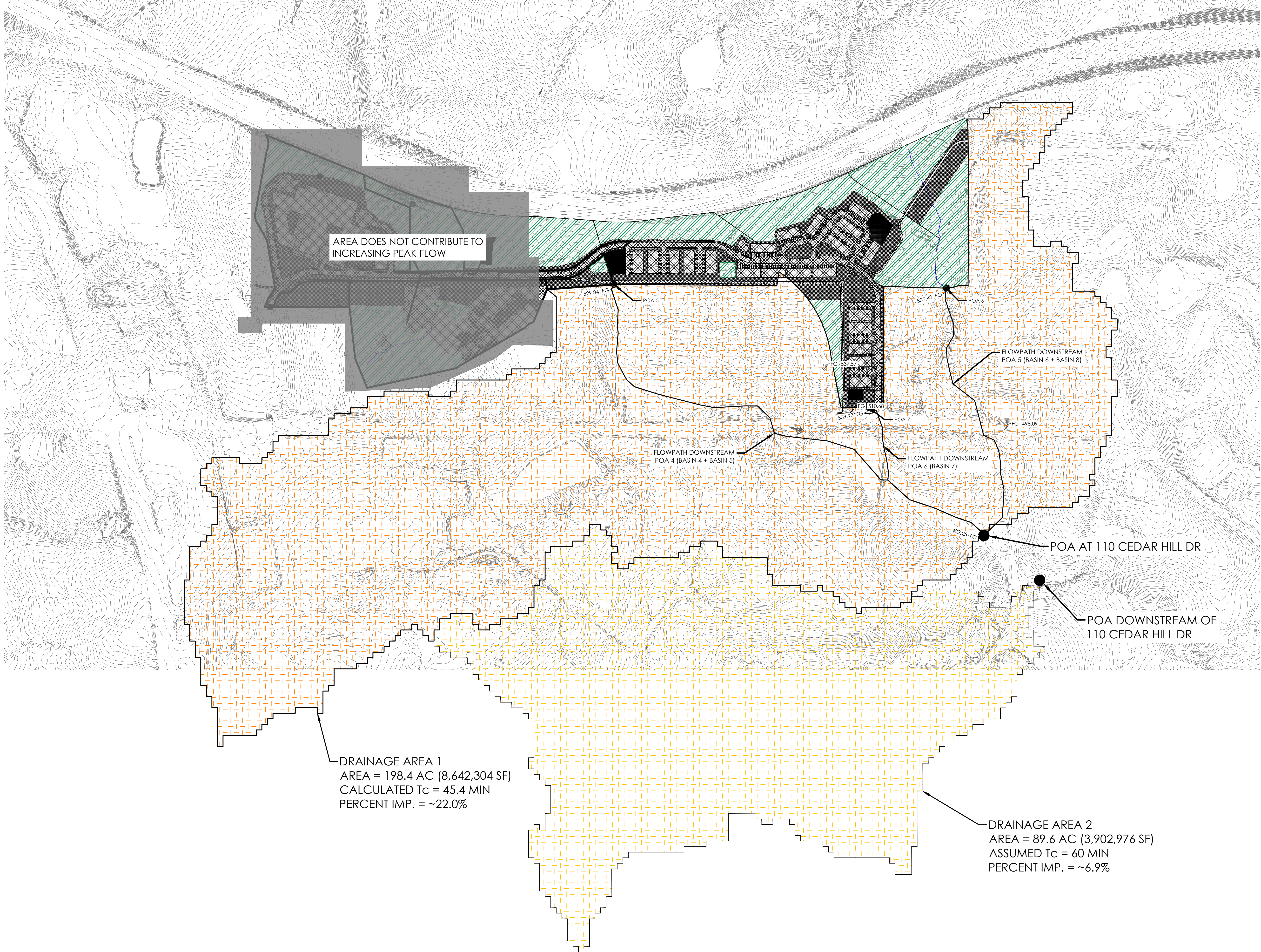


D:\32044\32044.0000\ARCHITECTURAL\CALCULATIONS AND REPORTS\32044.WATER_32044.0000 - 32044.MAPPING\32044.MAPPING\32044.DWG - 10/21/2025 4:07 PM



AREA DOES NOT CONTRIBUTE TO INCREASING PEAK FLOW

DRAINAGE AREA 1
AREA = 198.4 AC (8,642,304 SF)
CALCULATED Tc = 45.4 MIN
PERCENT IMP. = ~22.0%

DRAINAGE AREA 2
AREA = 89.6 AC (3,902,976 SF)
ASSUMED Tc = 60 MIN
PERCENT IMP. = ~6.9%

####	####	####	####
####	####	####	####
####	####	####	####
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####	####	####	####
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####	####	####	####
####	####	####	####
####	####	####	####
NO.	REVISIONS	BY	DATE



2510 Meridian Parkway • Suite 100
Durham, NC 27713 • 919.682.0368
www.thomasandhutton.com

POST DEV. STUDY 4

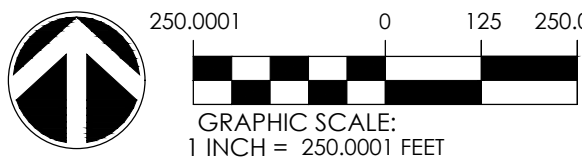
860 WEAVER DAIRY ROAD

PROJECT LOCATION:

####

CLIENT/OWNER:
LAND PLANNING & ENTITLEMENTS
157 EAST FRANKLIN STREET
CHAPEL HILL, NC 27514

####

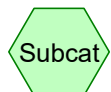
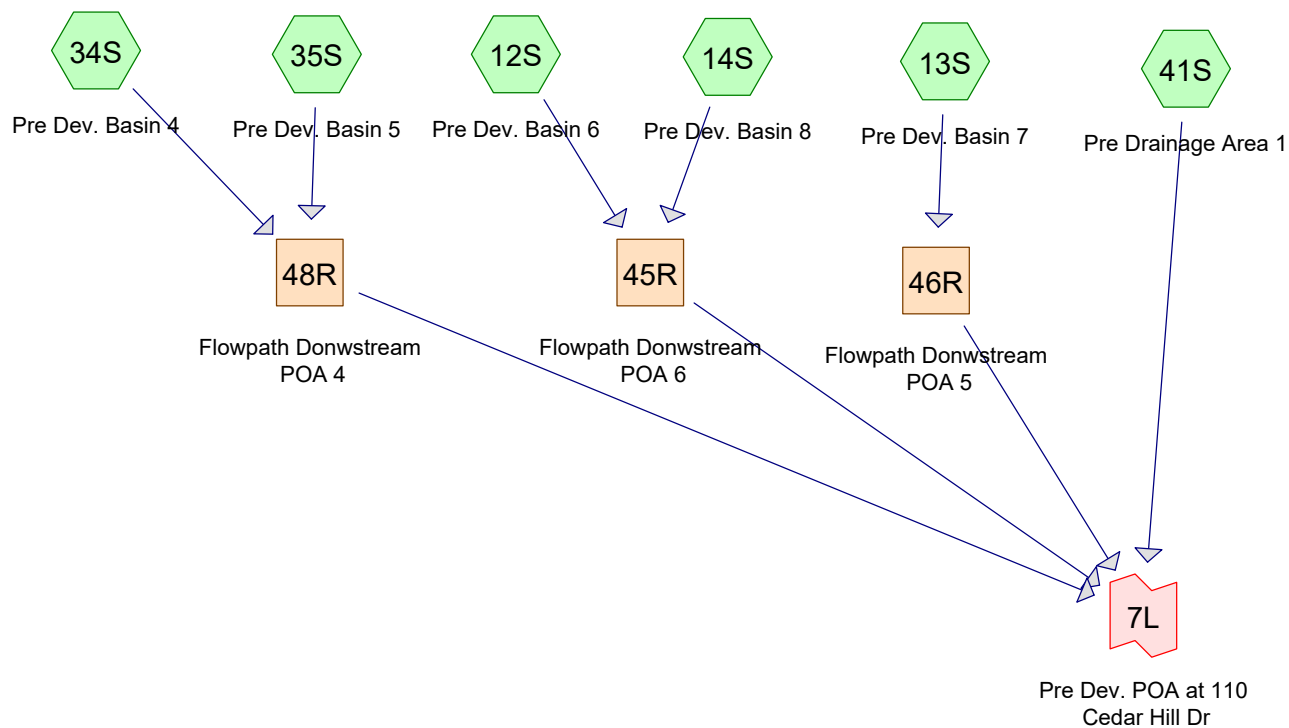


DATUM: HORIZ.: NAD 83 VERT.: NAVD 88

JOB NO: 32044.0000
DATE: 10/21/2025
DRAWN: ASL
DESIGNED:
REVIEWED: AO
APPROVED:
SCALE: 1" = 250.0001'

POST

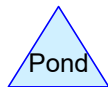
8. PRE AND POST DEVELOPMENT ANALYSIS AT 110 CEDAR HILL DR



Subcat



Reach



Pond



Link

Routing Diagram for Downstream Analysis - ZCP

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Downstream Analysis - ZCP

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-yr	Type II 24-hr		Default	24.00	1	3.16	2
2	2-yr	Type II 24-hr		Default	24.00	1	3.82	2
3	25-yr	Type II 24-hr		Default	24.00	1	6.54	2
4	100-yr	Type II 24-hr		Default	24.00	1	8.17	2

Downstream Analysis - ZCP

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Page 4

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
198.400	68	1 acre lots, 20% imp, HSG B (41S)
1.351	69	50-75% Grass cover, Fair, HSG B (14S)
1.518	56	Brush, Fair, HSG B (12S, 34S)
0.854	48	Brush, Good, HSG B (35S)
0.708	67	Brush, Poor, HSG B (13S)
23.054	60	Woods, Fair, HSG B (12S, 14S, 34S, 35S)
4.762	55	Woods, Good, HSG B (13S)
230.647	67	TOTAL AREA

Downstream Analysis - ZCP

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Page 5

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
230.647	HSG B	12S, 13S, 14S, 34S, 35S, 41S
0.000	HSG C	
0.000	HSG D	
0.000	Other	
230.647		TOTAL AREA

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Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	198.400	0.000	0.000	0.000	198.400	1 acre lots, 20% imp	41S
0.000	1.351	0.000	0.000	0.000	1.351	50-75% Grass cover, Fair	14S
0.000	1.518	0.000	0.000	0.000	1.518	Brush, Fair	12S, 34S
0.000	0.854	0.000	0.000	0.000	0.854	Brush, Good	35S
0.000	0.708	0.000	0.000	0.000	0.708	Brush, Poor	13S
0.000	23.054	0.000	0.000	0.000	23.054	Woods, Fair	12S, 14S, 34S, 35S
0.000	4.762	0.000	0.000	0.000	4.762	Woods, Good	13S
0.000	230.647	0.000	0.000	0.000	230.647	TOTAL AREA	

Downstream Analysis - ZCP

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Type II 24-hr 1-yr Rainfall=3.16"

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Page 7

Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment12S: Pre Dev. Basin 6 Runoff Area=441,055 sf 0.00% Impervious Runoff Depth=0.39"
Flow Length=1,222' Slope=0.0441 '/' Tc=12.4 min CN=60 Runoff=3.49 cfs 0.331 af

Subcatchment13S: Pre Dev. Basin 7 Runoff Area=238,293 sf 0.00% Impervious Runoff Depth=0.30"
Flow Length=977' Slope=0.0468 '/' Tc=10.2 min CN=57 Runoff=1.16 cfs 0.135 af

Subcatchment14S: Pre Dev. Basin 8 Runoff Area=289,814 sf 0.00% Impervious Runoff Depth=0.46"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=3.40 cfs 0.257 af

Subcatchment34S: Pre Dev. Basin 4 Runoff Area=130,388 sf 0.00% Impervious Runoff Depth=0.36"
Flow Length=561' Slope=0.0221 '/' Tc=8.9 min CN=59 Runoff=0.97 cfs 0.090 af

Subcatchment35S: Pre Dev. Basin 5 Runoff Area=305,128 sf 0.00% Impervious Runoff Depth=0.36"
Flow Length=998' Slope=0.0301 '/' Tc=12.3 min CN=59 Runoff=2.07 cfs 0.210 af

Subcatchment41S: Pre Drainage Area 1 Runoff Area=198.400 ac 20.00% Impervious Runoff Depth=0.71"
Flow Length=4,195' Slope=0.0177 '/' Tc=45.4 min CN=68 Runoff=74.63 cfs 11.755 af

Reach 45R: Flowpath Downstream POA Avg. Flow Depth=0.62' Max Vel=1.00 fps Inflow=6.37 cfs 0.589 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=2.71 cfs 0.589 af

Reach 46R: Flowpath Downstream POA Avg. Flow Depth=0.24' Max Vel=0.72 fps Inflow=1.16 cfs 0.135 af
n=0.100 L=1,036.0' S=0.0267 '/' Capacity=8.94 cfs Outflow=0.49 cfs 0.135 af

Reach 48R: Flowpath Downstream POA Avg. Flow Depth=0.32' Max Vel=0.68 fps Inflow=2.92 cfs 0.299 af
n=0.100 L=2,757.0' S=0.0173 '/' Capacity=7.18 cfs Outflow=0.68 cfs 0.299 af

Link 7L: Pre Dev. POA at 110 Cedar Hill Dr

Inflow=76.61 cfs 12.778 af

Primary=76.61 cfs 12.778 af

Total Runoff Area = 230.647 ac Runoff Volume = 12.778 af Average Runoff Depth = 0.66"
82.80% Pervious = 190.967 ac 17.20% Impervious = 39.680 ac

Downstream Analysis - ZCP

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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Subcatchment 12S: Pre Dev. Basin 6

Runoff = 3.49 cfs @ 12.10 hrs, Volume= 0.331 af, Depth= 0.39"

Routed to Reach 45R : Flowpath Downstream POA 6

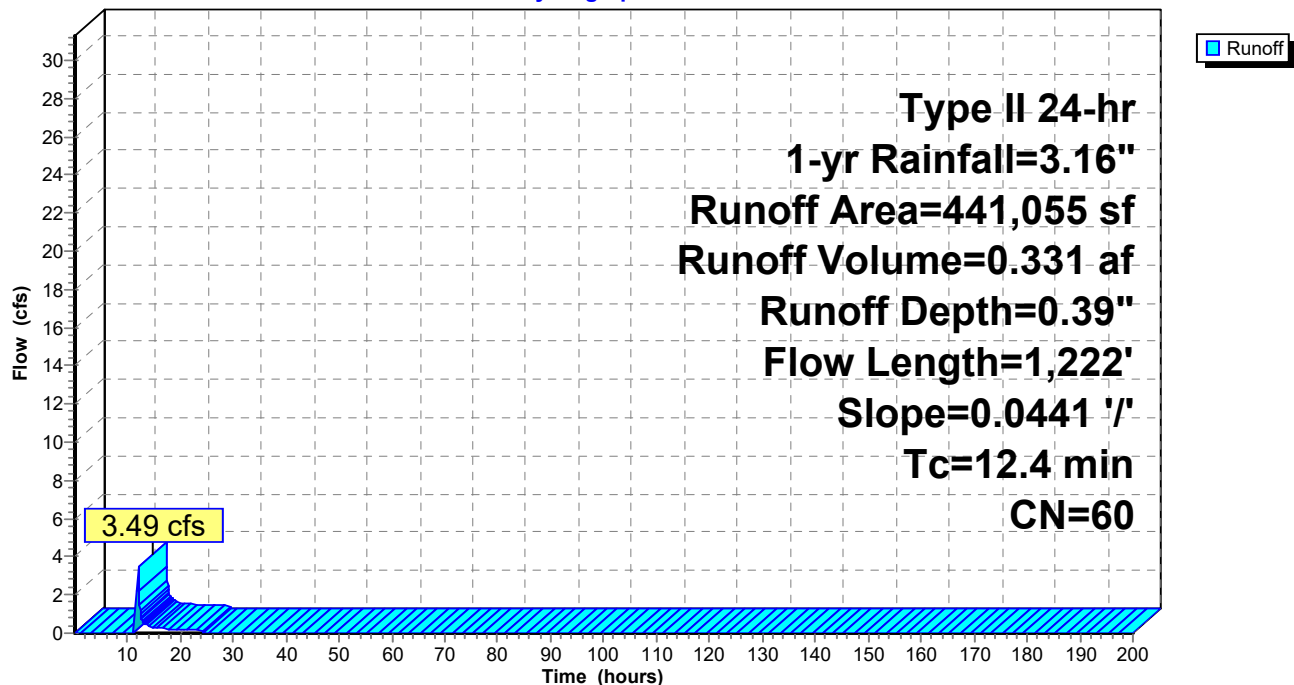
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 1-yr Rainfall=3.16"

Area (sf)	CN	Description
401,238	60	Woods, Fair, HSG B
39,817	56	Brush, Fair, HSG B
441,055	60	Weighted Average
441,055		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	1,222	0.0441	1.65		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 12S: Pre Dev. Basin 6

Hydrograph



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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Subcatchment 13S: Pre Dev. Basin 7

Runoff = 1.16 cfs @ 12.09 hrs, Volume= 0.135 af, Depth= 0.30"
Routed to Reach 46R : Flowpath Downstream POA 5

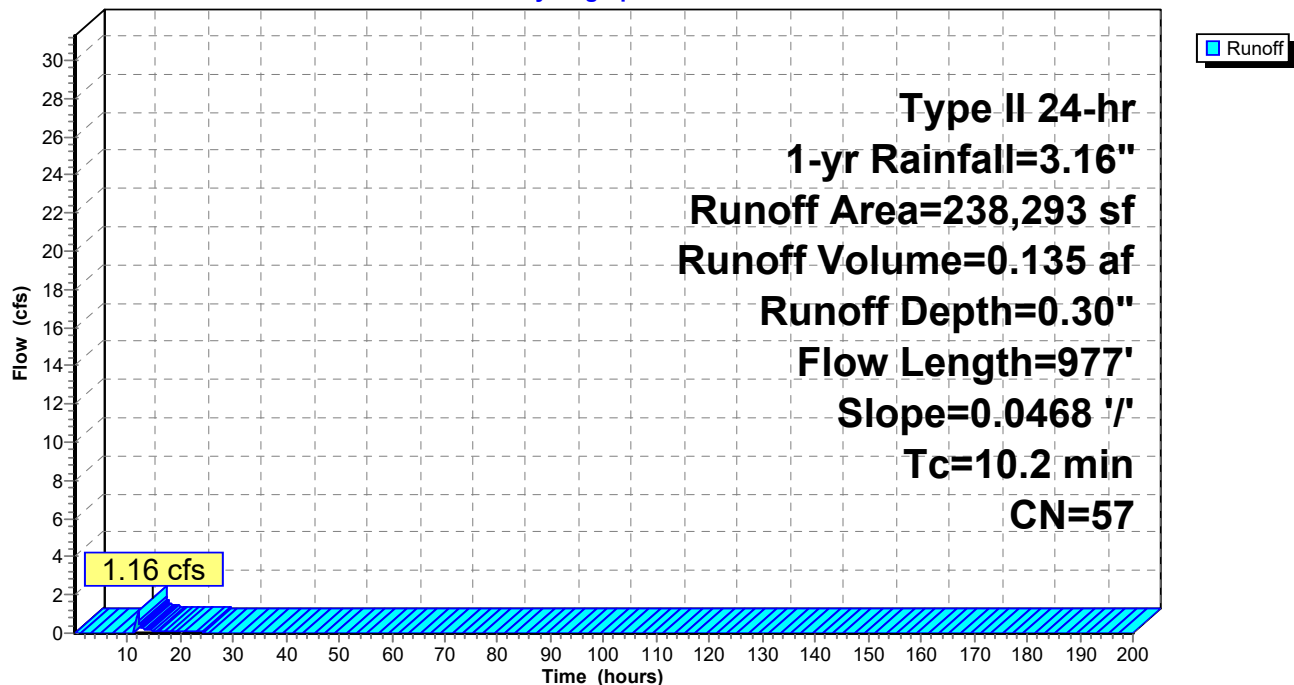
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 1-yr Rainfall=3.16"

Area (sf)	CN	Description
207,447	55	Woods, Good, HSG B
30,846	67	Brush, Poor, HSG B
238,293	57	Weighted Average
238,293		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	977	0.0468	1.60		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 13S: Pre Dev. Basin 7

Hydrograph



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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Subcatchment 14S: Pre Dev. Basin 8

Runoff = 3.40 cfs @ 12.03 hrs, Volume= 0.257 af, Depth= 0.46"
Routed to Reach 45R : Flowpath Downstream POA 6

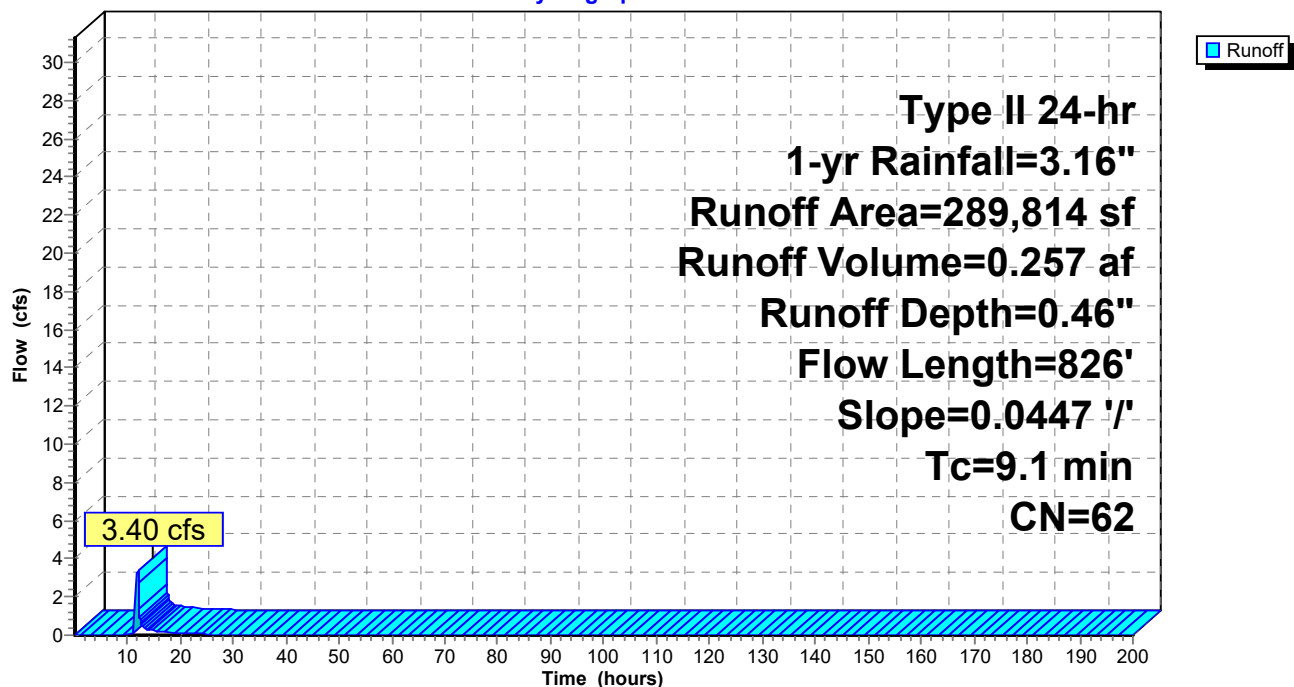
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 1-yr Rainfall=3.16"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
58,855	69	50-75% Grass cover, Fair, HSG B
289,814	62	Weighted Average
289,814		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 14S: Pre Dev. Basin 8

Hydrograph



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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Subcatchment 34S: Pre Dev. Basin 4

Runoff = 0.97 cfs @ 12.04 hrs, Volume= 0.090 af, Depth= 0.36"
Routed to Reach 48R : Flowpath Downstream POA 4

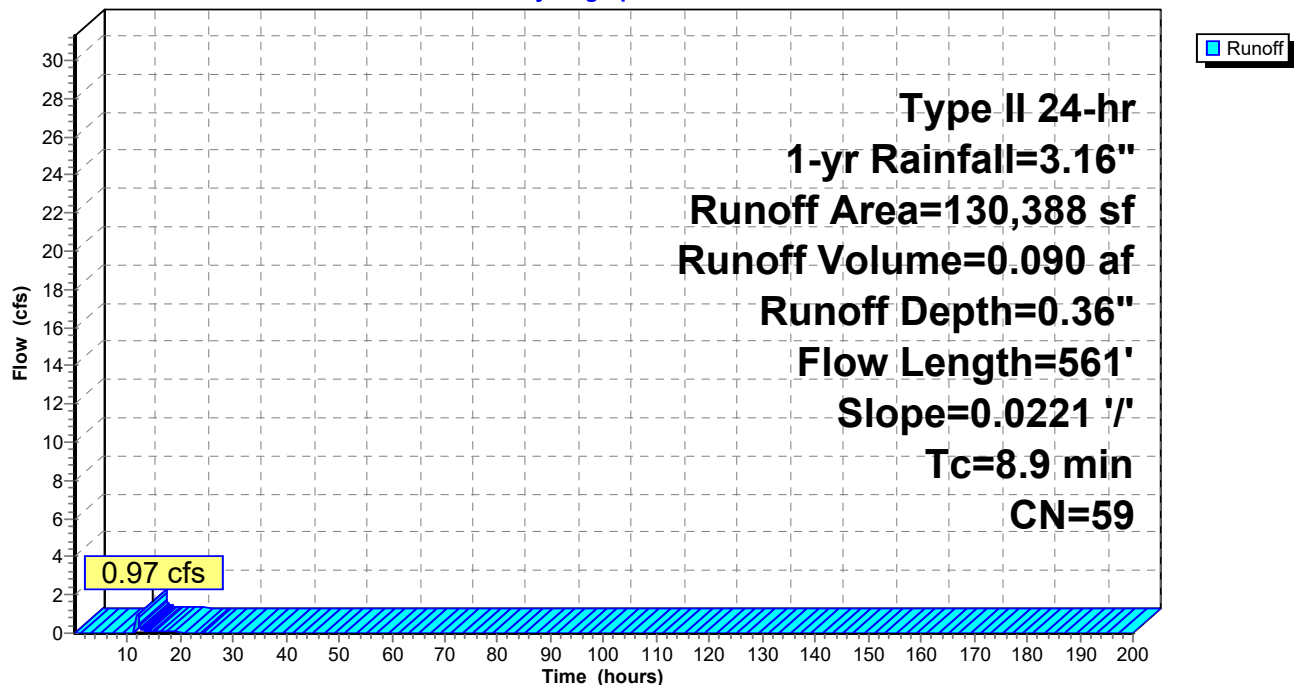
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 1-yr Rainfall=3.16"

Area (sf)	CN	Description
104,102	60	Woods, Fair, HSG B
26,286	56	Brush, Fair, HSG B
130,388	59	Weighted Average
130,388		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	561	0.0221	1.06		Kirpich Method, General overland flow k= 2.00

Subcatchment 34S: Pre Dev. Basin 4

Hydrograph



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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Subcatchment 35S: Pre Dev. Basin 5

Runoff = 2.07 cfs @ 12.10 hrs, Volume= 0.210 af, Depth= 0.36"

Routed to Reach 48R : Flowpath Downstream POA 4

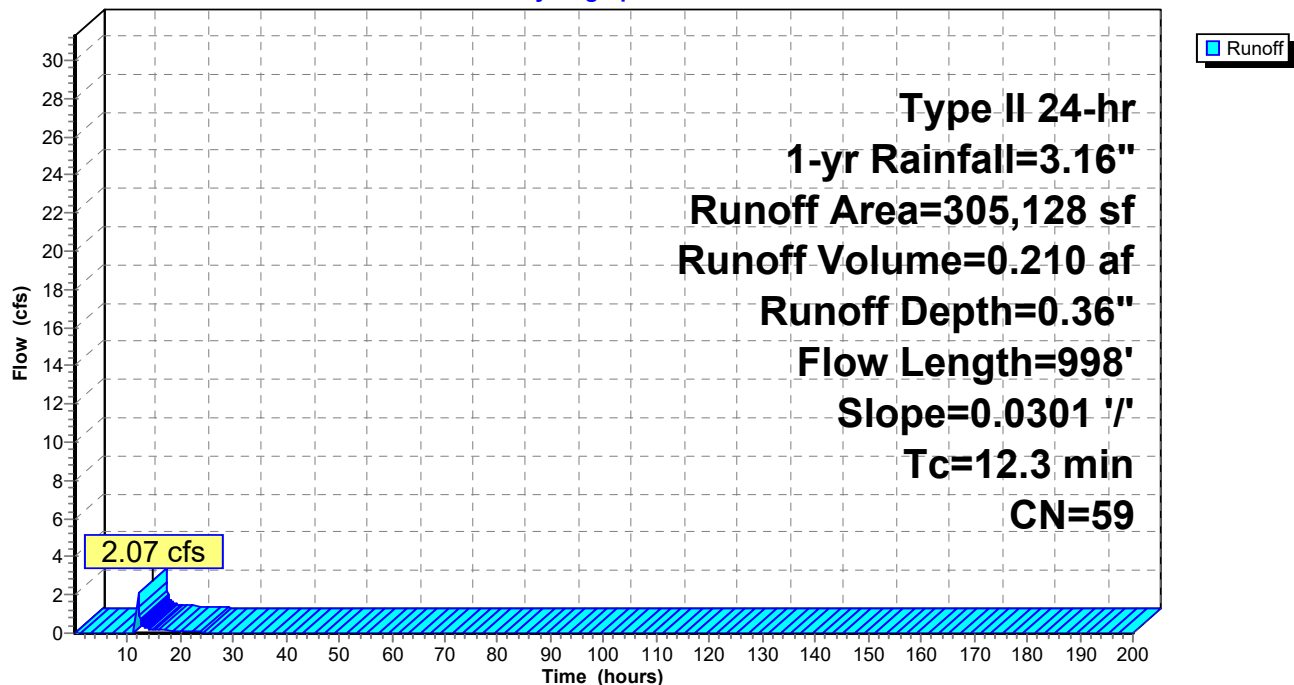
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 1-yr Rainfall=3.16"

Area (sf)	CN	Description
267,919	60	Woods, Fair, HSG B
37,209	48	Brush, Good, HSG B
305,128	59	Weighted Average
305,128		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	998	0.0301	1.36		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 35S: Pre Dev. Basin 5

Hydrograph



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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Subcatchment 41S: Pre Drainage Area 1

Runoff = 74.63 cfs @ 12.51 hrs, Volume= 11.755 af, Depth= 0.71"
Routed to Link 7L : Pre Dev. POA at 110 Cedar Hill Dr

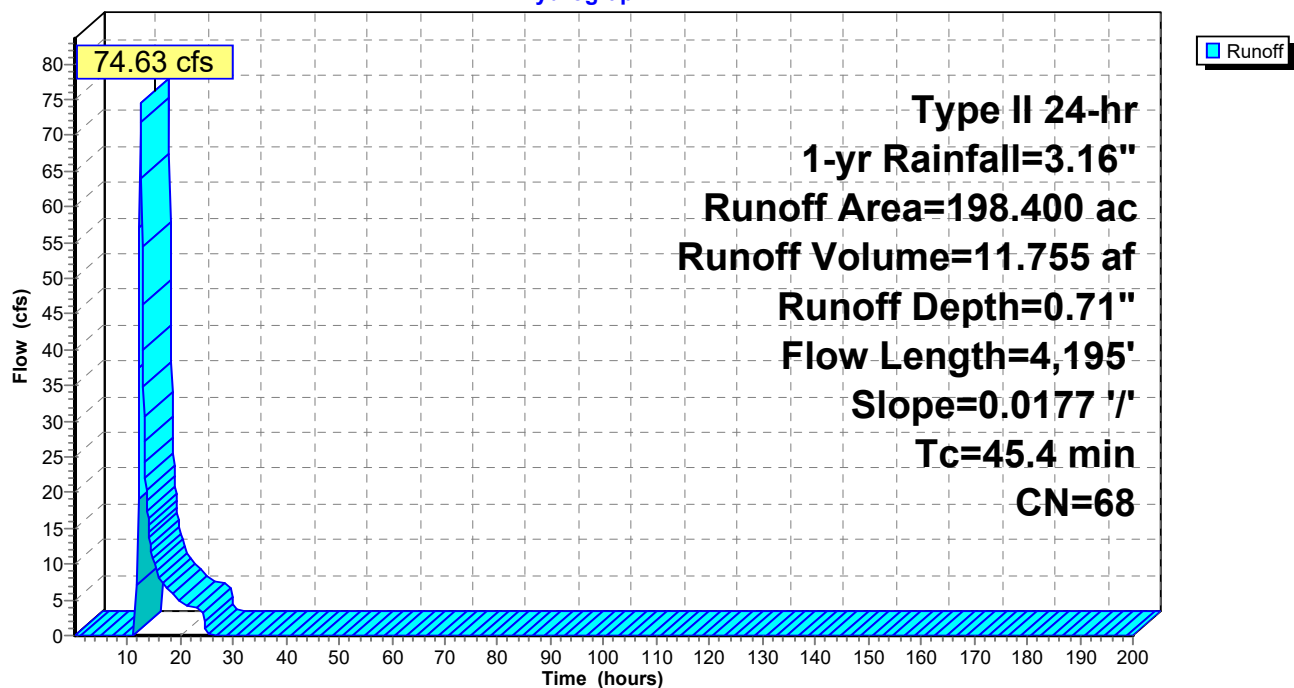
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 1-yr Rainfall=3.16"

Area (ac)	CN	Description
198.400	68	1 acre lots, 20% imp, HSG B
158.720		80.00% Pervious Area
39.680		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.4	4,195	0.0177	1.54		Kirpich Method, General overland flow k= 2.00

Subcatchment 41S: Pre Drainage Area 1

Hydrograph



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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Reach 45R: Flowpath Downstream POA 6

Inflow Area = 16.778 ac, 0.00% Impervious, Inflow Depth = 0.42" for 1-yr event
Inflow = 6.37 cfs @ 12.07 hrs, Volume= 0.589 af
Outflow = 2.71 cfs @ 12.72 hrs, Volume= 0.589 af, Atten= 57%, Lag= 39.0 min
Routed to Link 7L : Pre Dev. POA at 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.00 fps, Min. Travel Time= 25.1 min

Avg. Velocity= 0.21 fps, Avg. Travel Time= 120.1 min

Peak Storage= 4,105 cf @ 12.29 hrs

Average Depth at Peak Storage= 0.62' , Surface Width= 6.63'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

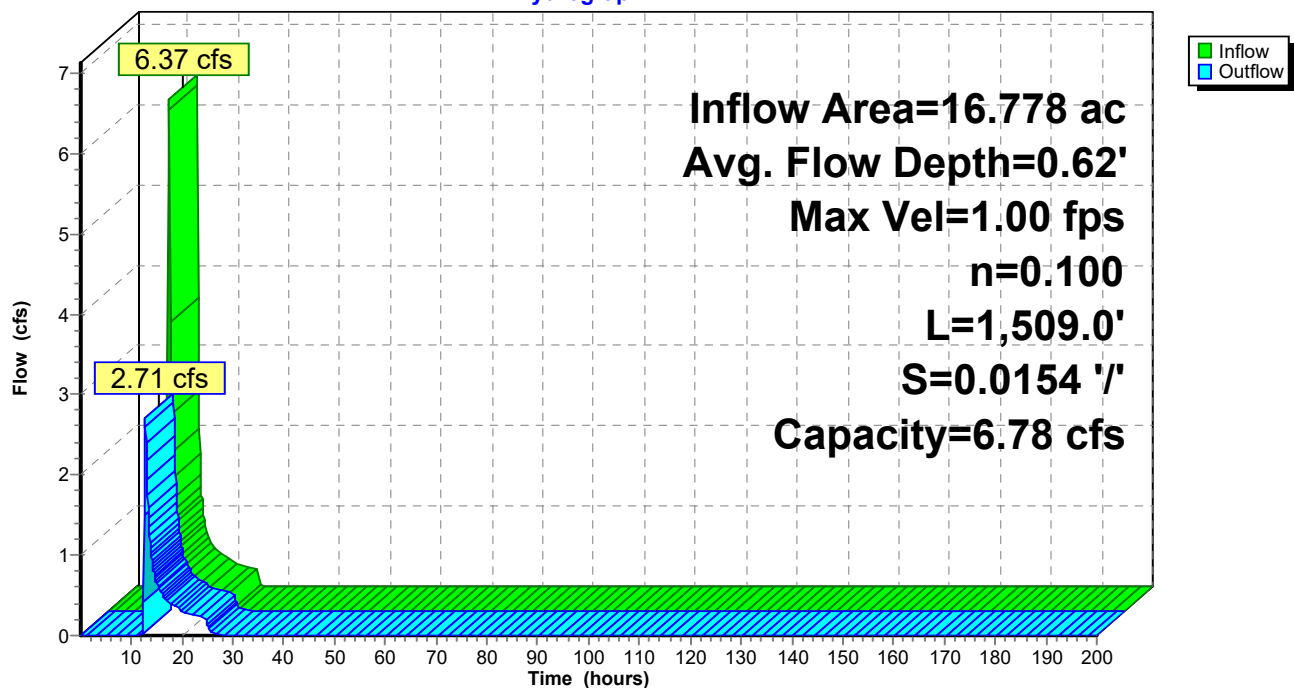
Length= 1,509.0' Slope= 0.0154 '/'

Inlet Invert= 505.43', Outlet Invert= 482.25'



Reach 45R: Flowpath Downstream POA 6

Hydrograph



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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Reach 46R: Flowpath Downstream POA 5

Inflow Area = 5.470 ac, 0.00% Impervious, Inflow Depth = 0.30" for 1-yr event
Inflow = 1.16 cfs @ 12.09 hrs, Volume= 0.135 af
Outflow = 0.49 cfs @ 12.74 hrs, Volume= 0.135 af, Atten= 58%, Lag= 38.7 min
Routed to Link 7L : Pre Dev. POA at 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 0.72 fps, Min. Travel Time= 24.0 min

Avg. Velocity= 0.24 fps, Avg. Travel Time= 71.0 min

Peak Storage= 708 cf @ 12.34 hrs

Average Depth at Peak Storage= 0.24' , Surface Width= 4.19'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 8.94 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

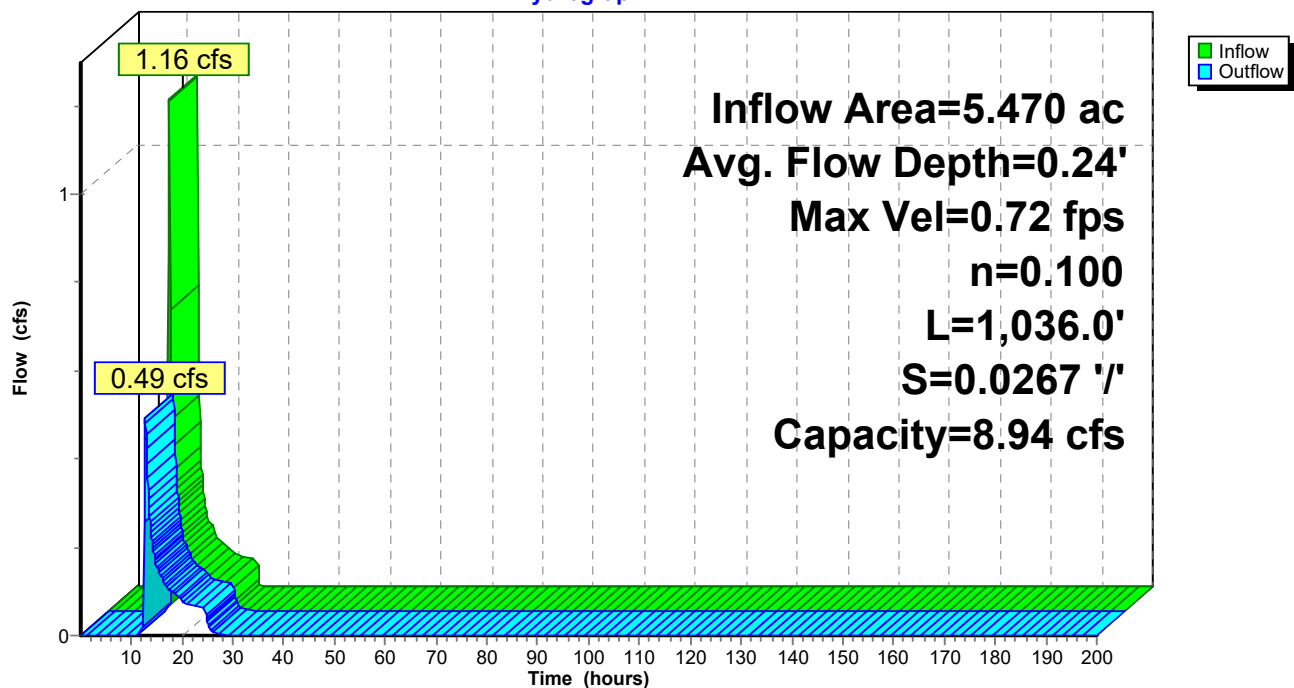
Length= 1,036.0' Slope= 0.0267 '/'

Inlet Invert= 509.93', Outlet Invert= 482.25'



Reach 46R: Flowpath Downstream POA 5

Hydrograph



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Type II 24-hr 1-yr Rainfall=3.16"

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Page 16

Summary for Reach 48R: Flowpath Downstream POA 4

Inflow Area = 9.998 ac, 0.00% Impervious, Inflow Depth = 0.36" for 1-yr event
Inflow = 2.92 cfs @ 12.09 hrs, Volume= 0.299 af
Outflow = 0.68 cfs @ 13.78 hrs, Volume= 0.299 af, Atten= 77%, Lag= 101.6 min
Routed to Link 7L : Pre Dev. POA at 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 0.68 fps, Min. Travel Time= 67.1 min

Avg. Velocity = 0.16 fps, Avg. Travel Time= 293.9 min

Peak Storage= 2,749 cf @ 12.65 hrs

Average Depth at Peak Storage= 0.32' , Surface Width= 4.75'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 7.18 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

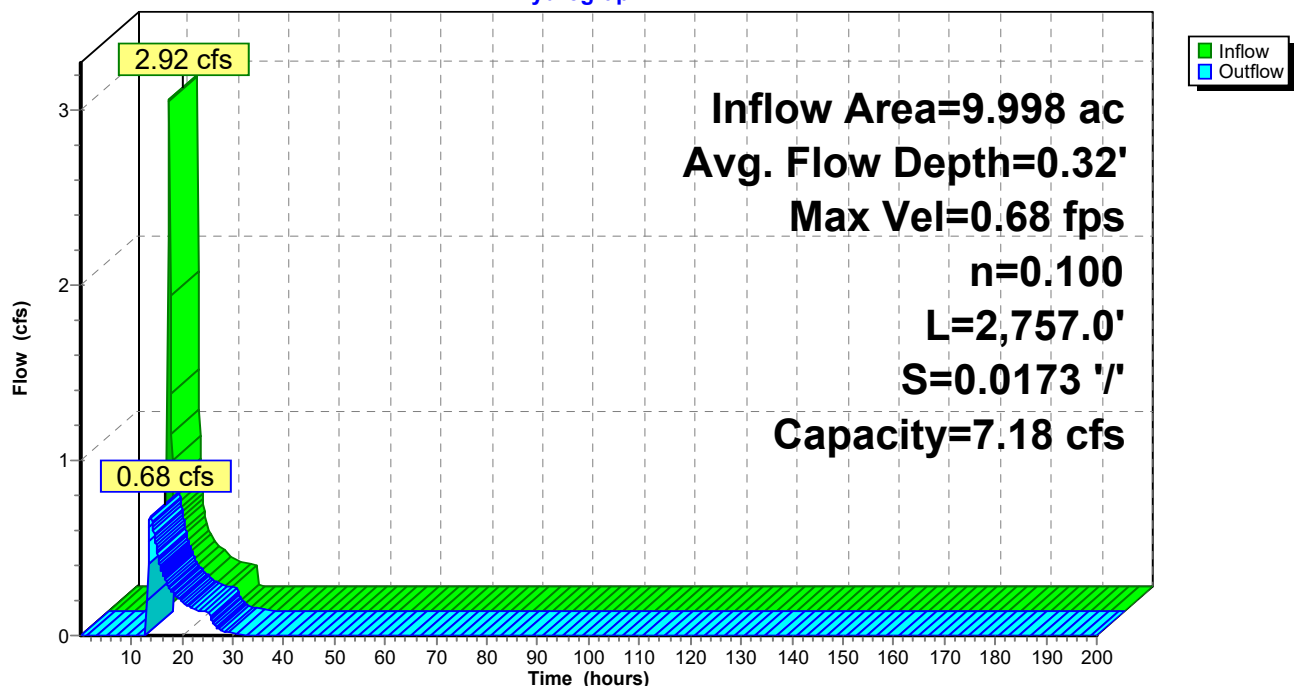
Length= 2,757.0' Slope= 0.0173 '/'

Inlet Invert= 529.84', Outlet Invert= 482.25'



Reach 48R: Flowpath Downstream POA 4

Hydrograph



Downstream Analysis - ZCP

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Type II 24-hr 1-yr Rainfall=3.16"

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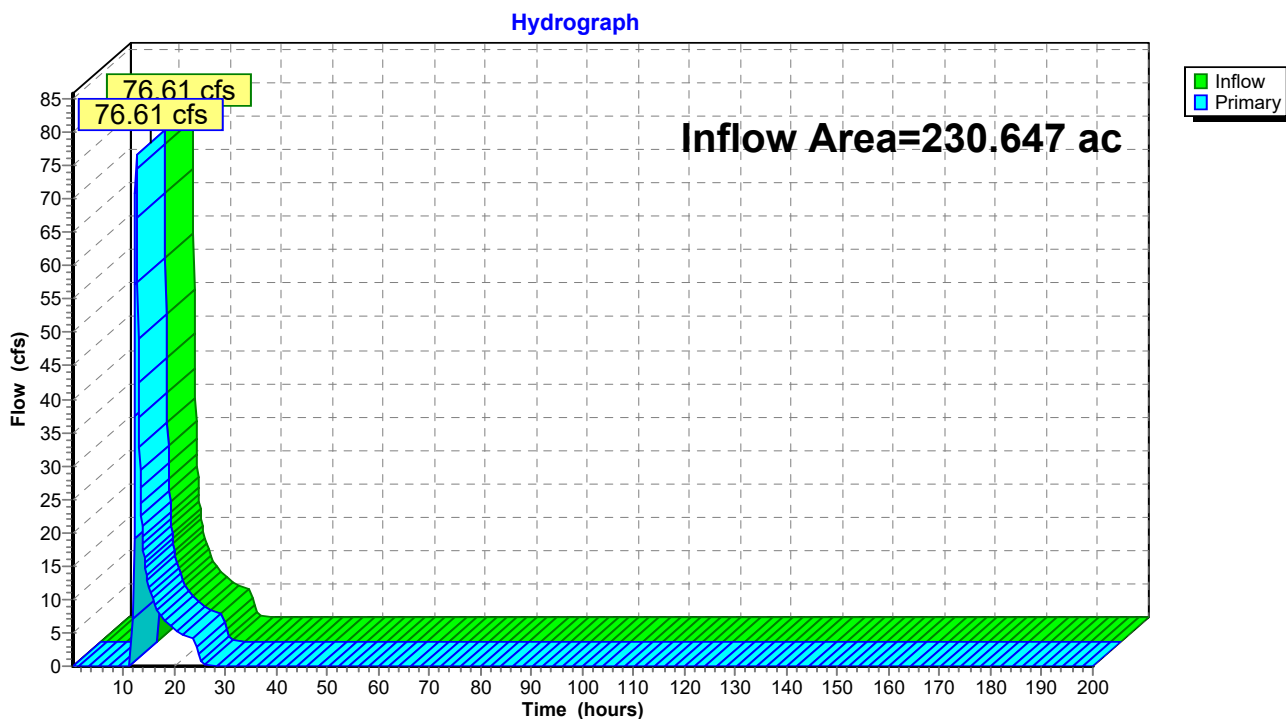
Page 17

Summary for Link 7L: Pre Dev. POA at 110 Cedar Hill Dr

Inflow Area = 230.647 ac, 17.20% Impervious, Inflow Depth = 0.66" for 1-yr event
Inflow = 76.61 cfs @ 12.53 hrs, Volume= 12.778 af
Primary = 76.61 cfs @ 12.53 hrs, Volume= 12.778 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 7L: Pre Dev. POA at 110 Cedar Hill Dr



Downstream Analysis - ZCP

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Type II 24-hr 2-yr Rainfall=3.82"

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment12S: Pre Dev. Basin 6 Runoff Area=441,055 sf 0.00% Impervious Runoff Depth=0.68"
Flow Length=1,222' Slope=0.0441 '/' Tc=12.4 min CN=60 Runoff=7.29 cfs 0.570 af

Subcatchment13S: Pre Dev. Basin 7 Runoff Area=238,293 sf 0.00% Impervious Runoff Depth=0.54"
Flow Length=977' Slope=0.0468 '/' Tc=10.2 min CN=57 Runoff=2.89 cfs 0.247 af

Subcatchment14S: Pre Dev. Basin 8 Runoff Area=289,814 sf 0.00% Impervious Runoff Depth=0.77"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=6.67 cfs 0.428 af

Subcatchment34S: Pre Dev. Basin 4 Runoff Area=130,388 sf 0.00% Impervious Runoff Depth=0.63"
Flow Length=561' Slope=0.0221 '/' Tc=8.9 min CN=59 Runoff=2.26 cfs 0.157 af

Subcatchment35S: Pre Dev. Basin 5 Runoff Area=305,128 sf 0.00% Impervious Runoff Depth=0.63"
Flow Length=998' Slope=0.0301 '/' Tc=12.3 min CN=59 Runoff=4.56 cfs 0.368 af

Subcatchment41S: Pre Drainage Area 1 Runoff Area=198.400 ac 20.00% Impervious Runoff Depth=1.09"
Flow Length=4,195' Slope=0.0177 '/' Tc=45.4 min CN=68 Runoff=125.05 cfs 18.066 af

Reach 45R: Flowpath Downstream Avg. Flow Depth=0.94' Max Vel=1.32 fps Inflow=13.31 cfs 0.998 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=6.66 cfs 0.998 af

Reach 46R: Flowpath Downstream POA Avg. Flow Depth=0.42' Max Vel=1.02 fps Inflow=2.89 cfs 0.247 af
n=0.100 L=1,036.0' S=0.0267 '/' Capacity=8.94 cfs Outflow=1.52 cfs 0.247 af

Reach 48R: Flowpath Downstream POA Avg. Flow Depth=0.49' Max Vel=0.92 fps Inflow=6.43 cfs 0.525 af
n=0.100 L=2,757.0' S=0.0173 '/' Capacity=7.18 cfs Outflow=1.77 cfs 0.525 af

Link 7L: Pre Dev. POA at 110 Cedar Hill Dr

Inflow=132.96 cfs 19.835 af
Primary=132.96 cfs 19.835 af

Total Runoff Area = 230.647 ac Runoff Volume = 19.835 af Average Runoff Depth = 1.03"
82.80% Pervious = 190.967 ac 17.20% Impervious = 39.680 ac

Downstream Analysis - ZCP

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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Subcatchment 12S: Pre Dev. Basin 6

Runoff = 7.29 cfs @ 12.08 hrs, Volume= 0.570 af, Depth= 0.68"

Routed to Reach 45R : Flowpath Downstream POA 6

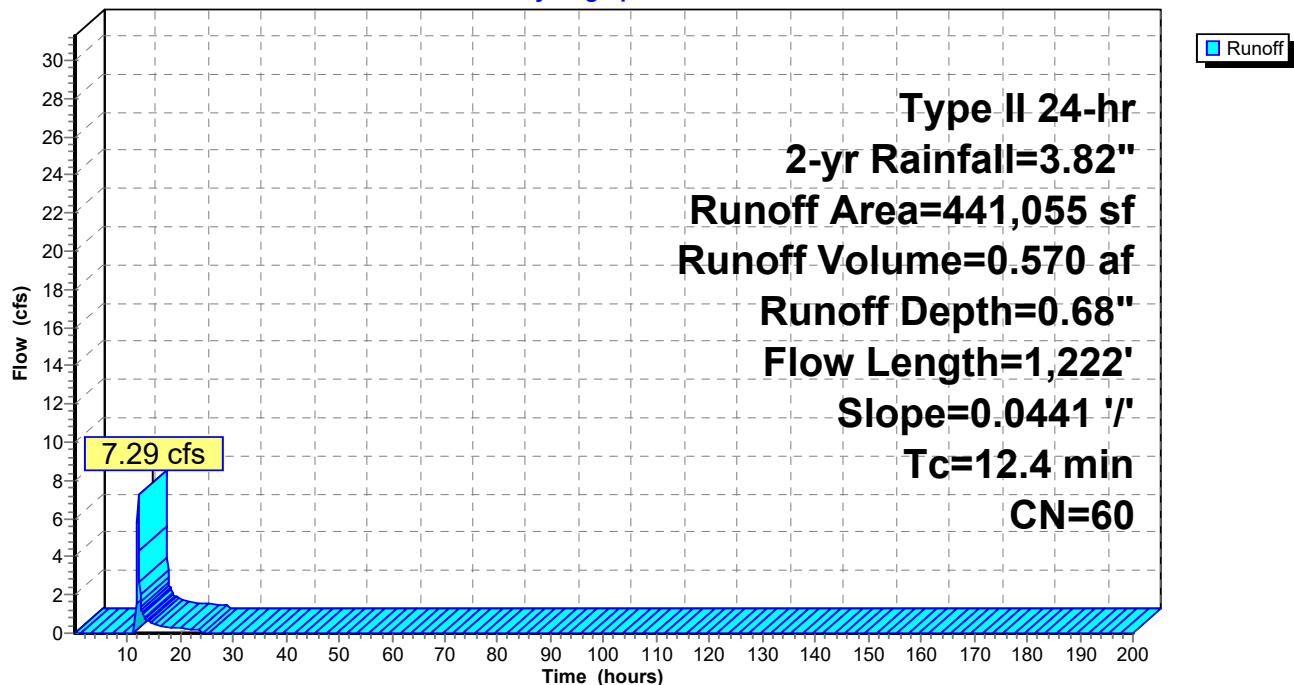
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 2-yr Rainfall=3.82"

Area (sf)	CN	Description
401,238	60	Woods, Fair, HSG B
39,817	56	Brush, Fair, HSG B
441,055	60	Weighted Average
441,055		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	1,222	0.0441	1.65		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 12S: Pre Dev. Basin 6

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Subcatchment 13S: Pre Dev. Basin 7

Runoff = 2.89 cfs @ 12.06 hrs, Volume= 0.247 af, Depth= 0.54"
Routed to Reach 46R : Flowpath Downstream POA 5

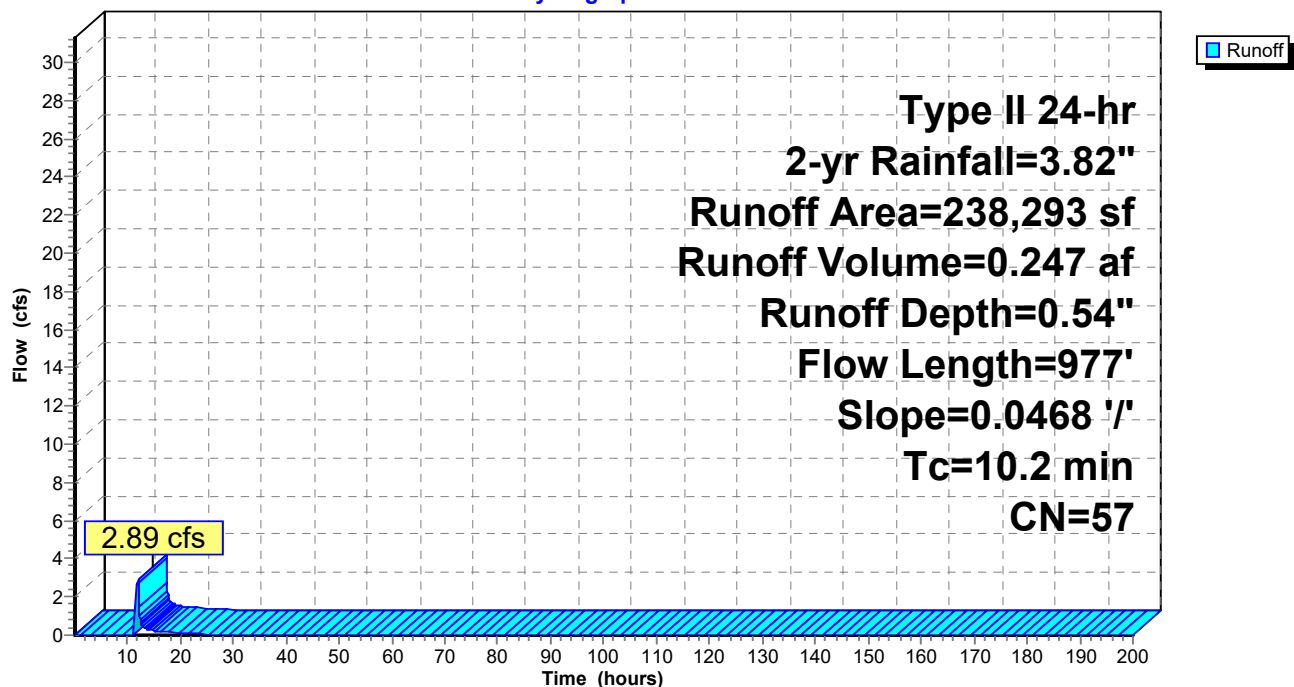
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 2-yr Rainfall=3.82"

Area (sf)	CN	Description
207,447	55	Woods, Good, HSG B
30,846	67	Brush, Poor, HSG B
238,293	57	Weighted Average
238,293		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	977	0.0468	1.60		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 13S: Pre Dev. Basin 7

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Subcatchment 14S: Pre Dev. Basin 8

Runoff = 6.67 cfs @ 12.02 hrs, Volume= 0.428 af, Depth= 0.77"
Routed to Reach 45R : Flowpath Downstream POA 6

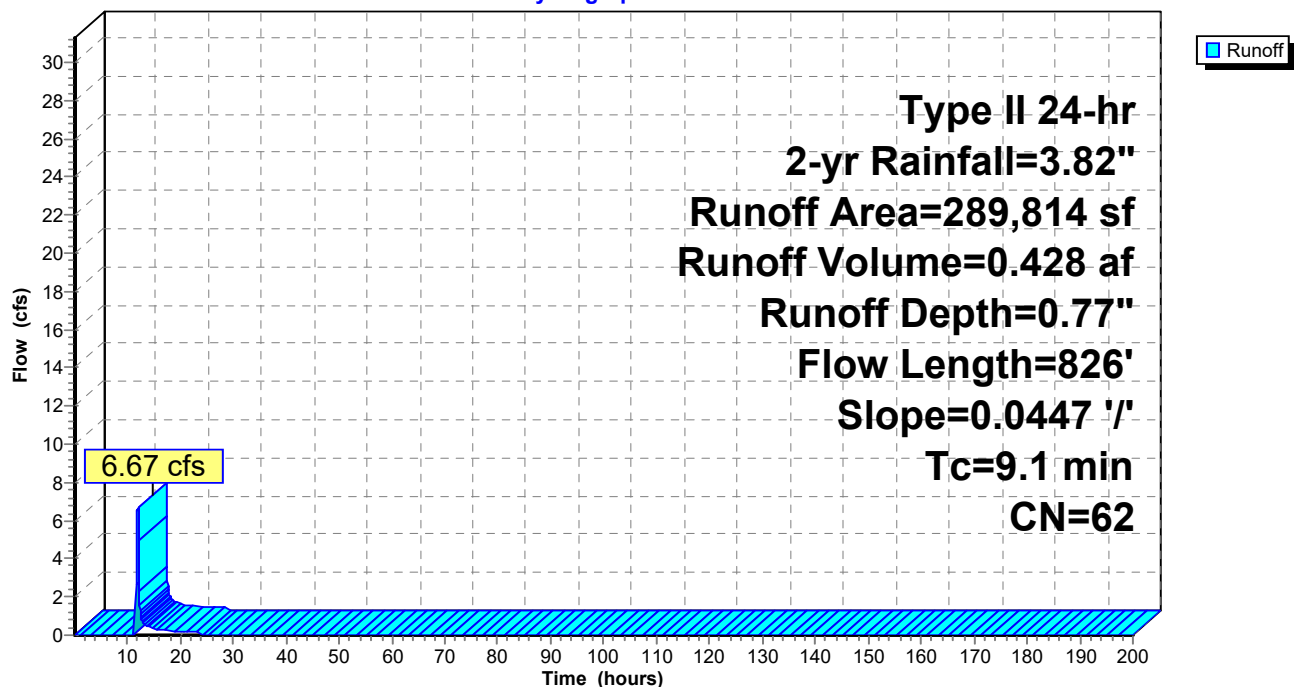
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 2-yr Rainfall=3.82"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
58,855	69	50-75% Grass cover, Fair, HSG B
289,814	62	Weighted Average
289,814		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 14S: Pre Dev. Basin 8

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Subcatchment 34S: Pre Dev. Basin 4

Runoff = 2.26 cfs @ 12.03 hrs, Volume= 0.157 af, Depth= 0.63"
Routed to Reach 48R : Flowpath Downstream POA 4

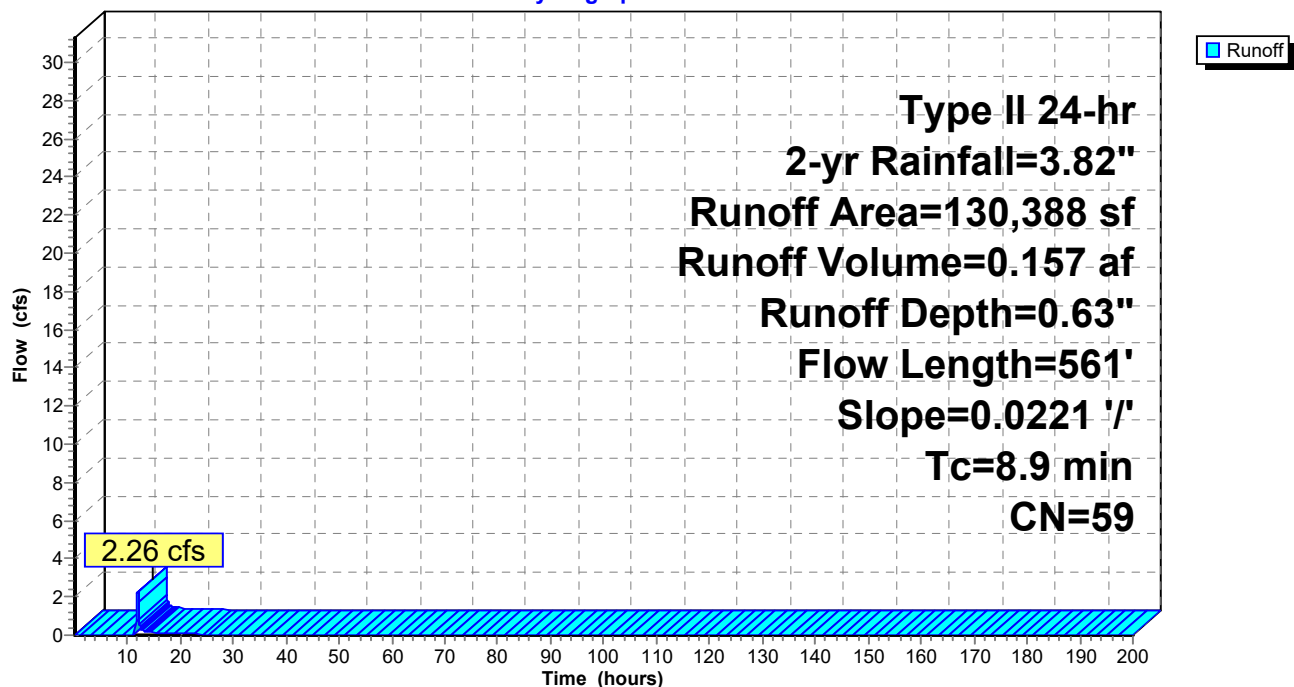
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 2-yr Rainfall=3.82"

Area (sf)	CN	Description
104,102	60	Woods, Fair, HSG B
26,286	56	Brush, Fair, HSG B
130,388	59	Weighted Average
130,388		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	561	0.0221	1.06		Kirpich Method, General overland flow k= 2.00

Subcatchment 34S: Pre Dev. Basin 4

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Subcatchment 35S: Pre Dev. Basin 5

Runoff = 4.56 cfs @ 12.09 hrs, Volume= 0.368 af, Depth= 0.63"

Routed to Reach 48R : Flowpath Downstream POA 4

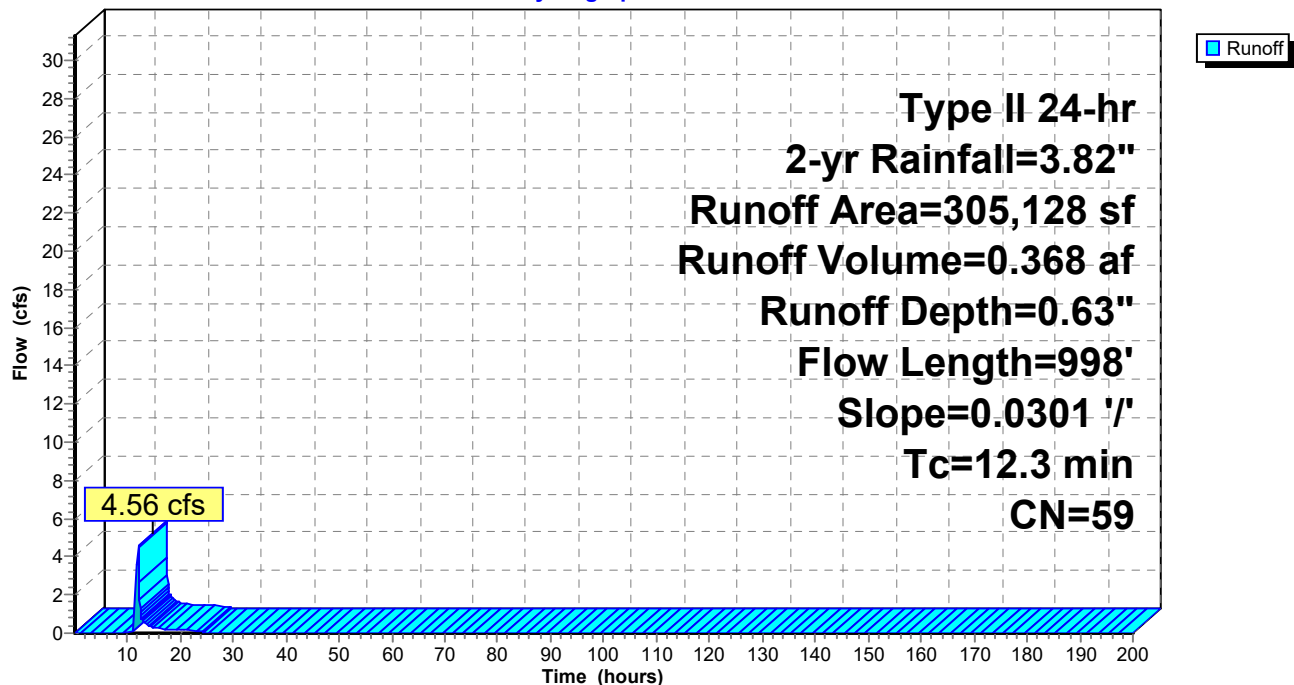
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 2-yr Rainfall=3.82"

Area (sf)	CN	Description
267,919	60	Woods, Fair, HSG B
37,209	48	Brush, Good, HSG B
305,128	59	Weighted Average
305,128		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	998	0.0301	1.36		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 35S: Pre Dev. Basin 5

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Subcatchment 41S: Pre Drainage Area 1

Runoff = 125.05 cfs @ 12.49 hrs, Volume= 18.066 af, Depth= 1.09"
Routed to Link 7L : Pre Dev. POA at 110 Cedar Hill Dr

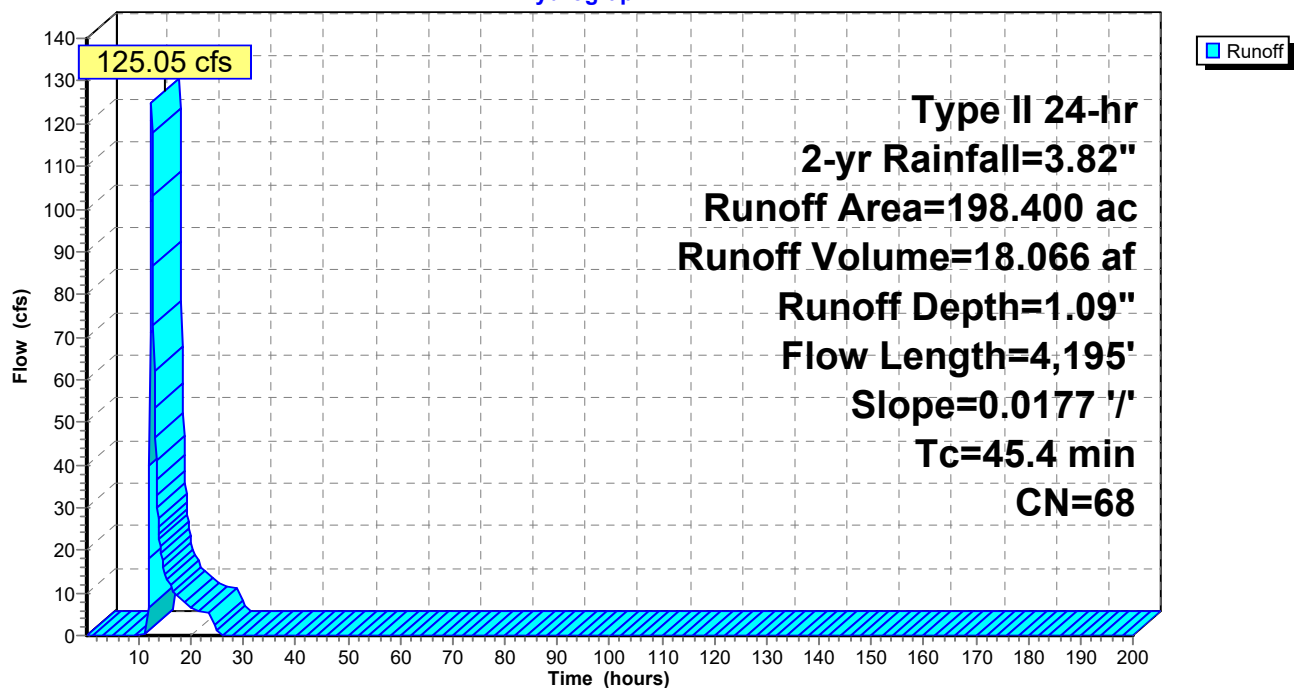
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 2-yr Rainfall=3.82"

Area (ac)	CN	Description
198.400	68	1 acre lots, 20% imp, HSG B
158.720		80.00% Pervious Area
39.680		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.4	4,195	0.0177	1.54		Kirpich Method, General overland flow k= 2.00

Subcatchment 41S: Pre Drainage Area 1

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Reach 45R: Flowpath Downstream POA 6

Inflow Area = 16.778 ac, 0.00% Impervious, Inflow Depth = 0.71" for 2-yr event
Inflow = 13.31 cfs @ 12.05 hrs, Volume= 0.998 af
Outflow = 6.66 cfs @ 12.54 hrs, Volume= 0.998 af, Atten= 50%, Lag= 29.7 min
Routed to Link 7L : Pre Dev. POA at 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.32 fps, Min. Travel Time= 19.1 min

Avg. Velocity = 0.23 fps, Avg. Travel Time= 108.7 min

Peak Storage= 7,785 cf @ 12.23 hrs

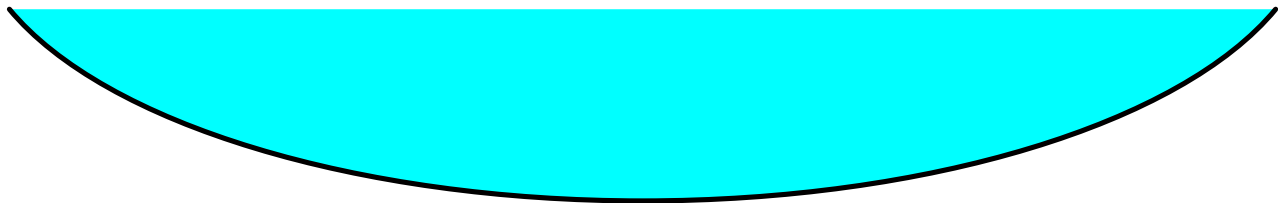
Average Depth at Peak Storage= 0.94' , Surface Width= 8.21'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

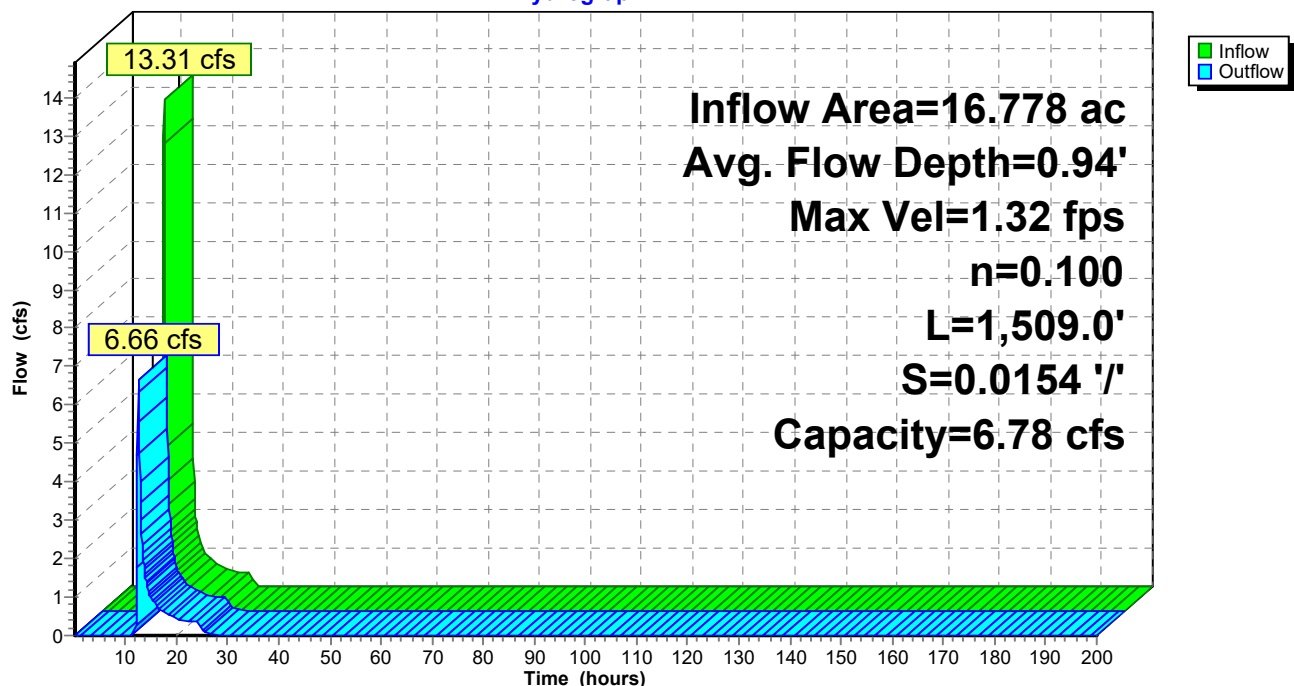
Length= 1,509.0' Slope= 0.0154 '/'

Inlet Invert= 505.43', Outlet Invert= 482.25'



Reach 45R: Flowpath Downstream POA 6

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Reach 46R: Flowpath Downstream POA 5

Inflow Area = 5.470 ac, 0.00% Impervious, Inflow Depth = 0.54" for 2-yr event
Inflow = 2.89 cfs @ 12.06 hrs, Volume= 0.247 af
Outflow = 1.52 cfs @ 12.52 hrs, Volume= 0.247 af, Atten= 47%, Lag= 27.5 min
Routed to Link 7L : Pre Dev. POA at 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.02 fps, Min. Travel Time= 16.9 min

Avg. Velocity= 0.27 fps, Avg. Travel Time= 62.9 min

Peak Storage= 1,574 cf @ 12.22 hrs

Average Depth at Peak Storage= 0.42' , Surface Width= 5.46'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 8.94 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

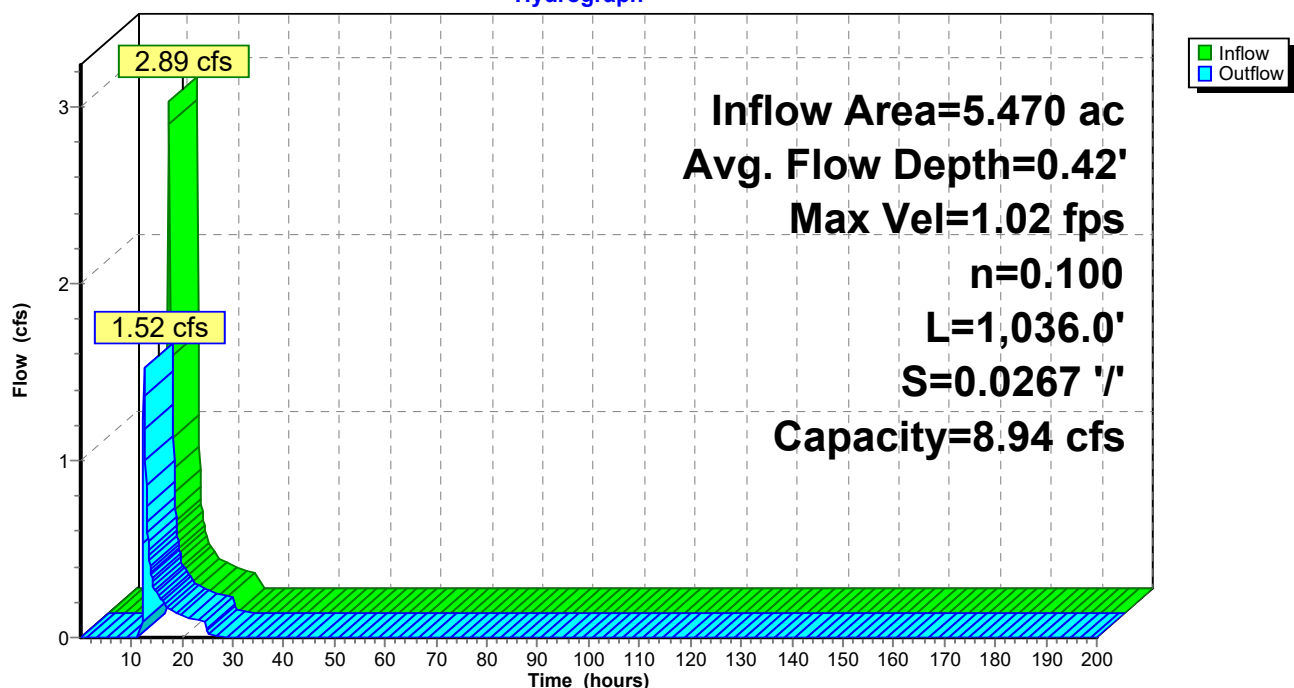
Length= 1,036.0' Slope= 0.0267 '/'

Inlet Invert= 509.93', Outlet Invert= 482.25'



Reach 46R: Flowpath Downstream POA 5

Hydrograph



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Summary for Reach 48R: Flowpath Downstream POA 4

Inflow Area = 9.998 ac, 0.00% Impervious, Inflow Depth = 0.63" for 2-yr event
Inflow = 6.43 cfs @ 12.07 hrs, Volume= 0.525 af
Outflow = 1.77 cfs @ 13.25 hrs, Volume= 0.525 af, Atten= 73%, Lag= 71.3 min
Routed to Link 7L : Pre Dev. POA at 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 0.92 fps, Min. Travel Time= 50.1 min

Avg. Velocity = 0.17 fps, Avg. Travel Time= 268.3 min

Peak Storage= 5,349 cf @ 12.42 hrs

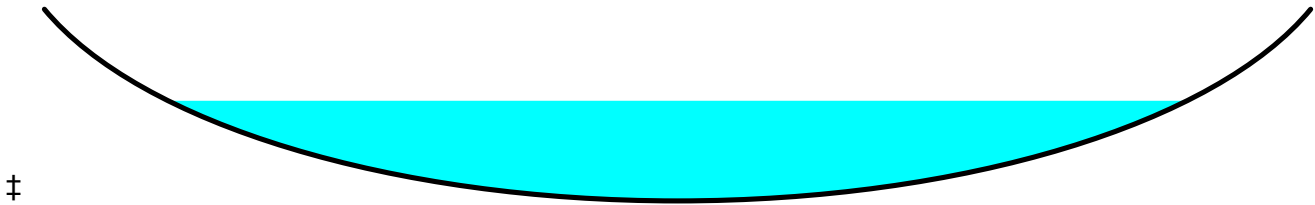
Average Depth at Peak Storage= 0.49' , Surface Width= 5.93'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 7.18 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

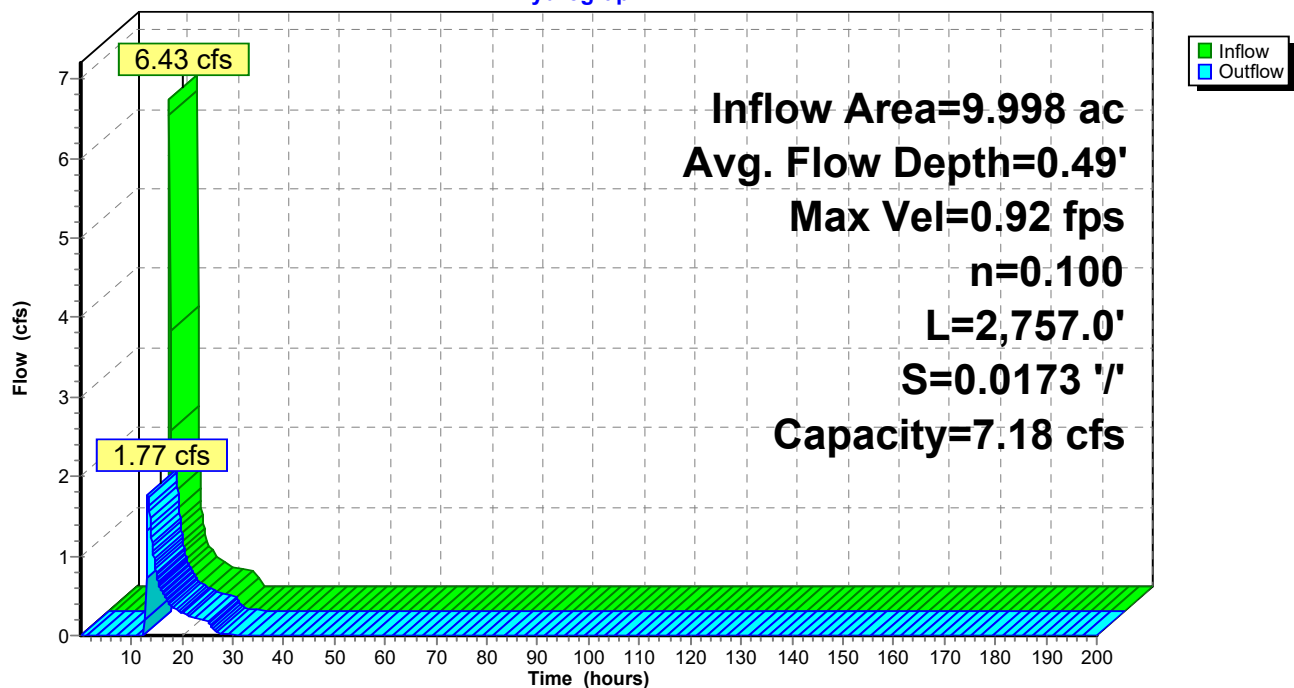
Length= 2,757.0' Slope= 0.0173 '/'

Inlet Invert= 529.84', Outlet Invert= 482.25'



Reach 48R: Flowpath Downstream POA 4

Hydrograph



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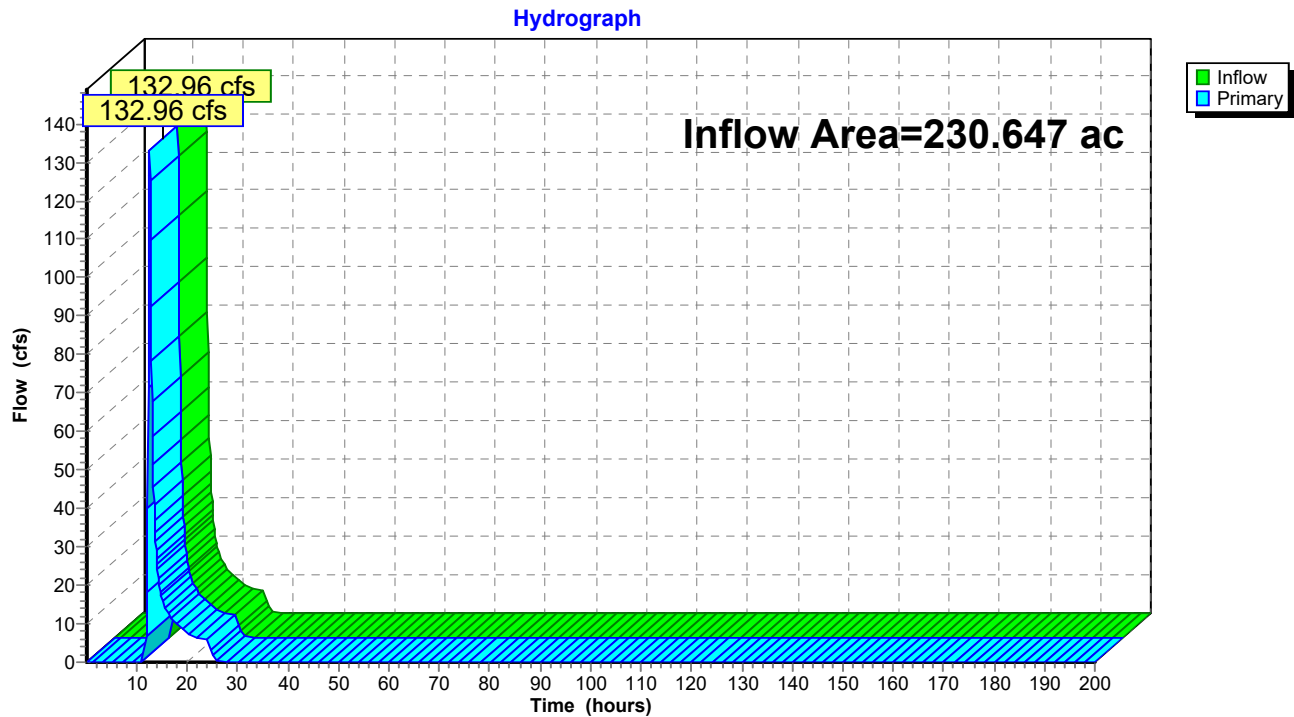
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Summary for Link 7L: Pre Dev. POA at 110 Cedar Hill Dr

Inflow Area = 230.647 ac, 17.20% Impervious, Inflow Depth = 1.03" for 2-yr event
Inflow = 132.96 cfs @ 12.50 hrs, Volume= 19.835 af
Primary = 132.96 cfs @ 12.50 hrs, Volume= 19.835 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 7L: Pre Dev. POA at 110 Cedar Hill Dr



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Type II 24-hr 25-yr Rainfall=6.54"

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment12S: Pre Dev. Basin 6 Runoff Area=441,055 sf 0.00% Impervious Runoff Depth=2.28"
Flow Length=1,222' Slope=0.0441 '/' Tc=12.4 min CN=60 Runoff=29.27 cfs 1.927 af

Subcatchment13S: Pre Dev. Basin 7 Runoff Area=238,293 sf 0.00% Impervious Runoff Depth=2.01"
Flow Length=977' Slope=0.0468 '/' Tc=10.2 min CN=57 Runoff=15.13 cfs 0.918 af

Subcatchment14S: Pre Dev. Basin 8 Runoff Area=289,814 sf 0.00% Impervious Runoff Depth=2.47"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=24.46 cfs 1.368 af

Subcatchment34S: Pre Dev. Basin 4 Runoff Area=130,388 sf 0.00% Impervious Runoff Depth=2.19"
Flow Length=561' Slope=0.0221 '/' Tc=8.9 min CN=59 Runoff=9.74 cfs 0.547 af

Subcatchment35S: Pre Dev. Basin 5 Runoff Area=305,128 sf 0.00% Impervious Runoff Depth=2.19"
Flow Length=998' Slope=0.0301 '/' Tc=12.3 min CN=59 Runoff=19.38 cfs 1.280 af

Subcatchment41S: Pre Drainage Area 1 Runoff Area=198.400 ac 20.00% Impervious Runoff Depth=3.04"
Flow Length=4,195' Slope=0.0177 '/' Tc=45.4 min CN=68 Runoff=386.50 cfs 50.294 af

Reach 45R: Flowpath Downstream Avg. Flow Depth=2.56' Max Vel=1.72 fps Inflow=52.95 cfs 3.295 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=31.10 cfs 3.295 af

Reach 46R: Flowpath Downstream Avg. Flow Depth=1.04' Max Vel=1.84 fps Inflow=15.13 cfs 0.918 af
n=0.100 L=1,036.0' S=0.0267 '/' Capacity=8.94 cfs Outflow=10.32 cfs 0.918 af

Reach 48R: Flowpath Downstream Avg. Flow Depth=1.26' Max Vel=1.60 fps Inflow=28.74 cfs 1.826 af
n=0.100 L=2,757.0' S=0.0173 '/' Capacity=7.18 cfs Outflow=12.25 cfs 1.826 af

Link 7L: Pre Dev. POA at 110 Cedar Hill Dr

Inflow=428.78 cfs 56.333 af
Primary=428.78 cfs 56.333 af

Total Runoff Area = 230.647 ac Runoff Volume = 56.333 af Average Runoff Depth = 2.93"
82.80% Pervious = 190.967 ac 17.20% Impervious = 39.680 ac

Downstream Analysis - ZCP

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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 12S: Pre Dev. Basin 6

Runoff = 29.27 cfs @ 12.05 hrs, Volume= 1.927 af, Depth= 2.28"

Routed to Reach 45R : Flowpath Downstream POA 6

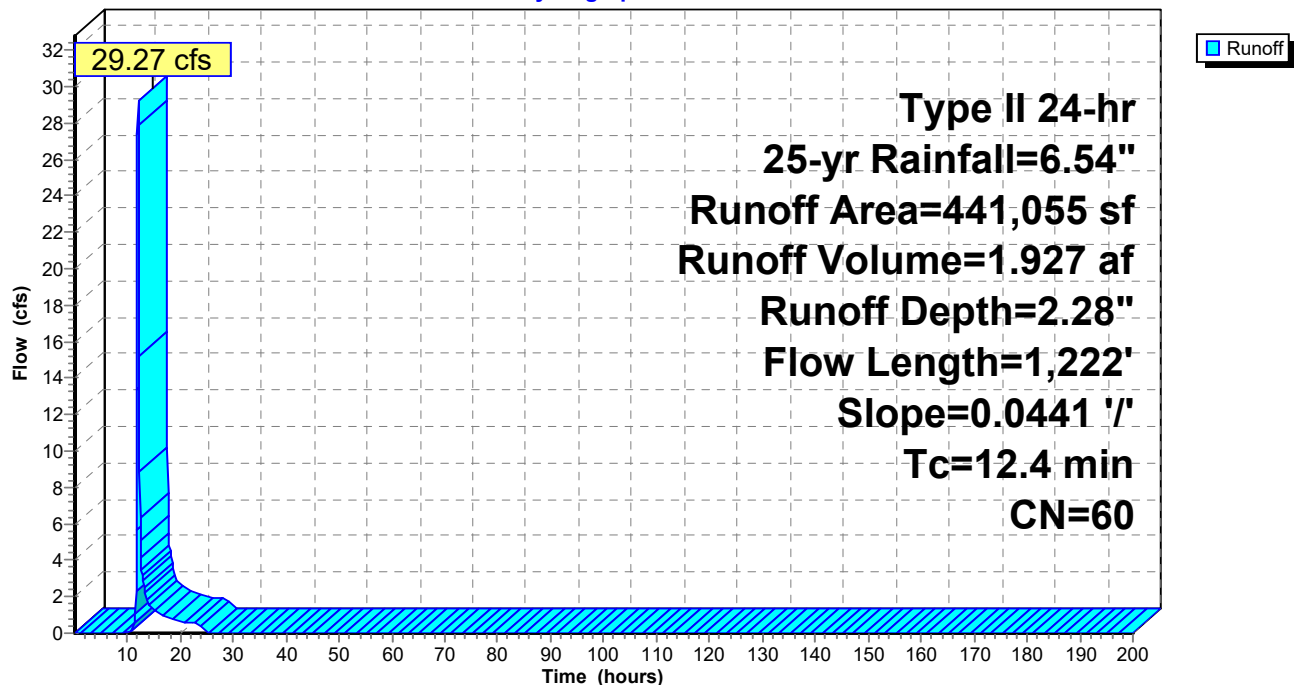
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
401,238	60	Woods, Fair, HSG B
39,817	56	Brush, Fair, HSG B
441,055	60	Weighted Average
441,055		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	1,222	0.0441	1.65		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 12S: Pre Dev. Basin 6

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 13S: Pre Dev. Basin 7

Runoff = 15.13 cfs @ 12.02 hrs, Volume= 0.918 af, Depth= 2.01"
Routed to Reach 46R : Flowpath Downstream POA 5

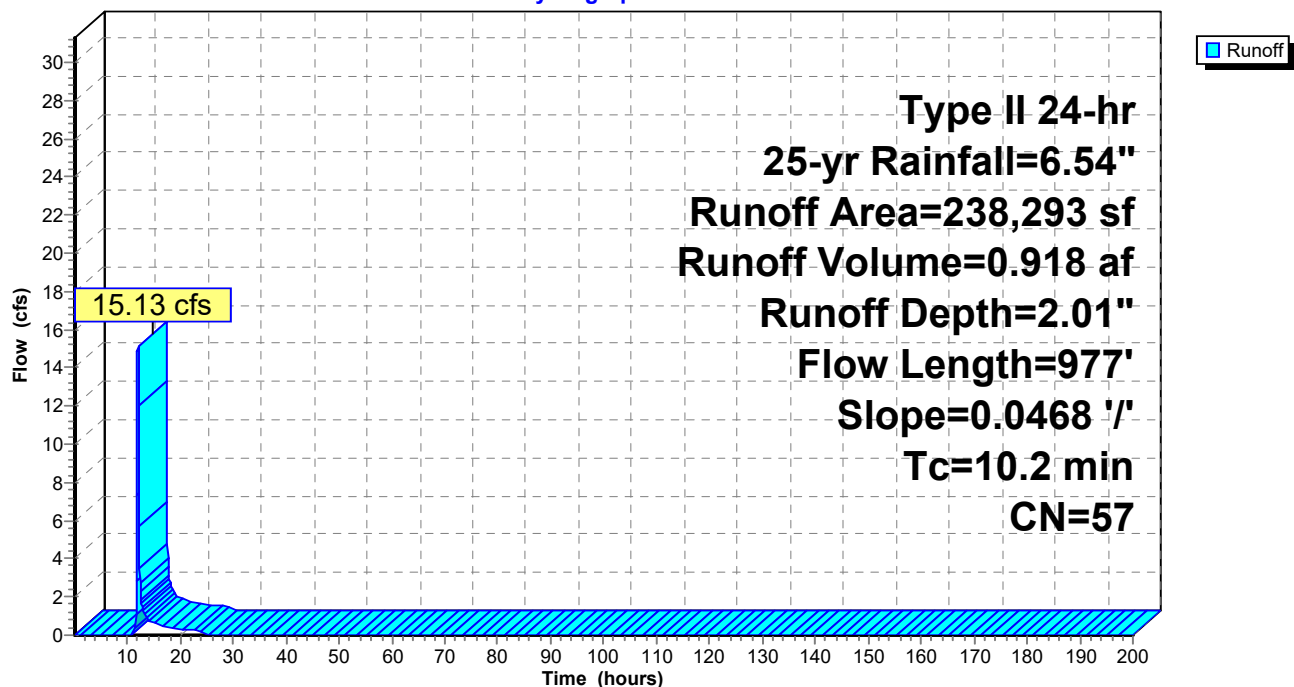
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
207,447	55	Woods, Good, HSG B
30,846	67	Brush, Poor, HSG B
238,293	57	Weighted Average
238,293		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	977	0.0468	1.60		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 13S: Pre Dev. Basin 7

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 14S: Pre Dev. Basin 8

Runoff = 24.46 cfs @ 12.01 hrs, Volume= 1.368 af, Depth= 2.47"

Routed to Reach 45R : Flowpath Downstream POA 6

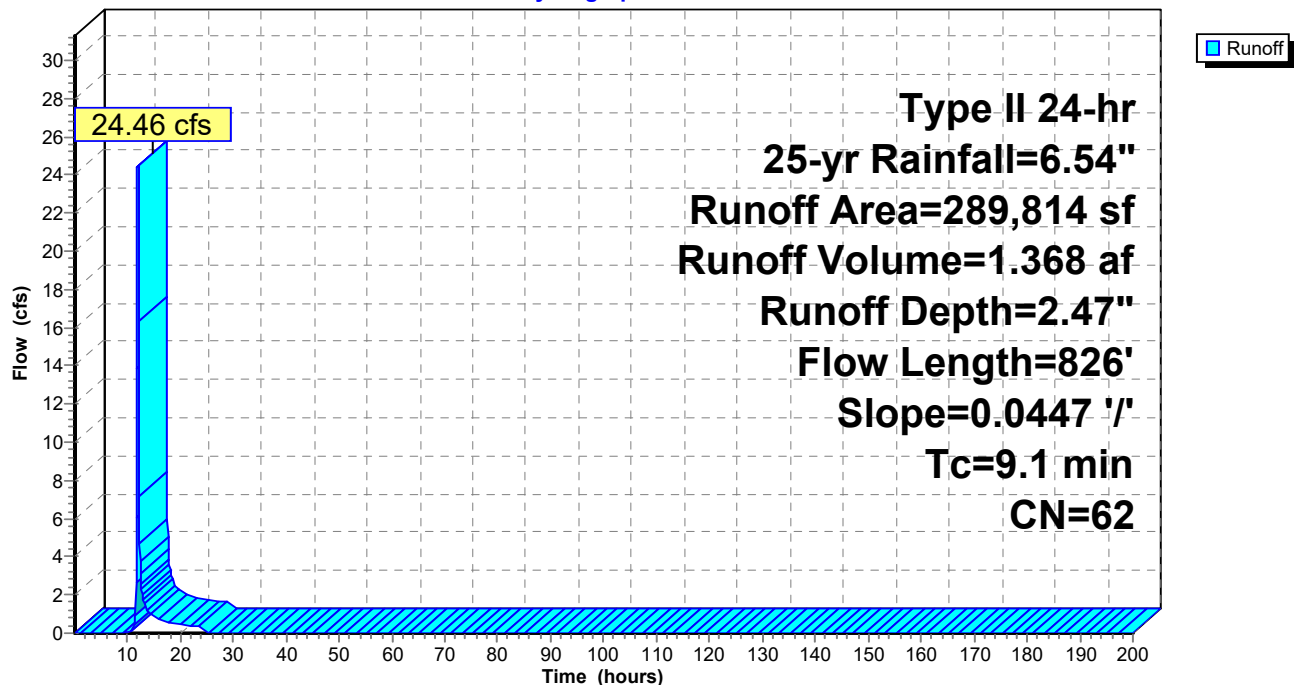
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
58,855	69	50-75% Grass cover, Fair, HSG B
289,814	62	Weighted Average
289,814		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 14S: Pre Dev. Basin 8

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 34S: Pre Dev. Basin 4

Runoff = 9.74 cfs @ 12.01 hrs, Volume= 0.547 af, Depth= 2.19"

Routed to Reach 48R : Flowpath Downstream POA 4

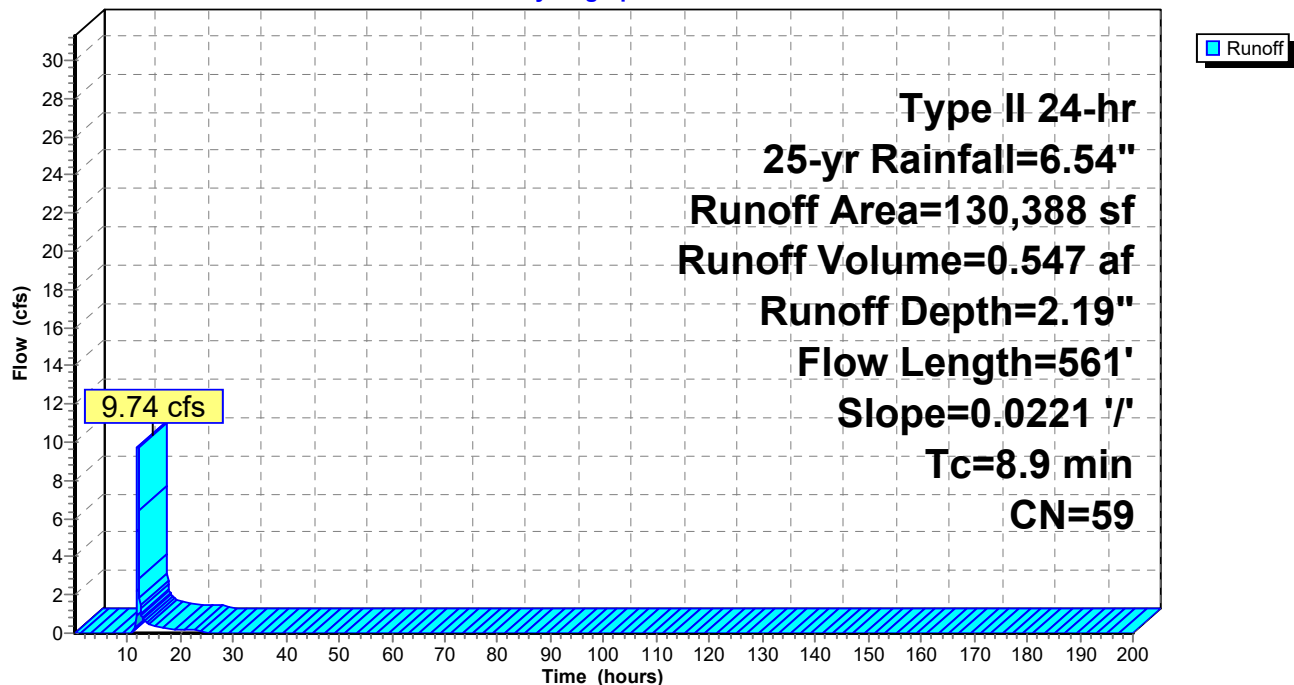
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
104,102	60	Woods, Fair, HSG B
26,286	56	Brush, Fair, HSG B
130,388	59	Weighted Average
130,388		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	561	0.0221	1.06		Kirpich Method, General overland flow k= 2.00

Subcatchment 34S: Pre Dev. Basin 4

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 35S: Pre Dev. Basin 5

Runoff = 19.38 cfs @ 12.05 hrs, Volume= 1.280 af, Depth= 2.19"

Routed to Reach 48R : Flowpath Downstream POA 4

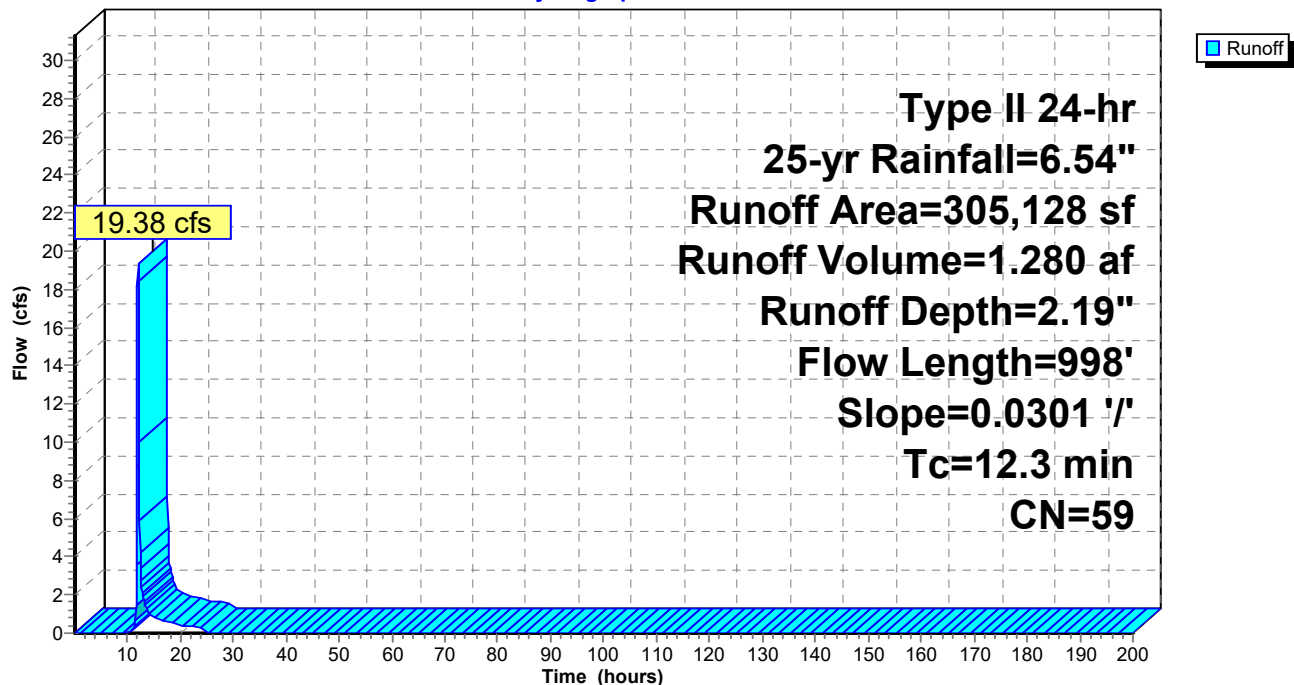
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
267,919	60	Woods, Fair, HSG B
37,209	48	Brush, Good, HSG B
305,128	59	Weighted Average
305,128		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	998	0.0301	1.36		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 35S: Pre Dev. Basin 5

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 41S: Pre Drainage Area 1

Runoff = 386.50 cfs @ 12.45 hrs, Volume= 50.294 af, Depth= 3.04"

Routed to Link 7L : Pre Dev. POA at 110 Cedar Hill Dr

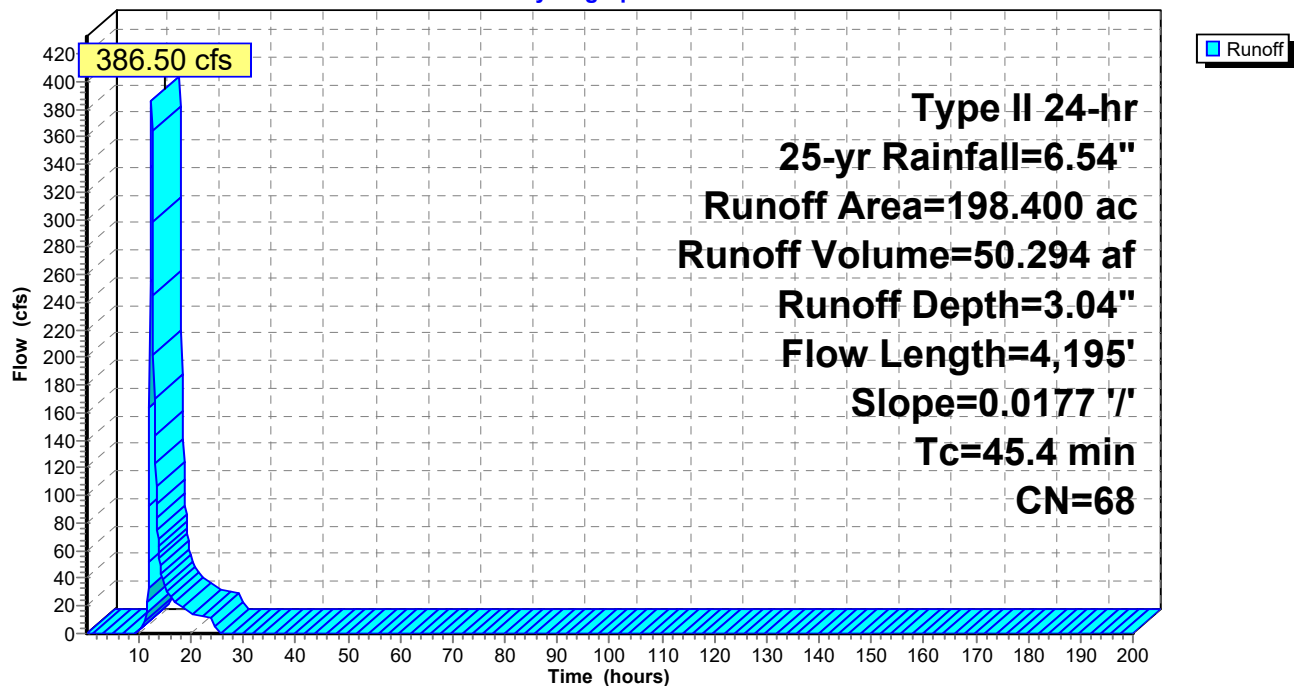
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (ac)	CN	Description
198.400	68	1 acre lots, 20% imp, HSG B
158.720		80.00% Pervious Area
39.680		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.4	4,195	0.0177	1.54		Kirpich Method, General overland flow k= 2.00

Subcatchment 41S: Pre Drainage Area 1

Hydrograph



Downstream Analysis - ZCP

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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Reach 45R: Flowpath Downstream POA 6

Inflow Area = 16.778 ac, 0.00% Impervious, Inflow Depth = 2.36" for 25-yr event
Inflow = 52.95 cfs @ 12.03 hrs, Volume= 3.295 af
Outflow = 31.10 cfs @ 12.42 hrs, Volume= 3.295 af, Atten= 41%, Lag= 23.5 min
Routed to Link 7L : Pre Dev. POA at 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.72 fps, Min. Travel Time= 14.6 min

Avg. Velocity = 0.29 fps, Avg. Travel Time= 85.8 min

Peak Storage= 27,793 cf @ 12.17 hrs

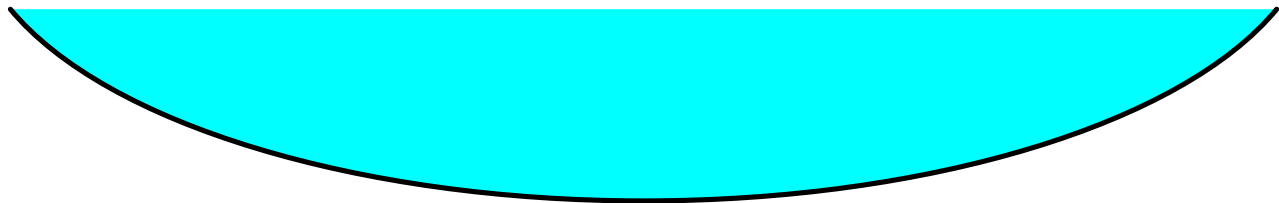
Average Depth at Peak Storage= 2.56' , Surface Width= 13.54'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

Length= 1,509.0' Slope= 0.0154 '/'

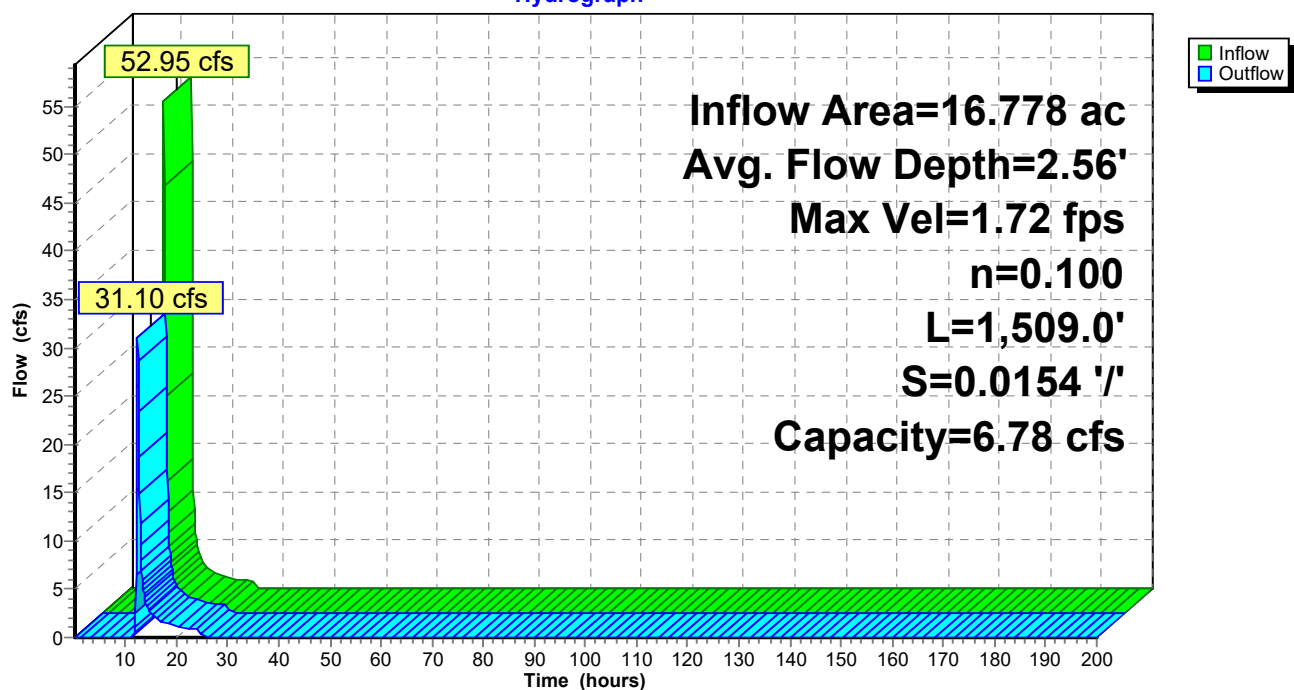
Inlet Invert= 505.43', Outlet Invert= 482.25'



‡

Reach 45R: Flowpath Downstream POA 6

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Reach 46R: Flowpath Downstream POA 5

Inflow Area = 5.470 ac, 0.00% Impervious, Inflow Depth = 2.01" for 25-yr event
Inflow = 15.13 cfs @ 12.02 hrs, Volume= 0.918 af
Outflow = 10.32 cfs @ 12.30 hrs, Volume= 0.918 af, Atten= 32%, Lag= 16.4 min
Routed to Link 7L : Pre Dev. POA at 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.84 fps, Min. Travel Time= 9.4 min

Avg. Velocity= 0.36 fps, Avg. Travel Time= 47.8 min

Peak Storage= 6,193 cf @ 12.13 hrs

Average Depth at Peak Storage= 1.04' , Surface Width= 8.64'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 8.94 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

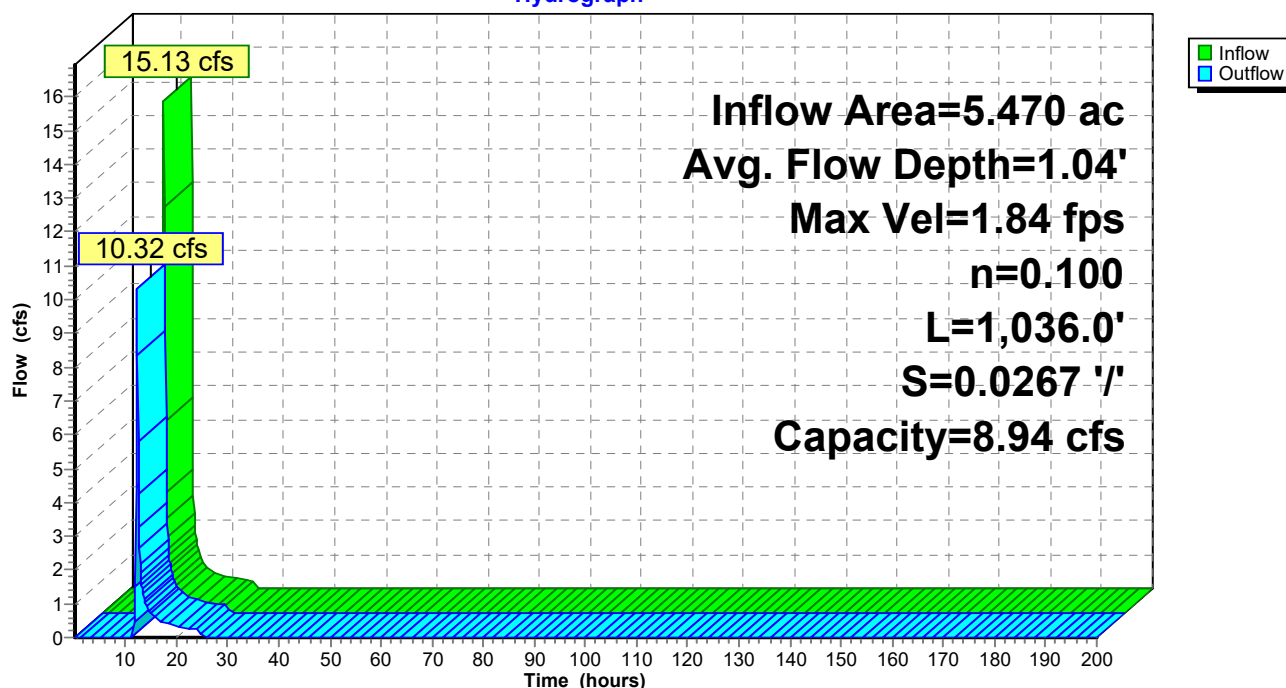
Length= 1,036.0' Slope= 0.0267 '/'

Inlet Invert= 509.93', Outlet Invert= 482.25'



Reach 46R: Flowpath Downstream POA 5

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Reach 48R: Flowpath Downstream POA 4

Inflow Area = 9.998 ac, 0.00% Impervious, Inflow Depth = 2.19" for 25-yr event
Inflow = 28.74 cfs @ 12.03 hrs, Volume= 1.826 af
Outflow = 12.25 cfs @ 12.72 hrs, Volume= 1.826 af, Atten= 57%, Lag= 41.3 min
Routed to Link 7L : Pre Dev. POA at 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.60 fps, Min. Travel Time= 28.8 min

Avg. Velocity= 0.21 fps, Avg. Travel Time= 216.8 min

Peak Storage= 21,397 cf @ 12.23 hrs

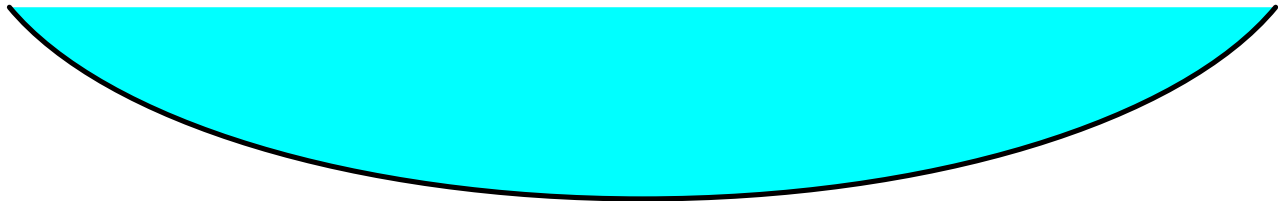
Average Depth at Peak Storage= 1.26' , Surface Width= 9.50'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 7.18 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

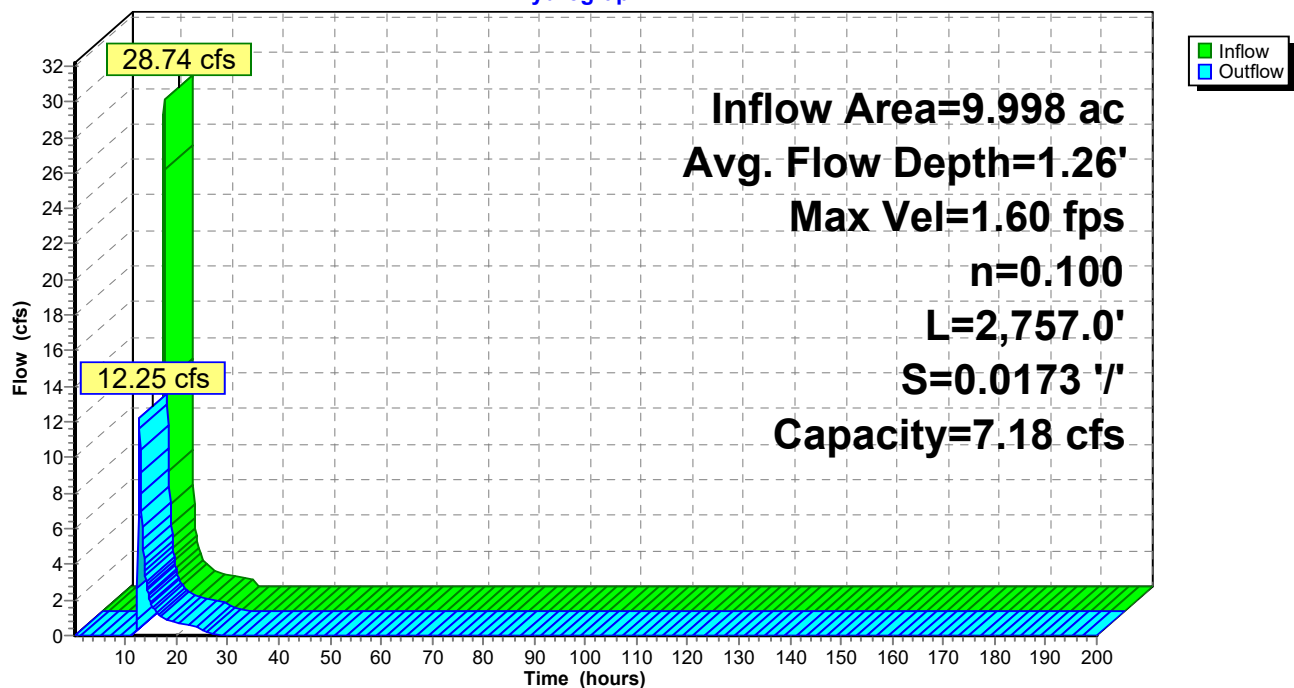
Length= 2,757.0' Slope= 0.0173 '/'

Inlet Invert= 529.84', Outlet Invert= 482.25'



Reach 48R: Flowpath Downstream POA 4

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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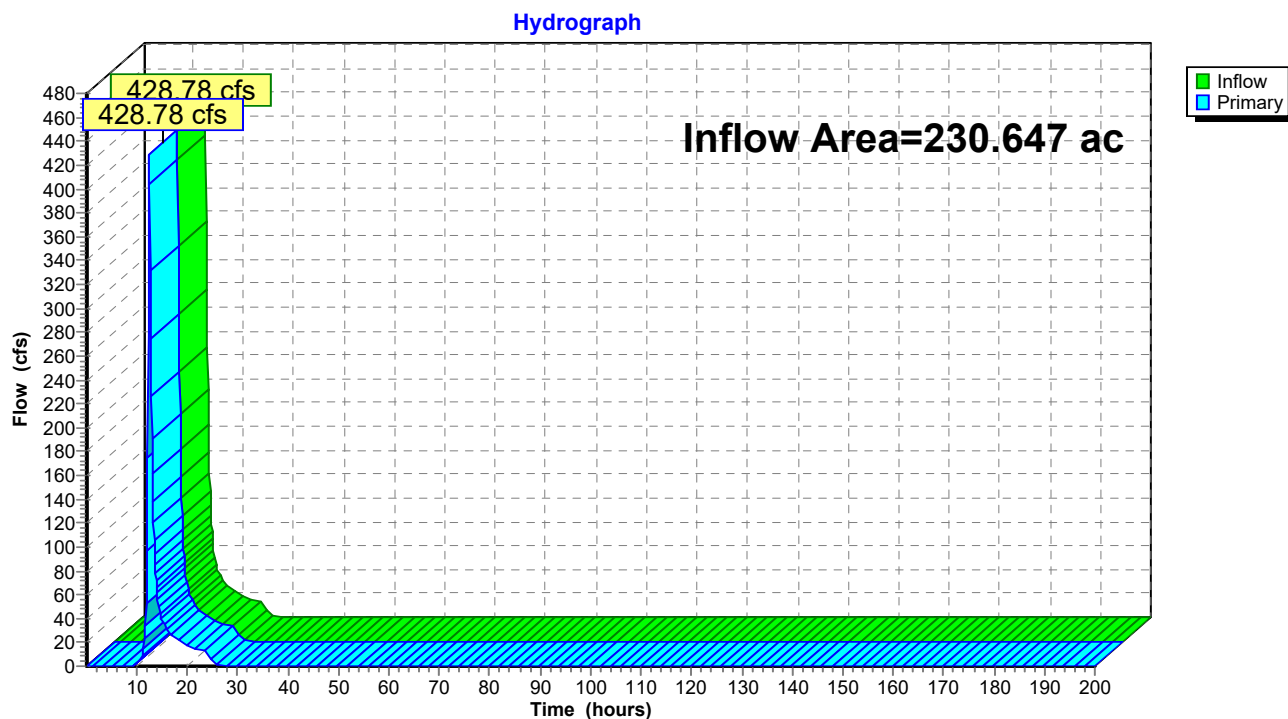
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Summary for Link 7L: Pre Dev. POA at 110 Cedar Hill Dr

Inflow Area = 230.647 ac, 17.20% Impervious, Inflow Depth = 2.93" for 25-yr event
Inflow = 428.78 cfs @ 12.45 hrs, Volume= 56.333 af
Primary = 428.78 cfs @ 12.45 hrs, Volume= 56.333 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 7L: Pre Dev. POA at 110 Cedar Hill Dr



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Type II 24-hr 100-yr Rainfall=8.17"

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment12S: Pre Dev. Basin 6 Runoff Area=441,055 sf 0.00% Impervious Runoff Depth=3.46"
Flow Length=1,222' Slope=0.0441 '/' Tc=12.4 min CN=60 Runoff=45.48 cfs 2.921 af

Subcatchment13S: Pre Dev. Basin 7 Runoff Area=238,293 sf 0.00% Impervious Runoff Depth=3.12"
Flow Length=977' Slope=0.0468 '/' Tc=10.2 min CN=57 Runoff=24.22 cfs 1.424 af

Subcatchment14S: Pre Dev. Basin 8 Runoff Area=289,814 sf 0.00% Impervious Runoff Depth=3.69"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=36.97 cfs 2.045 af

Subcatchment34S: Pre Dev. Basin 4 Runoff Area=130,388 sf 0.00% Impervious Runoff Depth=3.35"
Flow Length=561' Slope=0.0221 '/' Tc=8.9 min CN=59 Runoff=15.15 cfs 0.835 af

Subcatchment35S: Pre Dev. Basin 5 Runoff Area=305,128 sf 0.00% Impervious Runoff Depth=3.35"
Flow Length=998' Slope=0.0301 '/' Tc=12.3 min CN=59 Runoff=30.46 cfs 1.955 af

Subcatchment41S: Pre Drainage Area 1 Runoff Area=198.400 ac 20.00% Impervious Runoff Depth=4.38"
Flow Length=4,195' Slope=0.0177 '/' Tc=45.4 min CN=68 Runoff=563.62 cfs 72.391 af

Reach 45R: Flowpath Downstream Avg. Flow Depth=3.72' Max Vel=1.78 fps Inflow=81.35 cfs 4.966 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=48.58 cfs 4.966 af

Reach 46R: Flowpath Downstream Avg. Flow Depth=1.40' Max Vel=2.05 fps Inflow=24.22 cfs 1.424 af
n=0.100 L=1,036.0' S=0.0267 '/' Capacity=8.94 cfs Outflow=16.93 cfs 1.424 af

Reach 48R: Flowpath Downstream Avg. Flow Depth=1.77' Max Vel=1.74 fps Inflow=45.04 cfs 2.790 af
n=0.100 L=2,757.0' S=0.0173 '/' Capacity=7.18 cfs Outflow=20.15 cfs 2.790 af

Link 7L: Pre Dev. POA at 110 Cedar Hill Dr

Inflow=633.58 cfs 81.570 af
Primary=633.58 cfs 81.570 af

Total Runoff Area = 230.647 ac Runoff Volume = 81.570 af Average Runoff Depth = 4.24"
82.80% Pervious = 190.967 ac 17.20% Impervious = 39.680 ac

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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 12S: Pre Dev. Basin 6

Runoff = 45.48 cfs @ 12.05 hrs, Volume= 2.921 af, Depth= 3.46"

Routed to Reach 45R : Flowpath Downstream POA 6

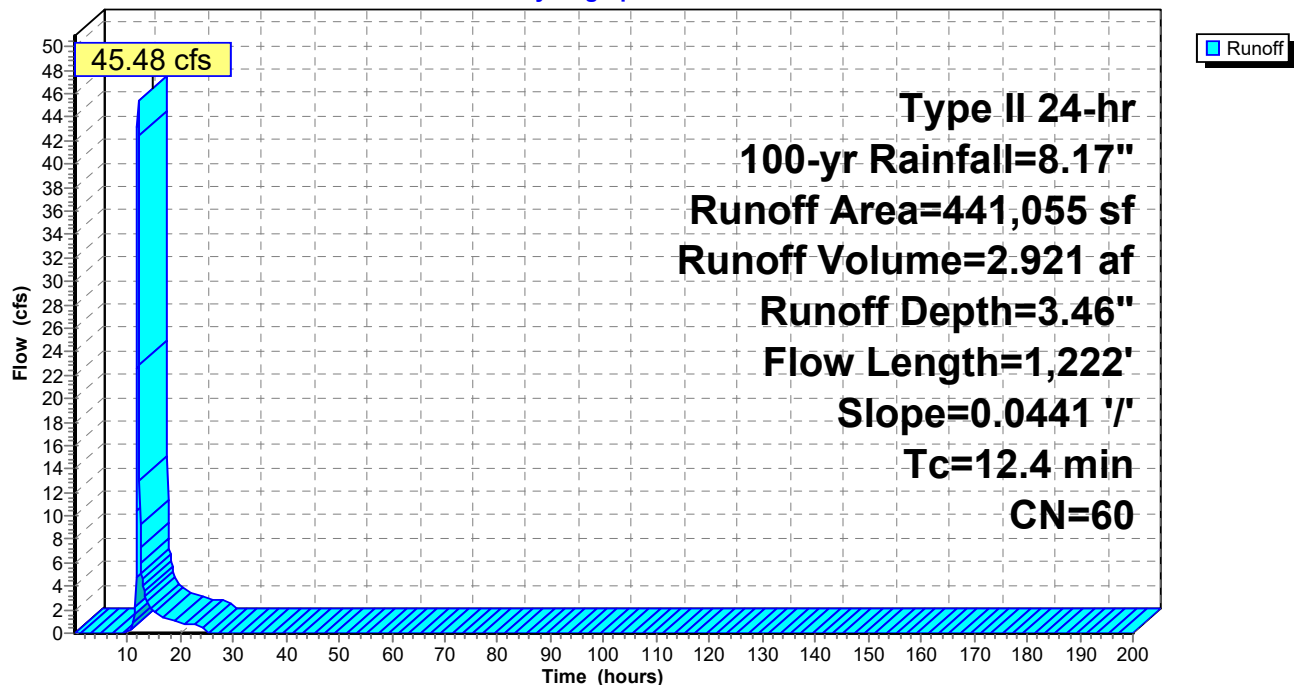
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
401,238	60	Woods, Fair, HSG B
39,817	56	Brush, Fair, HSG B
441,055	60	Weighted Average
441,055		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	1,222	0.0441	1.65		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 12S: Pre Dev. Basin 6

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 13S: Pre Dev. Basin 7

Runoff = 24.22 cfs @ 12.02 hrs, Volume= 1.424 af, Depth= 3.12"

Routed to Reach 46R : Flowpath Downstream POA 5

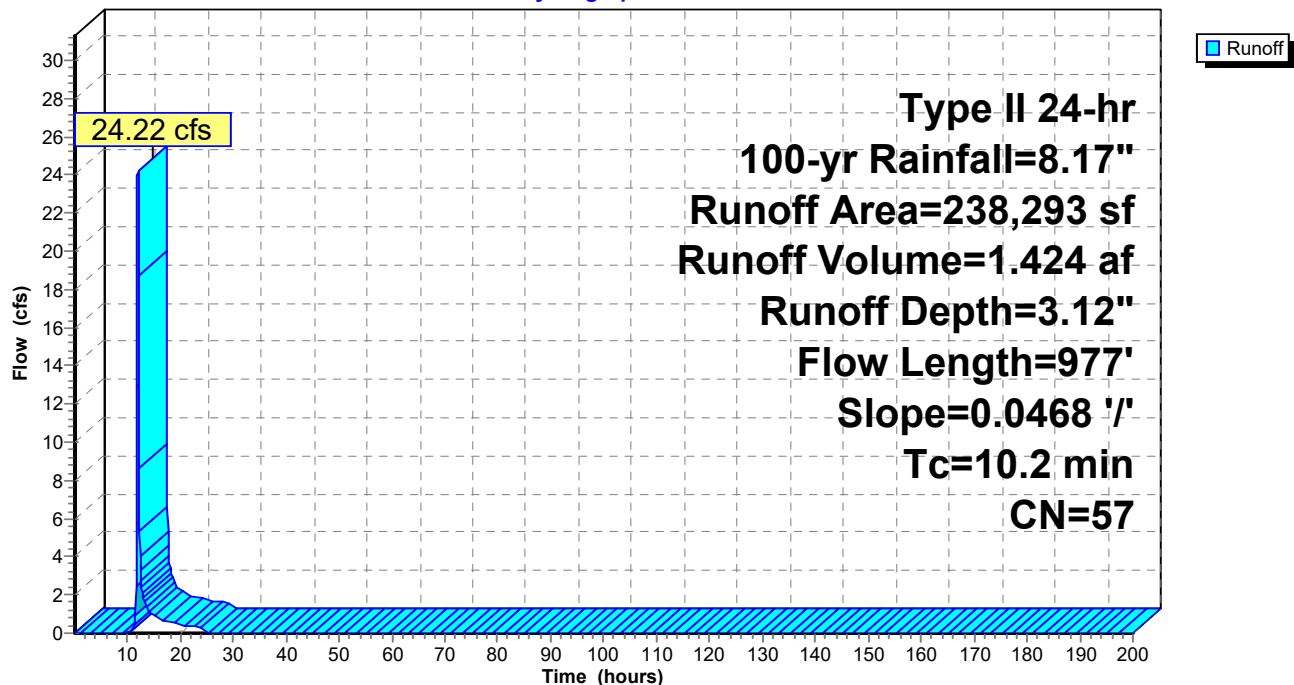
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
207,447	55	Woods, Good, HSG B
30,846	67	Brush, Poor, HSG B
238,293	57	Weighted Average
238,293		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	977	0.0468	1.60		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 13S: Pre Dev. Basin 7

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 14S: Pre Dev. Basin 8

Runoff = 36.97 cfs @ 12.00 hrs, Volume= 2.045 af, Depth= 3.69"
Routed to Reach 45R : Flowpath Downstream POA 6

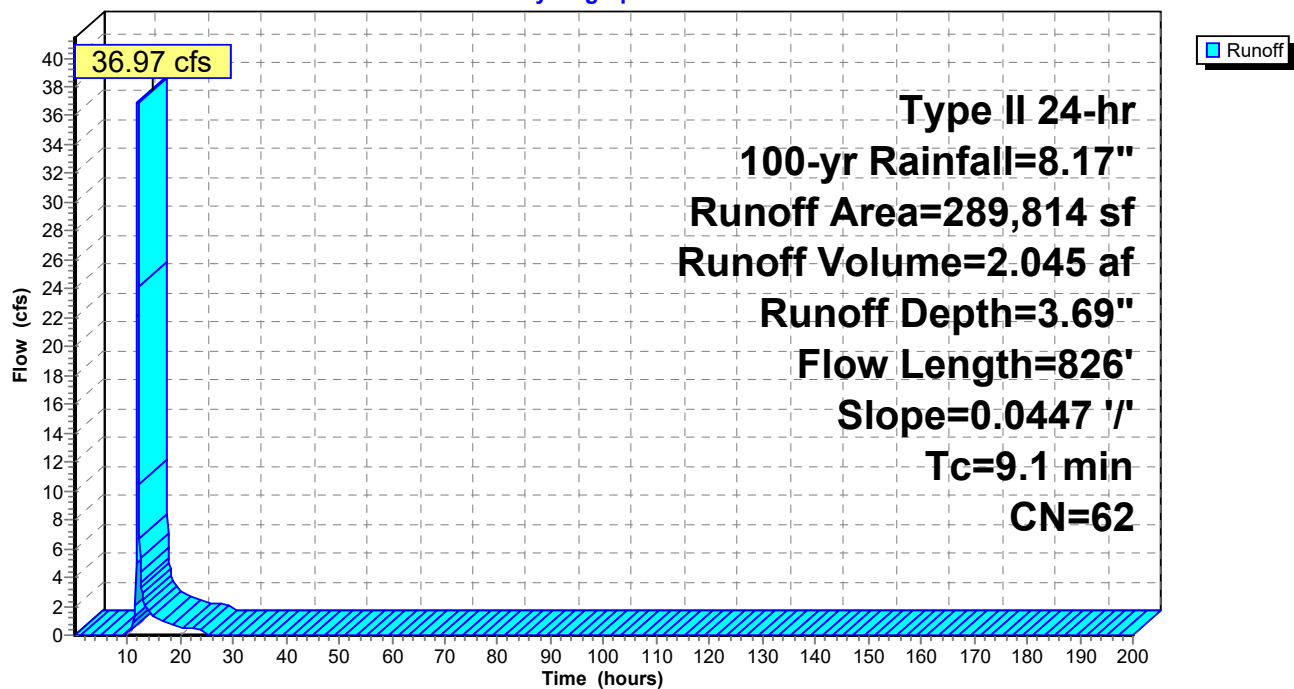
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
58,855	69	50-75% Grass cover, Fair, HSG B
289,814	62	Weighted Average
289,814		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 14S: Pre Dev. Basin 8

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 34S: Pre Dev. Basin 4

Runoff = 15.15 cfs @ 12.00 hrs, Volume= 0.835 af, Depth= 3.35"

Routed to Reach 48R : Flowpath Downstream POA 4

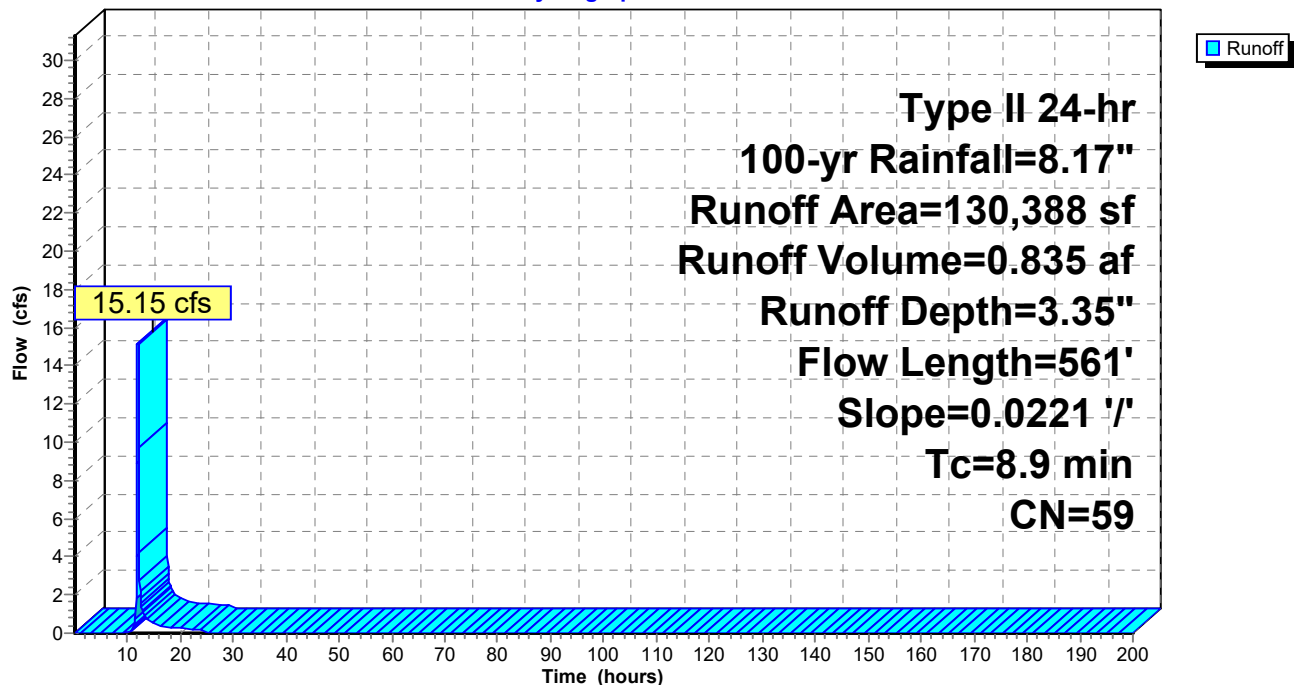
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
104,102	60	Woods, Fair, HSG B
26,286	56	Brush, Fair, HSG B
130,388	59	Weighted Average
130,388		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	561	0.0221	1.06		Kirpich Method, General overland flow k= 2.00

Subcatchment 34S: Pre Dev. Basin 4

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 35S: Pre Dev. Basin 5

Runoff = 30.46 cfs @ 12.05 hrs, Volume= 1.955 af, Depth= 3.35"

Routed to Reach 48R : Flowpath Downstream POA 4

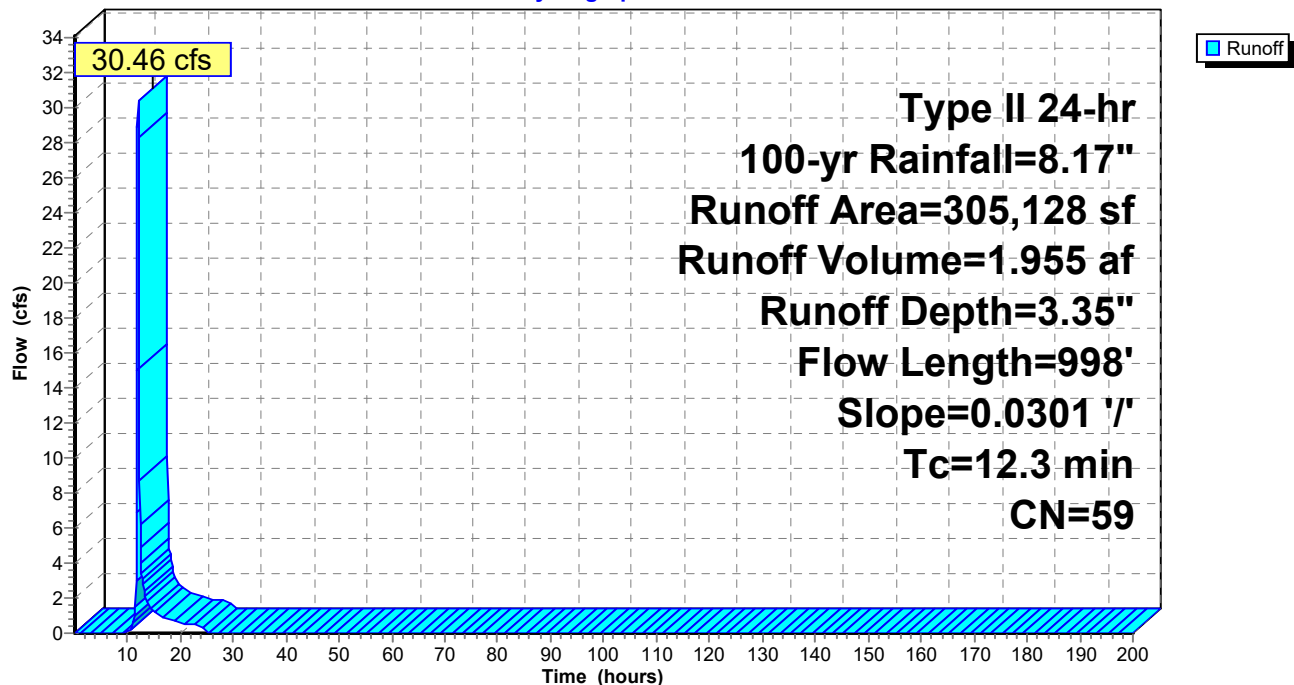
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
267,919	60	Woods, Fair, HSG B
37,209	48	Brush, Good, HSG B
305,128	59	Weighted Average
305,128		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	998	0.0301	1.36		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 35S: Pre Dev. Basin 5

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 41S: Pre Drainage Area 1

Runoff = 563.62 cfs @ 12.44 hrs, Volume= 72.391 af, Depth= 4.38"

Routed to Link 7L : Pre Dev. POA at 110 Cedar Hill Dr

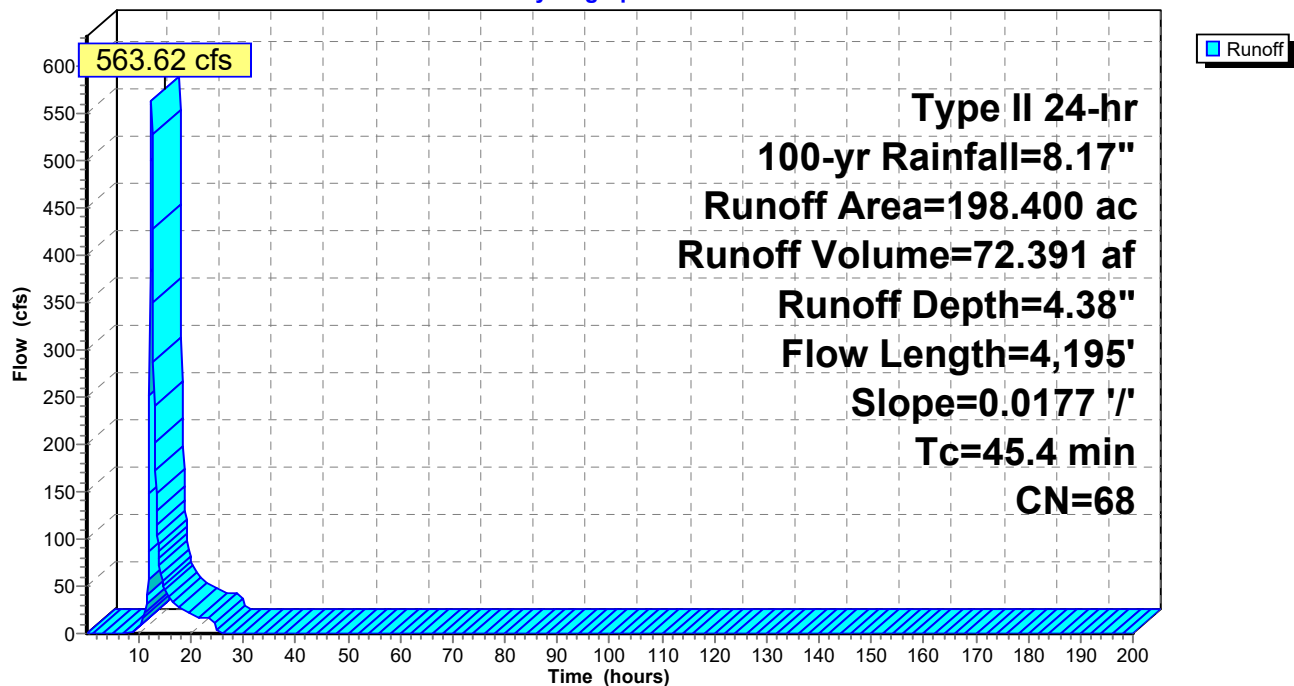
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (ac)	CN	Description
198.400	68	1 acre lots, 20% imp, HSG B
158.720		80.00% Pervious Area
39.680		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.4	4,195	0.0177	1.54		Kirpich Method, General overland flow k= 2.00

Subcatchment 41S: Pre Drainage Area 1

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Reach 45R: Flowpath Downstream POA 6

Inflow Area = 16.778 ac, 0.00% Impervious, Inflow Depth = 3.55" for 100-yr event
Inflow = 81.35 cfs @ 12.02 hrs, Volume= 4.966 af
Outflow = 48.58 cfs @ 12.40 hrs, Volume= 4.966 af, Atten= 40%, Lag= 22.8 min
Routed to Link 7L : Pre Dev. POA at 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.78 fps, Min. Travel Time= 14.2 min

Avg. Velocity= 0.32 fps, Avg. Travel Time= 78.2 min

Peak Storage= 42,125 cf @ 12.16 hrs

Average Depth at Peak Storage= 3.72', Surface Width= 16.32'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

Length= 1,509.0' Slope= 0.0154 '/'

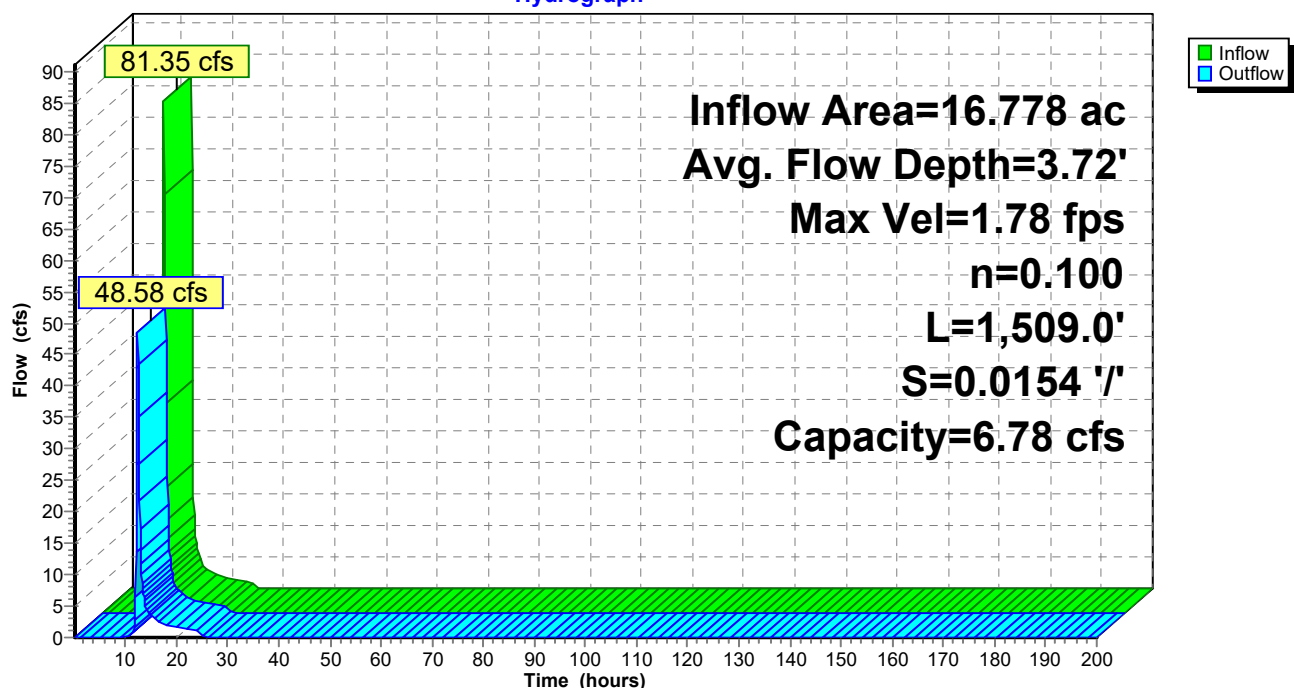
Inlet Invert= 505.43', Outlet Invert= 482.25'



‡

Reach 45R: Flowpath Downstream POA 6

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Reach 46R: Flowpath Downstream POA 5

Inflow Area = 5.470 ac, 0.00% Impervious, Inflow Depth = 3.12" for 100-yr event
Inflow = 24.22 cfs @ 12.02 hrs, Volume= 1.424 af
Outflow = 16.93 cfs @ 12.26 hrs, Volume= 1.424 af, Atten= 30%, Lag= 14.4 min
Routed to Link 7L : Pre Dev. POA at 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 2.05 fps, Min. Travel Time= 8.4 min

Avg. Velocity= 0.40 fps, Avg. Travel Time= 43.3 min

Peak Storage= 9,197 cf @ 12.11 hrs

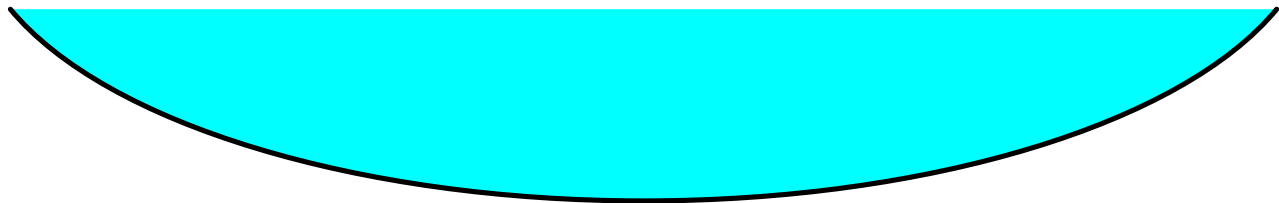
Average Depth at Peak Storage= 1.40' , Surface Width= 10.00'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 8.94 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

Length= 1,036.0' Slope= 0.0267 '/'

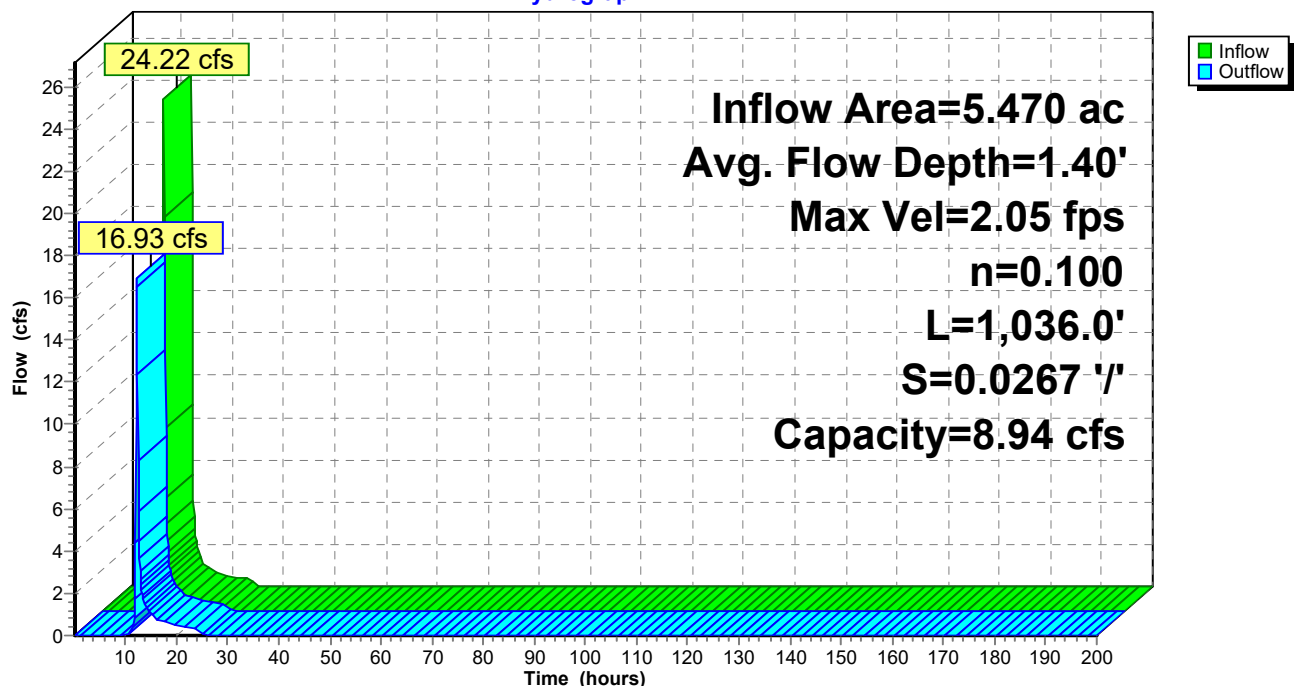
Inlet Invert= 509.93', Outlet Invert= 482.25'



‡

Reach 46R: Flowpath Downstream POA 5

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Reach 48R: Flowpath Downstream POA 4

Inflow Area = 9.998 ac, 0.00% Impervious, Inflow Depth = 3.35" for 100-yr event
Inflow = 45.04 cfs @ 12.03 hrs, Volume= 2.790 af
Outflow = 20.15 cfs @ 12.66 hrs, Volume= 2.790 af, Atten= 55%, Lag= 38.1 min
Routed to Link 7L : Pre Dev. POA at 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.74 fps, Min. Travel Time= 26.5 min

Avg. Velocity= 0.23 fps, Avg. Travel Time= 199.8 min

Peak Storage= 32,965 cf @ 12.22 hrs

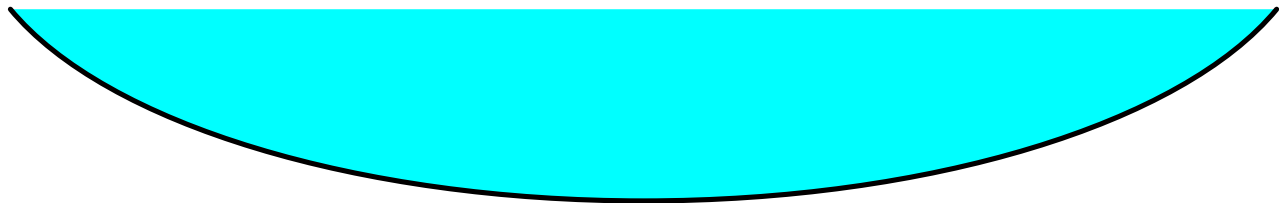
Average Depth at Peak Storage= 1.77' , Surface Width= 11.26'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 7.18 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

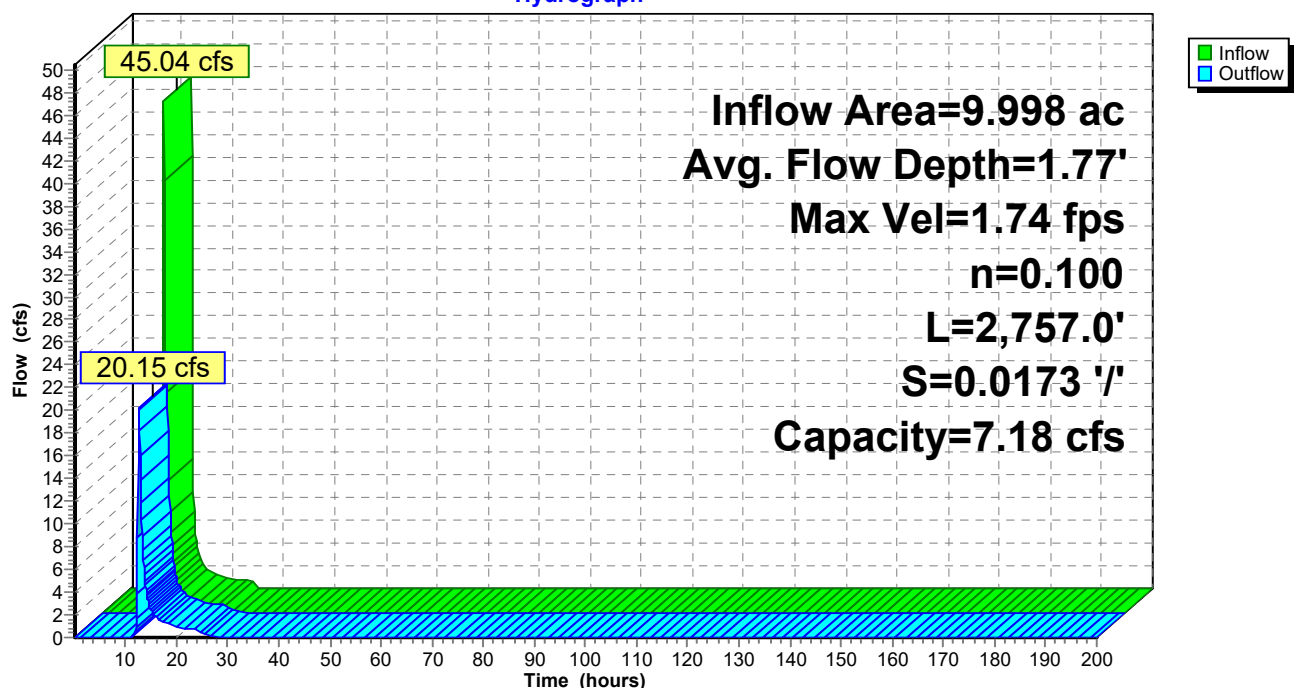
Length= 2,757.0' Slope= 0.0173 '/'

Inlet Invert= 529.84', Outlet Invert= 482.25'



Reach 48R: Flowpath Downstream POA 4

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Link 7L: Pre Dev. POA at 110 Cedar Hill Dr

Inflow Area = 230.647 ac, 17.20% Impervious, Inflow Depth = 4.24" for 100-yr event

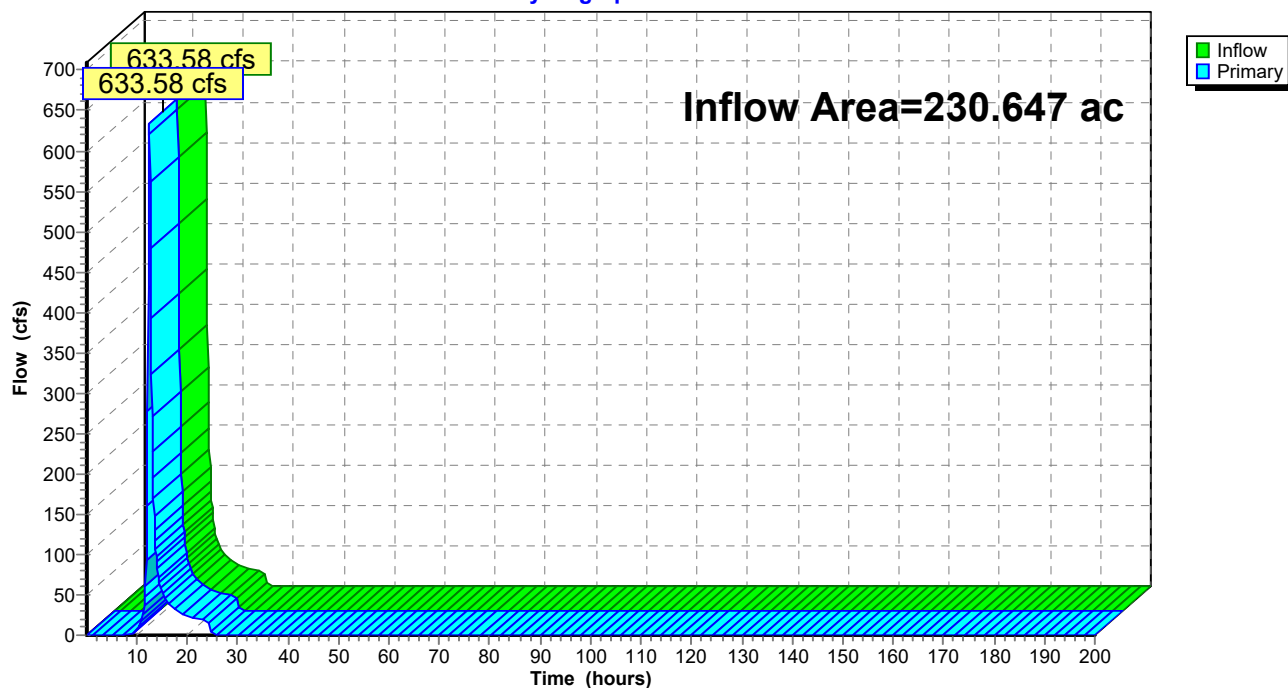
Inflow = 633.58 cfs @ 12.44 hrs, Volume= 81.570 af

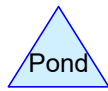
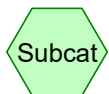
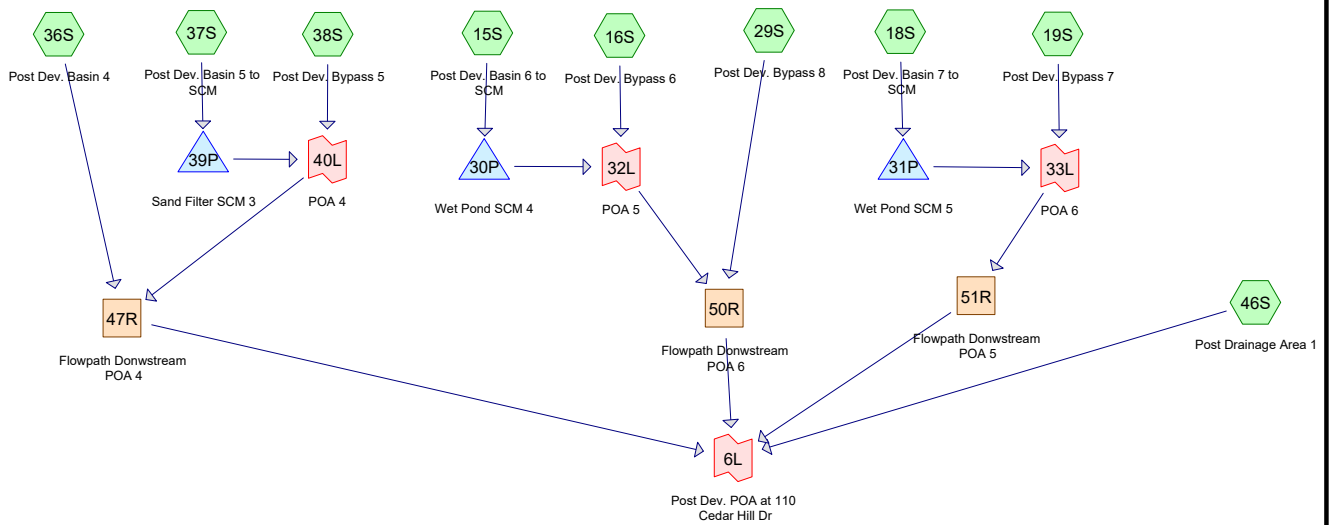
Primary = 633.58 cfs @ 12.44 hrs, Volume= 81.570 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 7L: Pre Dev. POA at 110 Cedar Hill Dr

Hydrograph





Downstream Analysis - ZCP

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-yr	Type II 24-hr		Default	24.00	1	3.16	2
2	2-yr	Type II 24-hr		Default	24.00	1	3.82	2
3	25-yr	Type II 24-hr		Default	24.00	1	6.54	2
4	100-yr	Type II 24-hr		Default	24.00	1	8.17	2

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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
198.400	68	1 acre lots, 20% imp, HSG B (46S)
1.227	69	50-75% Grass cover, Fair, HSG B (29S)
4.509	56	Brush, Fair, HSG B (15S, 16S, 18S, 19S, 36S)
1.926	48	Brush, Good, HSG B (37S, 38S)
5.075	98	Paved parking, HSG B (15S, 16S, 18S, 19S, 29S, 36S, 37S, 38S)
3.144	98	Roofs, HSG B (15S, 18S, 37S)
0.409	98	Water Surface, 0% imp, HSG B (15S, 18S)
12.301	60	Woods, Fair, HSG B (16S, 29S, 36S, 38S)
0.917	55	Woods, Good, HSG B (19S)
227.907	68	TOTAL AREA

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Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
227.907	HSG B	15S, 16S, 18S, 19S, 29S, 36S, 37S, 38S, 46S
0.000	HSG C	
0.000	HSG D	
0.000	Other	
227.907		TOTAL AREA

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Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	198.400	0.000	0.000	0.000	198.400	1 acre lots, 20% imp	46S
0.000	1.227	0.000	0.000	0.000	1.227	50-75% Grass cover, Fair	29S
0.000	4.509	0.000	0.000	0.000	4.509	Brush, Fair	15S, 16S, 18S, 19S, 36S
0.000	1.926	0.000	0.000	0.000	1.926	Brush, Good	37S, 38S
0.000	5.075	0.000	0.000	0.000	5.075	Paved parking	15S, 16S, 18S, 19S, 29S, 36S, 37S, 38S
0.000	3.144	0.000	0.000	0.000	3.144	Roofs	15S, 18S, 37S
0.000	0.409	0.000	0.000	0.000	0.409	Water Surface, 0% imp	15S, 18S
0.000	12.301	0.000	0.000	0.000	12.301	Woods, Fair	16S, 29S, 36S, 38S
0.000	0.917	0.000	0.000	0.000	0.917	Woods, Good	19S
0.000	227.907	0.000	0.000	0.000	227.907	TOTAL AREA	

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Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	30P	522.00	521.50	45.0	0.0111	0.011	0.0	36.0	0.0	
2	31P	510.50	510.00	79.0	0.0063	0.013	0.0	36.0	0.0	
3	39P	530.00	529.00	50.0	0.0200	0.011	0.0	36.0	0.0	

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Type II 24-hr 1-yr Rainfall=3.16"

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment15S: Post Dev. Basin 6 to Runoff Area=185,285 sf 75.67% Impervious Runoff Depth=2.22"
Tc=5.0 min CN=91 Runoff=14.44 cfs 0.787 af

Subcatchment16S: Post Dev. Bypass 6 Runoff Area=257,427 sf 1.66% Impervious Runoff Depth=0.39"
Tc=5.0 min CN=60 Runoff=2.88 cfs 0.193 af

Subcatchment18S: Post Dev. Basin 7 to Runoff Area=150,448 sf 57.98% Impervious Runoff Depth=1.44"
Tc=5.0 min CN=81 Runoff=7.97 cfs 0.414 af

Subcatchment19S: Post Dev. Bypass 7 Runoff Area=86,411 sf 12.93% Impervious Runoff Depth=0.43"
Tc=10.0 min CN=61 Runoff=0.81 cfs 0.071 af

Subcatchment29S: Post Dev. Bypass 8 Runoff Area=289,814 sf 1.87% Impervious Runoff Depth=0.46"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=3.40 cfs 0.257 af

Subcatchment36S: Post Dev. Basin 4 Runoff Area=29,236 sf 11.81% Impervious Runoff Depth=0.46"
Tc=5.0 min CN=62 Runoff=0.42 cfs 0.026 af

Subcatchment37S: Post Dev. Basin 5 to Runoff Area=122,978 sf 76.45% Impervious Runoff Depth=1.80"
Tc=5.0 min CN=86 Runoff=8.04 cfs 0.424 af

Subcatchment38S: Post Dev. Bypass 5 Runoff Area=163,726 sf 7.49% Impervious Runoff Depth=0.36"
Tc=12.3 min CN=59 Runoff=1.11 cfs 0.113 af

Subcatchment46S: Post Drainage Area 1 Runoff Area=198.400 ac 20.00% Impervious Runoff Depth=0.71"
Flow Length=4,195' Slope=0.0177 '/' Tc=45.4 min CN=68 Runoff=74.63 cfs 11.755 af

Reach 47R: Flowpath Downstream POA Avg. Flow Depth=0.23' Max Vel=0.56 fps Inflow=1.37 cfs 0.562 af
n=0.100 L=2,757.0' S=0.0173 '/' Capacity=7.18 cfs Outflow=0.35 cfs 0.562 af

Reach 50R: Flowpath Downstream POA Avg. Flow Depth=0.56' Max Vel=0.94 fps Inflow=6.27 cfs 1.235 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=2.15 cfs 1.234 af

Reach 51R: Flowpath Downstream POA Avg. Flow Depth=0.22' Max Vel=0.68 fps Inflow=0.88 cfs 0.484 af
n=0.100 L=1,036.0' S=0.0267 '/' Capacity=8.94 cfs Outflow=0.40 cfs 0.484 af

Pond 30P: Wet Pond SCM 4 Peak Elev=525.08' Storage=36,247 cf Inflow=14.44 cfs 0.787 af
Outflow=0.10 cfs 0.784 af

Pond 31P: Wet Pond SCM 5 Peak Elev=513.60' Storage=14,993 cf Inflow=7.97 cfs 0.414 af
Outflow=0.10 cfs 0.414 af

Pond 39P: Sand Filter SCM 3 Peak Elev=533.58' Storage=13,765 cf Inflow=8.04 cfs 0.424 af
Outflow=0.11 cfs 0.424 af

Link 6L: Post Dev. POA at 110 Cedar Hill Dr Inflow=76.41 cfs 14.035 af
Primary=76.41 cfs 14.035 af

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Type II 24-hr 1-yr Rainfall=3.16"

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Link 32L: POA 5

Inflow=2.96 cfs 0.978 af

Primary=2.96 cfs 0.978 af

Link 33L: POA 6

Inflow=0.88 cfs 0.484 af

Primary=0.88 cfs 0.484 af

Link 40L: POA 4

Inflow=1.20 cfs 0.536 af

Primary=1.20 cfs 0.536 af

Total Runoff Area = 227.907 ac Runoff Volume = 14.039 af Average Runoff Depth = 0.74"

78.98% Pervious = 180.008 ac 21.02% Impervious = 47.899 ac

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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Subcatchment 15S: Post Dev. Basin 6 to SCM

Runoff = 14.44 cfs @ 11.95 hrs, Volume= 0.787 af, Depth= 2.22"
Routed to Pond 30P : Wet Pond SCM 4

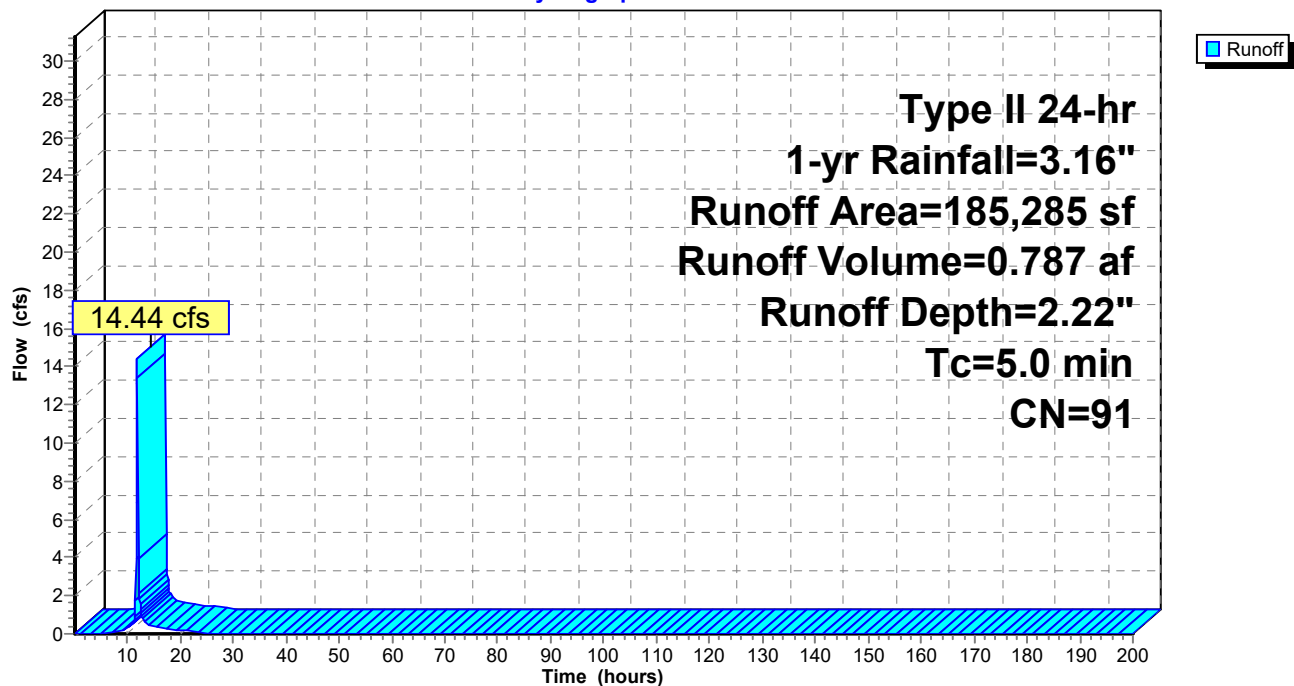
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 1-yr Rainfall=3.16"

Area (sf)	CN	Description
76,830	98	Paved parking, HSG B
63,382	98	Roofs, HSG B
30,858	56	Brush, Fair, HSG B
14,215	98	Water Surface, 0% imp, HSG B
185,285	91	Weighted Average
45,073		24.33% Pervious Area
140,212		75.67% Impervious Area

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

Subcatchment 15S: Post Dev. Basin 6 to SCM

Hydrograph



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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Subcatchment 16S: Post Dev. Bypass 6

Runoff = 2.88 cfs @ 12.00 hrs, Volume= 0.193 af, Depth= 0.39"
Routed to Link 32L : POA 5

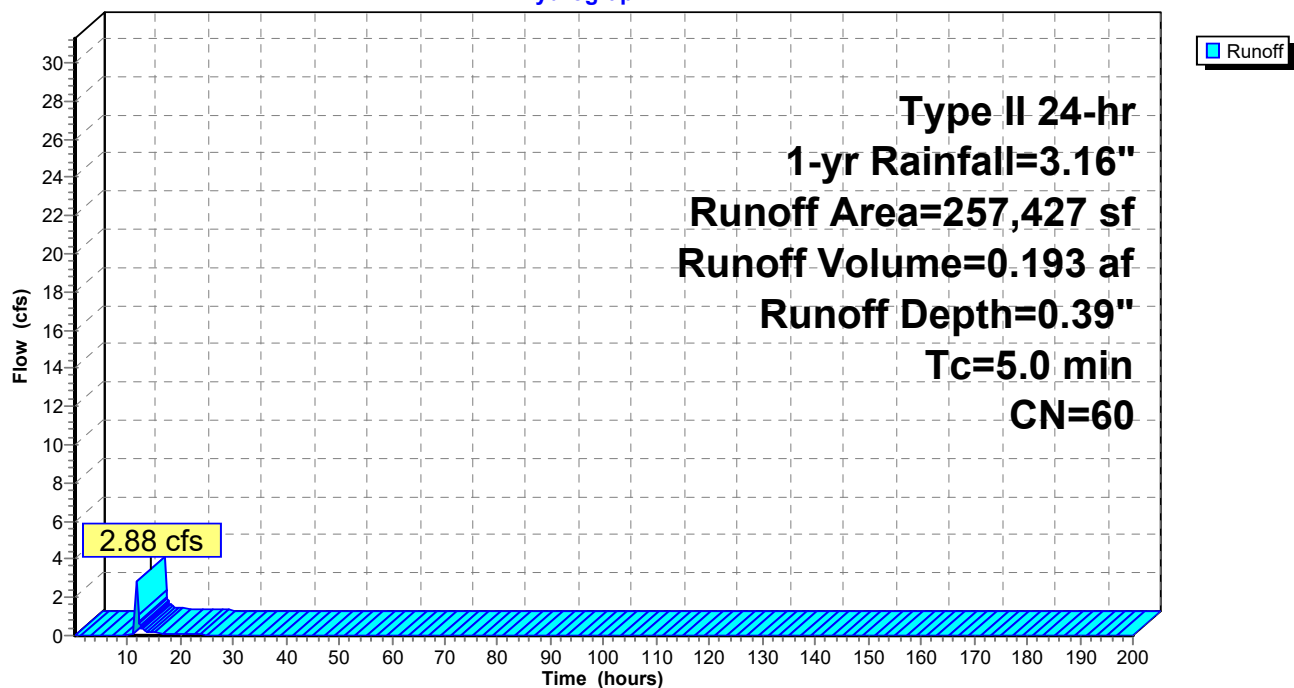
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 1-yr Rainfall=3.16"

Area (sf)	CN	Description
4,268	98	Paved parking, HSG B
51,015	56	Brush, Fair, HSG B
202,144	60	Woods, Fair, HSG B
257,427	60	Weighted Average
253,159		98.34% Pervious Area
4,268		1.66% Impervious Area

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

Subcatchment 16S: Post Dev. Bypass 6

Hydrograph



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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Subcatchment 18S: Post Dev. Basin 7 to SCM

Runoff = 7.97 cfs @ 11.96 hrs, Volume= 0.414 af, Depth= 1.44"
Routed to Pond 31P : Wet Pond SCM 5

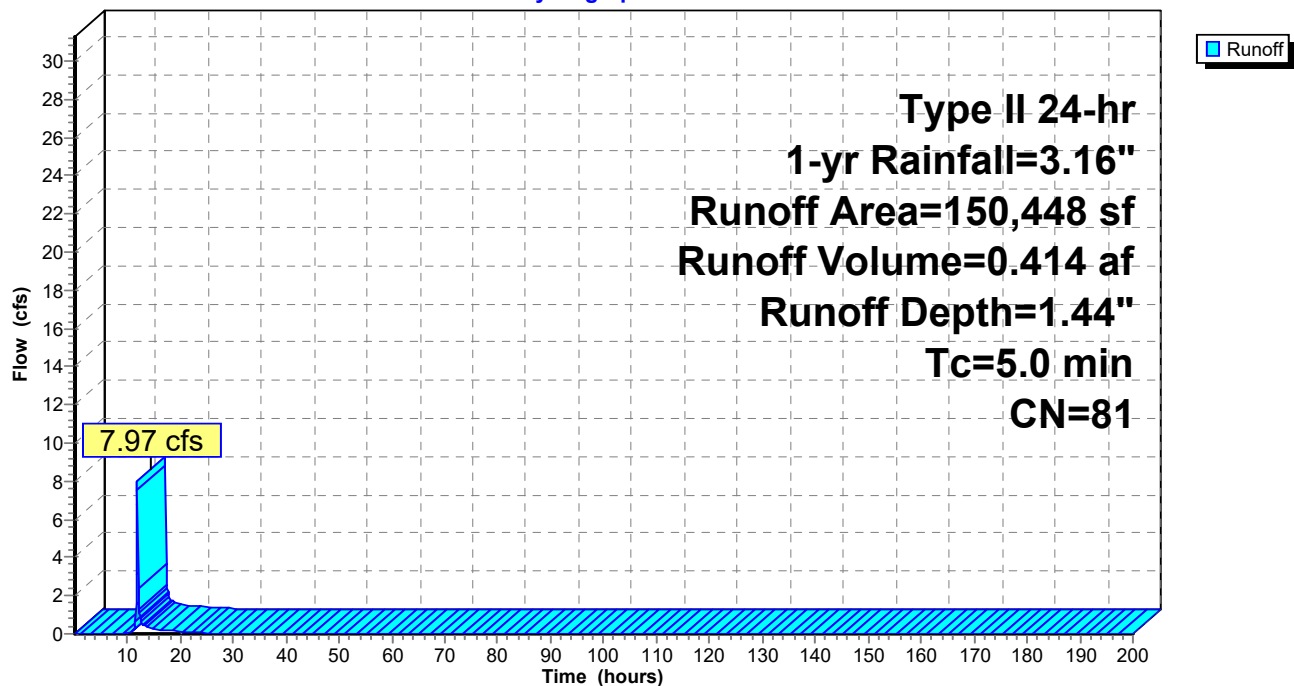
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 1-yr Rainfall=3.16"

Area (sf)	CN	Description
53,515	98	Paved parking, HSG B
33,715	98	Roofs, HSG B
59,637	56	Brush, Fair, HSG B
3,581	98	Water Surface, 0% imp, HSG B
150,448	81	Weighted Average
63,218		42.02% Pervious Area
87,230		57.98% Impervious Area

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

Subcatchment 18S: Post Dev. Basin 7 to SCM

Hydrograph



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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Subcatchment 19S: Post Dev. Bypass 7

Runoff = 0.81 cfs @ 12.06 hrs, Volume= 0.071 af, Depth= 0.43"
Routed to Link 33L : POA 6

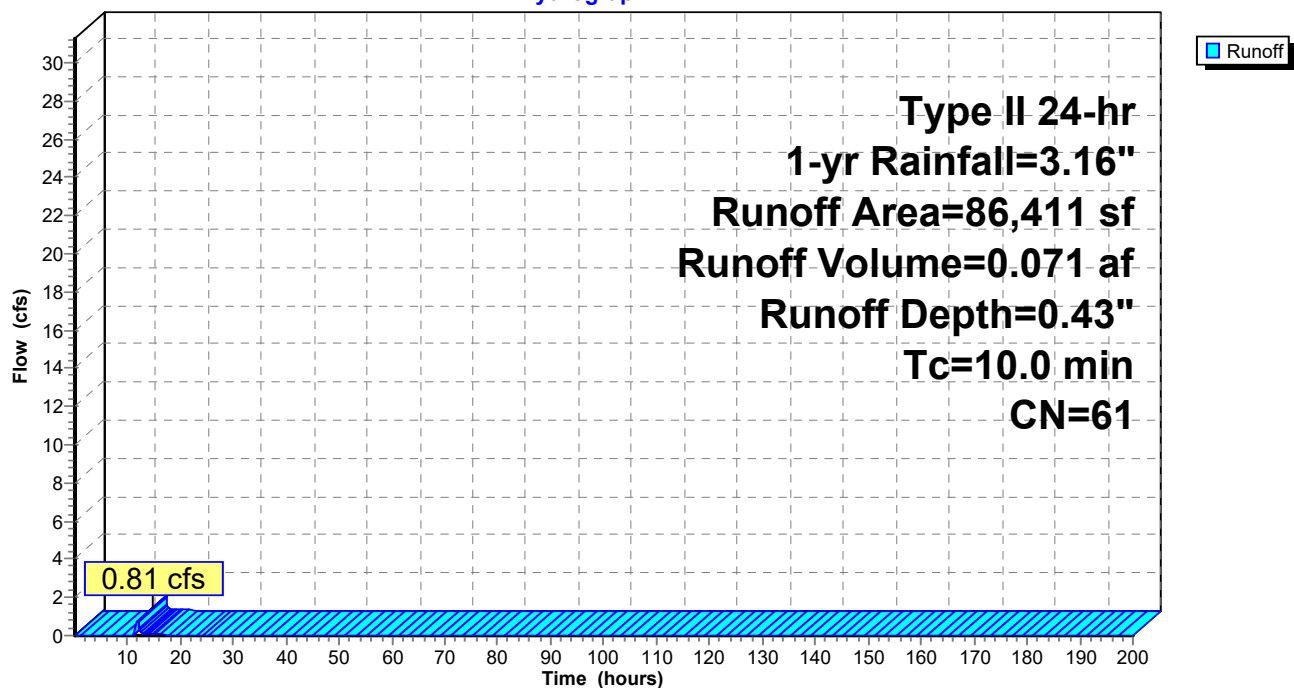
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 1-yr Rainfall=3.16"

Area (sf)	CN	Description
11,171	98	Paved parking, HSG B
35,296	56	Brush, Fair, HSG B
39,944	55	Woods, Good, HSG B
86,411	61	Weighted Average
75,240		87.07% Pervious Area
11,171		12.93% Impervious Area

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

Subcatchment 19S: Post Dev. Bypass 7

Hydrograph



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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Subcatchment 29S: Post Dev. Bypass 8

Runoff = 3.40 cfs @ 12.03 hrs, Volume= 0.257 af, Depth= 0.46"
Routed to Reach 50R : Flowpath Downstream POA 6

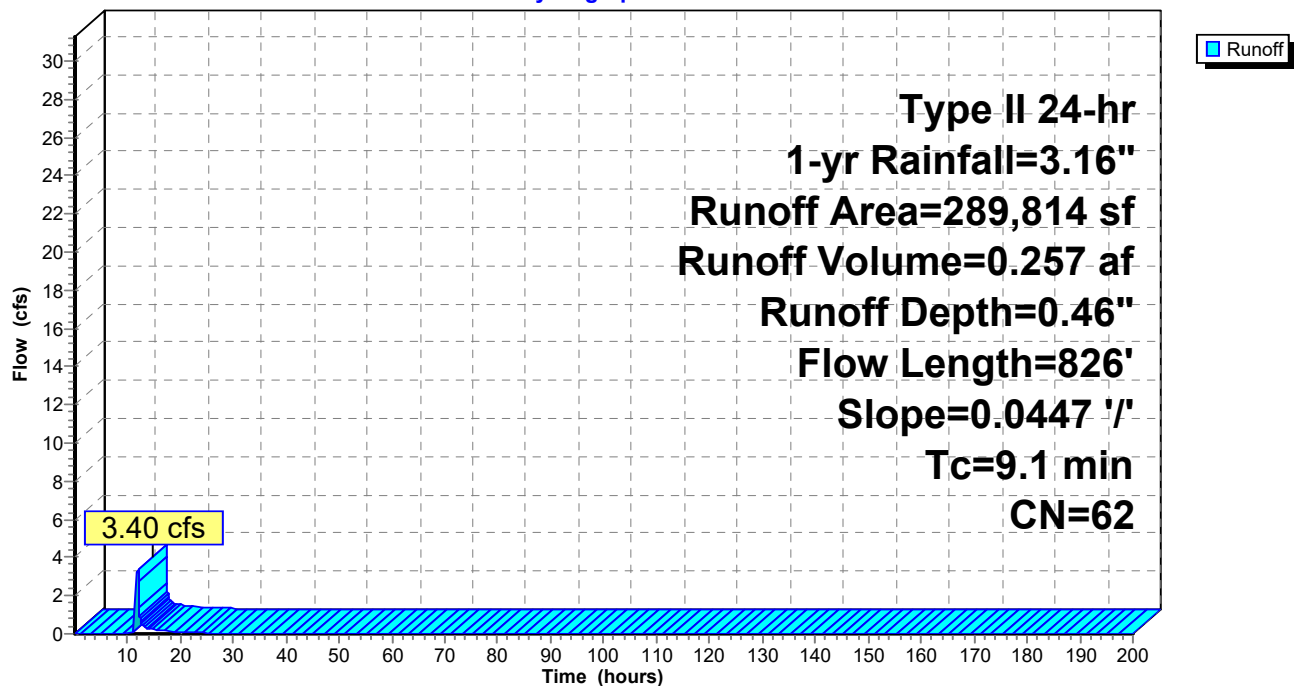
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 1-yr Rainfall=3.16"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
53,439	69	50-75% Grass cover, Fair, HSG B
5,416	98	Paved parking, HSG B
289,814	62	Weighted Average
284,398		98.13% Pervious Area
5,416		1.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 29S: Post Dev. Bypass 8

Hydrograph



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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Subcatchment 36S: Post Dev. Basin 4

Runoff = 0.42 cfs @ 11.99 hrs, Volume= 0.026 af, Depth= 0.46"

Routed to Reach 47R : Flowpath Downstream POA 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

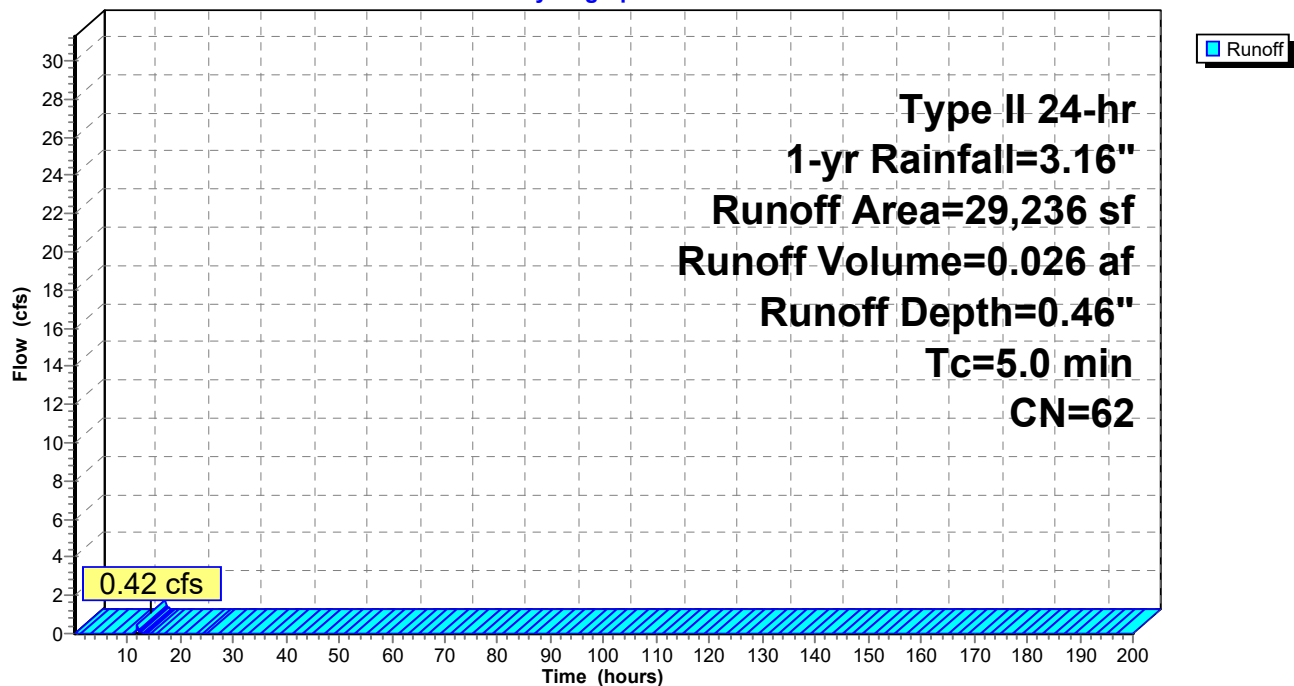
Type II 24-hr 1-yr Rainfall=3.16"

Area (sf)	CN	Description
6,194	60	Woods, Fair, HSG B
19,589	56	Brush, Fair, HSG B
3,453	98	Paved parking, HSG B
29,236	62	Weighted Average
25,783		88.19% Pervious Area
3,453		11.81% Impervious Area

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

Subcatchment 36S: Post Dev. Basin 4

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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Subcatchment 37S: Post Dev. Basin 5 to SCM

Runoff = 8.04 cfs @ 11.96 hrs, Volume= 0.424 af, Depth= 1.80"
Routed to Pond 39P : Sand Filter SCM 3

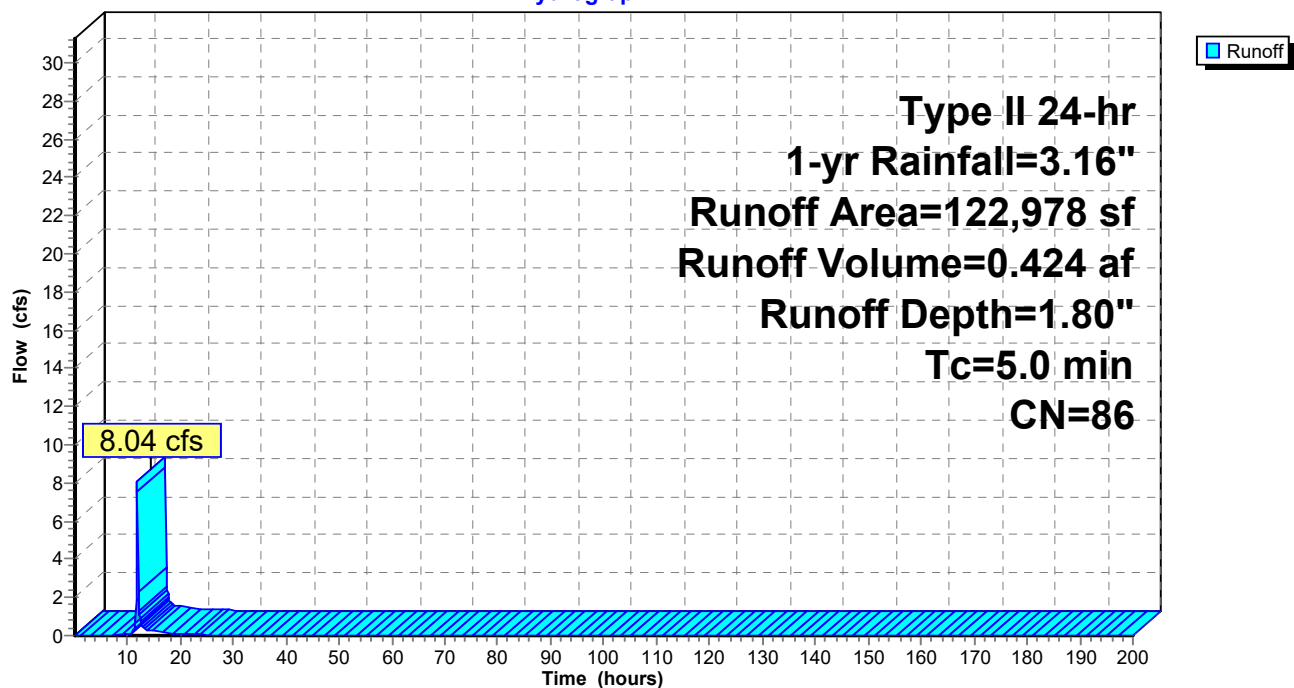
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 1-yr Rainfall=3.16"

Area (sf)	CN	Description
54,167	98	Paved parking, HSG B
39,855	98	Roofs, HSG B
28,956	48	Brush, Good, HSG B
122,978	86	Weighted Average
28,956		23.55% Pervious Area
94,022		76.45% Impervious Area

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

Subcatchment 37S: Post Dev. Basin 5 to SCM

Hydrograph



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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Subcatchment 38S: Post Dev. Bypass 5

Runoff = 1.11 cfs @ 12.10 hrs, Volume= 0.113 af, Depth= 0.36"
Routed to Link 40L : POA 4

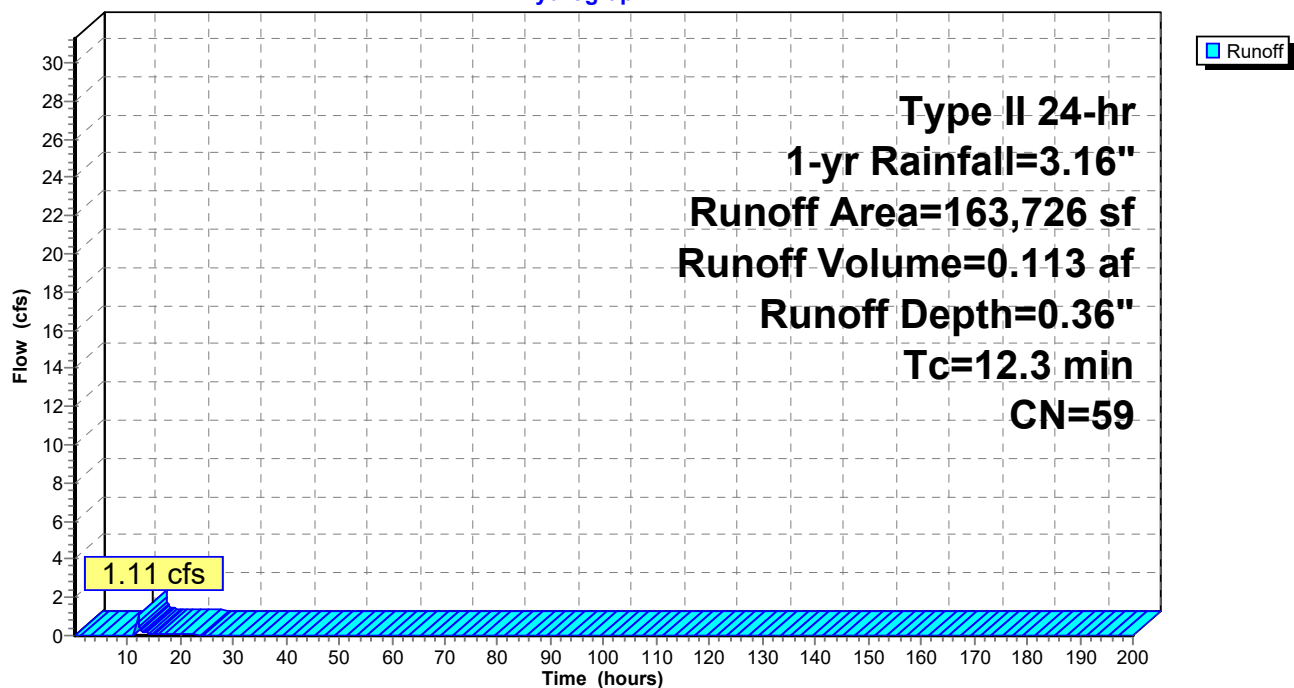
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 1-yr Rainfall=3.16"

Area (sf)	CN	Description
12,257	98	Paved parking, HSG B
54,926	48	Brush, Good, HSG B
96,543	60	Woods, Fair, HSG B
163,726	59	Weighted Average
151,469		92.51% Pervious Area
12,257		7.49% Impervious Area

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

Subcatchment 38S: Post Dev. Bypass 5

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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Subcatchment 46S: Post Drainage Area 1

Runoff = 74.63 cfs @ 12.51 hrs, Volume= 11.755 af, Depth= 0.71"
Routed to Link 6L : Post Dev. POA at 110 Cedar Hill Dr

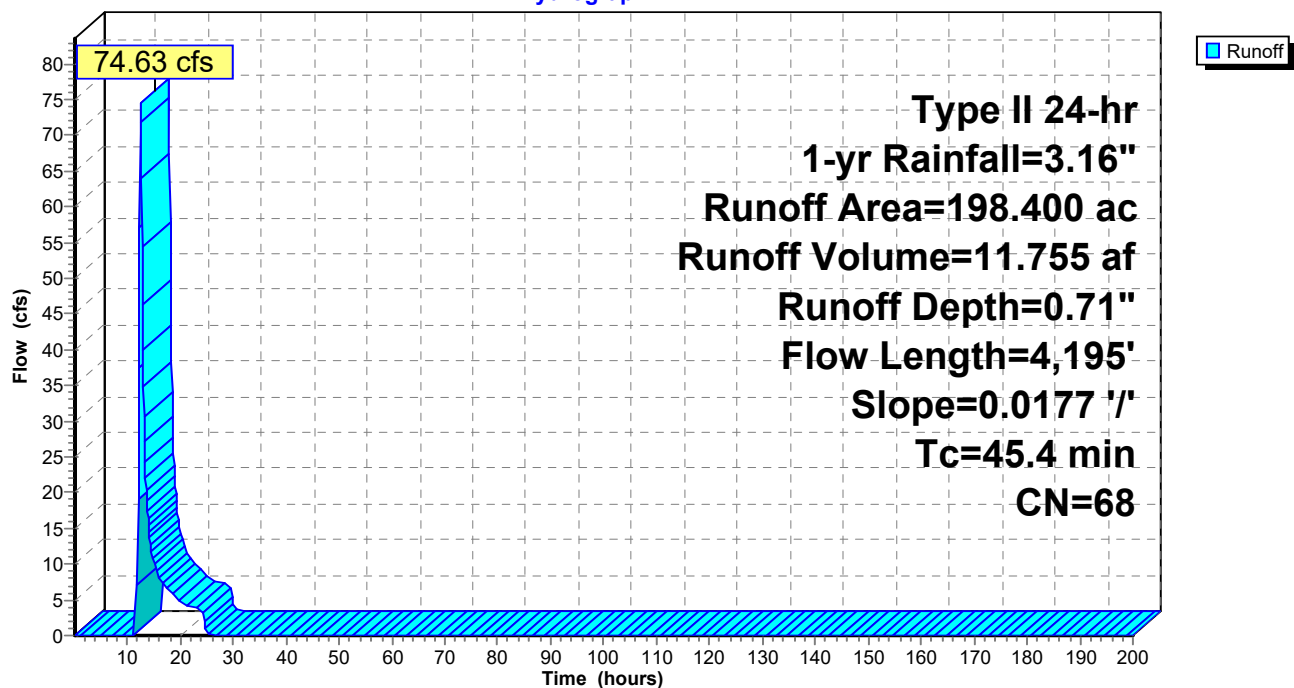
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 1-yr Rainfall=3.16"

Area (ac)	CN	Description
198.400	68	1 acre lots, 20% imp, HSG B
158.720		80.00% Pervious Area
39.680		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.4	4,195	0.0177	1.54		Kirpich Method, General overland flow k= 2.00

Subcatchment 46S: Post Drainage Area 1

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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Reach 47R: Flowpath Downstream POA 4

Inflow Area = 7.253 ac, 34.73% Impervious, Inflow Depth = 0.93" for 1-yr event
Inflow = 1.37 cfs @ 12.08 hrs, Volume= 0.562 af
Outflow = 0.35 cfs @ 14.33 hrs, Volume= 0.562 af, Atten= 74%, Lag= 135.1 min
Routed to Link 6L : Post Dev. POA at 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 0.56 fps, Min. Travel Time= 82.2 min

Avg. Velocity = 0.20 fps, Avg. Travel Time= 227.7 min

Peak Storage= 1,735 cf @ 12.96 hrs

Average Depth at Peak Storage= 0.23' , Surface Width= 4.07'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 7.18 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

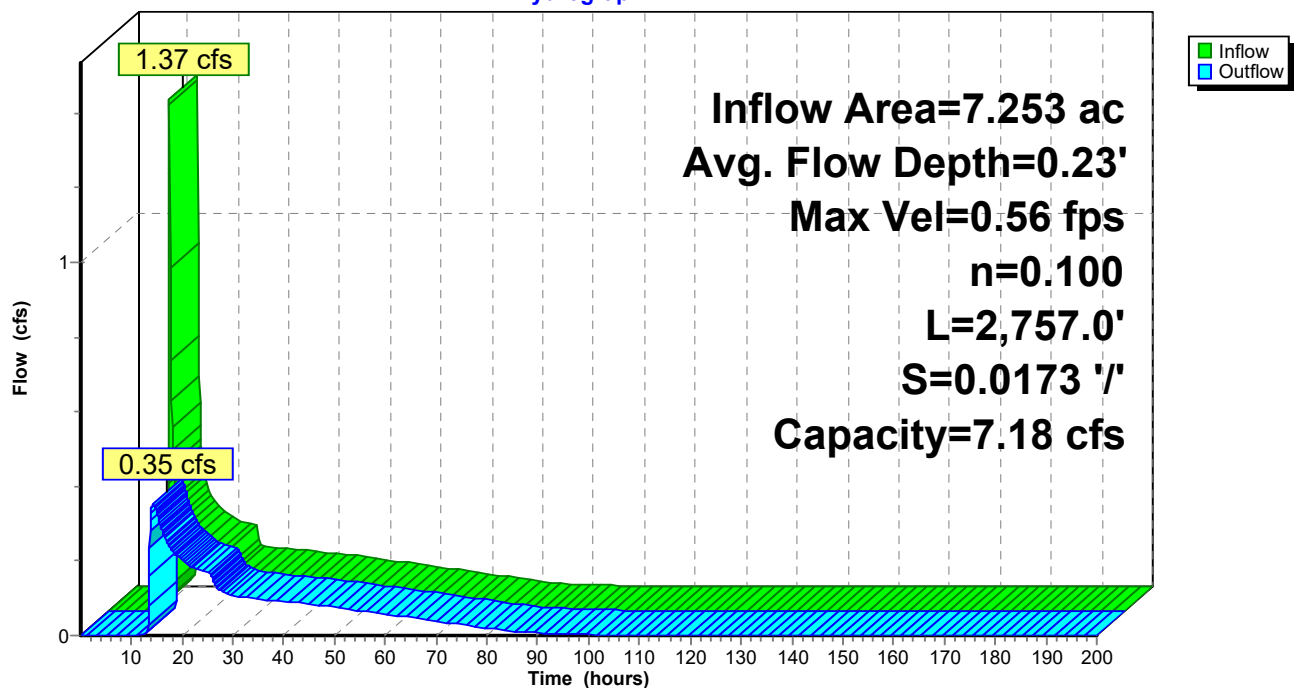
Length= 2,757.0' Slope= 0.0173 '/'

Inlet Invert= 529.84', Outlet Invert= 482.25'



Reach 47R: Flowpath Downstream POA 4

Hydrograph



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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Reach 50R: Flowpath Downstream POA 6

Inflow Area = 16.816 ac, 20.46% Impervious, Inflow Depth > 0.88" for 1-yr event
Inflow = 6.27 cfs @ 12.02 hrs, Volume= 1.235 af
Outflow = 2.15 cfs @ 12.70 hrs, Volume= 1.234 af, Atten= 66%, Lag= 40.9 min
Routed to Link 6L : Post Dev. POA at 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 0.94 fps, Min. Travel Time= 26.8 min

Avg. Velocity= 0.28 fps, Avg. Travel Time= 89.4 min

Peak Storage= 3,551 cf @ 12.23 hrs

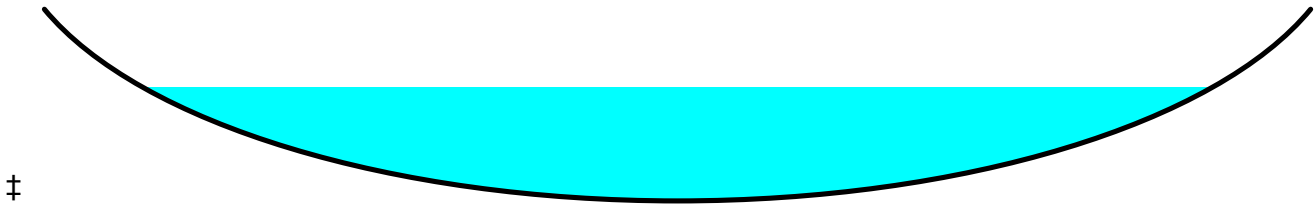
Average Depth at Peak Storage= 0.56' , Surface Width= 6.32'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

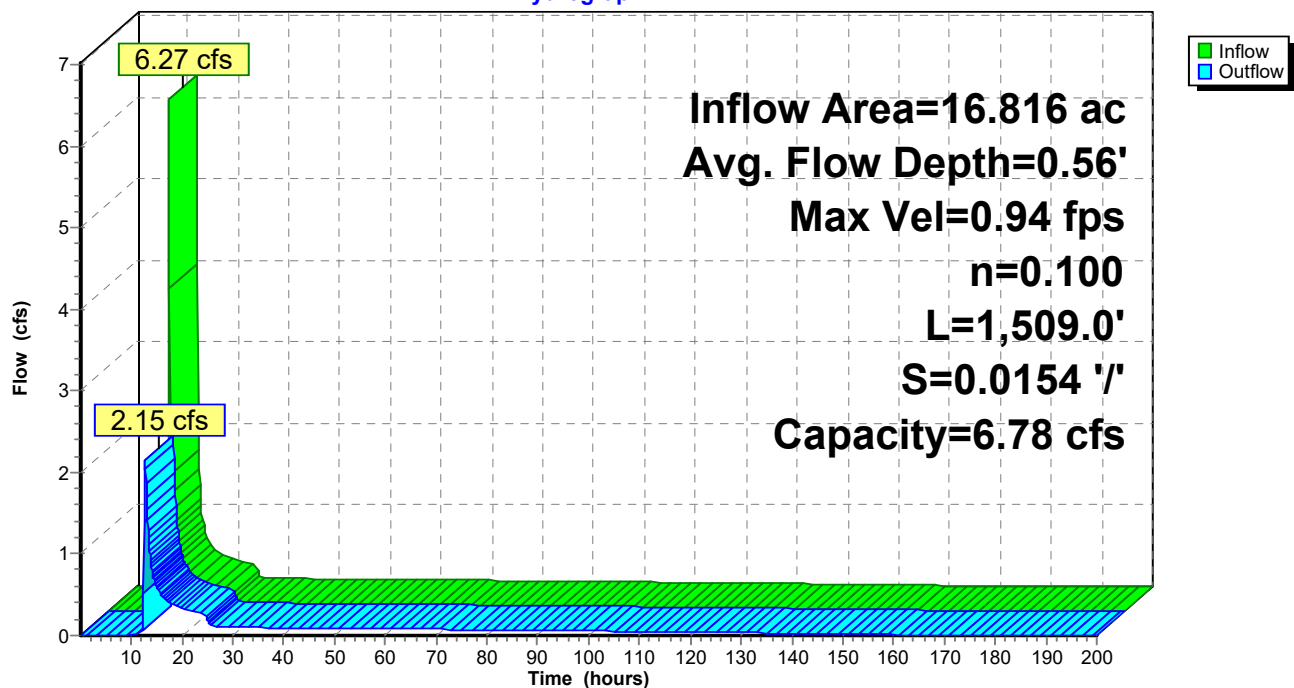
Length= 1,509.0' Slope= 0.0154 '/'

Inlet Invert= 505.43', Outlet Invert= 482.25'



Reach 50R: Flowpath Downstream POA 6

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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Reach 51R: Flowpath Downstream POA 5

Inflow Area = 5.438 ac, 41.54% Impervious, Inflow Depth = 1.07" for 1-yr event
Inflow = 0.88 cfs @ 12.06 hrs, Volume= 0.484 af
Outflow = 0.40 cfs @ 12.73 hrs, Volume= 0.484 af, Atten= 55%, Lag= 40.1 min
Routed to Link 6L : Post Dev. POA at 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 0.68 fps, Min. Travel Time= 25.5 min

Avg. Velocity= 0.24 fps, Avg. Travel Time= 71.3 min

Peak Storage= 611 cf @ 12.29 hrs

Average Depth at Peak Storage= 0.22' , Surface Width= 3.99'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 8.94 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

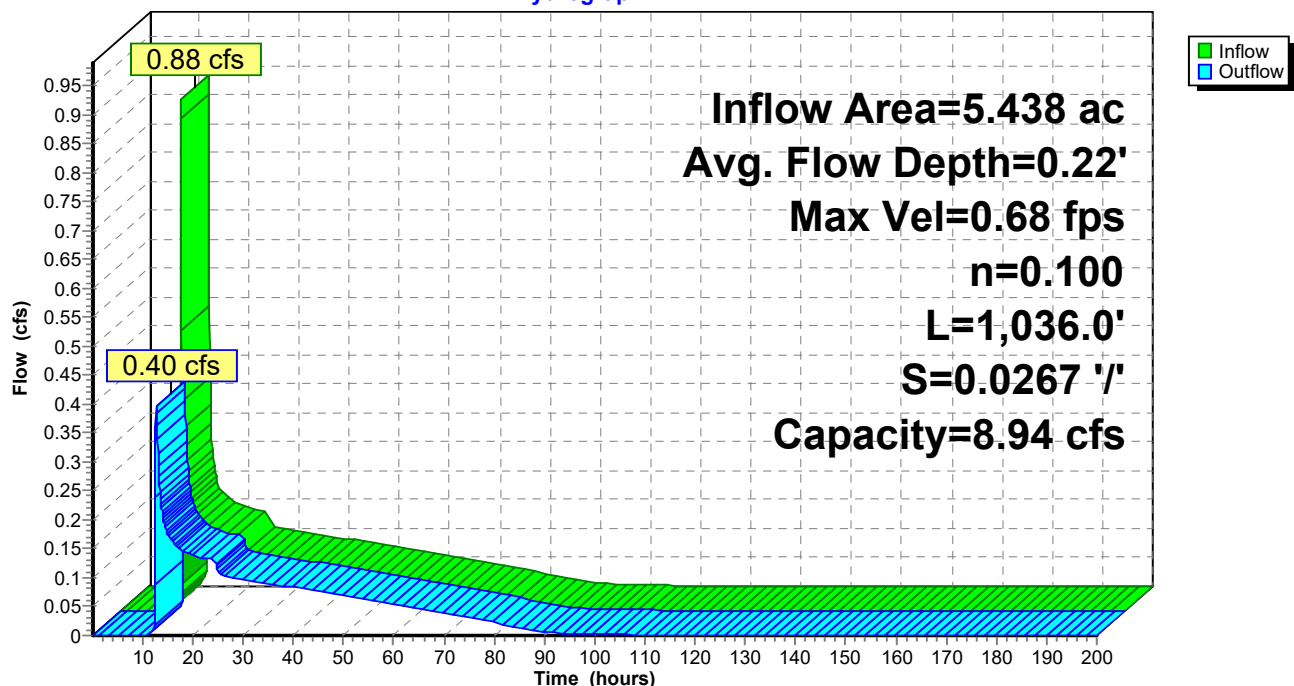
Length= 1,036.0' Slope= 0.0267 '/'

Inlet Invert= 509.93', Outlet Invert= 482.25'



Reach 51R: Flowpath Downstream POA 5

Hydrograph



Downstream Analysis - ZCP

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Summary for Pond 30P: Wet Pond SCM 4

Inflow Area = 4.254 ac, 75.67% Impervious, Inflow Depth = 2.22" for 1-yr event
Inflow = 14.44 cfs @ 11.95 hrs, Volume= 0.787 af
Outflow = 0.10 cfs @ 24.02 hrs, Volume= 0.784 af, Atten= 99%, Lag= 724.1 min
Primary = 0.10 cfs @ 24.02 hrs, Volume= 0.784 af
Routed to Link 32L : POA 5

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Starting Elev= 522.00' Surf.Area= 7,056 sf Storage= 6,623 cf

Peak Elev= 525.08' @ 24.02 hrs Surf.Area= 10,941 sf Storage= 36,247 cf (29,624 cf above start)

Plug-Flow detention time= 4,052.3 min calculated for 0.632 af (80% of inflow)

Center-of-Mass det. time= 3,285.9 min (4,084.8 - 798.9)

Volume	Invert	Avail.Storage	Storage Description
#1	521.00'	71,189 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
521.00	6,190	0	0
522.00	7,056	6,623	6,623
522.50	8,333	3,847	10,470
523.00	9,531	4,466	14,936
524.00	10,198	9,865	24,801
525.00	10,883	10,541	35,341
526.00	11,584	11,234	46,575
527.00	12,303	11,944	58,518
528.00	13,038	12,671	71,189

Device	Routing	Invert	Outlet Devices
#1	Primary	522.00'	36.0" Round Culvert L= 45.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 522.00' / 521.50' S= 0.0111 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf
#2	Device 1	522.00'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	525.40'	40.0" W x 4.0" H Vert. Peakflow Orifice X 2.00 C= 0.600 Limited to weir flow at low heads
#4	Device 1	526.90'	48.0" x 48.0" Horiz. Overflow C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.10 cfs @ 24.02 hrs HW=525.08' (Free Discharge)

1=Culvert (Passes 0.10 cfs of 40.79 cfs potential flow)
2=Drawdown (Orifice Controls 0.10 cfs @ 8.37 fps)
3=Peakflow Orifice (Controls 0.00 cfs)
4=Overflow (Controls 0.00 cfs)

Downstream Analysis - ZCP

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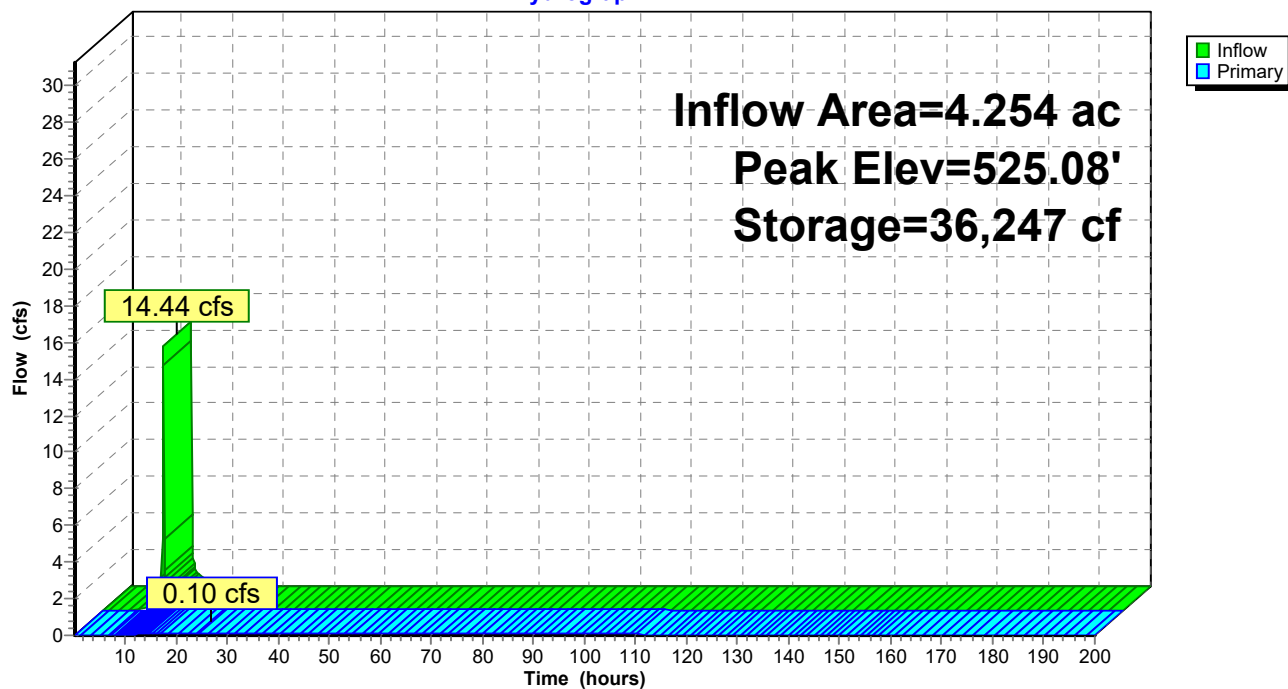
Type II 24-hr 1-yr Rainfall=3.16"

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Pond 30P: Wet Pond SCM 4

Hydrograph



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Summary for Pond 31P: Wet Pond SCM 5

Inflow Area = 3.454 ac, 57.98% Impervious, Inflow Depth = 1.44" for 1-yr event
Inflow = 7.97 cfs @ 11.96 hrs, Volume= 0.414 af
Outflow = 0.10 cfs @ 21.99 hrs, Volume= 0.414 af, Atten= 99%, Lag= 601.4 min
Primary = 0.10 cfs @ 21.99 hrs, Volume= 0.414 af
Routed to Link 33L : POA 6

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Starting Elev= 510.50' Surf.Area= 3,231 sf Storage= 1,401 cf

Peak Elev= 513.60' @ 21.99 hrs Surf.Area= 5,103 sf Storage= 14,993 cf (13,593 cf above start)

Plug-Flow detention time= 1,784.9 min calculated for 0.382 af (92% of inflow)

Center-of-Mass det. time= 1,606.2 min (2,442.2 - 836.0)

Volume	Invert	Avail.Storage	Storage Description
#1	510.00'	42,078 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
510.00	2,371	0	0
510.50	3,231	1,401	1,401
511.00	3,997	1,807	3,208
512.00	4,407	4,202	7,410
513.00	4,836	4,622	12,031
514.00	5,284	5,060	17,091
515.00	5,749	5,517	22,608
516.00	6,233	5,991	28,599
517.00	6,735	6,484	35,083
518.00	7,255	6,995	42,078

Device	Routing	Invert	Outlet Devices
#1	Primary	510.50'	36.0" Round Culvert L= 79.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 510.50' / 510.00' S= 0.0063 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Device 1	510.50'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	514.70'	34.0" W x 4.5" H Vert. Peakflow Orifice X 2.00 C= 0.600 Limited to weir flow at low heads
#4	Device 1	516.60'	48.0" x 48.0" Horiz. Overflow C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.10 cfs @ 21.99 hrs HW=513.60' (Free Discharge)

1=Culvert (Passes 0.10 cfs of 38.15 cfs potential flow)
2=Drawdown (Orifice Controls 0.10 cfs @ 8.39 fps)
3=Peakflow Orifice (Controls 0.00 cfs)
4=Overflow (Controls 0.00 cfs)

Downstream Analysis - ZCP

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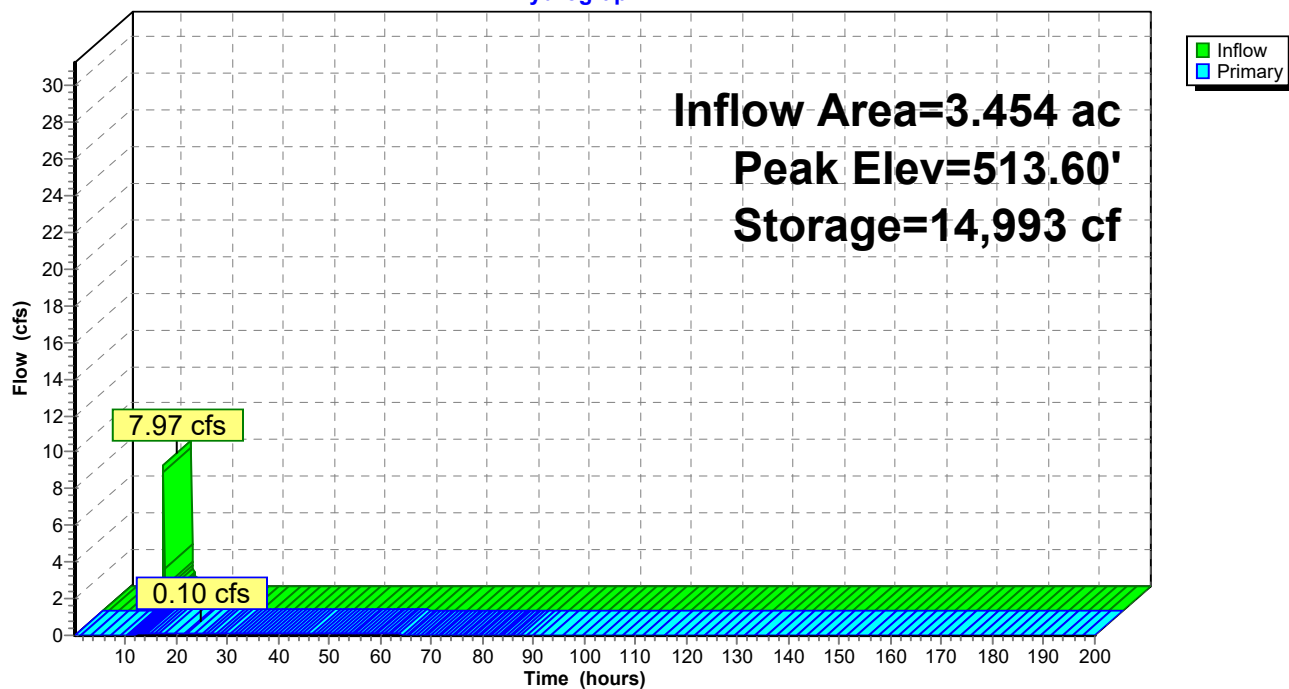
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Pond 31P: Wet Pond SCM 5

Hydrograph



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Summary for Pond 39P: Sand Filter SCM 3

Inflow Area = 2.823 ac, 76.45% Impervious, Inflow Depth = 1.80" for 1-yr event
Inflow = 8.04 cfs @ 11.96 hrs, Volume= 0.424 af
Outflow = 0.11 cfs @ 19.52 hrs, Volume= 0.424 af, Atten= 99%, Lag= 453.5 min
Primary = 0.11 cfs @ 19.52 hrs, Volume= 0.424 af
Routed to Link 40L : POA 4

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Peak Elev= 533.58' @ 19.52 hrs Surf.Area= 4,515 sf Storage= 13,765 cf

Plug-Flow detention time= 1,498.2 min calculated for 0.423 af (100% of inflow)
Center-of-Mass det. time= 1,500.4 min (2,319.5 - 819.1)

Volume	Invert	Avail.Storage	Storage Description
#1	530.00'	16,905 cf	Sediment/Sand Chamber (Prismatic) Listed below (Recalc) x 23
#2	530.00'	16,800 cf	Storage (Prismatic) Listed below (Recalc) x 20
		33,705 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
530.00	105	0.0	0	0
532.00	105	50.0	105	105
538.00	105	100.0	630	735

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
530.00	105	0	0
538.00	105	840	840

Device	Routing	Invert	Outlet Devices
#1	Primary	530.00'	36.0" Round Culvert L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 530.00' / 529.00' S= 0.0200 ' / Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf
#2	Device 1	530.00'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	534.70'	34.0" W x 5.0" H Vert. Main Orifice C= 0.600 Limited to weir flow at low heads
#4	Device 1	537.20'	25.0' long Overflow 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.11 cfs @ 19.52 hrs HW=533.58' (Free Discharge)

- 1=Culvert (Passes 0.11 cfs of 49.13 cfs potential flow)
- 2=Drawdown (Orifice Controls 0.11 cfs @ 9.04 fps)
- 3=Main Orifice (Controls 0.00 cfs)
- 4=Overflow (Controls 0.00 cfs)

Downstream Analysis - ZCP

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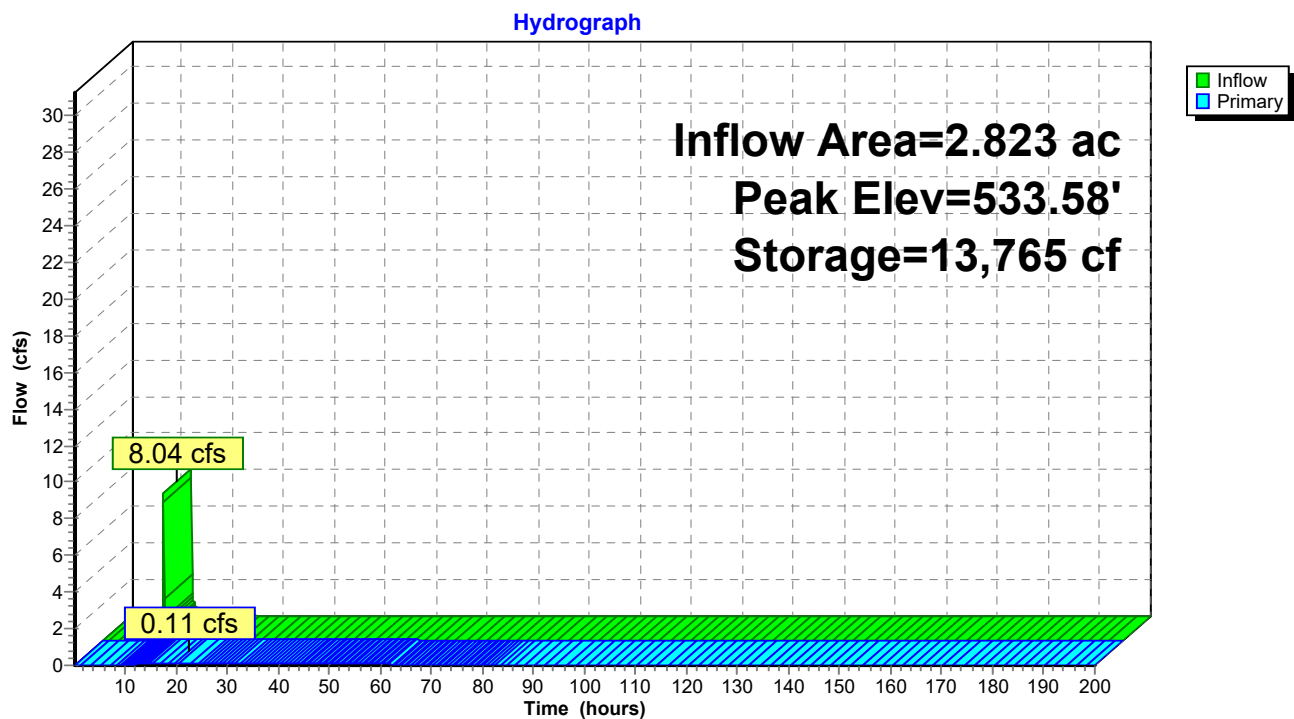
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Pond 39P: Sand Filter SCM 3



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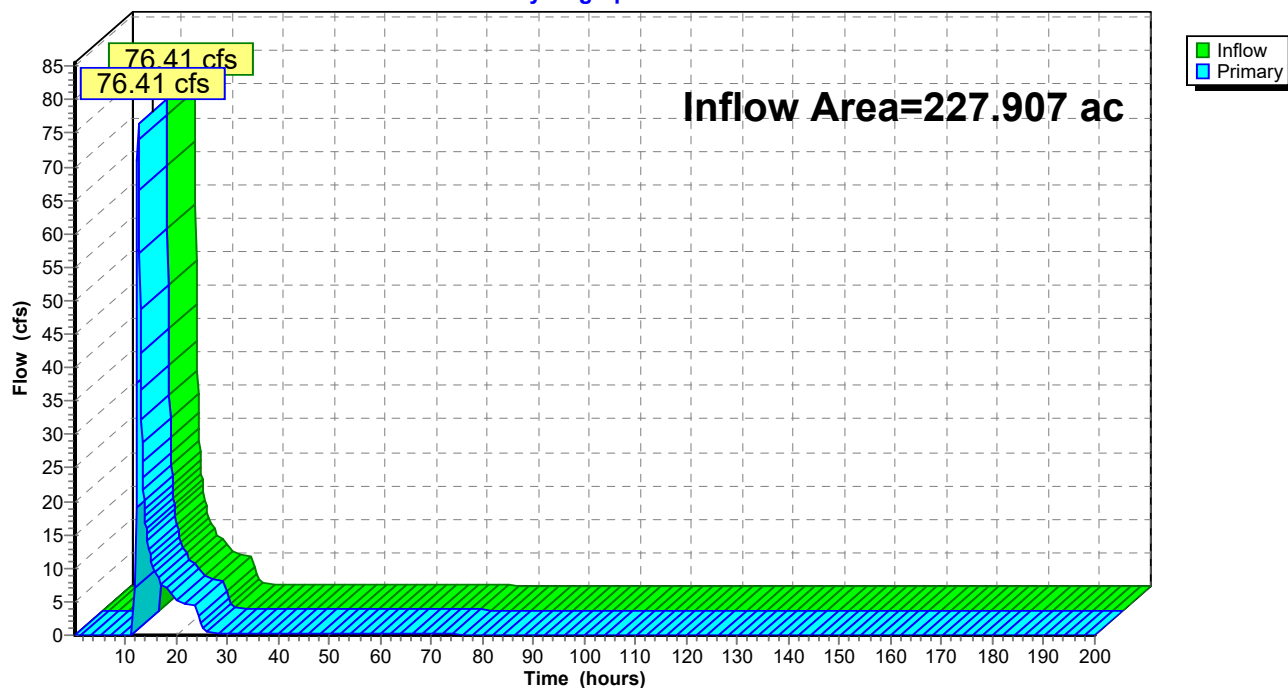
Summary for Link 6L: Post Dev. POA at 110 Cedar Hill Dr

Inflow Area = 227.907 ac, 21.02% Impervious, Inflow Depth = 0.74" for 1-yr event
Inflow = 76.41 cfs @ 12.52 hrs, Volume= 14.035 af
Primary = 76.41 cfs @ 12.52 hrs, Volume= 14.035 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 6L: Post Dev. POA at 110 Cedar Hill Dr

Hydrograph



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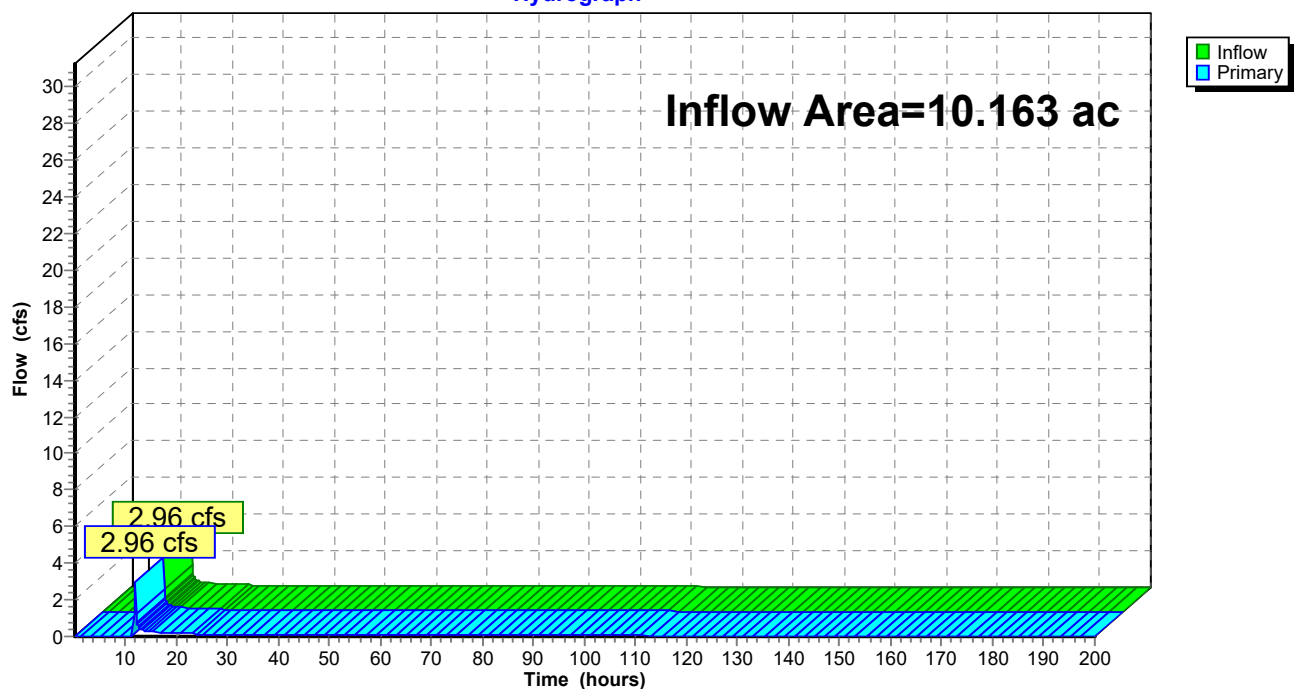
Summary for Link 32L: POA 5

Inflow Area = 10.163 ac, 32.64% Impervious, Inflow Depth > 1.15" for 1-yr event
Inflow = 2.96 cfs @ 12.00 hrs, Volume= 0.978 af
Primary = 2.96 cfs @ 12.00 hrs, Volume= 0.978 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 50R : Flowpath Downstream POA 6

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 32L: POA 5

Hydrograph



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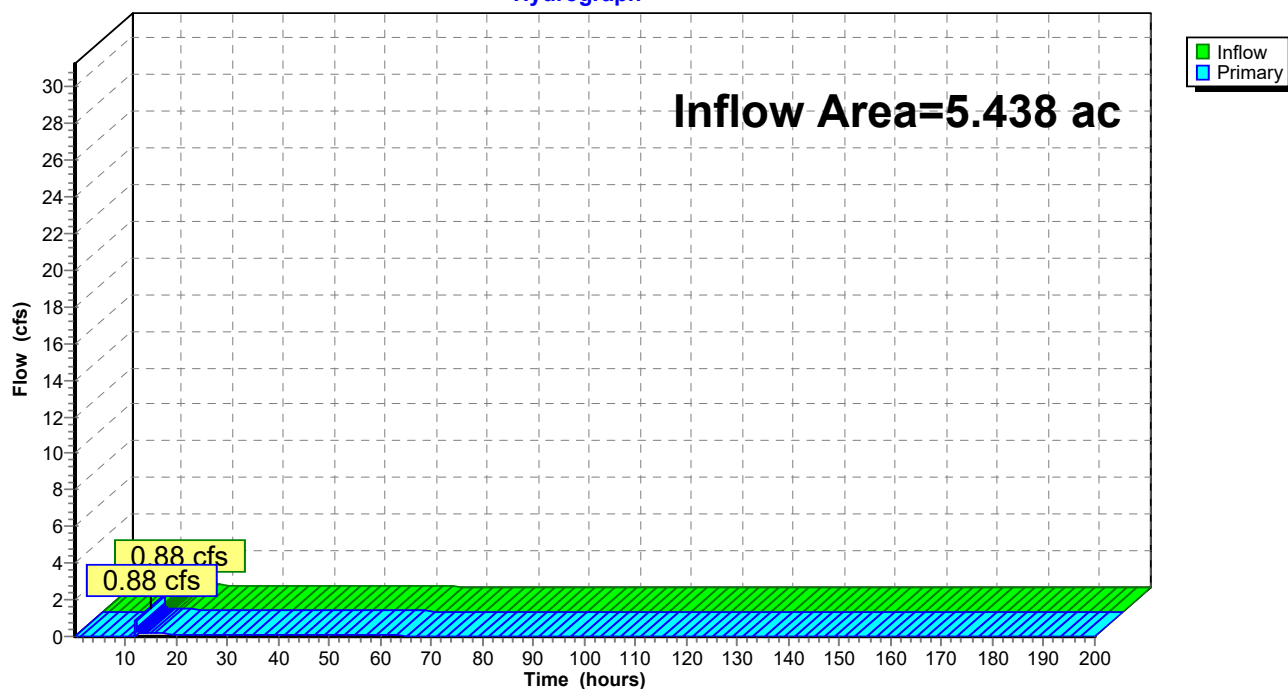
Summary for Link 33L: POA 6

Inflow Area = 5.438 ac, 41.54% Impervious, Inflow Depth = 1.07" for 1-yr event
Inflow = 0.88 cfs @ 12.06 hrs, Volume= 0.484 af
Primary = 0.88 cfs @ 12.06 hrs, Volume= 0.484 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 51R : Flowpath Downstream POA 5

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 33L: POA 6

Hydrograph



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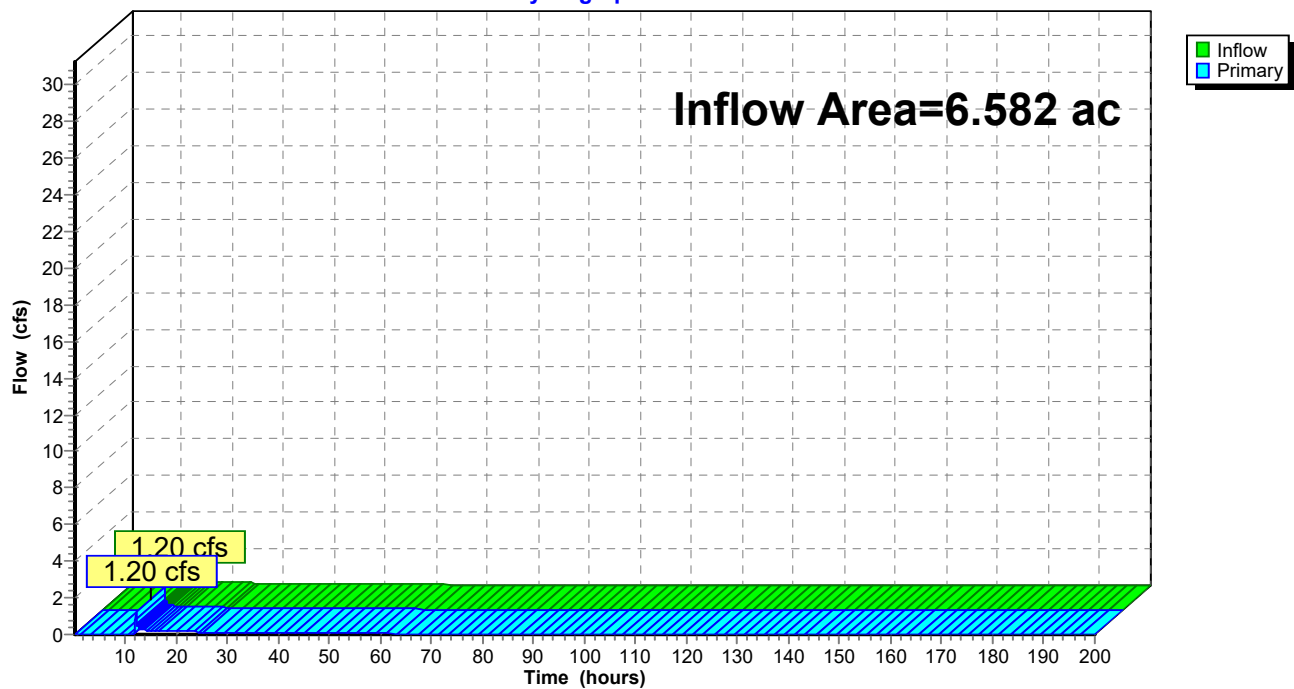
Summary for Link 40L: POA 4

Inflow Area = 6.582 ac, 37.07% Impervious, Inflow Depth = 0.98" for 1-yr event
Inflow = 1.20 cfs @ 12.10 hrs, Volume= 0.536 af
Primary = 1.20 cfs @ 12.10 hrs, Volume= 0.536 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 47R : Flowpath Downstream POA 4

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 40L: POA 4

Hydrograph



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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment15S: Post Dev. Basin 6 to Runoff Area=185,285 sf 75.67% Impervious Runoff Depth=2.85"
Tc=5.0 min CN=91 Runoff=18.23 cfs 1.009 af

Subcatchment16S: Post Dev. Bypass 6 Runoff Area=257,427 sf 1.66% Impervious Runoff Depth=0.68"
Tc=5.0 min CN=60 Runoff=5.76 cfs 0.333 af

Subcatchment18S: Post Dev. Basin 7 to Runoff Area=150,448 sf 57.98% Impervious Runoff Depth=1.97"
Tc=5.0 min CN=81 Runoff=10.86 cfs 0.567 af

Subcatchment19S: Post Dev. Bypass 7 Runoff Area=86,411 sf 12.93% Impervious Runoff Depth=0.72"
Tc=10.0 min CN=61 Runoff=1.72 cfs 0.119 af

Subcatchment29S: Post Dev. Bypass 8 Runoff Area=289,814 sf 1.87% Impervious Runoff Depth=0.77"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=6.67 cfs 0.428 af

Subcatchment36S: Post Dev. Basin 4 Runoff Area=29,236 sf 11.81% Impervious Runoff Depth=0.77"
Tc=5.0 min CN=62 Runoff=0.77 cfs 0.043 af

Subcatchment37S: Post Dev. Basin 5 to Runoff Area=122,978 sf 76.45% Impervious Runoff Depth=2.38"
Tc=5.0 min CN=86 Runoff=10.52 cfs 0.561 af

Subcatchment38S: Post Dev. Bypass 5 Runoff Area=163,726 sf 7.49% Impervious Runoff Depth=0.63"
Tc=12.3 min CN=59 Runoff=2.45 cfs 0.197 af

Subcatchment46S: Post Drainage Area 1 Runoff Area=198.400 ac 20.00% Impervious Runoff Depth=1.09"
Flow Length=4,195' Slope=0.0177 '/' Tc=45.4 min CN=68 Runoff=125.05 cfs 18.066 af

Reach 47R: Flowpath Downstream POA Avg. Flow Depth=0.34' Max Vel=0.71 fps Inflow=2.92 cfs 0.801 af
n=0.100 L=2,757.0' S=0.0173 '/' Capacity=7.18 cfs Outflow=0.78 cfs 0.801 af

Reach 50R: Flowpath Downstream Avg. Flow Depth=0.83' Max Vel=1.21 fps Inflow=12.36 cfs 1.765 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=5.16 cfs 1.764 af

Reach 51R: Flowpath Downstream POA Avg. Flow Depth=0.33' Max Vel=0.87 fps Inflow=1.81 cfs 0.687 af
n=0.100 L=1,036.0' S=0.0267 '/' Capacity=8.94 cfs Outflow=0.89 cfs 0.687 af

Pond 30P: Wet Pond SCM 4 Peak Elev=525.45' Storage=40,349 cf Inflow=18.23 cfs 1.009 af
Outflow=0.42 cfs 1.004 af

Pond 31P: Wet Pond SCM 5 Peak Elev=514.69' Storage=20,849 cf Inflow=10.86 cfs 0.567 af
Outflow=0.12 cfs 0.567 af

Pond 39P: Sand Filter SCM 3 Peak Elev=534.70' Storage=18,813 cf Inflow=10.52 cfs 0.561 af
Outflow=0.13 cfs 0.561 af

Link 6L: Post Dev. POA at 110 Cedar Hill Dr Inflow=130.98 cfs 21.318 af
Primary=130.98 cfs 21.318 af

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Type II 24-hr 2-yr Rainfall=3.82"

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Link 32L: POA 5

Inflow=5.84 cfs 1.337 af

Primary=5.84 cfs 1.337 af

Link 33L: POA 6

Inflow=1.81 cfs 0.687 af

Primary=1.81 cfs 0.687 af

Link 40L: POA 4

Inflow=2.55 cfs 0.758 af

Primary=2.55 cfs 0.758 af

Total Runoff Area = 227.907 ac Runoff Volume = 21.323 af Average Runoff Depth = 1.12"

78.98% Pervious = 180.008 ac 21.02% Impervious = 47.899 ac

Downstream Analysis - ZCP

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Summary for Subcatchment 15S: Post Dev. Basin 6 to SCM

Runoff = 18.23 cfs @ 11.95 hrs, Volume= 1.009 af, Depth= 2.85"
Routed to Pond 30P : Wet Pond SCM 4

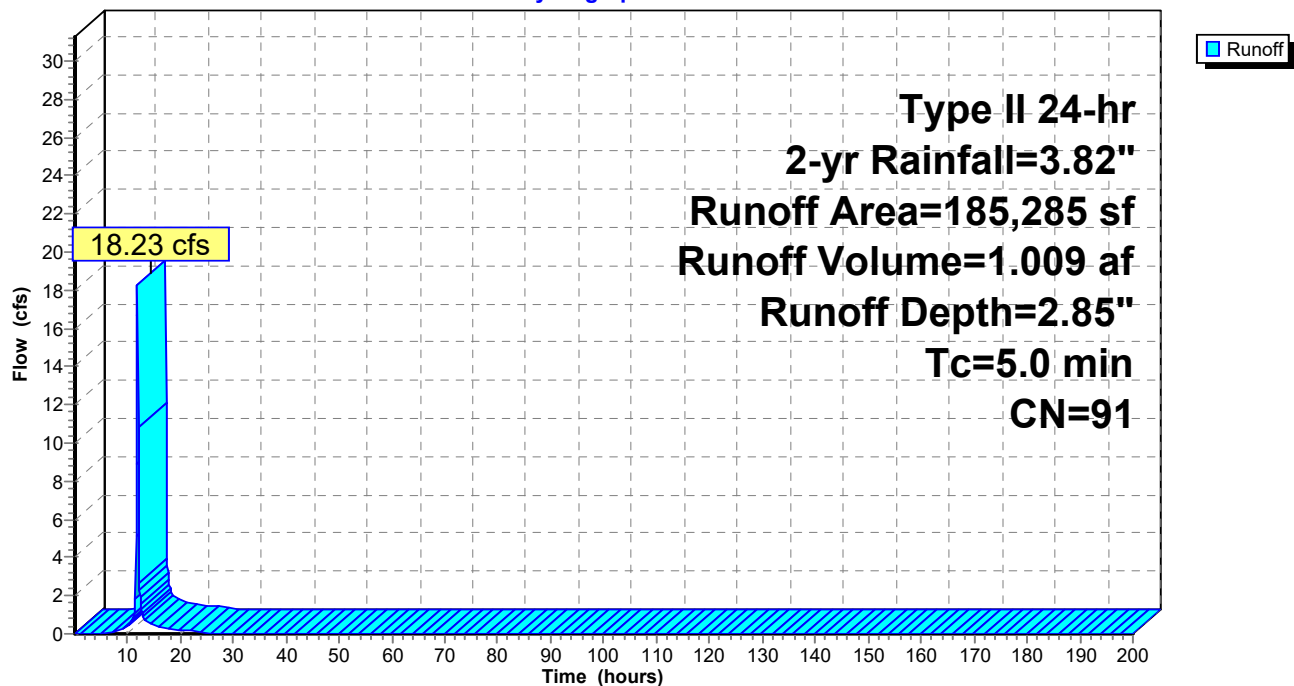
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 2-yr Rainfall=3.82"

Area (sf)	CN	Description
76,830	98	Paved parking, HSG B
63,382	98	Roofs, HSG B
30,858	56	Brush, Fair, HSG B
14,215	98	Water Surface, 0% imp, HSG B
185,285	91	Weighted Average
45,073		24.33% Pervious Area
140,212		75.67% Impervious Area

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

Subcatchment 15S: Post Dev. Basin 6 to SCM

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Subcatchment 16S: Post Dev. Bypass 6

Runoff = 5.76 cfs @ 11.99 hrs, Volume= 0.333 af, Depth= 0.68"
Routed to Link 32L : POA 5

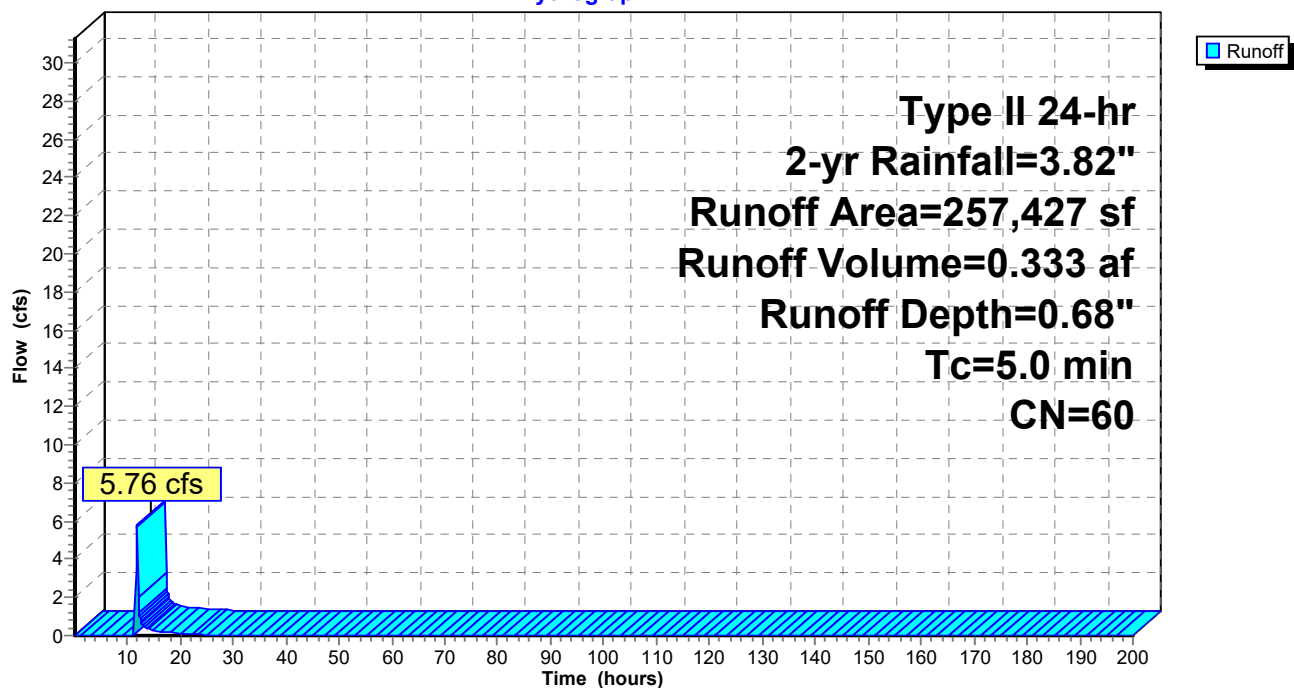
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 2-yr Rainfall=3.82"

Area (sf)	CN	Description
4,268	98	Paved parking, HSG B
51,015	56	Brush, Fair, HSG B
202,144	60	Woods, Fair, HSG B
257,427	60	Weighted Average
253,159		98.34% Pervious Area
4,268		1.66% Impervious Area

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

Subcatchment 16S: Post Dev. Bypass 6

Hydrograph



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Summary for Subcatchment 18S: Post Dev. Basin 7 to SCM

Runoff = 10.86 cfs @ 11.96 hrs, Volume= 0.567 af, Depth= 1.97"
Routed to Pond 31P : Wet Pond SCM 5

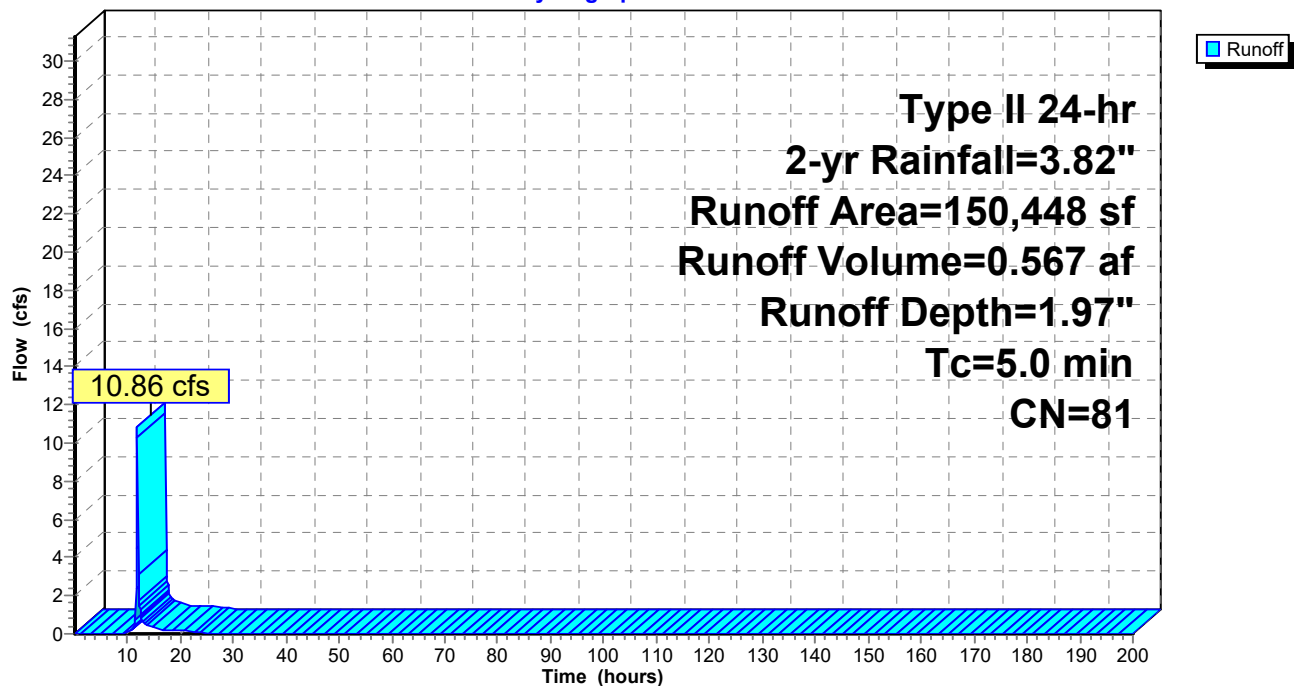
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 2-yr Rainfall=3.82"

Area (sf)	CN	Description
53,515	98	Paved parking, HSG B
33,715	98	Roofs, HSG B
59,637	56	Brush, Fair, HSG B
3,581	98	Water Surface, 0% imp, HSG B
150,448	81	Weighted Average
63,218		42.02% Pervious Area
87,230		57.98% Impervious Area

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

Subcatchment 18S: Post Dev. Basin 7 to SCM

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Subcatchment 19S: Post Dev. Bypass 7

Runoff = 1.72 cfs @ 12.04 hrs, Volume= 0.119 af, Depth= 0.72"
Routed to Link 33L : POA 6

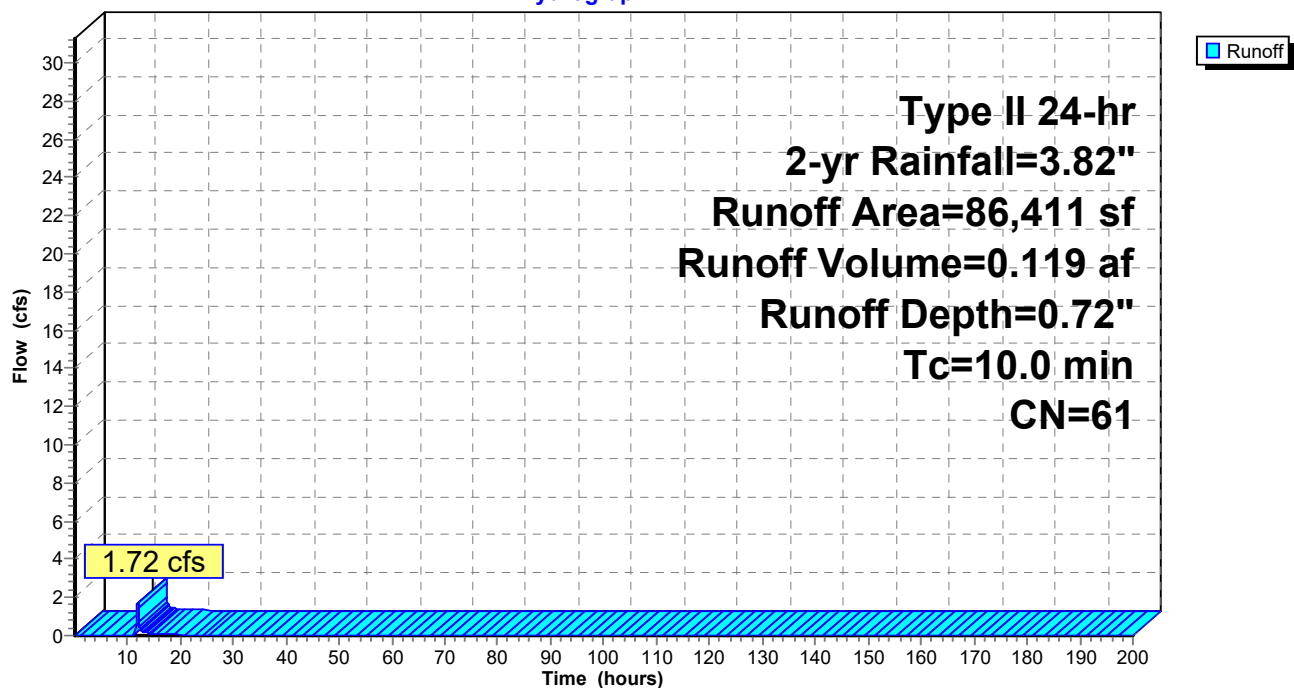
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 2-yr Rainfall=3.82"

Area (sf)	CN	Description
11,171	98	Paved parking, HSG B
35,296	56	Brush, Fair, HSG B
39,944	55	Woods, Good, HSG B
86,411	61	Weighted Average
75,240		87.07% Pervious Area
11,171		12.93% Impervious Area

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

Subcatchment 19S: Post Dev. Bypass 7

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Subcatchment 29S: Post Dev. Bypass 8

Runoff = 6.67 cfs @ 12.02 hrs, Volume= 0.428 af, Depth= 0.77"

Routed to Reach 50R : Flowpath Downstream POA 6

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

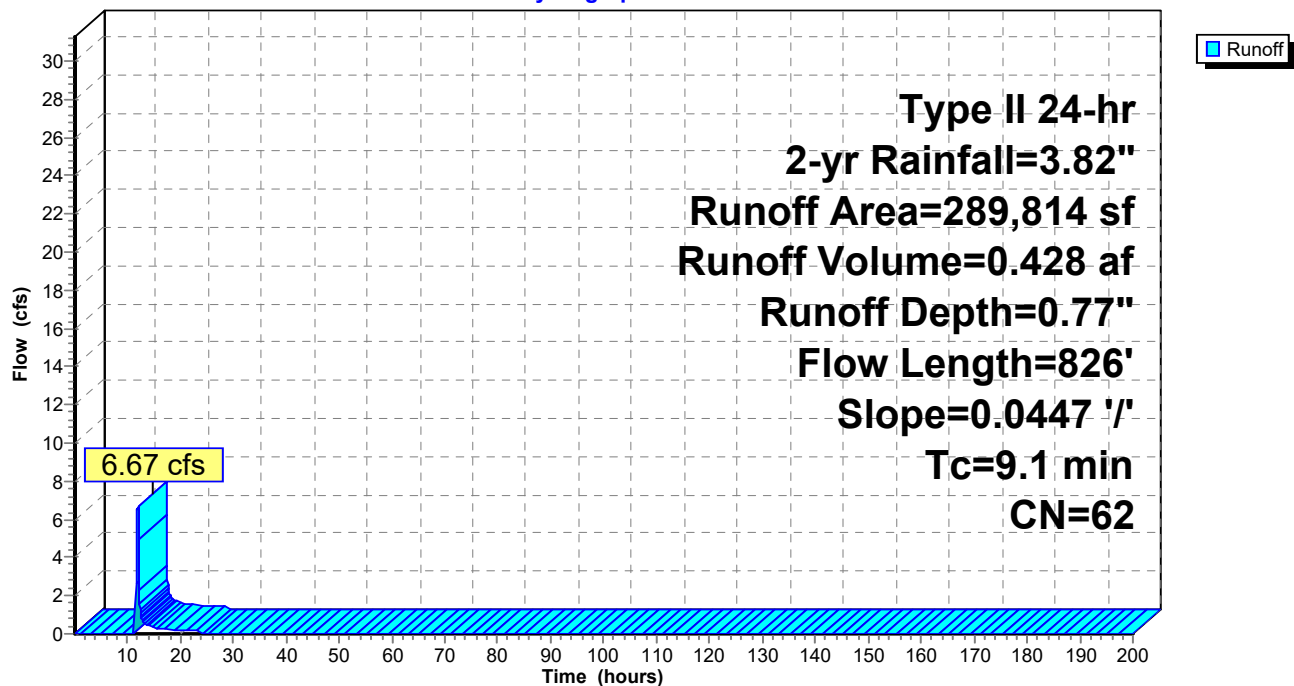
Type II 24-hr 2-yr Rainfall=3.82"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
53,439	69	50-75% Grass cover, Fair, HSG B
5,416	98	Paved parking, HSG B
289,814	62	Weighted Average
284,398		98.13% Pervious Area
5,416		1.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 29S: Post Dev. Bypass 8

Hydrograph



Downstream Analysis - ZCP

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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Subcatchment 36S: Post Dev. Basin 4

Runoff = 0.77 cfs @ 11.98 hrs, Volume= 0.043 af, Depth= 0.77"

Routed to Reach 47R : Flowpath Downstream POA 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

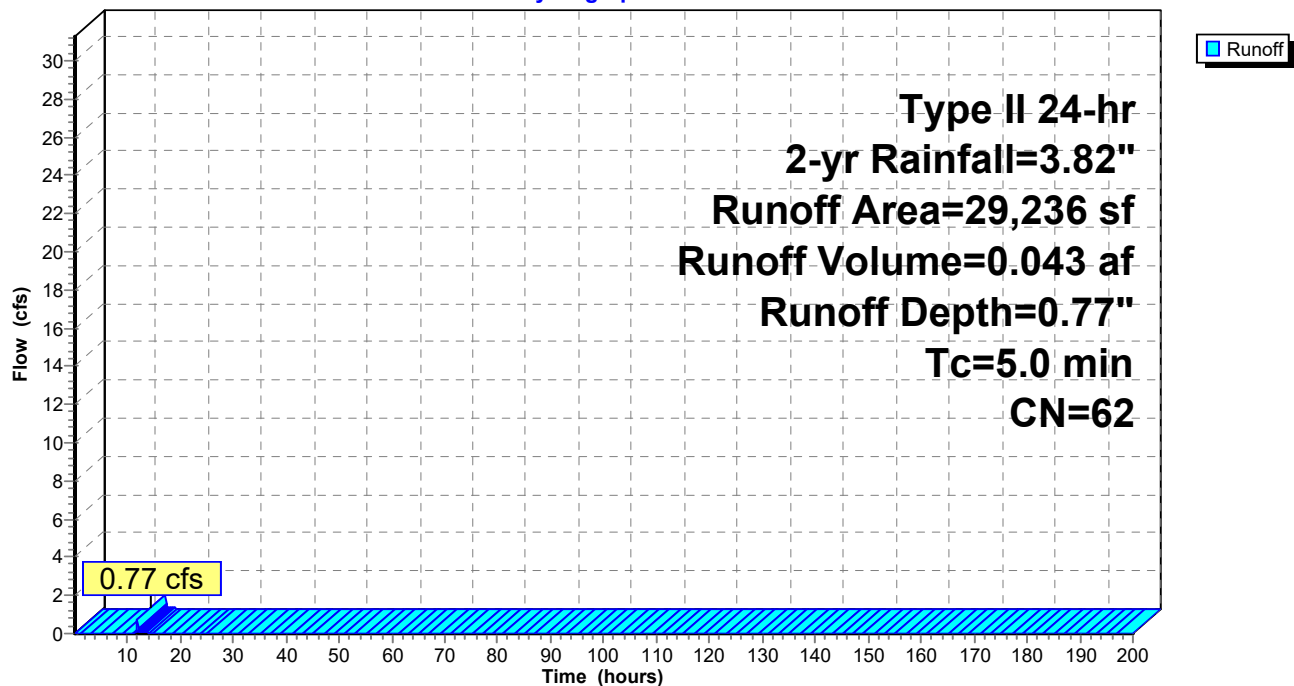
Type II 24-hr 2-yr Rainfall=3.82"

Area (sf)	CN	Description
6,194	60	Woods, Fair, HSG B
19,589	56	Brush, Fair, HSG B
3,453	98	Paved parking, HSG B
29,236	62	Weighted Average
25,783		88.19% Pervious Area
3,453		11.81% Impervious Area

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

Subcatchment 36S: Post Dev. Basin 4

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Subcatchment 37S: Post Dev. Basin 5 to SCM

Runoff = 10.52 cfs @ 11.96 hrs, Volume= 0.561 af, Depth= 2.38"
Routed to Pond 39P : Sand Filter SCM 3

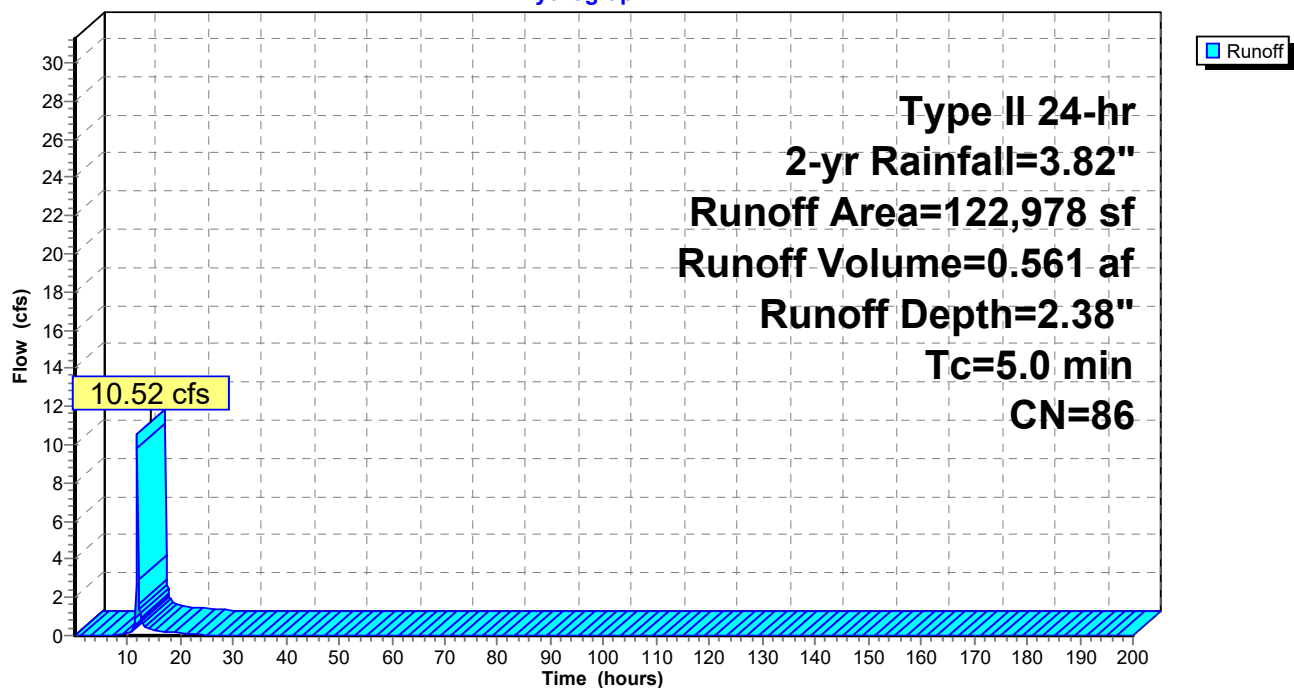
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 2-yr Rainfall=3.82"

Area (sf)	CN	Description
54,167	98	Paved parking, HSG B
39,855	98	Roofs, HSG B
28,956	48	Brush, Good, HSG B
122,978	86	Weighted Average
28,956		23.55% Pervious Area
94,022		76.45% Impervious Area

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

Subcatchment 37S: Post Dev. Basin 5 to SCM

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Subcatchment 38S: Post Dev. Bypass 5

Runoff = 2.45 cfs @ 12.09 hrs, Volume= 0.197 af, Depth= 0.63"
Routed to Link 40L : POA 4

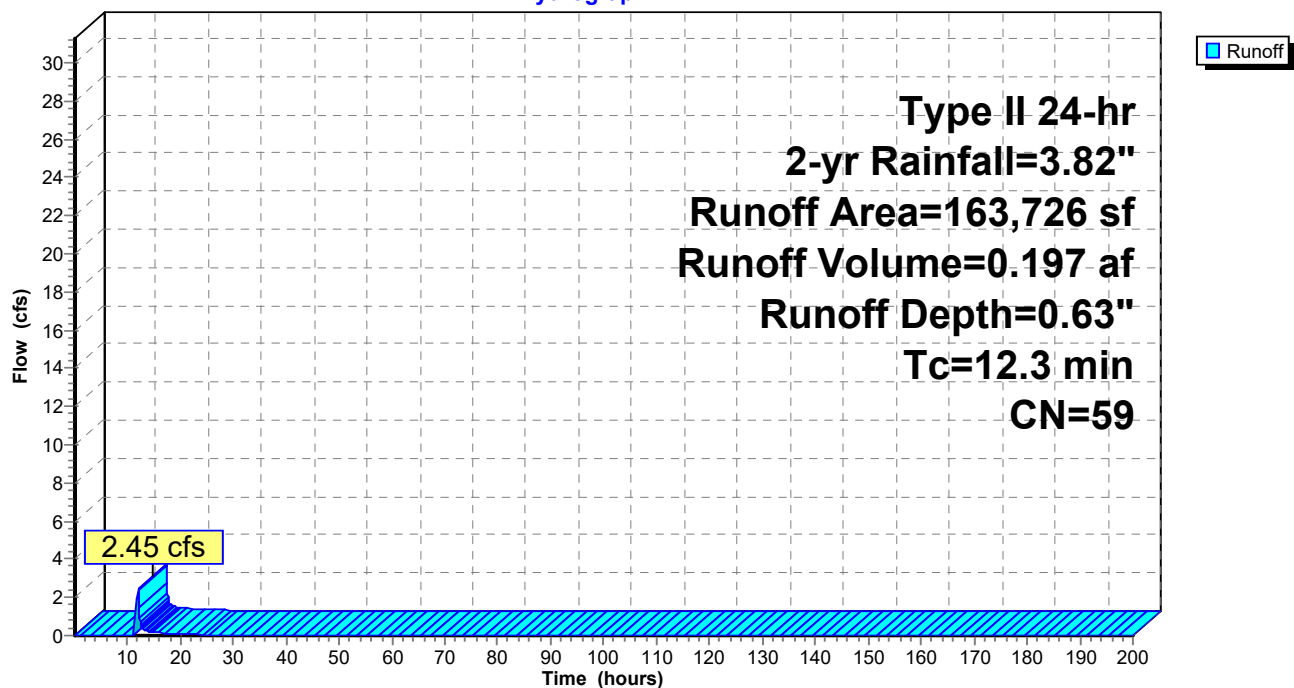
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 2-yr Rainfall=3.82"

Area (sf)	CN	Description
12,257	98	Paved parking, HSG B
54,926	48	Brush, Good, HSG B
96,543	60	Woods, Fair, HSG B
163,726	59	Weighted Average
151,469		92.51% Pervious Area
12,257		7.49% Impervious Area

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

Subcatchment 38S: Post Dev. Bypass 5

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Subcatchment 46S: Post Drainage Area 1

Runoff = 125.05 cfs @ 12.49 hrs, Volume= 18.066 af, Depth= 1.09"

Routed to Link 6L : Post Dev. POA at 110 Cedar Hill Dr

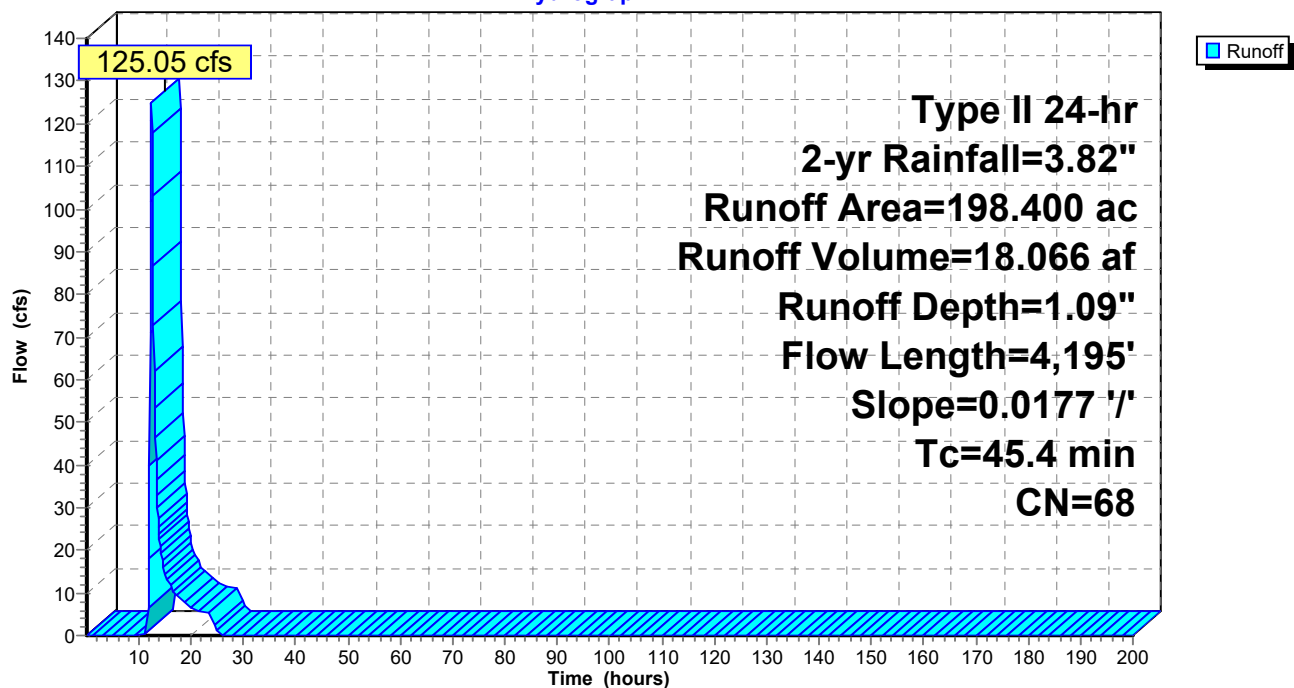
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 2-yr Rainfall=3.82"

Area (ac)	CN	Description
198.400	68	1 acre lots, 20% imp, HSG B
158.720		80.00% Pervious Area
39.680		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.4	4,195	0.0177	1.54		Kirpich Method, General overland flow k= 2.00

Subcatchment 46S: Post Drainage Area 1

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Reach 47R: Flowpath Downstream POA 4

Inflow Area = 7.253 ac, 34.73% Impervious, Inflow Depth = 1.33" for 2-yr event
Inflow = 2.92 cfs @ 12.05 hrs, Volume= 0.801 af
Outflow = 0.78 cfs @ 13.59 hrs, Volume= 0.801 af, Atten= 73%, Lag= 92.3 min
Routed to Link 6L : Post Dev. POA at 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 0.71 fps, Min. Travel Time= 64.4 min

Avg. Velocity= 0.22 fps, Avg. Travel Time= 209.5 min

Peak Storage= 3,021 cf @ 12.51 hrs

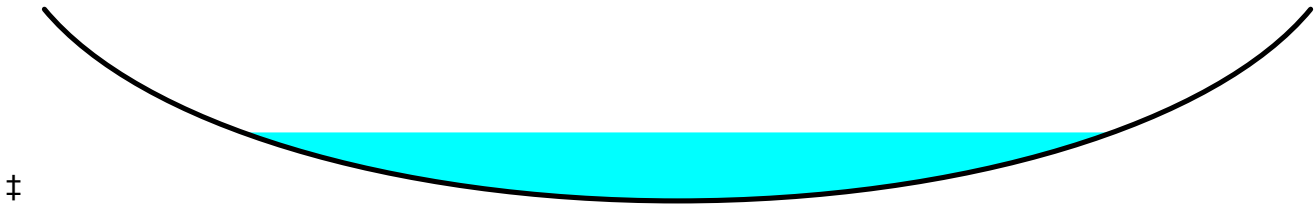
Average Depth at Peak Storage= 0.34' , Surface Width= 4.90'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 7.18 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

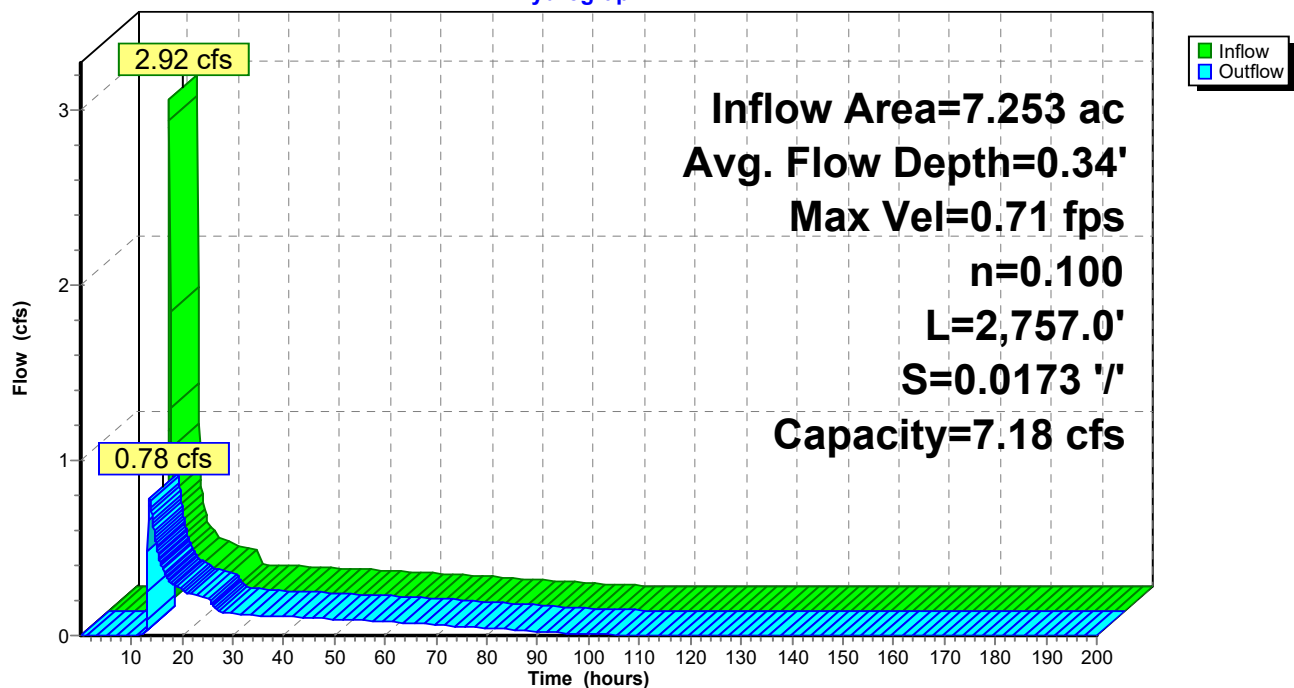
Length= 2,757.0' Slope= 0.0173 '/'

Inlet Invert= 529.84', Outlet Invert= 482.25'



Reach 47R: Flowpath Downstream POA 4

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Reach 50R: Flowpath Downstream POA 6

Inflow Area = 16.816 ac, 20.46% Impervious, Inflow Depth > 1.26" for 2-yr event
Inflow = 12.36 cfs @ 12.00 hrs, Volume= 1.765 af
Outflow = 5.16 cfs @ 12.53 hrs, Volume= 1.764 af, Atten= 58%, Lag= 31.3 min
Routed to Link 6L : Post Dev. POA at 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.21 fps, Min. Travel Time= 20.7 min

Avg. Velocity= 0.30 fps, Avg. Travel Time= 83.3 min

Peak Storage= 6,456 cf @ 12.16 hrs

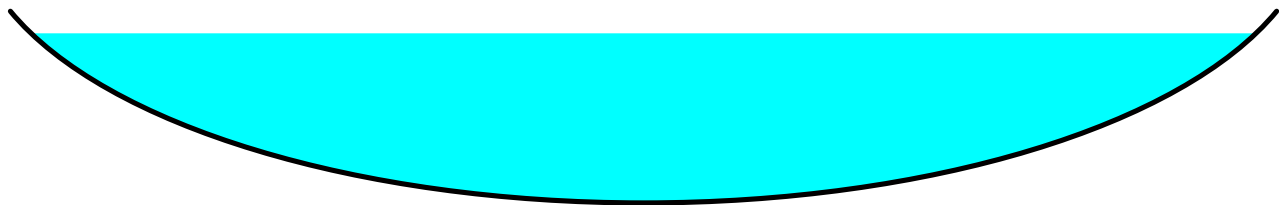
Average Depth at Peak Storage= 0.83' , Surface Width= 7.71'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

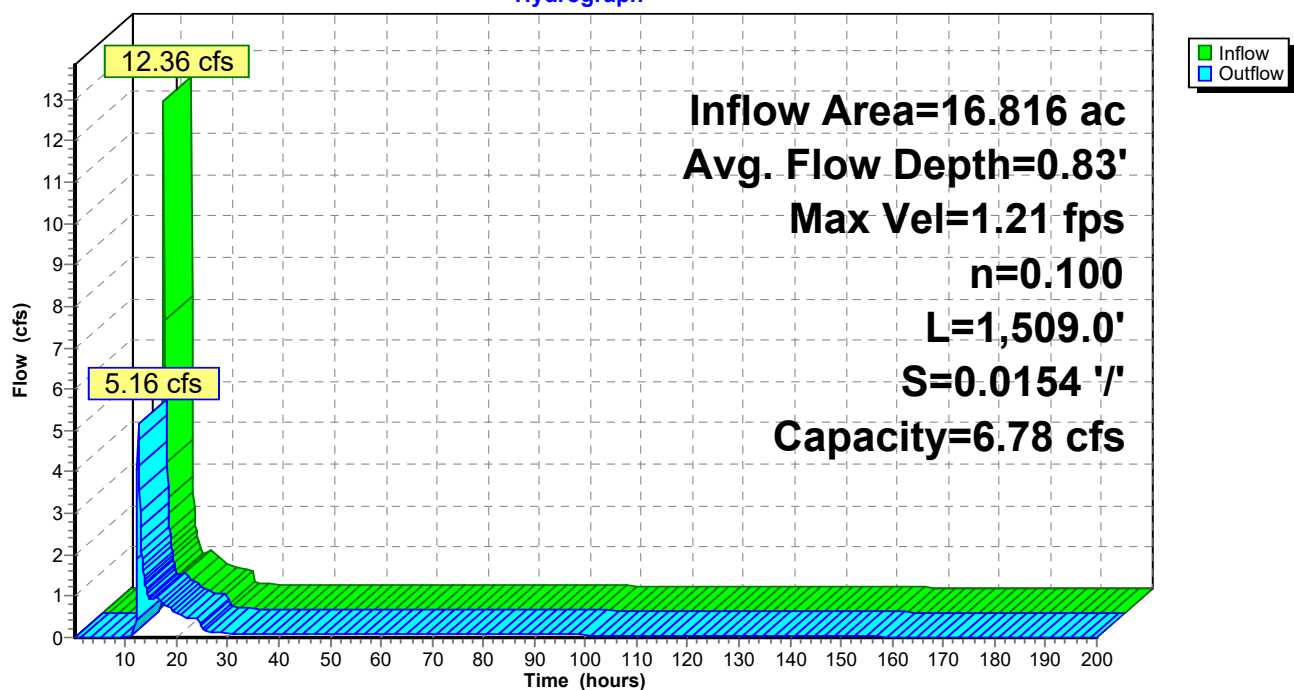
Length= 1,509.0' Slope= 0.0154 '/'

Inlet Invert= 505.43', Outlet Invert= 482.25'



Reach 50R: Flowpath Downstream POA 6

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Summary for Reach 51R: Flowpath Downstream POA 5

Inflow Area = 5.438 ac, 41.54% Impervious, Inflow Depth = 1.52" for 2-yr event
Inflow = 1.81 cfs @ 12.04 hrs, Volume= 0.687 af
Outflow = 0.89 cfs @ 12.55 hrs, Volume= 0.687 af, Atten= 51%, Lag= 30.7 min
Routed to Link 6L : Post Dev. POA at 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 0.87 fps, Min. Travel Time= 19.9 min

Avg. Velocity = 0.26 fps, Avg. Travel Time= 65.4 min

Peak Storage= 1,083 cf @ 12.22 hrs

Average Depth at Peak Storage= 0.33' , Surface Width= 4.82'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 8.94 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

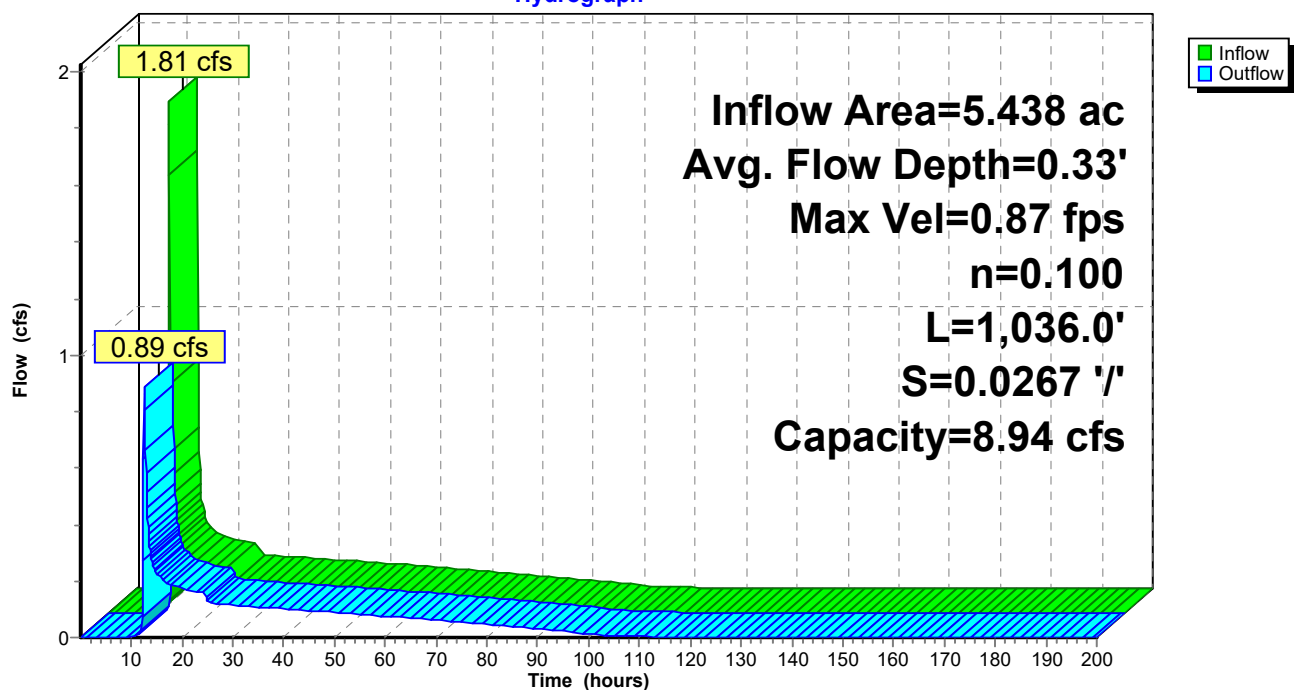
Length= 1,036.0' Slope= 0.0267 '/'

Inlet Invert= 509.93', Outlet Invert= 482.25'



Reach 51R: Flowpath Downstream POA 5

Hydrograph



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Summary for Pond 30P: Wet Pond SCM 4

Inflow Area = 4.254 ac, 75.67% Impervious, Inflow Depth = 2.85" for 2-yr event
Inflow = 18.23 cfs @ 11.95 hrs, Volume= 1.009 af
Outflow = 0.42 cfs @ 15.50 hrs, Volume= 1.004 af, Atten= 98%, Lag= 213.0 min
Primary = 0.42 cfs @ 15.50 hrs, Volume= 1.004 af
Routed to Link 32L : POA 5

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Starting Elev= 522.00' Surf.Area= 7,056 sf Storage= 6,623 cf

Peak Elev= 525.45' @ 15.50 hrs Surf.Area= 11,201 sf Storage= 40,349 cf (33,726 cf above start)

Plug-Flow detention time= 3,648.7 min calculated for 0.852 af (84% of inflow)

Center-of-Mass det. time= 3,062.1 min (3,854.1 - 791.9)

Volume	Invert	Avail.Storage	Storage Description
#1	521.00'	71,189 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
521.00	6,190	0	0
522.00	7,056	6,623	6,623
522.50	8,333	3,847	10,470
523.00	9,531	4,466	14,936
524.00	10,198	9,865	24,801
525.00	10,883	10,541	35,341
526.00	11,584	11,234	46,575
527.00	12,303	11,944	58,518
528.00	13,038	12,671	71,189

Device	Routing	Invert	Outlet Devices
#1	Primary	522.00'	36.0" Round Culvert L= 45.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 522.00' / 521.50' S= 0.0111 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf
#2	Device 1	522.00'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	525.40'	40.0" W x 4.0" H Vert. Peakflow Orifice X 2.00 C= 0.600 Limited to weir flow at low heads
#4	Device 1	526.90'	48.0" x 48.0" Horiz. Overflow C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.37 cfs @ 15.50 hrs HW=525.45' (Free Discharge)

1=Culvert (Passes 0.37 cfs of 46.88 cfs potential flow)
2=Drawdown (Orifice Controls 0.11 cfs @ 8.87 fps)
3=Peakflow Orifice (Orifice Controls 0.26 cfs @ 0.74 fps)
4=Overflow (Controls 0.00 cfs)

Downstream Analysis - ZCP

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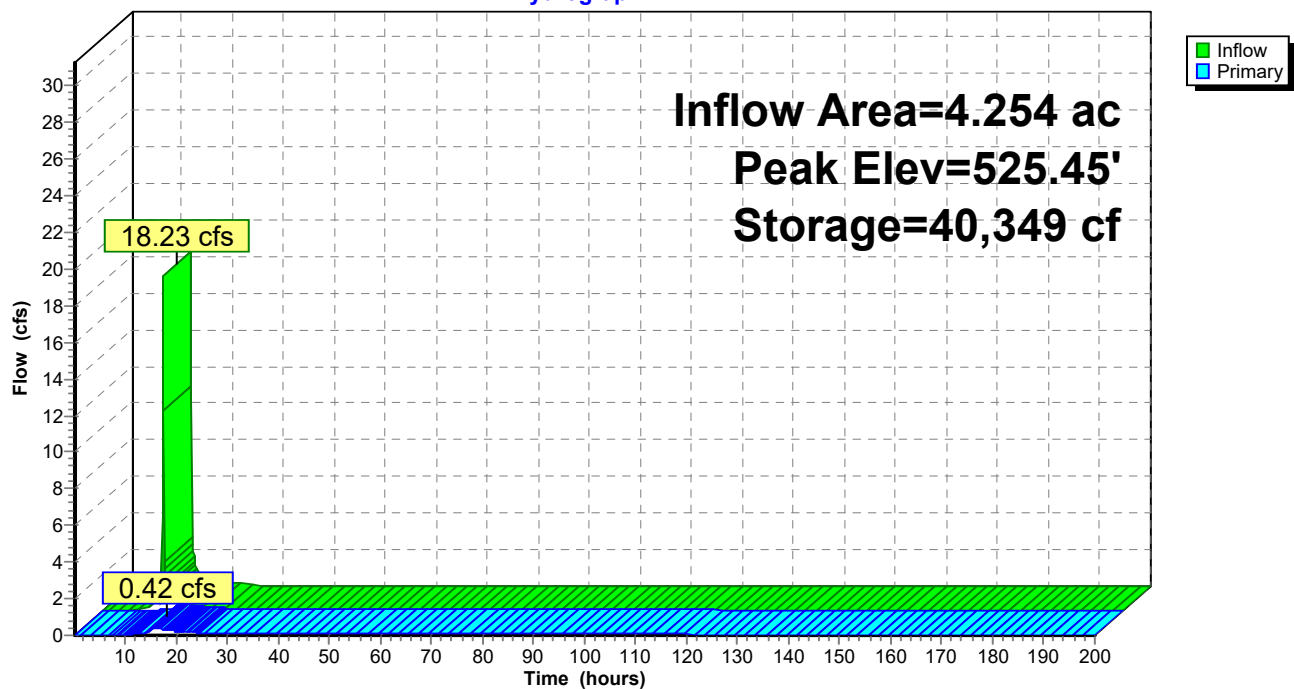
Type II 24-hr 2-yr Rainfall=3.82"

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Pond 30P: Wet Pond SCM 4

Hydrograph



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Summary for Pond 31P: Wet Pond SCM 5

Inflow Area = 3.454 ac, 57.98% Impervious, Inflow Depth = 1.97" for 2-yr event
Inflow = 10.86 cfs @ 11.96 hrs, Volume= 0.567 af
Outflow = 0.12 cfs @ 24.00 hrs, Volume= 0.567 af, Atten= 99%, Lag= 722.4 min
Primary = 0.12 cfs @ 24.00 hrs, Volume= 0.567 af
Routed to Link 33L : POA 6

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Starting Elev= 510.50' Surf.Area= 3,231 sf Storage= 1,401 cf

Peak Elev= 514.69' @ 24.00 hrs Surf.Area= 5,605 sf Storage= 20,849 cf (19,448 cf above start)

Plug-Flow detention time= 2,066.4 min calculated for 0.535 af (94% of inflow)

Center-of-Mass det. time= 1,916.9 min (2,743.8 - 826.9)

Volume	Invert	Avail.Storage	Storage Description
#1	510.00'	42,078 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
510.00	2,371	0	0
510.50	3,231	1,401	1,401
511.00	3,997	1,807	3,208
512.00	4,407	4,202	7,410
513.00	4,836	4,622	12,031
514.00	5,284	5,060	17,091
515.00	5,749	5,517	22,608
516.00	6,233	5,991	28,599
517.00	6,735	6,484	35,083
518.00	7,255	6,995	42,078

Device	Routing	Invert	Outlet Devices
#1	Primary	510.50'	36.0" Round Culvert L= 79.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 510.50' / 510.00' S= 0.0063 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Device 1	510.50'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	514.70'	34.0" W x 4.5" H Vert. Peakflow Orifice X 2.00 C= 0.600 Limited to weir flow at low heads
#4	Device 1	516.60'	48.0" x 48.0" Horiz. Overflow C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.12 cfs @ 24.00 hrs HW=514.69' (Free Discharge)

1=Culvert (Passes 0.12 cfs of 51.21 cfs potential flow)
2=Drawdown (Orifice Controls 0.12 cfs @ 9.78 fps)
3=Peakflow Orifice (Controls 0.00 cfs)
4=Overflow (Controls 0.00 cfs)

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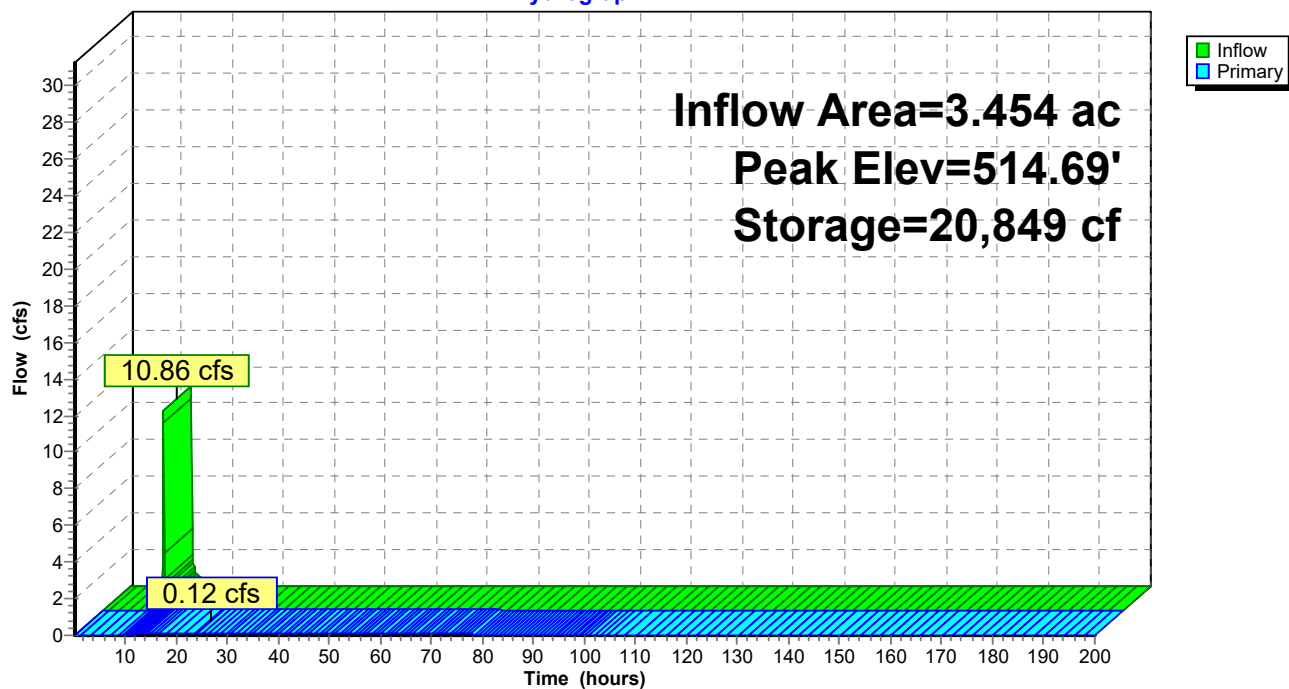
Type II 24-hr 2-yr Rainfall=3.82"

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Pond 31P: Wet Pond SCM 5

Hydrograph



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Summary for Pond 39P: Sand Filter SCM 3

Inflow Area = 2.823 ac, 76.45% Impervious, Inflow Depth = 2.38" for 2-yr event
Inflow = 10.52 cfs @ 11.96 hrs, Volume= 0.561 af
Outflow = 0.13 cfs @ 19.94 hrs, Volume= 0.561 af, Atten= 99%, Lag= 478.8 min
Primary = 0.13 cfs @ 19.94 hrs, Volume= 0.561 af
Routed to Link 40L : POA 4

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Peak Elev= 534.70' @ 19.94 hrs Surf.Area= 4,515 sf Storage= 18,813 cf

Plug-Flow detention time= 1,757.2 min calculated for 0.561 af (100% of inflow)
Center-of-Mass det. time= 1,756.3 min (2,567.4 - 811.1)

Volume	Invert	Avail.Storage	Storage Description
#1	530.00'	16,905 cf	Sediment/Sand Chamber (Prismatic) Listed below (Recalc) x 23
#2	530.00'	16,800 cf	Storage (Prismatic) Listed below (Recalc) x 20
		33,705 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
530.00	105	0.0	0	0
532.00	105	50.0	105	105
538.00	105	100.0	630	735

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
530.00	105	0	0
538.00	105	840	840

Device	Routing	Invert	Outlet Devices
#1	Primary	530.00'	36.0" Round Culvert L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 530.00' / 529.00' S= 0.0200 ' / Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf
#2	Device 1	530.00'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	534.70'	34.0" W x 5.0" H Vert. Main Orifice C= 0.600 Limited to weir flow at low heads
#4	Device 1	537.20'	25.0' long Overflow 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.13 cfs @ 19.94 hrs HW=534.70' (Free Discharge)

- 1=Culvert (Passes 0.13 cfs of 60.90 cfs potential flow)
- 2=Drawdown (Orifice Controls 0.13 cfs @ 10.37 fps)
- 3=Main Orifice (Orifice Controls 0.00 cfs @ 0.13 fps)
- 4=Overflow (Controls 0.00 cfs)

Downstream Analysis - ZCP

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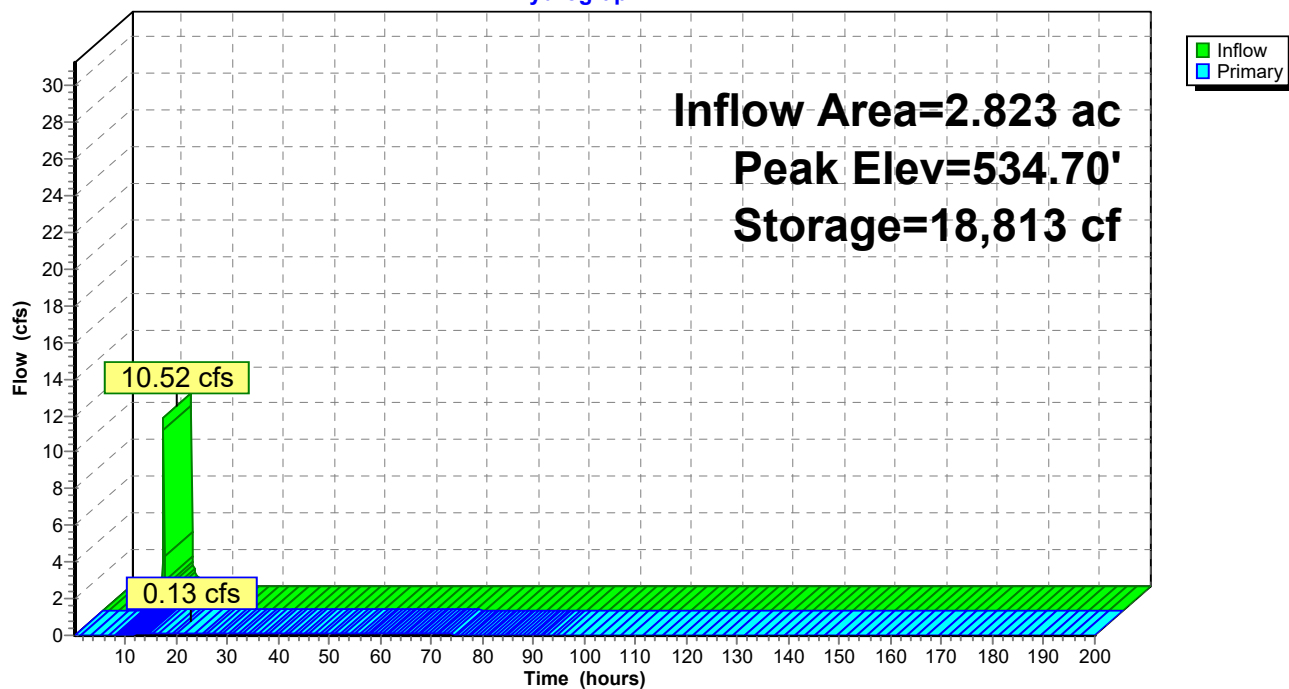
Type II 24-hr 2-yr Rainfall=3.82"

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Pond 39P: Sand Filter SCM 3

Hydrograph



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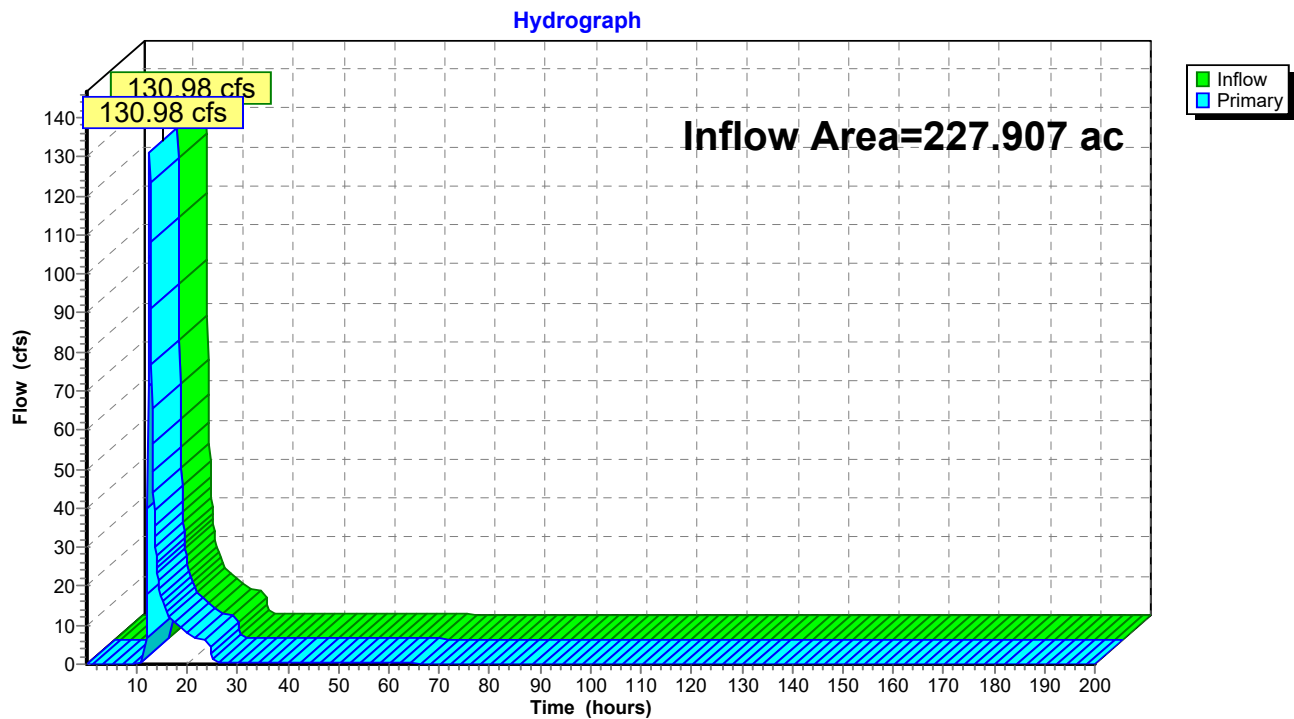
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Summary for Link 6L: Post Dev. POA at 110 Cedar Hill Dr

Inflow Area = 227.907 ac, 21.02% Impervious, Inflow Depth = 1.12" for 2-yr event
Inflow = 130.98 cfs @ 12.49 hrs, Volume= 21.318 af
Primary = 130.98 cfs @ 12.49 hrs, Volume= 21.318 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 6L: Post Dev. POA at 110 Cedar Hill Dr



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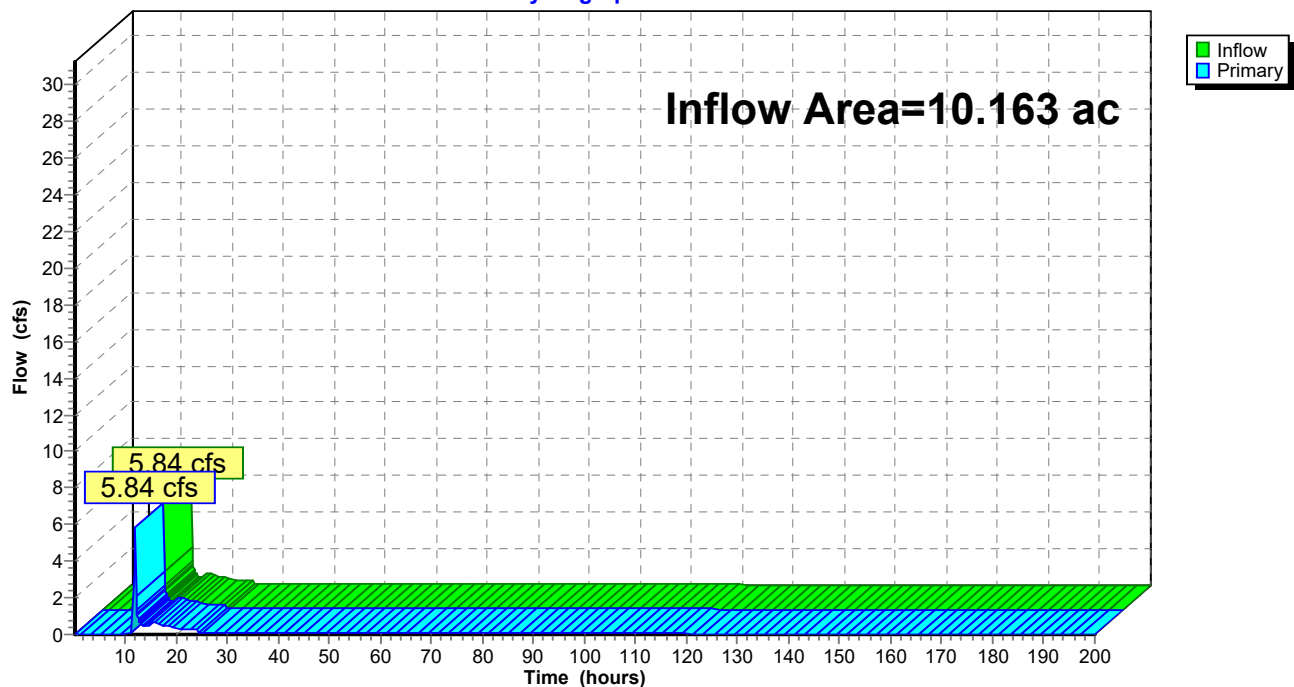
Summary for Link 32L: POA 5

Inflow Area = 10.163 ac, 32.64% Impervious, Inflow Depth > 1.58" for 2-yr event
Inflow = 5.84 cfs @ 11.99 hrs, Volume= 1.337 af
Primary = 5.84 cfs @ 11.99 hrs, Volume= 1.337 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 50R : Flowpath Downstream POA 6

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 32L: POA 5

Hydrograph



Downstream Analysis - ZCP

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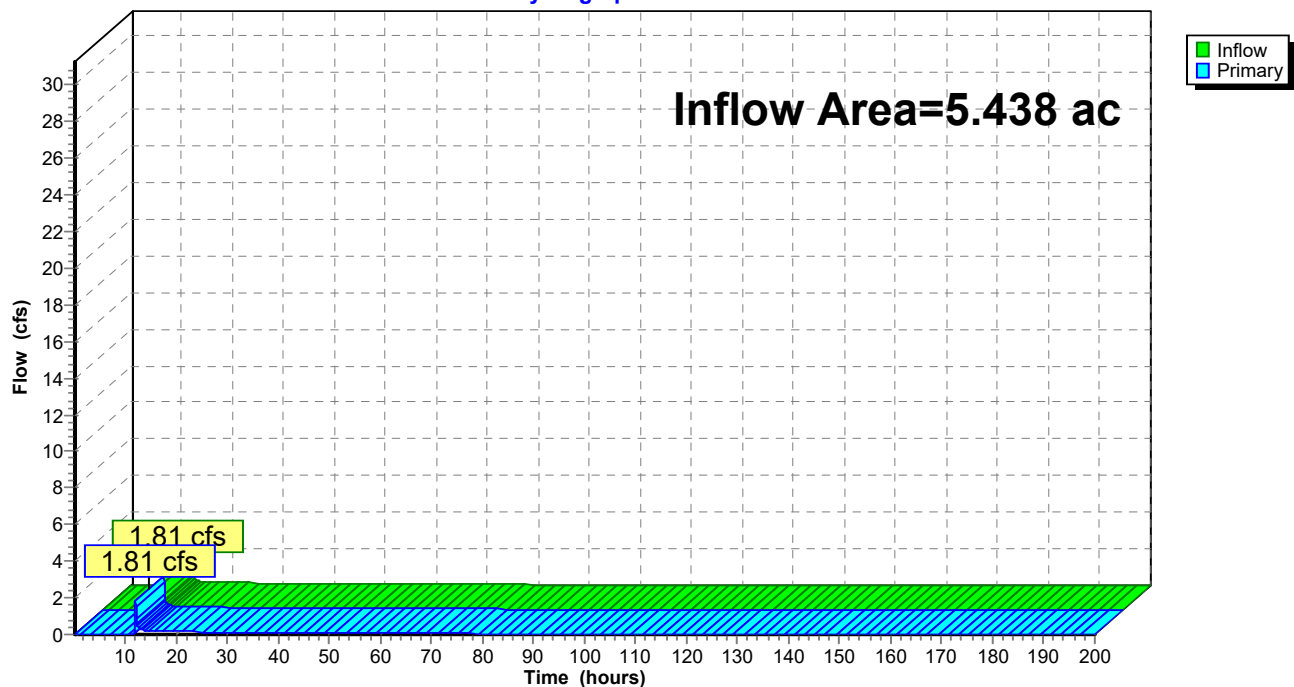
Summary for Link 33L: POA 6

Inflow Area = 5.438 ac, 41.54% Impervious, Inflow Depth = 1.52" for 2-yr event
Inflow = 1.81 cfs @ 12.04 hrs, Volume= 0.687 af
Primary = 1.81 cfs @ 12.04 hrs, Volume= 0.687 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 51R : Flowpath Downstream POA 5

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 33L: POA 6

Hydrograph



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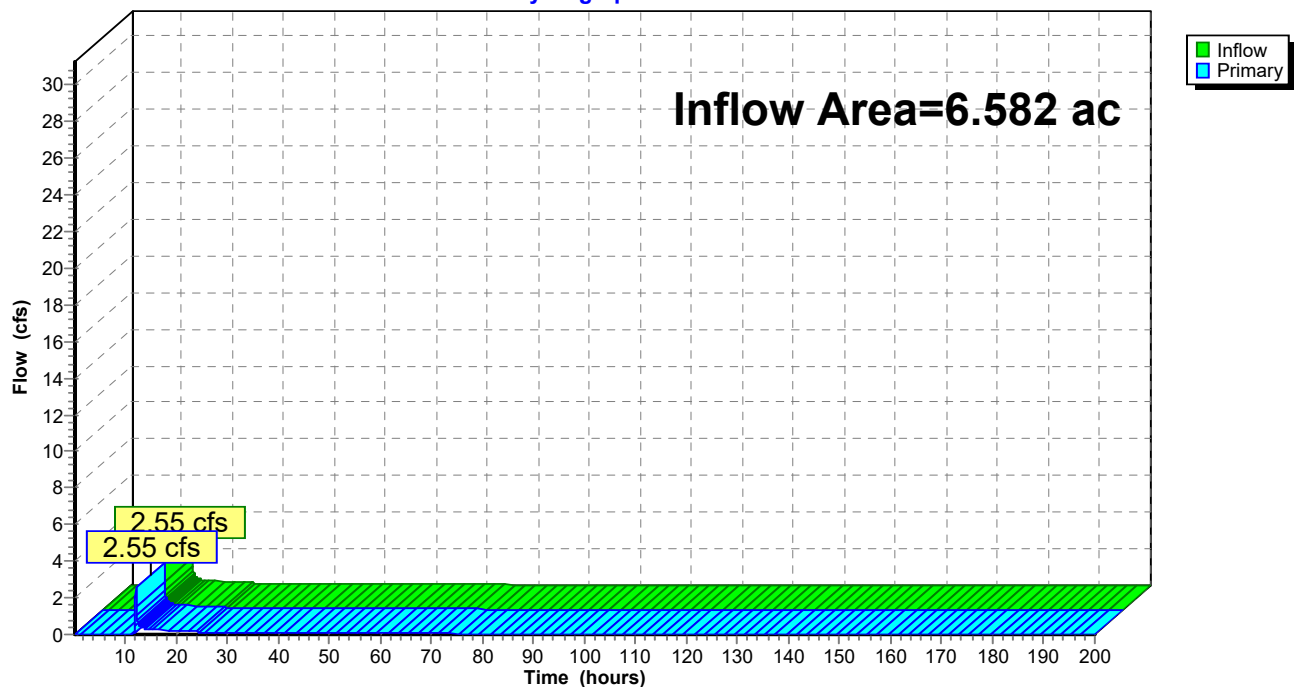
Summary for Link 40L: POA 4

Inflow Area = 6.582 ac, 37.07% Impervious, Inflow Depth = 1.38" for 2-yr event
Inflow = 2.55 cfs @ 12.09 hrs, Volume= 0.758 af
Primary = 2.55 cfs @ 12.09 hrs, Volume= 0.758 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 47R : Flowpath Downstream POA 4

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 40L: POA 4

Hydrograph



Downstream Analysis - ZCP

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Type II 24-hr 25-yr Rainfall=6.54"

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment15S: Post Dev. Basin 6 to Runoff Area=185,285 sf 75.67% Impervious Runoff Depth=5.49"
Tc=5.0 min CN=91 Runoff=32.86 cfs 1.945 af

Subcatchment16S: Post Dev. Bypass 6 Runoff Area=257,427 sf 1.66% Impervious Runoff Depth=2.28"
Tc=5.0 min CN=60 Runoff=21.62 cfs 1.124 af

Subcatchment18S: Post Dev. Basin 7 to Runoff Area=150,448 sf 57.98% Impervious Runoff Depth=4.38"
Tc=5.0 min CN=81 Runoff=23.36 cfs 1.260 af

Subcatchment19S: Post Dev. Bypass 7 Runoff Area=86,411 sf 12.93% Impervious Runoff Depth=2.38"
Tc=10.0 min CN=61 Runoff=6.70 cfs 0.393 af

Subcatchment29S: Post Dev. Bypass 8 Runoff Area=289,814 sf 1.87% Impervious Runoff Depth=2.47"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=24.46 cfs 1.368 af

Subcatchment36S: Post Dev. Basin 4 Runoff Area=29,236 sf 11.81% Impervious Runoff Depth=2.47"
Tc=5.0 min CN=62 Runoff=2.66 cfs 0.138 af

Subcatchment37S: Post Dev. Basin 5 to Runoff Area=122,978 sf 76.45% Impervious Runoff Depth=4.92"
Tc=5.0 min CN=86 Runoff=20.88 cfs 1.159 af

Subcatchment38S: Post Dev. Bypass 5 Runoff Area=163,726 sf 7.49% Impervious Runoff Depth=2.19"
Tc=12.3 min CN=59 Runoff=10.40 cfs 0.687 af

Subcatchment46S: Post Drainage Area 1 Runoff Area=198.400 ac 20.00% Impervious Runoff Depth=3.04"
Flow Length=4,195' Slope=0.0177 '/' Tc=45.4 min CN=68 Runoff=386.50 cfs 50.294 af

Reach 47R: Flowpath Downstream Avg. Flow Depth=1.00' Max Vel=1.45 fps Inflow=17.76 cfs 1.983 af
n=0.100 L=2,757.0' S=0.0173 '/' Capacity=7.18 cfs Outflow=8.15 cfs 1.983 af

Reach 50R: Flowpath Downstream Avg. Flow Depth=2.48' Max Vel=1.72 fps Inflow=53.42 cfs 4.433 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=29.31 cfs 4.432 af

Reach 51R: Flowpath Downstream Avg. Flow Depth=1.06' Max Vel=1.86 fps Inflow=14.55 cfs 1.653 af
n=0.100 L=1,036.0' S=0.0267 '/' Capacity=8.94 cfs Outflow=10.84 cfs 1.653 af

Pond 30P: Wet Pond SCM 4 Peak Elev=526.48' Storage=52,233 cf Inflow=32.86 cfs 1.945 af
Outflow=10.36 cfs 1.940 af

Pond 31P: Wet Pond SCM 5 Peak Elev=515.68' Storage=26,654 cf Inflow=23.36 cfs 1.260 af
Outflow=9.26 cfs 1.260 af

Pond 39P: Sand Filter SCM 3 Peak Elev=536.16' Storage=25,386 cf Inflow=20.88 cfs 1.159 af
Outflow=6.51 cfs 1.159 af

Link 6L: Post Dev. POA at 110 Cedar Hill Dr Inflow=426.69 cfs 58.363 af
Primary=426.69 cfs 58.363 af

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Type II 24-hr 25-yr Rainfall=6.54"

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Link 32L: POA 5

Inflow=28.99 cfs 3.065 af

Primary=28.99 cfs 3.065 af

Link 33L: POA 6

Inflow=14.55 cfs 1.653 af

Primary=14.55 cfs 1.653 af

Link 40L: POA 4

Inflow=16.49 cfs 1.845 af

Primary=16.49 cfs 1.845 af

Total Runoff Area = 227.907 ac Runoff Volume = 58.368 af Average Runoff Depth = 3.07"

78.98% Pervious = 180.008 ac 21.02% Impervious = 47.899 ac

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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 15S: Post Dev. Basin 6 to SCM

Runoff = 32.86 cfs @ 11.95 hrs, Volume= 1.945 af, Depth= 5.49"
Routed to Pond 30P : Wet Pond SCM 4

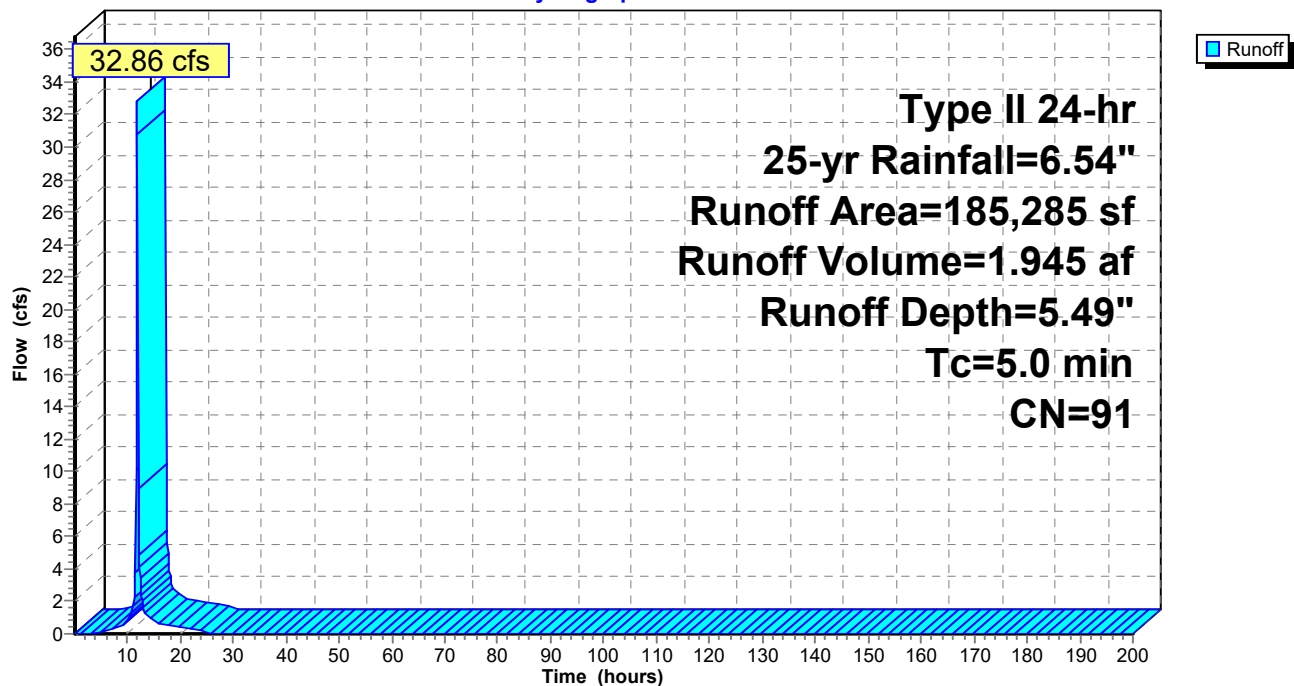
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
76,830	98	Paved parking, HSG B
63,382	98	Roofs, HSG B
30,858	56	Brush, Fair, HSG B
14,215	98	Water Surface, 0% imp, HSG B
185,285	91	Weighted Average
45,073		24.33% Pervious Area
140,212		75.67% Impervious Area

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

Subcatchment 15S: Post Dev. Basin 6 to SCM

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 16S: Post Dev. Bypass 6

Runoff = 21.62 cfs @ 11.97 hrs, Volume= 1.124 af, Depth= 2.28"
Routed to Link 32L : POA 5

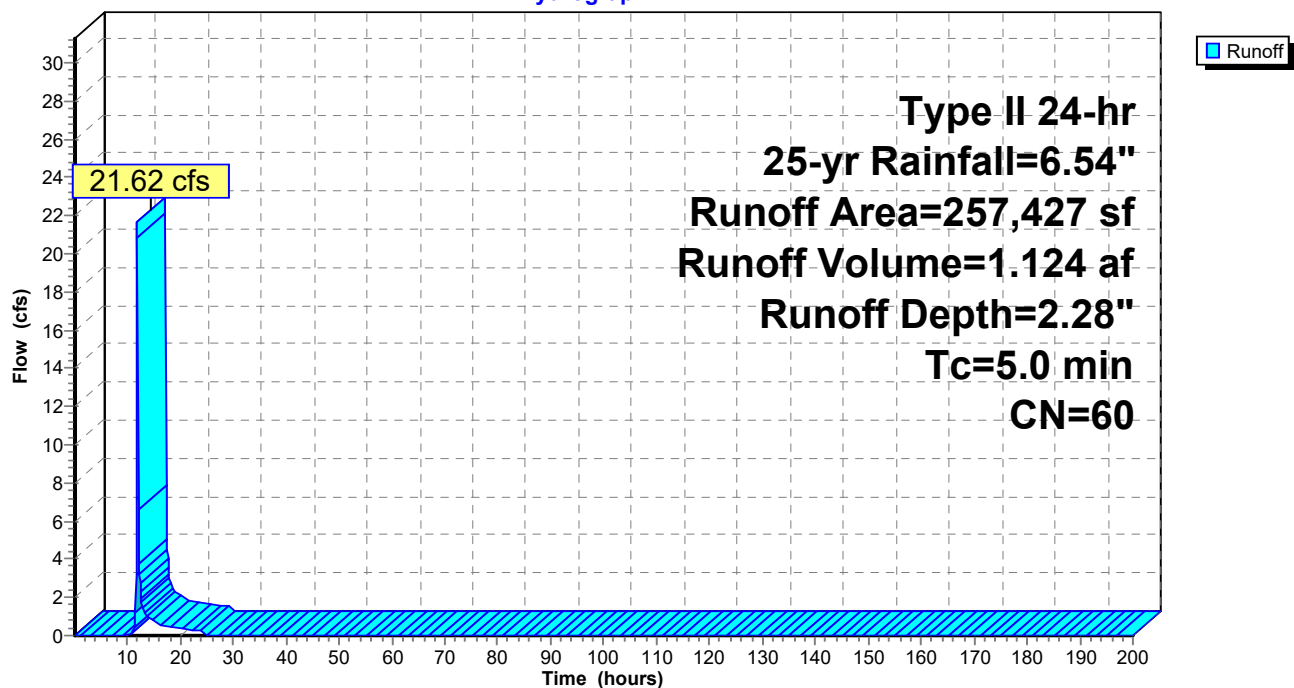
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
4,268	98	Paved parking, HSG B
51,015	56	Brush, Fair, HSG B
202,144	60	Woods, Fair, HSG B
257,427	60	Weighted Average
253,159		98.34% Pervious Area
4,268		1.66% Impervious Area

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

Subcatchment 16S: Post Dev. Bypass 6

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 18S: Post Dev. Basin 7 to SCM

Runoff = 23.36 cfs @ 11.95 hrs, Volume= 1.260 af, Depth= 4.38"
Routed to Pond 31P : Wet Pond SCM 5

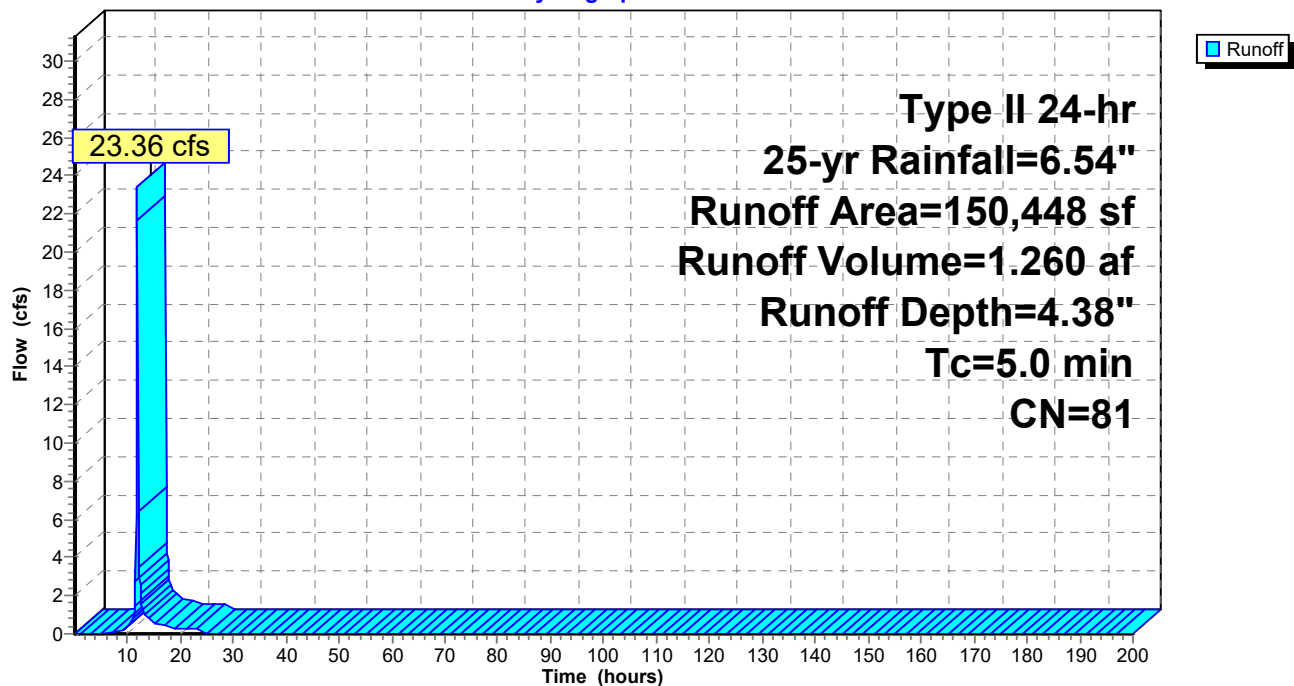
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
53,515	98	Paved parking, HSG B
33,715	98	Roofs, HSG B
59,637	56	Brush, Fair, HSG B
3,581	98	Water Surface, 0% imp, HSG B
150,448	81	Weighted Average
63,218		42.02% Pervious Area
87,230		57.98% Impervious Area

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

Subcatchment 18S: Post Dev. Basin 7 to SCM

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 19S: Post Dev. Bypass 7

Runoff = 6.70 cfs @ 12.02 hrs, Volume= 0.393 af, Depth= 2.38"
Routed to Link 33L : POA 6

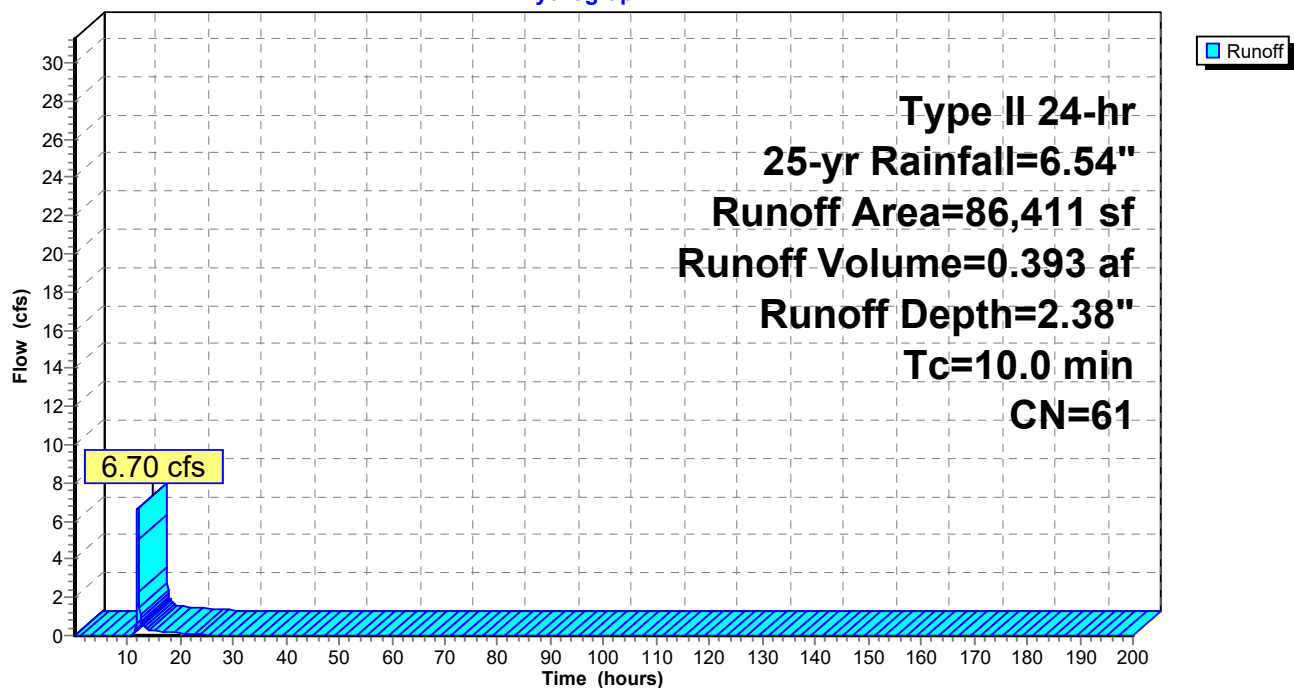
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
11,171	98	Paved parking, HSG B
35,296	56	Brush, Fair, HSG B
39,944	55	Woods, Good, HSG B
86,411	61	Weighted Average
75,240		87.07% Pervious Area
11,171		12.93% Impervious Area

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

Subcatchment 19S: Post Dev. Bypass 7

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 29S: Post Dev. Bypass 8

Runoff = 24.46 cfs @ 12.01 hrs, Volume= 1.368 af, Depth= 2.47"

Routed to Reach 50R : Flowpath Downstream POA 6

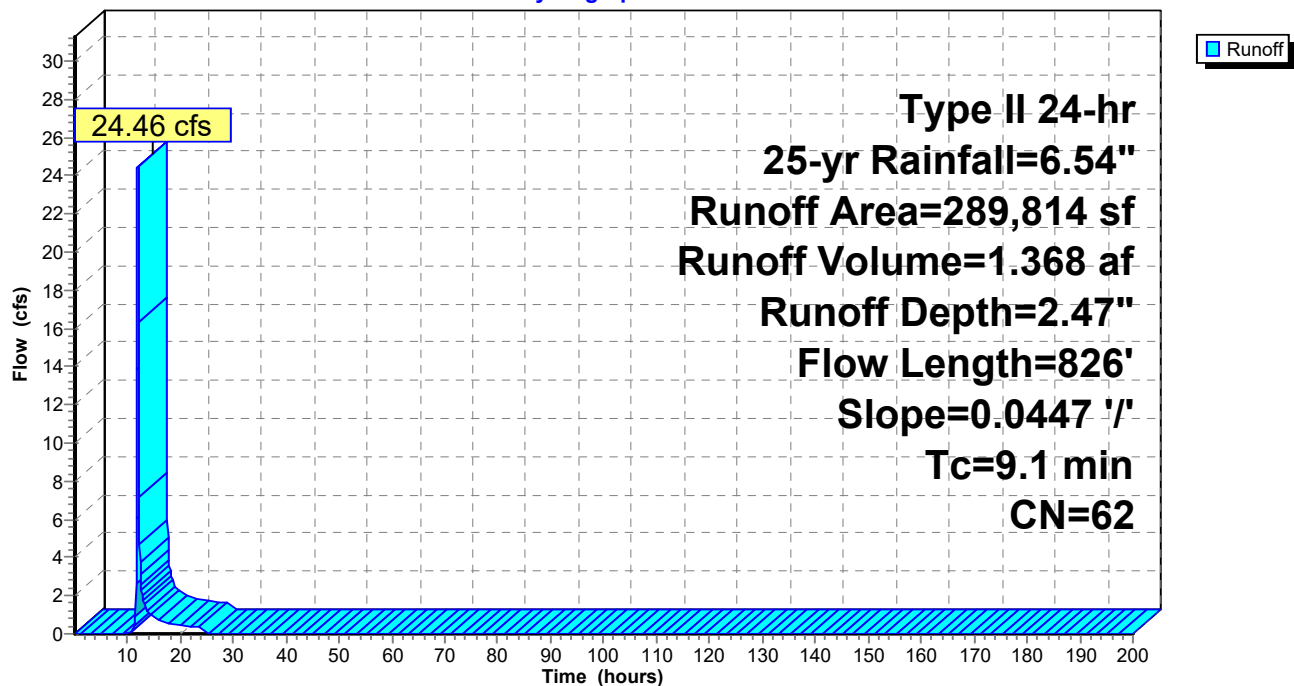
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
53,439	69	50-75% Grass cover, Fair, HSG B
5,416	98	Paved parking, HSG B
289,814	62	Weighted Average
284,398		98.13% Pervious Area
5,416		1.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 29S: Post Dev. Bypass 8

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 36S: Post Dev. Basin 4

Runoff = 2.66 cfs @ 11.97 hrs, Volume= 0.138 af, Depth= 2.47"

Routed to Reach 47R : Flowpath Downstream POA 4

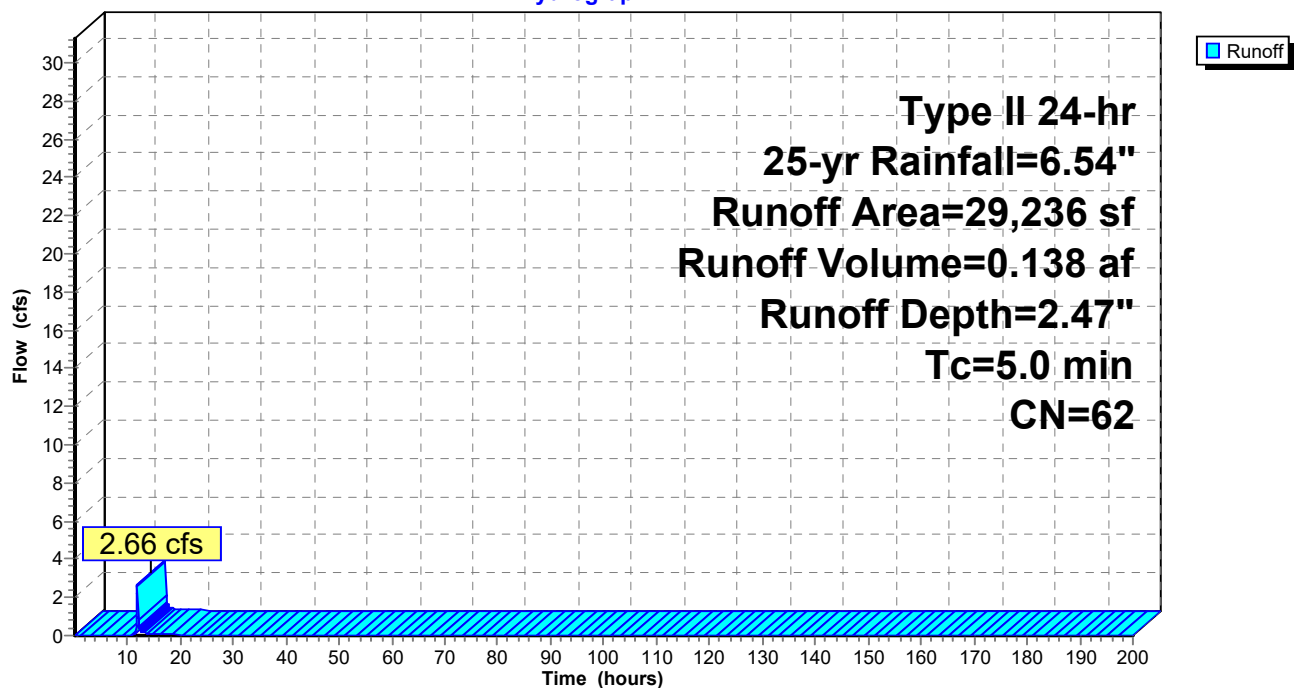
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
6,194	60	Woods, Fair, HSG B
19,589	56	Brush, Fair, HSG B
3,453	98	Paved parking, HSG B
29,236	62	Weighted Average
25,783		88.19% Pervious Area
3,453		11.81% Impervious Area

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

Subcatchment 36S: Post Dev. Basin 4

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 37S: Post Dev. Basin 5 to SCM

Runoff = 20.88 cfs @ 11.95 hrs, Volume= 1.159 af, Depth= 4.92"
Routed to Pond 39P : Sand Filter SCM 3

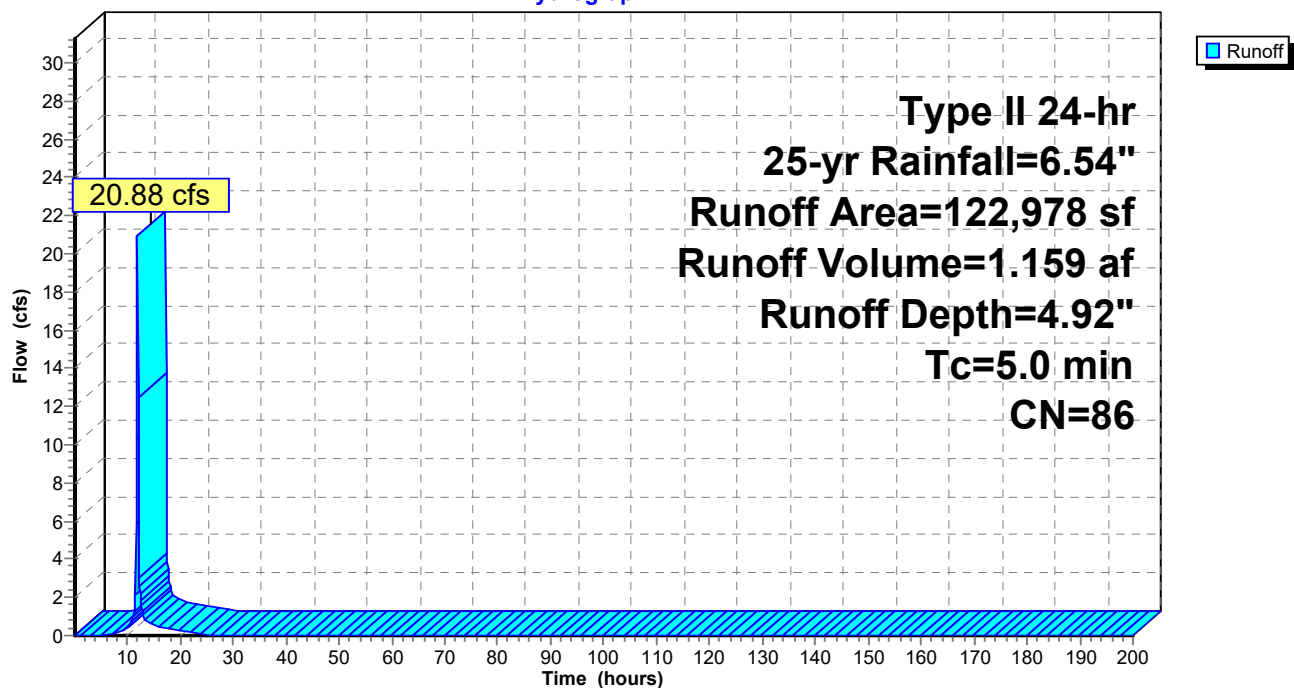
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
54,167	98	Paved parking, HSG B
39,855	98	Roofs, HSG B
28,956	48	Brush, Good, HSG B
122,978	86	Weighted Average
28,956		23.55% Pervious Area
94,022		76.45% Impervious Area

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

Subcatchment 37S: Post Dev. Basin 5 to SCM

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 38S: Post Dev. Bypass 5

Runoff = 10.40 cfs @ 12.05 hrs, Volume= 0.687 af, Depth= 2.19"
Routed to Link 40L : POA 4

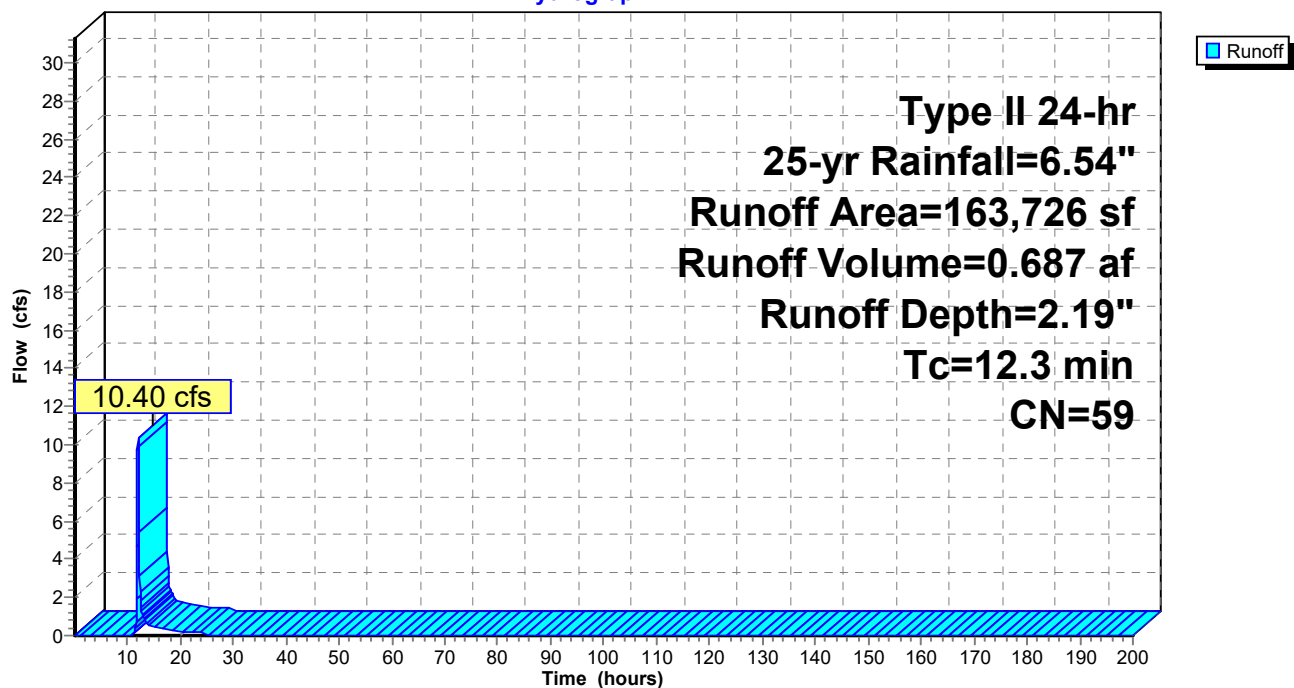
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
12,257	98	Paved parking, HSG B
54,926	48	Brush, Good, HSG B
96,543	60	Woods, Fair, HSG B
163,726	59	Weighted Average
151,469		92.51% Pervious Area
12,257		7.49% Impervious Area

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

Subcatchment 38S: Post Dev. Bypass 5

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 46S: Post Drainage Area 1

Runoff = 386.50 cfs @ 12.45 hrs, Volume= 50.294 af, Depth= 3.04"

Routed to Link 6L : Post Dev. POA at 110 Cedar Hill Dr

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

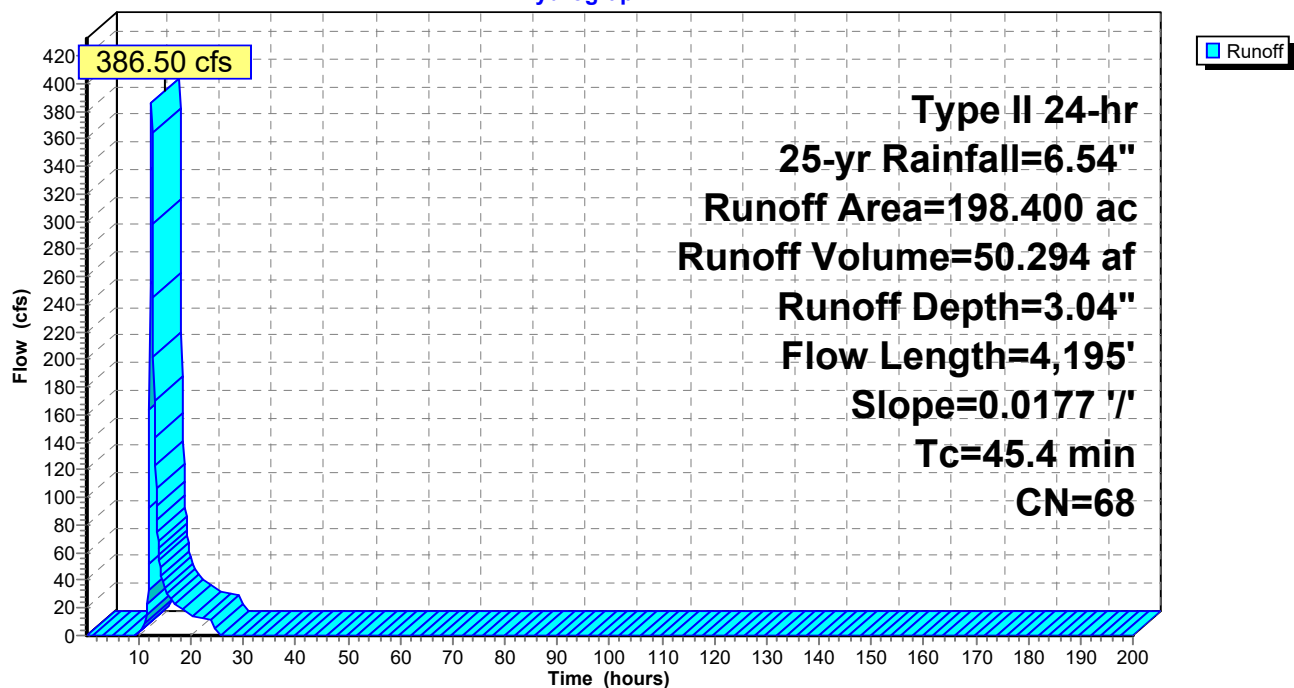
Type II 24-hr 25-yr Rainfall=6.54"

Area (ac)	CN	Description
198.400	68	1 acre lots, 20% imp, HSG B
158.720		80.00% Pervious Area
39.680		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.4	4,195	0.0177	1.54		Kirpich Method, General overland flow k= 2.00

Subcatchment 46S: Post Drainage Area 1

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Reach 47R: Flowpath Downstream POA 4

Inflow Area = 7.253 ac, 34.73% Impervious, Inflow Depth = 3.28" for 25-yr event
Inflow = 17.76 cfs @ 12.05 hrs, Volume= 1.983 af
Outflow = 8.15 cfs @ 12.89 hrs, Volume= 1.983 af, Atten= 54%, Lag= 50.4 min
Routed to Link 6L : Post Dev. POA at 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.45 fps, Min. Travel Time= 31.7 min

Avg. Velocity= 0.24 fps, Avg. Travel Time= 192.5 min

Peak Storage= 15,618 cf @ 12.35 hrs

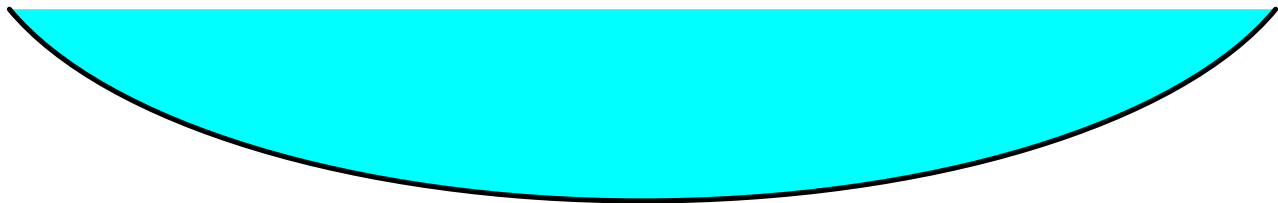
Average Depth at Peak Storage= 1.00' , Surface Width= 8.48'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 7.18 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

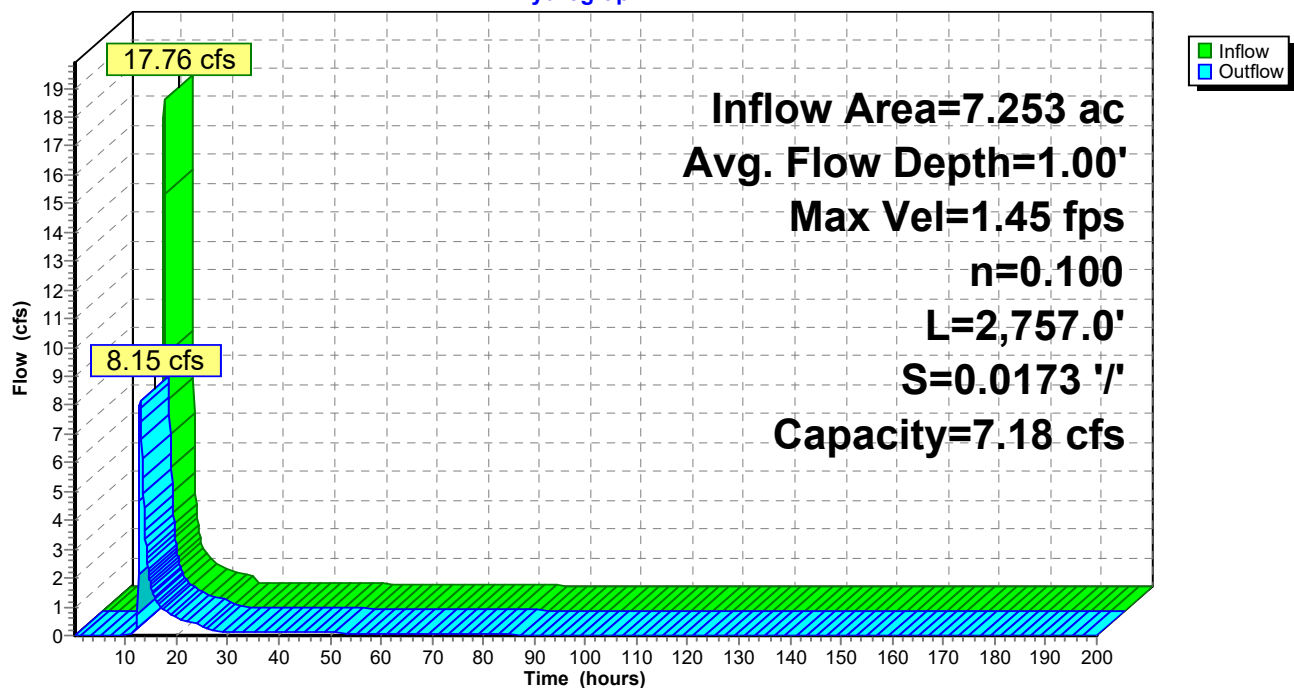
Length= 2,757.0' Slope= 0.0173 '/'

Inlet Invert= 529.84', Outlet Invert= 482.25'



Reach 47R: Flowpath Downstream POA 4

Hydrograph



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Summary for Reach 50R: Flowpath Downstream POA 6

Inflow Area = 16.816 ac, 20.46% Impervious, Inflow Depth = 3.16" for 25-yr event
Inflow = 53.42 cfs @ 12.00 hrs, Volume= 4.433 af
Outflow = 29.31 cfs @ 12.40 hrs, Volume= 4.432 af, Atten= 45%, Lag= 24.0 min
Routed to Link 6L : Post Dev. POA at 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.72 fps, Min. Travel Time= 14.7 min

Avg. Velocity = 0.32 fps, Avg. Travel Time= 78.5 min

Peak Storage= 26,822 cf @ 12.14 hrs

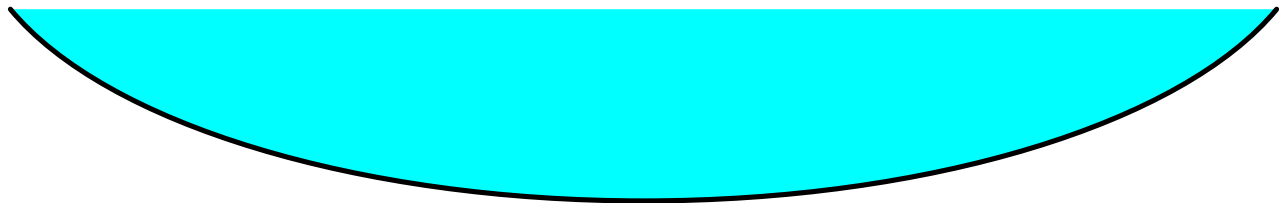
Average Depth at Peak Storage= 2.48' , Surface Width= 13.33'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

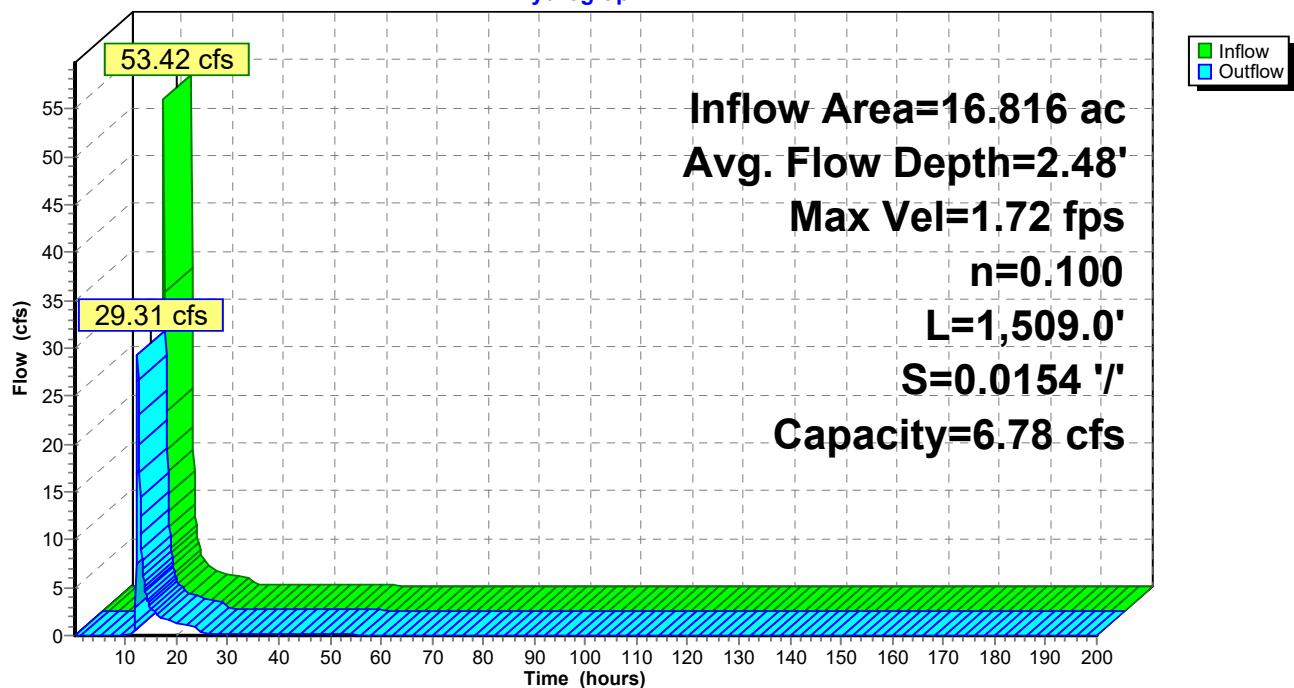
Length= 1,509.0' Slope= 0.0154 '/'

Inlet Invert= 505.43', Outlet Invert= 482.25'



Reach 50R: Flowpath Downstream POA 6

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Summary for Reach 51R: Flowpath Downstream POA 5

Inflow Area = 5.438 ac, 41.54% Impervious, Inflow Depth = 3.65" for 25-yr event
Inflow = 14.55 cfs @ 12.07 hrs, Volume= 1.653 af
Outflow = 10.84 cfs @ 12.36 hrs, Volume= 1.653 af, Atten= 26%, Lag= 17.3 min
Routed to Link 6L : Post Dev. POA at 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.86 fps, Min. Travel Time= 9.3 min

Avg. Velocity= 0.29 fps, Avg. Travel Time= 60.4 min

Peak Storage= 6,321 cf @ 12.20 hrs

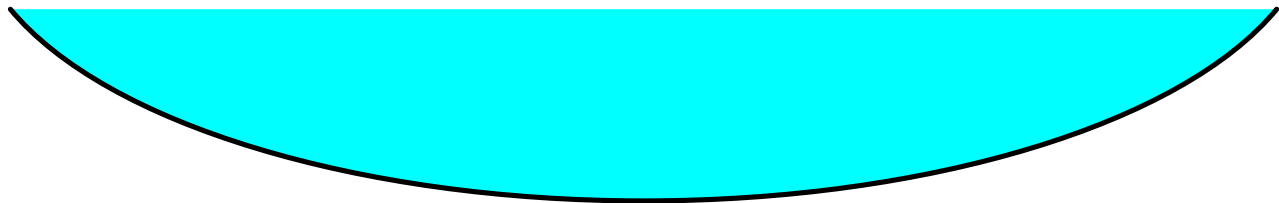
Average Depth at Peak Storage= 1.06' , Surface Width= 8.70'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 8.94 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

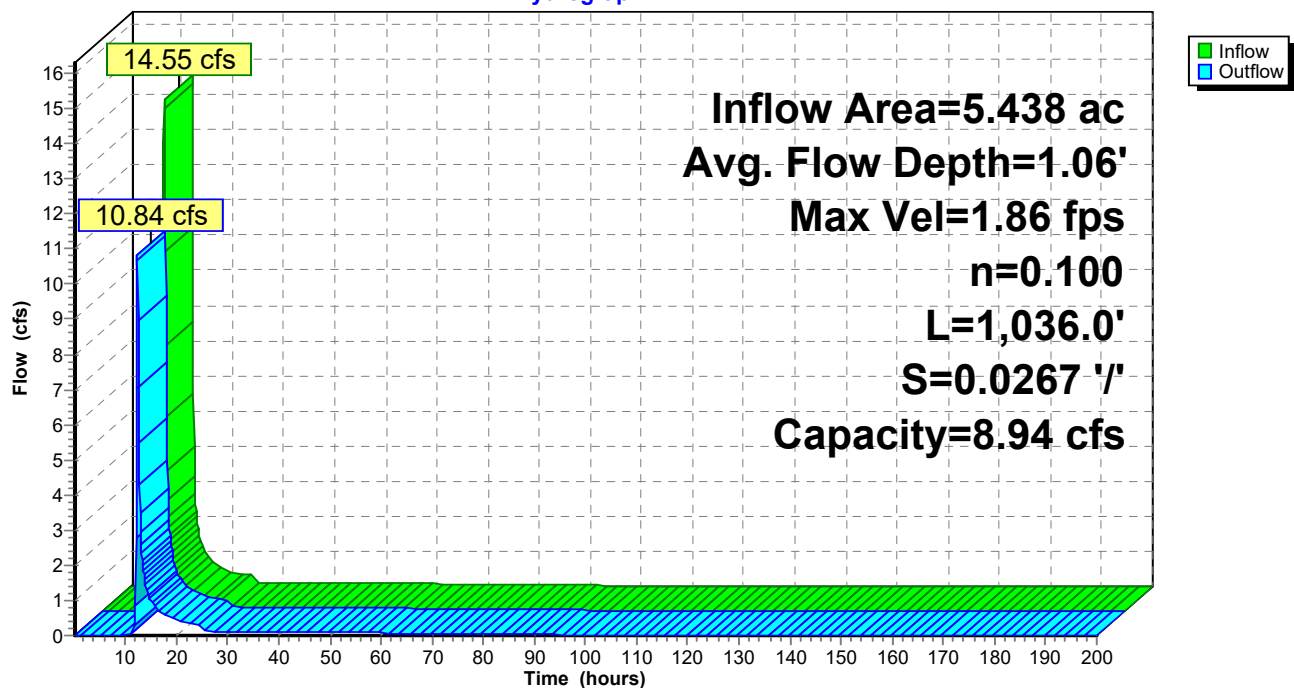
Length= 1,036.0' Slope= 0.0267 '/'

Inlet Invert= 509.93', Outlet Invert= 482.25'



Reach 51R: Flowpath Downstream POA 5

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Pond 30P: Wet Pond SCM 4

Inflow Area = 4.254 ac, 75.67% Impervious, Inflow Depth = 5.49" for 25-yr event
Inflow = 32.86 cfs @ 11.95 hrs, Volume= 1.945 af
Outflow = 10.36 cfs @ 12.13 hrs, Volume= 1.940 af, Atten= 68%, Lag= 11.0 min
Primary = 10.36 cfs @ 12.13 hrs, Volume= 1.940 af
Routed to Link 32L : POA 5

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Starting Elev= 522.00' Surf.Area= 7,056 sf Storage= 6,623 cf

Peak Elev= 526.48' @ 12.13 hrs Surf.Area= 11,930 sf Storage= 52,233 cf (45,610 cf above start)

Plug-Flow detention time= 1,812.3 min calculated for 1.788 af (92% of inflow)

Center-of-Mass det. time= 1,624.1 min (2,398.1 - 774.1)

Volume	Invert	Avail.Storage	Storage Description
#1	521.00'	71,189 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
521.00	6,190	0	0
522.00	7,056	6,623	6,623
522.50	8,333	3,847	10,470
523.00	9,531	4,466	14,936
524.00	10,198	9,865	24,801
525.00	10,883	10,541	35,341
526.00	11,584	11,234	46,575
527.00	12,303	11,944	58,518
528.00	13,038	12,671	71,189

Device	Routing	Invert	Outlet Devices
#1	Primary	522.00'	36.0" Round Culvert L= 45.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 522.00' / 521.50' S= 0.0111 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf
#2	Device 1	522.00'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	525.40'	40.0" W x 4.0" H Vert. Peakflow Orifice X 2.00 C= 0.600 Limited to weir flow at low heads
#4	Device 1	526.90'	48.0" x 48.0" Horiz. Overflow C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=10.10 cfs @ 12.13 hrs HW=526.44' (Free Discharge)

1=Culvert (Passes 10.10 cfs of 58.34 cfs potential flow)
2=Drawdown (Orifice Controls 0.12 cfs @ 10.07 fps)
3=Peakflow Orifice (Orifice Controls 9.97 cfs @ 4.49 fps)
4=Overflow (Controls 0.00 cfs)

Downstream Analysis - ZCP

Prepared by Thomas & Hutton

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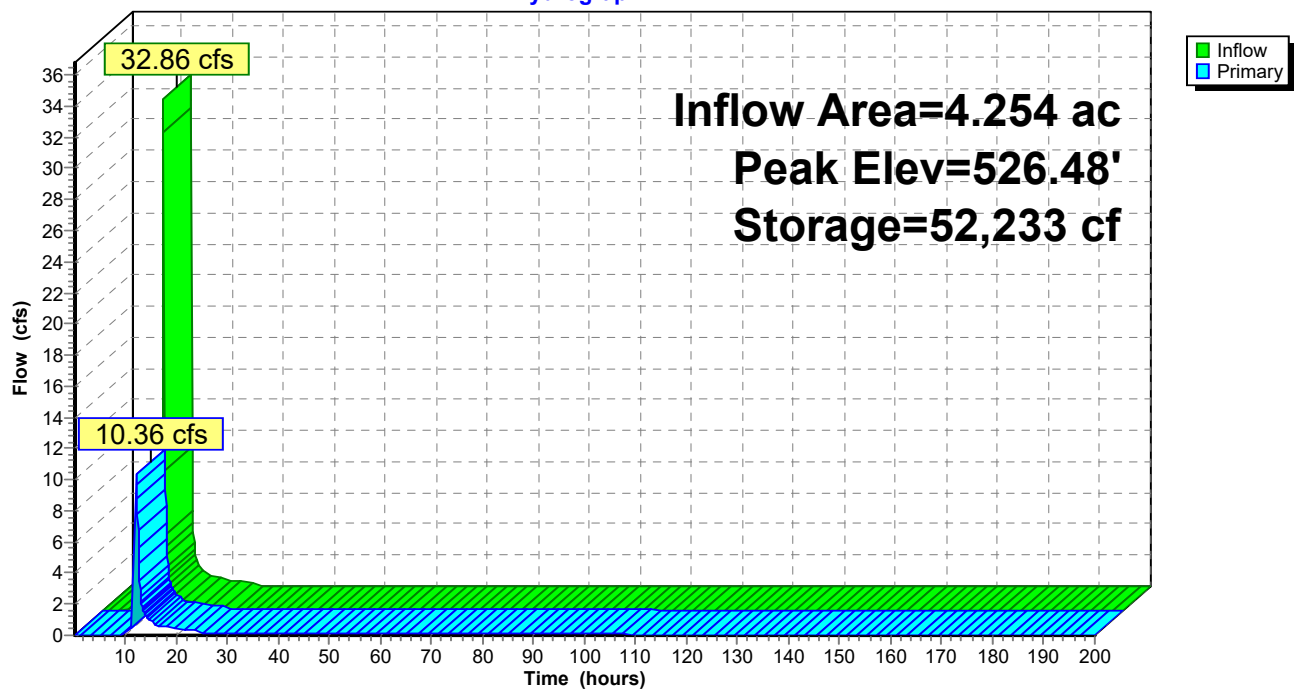
Type II 24-hr 25-yr Rainfall=6.54"

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Pond 30P: Wet Pond SCM 4

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Pond 31P: Wet Pond SCM 5

Inflow Area = 3.454 ac, 57.98% Impervious, Inflow Depth = 4.38" for 25-yr event
Inflow = 23.36 cfs @ 11.95 hrs, Volume= 1.260 af
Outflow = 9.26 cfs @ 12.11 hrs, Volume= 1.260 af, Atten= 60%, Lag= 9.7 min
Primary = 9.26 cfs @ 12.11 hrs, Volume= 1.260 af
Routed to Link 33L : POA 6

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Starting Elev= 510.50' Surf.Area= 3,231 sf Storage= 1,401 cf
Peak Elev= 515.68' @ 12.11 hrs Surf.Area= 6,080 sf Storage= 26,654 cf (25,254 cf above start)

Plug-Flow detention time= 950.7 min calculated for 1.228 af (97% of inflow)
Center-of-Mass det. time= 907.2 min (1,711.4 - 804.2)

Volume	Invert	Avail.Storage	Storage Description
#1	510.00'	42,078 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
510.00	2,371	0	0
510.50	3,231	1,401	1,401
511.00	3,997	1,807	3,208
512.00	4,407	4,202	7,410
513.00	4,836	4,622	12,031
514.00	5,284	5,060	17,091
515.00	5,749	5,517	22,608
516.00	6,233	5,991	28,599
517.00	6,735	6,484	35,083
518.00	7,255	6,995	42,078

Device	Routing	Invert	Outlet Devices
#1	Primary	510.50'	36.0" Round Culvert L= 79.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 510.50' / 510.00' S= 0.0063 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Device 1	510.50'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	514.70'	34.0" W x 4.5" H Vert. Peakflow Orifice X 2.00 C= 0.600 Limited to weir flow at low heads
#4	Device 1	516.60'	48.0" x 48.0" Horiz. Overflow C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=9.03 cfs @ 12.11 hrs HW=515.65' (Free Discharge)

1=Culvert (Passes 9.03 cfs of 64.10 cfs potential flow)
2=Drawdown (Orifice Controls 0.13 cfs @ 10.86 fps)
3=Peakflow Orifice (Orifice Controls 8.90 cfs @ 4.19 fps)
4=Overflow (Controls 0.00 cfs)

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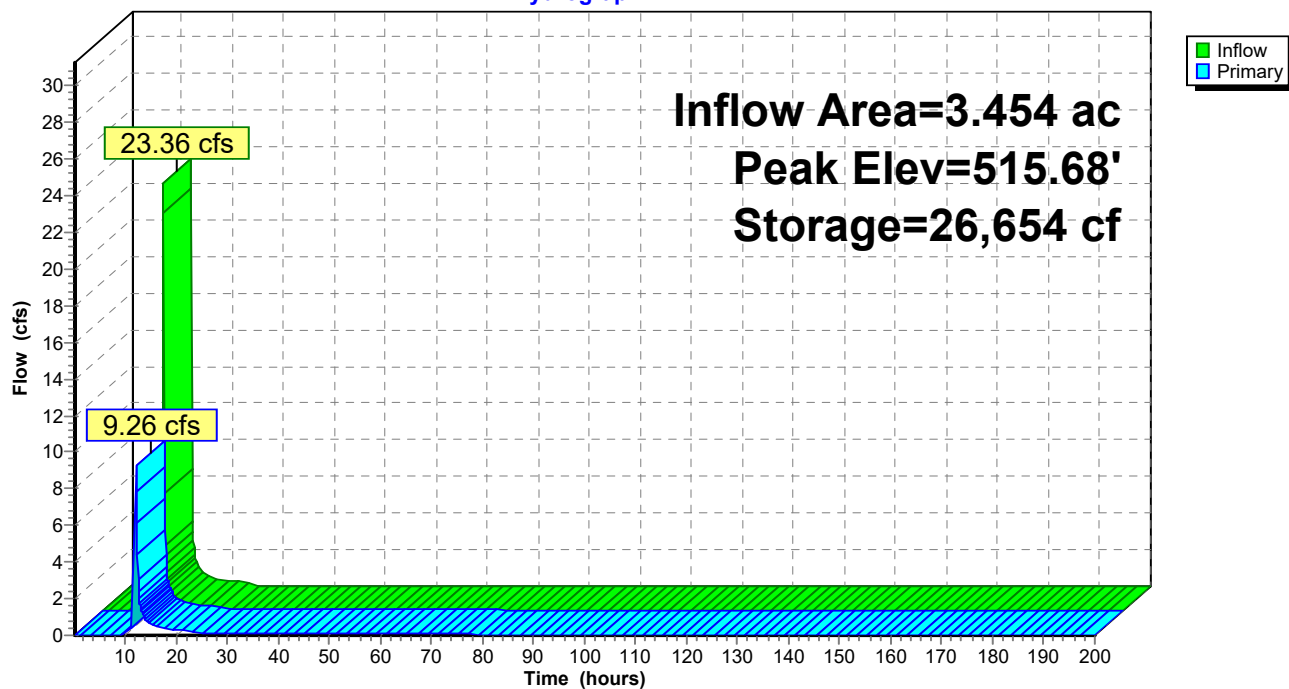
Type II 24-hr 25-yr Rainfall=6.54"

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Pond 31P: Wet Pond SCM 5

Hydrograph



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Summary for Pond 39P: Sand Filter SCM 3

Inflow Area = 2.823 ac, 76.45% Impervious, Inflow Depth = 4.92" for 25-yr event
Inflow = 20.88 cfs @ 11.95 hrs, Volume= 1.159 af
Outflow = 6.51 cfs @ 12.13 hrs, Volume= 1.159 af, Atten= 69%, Lag= 10.8 min
Primary = 6.51 cfs @ 12.13 hrs, Volume= 1.159 af
Routed to Link 40L : POA 4

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Peak Elev= 536.16' @ 12.13 hrs Surf.Area= 4,515 sf Storage= 25,386 cf

Plug-Flow detention time= 896.2 min calculated for 1.158 af (100% of inflow)
Center-of-Mass det. time= 898.9 min (1,689.4 - 790.5)

Volume	Invert	Avail.Storage	Storage Description
#1	530.00'	16,905 cf	Sediment/Sand Chamber (Prismatic) Listed below (Recalc) x 23
#2	530.00'	16,800 cf	Storage (Prismatic) Listed below (Recalc) x 20
		33,705 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
530.00	105	0.0	0	0
532.00	105	50.0	105	105
538.00	105	100.0	630	735

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
530.00	105	0	0
538.00	105	840	840

Device	Routing	Invert	Outlet Devices
#1	Primary	530.00'	36.0" Round Culvert L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 530.00' / 529.00' S= 0.0200'/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf
#2	Device 1	530.00'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	534.70'	34.0" W x 5.0" H Vert. Main Orifice C= 0.600 Limited to weir flow at low heads
#4	Device 1	537.20'	25.0' long Overflow 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=6.30 cfs @ 12.13 hrs HW=536.08' (Free Discharge)

- 1=Culvert (Passes 6.30 cfs of 72.87 cfs potential flow)
- 2=Drawdown (Orifice Controls 0.14 cfs @ 11.82 fps)
- 3=Main Orifice (Orifice Controls 6.16 cfs @ 5.21 fps)
- 4=Overflow (Controls 0.00 cfs)

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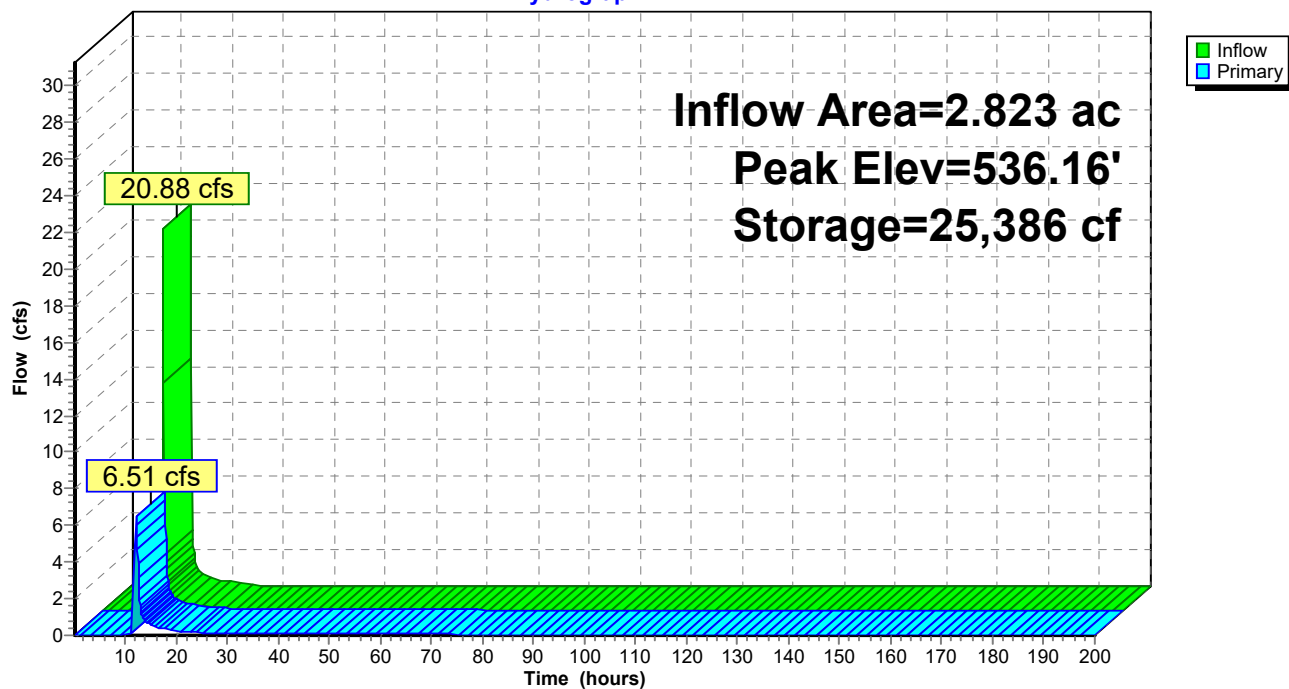
Type II 24-hr 25-yr Rainfall=6.54"

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Pond 39P: Sand Filter SCM 3

Hydrograph



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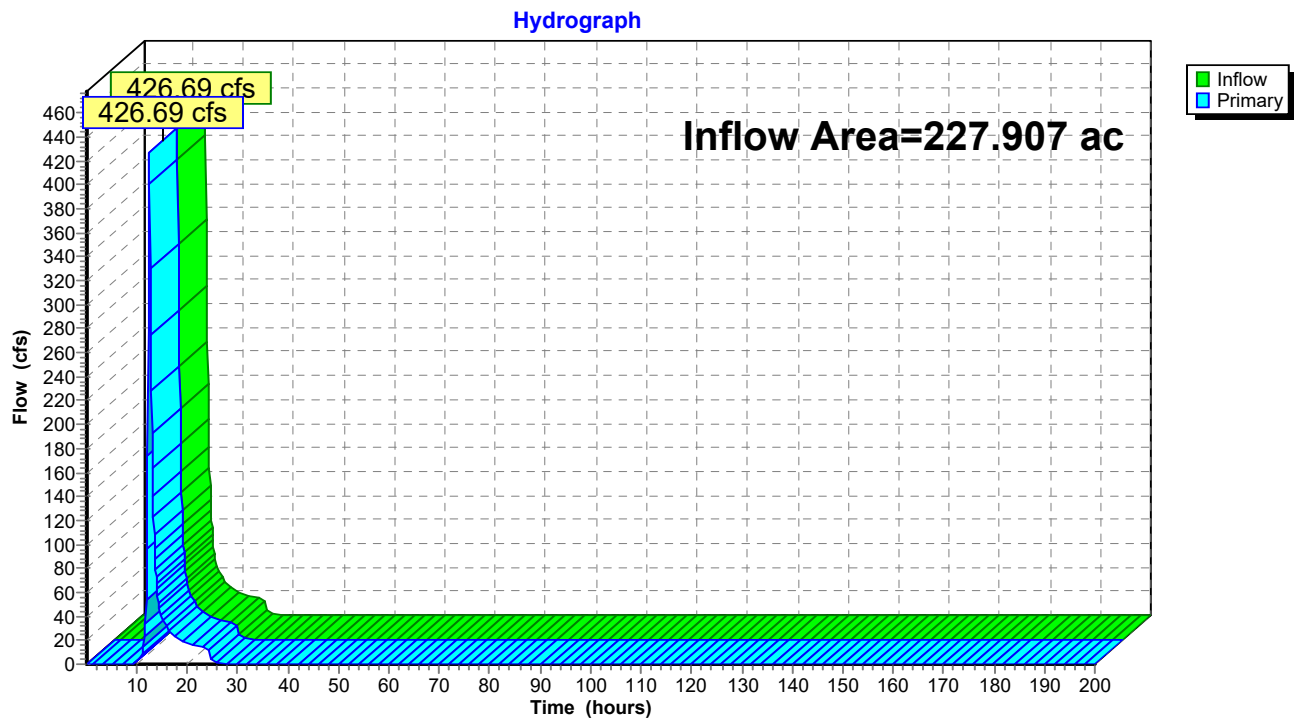
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Summary for Link 6L: Post Dev. POA at 110 Cedar Hill Dr

Inflow Area = 227.907 ac, 21.02% Impervious, Inflow Depth = 3.07" for 25-yr event
Inflow = 426.69 cfs @ 12.44 hrs, Volume= 58.363 af
Primary = 426.69 cfs @ 12.44 hrs, Volume= 58.363 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 6L: Post Dev. POA at 110 Cedar Hill Dr



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Type II 24-hr 25-yr Rainfall=6.54"

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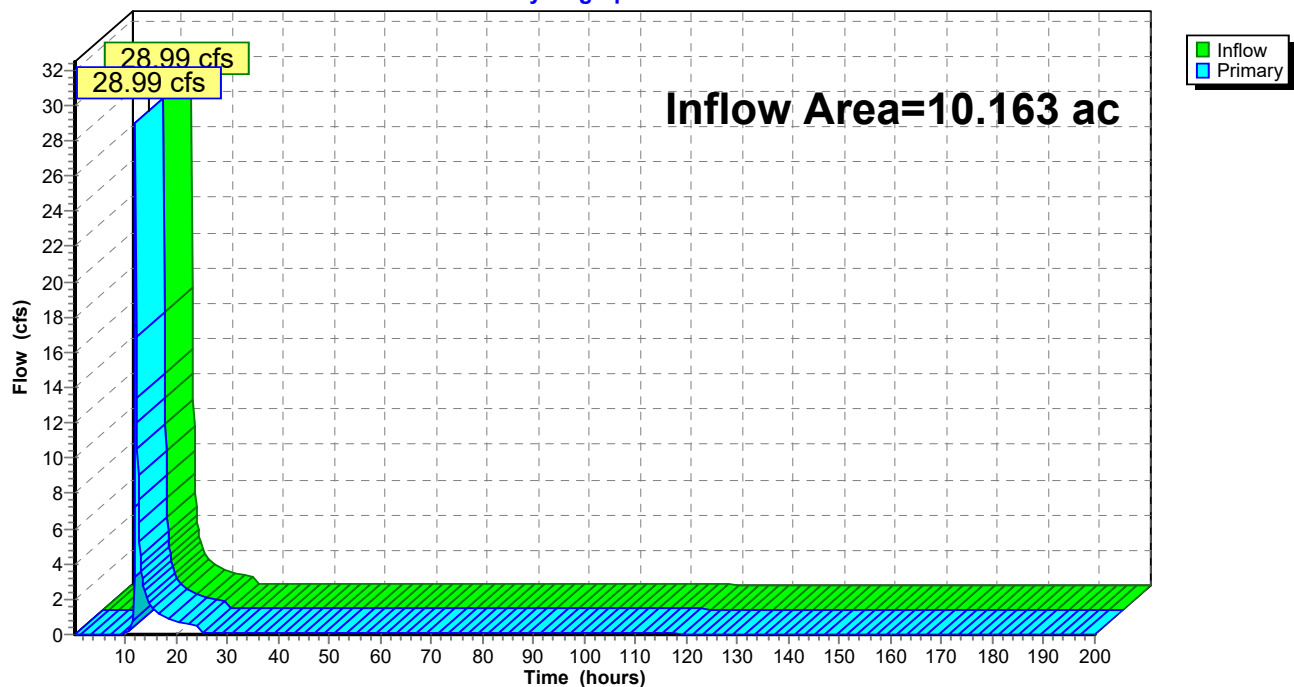
Summary for Link 32L: POA 5

Inflow Area = 10.163 ac, 32.64% Impervious, Inflow Depth = 3.62" for 25-yr event
Inflow = 28.99 cfs @ 12.00 hrs, Volume= 3.065 af
Primary = 28.99 cfs @ 12.00 hrs, Volume= 3.065 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 50R : Flowpath Downstream POA 6

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 32L: POA 5

Hydrograph



Downstream Analysis - ZCP

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Type II 24-hr 25-yr Rainfall=6.54"

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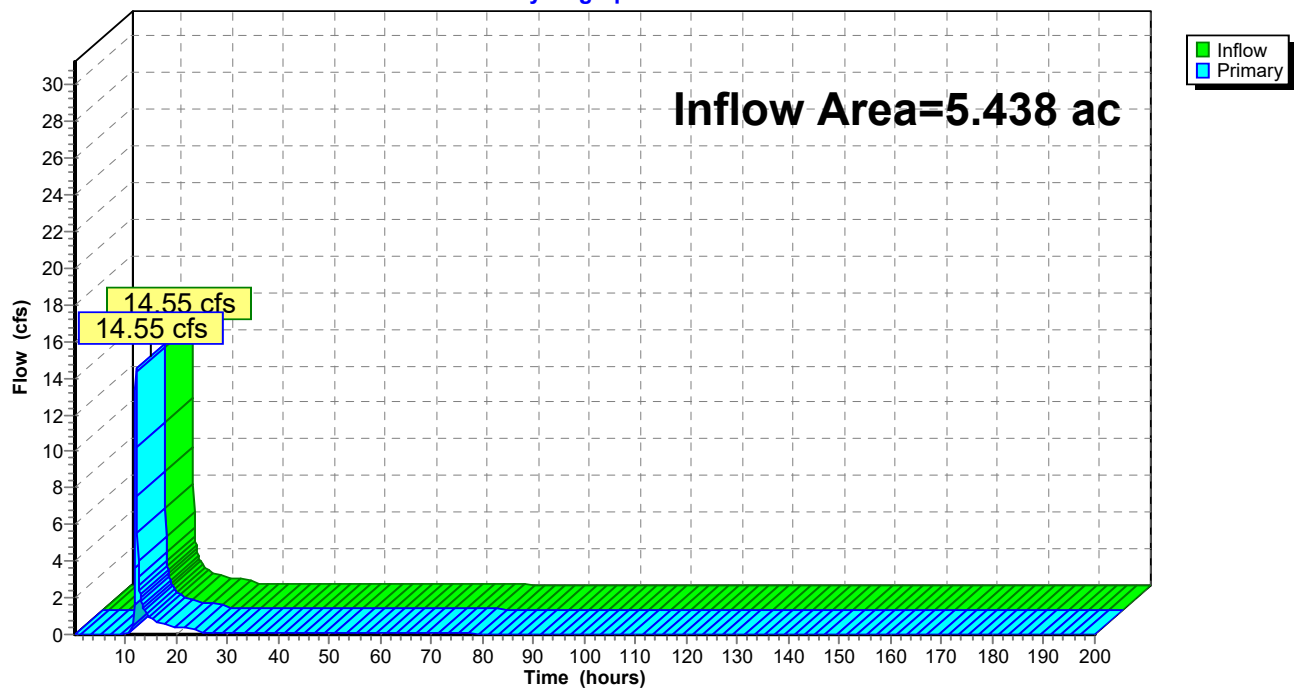
Summary for Link 33L: POA 6

Inflow Area = 5.438 ac, 41.54% Impervious, Inflow Depth = 3.65" for 25-yr event
Inflow = 14.55 cfs @ 12.07 hrs, Volume= 1.653 af
Primary = 14.55 cfs @ 12.07 hrs, Volume= 1.653 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 51R : Flowpath Downstream POA 5

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 33L: POA 6

Hydrograph



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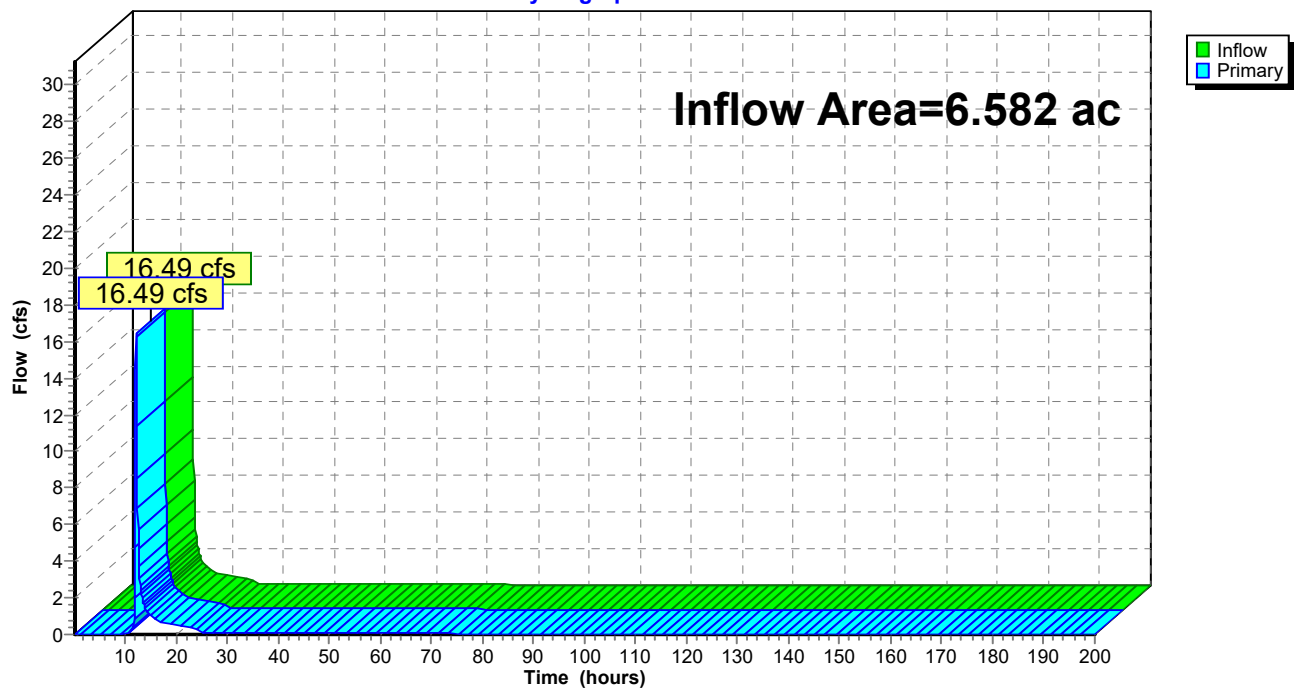
Summary for Link 40L: POA 4

Inflow Area = 6.582 ac, 37.07% Impervious, Inflow Depth = 3.36" for 25-yr event
Inflow = 16.49 cfs @ 12.08 hrs, Volume= 1.845 af
Primary = 16.49 cfs @ 12.08 hrs, Volume= 1.845 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 47R : Flowpath Downstream POA 4

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 40L: POA 4

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment15S: Post Dev. Basin 6 to Runoff Area=185,285 sf 75.67% Impervious Runoff Depth=7.09"
Tc=5.0 min CN=91 Runoff=41.82 cfs 2.514 af

Subcatchment16S: Post Dev. Bypass 6 Runoff Area=257,427 sf 1.66% Impervious Runoff Depth=3.46"
Tc=5.0 min CN=60 Runoff=32.88 cfs 1.705 af

Subcatchment18S: Post Dev. Basin 7 to Runoff Area=150,448 sf 57.98% Impervious Runoff Depth=5.90"
Tc=5.0 min CN=81 Runoff=30.97 cfs 1.699 af

Subcatchment19S: Post Dev. Bypass 7 Runoff Area=86,411 sf 12.93% Impervious Runoff Depth=3.57"
Tc=10.0 min CN=61 Runoff=10.26 cfs 0.591 af

Subcatchment29S: Post Dev. Bypass 8 Runoff Area=289,814 sf 1.87% Impervious Runoff Depth=3.69"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=36.97 cfs 2.045 af

Subcatchment36S: Post Dev. Basin 4 Runoff Area=29,236 sf 11.81% Impervious Runoff Depth=3.69"
Tc=5.0 min CN=62 Runoff=3.97 cfs 0.206 af

Subcatchment37S: Post Dev. Basin 5 to Runoff Area=122,978 sf 76.45% Impervious Runoff Depth=6.50"
Tc=5.0 min CN=86 Runoff=26.34 cfs 1.528 af

Subcatchment38S: Post Dev. Bypass 5 Runoff Area=163,726 sf 7.49% Impervious Runoff Depth=3.35"
Tc=12.3 min CN=59 Runoff=16.35 cfs 1.049 af

Subcatchment46S: Post Drainage Area 1 Runoff Area=198.400 ac 20.00% Impervious Runoff Depth=4.38"
Flow Length=4,195' Slope=0.0177 '/' Tc=45.4 min CN=68 Runoff=563.62 cfs 72.391 af

Reach 47R: Flowpath Downstream Avg. Flow Depth=1.39' Max Vel=1.65 fps Inflow=31.74 cfs 2.783 af
n=0.100 L=2,757.0' S=0.0173 '/' Capacity=7.18 cfs Outflow=14.65 cfs 2.783 af

Reach 50R: Flowpath Downstream Avg. Flow Depth=3.77' Max Vel=1.78 fps Inflow=82.21 cfs 6.259 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=48.08 cfs 6.259 af

Reach 51R: Flowpath Downstream Avg. Flow Depth=1.43' Max Vel=2.06 fps Inflow=23.92 cfs 2.290 af
n=0.100 L=1,036.0' S=0.0267 '/' Capacity=8.94 cfs Outflow=18.51 cfs 2.290 af

Pond 30P: Wet Pond SCM 4 Peak Elev=527.19' Storage=60,840 cf Inflow=41.82 cfs 2.514 af
Outflow=21.85 cfs 2.510 af

Pond 31P: Wet Pond SCM 5 Peak Elev=516.66' Storage=32,811 cf Inflow=30.97 cfs 1.699 af
Outflow=14.53 cfs 1.699 af

Pond 39P: Sand Filter SCM 3 Peak Elev=537.36' Storage=30,826 cf Inflow=26.34 cfs 1.528 af
Outflow=14.54 cfs 1.528 af

Link 6L: Post Dev. POA at 110 Cedar Hill Dr Inflow=631.46 cfs 83.723 af
Primary=631.46 cfs 83.723 af

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Type II 24-hr 100-yr Rainfall=8.17"

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Link 32L: POA 5

Inflow=45.34 cfs 4.214 af

Primary=45.34 cfs 4.214 af

Link 33L: POA 6

Inflow=23.92 cfs 2.290 af

Primary=23.92 cfs 2.290 af

Link 40L: POA 4

Inflow=30.11 cfs 2.577 af

Primary=30.11 cfs 2.577 af

Total Runoff Area = 227.907 ac Runoff Volume = 83.728 af Average Runoff Depth = 4.41"

78.98% Pervious = 180.008 ac 21.02% Impervious = 47.899 ac

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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 15S: Post Dev. Basin 6 to SCM

Runoff = 41.82 cfs @ 11.95 hrs, Volume= 2.514 af, Depth= 7.09"
Routed to Pond 30P : Wet Pond SCM 4

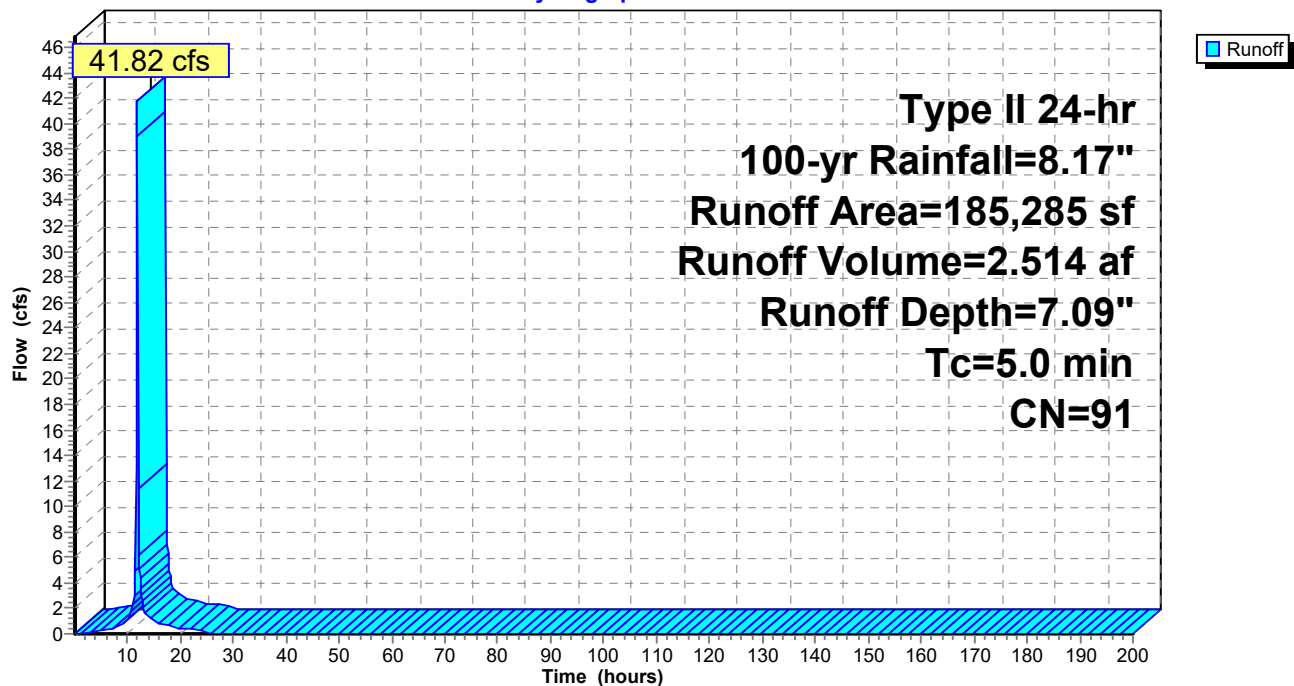
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
76,830	98	Paved parking, HSG B
63,382	98	Roofs, HSG B
30,858	56	Brush, Fair, HSG B
14,215	98	Water Surface, 0% imp, HSG B
185,285	91	Weighted Average
45,073		24.33% Pervious Area
140,212		75.67% Impervious Area

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

Subcatchment 15S: Post Dev. Basin 6 to SCM

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 16S: Post Dev. Bypass 6

Runoff = 32.88 cfs @ 11.96 hrs, Volume= 1.705 af, Depth= 3.46"
Routed to Link 32L : POA 5

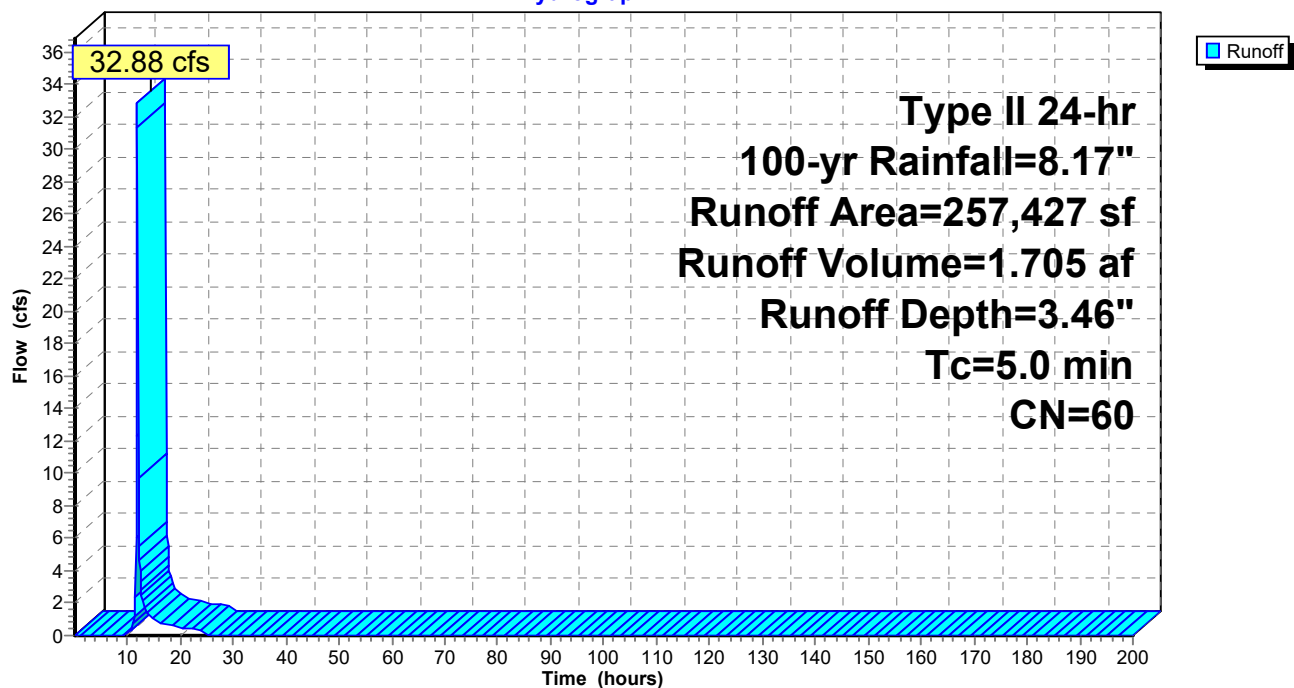
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
4,268	98	Paved parking, HSG B
51,015	56	Brush, Fair, HSG B
202,144	60	Woods, Fair, HSG B
257,427	60	Weighted Average
253,159		98.34% Pervious Area
4,268		1.66% Impervious Area

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

Subcatchment 16S: Post Dev. Bypass 6

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 18S: Post Dev. Basin 7 to SCM

Runoff = 30.97 cfs @ 11.95 hrs, Volume= 1.699 af, Depth= 5.90"
Routed to Pond 31P : Wet Pond SCM 5

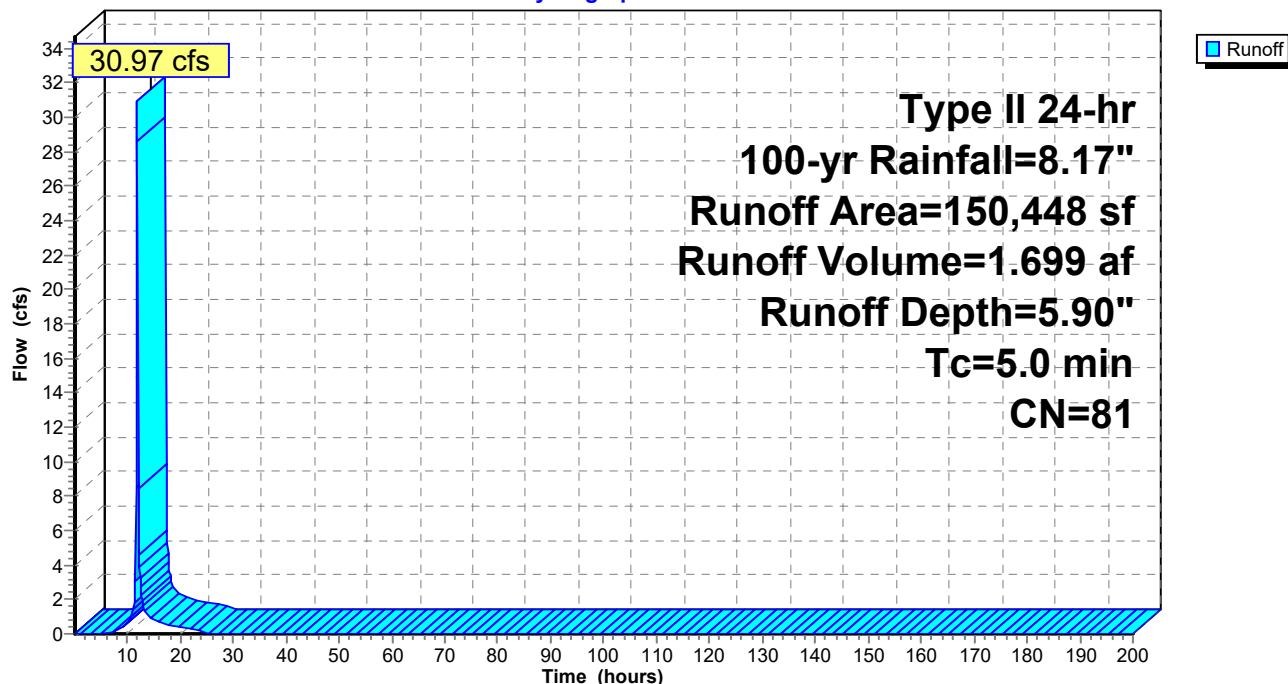
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
53,515	98	Paved parking, HSG B
33,715	98	Roofs, HSG B
59,637	56	Brush, Fair, HSG B
3,581	98	Water Surface, 0% imp, HSG B
150,448	81	Weighted Average
63,218		42.02% Pervious Area
87,230		57.98% Impervious Area

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

Subcatchment 18S: Post Dev. Basin 7 to SCM

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 19S: Post Dev. Bypass 7

Runoff = 10.26 cfs @ 12.01 hrs, Volume= 0.591 af, Depth= 3.57"
Routed to Link 33L : POA 6

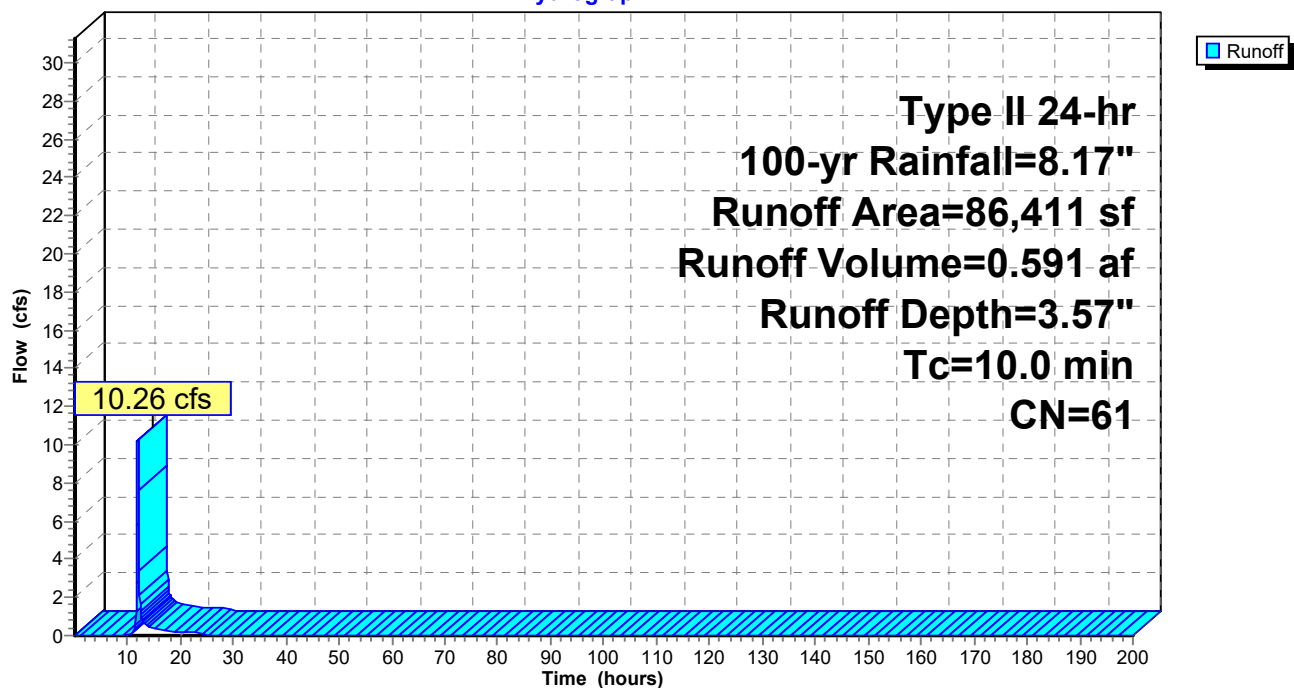
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
11,171	98	Paved parking, HSG B
35,296	56	Brush, Fair, HSG B
39,944	55	Woods, Good, HSG B
86,411	61	Weighted Average
75,240		87.07% Pervious Area
11,171		12.93% Impervious Area

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

Subcatchment 19S: Post Dev. Bypass 7

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 29S: Post Dev. Bypass 8

Runoff = 36.97 cfs @ 12.00 hrs, Volume= 2.045 af, Depth= 3.69"
Routed to Reach 50R : Flowpath Downstream POA 6

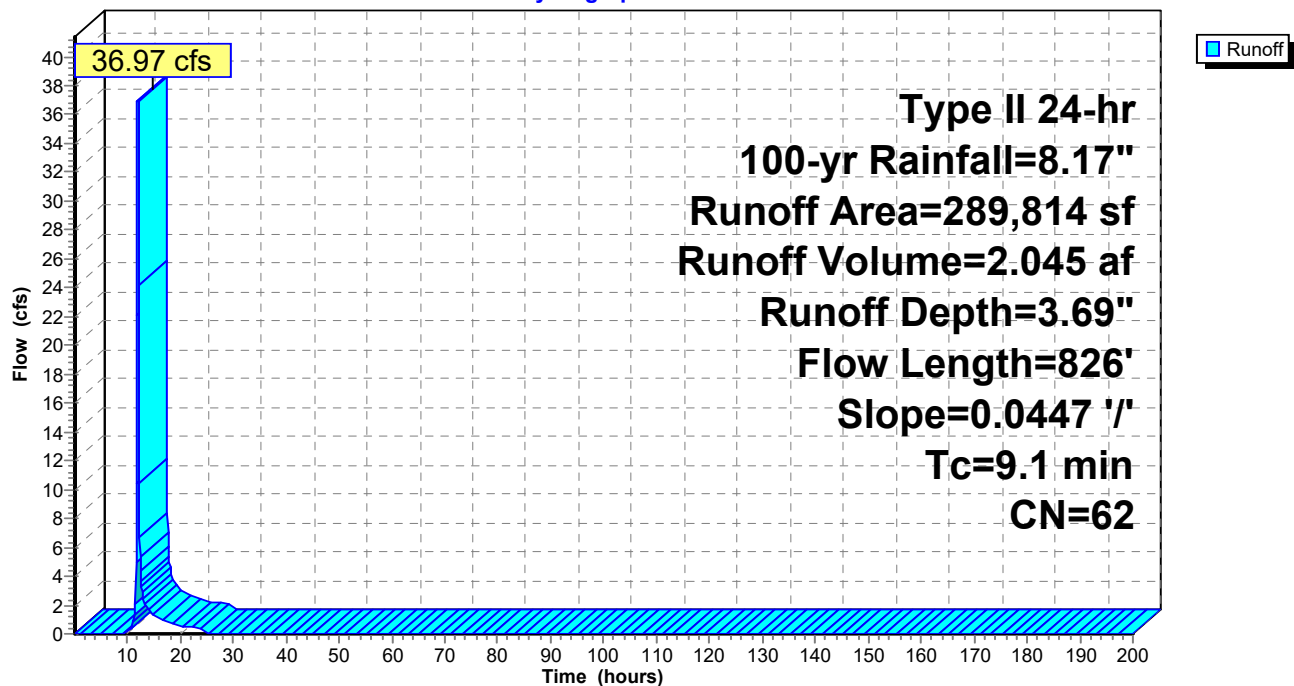
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
53,439	69	50-75% Grass cover, Fair, HSG B
5,416	98	Paved parking, HSG B
289,814	62	Weighted Average
284,398		98.13% Pervious Area
5,416		1.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 29S: Post Dev. Bypass 8

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 36S: Post Dev. Basin 4

Runoff = 3.97 cfs @ 11.96 hrs, Volume= 0.206 af, Depth= 3.69"

Routed to Reach 47R : Flowpath Downstream POA 4

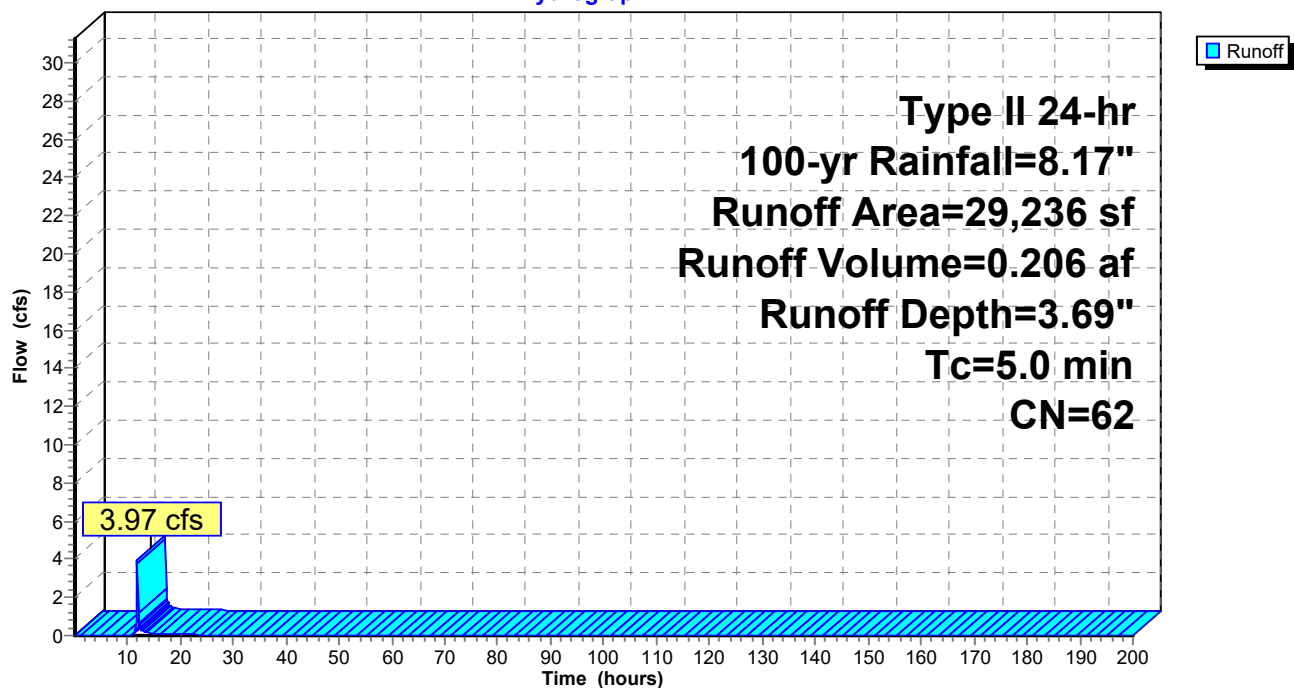
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
6,194	60	Woods, Fair, HSG B
19,589	56	Brush, Fair, HSG B
3,453	98	Paved parking, HSG B
29,236	62	Weighted Average
25,783		88.19% Pervious Area
3,453		11.81% Impervious Area

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

Subcatchment 36S: Post Dev. Basin 4

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 37S: Post Dev. Basin 5 to SCM

Runoff = 26.34 cfs @ 11.95 hrs, Volume= 1.528 af, Depth= 6.50"
Routed to Pond 39P : Sand Filter SCM 3

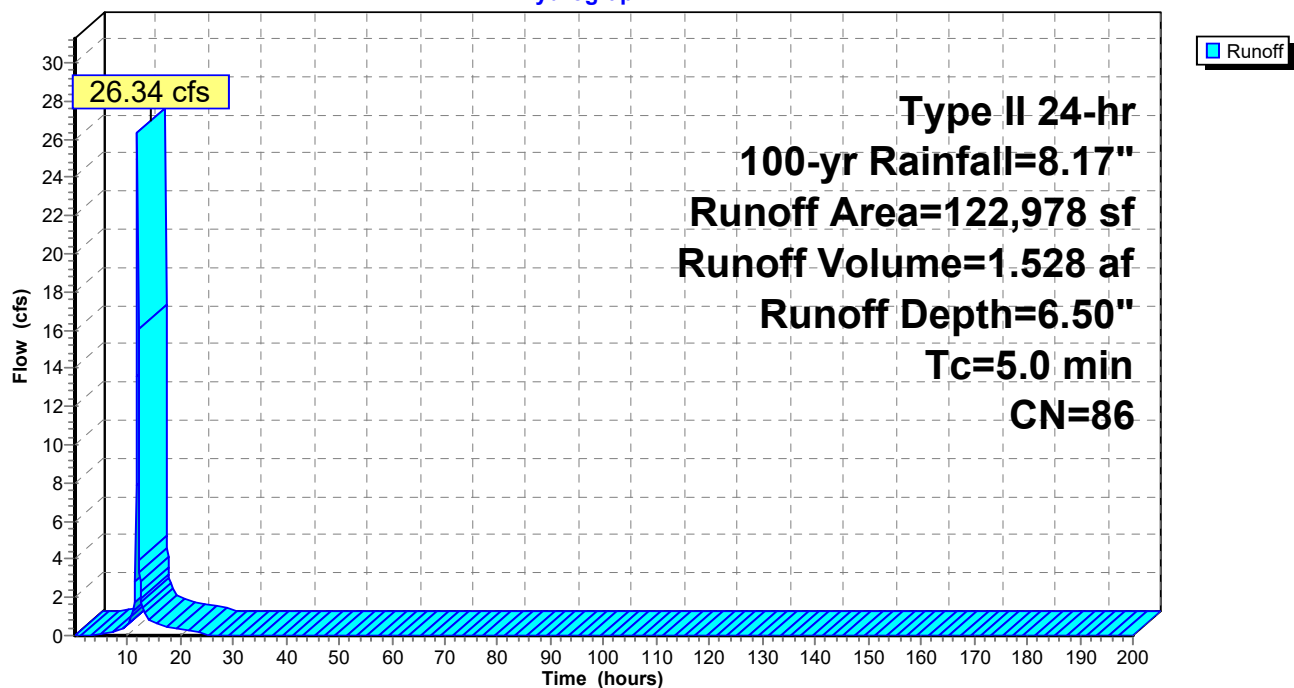
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
54,167	98	Paved parking, HSG B
39,855	98	Roofs, HSG B
28,956	48	Brush, Good, HSG B
122,978	86	Weighted Average
28,956		23.55% Pervious Area
94,022		76.45% Impervious Area

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

Subcatchment 37S: Post Dev. Basin 5 to SCM

Hydrograph



Downstream Analysis - ZCP

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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 38S: Post Dev. Bypass 5

Runoff = 16.35 cfs @ 12.05 hrs, Volume= 1.049 af, Depth= 3.35"
Routed to Link 40L : POA 4

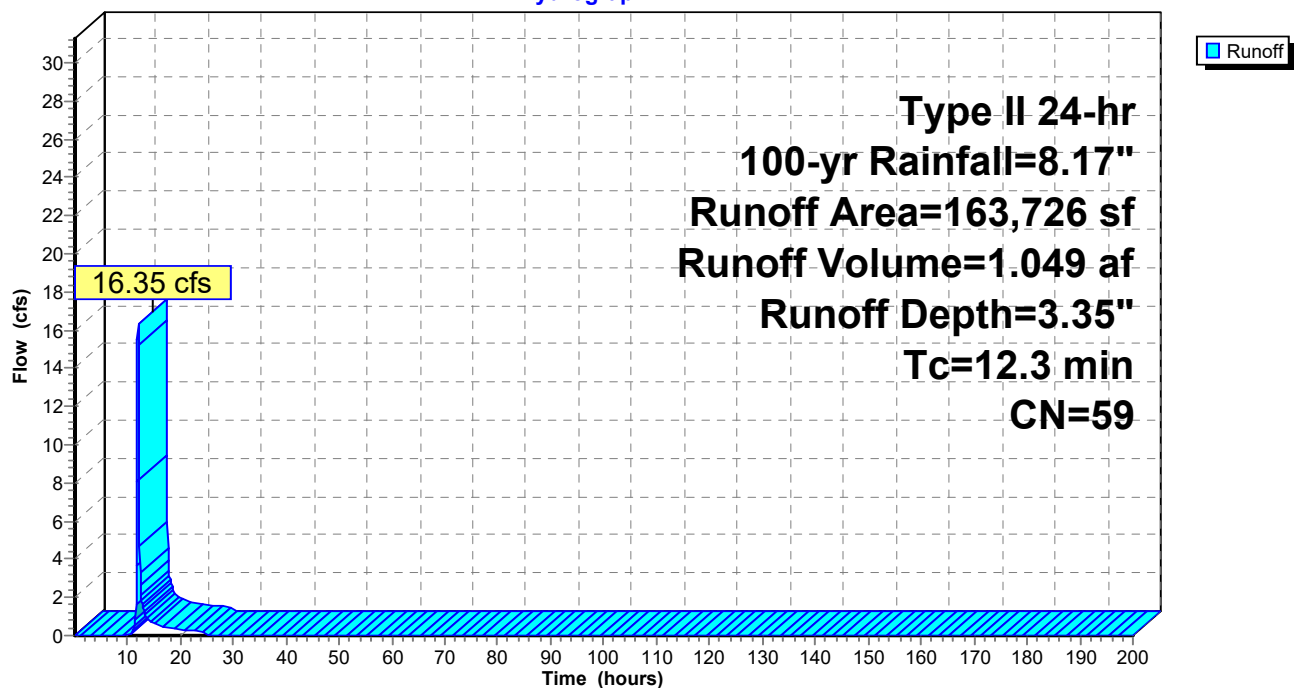
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
12,257	98	Paved parking, HSG B
54,926	48	Brush, Good, HSG B
96,543	60	Woods, Fair, HSG B
163,726	59	Weighted Average
151,469		92.51% Pervious Area
12,257		7.49% Impervious Area

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

Subcatchment 38S: Post Dev. Bypass 5

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Summary for Subcatchment 46S: Post Drainage Area 1

Runoff = 563.62 cfs @ 12.44 hrs, Volume= 72.391 af, Depth= 4.38"
Routed to Link 6L : Post Dev. POA at 110 Cedar Hill Dr

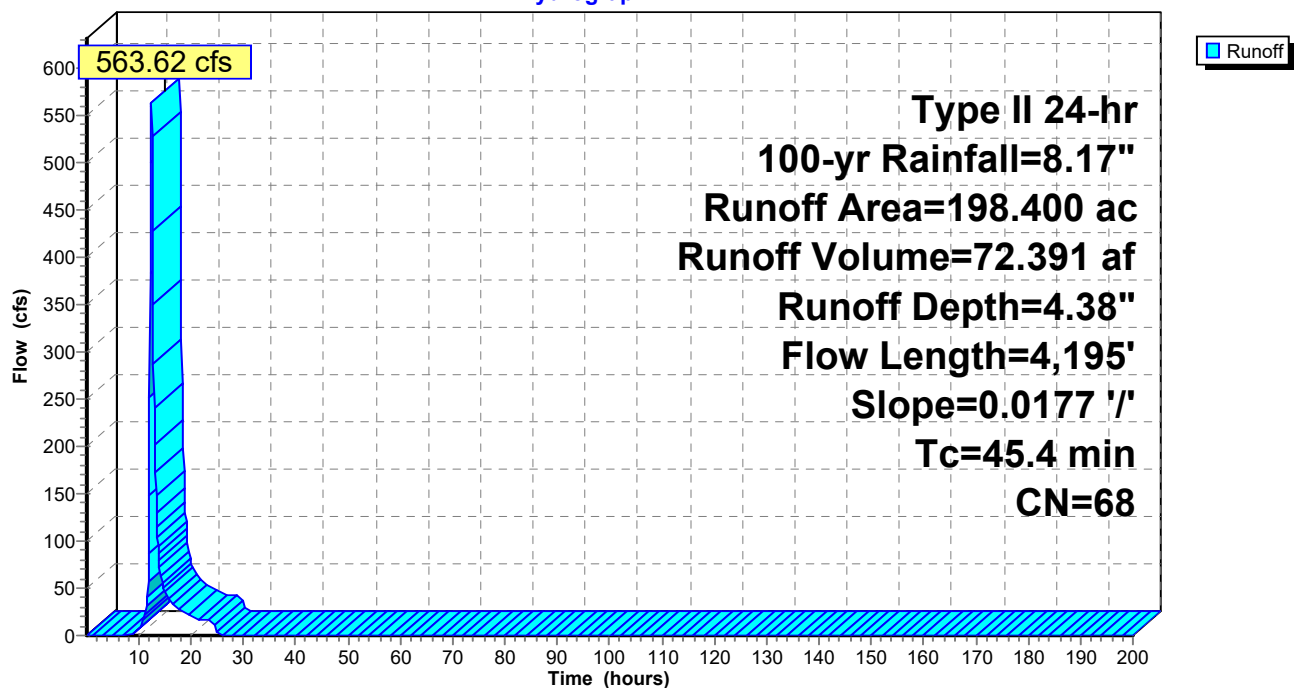
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (ac)	CN	Description
198.400	68	1 acre lots, 20% imp, HSG B
158.720		80.00% Pervious Area
39.680		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.4	4,195	0.0177	1.54		Kirpich Method, General overland flow k= 2.00

Subcatchment 46S: Post Drainage Area 1

Hydrograph



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Summary for Reach 47R: Flowpath Downstream POA 4

Inflow Area = 7.253 ac, 34.73% Impervious, Inflow Depth = 4.61" for 100-yr event
Inflow = 31.74 cfs @ 12.07 hrs, Volume= 2.783 af
Outflow = 14.65 cfs @ 12.74 hrs, Volume= 2.783 af, Atten= 54%, Lag= 40.3 min
Routed to Link 6L : Post Dev. POA at 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.65 fps, Min. Travel Time= 27.9 min

Avg. Velocity = 0.25 fps, Avg. Travel Time= 186.7 min

Peak Storage= 24,403 cf @ 12.26 hrs

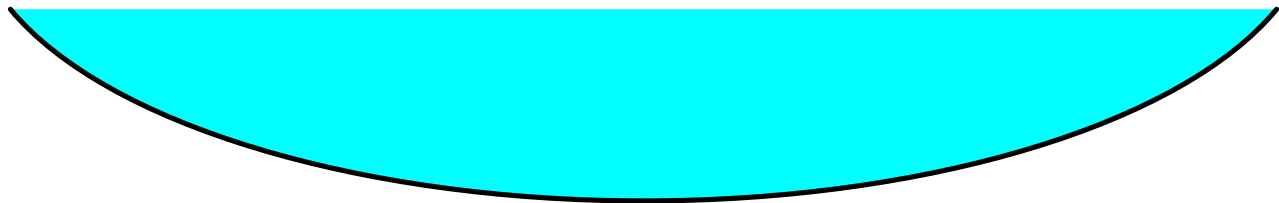
Average Depth at Peak Storage= 1.39' , Surface Width= 9.99'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 7.18 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

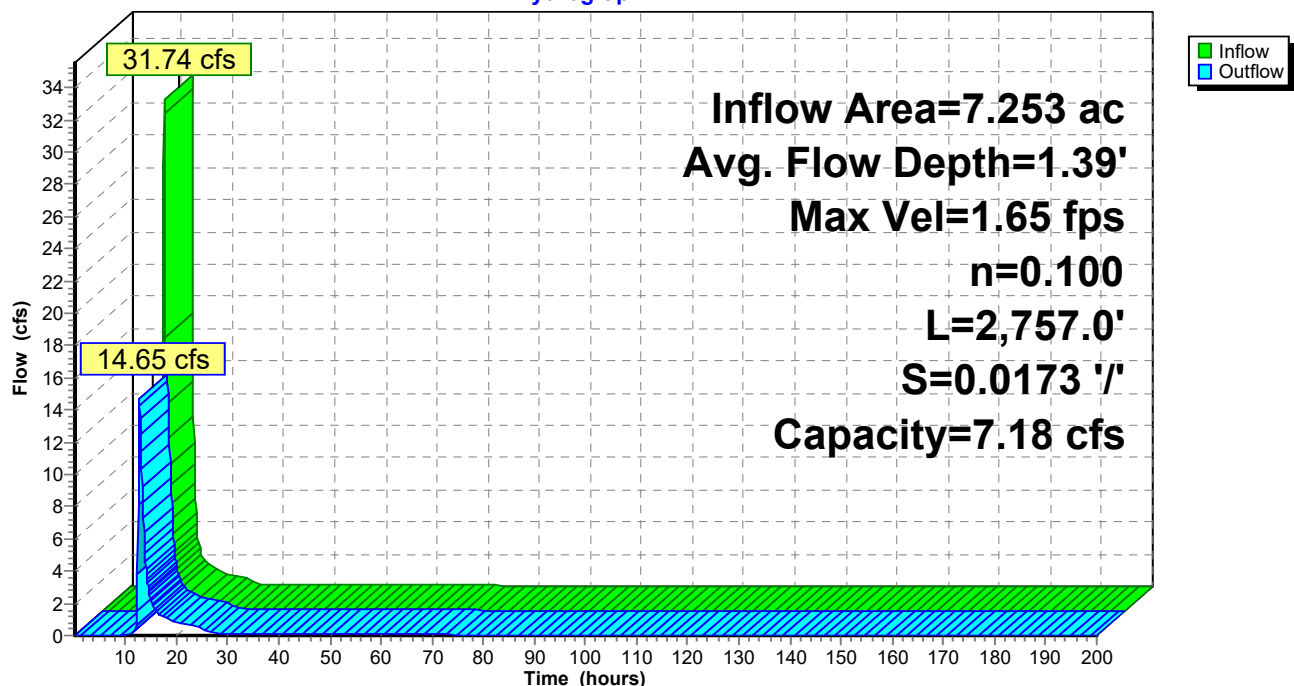
Length= 2,757.0' Slope= 0.0173 '/'

Inlet Invert= 529.84', Outlet Invert= 482.25'



Reach 47R: Flowpath Downstream POA 4

Hydrograph



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Summary for Reach 50R: Flowpath Downstream POA 6

Inflow Area = 16.816 ac, 20.46% Impervious, Inflow Depth = 4.47" for 100-yr event
Inflow = 82.21 cfs @ 12.00 hrs, Volume= 6.259 af
Outflow = 48.08 cfs @ 12.38 hrs, Volume= 6.259 af, Atten= 42%, Lag= 22.8 min
Routed to Link 6L : Post Dev. POA at 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.78 fps, Min. Travel Time= 14.2 min

Avg. Velocity= 0.33 fps, Avg. Travel Time= 76.6 min

Peak Storage= 42,639 cf @ 12.13 hrs

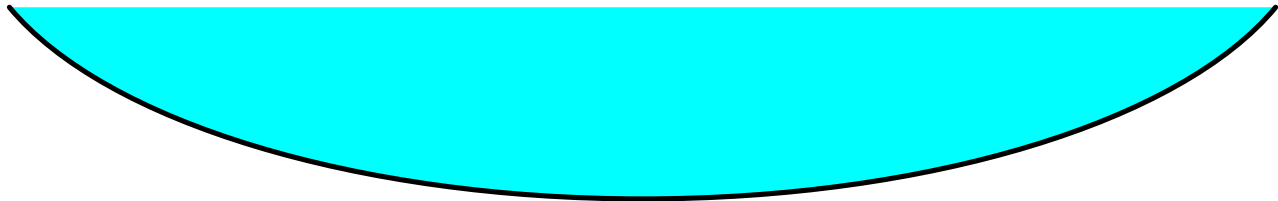
Average Depth at Peak Storage= 3.77' , Surface Width= 16.41'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

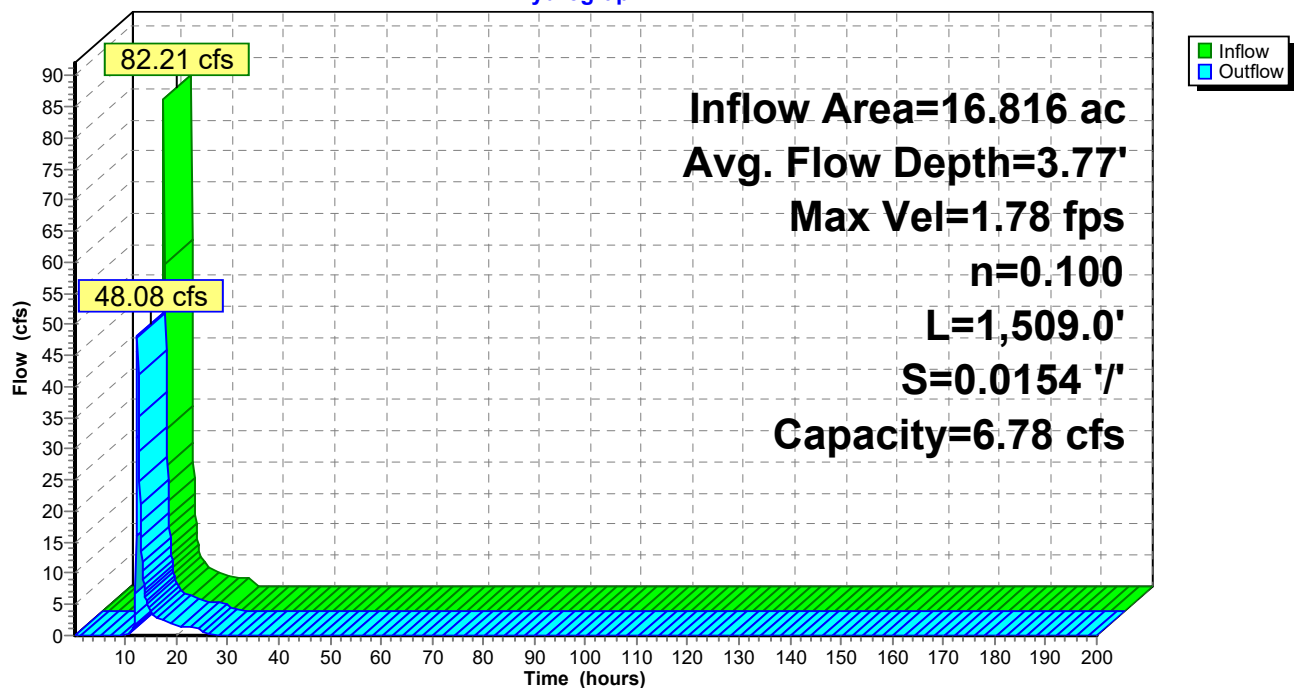
Length= 1,509.0' Slope= 0.0154 '/'

Inlet Invert= 505.43', Outlet Invert= 482.25'



Reach 50R: Flowpath Downstream POA 6

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Summary for Reach 51R: Flowpath Downstream POA 5

Inflow Area = 5.438 ac, 41.54% Impervious, Inflow Depth = 5.05" for 100-yr event
Inflow = 23.92 cfs @ 12.04 hrs, Volume= 2.290 af
Outflow = 18.51 cfs @ 12.31 hrs, Volume= 2.290 af, Atten= 23%, Lag= 16.3 min
Routed to Link 6L : Post Dev. POA at 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 2.06 fps, Min. Travel Time= 8.4 min

Avg. Velocity= 0.29 fps, Avg. Travel Time= 58.8 min

Peak Storage= 9,461 cf @ 12.16 hrs

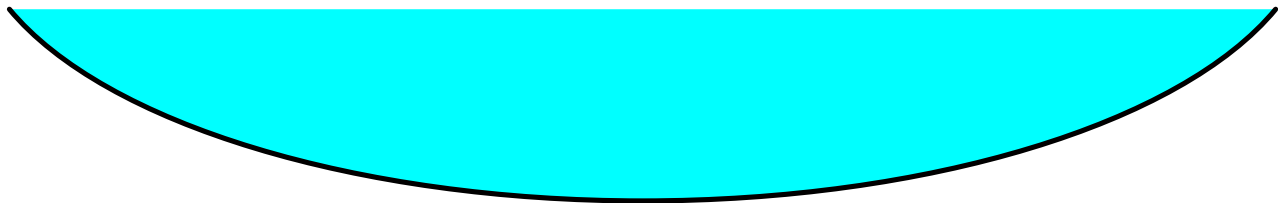
Average Depth at Peak Storage= 1.43' , Surface Width= 10.11'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 8.94 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

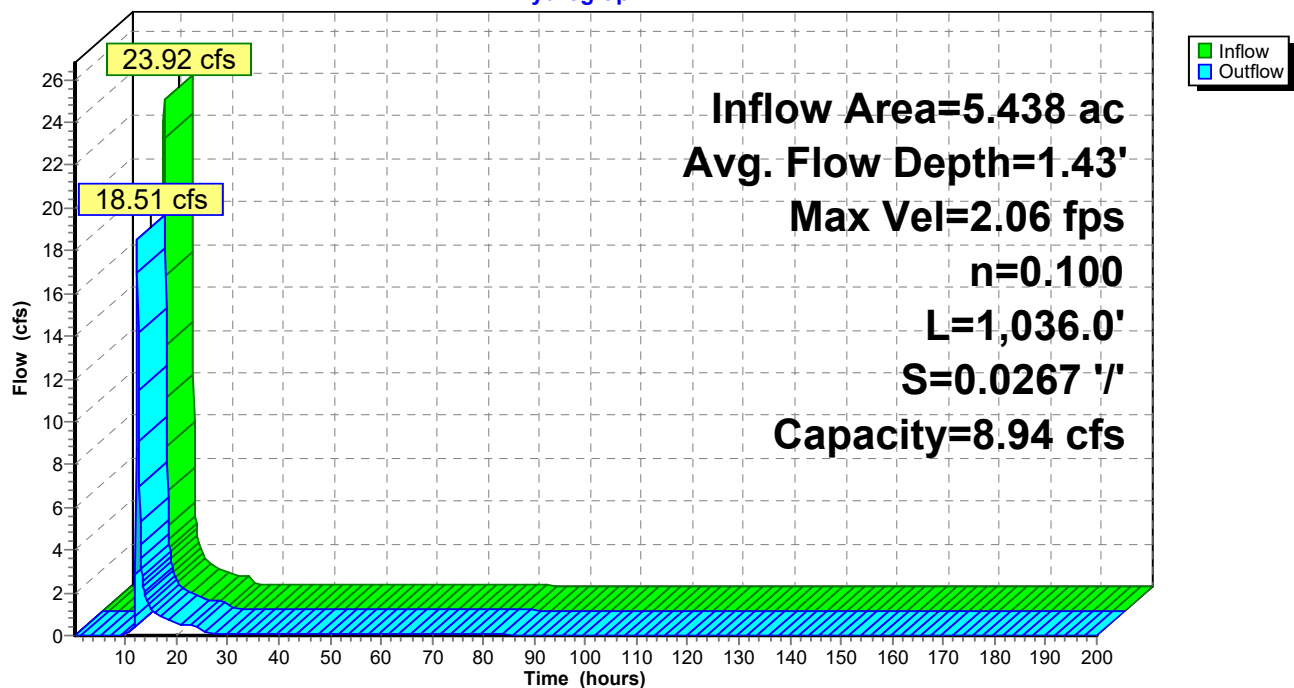
Length= 1,036.0' Slope= 0.0267 '/'

Inlet Invert= 509.93', Outlet Invert= 482.25'



Reach 51R: Flowpath Downstream POA 5

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Summary for Pond 30P: Wet Pond SCM 4

Inflow Area = 4.254 ac, 75.67% Impervious, Inflow Depth = 7.09" for 100-yr event
Inflow = 41.82 cfs @ 11.95 hrs, Volume= 2.514 af
Outflow = 21.85 cfs @ 12.10 hrs, Volume= 2.510 af, Atten= 48%, Lag= 9.1 min
Primary = 21.85 cfs @ 12.10 hrs, Volume= 2.510 af
Routed to Link 32L : POA 5

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Starting Elev= 522.00' Surf.Area= 7,056 sf Storage= 6,623 cf

Peak Elev= 527.19' @ 12.10 hrs Surf.Area= 12,441 sf Storage= 60,840 cf (54,217 cf above start)

Plug-Flow detention time= 1,395.3 min calculated for 2.357 af (94% of inflow)

Center-of-Mass det. time= 1,272.0 min (2,039.5 - 767.5)

Volume	Invert	Avail.Storage	Storage Description
#1	521.00'	71,189 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
521.00	6,190	0	0
522.00	7,056	6,623	6,623
522.50	8,333	3,847	10,470
523.00	9,531	4,466	14,936
524.00	10,198	9,865	24,801
525.00	10,883	10,541	35,341
526.00	11,584	11,234	46,575
527.00	12,303	11,944	58,518
528.00	13,038	12,671	71,189

Device	Routing	Invert	Outlet Devices
#1	Primary	522.00'	36.0" Round Culvert L= 45.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 522.00' / 521.50' S= 0.0111 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf
#2	Device 1	522.00'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	525.40'	40.0" W x 4.0" H Vert. Peakflow Orifice X 2.00 C= 0.600 Limited to weir flow at low heads
#4	Device 1	526.90'	48.0" x 48.0" Horiz. Overflow C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=21.54 cfs @ 12.10 hrs HW=527.18' (Free Discharge)

1=Culvert (Passes 21.54 cfs of 65.30 cfs potential flow)
2=Drawdown (Orifice Controls 0.13 cfs @ 10.89 fps)
3=Peakflow Orifice (Orifice Controls 13.59 cfs @ 6.12 fps)
4=Overflow (Weir Controls 7.81 cfs @ 1.73 fps)

Downstream Analysis - ZCP

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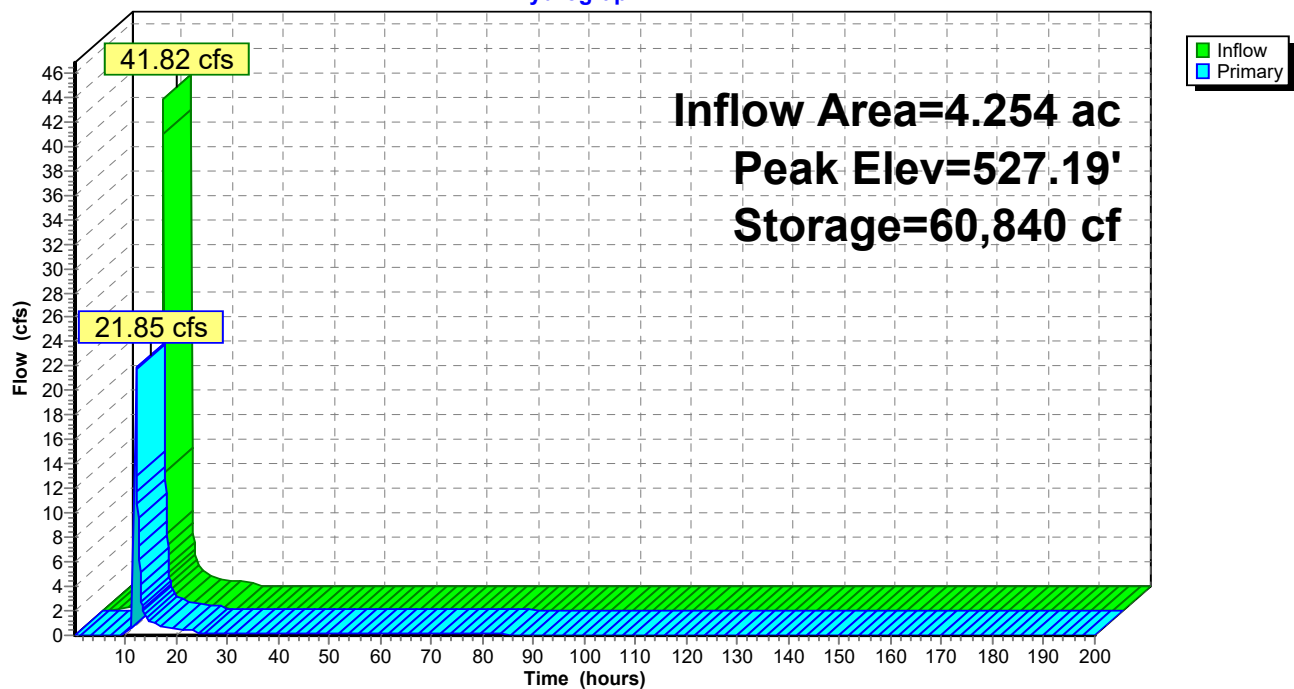
Type II 24-hr 100-yr Rainfall=8.17"

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Pond 30P: Wet Pond SCM 4

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Summary for Pond 31P: Wet Pond SCM 5

Inflow Area = 3.454 ac, 57.98% Impervious, Inflow Depth = 5.90" for 100-yr event
Inflow = 30.97 cfs @ 11.95 hrs, Volume= 1.699 af
Outflow = 14.53 cfs @ 12.09 hrs, Volume= 1.699 af, Atten= 53%, Lag= 8.6 min
Primary = 14.53 cfs @ 12.09 hrs, Volume= 1.699 af
Routed to Link 33L : POA 6

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Starting Elev= 510.50' Surf.Area= 3,231 sf Storage= 1,401 cf
Peak Elev= 516.66' @ 12.09 hrs Surf.Area= 6,564 sf Storage= 32,811 cf (31,411 cf above start)

Plug-Flow detention time= 708.7 min calculated for 1.666 af (98% of inflow)
Center-of-Mass det. time= 683.6 min (1,479.3 - 795.7)

Volume	Invert	Avail.Storage	Storage Description
#1	510.00'	42,078 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
510.00	2,371	0	0
510.50	3,231	1,401	1,401
511.00	3,997	1,807	3,208
512.00	4,407	4,202	7,410
513.00	4,836	4,622	12,031
514.00	5,284	5,060	17,091
515.00	5,749	5,517	22,608
516.00	6,233	5,991	28,599
517.00	6,735	6,484	35,083
518.00	7,255	6,995	42,078

Device	Routing	Invert	Outlet Devices
#1	Primary	510.50'	36.0" Round Culvert L= 79.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 510.50' / 510.00' S= 0.0063 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Device 1	510.50'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	514.70'	34.0" W x 4.5" H Vert. Peakflow Orifice X 2.00 C= 0.600 Limited to weir flow at low heads
#4	Device 1	516.60'	48.0" x 48.0" Horiz. Overflow C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=14.13 cfs @ 12.09 hrs HW=516.64' (Free Discharge)

1=Culvert (Passes 14.13 cfs of 73.32 cfs potential flow)
2=Drawdown (Orifice Controls 0.15 cfs @ 11.87 fps)
3=Peakflow Orifice (Orifice Controls 13.54 cfs @ 6.37 fps)
4=Overflow (Weir Controls 0.44 cfs @ 0.66 fps)

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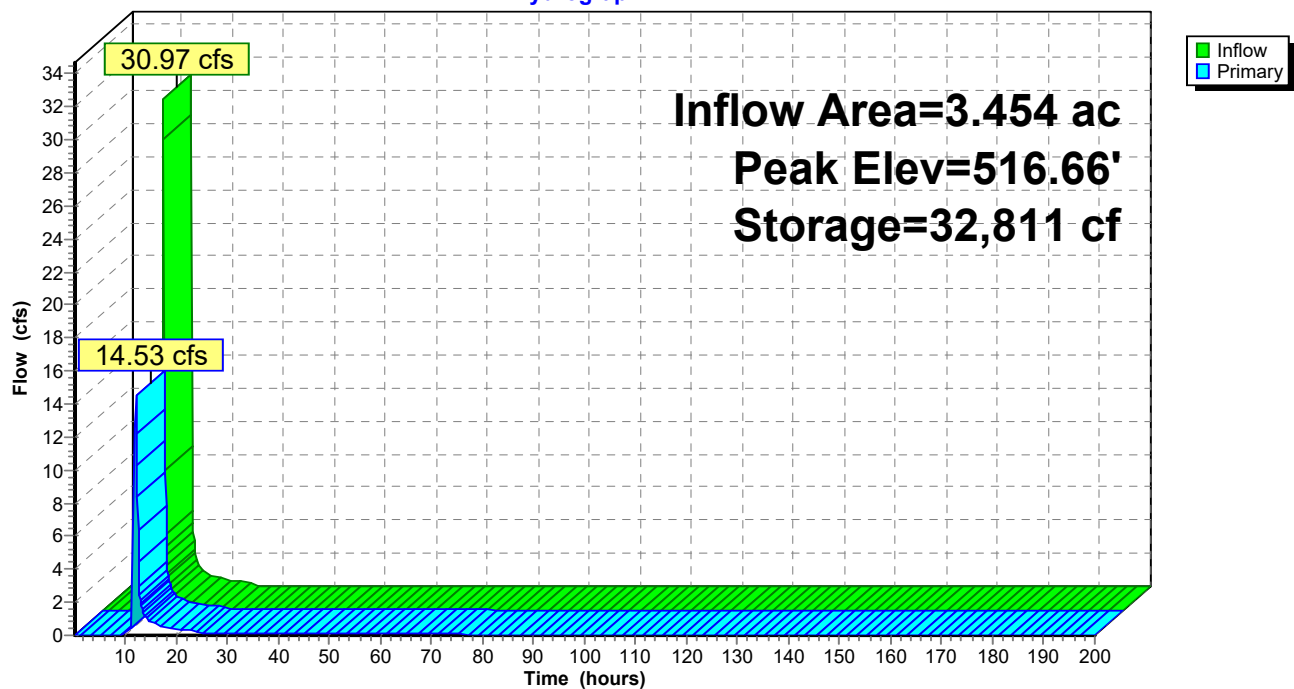
Type II 24-hr 100-yr Rainfall=8.17"

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Pond 31P: Wet Pond SCM 5

Hydrograph



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Summary for Pond 39P: Sand Filter SCM 3

Inflow Area = 2.823 ac, 76.45% Impervious, Inflow Depth = 6.50" for 100-yr event
Inflow = 26.34 cfs @ 11.95 hrs, Volume= 1.528 af
Outflow = 14.54 cfs @ 12.10 hrs, Volume= 1.528 af, Atten= 45%, Lag= 9.1 min
Primary = 14.54 cfs @ 12.10 hrs, Volume= 1.528 af
Routed to Link 40L : POA 4

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Peak Elev= 537.36' @ 12.09 hrs Surf.Area= 4,515 sf Storage= 30,826 cf

Plug-Flow detention time= 692.1 min calculated for 1.528 af (100% of inflow)
Center-of-Mass det. time= 694.8 min (1,477.7 - 782.9)

Volume	Invert	Avail.Storage	Storage Description
#1	530.00'	16,905 cf	Sediment/Sand Chamber (Prismatic) Listed below (Recalc) x 23
#2	530.00'	16,800 cf	Storage (Prismatic) Listed below (Recalc) x 20
		33,705 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
530.00	105	0.0	0	0
532.00	105	50.0	105	105
538.00	105	100.0	630	735

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
530.00	105	0	0
538.00	105	840	840

Device	Routing	Invert	Outlet Devices
#1	Primary	530.00'	36.0" Round Culvert L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 530.00' / 529.00' S= 0.0200 ' / Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf
#2	Device 1	530.00'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	534.70'	34.0" W x 5.0" H Vert. Main Orifice C= 0.600 Limited to weir flow at low heads
#4	Device 1	537.20'	25.0' long Overflow 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=14.39 cfs @ 12.10 hrs HW=537.36' (Free Discharge)

- 1=Culvert (Passes 14.39 cfs of 82.38 cfs potential flow)
- 2=Drawdown (Orifice Controls 0.16 cfs @ 13.01 fps)
- 3=Main Orifice (Orifice Controls 8.89 cfs @ 7.53 fps)
- 4=Overflow (Weir Controls 5.33 cfs @ 1.35 fps)

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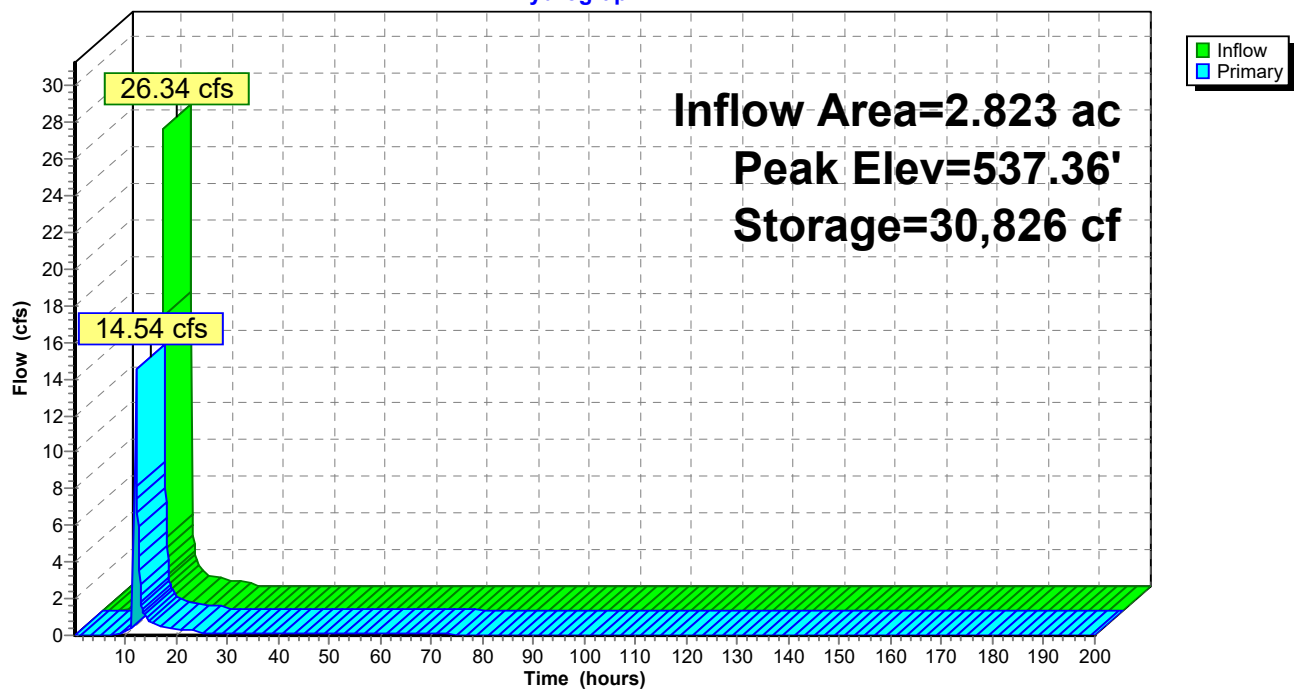
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Pond 39P: Sand Filter SCM 3

Hydrograph



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Summary for Link 6L: Post Dev. POA at 110 Cedar Hill Dr

Inflow Area = 227.907 ac, 21.02% Impervious, Inflow Depth = 4.41" for 100-yr event

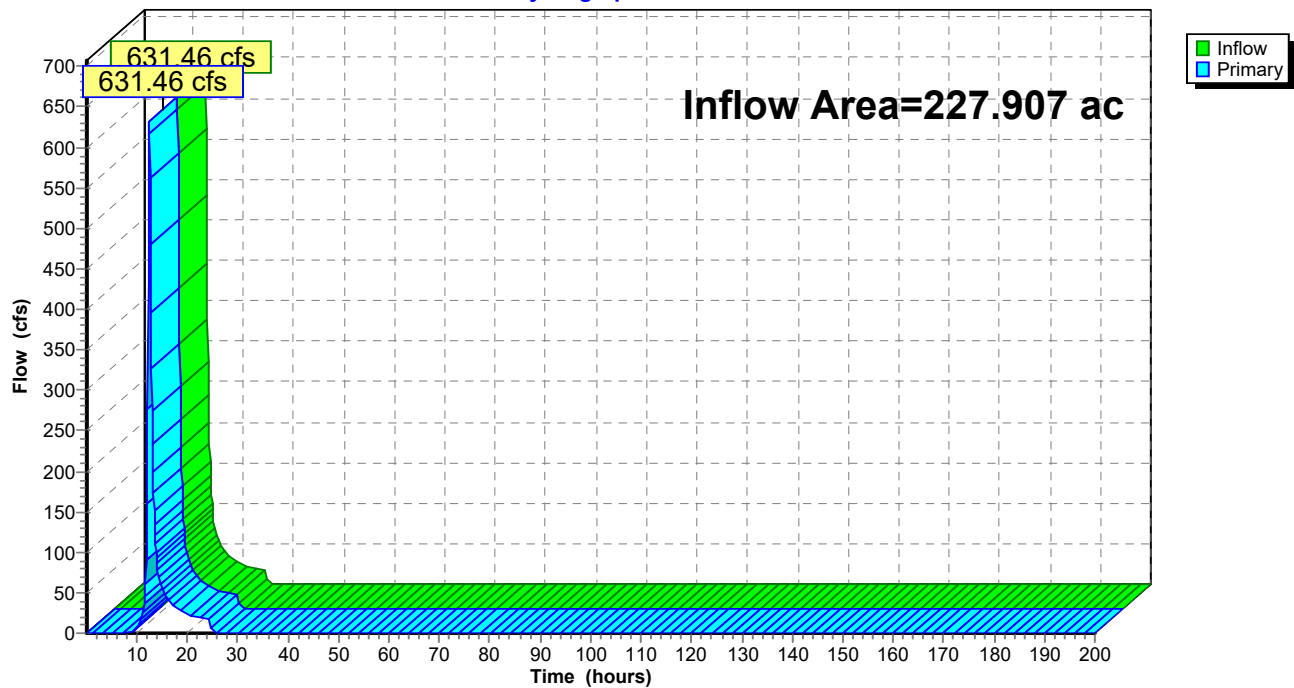
Inflow = 631.46 cfs @ 12.44 hrs, Volume= 83.723 af

Primary = 631.46 cfs @ 12.44 hrs, Volume= 83.723 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 6L: Post Dev. POA at 110 Cedar Hill Dr

Hydrograph



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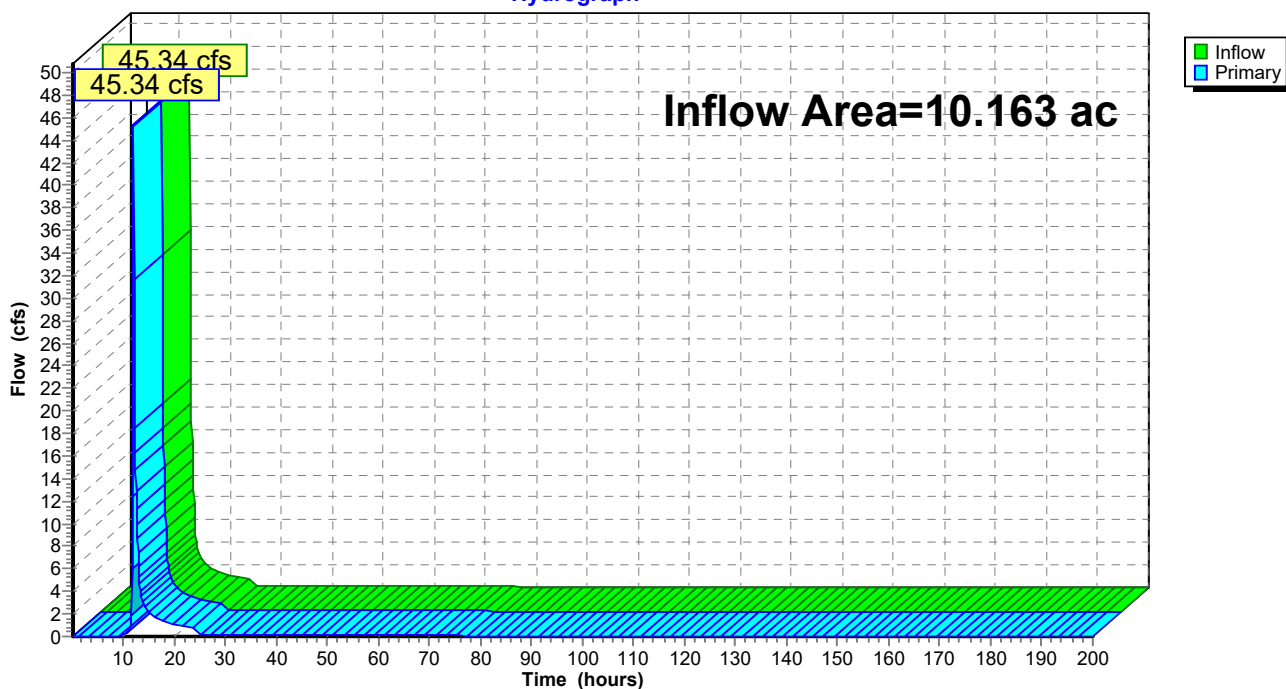
Summary for Link 32L: POA 5

Inflow Area = 10.163 ac, 32.64% Impervious, Inflow Depth = 4.98" for 100-yr event
Inflow = 45.34 cfs @ 11.99 hrs, Volume= 4.214 af
Primary = 45.34 cfs @ 11.99 hrs, Volume= 4.214 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 50R : Flowpath Downstream POA 6

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 32L: POA 5

Hydrograph



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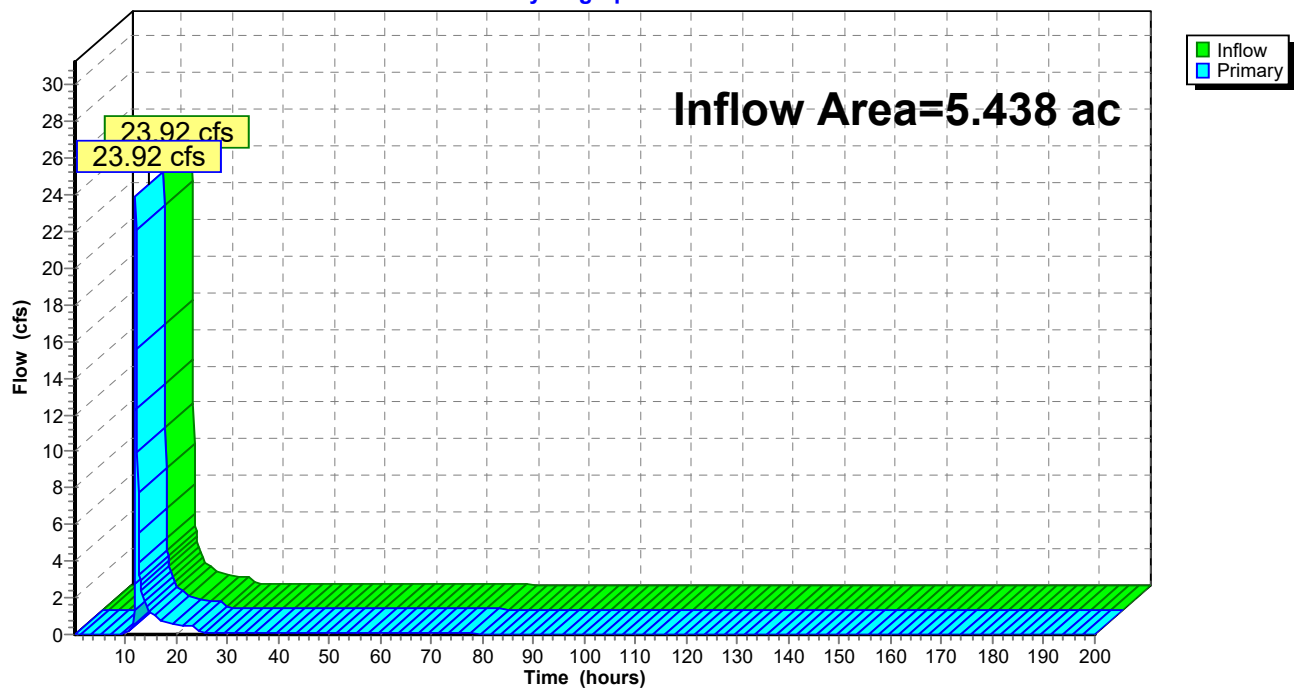
Summary for Link 33L: POA 6

Inflow Area = 5.438 ac, 41.54% Impervious, Inflow Depth = 5.05" for 100-yr event
Inflow = 23.92 cfs @ 12.04 hrs, Volume= 2.290 af
Primary = 23.92 cfs @ 12.04 hrs, Volume= 2.290 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 51R : Flowpath Downstream POA 5

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 33L: POA 6

Hydrograph



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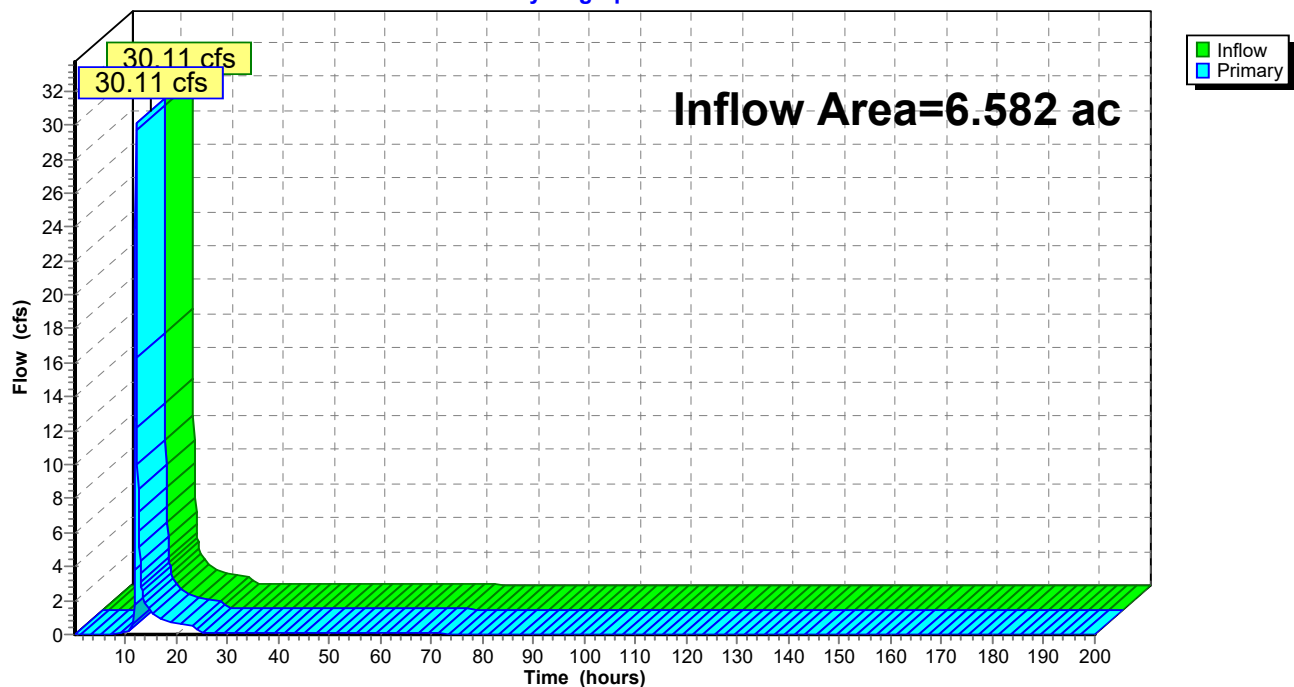
Summary for Link 40L: POA 4

Inflow Area = 6.582 ac, 37.07% Impervious, Inflow Depth = 4.70" for 100-yr event
Inflow = 30.11 cfs @ 12.08 hrs, Volume= 2.577 af
Primary = 30.11 cfs @ 12.08 hrs, Volume= 2.577 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 47R : Flowpath Downstream POA 4

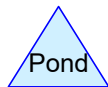
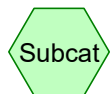
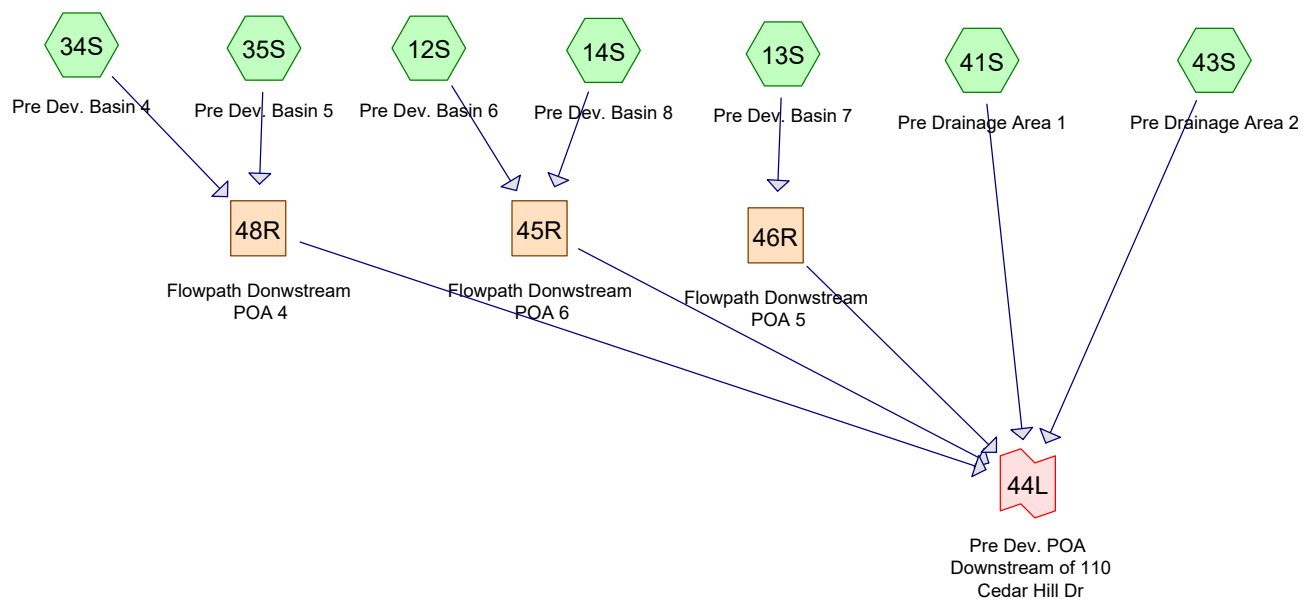
Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 40L: POA 4

Hydrograph



9. PRE AND POST DEVELOPMENT ANALYSIS DOWNSTREAM OF 110 CEDAR HILL DR



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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
198.400	68	1 acre lots, 20% imp, HSG B (41S)
89.600	65	2 acre lots, 12% imp, HSG B (43S)
1.351	69	50-75% Grass cover, Fair, HSG B (14S)
1.518	56	Brush, Fair, HSG B (12S, 34S)
0.854	48	Brush, Good, HSG B (35S)
0.708	67	Brush, Poor, HSG B (13S)
23.054	60	Woods, Fair, HSG B (12S, 14S, 34S, 35S)
4.762	55	Woods, Good, HSG B (13S)
320.247	66	TOTAL AREA

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Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
320.247	HSG B	12S, 13S, 14S, 34S, 35S, 41S, 43S
0.000	HSG C	
0.000	HSG D	
0.000	Other	
320.247		TOTAL AREA

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Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	198.400	0.000	0.000	0.000	198.400	1 acre lots, 20% imp	41S
0.000	89.600	0.000	0.000	0.000	89.600	2 acre lots, 12% imp	43S
0.000	1.351	0.000	0.000	0.000	1.351	50-75% Grass cover, Fair	14S
0.000	1.518	0.000	0.000	0.000	1.518	Brush, Fair	12S, 34S
0.000	0.854	0.000	0.000	0.000	0.854	Brush, Good	35S
0.000	0.708	0.000	0.000	0.000	0.708	Brush, Poor	13S
0.000	23.054	0.000	0.000	0.000	23.054	Woods, Fair	12S, 14S, 34S, 35S
0.000	4.762	0.000	0.000	0.000	4.762	Woods, Good	13S
0.000	320.247	0.000	0.000	0.000	320.247	TOTAL AREA	

Downstream Analysis - ZCP

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Type II 24-hr 1-yr Rainfall=3.16"

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment12S: Pre Dev. Basin 6 Runoff Area=441,055 sf 0.00% Impervious Runoff Depth=0.39"
Flow Length=1,222' Slope=0.0441 '/' Tc=12.4 min CN=60 Runoff=3.49 cfs 0.331 af

Subcatchment13S: Pre Dev. Basin 7 Runoff Area=238,293 sf 0.00% Impervious Runoff Depth=0.30"
Flow Length=977' Slope=0.0468 '/' Tc=10.2 min CN=57 Runoff=1.16 cfs 0.135 af

Subcatchment14S: Pre Dev. Basin 8 Runoff Area=289,814 sf 0.00% Impervious Runoff Depth=0.46"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=3.40 cfs 0.257 af

Subcatchment34S: Pre Dev. Basin 4 Runoff Area=130,388 sf 0.00% Impervious Runoff Depth=0.36"
Flow Length=561' Slope=0.0221 '/' Tc=8.9 min CN=59 Runoff=0.97 cfs 0.090 af

Subcatchment35S: Pre Dev. Basin 5 Runoff Area=305,128 sf 0.00% Impervious Runoff Depth=0.36"
Flow Length=998' Slope=0.0301 '/' Tc=12.3 min CN=59 Runoff=2.07 cfs 0.210 af

Subcatchment41S: Pre Drainage Area 1 Runoff Area=198.400 ac 20.00% Impervious Runoff Depth=0.71"
Flow Length=4,195' Slope=0.0177 '/' Tc=45.4 min CN=68 Runoff=74.63 cfs 11.755 af

Subcatchment43S: Pre Drainage Area 2 Runoff Area=89.600 ac 12.00% Impervious Runoff Depth=0.58"
Flow Length=3,771' Slope=0.0323 '/' Tc=33.2 min CN=65 Runoff=31.19 cfs 4.339 af

Reach 45R: Flowpath Downstream POA Avg. Flow Depth=0.62' Max Vel=1.00 fps Inflow=6.37 cfs 0.589 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=2.71 cfs 0.589 af

Reach 46R: Flowpath Downstream POA Avg. Flow Depth=0.24' Max Vel=0.72 fps Inflow=1.16 cfs 0.135 af
n=0.100 L=1,036.0' S=0.0267 '/' Capacity=8.94 cfs Outflow=0.49 cfs 0.135 af

Reach 48R: Flowpath Downstream POA Avg. Flow Depth=0.32' Max Vel=0.68 fps Inflow=2.92 cfs 0.299 af
n=0.100 L=2,757.0' S=0.0173 '/' Capacity=7.18 cfs Outflow=0.68 cfs 0.299 af

Link 44L: Pre Dev. POA Downstream of 110 Cedar Hill Dr Inflow=103.40 cfs 17.116 af
Primary=103.40 cfs 17.116 af

Total Runoff Area = 320.247 ac Runoff Volume = 17.116 af Average Runoff Depth = 0.64"
84.25% Pervious = 269.815 ac 15.75% Impervious = 50.432 ac

Downstream Analysis - ZCP

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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Subcatchment 12S: Pre Dev. Basin 6

Runoff = 3.49 cfs @ 12.10 hrs, Volume= 0.331 af, Depth= 0.39"

Routed to Reach 45R : Flowpath Downstream POA 6

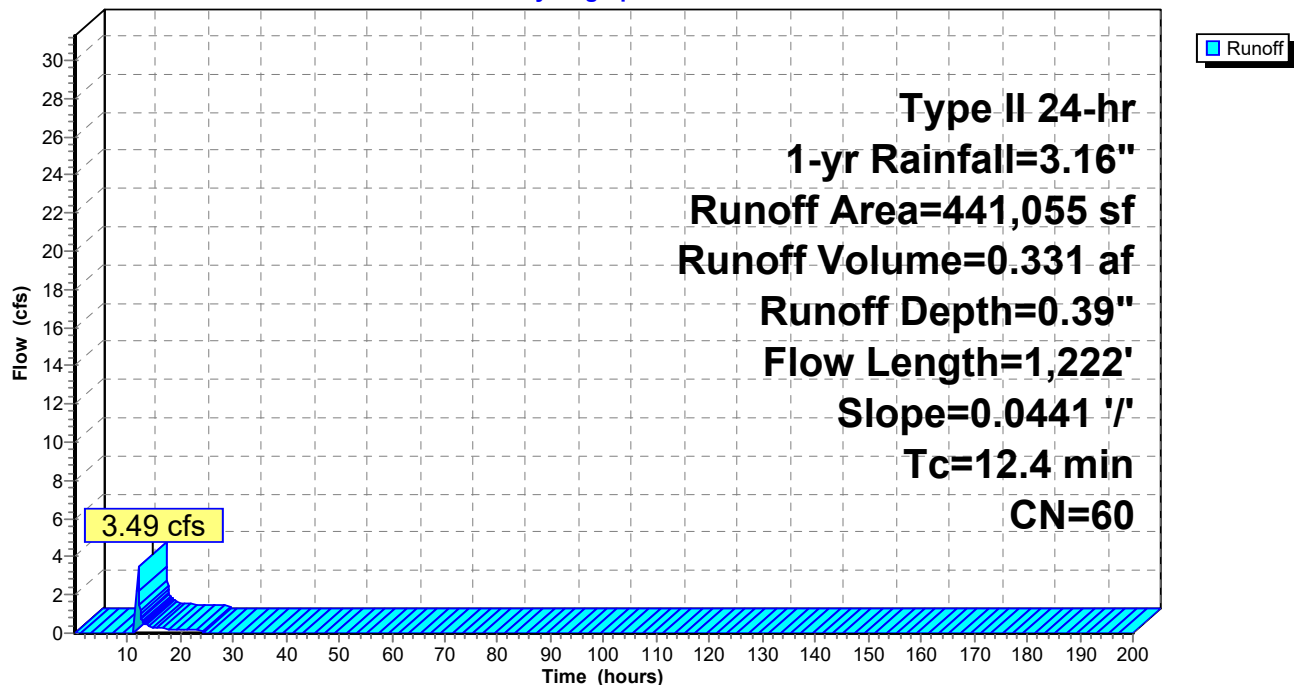
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 1-yr Rainfall=3.16"

Area (sf)	CN	Description
401,238	60	Woods, Fair, HSG B
39,817	56	Brush, Fair, HSG B
441,055	60	Weighted Average
441,055		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	1,222	0.0441	1.65		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 12S: Pre Dev. Basin 6

Hydrograph



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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Subcatchment 13S: Pre Dev. Basin 7

Runoff = 1.16 cfs @ 12.09 hrs, Volume= 0.135 af, Depth= 0.30"

Routed to Reach 46R : Flowpath Downstream POA 5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

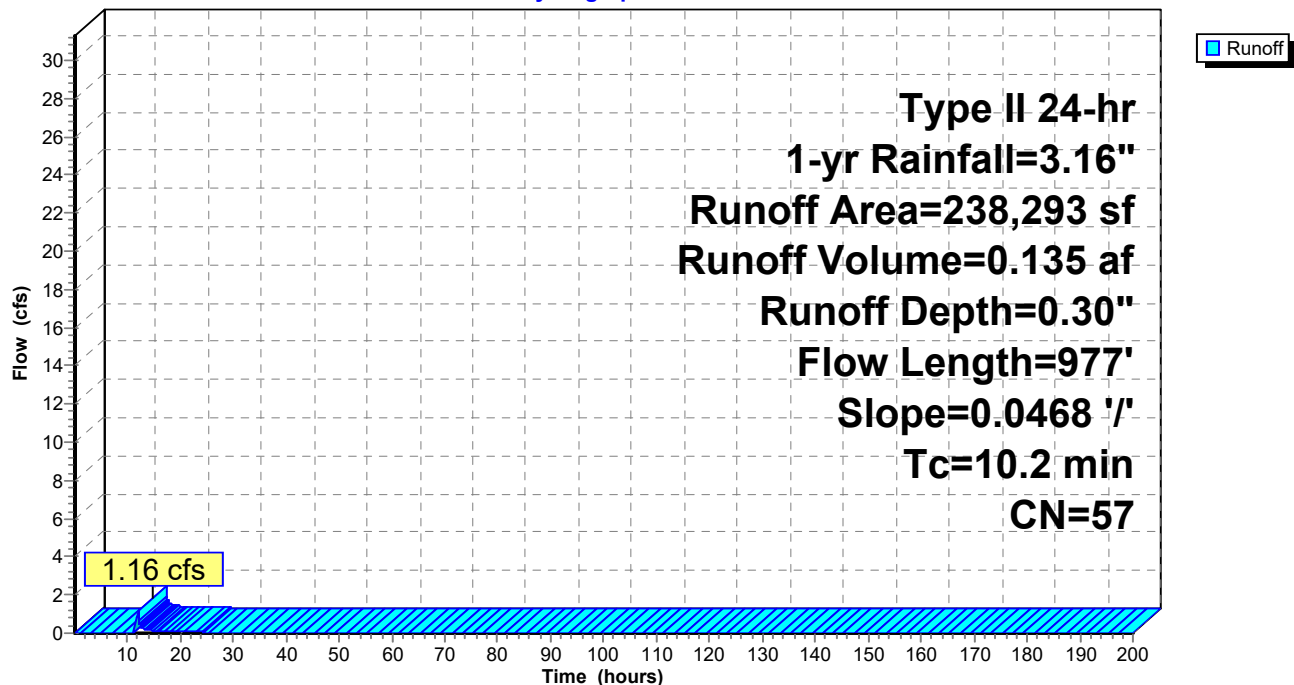
Type II 24-hr 1-yr Rainfall=3.16"

Area (sf)	CN	Description
207,447	55	Woods, Good, HSG B
30,846	67	Brush, Poor, HSG B
238,293	57	Weighted Average
238,293		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	977	0.0468	1.60		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 13S: Pre Dev. Basin 7

Hydrograph



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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Subcatchment 14S: Pre Dev. Basin 8

Runoff = 3.40 cfs @ 12.03 hrs, Volume= 0.257 af, Depth= 0.46"
Routed to Reach 45R : Flowpath Downstream POA 6

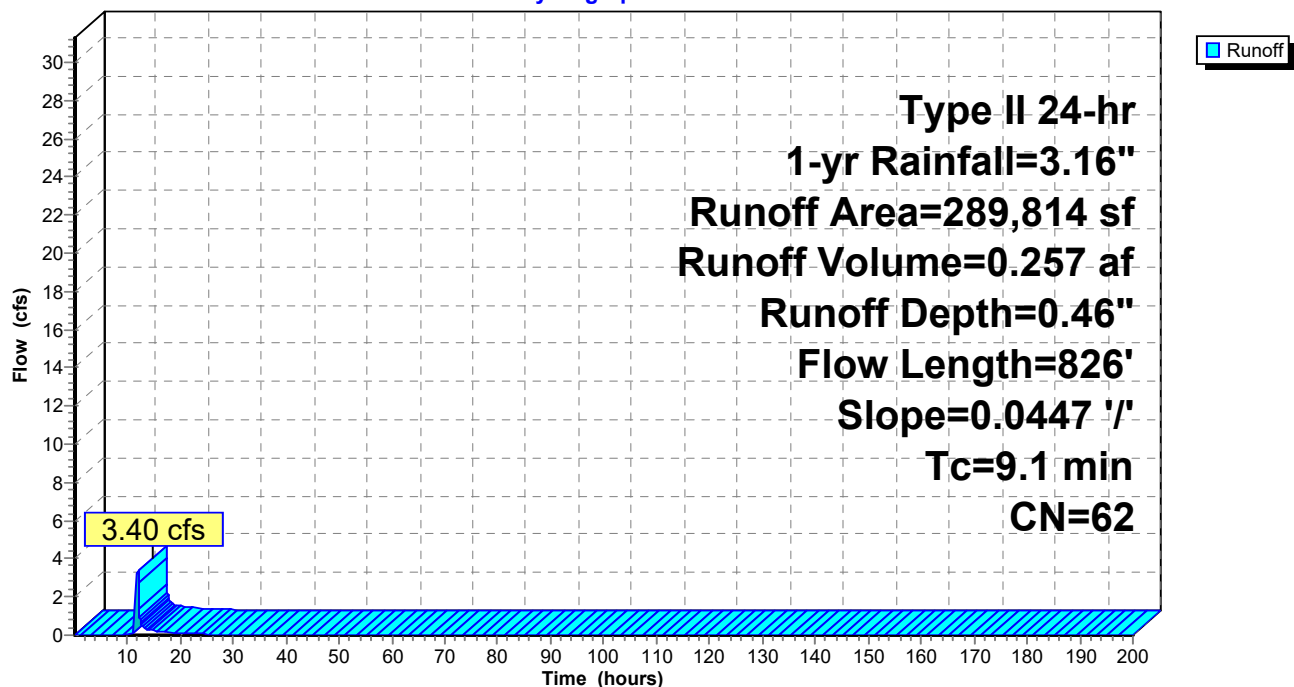
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 1-yr Rainfall=3.16"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
58,855	69	50-75% Grass cover, Fair, HSG B
289,814	62	Weighted Average
289,814		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 14S: Pre Dev. Basin 8

Hydrograph



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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Subcatchment 34S: Pre Dev. Basin 4

Runoff = 0.97 cfs @ 12.04 hrs, Volume= 0.090 af, Depth= 0.36"

Routed to Reach 48R : Flowpath Downstream POA 4

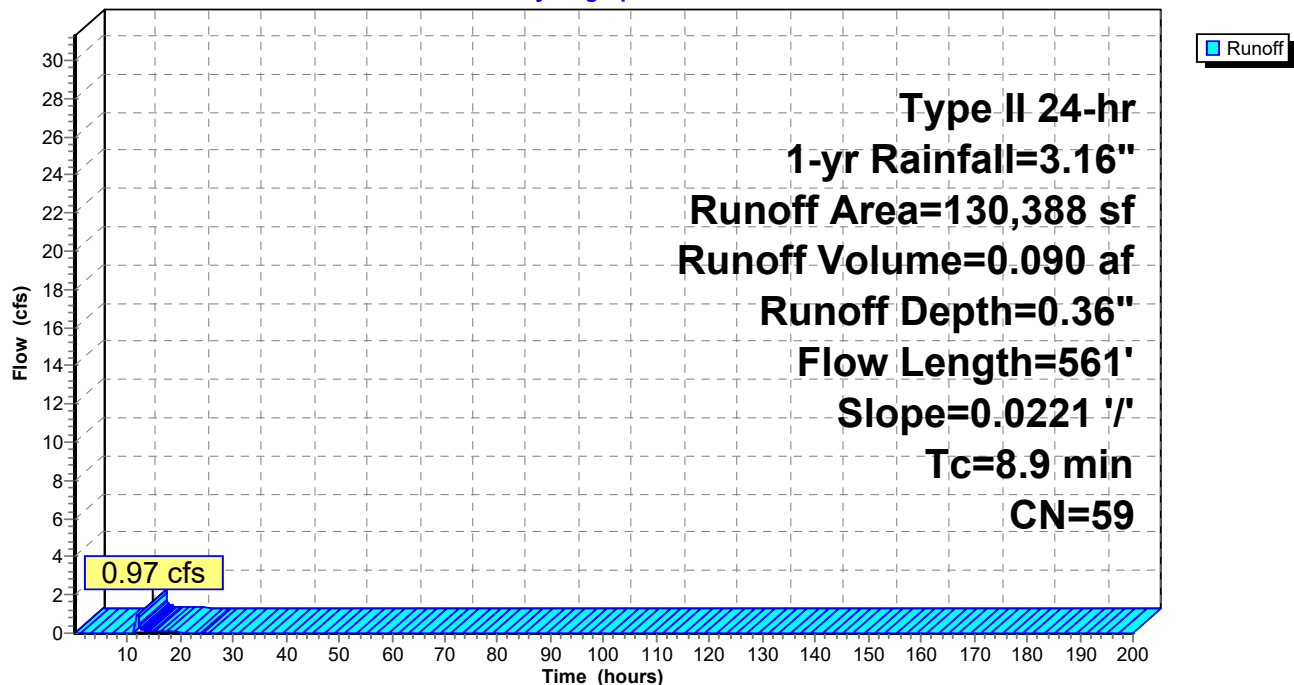
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 1-yr Rainfall=3.16"

Area (sf)	CN	Description
104,102	60	Woods, Fair, HSG B
26,286	56	Brush, Fair, HSG B
130,388	59	Weighted Average
130,388		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	561	0.0221	1.06		Kirpich Method, General overland flow k= 2.00

Subcatchment 34S: Pre Dev. Basin 4

Hydrograph



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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Subcatchment 35S: Pre Dev. Basin 5

Runoff = 2.07 cfs @ 12.10 hrs, Volume= 0.210 af, Depth= 0.36"

Routed to Reach 48R : Flowpath Downstream POA 4

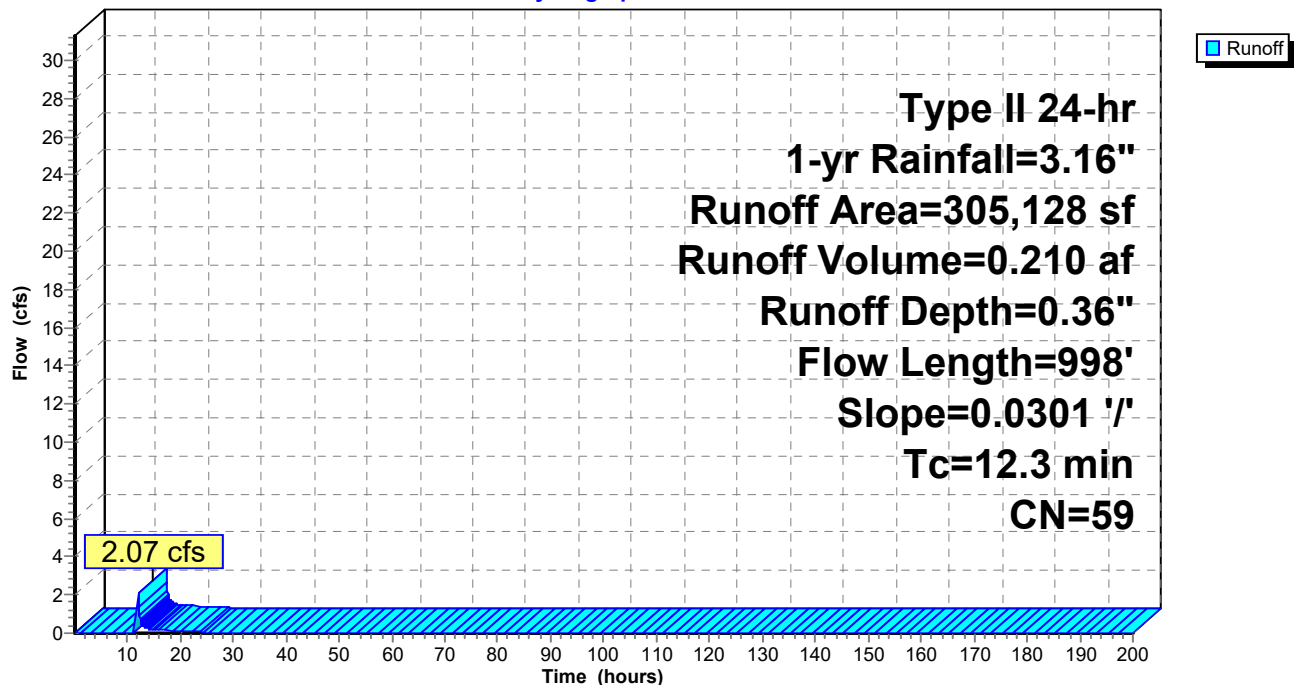
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 1-yr Rainfall=3.16"

Area (sf)	CN	Description
267,919	60	Woods, Fair, HSG B
37,209	48	Brush, Good, HSG B
305,128	59	Weighted Average
305,128		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	998	0.0301	1.36		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 35S: Pre Dev. Basin 5

Hydrograph



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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Subcatchment 41S: Pre Drainage Area 1

Runoff = 74.63 cfs @ 12.51 hrs, Volume= 11.755 af, Depth= 0.71"

Routed to Link 44L : Pre Dev. POA Downstream of 110 Cedar Hill Dr

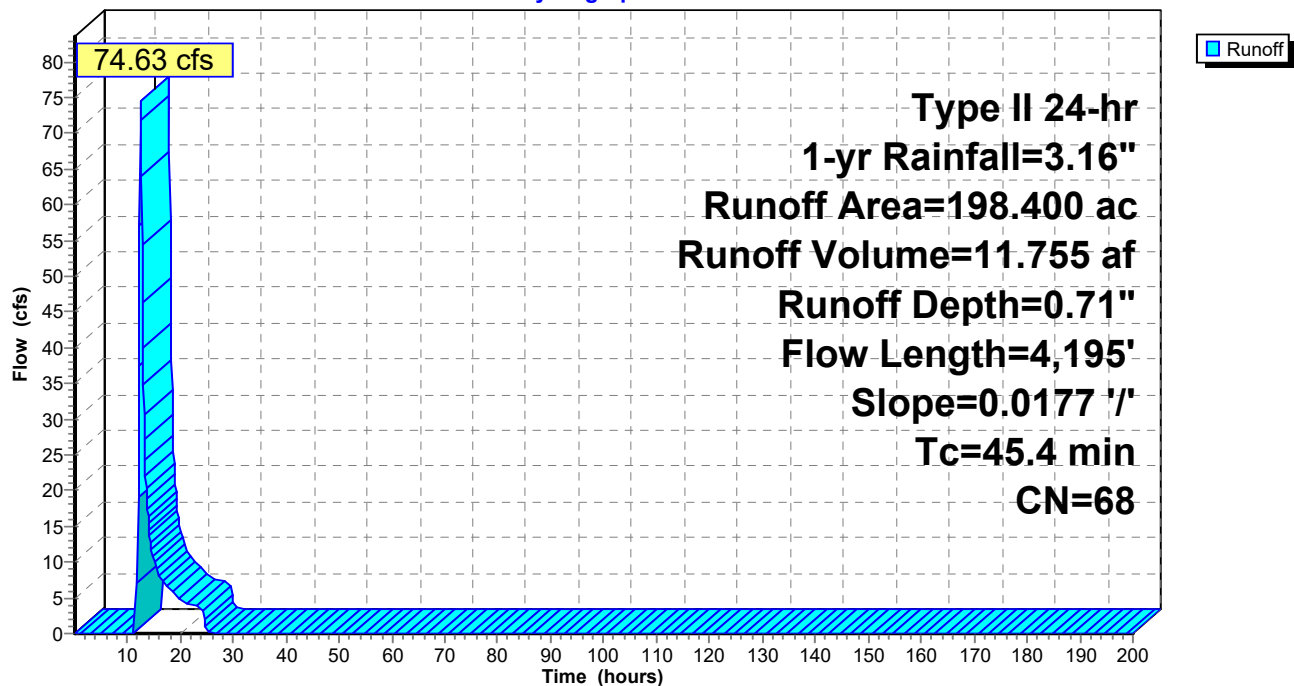
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 1-yr Rainfall=3.16"

Area (ac)	CN	Description
198.400	68	1 acre lots, 20% imp, HSG B
158.720		80.00% Pervious Area
39.680		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.4	4,195	0.0177	1.54		Kirpich Method, General overland flow k= 2.00

Subcatchment 41S: Pre Drainage Area 1

Hydrograph



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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Subcatchment 43S: Pre Drainage Area 2

Runoff = 31.19 cfs @ 12.35 hrs, Volume= 4.339 af, Depth= 0.58"

Routed to Link 44L : Pre Dev. POA Downstream of 110 Cedar Hill Dr

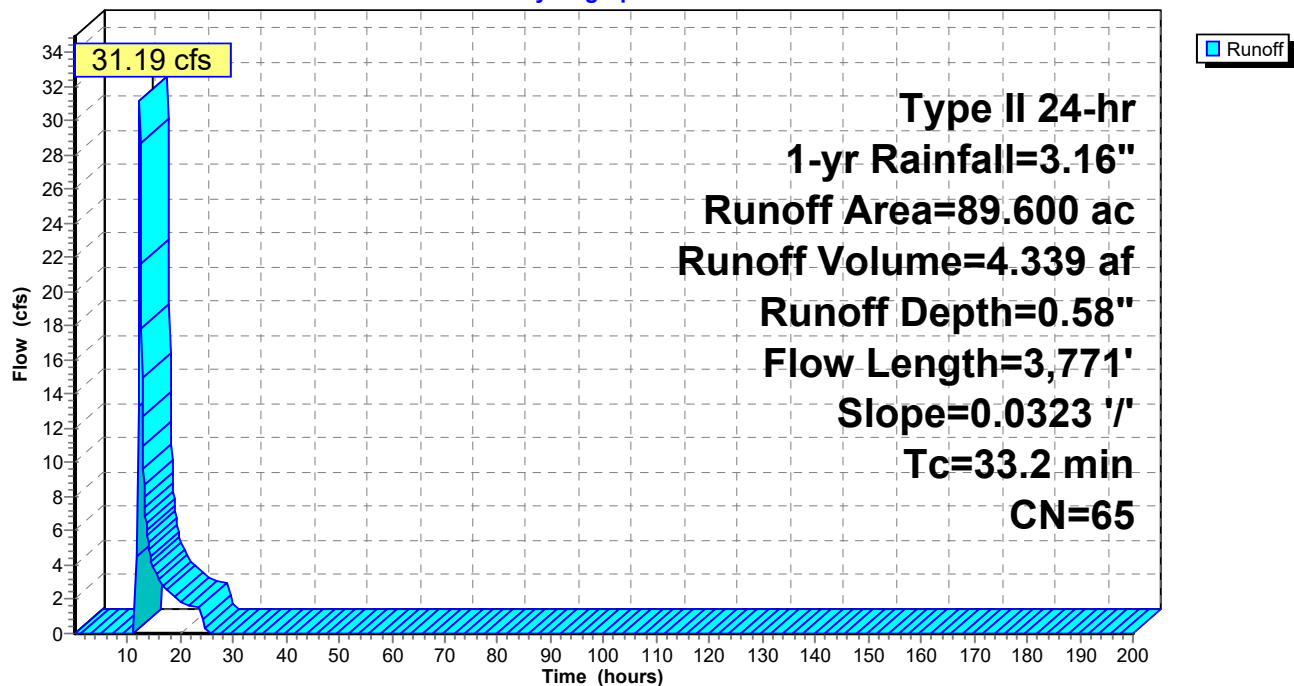
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 1-yr Rainfall=3.16"

Area (ac)	CN	Description
89.600	65	2 acre lots, 12% imp, HSG B
78.848		88.00% Pervious Area
10.752		12.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.2	3,771	0.0323	1.89		Kirpich Method, General overland flow k= 2.00

Subcatchment 43S: Pre Drainage Area 2

Hydrograph



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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Reach 45R: Flowpath Downstream POA 6

Inflow Area = 16.778 ac, 0.00% Impervious, Inflow Depth = 0.42" for 1-yr event
Inflow = 6.37 cfs @ 12.07 hrs, Volume= 0.589 af
Outflow = 2.71 cfs @ 12.72 hrs, Volume= 0.589 af, Atten= 57%, Lag= 39.0 min
Routed to Link 44L : Pre Dev. POA Downstream of 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.00 fps, Min. Travel Time= 25.1 min

Avg. Velocity= 0.21 fps, Avg. Travel Time= 120.1 min

Peak Storage= 4,105 cf @ 12.29 hrs

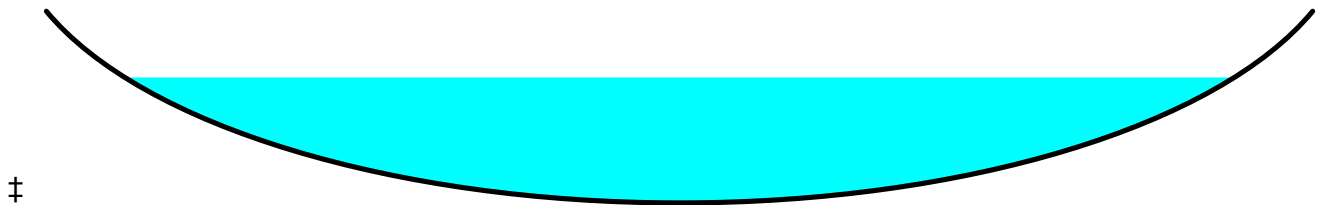
Average Depth at Peak Storage= 0.62' , Surface Width= 6.63'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

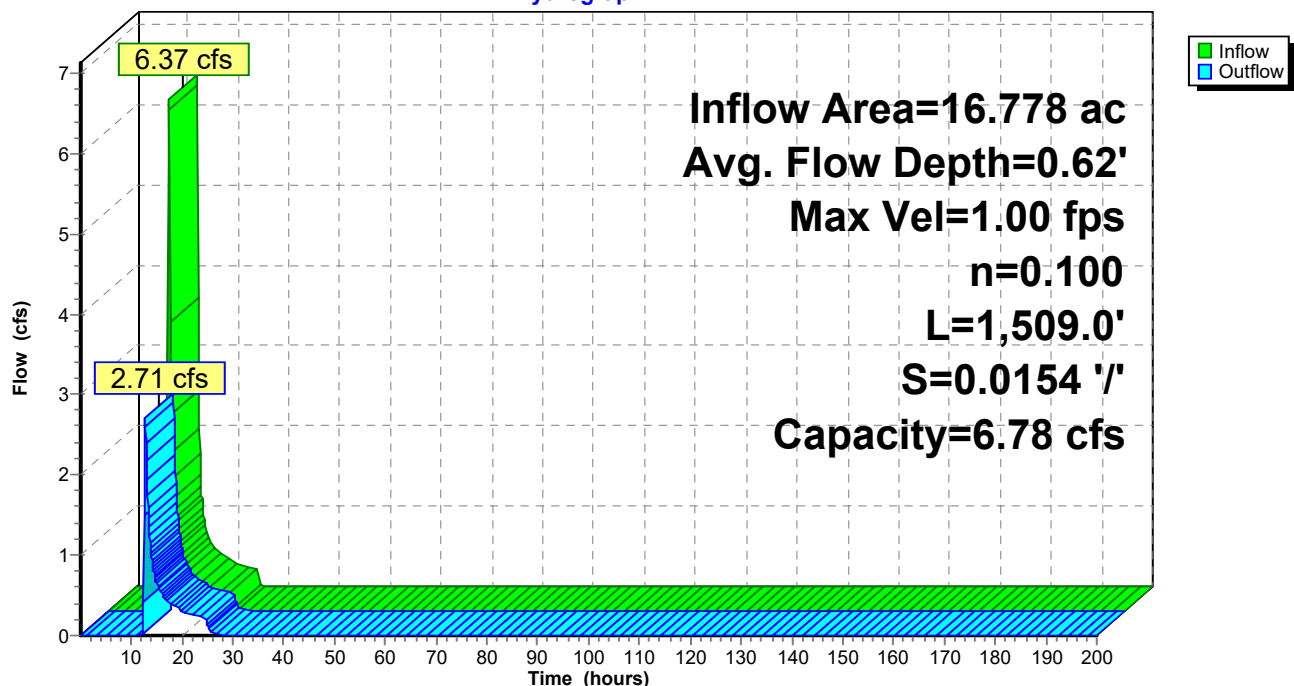
Length= 1,509.0' Slope= 0.0154 '/'

Inlet Invert= 505.43', Outlet Invert= 482.25'



Reach 45R: Flowpath Downstream POA 6

Hydrograph



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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Reach 46R: Flowpath Downstream POA 5

Inflow Area = 5.470 ac, 0.00% Impervious, Inflow Depth = 0.30" for 1-yr event
Inflow = 1.16 cfs @ 12.09 hrs, Volume= 0.135 af
Outflow = 0.49 cfs @ 12.74 hrs, Volume= 0.135 af, Atten= 58%, Lag= 38.7 min
Routed to Link 44L : Pre Dev. POA Downstream of 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 0.72 fps, Min. Travel Time= 24.0 min

Avg. Velocity= 0.24 fps, Avg. Travel Time= 71.0 min

Peak Storage= 708 cf @ 12.34 hrs

Average Depth at Peak Storage= 0.24' , Surface Width= 4.19'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 8.94 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

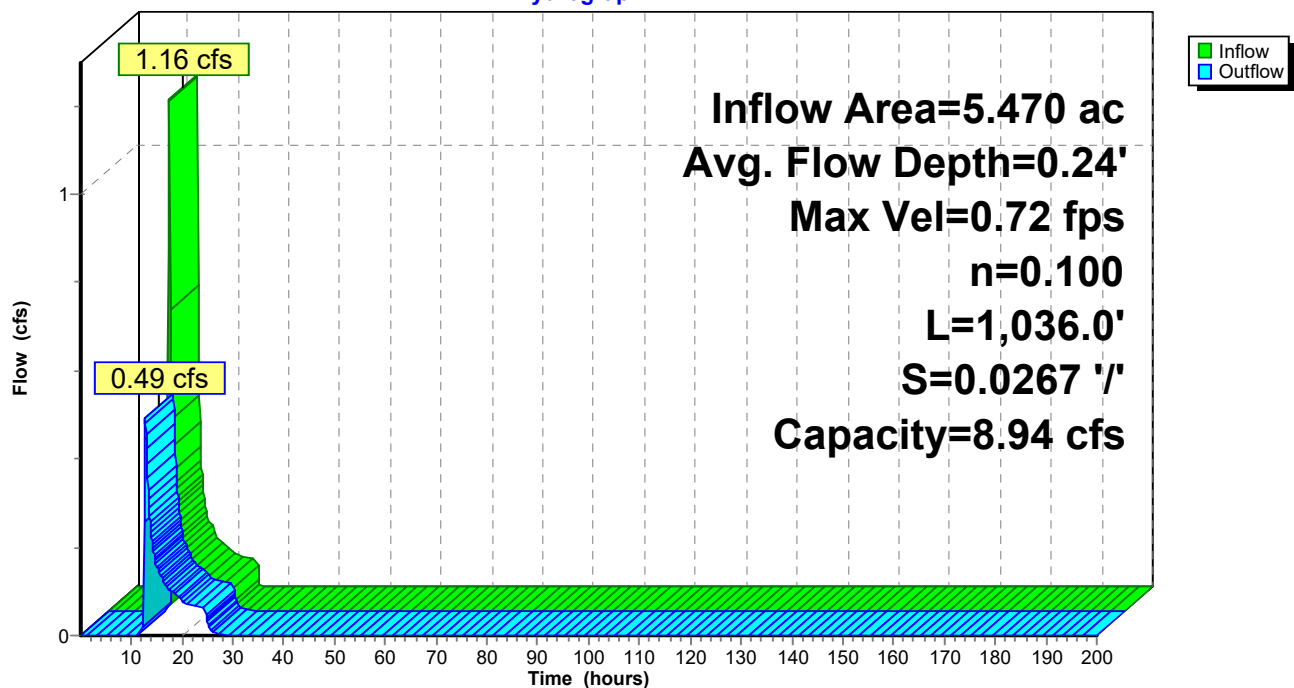
Length= 1,036.0' Slope= 0.0267 '/'

Inlet Invert= 509.93', Outlet Invert= 482.25'



Reach 46R: Flowpath Downstream POA 5

Hydrograph



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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Reach 48R: Flowpath Downstream POA 4

Inflow Area = 9.998 ac, 0.00% Impervious, Inflow Depth = 0.36" for 1-yr event
Inflow = 2.92 cfs @ 12.09 hrs, Volume= 0.299 af
Outflow = 0.68 cfs @ 13.78 hrs, Volume= 0.299 af, Atten= 77%, Lag= 101.6 min
Routed to Link 44L : Pre Dev. POA Downstream of 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 0.68 fps, Min. Travel Time= 67.1 min

Avg. Velocity = 0.16 fps, Avg. Travel Time= 293.9 min

Peak Storage= 2,749 cf @ 12.65 hrs

Average Depth at Peak Storage= 0.32' , Surface Width= 4.75'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 7.18 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

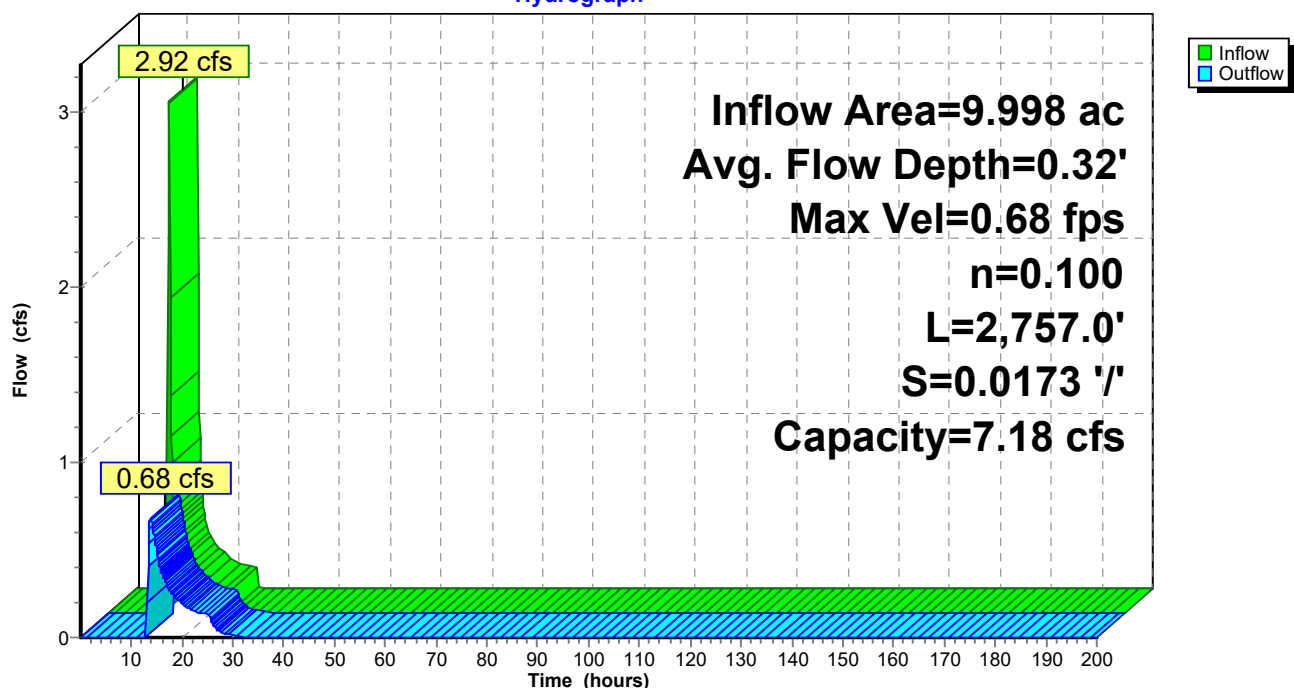
Length= 2,757.0' Slope= 0.0173 '/'

Inlet Invert= 529.84', Outlet Invert= 482.25'



Reach 48R: Flowpath Downstream POA 4

Hydrograph



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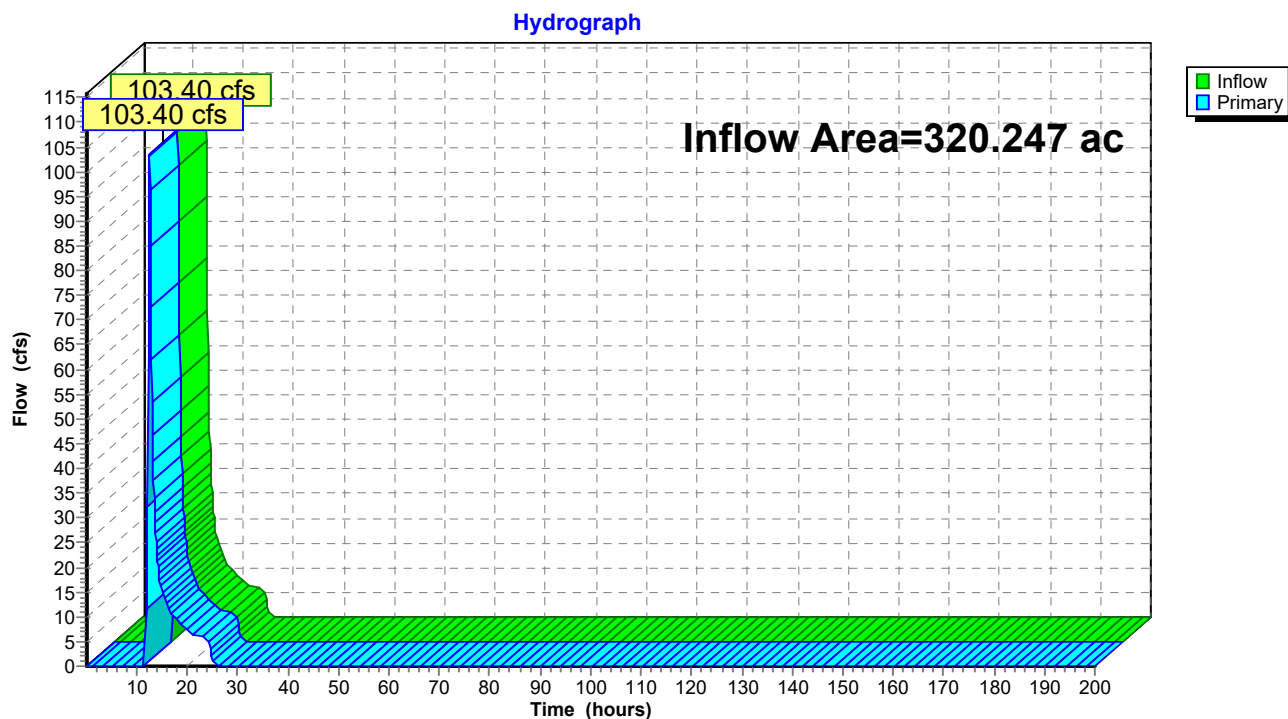
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Summary for Link 44L: Pre Dev. POA Downstream of 110 Cedar Hill Dr

Inflow Area = 320.247 ac, 15.75% Impervious, Inflow Depth = 0.64" for 1-yr event
Inflow = 103.40 cfs @ 12.47 hrs, Volume= 17.116 af
Primary = 103.40 cfs @ 12.47 hrs, Volume= 17.116 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 44L: Pre Dev. POA Downstream of 110 Cedar Hill Dr



Downstream Analysis - ZCP

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Type II 24-hr 2-yr Rainfall=3.82"

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment12S: Pre Dev. Basin 6 Runoff Area=441,055 sf 0.00% Impervious Runoff Depth=0.68"
Flow Length=1,222' Slope=0.0441 '/' Tc=12.4 min CN=60 Runoff=7.29 cfs 0.570 af

Subcatchment13S: Pre Dev. Basin 7 Runoff Area=238,293 sf 0.00% Impervious Runoff Depth=0.54"
Flow Length=977' Slope=0.0468 '/' Tc=10.2 min CN=57 Runoff=2.89 cfs 0.247 af

Subcatchment14S: Pre Dev. Basin 8 Runoff Area=289,814 sf 0.00% Impervious Runoff Depth=0.77"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=6.67 cfs 0.428 af

Subcatchment34S: Pre Dev. Basin 4 Runoff Area=130,388 sf 0.00% Impervious Runoff Depth=0.63"
Flow Length=561' Slope=0.0221 '/' Tc=8.9 min CN=59 Runoff=2.26 cfs 0.157 af

Subcatchment35S: Pre Dev. Basin 5 Runoff Area=305,128 sf 0.00% Impervious Runoff Depth=0.63"
Flow Length=998' Slope=0.0301 '/' Tc=12.3 min CN=59 Runoff=4.56 cfs 0.368 af

Subcatchment41S: Pre Drainage Area 1 Runoff Area=198.400 ac 20.00% Impervious Runoff Depth=1.09"
Flow Length=4,195' Slope=0.0177 '/' Tc=45.4 min CN=68 Runoff=125.05 cfs 18.066 af

Subcatchment43S: Pre Drainage Area 2 Runoff Area=89.600 ac 12.00% Impervious Runoff Depth=0.93"
Flow Length=3,771' Slope=0.0323 '/' Tc=33.2 min CN=65 Runoff=56.73 cfs 6.913 af

Reach 45R: Flowpath Downstream Avg. Flow Depth=0.94' Max Vel=1.32 fps Inflow=13.31 cfs 0.998 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=6.66 cfs 0.998 af

Reach 46R: Flowpath Downstream POA Avg. Flow Depth=0.42' Max Vel=1.02 fps Inflow=2.89 cfs 0.247 af
n=0.100 L=1,036.0' S=0.0267 '/' Capacity=8.94 cfs Outflow=1.52 cfs 0.247 af

Reach 48R: Flowpath Downstream POA Avg. Flow Depth=0.49' Max Vel=0.92 fps Inflow=6.43 cfs 0.525 af
n=0.100 L=2,757.0' S=0.0173 '/' Capacity=7.18 cfs Outflow=1.77 cfs 0.525 af

Link 44L: Pre Dev. POA Downstream of 110 Cedar Hill Dr Inflow=182.69 cfs 26.748 af
Primary=182.69 cfs 26.748 af

Total Runoff Area = 320.247 ac Runoff Volume = 26.748 af Average Runoff Depth = 1.00"
84.25% Pervious = 269.815 ac 15.75% Impervious = 50.432 ac

Downstream Analysis - ZCP

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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Subcatchment 12S: Pre Dev. Basin 6

Runoff = 7.29 cfs @ 12.08 hrs, Volume= 0.570 af, Depth= 0.68"
Routed to Reach 45R : Flowpath Downstream POA 6

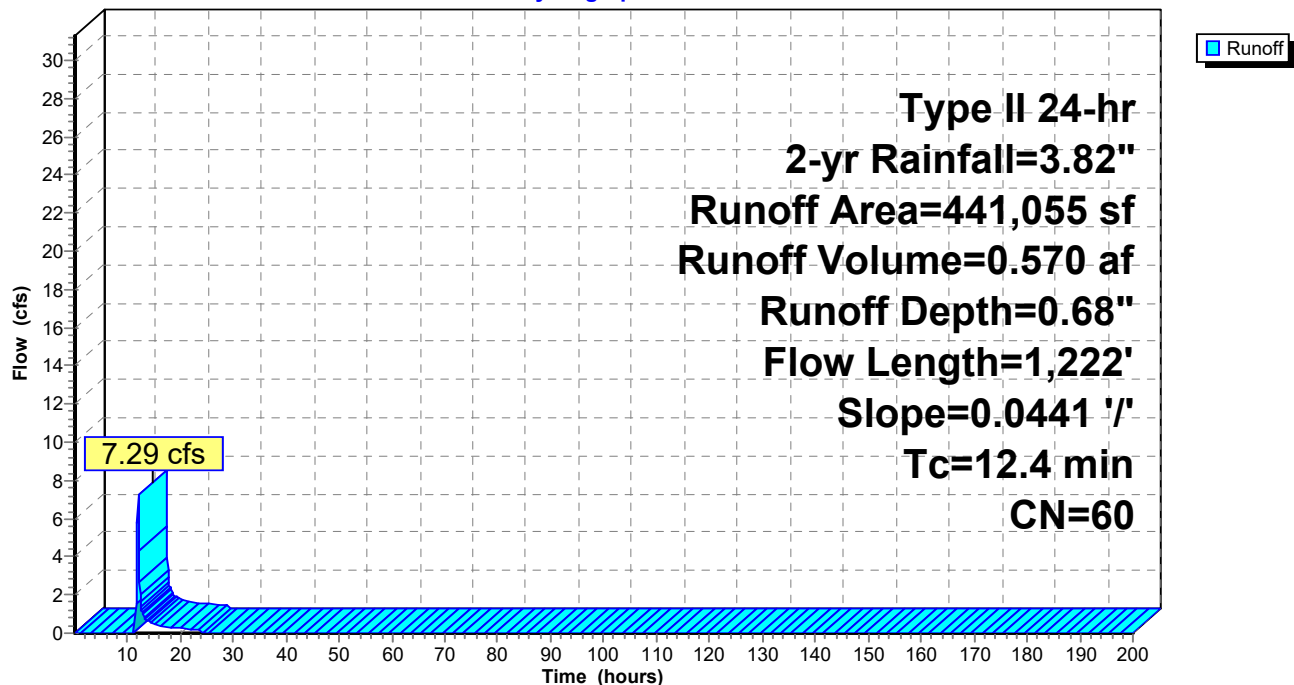
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 2-yr Rainfall=3.82"

Area (sf)	CN	Description
401,238	60	Woods, Fair, HSG B
39,817	56	Brush, Fair, HSG B
441,055	60	Weighted Average
441,055		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	1,222	0.0441	1.65		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 12S: Pre Dev. Basin 6

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Subcatchment 13S: Pre Dev. Basin 7

Runoff = 2.89 cfs @ 12.06 hrs, Volume= 0.247 af, Depth= 0.54"

Routed to Reach 46R : Flowpath Downstream POA 5

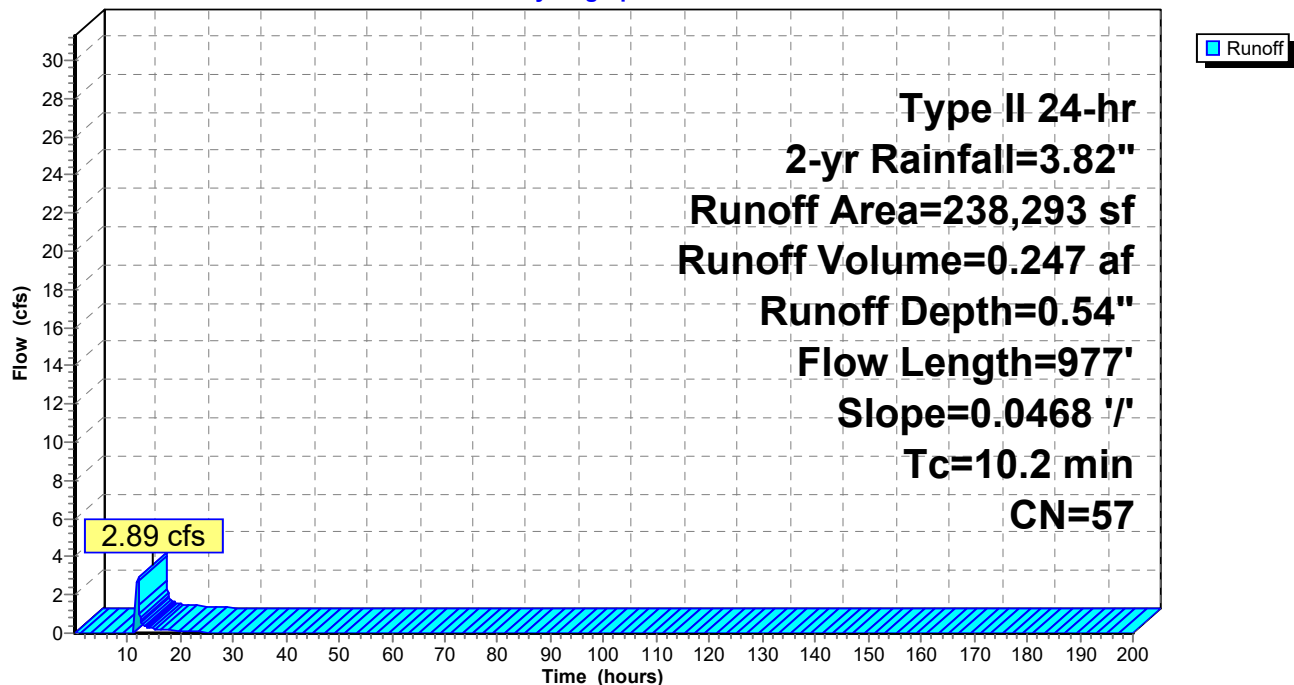
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 2-yr Rainfall=3.82"

Area (sf)	CN	Description
207,447	55	Woods, Good, HSG B
30,846	67	Brush, Poor, HSG B
238,293	57	Weighted Average
238,293		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	977	0.0468	1.60		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 13S: Pre Dev. Basin 7

Hydrograph



Downstream Analysis - ZCP

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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Subcatchment 14S: Pre Dev. Basin 8

Runoff = 6.67 cfs @ 12.02 hrs, Volume= 0.428 af, Depth= 0.77"
Routed to Reach 45R : Flowpath Downstream POA 6

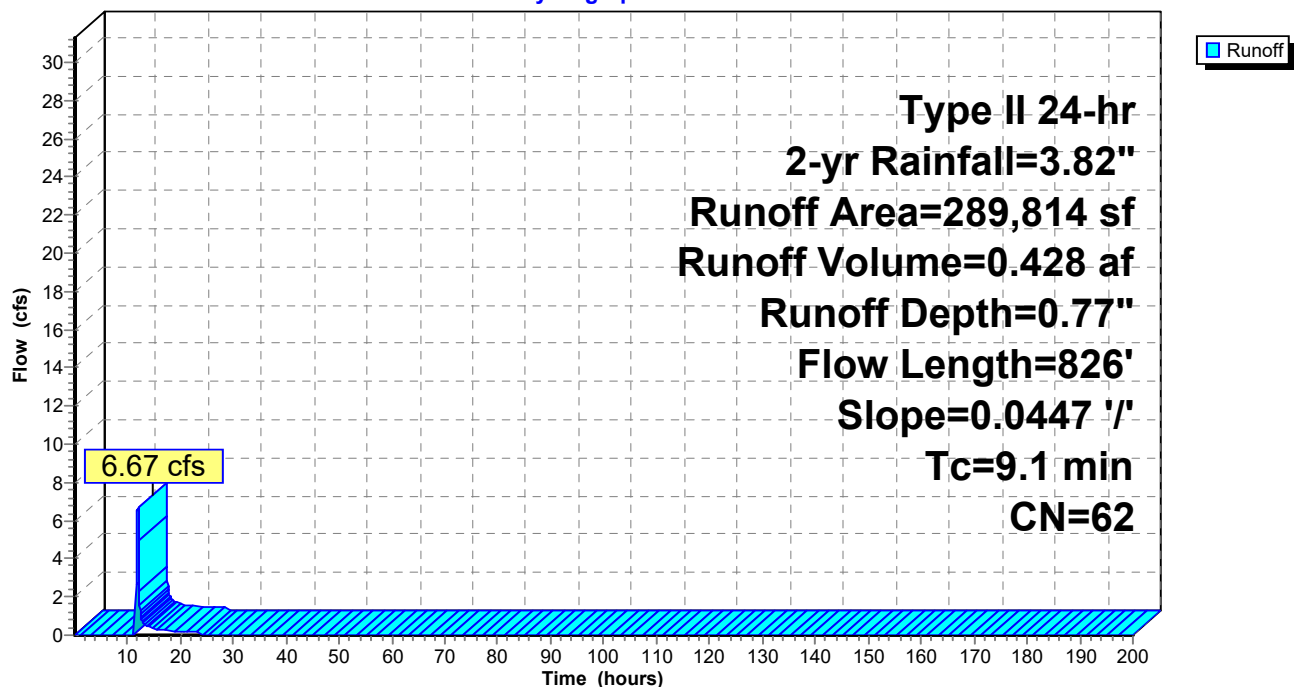
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 2-yr Rainfall=3.82"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
58,855	69	50-75% Grass cover, Fair, HSG B
289,814	62	Weighted Average
289,814		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 14S: Pre Dev. Basin 8

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Subcatchment 34S: Pre Dev. Basin 4

Runoff = 2.26 cfs @ 12.03 hrs, Volume= 0.157 af, Depth= 0.63"

Routed to Reach 48R : Flowpath Downstream POA 4

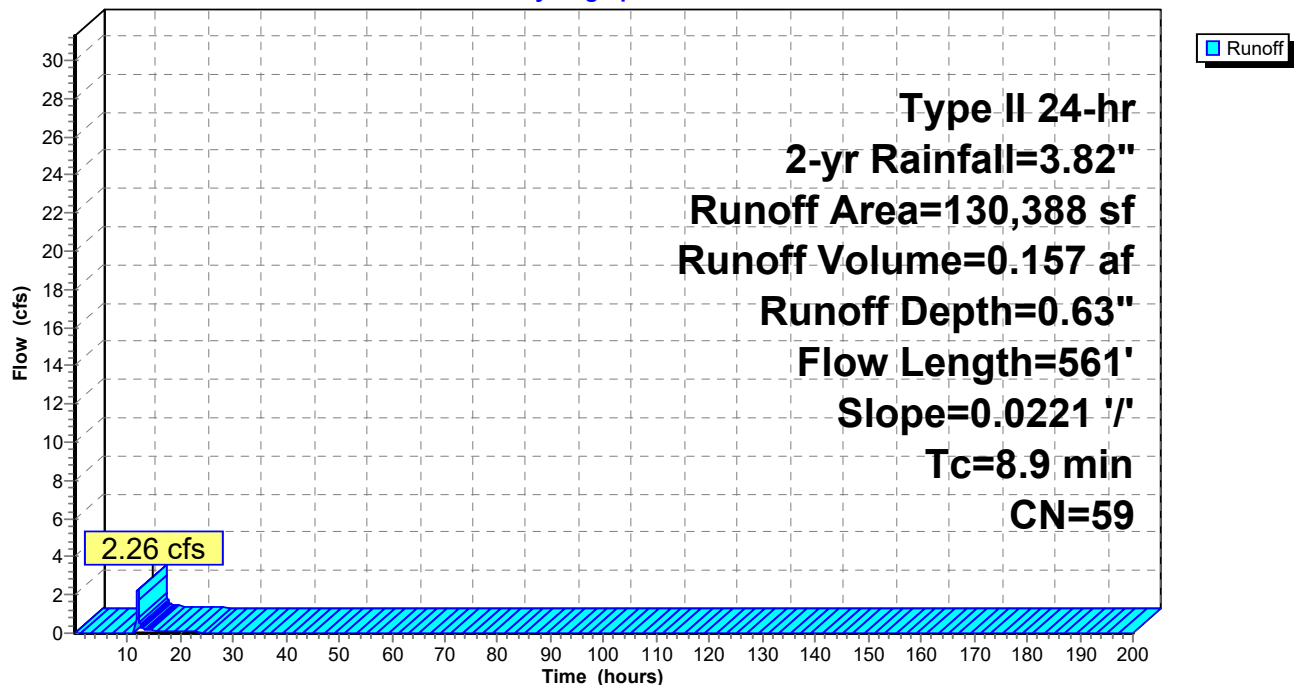
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 2-yr Rainfall=3.82"

Area (sf)	CN	Description
104,102	60	Woods, Fair, HSG B
26,286	56	Brush, Fair, HSG B
130,388	59	Weighted Average
130,388		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	561	0.0221	1.06		Kirpich Method, General overland flow k= 2.00

Subcatchment 34S: Pre Dev. Basin 4

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Subcatchment 35S: Pre Dev. Basin 5

Runoff = 4.56 cfs @ 12.09 hrs, Volume= 0.368 af, Depth= 0.63"

Routed to Reach 48R : Flowpath Downstream POA 4

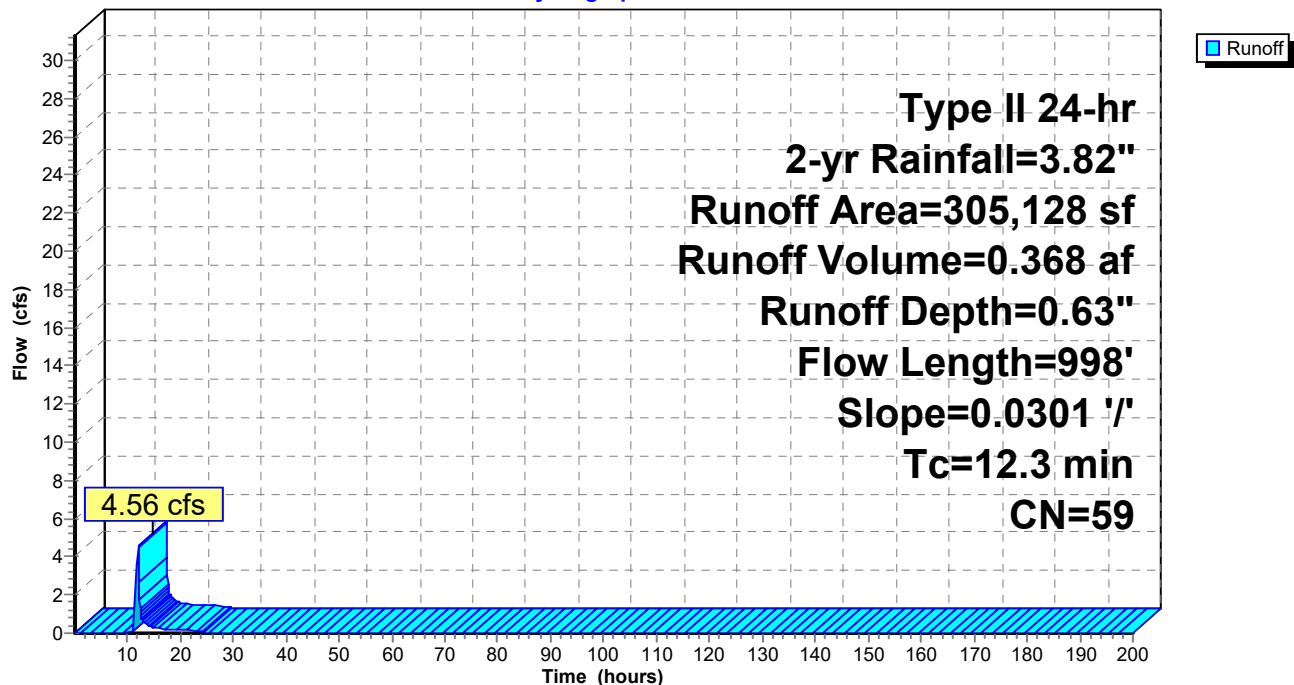
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 2-yr Rainfall=3.82"

Area (sf)	CN	Description
267,919	60	Woods, Fair, HSG B
37,209	48	Brush, Good, HSG B
305,128	59	Weighted Average
305,128		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	998	0.0301	1.36		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 35S: Pre Dev. Basin 5

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Subcatchment 41S: Pre Drainage Area 1

Runoff = 125.05 cfs @ 12.49 hrs, Volume= 18.066 af, Depth= 1.09"

Routed to Link 44L : Pre Dev. POA Downstream of 110 Cedar Hill Dr

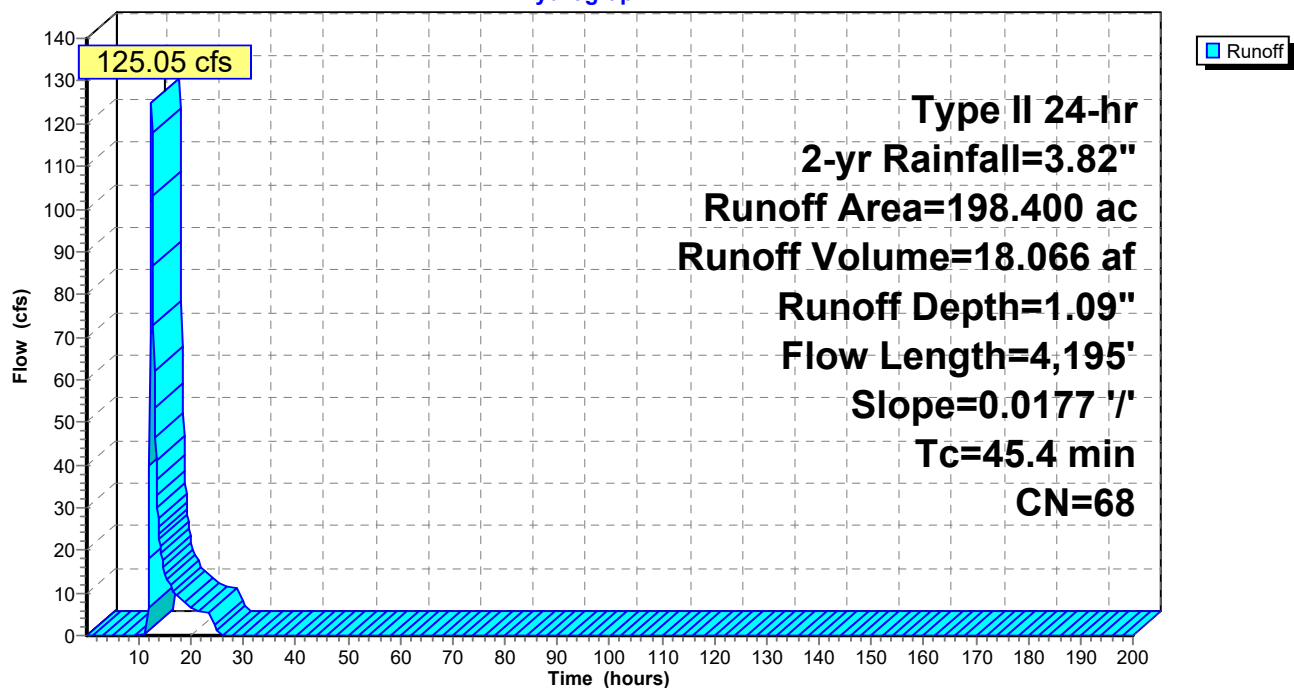
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 2-yr Rainfall=3.82"

Area (ac)	CN	Description
198.400	68	1 acre lots, 20% imp, HSG B
158.720		80.00% Pervious Area
39.680		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.4	4,195	0.0177	1.54		Kirpich Method, General overland flow k= 2.00

Subcatchment 41S: Pre Drainage Area 1

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Subcatchment 43S: Pre Drainage Area 2

Runoff = 56.73 cfs @ 12.33 hrs, Volume= 6.913 af, Depth= 0.93"

Routed to Link 44L : Pre Dev. POA Downstream of 110 Cedar Hill Dr

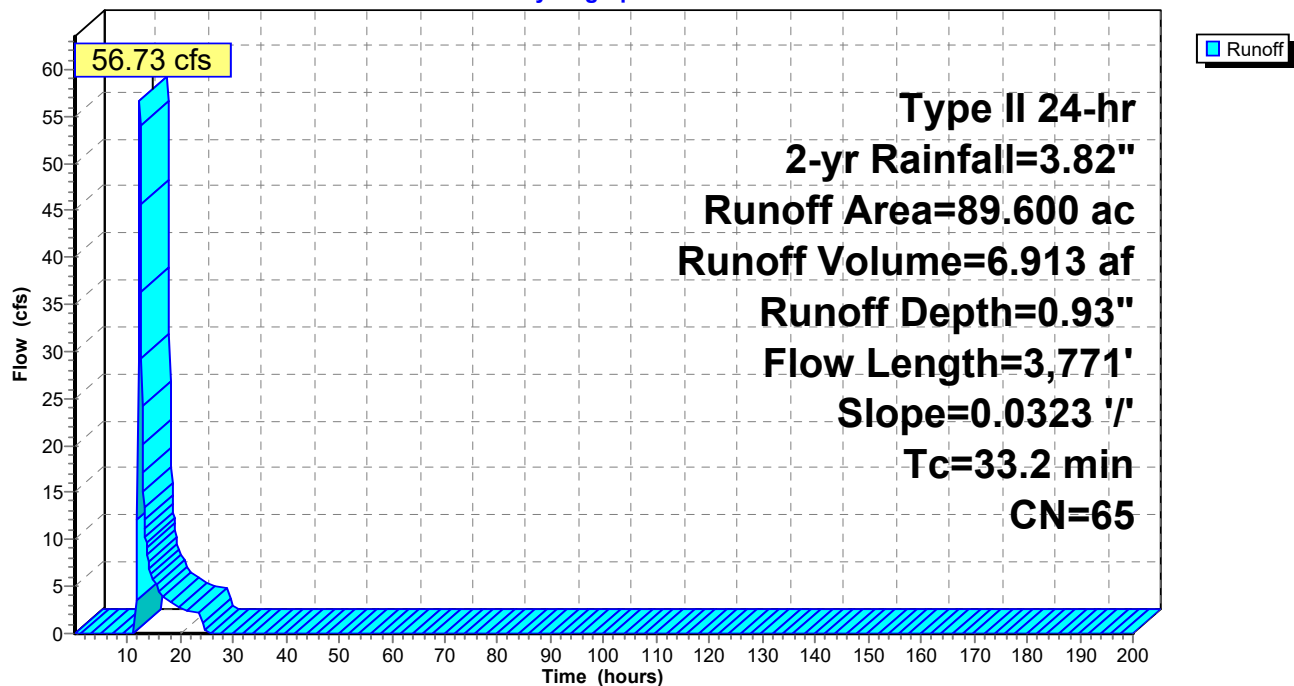
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 2-yr Rainfall=3.82"

Area (ac)	CN	Description
89.600	65	2 acre lots, 12% imp, HSG B
78.848		88.00% Pervious Area
10.752		12.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.2	3,771	0.0323	1.89		Kirpich Method, General overland flow k= 2.00

Subcatchment 43S: Pre Drainage Area 2

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Reach 45R: Flowpath Downstream POA 6

Inflow Area = 16.778 ac, 0.00% Impervious, Inflow Depth = 0.71" for 2-yr event
Inflow = 13.31 cfs @ 12.05 hrs, Volume= 0.998 af
Outflow = 6.66 cfs @ 12.54 hrs, Volume= 0.998 af, Atten= 50%, Lag= 29.7 min
Routed to Link 44L : Pre Dev. POA Downstream of 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.32 fps, Min. Travel Time= 19.1 min

Avg. Velocity= 0.23 fps, Avg. Travel Time= 108.7 min

Peak Storage= 7,785 cf @ 12.23 hrs

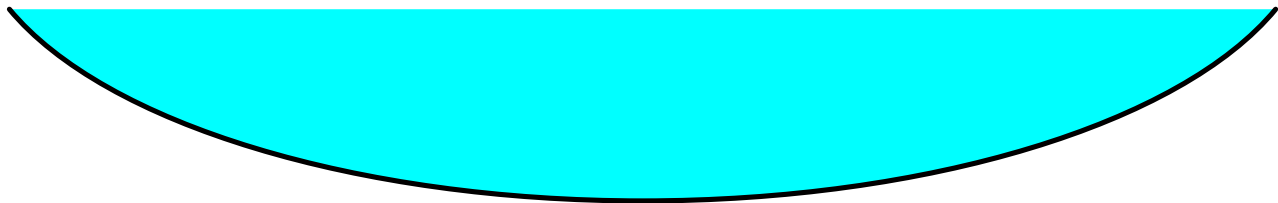
Average Depth at Peak Storage= 0.94' , Surface Width= 8.21'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

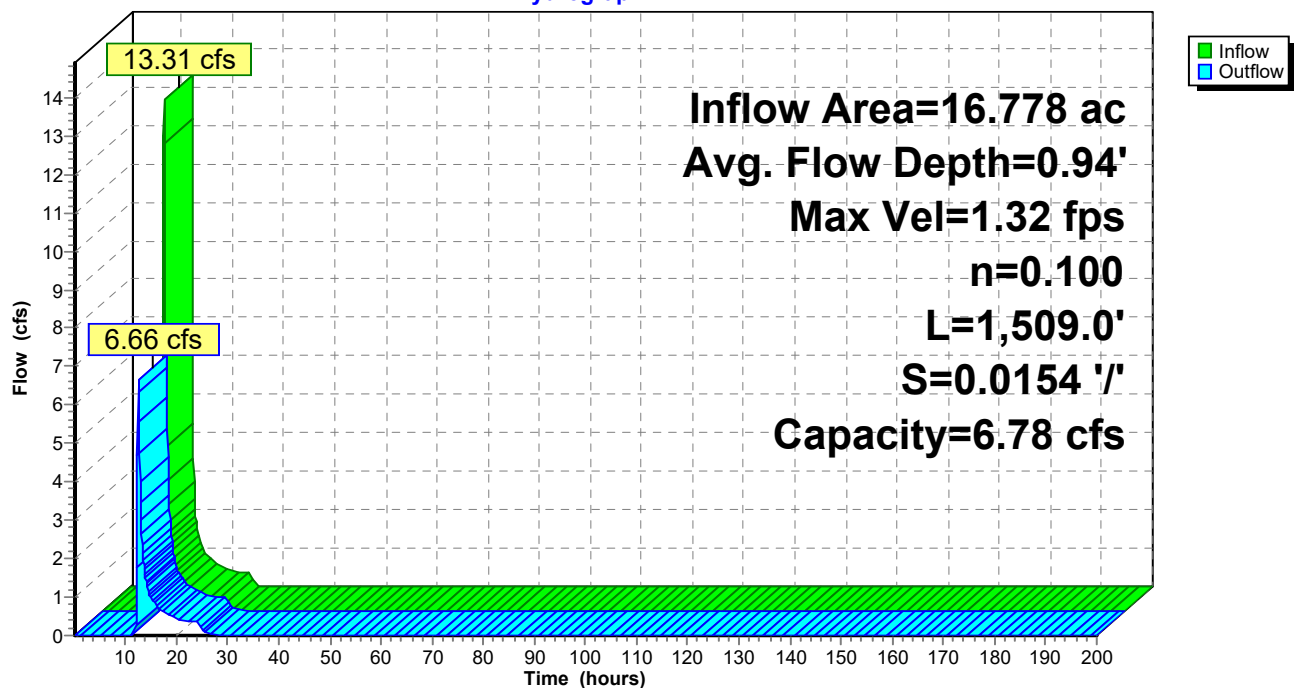
Length= 1,509.0' Slope= 0.0154 '/'

Inlet Invert= 505.43', Outlet Invert= 482.25'



Reach 45R: Flowpath Downstream POA 6

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Reach 46R: Flowpath Downstream POA 5

Inflow Area = 5.470 ac, 0.00% Impervious, Inflow Depth = 0.54" for 2-yr event
Inflow = 2.89 cfs @ 12.06 hrs, Volume= 0.247 af
Outflow = 1.52 cfs @ 12.52 hrs, Volume= 0.247 af, Atten= 47%, Lag= 27.5 min
Routed to Link 44L : Pre Dev. POA Downstream of 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.02 fps, Min. Travel Time= 16.9 min

Avg. Velocity= 0.27 fps, Avg. Travel Time= 62.9 min

Peak Storage= 1,574 cf @ 12.22 hrs

Average Depth at Peak Storage= 0.42' , Surface Width= 5.46'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 8.94 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

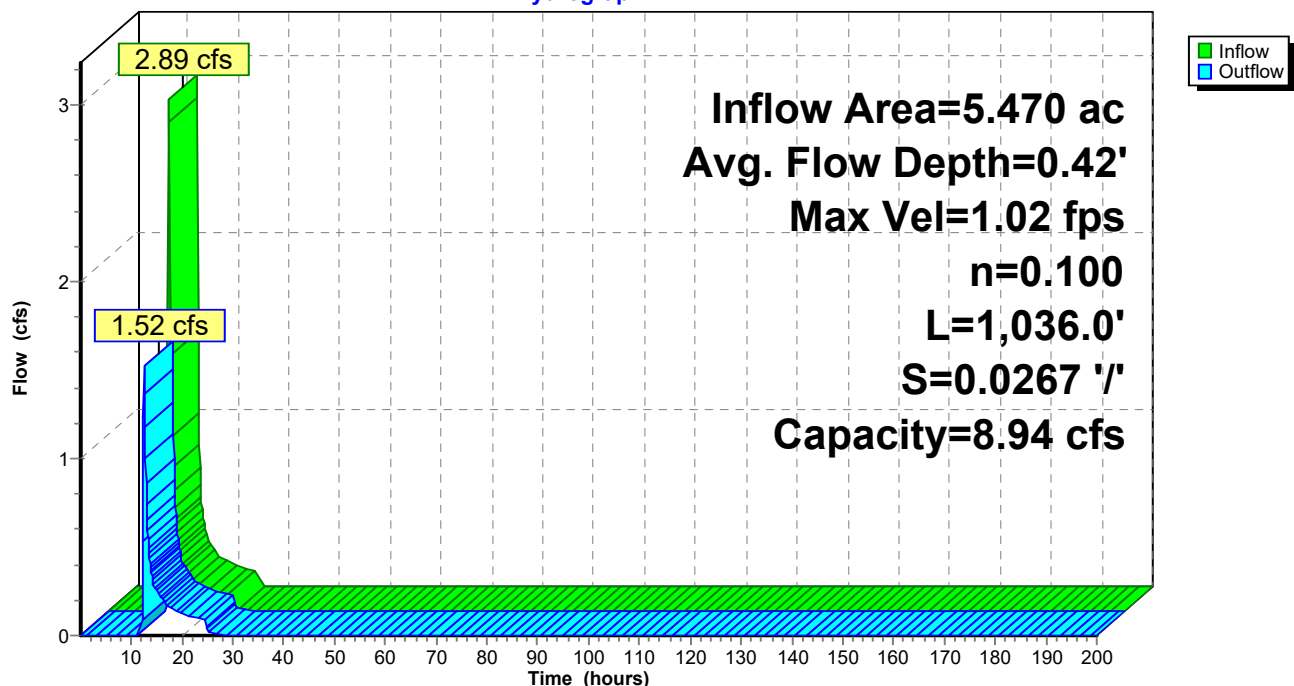
Length= 1,036.0' Slope= 0.0267 '/'

Inlet Invert= 509.93', Outlet Invert= 482.25'



Reach 46R: Flowpath Downstream POA 5

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Reach 48R: Flowpath Downstream POA 4

Inflow Area = 9.998 ac, 0.00% Impervious, Inflow Depth = 0.63" for 2-yr event
Inflow = 6.43 cfs @ 12.07 hrs, Volume= 0.525 af
Outflow = 1.77 cfs @ 13.25 hrs, Volume= 0.525 af, Atten= 73%, Lag= 71.3 min
Routed to Link 44L : Pre Dev. POA Downstream of 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 0.92 fps, Min. Travel Time= 50.1 min

Avg. Velocity = 0.17 fps, Avg. Travel Time= 268.3 min

Peak Storage= 5,349 cf @ 12.42 hrs

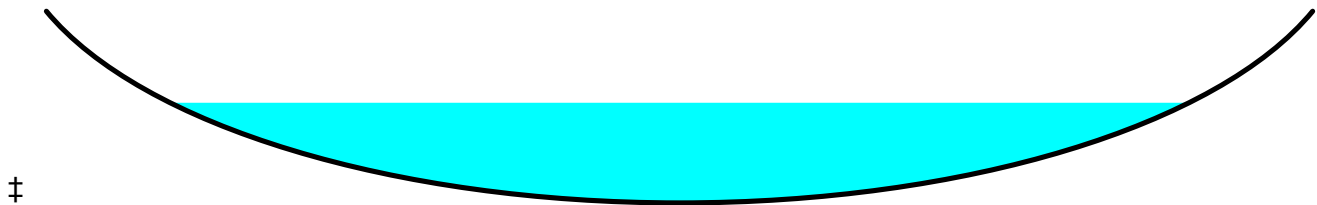
Average Depth at Peak Storage= 0.49' , Surface Width= 5.93'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 7.18 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

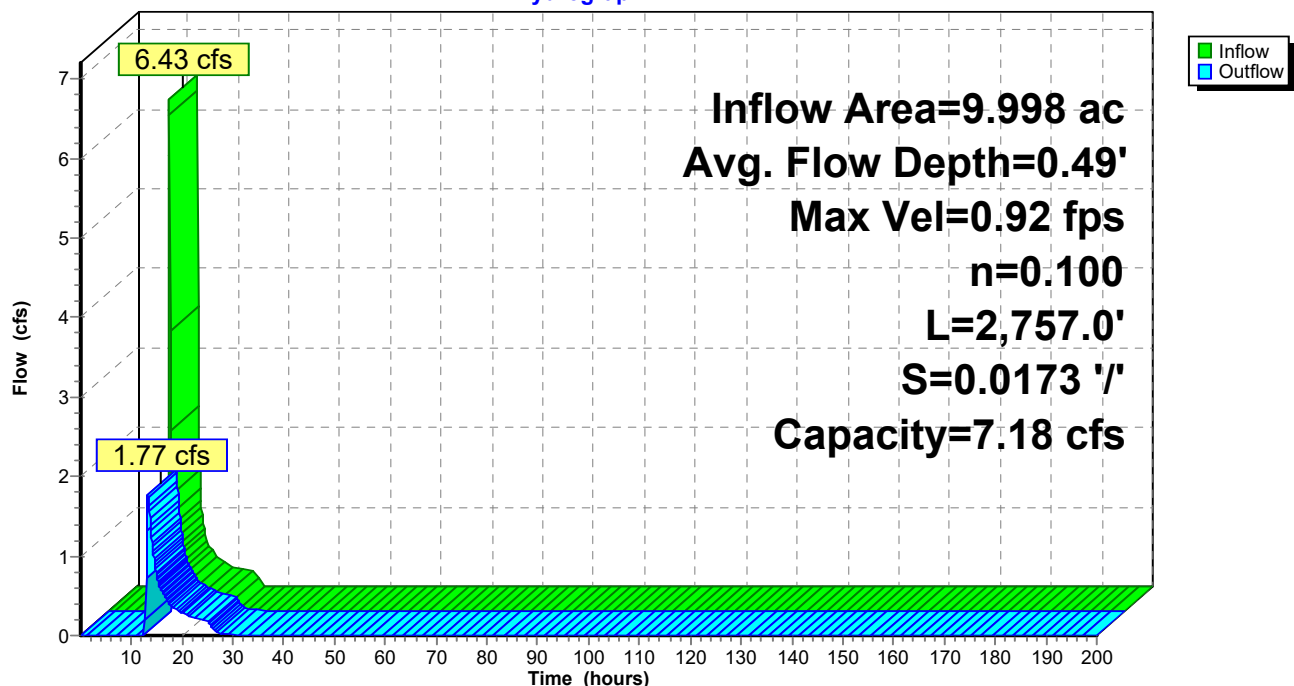
Length= 2,757.0' Slope= 0.0173 '/'

Inlet Invert= 529.84', Outlet Invert= 482.25'



Reach 48R: Flowpath Downstream POA 4

Hydrograph



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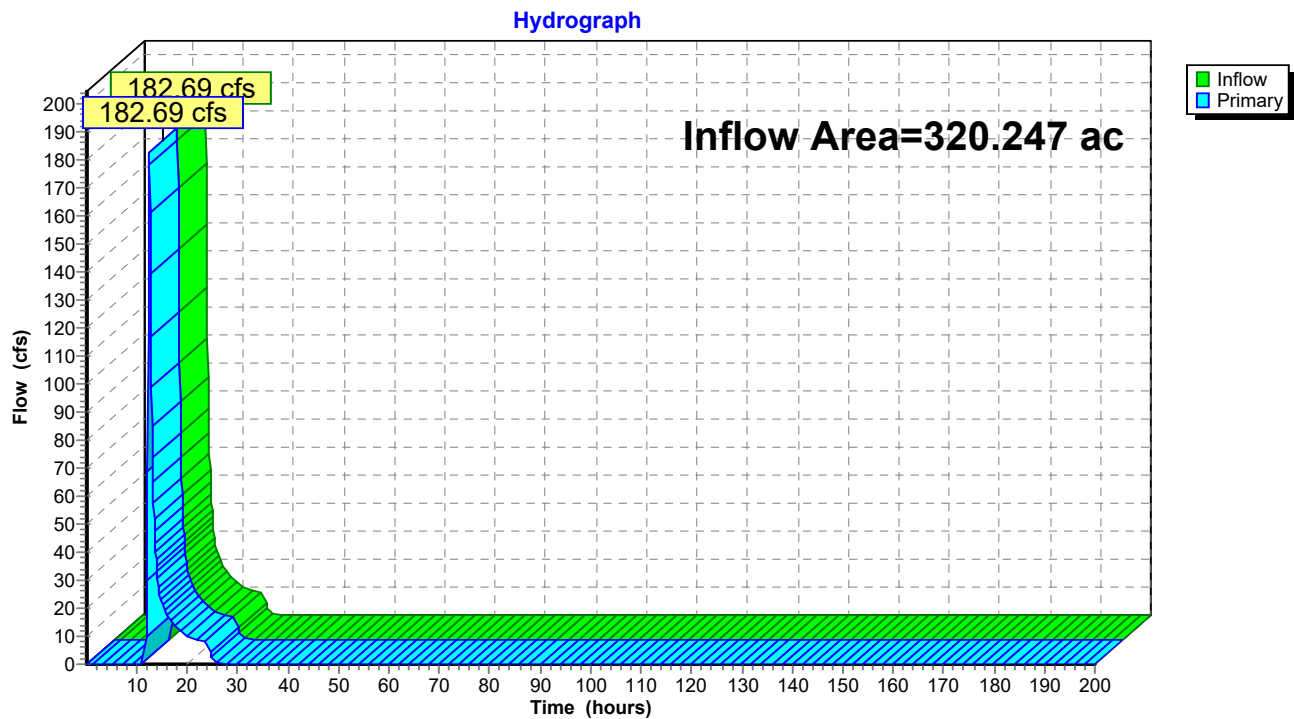
Page 29

Summary for Link 44L: Pre Dev. POA Downstream of 110 Cedar Hill Dr

Inflow Area = 320.247 ac, 15.75% Impervious, Inflow Depth = 1.00" for 2-yr event
Inflow = 182.69 cfs @ 12.44 hrs, Volume= 26.748 af
Primary = 182.69 cfs @ 12.44 hrs, Volume= 26.748 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 44L: Pre Dev. POA Downstream of 110 Cedar Hill Dr



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Type II 24-hr 25-yr Rainfall=6.54"

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment12S: Pre Dev. Basin 6 Runoff Area=441,055 sf 0.00% Impervious Runoff Depth=2.28"
Flow Length=1,222' Slope=0.0441 '/' Tc=12.4 min CN=60 Runoff=29.27 cfs 1.927 af

Subcatchment13S: Pre Dev. Basin 7 Runoff Area=238,293 sf 0.00% Impervious Runoff Depth=2.01"
Flow Length=977' Slope=0.0468 '/' Tc=10.2 min CN=57 Runoff=15.13 cfs 0.918 af

Subcatchment14S: Pre Dev. Basin 8 Runoff Area=289,814 sf 0.00% Impervious Runoff Depth=2.47"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=24.46 cfs 1.368 af

Subcatchment34S: Pre Dev. Basin 4 Runoff Area=130,388 sf 0.00% Impervious Runoff Depth=2.19"
Flow Length=561' Slope=0.0221 '/' Tc=8.9 min CN=59 Runoff=9.74 cfs 0.547 af

Subcatchment35S: Pre Dev. Basin 5 Runoff Area=305,128 sf 0.00% Impervious Runoff Depth=2.19"
Flow Length=998' Slope=0.0301 '/' Tc=12.3 min CN=59 Runoff=19.38 cfs 1.280 af

Subcatchment41S: Pre Drainage Area 1 Runoff Area=198.400 ac 20.00% Impervious Runoff Depth=3.04"
Flow Length=4,195' Slope=0.0177 '/' Tc=45.4 min CN=68 Runoff=386.50 cfs 50.294 af

Subcatchment43S: Pre Drainage Area 2 Runoff Area=89.600 ac 12.00% Impervious Runoff Depth=2.75"
Flow Length=3,771' Slope=0.0323 '/' Tc=33.2 min CN=65 Runoff=193.14 cfs 20.543 af

Reach 45R: Flowpath Downstream Avg. Flow Depth=2.56' Max Vel=1.72 fps Inflow=52.95 cfs 3.295 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=31.10 cfs 3.295 af

Reach 46R: Flowpath Downstream Avg. Flow Depth=1.04' Max Vel=1.84 fps Inflow=15.13 cfs 0.918 af
n=0.100 L=1,036.0' S=0.0267 '/' Capacity=8.94 cfs Outflow=10.32 cfs 0.918 af

Reach 48R: Flowpath Downstream Avg. Flow Depth=1.26' Max Vel=1.60 fps Inflow=28.74 cfs 1.826 af
n=0.100 L=2,757.0' S=0.0173 '/' Capacity=7.18 cfs Outflow=12.25 cfs 1.826 af

Link 44L: Pre Dev. POA Downstream of 110 Cedar Hill Dr Inflow=600.22 cfs 76.876 af
Primary=600.22 cfs 76.876 af

Total Runoff Area = 320.247 ac Runoff Volume = 76.876 af Average Runoff Depth = 2.88"
84.25% Pervious = 269.815 ac 15.75% Impervious = 50.432 ac

Downstream Analysis - ZCP

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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 12S: Pre Dev. Basin 6

Runoff = 29.27 cfs @ 12.05 hrs, Volume= 1.927 af, Depth= 2.28"

Routed to Reach 45R : Flowpath Downstream POA 6

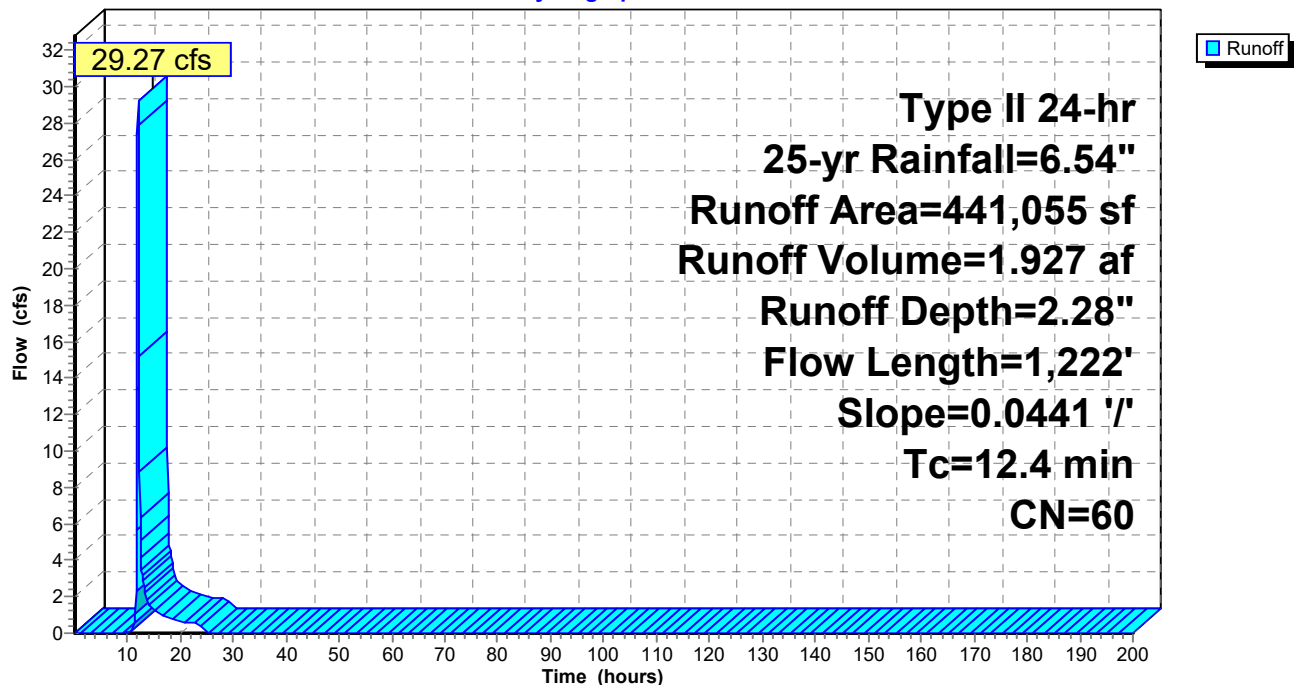
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
401,238	60	Woods, Fair, HSG B
39,817	56	Brush, Fair, HSG B
441,055	60	Weighted Average
441,055		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	1,222	0.0441	1.65		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 12S: Pre Dev. Basin 6

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 13S: Pre Dev. Basin 7

Runoff = 15.13 cfs @ 12.02 hrs, Volume= 0.918 af, Depth= 2.01"

Routed to Reach 46R : Flowpath Downstream POA 5

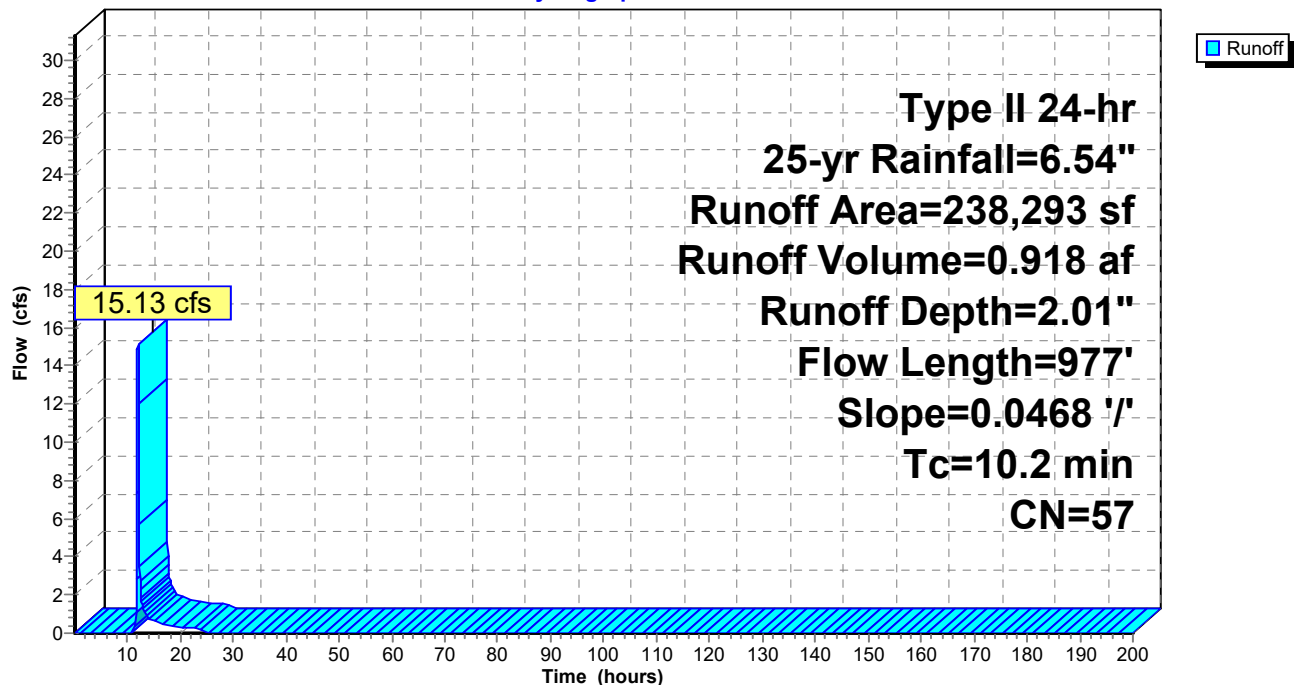
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
207,447	55	Woods, Good, HSG B
30,846	67	Brush, Poor, HSG B
238,293	57	Weighted Average
238,293		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	977	0.0468	1.60		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 13S: Pre Dev. Basin 7

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 14S: Pre Dev. Basin 8

Runoff = 24.46 cfs @ 12.01 hrs, Volume= 1.368 af, Depth= 2.47"

Routed to Reach 45R : Flowpath Downstream POA 6

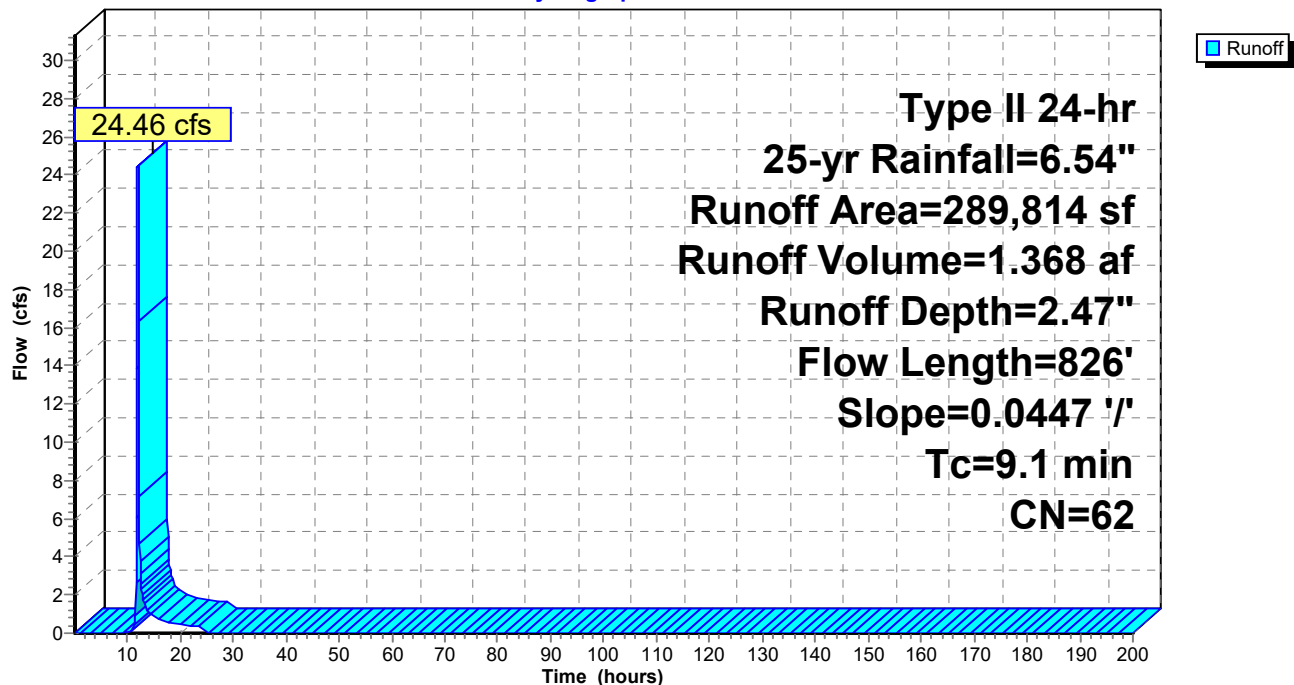
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
58,855	69	50-75% Grass cover, Fair, HSG B
289,814	62	Weighted Average
289,814		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 14S: Pre Dev. Basin 8

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 34S: Pre Dev. Basin 4

Runoff = 9.74 cfs @ 12.01 hrs, Volume= 0.547 af, Depth= 2.19"

Routed to Reach 48R : Flowpath Downstream POA 4

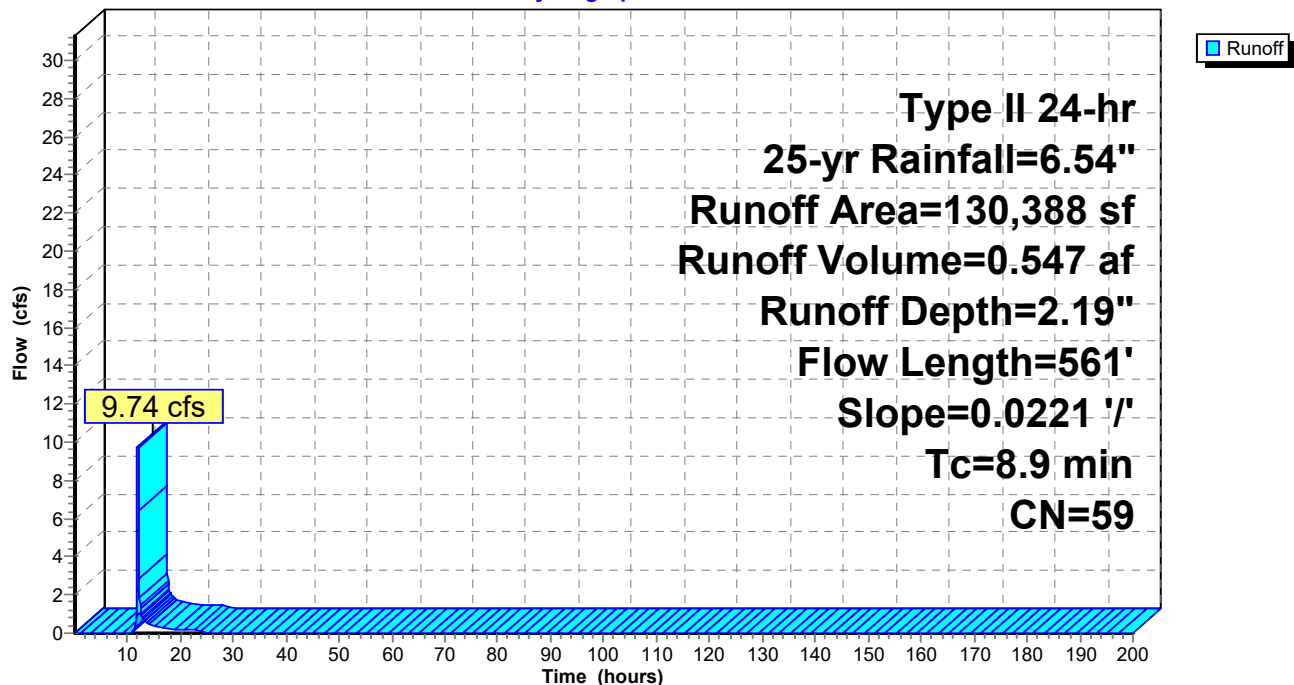
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
104,102	60	Woods, Fair, HSG B
26,286	56	Brush, Fair, HSG B
130,388	59	Weighted Average
130,388		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	561	0.0221	1.06		Kirpich Method, General overland flow k= 2.00

Subcatchment 34S: Pre Dev. Basin 4

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 35S: Pre Dev. Basin 5

Runoff = 19.38 cfs @ 12.05 hrs, Volume= 1.280 af, Depth= 2.19"

Routed to Reach 48R : Flowpath Downstream POA 4

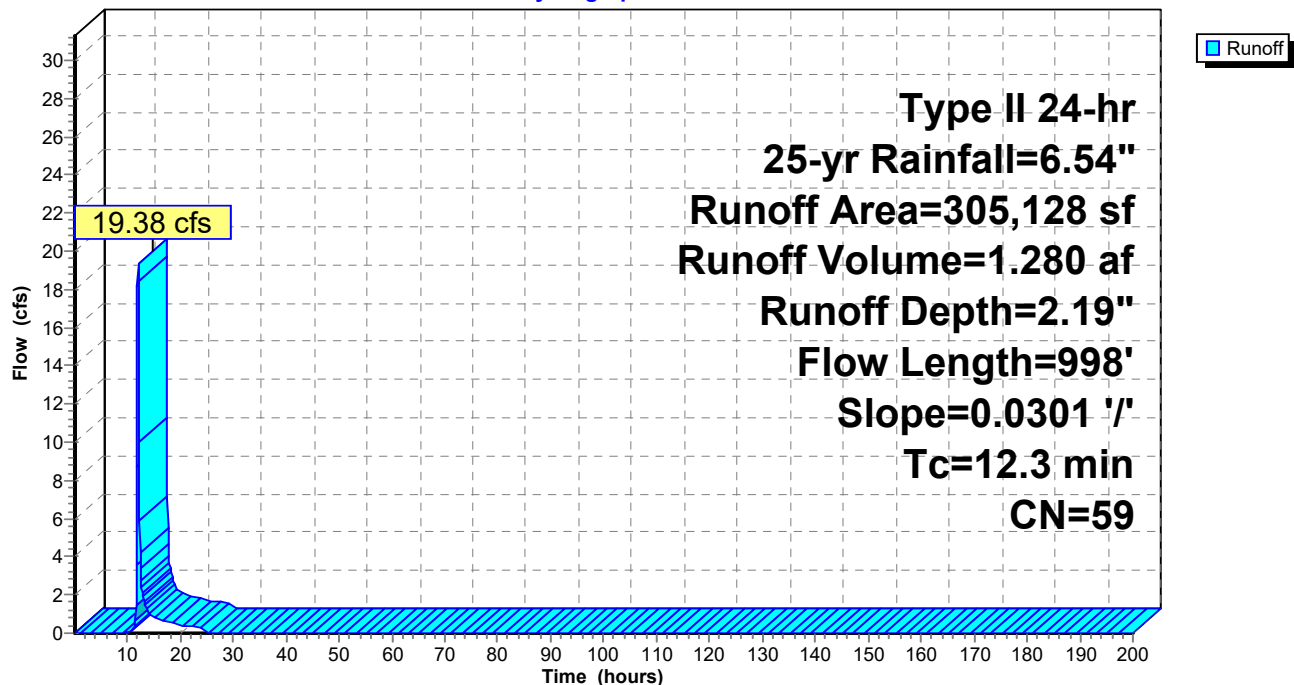
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
267,919	60	Woods, Fair, HSG B
37,209	48	Brush, Good, HSG B
305,128	59	Weighted Average
305,128		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	998	0.0301	1.36		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 35S: Pre Dev. Basin 5

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 41S: Pre Drainage Area 1

Runoff = 386.50 cfs @ 12.45 hrs, Volume= 50.294 af, Depth= 3.04"

Routed to Link 44L : Pre Dev. POA Downstream of 110 Cedar Hill Dr

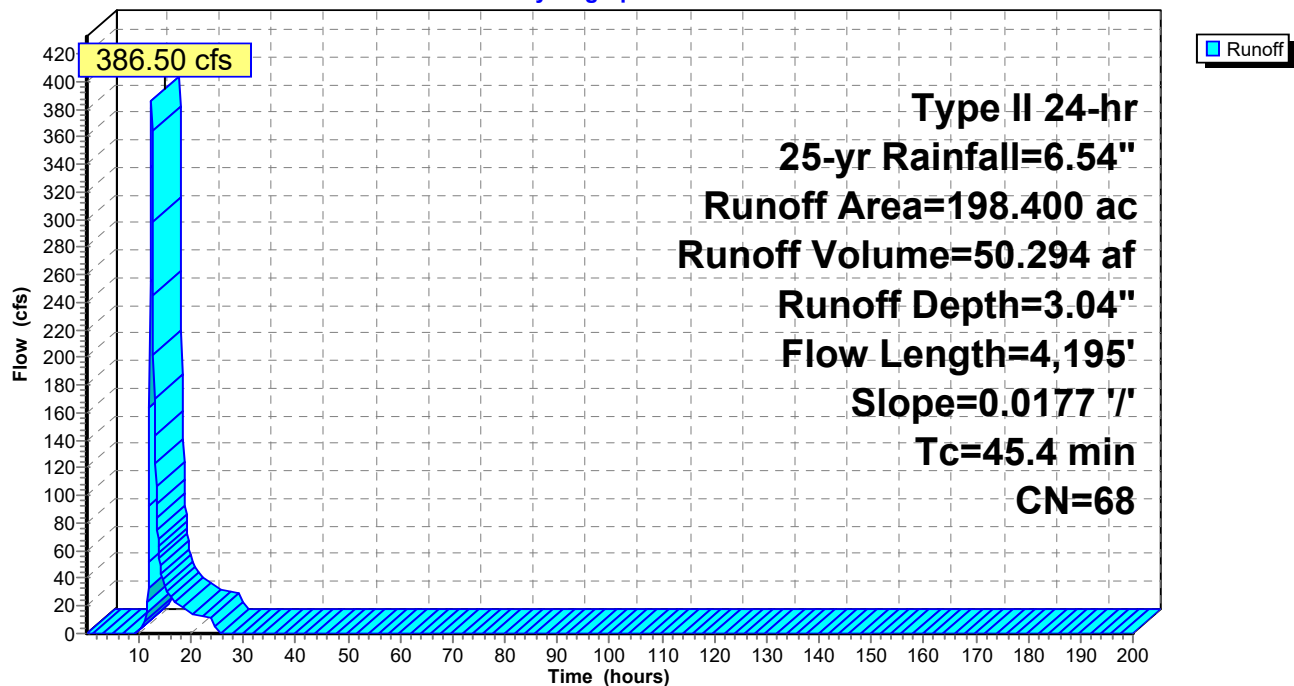
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (ac)	CN	Description
198.400	68	1 acre lots, 20% imp, HSG B
158.720		80.00% Pervious Area
39.680		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.4	4,195	0.0177	1.54		Kirpich Method, General overland flow k= 2.00

Subcatchment 41S: Pre Drainage Area 1

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 43S: Pre Drainage Area 2

Runoff = 193.14 cfs @ 12.30 hrs, Volume= 20.543 af, Depth= 2.75"

Routed to Link 44L : Pre Dev. POA Downstream of 110 Cedar Hill Dr

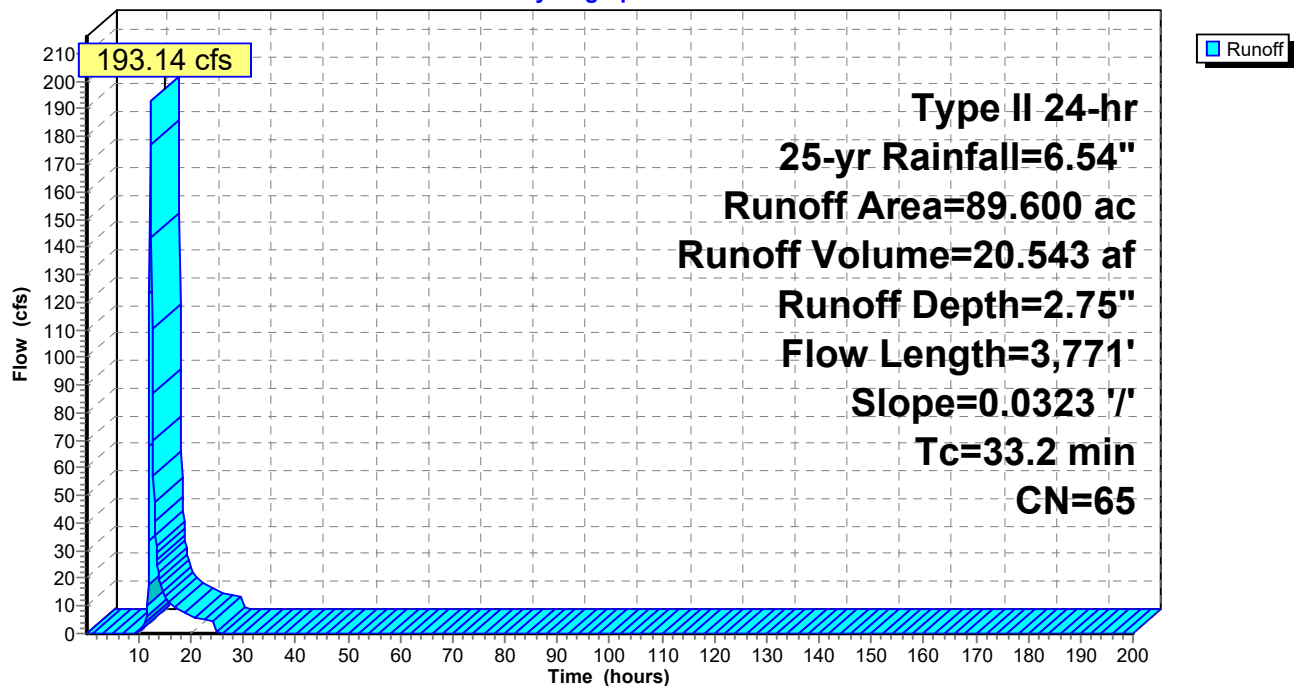
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (ac)	CN	Description
89.600	65	2 acre lots, 12% imp, HSG B
78.848		88.00% Pervious Area
10.752		12.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.2	3,771	0.0323	1.89		Kirpich Method, General overland flow k= 2.00

Subcatchment 43S: Pre Drainage Area 2

Hydrograph



Downstream Analysis - ZCP

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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Reach 45R: Flowpath Downstream POA 6

Inflow Area = 16.778 ac, 0.00% Impervious, Inflow Depth = 2.36" for 25-yr event
Inflow = 52.95 cfs @ 12.03 hrs, Volume= 3.295 af
Outflow = 31.10 cfs @ 12.42 hrs, Volume= 3.295 af, Atten= 41%, Lag= 23.5 min
Routed to Link 44L : Pre Dev. POA Downstream of 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.72 fps, Min. Travel Time= 14.6 min

Avg. Velocity = 0.29 fps, Avg. Travel Time= 85.8 min

Peak Storage= 27,793 cf @ 12.17 hrs

Average Depth at Peak Storage= 2.56' , Surface Width= 13.54'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

Length= 1,509.0' Slope= 0.0154 '/'

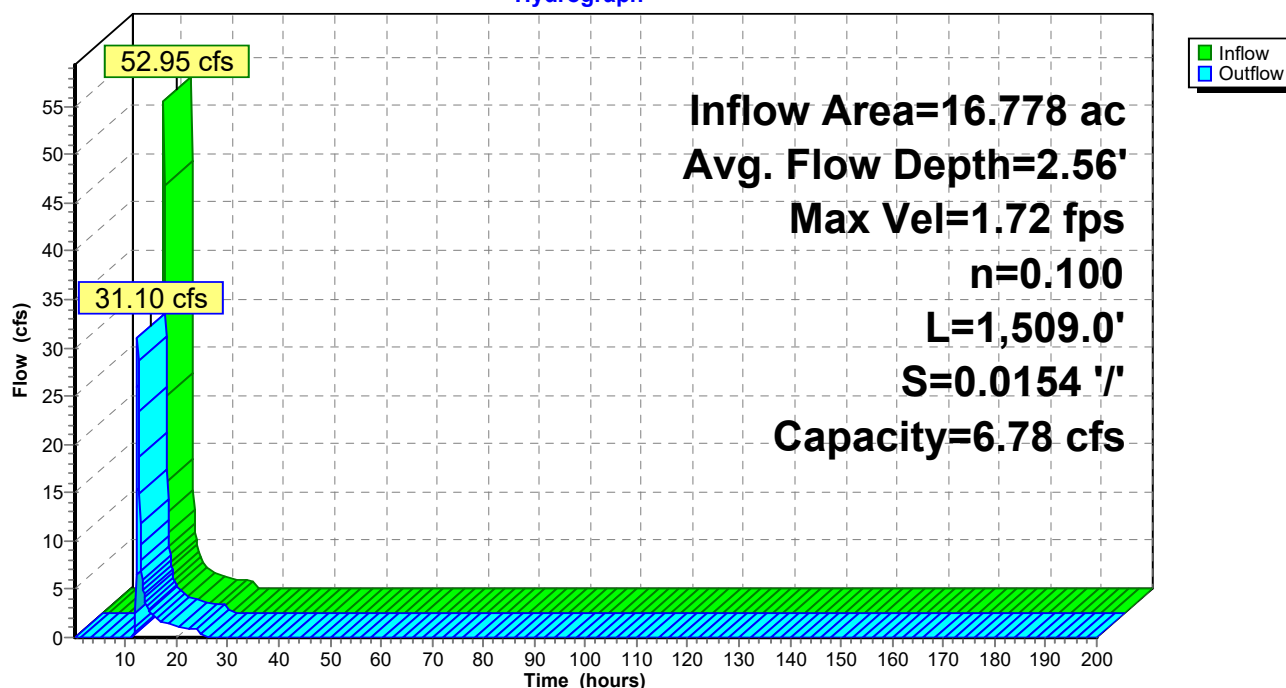
Inlet Invert= 505.43', Outlet Invert= 482.25'



‡

Reach 45R: Flowpath Downstream POA 6

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Reach 46R: Flowpath Downstream POA 5

Inflow Area = 5.470 ac, 0.00% Impervious, Inflow Depth = 2.01" for 25-yr event
Inflow = 15.13 cfs @ 12.02 hrs, Volume= 0.918 af
Outflow = 10.32 cfs @ 12.30 hrs, Volume= 0.918 af, Atten= 32%, Lag= 16.4 min
Routed to Link 44L : Pre Dev. POA Downstream of 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.84 fps, Min. Travel Time= 9.4 min

Avg. Velocity= 0.36 fps, Avg. Travel Time= 47.8 min

Peak Storage= 6,193 cf @ 12.13 hrs

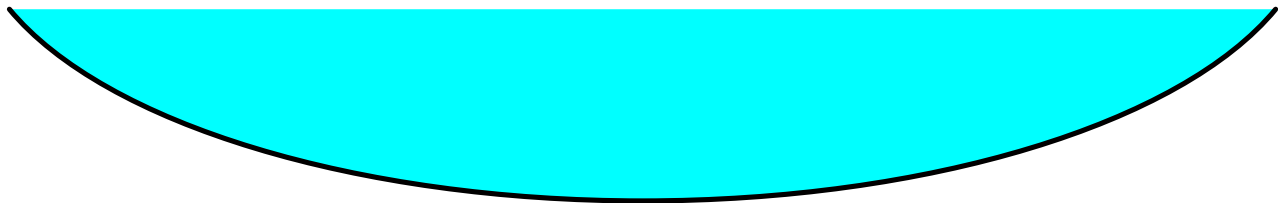
Average Depth at Peak Storage= 1.04' , Surface Width= 8.64'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 8.94 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

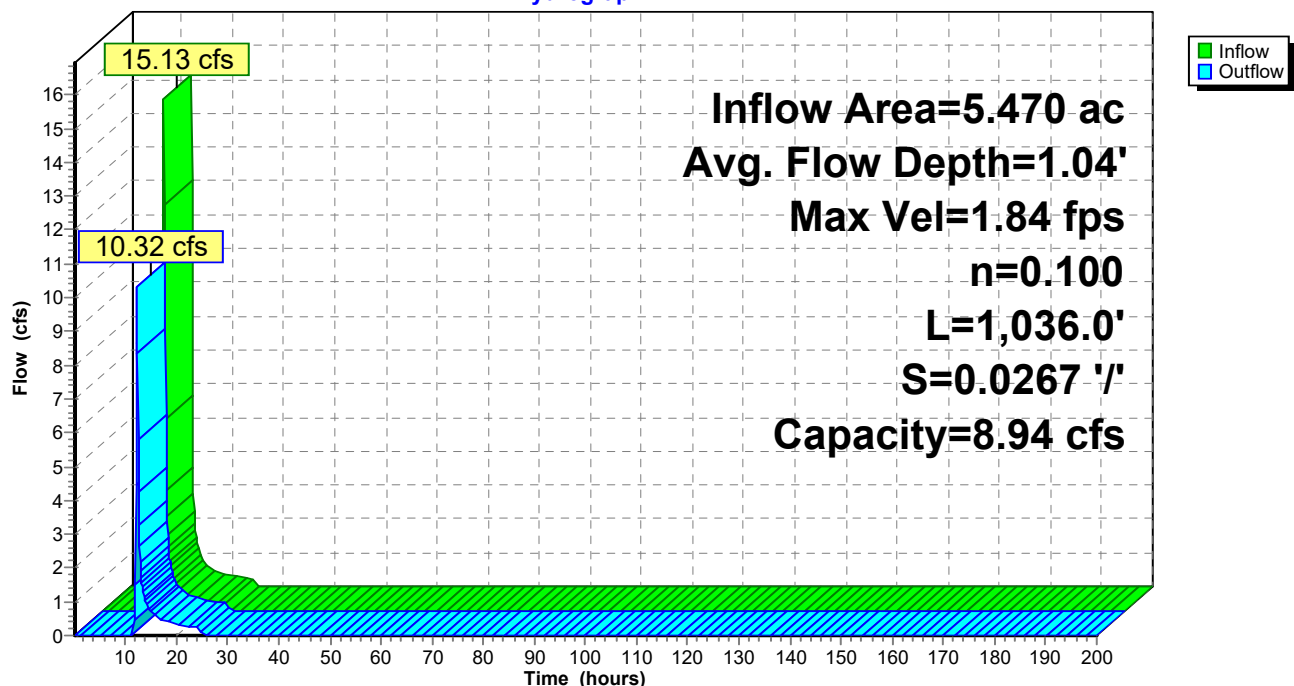
Length= 1,036.0' Slope= 0.0267 '/'

Inlet Invert= 509.93', Outlet Invert= 482.25'



Reach 46R: Flowpath Downstream POA 5

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Reach 48R: Flowpath Downstream POA 4

Inflow Area = 9.998 ac, 0.00% Impervious, Inflow Depth = 2.19" for 25-yr event
Inflow = 28.74 cfs @ 12.03 hrs, Volume= 1.826 af
Outflow = 12.25 cfs @ 12.72 hrs, Volume= 1.826 af, Atten= 57%, Lag= 41.3 min
Routed to Link 44L : Pre Dev. POA Downstream of 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.60 fps, Min. Travel Time= 28.8 min

Avg. Velocity= 0.21 fps, Avg. Travel Time= 216.8 min

Peak Storage= 21,397 cf @ 12.23 hrs

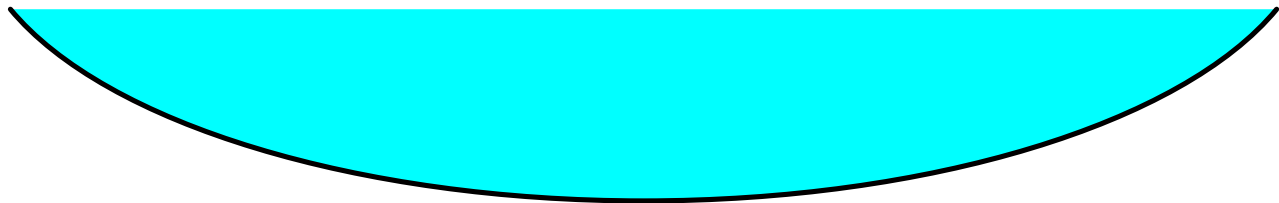
Average Depth at Peak Storage= 1.26' , Surface Width= 9.50'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 7.18 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

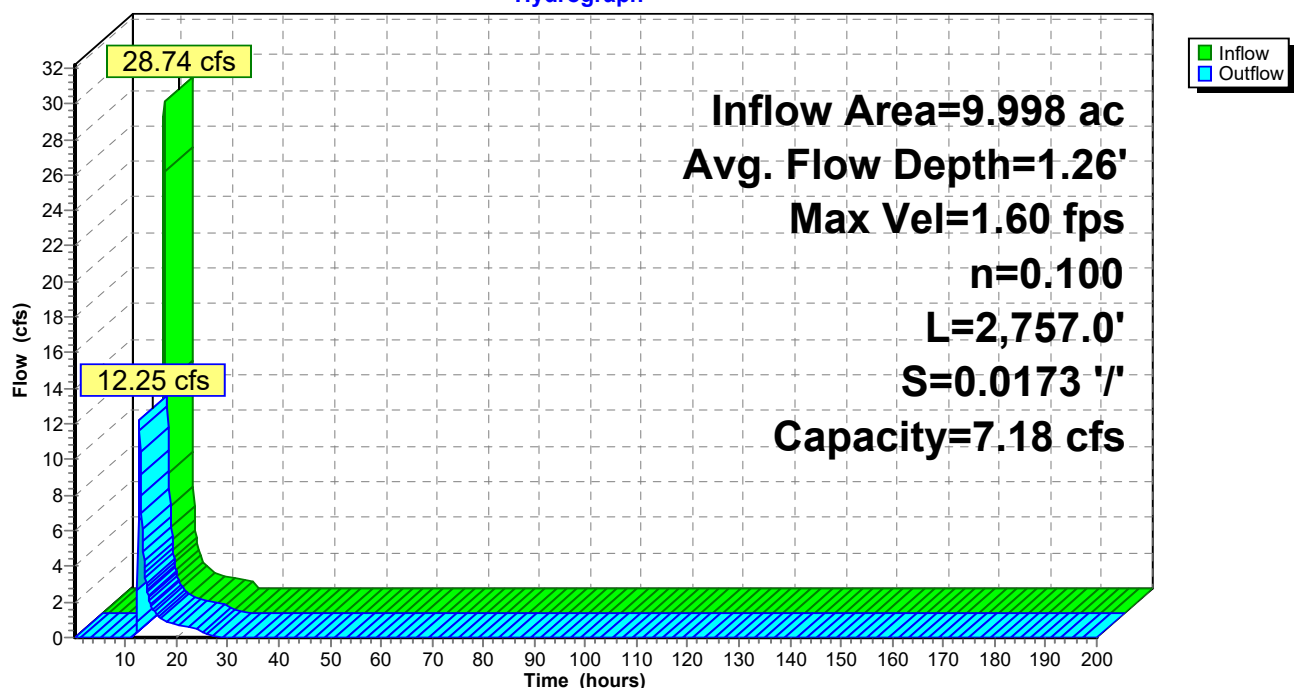
Length= 2,757.0' Slope= 0.0173 '/'

Inlet Invert= 529.84', Outlet Invert= 482.25'



Reach 48R: Flowpath Downstream POA 4

Hydrograph



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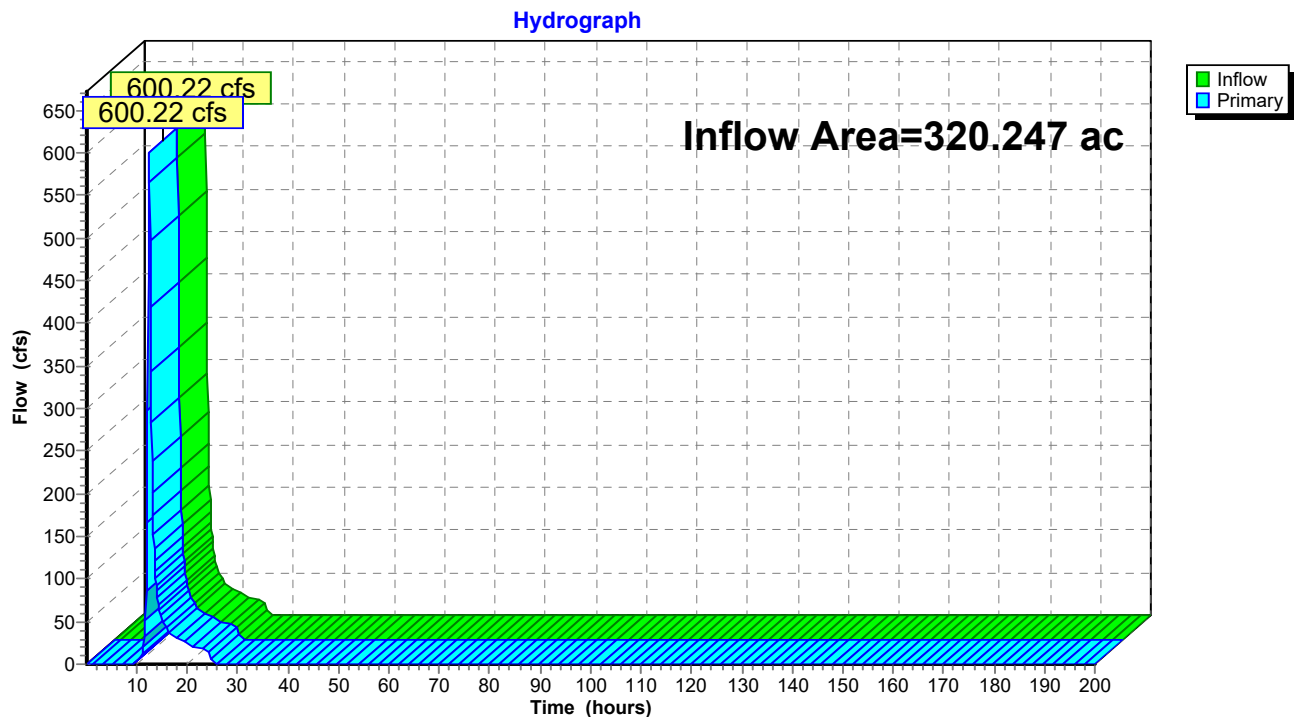
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Summary for Link 44L: Pre Dev. POA Downstream of 110 Cedar Hill Dr

Inflow Area = 320.247 ac, 15.75% Impervious, Inflow Depth = 2.88" for 25-yr event
Inflow = 600.22 cfs @ 12.40 hrs, Volume= 76.876 af
Primary = 600.22 cfs @ 12.40 hrs, Volume= 76.876 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 44L: Pre Dev. POA Downstream of 110 Cedar Hill Dr



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Type II 24-hr 100-yr Rainfall=8.17"

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment12S: Pre Dev. Basin 6 Runoff Area=441,055 sf 0.00% Impervious Runoff Depth=3.46"
Flow Length=1,222' Slope=0.0441 '/' Tc=12.4 min CN=60 Runoff=45.48 cfs 2.921 af

Subcatchment13S: Pre Dev. Basin 7 Runoff Area=238,293 sf 0.00% Impervious Runoff Depth=3.12"
Flow Length=977' Slope=0.0468 '/' Tc=10.2 min CN=57 Runoff=24.22 cfs 1.424 af

Subcatchment14S: Pre Dev. Basin 8 Runoff Area=289,814 sf 0.00% Impervious Runoff Depth=3.69"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=36.97 cfs 2.045 af

Subcatchment34S: Pre Dev. Basin 4 Runoff Area=130,388 sf 0.00% Impervious Runoff Depth=3.35"
Flow Length=561' Slope=0.0221 '/' Tc=8.9 min CN=59 Runoff=15.15 cfs 0.835 af

Subcatchment35S: Pre Dev. Basin 5 Runoff Area=305,128 sf 0.00% Impervious Runoff Depth=3.35"
Flow Length=998' Slope=0.0301 '/' Tc=12.3 min CN=59 Runoff=30.46 cfs 1.955 af

Subcatchment41S: Pre Drainage Area 1 Runoff Area=198.400 ac 20.00% Impervious Runoff Depth=4.38"
Flow Length=4,195' Slope=0.0177 '/' Tc=45.4 min CN=68 Runoff=563.62 cfs 72.391 af

Subcatchment43S: Pre Drainage Area 2 Runoff Area=89.600 ac 12.00% Impervious Runoff Depth=4.03"
Flow Length=3,771' Slope=0.0323 '/' Tc=33.2 min CN=65 Runoff=287.89 cfs 30.107 af

Reach 45R: Flowpath Downstream Avg. Flow Depth=3.72' Max Vel=1.78 fps Inflow=81.35 cfs 4.966 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=48.58 cfs 4.966 af

Reach 46R: Flowpath Downstream Avg. Flow Depth=1.40' Max Vel=2.05 fps Inflow=24.22 cfs 1.424 af
n=0.100 L=1,036.0' S=0.0267 '/' Capacity=8.94 cfs Outflow=16.93 cfs 1.424 af

Reach 48R: Flowpath Downstream Avg. Flow Depth=1.77' Max Vel=1.74 fps Inflow=45.04 cfs 2.790 af
n=0.100 L=2,757.0' S=0.0173 '/' Capacity=7.18 cfs Outflow=20.15 cfs 2.790 af

Link 44L: Pre Dev. POA Downstream of 110 Cedar Hill Dr Inflow=889.39 cfs 111.677 af
Primary=889.39 cfs 111.677 af

Total Runoff Area = 320.247 ac Runoff Volume = 111.677 af Average Runoff Depth = 4.18"
84.25% Pervious = 269.815 ac 15.75% Impervious = 50.432 ac

Downstream Analysis - ZCP

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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 12S: Pre Dev. Basin 6

Runoff = 45.48 cfs @ 12.05 hrs, Volume= 2.921 af, Depth= 3.46"

Routed to Reach 45R : Flowpath Downstream POA 6

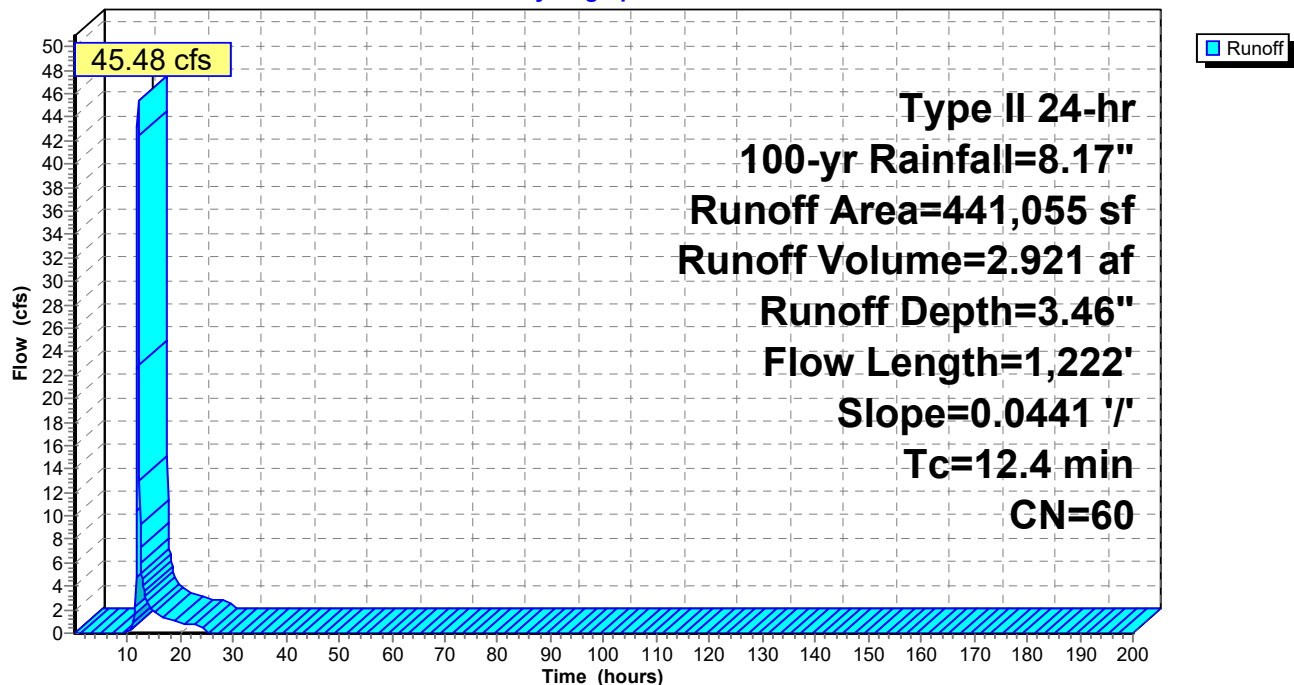
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
401,238	60	Woods, Fair, HSG B
39,817	56	Brush, Fair, HSG B
441,055	60	Weighted Average
441,055		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	1,222	0.0441	1.65		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 12S: Pre Dev. Basin 6

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 13S: Pre Dev. Basin 7

Runoff = 24.22 cfs @ 12.02 hrs, Volume= 1.424 af, Depth= 3.12"

Routed to Reach 46R : Flowpath Downstream POA 5

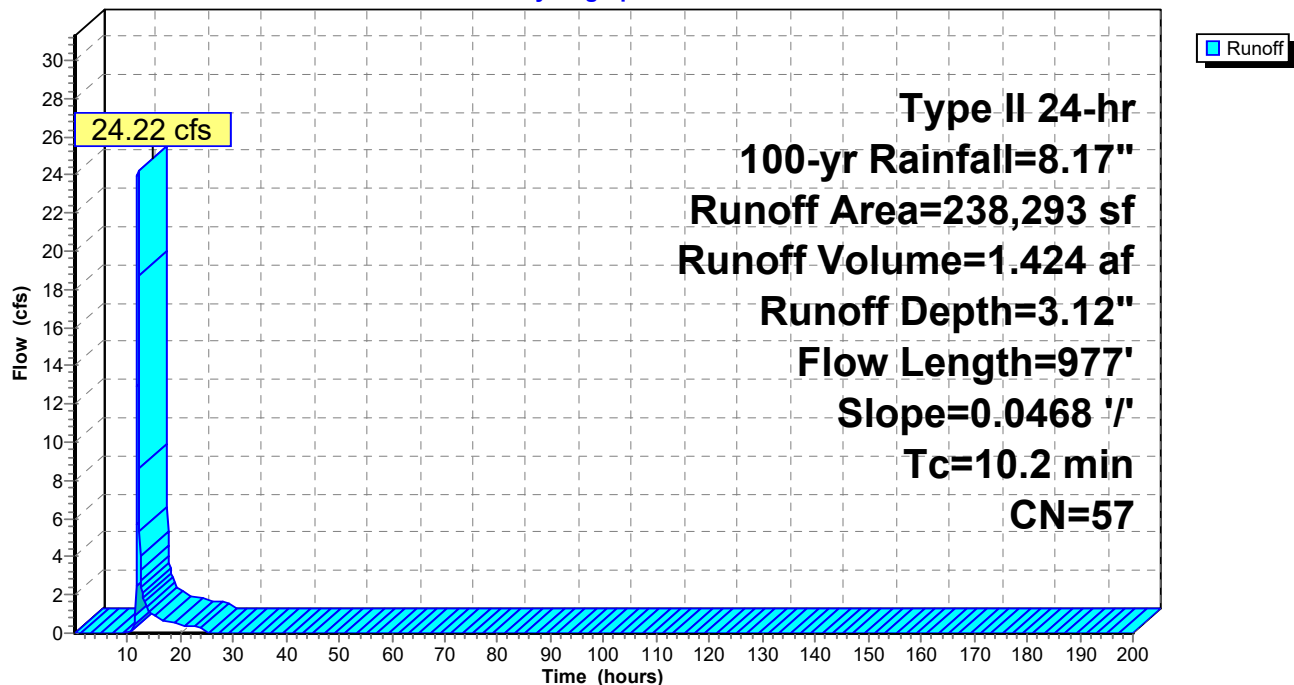
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
207,447	55	Woods, Good, HSG B
30,846	67	Brush, Poor, HSG B
238,293	57	Weighted Average
238,293		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	977	0.0468	1.60		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 13S: Pre Dev. Basin 7

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 14S: Pre Dev. Basin 8

Runoff = 36.97 cfs @ 12.00 hrs, Volume= 2.045 af, Depth= 3.69"

Routed to Reach 45R : Flowpath Downstream POA 6

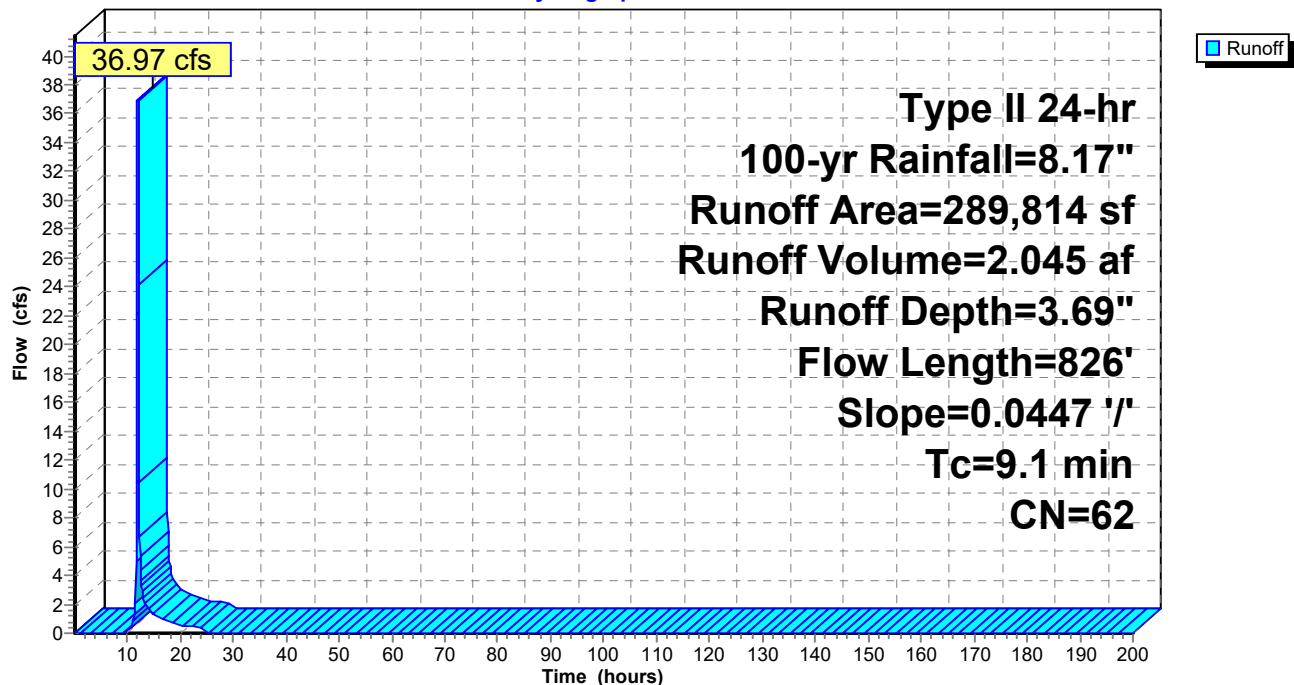
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
58,855	69	50-75% Grass cover, Fair, HSG B
289,814	62	Weighted Average
289,814		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 14S: Pre Dev. Basin 8

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 34S: Pre Dev. Basin 4

Runoff = 15.15 cfs @ 12.00 hrs, Volume= 0.835 af, Depth= 3.35"
Routed to Reach 48R : Flowpath Downstream POA 4

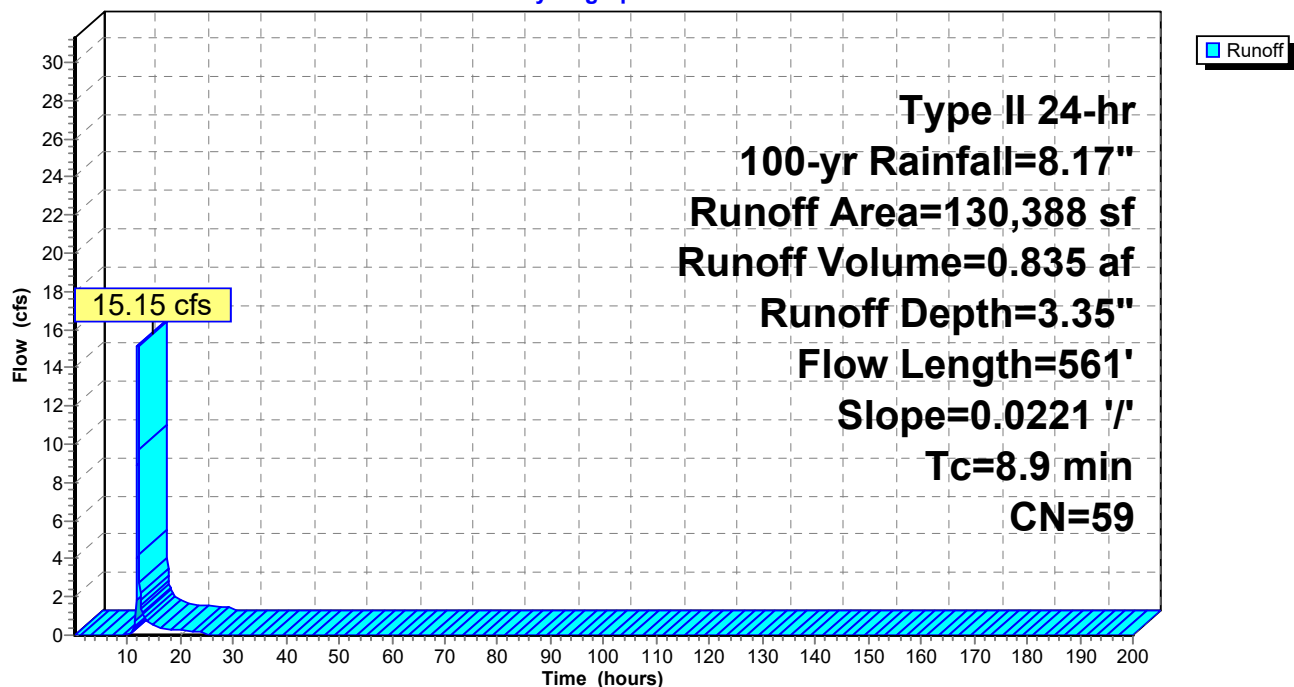
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
104,102	60	Woods, Fair, HSG B
26,286	56	Brush, Fair, HSG B
130,388	59	Weighted Average
130,388		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	561	0.0221	1.06		Kirpich Method, General overland flow k= 2.00

Subcatchment 34S: Pre Dev. Basin 4

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 35S: Pre Dev. Basin 5

Runoff = 30.46 cfs @ 12.05 hrs, Volume= 1.955 af, Depth= 3.35"

Routed to Reach 48R : Flowpath Downstream POA 4

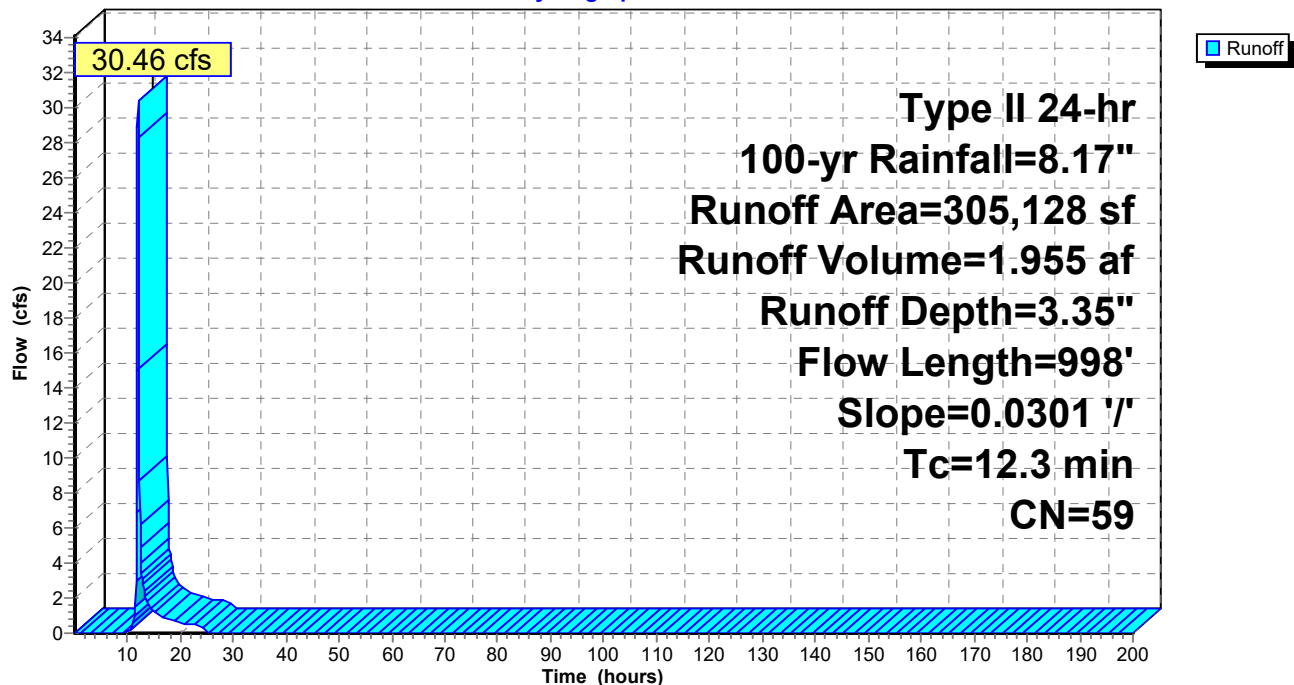
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
267,919	60	Woods, Fair, HSG B
37,209	48	Brush, Good, HSG B
305,128	59	Weighted Average
305,128		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	998	0.0301	1.36		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 35S: Pre Dev. Basin 5

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 41S: Pre Drainage Area 1

Runoff = 563.62 cfs @ 12.44 hrs, Volume= 72.391 af, Depth= 4.38"

Routed to Link 44L : Pre Dev. POA Downstream of 110 Cedar Hill Dr

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

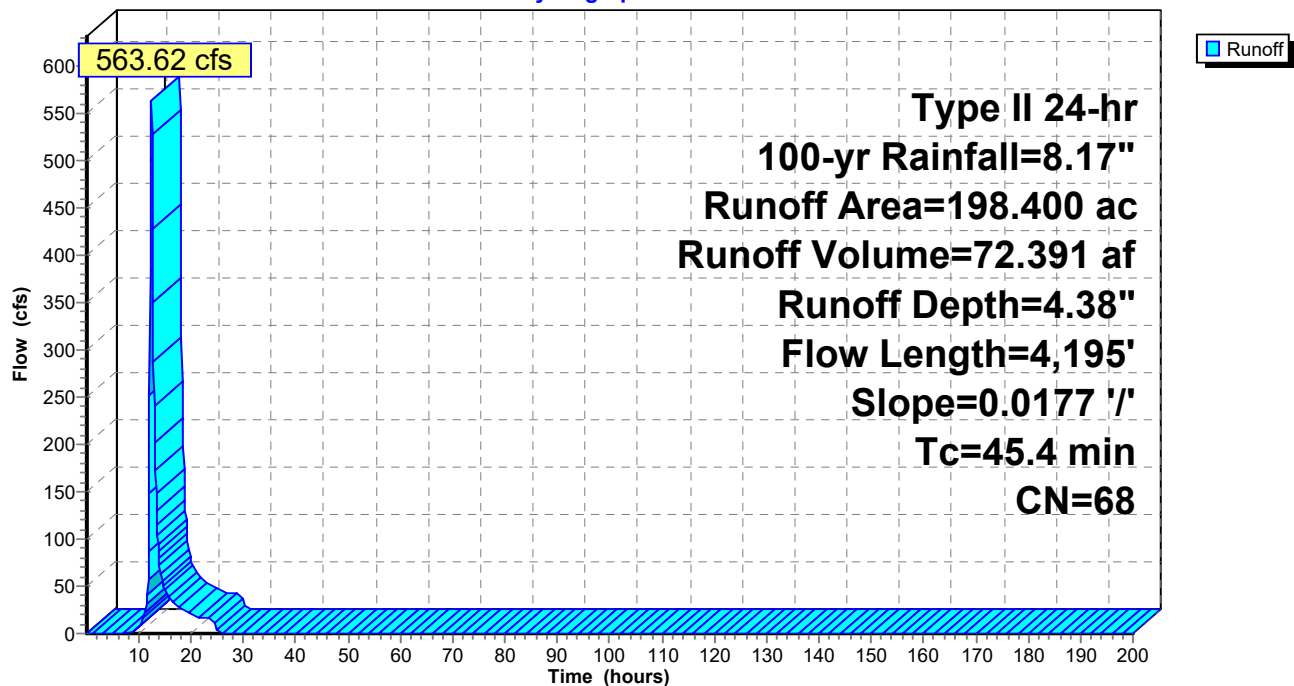
Type II 24-hr 100-yr Rainfall=8.17"

Area (ac)	CN	Description
198.400	68	1 acre lots, 20% imp, HSG B
158.720		80.00% Pervious Area
39.680		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.4	4,195	0.0177	1.54		Kirpich Method, General overland flow k= 2.00

Subcatchment 41S: Pre Drainage Area 1

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 43S: Pre Drainage Area 2

Runoff = 287.89 cfs @ 12.30 hrs, Volume= 30.107 af, Depth= 4.03"

Routed to Link 44L : Pre Dev. POA Downstream of 110 Cedar Hill Dr

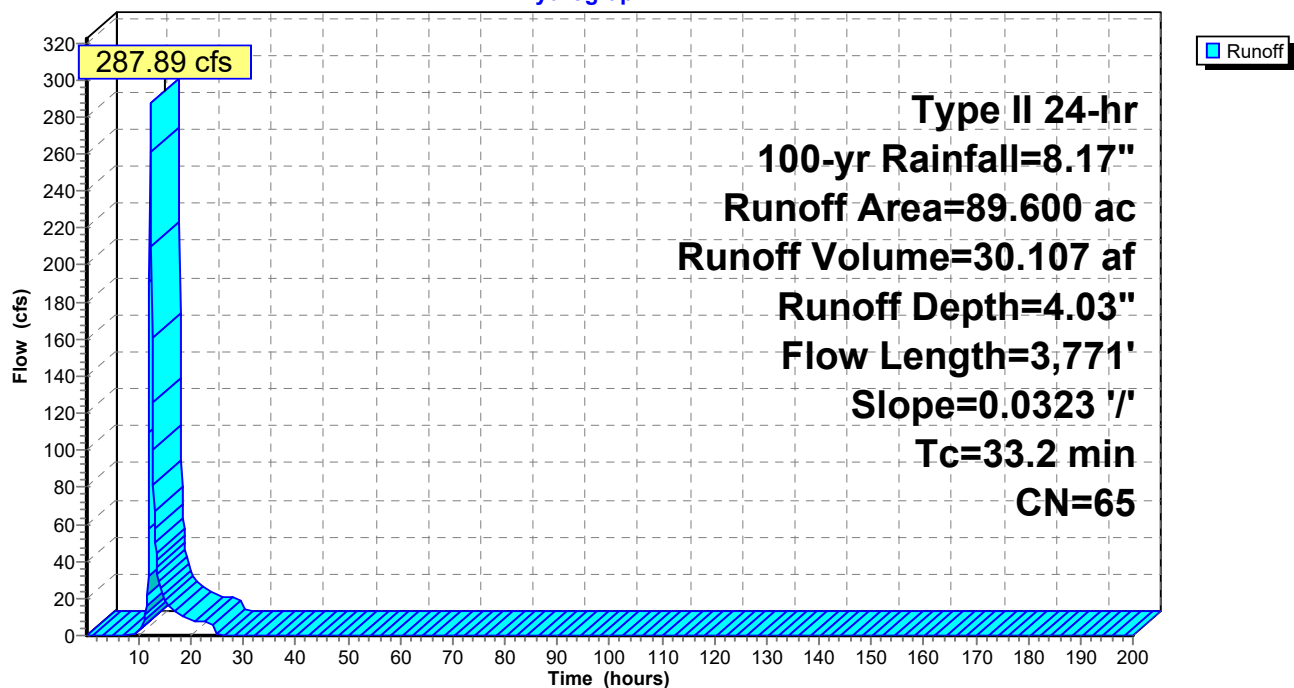
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (ac)	CN	Description
89.600	65	2 acre lots, 12% imp, HSG B
78.848		88.00% Pervious Area
10.752		12.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.2	3,771	0.0323	1.89		Kirpich Method, General overland flow k= 2.00

Subcatchment 43S: Pre Drainage Area 2

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Reach 45R: Flowpath Downstream POA 6

Inflow Area = 16.778 ac, 0.00% Impervious, Inflow Depth = 3.55" for 100-yr event
Inflow = 81.35 cfs @ 12.02 hrs, Volume= 4.966 af
Outflow = 48.58 cfs @ 12.40 hrs, Volume= 4.966 af, Atten= 40%, Lag= 22.8 min
Routed to Link 44L : Pre Dev. POA Downstream of 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.78 fps, Min. Travel Time= 14.2 min

Avg. Velocity = 0.32 fps, Avg. Travel Time= 78.2 min

Peak Storage= 42,125 cf @ 12.16 hrs

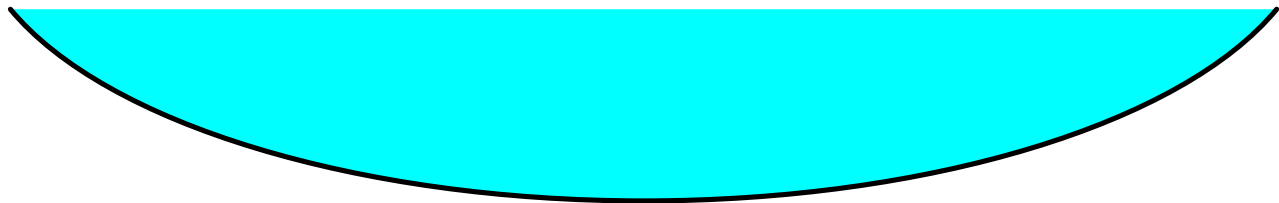
Average Depth at Peak Storage= 3.72' , Surface Width= 16.32'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

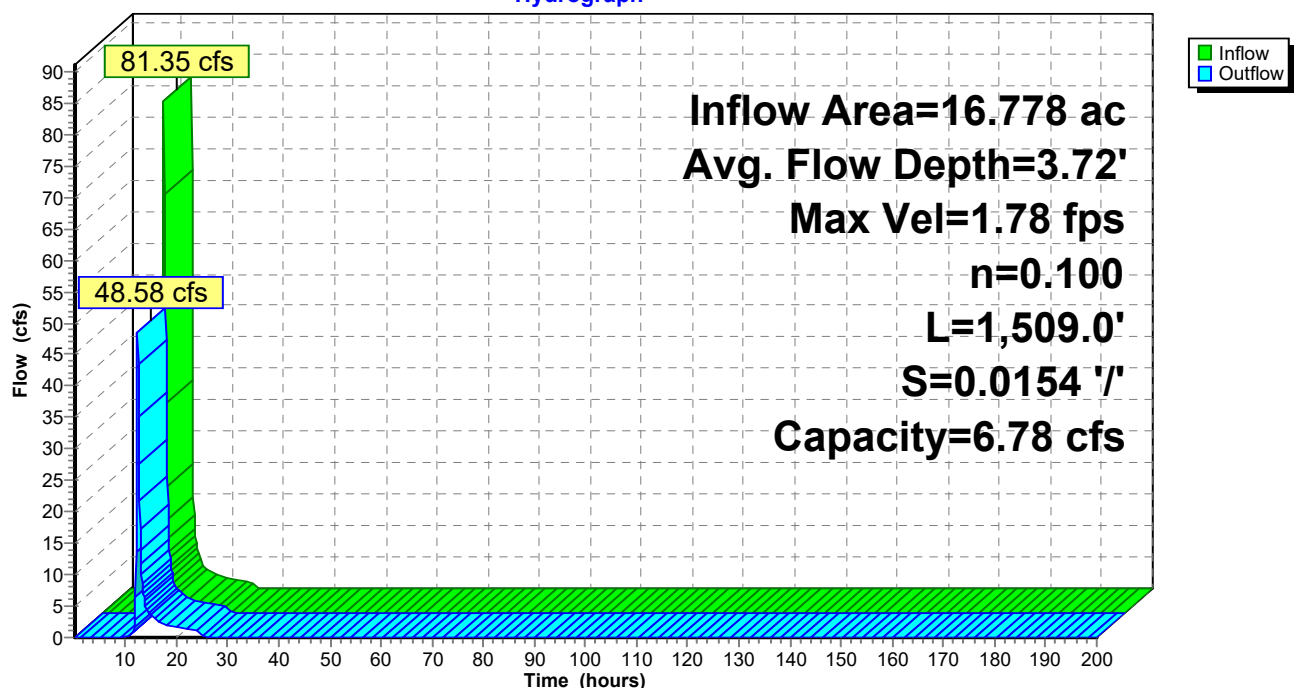
Length= 1,509.0' Slope= 0.0154 '/'

Inlet Invert= 505.43', Outlet Invert= 482.25'



Reach 45R: Flowpath Downstream POA 6

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Reach 46R: Flowpath Downstream POA 5

Inflow Area = 5.470 ac, 0.00% Impervious, Inflow Depth = 3.12" for 100-yr event
Inflow = 24.22 cfs @ 12.02 hrs, Volume= 1.424 af
Outflow = 16.93 cfs @ 12.26 hrs, Volume= 1.424 af, Atten= 30%, Lag= 14.4 min
Routed to Link 44L : Pre Dev. POA Downstream of 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 2.05 fps, Min. Travel Time= 8.4 min

Avg. Velocity= 0.40 fps, Avg. Travel Time= 43.3 min

Peak Storage= 9,197 cf @ 12.11 hrs

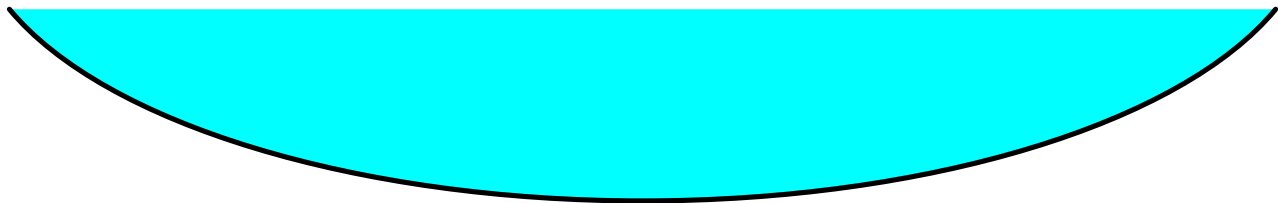
Average Depth at Peak Storage= 1.40' , Surface Width= 10.00'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 8.94 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

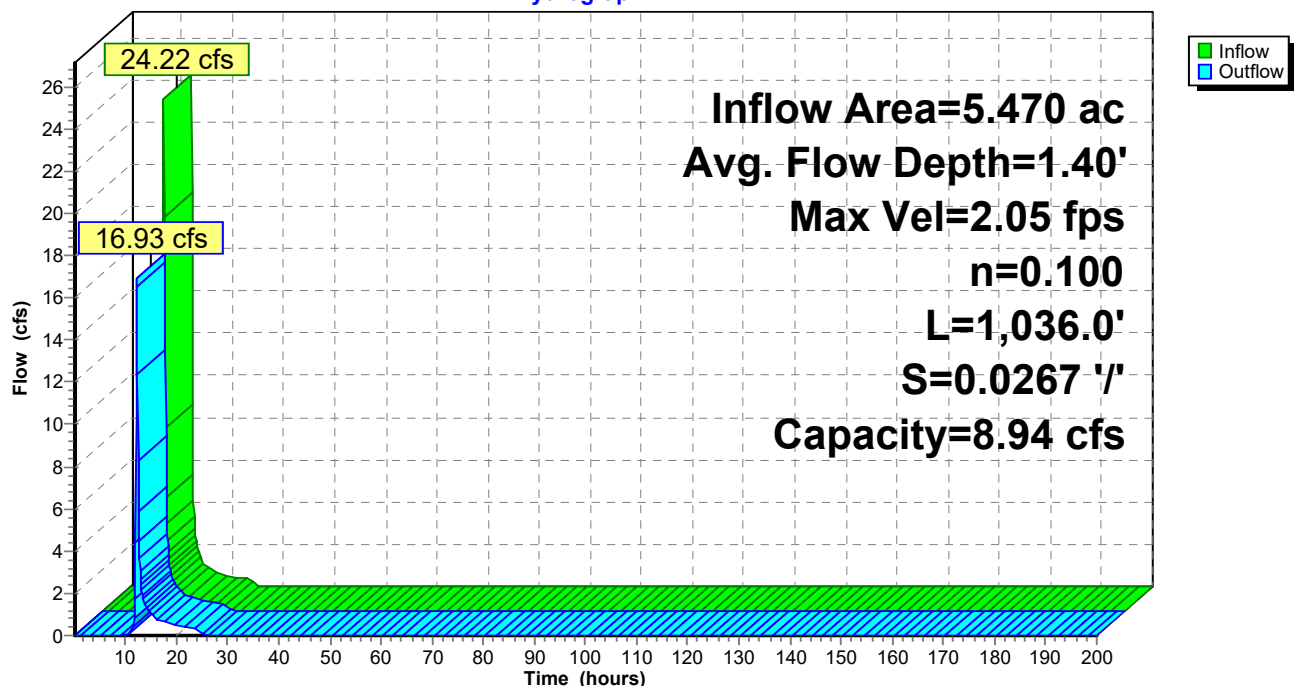
Length= 1,036.0' Slope= 0.0267 '/'

Inlet Invert= 509.93', Outlet Invert= 482.25'



Reach 46R: Flowpath Downstream POA 5

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Reach 48R: Flowpath Downstream POA 4

Inflow Area = 9.998 ac, 0.00% Impervious, Inflow Depth = 3.35" for 100-yr event
Inflow = 45.04 cfs @ 12.03 hrs, Volume= 2.790 af
Outflow = 20.15 cfs @ 12.66 hrs, Volume= 2.790 af, Atten= 55%, Lag= 38.1 min
Routed to Link 44L : Pre Dev. POA Downstream of 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.74 fps, Min. Travel Time= 26.5 min

Avg. Velocity= 0.23 fps, Avg. Travel Time= 199.8 min

Peak Storage= 32,965 cf @ 12.22 hrs

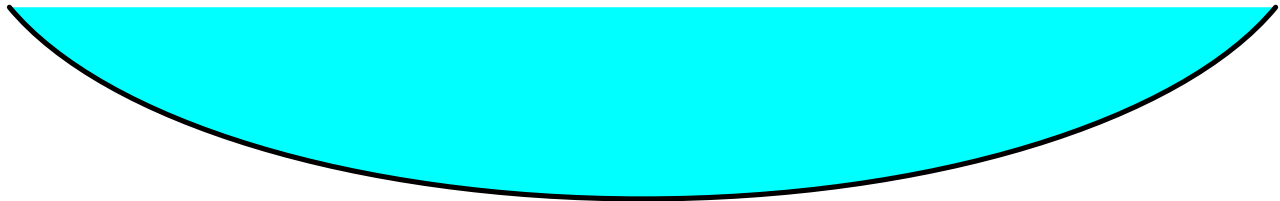
Average Depth at Peak Storage= 1.77' , Surface Width= 11.26'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 7.18 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

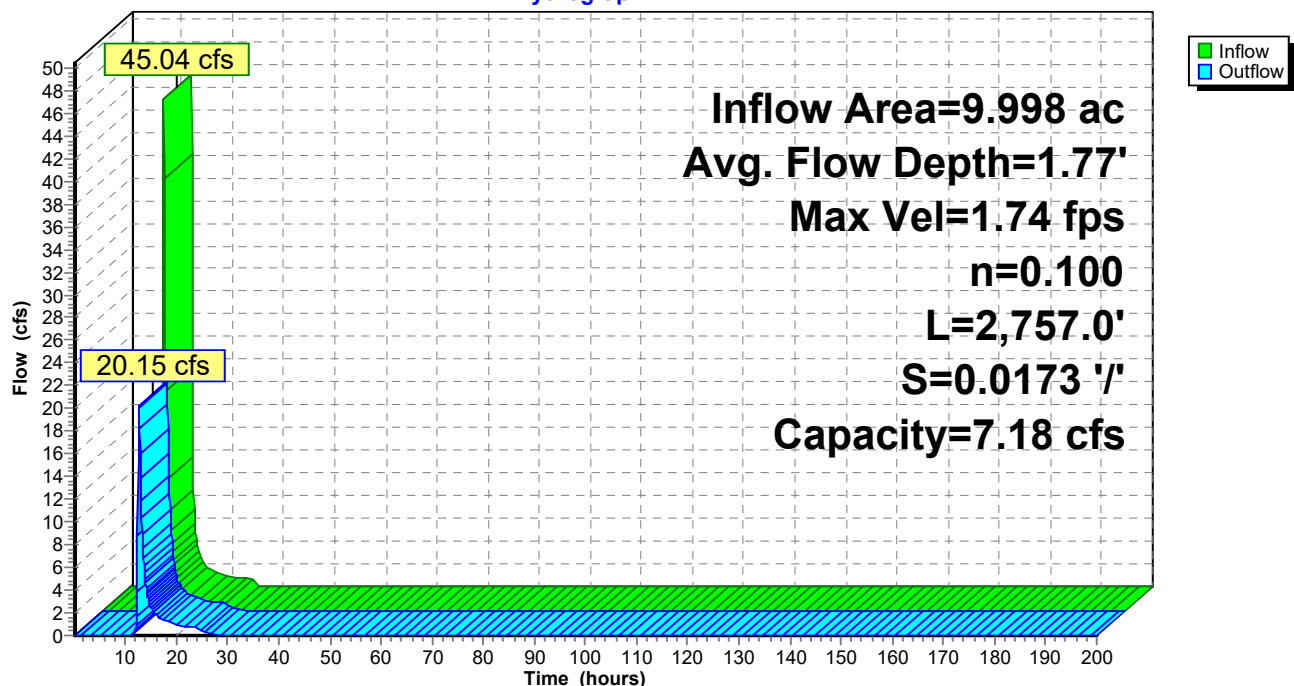
Length= 2,757.0' Slope= 0.0173 '/'

Inlet Invert= 529.84', Outlet Invert= 482.25'



Reach 48R: Flowpath Downstream POA 4

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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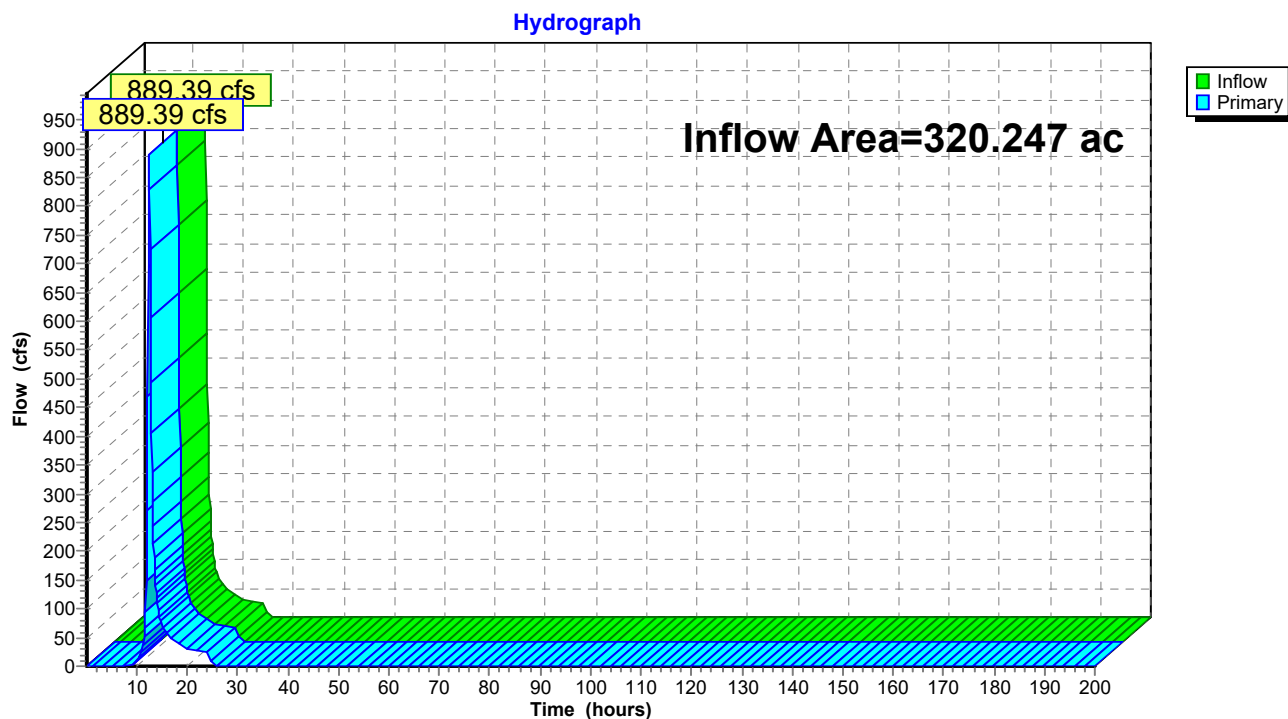
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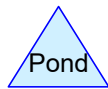
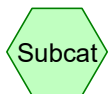
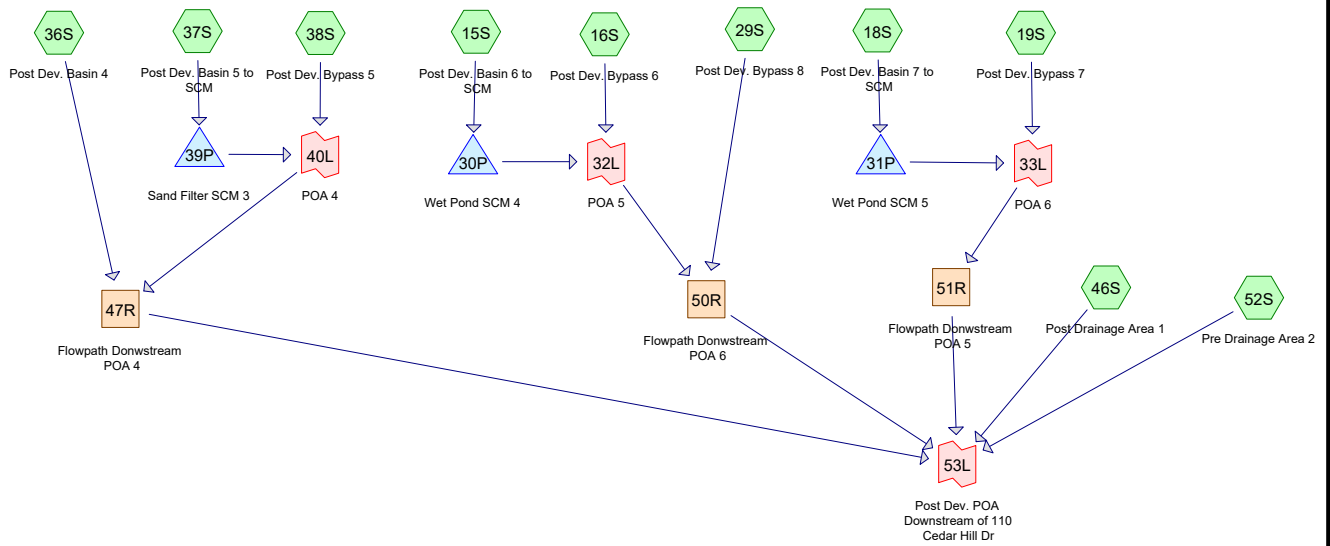
Summary for Link 44L: Pre Dev. POA Downstream of 110 Cedar Hill Dr

Inflow Area = 320.247 ac, 15.75% Impervious, Inflow Depth = 4.18" for 100-yr event
Inflow = 889.39 cfs @ 12.39 hrs, Volume= 111.677 af
Primary = 889.39 cfs @ 12.39 hrs, Volume= 111.677 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 44L: Pre Dev. POA Downstream of 110 Cedar Hill Dr





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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
198.400	68	1 acre lots, 20% imp, HSG B (46S)
89.600	65	2 acre lots, 12% imp, HSG B (52S)
1.227	69	50-75% Grass cover, Fair, HSG B (29S)
4.509	56	Brush, Fair, HSG B (15S, 16S, 18S, 19S, 36S)
1.926	48	Brush, Good, HSG B (37S, 38S)
5.075	98	Paved parking, HSG B (15S, 16S, 18S, 19S, 29S, 36S, 37S, 38S)
3.144	98	Roofs, HSG B (15S, 18S, 37S)
0.409	98	Water Surface, 0% imp, HSG B (15S, 18S)
12.301	60	Woods, Fair, HSG B (16S, 29S, 36S, 38S)
0.917	55	Woods, Good, HSG B (19S)
317.507	67	TOTAL AREA

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Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
317.507	HSG B	15S, 16S, 18S, 19S, 29S, 36S, 37S, 38S, 46S, 52S
0.000	HSG C	
0.000	HSG D	
0.000	Other	
317.507		TOTAL AREA

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Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	198.400	0.000	0.000	0.000	198.400	1 acre lots, 20% imp	46S
0.000	89.600	0.000	0.000	0.000	89.600	2 acre lots, 12% imp	52S
0.000	1.227	0.000	0.000	0.000	1.227	50-75% Grass cover, Fair	29S
0.000	4.509	0.000	0.000	0.000	4.509	Brush, Fair	15S, 16S, 18S, 19S, 36S
0.000	1.926	0.000	0.000	0.000	1.926	Brush, Good	37S, 38S
0.000	5.075	0.000	0.000	0.000	5.075	Paved parking	15S, 16S, 18S, 19S, 29S, 36S, 37S, 38S
0.000	3.144	0.000	0.000	0.000	3.144	Roofs	15S, 18S, 37S
0.000	0.409	0.000	0.000	0.000	0.409	Water Surface, 0% imp	15S, 18S
0.000	12.301	0.000	0.000	0.000	12.301	Woods, Fair	16S, 29S, 36S, 38S
0.000	0.917	0.000	0.000	0.000	0.917	Woods, Good	19S
0.000	317.507	0.000	0.000	0.000	317.507	TOTAL AREA	

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Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	30P	522.00	521.50	45.0	0.0111	0.011	0.0	36.0	0.0	
2	31P	510.50	510.00	79.0	0.0063	0.013	0.0	36.0	0.0	
3	39P	530.00	529.00	50.0	0.0200	0.011	0.0	36.0	0.0	

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Type II 24-hr 1-yr Rainfall=3.16"

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment15S: Post Dev. Basin 6 to Runoff Area=185,285 sf 75.67% Impervious Runoff Depth=2.22"
Tc=5.0 min CN=91 Runoff=14.44 cfs 0.787 af

Subcatchment16S: Post Dev. Bypass 6 Runoff Area=257,427 sf 1.66% Impervious Runoff Depth=0.39"
Tc=5.0 min CN=60 Runoff=2.88 cfs 0.193 af

Subcatchment18S: Post Dev. Basin 7 to Runoff Area=150,448 sf 57.98% Impervious Runoff Depth=1.44"
Tc=5.0 min CN=81 Runoff=7.97 cfs 0.414 af

Subcatchment19S: Post Dev. Bypass 7 Runoff Area=86,411 sf 12.93% Impervious Runoff Depth=0.43"
Tc=10.0 min CN=61 Runoff=0.81 cfs 0.071 af

Subcatchment29S: Post Dev. Bypass 8 Runoff Area=289,814 sf 1.87% Impervious Runoff Depth=0.46"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=3.40 cfs 0.257 af

Subcatchment36S: Post Dev. Basin 4 Runoff Area=29,236 sf 11.81% Impervious Runoff Depth=0.46"
Tc=5.0 min CN=62 Runoff=0.42 cfs 0.026 af

Subcatchment37S: Post Dev. Basin 5 to Runoff Area=122,978 sf 76.45% Impervious Runoff Depth=1.80"
Tc=5.0 min CN=86 Runoff=8.04 cfs 0.424 af

Subcatchment38S: Post Dev. Bypass 5 Runoff Area=163,726 sf 7.49% Impervious Runoff Depth=0.36"
Tc=12.3 min CN=59 Runoff=1.11 cfs 0.113 af

Subcatchment46S: Post Drainage Area 1 Runoff Area=198.400 ac 20.00% Impervious Runoff Depth=0.71"
Flow Length=4,195' Slope=0.0177 '/' Tc=45.4 min CN=68 Runoff=74.63 cfs 11.755 af

Subcatchment52S: Pre Drainage Area 2 Runoff Area=89.600 ac 12.00% Impervious Runoff Depth=0.58"
Flow Length=3,771' Slope=0.0323 '/' Tc=33.2 min CN=65 Runoff=31.19 cfs 4.339 af

Reach 47R: Flowpath Downstream POA Avg. Flow Depth=0.23' Max Vel=0.56 fps Inflow=1.37 cfs 0.562 af
n=0.100 L=2,757.0' S=0.0173 '/' Capacity=7.18 cfs Outflow=0.35 cfs 0.562 af

Reach 50R: Flowpath Downstream POA Avg. Flow Depth=0.56' Max Vel=0.94 fps Inflow=6.27 cfs 1.235 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=2.15 cfs 1.234 af

Reach 51R: Flowpath Downstream POA Avg. Flow Depth=0.22' Max Vel=0.68 fps Inflow=0.88 cfs 0.484 af
n=0.100 L=1,036.0' S=0.0267 '/' Capacity=8.94 cfs Outflow=0.40 cfs 0.484 af

Pond 30P: Wet Pond SCM 4 Peak Elev=525.08' Storage=36,247 cf Inflow=14.44 cfs 0.787 af
Outflow=0.10 cfs 0.784 af

Pond 31P: Wet Pond SCM 5 Peak Elev=513.60' Storage=14,993 cf Inflow=7.97 cfs 0.414 af
Outflow=0.10 cfs 0.414 af

Pond 39P: Sand Filter SCM 3 Peak Elev=533.58' Storage=13,765 cf Inflow=8.04 cfs 0.424 af
Outflow=0.11 cfs 0.424 af

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Type II 24-hr 1-yr Rainfall=3.16"

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Link 32L: POA 5

Inflow=2.96 cfs 0.978 af

Primary=2.96 cfs 0.978 af

Link 33L: POA 6

Inflow=0.88 cfs 0.484 af

Primary=0.88 cfs 0.484 af

Link 40L: POA 4

Inflow=1.20 cfs 0.536 af

Primary=1.20 cfs 0.536 af

Link 53L: Post Dev. POA Downstream of 110 Cedar Hill Dr

Inflow=103.38 cfs 18.374 af

Primary=103.38 cfs 18.374 af

Total Runoff Area = 317.507 ac Runoff Volume = 18.378 af Average Runoff Depth = 0.69"
81.53% Pervious = 258.856 ac 18.47% Impervious = 58.651 ac

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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Subcatchment 15S: Post Dev. Basin 6 to SCM

Runoff = 14.44 cfs @ 11.95 hrs, Volume= 0.787 af, Depth= 2.22"
Routed to Pond 30P : Wet Pond SCM 4

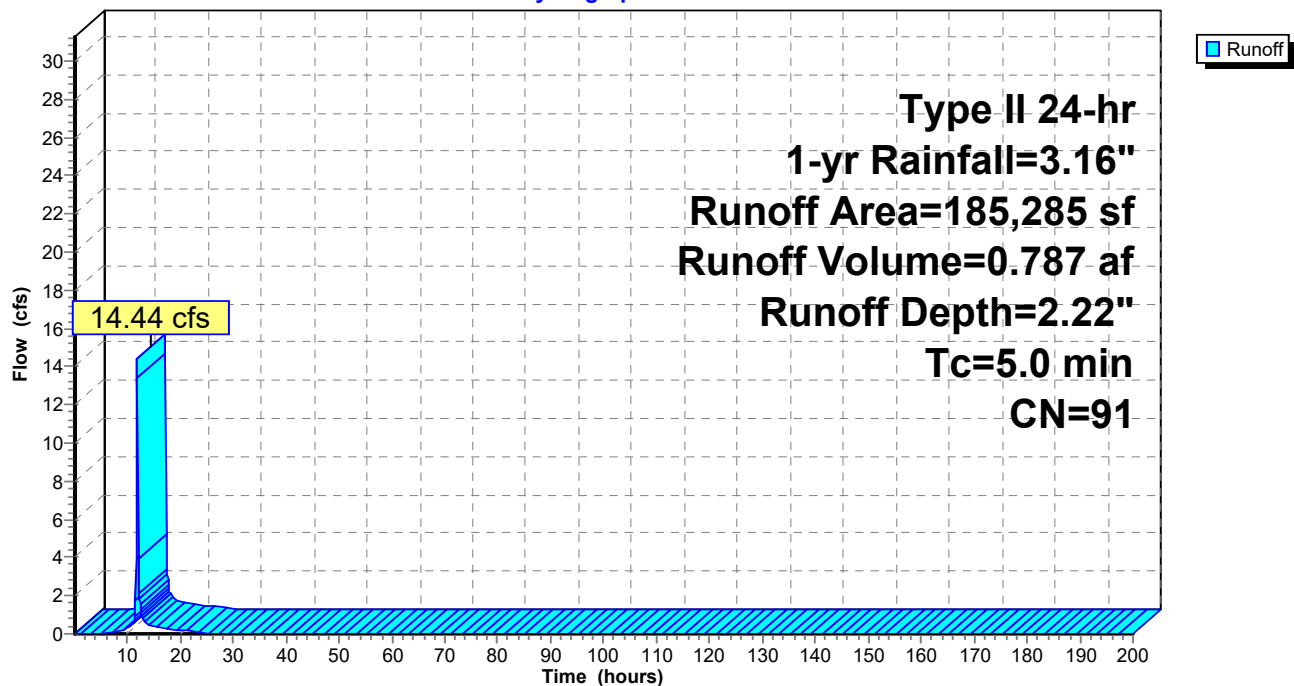
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 1-yr Rainfall=3.16"

Area (sf)	CN	Description
76,830	98	Paved parking, HSG B
63,382	98	Roofs, HSG B
30,858	56	Brush, Fair, HSG B
14,215	98	Water Surface, 0% imp, HSG B
185,285	91	Weighted Average
45,073		24.33% Pervious Area
140,212		75.67% Impervious Area

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

Subcatchment 15S: Post Dev. Basin 6 to SCM

Hydrograph



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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Subcatchment 16S: Post Dev. Bypass 6

Runoff = 2.88 cfs @ 12.00 hrs, Volume= 0.193 af, Depth= 0.39"
Routed to Link 32L : POA 5

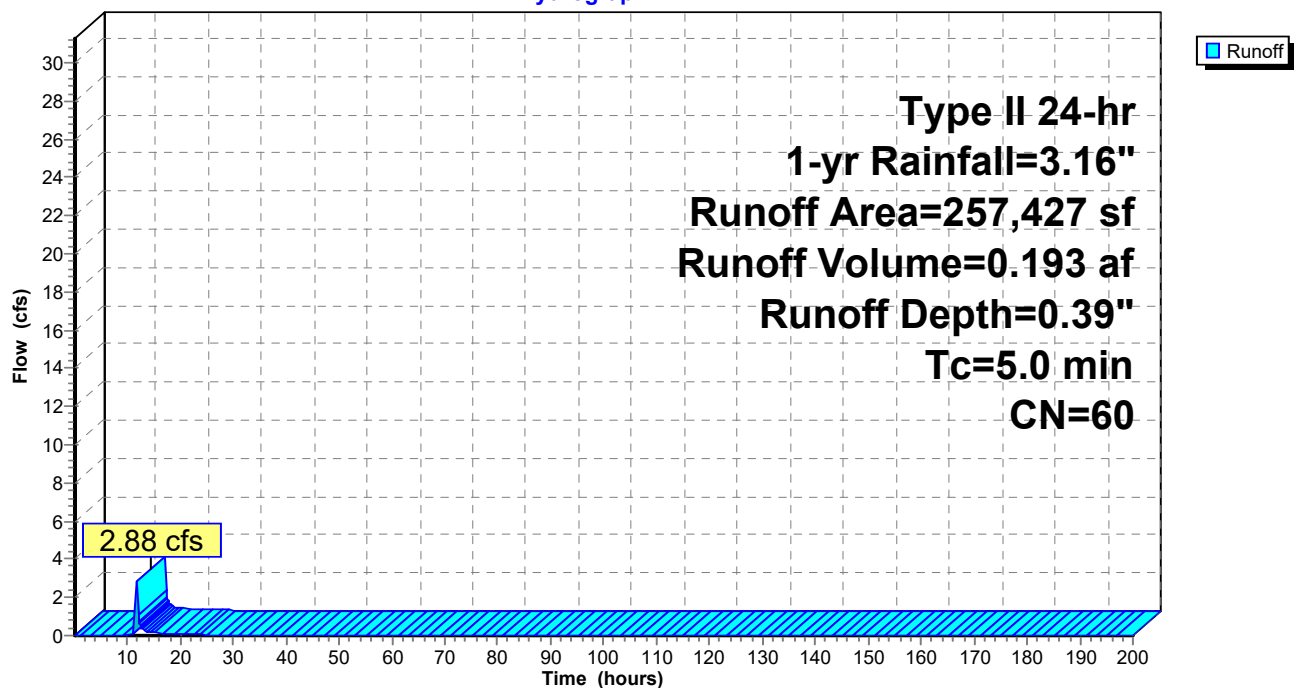
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 1-yr Rainfall=3.16"

Area (sf)	CN	Description
4,268	98	Paved parking, HSG B
51,015	56	Brush, Fair, HSG B
202,144	60	Woods, Fair, HSG B
257,427	60	Weighted Average
253,159		98.34% Pervious Area
4,268		1.66% Impervious Area

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

Subcatchment 16S: Post Dev. Bypass 6

Hydrograph



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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Subcatchment 18S: Post Dev. Basin 7 to SCM

Runoff = 7.97 cfs @ 11.96 hrs, Volume= 0.414 af, Depth= 1.44"
Routed to Pond 31P : Wet Pond SCM 5

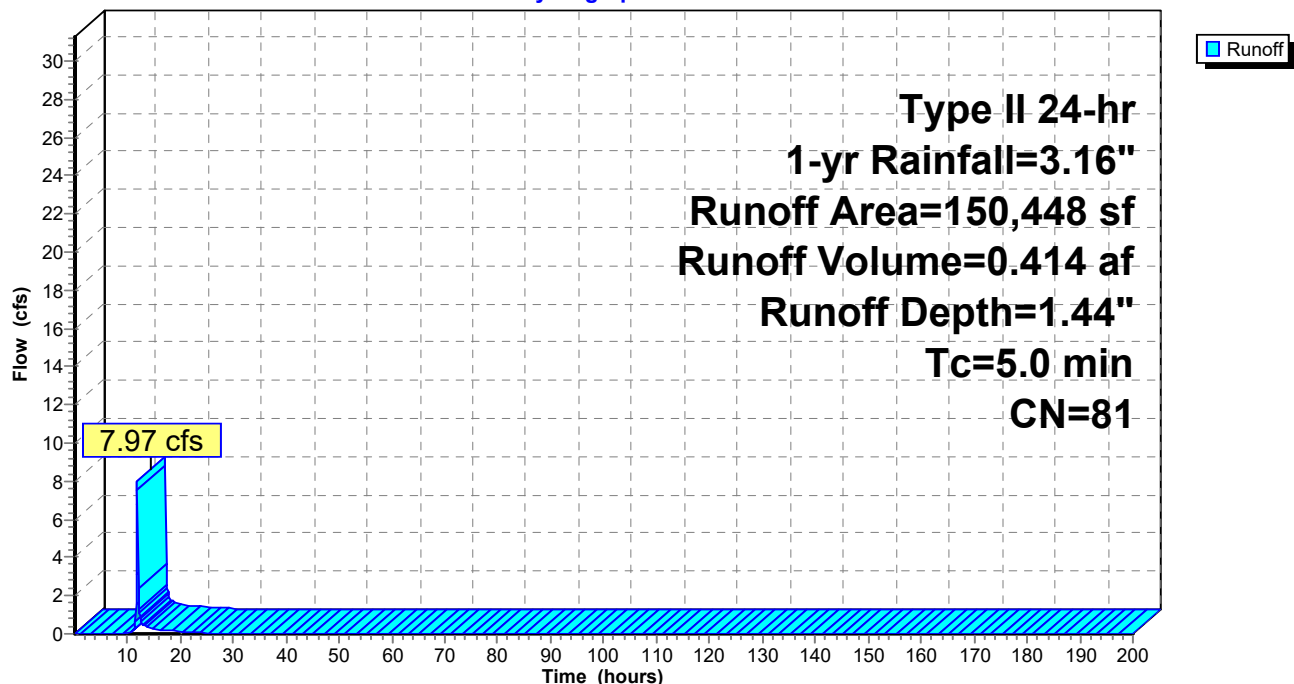
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 1-yr Rainfall=3.16"

Area (sf)	CN	Description
53,515	98	Paved parking, HSG B
33,715	98	Roofs, HSG B
59,637	56	Brush, Fair, HSG B
3,581	98	Water Surface, 0% imp, HSG B
150,448	81	Weighted Average
63,218		42.02% Pervious Area
87,230		57.98% Impervious Area

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

Subcatchment 18S: Post Dev. Basin 7 to SCM

Hydrograph



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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Subcatchment 19S: Post Dev. Bypass 7

Runoff = 0.81 cfs @ 12.06 hrs, Volume= 0.071 af, Depth= 0.43"
Routed to Link 33L : POA 6

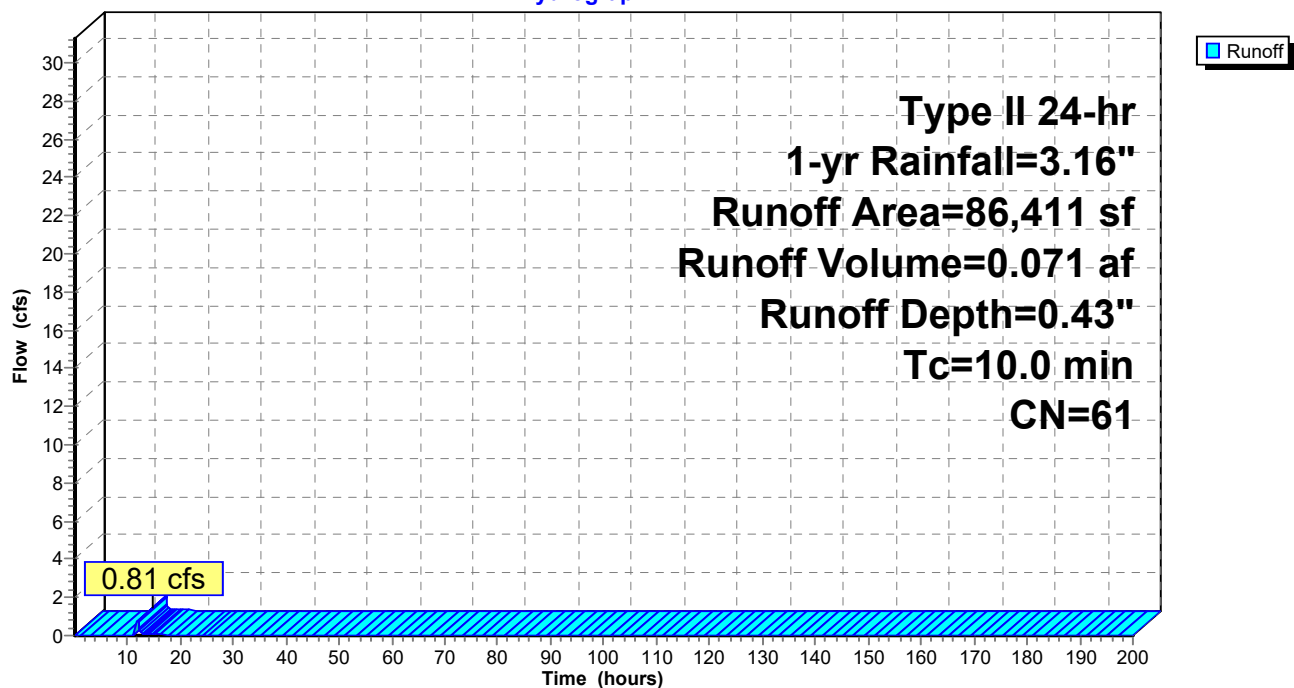
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 1-yr Rainfall=3.16"

Area (sf)	CN	Description
11,171	98	Paved parking, HSG B
35,296	56	Brush, Fair, HSG B
39,944	55	Woods, Good, HSG B
86,411	61	Weighted Average
75,240		87.07% Pervious Area
11,171		12.93% Impervious Area

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

Subcatchment 19S: Post Dev. Bypass 7

Hydrograph



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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Subcatchment 29S: Post Dev. Bypass 8

Runoff = 3.40 cfs @ 12.03 hrs, Volume= 0.257 af, Depth= 0.46"
Routed to Reach 50R : Flowpath Downstream POA 6

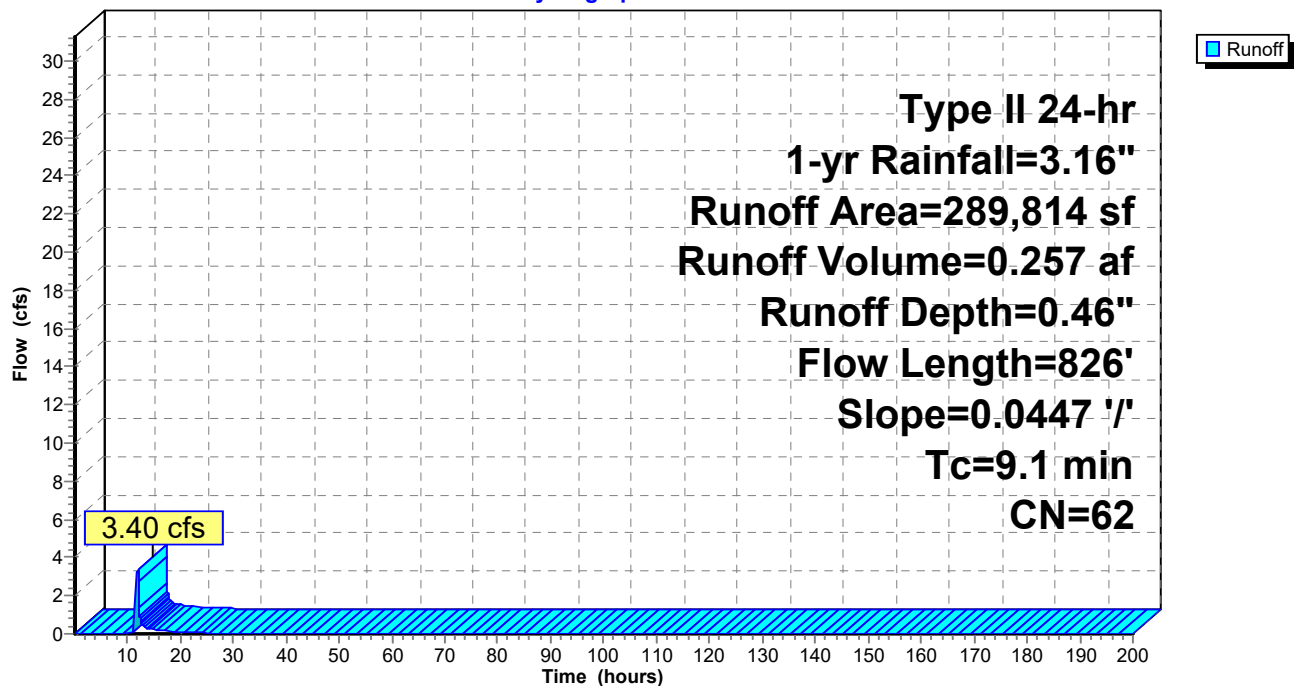
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 1-yr Rainfall=3.16"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
53,439	69	50-75% Grass cover, Fair, HSG B
5,416	98	Paved parking, HSG B
289,814	62	Weighted Average
284,398		98.13% Pervious Area
5,416		1.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 29S: Post Dev. Bypass 8

Hydrograph



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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Subcatchment 36S: Post Dev. Basin 4

Runoff = 0.42 cfs @ 11.99 hrs, Volume= 0.026 af, Depth= 0.46"

Routed to Reach 47R : Flowpath Downstream POA 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

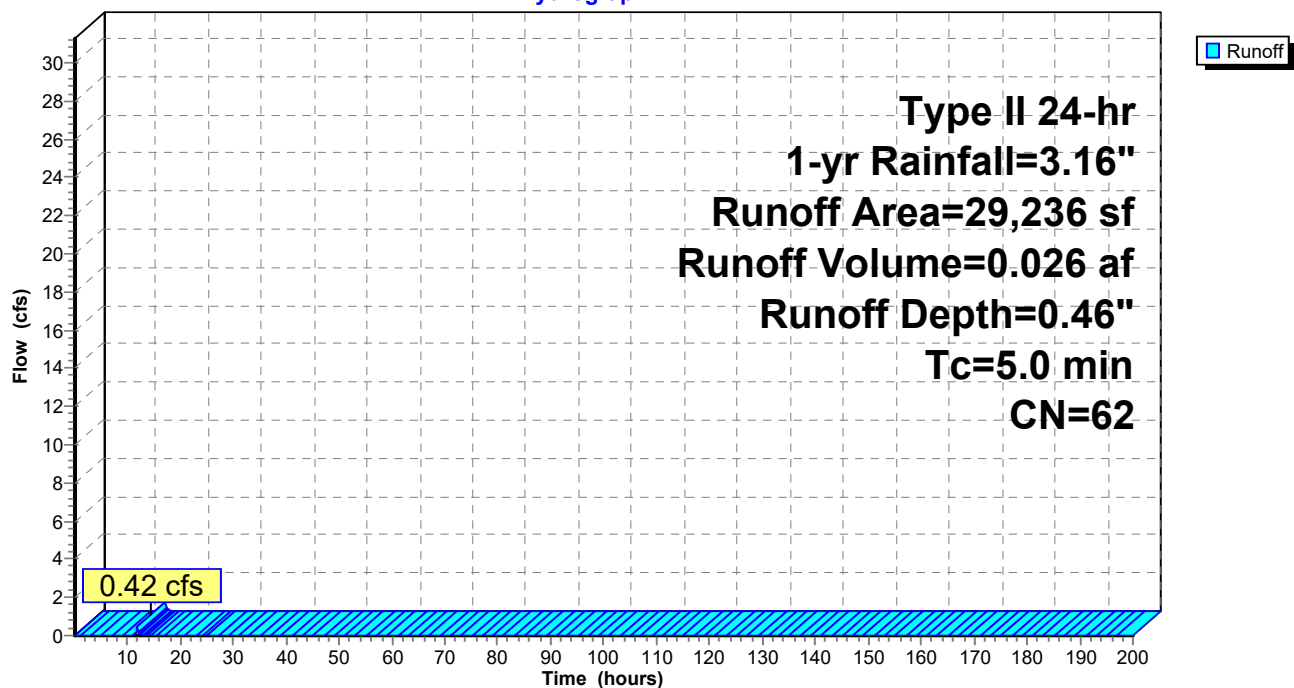
Type II 24-hr 1-yr Rainfall=3.16"

Area (sf)	CN	Description
6,194	60	Woods, Fair, HSG B
19,589	56	Brush, Fair, HSG B
3,453	98	Paved parking, HSG B
29,236	62	Weighted Average
25,783		88.19% Pervious Area
3,453		11.81% Impervious Area

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

Subcatchment 36S: Post Dev. Basin 4

Hydrograph



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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Subcatchment 37S: Post Dev. Basin 5 to SCM

Runoff = 8.04 cfs @ 11.96 hrs, Volume= 0.424 af, Depth= 1.80"
Routed to Pond 39P : Sand Filter SCM 3

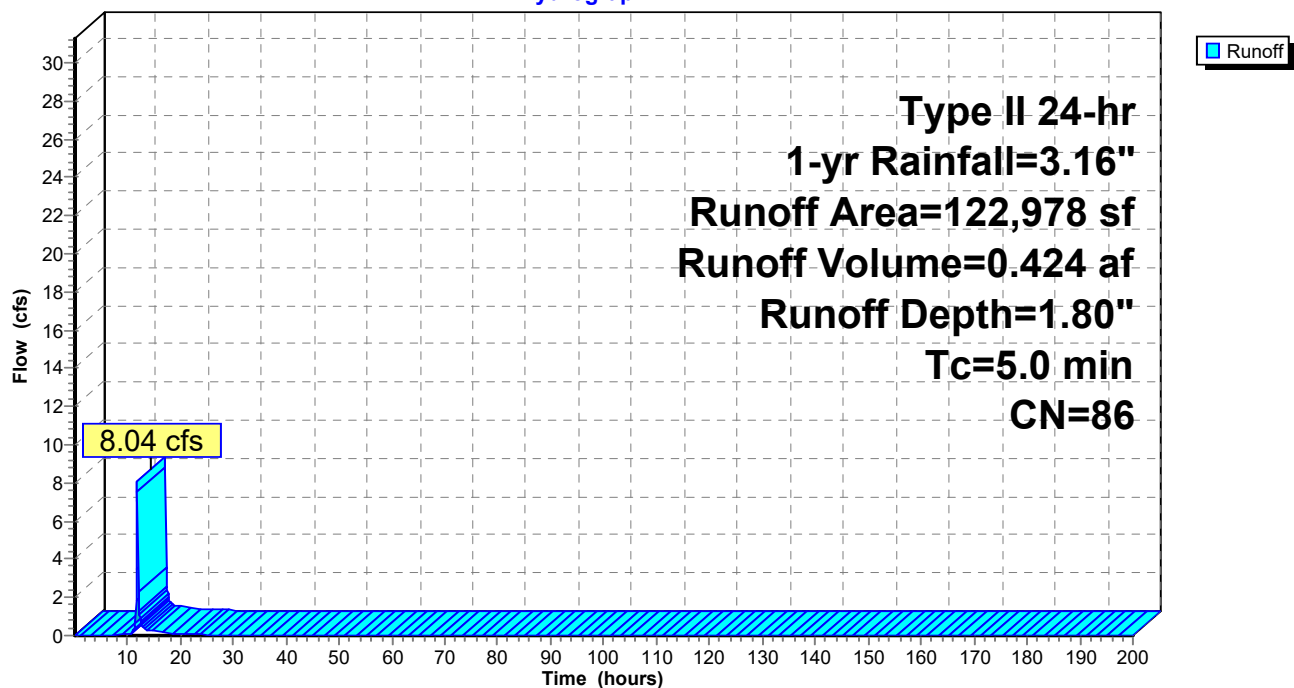
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 1-yr Rainfall=3.16"

Area (sf)	CN	Description
54,167	98	Paved parking, HSG B
39,855	98	Roofs, HSG B
28,956	48	Brush, Good, HSG B
122,978	86	Weighted Average
28,956		23.55% Pervious Area
94,022		76.45% Impervious Area

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

Subcatchment 37S: Post Dev. Basin 5 to SCM

Hydrograph



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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Subcatchment 38S: Post Dev. Bypass 5

Runoff = 1.11 cfs @ 12.10 hrs, Volume= 0.113 af, Depth= 0.36"
Routed to Link 40L : POA 4

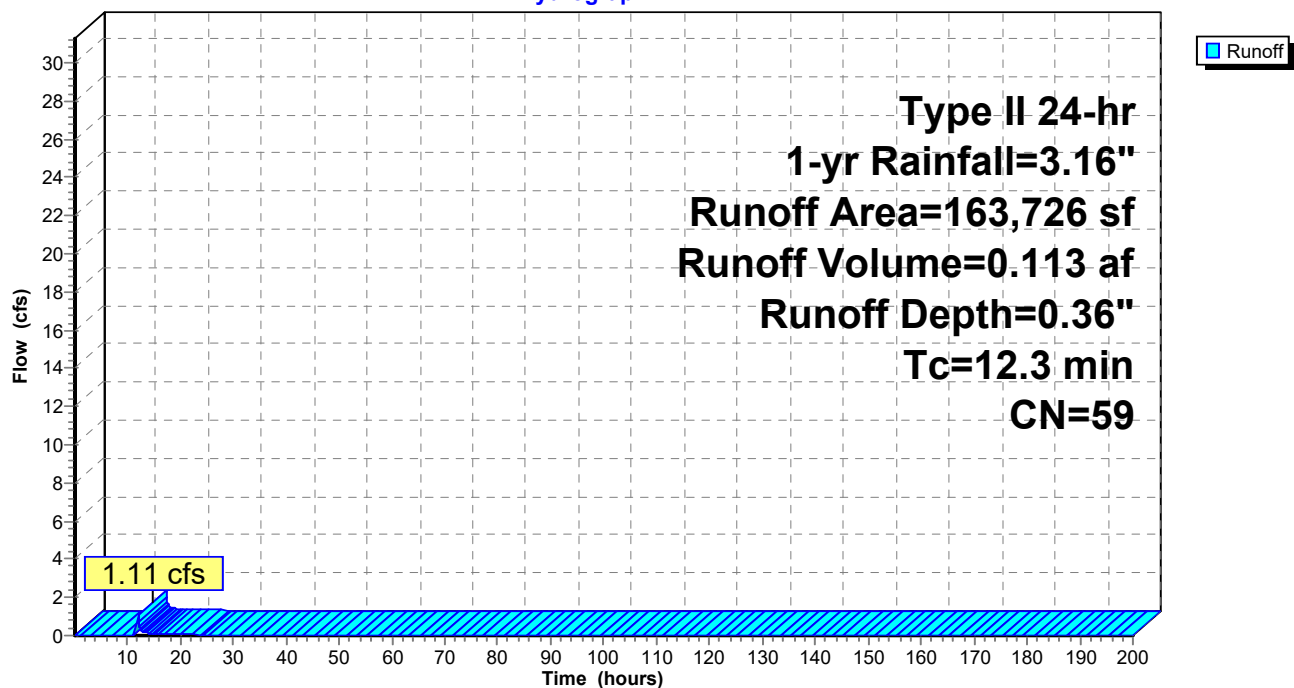
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 1-yr Rainfall=3.16"

Area (sf)	CN	Description
12,257	98	Paved parking, HSG B
54,926	48	Brush, Good, HSG B
96,543	60	Woods, Fair, HSG B
163,726	59	Weighted Average
151,469		92.51% Pervious Area
12,257		7.49% Impervious Area

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

Subcatchment 38S: Post Dev. Bypass 5

Hydrograph



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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Subcatchment 46S: Post Drainage Area 1

Runoff = 74.63 cfs @ 12.51 hrs, Volume= 11.755 af, Depth= 0.71"

Routed to Link 53L : Post Dev. POA Downstream of 110 Cedar Hill Dr

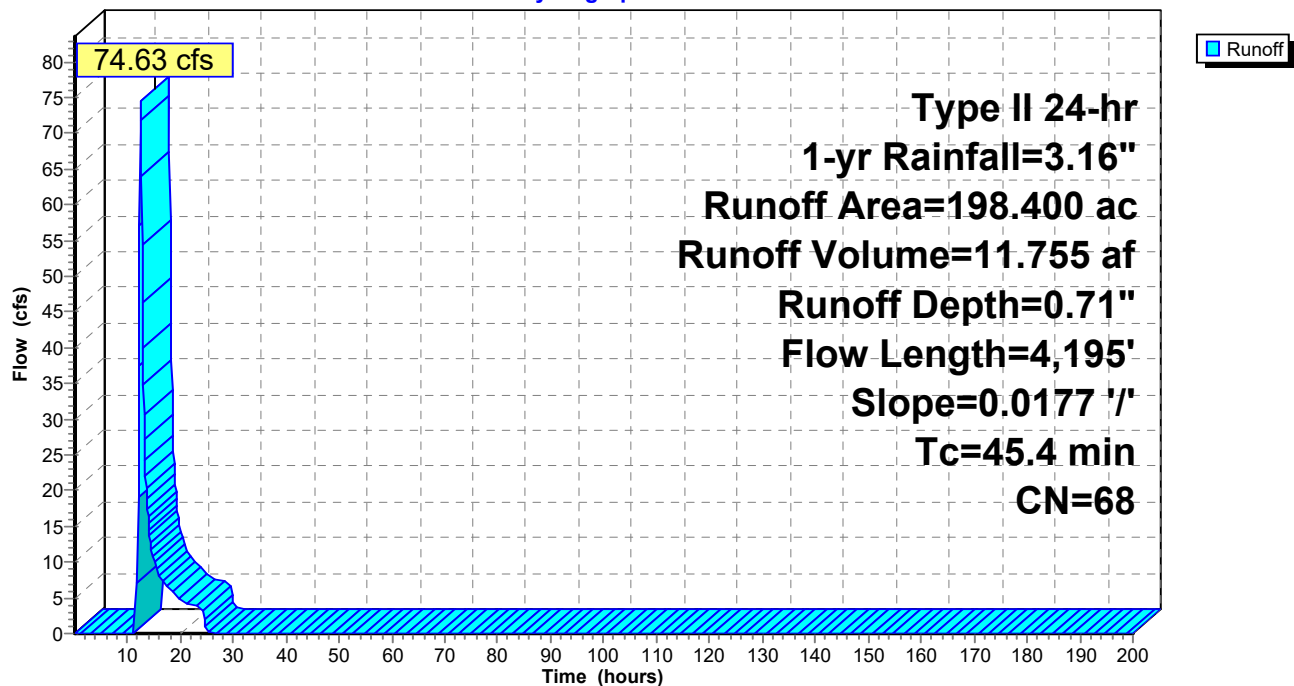
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 1-yr Rainfall=3.16"

Area (ac)	CN	Description
198.400	68	1 acre lots, 20% imp, HSG B
158.720		80.00% Pervious Area
39.680		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.4	4,195	0.0177	1.54		Kirpich Method, General overland flow k= 2.00

Subcatchment 46S: Post Drainage Area 1

Hydrograph



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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Subcatchment 52S: Pre Drainage Area 2

Runoff = 31.19 cfs @ 12.35 hrs, Volume= 4.339 af, Depth= 0.58"

Routed to Link 53L : Post Dev. POA Downstream of 110 Cedar Hill Dr

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

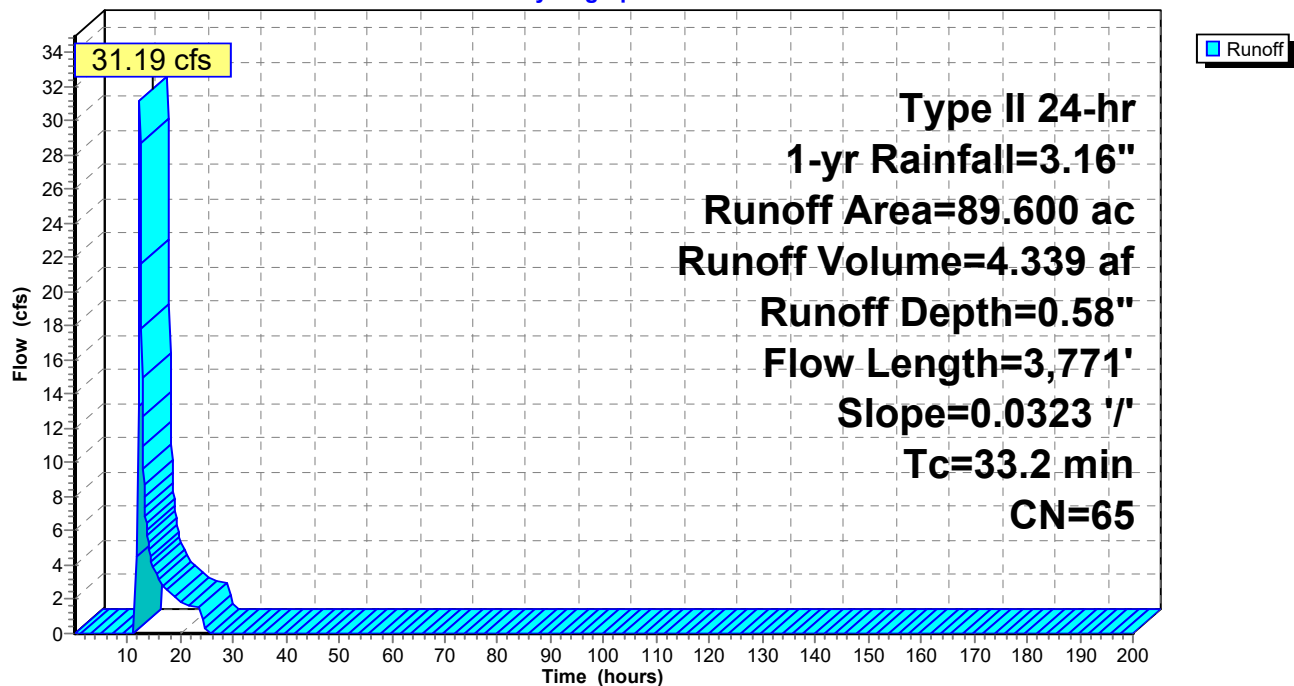
Type II 24-hr 1-yr Rainfall=3.16"

Area (ac)	CN	Description
89.600	65	2 acre lots, 12% imp, HSG B
78.848		88.00% Pervious Area
10.752		12.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.2	3,771	0.0323	1.89		Kirpich Method, General overland flow k= 2.00

Subcatchment 52S: Pre Drainage Area 2

Hydrograph



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Type II 24-hr 1-yr Rainfall=3.16"

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Summary for Reach 47R: Flowpath Downstream POA 4

Inflow Area = 7.253 ac, 34.73% Impervious, Inflow Depth = 0.93" for 1-yr event
Inflow = 1.37 cfs @ 12.08 hrs, Volume= 0.562 af
Outflow = 0.35 cfs @ 14.33 hrs, Volume= 0.562 af, Atten= 74%, Lag= 135.1 min
Routed to Link 53L : Post Dev. POA Downstream of 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 0.56 fps, Min. Travel Time= 82.2 min

Avg. Velocity= 0.20 fps, Avg. Travel Time= 227.7 min

Peak Storage= 1,735 cf @ 12.96 hrs

Average Depth at Peak Storage= 0.23' , Surface Width= 4.07'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 7.18 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

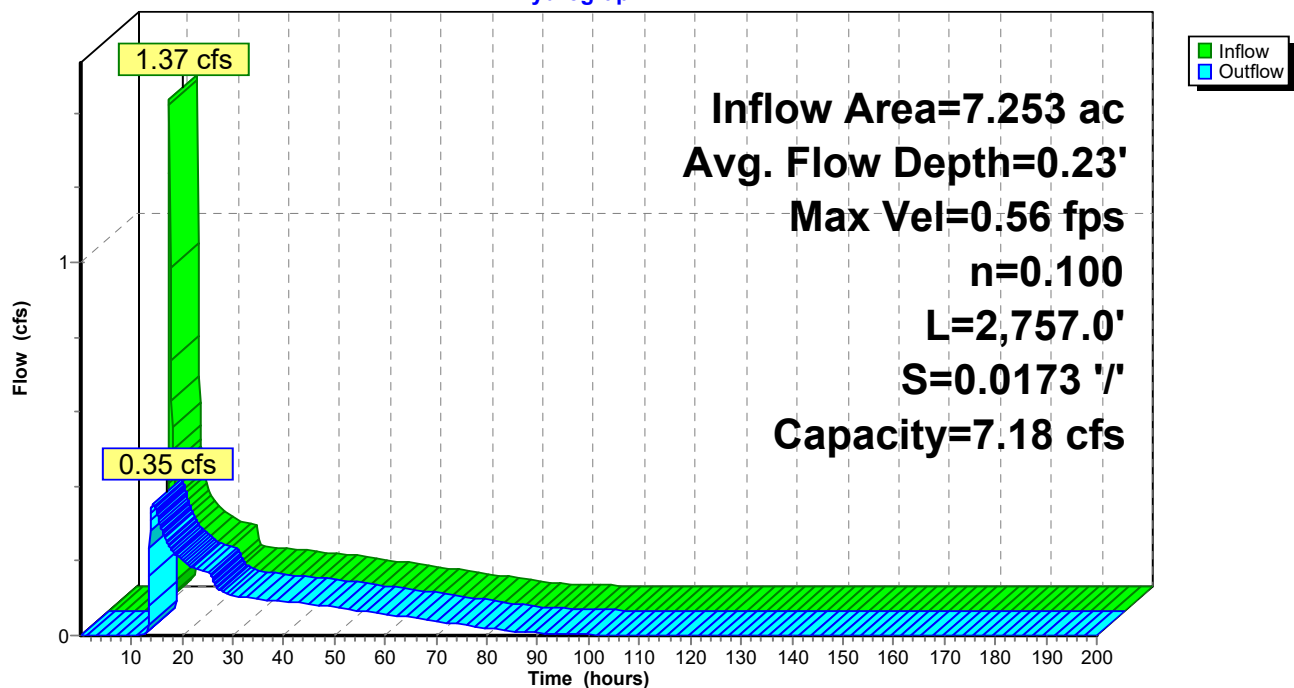
Length= 2,757.0' Slope= 0.0173 '/'

Inlet Invert= 529.84', Outlet Invert= 482.25'



Reach 47R: Flowpath Downstream POA 4

Hydrograph



Downstream Analysis - ZCP

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Summary for Reach 50R: Flowpath Downstream POA 6

Inflow Area = 16.816 ac, 20.46% Impervious, Inflow Depth > 0.88" for 1-yr event
Inflow = 6.27 cfs @ 12.02 hrs, Volume= 1.235 af
Outflow = 2.15 cfs @ 12.70 hrs, Volume= 1.234 af, Atten= 66%, Lag= 40.9 min
Routed to Link 53L : Post Dev. POA Downstream of 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 0.94 fps, Min. Travel Time= 26.8 min

Avg. Velocity= 0.28 fps, Avg. Travel Time= 89.4 min

Peak Storage= 3,551 cf @ 12.23 hrs

Average Depth at Peak Storage= 0.56' , Surface Width= 6.32'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

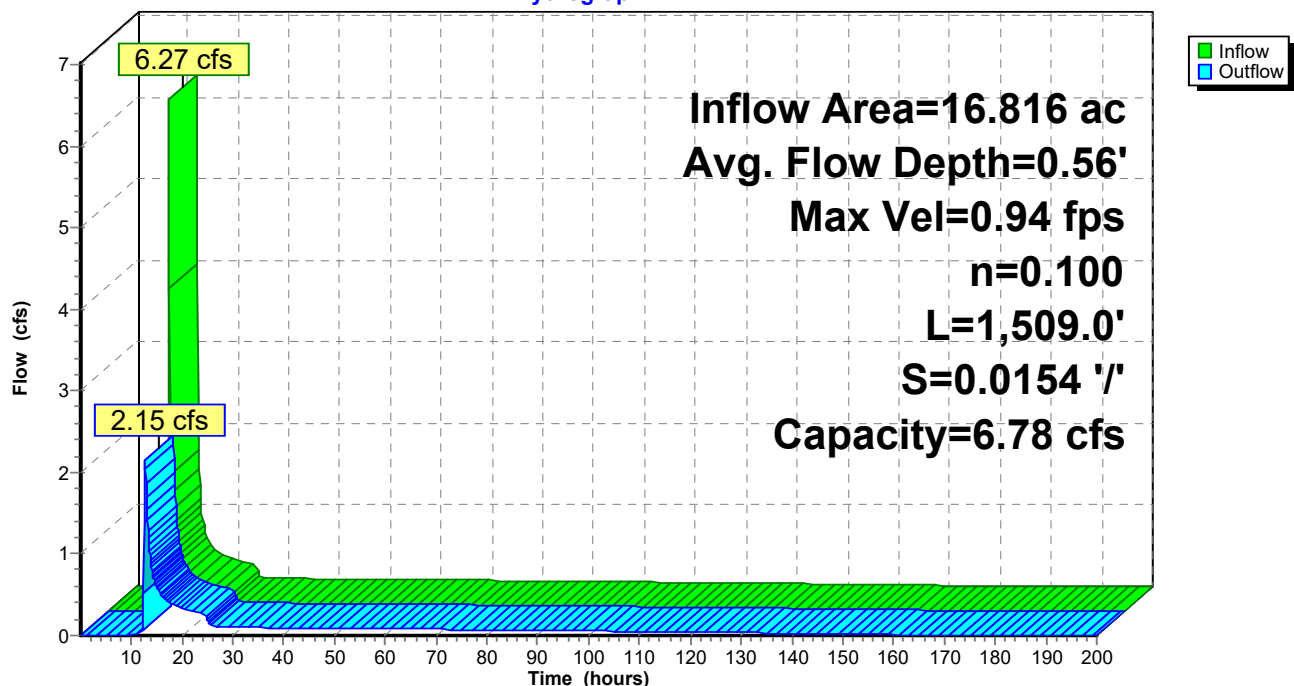
Length= 1,509.0' Slope= 0.0154 '/'

Inlet Invert= 505.43', Outlet Invert= 482.25'



Reach 50R: Flowpath Downstream POA 6

Hydrograph



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Summary for Reach 51R: Flowpath Downstream POA 5

Inflow Area = 5.438 ac, 41.54% Impervious, Inflow Depth = 1.07" for 1-yr event
Inflow = 0.88 cfs @ 12.06 hrs, Volume= 0.484 af
Outflow = 0.40 cfs @ 12.73 hrs, Volume= 0.484 af, Atten= 55%, Lag= 40.1 min
Routed to Link 53L : Post Dev. POA Downstream of 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 0.68 fps, Min. Travel Time= 25.5 min

Avg. Velocity= 0.24 fps, Avg. Travel Time= 71.3 min

Peak Storage= 611 cf @ 12.29 hrs

Average Depth at Peak Storage= 0.22' , Surface Width= 3.99'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 8.94 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

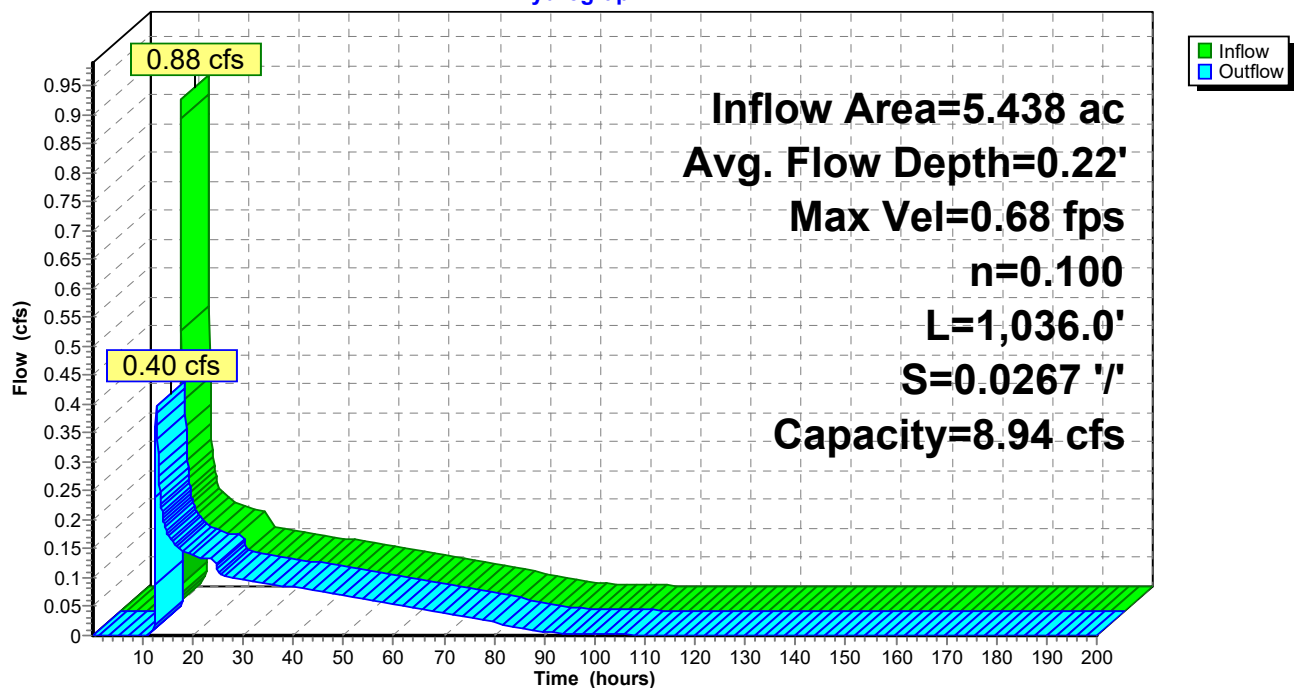
Length= 1,036.0' Slope= 0.0267 '/'

Inlet Invert= 509.93', Outlet Invert= 482.25'



Reach 51R: Flowpath Downstream POA 5

Hydrograph



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Summary for Pond 30P: Wet Pond SCM 4

Inflow Area = 4.254 ac, 75.67% Impervious, Inflow Depth = 2.22" for 1-yr event
Inflow = 14.44 cfs @ 11.95 hrs, Volume= 0.787 af
Outflow = 0.10 cfs @ 24.02 hrs, Volume= 0.784 af, Atten= 99%, Lag= 724.1 min
Primary = 0.10 cfs @ 24.02 hrs, Volume= 0.784 af
Routed to Link 32L : POA 5

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Starting Elev= 522.00' Surf.Area= 7,056 sf Storage= 6,623 cf

Peak Elev= 525.08' @ 24.02 hrs Surf.Area= 10,941 sf Storage= 36,247 cf (29,624 cf above start)

Plug-Flow detention time= 4,052.3 min calculated for 0.632 af (80% of inflow)

Center-of-Mass det. time= 3,285.9 min (4,084.8 - 798.9)

Volume	Invert	Avail.Storage	Storage Description
#1	521.00'	71,189 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
521.00	6,190	0	0
522.00	7,056	6,623	6,623
522.50	8,333	3,847	10,470
523.00	9,531	4,466	14,936
524.00	10,198	9,865	24,801
525.00	10,883	10,541	35,341
526.00	11,584	11,234	46,575
527.00	12,303	11,944	58,518
528.00	13,038	12,671	71,189

Device	Routing	Invert	Outlet Devices
#1	Primary	522.00'	36.0" Round Culvert L= 45.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 522.00' / 521.50' S= 0.0111 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf
#2	Device 1	522.00'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	525.40'	40.0" W x 4.0" H Vert. Peakflow Orifice X 2.00 C= 0.600 Limited to weir flow at low heads
#4	Device 1	526.90'	48.0" x 48.0" Horiz. Overflow C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.10 cfs @ 24.02 hrs HW=525.08' (Free Discharge)

1=Culvert (Passes 0.10 cfs of 40.79 cfs potential flow)
2=Drawdown (Orifice Controls 0.10 cfs @ 8.37 fps)
3=Peakflow Orifice (Controls 0.00 cfs)
4=Overflow (Controls 0.00 cfs)

Downstream Analysis - ZCP

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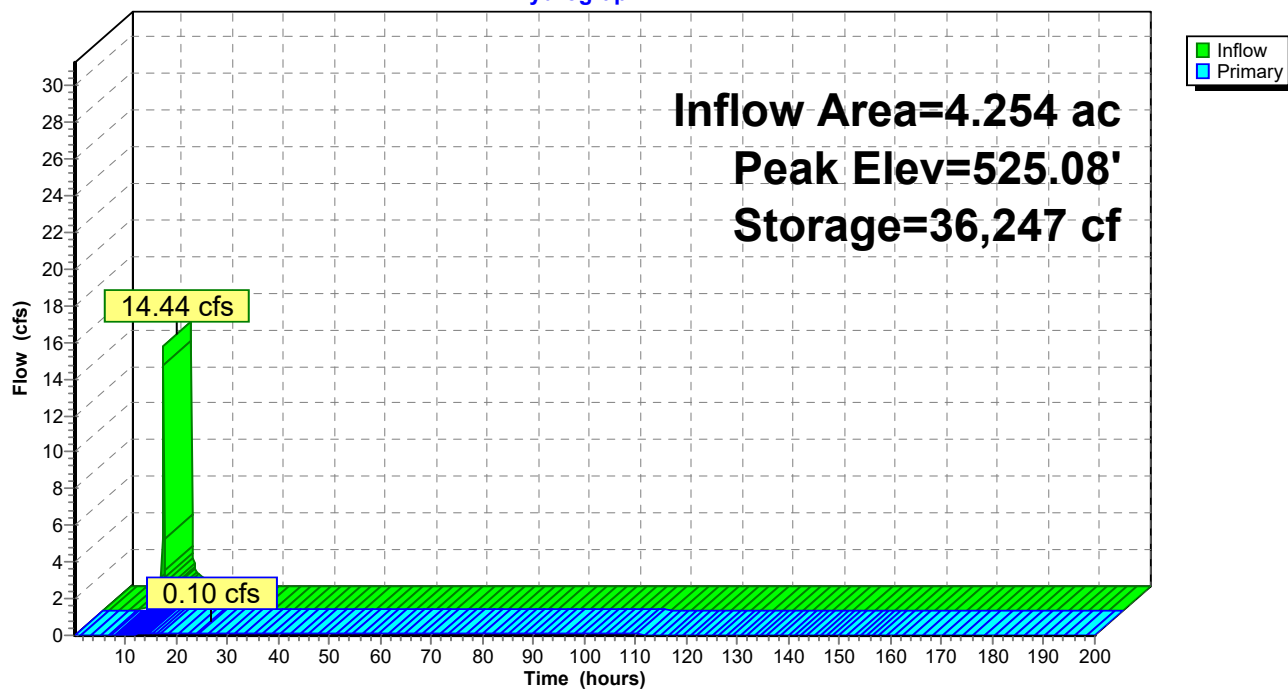
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Pond 30P: Wet Pond SCM 4

Hydrograph



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Summary for Pond 31P: Wet Pond SCM 5

Inflow Area = 3.454 ac, 57.98% Impervious, Inflow Depth = 1.44" for 1-yr event
Inflow = 7.97 cfs @ 11.96 hrs, Volume= 0.414 af
Outflow = 0.10 cfs @ 21.99 hrs, Volume= 0.414 af, Atten= 99%, Lag= 601.4 min
Primary = 0.10 cfs @ 21.99 hrs, Volume= 0.414 af
Routed to Link 33L : POA 6

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Starting Elev= 510.50' Surf.Area= 3,231 sf Storage= 1,401 cf

Peak Elev= 513.60' @ 21.99 hrs Surf.Area= 5,103 sf Storage= 14,993 cf (13,593 cf above start)

Plug-Flow detention time= 1,784.9 min calculated for 0.382 af (92% of inflow)

Center-of-Mass det. time= 1,606.2 min (2,442.2 - 836.0)

Volume	Invert	Avail.Storage	Storage Description
#1	510.00'	42,078 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
510.00	2,371	0	0
510.50	3,231	1,401	1,401
511.00	3,997	1,807	3,208
512.00	4,407	4,202	7,410
513.00	4,836	4,622	12,031
514.00	5,284	5,060	17,091
515.00	5,749	5,517	22,608
516.00	6,233	5,991	28,599
517.00	6,735	6,484	35,083
518.00	7,255	6,995	42,078

Device	Routing	Invert	Outlet Devices
#1	Primary	510.50'	36.0" Round Culvert L= 79.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 510.50' / 510.00' S= 0.0063 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Device 1	510.50'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	514.70'	34.0" W x 4.5" H Vert. Peakflow Orifice X 2.00 C= 0.600 Limited to weir flow at low heads
#4	Device 1	516.60'	48.0" x 48.0" Horiz. Overflow C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.10 cfs @ 21.99 hrs HW=513.60' (Free Discharge)

1=Culvert (Passes 0.10 cfs of 38.15 cfs potential flow)
2=Drawdown (Orifice Controls 0.10 cfs @ 8.39 fps)
3=Peakflow Orifice (Controls 0.00 cfs)
4=Overflow (Controls 0.00 cfs)

Downstream Analysis - ZCP

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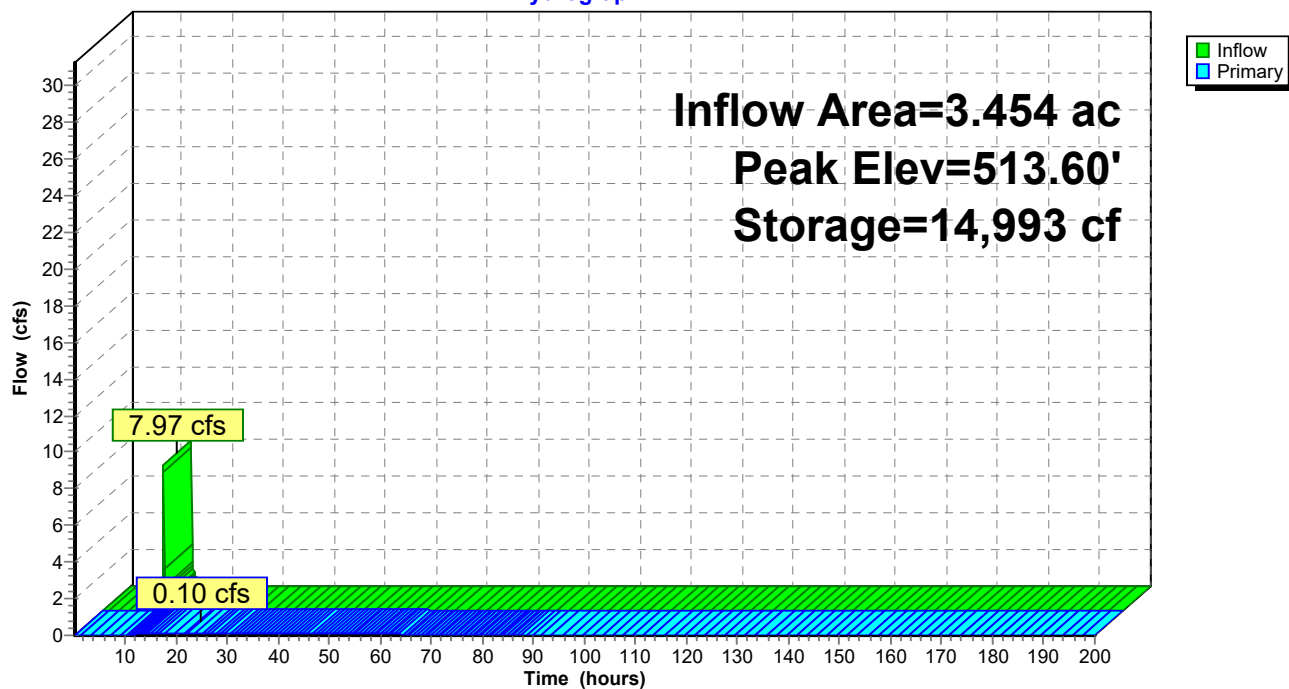
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Pond 31P: Wet Pond SCM 5

Hydrograph



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Summary for Pond 39P: Sand Filter SCM 3

Inflow Area = 2.823 ac, 76.45% Impervious, Inflow Depth = 1.80" for 1-yr event
Inflow = 8.04 cfs @ 11.96 hrs, Volume= 0.424 af
Outflow = 0.11 cfs @ 19.52 hrs, Volume= 0.424 af, Atten= 99%, Lag= 453.5 min
Primary = 0.11 cfs @ 19.52 hrs, Volume= 0.424 af
Routed to Link 40L : POA 4

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Peak Elev= 533.58' @ 19.52 hrs Surf.Area= 4,515 sf Storage= 13,765 cf

Plug-Flow detention time= 1,498.2 min calculated for 0.423 af (100% of inflow)
Center-of-Mass det. time= 1,500.4 min (2,319.5 - 819.1)

Volume	Invert	Avail.Storage	Storage Description
#1	530.00'	16,905 cf	Sediment/Sand Chamber (Prismatic) Listed below (Recalc) x 23
#2	530.00'	16,800 cf	Storage (Prismatic) Listed below (Recalc) x 20
		33,705 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
530.00	105	0.0	0	0
532.00	105	50.0	105	105
538.00	105	100.0	630	735

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
530.00	105	0	0
538.00	105	840	840

Device	Routing	Invert	Outlet Devices
#1	Primary	530.00'	36.0" Round Culvert L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 530.00' / 529.00' S= 0.0200 ' / Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf
#2	Device 1	530.00'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	534.70'	34.0" W x 5.0" H Vert. Main Orifice C= 0.600 Limited to weir flow at low heads
#4	Device 1	537.20'	25.0' long Overflow 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.11 cfs @ 19.52 hrs HW=533.58' (Free Discharge)

- 1=Culvert (Passes 0.11 cfs of 49.13 cfs potential flow)
- 2=Drawdown (Orifice Controls 0.11 cfs @ 9.04 fps)
- 3=Main Orifice (Controls 0.00 cfs)
- 4=Overflow (Controls 0.00 cfs)

Downstream Analysis - ZCP

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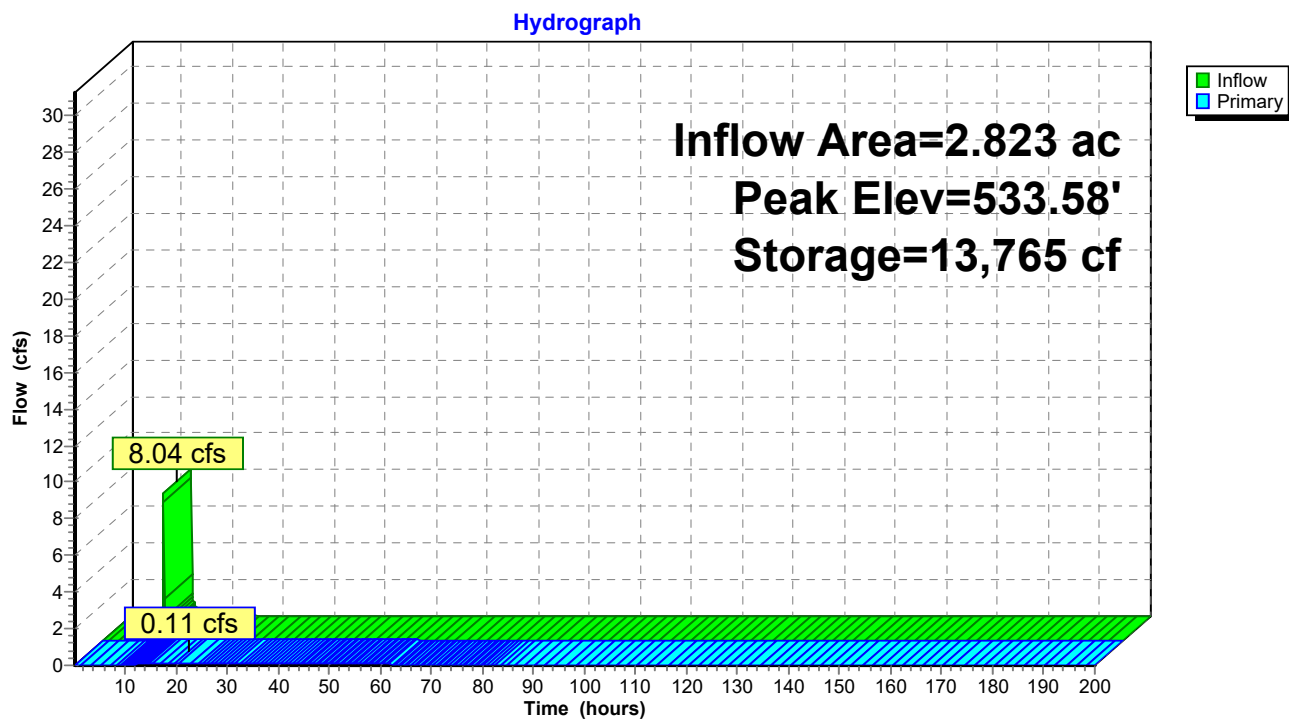
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Pond 39P: Sand Filter SCM 3



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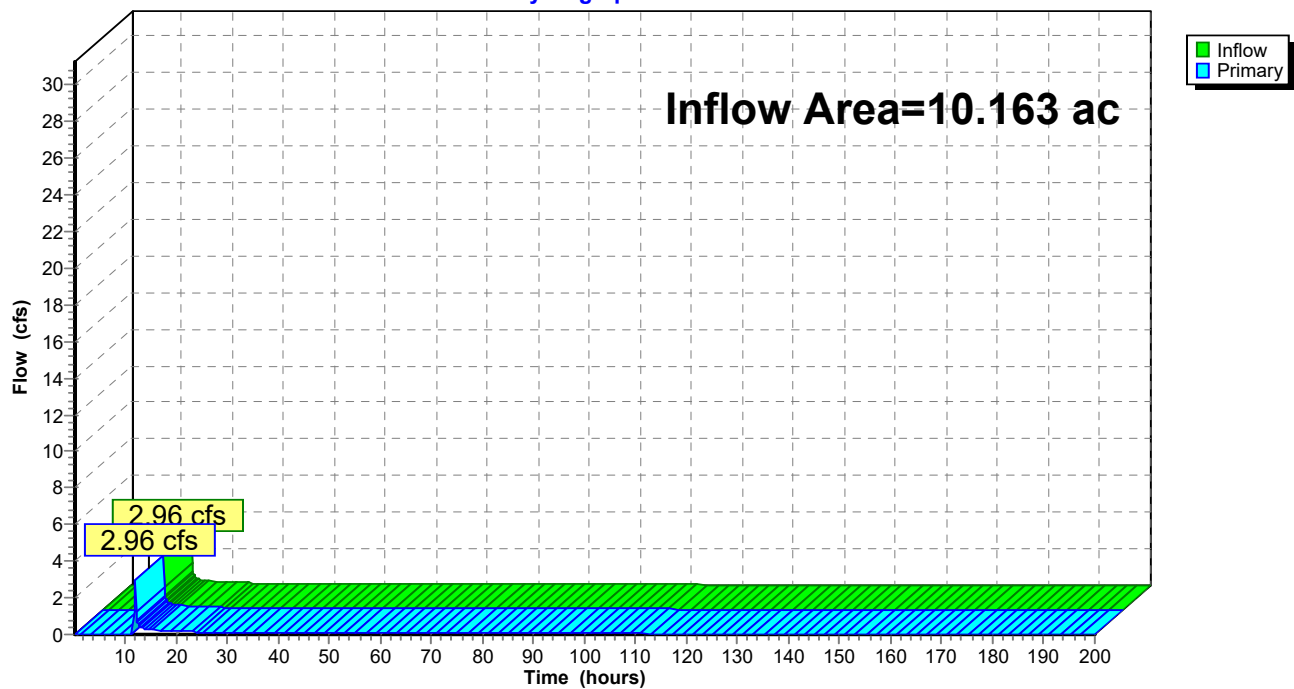
Summary for Link 32L: POA 5

Inflow Area = 10.163 ac, 32.64% Impervious, Inflow Depth > 1.15" for 1-yr event
Inflow = 2.96 cfs @ 12.00 hrs, Volume= 0.978 af
Primary = 2.96 cfs @ 12.00 hrs, Volume= 0.978 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 50R : Flowpath Downstream POA 6

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 32L: POA 5

Hydrograph



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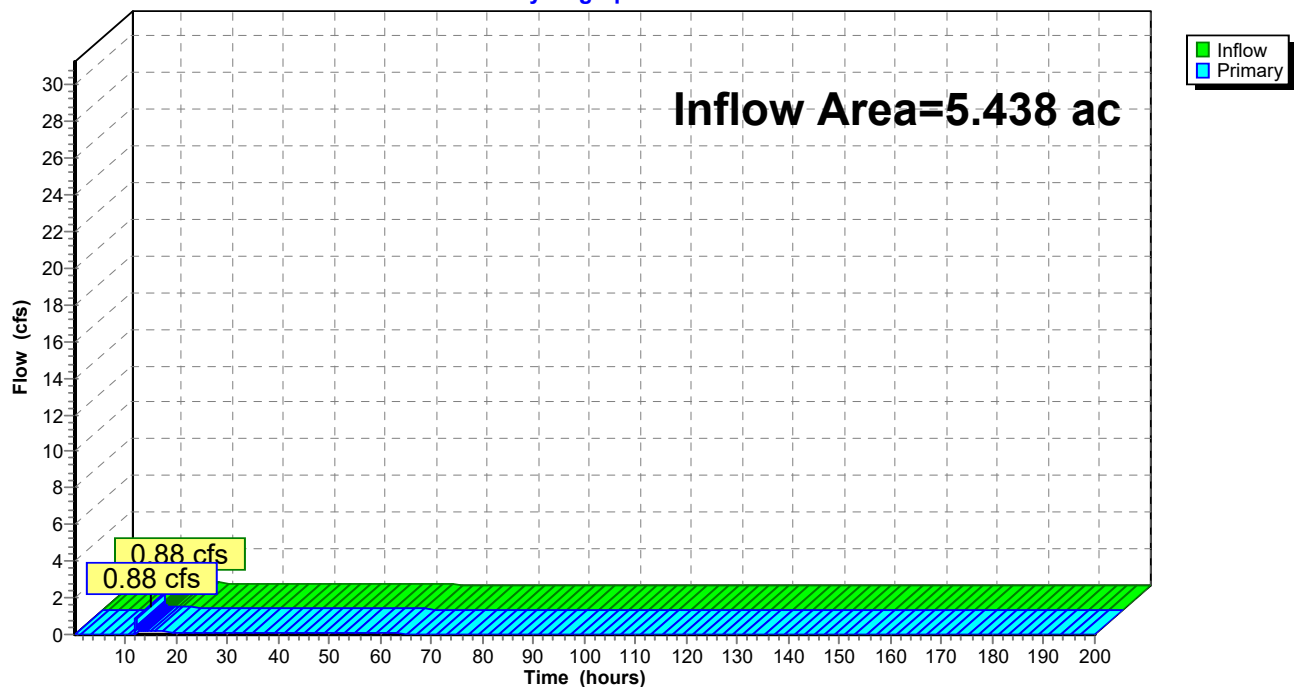
Summary for Link 33L: POA 6

Inflow Area = 5.438 ac, 41.54% Impervious, Inflow Depth = 1.07" for 1-yr event
Inflow = 0.88 cfs @ 12.06 hrs, Volume= 0.484 af
Primary = 0.88 cfs @ 12.06 hrs, Volume= 0.484 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 51R : Flowpath Downstream POA 5

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 33L: POA 6

Hydrograph



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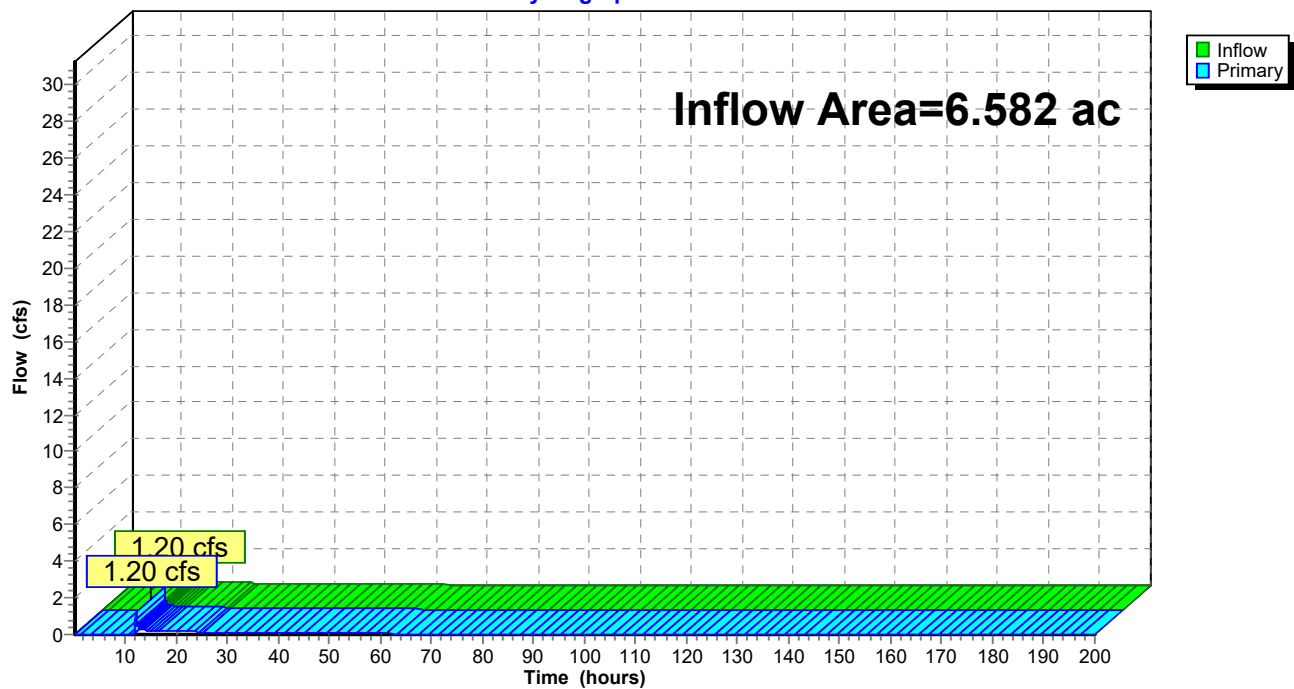
Summary for Link 40L: POA 4

Inflow Area = 6.582 ac, 37.07% Impervious, Inflow Depth = 0.98" for 1-yr event
Inflow = 1.20 cfs @ 12.10 hrs, Volume= 0.536 af
Primary = 1.20 cfs @ 12.10 hrs, Volume= 0.536 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 47R : Flowpath Downstream POA 4

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 40L: POA 4

Hydrograph



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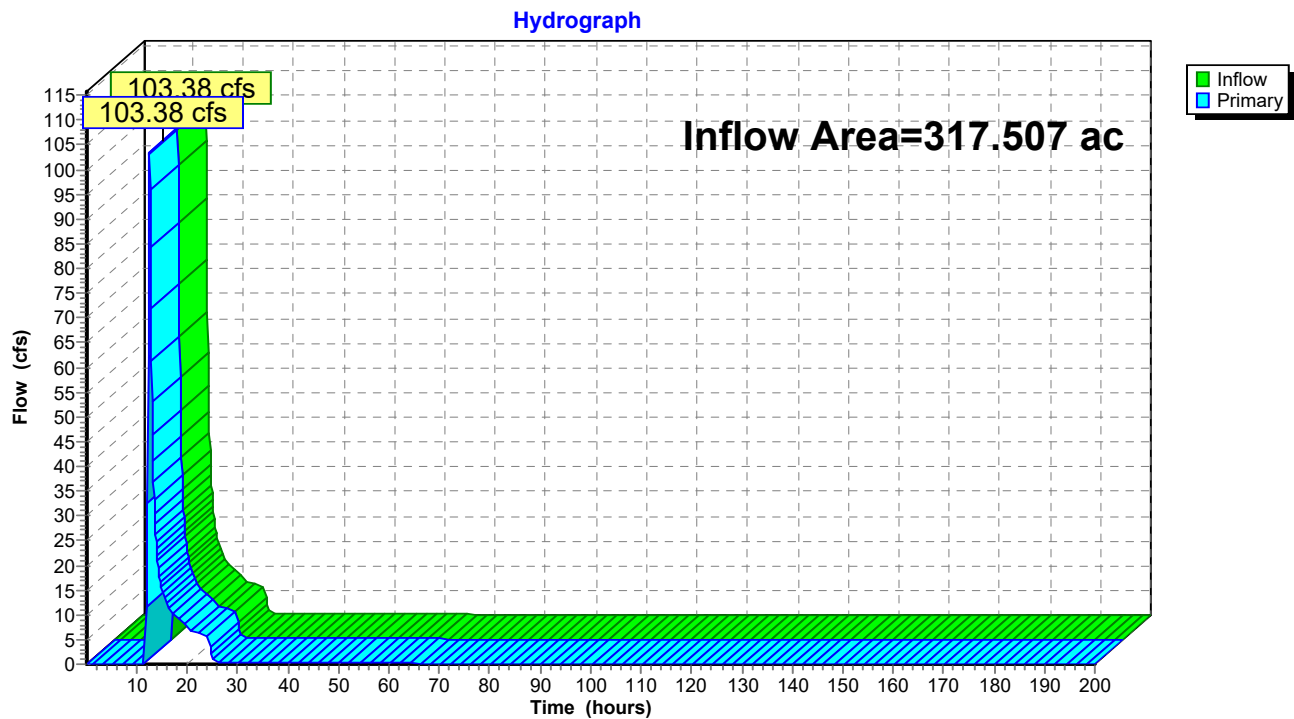
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Summary for Link 53L: Post Dev. POA Downstream of 110 Cedar Hill Dr

Inflow Area = 317.507 ac, 18.47% Impervious, Inflow Depth = 0.69" for 1-yr event
Inflow = 103.38 cfs @ 12.46 hrs, Volume= 18.374 af
Primary = 103.38 cfs @ 12.46 hrs, Volume= 18.374 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 53L: Post Dev. POA Downstream of 110 Cedar Hill Dr



Downstream Analysis - ZCP

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment15S: Post Dev. Basin 6 to Runoff Area=185,285 sf 75.67% Impervious Runoff Depth=2.85"
Tc=5.0 min CN=91 Runoff=18.23 cfs 1.009 af

Subcatchment16S: Post Dev. Bypass 6 Runoff Area=257,427 sf 1.66% Impervious Runoff Depth=0.68"
Tc=5.0 min CN=60 Runoff=5.76 cfs 0.333 af

Subcatchment18S: Post Dev. Basin 7 to Runoff Area=150,448 sf 57.98% Impervious Runoff Depth=1.97"
Tc=5.0 min CN=81 Runoff=10.86 cfs 0.567 af

Subcatchment19S: Post Dev. Bypass 7 Runoff Area=86,411 sf 12.93% Impervious Runoff Depth=0.72"
Tc=10.0 min CN=61 Runoff=1.72 cfs 0.119 af

Subcatchment29S: Post Dev. Bypass 8 Runoff Area=289,814 sf 1.87% Impervious Runoff Depth=0.77"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=6.67 cfs 0.428 af

Subcatchment36S: Post Dev. Basin 4 Runoff Area=29,236 sf 11.81% Impervious Runoff Depth=0.77"
Tc=5.0 min CN=62 Runoff=0.77 cfs 0.043 af

Subcatchment37S: Post Dev. Basin 5 to Runoff Area=122,978 sf 76.45% Impervious Runoff Depth=2.38"
Tc=5.0 min CN=86 Runoff=10.52 cfs 0.561 af

Subcatchment38S: Post Dev. Bypass 5 Runoff Area=163,726 sf 7.49% Impervious Runoff Depth=0.63"
Tc=12.3 min CN=59 Runoff=2.45 cfs 0.197 af

Subcatchment46S: Post Drainage Area 1 Runoff Area=198.400 ac 20.00% Impervious Runoff Depth=1.09"
Flow Length=4,195' Slope=0.0177 '/' Tc=45.4 min CN=68 Runoff=125.05 cfs 18.066 af

Subcatchment52S: Pre Drainage Area 2 Runoff Area=89.600 ac 12.00% Impervious Runoff Depth=0.93"
Flow Length=3,771' Slope=0.0323 '/' Tc=33.2 min CN=65 Runoff=56.73 cfs 6.913 af

Reach 47R: Flowpath Downstream POA Avg. Flow Depth=0.34' Max Vel=0.71 fps Inflow=2.92 cfs 0.801 af
n=0.100 L=2,757.0' S=0.0173 '/' Capacity=7.18 cfs Outflow=0.78 cfs 0.801 af

Reach 50R: Flowpath Downstream Avg. Flow Depth=0.83' Max Vel=1.21 fps Inflow=12.36 cfs 1.765 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=5.16 cfs 1.764 af

Reach 51R: Flowpath Downstream POA Avg. Flow Depth=0.33' Max Vel=0.87 fps Inflow=1.81 cfs 0.687 af
n=0.100 L=1,036.0' S=0.0267 '/' Capacity=8.94 cfs Outflow=0.89 cfs 0.687 af

Pond 30P: Wet Pond SCM 4 Peak Elev=525.45' Storage=40,349 cf Inflow=18.23 cfs 1.009 af
Outflow=0.42 cfs 1.004 af

Pond 31P: Wet Pond SCM 5 Peak Elev=514.69' Storage=20,849 cf Inflow=10.86 cfs 0.567 af
Outflow=0.12 cfs 0.567 af

Pond 39P: Sand Filter SCM 3 Peak Elev=534.70' Storage=18,813 cf Inflow=10.52 cfs 0.561 af
Outflow=0.13 cfs 0.561 af

Downstream Analysis - ZCP

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Link 32L: POA 5

Inflow=5.84 cfs 1.337 af

Primary=5.84 cfs 1.337 af

Link 33L: POA 6

Inflow=1.81 cfs 0.687 af

Primary=1.81 cfs 0.687 af

Link 40L: POA 4

Inflow=2.55 cfs 0.758 af

Primary=2.55 cfs 0.758 af

Link 53L: Post Dev. POA Downstream of 110 Cedar Hill Dr

Inflow=181.12 cfs 28.230 af

Primary=181.12 cfs 28.230 af

Total Runoff Area = 317.507 ac Runoff Volume = 28.235 af Average Runoff Depth = 1.07"
81.53% Pervious = 258.856 ac 18.47% Impervious = 58.651 ac

Downstream Analysis - ZCP

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Summary for Subcatchment 15S: Post Dev. Basin 6 to SCM

Runoff = 18.23 cfs @ 11.95 hrs, Volume= 1.009 af, Depth= 2.85"
Routed to Pond 30P : Wet Pond SCM 4

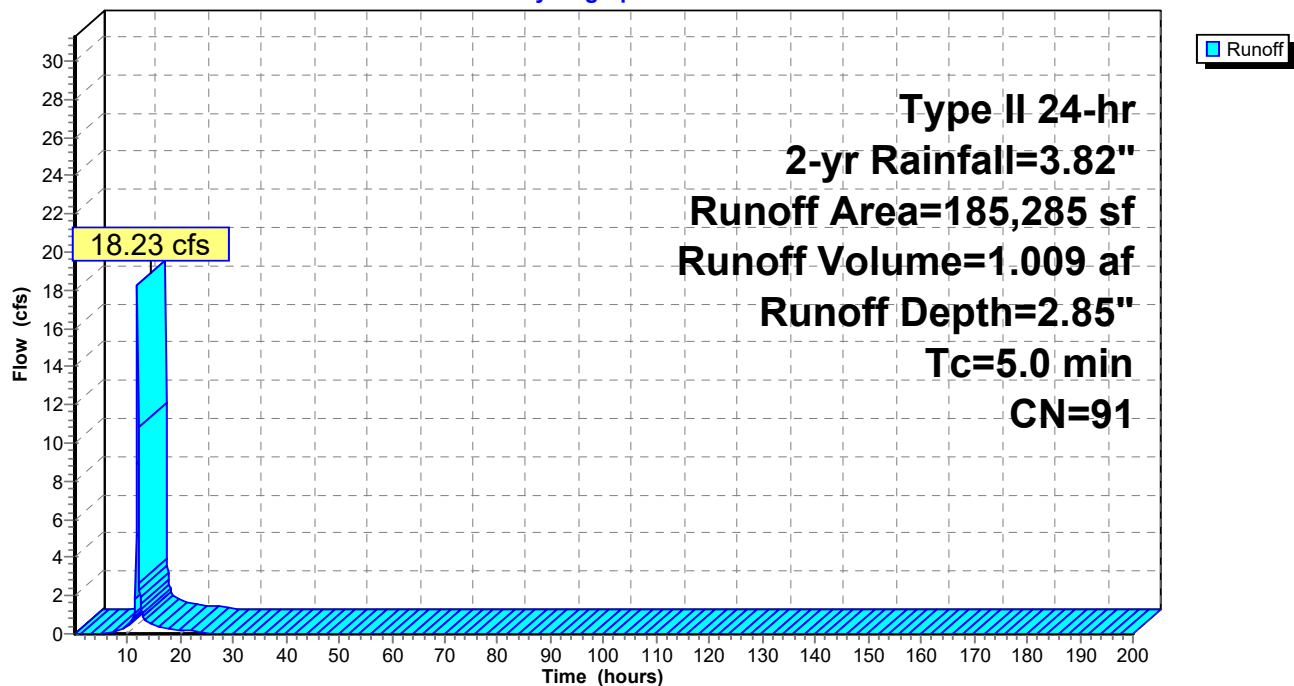
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 2-yr Rainfall=3.82"

Area (sf)	CN	Description
76,830	98	Paved parking, HSG B
63,382	98	Roofs, HSG B
30,858	56	Brush, Fair, HSG B
14,215	98	Water Surface, 0% imp, HSG B
185,285	91	Weighted Average
45,073		24.33% Pervious Area
140,212		75.67% Impervious Area

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

Subcatchment 15S: Post Dev. Basin 6 to SCM

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Subcatchment 16S: Post Dev. Bypass 6

Runoff = 5.76 cfs @ 11.99 hrs, Volume= 0.333 af, Depth= 0.68"
Routed to Link 32L : POA 5

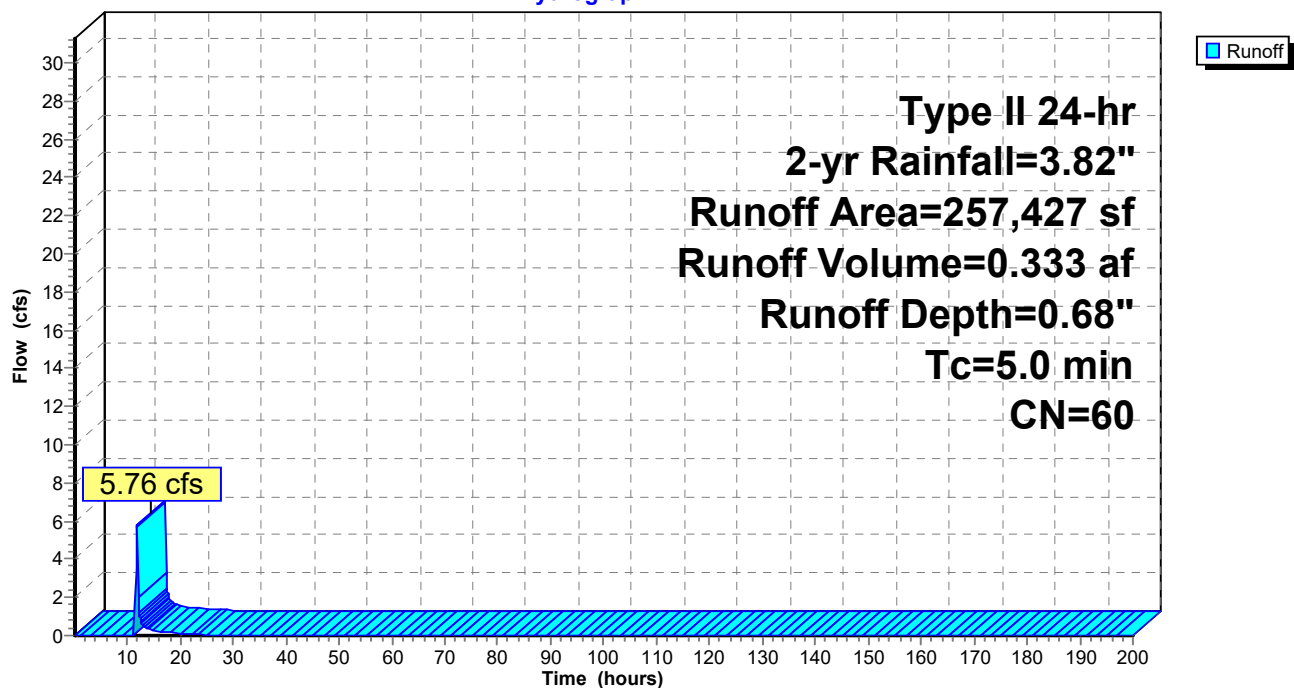
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 2-yr Rainfall=3.82"

Area (sf)	CN	Description
4,268	98	Paved parking, HSG B
51,015	56	Brush, Fair, HSG B
202,144	60	Woods, Fair, HSG B
257,427	60	Weighted Average
253,159		98.34% Pervious Area
4,268		1.66% Impervious Area

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

Subcatchment 16S: Post Dev. Bypass 6

Hydrograph



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Summary for Subcatchment 18S: Post Dev. Basin 7 to SCM

Runoff = 10.86 cfs @ 11.96 hrs, Volume= 0.567 af, Depth= 1.97"
Routed to Pond 31P : Wet Pond SCM 5

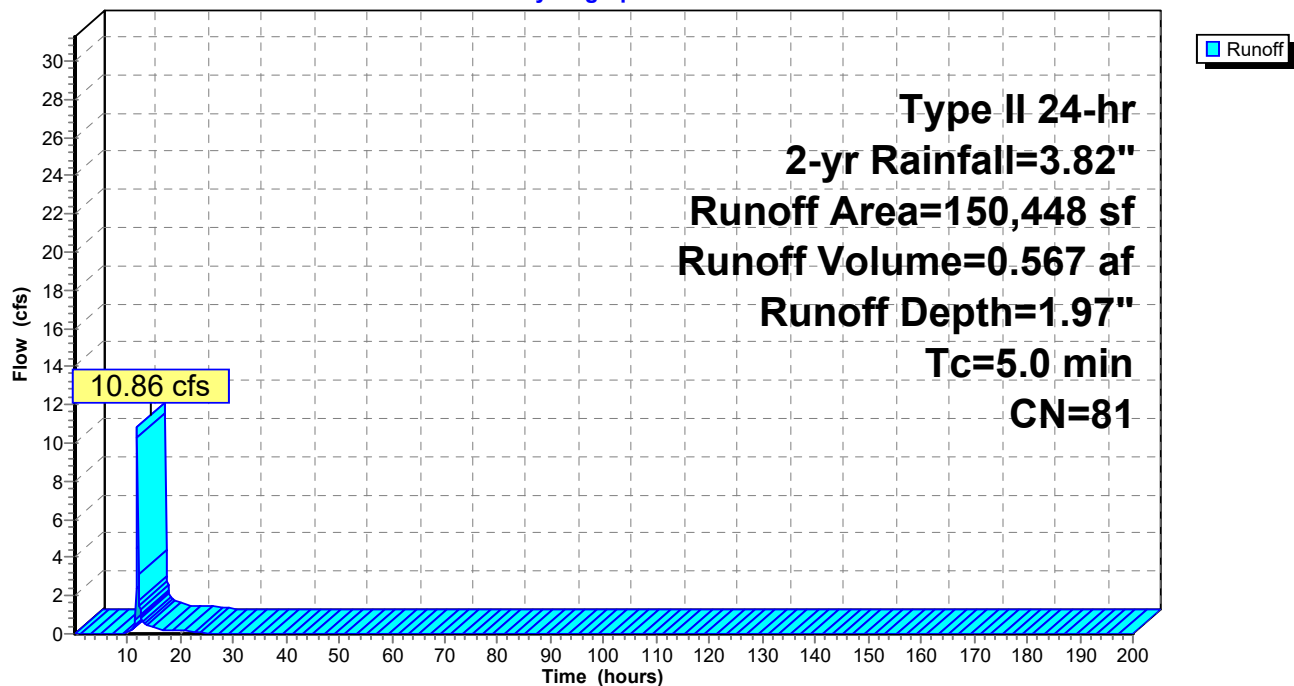
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 2-yr Rainfall=3.82"

Area (sf)	CN	Description
53,515	98	Paved parking, HSG B
33,715	98	Roofs, HSG B
59,637	56	Brush, Fair, HSG B
3,581	98	Water Surface, 0% imp, HSG B
150,448	81	Weighted Average
63,218		42.02% Pervious Area
87,230		57.98% Impervious Area

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

Subcatchment 18S: Post Dev. Basin 7 to SCM

Hydrograph



Downstream Analysis - ZCP

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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Subcatchment 19S: Post Dev. Bypass 7

Runoff = 1.72 cfs @ 12.04 hrs, Volume= 0.119 af, Depth= 0.72"
Routed to Link 33L : POA 6

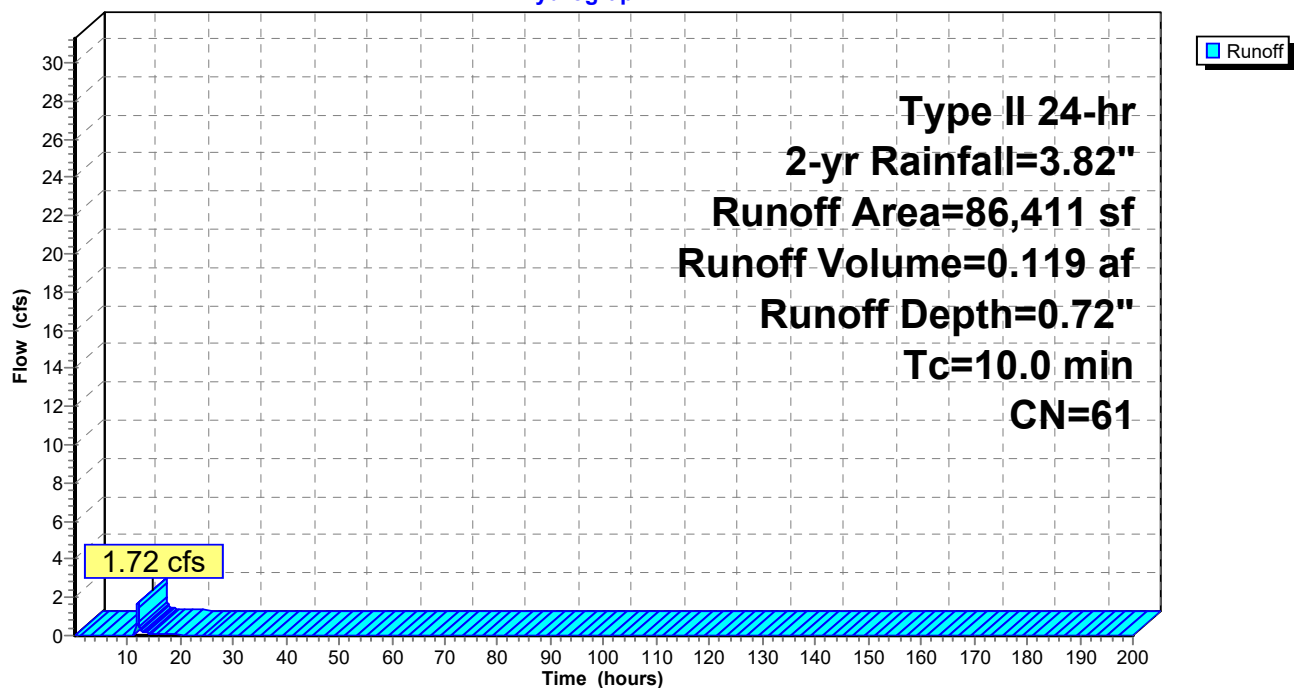
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 2-yr Rainfall=3.82"

Area (sf)	CN	Description
11,171	98	Paved parking, HSG B
35,296	56	Brush, Fair, HSG B
39,944	55	Woods, Good, HSG B
86,411	61	Weighted Average
75,240		87.07% Pervious Area
11,171		12.93% Impervious Area

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

Subcatchment 19S: Post Dev. Bypass 7

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Subcatchment 29S: Post Dev. Bypass 8

Runoff = 6.67 cfs @ 12.02 hrs, Volume= 0.428 af, Depth= 0.77"

Routed to Reach 50R : Flowpath Downstream POA 6

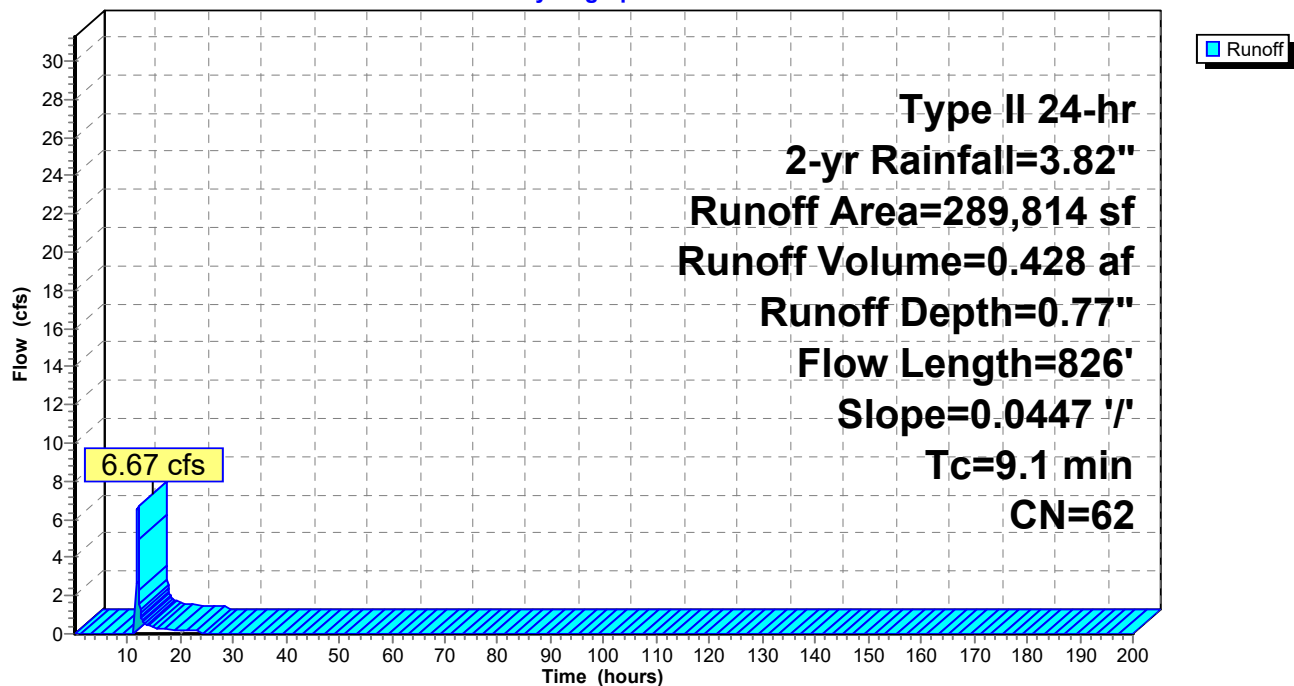
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 2-yr Rainfall=3.82"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
53,439	69	50-75% Grass cover, Fair, HSG B
5,416	98	Paved parking, HSG B
289,814	62	Weighted Average
284,398		98.13% Pervious Area
5,416		1.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 29S: Post Dev. Bypass 8

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Subcatchment 36S: Post Dev. Basin 4

Runoff = 0.77 cfs @ 11.98 hrs, Volume= 0.043 af, Depth= 0.77"

Routed to Reach 47R : Flowpath Downstream POA 4

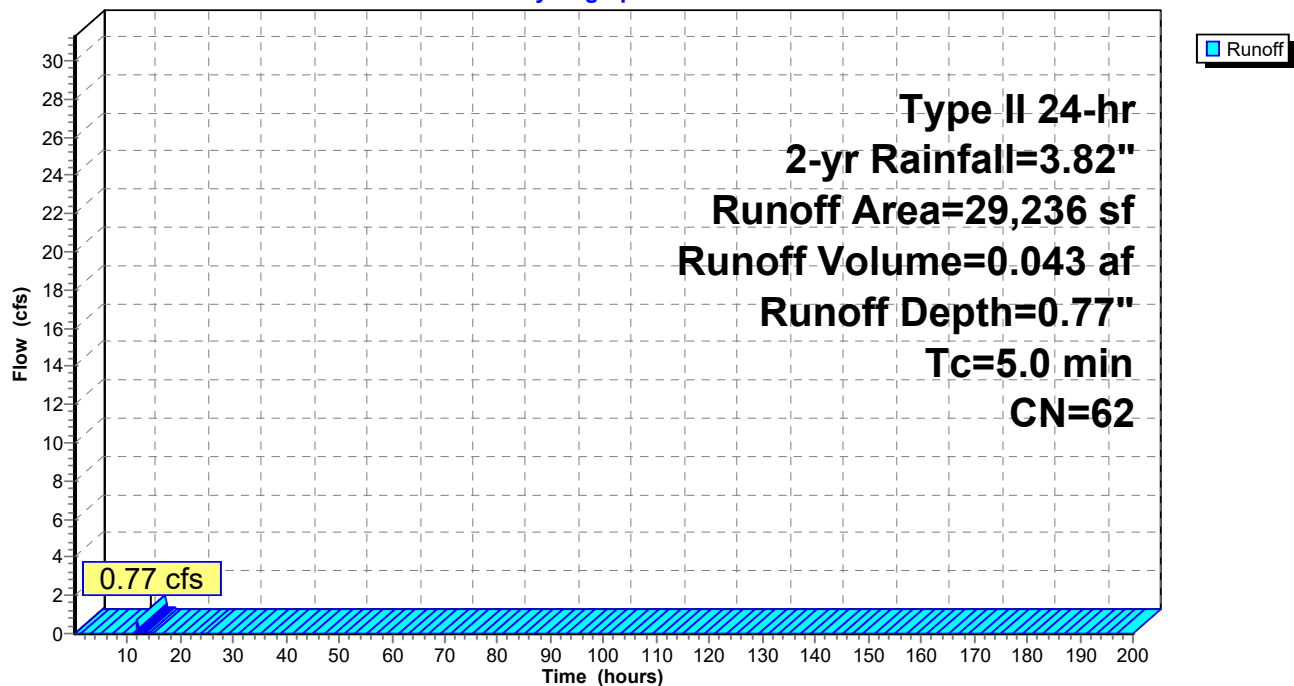
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 2-yr Rainfall=3.82"

Area (sf)	CN	Description
6,194	60	Woods, Fair, HSG B
19,589	56	Brush, Fair, HSG B
3,453	98	Paved parking, HSG B
29,236	62	Weighted Average
25,783		88.19% Pervious Area
3,453		11.81% Impervious Area

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

Subcatchment 36S: Post Dev. Basin 4

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Subcatchment 37S: Post Dev. Basin 5 to SCM

Runoff = 10.52 cfs @ 11.96 hrs, Volume= 0.561 af, Depth= 2.38"
Routed to Pond 39P : Sand Filter SCM 3

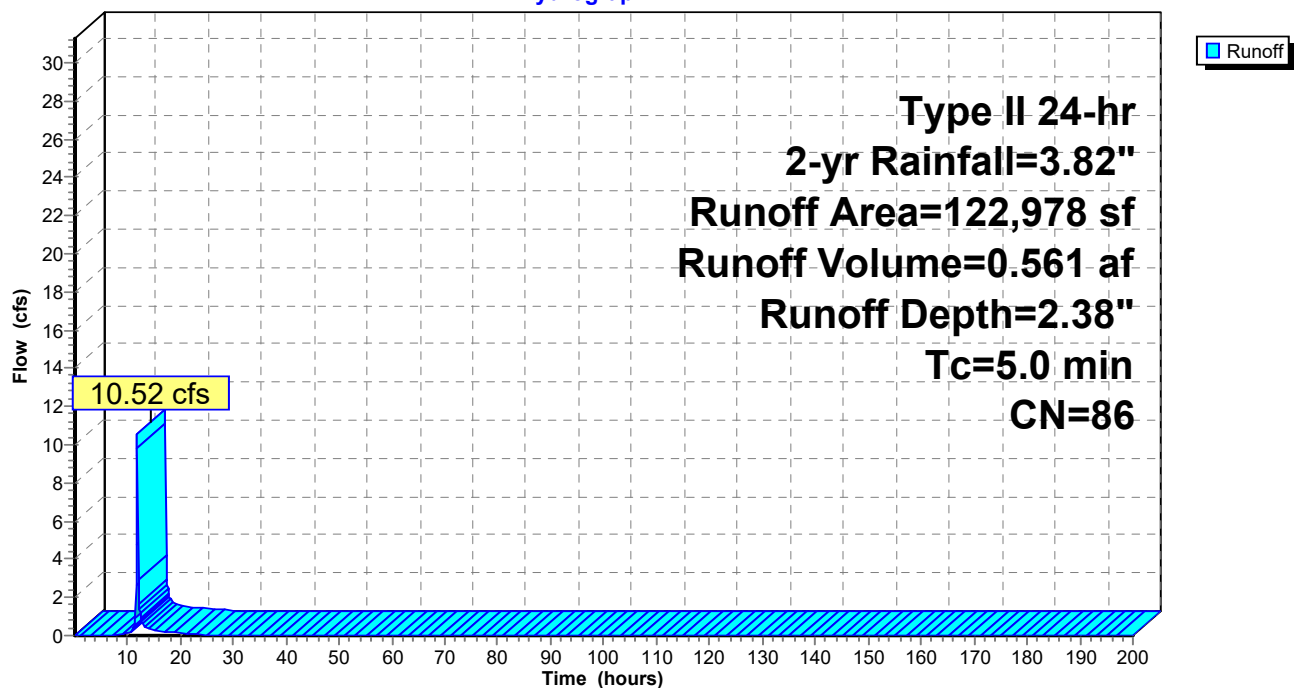
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 2-yr Rainfall=3.82"

Area (sf)	CN	Description
54,167	98	Paved parking, HSG B
39,855	98	Roofs, HSG B
28,956	48	Brush, Good, HSG B
122,978	86	Weighted Average
28,956		23.55% Pervious Area
94,022		76.45% Impervious Area

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

Subcatchment 37S: Post Dev. Basin 5 to SCM

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Subcatchment 38S: Post Dev. Bypass 5

Runoff = 2.45 cfs @ 12.09 hrs, Volume= 0.197 af, Depth= 0.63"
Routed to Link 40L : POA 4

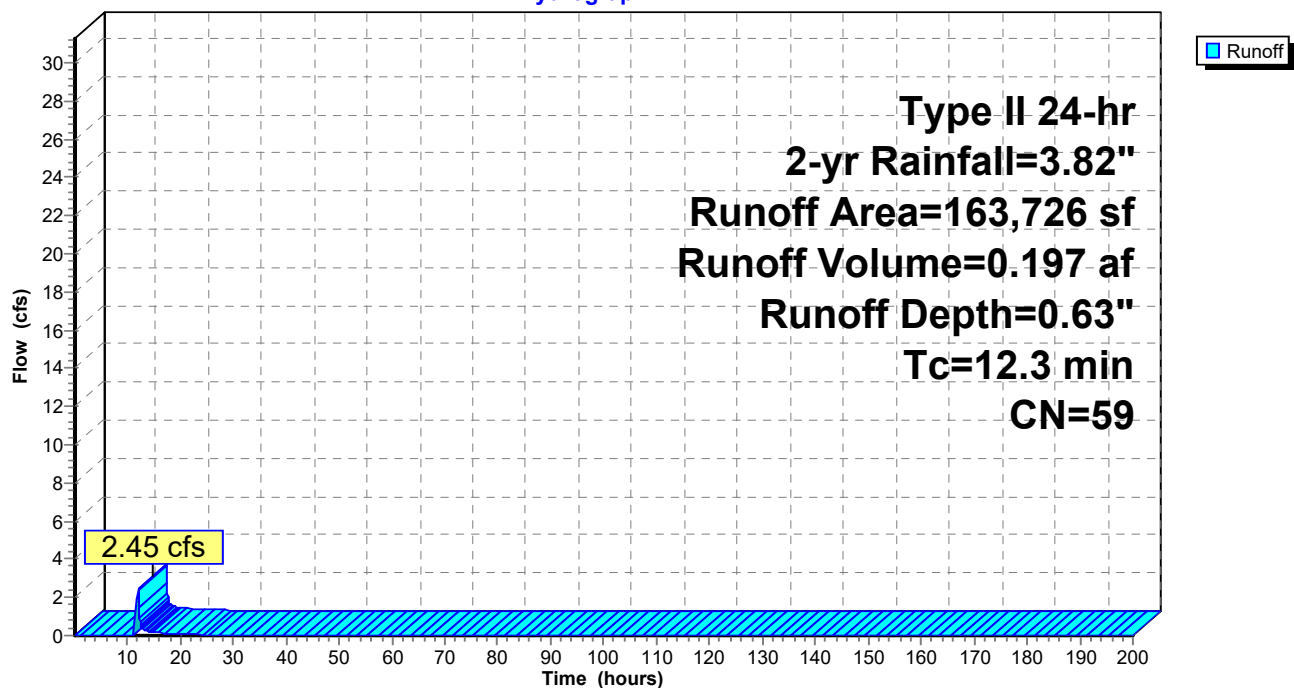
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 2-yr Rainfall=3.82"

Area (sf)	CN	Description
12,257	98	Paved parking, HSG B
54,926	48	Brush, Good, HSG B
96,543	60	Woods, Fair, HSG B
163,726	59	Weighted Average
151,469		92.51% Pervious Area
12,257		7.49% Impervious Area

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

Subcatchment 38S: Post Dev. Bypass 5

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Subcatchment 46S: Post Drainage Area 1

Runoff = 125.05 cfs @ 12.49 hrs, Volume= 18.066 af, Depth= 1.09"

Routed to Link 53L : Post Dev. POA Downstream of 110 Cedar Hill Dr

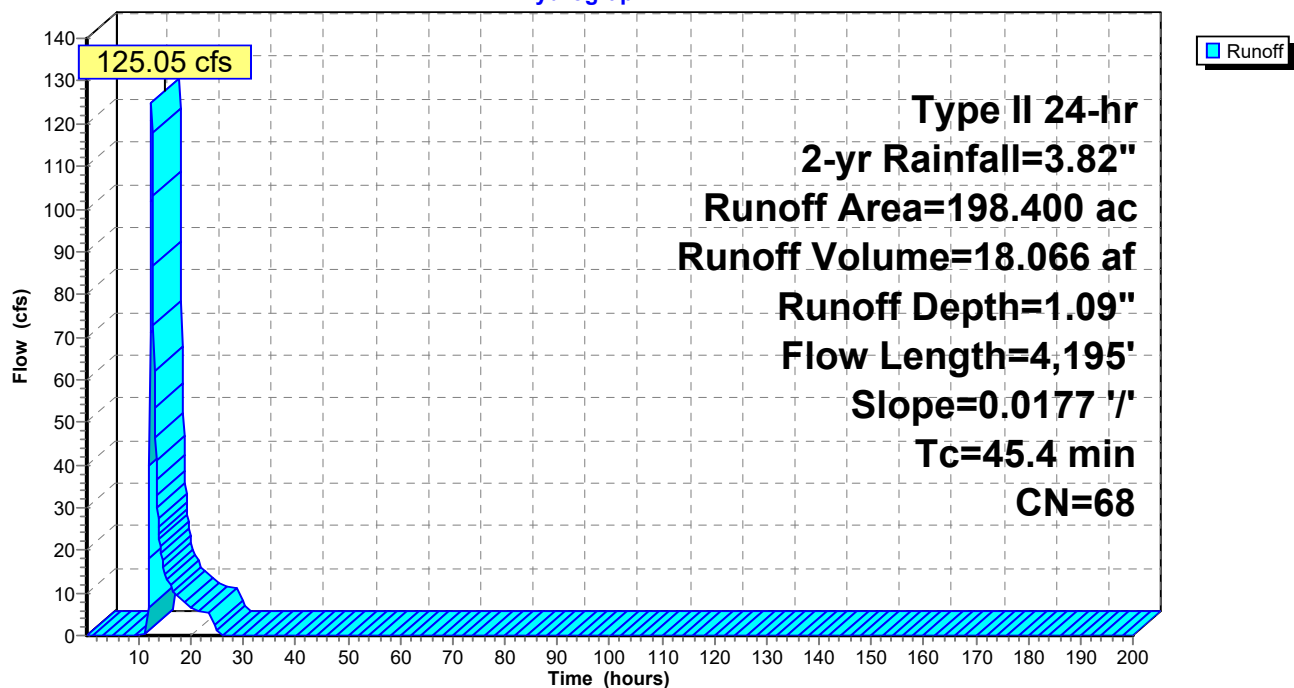
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 2-yr Rainfall=3.82"

Area (ac)	CN	Description
198.400	68	1 acre lots, 20% imp, HSG B
158.720		80.00% Pervious Area
39.680		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.4	4,195	0.0177	1.54		Kirpich Method, General overland flow k= 2.00

Subcatchment 46S: Post Drainage Area 1

Hydrograph



Downstream Analysis - ZCP

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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Subcatchment 52S: Pre Drainage Area 2

Runoff = 56.73 cfs @ 12.33 hrs, Volume= 6.913 af, Depth= 0.93"

Routed to Link 53L : Post Dev. POA Downstream of 110 Cedar Hill Dr

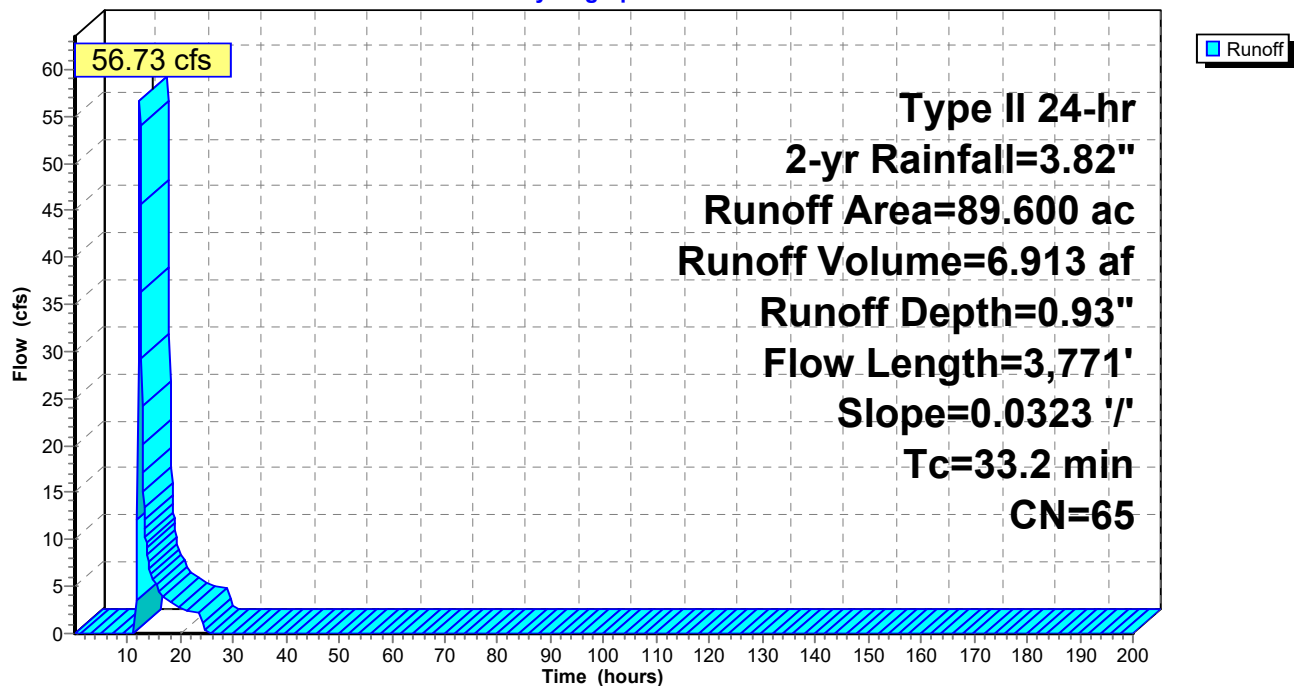
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 2-yr Rainfall=3.82"

Area (ac)	CN	Description
89.600	65	2 acre lots, 12% imp, HSG B
78.848		88.00% Pervious Area
10.752		12.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.2	3,771	0.0323	1.89		Kirpich Method, General overland flow k= 2.00

Subcatchment 52S: Pre Drainage Area 2

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Reach 47R: Flowpath Downstream POA 4

Inflow Area = 7.253 ac, 34.73% Impervious, Inflow Depth = 1.33" for 2-yr event
Inflow = 2.92 cfs @ 12.05 hrs, Volume= 0.801 af
Outflow = 0.78 cfs @ 13.59 hrs, Volume= 0.801 af, Atten= 73%, Lag= 92.3 min
Routed to Link 53L : Post Dev. POA Downstream of 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 0.71 fps, Min. Travel Time= 64.4 min

Avg. Velocity= 0.22 fps, Avg. Travel Time= 209.5 min

Peak Storage= 3,021 cf @ 12.51 hrs

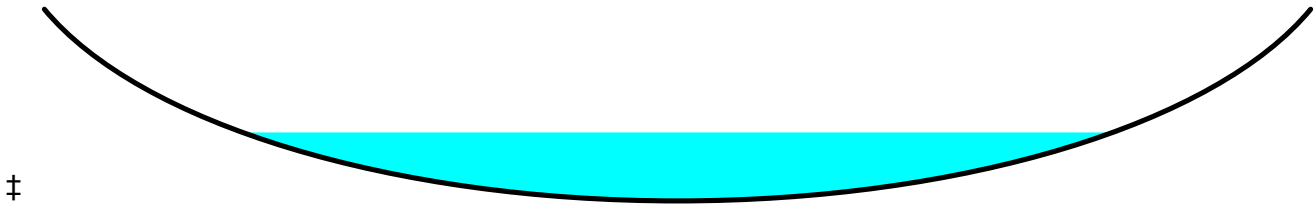
Average Depth at Peak Storage= 0.34' , Surface Width= 4.90'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 7.18 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

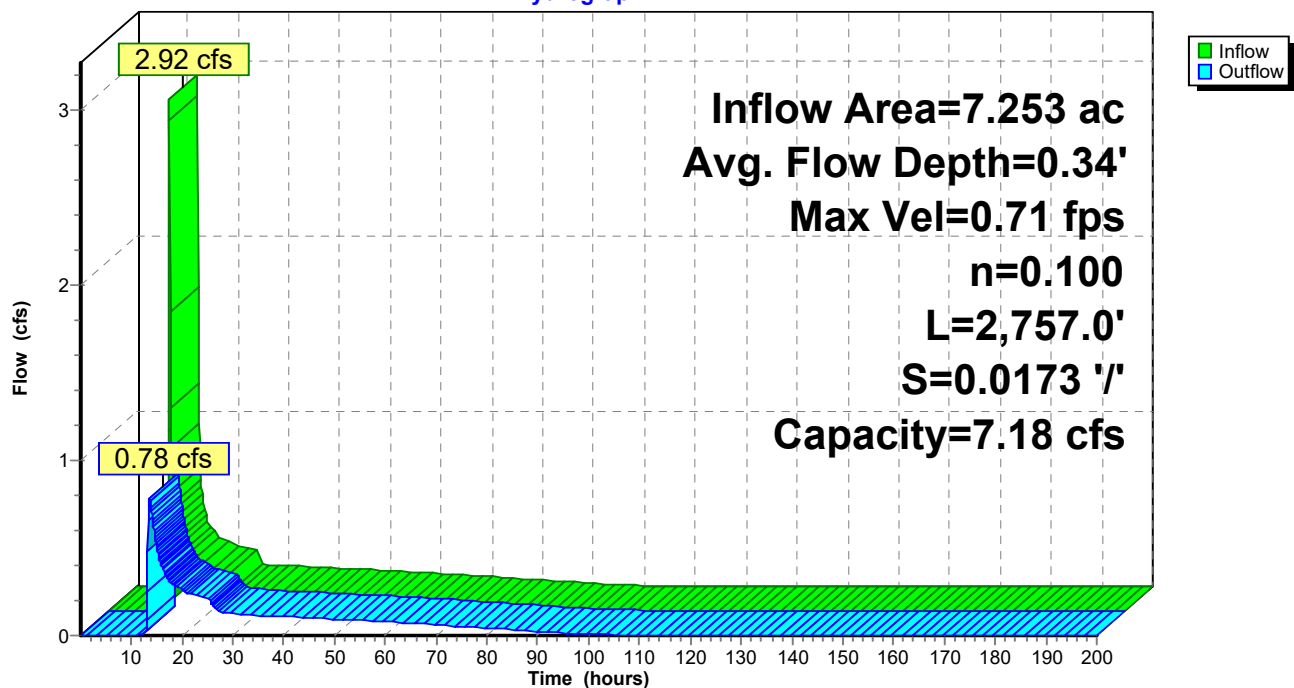
Length= 2,757.0' Slope= 0.0173 '/'

Inlet Invert= 529.84', Outlet Invert= 482.25'



Reach 47R: Flowpath Downstream POA 4

Hydrograph



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Summary for Reach 50R: Flowpath Downstream POA 6

Inflow Area = 16.816 ac, 20.46% Impervious, Inflow Depth > 1.26" for 2-yr event
Inflow = 12.36 cfs @ 12.00 hrs, Volume= 1.765 af
Outflow = 5.16 cfs @ 12.53 hrs, Volume= 1.764 af, Atten= 58%, Lag= 31.3 min
Routed to Link 53L : Post Dev. POA Downstream of 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.21 fps, Min. Travel Time= 20.7 min

Avg. Velocity= 0.30 fps, Avg. Travel Time= 83.3 min

Peak Storage= 6,456 cf @ 12.16 hrs

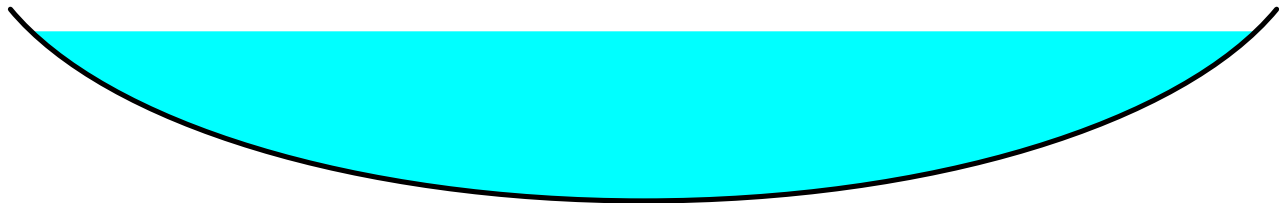
Average Depth at Peak Storage= 0.83' , Surface Width= 7.71'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

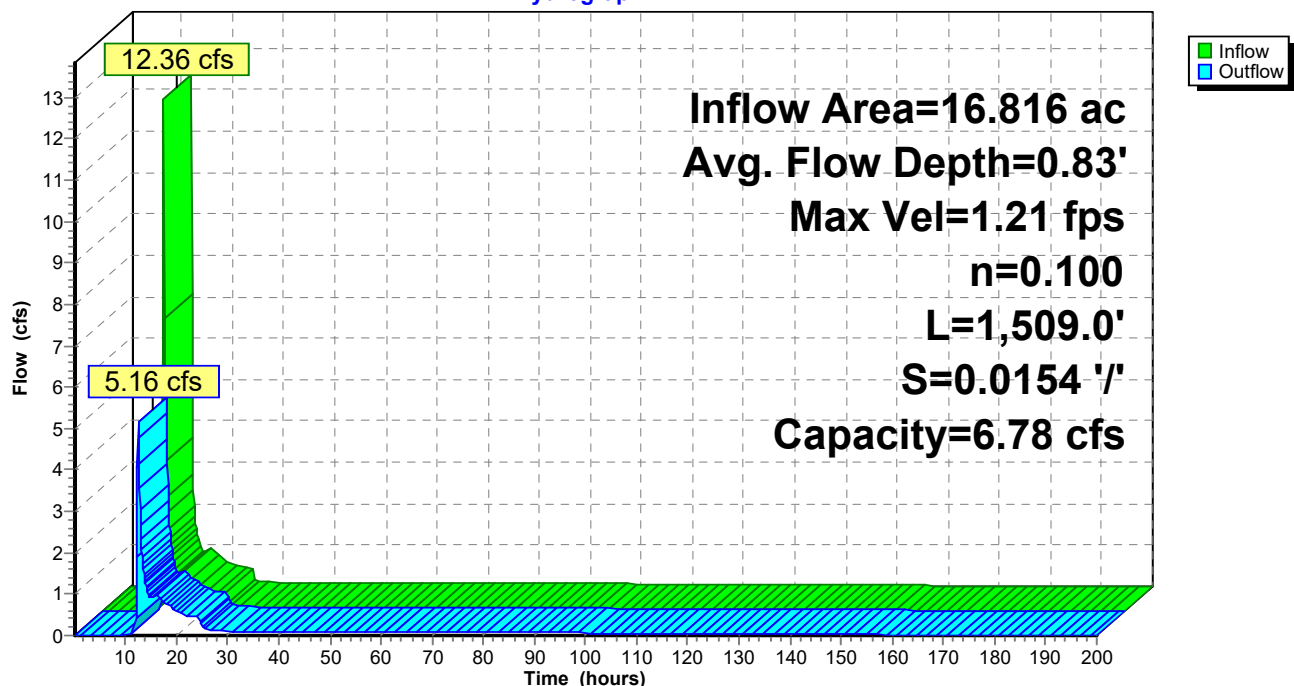
Length= 1,509.0' Slope= 0.0154 '/'

Inlet Invert= 505.43', Outlet Invert= 482.25'



Reach 50R: Flowpath Downstream POA 6

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Reach 51R: Flowpath Downstream POA 5

Inflow Area = 5.438 ac, 41.54% Impervious, Inflow Depth = 1.52" for 2-yr event
Inflow = 1.81 cfs @ 12.04 hrs, Volume= 0.687 af
Outflow = 0.89 cfs @ 12.55 hrs, Volume= 0.687 af, Atten= 51%, Lag= 30.7 min
Routed to Link 53L : Post Dev. POA Downstream of 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 0.87 fps, Min. Travel Time= 19.9 min

Avg. Velocity = 0.26 fps, Avg. Travel Time= 65.4 min

Peak Storage= 1,083 cf @ 12.22 hrs

Average Depth at Peak Storage= 0.33' , Surface Width= 4.82'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 8.94 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

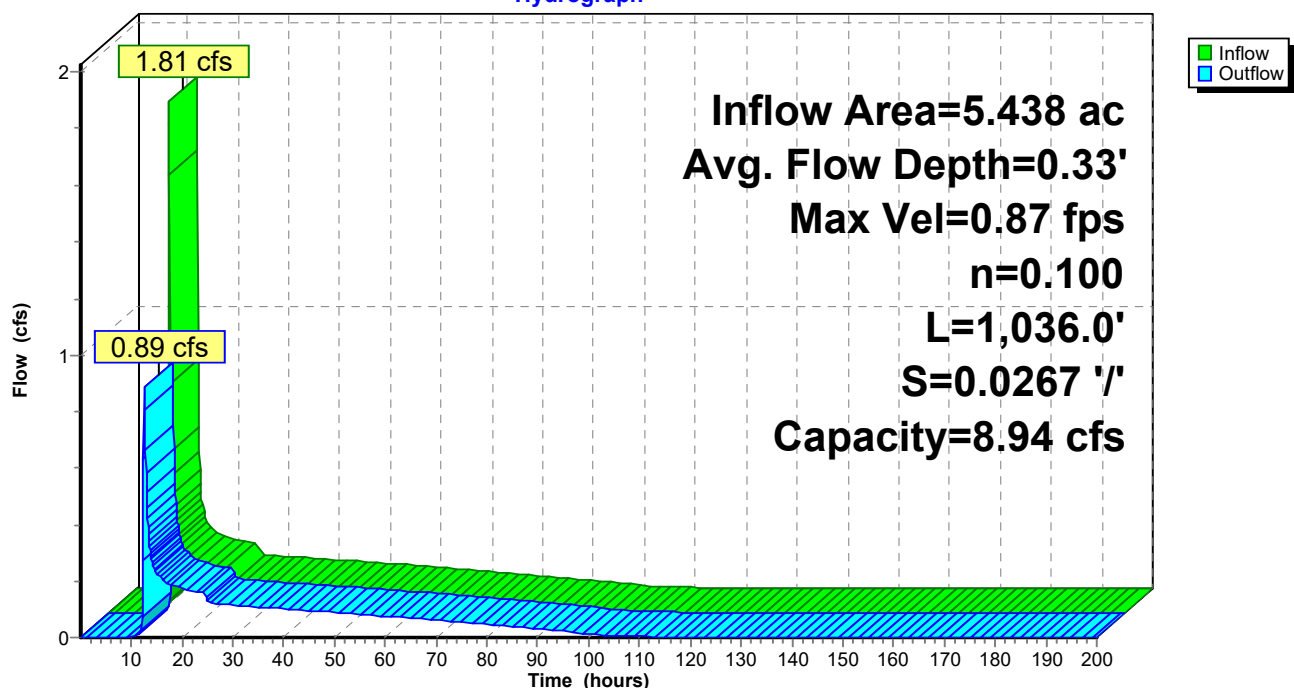
Length= 1,036.0' Slope= 0.0267 '/'

Inlet Invert= 509.93', Outlet Invert= 482.25'



Reach 51R: Flowpath Downstream POA 5

Hydrograph



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Summary for Pond 30P: Wet Pond SCM 4

Inflow Area = 4.254 ac, 75.67% Impervious, Inflow Depth = 2.85" for 2-yr event
Inflow = 18.23 cfs @ 11.95 hrs, Volume= 1.009 af
Outflow = 0.42 cfs @ 15.50 hrs, Volume= 1.004 af, Atten= 98%, Lag= 213.0 min
Primary = 0.42 cfs @ 15.50 hrs, Volume= 1.004 af
Routed to Link 32L : POA 5

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Starting Elev= 522.00' Surf.Area= 7,056 sf Storage= 6,623 cf

Peak Elev= 525.45' @ 15.50 hrs Surf.Area= 11,201 sf Storage= 40,349 cf (33,726 cf above start)

Plug-Flow detention time= 3,648.7 min calculated for 0.852 af (84% of inflow)

Center-of-Mass det. time= 3,062.1 min (3,854.1 - 791.9)

Volume	Invert	Avail.Storage	Storage Description
#1	521.00'	71,189 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
521.00	6,190	0	0
522.00	7,056	6,623	6,623
522.50	8,333	3,847	10,470
523.00	9,531	4,466	14,936
524.00	10,198	9,865	24,801
525.00	10,883	10,541	35,341
526.00	11,584	11,234	46,575
527.00	12,303	11,944	58,518
528.00	13,038	12,671	71,189

Device	Routing	Invert	Outlet Devices
#1	Primary	522.00'	36.0" Round Culvert L= 45.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 522.00' / 521.50' S= 0.0111 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf
#2	Device 1	522.00'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	525.40'	40.0" W x 4.0" H Vert. Peakflow Orifice X 2.00 C= 0.600 Limited to weir flow at low heads
#4	Device 1	526.90'	48.0" x 48.0" Horiz. Overflow C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.37 cfs @ 15.50 hrs HW=525.45' (Free Discharge)

1=Culvert (Passes 0.37 cfs of 46.88 cfs potential flow)
2=Drawdown (Orifice Controls 0.11 cfs @ 8.87 fps)
3=Peakflow Orifice (Orifice Controls 0.26 cfs @ 0.74 fps)
4=Overflow (Controls 0.00 cfs)

Downstream Analysis - ZCP

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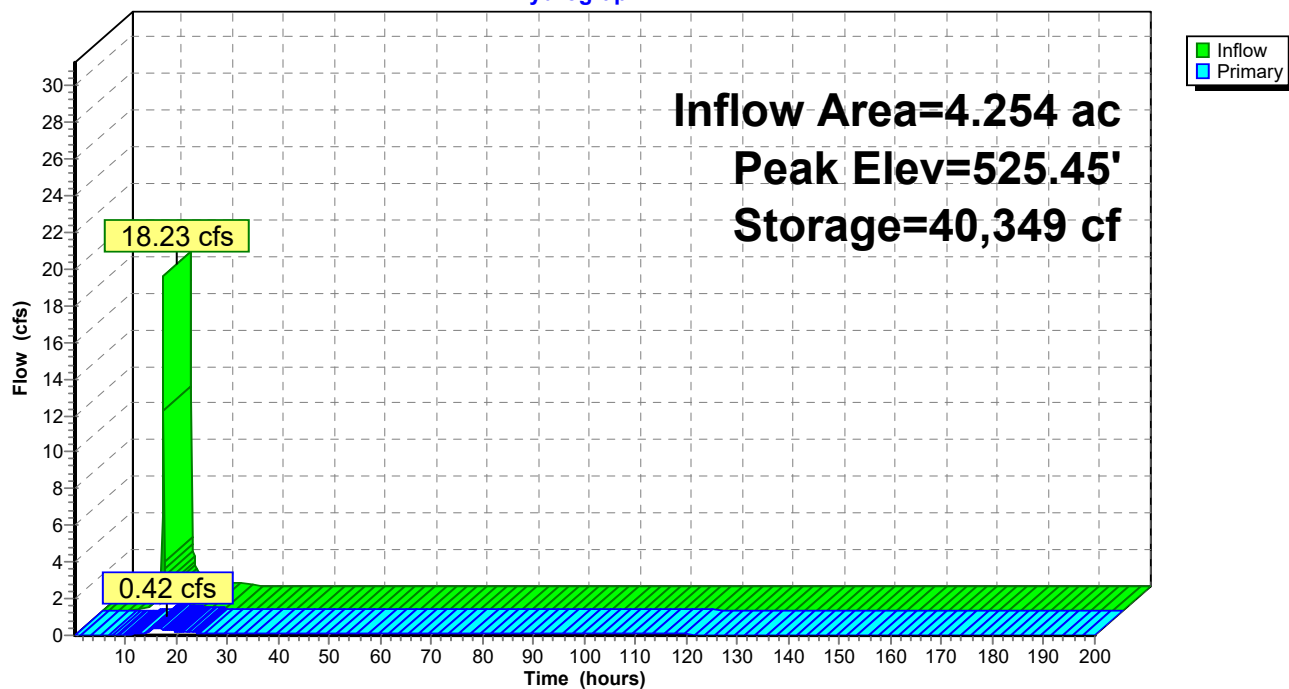
Type II 24-hr 2-yr Rainfall=3.82"

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Pond 30P: Wet Pond SCM 4

Hydrograph



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Summary for Pond 31P: Wet Pond SCM 5

Inflow Area = 3.454 ac, 57.98% Impervious, Inflow Depth = 1.97" for 2-yr event
Inflow = 10.86 cfs @ 11.96 hrs, Volume= 0.567 af
Outflow = 0.12 cfs @ 24.00 hrs, Volume= 0.567 af, Atten= 99%, Lag= 722.4 min
Primary = 0.12 cfs @ 24.00 hrs, Volume= 0.567 af
Routed to Link 33L : POA 6

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Starting Elev= 510.50' Surf.Area= 3,231 sf Storage= 1,401 cf

Peak Elev= 514.69' @ 24.00 hrs Surf.Area= 5,605 sf Storage= 20,849 cf (19,448 cf above start)

Plug-Flow detention time= 2,066.4 min calculated for 0.535 af (94% of inflow)

Center-of-Mass det. time= 1,916.9 min (2,743.8 - 826.9)

Volume	Invert	Avail.Storage	Storage Description
#1	510.00'	42,078 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
510.00	2,371	0	0
510.50	3,231	1,401	1,401
511.00	3,997	1,807	3,208
512.00	4,407	4,202	7,410
513.00	4,836	4,622	12,031
514.00	5,284	5,060	17,091
515.00	5,749	5,517	22,608
516.00	6,233	5,991	28,599
517.00	6,735	6,484	35,083
518.00	7,255	6,995	42,078

Device	Routing	Invert	Outlet Devices
#1	Primary	510.50'	36.0" Round Culvert L= 79.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 510.50' / 510.00' S= 0.0063 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Device 1	510.50'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	514.70'	34.0" W x 4.5" H Vert. Peakflow Orifice X 2.00 C= 0.600 Limited to weir flow at low heads
#4	Device 1	516.60'	48.0" x 48.0" Horiz. Overflow C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.12 cfs @ 24.00 hrs HW=514.69' (Free Discharge)

1=Culvert (Passes 0.12 cfs of 51.21 cfs potential flow)
2=Drawdown (Orifice Controls 0.12 cfs @ 9.78 fps)
3=Peakflow Orifice (Controls 0.00 cfs)
4=Overflow (Controls 0.00 cfs)

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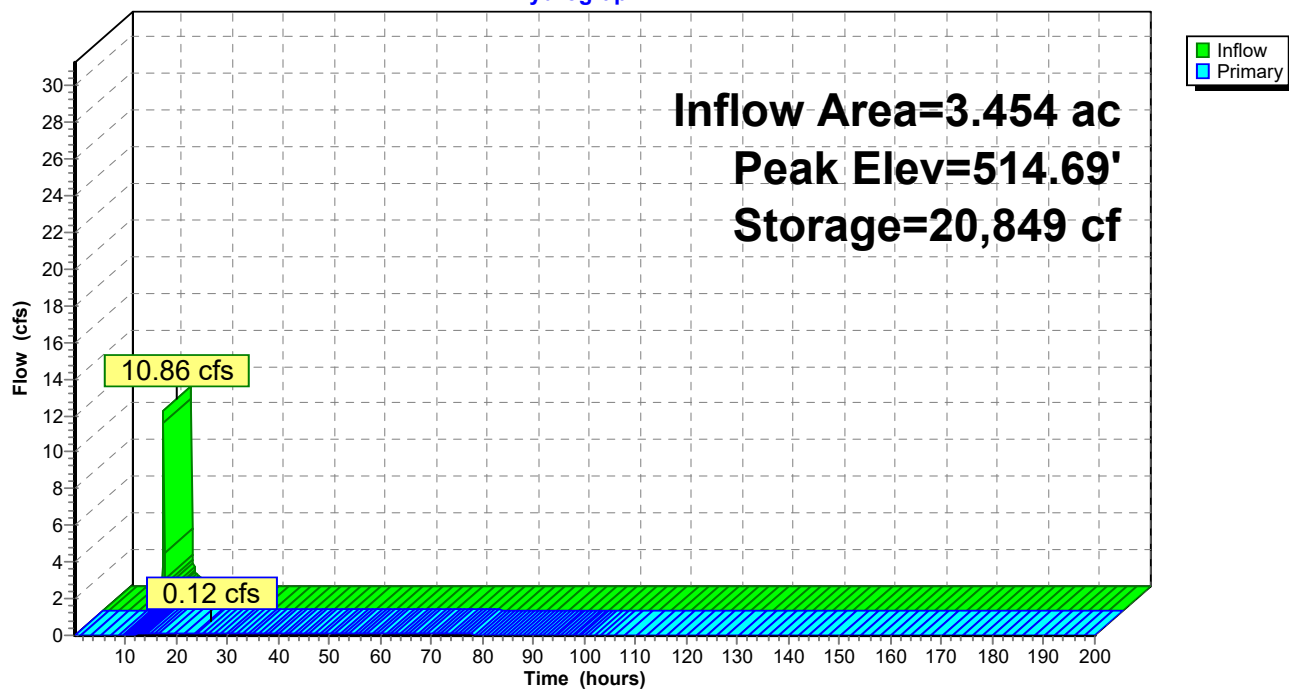
Type II 24-hr 2-yr Rainfall=3.82"

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Pond 31P: Wet Pond SCM 5

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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Summary for Pond 39P: Sand Filter SCM 3

Inflow Area = 2.823 ac, 76.45% Impervious, Inflow Depth = 2.38" for 2-yr event
Inflow = 10.52 cfs @ 11.96 hrs, Volume= 0.561 af
Outflow = 0.13 cfs @ 19.94 hrs, Volume= 0.561 af, Atten= 99%, Lag= 478.8 min
Primary = 0.13 cfs @ 19.94 hrs, Volume= 0.561 af
Routed to Link 40L : POA 4

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Peak Elev= 534.70' @ 19.94 hrs Surf.Area= 4,515 sf Storage= 18,813 cf

Plug-Flow detention time= 1,757.2 min calculated for 0.561 af (100% of inflow)
Center-of-Mass det. time= 1,756.3 min (2,567.4 - 811.1)

Volume	Invert	Avail.Storage	Storage Description
#1	530.00'	16,905 cf	Sediment/Sand Chamber (Prismatic) Listed below (Recalc) x 23
#2	530.00'	16,800 cf	Storage (Prismatic) Listed below (Recalc) x 20
		33,705 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
530.00	105	0.0	0	0
532.00	105	50.0	105	105
538.00	105	100.0	630	735

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
530.00	105	0	0
538.00	105	840	840

Device	Routing	Invert	Outlet Devices
#1	Primary	530.00'	36.0" Round Culvert L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 530.00' / 529.00' S= 0.0200 ' / Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf
#2	Device 1	530.00'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	534.70'	34.0" W x 5.0" H Vert. Main Orifice C= 0.600 Limited to weir flow at low heads
#4	Device 1	537.20'	25.0' long Overflow 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.13 cfs @ 19.94 hrs HW=534.70' (Free Discharge)

- 1=Culvert (Passes 0.13 cfs of 60.90 cfs potential flow)
- 2=Drawdown (Orifice Controls 0.13 cfs @ 10.37 fps)
- 3=Main Orifice (Orifice Controls 0.00 cfs @ 0.13 fps)
- 4=Overflow (Controls 0.00 cfs)

Downstream Analysis - ZCP

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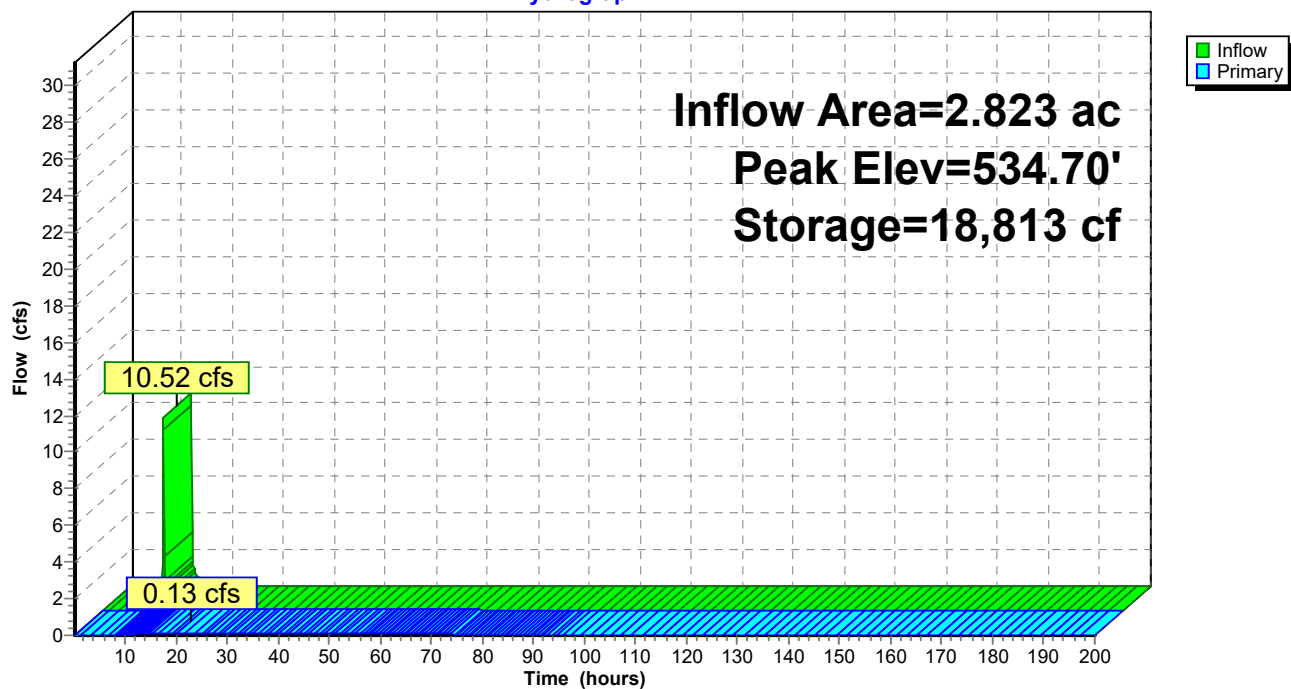
Type II 24-hr 2-yr Rainfall=3.82"

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Pond 39P: Sand Filter SCM 3

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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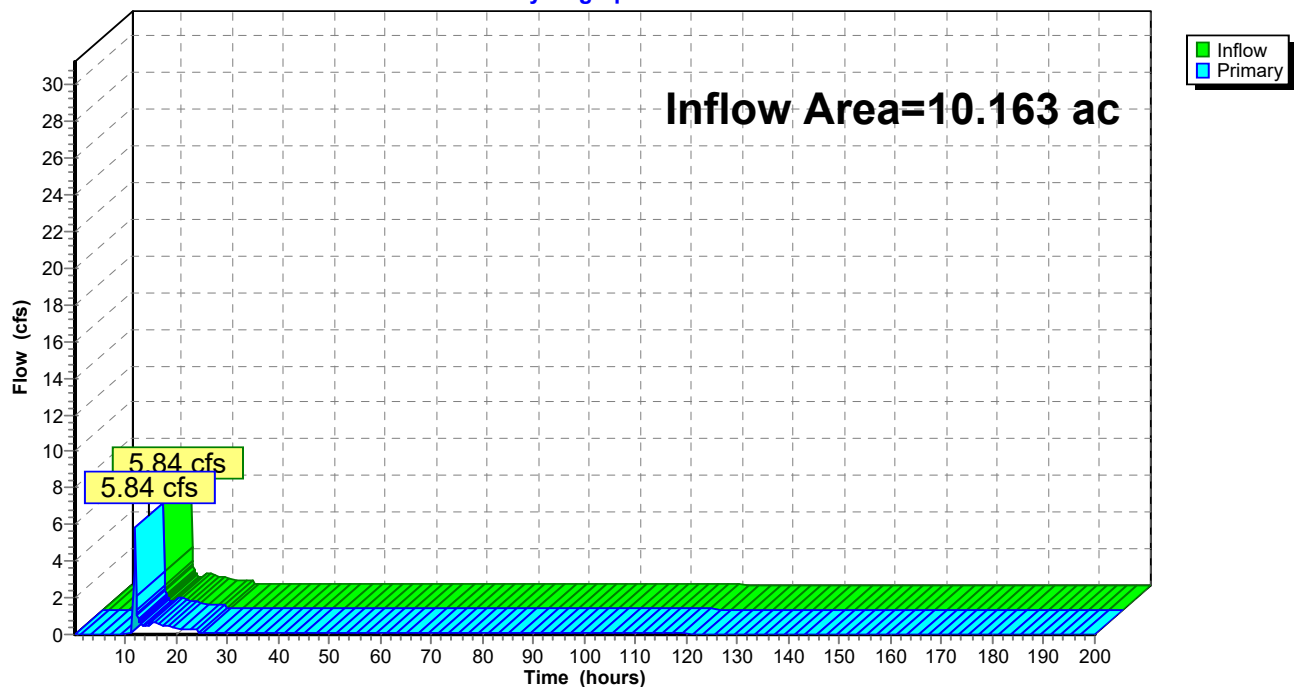
Summary for Link 32L: POA 5

Inflow Area = 10.163 ac, 32.64% Impervious, Inflow Depth > 1.58" for 2-yr event
Inflow = 5.84 cfs @ 11.99 hrs, Volume= 1.337 af
Primary = 5.84 cfs @ 11.99 hrs, Volume= 1.337 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 50R : Flowpath Downstream POA 6

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 32L: POA 5

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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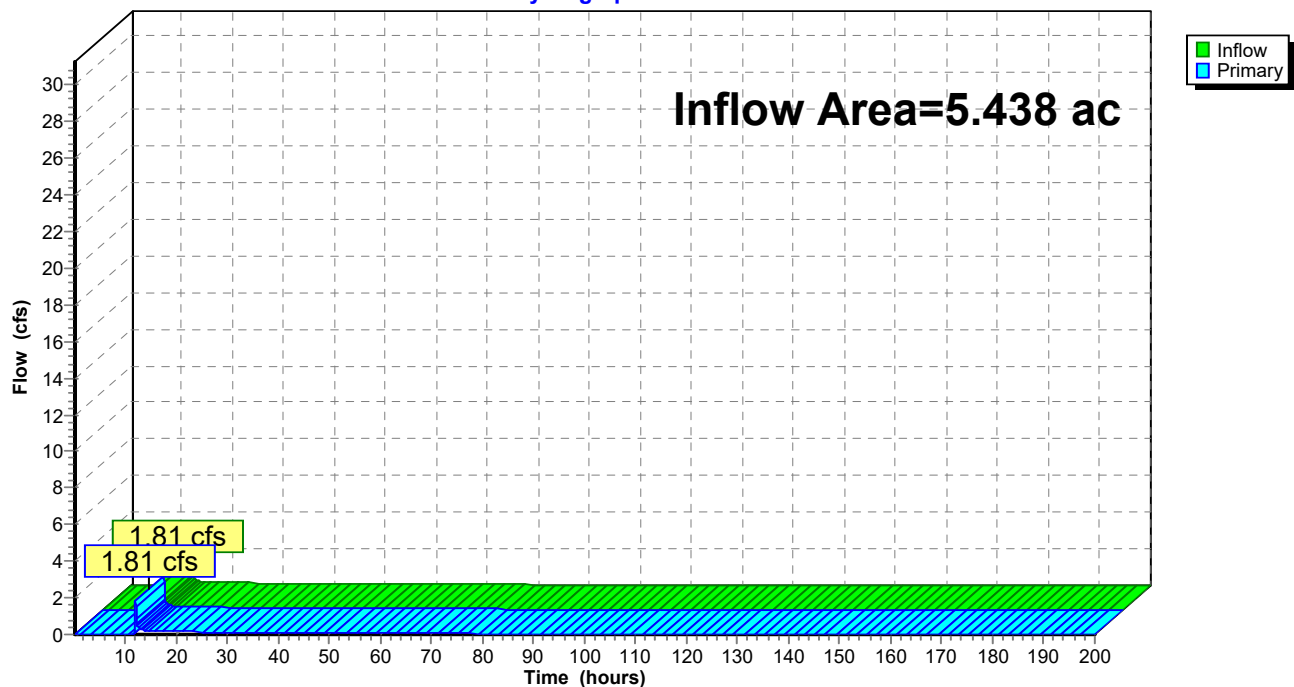
Summary for Link 33L: POA 6

Inflow Area = 5.438 ac, 41.54% Impervious, Inflow Depth = 1.52" for 2-yr event
Inflow = 1.81 cfs @ 12.04 hrs, Volume= 0.687 af
Primary = 1.81 cfs @ 12.04 hrs, Volume= 0.687 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 51R : Flowpath Downstream POA 5

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 33L: POA 6

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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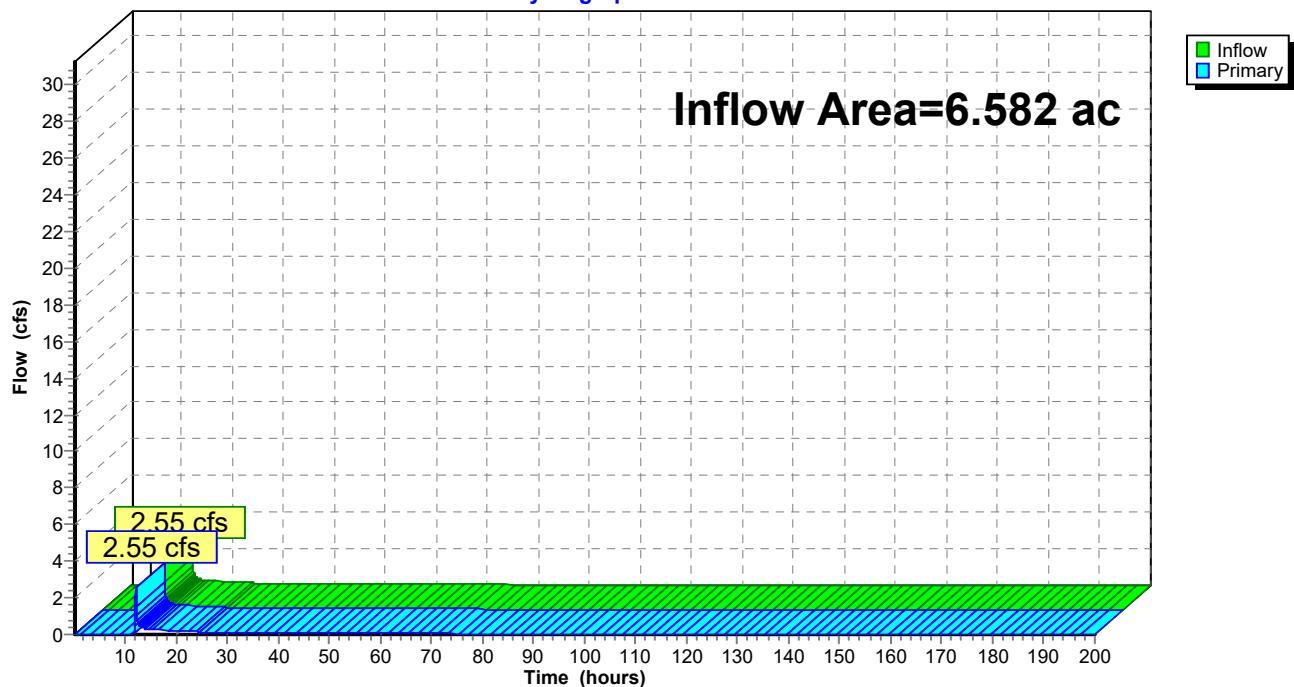
Summary for Link 40L: POA 4

Inflow Area = 6.582 ac, 37.07% Impervious, Inflow Depth = 1.38" for 2-yr event
Inflow = 2.55 cfs @ 12.09 hrs, Volume= 0.758 af
Primary = 2.55 cfs @ 12.09 hrs, Volume= 0.758 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 47R : Flowpath Downstream POA 4

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 40L: POA 4

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.82"

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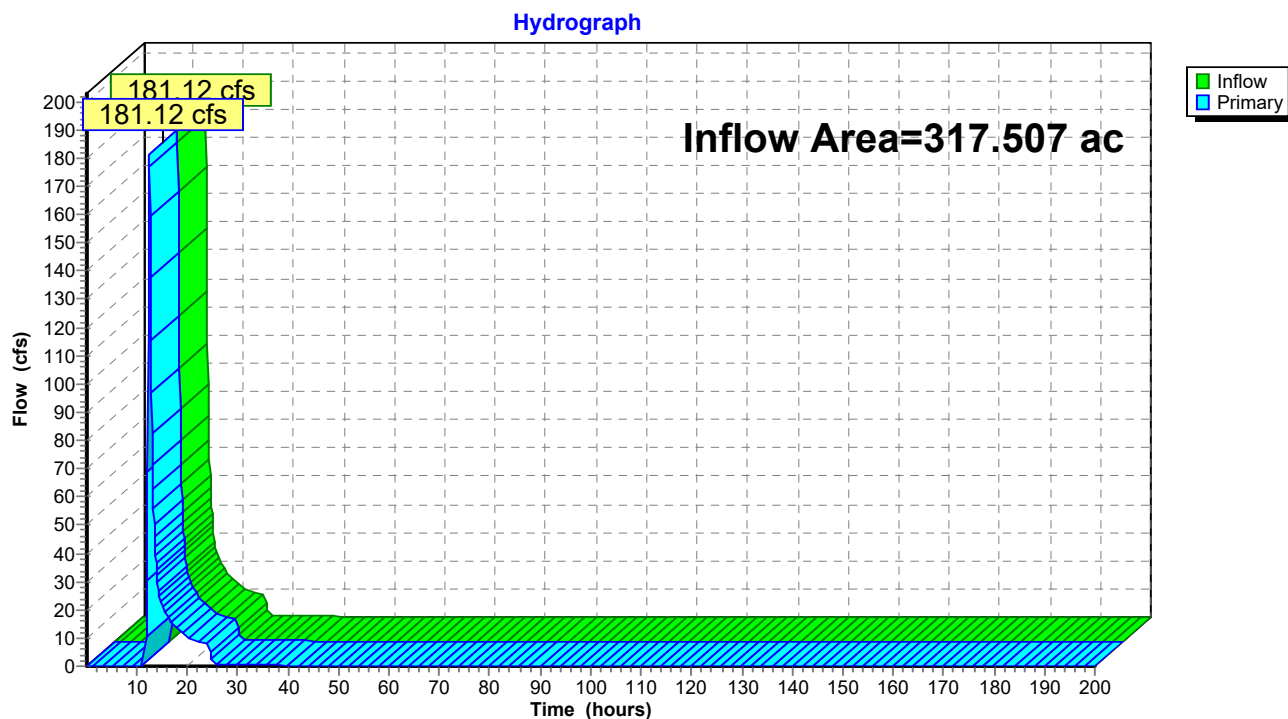
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Summary for Link 53L: Post Dev. POA Downstream of 110 Cedar Hill Dr

Inflow Area = 317.507 ac, 18.47% Impervious, Inflow Depth = 1.07" for 2-yr event
Inflow = 181.12 cfs @ 12.44 hrs, Volume= 28.230 af
Primary = 181.12 cfs @ 12.44 hrs, Volume= 28.230 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 53L: Post Dev. POA Downstream of 110 Cedar Hill Dr



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Type II 24-hr 25-yr Rainfall=6.54"

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment15S: Post Dev. Basin 6 to Runoff Area=185,285 sf 75.67% Impervious Runoff Depth=5.49"
Tc=5.0 min CN=91 Runoff=32.86 cfs 1.945 af

Subcatchment16S: Post Dev. Bypass 6 Runoff Area=257,427 sf 1.66% Impervious Runoff Depth=2.28"
Tc=5.0 min CN=60 Runoff=21.62 cfs 1.124 af

Subcatchment18S: Post Dev. Basin 7 to Runoff Area=150,448 sf 57.98% Impervious Runoff Depth=4.38"
Tc=5.0 min CN=81 Runoff=23.36 cfs 1.260 af

Subcatchment19S: Post Dev. Bypass 7 Runoff Area=86,411 sf 12.93% Impervious Runoff Depth=2.38"
Tc=10.0 min CN=61 Runoff=6.70 cfs 0.393 af

Subcatchment29S: Post Dev. Bypass 8 Runoff Area=289,814 sf 1.87% Impervious Runoff Depth=2.47"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=24.46 cfs 1.368 af

Subcatchment36S: Post Dev. Basin 4 Runoff Area=29,236 sf 11.81% Impervious Runoff Depth=2.47"
Tc=5.0 min CN=62 Runoff=2.66 cfs 0.138 af

Subcatchment37S: Post Dev. Basin 5 to Runoff Area=122,978 sf 76.45% Impervious Runoff Depth=4.92"
Tc=5.0 min CN=86 Runoff=20.88 cfs 1.159 af

Subcatchment38S: Post Dev. Bypass 5 Runoff Area=163,726 sf 7.49% Impervious Runoff Depth=2.19"
Tc=12.3 min CN=59 Runoff=10.40 cfs 0.687 af

Subcatchment46S: Post Drainage Area 1 Runoff Area=198.400 ac 20.00% Impervious Runoff Depth=3.04"
Flow Length=4,195' Slope=0.0177 '/' Tc=45.4 min CN=68 Runoff=386.50 cfs 50.294 af

Subcatchment52S: Pre Drainage Area 2 Runoff Area=89.600 ac 12.00% Impervious Runoff Depth=2.75"
Flow Length=3,771' Slope=0.0323 '/' Tc=33.2 min CN=65 Runoff=193.14 cfs 20.543 af

Reach 47R: Flowpath Downstream Avg. Flow Depth=1.00' Max Vel=1.45 fps Inflow=17.76 cfs 1.983 af
n=0.100 L=2,757.0' S=0.0173 '/' Capacity=7.18 cfs Outflow=8.15 cfs 1.983 af

Reach 50R: Flowpath Downstream Avg. Flow Depth=2.48' Max Vel=1.72 fps Inflow=53.42 cfs 4.433 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=29.31 cfs 4.432 af

Reach 51R: Flowpath Downstream Avg. Flow Depth=1.06' Max Vel=1.86 fps Inflow=14.55 cfs 1.653 af
n=0.100 L=1,036.0' S=0.0267 '/' Capacity=8.94 cfs Outflow=10.84 cfs 1.653 af

Pond 30P: Wet Pond SCM 4 Peak Elev=526.48' Storage=52,233 cf Inflow=32.86 cfs 1.945 af
Outflow=10.36 cfs 1.940 af

Pond 31P: Wet Pond SCM 5 Peak Elev=515.68' Storage=26,654 cf Inflow=23.36 cfs 1.260 af
Outflow=9.26 cfs 1.260 af

Pond 39P: Sand Filter SCM 3 Peak Elev=536.16' Storage=25,386 cf Inflow=20.88 cfs 1.159 af
Outflow=6.51 cfs 1.159 af

Downstream Analysis - ZCP

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Type II 24-hr 25-yr Rainfall=6.54"

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Link 32L: POA 5

Inflow=28.99 cfs 3.065 af

Primary=28.99 cfs 3.065 af

Link 33L: POA 6

Inflow=14.55 cfs 1.653 af

Primary=14.55 cfs 1.653 af

Link 40L: POA 4

Inflow=16.49 cfs 1.845 af

Primary=16.49 cfs 1.845 af

Link 53L: Post Dev. POA Downstream of 110 Cedar Hill Dr

Inflow=598.98 cfs 78.906 af

Primary=598.98 cfs 78.906 af

Total Runoff Area = 317.507 ac Runoff Volume = 78.911 af Average Runoff Depth = 2.98"
81.53% Pervious = 258.856 ac 18.47% Impervious = 58.651 ac

Downstream Analysis - ZCP

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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 15S: Post Dev. Basin 6 to SCM

Runoff = 32.86 cfs @ 11.95 hrs, Volume= 1.945 af, Depth= 5.49"
Routed to Pond 30P : Wet Pond SCM 4

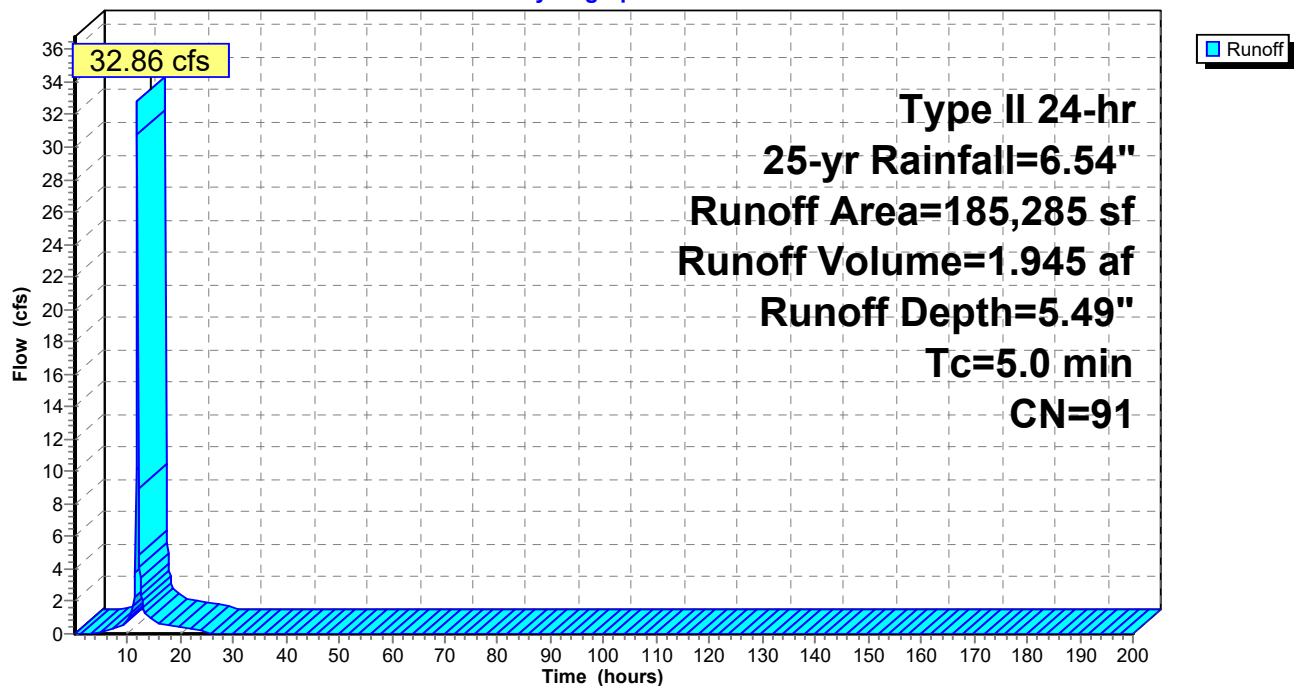
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
76,830	98	Paved parking, HSG B
63,382	98	Roofs, HSG B
30,858	56	Brush, Fair, HSG B
14,215	98	Water Surface, 0% imp, HSG B
185,285	91	Weighted Average
45,073		24.33% Pervious Area
140,212		75.67% Impervious Area

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

Subcatchment 15S: Post Dev. Basin 6 to SCM

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 16S: Post Dev. Bypass 6

Runoff = 21.62 cfs @ 11.97 hrs, Volume= 1.124 af, Depth= 2.28"
Routed to Link 32L : POA 5

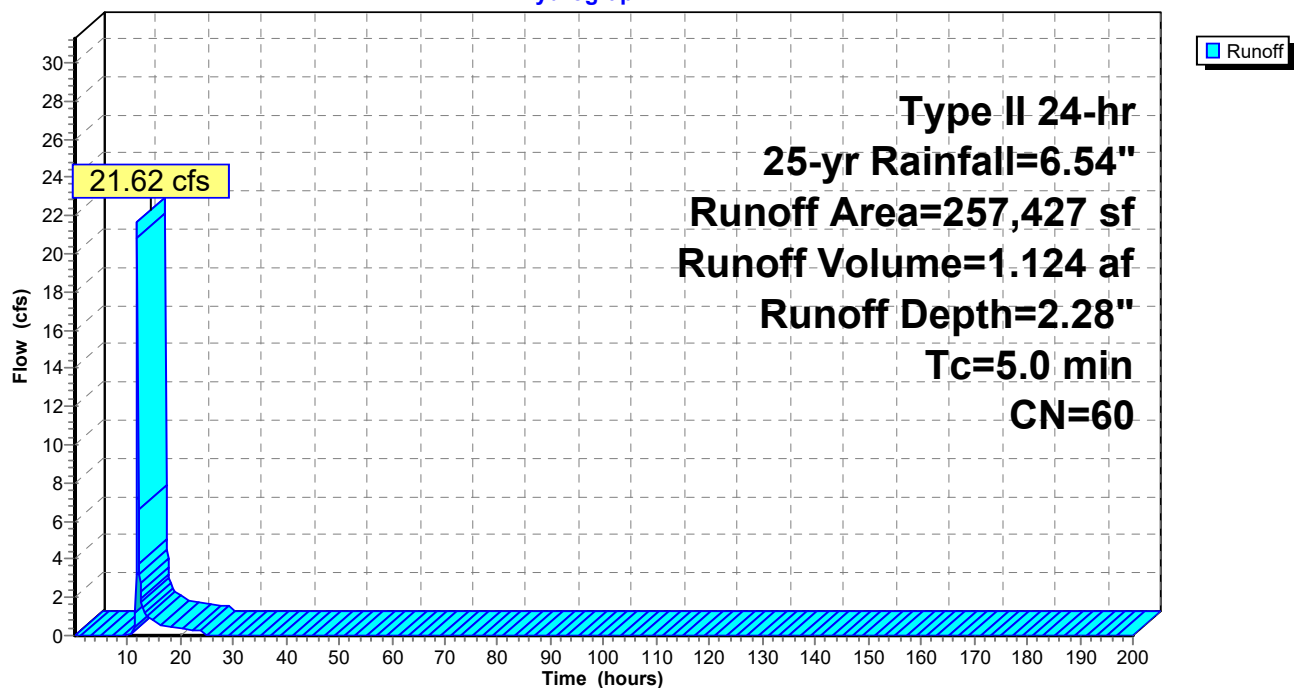
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
4,268	98	Paved parking, HSG B
51,015	56	Brush, Fair, HSG B
202,144	60	Woods, Fair, HSG B
257,427	60	Weighted Average
253,159		98.34% Pervious Area
4,268		1.66% Impervious Area

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

Subcatchment 16S: Post Dev. Bypass 6

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 18S: Post Dev. Basin 7 to SCM

Runoff = 23.36 cfs @ 11.95 hrs, Volume= 1.260 af, Depth= 4.38"
Routed to Pond 31P : Wet Pond SCM 5

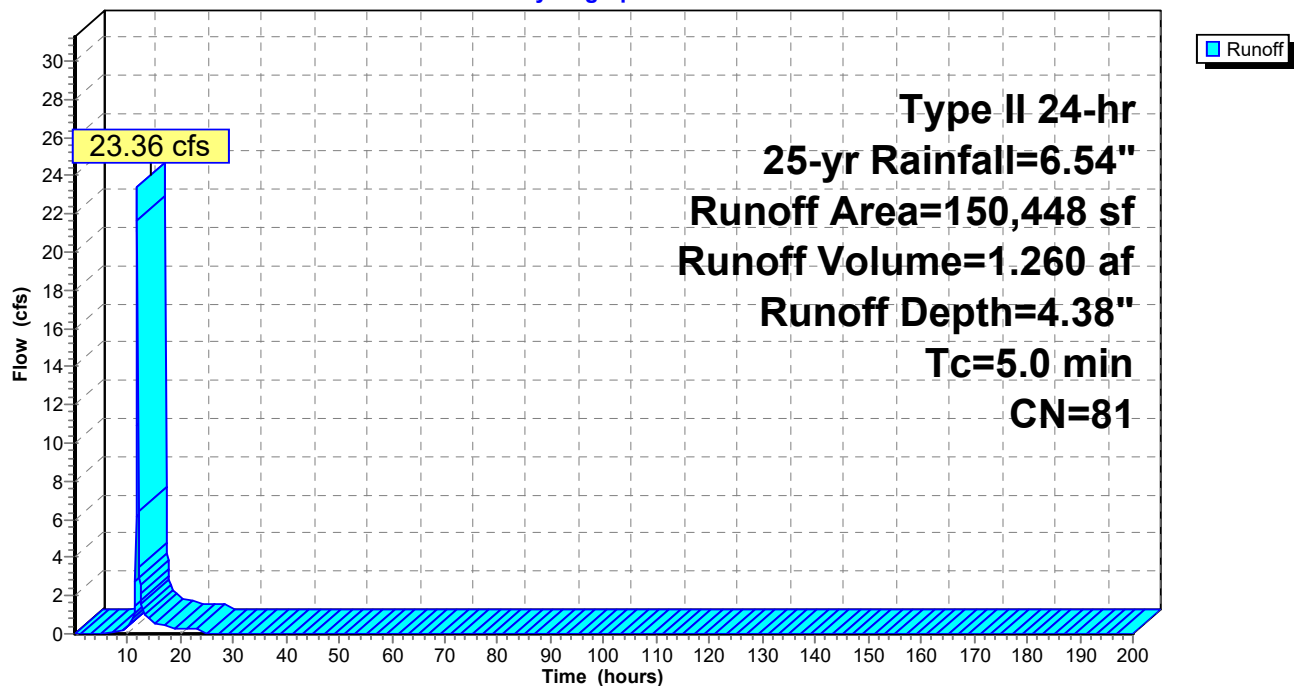
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
53,515	98	Paved parking, HSG B
33,715	98	Roofs, HSG B
59,637	56	Brush, Fair, HSG B
3,581	98	Water Surface, 0% imp, HSG B
150,448	81	Weighted Average
63,218		42.02% Pervious Area
87,230		57.98% Impervious Area

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

Subcatchment 18S: Post Dev. Basin 7 to SCM

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 19S: Post Dev. Bypass 7

Runoff = 6.70 cfs @ 12.02 hrs, Volume= 0.393 af, Depth= 2.38"
Routed to Link 33L : POA 6

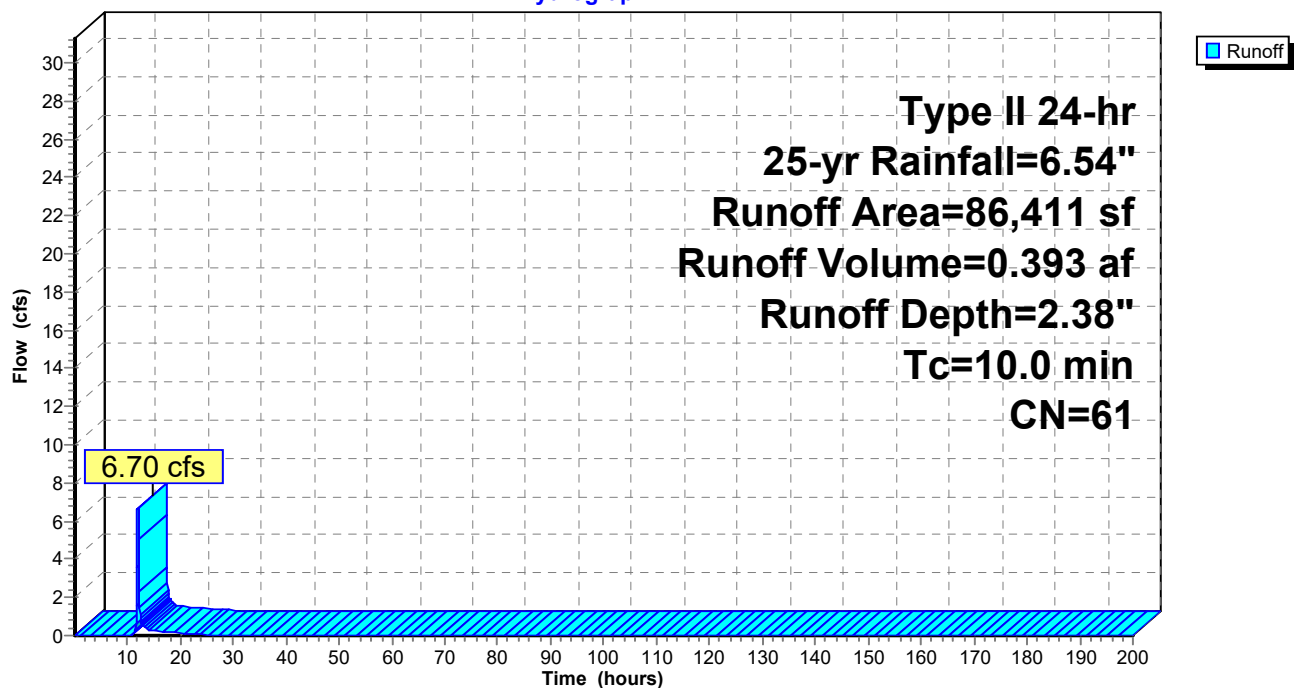
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
11,171	98	Paved parking, HSG B
35,296	56	Brush, Fair, HSG B
39,944	55	Woods, Good, HSG B
86,411	61	Weighted Average
75,240		87.07% Pervious Area
11,171		12.93% Impervious Area

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

Subcatchment 19S: Post Dev. Bypass 7

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 29S: Post Dev. Bypass 8

Runoff = 24.46 cfs @ 12.01 hrs, Volume= 1.368 af, Depth= 2.47"
Routed to Reach 50R : Flowpath Downstream POA 6

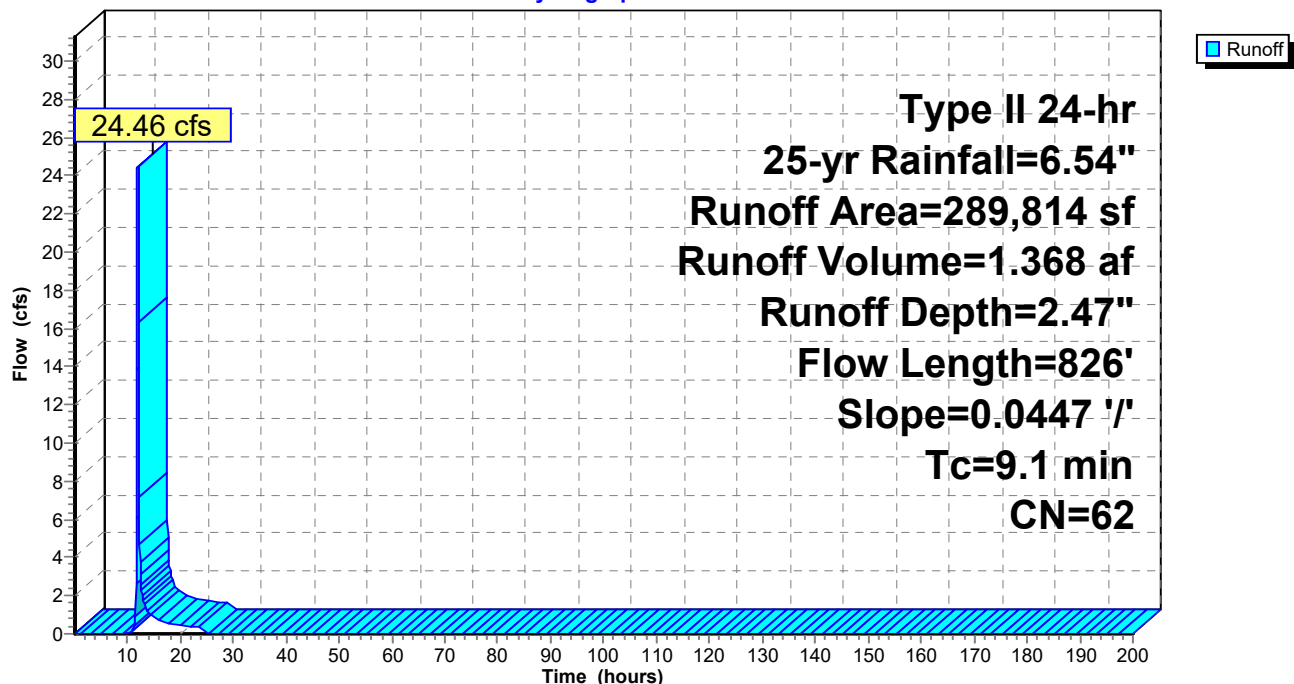
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
53,439	69	50-75% Grass cover, Fair, HSG B
5,416	98	Paved parking, HSG B
289,814	62	Weighted Average
284,398		98.13% Pervious Area
5,416		1.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 29S: Post Dev. Bypass 8

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 36S: Post Dev. Basin 4

Runoff = 2.66 cfs @ 11.97 hrs, Volume= 0.138 af, Depth= 2.47"
Routed to Reach 47R : Flowpath Downstream POA 4

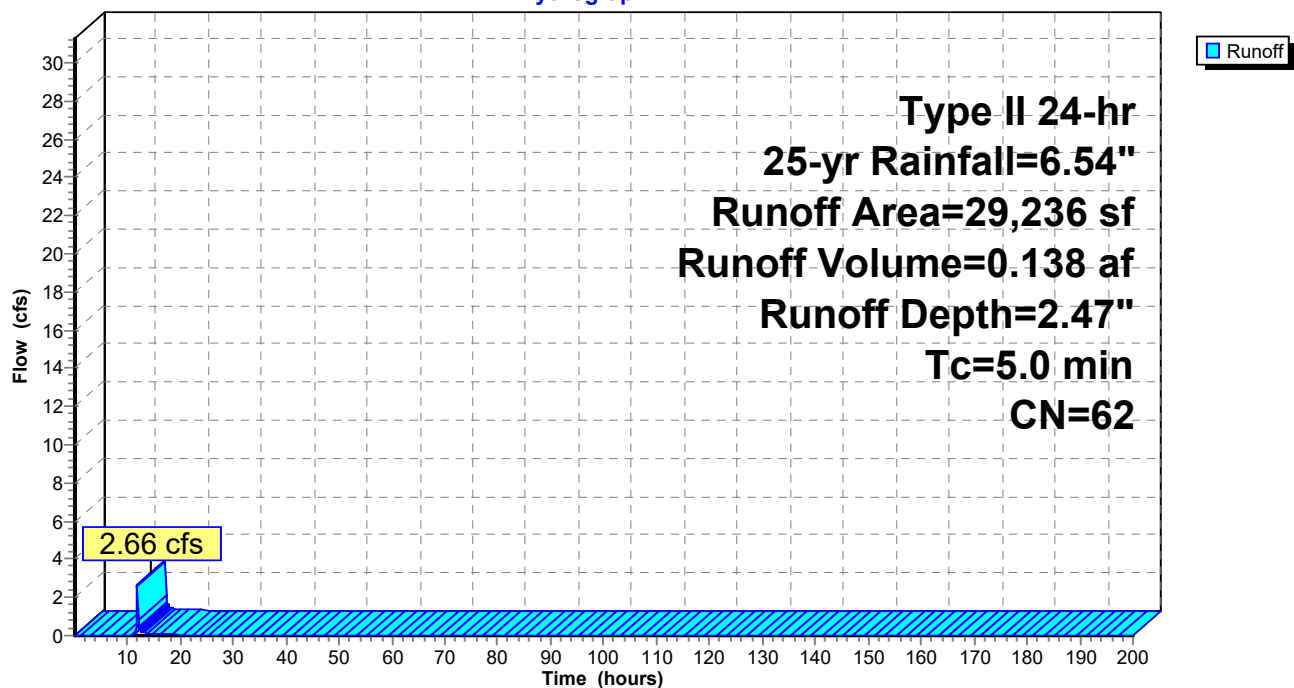
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
6,194	60	Woods, Fair, HSG B
19,589	56	Brush, Fair, HSG B
3,453	98	Paved parking, HSG B
29,236	62	Weighted Average
25,783		88.19% Pervious Area
3,453		11.81% Impervious Area

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

Subcatchment 36S: Post Dev. Basin 4

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 37S: Post Dev. Basin 5 to SCM

Runoff = 20.88 cfs @ 11.95 hrs, Volume= 1.159 af, Depth= 4.92"
Routed to Pond 39P : Sand Filter SCM 3

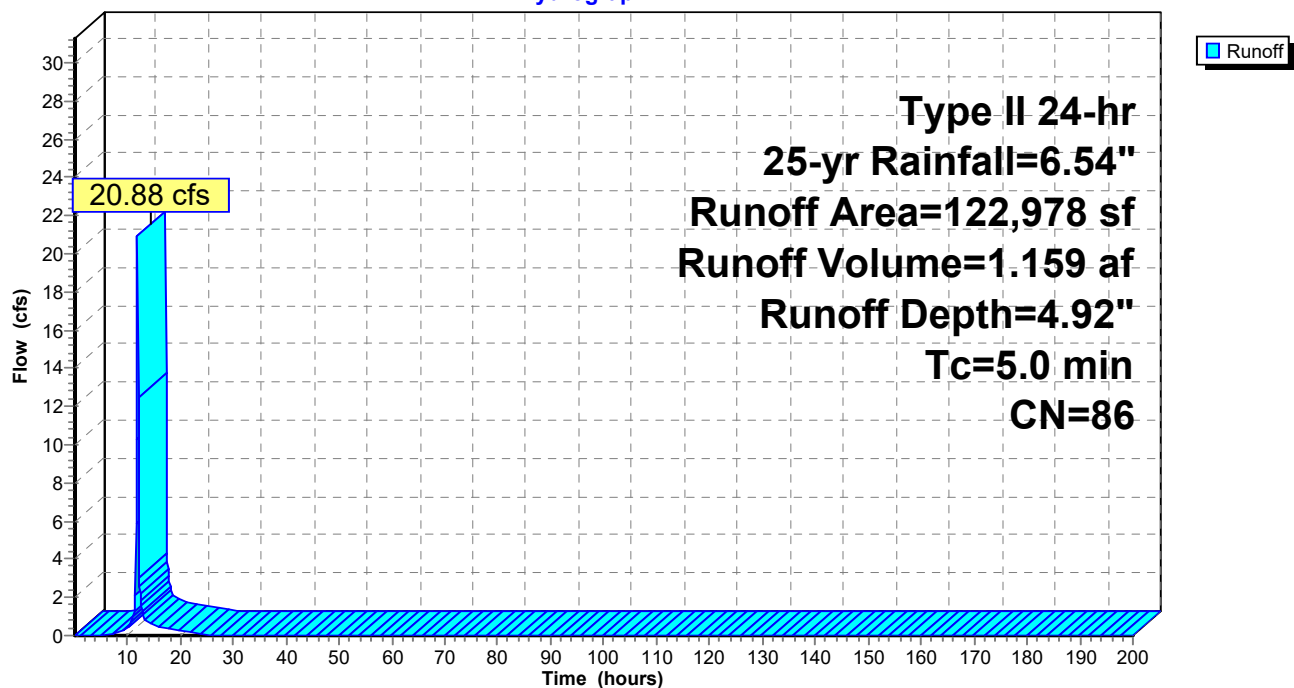
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
54,167	98	Paved parking, HSG B
39,855	98	Roofs, HSG B
28,956	48	Brush, Good, HSG B
122,978	86	Weighted Average
28,956		23.55% Pervious Area
94,022		76.45% Impervious Area

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

Subcatchment 37S: Post Dev. Basin 5 to SCM

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 38S: Post Dev. Bypass 5

Runoff = 10.40 cfs @ 12.05 hrs, Volume= 0.687 af, Depth= 2.19"
Routed to Link 40L : POA 4

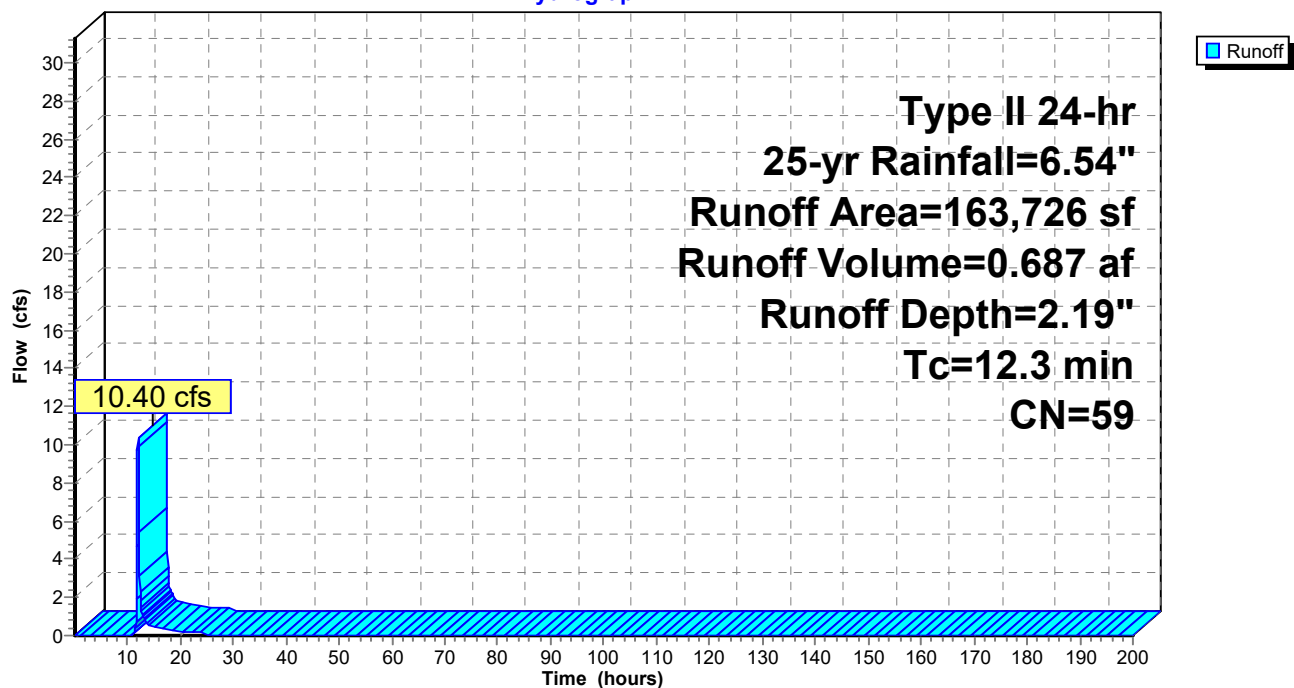
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
12,257	98	Paved parking, HSG B
54,926	48	Brush, Good, HSG B
96,543	60	Woods, Fair, HSG B
163,726	59	Weighted Average
151,469		92.51% Pervious Area
12,257		7.49% Impervious Area

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

Subcatchment 38S: Post Dev. Bypass 5

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 46S: Post Drainage Area 1

Runoff = 386.50 cfs @ 12.45 hrs, Volume= 50.294 af, Depth= 3.04"

Routed to Link 53L : Post Dev. POA Downstream of 110 Cedar Hill Dr

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

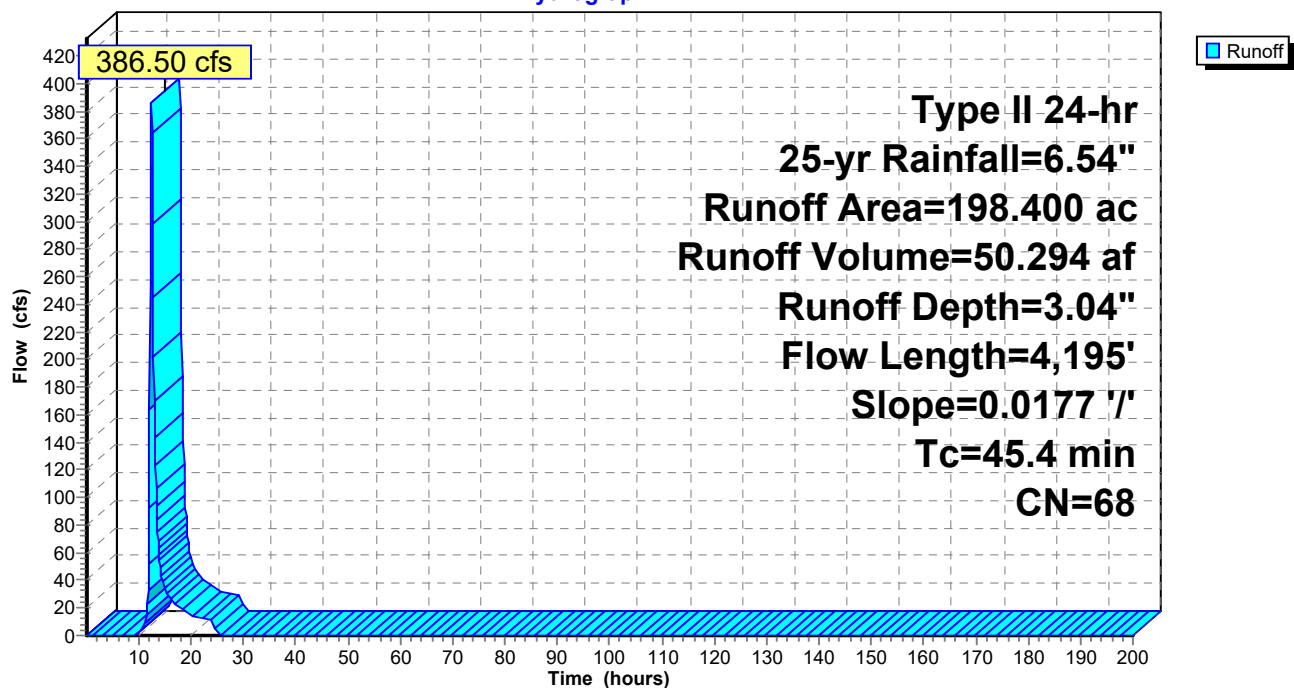
Type II 24-hr 25-yr Rainfall=6.54"

Area (ac)	CN	Description
198.400	68	1 acre lots, 20% imp, HSG B
158.720		80.00% Pervious Area
39.680		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.4	4,195	0.0177	1.54		Kirpich Method, General overland flow k= 2.00

Subcatchment 46S: Post Drainage Area 1

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 52S: Pre Drainage Area 2

Runoff = 193.14 cfs @ 12.30 hrs, Volume= 20.543 af, Depth= 2.75"

Routed to Link 53L : Post Dev. POA Downstream of 110 Cedar Hill Dr

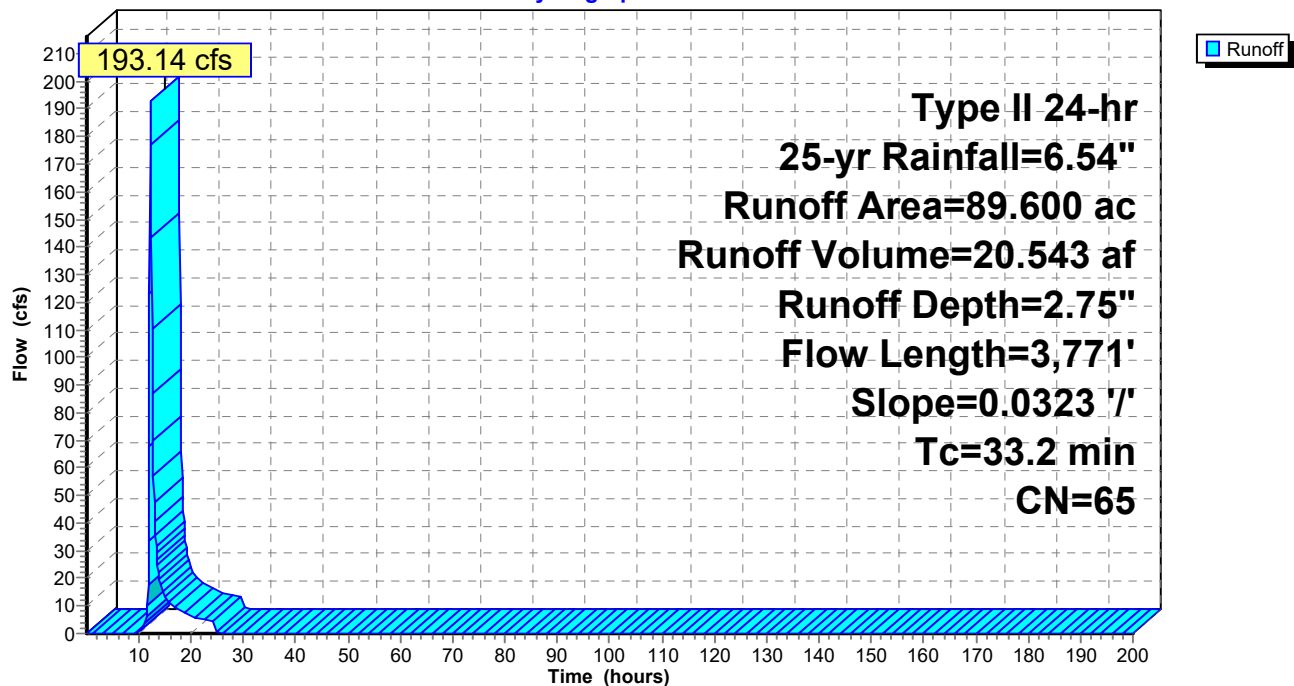
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (ac)	CN	Description
89.600	65	2 acre lots, 12% imp, HSG B
78.848		88.00% Pervious Area
10.752		12.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.2	3,771	0.0323	1.89		Kirpich Method, General overland flow k= 2.00

Subcatchment 52S: Pre Drainage Area 2

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Reach 47R: Flowpath Downstream POA 4

Inflow Area = 7.253 ac, 34.73% Impervious, Inflow Depth = 3.28" for 25-yr event
Inflow = 17.76 cfs @ 12.05 hrs, Volume= 1.983 af
Outflow = 8.15 cfs @ 12.89 hrs, Volume= 1.983 af, Atten= 54%, Lag= 50.4 min
Routed to Link 53L : Post Dev. POA Downstream of 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.45 fps, Min. Travel Time= 31.7 min

Avg. Velocity= 0.24 fps, Avg. Travel Time= 192.5 min

Peak Storage= 15,618 cf @ 12.35 hrs

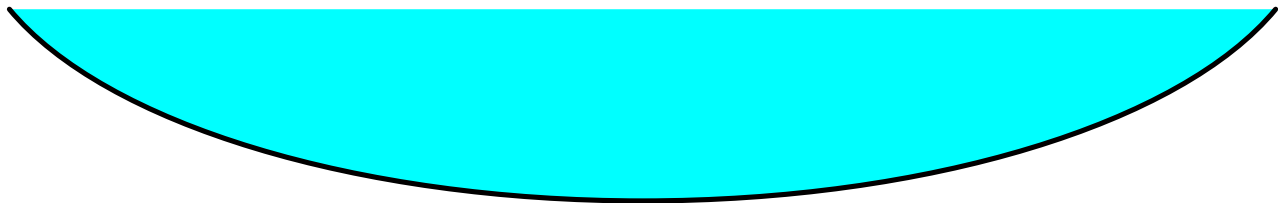
Average Depth at Peak Storage= 1.00' , Surface Width= 8.48'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 7.18 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

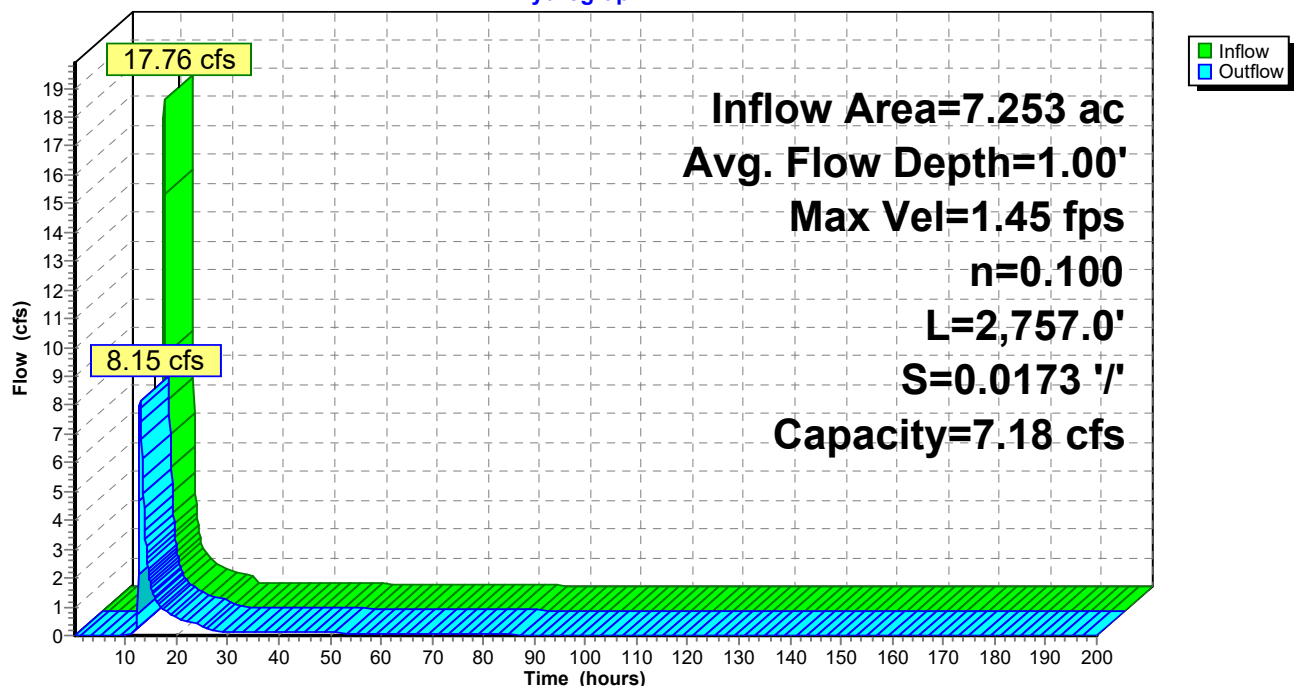
Length= 2,757.0' Slope= 0.0173 '/'

Inlet Invert= 529.84', Outlet Invert= 482.25'



Reach 47R: Flowpath Downstream POA 4

Hydrograph



Downstream Analysis - ZCP

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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Reach 50R: Flowpath Downstream POA 6

Inflow Area = 16.816 ac, 20.46% Impervious, Inflow Depth = 3.16" for 25-yr event
Inflow = 53.42 cfs @ 12.00 hrs, Volume= 4.433 af
Outflow = 29.31 cfs @ 12.40 hrs, Volume= 4.432 af, Atten= 45%, Lag= 24.0 min
Routed to Link 53L : Post Dev. POA Downstream of 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.72 fps, Min. Travel Time= 14.7 min

Avg. Velocity = 0.32 fps, Avg. Travel Time= 78.5 min

Peak Storage= 26,822 cf @ 12.14 hrs

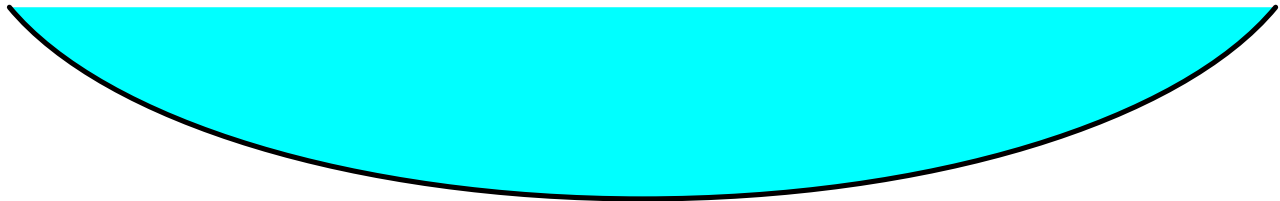
Average Depth at Peak Storage= 2.48' , Surface Width= 13.33'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

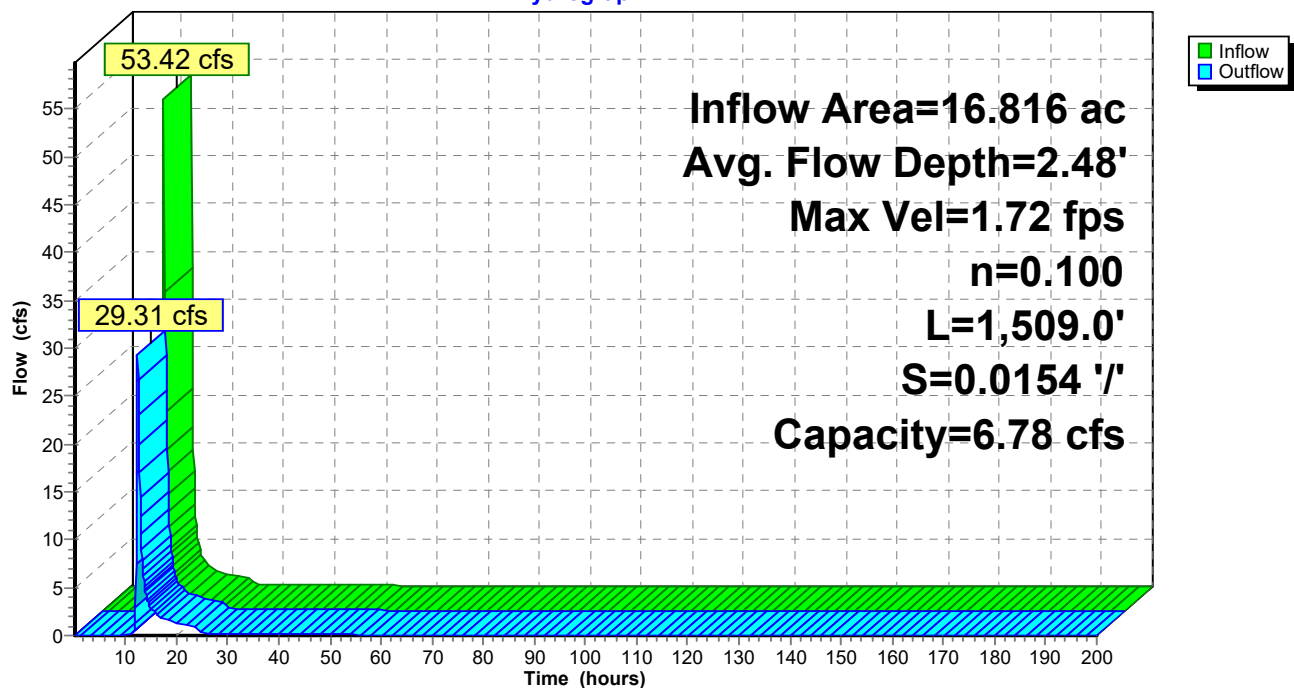
Length= 1,509.0' Slope= 0.0154 '/'

Inlet Invert= 505.43', Outlet Invert= 482.25'



Reach 50R: Flowpath Downstream POA 6

Hydrograph



Downstream Analysis - ZCP

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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Reach 51R: Flowpath Downstream POA 5

Inflow Area = 5.438 ac, 41.54% Impervious, Inflow Depth = 3.65" for 25-yr event
Inflow = 14.55 cfs @ 12.07 hrs, Volume= 1.653 af
Outflow = 10.84 cfs @ 12.36 hrs, Volume= 1.653 af, Atten= 26%, Lag= 17.3 min
Routed to Link 53L : Post Dev. POA Downstream of 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.86 fps, Min. Travel Time= 9.3 min

Avg. Velocity= 0.29 fps, Avg. Travel Time= 60.4 min

Peak Storage= 6,321 cf @ 12.20 hrs

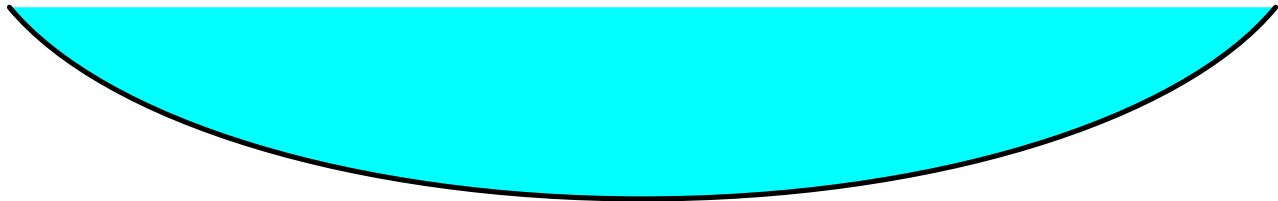
Average Depth at Peak Storage= 1.06' , Surface Width= 8.70'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 8.94 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

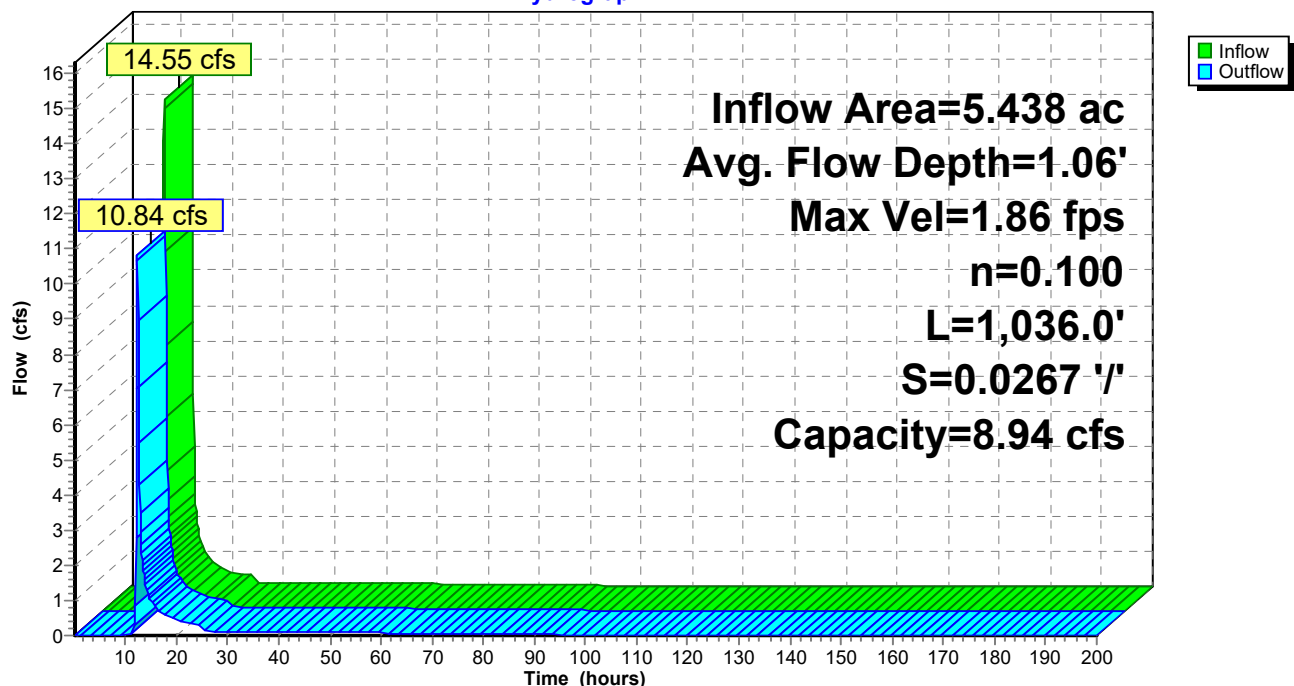
Length= 1,036.0' Slope= 0.0267 '/'

Inlet Invert= 509.93', Outlet Invert= 482.25'



Reach 51R: Flowpath Downstream POA 5

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Summary for Pond 30P: Wet Pond SCM 4

Inflow Area = 4.254 ac, 75.67% Impervious, Inflow Depth = 5.49" for 25-yr event
Inflow = 32.86 cfs @ 11.95 hrs, Volume= 1.945 af
Outflow = 10.36 cfs @ 12.13 hrs, Volume= 1.940 af, Atten= 68%, Lag= 11.0 min
Primary = 10.36 cfs @ 12.13 hrs, Volume= 1.940 af
Routed to Link 32L : POA 5

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Starting Elev= 522.00' Surf.Area= 7,056 sf Storage= 6,623 cf

Peak Elev= 526.48' @ 12.13 hrs Surf.Area= 11,930 sf Storage= 52,233 cf (45,610 cf above start)

Plug-Flow detention time= 1,812.3 min calculated for 1.788 af (92% of inflow)

Center-of-Mass det. time= 1,624.1 min (2,398.1 - 774.1)

Volume	Invert	Avail.Storage	Storage Description
#1	521.00'	71,189 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
521.00	6,190	0	0
522.00	7,056	6,623	6,623
522.50	8,333	3,847	10,470
523.00	9,531	4,466	14,936
524.00	10,198	9,865	24,801
525.00	10,883	10,541	35,341
526.00	11,584	11,234	46,575
527.00	12,303	11,944	58,518
528.00	13,038	12,671	71,189

Device	Routing	Invert	Outlet Devices
#1	Primary	522.00'	36.0" Round Culvert L= 45.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 522.00' / 521.50' S= 0.0111 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf
#2	Device 1	522.00'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	525.40'	40.0" W x 4.0" H Vert. Peakflow Orifice X 2.00 C= 0.600 Limited to weir flow at low heads
#4	Device 1	526.90'	48.0" x 48.0" Horiz. Overflow C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=10.10 cfs @ 12.13 hrs HW=526.44' (Free Discharge)

1=Culvert (Passes 10.10 cfs of 58.34 cfs potential flow)
2=Drawdown (Orifice Controls 0.12 cfs @ 10.07 fps)
3=Peakflow Orifice (Orifice Controls 9.97 cfs @ 4.49 fps)
4=Overflow (Controls 0.00 cfs)

Downstream Analysis - ZCP

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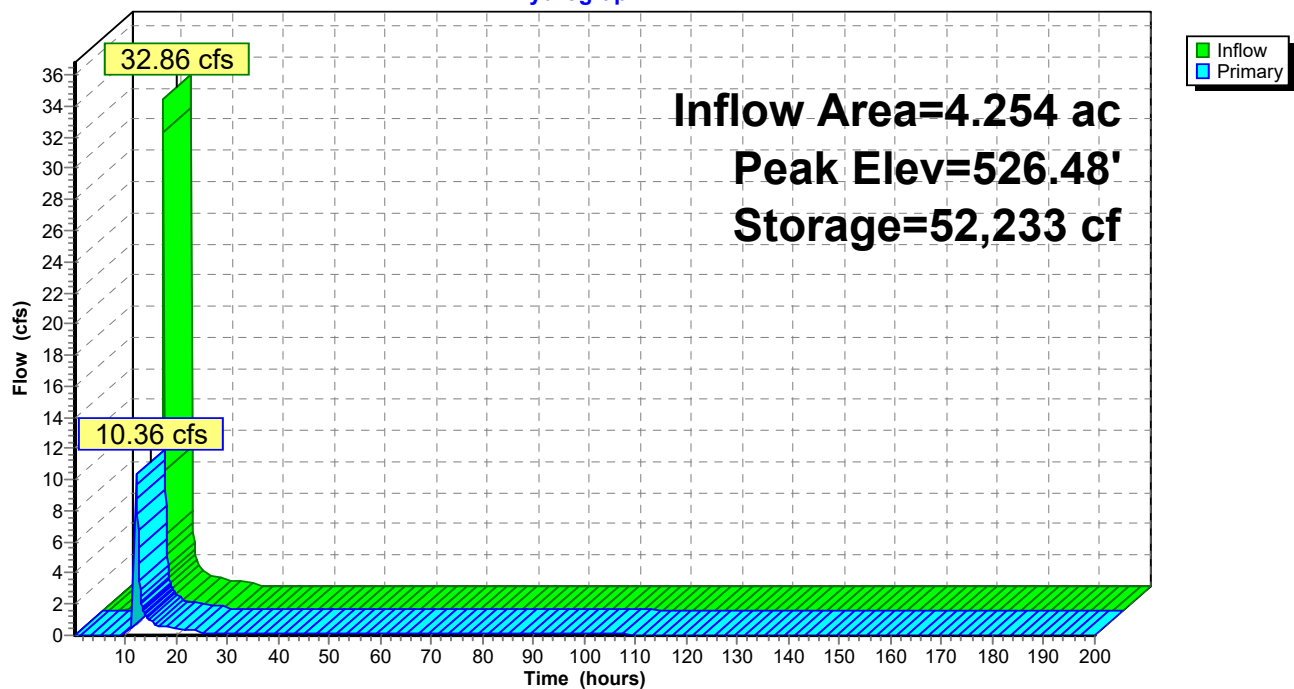
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Pond 30P: Wet Pond SCM 4

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Summary for Pond 31P: Wet Pond SCM 5

Inflow Area = 3.454 ac, 57.98% Impervious, Inflow Depth = 4.38" for 25-yr event
Inflow = 23.36 cfs @ 11.95 hrs, Volume= 1.260 af
Outflow = 9.26 cfs @ 12.11 hrs, Volume= 1.260 af, Atten= 60%, Lag= 9.7 min
Primary = 9.26 cfs @ 12.11 hrs, Volume= 1.260 af
Routed to Link 33L : POA 6

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Starting Elev= 510.50' Surf.Area= 3,231 sf Storage= 1,401 cf

Peak Elev= 515.68' @ 12.11 hrs Surf.Area= 6,080 sf Storage= 26,654 cf (25,254 cf above start)

Plug-Flow detention time= 950.7 min calculated for 1.228 af (97% of inflow)

Center-of-Mass det. time= 907.2 min (1,711.4 - 804.2)

Volume	Invert	Avail.Storage	Storage Description
#1	510.00'	42,078 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
510.00	2,371	0	0
510.50	3,231	1,401	1,401
511.00	3,997	1,807	3,208
512.00	4,407	4,202	7,410
513.00	4,836	4,622	12,031
514.00	5,284	5,060	17,091
515.00	5,749	5,517	22,608
516.00	6,233	5,991	28,599
517.00	6,735	6,484	35,083
518.00	7,255	6,995	42,078

Device	Routing	Invert	Outlet Devices
#1	Primary	510.50'	36.0" Round Culvert L= 79.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 510.50' / 510.00' S= 0.0063 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Device 1	510.50'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	514.70'	34.0" W x 4.5" H Vert. Peakflow Orifice X 2.00 C= 0.600 Limited to weir flow at low heads
#4	Device 1	516.60'	48.0" x 48.0" Horiz. Overflow C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=9.03 cfs @ 12.11 hrs HW=515.65' (Free Discharge)

1=Culvert (Passes 9.03 cfs of 64.10 cfs potential flow)
2=Drawdown (Orifice Controls 0.13 cfs @ 10.86 fps)
3=Peakflow Orifice (Orifice Controls 8.90 cfs @ 4.19 fps)
4=Overflow (Controls 0.00 cfs)

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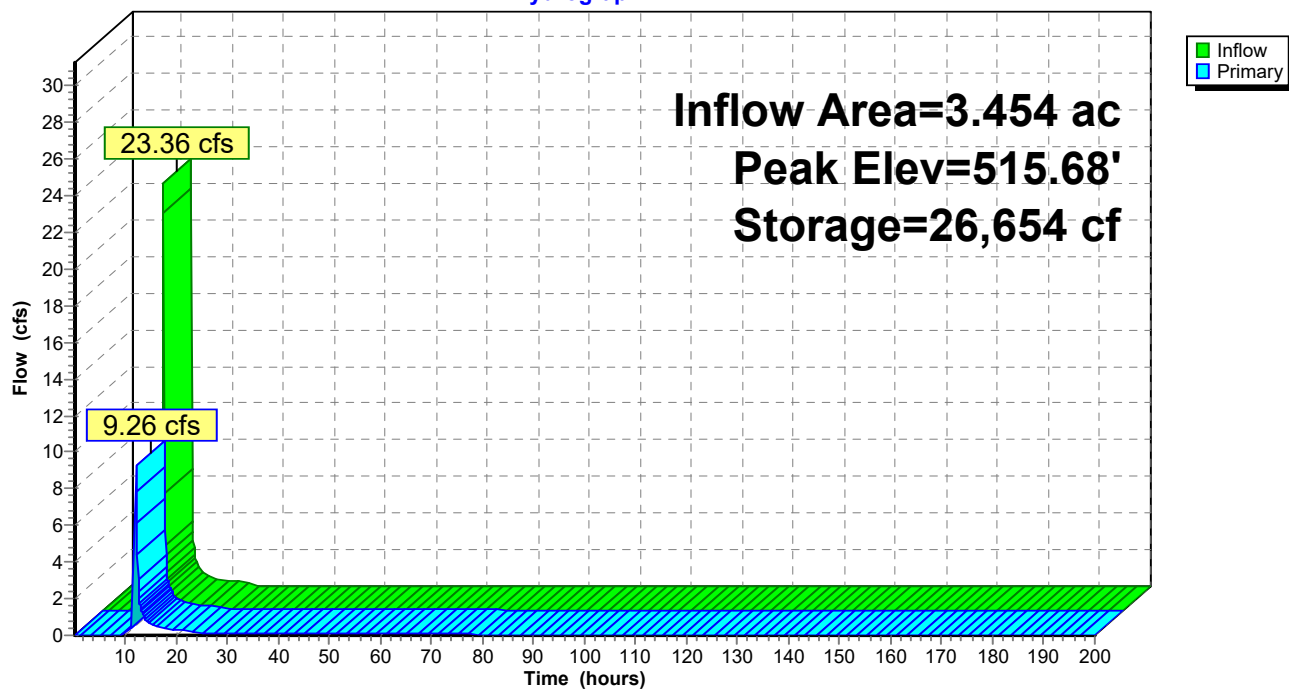
Type II 24-hr 25-yr Rainfall=6.54"

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Pond 31P: Wet Pond SCM 5

Hydrograph



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Summary for Pond 39P: Sand Filter SCM 3

Inflow Area = 2.823 ac, 76.45% Impervious, Inflow Depth = 4.92" for 25-yr event
Inflow = 20.88 cfs @ 11.95 hrs, Volume= 1.159 af
Outflow = 6.51 cfs @ 12.13 hrs, Volume= 1.159 af, Atten= 69%, Lag= 10.8 min
Primary = 6.51 cfs @ 12.13 hrs, Volume= 1.159 af
Routed to Link 40L : POA 4

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Peak Elev= 536.16' @ 12.13 hrs Surf.Area= 4,515 sf Storage= 25,386 cf

Plug-Flow detention time= 896.2 min calculated for 1.158 af (100% of inflow)
Center-of-Mass det. time= 898.9 min (1,689.4 - 790.5)

Volume	Invert	Avail.Storage	Storage Description
#1	530.00'	16,905 cf	Sediment/Sand Chamber (Prismatic) Listed below (Recalc) x 23
#2	530.00'	16,800 cf	Storage (Prismatic) Listed below (Recalc) x 20
		33,705 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
530.00	105	0.0	0	0
532.00	105	50.0	105	105
538.00	105	100.0	630	735

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
530.00	105	0	0
538.00	105	840	840

Device	Routing	Invert	Outlet Devices
#1	Primary	530.00'	36.0" Round Culvert L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 530.00' / 529.00' S= 0.0200 ' / Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf
#2	Device 1	530.00'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	534.70'	34.0" W x 5.0" H Vert. Main Orifice C= 0.600 Limited to weir flow at low heads
#4	Device 1	537.20'	25.0' long Overflow 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=6.30 cfs @ 12.13 hrs HW=536.08' (Free Discharge)

- 1=Culvert (Passes 6.30 cfs of 72.87 cfs potential flow)
- 2=Drawdown (Orifice Controls 0.14 cfs @ 11.82 fps)
- 3=Main Orifice (Orifice Controls 6.16 cfs @ 5.21 fps)
- 4=Overflow (Controls 0.00 cfs)

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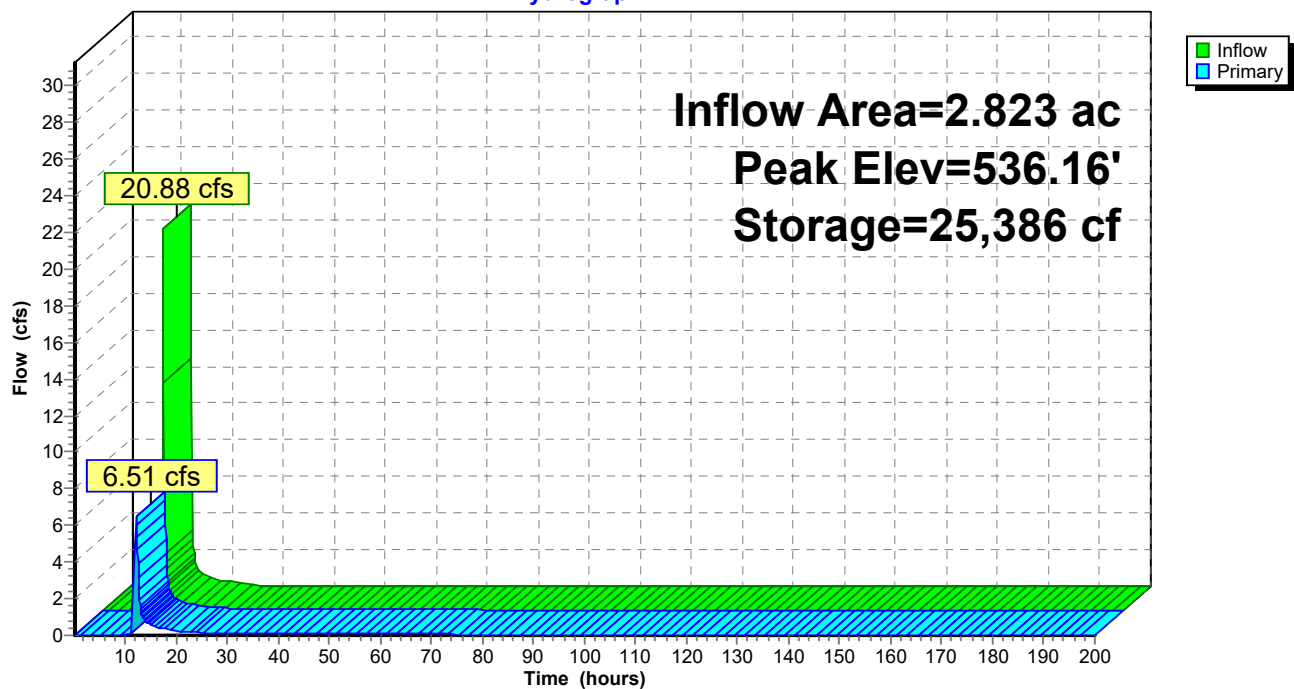
Type II 24-hr 25-yr Rainfall=6.54"

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Pond 39P: Sand Filter SCM 3

Hydrograph



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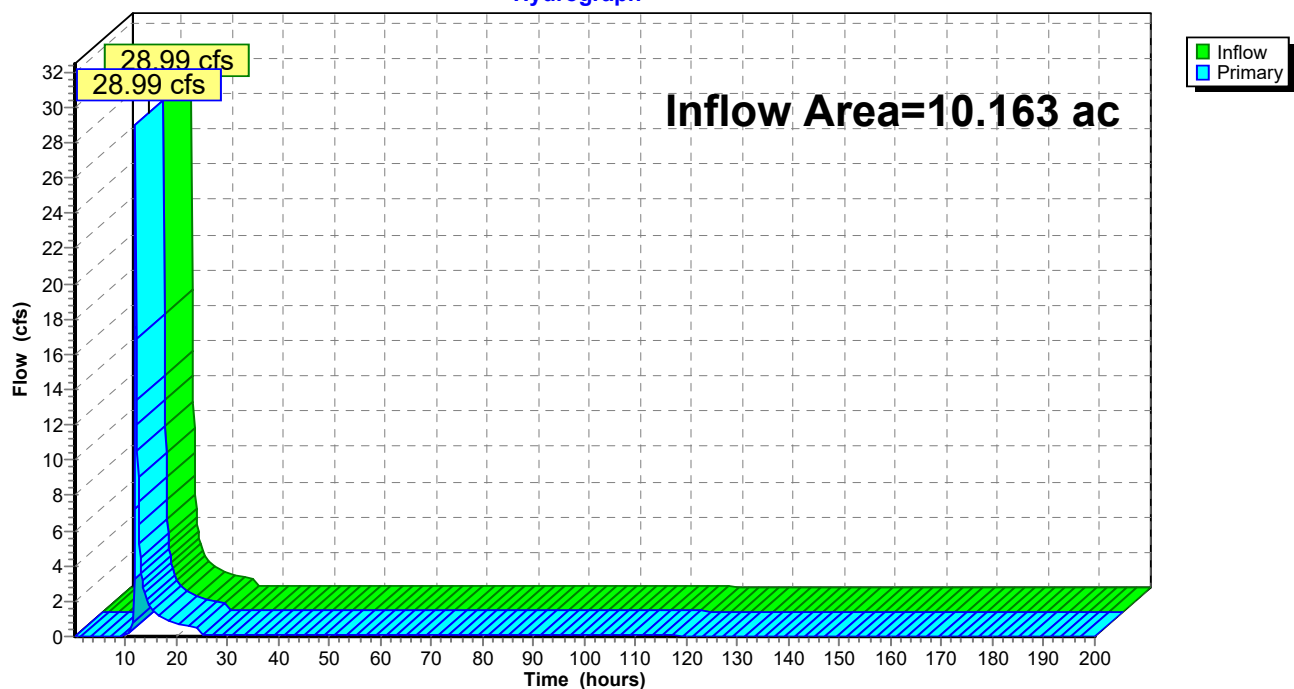
Summary for Link 32L: POA 5

Inflow Area = 10.163 ac, 32.64% Impervious, Inflow Depth = 3.62" for 25-yr event
Inflow = 28.99 cfs @ 12.00 hrs, Volume= 3.065 af
Primary = 28.99 cfs @ 12.00 hrs, Volume= 3.065 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 50R : Flowpath Downstream POA 6

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 32L: POA 5

Hydrograph



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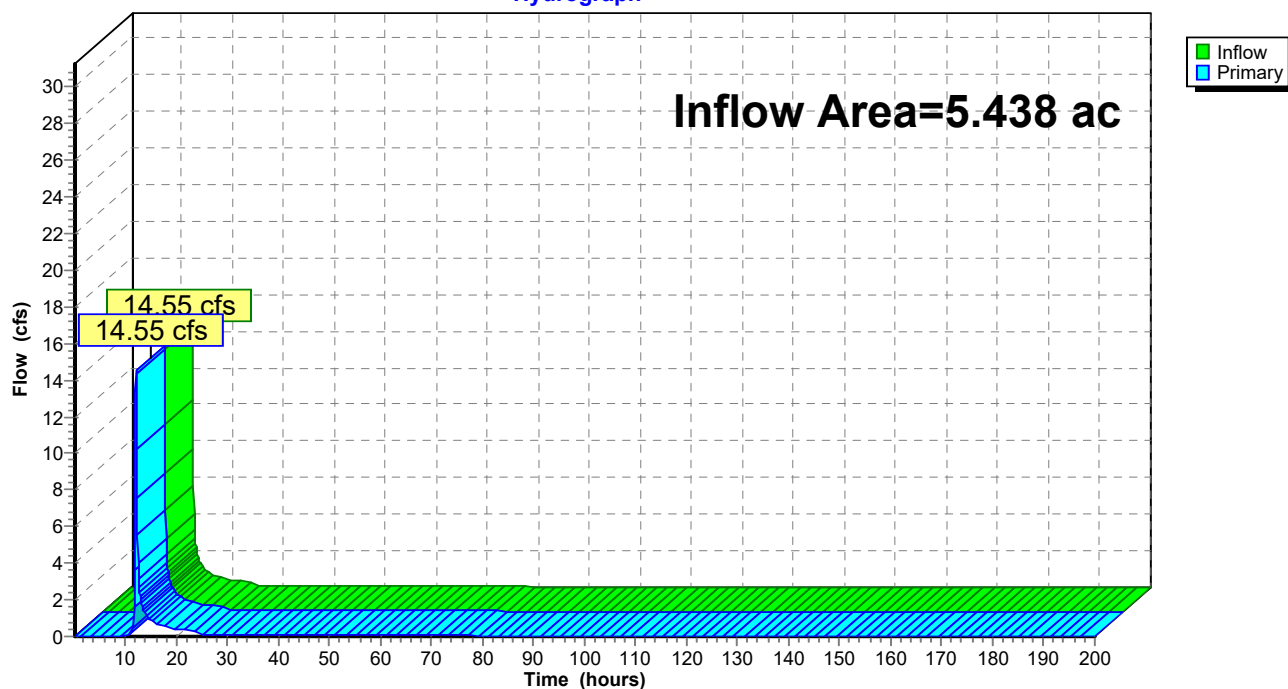
Summary for Link 33L: POA 6

Inflow Area = 5.438 ac, 41.54% Impervious, Inflow Depth = 3.65" for 25-yr event
Inflow = 14.55 cfs @ 12.07 hrs, Volume= 1.653 af
Primary = 14.55 cfs @ 12.07 hrs, Volume= 1.653 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 51R : Flowpath Downstream POA 5

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 33L: POA 6

Hydrograph



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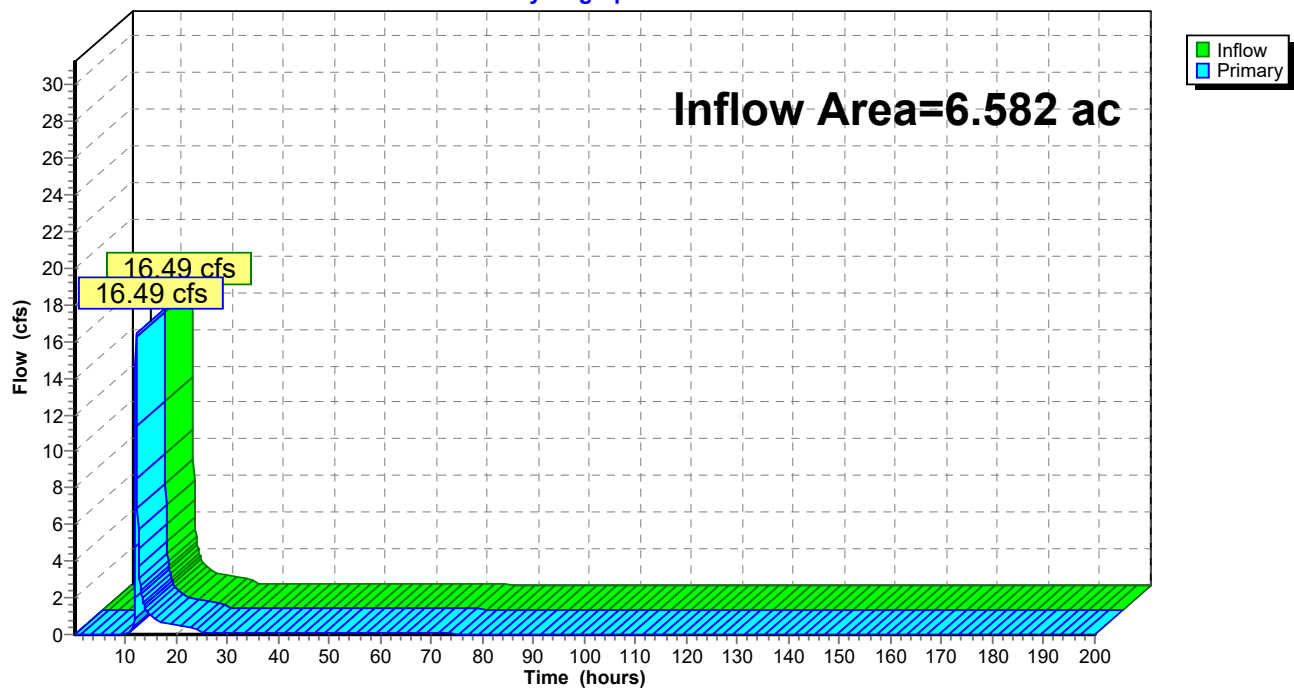
Summary for Link 40L: POA 4

Inflow Area = 6.582 ac, 37.07% Impervious, Inflow Depth = 3.36" for 25-yr event
Inflow = 16.49 cfs @ 12.08 hrs, Volume= 1.845 af
Primary = 16.49 cfs @ 12.08 hrs, Volume= 1.845 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 47R : Flowpath Downstream POA 4

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 40L: POA 4

Hydrograph



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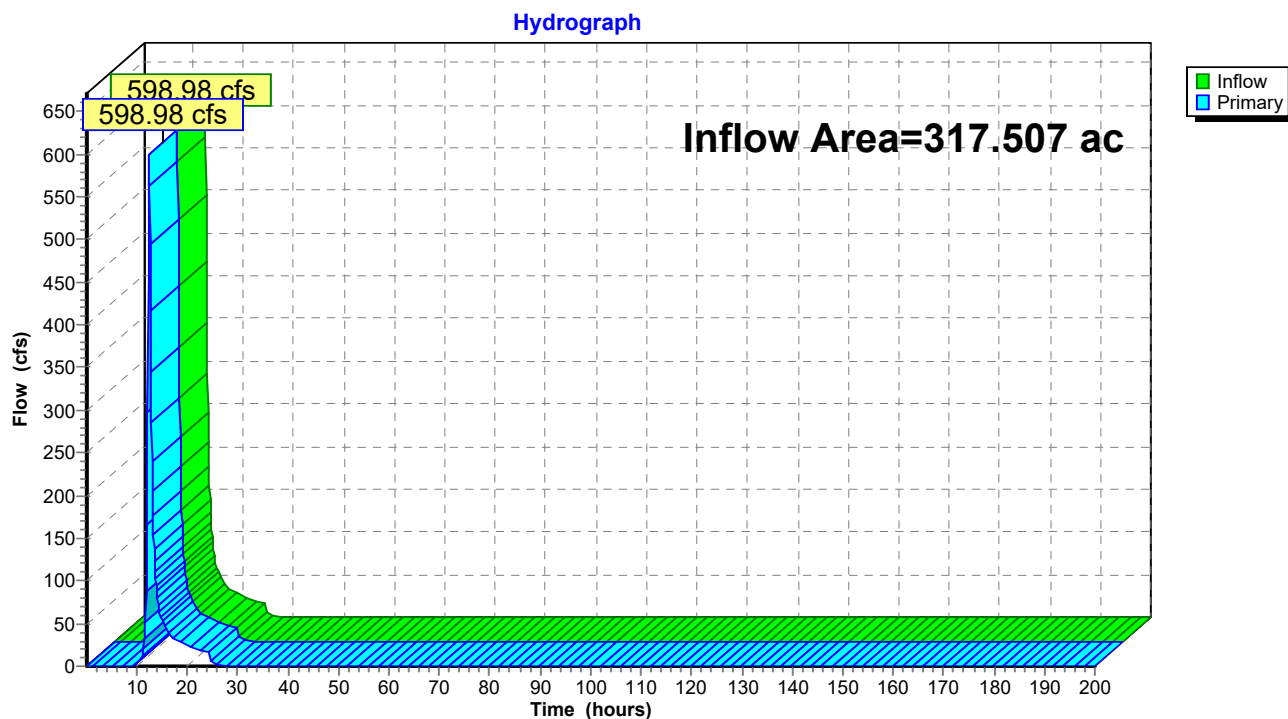
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Summary for Link 53L: Post Dev. POA Downstream of 110 Cedar Hill Dr

Inflow Area = 317.507 ac, 18.47% Impervious, Inflow Depth = 2.98" for 25-yr event
Inflow = 598.98 cfs @ 12.40 hrs, Volume= 78.906 af
Primary = 598.98 cfs @ 12.40 hrs, Volume= 78.906 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 53L: Post Dev. POA Downstream of 110 Cedar Hill Dr



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Type II 24-hr 100-yr Rainfall=8.17"

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment15S: Post Dev. Basin 6 to Runoff Area=185,285 sf 75.67% Impervious Runoff Depth=7.09"
Tc=5.0 min CN=91 Runoff=41.82 cfs 2.514 af

Subcatchment16S: Post Dev. Bypass 6 Runoff Area=257,427 sf 1.66% Impervious Runoff Depth=3.46"
Tc=5.0 min CN=60 Runoff=32.88 cfs 1.705 af

Subcatchment18S: Post Dev. Basin 7 to Runoff Area=150,448 sf 57.98% Impervious Runoff Depth=5.90"
Tc=5.0 min CN=81 Runoff=30.97 cfs 1.699 af

Subcatchment19S: Post Dev. Bypass 7 Runoff Area=86,411 sf 12.93% Impervious Runoff Depth=3.57"
Tc=10.0 min CN=61 Runoff=10.26 cfs 0.591 af

Subcatchment29S: Post Dev. Bypass 8 Runoff Area=289,814 sf 1.87% Impervious Runoff Depth=3.69"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=36.97 cfs 2.045 af

Subcatchment36S: Post Dev. Basin 4 Runoff Area=29,236 sf 11.81% Impervious Runoff Depth=3.69"
Tc=5.0 min CN=62 Runoff=3.97 cfs 0.206 af

Subcatchment37S: Post Dev. Basin 5 to Runoff Area=122,978 sf 76.45% Impervious Runoff Depth=6.50"
Tc=5.0 min CN=86 Runoff=26.34 cfs 1.528 af

Subcatchment38S: Post Dev. Bypass 5 Runoff Area=163,726 sf 7.49% Impervious Runoff Depth=3.35"
Tc=12.3 min CN=59 Runoff=16.35 cfs 1.049 af

Subcatchment46S: Post Drainage Area 1 Runoff Area=198.400 ac 20.00% Impervious Runoff Depth=4.38"
Flow Length=4,195' Slope=0.0177 '/' Tc=45.4 min CN=68 Runoff=563.62 cfs 72.391 af

Subcatchment52S: Pre Drainage Area 2 Runoff Area=89.600 ac 12.00% Impervious Runoff Depth=4.03"
Flow Length=3,771' Slope=0.0323 '/' Tc=33.2 min CN=65 Runoff=287.89 cfs 30.107 af

Reach 47R: Flowpath Downstream Avg. Flow Depth=1.39' Max Vel=1.65 fps Inflow=31.74 cfs 2.783 af
n=0.100 L=2,757.0' S=0.0173 '/' Capacity=7.18 cfs Outflow=14.65 cfs 2.783 af

Reach 50R: Flowpath Downstream Avg. Flow Depth=3.77' Max Vel=1.78 fps Inflow=82.21 cfs 6.259 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=48.08 cfs 6.259 af

Reach 51R: Flowpath Downstream Avg. Flow Depth=1.43' Max Vel=2.06 fps Inflow=23.92 cfs 2.290 af
n=0.100 L=1,036.0' S=0.0267 '/' Capacity=8.94 cfs Outflow=18.51 cfs 2.290 af

Pond 30P: Wet Pond SCM 4 Peak Elev=527.19' Storage=60,840 cf Inflow=41.82 cfs 2.514 af
Outflow=21.85 cfs 2.510 af

Pond 31P: Wet Pond SCM 5 Peak Elev=516.66' Storage=32,811 cf Inflow=30.97 cfs 1.699 af
Outflow=14.53 cfs 1.699 af

Pond 39P: Sand Filter SCM 3 Peak Elev=537.36' Storage=30,826 cf Inflow=26.34 cfs 1.528 af
Outflow=14.54 cfs 1.528 af

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Type II 24-hr 100-yr Rainfall=8.17"

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Link 32L: POA 5

Inflow=45.34 cfs 4.214 af

Primary=45.34 cfs 4.214 af

Link 33L: POA 6

Inflow=23.92 cfs 2.290 af

Primary=23.92 cfs 2.290 af

Link 40L: POA 4

Inflow=30.11 cfs 2.577 af

Primary=30.11 cfs 2.577 af

Link 53L: Post Dev. POA Downstream of 110 Cedar Hill Dr

Inflow=888.53 cfs 113.829 af

Primary=888.53 cfs 113.829 af

Total Runoff Area = 317.507 ac Runoff Volume = 113.835 af Average Runoff Depth = 4.30"
81.53% Pervious = 258.856 ac 18.47% Impervious = 58.651 ac

Downstream Analysis - ZCP

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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 15S: Post Dev. Basin 6 to SCM

Runoff = 41.82 cfs @ 11.95 hrs, Volume= 2.514 af, Depth= 7.09"
Routed to Pond 30P : Wet Pond SCM 4

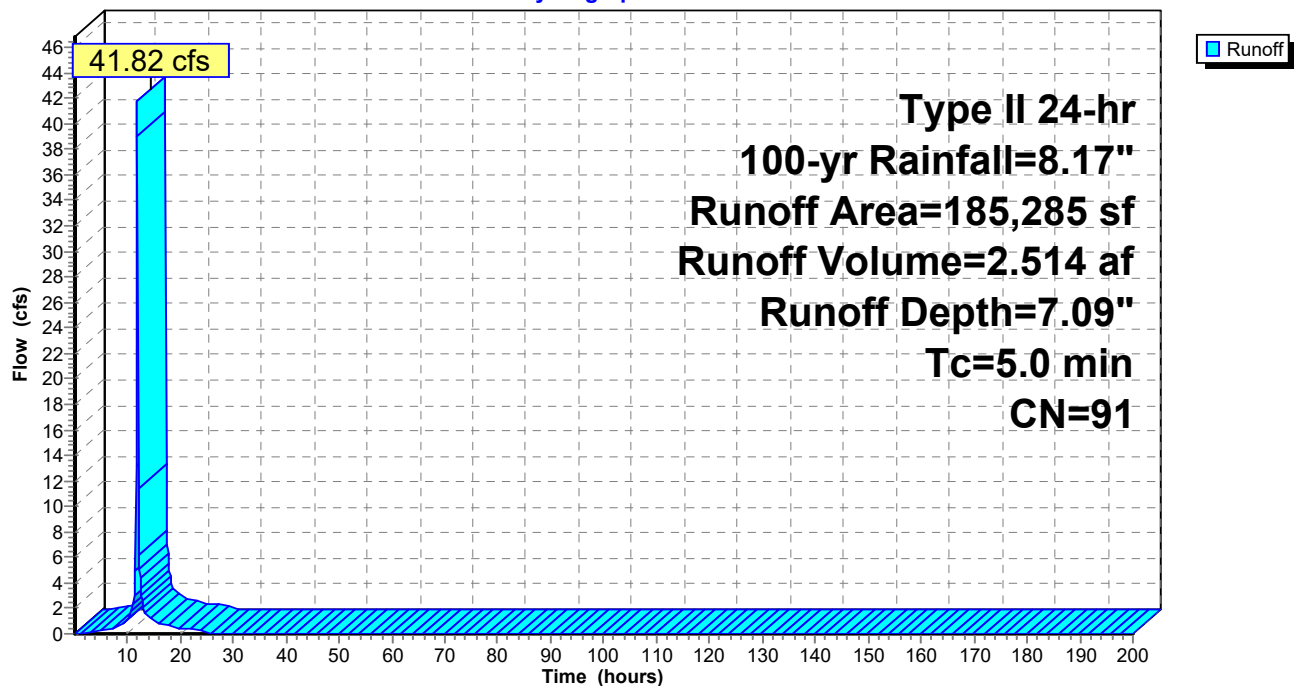
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
76,830	98	Paved parking, HSG B
63,382	98	Roofs, HSG B
30,858	56	Brush, Fair, HSG B
14,215	98	Water Surface, 0% imp, HSG B
185,285	91	Weighted Average
45,073		24.33% Pervious Area
140,212		75.67% Impervious Area

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

Subcatchment 15S: Post Dev. Basin 6 to SCM

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 16S: Post Dev. Bypass 6

Runoff = 32.88 cfs @ 11.96 hrs, Volume= 1.705 af, Depth= 3.46"
Routed to Link 32L : POA 5

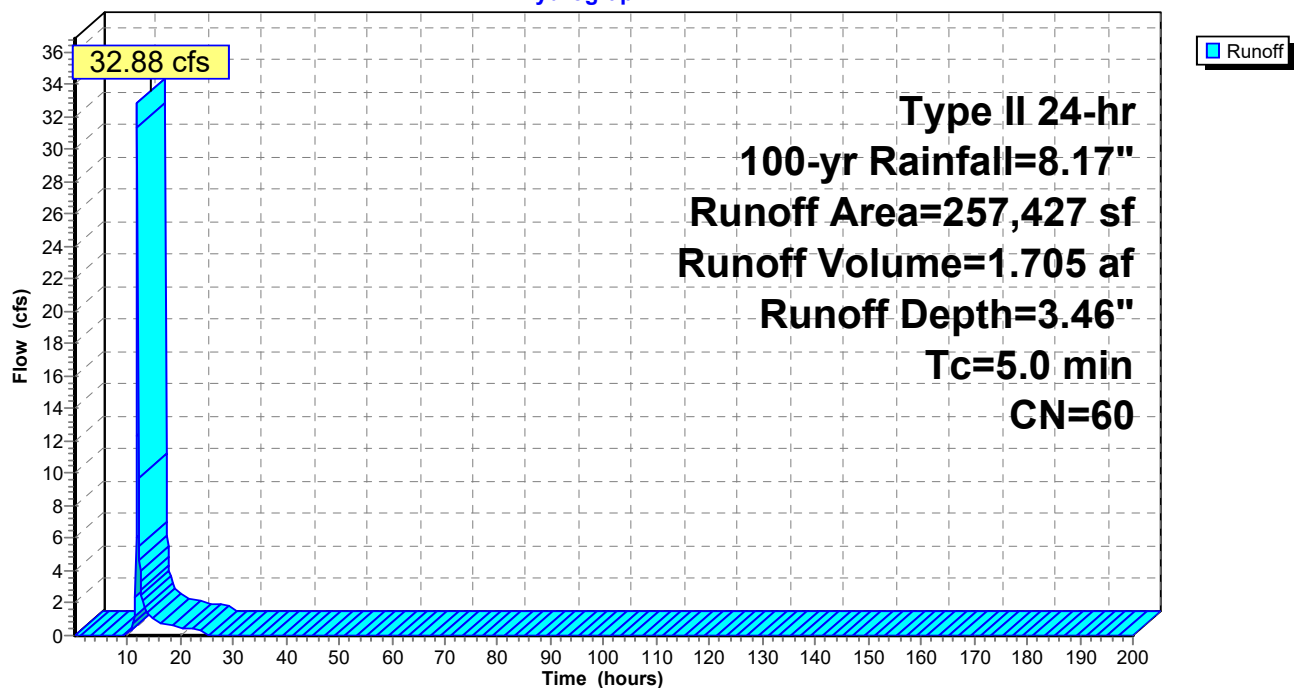
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
4,268	98	Paved parking, HSG B
51,015	56	Brush, Fair, HSG B
202,144	60	Woods, Fair, HSG B
257,427	60	Weighted Average
253,159		98.34% Pervious Area
4,268		1.66% Impervious Area

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

Subcatchment 16S: Post Dev. Bypass 6

Hydrograph



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Summary for Subcatchment 18S: Post Dev. Basin 7 to SCM

Runoff = 30.97 cfs @ 11.95 hrs, Volume= 1.699 af, Depth= 5.90"
Routed to Pond 31P : Wet Pond SCM 5

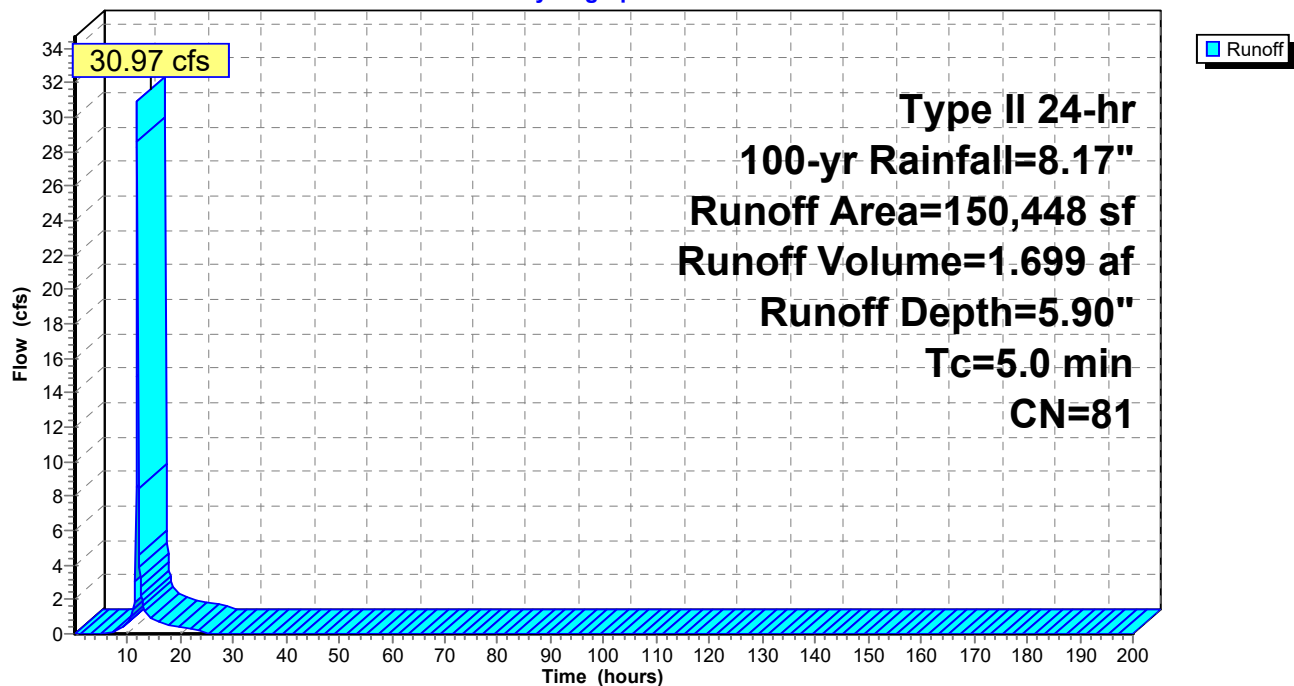
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
53,515	98	Paved parking, HSG B
33,715	98	Roofs, HSG B
59,637	56	Brush, Fair, HSG B
3,581	98	Water Surface, 0% imp, HSG B
150,448	81	Weighted Average
63,218		42.02% Pervious Area
87,230		57.98% Impervious Area

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

Subcatchment 18S: Post Dev. Basin 7 to SCM

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 19S: Post Dev. Bypass 7

Runoff = 10.26 cfs @ 12.01 hrs, Volume= 0.591 af, Depth= 3.57"
Routed to Link 33L : POA 6

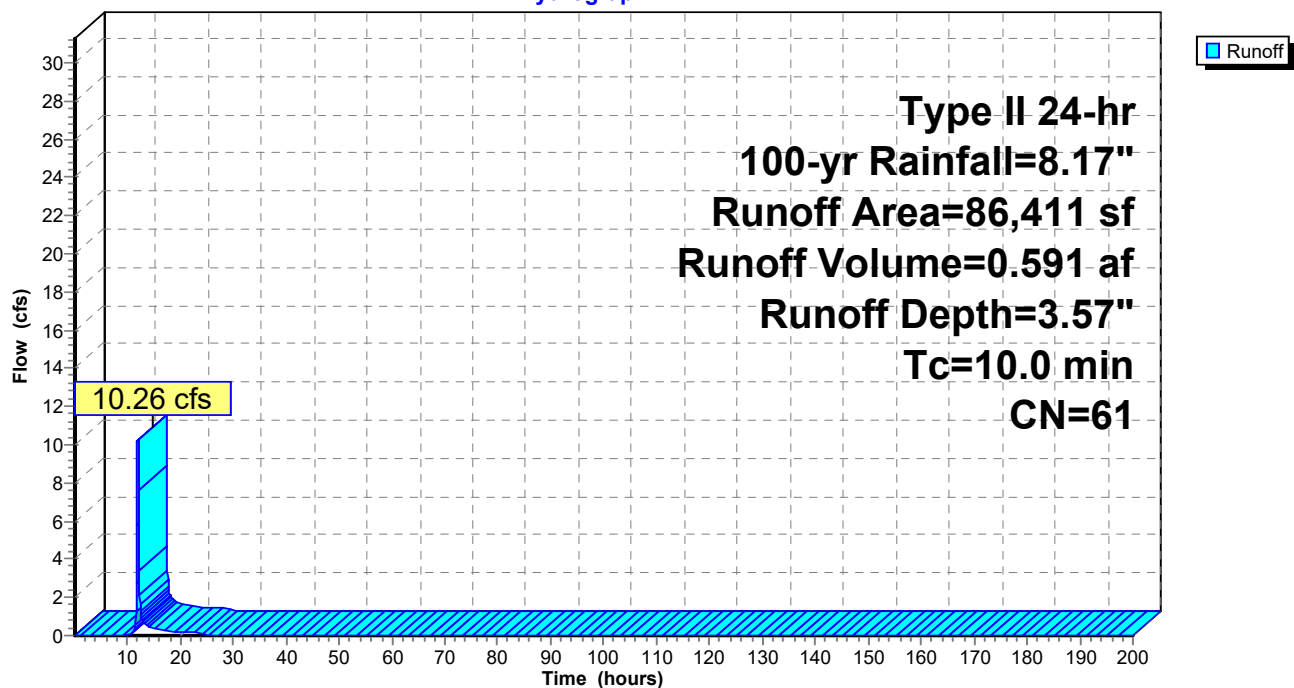
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
11,171	98	Paved parking, HSG B
35,296	56	Brush, Fair, HSG B
39,944	55	Woods, Good, HSG B
86,411	61	Weighted Average
75,240		87.07% Pervious Area
11,171		12.93% Impervious Area

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

Subcatchment 19S: Post Dev. Bypass 7

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 29S: Post Dev. Bypass 8

Runoff = 36.97 cfs @ 12.00 hrs, Volume= 2.045 af, Depth= 3.69"

Routed to Reach 50R : Flowpath Downstream POA 6

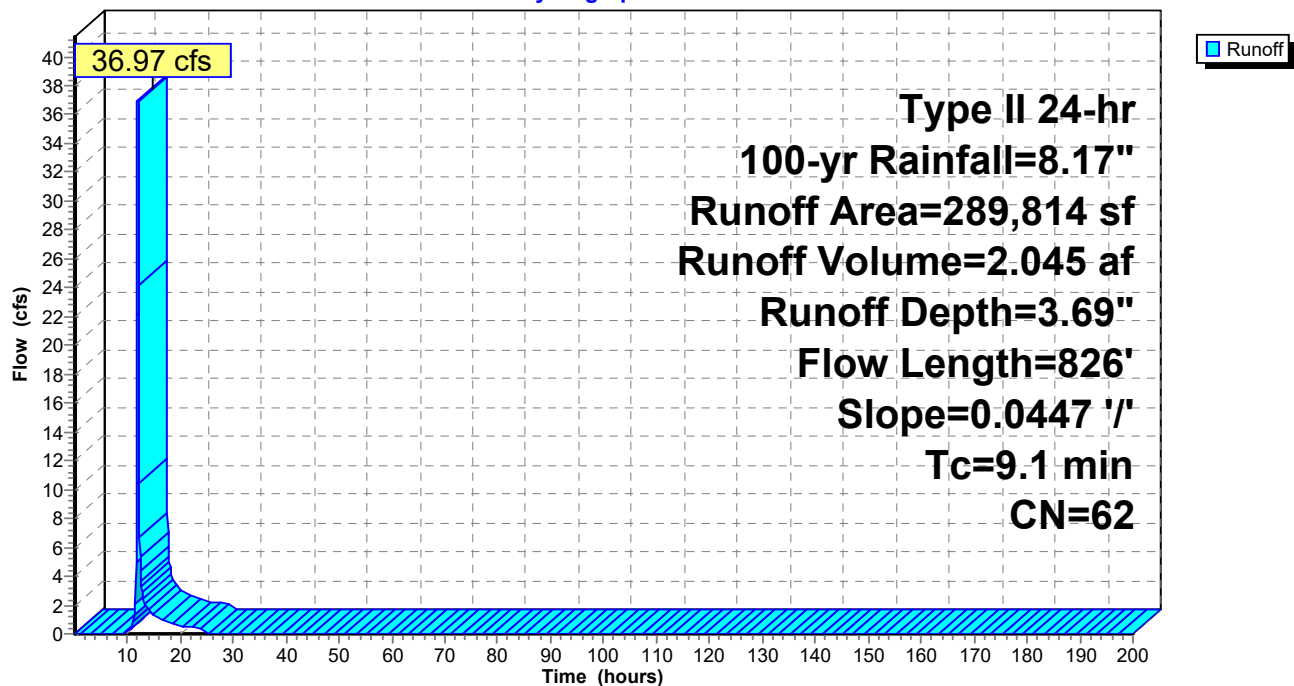
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
53,439	69	50-75% Grass cover, Fair, HSG B
5,416	98	Paved parking, HSG B
289,814	62	Weighted Average
284,398		98.13% Pervious Area
5,416		1.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 29S: Post Dev. Bypass 8

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 36S: Post Dev. Basin 4

Runoff = 3.97 cfs @ 11.96 hrs, Volume= 0.206 af, Depth= 3.69"

Routed to Reach 47R : Flowpath Downstream POA 4

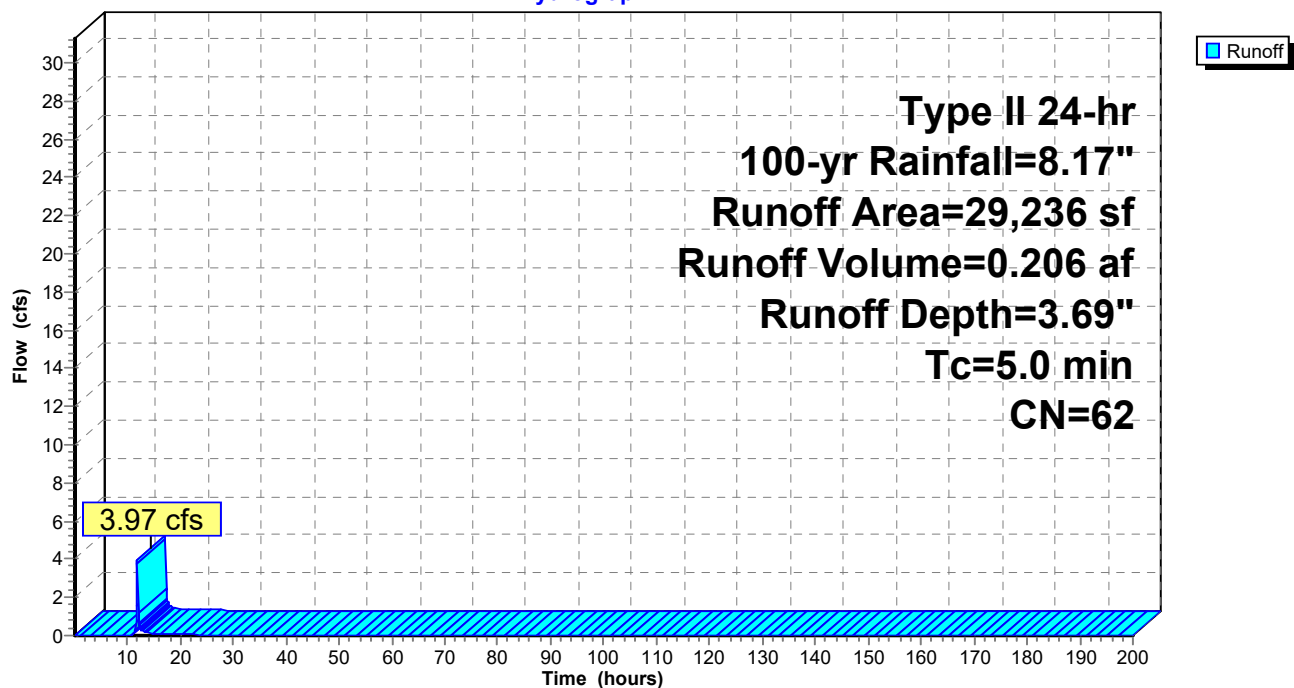
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
6,194	60	Woods, Fair, HSG B
19,589	56	Brush, Fair, HSG B
3,453	98	Paved parking, HSG B
29,236	62	Weighted Average
25,783		88.19% Pervious Area
3,453		11.81% Impervious Area

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

Subcatchment 36S: Post Dev. Basin 4

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 37S: Post Dev. Basin 5 to SCM

Runoff = 26.34 cfs @ 11.95 hrs, Volume= 1.528 af, Depth= 6.50"
Routed to Pond 39P : Sand Filter SCM 3

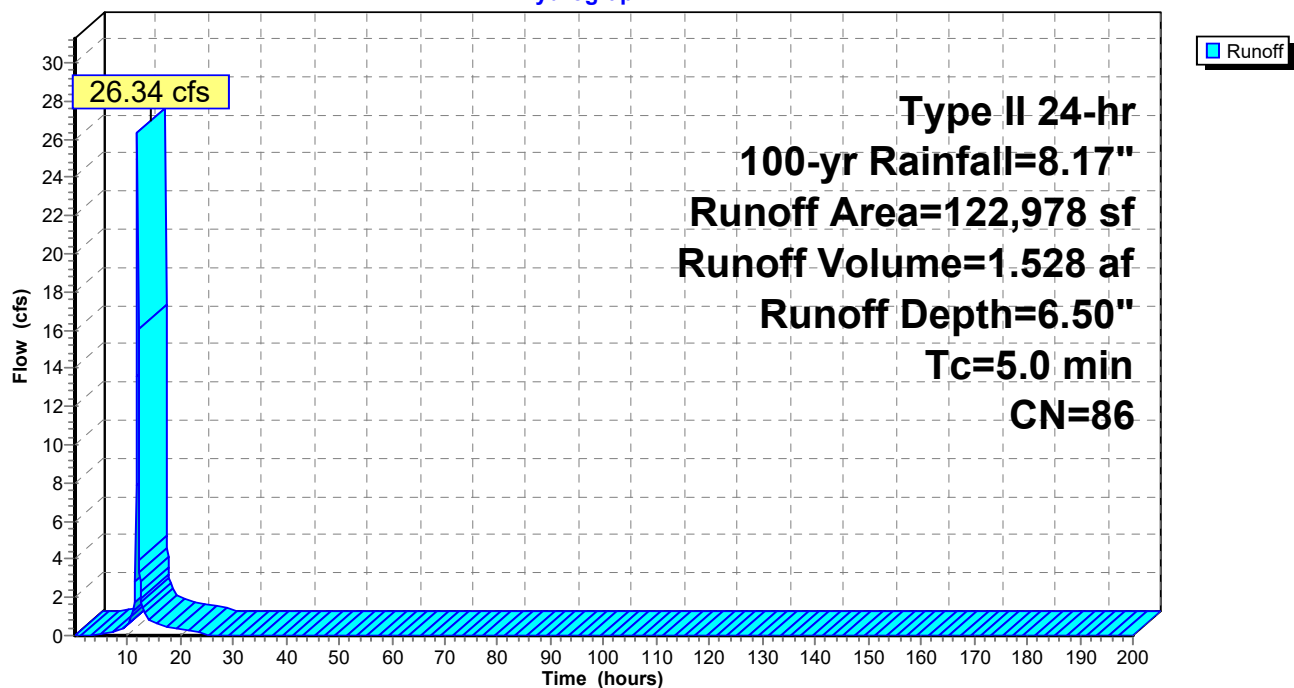
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
54,167	98	Paved parking, HSG B
39,855	98	Roofs, HSG B
28,956	48	Brush, Good, HSG B
122,978	86	Weighted Average
28,956		23.55% Pervious Area
94,022		76.45% Impervious Area

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

Subcatchment 37S: Post Dev. Basin 5 to SCM

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 38S: Post Dev. Bypass 5

Runoff = 16.35 cfs @ 12.05 hrs, Volume= 1.049 af, Depth= 3.35"
Routed to Link 40L : POA 4

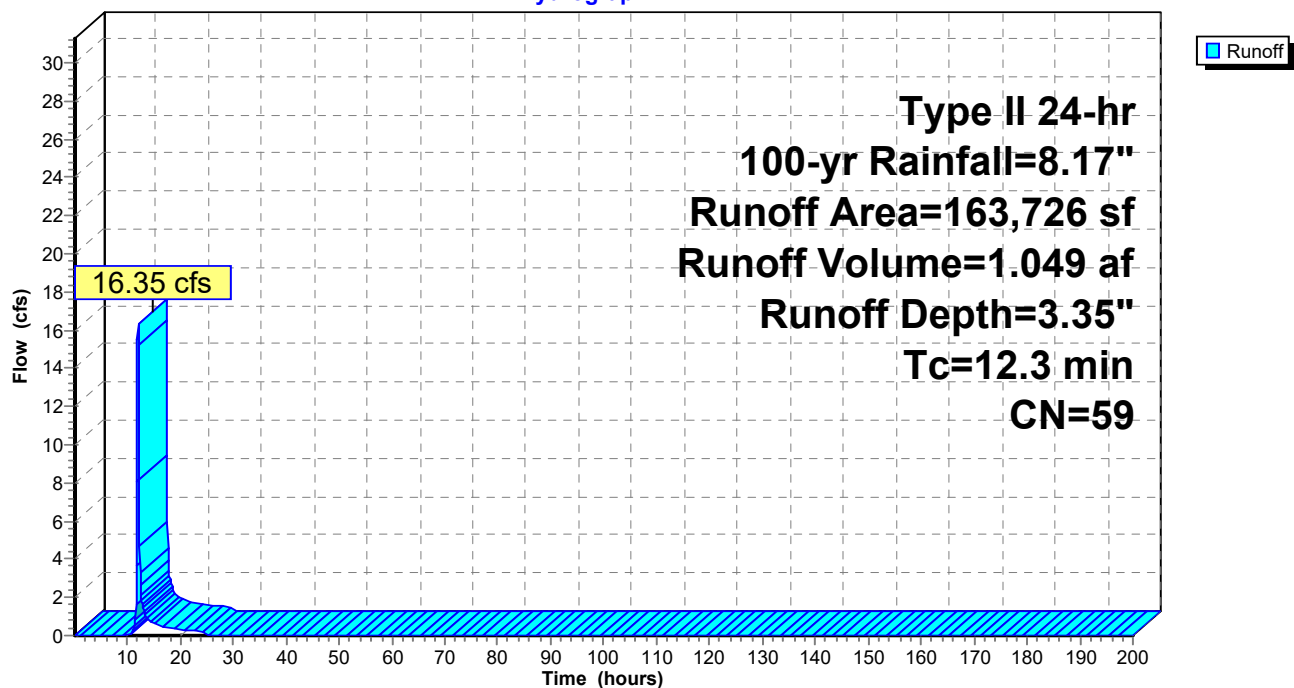
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
12,257	98	Paved parking, HSG B
54,926	48	Brush, Good, HSG B
96,543	60	Woods, Fair, HSG B
163,726	59	Weighted Average
151,469		92.51% Pervious Area
12,257		7.49% Impervious Area

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

Subcatchment 38S: Post Dev. Bypass 5

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 46S: Post Drainage Area 1

Runoff = 563.62 cfs @ 12.44 hrs, Volume= 72.391 af, Depth= 4.38"

Routed to Link 53L : Post Dev. POA Downstream of 110 Cedar Hill Dr

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

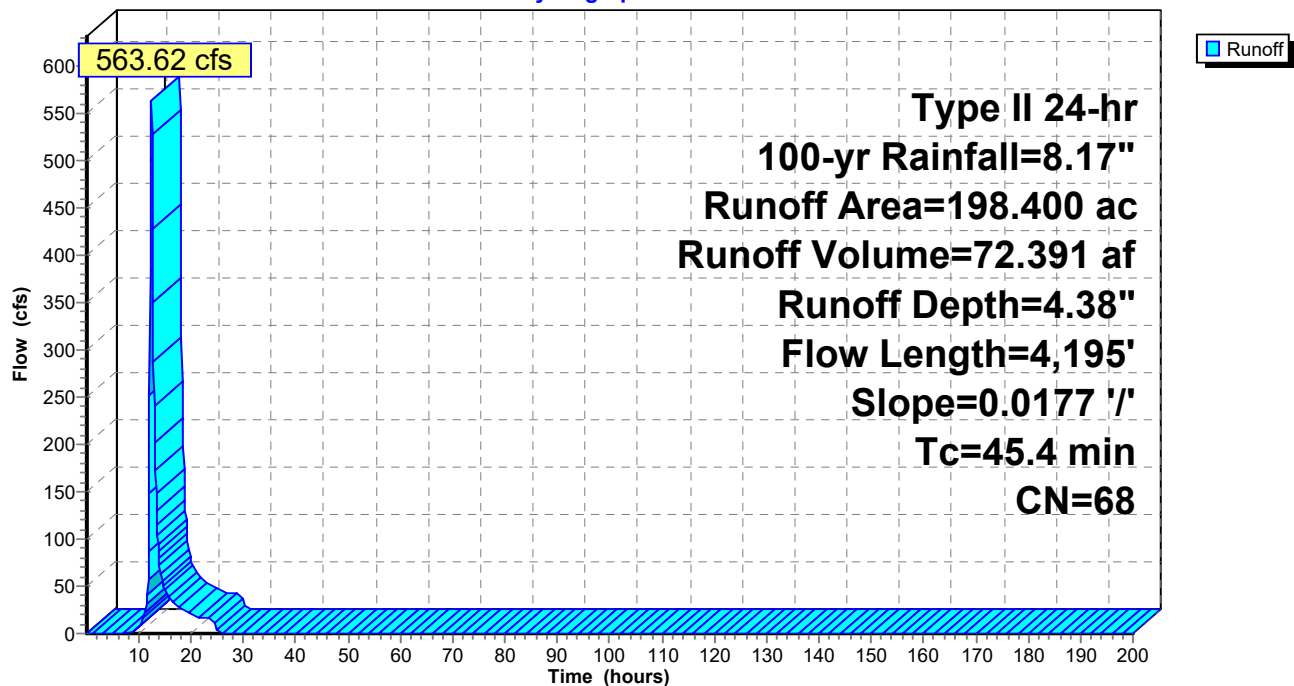
Type II 24-hr 100-yr Rainfall=8.17"

Area (ac)	CN	Description
198.400	68	1 acre lots, 20% imp, HSG B
158.720		80.00% Pervious Area
39.680		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.4	4,195	0.0177	1.54		Kirpich Method, General overland flow k= 2.00

Subcatchment 46S: Post Drainage Area 1

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 52S: Pre Drainage Area 2

Runoff = 287.89 cfs @ 12.30 hrs, Volume= 30.107 af, Depth= 4.03"

Routed to Link 53L : Post Dev. POA Downstream of 110 Cedar Hill Dr

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

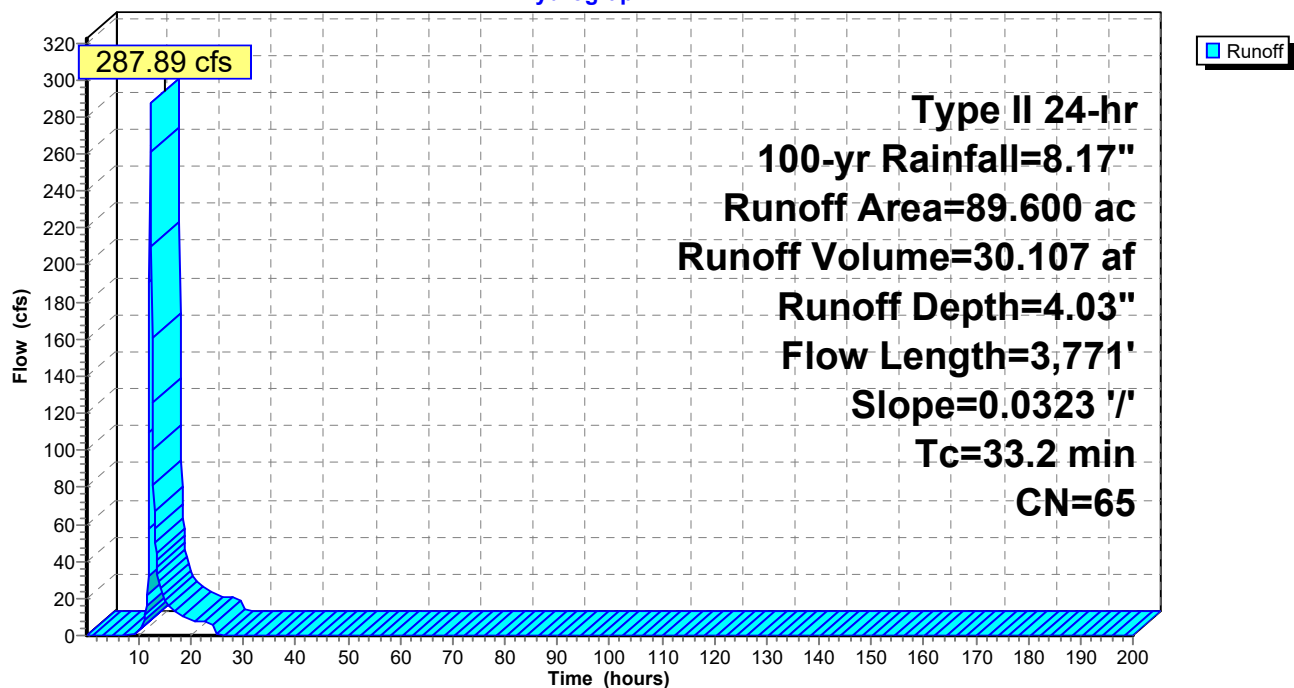
Type II 24-hr 100-yr Rainfall=8.17"

Area (ac)	CN	Description
89.600	65	2 acre lots, 12% imp, HSG B
78.848		88.00% Pervious Area
10.752		12.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.2	3,771	0.0323	1.89		Kirpich Method, General overland flow k= 2.00

Subcatchment 52S: Pre Drainage Area 2

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Reach 47R: Flowpath Downstream POA 4

Inflow Area = 7.253 ac, 34.73% Impervious, Inflow Depth = 4.61" for 100-yr event
Inflow = 31.74 cfs @ 12.07 hrs, Volume= 2.783 af
Outflow = 14.65 cfs @ 12.74 hrs, Volume= 2.783 af, Atten= 54%, Lag= 40.3 min
Routed to Link 53L : Post Dev. POA Downstream of 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.65 fps, Min. Travel Time= 27.9 min

Avg. Velocity= 0.25 fps, Avg. Travel Time= 186.7 min

Peak Storage= 24,403 cf @ 12.26 hrs

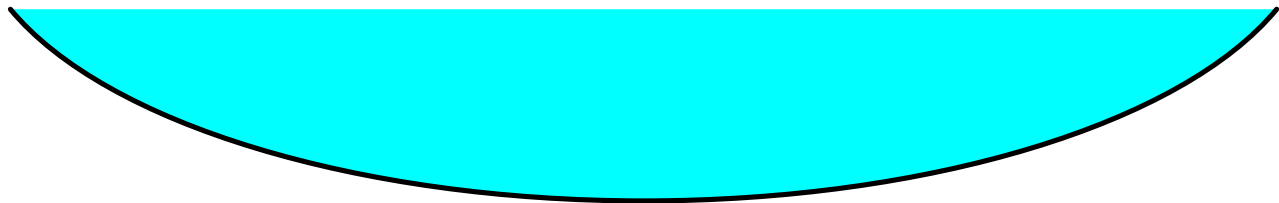
Average Depth at Peak Storage= 1.39' , Surface Width= 9.99'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 7.18 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

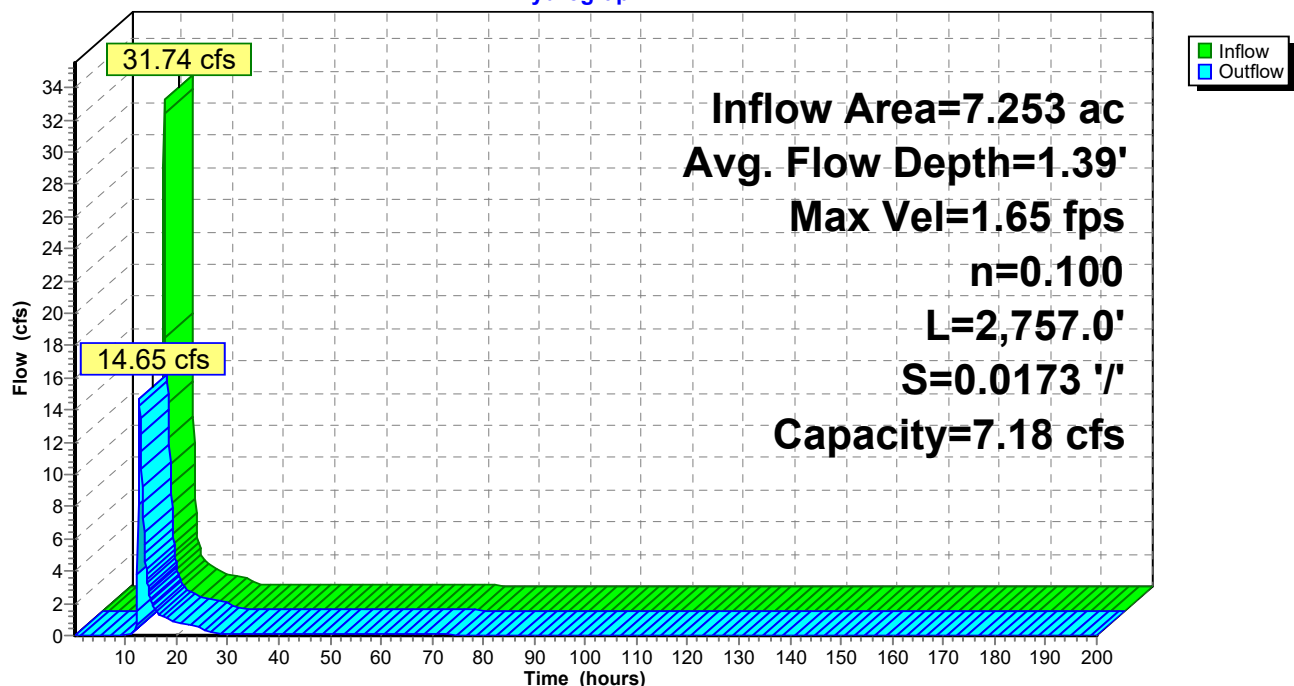
Length= 2,757.0' Slope= 0.0173 '/'

Inlet Invert= 529.84', Outlet Invert= 482.25'



Reach 47R: Flowpath Downstream POA 4

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Reach 50R: Flowpath Downstream POA 6

Inflow Area = 16.816 ac, 20.46% Impervious, Inflow Depth = 4.47" for 100-yr event
Inflow = 82.21 cfs @ 12.00 hrs, Volume= 6.259 af
Outflow = 48.08 cfs @ 12.38 hrs, Volume= 6.259 af, Atten= 42%, Lag= 22.8 min
Routed to Link 53L : Post Dev. POA Downstream of 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.78 fps, Min. Travel Time= 14.2 min

Avg. Velocity= 0.33 fps, Avg. Travel Time= 76.6 min

Peak Storage= 42,639 cf @ 12.13 hrs

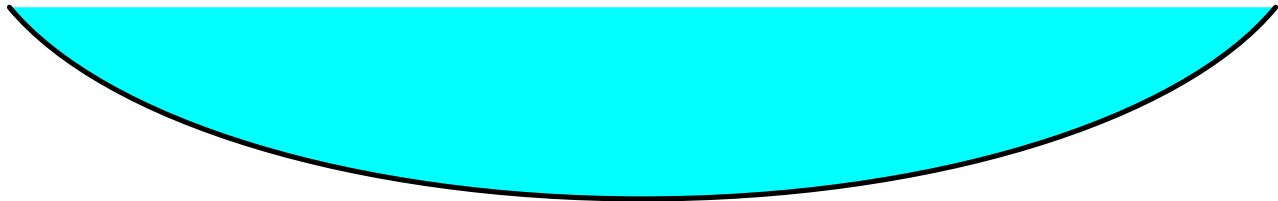
Average Depth at Peak Storage= 3.77' , Surface Width= 16.41'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

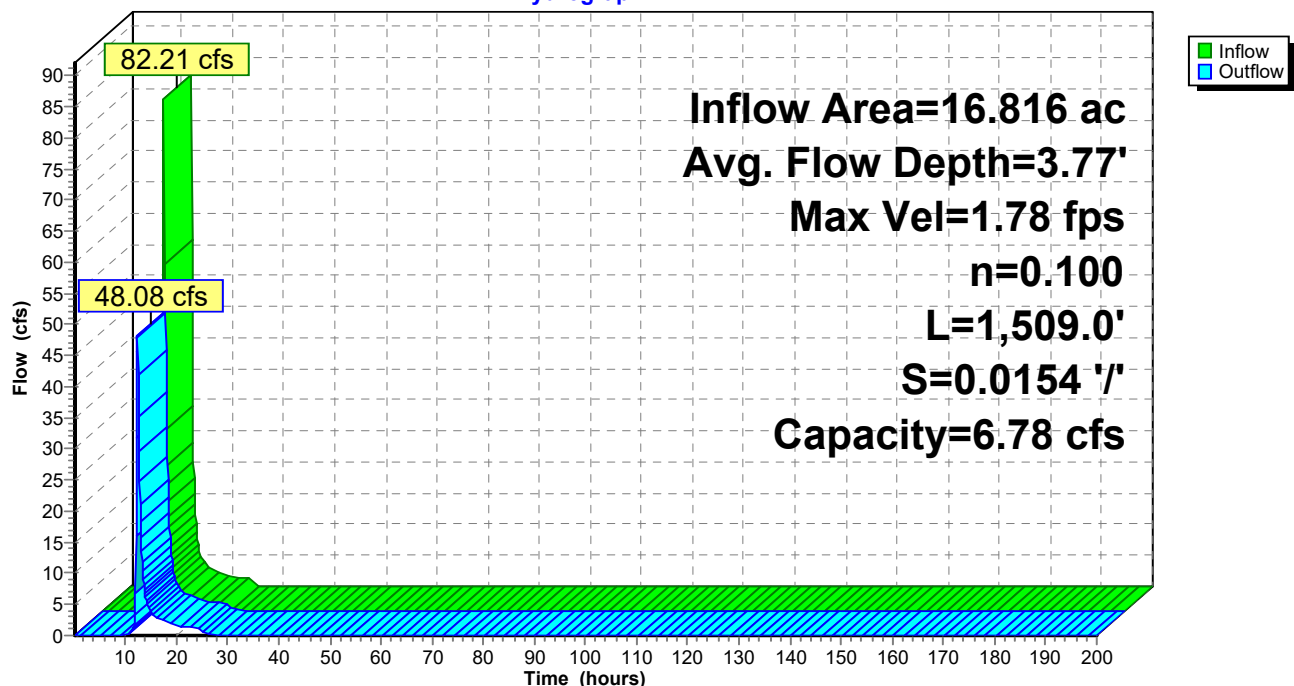
Length= 1,509.0' Slope= 0.0154 '/'

Inlet Invert= 505.43', Outlet Invert= 482.25'



Reach 50R: Flowpath Downstream POA 6

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Reach 51R: Flowpath Downstream POA 5

Inflow Area = 5.438 ac, 41.54% Impervious, Inflow Depth = 5.05" for 100-yr event
Inflow = 23.92 cfs @ 12.04 hrs, Volume= 2.290 af
Outflow = 18.51 cfs @ 12.31 hrs, Volume= 2.290 af, Atten= 23%, Lag= 16.3 min
Routed to Link 53L : Post Dev. POA Downstream of 110 Cedar Hill Dr

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 2.06 fps, Min. Travel Time= 8.4 min

Avg. Velocity= 0.29 fps, Avg. Travel Time= 58.8 min

Peak Storage= 9,461 cf @ 12.16 hrs

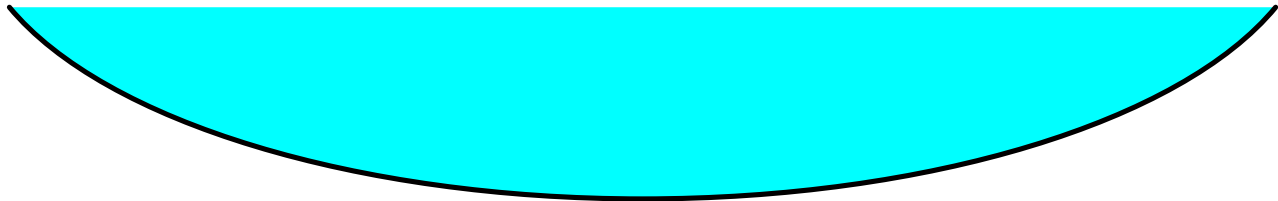
Average Depth at Peak Storage= 1.43' , Surface Width= 10.11'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 8.94 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

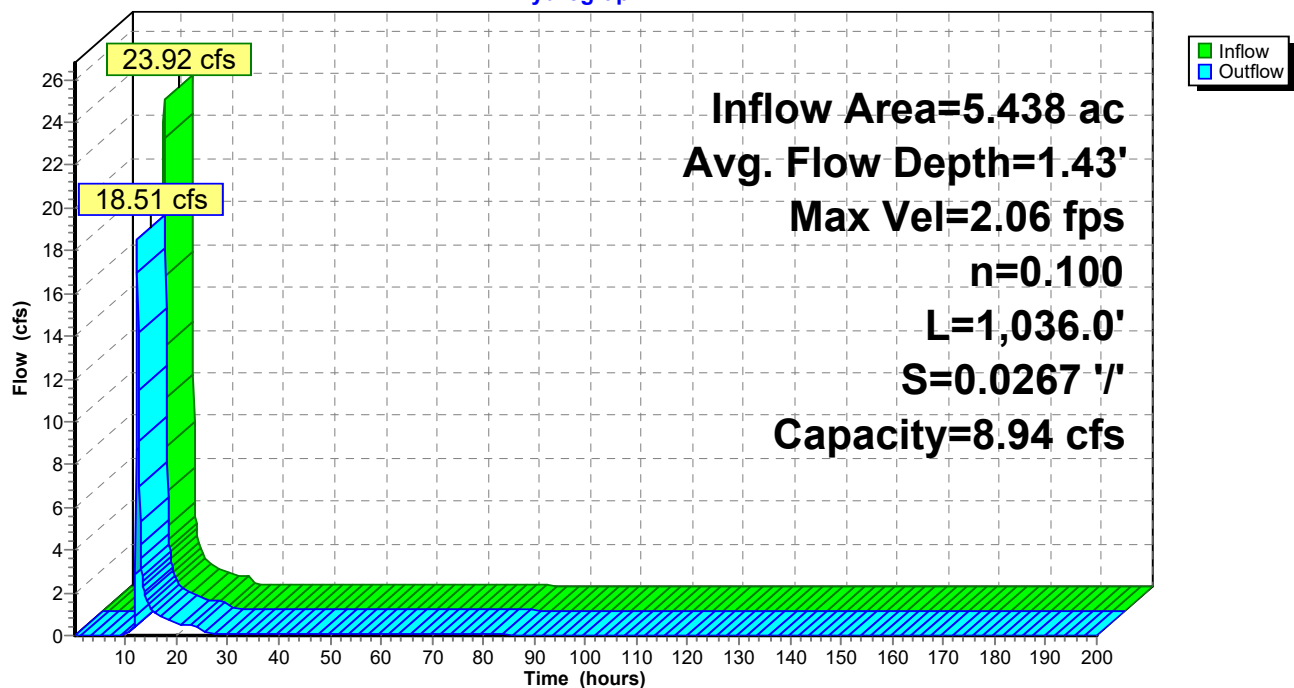
Length= 1,036.0' Slope= 0.0267 '/'

Inlet Invert= 509.93', Outlet Invert= 482.25'



Reach 51R: Flowpath Downstream POA 5

Hydrograph



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Summary for Pond 30P: Wet Pond SCM 4

Inflow Area = 4.254 ac, 75.67% Impervious, Inflow Depth = 7.09" for 100-yr event
Inflow = 41.82 cfs @ 11.95 hrs, Volume= 2.514 af
Outflow = 21.85 cfs @ 12.10 hrs, Volume= 2.510 af, Atten= 48%, Lag= 9.1 min
Primary = 21.85 cfs @ 12.10 hrs, Volume= 2.510 af
Routed to Link 32L : POA 5

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Starting Elev= 522.00' Surf.Area= 7,056 sf Storage= 6,623 cf

Peak Elev= 527.19' @ 12.10 hrs Surf.Area= 12,441 sf Storage= 60,840 cf (54,217 cf above start)

Plug-Flow detention time= 1,395.3 min calculated for 2.357 af (94% of inflow)

Center-of-Mass det. time= 1,272.0 min (2,039.5 - 767.5)

Volume	Invert	Avail.Storage	Storage Description
#1	521.00'	71,189 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
521.00	6,190	0	0
522.00	7,056	6,623	6,623
522.50	8,333	3,847	10,470
523.00	9,531	4,466	14,936
524.00	10,198	9,865	24,801
525.00	10,883	10,541	35,341
526.00	11,584	11,234	46,575
527.00	12,303	11,944	58,518
528.00	13,038	12,671	71,189

Device	Routing	Invert	Outlet Devices
#1	Primary	522.00'	36.0" Round Culvert L= 45.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 522.00' / 521.50' S= 0.0111 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf
#2	Device 1	522.00'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	525.40'	40.0" W x 4.0" H Vert. Peakflow Orifice X 2.00 C= 0.600 Limited to weir flow at low heads
#4	Device 1	526.90'	48.0" x 48.0" Horiz. Overflow C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=21.54 cfs @ 12.10 hrs HW=527.18' (Free Discharge)

1=Culvert (Passes 21.54 cfs of 65.30 cfs potential flow)
2=Drawdown (Orifice Controls 0.13 cfs @ 10.89 fps)
3=Peakflow Orifice (Orifice Controls 13.59 cfs @ 6.12 fps)
4=Overflow (Weir Controls 7.81 cfs @ 1.73 fps)

Downstream Analysis - ZCP

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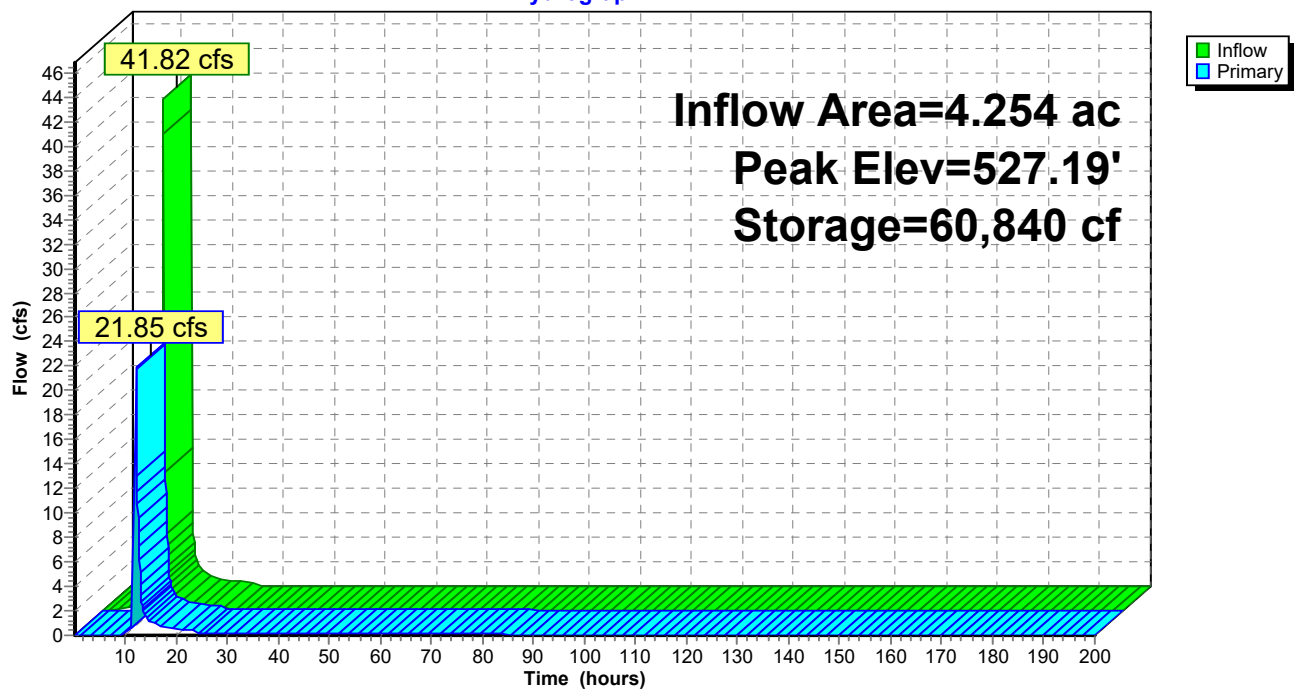
Type II 24-hr 100-yr Rainfall=8.17"

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Pond 30P: Wet Pond SCM 4

Hydrograph



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Summary for Pond 31P: Wet Pond SCM 5

Inflow Area = 3.454 ac, 57.98% Impervious, Inflow Depth = 5.90" for 100-yr event
Inflow = 30.97 cfs @ 11.95 hrs, Volume= 1.699 af
Outflow = 14.53 cfs @ 12.09 hrs, Volume= 1.699 af, Atten= 53%, Lag= 8.6 min
Primary = 14.53 cfs @ 12.09 hrs, Volume= 1.699 af
Routed to Link 33L : POA 6

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Starting Elev= 510.50' Surf.Area= 3,231 sf Storage= 1,401 cf
Peak Elev= 516.66' @ 12.09 hrs Surf.Area= 6,564 sf Storage= 32,811 cf (31,411 cf above start)

Plug-Flow detention time= 708.7 min calculated for 1.666 af (98% of inflow)
Center-of-Mass det. time= 683.6 min (1,479.3 - 795.7)

Volume	Invert	Avail.Storage	Storage Description
#1	510.00'	42,078 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
510.00	2,371	0	0
510.50	3,231	1,401	1,401
511.00	3,997	1,807	3,208
512.00	4,407	4,202	7,410
513.00	4,836	4,622	12,031
514.00	5,284	5,060	17,091
515.00	5,749	5,517	22,608
516.00	6,233	5,991	28,599
517.00	6,735	6,484	35,083
518.00	7,255	6,995	42,078

Device	Routing	Invert	Outlet Devices
#1	Primary	510.50'	36.0" Round Culvert L= 79.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 510.50' / 510.00' S= 0.0063 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 7.07 sf
#2	Device 1	510.50'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	514.70'	34.0" W x 4.5" H Vert. Peakflow Orifice X 2.00 C= 0.600 Limited to weir flow at low heads
#4	Device 1	516.60'	48.0" x 48.0" Horiz. Overflow C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=14.13 cfs @ 12.09 hrs HW=516.64' (Free Discharge)

1=Culvert (Passes 14.13 cfs of 73.32 cfs potential flow)
2=Drawdown (Orifice Controls 0.15 cfs @ 11.87 fps)
3=Peakflow Orifice (Orifice Controls 13.54 cfs @ 6.37 fps)
4=Overflow (Weir Controls 0.44 cfs @ 0.66 fps)

Downstream Analysis - ZCP

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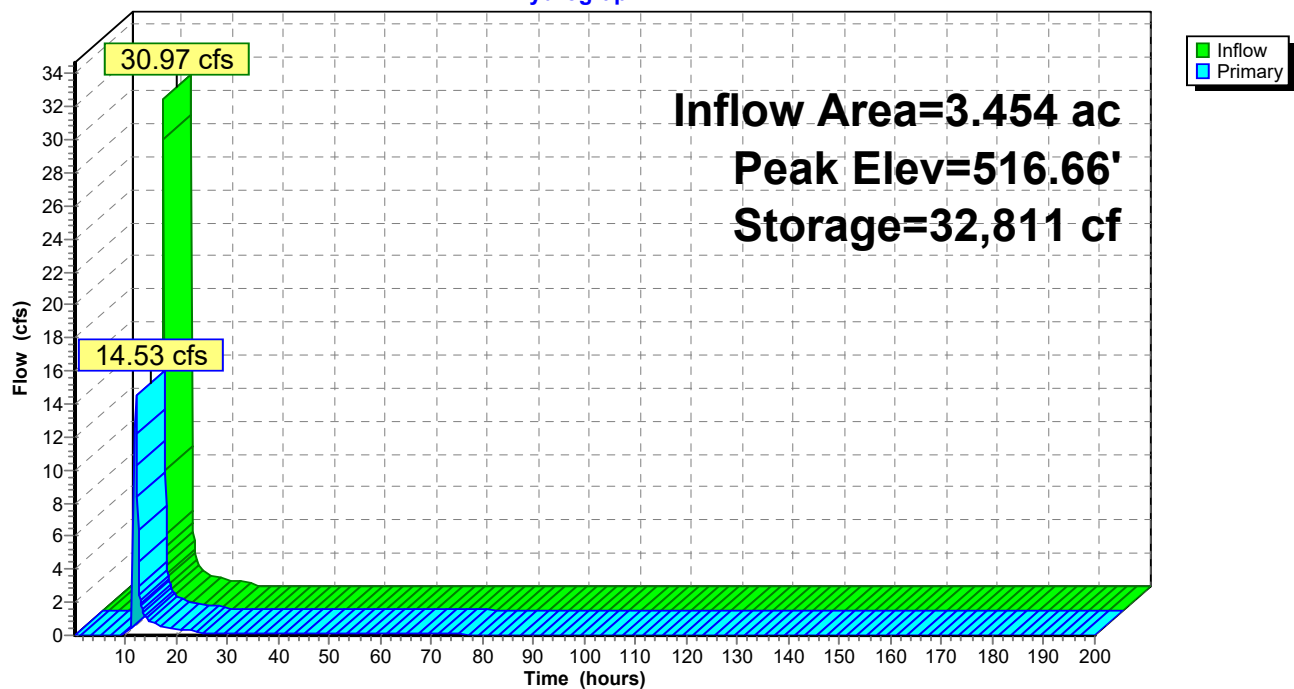
Type II 24-hr 100-yr Rainfall=8.17"

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Pond 31P: Wet Pond SCM 5

Hydrograph



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Summary for Pond 39P: Sand Filter SCM 3

Inflow Area = 2.823 ac, 76.45% Impervious, Inflow Depth = 6.50" for 100-yr event
Inflow = 26.34 cfs @ 11.95 hrs, Volume= 1.528 af
Outflow = 14.54 cfs @ 12.10 hrs, Volume= 1.528 af, Atten= 45%, Lag= 9.1 min
Primary = 14.54 cfs @ 12.10 hrs, Volume= 1.528 af
Routed to Link 40L : POA 4

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Peak Elev= 537.36' @ 12.09 hrs Surf.Area= 4,515 sf Storage= 30,826 cf

Plug-Flow detention time= 692.1 min calculated for 1.528 af (100% of inflow)
Center-of-Mass det. time= 694.8 min (1,477.7 - 782.9)

Volume	Invert	Avail.Storage	Storage Description
#1	530.00'	16,905 cf	Sediment/Sand Chamber (Prismatic) Listed below (Recalc) x 23
#2	530.00'	16,800 cf	Storage (Prismatic) Listed below (Recalc) x 20
		33,705 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
530.00	105	0.0	0	0
532.00	105	50.0	105	105
538.00	105	100.0	630	735

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
530.00	105	0	0
538.00	105	840	840

Device	Routing	Invert	Outlet Devices
#1	Primary	530.00'	36.0" Round Culvert L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 530.00' / 529.00' S= 0.0200 ' / Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf
#2	Device 1	530.00'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	534.70'	34.0" W x 5.0" H Vert. Main Orifice C= 0.600 Limited to weir flow at low heads
#4	Device 1	537.20'	25.0' long Overflow 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=14.39 cfs @ 12.10 hrs HW=537.36' (Free Discharge)

- 1=Culvert (Passes 14.39 cfs of 82.38 cfs potential flow)
- 2=Drawdown (Orifice Controls 0.16 cfs @ 13.01 fps)
- 3=Main Orifice (Orifice Controls 8.89 cfs @ 7.53 fps)
- 4=Overflow (Weir Controls 5.33 cfs @ 1.35 fps)

Downstream Analysis - ZCP

Prepared by Thomas & Hutton

HydroCAD® 10.20-7a s/n 02108 © 2025 HydroCAD Software Solutions LLC

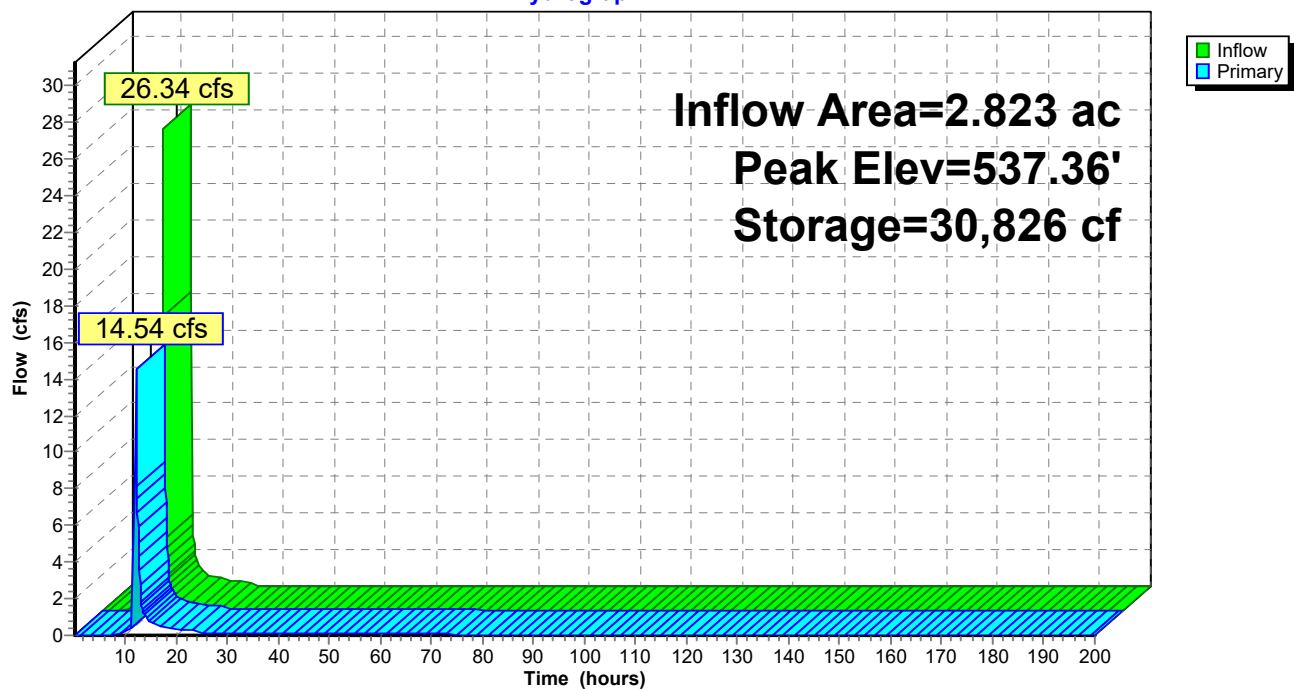
Type II 24-hr 100-yr Rainfall=8.17"

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Pond 39P: Sand Filter SCM 3

Hydrograph



Downstream Analysis - ZCP

Prepared by Thomas & Hutton

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Type II 24-hr 100-yr Rainfall=8.17"

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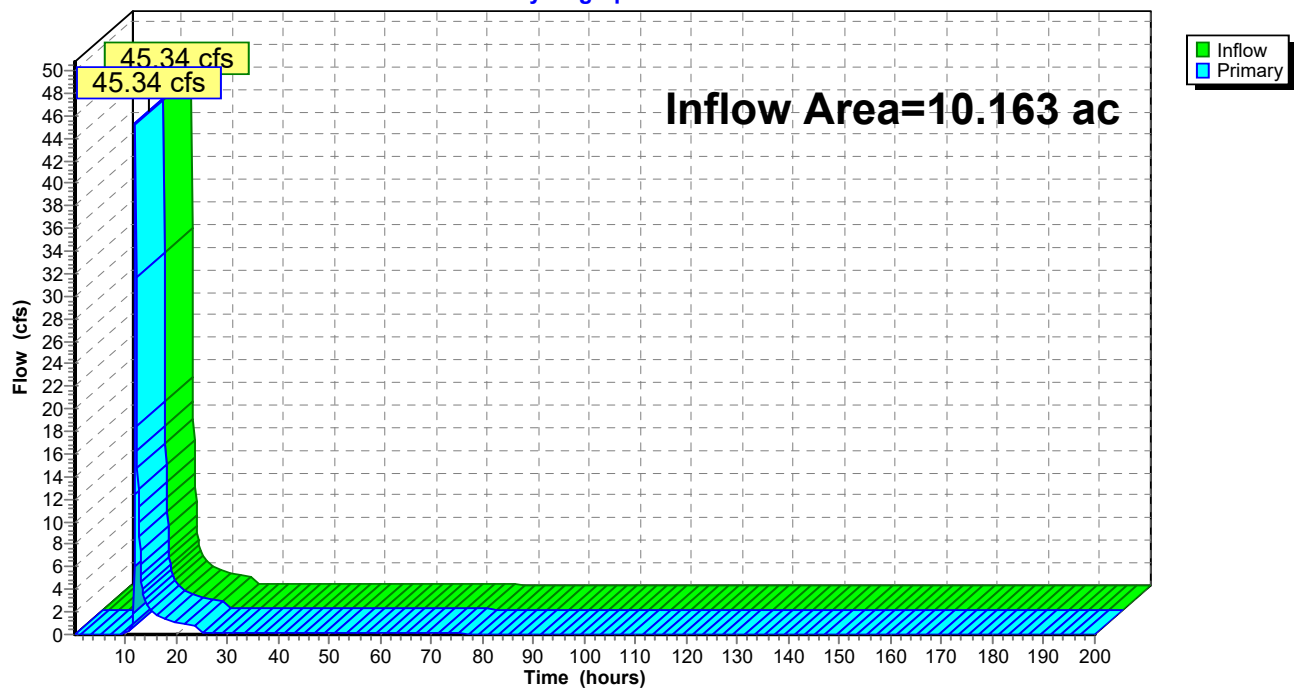
Summary for Link 32L: POA 5

Inflow Area = 10.163 ac, 32.64% Impervious, Inflow Depth = 4.98" for 100-yr event
Inflow = 45.34 cfs @ 11.99 hrs, Volume= 4.214 af
Primary = 45.34 cfs @ 11.99 hrs, Volume= 4.214 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 50R : Flowpath Downstream POA 6

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 32L: POA 5

Hydrograph



Downstream Analysis - ZCP

Prepared by Thomas & Hutton

HydroCAD® 10.20-7a s/n 02108 © 2025 HydroCAD Software Solutions LLC

Type II 24-hr 100-yr Rainfall=8.17"

Printed 10/7/2025

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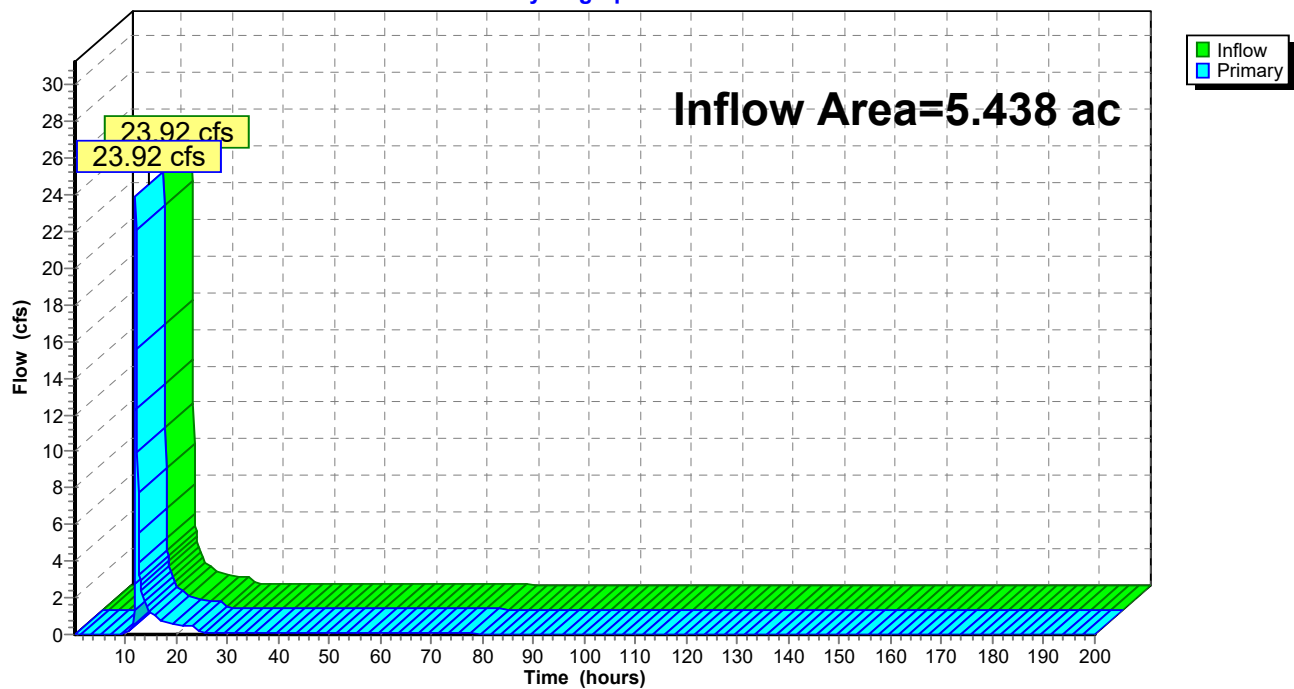
Summary for Link 33L: POA 6

Inflow Area = 5.438 ac, 41.54% Impervious, Inflow Depth = 5.05" for 100-yr event
Inflow = 23.92 cfs @ 12.04 hrs, Volume= 2.290 af
Primary = 23.92 cfs @ 12.04 hrs, Volume= 2.290 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 51R : Flowpath Downstream POA 5

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 33L: POA 6

Hydrograph



Downstream Analysis - ZCP

Prepared by Thomas & Hutton

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Type II 24-hr 100-yr Rainfall=8.17"

Printed 10/7/2025

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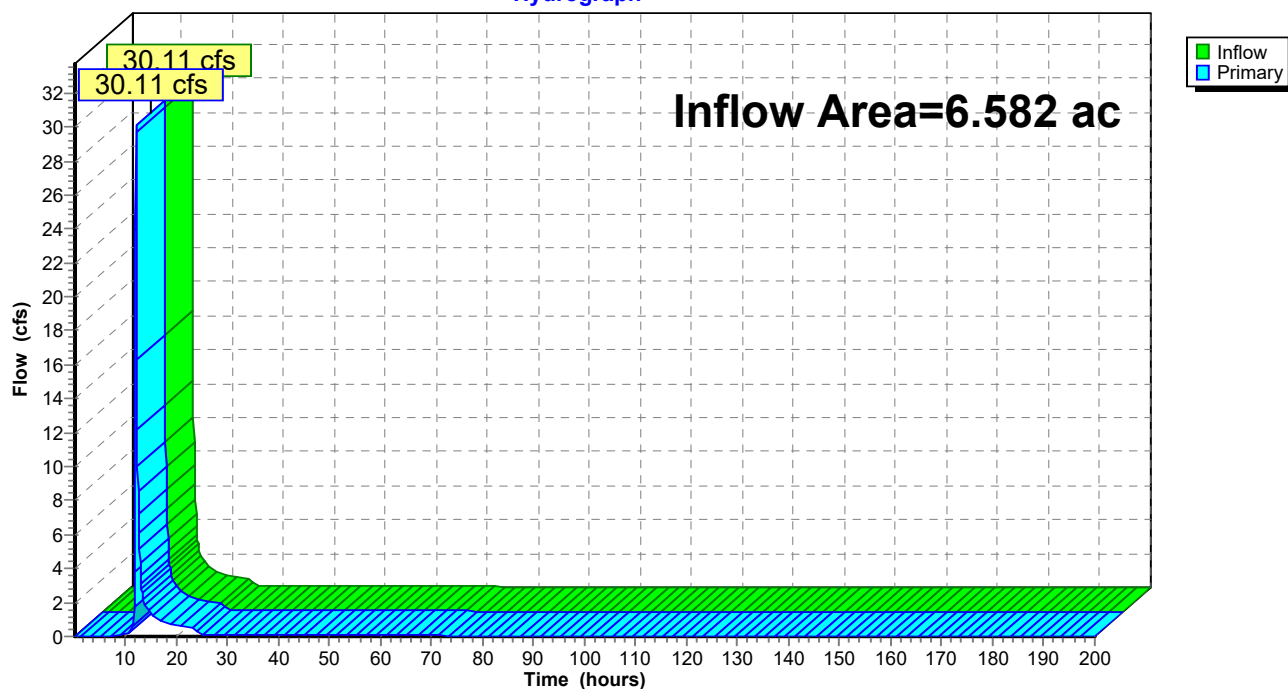
Summary for Link 40L: POA 4

Inflow Area = 6.582 ac, 37.07% Impervious, Inflow Depth = 4.70" for 100-yr event
Inflow = 30.11 cfs @ 12.08 hrs, Volume= 2.577 af
Primary = 30.11 cfs @ 12.08 hrs, Volume= 2.577 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 47R : Flowpath Downstream POA 4

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 40L: POA 4

Hydrograph



Downstream Analysis - ZCP

Prepared by Thomas & Hutton

HydroCAD® 10.20-7a s/n 02108 © 2025 HydroCAD Software Solutions LLC

Type II 24-hr 100-yr Rainfall=8.17"

Printed 10/7/2025

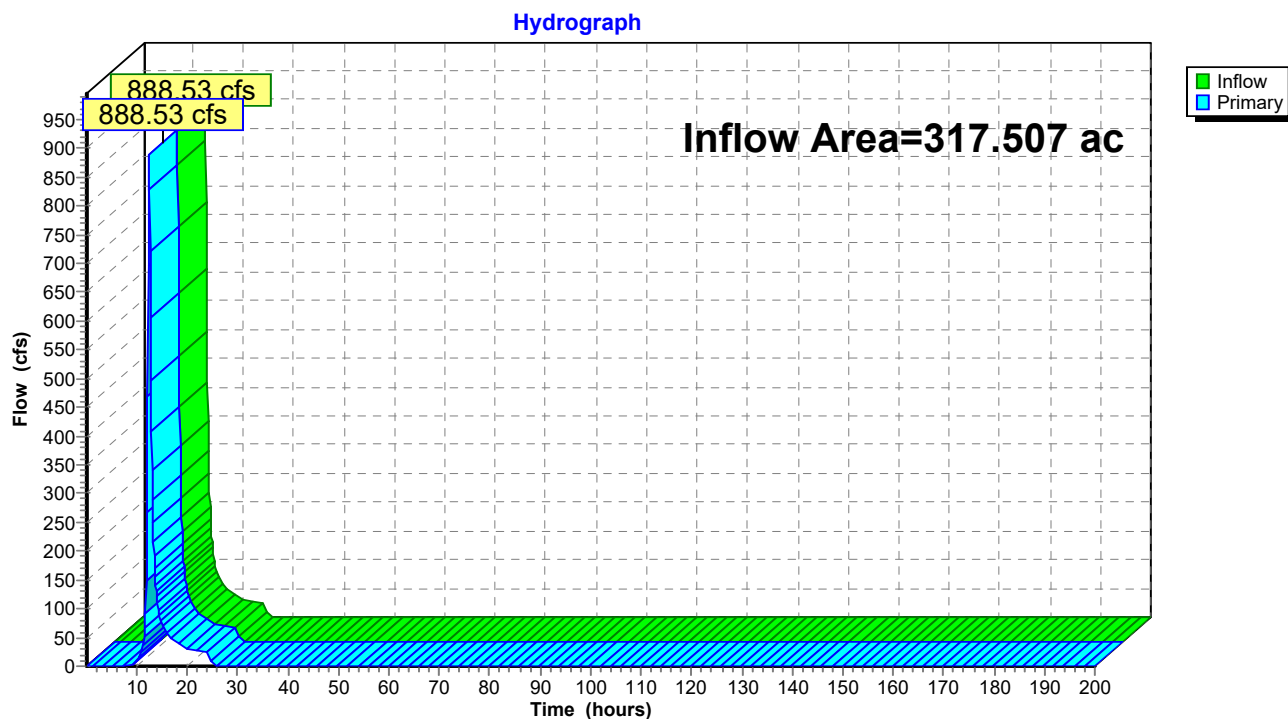
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Summary for Link 53L: Post Dev. POA Downstream of 110 Cedar Hill Dr

Inflow Area = 317.507 ac, 18.47% Impervious, Inflow Depth = 4.30" for 100-yr event
Inflow = 888.53 cfs @ 12.39 hrs, Volume= 113.829 af
Primary = 888.53 cfs @ 12.39 hrs, Volume= 113.829 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 53L: Post Dev. POA Downstream of 110 Cedar Hill Dr



10. STREAMSTATS REPORT & ELEVATION PROFILES

StreamStats Report

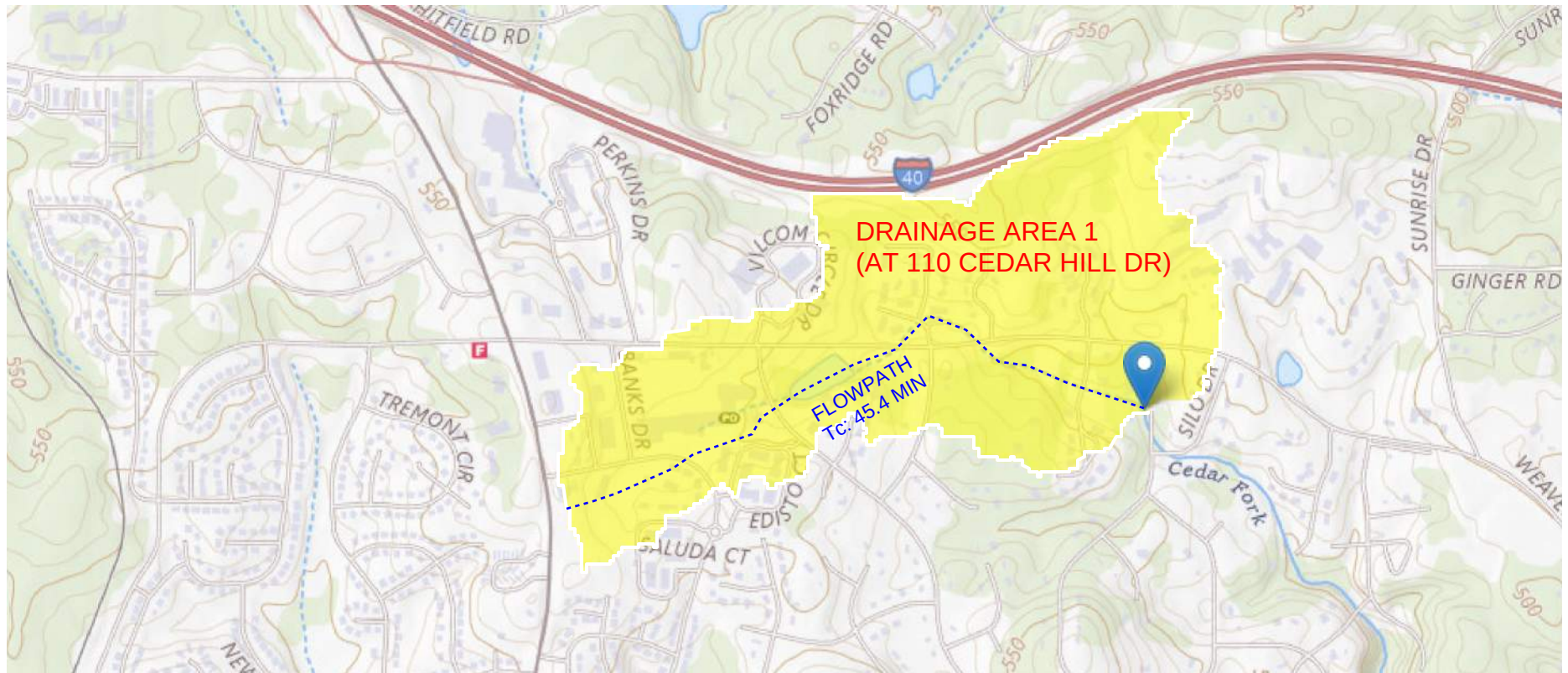
Region ID: NC

Workspace ID: NC20251006130824262000

Clicked Point (Latitude, Longitude): 35.96250, -79.04212

NHD Stream GNIS Name of Click Point:  Cedar Fork

Time: 2025-10-06 09:08:46 -0400



➤ Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.31	square miles
LC06IMP	Percentage of impervious area determined from NLCD 2006 impervious dataset	22.05	percent
PCTREG1	Percentage of drainage area located in Region 1 - Piedmont / Ridge and Valley	100	percent
PCTREG2	Percentage of drainage area located in Region 2 - Blue Ridge	0	percent
PCTREG3	Percentage of drainage area located in Region 3 - Sandhills	0	percent
PCTREG4	Percentage of drainage area located in Region 4 - Coastal Plains	0	percent
PCTREG5	Percentage of drainage area located in Region 5 - Lower Tifton Uplands	0	percent

➤ Peak-Flow Statistics

Peak-Flow Statistics Parameters [Region 1 Piedmont rural under 1 sqmi 2014 5030]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.31	square miles	0.1	1
LC06IMP	Percent Impervious NLCD2006	22.05	percent	0	47.9

Peak-Flow Statistics Parameters [Peak Southeast US NC 2023 5006]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.31	square miles	0.08	8902
PCTREG1	Percent Area in Region 1 - Piedmont / Ridge and Valley	100	percent	0	100

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
PCTREG2	Percent Area in Region 2 - Blue Ridge	0	percent	0	100
PCTREG3	Percent Area in Region 3 - Sandhills	0	percent	0	100
PCTREG4	Percent Area in Region 4 - Coastal Plains	0	percent	0	100
PCTREG5	Percent Area in Region 5 - Lower Tifton Uplands	0	percent	0	100

Peak-Flow Statistics Flow Report [Region 1 Piedmont rural under 1 sqmi 2014 5030]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	PIL	PIU	ASEp
50-percent AEP flood	140	ft^3/s	75.3	260	31.9
20-percent AEP flood	195	ft^3/s	118	322	25.4
10-percent AEP flood	232	ft^3/s	143	375	25
4-percent AEP flood	273	ft^3/s	161	462	27
2-percent AEP flood	302	ft^3/s	171	533	29.3
1-percent AEP flood	332	ft^3/s	178	621	32.1
0.5-percent AEP flood	359	ft^3/s	182	708	35.1
0.2-percent AEP flood	402	ft^3/s	195	827	37.5

Peak-Flow Statistics Flow Report [Peak Southeast US NC 2023 5006]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	PIL	PIU	ASEp
50-percent AEP flood	70.1	ft^3/s	38.4	128	36.8
20-percent AEP flood	127	ft^3/s	71.5	226	35.8

Statistic	Value	Unit	PIL	PIU	ASEp
10-percent AEP flood	174	ft^3/s	97.2	312	36.3
4-percent AEP flood	239	ft^3/s	128	447	38.4
2-percent AEP flood	297	ft^3/s	157	560	39.8
1-percent AEP flood	355	ft^3/s	184	684	41.3
0.5-percent AEP flood	415	ft^3/s	211	818	42.8
0.2-percent AEP flood	495	ft^3/s	245	998	44.4

Peak-Flow Statistics Citations

Feaster, T.D., Gotvald, A.J., and Weaver, J.C., 2014, Methods for estimating the magnitude and frequency of floods for urban and small, rural streams in Georgia, South Carolina, and North Carolina, 2011 (ver. 1.1, March 2014): U.S. Geological Survey Scientific Investigations Report 2014-5030, 104 p. (<http://pubs.usgs.gov/sir/2014/5030/>)

Feaster, T.D., Gotvald, A.J., Musser, J.W., Weaver, J.C., Kolb, K.R., Veilleux, A.G., and Wagner, D.M. 2023, Magnitude and frequency of floods for rural streams in Georgia, South Carolina, and North Carolina, 2017—Results: U.S. Geological Survey Scientific Investigations Report 2023-5006, 75 p. (<https://pubs.er.usgs.gov/publication/sir20235006>)

➤ Urban Peak-Flow Statistics

Urban Peak-Flow Statistics Parameters [Region 1 Piedmont Urban under 3 sqmi 2014 5030]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.31	square miles	0.1	3
LC06IMP	Percent Impervious NLCD2006	22.05	percent	0	47.9

Urban Peak-Flow Statistics Flow Report [Region 1 Piedmont Urban under 3 sqmi 2014 5030]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR²: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	PIL	PIU	ASEp
Urban 50-percent AEP flood	140	ft^3/s	75.3	260	31.9
Urban 20-Percent AEP flood	195	ft^3/s	118	322	25.4
Urban 10-percent AEP flood	232	ft^3/s	143	375	25
Urban 4-percent AEP flood	273	ft^3/s	161	462	27
Urban 2-percent AEP flood	302	ft^3/s	171	533	29.3
Urban 1-percent AEP flood	332	ft^3/s	178	621	32.1
Urban 0.5-percent AEP flood	359	ft^3/s	182	708	35.1
Urban 0.2-percent AEP flood	402	ft^3/s	195	827	37.5

Urban Peak-Flow Statistics Citations

Feaster, T.D., Gotvald, A.J., and Weaver, J.C.,2014, Methods for estimating the magnitude and frequency of floods for urban and small, rural streams in Georgia, South Carolina, and North Carolina, 2011 (ver. 1.1, March 2014): U.S. Geological Survey Scientific Investigations Report 2014–5030, 104 p. (<http://pubs.usgs.gov/sir/2014/5030/>)

➤ Bankfull Statistics

Bankfull Statistics Parameters [Appalachian Highlands D Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.31	square miles	0.07722	940.1535

Bankfull Statistics Parameters [Piedmont P Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.31	square miles	0.289575	939.99906

Bankfull Statistics Parameters [USA Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.31	square miles	0.07722	59927.7393

Bankfull Statistics Flow Report [Appalachian Highlands D Bieger 2015]

Statistic	Value	Unit
Bieger_D_channel_width	9.35	ft
Bieger_D_channel_depth	0.801	ft
Bieger_D_channel_cross_sectional_area	7.56	ft^2

Bankfull Statistics Flow Report [Piedmont P Bieger 2015]

Statistic	Value	Unit
Bieger_P_channel_width	8.52	ft
Bieger_P_channel_depth	0.797	ft
Bieger_P_channel_cross_sectional_area	6.48	ft^2

Bankfull Statistics Flow Report [USA Bieger 2015]

Statistic	Value	Unit
Bieger_USA_channel_width	8.2	ft
Bieger_USA_channel_depth	0.939	ft
Bieger_USA_channel_cross_sectional_area	9.08	ft^2

Bankfull Statistics Flow Report [Area-Averaged]

Statistic	Value	Unit
Bieger_D_channel_width	9.35	ft
Bieger_D_channel_depth	0.801	ft
Bieger_D_channel_cross_sectional_area	7.56	ft^2
Bieger_P_channel_width	8.52	ft
Bieger_P_channel_depth	0.797	ft
Bieger_P_channel_cross_sectional_area	6.48	ft^2
Bieger_USA_channel_width	8.2	ft
Bieger_USA_channel_depth	0.939	ft
Bieger_USA_channel_cross_sectional_area	9.08	ft^2

Bankfull Statistics Citations

Bieger, Katrin; Rathjens, Hendrik; Allen, Peter M.; and Arnold, Jeffrey G.,2015, Development and Evaluation of Bankfull Hydraulic Geometry Relationships for the Physiographic Regions of the United States, Publications from USDA-ARS / UNL Faculty, 17p. (https://digitalcommons.unl.edu/usdaarsfacpub/1515?utm_source=digitalcommons.unl.edu%2Fusdaarsfacpub%2F1515&utm_medium=PDF&utm_campaign=PDFCoverPages)

➤ Maximum Probable Flood Statistics

Maximum Probable Flood Statistics Parameters [Crippen Bue Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.31	square miles	0.1	3000

Maximum Probable Flood Statistics Parameters [Southeast US MPF abv FallLine small 2023 5006]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.31	square miles	0.08	30
PCTREG1	Percent Area in Region 1 - Piedmont / Ridge and Valley	100	percent		
PCTREG2	Percent Area in Region 2 - Blue Ridge	0	percent		
PCTREG5	Percent Area in Region 5 - Lower Tifton Uplands	0	percent		

Maximum Probable Flood Statistics Flow Report [Southeast US MPF abv FallLine small 2023 5006]

Statistic	Value	Unit
Maximum Flood Southeastern US	638	ft ³ /s

Maximum Probable Flood Statistics Flow Report [Crippen Bue Region 2]

Statistic	Value	Unit
Maximum Flood Crippen Bue Regional	2440	ft ³ /s

Maximum Probable Flood Statistics Flow Report [Area-Averaged]

Statistic	Value	Unit
Maximum Flood Southeastern US	638	ft ³ /s
Maximum Flood Crippen Bue Regional	2440	ft ³ /s

Maximum Probable Flood Statistics Citations

Crippen, J.R. and Bue, Conrad D.1977, Maximum Floodflows in the Conterminous United States, Geological Survey Water-Supply Paper 1887, 52p. (<https://pubs.usgs.gov/wsp/1887/report.pdf>)

Feaster, T.D., Gotvald, A.J., Musser, J.W., Weaver, J.C, Kolb, K.R., Veilleux, A.G., and Wagner, D.M.2023, Magnitude and frequency of floods for rural streams in Georgia, South Carolina, and North Carolina, 2017—Results: U.S. Geological Survey Scientific Investigations Report 2023-5006, 75 p. (<https://pubs.er.usgs.gov/publication/sir20235006>)

➤ NHD Features of Delineated Basin

NHD Streams Intersecting Basin Delineation Boundary

This functionality attempts to find the stream name at the delineation point. The name of the nearest intersecting National Hydrography Dataset (NHD) stream is selected by default to appear in the report above. NHD streams do not correspond to the StreamStats stream grid and may not be accurate. If you would like a different stream to appear in the above section, please make a selection below.

GNIS ID	GNIS Name	Distance from Clicked Point (ft)	Feature Type	Selected Stream Name
00982827	Cedar Fork	0.27	Perennial	☒ Cedar Fork

Watershed Boundary Dataset (WBD) HUC 8 Intersecting Basin Delineation Boundary

This functionality attempts to find the intersecting HUC 8 of the delineated watershed. HUC boundaries do not correspond to the StreamStats data and may not be accurate.

HUC 8	Name
03030002	Haw

NHD Hydrologic Features Citations

U.S. Geological Survey, 2022, USGS TNM - National Hydrography Dataset, accessed July 21, 2022 at URL <https://hydro.nationalmap.gov/arcgis/rest/services/nhd/MapServer/6>.
(<https://hydro.nationalmap.gov/arcgis/rest/services/nhd/MapServer/6>) U.S. Geological Survey, 2022, USGS TNM - National Hydrography Dataset, accessed July 21, 2022 at URL <https://hydro.nationalmap.gov/arcgis/rest/services/wbd/MapServer/4>.
(<https://hydro.nationalmap.gov/arcgis/rest/services/wbd/MapServer/4>)

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USGS Product Names Disclaimer: Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

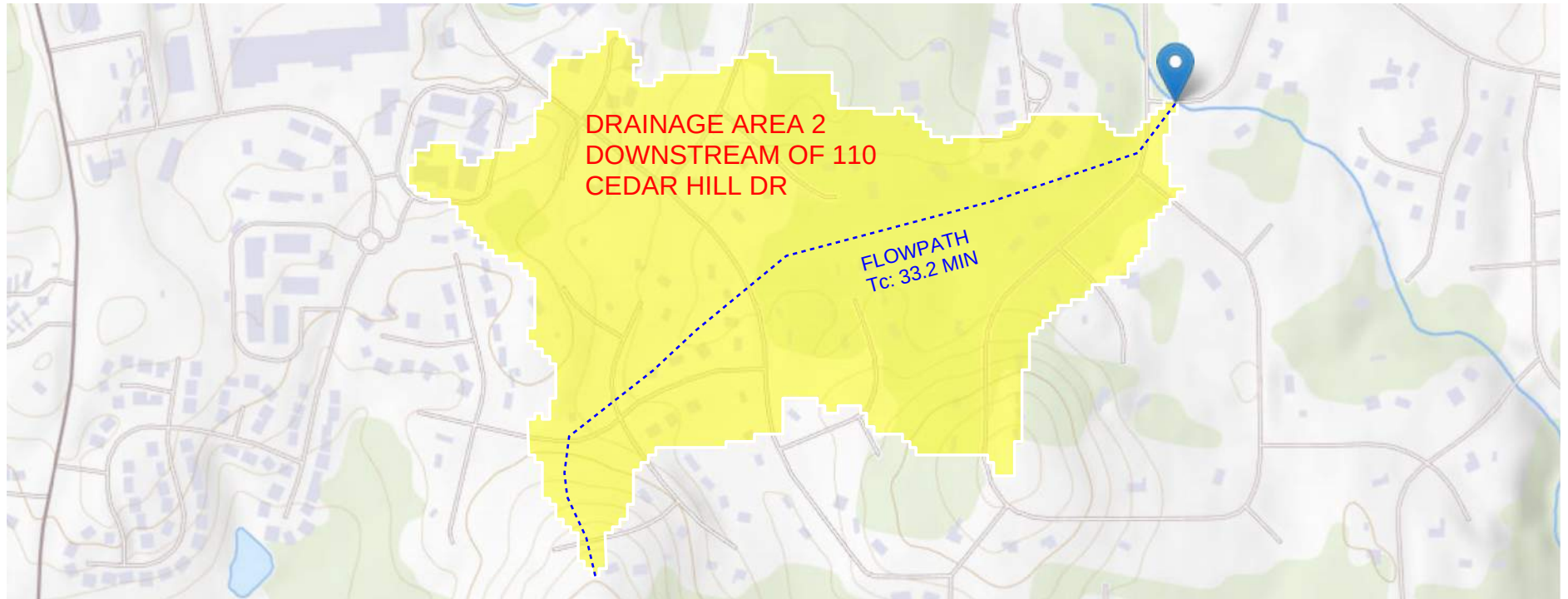
Application Version: 4.29.3

StreamStats Services Version: 1.2.22

NSS Services Version: 2.2.1

StreamStats Report

Region ID: NC
Workspace ID: NC20251003120352236000
Clicked Point (Latitude, Longitude): 35.96163, -79.04153
NHD Stream GNIS Name of Click Point: Cedar Fork
Time: 2025-10-03 08:04:23 -0400



+ Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.14	square miles

Parameter Code	Parameter Description	Value	Unit
LC06IMP	Percentage of impervious area determined from NLCD 2006 impervious dataset	6.9	percent
PCTREG1	Percentage of drainage area located in Region 1 - Piedmont / Ridge and Valley	100	percent
PCTREG2	Percentage of drainage area located in Region 2 - Blue Ridge	0	percent
PCTREG3	Percentage of drainage area located in Region 3 - Sandhills	0	percent
PCTREG4	Percentage of drainage area located in Region 4 - Coastal Plains	0	percent
PCTREG5	Percentage of drainage area located in Region 5 - Lower Tifton Uplands	0	percent

➤ Peak-Flow Statistics

Peak-Flow Statistics Parameters [Region 1 Piedmont rural under 1 sqmi 2014 5030]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.14	square miles	0.1	1
LC06IMP	Percent Impervious NLCD2006	6.9	percent	0	47.9

Peak-Flow Statistics Parameters [Peak Southeast US NC 2023 5006]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.14	square miles	0.08	8902
PCTREG1	Percent Area in Region 1 - Piedmont / Ridge and Valley	100	percent	0	100
PCTREG2	Percent Area in Region 2 - Blue Ridge	0	percent	0	100
PCTREG3	Percent Area in Region 3 - Sandhills	0	percent	0	100
PCTREG4	Percent Area in Region 4 - Coastal Plains	0	percent	0	100
PCTREG5	Percent Area in Region 5 - Lower Tifton Uplands	0	percent	0	100

Peak-Flow Statistics Flow Report [Region 1 Piedmont rural under 1 sqmi 2014 5030]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR²: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	PIL	PIU	ASEp
50-percent AEP flood	50	ft ³ /s	26.6	94	31.9
20-percent AEP flood	78	ft ³ /s	46.7	130	25.4
10-percent AEP flood	97.7	ft ³ /s	59.7	160	25
4-percent AEP flood	123	ft ³ /s	71.7	211	27
2-percent AEP flood	142	ft ³ /s	79.2	254	29.3
1-percent AEP flood	161	ft ³ /s	84.7	306	32.1
0.5-percent AEP flood	180	ft ³ /s	89.8	361	35.1
0.2-percent AEP flood	210	ft ³ /s	99.8	442	37.5

Peak-Flow Statistics Flow Report [Peak Southeast US NC 2023 5006]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR²: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	PIL	PIU	ASEp
50-percent AEP flood	41.9	ft ³ /s	22.9	76.6	36.8
20-percent AEP flood	77.1	ft ³ /s	43.3	137	35.8
10-percent AEP flood	106	ft ³ /s	59.1	190	36.3
4-percent AEP flood	147	ft ³ /s	78.5	275	38.4
2-percent AEP flood	183	ft ³ /s	96.8	346	39.8
1-percent AEP flood	219	ft ³ /s	113	423	41.3
0.5-percent AEP flood	258	ft ³ /s	131	510	42.8
0.2-percent AEP flood	308	ft ³ /s	152	623	44.4

Feaster, T.D., Gotvald, A.J., and Weaver, J.C.,2014, Methods for estimating the magnitude and frequency of floods for urban and small, rural streams in Georgia, South Carolina, and North Carolina, 2011 (ver. 1.1, March 2014): U.S. Geological Survey Scientific Investigations Report 2014–5030, 104 p. (<http://pubs.usgs.gov/sir/2014/5030/>)

Feaster, T.D., Gotvald, A.J., Musser, J.W., Weaver, J.C, Kolb, K.R., Veilleux, A.G., and Wagner, D.M.2023, Magnitude and frequency of floods for rural streams in Georgia, South Carolina, and North Carolina, 2017—Results: U.S. Geological Survey Scientific Investigations Report 2023-5006, 75 p. (<https://pubs.er.usgs.gov/publication/sir20235006>)

➤ Bankfull Statistics

Bankfull Statistics Parameters [Appalachian Highlands D Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.14	square miles	0.07722	940.1535

Bankfull Statistics Parameters [Piedmont P Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.14	square miles	0.289575	939.99906

Bankfull Statistics Parameters [USA Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.14	square miles	0.07722	59927.7393

Bankfull Statistics Flow Report [Appalachian Highlands D Bieger 2015]

Statistic	Value	Unit
Bieger_D_channel_width	6.72	ft
Bieger_D_channel_depth	0.638	ft
Bieger_D_channel_cross_sectional_area	4.32	ft^2

Bankfull Statistics Disclaimers [Piedmont P Bieger 2015]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Bankfull Statistics Flow Report [Piedmont P Bieger 2015]

Statistic	Value	Unit
Bieger_P_channel_width	6.15	ft
Bieger_P_channel_depth	0.623	ft
Bieger_P_channel_cross_sectional_area	3.57	ft^2

Bankfull Statistics Flow Report [USA Bieger 2015]

Statistic	Value	Unit
Bieger_USA_channel_width	6.2	ft
Bieger_USA_channel_depth	0.793	ft
Bieger_USA_channel_cross_sectional_area	5.91	ft^2

Bankfull Statistics Flow Report [Area-Averaged]

Statistic	Value	Unit
Bieger_D_channel_width	6.72	ft
Bieger_D_channel_depth	0.638	ft
Bieger_D_channel_cross_sectional_area	4.32	ft^2
Bieger_P_channel_width	6.15	ft
Bieger_P_channel_depth	0.623	ft
Bieger_P_channel_cross_sectional_area	3.57	ft^2
Bieger_USA_channel_width	6.2	ft
Bieger_USA_channel_depth	0.793	ft
Bieger_USA_channel_cross_sectional_area	5.91	ft^2

Bieger, Katrin; Rathjens, Hendrik; Allen, Peter M.; and Arnold, Jeffrey G.,2015, Development and Evaluation of Bankfull Hydraulic Geometry Relationships for the Physiographic Regions of the United States, Publications from USDA-ARS / UNL Faculty, 17p.
(https://digitalcommons.unl.edu/usdaarsfacpub/1515?utm_source=digitalcommons.unl.edu%2Fusdaarsfacpub%2F1515&utm_medium=PDF&utm_campaign=PDFCoverPages)

➤ Urban Peak-Flow Statistics

Urban Peak-Flow Statistics Parameters [Region 1 Piedmont Urban under 3 sqmi 2014 5030]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.14	square miles	0.1	3
LC06IMP	Percent Impervious NLCD2006	6.9	percent	0	47.9

Urban Peak-Flow Statistics Flow Report [Region 1 Piedmont Urban under 3 sqmi 2014 5030]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR²: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	PIL	PIU	ASEp
Urban 50-percent AEP flood	50	ft ³ /s	26.6	94	31.9
Urban 20-Percent AEP flood	78	ft ³ /s	46.7	130	25.4
Urban 10-percent AEP flood	97.7	ft ³ /s	59.7	160	25
Urban 4-percent AEP flood	123	ft ³ /s	71.7	211	27
Urban 2-percent AEP flood	142	ft ³ /s	79.2	254	29.3
Urban 1-percent AEP flood	161	ft ³ /s	84.7	306	32.1
Urban 0.5-percent AEP flood	180	ft ³ /s	89.8	361	35.1
Urban 0.2-percent AEP flood	210	ft ³ /s	99.8	442	37.5

Feaster, T.D., Gotvald, A.J., and Weaver, J.C., 2014, Methods for estimating the magnitude and frequency of floods for urban and small, rural streams in Georgia, South Carolina, and North Carolina, 2011 (ver. 1.1, March 2014): U.S. Geological Survey Scientific Investigations Report 2014–5030, 104 p. (<http://pubs.usgs.gov/sir/2014/5030/>)

➤ Maximum Probable Flood Statistics

Maximum Probable Flood Statistics Parameters [Crippen Bue Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.14	square miles	0.1	3000

Maximum Probable Flood Statistics Parameters [Southeast US MPF abv FallLine small 2023 5006]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.14	square miles	0.08	30
PCTREG1	Percent Area in Region 1 - Piedmont / Ridge and Valley	100	percent		
PCTREG2	Percent Area in Region 2 - Blue Ridge	0	percent		
PCTREG5	Percent Area in Region 5 - Lower Tifton Uplands	0	percent		

Maximum Probable Flood Statistics Flow Report [Southeast US MPF abv FallLine small 2023 5006]

Statistic	Value	Unit
Maximum Flood Southeastern US	283	ft ³ /s

Maximum Probable Flood Statistics Flow Report [Crippen Bue Region 2]

Statistic	Value	Unit
Maximum Flood Crippen Bue Regional	1360	ft ³ /s

Maximum Probable Flood Statistics Flow Report [Area-Averaged]

Statistic	Value	Unit
Maximum Flood Southeastern US	283	ft^3/s
Maximum Flood Crippen Bue Regional	1360	ft^3/s

Maximum Probable Flood Statistics Citations

Crippen, J.R. and Bue, Conrad D.1977, Maximum Floodflows in the Conterminous United States, Geological Survey Water-Supply Paper 1887, 52p. (<https://pubs.usgs.gov/wsp/1887/report.pdf>)
Feaster, T.D., Gotvald, A.J., Musser, J.W., Weaver, J.C, Kolb, K.R., Veilleux, A.G., and Wagner, D.M.2023, Magnitude and frequency of floods for rural streams in Georgia, South Carolina, and North Carolina, 2017—Results: U.S. Geological Survey Scientific Investigations Report 2023-5006, 75 p. (<https://pubs.er.usgs.gov/publication/sir20235006>)

➤ NHD Features of Delineated Basin

NHD Streams Intersecting Basin Delineation Boundary

This functionality attempts to find the stream name at the delineation point. The name of the nearest intersecting National Hydrography Dataset (NHD) stream is selected by default to appear in the report above. NHD streams do not correspond to the StreamStats stream grid and may not be accurate. If you would like a different stream to appear in the above section, please make a selection below.

GNIS ID	GNIS Name	Distance from Clicked Point (ft)	Feature Type	Selected Stream Name
00982827	Cedar Fork	8.28	Perennial	☒ Cedar Fork

Watershed Boundary Dataset (WBD) HUC 8 Intersecting Basin Delineation Boundary

This functionality attempts to find the intersecting HUC 8 of the delineated watershed. HUC boundaries do not correspond to the StreamStats data and may not be accurate.

HUC 8	Name
03030002	Haw

NHD Hydrologic Features Citations

U.S. Geological Survey, 2022, USGS TNM - National Hydrography Dataset, accessed July 21, 2022 at URL <https://hydro.nationalmap.gov/arcgis/rest/services/nhd/MapServer/6>. (<https://hydro.nationalmap.gov/arcgis/rest/services/nhd/MapServer/6>)
U.S. Geological Survey, 2022, USGS TNM - National Hydrography Dataset, accessed July 21, 2022 at URL <https://hydro.nationalmap.gov/arcgis/rest/services/wbd/MapServer/4>. (<https://hydro.nationalmap.gov/arcgis/rest/services/wbd/MapServer/4>)

USGS Data Disclaimer: Unless otherwise stated, all data, metadata and related materials are considered to satisfy the quality standards relative to the purpose for which the data were collected. Although these data and associated metadata have been reviewed for accuracy and completeness and approved for release by the U.S. Geological Survey (USGS), no warranty expressed or implied is made regarding the display or utility of the data for other purposes, nor on all computer systems, nor shall the act of distribution constitute any such warranty.

USGS Software Disclaimer: This software has been approved for release by the U.S. Geological Survey (USGS). Although the software has been subjected to rigorous review, the USGS reserves the right to update the software as needed pursuant to further analysis and review. No warranty, expressed or implied, is made by the USGS or the U.S. Government as to the functionality of the software and related material nor shall the fact of release constitute any such warranty. Furthermore, the software is released on condition that neither the USGS nor the U.S. Government shall be held liable for any damages resulting from its authorized or unauthorized use.

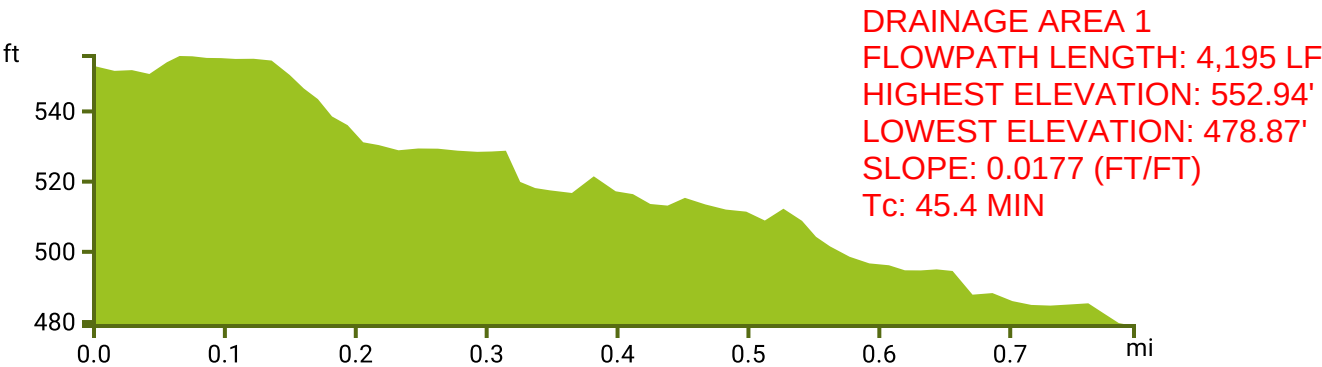
USGS Product Names Disclaimer: Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Application Version: 4.29.3

StreamStats Services Version: 1.2.22

NSS Services Version: 2.2.1

Elevation profile



Latitude	Longitude	Elevation (ft)	Distance (ft)
35.96154	-79.05429	552.94	0.00
35.96142	-79.05406	551.56	82.71
35.96157	-79.05390	551.77	153.12
35.96171	-79.05374	550.67	223.53
35.96186	-79.05358	554.01	293.94
35.96199	-79.05352	555.79	345.18
35.96212	-79.05345	555.71	396.42
35.96220	-79.05329	555.25	454.48
35.96229	-79.05313	555.19	512.54

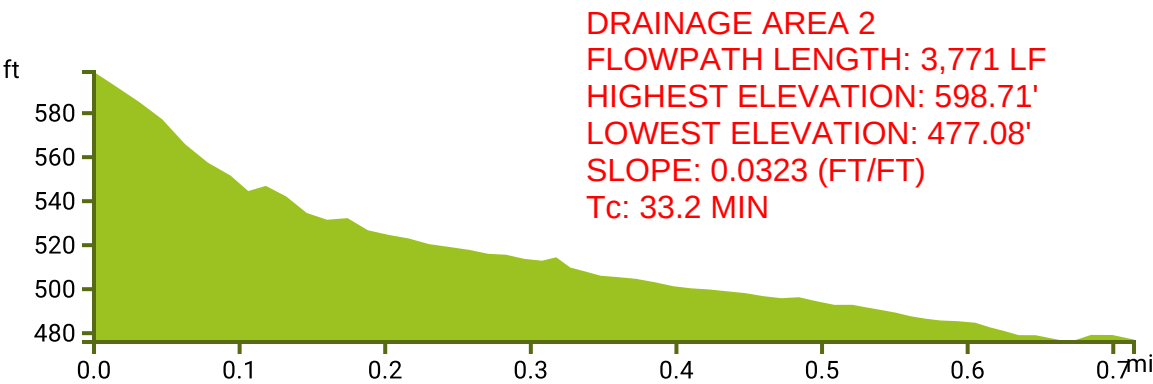
Latitude	Longitude	Elevation (ft)	Distance (ft)
35.96238	-79.05296	554.95	570.60
35.96243	-79.05272	555.00	643.50
35.96249	-79.05249	554.49	716.41
35.96255	-79.05225	550.39	789.32
35.96261	-79.05207	546.54	846.25
35.96267	-79.05190	543.50	903.18
35.96272	-79.05172	538.57	960.11
35.96278	-79.05152	536.09	1022.98
35.96284	-79.05132	531.21	1085.84
35.96290	-79.05112	530.41	1148.71
35.96299	-79.05087	528.93	1228.19
35.96308	-79.05063	529.44	1307.66
35.96317	-79.05038	529.39	1387.14
35.96326	-79.05014	528.82	1466.62
35.96335	-79.04989	528.49	1546.10
35.96337	-79.04970	528.59	1603.81
35.96340	-79.04951	528.81	1661.52
35.96342	-79.04931	519.92	1719.23
35.96347	-79.04912	518.17	1779.41

Latitude	Longitude	Elevation (ft)	Distance (ft)
35.96352	-79.04893	517.51	1839.58
35.96369	-79.04871	516.76	1927.80
35.96386	-79.04850	521.51	2016.02
35.96403	-79.04828	517.25	2104.25
35.96415	-79.04810	516.43	2174.09
35.96427	-79.04792	513.63	2243.94
35.96439	-79.04774	513.17	2313.78
35.96451	-79.04755	515.38	2383.62
35.96443	-79.04730	513.50	2466.08
35.96434	-79.04704	512.04	2548.54
35.96425	-79.04678	511.45	2631.00
35.96412	-79.04659	508.92	2705.99
35.96399	-79.04639	512.29	2780.98
35.96385	-79.04620	508.83	2855.98
35.96373	-79.04608	504.28	2912.44
35.96361	-79.04597	501.56	2968.91
35.96357	-79.04570	498.59	3048.16
35.96354	-79.04544	496.71	3127.42
35.96351	-79.04517	496.17	3206.67

Latitude	Longitude	Elevation (ft)	Distance (ft)
35.96344	-79.04497	494.74	3270.89
35.96338	-79.04476	494.70	3335.10
35.96332	-79.04456	495.00	3399.32
35.96326	-79.04436	494.54	3463.54
35.96316	-79.04411	487.79	3543.92
35.96307	-79.04387	488.25	3624.29
35.96297	-79.04363	485.96	3704.66
35.96292	-79.04337	484.87	3781.21
35.96287	-79.04312	484.68	3857.75
35.96282	-79.04287	485.00	3934.30
35.96278	-79.04262	485.33	4010.84
35.96270	-79.04243	482.51	4072.31
35.96263	-79.04225	479.71	4133.77
35.96255	-79.04206	478.87	4195.23

Elevation data provided by: **ESRI Elevation Analysis services** (<https://developers.arcgis.com/rest/elevation/api-reference/profile.htm>)

Elevation profile



Latitude	Longitude	Elevation (ft)	Distance (ft)
35.95616	-79.04981	598.71	0.00
35.95638	-79.04985	591.90	82.56
35.95660	-79.04990	584.97	165.12
35.95683	-79.04995	577.18	247.68
35.95705	-79.04999	565.91	330.25
35.95727	-79.05004	557.53	412.81
35.95750	-79.05009	551.60	495.37
35.95765	-79.05018	544.60	559.20
35.95781	-79.05028	546.96	623.03

Latitude	Longitude	Elevation (ft)	Distance (ft)
35.95794	-79.05008	542.13	697.03
35.95806	-79.04989	534.66	771.04
35.95819	-79.04969	531.54	845.04
35.95832	-79.04950	532.30	919.04
35.95844	-79.04930	526.78	993.05
35.95857	-79.04911	524.70	1067.05
35.95870	-79.04891	523.04	1141.06
35.95882	-79.04872	520.47	1215.06
35.95895	-79.04852	519.17	1289.06
35.95908	-79.04833	517.81	1363.07
35.95922	-79.04819	516.09	1428.45
35.95935	-79.04805	515.66	1493.84
35.95949	-79.04791	513.80	1559.22
35.95963	-79.04777	512.94	1624.61
35.95970	-79.04762	514.49	1675.75
35.95977	-79.04747	509.84	1726.89
35.95984	-79.04732	508.14	1778.04
35.95988	-79.04712	506.12	1836.52
35.95991	-79.04693	505.52	1895.00

Latitude	Longitude	Elevation (ft)	Distance (ft)
35.95993	-79.04670	504.73	1963.19
35.95996	-79.04647	503.21	2031.38
35.95998	-79.04624	501.35	2099.57
35.96002	-79.04603	500.38	2165.11
35.96007	-79.04582	499.87	2230.65
35.96012	-79.04560	499.02	2296.19
35.96016	-79.04539	498.19	2361.74
35.96021	-79.04517	496.82	2427.28
35.96024	-79.04496	495.91	2491.73
35.96027	-79.04474	496.34	2556.18
35.96030	-79.04453	494.49	2620.63
35.96033	-79.04431	492.87	2685.09
35.96036	-79.04410	492.89	2749.54
35.96043	-79.04394	491.67	2802.53
35.96050	-79.04378	490.50	2855.51
35.96057	-79.04363	489.29	2908.50
35.96056	-79.04345	487.67	2961.53
35.96055	-79.04327	486.59	3014.56
35.96054	-79.04309	485.79	3067.59

Latitude	Longitude	Elevation (ft)	Distance (ft)
35.96052	-79.04288	485.45	3131.34
35.96050	-79.04266	484.76	3195.09
35.96059	-79.04253	482.68	3247.61
35.96069	-79.04239	481.00	3300.13
35.96078	-79.04225	479.11	3352.65
35.96094	-79.04220	479.07	3414.22
35.96110	-79.04214	477.53	3475.80
35.96127	-79.04208	475.99	3537.37
35.96141	-79.04189	479.22	3615.17
35.96155	-79.04170	479.17	3692.98
35.96170	-79.04150	477.08	3770.78

Elevation data provided by: **ESRI Elevation Analysis services** (<https://developers.arcgis.com/rest/elevation/api-reference/profile.htm>)

11. PRE AND POST DEVELOPMENT MAPS FOR THIRD STUDY

FLOWPATH BASIN 4
 $T_c = 8.9$

FLOWPATH BASIN 5
 $T_c = 12.3$ MIN

FLOWPATH BASIN 6
 $T_c = 12.4$ MIN

FLOWPATH BASIN 7
 $T_c = 10.2$ MIN

FLOWPATH BASIN 8
 $T_c = 9.1$ MIN

529.84 FG
 POA 5

505.43 FG
 POA 6

POINT 1
 AREA: 91,613 SF

POINT 2
 273,607 SF

POINT 3
 316,553 SF

POINT 4
 423,660 SF

494.65 FG

GI #71
 HI #72
 HI #73
 HI #74
 HI #75
 HI #76
 HI #77
 HI #78

GI #YARD
 GI #79

HI #80
 HI #81
 HI #82
 HI #83
 HI #84
 HI #85
 HI #86
 HI #87
 HI #88
 HI #89
 HI #90

JB #85
 JB #92

HW #91
 FG 498.09

OUTLET

POA 7

537.57 FG

510.65 FG

498.09 FG

1
 2
 3
 4
 5
 6
 7
 8
 9
 10
 11
 12
 13
 14
 15
 16
 17

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PRE DEV STUDY 5

860 WEAVER DAIRY ROAD

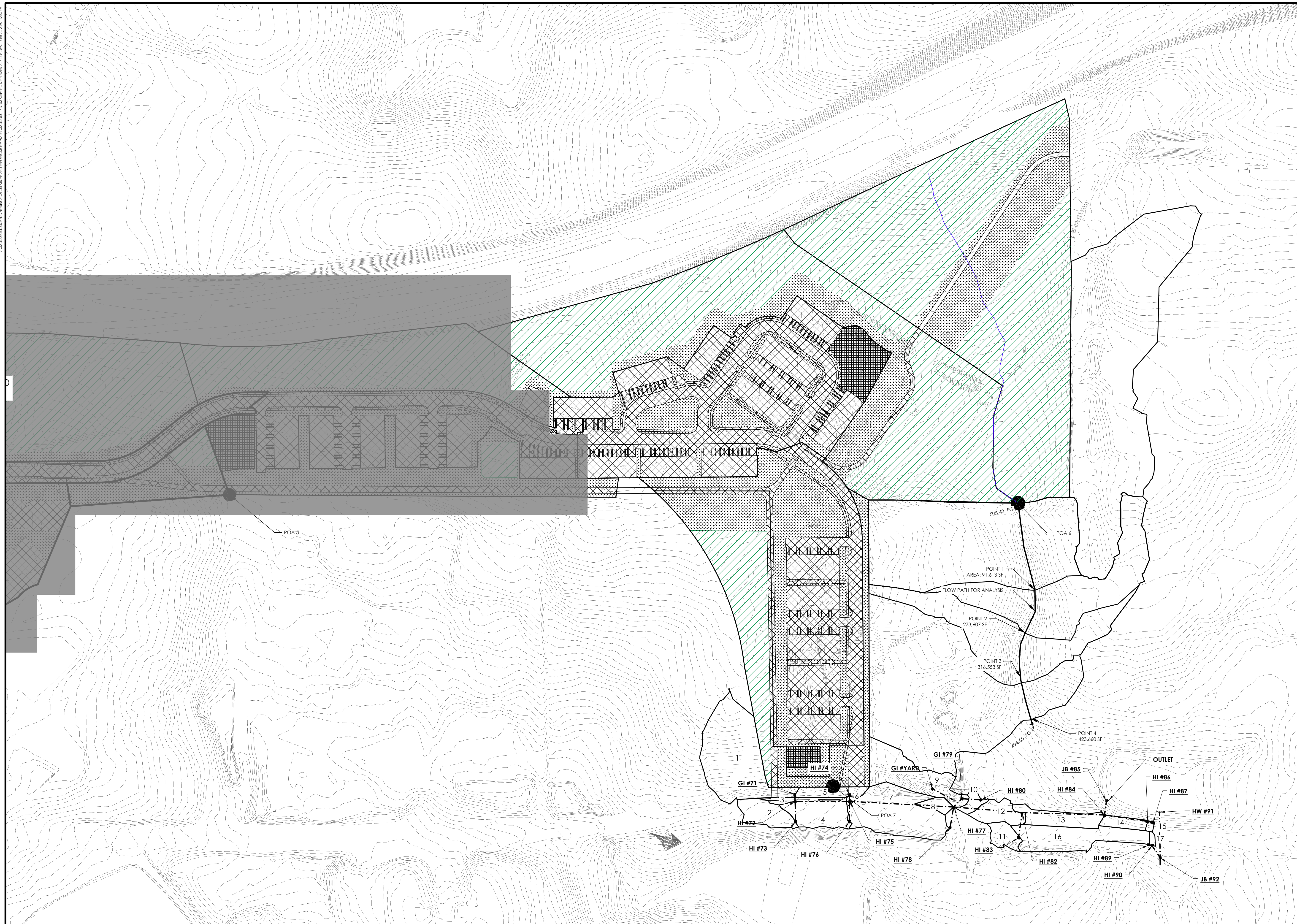
PROJECT LOCATION:

CLIENT/OWNER:

LAND PLANNING & ENTITLEMENTS
157 EAST FRANKLIN STREET
CHAPEL HILL, NC 27514

100,000 0 50 100,000

GRAPHIC SCALE:
1 INCH = 100,000 FEET



NO.	REVISIONS	BY	DATE



2510 Meridian Parkway • Suite 100
Durham, NC 27713 • 919.682.0368
www.thomasandhutton.com

POST DEV. STUDY 6

860 WEAVER DAIRY ROAD

PROJECT LOCATION:

CLIENT/OWNER:
LAND PLANNING & ENTITLEMENTS
157 EAST FRANKLIN STREET
CHAPEL HILL, NC 27514



00 0 50 100

GRAPHIC SCALE:
1 INCH = 100 FEET

DATUM: HORIZ.: NAD 83

VERT.: NAVD 83

JOB NO: 32044.0000

DATE: 10/21/2025

DRAWN: ASL
DESIGNED:DESIGNED: _____
REVIEWED: _____

APPROVED: _____

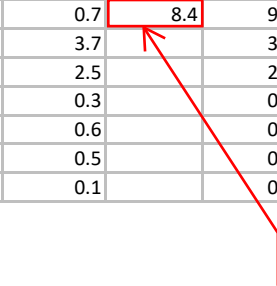
SCALE: 1" = 100'

POST

12. HGL REFERENCE MATERIAL AND HGL PROFILES

Storm Drain Computations

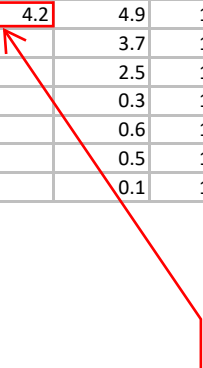
Structure ID		Length (ft)	Drainage Area (ac)	Runoff Coeff "C"	Tc (min)	Rain "I" (in/hr)	Runoff "Q" (cfs)	Known Q (cfs)	Total Q (cfs)	Pipe Dia. (in)	Full Q (cfs)	Velocity Full (ft/s)	Velocity Design (ft/s)	Invert Elevation		Slope
From	To													U/S	D/S	
85	Outlet	5			6	7.42	14.8		23.2	30	62.9	12.81	11.83	491.30	491.20	2.00%
84	85	33	0.15	0.98	6	7.43	14.8		23.2	30	98.4	20.04	16.38	493.10	491.50	4.89%
82	84	188	0.11	0.98	6	7.54	13.4		21.8	24	40.0	12.74	13.00	498.20	493.20	2.66%
77	82	156	0.04	0.98	6	7.67	12.2		20.6	24	24.1	7.66	8.60	499.70	498.20	0.96%
75	77	237	0.01	0.98	6	7.84	6.1		14.5	24	31.9	10.15	9.90	504.40	499.70	1.98%
76	75	47	0.21	0.98	5	8.06	1.6		1.6	15	4.2	3.44	3.22	505.20	505.00	0.43%
72	75	124	0.02	0.98	5	7.96	3.9		3.9	24	34.8	11.09	7.32	506.90	504.40	2.02%
73	72	47	0.14	0.98	5	8.06	1.1		1.1	15	5.2	4.21	3.37	507.40	507.10	0.64%
71	72	16	0.65	0.50	5	8.06	2.6		2.6	18	24.9	14.11	9.18	507.90	507.00	5.63%
74	75	16	0.08	0.98	5	8.06	0.7	8.4	9.0	15	8.9	7.22	8.21	504.80	504.50	1.88%
78	77	47	0.46	0.98	5	8.06	3.7		3.7	15	5.2	4.21	4.57	501.30	501.00	0.64%
79	77	26	0.34	0.80	5	7.91	2.5		2.5	15	4.0	3.24	3.42	499.90	499.80	0.38%
80	79	44	0.04	0.98	5	8.06	0.3		0.3	15	4.4	3.55	2.07	500.10	499.90	0.46%
83	82	58	0.08	0.98	5	8.06	0.6		0.6	15	4.1	3.35	2.41	498.80	498.60	0.34%
86	84	99	0.06	0.98	5	8.02	0.5		0.5	15	6.8	5.54	3.30	494.40	493.30	1.11%
87	86	12	0.01	0.98	5	8.06	0.1		0.1	15	8.2	6.70	2.04	494.60	494.40	1.62%



10-YEAR PRE DEV. BASIN 7 (13S)

Storm Drain Computations

Structure ID		Length (ft)	Drainage Area (ac)	Runoff Coeff "C"	Tc (min)	Rain "I" (in/hr)	Runoff "Q" (cfs)	Known Q (cfs)	Total Q (cfs)	Pipe Dia. (in)	Full Q (cfs)	Velocity Full (ft/s)	Velocity Design (ft/s)	Invert Elevation		Slope
From	To													U/S	D/S	
85	Outlet	5			7	7.39	14.8		19.0	30	62.9	12.81	11.21	491.30	491.20	2.00%
84	85	33	0.15	0.98	7	7.40	14.8		19.0	30	98.4	20.04	15.48	493.10	491.50	4.89%
82	84	188	0.11	0.98	6	7.51	13.4		17.6	24	40.0	12.74	12.32	498.20	493.20	2.66%
77	82	156	0.04	0.98	6	7.65	12.2		16.4	24	24.1	7.66	8.23	499.70	498.20	0.96%
75	77	237	0.01	0.98	6	7.84	6.1		10.3	24	31.9	10.15	9.05	504.40	499.70	1.98%
76	75	47	0.21	0.98	5	8.06	1.6		1.6	15	4.2	3.44	3.22	505.20	505.00	0.43%
72	75	124	0.02	0.98	5	7.96	3.9		3.9	24	34.8	11.09	7.32	506.90	504.40	2.02%
73	72	47	0.14	0.98	5	8.06	1.1		1.1	15	5.2	4.21	3.37	507.40	507.10	0.64%
71	72	16	0.65	0.50	5	8.06	2.6		2.6	18	24.9	14.11	9.18	507.90	507.00	5.63%
74	75	16	0.08	0.98	5	8.06	0.7	4.2	4.9	15	8.9	7.22	7.38	504.80	504.50	1.88%
78	77	47	0.46	0.98	5	8.06	3.7		3.7	15	5.2	4.21	4.57	501.30	501.00	0.64%
79	77	26	0.34	0.80	5	7.91	2.5		2.5	15	4.0	3.24	3.42	499.90	499.80	0.38%
80	79	44	0.04	0.98	5	8.06	0.3		0.3	15	4.4	3.55	2.07	500.10	499.90	0.46%
83	82	58	0.08	0.98	5	8.06	0.6		0.6	15	4.1	3.35	2.41	498.80	498.60	0.34%
86	84	99	0.06	0.98	5	8.02	0.5		0.5	15	6.8	5.54	3.30	494.40	493.30	1.11%
87	86	12	0.01	0.98	5	8.06	0.1		0.1	15	8.2	6.70	2.04	494.60	494.40	1.62%



10-YEAR POST DEV POA 6 (33L)

25-Yr Pre Dev.

**FLOW USED TO GENERATE
CULVERT RESULTS
IN HYDRAFLOW**

**HEC-22
Storm Drain Computations**

Structure ID		Length (ft)	Drainage Area (ac)	Runoff Coeff "C"	Tc (min)	Rain "I" (in/hr)	Runoff "Q" (cfs)	Known Q (cfs)	Total Q (cfs)	Pipe Dia. (in)	Full Q (cfs)	Velocity Full (ft/s)	Velocity Design (ft/s)	Invert Elevation		Slope
From	To													U/S	D/S	
85	Outlet	5			6	8.16	16.3		31.4	30	62.9	12.81	12.80	491.30	491.20	2.00%
84	85	33	0.15	0.98	6	8.18	16.3		31.5	30	98.4	20.04	17.82	493.10	491.50	4.89%
82	84	188	0.11	0.98	6	8.29	14.8		29.9	24	40.0	12.74	13.96	498.20	493.20	2.66%
77	82	156	0.04	0.98	6	8.42	13.4		28.6	24	24.1	7.66	9.09	499.70	498.20	0.96%
75	77	237	0.01	0.98	6	8.59	6.7		21.9	24	31.9	10.15	10.92	504.40	499.70	1.98%
76	75	47	0.21	0.98	5	8.83	1.8		1.8	15	4.2	3.44	3.30	505.20	505.00	0.43%
72	75	124	0.02	0.98	5	8.72	4.3		4.3	24	34.8	11.09	7.52	506.90	504.40	2.02%
73	72	47	0.14	0.98	5	8.83	1.2		1.2	15	5.2	4.21	3.46	507.40	507.10	0.64%
71	72	16	0.65	0.50	5	8.83	2.9		2.9	18	24.9	14.11	9.42	507.90	507.00	5.63%
74	75	16	0.08	0.98	5	8.83	0.7	15.1	15.9	15	8.9	7.22	12.92	504.80	504.50	1.88%
78	77	47	0.46	0.98	5	8.83	4.0		4.0	15	5.2	4.21	4.65	501.30	501.00	0.64%
79	77	26	0.34	0.80	5	8.67	2.7		2.7	15	4.0	3.24	3.49	499.90	499.80	0.38%
80	79	44	0.04	0.98	5	8.83	0.3		0.3	15	4.4	3.55	2.13	500.10	499.90	0.46%
83	82	58	0.08	0.98	5	8.83	0.7		0.7	15	4.1	3.35	2.47	498.80	498.60	0.34%
86	84	99	0.06	0.98	5	8.78	0.6		0.6	15	6.8	5.54	3.39	494.40	493.30	1.11%
87	86	12	0.01	0.98	5	8.83	0.1		0.1	15	8.2	6.70	2.10	494.60	494.40	1.62%

25-YEAR PRE DEV. BASIN 7 (13S)

25-Yr Post Dev.

**FLOW USED TO GENERATE
CULVERT RESULTS
IN HYDRAFLOW**

**HEC-22
Storm Drain Computations**

Structure ID		Length (ft)	Drainage Area (ac)	Runoff Coeff "C"	Tc (min)	Rain "I" (in/hr)	Runoff "Q" (cfs)	Known Q (cfs)	Total Q (cfs)	Pipe Dia. (in)	Full Q (cfs)	Velocity Full (ft/s)	Velocity Design (ft/s)	Invert Elevation		Slope
From	To													U/S	D/S	
85	Outlet	5			6	8.16	16.3		30.8	30	62.9	12.81	12.74	491.30	491.20	2.00%
84	85	33	0.15	0.98	6	8.17	16.3		30.9	30	98.4	20.04	17.72	493.10	491.50	4.89%
82	84	188	0.11	0.98	6	8.28	14.8		29.3	24	40.0	12.74	13.90	498.20	493.20	2.66%
77	82	156	0.04	0.98	6	8.42	13.4		28.0	24	24.1	7.66	8.91	499.70	498.20	0.96%
75	77	237	0.01	0.98	6	8.59	6.7		21.3	24	31.9	10.15	10.86	504.40	499.70	1.98%
76	75	47	0.21	0.98	5	8.83	1.8		1.8	15	4.2	3.44	3.30	505.20	505.00	0.43%
72	75	124	0.02	0.98	5	8.72	4.3		4.3	24	34.8	11.09	7.52	506.90	504.40	2.02%
73	72	47	0.14	0.98	5	8.83	1.2		1.2	15	5.2	4.21	3.46	507.40	507.10	0.64%
71	72	16	0.65	0.50	5	8.83	2.9		2.9	18	24.9	14.11	9.42	507.90	507.00	5.63%
74	75	16	0.08	0.98	5	8.83	0.7	14.6	15.3	15	8.9	7.22	12.45	504.80	504.50	1.88%
78	77	47	0.46	0.98	5	8.83	4.0		4.0	15	5.2	4.21	4.65	501.30	501.00	0.64%
79	77	26	0.34	0.80	5	8.67	2.7		2.7	15	4.0	3.24	3.49	499.90	499.80	0.38%
80	79	44	0.04	0.98	5	8.83	0.3		0.3	15	4.4	3.55	2.13	500.10	499.90	0.46%
83	82	58	0.08	0.98	5	8.83	0.7		0.7	15	4.1	3.35	2.47	498.80	498.60	0.34%
86	84	99	0.06	0.98	5	8.78	0.6		0.6	15	6.8	5.54	3.39	494.40	493.30	1.11%
87	86	12	0.01	0.98	5	8.83	0.1		0.1	15	8.2	6.70	2.10	494.60	494.40	1.62%

25-YEAR POST DEV. POA 6 (33L)

Energy Grade Line Computations

Struct. ID	Q (cfs)	EGLo (ft)	HGLo (ft)	Total Pipe Loss (ft)	EGLi (ft)	HGLi (ft)	Ea (ft)	EGLa (ft)	Surface Elev. (ft)
Outlet		493.70	493.70						494.10
85	23.2	494.05	493.70	0.01	494.06	493.71	3.0	494.32	494.79
84	23.2	494.46	494.11		498.10	493.93	5.0	498.10	498.40
82	21.8	498.40	497.65		501.88	499.25	3.7	501.88	502.00
77	20.6	502.15	501.48	1.10	503.25	502.58	3.9	503.55	504.70
75	14.5	503.69	503.35		506.87	505.35	2.5	506.87	509.20
76	1.6	506.88	506.86	0.03	506.91	506.89	1.7	506.92	508.20
72	3.9	506.88	506.86		508.18	507.35	1.3	508.18	511.40
73	1.1	508.19	508.18		508.19	508.01	0.8	508.19	510.40
71	2.6	508.20	508.16		509.54	508.23	1.6	509.54	510.10
74	9.0	507.21	506.37	0.31	507.52	506.68	3.0	507.79	508.43
78	3.7	503.61	503.47	0.15	503.76	503.62	2.5	503.81	504.87
79	2.5	503.58	503.52	0.04	503.62	503.55	3.7	503.63	502.90
80	0.3	503.63	503.63		503.64	503.63	3.5	503.64	503.10
83	0.6	501.88	501.88		501.89	501.88	3.1	501.89	501.80
86	0.5	498.10	498.10	0.01	498.11	498.11	3.7	498.11	497.50
87	0.1	498.11	498.11		498.11	498.11	3.5	498.11	497.60

Energy Grade Line Computations

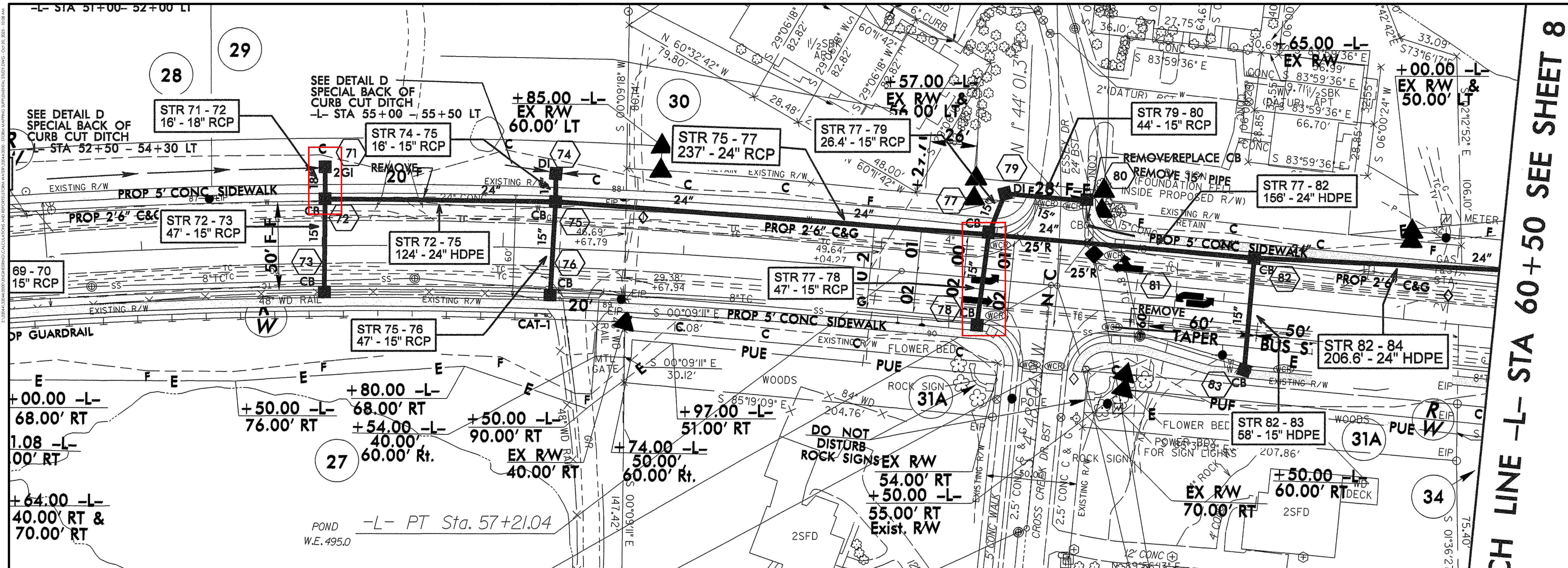
Struct. ID	Q (cfs)	EGLo (ft)	HGLo (ft)	Total Pipe Loss (ft)	EGLi (ft)	HGLi (ft)	Ea (ft)	EGLa (ft)	Surface Elev. (ft)
Outlet		493.70	493.70						494.10
85	19.0	493.93	493.70	0.01	493.94	493.71	2.8	494.11	494.79
84	19.0	494.21	493.97		497.57	493.84	4.5	497.57	498.40
82	17.6	497.77	497.28		501.49	499.13	3.3	501.49	502.00
77	16.4	501.66	501.23	0.70	502.36	501.93	2.9	502.57	504.70
75	10.3	502.64	502.47		506.46	505.18	2.1	506.46	509.20
76	1.6	506.47	506.44	0.03	506.50	506.47	1.3	506.51	508.20
72	3.9	506.47	506.44		508.18	507.35	1.3	508.18	511.40
73	1.1	508.19	508.18		508.19	508.01	0.8	508.19	510.40
71	2.6	508.20	508.16		509.54	508.23	1.6	509.54	510.10
74	4.9	506.56	506.31	0.09	506.65	506.40	2.0	506.76	508.43
78	3.7	502.63	502.49	0.15	502.78	502.64	1.6	502.86	504.87
79	2.5	502.60	502.53	0.04	502.64	502.57	2.8	502.66	502.90
80	0.3	502.66	502.66		502.66	502.66	2.6	502.66	503.10
83	0.6	501.49	501.49		501.49	501.49	2.7	501.50	501.80
86	0.5	497.57	497.57	0.01	497.58	497.58	3.2	497.58	497.50
87	0.1	497.58	497.58		497.58	497.58	3.0	497.58	497.60

Energy Grade Line Computations

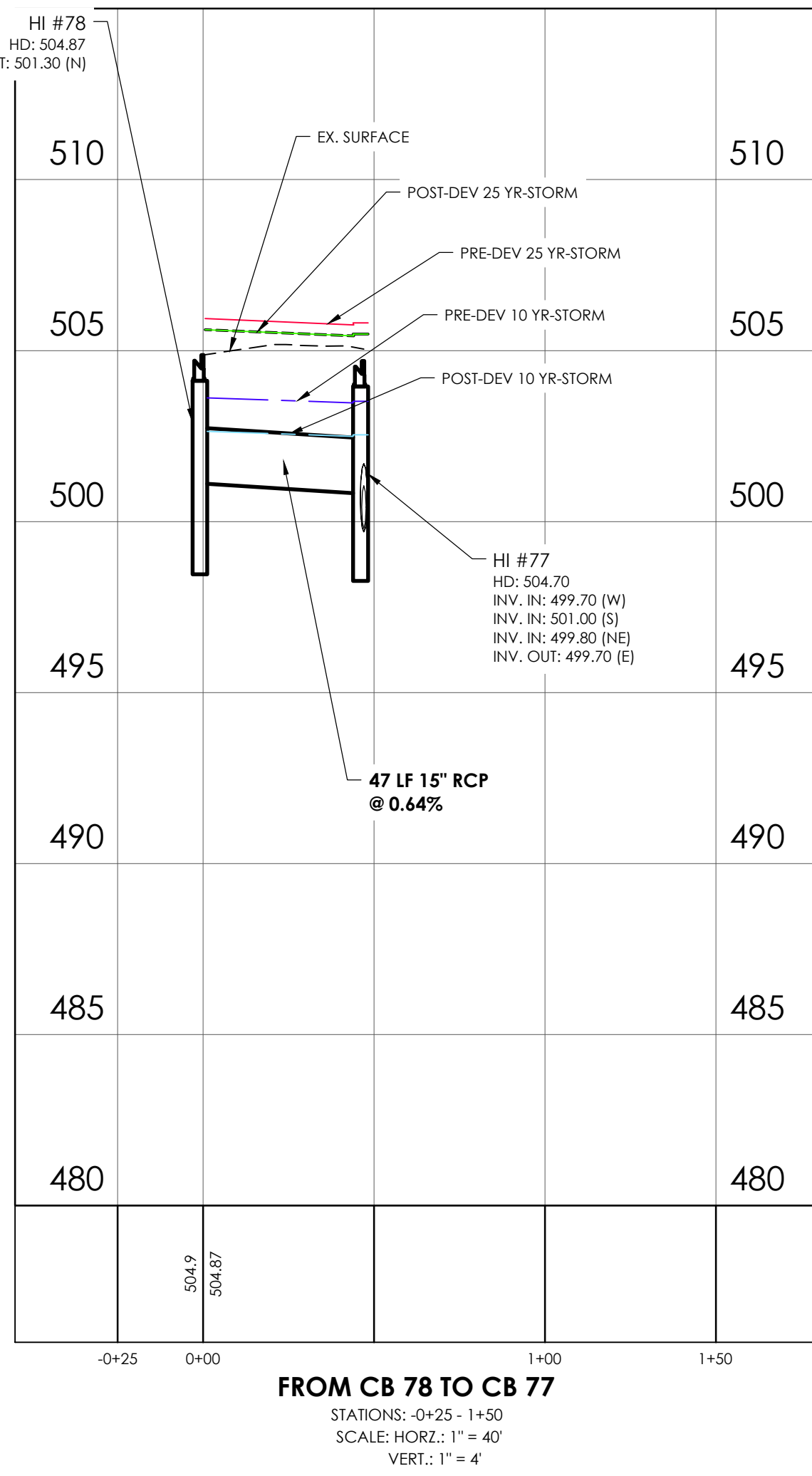
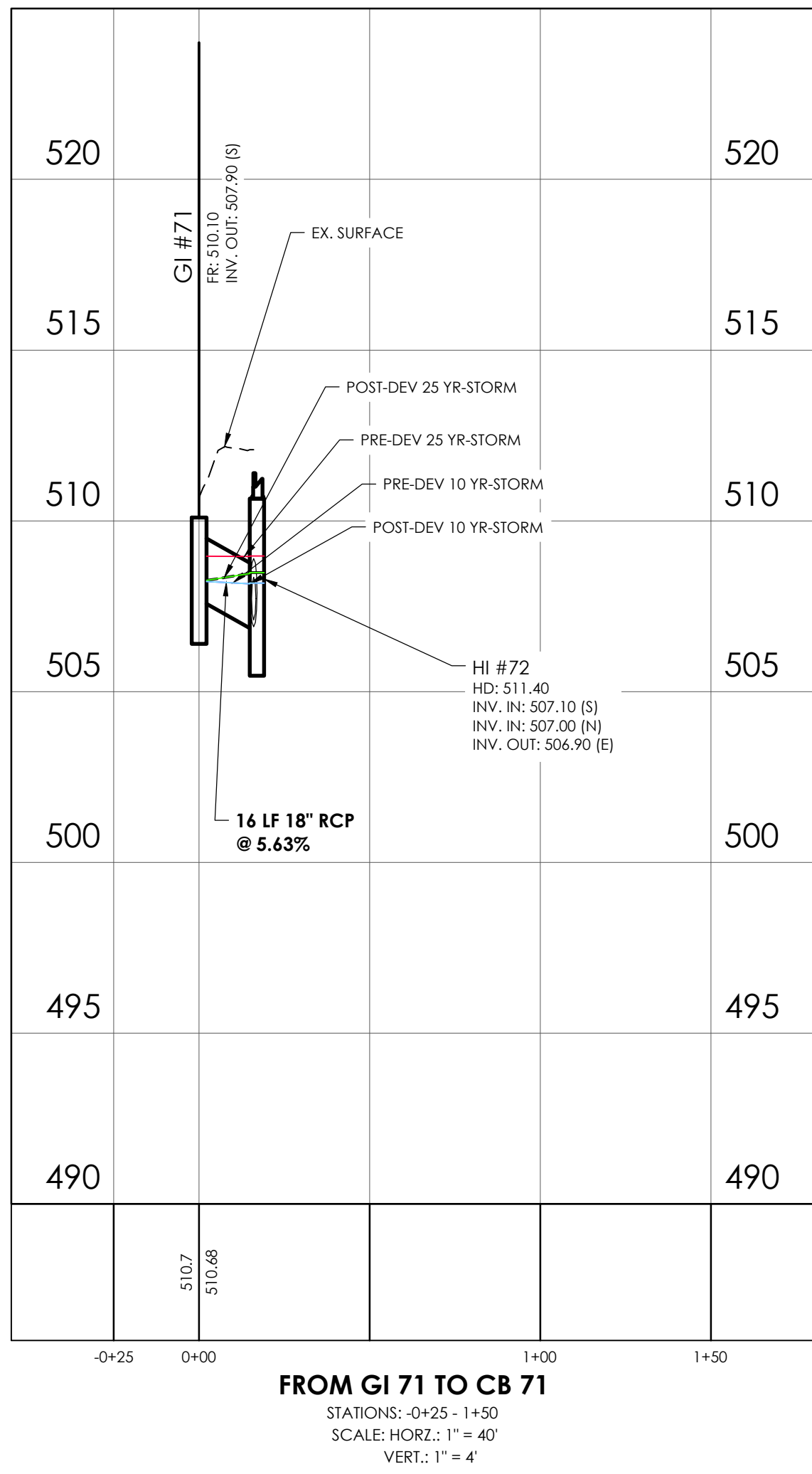
Struct. ID	Q (cfs)	EGLo (ft)	HGLo (ft)	Total Pipe Loss (ft)	EGLi (ft)	HGLi (ft)	Ea (ft)	EGLa (ft)	Surface Elev. (ft)
Outlet		493.70	493.70						494.10
85	31.4	494.34	493.70	0.03	494.36	493.73	3.6	494.85	494.79
84	31.5	495.10	494.46		499.01	494.07	5.9	499.01	498.40
82	29.9	499.57	498.16	2.80	502.37	500.96	4.5	502.71	502.00
77	28.6	503.22	501.94	2.12	505.34	504.06	6.2	505.85	504.70
75	21.9	506.15	505.40	2.21	508.37	507.61	4.5	508.91	509.20
76	1.8	508.92	508.89	0.04	508.96	508.92	3.8	508.96	508.20
72	4.3	508.92	508.89	0.04	508.96	508.93	2.1	508.98	511.40
73	1.2	508.99	508.97	0.02	509.00	508.99	1.6	509.01	510.40
71	2.9	509.00	508.96	0.01	509.01	508.97	1.1	509.02	510.10
74	15.9	509.95	507.35	0.96	510.91	508.31	6.6	511.43	508.43
78	4.0	505.92	505.75	0.18	506.10	505.94	4.8	506.14	504.87
79	2.7	505.88	505.81	0.05	505.93	505.85	6.1	505.95	502.90
80	0.3	505.95	505.95		505.95	505.95	5.9	505.95	503.10
83	0.7	502.71	502.70	0.01	502.72	502.71	3.9	502.72	501.80
86	0.6	499.01	499.00	0.01	499.02	499.01	4.6	499.02	497.50
87	0.1	499.02	499.02		499.02	499.02	4.4	499.02	497.60

Energy Grade Line Computations

Struct. ID	Q (cfs)	EGLo (ft)	HGLo (ft)	Total Pipe Loss (ft)	EGLi (ft)	HGLi (ft)	Ea (ft)	EGLa (ft)	Surface Elev. (ft)
Outlet		493.70	493.70						494.10
85	30.8	494.31	493.70	0.02	494.34	493.72	3.5	494.80	494.79
84	30.9	495.04	494.43		498.95	494.06	5.9	498.95	498.40
82	29.3	499.49	498.13	2.69	502.18	500.83	4.3	502.50	502.00
77	28.0	503.00	501.76	2.03	505.03	503.80	5.8	505.53	504.70
75	21.3	505.81	505.10	2.10	507.91	507.20	4.0	508.42	509.20
76	1.8	508.43	508.40	0.04	508.47	508.44	3.3	508.48	508.20
72	4.3	508.43	508.40	0.04	508.47	508.44	1.6	508.49	511.40
73	1.2	508.50	508.48	0.02	508.52	508.50	1.1	508.52	510.40
71	2.9	508.51	508.47		509.63	508.25	1.7	509.63	510.10
74	15.3	509.38	506.98	0.89	510.28	507.87	6.0	510.76	508.43
78	4.0	505.60	505.43	0.18	505.78	505.61	4.5	505.81	504.87
79	2.7	505.56	505.48	0.05	505.61	505.53	5.7	505.63	502.90
80	0.3	505.63	505.62		505.63	505.63	5.5	505.63	503.10
83	0.7	502.51	502.50	0.01	502.51	502.51	3.7	502.51	501.80
86	0.6	498.95	498.94	0.01	498.96	498.95	4.6	498.96	497.50
87	0.1	498.96	498.96		498.96	498.96	4.4	498.96	497.60



CH LINE -L- STA 60+50 SEE SHEET 8



	PRE-DEV 10 YR-STORM
	POST-DEV 10 YR-STORM
	PRE-DEV 25 YR-STORM
	POST-DEV 25 YR-STORM

NO.	REVISIONS	BY	DATE

THOMAS & HUTTON

2510 Meridian Parkway • Suite 100
Durham, NC 27713 • 919.682.0368
www.thomasandhutton.com

HGL FOR EXISTING STORM DRAINAGE NETWORK

860 WEAVER DAIRY ROAD

PROJECT LOCATION:

CLIENT/OWNER:
LAND PLANNING & ENTITLEMENTS
157 EAST FRANKLIN STREET
CHAPEL HILL, NC 27514

GRAPHIC SCALE:
1 INCH = 40 FEET

DATUM: HORIZ.: NAD 83 VERT.: NAVD 88

JOB NO:	32044.0000
DATE:	
DRAWN:	
DESIGNED:	
REVIEWED:	
APPROVED:	
SCALE:	1" = 40'

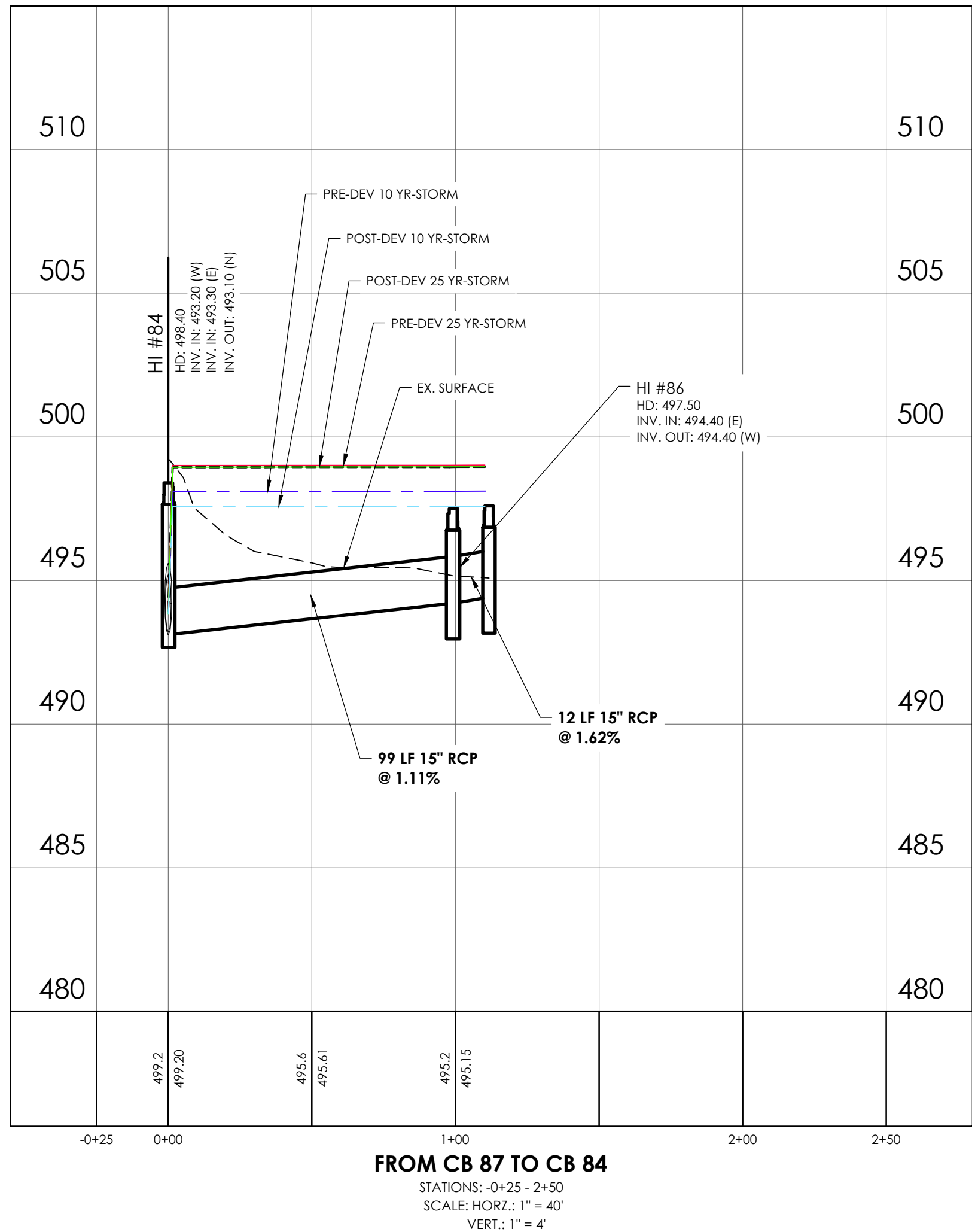
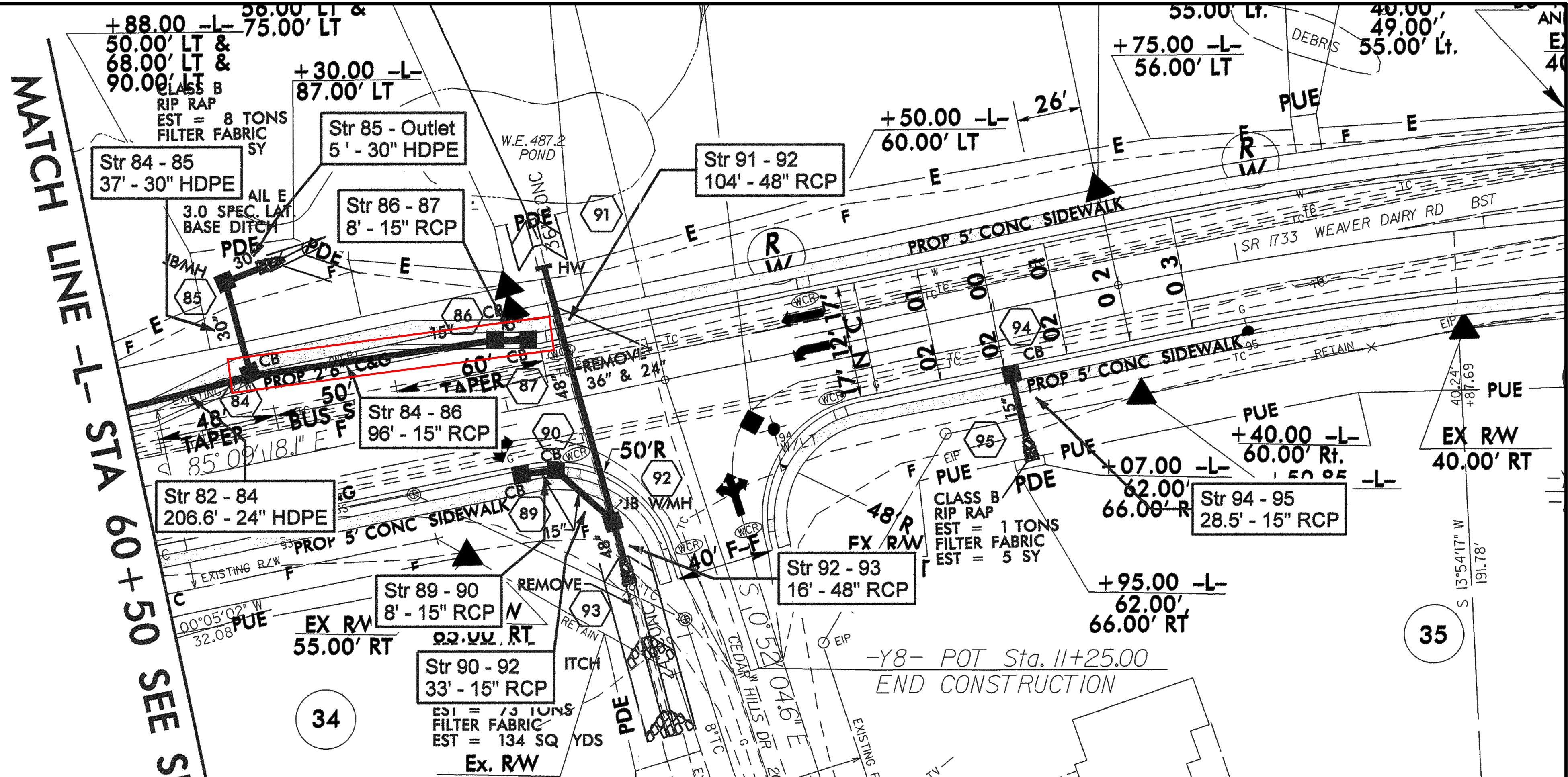
HGL

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REVISIONS

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	PRE-DEV 10 YR-STORM
	POST-DEV 10 YR-STORM
	PRE-DEV 25 YR-STORM
	POST-DEV 25 YR-STORM

NO.	REVISIONS	BY	DATE

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SCALE: 1" = 40'

HGL