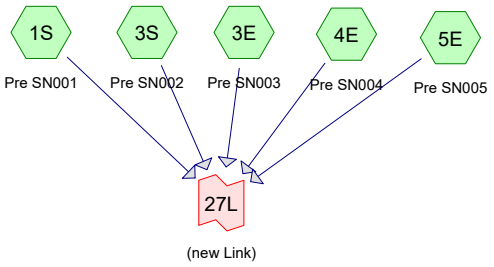
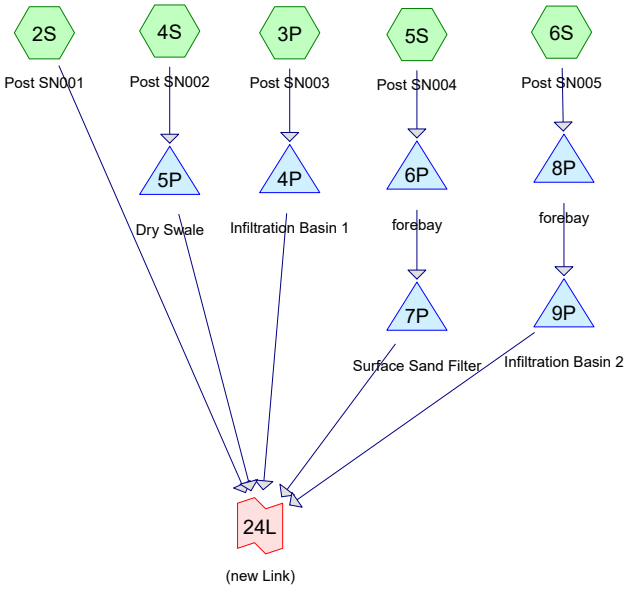
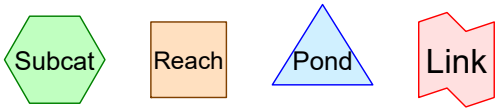
Pre-development



Post-Development





Routing Diagram for Qp10_001-005_11-2017_COMPLETE
Prepared by VT Agency of Natural Resources, Printed 1/2/2019

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.120	56	(3E)
3.500	72	Adjusted value (2S)
3.120	64	Adjusted value (3P)
0.380	66	Adjusted value (4S)
5.950	63	Adjusted value (5S)
7.000	62	CNadj Per 2.2.5.3 (6S)
12.560	55	Woods, Good, HSG B (4E, 5E)
0.360	61	offsite - >75% Grass cover, Good, HSG B (4E)
0.030	98	offsite impervious (4E)
3.500	69	woods good condition (1S)
0.380	55	woods good condition (3S)
39.900	**61**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
12.920	HSG B	4E, 5E
0.000	HSG C	
0.000	HSG D	
26.980	Other	1S, 2S, 3E, 3P, 3S, 4E, 4S, 5S, 6S
39.900		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	3.120	3.120		3E
0.000	0.000	0.000	0.000	12.950	12.950	Adjusted value	2S, 3P, 4S, 5S
0.000	0.000	0.000	0.000	7.000	7.000	CNadj Per 2.2.5.3	6S
0.000	12.560	0.000	0.000	0.000	12.560	Woods, Good	4E, 5E
0.000	0.360	0.000	0.000	0.000	0.360	offsite - >75% Grass cover, Good	4E
0.000	0.000	0.000	0.000	0.030	0.030	offsite impervious	4E
0.000	0.000	0.000	0.000	3.880	3.880	woods good condition	1S, 3S
0.000	**12.920**	**0.000**	**0.000**	**26.980**	**39.900**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	7P	52.75	51.00	40.0	0.0437	0.013	8.0	0.0	0.0

Time span=2.00-100.00 hrs, dt=0.01 hrs, 9801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Pre SN001 Runoff Area=3.500 ac 0.00% Impervious Runoff Depth=0.91"
Tc=13.2 min CN=69 Runoff=4.10 cfs 0.266 af

Subcatchment 2S: Post SN001 Runoff Area=3.500 ac 0.00% Impervious Runoff Depth=1.08"
Tc=12.1 min CN=72 Runoff=5.20 cfs 0.314 af

Subcatchment 3E: Pre SN003 Runoff Area=3.120 ac 0.00% Impervious Runoff Depth=0.36"
Tc=14.5 min CN=56 Runoff=0.80 cfs 0.092 af

Subcatchment 3P: Post SN003 Runoff Area=3.120 ac 0.00% Impervious Runoff Depth=0.67"
Tc=12.9 min CN=64 Runoff=2.46 cfs 0.174 af

Subcatchment 3S: Pre SN002 Runoff Area=0.380 ac 0.00% Impervious Runoff Depth=0.32"
Tc=6.6 min CN=55 Runoff=0.13 cfs 0.010 af

Subcatchment 4E: Pre SN004 Runoff Area=5.950 ac 0.50% Impervious Runoff Depth>0.35"
Tc=22.6 min CN=WQ Runoff=1.08 cfs 0.174 af

Subcatchment 4S: Post SN002 Runoff Area=0.380 ac 0.00% Impervious Runoff Depth=0.76"
Tc=4.3 min CN=66 Runoff=0.53 cfs 0.024 af

Subcatchment 5E: Pre SN005 Runoff Area=7.000 ac 0.00% Impervious Runoff Depth=0.32"
Tc=17.8 min CN=55 Runoff=1.27 cfs 0.188 af

Subcatchment 5S: Post SN004 Runoff Area=5.950 ac 0.00% Impervious Runoff Depth=0.63"
Tc=18.4 min CN=63 Runoff=3.41 cfs 0.310 af

Subcatchment 6S: Post SN005 Runoff Area=7.000 ac 0.00% Impervious Runoff Depth=0.58"
Tc=15.8 min CN=62 Runoff=3.99 cfs 0.340 af

Pond 4P: Infiltration Basin 1 Peak Elev=57.66' Storage=1,408 cf Inflow=2.46 cfs 0.174 af
Discarded=0.21 cfs 0.125 af Primary=1.46 cfs 0.049 af Outflow=1.67 cfs 0.174 af

Pond 5P: Dry Swale Peak Elev=60.24' Storage=224 cf Inflow=0.53 cfs 0.024 af
Discarded=0.15 cfs 0.024 af Primary=0.00 cfs 0.000 af Outflow=0.15 cfs 0.024 af

Pond 6P: forebay Peak Elev=53.37' Storage=2,508 cf Inflow=3.41 cfs 0.310 af
Outflow=3.35 cfs 0.310 af

Pond 7P: Surface Sand Filter Peak Elev=53.08' Storage=3,920 cf Inflow=3.35 cfs 0.310 af
Discarded=0.41 cfs 0.279 af Primary=0.34 cfs 0.031 af Outflow=0.74 cfs 0.310 af

Pond 8P: forebay Peak Elev=52.80' Storage=2,749 cf Inflow=3.99 cfs 0.340 af
Outflow=3.93 cfs 0.340 af

Pond 9P: Infiltration Basin 2 Peak Elev=52.32' Storage=4,132 cf Inflow=3.93 cfs 0.340 af
Discarded=0.27 cfs 0.284 af Primary=0.84 cfs 0.056 af Outflow=1.11 cfs 0.340 af

Link 24L: (new Link) Inflow=5.20 cfs 0.449 af
Primary=5.20 cfs 0.449 af

Link 27L: (new Link) Inflow=6.46 cfs 0.731 af
Primary=6.46 cfs 0.731 af

Total Runoff Area = 39.900 ac Runoff Volume = 1.893 af Average Runoff Depth = 0.57"
99.92% Pervious = 39.870 ac 0.08% Impervious = 0.030 ac

Summary for Subcatchment 1S: Pre SN001

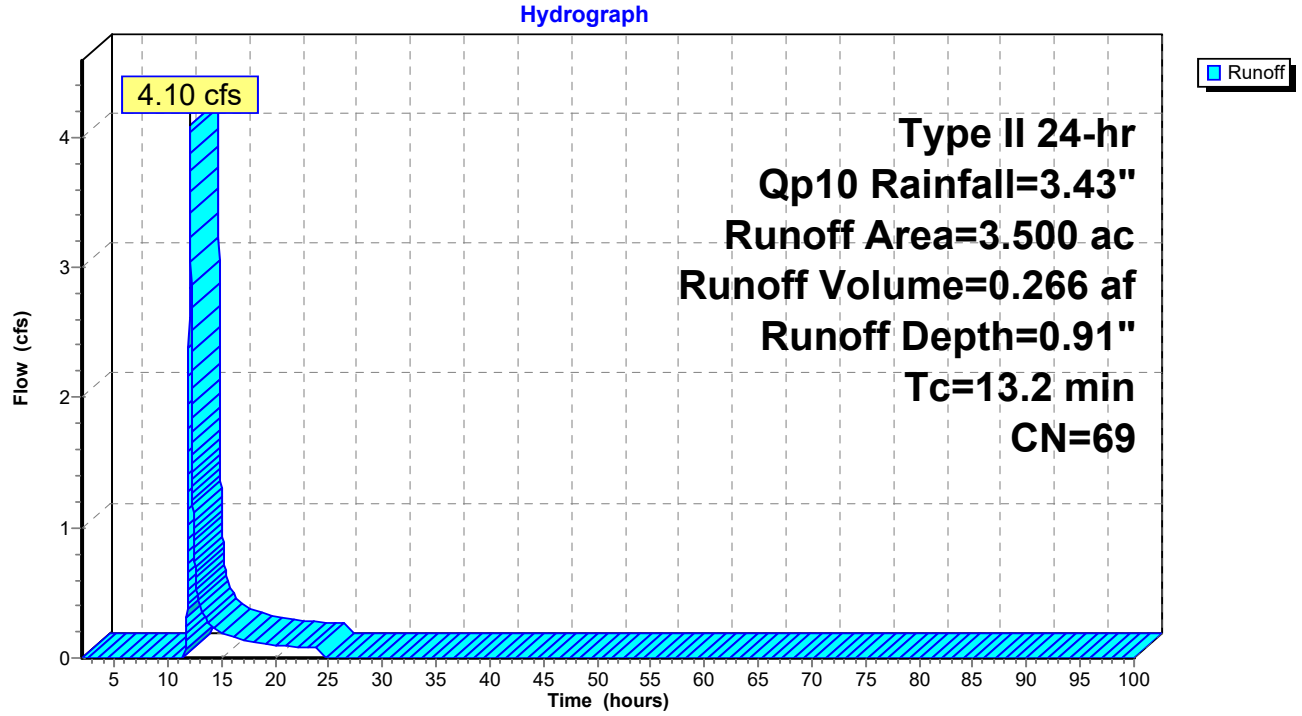
Runoff = 4.10 cfs @ 12.07 hrs, Volume= 0.266 af, Depth= 0.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 2.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr Qp10 Rainfall=3.43"

	Area (ac)	CN	Description
*	3.500	69	woods good condition
	3.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2					**Direct Entry, Watershed Lag Method**

Subcatchment 1S: Pre SN001



Summary for Subcatchment 2S: Post SN001

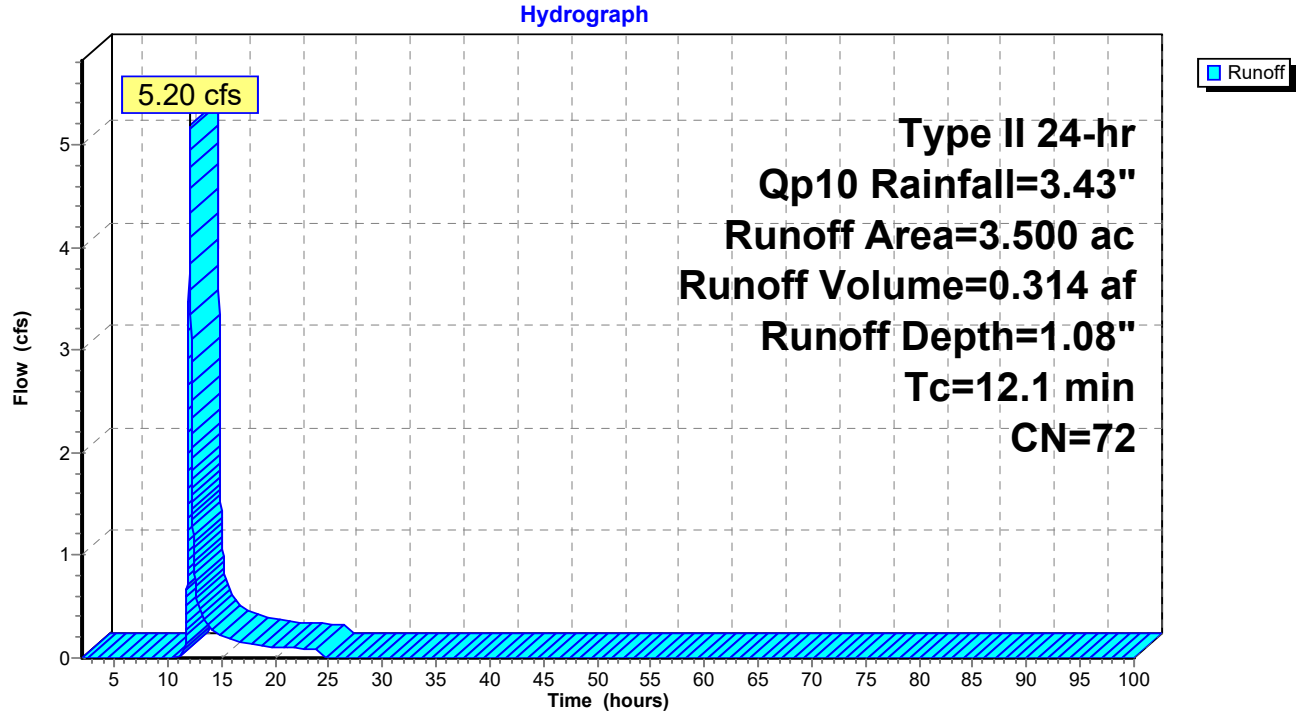
Runoff = 5.20 cfs @ 12.05 hrs, Volume= 0.314 af, Depth= 1.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 2.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr Qp10 Rainfall=3.43"

	Area (ac)	CN	Description
*	3.500	72	Adjusted value
	3.500		100.00% Pervious Area

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

Subcatchment 2S: Post SN001



Summary for Subcatchment 3E: Pre SN003

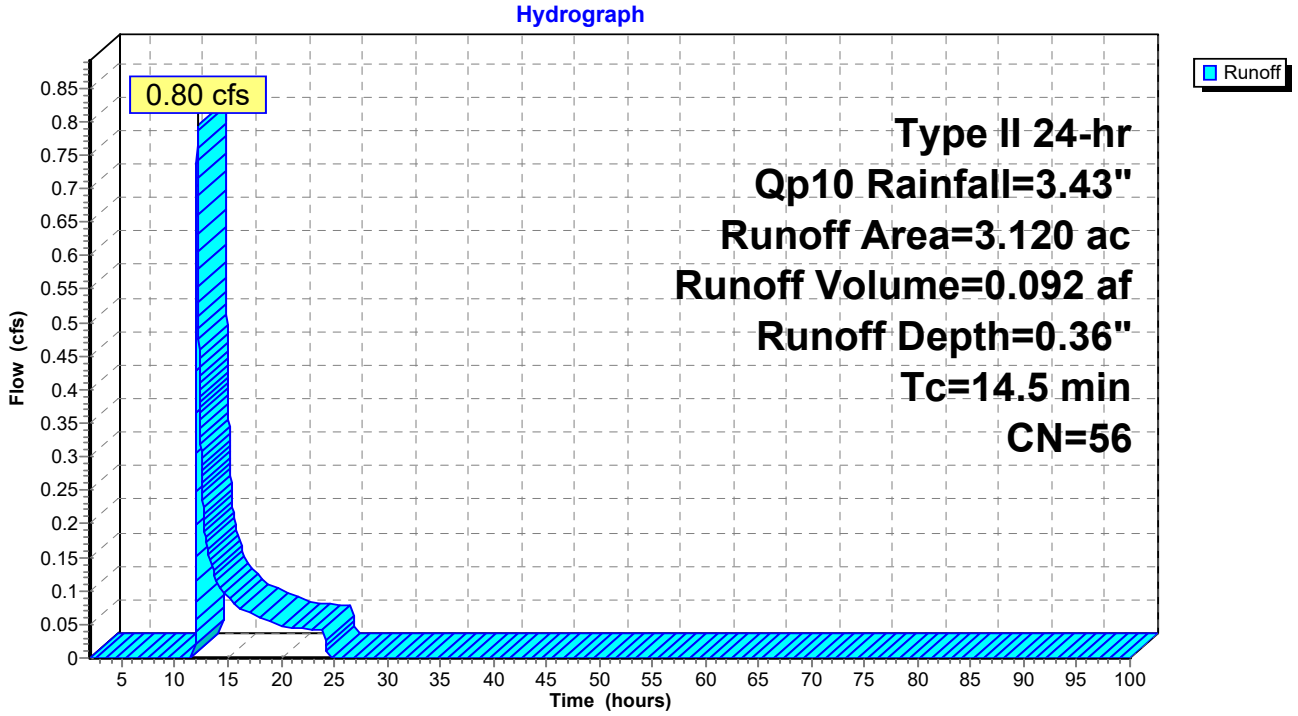
Runoff = 0.80 cfs @ 12.12 hrs, Volume= 0.092 af, Depth= 0.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 2.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr Qp10 Rainfall=3.43"

	Area (ac)	CN	Description
*	3.120	56	
	3.120		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5					**Direct Entry, Watershed Lag Method**

Subcatchment 3E: Pre SN003



Summary for Subcatchment 3P: Post SN003

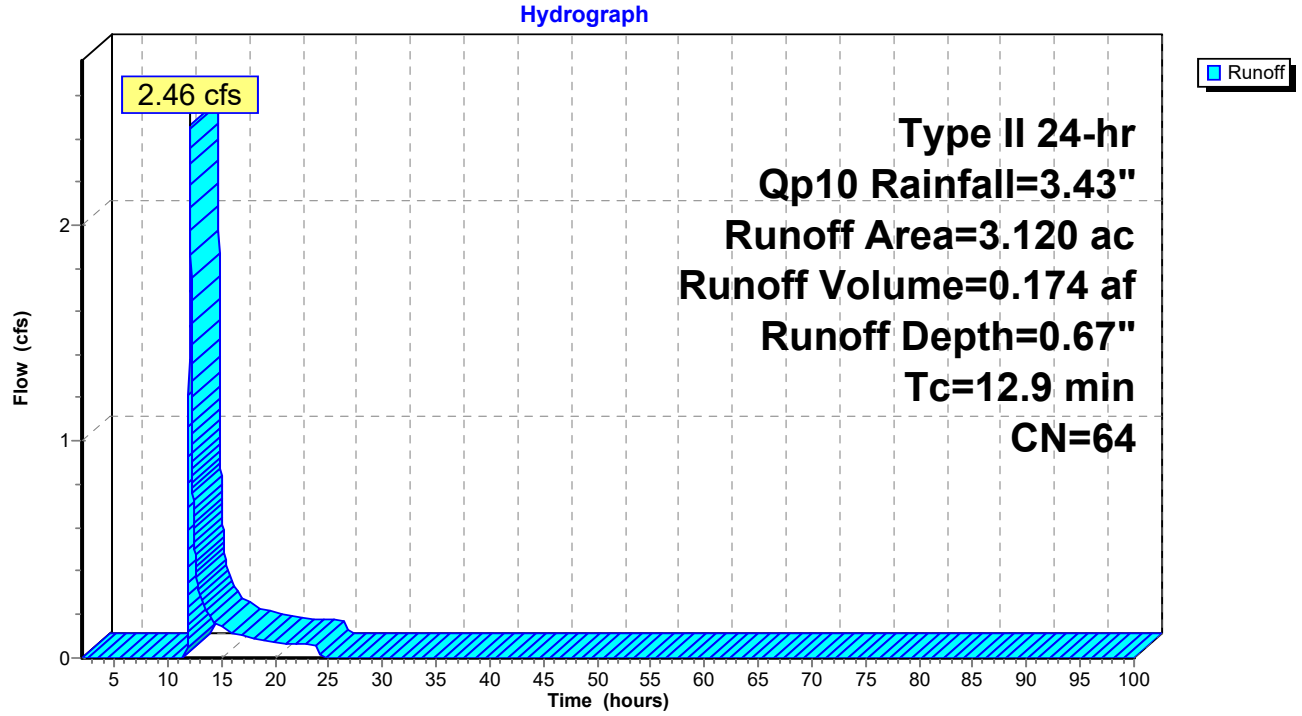
Runoff = 2.46 cfs @ 12.07 hrs, Volume= 0.174 af, Depth= 0.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 2.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr Qp10 Rainfall=3.43"

	Area (ac)	CN	Description
*	3.120	64	Adjusted value
	3.120		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9					**Direct Entry, Watershed Lag Method**

Subcatchment 3P: Post SN003



Summary for Subcatchment 3S: Pre SN002

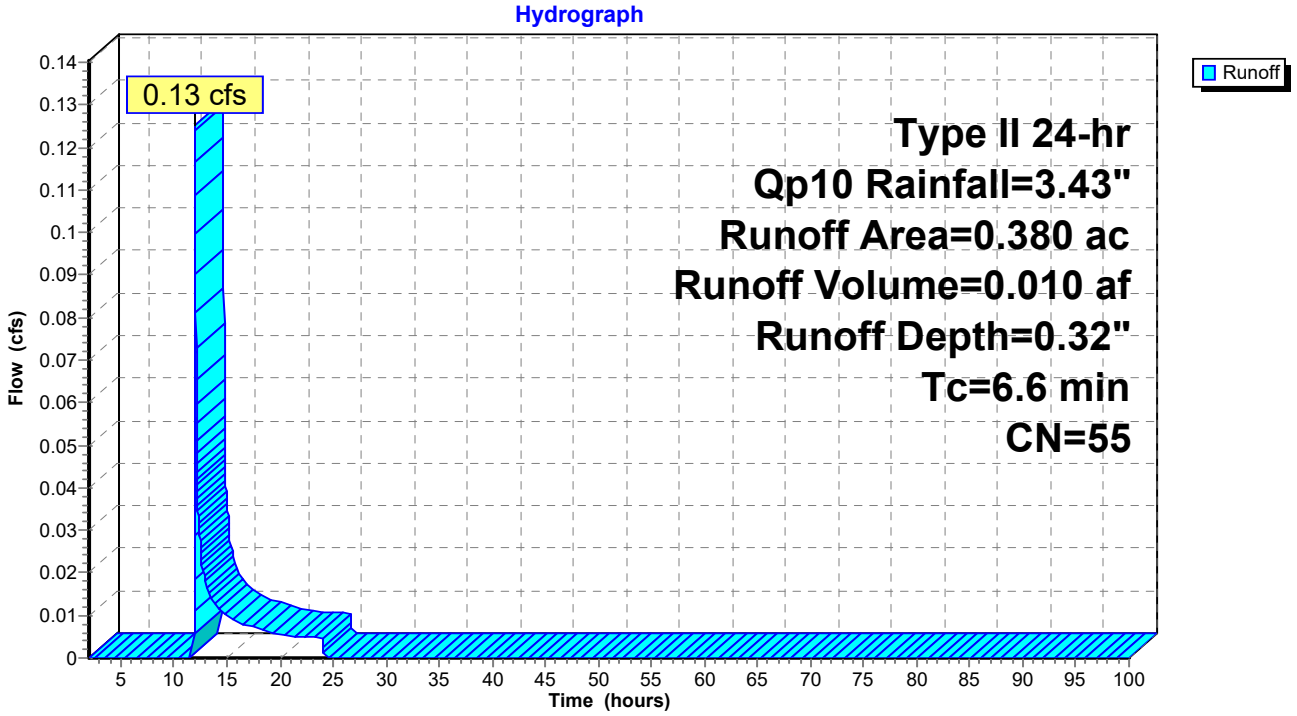
Runoff = 0.13 cfs @ 12.02 hrs, Volume= 0.010 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 2.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr Qp10 Rainfall=3.43"

	Area (ac)	CN	Description
*	0.380	55	woods good condition
	0.380		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6					**Direct Entry, Watershed Lag Method**

Subcatchment 3S: Pre SN002



Summary for Subcatchment 4E: Pre SN004

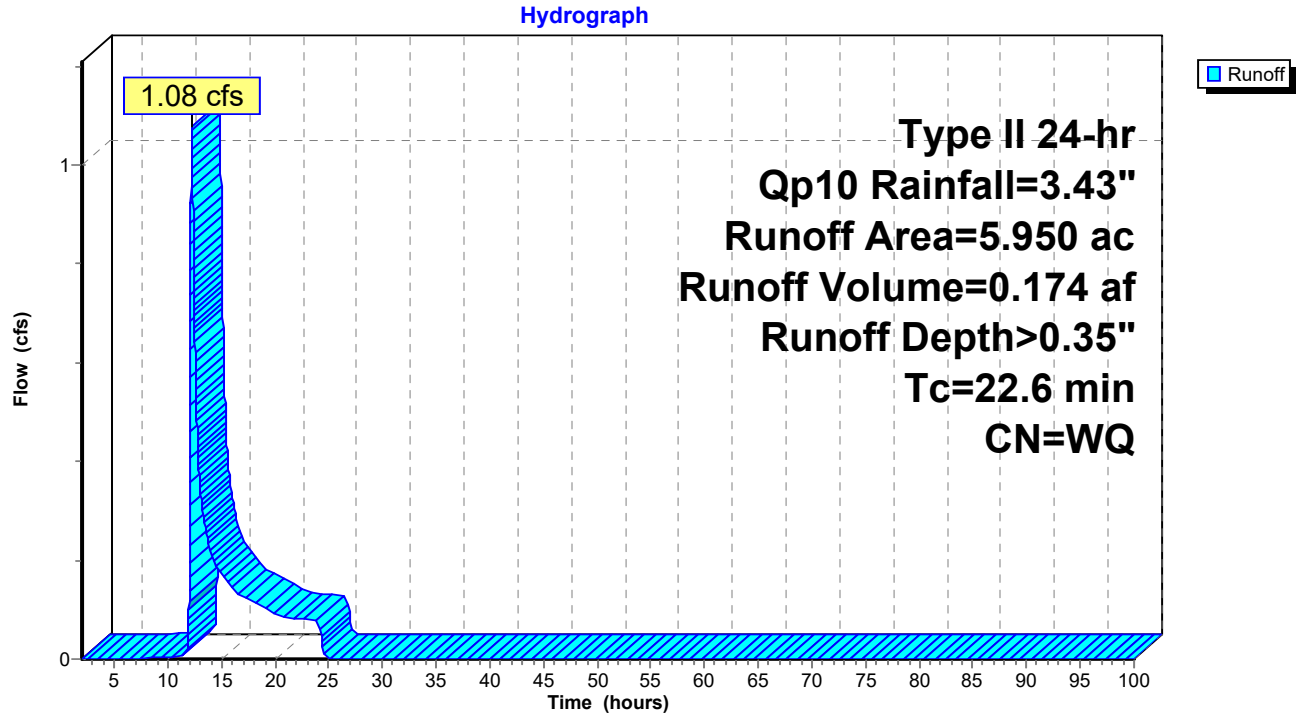
Runoff = 1.08 cfs @ 12.23 hrs, Volume= 0.174 af, Depth> 0.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 2.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr Qp10 Rainfall=3.43"

	Area (ac)	CN	Description
*	0.360	61	offsite - >75% Grass cover, Good, HSG B
	5.560	55	Woods, Good, HSG B
*	0.030	98	offsite impervious
	5.950		Weighted Average
	5.920		99.50% Pervious Area
	0.030		0.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.6					**Direct Entry, Watershed Lag Method**

Subcatchment 4E: Pre SN004



Summary for Subcatchment 4S: Post SN002

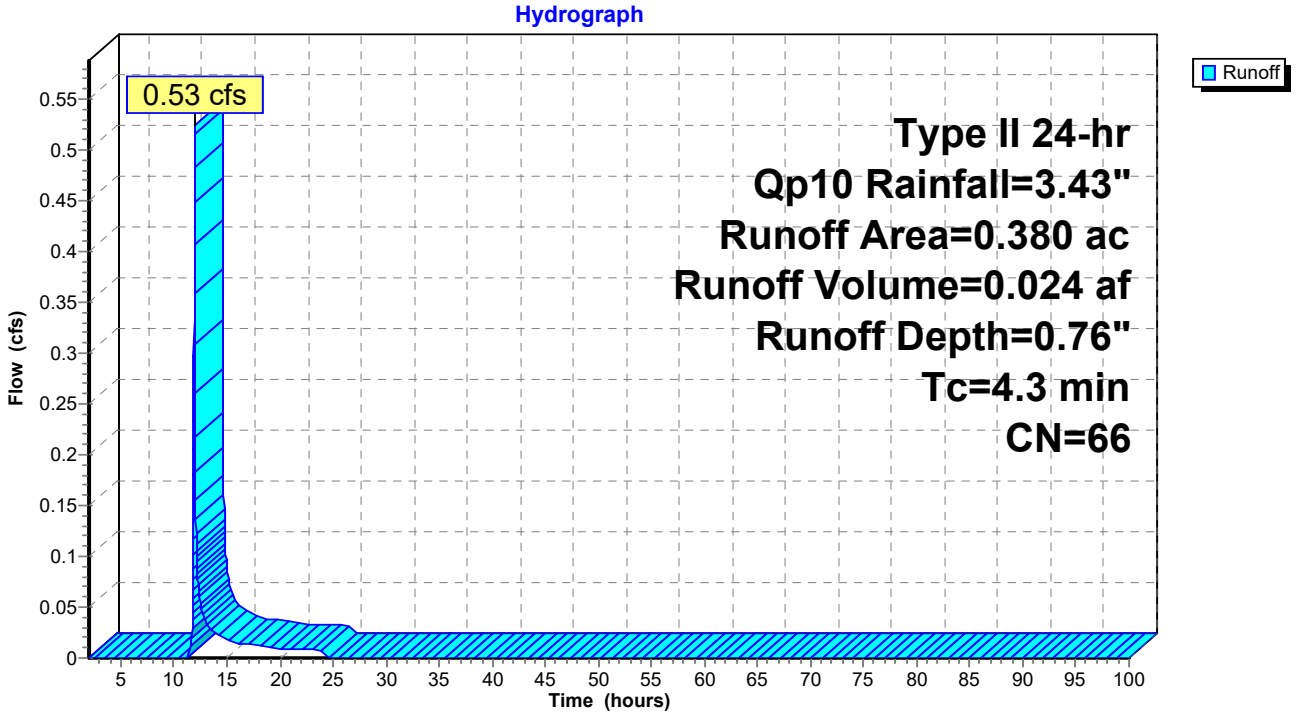
Runoff = 0.53 cfs @ 11.96 hrs, Volume= 0.024 af, Depth= 0.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 2.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr Qp10 Rainfall=3.43"

	Area (ac)	CN	Description
*	0.380	66	Adjusted value
	0.380		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3					**Direct Entry, Watershed Lag Calc**

Subcatchment 4S: Post SN002



Summary for Subcatchment 5E: Pre SN005

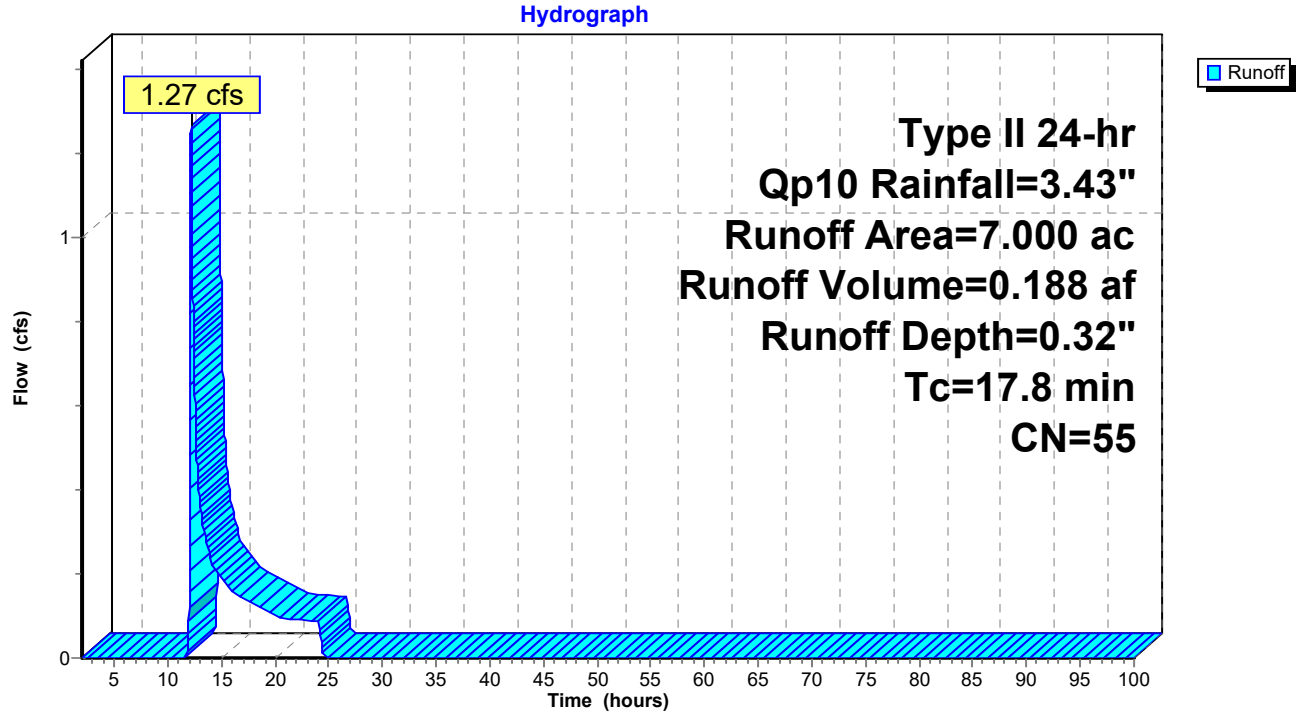
Runoff = 1.27 cfs @ 12.17 hrs, Volume= 0.188 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 2.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr Qp10 Rainfall=3.43"

Area (ac)	CN	Description
7.000	55	Woods, Good, HSG B
7.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8					**Direct Entry, Watershed Lag Method**

Subcatchment 5E: Pre SN005



Summary for Subcatchment 5S: Post SN004

Curve Number takes into account Tv credit from Simple Disconnection.

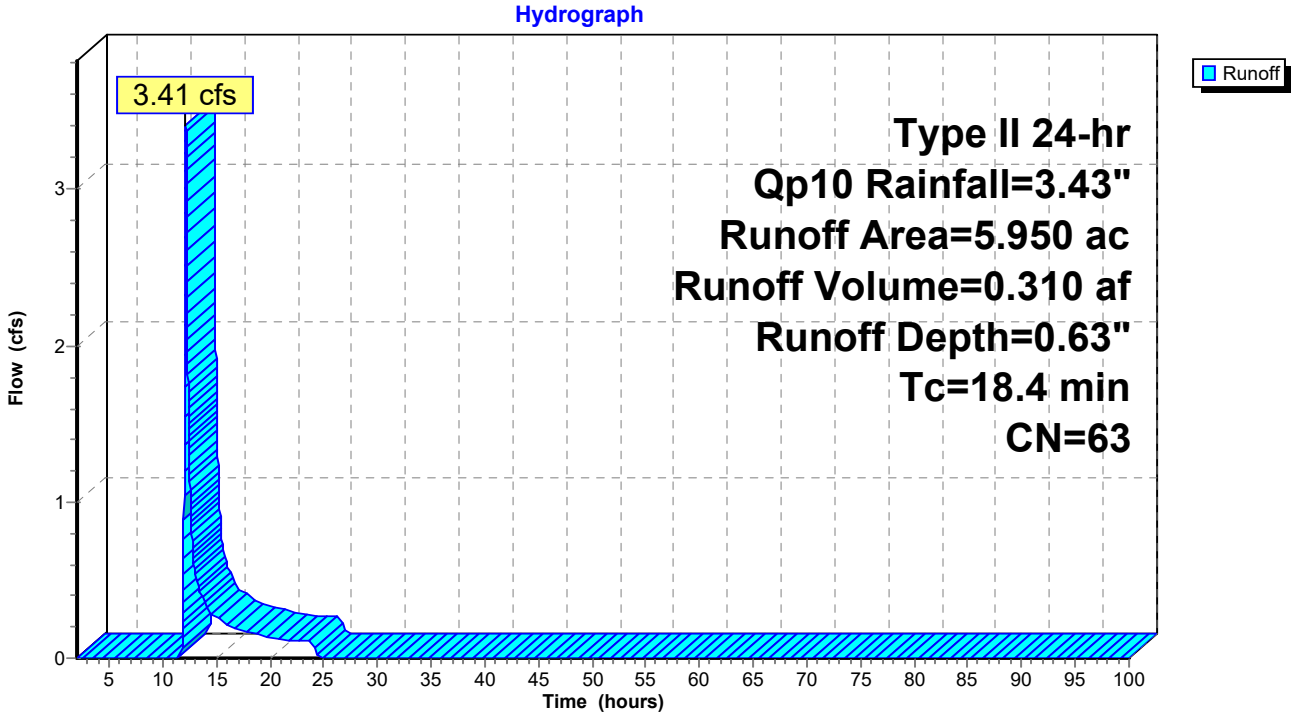
Runoff = 3.41 cfs @ 12.14 hrs, Volume= 0.310 af, Depth= 0.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 2.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr Qp10 Rainfall=3.43"

	Area (ac)	CN	Description
*	5.950	63	Adjusted value
	5.950		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.4					**Direct Entry, Watershed Lag Method**

Subcatchment 5S: Post SN004



Summary for Subcatchment 6S: Post SN005

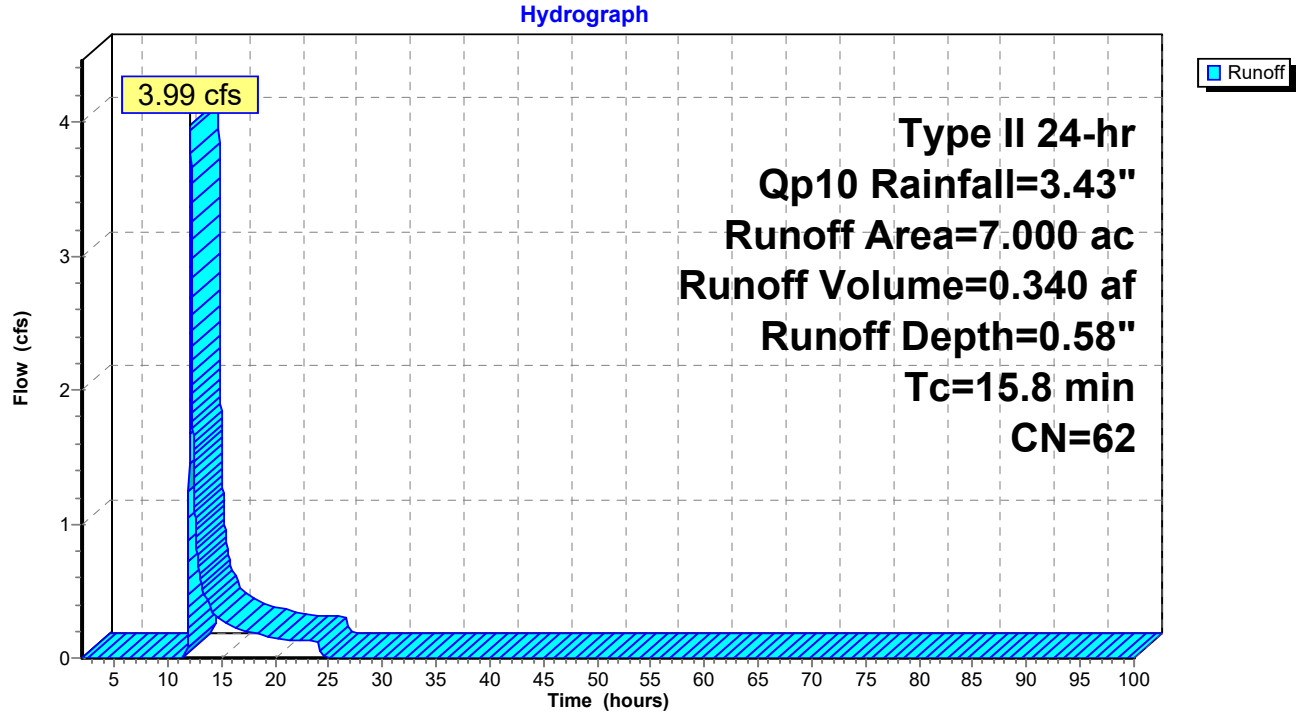
Runoff = 3.99 cfs @ 12.11 hrs, Volume= 0.340 af, Depth= 0.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 2.00-100.00 hrs, dt= 0.01 hrs
Type II 24-hr Qp10 Rainfall=3.43"

	Area (ac)	CN	Description
*	7.000	62	CNadj Per 2.2.5.3
	7.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.8					**Direct Entry, Watershed Lag Method**

Subcatchment 6S: Post SN005



Summary for Pond 4P: Infiltration Basin 1

Inflow Area = 3.120 ac, 0.00% Impervious, Inflow Depth = 0.67" for Qp10 event
Inflow = 2.46 cfs @ 12.07 hrs, Volume= 0.174 af
Outflow = 1.67 cfs @ 12.17 hrs, Volume= 0.174 af, Atten= 32%, Lag= 5.8 min
Discarded = 0.21 cfs @ 12.17 hrs, Volume= 0.125 af
Primary = 1.46 cfs @ 12.17 hrs, Volume= 0.049 af

Routing by Stor-Ind method, Time Span= 2.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 57.66' @ 12.17 hrs Surf.Area= 1,974 sf Storage= 1,408 cf

Plug-Flow detention time= 93.1 min calculated for 0.174 af (100% of inflow)
Center-of-Mass det. time= 93.1 min (989.8 - 896.7)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	2,436 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

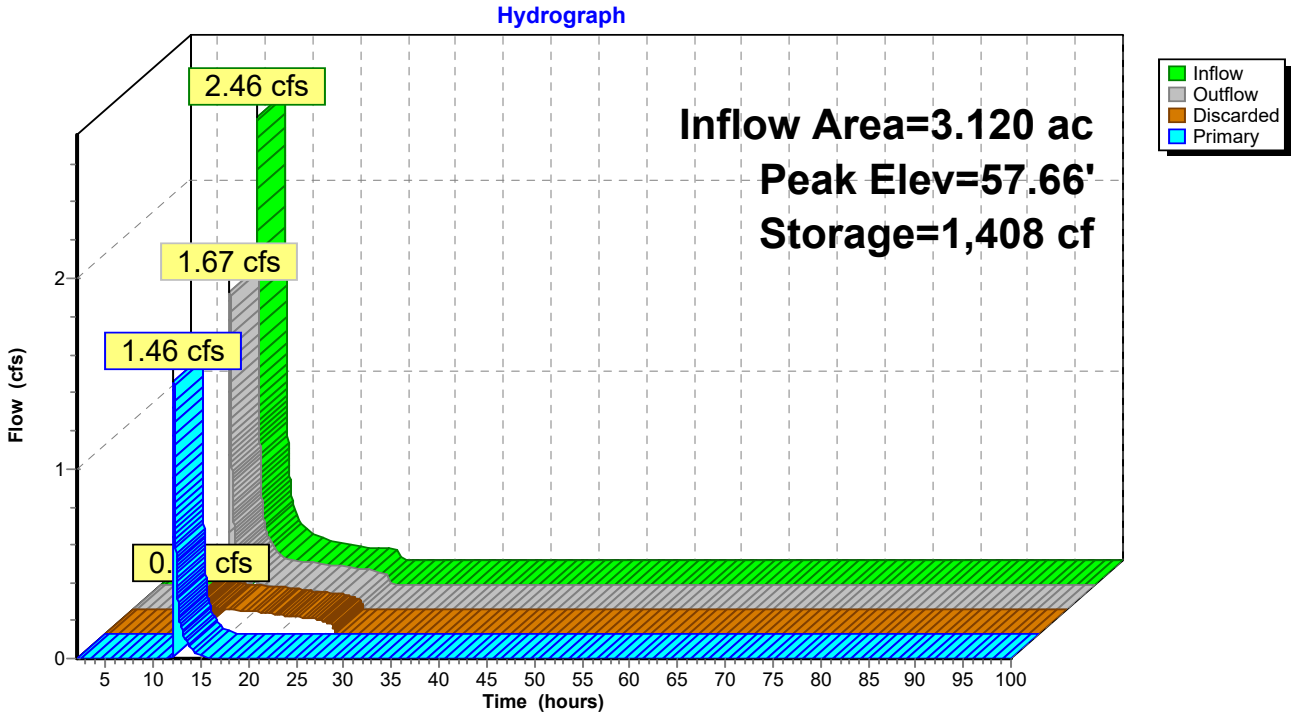
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	525	0	0
57.00	861	693	693
57.50	1,056	479	1,172
58.00	4,000	1,264	2,436

Device	Routing	Invert	Outlet Devices
#1	Discarded	56.00'	**4.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 52.00'
#2	Primary	57.50'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Discarded OutFlow Max=0.21 cfs @ 12.17 hrs HW=57.66' (Free Discharge)
1=Exfiltration (Controls 0.21 cfs)

Primary OutFlow Max=1.46 cfs @ 12.17 hrs HW=57.66' (Free Discharge)
2=Broad-Crested Rectangular Weir (Weir Controls 1.46 cfs @ 0.94 fps)

Pond 4P: Infiltration Basin 1



Summary for Pond 5P: Dry Swale

Inflow Area = 0.380 ac, 0.00% Impervious, Inflow Depth = 0.76" for Qp10 event
Inflow = 0.53 cfs @ 11.96 hrs, Volume= 0.024 af
Outflow = 0.15 cfs @ 12.07 hrs, Volume= 0.024 af, Atten= 71%, Lag= 6.5 min
Discarded = 0.15 cfs @ 12.07 hrs, Volume= 0.024 af
Primary = 0.00 cfs @ 2.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 2.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 60.24' @ 12.07 hrs Surf.Area= 1,814 sf Storage= 224 cf
Flood Elev= 61.00' Surf.Area= 3,750 sf Storage= 958 cf

Plug-Flow detention time= 10.4 min calculated for 0.024 af (100% of inflow)
Center-of-Mass det. time= 10.4 min (890.9 - 880.5)

Volume	Invert	Avail.Storage	Storage Description
#1	60.00'	958 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

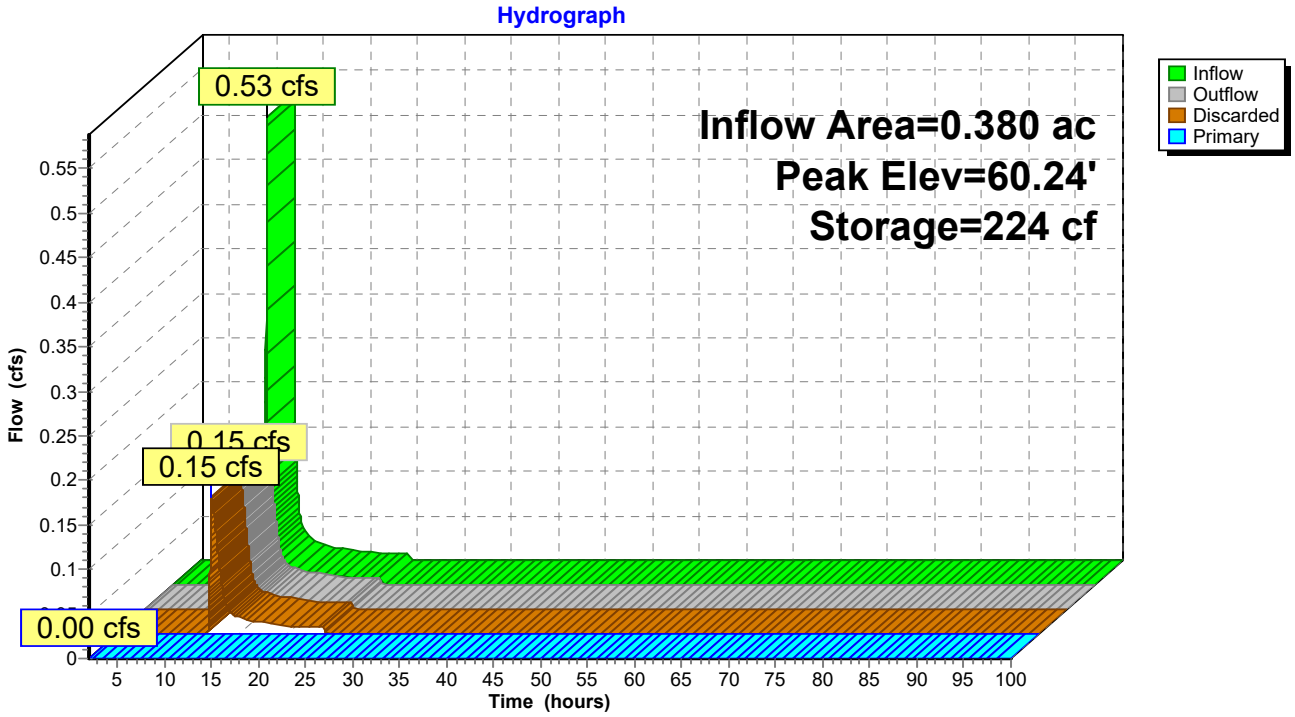
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
60.00	80	0	0
60.50	3,750	958	958

Device	Routing	Invert	Outlet Devices
#1	Discarded	60.00'	**3.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 57.00'
#2	Primary	60.50'	**60.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.15 cfs @ 12.07 hrs HW=60.24' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.15 cfs)

Primary OutFlow Max=0.00 cfs @ 2.00 hrs HW=60.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 5P: Dry Swale



Summary for Pond 6P: forebay

Inflow Area = 5.950 ac, 0.00% Impervious, Inflow Depth = 0.63" for Qp10 event
Inflow = 3.41 cfs @ 12.14 hrs, Volume= 0.310 af
Outflow = 3.35 cfs @ 12.17 hrs, Volume= 0.310 af, Atten= 2%, Lag= 1.6 min
Primary = 3.35 cfs @ 12.17 hrs, Volume= 0.310 af

Routing by Stor-Ind method, Time Span= 2.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 53.10' Surf.Area= 1,475 sf Storage= 2,084 cf
Peak Elev= 53.37' @ 12.17 hrs Surf.Area= 1,677 sf Storage= 2,508 cf (425 cf above start)

Plug-Flow detention time= 110.4 min calculated for 0.262 af (85% of inflow)
Center-of-Mass det. time= 4.1 min (910.3 - 906.3)

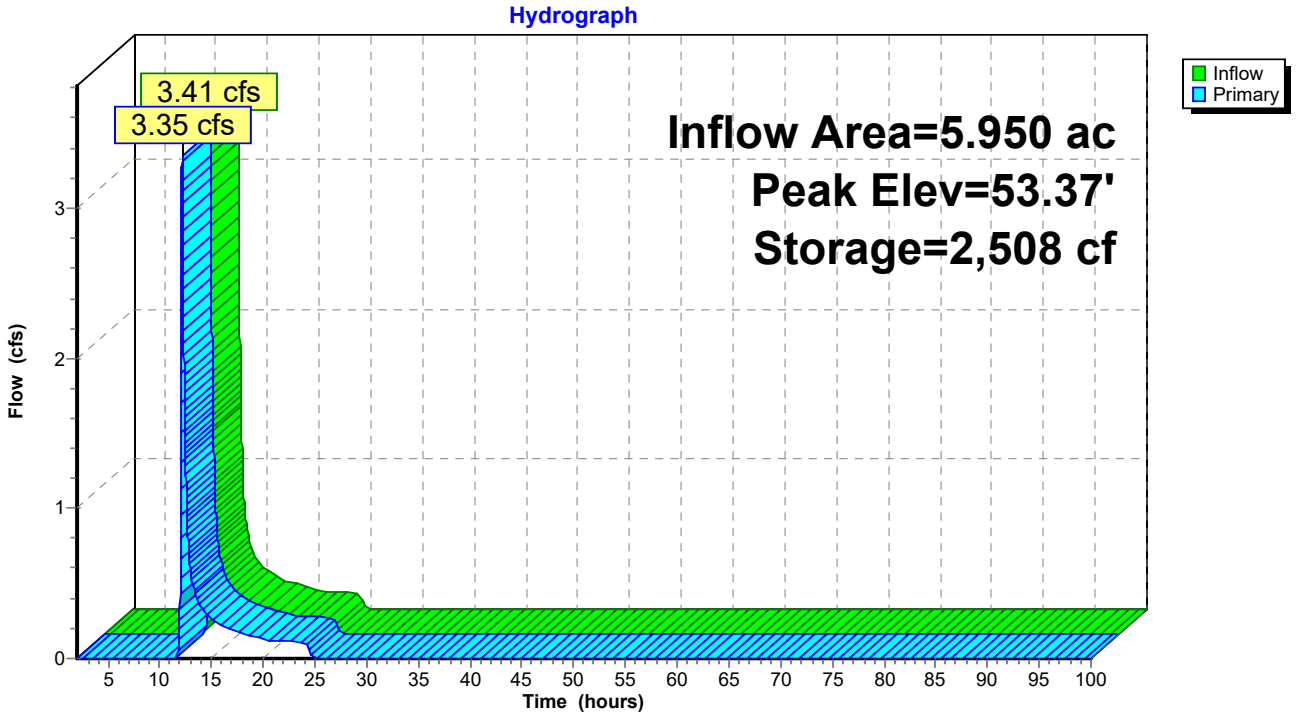
Volume	Invert	Avail.Storage	Storage Description
#1	51.00'	3,300 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
51.00	560	0	0
52.00	960	760	760
53.00	1,400	1,180	1,940
53.80	2,000	1,360	3,300

Device	Routing	Invert	Outlet Devices
#1	Primary	53.10'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=3.35 cfs @ 12.17 hrs HW=53.37' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 3.35 cfs @ 1.24 fps)

Pond 6P: forebay



Summary for Pond 7P: Surface Sand Filter

Inflow Area = 5.950 ac, 0.00% Impervious, Inflow Depth = 0.63" for Qp10 event
Inflow = 3.35 cfs @ 12.17 hrs, Volume= 0.310 af
Outflow = 0.74 cfs @ 12.77 hrs, Volume= 0.310 af, Atten= 78%, Lag= 36.1 min
Discarded = 0.41 cfs @ 12.77 hrs, Volume= 0.279 af
Primary = 0.34 cfs @ 12.77 hrs, Volume= 0.031 af

Routing by Stor-Ind method, Time Span= 2.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 53.08' @ 12.77 hrs Surf.Area= 3,173 sf Storage= 3,920 cf

Plug-Flow detention time= 97.7 min calculated for 0.310 af (100% of inflow)
Center-of-Mass det. time= 97.7 min (1,008.0 - 910.3)

Volume	Invert	Avail.Storage	Storage Description
#1	49.67'	7,455 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

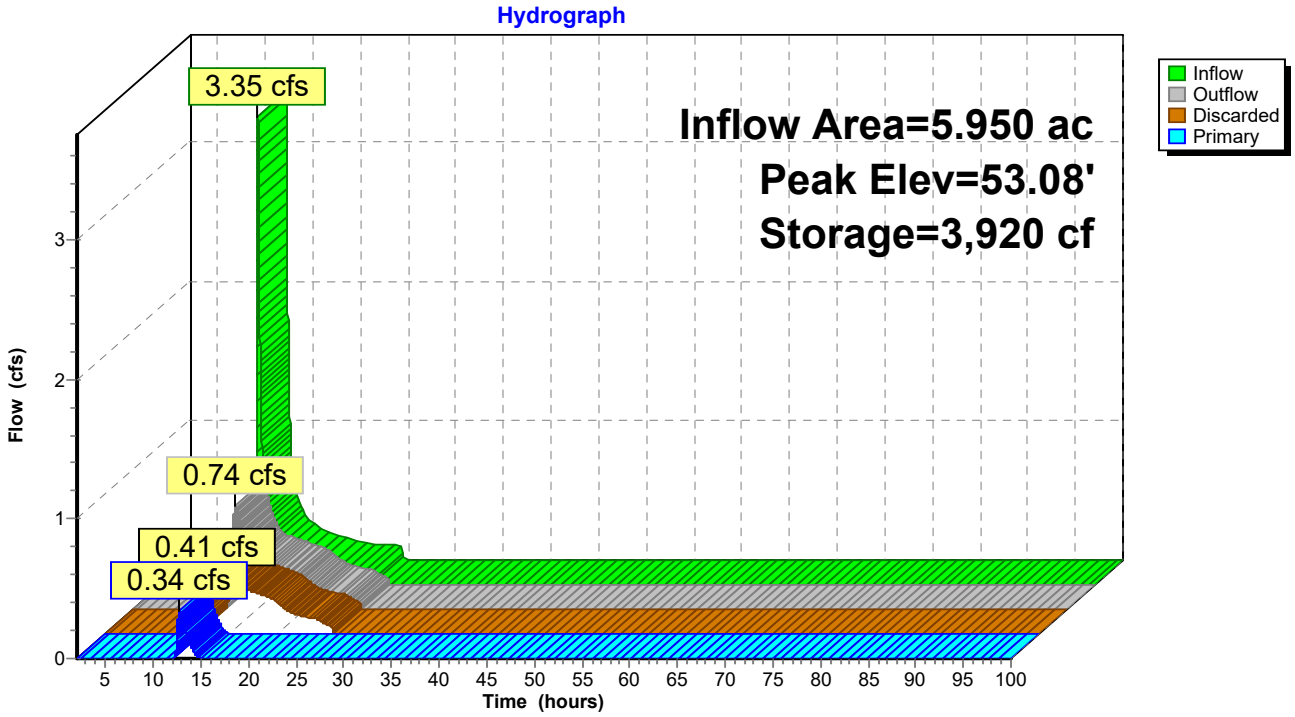
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
49.67	580	0.0	0	0
51.50	580	33.0	350	350
52.00	2,200	100.0	695	1,045
53.00	3,060	100.0	2,630	3,675
54.00	4,500	100.0	3,780	7,455

Device	Routing	Invert	Outlet Devices
#1	Discarded	49.67'	**3.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 48.00'
#2	Primary	53.50'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#3	Primary	52.75'	**8.0" Round Culvert** L= 40.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 52.75' / 51.00' S= 0.0437 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Discarded OutFlow Max=0.41 cfs @ 12.77 hrs HW=53.08' (Free Discharge)
└**1=Exfiltration** (Controls 0.41 cfs)

Primary OutFlow Max=0.33 cfs @ 12.77 hrs HW=53.08' (Free Discharge)
├**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
└**3=Culvert** (Inlet Controls 0.33 cfs @ 1.95 fps)

Pond 7P: Surface Sand Filter



Summary for Pond 8P: forebay

Inflow Area = 7.000 ac, 0.00% Impervious, Inflow Depth = 0.58" for Qp10 event
Inflow = 3.99 cfs @ 12.11 hrs, Volume= 0.340 af
Outflow = 3.93 cfs @ 12.13 hrs, Volume= 0.340 af, Atten= 2%, Lag= 1.3 min
Primary = 3.93 cfs @ 12.13 hrs, Volume= 0.340 af

Routing by Stor-Ind method, Time Span= 2.00-100.00 hrs, dt= 0.01 hrs
Starting Elev= 52.50' Surf.Area= 1,327 sf Storage= 2,341 cf
Peak Elev= 52.80' @ 12.13 hrs Surf.Area= 1,431 sf Storage= 2,749 cf (408 cf above start)

Plug-Flow detention time= 112.8 min calculated for 0.286 af (84% of inflow)
Center-of-Mass det. time= 3.4 min (912.0 - 908.6)

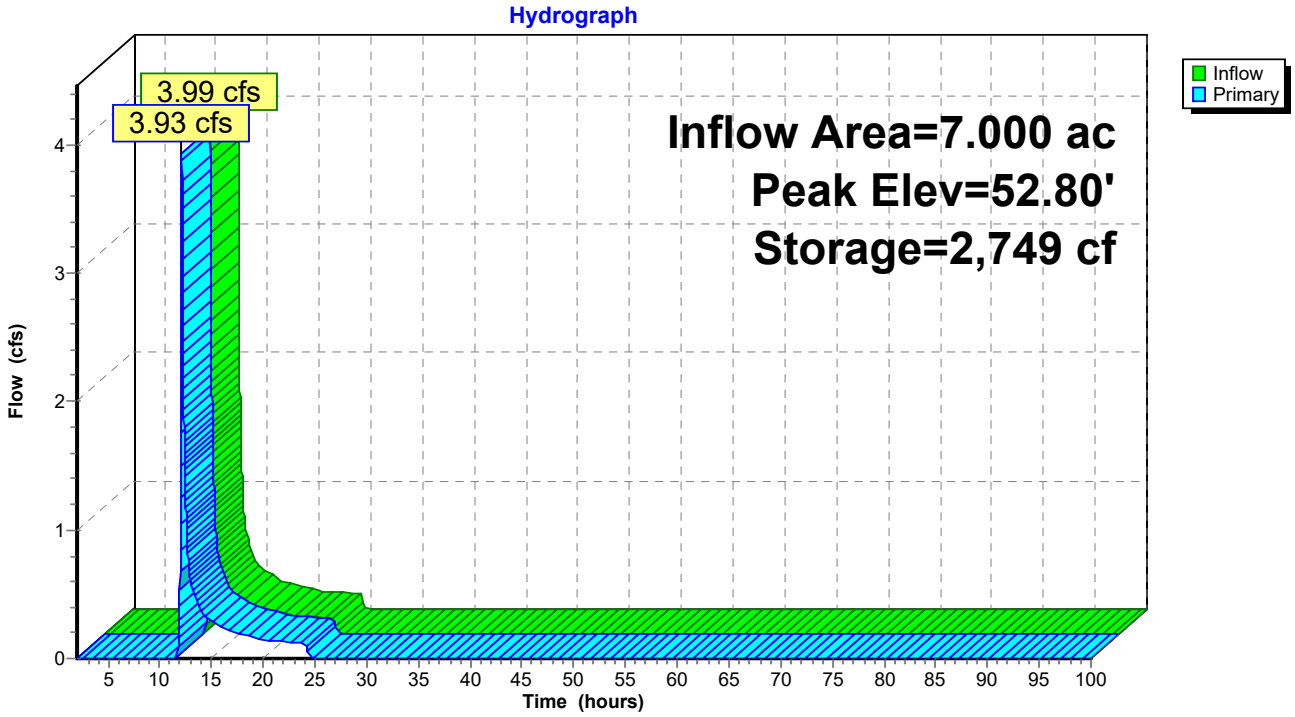
Volume	Invert	Avail.Storage	Storage Description
#1	50.00'	4,742 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
50.00	587	99.0	0	0	587
51.00	854	115.0	716	716	880
52.00	1,160	130.0	1,003	1,719	1,197
53.00	1,505	146.0	1,329	3,048	1,574
54.00	1,890	161.0	1,694	4,742	1,972

Device	Routing	Invert	Outlet Devices
#1	Primary	52.50'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=3.92 cfs @ 12.13 hrs HW=52.80' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 3.92 cfs @ 1.33 fps)

Pond 8P: forebay



Summary for Pond 9P: Infiltration Basin 2

Inflow Area = 7.000 ac, 0.00% Impervious, Inflow Depth = 0.58" for Qp10 event
Inflow = 3.93 cfs @ 12.13 hrs, Volume= 0.340 af
Outflow = 1.11 cfs @ 12.55 hrs, Volume= 0.340 af, Atten= 72%, Lag= 24.9 min
Discarded = 0.27 cfs @ 12.55 hrs, Volume= 0.284 af
Primary = 0.84 cfs @ 12.55 hrs, Volume= 0.056 af

Routing by Stor-Ind method, Time Span= 2.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 52.32' @ 12.55 hrs Surf.Area= 2,261 sf Storage= 4,132 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 168.9 min (1,080.8 - 912.0)

Volume	Invert	Avail.Storage	Storage Description
#1	50.00'	5,768 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

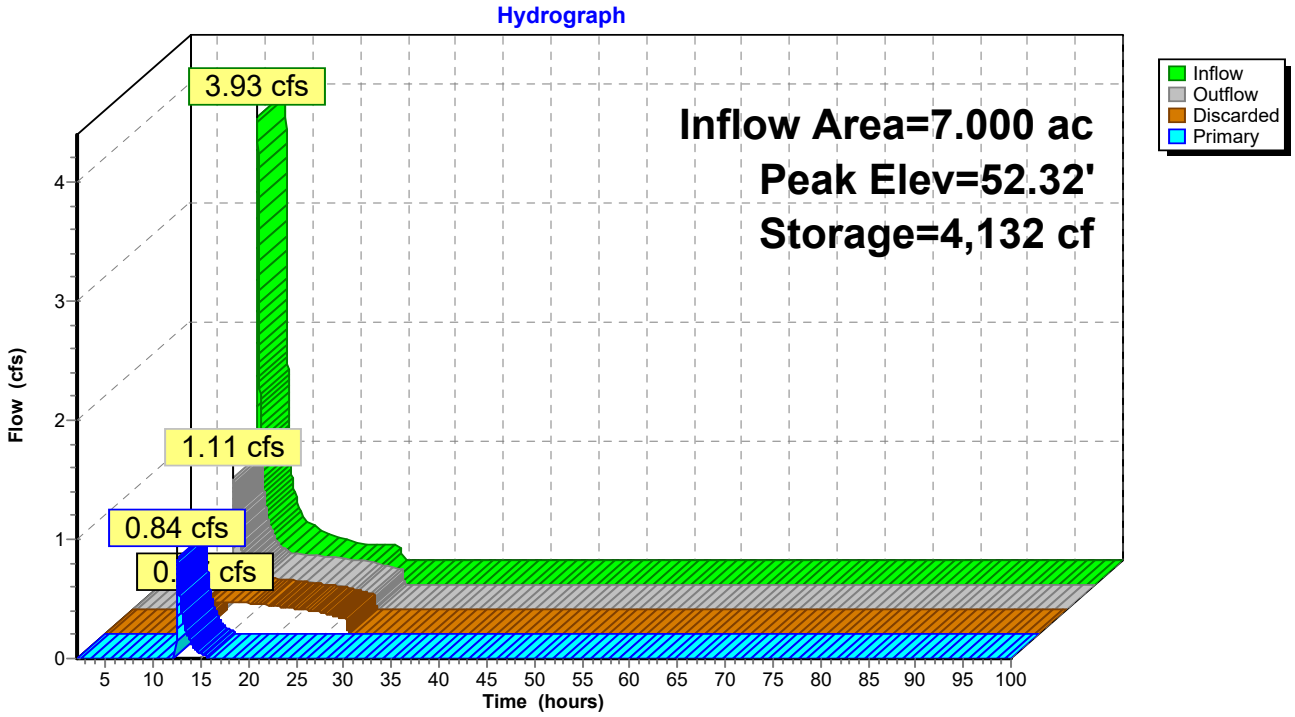
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
50.00	1,334	141.0	0	0	1,334
51.00	1,707	157.0	1,517	1,517	1,742
52.00	2,120	172.0	1,910	3,426	2,167
53.00	2,571	188.0	2,342	5,768	2,660

Device	Routing	Invert	Outlet Devices
#1	Discarded	50.00'	**4.000 in/hr Exfiltration over Horizontal area** Conductivity to Groundwater Elevation = 44.00'
#2	Primary	52.20'	**8.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.27 cfs @ 12.55 hrs HW=52.32' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.27 cfs)

Primary OutFlow Max=0.83 cfs @ 12.55 hrs HW=52.32' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.83 cfs @ 0.85 fps)

Pond 9P: Infiltration Basin 2

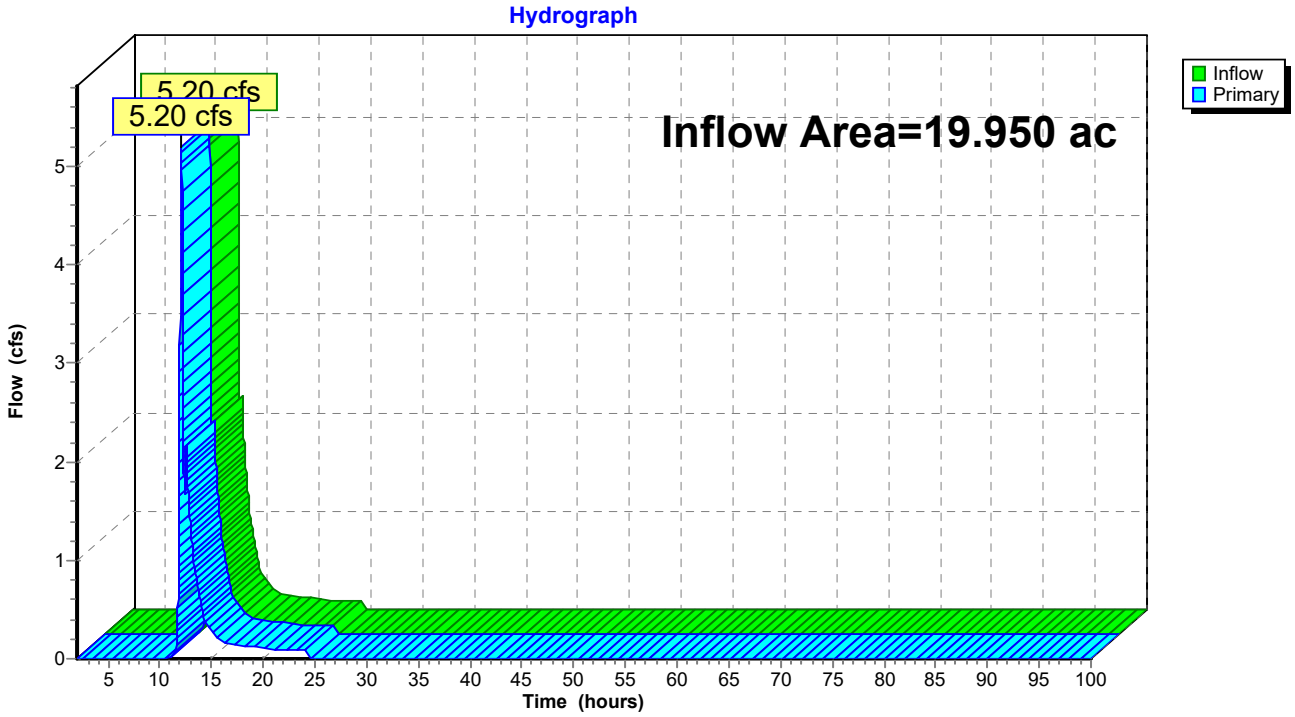


Summary for Link 24L: (new Link)

Inflow Area = 19.950 ac, 0.00% Impervious, Inflow Depth = 0.27" for Qp10 event
Inflow = 5.20 cfs @ 12.05 hrs, Volume= 0.449 af
Primary = 5.20 cfs @ 12.05 hrs, Volume= 0.449 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 2.00-100.00 hrs, dt= 0.01 hrs

Link 24L: (new Link)

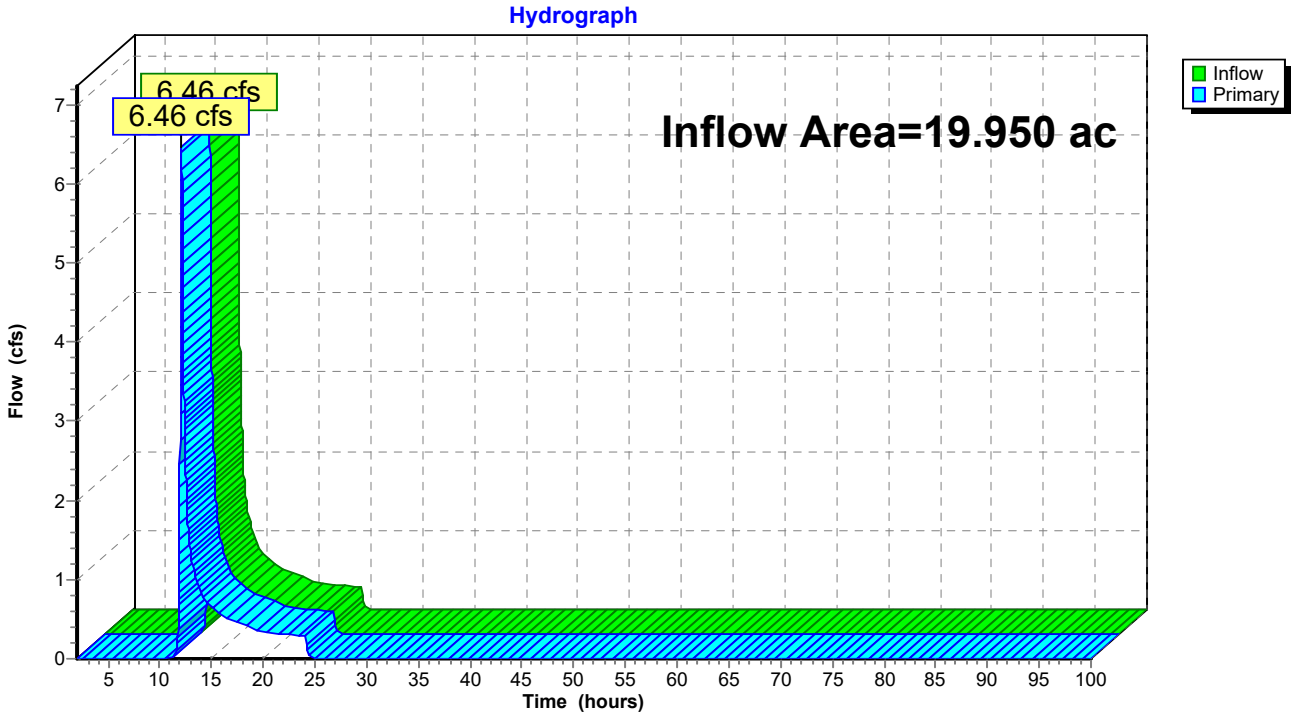


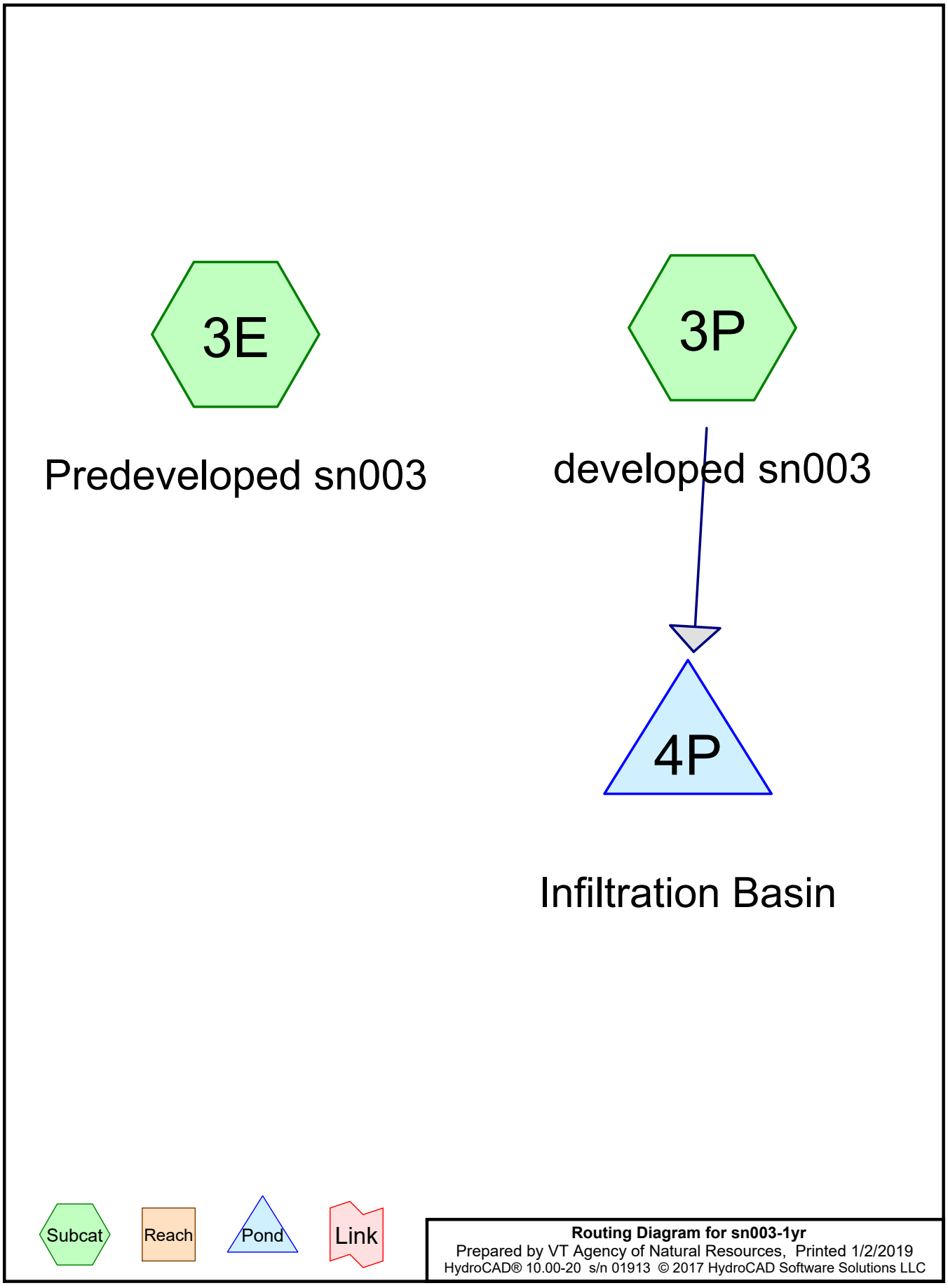
Summary for Link 27L: (new Link)

Inflow Area = 19.950 ac, 0.15% Impervious, Inflow Depth = 0.44" for Qp10 event
Inflow = 6.46 cfs @ 12.10 hrs, Volume= 0.731 af
Primary = 6.46 cfs @ 12.10 hrs, Volume= 0.731 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 2.00-100.00 hrs, dt= 0.01 hrs

Link 27L: (new Link)





Routing Diagram for sn003-1yr
Prepared by VT Agency of Natural Resources, Printed 1/2/2019

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.120	69	Adjusted value (3P)
2.660	55	Woods, Good, HSG B (3E)
0.400	61	offsite - >75% Grass cover, Good, HSG B (3E)
0.060	98	offsite impervious (3E)
6.240	**63**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
3.060	HSG B	3E
0.000	HSG C	
0.000	HSG D	
3.180	Other	3E, 3P
6.240		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	3.120	3.120	Adjusted value	3P
0.000	2.660	0.000	0.000	0.000	2.660	Woods, Good	3E
0.000	0.400	0.000	0.000	0.000	0.400	offsite - >75% Grass cover, Good	3E
0.000	0.000	0.000	0.000	0.060	0.060	offsite impervious	3E
0.000	**3.060**	**0.000**	**0.000**	**3.180**	**6.240**	**TOTAL AREA**	

Time span=2.00-50.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 3E: Predeveloped sn003 Runoff Area=3.120 ac 1.92% Impervious Runoff Depth=0.06"
Tc=14.3 min CN=WQ Runoff=0.13 cfs 0.016 af

Subcatchment 3P: developed sn003 Runoff Area=3.120 ac 0.00% Impervious Runoff Depth=0.23"
Tc=13.4 min CN=69 Runoff=0.61 cfs 0.061 af

Pond 4P: Infiltration Basin Peak Elev=56.95' Storage=647 cf Inflow=0.61 cfs 0.061 af
Discarded=0.09 cfs 0.061 af Primary=0.00 cfs 0.000 af Outflow=0.09 cfs 0.061 af

Total Runoff Area = 6.240 ac Runoff Volume = 0.077 af Average Runoff Depth = 0.15"
99.04% Pervious = 6.180 ac 0.96% Impervious = 0.060 ac

Summary for Subcatchment 3E: Predeveloped sn003

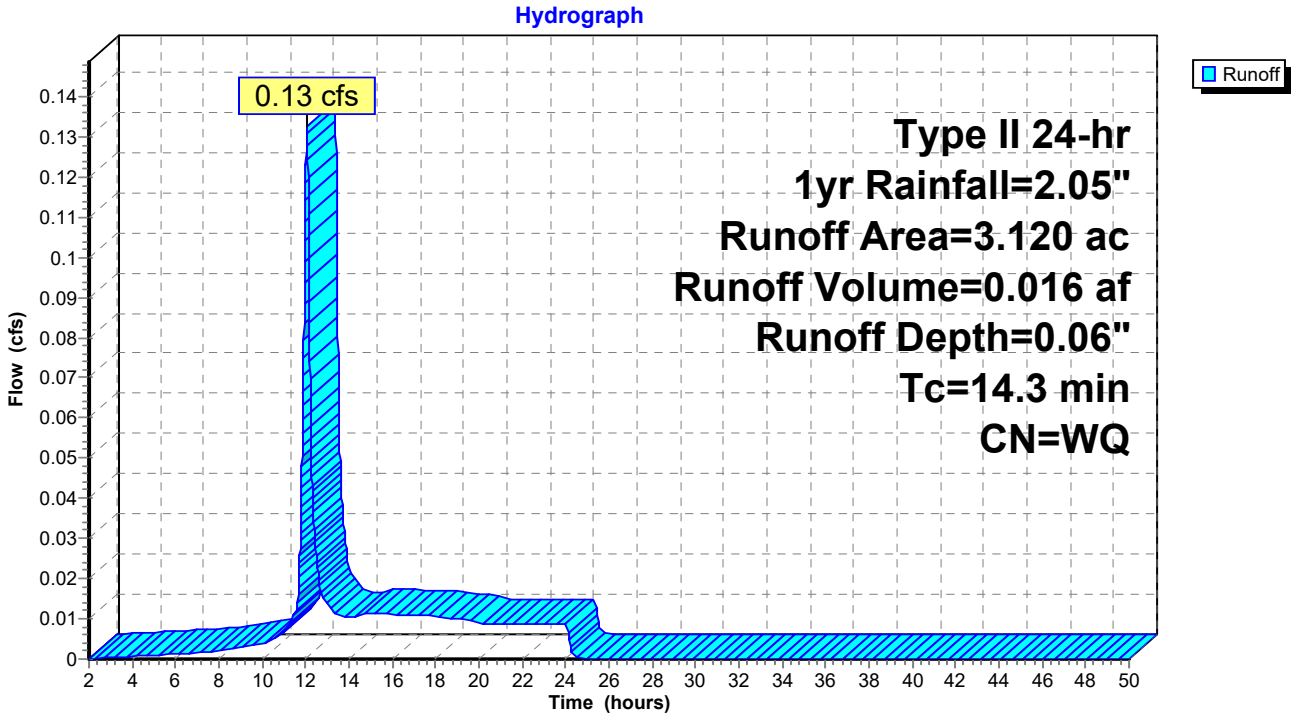
Runoff = 0.13 cfs @ 12.06 hrs, Volume= 0.016 af, Depth= 0.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 2.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 1yr Rainfall=2.05"

	Area (ac)	CN	Description
*	0.400	61	offsite - >75% Grass cover, Good, HSG B
	2.660	55	Woods, Good, HSG B
*	0.060	98	offsite impervious
	3.120		Weighted Average
	3.060		98.08% Pervious Area
	0.060		1.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3					**Direct Entry, Watershed Lag Method**

Subcatchment 3E: Predeveloped sn003



Summary for Subcatchment 3P: developed sn003

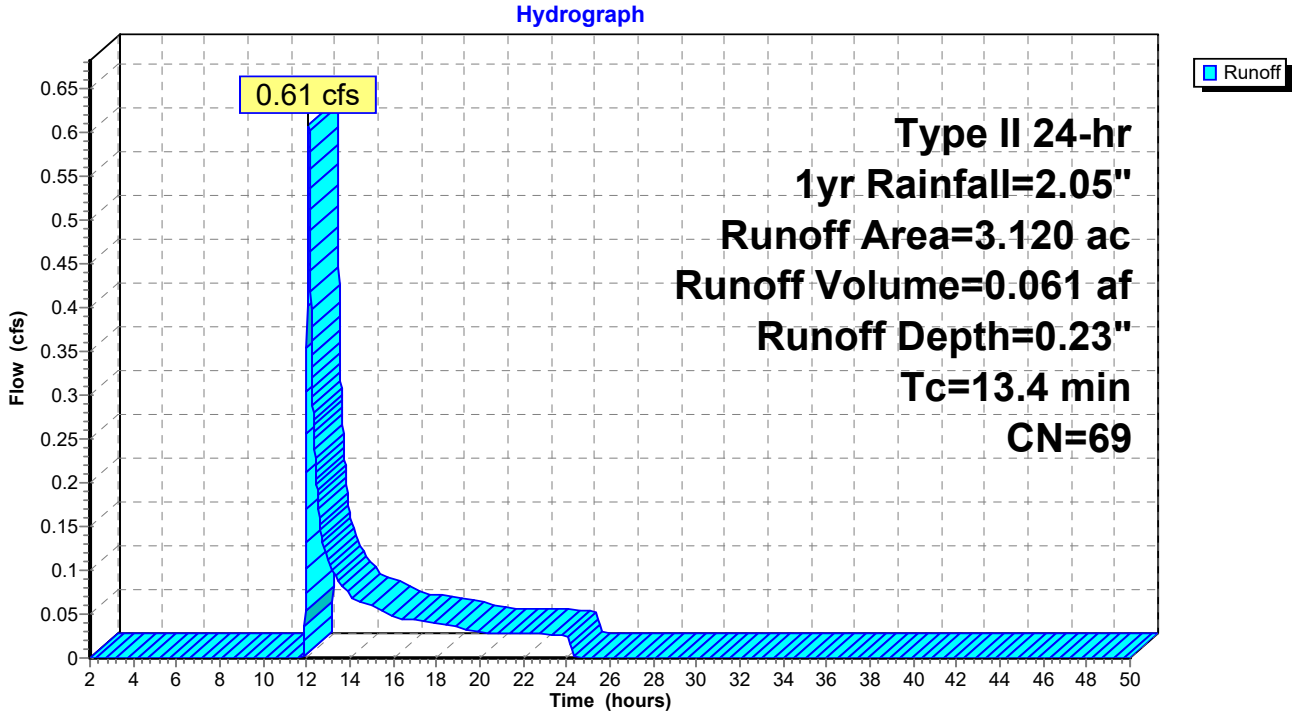
Runoff = 0.61 cfs @ 12.10 hrs, Volume= 0.061 af, Depth= 0.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 2.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 1yr Rainfall=2.05"

	Area (ac)	CN	Description
*	3.120	69	Adjusted value
	3.120		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4					**Direct Entry, Watershed Lag Method**

Subcatchment 3P: developed sn003



Summary for Pond 4P: Infiltration Basin

Inflow Area = 3.120 ac, 0.00% Impervious, Inflow Depth = 0.23" for 1yr event
Inflow = 0.61 cfs @ 12.10 hrs, Volume= 0.061 af
Outflow = 0.09 cfs @ 13.35 hrs, Volume= 0.061 af, Atten= 85%, Lag= 75.2 min
Discarded = 0.09 cfs @ 13.35 hrs, Volume= 0.061 af
Primary = 0.00 cfs @ 2.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 2.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 56.95' @ 13.35 hrs Surf.Area= 843 sf Storage= 647 cf

Plug-Flow detention time= 70.3 min calculated for 0.061 af (100% of inflow)
Center-of-Mass det. time= 70.3 min (1,004.3 - 933.9)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	2,436 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

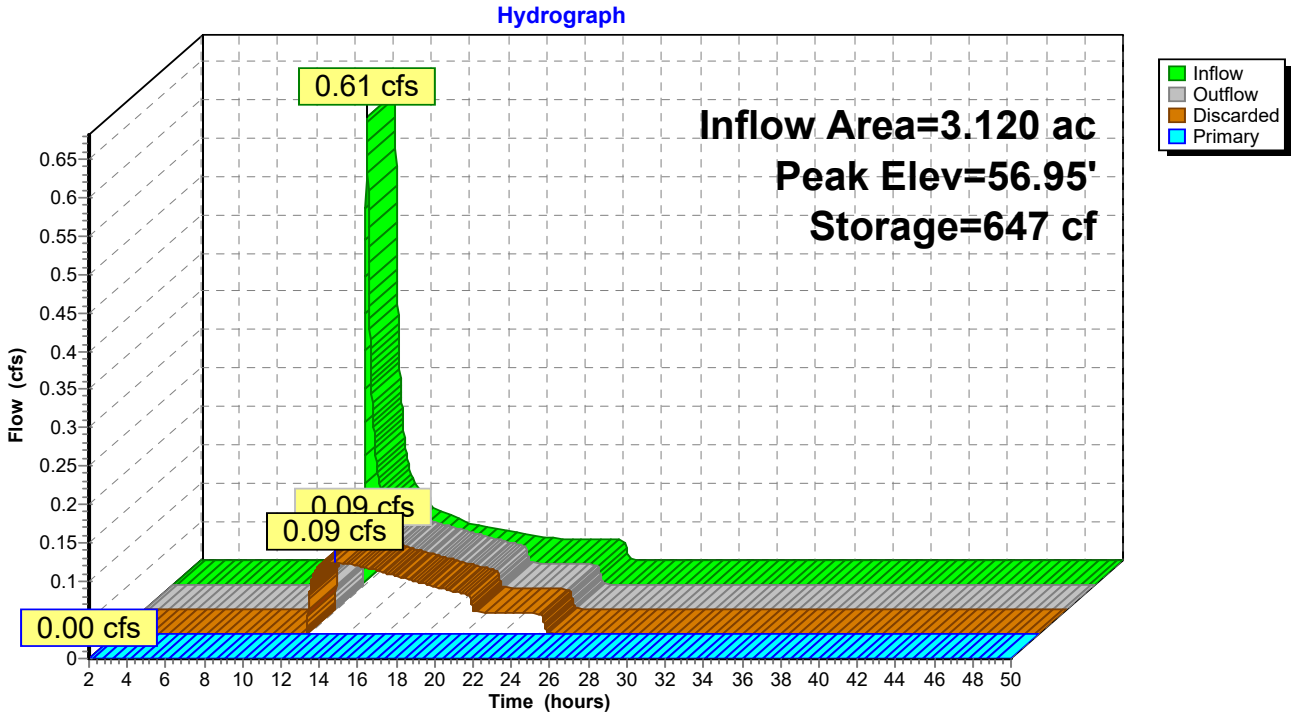
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	525	0	0
57.00	861	693	693
57.50	1,056	479	1,172
58.00	4,000	1,264	2,436

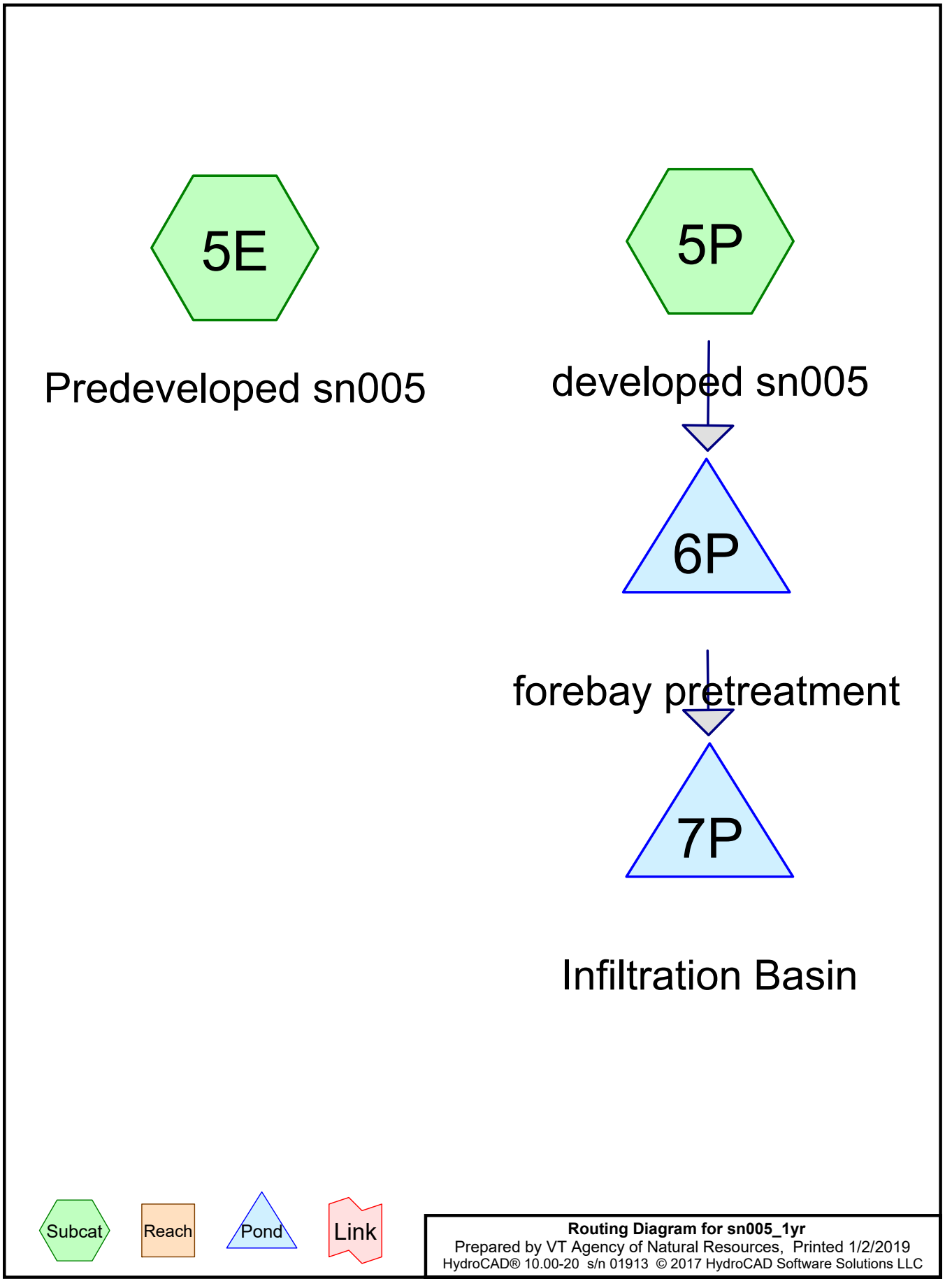
Device	Routing	Invert	Outlet Devices
#1	Discarded	56.00'	**4.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 52.00'
#2	Primary	57.50'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Discarded OutFlow Max=0.09 cfs @ 13.35 hrs HW=56.95' (Free Discharge)
1=Exfiltration (Controls 0.09 cfs)

Primary OutFlow Max=0.00 cfs @ 2.00 hrs HW=56.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 4P: Infiltration Basin





Routing Diagram for sn005_1yr
Prepared by VT Agency of Natural Resources, Printed 1/2/2019

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
7.000	69	CNadj Per 2.2.5.3 (5P)
7.000	55	Woods, Good, HSG B (5E)
14.000	**62**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
7.000	HSG B	5E
0.000	HSG C	
0.000	HSG D	
7.000	Other	5P
14.000		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	7.000	7.000	CNadj Per 2.2.5.3	5P
0.000	7.000	0.000	0.000	0.000	7.000	Woods, Good	5E
0.000	**7.000**	**0.000**	**0.000**	**7.000**	**14.000**	**TOTAL AREA**	

Time span=2.00-50.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 5E: Predeveloped sn005 Runoff Area=7.000 ac 0.00% Impervious Runoff Depth=0.02"
Tc=17.8 min CN=55 Runoff=0.02 cfs 0.012 af

Subcatchment 5P: developed sn005 Runoff Area=7.000 ac 0.00% Impervious Runoff Depth=0.23"
Tc=13.2 min CN=69 Runoff=1.38 cfs 0.137 af

Pond 6P: forebay pretreatment Peak Elev=52.64' Storage=2,536 cf Inflow=1.38 cfs 0.137 af
Outflow=1.31 cfs 0.137 af

Pond 7P: Infiltration Basin Peak Elev=51.02' Storage=1,551 cf Inflow=1.31 cfs 0.137 af
Discarded=0.18 cfs 0.137 af Primary=0.00 cfs 0.000 af Outflow=0.18 cfs 0.137 af

Total Runoff Area = 14.000 ac Runoff Volume = 0.149 af Average Runoff Depth = 0.13"
100.00% Pervious = 14.000 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 5E: Predeveloped sn005

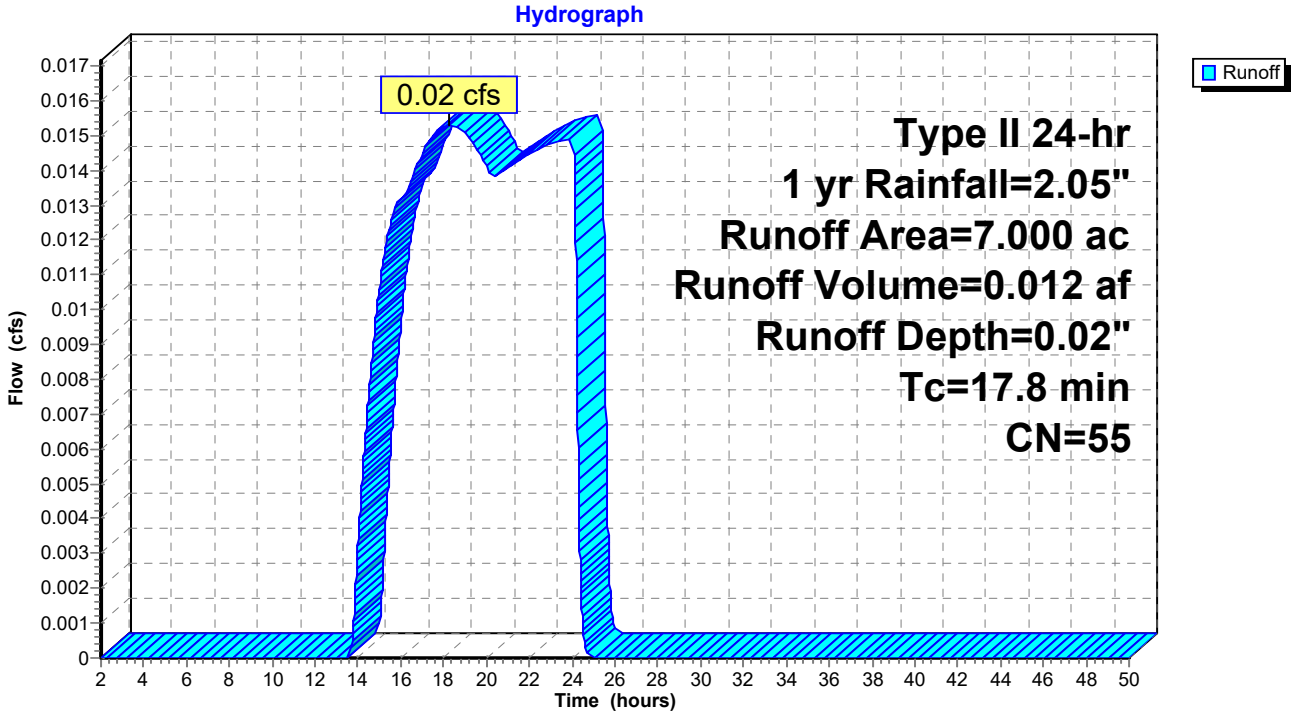
Runoff = 0.02 cfs @ 18.29 hrs, Volume= 0.012 af, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 2.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 yr Rainfall=2.05"

Area (ac)	CN	Description
7.000	55	Woods, Good, HSG B
7.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8					**Direct Entry, Watershed Lag Method**

Subcatchment 5E: Predeveloped sn005



Summary for Subcatchment 5P: developed sn005

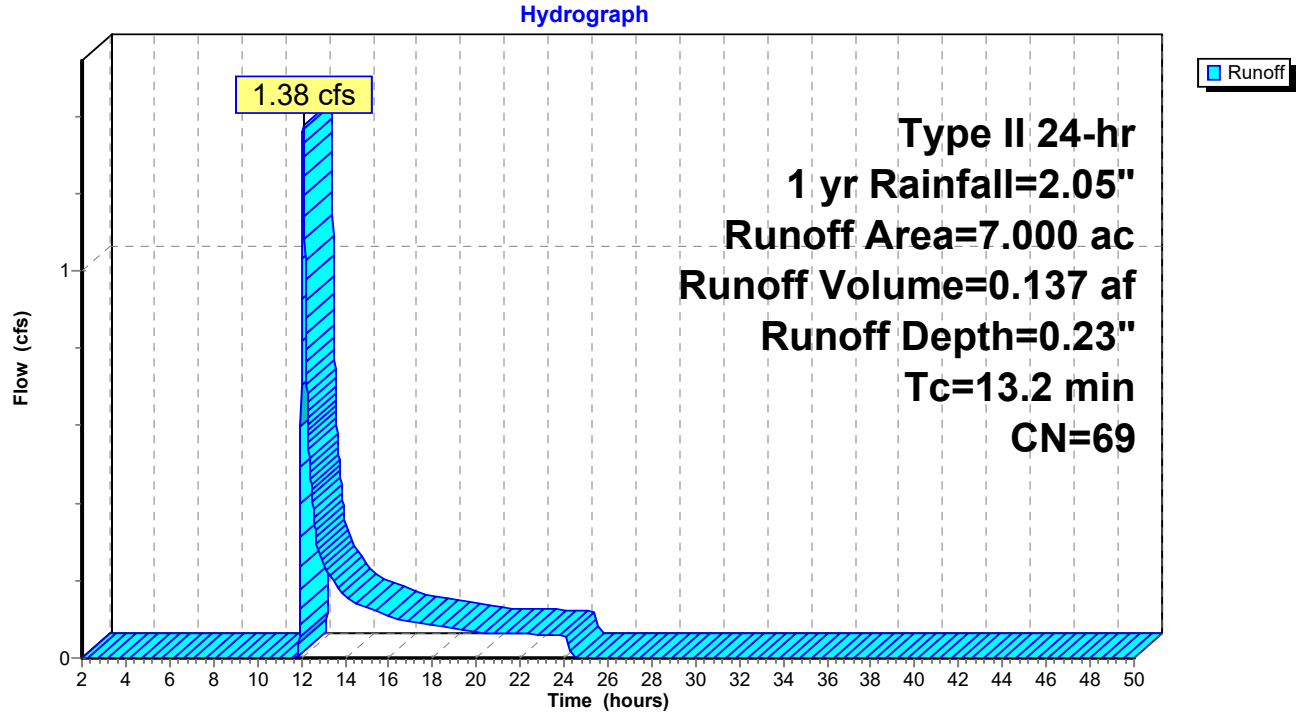
Runoff = 1.38 cfs @ 12.10 hrs, Volume= 0.137 af, Depth= 0.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 2.00-50.00 hrs, dt= 0.01 hrs
Type II 24-hr 1 yr Rainfall=2.05"

	Area (ac)	CN	Description
*	7.000	69	CNadj Per 2.2.5.3
	7.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2					**Direct Entry, Watershed Lag Method**

Subcatchment 5P: developed sn005



Summary for Pond 6P: forebay pretreatment

Inflow Area = 7.000 ac, 0.00% Impervious, Inflow Depth = 0.23" for 1 yr event
Inflow = 1.38 cfs @ 12.10 hrs, Volume= 0.137 af
Outflow = 1.31 cfs @ 12.13 hrs, Volume= 0.137 af, Atten= 5%, Lag= 1.8 min
Primary = 1.31 cfs @ 12.13 hrs, Volume= 0.137 af

Routing by Stor-Ind method, Time Span= 2.00-50.00 hrs, dt= 0.01 hrs
Starting Elev= 52.50' Surf.Area= 1,327 sf Storage= 2,341 cf
Peak Elev= 52.64' @ 12.13 hrs Surf.Area= 1,377 sf Storage= 2,536 cf (196 cf above start)

Plug-Flow detention time= 276.9 min calculated for 0.083 af (61% of inflow)
Center-of-Mass det. time= 4.7 min (938.5 - 933.8)

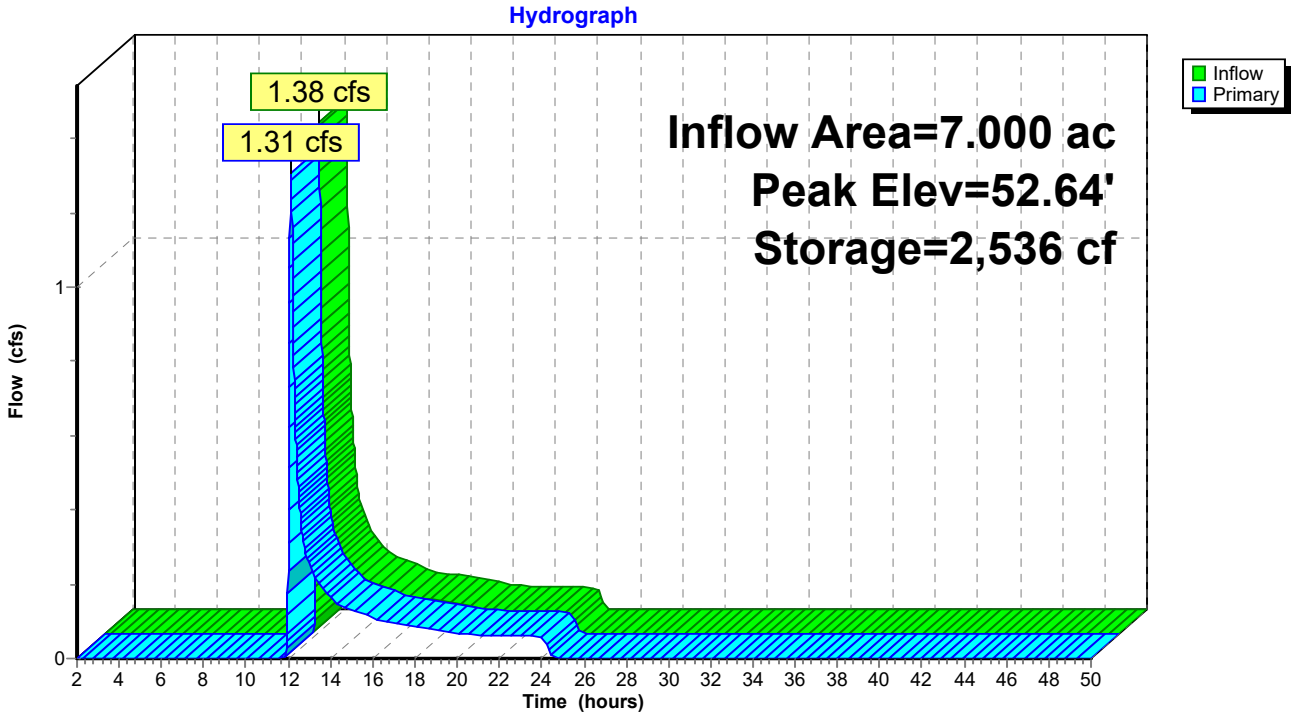
Volume	Invert	Avail.Storage	Storage Description
#1	50.00'	4,742 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
50.00	587	99.0	0	0	587
51.00	854	115.0	716	716	880
52.00	1,160	130.0	1,003	1,719	1,197
53.00	1,505	146.0	1,329	3,048	1,574
54.00	1,890	161.0	1,694	4,742	1,972

Device	Routing	Invert	Outlet Devices
#1	Primary	52.50'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=1.30 cfs @ 12.13 hrs HW=52.64' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 1.30 cfs @ 0.90 fps)

Pond 6P: forebay pretreatment



Summary for Pond 7P: Infiltration Basin

Inflow Area = 7.000 ac, 0.00% Impervious, Inflow Depth = 0.23" for 1 yr event
Inflow = 1.31 cfs @ 12.13 hrs, Volume= 0.137 af
Outflow = 0.18 cfs @ 13.72 hrs, Volume= 0.137 af, Atten= 86%, Lag= 95.5 min
Discarded = 0.18 cfs @ 13.72 hrs, Volume= 0.137 af
Primary = 0.00 cfs @ 2.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 2.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 51.02' @ 13.72 hrs Surf.Area= 1,715 sf Storage= 1,551 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 86.8 min (1,025.3 - 938.5)

Volume	Invert	Avail.Storage	Storage Description
#1	50.00'	5,768 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
50.00	1,334	141.0	0	0	1,334
51.00	1,707	157.0	1,517	1,517	1,742
52.00	2,120	172.0	1,910	3,426	2,167
53.00	2,571	188.0	2,342	5,768	2,660

Device	Routing	Invert	Outlet Devices
#1	Discarded	50.00'	**4.000 in/hr Exfiltration over Horizontal area** Conductivity to Groundwater Elevation = 44.00'
#2	Primary	52.20'	**8.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=0.18 cfs @ 13.72 hrs HW=51.02' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.18 cfs)

Primary OutFlow Max=0.00 cfs @ 2.00 hrs HW=50.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 7P: Infiltration Basin