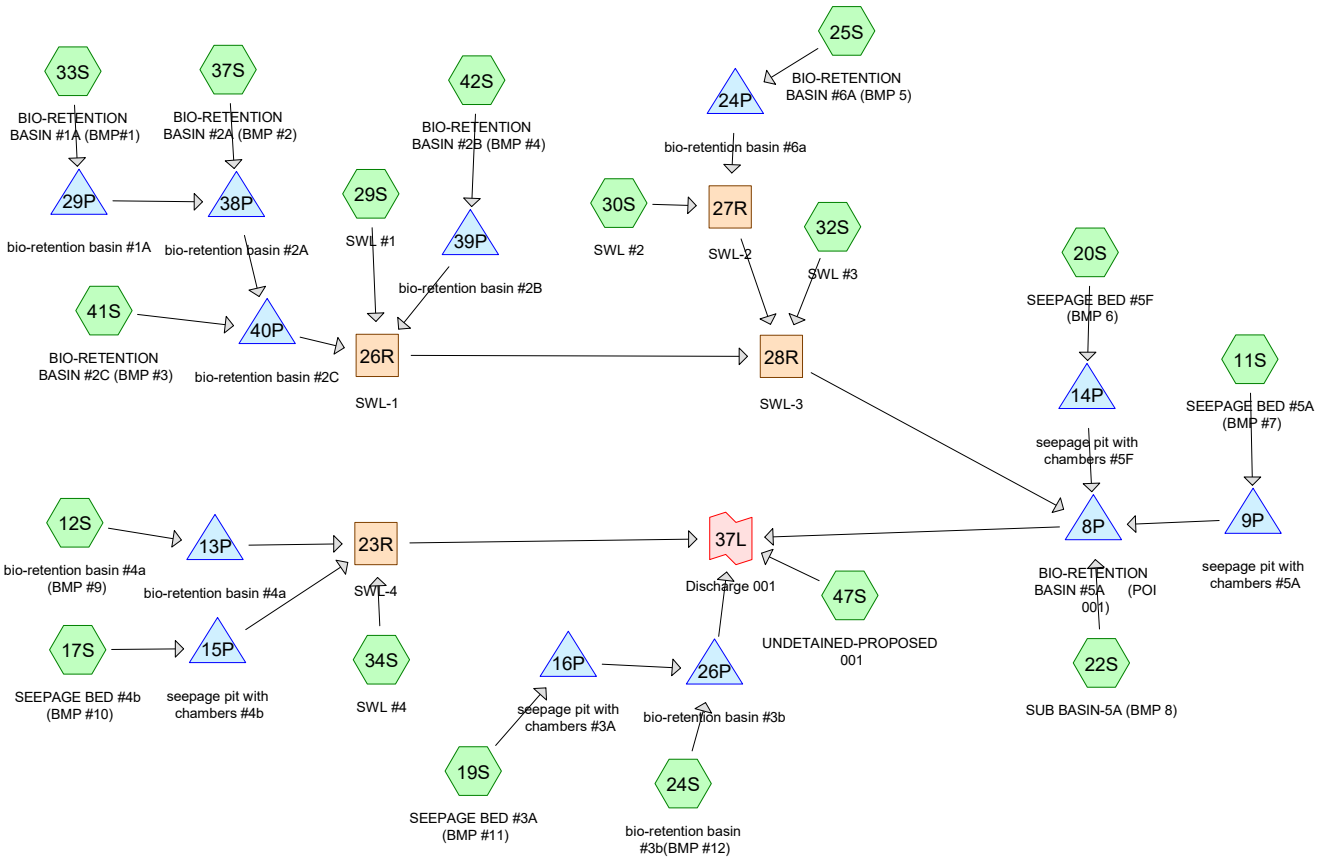


Subcat Reach Pond Link

Routing Diagram for NPDES_Stormwater-REV1.1
Prepared by Keystone Consulting Engineers, Printed 11/16/2022
HydroCAD® 10.20-2b s/n 02767 © 2021 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.124	40	>75% Grass cover, Good, HSG A (19S, 24S, 25S, 30S)
16.592	61	>75% Grass cover, Good, HSG B (12S, 22S, 24S, 25S, 29S, 32S, 33S, 34S, 37S, 41S, 42S, 47S)
5.223	74	>75% Grass cover, Good, HSG C (17S, 19S, 20S, 22S, 24S, 34S)
0.069	40	Meadow, non-grazed, HSG A (19S)
1.816	58	Meadow, non-grazed, HSG B (12S, 24S)
0.633	71	Meadow, non-grazed, HSG C (19S, 24S)
28.941	98	Paved parking & roofs (11S, 17S, 19S, 20S, 22S, 24S, 25S, 29S, 30S, 32S, 33S, 37S, 41S, 42S)
1.502	40	Woods, Good, HSG A (19S, 24S)
0.153	70	Woods, Good, HSG C (19S)
57.053	**80**	**TOTAL AREA**

Summary for Subcatchment 11S: SEEPAGE BED #5A (BMP #7)

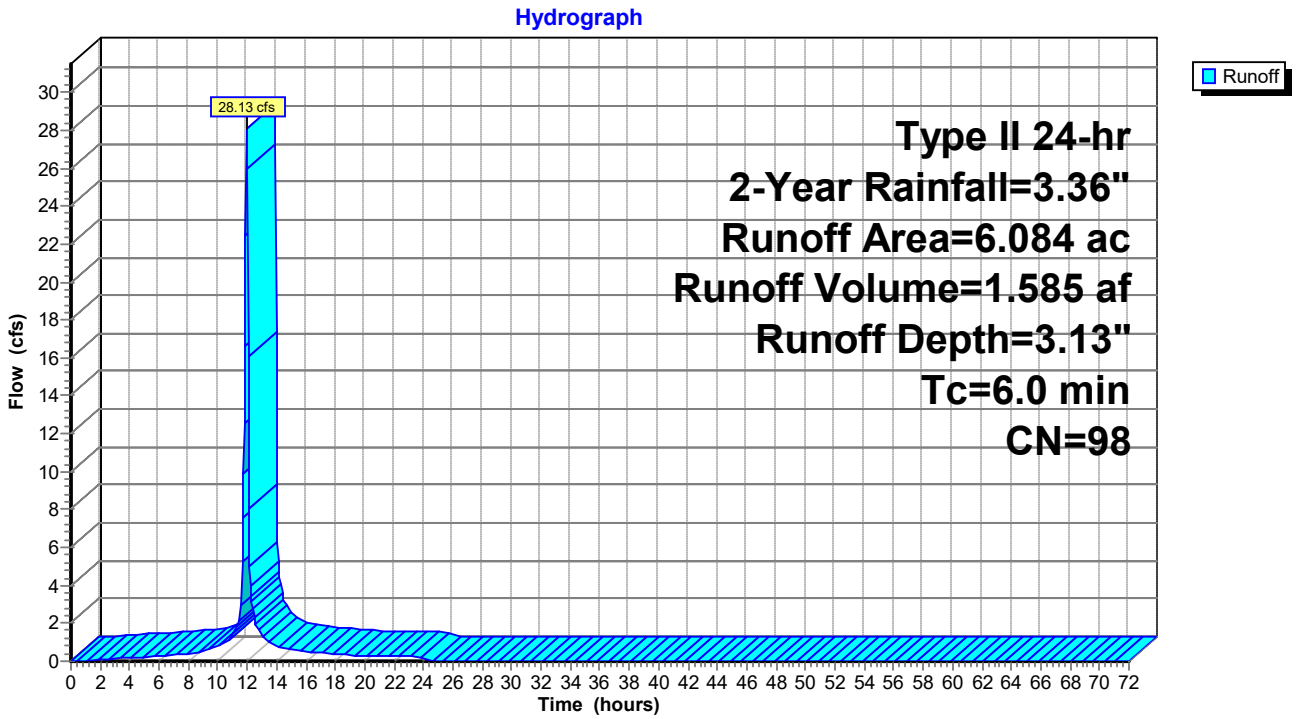
Runoff = 28.13 cfs @ 11.96 hrs, Volume= 1.585 af, Depth= 3.13"
Routed to Pond 9P : seepage pit with chambers #5A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=3.36"

Area (ac)	CN	Description
6.084	98	Paved parking & roofs
6.084		100.00% Impervious Area

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

Subcatchment 11S: SEEPAGE BED #5A (BMP #7)



Summary for Subcatchment 12S: bio-retention basin #4a (BMP #9)

Runoff = 0.84 cfs @ 12.23 hrs, Volume= 0.106 af, Depth= 0.47"
Routed to Pond 13P : bio-retention basin #4a

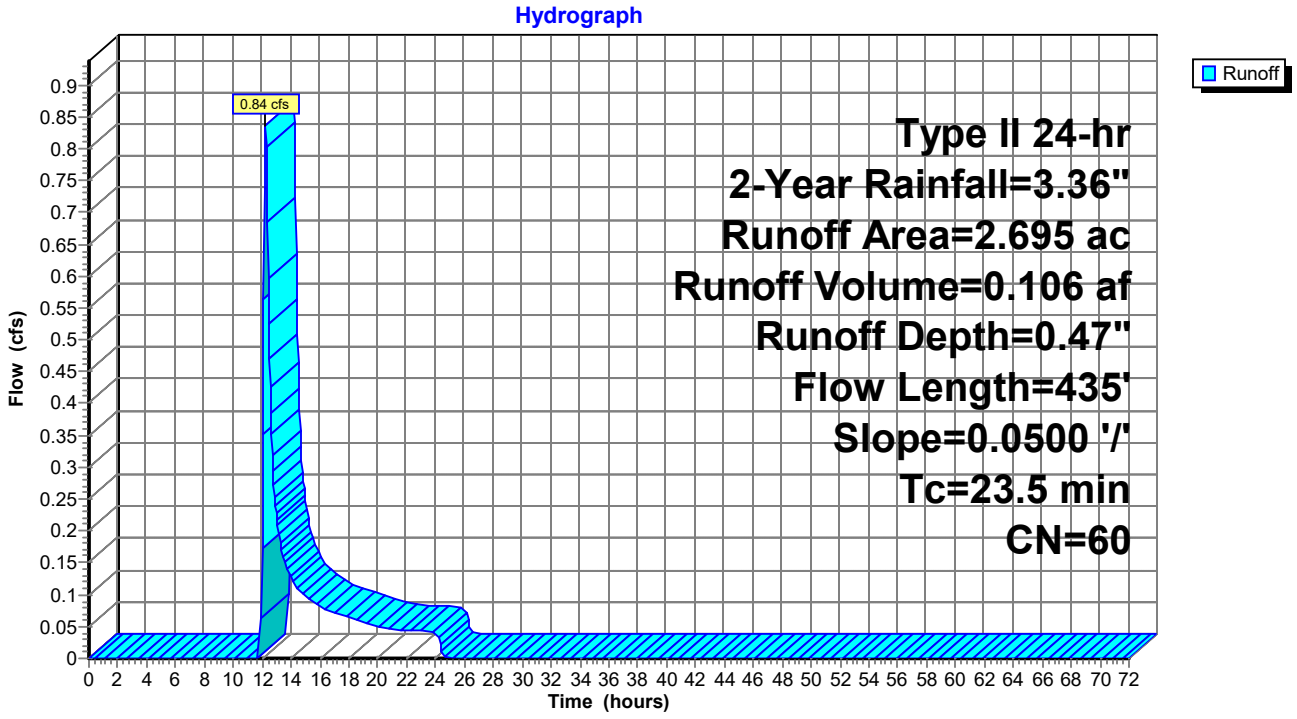
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=3.36"

Area (ac)	CN	Description
1.896	61	>75% Grass cover, Good, HSG B
0.799	58	Meadow, non-grazed, HSG B
2.695	60	Weighted Average
2.695		100.00% Pervious Area

office building in subarea

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	150	0.0500	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.23"
3.0	285	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
23.5	435	Total			

Subcatchment 12S: bio-retention basin #4a (BMP #9)



Summary for Subcatchment 17S: SEEPAGE BED #4b (BMP #10)

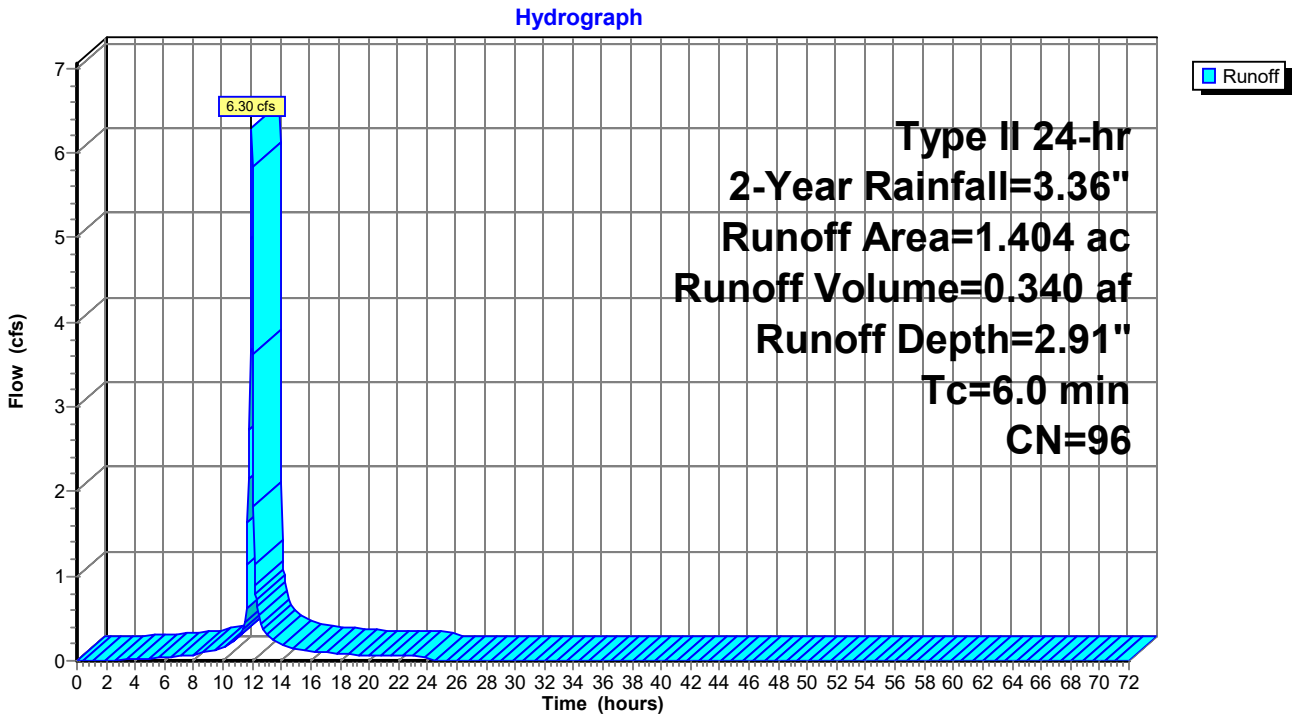
Runoff = 6.30 cfs @ 11.96 hrs, Volume= 0.340 af, Depth= 2.91"
Routed to Pond 15P : seepage pit with chambers #4b

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=3.36"

Area (ac)	CN	Description
1.312	98	Paved parking & roofs
0.092	74	>75% Grass cover, Good, HSG C
1.404	96	Weighted Average
0.092		6.55% Pervious Area
1.312		93.45% Impervious Area

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

Subcatchment 17S: SEEPAGE BED #4b (BMP #10)



Summary for Subcatchment 19S: SEEPAGE BED #3A (BMP #11)

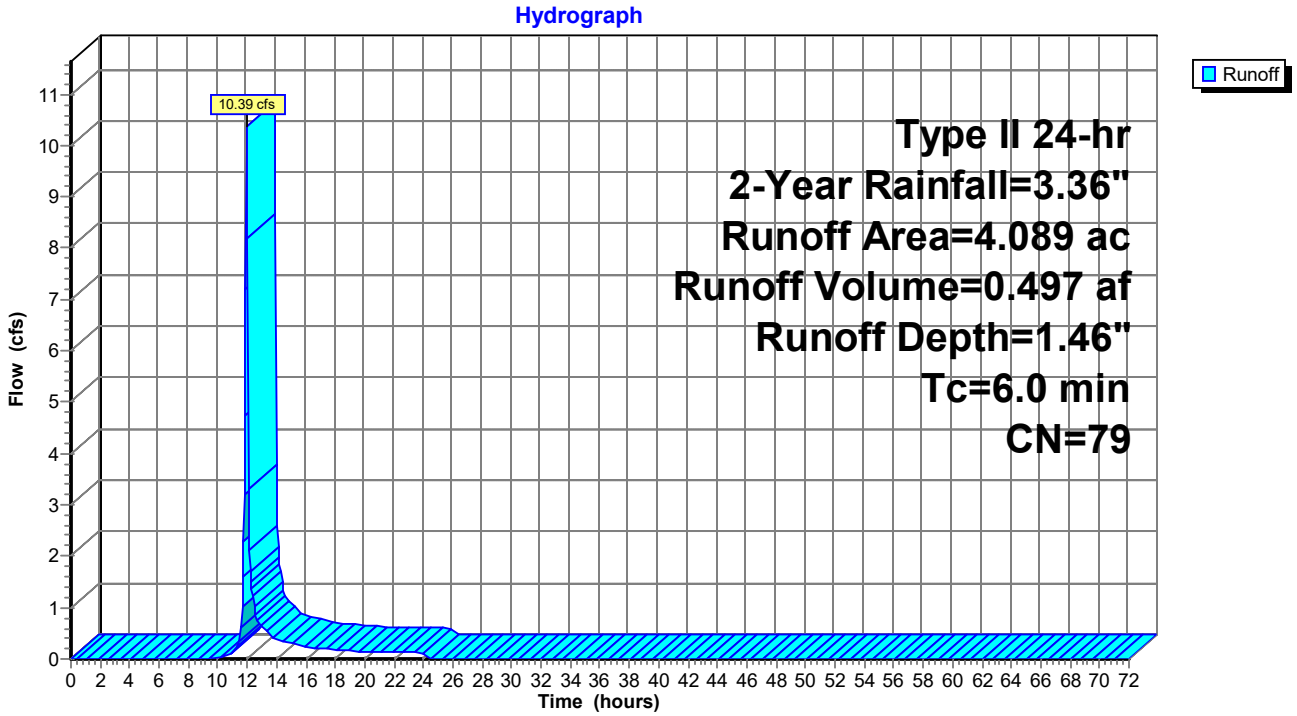
Runoff = 10.39 cfs @ 11.98 hrs, Volume= 0.497 af, Depth= 1.46"
Routed to Pond 16P : seepage pit with chambers #3A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=3.36"

	Area (ac)	CN	Description
	2.361	98	Paved parking & roofs
*	0.069	40	Meadow, non-grazed, HSG A
	0.059	71	Meadow, non-grazed, HSG C
*	0.485	40	>75% Grass cover, Good, HSG A
	0.485	74	>75% Grass cover, Good, HSG C
*	0.477	40	Woods, Good, HSG A
	0.153	70	Woods, Good, HSG C
	4.089	79	Weighted Average
	1.728		42.26% Pervious Area
	2.361		57.74% Impervious Area

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

Subcatchment 19S: SEEPAGE BED #3A (BMP #11)



Summary for Subcatchment 20S: SEEPAGE BED #5F (BMP 6)

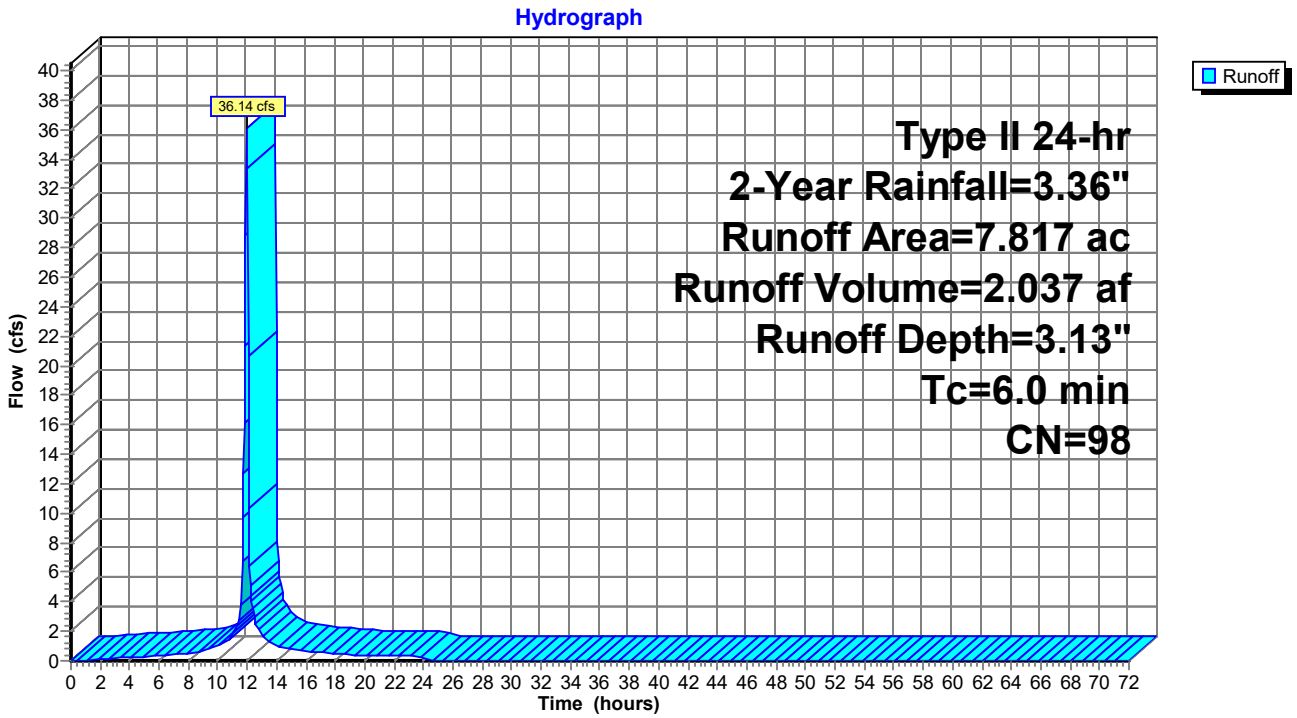
Runoff = 36.14 cfs @ 11.96 hrs, Volume= 2.037 af, Depth= 3.13"
Routed to Pond 14P : seepage pit with chambers #5F

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=3.36"

Area (ac)	CN	Description
7.808	98	Paved parking & roofs
0.009	74	>75% Grass cover, Good, HSG C
7.817	98	Weighted Average
0.009		0.12% Pervious Area
7.808		99.88% Impervious Area

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

Subcatchment 20S: SEEPAGE BED #5F (BMP 6)



Summary for Subcatchment 22S: SUB BASIN-5A (BMP 8)

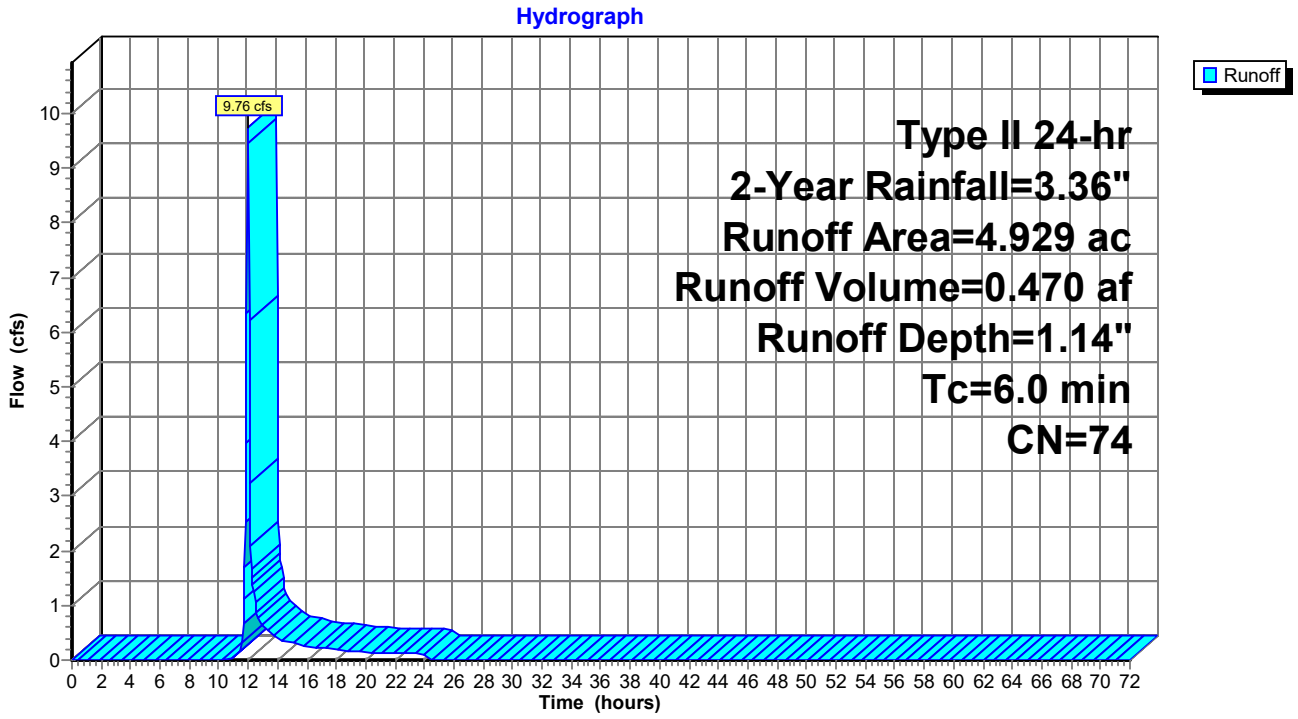
Runoff = 9.76 cfs @ 11.98 hrs, Volume= 0.470 af, Depth= 1.14"
Routed to Pond 8P : BIO-RETENTION BASIN #5A (POI 001)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=3.36"

Area (ac)	CN	Description
1.186	61	>75% Grass cover, Good, HSG B
3.048	74	>75% Grass cover, Good, HSG C
0.695	98	Paved parking & roofs
4.929	74	Weighted Average
4.234		85.90% Pervious Area
0.695		14.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6 minute min**

Subcatchment 22S: SUB BASIN-5A (BMP 8)



Summary for Subcatchment 24S: bio-retention basin #3b(BMP #12)

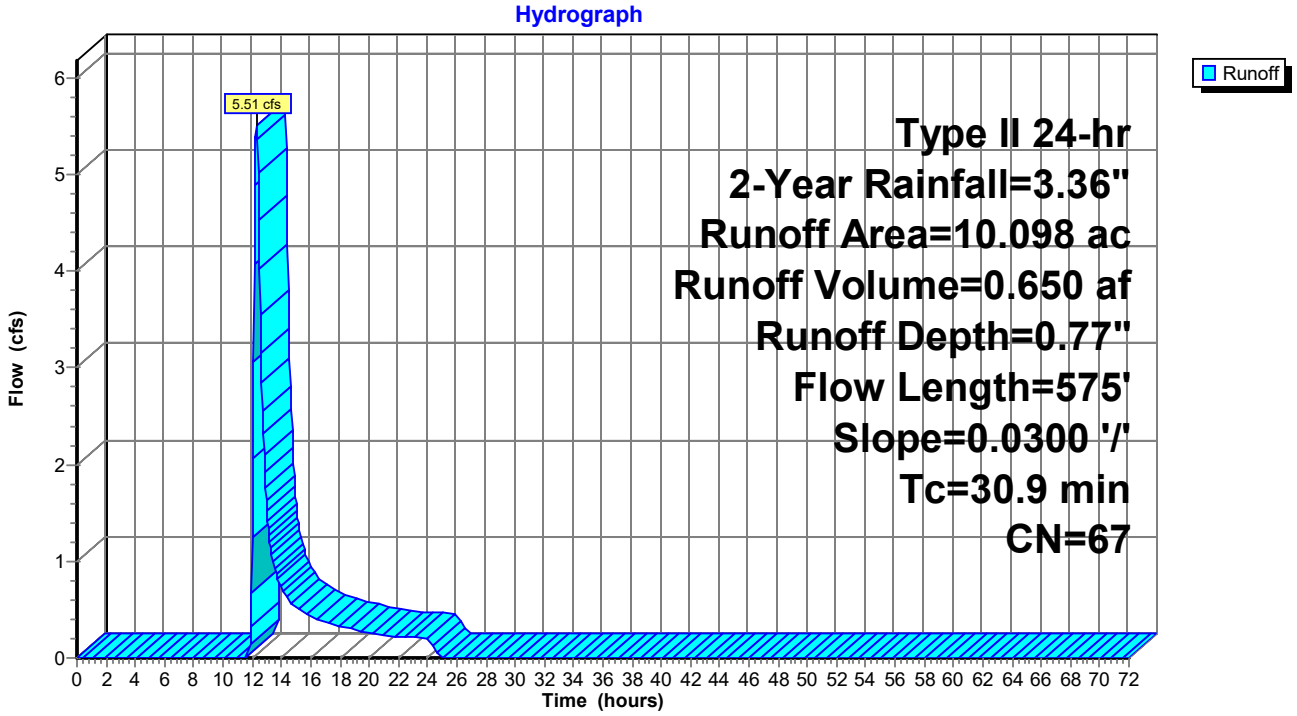
Runoff = 5.51 cfs @ 12.30 hrs, Volume= 0.650 af, Depth= 0.77"
Routed to Pond 26P : bio-retention basin #3b

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=3.36"

	Area (ac)	CN	Description
	2.349	98	Paved parking & roofs
	1.017	58	Meadow, non-grazed, HSG B
	0.574	71	Meadow, non-grazed, HSG C
	3.499	61	>75% Grass cover, Good, HSG B
	0.126	74	>75% Grass cover, Good, HSG C
*	1.025	40	Woods, Good, HSG A
*	0.745	40	>75% Grass cover, Good, HSG A
	0.763	74	>75% Grass cover, Good, HSG C
	10.098	67	Weighted Average
	7.749		76.74% Pervious Area
	2.349		23.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	150	0.0300	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.23"
5.8	425	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
30.9	575	Total			

Subcatchment 24S: bio-retention basin #3b(BMP #12)



Summary for Subcatchment 25S: BIO-RETENTION BASIN #6A (BMP 5)

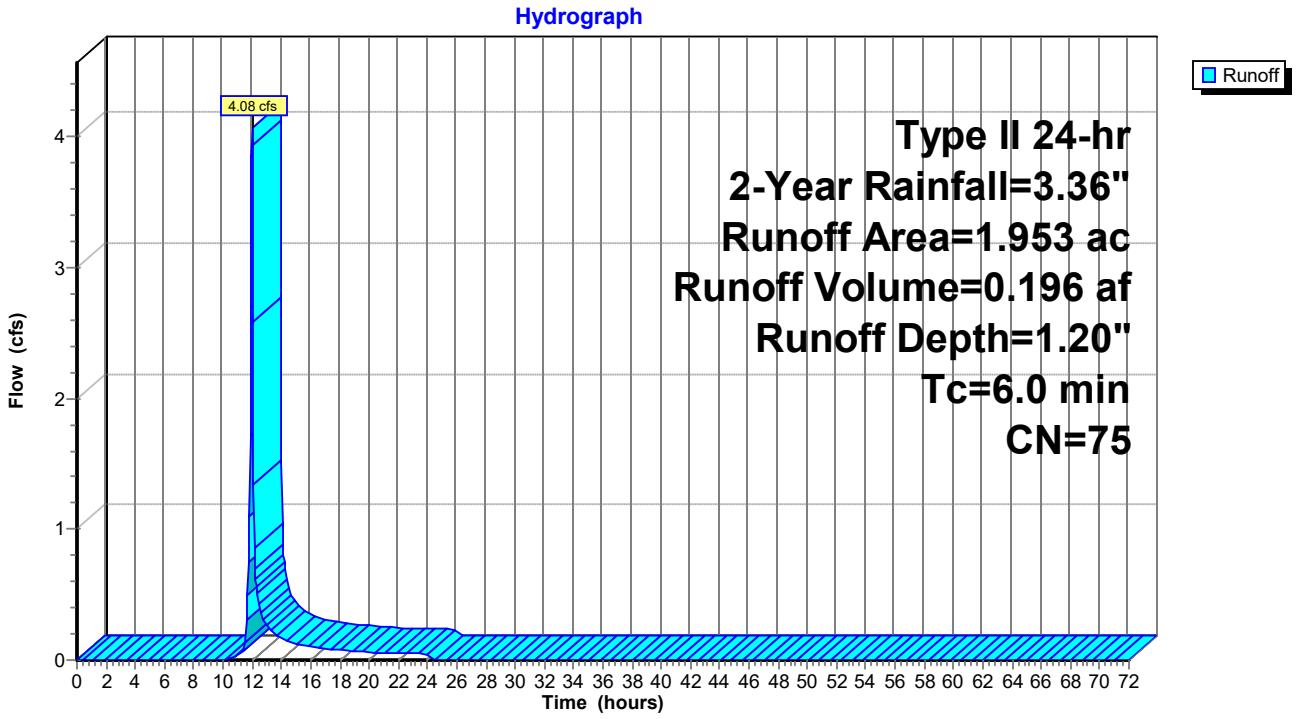
Runoff = 4.08 cfs @ 11.98 hrs, Volume= 0.196 af, Depth= 1.20"
Routed to Pond 24P : bio-retention basin #6a

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=3.36"

	Area (ac)	CN	Description
	1.119	98	Paved parking & roofs
*	0.665	40	>75% Grass cover, Good, HSG A
	0.169	61	>75% Grass cover, Good, HSG B
	1.953	75	Weighted Average
	0.834		42.70% Pervious Area
	1.119		57.30% Impervious Area

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

Subcatchment 25S: BIO-RETENTION BASIN #6A (BMP 5)



Summary for Subcatchment 29S: SWL #1

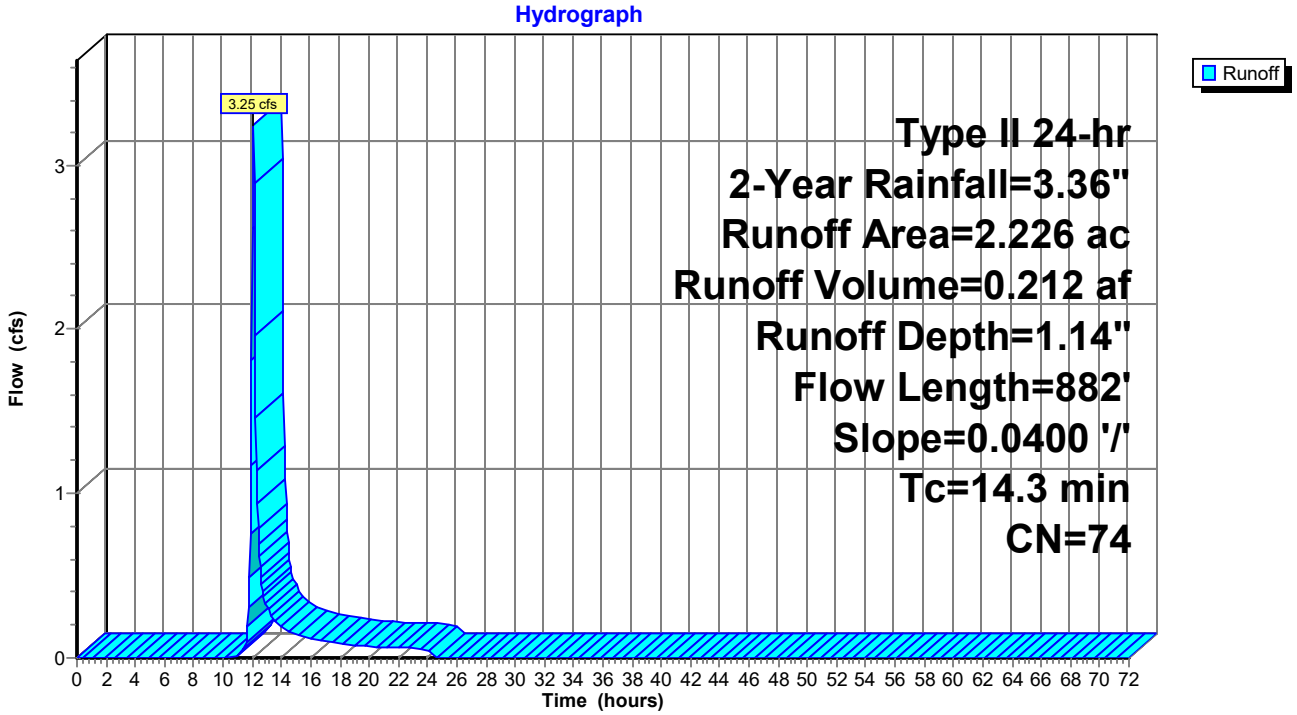
Runoff = 3.25 cfs @ 12.07 hrs, Volume= 0.212 af, Depth= 1.14"
Routed to Reach 26R : SWL-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=3.36"

Area (ac)	CN	Description
0.765	98	Paved parking & roofs
1.461	61	>75% Grass cover, Good, HSG B
2.226	74	Weighted Average
1.461		65.63% Pervious Area
0.765		34.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	150	0.0400	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.23"
4.1	732	0.0400	3.00		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
14.3	882	Total			

Subcatchment 29S: SWL #1



Summary for Subcatchment 30S: SWL #2

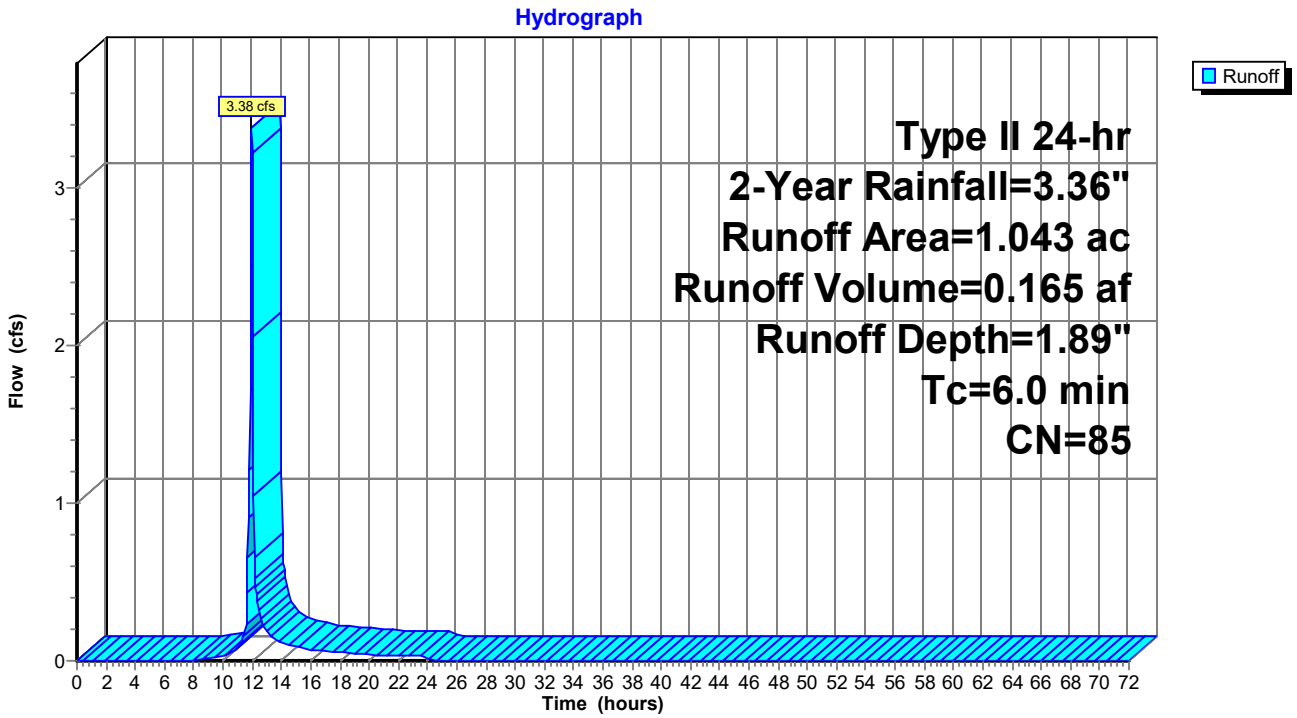
Runoff = 3.38 cfs @ 11.97 hrs, Volume= 0.165 af, Depth= 1.89"
Routed to Reach 27R : SWL-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=3.36"

	Area (ac)	CN	Description
	0.814	98	Paved parking & roofs
*	0.229	40	>75% Grass cover, Good, HSG A
	1.043	85	Weighted Average
	0.229		21.96% Pervious Area
	0.814		78.04% Impervious Area

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

Subcatchment 30S: SWL #2



Summary for Subcatchment 32S: SWL #3

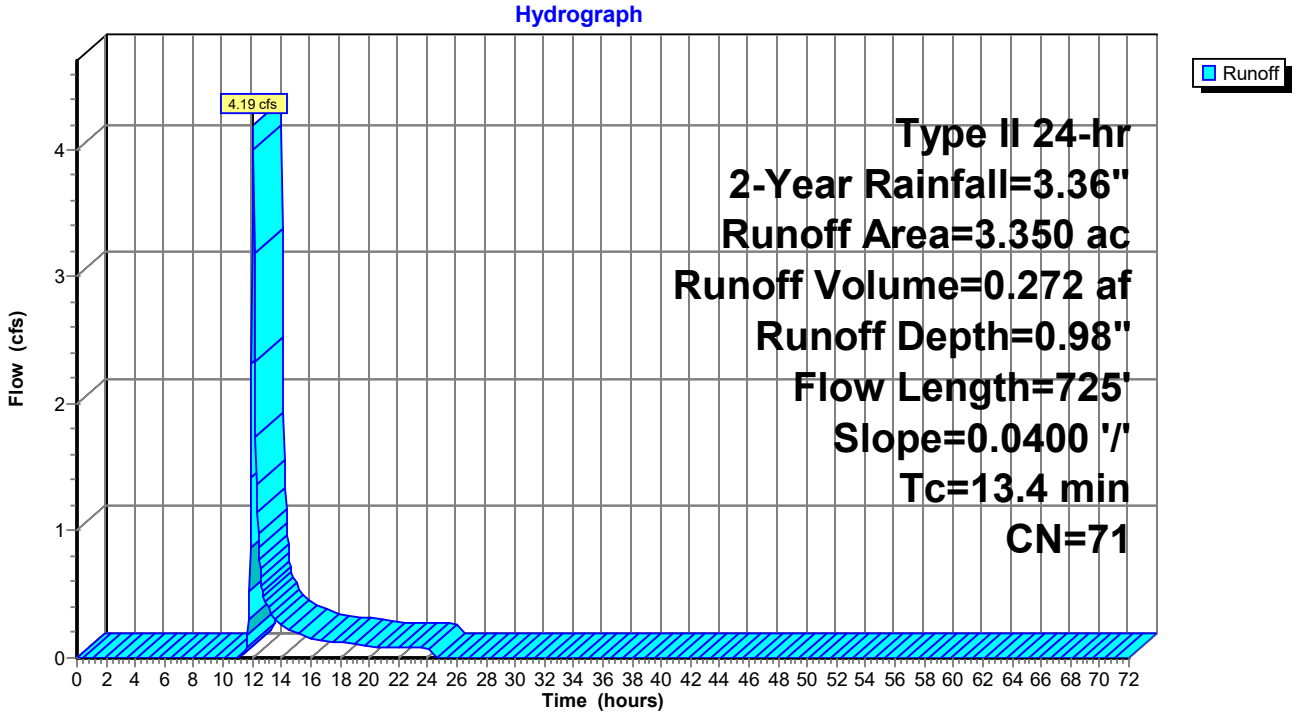
Runoff = 4.19 cfs @ 12.07 hrs, Volume= 0.272 af, Depth= 0.98"
Routed to Reach 28R : SWL-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=3.36"

Area (ac)	CN	Description
0.930	98	Paved parking & roofs
2.420	61	>75% Grass cover, Good, HSG B
3.350	71	Weighted Average
2.420		72.24% Pervious Area
0.930		27.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	150	0.0400	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.23"
3.2	575	0.0400	3.00		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
13.4	725	Total			

Subcatchment 32S: SWL #3



Summary for Subcatchment 33S: BIO-RETENTION BASIN #1A (BMP#1)

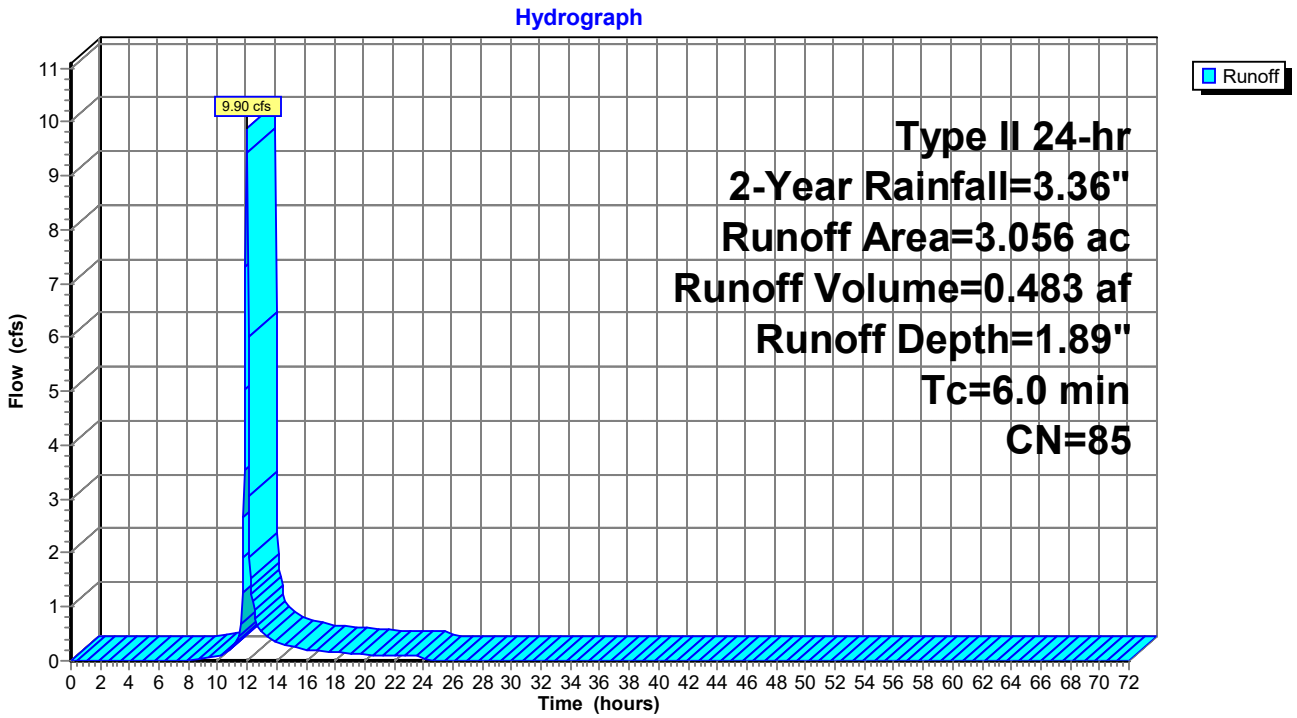
Runoff = 9.90 cfs @ 11.97 hrs, Volume= 0.483 af, Depth= 1.89"
Routed to Pond 29P : bio-retention basin #1A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=3.36"

Area (ac)	CN	Description
1.978	98	Paved parking & roofs
1.078	61	>75% Grass cover, Good, HSG B
3.056	85	Weighted Average
1.078		35.27% Pervious Area
1.978		64.73% Impervious Area

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

Subcatchment 33S: BIO-RETENTION BASIN #1A (BMP#1)



Summary for Subcatchment 34S: SWL #4

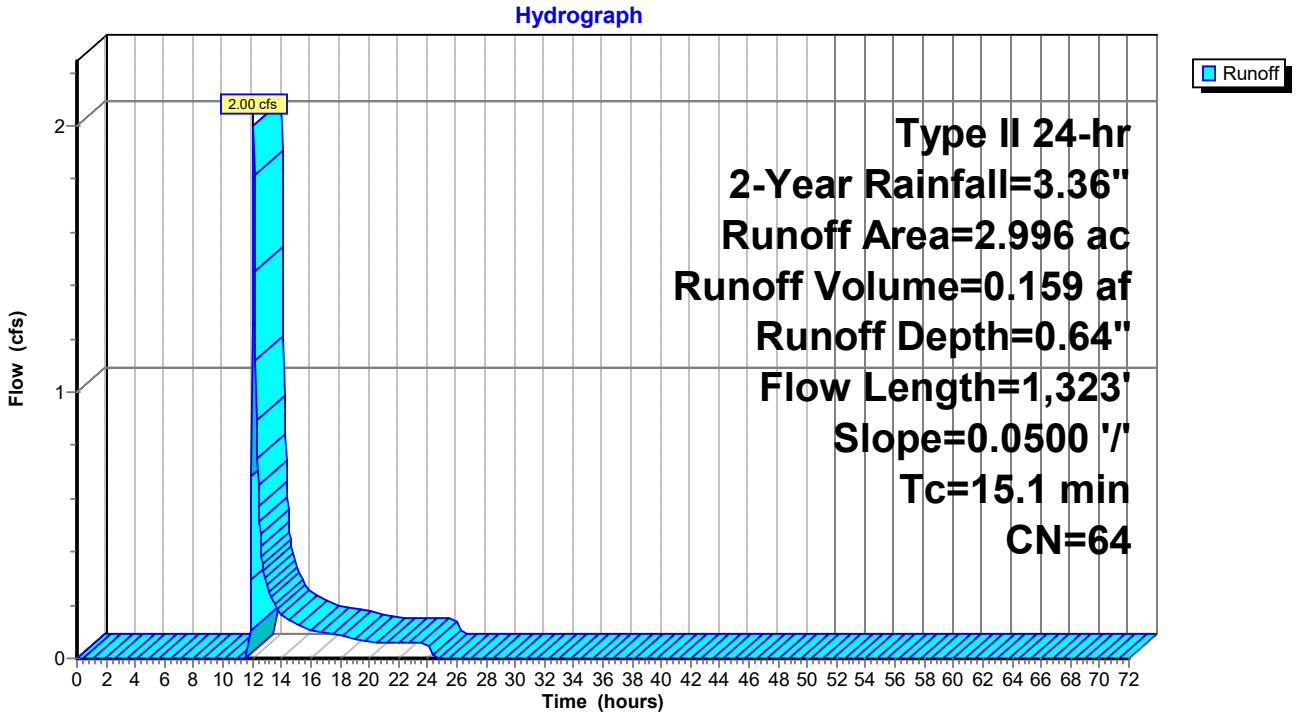
Runoff = 2.00 cfs @ 12.10 hrs, Volume= 0.159 af, Depth= 0.64"
Routed to Reach 23R : SWL-4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=3.36"

Area (ac)	CN	Description
2.296	61	>75% Grass cover, Good, HSG B
0.700	74	>75% Grass cover, Good, HSG C
2.996	64	Weighted Average
2.996		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	150	0.0500	0.27		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.23"
5.8	1,173	0.0500	3.35		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
15.1	1,323	Total			

Subcatchment 34S: SWL #4



Summary for Subcatchment 37S: BIO-RETENTION BASIN #2A (BMP #2)

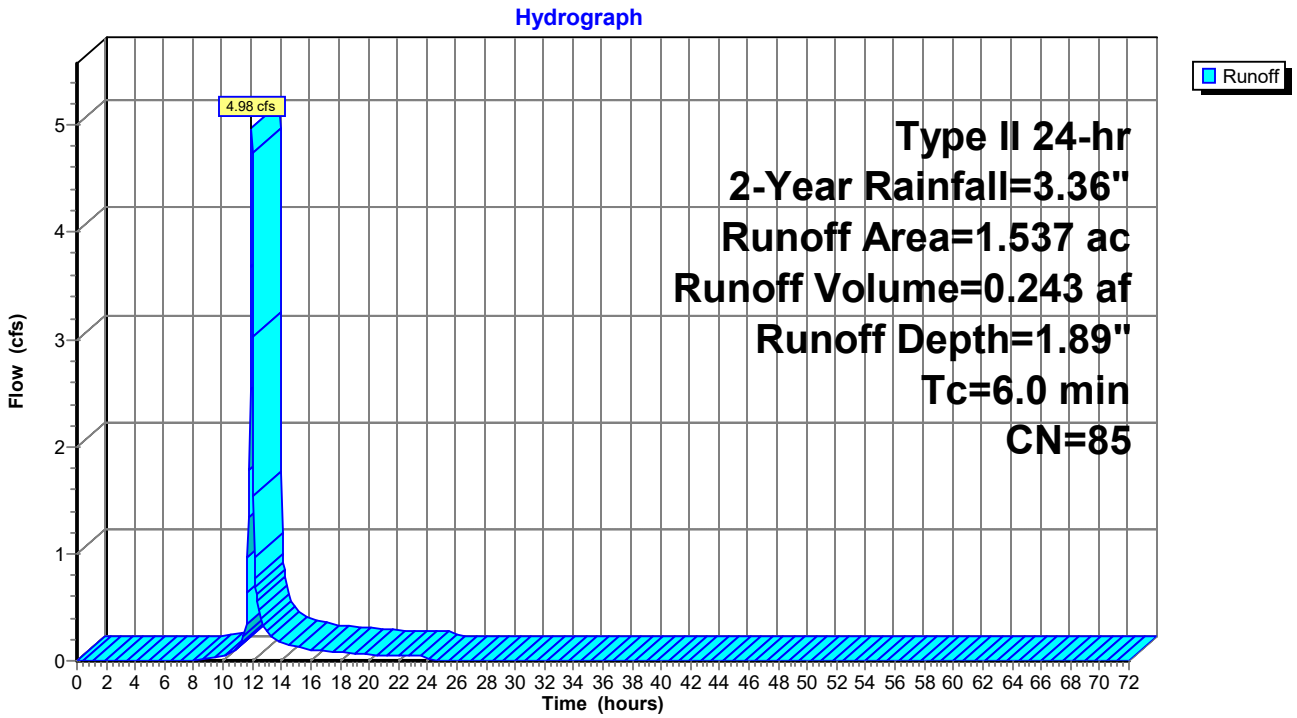
Runoff = 4.98 cfs @ 11.97 hrs, Volume= 0.243 af, Depth= 1.89"
Routed to Pond 38P : bio-retention basin #2A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=3.36"

Area (ac)	CN	Description
1.008	98	Paved parking & roofs
0.529	61	>75% Grass cover, Good, HSG B
1.537	85	Weighted Average
0.529		34.42% Pervious Area
1.008		65.58% Impervious Area

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

Subcatchment 37S: BIO-RETENTION BASIN #2A (BMP #2)



Summary for Subcatchment 41S: BIO-RETENTION BASIN #2C (BMP #3)

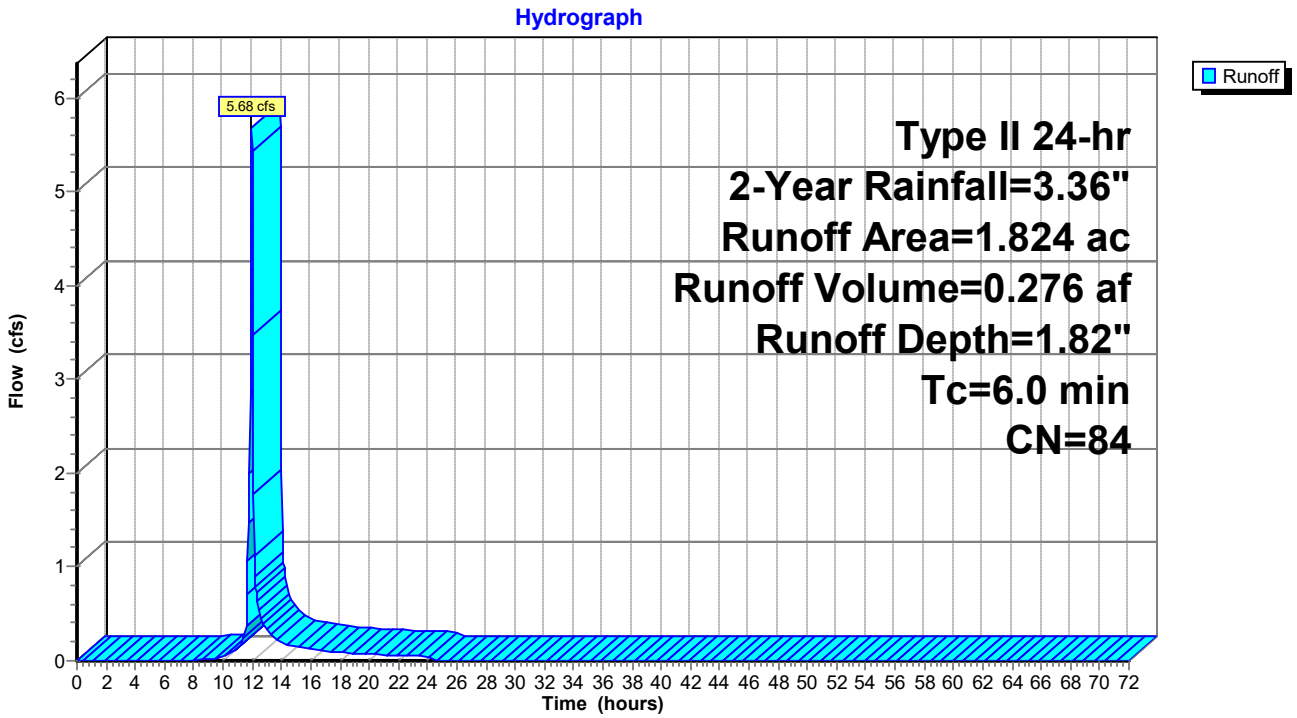
Runoff = 5.68 cfs @ 11.97 hrs, Volume= 0.276 af, Depth= 1.82"
Routed to Pond 40P : bio-retention basin #2C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=3.36"

Area (ac)	CN	Description
1.120	98	Paved parking & roofs
0.704	61	>75% Grass cover, Good, HSG B
1.824	84	Weighted Average
0.704		38.60% Pervious Area
1.120		61.40% Impervious Area

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

Subcatchment 41S: BIO-RETENTION BASIN #2C (BMP #3)



Summary for Subcatchment 42S: BIO-RETENTION BASIN #2B (BMP #4)

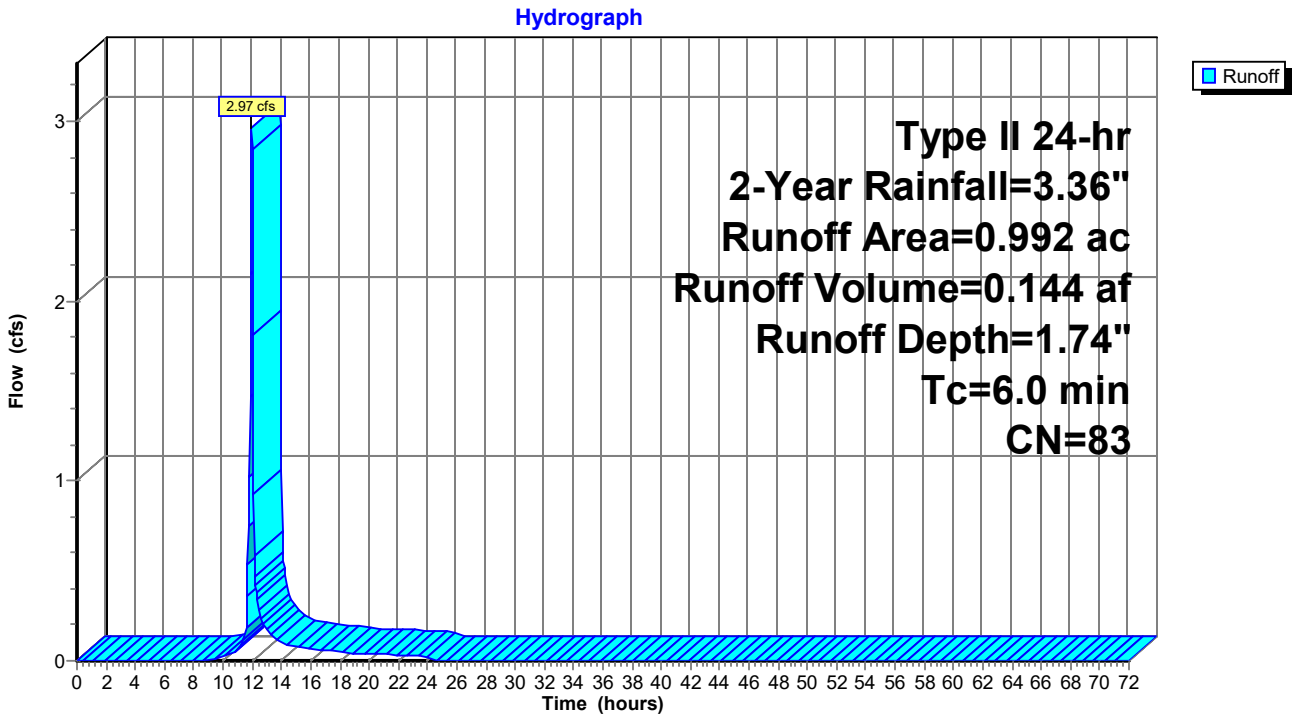
Runoff = 2.97 cfs @ 11.97 hrs, Volume= 0.144 af, Depth= 1.74"
Routed to Pond 39P : bio-retention basin #2B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=3.36"

Area (ac)	CN	Description
0.598	98	Paved parking & roofs
0.394	61	>75% Grass cover, Good, HSG B
0.992	83	Weighted Average
0.394		39.72% Pervious Area
0.598		60.28% Impervious Area

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

Subcatchment 42S: BIO-RETENTION BASIN #2B (BMP #4)



Summary for Subcatchment 47S: UNDETAINED-PROPOSED 001

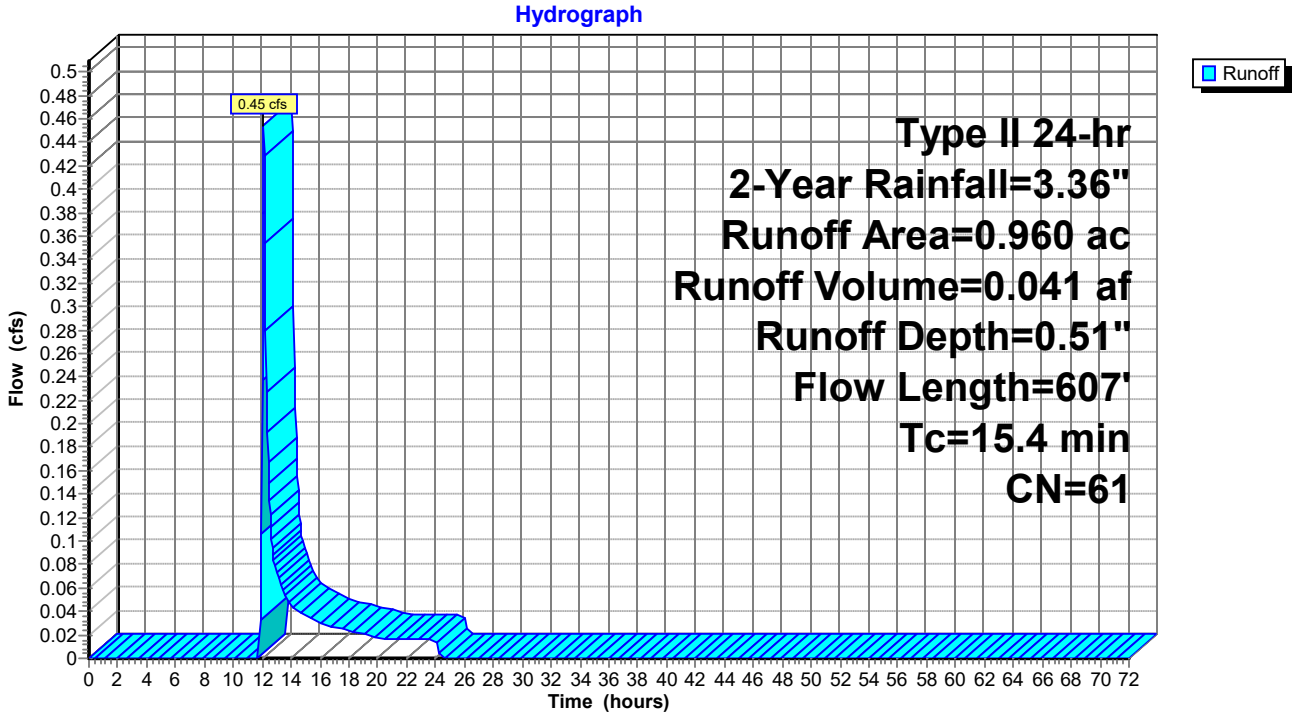
Runoff = 0.45 cfs @ 12.11 hrs, Volume= 0.041 af, Depth= 0.51"
Routed to Link 37L : Discharge 001

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=3.36"

Area (ac)	CN	Description
0.960	61	>75% Grass cover, Good, HSG B
0.960		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	150	0.0800	0.32		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.23"
7.7	457	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.4	607	Total			

Subcatchment 47S: UNDETAINED-PROPOSED 001

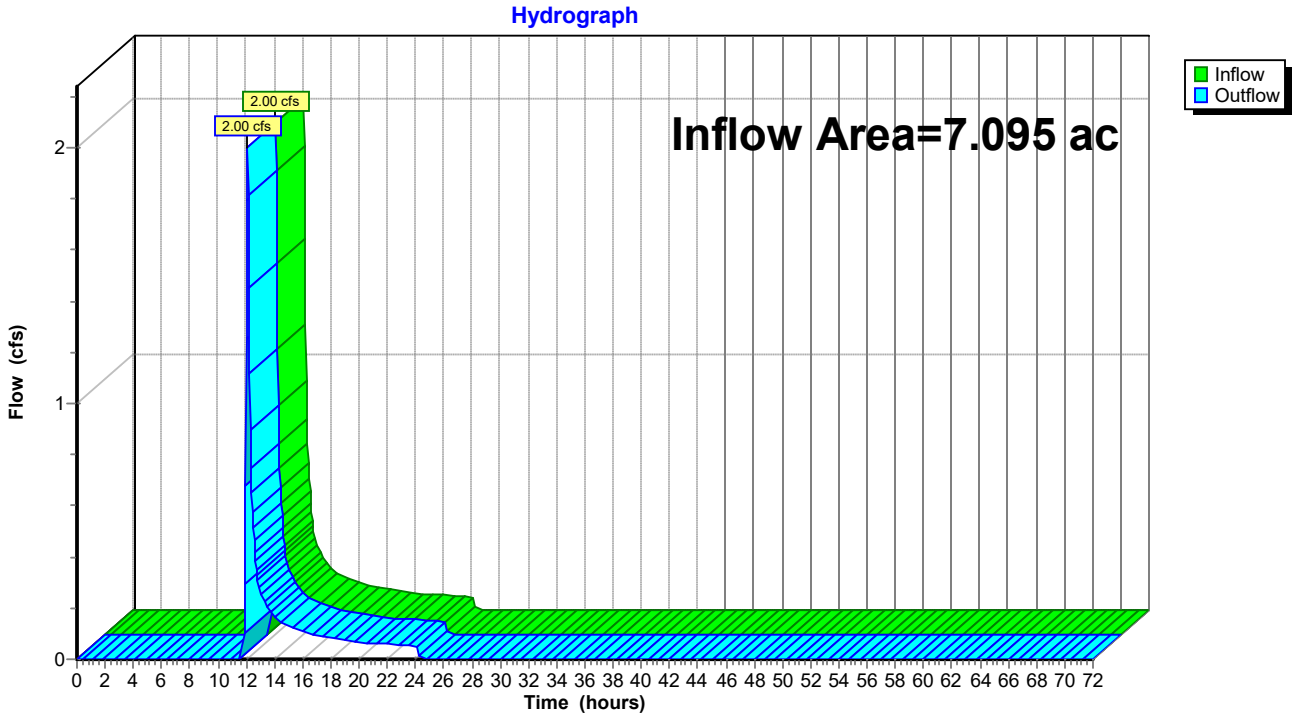


Summary for Reach 23R: SWL-4

Inflow Area = 7.095 ac, 18.49% Impervious, Inflow Depth = 0.27" for 2-Year event
Inflow = 2.00 cfs @ 12.10 hrs, Volume= 0.159 af
Outflow = 2.00 cfs @ 12.10 hrs, Volume= 0.159 af, Atten= 0%, Lag= 0.0 min
Routed to Link 37L : Discharge 001

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach 23R: SWL-4

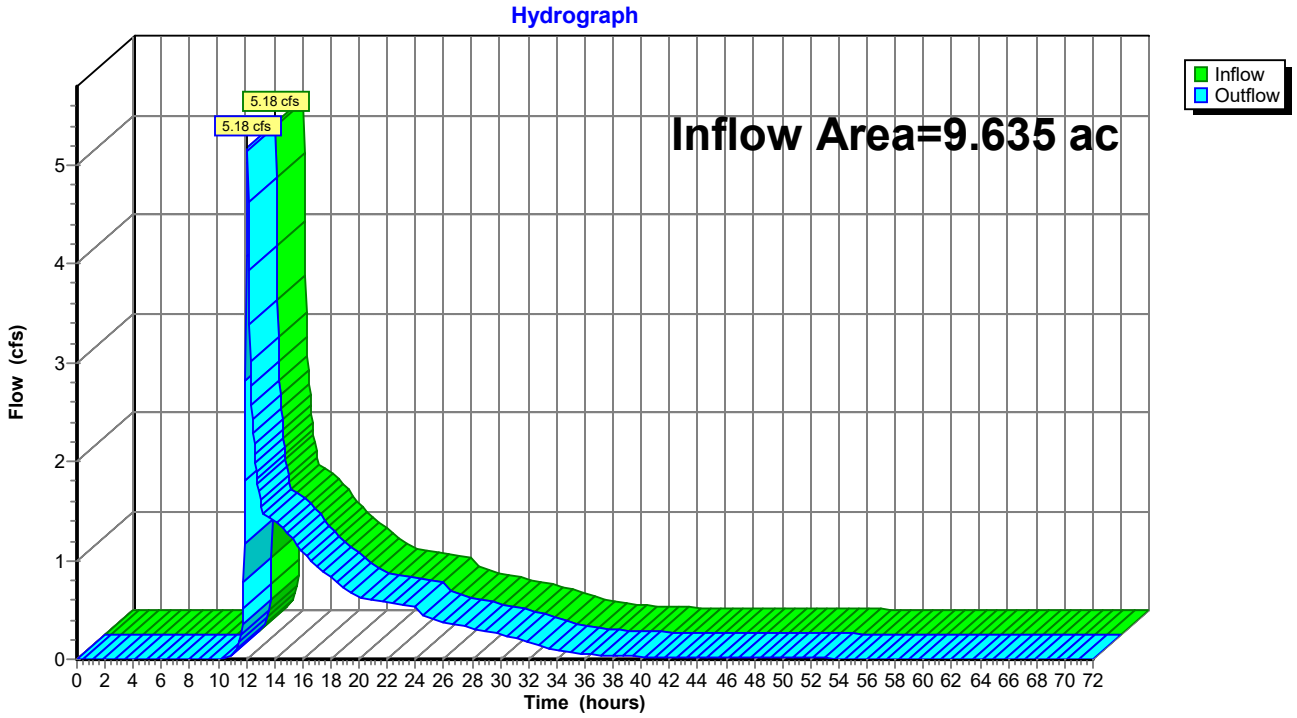


Summary for Reach 26R: SWL-1

Inflow Area = 9.635 ac, 56.76% Impervious, Inflow Depth > 1.68" for 2-Year event
Inflow = 5.18 cfs @ 12.09 hrs, Volume= 1.346 af
Outflow = 5.18 cfs @ 12.09 hrs, Volume= 1.346 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 28R : SWL-3

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach 26R: SWL-1

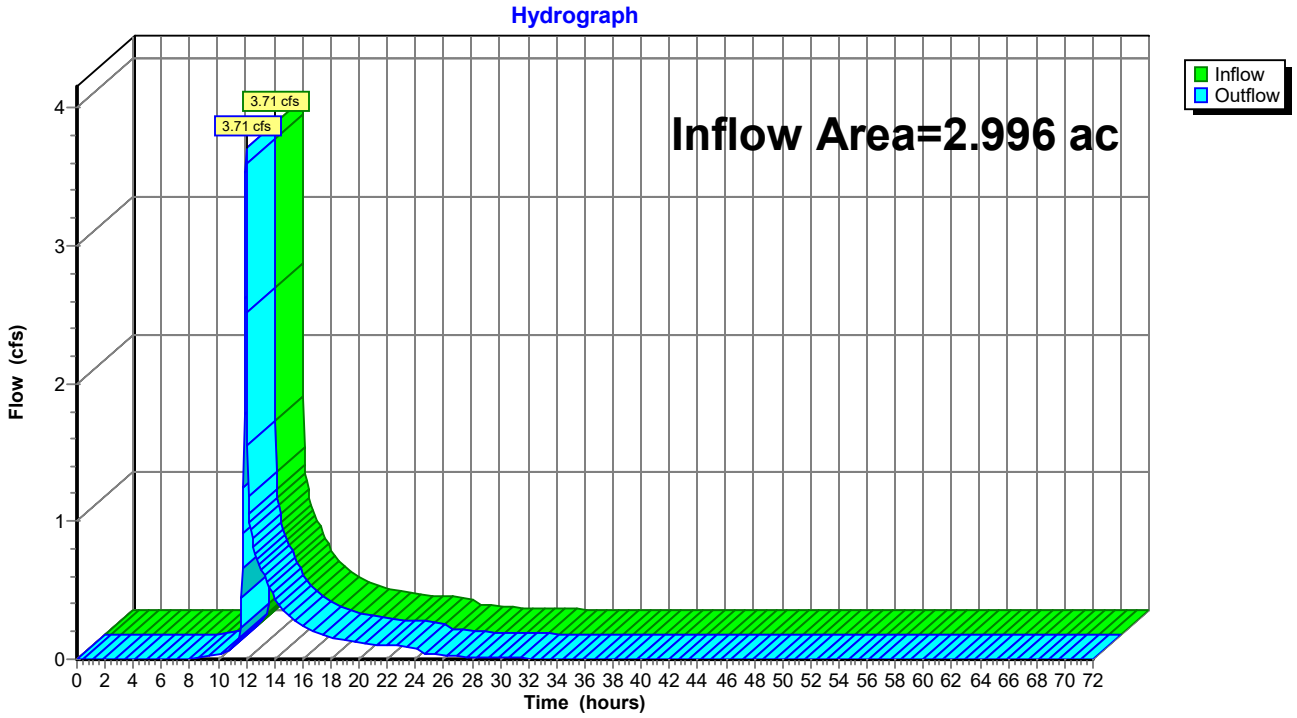


Summary for Reach 27R: SWL-2

Inflow Area = 2.996 ac, 64.52% Impervious, Inflow Depth = 1.44" for 2-Year event
Inflow = 3.71 cfs @ 11.98 hrs, Volume= 0.360 af
Outflow = 3.71 cfs @ 11.98 hrs, Volume= 0.360 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 28R : SWL-3

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach 27R: SWL-2

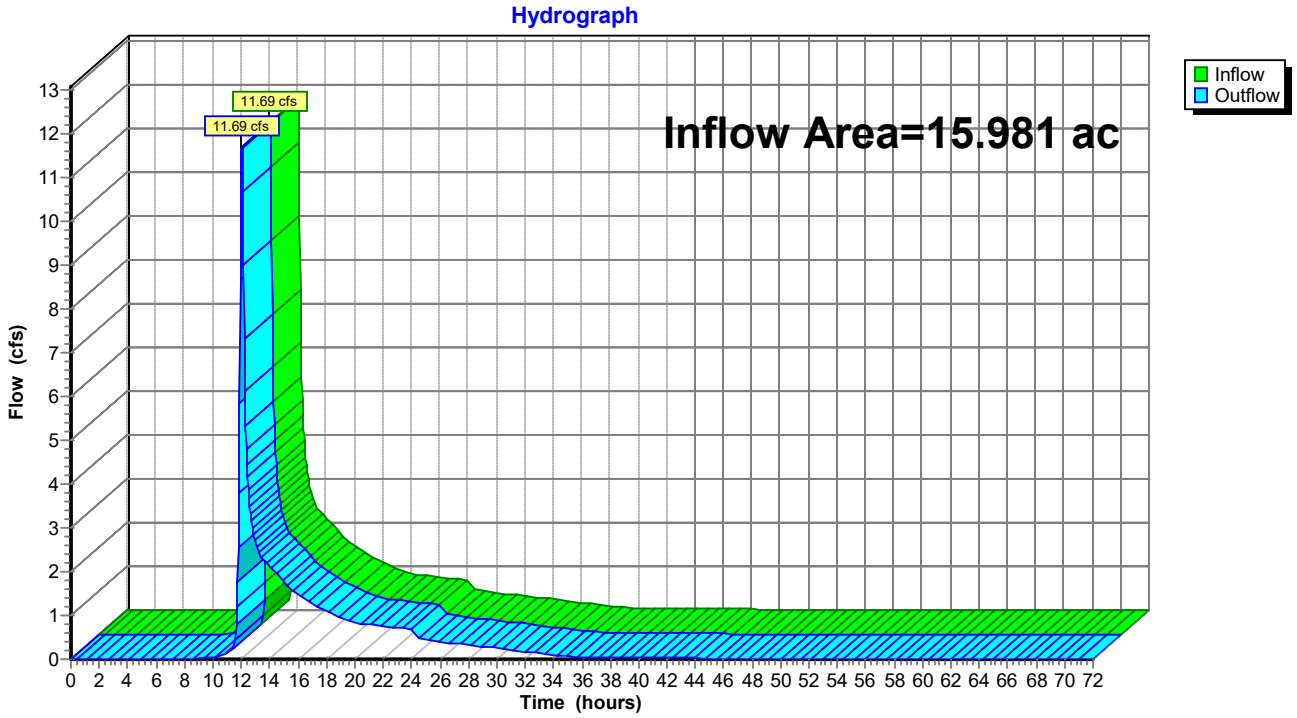


Summary for Reach 28R: SWL-3

Inflow Area = 15.981 ac, 52.14% Impervious, Inflow Depth > 1.49" for 2-Year event
Inflow = 11.69 cfs @ 12.04 hrs, Volume= 1.979 af
Outflow = 11.69 cfs @ 12.04 hrs, Volume= 1.979 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 8P : BIO-RETENTION BASIN #5A (POI 001)

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach 28R: SWL-3



Summary for Pond 8P: BIO-RETENTION BASIN #5A (POI 001)

Inflow Area = 34.811 ac, 65.84% Impervious, Inflow Depth > 0.84" for 2-Year event
Inflow = 20.54 cfs @ 12.00 hrs, Volume= 2.449 af
Outflow = 1.47 cfs @ 17.13 hrs, Volume= 2.449 af, Atten= 93%, Lag= 307.8 min
Discarded = 1.47 cfs @ 17.13 hrs, Volume= 2.449 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 37L : Discharge 001

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,868.49' @ 17.13 hrs Surf.Area= 81,393 sf Storage= 39,504 cf

Plug-Flow detention time= 300.3 min calculated for 2.449 af (100% of inflow)
Center-of-Mass det. time= 299.8 min (1,329.5 - 1,029.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,868.00'	560,097 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

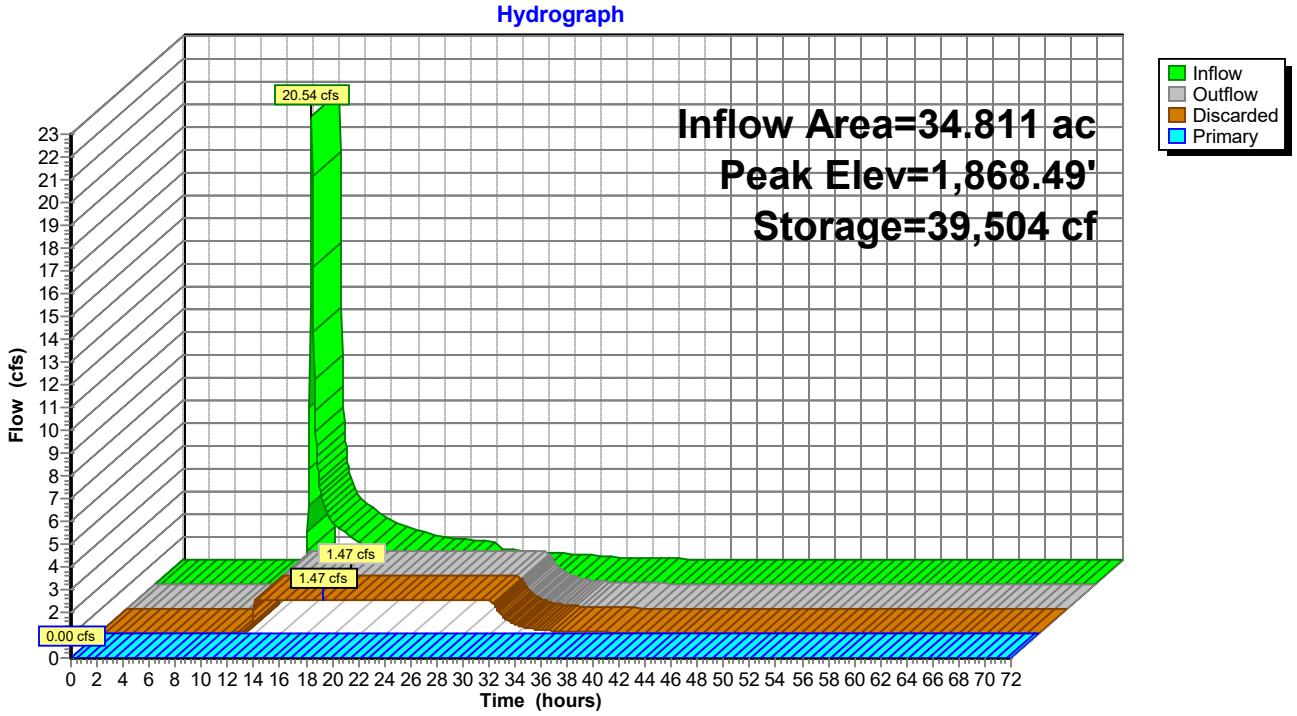
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,868.00	79,525	0	0
1,869.00	83,329	81,427	81,427
1,870.00	88,249	85,789	167,216
1,872.00	98,164	186,413	353,629
1,874.00	108,304	206,468	560,097

Device	Routing	Invert	Outlet Devices
#1	Primary	1,865.00'	**42.0" Round Culvert** L= 30.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 1,865.00' / 1,864.50' S= 0.0167 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf
#2	Device 1	1,869.10'	**20.0" W x 12.0" H Vert. Orifice/Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,870.50'	**72.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Discarded	1,868.00'	**0.780 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=1.47 cfs @ 17.13 hrs HW=1,868.49' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 1.47 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,868.00' (Free Discharge)
└**1=Culvert** (Passes 0.00 cfs of 45.69 cfs potential flow)
  ├**2=Orifice/Grate** (Controls 0.00 cfs)
  └**3=Orifice/Grate** (Controls 0.00 cfs)

Pond 8P: BIO-RETENTION BASIN #5A (POI 001)



Summary for Pond 9P: seepage pit with chambers #5A

Inflow Area = 6.084 ac,100.00% Impervious, Inflow Depth = 3.13" for 2-Year event
Inflow = 28.13 cfs @ 11.96 hrs, Volume= 1.585 af
Outflow = 1.28 cfs @ 11.10 hrs, Volume= 1.585 af, Atten= 95%, Lag= 0.0 min
Discarded = 1.28 cfs @ 11.10 hrs, Volume= 1.585 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 8P : BIO-RETENTION BASIN #5A (POI 001)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,877.13' @ 13.07 hrs Surf.Area= 42,456 sf Storage= 30,702 cf

Plug-Flow detention time= 188.2 min calculated for 1.584 af (100% of inflow)
Center-of-Mass det. time= 188.0 min (939.5 - 751.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,876.00'	40,538 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 169,824 cf Overall - 68,478 cf Embedded = 101,346 cf x 40.0% Voids
#2	1,876.50'	68,478 cf	**Cultec R-360HD** x 1862 Inside #1 Effective Size= 54.9"W x 36.0"H => 9.99 sf x 3.67'L = 36.6 cf Overall Size= 60.0"W x 36.0"H x 4.17'L with 0.50' Overlap 1862 Chambers in 19 Rows Cap Storage= 6.5 cf x 2 x 19 rows = 245.5 cf
		109,016 cf	Total Available Storage

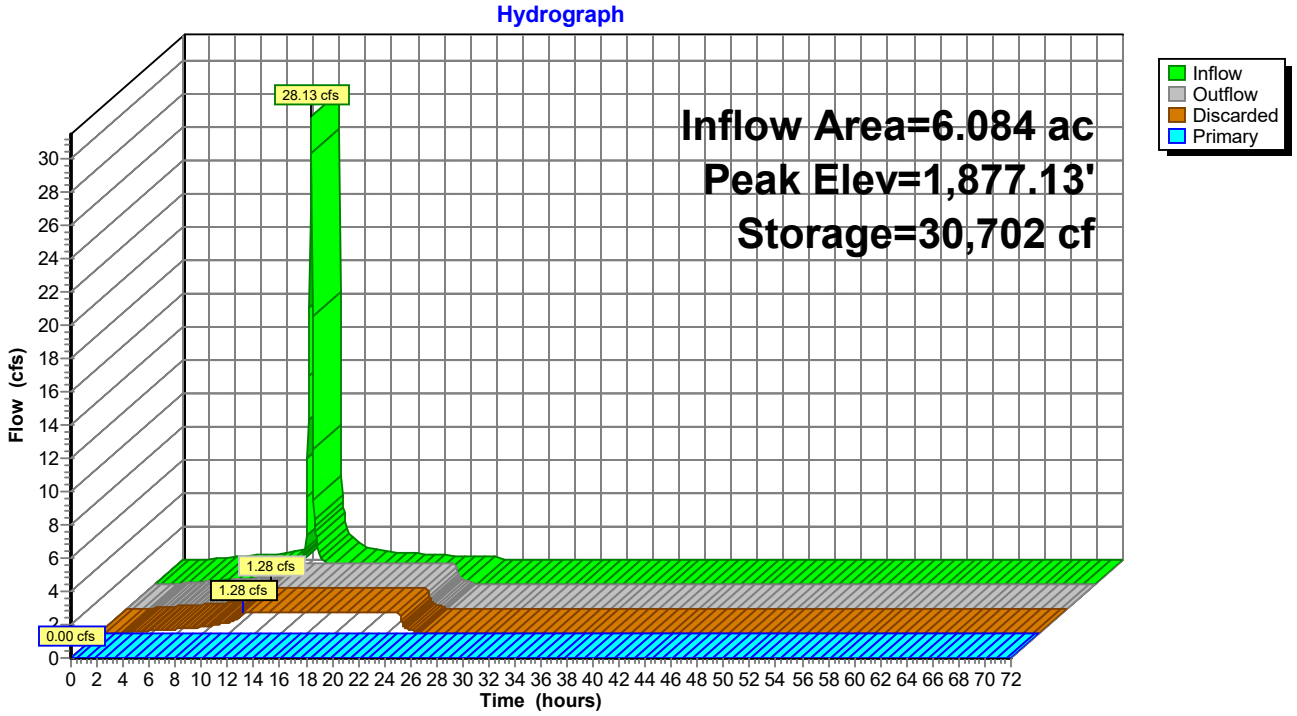
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,876.00	42,456	0	0
1,880.00	42,456	169,824	169,824

Device	Routing	Invert	Outlet Devices
#1	Primary	1,876.00'	**24.0" Round Culvert** L= 120.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,876.00' / 1,868.00' S= 0.0667 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,877.80'	**12.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	1,876.00'	**1.300 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=1.28 cfs @ 11.10 hrs HW=1,876.04' (Free Discharge)
↑—**3=Exfiltration** (Exfiltration Controls 1.28 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,876.00' TW=1,869.56' (Fixed TW Elev= 1,869.56')
↑—**1=Culvert** (Controls 0.00 cfs)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 9P: seepage pit with chambers #5A



Summary for Pond 13P: bio-retention basin #4a

Inflow Area = 2.695 ac, 0.00% Impervious, Inflow Depth = 0.47" for 2-Year event
Inflow = 0.84 cfs @ 12.23 hrs, Volume= 0.106 af
Outflow = 0.11 cfs @ 14.48 hrs, Volume= 0.106 af, Atten= 87%, Lag= 134.8 min
Discarded = 0.11 cfs @ 14.48 hrs, Volume= 0.106 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 23R : SWL-4

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,892.27' @ 14.48 hrs Surf.Area= 5,829 sf Storage= 1,560 cf

Plug-Flow detention time= 158.0 min calculated for 0.106 af (100% of inflow)
Center-of-Mass det. time= 157.9 min (1,086.6 - 928.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,892.00'	30,734 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

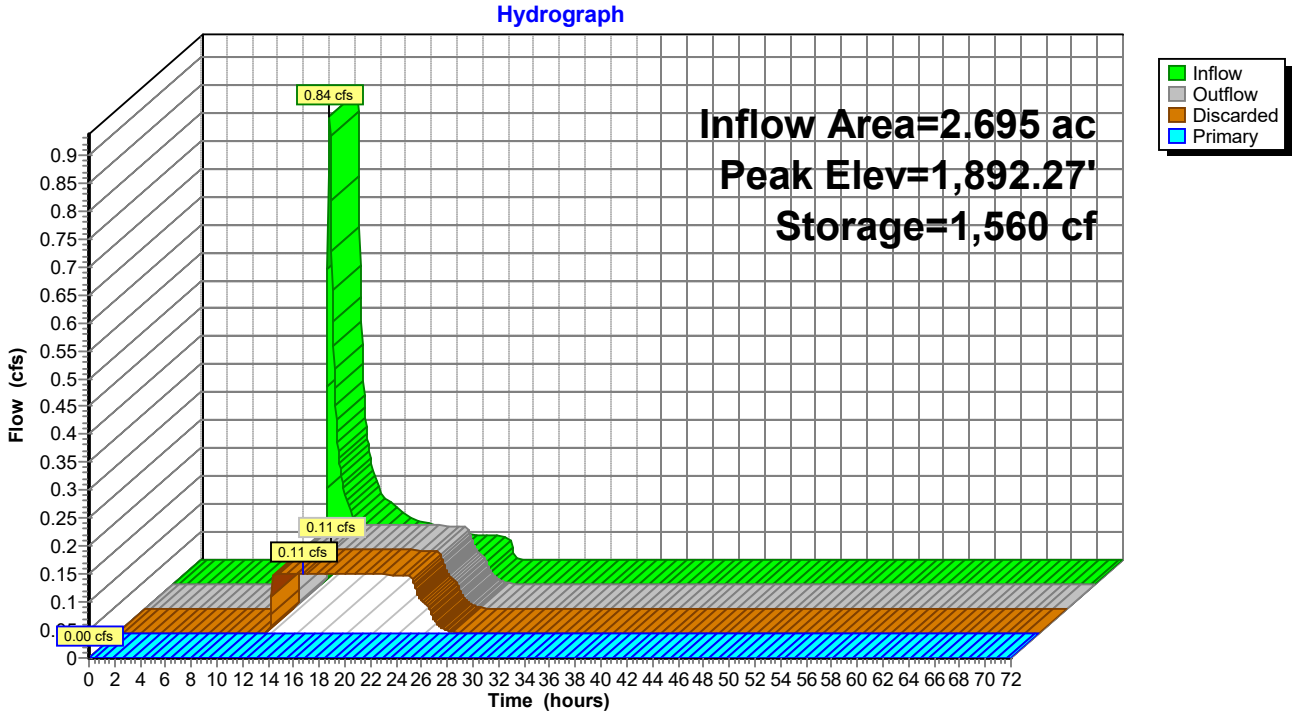
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,892.00	5,542	0	0
1,894.00	7,636	13,178	13,178
1,896.00	9,920	17,556	30,734

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,892.00'	**0.800 in/hr Exfiltration over Surface area**
#2	Primary	1,894.00'	**20.0' long + 3.0 '/' SideZ x 20.0' 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=0.11 cfs @ 14.48 hrs HW=1,892.27' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,892.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 13P: bio-retention basin #4a



Summary for Pond 14P: seepage pit with chambers #5F

Inflow Area = 7.817 ac, 99.88% Impervious, Inflow Depth = 3.13" for 2-Year event
Inflow = 36.14 cfs @ 11.96 hrs, Volume= 2.037 af
Outflow = 2.24 cfs @ 11.40 hrs, Volume= 2.037 af, Atten= 94%, Lag= 0.0 min
Discarded = 2.24 cfs @ 11.40 hrs, Volume= 2.037 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 8P : BIO-RETENTION BASIN #5A (POI 001)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,869.53' @ 12.65 hrs Surf.Area= 56,925 sf Storage= 35,756 cf

Plug-Flow detention time= 114.0 min calculated for 2.037 af (100% of inflow)
Center-of-Mass det. time= 113.9 min (865.4 - 751.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,868.50'	56,160 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 227,700 cf Overall - 87,300 cf Embedded = 140,400 cf x 40.0% Voids
#2	1,869.00'	87,300 cf	**Cultec R-360HD** x 2376 Inside #1 Effective Size= 54.9"W x 36.0"H => 9.99 sf x 3.67'L = 36.6 cf Overall Size= 60.0"W x 36.0"H x 4.17'L with 0.50' Overlap 2376 Chambers in 18 Rows Cap Storage= 6.5 cf x 2 x 18 rows = 232.6 cf
		143,460 cf	Total Available Storage

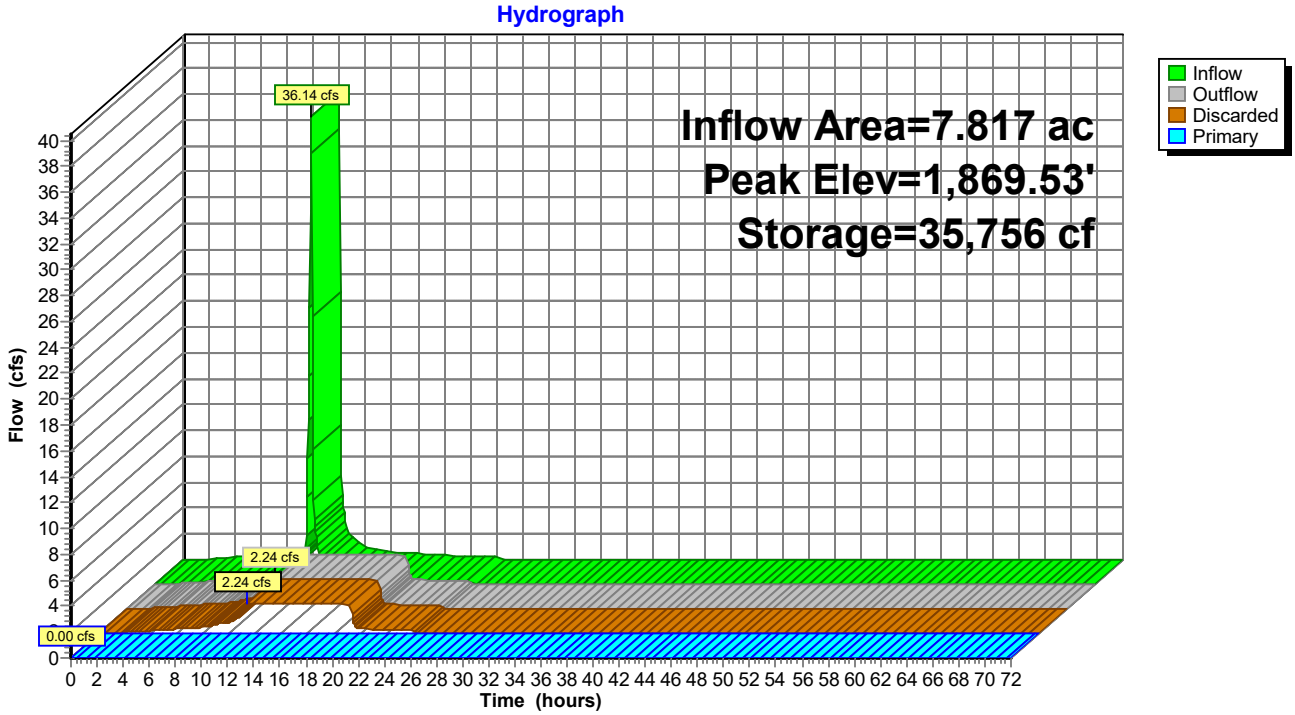
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,868.50	56,925	0	0
1,872.50	56,925	227,700	227,700

Device	Routing	Invert	Outlet Devices
#1	Primary	1,869.50'	**24.0" Round Culvert** L= 60.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,869.50' / 1,868.00' S= 0.0250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,870.00'	**12.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	1,868.50'	**1.700 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=2.24 cfs @ 11.40 hrs HW=1,868.54' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 2.24 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,868.50' TW=1,869.56' (Fixed TW Elev= 1,869.56')
└**1=Culvert** (Controls 0.00 cfs)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 14P: seepage pit with chambers #5F



Summary for Pond 15P: seepage pit with chambers #4b

Inflow Area = 1.404 ac, 93.45% Impervious, Inflow Depth = 2.91" for 2-Year event
Inflow = 6.30 cfs @ 11.96 hrs, Volume= 0.340 af
Outflow = 0.22 cfs @ 10.90 hrs, Volume= 0.340 af, Atten= 96%, Lag= 0.0 min
Discarded = 0.22 cfs @ 10.90 hrs, Volume= 0.340 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 23R : SWL-4

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,888.27' @ 13.57 hrs Surf.Area= 12,000 sf Storage= 7,393 cf

Plug-Flow detention time= 290.7 min calculated for 0.340 af (100% of inflow)
Center-of-Mass det. time= 290.7 min (1,059.8 - 769.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,887.00'	16,609 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 48,000 cf Overall - 6,477 cf Embedded = 41,523 cf x 40.0% Voids
#2	1,887.50'	6,477 cf	**Cultec R-360HD** x 175 Inside #1 Effective Size= 54.9"W x 36.0"H => 9.99 sf x 3.67'L = 36.6 cf Overall Size= 60.0"W x 36.0"H x 4.17'L with 0.50' Overlap 175 Chambers in 5 Rows Cap Storage= 6.5 cf x 2 x 5 rows = 64.6 cf
		23,086 cf	Total Available Storage

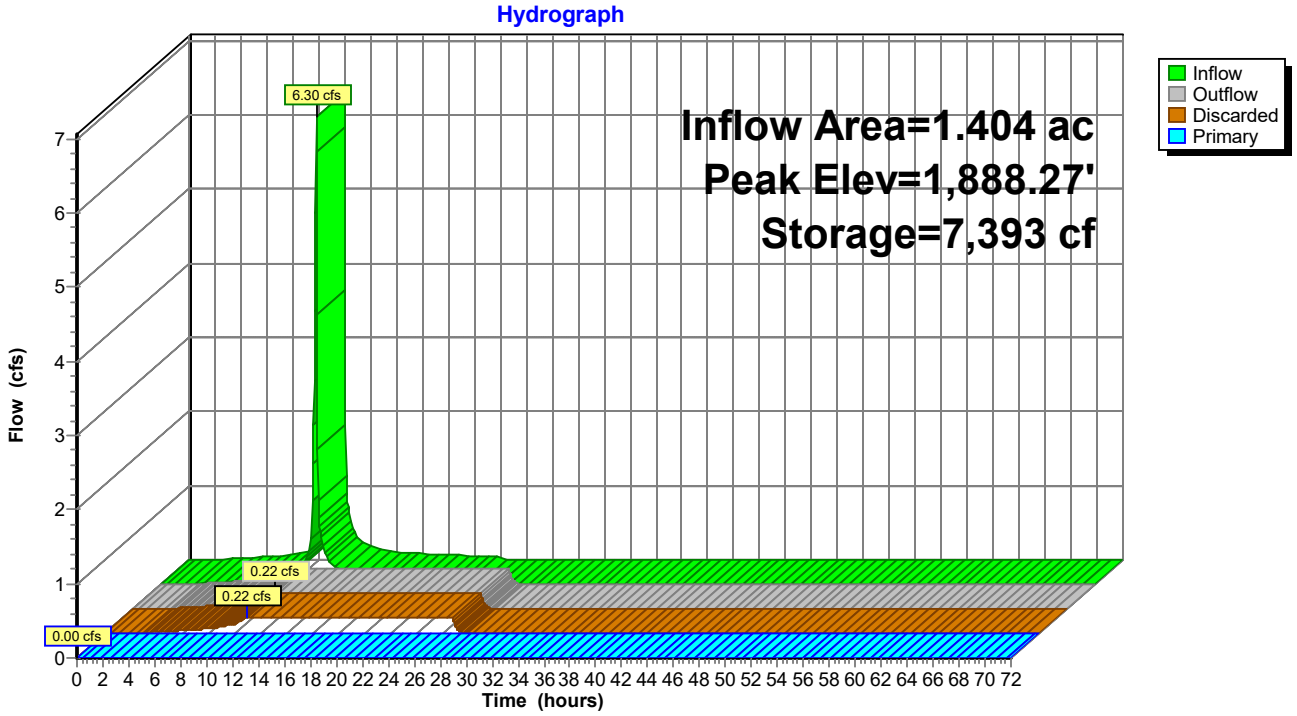
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,887.00	12,000	0	0
1,891.00	12,000	48,000	48,000

Device	Routing	Invert	Outlet Devices
#1	Primary	1,887.00'	**24.0" Round Culvert** L= 50.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,887.00' / 1,886.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,888.40'	**12.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	1,887.00'	**0.800 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.22 cfs @ 10.90 hrs HW=1,887.04' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.22 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,887.00' (Free Discharge)
└**1=Culvert** (Controls 0.00 cfs)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 15P: seepage pit with chambers #4b



Summary for Pond 16P: seepage pit with chambers #3A

Inflow Area = 4.089 ac, 57.74% Impervious, Inflow Depth = 1.46" for 2-Year event
Inflow = 10.39 cfs @ 11.98 hrs, Volume= 0.497 af
Outflow = 0.55 cfs @ 11.70 hrs, Volume= 0.497 af, Atten= 95%, Lag= 0.0 min
Discarded = 0.55 cfs @ 11.70 hrs, Volume= 0.497 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 26P : bio-retention basin #3b

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,901.71' @ 13.19 hrs Surf.Area= 26,640 sf Storage= 9,810 cf

Plug-Flow detention time= 166.6 min calculated for 0.496 af (100% of inflow)
Center-of-Mass det. time= 166.5 min (1,006.6 - 840.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,901.00'	26,373 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 106,560 cf Overall - 40,628 cf Embedded = 65,932 cf x 40.0% Voids
#2	1,901.50'	40,628 cf	**Cultec R-360HD** x 1102 Inside #1 Effective Size= 54.9"W x 36.0"H => 9.99 sf x 3.67'L = 36.6 cf Overall Size= 60.0"W x 36.0"H x 4.17'L with 0.50' Overlap 1102 Chambers in 19 Rows Cap Storage= 6.5 cf x 2 x 19 rows = 245.5 cf
		67,001 cf	Total Available Storage

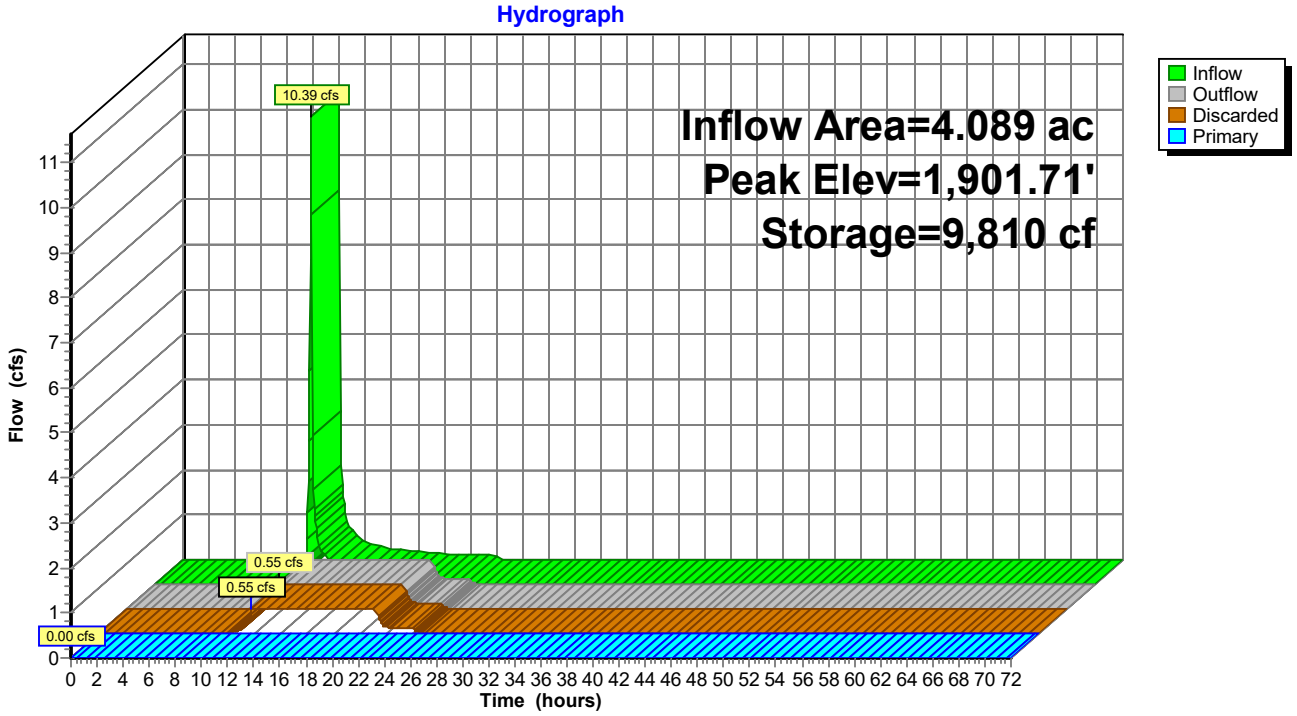
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,901.00	26,640	0	0
1,905.00	26,640	106,560	106,560

Device	Routing	Invert	Outlet Devices
#1	Primary	1,901.00'	**24.0" Round Culvert** L= 120.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,901.00' / 1,898.00' S= 0.0250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,902.00'	**12.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	1,901.00'	**0.900 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.55 cfs @ 11.70 hrs HW=1,901.05' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.55 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,901.00' (Free Discharge)
└**1=Culvert** (Controls 0.00 cfs)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 16P: seepage pit with chambers #3A



Summary for Pond 24P: bio-retention basin #6a

Inflow Area = 1.953 ac, 57.30% Impervious, Inflow Depth = 1.20" for 2-Year event
Inflow = 4.08 cfs @ 11.98 hrs, Volume= 0.196 af
Outflow = 0.53 cfs @ 12.35 hrs, Volume= 0.196 af, Atten= 87%, Lag= 22.1 min
Primary = 0.53 cfs @ 12.35 hrs, Volume= 0.196 af
Routed to Reach 27R : SWL-2

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,922.57' @ 12.35 hrs Surf.Area= 6,196 sf Storage= 3,343 cf

Plug-Flow detention time= 161.9 min calculated for 0.196 af (100% of inflow)
Center-of-Mass det. time= 163.0 min (1,015.6 - 852.5)

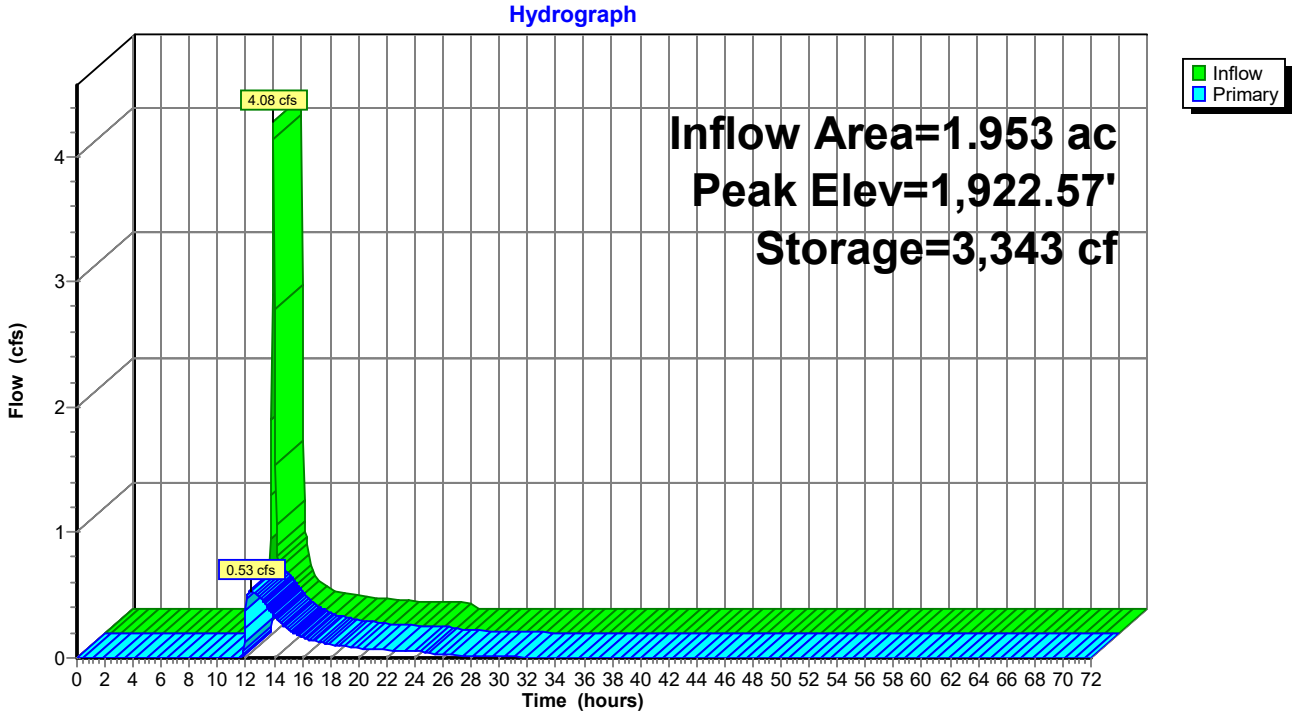
Volume	Invert	Avail.Storage	Storage Description
#1	1,922.00'	31,352 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,922.00	5,567	0	0
1,924.00	7,781	13,348	13,348
1,926.00	10,223	18,004	31,352

Device	Routing	Invert	Outlet Devices
#1	Primary	1,922.00'	**24.0" Round Culvert** L= 50.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,922.00' / 1,920.25' S= 0.0350 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,922.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,924.50'	**45.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.53 cfs @ 12.35 hrs HW=1,922.57' (Free Discharge)
└─**1=Culvert** (Passes 0.53 cfs of 1.66 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.53 cfs @ 2.72 fps)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Pond 24P: bio-retention basin #6a



Summary for Pond 26P: bio-retention basin #3b

Inflow Area = 14.187 ac, 33.20% Impervious, Inflow Depth = 0.55" for 2-Year event
Inflow = 5.51 cfs @ 12.30 hrs, Volume= 0.650 af
Outflow = 0.66 cfs @ 14.22 hrs, Volume= 0.650 af, Atten= 88%, Lag= 115.2 min
Discarded = 0.66 cfs @ 14.22 hrs, Volume= 0.650 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 37L : Discharge 001

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,891.50' @ 14.22 hrs Surf.Area= 23,671 sf Storage= 11,493 cf

Plug-Flow detention time= 185.9 min calculated for 0.650 af (100% of inflow)
Center-of-Mass det. time= 185.9 min (1,088.9 - 903.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,891.00'	218,379 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

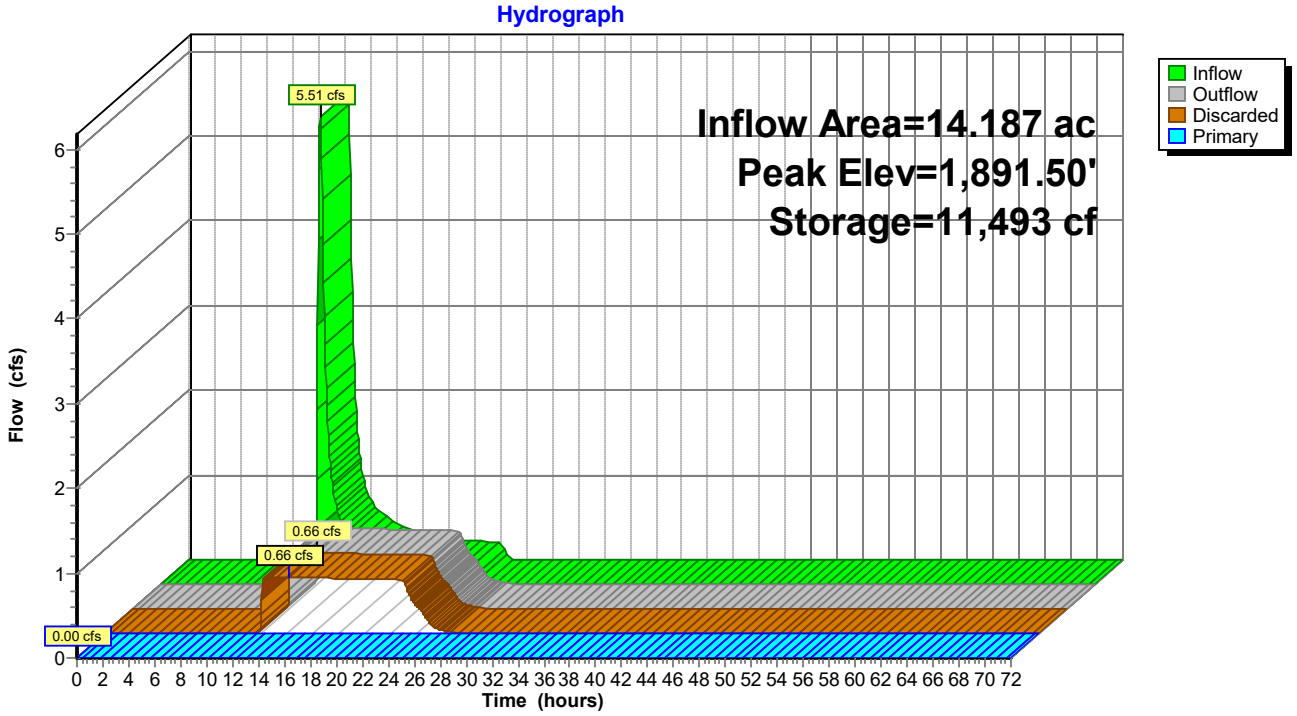
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,891.00	22,485	0	0
1,892.00	24,866	23,676	23,676
1,894.00	29,797	54,663	78,339
1,896.00	34,953	64,750	143,089
1,898.00	40,337	75,290	218,379

Device	Routing	Invert	Outlet Devices
#1	Primary	1,891.00'	**24.0" Round Culvert** L= 120.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,891.00' / 1,889.80' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,892.00'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	1,891.00'	**1.200 in/hr Exfiltration over Surface area**
#4	Device 1	1,896.60'	**45.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.66 cfs @ 14.22 hrs HW=1,891.50' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.66 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,891.00' (Free Discharge)
└**1=Culvert** (Controls 0.00 cfs)
  ├**2=Orifice/Grate** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Pond 26P: bio-retention basin #3b



Summary for Pond 29P: bio-retention basin #1A

Inflow Area = 3.056 ac, 64.73% Impervious, Inflow Depth = 1.89" for 2-Year event
Inflow = 9.90 cfs @ 11.97 hrs, Volume= 0.483 af
Outflow = 0.70 cfs @ 12.65 hrs, Volume= 0.478 af, Atten= 93%, Lag= 40.7 min
Primary = 0.70 cfs @ 12.65 hrs, Volume= 0.478 af
Routed to Pond 38P : bio-retention basin #2A

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,938.80' @ 12.65 hrs Surf.Area= 14,784 sf Storage= 10,970 cf

Plug-Flow detention time= 294.4 min calculated for 0.477 af (99% of inflow)
Center-of-Mass det. time= 290.0 min (1,110.9 - 820.8)

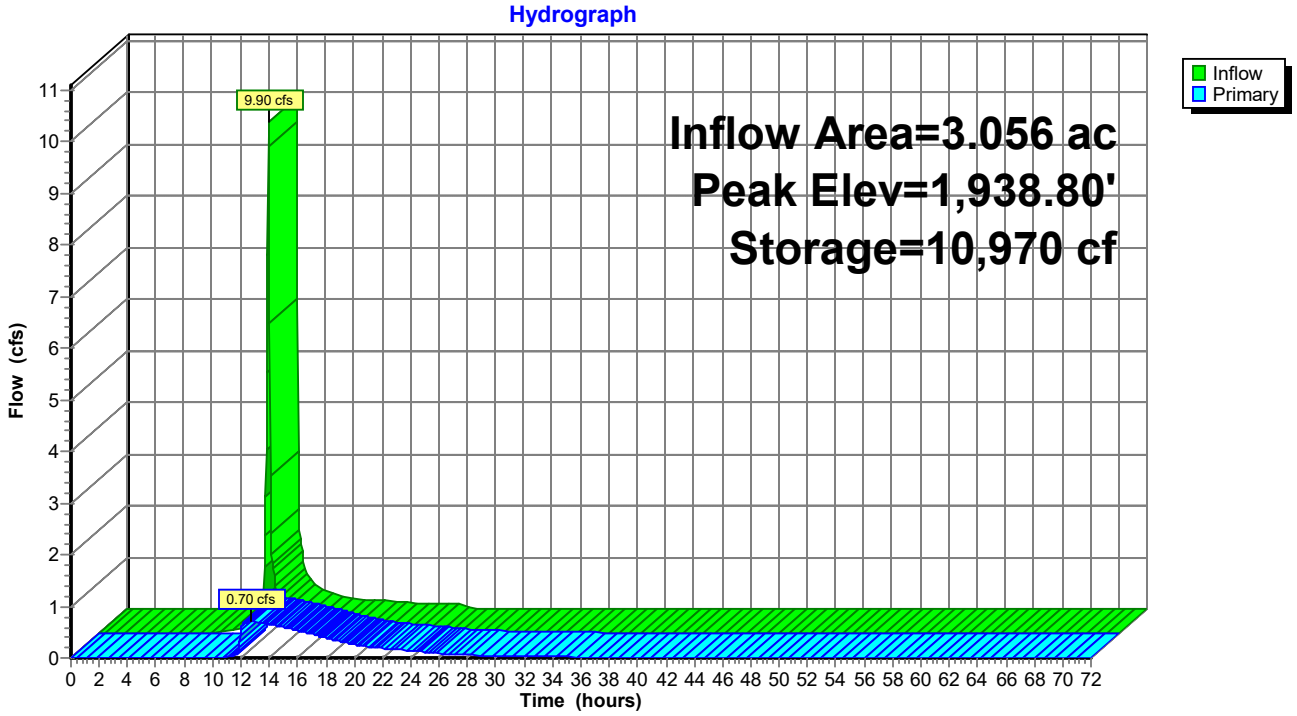
Volume	Invert	Avail.Storage	Storage Description
#1	1,938.00'	72,334 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,938.00	12,620	0	0
1,940.00	18,027	30,647	30,647
1,942.00	23,660	41,687	72,334

Device	Routing	Invert	Outlet Devices
#1	Primary	1,936.00'	**24.0" Round Culvert** L= 85.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,936.00' / 1,934.00' S= 0.0235 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,938.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,940.50'	**45.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.70 cfs @ 12.65 hrs HW=1,938.80' TW=1,936.57' (Fixed TW Elev= 1,936.57')
└─**1=Culvert** (Passes 0.70 cfs of 17.91 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.70 cfs @ 3.57 fps)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Pond 29P: bio-retention basin #1A



Summary for Pond 38P: bio-retention basin #2A

Inflow Area = 4.593 ac, 65.01% Impervious, Inflow Depth > 1.88" for 2-Year event
Inflow = 5.48 cfs @ 11.97 hrs, Volume= 0.720 af
Outflow = 0.88 cfs @ 13.59 hrs, Volume= 0.720 af, Atten= 84%, Lag= 96.8 min
Primary = 0.88 cfs @ 13.59 hrs, Volume= 0.720 af
Routed to Pond 40P : bio-retention basin #2C

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,936.05' @ 13.59 hrs Surf.Area= 4,360 sf Storage= 8,330 cf

Plug-Flow detention time= 226.8 min calculated for 0.719 af (100% of inflow)
Center-of-Mass det. time= 224.1 min (1,237.3 - 1,013.2)

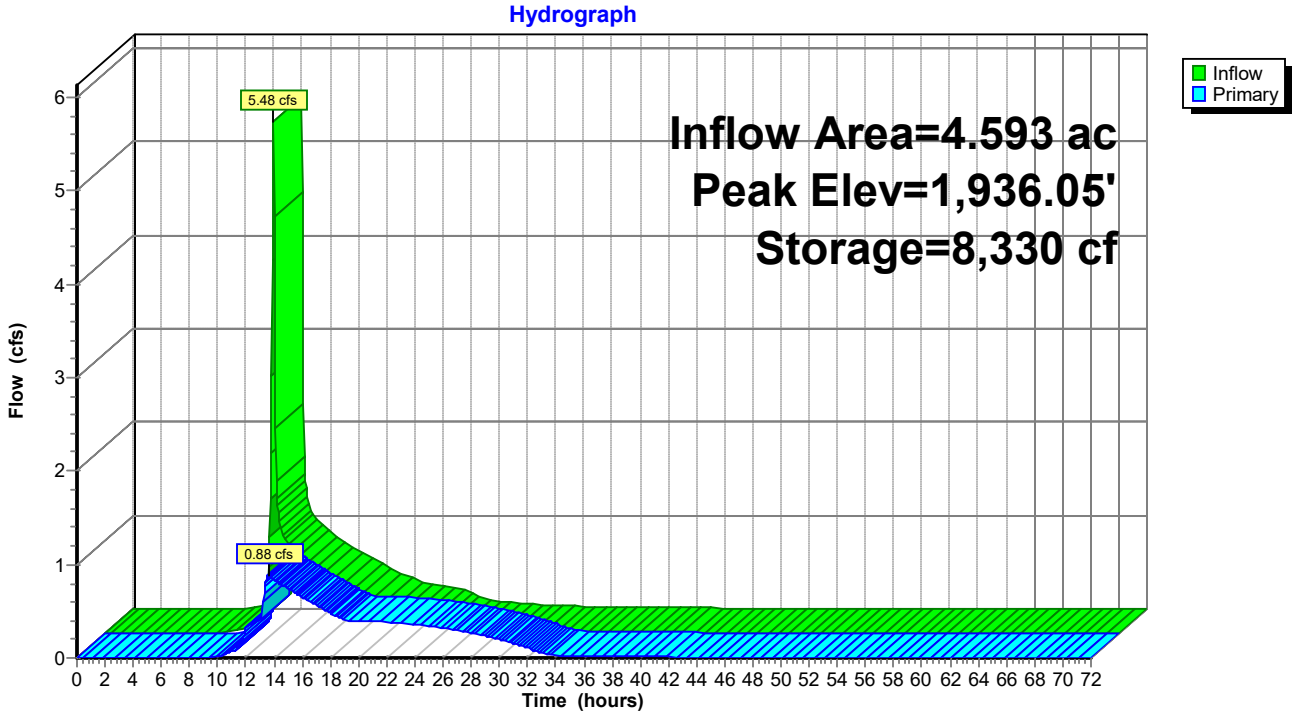
Volume	Invert	Avail.Storage	Storage Description
#1	1,933.00'	19,068 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,933.00	1,159	0	0
1,934.00	2,148	1,654	1,654
1,936.00	4,297	6,445	8,099
1,938.00	6,672	10,969	19,068

Device	Routing	Invert	Outlet Devices
#1	Primary	1,933.00'	**24.0" Round Culvert** L= 115.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,933.00' / 1,931.70' S= 0.0113 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,933.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,936.00'	**45.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.87 cfs @ 13.59 hrs HW=1,936.05' (Free Discharge)
└**1=Culvert** (Passes 0.87 cfs of 19.13 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.40 cfs @ 8.24 fps)
└**3=Orifice/Grate** (Weir Controls 0.46 cfs @ 0.76 fps)

Pond 38P: bio-retention basin #2A



Summary for Pond 39P: bio-retention basin #2B

Inflow Area = 0.992 ac, 60.28% Impervious, Inflow Depth = 1.74" for 2-Year event
Inflow = 2.97 cfs @ 11.97 hrs, Volume= 0.144 af
Outflow = 0.27 cfs @ 12.51 hrs, Volume= 0.142 af, Atten= 91%, Lag= 32.2 min
Primary = 0.27 cfs @ 12.51 hrs, Volume= 0.142 af
Routed to Reach 26R : SWL-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,916.33' @ 12.51 hrs Surf.Area= 9,613 sf Storage= 3,115 cf

Plug-Flow detention time= 333.0 min calculated for 0.142 af (99% of inflow)
Center-of-Mass det. time= 326.2 min (1,153.7 - 827.5)

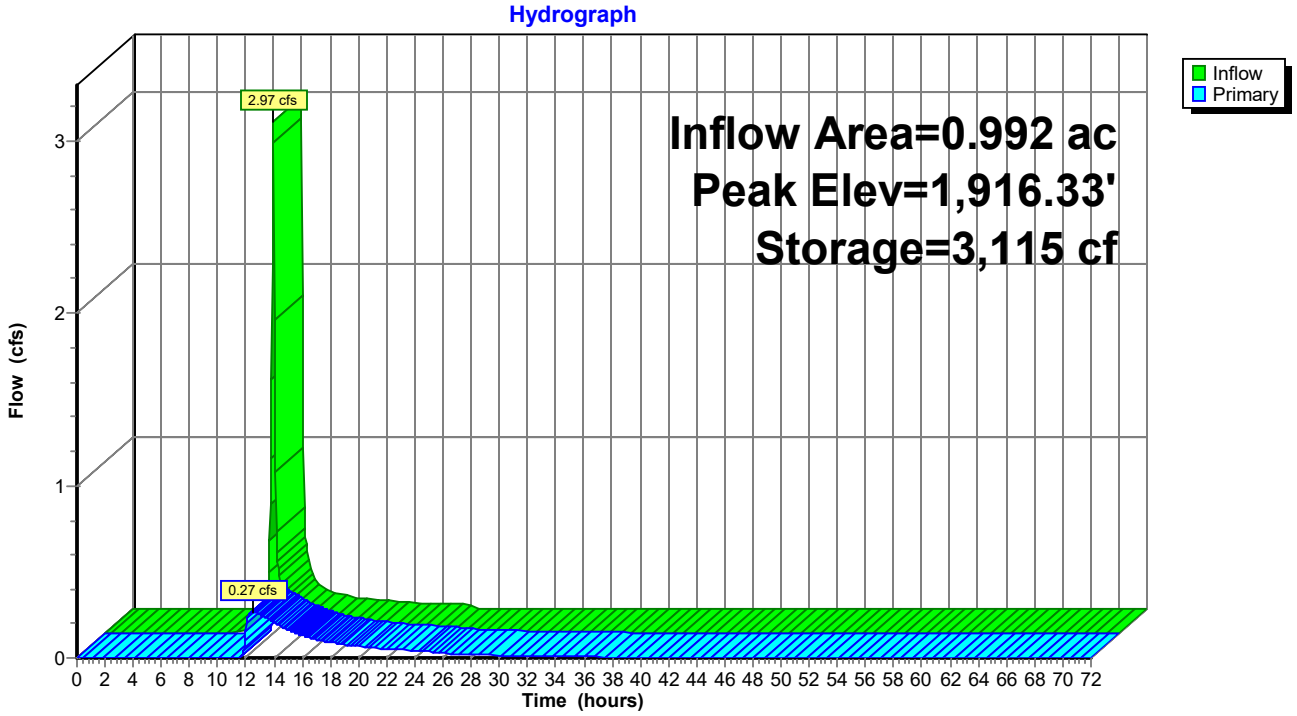
Volume	Invert	Avail.Storage	Storage Description
#1	1,916.00'	44,180 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,916.00	9,337	0	0
1,918.00	11,016	20,353	20,353
1,920.00	12,811	23,827	44,180

Device	Routing	Invert	Outlet Devices
#1	Primary	1,916.00'	**24.0" Round Culvert** L= 50.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,916.00' / 1,914.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,916.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,917.50'	**45.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.27 cfs @ 12.51 hrs HW=1,916.33' (Free Discharge)
└**1=Culvert** (Passes 0.27 cfs of 0.58 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 0.27 cfs @ 1.95 fps)
└**3=Orifice/Grate** (Controls 0.00 cfs)

Pond 39P: bio-retention basin #2B



Summary for Pond 40P: bio-retention basin #2C

Inflow Area = 6.417 ac, 63.99% Impervious, Inflow Depth > 1.86" for 2-Year event
Inflow = 5.98 cfs @ 11.97 hrs, Volume= 0.996 af
Outflow = 1.76 cfs @ 12.13 hrs, Volume= 0.992 af, Atten= 71%, Lag= 9.4 min
Primary = 1.76 cfs @ 12.13 hrs, Volume= 0.992 af
Routed to Reach 26R : SWL-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,931.59' @ 12.13 hrs Surf.Area= 9,939 sf Storage= 5,402 cf

Plug-Flow detention time= 99.4 min calculated for 0.992 af (100% of inflow)
Center-of-Mass det. time= 87.9 min (1,210.6 - 1,122.7)

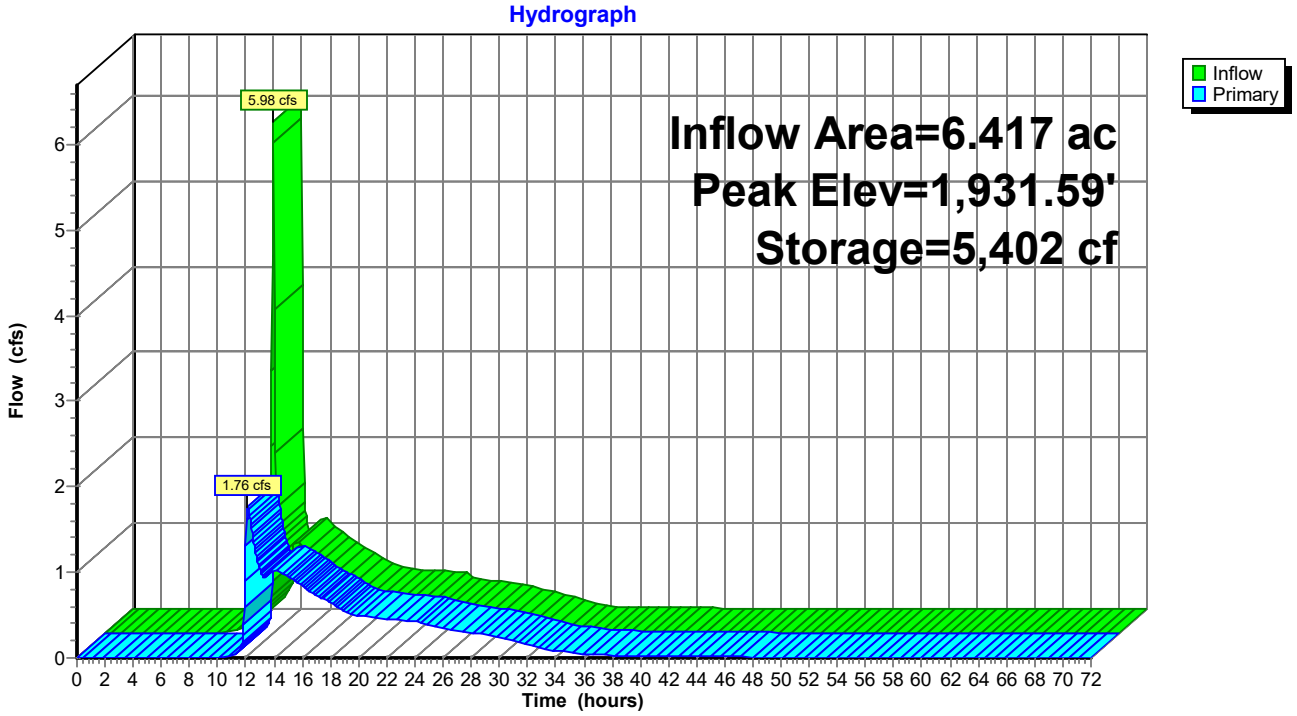
Volume	Invert	Avail.Storage	Storage Description
#1	1,931.00'	36,680 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,931.00	8,511	0	0
1,932.00	10,950	9,731	9,731
1,934.00	15,999	26,949	36,680

Device	Routing	Invert	Outlet Devices
#1	Primary	1,931.00'	**24.0" Round Culvert** L= 35.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,931.00' / 1,930.00' S= 0.0286 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,931.00'	**12.0" W x 4.0" H Vert. Orifice/Grate X 3.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,932.00'	**45.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.76 cfs @ 12.13 hrs HW=1,931.58' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.76 cfs @ 2.30 fps)
└**2=Orifice/Grate** (Passes 1.76 cfs of 3.09 cfs potential flow)
└**3=Orifice/Grate** (Controls 0.00 cfs)

Pond 40P: bio-retention basin #2C

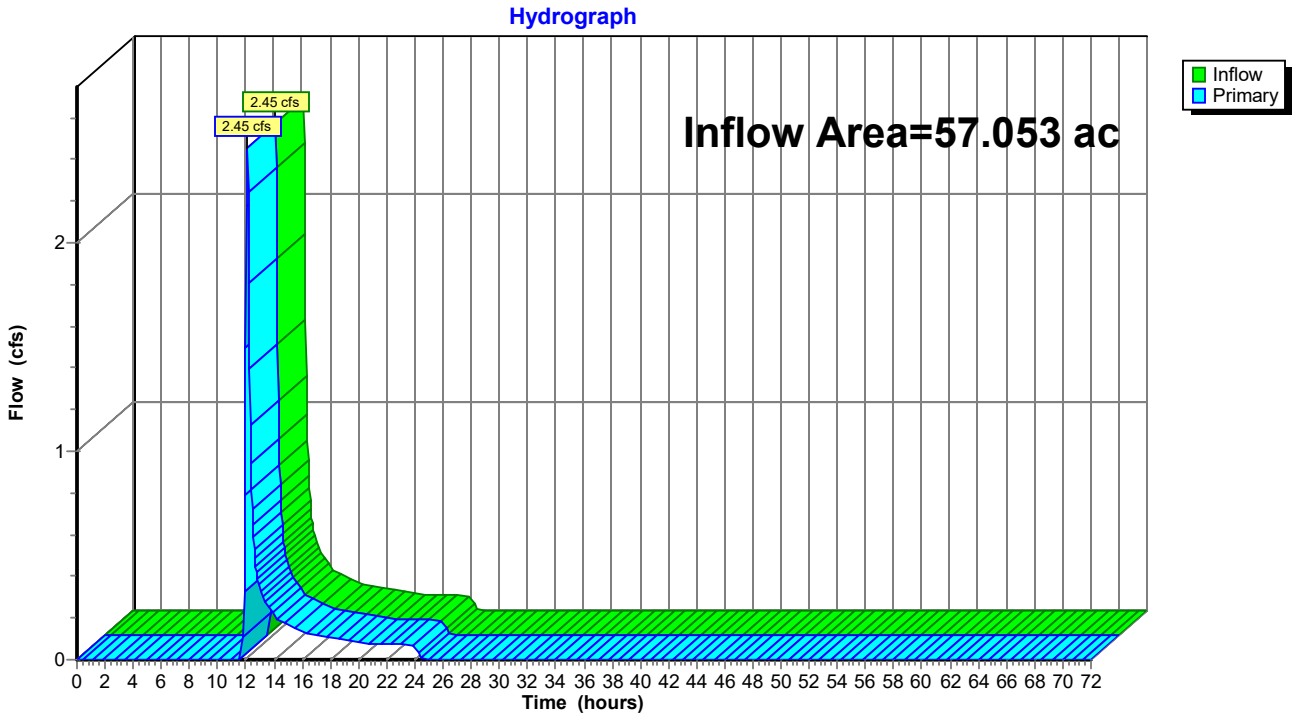


Summary for Link 37L: Discharge 001

Inflow Area = 57.053 ac, 50.73% Impervious, Inflow Depth = 0.04" for 2-Year event
Inflow = 2.45 cfs @ 12.10 hrs, Volume= 0.200 af
Primary = 2.45 cfs @ 12.10 hrs, Volume= 0.200 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 37L: Discharge 001



Summary for Subcatchment 11S: SEEPAGE BED #5A (BMP #7)

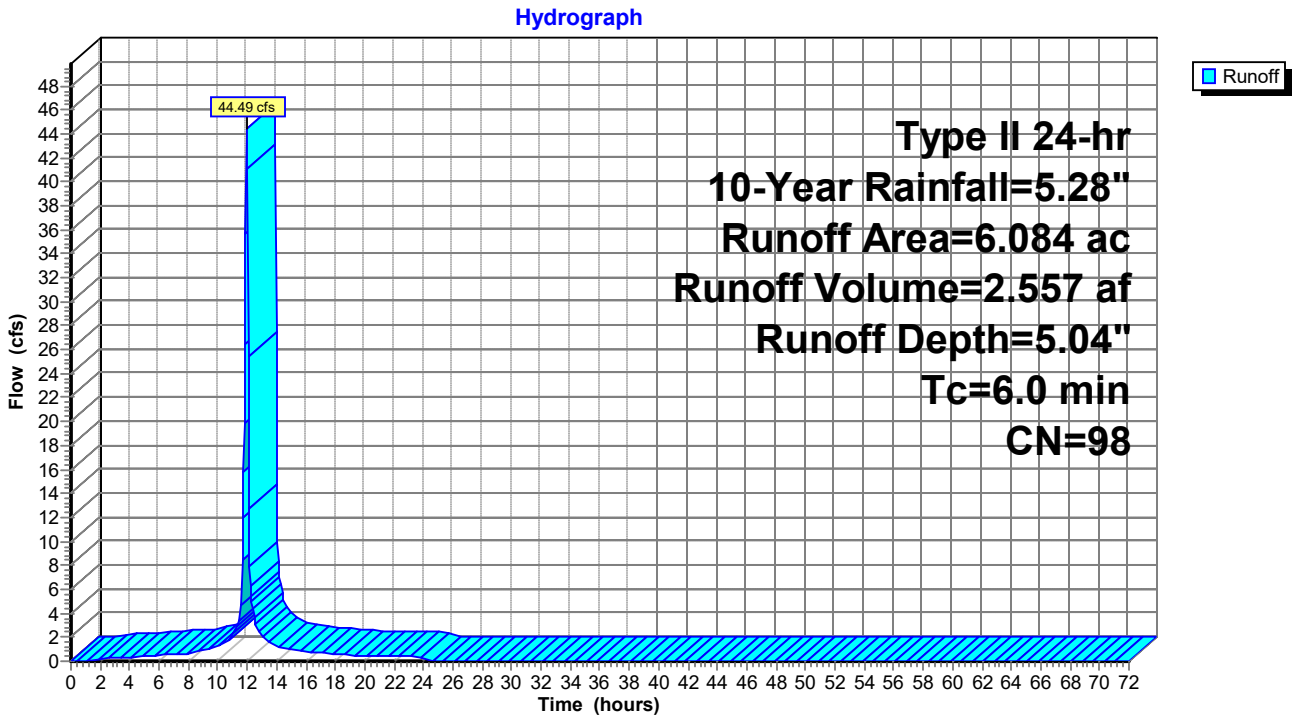
Runoff = 44.49 cfs @ 11.96 hrs, Volume= 2.557 af, Depth= 5.04"
Routed to Pond 9P : seepage pit with chambers #5A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=5.28"

Area (ac)	CN	Description
6.084	98	Paved parking & roofs
6.084		100.00% Impervious Area

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

Subcatchment 11S: SEEPAGE BED #5A (BMP #7)



Summary for Subcatchment 12S: bio-retention basin #4a (BMP #9)

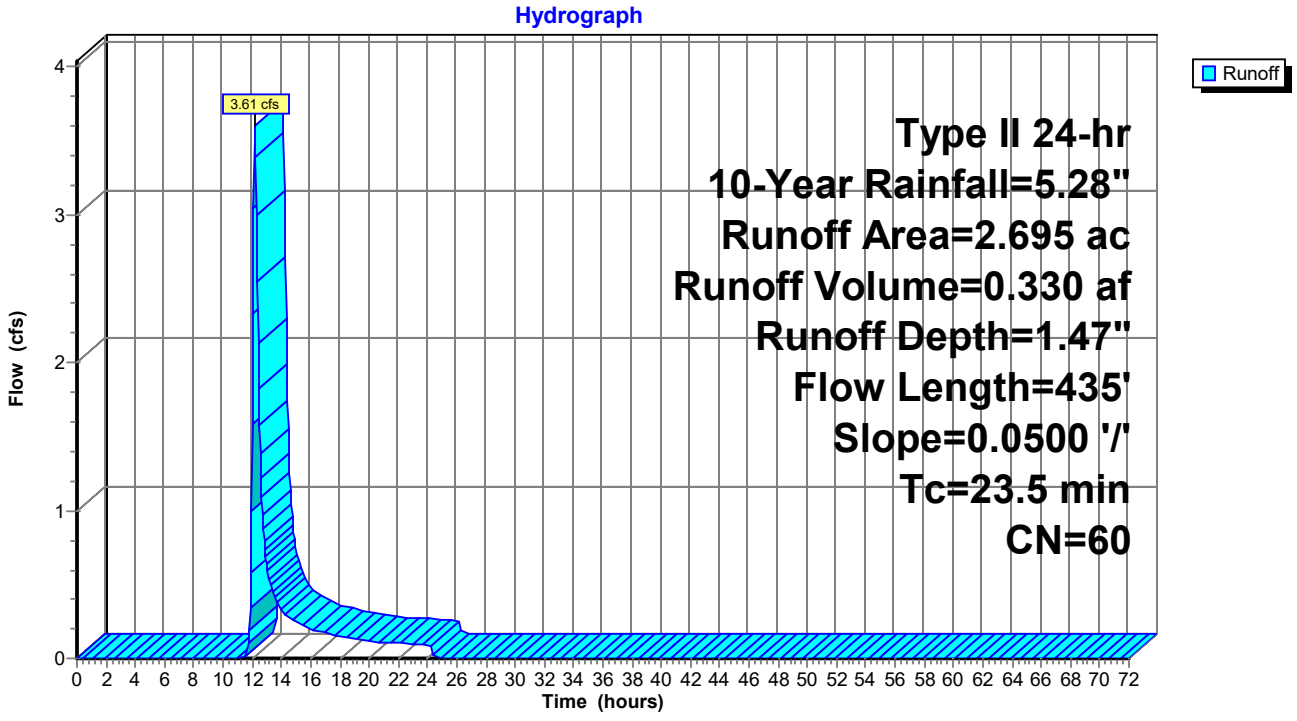
Runoff = 3.61 cfs @ 12.19 hrs, Volume= 0.330 af, Depth= 1.47"
Routed to Pond 13P : bio-retention basin #4a

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=5.28"

Area (ac)	CN	Description
1.896	61	>75% Grass cover, Good, HSG B
0.799	58	Meadow, non-grazed, HSG B
2.695	60	Weighted Average
2.695		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	150	0.0500	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.23"
3.0	285	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
23.5	435	Total			

Subcatchment 12S: bio-retention basin #4a (BMP #9)



Summary for Subcatchment 17S: SEEPAGE BED #4b (BMP #10)

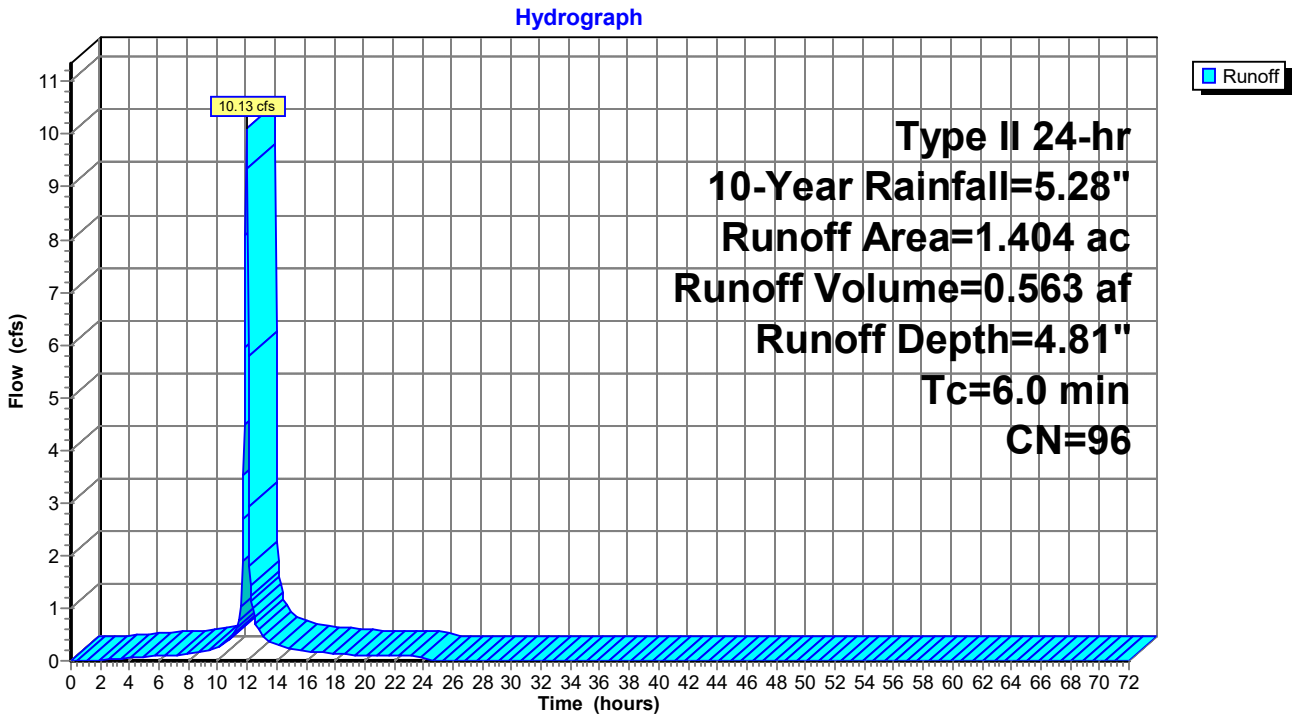
Runoff = 10.13 cfs @ 11.96 hrs, Volume= 0.563 af, Depth= 4.81"
Routed to Pond 15P : seepage pit with chambers #4b

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=5.28"

Area (ac)	CN	Description
1.312	98	Paved parking & roofs
0.092	74	>75% Grass cover, Good, HSG C
1.404	96	Weighted Average
0.092		6.55% Pervious Area
1.312		93.45% Impervious Area

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

Subcatchment 17S: SEEPAGE BED #4b (BMP #10)



Summary for Subcatchment 19S: SEEPAGE BED #3A (BMP #11)

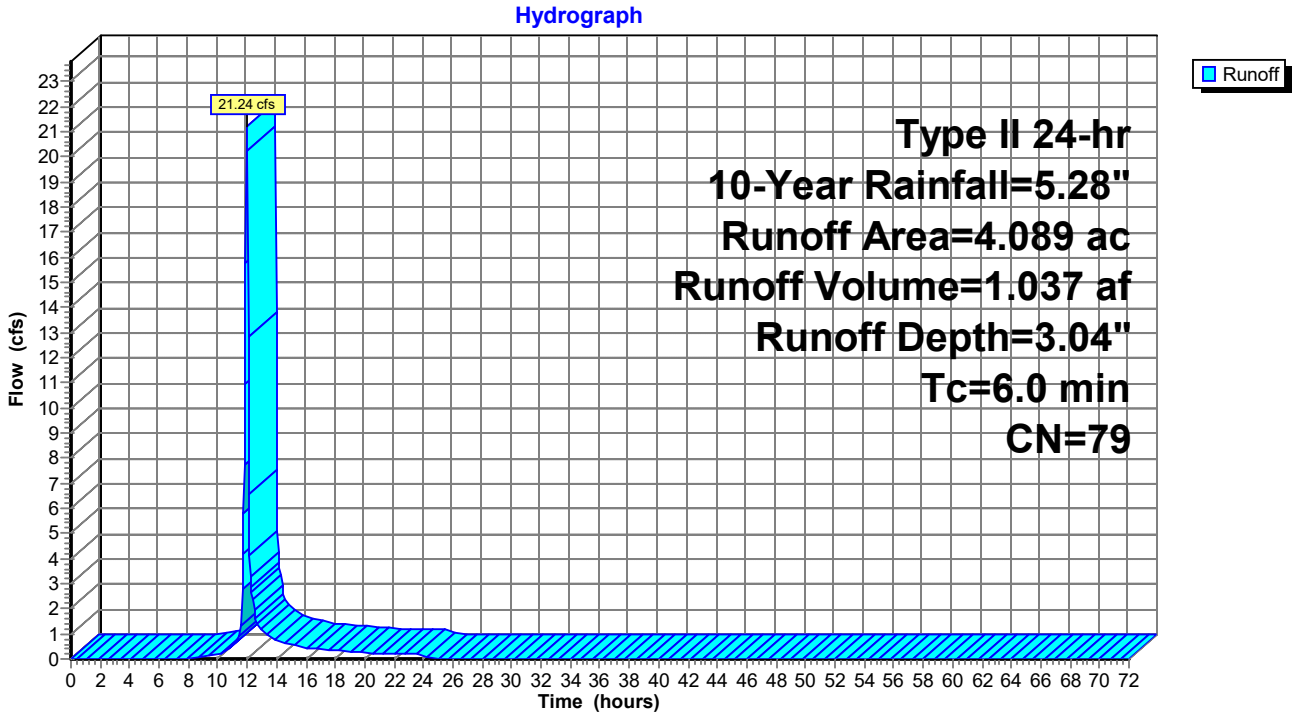
Runoff = 21.24 cfs @ 11.97 hrs, Volume= 1.037 af, Depth= 3.04"
Routed to Pond 16P : seepage pit with chambers #3A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=5.28"

	Area (ac)	CN	Description
	2.361	98	Paved parking & roofs
*	0.069	40	Meadow, non-grazed, HSG A
	0.059	71	Meadow, non-grazed, HSG C
*	0.485	40	>75% Grass cover, Good, HSG A
	0.485	74	>75% Grass cover, Good, HSG C
*	0.477	40	Woods, Good, HSG A
	0.153	70	Woods, Good, HSG C
	4.089	79	Weighted Average
	1.728		42.26% Pervious Area
	2.361		57.74% Impervious Area

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

Subcatchment 19S: SEEPAGE BED #3A (BMP #11)



Summary for Subcatchment 20S: SEEPAGE BED #5F (BMP 6)

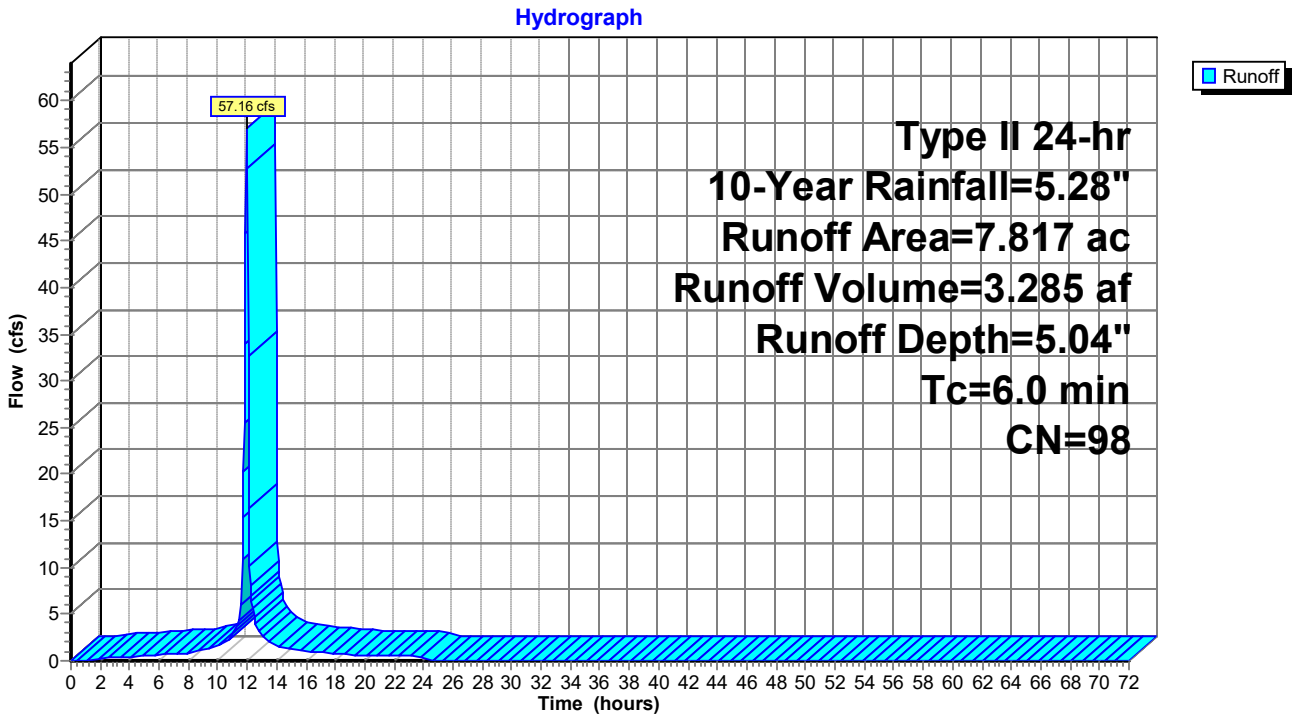
Runoff = 57.16 cfs @ 11.96 hrs, Volume= 3.285 af, Depth= 5.04"
Routed to Pond 14P : seepage pit with chambers #5F

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=5.28"

Area (ac)	CN	Description
7.808	98	Paved parking & roofs
0.009	74	>75% Grass cover, Good, HSG C
7.817	98	Weighted Average
0.009		0.12% Pervious Area
7.808		99.88% Impervious Area

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

Subcatchment 20S: SEEPAGE BED #5F (BMP 6)



Summary for Subcatchment 22S: SUB BASIN-5A (BMP 8)

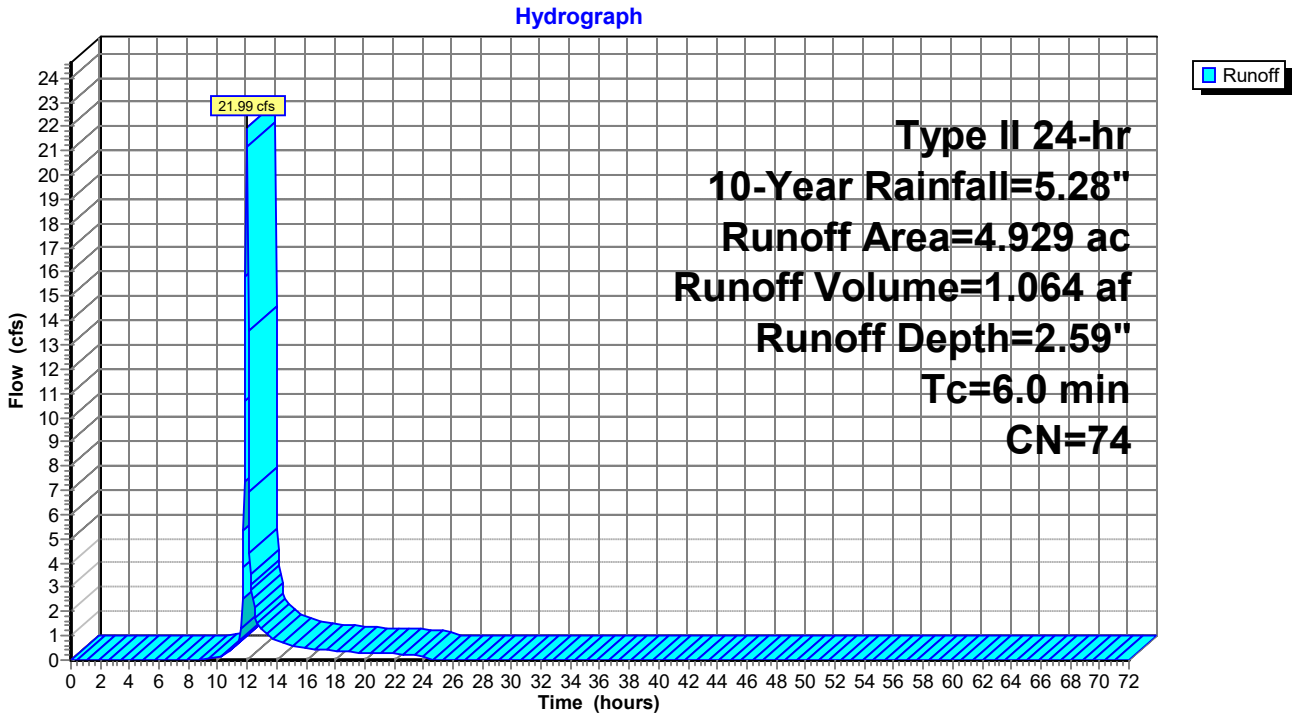
Runoff = 21.99 cfs @ 11.97 hrs, Volume= 1.064 af, Depth= 2.59"
Routed to Pond 8P : BIO-RETENTION BASIN #5A (POI 001)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=5.28"

Area (ac)	CN	Description
1.186	61	>75% Grass cover, Good, HSG B
3.048	74	>75% Grass cover, Good, HSG C
0.695	98	Paved parking & roofs
4.929	74	Weighted Average
4.234		85.90% Pervious Area
0.695		14.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6 minute min**

Subcatchment 22S: SUB BASIN-5A (BMP 8)



Summary for Subcatchment 24S: bio-retention basin #3b(BMP #12)

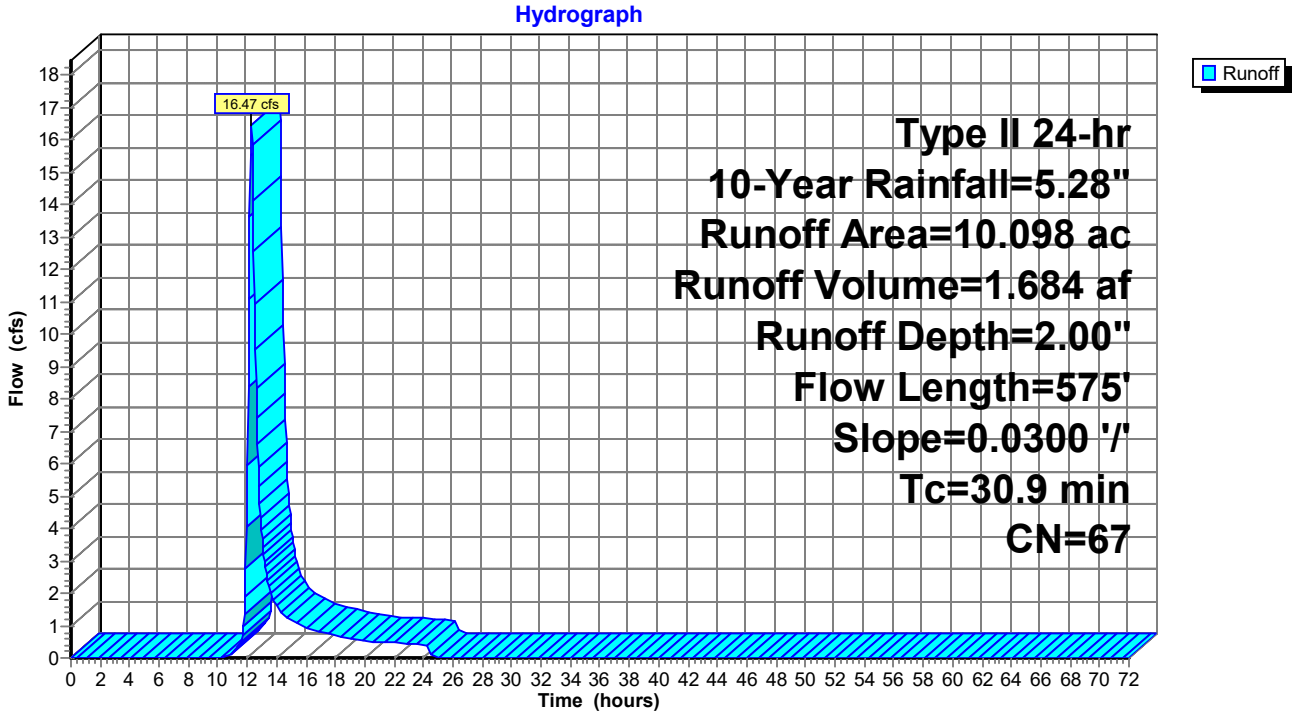
Runoff = 16.47 cfs @ 12.27 hrs, Volume= 1.684 af, Depth= 2.00"
Routed to Pond 26P : bio-retention basin #3b

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=5.28"

	Area (ac)	CN	Description
	2.349	98	Paved parking & roofs
	1.017	58	Meadow, non-grazed, HSG B
	0.574	71	Meadow, non-grazed, HSG C
	3.499	61	>75% Grass cover, Good, HSG B
	0.126	74	>75% Grass cover, Good, HSG C
*	1.025	40	Woods, Good, HSG A
*	0.745	40	>75% Grass cover, Good, HSG A
	0.763	74	>75% Grass cover, Good, HSG C
	10.098	67	Weighted Average
	7.749		76.74% Pervious Area
	2.349		23.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	150	0.0300	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.23"
5.8	425	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
30.9	575	Total			

Subcatchment 24S: bio-retention basin #3b(BMP #12)



Summary for Subcatchment 25S: BIO-RETENTION BASIN #6A (BMP 5)

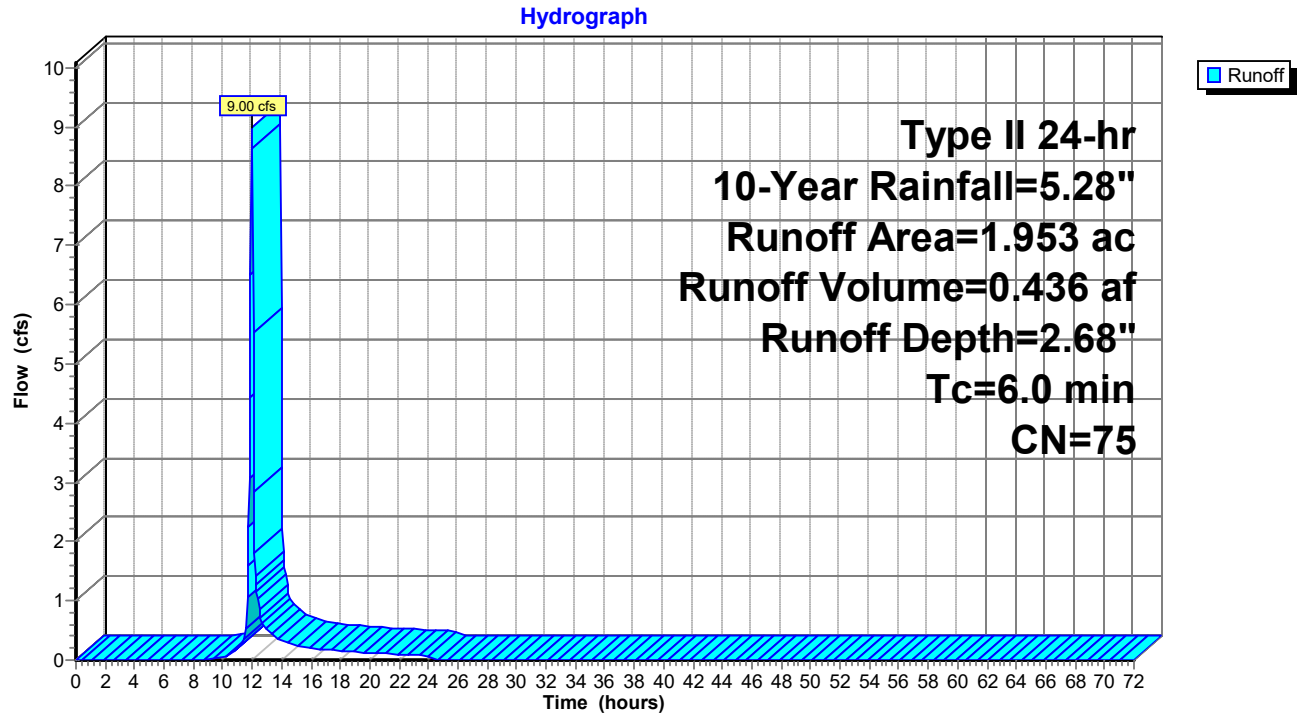
Runoff = 9.00 cfs @ 11.97 hrs, Volume= 0.436 af, Depth= 2.68"
Routed to Pond 24P : bio-retention basin #6a

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=5.28"

	Area (ac)	CN	Description
	1.119	98	Paved parking & roofs
*	0.665	40	>75% Grass cover, Good, HSG A
	0.169	61	>75% Grass cover, Good, HSG B
	1.953	75	Weighted Average
	0.834		42.70% Pervious Area
	1.119		57.30% Impervious Area

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

Subcatchment 25S: BIO-RETENTION BASIN #6A (BMP 5)



Summary for Subcatchment 29S: SWL #1

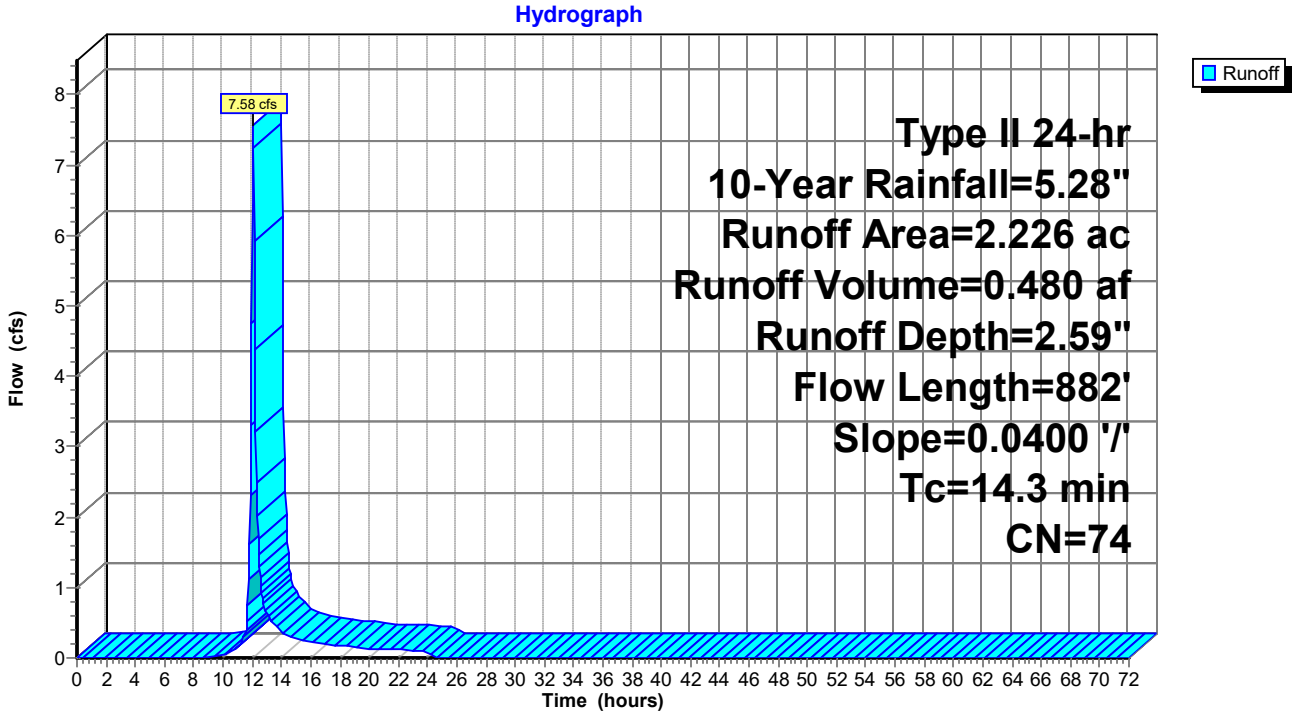
Runoff = 7.58 cfs @ 12.07 hrs, Volume= 0.480 af, Depth= 2.59"
Routed to Reach 26R : SWL-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=5.28"

Area (ac)	CN	Description
0.765	98	Paved parking & roofs
1.461	61	>75% Grass cover, Good, HSG B
2.226	74	Weighted Average
1.461		65.63% Pervious Area
0.765		34.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	150	0.0400	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.23"
4.1	732	0.0400	3.00		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
14.3	882	Total			

Subcatchment 29S: SWL #1



Summary for Subcatchment 30S: SWL #2

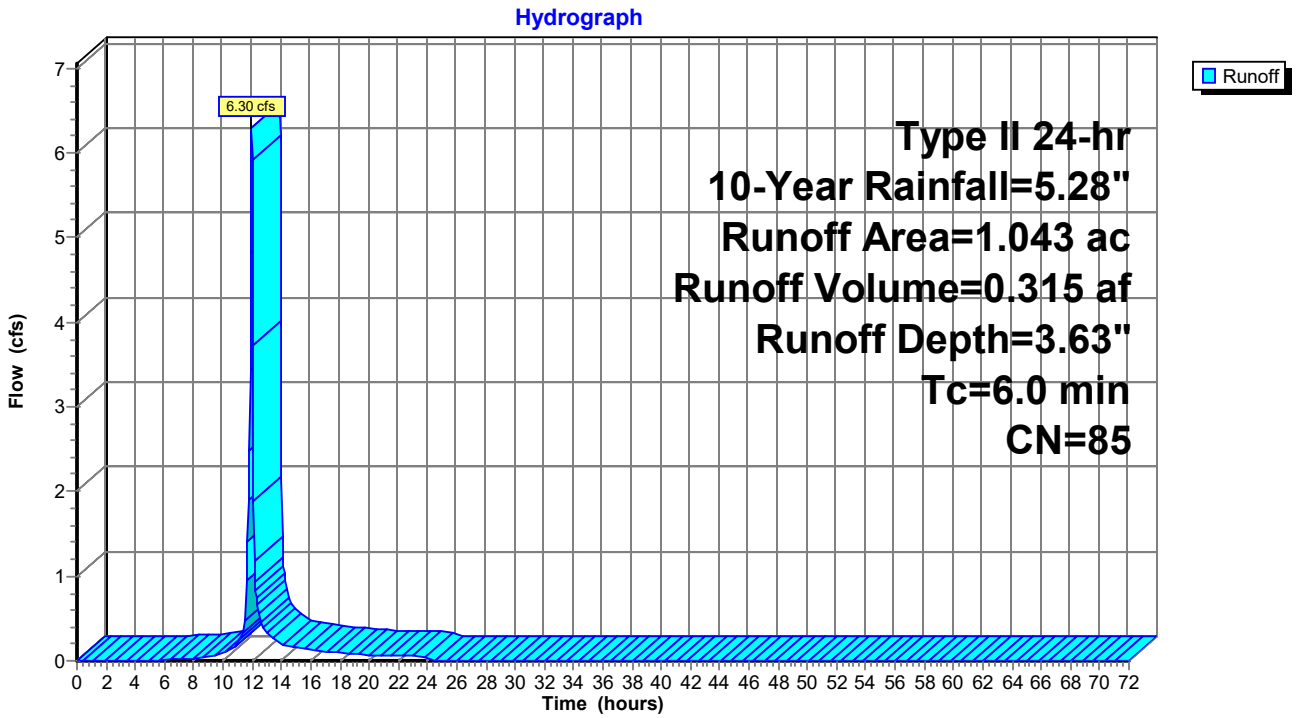
Runoff = 6.30 cfs @ 11.97 hrs, Volume= 0.315 af, Depth= 3.63"
Routed to Reach 27R : SWL-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=5.28"

	Area (ac)	CN	Description
	0.814	98	Paved parking & roofs
*	0.229	40	>75% Grass cover, Good, HSG A
	1.043	85	Weighted Average
	0.229		21.96% Pervious Area
	0.814		78.04% Impervious Area

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

Subcatchment 30S: SWL #2



Summary for Subcatchment 32S: SWL #3

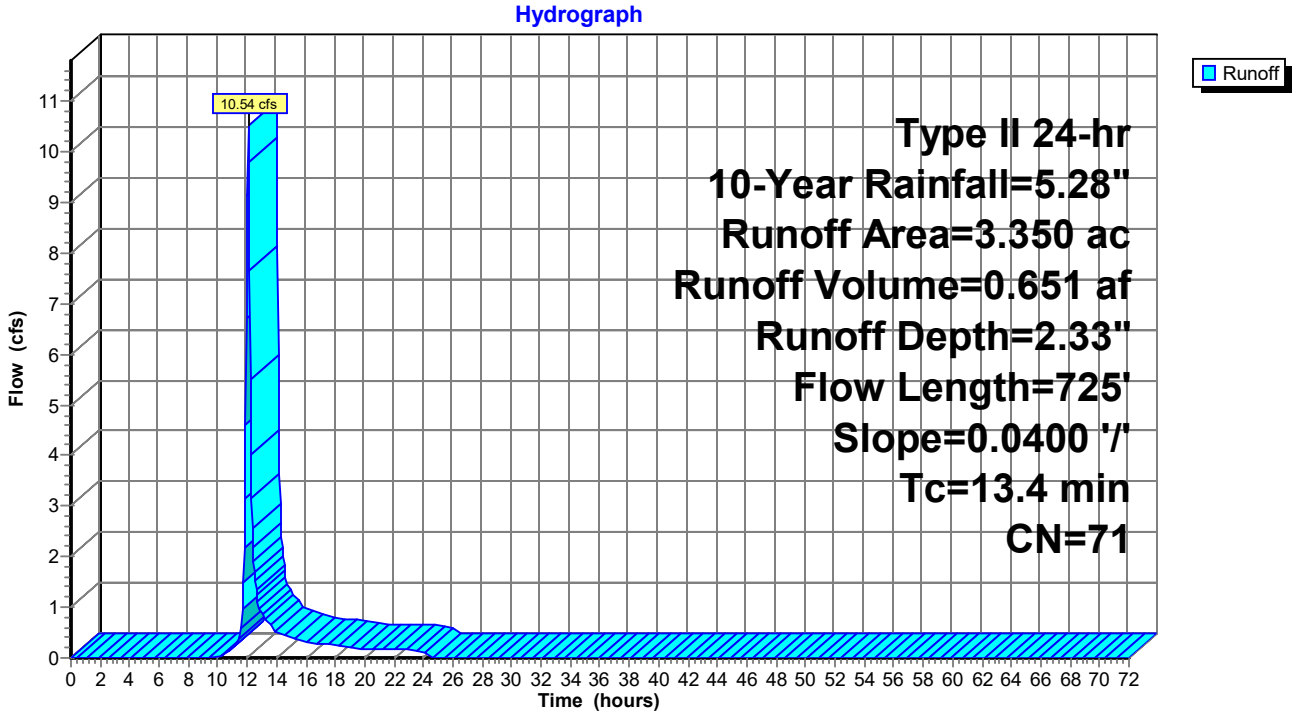
Runoff = 10.54 cfs @ 12.06 hrs, Volume= 0.651 af, Depth= 2.33"
Routed to Reach 28R : SWL-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=5.28"

Area (ac)	CN	Description
0.930	98	Paved parking & roofs
2.420	61	>75% Grass cover, Good, HSG B
3.350	71	Weighted Average
2.420		72.24% Pervious Area
0.930		27.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	150	0.0400	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.23"
3.2	575	0.0400	3.00		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
13.4	725	Total			

Subcatchment 32S: SWL #3



Summary for Subcatchment 33S: BIO-RETENTION BASIN #1A (BMP#1)

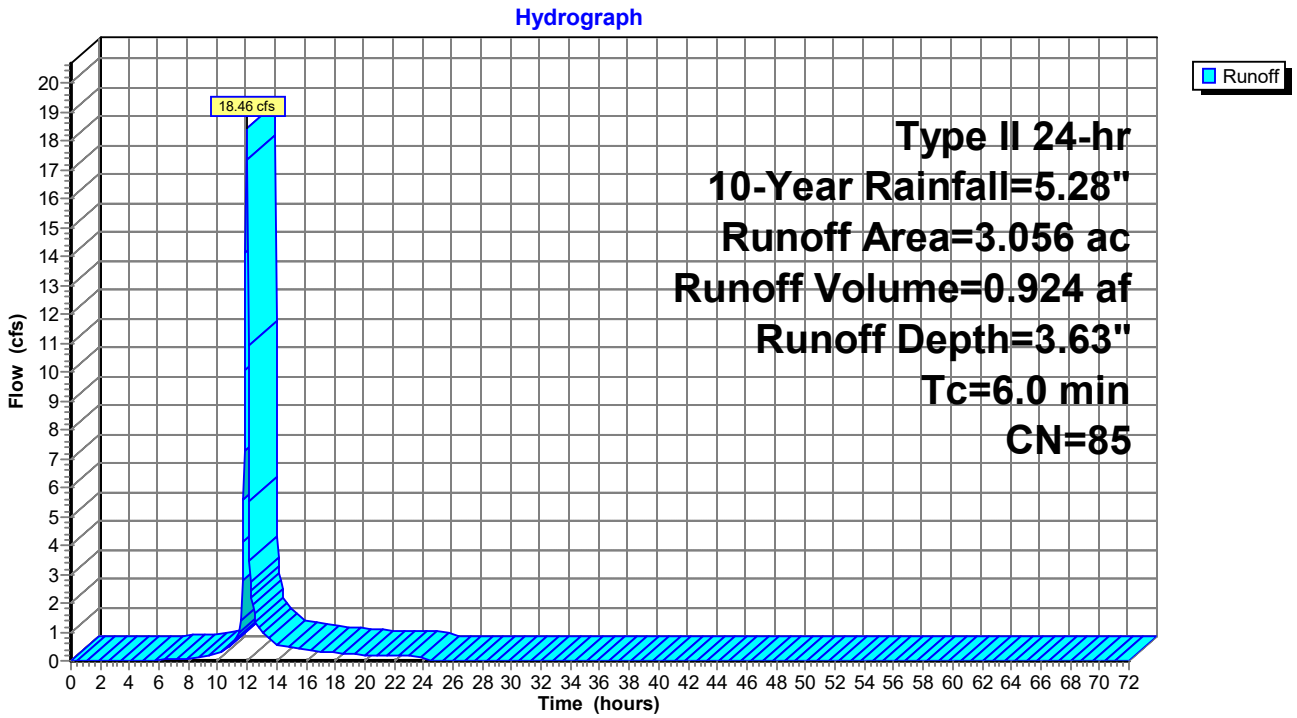
Runoff = 18.46 cfs @ 11.97 hrs, Volume= 0.924 af, Depth= 3.63"
Routed to Pond 29P : bio-retention basin #1A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=5.28"

Area (ac)	CN	Description
1.978	98	Paved parking & roofs
1.078	61	>75% Grass cover, Good, HSG B
3.056	85	Weighted Average
1.078		35.27% Pervious Area
1.978		64.73% Impervious Area

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

Subcatchment 33S: BIO-RETENTION BASIN #1A (BMP#1)



Summary for Subcatchment 34S: SWL #4

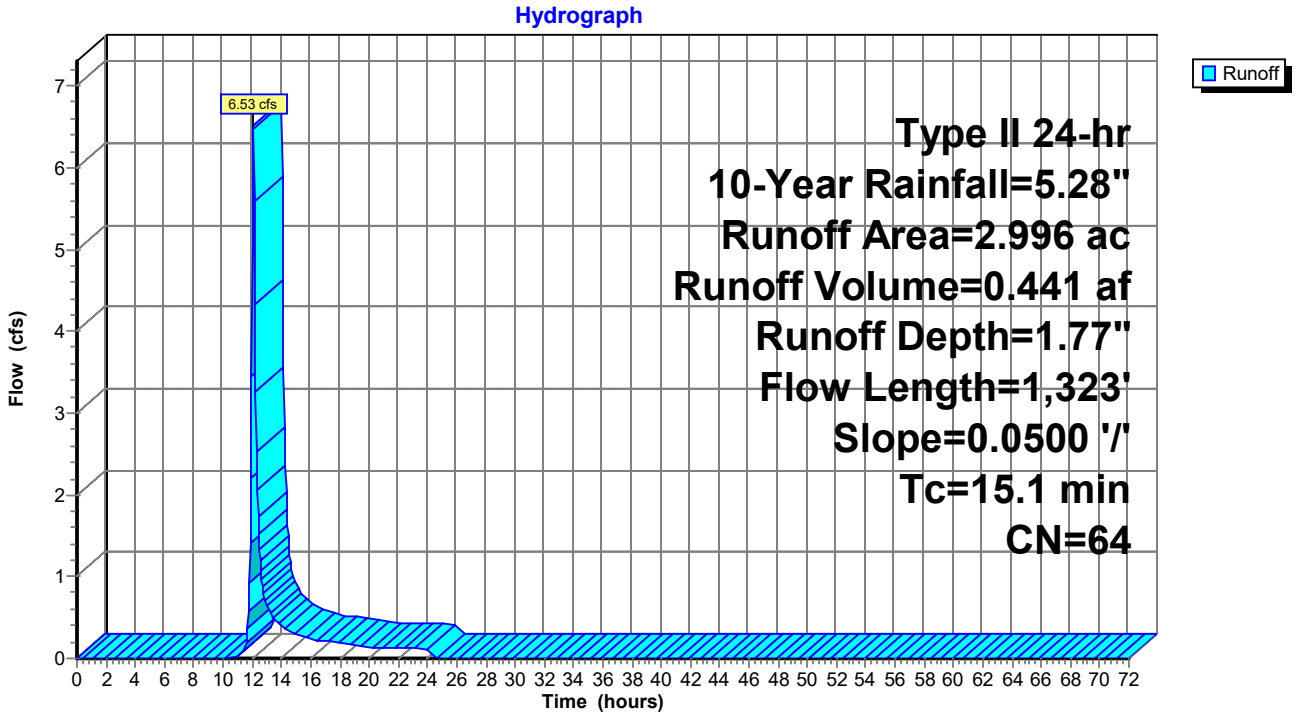
Runoff = 6.53 cfs @ 12.08 hrs, Volume= 0.441 af, Depth= 1.77"
Routed to Reach 23R : SWL-4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=5.28"

Area (ac)	CN	Description
2.296	61	>75% Grass cover, Good, HSG B
0.700	74	>75% Grass cover, Good, HSG C
2.996	64	Weighted Average
2.996		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	150	0.0500	0.27		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.23"
5.8	1,173	0.0500	3.35		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
15.1	1,323	Total			

Subcatchment 34S: SWL #4



Summary for Subcatchment 37S: BIO-RETENTION BASIN #2A (BMP #2)

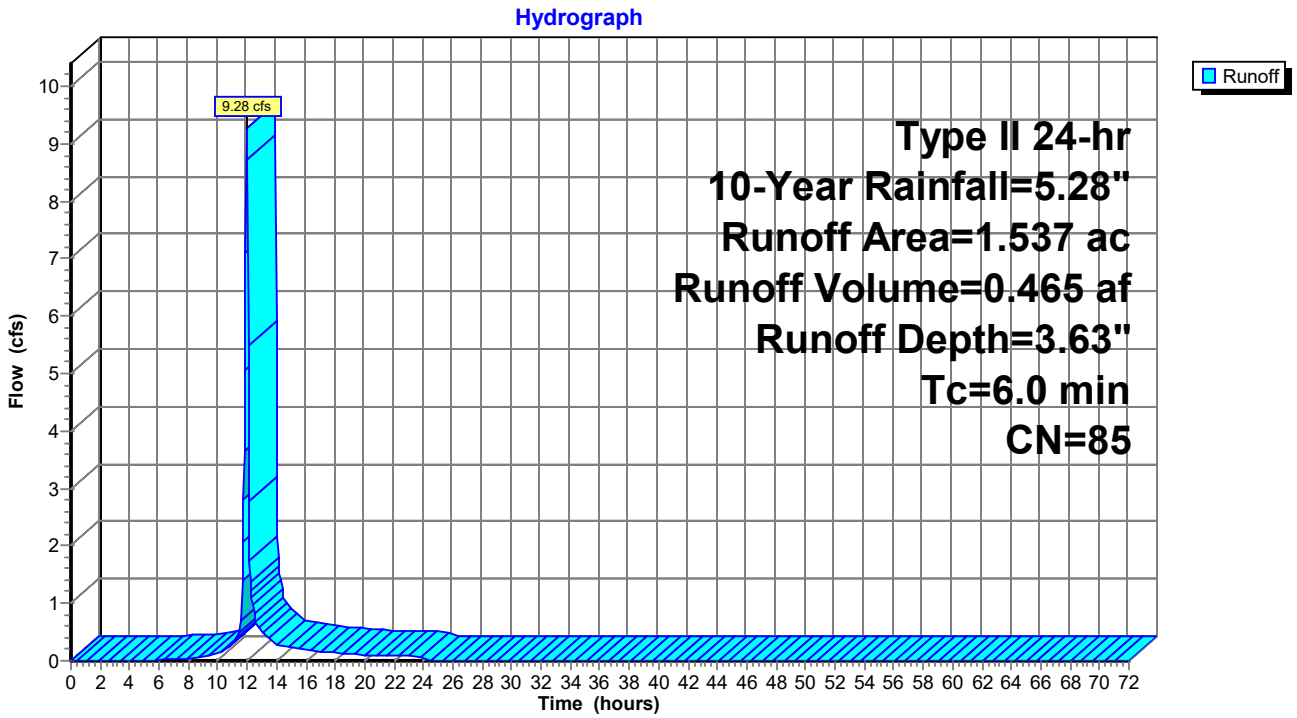
Runoff = 9.28 cfs @ 11.97 hrs, Volume= 0.465 af, Depth= 3.63"
Routed to Pond 38P : bio-retention basin #2A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=5.28"

Area (ac)	CN	Description
1.008	98	Paved parking & roofs
0.529	61	>75% Grass cover, Good, HSG B
1.537	85	Weighted Average
0.529		34.42% Pervious Area
1.008		65.58% Impervious Area

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

Subcatchment 37S: BIO-RETENTION BASIN #2A (BMP #2)



Summary for Subcatchment 41S: BIO-RETENTION BASIN #2C (BMP #3)

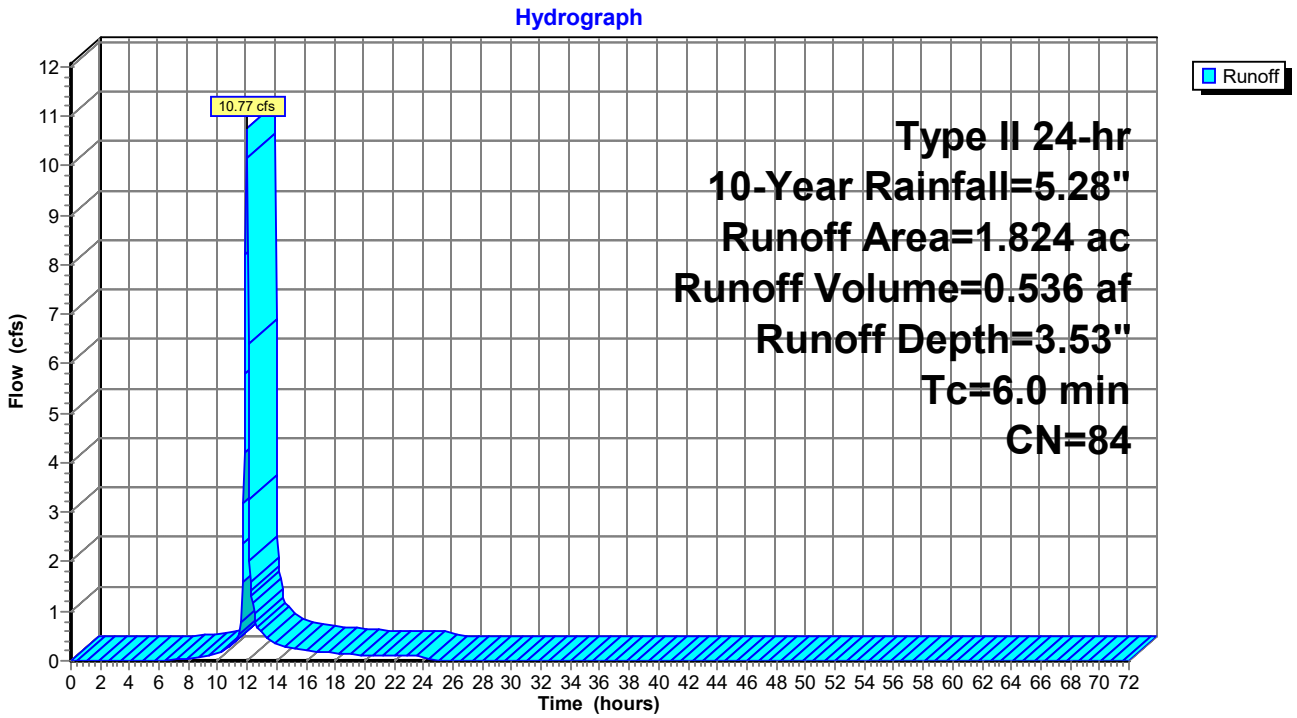
Runoff = 10.77 cfs @ 11.97 hrs, Volume= 0.536 af, Depth= 3.53"
Routed to Pond 40P : bio-retention basin #2C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=5.28"

Area (ac)	CN	Description
1.120	98	Paved parking & roofs
0.704	61	>75% Grass cover, Good, HSG B
1.824	84	Weighted Average
0.704		38.60% Pervious Area
1.120		61.40% Impervious Area

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

Subcatchment 41S: BIO-RETENTION BASIN #2C (BMP #3)



Summary for Subcatchment 42S: BIO-RETENTION BASIN #2B (BMP #4)

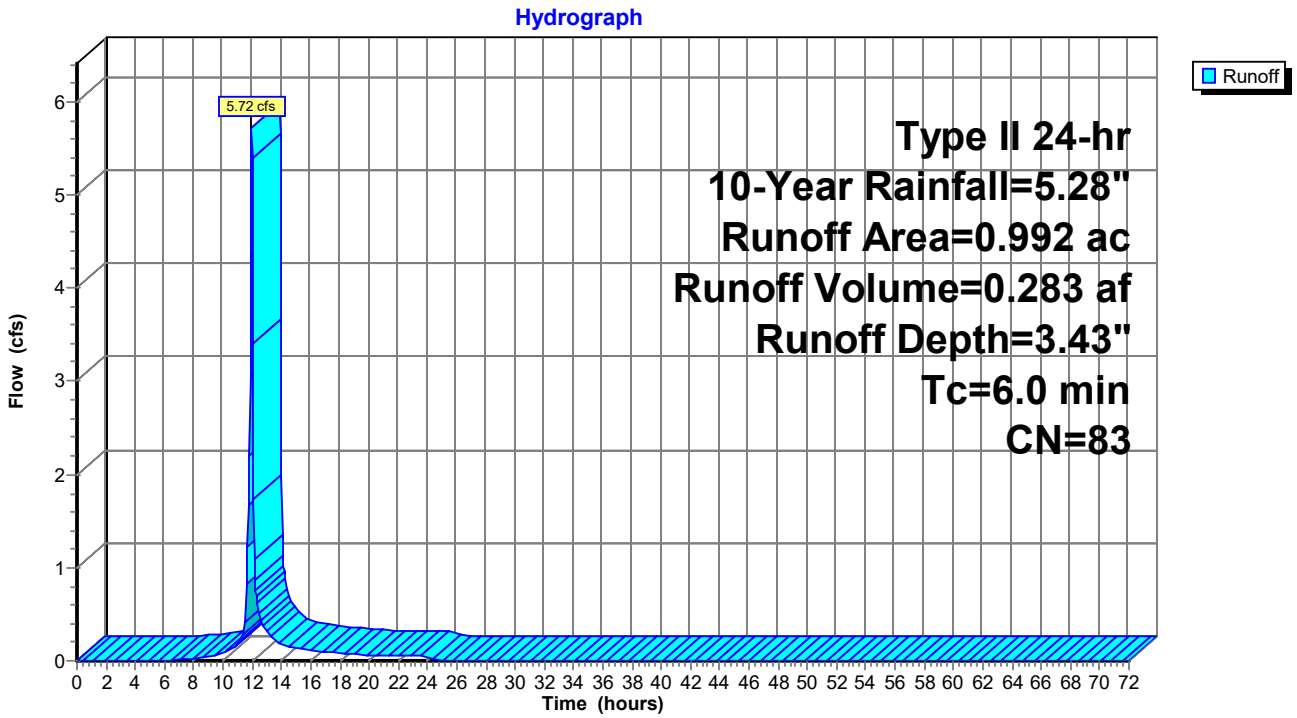
Runoff = 5.72 cfs @ 11.97 hrs, Volume= 0.283 af, Depth= 3.43"
Routed to Pond 39P : bio-retention basin #2B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=5.28"

Area (ac)	CN	Description
0.598	98	Paved parking & roofs
0.394	61	>75% Grass cover, Good, HSG B
0.992	83	Weighted Average
0.394		39.72% Pervious Area
0.598		60.28% Impervious Area

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

Subcatchment 42S: BIO-RETENTION BASIN #2B (BMP #4)



Summary for Subcatchment 47S: UNDETAINED-PROPOSED 001

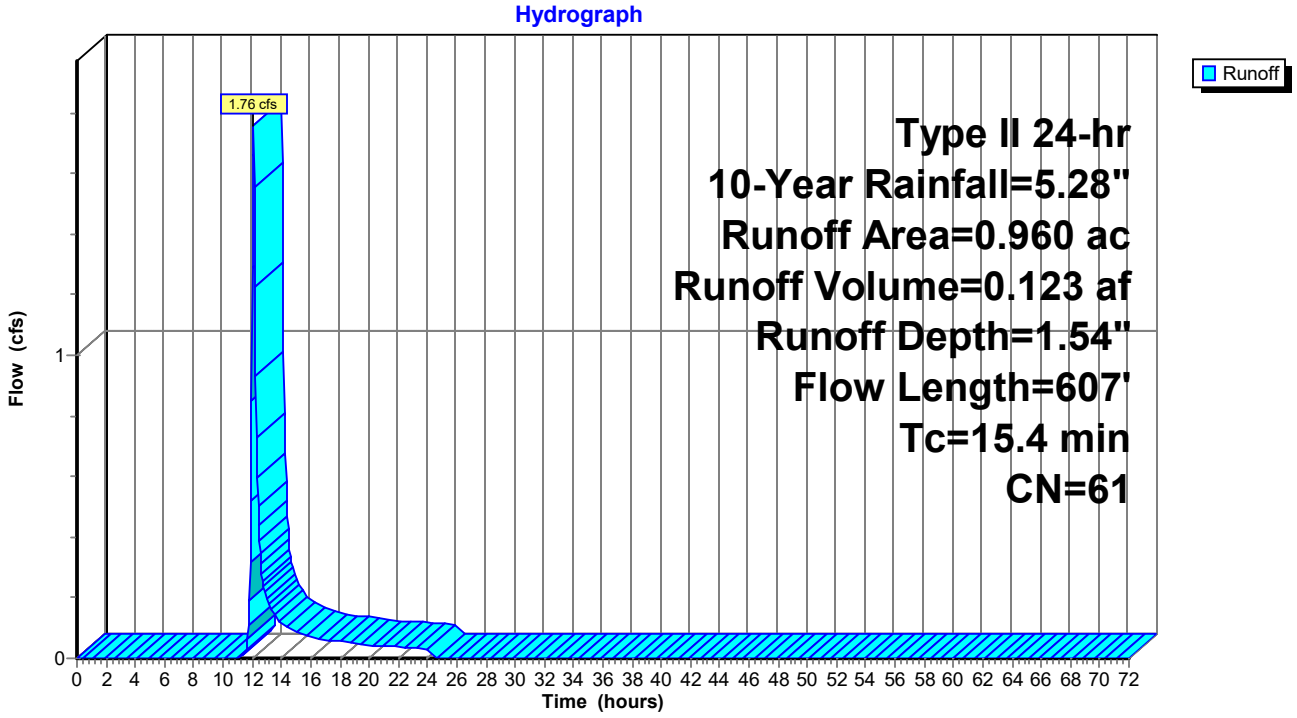
Runoff = 1.76 cfs @ 12.09 hrs, Volume= 0.123 af, Depth= 1.54"
Routed to Link 37L : Discharge 001

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=5.28"

Area (ac)	CN	Description
0.960	61	>75% Grass cover, Good, HSG B
0.960		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	150	0.0800	0.32		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.23"
7.7	457	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.4	607	Total			

Subcatchment 47S: UNDETAINED-PROPOSED 001

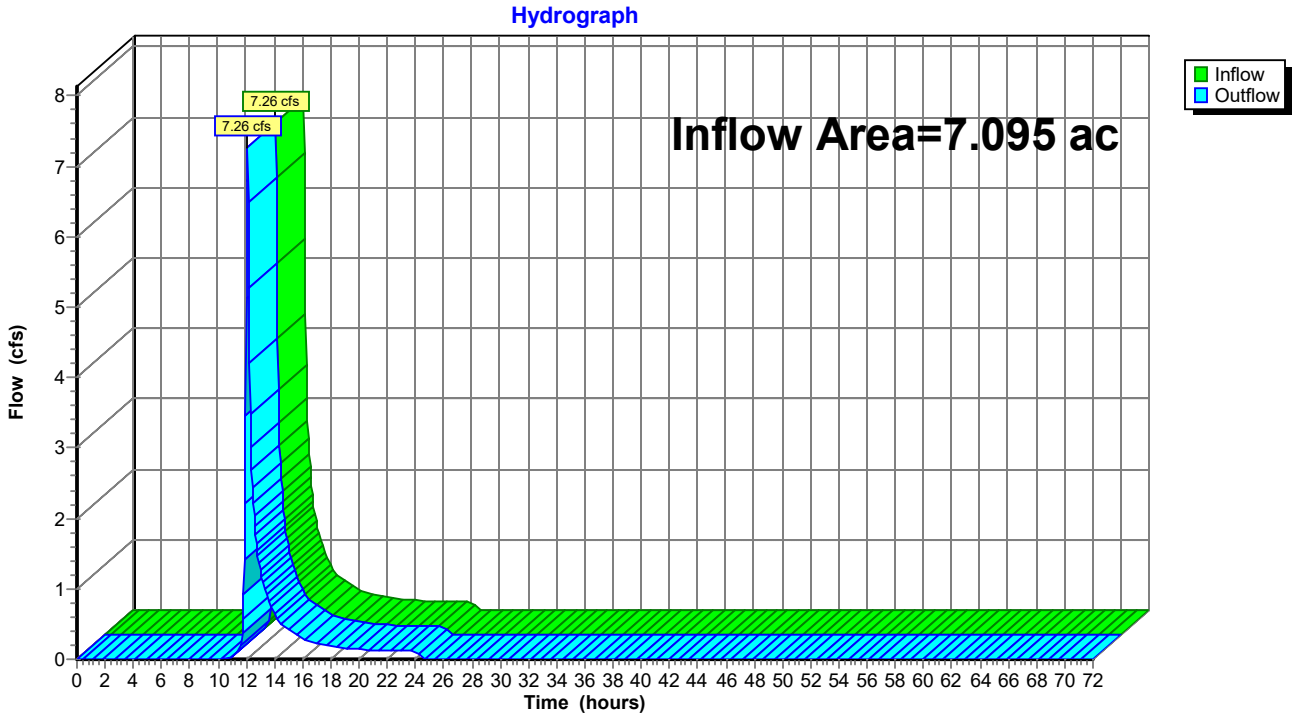


Summary for Reach 23R: SWL-4

Inflow Area = 7.095 ac, 18.49% Impervious, Inflow Depth = 0.95" for 10-Year event
Inflow = 7.26 cfs @ 12.09 hrs, Volume= 0.560 af
Outflow = 7.26 cfs @ 12.09 hrs, Volume= 0.560 af, Atten= 0%, Lag= 0.0 min
Routed to Link 37L : Discharge 001

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach 23R: SWL-4

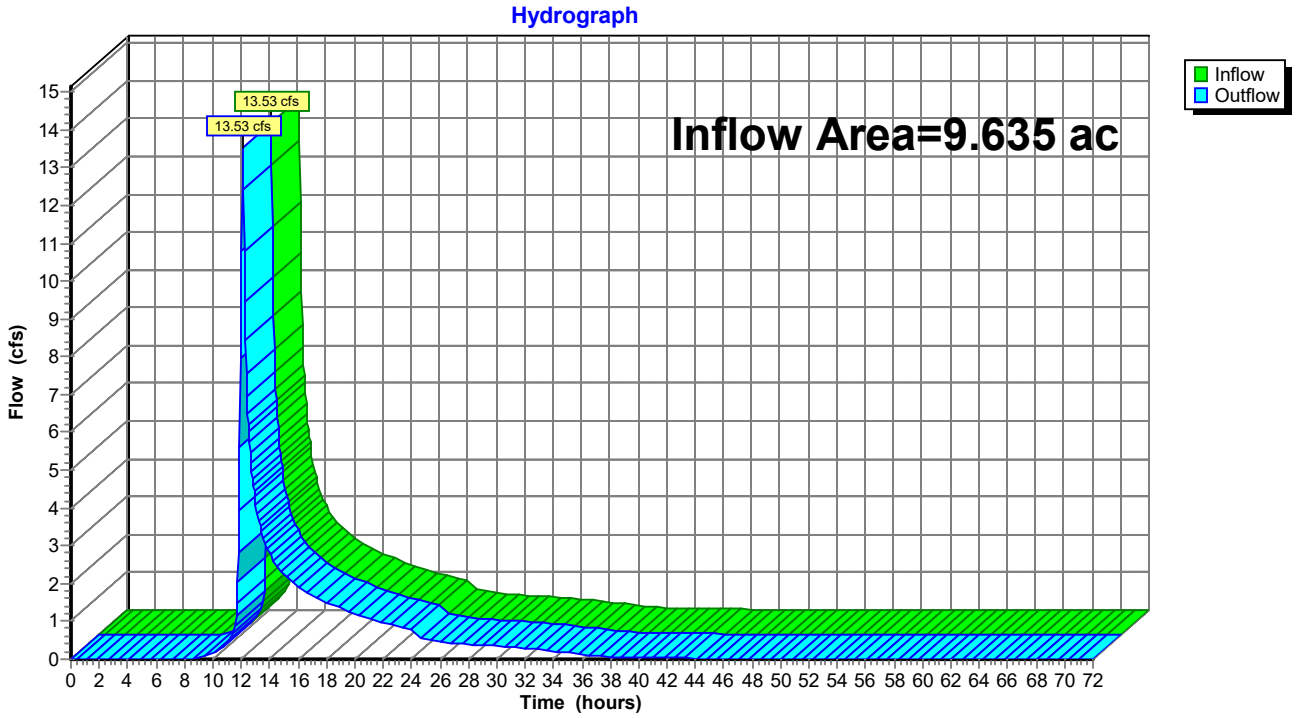


Summary for Reach 26R: SWL-1

Inflow Area = 9.635 ac, 56.76% Impervious, Inflow Depth > 3.33" for 10-Year event
Inflow = 13.53 cfs @ 12.10 hrs, Volume= 2.676 af
Outflow = 13.53 cfs @ 12.10 hrs, Volume= 2.676 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 28R : SWL-3

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach 26R: SWL-1

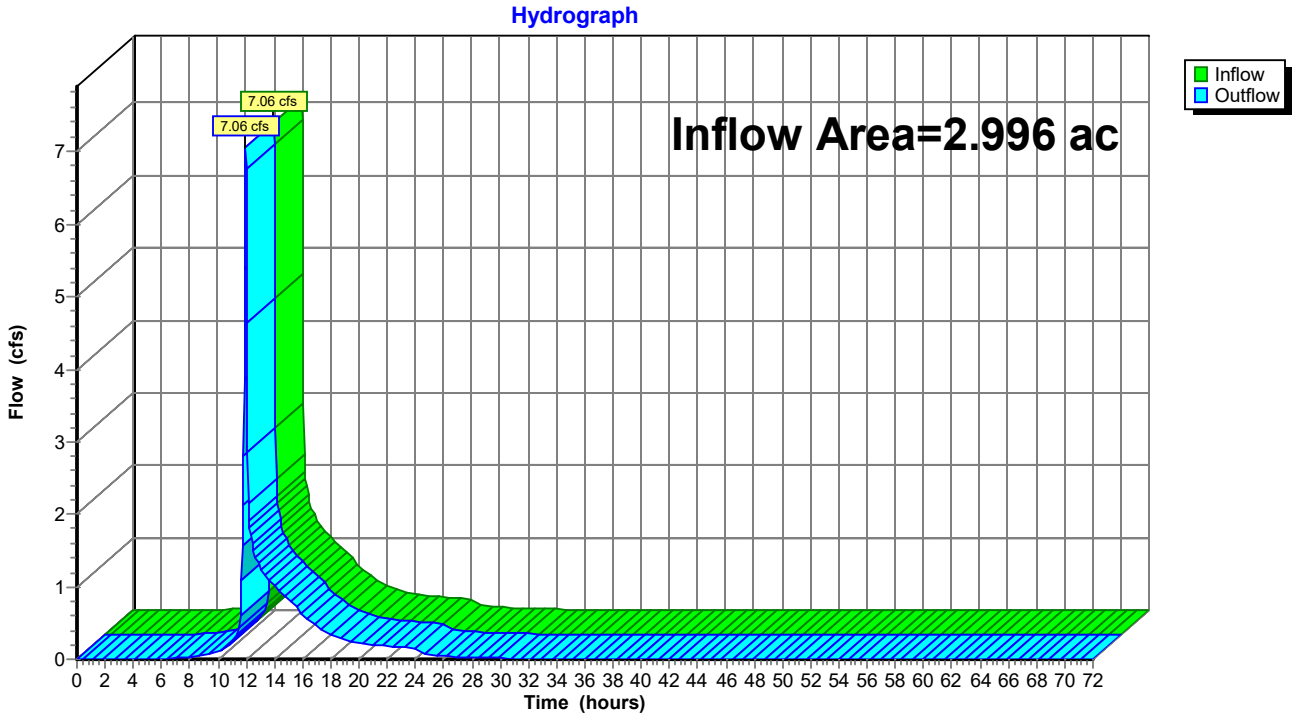


Summary for Reach 27R: SWL-2

Inflow Area = 2.996 ac, 64.52% Impervious, Inflow Depth = 3.01" for 10-Year event
Inflow = 7.06 cfs @ 11.97 hrs, Volume= 0.751 af
Outflow = 7.06 cfs @ 11.97 hrs, Volume= 0.751 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 28R : SWL-3

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach 27R: SWL-2

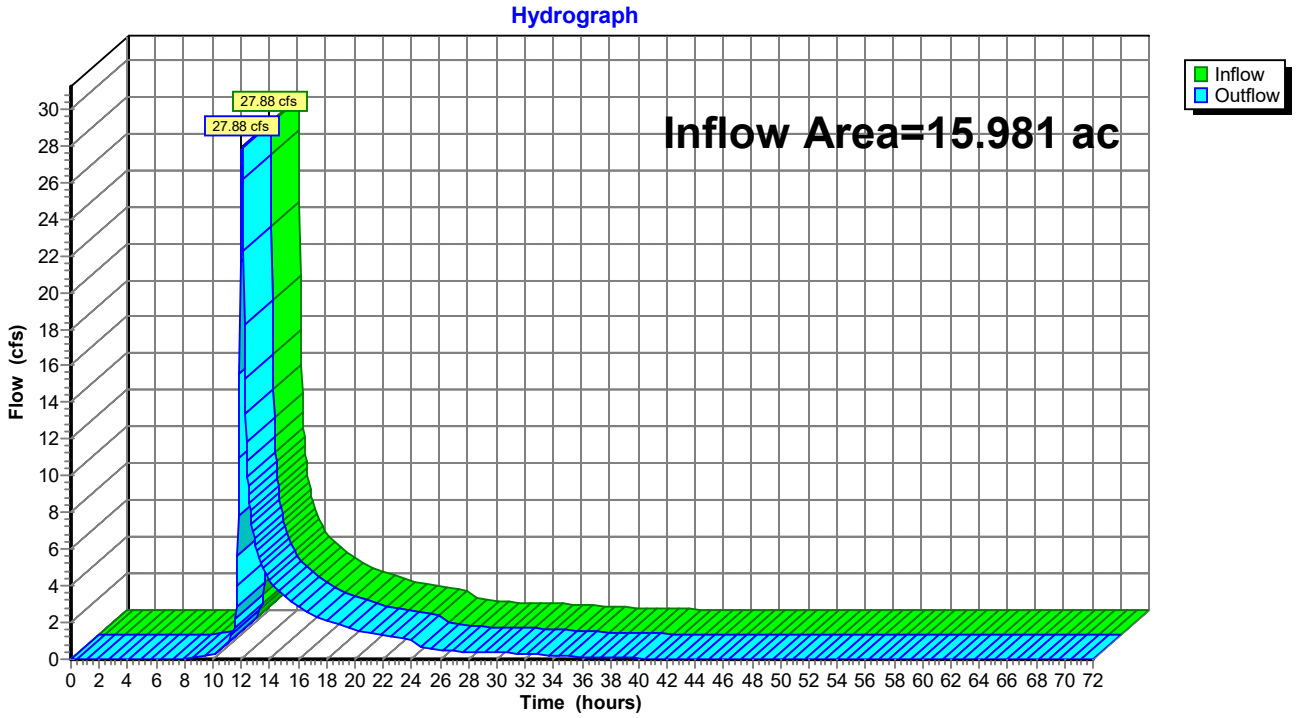


Summary for Reach 28R: SWL-3

Inflow Area = 15.981 ac, 52.14% Impervious, Inflow Depth > 3.06" for 10-Year event
Inflow = 27.88 cfs @ 12.05 hrs, Volume= 4.078 af
Outflow = 27.88 cfs @ 12.05 hrs, Volume= 4.078 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 8P : BIO-RETENTION BASIN #5A (POI 001)

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach 28R: SWL-3



Summary for Pond 8P: BIO-RETENTION BASIN #5A (POI 001)

Inflow Area = 34.811 ac, 65.84% Impervious, Inflow Depth > 1.79" for 10-Year event
Inflow = 47.87 cfs @ 12.00 hrs, Volume= 5.190 af
Outflow = 3.55 cfs @ 15.73 hrs, Volume= 5.190 af, Atten= 93%, Lag= 224.2 min
Discarded = 1.53 cfs @ 15.73 hrs, Volume= 4.212 af
Primary = 2.02 cfs @ 15.73 hrs, Volume= 0.978 af
Routed to Link 37L : Discharge 001

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,869.31' @ 15.73 hrs Surf.Area= 84,837 sf Storage= 107,196 cf

Plug-Flow detention time= 590.8 min calculated for 5.190 af (100% of inflow)
Center-of-Mass det. time= 590.6 min (1,555.0 - 964.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,868.00'	560,097 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

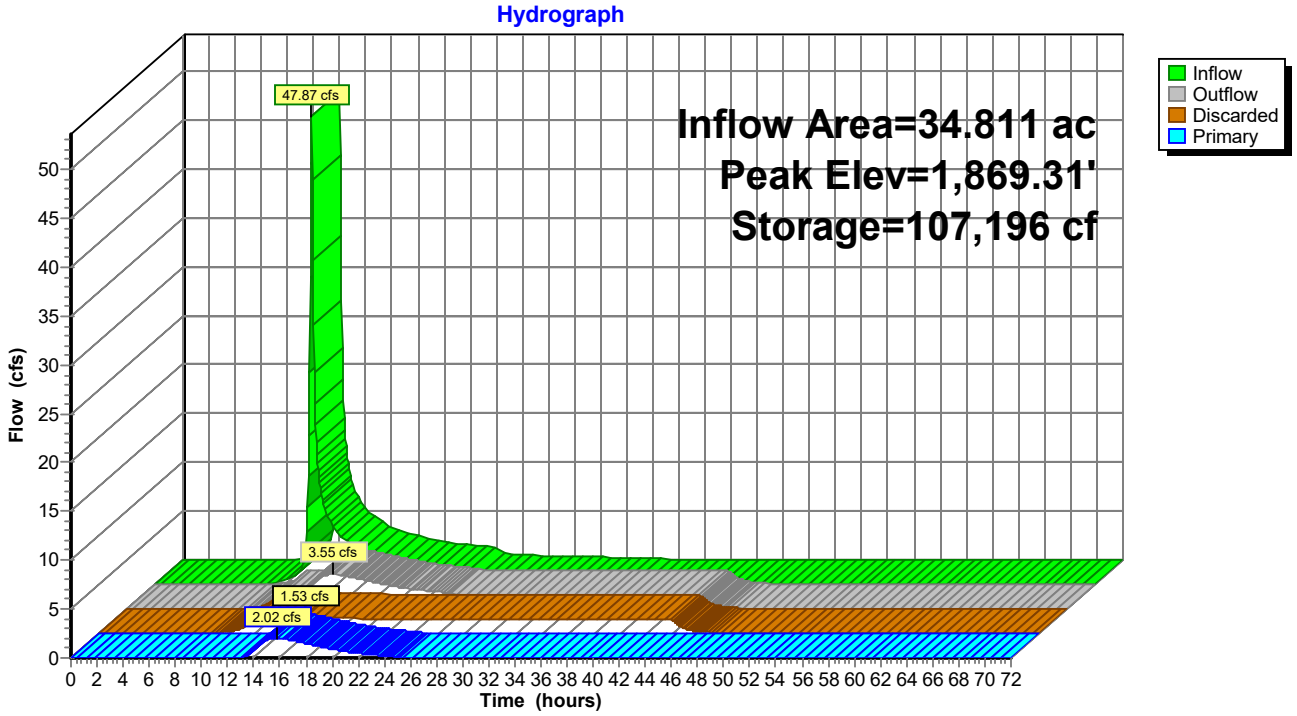
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,868.00	79,525	0	0
1,869.00	83,329	81,427	81,427
1,870.00	88,249	85,789	167,216
1,872.00	98,164	186,413	353,629
1,874.00	108,304	206,468	560,097

Device	Routing	Invert	Outlet Devices
#1	Primary	1,865.00'	**42.0" Round Culvert** L= 30.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 1,865.00' / 1,864.50' S= 0.0167 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf
#2	Device 1	1,869.10'	**20.0" W x 12.0" H Vert. Orifice/Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,870.50'	**72.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Discarded	1,868.00'	**0.780 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=1.53 cfs @ 15.73 hrs HW=1,869.31' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 1.53 cfs)

Primary OutFlow Max=2.01 cfs @ 15.73 hrs HW=1,869.31' (Free Discharge)
└**1=Culvert** (Passes 2.01 cfs of 72.94 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 2.01 cfs @ 1.46 fps)
  └**3=Orifice/Grate** (Controls 0.00 cfs)

Pond 8P: BIO-RETENTION BASIN #5A (POI 001)



Summary for Pond 9P: seepage pit with chambers #5A

Inflow Area = 6.084 ac,100.00% Impervious, Inflow Depth = 5.04" for 10-Year event
Inflow = 44.49 cfs @ 11.96 hrs, Volume= 2.557 af
Outflow = 1.34 cfs @ 13.86 hrs, Volume= 2.557 af, Atten= 97%, Lag= 114.2 min
Discarded = 1.28 cfs @ 10.30 hrs, Volume= 2.546 af
Primary = 0.07 cfs @ 13.86 hrs, Volume= 0.011 af
Routed to Pond 8P : BIO-RETENTION BASIN #5A (POI 001)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,877.87' @ 13.86 hrs Surf.Area= 42,456 sf Storage= 55,971 cf

Plug-Flow detention time= 366.1 min calculated for 2.555 af (100% of inflow)
Center-of-Mass det. time= 366.2 min (1,109.2 - 743.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,876.00'	40,538 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 169,824 cf Overall - 68,478 cf Embedded = 101,346 cf x 40.0% Voids
#2	1,876.50'	68,478 cf	**Cultec R-360HD** x 1862 Inside #1 Effective Size= 54.9"W x 36.0"H => 9.99 sf x 3.67'L = 36.6 cf Overall Size= 60.0"W x 36.0"H x 4.17'L with 0.50' Overlap 1862 Chambers in 19 Rows Cap Storage= 6.5 cf x 2 x 19 rows = 245.5 cf
		109,016 cf	Total Available Storage

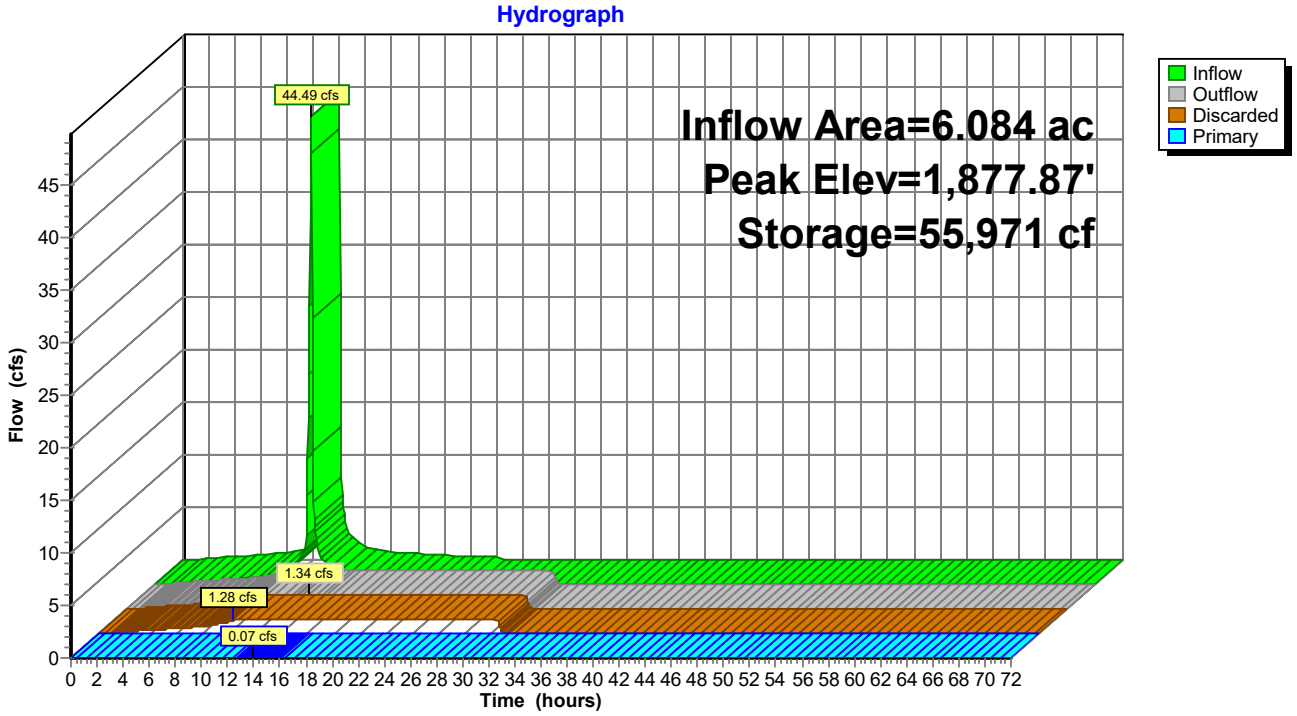
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,876.00	42,456	0	0
1,880.00	42,456	169,824	169,824

Device	Routing	Invert	Outlet Devices
#1	Primary	1,876.00'	**24.0" Round Culvert** L= 120.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,876.00' / 1,868.00' S= 0.0667 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,877.80'	**12.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	1,876.00'	**1.300 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=1.28 cfs @ 10.30 hrs HW=1,876.04' (Free Discharge)
↑**3=Exfiltration** (Exfiltration Controls 1.28 cfs)

Primary OutFlow Max=0.07 cfs @ 13.86 hrs HW=1,877.87' TW=1,869.56' (Fixed TW Elev= 1,869.56')
↑**1=Culvert** (Passes 0.07 cfs of 12.58 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 0.07 cfs @ 0.88 fps)

Pond 9P: seepage pit with chambers #5A



Summary for Pond 13P: bio-retention basin #4a

Inflow Area = 2.695 ac, 0.00% Impervious, Inflow Depth = 1.47" for 10-Year event
Inflow = 3.61 cfs @ 12.19 hrs, Volume= 0.330 af
Outflow = 0.13 cfs @ 19.29 hrs, Volume= 0.330 af, Atten= 96%, Lag= 425.7 min
Discarded = 0.13 cfs @ 19.29 hrs, Volume= 0.330 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 23R : SWL-4

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,893.43' @ 19.29 hrs Surf.Area= 7,042 sf Storage= 9,017 cf

Plug-Flow detention time= 783.1 min calculated for 0.329 af (100% of inflow)
Center-of-Mass det. time= 783.5 min (1,667.9 - 884.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,892.00'	30,734 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

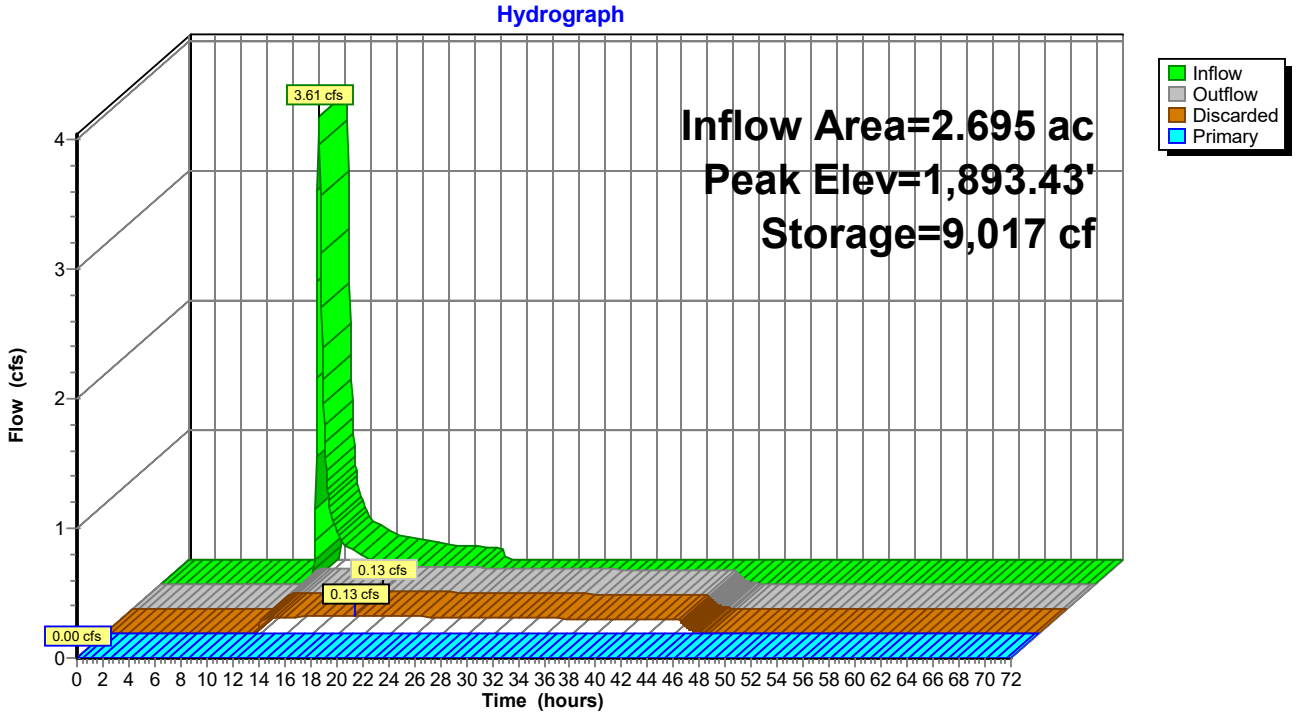
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,892.00	5,542	0	0
1,894.00	7,636	13,178	13,178
1,896.00	9,920	17,556	30,734

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,892.00'	**0.800 in/hr Exfiltration over Surface area**
#2	Primary	1,894.00'	**20.0' long + 3.0 '/' SideZ x 20.0' 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=0.13 cfs @ 19.29 hrs HW=1,893.43' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.13 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,892.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 13P: bio-retention basin #4a



Summary for Pond 14P: seepage pit with chambers #5F

Inflow Area = 7.817 ac, 99.88% Impervious, Inflow Depth = 5.04" for 10-Year event
Inflow = 57.16 cfs @ 11.96 hrs, Volume= 3.285 af
Outflow = 2.47 cfs @ 13.15 hrs, Volume= 3.285 af, Atten= 96%, Lag= 71.6 min
Discarded = 2.24 cfs @ 10.80 hrs, Volume= 3.247 af
Primary = 0.23 cfs @ 13.15 hrs, Volume= 0.038 af
Routed to Pond 8P : BIO-RETENTION BASIN #5A (POI 001)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,870.17' @ 13.15 hrs Surf.Area= 56,925 sf Storage= 64,623 cf

Plug-Flow detention time= 223.9 min calculated for 3.283 af (100% of inflow)
Center-of-Mass det. time= 223.9 min (966.9 - 743.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,868.50'	56,160 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 227,700 cf Overall - 87,300 cf Embedded = 140,400 cf x 40.0% Voids
#2	1,869.00'	87,300 cf	**Cultec R-360HD** x 2376 Inside #1 Effective Size= 54.9"W x 36.0"H => 9.99 sf x 3.67'L = 36.6 cf Overall Size= 60.0"W x 36.0"H x 4.17'L with 0.50' Overlap 2376 Chambers in 18 Rows Cap Storage= 6.5 cf x 2 x 18 rows = 232.6 cf
		143,460 cf	Total Available Storage

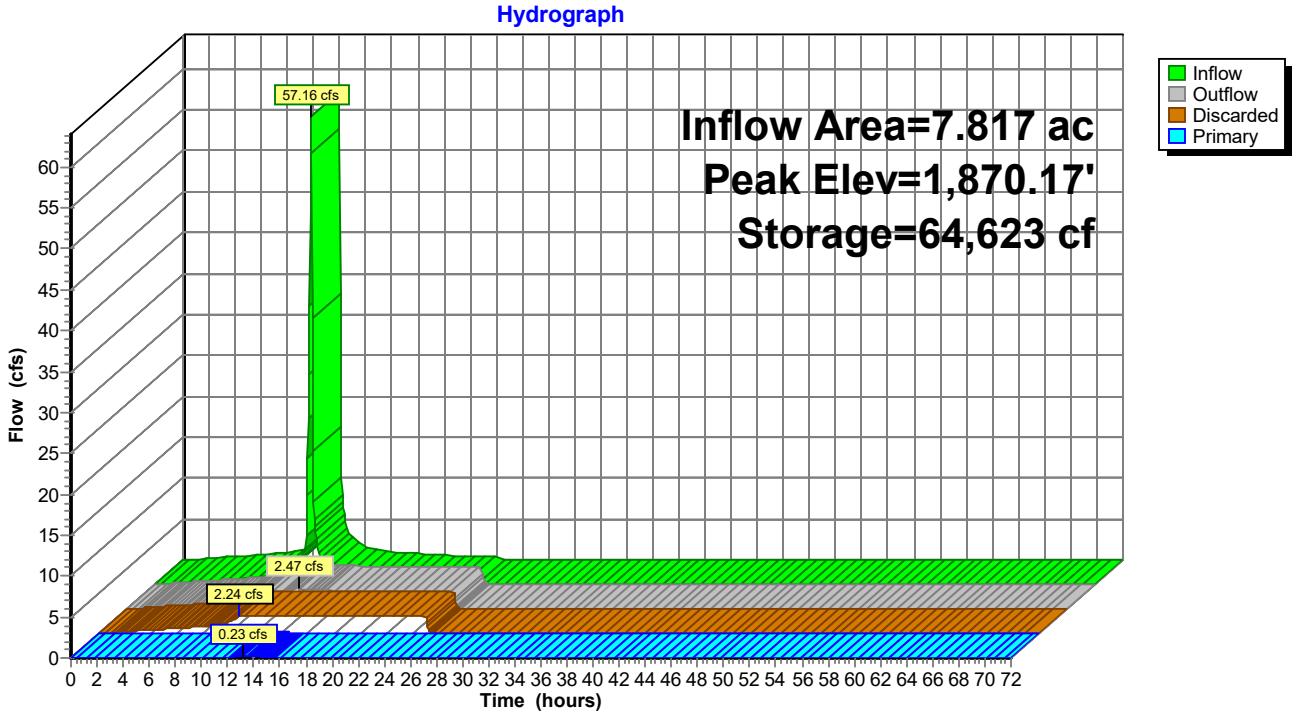
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,868.50	56,925	0	0
1,872.50	56,925	227,700	227,700

Device	Routing	Invert	Outlet Devices
#1	Primary	1,869.50'	**24.0" Round Culvert** L= 60.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,869.50' / 1,868.00' S= 0.0250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,870.00'	**12.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	1,868.50'	**1.700 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=2.24 cfs @ 10.80 hrs HW=1,868.54' (Free Discharge)
↑**3=Exfiltration** (Exfiltration Controls 2.24 cfs)

Primary OutFlow Max=0.23 cfs @ 13.15 hrs HW=1,870.17' TW=1,869.56' (Fixed TW Elev= 1,869.56')
↑**1=Culvert** (Passes 0.23 cfs of 2.17 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 0.23 cfs @ 1.33 fps)

Pond 14P: seepage pit with chambers #5F



Summary for Pond 15P: seepage pit with chambers #4b

Inflow Area = 1.404 ac, 93.45% Impervious, Inflow Depth = 4.81" for 10-Year event
Inflow = 10.13 cfs @ 11.96 hrs, Volume= 0.563 af
Outflow = 1.18 cfs @ 12.28 hrs, Volume= 0.563 af, Atten= 88%, Lag= 19.3 min
Discarded = 0.22 cfs @ 9.90 hrs, Volume= 0.443 af
Primary = 0.96 cfs @ 12.28 hrs, Volume= 0.119 af
Routed to Reach 23R : SWL-4

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,888.85' @ 12.28 hrs Surf.Area= 12,000 sf Storage= 11,101 cf

Plug-Flow detention time= 287.2 min calculated for 0.562 af (100% of inflow)
Center-of-Mass det. time= 287.3 min (1,044.6 - 757.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,887.00'	16,609 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 48,000 cf Overall - 6,477 cf Embedded = 41,523 cf x 40.0% Voids
#2	1,887.50'	6,477 cf	**Cultec R-360HD** x 175 Inside #1 Effective Size= 54.9"W x 36.0"H => 9.99 sf x 3.67'L = 36.6 cf Overall Size= 60.0"W x 36.0"H x 4.17'L with 0.50' Overlap 175 Chambers in 5 Rows Cap Storage= 6.5 cf x 2 x 5 rows = 64.6 cf
		23,086 cf	Total Available Storage

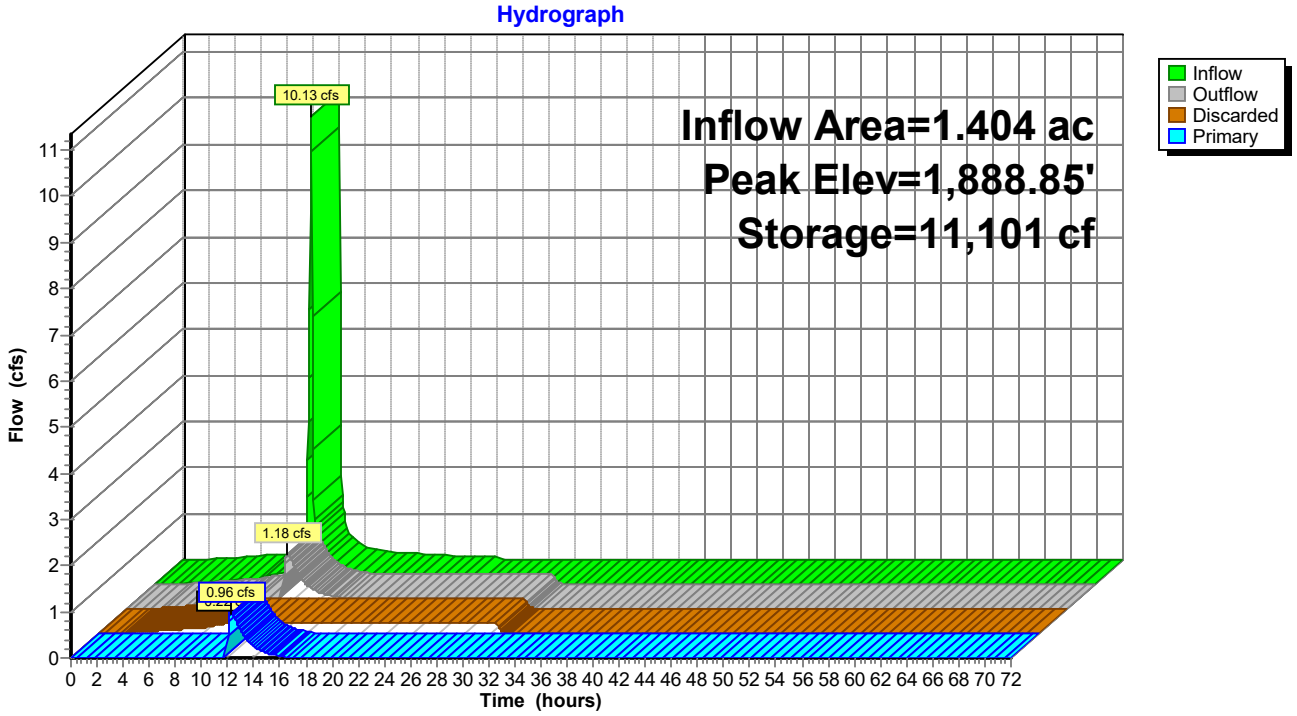
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,887.00	12,000	0	0
1,891.00	12,000	48,000	48,000

Device	Routing	Invert	Outlet Devices
#1	Primary	1,887.00'	**24.0" Round Culvert** L= 50.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,887.00' / 1,886.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,888.40'	**12.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	1,887.00'	**0.800 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.22 cfs @ 9.90 hrs HW=1,887.04' (Free Discharge)
↑**3=Exfiltration** (Exfiltration Controls 0.22 cfs)

Primary OutFlow Max=0.96 cfs @ 12.28 hrs HW=1,888.85' (Free Discharge)
↑**1=Culvert** (Passes 0.96 cfs of 12.37 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 0.96 cfs @ 2.14 fps)

Pond 15P: seepage pit with chambers #4b



Summary for Pond 16P: seepage pit with chambers #3A

Inflow Area = 4.089 ac, 57.74% Impervious, Inflow Depth = 3.04" for 10-Year event
Inflow = 21.24 cfs @ 11.97 hrs, Volume= 1.037 af
Outflow = 1.10 cfs @ 13.09 hrs, Volume= 1.037 af, Atten= 95%, Lag= 67.0 min
Discarded = 0.55 cfs @ 11.25 hrs, Volume= 0.883 af
Primary = 0.54 cfs @ 13.09 hrs, Volume= 0.154 af
Routed to Pond 26P : bio-retention basin #3b

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,902.31' @ 13.09 hrs Surf.Area= 26,640 sf Storage= 22,614 cf

Plug-Flow detention time= 319.2 min calculated for 1.037 af (100% of inflow)
Center-of-Mass det. time= 319.2 min (1,138.2 - 819.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,901.00'	26,373 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 106,560 cf Overall - 40,628 cf Embedded = 65,932 cf x 40.0% Voids
#2	1,901.50'	40,628 cf	**Cultec R-360HD** x 1102 Inside #1 Effective Size= 54.9"W x 36.0"H => 9.99 sf x 3.67'L = 36.6 cf Overall Size= 60.0"W x 36.0"H x 4.17'L with 0.50' Overlap 1102 Chambers in 19 Rows Cap Storage= 6.5 cf x 2 x 19 rows = 245.5 cf
		67,001 cf	Total Available Storage

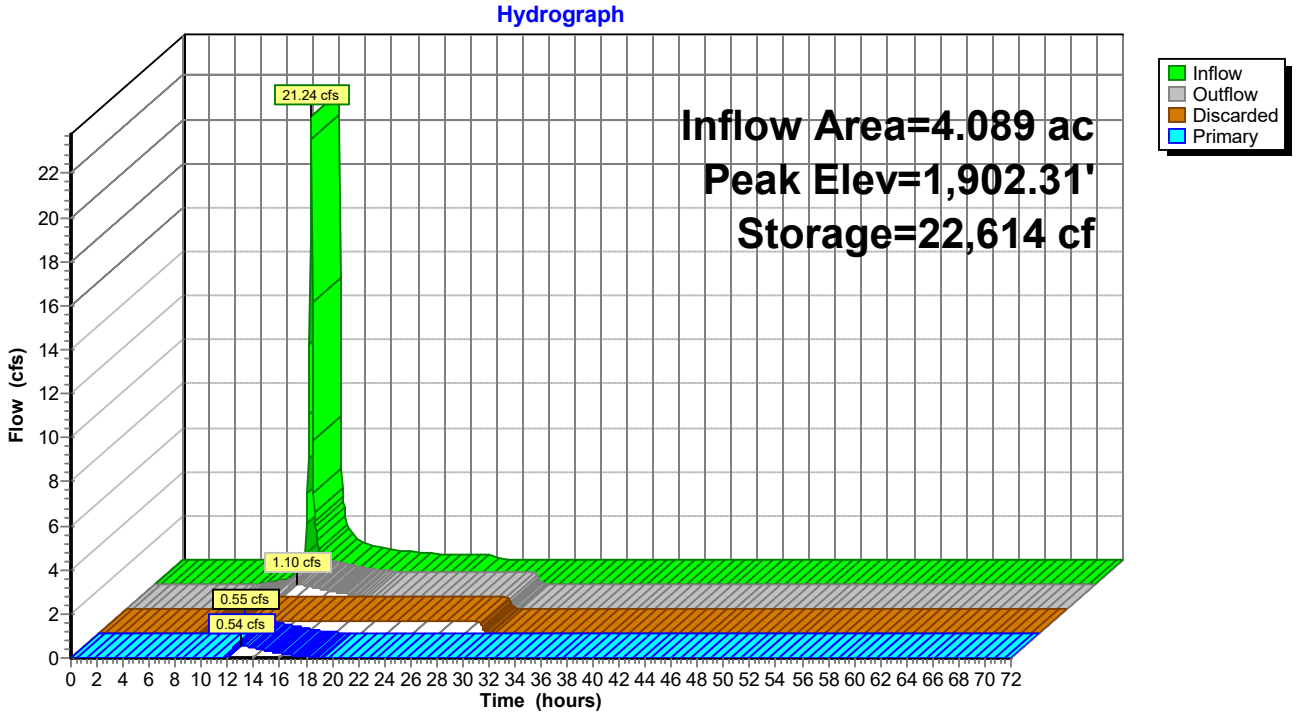
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,901.00	26,640	0	0
1,905.00	26,640	106,560	106,560

Device	Routing	Invert	Outlet Devices
#1	Primary	1,901.00'	**24.0" Round Culvert** L= 120.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,901.00' / 1,898.00' S= 0.0250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,902.00'	**12.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	1,901.00'	**0.900 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.55 cfs @ 11.25 hrs HW=1,901.04' (Free Discharge)
↑**3=Exfiltration** (Exfiltration Controls 0.55 cfs)

Primary OutFlow Max=0.54 cfs @ 13.09 hrs HW=1,902.31' (Free Discharge)
↑**1=Culvert** (Passes 0.54 cfs of 7.46 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 0.54 cfs @ 1.77 fps)

Pond 16P: seepage pit with chambers #3A



Summary for Pond 24P: bio-retention basin #6a

Inflow Area = 1.953 ac, 57.30% Impervious, Inflow Depth = 2.68" for 10-Year event
Inflow = 9.00 cfs @ 11.97 hrs, Volume= 0.436 af
Outflow = 0.99 cfs @ 12.40 hrs, Volume= 0.436 af, Atten= 89%, Lag= 25.8 min
Primary = 0.99 cfs @ 12.40 hrs, Volume= 0.436 af
Routed to Reach 27R : SWL-2

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,923.35' @ 12.40 hrs Surf.Area= 7,060 sf Storage= 8,514 cf

Plug-Flow detention time= 141.4 min calculated for 0.435 af (100% of inflow)
Center-of-Mass det. time= 142.7 min (971.8 - 829.1)

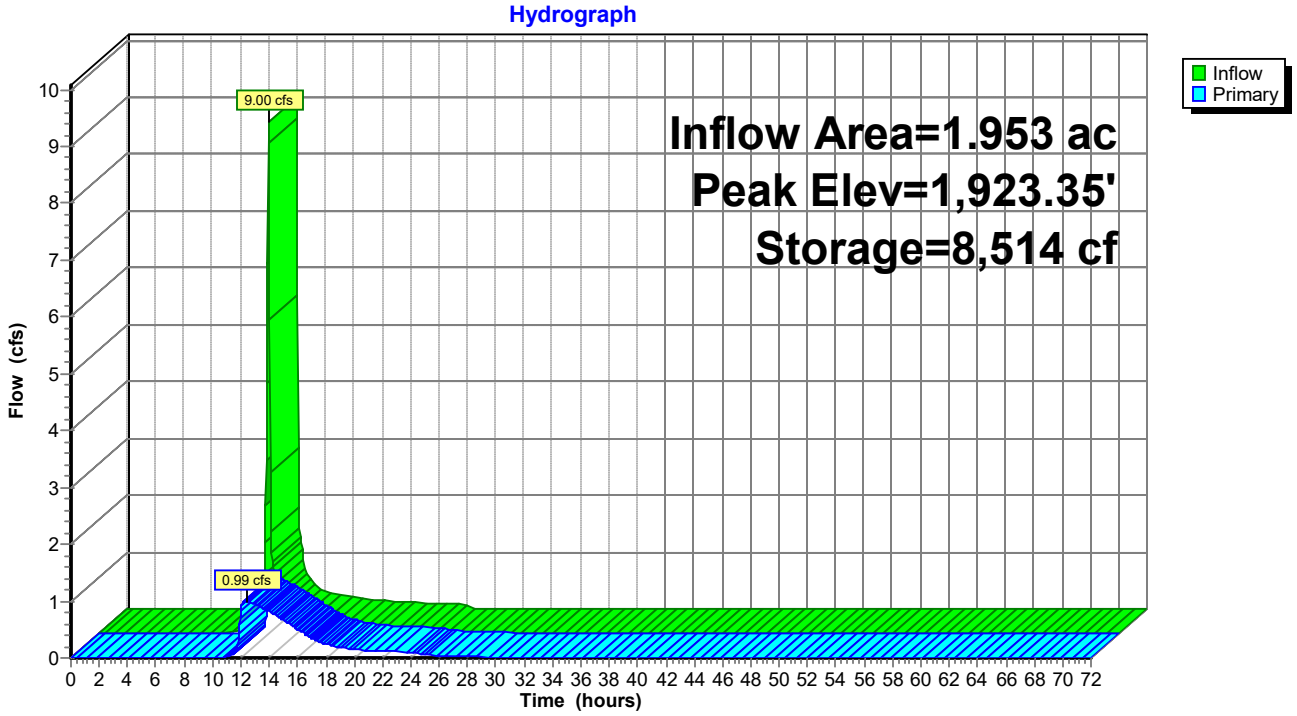
Volume	Invert	Avail.Storage	Storage Description
#1	1,922.00'	31,352 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,922.00	5,567	0	0
1,924.00	7,781	13,348	13,348
1,926.00	10,223	18,004	31,352

Device	Routing	Invert	Outlet Devices
#1	Primary	1,922.00'	**24.0" Round Culvert** L= 50.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,922.00' / 1,920.25' S= 0.0350 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,922.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,924.50'	**45.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.99 cfs @ 12.40 hrs HW=1,923.35' (Free Discharge)
└**1=Culvert** (Passes 0.99 cfs of 7.86 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.99 cfs @ 5.05 fps)
  └**3=Orifice/Grate** (Controls 0.00 cfs)

Pond 24P: bio-retention basin #6a



Summary for Pond 26P: bio-retention basin #3b

Inflow Area = 14.187 ac, 33.20% Impervious, Inflow Depth = 1.55" for 10-Year event
Inflow = 16.81 cfs @ 12.27 hrs, Volume= 1.838 af
Outflow = 0.98 cfs @ 16.60 hrs, Volume= 1.838 af, Atten= 94%, Lag= 259.6 min
Discarded = 0.75 cfs @ 16.60 hrs, Volume= 1.594 af
Primary = 0.23 cfs @ 16.60 hrs, Volume= 0.244 af
Routed to Link 37L : Discharge 001

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,892.92' @ 16.60 hrs Surf.Area= 27,142 sf Storage= 47,684 cf

Plug-Flow detention time= 585.7 min calculated for 1.836 af (100% of inflow)
Center-of-Mass det. time= 586.0 min (1,457.0 - 871.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,891.00'	218,379 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

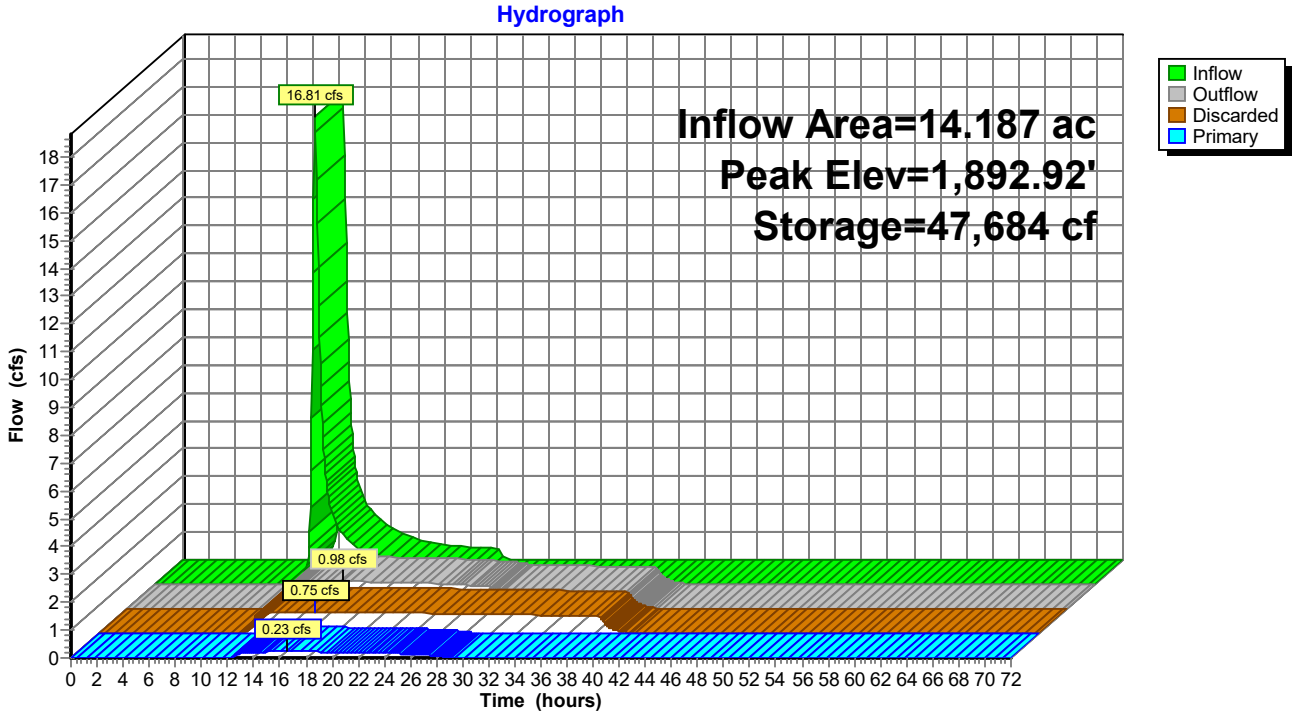
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,891.00	22,485	0	0
1,892.00	24,866	23,676	23,676
1,894.00	29,797	54,663	78,339
1,896.00	34,953	64,750	143,089
1,898.00	40,337	75,290	218,379

Device	Routing	Invert	Outlet Devices
#1	Primary	1,891.00'	**24.0" Round Culvert** L= 120.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,891.00' / 1,889.80' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,892.00'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	1,891.00'	**1.200 in/hr Exfiltration over Surface area**
#4	Device 1	1,896.60'	**45.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.75 cfs @ 16.60 hrs HW=1,892.92' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.75 cfs)

Primary OutFlow Max=0.23 cfs @ 16.60 hrs HW=1,892.92' (Free Discharge)
└**1=Culvert** (Passes 0.23 cfs of 12.92 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 0.23 cfs @ 4.63 fps)
└**4=Orifice/Grate** (Controls 0.00 cfs)

Pond 26P: bio-retention basin #3b



Summary for Pond 29P: bio-retention basin #1A

Inflow Area = 3.056 ac, 64.73% Impervious, Inflow Depth = 3.63" for 10-Year event
Inflow = 18.46 cfs @ 11.97 hrs, Volume= 0.924 af
Outflow = 1.07 cfs @ 12.85 hrs, Volume= 0.919 af, Atten= 94%, Lag= 53.1 min
Primary = 1.07 cfs @ 12.85 hrs, Volume= 0.919 af
Routed to Pond 38P : bio-retention basin #2A

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,939.53' @ 12.85 hrs Surf.Area= 16,748 sf Storage= 22,421 cf

Plug-Flow detention time= 310.3 min calculated for 0.918 af (99% of inflow)
Center-of-Mass det. time= 308.4 min (1,110.7 - 802.3)

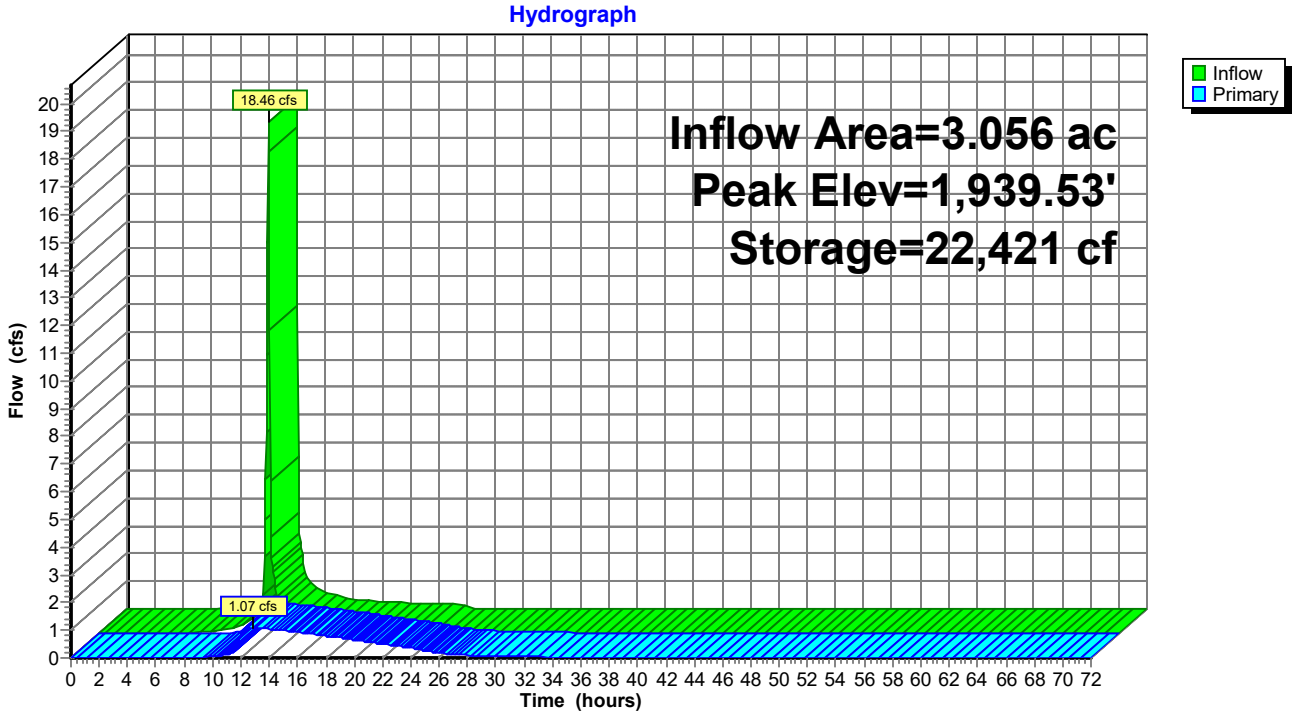
Volume	Invert	Avail.Storage	Storage Description
#1	1,938.00'	72,334 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,938.00	12,620	0	0
1,940.00	18,027	30,647	30,647
1,942.00	23,660	41,687	72,334

Device	Routing	Invert	Outlet Devices
#1	Primary	1,936.00'	**24.0" Round Culvert** L= 85.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,936.00' / 1,934.00' S= 0.0235 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,938.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,940.50'	**45.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.07 cfs @ 12.85 hrs HW=1,939.53' TW=1,936.57' (Fixed TW Elev= 1,936.57')
└─**1=Culvert** (Passes 1.07 cfs of 21.22 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.07 cfs @ 5.44 fps)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Pond 29P: bio-retention basin #1A



Summary for Pond 38P: bio-retention basin #2A

Inflow Area = 4.593 ac, 65.01% Impervious, Inflow Depth > 3.61" for 10-Year event
Inflow = 10.12 cfs @ 11.97 hrs, Volume= 1.383 af
Outflow = 6.26 cfs @ 12.07 hrs, Volume= 1.383 af, Atten= 38%, Lag= 6.0 min
Primary = 6.26 cfs @ 12.07 hrs, Volume= 1.383 af
Routed to Pond 40P : bio-retention basin #2C

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,936.29' @ 12.07 hrs Surf.Area= 4,643 sf Storage= 9,402 cf

Plug-Flow detention time= 152.6 min calculated for 1.383 af (100% of inflow)
Center-of-Mass det. time= 151.1 min (1,158.2 - 1,007.1)

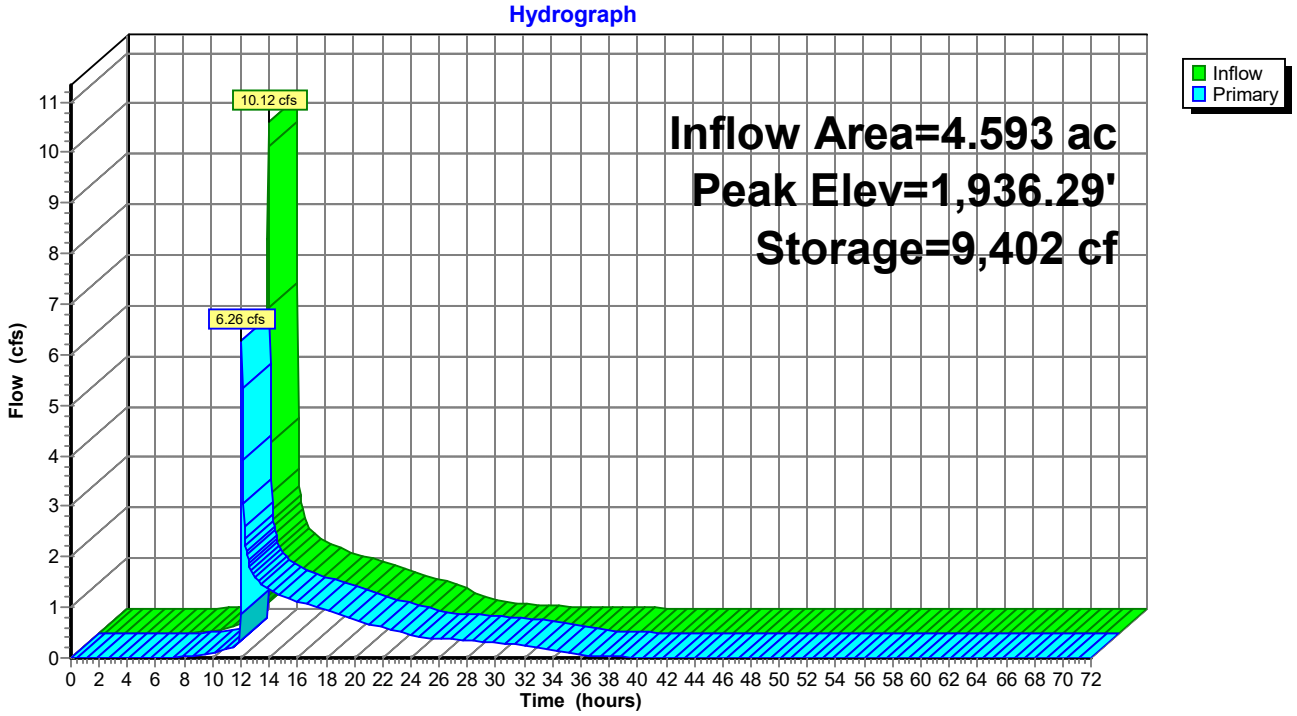
Volume	Invert	Avail.Storage	Storage Description
#1	1,933.00'	19,068 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,933.00	1,159	0	0
1,934.00	2,148	1,654	1,654
1,936.00	4,297	6,445	8,099
1,938.00	6,672	10,969	19,068

Device	Routing	Invert	Outlet Devices
#1	Primary	1,933.00'	**24.0" Round Culvert** L= 115.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,933.00' / 1,931.70' S= 0.0113 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,933.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,936.00'	**45.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.69 cfs @ 12.07 hrs HW=1,936.27' (Free Discharge)
└**1=Culvert** (Passes 5.69 cfs of 20.11 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.42 cfs @ 8.54 fps)
  └**3=Orifice/Grate** (Weir Controls 5.27 cfs @ 1.70 fps)

Pond 38P: bio-retention basin #2A



Summary for Pond 39P: bio-retention basin #2B

Inflow Area = 0.992 ac, 60.28% Impervious, Inflow Depth = 3.43" for 10-Year event
Inflow = 5.72 cfs @ 11.97 hrs, Volume= 0.283 af
Outflow = 0.60 cfs @ 12.39 hrs, Volume= 0.282 af, Atten= 90%, Lag= 25.5 min
Primary = 0.60 cfs @ 12.39 hrs, Volume= 0.282 af
Routed to Reach 26R : SWL-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,916.65' @ 12.39 hrs Surf.Area= 9,885 sf Storage= 6,275 cf

Plug-Flow detention time= 249.7 min calculated for 0.282 af (99% of inflow)
Center-of-Mass det. time= 245.8 min (1,054.0 - 808.2)

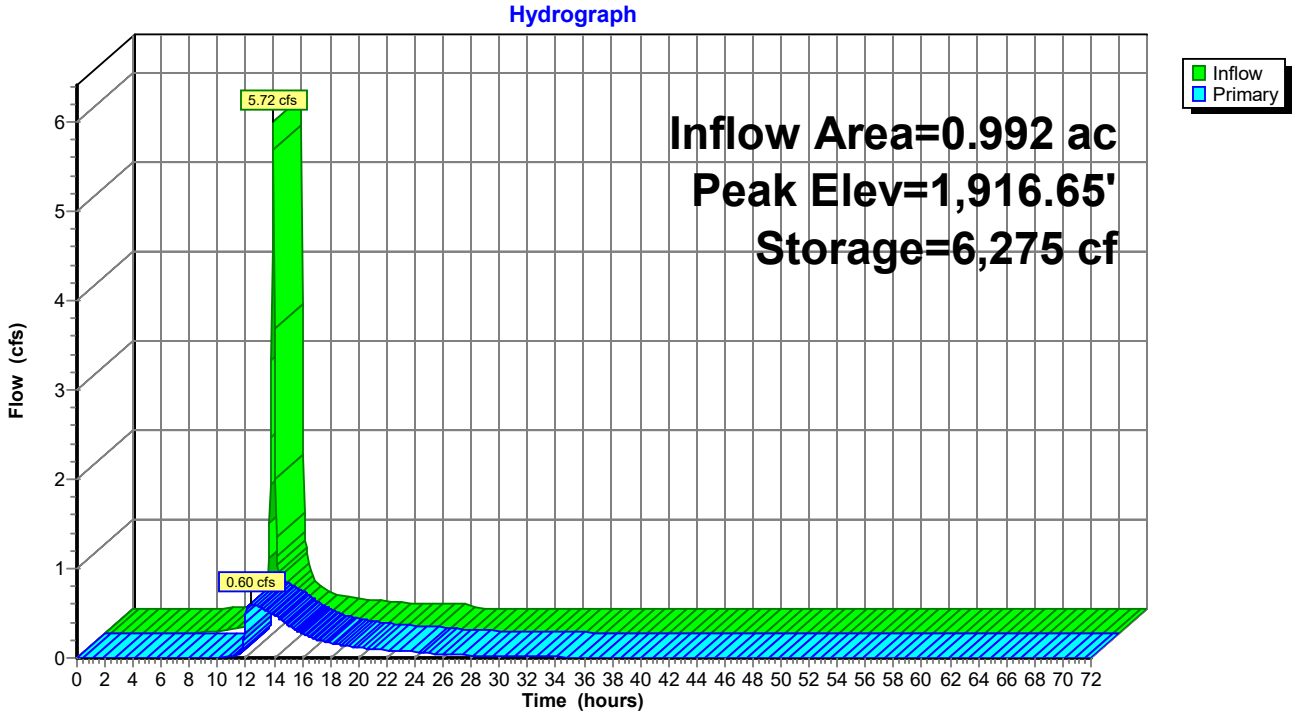
Volume	Invert	Avail.Storage	Storage Description
#1	1,916.00'	44,180 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,916.00	9,337	0	0
1,918.00	11,016	20,353	20,353
1,920.00	12,811	23,827	44,180

Device	Routing	Invert	Outlet Devices
#1	Primary	1,916.00'	**24.0" Round Culvert** L= 50.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,916.00' / 1,914.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,916.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,917.50'	**45.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.60 cfs @ 12.39 hrs HW=1,916.65' (Free Discharge)
└**1=Culvert** (Passes 0.60 cfs of 2.16 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.60 cfs @ 3.06 fps)
  └**3=Orifice/Grate** (Controls 0.00 cfs)

Pond 39P: bio-retention basin #2B



Summary for Pond 40P: bio-retention basin #2C

Inflow Area = 6.417 ac, 63.99% Impervious, Inflow Depth > 3.59" for 10-Year event
Inflow = 12.67 cfs @ 12.03 hrs, Volume= 1.919 af
Outflow = 5.91 cfs @ 12.16 hrs, Volume= 1.914 af, Atten= 53%, Lag= 7.9 min
Primary = 5.91 cfs @ 12.16 hrs, Volume= 1.914 af
Routed to Reach 26R : SWL-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,932.14' @ 12.16 hrs Surf.Area= 11,296 sf Storage= 11,254 cf

Plug-Flow detention time= 71.7 min calculated for 1.913 af (100% of inflow)
Center-of-Mass det. time= 65.8 min (1,125.4 - 1,059.6)

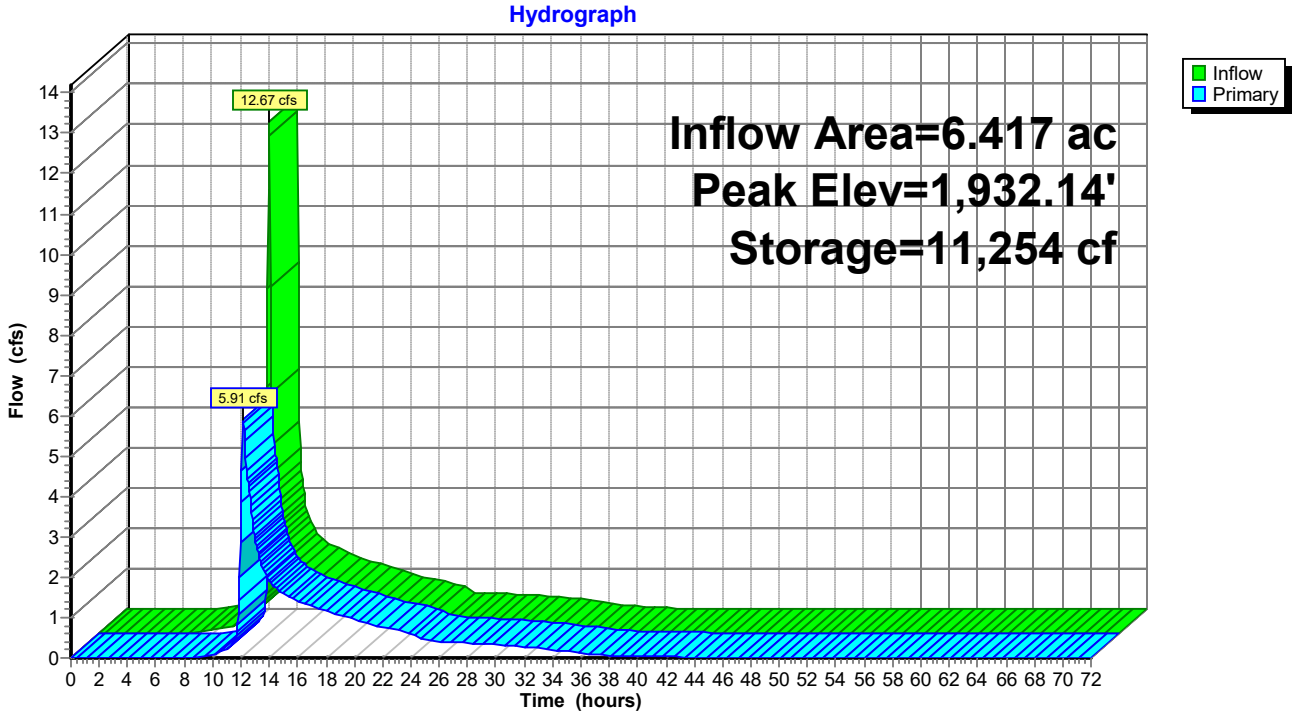
Volume	Invert	Avail.Storage	Storage Description
#1	1,931.00'	36,680 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,931.00	8,511	0	0
1,932.00	10,950	9,731	9,731
1,934.00	15,999	26,949	36,680

Device	Routing	Invert	Outlet Devices
#1	Primary	1,931.00'	**24.0" Round Culvert** L= 35.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,931.00' / 1,930.00' S= 0.0286 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,931.00'	**12.0" W x 4.0" H Vert. Orifice/Grate X 3.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,932.00'	**45.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.88 cfs @ 12.16 hrs HW=1,932.13' (Free Discharge)
└**1=Culvert** (Inlet Controls 5.88 cfs @ 3.20 fps)
├**2=Orifice/Grate** (Passes < 4.73 cfs potential flow)
└**3=Orifice/Grate** (Passes < 1.85 cfs potential flow)

Pond 40P: bio-retention basin #2C

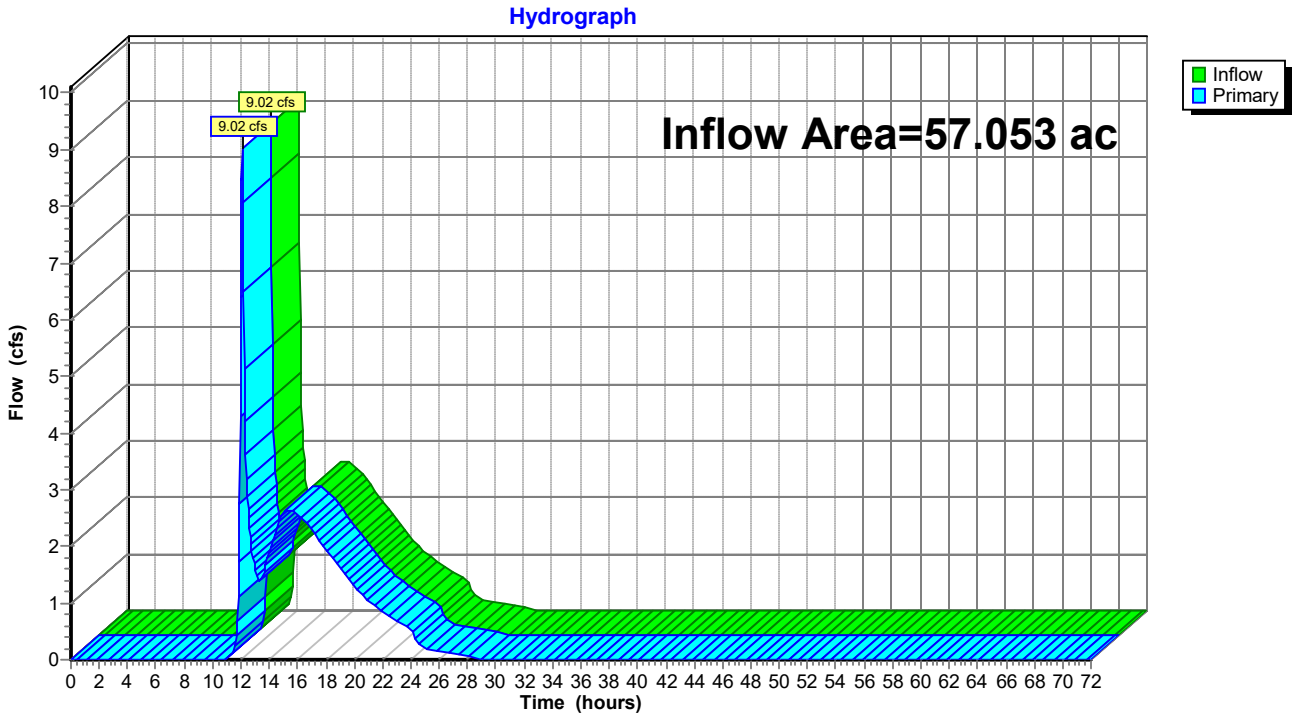


Summary for Link 37L: Discharge 001

Inflow Area = 57.053 ac, 50.73% Impervious, Inflow Depth = 0.40" for 10-Year event
Inflow = 9.02 cfs @ 12.09 hrs, Volume= 1.906 af
Primary = 9.02 cfs @ 12.09 hrs, Volume= 1.906 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 37L: Discharge 001



Summary for Subcatchment 11S: SEEPAGE BED #5A (BMP #7)

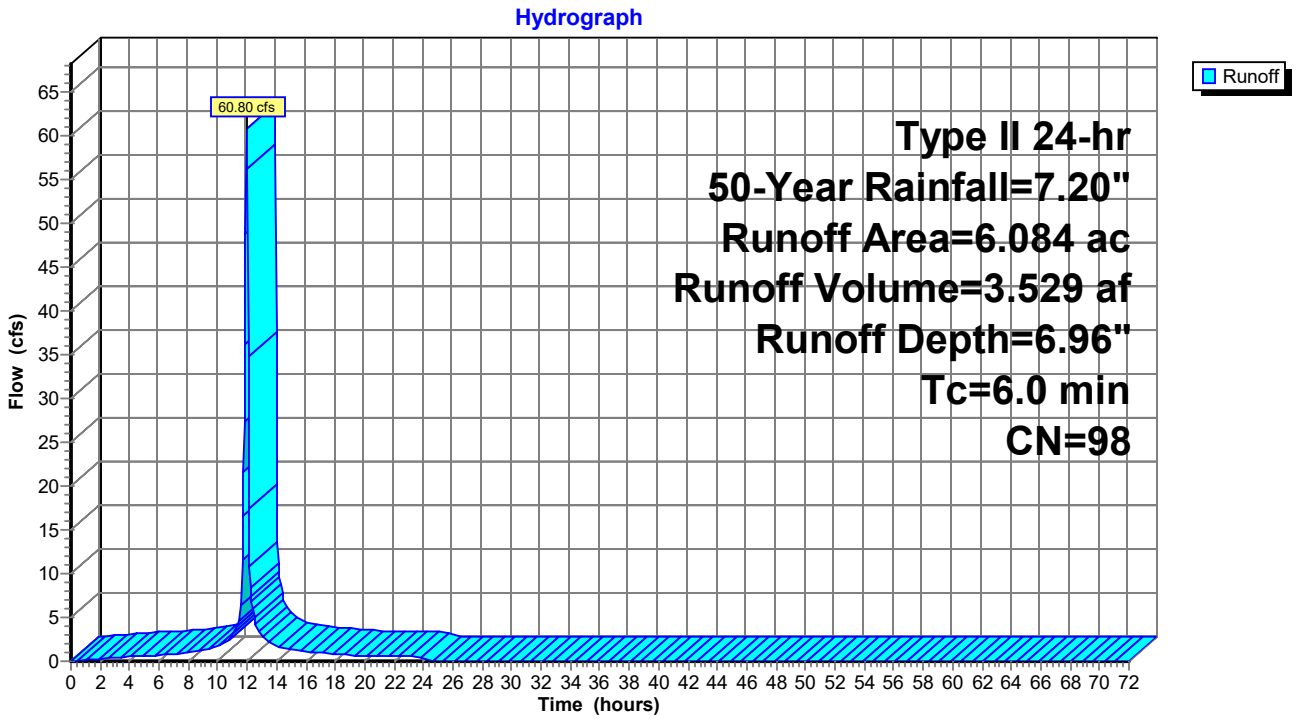
Runoff = 60.80 cfs @ 11.96 hrs, Volume= 3.529 af, Depth= 6.96"
Routed to Pond 9P : seepage pit with chambers #5A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=7.20"

Area (ac)	CN	Description
6.084	98	Paved parking & roofs
6.084		100.00% Impervious Area

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

Subcatchment 11S: SEEPAGE BED #5A (BMP #7)



Summary for Subcatchment 12S: bio-retention basin #4a (BMP #9)

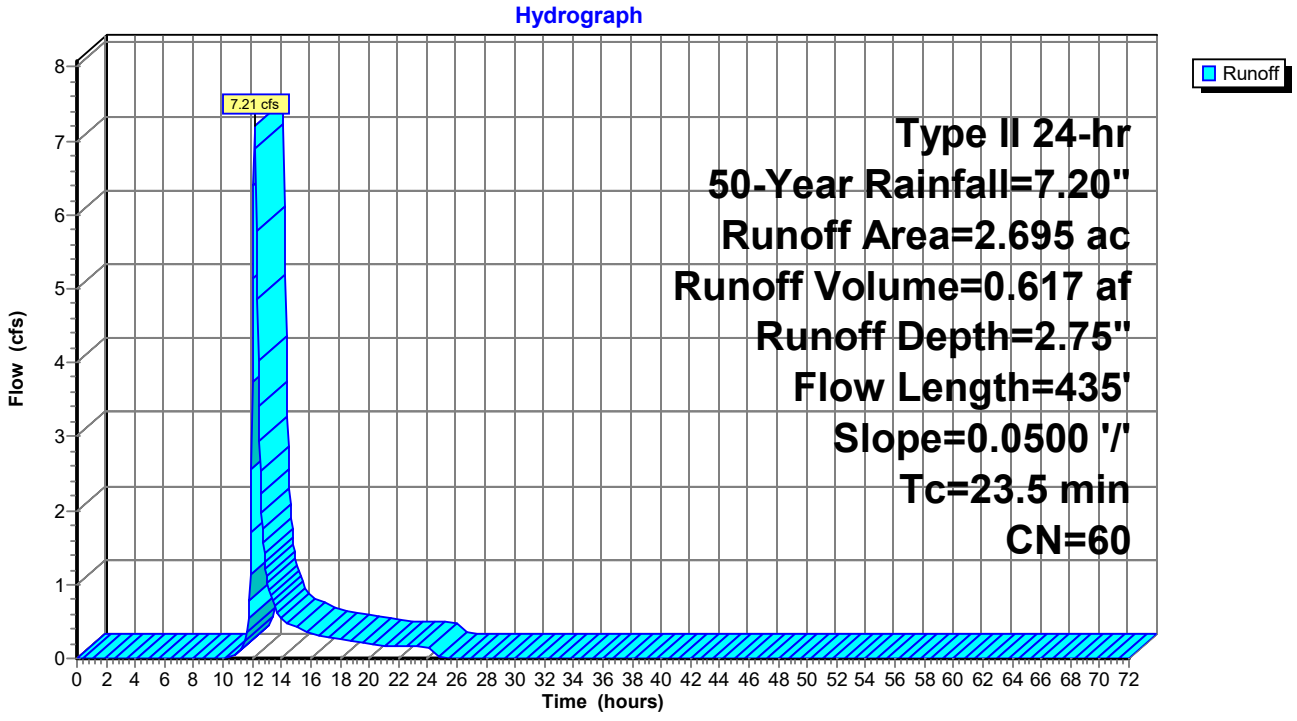
Runoff = 7.21 cfs @ 12.18 hrs, Volume= 0.617 af, Depth= 2.75"
Routed to Pond 13P : bio-retention basin #4a

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=7.20"

Area (ac)	CN	Description
1.896	61	>75% Grass cover, Good, HSG B
0.799	58	Meadow, non-grazed, HSG B
2.695	60	Weighted Average
2.695		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	150	0.0500	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.23"
3.0	285	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
23.5	435	Total			

Subcatchment 12S: bio-retention basin #4a (BMP #9)



Summary for Subcatchment 17S: SEEPAGE BED #4b (BMP #10)

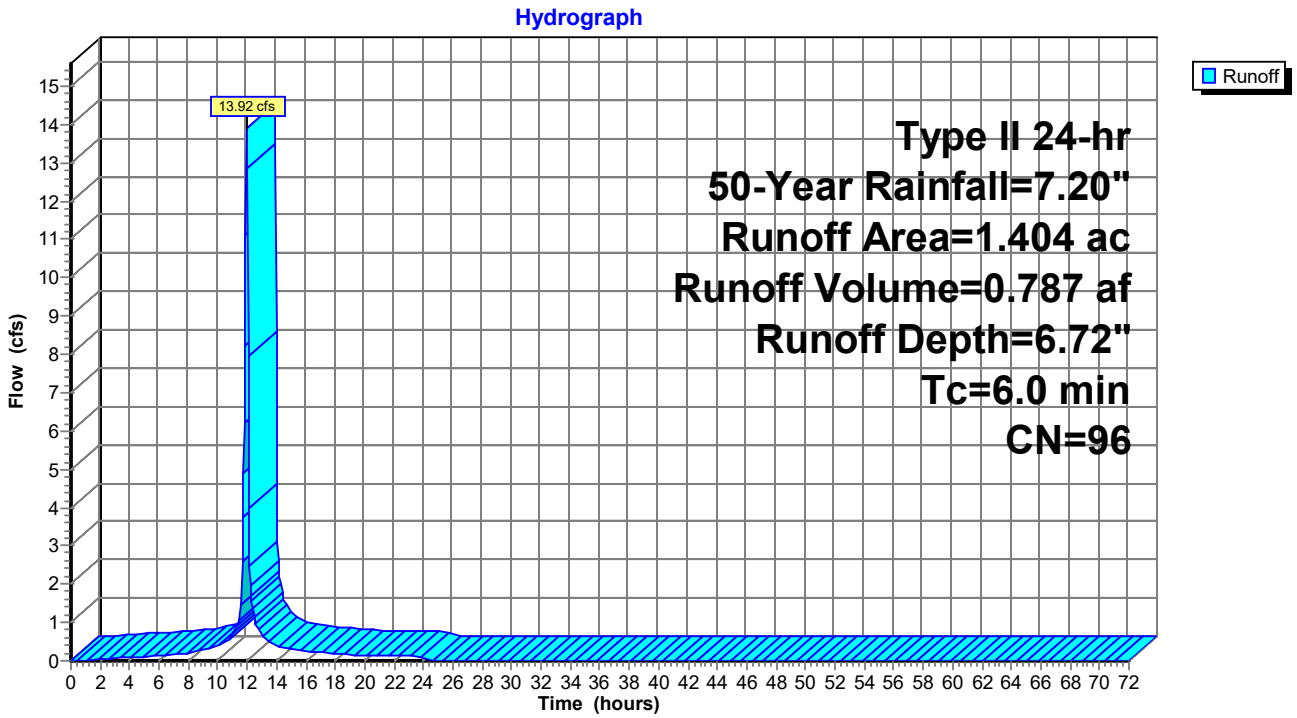
Runoff = 13.92 cfs @ 11.96 hrs, Volume= 0.787 af, Depth= 6.72"
Routed to Pond 15P : seepage pit with chambers #4b

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=7.20"

Area (ac)	CN	Description
1.312	98	Paved parking & roofs
0.092	74	>75% Grass cover, Good, HSG C
1.404	96	Weighted Average
0.092		6.55% Pervious Area
1.312		93.45% Impervious Area

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

Subcatchment 17S: SEEPAGE BED #4b (BMP #10)



Summary for Subcatchment 19S: SEEPAGE BED #3A (BMP #11)

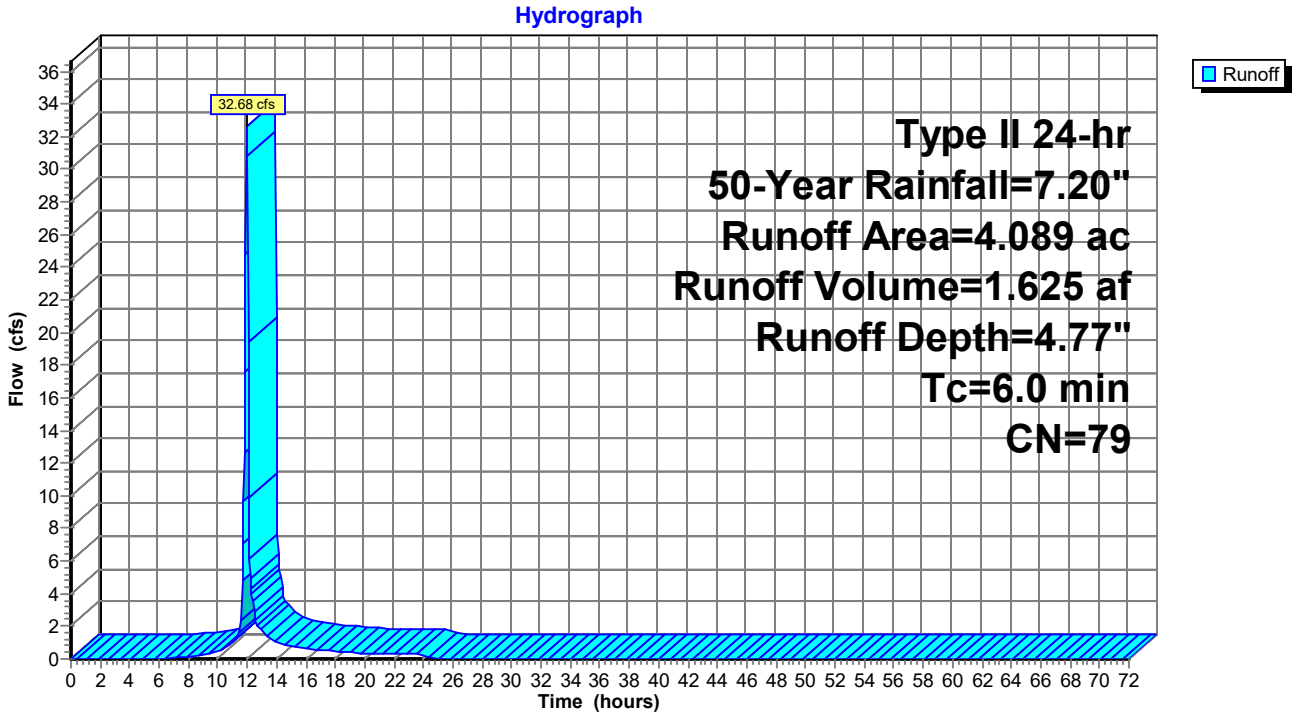
Runoff = 32.68 cfs @ 11.97 hrs, Volume= 1.625 af, Depth= 4.77"
Routed to Pond 16P : seepage pit with chambers #3A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=7.20"

	Area (ac)	CN	Description
	2.361	98	Paved parking & roofs
*	0.069	40	Meadow, non-grazed, HSG A
	0.059	71	Meadow, non-grazed, HSG C
*	0.485	40	>75% Grass cover, Good, HSG A
	0.485	74	>75% Grass cover, Good, HSG C
*	0.477	40	Woods, Good, HSG A
	0.153	70	Woods, Good, HSG C
	4.089	79	Weighted Average
	1.728		42.26% Pervious Area
	2.361		57.74% Impervious Area

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

Subcatchment 19S: SEEPAGE BED #3A (BMP #11)



Summary for Subcatchment 20S: SEEPAGE BED #5F (BMP 6)

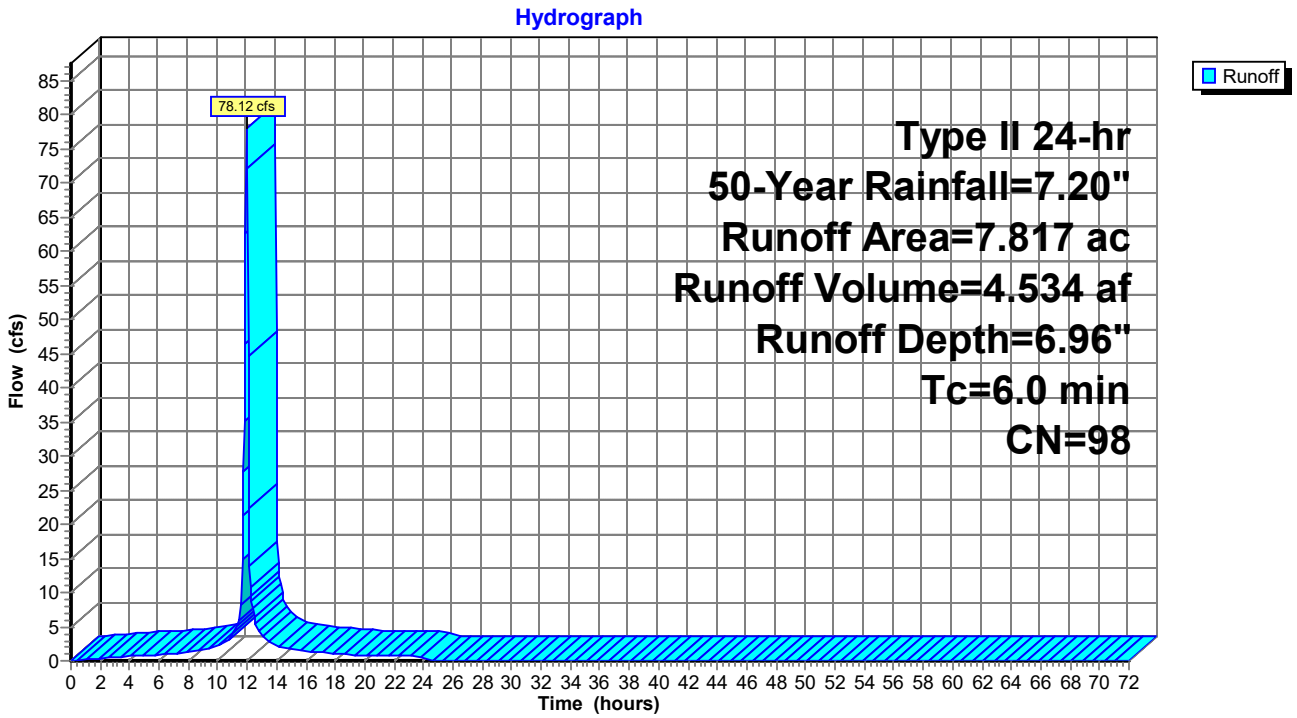
Runoff = 78.12 cfs @ 11.96 hrs, Volume= 4.534 af, Depth= 6.96"
Routed to Pond 14P : seepage pit with chambers #5F

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=7.20"

Area (ac)	CN	Description
7.808	98	Paved parking & roofs
0.009	74	>75% Grass cover, Good, HSG C
7.817	98	Weighted Average
0.009		0.12% Pervious Area
7.808		99.88% Impervious Area

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

Subcatchment 20S: SEEPAGE BED #5F (BMP 6)



Summary for Subcatchment 22S: SUB BASIN-5A (BMP 8)

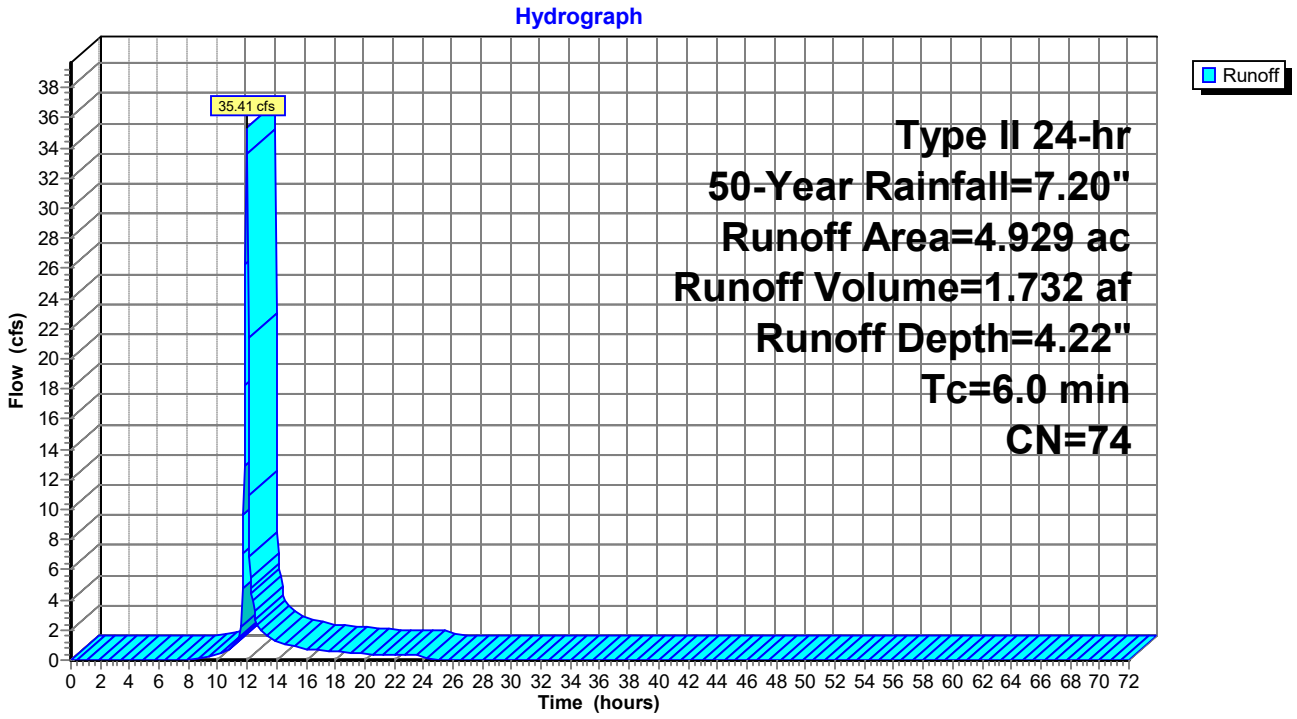
Runoff = 35.41 cfs @ 11.97 hrs, Volume= 1.732 af, Depth= 4.22"
Routed to Pond 8P : BIO-RETENTION BASIN #5A (POI 001)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=7.20"

Area (ac)	CN	Description
1.186	61	>75% Grass cover, Good, HSG B
3.048	74	>75% Grass cover, Good, HSG C
0.695	98	Paved parking & roofs
4.929	74	Weighted Average
4.234		85.90% Pervious Area
0.695		14.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6 minute min**

Subcatchment 22S: SUB BASIN-5A (BMP 8)



Summary for Subcatchment 24S: bio-retention basin #3b(BMP #12)

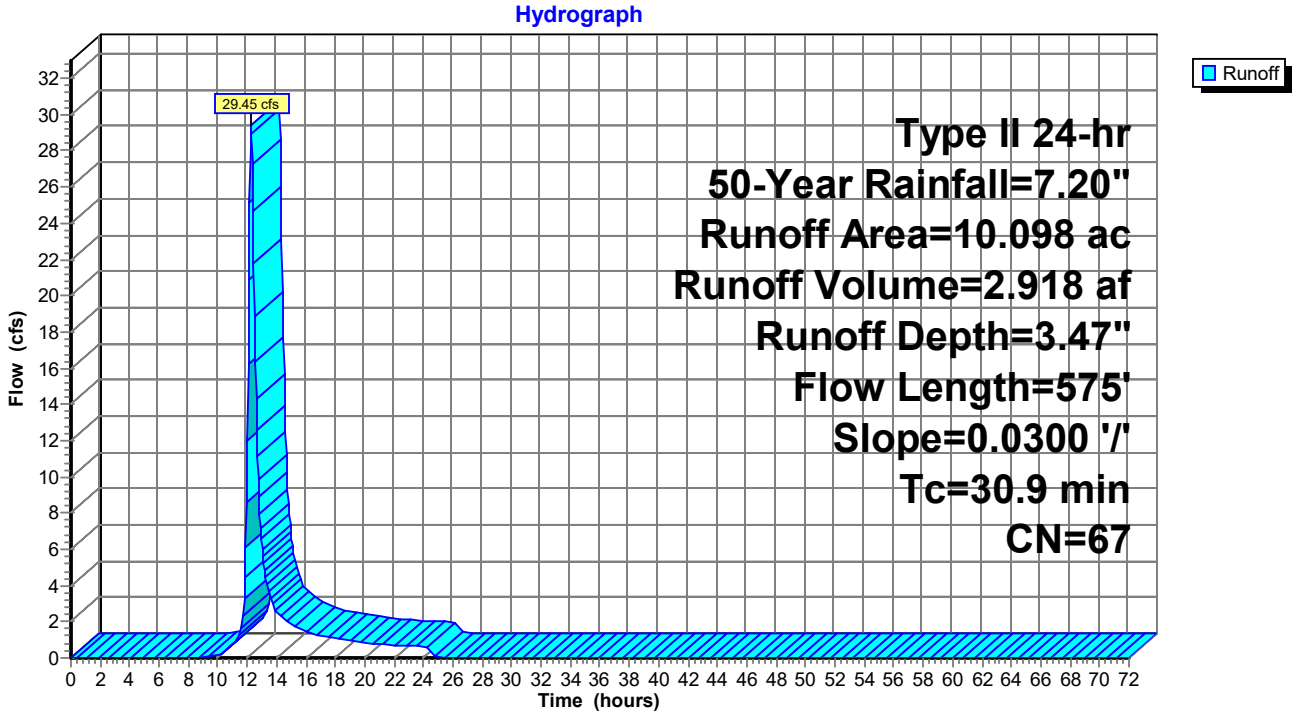
Runoff = 29.45 cfs @ 12.26 hrs, Volume= 2.918 af, Depth= 3.47"
Routed to Pond 26P : bio-retention basin #3b

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=7.20"

	Area (ac)	CN	Description
	2.349	98	Paved parking & roofs
	1.017	58	Meadow, non-grazed, HSG B
	0.574	71	Meadow, non-grazed, HSG C
	3.499	61	>75% Grass cover, Good, HSG B
	0.126	74	>75% Grass cover, Good, HSG C
*	1.025	40	Woods, Good, HSG A
*	0.745	40	>75% Grass cover, Good, HSG A
	0.763	74	>75% Grass cover, Good, HSG C
	10.098	67	Weighted Average
	7.749		76.74% Pervious Area
	2.349		23.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	150	0.0300	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.23"
5.8	425	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
30.9	575	Total			

Subcatchment 24S: bio-retention basin #3b(BMP #12)



Summary for Subcatchment 25S: BIO-RETENTION BASIN #6A (BMP 5)

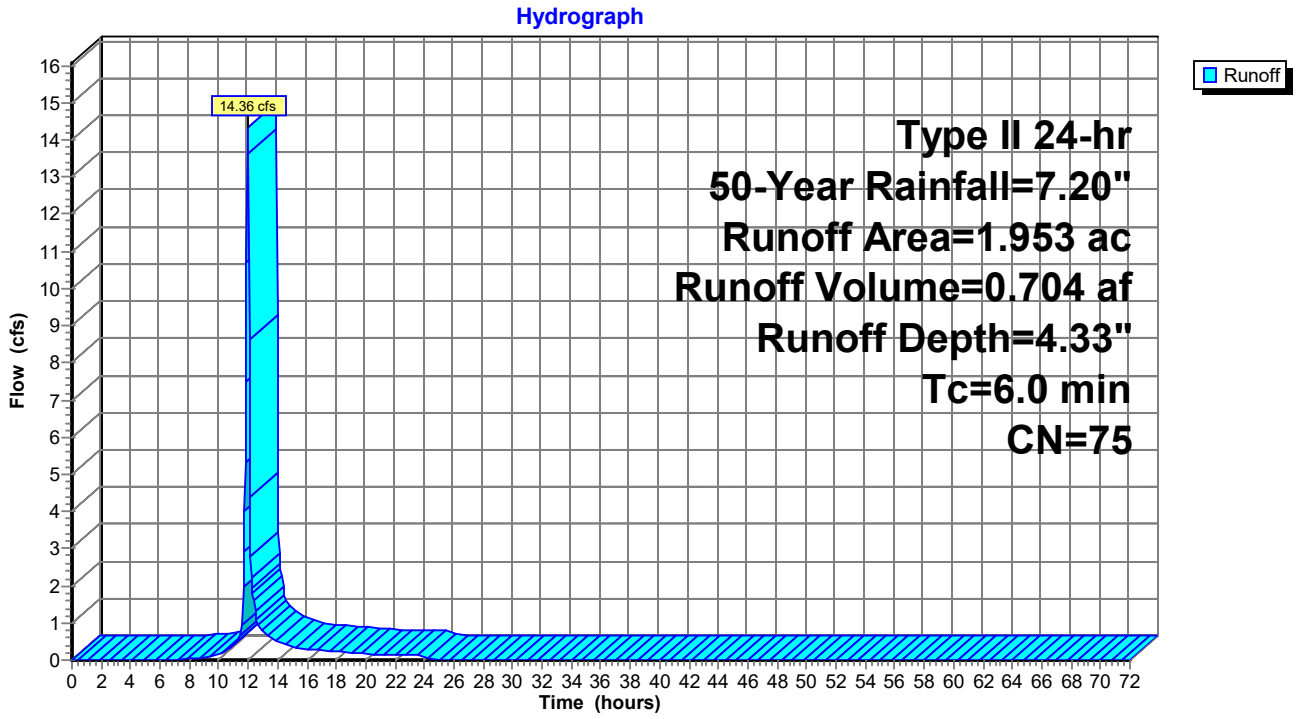
Runoff = 14.36 cfs @ 11.97 hrs, Volume= 0.704 af, Depth= 4.33"
Routed to Pond 24P : bio-retention basin #6a

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=7.20"

	Area (ac)	CN	Description
	1.119	98	Paved parking & roofs
*	0.665	40	>75% Grass cover, Good, HSG A
	0.169	61	>75% Grass cover, Good, HSG B
	1.953	75	Weighted Average
	0.834		42.70% Pervious Area
	1.119		57.30% Impervious Area

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

Subcatchment 25S: BIO-RETENTION BASIN #6A (BMP 5)



Summary for Subcatchment 29S: SWL #1

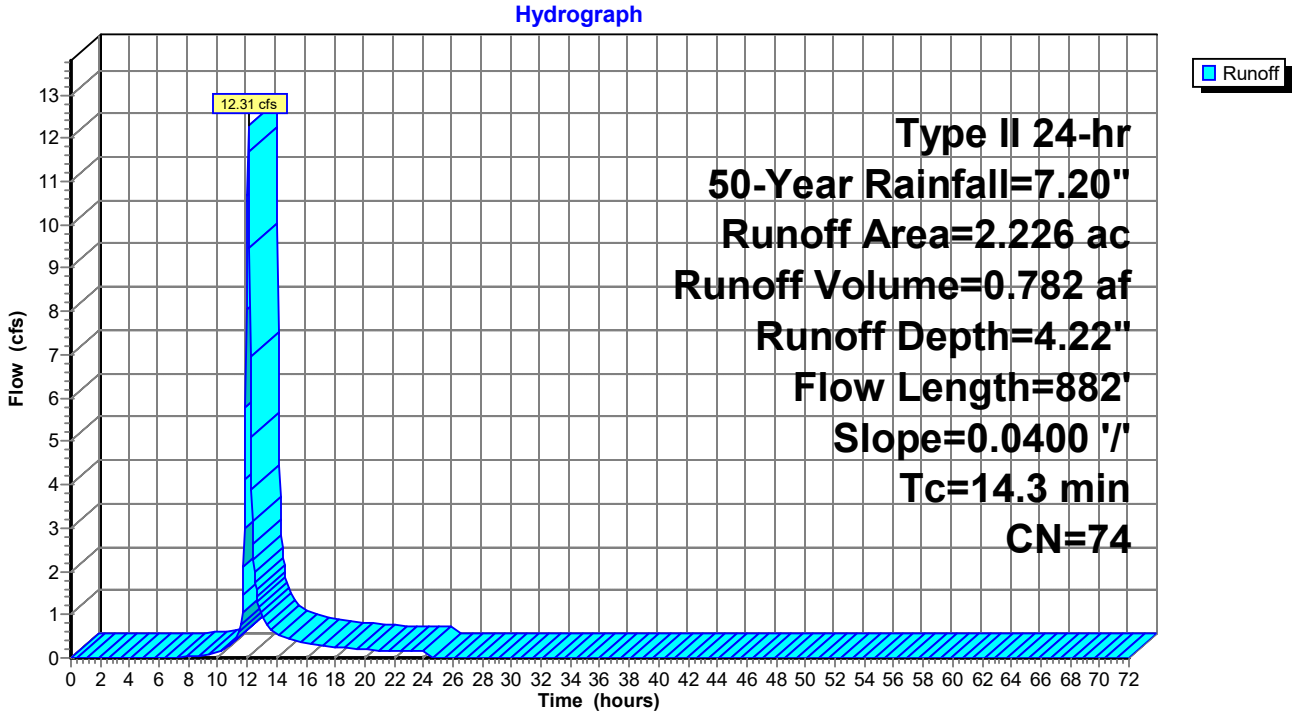
Runoff = 12.31 cfs @ 12.06 hrs, Volume= 0.782 af, Depth= 4.22"
Routed to Reach 26R : SWL-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=7.20"

Area (ac)	CN	Description
0.765	98	Paved parking & roofs
1.461	61	>75% Grass cover, Good, HSG B
2.226	74	Weighted Average
1.461		65.63% Pervious Area
0.765		34.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	150	0.0400	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.23"
4.1	732	0.0400	3.00		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
14.3	882	Total			

Subcatchment 29S: SWL #1



Summary for Subcatchment 30S: SWL #2

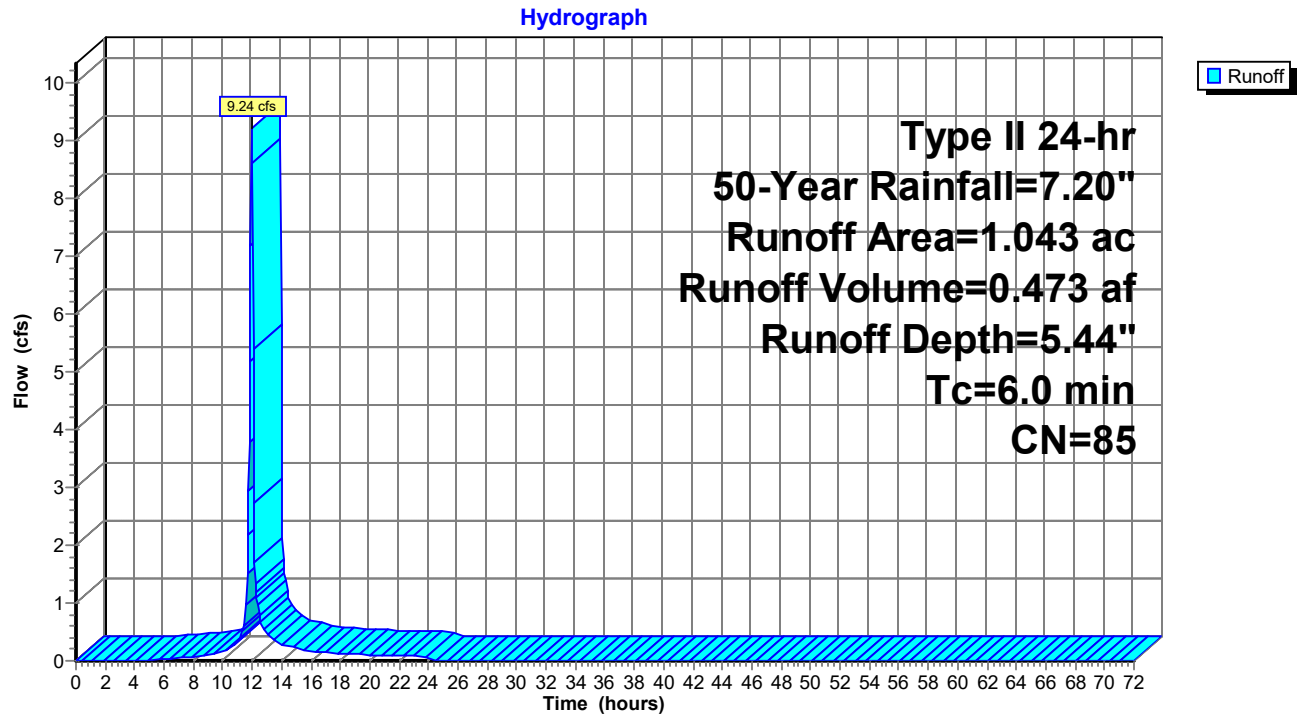
Runoff = 9.24 cfs @ 11.96 hrs, Volume= 0.473 af, Depth= 5.44"
Routed to Reach 27R : SWL-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=7.20"

	Area (ac)	CN	Description
	0.814	98	Paved parking & roofs
*	0.229	40	>75% Grass cover, Good, HSG A
	1.043	85	Weighted Average
	0.229		21.96% Pervious Area
	0.814		78.04% Impervious Area

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

Subcatchment 30S: SWL #2



Summary for Subcatchment 32S: SWL #3

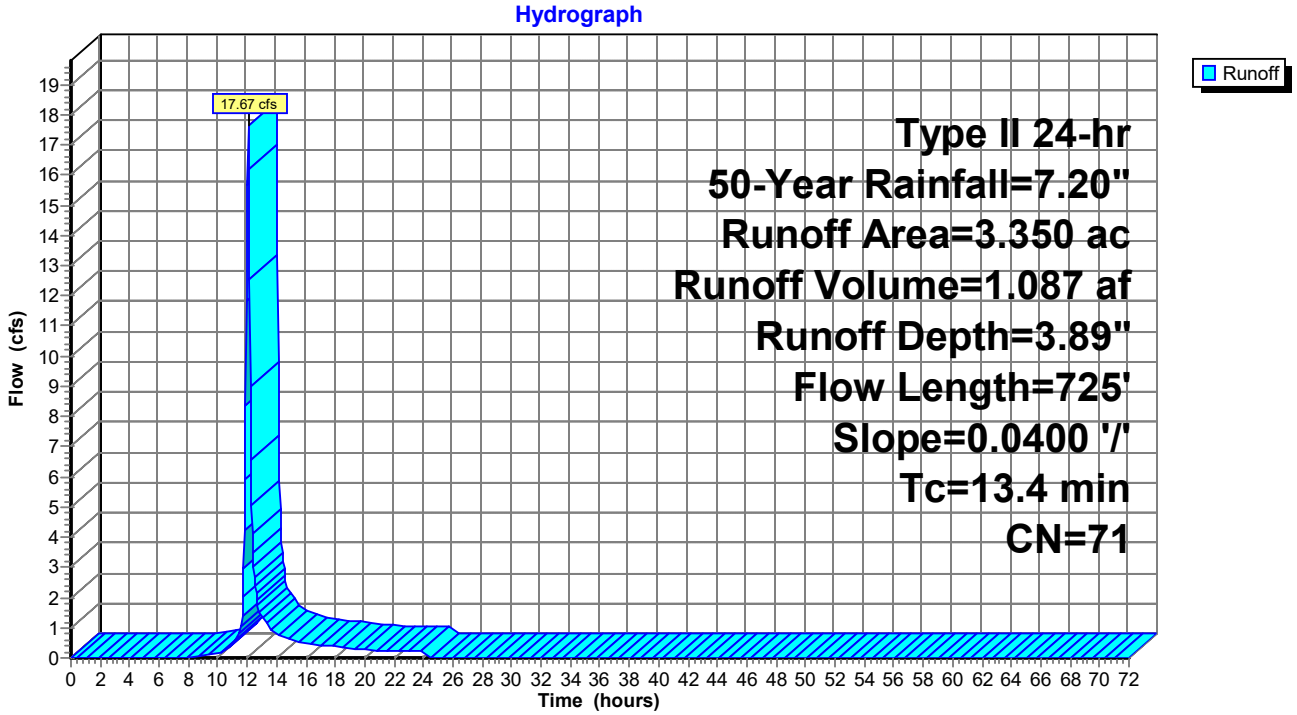
Runoff = 17.67 cfs @ 12.05 hrs, Volume= 1.087 af, Depth= 3.89"
Routed to Reach 28R : SWL-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=7.20"

Area (ac)	CN	Description
0.930	98	Paved parking & roofs
2.420	61	>75% Grass cover, Good, HSG B
3.350	71	Weighted Average
2.420		72.24% Pervious Area
0.930		27.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	150	0.0400	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.23"
3.2	575	0.0400	3.00		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
13.4	725	Total			

Subcatchment 32S: SWL #3



Summary for Subcatchment 33S: BIO-RETENTION BASIN #1A (BMP#1)

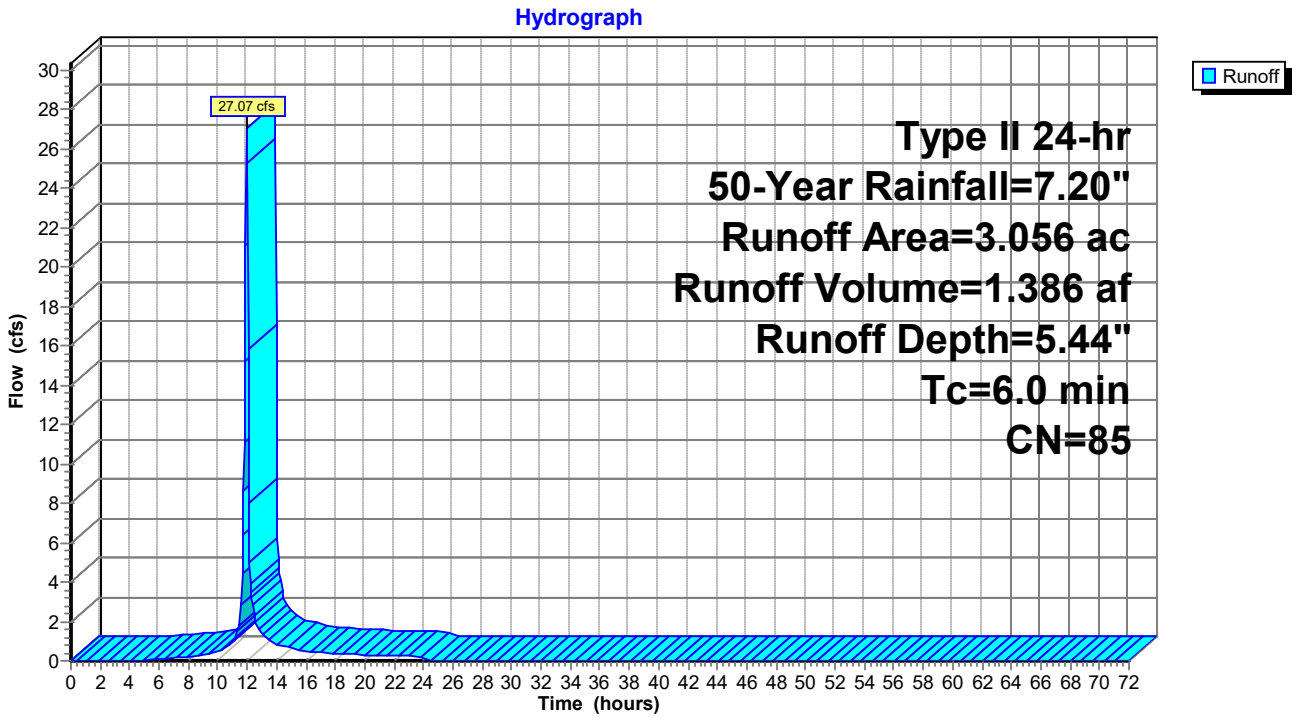
Runoff = 27.07 cfs @ 11.96 hrs, Volume= 1.386 af, Depth= 5.44"
Routed to Pond 29P : bio-retention basin #1A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=7.20"

Area (ac)	CN	Description
1.978	98	Paved parking & roofs
1.078	61	>75% Grass cover, Good, HSG B
3.056	85	Weighted Average
1.078		35.27% Pervious Area
1.978		64.73% Impervious Area

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

Subcatchment 33S: BIO-RETENTION BASIN #1A (BMP#1)



Summary for Subcatchment 34S: SWL #4

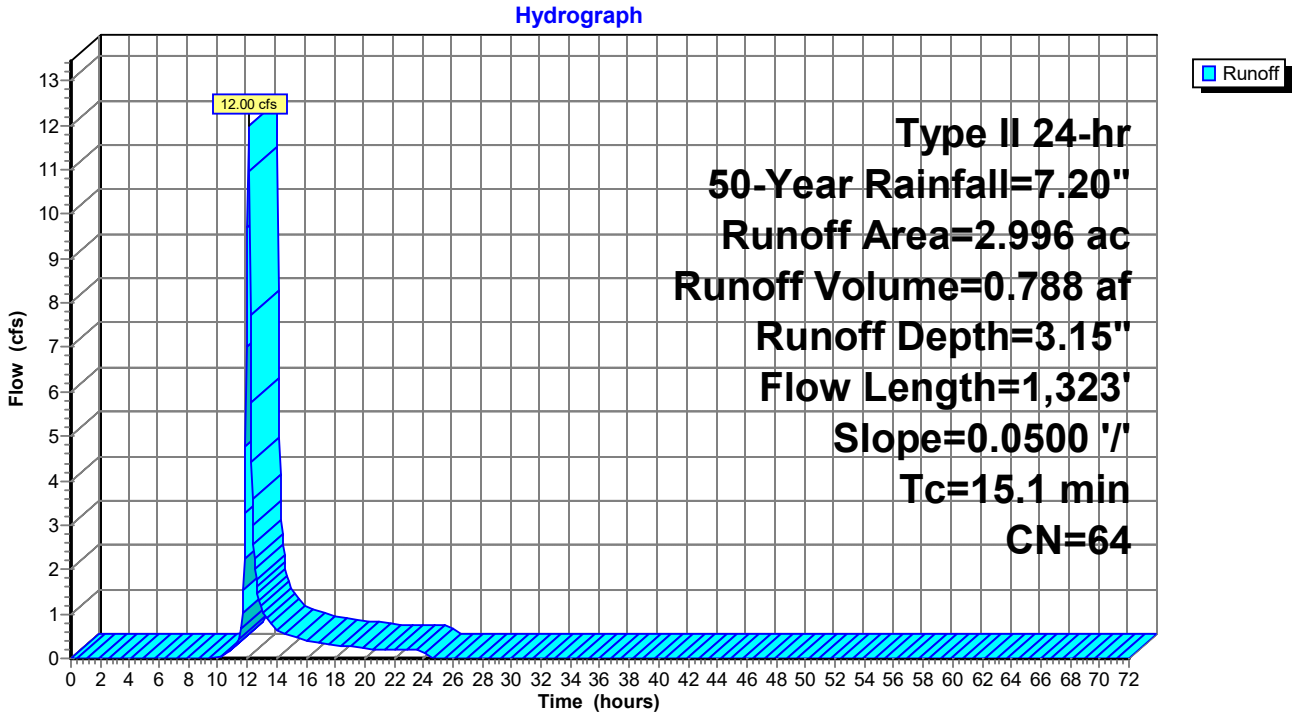
Runoff = 12.00 cfs @ 12.08 hrs, Volume= 0.788 af, Depth= 3.15"
Routed to Reach 23R : SWL-4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=7.20"

Area (ac)	CN	Description
2.296	61	>75% Grass cover, Good, HSG B
0.700	74	>75% Grass cover, Good, HSG C
2.996	64	Weighted Average
2.996		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	150	0.0500	0.27		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.23"
5.8	1,173	0.0500	3.35		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
15.1	1,323	Total			

Subcatchment 34S: SWL #4



Summary for Subcatchment 37S: BIO-RETENTION BASIN #2A (BMP #2)

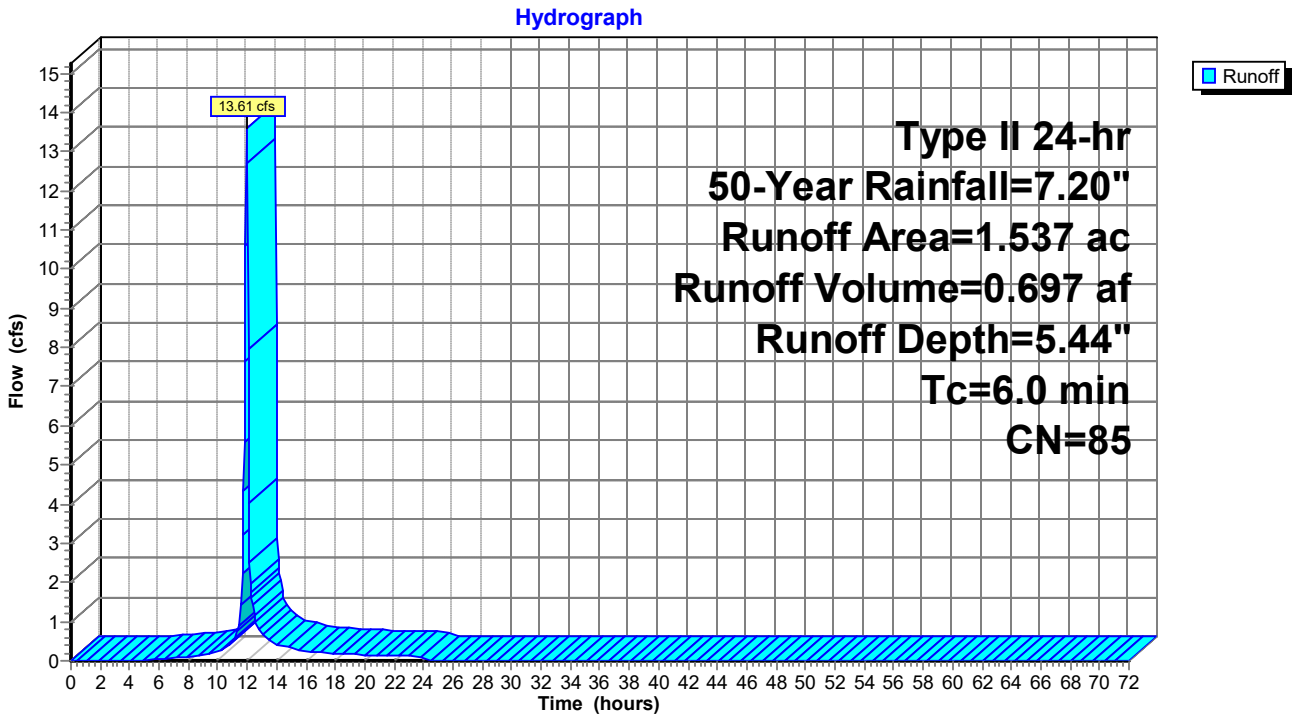
Runoff = 13.61 cfs @ 11.96 hrs, Volume= 0.697 af, Depth= 5.44"
Routed to Pond 38P : bio-retention basin #2A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=7.20"

Area (ac)	CN	Description
1.008	98	Paved parking & roofs
0.529	61	>75% Grass cover, Good, HSG B
1.537	85	Weighted Average
0.529		34.42% Pervious Area
1.008		65.58% Impervious Area

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

Subcatchment 37S: BIO-RETENTION BASIN #2A (BMP #2)



Summary for Subcatchment 41S: BIO-RETENTION BASIN #2C (BMP #3)

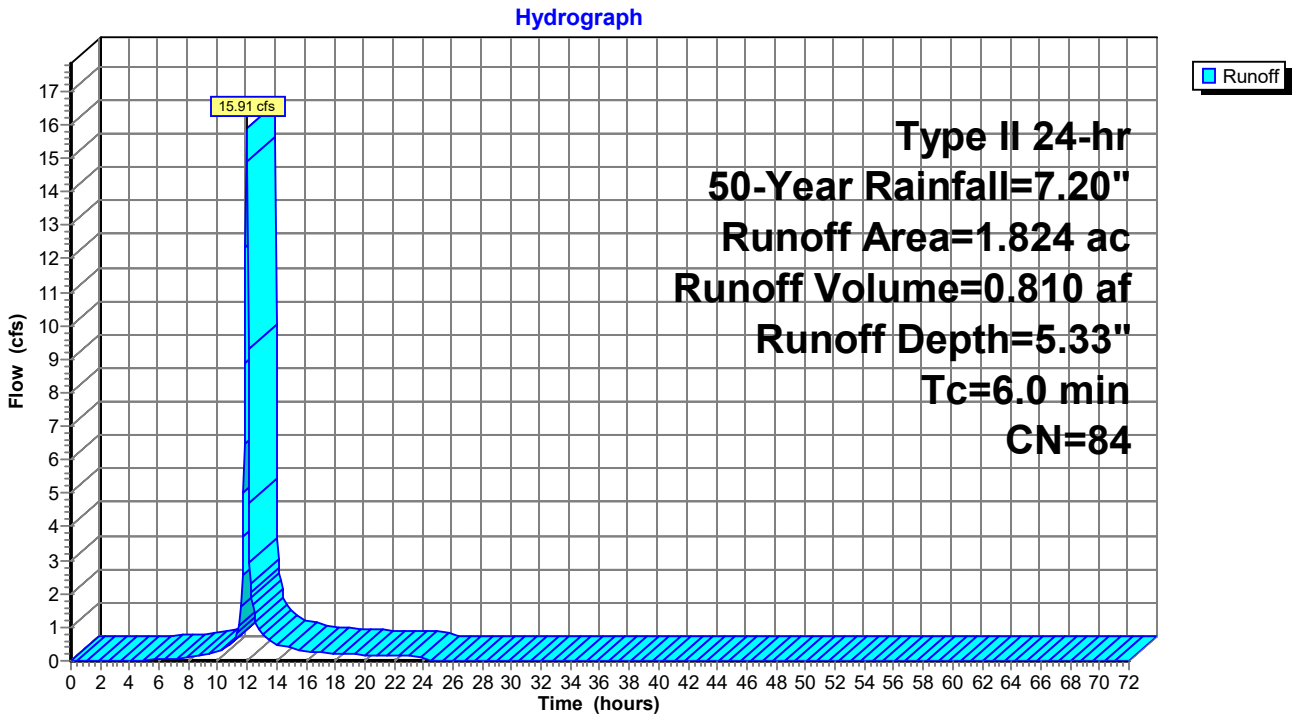
Runoff = 15.91 cfs @ 11.97 hrs, Volume= 0.810 af, Depth= 5.33"
Routed to Pond 40P : bio-retention basin #2C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=7.20"

Area (ac)	CN	Description
1.120	98	Paved parking & roofs
0.704	61	>75% Grass cover, Good, HSG B
1.824	84	Weighted Average
0.704		38.60% Pervious Area
1.120		61.40% Impervious Area

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

Subcatchment 41S: BIO-RETENTION BASIN #2C (BMP #3)



Summary for Subcatchment 42S: BIO-RETENTION BASIN #2B (BMP #4)

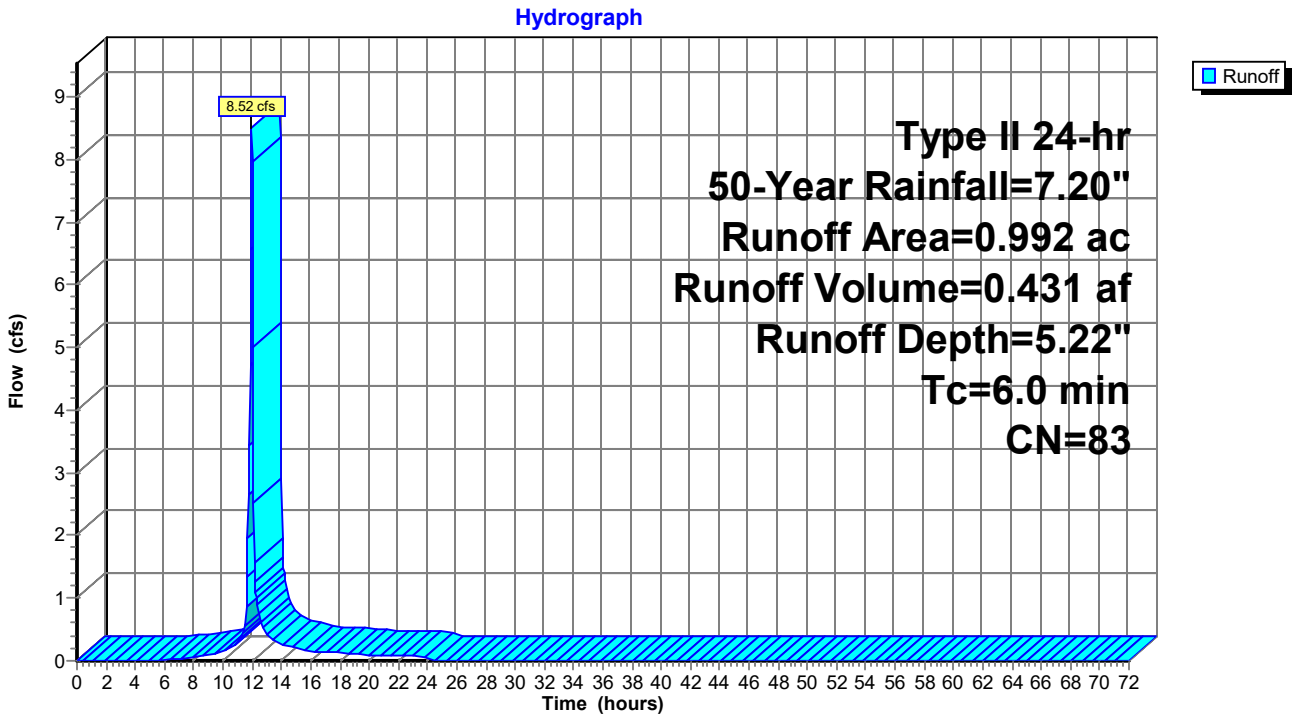
Runoff = 8.52 cfs @ 11.97 hrs, Volume= 0.431 af, Depth= 5.22"
Routed to Pond 39P : bio-retention basin #2B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=7.20"

Area (ac)	CN	Description
0.598	98	Paved parking & roofs
0.394	61	>75% Grass cover, Good, HSG B
0.992	83	Weighted Average
0.394		39.72% Pervious Area
0.598		60.28% Impervious Area

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

Subcatchment 42S: BIO-RETENTION BASIN #2B (BMP #4)



Summary for Subcatchment 47S: UNDETAINED-PROPOSED 001

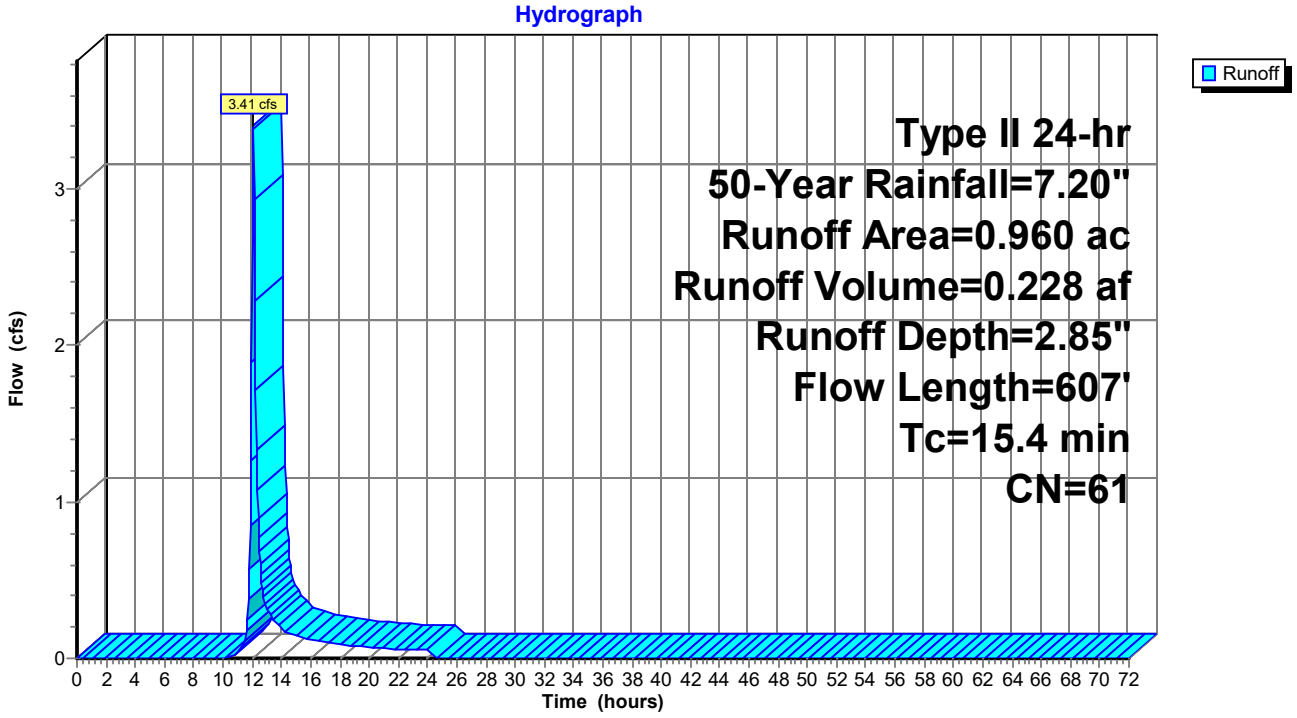
Runoff = 3.41 cfs @ 12.08 hrs, Volume= 0.228 af, Depth= 2.85"
Routed to Link 37L : Discharge 001

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=7.20"

Area (ac)	CN	Description
0.960	61	>75% Grass cover, Good, HSG B
0.960		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	150	0.0800	0.32		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.23"
7.7	457	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.4	607	Total			

Subcatchment 47S: UNDETAINED-PROPOSED 001

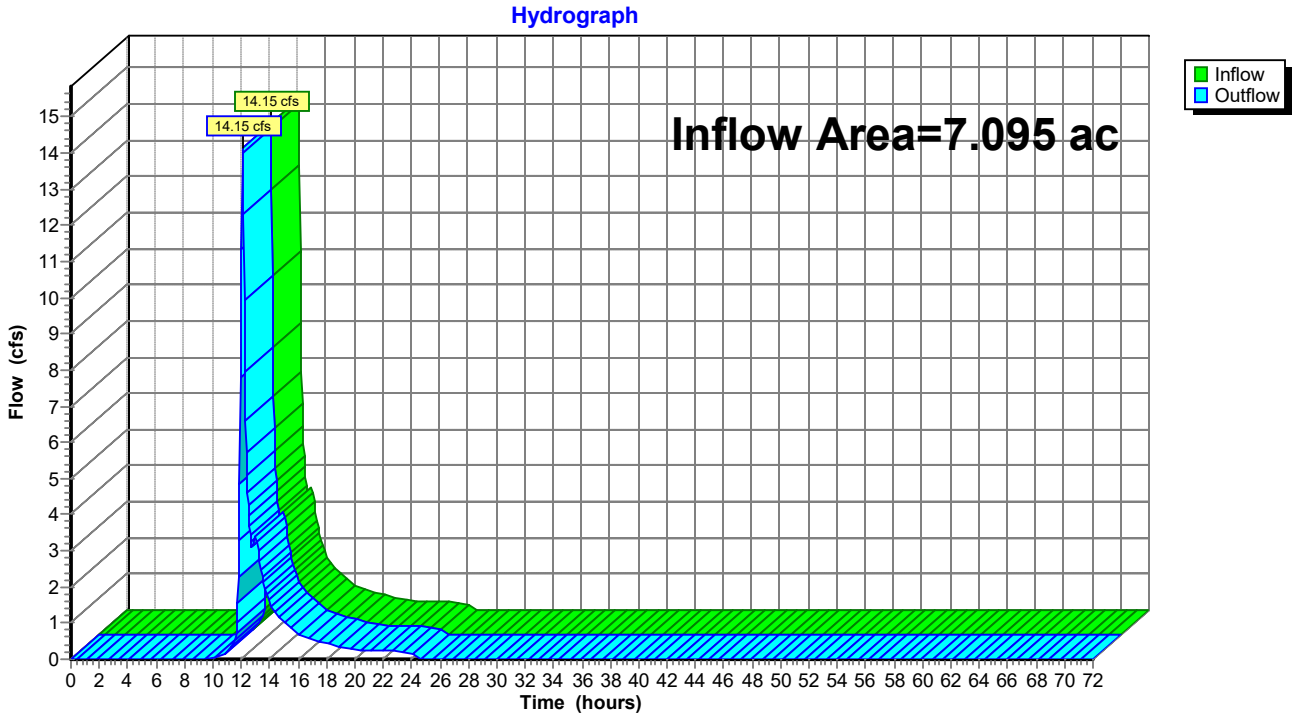


Summary for Reach 23R: SWL-4

Inflow Area = 7.095 ac, 18.49% Impervious, Inflow Depth = 2.10" for 50-Year event
Inflow = 14.15 cfs @ 12.08 hrs, Volume= 1.239 af
Outflow = 14.15 cfs @ 12.08 hrs, Volume= 1.239 af, Atten= 0%, Lag= 0.0 min
Routed to Link 37L : Discharge 001

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach 23R: SWL-4

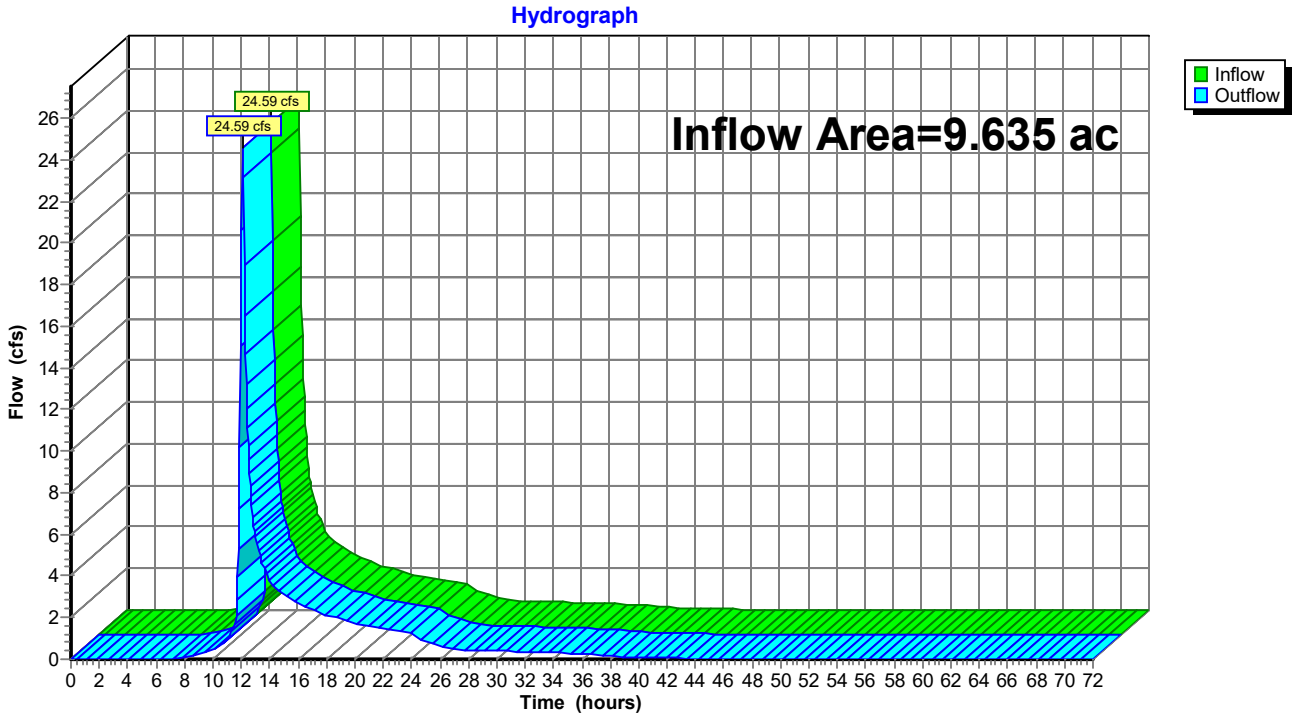


Summary for Reach 26R: SWL-1

Inflow Area = 9.635 ac, 56.76% Impervious, Inflow Depth > 5.10" for 50-Year event
Inflow = 24.59 cfs @ 12.08 hrs, Volume= 4.094 af
Outflow = 24.59 cfs @ 12.08 hrs, Volume= 4.094 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 28R : SWL-3

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach 26R: SWL-1

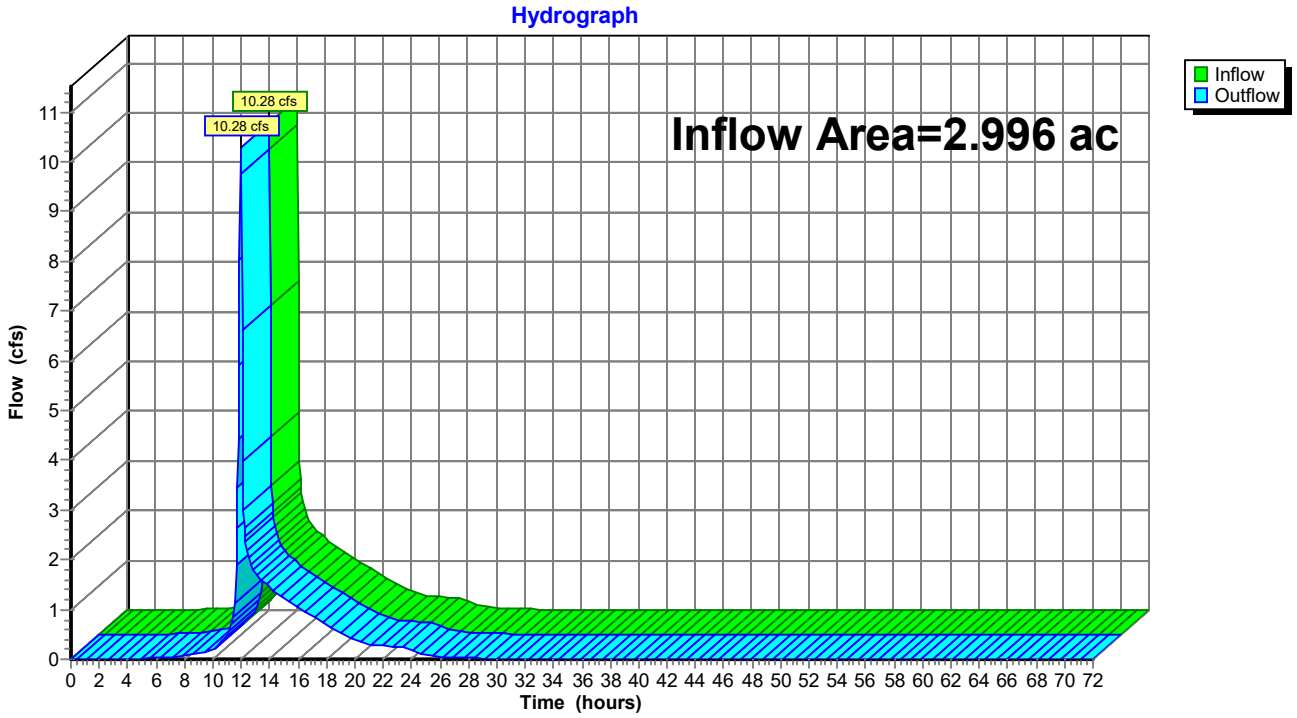


Summary for Reach 27R: SWL-2

Inflow Area = 2.996 ac, 64.52% Impervious, Inflow Depth = 4.71" for 50-Year event
Inflow = 10.28 cfs @ 11.97 hrs, Volume= 1.177 af
Outflow = 10.28 cfs @ 11.97 hrs, Volume= 1.177 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 28R : SWL-3

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach 27R: SWL-2

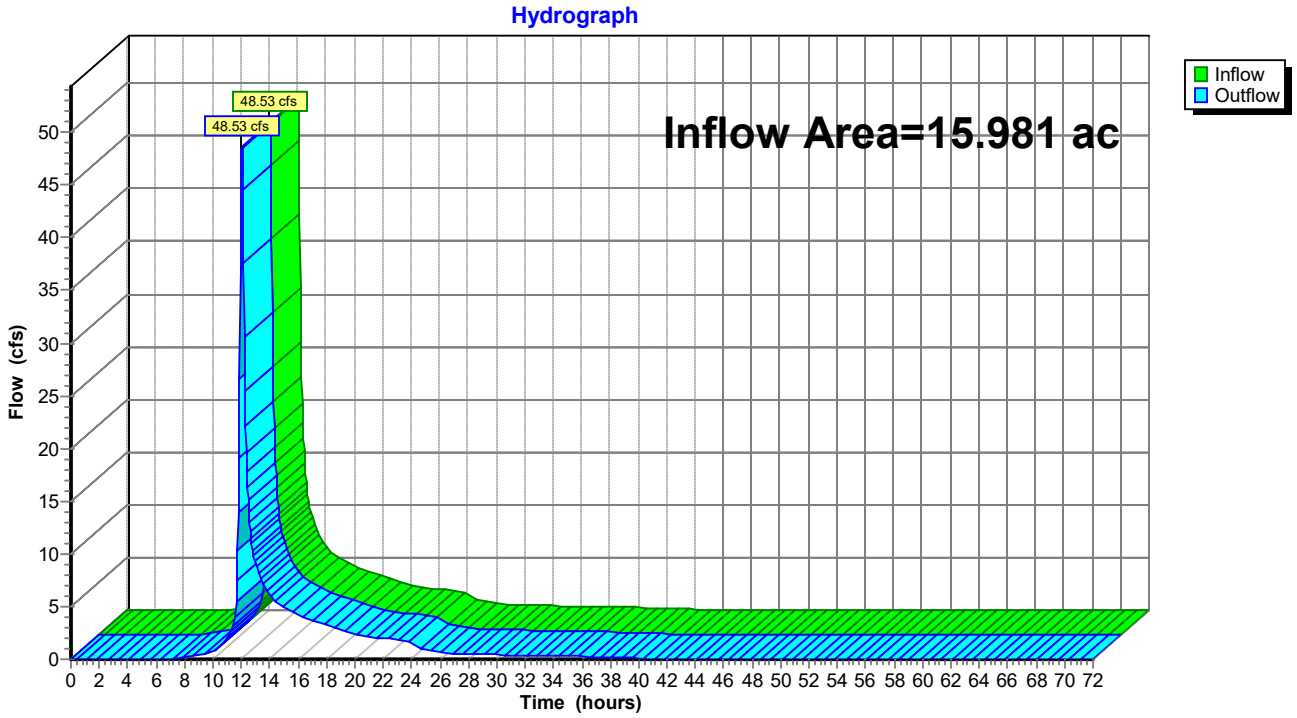


Summary for Reach 28R: SWL-3

Inflow Area = 15.981 ac, 52.14% Impervious, Inflow Depth > 4.77" for 50-Year event
Inflow = 48.53 cfs @ 12.04 hrs, Volume= 6.358 af
Outflow = 48.53 cfs @ 12.04 hrs, Volume= 6.358 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 8P : BIO-RETENTION BASIN #5A (POI 001)

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach 28R: SWL-3



Summary for Pond 8P: BIO-RETENTION BASIN #5A (POI 001)

Inflow Area = 34.811 ac, 65.84% Impervious, Inflow Depth = 3.16" for 50-Year event
Inflow = 79.99 cfs @ 12.00 hrs, Volume= 9.174 af
Outflow = 11.64 cfs @ 13.56 hrs, Volume= 9.174 af, Atten= 85%, Lag= 93.6 min
Discarded = 1.57 cfs @ 13.56 hrs, Volume= 4.607 af
Primary = 10.07 cfs @ 13.56 hrs, Volume= 4.567 af
Routed to Link 37L : Discharge 001

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,869.70' @ 13.56 hrs Surf.Area= 86,796 sf Storage= 141,373 cf

Plug-Flow detention time= 399.0 min calculated for 9.167 af (100% of inflow)
Center-of-Mass det. time= 398.7 min (1,333.3 - 934.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,868.00'	560,097 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

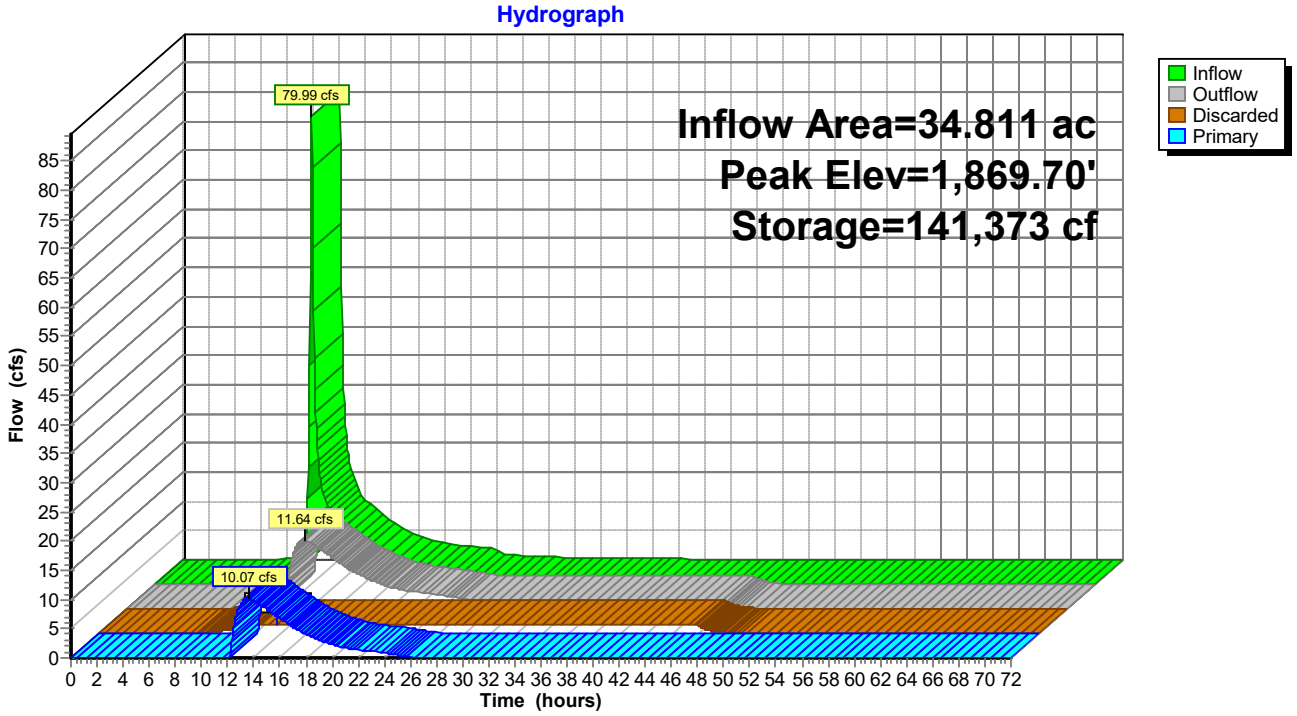
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,868.00	79,525	0	0
1,869.00	83,329	81,427	81,427
1,870.00	88,249	85,789	167,216
1,872.00	98,164	186,413	353,629
1,874.00	108,304	206,468	560,097

Device	Routing	Invert	Outlet Devices
#1	Primary	1,865.00'	**42.0" Round Culvert** L= 30.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 1,865.00' / 1,864.50' S= 0.0167 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf
#2	Device 1	1,869.10'	**20.0" W x 12.0" H Vert. Orifice/Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,870.50'	**72.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Discarded	1,868.00'	**0.780 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=1.57 cfs @ 13.56 hrs HW=1,869.70' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 1.57 cfs)

Primary OutFlow Max=10.06 cfs @ 13.56 hrs HW=1,869.70' (Free Discharge)
└**1=Culvert** (Passes 10.06 cfs of 77.84 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 10.06 cfs @ 2.50 fps)
└**3=Orifice/Grate** (Controls 0.00 cfs)

Pond 8P: BIO-RETENTION BASIN #5A (POI 001)



Summary for Pond 9P: seepage pit with chambers #5A

Inflow Area = 6.084 ac,100.00% Impervious, Inflow Depth = 6.96" for 50-Year event
Inflow = 60.80 cfs @ 11.96 hrs, Volume= 3.529 af
Outflow = 2.87 cfs @ 13.01 hrs, Volume= 3.529 af, Atten= 95%, Lag= 63.1 min
Discarded = 1.28 cfs @ 9.05 hrs, Volume= 3.000 af
Primary = 1.60 cfs @ 13.01 hrs, Volume= 0.530 af
Routed to Pond 8P : BIO-RETENTION BASIN #5A (POI 001)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,878.50' @ 13.01 hrs Surf.Area= 42,456 sf Storage= 75,688 cf

Plug-Flow detention time= 373.0 min calculated for 3.527 af (100% of inflow)
Center-of-Mass det. time= 373.2 min (1,111.5 - 738.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,876.00'	40,538 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 169,824 cf Overall - 68,478 cf Embedded = 101,346 cf x 40.0% Voids
#2	1,876.50'	68,478 cf	**Cultec R-360HD** x 1862 Inside #1 Effective Size= 54.9"W x 36.0"H => 9.99 sf x 3.67'L = 36.6 cf Overall Size= 60.0"W x 36.0"H x 4.17'L with 0.50' Overlap 1862 Chambers in 19 Rows Cap Storage= 6.5 cf x 2 x 19 rows = 245.5 cf
		109,016 cf	Total Available Storage

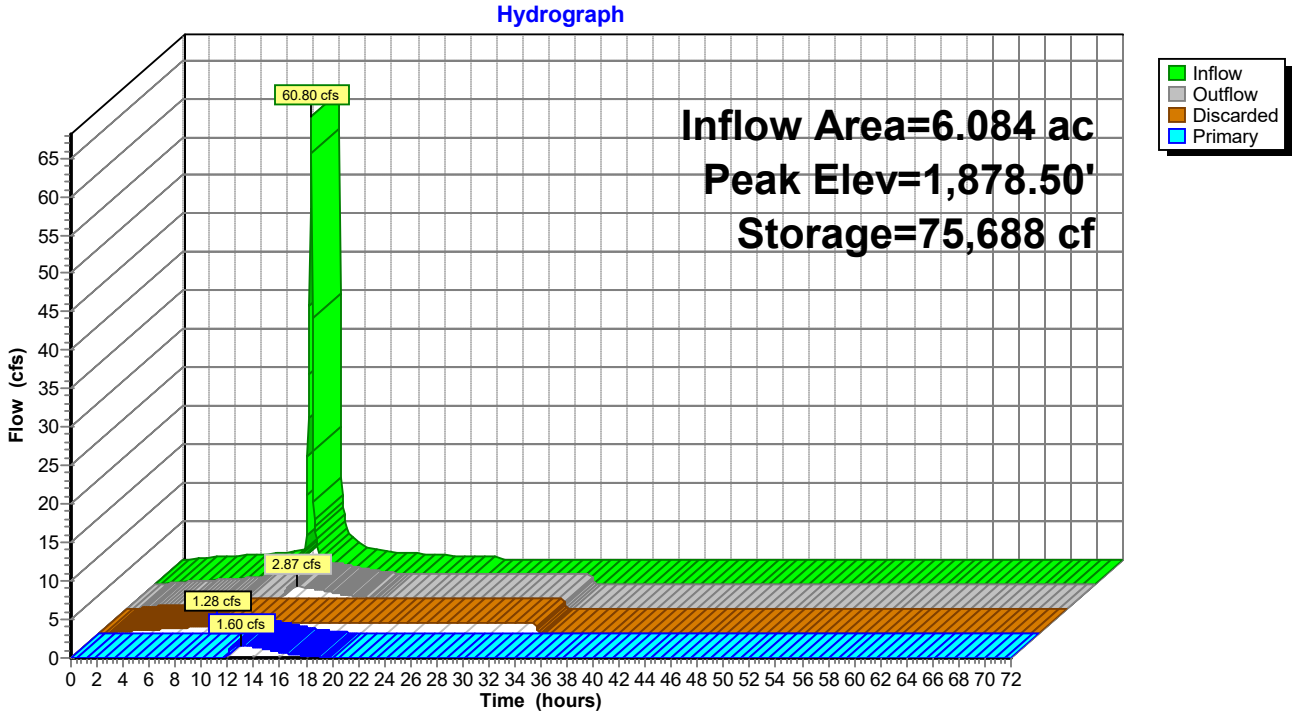
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,876.00	42,456	0	0
1,880.00	42,456	169,824	169,824

Device	Routing	Invert	Outlet Devices
#1	Primary	1,876.00'	**24.0" Round Culvert** L= 120.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,876.00' / 1,868.00' S= 0.0667 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,877.80'	**12.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	1,876.00'	**1.300 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=1.28 cfs @ 9.05 hrs HW=1,876.04' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 1.28 cfs)

Primary OutFlow Max=1.60 cfs @ 13.01 hrs HW=1,878.50' TW=1,869.56' (Fixed TW Elev= 1,869.56')
└**1=Culvert** (Passes 1.60 cfs of 16.36 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 1.60 cfs @ 3.19 fps)

Pond 9P: seepage pit with chambers #5A



Summary for Pond 13P: bio-retention basin #4a

Inflow Area = 2.695 ac, 0.00% Impervious, Inflow Depth = 2.75" for 50-Year event
Inflow = 7.21 cfs @ 12.18 hrs, Volume= 0.617 af
Outflow = 1.00 cfs @ 13.06 hrs, Volume= 0.617 af, Atten= 86%, Lag= 52.6 min
Discarded = 0.14 cfs @ 13.06 hrs, Volume= 0.454 af
Primary = 0.86 cfs @ 13.06 hrs, Volume= 0.163 af
Routed to Reach 23R : SWL-4

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,894.06' @ 13.06 hrs Surf.Area= 7,706 sf Storage= 13,651 cf

Plug-Flow detention time= 778.6 min calculated for 0.616 af (100% of inflow)
Center-of-Mass det. time= 779.4 min (1,644.2 - 864.8)

Volume	Invert	Avail.Storage	Storage Description
#1	1,892.00'	30,734 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

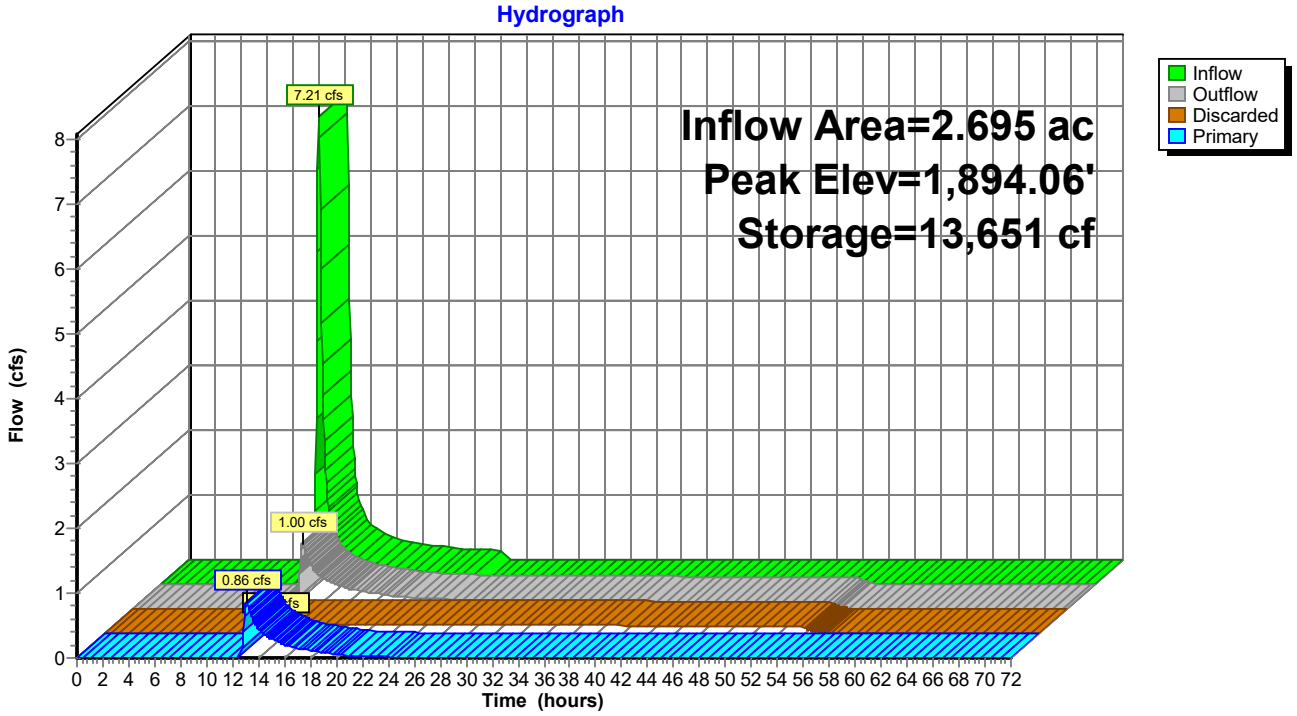
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,892.00	5,542	0	0
1,894.00	7,636	13,178	13,178
1,896.00	9,920	17,556	30,734

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,892.00'	**0.800 in/hr Exfiltration over Surface area**
#2	Primary	1,894.00'	**20.0' long + 3.0 '/' SideZ x 20.0' 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=0.14 cfs @ 13.06 hrs HW=1,894.06' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Primary OutFlow Max=0.82 cfs @ 13.06 hrs HW=1,894.06' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.82 cfs @ 0.66 fps)

Pond 13P: bio-retention basin #4a



Summary for Pond 14P: seepage pit with chambers #5F

Inflow Area = 7.817 ac, 99.88% Impervious, Inflow Depth = 6.96" for 50-Year event
Inflow = 78.12 cfs @ 11.96 hrs, Volume= 4.534 af
Outflow = 3.99 cfs @ 12.91 hrs, Volume= 4.534 af, Atten= 95%, Lag= 57.1 min
Discarded = 2.24 cfs @ 10.20 hrs, Volume= 3.979 af
Primary = 1.75 cfs @ 12.91 hrs, Volume= 0.555 af
Routed to Pond 8P : BIO-RETENTION BASIN #5A (POI 001)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,870.79' @ 12.91 hrs Surf.Area= 56,925 sf Storage= 90,722 cf

Plug-Flow detention time= 255.8 min calculated for 4.531 af (100% of inflow)
Center-of-Mass det. time= 255.8 min (994.1 - 738.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,868.50'	56,160 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 227,700 cf Overall - 87,300 cf Embedded = 140,400 cf x 40.0% Voids
#2	1,869.00'	87,300 cf	**Cultec R-360HD** x 2376 Inside #1 Effective Size= 54.9"W x 36.0"H => 9.99 sf x 3.67'L = 36.6 cf Overall Size= 60.0"W x 36.0"H x 4.17'L with 0.50' Overlap 2376 Chambers in 18 Rows Cap Storage= 6.5 cf x 2 x 18 rows = 232.6 cf
		143,460 cf	Total Available Storage

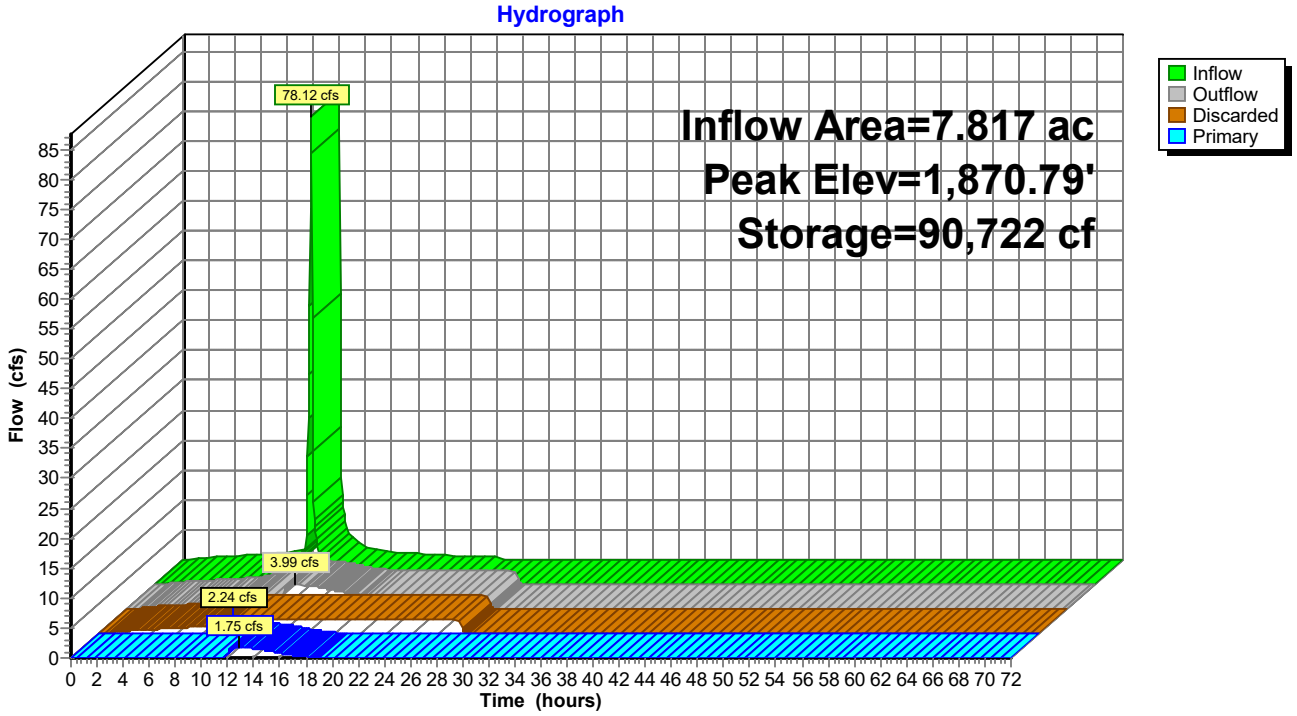
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,868.50	56,925	0	0
1,872.50	56,925	227,700	227,700

Device	Routing	Invert	Outlet Devices
#1	Primary	1,869.50'	**24.0" Round Culvert** L= 60.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,869.50' / 1,868.00' S= 0.0250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,870.00'	**12.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	1,868.50'	**1.700 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=2.24 cfs @ 10.20 hrs HW=1,868.54' (Free Discharge)
↑**3=Exfiltration** (Exfiltration Controls 2.24 cfs)

Primary OutFlow Max=1.75 cfs @ 12.91 hrs HW=1,870.79' TW=1,869.56' (Fixed TW Elev= 1,869.56')
↑**1=Culvert** (Passes 1.75 cfs of 7.29 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 1.75 cfs @ 3.50 fps)

Pond 14P: seepage pit with chambers #5F



Summary for Pond 15P: seepage pit with chambers #4b

Inflow Area = 1.404 ac, 93.45% Impervious, Inflow Depth = 6.72" for 50-Year event
Inflow = 13.92 cfs @ 11.96 hrs, Volume= 0.787 af
Outflow = 2.45 cfs @ 12.16 hrs, Volume= 0.787 af, Atten= 82%, Lag= 12.1 min
Discarded = 0.22 cfs @ 8.60 hrs, Volume= 0.498 af
Primary = 2.23 cfs @ 12.16 hrs, Volume= 0.288 af
Routed to Reach 23R : SWL-4

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,889.51' @ 12.16 hrs Surf.Area= 12,000 sf Storage= 15,212 cf

Plug-Flow detention time= 244.7 min calculated for 0.786 af (100% of inflow)
Center-of-Mass det. time= 244.9 min (995.3 - 750.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,887.00'	16,609 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 48,000 cf Overall - 6,477 cf Embedded = 41,523 cf x 40.0% Voids
#2	1,887.50'	6,477 cf	**Cultec R-360HD** x 175 Inside #1 Effective Size= 54.9"W x 36.0"H => 9.99 sf x 3.67'L = 36.6 cf Overall Size= 60.0"W x 36.0"H x 4.17'L with 0.50' Overlap 175 Chambers in 5 Rows Cap Storage= 6.5 cf x 2 x 5 rows = 64.6 cf
		23,086 cf	Total Available Storage

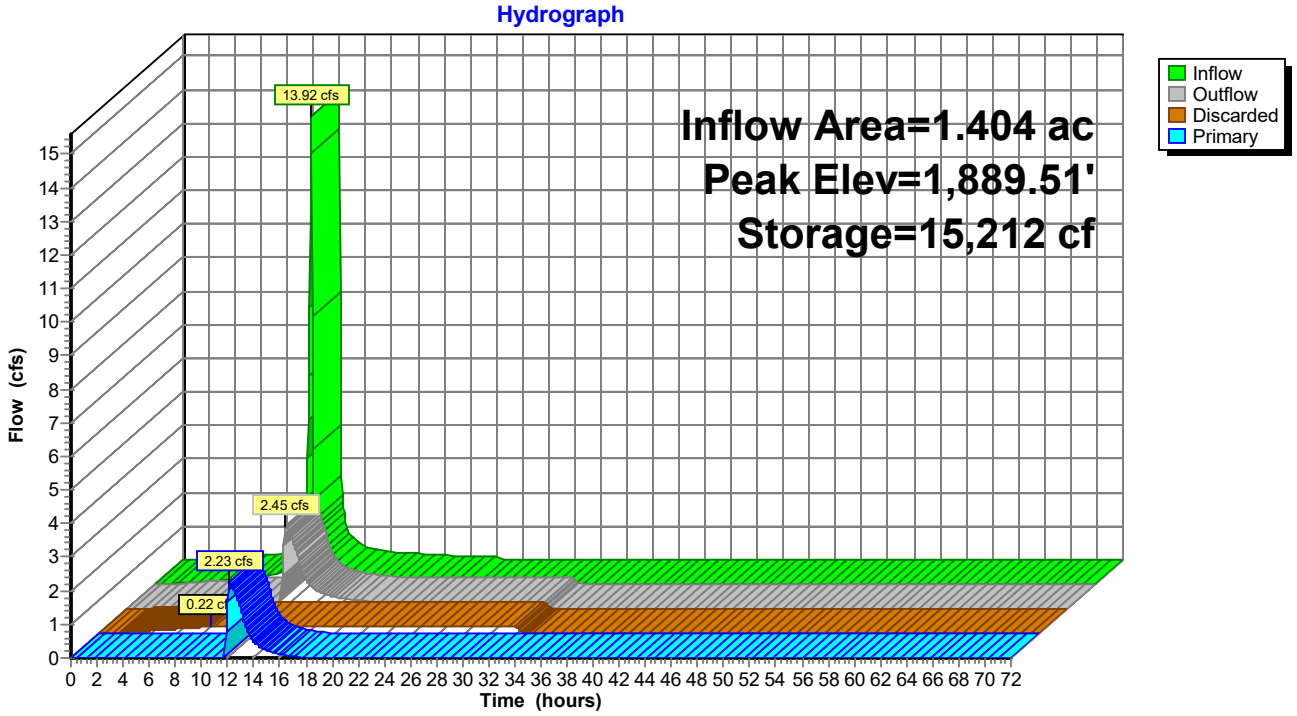
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,887.00	12,000	0	0
1,891.00	12,000	48,000	48,000

Device	Routing	Invert	Outlet Devices
#1	Primary	1,887.00'	**24.0" Round Culvert** L= 50.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,887.00' / 1,886.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,888.40'	**12.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	1,887.00'	**0.800 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.22 cfs @ 8.60 hrs HW=1,887.04' (Free Discharge)
↑**3=Exfiltration** (Exfiltration Controls 0.22 cfs)

Primary OutFlow Max=2.22 cfs @ 12.16 hrs HW=1,889.51' (Free Discharge)
↑**1=Culvert** (Passes 2.22 cfs of 16.40 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 2.22 cfs @ 4.45 fps)

Pond 15P: seepage pit with chambers #4b



Summary for Pond 16P: seepage pit with chambers #3A

Inflow Area = 4.089 ac, 57.74% Impervious, Inflow Depth = 4.77" for 50-Year event
Inflow = 32.68 cfs @ 11.97 hrs, Volume= 1.625 af
Outflow = 2.45 cfs @ 12.57 hrs, Volume= 1.625 af, Atten= 93%, Lag= 36.0 min
Discarded = 0.55 cfs @ 10.50 hrs, Volume= 1.026 af
Primary = 1.89 cfs @ 12.57 hrs, Volume= 0.599 af
Routed to Pond 26P : bio-retention basin #3b

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,902.88' @ 12.57 hrs Surf.Area= 26,640 sf Storage= 34,342 cf

Plug-Flow detention time= 277.9 min calculated for 1.623 af (100% of inflow)
Center-of-Mass det. time= 278.1 min (1,084.3 - 806.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,901.00'	26,373 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 106,560 cf Overall - 40,628 cf Embedded = 65,932 cf x 40.0% Voids
#2	1,901.50'	40,628 cf	**Cultec R-360HD** x 1102 Inside #1 Effective Size= 54.9"W x 36.0"H => 9.99 sf x 3.67'L = 36.6 cf Overall Size= 60.0"W x 36.0"H x 4.17'L with 0.50' Overlap 1102 Chambers in 19 Rows Cap Storage= 6.5 cf x 2 x 19 rows = 245.5 cf
		67,001 cf	Total Available Storage

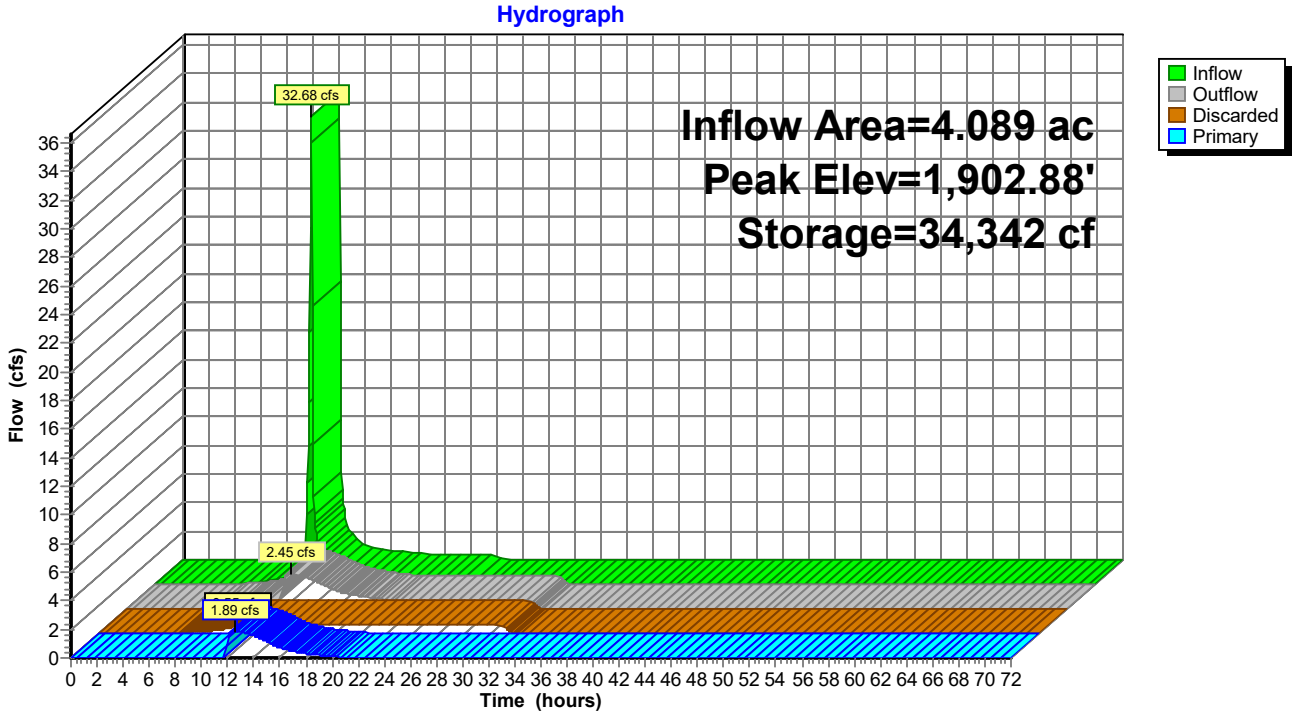
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,901.00	26,640	0	0
1,905.00	26,640	106,560	106,560

Device	Routing	Invert	Outlet Devices
#1	Primary	1,901.00'	**24.0" Round Culvert** L= 120.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,901.00' / 1,898.00' S= 0.0250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,902.00'	**12.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	1,901.00'	**0.900 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.55 cfs @ 10.50 hrs HW=1,901.04' (Free Discharge)
↑**3=Exfiltration** (Exfiltration Controls 0.55 cfs)

Primary OutFlow Max=1.89 cfs @ 12.57 hrs HW=1,902.88' (Free Discharge)
↑**1=Culvert** (Passes 1.89 cfs of 12.60 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 1.89 cfs @ 3.79 fps)

Pond 16P: seepage pit with chambers #3A



Summary for Pond 24P: bio-retention basin #6a

Inflow Area = 1.953 ac, 57.30% Impervious, Inflow Depth = 4.33" for 50-Year event
Inflow = 14.36 cfs @ 11.97 hrs, Volume= 0.704 af
Outflow = 1.31 cfs @ 12.48 hrs, Volume= 0.704 af, Atten= 91%, Lag= 30.7 min
Primary = 1.31 cfs @ 12.48 hrs, Volume= 0.704 af
Routed to Reach 27R : SWL-2

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,924.16' @ 12.48 hrs Surf.Area= 7,981 sf Storage= 14,640 cf

Plug-Flow detention time= 155.1 min calculated for 0.704 af (100% of inflow)
Center-of-Mass det. time= 154.8 min (970.2 - 815.4)

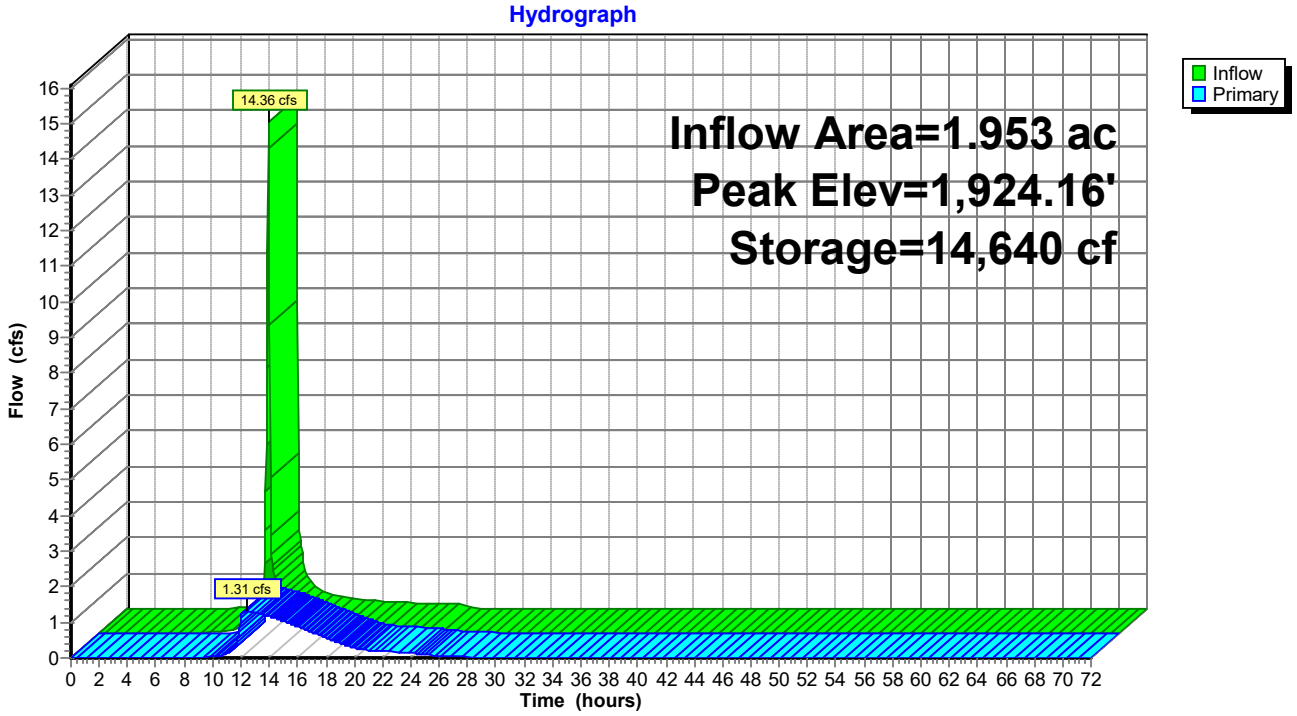
Volume	Invert	Avail.Storage	Storage Description
#1	1,922.00'	31,352 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,922.00	5,567	0	0
1,924.00	7,781	13,348	13,348
1,926.00	10,223	18,004	31,352

Device	Routing	Invert	Outlet Devices
#1	Primary	1,922.00'	**24.0" Round Culvert** L= 50.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,922.00' / 1,920.25' S= 0.0350 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,922.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,924.50'	**45.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.31 cfs @ 12.48 hrs HW=1,924.16' (Free Discharge)
└**1=Culvert** (Passes 1.31 cfs of 14.40 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 1.31 cfs @ 6.66 fps)
  └**3=Orifice/Grate** (Controls 0.00 cfs)

Pond 24P: bio-retention basin #6a



Summary for Pond 26P: bio-retention basin #3b

Inflow Area = 14.187 ac, 33.20% Impervious, Inflow Depth = 2.97" for 50-Year event
Inflow = 31.26 cfs @ 12.26 hrs, Volume= 3.517 af
Outflow = 1.29 cfs @ 18.43 hrs, Volume= 3.517 af, Atten= 96%, Lag= 370.3 min
Discarded = 0.89 cfs @ 18.43 hrs, Volume= 2.745 af
Primary = 0.40 cfs @ 18.43 hrs, Volume= 0.772 af
Routed to Link 37L : Discharge 001

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,894.85' @ 18.43 hrs Surf.Area= 31,977 sf Storage= 104,463 cf

Plug-Flow detention time= 937.6 min calculated for 3.514 af (100% of inflow)
Center-of-Mass det. time= 938.2 min (1,796.5 - 858.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,891.00'	218,379 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

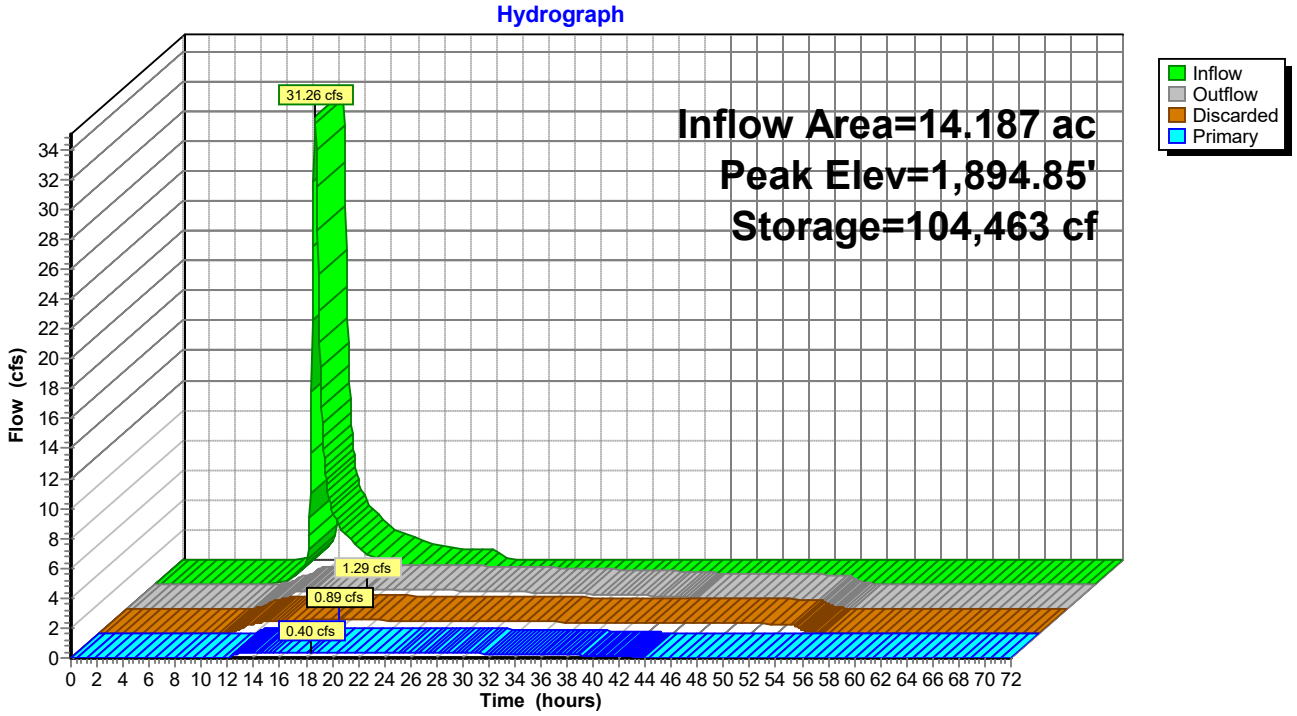
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,891.00	22,485	0	0
1,892.00	24,866	23,676	23,676
1,894.00	29,797	54,663	78,339
1,896.00	34,953	64,750	143,089
1,898.00	40,337	75,290	218,379

Device	Routing	Invert	Outlet Devices
#1	Primary	1,891.00'	**24.0" Round Culvert** L= 120.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,891.00' / 1,889.80' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,892.00'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	1,891.00'	**1.200 in/hr Exfiltration over Surface area**
#4	Device 1	1,896.60'	**45.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.89 cfs @ 18.43 hrs HW=1,894.85' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.89 cfs)

Primary OutFlow Max=0.40 cfs @ 18.43 hrs HW=1,894.85' (Free Discharge)
└**1=Culvert** (Passes 0.40 cfs of 22.52 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 0.40 cfs @ 8.12 fps)
└**4=Orifice/Grate** (Controls 0.00 cfs)

Pond 26P: bio-retention basin #3b



Summary for Pond 29P: bio-retention basin #1A

Inflow Area = 3.056 ac, 64.73% Impervious, Inflow Depth = 5.44" for 50-Year event
Inflow = 27.07 cfs @ 11.96 hrs, Volume= 1.386 af
Outflow = 1.33 cfs @ 13.04 hrs, Volume= 1.381 af, Atten= 95%, Lag= 64.4 min
Primary = 1.33 cfs @ 13.04 hrs, Volume= 1.381 af
Routed to Pond 38P : bio-retention basin #2A

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,940.22' @ 13.04 hrs Surf.Area= 18,650 sf Storage= 34,704 cf

Plug-Flow detention time= 354.8 min calculated for 1.381 af (100% of inflow)
Center-of-Mass det. time= 352.1 min (1,143.0 - 790.9)

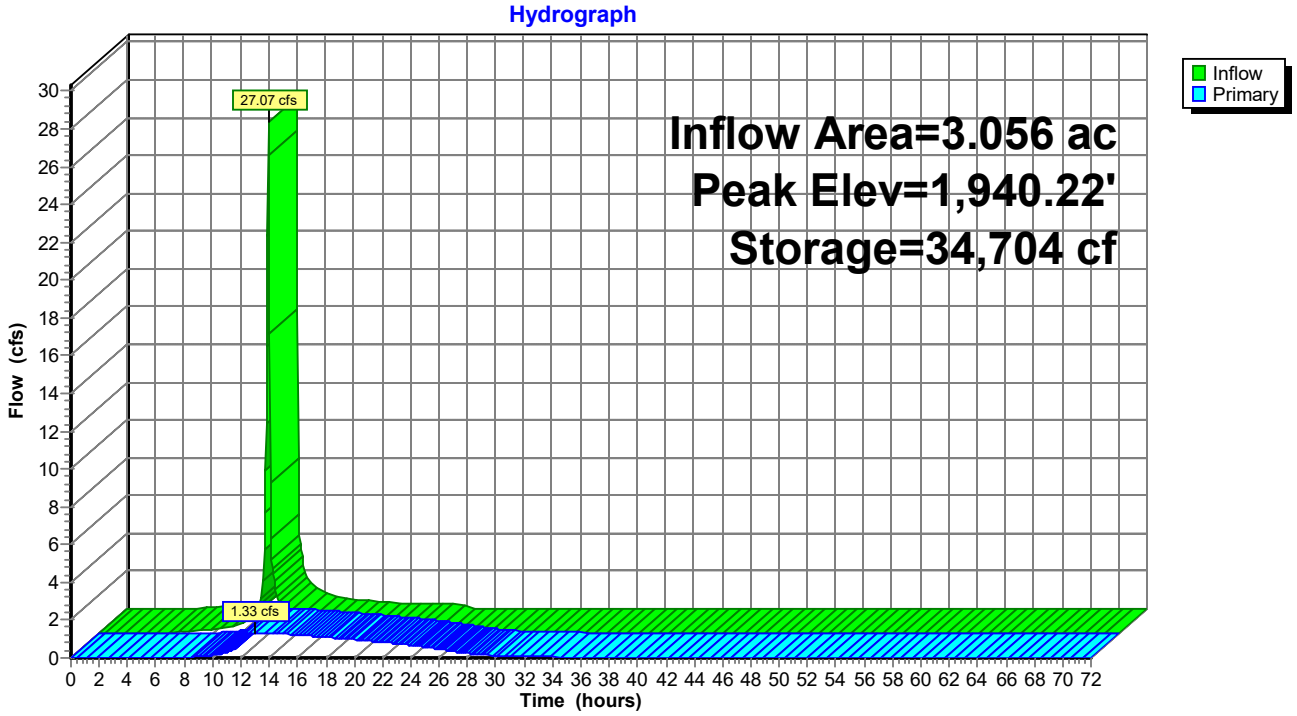
Volume	Invert	Avail.Storage	Storage Description
#1	1,938.00'	72,334 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,938.00	12,620	0	0
1,940.00	18,027	30,647	30,647
1,942.00	23,660	41,687	72,334

Device	Routing	Invert	Outlet Devices
#1	Primary	1,936.00'	**24.0" Round Culvert** L= 85.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,936.00' / 1,934.00' S= 0.0235 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,938.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,940.50'	**45.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.33 cfs @ 13.04 hrs HW=1,940.22' TW=1,936.57' (Fixed TW Elev= 1,936.57')
└─**1=Culvert** (Passes 1.33 cfs of 23.95 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.33 cfs @ 6.76 fps)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Pond 29P: bio-retention basin #1A



Summary for Pond 38P: bio-retention basin #2A

Inflow Area = 4.593 ac, 65.01% Impervious, Inflow Depth > 5.43" for 50-Year event
Inflow = 14.68 cfs @ 11.97 hrs, Volume= 2.078 af
Outflow = 13.71 cfs @ 12.00 hrs, Volume= 2.077 af, Atten= 7%, Lag= 2.2 min
Primary = 13.71 cfs @ 12.00 hrs, Volume= 2.077 af
Routed to Pond 40P : bio-retention basin #2C

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,936.50' @ 12.00 hrs Surf.Area= 4,890 sf Storage= 10,393 cf

Plug-Flow detention time= 120.4 min calculated for 2.077 af (100% of inflow)
Center-of-Mass det. time= 119.3 min (1,144.2 - 1,024.8)

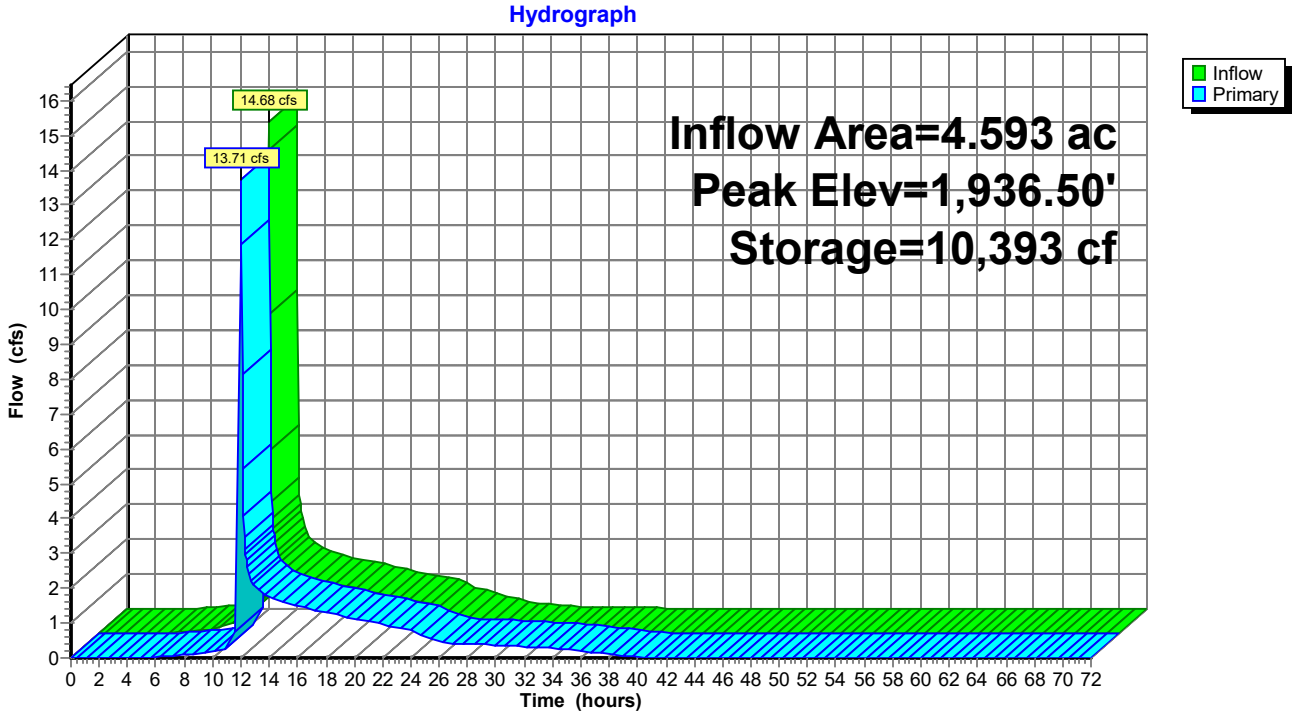
Volume	Invert	Avail.Storage	Storage Description
#1	1,933.00'	19,068 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,933.00	1,159	0	0
1,934.00	2,148	1,654	1,654
1,936.00	4,297	6,445	8,099
1,938.00	6,672	10,969	19,068

Device	Routing	Invert	Outlet Devices
#1	Primary	1,933.00'	**24.0" Round Culvert** L= 115.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,933.00' / 1,931.70' S= 0.0113 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,933.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,936.00'	**45.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=13.59 cfs @ 12.00 hrs HW=1,936.50' (Free Discharge)
└**1=Culvert** (Passes 13.59 cfs of 21.09 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.43 cfs @ 8.84 fps)
  └**3=Orifice/Grate** (Weir Controls 13.16 cfs @ 2.30 fps)

Pond 38P: bio-retention basin #2A



Summary for Pond 39P: bio-retention basin #2B

Inflow Area = 0.992 ac, 60.28% Impervious, Inflow Depth = 5.22" for 50-Year event
Inflow = 8.52 cfs @ 11.97 hrs, Volume= 0.431 af
Outflow = 0.82 cfs @ 12.43 hrs, Volume= 0.429 af, Atten= 90%, Lag= 27.6 min
Primary = 0.82 cfs @ 12.43 hrs, Volume= 0.429 af
Routed to Reach 26R : SWL-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,917.00' @ 12.43 hrs Surf.Area= 10,177 sf Storage= 9,760 cf

Plug-Flow detention time= 229.5 min calculated for 0.429 af (100% of inflow)
Center-of-Mass det. time= 226.8 min (1,023.0 - 796.3)

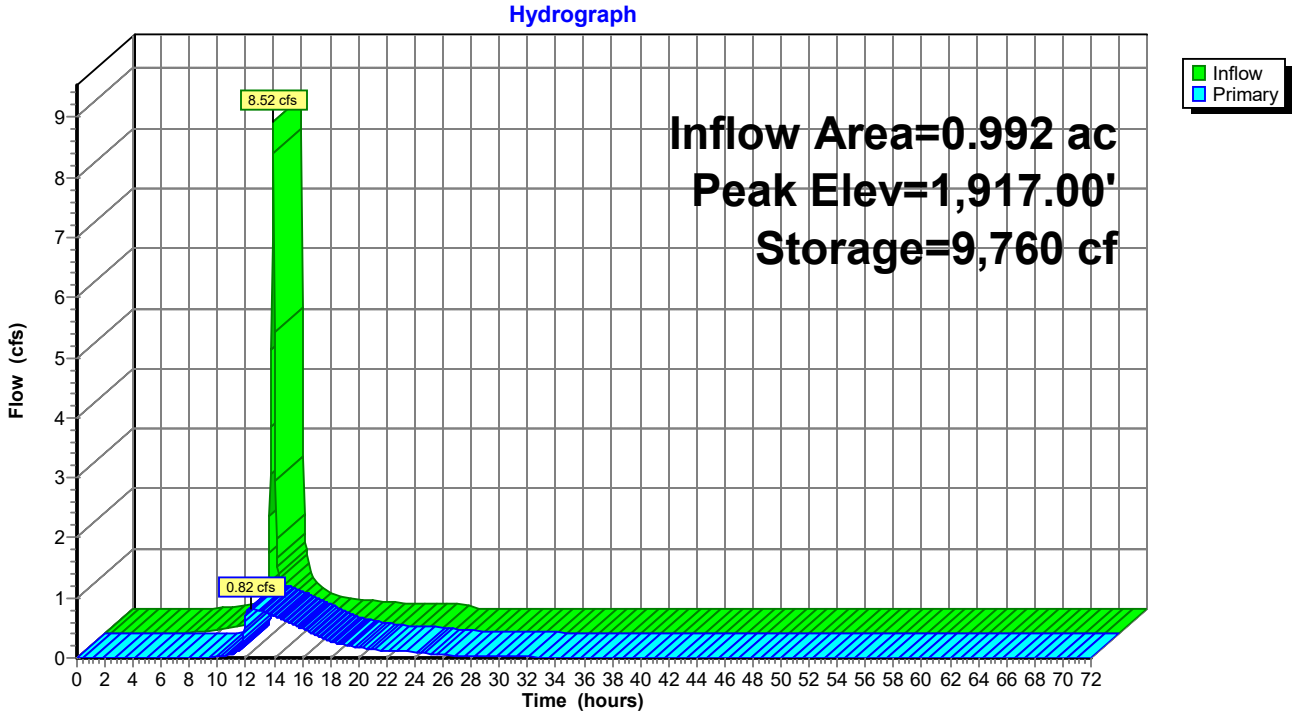
Volume	Invert	Avail.Storage	Storage Description
#1	1,916.00'	44,180 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,916.00	9,337	0	0
1,918.00	11,016	20,353	20,353
1,920.00	12,811	23,827	44,180

Device	Routing	Invert	Outlet Devices
#1	Primary	1,916.00'	**24.0" Round Culvert** L= 50.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,916.00' / 1,914.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,916.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,917.50'	**45.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.82 cfs @ 12.43 hrs HW=1,917.00' (Free Discharge)
└**1=Culvert** (Passes 0.82 cfs of 4.72 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.82 cfs @ 4.17 fps)
  └**3=Orifice/Grate** (Controls 0.00 cfs)

Pond 39P: bio-retention basin #2B



Summary for Pond 40P: bio-retention basin #2C

Inflow Area = 6.417 ac, 63.99% Impervious, Inflow Depth = 5.40" for 50-Year event
Inflow = 29.08 cfs @ 11.98 hrs, Volume= 2.887 af
Outflow = 11.90 cfs @ 12.12 hrs, Volume= 2.882 af, Atten= 59%, Lag= 8.0 min
Primary = 11.90 cfs @ 12.12 hrs, Volume= 2.882 af
Routed to Reach 26R : SWL-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,932.79' @ 12.12 hrs Surf.Area= 12,937 sf Storage= 19,132 cf

Plug-Flow detention time= 60.3 min calculated for 2.880 af (100% of inflow)
Center-of-Mass det. time= 56.2 min (1,102.0 - 1,045.8)

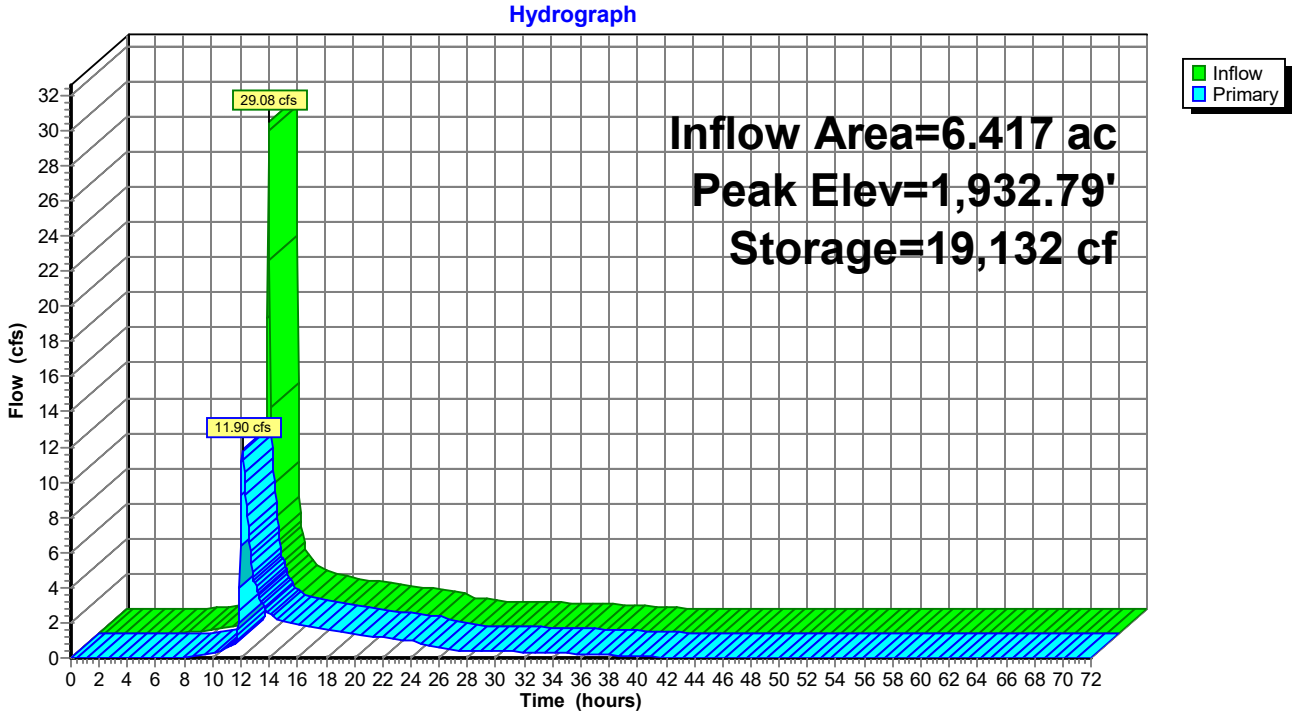
Volume	Invert	Avail.Storage	Storage Description
#1	1,931.00'	36,680 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,931.00	8,511	0	0
1,932.00	10,950	9,731	9,731
1,934.00	15,999	26,949	36,680

Device	Routing	Invert	Outlet Devices
#1	Primary	1,931.00'	**24.0" Round Culvert** L= 35.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,931.00' / 1,930.00' S= 0.0286 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,931.00'	**12.0" W x 4.0" H Vert. Orifice/Grate X 3.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,932.00'	**45.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=11.81 cfs @ 12.12 hrs HW=1,932.78' (Free Discharge)
└**1=Culvert** (Inlet Controls 11.81 cfs @ 4.00 fps)
├**2=Orifice/Grate** (Passes < 6.11 cfs potential flow)
└**3=Orifice/Grate** (Passes < 25.75 cfs potential flow)

Pond 40P: bio-retention basin #2C

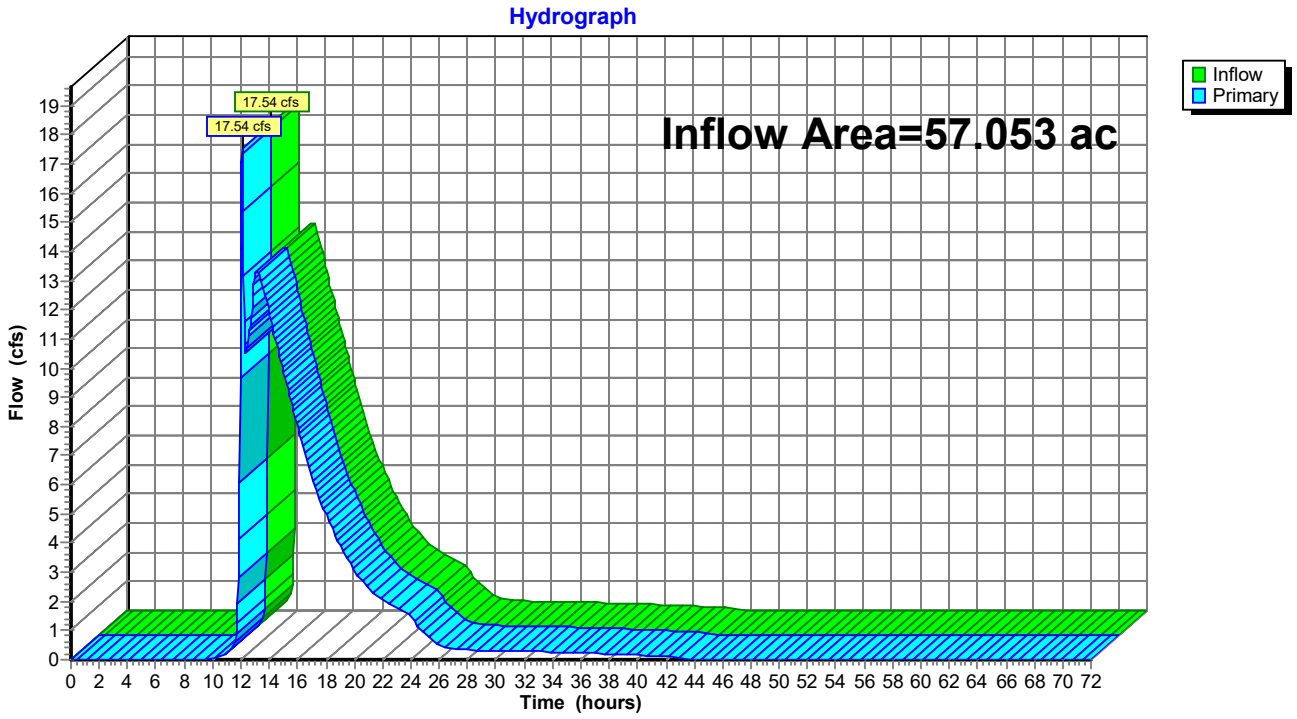


Summary for Link 37L: Discharge 001

Inflow Area = 57.053 ac, 50.73% Impervious, Inflow Depth = 1.43" for 50-Year event
Inflow = 17.54 cfs @ 12.08 hrs, Volume= 6.806 af
Primary = 17.54 cfs @ 12.08 hrs, Volume= 6.806 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 37L: Discharge 001



Summary for Subcatchment 11S: SEEPAGE BED #5A (BMP #7)

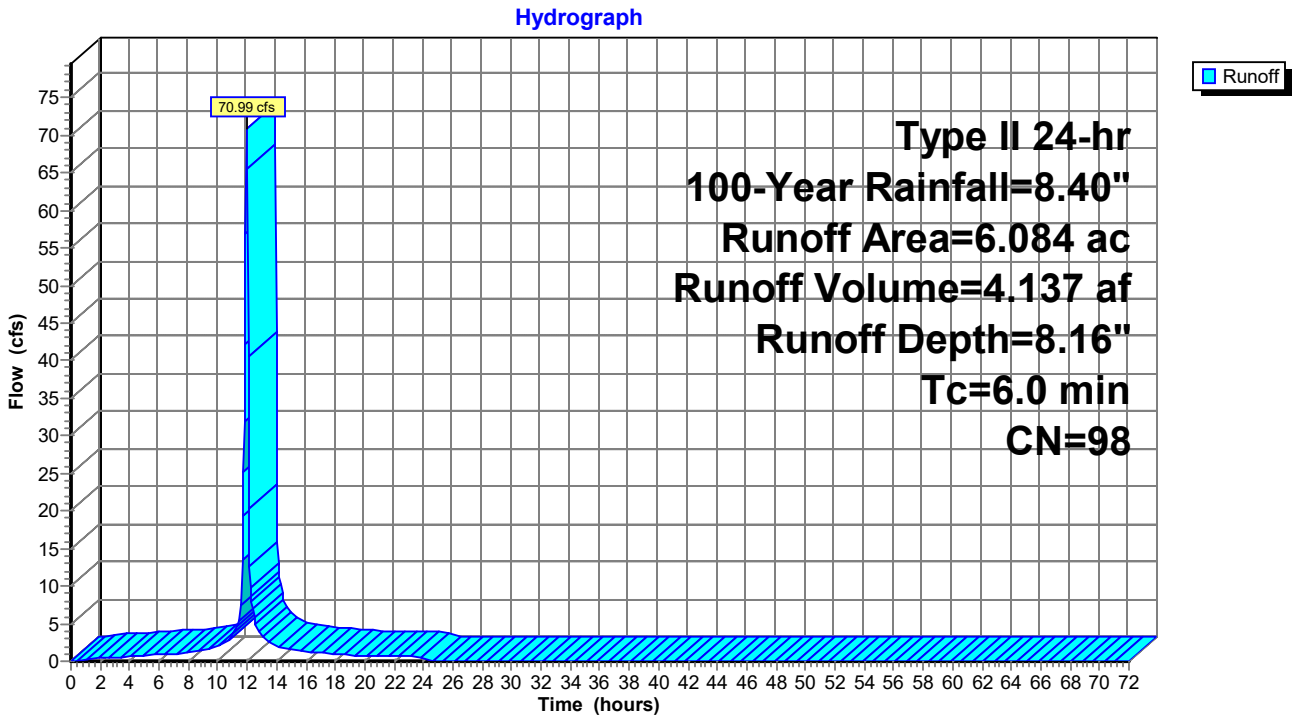
Runoff = 70.99 cfs @ 11.96 hrs, Volume= 4.137 af, Depth= 8.16"
Routed to Pond 9P : seepage pit with chambers #5A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=8.40"

Area (ac)	CN	Description
6.084	98	Paved parking & roofs
6.084		100.00% Impervious Area

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

Subcatchment 11S: SEEPAGE BED #5A (BMP #7)



Summary for Subcatchment 12S: bio-retention basin #4a (BMP #9)

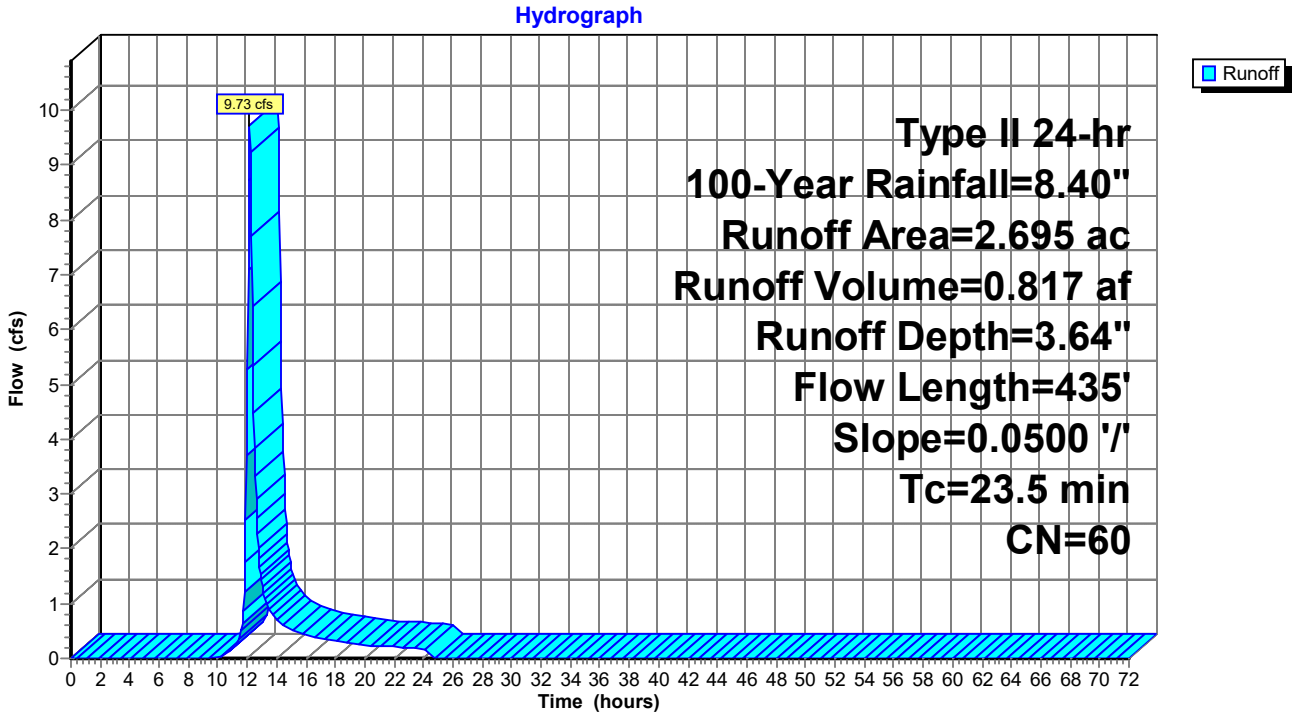
Runoff = 9.73 cfs @ 12.17 hrs, Volume= 0.817 af, Depth= 3.64"
Routed to Pond 13P : bio-retention basin #4a

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=8.40"

Area (ac)	CN	Description
1.896	61	>75% Grass cover, Good, HSG B
0.799	58	Meadow, non-grazed, HSG B
2.695	60	Weighted Average
2.695		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	150	0.0500	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.23"
3.0	285	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
23.5	435	Total			

Subcatchment 12S: bio-retention basin #4a (BMP #9)



Summary for Subcatchment 17S: SEEPAGE BED #4b (BMP #10)

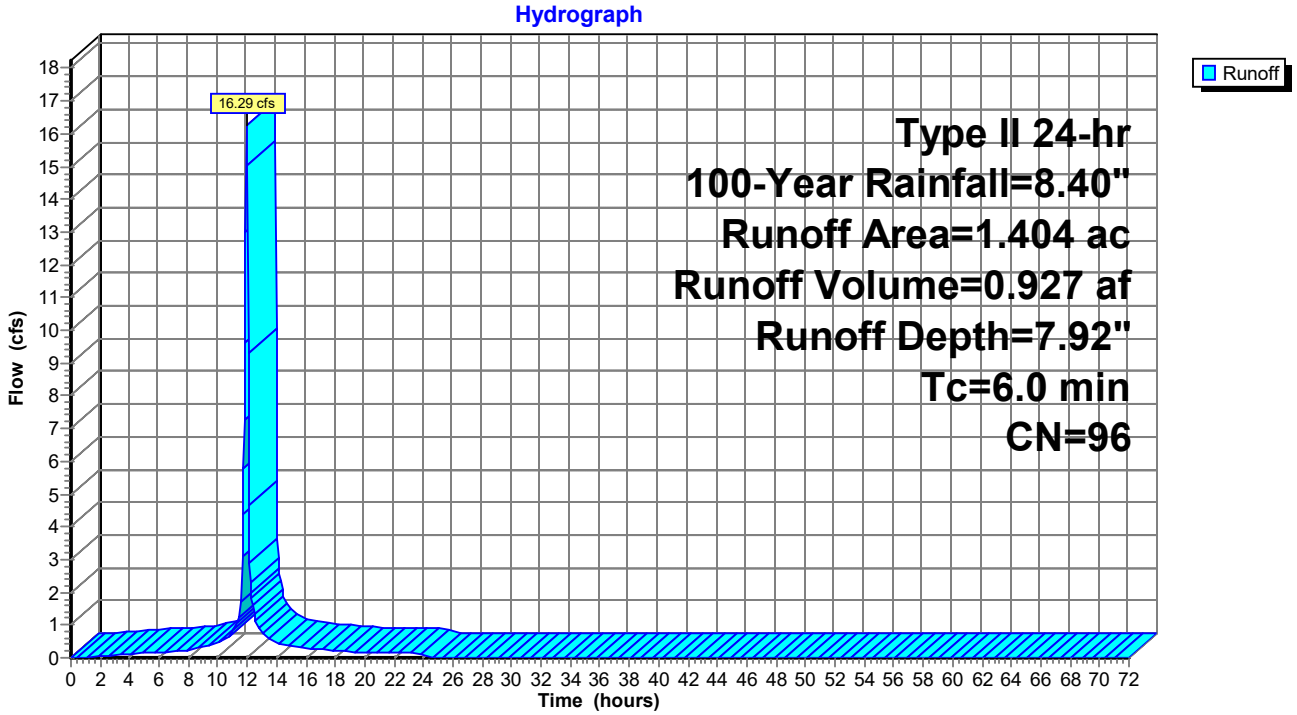
Runoff = 16.29 cfs @ 11.96 hrs, Volume= 0.927 af, Depth= 7.92"
Routed to Pond 15P : seepage pit with chambers #4b

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=8.40"

Area (ac)	CN	Description
1.312	98	Paved parking & roofs
0.092	74	>75% Grass cover, Good, HSG C
1.404	96	Weighted Average
0.092		6.55% Pervious Area
1.312		93.45% Impervious Area

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

Subcatchment 17S: SEEPAGE BED #4b (BMP #10)



Summary for Subcatchment 19S: SEEPAGE BED #3A (BMP #11)

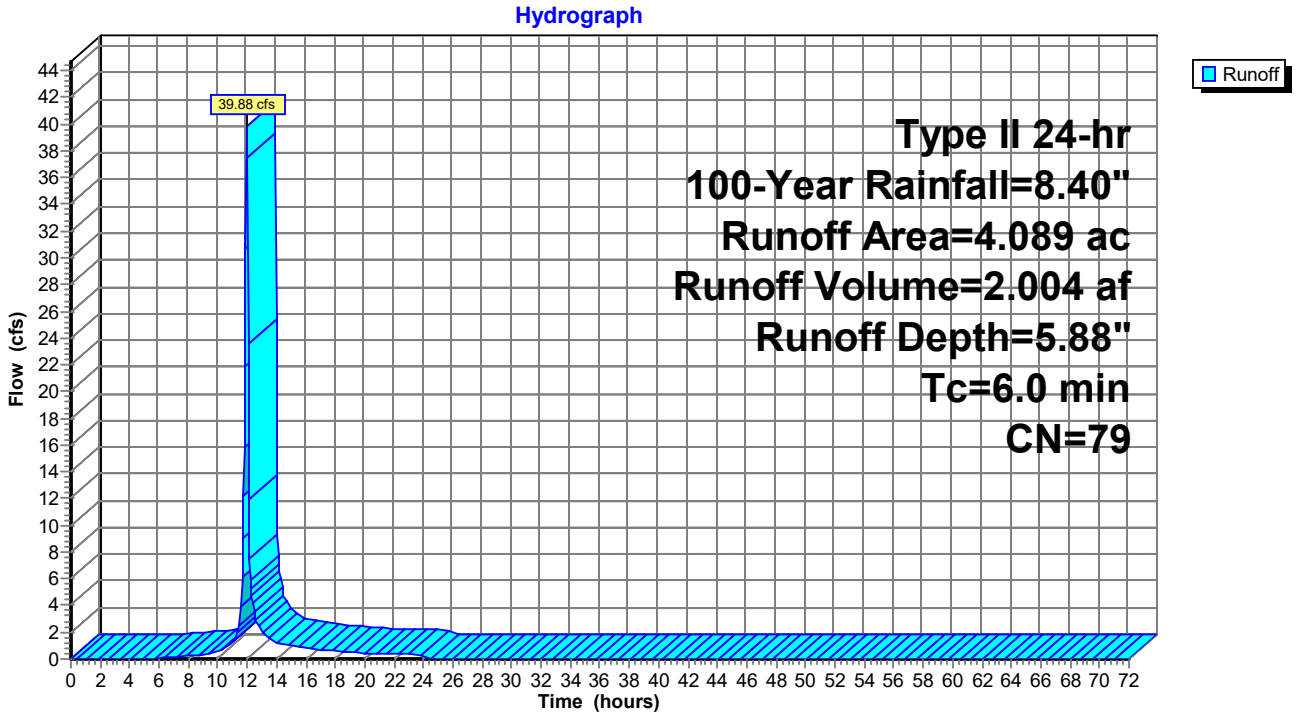
Runoff = 39.88 cfs @ 11.97 hrs, Volume= 2.004 af, Depth= 5.88"
Routed to Pond 16P : seepage pit with chambers #3A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=8.40"

	Area (ac)	CN	Description
	2.361	98	Paved parking & roofs
*	0.069	40	Meadow, non-grazed, HSG A
	0.059	71	Meadow, non-grazed, HSG C
*	0.485	40	>75% Grass cover, Good, HSG A
	0.485	74	>75% Grass cover, Good, HSG C
*	0.477	40	Woods, Good, HSG A
	0.153	70	Woods, Good, HSG C
	4.089	79	Weighted Average
	1.728		42.26% Pervious Area
	2.361		57.74% Impervious Area

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

Subcatchment 19S: SEEPAGE BED #3A (BMP #11)



Summary for Subcatchment 20S: SEEPAGE BED #5F (BMP 6)

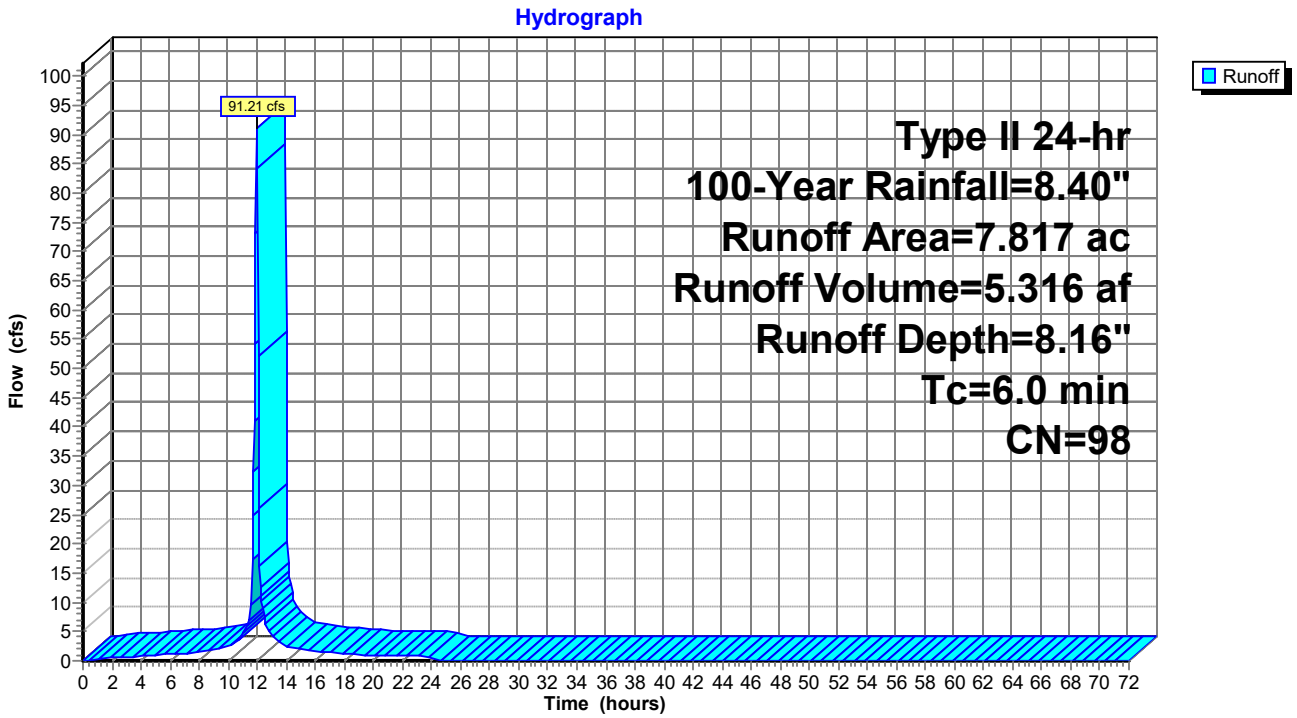
Runoff = 91.21 cfs @ 11.96 hrs, Volume= 5.316 af, Depth= 8.16"
Routed to Pond 14P : seepage pit with chambers #5F

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=8.40"

Area (ac)	CN	Description
7.808	98	Paved parking & roofs
0.009	74	>75% Grass cover, Good, HSG C
7.817	98	Weighted Average
0.009		0.12% Pervious Area
7.808		99.88% Impervious Area

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

Subcatchment 20S: SEEPAGE BED #5F (BMP 6)



Summary for Subcatchment 22S: SUB BASIN-5A (BMP 8)

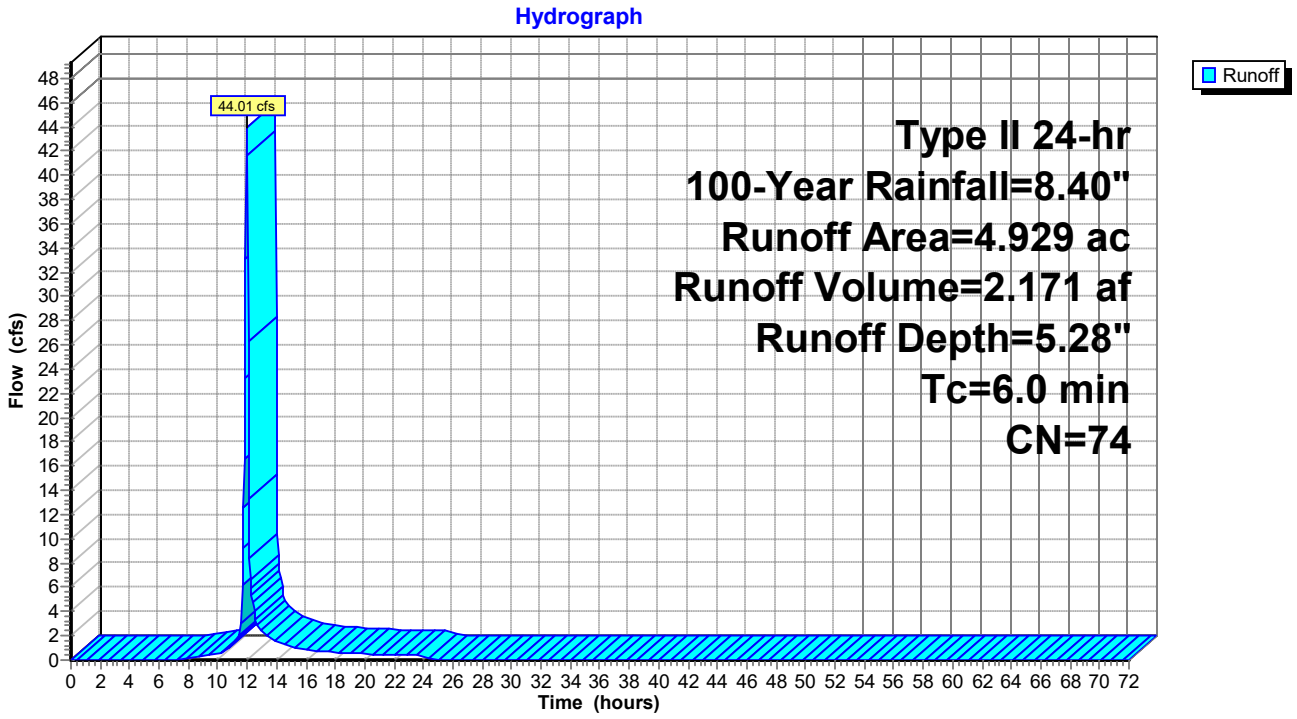
Runoff = 44.01 cfs @ 11.97 hrs, Volume= 2.171 af, Depth= 5.28"
Routed to Pond 8P : BIO-RETENTION BASIN #5A (POI 001)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=8.40"

Area (ac)	CN	Description
1.186	61	>75% Grass cover, Good, HSG B
3.048	74	>75% Grass cover, Good, HSG C
0.695	98	Paved parking & roofs
4.929	74	Weighted Average
4.234		85.90% Pervious Area
0.695		14.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6 minute min**

Subcatchment 22S: SUB BASIN-5A (BMP 8)



Summary for Subcatchment 24S: bio-retention basin #3b(BMP #12)

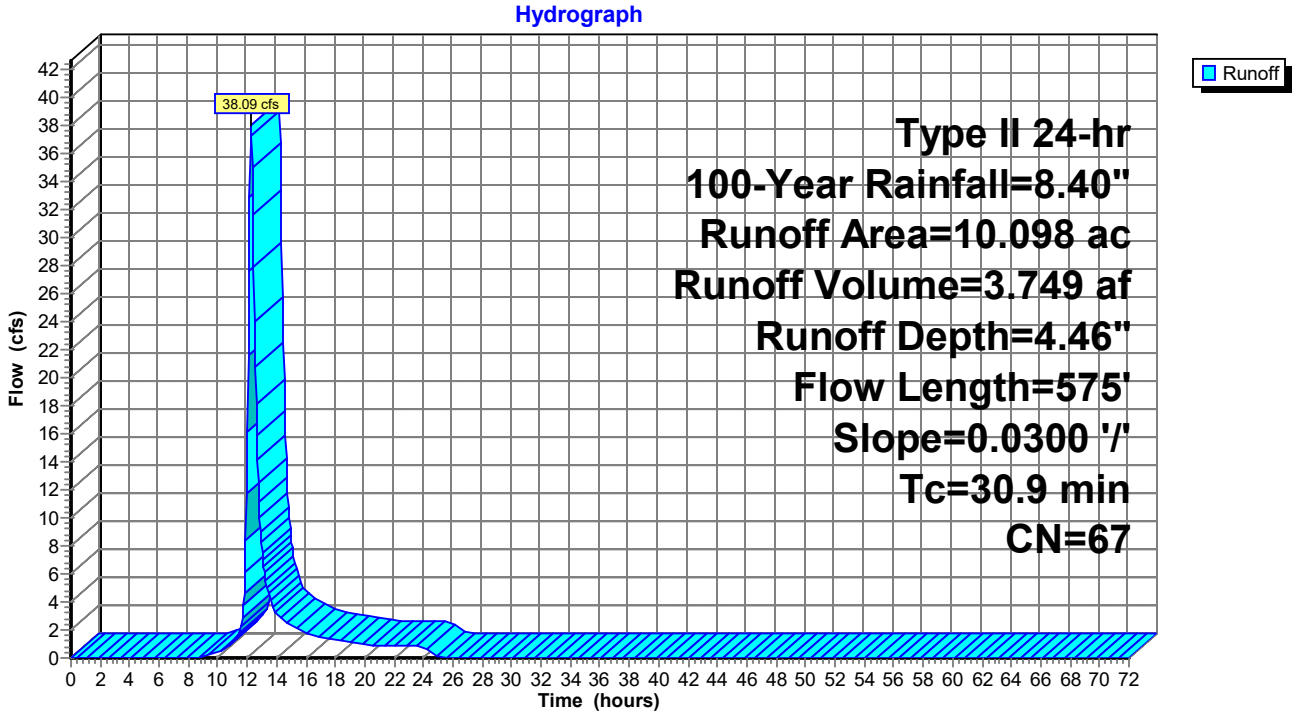
Runoff = 38.09 cfs @ 12.26 hrs, Volume= 3.749 af, Depth= 4.46"
Routed to Pond 26P : bio-retention basin #3b

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=8.40"

	Area (ac)	CN	Description
	2.349	98	Paved parking & roofs
	1.017	58	Meadow, non-grazed, HSG B
	0.574	71	Meadow, non-grazed, HSG C
	3.499	61	>75% Grass cover, Good, HSG B
	0.126	74	>75% Grass cover, Good, HSG C
*	1.025	40	Woods, Good, HSG A
*	0.745	40	>75% Grass cover, Good, HSG A
	0.763	74	>75% Grass cover, Good, HSG C
	10.098	67	Weighted Average
	7.749		76.74% Pervious Area
	2.349		23.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	150	0.0300	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.23"
5.8	425	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
30.9	575	Total			

Subcatchment 24S: bio-retention basin #3b(BMP #12)



Summary for Subcatchment 25S: BIO-RETENTION BASIN #6A (BMP 5)

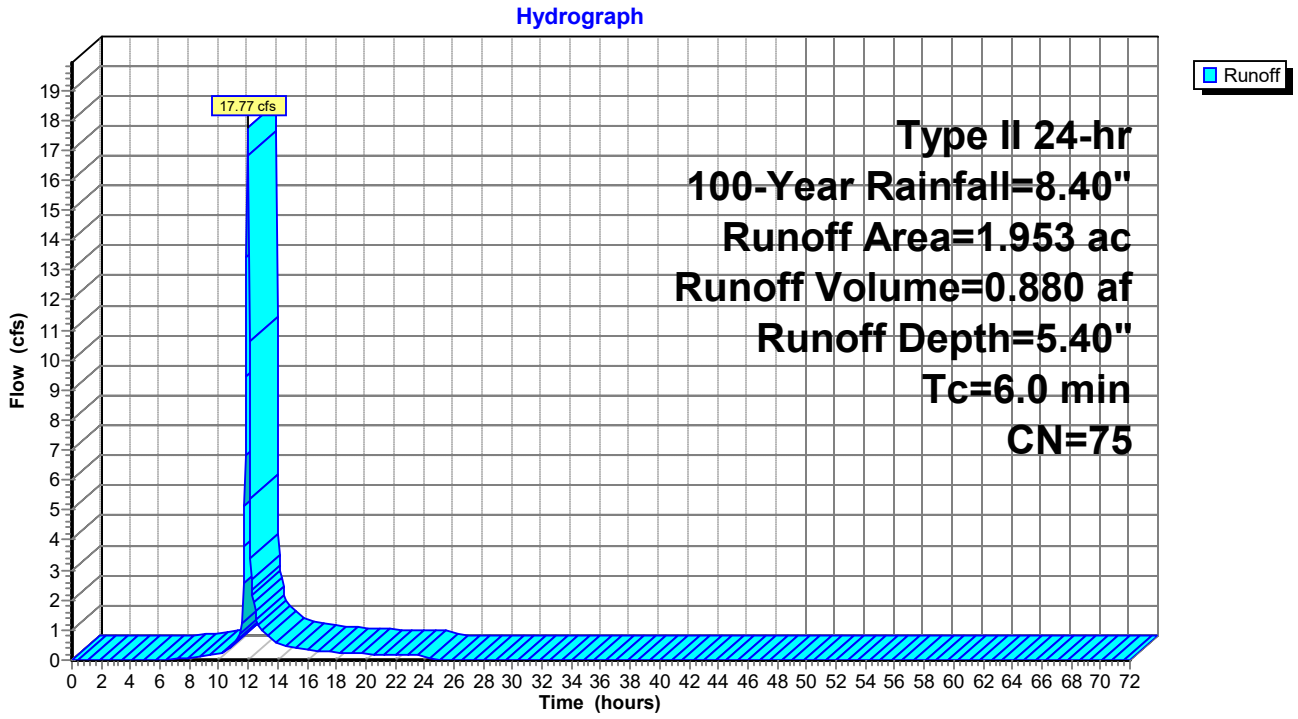
Runoff = 17.77 cfs @ 11.97 hrs, Volume= 0.880 af, Depth= 5.40"
Routed to Pond 24P : bio-retention basin #6a

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=8.40"

	Area (ac)	CN	Description
	1.119	98	Paved parking & roofs
*	0.665	40	>75% Grass cover, Good, HSG A
	0.169	61	>75% Grass cover, Good, HSG B
	1.953	75	Weighted Average
	0.834		42.70% Pervious Area
	1.119		57.30% Impervious Area

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

Subcatchment 25S: BIO-RETENTION BASIN #6A (BMP 5)



Summary for Subcatchment 29S: SWL #1

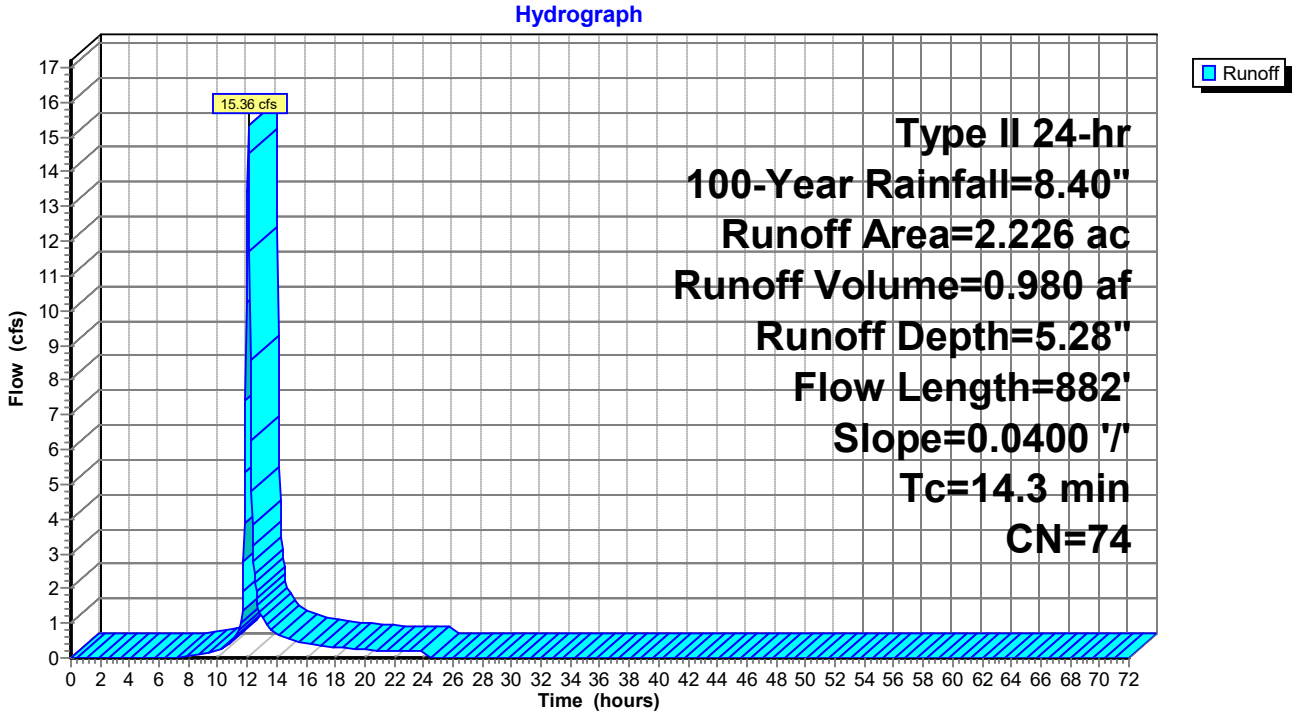
Runoff = 15.36 cfs @ 12.06 hrs, Volume= 0.980 af, Depth= 5.28"
Routed to Reach 26R : SWL-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=8.40"

Area (ac)	CN	Description
0.765	98	Paved parking & roofs
1.461	61	>75% Grass cover, Good, HSG B
2.226	74	Weighted Average
1.461		65.63% Pervious Area
0.765		34.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	150	0.0400	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.23"
4.1	732	0.0400	3.00		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
14.3	882	Total			

Subcatchment 29S: SWL #1



Summary for Subcatchment 30S: SWL #2

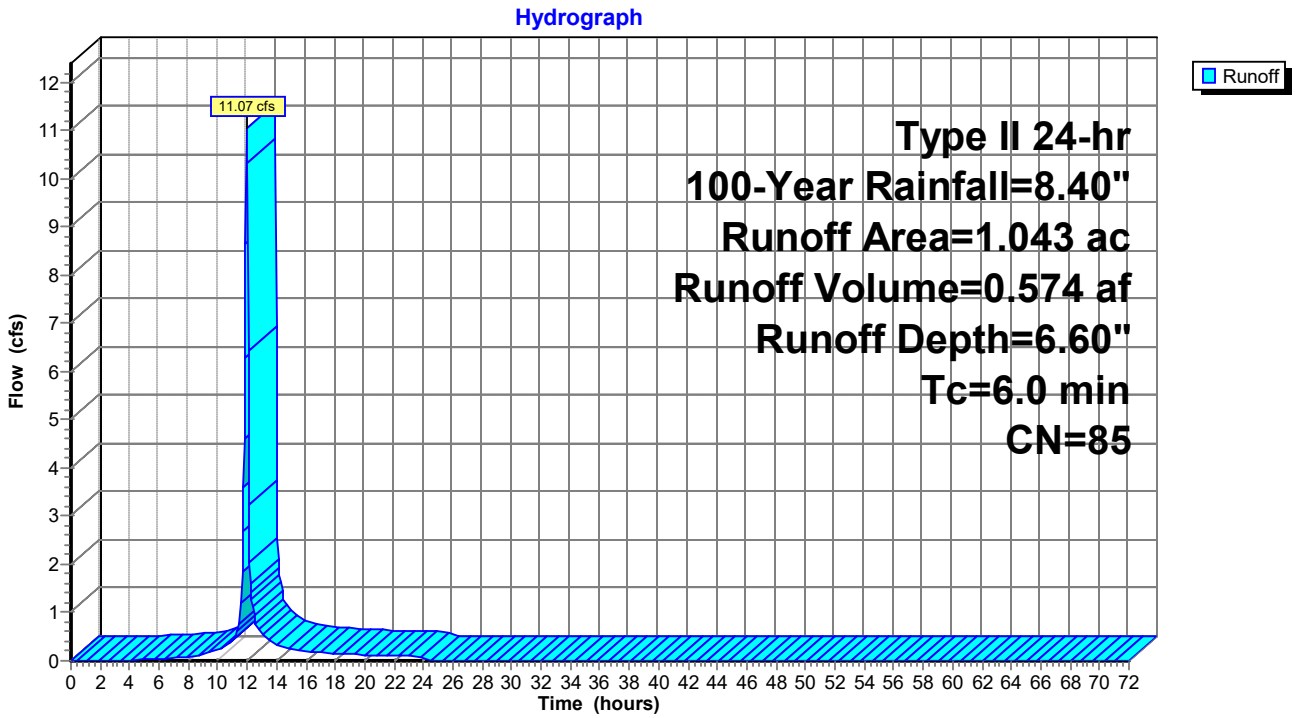
Runoff = 11.07 cfs @ 11.96 hrs, Volume= 0.574 af, Depth= 6.60"
Routed to Reach 27R : SWL-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=8.40"

	Area (ac)	CN	Description
	0.814	98	Paved parking & roofs
*	0.229	40	>75% Grass cover, Good, HSG A
	1.043	85	Weighted Average
	0.229		21.96% Pervious Area
	0.814		78.04% Impervious Area

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

Subcatchment 30S: SWL #2



Summary for Subcatchment 32S: SWL #3

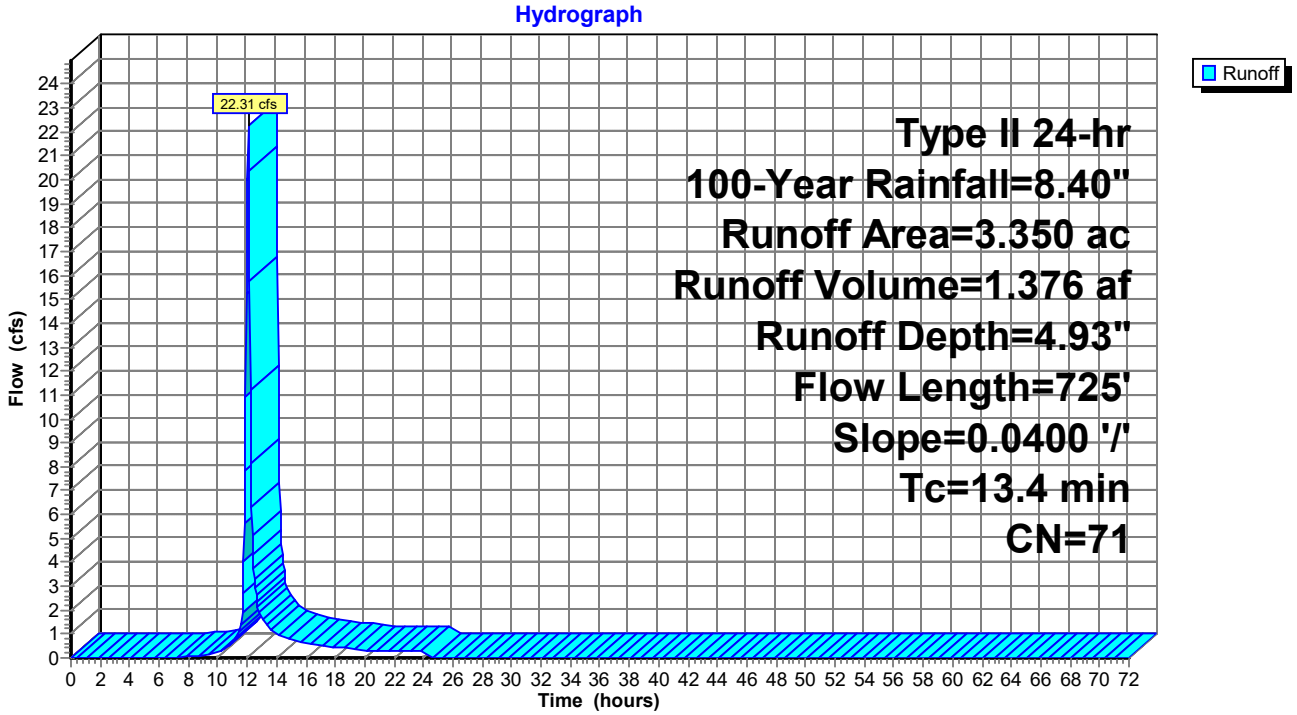
Runoff = 22.31 cfs @ 12.05 hrs, Volume= 1.376 af, Depth= 4.93"
Routed to Reach 28R : SWL-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=8.40"

Area (ac)	CN	Description
0.930	98	Paved parking & roofs
2.420	61	>75% Grass cover, Good, HSG B
3.350	71	Weighted Average
2.420		72.24% Pervious Area
0.930		27.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	150	0.0400	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.23"
3.2	575	0.0400	3.00		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
13.4	725	Total			

Subcatchment 32S: SWL #3



Summary for Subcatchment 33S: BIO-RETENTION BASIN #1A (BMP#1)

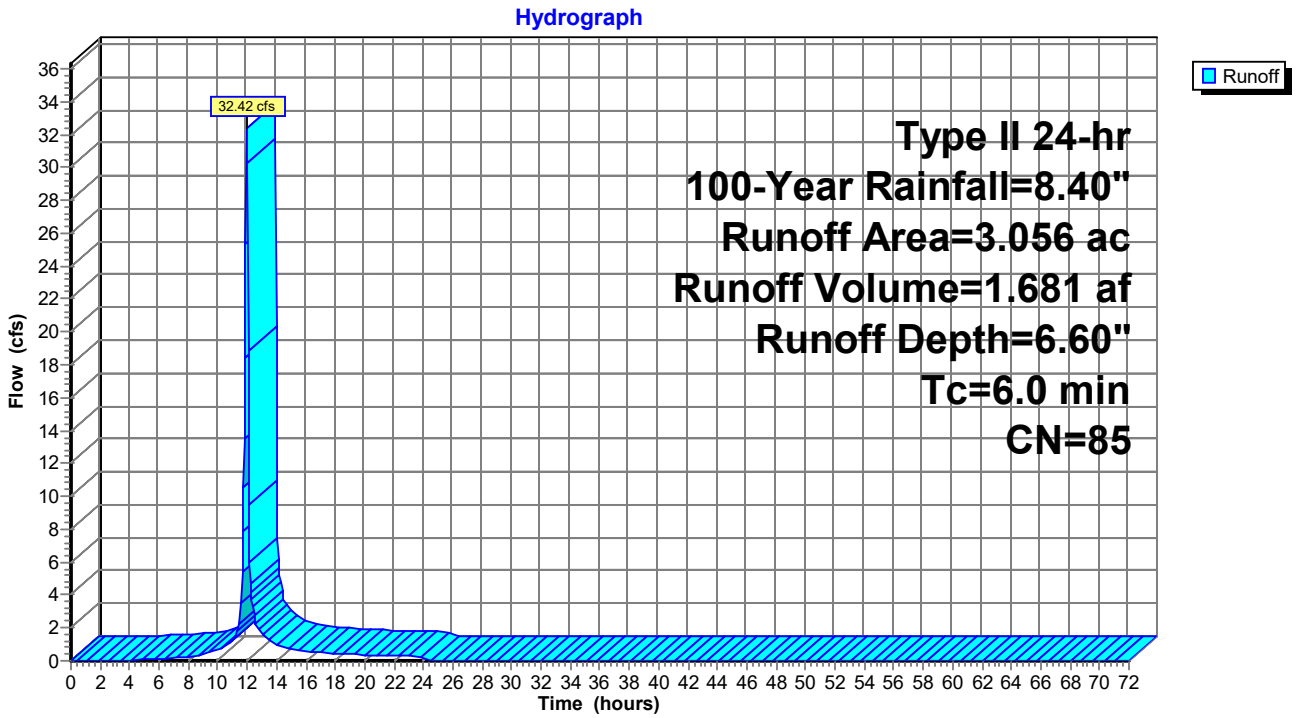
Runoff = 32.42 cfs @ 11.96 hrs, Volume= 1.681 af, Depth= 6.60"
Routed to Pond 29P : bio-retention basin #1A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=8.40"

Area (ac)	CN	Description
1.978	98	Paved parking & roofs
1.078	61	>75% Grass cover, Good, HSG B
3.056	85	Weighted Average
1.078		35.27% Pervious Area
1.978		64.73% Impervious Area

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

Subcatchment 33S: BIO-RETENTION BASIN #1A (BMP#1)



Summary for Subcatchment 34S: SWL #4

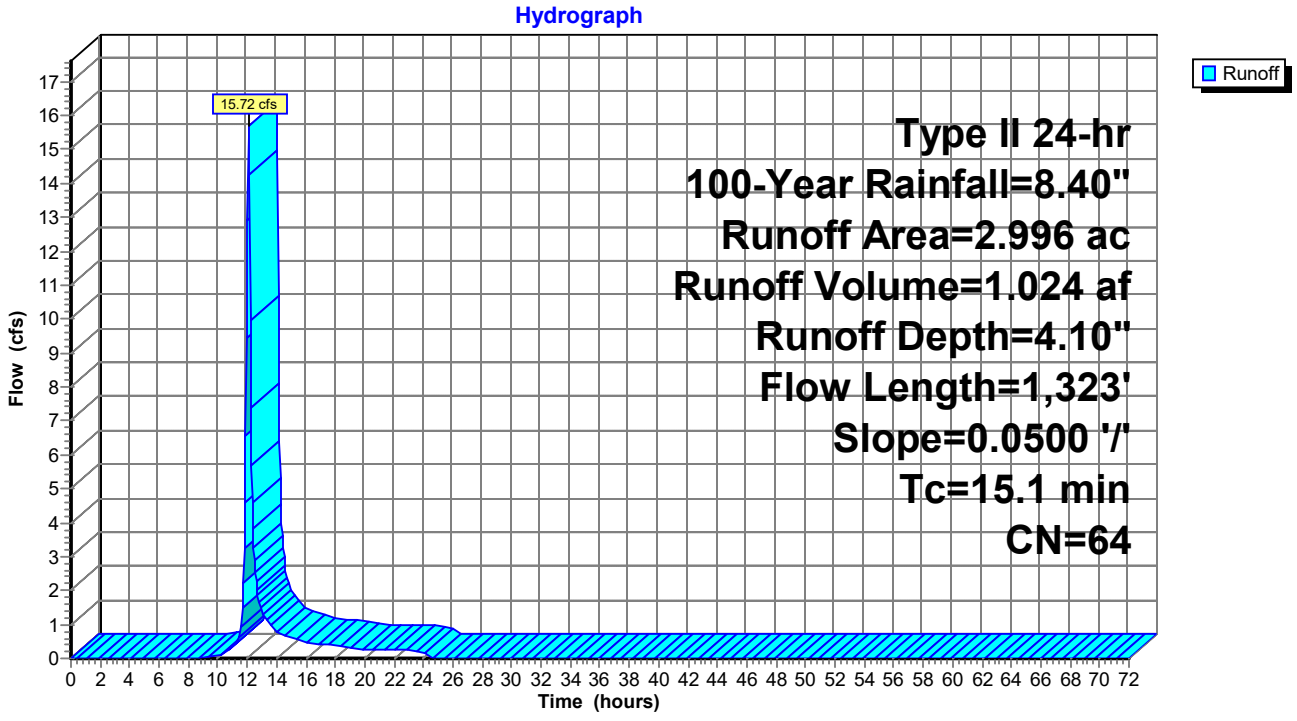
Runoff = 15.72 cfs @ 12.07 hrs, Volume= 1.024 af, Depth= 4.10"
Routed to Reach 23R : SWL-4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=8.40"

Area (ac)	CN	Description
2.296	61	>75% Grass cover, Good, HSG B
0.700	74	>75% Grass cover, Good, HSG C
2.996	64	Weighted Average
2.996		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	150	0.0500	0.27		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.23"
5.8	1,173	0.0500	3.35		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
15.1	1,323	Total			

Subcatchment 34S: SWL #4



Summary for Subcatchment 37S: BIO-RETENTION BASIN #2A (BMP #2)

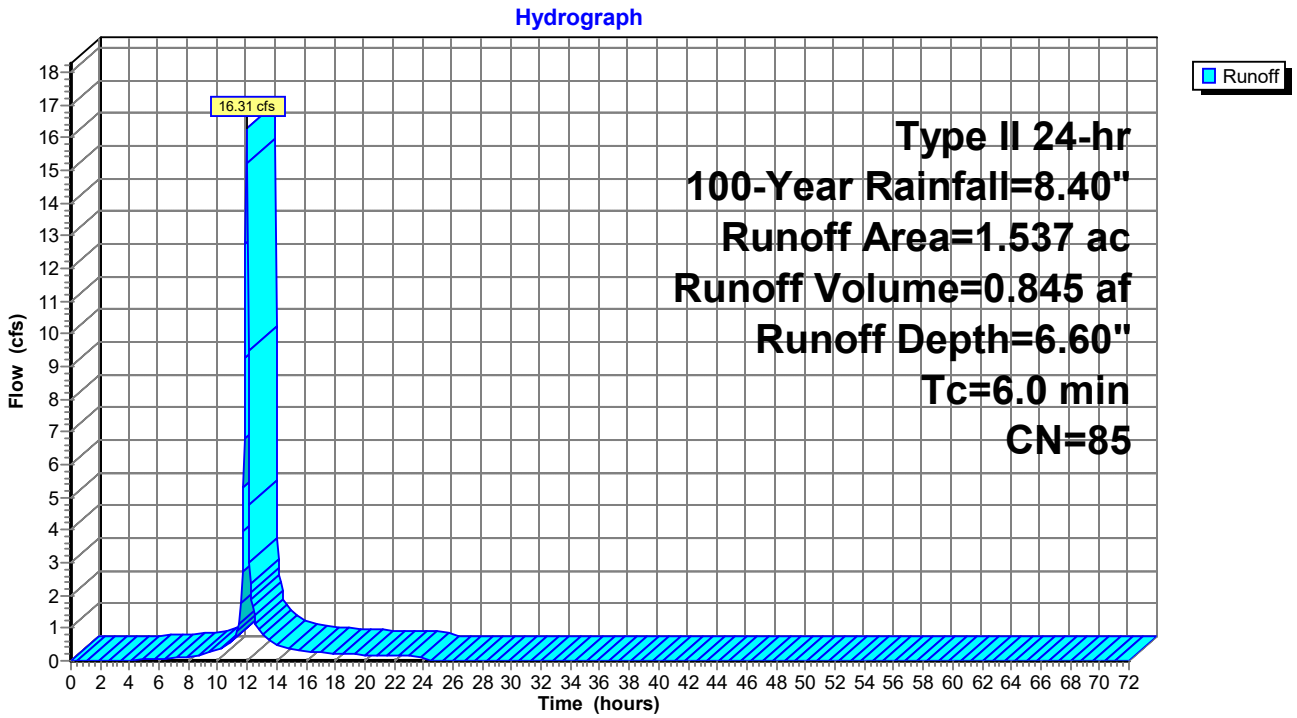
Runoff = 16.31 cfs @ 11.96 hrs, Volume= 0.845 af, Depth= 6.60"
Routed to Pond 38P : bio-retention basin #2A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=8.40"

Area (ac)	CN	Description
1.008	98	Paved parking & roofs
0.529	61	>75% Grass cover, Good, HSG B
1.537	85	Weighted Average
0.529		34.42% Pervious Area
1.008		65.58% Impervious Area

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

Subcatchment 37S: BIO-RETENTION BASIN #2A (BMP #2)



Summary for Subcatchment 41S: BIO-RETENTION BASIN #2C (BMP #3)

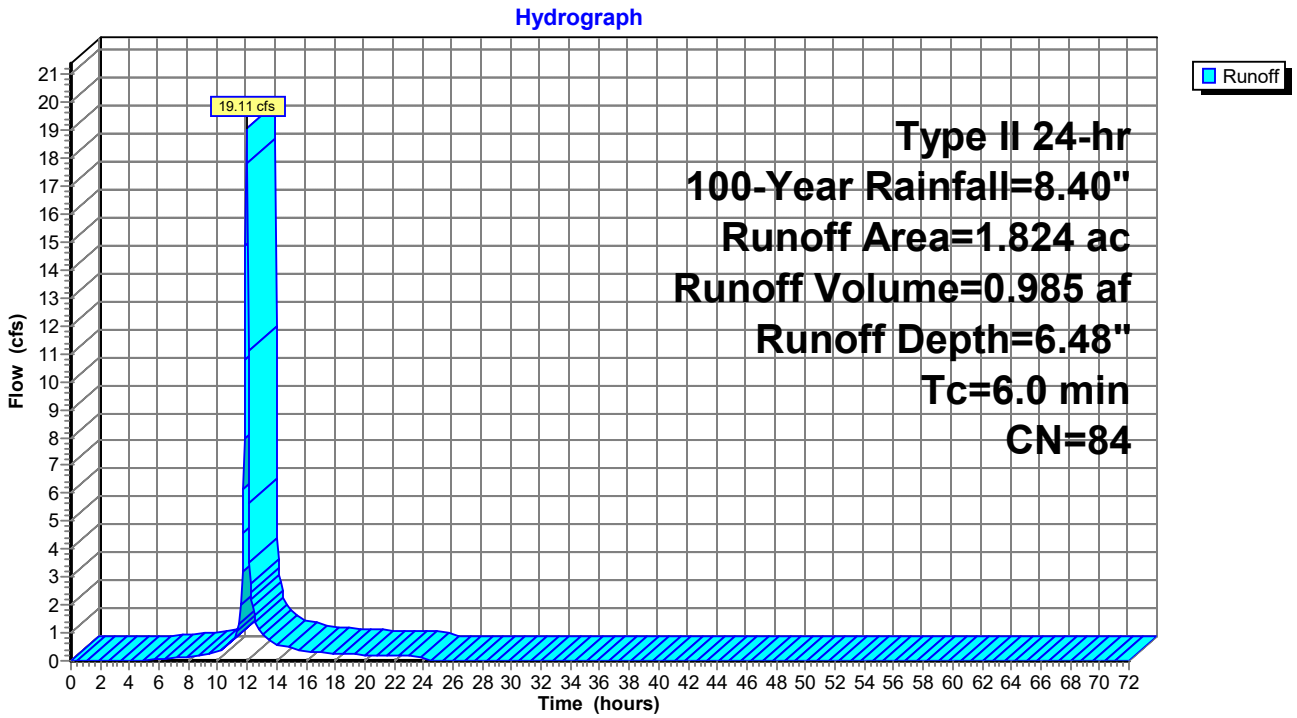
Runoff = 19.11 cfs @ 11.96 hrs, Volume= 0.985 af, Depth= 6.48"
Routed to Pond 40P : bio-retention basin #2C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=8.40"

Area (ac)	CN	Description
1.120	98	Paved parking & roofs
0.704	61	>75% Grass cover, Good, HSG B
1.824	84	Weighted Average
0.704		38.60% Pervious Area
1.120		61.40% Impervious Area

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

Subcatchment 41S: BIO-RETENTION BASIN #2C (BMP #3)



Summary for Subcatchment 42S: BIO-RETENTION BASIN #2B (BMP #4)

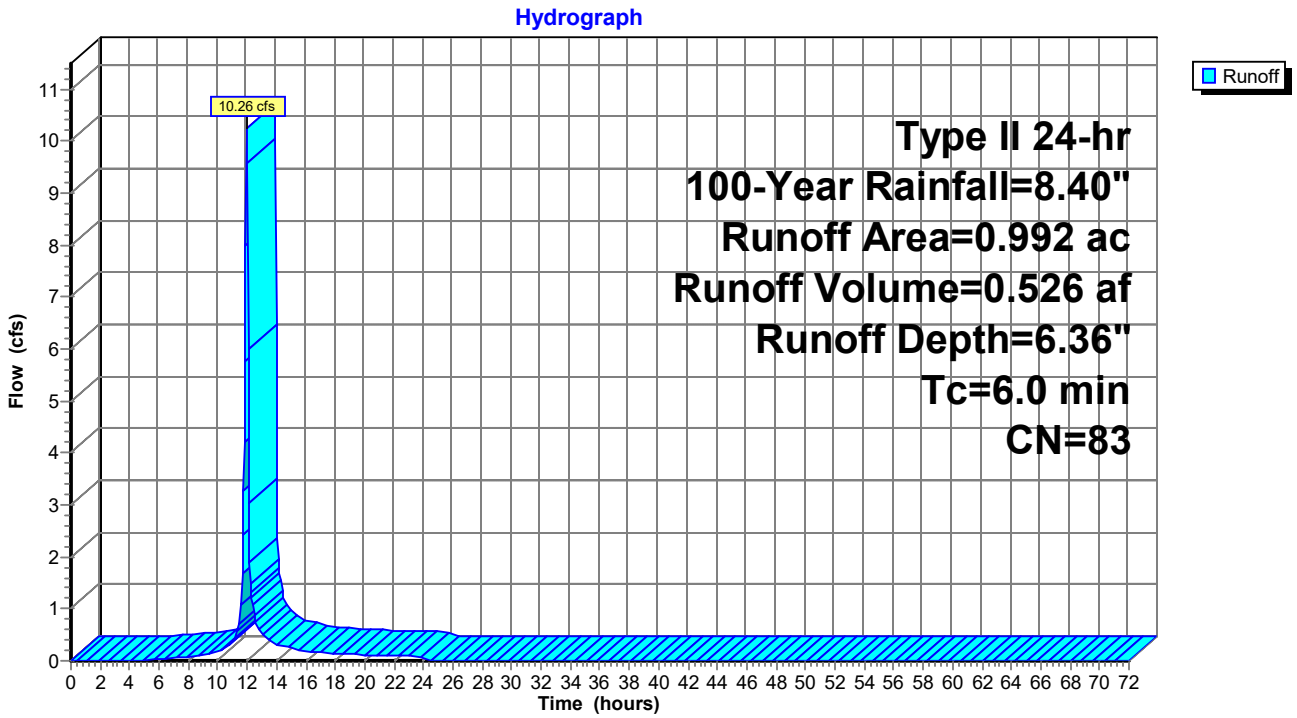
Runoff = 10.26 cfs @ 11.96 hrs, Volume= 0.526 af, Depth= 6.36"
Routed to Pond 39P : bio-retention basin #2B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=8.40"

Area (ac)	CN	Description
0.598	98	Paved parking & roofs
0.394	61	>75% Grass cover, Good, HSG B
0.992	83	Weighted Average
0.394		39.72% Pervious Area
0.598		60.28% Impervious Area

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

Subcatchment 42S: BIO-RETENTION BASIN #2B (BMP #4)



Summary for Subcatchment 47S: UNDETAINED-PROPOSED 001

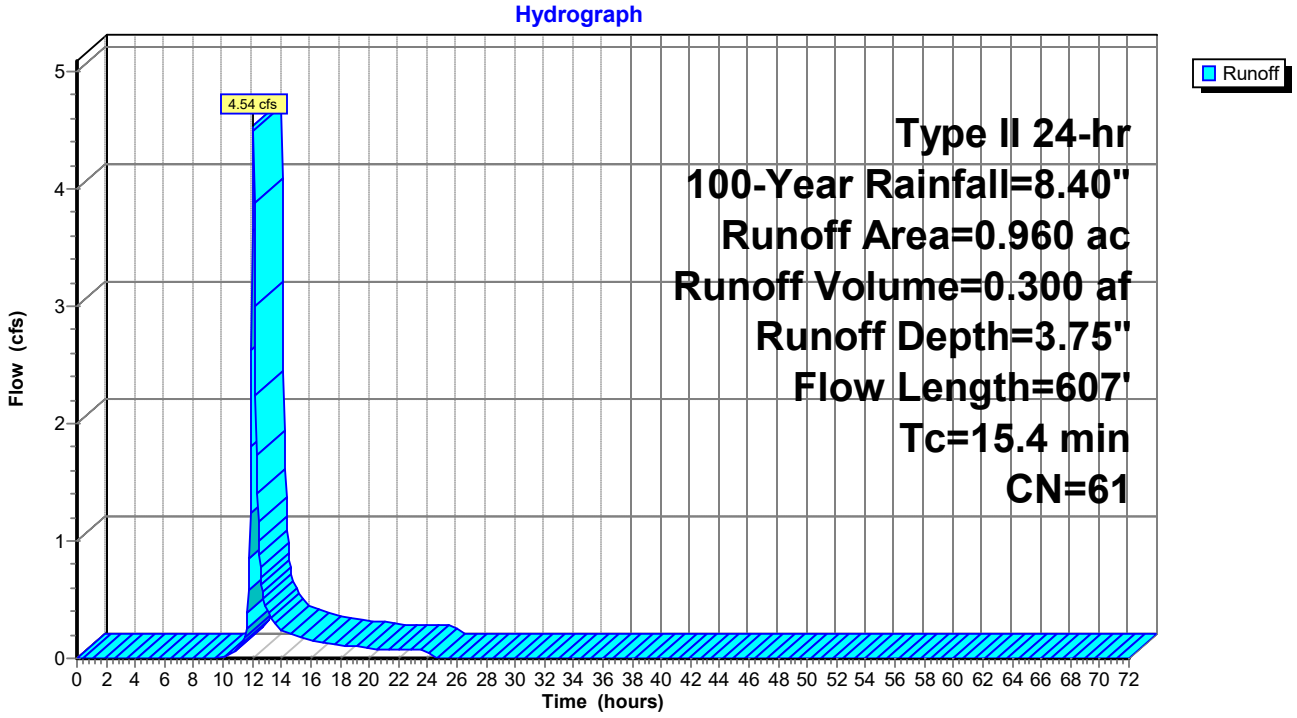
Runoff = 4.54 cfs @ 12.08 hrs, Volume= 0.300 af, Depth= 3.75"
Routed to Link 37L : Discharge 001

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=8.40"

Area (ac)	CN	Description
0.960	61	>75% Grass cover, Good, HSG B
0.960		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	150	0.0800	0.32		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.23"
7.7	457	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.4	607	Total			

Subcatchment 47S: UNDETAINED-PROPOSED 001

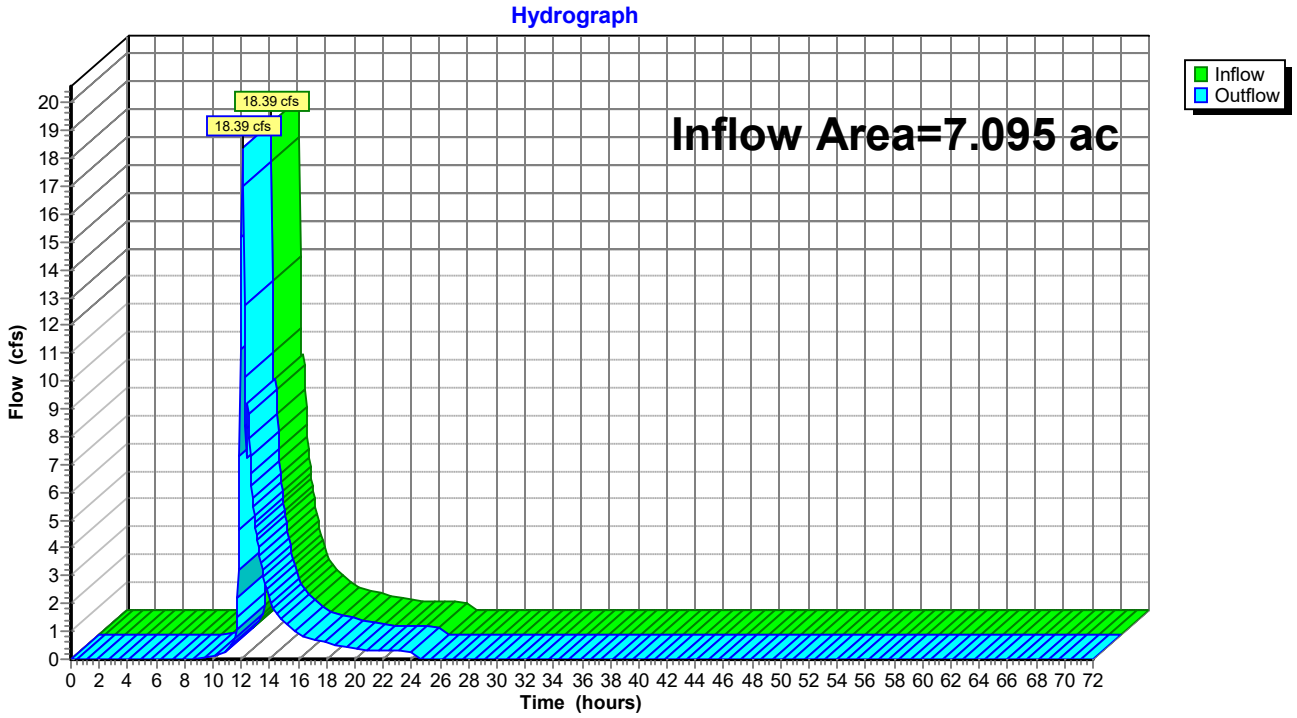


Summary for Reach 23R: SWL-4

Inflow Area = 7.095 ac, 18.49% Impervious, Inflow Depth = 3.01" for 100-Year event
Inflow = 18.39 cfs @ 12.08 hrs, Volume= 1.782 af
Outflow = 18.39 cfs @ 12.08 hrs, Volume= 1.782 af, Atten= 0%, Lag= 0.0 min
Routed to Link 37L : Discharge 001

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach 23R: SWL-4

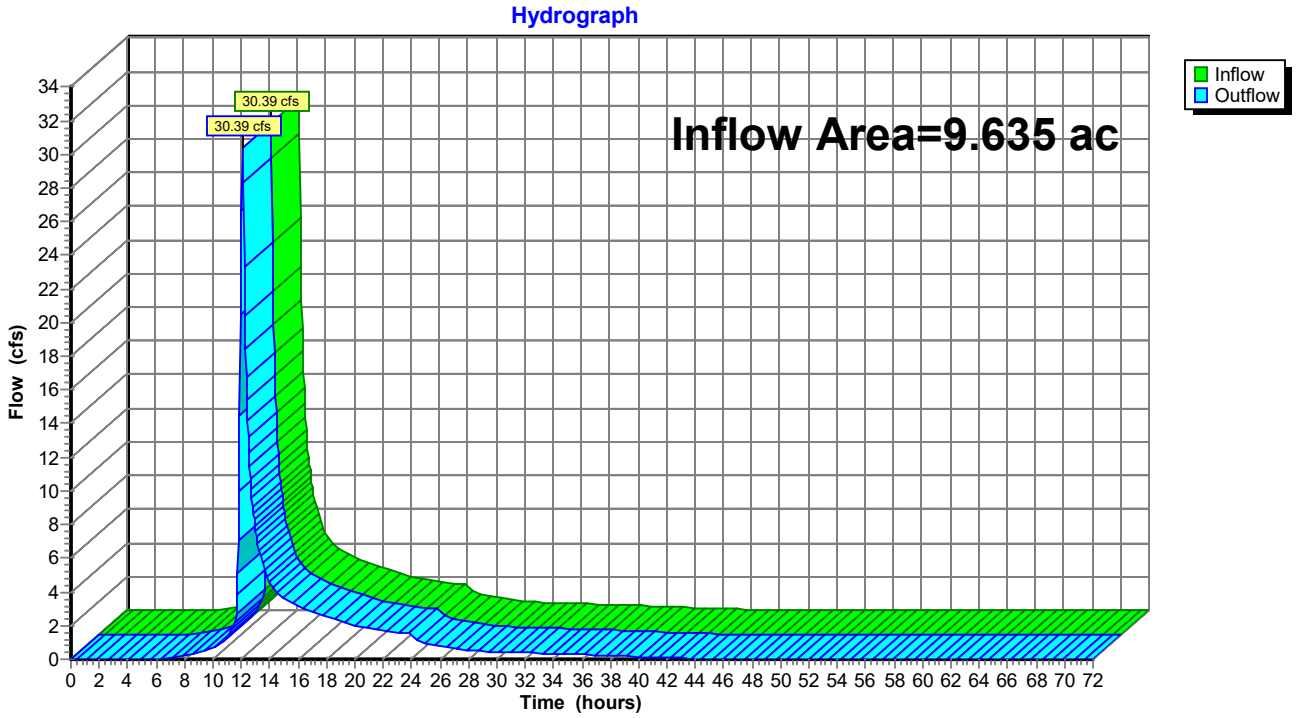


Summary for Reach 26R: SWL-1

Inflow Area = 9.635 ac, 56.76% Impervious, Inflow Depth > 6.23" for 100-Year event
Inflow = 30.39 cfs @ 12.07 hrs, Volume= 5.003 af
Outflow = 30.39 cfs @ 12.07 hrs, Volume= 5.003 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 28R : SWL-3

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach 26R: SWL-1

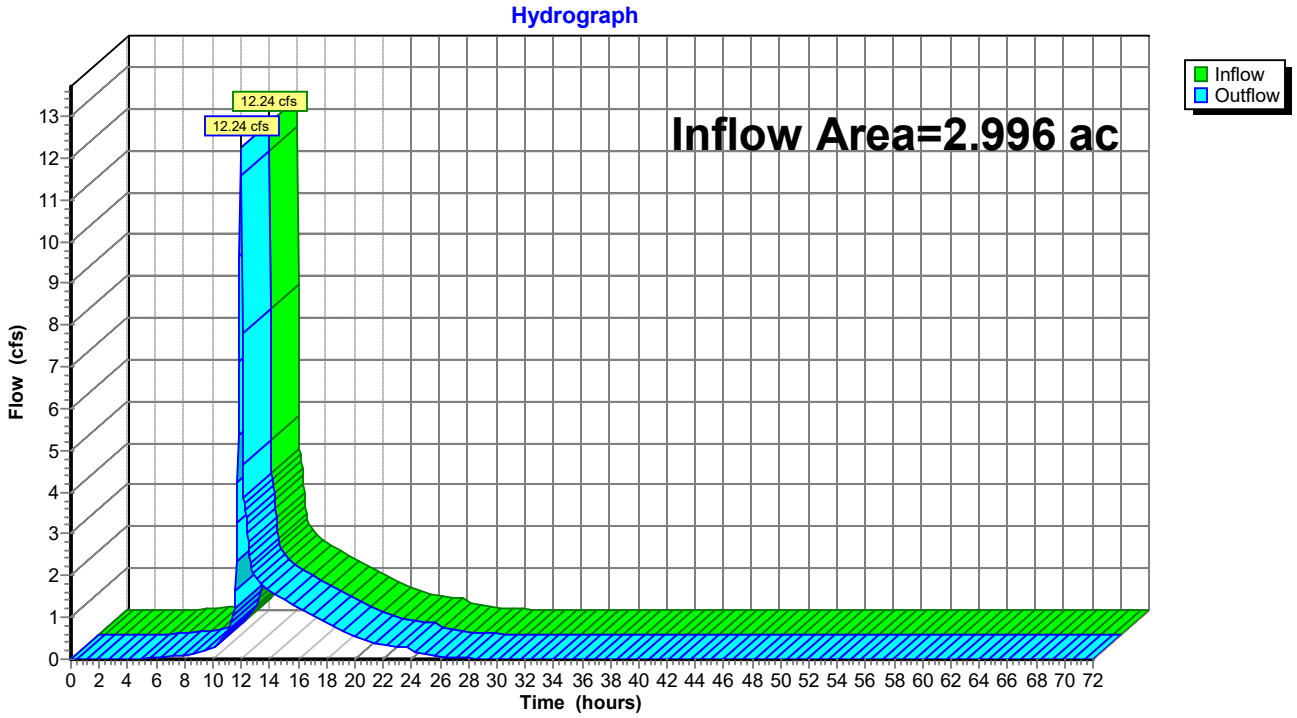


Summary for Reach 27R: SWL-2

Inflow Area = 2.996 ac, 64.52% Impervious, Inflow Depth = 5.82" for 100-Year event
Inflow = 12.24 cfs @ 11.97 hrs, Volume= 1.453 af
Outflow = 12.24 cfs @ 11.97 hrs, Volume= 1.453 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 28R : SWL-3

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach 27R: SWL-2

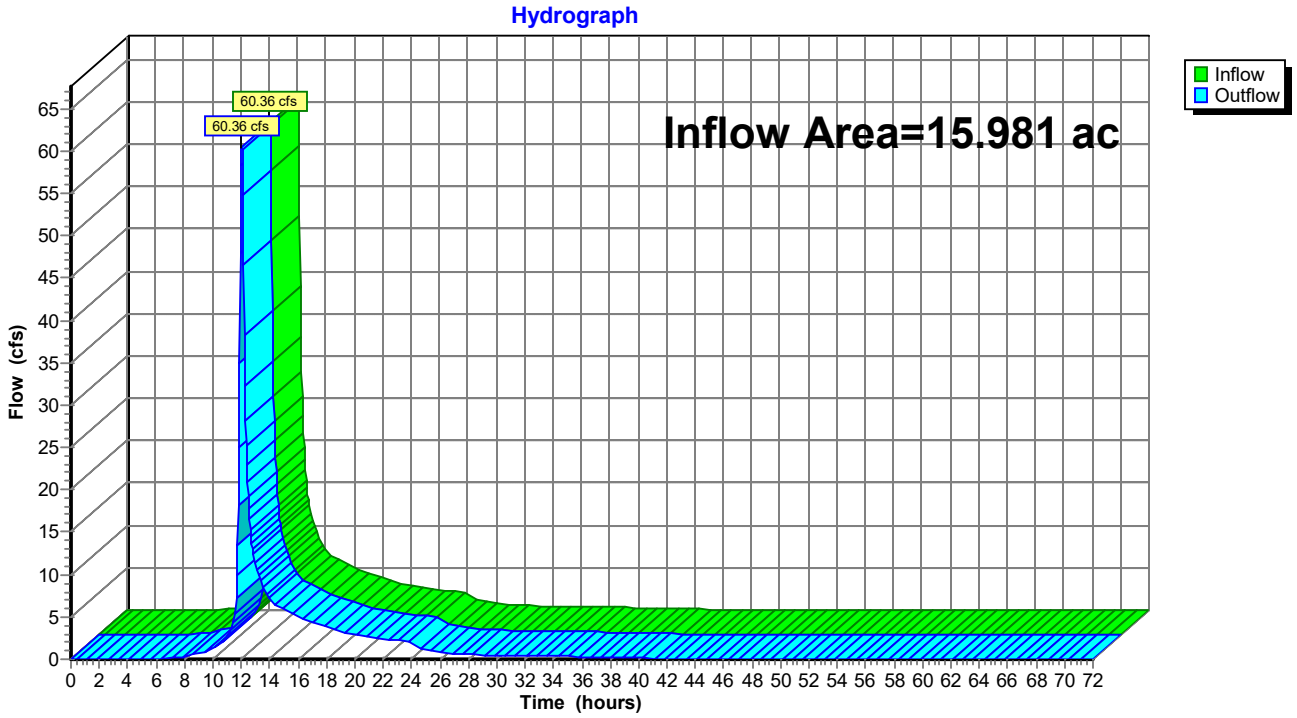


Summary for Reach 28R: SWL-3

Inflow Area = 15.981 ac, 52.14% Impervious, Inflow Depth = 5.88" for 100-Year event
Inflow = 60.36 cfs @ 12.04 hrs, Volume= 7.832 af
Outflow = 60.36 cfs @ 12.04 hrs, Volume= 7.832 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 8P : BIO-RETENTION BASIN #5A (POI 001)

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach 28R: SWL-3



Summary for Pond 8P: BIO-RETENTION BASIN #5A (POI 001)

Inflow Area = 34.811 ac, 65.84% Impervious, Inflow Depth = 4.11" for 100-Year event
Inflow = 101.83 cfs @ 12.00 hrs, Volume= 11.922 af
Outflow = 18.29 cfs @ 13.01 hrs, Volume= 11.922 af, Atten= 82%, Lag= 60.4 min
Discarded = 1.59 cfs @ 13.01 hrs, Volume= 4.818 af
Primary = 16.70 cfs @ 13.01 hrs, Volume= 7.104 af
Routed to Link 37L : Discharge 001

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,869.95' @ 13.01 hrs Surf.Area= 87,990 sf Storage= 162,572 cf

Plug-Flow detention time= 332.3 min calculated for 11.913 af (100% of inflow)
Center-of-Mass det. time= 332.0 min (1,259.5 - 927.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,868.00'	560,097 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

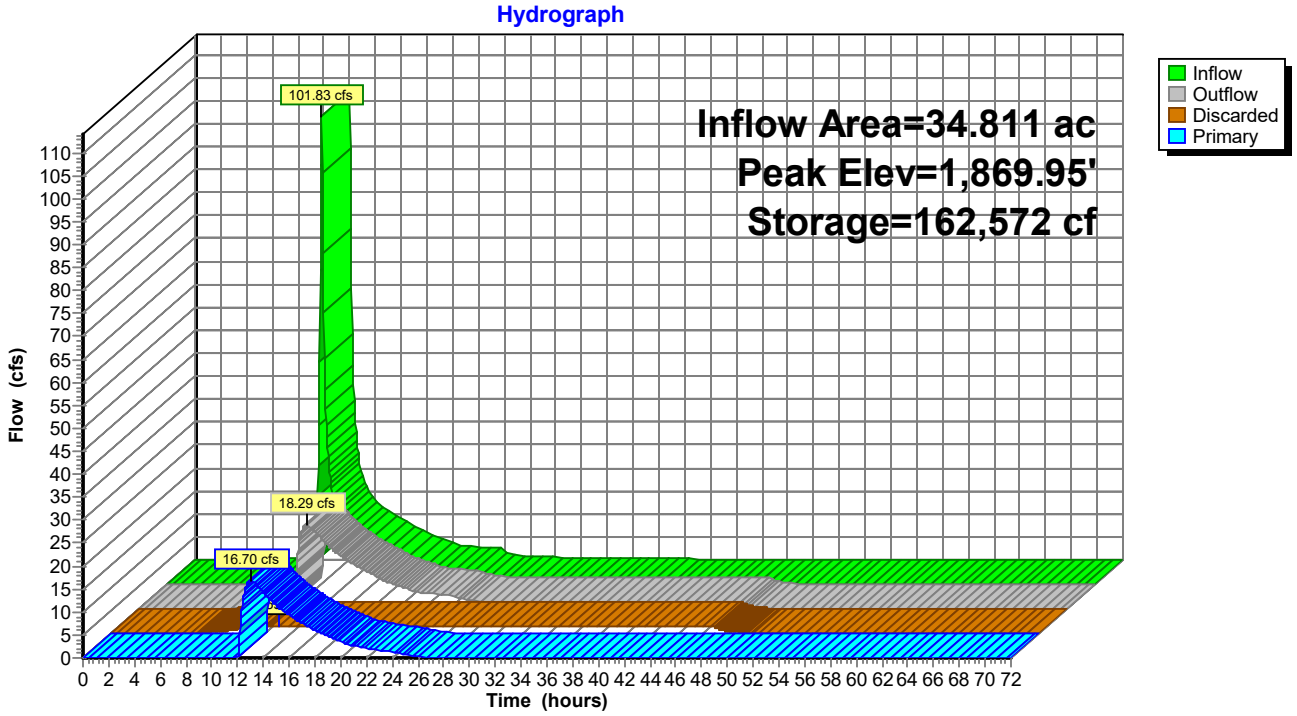
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,868.00	79,525	0	0
1,869.00	83,329	81,427	81,427
1,870.00	88,249	85,789	167,216
1,872.00	98,164	186,413	353,629
1,874.00	108,304	206,468	560,097

Device	Routing	Invert	Outlet Devices
#1	Primary	1,865.00'	**42.0" Round Culvert** L= 30.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 1,865.00' / 1,864.50' S= 0.0167 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf
#2	Device 1	1,869.10'	**20.0" W x 12.0" H Vert. Orifice/Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,870.50'	**72.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Discarded	1,868.00'	**0.780 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=1.59 cfs @ 13.01 hrs HW=1,869.95' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 1.59 cfs)

Primary OutFlow Max=16.69 cfs @ 13.01 hrs HW=1,869.95' (Free Discharge)
└**1=Culvert** (Passes 16.69 cfs of 82.83 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 16.69 cfs @ 2.95 fps)
  └**3=Orifice/Grate** (Controls 0.00 cfs)

Pond 8P: BIO-RETENTION BASIN #5A (POI 001)



Summary for Pond 9P: seepage pit with chambers #5A

Inflow Area = 6.084 ac,100.00% Impervious, Inflow Depth = 8.16" for 100-Year event
Inflow = 70.99 cfs @ 11.96 hrs, Volume= 4.137 af
Outflow = 3.61 cfs @ 12.92 hrs, Volume= 4.137 af, Atten= 95%, Lag= 57.3 min
Discarded = 1.28 cfs @ 8.60 hrs, Volume= 3.190 af
Primary = 2.33 cfs @ 12.92 hrs, Volume= 0.947 af
Routed to Pond 8P : BIO-RETENTION BASIN #5A (POI 001)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,879.00' @ 12.92 hrs Surf.Area= 42,456 sf Storage= 89,570 cf

Plug-Flow detention time= 367.1 min calculated for 4.137 af (100% of inflow)
Center-of-Mass det. time= 367.0 min (1,103.4 - 736.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,876.00'	40,538 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 169,824 cf Overall - 68,478 cf Embedded = 101,346 cf x 40.0% Voids
#2	1,876.50'	68,478 cf	**Cultec R-360HD** x 1862 Inside #1 Effective Size= 54.9"W x 36.0"H => 9.99 sf x 3.67'L = 36.6 cf Overall Size= 60.0"W x 36.0"H x 4.17'L with 0.50' Overlap 1862 Chambers in 19 Rows Cap Storage= 6.5 cf x 2 x 19 rows = 245.5 cf
		109,016 cf	Total Available Storage

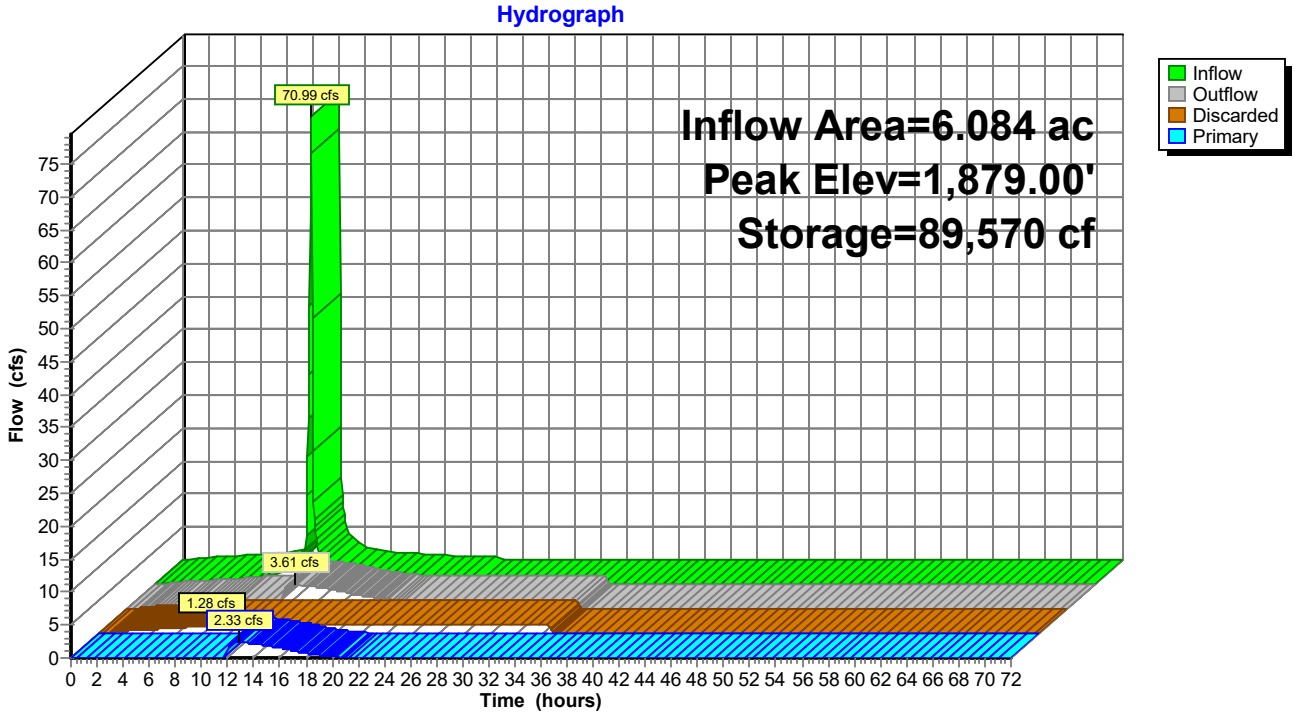
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,876.00	42,456	0	0
1,880.00	42,456	169,824	169,824

Device	Routing	Invert	Outlet Devices
#1	Primary	1,876.00'	**24.0" Round Culvert** L= 120.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,876.00' / 1,868.00' S= 0.0667 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,877.80'	**12.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	1,876.00'	**1.300 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=1.28 cfs @ 8.60 hrs HW=1,876.04' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 1.28 cfs)

Primary OutFlow Max=2.33 cfs @ 12.92 hrs HW=1,879.00' TW=1,869.56' (Fixed TW Elev= 1,869.56')
└**1=Culvert** (Passes 2.33 cfs of 18.85 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 2.33 cfs @ 4.67 fps)

Pond 9P: seepage pit with chambers #5A



Summary for Pond 13P: bio-retention basin #4a

Inflow Area = 2.695 ac, 0.00% Impervious, Inflow Depth = 3.64" for 100-Year event
Inflow = 9.73 cfs @ 12.17 hrs, Volume= 0.817 af
Outflow = 3.87 cfs @ 12.51 hrs, Volume= 0.817 af, Atten= 60%, Lag= 20.1 min
Discarded = 0.14 cfs @ 12.51 hrs, Volume= 0.459 af
Primary = 3.73 cfs @ 12.51 hrs, Volume= 0.357 af
Routed to Reach 23R : SWL-4

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,894.17' @ 12.51 hrs Surf.Area= 7,826 sf Storage= 14,466 cf

Plug-Flow detention time= 595.4 min calculated for 0.817 af (100% of inflow)
Center-of-Mass det. time= 595.1 min (1,451.6 - 856.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,892.00'	30,734 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

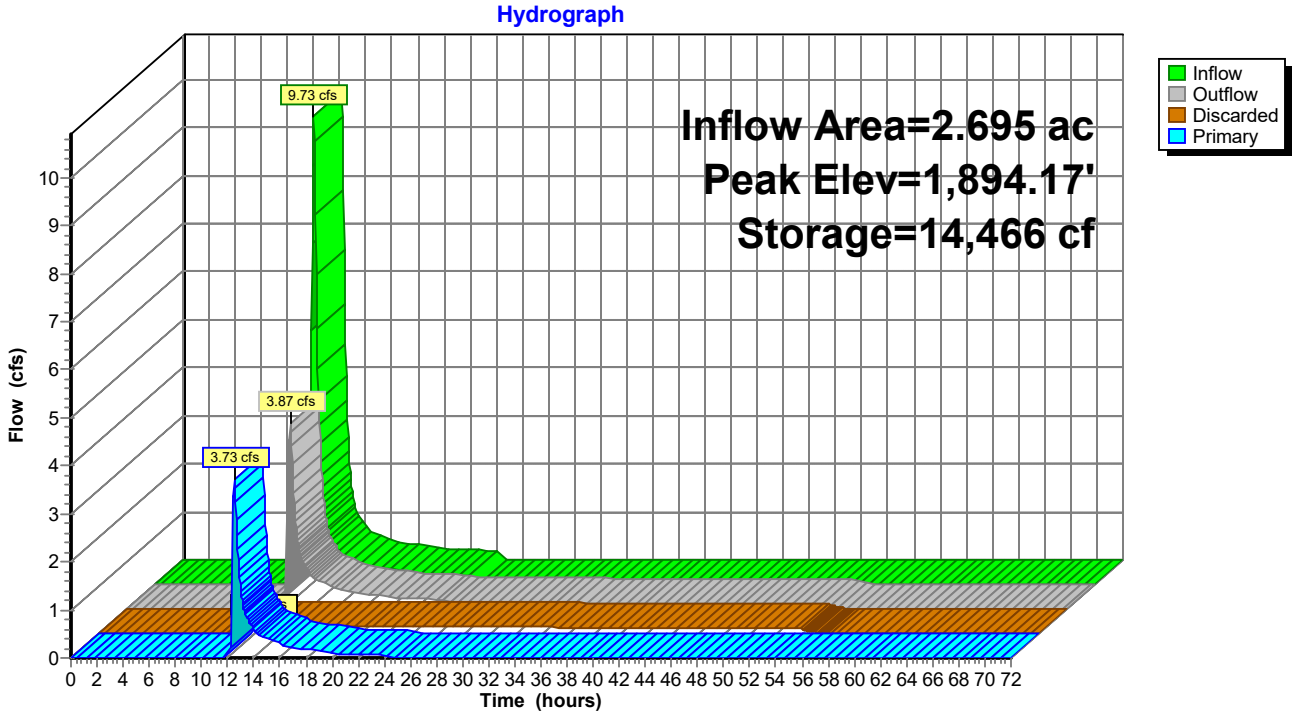
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,892.00	5,542	0	0
1,894.00	7,636	13,178	13,178
1,896.00	9,920	17,556	30,734

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,892.00'	**0.800 in/hr Exfiltration over Surface area**
#2	Primary	1,894.00'	**20.0' long + 3.0 '/' SideZ x 20.0' 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=0.14 cfs @ 12.51 hrs HW=1,894.17' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Primary OutFlow Max=3.67 cfs @ 12.51 hrs HW=1,894.17' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 3.67 cfs @ 1.08 fps)

Pond 13P: bio-retention basin #4a



Summary for Pond 14P: seepage pit with chambers #5F

Inflow Area = 7.817 ac, 99.88% Impervious, Inflow Depth = 8.16" for 100-Year event
Inflow = 91.21 cfs @ 11.96 hrs, Volume= 5.316 af
Outflow = 4.63 cfs @ 12.92 hrs, Volume= 5.316 af, Atten= 95%, Lag= 57.5 min
Discarded = 2.24 cfs @ 9.85 hrs, Volume= 4.343 af
Primary = 2.39 cfs @ 12.92 hrs, Volume= 0.972 af
Routed to Pond 8P : BIO-RETENTION BASIN #5A (POI 001)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,871.24' @ 12.92 hrs Surf.Area= 56,925 sf Storage= 108,429 cf

Plug-Flow detention time= 268.8 min calculated for 5.316 af (100% of inflow)
Center-of-Mass det. time= 268.8 min (1,005.1 - 736.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,868.50'	56,160 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 227,700 cf Overall - 87,300 cf Embedded = 140,400 cf x 40.0% Voids
#2	1,869.00'	87,300 cf	**Cultec R-360HD** x 2376 Inside #1 Effective Size= 54.9"W x 36.0"H => 9.99 sf x 3.67'L = 36.6 cf Overall Size= 60.0"W x 36.0"H x 4.17'L with 0.50' Overlap 2376 Chambers in 18 Rows Cap Storage= 6.5 cf x 2 x 18 rows = 232.6 cf
		143,460 cf	Total Available Storage

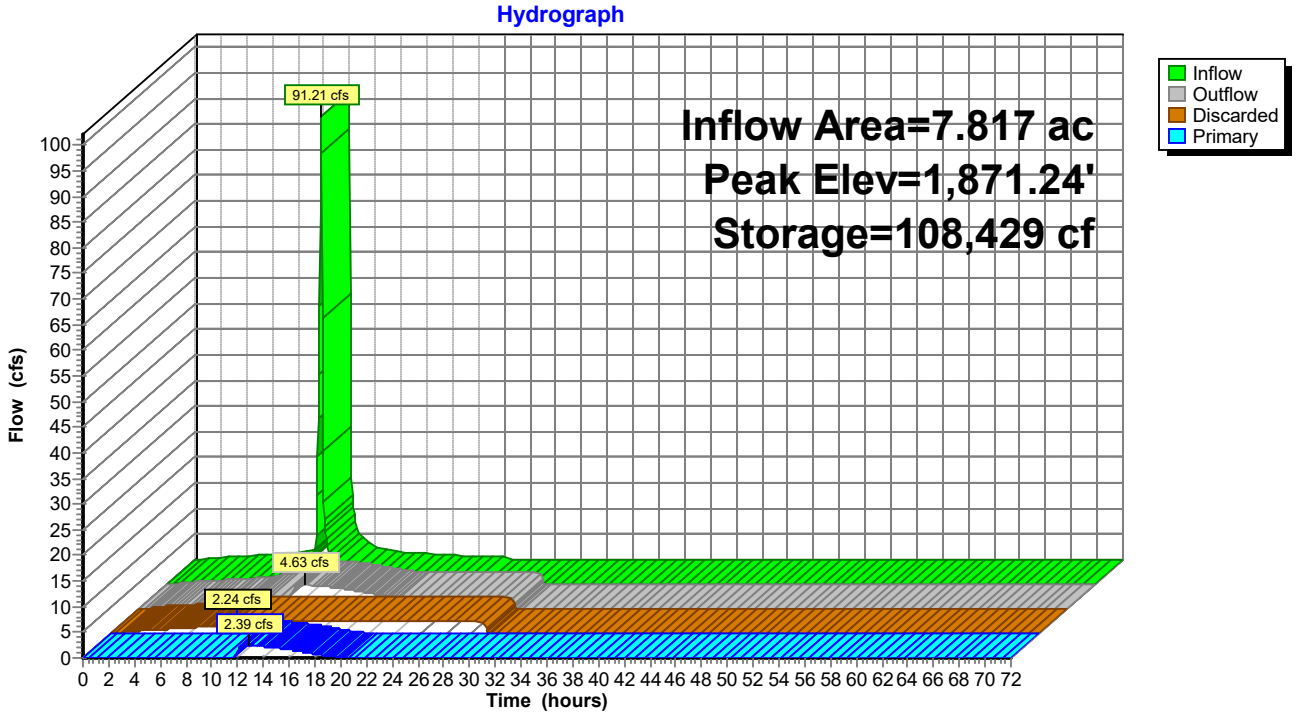
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,868.50	56,925	0	0
1,872.50	56,925	227,700	227,700

Device	Routing	Invert	Outlet Devices
#1	Primary	1,869.50'	**24.0" Round Culvert** L= 60.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,869.50' / 1,868.00' S= 0.0250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,870.00'	**12.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	1,868.50'	**1.700 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=2.24 cfs @ 9.85 hrs HW=1,868.54' (Free Discharge)
↑**3=Exfiltration** (Exfiltration Controls 2.24 cfs)

Primary OutFlow Max=2.39 cfs @ 12.92 hrs HW=1,871.24' TW=1,869.56' (Fixed TW Elev= 1,869.56')
↑**1=Culvert** (Passes 2.39 cfs of 11.50 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 2.39 cfs @ 4.78 fps)

Pond 14P: seepage pit with chambers #5F



Summary for Pond 15P: seepage pit with chambers #4b

Inflow Area = 1.404 ac, 93.45% Impervious, Inflow Depth = 7.92" for 100-Year event
Inflow = 16.29 cfs @ 11.96 hrs, Volume= 0.927 af
Outflow = 3.00 cfs @ 12.16 hrs, Volume= 0.927 af, Atten= 82%, Lag= 11.8 min
Discarded = 0.22 cfs @ 7.85 hrs, Volume= 0.526 af
Primary = 2.78 cfs @ 12.16 hrs, Volume= 0.400 af
Routed to Reach 23R : SWL-4

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,889.99' @ 12.16 hrs Surf.Area= 12,000 sf Storage= 17,989 cf

Plug-Flow detention time= 227.6 min calculated for 0.926 af (100% of inflow)
Center-of-Mass det. time= 227.8 min (975.3 - 747.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,887.00'	16,609 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 48,000 cf Overall - 6,477 cf Embedded = 41,523 cf x 40.0% Voids
#2	1,887.50'	6,477 cf	**Cultec R-360HD** x 175 Inside #1 Effective Size= 54.9"W x 36.0"H => 9.99 sf x 3.67'L = 36.6 cf Overall Size= 60.0"W x 36.0"H x 4.17'L with 0.50' Overlap 175 Chambers in 5 Rows Cap Storage= 6.5 cf x 2 x 5 rows = 64.6 cf
		23,086 cf	Total Available Storage

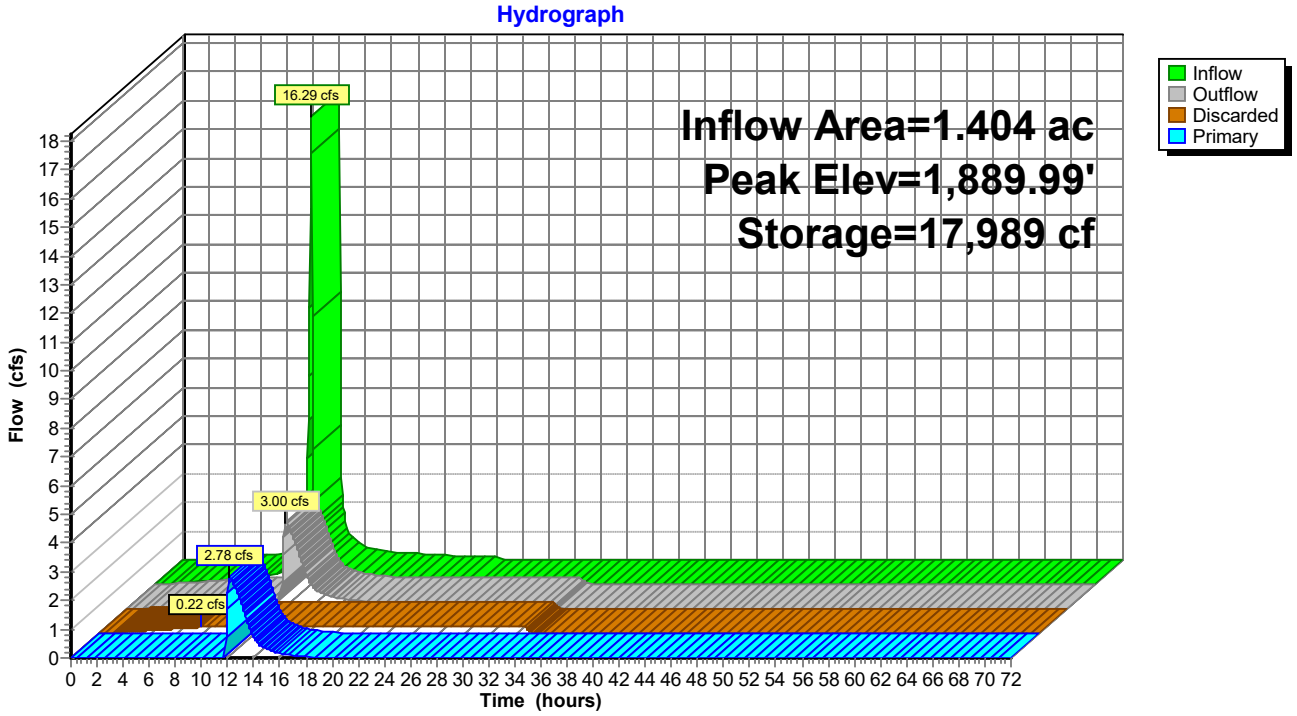
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,887.00	12,000	0	0
1,891.00	12,000	48,000	48,000

Device	Routing	Invert	Outlet Devices
#1	Primary	1,887.00'	**24.0" Round Culvert** L= 50.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,887.00' / 1,886.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,888.40'	**12.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	1,887.00'	**0.800 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.22 cfs @ 7.85 hrs HW=1,887.04' (Free Discharge)
↑**3=Exfiltration** (Exfiltration Controls 0.22 cfs)

Primary OutFlow Max=2.78 cfs @ 12.16 hrs HW=1,889.98' (Free Discharge)
↑**1=Culvert** (Passes 2.78 cfs of 18.80 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 2.78 cfs @ 5.55 fps)

Pond 15P: seepage pit with chambers #4b



Summary for Pond 16P: seepage pit with chambers #3A

Inflow Area = 4.089 ac, 57.74% Impervious, Inflow Depth = 5.88" for 100-Year event
Inflow = 39.88 cfs @ 11.97 hrs, Volume= 2.004 af
Outflow = 3.04 cfs @ 12.55 hrs, Volume= 2.004 af, Atten= 92%, Lag= 35.0 min
Discarded = 0.55 cfs @ 10.05 hrs, Volume= 1.093 af
Primary = 2.49 cfs @ 12.55 hrs, Volume= 0.911 af
Routed to Pond 26P : bio-retention basin #3b

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,903.32' @ 12.55 hrs Surf.Area= 26,640 sf Storage= 43,007 cf

Plug-Flow detention time= 264.4 min calculated for 2.003 af (100% of inflow)
Center-of-Mass det. time= 264.6 min (1,064.8 - 800.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,901.00'	26,373 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 106,560 cf Overall - 40,628 cf Embedded = 65,932 cf x 40.0% Voids
#2	1,901.50'	40,628 cf	**Cultec R-360HD** x 1102 Inside #1 Effective Size= 54.9"W x 36.0"H => 9.99 sf x 3.67'L = 36.6 cf Overall Size= 60.0"W x 36.0"H x 4.17'L with 0.50' Overlap 1102 Chambers in 19 Rows Cap Storage= 6.5 cf x 2 x 19 rows = 245.5 cf
		67,001 cf	Total Available Storage

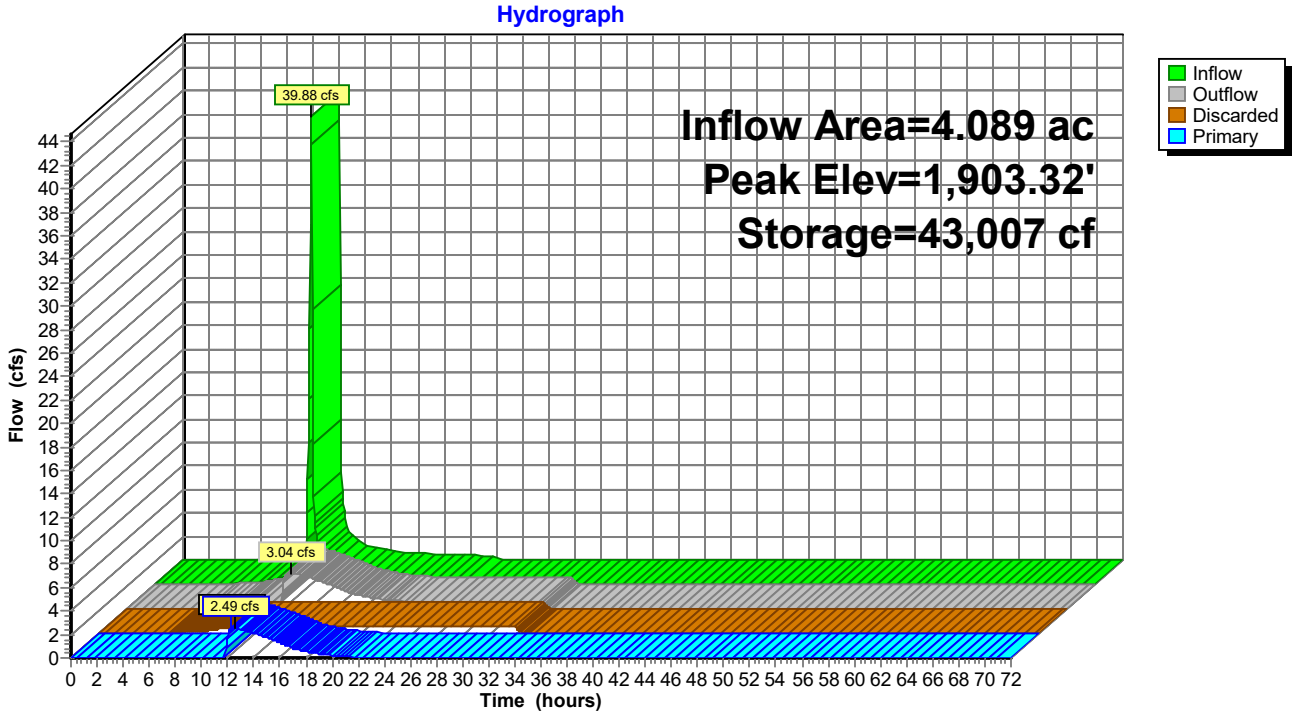
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,901.00	26,640	0	0
1,905.00	26,640	106,560	106,560

Device	Routing	Invert	Outlet Devices
#1	Primary	1,901.00'	**24.0" Round Culvert** L= 120.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,901.00' / 1,898.00' S= 0.0250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,902.00'	**12.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	1,901.00'	**0.900 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.55 cfs @ 10.05 hrs HW=1,901.04' (Free Discharge)
↑—**3=Exfiltration** (Exfiltration Controls 0.55 cfs)

Primary OutFlow Max=2.49 cfs @ 12.55 hrs HW=1,903.32' (Free Discharge)
↑—**1=Culvert** (Passes 2.49 cfs of 15.34 cfs potential flow)
↑—**2=Orifice/Grate** (Orifice Controls 2.49 cfs @ 4.97 fps)

Pond 16P: seepage pit with chambers #3A



Summary for Pond 24P: bio-retention basin #6a

Inflow Area = 1.953 ac, 57.30% Impervious, Inflow Depth = 5.40" for 100-Year event
Inflow = 17.77 cfs @ 11.97 hrs, Volume= 0.880 af
Outflow = 2.25 cfs @ 12.28 hrs, Volume= 0.879 af, Atten= 87%, Lag= 18.7 min
Primary = 2.25 cfs @ 12.28 hrs, Volume= 0.879 af
Routed to Reach 27R : SWL-2

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,924.58' @ 12.28 hrs Surf.Area= 8,484 sf Storage= 18,034 cf

Plug-Flow detention time= 157.3 min calculated for 0.879 af (100% of inflow)
Center-of-Mass det. time= 158.6 min (967.7 - 809.1)

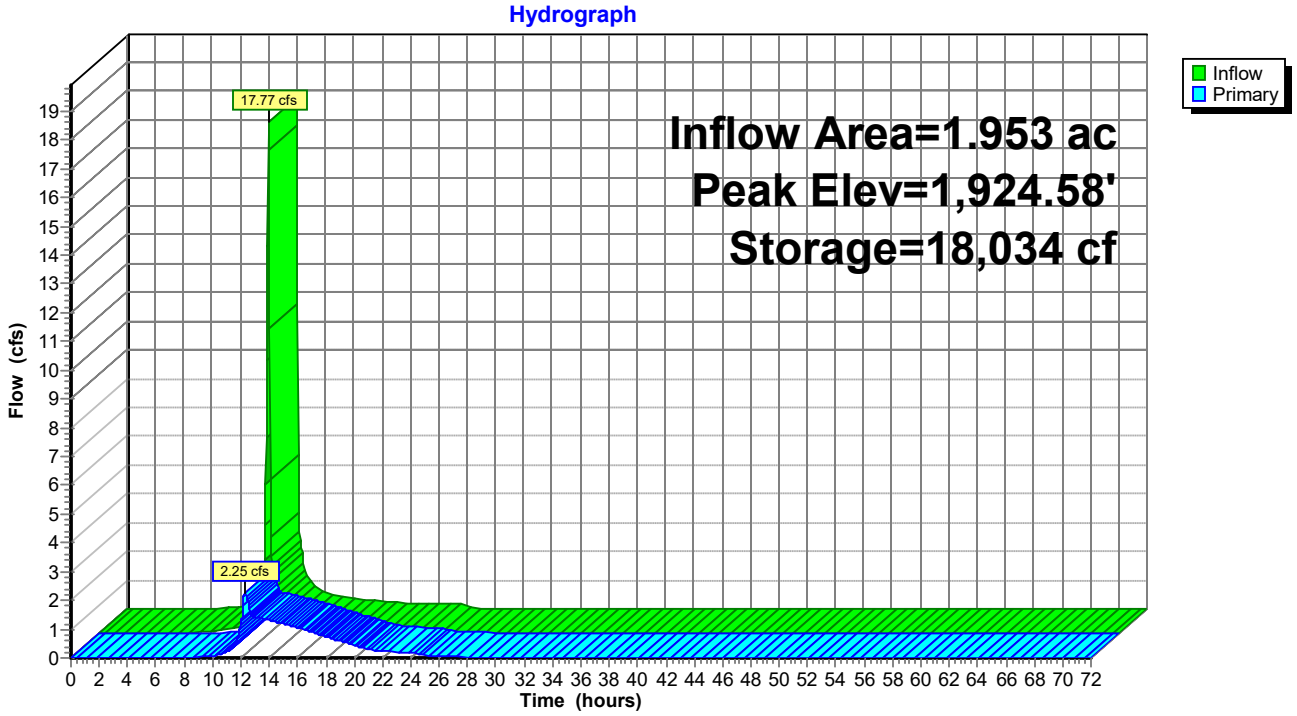
Volume	Invert	Avail.Storage	Storage Description
#1	1,922.00'	31,352 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,922.00	5,567	0	0
1,924.00	7,781	13,348	13,348
1,926.00	10,223	18,004	31,352

Device	Routing	Invert	Outlet Devices
#1	Primary	1,922.00'	**24.0" Round Culvert** L= 50.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,922.00' / 1,920.25' S= 0.0350 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,922.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,924.50'	**45.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.23 cfs @ 12.28 hrs HW=1,924.58' (Free Discharge)
└**1=Culvert** (Passes 2.23 cfs of 16.75 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 1.44 cfs @ 7.34 fps)
  └**3=Orifice/Grate** (Weir Controls 0.78 cfs @ 0.90 fps)

Pond 24P: bio-retention basin #6a



Summary for Pond 26P: bio-retention basin #3b

Inflow Area = 14.187 ac, 33.20% Impervious, Inflow Depth = 3.94" for 100-Year event
Inflow = 40.51 cfs @ 12.26 hrs, Volume= 4.660 af
Outflow = 1.45 cfs @ 19.24 hrs, Volume= 4.660 af, Atten= 96%, Lag= 418.8 min
Discarded = 0.97 cfs @ 19.24 hrs, Volume= 3.511 af
Primary = 0.48 cfs @ 19.24 hrs, Volume= 1.150 af
Routed to Link 37L : Discharge 001

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,896.05' @ 19.24 hrs Surf.Area= 35,078 sf Storage= 144,709 cf

Plug-Flow detention time= 1,136.0 min calculated for 4.657 af (100% of inflow)
Center-of-Mass det. time= 1,136.9 min (1,993.4 - 856.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,891.00'	218,379 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

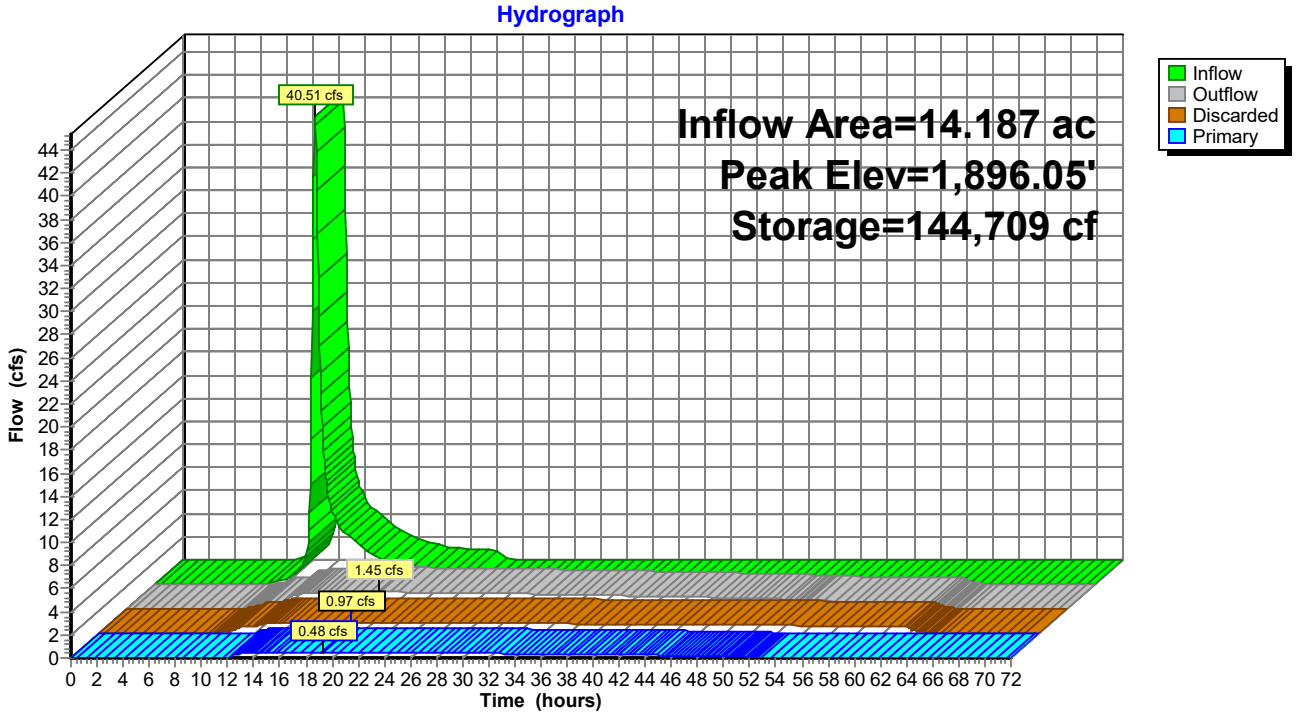
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,891.00	22,485	0	0
1,892.00	24,866	23,676	23,676
1,894.00	29,797	54,663	78,339
1,896.00	34,953	64,750	143,089
1,898.00	40,337	75,290	218,379

Device	Routing	Invert	Outlet Devices
#1	Primary	1,891.00'	**24.0" Round Culvert** L= 120.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,891.00' / 1,889.80' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,892.00'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	1,891.00'	**1.200 in/hr Exfiltration over Surface area**
#4	Device 1	1,896.60'	**45.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.97 cfs @ 19.24 hrs HW=1,896.05' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.97 cfs)

Primary OutFlow Max=0.48 cfs @ 19.24 hrs HW=1,896.05' (Free Discharge)
└**1=Culvert** (Passes 0.48 cfs of 26.85 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 0.48 cfs @ 9.69 fps)
└**4=Orifice/Grate** (Controls 0.00 cfs)

Pond 26P: bio-retention basin #3b



Summary for Pond 29P: bio-retention basin #1A

Inflow Area = 3.056 ac, 64.73% Impervious, Inflow Depth = 6.60" for 100-Year event
Inflow = 32.42 cfs @ 11.96 hrs, Volume= 1.681 af
Outflow = 2.19 cfs @ 12.61 hrs, Volume= 1.675 af, Atten= 93%, Lag= 38.6 min
Primary = 2.19 cfs @ 12.61 hrs, Volume= 1.675 af
Routed to Pond 38P : bio-retention basin #2A

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,940.57' @ 12.61 hrs Surf.Area= 19,639 sf Storage= 41,425 cf

Plug-Flow detention time= 365.8 min calculated for 1.675 af (100% of inflow)
Center-of-Mass det. time= 363.4 min (1,149.0 - 785.6)

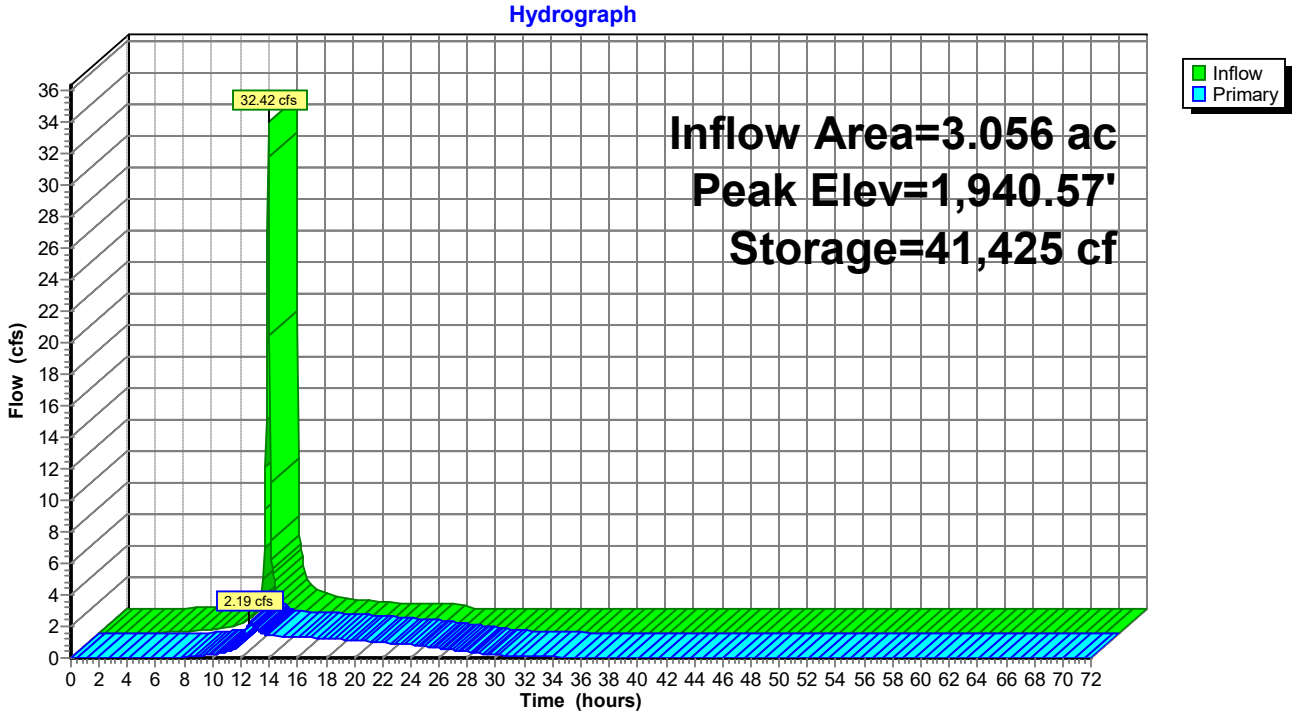
Volume	Invert	Avail.Storage	Storage Description
#1	1,938.00'	72,334 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,938.00	12,620	0	0
1,940.00	18,027	30,647	30,647
1,942.00	23,660	41,687	72,334

Device	Routing	Invert	Outlet Devices
#1	Primary	1,936.00'	**24.0" Round Culvert** L= 85.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,936.00' / 1,934.00' S= 0.0235 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,938.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,940.50'	**45.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.17 cfs @ 12.61 hrs HW=1,940.57' TW=1,936.57' (Fixed TW Elev= 1,936.57')
└─**1=Culvert** (Passes 2.17 cfs of 25.23 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.44 cfs @ 7.34 fps)
  └─**3=Orifice/Grate** (Weir Controls 0.73 cfs @ 0.88 fps)

Pond 29P: bio-retention basin #1A



Summary for Pond 38P: bio-retention basin #2A

Inflow Area = 4.593 ac, 65.01% Impervious, Inflow Depth > 6.58" for 100-Year event
Inflow = 17.49 cfs @ 11.97 hrs, Volume= 2.520 af
Outflow = 16.60 cfs @ 12.00 hrs, Volume= 2.519 af, Atten= 5%, Lag= 1.8 min
Primary = 16.60 cfs @ 12.00 hrs, Volume= 2.519 af
Routed to Pond 40P : bio-retention basin #2C

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,936.57' @ 12.00 hrs Surf.Area= 4,973 sf Storage= 10,737 cf

Plug-Flow detention time= 107.8 min calculated for 2.517 af (100% of inflow)
Center-of-Mass det. time= 106.9 min (1,134.0 - 1,027.1)

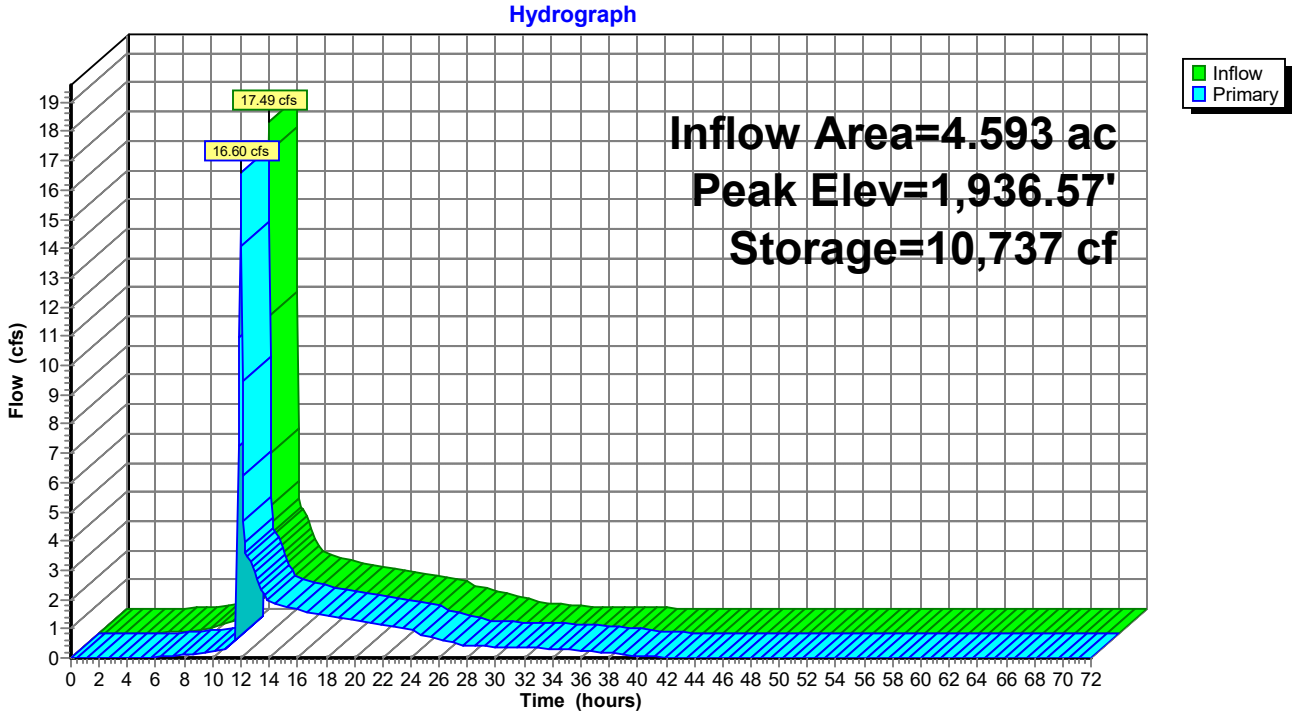
Volume	Invert	Avail.Storage	Storage Description
#1	1,933.00'	19,068 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,933.00	1,159	0	0
1,934.00	2,148	1,654	1,654
1,936.00	4,297	6,445	8,099
1,938.00	6,672	10,969	19,068

Device	Routing	Invert	Outlet Devices
#1	Primary	1,933.00'	**24.0" Round Culvert** L= 115.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,933.00' / 1,931.70' S= 0.0113 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,933.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,936.00'	**45.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=16.42 cfs @ 12.00 hrs HW=1,936.57' (Free Discharge)
└**1=Culvert** (Passes 16.42 cfs of 21.38 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.44 cfs @ 8.93 fps)
  └**3=Orifice/Grate** (Weir Controls 15.98 cfs @ 2.46 fps)

Pond 38P: bio-retention basin #2A



Summary for Pond 39P: bio-retention basin #2B

Inflow Area = 0.992 ac, 60.28% Impervious, Inflow Depth = 6.36" for 100-Year event
Inflow = 10.26 cfs @ 11.96 hrs, Volume= 0.526 af
Outflow = 0.93 cfs @ 12.45 hrs, Volume= 0.524 af, Atten= 91%, Lag= 29.2 min
Primary = 0.93 cfs @ 12.45 hrs, Volume= 0.524 af
Routed to Reach 26R : SWL-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,917.22' @ 12.45 hrs Surf.Area= 10,359 sf Storage= 11,987 cf

Plug-Flow detention time= 226.6 min calculated for 0.524 af (100% of inflow)
Center-of-Mass det. time= 224.3 min (1,015.0 - 790.7)

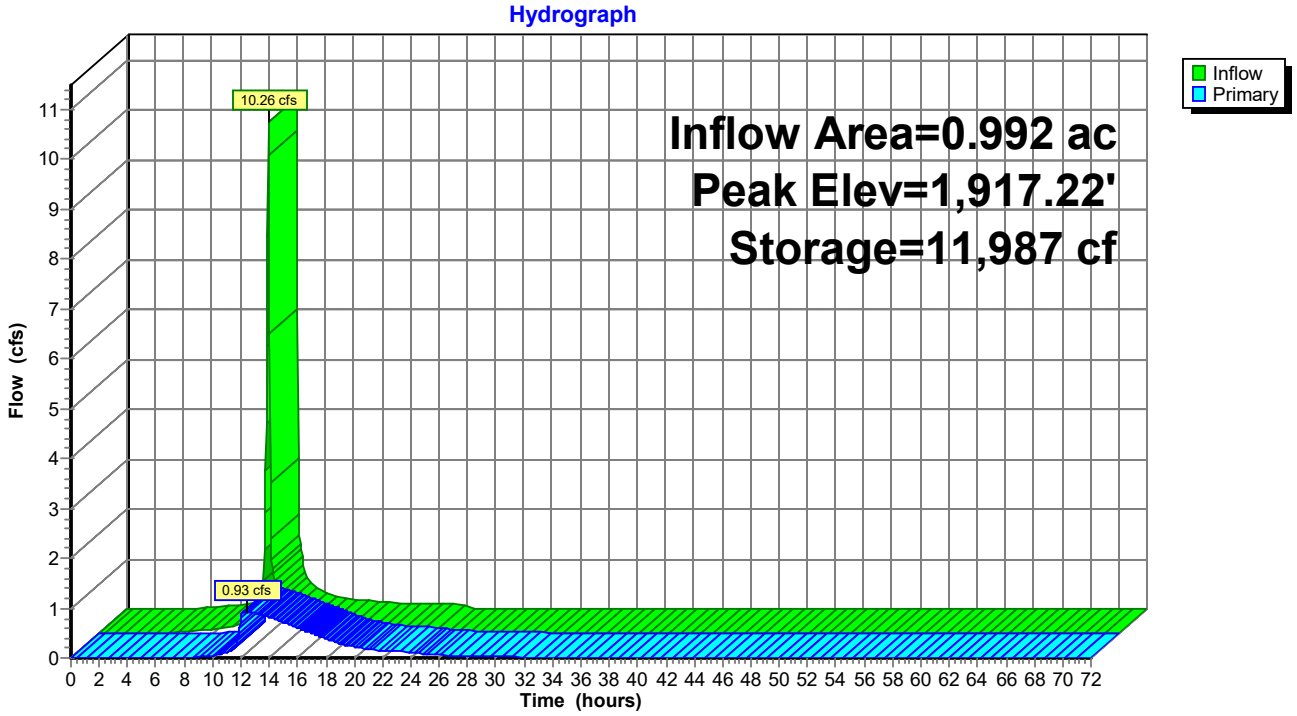
Volume	Invert	Avail.Storage	Storage Description
#1	1,916.00'	44,180 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,916.00	9,337	0	0
1,918.00	11,016	20,353	20,353
1,920.00	12,811	23,827	44,180

Device	Routing	Invert	Outlet Devices
#1	Primary	1,916.00'	**24.0" Round Culvert** L= 50.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,916.00' / 1,914.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,916.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,917.50'	**45.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.93 cfs @ 12.45 hrs HW=1,917.22' (Free Discharge)
└**1=Culvert** (Passes 0.93 cfs of 6.63 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.93 cfs @ 4.74 fps)
  └**3=Orifice/Grate** (Controls 0.00 cfs)

Pond 39P: bio-retention basin #2B



Summary for Pond 40P: bio-retention basin #2C

Inflow Area = 6.417 ac, 63.99% Impervious, Inflow Depth = 6.55" for 100-Year event
Inflow = 35.33 cfs @ 11.98 hrs, Volume= 3.504 af
Outflow = 14.40 cfs @ 12.11 hrs, Volume= 3.499 af, Atten= 59%, Lag= 8.1 min
Primary = 14.40 cfs @ 12.11 hrs, Volume= 3.499 af
Routed to Reach 26R : SWL-1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 1,933.16' @ 12.11 hrs Surf.Area= 13,888 sf Storage= 24,182 cf

Plug-Flow detention time= 56.5 min calculated for 3.499 af (100% of inflow)
Center-of-Mass det. time= 52.5 min (1,089.3 - 1,036.8)

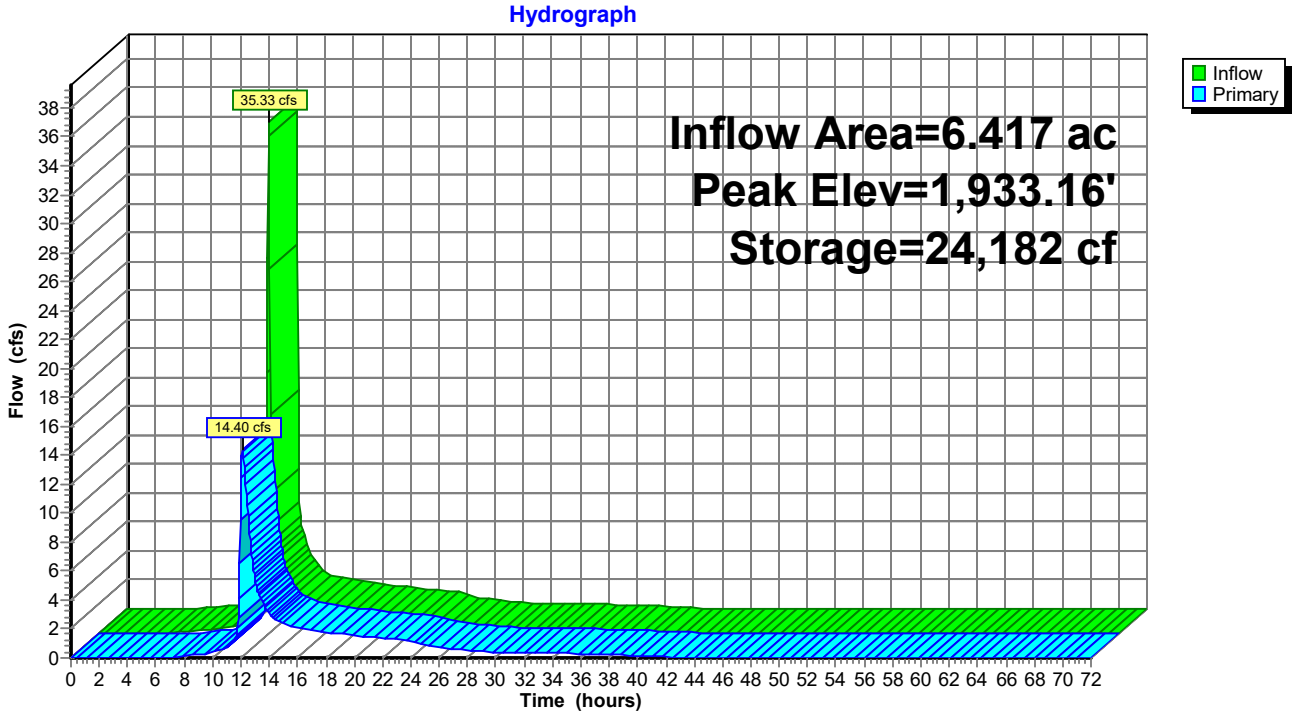
Volume	Invert	Avail.Storage	Storage Description
#1	1,931.00'	36,680 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,931.00	8,511	0	0
1,932.00	10,950	9,731	9,731
1,934.00	15,999	26,949	36,680

Device	Routing	Invert	Outlet Devices
#1	Primary	1,931.00'	**24.0" Round Culvert** L= 35.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 1,931.00' / 1,930.00' S= 0.0286 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	1,931.00'	**12.0" W x 4.0" H Vert. Orifice/Grate X 3.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	1,932.00'	**45.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=14.34 cfs @ 12.11 hrs HW=1,933.15' (Free Discharge)
└**1=Culvert** (Inlet Controls 14.34 cfs @ 4.56 fps)
├**2=Orifice/Grate** (Passes < 6.79 cfs potential flow)
└**3=Orifice/Grate** (Passes < 38.79 cfs potential flow)

Pond 40P: bio-retention basin #2C



Summary for Link 37L: Discharge 001

Inflow Area = 57.053 ac, 50.73% Impervious, Inflow Depth = 2.17" for 100-Year event
Inflow = 25.39 cfs @ 12.12 hrs, Volume= 10.335 af
Primary = 25.39 cfs @ 12.12 hrs, Volume= 10.335 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 37L: Discharge 001