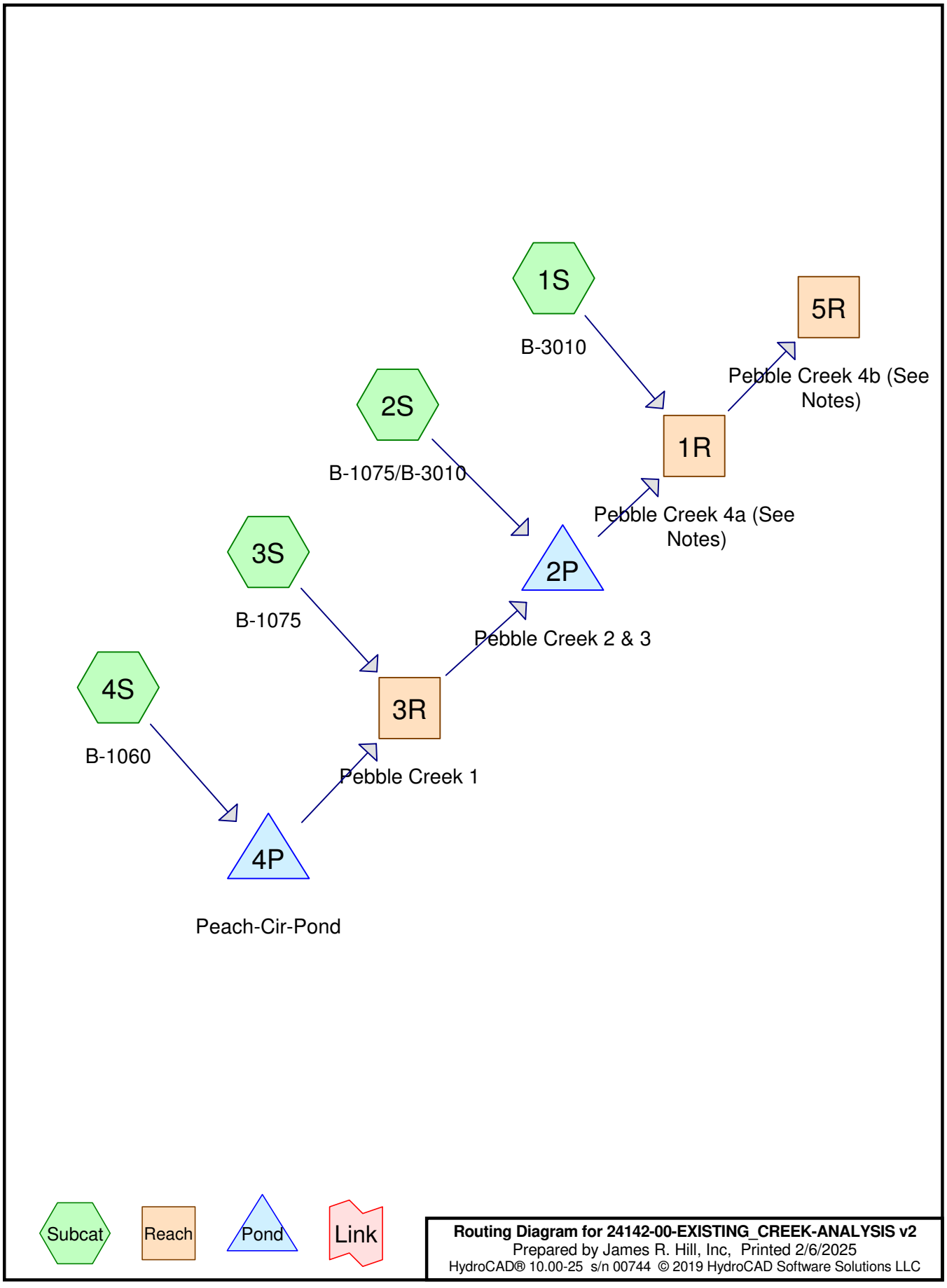


Routing Diagram for 24142-00-EXISTING_CREEK-ANALYSIS v2
Prepared by James R. Hill, Inc, Printed 2/6/2025

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.517	67	(2S)
2.862	73	(3S)
3.430	75	(4S)
0.465	74	>75% Grass cover, Good, HSG C (1S)
0.021	98	Paved parking, HSG D (1S)
0.115	98	Roofs, HSG D (1S)
1.025	70	Woods, Good, HSG C (1S)
11.435	**72**	**TOTAL AREA**

Summary for Subcatchment 1S: B-3010

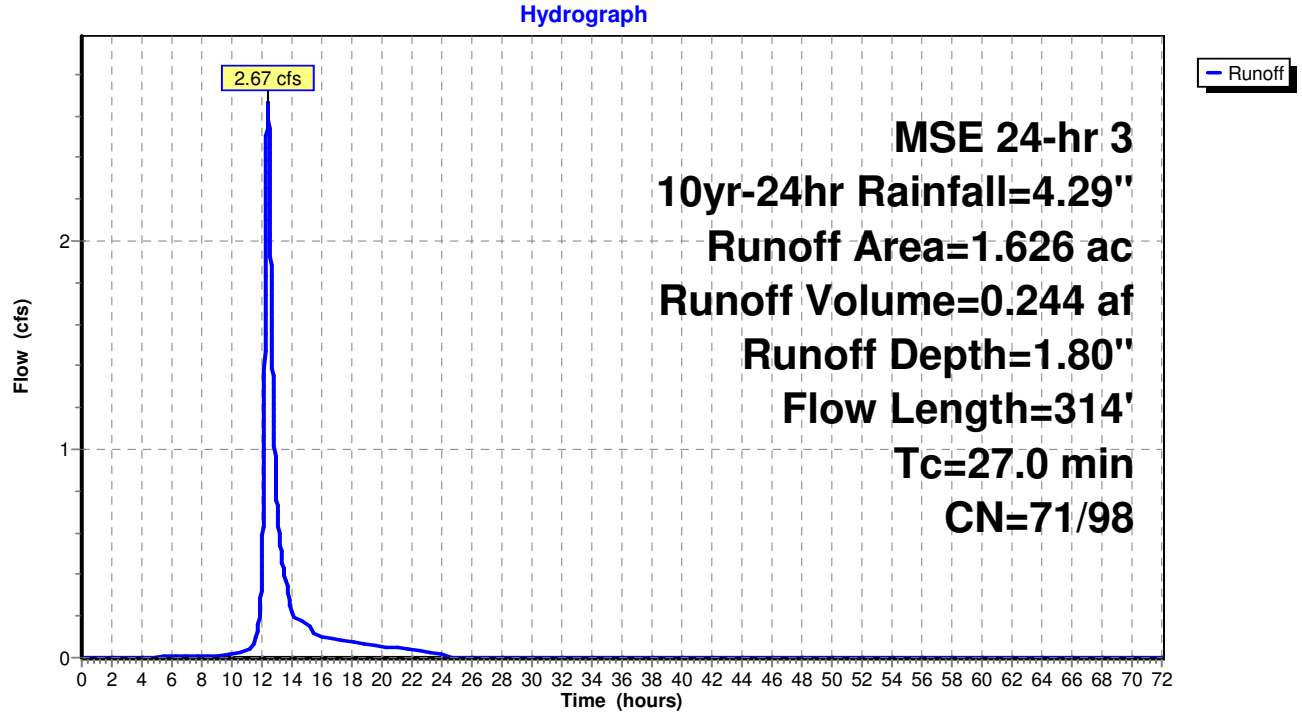
Runoff = 2.67 cfs @ 12.39 hrs, Volume= 0.244 af, Depth= 1.80"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10yr-24hr Rainfall=4.29"

Area (ac)	CN	Description
0.115	98	Roofs, HSG D
0.021	98	Paved parking, HSG D
1.025	70	Woods, Good, HSG C
0.465	74	>75% Grass cover, Good, HSG C
1.626	73	Weighted Average
1.490	71	91.64% Pervious Area
0.136	98	8.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.7	100	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.87"
4.3	214	0.0280	0.84		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
27.0	314	Total			

Subcatchment 1S: B-3010



Summary for Subcatchment 2S: B-1075/B-3010

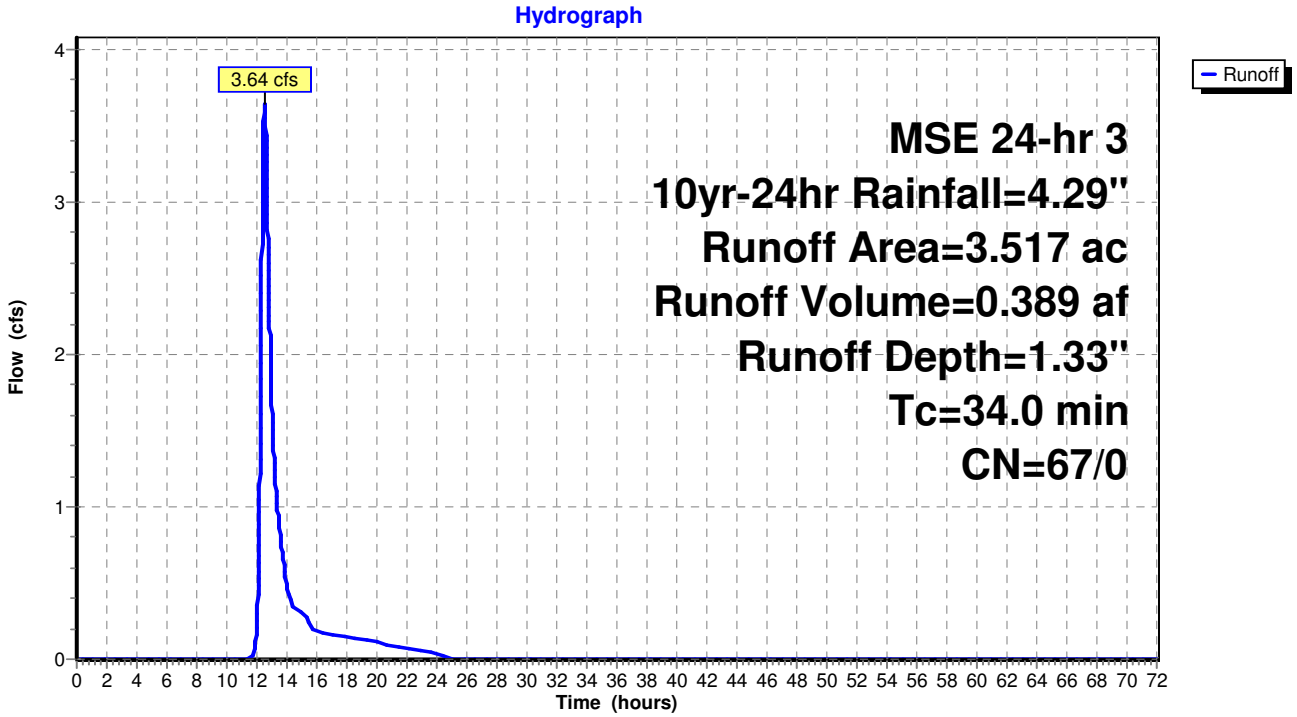
Runoff = 3.64 cfs @ 12.51 hrs, Volume= 0.389 af, Depth= 1.33"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10yr-24hr Rainfall=4.29"

	Area (ac)	CN	Description
*	3.517	67	
	3.517	67	100.00% Pervious Area

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

Subcatchment 2S: B-1075/B-3010



Summary for Subcatchment 3S: B-1075

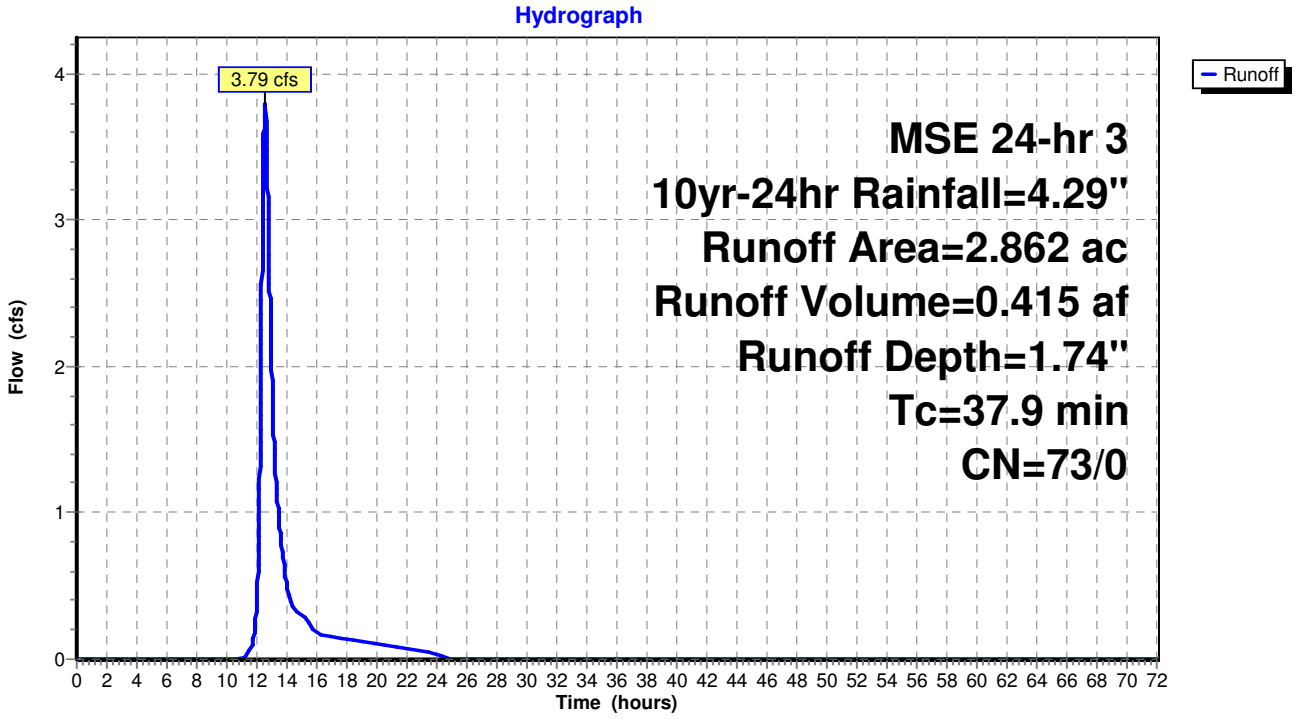
Runoff = 3.79 cfs @ 12.55 hrs, Volume= 0.415 af, Depth= 1.74"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10yr-24hr Rainfall=4.29"

	Area (ac)	CN	Description
*	2.862	73	
	2.862	73	100.00% Pervious Area

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

Subcatchment 3S: B-1075



Summary for Subcatchment 4S: B-1060

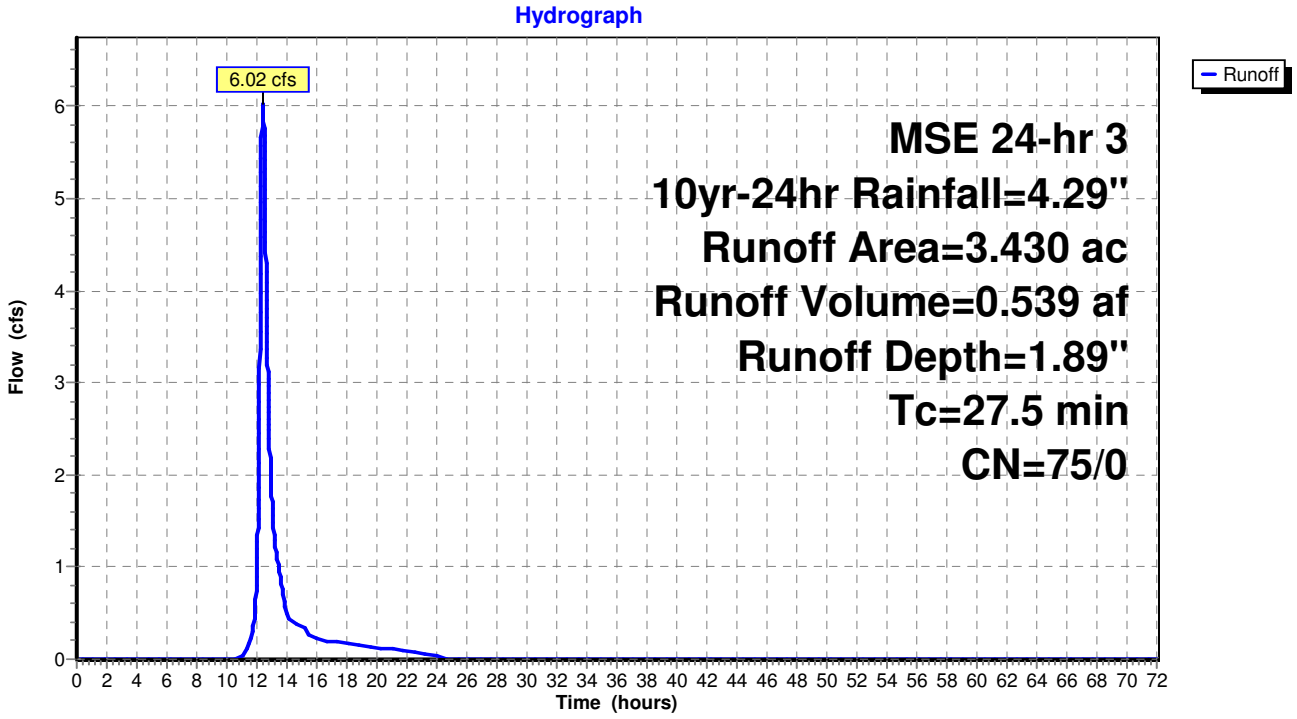
Runoff = 6.02 cfs @ 12.40 hrs, Volume= 0.539 af, Depth= 1.89"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10yr-24hr Rainfall=4.29"

	Area (ac)	CN	Description
*	3.430	75	
	3.430	75	100.00% Pervious Area

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

Subcatchment 4S: B-1060



Summary for Reach 1R: Pebble Creek 4a (See Notes)

Segment of the existing channel from existing 36" culvert (15' west of the west property line) to proposed 24" culvert inlets.

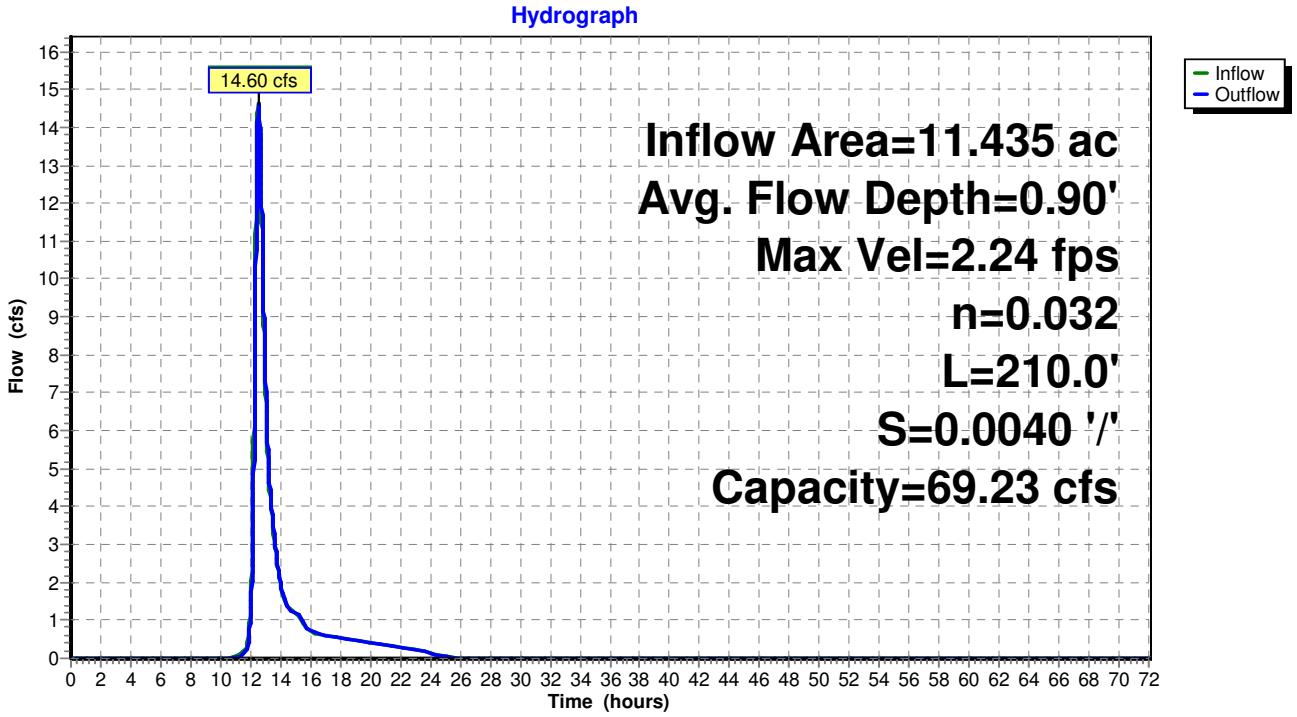
Inflow Area = 11.435 ac, 1.19% Impervious, Inflow Depth = 1.67" for 10yr-24hr event
Inflow = 14.64 cfs @ 12.52 hrs, Volume= 1.587 af
Outflow = 14.60 cfs @ 12.54 hrs, Volume= 1.587 af, Atten= 0%, Lag= 1.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.24 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 0.34 fps, Avg. Travel Time= 10.4 min

Peak Storage= 1,367 cf @ 12.54 hrs
Average Depth at Peak Storage= 0.90'
Bank-Full Depth= 2.00' Flow Area= 20.0 sf, Capacity= 69.23 cfs

5.00' x 2.00' deep channel, n= 0.032
Side Slope Z-value= 2.5 '/' Top Width= 15.00'
Length= 210.0' Slope= 0.0040 '/'
Inlet Invert= 955.17', Outlet Invert= 954.32'

Reach 1R: Pebble Creek 4a (See Notes)



Summary for Reach 3R: Pebble Creek 1

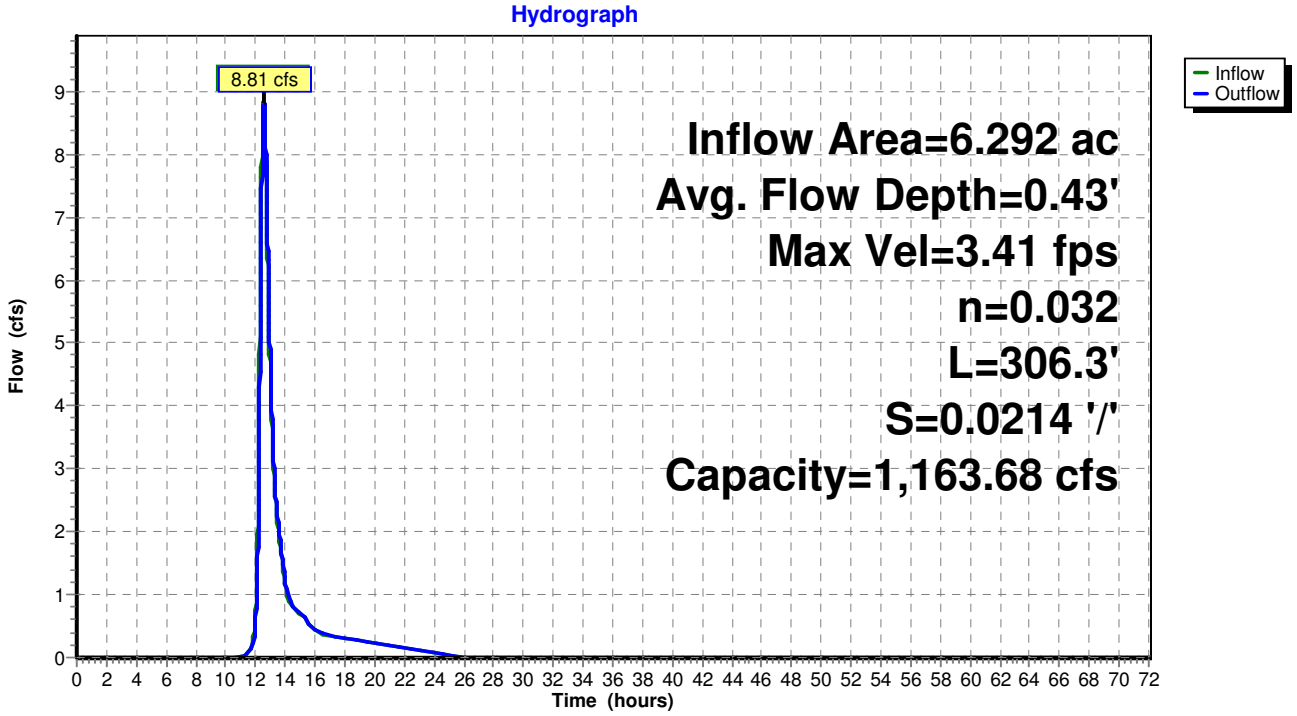
Inflow Area = 6.292 ac, 0.00% Impervious, Inflow Depth = 1.82" for 10yr-24hr event
Inflow = 8.83 cfs @ 12.55 hrs, Volume= 0.954 af
Outflow = 8.81 cfs @ 12.57 hrs, Volume= 0.954 af, Atten= 0%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.41 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 1.01 fps, Avg. Travel Time= 5.0 min

Peak Storage= 792 cf @ 12.57 hrs
Average Depth at Peak Storage= 0.43'
Bank-Full Depth= 5.00' Flow Area= 87.5 sf, Capacity= 1,163.68 cfs

5.00' x 5.00' deep channel, n= 0.032
Side Slope Z-value= 2.5 '/' Top Width= 30.00'
Length= 306.3' Slope= 0.0214 '/'
Inlet Invert= 963.55', Outlet Invert= 957.00'

Reach 3R: Pebble Creek 1



Summary for Reach 5R: Pebble Creek 4b (See Notes)

Segment of the existing channel through the (4) 24" culvert inlets to the property line.

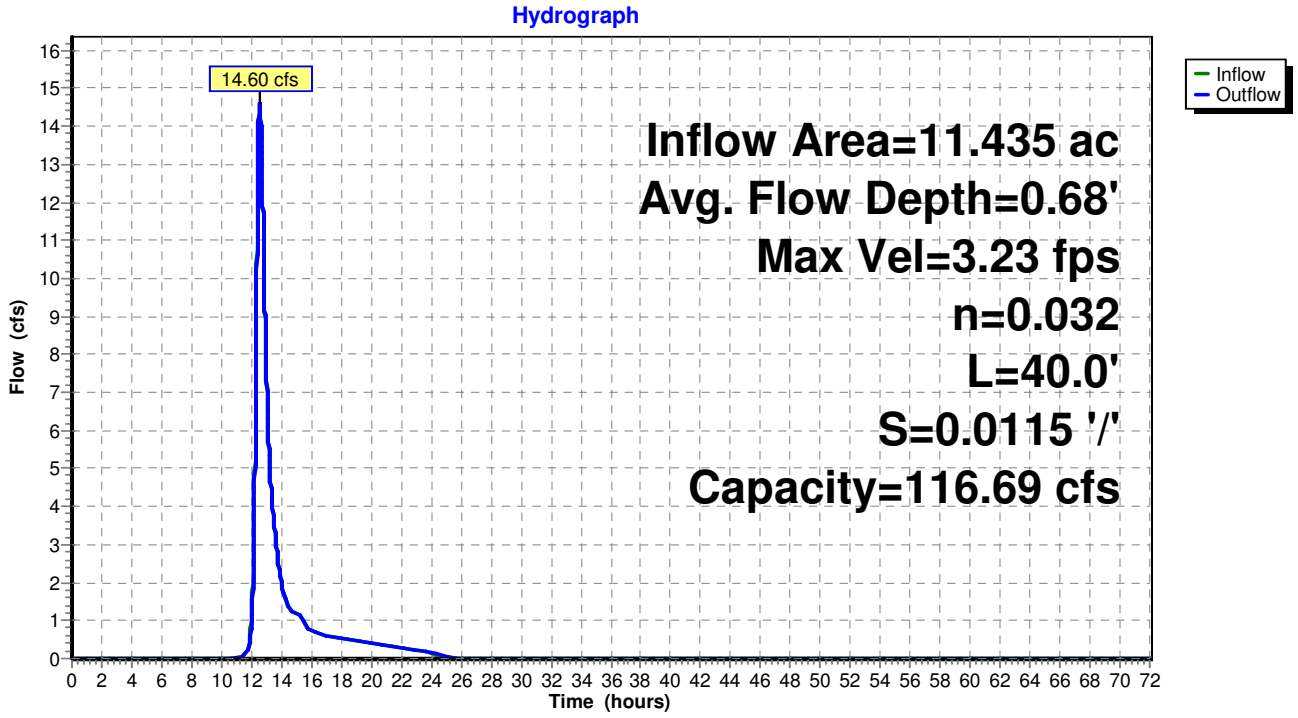
Inflow Area = 11.435 ac, 1.19% Impervious, Inflow Depth = 1.67" for 10yr-24hr event
Inflow = 14.60 cfs @ 12.54 hrs, Volume= 1.587 af
Outflow = 14.60 cfs @ 12.55 hrs, Volume= 1.587 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.23 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 0.52 fps, Avg. Travel Time= 1.3 min

Peak Storage= 181 cf @ 12.55 hrs
Average Depth at Peak Storage= 0.68'
Bank-Full Depth= 2.00' Flow Area= 20.0 sf, Capacity= 116.69 cfs

5.00' x 2.00' deep channel, n= 0.032
Side Slope Z-value= 2.5 '/' Top Width= 15.00'
Length= 40.0' Slope= 0.0115 '/'
Inlet Invert= 954.32', Outlet Invert= 953.86'

Reach 5R: Pebble Creek 4b (See Notes)



Summary for Pond 2P: Pebble Creek 2 & 3

Inflow Area = 9.809 ac, 0.00% Impervious, Inflow Depth = 1.64" for 10yr-24hr event
Inflow = 12.40 cfs @ 12.55 hrs, Volume= 1.343 af
Outflow = 12.40 cfs @ 12.56 hrs, Volume= 1.343 af, Atten= 0%, Lag= 0.4 min
Primary = 12.40 cfs @ 12.56 hrs, Volume= 1.343 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 957.12' @ 12.56 hrs Surf.Area= 272 sf Storage= 104 cf

Plug-Flow detention time= 0.2 min calculated for 1.343 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (856.1 - 856.0)

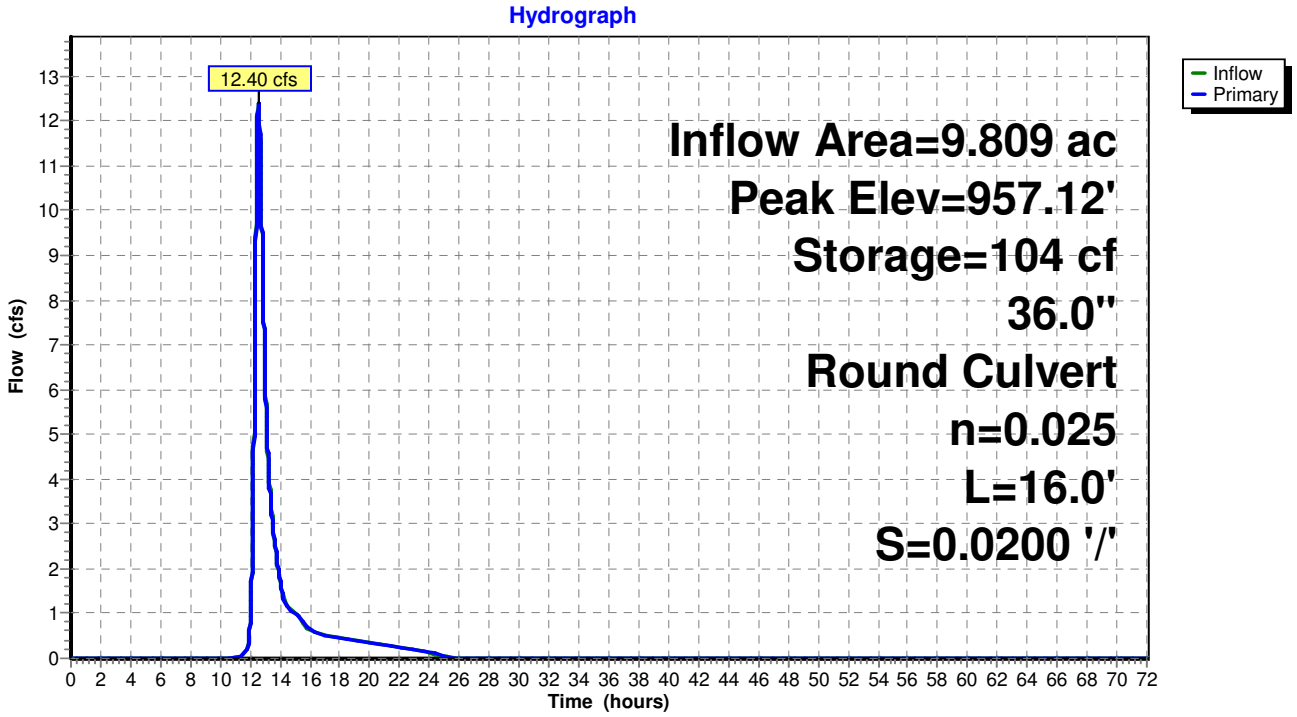
Volume	Invert	Avail.Storage	Storage Description
#1	955.49'	6,816 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
955.49	10	0	0
957.00	99	82	82
958.00	1,580	840	922
959.00	2,874	2,227	3,149
960.00	4,461	3,668	6,816

Device	Routing	Invert	Outlet Devices
#1	Primary	955.49'	**36.0" Round Culvert** L= 16.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 955.49' / 955.17' S= 0.0200 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf

Primary OutFlow Max=12.40 cfs @ 12.56 hrs HW=957.12' TW=956.07' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 12.40 cfs @ 4.59 fps)

Pond 2P: Pebble Creek 2 & 3



Summary for Pond 4P: Peach-Cir-Pond

Inflow Area = 3.430 ac, 0.00% Impervious, Inflow Depth = 1.89" for 10yr-24hr event
Inflow = 6.02 cfs @ 12.40 hrs, Volume= 0.539 af
Outflow = 5.04 cfs @ 12.55 hrs, Volume= 0.539 af, Atten= 16%, Lag= 8.7 min
Primary = 5.04 cfs @ 12.55 hrs, Volume= 0.539 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Starting Elev= 965.85' Surf.Area= 1,587 sf Storage= 758 cf
Peak Elev= 967.31' @ 12.55 hrs Surf.Area= 3,204 sf Storage= 4,287 cf (3,529 cf above start)

Plug-Flow detention time= 45.2 min calculated for 0.522 af (97% of inflow)
Center-of-Mass det. time= 23.2 min (857.2 - 834.0)

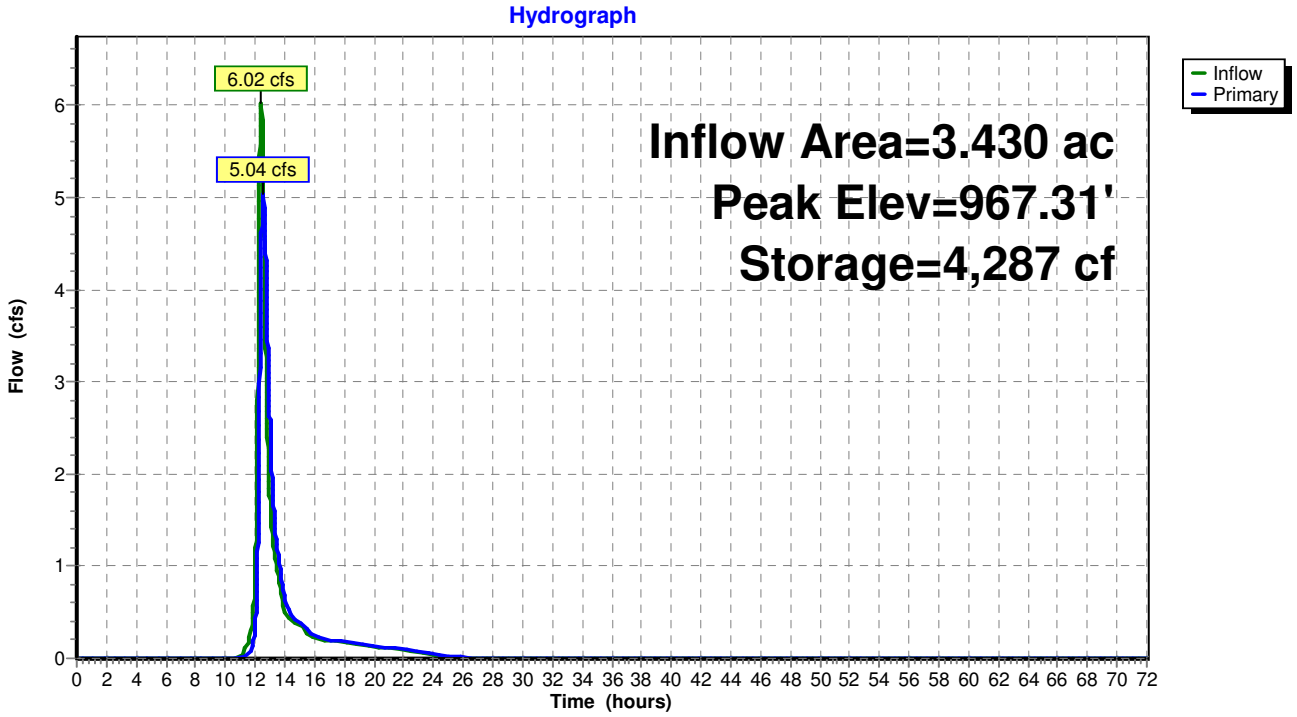
Volume	Invert	Avail.Storage	Storage Description
#1	965.00'	8,659 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
965.00	197	0	0
966.00	1,832	1,015	1,015
967.00	2,859	2,346	3,360
968.00	3,987	3,423	6,783
968.44	4,540	1,876	8,659

Device	Routing	Invert	Outlet Devices
#1	Primary	963.79'	**24.0" Round Culvert** L= 122.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 963.79' / 963.55' S= 0.0020 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Device 1	965.85'	**18.0" Round Culvert** L= 24.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 965.85' / 965.79' S= 0.0025 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf
#3	Primary	968.00'	**12.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=5.03 cfs @ 12.55 hrs HW=967.31' TW=963.98' (Dynamic Tailwater)
- **1=Culvert** (Passes 5.03 cfs of 19.22 cfs potential flow)
  - **2=Culvert** (Barrel Controls 5.03 cfs @ 3.65 fps)
- **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 4P: Peach-Cir-Pond



Summary for Subcatchment 1S: B-3010

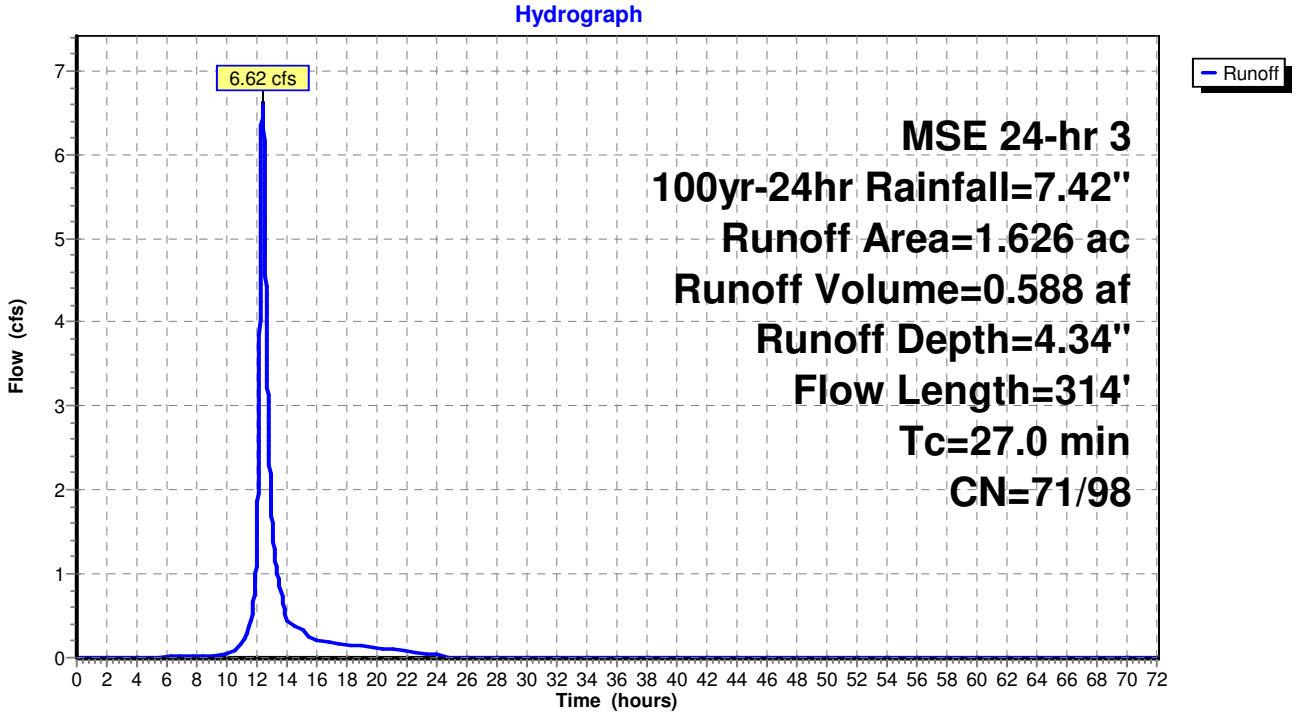
Runoff = 6.62 cfs @ 12.39 hrs, Volume= 0.588 af, Depth= 4.34"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100yr-24hr Rainfall=7.42"

Area (ac)	CN	Description
0.115	98	Roofs, HSG D
0.021	98	Paved parking, HSG D
1.025	70	Woods, Good, HSG C
0.465	74	>75% Grass cover, Good, HSG C
1.626	73	Weighted Average
1.490	71	91.64% Pervious Area
0.136	98	8.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.7	100	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.87"
4.3	214	0.0280	0.84		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
27.0	314	Total			

Subcatchment 1S: B-3010



Summary for Subcatchment 2S: B-1075/B-3010

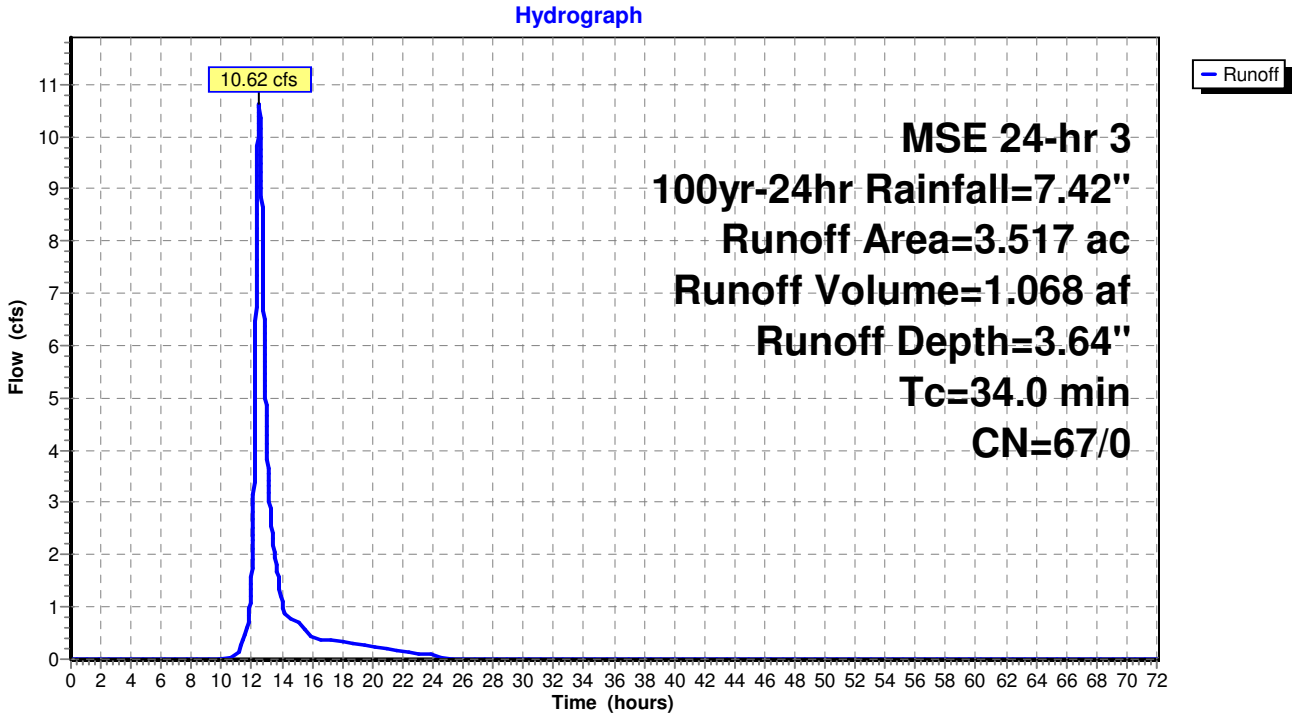
Runoff = 10.62 cfs @ 12.50 hrs, Volume= 1.068 af, Depth= 3.64"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100yr-24hr Rainfall=7.42"

	Area (ac)	CN	Description
*	3.517	67	
	3.517	67	100.00% Pervious Area

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

Subcatchment 2S: B-1075/B-3010



Summary for Subcatchment 3S: B-1075

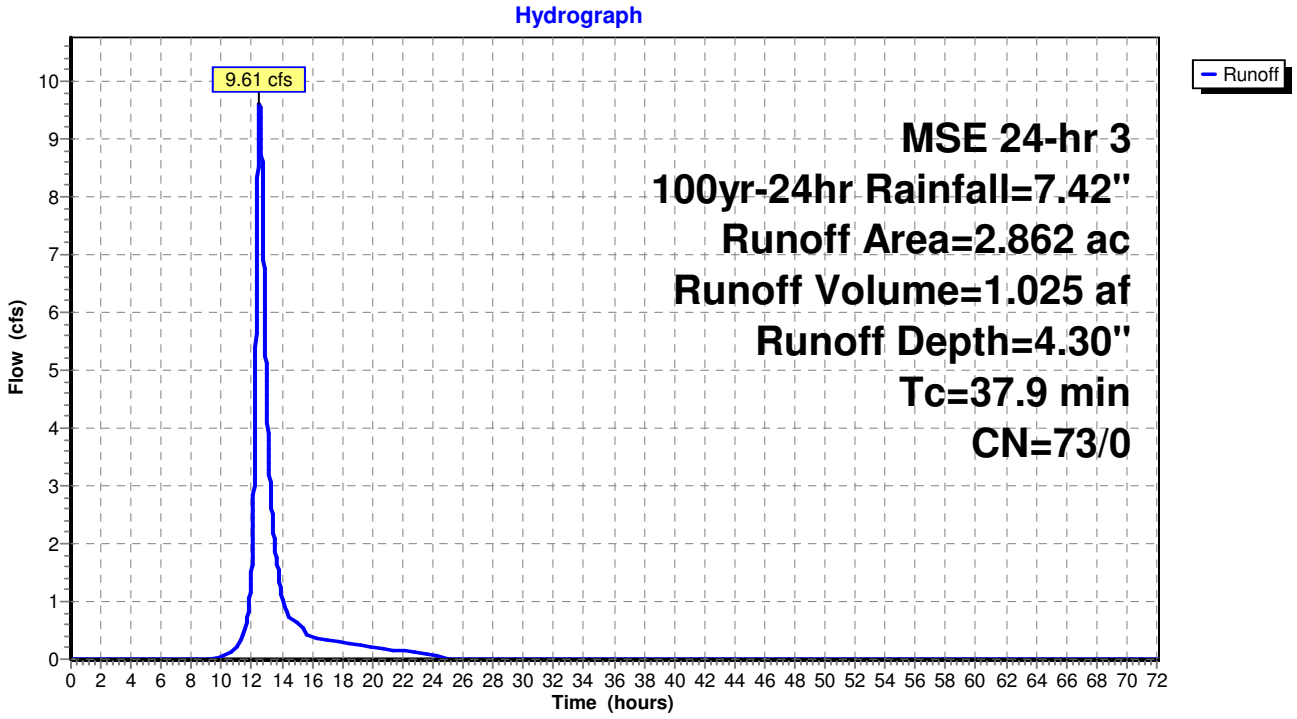
Runoff = 9.61 cfs @ 12.51 hrs, Volume= 1.025 af, Depth= 4.30"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100yr-24hr Rainfall=7.42"

	Area (ac)	CN	Description
*	2.862	73	
	2.862	73	100.00% Pervious Area

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

Subcatchment 3S: B-1075



Summary for Subcatchment 4S: B-1060

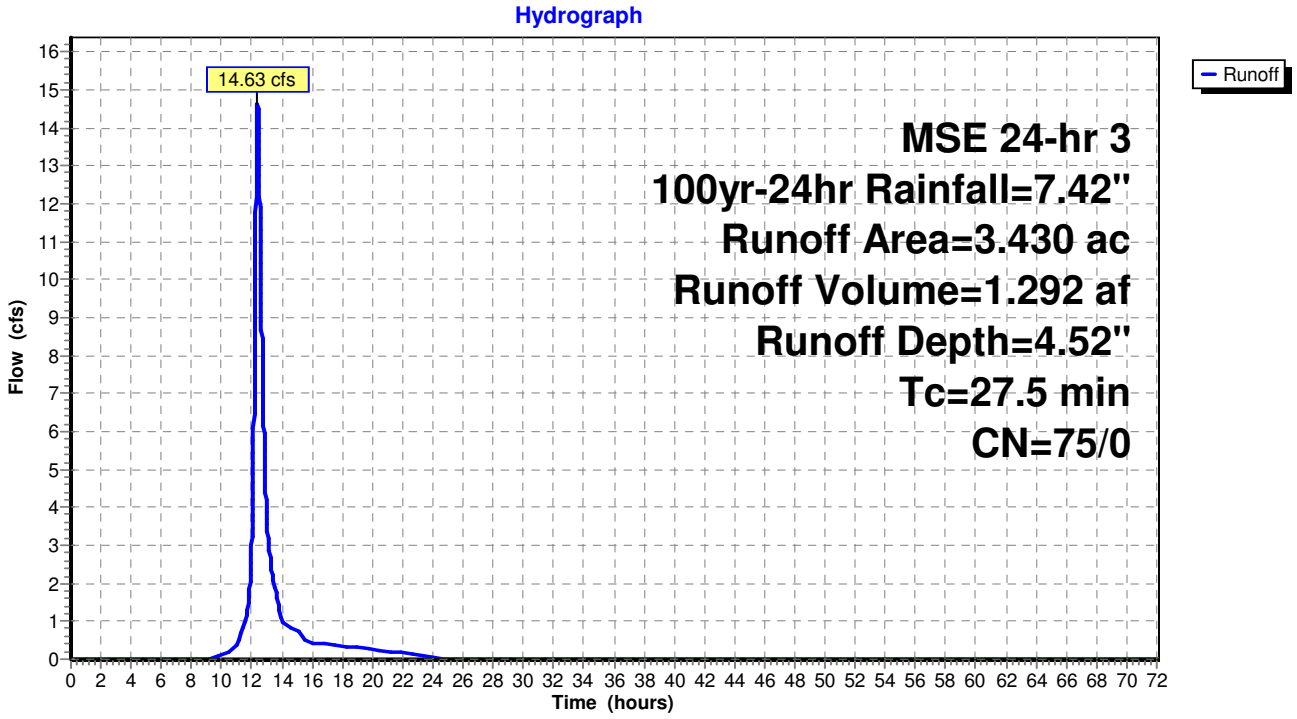
Runoff = 14.63 cfs @ 12.38 hrs, Volume= 1.292 af, Depth= 4.52"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100yr-24hr Rainfall=7.42"

	Area (ac)	CN	Description
*	3.430	75	
	3.430	75	100.00% Pervious Area

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

Subcatchment 4S: B-1060



Summary for Reach 1R: Pebble Creek 4a (See Notes)

Segment of the existing channel from existing 36" culvert (15' west of the west property line) to proposed 24" culvert inlets.

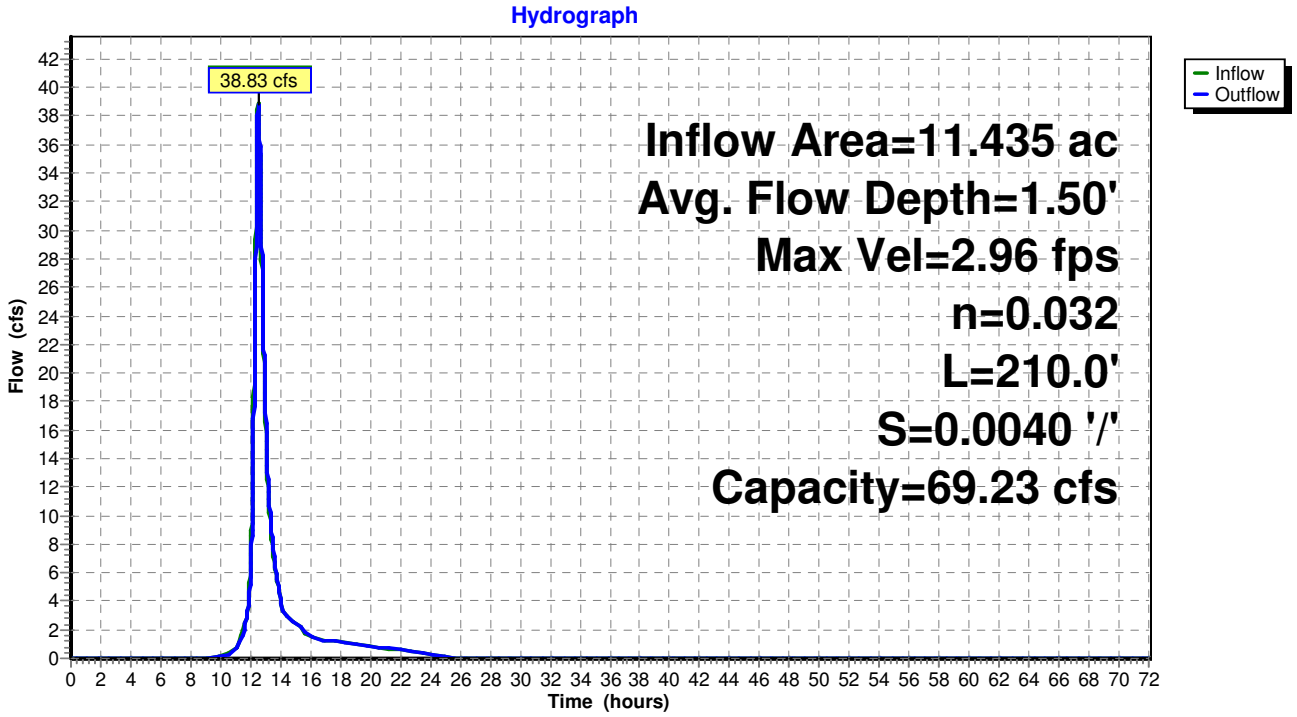
Inflow Area = 11.435 ac, 1.19% Impervious, Inflow Depth = 4.17" for 100yr-24hr event
Inflow = 38.91 cfs @ 12.51 hrs, Volume= 3.974 af
Outflow = 38.83 cfs @ 12.53 hrs, Volume= 3.974 af, Atten= 0%, Lag= 0.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.96 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 0.40 fps, Avg. Travel Time= 8.7 min

Peak Storage= 2,754 cf @ 12.53 hrs
Average Depth at Peak Storage= 1.50'
Bank-Full Depth= 2.00' Flow Area= 20.0 sf, Capacity= 69.23 cfs

5.00' x 2.00' deep channel, n= 0.032
Side Slope Z-value= 2.5 '/' Top Width= 15.00'
Length= 210.0' Slope= 0.0040 '/'
Inlet Invert= 955.17', Outlet Invert= 954.32'

Reach 1R: Pebble Creek 4a (See Notes)



Summary for Reach 3R: Pebble Creek 1

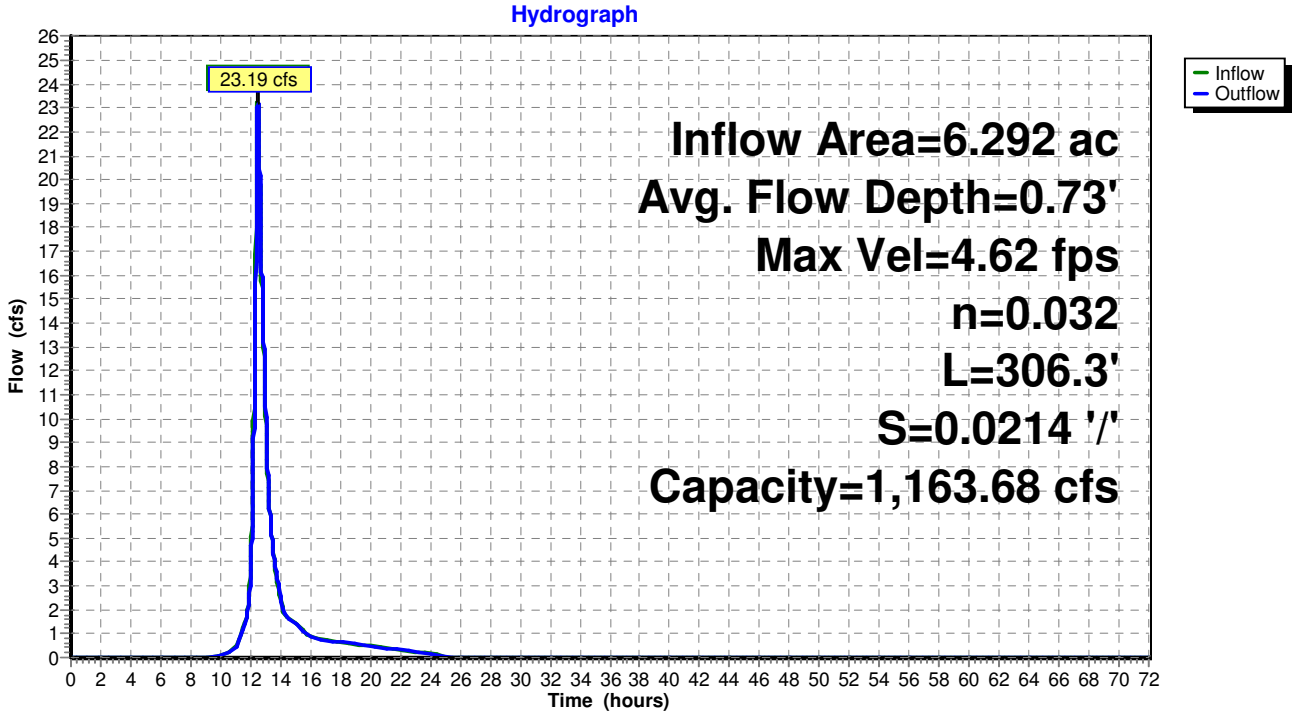
Inflow Area = 6.292 ac, 0.00% Impervious, Inflow Depth = 4.42" for 100yr-24hr event
Inflow = 23.24 cfs @ 12.47 hrs, Volume= 2.318 af
Outflow = 23.19 cfs @ 12.49 hrs, Volume= 2.318 af, Atten= 0%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.62 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 1.12 fps, Avg. Travel Time= 4.5 min

Peak Storage= 1,538 cf @ 12.49 hrs
Average Depth at Peak Storage= 0.73'
Bank-Full Depth= 5.00' Flow Area= 87.5 sf, Capacity= 1,163.68 cfs

5.00' x 5.00' deep channel, n= 0.032
Side Slope Z-value= 2.5 '/' Top Width= 30.00'
Length= 306.3' Slope= 0.0214 '/'
Inlet Invert= 963.55', Outlet Invert= 957.00'

Reach 3R: Pebble Creek 1



Summary for Reach 5R: Pebble Creek 4b (See Notes)

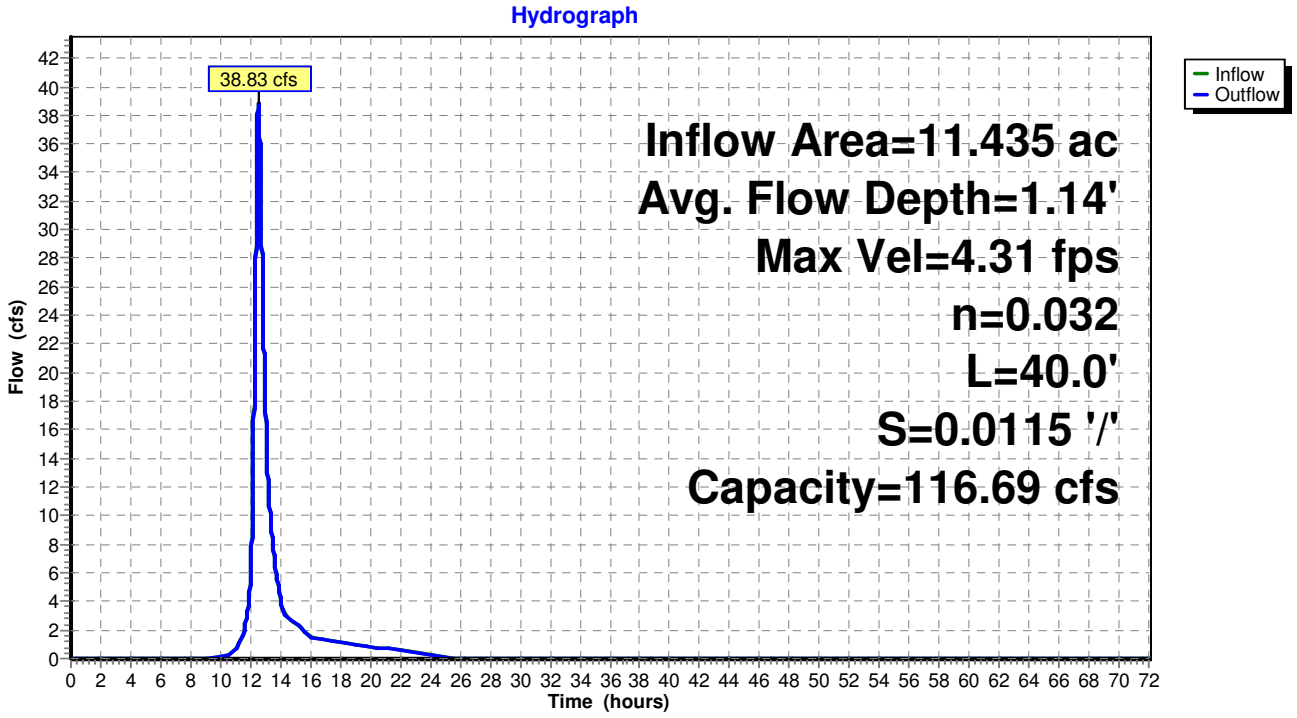
Segment of the existing channel through the (4) 24" culvert inlets to the property line.

Inflow Area = 11.435 ac, 1.19% Impervious, Inflow Depth = 4.17" for 100yr-24hr event
Inflow = 38.83 cfs @ 12.53 hrs, Volume= 3.974 af
Outflow = 38.83 cfs @ 12.53 hrs, Volume= 3.974 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.31 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 0.61 fps, Avg. Travel Time= 1.1 min

Peak Storage= 360 cf @ 12.53 hrs
Average Depth at Peak Storage= 1.14'
Bank-Full Depth= 2.00' Flow Area= 20.0 sf, Capacity= 116.69 cfs

5.00' x 2.00' deep channel, n= 0.032
Side Slope Z-value= 2.5 '/' Top Width= 15.00'
Length= 40.0' Slope= 0.0115 '/'
Inlet Invert= 954.32', Outlet Invert= 953.86'



Summary for Pond 2P: Pebble Creek 2 & 3

Inflow Area = 9.809 ac, 0.00% Impervious, Inflow Depth = 4.14" for 100yr-24hr event
Inflow = 33.80 cfs @ 12.49 hrs, Volume= 3.386 af
Outflow = 33.31 cfs @ 12.53 hrs, Volume= 3.386 af, Atten= 1%, Lag= 2.2 min
Primary = 33.31 cfs @ 12.53 hrs, Volume= 3.386 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 958.50' @ 12.53 hrs Surf.Area= 2,232 sf Storage= 1,882 cf

Plug-Flow detention time= 0.4 min calculated for 3.386 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (834.1 - 833.8)

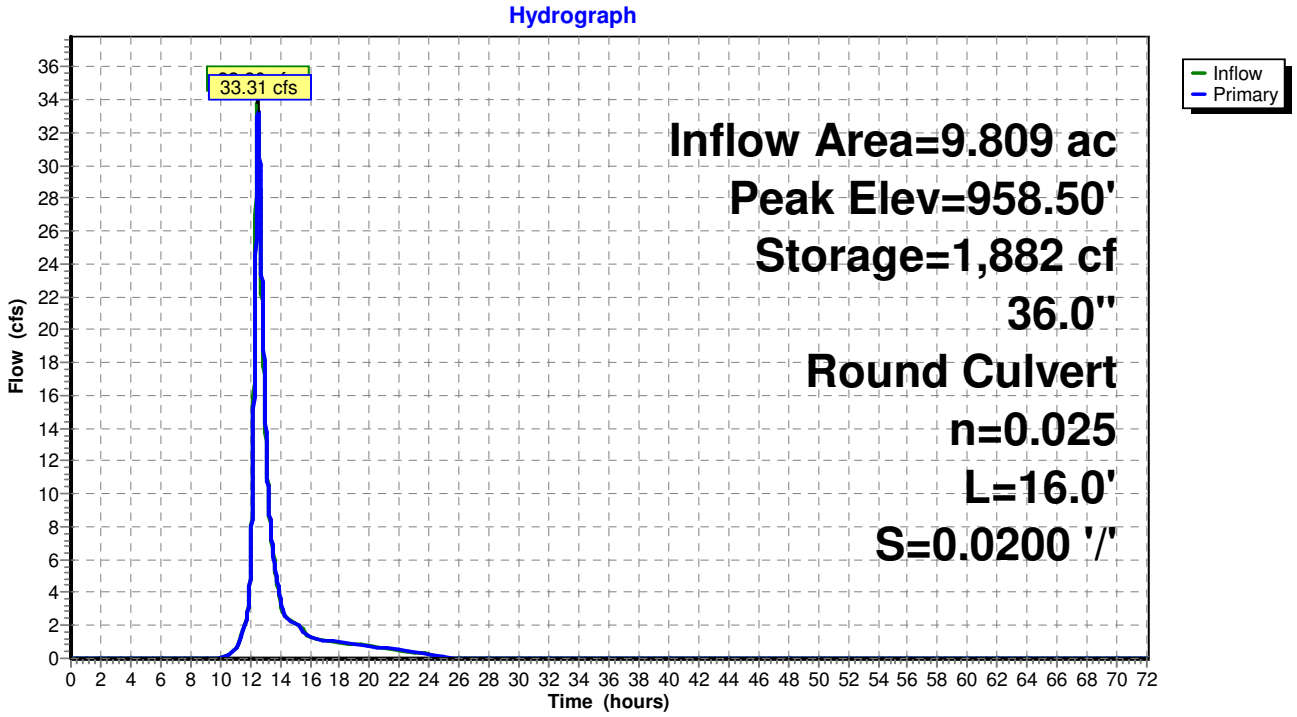
Volume	Invert	Avail.Storage	Storage Description
#1	955.49'	6,816 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
955.49	10	0	0
957.00	99	82	82
958.00	1,580	840	922
959.00	2,874	2,227	3,149
960.00	4,461	3,668	6,816

Device	Routing	Invert	Outlet Devices
#1	Primary	955.49'	**36.0" Round Culvert** L= 16.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 955.49' / 955.17' S= 0.0200 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf

Primary OutFlow Max=33.31 cfs @ 12.53 hrs HW=958.50' TW=956.67' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 33.31 cfs @ 5.83 fps)

Pond 2P: Pebble Creek 2 & 3



Summary for Pond 4P: Peach-Cir-Pond

Inflow Area = 3.430 ac, 0.00% Impervious, Inflow Depth = 4.52" for 100yr-24hr event
Inflow = 14.63 cfs @ 12.38 hrs, Volume= 1.292 af
Outflow = 13.86 cfs @ 12.46 hrs, Volume= 1.292 af, Atten= 5%, Lag= 4.8 min
Primary = 13.86 cfs @ 12.46 hrs, Volume= 1.292 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Starting Elev= 965.85' Surf.Area= 1,587 sf Storage= 758 cf
Peak Elev= 968.27' @ 12.46 hrs Surf.Area= 4,322 sf Storage= 7,892 cf (7,134 cf above start)

Plug-Flow detention time= 27.6 min calculated for 1.275 af (99% of inflow)
Center-of-Mass det. time= 17.1 min (833.3 - 816.2)

Volume	Invert	Avail.Storage	Storage Description
#1	965.00'	8,659 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
965.00	197	0	0
966.00	1,832	1,015	1,015
967.00	2,859	2,346	3,360
968.00	3,987	3,423	6,783
968.44	4,540	1,876	8,659

Device	Routing	Invert	Outlet Devices
#1	Primary	963.79'	**24.0" Round Culvert** L= 122.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 963.79' / 963.55' S= 0.0020 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Device 1	965.85'	**18.0" Round Culvert** L= 24.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 965.85' / 965.79' S= 0.0025 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf
#3	Primary	968.00'	**12.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=13.86 cfs @ 12.46 hrs HW=968.27' TW=964.28' (Dynamic Tailwater)
- **1=Culvert** (Passes 9.58 cfs of 23.91 cfs potential flow)
  - **2=Culvert** (Barrel Controls 9.58 cfs @ 5.42 fps)
- **3=Broad-Crested Rectangular Weir** (Weir Controls 4.28 cfs @ 1.34 fps)

Pond 4P: Peach-Cir-Pond