GRADY CONSULTING, L.L.C.
Registered Professional Civil Engineers & Land Surveyors

STORMWATER MANAGEMENT DESIGN CALCULATIONS

0 & 74 Congress St.

Assessors Map
Map F9 Lot 11
Pembroke, Massachusetts

Prepared for

Whatbarn, LLC
29 Duck Hill Rd
Duxbury, MA 02332

March 9, 2023

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SUMMARY

This analysis was prepared to demonstrate Compliance with the Town of Pembroke Stormwater Regulations. The proposed project is for the construction of 10 residential structures with an associated driveway, grading, infiltration basins, subsurface infiltration systems, drainage, and sewer.

The area of the proposed work is currently developed with a single family home, wooded, and grassed areas. Stormwater currently flows overland from the site towards the wetland at the rear.

The attenuation of storm water flows has been achieved by routing the driveway and roof runoff into an infiltration basin and subsurface infiltration, which outfalls to the surrounding wetland.

The post development runoff is broken up into 18 catchment areas

1) **Units 10-11 Entrance** – Runoff from the front yard and driveway for units 10 & 11 which are routed to a catch basin, into an infiltration basin, then outfalls to the wetland.
2) **Units 8-11 Backyard -** Runoff from the backyards for units 10 & 11 which are routed to a catch basin, into an infiltration basin, then outfalls to the wetland.
3) **Outer Border** – Outer border of the lot which captures runoff from grass and wooded areas which outfall directly into the wetland.
4) **Unit 5 Backyard and Basin #1 –** Runoff from grassed areas which drain into the proposed infiltration basin, which are routed to an outlet control structure that outfalls into the wetland.
5) **Unit 5 Parking –** Runoff from grassed areas and pavement to a catch basin, into the infiltration basin, to an outlet control structure that outfalls into the wetland.
6) **Driveway Center Section –** Runoff from grass and paved areas to a catch basin, into the infiltration basin, to an outlet control structure that outfalls into the wetland.
7) **Driveway Entrance -** Runoff from grass and paved areas to a catch basin, into the infiltration basin, to an outlet control structure that outfalls into the wetland

U1-U4) Building Units 1 to 4– Runoff from roofs that connect to a roof drain carrier pipe which is routed into the infiltration basin, to an outlet control structure that outfalls into the wetland.

U5) Existing Building 5 - Runoff from roof which is routed into the infiltration basin, to an outlet control structure that outfalls into the wetland.

U6-U7) Building units 6 & 7- Runoff from roofs that connect to a roof drain carrier pipe which is routed into the infiltration basin, to an outlet control structure that outfalls into the wetland.

U8-U11) Building Units 8-11 - Runoff from roofs that connect to a subsurface drainage structure that outfalls into the wetland.

This analysis is divided into the following sections:

Section I	Overall Site Analysis
Section II	Compliance with Massachusetts Storm water Management Regulations
Section III	Operation And Maintenance Plan

The calculations have been performed for the 2, 10, 25, 100-year 24 hour storm event, using the HydroCAD computer program. This computer program is based upon the Soils Conservation Service (SCS) TR-20 and TR-55 computer models and uses the SCS Curvilinear Unit rainfall distribution.

SUMMARY OF STORMWATER FLOWS

PRE-DEVELOPMENT

	100 YR	25 YR	10 YR	2 YR
DP1	12.74	7.73	5.34	2.52

POST-DEVELOPMENT

	100 YR	25 YR	10 YR	2 YR
DP1	12.57	7.42	5.03	2.47

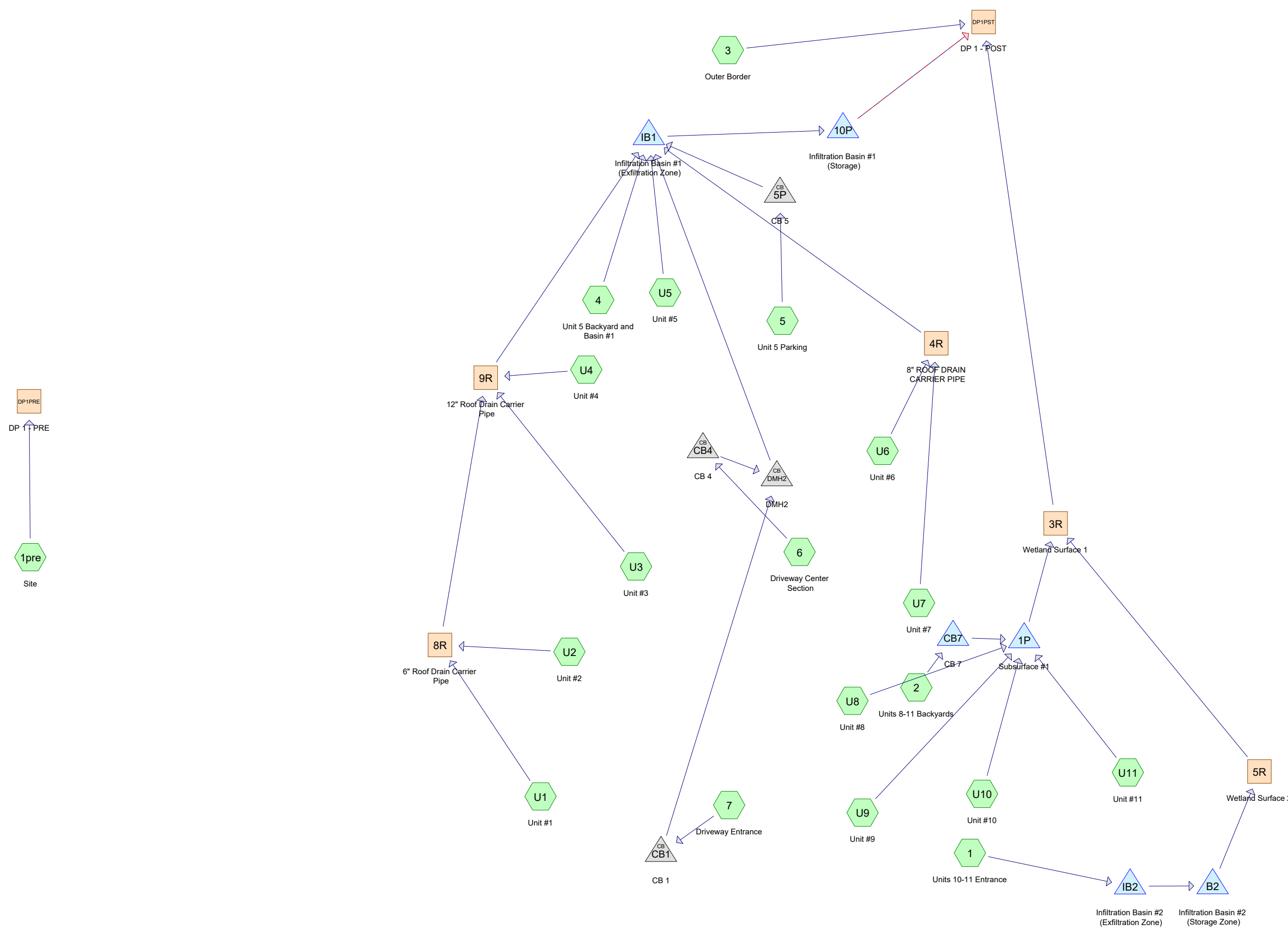
DIFFERENCE

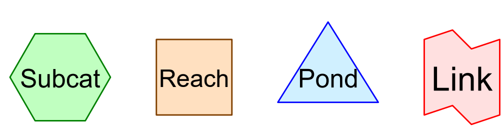
	100 YR	25 YR	10 YR	2 YR
DP1	0.17	0.31	0.31	0.05

Infiltration Basin #1
Top of basin = 92.0
Bottom of Basin = 88.0
2 yr el = 89.59
10 yr el = 90.06
25 yr el = 90.36
100 yr el = 90.89

Infiltration Basin #2
Top of basin = 99.0
Bottom of Basin = 97.1
2 yr el = 97.62
10 yr el = 97.76
25 yr el = 97.83
100 yr el = 97.96

Section I
Overall Site Analysis





Routing Diagram for 0-74 Congress St
Prepared by Grady Consulting LLC
HydroCAD® 10.20-2g s/n 09955 © 2022 HydroCAD Software Solutions LLC

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
269,512	HSG C	1, 1pre, 2, 3, 4, 5, 6, 7, U1, U10, U11, U2, U3, U4, U5, U6, U7, U8, U9
0	HSG D	
0	Other	
269,512		**TOTAL AREA**

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: Units 10-11 Entrance Runoff Area=13,032 sf 14.64% Impervious Runoff Depth>1.19"
Flow Length=190' Tc=12.6 min CN=77 Runoff=0.38 cfs 1,288 cf

Subcatchment 1pre: Site Runoff Area=134,756 sf 4.57% Impervious Runoff Depth>1.01"
Flow Length=451' Tc=22.8 min UI Adjusted CN=74 Runoff=2.52 cfs 11,326 cf

Subcatchment 2: Units 8-11 Backyards Runoff Area=7,232 sf 0.00% Impervious Runoff Depth>1.01"
Flow Length=84' Tc=11.3 min CN=74 Runoff=0.19 cfs 612 cf

Subcatchment 3: Outer Border Runoff Area=53,803 sf 0.00% Impervious Runoff Depth>0.91"
Flow Length=87' Tc=7.9 min CN=72 Runoff=1.40 cfs 4,079 cf

Subcatchment 4: Unit 5 Backyard and Basin Runoff Area=8,967 sf 0.00% Impervious Runoff Depth>1.02"
Flow Length=110' Tc=7.7 min CN=74 Runoff=0.27 cfs 760 cf

Subcatchment 5: Unit 5 Parking Runoff Area=8,830 sf 71.11% Impervious Runoff Depth>2.23"
Flow Length=100' Tc=7.9 min CN=91 Runoff=0.54 cfs 1,639 cf

Subcatchment 6: Driveway Center Section Runoff Area=14,952 sf 43.75% Impervious Runoff Depth>1.65"
Flow Length=163' Tc=10.8 min CN=84 Runoff=0.64 cfs 2,060 cf

Subcatchment 7: Driveway Entrance Runoff Area=9,350 sf 31.84% Impervious Runoff Depth>1.51"
Flow Length=88' Slope=0.0400 '/' Tc=9.8 min CN=82 Runoff=0.38 cfs 1,177 cf

Subcatchment U1: Unit #1 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>2.85"
Tc=5.0 min CN=98 Runoff=0.13 cfs 382 cf

Subcatchment U10: Unit #10 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>2.85"
Tc=5.0 min CN=98 Runoff=0.13 cfs 382 cf

Subcatchment U11: Unit #11 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>2.85"
Tc=5.0 min CN=98 Runoff=0.13 cfs 382 cf

Subcatchment U2: Unit #2 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>2.85"
Tc=5.0 min CN=98 Runoff=0.13 cfs 382 cf

Subcatchment U3: Unit #3 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>2.85"
Tc=5.0 min CN=98 Runoff=0.13 cfs 382 cf

Subcatchment U4: Unit #4 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>2.85"
Tc=5.0 min CN=98 Runoff=0.13 cfs 382 cf

Subcatchment U5: Unit #5 Runoff Area=2,510 sf 100.00% Impervious Runoff Depth>2.85"
Tc=5.0 min CN=98 Runoff=0.20 cfs 596 cf

Subcatchment U6: Unit #6 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>2.85"
Tc=5.0 min CN=98 Runoff=0.13 cfs 382 cf

Subcatchment U7: Unit #7 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>2.85"
Tc=5.0 min CN=98 Runoff=0.13 cfs 382 cf

Subcatchment U8: Unit #8 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>2.85"
Tc=5.0 min CN=98 Runoff=0.13 cfs 382 cf

Subcatchment U9: Unit #9 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>2.85"
Tc=5.0 min CN=98 Runoff=0.13 cfs 382 cf

Reach 3R: Wetland Surface 1 Avg. Flow Depth=0.05' Max Vel=0.26 fps Inflow=0.17 cfs 1,023 cf
n=0.100 L=344.0' S=0.0291 '/' Capacity=20.30 cfs Outflow=0.14 cfs 1,009 cf

Reach 4R: 8" ROOF DRAIN CARRIER PIPE Avg. Flow Depth=0.17' Max Vel=3.42 fps Inflow=0.25 cfs 764 cf
8.0" Round Pipe n=0.013 L=206.0' S=0.0194 '/' Capacity=1.68 cfs Outflow=0.25 cfs 763 cf

Reach 5R: Wetland Surface 2 Avg. Flow Depth=0.06' Max Vel=0.16 fps Inflow=0.21 cfs 713 cf
n=0.100 L=245.0' S=0.0082 '/' Capacity=10.76 cfs Outflow=0.11 cfs 701 cf

Reach 8R: 6" Roof Drain Carrier Pipe Avg. Flow Depth=0.19' Max Vel=3.50 fps Inflow=0.25 cfs 764 cf
6.0" Round Pipe n=0.013 L=113.0' S=0.0195 '/' Capacity=0.78 cfs Outflow=0.25 cfs 764 cf

Reach 9R: 12" Roof Drain Carrier Pipe Avg. Flow Depth=0.25' Max Vel=3.16 fps Inflow=0.50 cfs 1,528 cf
12.0" Round Pipe n=0.013 L=212.0' S=0.0099 '/' Capacity=3.55 cfs Outflow=0.49 cfs 1,526 cf

Reach DP1PRE: DP 1 - PRE Inflow=2.52 cfs 11,326 cf
Outflow=2.52 cfs 11,326 cf

Reach DP1PST: DP 1 - POST Inflow=2.47 cfs 11,275 cf
Outflow=2.47 cfs 11,275 cf

Pond 1P: Subsurface #1 Peak Elev=97.15' Storage=883 cf Inflow=0.64 cfs 2,139 cf
Discarded=0.03 cfs 1,244 cf Primary=0.06 cfs 321 cf Outflow=0.09 cfs 1,565 cf

Pond 5P: CB 5 Peak Elev=89.62' Inflow=0.54 cfs 1,639 cf
12.0" Round Culvert n=0.013 L=13.0' S=0.0192 '/' Outflow=0.54 cfs 1,639 cf

Pond 10P: Infiltration Basin #1 (Storage) Peak Elev=89.59' Storage=1,632 cf Inflow=2.17 cfs 6,913 cf
Primary=1.25 cfs 6,187 cf Secondary=0.00 cfs 0 cf Outflow=1.25 cfs 6,187 cf

Pond B2: Infiltration Basin #2 (Storage Zone) Peak Elev=97.62' Storage=111 cf Inflow=0.23 cfs 779 cf
Outflow=0.21 cfs 713 cf

Pond CB1: CB 1 Peak Elev=93.05' Inflow=0.38 cfs 1,177 cf
12.0" Round Culvert n=0.013 L=228.0' S=0.0121 '/' Outflow=0.38 cfs 1,177 cf

Pond CB4: CB 4 Peak Elev=90.61' Inflow=0.64 cfs 2,060 cf
12.0" Round Culvert n=0.013 L=12.0' S=0.0083 '/' Outflow=0.64 cfs 2,060 cf

Pond CB7: CB 7 Inflow=0.19 cfs 612 cf
Primary=0.19 cfs 612 cf

Pond DMH2: DMH2 Peak Elev=90.46' Inflow=1.02 cfs 3,238 cf
18.0" Round Culvert n=0.013 L=128.0' S=0.0078 '/' Outflow=1.02 cfs 3,238 cf

Pond IB1: Infiltration Basin #1 (Exfiltration Peak Elev=89.59' Storage=1,172 cf Inflow=2.68 cfs 8,522 cf
Discarded=0.02 cfs 913 cf Primary=2.17 cfs 6,913 cf Outflow=2.19 cfs 7,827 cf

Pond IB2: Infiltration Basin #2 (Exfiltration Peak Elev=97.63' Storage=223 cf Inflow=0.38 cfs 1,288 cf
Discarded=0.01 cfs 337 cf Primary=0.23 cfs 779 cf Outflow=0.24 cfs 1,117 cf

Total Runoff Area = 269,512 sf Runoff Volume = 27,358 cf Average Runoff Depth = 1.22"
84.25% Pervious = 227,061 sf 15.75% Impervious = 42,451 sf

Summary for Subcatchment 1: Units 10-11 Entrance

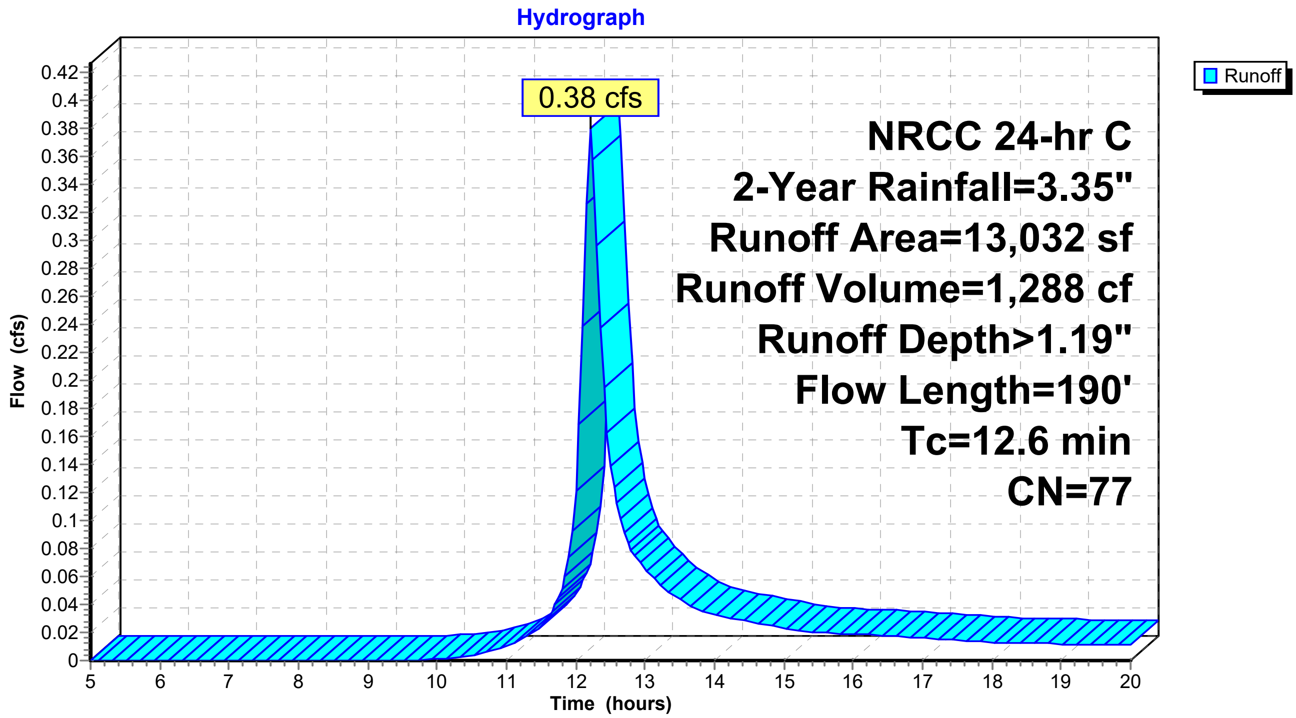
Runoff = 0.38 cfs @ 12.21 hrs, Volume= 1,288 cf, Depth> 1.19"
Routed to Pond IB2 : Infiltration Basin #2 (Exfiltration Zone)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 2-Year Rainfall=3.35"

Area (sf)	CN	Description
10,121	74	>75% Grass cover, Good, HSG C
1,003	70	Woods, Good, HSG C
1,908	98	Paved parking, HSG C
13,032	77	Weighted Average
11,124		85.36% Pervious Area
1,908		14.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		**Sheet Flow, Grass** Grass: Bermuda n= 0.410 P2= 3.35"
0.8	55	0.0300	1.21		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.1	17	0.0100	2.03		**Shallow Concentrated Flow, Driveway** Paved Kv= 20.3 fps
1.2	68	0.0180	0.94		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
12.6	190	Total			

Subcatchment 1: Units 10-11 Entrance



Summary for Subcatchment 1pre: Site

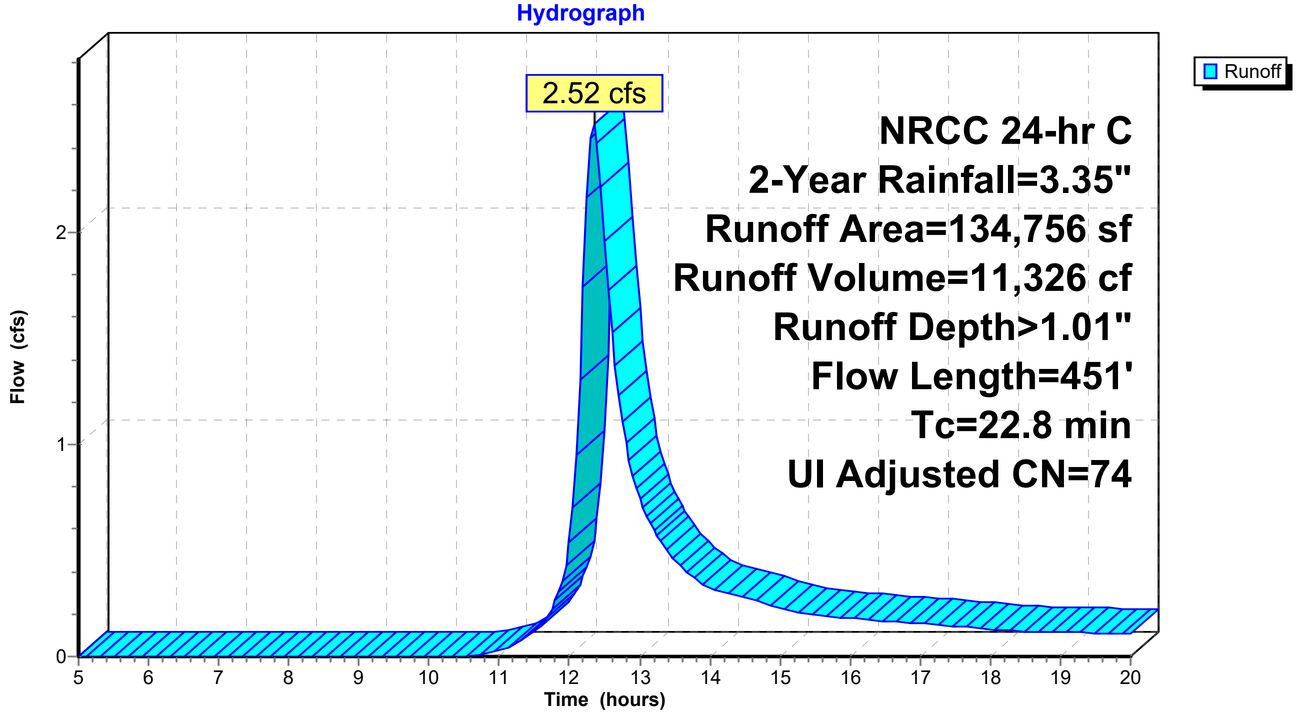
Runoff = 2.52 cfs @ 12.35 hrs, Volume= 11,326 cf, Depth> 1.01"
Routed to Reach DP1PRE : DP 1 - PRE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 2-Year Rainfall=3.35"

Area (sf)	CN	Adj	Description
56,945	70		Woods, Good, HSG C
2,937	98		Paved parking, HSG C
3,219	98		Unconnected roofs, HSG C
10,003	89		Gravel roads, HSG C
61,652	74		>75% Grass cover, Good, HSG C
134,756	75	74	Weighted Average, UI Adjusted
128,600			95.43% Pervious Area
6,156			4.57% Impervious Area
3,219			52.29% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.3	25	0.0110	0.03		**Sheet Flow, Woods** Woods: Dense underbrush n= 0.800 P2= 3.35"
0.5	25	0.0110	0.84		**Sheet Flow, Pavement** Smooth surfaces n= 0.011 P2= 3.35"
0.2	20	0.0110	2.13		**Shallow Concentrated Flow, Pavement** Paved Kv= 20.3 fps
1.5	65	0.0110	0.73		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
2.2	159	0.0290	1.19		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
2.0	52	0.0040	0.44		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.7	60	0.0370	1.35		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.4	45	0.1660	2.04		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
22.8	451	Total			

Subcatchment 1pre: Site



Summary for Subcatchment 2: Units 8-11 Backyards

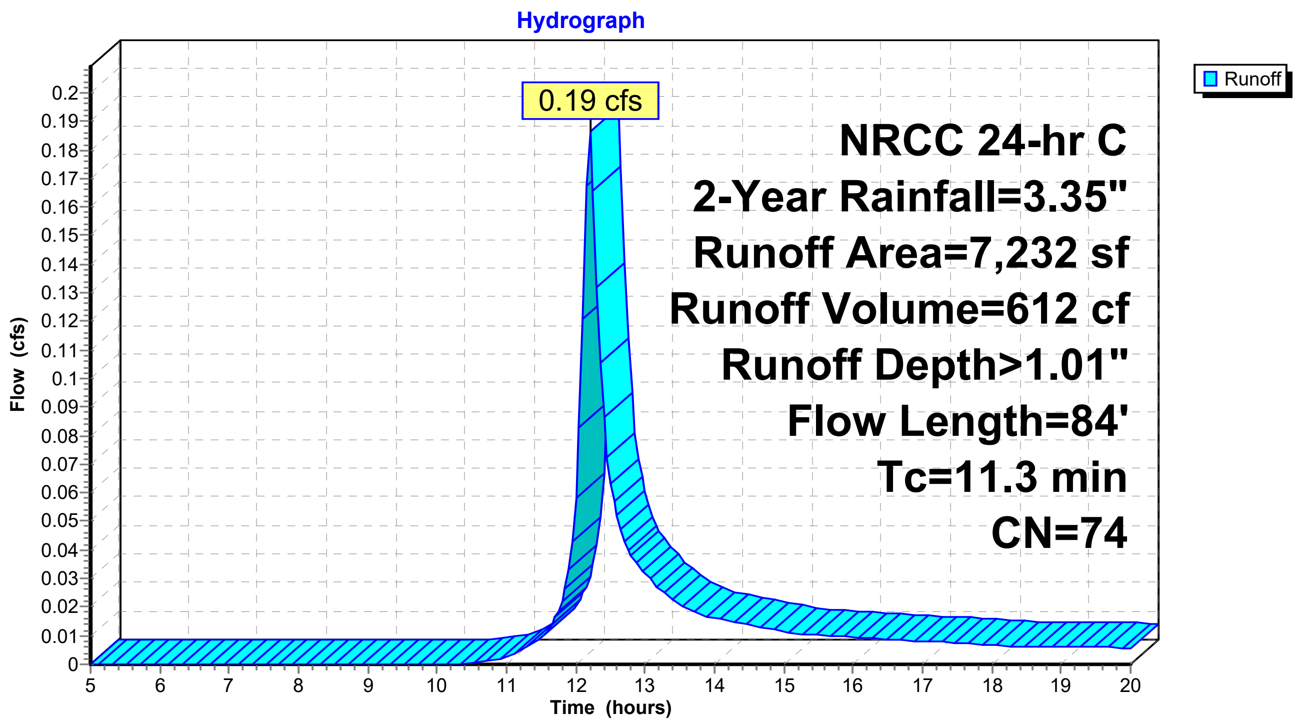
Runoff = 0.19 cfs @ 12.20 hrs, Volume= 612 cf, Depth> 1.01"
Routed to Pond CB7 : CB 7

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 2-Year Rainfall=3.35"

Area (sf)	CN	Description
7,232	74	>75% Grass cover, Good, HSG C
7,232		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7	50	0.0280	0.08		**Sheet Flow, Grass** Grass: Bermuda n= 0.410 P2= 3.35"
0.6	34	0.0200	0.99		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
11.3	84	Total			

Subcatchment 2: Units 8-11 Backyards



Summary for Subcatchment 3: Outer Border

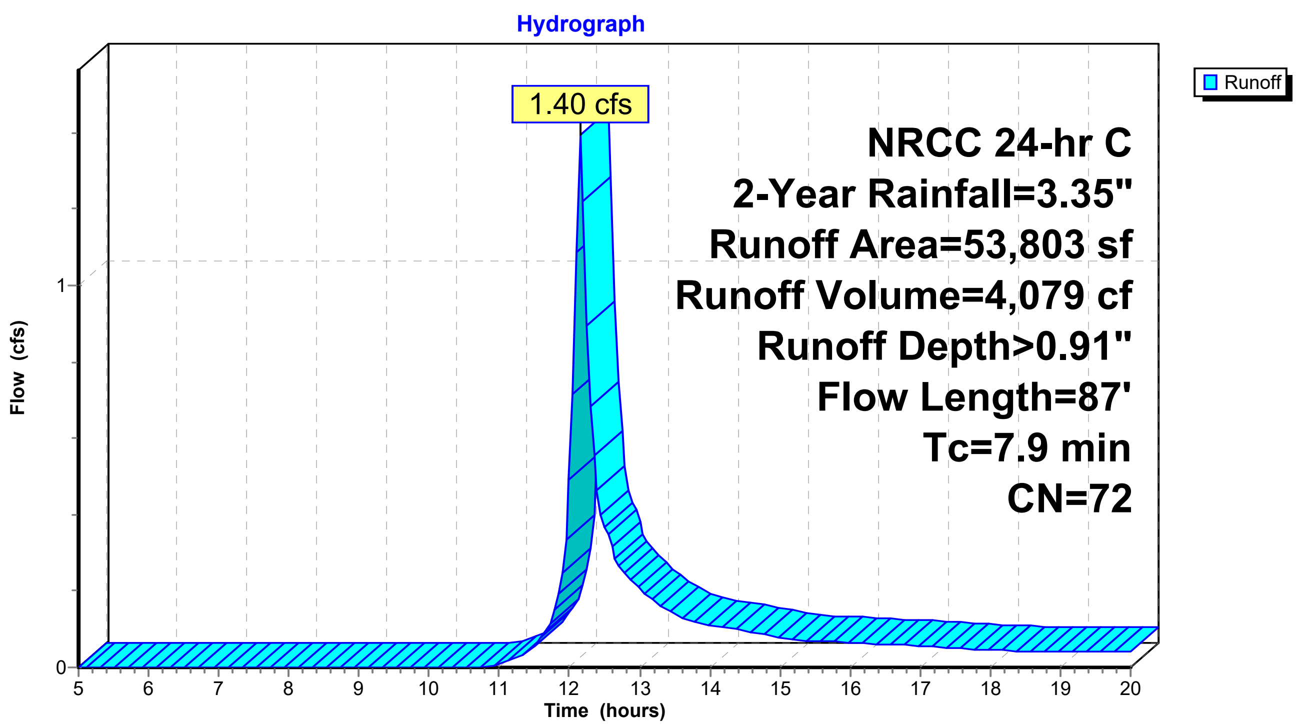
Runoff = 1.40 cfs @ 12.16 hrs, Volume= 4,079 cf, Depth> 0.91"
Routed to Reach DP1PST : DP 1 - POST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 2-Year Rainfall=3.35"

Area (sf)	CN	Description
22,640	74	>75% Grass cover, Good, HSG C
31,163	70	Woods, Good, HSG C
53,803	72	Weighted Average
53,803		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	50	0.0670	0.11		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.35"
0.5	37	0.0600	1.22		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
7.9	87	Total			

Subcatchment 3: Outer Border



Summary for Subcatchment 4: Unit 5 Backyard and Basin #1

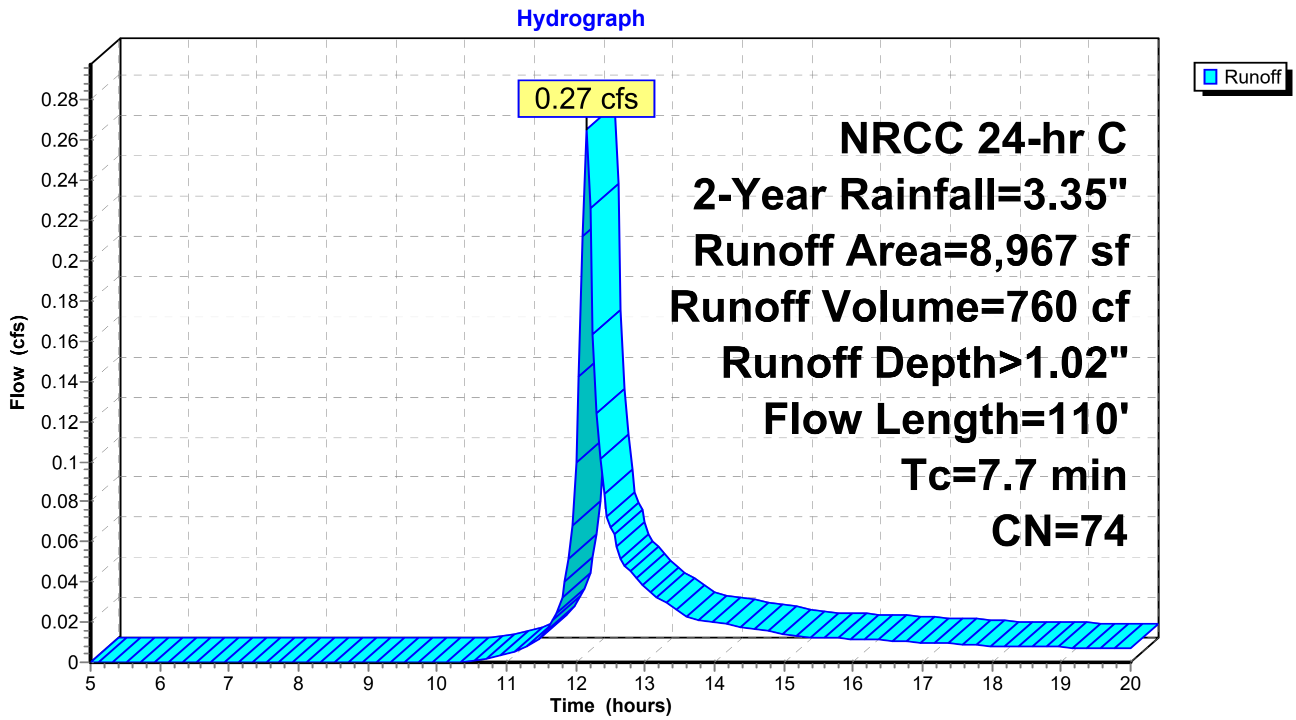
Runoff = 0.27 cfs @ 12.15 hrs, Volume= 760 cf, Depth> 1.02"
Routed to Pond IB1 : Infiltration Basin #1 (Exfiltration Zone)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 2-Year Rainfall=3.35"

Area (sf)	CN	Description
8,967	74	>75% Grass cover, Good, HSG C
8,967		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0780	0.12		**Sheet Flow, Grass** Grass: Bermuda n= 0.410 P2= 3.35"
0.6	60	0.0670	1.81		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
7.7	110	Total			

Subcatchment 4: Unit 5 Backyard and Basin #1



Summary for Subcatchment 5: Unit 5 Parking

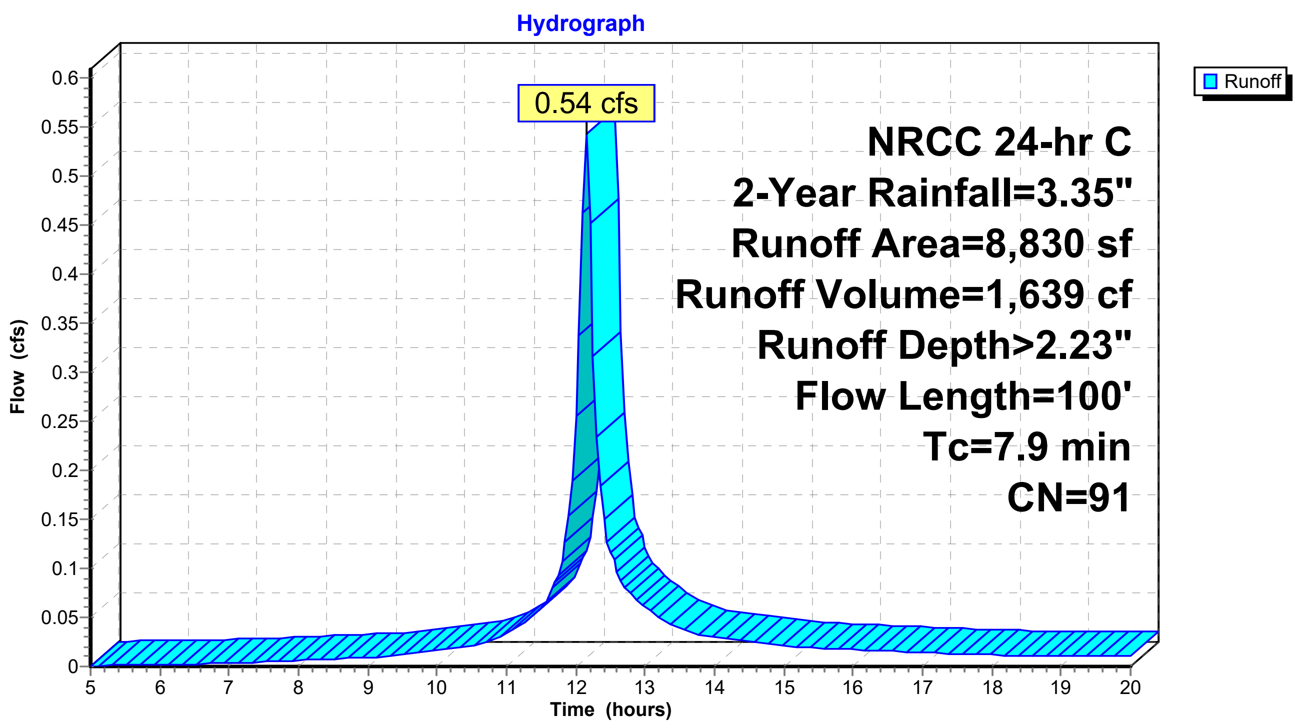
Runoff = 0.54 cfs @ 12.15 hrs, Volume= 1,639 cf, Depth> 2.23"
Routed to Pond 5P : CB 5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 2-Year Rainfall=3.35"

Area (sf)	CN	Description
2,551	74	>75% Grass cover, Good, HSG C
6,279	98	Paved roads w/curbs & sewers, HSG C
8,830	91	Weighted Average
2,551		28.89% Pervious Area
6,279		71.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	40	0.0450	0.09		**Sheet Flow, Grass** Grass: Bermuda n= 0.410 P2= 3.35"
0.3	10	0.0067	0.57		**Sheet Flow, Pavement** Smooth surfaces n= 0.011 P2= 3.35"
0.2	50	0.0280	3.40		**Shallow Concentrated Flow, Pavement** Paved Kv= 20.3 fps
7.9	100	Total			

Subcatchment 5: Unit 5 Parking



Summary for Subcatchment 6: Driveway Center Section

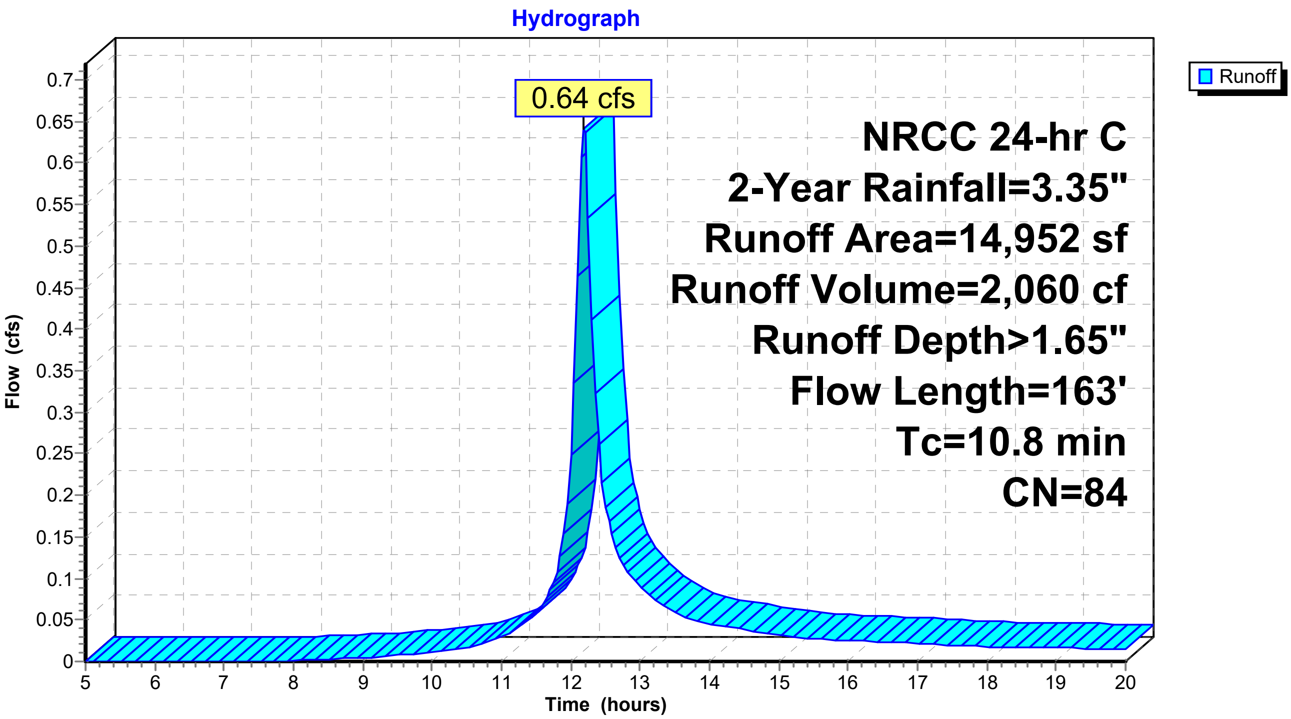
Runoff = 0.64 cfs @ 12.19 hrs, Volume= 2,060 cf, Depth> 1.65"
Routed to Pond CB4 : CB 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 2-Year Rainfall=3.35"

Area (sf)	CN	Description
8,411	74	>75% Grass cover, Good, HSG C
6,541	98	Paved roads w/curbs & sewers, HSG C
14,952	84	Weighted Average
8,411		56.25% Pervious Area
6,541		43.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	50	0.0320	0.08		**Sheet Flow, Grass** Grass: Bermuda n= 0.410 P2= 3.35"
0.2	18	0.0300	1.21		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.4	95	0.0360	3.85		**Shallow Concentrated Flow, Pavement** Paved Kv= 20.3 fps
10.8	163	Total			

Subcatchment 6: Driveway Center Section



Summary for Subcatchment 7: Driveway Entrance

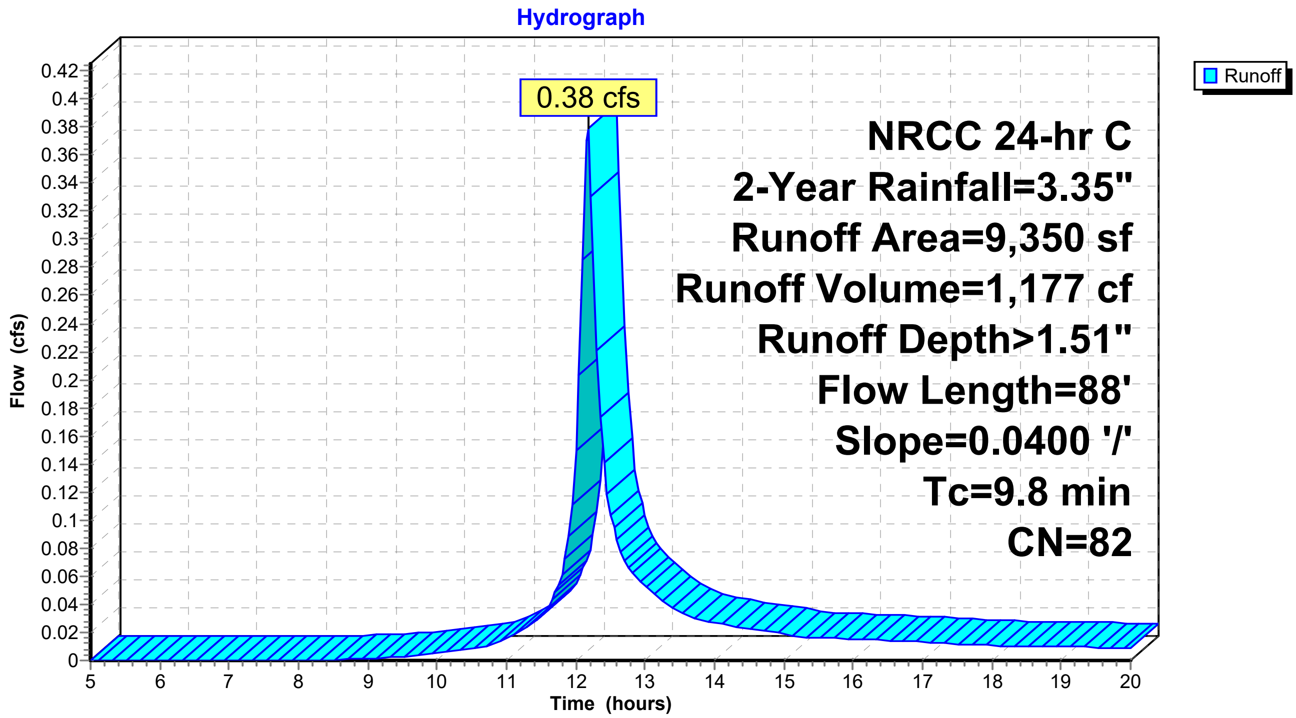
Runoff = 0.38 cfs @ 12.17 hrs, Volume= 1,177 cf, Depth> 1.51"
Routed to Pond CB1 : CB 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 2-Year Rainfall=3.35"

Area (sf)	CN	Description
2,977	98	Paved parking, HSG C
6,373	74	>75% Grass cover, Good, HSG C
9,350	82	Weighted Average
6,373		68.16% Pervious Area
2,977		31.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow, Grass** Grass: Bermuda n= 0.410 P2= 3.35"
0.5	38	0.0400	1.40		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
9.8	88	Total			

Subcatchment 7: Driveway Entrance



Summary for Subcatchment U1: Unit #1

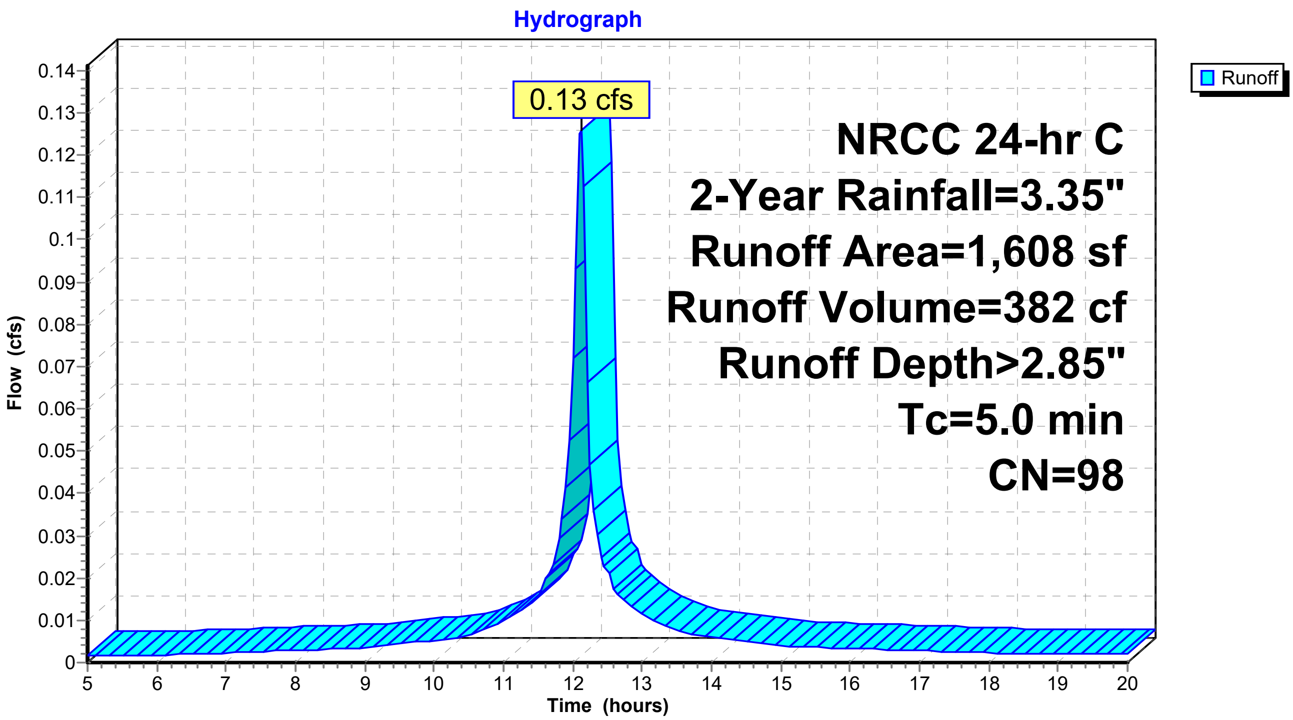
Runoff = 0.13 cfs @ 12.11 hrs, Volume= 382 cf, Depth> 2.85"
Routed to Reach 8R : 6" Roof Drain Carrier Pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 2-Year Rainfall=3.35"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U1: Unit #1



Summary for Subcatchment U10: Unit #10

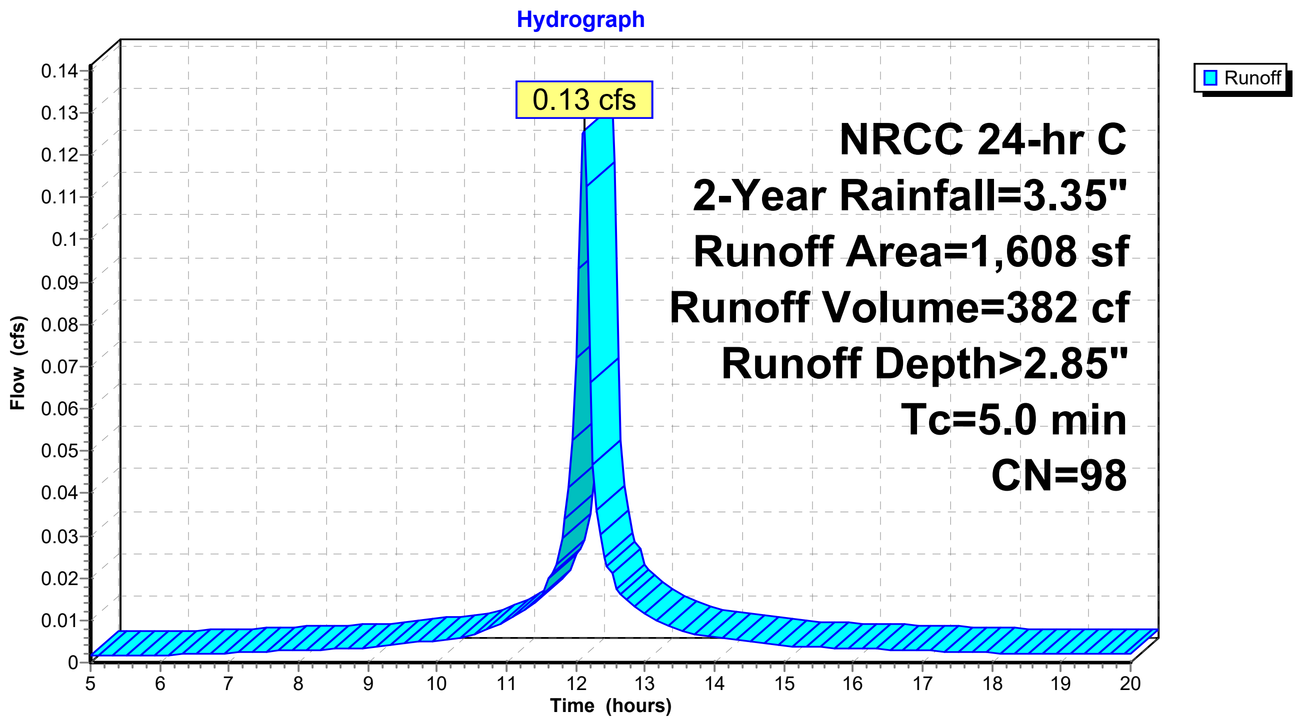
Runoff = 0.13 cfs @ 12.11 hrs, Volume= 382 cf, Depth> 2.85"
Routed to Pond 1P : Subsurface #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 2-Year Rainfall=3.35"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U10: Unit #10



Summary for Subcatchment U11: Unit #11

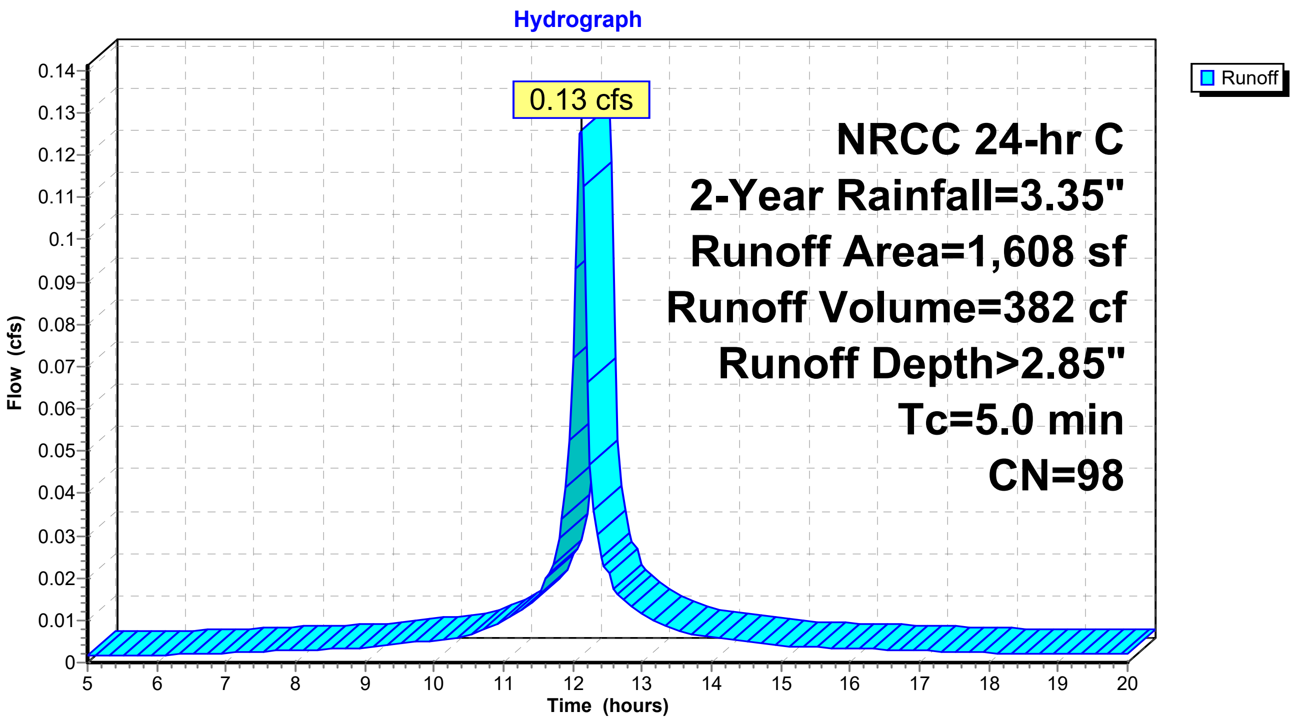
Runoff = 0.13 cfs @ 12.11 hrs, Volume= 382 cf, Depth> 2.85"
Routed to Pond 1P : Subsurface #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 2-Year Rainfall=3.35"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U11: Unit #11



Summary for Subcatchment U2: Unit #2

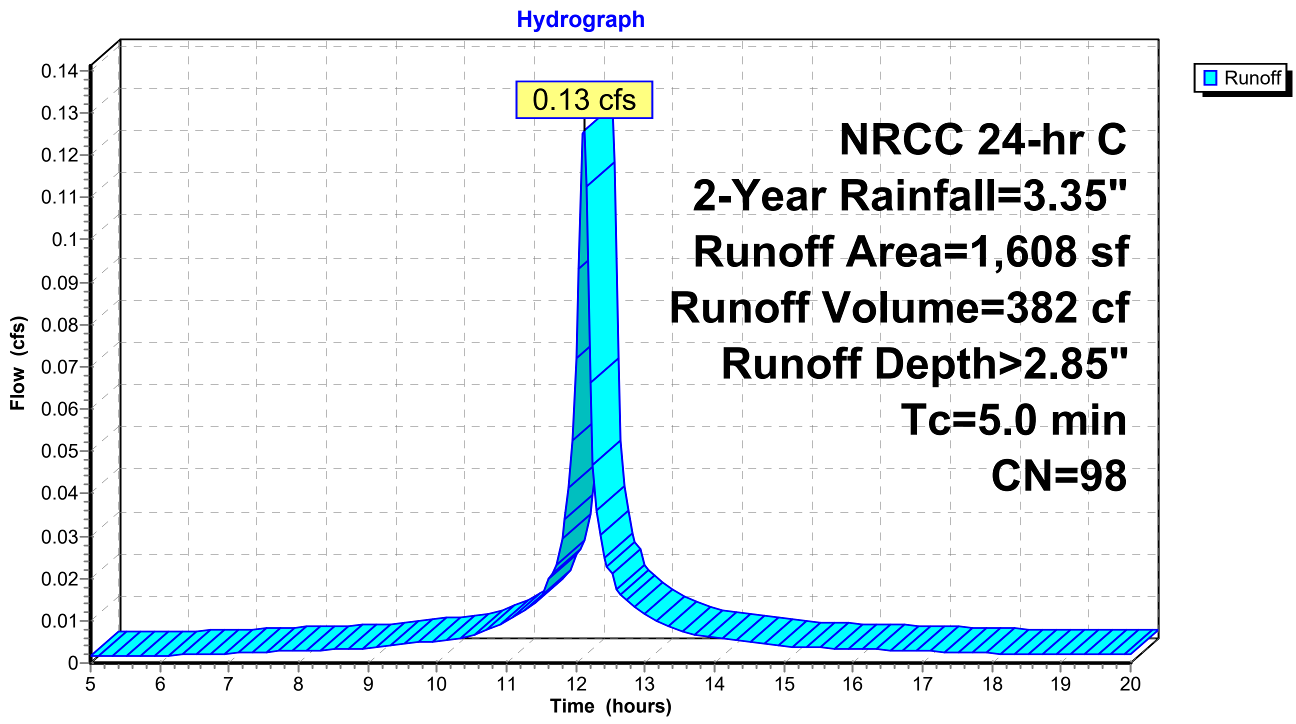
Runoff = 0.13 cfs @ 12.11 hrs, Volume= 382 cf, Depth> 2.85"
Routed to Reach 8R : 6" Roof Drain Carrier Pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 2-Year Rainfall=3.35"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U2: Unit #2



Summary for Subcatchment U3: Unit #3

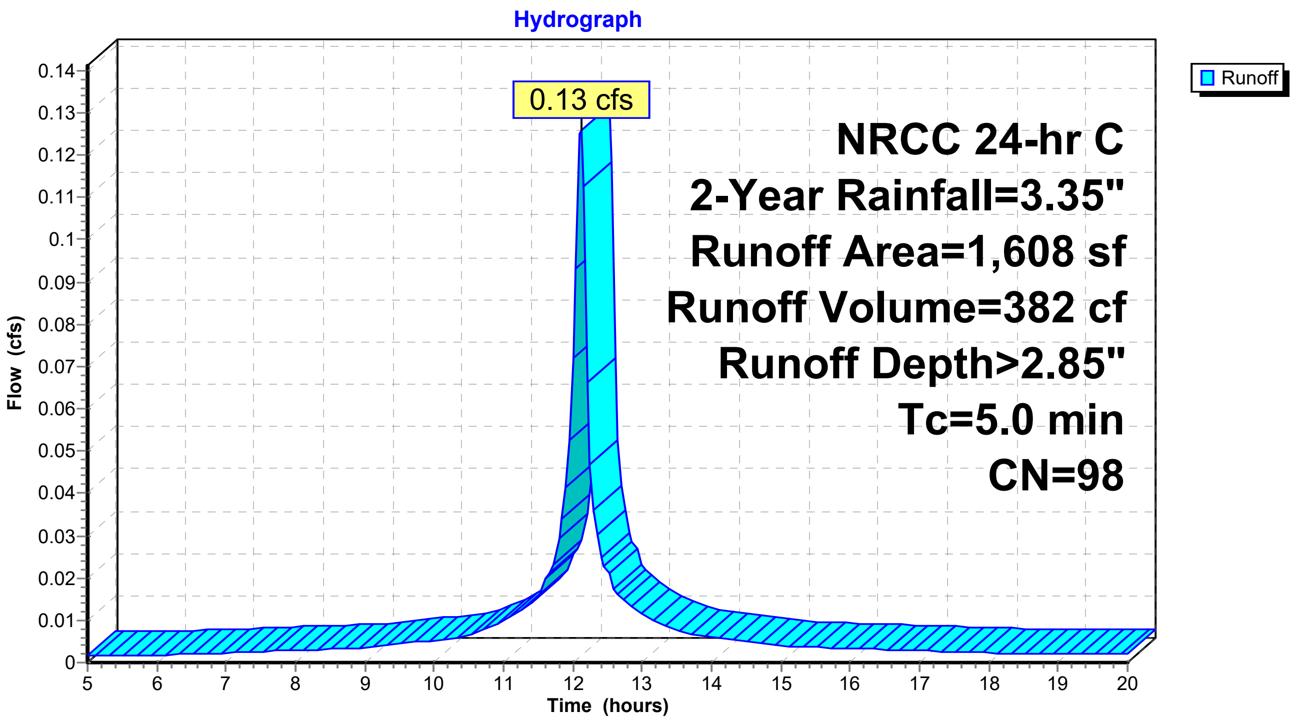
Runoff = 0.13 cfs @ 12.11 hrs, Volume= 382 cf, Depth> 2.85"
Routed to Reach 9R : 12" Roof Drain Carrier Pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 2-Year Rainfall=3.35"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U3: Unit #3



Summary for Subcatchment U4: Unit #4

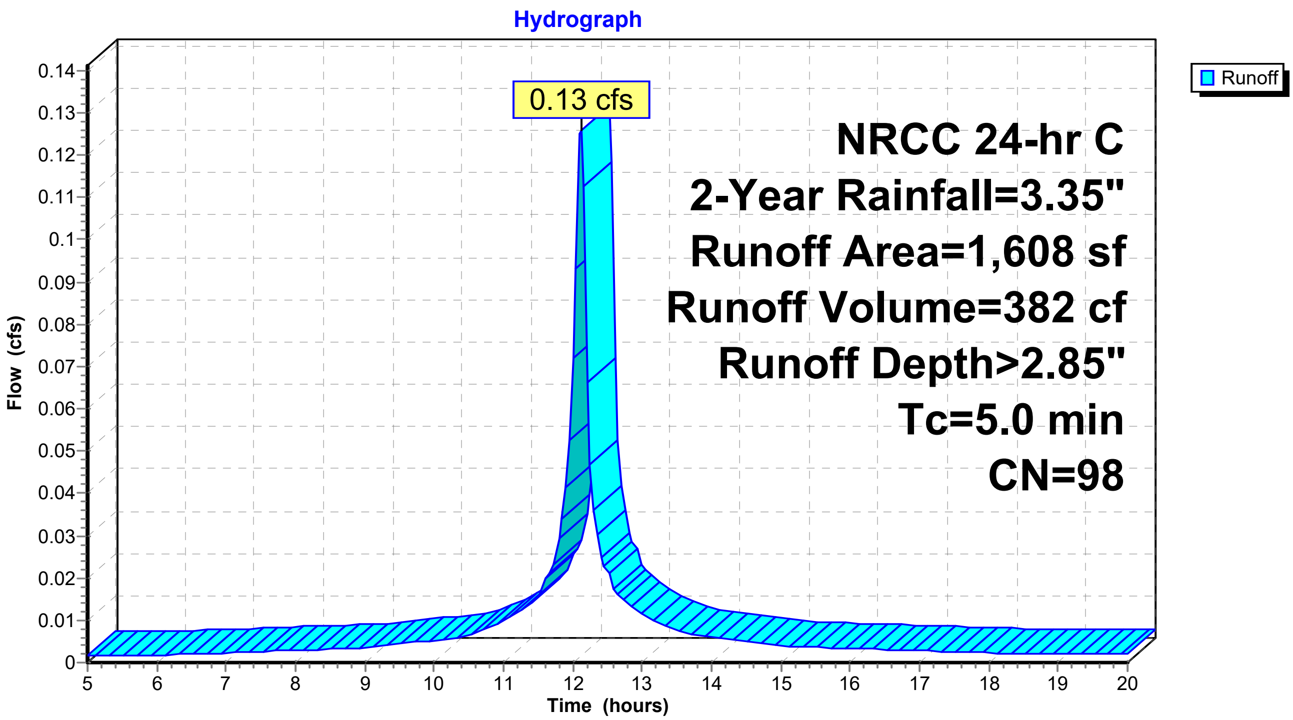
Runoff = 0.13 cfs @ 12.11 hrs, Volume= 382 cf, Depth> 2.85"
Routed to Reach 9R : 12" Roof Drain Carrier Pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 2-Year Rainfall=3.35"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U4: Unit #4



Summary for Subcatchment U5: Unit #5

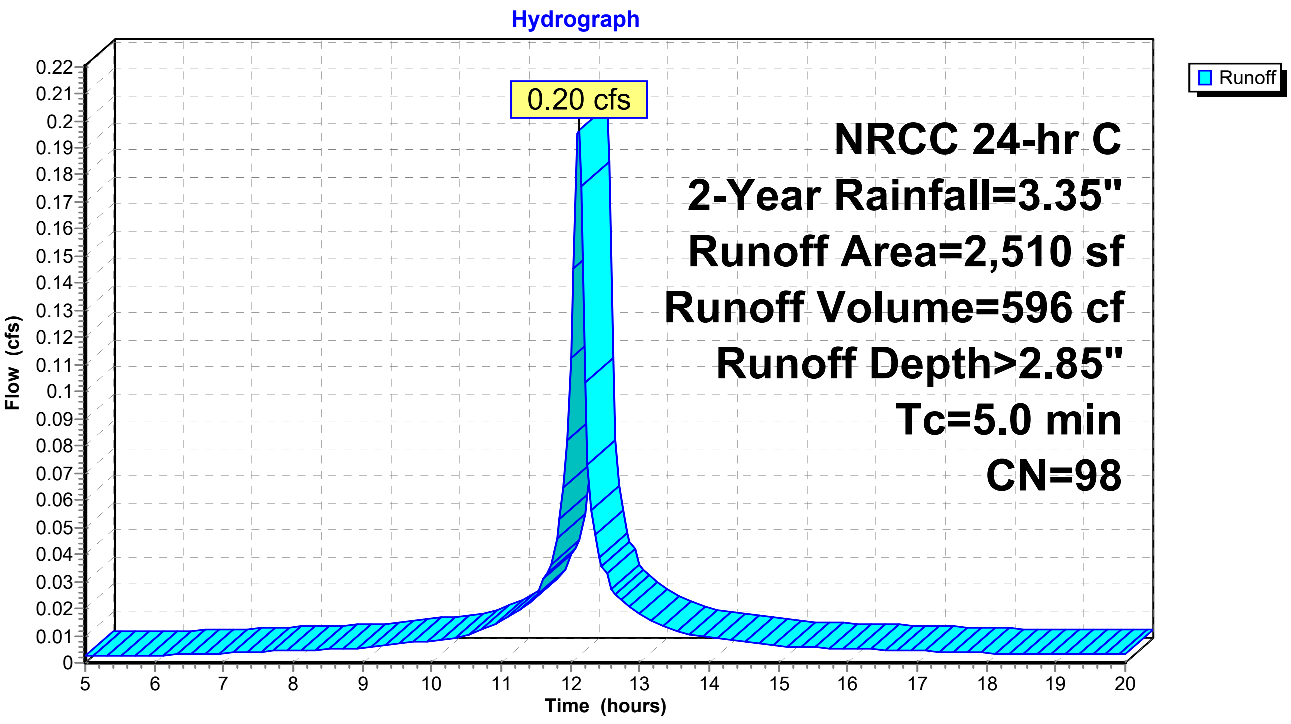
Runoff = 0.20 cfs @ 12.11 hrs, Volume= 596 cf, Depth> 2.85"
Routed to Pond IB1 : Infiltration Basin #1 (Exfiltration Zone)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 2-Year Rainfall=3.35"

Area (sf)	CN	Description
2,510	98	Unconnected roofs, HSG C
2,510		100.00% Impervious Area
2,510		100.00% Unconnected

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

Subcatchment U5: Unit #5



Summary for Subcatchment U6: Unit #6

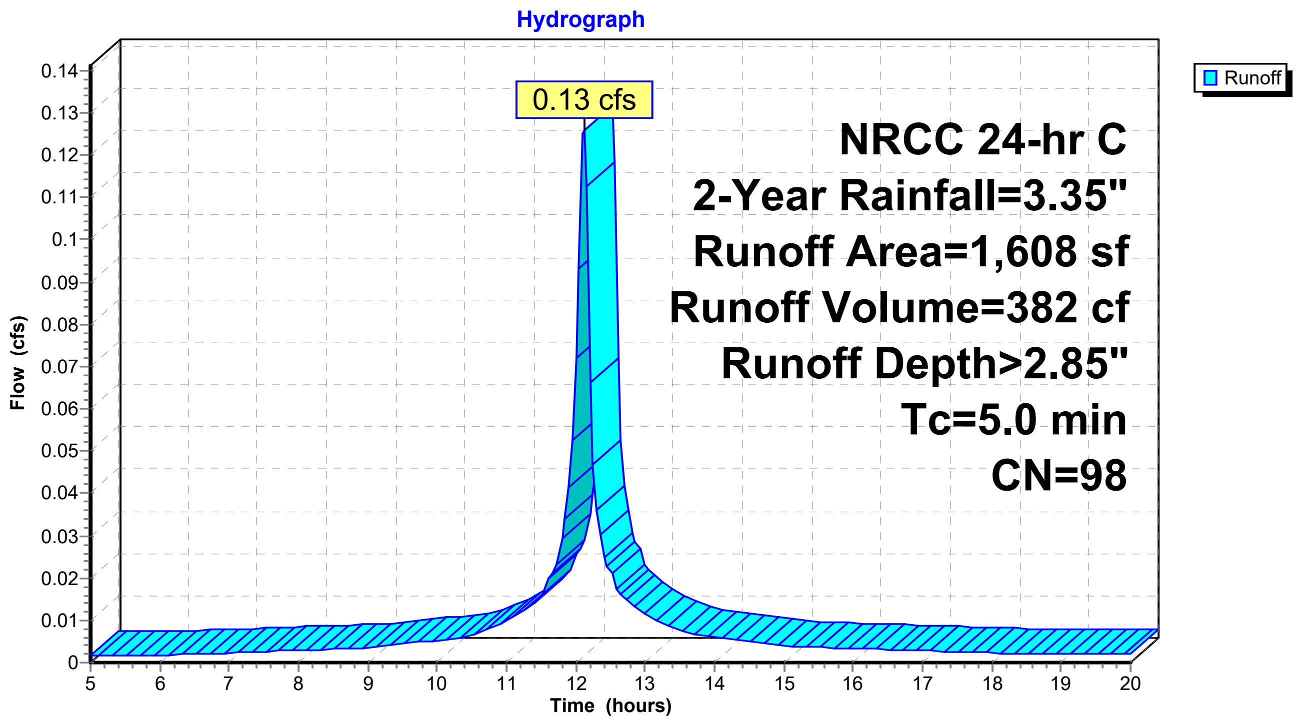
Runoff = 0.13 cfs @ 12.11 hrs, Volume= 382 cf, Depth> 2.85"
Routed to Reach 4R : 8" ROOF DRAIN CARRIER PIPE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 2-Year Rainfall=3.35"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U6: Unit #6



Summary for Subcatchment U7: Unit #7

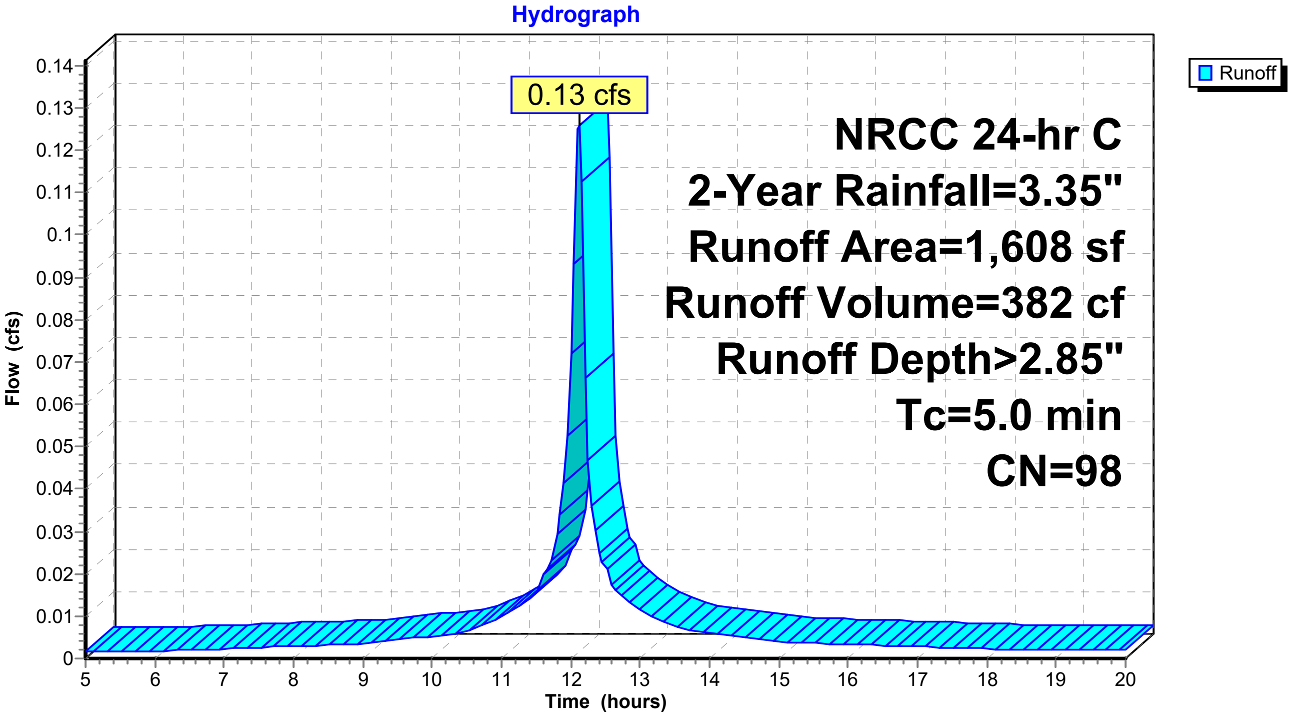
Runoff = 0.13 cfs @ 12.11 hrs, Volume= 382 cf, Depth> 2.85"
Routed to Reach 4R : 8" ROOF DRAIN CARRIER PIPE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 2-Year Rainfall=3.35"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U7: Unit #7



Summary for Subcatchment U8: Unit #8

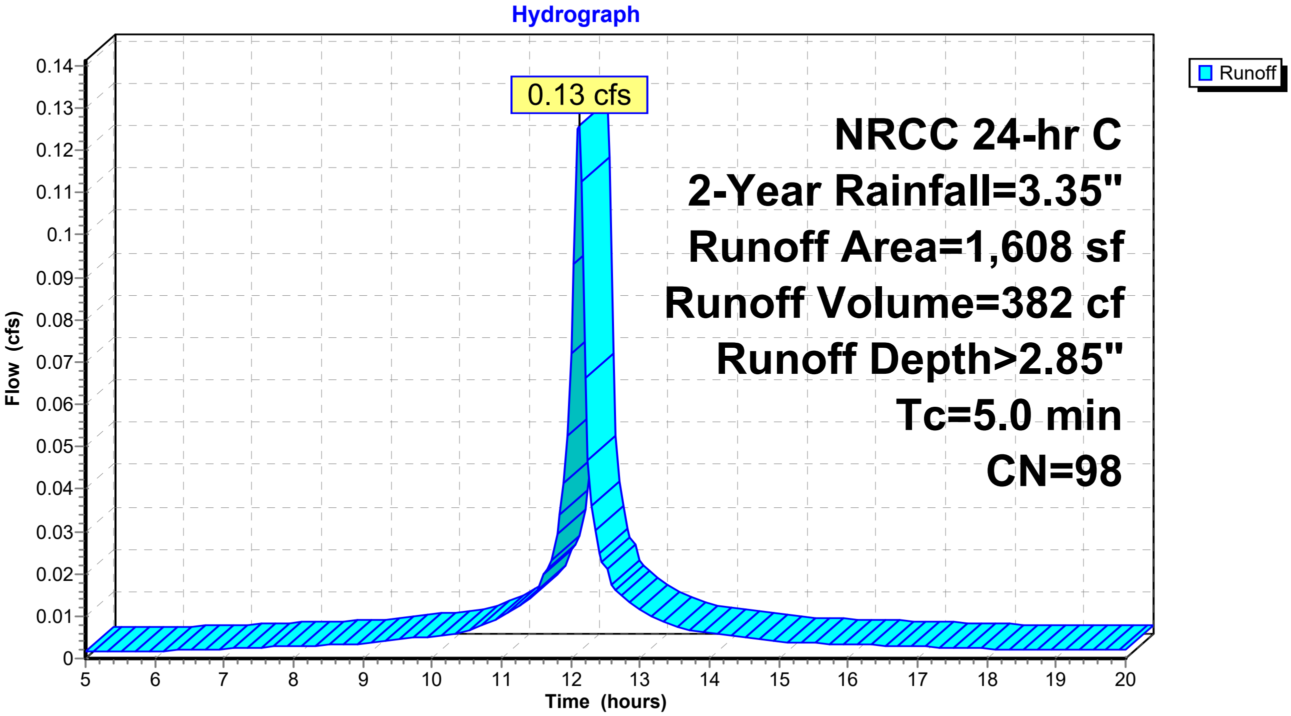
Runoff = 0.13 cfs @ 12.11 hrs, Volume= 382 cf, Depth> 2.85"
Routed to Pond 1P : Subsurface #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 2-Year Rainfall=3.35"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U8: Unit #8



Summary for Subcatchment U9: Unit #9

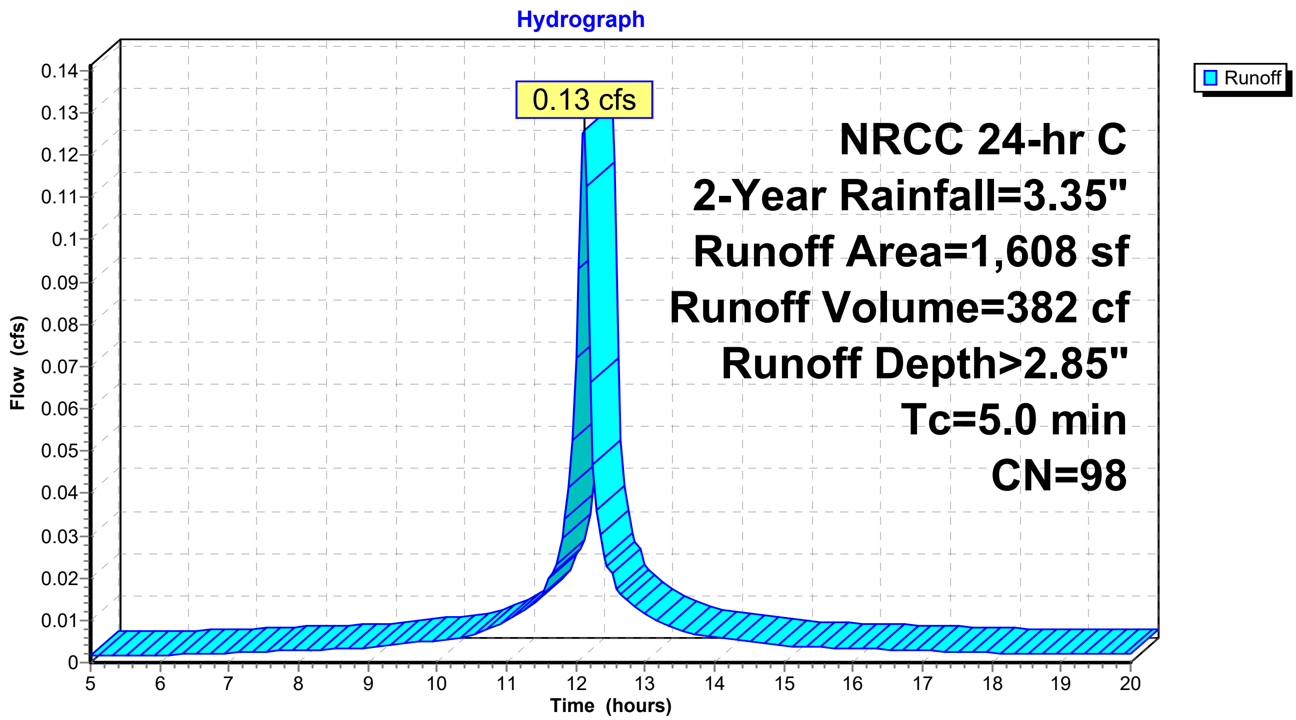
Runoff = 0.13 cfs @ 12.11 hrs, Volume= 382 cf, Depth> 2.85"
Routed to Pond 1P : Subsurface #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 2-Year Rainfall=3.35"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U9: Unit #9



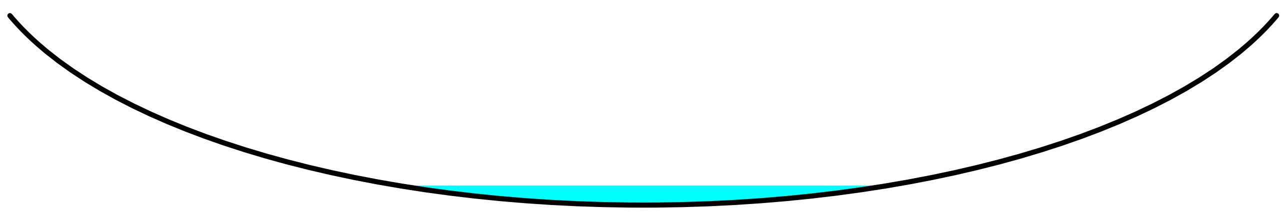
Summary for Reach 3R: Wetland Surface 1

Inflow Area = 26,696 sf, 31.24% Impervious, Inflow Depth > 0.46" for 2-Year event
Inflow = 0.17 cfs @ 12.73 hrs, Volume= 1,023 cf
Outflow = 0.14 cfs @ 13.10 hrs, Volume= 1,009 cf, Atten= 19%, Lag= 22.5 min
Routed to Reach DP1PST : DP 1 - POST

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.26 fps, Min. Travel Time= 21.7 min
Avg. Velocity = 0.15 fps, Avg. Travel Time= 37.9 min

Peak Storage= 183 cf @ 13.10 hrs
Average Depth at Peak Storage= 0.05' , Surface Width= 15.87'
Bank-Full Depth= 0.50' Flow Area= 16.7 sf, Capacity= 20.30 cfs

50.00' x 0.50' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage
Length= 344.0' Slope= 0.0291 '/'
Inlet Invert= 94.00', Outlet Invert= 84.00'



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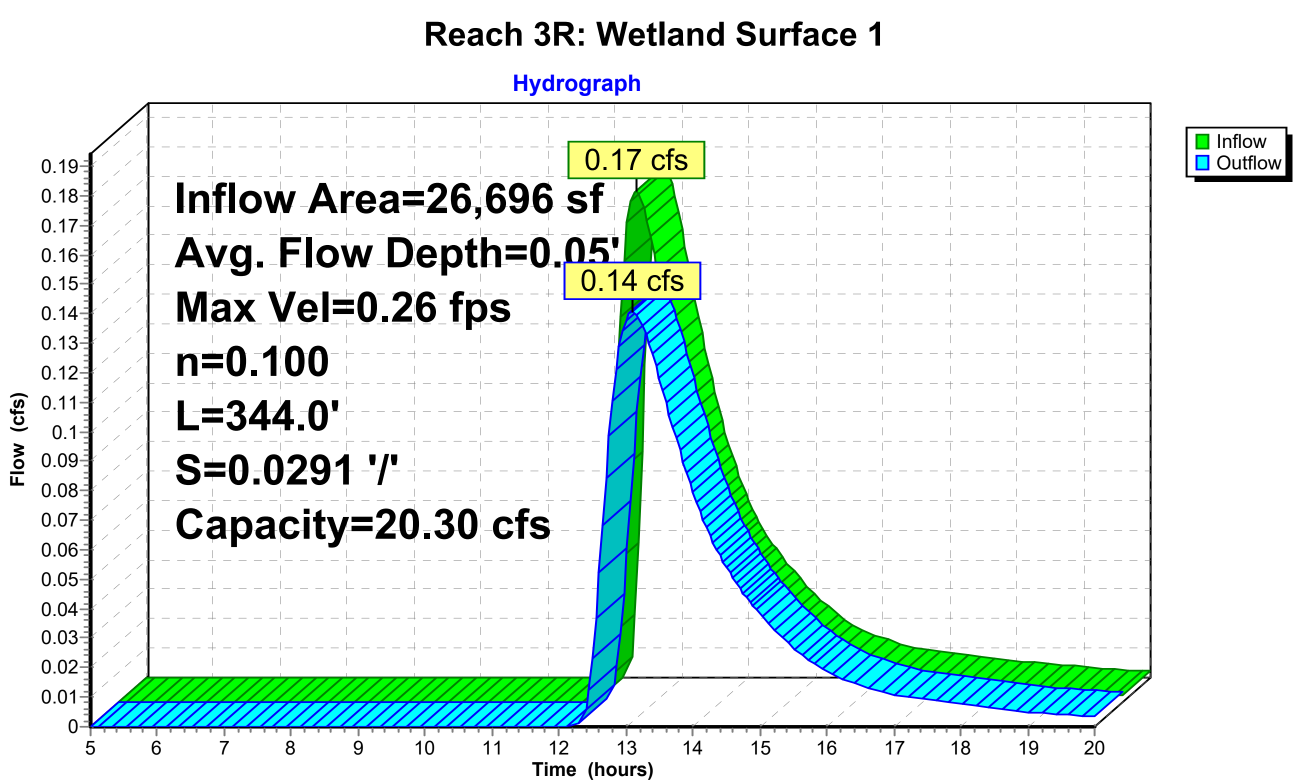


Stage-Discharge for Reach 3R: Wetland Surface 1

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
94.00	0.00	0.00
94.01	0.09	0.00
94.02	0.14	0.02
94.03	0.19	0.05
94.04	0.23	0.09
94.05	0.26	0.14
94.06	0.30	0.21
94.07	0.33	0.29
94.08	0.36	0.38
94.09	0.39	0.49
94.10	0.42	0.62
94.11	0.44	0.76
94.12	0.47	0.92
94.13	0.50	1.10
94.14	0.52	1.29
94.15	0.55	1.49
94.16	0.57	1.72
94.17	0.59	1.96
94.18	0.62	2.22
94.19	0.64	2.49
94.20	0.66	2.79
94.21	0.68	3.10
94.22	0.70	3.43
94.23	0.73	3.77
94.24	0.75	4.14
94.25	0.77	4.52
94.26	0.79	4.92
94.27	0.81	5.34
94.28	0.83	5.78
94.29	0.85	6.24
94.30	0.87	6.71
94.31	0.89	7.21
94.32	0.90	7.72
94.33	0.92	8.25
94.34	0.94	8.80
94.35	0.96	9.37
94.36	0.98	9.96
94.37	1.00	10.57
94.38	1.01	11.20
94.39	1.03	11.85
94.40	1.05	12.52
94.41	1.07	13.20
94.42	1.08	13.91
94.43	1.10	14.64
94.44	1.12	15.39
94.45	1.14	16.15
94.46	1.15	16.94
94.47	1.17	17.75
94.48	1.19	18.58
94.49	1.20	19.43
94.50	**1.22**	**20.30**

Stage-Area-Storage for Reach 3R: Wetland Surface 1

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
94.00	0.0	0
94.01	0.0	16
94.02	0.1	46
94.03	0.2	84
94.04	0.4	130
94.05	0.5	181
94.06	0.7	238
94.07	0.9	300
94.08	1.1	367
94.09	1.3	438
94.10	1.5	513
94.11	1.7	592
94.12	2.0	674
94.13	2.2	760
94.14	2.5	849
94.15	2.7	942
94.16	3.0	1,038
94.17	3.3	1,137
94.18	3.6	1,238
94.19	3.9	1,343
94.20	4.2	1,450
94.21	4.5	1,561
94.22	4.9	1,673
94.23	5.2	1,789
94.24	5.5	1,907
94.25	5.9	2,027
94.26	6.2	2,150
94.27	6.6	2,275
94.28	7.0	2,403
94.29	7.4	2,532
94.30	7.7	2,665
94.31	8.1	2,799
94.32	8.5	2,935
94.33	8.9	3,074
94.34	9.3	3,215
94.35	9.8	3,358
94.36	10.2	3,503
94.37	10.6	3,650
94.38	11.0	3,799
94.39	11.5	3,950
94.40	11.9	4,102
94.41	12.4	4,257
94.42	12.8	4,414
94.43	13.3	4,573
94.44	13.8	4,733
94.45	14.2	4,895
94.46	14.7	5,059
94.47	15.2	5,225
94.48	15.7	5,393
94.49	16.2	5,562
94.50	**16.7**	**5,733**

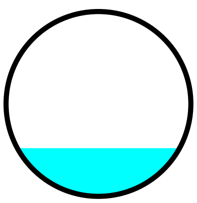
Summary for Reach 4R: 8" ROOF DRAIN CARRIER PIPE

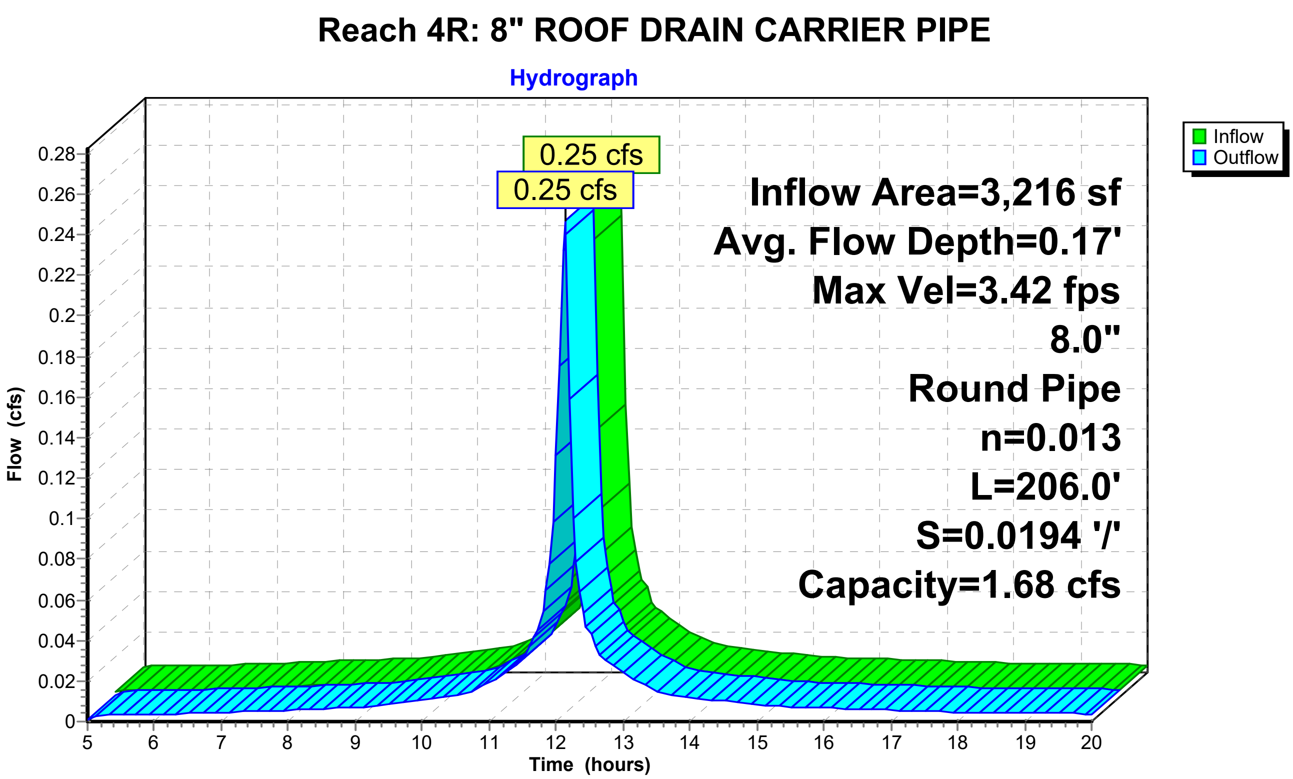
Inflow Area = 3,216 sf,100.00% Impervious, Inflow Depth > 2.85" for 2-Year event
Inflow = 0.25 cfs @ 12.11 hrs, Volume= 764 cf
Outflow = 0.25 cfs @ 12.13 hrs, Volume= 763 cf, Atten= 2%, Lag= 1.1 min
Routed to Pond IB1 : Infiltration Basin #1 (Exfiltration Zone)

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.42 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 1.29 fps, Avg. Travel Time= 2.7 min

Peak Storage= 15 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.17' , Surface Width= 0.58'
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 1.68 cfs

8.0" Round Pipe
n= 0.013
Length= 206.0' Slope= 0.0194 '/'
Inlet Invert= 93.00', Outlet Invert= 89.00'





Stage-Discharge for Reach 4R: 8" ROOF DRAIN CARRIER PIPE

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
93.00	0.00	0.00	93.53	5.50	1.64
93.01	0.55	0.00	93.54	**5.50**	1.67
93.02	0.89	0.00	93.55	5.50	1.69
93.03	1.16	0.01	93.56	5.49	1.72
93.04	1.39	0.01	93.57	5.48	1.74
93.05	1.61	0.02	93.58	5.47	1.76
93.06	1.81	0.03	93.59	5.45	1.78
93.07	2.00	0.04	93.60	5.42	1.79
93.08	2.17	0.05	93.61	5.39	1.80
93.09	2.34	0.07	93.62	5.35	**1.81**
93.10	2.49	0.08	93.63	5.30	1.81
93.11	2.64	0.10	93.64	5.24	1.80
93.12	2.79	0.12	93.65	5.15	1.79
93.13	2.92	0.14	93.66	5.03	1.75
93.14	3.05	0.16	93.67	4.72	1.65
93.15	3.18	0.19			
93.16	3.30	0.21			
93.17	3.42	0.24			
93.18	3.53	0.27			
93.19	3.64	0.30			
93.20	3.74	0.33			
93.21	3.84	0.36			
93.22	3.94	0.40			
93.23	4.04	0.43			
93.24	4.13	0.47			
93.25	4.21	0.50			
93.26	4.30	0.54			
93.27	4.38	0.58			
93.28	4.46	0.62			
93.29	4.53	0.66			
93.30	4.60	0.70			
93.31	4.67	0.74			
93.32	4.74	0.79			
93.33	4.80	0.83			
93.34	4.86	0.87			
93.35	4.92	0.91			
93.36	4.98	0.96			
93.37	5.03	1.00			
93.38	5.08	1.04			
93.39	5.13	1.09			
93.40	5.17	1.13			
93.41	5.22	1.17			
93.42	5.25	1.22			
93.43	5.29	1.26			
93.44	5.33	1.30			
93.45	5.36	1.34			
93.46	5.38	1.38			
93.47	5.41	1.42			
93.48	5.43	1.46			
93.49	5.45	1.50			
93.50	5.47	1.54			
93.51	5.48	1.57			
93.52	5.49	1.60			

Stage-Area-Storage for Reach 4R: 8" ROOF DRAIN CARRIER PIPE

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
93.00	0.0	0	93.53	0.3	61
93.01	0.0	0	93.54	0.3	62
93.02	0.0	1	93.55	0.3	63
93.03	0.0	1	93.56	0.3	64
93.04	0.0	2	93.57	0.3	65
93.05	0.0	2	93.58	0.3	66
93.06	0.0	3	93.59	0.3	67
93.07	0.0	4	93.60	0.3	68
93.08	0.0	5	93.61	0.3	69
93.09	0.0	6	93.62	0.3	70
93.10	0.0	7	93.63	0.3	70
93.11	0.0	8	93.64	0.3	71
93.12	0.0	9	93.65	0.3	71
93.13	0.0	10	93.66	0.3	72
93.14	0.1	11	93.67	**0.3**	**72**
93.15	0.1	12			
93.16	0.1	13			
93.17	0.1	14			
93.18	0.1	16			
93.19	0.1	17			
93.20	0.1	18			
93.21	0.1	19			
93.22	0.1	21			
93.23	0.1	22			
93.24	0.1	23			
93.25	0.1	25			
93.26	0.1	26			
93.27	0.1	27			
93.28	0.1	29			
93.29	0.1	30			
93.30	0.2	31			
93.31	0.2	33			
93.32	0.2	34			
93.33	0.2	35			
93.34	0.2	37			
93.35	0.2	38			
93.36	0.2	40			
93.37	0.2	41			
93.38	0.2	42			
93.39	0.2	44			
93.40	0.2	45			
93.41	0.2	46			
93.42	0.2	48			
93.43	0.2	49			
93.44	0.2	50			
93.45	0.3	52			
93.46	0.3	53			
93.47	0.3	54			
93.48	0.3	55			
93.49	0.3	57			
93.50	0.3	58			
93.51	0.3	59			
93.52	0.3	60			

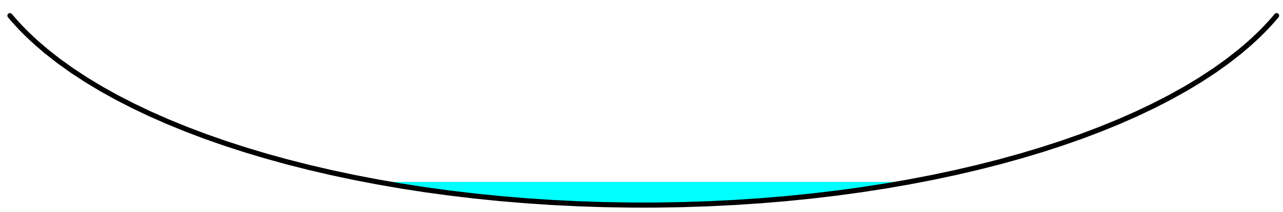
Summary for Reach 5R: Wetland Surface 2

Inflow Area = 13,032 sf, 14.64% Impervious, Inflow Depth > 0.66" for 2-Year event
Inflow = 0.21 cfs @ 12.35 hrs, Volume= 713 cf
Outflow = 0.11 cfs @ 12.69 hrs, Volume= 701 cf, Atten= 47%, Lag= 20.0 min
Routed to Reach 3R : Wetland Surface 1

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.16 fps, Min. Travel Time= 25.7 min
Avg. Velocity = 0.09 fps, Avg. Travel Time= 46.5 min

Peak Storage= 173 cf @ 12.69 hrs
Average Depth at Peak Storage= 0.06' , Surface Width= 17.44'
Bank-Full Depth= 0.50' Flow Area= 16.7 sf, Capacity= 10.76 cfs

50.00' x 0.50' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage
Length= 245.0' Slope= 0.0082 '/'
Inlet Invert= 96.00', Outlet Invert= 94.00'



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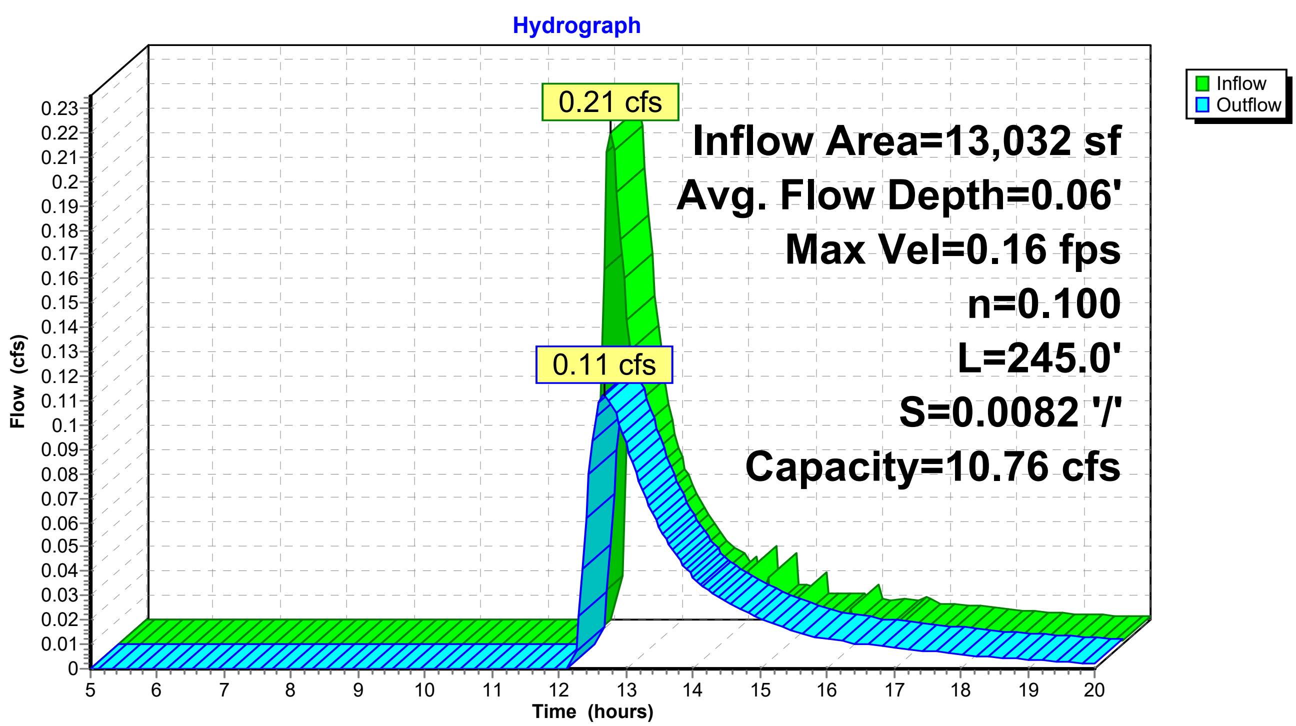
Reach 5R: Wetland Surface 2



Stage-Discharge for Reach 5R: Wetland Surface 2

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
96.00	0.00	0.00
96.01	0.05	0.00
96.02	0.08	0.01
96.03	0.10	0.02
96.04	0.12	0.05
96.05	0.14	0.07
96.06	0.16	0.11
96.07	0.17	0.15
96.08	0.19	0.20
96.09	0.21	0.26
96.10	0.22	0.33
96.11	0.24	0.40
96.12	0.25	0.49
96.13	0.26	0.58
96.14	0.28	0.68
96.15	0.29	0.79
96.16	0.30	0.91
96.17	0.31	1.04
96.18	0.33	1.18
96.19	0.34	1.32
96.20	0.35	1.48
96.21	0.36	1.64
96.22	0.37	1.82
96.23	0.38	2.00
96.24	0.40	2.19
96.25	0.41	2.40
96.26	0.42	2.61
96.27	0.43	2.83
96.28	0.44	3.06
96.29	0.45	3.30
96.30	0.46	3.56
96.31	0.47	3.82
96.32	0.48	4.09
96.33	0.49	4.37
96.34	0.50	4.66
96.35	0.51	4.97
96.36	0.52	5.28
96.37	0.53	5.60
96.38	0.54	5.94
96.39	0.55	6.28
96.40	0.56	6.63
96.41	0.57	7.00
96.42	0.57	7.37
96.43	0.58	7.76
96.44	0.59	8.15
96.45	0.60	8.56
96.46	0.61	8.98
96.47	0.62	9.41
96.48	0.63	9.85
96.49	0.64	10.30
96.50	**0.65**	**10.76**

Stage-Area-Storage for Reach 5R: Wetland Surface 2

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
96.00	0.0	0
96.01	0.0	12
96.02	0.1	33
96.03	0.2	60
96.04	0.4	92
96.05	0.5	129
96.06	0.7	170
96.07	0.9	214
96.08	1.1	261
96.09	1.3	312
96.10	1.5	365
96.11	1.7	421
96.12	2.0	480
96.13	2.2	541
96.14	2.5	605
96.15	2.7	671
96.16	3.0	739
96.17	3.3	810
96.18	3.6	882
96.19	3.9	957
96.20	4.2	1,033
96.21	4.5	1,111
96.22	4.9	1,192
96.23	5.2	1,274
96.24	5.5	1,358
96.25	5.9	1,444
96.26	6.2	1,531
96.27	6.6	1,620
96.28	7.0	1,711
96.29	7.4	1,804
96.30	7.7	1,898
96.31	8.1	1,993
96.32	8.5	2,091
96.33	8.9	2,189
96.34	9.3	2,290
96.35	9.8	2,391
96.36	10.2	2,495
96.37	10.6	2,599
96.38	11.0	2,705
96.39	11.5	2,813
96.40	11.9	2,922
96.41	12.4	3,032
96.42	12.8	3,144
96.43	13.3	3,257
96.44	13.8	3,371
96.45	14.2	3,486
96.46	14.7	3,603
96.47	15.2	3,721
96.48	15.7	3,841
96.49	16.2	3,961
96.50	**16.7**	**4,083**

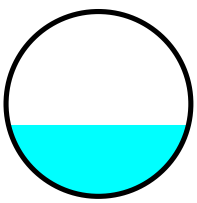
Summary for Reach 8R: 6" Roof Drain Carrier Pipe

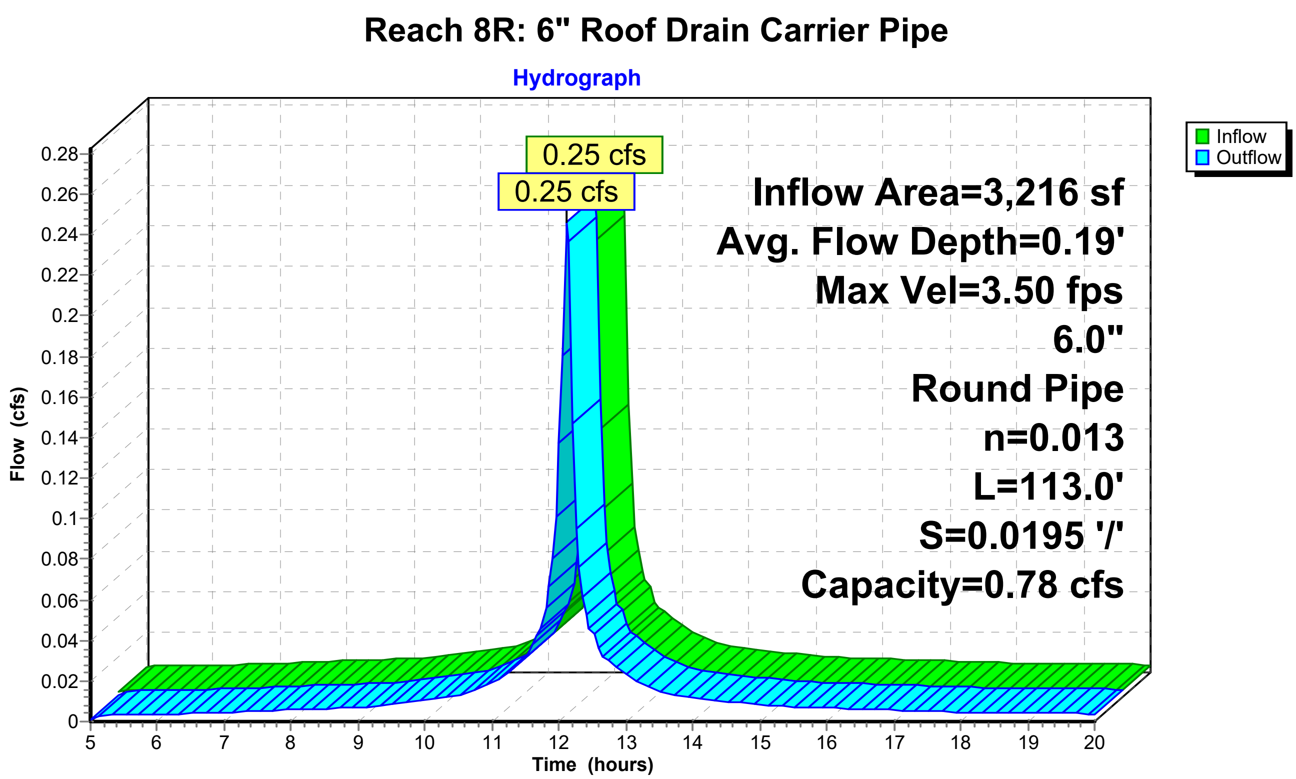
Inflow Area = 3,216 sf,100.00% Impervious, Inflow Depth > 2.85" for 2-Year event
Inflow = 0.25 cfs @ 12.11 hrs, Volume= 764 cf
Outflow = 0.25 cfs @ 12.12 hrs, Volume= 764 cf, Atten= 2%, Lag= 0.7 min
Routed to Reach 9R : 12" Roof Drain Carrier Pipe

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.50 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.35 fps, Avg. Travel Time= 1.4 min

Peak Storage= 8 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.19' , Surface Width= 0.49'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.78 cfs

6.0" Round Pipe
n= 0.013
Length= 113.0' Slope= 0.0195 '/'
Inlet Invert= 94.50', Outlet Invert= 92.30'





Stage-Discharge for Reach 8R: 6" Roof Drain Carrier Pipe

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
94.50	0.00	0.00
94.51	0.56	0.00
94.52	0.89	0.00
94.53	1.15	0.01
94.54	1.39	0.01
94.55	1.60	0.02
94.56	1.79	0.02
94.57	1.97	0.03
94.58	2.14	0.04
94.59	2.30	0.06
94.60	2.45	0.07
94.61	2.59	0.08
94.62	2.73	0.10
94.63	2.86	0.12
94.64	2.98	0.13
94.65	3.09	0.15
94.66	3.21	0.17
94.67	3.31	0.19
94.68	3.41	0.22
94.69	3.51	0.24
94.70	3.60	0.26
94.71	3.68	0.29
94.72	3.77	0.31
94.73	3.84	0.34
94.74	3.92	0.37
94.75	3.99	0.39
94.76	4.05	0.42
94.77	4.11	0.45
94.78	4.17	0.47
94.79	4.23	0.50
94.80	4.28	0.53
94.81	4.32	0.55
94.82	4.36	0.58
94.83	4.40	0.61
94.84	4.44	0.63
94.85	4.46	0.66
94.86	4.49	0.68
94.87	4.51	0.70
94.88	4.53	0.72
94.89	4.54	0.75
94.90	4.54	0.77
94.91	**4.55**	0.78
94.92	4.54	0.80
94.93	4.53	0.81
94.94	4.51	0.83
94.95	4.48	0.83
94.96	4.45	0.84
94.97	4.40	**0.84**
94.98	4.33	0.84
94.99	4.23	0.83
95.00	3.99	0.78

Stage-Area-Storage for Reach 8R: 6" Roof Drain Carrier Pipe

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
94.50	0.0	0
94.51	0.0	0
94.52	0.0	0
94.53	0.0	1
94.54	0.0	1
94.55	0.0	1
94.56	0.0	2
94.57	0.0	2
94.58	0.0	2
94.59	0.0	3
94.60	0.0	3
94.61	0.0	4
94.62	0.0	4
94.63	0.0	5
94.64	0.0	5
94.65	0.0	6
94.66	0.1	6
94.67	0.1	7
94.68	0.1	7
94.69	0.1	8
94.70	0.1	8
94.71	0.1	9
94.72	0.1	9
94.73	0.1	10
94.74	0.1	11
94.75	0.1	11
94.76	0.1	12
94.77	0.1	12
94.78	0.1	13
94.79	0.1	13
94.80	0.1	14
94.81	0.1	14
94.82	0.1	15
94.83	0.1	16
94.84	0.1	16
94.85	0.1	17
94.86	0.2	17
94.87	0.2	18
94.88	0.2	18
94.89	0.2	19
94.90	0.2	19
94.91	0.2	19
94.92	0.2	20
94.93	0.2	20
94.94	0.2	21
94.95	0.2	21
94.96	0.2	21
94.97	0.2	22
94.98	0.2	22
94.99	0.2	22
95.00	**0.2**	**22**

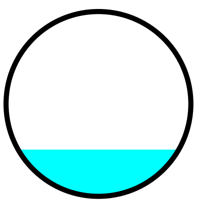
Summary for Reach 9R: 12" Roof Drain Carrier Pipe

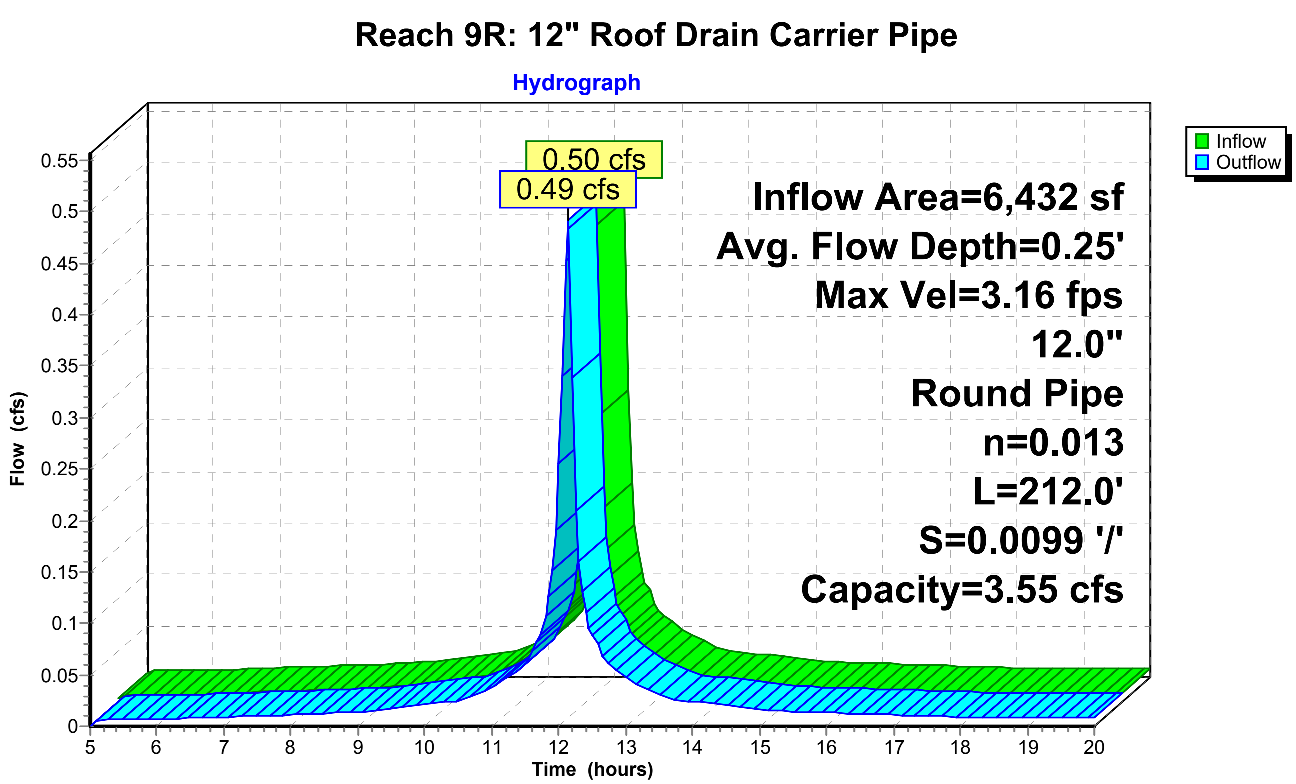
Inflow Area = 6,432 sf,100.00% Impervious, Inflow Depth > 2.85" for 2-Year event
Inflow = 0.50 cfs @ 12.12 hrs, Volume= 1,528 cf
Outflow = 0.49 cfs @ 12.13 hrs, Volume= 1,526 cf, Atten= 1%, Lag= 1.1 min
Routed to Pond IB1 : Infiltration Basin #1 (Exfiltration Zone)

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.16 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 1.19 fps, Avg. Travel Time= 3.0 min

Peak Storage= 33 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.25' , Surface Width= 0.87'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.55 cfs

12.0" Round Pipe
n= 0.013
Length= 212.0' Slope= 0.0099 '/'
Inlet Invert= 91.10', Outlet Invert= 89.00'





Stage-Discharge for Reach 9R: 12" Roof Drain Carrier Pipe

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
91.10	0.00	0.00	91.63	4.62	1.95
91.11	0.40	0.00	91.64	4.66	2.02
91.12	0.64	0.00	91.65	4.69	2.08
91.13	0.83	0.01	91.66	4.72	2.14
91.14	1.00	0.01	91.67	4.76	2.20
91.15	1.16	0.02	91.68	4.79	2.26
91.16	1.31	0.03	91.69	4.81	2.32
91.17	1.44	0.03	91.70	4.84	2.38
91.18	1.57	0.05	91.71	4.87	2.44
91.19	1.69	0.06	91.72	4.89	2.50
91.20	1.81	0.07	91.73	4.92	2.56
91.21	1.92	0.09	91.74	4.94	2.62
91.22	2.03	0.11	91.75	4.96	2.68
91.23	2.14	0.13	91.76	4.98	2.74
91.24	2.24	0.15	91.77	5.00	2.80
91.25	2.33	0.17	91.78	5.02	2.86
91.26	2.43	0.20	91.79	5.04	2.91
91.27	2.52	0.22	91.80	5.06	2.97
91.28	2.61	0.25	91.81	5.07	3.02
91.29	2.69	0.28	91.82	5.08	3.08
91.30	2.78	0.31	91.83	5.10	3.13
91.31	2.86	0.34	91.84	5.11	3.18
91.32	2.94	0.38	91.85	5.12	3.23
91.33	3.01	0.41	91.86	5.13	3.28
91.34	3.09	0.45	91.87	5.13	3.33
91.35	3.16	0.49	91.88	5.14	3.38
91.36	3.23	0.52	91.89	5.14	3.42
91.37	3.30	0.57	91.90	5.15	3.47
91.38	3.37	0.61	91.91	**5.15**	3.51
91.39	3.44	0.65	91.92	5.15	3.55
91.40	3.50	0.69	91.93	5.14	3.59
91.41	3.57	0.74	91.94	5.14	3.62
91.42	3.63	0.79	91.95	5.14	3.65
91.43	3.69	0.83	91.96	5.13	3.68
91.44	3.75	0.88	91.97	5.12	3.71
91.45	3.81	0.93	91.98	5.11	3.74
91.46	3.86	0.98	91.99	5.09	3.76
91.47	3.92	1.03	92.00	5.08	3.78
91.48	3.97	1.09	92.01	5.06	3.79
91.49	4.02	1.14	92.02	5.03	3.81
91.50	4.07	1.19	92.03	5.01	3.81
91.51	4.12	1.25	92.04	4.98	**3.81**
91.52	4.17	1.31	92.05	4.94	3.81
91.53	4.22	1.36	92.06	4.90	3.80
91.54	4.26	1.42	92.07	4.85	3.78
91.55	4.31	1.48	92.08	4.79	3.75
91.56	4.35	1.54	92.09	4.71	3.69
91.57	4.39	1.59	92.10	4.51	3.55
91.58	4.44	1.65			
91.59	4.48	1.71			
91.60	4.51	1.77			
91.61	4.55	1.83			
91.62	4.59	1.89			

Stage-Area-Storage for Reach 9R: 12" Roof Drain Carrier Pipe

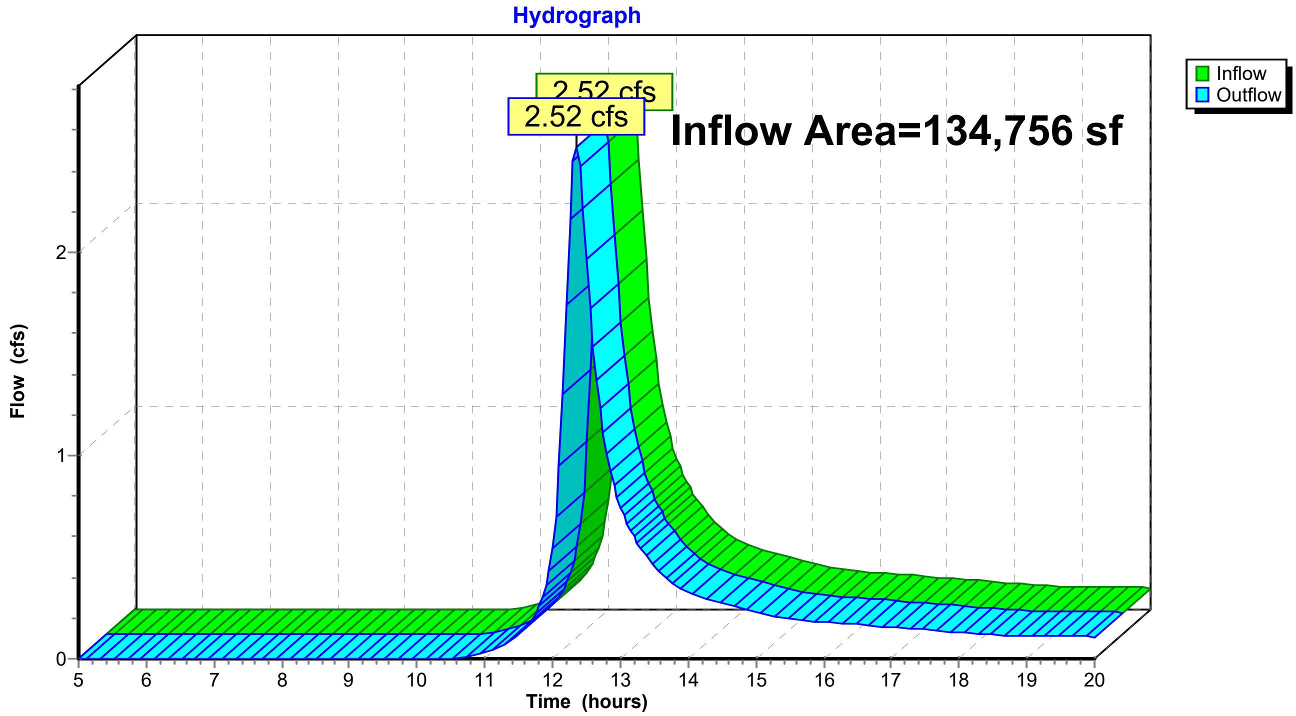
Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
91.10	0.0	0	91.63	0.4	90
91.11	0.0	0	91.64	0.4	92
91.12	0.0	1	91.65	0.4	94
91.13	0.0	1	91.66	0.5	96
91.14	0.0	2	91.67	0.5	98
91.15	0.0	3	91.68	0.5	100
91.16	0.0	4	91.69	0.5	102
91.17	0.0	5	91.70	0.5	104
91.18	0.0	6	91.71	0.5	106
91.19	0.0	7	91.72	0.5	108
91.20	0.0	9	91.73	0.5	110
91.21	0.0	10	91.74	0.5	113
91.22	0.1	11	91.75	0.5	115
91.23	0.1	13	91.76	0.5	117
91.24	0.1	14	91.77	0.6	119
91.25	0.1	16	91.78	0.6	121
91.26	0.1	17	91.79	0.6	123
91.27	0.1	19	91.80	0.6	124
91.28	0.1	20	91.81	0.6	126
91.29	0.1	22	91.82	0.6	128
91.30	0.1	24	91.83	0.6	130
91.31	0.1	25	91.84	0.6	132
91.32	0.1	27	91.85	0.6	134
91.33	0.1	29	91.86	0.6	136
91.34	0.1	31	91.87	0.6	138
91.35	0.2	33	91.88	0.7	139
91.36	0.2	34	91.89	0.7	141
91.37	0.2	36	91.90	0.7	143
91.38	0.2	38	91.91	0.7	144
91.39	0.2	40	91.92	0.7	146
91.40	0.2	42	91.93	0.7	148
91.41	0.2	44	91.94	0.7	149
91.42	0.2	46	91.95	0.7	151
91.43	0.2	48	91.96	0.7	152
91.44	0.2	50	91.97	0.7	154
91.45	0.2	52	91.98	0.7	155
91.46	0.3	54	91.99	0.7	157
91.47	0.3	56	92.00	0.7	158
91.48	0.3	58	92.01	0.8	159
91.49	0.3	60	92.02	0.8	160
91.50	0.3	62	92.03	0.8	161
91.51	0.3	64	92.04	0.8	162
91.52	0.3	66	92.05	0.8	163
91.53	0.3	68	92.06	0.8	164
91.54	0.3	71	92.07	0.8	165
91.55	0.3	73	92.08	0.8	166
91.56	0.4	75	92.09	0.8	166
91.57	0.4	77	92.10	**0.8**	**167**
91.58	0.4	79			
91.59	0.4	81			
91.60	0.4	83			
91.61	0.4	85			
91.62	0.4	87			

Summary for Reach DP1PRE: DP 1 - PRE

Inflow Area =	134,756 sf,	4.57% Impervious,	Inflow Depth > 1.01"	for 2-Year event
Inflow =	2.52 cfs @	12.35 hrs, Volume=	11,326 cf	
Outflow =	2.52 cfs @	12.35 hrs, Volume=	11,326 cf,	Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

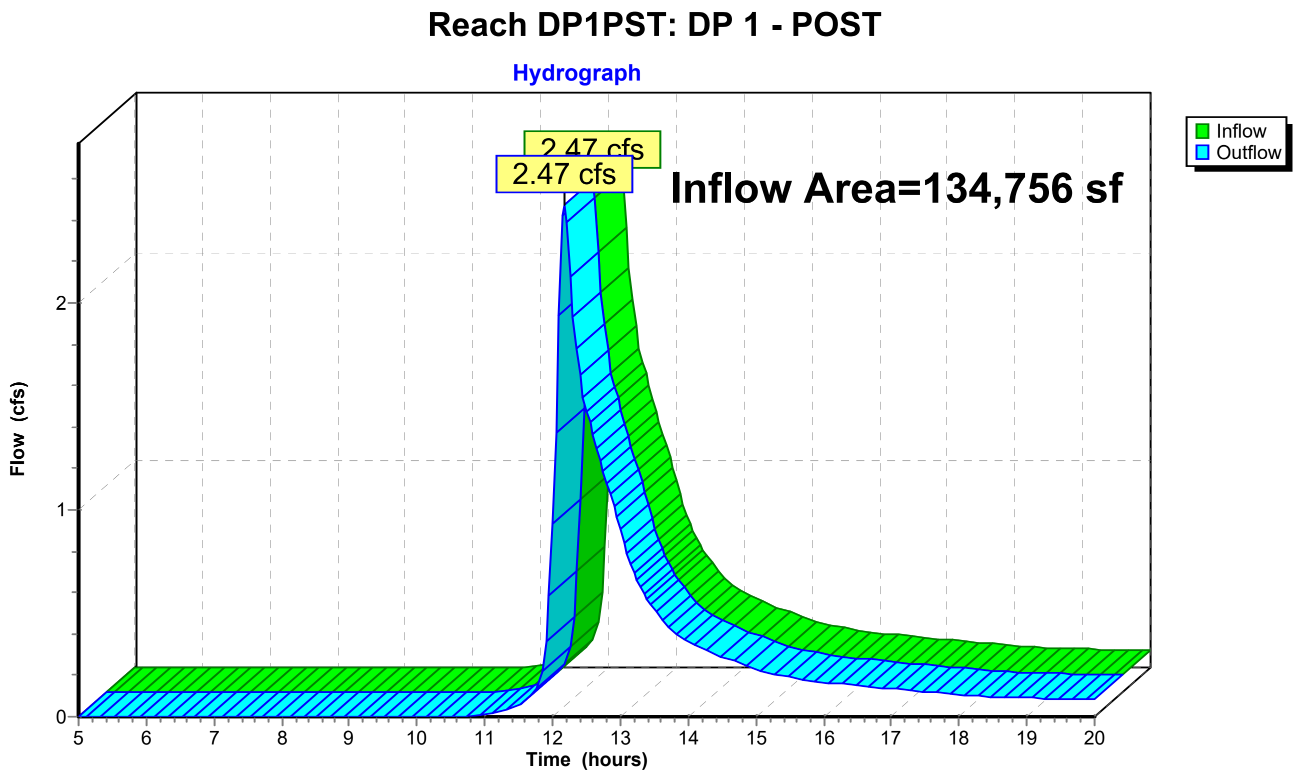
Reach DP1PRE: DP 1 - PRE



Summary for Reach DP1PST: DP 1 - POST

Inflow Area = 134,756 sf, 26.93% Impervious, Inflow Depth > 1.00" for 2-Year event
Inflow = 2.47 cfs @ 12.17 hrs, Volume= 11,275 cf
Outflow = 2.47 cfs @ 12.17 hrs, Volume= 11,275 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs



Summary for Pond 1P: Subsurface #1

Inflow Area = 13,664 sf, 47.07% Impervious, Inflow Depth > 1.88" for 2-Year event
Inflow = 0.64 cfs @ 12.12 hrs, Volume= 2,139 cf
Outflow = 0.09 cfs @ 12.82 hrs, Volume= 1,565 cf, Atten= 86%, Lag= 41.5 min
Discarded = 0.03 cfs @ 11.10 hrs, Volume= 1,244 cf
Primary = 0.06 cfs @ 12.82 hrs, Volume= 321 cf
Routed to Reach 3R : Wetland Surface 1

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 97.15' @ 12.82 hrs Surf.Area= 1,248 sf Storage= 883 cf

Plug-Flow detention time= 138.0 min calculated for 1,559 cf (73% of inflow)
Center-of-Mass det. time= 69.2 min (831.4 - 762.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	96.00'	902 cf	**37.25'W x 33.50'L x 2.54'H Field A**
			3,172 cf Overall - 918 cf Embedded = 2,254 cf x 40.0% Voids
#2A	96.50'	918 cf	**Cultec R-150XLHD** x 33 Inside #1
			Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf
			Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap
			Row Length Adjustment= +0.75' x 2.65 sf x 11 rows
		1,819 cf	Total Available Storage

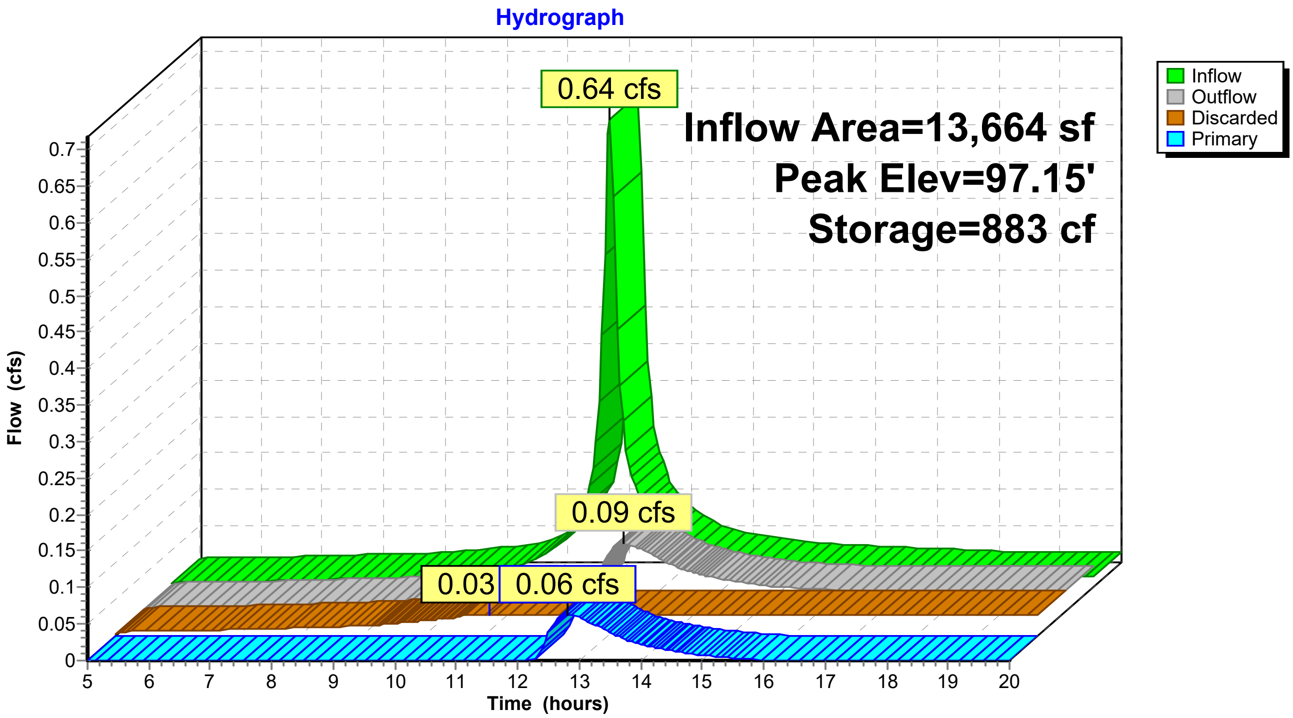
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	96.00'	**1.020 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	99.00'	**6.0" Horiz. Orifice/Grate X 2.00** C= 0.600
			Limited to weir flow at low heads
#3	Primary	97.00'	**6.0" Round Culvert**
			L= 15.0' RCP, sq.cut end projecting, Ke= 0.500
			Inlet / Outlet Invert= 97.00' / 96.75' S= 0.0167 '/' Cc= 0.900
			n= 0.013, Flow Area= 0.20 sf

Discarded OutFlow Max=0.03 cfs @ 11.10 hrs HW=96.03' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.06 cfs @ 12.82 hrs HW=97.15' TW=94.05' (Dynamic Tailwater)
├─**2=Orifice/Grate** (Controls 0.00 cfs)
└─**3=Culvert** (Inlet Controls 0.06 cfs @ 1.31 fps)

Pond 1P: Subsurface #1



Stage-Discharge for Pond 1P: Subsurface #1

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
96.00	0.00	**0.00**	0.00
96.05	0.03	**0.03**	0.00
96.10	0.03	0.03	0.00
96.15	0.03	0.03	0.00
96.20	0.03	0.03	0.00
96.25	0.03	0.03	0.00
96.30	0.03	0.03	0.00
96.35	0.03	0.03	0.00
96.40	0.03	0.03	0.00
96.45	0.03	0.03	0.00
96.50	0.03	0.03	0.00
96.55	0.03	0.03	0.00
96.60	0.03	0.03	0.00
96.65	0.03	0.03	0.00
96.70	0.03	0.03	0.00
96.75	0.03	0.03	0.00
96.80	0.03	0.03	0.00
96.85	0.03	0.03	0.00
96.90	0.03	0.03	0.00
96.95	0.03	0.03	0.00
97.00	0.03	0.03	0.00
97.05	0.04	0.03	0.01
97.10	0.06	0.03	0.03
97.15	0.09	0.03	0.07
97.20	0.14	0.03	0.11
97.25	0.20	0.03	0.17
97.30	0.26	0.03	0.23
97.35	0.33	0.03	0.30
97.40	0.39	0.03	0.36
97.45	0.45	0.03	0.43
97.50	0.50	0.03	0.47
97.55	0.55	0.03	0.52
97.60	0.59	0.03	0.56
97.65	0.63	0.03	0.60
97.70	0.66	0.03	0.63
97.75	0.70	0.03	0.67
97.80	0.73	0.03	0.70
97.85	0.76	0.03	0.73
97.90	0.79	0.03	0.76
97.95	0.82	0.03	0.79
98.00	0.85	0.03	0.82
98.05	0.88	0.03	0.85
98.10	0.90	0.03	0.87
98.15	0.93	0.03	0.90
98.20	0.95	0.03	0.92
98.25	0.97	0.03	0.95
98.30	1.00	0.03	0.97
98.35	1.02	0.03	0.99
98.40	1.04	0.03	1.01
98.45	1.07	0.03	1.04
98.50	1.09	0.03	1.06
98.55	1.11	0.03	1.08
98.60	1.13	0.03	1.10
98.65	1.15	0.03	1.12
98.70	1.17	0.03	1.14
98.75	1.19	0.03	1.16
98.80	1.21	0.03	1.18
98.85	1.23	0.03	1.20
98.90	1.24	0.03	1.21
98.95	1.26	0.03	1.23
99.00	**1.28**	0.03	**1.25**

Stage-Area-Storage for Pond 1P: Subsurface #1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
96.00	**1,248**	0	98.65	1,248	1,819
96.05	1,248	25	98.70	1,248	1,819
96.10	1,248	50	98.75	1,248	1,819
96.15	1,248	75	98.80	1,248	1,819
96.20	1,248	100	98.85	1,248	1,819
96.25	1,248	125	98.90	1,248	1,819
96.30	1,248	150	98.95	1,248	1,819
96.35	1,248	175	99.00	1,248	1,819
96.40	1,248	200			
96.45	1,248	225			
96.50	1,248	250			
96.55	1,248	300			
96.60	1,248	350			
96.65	1,248	400			
96.70	1,248	450			
96.75	1,248	499			
96.80	1,248	548			
96.85	1,248	597			
96.90	1,248	646			
96.95	1,248	694			
97.00	1,248	742			
97.05	1,248	790			
97.10	1,248	838			
97.15	1,248	885			
97.20	1,248	932			
97.25	1,248	978			
97.30	1,248	1,024			
97.35	1,248	1,069			
97.40	1,248	1,113			
97.45	1,248	1,157			
97.50	1,248	1,200			
97.55	1,248	1,242			
97.60	1,248	1,283			
97.65	1,248	1,322			
97.70	1,248	1,361			
97.75	1,248	1,398			
97.80	1,248	1,433			
97.85	1,248	1,465			
97.90	1,248	1,495			
97.95	1,248	1,522			
98.00	1,248	1,549			
98.05	1,248	1,574			
98.10	1,248	1,599			
98.15	1,248	1,624			
98.20	1,248	1,649			
98.25	1,248	1,674			
98.30	1,248	1,699			
98.35	1,248	1,724			
98.40	1,248	1,749			
98.45	1,248	1,774			
98.50	1,248	1,799			
98.55	1,248	**1,819**			
98.60	1,248	1,819			

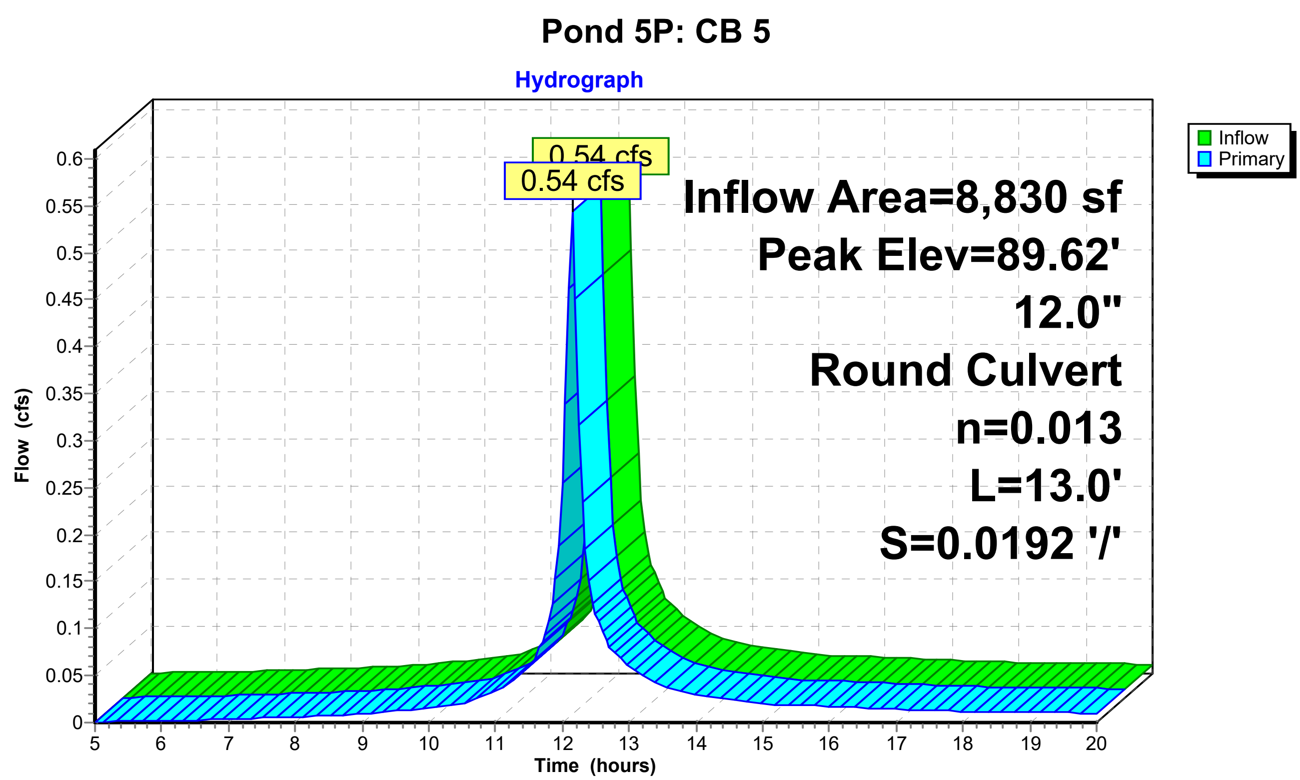
Summary for Pond 5P: CB 5

Inflow Area = 8,830 sf, 71.11% Impervious, Inflow Depth > 2.23" for 2-Year event
Inflow = 0.54 cfs @ 12.15 hrs, Volume= 1,639 cf
Outflow = 0.54 cfs @ 12.15 hrs, Volume= 1,639 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.54 cfs @ 12.15 hrs, Volume= 1,639 cf
Routed to Pond IB1 : Infiltration Basin #1 (Exfiltration Zone)

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 89.62' @ 12.36 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	89.25'	**12.0" Round Culvert** L= 13.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 89.25' / 89.00' S= 0.0192 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.51 cfs @ 12.15 hrs HW=89.62' TW=89.33' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 0.51 cfs @ 2.90 fps)



Stage-Discharge for Pond 5P: CB 5

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
89.25	0.00	89.78	1.02
89.26	0.00	89.79	1.05
89.27	0.00	89.80	1.08
89.28	0.00	89.81	1.12
89.29	0.01	89.82	1.15
89.30	0.01	89.83	1.18
89.31	0.02	89.84	1.21
89.32	0.02	89.85	1.25
89.33	0.03	89.86	1.28
89.34	0.04	89.87	1.31
89.35	0.04	89.88	1.35
89.36	0.05	89.89	1.38
89.37	0.06	89.90	1.42
89.38	0.07	89.91	1.45
89.39	0.09	89.92	1.48
89.40	0.10	89.93	1.52
89.41	0.11	89.94	1.55
89.42	0.12	89.95	1.59
89.43	0.14	89.96	1.62
89.44	0.15	89.97	1.66
89.45	0.17	89.98	1.69
89.46	0.19	89.99	1.73
89.47	0.20	90.00	1.77
89.48	0.22	90.01	1.80
89.49	0.24	90.02	1.84
89.50	0.26	90.03	1.87
89.51	0.28	90.04	1.91
89.52	0.30	90.05	1.94
89.53	0.32	90.06	1.98
89.54	0.35	90.07	2.02
89.55	0.37	90.08	2.05
89.56	0.39	90.09	2.09
89.57	0.42	90.10	2.13
89.58	0.44	90.11	2.16
89.59	0.47	90.12	2.20
89.60	0.49	90.13	2.23
89.61	0.52	90.14	2.27
89.62	0.55	90.15	2.31
89.63	0.57	90.16	2.34
89.64	0.60	90.17	2.38
89.65	0.63	90.18	2.41
89.66	0.66	90.19	2.45
89.67	0.69	90.20	2.48
89.68	0.72	90.21	2.52
89.69	0.75	90.22	2.55
89.70	0.78	90.23	2.59
89.71	0.81	90.24	2.62
89.72	0.84	90.25	**2.66**
89.73	0.87		
89.74	0.90		
89.75	0.93		
89.76	0.96		
89.77	0.99		

Stage-Area-Storage for Pond 5P: CB 5

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.25	**0**	89.78	0
89.26	0	89.79	0
89.27	0	89.80	0
89.28	0	89.81	0
89.29	0	89.82	0
89.30	0	89.83	0
89.31	0	89.84	0
89.32	0	89.85	0
89.33	0	89.86	0
89.34	0	89.87	0
89.35	0	89.88	0
89.36	0	89.89	0
89.37	0	89.90	0
89.38	0	89.91	0
89.39	0	89.92	0
89.40	0	89.93	0
89.41	0	89.94	0
89.42	0	89.95	0
89.43	0	89.96	0
89.44	0	89.97	0
89.45	0	89.98	0
89.46	0	89.99	0
89.47	0	90.00	0
89.48	0	90.01	0
89.49	0	90.02	0
89.50	0	90.03	0
89.51	0	90.04	0
89.52	0	90.05	0
89.53	0	90.06	0
89.54	0	90.07	0
89.55	0	90.08	0
89.56	0	90.09	0
89.57	0	90.10	0
89.58	0	90.11	0
89.59	0	90.12	0
89.60	0	90.13	0
89.61	0	90.14	0
89.62	0	90.15	0
89.63	0	90.16	0
89.64	0	90.17	0
89.65	0	90.18	0
89.66	0	90.19	0
89.67	0	90.20	0
89.68	0	90.21	0
89.69	0	90.22	0
89.70	0	90.23	0
89.71	0	90.24	0
89.72	0	90.25	0
89.73	0		
89.74	0		
89.75	0		
89.76	0		
89.77	0		

Summary for Pond 10P: Infiltration Basin #1 (Storage)

Inflow Area = 54,257 sf, 51.52% Impervious, Inflow Depth > 1.53" for 2-Year event
Inflow = 2.17 cfs @ 12.15 hrs, Volume= 6,913 cf
Outflow = 1.25 cfs @ 12.29 hrs, Volume= 6,187 cf, Atten= 43%, Lag= 8.8 min
Primary = 1.25 cfs @ 12.29 hrs, Volume= 6,187 cf
Routed to Reach DP1PST : DP 1 - POST
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0 cf
Routed to Reach DP1PST : DP 1 - POST

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 89.59' @ 12.29 hrs Surf.Area= 1,662 sf Storage= 1,632 cf

Plug-Flow detention time= 56.6 min calculated for 6,167 cf (89% of inflow)
Center-of-Mass det. time= 24.2 min (818.4 - 794.2)

Volume	Invert	Avail.Storage	Storage Description
#1	88.00'	8,689 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

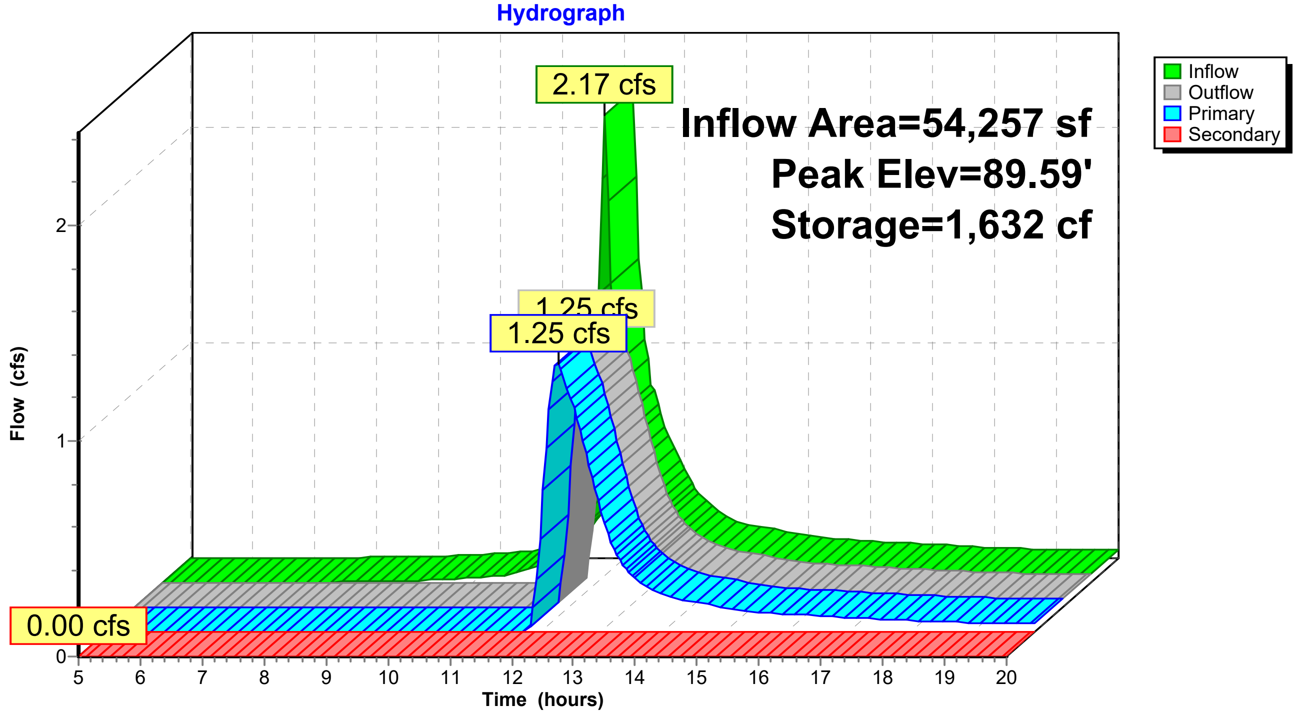
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
88.00	392	0	0
90.00	1,990	2,382	2,382
92.00	4,317	6,307	8,689

Device	Routing	Invert	Outlet Devices
#1	Secondary	91.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	86.50'	**12.0" Round Culvert** L= 37.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 86.50' / 86.00' S= 0.0135 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#3	Device 2	88.90'	**16.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 2	89.50'	**6.0" W x 15.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.24 cfs @ 12.29 hrs HW=89.59' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert** (Passes 1.24 cfs of 6.08 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 1.20 cfs @ 3.61 fps)
  └─**4=Orifice/Grate** (Orifice Controls 0.04 cfs @ 0.95 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=88.00' TW=0.00' (Dynamic Tailwater)
└─**1=Orifice/Grate** (Controls 0.00 cfs)

Pond 10P: Infiltration Basin #1 (Storage)



Stage-Discharge for Pond 10P: Infiltration Basin #1 (Storage)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
88.00	0.00	0.00	0.00
88.05	0.00	0.00	0.00
88.10	0.00	0.00	0.00
88.15	0.00	0.00	0.00
88.20	0.00	0.00	0.00
88.25	0.00	0.00	0.00
88.30	0.00	0.00	0.00
88.35	0.00	0.00	0.00
88.40	0.00	0.00	0.00
88.45	0.00	0.00	0.00
88.50	0.00	0.00	0.00
88.55	0.00	0.00	0.00
88.60	0.00	0.00	0.00
88.65	0.00	0.00	0.00
88.70	0.00	0.00	0.00
88.75	0.00	0.00	0.00
88.80	0.00	0.00	0.00
88.85	0.00	0.00	0.00
88.90	0.00	0.00	0.00
88.95	0.05	0.05	0.00
89.00	0.14	0.14	0.00
89.05	0.25	0.25	0.00
89.10	0.38	0.38	0.00
89.15	0.53	0.53	0.00
89.20	0.66	0.66	0.00
89.25	0.75	0.75	0.00
89.30	0.83	0.83	0.00
89.35	0.91	0.91	0.00
89.40	0.98	0.98	0.00
89.45	1.04	1.04	0.00
89.50	1.10	1.10	0.00
89.55	1.18	1.18	0.00
89.60	1.27	1.27	0.00
89.65	1.36	1.36	0.00
89.70	1.46	1.46	0.00
89.75	1.57	1.57	0.00
89.80	1.68	1.68	0.00
89.85	1.79	1.79	0.00
89.90	1.91	1.91	0.00
89.95	2.03	2.03	0.00
90.00	2.15	2.15	0.00
90.05	2.28	2.28	0.00
90.10	2.41	2.41	0.00
90.15	2.54	2.54	0.00
90.20	2.68	2.68	0.00
90.25	2.82	2.82	0.00
90.30	2.96	2.96	0.00
90.35	3.10	3.10	0.00
90.40	3.25	3.25	0.00
90.45	3.40	3.40	0.00
90.50	3.55	3.55	0.00
90.55	3.71	3.71	0.00
90.60	3.87	3.87	0.00
90.65	4.02	4.02	0.00
90.70	4.19	4.19	0.00
90.75	4.35	4.35	0.00
90.80	4.50	4.50	0.00
90.85	4.63	4.63	0.00
90.90	4.76	4.76	0.00
90.95	4.89	4.89	0.00
91.00	5.00	5.00	0.00
91.05	5.41	5.12	0.29
91.10	6.05	5.23	0.83
91.15	6.85	5.34	1.52
91.20	7.78	5.44	2.34
91.25	8.81	5.54	3.27
91.30	9.94	5.64	4.30
91.35	11.16	5.74	5.42
91.40	12.45	5.84	6.62
91.45	13.83	5.93	7.90
91.50	15.27	6.02	9.25
91.55	16.78	6.11	10.67
91.60	18.36	6.20	12.16
91.65	20.00	6.29	13.71
91.70	21.70	6.38	15.32
91.75	23.14	6.46	16.68
91.80	23.77	6.54	17.23
91.85	24.38	6.63	17.76
91.90	24.98	6.71	18.27
91.95	25.56	6.79	18.77
92.00	**26.13**	**6.87**	**19.26**

Stage-Area-Storage for Pond 10P: Infiltration Basin #1 (Storage)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
88.00	392	0
88.05	432	21
88.10	472	43
88.15	512	68
88.20	552	94
88.25	592	123
88.30	632	154
88.35	672	186
88.40	712	221
88.45	752	257
88.50	792	296
88.55	831	336
88.60	871	379
88.65	911	424
88.70	951	470
88.75	991	519
88.80	1,031	569
88.85	1,071	622
88.90	1,111	676
88.95	1,151	733
89.00	1,191	792
89.05	1,231	852
89.10	1,271	915
89.15	1,311	979
89.20	1,351	1,046
89.25	1,391	1,114
89.30	1,431	1,185
89.35	1,471	1,257
89.40	1,511	1,332
89.45	1,551	1,408
89.50	1,591	1,487
89.55	1,630	1,567
89.60	1,670	1,650
89.65	1,710	1,734
89.70	1,750	1,821
89.75	1,790	1,909
89.80	1,830	2,000
89.85	1,870	2,092
89.90	1,910	2,187
89.95	1,950	2,283
90.00	1,990	2,382
90.05	2,048	2,483
90.10	2,106	2,587
90.15	2,165	2,694
90.20	2,223	2,803
90.25	2,281	2,916
90.30	2,339	3,031
90.35	2,397	3,150
90.40	2,455	3,271
90.45	2,514	3,395
90.50	2,572	3,522
90.55	2,630	3,652
90.60	2,688	3,785
90.65	2,746	3,921
90.70	2,804	4,060
90.75	2,863	4,202
90.80	2,921	4,346
90.85	2,979	4,494
90.90	3,037	4,644
90.95	3,095	4,798
91.00	3,154	4,954
91.05	3,212	5,113
91.10	3,270	5,275
91.15	3,328	5,440
91.20	3,386	5,608
91.25	3,444	5,778
91.30	3,503	5,952
91.35	3,561	6,129
91.40	3,619	6,308
91.45	3,677	6,491
91.50	3,735	6,676
91.55	3,793	6,864
91.60	3,852	7,055
91.65	3,910	7,249
91.70	3,968	7,446
91.75	4,026	7,646
91.80	4,084	7,849
91.85	4,142	8,055
91.90	4,201	8,263
91.95	4,259	8,475
92.00	**4,317**	**8,689**

Summary for Pond B2: Infiltration Basin #2 (Storage Zone)

Inflow Area = 13,032 sf, 14.64% Impervious, Inflow Depth > 0.72" for 2-Year event
Inflow = 0.23 cfs @ 12.28 hrs, Volume= 779 cf
Outflow = 0.21 cfs @ 12.35 hrs, Volume= 713 cf, Atten= 8%, Lag= 4.3 min
Primary = 0.21 cfs @ 12.35 hrs, Volume= 713 cf
Routed to Reach 5R : Wetland Surface 2

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 97.62' @ 12.35 hrs Surf.Area= 425 sf Storage= 111 cf

Plug-Flow detention time= 33.8 min calculated for 713 cf (91% of inflow)
Center-of-Mass det. time= 11.9 min (811.0 - 799.1)

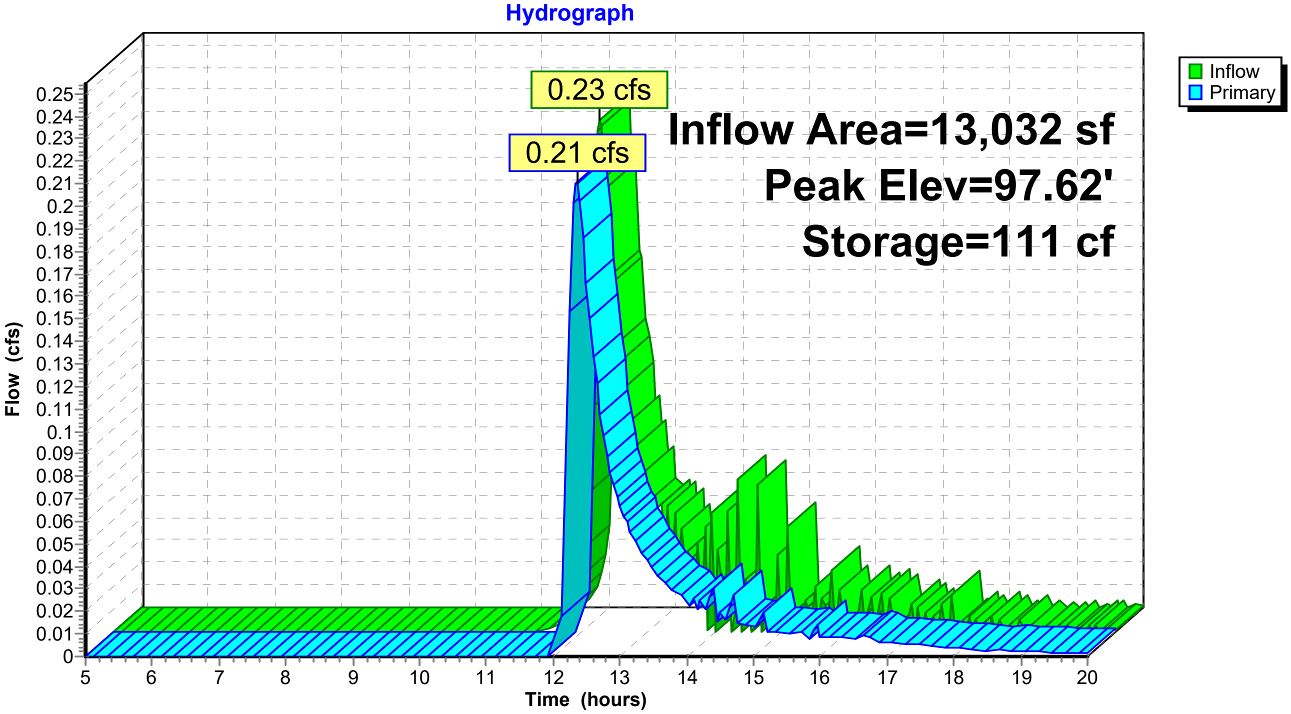
Volume	Invert	Avail.Storage	Storage Description
#1	97.10'	329 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
97.10	0	0	0
98.00	731	329	329

Device	Routing	Invert	Outlet Devices
#1	Primary	96.50'	**12.0" Round Culvert** L= 50.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 96.50' / 96.00' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	97.50'	**18.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.21 cfs @ 12.35 hrs HW=97.62' TW=96.04' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.21 cfs of 2.99 cfs potential flow)
  └─**2=Orifice/Grate** (Orifice Controls 0.21 cfs @ 1.13 fps)

Pond B2: Infiltration Basin #2 (Storage Zone)



Stage-Discharge for Pond B2: Infiltration Basin #2 (Storage Zone)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
97.10	0.00	97.63	0.23
97.11	0.00	97.64	0.25
97.12	0.00	97.65	0.28
97.13	0.00	97.66	0.31
97.14	0.00	97.67	0.34
97.15	0.00	97.68	0.37
97.16	0.00	97.69	0.40
97.17	0.00	97.70	0.43
97.18	0.00	97.71	0.46
97.19	0.00	97.72	0.50
97.20	0.00	97.73	0.53
97.21	0.00	97.74	0.57
97.22	0.00	97.75	0.60
97.23	0.00	97.76	0.64
97.24	0.00	97.77	0.68
97.25	0.00	97.78	0.71
97.26	0.00	97.79	0.75
97.27	0.00	97.80	0.79
97.28	0.00	97.81	0.83
97.29	0.00	97.82	0.87
97.30	0.00	97.83	0.91
97.31	0.00	97.84	0.95
97.32	0.00	97.85	1.00
97.33	0.00	97.86	1.04
97.34	0.00	97.87	1.08
97.35	0.00	97.88	1.13
97.36	0.00	97.89	1.17
97.37	0.00	97.90	1.22
97.38	0.00	97.91	1.26
97.39	0.00	97.92	1.31
97.40	0.00	97.93	1.36
97.41	0.00	97.94	1.41
97.42	0.00	97.95	1.45
97.43	0.00	97.96	1.50
97.44	0.00	97.97	1.55
97.45	0.00	97.98	1.60
97.46	0.00	97.99	1.65
97.47	0.00	98.00	**1.70**
97.48	0.00		
97.49	0.00		
97.50	0.00		
97.51	0.00		
97.52	0.01		
97.53	0.03		
97.54	0.04		
97.55	0.05		
97.56	0.07		
97.57	0.09		
97.58	0.11		
97.59	0.13		
97.60	0.15		
97.61	0.18		
97.62	0.20		

Stage-Area-Storage for Pond B2: Infiltration Basin #2 (Storage Zone)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
97.10	0	0	97.63	430	114
97.11	8	0	97.64	439	118
97.12	16	0	97.65	447	123
97.13	24	0	97.66	455	127
97.14	32	1	97.67	463	132
97.15	41	1	97.68	471	137
97.16	49	1	97.69	479	141
97.17	57	2	97.70	487	146
97.18	65	3	97.71	495	151
97.19	73	3	97.72	504	156
97.20	81	4	97.73	512	161
97.21	89	5	97.74	520	166
97.22	97	6	97.75	528	172
97.23	106	7	97.76	536	177
97.24	114	8	97.77	544	182
97.25	122	9	97.78	552	188
97.26	130	10	97.79	560	193
97.27	138	12	97.80	569	199
97.28	146	13	97.81	577	205
97.29	154	15	97.82	585	211
97.30	162	16	97.83	593	216
97.31	171	18	97.84	601	222
97.32	179	20	97.85	609	228
97.33	187	21	97.86	617	235
97.34	195	23	97.87	625	241
97.35	203	25	97.88	634	247
97.36	211	27	97.89	642	253
97.37	219	30	97.90	650	260
97.38	227	32	97.91	658	266
97.39	236	34	97.92	666	273
97.40	244	37	97.93	674	280
97.41	252	39	97.94	682	287
97.42	260	42	97.95	690	293
97.43	268	44	97.96	699	300
97.44	276	47	97.97	707	307
97.45	284	50	97.98	715	314
97.46	292	53	97.99	723	322
97.47	301	56	98.00	**731**	**329**
97.48	309	59			
97.49	317	62			
97.50	325	65			
97.51	333	68			
97.52	341	72			
97.53	349	75			
97.54	357	79			
97.55	366	82			
97.56	374	86			
97.57	382	90			
97.58	390	94			
97.59	398	98			
97.60	406	102			
97.61	414	106			
97.62	422	110			

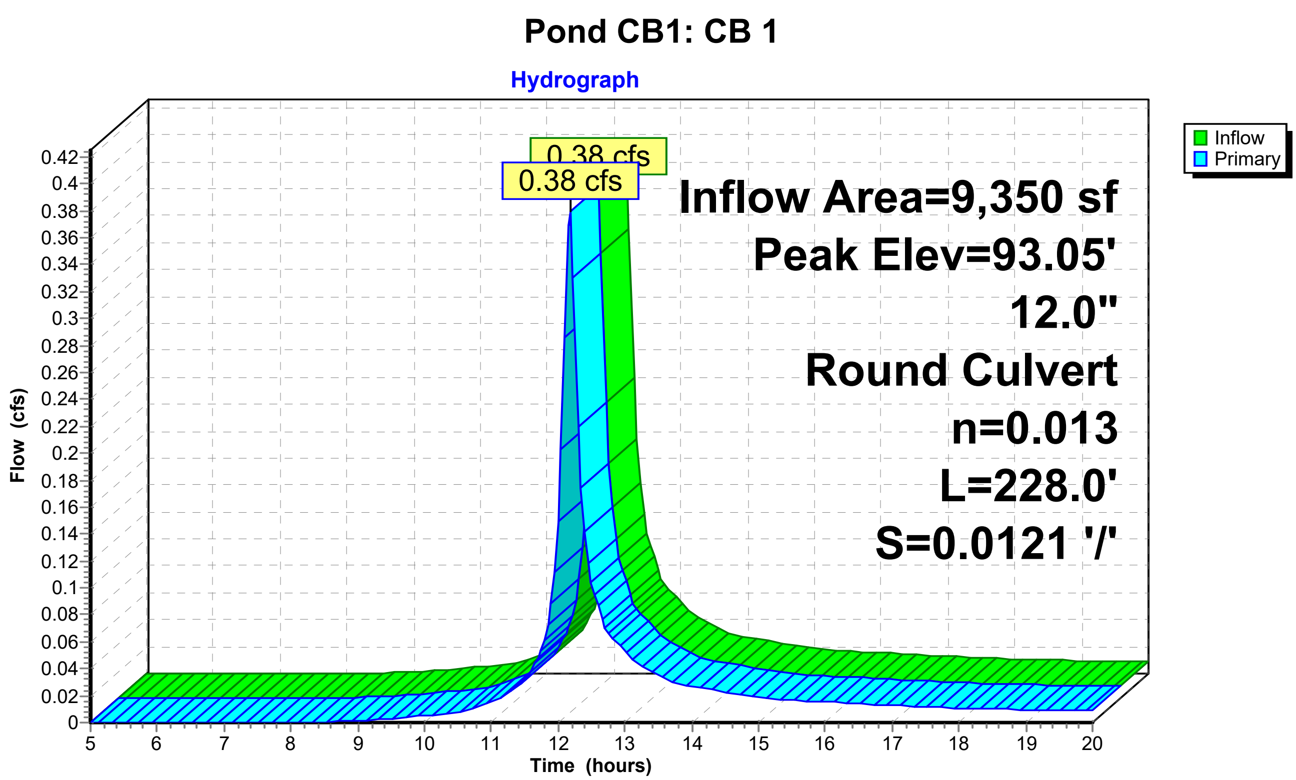
Summary for Pond CB1: CB 1

Inflow Area = 9,350 sf, 31.84% Impervious, Inflow Depth > 1.51" for 2-Year event
Inflow = 0.38 cfs @ 12.17 hrs, Volume= 1,177 cf
Outflow = 0.38 cfs @ 12.17 hrs, Volume= 1,177 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.38 cfs @ 12.17 hrs, Volume= 1,177 cf
Routed to Pond DMH2 : DMH2

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 93.05' @ 12.17 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	92.75'	**12.0" Round Culvert** L= 228.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 92.75' / 90.00' S= 0.0121 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.37 cfs @ 12.17 hrs HW=93.05' TW=90.46' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.37 cfs @ 1.86 fps)



Stage-Discharge for Pond CB1: CB 1

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
92.75	0.00	93.28	1.05
92.76	0.00	93.29	1.08
92.77	0.00	93.30	1.12
92.78	0.00	93.31	1.15
92.79	0.01	93.32	1.19
92.80	0.01	93.33	1.22
92.81	0.01	93.34	1.26
92.82	0.02	93.35	1.30
92.83	0.03	93.36	1.33
92.84	0.04	93.37	1.37
92.85	0.04	93.38	1.41
92.86	0.05	93.39	1.45
92.87	0.06	93.40	1.48
92.88	0.07	93.41	1.52
92.89	0.09	93.42	1.56
92.90	0.10	93.43	1.60
92.91	0.11	93.44	1.63
92.92	0.12	93.45	1.67
92.93	0.14	93.46	1.71
92.94	0.15	93.47	1.75
92.95	0.17	93.48	1.79
92.96	0.19	93.49	1.83
92.97	0.20	93.50	1.86
92.98	0.22	93.51	1.90
92.99	0.24	93.52	1.94
93.00	0.26	93.53	1.98
93.01	0.28	93.54	2.01
93.02	0.30	93.55	2.05
93.03	0.32	93.56	2.09
93.04	0.35	93.57	2.13
93.05	0.37	93.58	2.16
93.06	0.39	93.59	2.20
93.07	0.42	93.60	2.23
93.08	0.44	93.61	2.27
93.09	0.47	93.62	2.30
93.10	0.49	93.63	2.34
93.11	0.52	93.64	2.37
93.12	0.55	93.65	2.40
93.13	0.57	93.66	2.44
93.14	0.60	93.67	2.47
93.15	0.63	93.68	2.50
93.16	0.66	93.69	2.53
93.17	0.69	93.70	2.56
93.18	0.72	93.71	2.58
93.19	0.75	93.72	2.61
93.20	0.78	93.73	2.63
93.21	0.81	93.74	2.66
93.22	0.85	93.75	**2.67**
93.23	0.88		
93.24	0.91		
93.25	0.95		
93.26	0.98		
93.27	1.01		

Stage-Area-Storage for Pond CB1: CB 1

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
92.75	**0**	93.28	0
92.76	0	93.29	0
92.77	0	93.30	0
92.78	0	93.31	0
92.79	0	93.32	0
92.80	0	93.33	0
92.81	0	93.34	0
92.82	0	93.35	0
92.83	0	93.36	0
92.84	0	93.37	0
92.85	0	93.38	0
92.86	0	93.39	0
92.87	0	93.40	0
92.88	0	93.41	0
92.89	0	93.42	0
92.90	0	93.43	0
92.91	0	93.44	0
92.92	0	93.45	0
92.93	0	93.46	0
92.94	0	93.47	0
92.95	0	93.48	0
92.96	0	93.49	0
92.97	0	93.50	0
92.98	0	93.51	0
92.99	0	93.52	0
93.00	0	93.53	0
93.01	0	93.54	0
93.02	0	93.55	0
93.03	0	93.56	0
93.04	0	93.57	0
93.05	0	93.58	0
93.06	0	93.59	0
93.07	0	93.60	0
93.08	0	93.61	0
93.09	0	93.62	0
93.10	0	93.63	0
93.11	0	93.64	0
93.12	0	93.65	0
93.13	0	93.66	0
93.14	0	93.67	0
93.15	0	93.68	0
93.16	0	93.69	0
93.17	0	93.70	0
93.18	0	93.71	0
93.19	0	93.72	0
93.20	0	93.73	0
93.21	0	93.74	0
93.22	0	93.75	0
93.23	0		
93.24	0		
93.25	0		
93.26	0		
93.27	0		

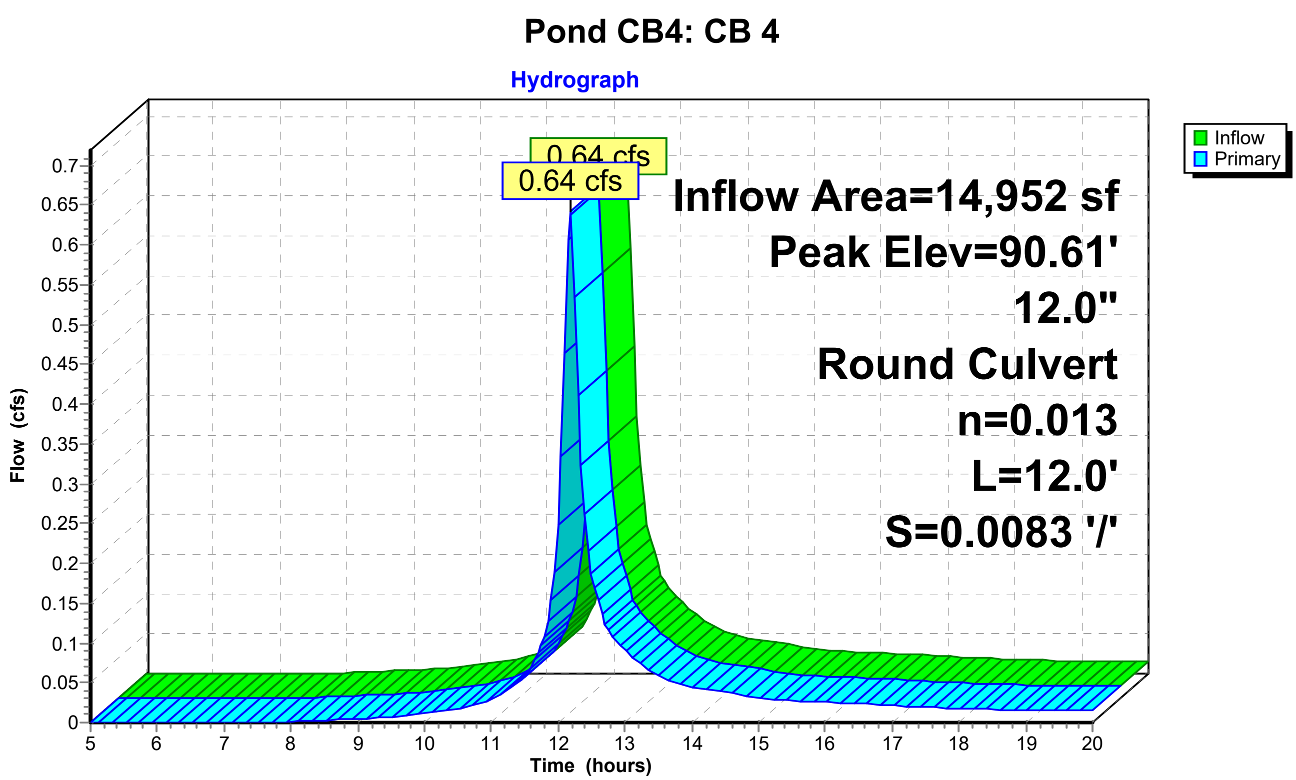
Summary for Pond CB4: CB 4

Inflow Area = 14,952 sf, 43.75% Impervious, Inflow Depth > 1.65" for 2-Year event
Inflow = 0.64 cfs @ 12.19 hrs, Volume= 2,060 cf
Outflow = 0.64 cfs @ 12.19 hrs, Volume= 2,060 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.64 cfs @ 12.19 hrs, Volume= 2,060 cf
Routed to Pond DMH2 : DMH2

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 90.61' @ 12.21 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	90.10'	**12.0" Round Culvert** L= 12.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 90.10' / 90.00' S= 0.0083 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.59 cfs @ 12.19 hrs HW=90.60' TW=90.46' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.59 cfs @ 2.17 fps)



Stage-Discharge for Pond CB4: CB 4

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
90.10	0.00	90.63	0.80
90.11	0.00	90.64	0.83
90.12	0.00	90.65	0.86
90.13	0.00	90.66	0.88
90.14	0.01	90.67	0.91
90.15	0.01	90.68	0.94
90.16	0.01	90.69	0.97
90.17	0.02	90.70	0.99
90.18	0.02	90.71	1.02
90.19	0.03	90.72	1.05
90.20	0.03	90.73	1.08
90.21	0.04	90.74	1.11
90.22	0.05	90.75	1.14
90.23	0.06	90.76	1.17
90.24	0.07	90.77	1.20
90.25	0.08	90.78	1.23
90.26	0.09	90.79	1.26
90.27	0.10	90.80	1.29
90.28	0.11	90.81	1.32
90.29	0.12	90.82	1.35
90.30	0.13	90.83	1.38
90.31	0.15	90.84	1.41
90.32	0.16	90.85	1.44
90.33	0.18	90.86	1.47
90.34	0.19	90.87	1.50
90.35	0.21	90.88	1.54
90.36	0.22	90.89	1.57
90.37	0.24	90.90	1.60
90.38	0.25	90.91	1.63
90.39	0.27	90.92	1.66
90.40	0.29	90.93	1.70
90.41	0.31	90.94	1.73
90.42	0.33	90.95	1.76
90.43	0.34	90.96	1.79
90.44	0.36	90.97	1.82
90.45	0.38	90.98	1.86
90.46	0.40	90.99	1.89
90.47	0.42	91.00	1.92
90.48	0.44	91.01	1.95
90.49	0.47	91.02	1.98
90.50	0.49	91.03	2.02
90.51	0.51	91.04	2.05
90.52	0.53	91.05	2.08
90.53	0.56	91.06	2.11
90.54	0.58	91.07	2.15
90.55	0.60	91.08	2.18
90.56	0.63	91.09	2.21
90.57	0.65	91.10	**2.24**
90.58	0.68		
90.59	0.70		
90.60	0.73		
90.61	0.75		
90.62	0.78		

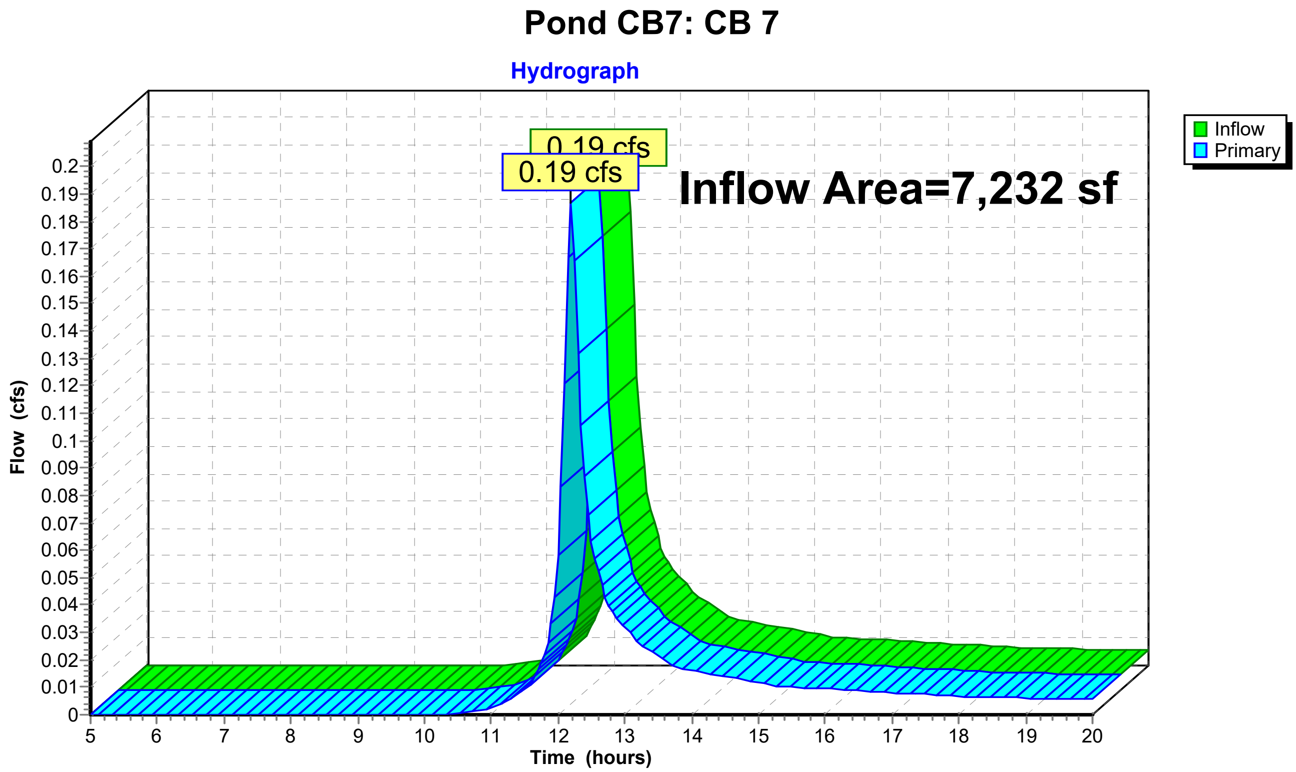
Stage-Area-Storage for Pond CB4: CB 4

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
90.10	**0**	90.63	0
90.11	0	90.64	0
90.12	0	90.65	0
90.13	0	90.66	0
90.14	0	90.67	0
90.15	0	90.68	0
90.16	0	90.69	0
90.17	0	90.70	0
90.18	0	90.71	0
90.19	0	90.72	0
90.20	0	90.73	0
90.21	0	90.74	0
90.22	0	90.75	0
90.23	0	90.76	0
90.24	0	90.77	0
90.25	0	90.78	0
90.26	0	90.79	0
90.27	0	90.80	0
90.28	0	90.81	0
90.29	0	90.82	0
90.30	0	90.83	0
90.31	0	90.84	0
90.32	0	90.85	0
90.33	0	90.86	0
90.34	0	90.87	0
90.35	0	90.88	0
90.36	0	90.89	0
90.37	0	90.90	0
90.38	0	90.91	0
90.39	0	90.92	0
90.40	0	90.93	0
90.41	0	90.94	0
90.42	0	90.95	0
90.43	0	90.96	0
90.44	0	90.97	0
90.45	0	90.98	0
90.46	0	90.99	0
90.47	0	91.00	0
90.48	0	91.01	0
90.49	0	91.02	0
90.50	0	91.03	0
90.51	0	91.04	0
90.52	0	91.05	0
90.53	0	91.06	0
90.54	0	91.07	0
90.55	0	91.08	0
90.56	0	91.09	0
90.57	0	91.10	0
90.58	0		
90.59	0		
90.60	0		
90.61	0		
90.62	0		

Summary for Pond CB7: CB 7

Inflow Area = 7,232 sf, 0.00% Impervious, Inflow Depth > 1.01" for 2-Year event
Inflow = 0.19 cfs @ 12.20 hrs, Volume= 612 cf
Primary = 0.19 cfs @ 12.20 hrs, Volume= 612 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 1P : Subsurface #1

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs



Summary for Pond DMH2: DMH2

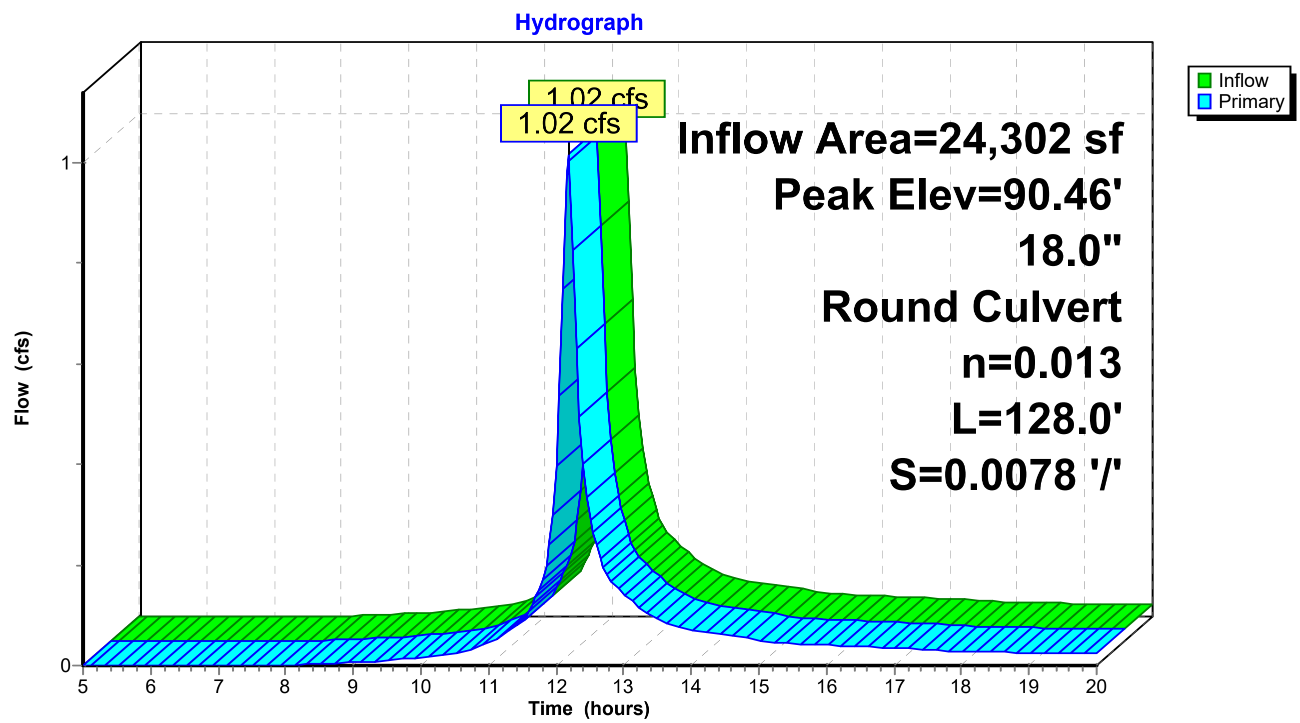
Inflow Area = 24,302 sf, 39.17% Impervious, Inflow Depth > 1.60" for 2-Year event
Inflow = 1.02 cfs @ 12.18 hrs, Volume= 3,238 cf
Outflow = 1.02 cfs @ 12.18 hrs, Volume= 3,238 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.02 cfs @ 12.18 hrs, Volume= 3,238 cf
Routed to Pond IB1 : Infiltration Basin #1 (Exfiltration Zone)

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 90.46' @ 12.18 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	90.00'	**18.0" Round Culvert** L= 128.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 90.00' / 89.00' S= 0.0078 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=0.97 cfs @ 12.18 hrs HW=90.46' TW=89.41' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.97 cfs @ 3.16 fps)

Pond DMH2: DMH2



Stage-Discharge for Pond DMH2: DMH2

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
90.00	0.00	90.53	1.31	91.06	4.44
90.01	0.00	90.54	1.36	91.07	4.51
90.02	0.00	90.55	1.41	91.08	4.58
90.03	0.00	90.56	1.45	91.09	4.65
90.04	0.01	90.57	1.50	91.10	4.71
90.05	0.01	90.58	1.55	91.11	4.78
90.06	0.01	90.59	1.60	91.12	4.85
90.07	0.02	90.60	1.65	91.13	4.91
90.08	0.03	90.61	1.70	91.14	4.98
90.09	0.04	90.62	1.76	91.15	5.05
90.10	0.04	90.63	1.81	91.16	5.12
90.11	0.05	90.64	1.86	91.17	5.18
90.12	0.06	90.65	1.92	91.18	5.25
90.13	0.08	90.66	1.97	91.19	5.32
90.14	0.09	90.67	2.02	91.20	5.39
90.15	0.10	90.68	2.08	91.21	5.45
90.16	0.12	90.69	2.13	91.22	5.52
90.17	0.13	90.70	2.19	91.23	5.59
90.18	0.15	90.71	2.25	91.24	5.66
90.19	0.17	90.72	2.30	91.25	5.72
90.20	0.19	90.73	2.36	91.26	5.79
90.21	0.21	90.74	2.42	91.27	5.86
90.22	0.23	90.75	2.48	91.28	5.93
90.23	0.25	90.76	2.54	91.29	5.99
90.24	0.27	90.77	2.59	91.30	6.06
90.25	0.30	90.78	2.65	91.31	6.12
90.26	0.32	90.79	2.71	91.32	6.19
90.27	0.35	90.80	2.77	91.33	6.26
90.28	0.38	90.81	2.83	91.34	6.32
90.29	0.40	90.82	2.90	91.35	6.39
90.30	0.43	90.83	2.96	91.36	6.45
90.31	0.46	90.84	3.02	91.37	6.52
90.32	0.49	90.85	3.08	91.38	6.58
90.33	0.52	90.86	3.14	91.39	6.65
90.34	0.55	90.87	3.21	91.40	6.71
90.35	0.59	90.88	3.27	91.41	6.78
90.36	0.62	90.89	3.33	91.42	6.84
90.37	0.66	90.90	3.40	91.43	6.91
90.38	0.69	90.91	3.46	91.44	6.97
90.39	0.73	90.92	3.52	91.45	7.03
90.40	0.76	90.93	3.59	91.46	7.09
90.41	0.80	90.94	3.65	91.47	7.16
90.42	0.84	90.95	3.72	91.48	7.22
90.43	0.88	90.96	3.78	91.49	7.28
90.44	0.92	90.97	3.85	91.50	**7.34**
90.45	0.96	90.98	3.91		
90.46	1.00	90.99	3.98		
90.47	1.04	91.00	4.05		
90.48	1.09	91.01	4.11		
90.49	1.13	91.02	4.18		
90.50	1.17	91.03	4.24		
90.51	1.22	91.04	4.31		
90.52	1.27	91.05	4.38		

Stage-Area-Storage for Pond DMH2: DMH2

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
90.00	**0**	90.53	0	91.06	0
90.01	0	90.54	0	91.07	0
90.02	0	90.55	0	91.08	0
90.03	0	90.56	0	91.09	0
90.04	0	90.57	0	91.10	0
90.05	0	90.58	0	91.11	0
90.06	0	90.59	0	91.12	0
90.07	0	90.60	0	91.13	0
90.08	0	90.61	0	91.14	0
90.09	0	90.62	0	91.15	0
90.10	0	90.63	0	91.16	0
90.11	0	90.64	0	91.17	0
90.12	0	90.65	0	91.18	0
90.13	0	90.66	0	91.19	0
90.14	0	90.67	0	91.20	0
90.15	0	90.68	0	91.21	0
90.16	0	90.69	0	91.22	0
90.17	0	90.70	0	91.23	0
90.18	0	90.71	0	91.24	0
90.19	0	90.72	0	91.25	0
90.20	0	90.73	0	91.26	0
90.21	0	90.74	0	91.27	0
90.22	0	90.75	0	91.28	0
90.23	0	90.76	0	91.29	0
90.24	0	90.77	0	91.30	0
90.25	0	90.78	0	91.31	0
90.26	0	90.79	0	91.32	0
90.27	0	90.80	0	91.33	0
90.28	0	90.81	0	91.34	0
90.29	0	90.82	0	91.35	0
90.30	0	90.83	0	91.36	0
90.31	0	90.84	0	91.37	0
90.32	0	90.85	0	91.38	0
90.33	0	90.86	0	91.39	0
90.34	0	90.87	0	91.40	0
90.35	0	90.88	0	91.41	0
90.36	0	90.89	0	91.42	0
90.37	0	90.90	0	91.43	0
90.38	0	90.91	0	91.44	0
90.39	0	90.92	0	91.45	0
90.40	0	90.93	0	91.46	0
90.41	0	90.94	0	91.47	0
90.42	0	90.95	0	91.48	0
90.43	0	90.96	0	91.49	0
90.44	0	90.97	0	91.50	0
90.45	0	90.98	0		
90.46	0	90.99	0		
90.47	0	91.00	0		
90.48	0	91.01	0		
90.49	0	91.02	0		
90.50	0	91.03	0		
90.51	0	91.04	0		
90.52	0	91.05	0		

Summary for Pond IB1: Infiltration Basin #1 (Exfiltration Zone)

Inflow Area = 54,257 sf, 51.52% Impervious, Inflow Depth > 1.88" for 2-Year event
Inflow = 2.68 cfs @ 12.15 hrs, Volume= 8,522 cf
Outflow = 2.19 cfs @ 12.15 hrs, Volume= 7,827 cf, Atten= 19%, Lag= 0.0 min
Discarded = 0.02 cfs @ 8.10 hrs, Volume= 913 cf
Primary = 2.17 cfs @ 12.15 hrs, Volume= 6,913 cf
Routed to Pond 10P : Infiltration Basin #1 (Storage)

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 89.59' @ 12.34 hrs Surf.Area= 736 sf Storage= 1,172 cf

Plug-Flow detention time= 44.4 min calculated for 7,800 cf (92% of inflow)
Center-of-Mass det. time= 15.5 min (790.5 - 775.1)

Volume	Invert	Avail.Storage	Storage Description
#1	88.00'	2,944 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

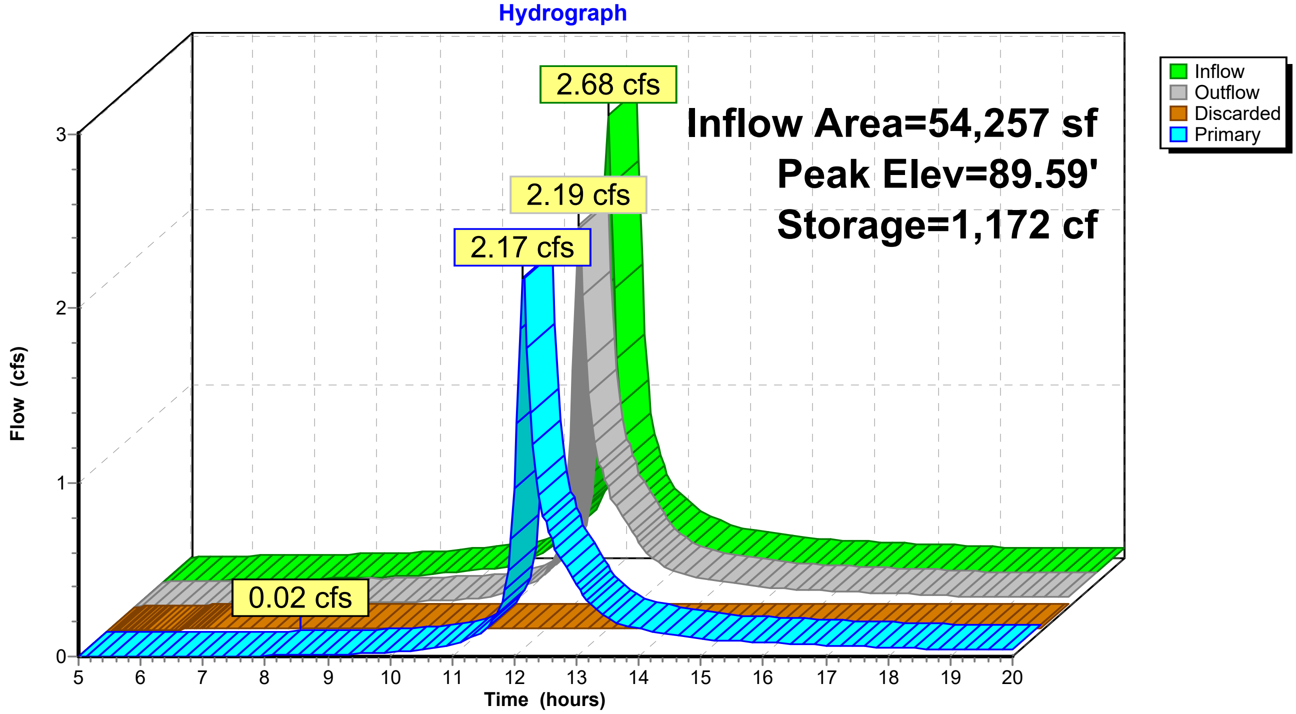
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
88.00	736	0	0
92.00	736	2,944	2,944

Device	Routing	Invert	Outlet Devices
#1	Discarded	88.00'	**1.020 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	88.00'	**48.0" Round Culvert** L= 2.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 88.00' / 88.00' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf

Discarded OutFlow Max=0.02 cfs @ 8.10 hrs HW=88.04' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 12.15 hrs HW=89.32' TW=89.43' (Dynamic Tailwater)
└─**2=Culvert** (Controls 0.00 cfs)

Pond IB1: Infiltration Basin #1 (Exfiltration Zone)



Stage-Discharge for Pond IB1: Infiltration Basin #1 (Exfiltration Zone)

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
88.00	0.00	**0.00**	0.00
88.05	0.03	**0.02**	0.01
88.10	0.07	0.02	0.05
88.15	0.13	0.02	0.11
88.20	0.23	0.02	0.21
88.25	0.35	0.02	0.33
88.30	0.50	0.02	0.48
88.35	0.68	0.02	0.66
88.40	0.88	0.02	0.86
88.45	1.11	0.02	1.09
88.50	1.37	0.02	1.35
88.55	1.65	0.02	1.63
88.60	1.96	0.02	1.94
88.65	2.29	0.02	2.27
88.70	2.65	0.02	2.63
88.75	3.03	0.02	3.01
88.80	3.44	0.02	3.42
88.85	3.87	0.02	3.85
88.90	4.33	0.02	4.31
88.95	4.81	0.02	4.79
89.00	5.31	0.02	5.29
89.05	5.84	0.02	5.82
89.10	6.39	0.02	6.37
89.15	6.96	0.02	6.94
89.20	7.56	0.02	7.54
89.25	8.17	0.02	8.16
89.30	8.81	0.02	8.79
89.35	9.47	0.02	9.45
89.40	10.15	0.02	10.14
89.45	10.86	0.02	10.84
89.50	11.58	0.02	11.56
89.55	12.32	0.02	12.30
89.60	13.09	0.02	13.07
89.65	13.87	0.02	13.85
89.70	14.67	0.02	14.65
89.75	15.49	0.02	15.48
89.80	16.33	0.02	16.32
89.85	17.19	0.02	17.17
89.90	18.07	0.02	18.05
89.95	18.96	0.02	18.94
90.00	19.87	0.02	19.86
90.05	20.80	0.02	20.79
90.10	21.75	0.02	21.73
90.15	22.71	0.02	22.69
90.20	23.69	0.02	23.67
90.25	24.68	0.02	24.66
90.30	25.69	0.02	25.67
90.35	26.71	0.02	26.70
90.40	27.75	0.02	27.74
90.45	28.81	0.02	28.79
90.50	29.87	0.02	29.86
90.55	30.95	0.02	30.93
90.60	32.05	0.02	32.03
90.65	33.15	0.02	33.13
90.70	34.27	0.02	34.25
90.75	35.40	0.02	35.38
90.80	36.54	0.02	36.52
90.85	37.69	0.02	37.67
90.90	38.85	0.02	38.84
90.95	40.03	0.02	40.01
91.00	41.21	0.02	41.19
91.05	42.40	0.02	42.38
91.10	43.60	0.02	43.58
91.15	44.81	0.02	44.79
91.20	46.02	0.02	46.01
91.25	47.25	0.02	47.23
91.30	48.48	0.02	48.46
91.35	49.71	0.02	49.69
91.40	50.95	0.02	50.94
91.45	52.20	0.02	52.18
91.50	53.45	0.02	53.44
91.55	54.71	0.02	54.69
91.60	55.97	0.02	55.95
91.65	57.23	0.02	57.21
91.70	58.49	0.02	58.48
91.75	59.76	0.02	59.74
91.80	61.03	0.02	61.01
91.85	62.29	0.02	62.28
91.90	63.56	0.02	63.54
91.95	64.83	0.02	64.81
92.00	**66.09**	0.02	**66.07**

Stage-Area-Storage for Pond IB1: Infiltration Basin #1 (Exfiltration Zone)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
88.00	**736**	0	90.65	736	1,950
88.05	736	37	90.70	736	1,987
88.10	736	74	90.75	736	2,024
88.15	736	110	90.80	736	2,061
88.20	736	147	90.85	736	2,098
88.25	736	184	90.90	736	2,134
88.30	736	221	90.95	736	2,171
88.35	736	258	91.00	736	2,208
88.40	736	294	91.05	736	2,245
88.45	736	331	91.10	736	2,282
88.50	736	368	91.15	736	2,318
88.55	736	405	91.20	736	2,355
88.60	736	442	91.25	736	2,392
88.65	736	478	91.30	736	2,429
88.70	736	515	91.35	736	2,466
88.75	736	552	91.40	736	2,502
88.80	736	589	91.45	736	2,539
88.85	736	626	91.50	736	2,576
88.90	736	662	91.55	736	2,613
88.95	736	699	91.60	736	2,650
89.00	736	736	91.65	736	2,686
89.05	736	773	91.70	736	2,723
89.10	736	810	91.75	736	2,760
89.15	736	846	91.80	736	2,797
89.20	736	883	91.85	736	2,834
89.25	736	920	91.90	736	2,870
89.30	736	957	91.95	736	2,907
89.35	736	994	92.00	736	**2,944**
89.40	736	1,030			
89.45	736	1,067			
89.50	736	1,104			
89.55	736	1,141			
89.60	736	1,178			
89.65	736	1,214			
89.70	736	1,251			
89.75	736	1,288			
89.80	736	1,325			
89.85	736	1,362			
89.90	736	1,398			
89.95	736	1,435			
90.00	736	1,472			
90.05	736	1,509			
90.10	736	1,546			
90.15	736	1,582			
90.20	736	1,619			
90.25	736	1,656			
90.30	736	1,693			
90.35	736	1,730			
90.40	736	1,766			
90.45	736	1,803			
90.50	736	1,840			
90.55	736	1,877			
90.60	736	1,914			

Summary for Pond IB2: Infiltration Basin #2 (Exfiltration Zone)

Inflow Area = 13,032 sf, 14.64% Impervious, Inflow Depth > 1.19" for 2-Year event
Inflow = 0.38 cfs @ 12.21 hrs, Volume= 1,288 cf
Outflow = 0.24 cfs @ 12.28 hrs, Volume= 1,117 cf, Atten= 38%, Lag= 4.2 min
Discarded = 0.01 cfs @ 11.45 hrs, Volume= 337 cf
Primary = 0.23 cfs @ 12.28 hrs, Volume= 779 cf
Routed to Pond B2 : Infiltration Basin #2 (Storage Zone)

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 97.63' @ 12.40 hrs Surf.Area= 424 sf Storage= 223 cf

Plug-Flow detention time= 60.4 min calculated for 1,117 cf (87% of inflow)
Center-of-Mass det. time= 19.0 min (835.7 - 816.7)

Volume	Invert	Avail.Storage	Storage Description
#1	97.10'	382 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

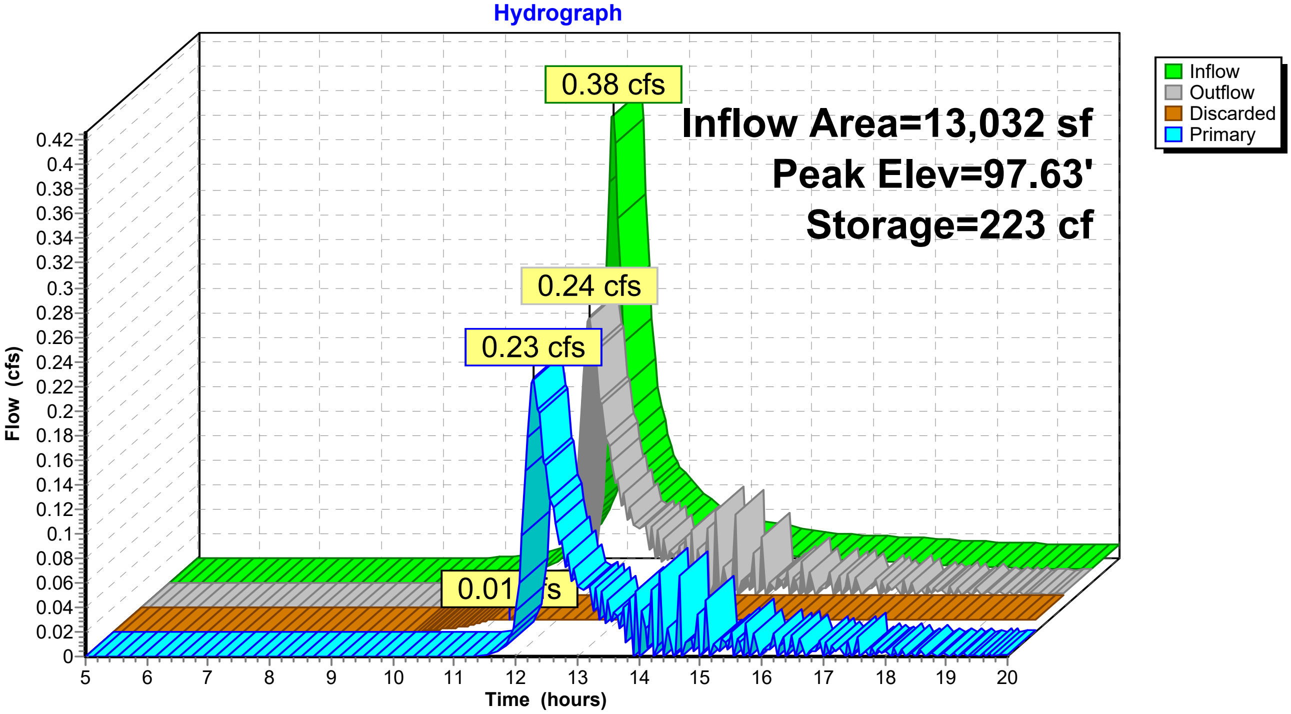
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
97.10	424	0	0
98.00	424	382	382

Device	Routing	Invert	Outlet Devices
#1	Discarded	97.10'	**1.020 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	97.10'	**36.0" Round Culvert** L= 2.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 97.10' / 97.10' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf

Discarded OutFlow Max=0.01 cfs @ 11.45 hrs HW=97.13' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 12.28 hrs HW=97.59' TW=97.61' (Dynamic Tailwater)
└─**2=Culvert** (Controls 0.00 cfs)

Pond IB2: Infiltration Basin #2 (Exfiltration Zone)



Stage-Discharge for Pond IB2: Infiltration Basin #2 (Exfiltration Zone)

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
97.10	0.00	**0.00**	0.00
97.15	0.02	**0.01**	0.01
97.20	0.05	0.01	0.04
97.25	0.11	0.01	0.10
97.30	0.19	0.01	0.18
97.35	0.30	0.01	0.29
97.40	0.42	0.01	0.41
97.45	0.58	0.01	0.57
97.50	0.75	0.01	0.74
97.55	0.95	0.01	0.94
97.60	1.17	0.01	1.16
97.65	1.41	0.01	1.40
97.70	1.67	0.01	1.66
97.75	1.95	0.01	1.94
97.80	2.25	0.01	2.24
97.85	2.58	0.01	2.57
97.90	2.92	0.01	2.91
97.95	3.29	0.01	3.28
98.00	3.67	0.01	3.66
98.05	4.07	0.01	4.06
98.10	4.49	0.01	4.48
98.15	4.93	0.01	4.92
98.20	5.39	0.01	5.38
98.25	5.87	0.01	5.86
98.30	6.36	0.01	6.35
98.35	6.87	0.01	6.86
98.40	7.40	0.01	7.39
98.45	7.94	0.01	7.93
98.50	8.50	0.01	8.49
98.55	9.07	0.01	9.06
98.60	9.66	0.01	9.65
98.65	10.27	0.01	10.26
98.70	10.89	0.01	10.88
98.75	11.52	0.01	11.51
98.80	12.17	0.01	12.16
98.85	12.83	0.01	12.82
98.90	13.50	0.01	13.49
98.95	14.18	0.01	14.17
99.00	14.88	0.01	14.87
99.05	15.59	0.01	15.58
99.10	16.31	0.01	16.30
99.15	17.04	0.01	17.03
99.20	17.77	0.01	17.76
99.25	18.52	0.01	18.51
99.30	19.28	0.01	19.27
99.35	20.05	0.01	20.04
99.40	20.82	0.01	20.81
99.45	21.60	0.01	21.59
99.50	22.39	0.01	22.38
99.55	23.19	0.01	23.18
99.60	23.99	0.01	23.98
99.65	24.79	0.01	24.78
99.70	25.60	0.01	25.59
99.75	26.42	0.01	26.41
99.80	27.23	0.01	27.22
99.85	28.05	0.01	28.04
99.90	28.87	0.01	28.86
99.95	29.69	0.01	29.68
100.00	30.52	0.01	30.51
100.05	31.34	0.01	31.33
100.10	**32.16**	0.01	**32.15**

Stage-Area-Storage for Pond IB2: Infiltration Basin #2 (Exfiltration Zone)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
97.10	**424**	0	99.75	424	382
97.15	424	21	99.80	424	382
97.20	424	42	99.85	424	382
97.25	424	64	99.90	424	382
97.30	424	85	99.95	424	382
97.35	424	106	100.00	424	382
97.40	424	127	100.05	424	382
97.45	424	148	100.10	424	382
97.50	424	170			
97.55	424	191			
97.60	424	212			
97.65	424	233			
97.70	424	254			
97.75	424	276			
97.80	424	297			
97.85	424	318			
97.90	424	339			
97.95	424	360			
98.00	424	**382**			
98.05	424	382			
98.10	424	382			
98.15	424	382			
98.20	424	382			
98.25	424	382			
98.30	424	382			
98.35	424	382			
98.40	424	382			
98.45	424	382			
98.50	424	382			
98.55	424	382			
98.60	424	382			
98.65	424	382			
98.70	424	382			
98.75	424	382			
98.80	424	382			
98.85	424	382			
98.90	424	382			
98.95	424	382			
99.00	424	382			
99.05	424	382			
99.10	424	382			
99.15	424	382			
99.20	424	382			
99.25	424	382			
99.30	424	382			
99.35	424	382			
99.40	424	382			
99.45	424	382			
99.50	424	382			
99.55	424	382			
99.60	424	382			
99.65	424	382			
99.70	424	382			

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: Units 10-11 Entrance Runoff Area=13,032 sf 14.64% Impervious Runoff Depth>2.35"
Flow Length=190' Tc=12.6 min CN=77 Runoff=0.76 cfs 2,556 cf

Subcatchment 1pre: Site Runoff Area=134,756 sf 4.57% Impervious Runoff Depth>2.10"
Flow Length=451' Tc=22.8 min UI Adjusted CN=74 Runoff=5.34 cfs 23,567 cf

Subcatchment 2: Units 8-11 Backyards Runoff Area=7,232 sf 0.00% Impervious Runoff Depth>2.11"
Flow Length=84' Tc=11.3 min CN=74 Runoff=0.39 cfs 1,271 cf

Subcatchment 3: Outer Border Runoff Area=53,803 sf 0.00% Impervious Runoff Depth>1.96"
Flow Length=87' Tc=7.9 min CN=72 Runoff=3.07 cfs 8,766 cf

Subcatchment 4: Unit 5 Backyard and Basin Runoff Area=8,967 sf 0.00% Impervious Runoff Depth>2.11"
Flow Length=110' Tc=7.7 min CN=74 Runoff=0.56 cfs 1,579 cf

Subcatchment 5: Unit 5 Parking Runoff Area=8,830 sf 71.11% Impervious Runoff Depth>3.66"
Flow Length=100' Tc=7.9 min CN=91 Runoff=0.87 cfs 2,691 cf

Subcatchment 6: Driveway Center Section Runoff Area=14,952 sf 43.75% Impervious Runoff Depth>2.98"
Flow Length=163' Tc=10.8 min CN=84 Runoff=1.13 cfs 3,709 cf

Subcatchment 7: Driveway Entrance Runoff Area=9,350 sf 31.84% Impervious Runoff Depth>2.79"
Flow Length=88' Slope=0.0400 '/' Tc=9.8 min CN=82 Runoff=0.69 cfs 2,177 cf

Subcatchment U1: Unit #1 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>4.28"
Tc=5.0 min CN=98 Runoff=0.19 cfs 573 cf

Subcatchment U10: Unit #10 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>4.28"
Tc=5.0 min CN=98 Runoff=0.19 cfs 573 cf

Subcatchment U11: Unit #11 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>4.28"
Tc=5.0 min CN=98 Runoff=0.19 cfs 573 cf

Subcatchment U2: Unit #2 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>4.28"
Tc=5.0 min CN=98 Runoff=0.19 cfs 573 cf

Subcatchment U3: Unit #3 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>4.28"
Tc=5.0 min CN=98 Runoff=0.19 cfs 573 cf

Subcatchment U4: Unit #4 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>4.28"
Tc=5.0 min CN=98 Runoff=0.19 cfs 573 cf

Subcatchment U5: Unit #5 Runoff Area=2,510 sf 100.00% Impervious Runoff Depth>4.28"
Tc=5.0 min CN=98 Runoff=0.29 cfs 895 cf

Subcatchment U6: Unit #6 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>4.28"
Tc=5.0 min CN=98 Runoff=0.19 cfs 573 cf

Subcatchment U7: Unit #7 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>4.28"
Tc=5.0 min CN=98 Runoff=0.19 cfs 573 cf

Subcatchment U8: Unit #8 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>4.28"
Tc=5.0 min CN=98 Runoff=0.19 cfs 573 cf

Subcatchment U9: Unit #9 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>4.28"
Tc=5.0 min CN=98 Runoff=0.19 cfs 573 cf

Reach 3R: Wetland Surface 1 Avg. Flow Depth=0.10' Max Vel=0.42 fps Inflow=0.81 cfs 3,358 cf
n=0.100 L=344.0' S=0.0291 '/' Capacity=20.30 cfs Outflow=0.66 cfs 3,327 cf

Reach 4R: 8" ROOF DRAIN CARRIER Avg. Flow Depth=0.21' Max Vel=3.82 fps Inflow=0.37 cfs 1,146 cf
8.0" Round Pipe n=0.013 L=206.0' S=0.0194 '/' Capacity=1.68 cfs Outflow=0.37 cfs 1,145 cf

Reach 5R: Wetland Surface 2 Avg. Flow Depth=0.11' Max Vel=0.23 fps Inflow=0.62 cfs 1,916 cf
n=0.100 L=245.0' S=0.0082 '/' Capacity=10.76 cfs Outflow=0.40 cfs 1,884 cf

Reach 8R: 6" Roof Drain Carrier Pipe Avg. Flow Depth=0.24' Max Vel=3.90 fps Inflow=0.37 cfs 1,146 cf
6.0" Round Pipe n=0.013 L=113.0' S=0.0195 '/' Capacity=0.78 cfs Outflow=0.37 cfs 1,146 cf

Reach 9R: 12" Roof Drain Carrier Pipe Avg. Flow Depth=0.31' Max Vel=3.54 fps Inflow=0.74 cfs 2,292 cf
12.0" Round Pipe n=0.013 L=212.0' S=0.0099 '/' Capacity=3.55 cfs Outflow=0.73 cfs 2,289 cf

Reach DP1PRE: DP 1 - PRE Inflow=5.34 cfs 23,567 cf
Outflow=5.34 cfs 23,567 cf

Reach DP1PST: DP 1 - POST Inflow=5.03 cfs 24,180 cf
Outflow=5.03 cfs 24,180 cf

Pond 1P: Subsurface #1 Peak Elev=97.48' Storage=1,180 cf Inflow=1.06 cfs 3,564 cf
Discarded=0.03 cfs 1,373 cf Primary=0.45 cfs 1,475 cf Outflow=0.48 cfs 2,847 cf

Pond 5P: CB 5 Peak Elev=90.08' Inflow=0.87 cfs 2,691 cf
12.0" Round Culvert n=0.013 L=13.0' S=0.0192 '/' Outflow=0.87 cfs 2,691 cf

Pond 10P: Infiltration Basin #1 (Storage) Peak Elev=90.06' Storage=2,511 cf Inflow=3.77 cfs 12,839 cf
Primary=2.31 cfs 12,088 cf Secondary=0.00 cfs 0 cf Outflow=2.31 cfs 12,088 cf

Pond B2: Infiltration Basin #2 (Storage Zone) Peak Elev=97.76' Storage=175 cf Inflow=0.68 cfs 1,985 cf
Outflow=0.62 cfs 1,916 cf

Pond CB1: CB 1 Peak Elev=93.17' Inflow=0.69 cfs 2,177 cf
12.0" Round Culvert n=0.013 L=228.0' S=0.0121 '/' Outflow=0.69 cfs 2,177 cf

Pond CB4: CB 4 Peak Elev=90.82' Inflow=1.13 cfs 3,709 cf
12.0" Round Culvert n=0.013 L=12.0' S=0.0083 '/' Outflow=1.13 cfs 3,709 cf

Pond CB7: CB 7 Inflow=0.39 cfs 1,271 cf
Primary=0.39 cfs 1,271 cf

Pond DMH2: DMH2 Peak Elev=90.66' Inflow=1.81 cfs 5,886 cf
18.0" Round Culvert n=0.013 L=128.0' S=0.0078 '/' Outflow=1.81 cfs 5,886 cf

Pond IB1: Infiltration Basin #1 (Exfiltration Peak Elev=90.07' Storage=1,522 cf Inflow=4.51 cfs 14,485 cf
Discarded=0.02 cfs 935 cf Primary=3.77 cfs 12,839 cf Outflow=3.79 cfs 13,774 cf

Pond IB2: Infiltration Basin #2 (Exfiltration Peak Elev=97.77' Storage=283 cf Inflow=0.76 cfs 2,556 cf
Discarded=0.01 cfs 393 cf Primary=0.68 cfs 1,985 cf Outflow=0.69 cfs 2,379 cf

Total Runoff Area = 269,512 sf Runoff Volume = 52,942 cf Average Runoff Depth = 2.36"
84.25% Pervious = 227,061 sf 15.75% Impervious = 42,451 sf

Summary for Subcatchment 1: Units 10-11 Entrance

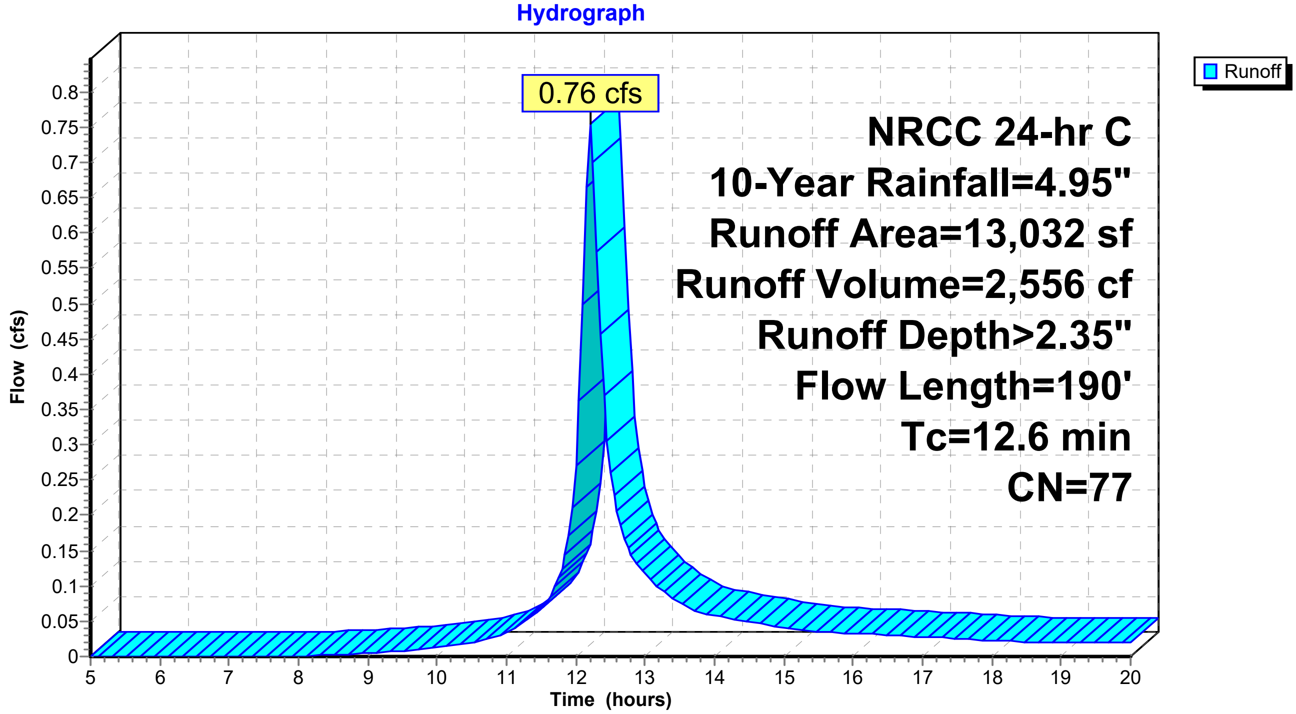
Runoff = 0.76 cfs @ 12.21 hrs, Volume= 2,556 cf, Depth> 2.35"
Routed to Pond IB2 : Infiltration Basin #2 (Exfiltration Zone)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 10-Year Rainfall=4.95"

Area (sf)	CN	Description
10,121	74	>75% Grass cover, Good, HSG C
1,003	70	Woods, Good, HSG C
1,908	98	Paved parking, HSG C
13,032	77	Weighted Average
11,124		85.36% Pervious Area
1,908		14.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		**Sheet Flow, Grass** Grass: Bermuda n= 0.410 P2= 3.35"
0.8	55	0.0300	1.21		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.1	17	0.0100	2.03		**Shallow Concentrated Flow, Driveway** Paved Kv= 20.3 fps
1.2	68	0.0180	0.94		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
12.6	190	Total			

Subcatchment 1: Units 10-11 Entrance



Summary for Subcatchment 1pre: Site

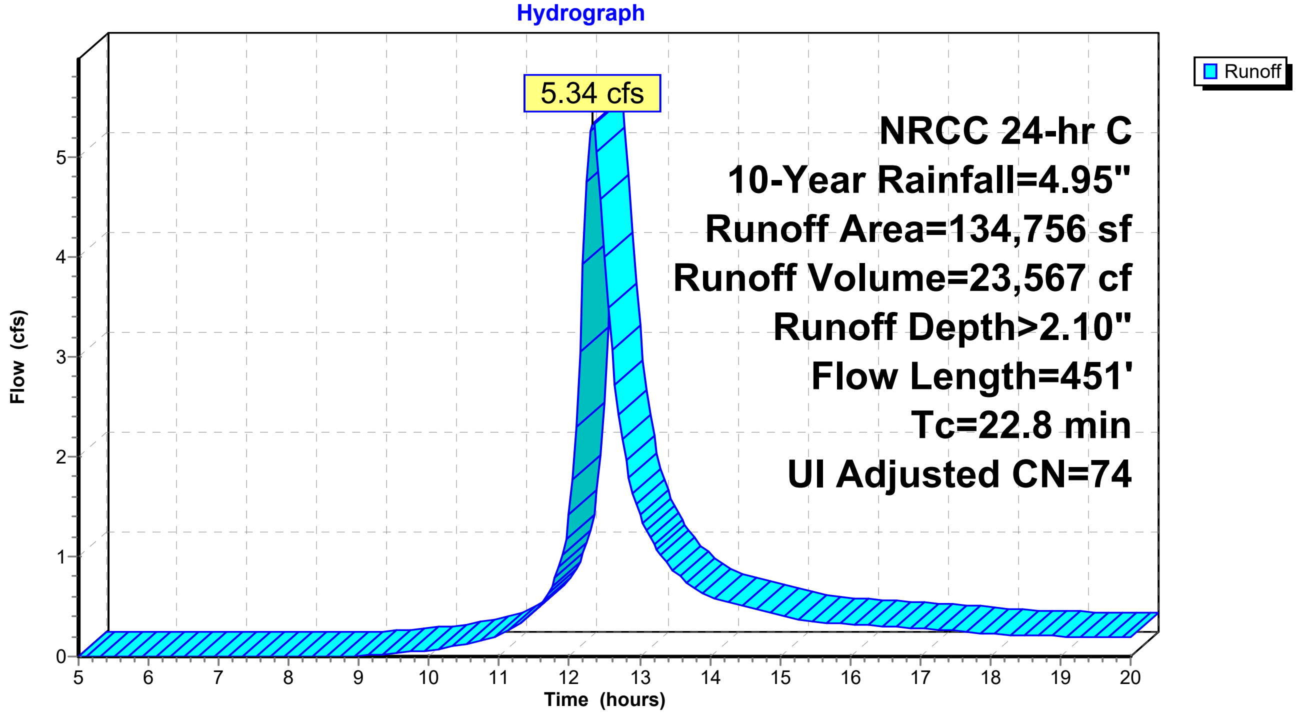
Runoff = 5.34 cfs @ 12.34 hrs, Volume= 23,567 cf, Depth> 2.10"
Routed to Reach DP1PRE : DP 1 - PRE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 10-Year Rainfall=4.95"

Area (sf)	CN	Adj	Description
56,945	70		Woods, Good, HSG C
2,937	98		Paved parking, HSG C
3,219	98		Unconnected roofs, HSG C
10,003	89		Gravel roads, HSG C
61,652	74		>75% Grass cover, Good, HSG C
134,756	75	74	Weighted Average, UI Adjusted
128,600			95.43% Pervious Area
6,156			4.57% Impervious Area
3,219			52.29% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.3	25	0.0110	0.03		**Sheet Flow, Woods** Woods: Dense underbrush n= 0.800 P2= 3.35"
0.5	25	0.0110	0.84		**Sheet Flow, Pavement** Smooth surfaces n= 0.011 P2= 3.35"
0.2	20	0.0110	2.13		**Shallow Concentrated Flow, Pavement** Paved Kv= 20.3 fps
1.5	65	0.0110	0.73		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
2.2	159	0.0290	1.19		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
2.0	52	0.0040	0.44		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.7	60	0.0370	1.35		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.4	45	0.1660	2.04		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
22.8	451	Total			

Subcatchment 1pre: Site



Summary for Subcatchment 2: Units 8-11 Backyards

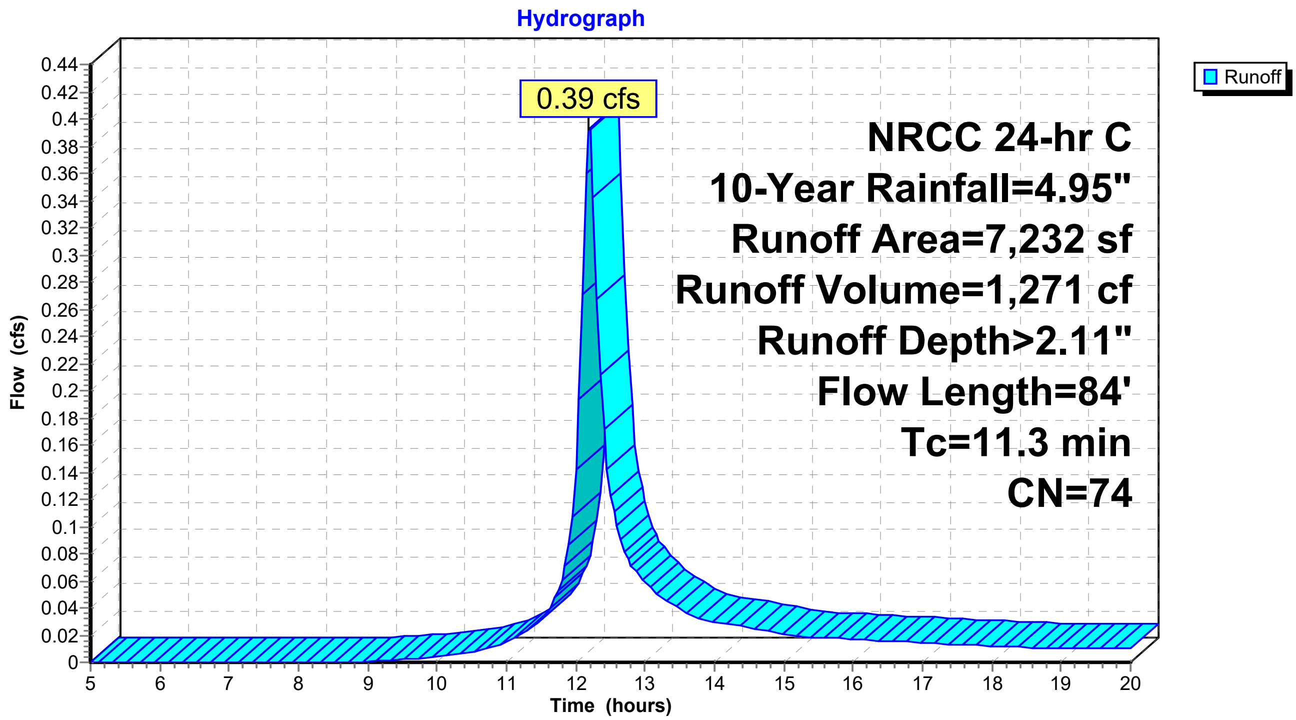
Runoff = 0.39 cfs @ 12.19 hrs, Volume= 1,271 cf, Depth> 2.11"
Routed to Pond CB7 : CB 7

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 10-Year Rainfall=4.95"

Area (sf)	CN	Description
7,232	74	>75% Grass cover, Good, HSG C
7,232		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7	50	0.0280	0.08		**Sheet Flow, Grass** Grass: Bermuda n= 0.410 P2= 3.35"
0.6	34	0.0200	0.99		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
11.3	84	Total			

Subcatchment 2: Units 8-11 Backyards



Summary for Subcatchment 3: Outer Border

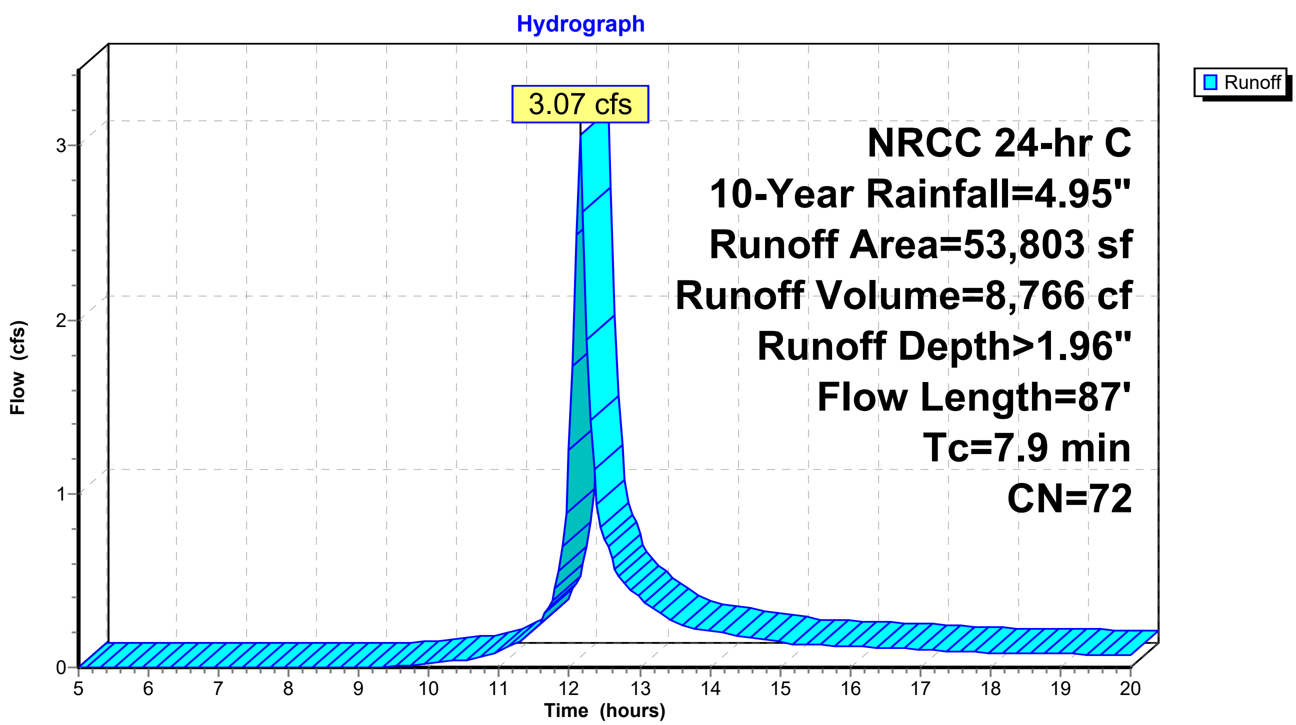
Runoff = 3.07 cfs @ 12.15 hrs, Volume= 8,766 cf, Depth> 1.96"
Routed to Reach DP1PST : DP 1 - POST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 10-Year Rainfall=4.95"

Area (sf)	CN	Description
22,640	74	>75% Grass cover, Good, HSG C
31,163	70	Woods, Good, HSG C
53,803	72	Weighted Average
53,803		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	50	0.0670	0.11		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.35"
0.5	37	0.0600	1.22		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
7.9	87	Total			

Subcatchment 3: Outer Border



Summary for Subcatchment 4: Unit 5 Backyard and Basin #1

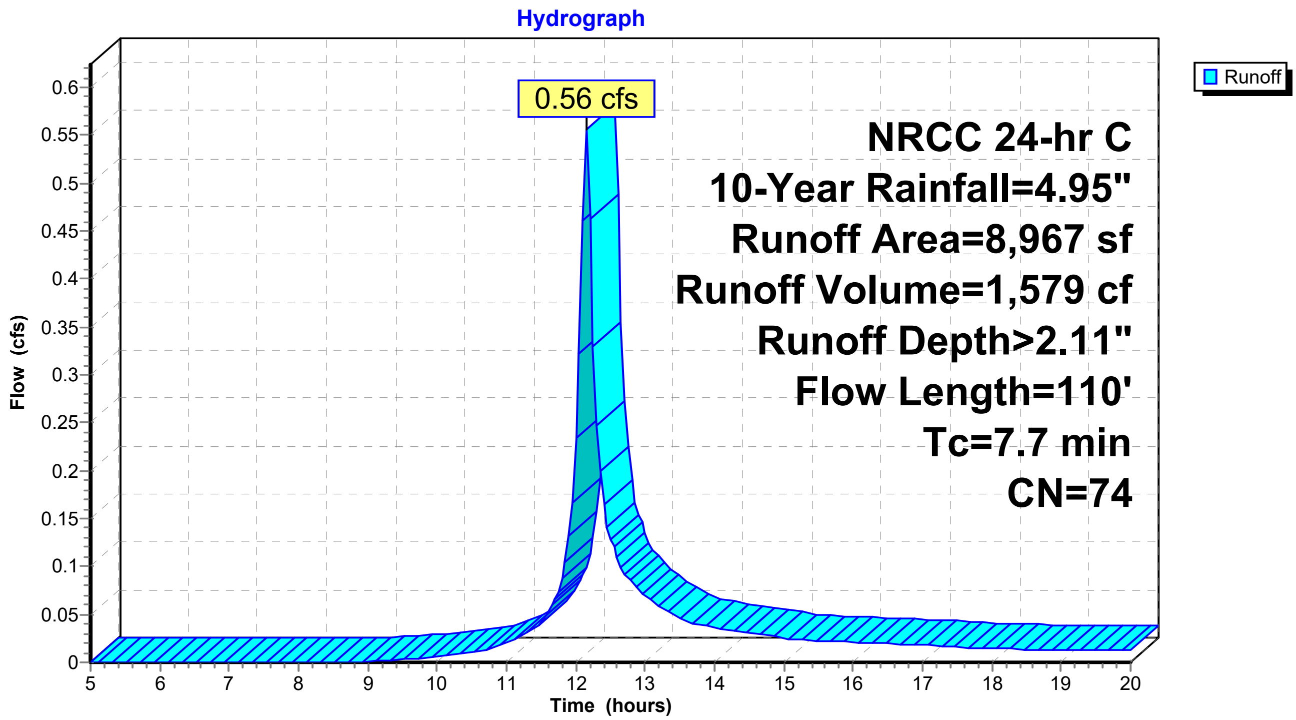
Runoff = 0.56 cfs @ 12.15 hrs, Volume= 1,579 cf, Depth> 2.11"
Routed to Pond IB1 : Infiltration Basin #1 (Exfiltration Zone)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 10-Year Rainfall=4.95"

Area (sf)	CN	Description
8,967	74	>75% Grass cover, Good, HSG C
8,967		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0780	0.12		**Sheet Flow, Grass** Grass: Bermuda n= 0.410 P2= 3.35"
0.6	60	0.0670	1.81		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
7.7	110	Total			

Subcatchment 4: Unit 5 Backyard and Basin #1



Summary for Subcatchment 5: Unit 5 Parking

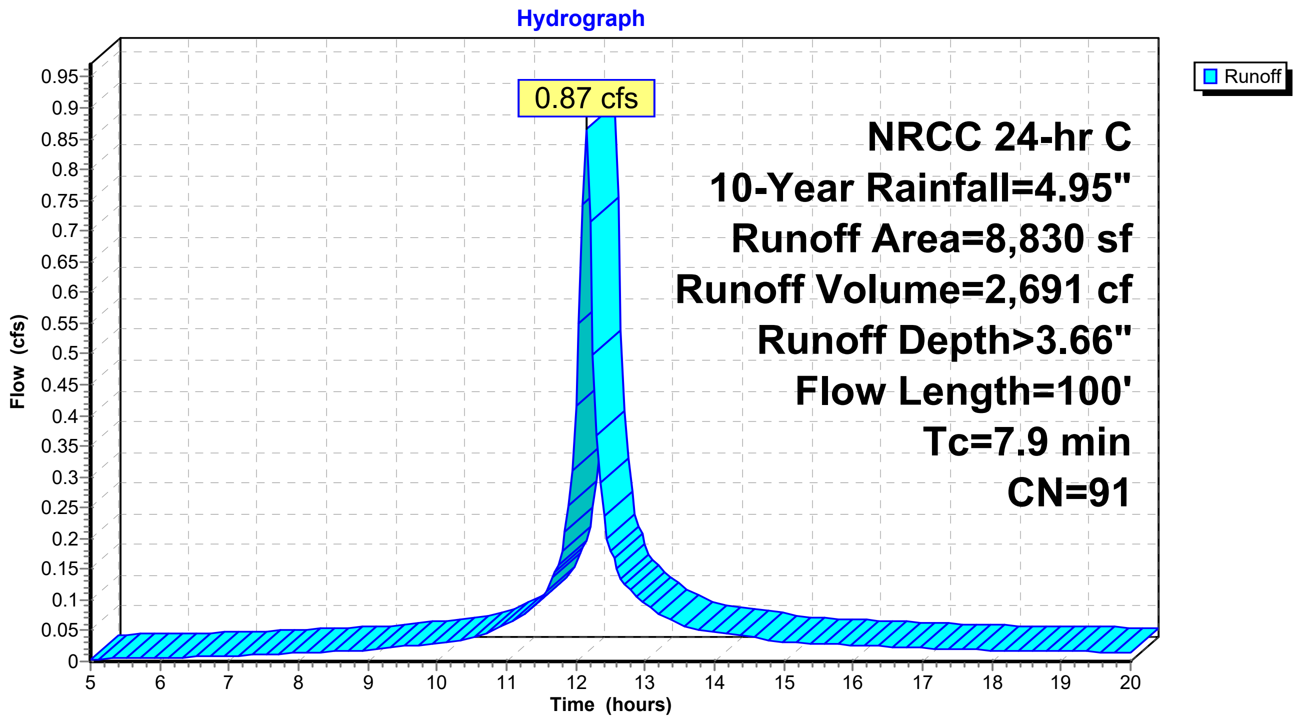
Runoff = 0.87 cfs @ 12.15 hrs, Volume= 2,691 cf, Depth> 3.66"
Routed to Pond 5P : CB 5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 10-Year Rainfall=4.95"

Area (sf)	CN	Description
2,551	74	>75% Grass cover, Good, HSG C
6,279	98	Paved roads w/curbs & sewers, HSG C
8,830	91	Weighted Average
2,551		28.89% Pervious Area
6,279		71.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	40	0.0450	0.09		**Sheet Flow, Grass** Grass: Bermuda n= 0.410 P2= 3.35"
0.3	10	0.0067	0.57		**Sheet Flow, Pavement** Smooth surfaces n= 0.011 P2= 3.35"
0.2	50	0.0280	3.40		**Shallow Concentrated Flow, Pavement** Paved Kv= 20.3 fps
7.9	100	Total			

Subcatchment 5: Unit 5 Parking



Summary for Subcatchment 6: Driveway Center Section

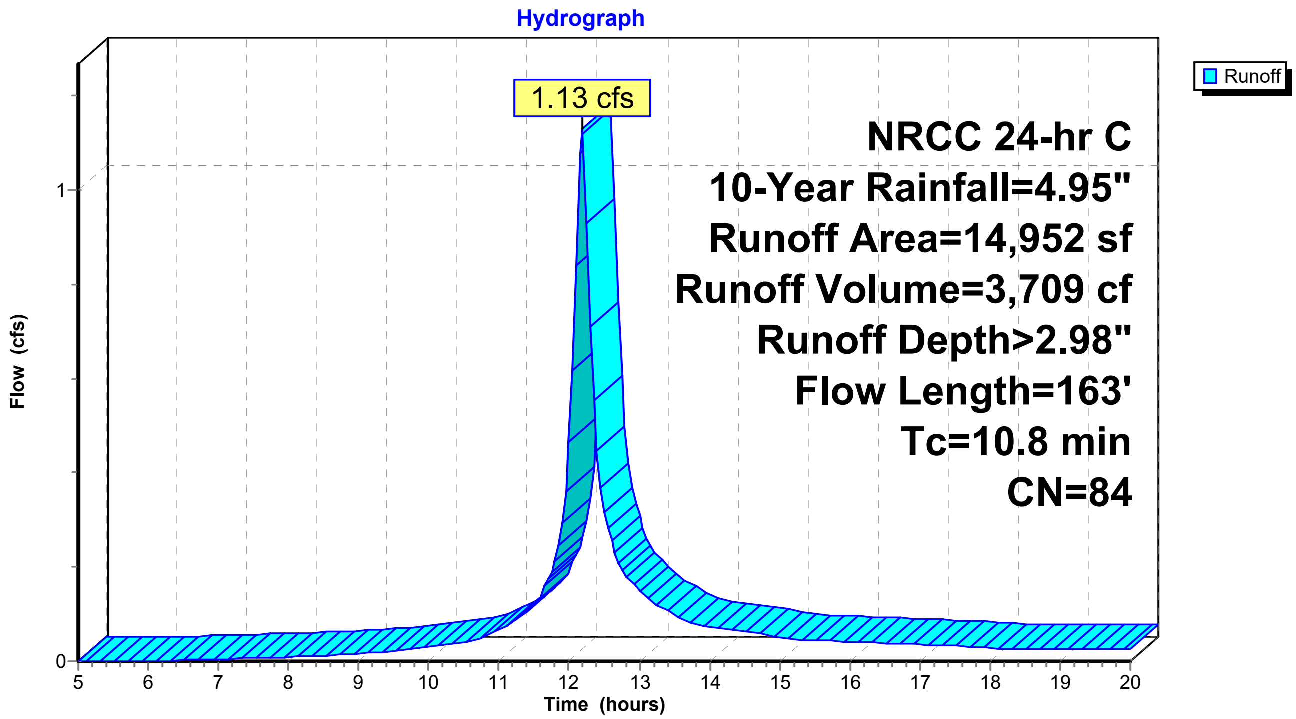
Runoff = 1.13 cfs @ 12.18 hrs, Volume= 3,709 cf, Depth> 2.98"
Routed to Pond CB4 : CB 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 10-Year Rainfall=4.95"

Area (sf)	CN	Description
8,411	74	>75% Grass cover, Good, HSG C
6,541	98	Paved roads w/curbs & sewers, HSG C
14,952	84	Weighted Average
8,411		56.25% Pervious Area
6,541		43.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	50	0.0320	0.08		**Sheet Flow, Grass** Grass: Bermuda n= 0.410 P2= 3.35"
0.2	18	0.0300	1.21		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.4	95	0.0360	3.85		**Shallow Concentrated Flow, Pavement** Paved Kv= 20.3 fps
10.8	163	Total			

Subcatchment 6: Driveway Center Section



Summary for Subcatchment 7: Driveway Entrance

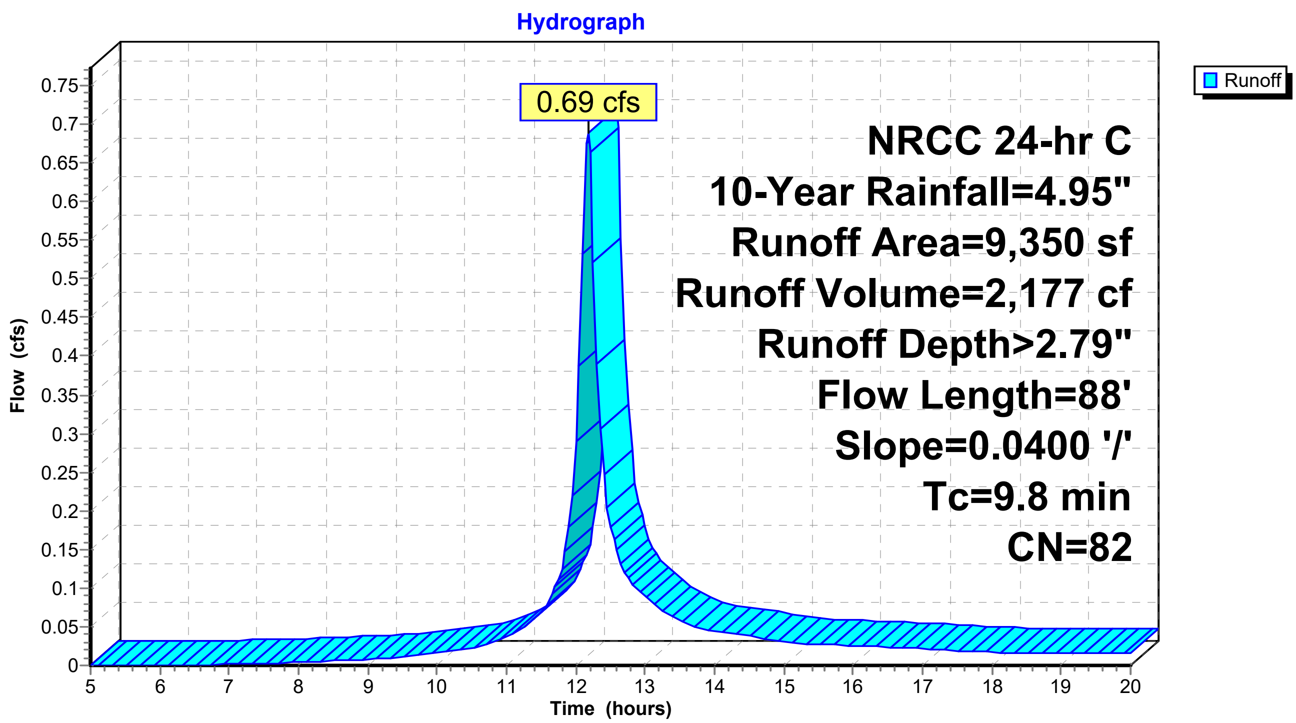
Runoff = 0.69 cfs @ 12.17 hrs, Volume= 2,177 cf, Depth> 2.79"
Routed to Pond CB1 : CB 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 10-Year Rainfall=4.95"

Area (sf)	CN	Description
2,977	98	Paved parking, HSG C
6,373	74	>75% Grass cover, Good, HSG C
9,350	82	Weighted Average
6,373		68.16% Pervious Area
2,977		31.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow, Grass** Grass: Bermuda n= 0.410 P2= 3.35"
0.5	38	0.0400	1.40		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
9.8	88	Total			

Subcatchment 7: Driveway Entrance



Summary for Subcatchment U1: Unit #1

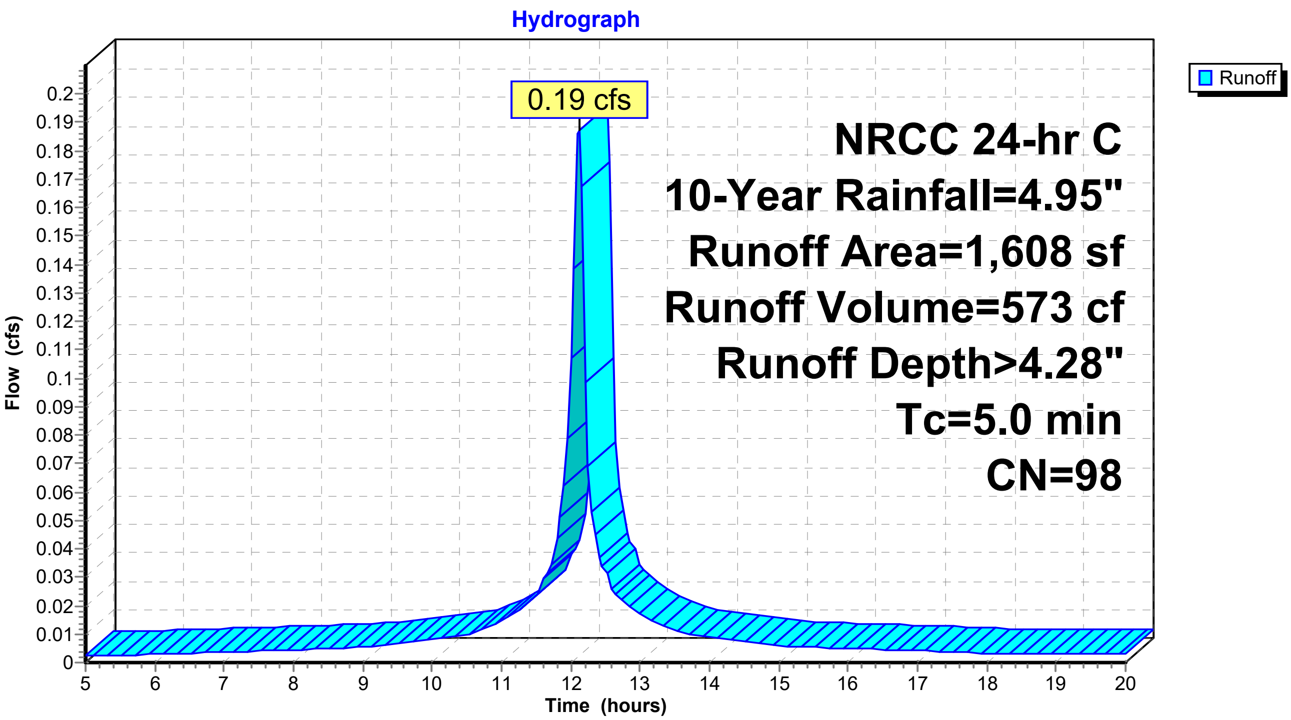
Runoff = 0.19 cfs @ 12.11 hrs, Volume= 573 cf, Depth> 4.28"
Routed to Reach 8R : 6" Roof Drain Carrier Pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 10-Year Rainfall=4.95"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U1: Unit #1



Summary for Subcatchment U10: Unit #10

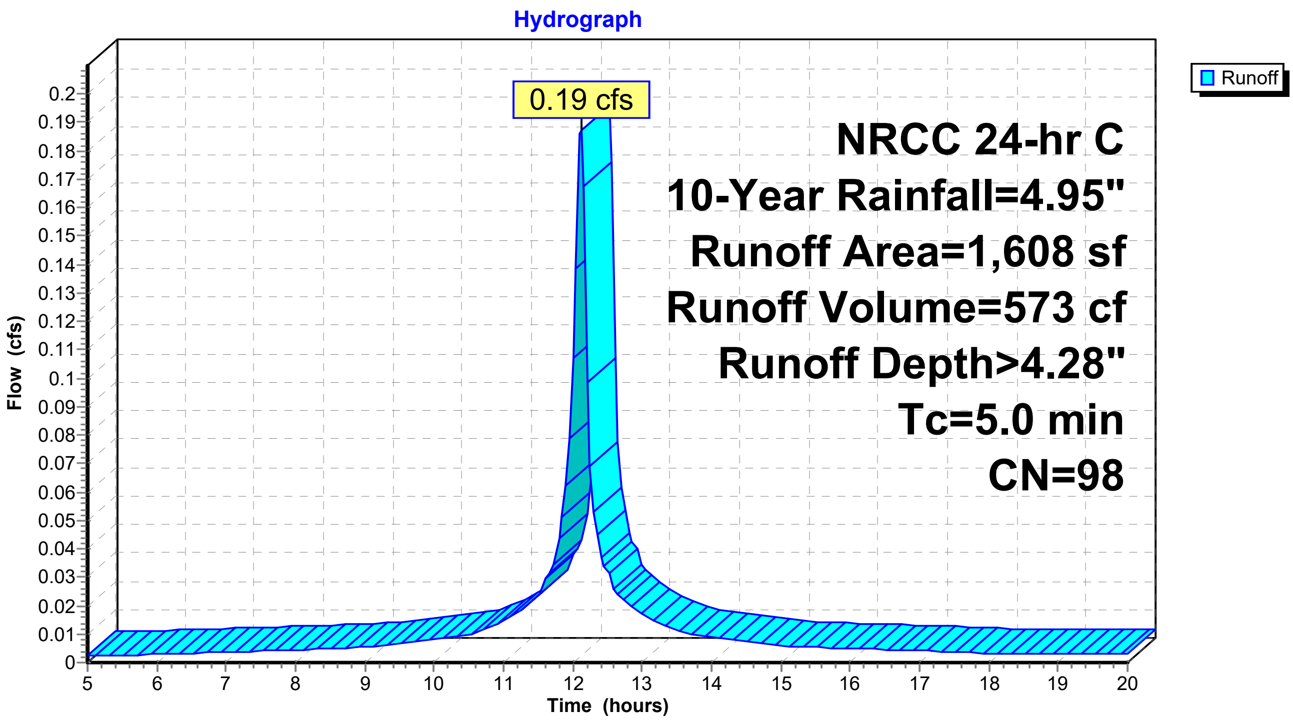
Runoff = 0.19 cfs @ 12.11 hrs, Volume= 573 cf, Depth> 4.28"
Routed to Pond 1P : Subsurface #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 10-Year Rainfall=4.95"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U10: Unit #10



Summary for Subcatchment U11: Unit #11

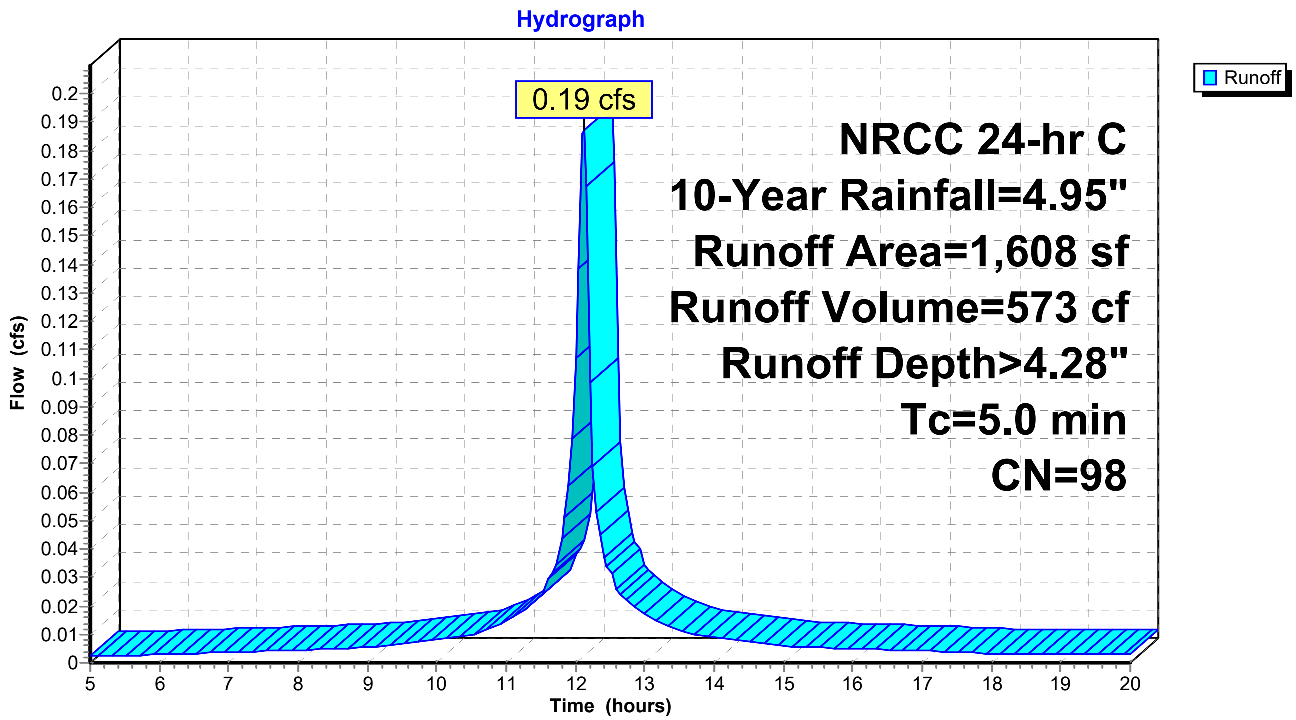
Runoff = 0.19 cfs @ 12.11 hrs, Volume= 573 cf, Depth> 4.28"
Routed to Pond 1P : Subsurface #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 10-Year Rainfall=4.95"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U11: Unit #11



Summary for Subcatchment U2: Unit #2

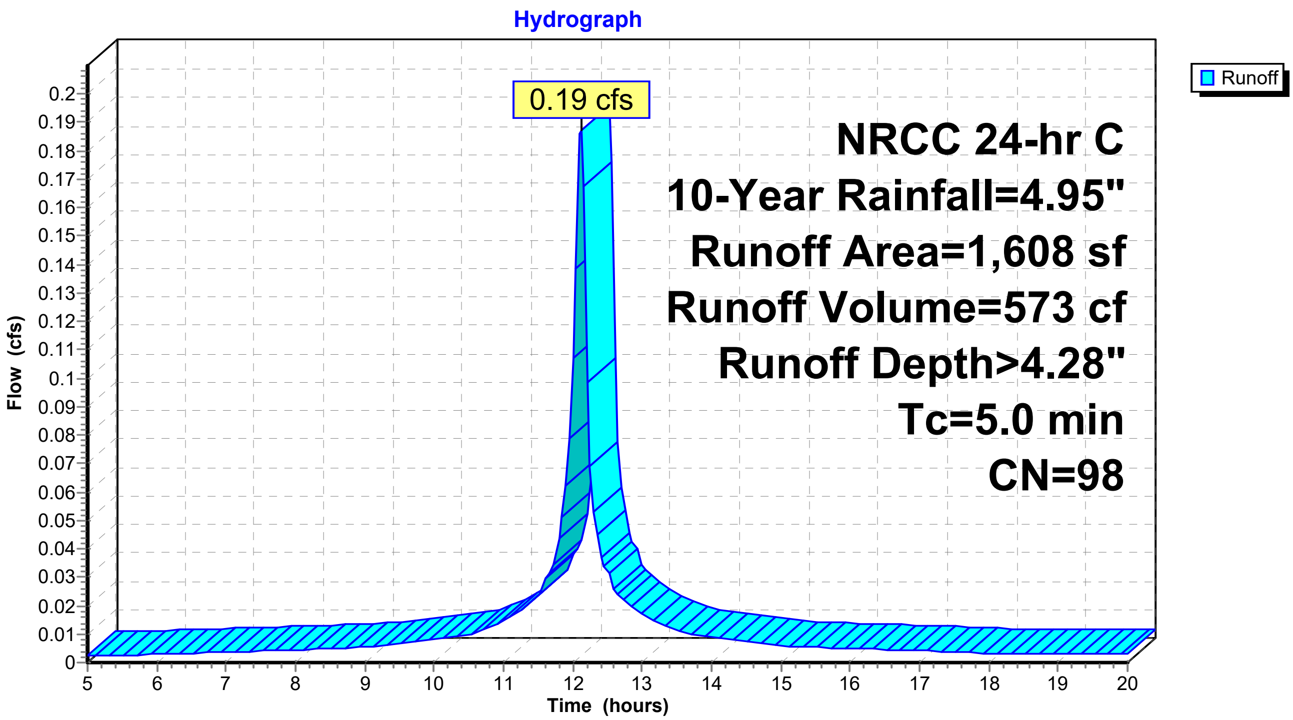
Runoff = 0.19 cfs @ 12.11 hrs, Volume= 573 cf, Depth> 4.28"
Routed to Reach 8R : 6" Roof Drain Carrier Pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 10-Year Rainfall=4.95"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U2: Unit #2



Summary for Subcatchment U3: Unit #3

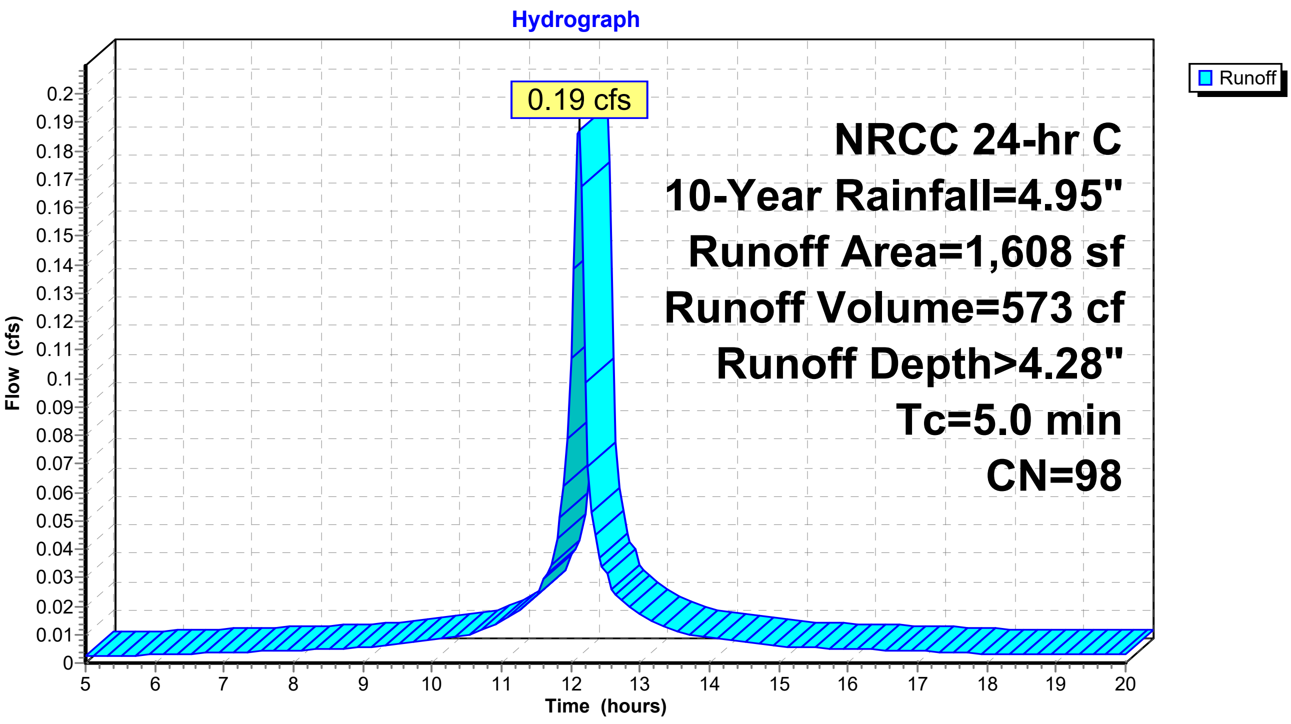
Runoff = 0.19 cfs @ 12.11 hrs, Volume= 573 cf, Depth> 4.28"
Routed to Reach 9R : 12" Roof Drain Carrier Pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 10-Year Rainfall=4.95"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U3: Unit #3



Summary for Subcatchment U4: Unit #4

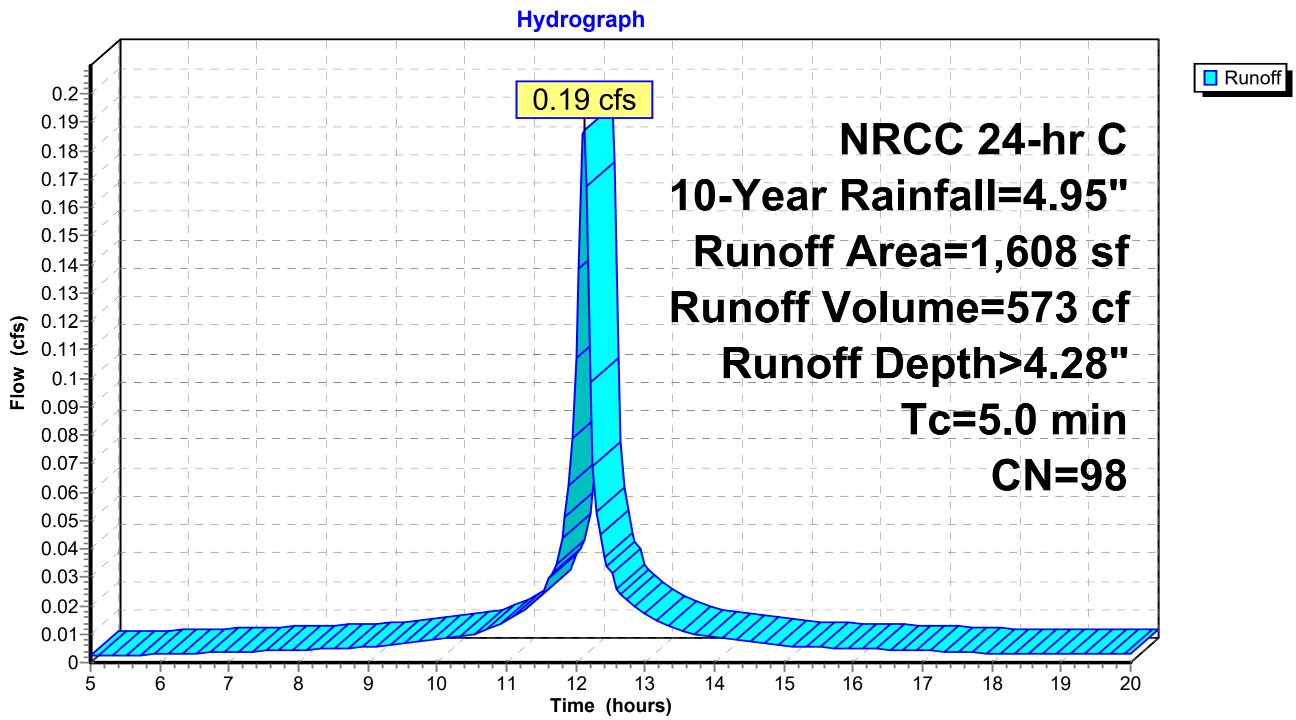
Runoff = 0.19 cfs @ 12.11 hrs, Volume= 573 cf, Depth> 4.28"
Routed to Reach 9R : 12" Roof Drain Carrier Pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 10-Year Rainfall=4.95"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U4: Unit #4



Summary for Subcatchment U5: Unit #5

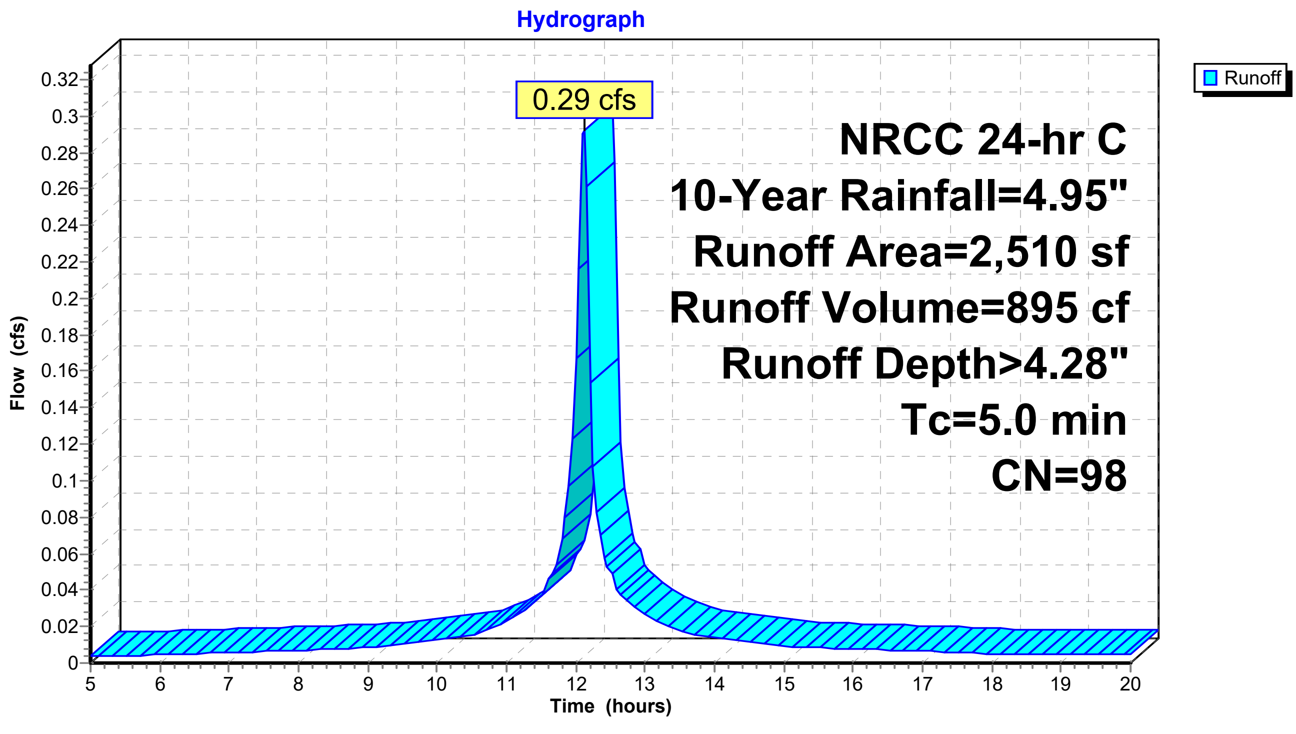
Runoff = 0.29 cfs @ 12.11 hrs, Volume= 895 cf, Depth> 4.28"
Routed to Pond IB1 : Infiltration Basin #1 (Exfiltration Zone)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 10-Year Rainfall=4.95"

Area (sf)	CN	Description
2,510	98	Unconnected roofs, HSG C
2,510		100.00% Impervious Area
2,510		100.00% Unconnected

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

Subcatchment U5: Unit #5



Summary for Subcatchment U6: Unit #6

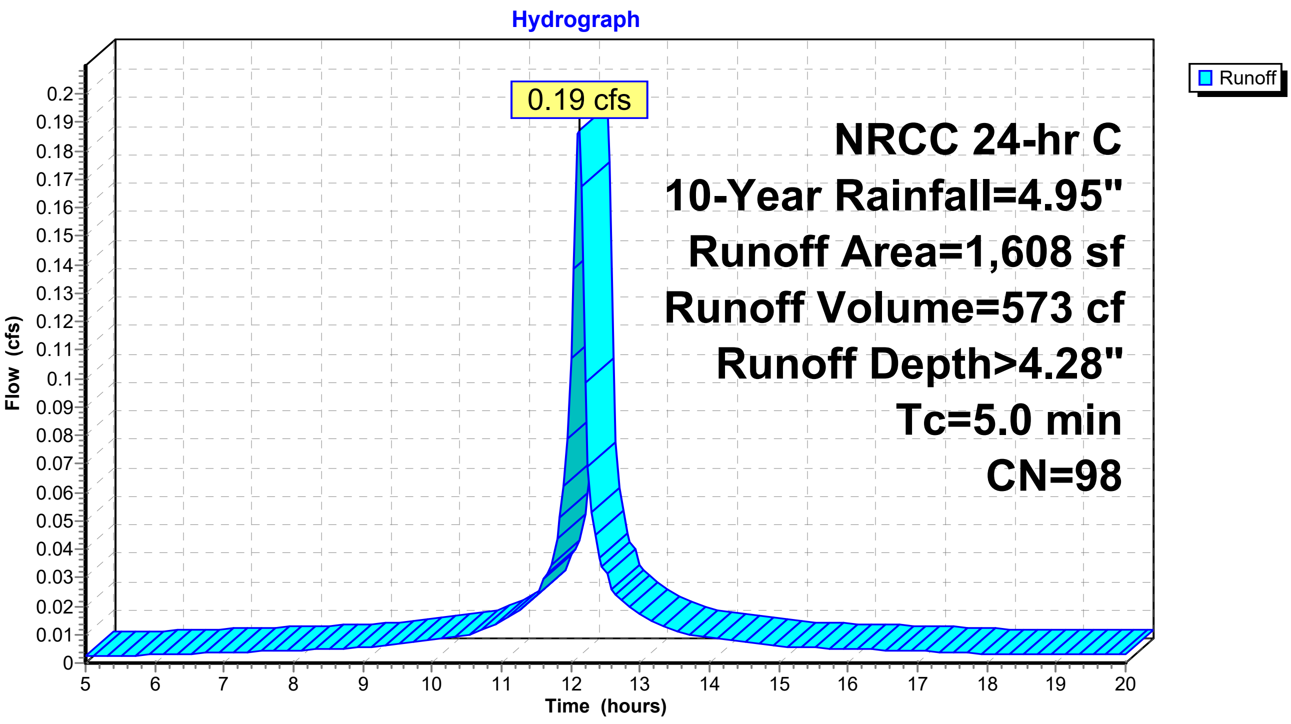
Runoff = 0.19 cfs @ 12.11 hrs, Volume= 573 cf, Depth> 4.28"
Routed to Reach 4R : 8" ROOF DRAIN CARRIER PIPE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 10-Year Rainfall=4.95"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U6: Unit #6



Summary for Subcatchment U7: Unit #7

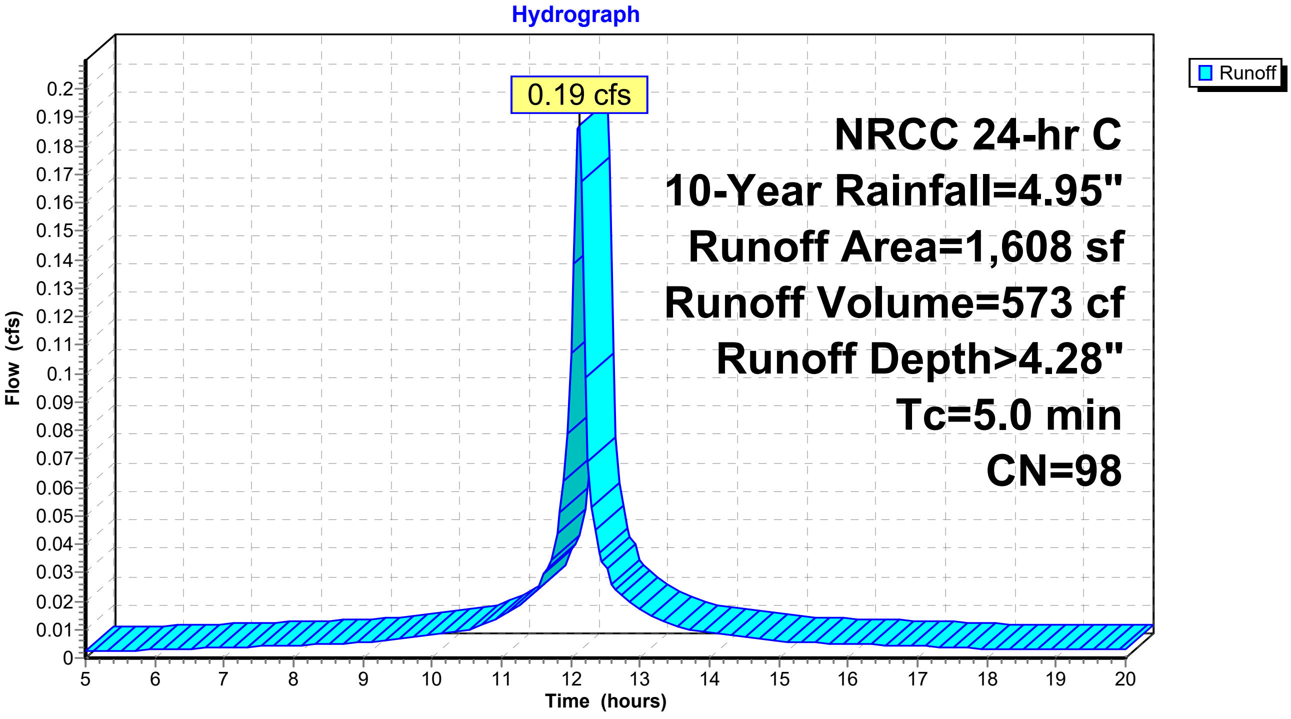
Runoff = 0.19 cfs @ 12.11 hrs, Volume= 573 cf, Depth> 4.28"
Routed to Reach 4R : 8" ROOF DRAIN CARRIER PIPE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 10-Year Rainfall=4.95"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U7: Unit #7



Summary for Subcatchment U8: Unit #8

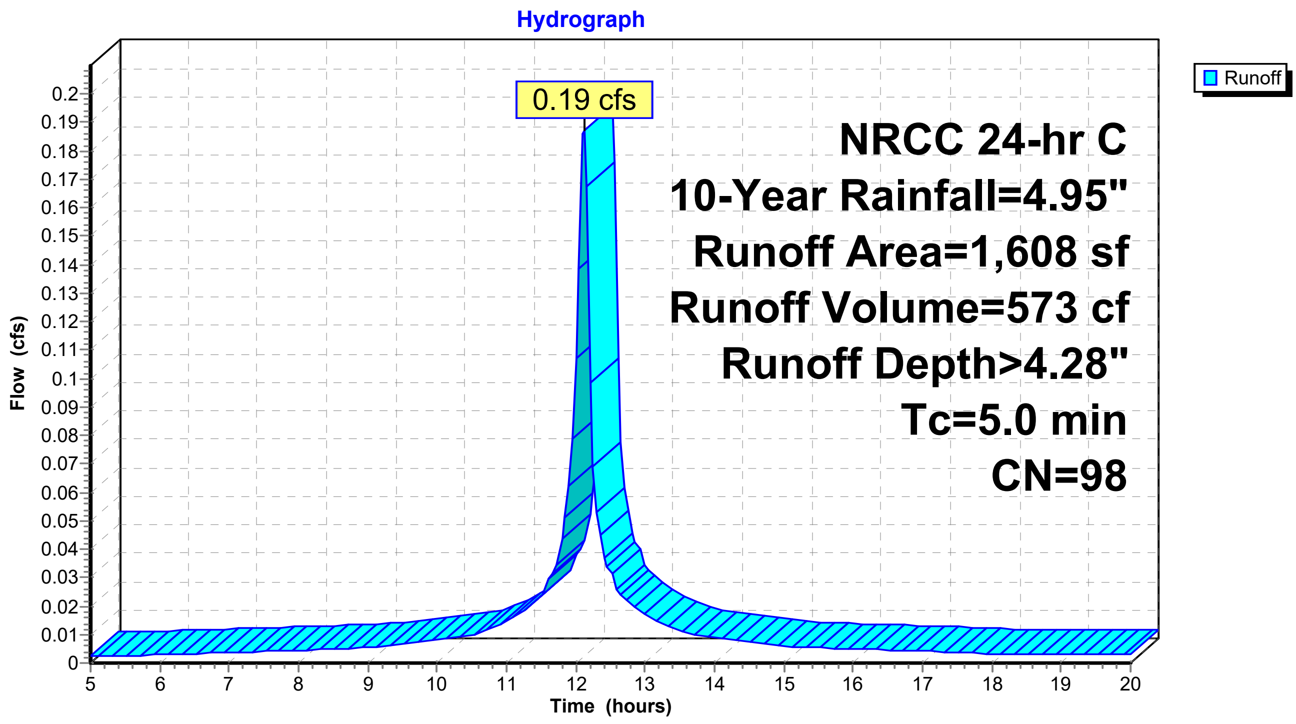
Runoff = 0.19 cfs @ 12.11 hrs, Volume= 573 cf, Depth> 4.28"
Routed to Pond 1P : Subsurface #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 10-Year Rainfall=4.95"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U8: Unit #8



Summary for Subcatchment U9: Unit #9

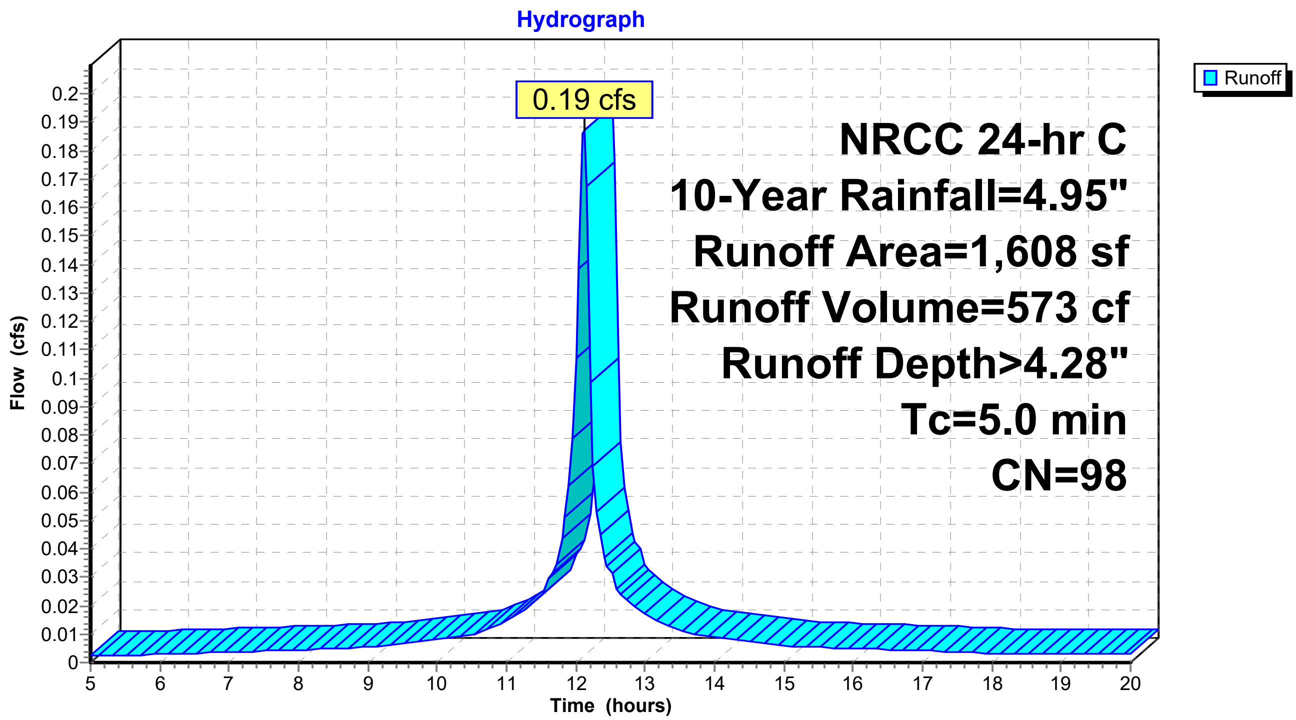
Runoff = 0.19 cfs @ 12.11 hrs, Volume= 573 cf, Depth> 4.28"
Routed to Pond 1P : Subsurface #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 10-Year Rainfall=4.95"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U9: Unit #9



Summary for Reach 3R: Wetland Surface 1

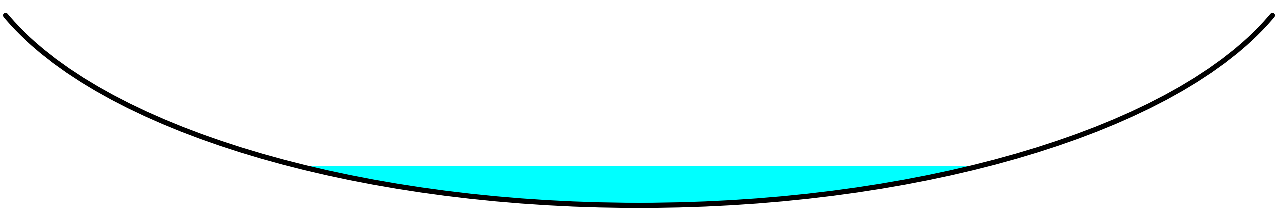
Inflow Area = 26,696 sf, 31.24% Impervious, Inflow Depth > 1.51" for 10-Year event
Inflow = 0.81 cfs @ 12.39 hrs, Volume= 3,358 cf
Outflow = 0.66 cfs @ 12.59 hrs, Volume= 3,327 cf, Atten= 19%, Lag= 12.3 min
Routed to Reach DP1PST : DP 1 - POST

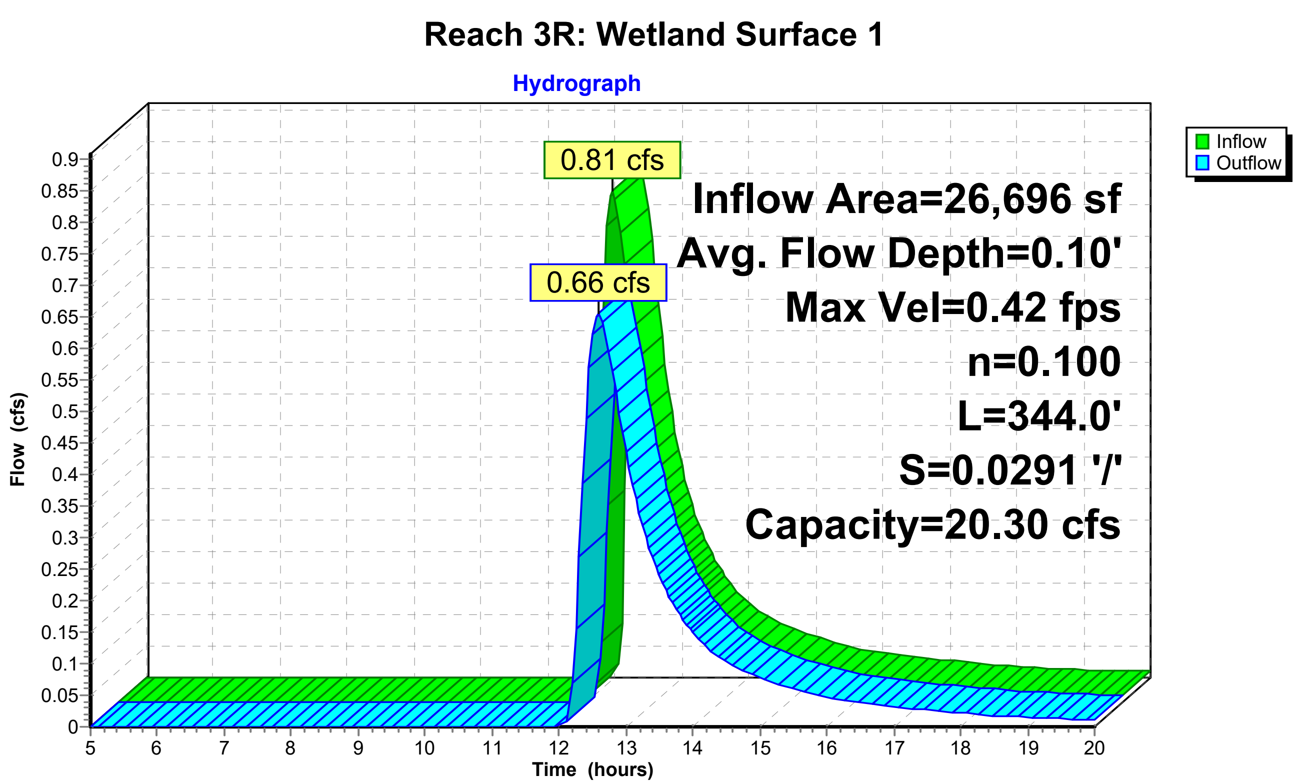
Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.42 fps, Min. Travel Time= 13.5 min
Avg. Velocity = 0.21 fps, Avg. Travel Time= 27.3 min

Peak Storage= 533 cf @ 12.59 hrs
Average Depth at Peak Storage= 0.10' , Surface Width= 22.64'
Bank-Full Depth= 0.50' Flow Area= 16.7 sf, Capacity= 20.30 cfs

50.00' x 0.50' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage
Length= 344.0' Slope= 0.0291 '/'
Inlet Invert= 94.00', Outlet Invert= 84.00'

‡





Stage-Discharge for Reach 3R: Wetland Surface 1

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
94.00	0.00	0.00
94.01	0.09	0.00
94.02	0.14	0.02
94.03	0.19	0.05
94.04	0.23	0.09
94.05	0.26	0.14
94.06	0.30	0.21
94.07	0.33	0.29
94.08	0.36	0.38
94.09	0.39	0.49
94.10	0.42	0.62
94.11	0.44	0.76
94.12	0.47	0.92
94.13	0.50	1.10
94.14	0.52	1.29
94.15	0.55	1.49
94.16	0.57	1.72
94.17	0.59	1.96
94.18	0.62	2.22
94.19	0.64	2.49
94.20	0.66	2.79
94.21	0.68	3.10
94.22	0.70	3.43
94.23	0.73	3.77
94.24	0.75	4.14
94.25	0.77	4.52
94.26	0.79	4.92
94.27	0.81	5.34
94.28	0.83	5.78
94.29	0.85	6.24
94.30	0.87	6.71
94.31	0.89	7.21
94.32	0.90	7.72
94.33	0.92	8.25
94.34	0.94	8.80
94.35	0.96	9.37
94.36	0.98	9.96
94.37	1.00	10.57
94.38	1.01	11.20
94.39	1.03	11.85
94.40	1.05	12.52
94.41	1.07	13.20
94.42	1.08	13.91
94.43	1.10	14.64
94.44	1.12	15.39
94.45	1.14	16.15
94.46	1.15	16.94
94.47	1.17	17.75
94.48	1.19	18.58
94.49	1.20	19.43
94.50	**1.22**	**20.30**

Stage-Area-Storage for Reach 3R: Wetland Surface 1

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
94.00	0.0	0
94.01	0.0	16
94.02	0.1	46
94.03	0.2	84
94.04	0.4	130
94.05	0.5	181
94.06	0.7	238
94.07	0.9	300
94.08	1.1	367
94.09	1.3	438
94.10	1.5	513
94.11	1.7	592
94.12	2.0	674
94.13	2.2	760
94.14	2.5	849
94.15	2.7	942
94.16	3.0	1,038
94.17	3.3	1,137
94.18	3.6	1,238
94.19	3.9	1,343
94.20	4.2	1,450
94.21	4.5	1,561
94.22	4.9	1,673
94.23	5.2	1,789
94.24	5.5	1,907
94.25	5.9	2,027
94.26	6.2	2,150
94.27	6.6	2,275
94.28	7.0	2,403
94.29	7.4	2,532
94.30	7.7	2,665
94.31	8.1	2,799
94.32	8.5	2,935
94.33	8.9	3,074
94.34	9.3	3,215
94.35	9.8	3,358
94.36	10.2	3,503
94.37	10.6	3,650
94.38	11.0	3,799
94.39	11.5	3,950
94.40	11.9	4,102
94.41	12.4	4,257
94.42	12.8	4,414
94.43	13.3	4,573
94.44	13.8	4,733
94.45	14.2	4,895
94.46	14.7	5,059
94.47	15.2	5,225
94.48	15.7	5,393
94.49	16.2	5,562
94.50	**16.7**	**5,733**

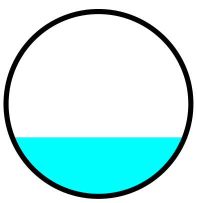
Summary for Reach 4R: 8" ROOF DRAIN CARRIER PIPE

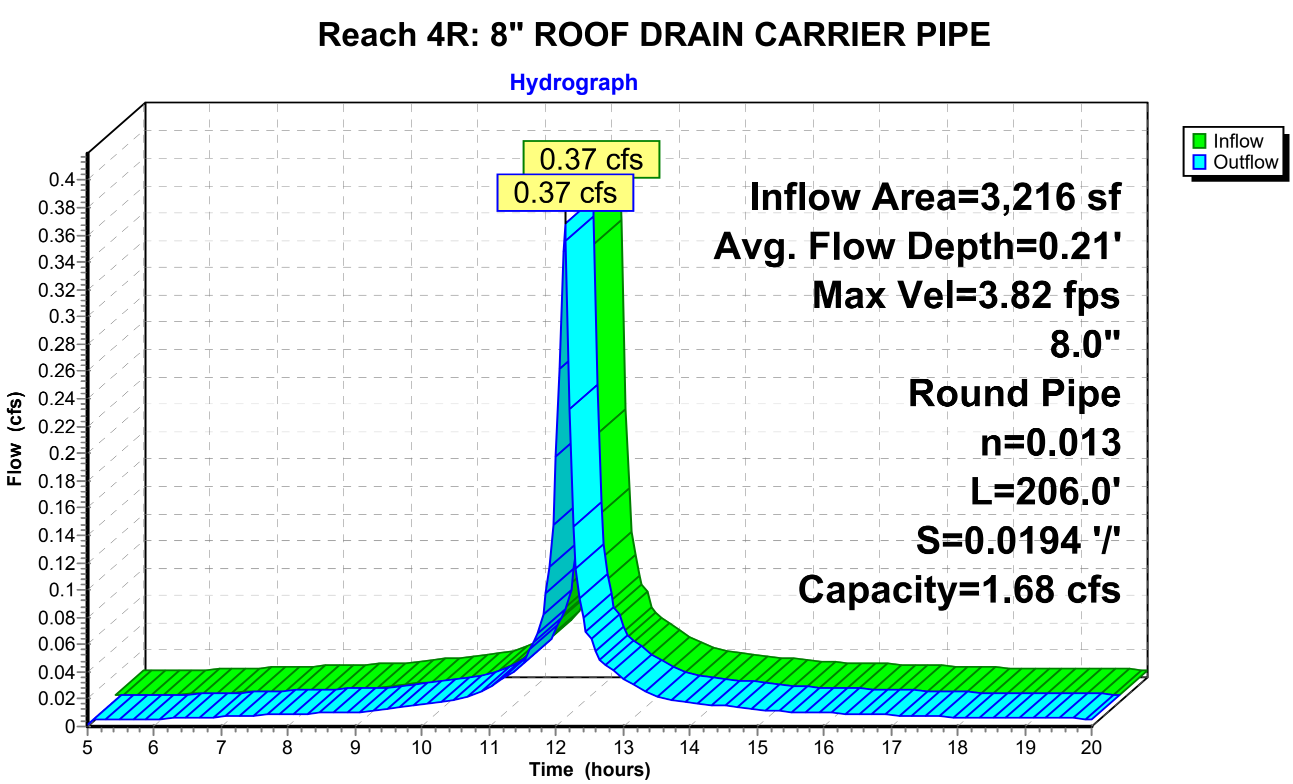
Inflow Area = 3,216 sf,100.00% Impervious, Inflow Depth > 4.28" for 10-Year event
Inflow = 0.37 cfs @ 12.11 hrs, Volume= 1,146 cf
Outflow = 0.37 cfs @ 12.13 hrs, Volume= 1,145 cf, Atten= 2%, Lag= 1.0 min
Routed to Pond IB1 : Infiltration Basin #1 (Exfiltration Zone)

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.82 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.47 fps, Avg. Travel Time= 2.3 min

Peak Storage= 20 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.21' , Surface Width= 0.62'
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 1.68 cfs

8.0" Round Pipe
n= 0.013
Length= 206.0' Slope= 0.0194 '/'
Inlet Invert= 93.00', Outlet Invert= 89.00'





Stage-Discharge for Reach 4R: 8" ROOF DRAIN CARRIER PIPE

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
93.00	0.00	0.00
93.01	0.55	0.00
93.02	0.89	0.00
93.03	1.16	0.01
93.04	1.39	0.01
93.05	1.61	0.02
93.06	1.81	0.03
93.07	2.00	0.04
93.08	2.17	0.05
93.09	2.34	0.07
93.10	2.49	0.08
93.11	2.64	0.10
93.12	2.79	0.12
93.13	2.92	0.14
93.14	3.05	0.16
93.15	3.18	0.19
93.16	3.30	0.21
93.17	3.42	0.24
93.18	3.53	0.27
93.19	3.64	0.30
93.20	3.74	0.33
93.21	3.84	0.36
93.22	3.94	0.40
93.23	4.04	0.43
93.24	4.13	0.47
93.25	4.21	0.50
93.26	4.30	0.54
93.27	4.38	0.58
93.28	4.46	0.62
93.29	4.53	0.66
93.30	4.60	0.70
93.31	4.67	0.74
93.32	4.74	0.79
93.33	4.80	0.83
93.34	4.86	0.87
93.35	4.92	0.91
93.36	4.98	0.96
93.37	5.03	1.00
93.38	5.08	1.04
93.39	5.13	1.09
93.40	5.17	1.13
93.41	5.22	1.17
93.42	5.25	1.22
93.43	5.29	1.26
93.44	5.33	1.30
93.45	5.36	1.34
93.46	5.38	1.38
93.47	5.41	1.42
93.48	5.43	1.46
93.49	5.45	1.50
93.50	5.47	1.54
93.51	5.48	1.57
93.52	5.49	1.60

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
93.53	5.50	1.64
93.54	**5.50**	1.67
93.55	5.50	1.69
93.56	5.49	1.72
93.57	5.48	1.74
93.58	5.47	1.76
93.59	5.45	1.78
93.60	5.42	1.79
93.61	5.39	1.80
93.62	5.35	**1.81**
93.63	5.30	1.81
93.64	5.24	1.80
93.65	5.15	1.79
93.66	5.03	1.75
93.67	4.72	1.65

Stage-Area-Storage for Reach 4R: 8" ROOF DRAIN CARRIER PIPE

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
93.00	0.0	0	93.53	0.3	61
93.01	0.0	0	93.54	0.3	62
93.02	0.0	1	93.55	0.3	63
93.03	0.0	1	93.56	0.3	64
93.04	0.0	2	93.57	0.3	65
93.05	0.0	2	93.58	0.3	66
93.06	0.0	3	93.59	0.3	67
93.07	0.0	4	93.60	0.3	68
93.08	0.0	5	93.61	0.3	69
93.09	0.0	6	93.62	0.3	70
93.10	0.0	7	93.63	0.3	70
93.11	0.0	8	93.64	0.3	71
93.12	0.0	9	93.65	0.3	71
93.13	0.0	10	93.66	0.3	72
93.14	0.1	11	93.67	**0.3**	**72**
93.15	0.1	12			
93.16	0.1	13			
93.17	0.1	14			
93.18	0.1	16			
93.19	0.1	17			
93.20	0.1	18			
93.21	0.1	19			
93.22	0.1	21			
93.23	0.1	22			
93.24	0.1	23			
93.25	0.1	25			
93.26	0.1	26			
93.27	0.1	27			
93.28	0.1	29			
93.29	0.1	30			
93.30	0.2	31			
93.31	0.2	33			
93.32	0.2	34			
93.33	0.2	35			
93.34	0.2	37			
93.35	0.2	38			
93.36	0.2	40			
93.37	0.2	41			
93.38	0.2	42			
93.39	0.2	44			
93.40	0.2	45			
93.41	0.2	46			
93.42	0.2	48			
93.43	0.2	49			
93.44	0.2	50			
93.45	0.3	52			
93.46	0.3	53			
93.47	0.3	54			
93.48	0.3	55			
93.49	0.3	57			
93.50	0.3	58			
93.51	0.3	59			
93.52	0.3	60			

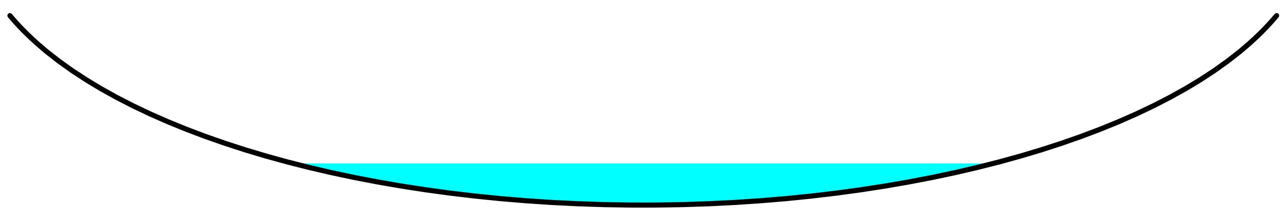
Summary for Reach 5R: Wetland Surface 2

Inflow Area = 13,032 sf, 14.64% Impervious, Inflow Depth > 1.76" for 10-Year event
Inflow = 0.62 cfs @ 12.26 hrs, Volume= 1,916 cf
Outflow = 0.40 cfs @ 12.46 hrs, Volume= 1,884 cf, Atten= 35%, Lag= 11.6 min
Routed to Reach 3R : Wetland Surface 1

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.23 fps, Min. Travel Time= 17.4 min
Avg. Velocity = 0.12 fps, Avg. Travel Time= 35.3 min

Peak Storage= 419 cf @ 12.46 hrs
Average Depth at Peak Storage= 0.11' , Surface Width= 23.41'
Bank-Full Depth= 0.50' Flow Area= 16.7 sf, Capacity= 10.76 cfs

50.00' x 0.50' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage
Length= 245.0' Slope= 0.0082 '/'
Inlet Invert= 96.00', Outlet Invert= 94.00'



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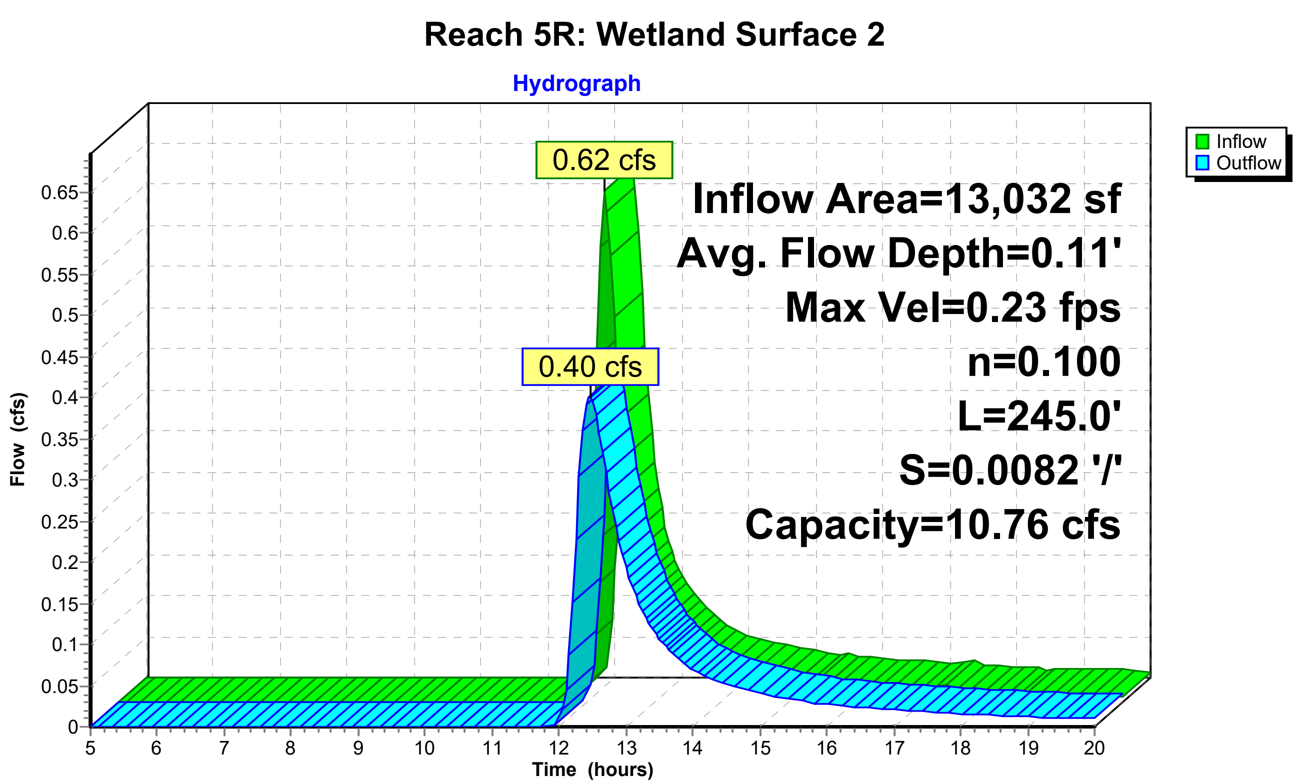


Stage-Discharge for Reach 5R: Wetland Surface 2

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
96.00	0.00	0.00
96.01	0.05	0.00
96.02	0.08	0.01
96.03	0.10	0.02
96.04	0.12	0.05
96.05	0.14	0.07
96.06	0.16	0.11
96.07	0.17	0.15
96.08	0.19	0.20
96.09	0.21	0.26
96.10	0.22	0.33
96.11	0.24	0.40
96.12	0.25	0.49
96.13	0.26	0.58
96.14	0.28	0.68
96.15	0.29	0.79
96.16	0.30	0.91
96.17	0.31	1.04
96.18	0.33	1.18
96.19	0.34	1.32
96.20	0.35	1.48
96.21	0.36	1.64
96.22	0.37	1.82
96.23	0.38	2.00
96.24	0.40	2.19
96.25	0.41	2.40
96.26	0.42	2.61
96.27	0.43	2.83
96.28	0.44	3.06
96.29	0.45	3.30
96.30	0.46	3.56
96.31	0.47	3.82
96.32	0.48	4.09
96.33	0.49	4.37
96.34	0.50	4.66
96.35	0.51	4.97
96.36	0.52	5.28
96.37	0.53	5.60
96.38	0.54	5.94
96.39	0.55	6.28
96.40	0.56	6.63
96.41	0.57	7.00
96.42	0.57	7.37
96.43	0.58	7.76
96.44	0.59	8.15
96.45	0.60	8.56
96.46	0.61	8.98
96.47	0.62	9.41
96.48	0.63	9.85
96.49	0.64	10.30
96.50	**0.65**	**10.76**

Stage-Area-Storage for Reach 5R: Wetland Surface 2

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
96.00	0.0	0
96.01	0.0	12
96.02	0.1	33
96.03	0.2	60
96.04	0.4	92
96.05	0.5	129
96.06	0.7	170
96.07	0.9	214
96.08	1.1	261
96.09	1.3	312
96.10	1.5	365
96.11	1.7	421
96.12	2.0	480
96.13	2.2	541
96.14	2.5	605
96.15	2.7	671
96.16	3.0	739
96.17	3.3	810
96.18	3.6	882
96.19	3.9	957
96.20	4.2	1,033
96.21	4.5	1,111
96.22	4.9	1,192
96.23	5.2	1,274
96.24	5.5	1,358
96.25	5.9	1,444
96.26	6.2	1,531
96.27	6.6	1,620
96.28	7.0	1,711
96.29	7.4	1,804
96.30	7.7	1,898
96.31	8.1	1,993
96.32	8.5	2,091
96.33	8.9	2,189
96.34	9.3	2,290
96.35	9.8	2,391
96.36	10.2	2,495
96.37	10.6	2,599
96.38	11.0	2,705
96.39	11.5	2,813
96.40	11.9	2,922
96.41	12.4	3,032
96.42	12.8	3,144
96.43	13.3	3,257
96.44	13.8	3,371
96.45	14.2	3,486
96.46	14.7	3,603
96.47	15.2	3,721
96.48	15.7	3,841
96.49	16.2	3,961
96.50	**16.7**	**4,083**

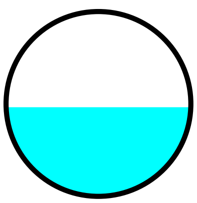
Summary for Reach 8R: 6" Roof Drain Carrier Pipe

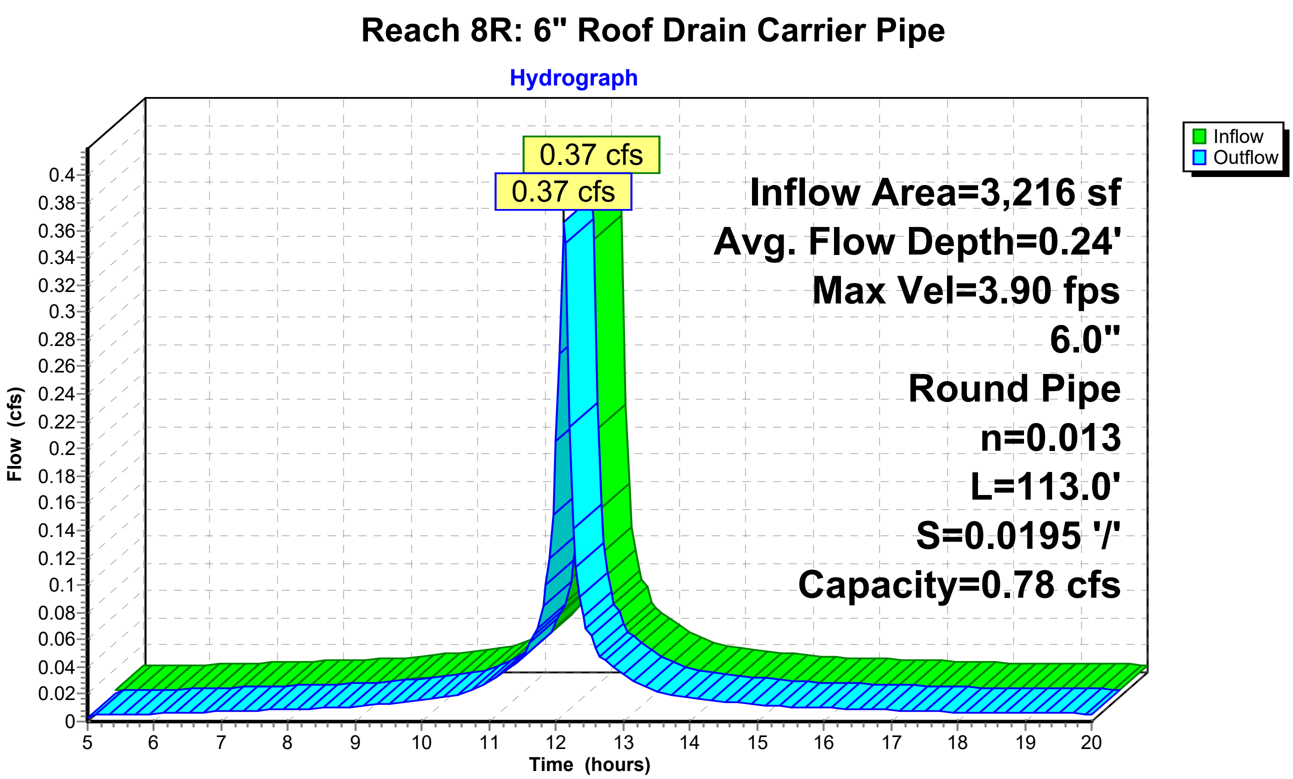
Inflow Area = 3,216 sf,100.00% Impervious, Inflow Depth > 4.28" for 10-Year event
Inflow = 0.37 cfs @ 12.11 hrs, Volume= 1,146 cf
Outflow = 0.37 cfs @ 12.12 hrs, Volume= 1,146 cf, Atten= 2%, Lag= 0.6 min
Routed to Reach 9R : 12" Roof Drain Carrier Pipe

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.90 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.53 fps, Avg. Travel Time= 1.2 min

Peak Storage= 11 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.24' , Surface Width= 0.50'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.78 cfs

6.0" Round Pipe
n= 0.013
Length= 113.0' Slope= 0.0195 '/'
Inlet Invert= 94.50', Outlet Invert= 92.30'





Stage-Discharge for Reach 8R: 6" Roof Drain Carrier Pipe

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
94.50	0.00	0.00
94.51	0.56	0.00
94.52	0.89	0.00
94.53	1.15	0.01
94.54	1.39	0.01
94.55	1.60	0.02
94.56	1.79	0.02
94.57	1.97	0.03
94.58	2.14	0.04
94.59	2.30	0.06
94.60	2.45	0.07
94.61	2.59	0.08
94.62	2.73	0.10
94.63	2.86	0.12
94.64	2.98	0.13
94.65	3.09	0.15
94.66	3.21	0.17
94.67	3.31	0.19
94.68	3.41	0.22
94.69	3.51	0.24
94.70	3.60	0.26
94.71	3.68	0.29
94.72	3.77	0.31
94.73	3.84	0.34
94.74	3.92	0.37
94.75	3.99	0.39
94.76	4.05	0.42
94.77	4.11	0.45
94.78	4.17	0.47
94.79	4.23	0.50
94.80	4.28	0.53
94.81	4.32	0.55
94.82	4.36	0.58
94.83	4.40	0.61
94.84	4.44	0.63
94.85	4.46	0.66
94.86	4.49	0.68
94.87	4.51	0.70
94.88	4.53	0.72
94.89	4.54	0.75
94.90	4.54	0.77
94.91	**4.55**	0.78
94.92	4.54	0.80
94.93	4.53	0.81
94.94	4.51	0.83
94.95	4.48	0.83
94.96	4.45	0.84
94.97	4.40	**0.84**
94.98	4.33	0.84
94.99	4.23	0.83
95.00	3.99	0.78

Stage-Area-Storage for Reach 8R: 6" Roof Drain Carrier Pipe

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
94.50	0.0	0
94.51	0.0	0
94.52	0.0	0
94.53	0.0	1
94.54	0.0	1
94.55	0.0	1
94.56	0.0	2
94.57	0.0	2
94.58	0.0	2
94.59	0.0	3
94.60	0.0	3
94.61	0.0	4
94.62	0.0	4
94.63	0.0	5
94.64	0.0	5
94.65	0.0	6
94.66	0.1	6
94.67	0.1	7
94.68	0.1	7
94.69	0.1	8
94.70	0.1	8
94.71	0.1	9
94.72	0.1	9
94.73	0.1	10
94.74	0.1	11
94.75	0.1	11
94.76	0.1	12
94.77	0.1	12
94.78	0.1	13
94.79	0.1	13
94.80	0.1	14
94.81	0.1	14
94.82	0.1	15
94.83	0.1	16
94.84	0.1	16
94.85	0.1	17
94.86	0.2	17
94.87	0.2	18
94.88	0.2	18
94.89	0.2	19
94.90	0.2	19
94.91	0.2	19
94.92	0.2	20
94.93	0.2	20
94.94	0.2	21
94.95	0.2	21
94.96	0.2	21
94.97	0.2	22
94.98	0.2	22
94.99	0.2	22
95.00	**0.2**	**22**

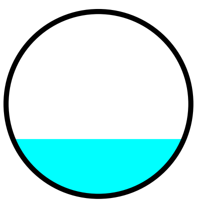
Summary for Reach 9R: 12" Roof Drain Carrier Pipe

Inflow Area = 6,432 sf,100.00% Impervious, Inflow Depth > 4.28" for 10-Year event
Inflow = 0.74 cfs @ 12.12 hrs, Volume= 2,292 cf
Outflow = 0.73 cfs @ 12.13 hrs, Volume= 2,289 cf, Atten= 1%, Lag= 1.0 min
Routed to Pond IB1 : Infiltration Basin #1 (Exfiltration Zone)

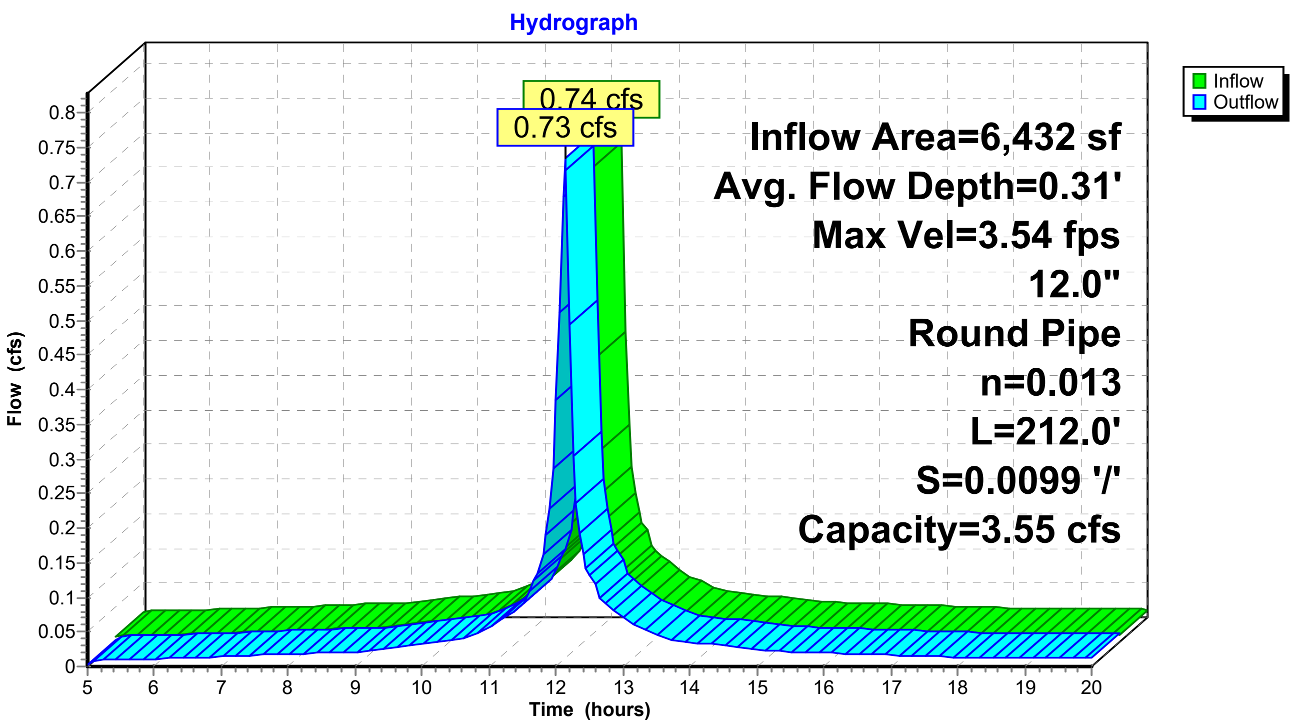
Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.54 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 1.35 fps, Avg. Travel Time= 2.6 min

Peak Storage= 44 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.31' , Surface Width= 0.92'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.55 cfs

12.0" Round Pipe
n= 0.013
Length= 212.0' Slope= 0.0099 '/'
Inlet Invert= 91.10', Outlet Invert= 89.00'



Reach 9R: 12" Roof Drain Carrier Pipe



Stage-Discharge for Reach 9R: 12" Roof Drain Carrier Pipe

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
91.10	0.00	0.00
91.11	0.40	0.00
91.12	0.64	0.00
91.13	0.83	0.01
91.14	1.00	0.01
91.15	1.16	0.02
91.16	1.31	0.03
91.17	1.44	0.03
91.18	1.57	0.05
91.19	1.69	0.06
91.20	1.81	0.07
91.21	1.92	0.09
91.22	2.03	0.11
91.23	2.14	0.13
91.24	2.24	0.15
91.25	2.33	0.17
91.26	2.43	0.20
91.27	2.52	0.22
91.28	2.61	0.25
91.29	2.69	0.28
91.30	2.78	0.31
91.31	2.86	0.34
91.32	2.94	0.38
91.33	3.01	0.41
91.34	3.09	0.45
91.35	3.16	0.49
91.36	3.23	0.52
91.37	3.30	0.57
91.38	3.37	0.61
91.39	3.44	0.65
91.40	3.50	0.69
91.41	3.57	0.74
91.42	3.63	0.79
91.43	3.69	0.83
91.44	3.75	0.88
91.45	3.81	0.93
91.46	3.86	0.98
91.47	3.92	1.03
91.48	3.97	1.09
91.49	4.02	1.14
91.50	4.07	1.19
91.51	4.12	1.25
91.52	4.17	1.31
91.53	4.22	1.36
91.54	4.26	1.42
91.55	4.31	1.48
91.56	4.35	1.54
91.57	4.39	1.59
91.58	4.44	1.65
91.59	4.48	1.71
91.60	4.51	1.77
91.61	4.55	1.83
91.62	4.59	1.89
91.63	4.62	1.95
91.64	4.66	2.02
91.65	4.69	2.08
91.66	4.72	2.14
91.67	4.76	2.20
91.68	4.79	2.26
91.69	4.81	2.32
91.70	4.84	2.38
91.71	4.87	2.44
91.72	4.89	2.50
91.73	4.92	2.56
91.74	4.94	2.62
91.75	4.96	2.68
91.76	4.98	2.74
91.77	5.00	2.80
91.78	5.02	2.86
91.79	5.04	2.91
91.80	5.06	2.97
91.81	5.07	3.02
91.82	5.08	3.08
91.83	5.10	3.13
91.84	5.11	3.18
91.85	5.12	3.23
91.86	5.13	3.28
91.87	5.13	3.33
91.88	5.14	3.38
91.89	5.14	3.42
91.90	5.15	3.47
91.91	**5.15**	3.51
91.92	5.15	3.55
91.93	5.14	3.59
91.94	5.14	3.62
91.95	5.14	3.65
91.96	5.13	3.68
91.97	5.12	3.71
91.98	5.11	3.74
91.99	5.09	3.76
92.00	5.08	3.78
92.01	5.06	3.79
92.02	5.03	3.81
92.03	5.01	3.81
92.04	4.98	**3.81**
92.05	4.94	3.81
92.06	4.90	3.80
92.07	4.85	3.78
92.08	4.79	3.75
92.09	4.71	3.69
92.10	4.51	3.55

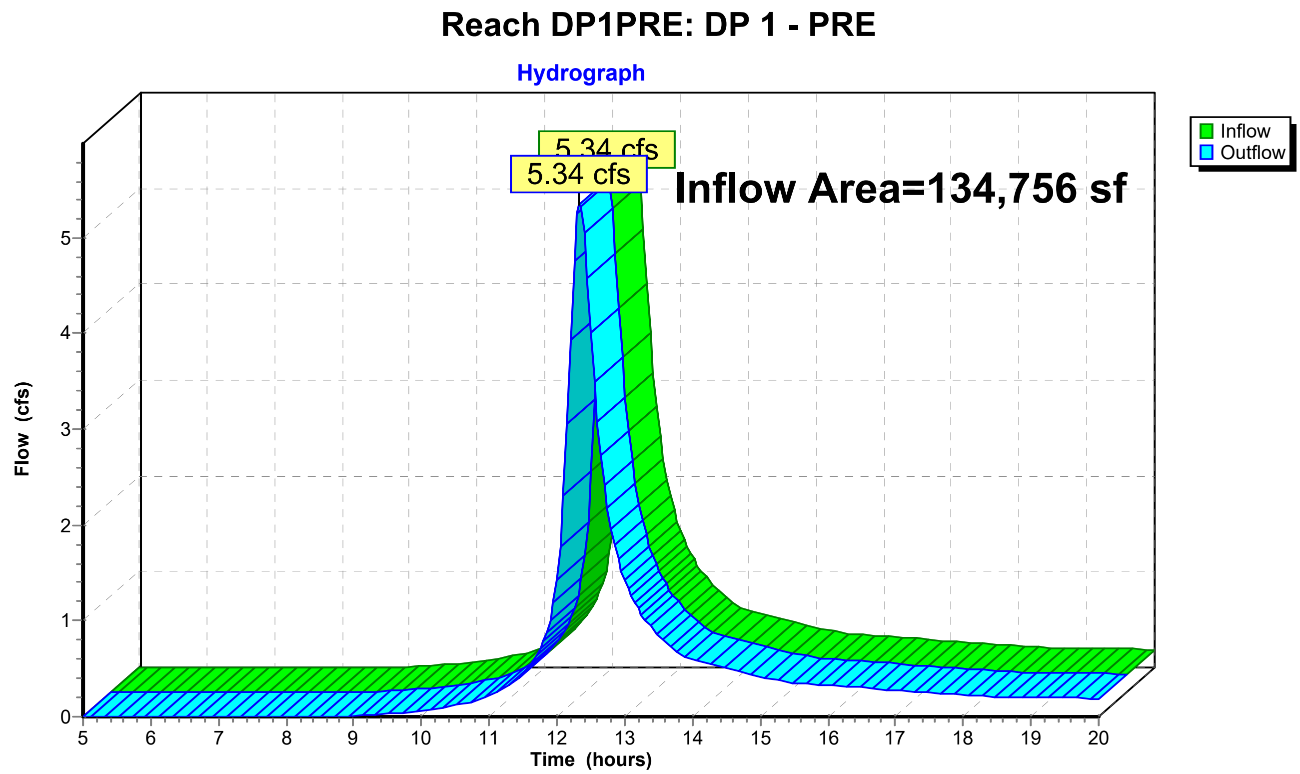
Stage-Area-Storage for Reach 9R: 12" Roof Drain Carrier Pipe

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
91.10	0.0	0	91.63	0.4	90
91.11	0.0	0	91.64	0.4	92
91.12	0.0	1	91.65	0.4	94
91.13	0.0	1	91.66	0.5	96
91.14	0.0	2	91.67	0.5	98
91.15	0.0	3	91.68	0.5	100
91.16	0.0	4	91.69	0.5	102
91.17	0.0	5	91.70	0.5	104
91.18	0.0	6	91.71	0.5	106
91.19	0.0	7	91.72	0.5	108
91.20	0.0	9	91.73	0.5	110
91.21	0.0	10	91.74	0.5	113
91.22	0.1	11	91.75	0.5	115
91.23	0.1	13	91.76	0.5	117
91.24	0.1	14	91.77	0.6	119
91.25	0.1	16	91.78	0.6	121
91.26	0.1	17	91.79	0.6	123
91.27	0.1	19	91.80	0.6	124
91.28	0.1	20	91.81	0.6	126
91.29	0.1	22	91.82	0.6	128
91.30	0.1	24	91.83	0.6	130
91.31	0.1	25	91.84	0.6	132
91.32	0.1	27	91.85	0.6	134
91.33	0.1	29	91.86	0.6	136
91.34	0.1	31	91.87	0.6	138
91.35	0.2	33	91.88	0.7	139
91.36	0.2	34	91.89	0.7	141
91.37	0.2	36	91.90	0.7	143
91.38	0.2	38	91.91	0.7	144
91.39	0.2	40	91.92	0.7	146
91.40	0.2	42	91.93	0.7	148
91.41	0.2	44	91.94	0.7	149
91.42	0.2	46	91.95	0.7	151
91.43	0.2	48	91.96	0.7	152
91.44	0.2	50	91.97	0.7	154
91.45	0.2	52	91.98	0.7	155
91.46	0.3	54	91.99	0.7	157
91.47	0.3	56	92.00	0.7	158
91.48	0.3	58	92.01	0.8	159
91.49	0.3	60	92.02	0.8	160
91.50	0.3	62	92.03	0.8	161
91.51	0.3	64	92.04	0.8	162
91.52	0.3	66	92.05	0.8	163
91.53	0.3	68	92.06	0.8	164
91.54	0.3	71	92.07	0.8	165
91.55	0.3	73	92.08	0.8	166
91.56	0.4	75	92.09	0.8	166
91.57	0.4	77	92.10	**0.8**	**167**
91.58	0.4	79			
91.59	0.4	81			
91.60	0.4	83			
91.61	0.4	85			
91.62	0.4	87			

Summary for Reach DP1PRE: DP 1 - PRE

Inflow Area = 134,756 sf, 4.57% Impervious, Inflow Depth > 2.10" for 10-Year event
Inflow = 5.34 cfs @ 12.34 hrs, Volume= 23,567 cf
Outflow = 5.34 cfs @ 12.34 hrs, Volume= 23,567 cf, Atten= 0%, Lag= 0.0 min

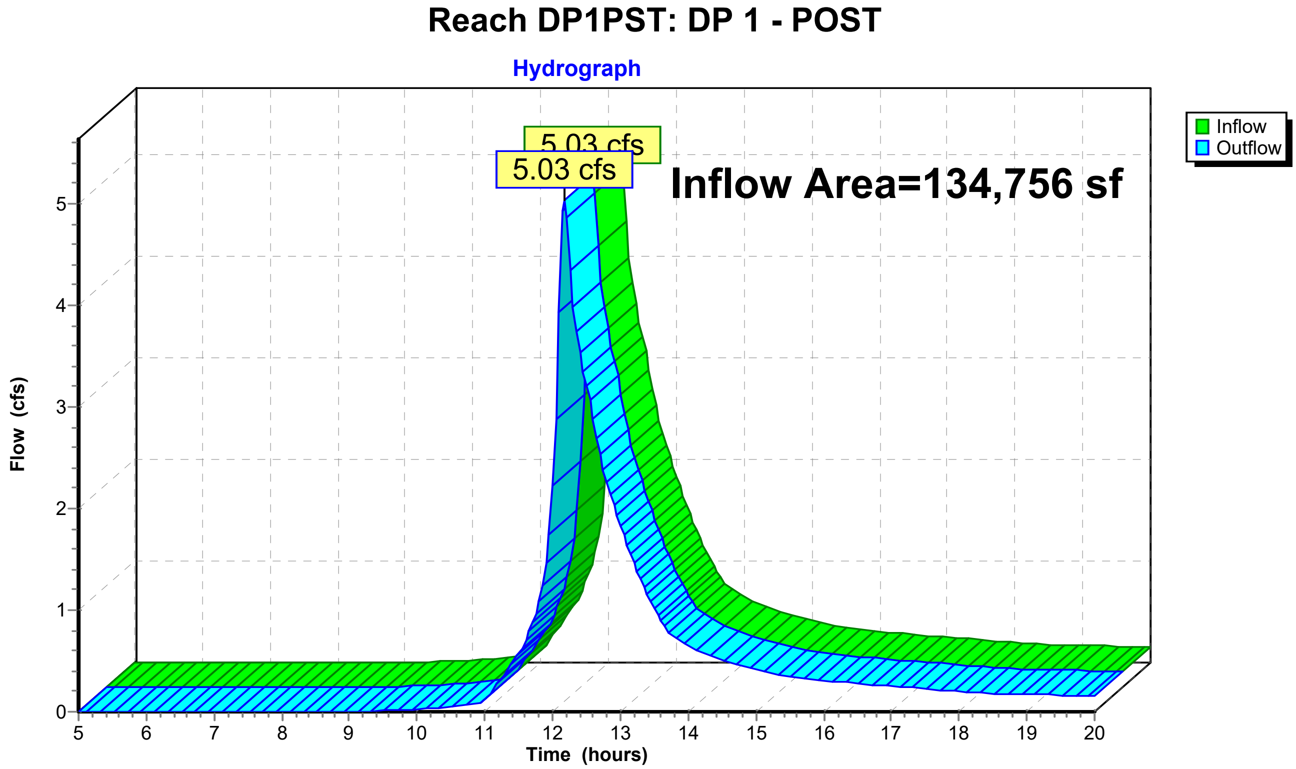
Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs



Summary for Reach DP1PST: DP 1 - POST

Inflow Area = 134,756 sf, 26.93% Impervious, Inflow Depth > 2.15" for 10-Year event
Inflow = 5.03 cfs @ 12.17 hrs, Volume= 24,180 cf
Outflow = 5.03 cfs @ 12.17 hrs, Volume= 24,180 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs



Summary for Pond 1P: Subsurface #1

Inflow Area = 13,664 sf, 47.07% Impervious, Inflow Depth > 3.13" for 10-Year event
Inflow = 1.06 cfs @ 12.13 hrs, Volume= 3,564 cf
Outflow = 0.48 cfs @ 12.31 hrs, Volume= 2,847 cf, Atten= 54%, Lag= 10.7 min
Discarded = 0.03 cfs @ 10.15 hrs, Volume= 1,373 cf
Primary = 0.45 cfs @ 12.31 hrs, Volume= 1,475 cf
Routed to Reach 3R : Wetland Surface 1

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 97.48' @ 12.31 hrs Surf.Area= 1,248 sf Storage= 1,180 cf

Plug-Flow detention time= 93.6 min calculated for 2,847 cf (80% of inflow)
Center-of-Mass det. time= 35.7 min (796.1 - 760.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	96.00'	902 cf	**37.25'W x 33.50'L x 2.54'H Field A** 3,172 cf Overall - 918 cf Embedded = 2,254 cf x 40.0% Voids
#2A	96.50'	918 cf	**Cultec R-150XLHD** x 33 Inside #1 Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap Row Length Adjustment= +0.75' x 2.65 sf x 11 rows
		1,819 cf	Total Available Storage

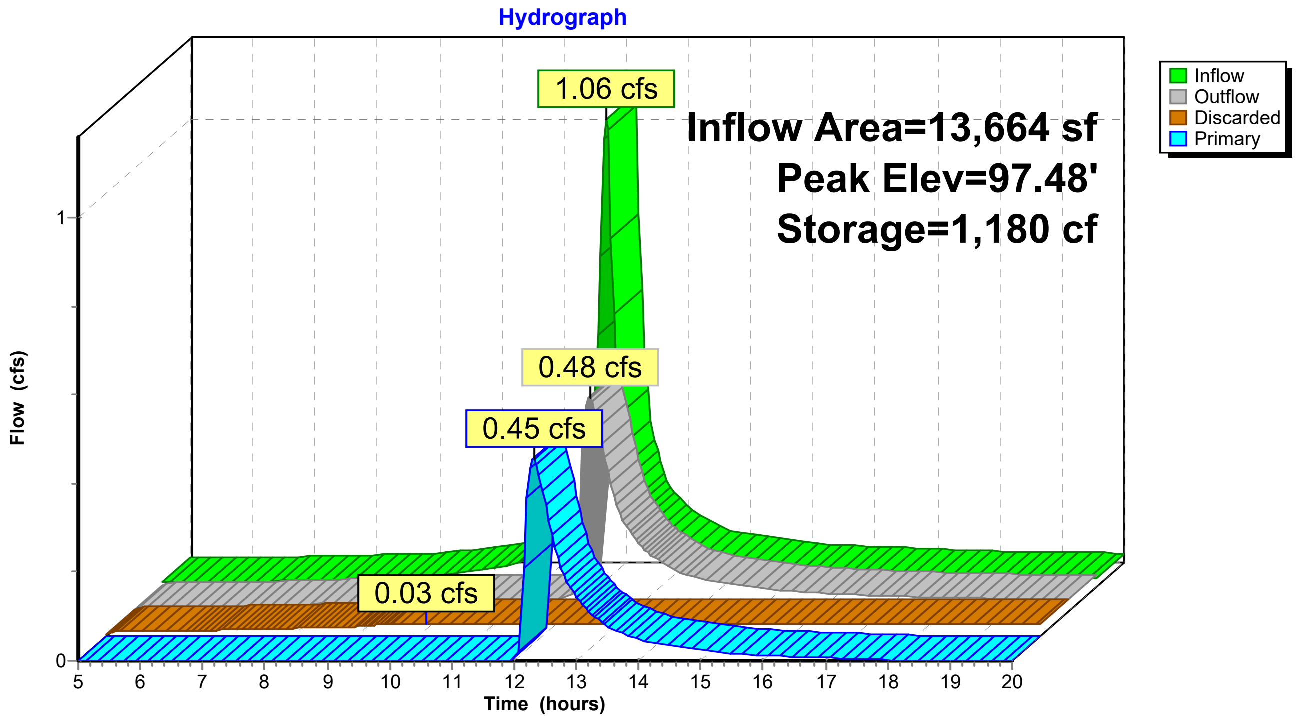
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	96.00'	**1.020 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	99.00'	**6.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Primary	97.00'	**6.0" Round Culvert** L= 15.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 97.00' / 96.75' S= 0.0167 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf

Discarded OutFlow Max=0.03 cfs @ 10.15 hrs HW=96.03' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.45 cfs @ 12.31 hrs HW=97.47' TW=94.07' (Dynamic Tailwater)
├─**2=Orifice/Grate** (Controls 0.00 cfs)
└─**3=Culvert** (Inlet Controls 0.45 cfs @ 2.35 fps)

Pond 1P: Subsurface #1



Stage-Discharge for Pond 1P: Subsurface #1

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
96.00	0.00	**0.00**	0.00
96.05	0.03	**0.03**	0.00
96.10	0.03	0.03	0.00
96.15	0.03	0.03	0.00
96.20	0.03	0.03	0.00
96.25	0.03	0.03	0.00
96.30	0.03	0.03	0.00
96.35	0.03	0.03	0.00
96.40	0.03	0.03	0.00
96.45	0.03	0.03	0.00
96.50	0.03	0.03	0.00
96.55	0.03	0.03	0.00
96.60	0.03	0.03	0.00
96.65	0.03	0.03	0.00
96.70	0.03	0.03	0.00
96.75	0.03	0.03	0.00
96.80	0.03	0.03	0.00
96.85	0.03	0.03	0.00
96.90	0.03	0.03	0.00
96.95	0.03	0.03	0.00
97.00	0.03	0.03	0.00
97.05	0.04	0.03	0.01
97.10	0.06	0.03	0.03
97.15	0.09	0.03	0.07
97.20	0.14	0.03	0.11
97.25	0.20	0.03	0.17
97.30	0.26	0.03	0.23
97.35	0.33	0.03	0.30
97.40	0.39	0.03	0.36
97.45	0.45	0.03	0.43
97.50	0.50	0.03	0.47
97.55	0.55	0.03	0.52
97.60	0.59	0.03	0.56
97.65	0.63	0.03	0.60
97.70	0.66	0.03	0.63
97.75	0.70	0.03	0.67
97.80	0.73	0.03	0.70
97.85	0.76	0.03	0.73
97.90	0.79	0.03	0.76
97.95	0.82	0.03	0.79
98.00	0.85	0.03	0.82
98.05	0.88	0.03	0.85
98.10	0.90	0.03	0.87
98.15	0.93	0.03	0.90
98.20	0.95	0.03	0.92
98.25	0.97	0.03	0.95
98.30	1.00	0.03	0.97
98.35	1.02	0.03	0.99
98.40	1.04	0.03	1.01
98.45	1.07	0.03	1.04
98.50	1.09	0.03	1.06
98.55	1.11	0.03	1.08
98.60	1.13	0.03	1.10
98.65	1.15	0.03	1.12
98.70	1.17	0.03	1.14
98.75	1.19	0.03	1.16
98.80	1.21	0.03	1.18
98.85	1.23	0.03	1.20
98.90	1.24	0.03	1.21
98.95	1.26	0.03	1.23
99.00	**1.28**	0.03	**1.25**

Stage-Area-Storage for Pond 1P: Subsurface #1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
96.00	**1,248**	0	98.65	1,248	1,819
96.05	1,248	25	98.70	1,248	1,819
96.10	1,248	50	98.75	1,248	1,819
96.15	1,248	75	98.80	1,248	1,819
96.20	1,248	100	98.85	1,248	1,819
96.25	1,248	125	98.90	1,248	1,819
96.30	1,248	150	98.95	1,248	1,819
96.35	1,248	175	99.00	1,248	1,819
96.40	1,248	200			
96.45	1,248	225			
96.50	1,248	250			
96.55	1,248	300			
96.60	1,248	350			
96.65	1,248	400			
96.70	1,248	450			
96.75	1,248	499			
96.80	1,248	548			
96.85	1,248	597			
96.90	1,248	646			
96.95	1,248	694			
97.00	1,248	742			
97.05	1,248	790			
97.10	1,248	838			
97.15	1,248	885			
97.20	1,248	932			
97.25	1,248	978			
97.30	1,248	1,024			
97.35	1,248	1,069			
97.40	1,248	1,113			
97.45	1,248	1,157			
97.50	1,248	1,200			
97.55	1,248	1,242			
97.60	1,248	1,283			
97.65	1,248	1,322			
97.70	1,248	1,361			
97.75	1,248	1,398			
97.80	1,248	1,433			
97.85	1,248	1,465			
97.90	1,248	1,495			
97.95	1,248	1,522			
98.00	1,248	1,549			
98.05	1,248	1,574			
98.10	1,248	1,599			
98.15	1,248	1,624			
98.20	1,248	1,649			
98.25	1,248	1,674			
98.30	1,248	1,699			
98.35	1,248	1,724			
98.40	1,248	1,749			
98.45	1,248	1,774			
98.50	1,248	1,799			
98.55	1,248	**1,819**			
98.60	1,248	1,819			

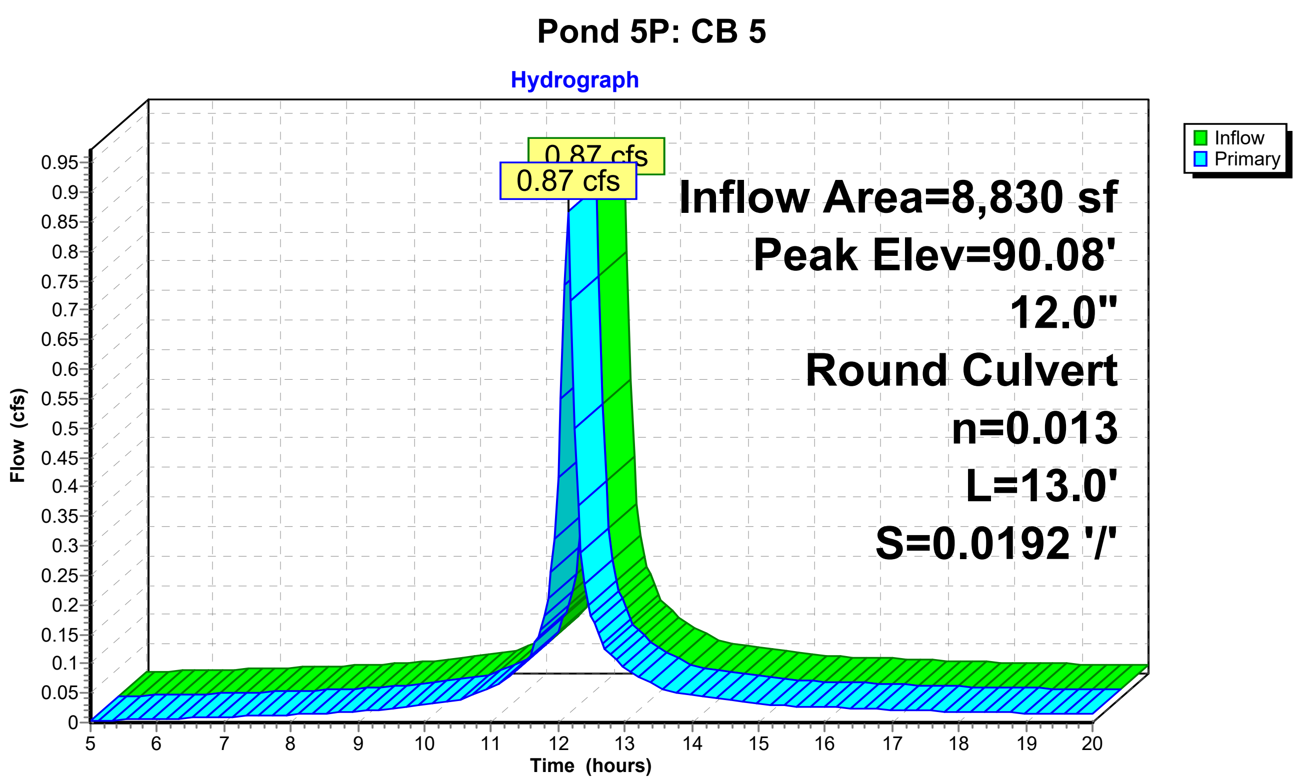
Summary for Pond 5P: CB 5

Inflow Area = 8,830 sf, 71.11% Impervious, Inflow Depth > 3.66" for 10-Year event
Inflow = 0.87 cfs @ 12.15 hrs, Volume= 2,691 cf
Outflow = 0.87 cfs @ 12.15 hrs, Volume= 2,691 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.87 cfs @ 12.15 hrs, Volume= 2,691 cf
Routed to Pond IB1 : Infiltration Basin #1 (Exfiltration Zone)

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 90.08' @ 12.37 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	89.25'	**12.0" Round Culvert** L= 13.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 89.25' / 89.00' S= 0.0192 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.51 cfs @ 12.15 hrs HW=89.80' TW=89.71' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 0.51 cfs @ 1.68 fps)



Stage-Discharge for Pond 5P: CB 5

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
89.25	0.00	89.78	1.02
89.26	0.00	89.79	1.05
89.27	0.00	89.80	1.08
89.28	0.00	89.81	1.12
89.29	0.01	89.82	1.15
89.30	0.01	89.83	1.18
89.31	0.02	89.84	1.21
89.32	0.02	89.85	1.25
89.33	0.03	89.86	1.28
89.34	0.04	89.87	1.31
89.35	0.04	89.88	1.35
89.36	0.05	89.89	1.38
89.37	0.06	89.90	1.42
89.38	0.07	89.91	1.45
89.39	0.09	89.92	1.48
89.40	0.10	89.93	1.52
89.41	0.11	89.94	1.55
89.42	0.12	89.95	1.59
89.43	0.14	89.96	1.62
89.44	0.15	89.97	1.66
89.45	0.17	89.98	1.69
89.46	0.19	89.99	1.73
89.47	0.20	90.00	1.77
89.48	0.22	90.01	1.80
89.49	0.24	90.02	1.84
89.50	0.26	90.03	1.87
89.51	0.28	90.04	1.91
89.52	0.30	90.05	1.94
89.53	0.32	90.06	1.98
89.54	0.35	90.07	2.02
89.55	0.37	90.08	2.05
89.56	0.39	90.09	2.09
89.57	0.42	90.10	2.13
89.58	0.44	90.11	2.16
89.59	0.47	90.12	2.20
89.60	0.49	90.13	2.23
89.61	0.52	90.14	2.27
89.62	0.55	90.15	2.31
89.63	0.57	90.16	2.34
89.64	0.60	90.17	2.38
89.65	0.63	90.18	2.41
89.66	0.66	90.19	2.45
89.67	0.69	90.20	2.48
89.68	0.72	90.21	2.52
89.69	0.75	90.22	2.55
89.70	0.78	90.23	2.59
89.71	0.81	90.24	2.62
89.72	0.84	90.25	**2.66**
89.73	0.87		
89.74	0.90		
89.75	0.93		
89.76	0.96		
89.77	0.99		

Stage-Area-Storage for Pond 5P: CB 5

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.25	**0**	89.78	0
89.26	0	89.79	0
89.27	0	89.80	0
89.28	0	89.81	0
89.29	0	89.82	0
89.30	0	89.83	0
89.31	0	89.84	0
89.32	0	89.85	0
89.33	0	89.86	0
89.34	0	89.87	0
89.35	0	89.88	0
89.36	0	89.89	0
89.37	0	89.90	0
89.38	0	89.91	0
89.39	0	89.92	0
89.40	0	89.93	0
89.41	0	89.94	0
89.42	0	89.95	0
89.43	0	89.96	0
89.44	0	89.97	0
89.45	0	89.98	0
89.46	0	89.99	0
89.47	0	90.00	0
89.48	0	90.01	0
89.49	0	90.02	0
89.50	0	90.03	0
89.51	0	90.04	0
89.52	0	90.05	0
89.53	0	90.06	0
89.54	0	90.07	0
89.55	0	90.08	0
89.56	0	90.09	0
89.57	0	90.10	0
89.58	0	90.11	0
89.59	0	90.12	0
89.60	0	90.13	0
89.61	0	90.14	0
89.62	0	90.15	0
89.63	0	90.16	0
89.64	0	90.17	0
89.65	0	90.18	0
89.66	0	90.19	0
89.67	0	90.20	0
89.68	0	90.21	0
89.69	0	90.22	0
89.70	0	90.23	0
89.71	0	90.24	0
89.72	0	90.25	0
89.73	0		
89.74	0		
89.75	0		
89.76	0		
89.77	0		

Summary for Pond 10P: Infiltration Basin #1 (Storage)

Inflow Area = 54,257 sf, 51.52% Impervious, Inflow Depth > 2.84" for 10-Year event
Inflow = 3.77 cfs @ 12.15 hrs, Volume= 12,839 cf
Outflow = 2.31 cfs @ 12.27 hrs, Volume= 12,088 cf, Atten= 39%, Lag= 7.5 min
Primary = 2.31 cfs @ 12.27 hrs, Volume= 12,088 cf
Routed to Reach DP1PST : DP 1 - POST
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0 cf
Routed to Reach DP1PST : DP 1 - POST

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 90.06' @ 12.27 hrs Surf.Area= 2,064 sf Storage= 2,511 cf

Plug-Flow detention time= 42.2 min calculated for 12,047 cf (94% of inflow)
Center-of-Mass det. time= 21.5 min (805.6 - 784.1)

Volume	Invert	Avail.Storage	Storage Description
#1	88.00'	8,689 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

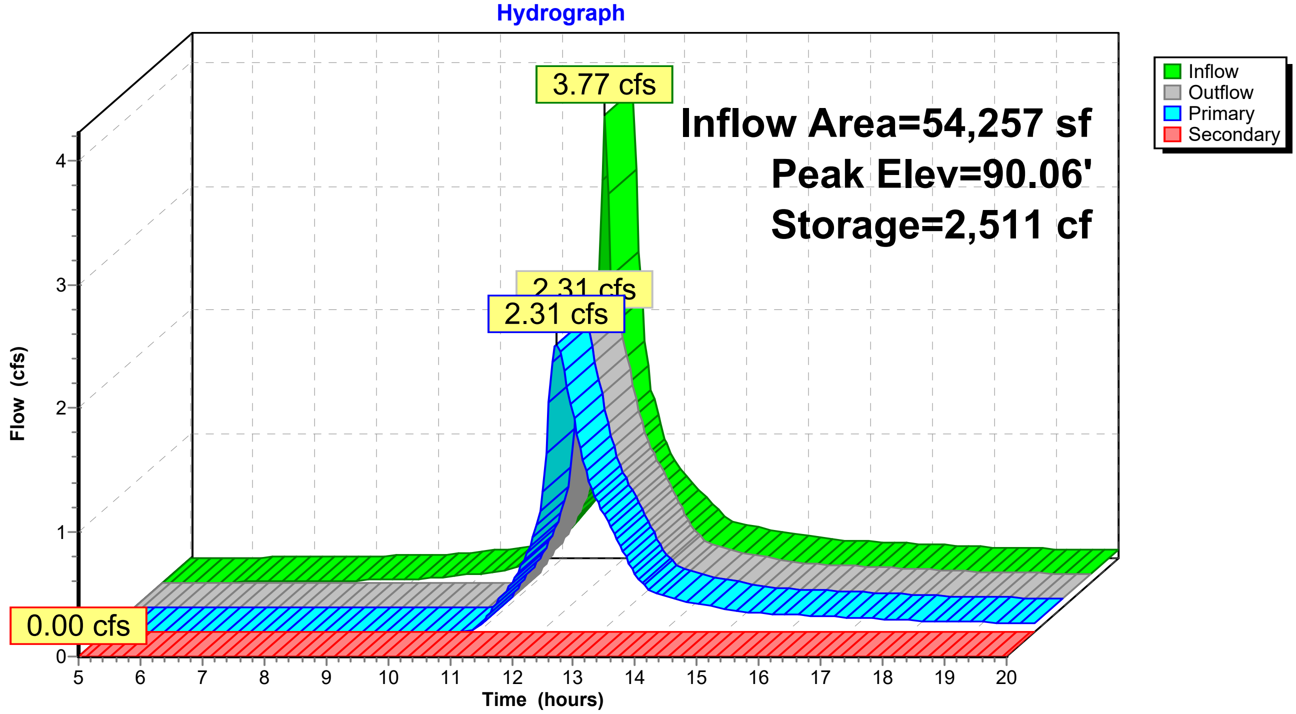
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
88.00	392	0	0
90.00	1,990	2,382	2,382
92.00	4,317	6,307	8,689

Device	Routing	Invert	Outlet Devices
#1	Secondary	91.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	86.50'	**12.0" Round Culvert** L= 37.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 86.50' / 86.00' S= 0.0135 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#3	Device 2	88.90'	**16.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 2	89.50'	**6.0" W x 15.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.30 cfs @ 12.27 hrs HW=90.06' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert** (Passes 2.30 cfs of 6.61 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 1.63 cfs @ 4.89 fps)
  └─**4=Orifice/Grate** (Orifice Controls 0.67 cfs @ 2.40 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=88.00' TW=0.00' (Dynamic Tailwater)
└─**1=Orifice/Grate** (Controls 0.00 cfs)

Pond 10P: Infiltration Basin #1 (Storage)



Stage-Discharge for Pond 10P: Infiltration Basin #1 (Storage)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
88.00	0.00	0.00	0.00
88.05	0.00	0.00	0.00
88.10	0.00	0.00	0.00
88.15	0.00	0.00	0.00
88.20	0.00	0.00	0.00
88.25	0.00	0.00	0.00
88.30	0.00	0.00	0.00
88.35	0.00	0.00	0.00
88.40	0.00	0.00	0.00
88.45	0.00	0.00	0.00
88.50	0.00	0.00	0.00
88.55	0.00	0.00	0.00
88.60	0.00	0.00	0.00
88.65	0.00	0.00	0.00
88.70	0.00	0.00	0.00
88.75	0.00	0.00	0.00
88.80	0.00	0.00	0.00
88.85	0.00	0.00	0.00
88.90	0.00	0.00	0.00
88.95	0.05	0.05	0.00
89.00	0.14	0.14	0.00
89.05	0.25	0.25	0.00
89.10	0.38	0.38	0.00
89.15	0.53	0.53	0.00
89.20	0.66	0.66	0.00
89.25	0.75	0.75	0.00
89.30	0.83	0.83	0.00
89.35	0.91	0.91	0.00
89.40	0.98	0.98	0.00
89.45	1.04	1.04	0.00
89.50	1.10	1.10	0.00
89.55	1.18	1.18	0.00
89.60	1.27	1.27	0.00
89.65	1.36	1.36	0.00
89.70	1.46	1.46	0.00
89.75	1.57	1.57	0.00
89.80	1.68	1.68	0.00
89.85	1.79	1.79	0.00
89.90	1.91	1.91	0.00
89.95	2.03	2.03	0.00
90.00	2.15	2.15	0.00
90.05	2.28	2.28	0.00
90.10	2.41	2.41	0.00
90.15	2.54	2.54	0.00
90.20	2.68	2.68	0.00
90.25	2.82	2.82	0.00
90.30	2.96	2.96	0.00
90.35	3.10	3.10	0.00
90.40	3.25	3.25	0.00
90.45	3.40	3.40	0.00
90.50	3.55	3.55	0.00
90.55	3.71	3.71	0.00
90.60	3.87	3.87	0.00
90.65	4.02	4.02	0.00
90.70	4.19	4.19	0.00
90.75	4.35	4.35	0.00
90.80	4.50	4.50	0.00
90.85	4.63	4.63	0.00
90.90	4.76	4.76	0.00
90.95	4.89	4.89	0.00
91.00	5.00	5.00	0.00
91.05	5.41	5.12	0.29
91.10	6.05	5.23	0.83
91.15	6.85	5.34	1.52
91.20	7.78	5.44	2.34
91.25	8.81	5.54	3.27
91.30	9.94	5.64	4.30
91.35	11.16	5.74	5.42
91.40	12.45	5.84	6.62
91.45	13.83	5.93	7.90
91.50	15.27	6.02	9.25
91.55	16.78	6.11	10.67
91.60	18.36	6.20	12.16
91.65	20.00	6.29	13.71
91.70	21.70	6.38	15.32
91.75	23.14	6.46	16.68
91.80	23.77	6.54	17.23
91.85	24.38	6.63	17.76
91.90	24.98	6.71	18.27
91.95	25.56	6.79	18.77
92.00	**26.13**	**6.87**	**19.26**

Stage-Area-Storage for Pond 10P: Infiltration Basin #1 (Storage)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
88.00	392	0	90.65	2,746	3,921
88.05	432	21	90.70	2,804	4,060
88.10	472	43	90.75	2,863	4,202
88.15	512	68	90.80	2,921	4,346
88.20	552	94	90.85	2,979	4,494
88.25	592	123	90.90	3,037	4,644
88.30	632	154	90.95	3,095	4,798
88.35	672	186	91.00	3,154	4,954
88.40	712	221	91.05	3,212	5,113
88.45	752	257	91.10	3,270	5,275
88.50	792	296	91.15	3,328	5,440
88.55	831	336	91.20	3,386	5,608
88.60	871	379	91.25	3,444	5,778
88.65	911	424	91.30	3,503	5,952
88.70	951	470	91.35	3,561	6,129
88.75	991	519	91.40	3,619	6,308
88.80	1,031	569	91.45	3,677	6,491
88.85	1,071	622	91.50	3,735	6,676
88.90	1,111	676	91.55	3,793	6,864
88.95	1,151	733	91.60	3,852	7,055
89.00	1,191	792	91.65	3,910	7,249
89.05	1,231	852	91.70	3,968	7,446
89.10	1,271	915	91.75	4,026	7,646
89.15	1,311	979	91.80	4,084	7,849
89.20	1,351	1,046	91.85	4,142	8,055
89.25	1,391	1,114	91.90	4,201	8,263
89.30	1,431	1,185	91.95	4,259	8,475
89.35	1,471	1,257	92.00	**4,317**	**8,689**
89.40	1,511	1,332			
89.45	1,551	1,408			
89.50	1,591	1,487			
89.55	1,630	1,567			
89.60	1,670	1,650			
89.65	1,710	1,734			
89.70	1,750	1,821			
89.75	1,790	1,909			
89.80	1,830	2,000			
89.85	1,870	2,092			
89.90	1,910	2,187			
89.95	1,950	2,283			
90.00	1,990	2,382			
90.05	2,048	2,483			
90.10	2,106	2,587			
90.15	2,165	2,694			
90.20	2,223	2,803			
90.25	2,281	2,916			
90.30	2,339	3,031			
90.35	2,397	3,150			
90.40	2,455	3,271			
90.45	2,514	3,395			
90.50	2,572	3,522			
90.55	2,630	3,652			
90.60	2,688	3,785			

Summary for Pond B2: Infiltration Basin #2 (Storage Zone)

Inflow Area = 13,032 sf, 14.64% Impervious, Inflow Depth > 1.83" for 10-Year event
Inflow = 0.68 cfs @ 12.21 hrs, Volume= 1,985 cf
Outflow = 0.62 cfs @ 12.26 hrs, Volume= 1,916 cf, Atten= 8%, Lag= 3.1 min
Primary = 0.62 cfs @ 12.26 hrs, Volume= 1,916 cf
Routed to Reach 5R : Wetland Surface 2

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 97.76' @ 12.26 hrs Surf.Area= 533 sf Storage= 175 cf

Plug-Flow detention time= 19.4 min calculated for 1,916 cf (97% of inflow)
Center-of-Mass det. time= 7.3 min (807.2 - 799.9)

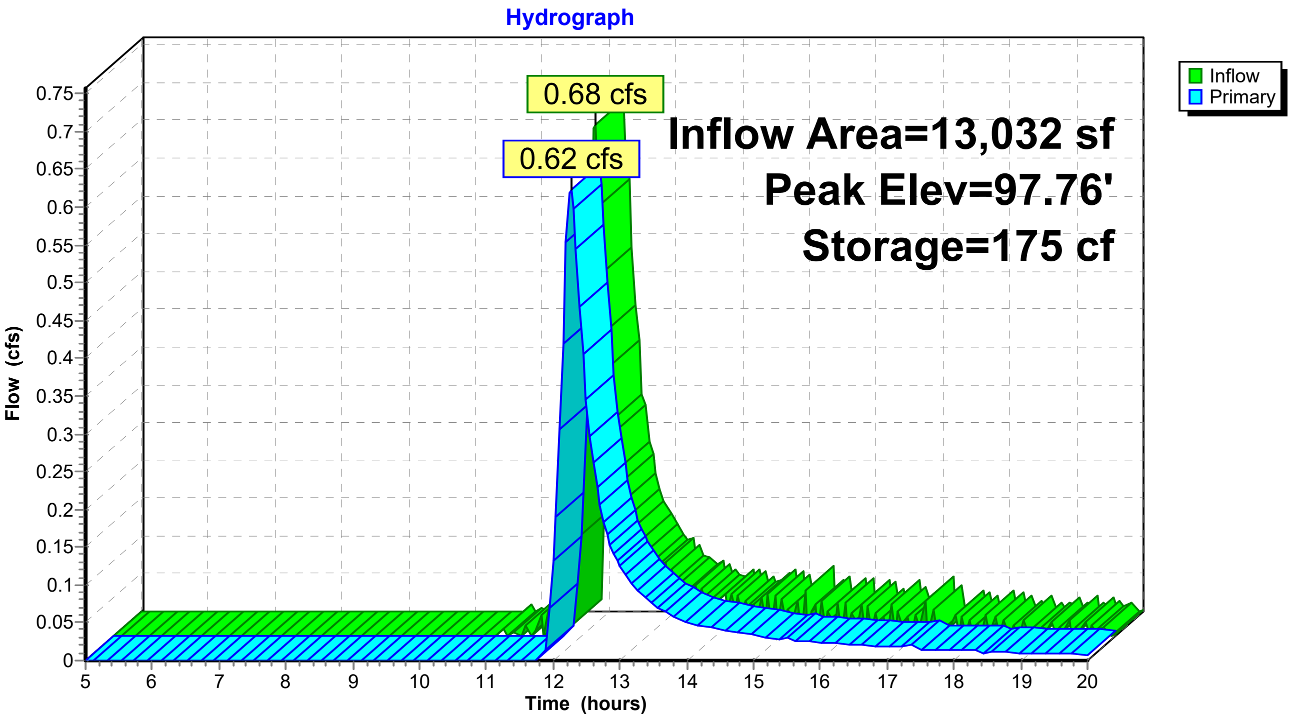
Volume	Invert	Avail.Storage	Storage Description
#1	97.10'	329 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
97.10	0	0	0
98.00	731	329	329

Device	Routing	Invert	Outlet Devices
#1	Primary	96.50'	**12.0" Round Culvert** L= 50.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 96.50' / 96.00' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	97.50'	**18.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.61 cfs @ 12.26 hrs HW=97.75' TW=96.09' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.61 cfs of 3.28 cfs potential flow)
  └─**2=Orifice/Grate** (Orifice Controls 0.61 cfs @ 1.62 fps)

Pond B2: Infiltration Basin #2 (Storage Zone)



Stage-Discharge for Pond B2: Infiltration Basin #2 (Storage Zone)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
97.10	0.00	97.63	0.23
97.11	0.00	97.64	0.25
97.12	0.00	97.65	0.28
97.13	0.00	97.66	0.31
97.14	0.00	97.67	0.34
97.15	0.00	97.68	0.37
97.16	0.00	97.69	0.40
97.17	0.00	97.70	0.43
97.18	0.00	97.71	0.46
97.19	0.00	97.72	0.50
97.20	0.00	97.73	0.53
97.21	0.00	97.74	0.57
97.22	0.00	97.75	0.60
97.23	0.00	97.76	0.64
97.24	0.00	97.77	0.68
97.25	0.00	97.78	0.71
97.26	0.00	97.79	0.75
97.27	0.00	97.80	0.79
97.28	0.00	97.81	0.83
97.29	0.00	97.82	0.87
97.30	0.00	97.83	0.91
97.31	0.00	97.84	0.95
97.32	0.00	97.85	1.00
97.33	0.00	97.86	1.04
97.34	0.00	97.87	1.08
97.35	0.00	97.88	1.13
97.36	0.00	97.89	1.17
97.37	0.00	97.90	1.22
97.38	0.00	97.91	1.26
97.39	0.00	97.92	1.31
97.40	0.00	97.93	1.36
97.41	0.00	97.94	1.41
97.42	0.00	97.95	1.45
97.43	0.00	97.96	1.50
97.44	0.00	97.97	1.55
97.45	0.00	97.98	1.60
97.46	0.00	97.99	1.65
97.47	0.00	98.00	**1.70**
97.48	0.00		
97.49	0.00		
97.50	0.00		
97.51	0.00		
97.52	0.01		
97.53	0.03		
97.54	0.04		
97.55	0.05		
97.56	0.07		
97.57	0.09		
97.58	0.11		
97.59	0.13		
97.60	0.15		
97.61	0.18		
97.62	0.20		

Stage-Area-Storage for Pond B2: Infiltration Basin #2 (Storage Zone)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
97.10	0	0
97.11	8	0
97.12	16	0
97.13	24	0
97.14	32	1
97.15	41	1
97.16	49	1
97.17	57	2
97.18	65	3
97.19	73	3
97.20	81	4
97.21	89	5
97.22	97	6
97.23	106	7
97.24	114	8
97.25	122	9
97.26	130	10
97.27	138	12
97.28	146	13
97.29	154	15
97.30	162	16
97.31	171	18
97.32	179	20
97.33	187	21
97.34	195	23
97.35	203	25
97.36	211	27
97.37	219	30
97.38	227	32
97.39	236	34
97.40	244	37
97.41	252	39
97.42	260	42
97.43	268	44
97.44	276	47
97.45	284	50
97.46	292	53
97.47	301	56
97.48	309	59
97.49	317	62
97.50	325	65
97.51	333	68
97.52	341	72
97.53	349	75
97.54	357	79
97.55	366	82
97.56	374	86
97.57	382	90
97.58	390	94
97.59	398	98
97.60	406	102
97.61	414	106
97.62	422	110

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
97.63	430	114
97.64	439	118
97.65	447	123
97.66	455	127
97.67	463	132
97.68	471	137
97.69	479	141
97.70	487	146
97.71	495	151
97.72	504	156
97.73	512	161
97.74	520	166
97.75	528	172
97.76	536	177
97.77	544	182
97.78	552	188
97.79	560	193
97.80	569	199
97.81	577	205
97.82	585	211
97.83	593	216
97.84	601	222
97.85	609	228
97.86	617	235
97.87	625	241
97.88	634	247
97.89	642	253
97.90	650	260
97.91	658	266
97.92	666	273
97.93	674	280
97.94	682	287
97.95	690	293
97.96	699	300
97.97	707	307
97.98	715	314
97.99	723	322
98.00	**731**	**329**

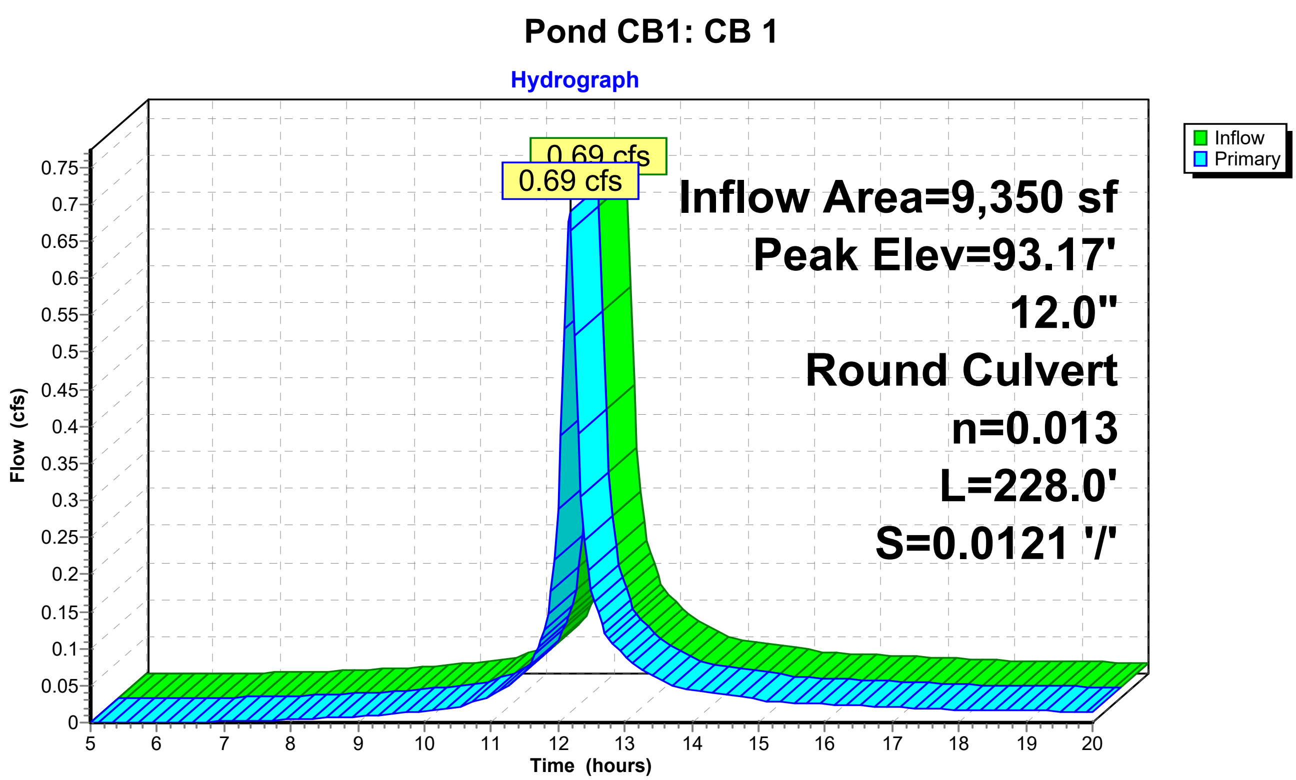
Summary for Pond CB1: CB 1

Inflow Area = 9,350 sf, 31.84% Impervious, Inflow Depth > 2.79" for 10-Year event
Inflow = 0.69 cfs @ 12.17 hrs, Volume= 2,177 cf
Outflow = 0.69 cfs @ 12.17 hrs, Volume= 2,177 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.69 cfs @ 12.17 hrs, Volume= 2,177 cf
Routed to Pond DMH2 : DMH2

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 93.17' @ 12.17 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	92.75'	**12.0" Round Culvert** L= 228.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 92.75' / 90.00' S= 0.0121 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.67 cfs @ 12.17 hrs HW=93.16' TW=90.64' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.67 cfs @ 2.19 fps)



Stage-Discharge for Pond CB1: CB 1

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
92.75	0.00	93.28	1.05
92.76	0.00	93.29	1.08
92.77	0.00	93.30	1.12
92.78	0.00	93.31	1.15
92.79	0.01	93.32	1.19
92.80	0.01	93.33	1.22
92.81	0.01	93.34	1.26
92.82	0.02	93.35	1.30
92.83	0.03	93.36	1.33
92.84	0.04	93.37	1.37
92.85	0.04	93.38	1.41
92.86	0.05	93.39	1.45
92.87	0.06	93.40	1.48
92.88	0.07	93.41	1.52
92.89	0.09	93.42	1.56
92.90	0.10	93.43	1.60
92.91	0.11	93.44	1.63
92.92	0.12	93.45	1.67
92.93	0.14	93.46	1.71
92.94	0.15	93.47	1.75
92.95	0.17	93.48	1.79
92.96	0.19	93.49	1.83
92.97	0.20	93.50	1.86
92.98	0.22	93.51	1.90
92.99	0.24	93.52	1.94
93.00	0.26	93.53	1.98
93.01	0.28	93.54	2.01
93.02	0.30	93.55	2.05
93.03	0.32	93.56	2.09
93.04	0.35	93.57	2.13
93.05	0.37	93.58	2.16
93.06	0.39	93.59	2.20
93.07	0.42	93.60	2.23
93.08	0.44	93.61	2.27
93.09	0.47	93.62	2.30
93.10	0.49	93.63	2.34
93.11	0.52	93.64	2.37
93.12	0.55	93.65	2.40
93.13	0.57	93.66	2.44
93.14	0.60	93.67	2.47
93.15	0.63	93.68	2.50
93.16	0.66	93.69	2.53
93.17	0.69	93.70	2.56
93.18	0.72	93.71	2.58
93.19	0.75	93.72	2.61
93.20	0.78	93.73	2.63
93.21	0.81	93.74	2.66
93.22	0.85	93.75	**2.67**
93.23	0.88		
93.24	0.91		
93.25	0.95		
93.26	0.98		
93.27	1.01		

Stage-Area-Storage for Pond CB1: CB 1

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
92.75	**0**	93.28	0
92.76	0	93.29	0
92.77	0	93.30	0
92.78	0	93.31	0
92.79	0	93.32	0
92.80	0	93.33	0
92.81	0	93.34	0
92.82	0	93.35	0
92.83	0	93.36	0
92.84	0	93.37	0
92.85	0	93.38	0
92.86	0	93.39	0
92.87	0	93.40	0
92.88	0	93.41	0
92.89	0	93.42	0
92.90	0	93.43	0
92.91	0	93.44	0
92.92	0	93.45	0
92.93	0	93.46	0
92.94	0	93.47	0
92.95	0	93.48	0
92.96	0	93.49	0
92.97	0	93.50	0
92.98	0	93.51	0
92.99	0	93.52	0
93.00	0	93.53	0
93.01	0	93.54	0
93.02	0	93.55	0
93.03	0	93.56	0
93.04	0	93.57	0
93.05	0	93.58	0
93.06	0	93.59	0
93.07	0	93.60	0
93.08	0	93.61	0
93.09	0	93.62	0
93.10	0	93.63	0
93.11	0	93.64	0
93.12	0	93.65	0
93.13	0	93.66	0
93.14	0	93.67	0
93.15	0	93.68	0
93.16	0	93.69	0
93.17	0	93.70	0
93.18	0	93.71	0
93.19	0	93.72	0
93.20	0	93.73	0
93.21	0	93.74	0
93.22	0	93.75	0
93.23	0		
93.24	0		
93.25	0		
93.26	0		
93.27	0		

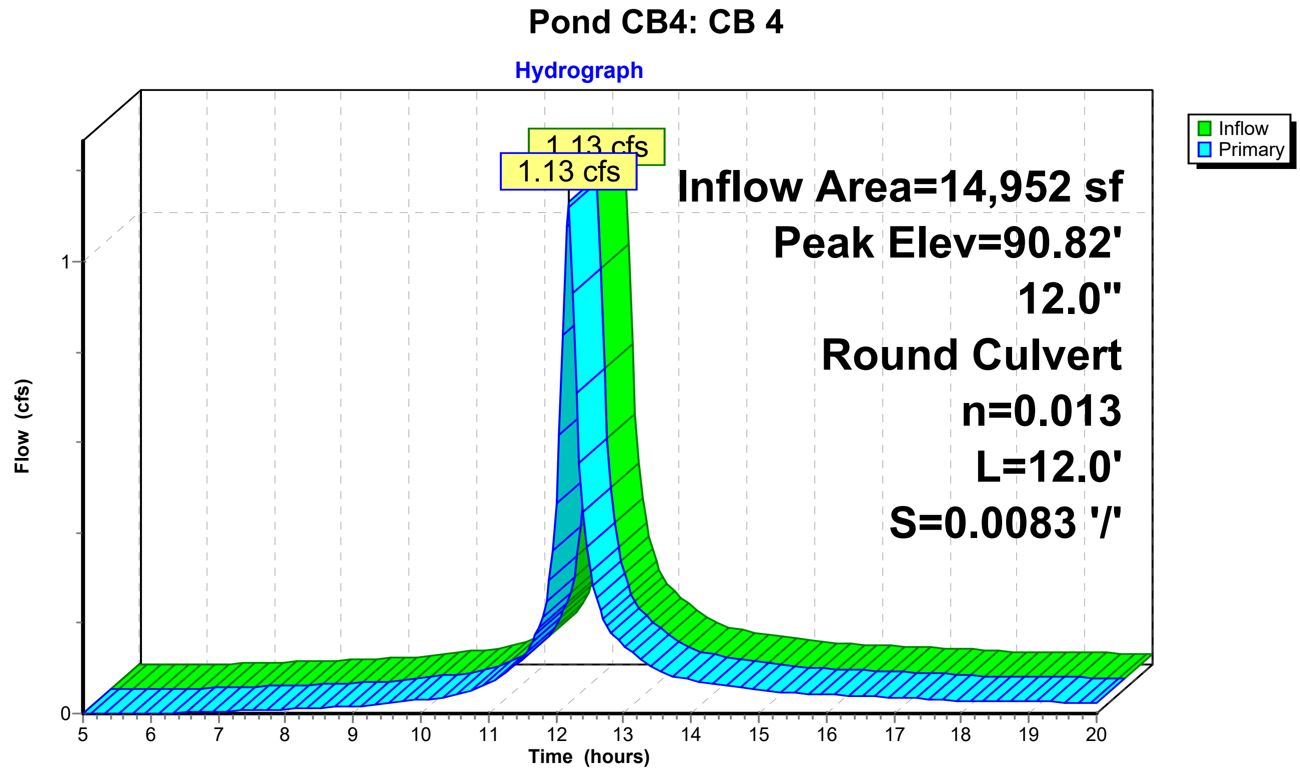
Summary for Pond CB4: CB 4

Inflow Area = 14,952 sf, 43.75% Impervious, Inflow Depth > 2.98" for 10-Year event
Inflow = 1.13 cfs @ 12.18 hrs, Volume= 3,709 cf
Outflow = 1.13 cfs @ 12.18 hrs, Volume= 3,709 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.13 cfs @ 12.18 hrs, Volume= 3,709 cf
Routed to Pond DMH2 : DMH2

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 90.82' @ 12.21 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	90.10'	**12.0" Round Culvert** L= 12.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 90.10' / 90.00' S= 0.0083 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.96 cfs @ 12.18 hrs HW=90.80' TW=90.65' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.96 cfs @ 2.29 fps)



Stage-Discharge for Pond CB4: CB 4

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
90.10	0.00	90.63	0.80
90.11	0.00	90.64	0.83
90.12	0.00	90.65	0.86
90.13	0.00	90.66	0.88
90.14	0.01	90.67	0.91
90.15	0.01	90.68	0.94
90.16	0.01	90.69	0.97
90.17	0.02	90.70	0.99
90.18	0.02	90.71	1.02
90.19	0.03	90.72	1.05
90.20	0.03	90.73	1.08
90.21	0.04	90.74	1.11
90.22	0.05	90.75	1.14
90.23	0.06	90.76	1.17
90.24	0.07	90.77	1.20
90.25	0.08	90.78	1.23
90.26	0.09	90.79	1.26
90.27	0.10	90.80	1.29
90.28	0.11	90.81	1.32
90.29	0.12	90.82	1.35
90.30	0.13	90.83	1.38
90.31	0.15	90.84	1.41
90.32	0.16	90.85	1.44
90.33	0.18	90.86	1.47
90.34	0.19	90.87	1.50
90.35	0.21	90.88	1.54
90.36	0.22	90.89	1.57
90.37	0.24	90.90	1.60
90.38	0.25	90.91	1.63
90.39	0.27	90.92	1.66
90.40	0.29	90.93	1.70
90.41	0.31	90.94	1.73
90.42	0.33	90.95	1.76
90.43	0.34	90.96	1.79
90.44	0.36	90.97	1.82
90.45	0.38	90.98	1.86
90.46	0.40	90.99	1.89
90.47	0.42	91.00	1.92
90.48	0.44	91.01	1.95
90.49	0.47	91.02	1.98
90.50	0.49	91.03	2.02
90.51	0.51	91.04	2.05
90.52	0.53	91.05	2.08
90.53	0.56	91.06	2.11
90.54	0.58	91.07	2.15
90.55	0.60	91.08	2.18
90.56	0.63	91.09	2.21
90.57	0.65	91.10	**2.24**
90.58	0.68		
90.59	0.70		
90.60	0.73		
90.61	0.75		
90.62	0.78		

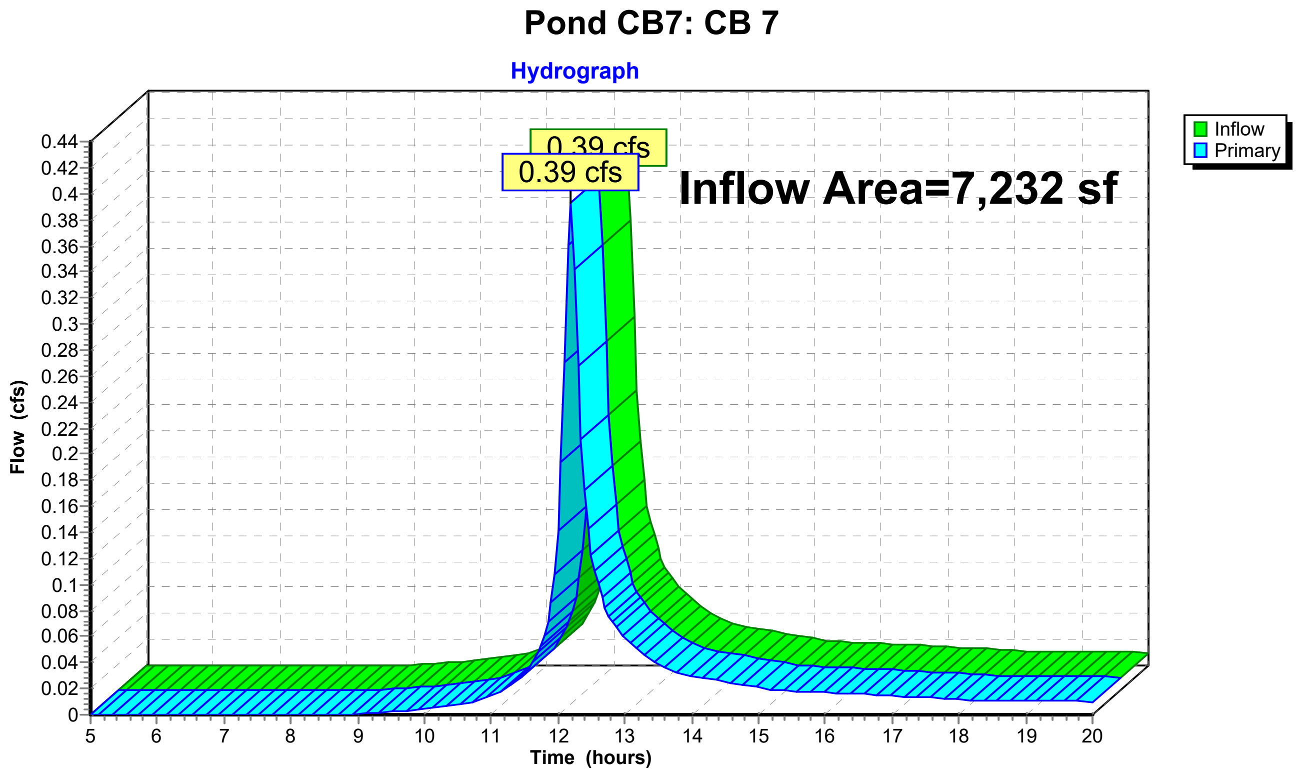
Stage-Area-Storage for Pond CB4: CB 4

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
90.10	**0**	90.63	0
90.11	0	90.64	0
90.12	0	90.65	0
90.13	0	90.66	0
90.14	0	90.67	0
90.15	0	90.68	0
90.16	0	90.69	0
90.17	0	90.70	0
90.18	0	90.71	0
90.19	0	90.72	0
90.20	0	90.73	0
90.21	0	90.74	0
90.22	0	90.75	0
90.23	0	90.76	0
90.24	0	90.77	0
90.25	0	90.78	0
90.26	0	90.79	0
90.27	0	90.80	0
90.28	0	90.81	0
90.29	0	90.82	0
90.30	0	90.83	0
90.31	0	90.84	0
90.32	0	90.85	0
90.33	0	90.86	0
90.34	0	90.87	0
90.35	0	90.88	0
90.36	0	90.89	0
90.37	0	90.90	0
90.38	0	90.91	0
90.39	0	90.92	0
90.40	0	90.93	0
90.41	0	90.94	0
90.42	0	90.95	0
90.43	0	90.96	0
90.44	0	90.97	0
90.45	0	90.98	0
90.46	0	90.99	0
90.47	0	91.00	0
90.48	0	91.01	0
90.49	0	91.02	0
90.50	0	91.03	0
90.51	0	91.04	0
90.52	0	91.05	0
90.53	0	91.06	0
90.54	0	91.07	0
90.55	0	91.08	0
90.56	0	91.09	0
90.57	0	91.10	0
90.58	0		
90.59	0		
90.60	0		
90.61	0		
90.62	0		

Summary for Pond CB7: CB 7

Inflow Area = 7,232 sf, 0.00% Impervious, Inflow Depth > 2.11" for 10-Year event
Inflow = 0.39 cfs @ 12.19 hrs, Volume= 1,271 cf
Primary = 0.39 cfs @ 12.19 hrs, Volume= 1,271 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 1P : Subsurface #1

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs



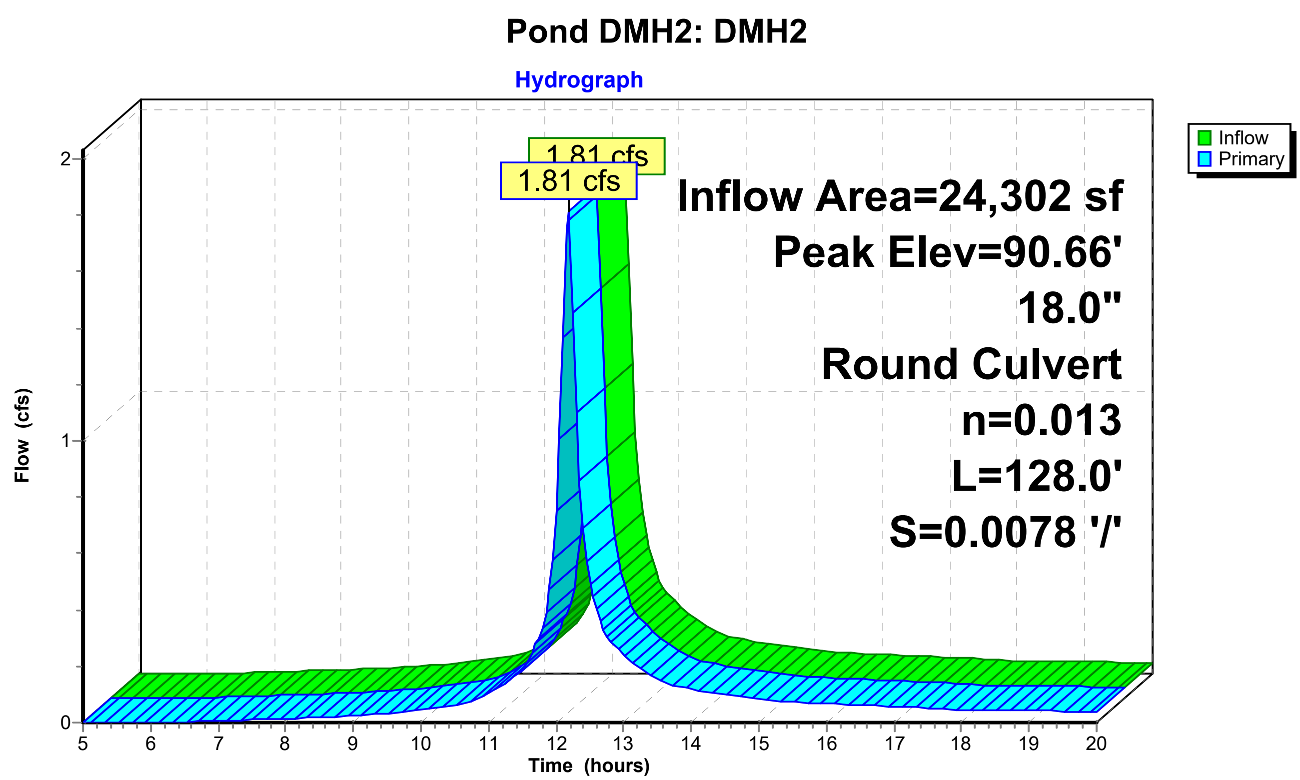
Summary for Pond DMH2: DMH2

Inflow Area = 24,302 sf, 39.17% Impervious, Inflow Depth > 2.91" for 10-Year event
Inflow = 1.81 cfs @ 12.18 hrs, Volume= 5,886 cf
Outflow = 1.81 cfs @ 12.18 hrs, Volume= 5,886 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.81 cfs @ 12.18 hrs, Volume= 5,886 cf
Routed to Pond IB1 : Infiltration Basin #1 (Exfiltration Zone)

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 90.66' @ 12.20 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	90.00'	**18.0" Round Culvert** L= 128.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 90.00' / 89.00' S= 0.0078 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=1.62 cfs @ 12.18 hrs HW=90.65' TW=89.82' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.62 cfs @ 3.25 fps)



Stage-Discharge for Pond DMH2: DMH2

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
90.00	0.00	90.53	1.31	91.06	4.44
90.01	0.00	90.54	1.36	91.07	4.51
90.02	0.00	90.55	1.41	91.08	4.58
90.03	0.00	90.56	1.45	91.09	4.65
90.04	0.01	90.57	1.50	91.10	4.71
90.05	0.01	90.58	1.55	91.11	4.78
90.06	0.01	90.59	1.60	91.12	4.85
90.07	0.02	90.60	1.65	91.13	4.91
90.08	0.03	90.61	1.70	91.14	4.98
90.09	0.04	90.62	1.76	91.15	5.05
90.10	0.04	90.63	1.81	91.16	5.12
90.11	0.05	90.64	1.86	91.17	5.18
90.12	0.06	90.65	1.92	91.18	5.25
90.13	0.08	90.66	1.97	91.19	5.32
90.14	0.09	90.67	2.02	91.20	5.39
90.15	0.10	90.68	2.08	91.21	5.45
90.16	0.12	90.69	2.13	91.22	5.52
90.17	0.13	90.70	2.19	91.23	5.59
90.18	0.15	90.71	2.25	91.24	5.66
90.19	0.17	90.72	2.30	91.25	5.72
90.20	0.19	90.73	2.36	91.26	5.79
90.21	0.21	90.74	2.42	91.27	5.86
90.22	0.23	90.75	2.48	91.28	5.93
90.23	0.25	90.76	2.54	91.29	5.99
90.24	0.27	90.77	2.59	91.30	6.06
90.25	0.30	90.78	2.65	91.31	6.12
90.26	0.32	90.79	2.71	91.32	6.19
90.27	0.35	90.80	2.77	91.33	6.26
90.28	0.38	90.81	2.83	91.34	6.32
90.29	0.40	90.82	2.90	91.35	6.39
90.30	0.43	90.83	2.96	91.36	6.45
90.31	0.46	90.84	3.02	91.37	6.52
90.32	0.49	90.85	3.08	91.38	6.58
90.33	0.52	90.86	3.14	91.39	6.65
90.34	0.55	90.87	3.21	91.40	6.71
90.35	0.59	90.88	3.27	91.41	6.78
90.36	0.62	90.89	3.33	91.42	6.84
90.37	0.66	90.90	3.40	91.43	6.91
90.38	0.69	90.91	3.46	91.44	6.97
90.39	0.73	90.92	3.52	91.45	7.03
90.40	0.76	90.93	3.59	91.46	7.09
90.41	0.80	90.94	3.65	91.47	7.16
90.42	0.84	90.95	3.72	91.48	7.22
90.43	0.88	90.96	3.78	91.49	7.28
90.44	0.92	90.97	3.85	91.50	**7.34**
90.45	0.96	90.98	3.91		
90.46	1.00	90.99	3.98		
90.47	1.04	91.00	4.05		
90.48	1.09	91.01	4.11		
90.49	1.13	91.02	4.18		
90.50	1.17	91.03	4.24		
90.51	1.22	91.04	4.31		
90.52	1.27	91.05	4.38		

Stage-Area-Storage for Pond DMH2: DMH2

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
90.00	**0**	90.53	0	91.06	0
90.01	0	90.54	0	91.07	0
90.02	0	90.55	0	91.08	0
90.03	0	90.56	0	91.09	0
90.04	0	90.57	0	91.10	0
90.05	0	90.58	0	91.11	0
90.06	0	90.59	0	91.12	0
90.07	0	90.60	0	91.13	0
90.08	0	90.61	0	91.14	0
90.09	0	90.62	0	91.15	0
90.10	0	90.63	0	91.16	0
90.11	0	90.64	0	91.17	0
90.12	0	90.65	0	91.18	0
90.13	0	90.66	0	91.19	0
90.14	0	90.67	0	91.20	0
90.15	0	90.68	0	91.21	0
90.16	0	90.69	0	91.22	0
90.17	0	90.70	0	91.23	0
90.18	0	90.71	0	91.24	0
90.19	0	90.72	0	91.25	0
90.20	0	90.73	0	91.26	0
90.21	0	90.74	0	91.27	0
90.22	0	90.75	0	91.28	0
90.23	0	90.76	0	91.29	0
90.24	0	90.77	0	91.30	0
90.25	0	90.78	0	91.31	0
90.26	0	90.79	0	91.32	0
90.27	0	90.80	0	91.33	0
90.28	0	90.81	0	91.34	0
90.29	0	90.82	0	91.35	0
90.30	0	90.83	0	91.36	0
90.31	0	90.84	0	91.37	0
90.32	0	90.85	0	91.38	0
90.33	0	90.86	0	91.39	0
90.34	0	90.87	0	91.40	0
90.35	0	90.88	0	91.41	0
90.36	0	90.89	0	91.42	0
90.37	0	90.90	0	91.43	0
90.38	0	90.91	0	91.44	0
90.39	0	90.92	0	91.45	0
90.40	0	90.93	0	91.46	0
90.41	0	90.94	0	91.47	0
90.42	0	90.95	0	91.48	0
90.43	0	90.96	0	91.49	0
90.44	0	90.97	0	91.50	0
90.45	0	90.98	0		
90.46	0	90.99	0		
90.47	0	91.00	0		
90.48	0	91.01	0		
90.49	0	91.02	0		
90.50	0	91.03	0		
90.51	0	91.04	0		
90.52	0	91.05	0		

Summary for Pond IB1: Infiltration Basin #1 (Exfiltration Zone)

Inflow Area = 54,257 sf, 51.52% Impervious, Inflow Depth > 3.20" for 10-Year event
Inflow = 4.51 cfs @ 12.15 hrs, Volume= 14,485 cf
Outflow = 3.79 cfs @ 12.15 hrs, Volume= 13,774 cf, Atten= 16%, Lag= 0.0 min
Discarded = 0.02 cfs @ 6.20 hrs, Volume= 935 cf
Primary = 3.77 cfs @ 12.15 hrs, Volume= 12,839 cf
Routed to Pond 10P : Infiltration Basin #1 (Storage)

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 90.07' @ 12.32 hrs Surf.Area= 736 sf Storage= 1,522 cf

Plug-Flow detention time= 34.0 min calculated for 13,773 cf (95% of inflow)
Center-of-Mass det. time= 14.8 min (782.0 - 767.2)

Volume	Invert	Avail.Storage	Storage Description
#1	88.00'	2,944 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

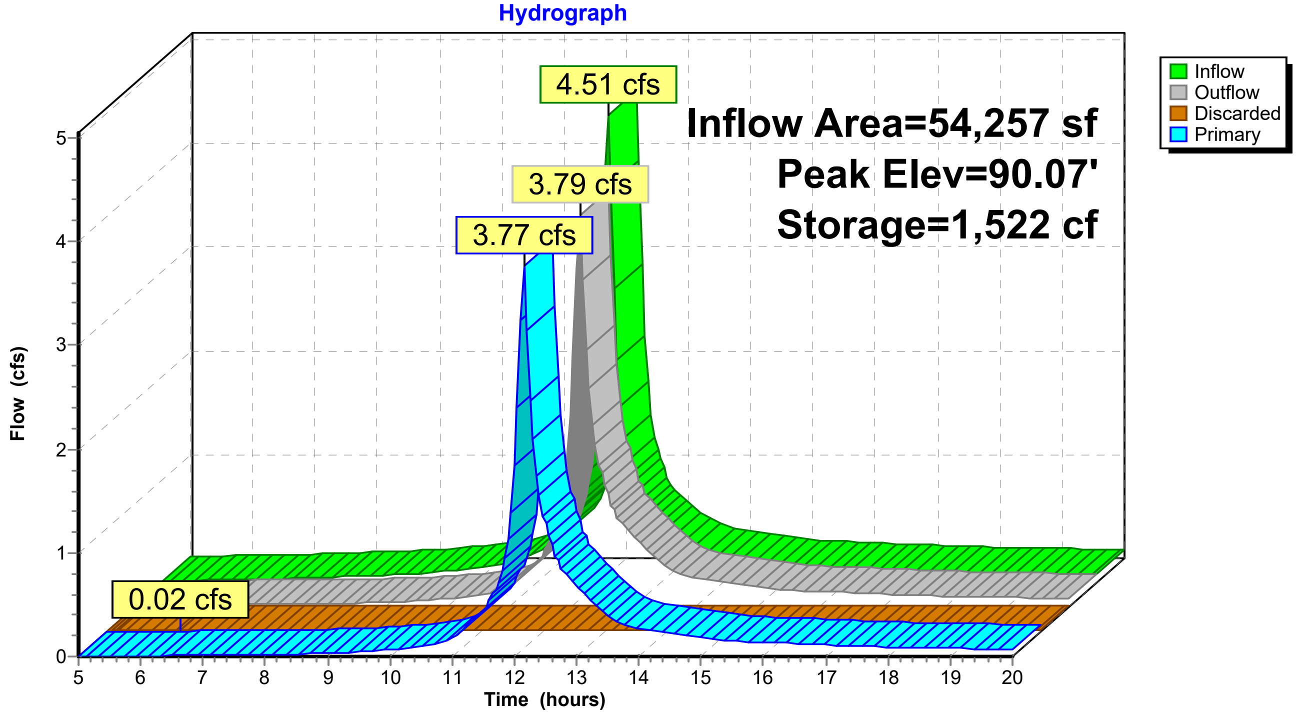
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
88.00	736	0	0
92.00	736	2,944	2,944

Device	Routing	Invert	Outlet Devices
#1	Discarded	88.00'	**1.020 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	88.00'	**48.0" Round Culvert** L= 2.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 88.00' / 88.00' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf

Discarded OutFlow Max=0.02 cfs @ 6.20 hrs HW=88.04' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 12.15 hrs HW=89.71' TW=89.87' (Dynamic Tailwater)
└─**2=Culvert** (Controls 0.00 cfs)

Pond IB1: Infiltration Basin #1 (Exfiltration Zone)



Stage-Discharge for Pond IB1: Infiltration Basin #1 (Exfiltration Zone)

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
88.00	0.00	**0.00**	0.00
88.05	0.03	**0.02**	0.01
88.10	0.07	0.02	0.05
88.15	0.13	0.02	0.11
88.20	0.23	0.02	0.21
88.25	0.35	0.02	0.33
88.30	0.50	0.02	0.48
88.35	0.68	0.02	0.66
88.40	0.88	0.02	0.86
88.45	1.11	0.02	1.09
88.50	1.37	0.02	1.35
88.55	1.65	0.02	1.63
88.60	1.96	0.02	1.94
88.65	2.29	0.02	2.27
88.70	2.65	0.02	2.63
88.75	3.03	0.02	3.01
88.80	3.44	0.02	3.42
88.85	3.87	0.02	3.85
88.90	4.33	0.02	4.31
88.95	4.81	0.02	4.79
89.00	5.31	0.02	5.29
89.05	5.84	0.02	5.82
89.10	6.39	0.02	6.37
89.15	6.96	0.02	6.94
89.20	7.56	0.02	7.54
89.25	8.17	0.02	8.16
89.30	8.81	0.02	8.79
89.35	9.47	0.02	9.45
89.40	10.15	0.02	10.14
89.45	10.86	0.02	10.84
89.50	11.58	0.02	11.56
89.55	12.32	0.02	12.30
89.60	13.09	0.02	13.07
89.65	13.87	0.02	13.85
89.70	14.67	0.02	14.65
89.75	15.49	0.02	15.48
89.80	16.33	0.02	16.32
89.85	17.19	0.02	17.17
89.90	18.07	0.02	18.05
89.95	18.96	0.02	18.94
90.00	19.87	0.02	19.86
90.05	20.80	0.02	20.79
90.10	21.75	0.02	21.73
90.15	22.71	0.02	22.69
90.20	23.69	0.02	23.67
90.25	24.68	0.02	24.66
90.30	25.69	0.02	25.67
90.35	26.71	0.02	26.70
90.40	27.75	0.02	27.74
90.45	28.81	0.02	28.79
90.50	29.87	0.02	29.86
90.55	30.95	0.02	30.93
90.60	32.05	0.02	32.03
90.65	33.15	0.02	33.13
90.70	34.27	0.02	34.25
90.75	35.40	0.02	35.38
90.80	36.54	0.02	36.52
90.85	37.69	0.02	37.67
90.90	38.85	0.02	38.84
90.95	40.03	0.02	40.01
91.00	41.21	0.02	41.19
91.05	42.40	0.02	42.38
91.10	43.60	0.02	43.58
91.15	44.81	0.02	44.79
91.20	46.02	0.02	46.01
91.25	47.25	0.02	47.23
91.30	48.48	0.02	48.46
91.35	49.71	0.02	49.69
91.40	50.95	0.02	50.94
91.45	52.20	0.02	52.18
91.50	53.45	0.02	53.44
91.55	54.71	0.02	54.69
91.60	55.97	0.02	55.95
91.65	57.23	0.02	57.21
91.70	58.49	0.02	58.48
91.75	59.76	0.02	59.74
91.80	61.03	0.02	61.01
91.85	62.29	0.02	62.28
91.90	63.56	0.02	63.54
91.95	64.83	0.02	64.81
92.00	**66.09**	0.02	**66.07**

Stage-Area-Storage for Pond IB1: Infiltration Basin #1 (Exfiltration Zone)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
88.00	**736**	0	90.65	736	1,950
88.05	736	37	90.70	736	1,987
88.10	736	74	90.75	736	2,024
88.15	736	110	90.80	736	2,061
88.20	736	147	90.85	736	2,098
88.25	736	184	90.90	736	2,134
88.30	736	221	90.95	736	2,171
88.35	736	258	91.00	736	2,208
88.40	736	294	91.05	736	2,245
88.45	736	331	91.10	736	2,282
88.50	736	368	91.15	736	2,318
88.55	736	405	91.20	736	2,355
88.60	736	442	91.25	736	2,392
88.65	736	478	91.30	736	2,429
88.70	736	515	91.35	736	2,466
88.75	736	552	91.40	736	2,502
88.80	736	589	91.45	736	2,539
88.85	736	626	91.50	736	2,576
88.90	736	662	91.55	736	2,613
88.95	736	699	91.60	736	2,650
89.00	736	736	91.65	736	2,686
89.05	736	773	91.70	736	2,723
89.10	736	810	91.75	736	2,760
89.15	736	846	91.80	736	2,797
89.20	736	883	91.85	736	2,834
89.25	736	920	91.90	736	2,870
89.30	736	957	91.95	736	2,907
89.35	736	994	92.00	736	**2,944**
89.40	736	1,030			
89.45	736	1,067			
89.50	736	1,104			
89.55	736	1,141			
89.60	736	1,178			
89.65	736	1,214			
89.70	736	1,251			
89.75	736	1,288			
89.80	736	1,325			
89.85	736	1,362			
89.90	736	1,398			
89.95	736	1,435			
90.00	736	1,472			
90.05	736	1,509			
90.10	736	1,546			
90.15	736	1,582			
90.20	736	1,619			
90.25	736	1,656			
90.30	736	1,693			
90.35	736	1,730			
90.40	736	1,766			
90.45	736	1,803			
90.50	736	1,840			
90.55	736	1,877			
90.60	736	1,914			

Summary for Pond IB2: Infiltration Basin #2 (Exfiltration Zone)

Inflow Area = 13,032 sf, 14.64% Impervious, Inflow Depth > 2.35" for 10-Year event
Inflow = 0.76 cfs @ 12.21 hrs, Volume= 2,556 cf
Outflow = 0.69 cfs @ 12.21 hrs, Volume= 2,379 cf, Atten= 9%, Lag= 0.2 min
Discarded = 0.01 cfs @ 10.35 hrs, Volume= 393 cf
Primary = 0.68 cfs @ 12.21 hrs, Volume= 1,985 cf
Routed to Pond B2 : Infiltration Basin #2 (Storage Zone)

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 97.77' @ 12.31 hrs Surf.Area= 424 sf Storage= 283 cf

Plug-Flow detention time= 35.6 min calculated for 2,371 cf (93% of inflow)
Center-of-Mass det. time= 11.5 min (812.0 - 800.5)

Volume	Invert	Avail.Storage	Storage Description
#1	97.10'	382 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

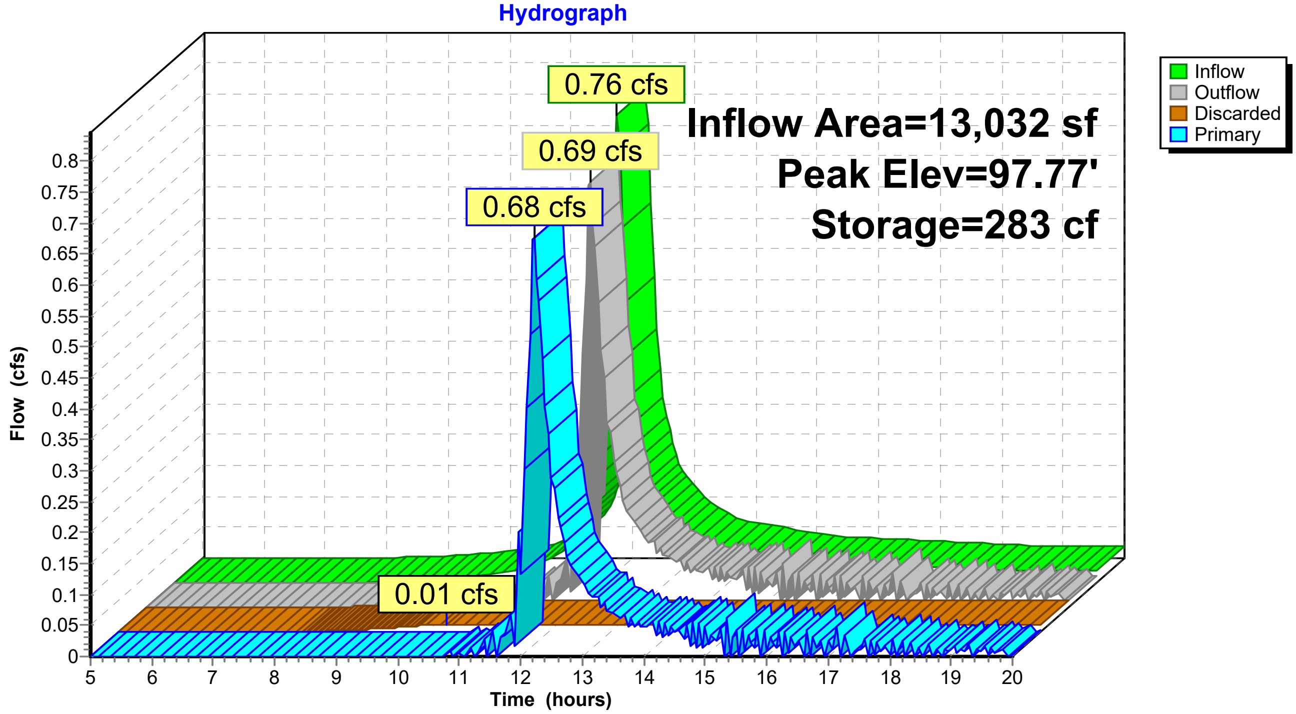
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
97.10	424	0	0
98.00	424	382	382

Device	Routing	Invert	Outlet Devices
#1	Discarded	97.10'	**1.020 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	97.10'	**36.0" Round Culvert** L= 2.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 97.10' / 97.10' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf

Discarded OutFlow Max=0.01 cfs @ 10.35 hrs HW=97.13' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 12.21 hrs HW=97.73' TW=97.74' (Dynamic Tailwater)
└─**2=Culvert** (Controls 0.00 cfs)

Pond IB2: Infiltration Basin #2 (Exfiltration Zone)



Stage-Discharge for Pond IB2: Infiltration Basin #2 (Exfiltration Zone)

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
97.10	0.00	**0.00**	0.00
97.15	0.02	**0.01**	0.01
97.20	0.05	0.01	0.04
97.25	0.11	0.01	0.10
97.30	0.19	0.01	0.18
97.35	0.30	0.01	0.29
97.40	0.42	0.01	0.41
97.45	0.58	0.01	0.57
97.50	0.75	0.01	0.74
97.55	0.95	0.01	0.94
97.60	1.17	0.01	1.16
97.65	1.41	0.01	1.40
97.70	1.67	0.01	1.66
97.75	1.95	0.01	1.94
97.80	2.25	0.01	2.24
97.85	2.58	0.01	2.57
97.90	2.92	0.01	2.91
97.95	3.29	0.01	3.28
98.00	3.67	0.01	3.66
98.05	4.07	0.01	4.06
98.10	4.49	0.01	4.48
98.15	4.93	0.01	4.92
98.20	5.39	0.01	5.38
98.25	5.87	0.01	5.86
98.30	6.36	0.01	6.35
98.35	6.87	0.01	6.86
98.40	7.40	0.01	7.39
98.45	7.94	0.01	7.93
98.50	8.50	0.01	8.49
98.55	9.07	0.01	9.06
98.60	9.66	0.01	9.65
98.65	10.27	0.01	10.26
98.70	10.89	0.01	10.88
98.75	11.52	0.01	11.51
98.80	12.17	0.01	12.16
98.85	12.83	0.01	12.82
98.90	13.50	0.01	13.49
98.95	14.18	0.01	14.17
99.00	14.88	0.01	14.87
99.05	15.59	0.01	15.58
99.10	16.31	0.01	16.30
99.15	17.04	0.01	17.03
99.20	17.77	0.01	17.76
99.25	18.52	0.01	18.51
99.30	19.28	0.01	19.27
99.35	20.05	0.01	20.04
99.40	20.82	0.01	20.81
99.45	21.60	0.01	21.59
99.50	22.39	0.01	22.38
99.55	23.19	0.01	23.18
99.60	23.99	0.01	23.98
99.65	24.79	0.01	24.78
99.70	25.60	0.01	25.59
99.75	26.42	0.01	26.41
99.80	27.23	0.01	27.22
99.85	28.05	0.01	28.04
99.90	28.87	0.01	28.86
99.95	29.69	0.01	29.68
100.00	30.52	0.01	30.51
100.05	31.34	0.01	31.33
100.10	**32.16**	0.01	**32.15**

Stage-Area-Storage for Pond IB2: Infiltration Basin #2 (Exfiltration Zone)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
97.10	**424**	0	99.75	424	382
97.15	424	21	99.80	424	382
97.20	424	42	99.85	424	382
97.25	424	64	99.90	424	382
97.30	424	85	99.95	424	382
97.35	424	106	100.00	424	382
97.40	424	127	100.05	424	382
97.45	424	148	100.10	424	382
97.50	424	170			
97.55	424	191			
97.60	424	212			
97.65	424	233			
97.70	424	254			
97.75	424	276			
97.80	424	297			
97.85	424	318			
97.90	424	339			
97.95	424	360			
98.00	424	**382**			
98.05	424	382			
98.10	424	382			
98.15	424	382			
98.20	424	382			
98.25	424	382			
98.30	424	382			
98.35	424	382			
98.40	424	382			
98.45	424	382			
98.50	424	382			
98.55	424	382			
98.60	424	382			
98.65	424	382			
98.70	424	382			
98.75	424	382			
98.80	424	382			
98.85	424	382			
98.90	424	382			
98.95	424	382			
99.00	424	382			
99.05	424	382			
99.10	424	382			
99.15	424	382			
99.20	424	382			
99.25	424	382			
99.30	424	382			
99.35	424	382			
99.40	424	382			
99.45	424	382			
99.50	424	382			
99.55	424	382			
99.60	424	382			
99.65	424	382			
99.70	424	382			

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: Units 10-11 Entrance Runoff Area=13,032 sf 14.64% Impervious Runoff Depth>3.35"
Flow Length=190' Tc=12.6 min CN=77 Runoff=1.06 cfs 3,633 cf

Subcatchment 1pre: Site Runoff Area=134,756 sf 4.57% Impervious Runoff Depth>3.04"
Flow Length=451' Tc=22.8 min UI Adjusted CN=74 Runoff=7.73 cfs 34,177 cf

Subcatchment 2: Units 8-11 Backyards Runoff Area=7,232 sf 0.00% Impervious Runoff Depth>3.06"
Flow Length=84' Tc=11.3 min CN=74 Runoff=0.57 cfs 1,843 cf

Subcatchment 3: Outer Border Runoff Area=53,803 sf 0.00% Impervious Runoff Depth>2.87"
Flow Length=87' Tc=7.9 min CN=72 Runoff=4.49 cfs 12,885 cf

Subcatchment 4: Unit 5 Backyard and Basin Runoff Area=8,967 sf 0.00% Impervious Runoff Depth>3.06"
Flow Length=110' Tc=7.7 min CN=74 Runoff=0.80 cfs 2,288 cf

Subcatchment 5: Unit 5 Parking Runoff Area=8,830 sf 71.11% Impervious Runoff Depth>4.78"
Flow Length=100' Tc=7.9 min CN=91 Runoff=1.12 cfs 3,514 cf

Subcatchment 6: Driveway Center Section Runoff Area=14,952 sf 43.75% Impervious Runoff Depth>4.06"
Flow Length=163' Tc=10.8 min CN=84 Runoff=1.51 cfs 5,053 cf

Subcatchment 7: Driveway Entrance Runoff Area=9,350 sf 31.84% Impervious Runoff Depth>3.85"
Flow Length=88' Slope=0.0400 '/' Tc=9.8 min CN=82 Runoff=0.94 cfs 3,000 cf

Subcatchment U1: Unit #1 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>5.38"
Tc=5.0 min CN=98 Runoff=0.23 cfs 721 cf

Subcatchment U10: Unit #10 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>5.38"
Tc=5.0 min CN=98 Runoff=0.23 cfs 721 cf

Subcatchment U11: Unit #11 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>5.38"
Tc=5.0 min CN=98 Runoff=0.23 cfs 721 cf

Subcatchment U2: Unit #2 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>5.38"
Tc=5.0 min CN=98 Runoff=0.23 cfs 721 cf

Subcatchment U3: Unit #3 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>5.38"
Tc=5.0 min CN=98 Runoff=0.23 cfs 721 cf

Subcatchment U4: Unit #4 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>5.38"
Tc=5.0 min CN=98 Runoff=0.23 cfs 721 cf

Subcatchment U5: Unit #5 Runoff Area=2,510 sf 100.00% Impervious Runoff Depth>5.38"
Tc=5.0 min CN=98 Runoff=0.37 cfs 1,125 cf

Subcatchment U6: Unit #6 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>5.38"
Tc=5.0 min CN=98 Runoff=0.23 cfs 721 cf

Subcatchment U7: Unit #7 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>5.38"
Tc=5.0 min CN=98 Runoff=0.23 cfs 721 cf

Subcatchment U8: Unit #8 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>5.38"
Tc=5.0 min CN=98 Runoff=0.23 cfs 721 cf

Subcatchment U9: Unit #9 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>5.38"
Tc=5.0 min CN=98 Runoff=0.23 cfs 721 cf

Reach 3R: Wetland Surface 1 Avg. Flow Depth=0.13' Max Vel=0.50 fps Inflow=1.32 cfs 5,416 cf
n=0.100 L=344.0' S=0.0291 '/' Capacity=20.30 cfs Outflow=1.15 cfs 5,369 cf

Reach 4R: 8" ROOF DRAIN CARRIER Avg. Flow Depth=0.24' Max Vel=4.07 fps Inflow=0.47 cfs 1,441 cf
8.0" Round Pipe n=0.013 L=206.0' S=0.0194 '/' Capacity=1.68 cfs Outflow=0.46 cfs 1,440 cf

Reach 5R: Wetland Surface 2 Avg. Flow Depth=0.14' Max Vel=0.27 fps Inflow=0.91 cfs 2,950 cf
n=0.100 L=245.0' S=0.0082 '/' Capacity=10.76 cfs Outflow=0.65 cfs 2,905 cf

Reach 8R: 6" Roof Drain Carrier Pipe Avg. Flow Depth=0.28' Max Vel=4.12 fps Inflow=0.47 cfs 1,441 cf
6.0" Round Pipe n=0.013 L=113.0' S=0.0195 '/' Capacity=0.78 cfs Outflow=0.46 cfs 1,441 cf

Reach 9R: 12" Roof Drain Carrier Pipe Avg. Flow Depth=0.35' Max Vel=3.77 fps Inflow=0.93 cfs 2,882 cf
12.0" Round Pipe n=0.013 L=212.0' S=0.0099 '/' Capacity=3.55 cfs Outflow=0.92 cfs 2,879 cf

Reach DP1PRE: DP 1 - PRE Inflow=7.73 cfs 34,177 cf
Outflow=7.73 cfs 34,177 cf

Reach DP1PST: DP 1 - POST Inflow=7.42 cfs 35,126 cf
Outflow=7.42 cfs 35,126 cf

Pond 1P: Subsurface #1 Peak Elev=97.83' Storage=1,452 cf Inflow=1.39 cfs 4,725 cf
Discarded=0.03 cfs 1,450 cf Primary=0.72 cfs 2,511 cf Outflow=0.75 cfs 3,962 cf

Pond 5P: CB 5 Peak Elev=90.38' Inflow=1.12 cfs 3,514 cf
12.0" Round Culvert n=0.013 L=13.0' S=0.0192 '/' Outflow=1.12 cfs 3,514 cf

Pond 10P: Infiltration Basin #1 (Storage) Peak Elev=90.36' Storage=3,183 cf Inflow=5.08 cfs 17,640 cf
Primary=3.14 cfs 16,872 cf Secondary=0.00 cfs 0 cf Outflow=3.14 cfs 16,872 cf

Pond B2: Infiltration Basin #2 (Storage Zone) Peak Elev=97.83' Storage=216 cf Inflow=0.95 cfs 3,024 cf
Outflow=0.91 cfs 2,950 cf

Pond CB1: CB 1 Peak Elev=93.25' Inflow=0.94 cfs 3,000 cf
12.0" Round Culvert n=0.013 L=228.0' S=0.0121 '/' Outflow=0.94 cfs 3,000 cf

Pond CB4: CB 4 Peak Elev=90.98' Inflow=1.51 cfs 5,053 cf
12.0" Round Culvert n=0.013 L=12.0' S=0.0083 '/' Outflow=1.51 cfs 5,053 cf

Pond CB7: CB 7 Inflow=0.57 cfs 1,843 cf
Primary=0.57 cfs 1,843 cf

Pond DMH2: DMH2 Peak Elev=90.81' Inflow=2.44 cfs 8,053 cf
18.0" Round Culvert n=0.013 L=128.0' S=0.0078 '/' Outflow=2.44 cfs 8,053 cf

Pond IB1: Infiltration Basin #1 (Exfiltration Peak Elev=90.37' Storage=1,744 cf Inflow=5.96 cfs 19,299 cf
Discarded=0.02 cfs 937 cf Primary=5.08 cfs 17,640 cf Outflow=5.10 cfs 18,577 cf

Pond IB2: Infiltration Basin #2 (Exfiltration Peak Elev=97.85' Storage=316 cf Inflow=1.06 cfs 3,633 cf
Discarded=0.01 cfs 432 cf Primary=0.95 cfs 3,024 cf Outflow=0.96 cfs 3,456 cf

Total Runoff Area = 269,512 sf Runoff Volume = 74,725 cf Average Runoff Depth = 3.33"
84.25% Pervious = 227,061 sf 15.75% Impervious = 42,451 sf

Summary for Subcatchment 1: Units 10-11 Entrance

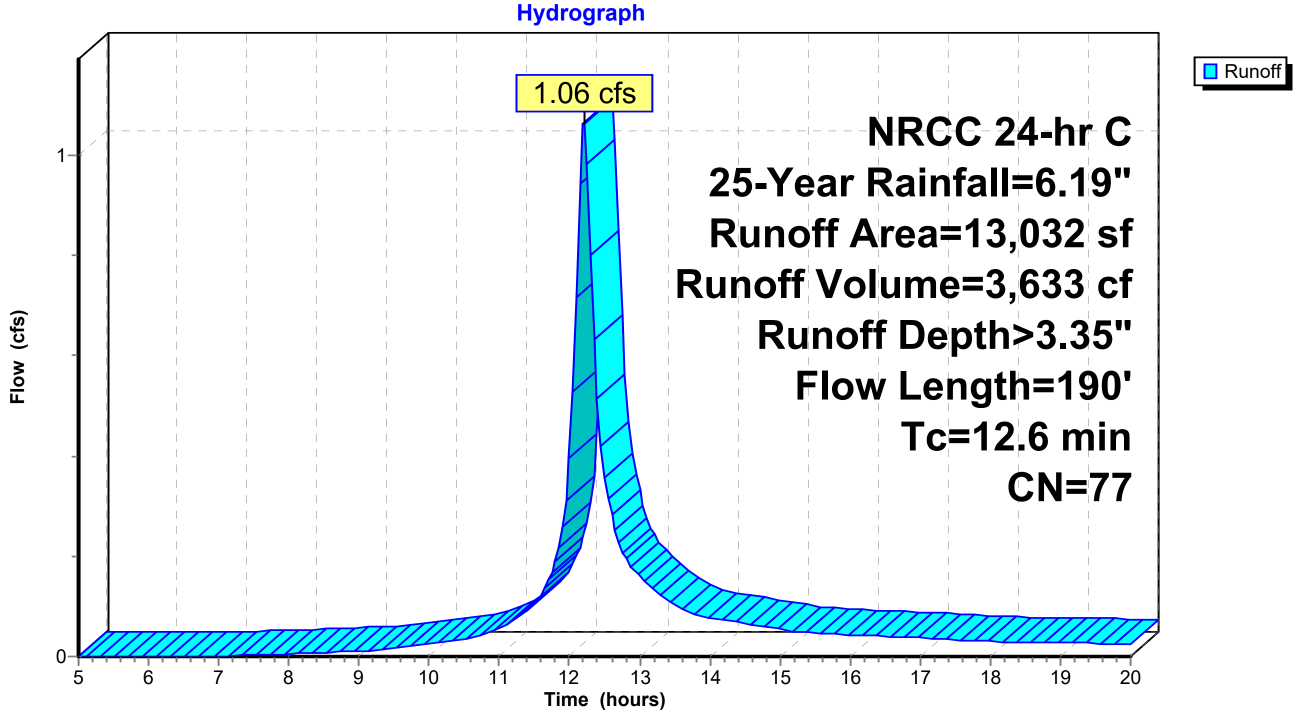
Runoff = 1.06 cfs @ 12.20 hrs, Volume= 3,633 cf, Depth> 3.35"
Routed to Pond IB2 : Infiltration Basin #2 (Exfiltration Zone)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 25-Year Rainfall=6.19"

Area (sf)	CN	Description
10,121	74	>75% Grass cover, Good, HSG C
1,003	70	Woods, Good, HSG C
1,908	98	Paved parking, HSG C
13,032	77	Weighted Average
11,124		85.36% Pervious Area
1,908		14.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		**Sheet Flow, Grass** Grass: Bermuda n= 0.410 P2= 3.35"
0.8	55	0.0300	1.21		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.1	17	0.0100	2.03		**Shallow Concentrated Flow, Driveway** Paved Kv= 20.3 fps
1.2	68	0.0180	0.94		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
12.6	190	Total			

Subcatchment 1: Units 10-11 Entrance



Summary for Subcatchment 1pre: Site

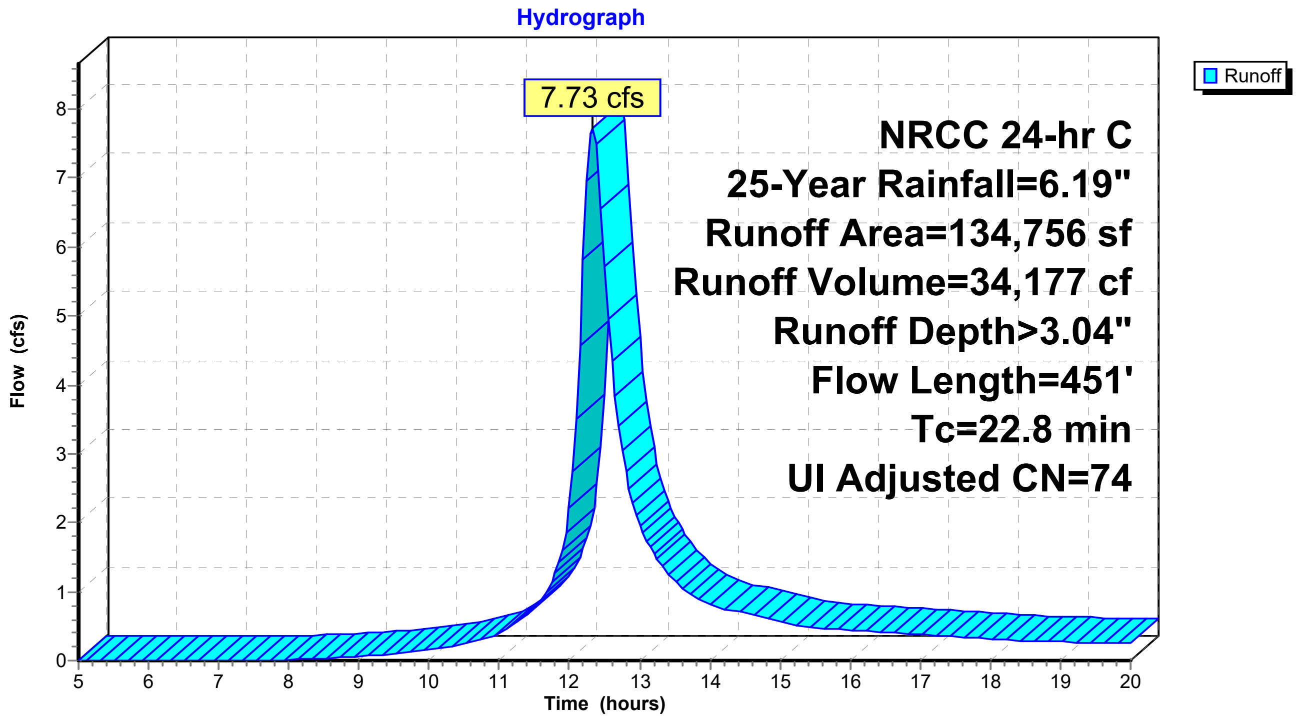
Runoff = 7.73 cfs @ 12.33 hrs, Volume= 34,177 cf, Depth> 3.04"
Routed to Reach DP1PRE : DP 1 - PRE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 25-Year Rainfall=6.19"

Area (sf)	CN	Adj	Description
56,945	70		Woods, Good, HSG C
2,937	98		Paved parking, HSG C
3,219	98		Unconnected roofs, HSG C
10,003	89		Gravel roads, HSG C
61,652	74		>75% Grass cover, Good, HSG C
134,756	75	74	Weighted Average, UI Adjusted
128,600			95.43% Pervious Area
6,156			4.57% Impervious Area
3,219			52.29% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.3	25	0.0110	0.03		**Sheet Flow, Woods** Woods: Dense underbrush n= 0.800 P2= 3.35"
0.5	25	0.0110	0.84		**Sheet Flow, Pavement** Smooth surfaces n= 0.011 P2= 3.35"
0.2	20	0.0110	2.13		**Shallow Concentrated Flow, Pavement** Paved Kv= 20.3 fps
1.5	65	0.0110	0.73		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
2.2	159	0.0290	1.19		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
2.0	52	0.0040	0.44		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.7	60	0.0370	1.35		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.4	45	0.1660	2.04		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
22.8	451	Total			

Subcatchment 1pre: Site



Summary for Subcatchment 2: Units 8-11 Backyards

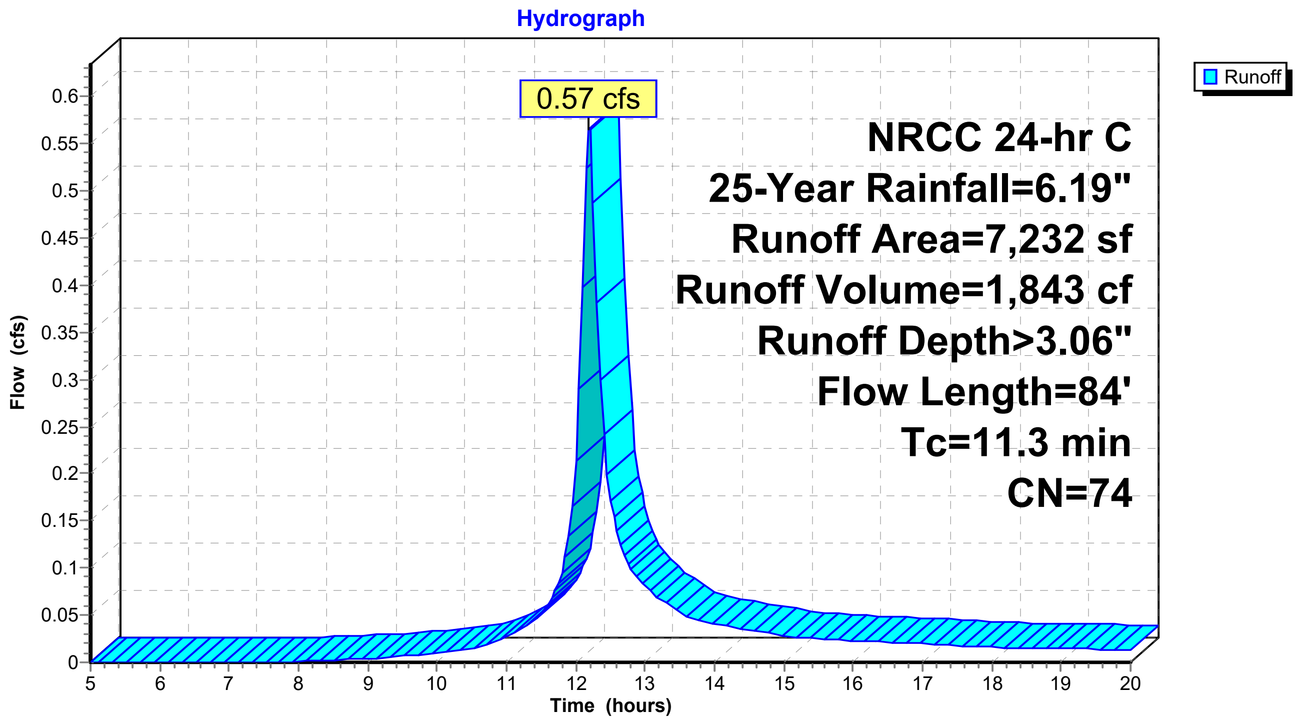
Runoff = 0.57 cfs @ 12.19 hrs, Volume= 1,843 cf, Depth> 3.06"
Routed to Pond CB7 : CB 7

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 25-Year Rainfall=6.19"

Area (sf)	CN	Description
7,232	74	>75% Grass cover, Good, HSG C
7,232		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7	50	0.0280	0.08		**Sheet Flow, Grass** Grass: Bermuda n= 0.410 P2= 3.35"
0.6	34	0.0200	0.99		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
11.3	84	Total			

Subcatchment 2: Units 8-11 Backyards



Summary for Subcatchment 3: Outer Border

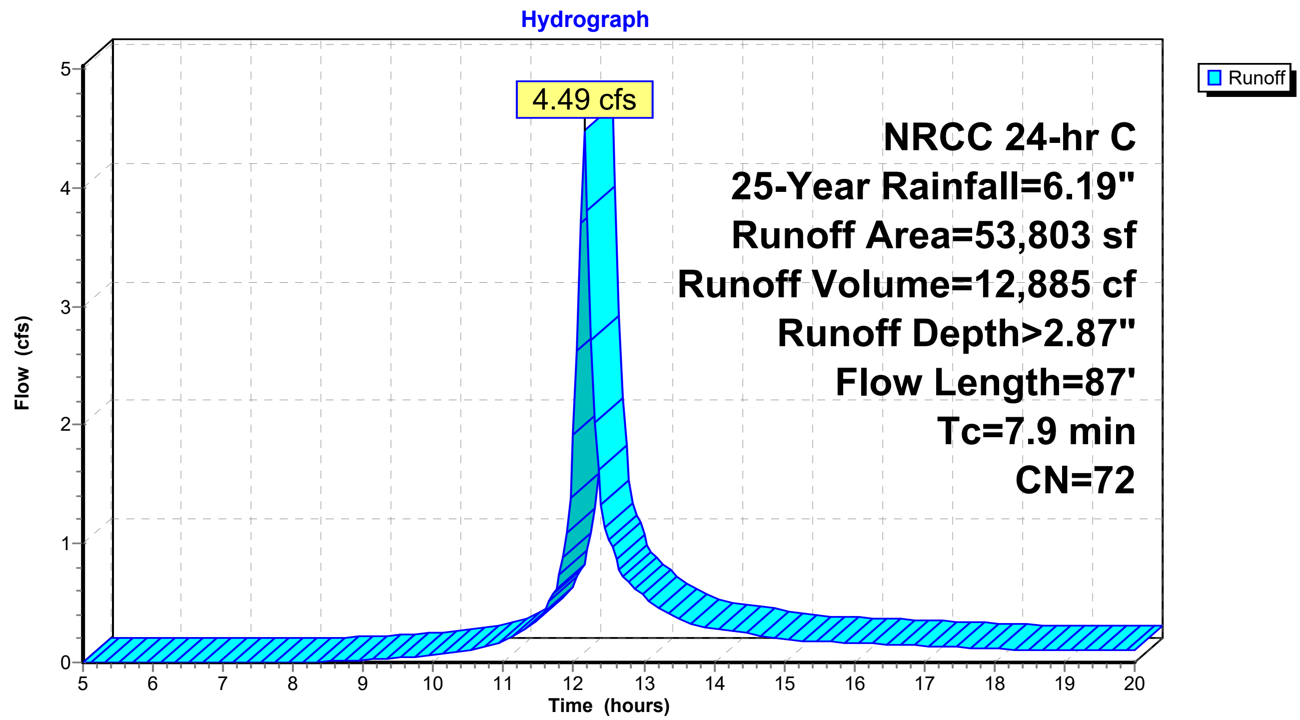
Runoff = 4.49 cfs @ 12.15 hrs, Volume= 12,885 cf, Depth> 2.87"
Routed to Reach DP1PST : DP 1 - POST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 25-Year Rainfall=6.19"

Area (sf)	CN	Description
22,640	74	>75% Grass cover, Good, HSG C
31,163	70	Woods, Good, HSG C
53,803	72	Weighted Average
53,803		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	50	0.0670	0.11		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.35"
0.5	37	0.0600	1.22		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
7.9	87	Total			

Subcatchment 3: Outer Border



Summary for Subcatchment 4: Unit 5 Backyard and Basin #1

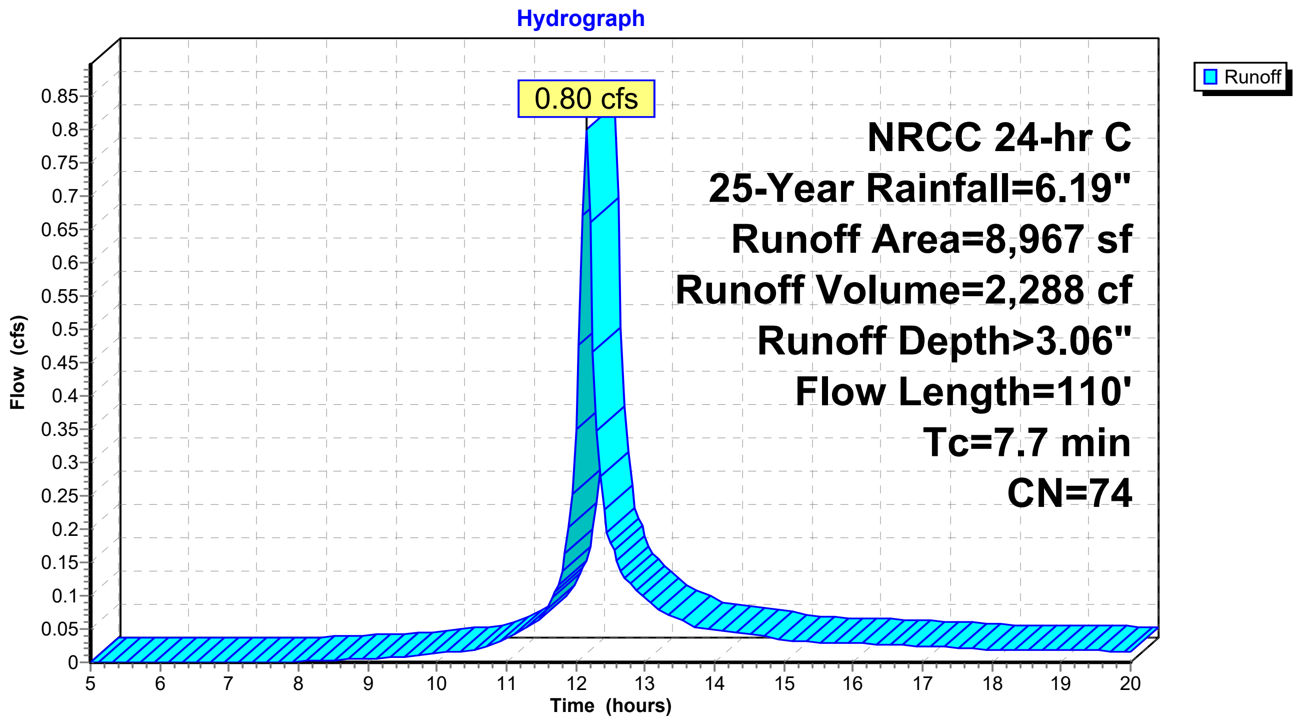
Runoff = 0.80 cfs @ 12.15 hrs, Volume= 2,288 cf, Depth> 3.06"
Routed to Pond IB1 : Infiltration Basin #1 (Exfiltration Zone)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 25-Year Rainfall=6.19"

Area (sf)	CN	Description
8,967	74	>75% Grass cover, Good, HSG C
8,967		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0780	0.12		**Sheet Flow, Grass** Grass: Bermuda n= 0.410 P2= 3.35"
0.6	60	0.0670	1.81		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
7.7	110	Total			

Subcatchment 4: Unit 5 Backyard and Basin #1



Summary for Subcatchment 5: Unit 5 Parking

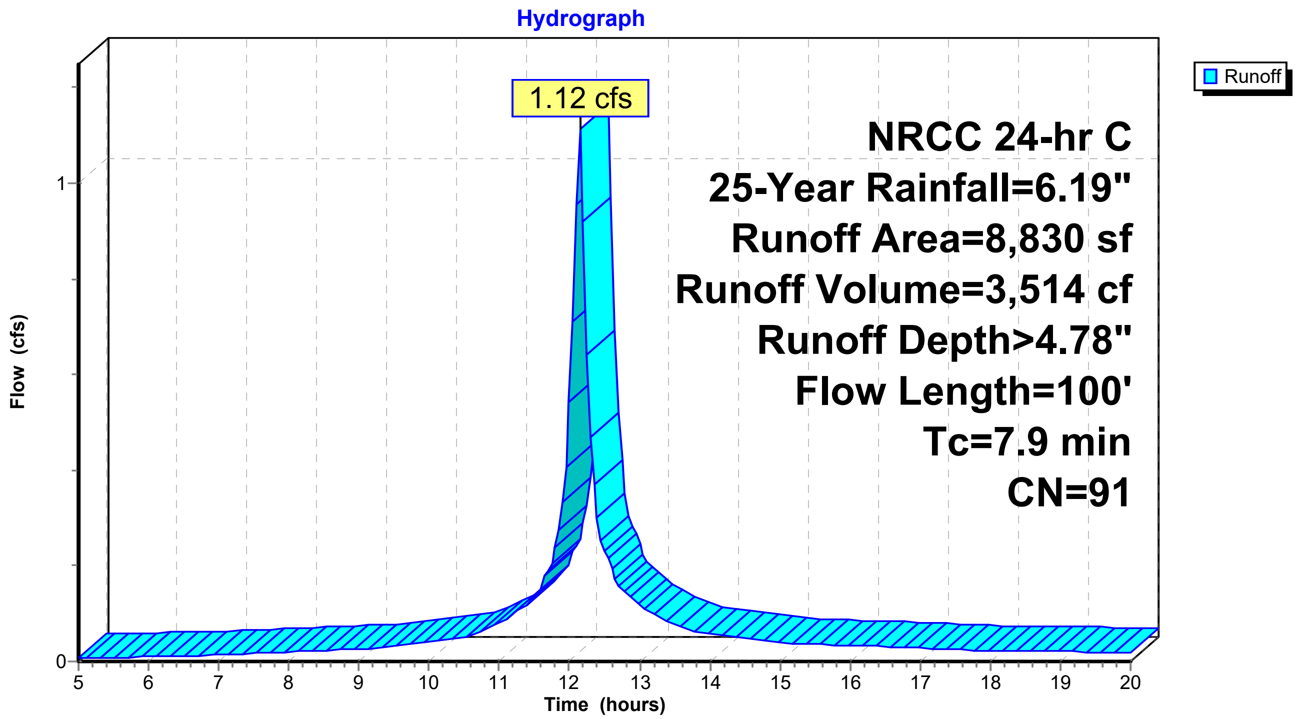
Runoff = 1.12 cfs @ 12.15 hrs, Volume= 3,514 cf, Depth> 4.78"
Routed to Pond 5P : CB 5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 25-Year Rainfall=6.19"

Area (sf)	CN	Description
2,551	74	>75% Grass cover, Good, HSG C
6,279	98	Paved roads w/curbs & sewers, HSG C
8,830	91	Weighted Average
2,551		28.89% Pervious Area
6,279		71.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	40	0.0450	0.09		**Sheet Flow, Grass** Grass: Bermuda n= 0.410 P2= 3.35"
0.3	10	0.0067	0.57		**Sheet Flow, Pavement** Smooth surfaces n= 0.011 P2= 3.35"
0.2	50	0.0280	3.40		**Shallow Concentrated Flow, Pavement** Paved Kv= 20.3 fps
7.9	100	Total			

Subcatchment 5: Unit 5 Parking



Summary for Subcatchment 6: Driveway Center Section

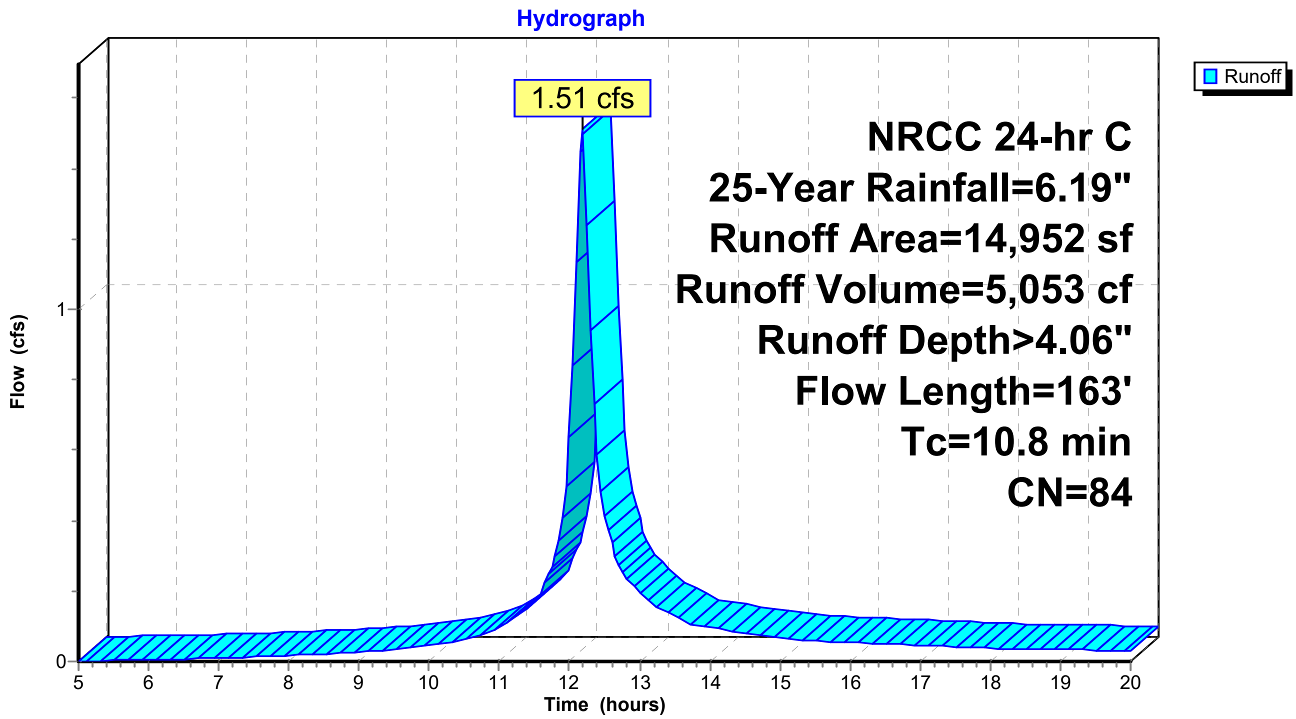
Runoff = 1.51 cfs @ 12.18 hrs, Volume= 5,053 cf, Depth> 4.06"
Routed to Pond CB4 : CB 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 25-Year Rainfall=6.19"

Area (sf)	CN	Description
8,411	74	>75% Grass cover, Good, HSG C
6,541	98	Paved roads w/curbs & sewers, HSG C
14,952	84	Weighted Average
8,411		56.25% Pervious Area
6,541		43.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	50	0.0320	0.08		**Sheet Flow, Grass** Grass: Bermuda n= 0.410 P2= 3.35"
0.2	18	0.0300	1.21		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.4	95	0.0360	3.85		**Shallow Concentrated Flow, Pavement** Paved Kv= 20.3 fps
10.8	163	Total			

Subcatchment 6: Driveway Center Section



Summary for Subcatchment 7: Driveway Entrance

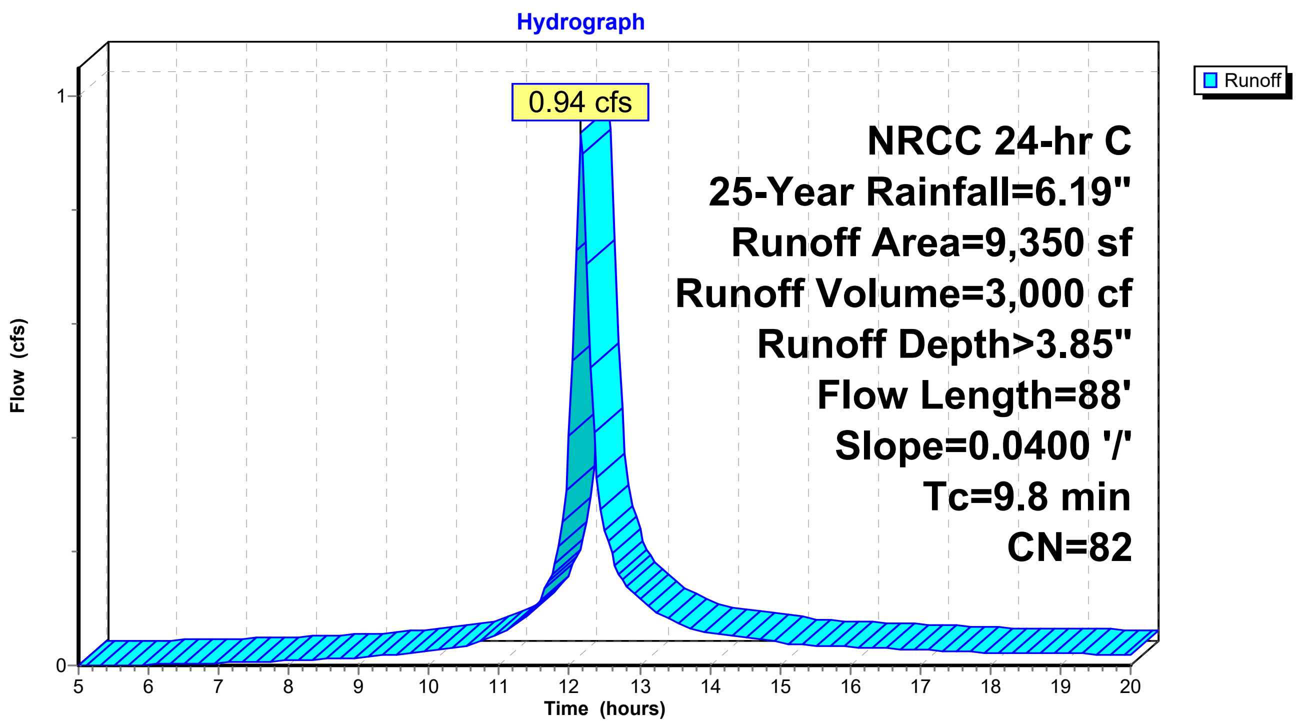
Runoff = 0.94 cfs @ 12.17 hrs, Volume= 3,000 cf, Depth> 3.85"
Routed to Pond CB1 : CB 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 25-Year Rainfall=6.19"

Area (sf)	CN	Description
2,977	98	Paved parking, HSG C
6,373	74	>75% Grass cover, Good, HSG C
9,350	82	Weighted Average
6,373		68.16% Pervious Area
2,977		31.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow, Grass** Grass: Bermuda n= 0.410 P2= 3.35"
0.5	38	0.0400	1.40		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
9.8	88	Total			

Subcatchment 7: Driveway Entrance



Summary for Subcatchment U1: Unit #1

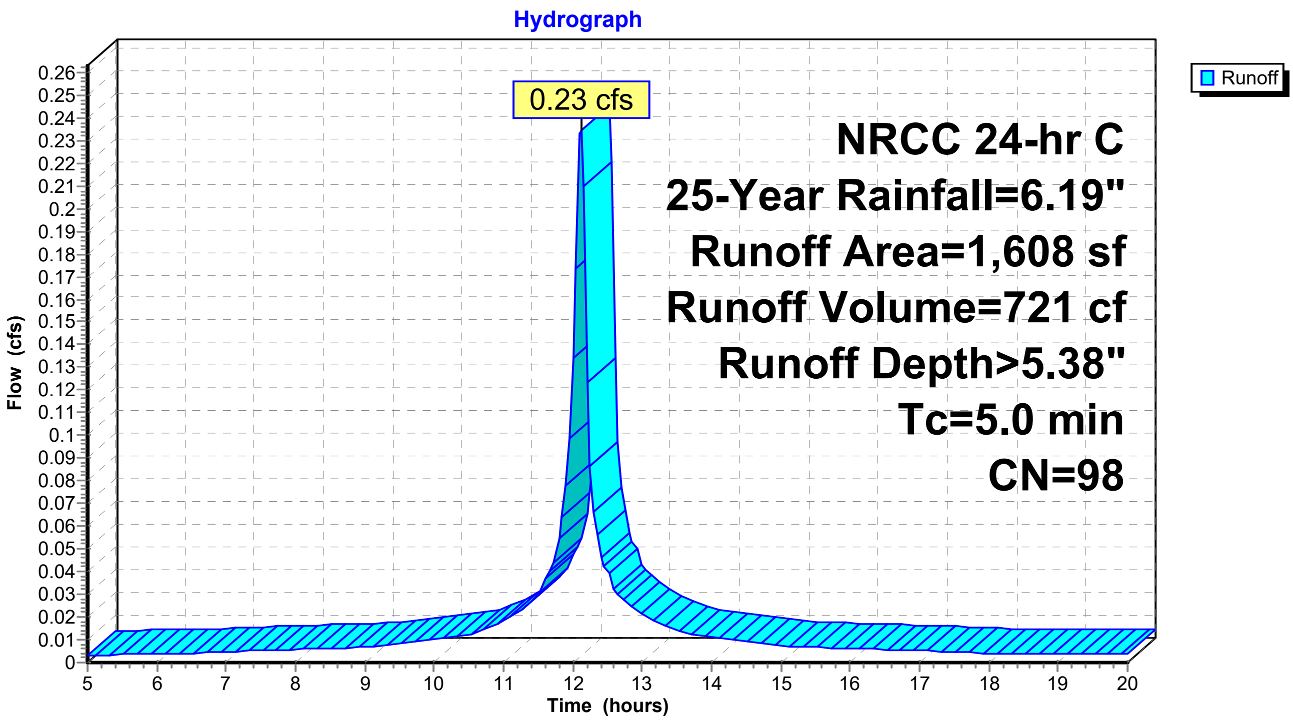
Runoff = 0.23 cfs @ 12.11 hrs, Volume= 721 cf, Depth> 5.38"
Routed to Reach 8R : 6" Roof Drain Carrier Pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 25-Year Rainfall=6.19"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U1: Unit #1



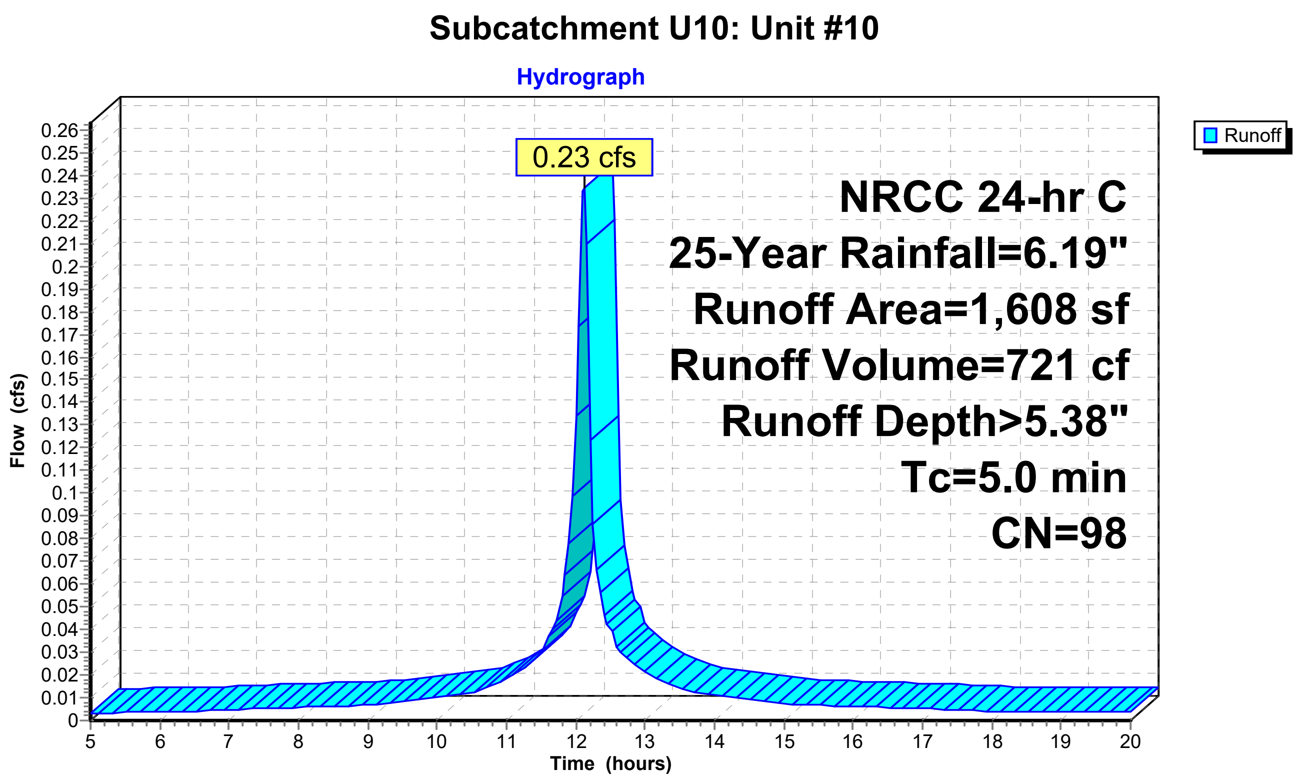
Summary for Subcatchment U10: Unit #10

Runoff = 0.23 cfs @ 12.11 hrs, Volume= 721 cf, Depth> 5.38"
Routed to Pond 1P : Subsurface #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 25-Year Rainfall=6.19"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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



Summary for Subcatchment U11: Unit #11

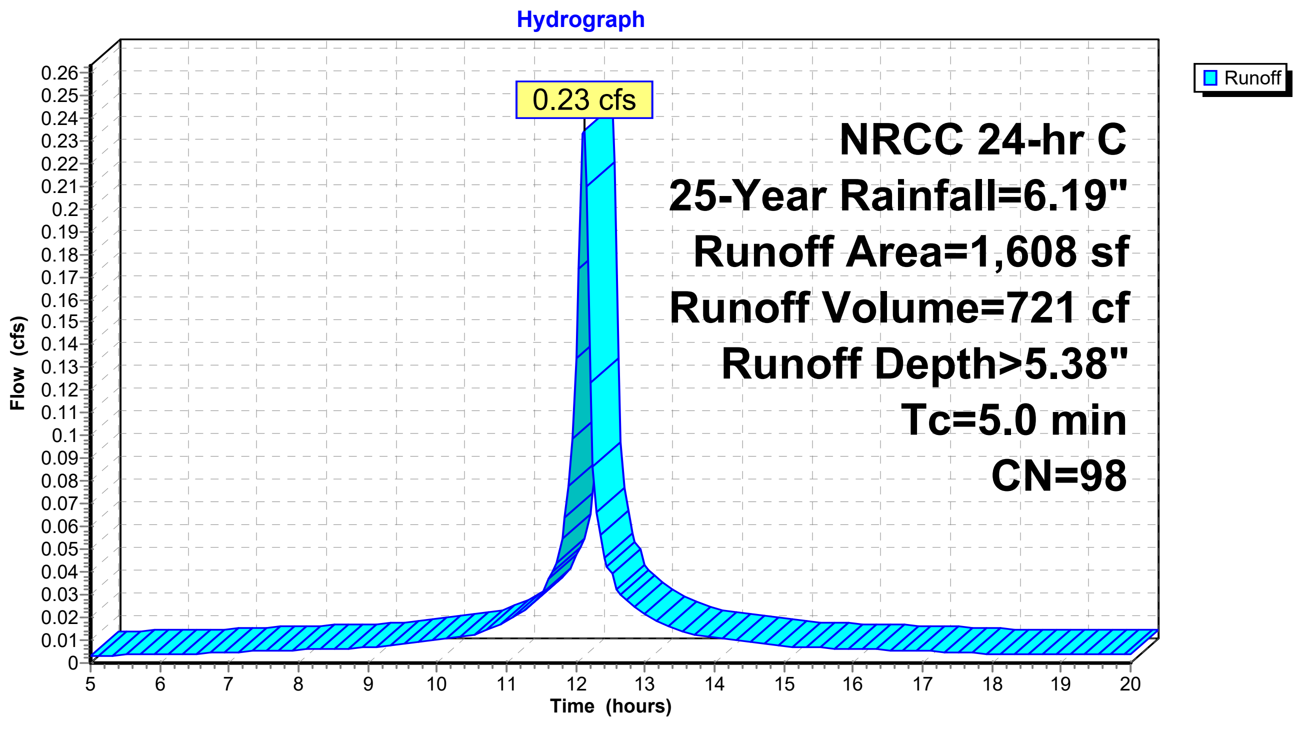
Runoff = 0.23 cfs @ 12.11 hrs, Volume= 721 cf, Depth> 5.38"
Routed to Pond 1P : Subsurface #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 25-Year Rainfall=6.19"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U11: Unit #11



Summary for Subcatchment U2: Unit #2

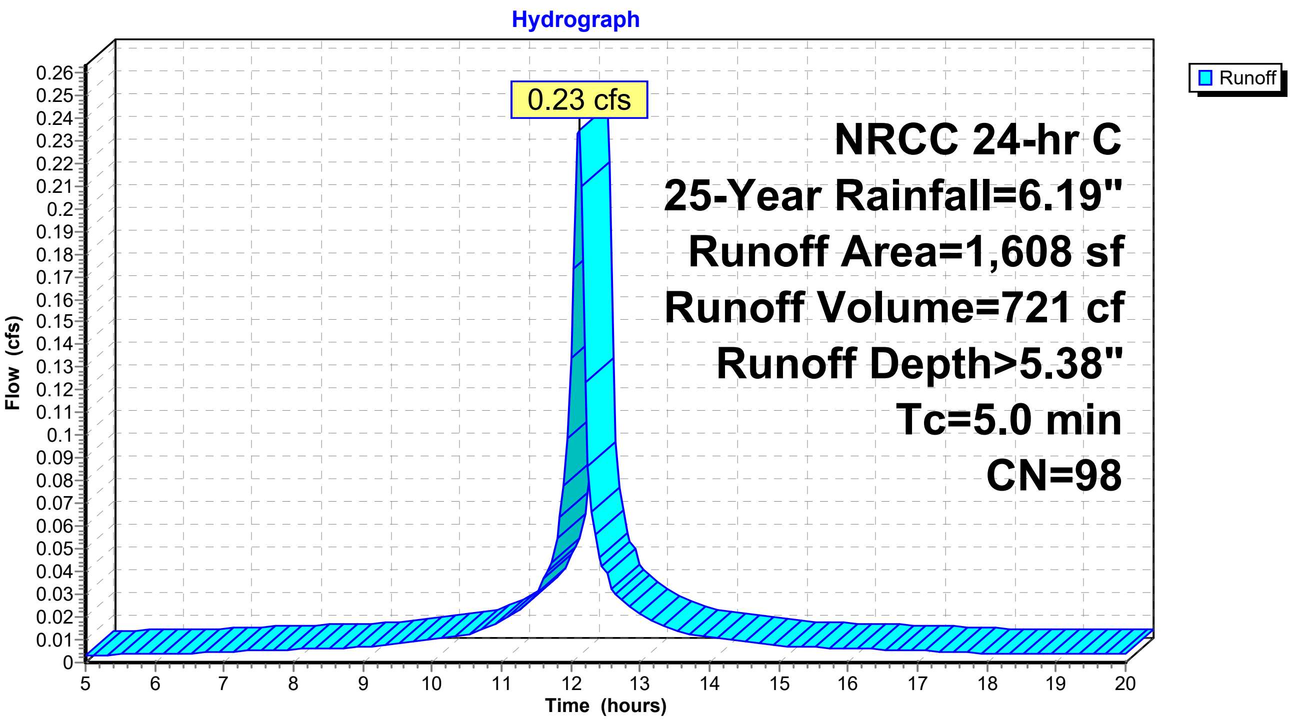
Runoff = 0.23 cfs @ 12.11 hrs, Volume= 721 cf, Depth> 5.38"
Routed to Reach 8R : 6" Roof Drain Carrier Pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 25-Year Rainfall=6.19"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U2: Unit #2



Summary for Subcatchment U3: Unit #3

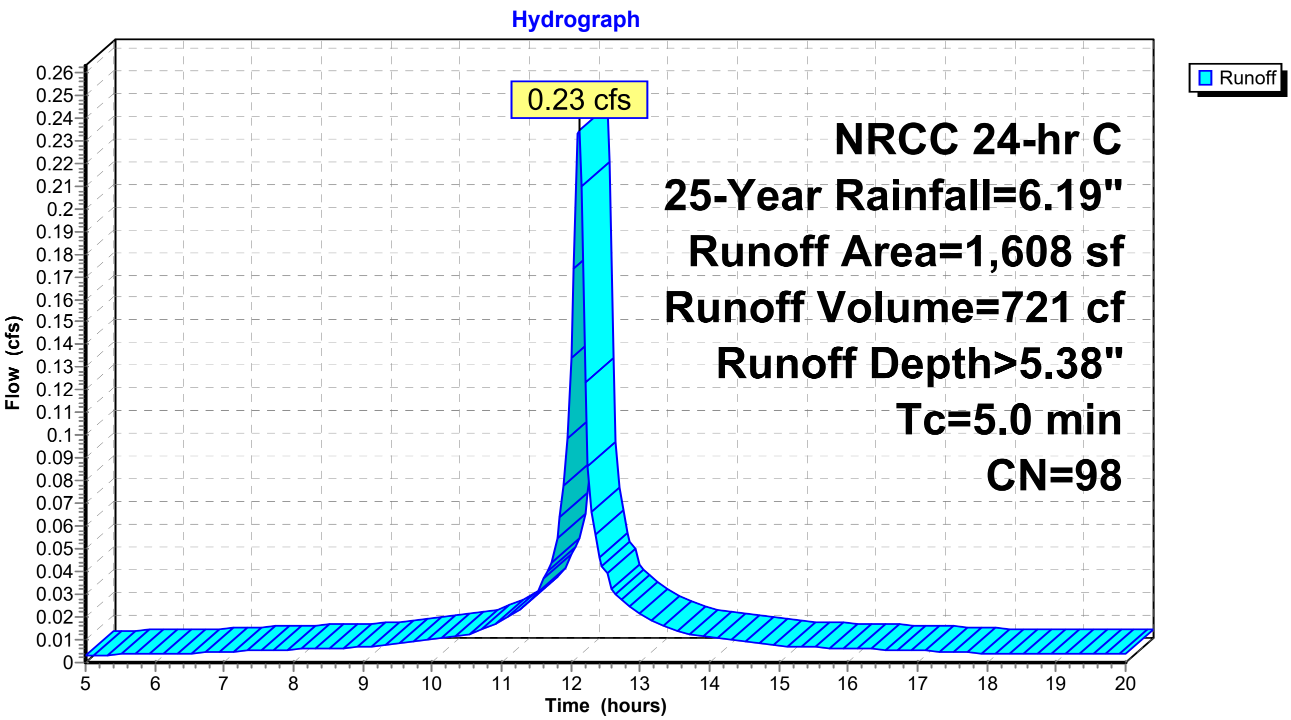
Runoff = 0.23 cfs @ 12.11 hrs, Volume= 721 cf, Depth> 5.38"
Routed to Reach 9R : 12" Roof Drain Carrier Pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 25-Year Rainfall=6.19"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U3: Unit #3



Summary for Subcatchment U4: Unit #4

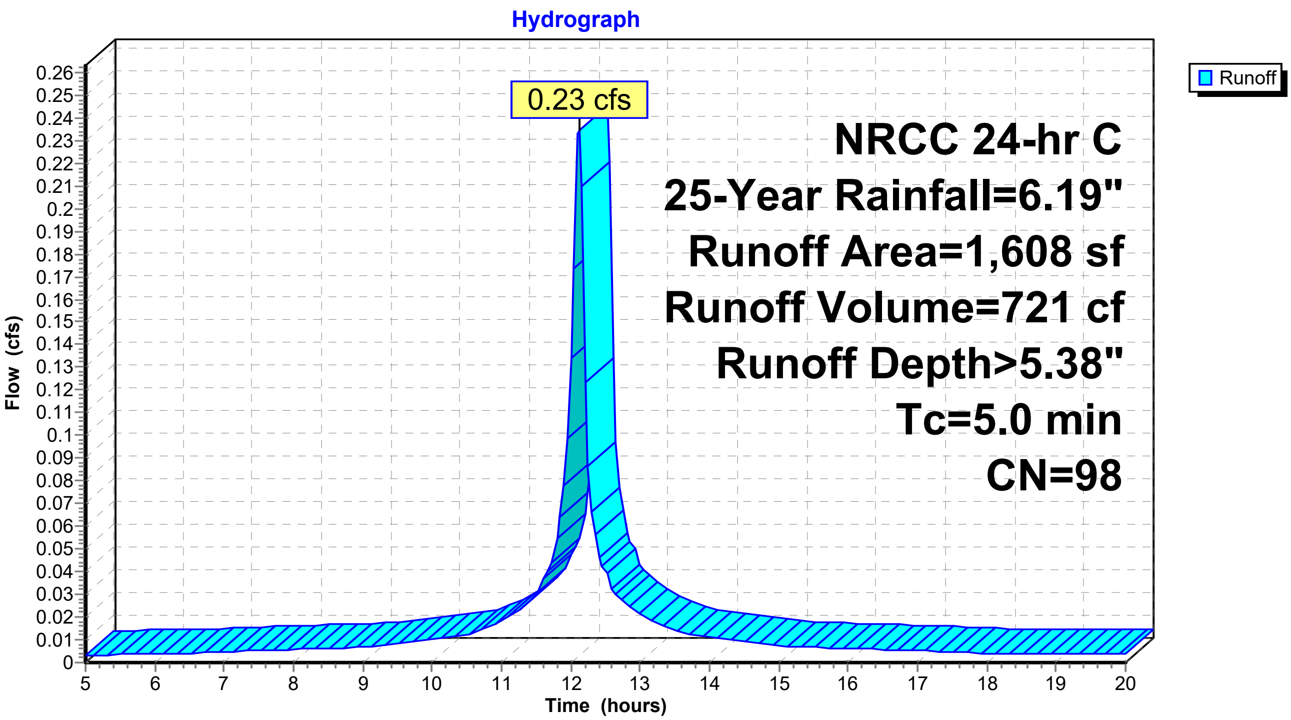
Runoff = 0.23 cfs @ 12.11 hrs, Volume= 721 cf, Depth> 5.38"
Routed to Reach 9R : 12" Roof Drain Carrier Pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 25-Year Rainfall=6.19"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U4: Unit #4



Summary for Subcatchment U5: Unit #5

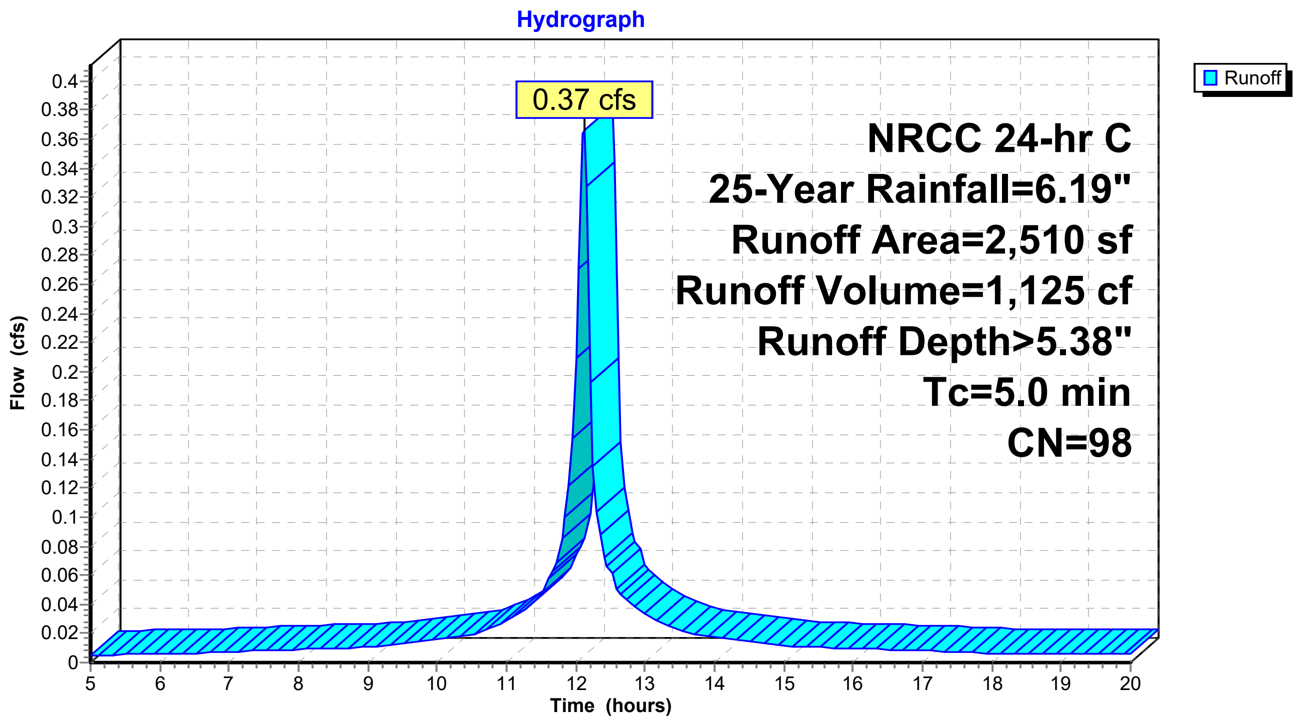
Runoff = 0.37 cfs @ 12.11 hrs, Volume= 1,125 cf, Depth> 5.38"
Routed to Pond IB1 : Infiltration Basin #1 (Exfiltration Zone)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 25-Year Rainfall=6.19"

Area (sf)	CN	Description
2,510	98	Unconnected roofs, HSG C
2,510		100.00% Impervious Area
2,510		100.00% Unconnected

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

Subcatchment U5: Unit #5



Summary for Subcatchment U6: Unit #6

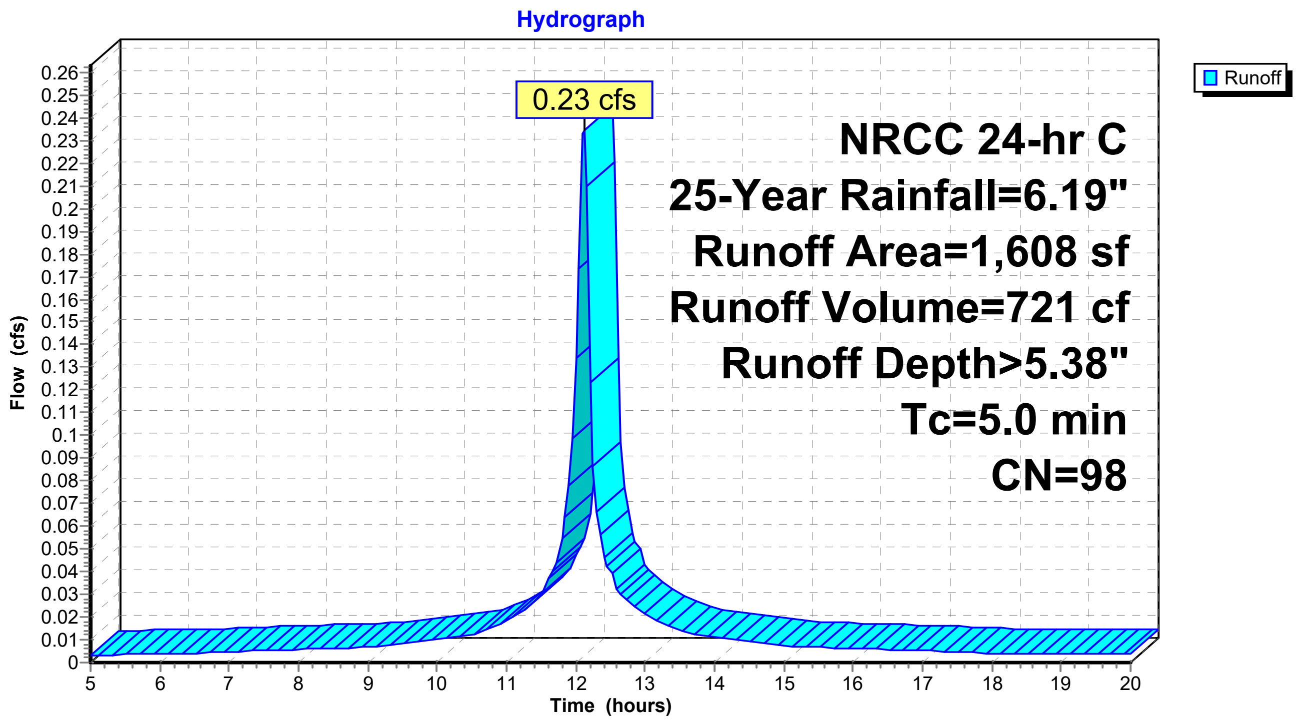
Runoff = 0.23 cfs @ 12.11 hrs, Volume= 721 cf, Depth> 5.38"
Routed to Reach 4R : 8" ROOF DRAIN CARRIER PIPE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 25-Year Rainfall=6.19"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U6: Unit #6



Summary for Subcatchment U7: Unit #7

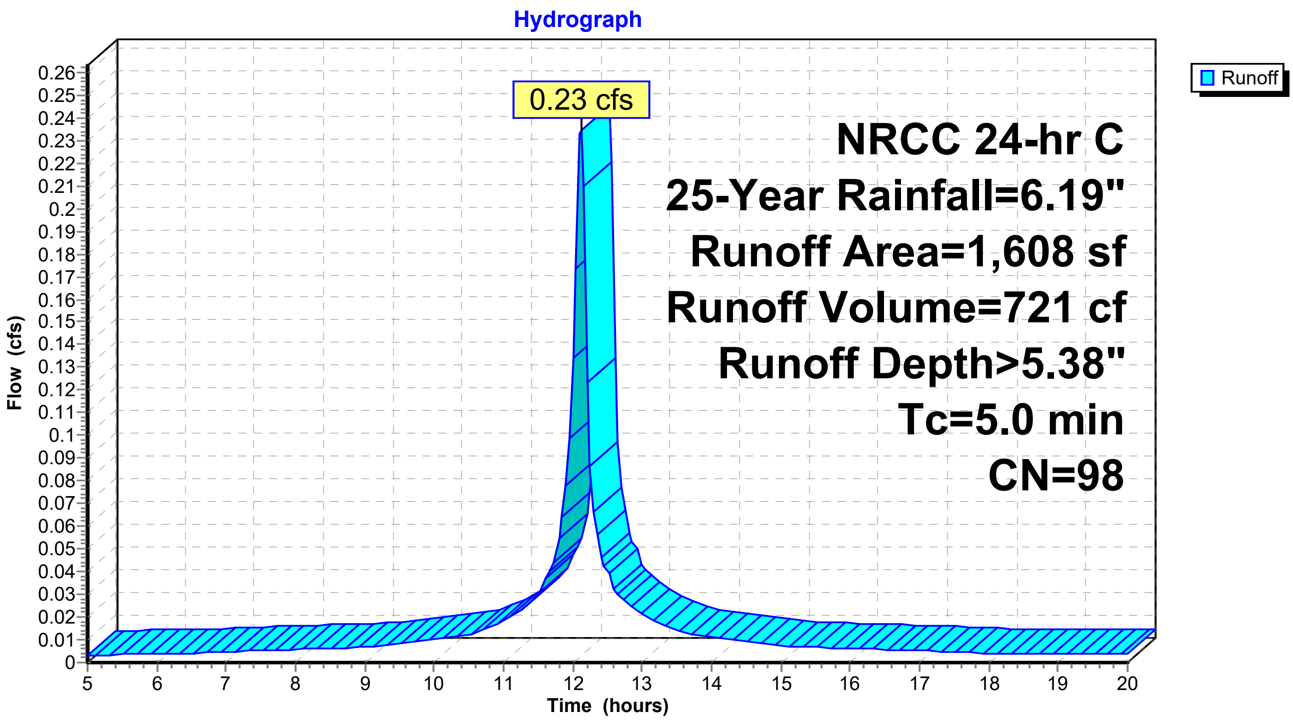
Runoff = 0.23 cfs @ 12.11 hrs, Volume= 721 cf, Depth> 5.38"
Routed to Reach 4R : 8" ROOF DRAIN CARRIER PIPE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 25-Year Rainfall=6.19"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U7: Unit #7



Summary for Subcatchment U8: Unit #8

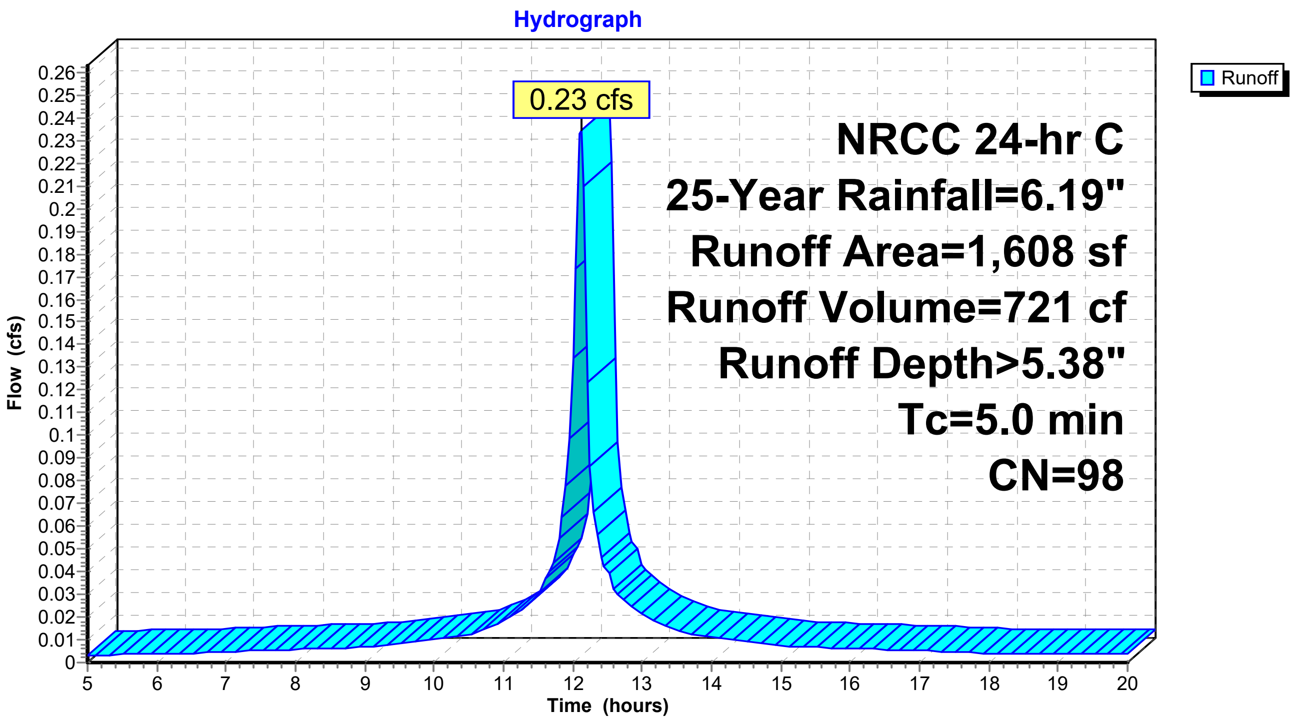
Runoff = 0.23 cfs @ 12.11 hrs, Volume= 721 cf, Depth> 5.38"
Routed to Pond 1P : Subsurface #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 25-Year Rainfall=6.19"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U8: Unit #8



Summary for Subcatchment U9: Unit #9

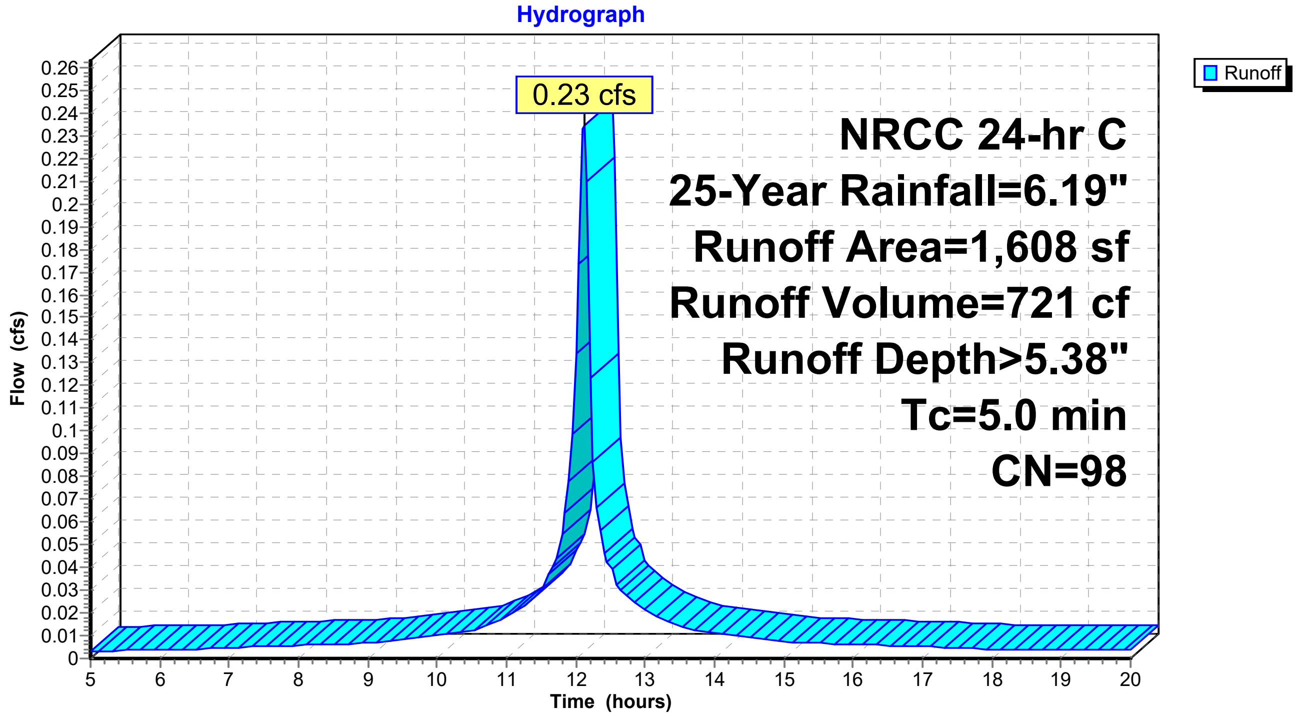
Runoff = 0.23 cfs @ 12.11 hrs, Volume= 721 cf, Depth> 5.38"
Routed to Pond 1P : Subsurface #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 25-Year Rainfall=6.19"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U9: Unit #9



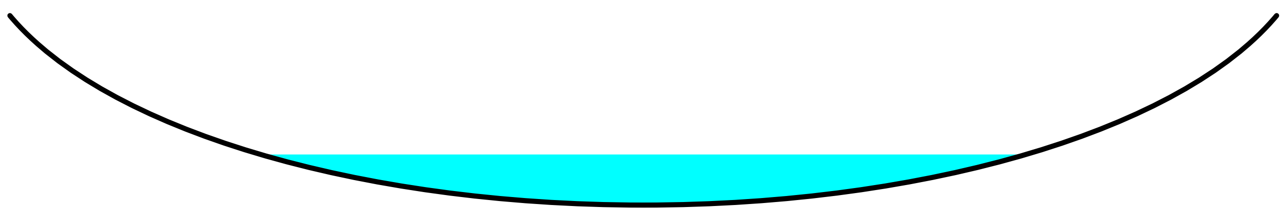
Summary for Reach 3R: Wetland Surface 1

Inflow Area = 26,696 sf, 31.24% Impervious, Inflow Depth > 2.43" for 25-Year event
Inflow = 1.32 cfs @ 12.36 hrs, Volume= 5,416 cf
Outflow = 1.15 cfs @ 12.52 hrs, Volume= 5,369 cf, Atten= 13%, Lag= 9.5 min
Routed to Reach DP1PST : DP 1 - POST

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.50 fps, Min. Travel Time= 11.4 min
Avg. Velocity = 0.24 fps, Avg. Travel Time= 24.4 min

Peak Storage= 785 cf @ 12.52 hrs
Average Depth at Peak Storage= 0.13' , Surface Width= 25.77'
Bank-Full Depth= 0.50' Flow Area= 16.7 sf, Capacity= 20.30 cfs

50.00' x 0.50' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage
Length= 344.0' Slope= 0.0291 '/'
Inlet Invert= 94.00', Outlet Invert= 84.00'



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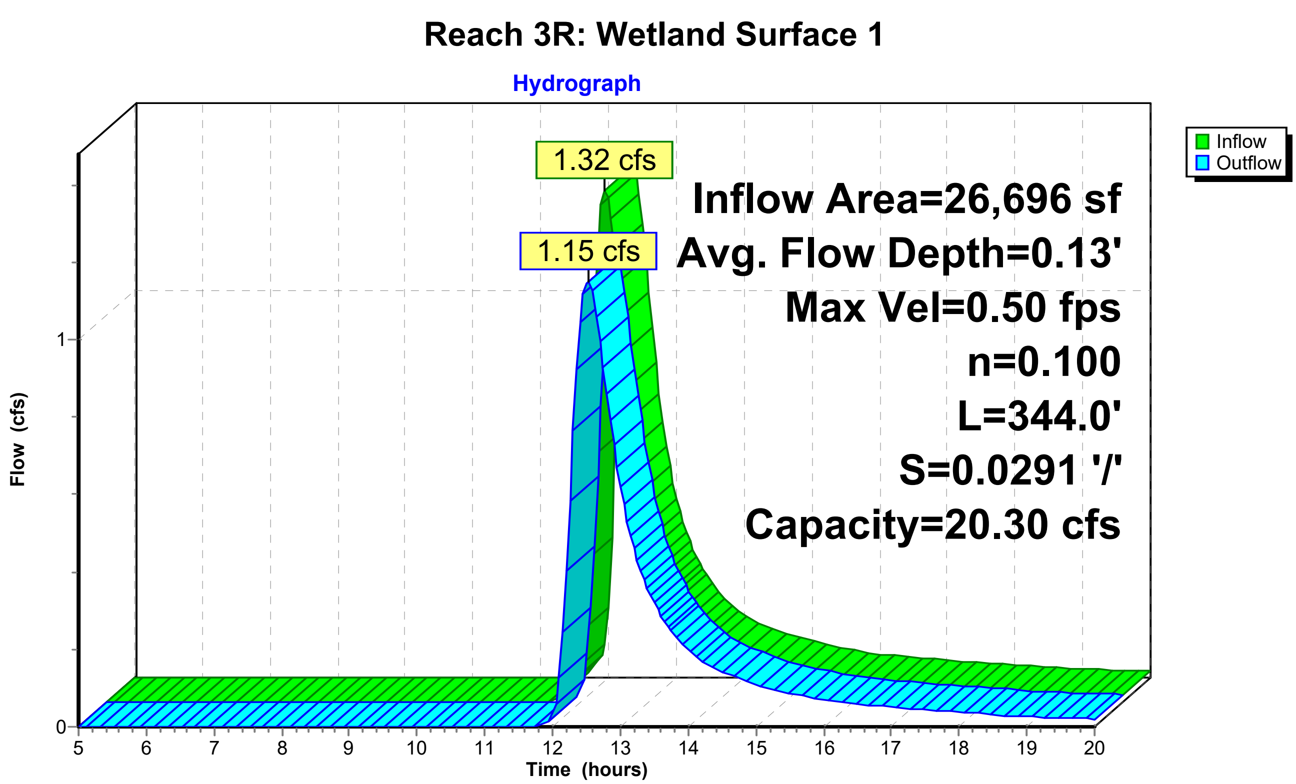


Stage-Discharge for Reach 3R: Wetland Surface 1

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
94.00	0.00	0.00
94.01	0.09	0.00
94.02	0.14	0.02
94.03	0.19	0.05
94.04	0.23	0.09
94.05	0.26	0.14
94.06	0.30	0.21
94.07	0.33	0.29
94.08	0.36	0.38
94.09	0.39	0.49
94.10	0.42	0.62
94.11	0.44	0.76
94.12	0.47	0.92
94.13	0.50	1.10
94.14	0.52	1.29
94.15	0.55	1.49
94.16	0.57	1.72
94.17	0.59	1.96
94.18	0.62	2.22
94.19	0.64	2.49
94.20	0.66	2.79
94.21	0.68	3.10
94.22	0.70	3.43
94.23	0.73	3.77
94.24	0.75	4.14
94.25	0.77	4.52
94.26	0.79	4.92
94.27	0.81	5.34
94.28	0.83	5.78
94.29	0.85	6.24
94.30	0.87	6.71
94.31	0.89	7.21
94.32	0.90	7.72
94.33	0.92	8.25
94.34	0.94	8.80
94.35	0.96	9.37
94.36	0.98	9.96
94.37	1.00	10.57
94.38	1.01	11.20
94.39	1.03	11.85
94.40	1.05	12.52
94.41	1.07	13.20
94.42	1.08	13.91
94.43	1.10	14.64
94.44	1.12	15.39
94.45	1.14	16.15
94.46	1.15	16.94
94.47	1.17	17.75
94.48	1.19	18.58
94.49	1.20	19.43
94.50	**1.22**	**20.30**

Stage-Area-Storage for Reach 3R: Wetland Surface 1

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
94.00	0.0	0
94.01	0.0	16
94.02	0.1	46
94.03	0.2	84
94.04	0.4	130
94.05	0.5	181
94.06	0.7	238
94.07	0.9	300
94.08	1.1	367
94.09	1.3	438
94.10	1.5	513
94.11	1.7	592
94.12	2.0	674
94.13	2.2	760
94.14	2.5	849
94.15	2.7	942
94.16	3.0	1,038
94.17	3.3	1,137
94.18	3.6	1,238
94.19	3.9	1,343
94.20	4.2	1,450
94.21	4.5	1,561
94.22	4.9	1,673
94.23	5.2	1,789
94.24	5.5	1,907
94.25	5.9	2,027
94.26	6.2	2,150
94.27	6.6	2,275
94.28	7.0	2,403
94.29	7.4	2,532
94.30	7.7	2,665
94.31	8.1	2,799
94.32	8.5	2,935
94.33	8.9	3,074
94.34	9.3	3,215
94.35	9.8	3,358
94.36	10.2	3,503
94.37	10.6	3,650
94.38	11.0	3,799
94.39	11.5	3,950
94.40	11.9	4,102
94.41	12.4	4,257
94.42	12.8	4,414
94.43	13.3	4,573
94.44	13.8	4,733
94.45	14.2	4,895
94.46	14.7	5,059
94.47	15.2	5,225
94.48	15.7	5,393
94.49	16.2	5,562
94.50	**16.7**	**5,733**

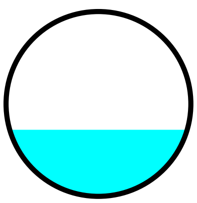
Summary for Reach 4R: 8" ROOF DRAIN CARRIER PIPE

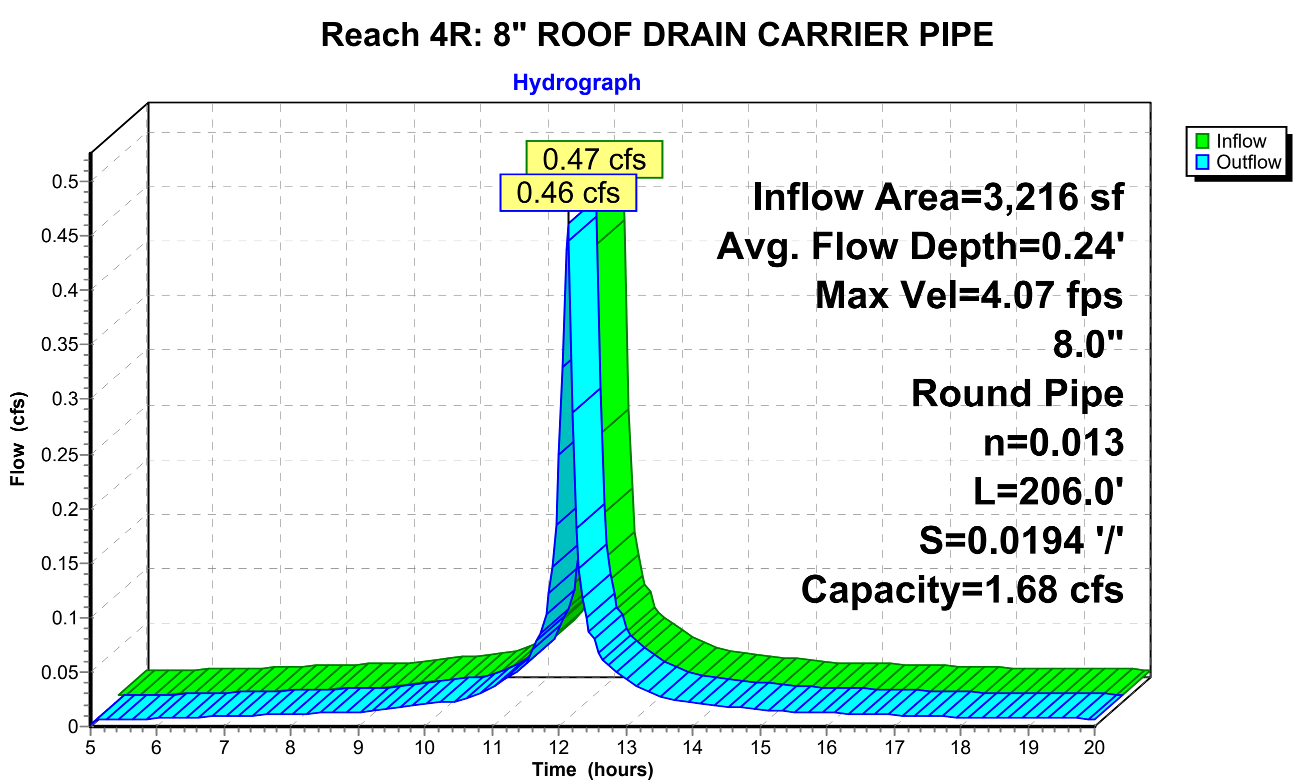
Inflow Area = 3,216 sf,100.00% Impervious, Inflow Depth > 5.38" for 25-Year event
Inflow = 0.47 cfs @ 12.11 hrs, Volume= 1,441 cf
Outflow = 0.46 cfs @ 12.13 hrs, Volume= 1,440 cf, Atten= 2%, Lag= 1.0 min
Routed to Pond IB1 : Infiltration Basin #1 (Exfiltration Zone)

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.07 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.57 fps, Avg. Travel Time= 2.2 min

Peak Storage= 23 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.24' , Surface Width= 0.64'
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 1.68 cfs

8.0" Round Pipe
n= 0.013
Length= 206.0' Slope= 0.0194 '/'
Inlet Invert= 93.00', Outlet Invert= 89.00'





Stage-Discharge for Reach 4R: 8" ROOF DRAIN CARRIER PIPE

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)	Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
93.00	0.00	0.00	93.53	5.50	1.64
93.01	0.55	0.00	93.54	**5.50**	1.67
93.02	0.89	0.00	93.55	5.50	1.69
93.03	1.16	0.01	93.56	5.49	1.72
93.04	1.39	0.01	93.57	5.48	1.74
93.05	1.61	0.02	93.58	5.47	1.76
93.06	1.81	0.03	93.59	5.45	1.78
93.07	2.00	0.04	93.60	5.42	1.79
93.08	2.17	0.05	93.61	5.39	1.80
93.09	2.34	0.07	93.62	5.35	**1.81**
93.10	2.49	0.08	93.63	5.30	1.81
93.11	2.64	0.10	93.64	5.24	1.80
93.12	2.79	0.12	93.65	5.15	1.79
93.13	2.92	0.14	93.66	5.03	1.75
93.14	3.05	0.16	93.67	4.72	1.65
93.15	3.18	0.19			
93.16	3.30	0.21			
93.17	3.42	0.24			
93.18	3.53	0.27			
93.19	3.64	0.30			
93.20	3.74	0.33			
93.21	3.84	0.36			
93.22	3.94	0.40			
93.23	4.04	0.43			
93.24	4.13	0.47			
93.25	4.21	0.50			
93.26	4.30	0.54			
93.27	4.38	0.58			
93.28	4.46	0.62			
93.29	4.53	0.66			
93.30	4.60	0.70			
93.31	4.67	0.74			
93.32	4.74	0.79			
93.33	4.80	0.83			
93.34	4.86	0.87			
93.35	4.92	0.91			
93.36	4.98	0.96			
93.37	5.03	1.00			
93.38	5.08	1.04			
93.39	5.13	1.09			
93.40	5.17	1.13			
93.41	5.22	1.17			
93.42	5.25	1.22			
93.43	5.29	1.26			
93.44	5.33	1.30			
93.45	5.36	1.34			
93.46	5.38	1.38			
93.47	5.41	1.42			
93.48	5.43	1.46			
93.49	5.45	1.50			
93.50	5.47	1.54			
93.51	5.48	1.57			
93.52	5.49	1.60			

Stage-Area-Storage for Reach 4R: 8" ROOF DRAIN CARRIER PIPE

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
93.00	0.0	0
93.01	0.0	0
93.02	0.0	1
93.03	0.0	1
93.04	0.0	2
93.05	0.0	2
93.06	0.0	3
93.07	0.0	4
93.08	0.0	5
93.09	0.0	6
93.10	0.0	7
93.11	0.0	8
93.12	0.0	9
93.13	0.0	10
93.14	0.1	11
93.15	0.1	12
93.16	0.1	13
93.17	0.1	14
93.18	0.1	16
93.19	0.1	17
93.20	0.1	18
93.21	0.1	19
93.22	0.1	21
93.23	0.1	22
93.24	0.1	23
93.25	0.1	25
93.26	0.1	26
93.27	0.1	27
93.28	0.1	29
93.29	0.1	30
93.30	0.2	31
93.31	0.2	33
93.32	0.2	34
93.33	0.2	35
93.34	0.2	37
93.35	0.2	38
93.36	0.2	40
93.37	0.2	41
93.38	0.2	42
93.39	0.2	44
93.40	0.2	45
93.41	0.2	46
93.42	0.2	48
93.43	0.2	49
93.44	0.2	50
93.45	0.3	52
93.46	0.3	53
93.47	0.3	54
93.48	0.3	55
93.49	0.3	57
93.50	0.3	58
93.51	0.3	59
93.52	0.3	60
93.53	0.3	61
93.54	0.3	62
93.55	0.3	63
93.56	0.3	64
93.57	0.3	65
93.58	0.3	66
93.59	0.3	67
93.60	0.3	68
93.61	0.3	69
93.62	0.3	70
93.63	0.3	70
93.64	0.3	71
93.65	0.3	71
93.66	0.3	72
93.67	**0.3**	**72**

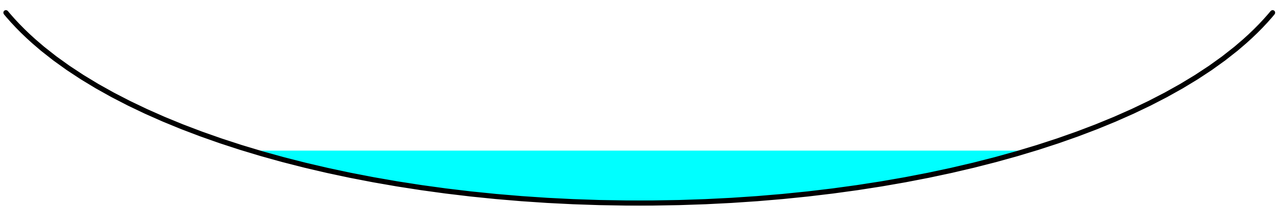
Summary for Reach 5R: Wetland Surface 2

Inflow Area = 13,032 sf, 14.64% Impervious, Inflow Depth > 2.72" for 25-Year event
Inflow = 0.91 cfs @ 12.26 hrs, Volume= 2,950 cf
Outflow = 0.65 cfs @ 12.41 hrs, Volume= 2,905 cf, Atten= 28%, Lag= 9.0 min
Routed to Reach 3R : Wetland Surface 1

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.27 fps, Min. Travel Time= 15.0 min
Avg. Velocity = 0.13 fps, Avg. Travel Time= 31.5 min

Peak Storage= 586 cf @ 12.41 hrs
Average Depth at Peak Storage= 0.14' , Surface Width= 26.18'
Bank-Full Depth= 0.50' Flow Area= 16.7 sf, Capacity= 10.76 cfs

50.00' x 0.50' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage
Length= 245.0' Slope= 0.0082 '/'
Inlet Invert= 96.00', Outlet Invert= 94.00'



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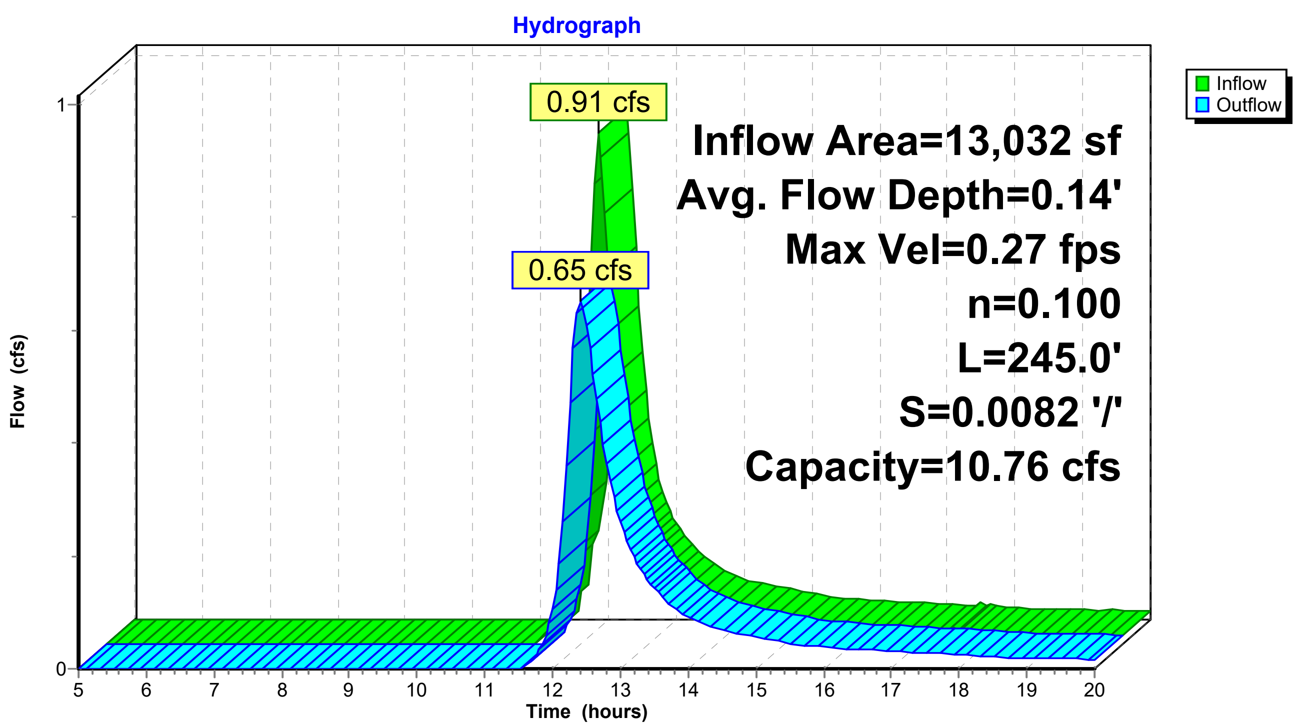
Reach 5R: Wetland Surface 2



Stage-Discharge for Reach 5R: Wetland Surface 2

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
96.00	0.00	0.00
96.01	0.05	0.00
96.02	0.08	0.01
96.03	0.10	0.02
96.04	0.12	0.05
96.05	0.14	0.07
96.06	0.16	0.11
96.07	0.17	0.15
96.08	0.19	0.20
96.09	0.21	0.26
96.10	0.22	0.33
96.11	0.24	0.40
96.12	0.25	0.49
96.13	0.26	0.58
96.14	0.28	0.68
96.15	0.29	0.79
96.16	0.30	0.91
96.17	0.31	1.04
96.18	0.33	1.18
96.19	0.34	1.32
96.20	0.35	1.48
96.21	0.36	1.64
96.22	0.37	1.82
96.23	0.38	2.00
96.24	0.40	2.19
96.25	0.41	2.40
96.26	0.42	2.61
96.27	0.43	2.83
96.28	0.44	3.06
96.29	0.45	3.30
96.30	0.46	3.56
96.31	0.47	3.82
96.32	0.48	4.09
96.33	0.49	4.37
96.34	0.50	4.66
96.35	0.51	4.97
96.36	0.52	5.28
96.37	0.53	5.60
96.38	0.54	5.94
96.39	0.55	6.28
96.40	0.56	6.63
96.41	0.57	7.00
96.42	0.57	7.37
96.43	0.58	7.76
96.44	0.59	8.15
96.45	0.60	8.56
96.46	0.61	8.98
96.47	0.62	9.41
96.48	0.63	9.85
96.49	0.64	10.30
96.50	**0.65**	**10.76**

Stage-Area-Storage for Reach 5R: Wetland Surface 2

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
96.00	0.0	0
96.01	0.0	12
96.02	0.1	33
96.03	0.2	60
96.04	0.4	92
96.05	0.5	129
96.06	0.7	170
96.07	0.9	214
96.08	1.1	261
96.09	1.3	312
96.10	1.5	365
96.11	1.7	421
96.12	2.0	480
96.13	2.2	541
96.14	2.5	605
96.15	2.7	671
96.16	3.0	739
96.17	3.3	810
96.18	3.6	882
96.19	3.9	957
96.20	4.2	1,033
96.21	4.5	1,111
96.22	4.9	1,192
96.23	5.2	1,274
96.24	5.5	1,358
96.25	5.9	1,444
96.26	6.2	1,531
96.27	6.6	1,620
96.28	7.0	1,711
96.29	7.4	1,804
96.30	7.7	1,898
96.31	8.1	1,993
96.32	8.5	2,091
96.33	8.9	2,189
96.34	9.3	2,290
96.35	9.8	2,391
96.36	10.2	2,495
96.37	10.6	2,599
96.38	11.0	2,705
96.39	11.5	2,813
96.40	11.9	2,922
96.41	12.4	3,032
96.42	12.8	3,144
96.43	13.3	3,257
96.44	13.8	3,371
96.45	14.2	3,486
96.46	14.7	3,603
96.47	15.2	3,721
96.48	15.7	3,841
96.49	16.2	3,961
96.50	**16.7**	**4,083**

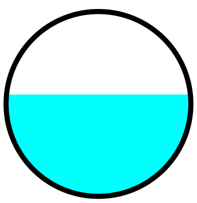
Summary for Reach 8R: 6" Roof Drain Carrier Pipe

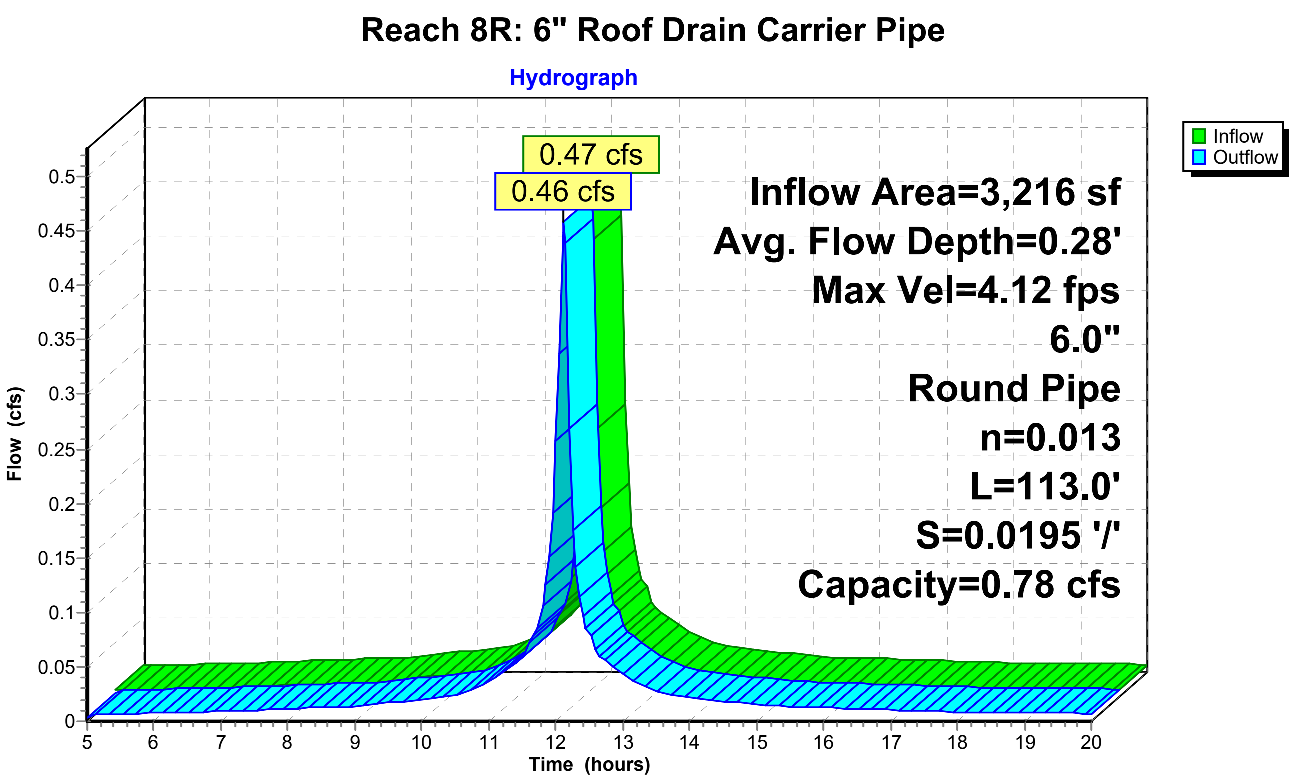
Inflow Area = 3,216 sf,100.00% Impervious, Inflow Depth > 5.38" for 25-Year event
Inflow = 0.47 cfs @ 12.11 hrs, Volume= 1,441 cf
Outflow = 0.46 cfs @ 12.12 hrs, Volume= 1,441 cf, Atten= 2%, Lag= 0.6 min
Routed to Reach 9R : 12" Roof Drain Carrier Pipe

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.12 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.63 fps, Avg. Travel Time= 1.2 min

Peak Storage= 13 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.28' , Surface Width= 0.50'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.78 cfs

6.0" Round Pipe
n= 0.013
Length= 113.0' Slope= 0.0195 '/'
Inlet Invert= 94.50', Outlet Invert= 92.30'





Stage-Discharge for Reach 8R: 6" Roof Drain Carrier Pipe

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
94.50	0.00	0.00
94.51	0.56	0.00
94.52	0.89	0.00
94.53	1.15	0.01
94.54	1.39	0.01
94.55	1.60	0.02
94.56	1.79	0.02
94.57	1.97	0.03
94.58	2.14	0.04
94.59	2.30	0.06
94.60	2.45	0.07
94.61	2.59	0.08
94.62	2.73	0.10
94.63	2.86	0.12
94.64	2.98	0.13
94.65	3.09	0.15
94.66	3.21	0.17
94.67	3.31	0.19
94.68	3.41	0.22
94.69	3.51	0.24
94.70	3.60	0.26
94.71	3.68	0.29
94.72	3.77	0.31
94.73	3.84	0.34
94.74	3.92	0.37
94.75	3.99	0.39
94.76	4.05	0.42
94.77	4.11	0.45
94.78	4.17	0.47
94.79	4.23	0.50
94.80	4.28	0.53
94.81	4.32	0.55
94.82	4.36	0.58
94.83	4.40	0.61
94.84	4.44	0.63
94.85	4.46	0.66
94.86	4.49	0.68
94.87	4.51	0.70
94.88	4.53	0.72
94.89	4.54	0.75
94.90	4.54	0.77
94.91	**4.55**	0.78
94.92	4.54	0.80
94.93	4.53	0.81
94.94	4.51	0.83
94.95	4.48	0.83
94.96	4.45	0.84
94.97	4.40	**0.84**
94.98	4.33	0.84
94.99	4.23	0.83
95.00	3.99	0.78

Stage-Area-Storage for Reach 8R: 6" Roof Drain Carrier Pipe

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
94.50	0.0	0
94.51	0.0	0
94.52	0.0	0
94.53	0.0	1
94.54	0.0	1
94.55	0.0	1
94.56	0.0	2
94.57	0.0	2
94.58	0.0	2
94.59	0.0	3
94.60	0.0	3
94.61	0.0	4
94.62	0.0	4
94.63	0.0	5
94.64	0.0	5
94.65	0.0	6
94.66	0.1	6
94.67	0.1	7
94.68	0.1	7
94.69	0.1	8
94.70	0.1	8
94.71	0.1	9
94.72	0.1	9
94.73	0.1	10
94.74	0.1	11
94.75	0.1	11
94.76	0.1	12
94.77	0.1	12
94.78	0.1	13
94.79	0.1	13
94.80	0.1	14
94.81	0.1	14
94.82	0.1	15
94.83	0.1	16
94.84	0.1	16
94.85	0.1	17
94.86	0.2	17
94.87	0.2	18
94.88	0.2	18
94.89	0.2	19
94.90	0.2	19
94.91	0.2	19
94.92	0.2	20
94.93	0.2	20
94.94	0.2	21
94.95	0.2	21
94.96	0.2	21
94.97	0.2	22
94.98	0.2	22
94.99	0.2	22
95.00	**0.2**	**22**

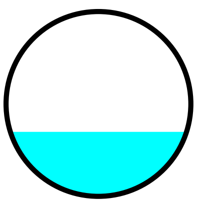
Summary for Reach 9R: 12" Roof Drain Carrier Pipe

Inflow Area = 6,432 sf,100.00% Impervious, Inflow Depth > 5.38" for 25-Year event
Inflow = 0.93 cfs @ 12.12 hrs, Volume= 2,882 cf
Outflow = 0.92 cfs @ 12.13 hrs, Volume= 2,879 cf, Atten= 1%, Lag= 1.0 min
Routed to Pond IB1 : Infiltration Basin #1 (Exfiltration Zone)

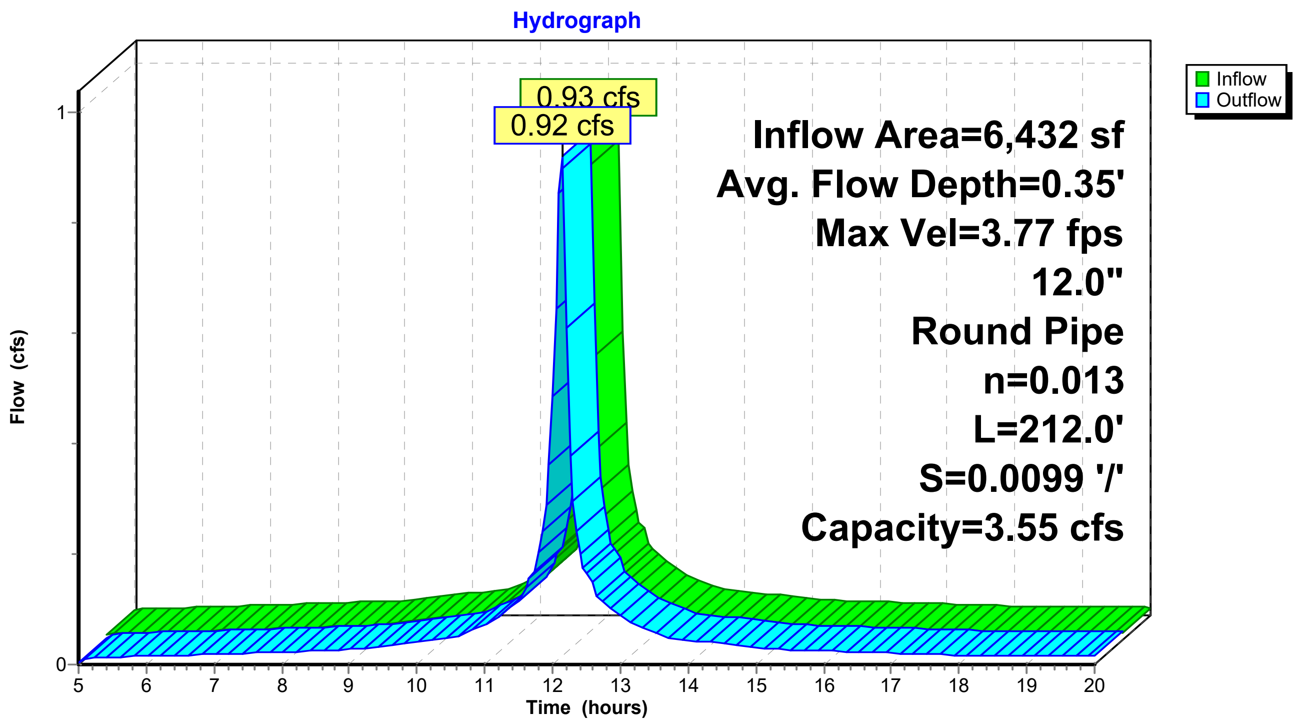
Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.77 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.45 fps, Avg. Travel Time= 2.4 min

Peak Storage= 52 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.35' , Surface Width= 0.95'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.55 cfs

12.0" Round Pipe
n= 0.013
Length= 212.0' Slope= 0.0099 '/'
Inlet Invert= 91.10', Outlet Invert= 89.00'



Reach 9R: 12" Roof Drain Carrier Pipe



Stage-Discharge for Reach 9R: 12" Roof Drain Carrier Pipe

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
91.10	0.00	0.00
91.11	0.40	0.00
91.12	0.64	0.00
91.13	0.83	0.01
91.14	1.00	0.01
91.15	1.16	0.02
91.16	1.31	0.03
91.17	1.44	0.03
91.18	1.57	0.05
91.19	1.69	0.06
91.20	1.81	0.07
91.21	1.92	0.09
91.22	2.03	0.11
91.23	2.14	0.13
91.24	2.24	0.15
91.25	2.33	0.17
91.26	2.43	0.20
91.27	2.52	0.22
91.28	2.61	0.25
91.29	2.69	0.28
91.30	2.78	0.31
91.31	2.86	0.34
91.32	2.94	0.38
91.33	3.01	0.41
91.34	3.09	0.45
91.35	3.16	0.49
91.36	3.23	0.52
91.37	3.30	0.57
91.38	3.37	0.61
91.39	3.44	0.65
91.40	3.50	0.69
91.41	3.57	0.74
91.42	3.63	0.79
91.43	3.69	0.83
91.44	3.75	0.88
91.45	3.81	0.93
91.46	3.86	0.98
91.47	3.92	1.03
91.48	3.97	1.09
91.49	4.02	1.14
91.50	4.07	1.19
91.51	4.12	1.25
91.52	4.17	1.31
91.53	4.22	1.36
91.54	4.26	1.42
91.55	4.31	1.48
91.56	4.35	1.54
91.57	4.39	1.59
91.58	4.44	1.65
91.59	4.48	1.71
91.60	4.51	1.77
91.61	4.55	1.83
91.62	4.59	1.89
91.63	4.62	1.95
91.64	4.66	2.02
91.65	4.69	2.08
91.66	4.72	2.14
91.67	4.76	2.20
91.68	4.79	2.26
91.69	4.81	2.32
91.70	4.84	2.38
91.71	4.87	2.44
91.72	4.89	2.50
91.73	4.92	2.56
91.74	4.94	2.62
91.75	4.96	2.68
91.76	4.98	2.74
91.77	5.00	2.80
91.78	5.02	2.86
91.79	5.04	2.91
91.80	5.06	2.97
91.81	5.07	3.02
91.82	5.08	3.08
91.83	5.10	3.13
91.84	5.11	3.18
91.85	5.12	3.23
91.86	5.13	3.28
91.87	5.13	3.33
91.88	5.14	3.38
91.89	5.14	3.42
91.90	5.15	3.47
91.91	**5.15**	3.51
91.92	5.15	3.55
91.93	5.14	3.59
91.94	5.14	3.62
91.95	5.14	3.65
91.96	5.13	3.68
91.97	5.12	3.71
91.98	5.11	3.74
91.99	5.09	3.76
92.00	5.08	3.78
92.01	5.06	3.79
92.02	5.03	3.81
92.03	5.01	3.81
92.04	4.98	**3.81**
92.05	4.94	3.81
92.06	4.90	3.80
92.07	4.85	3.78
92.08	4.79	3.75
92.09	4.71	3.69
92.10	4.51	3.55

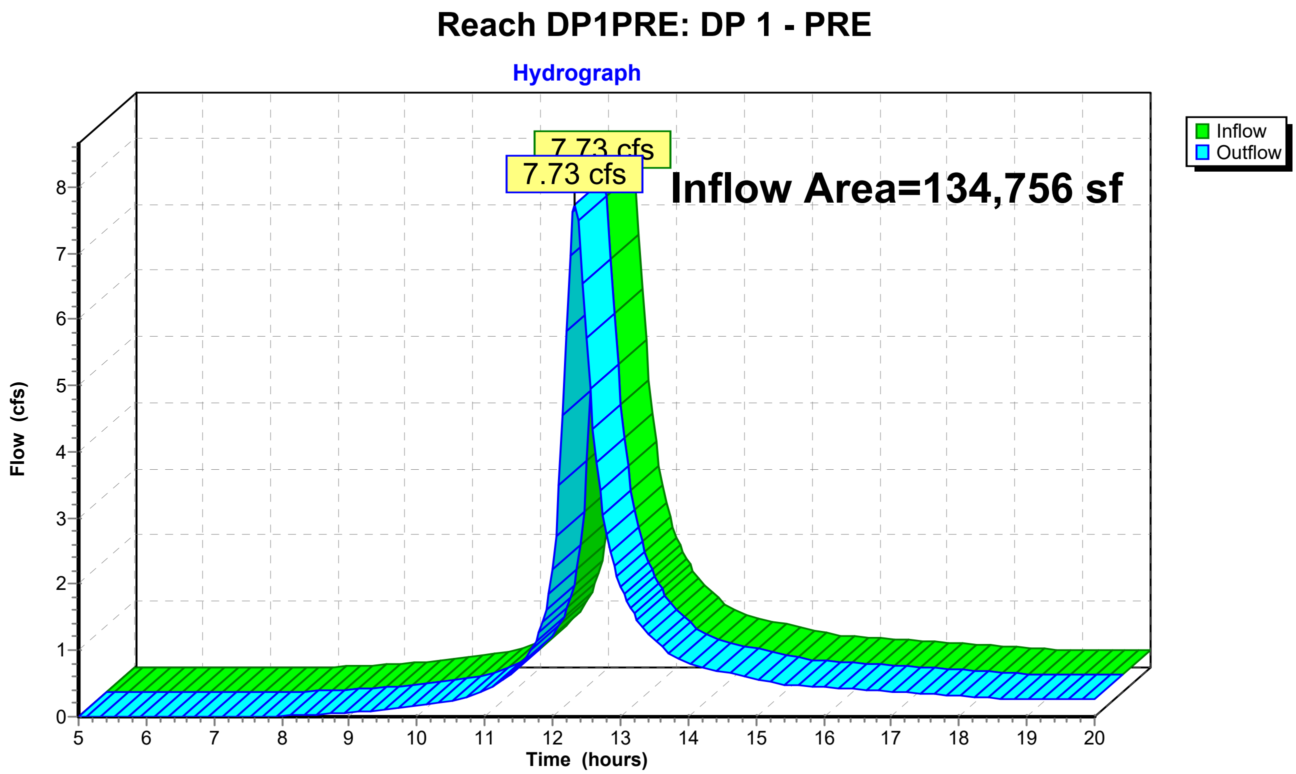
Stage-Area-Storage for Reach 9R: 12" Roof Drain Carrier Pipe

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
91.10	0.0	0	91.63	0.4	90
91.11	0.0	0	91.64	0.4	92
91.12	0.0	1	91.65	0.4	94
91.13	0.0	1	91.66	0.5	96
91.14	0.0	2	91.67	0.5	98
91.15	0.0	3	91.68	0.5	100
91.16	0.0	4	91.69	0.5	102
91.17	0.0	5	91.70	0.5	104
91.18	0.0	6	91.71	0.5	106
91.19	0.0	7	91.72	0.5	108
91.20	0.0	9	91.73	0.5	110
91.21	0.0	10	91.74	0.5	113
91.22	0.1	11	91.75	0.5	115
91.23	0.1	13	91.76	0.5	117
91.24	0.1	14	91.77	0.6	119
91.25	0.1	16	91.78	0.6	121
91.26	0.1	17	91.79	0.6	123
91.27	0.1	19	91.80	0.6	124
91.28	0.1	20	91.81	0.6	126
91.29	0.1	22	91.82	0.6	128
91.30	0.1	24	91.83	0.6	130
91.31	0.1	25	91.84	0.6	132
91.32	0.1	27	91.85	0.6	134
91.33	0.1	29	91.86	0.6	136
91.34	0.1	31	91.87	0.6	138
91.35	0.2	33	91.88	0.7	139
91.36	0.2	34	91.89	0.7	141
91.37	0.2	36	91.90	0.7	143
91.38	0.2	38	91.91	0.7	144
91.39	0.2	40	91.92	0.7	146
91.40	0.2	42	91.93	0.7	148
91.41	0.2	44	91.94	0.7	149
91.42	0.2	46	91.95	0.7	151
91.43	0.2	48	91.96	0.7	152
91.44	0.2	50	91.97	0.7	154
91.45	0.2	52	91.98	0.7	155
91.46	0.3	54	91.99	0.7	157
91.47	0.3	56	92.00	0.7	158
91.48	0.3	58	92.01	0.8	159
91.49	0.3	60	92.02	0.8	160
91.50	0.3	62	92.03	0.8	161
91.51	0.3	64	92.04	0.8	162
91.52	0.3	66	92.05	0.8	163
91.53	0.3	68	92.06	0.8	164
91.54	0.3	71	92.07	0.8	165
91.55	0.3	73	92.08	0.8	166
91.56	0.4	75	92.09	0.8	166
91.57	0.4	77	92.10	**0.8**	**167**
91.58	0.4	79			
91.59	0.4	81			
91.60	0.4	83			
91.61	0.4	85			
91.62	0.4	87			

Summary for Reach DP1PRE: DP 1 - PRE

Inflow Area = 134,756 sf, 4.57% Impervious, Inflow Depth > 3.04" for 25-Year event
Inflow = 7.73 cfs @ 12.33 hrs, Volume= 34,177 cf
Outflow = 7.73 cfs @ 12.33 hrs, Volume= 34,177 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

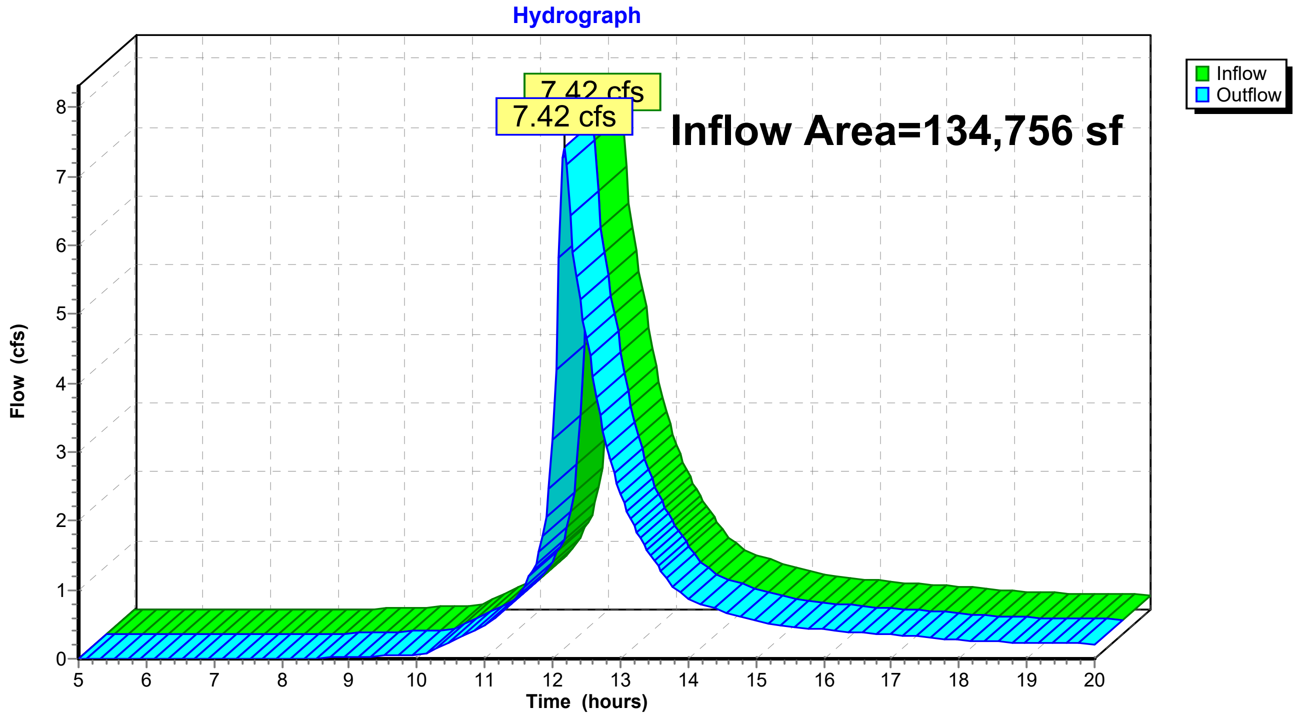


Summary for Reach DP1PST: DP 1 - POST

Inflow Area = 134,756 sf, 26.93% Impervious, Inflow Depth > 3.13" for 25-Year event
Inflow = 7.42 cfs @ 12.17 hrs, Volume= 35,126 cf
Outflow = 7.42 cfs @ 12.17 hrs, Volume= 35,126 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP1PST: DP 1 - POST



Summary for Pond 1P: Subsurface #1

Inflow Area = 13,664 sf, 47.07% Impervious, Inflow Depth > 4.15" for 25-Year event
Inflow = 1.39 cfs @ 12.13 hrs, Volume= 4,725 cf
Outflow = 0.75 cfs @ 12.27 hrs, Volume= 3,962 cf, Atten= 46%, Lag= 8.6 min
Discarded = 0.03 cfs @ 9.50 hrs, Volume= 1,450 cf
Primary = 0.72 cfs @ 12.27 hrs, Volume= 2,511 cf
Routed to Reach 3R : Wetland Surface 1

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 97.83' @ 12.27 hrs Surf.Area= 1,248 sf Storage= 1,452 cf

Plug-Flow detention time= 78.8 min calculated for 3,948 cf (84% of inflow)
Center-of-Mass det. time= 29.6 min (788.3 - 758.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	96.00'	902 cf	**37.25'W x 33.50'L x 2.54'H Field A** 3,172 cf Overall - 918 cf Embedded = 2,254 cf x 40.0% Voids
#2A	96.50'	918 cf	**Cultec R-150XLHD** x 33 Inside #1 Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap Row Length Adjustment= +0.75' x 2.65 sf x 11 rows
		1,819 cf	Total Available Storage

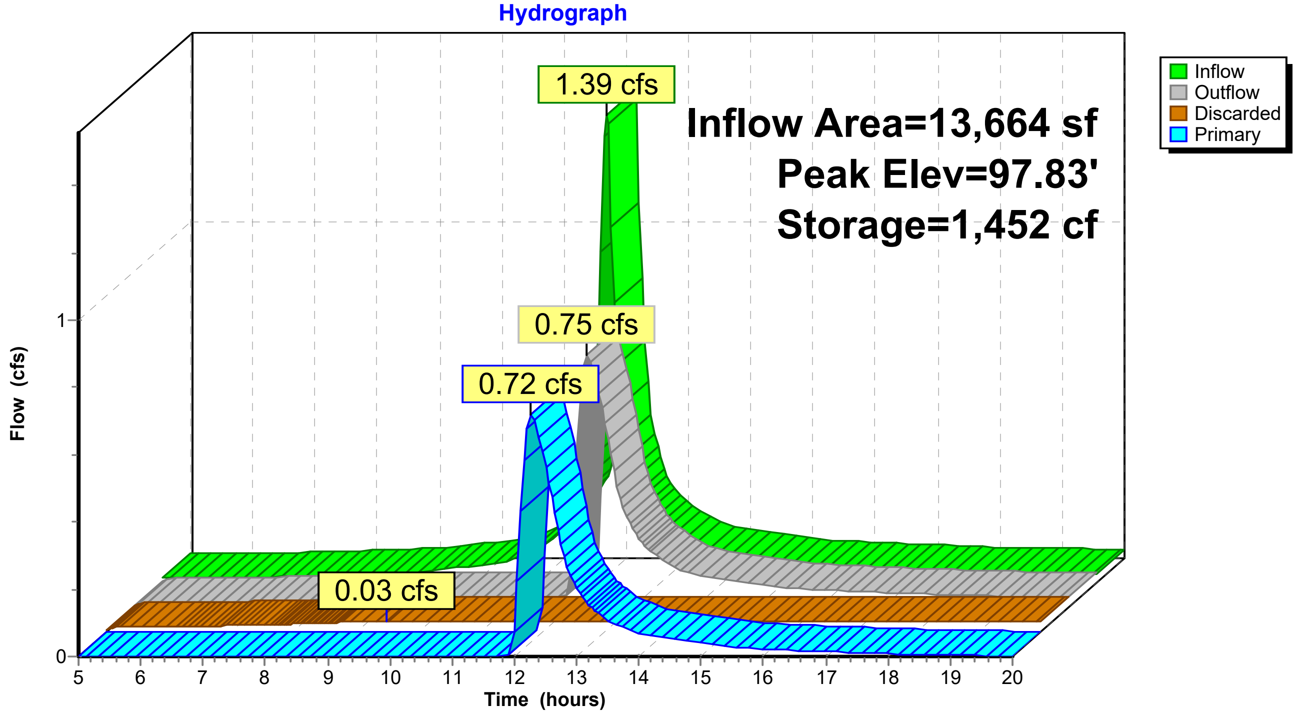
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	96.00'	**1.020 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	99.00'	**6.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Primary	97.00'	**6.0" Round Culvert** L= 15.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 97.00' / 96.75' S= 0.0167 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf

Discarded OutFlow Max=0.03 cfs @ 9.50 hrs HW=96.03' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.72 cfs @ 12.27 hrs HW=97.82' TW=94.10' (Dynamic Tailwater)
├─**2=Orifice/Grate** (Controls 0.00 cfs)
└─**3=Culvert** (Inlet Controls 0.72 cfs @ 3.64 fps)

Pond 1P: Subsurface #1



Stage-Discharge for Pond 1P: Subsurface #1

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
96.00	0.00	**0.00**	0.00
96.05	0.03	**0.03**	0.00
96.10	0.03	0.03	0.00
96.15	0.03	0.03	0.00
96.20	0.03	0.03	0.00
96.25	0.03	0.03	0.00
96.30	0.03	0.03	0.00
96.35	0.03	0.03	0.00
96.40	0.03	0.03	0.00
96.45	0.03	0.03	0.00
96.50	0.03	0.03	0.00
96.55	0.03	0.03	0.00
96.60	0.03	0.03	0.00
96.65	0.03	0.03	0.00
96.70	0.03	0.03	0.00
96.75	0.03	0.03	0.00
96.80	0.03	0.03	0.00
96.85	0.03	0.03	0.00
96.90	0.03	0.03	0.00
96.95	0.03	0.03	0.00
97.00	0.03	0.03	0.00
97.05	0.04	0.03	0.01
97.10	0.06	0.03	0.03
97.15	0.09	0.03	0.07
97.20	0.14	0.03	0.11
97.25	0.20	0.03	0.17
97.30	0.26	0.03	0.23
97.35	0.33	0.03	0.30
97.40	0.39	0.03	0.36
97.45	0.45	0.03	0.43
97.50	0.50	0.03	0.47
97.55	0.55	0.03	0.52
97.60	0.59	0.03	0.56
97.65	0.63	0.03	0.60
97.70	0.66	0.03	0.63
97.75	0.70	0.03	0.67
97.80	0.73	0.03	0.70
97.85	0.76	0.03	0.73
97.90	0.79	0.03	0.76
97.95	0.82	0.03	0.79
98.00	0.85	0.03	0.82
98.05	0.88	0.03	0.85
98.10	0.90	0.03	0.87
98.15	0.93	0.03	0.90
98.20	0.95	0.03	0.92
98.25	0.97	0.03	0.95
98.30	1.00	0.03	0.97
98.35	1.02	0.03	0.99
98.40	1.04	0.03	1.01
98.45	1.07	0.03	1.04
98.50	1.09	0.03	1.06
98.55	1.11	0.03	1.08
98.60	1.13	0.03	1.10
98.65	1.15	0.03	1.12
98.70	1.17	0.03	1.14
98.75	1.19	0.03	1.16
98.80	1.21	0.03	1.18
98.85	1.23	0.03	1.20
98.90	1.24	0.03	1.21
98.95	1.26	0.03	1.23
99.00	**1.28**	0.03	**1.25**

Stage-Area-Storage for Pond 1P: Subsurface #1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
96.00	**1,248**	0
96.05	1,248	25
96.10	1,248	50
96.15	1,248	75
96.20	1,248	100
96.25	1,248	125
96.30	1,248	150
96.35	1,248	175
96.40	1,248	200
96.45	1,248	225
96.50	1,248	250
96.55	1,248	300
96.60	1,248	350
96.65	1,248	400
96.70	1,248	450
96.75	1,248	499
96.80	1,248	548
96.85	1,248	597
96.90	1,248	646
96.95	1,248	694
97.00	1,248	742
97.05	1,248	790
97.10	1,248	838
97.15	1,248	885
97.20	1,248	932
97.25	1,248	978
97.30	1,248	1,024
97.35	1,248	1,069
97.40	1,248	1,113
97.45	1,248	1,157
97.50	1,248	1,200
97.55	1,248	1,242
97.60	1,248	1,283
97.65	1,248	1,322
97.70	1,248	1,361
97.75	1,248	1,398
97.80	1,248	1,433
97.85	1,248	1,465
97.90	1,248	1,495
97.95	1,248	1,522
98.00	1,248	1,549
98.05	1,248	1,574
98.10	1,248	1,599
98.15	1,248	1,624
98.20	1,248	1,649
98.25	1,248	1,674
98.30	1,248	1,699
98.35	1,248	1,724
98.40	1,248	1,749
98.45	1,248	1,774
98.50	1,248	1,799
98.55	1,248	**1,819**
98.60	1,248	1,819
98.65	1,248	1,819
98.70	1,248	1,819
98.75	1,248	1,819
98.80	1,248	1,819
98.85	1,248	1,819
98.90	1,248	1,819
98.95	1,248	1,819
99.00	1,248	1,819

Summary for Pond 5P: CB 5

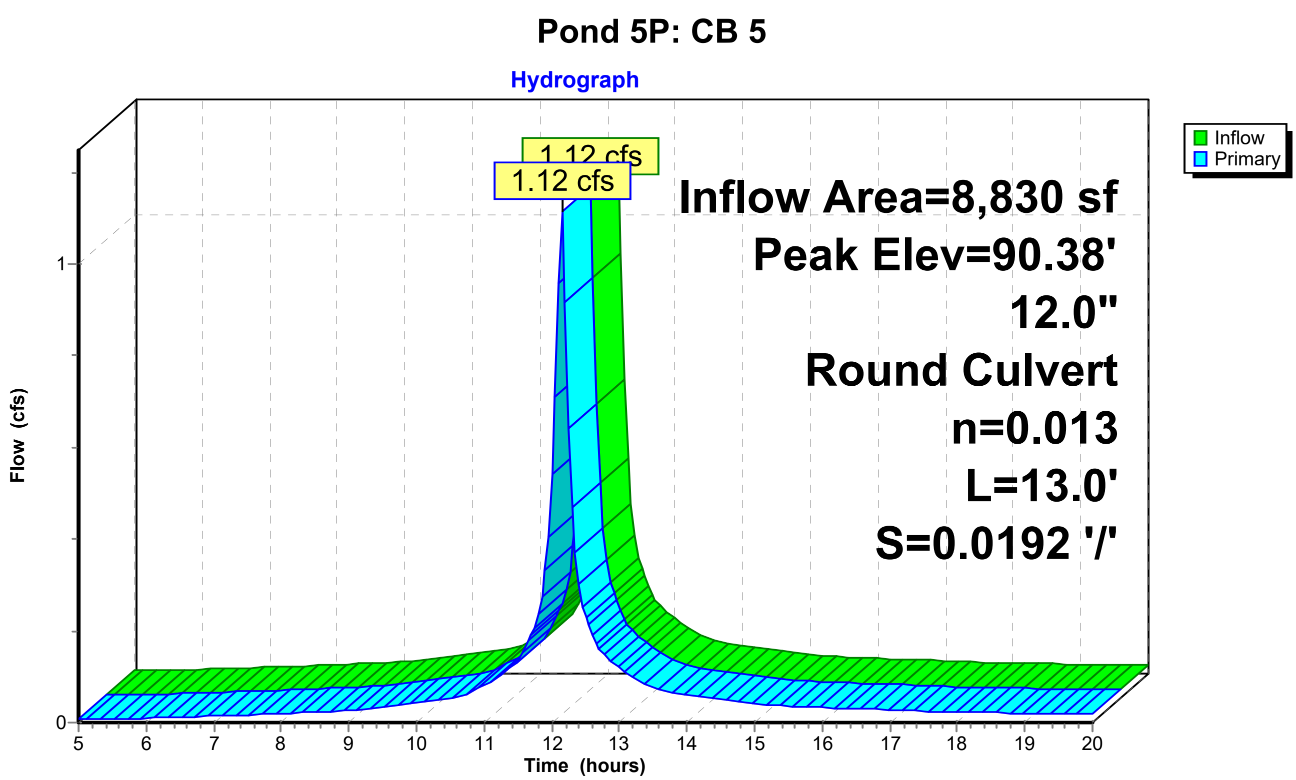
Inflow Area =	8,830 sf,	71.11% Impervious,	Inflow Depth > 4.78"	for 25-Year event
Inflow =	1.12 cfs @	12.15 hrs, Volume=	3,514 cf	
Outflow =	1.12 cfs @	12.15 hrs, Volume=	3,514 cf,	Atten= 0%, Lag= 0.0 min
Primary =	1.12 cfs @	12.15 hrs, Volume=	3,514 cf	

Routed to Pond IB1 : Infiltration Basin #1 (Exfiltration Zone)

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 90.38' @ 12.37 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	89.25'	**12.0" Round Culvert** L= 13.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 89.25' / 89.00' S= 0.0192 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.16 cfs @ 12.15 hrs HW=89.96' TW=89.95' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.16 cfs @ 0.37 fps)



Stage-Discharge for Pond 5P: CB 5

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
89.25	0.00	89.78	1.02	90.31	2.83
89.26	0.00	89.79	1.05	90.32	2.86
89.27	0.00	89.80	1.08	90.33	2.88
89.28	0.00	89.81	1.12	90.34	2.90
89.29	0.01	89.82	1.15	90.35	2.93
89.30	0.01	89.83	1.18	90.36	2.95
89.31	0.02	89.84	1.21	90.37	2.98
89.32	0.02	89.85	1.25	90.38	**3.00**
89.33	0.03	89.86	1.28		
89.34	0.04	89.87	1.31		
89.35	0.04	89.88	1.35		
89.36	0.05	89.89	1.38		
89.37	0.06	89.90	1.42		
89.38	0.07	89.91	1.45		
89.39	0.09	89.92	1.48		
89.40	0.10	89.93	1.52		
89.41	0.11	89.94	1.55		
89.42	0.12	89.95	1.59		
89.43	0.14	89.96	1.62		
89.44	0.15	89.97	1.66		
89.45	0.17	89.98	1.69		
89.46	0.19	89.99	1.73		
89.47	0.20	90.00	1.77		
89.48	0.22	90.01	1.80		
89.49	0.24	90.02	1.84		
89.50	0.26	90.03	1.87		
89.51	0.28	90.04	1.91		
89.52	0.30	90.05	1.94		
89.53	0.32	90.06	1.98		
89.54	0.35	90.07	2.02		
89.55	0.37	90.08	2.05		
89.56	0.39	90.09	2.09		
89.57	0.42	90.10	2.13		
89.58	0.44	90.11	2.16		
89.59	0.47	90.12	2.20		
89.60	0.49	90.13	2.23		
89.61	0.52	90.14	2.27		
89.62	0.55	90.15	2.31		
89.63	0.57	90.16	2.34		
89.64	0.60	90.17	2.38		
89.65	0.63	90.18	2.41		
89.66	0.66	90.19	2.45		
89.67	0.69	90.20	2.48		
89.68	0.72	90.21	2.52		
89.69	0.75	90.22	2.55		
89.70	0.78	90.23	2.59		
89.71	0.81	90.24	2.62		
89.72	0.84	90.25	2.66		
89.73	0.87	90.26	2.69		
89.74	0.90	90.27	2.73		
89.75	0.93	90.28	2.75		
89.76	0.96	90.29	2.78		
89.77	0.99	90.30	2.80		

Stage-Area-Storage for Pond 5P: CB 5

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.25	**0**	89.78	0	90.31	0
89.26	0	89.79	0	90.32	0
89.27	0	89.80	0	90.33	0
89.28	0	89.81	0	90.34	0
89.29	0	89.82	0	90.35	0
89.30	0	89.83	0	90.36	0
89.31	0	89.84	0	90.37	0
89.32	0	89.85	0	90.38	0
89.33	0	89.86	0		
89.34	0	89.87	0		
89.35	0	89.88	0		
89.36	0	89.89	0		
89.37	0	89.90	0		
89.38	0	89.91	0		
89.39	0	89.92	0		
89.40	0	89.93	0		
89.41	0	89.94	0		
89.42	0	89.95	0		
89.43	0	89.96	0		
89.44	0	89.97	0		
89.45	0	89.98	0		
89.46	0	89.99	0		
89.47	0	90.00	0		
89.48	0	90.01	0		
89.49	0	90.02	0		
89.50	0	90.03	0		
89.51	0	90.04	0		
89.52	0	90.05	0		
89.53	0	90.06	0		
89.54	0	90.07	0		
89.55	0	90.08	0		
89.56	0	90.09	0		
89.57	0	90.10	0		
89.58	0	90.11	0		
89.59	0	90.12	0		
89.60	0	90.13	0		
89.61	0	90.14	0		
89.62	0	90.15	0		
89.63	0	90.16	0		
89.64	0	90.17	0		
89.65	0	90.18	0		
89.66	0	90.19	0		
89.67	0	90.20	0		
89.68	0	90.21	0		
89.69	0	90.22	0		
89.70	0	90.23	0		
89.71	0	90.24	0		
89.72	0	90.25	0		
89.73	0	90.26	0		
89.74	0	90.27	0		
89.75	0	90.28	0		
89.76	0	90.29	0		
89.77	0	90.30	0		

Summary for Pond 10P: Infiltration Basin #1 (Storage)

Inflow Area = 54,257 sf, 51.52% Impervious, Inflow Depth > 3.90" for 25-Year event
Inflow = 5.08 cfs @ 12.15 hrs, Volume= 17,640 cf
Outflow = 3.14 cfs @ 12.27 hrs, Volume= 16,872 cf, Atten= 38%, Lag= 7.3 min
Primary = 3.14 cfs @ 12.27 hrs, Volume= 16,872 cf
Routed to Reach DP1PST : DP 1 - POST
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0 cf
Routed to Reach DP1PST : DP 1 - POST

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 90.36' @ 12.27 hrs Surf.Area= 2,413 sf Storage= 3,183 cf

Plug-Flow detention time= 36.6 min calculated for 16,815 cf (95% of inflow)
Center-of-Mass det. time= 20.4 min (798.2 - 777.9)

Volume	Invert	Avail.Storage	Storage Description
#1	88.00'	8,689 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

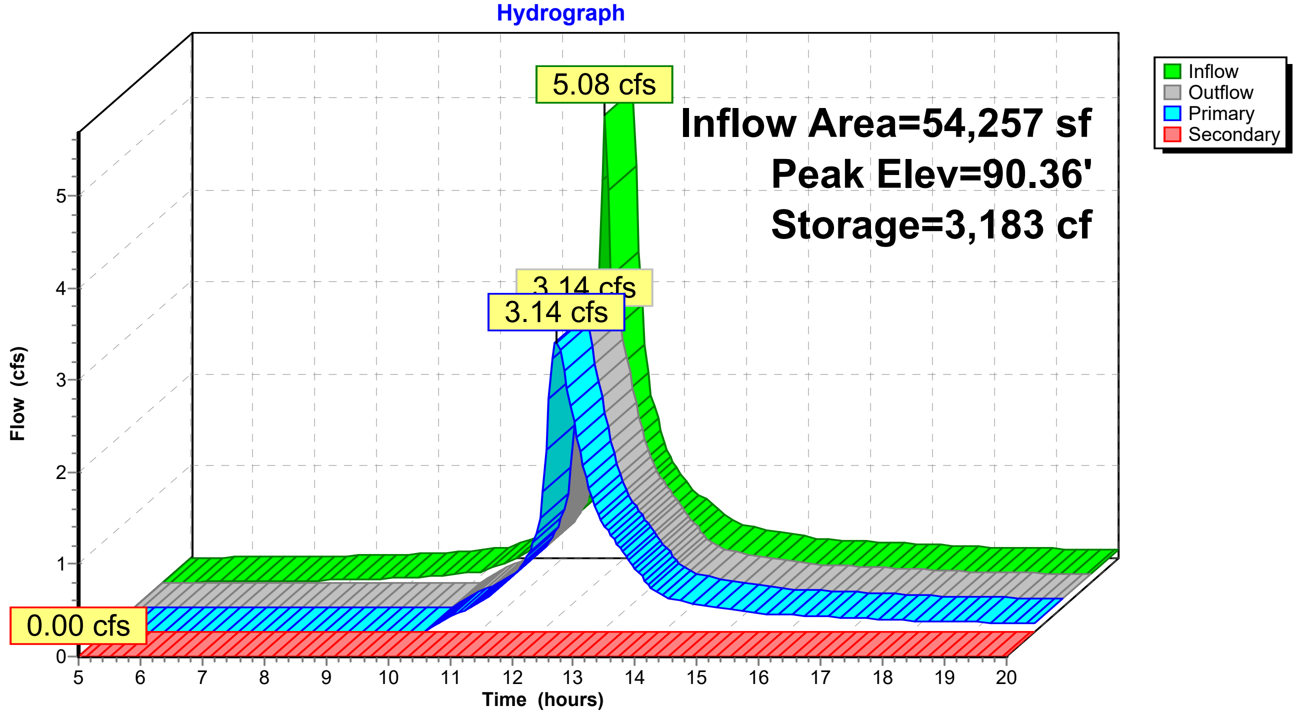
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
88.00	392	0	0
90.00	1,990	2,382	2,382
92.00	4,317	6,307	8,689

Device	Routing	Invert	Outlet Devices
#1	Secondary	91.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	86.50'	**12.0" Round Culvert** L= 37.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 86.50' / 86.00' S= 0.0135 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#3	Device 2	88.90'	**16.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 2	89.50'	**6.0" W x 15.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.12 cfs @ 12.27 hrs HW=90.36' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert** (Passes 3.12 cfs of 6.93 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 1.85 cfs @ 5.55 fps)
  └─**4=Orifice/Grate** (Orifice Controls 1.27 cfs @ 2.97 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=88.00' TW=0.00' (Dynamic Tailwater)
└─**1=Orifice/Grate** (Controls 0.00 cfs)

Pond 10P: Infiltration Basin #1 (Storage)



Stage-Discharge for Pond 10P: Infiltration Basin #1 (Storage)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
88.00	0.00	0.00	0.00	90.65	4.02	4.02	0.00
88.05	0.00	0.00	0.00	90.70	4.19	4.19	0.00
88.10	0.00	0.00	0.00	90.75	4.35	4.35	0.00
88.15	0.00	0.00	0.00	90.80	4.50	4.50	0.00
88.20	0.00	0.00	0.00	90.85	4.63	4.63	0.00
88.25	0.00	0.00	0.00	90.90	4.76	4.76	0.00
88.30	0.00	0.00	0.00	90.95	4.89	4.89	0.00
88.35	0.00	0.00	0.00	91.00	5.00	5.00	0.00
88.40	0.00	0.00	0.00	91.05	5.41	5.12	0.29
88.45	0.00	0.00	0.00	91.10	6.05	5.23	0.83
88.50	0.00	0.00	0.00	91.15	6.85	5.34	1.52
88.55	0.00	0.00	0.00	91.20	7.78	5.44	2.34
88.60	0.00	0.00	0.00	91.25	8.81	5.54	3.27
88.65	0.00	0.00	0.00	91.30	9.94	5.64	4.30
88.70	0.00	0.00	0.00	91.35	11.16	5.74	5.42
88.75	0.00	0.00	0.00	91.40	12.45	5.84	6.62
88.80	0.00	0.00	0.00	91.45	13.83	5.93	7.90
88.85	0.00	0.00	0.00	91.50	15.27	6.02	9.25
88.90	0.00	0.00	0.00	91.55	16.78	6.11	10.67
88.95	0.05	0.05	0.00	91.60	18.36	6.20	12.16
89.00	0.14	0.14	0.00	91.65	20.00	6.29	13.71
89.05	0.25	0.25	0.00	91.70	21.70	6.38	15.32
89.10	0.38	0.38	0.00	91.75	23.14	6.46	16.68
89.15	0.53	0.53	0.00	91.80	23.77	6.54	17.23
89.20	0.66	0.66	0.00	91.85	24.38	6.63	17.76
89.25	0.75	0.75	0.00	91.90	24.98	6.71	18.27
89.30	0.83	0.83	0.00	91.95	25.56	6.79	18.77
89.35	0.91	0.91	0.00	92.00	**26.13**	**6.87**	**19.26**
89.40	0.98	0.98	0.00				
89.45	1.04	1.04	0.00				
89.50	1.10	1.10	0.00				
89.55	1.18	1.18	0.00				
89.60	1.27	1.27	0.00				
89.65	1.36	1.36	0.00				
89.70	1.46	1.46	0.00				
89.75	1.57	1.57	0.00				
89.80	1.68	1.68	0.00				
89.85	1.79	1.79	0.00				
89.90	1.91	1.91	0.00				
89.95	2.03	2.03	0.00				
90.00	2.15	2.15	0.00				
90.05	2.28	2.28	0.00				
90.10	2.41	2.41	0.00				
90.15	2.54	2.54	0.00				
90.20	2.68	2.68	0.00				
90.25	2.82	2.82	0.00				
90.30	2.96	2.96	0.00				
90.35	3.10	3.10	0.00				
90.40	3.25	3.25	0.00				
90.45	3.40	3.40	0.00				
90.50	3.55	3.55	0.00				
90.55	3.71	3.71	0.00				
90.60	3.87	3.87	0.00				

Stage-Area-Storage for Pond 10P: Infiltration Basin #1 (Storage)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
88.00	392	0	90.65	2,746	3,921
88.05	432	21	90.70	2,804	4,060
88.10	472	43	90.75	2,863	4,202
88.15	512	68	90.80	2,921	4,346
88.20	552	94	90.85	2,979	4,494
88.25	592	123	90.90	3,037	4,644
88.30	632	154	90.95	3,095	4,798
88.35	672	186	91.00	3,154	4,954
88.40	712	221	91.05	3,212	5,113
88.45	752	257	91.10	3,270	5,275
88.50	792	296	91.15	3,328	5,440
88.55	831	336	91.20	3,386	5,608
88.60	871	379	91.25	3,444	5,778
88.65	911	424	91.30	3,503	5,952
88.70	951	470	91.35	3,561	6,129
88.75	991	519	91.40	3,619	6,308
88.80	1,031	569	91.45	3,677	6,491
88.85	1,071	622	91.50	3,735	6,676
88.90	1,111	676	91.55	3,793	6,864
88.95	1,151	733	91.60	3,852	7,055
89.00	1,191	792	91.65	3,910	7,249
89.05	1,231	852	91.70	3,968	7,446
89.10	1,271	915	91.75	4,026	7,646
89.15	1,311	979	91.80	4,084	7,849
89.20	1,351	1,046	91.85	4,142	8,055
89.25	1,391	1,114	91.90	4,201	8,263
89.30	1,431	1,185	91.95	4,259	8,475
89.35	1,471	1,257	92.00	**4,317**	**8,689**
89.40	1,511	1,332			
89.45	1,551	1,408			
89.50	1,591	1,487			
89.55	1,630	1,567			
89.60	1,670	1,650			
89.65	1,710	1,734			
89.70	1,750	1,821			
89.75	1,790	1,909			
89.80	1,830	2,000			
89.85	1,870	2,092			
89.90	1,910	2,187			
89.95	1,950	2,283			
90.00	1,990	2,382			
90.05	2,048	2,483			
90.10	2,106	2,587			
90.15	2,165	2,694			
90.20	2,223	2,803			
90.25	2,281	2,916			
90.30	2,339	3,031			
90.35	2,397	3,150			
90.40	2,455	3,271			
90.45	2,514	3,395			
90.50	2,572	3,522			
90.55	2,630	3,652			
90.60	2,688	3,785			

Summary for Pond B2: Infiltration Basin #2 (Storage Zone)

Inflow Area = 13,032 sf, 14.64% Impervious, Inflow Depth > 2.78" for 25-Year event
Inflow = 0.95 cfs @ 12.22 hrs, Volume= 3,024 cf
Outflow = 0.91 cfs @ 12.26 hrs, Volume= 2,950 cf, Atten= 5%, Lag= 2.1 min
Primary = 0.91 cfs @ 12.26 hrs, Volume= 2,950 cf
Routed to Reach 5R : Wetland Surface 2

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 97.83' @ 12.26 hrs Surf.Area= 592 sf Storage= 216 cf

Plug-Flow detention time= 14.7 min calculated for 2,941 cf (97% of inflow)
Center-of-Mass det. time= 5.9 min (802.7 - 796.8)

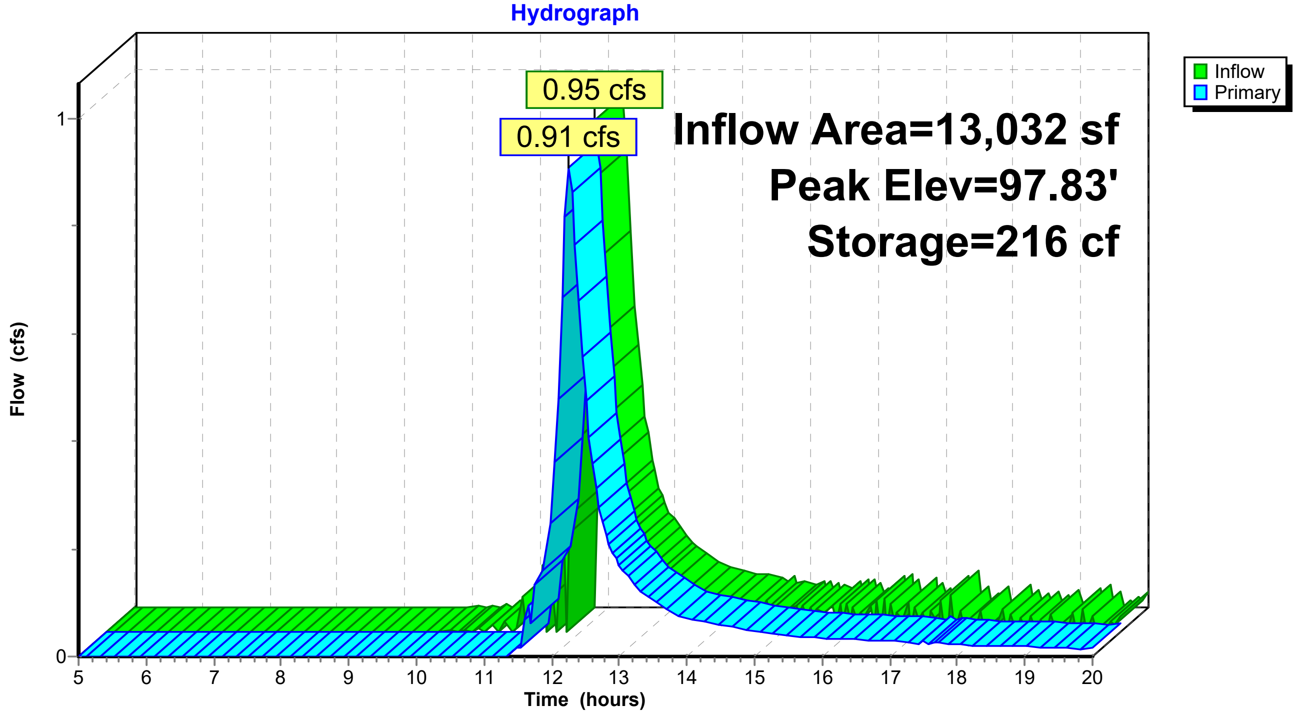
Volume	Invert	Avail.Storage	Storage Description
#1	97.10'	329 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
97.10	0	0	0
98.00	731	329	329

Device	Routing	Invert	Outlet Devices
#1	Primary	96.50'	**12.0" Round Culvert** L= 50.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 96.50' / 96.00' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	97.50'	**18.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.90 cfs @ 12.26 hrs HW=97.83' TW=96.12' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.90 cfs of 3.33 cfs potential flow)
  └**2=Orifice/Grate** (Orifice Controls 0.90 cfs @ 1.83 fps)

Pond B2: Infiltration Basin #2 (Storage Zone)



Stage-Discharge for Pond B2: Infiltration Basin #2 (Storage Zone)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
97.10	0.00	97.63	0.23
97.11	0.00	97.64	0.25
97.12	0.00	97.65	0.28
97.13	0.00	97.66	0.31
97.14	0.00	97.67	0.34
97.15	0.00	97.68	0.37
97.16	0.00	97.69	0.40
97.17	0.00	97.70	0.43
97.18	0.00	97.71	0.46
97.19	0.00	97.72	0.50
97.20	0.00	97.73	0.53
97.21	0.00	97.74	0.57
97.22	0.00	97.75	0.60
97.23	0.00	97.76	0.64
97.24	0.00	97.77	0.68
97.25	0.00	97.78	0.71
97.26	0.00	97.79	0.75
97.27	0.00	97.80	0.79
97.28	0.00	97.81	0.83
97.29	0.00	97.82	0.87
97.30	0.00	97.83	0.91
97.31	0.00	97.84	0.95
97.32	0.00	97.85	1.00
97.33	0.00	97.86	1.04
97.34	0.00	97.87	1.08
97.35	0.00	97.88	1.13
97.36	0.00	97.89	1.17
97.37	0.00	97.90	1.22
97.38	0.00	97.91	1.26
97.39	0.00	97.92	1.31
97.40	0.00	97.93	1.36
97.41	0.00	97.94	1.41
97.42	0.00	97.95	1.45
97.43	0.00	97.96	1.50
97.44	0.00	97.97	1.55
97.45	0.00	97.98	1.60
97.46	0.00	97.99	1.65
97.47	0.00	98.00	**1.70**
97.48	0.00		
97.49	0.00		
97.50	0.00		
97.51	0.00		
97.52	0.01		
97.53	0.03		
97.54	0.04		
97.55	0.05		
97.56	0.07		
97.57	0.09		
97.58	0.11		
97.59	0.13		
97.60	0.15		
97.61	0.18		
97.62	0.20		

Stage-Area-Storage for Pond B2: Infiltration Basin #2 (Storage Zone)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
97.10	0	0	97.63	430	114
97.11	8	0	97.64	439	118
97.12	16	0	97.65	447	123
97.13	24	0	97.66	455	127
97.14	32	1	97.67	463	132
97.15	41	1	97.68	471	137
97.16	49	1	97.69	479	141
97.17	57	2	97.70	487	146
97.18	65	3	97.71	495	151
97.19	73	3	97.72	504	156
97.20	81	4	97.73	512	161
97.21	89	5	97.74	520	166
97.22	97	6	97.75	528	172
97.23	106	7	97.76	536	177
97.24	114	8	97.77	544	182
97.25	122	9	97.78	552	188
97.26	130	10	97.79	560	193
97.27	138	12	97.80	569	199
97.28	146	13	97.81	577	205
97.29	154	15	97.82	585	211
97.30	162	16	97.83	593	216
97.31	171	18	97.84	601	222
97.32	179	20	97.85	609	228
97.33	187	21	97.86	617	235
97.34	195	23	97.87	625	241
97.35	203	25	97.88	634	247
97.36	211	27	97.89	642	253
97.37	219	30	97.90	650	260
97.38	227	32	97.91	658	266
97.39	236	34	97.92	666	273
97.40	244	37	97.93	674	280
97.41	252	39	97.94	682	287
97.42	260	42	97.95	690	293
97.43	268	44	97.96	699	300
97.44	276	47	97.97	707	307
97.45	284	50	97.98	715	314
97.46	292	53	97.99	723	322
97.47	301	56	98.00	**731**	**329**
97.48	309	59			
97.49	317	62			
97.50	325	65			
97.51	333	68			
97.52	341	72			
97.53	349	75			
97.54	357	79			
97.55	366	82			
97.56	374	86			
97.57	382	90			
97.58	390	94			
97.59	398	98			
97.60	406	102			
97.61	414	106			
97.62	422	110			

Summary for Pond CB1: CB 1

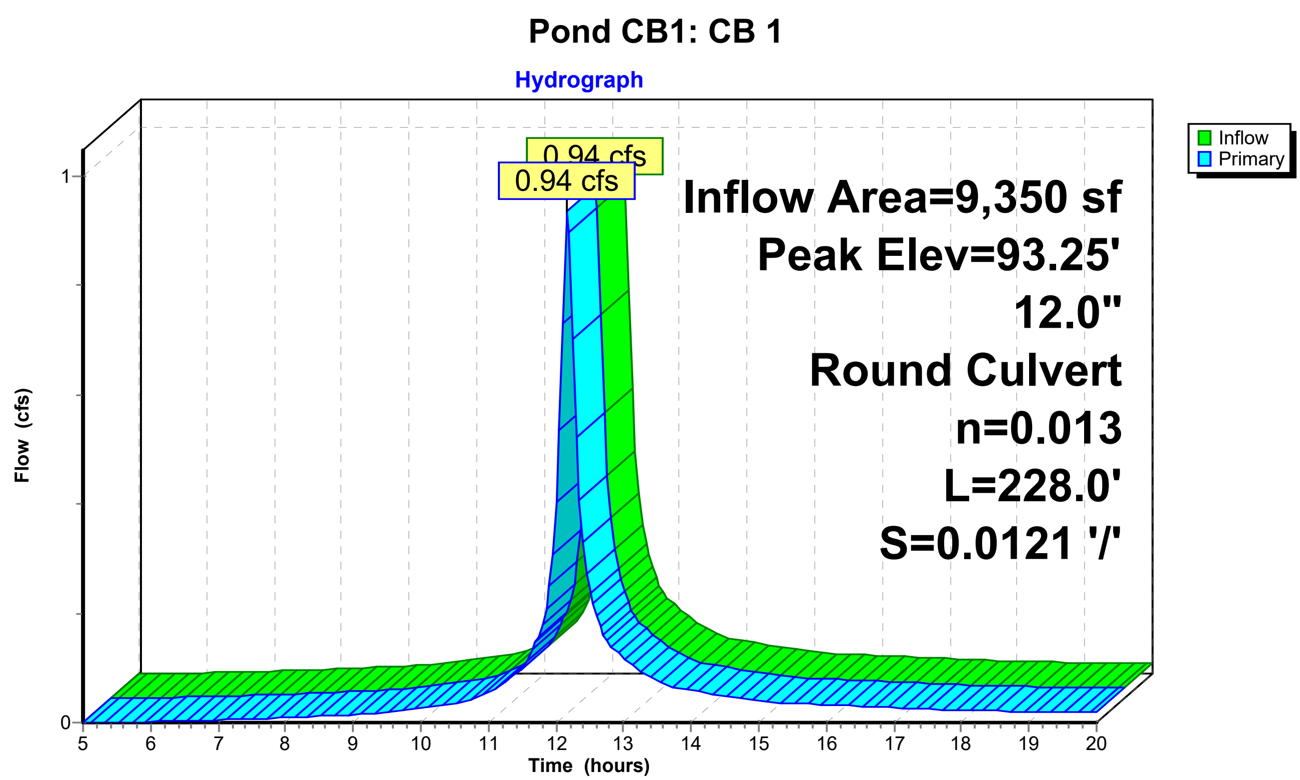
Inflow Area =	9,350 sf,	31.84% Impervious,	Inflow Depth > 3.85"	for 25-Year event
Inflow =	0.94 cfs @	12.17 hrs, Volume=	3,000 cf	
Outflow =	0.94 cfs @	12.17 hrs, Volume=	3,000 cf, Atten= 0%, Lag= 0.0 min	
Primary =	0.94 cfs @	12.17 hrs, Volume=	3,000 cf	

Routed to Pond DMH2 : DMH2

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 93.25' @ 12.17 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	92.75'	**12.0" Round Culvert** L= 228.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 92.75' / 90.00' S= 0.0121 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.91 cfs @ 12.17 hrs HW=93.24' TW=90.79' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.91 cfs @ 2.38 fps)



Stage-Discharge for Pond CB1: CB 1

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
92.75	0.00	93.28	1.05
92.76	0.00	93.29	1.08
92.77	0.00	93.30	1.12
92.78	0.00	93.31	1.15
92.79	0.01	93.32	1.19
92.80	0.01	93.33	1.22
92.81	0.01	93.34	1.26
92.82	0.02	93.35	1.30
92.83	0.03	93.36	1.33
92.84	0.04	93.37	1.37
92.85	0.04	93.38	1.41
92.86	0.05	93.39	1.45
92.87	0.06	93.40	1.48
92.88	0.07	93.41	1.52
92.89	0.09	93.42	1.56
92.90	0.10	93.43	1.60
92.91	0.11	93.44	1.63
92.92	0.12	93.45	1.67
92.93	0.14	93.46	1.71
92.94	0.15	93.47	1.75
92.95	0.17	93.48	1.79
92.96	0.19	93.49	1.83
92.97	0.20	93.50	1.86
92.98	0.22	93.51	1.90
92.99	0.24	93.52	1.94
93.00	0.26	93.53	1.98
93.01	0.28	93.54	2.01
93.02	0.30	93.55	2.05
93.03	0.32	93.56	2.09
93.04	0.35	93.57	2.13
93.05	0.37	93.58	2.16
93.06	0.39	93.59	2.20
93.07	0.42	93.60	2.23
93.08	0.44	93.61	2.27
93.09	0.47	93.62	2.30
93.10	0.49	93.63	2.34
93.11	0.52	93.64	2.37
93.12	0.55	93.65	2.40
93.13	0.57	93.66	2.44
93.14	0.60	93.67	2.47
93.15	0.63	93.68	2.50
93.16	0.66	93.69	2.53
93.17	0.69	93.70	2.56
93.18	0.72	93.71	2.58
93.19	0.75	93.72	2.61
93.20	0.78	93.73	2.63
93.21	0.81	93.74	2.66
93.22	0.85	93.75	**2.67**
93.23	0.88		
93.24	0.91		
93.25	0.95		
93.26	0.98		
93.27	1.01		

Stage-Area-Storage for Pond CB1: CB 1

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
92.75	**0**	93.28	0
92.76	0	93.29	0
92.77	0	93.30	0
92.78	0	93.31	0
92.79	0	93.32	0
92.80	0	93.33	0
92.81	0	93.34	0
92.82	0	93.35	0
92.83	0	93.36	0
92.84	0	93.37	0
92.85	0	93.38	0
92.86	0	93.39	0
92.87	0	93.40	0
92.88	0	93.41	0
92.89	0	93.42	0
92.90	0	93.43	0
92.91	0	93.44	0
92.92	0	93.45	0
92.93	0	93.46	0
92.94	0	93.47	0
92.95	0	93.48	0
92.96	0	93.49	0
92.97	0	93.50	0
92.98	0	93.51	0
92.99	0	93.52	0
93.00	0	93.53	0
93.01	0	93.54	0
93.02	0	93.55	0
93.03	0	93.56	0
93.04	0	93.57	0
93.05	0	93.58	0
93.06	0	93.59	0
93.07	0	93.60	0
93.08	0	93.61	0
93.09	0	93.62	0
93.10	0	93.63	0
93.11	0	93.64	0
93.12	0	93.65	0
93.13	0	93.66	0
93.14	0	93.67	0
93.15	0	93.68	0
93.16	0	93.69	0
93.17	0	93.70	0
93.18	0	93.71	0
93.19	0	93.72	0
93.20	0	93.73	0
93.21	0	93.74	0
93.22	0	93.75	0
93.23	0		
93.24	0		
93.25	0		
93.26	0		
93.27	0		

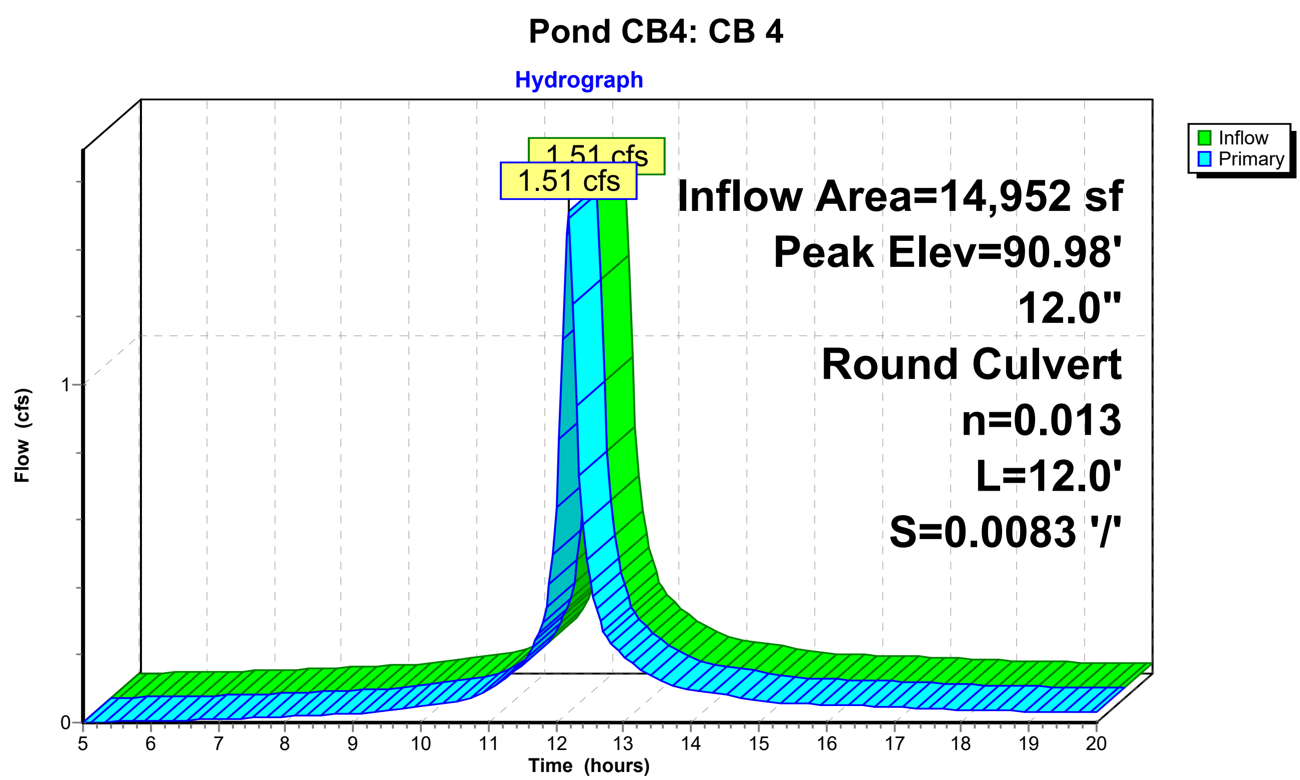
Summary for Pond CB4: CB 4

Inflow Area = 14,952 sf, 43.75% Impervious, Inflow Depth > 4.06" for 25-Year event
Inflow = 1.51 cfs @ 12.18 hrs, Volume= 5,053 cf
Outflow = 1.51 cfs @ 12.18 hrs, Volume= 5,053 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.51 cfs @ 12.18 hrs, Volume= 5,053 cf
Routed to Pond DMH2 : DMH2

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 90.98' @ 12.22 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	90.10'	**12.0" Round Culvert** L= 12.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 90.10' / 90.00' S= 0.0083 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.24 cfs @ 12.18 hrs HW=90.95' TW=90.80' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.24 cfs @ 2.34 fps)



Stage-Discharge for Pond CB4: CB 4

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
90.10	0.00	90.63	0.80
90.11	0.00	90.64	0.83
90.12	0.00	90.65	0.86
90.13	0.00	90.66	0.88
90.14	0.01	90.67	0.91
90.15	0.01	90.68	0.94
90.16	0.01	90.69	0.97
90.17	0.02	90.70	0.99
90.18	0.02	90.71	1.02
90.19	0.03	90.72	1.05
90.20	0.03	90.73	1.08
90.21	0.04	90.74	1.11
90.22	0.05	90.75	1.14
90.23	0.06	90.76	1.17
90.24	0.07	90.77	1.20
90.25	0.08	90.78	1.23
90.26	0.09	90.79	1.26
90.27	0.10	90.80	1.29
90.28	0.11	90.81	1.32
90.29	0.12	90.82	1.35
90.30	0.13	90.83	1.38
90.31	0.15	90.84	1.41
90.32	0.16	90.85	1.44
90.33	0.18	90.86	1.47
90.34	0.19	90.87	1.50
90.35	0.21	90.88	1.54
90.36	0.22	90.89	1.57
90.37	0.24	90.90	1.60
90.38	0.25	90.91	1.63
90.39	0.27	90.92	1.66
90.40	0.29	90.93	1.70
90.41	0.31	90.94	1.73
90.42	0.33	90.95	1.76
90.43	0.34	90.96	1.79
90.44	0.36	90.97	1.82
90.45	0.38	90.98	1.86
90.46	0.40	90.99	1.89
90.47	0.42	91.00	1.92
90.48	0.44	91.01	1.95
90.49	0.47	91.02	1.98
90.50	0.49	91.03	2.02
90.51	0.51	91.04	2.05
90.52	0.53	91.05	2.08
90.53	0.56	91.06	2.11
90.54	0.58	91.07	2.15
90.55	0.60	91.08	2.18
90.56	0.63	91.09	2.21
90.57	0.65	91.10	**2.24**
90.58	0.68		
90.59	0.70		
90.60	0.73		
90.61	0.75		
90.62	0.78		

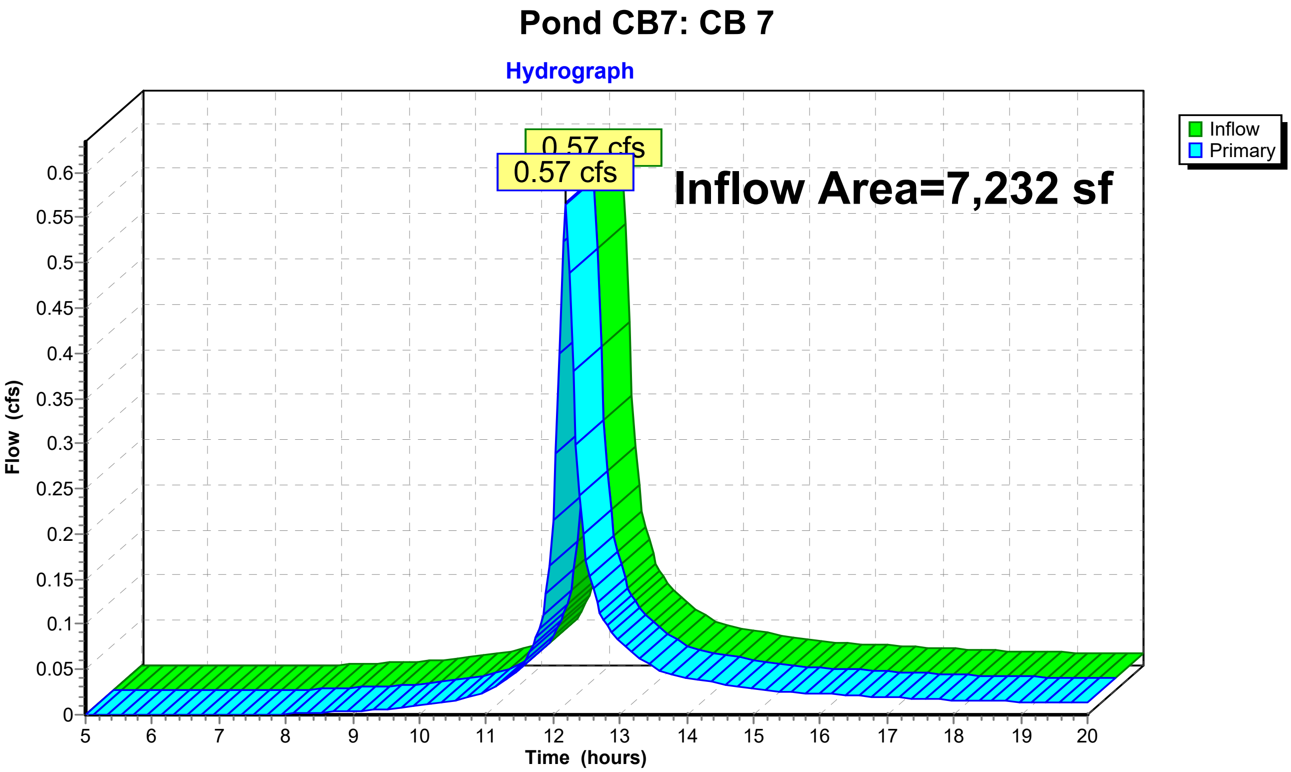
Stage-Area-Storage for Pond CB4: CB 4

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
90.10	**0**	90.63	0
90.11	0	90.64	0
90.12	0	90.65	0
90.13	0	90.66	0
90.14	0	90.67	0
90.15	0	90.68	0
90.16	0	90.69	0
90.17	0	90.70	0
90.18	0	90.71	0
90.19	0	90.72	0
90.20	0	90.73	0
90.21	0	90.74	0
90.22	0	90.75	0
90.23	0	90.76	0
90.24	0	90.77	0
90.25	0	90.78	0
90.26	0	90.79	0
90.27	0	90.80	0
90.28	0	90.81	0
90.29	0	90.82	0
90.30	0	90.83	0
90.31	0	90.84	0
90.32	0	90.85	0
90.33	0	90.86	0
90.34	0	90.87	0
90.35	0	90.88	0
90.36	0	90.89	0
90.37	0	90.90	0
90.38	0	90.91	0
90.39	0	90.92	0
90.40	0	90.93	0
90.41	0	90.94	0
90.42	0	90.95	0
90.43	0	90.96	0
90.44	0	90.97	0
90.45	0	90.98	0
90.46	0	90.99	0
90.47	0	91.00	0
90.48	0	91.01	0
90.49	0	91.02	0
90.50	0	91.03	0
90.51	0	91.04	0
90.52	0	91.05	0
90.53	0	91.06	0
90.54	0	91.07	0
90.55	0	91.08	0
90.56	0	91.09	0
90.57	0	91.10	0
90.58	0		
90.59	0		
90.60	0		
90.61	0		
90.62	0		

Summary for Pond CB7: CB 7

Inflow Area = 7,232 sf, 0.00% Impervious, Inflow Depth > 3.06" for 25-Year event
Inflow = 0.57 cfs @ 12.19 hrs, Volume= 1,843 cf
Primary = 0.57 cfs @ 12.19 hrs, Volume= 1,843 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 1P : Subsurface #1

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs



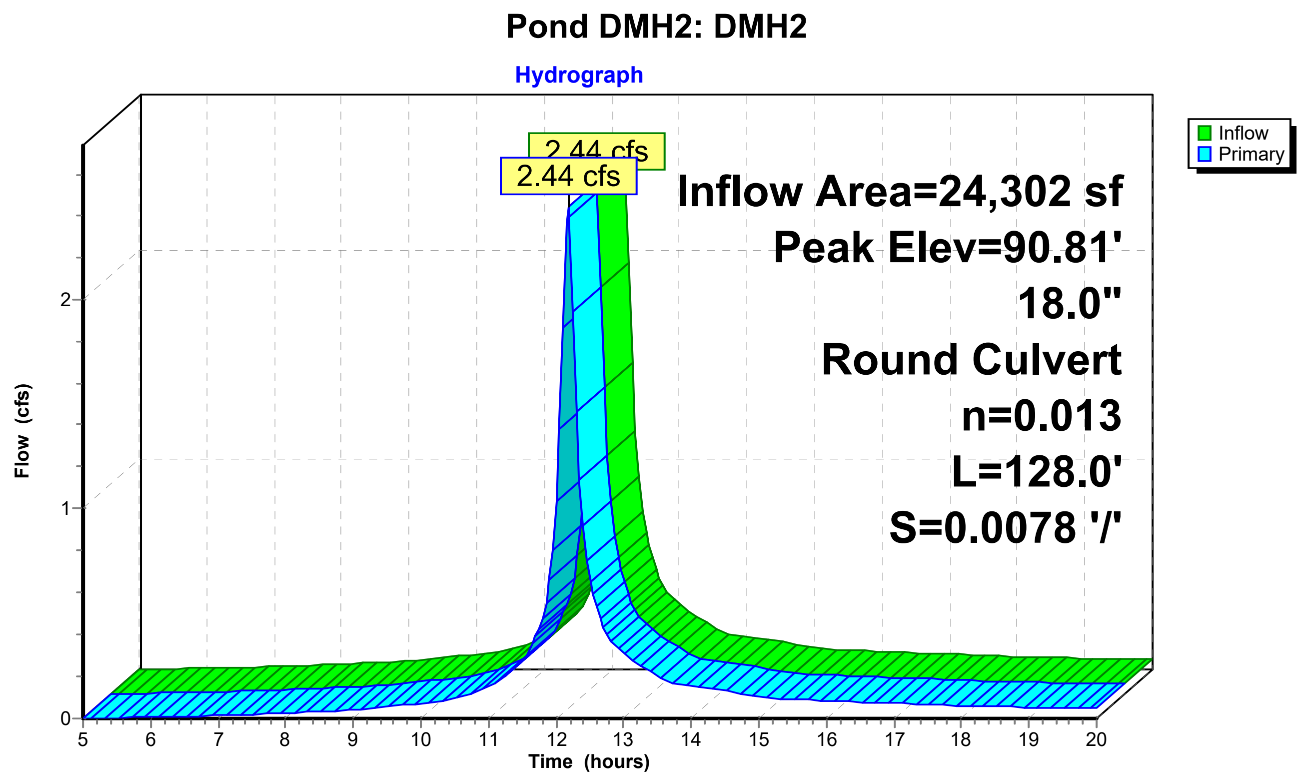
Summary for Pond DMH2: DMH2

Inflow Area = 24,302 sf, 39.17% Impervious, Inflow Depth > 3.98" for 25-Year event
Inflow = 2.44 cfs @ 12.18 hrs, Volume= 8,053 cf
Outflow = 2.44 cfs @ 12.18 hrs, Volume= 8,053 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.44 cfs @ 12.18 hrs, Volume= 8,053 cf
Routed to Pond IB1 : Infiltration Basin #1 (Exfiltration Zone)

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 90.81' @ 12.21 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	90.00'	**18.0" Round Culvert** L= 128.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 90.00' / 89.00' S= 0.0078 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=2.11 cfs @ 12.18 hrs HW=90.79' TW=90.08' (Dynamic Tailwater)
1=Culvert (Outlet Controls 2.11 cfs @ 3.24 fps)



Stage-Discharge for Pond DMH2: DMH2

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
90.00	0.00	90.53	1.31	91.06	4.44
90.01	0.00	90.54	1.36	91.07	4.51
90.02	0.00	90.55	1.41	91.08	4.58
90.03	0.00	90.56	1.45	91.09	4.65
90.04	0.01	90.57	1.50	91.10	4.71
90.05	0.01	90.58	1.55	91.11	4.78
90.06	0.01	90.59	1.60	91.12	4.85
90.07	0.02	90.60	1.65	91.13	4.91
90.08	0.03	90.61	1.70	91.14	4.98
90.09	0.04	90.62	1.76	91.15	5.05
90.10	0.04	90.63	1.81	91.16	5.12
90.11	0.05	90.64	1.86	91.17	5.18
90.12	0.06	90.65	1.92	91.18	5.25
90.13	0.08	90.66	1.97	91.19	5.32
90.14	0.09	90.67	2.02	91.20	5.39
90.15	0.10	90.68	2.08	91.21	5.45
90.16	0.12	90.69	2.13	91.22	5.52
90.17	0.13	90.70	2.19	91.23	5.59
90.18	0.15	90.71	2.25	91.24	5.66
90.19	0.17	90.72	2.30	91.25	5.72
90.20	0.19	90.73	2.36	91.26	5.79
90.21	0.21	90.74	2.42	91.27	5.86
90.22	0.23	90.75	2.48	91.28	5.93
90.23	0.25	90.76	2.54	91.29	5.99
90.24	0.27	90.77	2.59	91.30	6.06
90.25	0.30	90.78	2.65	91.31	6.12
90.26	0.32	90.79	2.71	91.32	6.19
90.27	0.35	90.80	2.77	91.33	6.26
90.28	0.38	90.81	2.83	91.34	6.32
90.29	0.40	90.82	2.90	91.35	6.39
90.30	0.43	90.83	2.96	91.36	6.45
90.31	0.46	90.84	3.02	91.37	6.52
90.32	0.49	90.85	3.08	91.38	6.58
90.33	0.52	90.86	3.14	91.39	6.65
90.34	0.55	90.87	3.21	91.40	6.71
90.35	0.59	90.88	3.27	91.41	6.78
90.36	0.62	90.89	3.33	91.42	6.84
90.37	0.66	90.90	3.40	91.43	6.91
90.38	0.69	90.91	3.46	91.44	6.97
90.39	0.73	90.92	3.52	91.45	7.03
90.40	0.76	90.93	3.59	91.46	7.09
90.41	0.80	90.94	3.65	91.47	7.16
90.42	0.84	90.95	3.72	91.48	7.22
90.43	0.88	90.96	3.78	91.49	7.28
90.44	0.92	90.97	3.85	91.50	**7.34**
90.45	0.96	90.98	3.91		
90.46	1.00	90.99	3.98		
90.47	1.04	91.00	4.05		
90.48	1.09	91.01	4.11		
90.49	1.13	91.02	4.18		
90.50	1.17	91.03	4.24		
90.51	1.22	91.04	4.31		
90.52	1.27	91.05	4.38		

Stage-Area-Storage for Pond DMH2: DMH2

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
90.00	**0**	90.53	0	91.06	0
90.01	0	90.54	0	91.07	0
90.02	0	90.55	0	91.08	0
90.03	0	90.56	0	91.09	0
90.04	0	90.57	0	91.10	0
90.05	0	90.58	0	91.11	0
90.06	0	90.59	0	91.12	0
90.07	0	90.60	0	91.13	0
90.08	0	90.61	0	91.14	0
90.09	0	90.62	0	91.15	0
90.10	0	90.63	0	91.16	0
90.11	0	90.64	0	91.17	0
90.12	0	90.65	0	91.18	0
90.13	0	90.66	0	91.19	0
90.14	0	90.67	0	91.20	0
90.15	0	90.68	0	91.21	0
90.16	0	90.69	0	91.22	0
90.17	0	90.70	0	91.23	0
90.18	0	90.71	0	91.24	0
90.19	0	90.72	0	91.25	0
90.20	0	90.73	0	91.26	0
90.21	0	90.74	0	91.27	0
90.22	0	90.75	0	91.28	0
90.23	0	90.76	0	91.29	0
90.24	0	90.77	0	91.30	0
90.25	0	90.78	0	91.31	0
90.26	0	90.79	0	91.32	0
90.27	0	90.80	0	91.33	0
90.28	0	90.81	0	91.34	0
90.29	0	90.82	0	91.35	0
90.30	0	90.83	0	91.36	0
90.31	0	90.84	0	91.37	0
90.32	0	90.85	0	91.38	0
90.33	0	90.86	0	91.39	0
90.34	0	90.87	0	91.40	0
90.35	0	90.88	0	91.41	0
90.36	0	90.89	0	91.42	0
90.37	0	90.90	0	91.43	0
90.38	0	90.91	0	91.44	0
90.39	0	90.92	0	91.45	0
90.40	0	90.93	0	91.46	0
90.41	0	90.94	0	91.47	0
90.42	0	90.95	0	91.48	0
90.43	0	90.96	0	91.49	0
90.44	0	90.97	0	91.50	0
90.45	0	90.98	0		
90.46	0	90.99	0		
90.47	0	91.00	0		
90.48	0	91.01	0		
90.49	0	91.02	0		
90.50	0	91.03	0		
90.51	0	91.04	0		
90.52	0	91.05	0		

Summary for Pond IB1: Infiltration Basin #1 (Exfiltration Zone)

Inflow Area = 54,257 sf, 51.52% Impervious, Inflow Depth > 4.27" for 25-Year event
Inflow = 5.96 cfs @ 12.15 hrs, Volume= 19,299 cf
Outflow = 5.10 cfs @ 12.15 hrs, Volume= 18,577 cf, Atten= 14%, Lag= 0.0 min
Discarded = 0.02 cfs @ 5.50 hrs, Volume= 937 cf
Primary = 5.08 cfs @ 12.15 hrs, Volume= 17,640 cf
Routed to Pond 10P : Infiltration Basin #1 (Storage)

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 90.37' @ 12.32 hrs Surf.Area= 736 sf Storage= 1,744 cf

Plug-Flow detention time= 28.9 min calculated for 18,514 cf (96% of inflow)
Center-of-Mass det. time= 14.0 min (776.6 - 762.5)

Volume	Invert	Avail.Storage	Storage Description
#1	88.00'	2,944 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

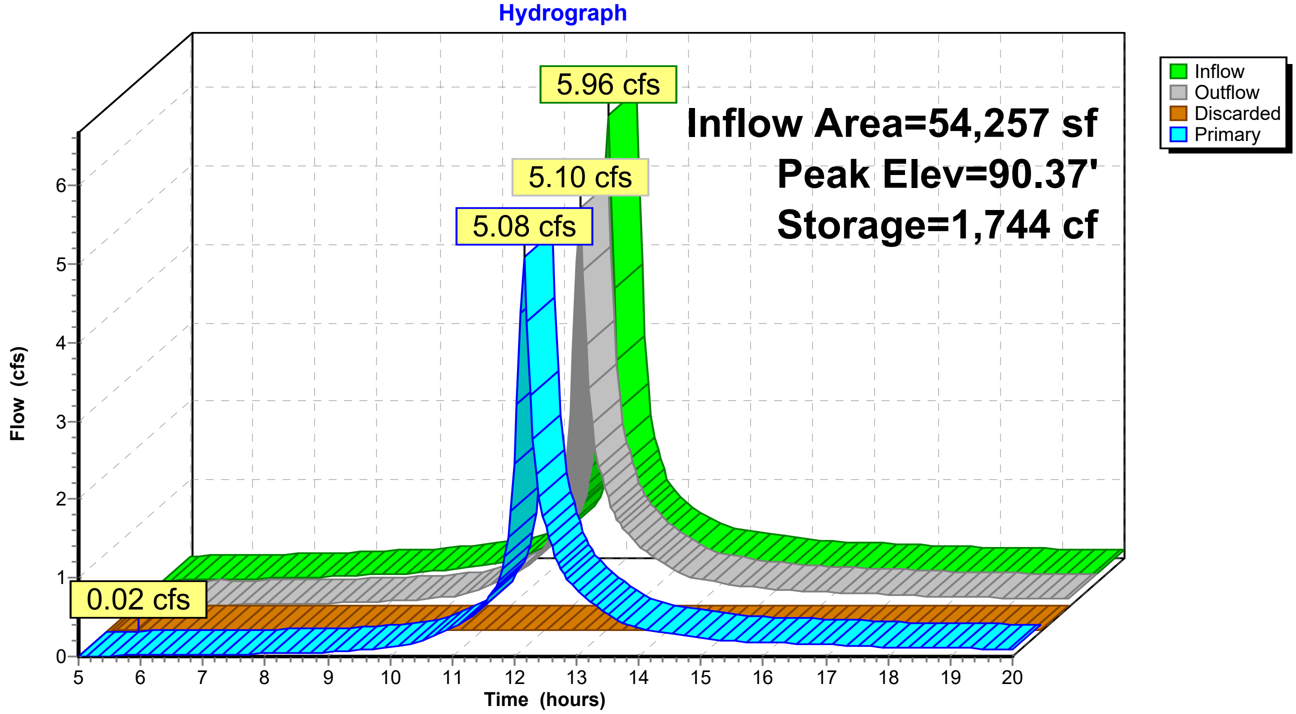
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
88.00	736	0	0
92.00	736	2,944	2,944

Device	Routing	Invert	Outlet Devices
#1	Discarded	88.00'	**1.020 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	88.00'	**48.0" Round Culvert** L= 2.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 88.00' / 88.00' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf

Discarded OutFlow Max=0.02 cfs @ 5.50 hrs HW=88.04' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 12.15 hrs HW=89.96' TW=90.14' (Dynamic Tailwater)
└─**2=Culvert** (Controls 0.00 cfs)

Pond IB1: Infiltration Basin #1 (Exfiltration Zone)



Stage-Discharge for Pond IB1: Infiltration Basin #1 (Exfiltration Zone)

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
88.00	0.00	**0.00**	0.00
88.05	0.03	**0.02**	0.01
88.10	0.07	0.02	0.05
88.15	0.13	0.02	0.11
88.20	0.23	0.02	0.21
88.25	0.35	0.02	0.33
88.30	0.50	0.02	0.48
88.35	0.68	0.02	0.66
88.40	0.88	0.02	0.86
88.45	1.11	0.02	1.09
88.50	1.37	0.02	1.35
88.55	1.65	0.02	1.63
88.60	1.96	0.02	1.94
88.65	2.29	0.02	2.27
88.70	2.65	0.02	2.63
88.75	3.03	0.02	3.01
88.80	3.44	0.02	3.42
88.85	3.87	0.02	3.85
88.90	4.33	0.02	4.31
88.95	4.81	0.02	4.79
89.00	5.31	0.02	5.29
89.05	5.84	0.02	5.82
89.10	6.39	0.02	6.37
89.15	6.96	0.02	6.94
89.20	7.56	0.02	7.54
89.25	8.17	0.02	8.16
89.30	8.81	0.02	8.79
89.35	9.47	0.02	9.45
89.40	10.15	0.02	10.14
89.45	10.86	0.02	10.84
89.50	11.58	0.02	11.56
89.55	12.32	0.02	12.30
89.60	13.09	0.02	13.07
89.65	13.87	0.02	13.85
89.70	14.67	0.02	14.65
89.75	15.49	0.02	15.48
89.80	16.33	0.02	16.32
89.85	17.19	0.02	17.17
89.90	18.07	0.02	18.05
89.95	18.96	0.02	18.94
90.00	19.87	0.02	19.86
90.05	20.80	0.02	20.79
90.10	21.75	0.02	21.73
90.15	22.71	0.02	22.69
90.20	23.69	0.02	23.67
90.25	24.68	0.02	24.66
90.30	25.69	0.02	25.67
90.35	26.71	0.02	26.70
90.40	27.75	0.02	27.74
90.45	28.81	0.02	28.79
90.50	29.87	0.02	29.86
90.55	30.95	0.02	30.93
90.60	32.05	0.02	32.03
90.65	33.15	0.02	33.13
90.70	34.27	0.02	34.25
90.75	35.40	0.02	35.38
90.80	36.54	0.02	36.52
90.85	37.69	0.02	37.67
90.90	38.85	0.02	38.84
90.95	40.03	0.02	40.01
91.00	41.21	0.02	41.19
91.05	42.40	0.02	42.38
91.10	43.60	0.02	43.58
91.15	44.81	0.02	44.79
91.20	46.02	0.02	46.01
91.25	47.25	0.02	47.23
91.30	48.48	0.02	48.46
91.35	49.71	0.02	49.69
91.40	50.95	0.02	50.94
91.45	52.20	0.02	52.18
91.50	53.45	0.02	53.44
91.55	54.71	0.02	54.69
91.60	55.97	0.02	55.95
91.65	57.23	0.02	57.21
91.70	58.49	0.02	58.48
91.75	59.76	0.02	59.74
91.80	61.03	0.02	61.01
91.85	62.29	0.02	62.28
91.90	63.56	0.02	63.54
91.95	64.83	0.02	64.81
92.00	**66.09**	0.02	**66.07**

Stage-Area-Storage for Pond IB1: Infiltration Basin #1 (Exfiltration Zone)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
88.00	**736**	0
88.05	736	37
88.10	736	74
88.15	736	110
88.20	736	147
88.25	736	184
88.30	736	221
88.35	736	258
88.40	736	294
88.45	736	331
88.50	736	368
88.55	736	405
88.60	736	442
88.65	736	478
88.70	736	515
88.75	736	552
88.80	736	589
88.85	736	626
88.90	736	662
88.95	736	699
89.00	736	736
89.05	736	773
89.10	736	810
89.15	736	846
89.20	736	883
89.25	736	920
89.30	736	957
89.35	736	994
89.40	736	1,030
89.45	736	1,067
89.50	736	1,104
89.55	736	1,141
89.60	736	1,178
89.65	736	1,214
89.70	736	1,251
89.75	736	1,288
89.80	736	1,325
89.85	736	1,362
89.90	736	1,398
89.95	736	1,435
90.00	736	1,472
90.05	736	1,509
90.10	736	1,546
90.15	736	1,582
90.20	736	1,619
90.25	736	1,656
90.30	736	1,693
90.35	736	1,730
90.40	736	1,766
90.45	736	1,803
90.50	736	1,840
90.55	736	1,877
90.60	736	1,914
90.65	736	1,950
90.70	736	1,987
90.75	736	2,024
90.80	736	2,061
90.85	736	2,098
90.90	736	2,134
90.95	736	2,171
91.00	736	2,208
91.05	736	2,245
91.10	736	2,282
91.15	736	2,318
91.20	736	2,355
91.25	736	2,392
91.30	736	2,429
91.35	736	2,466
91.40	736	2,502
91.45	736	2,539
91.50	736	2,576
91.55	736	2,613
91.60	736	2,650
91.65	736	2,686
91.70	736	2,723
91.75	736	2,760
91.80	736	2,797
91.85	736	2,834
91.90	736	2,870
91.95	736	2,907
92.00	736	**2,944**

Summary for Pond IB2: Infiltration Basin #2 (Exfiltration Zone)

Inflow Area = 13,032 sf, 14.64% Impervious, Inflow Depth > 3.35" for 25-Year event
Inflow = 1.06 cfs @ 12.20 hrs, Volume= 3,633 cf
Outflow = 0.96 cfs @ 12.22 hrs, Volume= 3,456 cf, Atten= 10%, Lag= 1.1 min
Discarded = 0.01 cfs @ 9.25 hrs, Volume= 432 cf
Primary = 0.95 cfs @ 12.22 hrs, Volume= 3,024 cf
Routed to Pond B2 : Infiltration Basin #2 (Storage Zone)

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 97.85' @ 12.30 hrs Surf.Area= 424 sf Storage= 316 cf

Plug-Flow detention time= 28.2 min calculated for 3,445 cf (95% of inflow)
Center-of-Mass det. time= 10.4 min (802.3 - 791.9)

Volume	Invert	Avail.Storage	Storage Description
#1	97.10'	382 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

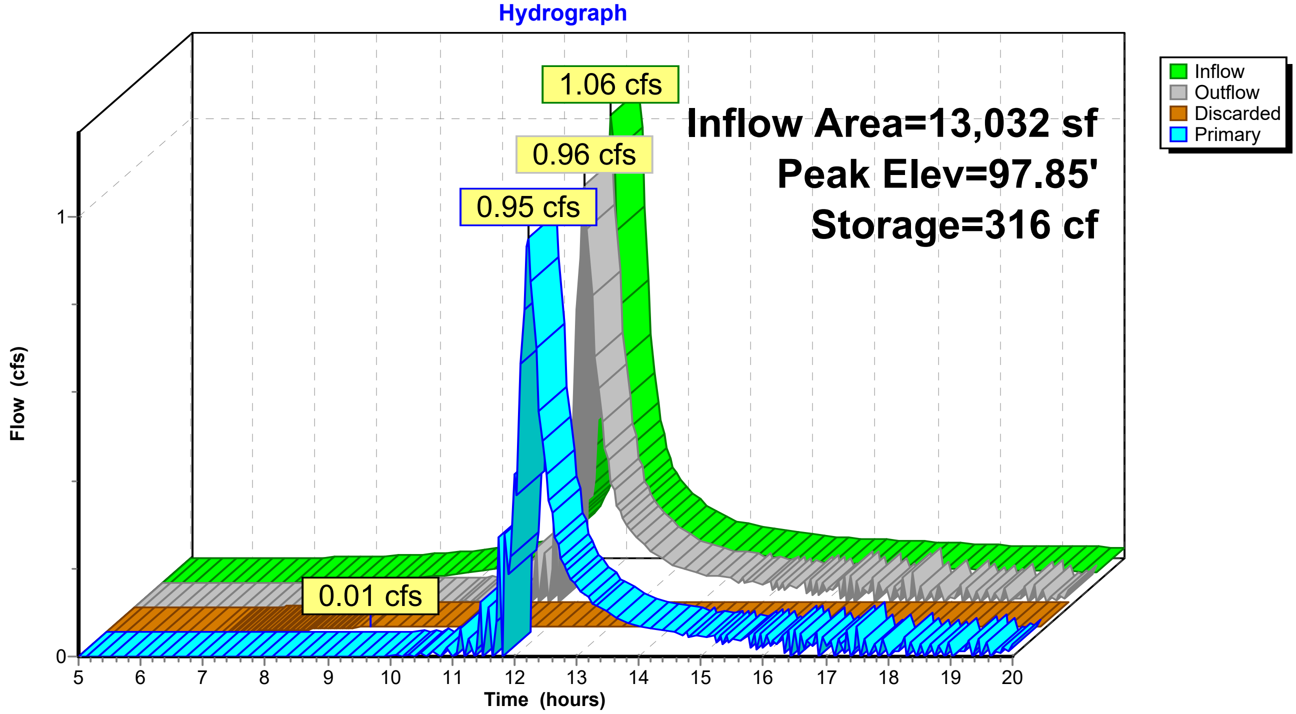
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
97.10	424	0	0
98.00	424	382	382

Device	Routing	Invert	Outlet Devices
#1	Discarded	97.10'	**1.020 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	97.10'	**36.0" Round Culvert** L= 2.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 97.10' / 97.10' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf

Discarded OutFlow Max=0.01 cfs @ 9.25 hrs HW=97.11' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 12.22 hrs HW=97.81' TW=97.82' (Dynamic Tailwater)
└─**2=Culvert** (Controls 0.00 cfs)

Pond IB2: Infiltration Basin #2 (Exfiltration Zone)



Stage-Discharge for Pond IB2: Infiltration Basin #2 (Exfiltration Zone)

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
97.10	0.00	**0.00**	0.00
97.15	0.02	**0.01**	0.01
97.20	0.05	0.01	0.04
97.25	0.11	0.01	0.10
97.30	0.19	0.01	0.18
97.35	0.30	0.01	0.29
97.40	0.42	0.01	0.41
97.45	0.58	0.01	0.57
97.50	0.75	0.01	0.74
97.55	0.95	0.01	0.94
97.60	1.17	0.01	1.16
97.65	1.41	0.01	1.40
97.70	1.67	0.01	1.66
97.75	1.95	0.01	1.94
97.80	2.25	0.01	2.24
97.85	2.58	0.01	2.57
97.90	2.92	0.01	2.91
97.95	3.29	0.01	3.28
98.00	3.67	0.01	3.66
98.05	4.07	0.01	4.06
98.10	4.49	0.01	4.48
98.15	4.93	0.01	4.92
98.20	5.39	0.01	5.38
98.25	5.87	0.01	5.86
98.30	6.36	0.01	6.35
98.35	6.87	0.01	6.86
98.40	7.40	0.01	7.39
98.45	7.94	0.01	7.93
98.50	8.50	0.01	8.49
98.55	9.07	0.01	9.06
98.60	9.66	0.01	9.65
98.65	10.27	0.01	10.26
98.70	10.89	0.01	10.88
98.75	11.52	0.01	11.51
98.80	12.17	0.01	12.16
98.85	12.83	0.01	12.82
98.90	13.50	0.01	13.49
98.95	14.18	0.01	14.17
99.00	14.88	0.01	14.87
99.05	15.59	0.01	15.58
99.10	16.31	0.01	16.30
99.15	17.04	0.01	17.03
99.20	17.77	0.01	17.76
99.25	18.52	0.01	18.51
99.30	19.28	0.01	19.27
99.35	20.05	0.01	20.04
99.40	20.82	0.01	20.81
99.45	21.60	0.01	21.59
99.50	22.39	0.01	22.38
99.55	23.19	0.01	23.18
99.60	23.99	0.01	23.98
99.65	24.79	0.01	24.78
99.70	25.60	0.01	25.59
99.75	26.42	0.01	26.41
99.80	27.23	0.01	27.22
99.85	28.05	0.01	28.04
99.90	28.87	0.01	28.86
99.95	29.69	0.01	29.68
100.00	30.52	0.01	30.51
100.05	31.34	0.01	31.33
100.10	**32.16**	0.01	**32.15**

Stage-Area-Storage for Pond IB2: Infiltration Basin #2 (Exfiltration Zone)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
97.10	**424**	0
97.15	424	21
97.20	424	42
97.25	424	64
97.30	424	85
97.35	424	106
97.40	424	127
97.45	424	148
97.50	424	170
97.55	424	191
97.60	424	212
97.65	424	233
97.70	424	254
97.75	424	276
97.80	424	297
97.85	424	318
97.90	424	339
97.95	424	360
98.00	424	**382**
98.05	424	382
98.10	424	382
98.15	424	382
98.20	424	382
98.25	424	382
98.30	424	382
98.35	424	382
98.40	424	382
98.45	424	382
98.50	424	382
98.55	424	382
98.60	424	382
98.65	424	382
98.70	424	382
98.75	424	382
98.80	424	382
98.85	424	382
98.90	424	382
98.95	424	382
99.00	424	382
99.05	424	382
99.10	424	382
99.15	424	382
99.20	424	382
99.25	424	382
99.30	424	382
99.35	424	382
99.40	424	382
99.45	424	382
99.50	424	382
99.55	424	382
99.60	424	382
99.65	424	382
99.70	424	382

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
99.75	424	382
99.80	424	382
99.85	424	382
99.90	424	382
99.95	424	382
100.00	424	382
100.05	424	382
100.10	424	382

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: Units 10-11 Entrance Runoff Area=13,032 sf 14.64% Impervious Runoff Depth>5.46"
Flow Length=190' Tc=12.6 min CN=77 Runoff=1.70 cfs 5,926 cf

Subcatchment 1pre: Site Runoff Area=134,756 sf 4.57% Impervious Runoff Depth>5.08"
Flow Length=451' Tc=22.8 min UI Adjusted CN=74 Runoff=12.74 cfs 57,094 cf

Subcatchment 2: Units 8-11 Backyards Runoff Area=7,232 sf 0.00% Impervious Runoff Depth>5.11"
Flow Length=84' Tc=11.3 min CN=74 Runoff=0.93 cfs 3,077 cf

Subcatchment 3: Outer Border Runoff Area=53,803 sf 0.00% Impervious Runoff Depth>4.88"
Flow Length=87' Tc=7.9 min CN=72 Runoff=7.49 cfs 21,869 cf

Subcatchment 4: Unit 5 Backyard and Basin Runoff Area=8,967 sf 0.00% Impervious Runoff Depth>5.11"
Flow Length=110' Tc=7.7 min CN=74 Runoff=1.31 cfs 3,820 cf

Subcatchment 5: Unit 5 Parking Runoff Area=8,830 sf 71.11% Impervious Runoff Depth>7.03"
Flow Length=100' Tc=7.9 min CN=91 Runoff=1.61 cfs 5,170 cf

Subcatchment 6: Driveway Center Section Runoff Area=14,952 sf 43.75% Impervious Runoff Depth>6.27"
Flow Length=163' Tc=10.8 min CN=84 Runoff=2.28 cfs 7,815 cf

Subcatchment 7: Driveway Entrance Runoff Area=9,350 sf 31.84% Impervious Runoff Depth>6.05"
Flow Length=88' Slope=0.0400 '/' Tc=9.8 min CN=82 Runoff=1.43 cfs 4,711 cf

Subcatchment U1: Unit #1 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>7.58"
Tc=5.0 min CN=98 Runoff=0.33 cfs 1,016 cf

Subcatchment U10: Unit #10 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>7.58"
Tc=5.0 min CN=98 Runoff=0.33 cfs 1,016 cf

Subcatchment U11: Unit #11 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>7.58"
Tc=5.0 min CN=98 Runoff=0.33 cfs 1,016 cf

Subcatchment U2: Unit #2 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>7.58"
Tc=5.0 min CN=98 Runoff=0.33 cfs 1,016 cf

Subcatchment U3: Unit #3 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>7.58"
Tc=5.0 min CN=98 Runoff=0.33 cfs 1,016 cf

Subcatchment U4: Unit #4 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>7.58"
Tc=5.0 min CN=98 Runoff=0.33 cfs 1,016 cf

Subcatchment U5: Unit #5 Runoff Area=2,510 sf 100.00% Impervious Runoff Depth>7.58"
Tc=5.0 min CN=98 Runoff=0.51 cfs 1,586 cf

Subcatchment U6: Unit #6 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>7.58"
Tc=5.0 min CN=98 Runoff=0.33 cfs 1,016 cf

Subcatchment U7: Unit #7 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>7.58"
Tc=5.0 min CN=98 Runoff=0.33 cfs 1,016 cf

Subcatchment U8: Unit #8 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>7.58"
Tc=5.0 min CN=98 Runoff=0.33 cfs 1,016 cf

Subcatchment U9: Unit #9 Runoff Area=1,608 sf 100.00% Impervious Runoff Depth>7.58"
Tc=5.0 min CN=98 Runoff=0.33 cfs 1,016 cf

Reach 3R: Wetland Surface 1 Avg. Flow Depth=0.17' Max Vel=0.60 fps Inflow=2.51 cfs 9,899 cf
n=0.100 L=344.0' S=0.0291 '/' Capacity=20.30 cfs Outflow=2.03 cfs 9,817 cf

Reach 4R: 8" ROOF DRAIN CARRIER Avg. Flow Depth=0.29' Max Vel=4.46 fps Inflow=0.66 cfs 2,032 cf
8.0" Round Pipe n=0.013 L=206.0' S=0.0194 '/' Capacity=1.68 cfs Outflow=0.65 cfs 2,030 cf

Reach 5R: Wetland Surface 2 Avg. Flow Depth=0.18' Max Vel=0.32 fps Inflow=1.48 cfs 5,175 cf
n=0.100 L=245.0' S=0.0082 '/' Capacity=10.76 cfs Outflow=1.14 cfs 5,107 cf

Reach 8R: 6" Roof Drain Carrier Pipe Avg. Flow Depth=0.35' Max Vel=4.43 fps Inflow=0.66 cfs 2,032 cf
6.0" Round Pipe n=0.013 L=113.0' S=0.0195 '/' Capacity=0.78 cfs Outflow=0.64 cfs 2,031 cf

Reach 9R: 12" Roof Drain Carrier Pipe Avg. Flow Depth=0.42' Max Vel=4.13 fps Inflow=1.30 cfs 4,063 cf
12.0" Round Pipe n=0.013 L=212.0' S=0.0099 '/' Capacity=3.55 cfs Outflow=1.30 cfs 4,059 cf

Reach DP1PRE: DP 1 - PRE Inflow=12.74 cfs 57,094 cf
Outflow=12.74 cfs 57,094 cf

Reach DP1PST: DP 1 - POST Inflow=12.57 cfs 58,398 cf
Outflow=12.57 cfs 58,398 cf

Pond 1P: Subsurface #1 Peak Elev=99.13' Storage=1,819 cf Inflow=2.08 cfs 7,141 cf
Discarded=0.03 cfs 1,545 cf Primary=1.77 cfs 4,792 cf Outflow=1.80 cfs 6,337 cf

Pond 5P: CB 5 Peak Elev=90.92' Inflow=1.61 cfs 5,170 cf
12.0" Round Culvert n=0.013 L=13.0' S=0.0192 '/' Outflow=1.61 cfs 5,170 cf

Pond 10P: Infiltration Basin #1 (Storage) Peak Elev=90.89' Storage=4,618 cf Inflow=7.82 cfs 27,511 cf
Primary=4.74 cfs 26,712 cf Secondary=0.00 cfs 0 cf Outflow=4.74 cfs 26,712 cf

Pond B2: Infiltration Basin #2 (Storage Zone) Peak Elev=97.96' Storage=297 cf Inflow=1.55 cfs 5,250 cf
Outflow=1.48 cfs 5,175 cf

Pond CB1: CB 1 Peak Elev=93.39' Inflow=1.43 cfs 4,711 cf
12.0" Round Culvert n=0.013 L=228.0' S=0.0121 '/' Outflow=1.43 cfs 4,711 cf

Pond CB4: CB 4 Peak Elev=91.41' Inflow=2.28 cfs 7,815 cf
12.0" Round Culvert n=0.013 L=12.0' S=0.0083 '/' Outflow=2.28 cfs 7,815 cf

Pond CB7: CB 7 Inflow=0.93 cfs 3,077 cf
Primary=0.93 cfs 3,077 cf

Pond DMH2: DMH2 Peak Elev=91.13' Inflow=3.70 cfs 12,527 cf
18.0" Round Culvert n=0.013 L=128.0' S=0.0078 '/' Outflow=3.70 cfs 12,527 cf

Pond IB1: Infiltration Basin #1 (Exfiltration Peak Elev=90.90' Storage=2,133 cf Inflow=8.87 cfs 29,191 cf
Discarded=0.02 cfs 940 cf Primary=7.82 cfs 27,511 cf Outflow=7.84 cfs 28,451 cf

Pond IB2: Infiltration Basin #2 (Exfiltration Peak Elev=97.98' Storage=375 cf Inflow=1.70 cfs 5,926 cf
Discarded=0.01 cfs 492 cf Primary=1.55 cfs 5,250 cf Outflow=1.56 cfs 5,742 cf

Total Runoff Area = 269,512 sf Runoff Volume = 121,227 cf Average Runoff Depth = 5.40"
84.25% Pervious = 227,061 sf 15.75% Impervious = 42,451 sf

Summary for Subcatchment 1: Units 10-11 Entrance

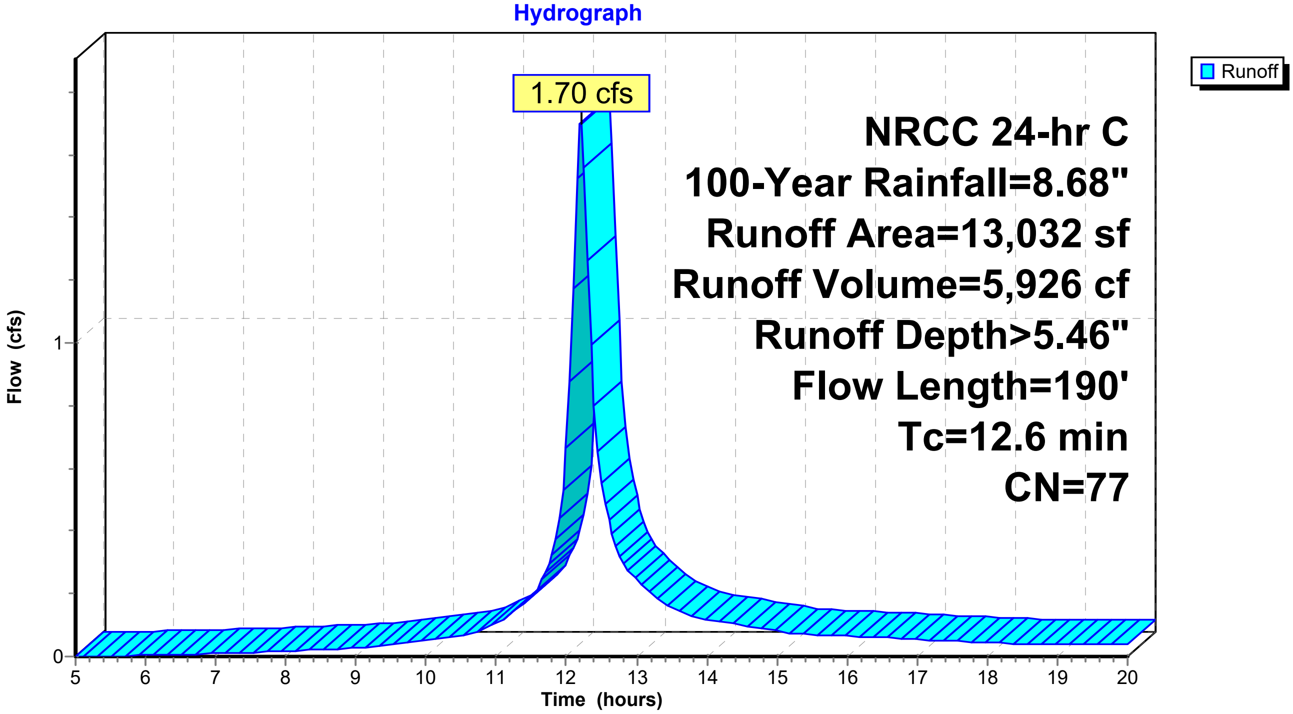
Runoff = 1.70 cfs @ 12.20 hrs, Volume= 5,926 cf, Depth> 5.46"
Routed to Pond IB2 : Infiltration Basin #2 (Exfiltration Zone)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 100-Year Rainfall=8.68"

Area (sf)	CN	Description
10,121	74	>75% Grass cover, Good, HSG C
1,003	70	Woods, Good, HSG C
1,908	98	Paved parking, HSG C
13,032	77	Weighted Average
11,124		85.36% Pervious Area
1,908		14.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.0300	0.08		**Sheet Flow, Grass** Grass: Bermuda n= 0.410 P2= 3.35"
0.8	55	0.0300	1.21		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.1	17	0.0100	2.03		**Shallow Concentrated Flow, Driveway** Paved Kv= 20.3 fps
1.2	68	0.0180	0.94		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
12.6	190	Total			

Subcatchment 1: Units 10-11 Entrance



Summary for Subcatchment 1pre: Site

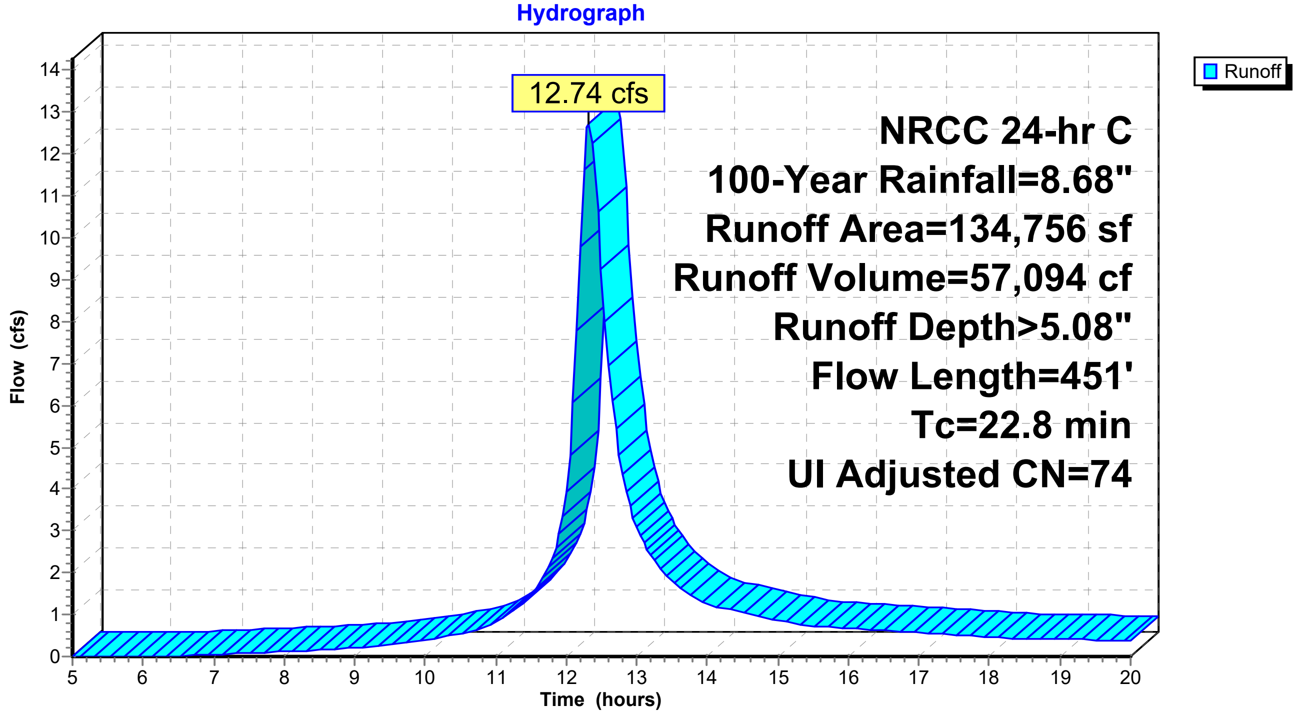
Runoff = 12.74 cfs @ 12.33 hrs, Volume= 57,094 cf, Depth> 5.08"
Routed to Reach DP1PRE : DP 1 - PRE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 100-Year Rainfall=8.68"

Area (sf)	CN	Adj	Description
56,945	70		Woods, Good, HSG C
2,937	98		Paved parking, HSG C
3,219	98		Unconnected roofs, HSG C
10,003	89		Gravel roads, HSG C
61,652	74		>75% Grass cover, Good, HSG C
134,756	75	74	Weighted Average, UI Adjusted
128,600			95.43% Pervious Area
6,156			4.57% Impervious Area
3,219			52.29% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.3	25	0.0110	0.03		**Sheet Flow, Woods** Woods: Dense underbrush n= 0.800 P2= 3.35"
0.5	25	0.0110	0.84		**Sheet Flow, Pavement** Smooth surfaces n= 0.011 P2= 3.35"
0.2	20	0.0110	2.13		**Shallow Concentrated Flow, Pavement** Paved Kv= 20.3 fps
1.5	65	0.0110	0.73		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
2.2	159	0.0290	1.19		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
2.0	52	0.0040	0.44		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.7	60	0.0370	1.35		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.4	45	0.1660	2.04		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
22.8	451	Total			

Subcatchment 1pre: Site



Summary for Subcatchment 2: Units 8-11 Backyards

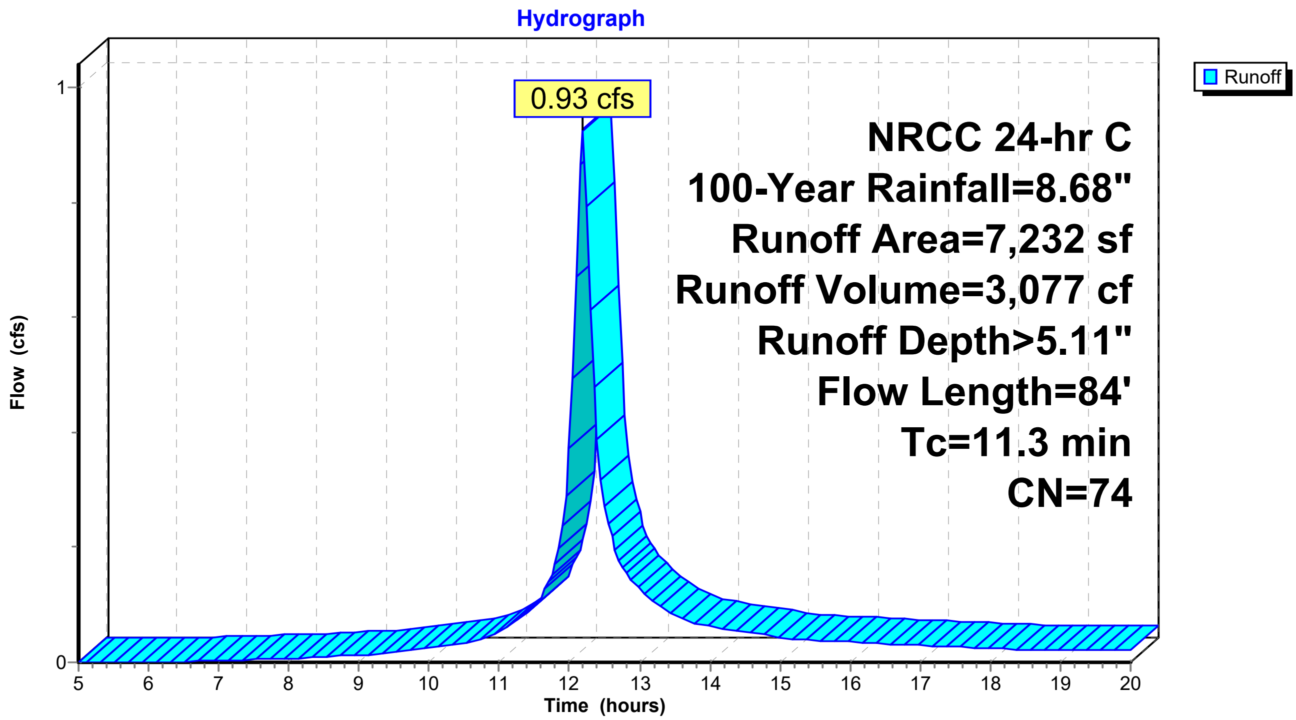
Runoff = 0.93 cfs @ 12.19 hrs, Volume= 3,077 cf, Depth> 5.11"
Routed to Pond CB7 : CB 7

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 100-Year Rainfall=8.68"

Area (sf)	CN	Description
7,232	74	>75% Grass cover, Good, HSG C
7,232		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7	50	0.0280	0.08		**Sheet Flow, Grass** Grass: Bermuda n= 0.410 P2= 3.35"
0.6	34	0.0200	0.99		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
11.3	84	Total			

Subcatchment 2: Units 8-11 Backyards



Summary for Subcatchment 3: Outer Border

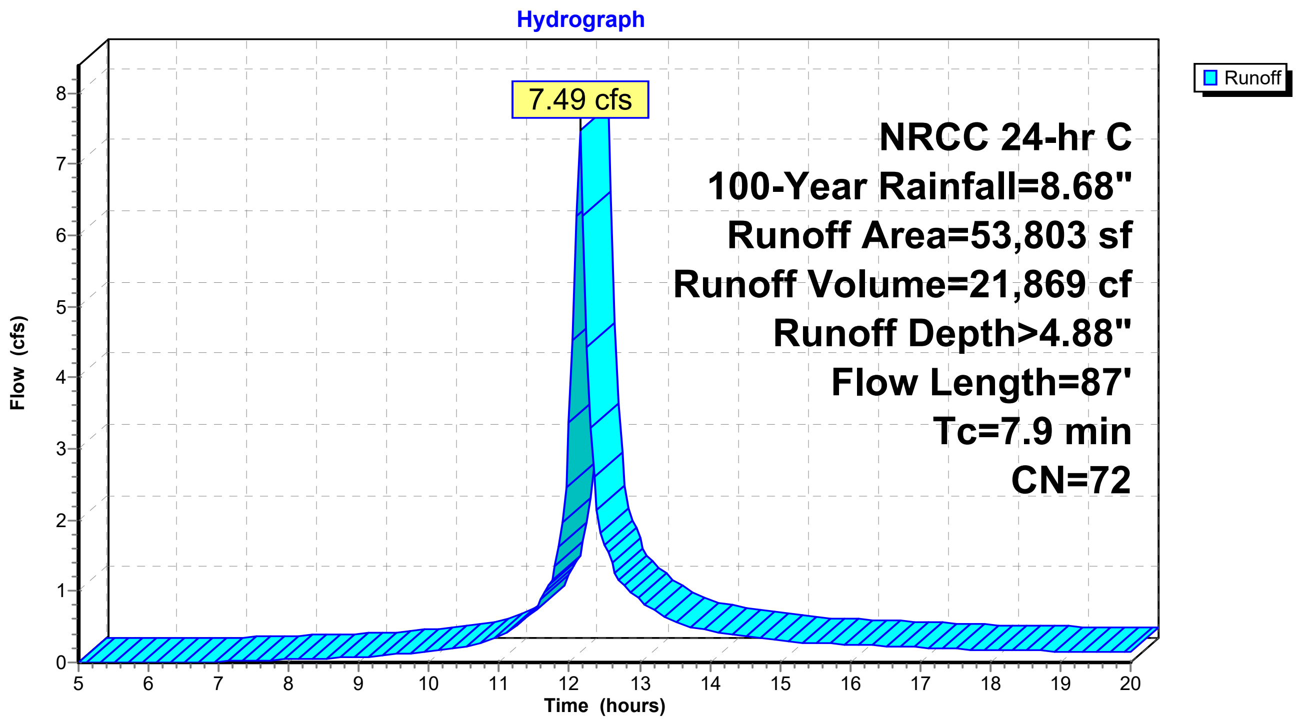
Runoff = 7.49 cfs @ 12.15 hrs, Volume= 21,869 cf, Depth> 4.88"
Routed to Reach DP1PST : DP 1 - POST

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 100-Year Rainfall=8.68"

Area (sf)	CN	Description
22,640	74	>75% Grass cover, Good, HSG C
31,163	70	Woods, Good, HSG C
53,803	72	Weighted Average
53,803		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	50	0.0670	0.11		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.35"
0.5	37	0.0600	1.22		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
7.9	87	Total			

Subcatchment 3: Outer Border



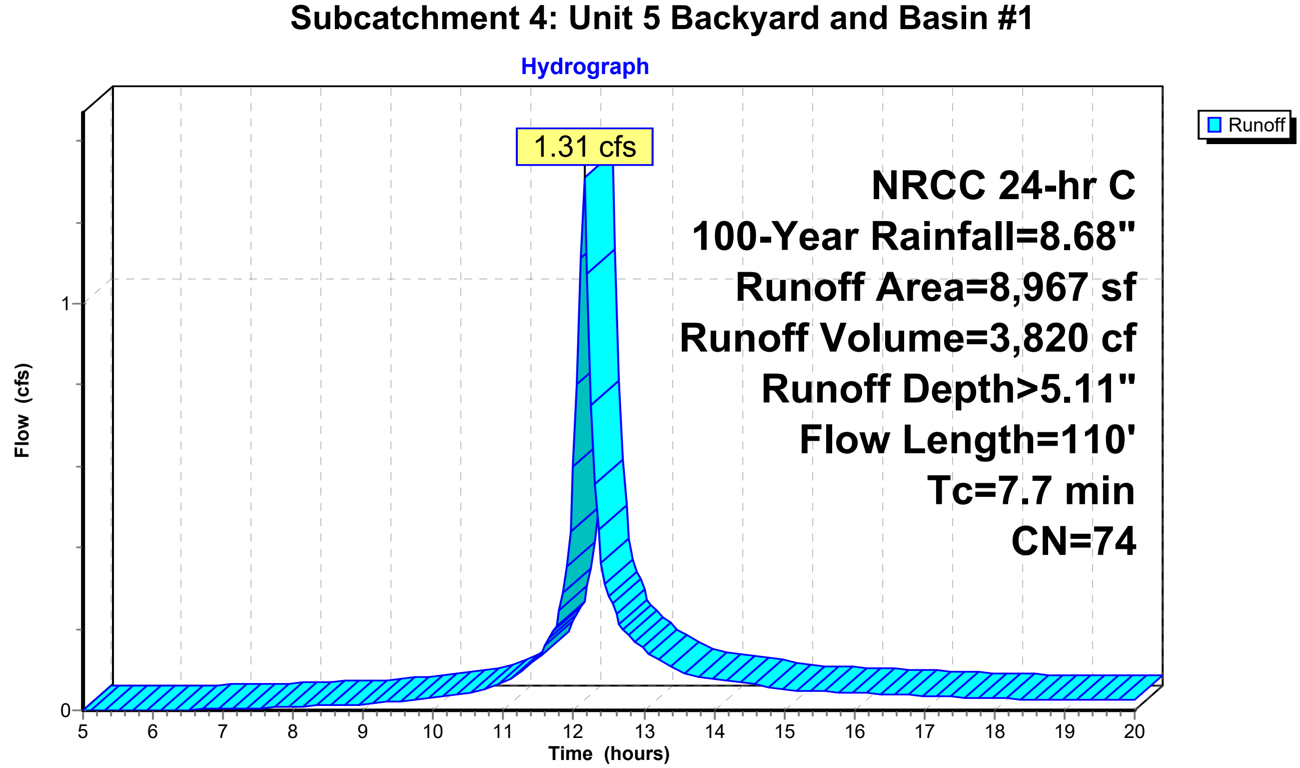
Summary for Subcatchment 4: Unit 5 Backyard and Basin #1

Runoff = 1.31 cfs @ 12.15 hrs, Volume= 3,820 cf, Depth> 5.11"
Routed to Pond IB1 : Infiltration Basin #1 (Exfiltration Zone)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 100-Year Rainfall=8.68"

Area (sf)	CN	Description
8,967	74	>75% Grass cover, Good, HSG C
8,967		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0780	0.12		**Sheet Flow, Grass** Grass: Bermuda n= 0.410 P2= 3.35"
0.6	60	0.0670	1.81		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
7.7	110	Total			



Summary for Subcatchment 5: Unit 5 Parking

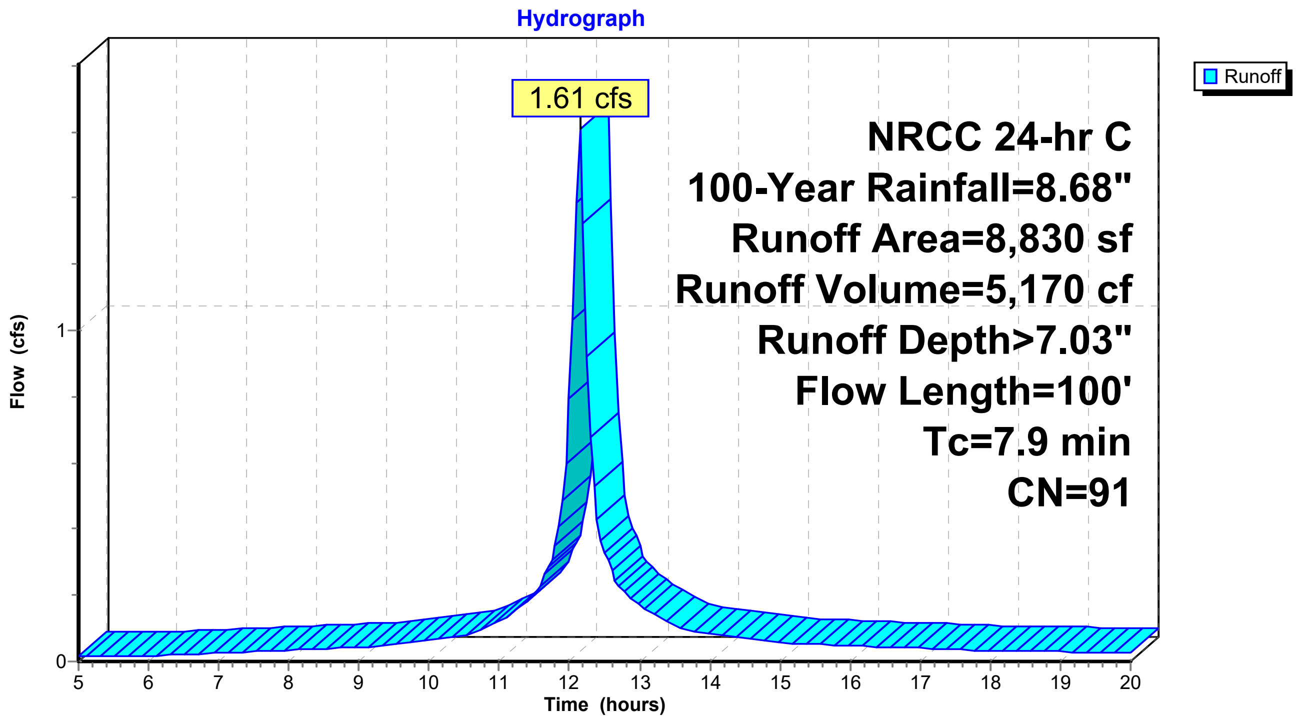
Runoff = 1.61 cfs @ 12.15 hrs, Volume= 5,170 cf, Depth> 7.03"
Routed to Pond 5P : CB 5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 100-Year Rainfall=8.68"

Area (sf)	CN	Description
2,551	74	>75% Grass cover, Good, HSG C
6,279	98	Paved roads w/curbs & sewers, HSG C
8,830	91	Weighted Average
2,551		28.89% Pervious Area
6,279		71.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	40	0.0450	0.09		**Sheet Flow, Grass** Grass: Bermuda n= 0.410 P2= 3.35"
0.3	10	0.0067	0.57		**Sheet Flow, Pavement** Smooth surfaces n= 0.011 P2= 3.35"
0.2	50	0.0280	3.40		**Shallow Concentrated Flow, Pavement** Paved Kv= 20.3 fps
7.9	100	Total			

Subcatchment 5: Unit 5 Parking



Summary for Subcatchment 6: Driveway Center Section

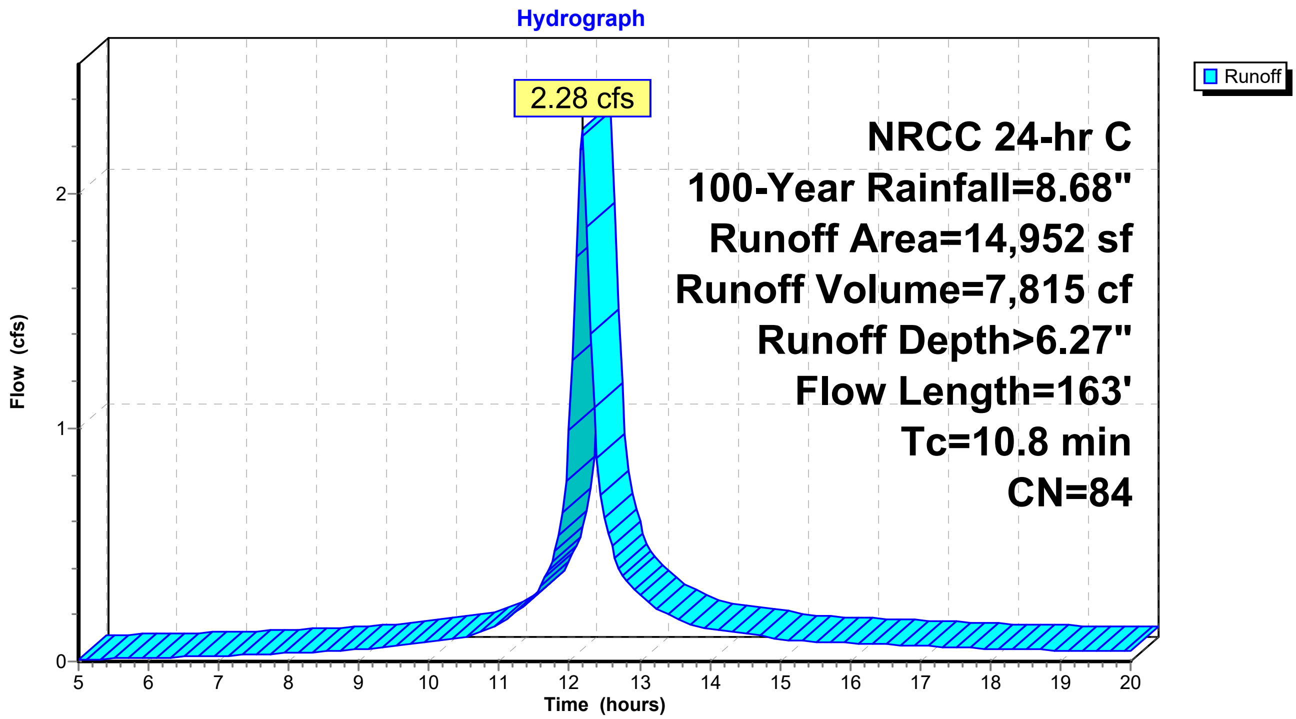
Runoff = 2.28 cfs @ 12.18 hrs, Volume= 7,815 cf, Depth> 6.27"
Routed to Pond CB4 : CB 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 100-Year Rainfall=8.68"

Area (sf)	CN	Description
8,411	74	>75% Grass cover, Good, HSG C
6,541	98	Paved roads w/curbs & sewers, HSG C
14,952	84	Weighted Average
8,411		56.25% Pervious Area
6,541		43.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	50	0.0320	0.08		**Sheet Flow, Grass** Grass: Bermuda n= 0.410 P2= 3.35"
0.2	18	0.0300	1.21		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.4	95	0.0360	3.85		**Shallow Concentrated Flow, Pavement** Paved Kv= 20.3 fps
10.8	163	Total			

Subcatchment 6: Driveway Center Section



Summary for Subcatchment 7: Driveway Entrance

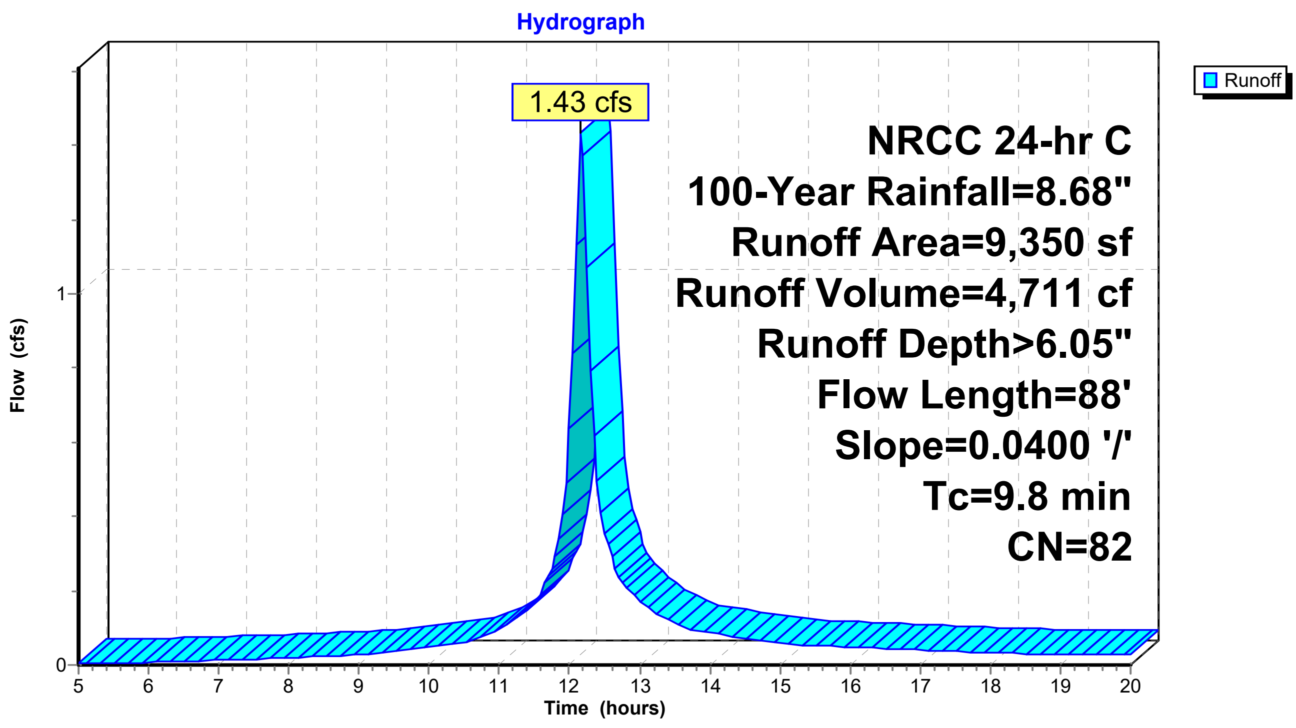
Runoff = 1.43 cfs @ 12.17 hrs, Volume= 4,711 cf, Depth> 6.05"
Routed to Pond CB1 : CB 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 100-Year Rainfall=8.68"

Area (sf)	CN	Description
2,977	98	Paved parking, HSG C
6,373	74	>75% Grass cover, Good, HSG C
9,350	82	Weighted Average
6,373		68.16% Pervious Area
2,977		31.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow, Grass** Grass: Bermuda n= 0.410 P2= 3.35"
0.5	38	0.0400	1.40		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
9.8	88	Total			

Subcatchment 7: Driveway Entrance



Summary for Subcatchment U1: Unit #1

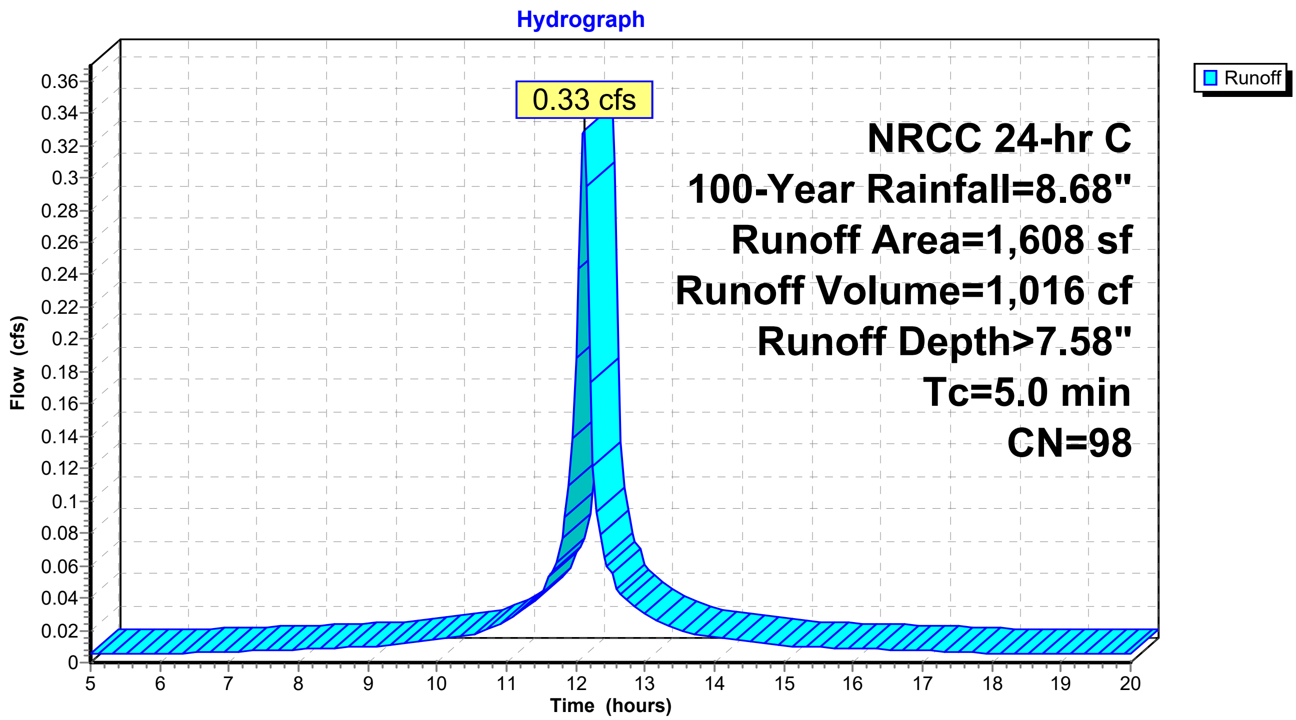
Runoff = 0.33 cfs @ 12.11 hrs, Volume= 1,016 cf, Depth> 7.58"
Routed to Reach 8R : 6" Roof Drain Carrier Pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 100-Year Rainfall=8.68"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U1: Unit #1



Summary for Subcatchment U10: Unit #10

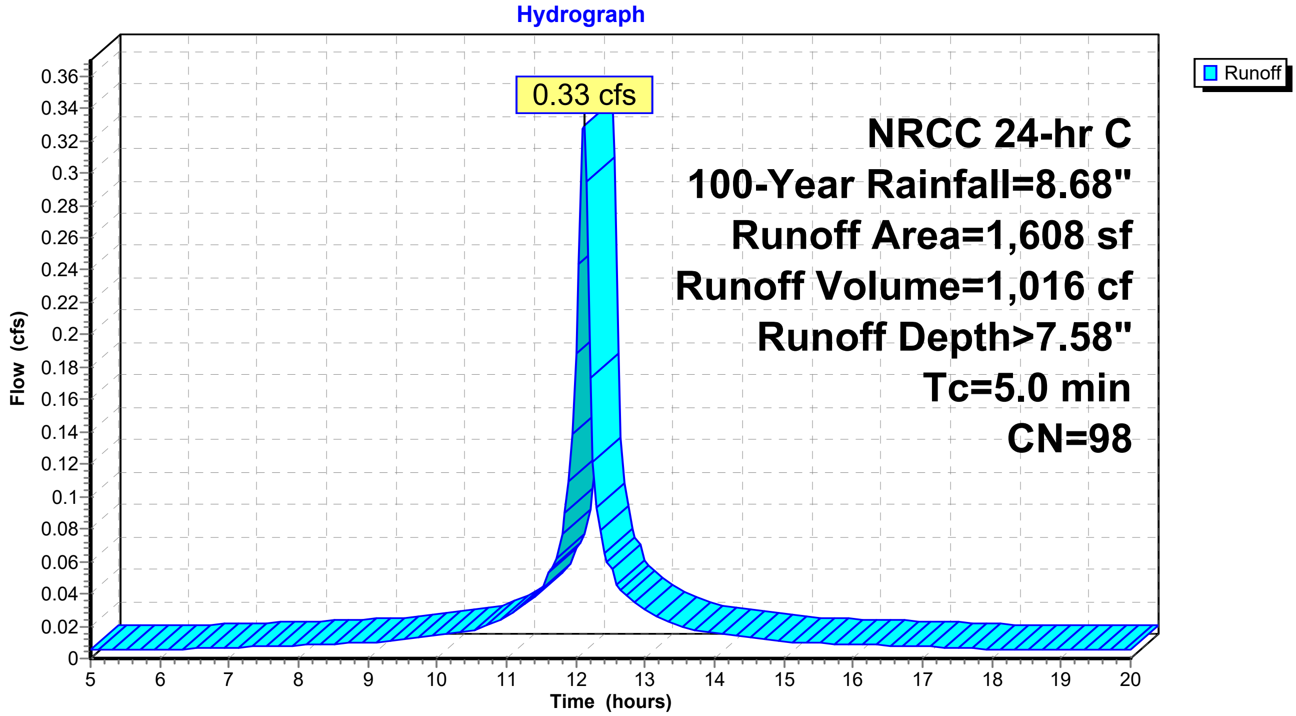
Runoff = 0.33 cfs @ 12.11 hrs, Volume= 1,016 cf, Depth> 7.58"
Routed to Pond 1P : Subsurface #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 100-Year Rainfall=8.68"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U10: Unit #10



Summary for Subcatchment U11: Unit #11

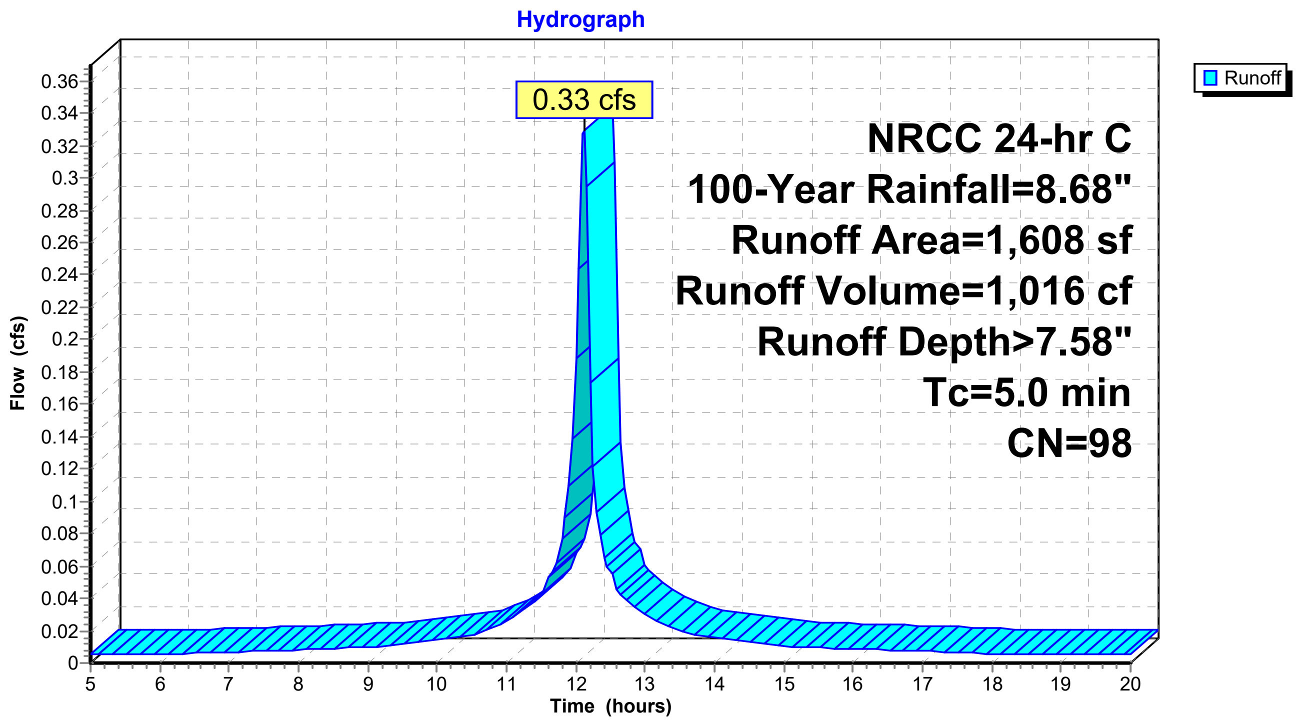
Runoff = 0.33 cfs @ 12.11 hrs, Volume= 1,016 cf, Depth> 7.58"
Routed to Pond 1P : Subsurface #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 100-Year Rainfall=8.68"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U11: Unit #11



Summary for Subcatchment U2: Unit #2

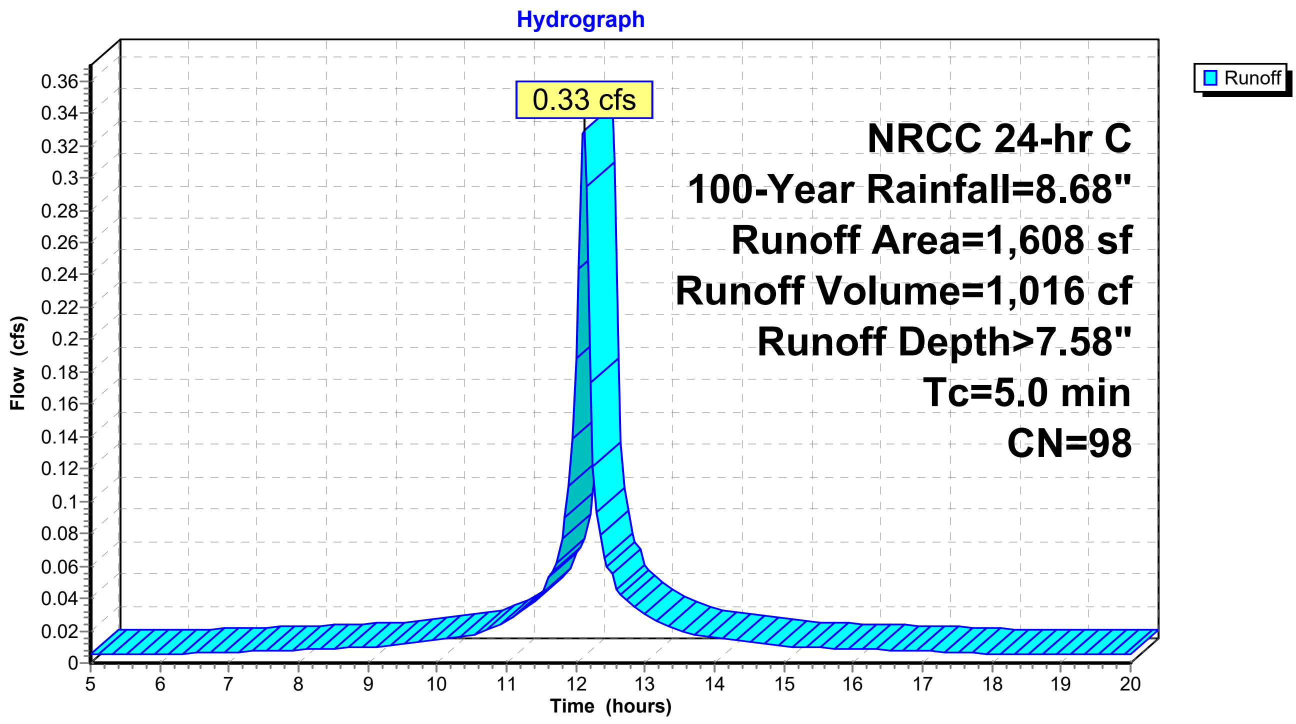
Runoff = 0.33 cfs @ 12.11 hrs, Volume= 1,016 cf, Depth> 7.58"
Routed to Reach 8R : 6" Roof Drain Carrier Pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 100-Year Rainfall=8.68"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U2: Unit #2



Summary for Subcatchment U3: Unit #3

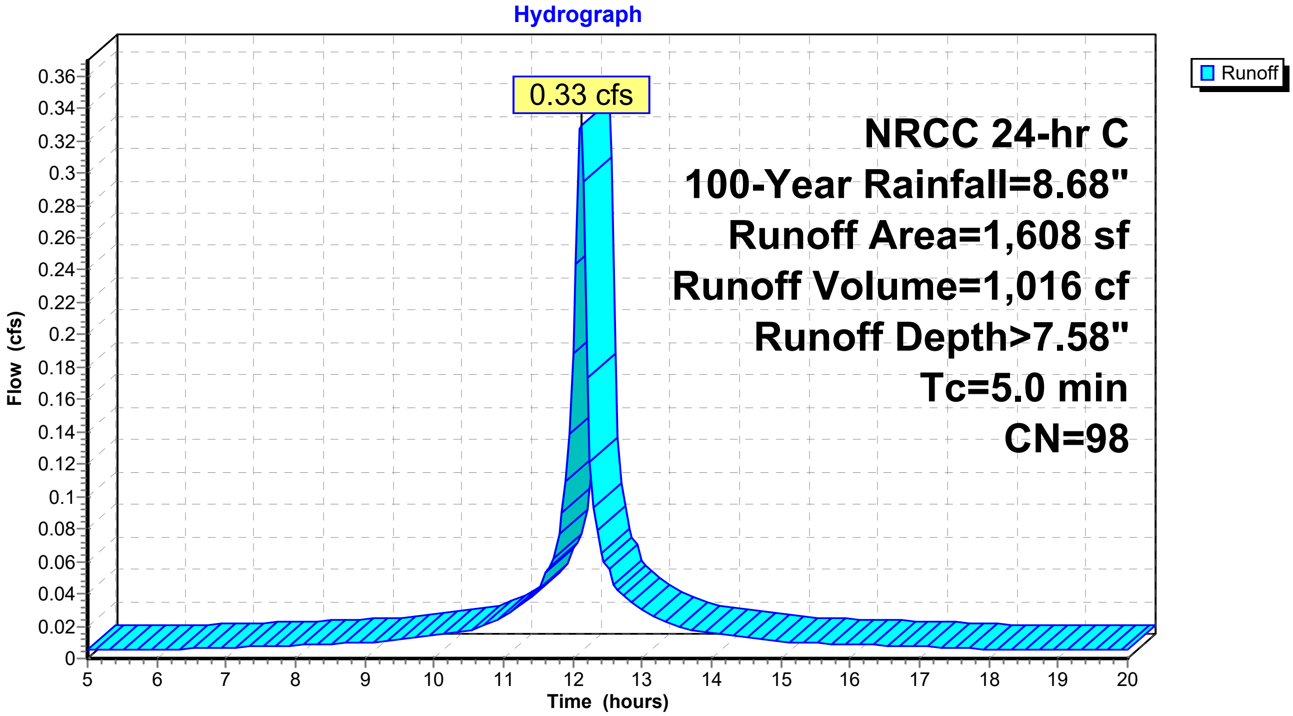
Runoff = 0.33 cfs @ 12.11 hrs, Volume= 1,016 cf, Depth> 7.58"
Routed to Reach 9R : 12" Roof Drain Carrier Pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 100-Year Rainfall=8.68"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U3: Unit #3



Summary for Subcatchment U4: Unit #4

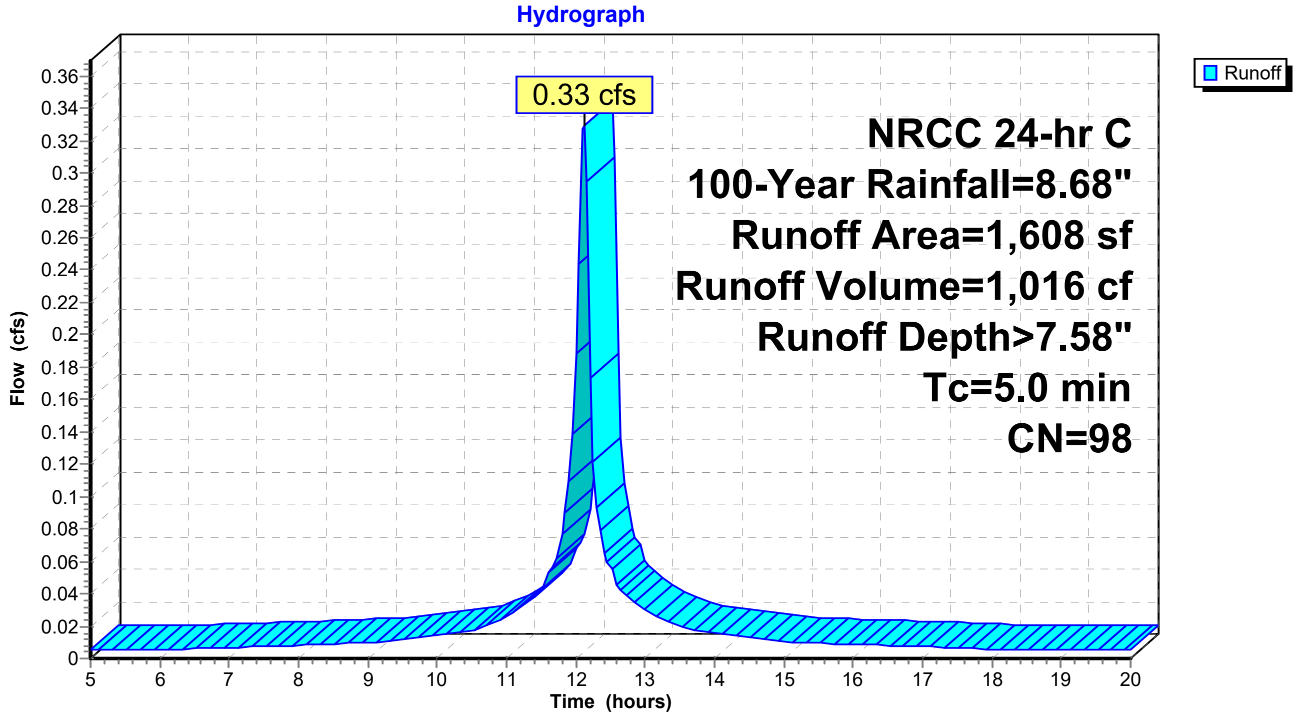
Runoff = 0.33 cfs @ 12.11 hrs, Volume= 1,016 cf, Depth> 7.58"
Routed to Reach 9R : 12" Roof Drain Carrier Pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 100-Year Rainfall=8.68"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U4: Unit #4



Summary for Subcatchment U5: Unit #5

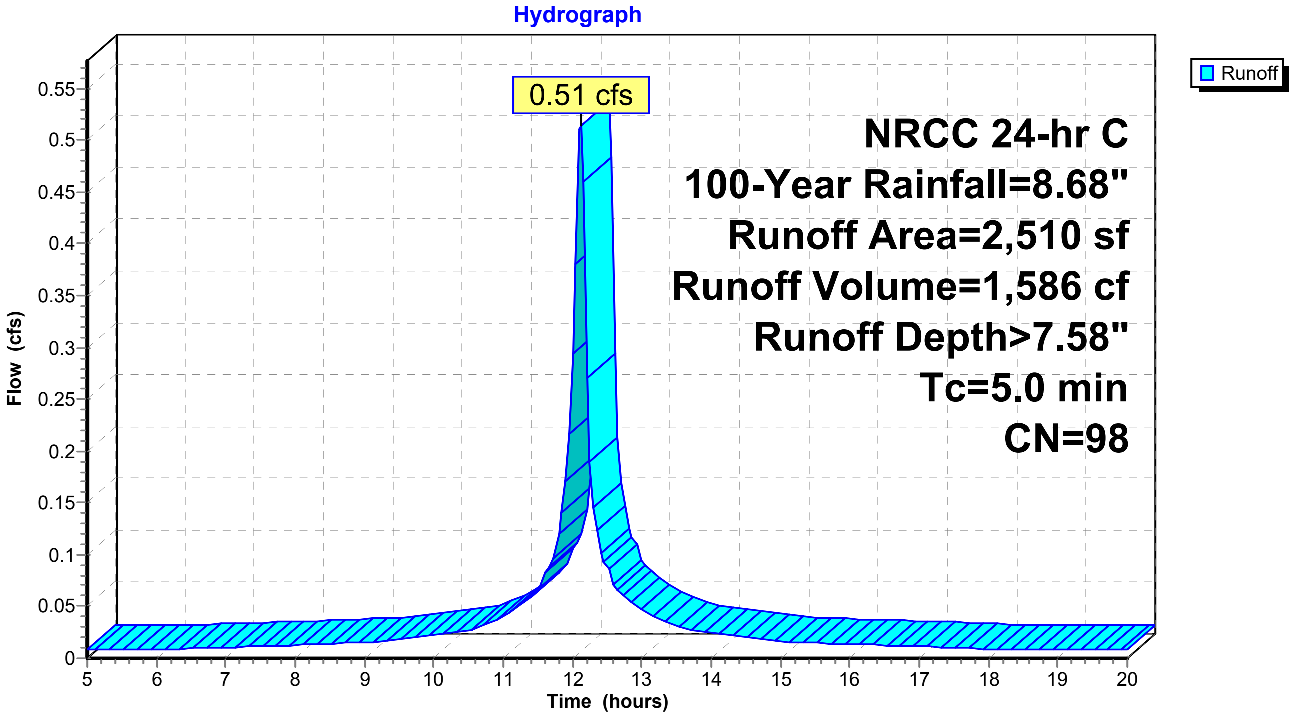
Runoff = 0.51 cfs @ 12.11 hrs, Volume= 1,586 cf, Depth> 7.58"
Routed to Pond IB1 : Infiltration Basin #1 (Exfiltration Zone)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 100-Year Rainfall=8.68"

Area (sf)	CN	Description
2,510	98	Unconnected roofs, HSG C
2,510		100.00% Impervious Area
2,510		100.00% Unconnected

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

Subcatchment U5: Unit #5



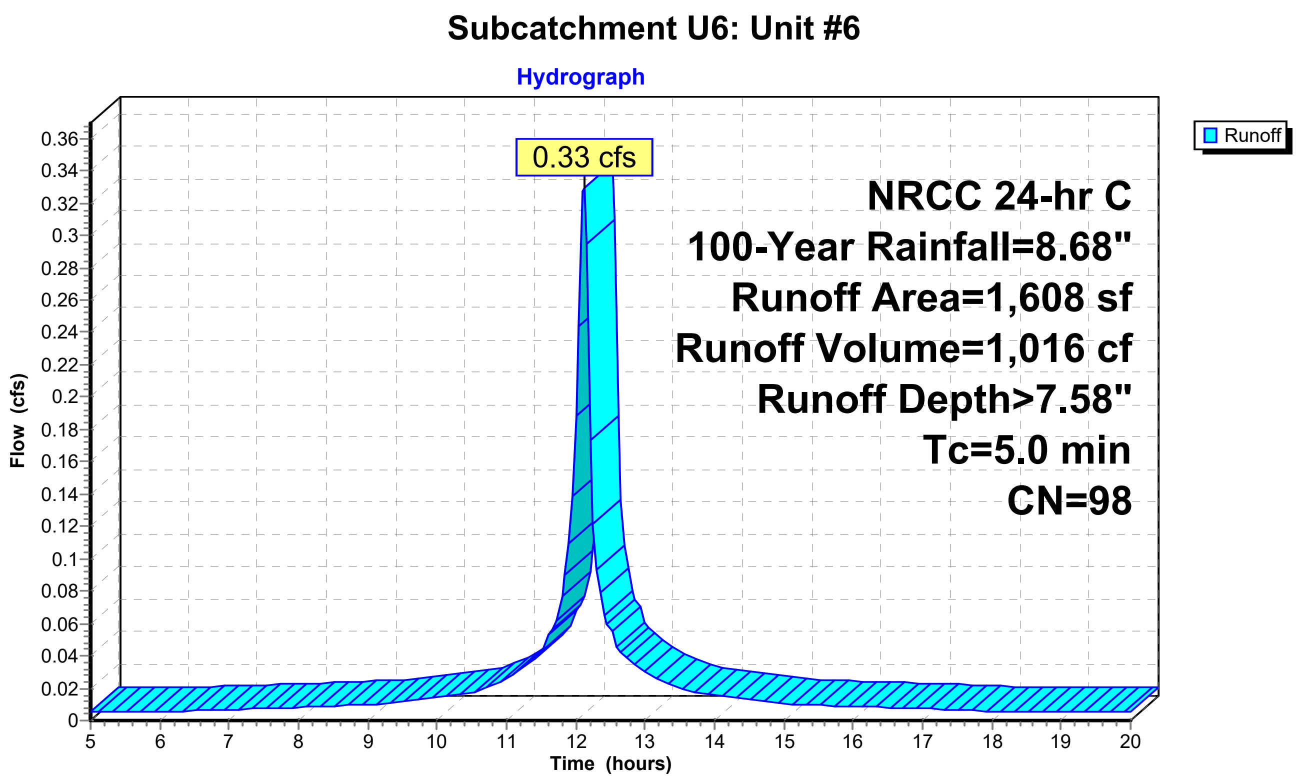
Summary for Subcatchment U6: Unit #6

Runoff = 0.33 cfs @ 12.11 hrs, Volume= 1,016 cf, Depth> 7.58"
Routed to Reach 4R : 8" ROOF DRAIN CARRIER PIPE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 100-Year Rainfall=8.68"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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



Summary for Subcatchment U7: Unit #7

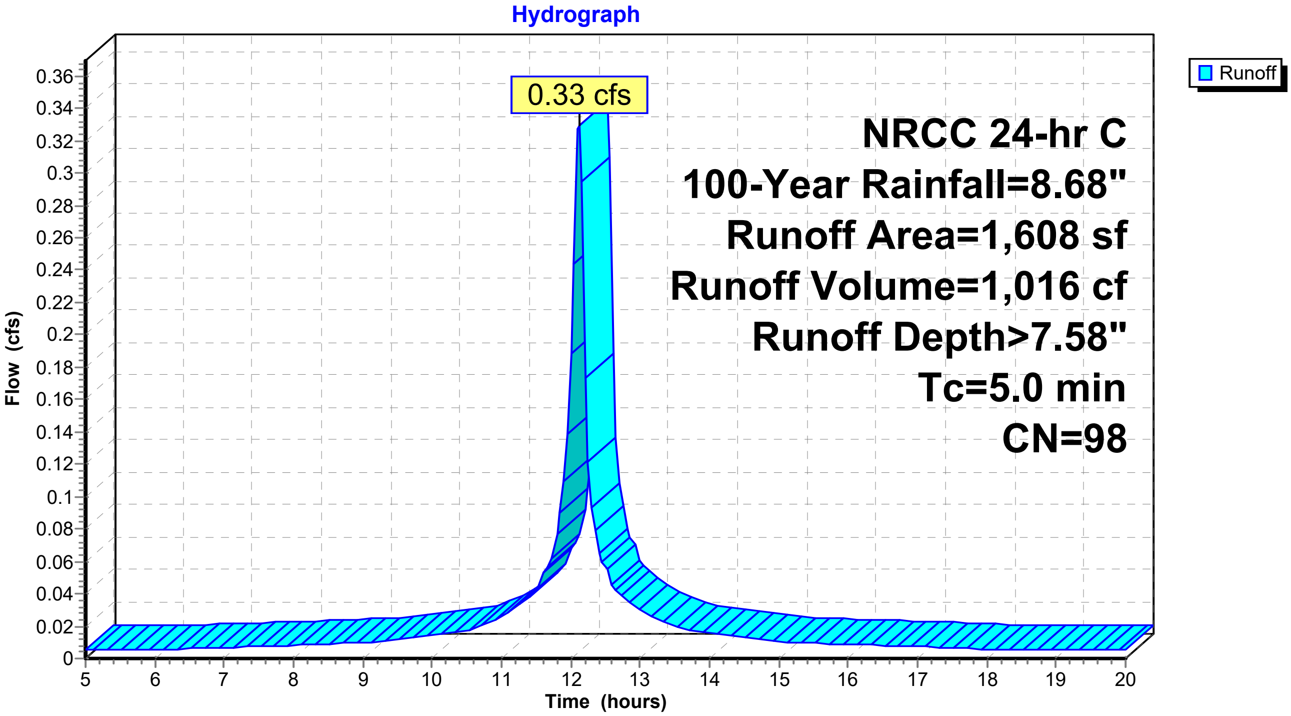
Runoff = 0.33 cfs @ 12.11 hrs, Volume= 1,016 cf, Depth> 7.58"
Routed to Reach 4R : 8" ROOF DRAIN CARRIER PIPE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 100-Year Rainfall=8.68"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U7: Unit #7



Summary for Subcatchment U8: Unit #8

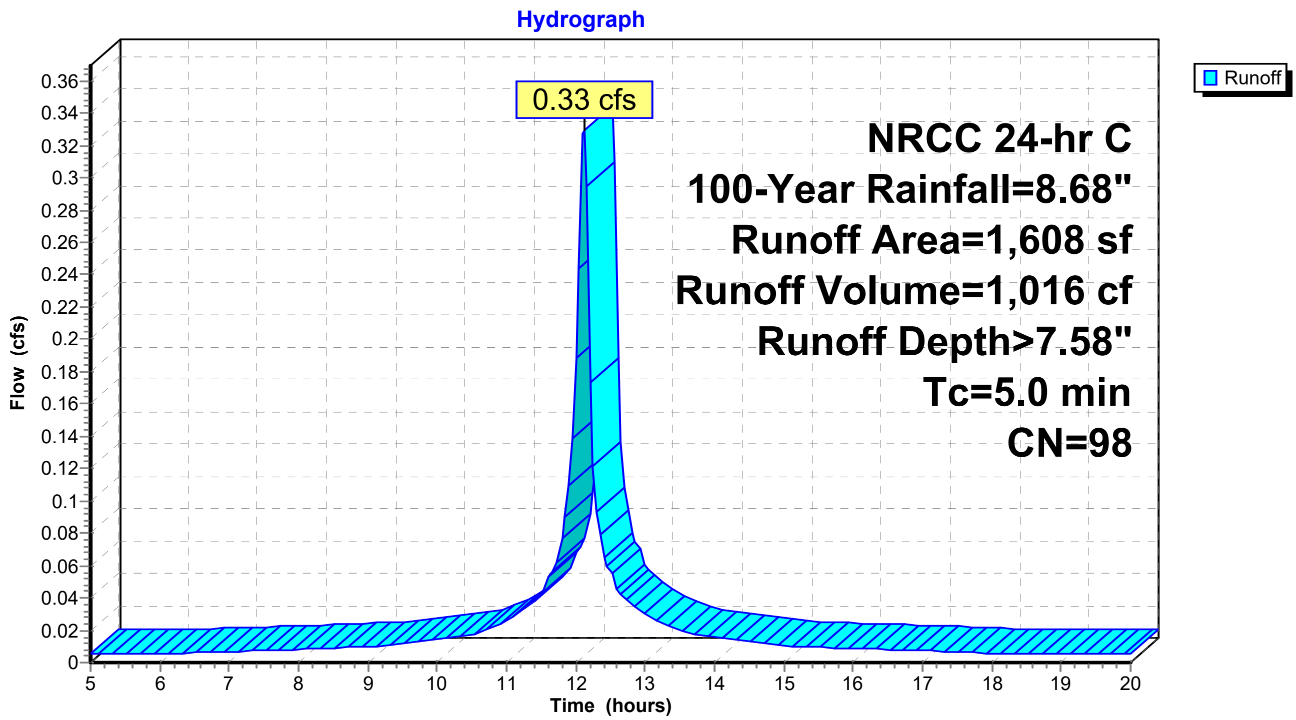
Runoff = 0.33 cfs @ 12.11 hrs, Volume= 1,016 cf, Depth> 7.58"
Routed to Pond 1P : Subsurface #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 100-Year Rainfall=8.68"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U8: Unit #8



Summary for Subcatchment U9: Unit #9

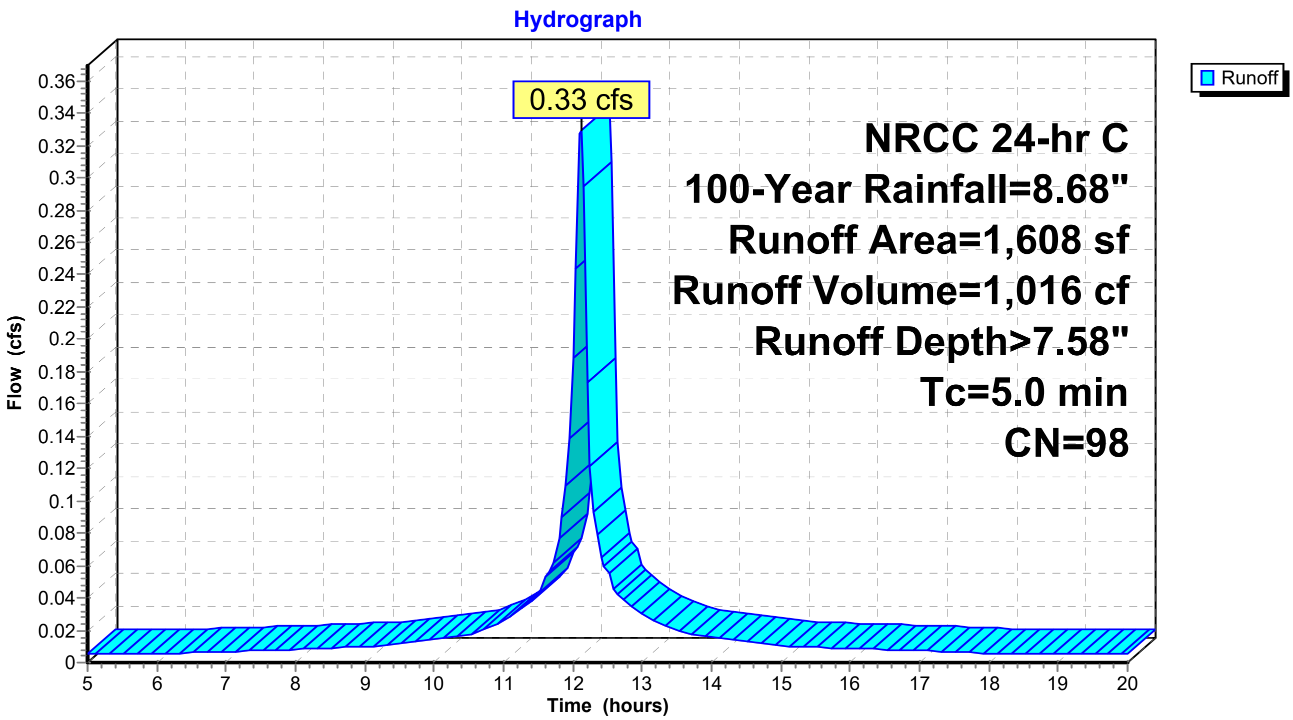
Runoff = 0.33 cfs @ 12.11 hrs, Volume= 1,016 cf, Depth> 7.58"
Routed to Pond 1P : Subsurface #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 100-Year Rainfall=8.68"

Area (sf)	CN	Description
1,608	98	Unconnected roofs, HSG C
1,608		100.00% Impervious Area
1,608		100.00% Unconnected

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

Subcatchment U9: Unit #9



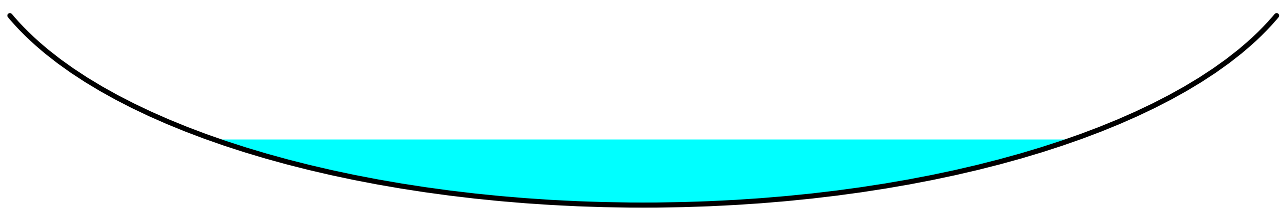
Summary for Reach 3R: Wetland Surface 1

Inflow Area = 26,696 sf, 31.24% Impervious, Inflow Depth > 4.45" for 100-Year event
Inflow = 2.51 cfs @ 12.21 hrs, Volume= 9,899 cf
Outflow = 2.03 cfs @ 12.44 hrs, Volume= 9,817 cf, Atten= 19%, Lag= 14.1 min
Routed to Reach DP1PST : DP 1 - POST

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.60 fps, Min. Travel Time= 9.6 min
Avg. Velocity = 0.27 fps, Avg. Travel Time= 21.1 min

Peak Storage= 1,164 cf @ 12.44 hrs
Average Depth at Peak Storage= 0.17' , Surface Width= 29.39'
Bank-Full Depth= 0.50' Flow Area= 16.7 sf, Capacity= 20.30 cfs

50.00' x 0.50' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage
Length= 344.0' Slope= 0.0291 '/'
Inlet Invert= 94.00', Outlet Invert= 84.00'



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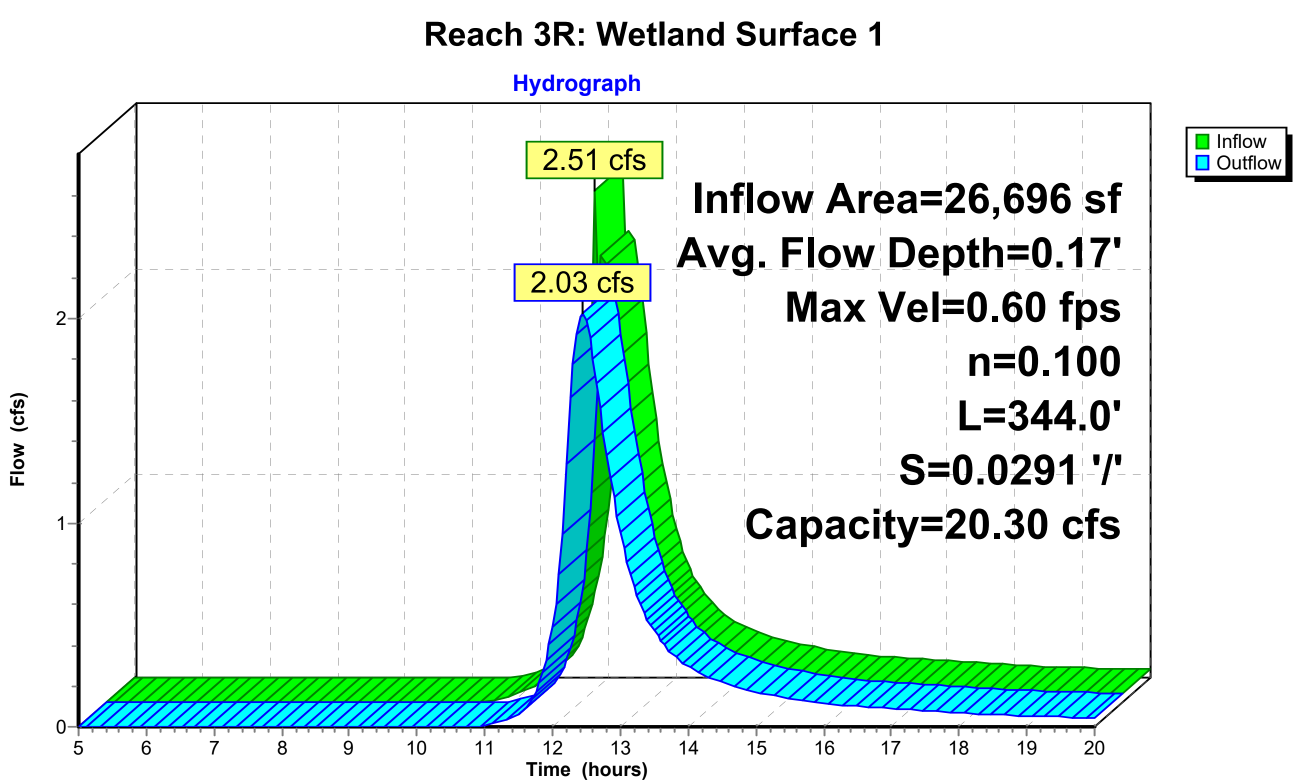


Stage-Discharge for Reach 3R: Wetland Surface 1

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
94.00	0.00	0.00
94.01	0.09	0.00
94.02	0.14	0.02
94.03	0.19	0.05
94.04	0.23	0.09
94.05	0.26	0.14
94.06	0.30	0.21
94.07	0.33	0.29
94.08	0.36	0.38
94.09	0.39	0.49
94.10	0.42	0.62
94.11	0.44	0.76
94.12	0.47	0.92
94.13	0.50	1.10
94.14	0.52	1.29
94.15	0.55	1.49
94.16	0.57	1.72
94.17	0.59	1.96
94.18	0.62	2.22
94.19	0.64	2.49
94.20	0.66	2.79
94.21	0.68	3.10
94.22	0.70	3.43
94.23	0.73	3.77
94.24	0.75	4.14
94.25	0.77	4.52
94.26	0.79	4.92
94.27	0.81	5.34
94.28	0.83	5.78
94.29	0.85	6.24
94.30	0.87	6.71
94.31	0.89	7.21
94.32	0.90	7.72
94.33	0.92	8.25
94.34	0.94	8.80
94.35	0.96	9.37
94.36	0.98	9.96
94.37	1.00	10.57
94.38	1.01	11.20
94.39	1.03	11.85
94.40	1.05	12.52
94.41	1.07	13.20
94.42	1.08	13.91
94.43	1.10	14.64
94.44	1.12	15.39
94.45	1.14	16.15
94.46	1.15	16.94
94.47	1.17	17.75
94.48	1.19	18.58
94.49	1.20	19.43
94.50	**1.22**	**20.30**

Stage-Area-Storage for Reach 3R: Wetland Surface 1

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
94.00	0.0	0
94.01	0.0	16
94.02	0.1	46
94.03	0.2	84
94.04	0.4	130
94.05	0.5	181
94.06	0.7	238
94.07	0.9	300
94.08	1.1	367
94.09	1.3	438
94.10	1.5	513
94.11	1.7	592
94.12	2.0	674
94.13	2.2	760
94.14	2.5	849
94.15	2.7	942
94.16	3.0	1,038
94.17	3.3	1,137
94.18	3.6	1,238
94.19	3.9	1,343
94.20	4.2	1,450
94.21	4.5	1,561
94.22	4.9	1,673
94.23	5.2	1,789
94.24	5.5	1,907
94.25	5.9	2,027
94.26	6.2	2,150
94.27	6.6	2,275
94.28	7.0	2,403
94.29	7.4	2,532
94.30	7.7	2,665
94.31	8.1	2,799
94.32	8.5	2,935
94.33	8.9	3,074
94.34	9.3	3,215
94.35	9.8	3,358
94.36	10.2	3,503
94.37	10.6	3,650
94.38	11.0	3,799
94.39	11.5	3,950
94.40	11.9	4,102
94.41	12.4	4,257
94.42	12.8	4,414
94.43	13.3	4,573
94.44	13.8	4,733
94.45	14.2	4,895
94.46	14.7	5,059
94.47	15.2	5,225
94.48	15.7	5,393
94.49	16.2	5,562
94.50	**16.7**	**5,733**

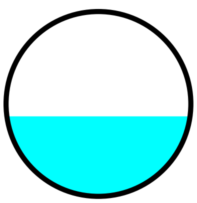
Summary for Reach 4R: 8" ROOF DRAIN CARRIER PIPE

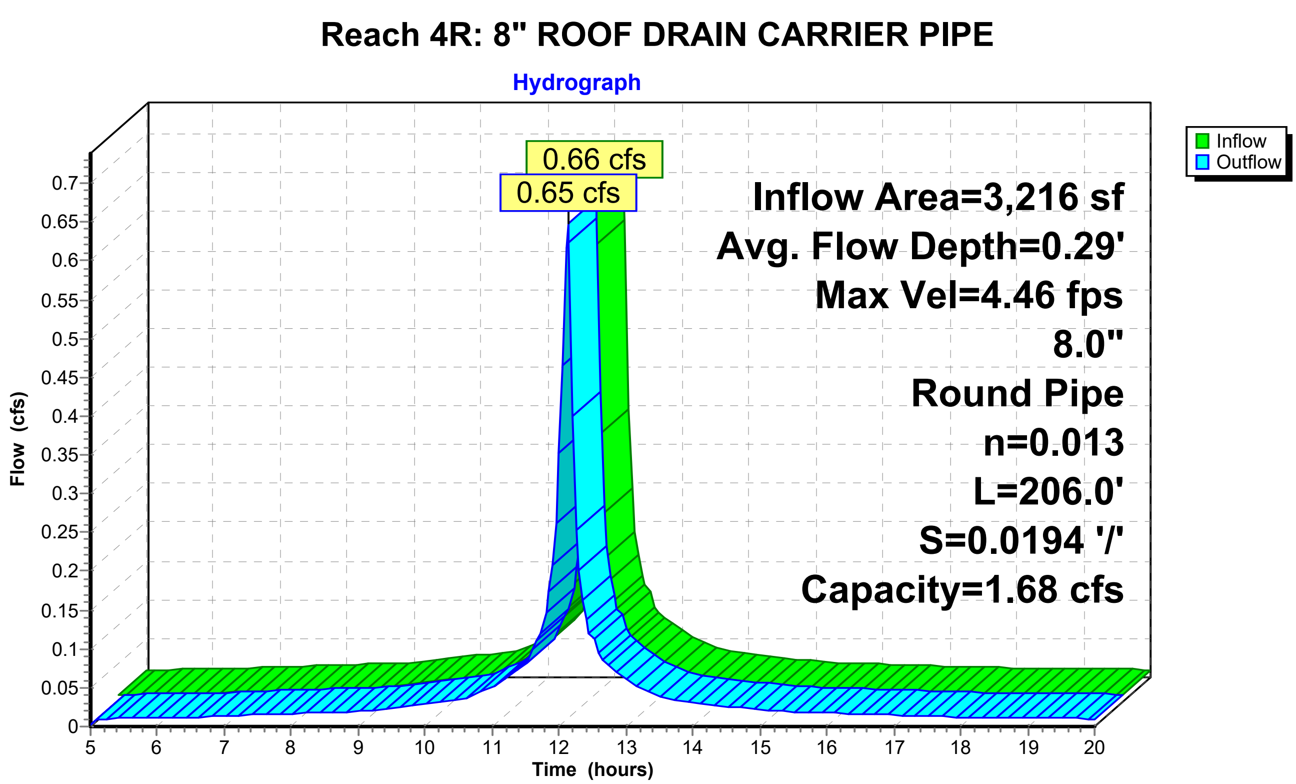
Inflow Area = 3,216 sf,100.00% Impervious, Inflow Depth > 7.58" for 100-Year event
Inflow = 0.66 cfs @ 12.11 hrs, Volume= 2,032 cf
Outflow = 0.65 cfs @ 12.13 hrs, Volume= 2,030 cf, Atten= 2%, Lag= 0.9 min
Routed to Pond IB1 : Infiltration Basin #1 (Exfiltration Zone)

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.46 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.75 fps, Avg. Travel Time= 2.0 min

Peak Storage= 30 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.29' , Surface Width= 0.66'
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 1.68 cfs

8.0" Round Pipe
n= 0.013
Length= 206.0' Slope= 0.0194 '/'
Inlet Invert= 93.00', Outlet Invert= 89.00'





Stage-Discharge for Reach 4R: 8" ROOF DRAIN CARRIER PIPE

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
93.00	0.00	0.00
93.01	0.55	0.00
93.02	0.89	0.00
93.03	1.16	0.01
93.04	1.39	0.01
93.05	1.61	0.02
93.06	1.81	0.03
93.07	2.00	0.04
93.08	2.17	0.05
93.09	2.34	0.07
93.10	2.49	0.08
93.11	2.64	0.10
93.12	2.79	0.12
93.13	2.92	0.14
93.14	3.05	0.16
93.15	3.18	0.19
93.16	3.30	0.21
93.17	3.42	0.24
93.18	3.53	0.27
93.19	3.64	0.30
93.20	3.74	0.33
93.21	3.84	0.36
93.22	3.94	0.40
93.23	4.04	0.43
93.24	4.13	0.47
93.25	4.21	0.50
93.26	4.30	0.54
93.27	4.38	0.58
93.28	4.46	0.62
93.29	4.53	0.66
93.30	4.60	0.70
93.31	4.67	0.74
93.32	4.74	0.79
93.33	4.80	0.83
93.34	4.86	0.87
93.35	4.92	0.91
93.36	4.98	0.96
93.37	5.03	1.00
93.38	5.08	1.04
93.39	5.13	1.09
93.40	5.17	1.13
93.41	5.22	1.17
93.42	5.25	1.22
93.43	5.29	1.26
93.44	5.33	1.30
93.45	5.36	1.34
93.46	5.38	1.38
93.47	5.41	1.42
93.48	5.43	1.46
93.49	5.45	1.50
93.50	5.47	1.54
93.51	5.48	1.57
93.52	5.49	1.60
93.53	5.50	1.64
93.54	**5.50**	1.67
93.55	5.50	1.69
93.56	5.49	1.72
93.57	5.48	1.74
93.58	5.47	1.76
93.59	5.45	1.78
93.60	5.42	1.79
93.61	5.39	1.80
93.62	5.35	**1.81**
93.63	5.30	1.81
93.64	5.24	1.80
93.65	5.15	1.79
93.66	5.03	1.75
93.67	4.72	1.65

Stage-Area-Storage for Reach 4R: 8" ROOF DRAIN CARRIER PIPE

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
93.00	0.0	0
93.01	0.0	0
93.02	0.0	1
93.03	0.0	1
93.04	0.0	2
93.05	0.0	2
93.06	0.0	3
93.07	0.0	4
93.08	0.0	5
93.09	0.0	6
93.10	0.0	7
93.11	0.0	8
93.12	0.0	9
93.13	0.0	10
93.14	0.1	11
93.15	0.1	12
93.16	0.1	13
93.17	0.1	14
93.18	0.1	16
93.19	0.1	17
93.20	0.1	18
93.21	0.1	19
93.22	0.1	21
93.23	0.1	22
93.24	0.1	23
93.25	0.1	25
93.26	0.1	26
93.27	0.1	27
93.28	0.1	29
93.29	0.1	30
93.30	0.2	31
93.31	0.2	33
93.32	0.2	34
93.33	0.2	35
93.34	0.2	37
93.35	0.2	38
93.36	0.2	40
93.37	0.2	41
93.38	0.2	42
93.39	0.2	44
93.40	0.2	45
93.41	0.2	46
93.42	0.2	48
93.43	0.2	49
93.44	0.2	50
93.45	0.3	52
93.46	0.3	53
93.47	0.3	54
93.48	0.3	55
93.49	0.3	57
93.50	0.3	58
93.51	0.3	59
93.52	0.3	60
93.53	0.3	61
93.54	0.3	62
93.55	0.3	63
93.56	0.3	64
93.57	0.3	65
93.58	0.3	66
93.59	0.3	67
93.60	0.3	68
93.61	0.3	69
93.62	0.3	70
93.63	0.3	70
93.64	0.3	71
93.65	0.3	71
93.66	0.3	72
93.67	**0.3**	**72**

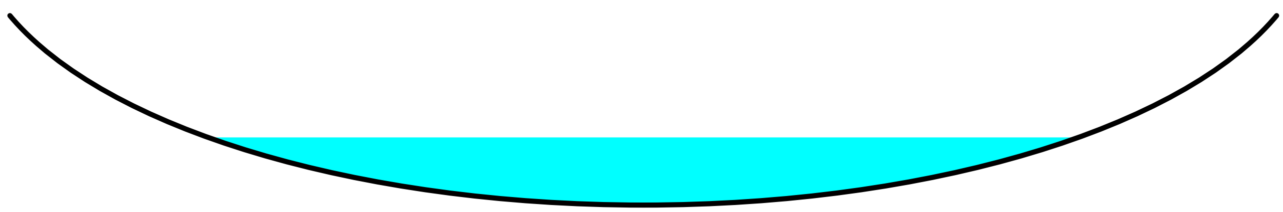
Summary for Reach 5R: Wetland Surface 2

Inflow Area = 13,032 sf, 14.64% Impervious, Inflow Depth > 4.76" for 100-Year event
Inflow = 1.48 cfs @ 12.25 hrs, Volume= 5,175 cf
Outflow = 1.14 cfs @ 12.37 hrs, Volume= 5,107 cf, Atten= 23%, Lag= 7.2 min
Routed to Reach 3R : Wetland Surface 1

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.32 fps, Min. Travel Time= 12.6 min
Avg. Velocity = 0.15 fps, Avg. Travel Time= 27.5 min

Peak Storage= 865 cf @ 12.37 hrs
Average Depth at Peak Storage= 0.18' , Surface Width= 29.81'
Bank-Full Depth= 0.50' Flow Area= 16.7 sf, Capacity= 10.76 cfs

50.00' x 0.50' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage
Length= 245.0' Slope= 0.0082 '/'
Inlet Invert= 96.00', Outlet Invert= 94.00'



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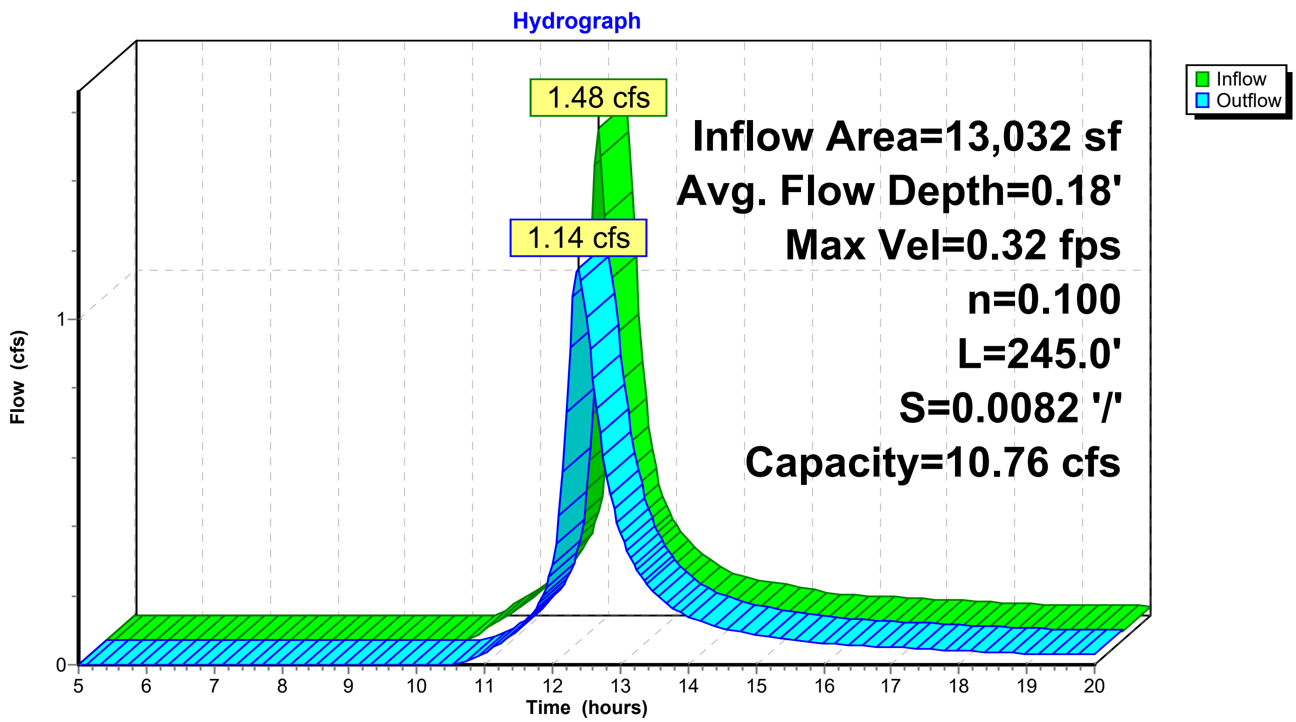
Reach 5R: Wetland Surface 2



Stage-Discharge for Reach 5R: Wetland Surface 2

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
96.00	0.00	0.00
96.01	0.05	0.00
96.02	0.08	0.01
96.03	0.10	0.02
96.04	0.12	0.05
96.05	0.14	0.07
96.06	0.16	0.11
96.07	0.17	0.15
96.08	0.19	0.20
96.09	0.21	0.26
96.10	0.22	0.33
96.11	0.24	0.40
96.12	0.25	0.49
96.13	0.26	0.58
96.14	0.28	0.68
96.15	0.29	0.79
96.16	0.30	0.91
96.17	0.31	1.04
96.18	0.33	1.18
96.19	0.34	1.32
96.20	0.35	1.48
96.21	0.36	1.64
96.22	0.37	1.82
96.23	0.38	2.00
96.24	0.40	2.19
96.25	0.41	2.40
96.26	0.42	2.61
96.27	0.43	2.83
96.28	0.44	3.06
96.29	0.45	3.30
96.30	0.46	3.56
96.31	0.47	3.82
96.32	0.48	4.09
96.33	0.49	4.37
96.34	0.50	4.66
96.35	0.51	4.97
96.36	0.52	5.28
96.37	0.53	5.60
96.38	0.54	5.94
96.39	0.55	6.28
96.40	0.56	6.63
96.41	0.57	7.00
96.42	0.57	7.37
96.43	0.58	7.76
96.44	0.59	8.15
96.45	0.60	8.56
96.46	0.61	8.98
96.47	0.62	9.41
96.48	0.63	9.85
96.49	0.64	10.30
96.50	**0.65**	**10.76**

Stage-Area-Storage for Reach 5R: Wetland Surface 2

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
96.00	0.0	0
96.01	0.0	12
96.02	0.1	33
96.03	0.2	60
96.04	0.4	92
96.05	0.5	129
96.06	0.7	170
96.07	0.9	214
96.08	1.1	261
96.09	1.3	312
96.10	1.5	365
96.11	1.7	421
96.12	2.0	480
96.13	2.2	541
96.14	2.5	605
96.15	2.7	671
96.16	3.0	739
96.17	3.3	810
96.18	3.6	882
96.19	3.9	957
96.20	4.2	1,033
96.21	4.5	1,111
96.22	4.9	1,192
96.23	5.2	1,274
96.24	5.5	1,358
96.25	5.9	1,444
96.26	6.2	1,531
96.27	6.6	1,620
96.28	7.0	1,711
96.29	7.4	1,804
96.30	7.7	1,898
96.31	8.1	1,993
96.32	8.5	2,091
96.33	8.9	2,189
96.34	9.3	2,290
96.35	9.8	2,391
96.36	10.2	2,495
96.37	10.6	2,599
96.38	11.0	2,705
96.39	11.5	2,813
96.40	11.9	2,922
96.41	12.4	3,032
96.42	12.8	3,144
96.43	13.3	3,257
96.44	13.8	3,371
96.45	14.2	3,486
96.46	14.7	3,603
96.47	15.2	3,721
96.48	15.7	3,841
96.49	16.2	3,961
96.50	**16.7**	**4,083**

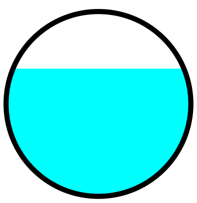
Summary for Reach 8R: 6" Roof Drain Carrier Pipe

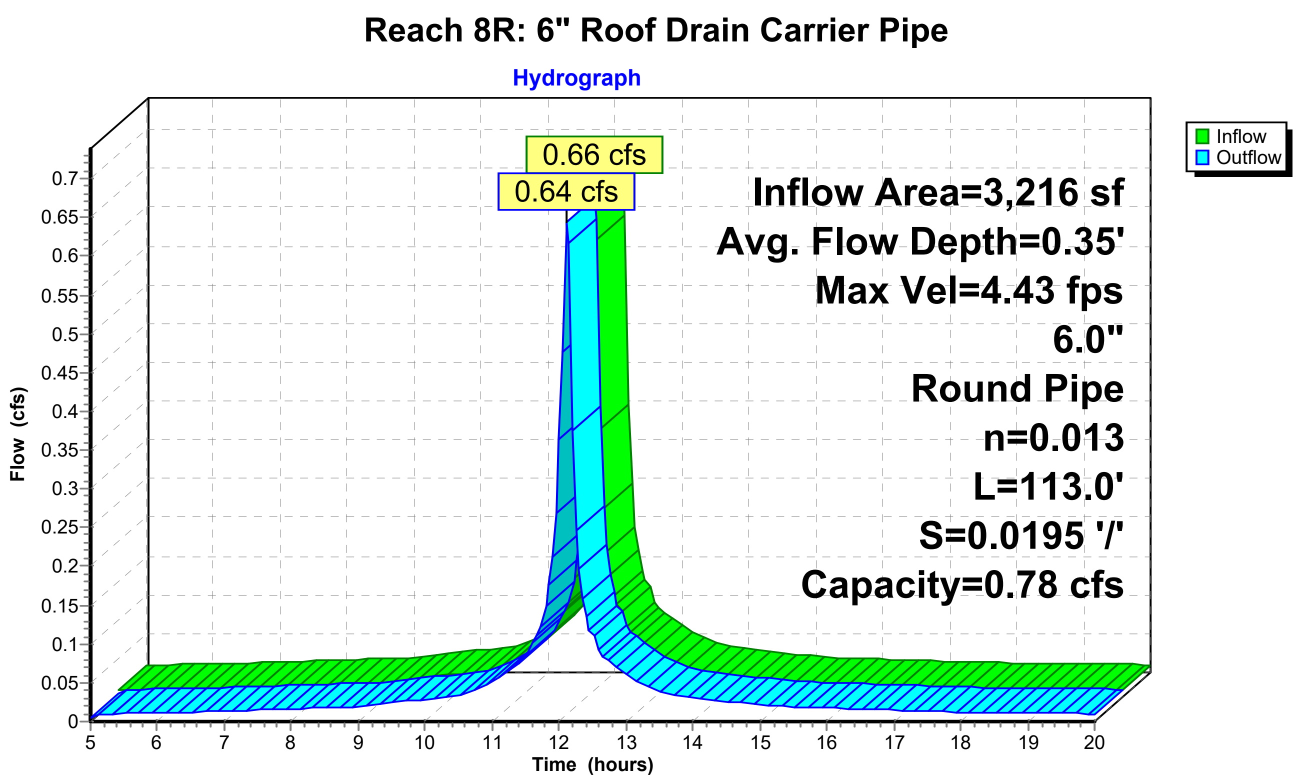
Inflow Area = 3,216 sf,100.00% Impervious, Inflow Depth > 7.58" for 100-Year event
Inflow = 0.66 cfs @ 12.11 hrs, Volume= 2,032 cf
Outflow = 0.64 cfs @ 12.12 hrs, Volume= 2,031 cf, Atten= 2%, Lag= 0.6 min
Routed to Reach 9R : 12" Roof Drain Carrier Pipe

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.43 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.81 fps, Avg. Travel Time= 1.0 min

Peak Storage= 16 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.35' , Surface Width= 0.46'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.78 cfs

6.0" Round Pipe
n= 0.013
Length= 113.0' Slope= 0.0195 '/'
Inlet Invert= 94.50', Outlet Invert= 92.30'





Stage-Discharge for Reach 8R: 6" Roof Drain Carrier Pipe

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
94.50	0.00	0.00
94.51	0.56	0.00
94.52	0.89	0.00
94.53	1.15	0.01
94.54	1.39	0.01
94.55	1.60	0.02
94.56	1.79	0.02
94.57	1.97	0.03
94.58	2.14	0.04
94.59	2.30	0.06
94.60	2.45	0.07
94.61	2.59	0.08
94.62	2.73	0.10
94.63	2.86	0.12
94.64	2.98	0.13
94.65	3.09	0.15
94.66	3.21	0.17
94.67	3.31	0.19
94.68	3.41	0.22
94.69	3.51	0.24
94.70	3.60	0.26
94.71	3.68	0.29
94.72	3.77	0.31
94.73	3.84	0.34
94.74	3.92	0.37
94.75	3.99	0.39
94.76	4.05	0.42
94.77	4.11	0.45
94.78	4.17	0.47
94.79	4.23	0.50
94.80	4.28	0.53
94.81	4.32	0.55
94.82	4.36	0.58
94.83	4.40	0.61
94.84	4.44	0.63
94.85	4.46	0.66
94.86	4.49	0.68
94.87	4.51	0.70
94.88	4.53	0.72
94.89	4.54	0.75
94.90	4.54	0.77
94.91	**4.55**	0.78
94.92	4.54	0.80
94.93	4.53	0.81
94.94	4.51	0.83
94.95	4.48	0.83
94.96	4.45	0.84
94.97	4.40	**0.84**
94.98	4.33	0.84
94.99	4.23	0.83
95.00	3.99	0.78

Stage-Area-Storage for Reach 8R: 6" Roof Drain Carrier Pipe

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
94.50	0.0	0
94.51	0.0	0
94.52	0.0	0
94.53	0.0	1
94.54	0.0	1
94.55	0.0	1
94.56	0.0	2
94.57	0.0	2
94.58	0.0	2
94.59	0.0	3
94.60	0.0	3
94.61	0.0	4
94.62	0.0	4
94.63	0.0	5
94.64	0.0	5
94.65	0.0	6
94.66	0.1	6
94.67	0.1	7
94.68	0.1	7
94.69	0.1	8
94.70	0.1	8
94.71	0.1	9
94.72	0.1	9
94.73	0.1	10
94.74	0.1	11
94.75	0.1	11
94.76	0.1	12
94.77	0.1	12
94.78	0.1	13
94.79	0.1	13
94.80	0.1	14
94.81	0.1	14
94.82	0.1	15
94.83	0.1	16
94.84	0.1	16
94.85	0.1	17
94.86	0.2	17
94.87	0.2	18
94.88	0.2	18
94.89	0.2	19
94.90	0.2	19
94.91	0.2	19
94.92	0.2	20
94.93	0.2	20
94.94	0.2	21
94.95	0.2	21
94.96	0.2	21
94.97	0.2	22
94.98	0.2	22
94.99	0.2	22
95.00	**0.2**	**22**

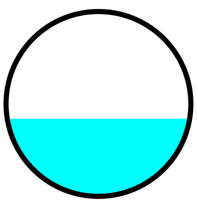
Summary for Reach 9R: 12" Roof Drain Carrier Pipe

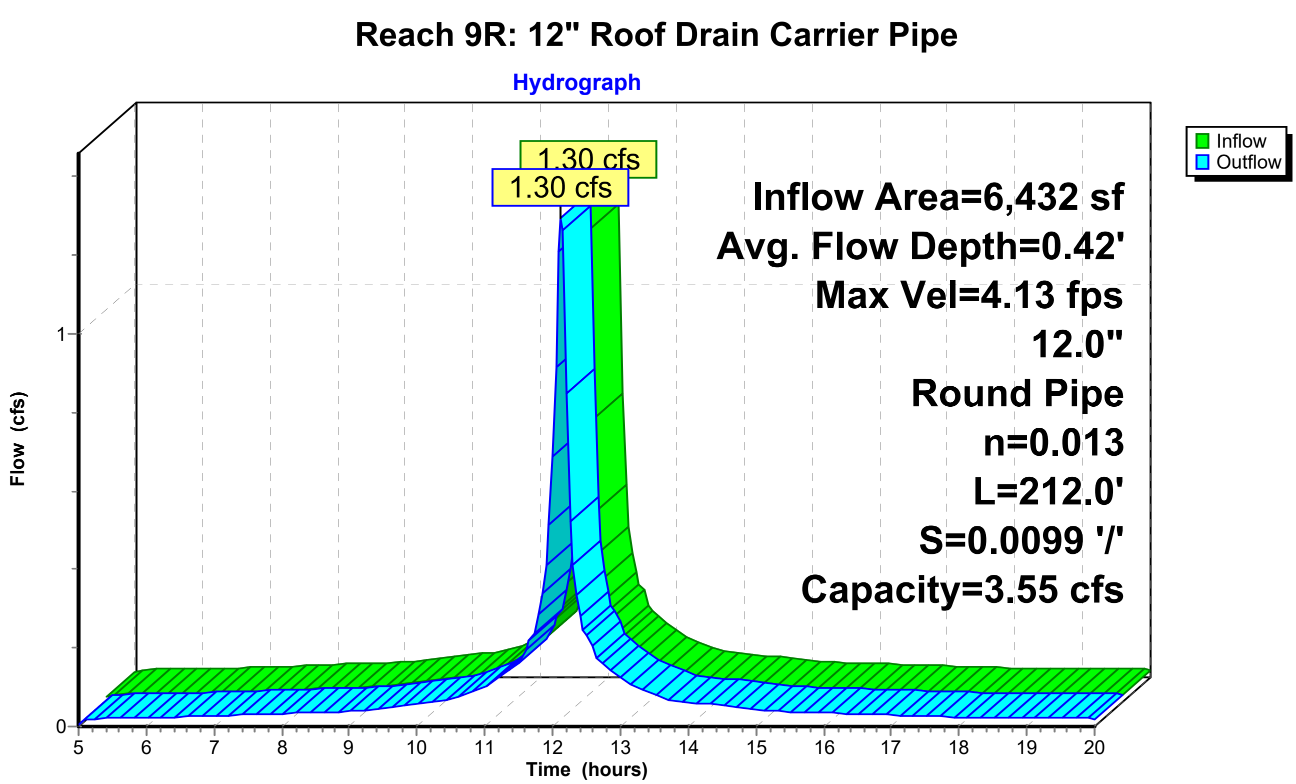
Inflow Area = 6,432 sf,100.00% Impervious, Inflow Depth > 7.58" for 100-Year event
Inflow = 1.30 cfs @ 12.12 hrs, Volume= 4,063 cf
Outflow = 1.30 cfs @ 12.13 hrs, Volume= 4,059 cf, Atten= 1%, Lag= 0.9 min
Routed to Pond IB1 : Infiltration Basin #1 (Exfiltration Zone)

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.13 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.61 fps, Avg. Travel Time= 2.2 min

Peak Storage= 66 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.42' , Surface Width= 0.99'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.55 cfs

12.0" Round Pipe
n= 0.013
Length= 212.0' Slope= 0.0099 '/'
Inlet Invert= 91.10', Outlet Invert= 89.00'





Stage-Discharge for Reach 9R: 12" Roof Drain Carrier Pipe

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
91.10	0.00	0.00
91.11	0.40	0.00
91.12	0.64	0.00
91.13	0.83	0.01
91.14	1.00	0.01
91.15	1.16	0.02
91.16	1.31	0.03
91.17	1.44	0.03
91.18	1.57	0.05
91.19	1.69	0.06
91.20	1.81	0.07
91.21	1.92	0.09
91.22	2.03	0.11
91.23	2.14	0.13
91.24	2.24	0.15
91.25	2.33	0.17
91.26	2.43	0.20
91.27	2.52	0.22
91.28	2.61	0.25
91.29	2.69	0.28
91.30	2.78	0.31
91.31	2.86	0.34
91.32	2.94	0.38
91.33	3.01	0.41
91.34	3.09	0.45
91.35	3.16	0.49
91.36	3.23	0.52
91.37	3.30	0.57
91.38	3.37	0.61
91.39	3.44	0.65
91.40	3.50	0.69
91.41	3.57	0.74
91.42	3.63	0.79
91.43	3.69	0.83
91.44	3.75	0.88
91.45	3.81	0.93
91.46	3.86	0.98
91.47	3.92	1.03
91.48	3.97	1.09
91.49	4.02	1.14
91.50	4.07	1.19
91.51	4.12	1.25
91.52	4.17	1.31
91.53	4.22	1.36
91.54	4.26	1.42
91.55	4.31	1.48
91.56	4.35	1.54
91.57	4.39	1.59
91.58	4.44	1.65
91.59	4.48	1.71
91.60	4.51	1.77
91.61	4.55	1.83
91.62	4.59	1.89

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
91.63	4.62	1.95
91.64	4.66	2.02
91.65	4.69	2.08
91.66	4.72	2.14
91.67	4.76	2.20
91.68	4.79	2.26
91.69	4.81	2.32
91.70	4.84	2.38
91.71	4.87	2.44
91.72	4.89	2.50
91.73	4.92	2.56
91.74	4.94	2.62
91.75	4.96	2.68
91.76	4.98	2.74
91.77	5.00	2.80
91.78	5.02	2.86
91.79	5.04	2.91
91.80	5.06	2.97
91.81	5.07	3.02
91.82	5.08	3.08
91.83	5.10	3.13
91.84	5.11	3.18
91.85	5.12	3.23
91.86	5.13	3.28
91.87	5.13	3.33
91.88	5.14	3.38
91.89	5.14	3.42
91.90	5.15	3.47
91.91	**5.15**	3.51
91.92	5.15	3.55
91.93	5.14	3.59
91.94	5.14	3.62
91.95	5.14	3.65
91.96	5.13	3.68
91.97	5.12	3.71
91.98	5.11	3.74
91.99	5.09	3.76
92.00	5.08	3.78
92.01	5.06	3.79
92.02	5.03	3.81
92.03	5.01	3.81
92.04	4.98	**3.81**
92.05	4.94	3.81
92.06	4.90	3.80
92.07	4.85	3.78
92.08	4.79	3.75
92.09	4.71	3.69
92.10	4.51	3.55

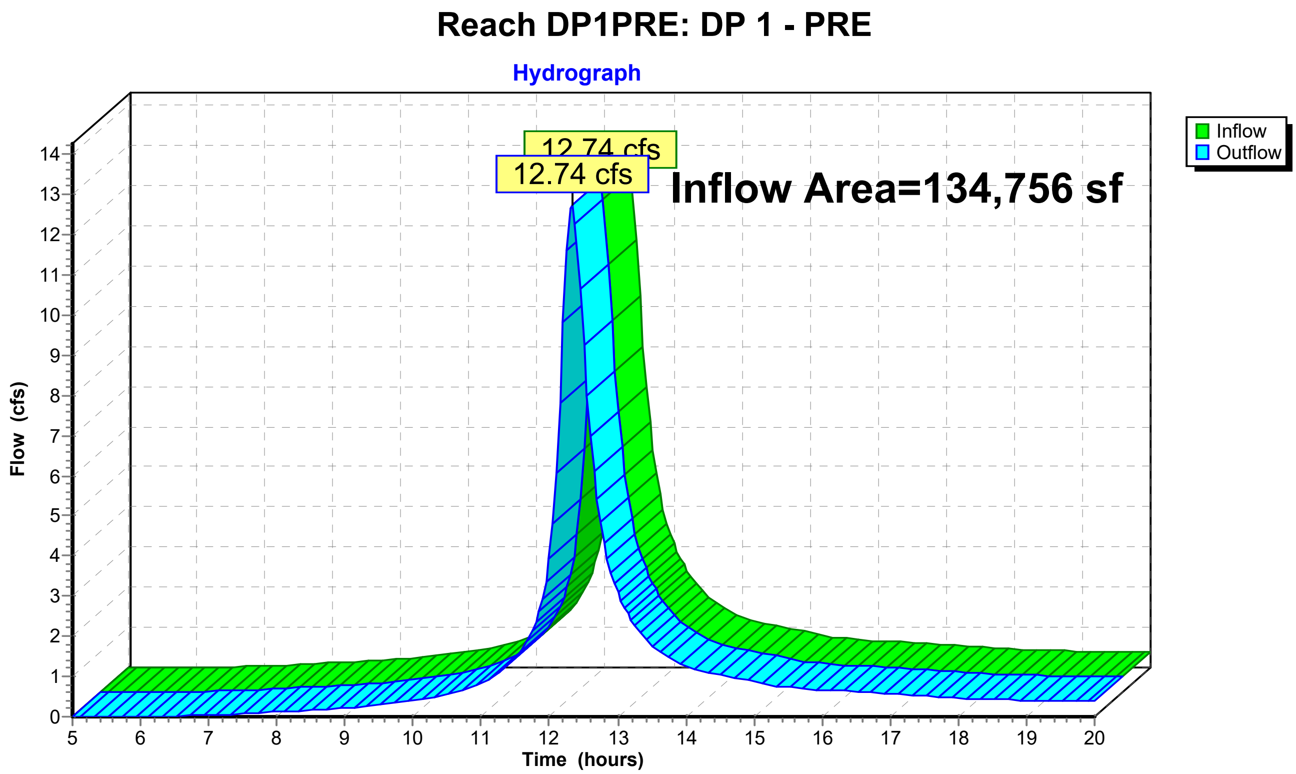
Stage-Area-Storage for Reach 9R: 12" Roof Drain Carrier Pipe

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
91.10	0.0	0	91.63	0.4	90
91.11	0.0	0	91.64	0.4	92
91.12	0.0	1	91.65	0.4	94
91.13	0.0	1	91.66	0.5	96
91.14	0.0	2	91.67	0.5	98
91.15	0.0	3	91.68	0.5	100
91.16	0.0	4	91.69	0.5	102
91.17	0.0	5	91.70	0.5	104
91.18	0.0	6	91.71	0.5	106
91.19	0.0	7	91.72	0.5	108
91.20	0.0	9	91.73	0.5	110
91.21	0.0	10	91.74	0.5	113
91.22	0.1	11	91.75	0.5	115
91.23	0.1	13	91.76	0.5	117
91.24	0.1	14	91.77	0.6	119
91.25	0.1	16	91.78	0.6	121
91.26	0.1	17	91.79	0.6	123
91.27	0.1	19	91.80	0.6	124
91.28	0.1	20	91.81	0.6	126
91.29	0.1	22	91.82	0.6	128
91.30	0.1	24	91.83	0.6	130
91.31	0.1	25	91.84	0.6	132
91.32	0.1	27	91.85	0.6	134
91.33	0.1	29	91.86	0.6	136
91.34	0.1	31	91.87	0.6	138
91.35	0.2	33	91.88	0.7	139
91.36	0.2	34	91.89	0.7	141
91.37	0.2	36	91.90	0.7	143
91.38	0.2	38	91.91	0.7	144
91.39	0.2	40	91.92	0.7	146
91.40	0.2	42	91.93	0.7	148
91.41	0.2	44	91.94	0.7	149
91.42	0.2	46	91.95	0.7	151
91.43	0.2	48	91.96	0.7	152
91.44	0.2	50	91.97	0.7	154
91.45	0.2	52	91.98	0.7	155
91.46	0.3	54	91.99	0.7	157
91.47	0.3	56	92.00	0.7	158
91.48	0.3	58	92.01	0.8	159
91.49	0.3	60	92.02	0.8	160
91.50	0.3	62	92.03	0.8	161
91.51	0.3	64	92.04	0.8	162
91.52	0.3	66	92.05	0.8	163
91.53	0.3	68	92.06	0.8	164
91.54	0.3	71	92.07	0.8	165
91.55	0.3	73	92.08	0.8	166
91.56	0.4	75	92.09	0.8	166
91.57	0.4	77	92.10	**0.8**	**167**
91.58	0.4	79			
91.59	0.4	81			
91.60	0.4	83			
91.61	0.4	85			
91.62	0.4	87			

Summary for Reach DP1PRE: DP 1 - PRE

Inflow Area = 134,756 sf, 4.57% Impervious, Inflow Depth > 5.08" for 100-Year event
Inflow = 12.74 cfs @ 12.33 hrs, Volume= 57,094 cf
Outflow = 12.74 cfs @ 12.33 hrs, Volume= 57,094 cf, Atten= 0%, Lag= 0.0 min

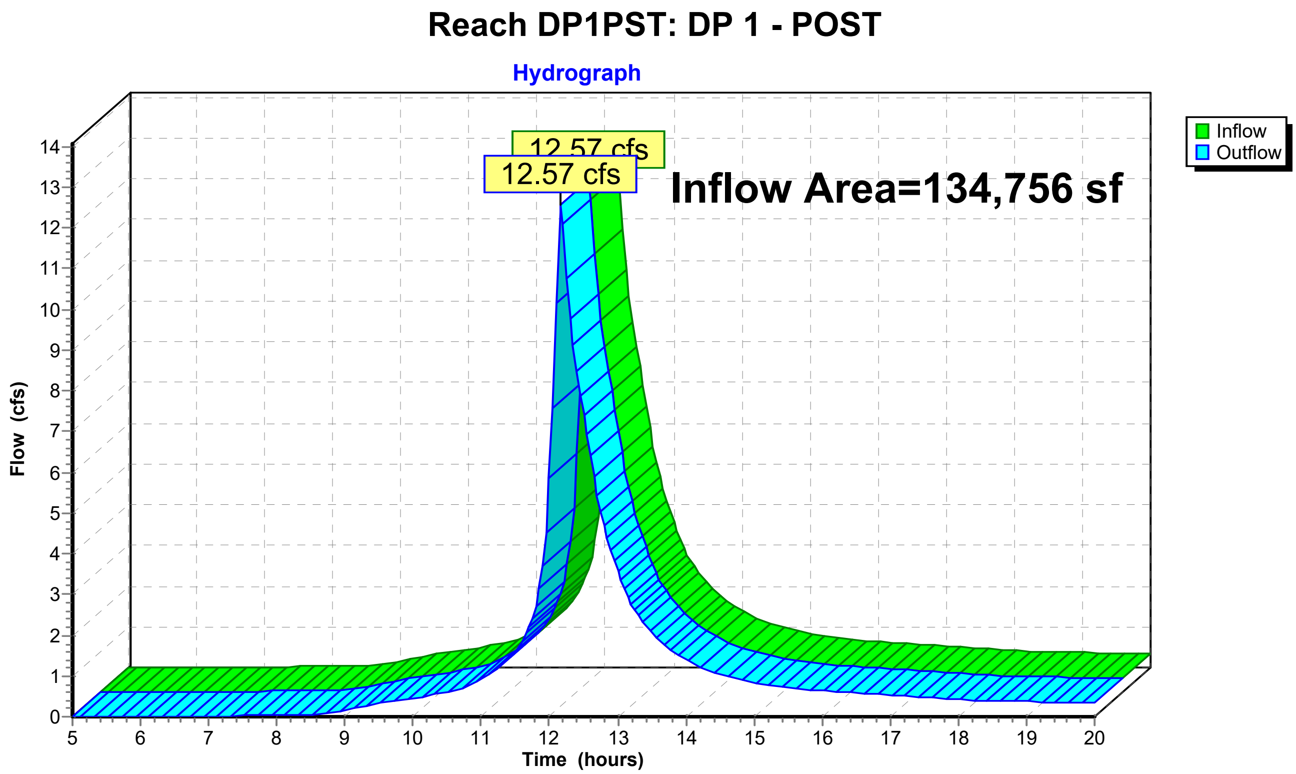
Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs



Summary for Reach DP1PST: DP 1 - POST

Inflow Area =	134,756 sf, 26.93% Impervious, Inflow Depth > 5.20"	for 100-Year event
Inflow =	12.57 cfs @ 12.17 hrs, Volume=	58,398 cf
Outflow =	12.57 cfs @ 12.17 hrs, Volume=	58,398 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs



Summary for Pond 1P: Subsurface #1

Inflow Area = 13,664 sf, 47.07% Impervious, Inflow Depth > 6.27" for 100-Year event
Inflow = 2.08 cfs @ 12.13 hrs, Volume= 7,141 cf
Outflow = 1.80 cfs @ 12.20 hrs, Volume= 6,337 cf, Atten= 14%, Lag= 4.2 min
Discarded = 0.03 cfs @ 7.75 hrs, Volume= 1,545 cf
Primary = 1.77 cfs @ 12.20 hrs, Volume= 4,792 cf
Routed to Reach 3R : Wetland Surface 1

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 99.13' @ 12.20 hrs Surf.Area= 1,248 sf Storage= 1,819 cf

Plug-Flow detention time= 66.1 min calculated for 6,314 cf (88% of inflow)
Center-of-Mass det. time= 28.1 min (783.3 - 755.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	96.00'	902 cf	**37.25'W x 33.50'L x 2.54'H Field A**
			3,172 cf Overall - 918 cf Embedded = 2,254 cf x 40.0% Voids
#2A	96.50'	918 cf	**Cultec R-150XLHD** x 33 Inside #1
			Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf
			Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap
			Row Length Adjustment= +0.75' x 2.65 sf x 11 rows
		1,819 cf	Total Available Storage

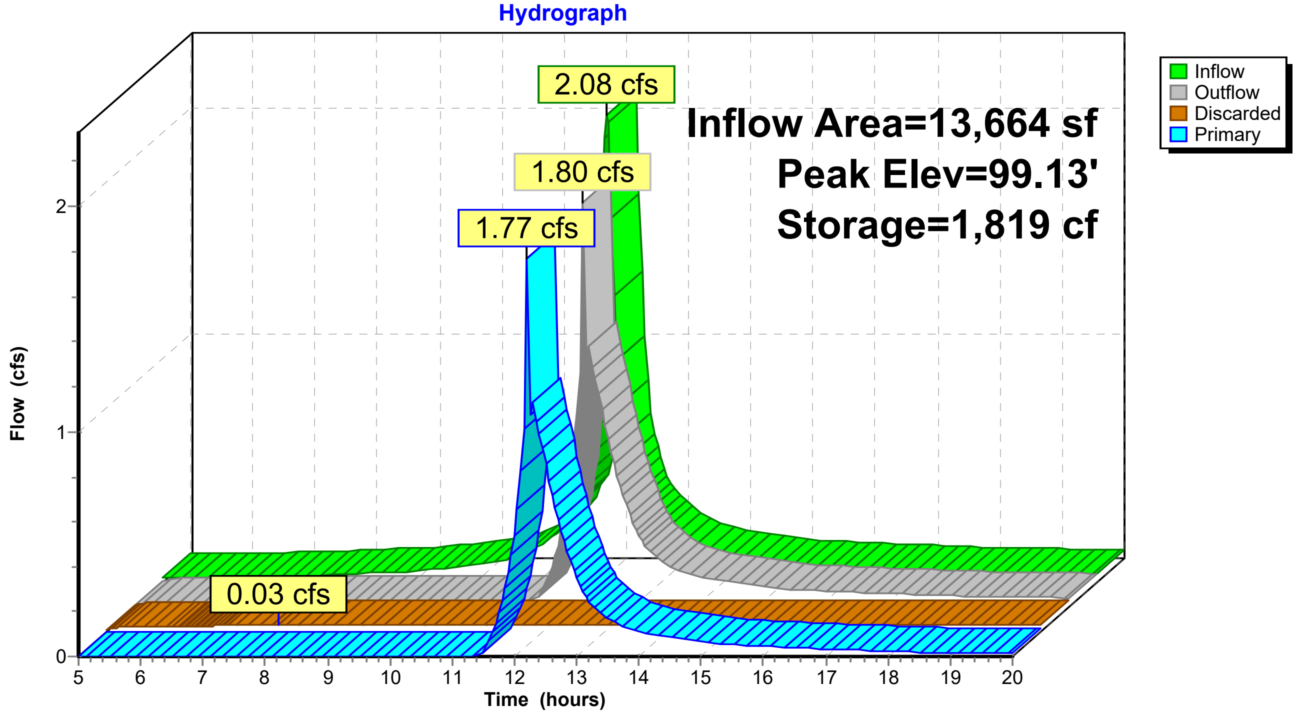
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	96.00'	**1.020 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	99.00'	**6.0" Horiz. Orifice/Grate X 2.00** C= 0.600
			Limited to weir flow at low heads
#3	Primary	97.00'	**6.0" Round Culvert**
			L= 15.0' RCP, sq.cut end projecting, Ke= 0.500
			Inlet / Outlet Invert= 97.00' / 96.75' S= 0.0167 '/' Cc= 0.900
			n= 0.013, Flow Area= 0.20 sf

Discarded OutFlow Max=0.03 cfs @ 7.75 hrs HW=96.03' (Free Discharge)
└—**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=1.69 cfs @ 12.20 hrs HW=99.12' TW=94.14' (Dynamic Tailwater)
├—**2=Orifice/Grate** (Weir Controls 0.40 cfs @ 1.11 fps)
└—**3=Culvert** (Inlet Controls 1.29 cfs @ 6.58 fps)

Pond 1P: Subsurface #1



Stage-Discharge for Pond 1P: Subsurface #1

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
96.00	0.00	**0.00**	0.00
96.05	0.03	**0.03**	0.00
96.10	0.03	0.03	0.00
96.15	0.03	0.03	0.00
96.20	0.03	0.03	0.00
96.25	0.03	0.03	0.00
96.30	0.03	0.03	0.00
96.35	0.03	0.03	0.00
96.40	0.03	0.03	0.00
96.45	0.03	0.03	0.00
96.50	0.03	0.03	0.00
96.55	0.03	0.03	0.00
96.60	0.03	0.03	0.00
96.65	0.03	0.03	0.00
96.70	0.03	0.03	0.00
96.75	0.03	0.03	0.00
96.80	0.03	0.03	0.00
96.85	0.03	0.03	0.00
96.90	0.03	0.03	0.00
96.95	0.03	0.03	0.00
97.00	0.03	0.03	0.00
97.05	0.04	0.03	0.01
97.10	0.06	0.03	0.03
97.15	0.09	0.03	0.07
97.20	0.14	0.03	0.11
97.25	0.20	0.03	0.17
97.30	0.26	0.03	0.23
97.35	0.33	0.03	0.30
97.40	0.39	0.03	0.36
97.45	0.45	0.03	0.43
97.50	0.50	0.03	0.47
97.55	0.55	0.03	0.52
97.60	0.59	0.03	0.56
97.65	0.63	0.03	0.60
97.70	0.66	0.03	0.63
97.75	0.70	0.03	0.67
97.80	0.73	0.03	0.70
97.85	0.76	0.03	0.73
97.90	0.79	0.03	0.76
97.95	0.82	0.03	0.79
98.00	0.85	0.03	0.82
98.05	0.88	0.03	0.85
98.10	0.90	0.03	0.87
98.15	0.93	0.03	0.90
98.20	0.95	0.03	0.92
98.25	0.97	0.03	0.95
98.30	1.00	0.03	0.97
98.35	1.02	0.03	0.99
98.40	1.04	0.03	1.01
98.45	1.07	0.03	1.04
98.50	1.09	0.03	1.06
98.55	1.11	0.03	1.08
98.60	1.13	0.03	1.10
98.65	1.15	0.03	1.12
98.70	1.17	0.03	1.14
98.75	1.19	0.03	1.16
98.80	1.21	0.03	1.18
98.85	1.23	0.03	1.20
98.90	1.24	0.03	1.21
98.95	1.26	0.03	1.23
99.00	1.28	0.03	1.25
99.05	1.41	0.03	1.38
99.10	1.64	0.03	1.61
99.15	**1.93**	0.03	**1.90**

Stage-Area-Storage for Pond 1P: Subsurface #1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
96.00	**1,248**	0	98.65	1,248	1,819
96.05	1,248	25	98.70	1,248	1,819
96.10	1,248	50	98.75	1,248	1,819
96.15	1,248	75	98.80	1,248	1,819
96.20	1,248	100	98.85	1,248	1,819
96.25	1,248	125	98.90	1,248	1,819
96.30	1,248	150	98.95	1,248	1,819
96.35	1,248	175	99.00	1,248	1,819
96.40	1,248	200	99.05	1,248	1,819
96.45	1,248	225	99.10	1,248	1,819
96.50	1,248	250	99.15	1,248	1,819
96.55	1,248	300			
96.60	1,248	350			
96.65	1,248	400			
96.70	1,248	450			
96.75	1,248	499			
96.80	1,248	548			
96.85	1,248	597			
96.90	1,248	646			
96.95	1,248	694			
97.00	1,248	742			
97.05	1,248	790			
97.10	1,248	838			
97.15	1,248	885			
97.20	1,248	932			
97.25	1,248	978			
97.30	1,248	1,024			
97.35	1,248	1,069			
97.40	1,248	1,113			
97.45	1,248	1,157			
97.50	1,248	1,200			
97.55	1,248	1,242			
97.60	1,248	1,283			
97.65	1,248	1,322			
97.70	1,248	1,361			
97.75	1,248	1,398			
97.80	1,248	1,433			
97.85	1,248	1,465			
97.90	1,248	1,495			
97.95	1,248	1,522			
98.00	1,248	1,549			
98.05	1,248	1,574			
98.10	1,248	1,599			
98.15	1,248	1,624			
98.20	1,248	1,649			
98.25	1,248	1,674			
98.30	1,248	1,699			
98.35	1,248	1,724			
98.40	1,248	1,749			
98.45	1,248	1,774			
98.50	1,248	1,799			
98.55	1,248	**1,819**			
98.60	1,248	1,819			

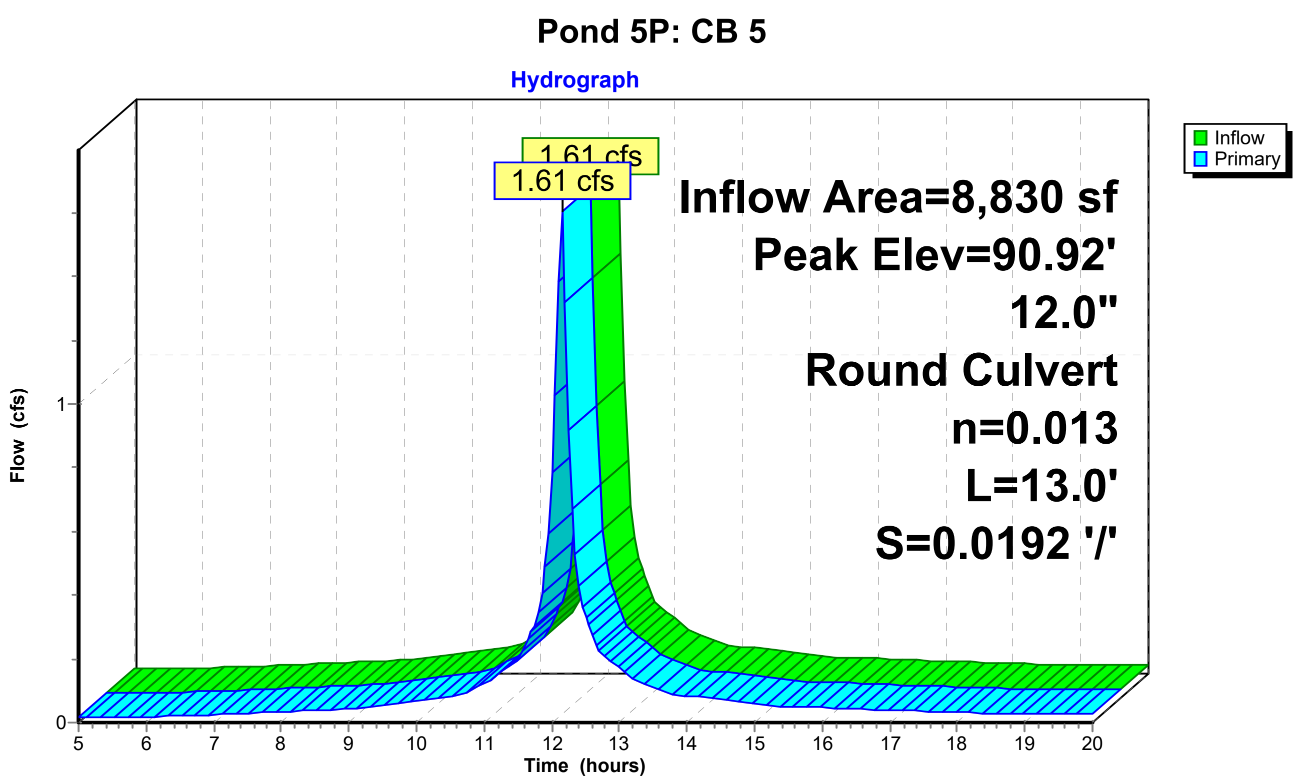
Summary for Pond 5P: CB 5

Inflow Area = 8,830 sf, 71.11% Impervious, Inflow Depth > 7.03" for 100-Year event
Inflow = 1.61 cfs @ 12.15 hrs, Volume= 5,170 cf
Outflow = 1.61 cfs @ 12.15 hrs, Volume= 5,170 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.61 cfs @ 12.15 hrs, Volume= 5,170 cf
Routed to Pond IB1 : Infiltration Basin #1 (Exfiltration Zone)

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 90.92' @ 12.36 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	89.25'	**12.0" Round Culvert** L= 13.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 89.25' / 89.00' S= 0.0192 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.15 hrs HW=90.34' TW=90.40' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)



Stage-Discharge for Pond 5P: CB 5

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
89.25	0.00	89.78	1.02	90.31	2.83	90.84	3.95
89.26	0.00	89.79	1.05	90.32	2.86	90.85	3.97
89.27	0.00	89.80	1.08	90.33	2.88	90.86	3.98
89.28	0.00	89.81	1.12	90.34	2.90	90.87	4.00
89.29	0.01	89.82	1.15	90.35	2.93	90.88	4.02
89.30	0.01	89.83	1.18	90.36	2.95	90.89	4.04
89.31	0.02	89.84	1.21	90.37	2.98	90.90	4.06
89.32	0.02	89.85	1.25	90.38	3.00	90.91	4.07
89.33	0.03	89.86	1.28	90.39	3.03	90.92	**4.09**
89.34	0.04	89.87	1.31	90.40	3.05		
89.35	0.04	89.88	1.35	90.41	3.07		
89.36	0.05	89.89	1.38	90.42	3.10		
89.37	0.06	89.90	1.42	90.43	3.12		
89.38	0.07	89.91	1.45	90.44	3.14		
89.39	0.09	89.92	1.48	90.45	3.16		
89.40	0.10	89.93	1.52	90.46	3.19		
89.41	0.11	89.94	1.55	90.47	3.21		
89.42	0.12	89.95	1.59	90.48	3.23		
89.43	0.14	89.96	1.62	90.49	3.25		
89.44	0.15	89.97	1.66	90.50	3.28		
89.45	0.17	89.98	1.69	90.51	3.30		
89.46	0.19	89.99	1.73	90.52	3.32		
89.47	0.20	90.00	1.77	90.53	3.34		
89.48	0.22	90.01	1.80	90.54	3.36		
89.49	0.24	90.02	1.84	90.55	3.38		
89.50	0.26	90.03	1.87	90.56	3.40		
89.51	0.28	90.04	1.91	90.57	3.42		
89.52	0.30	90.05	1.94	90.58	3.45		
89.53	0.32	90.06	1.98	90.59	3.47		
89.54	0.35	90.07	2.02	90.60	3.49		
89.55	0.37	90.08	2.05	90.61	3.51		
89.56	0.39	90.09	2.09	90.62	3.53		
89.57	0.42	90.10	2.13	90.63	3.55		
89.58	0.44	90.11	2.16	90.64	3.57		
89.59	0.47	90.12	2.20	90.65	3.59		
89.60	0.49	90.13	2.23	90.66	3.61		
89.61	0.52	90.14	2.27	90.67	3.63		
89.62	0.55	90.15	2.31	90.68	3.65		
89.63	0.57	90.16	2.34	90.69	3.67		
89.64	0.60	90.17	2.38	90.70	3.69		
89.65	0.63	90.18	2.41	90.71	3.71		
89.66	0.66	90.19	2.45	90.72	3.72		
89.67	0.69	90.20	2.48	90.73	3.74		
89.68	0.72	90.21	2.52	90.74	3.76		
89.69	0.75	90.22	2.55	90.75	3.78		
89.70	0.78	90.23	2.59	90.76	3.80		
89.71	0.81	90.24	2.62	90.77	3.82		
89.72	0.84	90.25	2.66	90.78	3.84		
89.73	0.87	90.26	2.69	90.79	3.86		
89.74	0.90	90.27	2.73	90.80	3.88		
89.75	0.93	90.28	2.75	90.81	3.89		
89.76	0.96	90.29	2.78	90.82	3.91		
89.77	0.99	90.30	2.80	90.83	3.93		

Stage-Area-Storage for Pond 5P: CB 5

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
89.25	**0**	90.31	0
89.27	0	90.33	0
89.29	0	90.35	0
89.31	0	90.37	0
89.33	0	90.39	0
89.35	0	90.41	0
89.37	0	90.43	0
89.39	0	90.45	0
89.41	0	90.47	0
89.43	0	90.49	0
89.45	0	90.51	0
89.47	0	90.53	0
89.49	0	90.55	0
89.51	0	90.57	0
89.53	0	90.59	0
89.55	0	90.61	0
89.57	0	90.63	0
89.59	0	90.65	0
89.61	0	90.67	0
89.63	0	90.69	0
89.65	0	90.71	0
89.67	0	90.73	0
89.69	0	90.75	0
89.71	0	90.77	0
89.73	0	90.79	0
89.75	0	90.81	0
89.77	0	90.83	0
89.79	0	90.85	0
89.81	0	90.87	0
89.83	0	90.89	0
89.85	0	90.91	0
89.87	0		
89.89	0		
89.91	0		
89.93	0		
89.95	0		
89.97	0		
89.99	0		
90.01	0		
90.03	0		
90.05	0		
90.07	0		
90.09	0		
90.11	0		
90.13	0		
90.15	0		
90.17	0		
90.19	0		
90.21	0		
90.23	0		
90.25	0		
90.27	0		
90.29	0		

Summary for Pond 10P: Infiltration Basin #1 (Storage)

Inflow Area = 54,257 sf, 51.52% Impervious, Inflow Depth > 6.08" for 100-Year event
Inflow = 7.82 cfs @ 12.15 hrs, Volume= 27,511 cf
Outflow = 4.74 cfs @ 12.27 hrs, Volume= 26,712 cf, Atten= 39%, Lag= 7.3 min
Primary = 4.74 cfs @ 12.27 hrs, Volume= 26,712 cf
Routed to Reach DP1PST : DP 1 - POST
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0 cf
Routed to Reach DP1PST : DP 1 - POST

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 90.89' @ 12.27 hrs Surf.Area= 3,027 sf Storage= 4,618 cf

Plug-Flow detention time= 30.0 min calculated for 26,623 cf (97% of inflow)
Center-of-Mass det. time= 18.5 min (787.3 - 768.8)

Volume	Invert	Avail.Storage	Storage Description
#1	88.00'	8,689 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

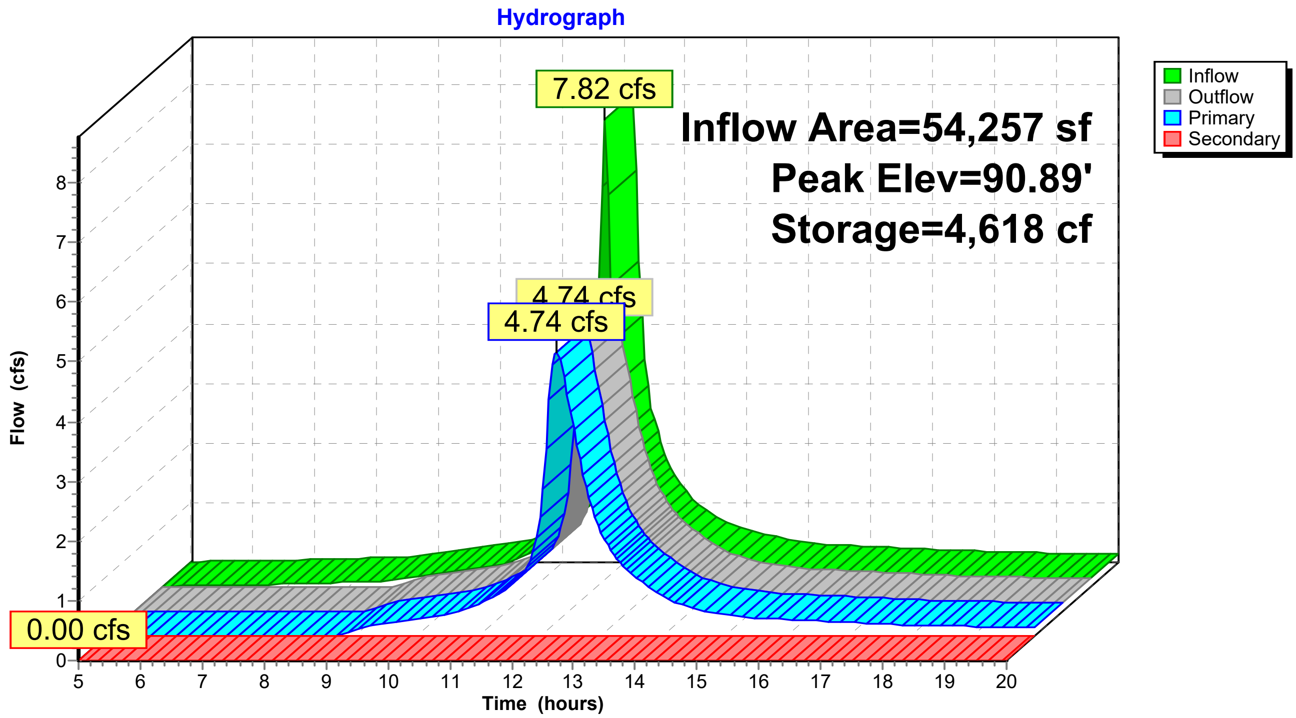
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
88.00	392	0	0
90.00	1,990	2,382	2,382
92.00	4,317	6,307	8,689

Device	Routing	Invert	Outlet Devices
#1	Secondary	91.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	86.50'	**12.0" Round Culvert** L= 37.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 86.50' / 86.00' S= 0.0135 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#3	Device 2	88.90'	**16.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 2	89.50'	**6.0" W x 15.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.72 cfs @ 12.27 hrs HW=90.88' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert** (Passes 4.72 cfs of 7.45 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 2.19 cfs @ 6.56 fps)
  └─**4=Orifice/Grate** (Orifice Controls 2.53 cfs @ 4.05 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=88.00' TW=0.00' (Dynamic Tailwater)
└─**1=Orifice/Grate** (Controls 0.00 cfs)

Pond 10P: Infiltration Basin #1 (Storage)



Stage-Discharge for Pond 10P: Infiltration Basin #1 (Storage)

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
88.00	0.00	0.00	0.00
88.05	0.00	0.00	0.00
88.10	0.00	0.00	0.00
88.15	0.00	0.00	0.00
88.20	0.00	0.00	0.00
88.25	0.00	0.00	0.00
88.30	0.00	0.00	0.00
88.35	0.00	0.00	0.00
88.40	0.00	0.00	0.00
88.45	0.00	0.00	0.00
88.50	0.00	0.00	0.00
88.55	0.00	0.00	0.00
88.60	0.00	0.00	0.00
88.65	0.00	0.00	0.00
88.70	0.00	0.00	0.00
88.75	0.00	0.00	0.00
88.80	0.00	0.00	0.00
88.85	0.00	0.00	0.00
88.90	0.00	0.00	0.00
88.95	0.05	0.05	0.00
89.00	0.14	0.14	0.00
89.05	0.25	0.25	0.00
89.10	0.38	0.38	0.00
89.15	0.53	0.53	0.00
89.20	0.66	0.66	0.00
89.25	0.75	0.75	0.00
89.30	0.83	0.83	0.00
89.35	0.91	0.91	0.00
89.40	0.98	0.98	0.00
89.45	1.04	1.04	0.00
89.50	1.10	1.10	0.00
89.55	1.18	1.18	0.00
89.60	1.27	1.27	0.00
89.65	1.36	1.36	0.00
89.70	1.46	1.46	0.00
89.75	1.57	1.57	0.00
89.80	1.68	1.68	0.00
89.85	1.79	1.79	0.00
89.90	1.91	1.91	0.00
89.95	2.03	2.03	0.00
90.00	2.15	2.15	0.00
90.05	2.28	2.28	0.00
90.10	2.41	2.41	0.00
90.15	2.54	2.54	0.00
90.20	2.68	2.68	0.00
90.25	2.82	2.82	0.00
90.30	2.96	2.96	0.00
90.35	3.10	3.10	0.00
90.40	3.25	3.25	0.00
90.45	3.40	3.40	0.00
90.50	3.55	3.55	0.00
90.55	3.71	3.71	0.00
90.60	3.87	3.87	0.00
90.65	4.02	4.02	0.00
90.70	4.19	4.19	0.00
90.75	4.35	4.35	0.00
90.80	4.50	4.50	0.00
90.85	4.63	4.63	0.00
90.90	4.76	4.76	0.00
90.95	4.89	4.89	0.00
91.00	5.00	5.00	0.00
91.05	5.41	5.12	0.29
91.10	6.05	5.23	0.83
91.15	6.85	5.34	1.52
91.20	7.78	5.44	2.34
91.25	8.81	5.54	3.27
91.30	9.94	5.64	4.30
91.35	11.16	5.74	5.42
91.40	12.45	5.84	6.62
91.45	13.83	5.93	7.90
91.50	15.27	6.02	9.25
91.55	16.78	6.11	10.67
91.60	18.36	6.20	12.16
91.65	20.00	6.29	13.71
91.70	21.70	6.38	15.32
91.75	23.14	6.46	16.68
91.80	23.77	6.54	17.23
91.85	24.38	6.63	17.76
91.90	24.98	6.71	18.27
91.95	25.56	6.79	18.77
92.00	**26.13**	**6.87**	**19.26**

Stage-Area-Storage for Pond 10P: Infiltration Basin #1 (Storage)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
88.00	392	0	90.65	2,746	3,921
88.05	432	21	90.70	2,804	4,060
88.10	472	43	90.75	2,863	4,202
88.15	512	68	90.80	2,921	4,346
88.20	552	94	90.85	2,979	4,494
88.25	592	123	90.90	3,037	4,644
88.30	632	154	90.95	3,095	4,798
88.35	672	186	91.00	3,154	4,954
88.40	712	221	91.05	3,212	5,113
88.45	752	257	91.10	3,270	5,275
88.50	792	296	91.15	3,328	5,440
88.55	831	336	91.20	3,386	5,608
88.60	871	379	91.25	3,444	5,778
88.65	911	424	91.30	3,503	5,952
88.70	951	470	91.35	3,561	6,129
88.75	991	519	91.40	3,619	6,308
88.80	1,031	569	91.45	3,677	6,491
88.85	1,071	622	91.50	3,735	6,676
88.90	1,111	676	91.55	3,793	6,864
88.95	1,151	733	91.60	3,852	7,055
89.00	1,191	792	91.65	3,910	7,249
89.05	1,231	852	91.70	3,968	7,446
89.10	1,271	915	91.75	4,026	7,646
89.15	1,311	979	91.80	4,084	7,849
89.20	1,351	1,046	91.85	4,142	8,055
89.25	1,391	1,114	91.90	4,201	8,263
89.30	1,431	1,185	91.95	4,259	8,475
89.35	1,471	1,257	92.00	**4,317**	**8,689**
89.40	1,511	1,332			
89.45	1,551	1,408			
89.50	1,591	1,487			
89.55	1,630	1,567			
89.60	1,670	1,650			
89.65	1,710	1,734			
89.70	1,750	1,821			
89.75	1,790	1,909			
89.80	1,830	2,000			
89.85	1,870	2,092			
89.90	1,910	2,187			
89.95	1,950	2,283			
90.00	1,990	2,382			
90.05	2,048	2,483			
90.10	2,106	2,587			
90.15	2,165	2,694			
90.20	2,223	2,803			
90.25	2,281	2,916			
90.30	2,339	3,031			
90.35	2,397	3,150			
90.40	2,455	3,271			
90.45	2,514	3,395			
90.50	2,572	3,522			
90.55	2,630	3,652			
90.60	2,688	3,785			

Summary for Pond B2: Infiltration Basin #2 (Storage Zone)

Inflow Area = 13,032 sf, 14.64% Impervious, Inflow Depth > 4.83" for 100-Year event
Inflow = 1.55 cfs @ 12.21 hrs, Volume= 5,250 cf
Outflow = 1.48 cfs @ 12.25 hrs, Volume= 5,175 cf, Atten= 5%, Lag= 2.5 min
Primary = 1.48 cfs @ 12.25 hrs, Volume= 5,175 cf
Routed to Reach 5R : Wetland Surface 2

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 97.96' @ 12.25 hrs Surf.Area= 695 sf Storage= 297 cf

Plug-Flow detention time= 11.4 min calculated for 5,175 cf (99% of inflow)
Center-of-Mass det. time= 5.4 min (793.7 - 788.3)

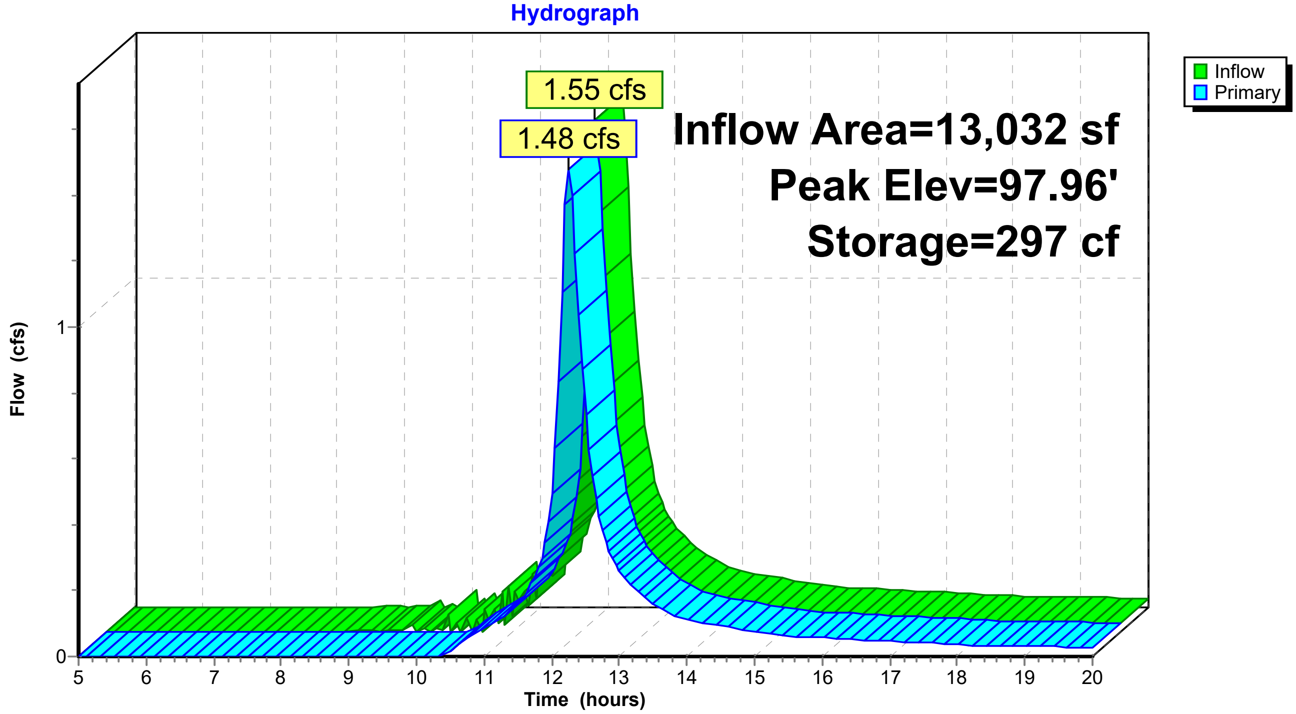
Volume	Invert	Avail.Storage	Storage Description
#1	97.10'	329 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
97.10	0	0	0
98.00	731	329	329

Device	Routing	Invert	Outlet Devices
#1	Primary	96.50'	**12.0" Round Culvert** L= 50.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 96.50' / 96.00' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	97.50'	**18.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.47 cfs @ 12.25 hrs HW=97.95' TW=96.16' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.47 cfs of 3.51 cfs potential flow)
  └─**2=Orifice/Grate** (Orifice Controls 1.47 cfs @ 2.16 fps)

Pond B2: Infiltration Basin #2 (Storage Zone)



Stage-Discharge for Pond B2: Infiltration Basin #2 (Storage Zone)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
97.10	0.00	97.63	0.23
97.11	0.00	97.64	0.25
97.12	0.00	97.65	0.28
97.13	0.00	97.66	0.31
97.14	0.00	97.67	0.34
97.15	0.00	97.68	0.37
97.16	0.00	97.69	0.40
97.17	0.00	97.70	0.43
97.18	0.00	97.71	0.46
97.19	0.00	97.72	0.50
97.20	0.00	97.73	0.53
97.21	0.00	97.74	0.57
97.22	0.00	97.75	0.60
97.23	0.00	97.76	0.64
97.24	0.00	97.77	0.68
97.25	0.00	97.78	0.71
97.26	0.00	97.79	0.75
97.27	0.00	97.80	0.79
97.28	0.00	97.81	0.83
97.29	0.00	97.82	0.87
97.30	0.00	97.83	0.91
97.31	0.00	97.84	0.95
97.32	0.00	97.85	1.00
97.33	0.00	97.86	1.04
97.34	0.00	97.87	1.08
97.35	0.00	97.88	1.13
97.36	0.00	97.89	1.17
97.37	0.00	97.90	1.22
97.38	0.00	97.91	1.26
97.39	0.00	97.92	1.31
97.40	0.00	97.93	1.36
97.41	0.00	97.94	1.41
97.42	0.00	97.95	1.45
97.43	0.00	97.96	1.50
97.44	0.00	97.97	1.55
97.45	0.00	97.98	1.60
97.46	0.00	97.99	1.65
97.47	0.00	98.00	**1.70**
97.48	0.00		
97.49	0.00		
97.50	0.00		
97.51	0.00		
97.52	0.01		
97.53	0.03		
97.54	0.04		
97.55	0.05		
97.56	0.07		
97.57	0.09		
97.58	0.11		
97.59	0.13		
97.60	0.15		
97.61	0.18		
97.62	0.20		

Stage-Area-Storage for Pond B2: Infiltration Basin #2 (Storage Zone)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
97.10	0	0	97.63	430	114
97.11	8	0	97.64	439	118
97.12	16	0	97.65	447	123
97.13	24	0	97.66	455	127
97.14	32	1	97.67	463	132
97.15	41	1	97.68	471	137
97.16	49	1	97.69	479	141
97.17	57	2	97.70	487	146
97.18	65	3	97.71	495	151
97.19	73	3	97.72	504	156
97.20	81	4	97.73	512	161
97.21	89	5	97.74	520	166
97.22	97	6	97.75	528	172
97.23	106	7	97.76	536	177
97.24	114	8	97.77	544	182
97.25	122	9	97.78	552	188
97.26	130	10	97.79	560	193
97.27	138	12	97.80	569	199
97.28	146	13	97.81	577	205
97.29	154	15	97.82	585	211
97.30	162	16	97.83	593	216
97.31	171	18	97.84	601	222
97.32	179	20	97.85	609	228
97.33	187	21	97.86	617	235
97.34	195	23	97.87	625	241
97.35	203	25	97.88	634	247
97.36	211	27	97.89	642	253
97.37	219	30	97.90	650	260
97.38	227	32	97.91	658	266
97.39	236	34	97.92	666	273
97.40	244	37	97.93	674	280
97.41	252	39	97.94	682	287
97.42	260	42	97.95	690	293
97.43	268	44	97.96	699	300
97.44	276	47	97.97	707	307
97.45	284	50	97.98	715	314
97.46	292	53	97.99	723	322
97.47	301	56	98.00	**731**	**329**
97.48	309	59			
97.49	317	62			
97.50	325	65			
97.51	333	68			
97.52	341	72			
97.53	349	75			
97.54	357	79			
97.55	366	82			
97.56	374	86			
97.57	382	90			
97.58	390	94			
97.59	398	98			
97.60	406	102			
97.61	414	106			
97.62	422	110			

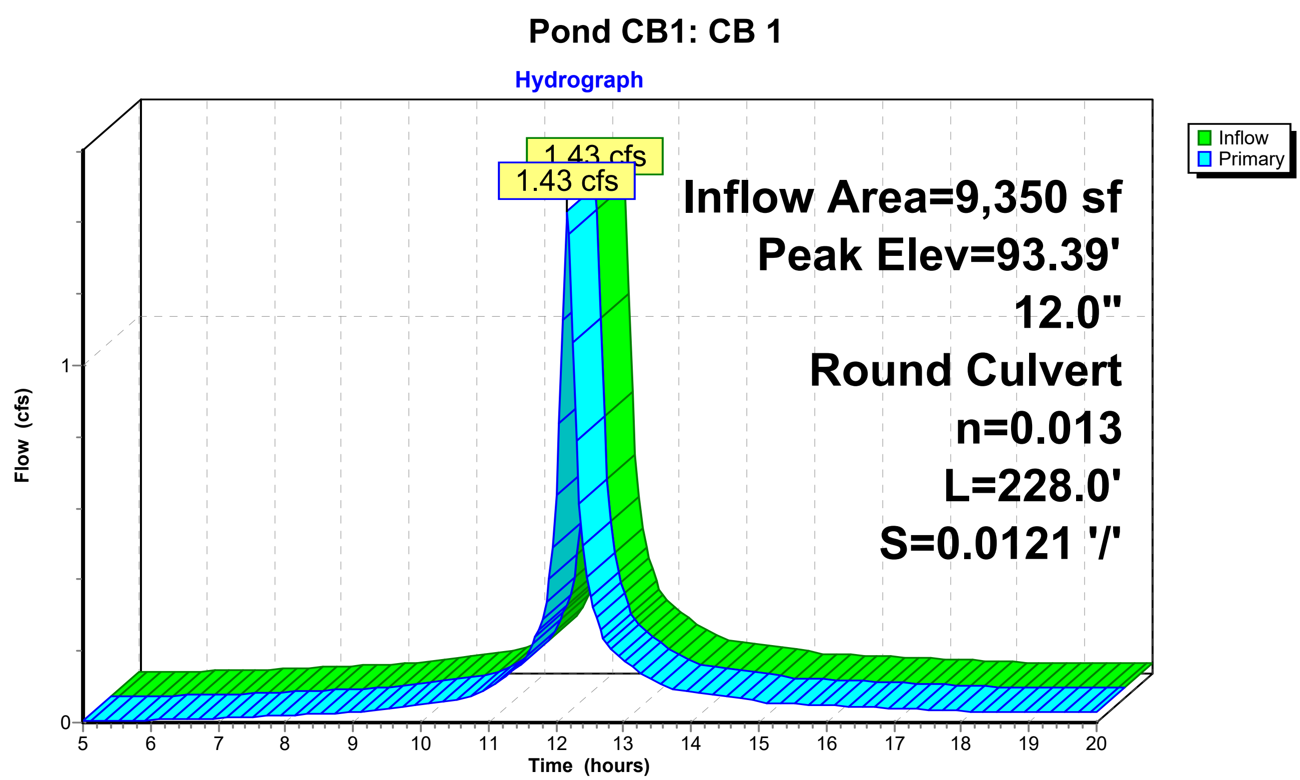
Summary for Pond CB1: CB 1

Inflow Area = 9,350 sf, 31.84% Impervious, Inflow Depth > 6.05" for 100-Year event
Inflow = 1.43 cfs @ 12.17 hrs, Volume= 4,711 cf
Outflow = 1.43 cfs @ 12.17 hrs, Volume= 4,711 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.43 cfs @ 12.17 hrs, Volume= 4,711 cf
Routed to Pond DMH2 : DMH2

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 93.39' @ 12.17 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	92.75'	**12.0" Round Culvert** L= 228.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 92.75' / 90.00' S= 0.0121 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.40 cfs @ 12.17 hrs HW=93.38' TW=91.07' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.40 cfs @ 2.70 fps)



Stage-Discharge for Pond CB1: CB 1

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
92.75	0.00	93.28	1.05
92.76	0.00	93.29	1.08
92.77	0.00	93.30	1.12
92.78	0.00	93.31	1.15
92.79	0.01	93.32	1.19
92.80	0.01	93.33	1.22
92.81	0.01	93.34	1.26
92.82	0.02	93.35	1.30
92.83	0.03	93.36	1.33
92.84	0.04	93.37	1.37
92.85	0.04	93.38	1.41
92.86	0.05	93.39	1.45
92.87	0.06	93.40	1.48
92.88	0.07	93.41	1.52
92.89	0.09	93.42	1.56
92.90	0.10	93.43	1.60
92.91	0.11	93.44	1.63
92.92	0.12	93.45	1.67
92.93	0.14	93.46	1.71
92.94	0.15	93.47	1.75
92.95	0.17	93.48	1.79
92.96	0.19	93.49	1.83
92.97	0.20	93.50	1.86
92.98	0.22	93.51	1.90
92.99	0.24	93.52	1.94
93.00	0.26	93.53	1.98
93.01	0.28	93.54	2.01
93.02	0.30	93.55	2.05
93.03	0.32	93.56	2.09
93.04	0.35	93.57	2.13
93.05	0.37	93.58	2.16
93.06	0.39	93.59	2.20
93.07	0.42	93.60	2.23
93.08	0.44	93.61	2.27
93.09	0.47	93.62	2.30
93.10	0.49	93.63	2.34
93.11	0.52	93.64	2.37
93.12	0.55	93.65	2.40
93.13	0.57	93.66	2.44
93.14	0.60	93.67	2.47
93.15	0.63	93.68	2.50
93.16	0.66	93.69	2.53
93.17	0.69	93.70	2.56
93.18	0.72	93.71	2.58
93.19	0.75	93.72	2.61
93.20	0.78	93.73	2.63
93.21	0.81	93.74	2.66
93.22	0.85	93.75	**2.67**
93.23	0.88		
93.24	0.91		
93.25	0.95		
93.26	0.98		
93.27	1.01		

Stage-Area-Storage for Pond CB1: CB 1

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
92.75	**0**	93.28	0
92.76	0	93.29	0
92.77	0	93.30	0
92.78	0	93.31	0
92.79	0	93.32	0
92.80	0	93.33	0
92.81	0	93.34	0
92.82	0	93.35	0
92.83	0	93.36	0
92.84	0	93.37	0
92.85	0	93.38	0
92.86	0	93.39	0
92.87	0	93.40	0
92.88	0	93.41	0
92.89	0	93.42	0
92.90	0	93.43	0
92.91	0	93.44	0
92.92	0	93.45	0
92.93	0	93.46	0
92.94	0	93.47	0
92.95	0	93.48	0
92.96	0	93.49	0
92.97	0	93.50	0
92.98	0	93.51	0
92.99	0	93.52	0
93.00	0	93.53	0
93.01	0	93.54	0
93.02	0	93.55	0
93.03	0	93.56	0
93.04	0	93.57	0
93.05	0	93.58	0
93.06	0	93.59	0
93.07	0	93.60	0
93.08	0	93.61	0
93.09	0	93.62	0
93.10	0	93.63	0
93.11	0	93.64	0
93.12	0	93.65	0
93.13	0	93.66	0
93.14	0	93.67	0
93.15	0	93.68	0
93.16	0	93.69	0
93.17	0	93.70	0
93.18	0	93.71	0
93.19	0	93.72	0
93.20	0	93.73	0
93.21	0	93.74	0
93.22	0	93.75	0
93.23	0		
93.24	0		
93.25	0		
93.26	0		
93.27	0		

Summary for Pond CB4: CB 4

Inflow Area =	14,952 sf,	43.75% Impervious,	Inflow Depth > 6.27"	for 100-Year event
Inflow =	2.28 cfs @	12.18 hrs, Volume=	7,815 cf	
Outflow =	2.28 cfs @	12.18 hrs, Volume=	7,815 cf, Atten= 0%, Lag= 0.0 min	
Primary =	2.28 cfs @	12.18 hrs, Volume=	7,815 cf	

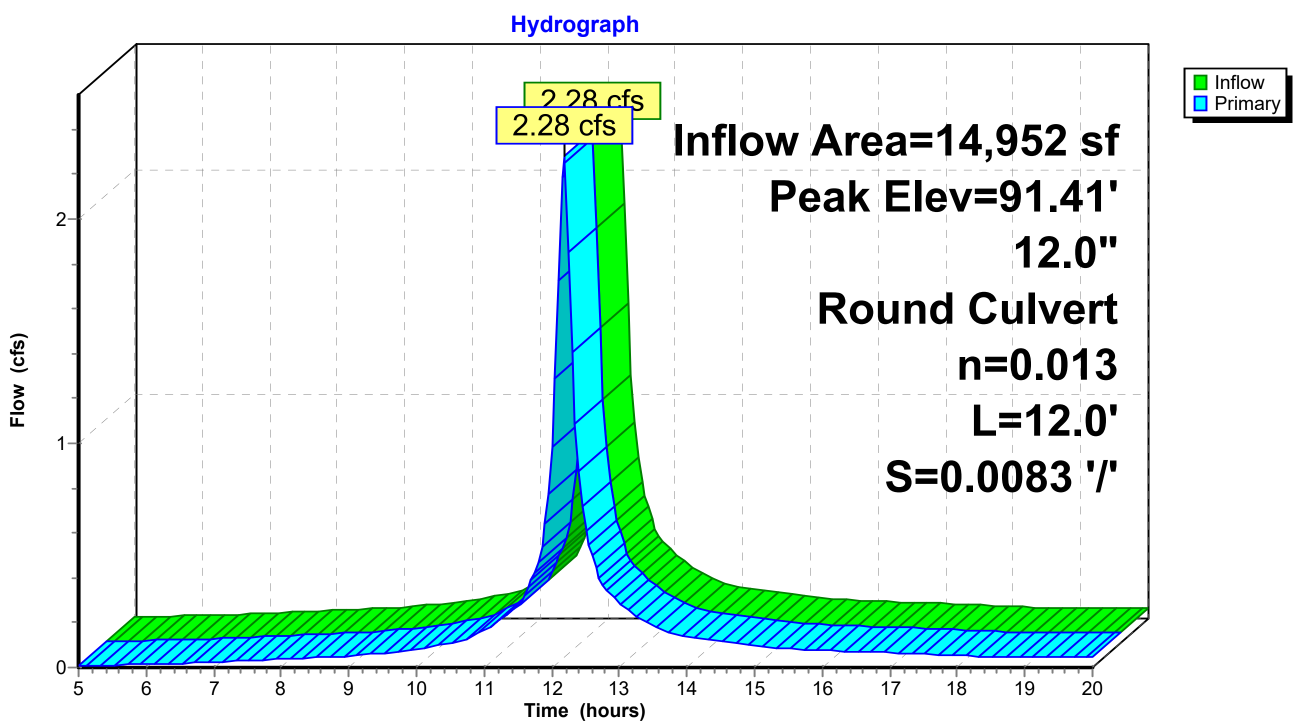
Routed to Pond DMH2 : DMH2

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 91.41' @ 12.22 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	90.10'	**12.0" Round Culvert** L= 12.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 90.10' / 90.00' S= 0.0083 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.85 cfs @ 12.18 hrs HW=91.33' TW=91.09' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.85 cfs @ 2.36 fps)

Pond CB4: CB 4



Stage-Discharge for Pond CB4: CB 4

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
90.10	0.00	90.63	0.80	91.16	2.43
90.11	0.00	90.64	0.83	91.17	2.46
90.12	0.00	90.65	0.86	91.18	2.49
90.13	0.00	90.66	0.88	91.19	2.52
90.14	0.01	90.67	0.91	91.20	2.55
90.15	0.01	90.68	0.94	91.21	2.57
90.16	0.01	90.69	0.97	91.22	2.60
90.17	0.02	90.70	0.99	91.23	2.63
90.18	0.02	90.71	1.02	91.24	2.66
90.19	0.03	90.72	1.05	91.25	2.69
90.20	0.03	90.73	1.08	91.26	2.71
90.21	0.04	90.74	1.11	91.27	2.74
90.22	0.05	90.75	1.14	91.28	2.77
90.23	0.06	90.76	1.17	91.29	2.79
90.24	0.07	90.77	1.20	91.30	2.82
90.25	0.08	90.78	1.23	91.31	2.84
90.26	0.09	90.79	1.26	91.32	2.87
90.27	0.10	90.80	1.29	91.33	2.89
90.28	0.11	90.81	1.32	91.34	2.91
90.29	0.12	90.82	1.35	91.35	2.93
90.30	0.13	90.83	1.38	91.36	2.95
90.31	0.15	90.84	1.41	91.37	2.97
90.32	0.16	90.85	1.44	91.38	2.99
90.33	0.18	90.86	1.47	91.39	3.00
90.34	0.19	90.87	1.50	91.40	**3.02**
90.35	0.21	90.88	1.54		
90.36	0.22	90.89	1.57		
90.37	0.24	90.90	1.60		
90.38	0.25	90.91	1.63		
90.39	0.27	90.92	1.66		
90.40	0.29	90.93	1.70		
90.41	0.31	90.94	1.73		
90.42	0.33	90.95	1.76		
90.43	0.34	90.96	1.79		
90.44	0.36	90.97	1.82		
90.45	0.38	90.98	1.86		
90.46	0.40	90.99	1.89		
90.47	0.42	91.00	1.92		
90.48	0.44	91.01	1.95		
90.49	0.47	91.02	1.98		
90.50	0.49	91.03	2.02		
90.51	0.51	91.04	2.05		
90.52	0.53	91.05	2.08		
90.53	0.56	91.06	2.11		
90.54	0.58	91.07	2.15		
90.55	0.60	91.08	2.18		
90.56	0.63	91.09	2.21		
90.57	0.65	91.10	2.24		
90.58	0.68	91.11	2.27		
90.59	0.70	91.12	2.30		
90.60	0.73	91.13	2.33		
90.61	0.75	91.14	2.36		
90.62	0.78	91.15	2.40		

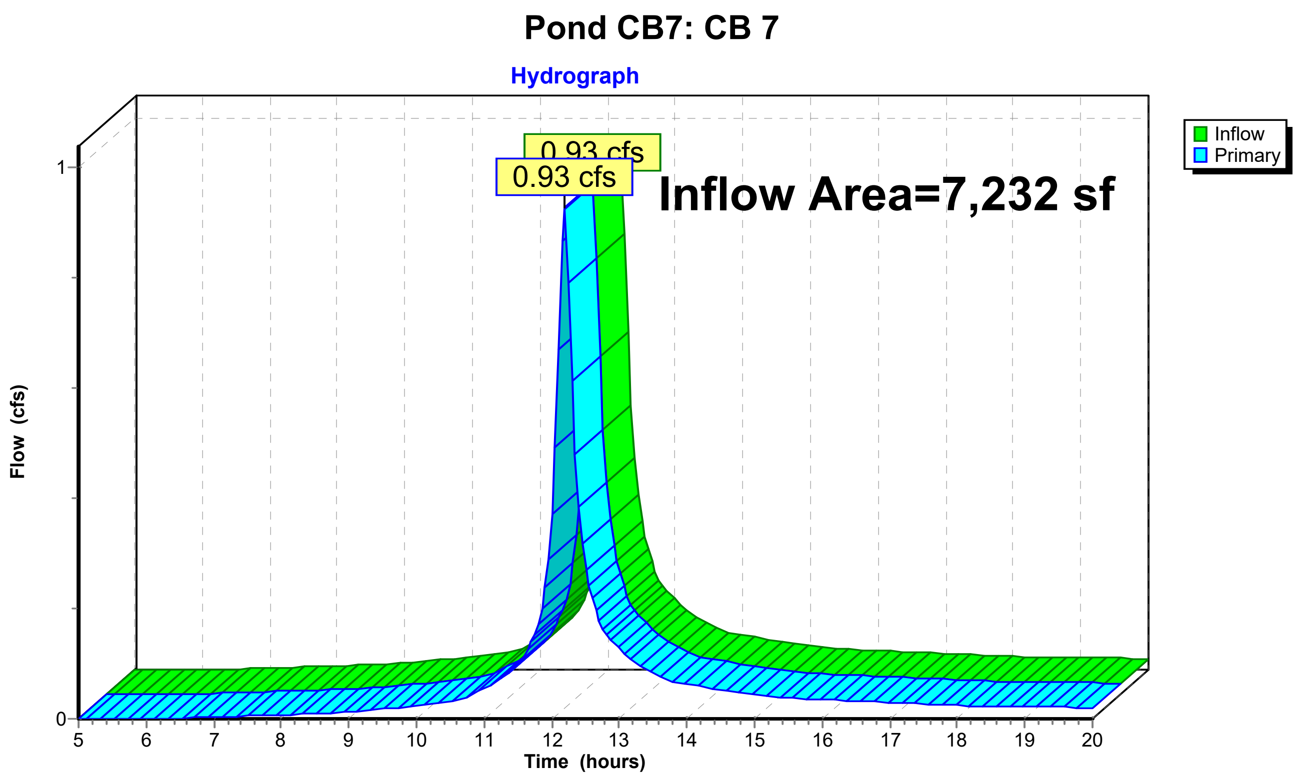
Stage-Area-Storage for Pond CB4: CB 4

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
90.10	**0**	90.63	0	91.16	0
90.11	0	90.64	0	91.17	0
90.12	0	90.65	0	91.18	0
90.13	0	90.66	0	91.19	0
90.14	0	90.67	0	91.20	0
90.15	0	90.68	0	91.21	0
90.16	0	90.69	0	91.22	0
90.17	0	90.70	0	91.23	0
90.18	0	90.71	0	91.24	0
90.19	0	90.72	0	91.25	0
90.20	0	90.73	0	91.26	0
90.21	0	90.74	0	91.27	0
90.22	0	90.75	0	91.28	0
90.23	0	90.76	0	91.29	0
90.24	0	90.77	0	91.30	0
90.25	0	90.78	0	91.31	0
90.26	0	90.79	0	91.32	0
90.27	0	90.80	0	91.33	0
90.28	0	90.81	0	91.34	0
90.29	0	90.82	0	91.35	0
90.30	0	90.83	0	91.36	0
90.31	0	90.84	0	91.37	0
90.32	0	90.85	0	91.38	0
90.33	0	90.86	0	91.39	0
90.34	0	90.87	0	91.40	0
90.35	0	90.88	0		
90.36	0	90.89	0		
90.37	0	90.90	0		
90.38	0	90.91	0		
90.39	0	90.92	0		
90.40	0	90.93	0		
90.41	0	90.94	0		
90.42	0	90.95	0		
90.43	0	90.96	0		
90.44	0	90.97	0		
90.45	0	90.98	0		
90.46	0	90.99	0		
90.47	0	91.00	0		
90.48	0	91.01	0		
90.49	0	91.02	0		
90.50	0	91.03	0		
90.51	0	91.04	0		
90.52	0	91.05	0		
90.53	0	91.06	0		
90.54	0	91.07	0		
90.55	0	91.08	0		
90.56	0	91.09	0		
90.57	0	91.10	0		
90.58	0	91.11	0		
90.59	0	91.12	0		
90.60	0	91.13	0		
90.61	0	91.14	0		
90.62	0	91.15	0		

Summary for Pond CB7: CB 7

Inflow Area = 7,232 sf, 0.00% Impervious, Inflow Depth > 5.11" for 100-Year event
Inflow = 0.93 cfs @ 12.19 hrs, Volume= 3,077 cf
Primary = 0.93 cfs @ 12.19 hrs, Volume= 3,077 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond 1P : Subsurface #1

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs



Summary for Pond DMH2: DMH2

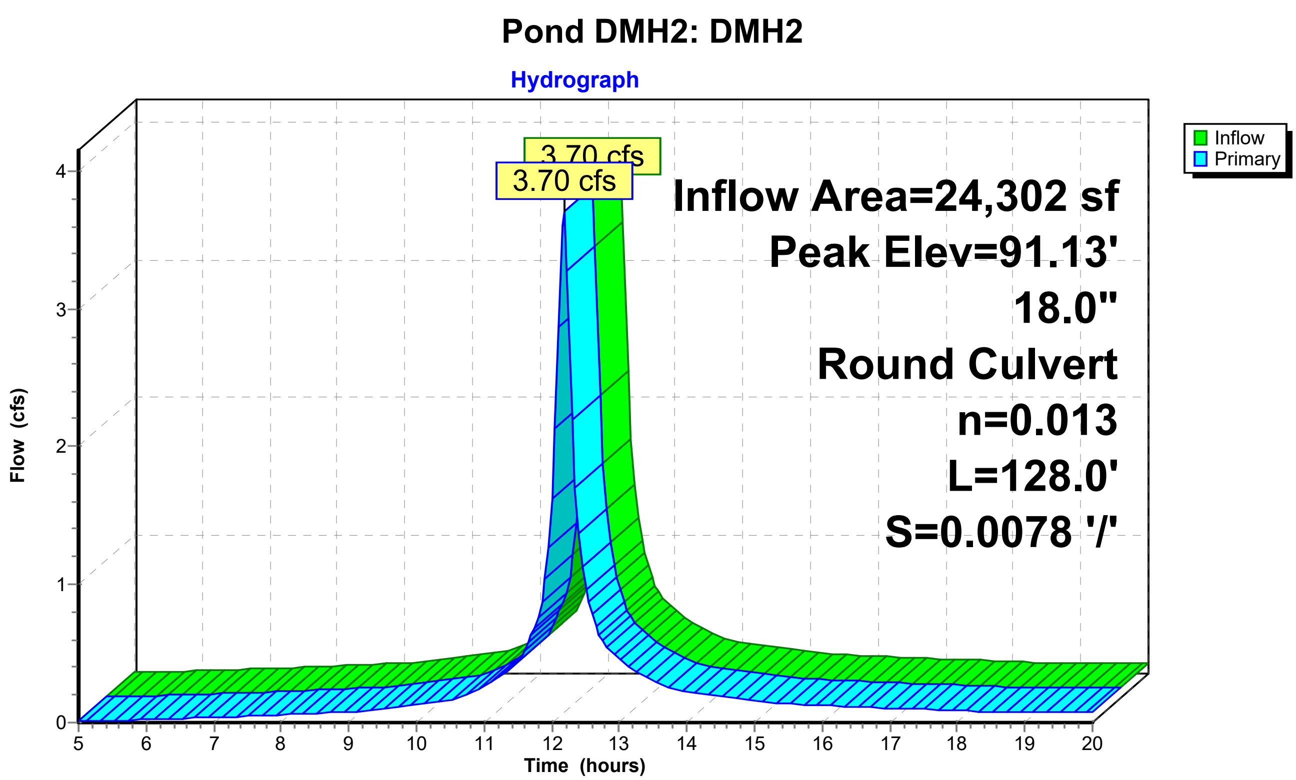
Inflow Area =	24,302 sf,	39.17% Impervious,	Inflow Depth > 6.19"	for 100-Year event	
Inflow =	3.70 cfs @	12.18 hrs,	Volume=	12,527 cf	
Outflow =	3.70 cfs @	12.18 hrs,	Volume=	12,527 cf,	Atten= 0%, Lag= 0.0 min
Primary =	3.70 cfs @	12.18 hrs,	Volume=	12,527 cf	

Routed to Pond IB1 : Infiltration Basin #1 (Exfiltration Zone)

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 91.13' @ 12.22 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	90.00'	**18.0" Round Culvert** L= 128.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 90.00' / 89.00' S= 0.0078 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=3.02 cfs @ 12.18 hrs HW=91.08' TW=90.54' (Dynamic Tailwater)
1=Culvert (Outlet Controls 3.02 cfs @ 3.09 fps)



Stage-Discharge for Pond DMH2: DMH2

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
90.00	0.00	90.53	1.31	91.06	4.44
90.01	0.00	90.54	1.36	91.07	4.51
90.02	0.00	90.55	1.41	91.08	4.58
90.03	0.00	90.56	1.45	91.09	4.65
90.04	0.01	90.57	1.50	91.10	4.71
90.05	0.01	90.58	1.55	91.11	4.78
90.06	0.01	90.59	1.60	91.12	4.85
90.07	0.02	90.60	1.65	91.13	4.91
90.08	0.03	90.61	1.70	91.14	4.98
90.09	0.04	90.62	1.76	91.15	5.05
90.10	0.04	90.63	1.81	91.16	5.12
90.11	0.05	90.64	1.86	91.17	5.18
90.12	0.06	90.65	1.92	91.18	5.25
90.13	0.08	90.66	1.97	91.19	5.32
90.14	0.09	90.67	2.02	91.20	5.39
90.15	0.10	90.68	2.08	91.21	5.45
90.16	0.12	90.69	2.13	91.22	5.52
90.17	0.13	90.70	2.19	91.23	5.59
90.18	0.15	90.71	2.25	91.24	5.66
90.19	0.17	90.72	2.30	91.25	5.72
90.20	0.19	90.73	2.36	91.26	5.79
90.21	0.21	90.74	2.42	91.27	5.86
90.22	0.23	90.75	2.48	91.28	5.93
90.23	0.25	90.76	2.54	91.29	5.99
90.24	0.27	90.77	2.59	91.30	6.06
90.25	0.30	90.78	2.65	91.31	6.12
90.26	0.32	90.79	2.71	91.32	6.19
90.27	0.35	90.80	2.77	91.33	6.26
90.28	0.38	90.81	2.83	91.34	6.32
90.29	0.40	90.82	2.90	91.35	6.39
90.30	0.43	90.83	2.96	91.36	6.45
90.31	0.46	90.84	3.02	91.37	6.52
90.32	0.49	90.85	3.08	91.38	6.58
90.33	0.52	90.86	3.14	91.39	6.65
90.34	0.55	90.87	3.21	91.40	6.71
90.35	0.59	90.88	3.27	91.41	6.78
90.36	0.62	90.89	3.33	91.42	6.84
90.37	0.66	90.90	3.40	91.43	6.91
90.38	0.69	90.91	3.46	91.44	6.97
90.39	0.73	90.92	3.52	91.45	7.03
90.40	0.76	90.93	3.59	91.46	7.09
90.41	0.80	90.94	3.65	91.47	7.16
90.42	0.84	90.95	3.72	91.48	7.22
90.43	0.88	90.96	3.78	91.49	7.28
90.44	0.92	90.97	3.85	91.50	**7.34**
90.45	0.96	90.98	3.91		
90.46	1.00	90.99	3.98		
90.47	1.04	91.00	4.05		
90.48	1.09	91.01	4.11		
90.49	1.13	91.02	4.18		
90.50	1.17	91.03	4.24		
90.51	1.22	91.04	4.31		
90.52	1.27	91.05	4.38		

Stage-Area-Storage for Pond DMH2: DMH2

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
90.00	**0**	90.53	0	91.06	0
90.01	0	90.54	0	91.07	0
90.02	0	90.55	0	91.08	0
90.03	0	90.56	0	91.09	0
90.04	0	90.57	0	91.10	0
90.05	0	90.58	0	91.11	0
90.06	0	90.59	0	91.12	0
90.07	0	90.60	0	91.13	0
90.08	0	90.61	0	91.14	0
90.09	0	90.62	0	91.15	0
90.10	0	90.63	0	91.16	0
90.11	0	90.64	0	91.17	0
90.12	0	90.65	0	91.18	0
90.13	0	90.66	0	91.19	0
90.14	0	90.67	0	91.20	0
90.15	0	90.68	0	91.21	0
90.16	0	90.69	0	91.22	0
90.17	0	90.70	0	91.23	0
90.18	0	90.71	0	91.24	0
90.19	0	90.72	0	91.25	0
90.20	0	90.73	0	91.26	0
90.21	0	90.74	0	91.27	0
90.22	0	90.75	0	91.28	0
90.23	0	90.76	0	91.29	0
90.24	0	90.77	0	91.30	0
90.25	0	90.78	0	91.31	0
90.26	0	90.79	0	91.32	0
90.27	0	90.80	0	91.33	0
90.28	0	90.81	0	91.34	0
90.29	0	90.82	0	91.35	0
90.30	0	90.83	0	91.36	0
90.31	0	90.84	0	91.37	0
90.32	0	90.85	0	91.38	0
90.33	0	90.86	0	91.39	0
90.34	0	90.87	0	91.40	0
90.35	0	90.88	0	91.41	0
90.36	0	90.89	0	91.42	0
90.37	0	90.90	0	91.43	0
90.38	0	90.91	0	91.44	0
90.39	0	90.92	0	91.45	0
90.40	0	90.93	0	91.46	0
90.41	0	90.94	0	91.47	0
90.42	0	90.95	0	91.48	0
90.43	0	90.96	0	91.49	0
90.44	0	90.97	0	91.50	0
90.45	0	90.98	0		
90.46	0	90.99	0		
90.47	0	91.00	0		
90.48	0	91.01	0		
90.49	0	91.02	0		
90.50	0	91.03	0		
90.51	0	91.04	0		
90.52	0	91.05	0		

Summary for Pond IB1: Infiltration Basin #1 (Exfiltration Zone)

Inflow Area = 54,257 sf, 51.52% Impervious, Inflow Depth > 6.46" for 100-Year event
Inflow = 8.87 cfs @ 12.15 hrs, Volume= 29,191 cf
Outflow = 7.84 cfs @ 12.15 hrs, Volume= 28,451 cf, Atten= 12%, Lag= 0.0 min
Discarded = 0.02 cfs @ 5.20 hrs, Volume= 940 cf
Primary = 7.82 cfs @ 12.15 hrs, Volume= 27,511 cf
Routed to Pond 10P : Infiltration Basin #1 (Storage)

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 90.90' @ 12.32 hrs Surf.Area= 736 sf Storage= 2,133 cf

Plug-Flow detention time= 22.8 min calculated for 28,353 cf (97% of inflow)
Center-of-Mass det. time= 12.2 min (768.2 - 756.0)

Volume	Invert	Avail.Storage	Storage Description
#1	88.00'	2,944 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

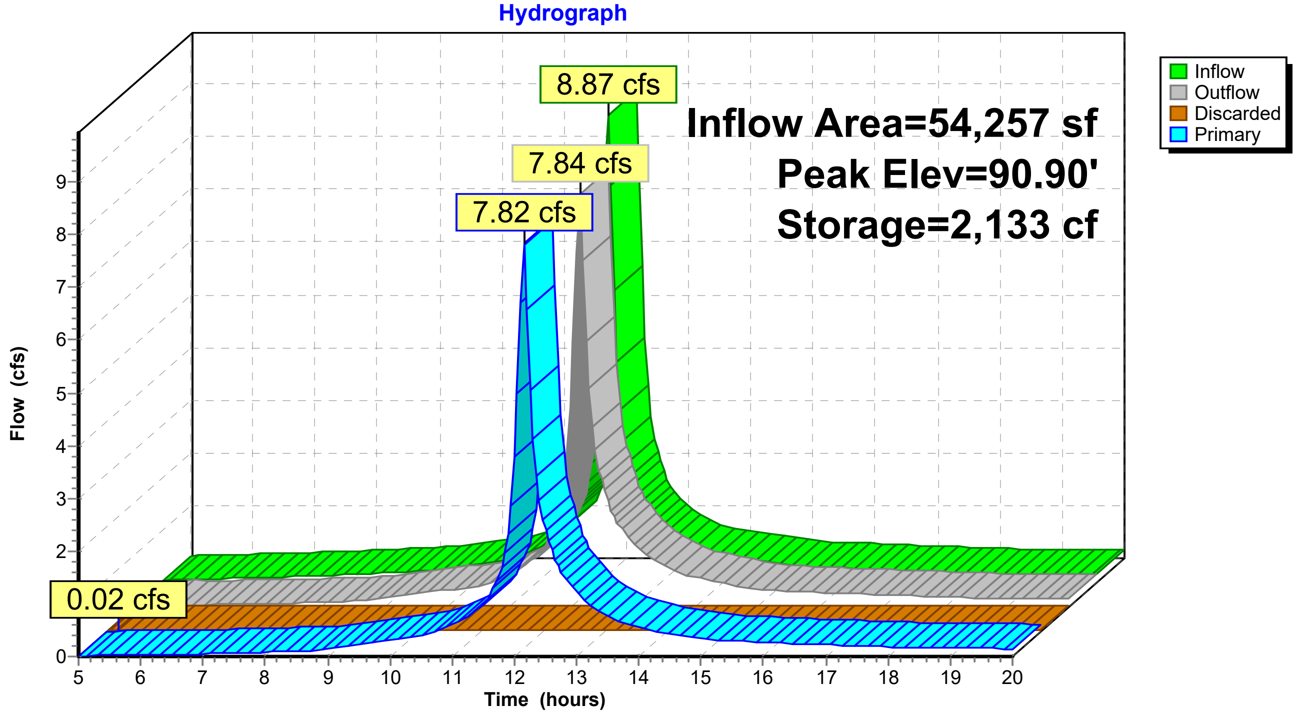
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
88.00	736	0	0
92.00	736	2,944	2,944

Device	Routing	Invert	Outlet Devices
#1	Discarded	88.00'	**1.020 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	88.00'	**48.0" Round Culvert** L= 2.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 88.00' / 88.00' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 12.57 sf

Discarded OutFlow Max=0.02 cfs @ 5.20 hrs HW=88.04' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 12.15 hrs HW=90.40' TW=90.62' (Dynamic Tailwater)
└─**2=Culvert** (Controls 0.00 cfs)

Pond IB1: Infiltration Basin #1 (Exfiltration Zone)



Stage-Discharge for Pond IB1: Infiltration Basin #1 (Exfiltration Zone)

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
88.00	0.00	**0.00**	0.00
88.05	0.03	**0.02**	0.01
88.10	0.07	0.02	0.05
88.15	0.13	0.02	0.11
88.20	0.23	0.02	0.21
88.25	0.35	0.02	0.33
88.30	0.50	0.02	0.48
88.35	0.68	0.02	0.66
88.40	0.88	0.02	0.86
88.45	1.11	0.02	1.09
88.50	1.37	0.02	1.35
88.55	1.65	0.02	1.63
88.60	1.96	0.02	1.94
88.65	2.29	0.02	2.27
88.70	2.65	0.02	2.63
88.75	3.03	0.02	3.01
88.80	3.44	0.02	3.42
88.85	3.87	0.02	3.85
88.90	4.33	0.02	4.31
88.95	4.81	0.02	4.79
89.00	5.31	0.02	5.29
89.05	5.84	0.02	5.82
89.10	6.39	0.02	6.37
89.15	6.96	0.02	6.94
89.20	7.56	0.02	7.54
89.25	8.17	0.02	8.16
89.30	8.81	0.02	8.79
89.35	9.47	0.02	9.45
89.40	10.15	0.02	10.14
89.45	10.86	0.02	10.84
89.50	11.58	0.02	11.56
89.55	12.32	0.02	12.30
89.60	13.09	0.02	13.07
89.65	13.87	0.02	13.85
89.70	14.67	0.02	14.65
89.75	15.49	0.02	15.48
89.80	16.33	0.02	16.32
89.85	17.19	0.02	17.17
89.90	18.07	0.02	18.05
89.95	18.96	0.02	18.94
90.00	19.87	0.02	19.86
90.05	20.80	0.02	20.79
90.10	21.75	0.02	21.73
90.15	22.71	0.02	22.69
90.20	23.69	0.02	23.67
90.25	24.68	0.02	24.66
90.30	25.69	0.02	25.67
90.35	26.71	0.02	26.70
90.40	27.75	0.02	27.74
90.45	28.81	0.02	28.79
90.50	29.87	0.02	29.86
90.55	30.95	0.02	30.93
90.60	32.05	0.02	32.03
90.65	33.15	0.02	33.13
90.70	34.27	0.02	34.25
90.75	35.40	0.02	35.38
90.80	36.54	0.02	36.52
90.85	37.69	0.02	37.67
90.90	38.85	0.02	38.84
90.95	40.03	0.02	40.01
91.00	41.21	0.02	41.19
91.05	42.40	0.02	42.38
91.10	43.60	0.02	43.58
91.15	44.81	0.02	44.79
91.20	46.02	0.02	46.01
91.25	47.25	0.02	47.23
91.30	48.48	0.02	48.46
91.35	49.71	0.02	49.69
91.40	50.95	0.02	50.94
91.45	52.20	0.02	52.18
91.50	53.45	0.02	53.44
91.55	54.71	0.02	54.69
91.60	55.97	0.02	55.95
91.65	57.23	0.02	57.21
91.70	58.49	0.02	58.48
91.75	59.76	0.02	59.74
91.80	61.03	0.02	61.01
91.85	62.29	0.02	62.28
91.90	63.56	0.02	63.54
91.95	64.83	0.02	64.81
92.00	**66.09**	0.02	**66.07**

Stage-Area-Storage for Pond IB1: Infiltration Basin #1 (Exfiltration Zone)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
88.00	**736**	0	90.65	736	1,950
88.05	736	37	90.70	736	1,987
88.10	736	74	90.75	736	2,024
88.15	736	110	90.80	736	2,061
88.20	736	147	90.85	736	2,098
88.25	736	184	90.90	736	2,134
88.30	736	221	90.95	736	2,171
88.35	736	258	91.00	736	2,208
88.40	736	294	91.05	736	2,245
88.45	736	331	91.10	736	2,282
88.50	736	368	91.15	736	2,318
88.55	736	405	91.20	736	2,355
88.60	736	442	91.25	736	2,392
88.65	736	478	91.30	736	2,429
88.70	736	515	91.35	736	2,466
88.75	736	552	91.40	736	2,502
88.80	736	589	91.45	736	2,539
88.85	736	626	91.50	736	2,576
88.90	736	662	91.55	736	2,613
88.95	736	699	91.60	736	2,650
89.00	736	736	91.65	736	2,686
89.05	736	773	91.70	736	2,723
89.10	736	810	91.75	736	2,760
89.15	736	846	91.80	736	2,797
89.20	736	883	91.85	736	2,834
89.25	736	920	91.90	736	2,870
89.30	736	957	91.95	736	2,907
89.35	736	994	92.00	736	**2,944**
89.40	736	1,030			
89.45	736	1,067			
89.50	736	1,104			
89.55	736	1,141			
89.60	736	1,178			
89.65	736	1,214			
89.70	736	1,251			
89.75	736	1,288			
89.80	736	1,325			
89.85	736	1,362			
89.90	736	1,398			
89.95	736	1,435			
90.00	736	1,472			
90.05	736	1,509			
90.10	736	1,546			
90.15	736	1,582			
90.20	736	1,619			
90.25	736	1,656			
90.30	736	1,693			
90.35	736	1,730			
90.40	736	1,766			
90.45	736	1,803			
90.50	736	1,840			
90.55	736	1,877			
90.60	736	1,914			

Summary for Pond IB2: Infiltration Basin #2 (Exfiltration Zone)

Inflow Area = 13,032 sf, 14.64% Impervious, Inflow Depth > 5.46" for 100-Year event
Inflow = 1.70 cfs @ 12.20 hrs, Volume= 5,926 cf
Outflow = 1.56 cfs @ 12.21 hrs, Volume= 5,742 cf, Atten= 8%, Lag= 0.6 min
Discarded = 0.01 cfs @ 7.55 hrs, Volume= 492 cf
Primary = 1.55 cfs @ 12.21 hrs, Volume= 5,250 cf
Routed to Pond B2 : Infiltration Basin #2 (Storage Zone)

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 97.98' @ 12.29 hrs Surf.Area= 424 sf Storage= 375 cf

Plug-Flow detention time= 21.2 min calculated for 5,723 cf (97% of inflow)
Center-of-Mass det. time= 9.2 min (788.5 - 779.4)

Volume	Invert	Avail.Storage	Storage Description
#1	97.10'	382 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

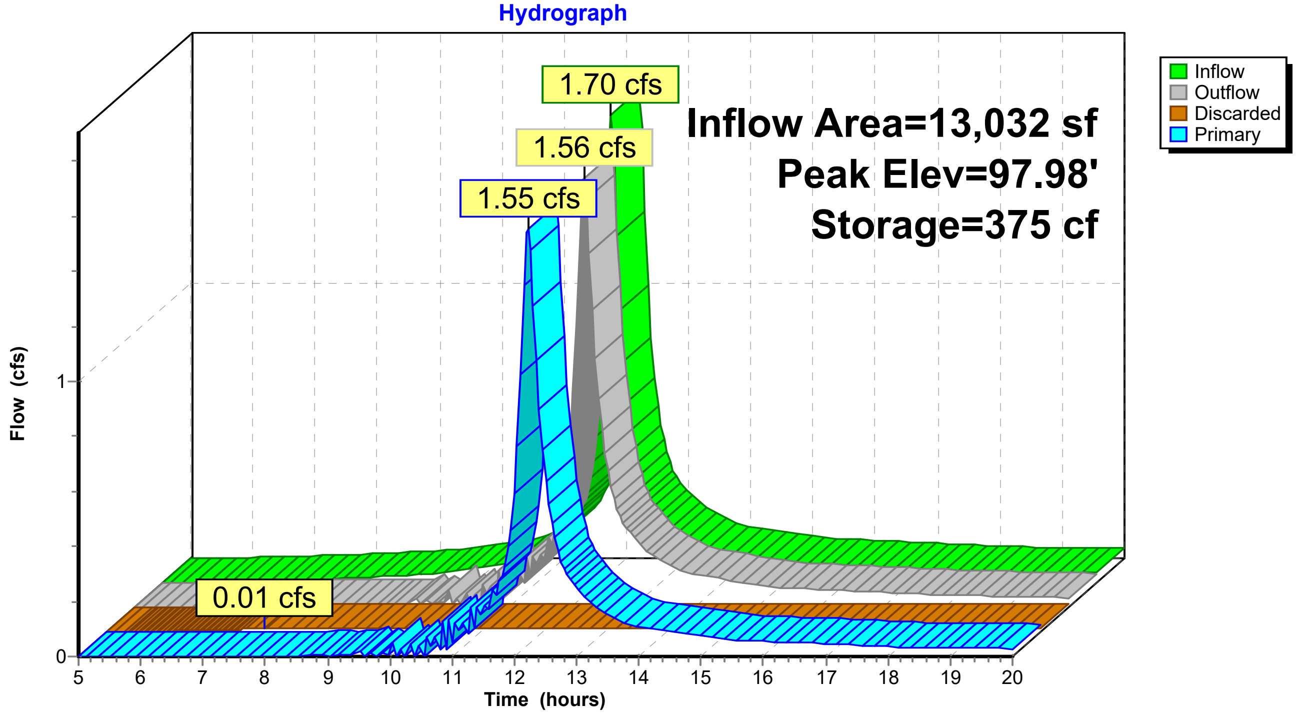
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
97.10	424	0	0
98.00	424	382	382

Device	Routing	Invert	Outlet Devices
#1	Discarded	97.10'	**1.020 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	97.10'	**36.0" Round Culvert** L= 2.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 97.10' / 97.10' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf

Discarded OutFlow Max=0.01 cfs @ 7.55 hrs HW=97.12' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 12.21 hrs HW=97.94' TW=97.94' (Dynamic Tailwater)
└**2=Culvert** (Controls 0.00 cfs)

Pond IB2: Infiltration Basin #2 (Exfiltration Zone)



Stage-Discharge for Pond IB2: Infiltration Basin #2 (Exfiltration Zone)

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
97.10	0.00	**0.00**	0.00
97.15	0.02	**0.01**	0.01
97.20	0.05	0.01	0.04
97.25	0.11	0.01	0.10
97.30	0.19	0.01	0.18
97.35	0.30	0.01	0.29
97.40	0.42	0.01	0.41
97.45	0.58	0.01	0.57
97.50	0.75	0.01	0.74
97.55	0.95	0.01	0.94
97.60	1.17	0.01	1.16
97.65	1.41	0.01	1.40
97.70	1.67	0.01	1.66
97.75	1.95	0.01	1.94
97.80	2.25	0.01	2.24
97.85	2.58	0.01	2.57
97.90	2.92	0.01	2.91
97.95	3.29	0.01	3.28
98.00	3.67	0.01	3.66
98.05	4.07	0.01	4.06
98.10	4.49	0.01	4.48
98.15	4.93	0.01	4.92
98.20	5.39	0.01	5.38
98.25	5.87	0.01	5.86
98.30	6.36	0.01	6.35
98.35	6.87	0.01	6.86
98.40	7.40	0.01	7.39
98.45	7.94	0.01	7.93
98.50	8.50	0.01	8.49
98.55	9.07	0.01	9.06
98.60	9.66	0.01	9.65
98.65	10.27	0.01	10.26
98.70	10.89	0.01	10.88
98.75	11.52	0.01	11.51
98.80	12.17	0.01	12.16
98.85	12.83	0.01	12.82
98.90	13.50	0.01	13.49
98.95	14.18	0.01	14.17
99.00	14.88	0.01	14.87
99.05	15.59	0.01	15.58
99.10	16.31	0.01	16.30
99.15	17.04	0.01	17.03
99.20	17.77	0.01	17.76
99.25	18.52	0.01	18.51
99.30	19.28	0.01	19.27
99.35	20.05	0.01	20.04
99.40	20.82	0.01	20.81
99.45	21.60	0.01	21.59
99.50	22.39	0.01	22.38
99.55	23.19	0.01	23.18
99.60	23.99	0.01	23.98
99.65	24.79	0.01	24.78
99.70	25.60	0.01	25.59
99.75	26.42	0.01	26.41
99.80	27.23	0.01	27.22
99.85	28.05	0.01	28.04
99.90	28.87	0.01	28.86
99.95	29.69	0.01	29.68
100.00	30.52	0.01	30.51
100.05	31.34	0.01	31.33
100.10	**32.16**	0.01	**32.15**

Stage-Area-Storage for Pond IB2: Infiltration Basin #2 (Exfiltration Zone)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
97.10	**424**	0	99.75	424	382
97.15	424	21	99.80	424	382
97.20	424	42	99.85	424	382
97.25	424	64	99.90	424	382
97.30	424	85	99.95	424	382
97.35	424	106	100.00	424	382
97.40	424	127	100.05	424	382
97.45	424	148	100.10	424	382
97.50	424	170			
97.55	424	191			
97.60	424	212			
97.65	424	233			
97.70	424	254			
97.75	424	276			
97.80	424	297			
97.85	424	318			
97.90	424	339			
97.95	424	360			
98.00	424	**382**			
98.05	424	382			
98.10	424	382			
98.15	424	382			
98.20	424	382			
98.25	424	382			
98.30	424	382			
98.35	424	382			
98.40	424	382			
98.45	424	382			
98.50	424	382			
98.55	424	382			
98.60	424	382			
98.65	424	382			
98.70	424	382			
98.75	424	382			
98.80	424	382			
98.85	424	382			
98.90	424	382			
98.95	424	382			
99.00	424	382			
99.05	424	382			
99.10	424	382			
99.15	424	382			
99.20	424	382			
99.25	424	382			
99.30	424	382			
99.35	424	382			
99.40	424	382			
99.45	424	382			
99.50	424	382			
99.55	424	382			
99.60	424	382			
99.65	424	382			
99.70	424	382			

Section II
Stormwater Management

- ♦ **STANDARD #1 No New Stormwater Conveyances**

  The proposed development proposes no new stormwater conveyances that discharge untreated stormwater off-site or cause down gradient erosion.

- ♦ **STANDARD #2 Post Development Peak Discharge**

  The overall site analysis demonstrates that the stormwater management system has been designed so that the post-development peak discharge rates do not exceed the pre-development discharge rate for the 2 yr, 10 yr, 25yr & 100 yr 24 hr storm events.

- ♦ **STANDARD #3 RECHARGE TO GROUNDWATER**

Total impervious areas:

Pavement = 17,705 SF
Roof = 18,590 SF
Soil group = C

36,295 SF * 0.25 *1' / 12" = 756.1 CF

Proposed infiltration (Basin #1) = 1,334 CF
Proposed infiltration (Basin #2) = 159 CF
Proposed infiltration (Subsurface #1) = 742 CF
Proposed infiltration (Total) = 2,235 CF

<u>Drawdown Within 72 Hours</u>

$$Time_{drawdown} = \frac{Rv}{(K)(Bottom\ Area)}$$

Where:
Rv = Storage Volume (required recharge volume)
K = Saturated Hydraulic Conductivity For "Static" and "Simple Dynamic" Methods, use Rawls Rate (see Table 2.3.3). For "Dynamic Field" Method, use 50% of the in-situ saturated hydraulic conductivity.
Bottom Area = Bottom Area of Recharge Structure

Infiltration Basin #1
Storage Volume = 1,334 CF stored below outlet

Time = $\frac{1{,}334\ CF}{(1.02")(1'/12")(736\ SF)}$ = 21.3 hours < 72 hours

Infiltration Basin #2
Storage Volume = 159 CF stored below outlet

Time = $\frac{159\ CF}{(1.02")(1'/12")(424\ SF)}$ = 4.4 hours < 72 hours

Subsurface Basin
Storage Volume = 742 CF stored below outlet

Time = $\frac{742\ CF}{(1.02")(1'/12")(1{,}275\ SF)}$ = 6.8 hours < 72 hours

- **STANDARD #4 WATER QUALITY**

  Total impervious areas:

  Pavement = 17,705 SF

  Roof = 18,590 SF

  Total impervious area = 36,295 SF

  0.5" * 36,295 SF 1' / 12" = 1,512 CF

  Proposed water quality volume (Basin #1) = 1,334 CF
  Proposed water quality volume (Basin #2) = 159 CF
  Proposed water quality volume (Subsurface #1) = 742 CF
  Proposed water quality volume (Total) = 2,235 CF

- **STANDARD #5 Land Uses With Higher Potential Pollutant Loads**

  This site will not produce a higher potential pollutant load.

- **STANDARD #6 Critical Areas**

  The site is not located within a Zone I or Zone II Area.

- **STANDARD #7 Redevelopment**

  The project is not a redevelopment.

- **STANDARD #8 Erosion & Sediment Control Plan**

  Erosion and sediment controls are detailed within the plan.

- **STANDARD #9 Operation & Maintenance Plan**

  See O&M plan attached hereto.

- **STANDARD #10 Illicit Discharge Statement**

  "All illicit discharges to the stormwater management system are prohibited."

  This statement is intended to meet Standard #10 of the Stormwater Management requirements

  Illicit discharges to the stormwater management system are discharges that are not entirely comprised of stormwater.

  Except for the potential for deliberate criminal act of discharge by an unauthorized entity for which the property owner has no control, there are to be no illicit discharges into the stormwater system.

  ____
  Applicant\Owner

Infiltration Basin #1

This spreadsheet will calculate the height of a groundwater mound beneath a stormwater infiltration basin. More information can be found in the U.S. Geological Survey Scientific Investigations Report 2010-5102 "Simulation of groundwater mounding beneath hypothetical stormwater infiltration basins".

The user must specify infiltration rate (R), specific yield (Sy), horizontal hydraulic conductivity (Kh), basin dimensions (x, y), duration of infiltration period (t), and the initial thickness of the saturated zone (hi(0), height of the water table if the bottom of the aquifer is the datum). For a square basin the half width equals the half length (x = y). For a rectangular basin, if the user wants the water-table changes perpendicular to the long side, specify x as the short dimension and y as the long dimension. Conversely, if the user wants the values perpendicular to the short side, specify y as the short dimension, x as the long dimension. All distances are from the center of the basin.
Users can change the distances from the center of the basin at which water-table aquifer thickness are calculated.
Cells highlighted in yellow are values that can be changed by the user. Cells highlighted in red are output values based on user-specified inputs. The user MUST click the blue "Re-Calculate Now" button each time ANY of the user-specified inputs are changed otherwise necessary iterations to converge on the correct solution will not be done and values shown will be incorrect. Use consistent units for all input values (for example, feet and days)

use consistent units (e.g. feet & days **or** inches & hours)

Input Values		
0.5400	*R*	**Recharge (infiltration) rate (feet/day)**
0.210	Sy	**Specific yield, Sy (dimensionless, between 0 and 1)**
6.56	K	**Horizontal hydraulic conductivity, Kh (feet/day)***
36.000	x	**1/2 length of basin (x direction, in feet)**
6.000	y	**1/2 width of basin (y direction, in feet)**
0.888	t	**duration of infiltration period (days)**
20.000	hi(0)	**initial thickness of saturated zone (feet)**

Conversion Table

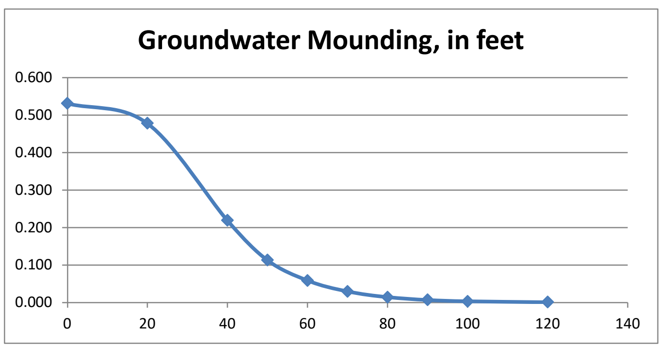
inch/hour	**feet/day**
0.67	1.33
2.00	4.00
hours	**days**
36	1.50

In the report accompanying this spreadsheet (USGS SIR 2010-5102), vertical soil permeability (ft/d) is assumed to be one-tenth horizontal hydraulic conductivity (ft/d).

20.531	h(max)	**maximum thickness of saturated zone (beneath center of basin at end of infiltration period)**
0.531	Δh(max)	**maximum groundwater mounding (beneath center of basin at end of infiltration period)**

Ground-water Mounding, in feet	**Distance from center of basin in x direction, in feet**
0.531	0
0.478	20
0.219	40
0.113	50
0.059	60
0.030	70
0.015	80
0.007	90
0.003	100
0.001	120

Re-Calculate Now



Disclaimer

This spreadsheet solving the Hantush (1967) equation for ground-water mounding beneath an infiltration basin is made available to the general public as a convenience for those wishing to replicate values documented in the USGS Scientific Investigations Report 2010-5102 "Groundwater mounding beneath hypothetical stormwater infiltration basins" or to calculate values based on user-specified site conditions. Any changes made to the spreadsheet (other than values identified as user-specified) after transmission from the USGS could have unintended, undesirable consequences. These consequences could include, but may not be limited to: erroneous output, numerical instabilities, and violations of underlying assumptions that are inherent in results presented in the accompanying USGS published report. The USGS assumes no responsibility for the consequences of any changes made to the spreadsheet. If changes are made to the spreadsheet, the user is responsible for documenting the changes and justifying the results and conclusions.

Infiltration Basin #2

This spreadsheet will calculate the height of a groundwater mound beneath a stormwater infiltration basin. More information can be found in the U.S. Geological Survey Scientific Investigations Report 2010-5102 "Simulation of groundwater mounding beneath hypothetical stormwater infiltration basins".

The user must specify infiltration rate (R), specific yield (Sy), horizontal hydraulic conductivity (Kh), basin dimensions (x, y), duration of infiltration period (t), and the initial thickness of the saturated zone (hi(0), height of the water table if the bottom of the aquifer is the datum). For a square basin the half width equals the half length (x = y). For a rectangular basin, if the user wants the water-table changes perpendicular to the long side, specify x as the short dimension and y as the long dimension. Conversely, if the user wants the values perpendicular to the short side, specify y as the short dimension, x as the long dimension. All distances are from the center of the basin.
Users can change the distances from the center of the basin at which water-table aquifer thickness are calculated.
Cells highlighted in yellow are values that can be changed by the user. Cells highlighted in red are output values based on user-specified inputs. The user MUST click the blue "Re-Calculate Now" button each time ANY of the user-specified inputs are changed otherwise necessary iterations to converge on the correct solution will not be done and values shown will be incorrect. Use consistent units for all input values (for example, feet and days)

use consistent units (e.g. feet & days **or** inches & hours)

Input Values

0.5400	***R***	**Recharge (infiltration) rate (feet/day)**
0.210	**Sy**	**Specific yield, Sy (dimensionless, between 0 and 1)**
6.56	**K**	**Horizontal hydraulic conductivity, Kh (feet/day)***
15.000	**x**	**1/2 length of basin (x direction, in feet)**
7.000	**y**	**1/2 width of basin (y direction, in feet)**
0.183	**t**	**duration of infiltration period (days)**
20.000	**hi(0)**	**initial thickness of saturated zone (feet)**

Conversion Table

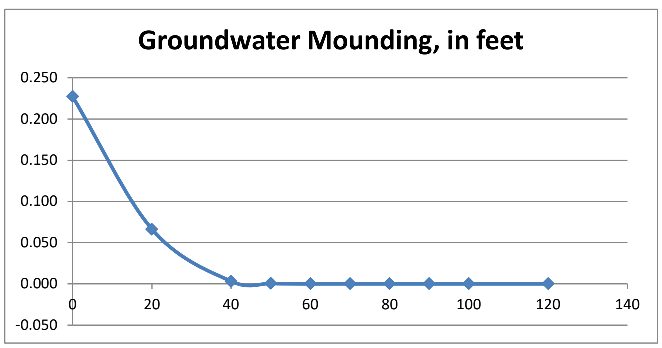
inch/hour	**feet/day**
0.67	1.33
2.00	4.00
hours	**days**
36	1.50

In the report accompanying this spreadsheet (USGS SIR 2010-5102), vertical soil permeability (ft/d) is assumed to be one-tenth horizontal hydraulic conductivity (ft/d).

20.227	h(max)	**maximum thickness of saturated zone (beneath center of basin at end of infiltration period)**
0.227	Δh(max)	**maximum groundwater mounding (beneath center of basin at end of infiltration period)**

Ground-water Mounding, in feet	**Distance from center of basin in x direction, in feet**
0.227	**0**
0.066	**20**
0.003	**40**
0.001	**50**
0.000	**60**
0.000	**70**
0.000	**80**
0.000	**90**
0.000	**100**
0.000	**120**

Re-Calculate Now



Disclaimer

This spreadsheet solving the Hantush (1967) equation for ground-water mounding beneath an infiltration basin is made available to the general public as a convenience for those wishing to replicate values documented in the USGS Scientific Investigations Report 2010-5102 "Groundwater mounding beneath hypothetical stormwater infiltration basins" or to calculate values based on user-specified site conditions. Any changes made to the spreadsheet (other than values identified as user-specified) after transmission from the USGS could have unintended, undesirable consequences. These consequences could include, but may not be limited to: erroneous output, numerical instabilities, and violations of underlying assumptions that are inherent in results presented in the accompanying USGS published report. The USGS assumes no responsibility for the consequences of any changes made to the spreadsheet. If changes are made to the spreadsheet, the user is responsible for documenting the changes and justifying the results and conclusions.

Subsurface Basin #1

This spreadsheet will calculate the height of a groundwater mound beneath a stormwater infiltration basin. More information can be found in the U.S. Geological Survey Scientific Investigations Report 2010-5102 "Simulation of groundwater mounding beneath hypothetical stormwater infiltration basins".

The user must specify infiltration rate (R), specific yield (Sy), horizontal hydraulic conductivity (Kh), basin dimensions (x, y), duration of infiltration period (t), and the initial thickness of the saturated zone (hi(0), height of the water table if the bottom of the aquifer is the datum). For a square basin the half width equals the half length (x = y). For a rectangular basin, if the user wants the water-table changes perpendicular to the long side, specify x as the short dimension and y as the long dimension. Conversely, if the user wants the values perpendicular to the short side, specify y as the short dimension, x as the long dimension. All distances are from the center of the basin.
Users can change the distances from the center of the basin at which water-table aquifer thickness are calculated.
Cells highlighted in yellow are values that can be changed by the user. Cells highlighted in red are output values based on user-specified inputs. The user MUST click the blue "Re-Calculate Now" button each time ANY of the user-specified inputs are changed otherwise necessary iterations to converge on the correct solution will not be done and values shown will be incorrect. Use consistent units for all input values (for example, feet and days)

use consistent units (e.g. feet & days **or** inches & hours)

Input Values			
0.5400	*R*	**Recharge (infiltration) rate (feet/day)**
0.210	Sy	**Specific yield, Sy (dimensionless, between 0 and 1)**
6.56	K	**Horizontal hydraulic conductivity, Kh (feet/day)***
18.500	x	**1/2 length of basin (x direction, in feet)**
17.000	y	**1/2 width of basin (y direction, in feet)**
0.283	t	**duration of infiltration period (days)**
20.000	hi(0)	**initial thickness of saturated zone (feet)**

Conversion Table

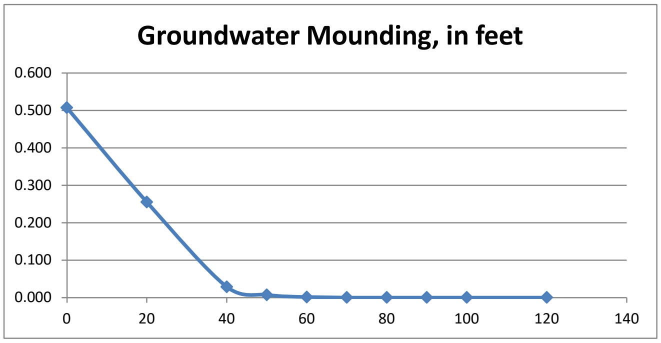
inch/hour	feet/day
0.67	1.33
2.00	4.00
hours	**days**
36	1.50

In the report accompanying this spreadsheet (USGS SIR 2010-5102), vertical soil permeability (ft/d) is assumed to be one-tenth horizontal hydraulic conductivity (ft/d).

20.507	h(max)	**maximum thickness of saturated zone (beneath center of basin at end of infiltration period)**
0.507	Δh(max)	**maximum groundwater mounding (beneath center of basin at end of infiltration period)**

Ground-water Mounding, in feet	Distance from center of basin in x direction, in feet
0.507	0
0.255	20
0.029	40
0.008	50
0.002	60
0.001	70
0.000	80
0.000	90
0.000	100
0.000	120

Re-Calculate Now



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INSTRUCTIONS:
1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Version 1, Automated: Mar. 4, 2008

Location: 0 & 74 Congress St

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
Infiltration Basin	**0.80**	**0.75**	**0.60**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**

Total TSS Removal = 85%

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: 22-286
Prepared By: **GAP**
Date: **3/9/2023**

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet
must be used if Proprietary BMP Proposed
1. From MassDEP Stormwater Handbook Vol. 1

V

INSTRUCTIONS:
1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
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Version 1, Automated: Mar. 4, 2008

Location: 0 & 74 Congress St

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
Subsurface Infiltration Structure	**0.80**	**0.75**	**0.60**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**

Total TSS Removal = **85%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: 22-286
Prepared By: **GAP**
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Non-automated TSS Calculation Sheet
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1. From MassDEP Stormwater Handbook Vol. 1

Mass. Dept. of Environmental Protection

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

A. Introduction

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.

A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.[1] This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8[2]
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

---

[1] The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

[2] For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature

COMMONWEALTH OF MASSACHUSETTS
KEVIN S. GRADY
CIVIL
No. 46264
REGISTERED
PROFESSIONAL ENGINEER

2023-03-15

Signature and Date

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

☒ New development

☐ Redevelopment

☐ Mix of New Development and Redevelopment

Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- ☒ No disturbance to any Wetland Resource Areas
- ☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- ☐ Reduced Impervious Area (Redevelopment Only)
- ☒ Minimizing disturbance to existing trees and shrubs
- ☐ LID Site Design Credit Requested:
  - ☐ Credit 1
  - ☐ Credit 2
  - ☐ Credit 3
- ☐ Use of "country drainage" versus curb and gutter conveyance and pipe
- ☐ Bioretention Cells (includes Rain Gardens)
- ☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- ☐ Treebox Filter
- ☐ Water Quality Swale
- ☐ Grass Channel
- ☐ Green Roof
- ☐ Other (describe): Sand Filter

Standard 1: No New Untreated Discharges

- ☒ No new untreated discharges
- ☒ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- ☒ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Checklist (continued)

Standard 2: Peak Rate Attenuation

☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.
☐ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

☒ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

☒ Soil Analysis provided.

☒ Required Recharge Volume calculation provided.

☐ Required Recharge volume reduced through use of the LID site Design Credits.

☒ Sizing the infiltration, BMPs is based on the following method: Check the method used.

☒ Static ☐ Simple Dynamic ☐ Dynamic Field[1]

☒ Runoff from all impervious areas at the site discharging to the infiltration BMP.

☐ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.

☒ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:

☐ Site is comprised solely of C and D soils and/or bedrock at the land surface

☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000

☐ Solid Waste Landfill pursuant to 310 CMR 19.000

☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☒ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

[1] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

Checklist (continued)

Standard 3: Recharge (continued)

☒ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

☒ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☒ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☐ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☐ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☐ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☐ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☒ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

Checklist (continued)

Standard 4: Water Quality (continued)

☒ The BMP is sized (and calculations provided) based on:

- ☒ The ½" or 1" Water Quality Volume or
- ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☒ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☒ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☒ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☐ Critical areas and BMPs are identified in the Stormwater Report.

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

☐ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

- ☐ Limited Project
- ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☐ Bike Path and/or Foot Path
- ☐ Redevelopment Project
- ☐ Redevelopment portion of mix of new and redevelopment.

☐ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☐ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☒ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☒ The project is ***not*** covered by a NPDES Construction General Permit.

☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☐ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☒ Name of the stormwater management system owners;
- ☒ Party responsible for operation and maintenance;
- ☒ Schedule for implementation of routine and non-routine maintenance tasks;
- ☒ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☒ Description and delineation of public safety features;
- ☒ Estimated operation and maintenance budget; and
- ☒ Operation and Maintenance Log Form.

☐ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

☐ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

☒ An Illicit Discharge Compliance Statement is attached;

☐ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

OPERATION AND MAINTENANCE PLAN

PROPOSED SITE WORK – DURING CONSTRUCTION

Map F9 Lot 11
0 & 74 Congress St.
Pembroke, Massachusetts

Owner:

Kevin St. George
PO BOX 174
No. Pembroke, MA 02358

Party Responsible for Operation and Maintenance:

Kevin St. George
PO BOX 174
No. Pembroke, MA 02358

Source of Funding:

Operation and Maintenance of this stormwater management system will be the responsibility of the property owner to include its successor and/or assigns, as the same may appear on record with the appropriate register of deeds.

During Construction:

Construction activities shall follow the Construction Sequence shown on the approved plans. During periods of active construction the stormwater management system shall be inspected on a weekly basis and within 24 hours of a storm event of greater than ½". Maintenance tasks shall be performed monthly or after significant rainfall events of 1" of rain or greater. During construction, silt-laden runoff shall be prevented from entering the drainage system and off-site properties. Temporary swales shall be constructed as needed during construction to direct runoff to sediment traps. Infiltration systems and subsurface storage systems shall not be placed in service until after the installation of base course pavement and vegetative stabilization of the areas contributing to the systems.

During dewatering operations, all water pumped from the dewatering shall be directed to a "dirt bag" pumped sediment removal system (or approved equal) as manufactured by ACF Environmental. Water from construction dewatering activities should not be directed into any of the existing or proposed stormwater management facilities system unless it is fully treated prior to discharge. The unit shall be placed on a crushed stone blanket. Disposal of such "dirt bag" shall occur when the device is full and can no longer effectively filter sediment or allow water to pass at a reasonable flow rate. Disposal of this unit shall be the responsibility of the contractor and shall be as directed by the owner in accordance with applicable local, state, and federal guidelines and regulations.

Stabilized construction entrances shall be placed at the entrances and shall consist of 1½" to 2" stone and be constructed as shown on the approved plans.

All erosion and sedimentation control measures shall be in place prior to the commencement of any site work or earthwork operations, and shall be maintained during construction, and shall remain in place until all site work is complete and ground cover is established.

Heavy equipment shall not be used on basin bottoms.

All exposed soils not to be paved shall be stabilized as soon as practical. Seed mixes shall only be applied during appropriate periods as recommended by the seed supplier, typically May 1 to October 15. Any exposed soils that cannot be stabilized by vegetation during these dates shall be stabilized with hay bales, hay mulch, check dams, jute netting or other acceptable means.

Once each structure is in place, it should be maintained in accordance with the procedures described in the post-construction Operations and Maintenance Plan.

During dry periods where dust is created by construction activities the following control measures should be implemented.

- Sprinkling – The contractor may sprinkle the ground along haul roads and traffic areas until moist.
- Vegetative cover – Areas that are not expected to be disturbed regularly may be stabilized with vegetative cover.
- Mulch – Mulching can be used as a quick and effective means of dust control in recently disturbed areas.
- Spray on chemical soil treatments may be utilized. Application rates shall conform to manufacturers recommendations.

Illicit Discharges

Illicit discharges to the stormwater management system are discharges that are not entirely comprised of stormwater. Illicit discharges are prohibited from the stormwater management system and the stormwater management system shall be inspected for illicit discharges annually.

The following is a list of discharges that are allowed under the EPA Construction General Permit (CGP) provided that appropriate stormwater controls are designed, installed, and maintained:
a. Stormwater discharges, including stormwater runoff, snowmelt runoff, and surface runoff and drainage, associated with construction activity under 40 CFR §122.26(b)(14) or § 122.26(b)(15)(i);
b. Stormwater discharges designated by EPA as needing a permit under 40 CFR § 122.26(a)(1)(v) or §122.26(b)(15)(ii);
c. Stormwater discharges from construction support activities *(e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas)* provided:
i. The support activity is directly related to the construction site required to have permit coverage for stormwater discharges;
ii. The support activity is not a commercial operation, nor does it serve multiple unrelated construction projects;
iii. The support activity does not continue to operate beyond the completion of the construction activity at the project it supports; and
iv. Stormwater controls are implemented in accordance with Part 2 of the CGP and, if applicable, Part 3 of the CGP, for discharges from the support activity areas.

The following non-stormwater discharges from your construction activity, provided that, with the exception of water used to control dust and to irrigate areas to be vegetatively stabilized, these discharges are not routed to areas of exposed soil on your site and you comply with any applicable requirements for these discharges in Part 2 of the CGP:

i. Discharges from emergency fire-fighting activities;

ii. Fire hydrant flushings;

iii. Landscape irrigation;

iv. Water used to wash vehicles and equipment, provided that there is no discharge of soaps, solvents, or detergents used for such purposes;

v. Water used to control dust;

vi. Potable water including uncontaminated water line flushings;

vii. Routine external building washdown that does not use detergents;

viii. Pavement wash waters provided spills or leaks of toxic or hazardous materials have not occurred (unless all spill material has been removed) and where detergents are not used. You are prohibited from directing pavement wash waters directly into any surface water, storm drain inlet, or stormwater conveyance, unless the conveyance is connected to a sediment basin, sediment trap, or similarly effective control;

ix. Uncontaminated air conditioning or compressor condensate;

x. Uncontaminated, non-turbid discharges of ground water or spring water;

xi. Foundation or footing drains where flows are not contaminated with process materials such as solvents or contaminated ground water; and

xii. Construction dewatering water that has been treated by an appropriate control under Part 2.1.3.4 of the CGP; and

e. Discharges of stormwater listed above in Parts a, b, and c, or authorized nonstormwater discharges in Part d above, commingled with a discharge authorized by a different NPDES permit and/or a discharge that does not require NPDES permit authorization.

For additional information, refer to Performance, Standards and Guidelines for Stormwater Management in Massachusetts, published by the Department of Environmental Protection.

STORMWATER MANAGEMENT
BEST MANAGEMENT PRACTICES
INSPECTION SCHEDULE AND EVALUATION CHECKLIST – CONSTRUCTION PHASE

PROJECT LOCATION: 0 & 74 Congress St., Pembroke Latest Revision: March 9, 2023

Stormwater Control Manager: _____ **Stamp**

Best Management Practice	Inspection Frequency (1)	Date Inspected	Inspector	Minimum Maintenance and Key Items to Check	Cleaning/ Repair Needed yes/no List items	Date of Cleaning/Repair	Performed By	Water Level in Detention System
Silt socks & swales and silt traps	After every major storm event							
Dewatering Operations	Daily- during actual dewatering							
Temporary Construction Entrance	Daily or as needed.							

(1) Refer to the Massachusetts Stormwater Management, Volume Two: Stormwater Technical Handbook for recommendations regarding frequency for inspection and maintenance of specific BMPs.

Limited or no use of sodium chloride salts, fertilizers or pesticides recommended. Slow release fertilizer recommended.
Other notes:(Include deviations from: Con Com Order of Conditions, PB Approval, Construction Sequence and Approved Plan)

<u>OPERATION AND MAINTENANCE PLAN</u>
PROPOSED DRAINAGE SYSTEM – POST CONSTRUCTION
Map F9 Lot 11
0 & 74 Congress St.
Pembroke, Massachusetts

Owner:

Kevin St. George
PO BOX 174
No. Pembroke, MA 02358

After construction is complete the owner will be the party responsible for operation and maintenance of the drainage system. When the property is conveyed, the new owner will be the party responsible for operation and maintenance.

Source of Funding:

Operation and Maintenance of this stormwater management system will be the responsibility of the owner. The estimated annual budget for the operation and maintenance of the stormwater system is $1,000.

Schedule for Inspection and Maintenance:

<u>Deep Sump Catch Basins & Drain Manholes</u>

Deep sump catch basins shall become part of the roadway system and shall be inspected after every major storm event during construction and cleaned when sediment exceeds 24" depth. After construction when all slopes have been stabilized, basins shall be cleaned a minimum of 4 times per year or whenever the depth of deposits is greater than or equal to on half the depth from the bottom of the invert (2 ft). Disposal of the accumulated sediment shall be in accordance with applicable local, state, and federal guidelines and regulations.

<u>Infiltration Basin</u>

The Infiltration BMP's should be inspected on a quarterly basis: additional inspections should be scheduled during the first few months to make sure the vegetation is established adequately and also following major storm events. Additional inspections are required following any storm event that exceeds 2.5 inches in 24-hour period (the one-year frequency storm). Evidence of standing water for more than 48 hours following a storm would indicate possible failure of the infiltration surface. In that case, a qualified professional engineer should be retained to assess the cause of failure and recommend corrective action, which should be immediately implemented to restore the function of the system. The basin should be inspected for slope integrity, soil moisture, vegetative health, soil stability, soil compaction, soil erosion, ponding and sedimentation. The basin should be mowed twice per year.

Regular maintenance tasks include mowing, watering, and weed and pest control. Only organic fertilizers, weed and pest control will be utilized.

Sediment and debris should be removed manually, at least twice per year, before the vegetation is impacted adversely. Periodic mowing (Twice per year) may be required to maintain the dense growth of vegetation. Care should be taken to protect basin from snow removal procedures and off street parking.

Subsurface Drainage Systems Maintenance Schedule

Activity Time of Year Frequency

Inspect Inlets and access manholes twice per year. Remove any debris that might clog the system.

After construction, the systems should be inspected for standing water 1-2 days after any significant rainfall exceeding 1" of rainfall in 24 hours or major storm event. If the system is continuing to hold standing water after 2 days the owner should have it inspected and repaired. The systems should also be inspected to verify whether infiltration function has been lost. If infiltration capacity has become degraded, it should be restored under the direction of a qualified professional.

The subsurface systems should be inspected twice per year and at least once per year by a drainage system professional to ensure that the system is operating as intended. The owner shall implement and pay for the inspector's recommendations.

Lawn Fertilization

Lawn fertilizer shall be slow release and limited to 3 lbs per 1000 s.f. per year.

Stormwater Contamination Prevention

Exterior storage of hazardous materials including deicing chemicals, fertilizers, herbicides, pesticides, and other hazardous materials is prohibited. All materials are to be stored inside of the buildings no exterior storage of materials is allowed. No fueling of equipment is allowed on the premises and is prohibited.

Individual storage unit users shall be notified of the prohibition of illicit discharges to the stormwater management system.

Snow Removal and De-icing

Snow removal will be the responsibility of the Owner. Snow will be plowed from Parking areas and driveways and shoveled or removed with a snow blower from walkways. Snow will be stored along roadways and walkways as shown on the Site Plan. If additional stockpiling area is needed, excess snow will be removed from the site with proper off-site disposal. Snow shall be stockpiled in areas where melting will be directed through the drainage systems and not directly to the wetlands. Stockpiling within any rain garden and infiltration areas is prohibited.

Pet Waste Management

Individual dog owners shall pick up after their dogs on their own lawns and dispose of the waste either in the trash or in some cases flushing it down the toilet. Plastic baggies to can be provided through dispensers such as Mutt-Mitt stations, to encourage pick-up of waste. Individuals can also utilize various waste disposal products like Doggie Dooleys (miniature septic tanks for pet waste) or dog waste disposal units.

Inspections

Yearly inspections of the stormwater management system shall be performed and an Inspection Schedule and Evaluation Checklist shall be maintained by the Owner and made available to regulatory officials if requested. Copies of the receipts for cleaning of the systems shall also be maintained.

The Owner shall be responsible to secure the services of a Licensed Engineer on an on-going basis. The inspector shall review the project with respect to the following:

- Proper installation and performance of the Stormwater Management System.
- Review of the controls to determine any damaged or ineffective controls.
- Corrective actions.

The Engineer shall prepare, stamp and submit, to the Owner, a report documenting the findings and should request the required maintenance or repair for the pollution prevention controls when the inspector finds that it is necessary for the control to be effective (see attached Inspection Schedule and Evaluation Checklist). The inspector shall notify the Owner to make the changes.

The owner and/or their employees responsible for the O&M of the stormwater management system shall be trained annually. Records of trained individuals shall be kept and submitted to the town with the check list. The records shall indicate the latest training date.

The attached inspection form shall be retained and kept available for a minimum of three years.

For additional information, refer to Performance, Standards and Guidelines for Stormwater Management in Massachusetts, published by the Department of Environmental Protection

Definition of Major Storm Event
For the purposes of this operation and maintenance plan a major storm event should be defined as a rainfall of such intensity or duration that causes observable movement of sediment on the roadway or site. It is the intent of this plan to prevent this sediment from entering the drainage system. Prior to stabilization of the site this may occur more frequently with less intense storms. As the site is stabilized with ground cover the movement of sediment will only occur during more severe storms.

Illicit Discharges

Illicit discharges to the stormwater management system are discharges that are not entirely comprised of stormwater. Illicit discharges are prohibited from the stormwater management system and the stormwater management system shall be inspected for illicit discharges annually.

This Standard prohibits illicit discharges to stormwater management systems. The stormwater management system is the system for conveying, treating, and infiltrating stormwater on-site, including stormwater best management practices and any pipes intended to transport stormwater to the groundwater, a surface water, or municipal separate storm sewer system. Illicit discharges to the stormwater management system are discharges that are not entirely comprised of stormwater. Notwithstanding the foregoing, an illicit discharge does not include discharges from the following activities or facilities: firefighting, water line flushing, landscape irrigation, uncontaminated groundwater, potable water sources, foundation drains, air conditioning condensation, footing drains, individual resident car washing, flows from riparian habitats and wetlands, dechlorinated water from swimming pools, water used for street washing and water used to clean residential buildings without detergents.

For additional information, refer to Performance Standards and Guidelines for Stormwater Management in Massachusetts, published by the Department of Environmental Protection.

STORMWATER MANAGEMENT
BEST MANAGEMENT PRACTICES

INSPECTION SCHEDULE AND EVALUATION CHECKLIST – POST CONSTRUCTION PHASE

PROJECT LOCATION 0 & 74 Congress St.
Latest Revision: March 9, 2023

Best Management Practice	Inspection Frequency (1)	Date Inspected	Inspector	Minimum Maintenance and Key Items to Check	Cleaning/ Repair Needed yes/no List items	Date of Cleaning/ Repair	Performed By	Water Level in Drainage System
Deep Sump Hooded Catch Basins	4 times per year							
Subsurface Structure	Quarterly							
Infiltration Basin	Twice per year							

(1) Refer to the Massachusetts Stormwater Management, Volume Two: Stormwater Technical Handbook for recommendations regarding frequency for inspection and maintenance of specific BMPs.
(2) records shall be kept for a minimum of three years.

Limited or no use of sodium chloride salts, fertilizers or pesticides recommended. Slow release fertilizer recommended.
Other notes:(Include deviations from: Con Com Order of Conditions, PB Approval, Construction Sequence and Approved Plan)

Stormwater Control Manager: _____ **Stamp**

Deep Sump Catch Basin

Description: Deep sump catch basins, also known as oil and grease or hooded catch basins, are underground retention systems designed to remove trash, debris, and coarse sediment from stormwater runoff, and serve as temporary spill containment devices for floatables such as oils and greases.

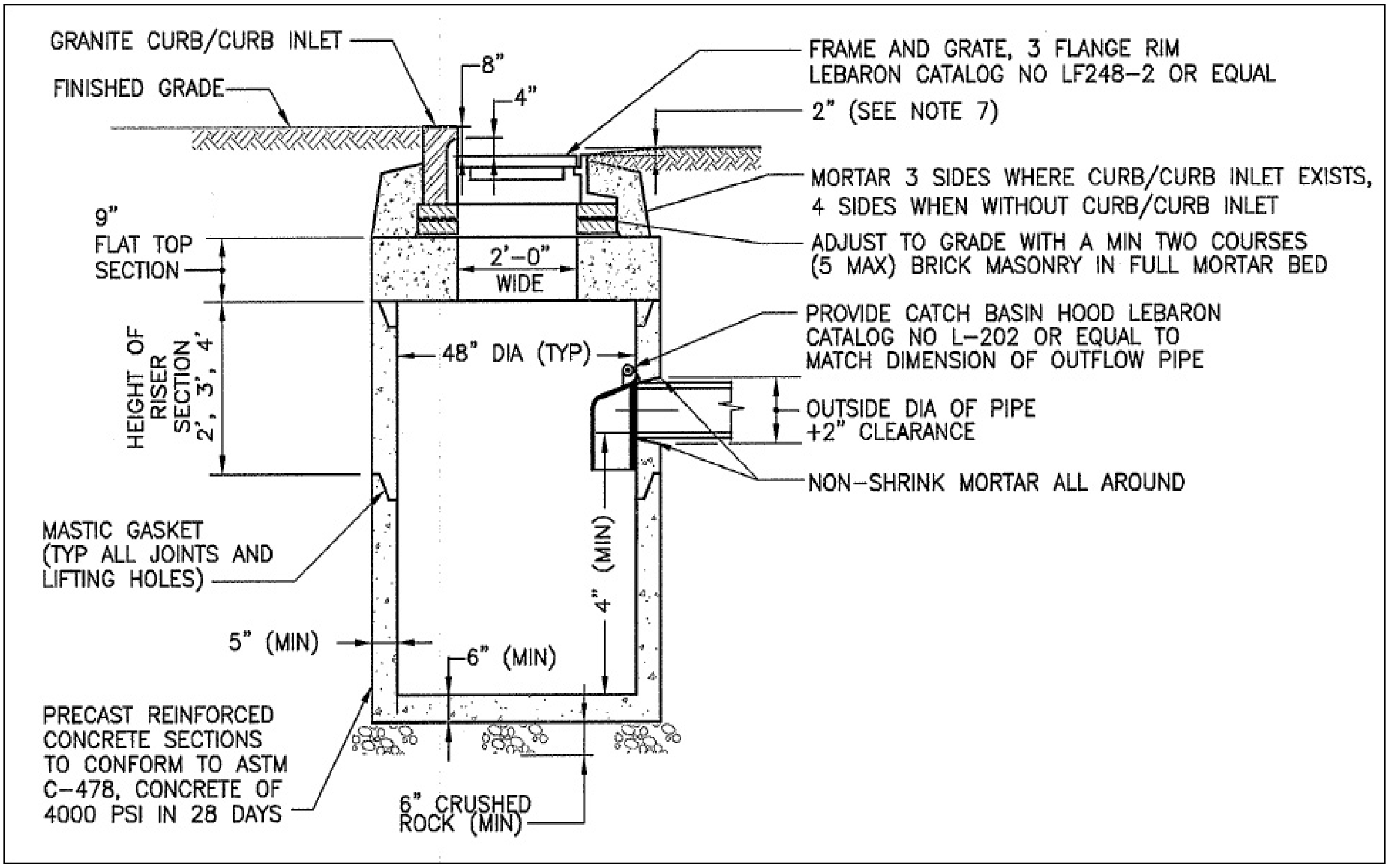
Ability to meet specific standards

Standard	Description
2 - Peak Flow	Provides no peak flow attenuation
3 - Recharge	Provides no groundwater recharge
4 - TSS Removal	25% TSS removal credit when used for pretreatment. Because of their limited effectiveness and storage capacity, deep sump catch basins receive credit for removing TSS only if they are used for pretreatment and designed as off-line systems.
5 - Higher Pollutant Loading	Recommended as pretreatment BMP. Although provides some spill control capability, a deep sump catch basin may not be used in place of an oil grit separator or sand filter for land uses that have the potential to generate runoff with high concentrations of oil and grease such as: high-intensity-use parking lots, gas stations, fleet storage areas, vehicle and/or equipment maintenance and service areas.
6 - Discharges near or to Critical Areas	May be used as pretreatment BMP. not an adequate spill control device for discharges near or to critical areas.
7 - Redevelopment	Highly suitable.

Advantages/Benefits:
- Located underground, so limited lot size is not a deterrent.
- Compatible with subsurface storm drain systems.
- Can be used for retrofitting small urban lots where larger BMPs are not feasible.
- Provide pretreatment of runoff before it is delivered to other BMPs.
- Easily accessed for maintenance.
- Longevity is high with proper maintenance.

Disadvantages/Limitations:
- Limited pollutant removal.
- Expensive to install and maintain, resulting in high cost per unit area treated.
- No ability to control volume of stormwater
- Frequent maintenance is essential
- Requires proper disposal of trapped sediment and oil and grease
- Entrapment hazard for amphibians and other small animals

Pollutant Removal Efficiencies
- Total Suspended Solids (TSS) - 25% (for regulatory purposes)
- Nutrients (Nitrogen, phosphorus) - Insufficient data
- Metals (copper, lead, zinc, cadmium) - Insufficient data
- Pathogens (coliform, e coli) - Insufficient data



adapted from the University of New Hampshire

Maintenance

Activity	Frequency
Inspect units	Four times per year
Clean units	Four times per year or whenever the depth of deposits is greater than or equal to one half the depth from the bottom of the invert of the lowest pipe in the basin.

Special Features

All deep sump catch basins must include hoods. For MassHighway projects, consult the Stormwater Handbook for Highways and Bridges for hood requirements.

LID Alternative

Reduce Impervious Surface
Disconnect rooftop and non-rooftop runoff
Vegetated Filter Strip

Deep Sump Catch Basin

Suitable Applications

- Pretreatment
- Residential subdivisions
- Office
- Retail

Design Considerations

- The contributing drainage area to any deep sump catch basin should not exceed ¼ acre of impervious cover.
- Design and construct deep sump catch basins as off-line systems.
- Size the drainage area so that the flow rate does not exceed the capacity of the inlet grate.
- Divert excess flows to another BMP intended to meet the water quantity requirements (peak rate attenuation) or to a storm drain system. An off-line design enhances pollutant removal efficiency, because it prevents the resuspension of sediments in large storms.

Make the sump depth (distance from the bottom of the outlet pipe to the bottom of the basin) at least four feet times the diameter of the outlet pipe and more if the contributing drainage area has a high sediment load. The minimum sump depth is 4 feet. Double catch basins, those with 2 inlet grates, may require deeper sumps. Install the invert of the outlet pipe at least 4 feet from the bottom of the catch basin grate.

The inlet grate serves to prevent larger debris from entering the sump. To be effective, the grate must have a separation between the grates of one square inch or less. The inlet openings must not allow flows greater than 3 cfs to enter the deep sump catch basin. If the inlet grate is designed with a curb cut, the grate must reach the back of the curb cut to prevent bypassing. The inlet grate must be constructed of a durable material and fit tightly into the frame so it won't be dislodged by automobile traffic. The inlet grate must not be welded to the frame so that sediments may be easily removed. To facilitate maintenance, the inlet grate must be placed along the road shoulder or curb line rather than a traffic lane.

Note that within parking garages, the State Plumbing Code regulates inlet grates and other stormwater management controls. Inlet grates inside parking garages are currently required to have much smaller openings than those described herein.

To receive the 25% removal credit, hoods must be used in deep sump catch basins. Hoods also help contain oil spills. MassHighway may install catch basins without hoods provided they are designed, constructed, operated, and maintained in accordance with the Mass Highway Stormwater Handbook.

Install the weep hole above the outlet pipe. Never install the weep hole in the bottom of the catch basin barrel.

Site Constraints

A proponent may not be able to install a deep sump catch basin because of:

- Depth to bedrock;
- High groundwater;
- Presence of utilities; or
- Other site conditions that limit depth of excavation because of stability.

Maintenance

Regular maintenance is essential. Deep sump catch basins remain effective at removing pollutants only if they are cleaned out frequently. One study found that once 50% of the sump volume is filled, the catch basin is not able to retain additional sediments.

Inspect or clean deep sump basins at least four times per year and at the end of the foliage and snow-removal seasons. Sediments must also be removed four times per year or whenever the depth of deposits is greater than or equal to one half the depth from the bottom of the invert of the lowest pipe in the basin. If handling runoff from land uses with higher potential pollutant loads or discharging runoff near or to a critical area, more frequent cleaning may be necessary.

Clamshell buckets are typically used to remove sediment in Massachusetts. However, vacuum trucks are preferable, because they remove more trapped sediment and supernatant than clamshells. Vacuuming is also a speedier process and is less likely to snap the cast iron hood within the deep sump catch basin.

Always consider the safety of the staff cleaning deep sump catch basins. Cleaning a deep sump catch basin within a road with active traffic or even within a parking lot is dangerous, and a police detail may be necessary to safeguard workers.

Although catch basin debris often contains concentrations of oil and hazardous materials such as petroleum hydrocarbons and metals, MassDEP classifies them as solid waste. Unless there is evidence that they have been contaminated by a spill or other means, MassDEP does not routinely require catch basin cleanings to be tested before disposal. Contaminated catch basin cleanings must be evaluated in accordance with the Hazardous Waste Regulations, 310 CMR 30.000, and handled as hazardous waste.

In the absence of evidence of contamination, catch basin cleanings may be taken to a landfill or other facility permitted by MassDEP to accept solid waste, without any prior approval by MassDEP. However, some landfills require catch basin cleanings to be tested before they are accepted.

With prior MassDEP approval, catch basin cleanings may be used as grading and shaping materials at landfills undergoing closure (see Revised Guidelines for Determining Closure Activities at Inactive Unlined Landfill Sites) or as daily cover at active landfills. MassDEP also encourages the beneficial reuse of catch basin cleanings whenever possible. A Beneficial Reuse Determination is required for such use.

MassDEP regulations prohibit landfills from accepting materials that contain free-draining liquids. One way to remove liquids is to use a hydraulic lift truck during cleaning operations so that the material can be decanted at the site. After loading material from several catch basins into a truck, elevate the truck so that any free-draining liquid can flow back into the structure. If there is no free water in the truck, the material may be deemed to be sufficiently dry. Otherwise the catch basin cleanings must undergo a Paint Filter Liquids Test. Go to www. Mass.gov/dep/recycle/laws/cafacts.doc for information on all of the MassDEP requirements pertaining to the disposal of catch basin cleanings.

Infiltration Basins

Description: Infiltration basins are stormwater runoff impoundments that are constructed over permeable soils. Pretreatment is critical for effective performance of infiltration basins. Runoff from the design storm is stored until it exfiltrates through the soil of the basin floor.

Ability to meet specific standards

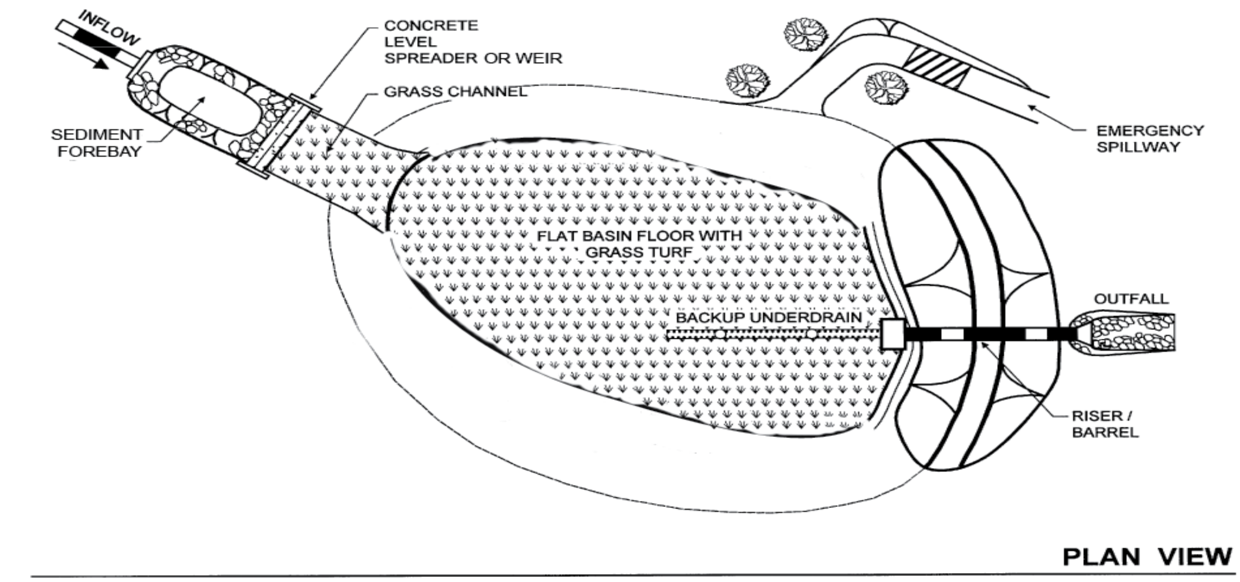
Standard	Description
2 - Peak Flow	Can be designed to provide peak flow attenuation.
3 - Recharge	Provides groundwater recharge.
4 - TSS Removal	80% TSS removal, with adequate pretreatment
5 - Higher Pollutant Loading	May be used if 44% of TSS is removed with a pretreatment BMP prior to infiltration. For some land uses with higher potential pollutant loads, use an oil grit separator, sand filter or equivalent for pretreatment prior to discharge to the infiltration basin. Infiltration must be done in compliance with 314 CMR 5.00
6 - Discharges near or to Critical Areas	Highly recommended, especially for discharges near cold-water fisheries. Requires 44% removal of TSS prior to discharge to infiltration basin
7 - Redevelopment	Typically not an option due to land area constraints

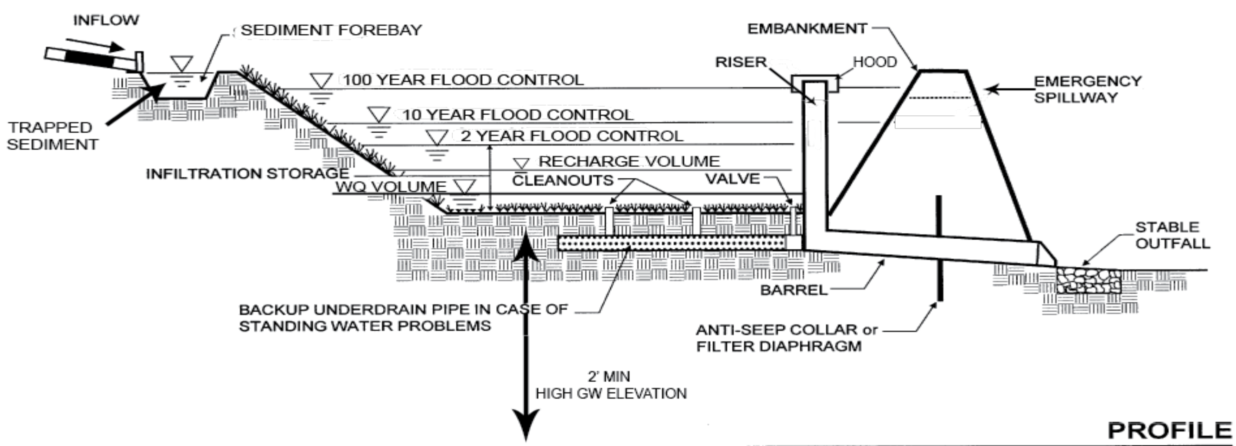
Advantages/Benefits:
- Provides groundwater recharge.
- Reduces local flooding.
- Preserves the natural water balance of the site.
- Can be used for larger sites than infiltration trenches or structures.

Disadvantages/Limitations:
- High failure rates due to improper siting, inadequate pretreatment, poor design and lack of maintenance.
- Restricted to fairly small drainage areas.
- Not appropriate for treating significant loads of sediment and other pollutants.
- Requires frequent maintenance.
- Can serve as a “regional” stormwater treatment facility

Pollutant Removal Efficiencies

• Total Suspended Solids (TSS)	80% with pretreatment
• Total Nitrogen	50% to 60%
• Total Phosphorus	60% to 70%
• Metals (copper, lead, zinc, cadmium)	85% to 90%
• Pathogens (coliform, e coli)	90%





adapted from the Vermont Stormwater Manual

Maintenance

Activity	Frequency
Preventative maintenance	Twice a year
Inspect to ensure proper functioning	After every major storm during first 3 months of operation and twice a year thereafter and when there are discharges through the high outlet orifice.
Mow the buffer area, side slopes, and basin bottom if grassed floor; rake if stone bottom; remove trash and debris; remove grass clippings and accumulated organic matter	Twice a year
Inspect and clean pretreatment devices	Every other month recommended and at least twice a year and after every major storm event.

Special Features: High failure rate without adequate pretreatment and regular maintenance.

LID Alternative: Reduce impervious surfaces. Bioretention areas

Infiltration Basins

The following are variations of the infiltration basin design.

Full Exfiltration Basin Systems

These basin systems are sized to provide storage and exfiltration of the required recharge volume and treatment of the required water quality volume. They also attenuate peak discharges. Designs typically include an emergency overflow channel to discharge runoff volumes in excess of the design storm.

Partial or Off-line Exfiltration Basin Systems

Partial basin systems exfiltrate a portion of the runoff (usually the first flush or the first half inch), with the remaining runoff being directed to other BMPs. Flow splitters or weirs divert flows containing the first flush into the infiltration basin. This design is useful at sites where exfiltration cannot be achieved by downstream detention BMPs because of site condition limitations.

Applicability

The suitability of infiltration basins at a given site is restricted by several factors, including soils, slope, depth to water table, depth to bedrock, the presence of an impermeable layer, contributing watershed area, proximity to wells, surface waters, and foundations. Generally, infiltration basins are suitable at sites with gentle slopes, permeable soils, relatively deep bedrock and groundwater levels, and a contributing watershed area of approximately 2 to 15 acres. Table IB.1 presents the recommended site criteria for infiltration basins.

Pollution prevention and pretreatment are particularly important at sites where infiltration basins are located. A pollution prevention program that separates contaminated and uncontaminated runoff is essential. Uncontaminated runoff can be infiltrated directly, while contaminated runoff must be collected and pretreated using an appropriate combination of BMPs and then rerouted to the infiltration basin. This approach allows uncontaminated stormwater to be infiltrated during and immediately after the storm and permits the infiltration of contaminated stormwater after an appropriate detention time. The Pollution Prevention and Source Control Plan required by Stormwater Standard 4 must take these factors into account. For land uses with higher potential pollutant loads, provide a bypass to divert contaminated stormwater from the infiltration basin in storms larger than the design storm.

Table IB.1 - Site Criteria for Infiltration Basins
1. The contributing drainage area to any individual infiltration basin should be restricted to 15 acres or less.
2. The minimum depth to the seasonal high water table, bedrock, and/or impermeable layer should be 2 ft. from the bottom of the basin.
3. The minimum infiltration rate is 0.17 inches per hour. Infiltration basins must be sized in accordance with the procedures set forth in Volume 3.
4. One soil sample for every 5000 ft. of basin area is recommended, with a minimum of three samples for each infiltration basin. Samples should be taken at the actual location of the proposed infiltration basin so that any localized soil conditions are detected.
5. Infiltration basins should not be used at sites where soil have 30% or greater clay content, or 40% or greater silt clay content.
6. Infiltration basins should not be placed over fill materials.
7. The following setback requirements should apply to infiltration basin installations: • Distance from any slope greater than 15% - Minimum of 50 ft. • Distance from any soil absorption system- Minimum of 50 ft. • Distance from any private well - Minimum of 100 ft., additional setback distance may be required depending on hydrogeological conditions. • Distance from any public groundwater drinking supply wells - Zone I radius, additional setback distance may be required depending on hydrogeological conditions. • Distance from any surface drinking water supply - Zone A • Distance from any surface water of the commonwealth (other than surface water supplies and their tributaries) - Minimum of 50 ft. • Distance from any building foundations including slab foundations without basements - Minimum of 10 ft. downslope and 100 ft. upslope.

Prior to pretreatment, implement the pollution prevention and source control program specified in the Pollution Prevention and Source Control Plan to reduce the concentration of pollutants in the discharge. Program components include careful management of snow and deicing chemicals, fertilizers, herbicides, and pest control. The Plan must prohibit snow disposal in the basin and include measures to prevent runoff of stockpiled snow from entering the basin. Stockpiled snow contains concentrations of sand and deicing chemicals. At industrial sites, keep raw materials and wastes from being exposed to precipitation. Select pretreatment BMPs that remove coarse sediments, oil and grease, and floatable organic and inorganic materials, and soluble pollutants.

Effectiveness

Infiltration basins are highly effective treatment systems that remove many contaminants, including TSS. However, infiltration basins are not intended to remove coarse particulate pollutants. Use a pretreatment device to remove them before they enter the basin. The pollutant removal efficiency of the basin depends on how much runoff is exfiltrated by the basin.

Infiltration basins can be made to control peak discharges by incorporating additional stages in the design. To do this, design the riser outlet structure or weir with multiple orifices, with the lowest orifice set to achieve storage of the full recharge volume required by Standard 3. Design the upper orifices using the same procedures as extended detention basins. The basins can also be designed to achieve exfiltration of storms greater than the required recharge volume. However, in such cases, make sure the soils are permeable enough to allow the basin to exfiltrate the entire volume in a 72-hour period. This may necessitate increasing the size of the floor area of the basin. Generally, it is not economically feasible to provide storage for large infrequent storms, such as the 100-year 24-hour storm.

Planning Considerations

Carefully evaluate sites before planning infiltration basins, including investigating soils, depth to bedrock, and depth to water table. Suitable parent soils should have a minimum infiltration rate of 0.17 inches per hour. Infiltration basis must be sized in accordance with the procedures set forth in Volume 3. The slopes of the contributing drainage area for the infiltration basin must be less than 5%.

Design

Infiltration basins are highly effective treatment and disposal systems when designed properly. The first step before design is providing source control and implementing pollution prevention measures to minimize sediment and other contaminants in runoff discharged to the infiltration basin. Next, consider the appropriate pretreatment BMPs.

Design pretreatment BMPs to pretreat runoff before stormwater reaches the infiltration basin. For Critical Areas, land uses with potentially higher pollutant loads, and soils with rapid infiltration rates (greater than 2.4 inches/hour), pretreatment must remove at least 44% of the TSS. Proponents may comply with this requirement by proposing two pretreatment BMPs capable of removing 25% TSS. However, the issuing authorities (i.e., Conservation Commissions or MassDEP) may require additional pretreatment for other constituents beyond TSS for land uses with higher potential pollutant loads. If the land use has the potential to generate stormwater runoff with high concentrations of oil and grease, treatment by an oil grit separator or equivalent is required before discharge to the infiltration basin.

For discharges from areas other than Critical Areas, land uses with potentially higher pollutant loads, and soils with rapid infiltration rates, MassDEP also requires some TSS pretreatment. Common pretreatment for infiltration basins includes aggressive street sweeping, deep sump catch basins, oil/grit separators, vegetated filter strips, water quality swales, or sediment forebays. Fully stabilize all land surfaces contributing drainage to the infiltration practice after construction is complete to reduce the amount of sediment in runoff that flows to the pretreatment devices.

Always investigate site conditions. Infiltration basins must have a minimum separation from seasonal high groundwater of at least 2 feet. Greater separation is necessary for bedrock. If there is bedrock on the site, conduct an analysis to determine the appropriate vertical separation. The greater the distance from the bottom of the basin media to the seasonal high groundwater elevation, the less likely the basin will fail to drain in the 72-hour period following precipitation.

Determine soil infiltration rates using samples collected at the proposed location of the basin. Take one soil boring or dig one test pit for every 5,000 feet of basin area, with a minimum of three borings for each infiltration basin. Conduct the borings or test pits in the layer where infiltration is proposed. For example, if the A and B horizons are to be removed and the infiltration will be through the C horizon, conduct the borings or test pits through the C horizon. MassDEP requires that borings be at least 20 feet deep or extend to the depth of the limiting layer.

For each bore hole or test pit, evaluate the saturated hydraulic conductivity of the soil, depth to seasonal high groundwater, NRCS soil textural class, NRCS Hydrologic Soil Group, and the presence of fill materials in accordance with Volume 3. Never locate infiltration basins above fill. Never locate infiltration basins in Hydrologic Soil Group "D" soils. The minimum acceptable final soil infiltration rate is 0.17 inches per hour. Design the infiltration basin based on the soil evaluation set forth in Volume 3.

If the proposed basin is determined to be in Hydrologic Soil Group "C" soils, incorporate measures in the design to reduce the potential for clogging, such as providing more pretreatment or greater media depth to provide additional storage. Never use the results of a Title 5 percolation test to estimate a saturated hydraulic conductivity rate, because it tends to greatly overestimate the rate that water will infiltrate into the subsurface.

Estimate seasonal high groundwater based on soil mottles or through direct observation when borings are conducted in April or May, when groundwater levels are likely to be highest. If it is difficult to determine the seasonal high groundwater elevation from the borings or test pits, then use the Frimpter method developed by the USGS (Massachusetts/ Rhode Island District Office) to estimate seasonal high groundwater. After estimating the seasonal high groundwater using the Frimpter method, re-examine the bore holes or test pits to determine if there are any field indicators that corroborate the Frimpter method estimate.

Stabilize inlet channels to prevent incoming flow velocities from reaching erosive levels, which can scour the basin floor. Riprap is an excellent inlet stabilizer. Design the riprap so it terminates in a broad apron, thereby distributing runoff more evenly over the basin surface to promote better infiltration.

At a minimum, size the basin to hold the required recharge volume. Determine the required recharge volume using either the static or dynamic methods set forth in Volume 3. Remember that the required storage volume of an infiltration basin is the sum of the quantity of runoff entering the basin from the contributing area and the precipitation directly entering the basin. Include one foot of freeboard above the total of the required recharge volume and the direct precipitation volume to account for design uncertainty. When applying the dynamic method to size the basin, use only the bottom of the basin (i.e., do not include side wall exfiltration) for the effective infiltration area.

Design the infiltration basin to exfiltrate in no less than 72 hours. Consider only the basin floor as the effective infiltration area when determining whether the basin meets this requirement.

Design the basin floor to be as flat as possible to provide uniform ponding and exfiltration of the runoff. Design the basin floor to have as close to a 0% slope as possible. In no case shall the longitudinal slope exceed 1%. Enhanced deposition of sediment in low areas may clog the surface soils, resulting in reduced infiltration and wet areas. Design the side slopes of the basin to be no steeper than 3:1 (horizontal: vertical) to allow for proper vegetative stabilization, easier mowing, easier access, and better public safety.

For basins with a 1% longitudinal slope, it will be necessary to incorporate cells into the design, making sure that the depth of ponded water does not exceed 2 feet, because sloped basin floors cause water to move downhill, thereby decreasing the likelihood of infiltration. Make lateral slopes flat (i.e., 0% slope).

After the basin floor is shaped, place soil additives on the basin floor to amend the soil. The soil additives shall include compost, properly aged to kill any seed stock contained within the compost. Do not put biosolids in the compost. Mix native soils that were excavated from the A or B horizons to create the basin with the compost, and then scarify the native materials and compost into the parent material using a chisel plow or rotary device to a depth of 12 inches. Immediately after constructing the basin, stabilize its bottom and side slopes with a dense turf of water-tolerant grass. Use low-maintenance, rapidly germinating grasses, such as fescues. The selected grasses must be capable of surviving in both wet and dry conditions. Do not use sod, which can prevent roots from directly contacting the underlying soil. During the first two months, inspect the newly established vegetation several times to determine if any remedial actions (e.g., reseeding, irrigating) are necessary.

Never plant trees or shrubs within the basin or on the impounding embankments as they increase the chance of basin failure due to root decay or subsurface disturbance. The root penetration and thatch formation of the turf helps to maintain and may even enhance the original infiltration capacity. Soluble nutrients are taken up by the turf for growth, improving the pollutant removal capacity. Dense turf will impede soil erosion and scouring of the basin floor.

In place of turf, use a basin liner of 6 to 12 inches of fill material, such as coarse sand. Clean and replace this material as needed. Do not use loose stone, riprap, and other irregular materials requiring hand removal of debris and weeds.

Design embankments and spillways to conform to the regulatory guidelines of the state's Office of Dam Safety (302 CMR 10.00). Design infiltration basins to be below surrounding grade to avoid issues related to potential embankment failure. All infiltration basins must have an emergency spillway capable of bypassing runoff from large storms without damage to the impounding structure. Design the emergency spillway to divert the storm associated with brimful conditions without impinging upon the structural integrity of the basin. The brimful condition could be the required recharge volume or a design storm (such as the 2-year, 10-year, or 100-year storm if the basin is designed to provide peak rate attenuation in addition to exfiltration). The storm associated with the brimful conditions should not include the one foot of freeboard required to account for design uncertainty. Design the emergency spillway to shunt water toward a location where the water will not damage wetlands or buildings. A common error is to direct the spillway runoff toward an adjoining property not owned by an applicant. If the emergency spillway is designed to drain the emergency overflow toward an adjoining property, obtain a drainage easement and submit it to the Conservation Commission as part of the Wetlands NOI submission. Place vegetative buffers around the perimeter of the basin for erosion control and additional sediment and nutrient removal.

Monitoring wells: Install one monitoring well in the basin floor per every 5,000 square feet of basin floor. Make sure the monitoring well(s) extend 20 feet beneath the basin floor or to the limiting layer, whichever is higher.

Access: Include access in the basin design. The area at the top of the basin must provide unimpeded vehicular access around the entire basin perimeter. The access area shall be no less than 15 feet.

Inlet Structures: Place inlet structures at one longitudinal end of the basin, to maximize the flow path from the inlet to the overflow outlet. A common error is to design multiple inlet points around the entire basin perimeter.

Outlet structures: Infiltration basins must include an overflow outlet in addition to an emergency spillway. Whether using a single orifice or multiple orifices in the design, at a minimum, set the lowest orifice at or above the required recharge volume.

Drawdown device: Include a device to draw the basin down for maintenance purposes. If the basin includes multiple cells, include a drawdown device for each cell.

Fences: Do not place fences around basins located in Riverfront Areas, as required by 310 CMR 10.58(4)(d)1.d. to avoid impeding wildlife movement. In such cases, consider including a safety bench as part of the design.

Construction

Prior to construction, rope or fence off the area selected for the infiltration basin. Never allow construction equipment to drive across the area intended to serve as the infiltration basin.

Never use infiltration basins as temporary sediment traps for construction activities.

To limit smearing or compacting soils, never construct the basin in winter or when it is raining. Use light earth-moving equipment to excavate the infiltration basin because heavy equipment compacts the soils beneath the basin floor and side slopes and reduces infiltration capacity. Because some compaction of soils is inevitable during construction, add the required soil amendments and deeply till the basin floor with a rotary tiller or a disc harrow to a depth of 12 inches to restore infiltration rates after final grading.

Use proper erosion/sediment control during construction. Immediately following basin construction, stabilize the floor and side slopes of the basin with a dense turf of water-tolerant grass. Use low maintenance, rapidly germinating grasses, such as fescues. Do not sod the basin floor or side slopes. After the basin is completed, keep the basin roped or fenced off while construction proceeds on other parts of the site. Never direct construction period drainage to the infiltration basin. After construction is completed, do not direct runoff into the basin until the bottom and side slopes are fully stabilized.

Maintenance

Infiltration basins are prone to clogging and failure, so it is imperative to develop and implement aggressive maintenance plans and schedules. Installing the required pretreatment BMPs will significantly reduce maintenance requirements for the basin.

The Operation and Maintenance Plan required by Standard 9 must include inspections and preventive maintenance at least twice a year, and after every time drainage discharges through the high outlet orifice. The Plan must require inspecting the pretreatment BMPs in accordance with the minimal requirements specified for those practices and after every major storm event. A major storm event is defined as a storm that is equal to or greater than the 2-year, 24-hour storm (generally 2.9 to 3.6 inches in a 24-hour period, depending in geographic location in Massachusetts).

Once the basin is in use, inspect it after every major storm for the first few months to ensure it is stabilized and functioning properly and if necessary take corrective action. Note how long water remains standing in the basin after a storm; standing water within the basin 48 to 72 hours after a storm indicates that the infiltration capacity may have been overestimated. If the ponding is due to clogging, immediately address the reasons for the clogging (such as upland sediment erosion, excessive compaction of soils, or low spots).
Thereafter, inspect the infiltration basin at least twice per year. Important items to check during the inspection include:

- Signs of differential settlement,
- Cracking,
- Erosion,
- Leakage in the embankments
- Tree growth on the embankments
- Condition of riprap,
- Sediment accumulation and
- The health of the turf.

At least twice a year, mow the buffer area, side slopes, and basin bottom. Remove grass clippings and accumulated organic matter to prevent an impervious organic mat from forming. Remove trash and debris at the same time. Use deep tilling to break up clogged surfaces, and revegetate immediately.

Remove sediment from the basin as necessary, but wait until the floor of the basin is thoroughly dry. Use light equipment to remove the top layer so as to not compact the underlying soil. Deeply till the remaining soil, and revegetate as soon as possible. Inspect and clean pretreatment devices associated with basins at least twice a year, and ideally every other month.

References:

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Nonintentional Stormwater Infiltration, EPA/600/R-94/051, Risk Reduction Engineering Laboratory, U.S. EPA, Cincinnati, OH

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Wisconsin Department of Natural Resources, 2004, Conservation Practice Standard 1003, Infiltration Basin, http://www.dnr.state.wi.us/org/water/wm/nps/stormwater/technote.htm

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Subsurface Structures

Description: Subsurface structures are underground systems that capture runoff, and gradually infiltrate it into the groundwater through rock and gravel. There are a number of underground infiltration systems that can be installed to enhance groundwater recharge. The most common types include pre-cast concrete or plastic pits, chambers (manufactured pipes), perforated pipes, and galleys.

Ability to meet specific standards

Standard	Description
2 - Peak Flow	N/A
3 - Recharge	Provides groundwater recharge
4 - TSS Removal	80%
5 - Higher Pollutant Loading	May be used if 44% of TSS is removed with a pretreatment BMP prior to infiltration. Land uses with the potential to generate runoff with high concentrations of oil and grease require an oil grit separator or equivalent prior to discharge to the infiltration structure. Infiltration must be done in accordance with 314 CMR 5.00.
6 - Discharges near or to Critical Areas	Highly recommended
7 - Redevelopment	Suitable with pretreatment

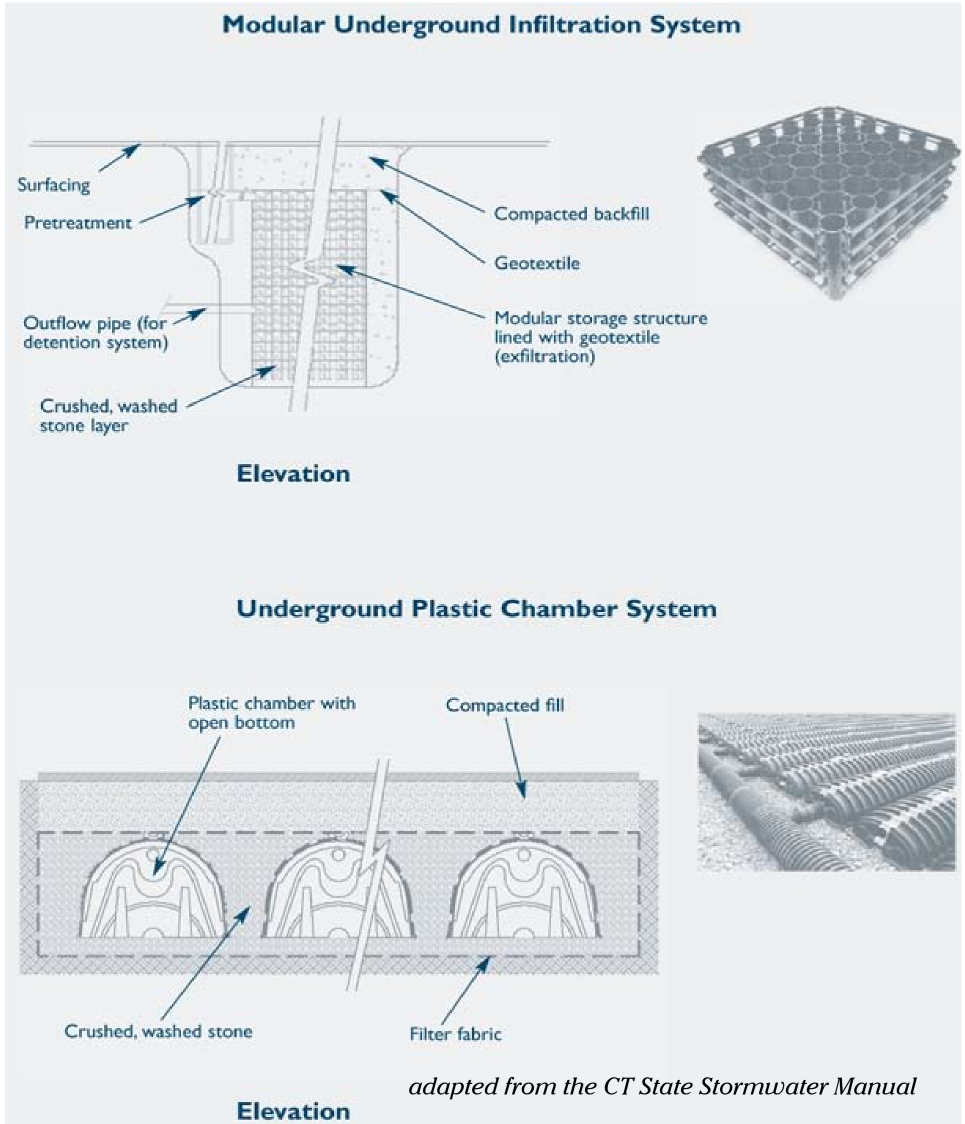
Advantages/Benefits:
- Provides groundwater recharge
- Reduces downstream flooding
- Preserves the natural water balance of the site
- Can remove other pollutants besides TSS
- Can be installed on properties with limited space
- Useful in stormwater retrofit applications

Disadvantages/Limitations:
- Limited data on field performance
- Susceptible to clogging by sediment
- Potential for mosquito breeding due to standing water if system fails

Pollutant Removal Efficiencies

• Total Suspended Solids (TSS)	80%
• Nutrients (Nitrogen, phosphorus)	Insufficient data
• Metals (copper, lead, zinc, cadmium)	Insufficient data
• Pathogens (coliform, e coli)	Insufficient data

Subsurface Structures



adapted from the CT State Stormwater Manual

There are different types of subsurface structures:

Infiltration Pit: A pre-cast concrete or plastic barrel with uniform perforations. The bottom of the pit should be closed with the lowest row of perforations at least 6 inches above the bottom, to serve as a sump. Infiltration pits typically include an observation well. The pits may be placed linearly, so that as the infiltrative surfaces in the first pit clog, the overflow moves to the second pit for exfiltration. Place an outlet near the top of the infiltration pit to accommodate emergency overflows. MassDEP provides recharge credit for storage below the emergency outflow invert. To make an infiltration pit, excavate the pit, wrap fabric around the barrel, place stone in the bottom of the pit, place the barrel in the pit, and then backfill stone around the barrel. Take a boring or dig an observation trench at the site of each proposed pit.

Chambers: These are typically manufactured pipes containing open bottoms and sometimes perforations. The chambers are placed atop a stone bed. Take the same number of borings or observation pits as for infiltration trenches. Do not confuse these systems with underground detention systems (UDS) that use similar chambers. UDS are designed to attenuate peak rates of runoff--not to recharge groundwater.

Perforated Pipes: In this system, pipes containing perforations are placed in a leaching bed, similar to a Title 5 soil absorption system (SAS). The pipes dose the leaching bed. Take the same number of borings or observation pits as for infiltration trenches. Perforated pipes by themselves do not constitute a stormwater recharge system and receive no credit pursuant to Stormwater Standard No. 3. Do not confuse recharge systems that use perforated pipes with perforated pipes installed to lower the water table or divert groundwater flows.

Galleys: Similar to infiltration pits. Some designs consist of concrete perforated rectangular vaults. Others are modular systems usually placed under parking lots. When the galley design consists of a single rectangular perforated vault, conduct one boring or observation trench per galley. When the galleys consist of interlocking modular units, take the same number of borings or observation pits as for infiltration trenches. Do not confuse these galleys with vaults storing water for purposes of underground detention, which do not contain perforations.

Applicability

Subsurface structures are constructed to store stormwater temporarily and let it percolate into the underlying soil. These structures are used for small drainage areas (typically less than 2 acres). They are feasible only where the soil is adequately permeable and the maximum water table and/or bedrock elevation is sufficiently low. They can be used to control the quantity as well as quality of stormwater runoff, if properly designed and constructed. The structures serve as storage chambers for captured stormwater, while the soil matrix provides treatment.

Without adequate pretreatment, subsurface structures are not suitable for stormwater runoff from land uses or activities with the potential for high sediment or pollutant loads. Structural pretreatment BMPs for these systems include, but are not limited to, deep sump catch basins, proprietary separators, and oil/grit separators. They are suitable alternatives to traditional infiltration trenches and basins for space-limited sites. These systems can be installed beneath parking lots and other developed areas provided the systems can be accessed for routine maintenance.

Subsurface systems are highly prone to clogging. Pretreatment is always required unless the runoff is strictly from residential rooftops.

Effectiveness

Performance of subsurface systems varies by manufacturer and system design. Although there are limited field performance data, pollutant removal efficiency is expected to be similar to those of infiltration trenches and basins (i.e., up to 80% of TSS removal). MassDEP awards a TSS removal credit of 80% for systems designed in accordance with the specifications in this handbook.

Planning Considerations

Subsurface structures are excellent groundwater recharge alternatives where space is limited. Because infiltration systems discharge runoff to groundwater, they are inappropriate for use in areas with potentially higher pollutant loads (such as gas stations), unless adequate pretreatment is provided. In that event, oil grit separators, sand filters or equivalent BMPs must be used to remove sediment, floatables and grease prior to discharge to the subsurface structure.

Design

Unlike infiltration basins, widely accepted design standards and procedures for designing subsurface structures are not available. Generally, a subsurface structure is designed to store a "capture volume" of runoff for a specified period of "storage time." The definition of capture volume differs depending on the purpose of the subsurface structure and the stormwater management program being used. Subsurface structures should infiltrate good quality runoff only. Pretreatment prior to infiltration is essential.
The composition, configuration and layout of subsurface structures varies considerably depending on the manufacturer. Follow the design criteria specified by vendors or system manufacturers. Install subsurface structures in areas that are easily accessible for routine and non-routine maintenance.

As with infiltration trenches and basins, install subsurface structures only in soils having suitable infiltration capacities as determined through field testing. Determine the infiltrative capacity of the underlying native soil through the soil evaluation set forth in Volume 3. Never use a standard septic system percolation test to determine soil permeability because this test tends to greatly overestimate the infiltration capacity of soils.

Subsurface structures are typically designed to function off-line. Place a flow bypass structure upgradient of the infiltration structure to convey high flows around the structure during large storms.

Design the subsurface structure so that it drains within 72 hours after the storm event and completely dewaters between storms. Use a minimum draining time of 6 hours to ensure adequate pollutant removal. Design all ports to be mosquito-proof, i.e., to inhibit or reduce the number of mosquitoes able to breed within the BMP.

The minimum acceptable field infiltration rate is 0.17 inches per hour. Subsurface structures must be sized in accordance with the procedures set forth in Volume 3. Manufactured structures must also be sized in accordance with the manufacturers' specifications. Design the system to totally exfiltrate within 72 hours.

Design the subsurface structure for live and dead loads appropriate for their location. Provide measures to dissipate inlet flow velocities and prevent channeling of the stone media. Generally, design the system so that inflow velocities are less than 2 feet per second (fps).
All of these devices must have an appropriate number of observation wells, to monitor the water surface elevation within the well, and to serve as a sampling port.

Each of these different types of structures, with the exception of perforated pipes in leaching fields similar to Title 5 systems, must have entry ports to allow worker access for maintenance, in accordance with OSHA requirements.

Construction

Stabilize the site prior to installing the subsurface structure. Do not allow runoff from any disturbed areas on the site to flow to the structure. Rope off the area where the subsurface structures are to be placed. Accomplish any required excavation with equipment placed just outside of this area. If the size of the area intended for exfiltration is too large to accommodate this approach, use trucks with low-pressure tires to minimize compaction. Do not allow any other vehicles within the area to be excavated. Keep the area above and immediately surrounding the subsurface structure roped off to all construction vehicles until the final top surface is installed (either paving or landscaping). This prevents additional compaction. When installing the final top surface, work from the edges to minimize compaction of the underlying soils.

Before installing the top surface, implement erosion and sediment controls to prevent sheet flow or wind blown sediment from entering the leach field. This includes, but is not limited to, minimizing land disturbances at any one time, placing stockpiles away from the area intended for infiltration, stabilizing any stockpiles through use of vegetation or tarps, and placing sediment fences around the perimeter of the infiltration field.

Provide an access port, man-way, and observation well to enable inspection of water levels within the system. Make the observation well pipe visible at grade (i.e., not buried).

Maintenance

Because subsurface structures are installed underground, they are extremely difficult to maintain. Inspect inlets at least twice a year. Remove any debris that might clog the system. Include mosquito controls in the Operation and Maintenance Plan.

Adapted from:
Connecticut Department of Environmental Conservation. Connecticut Stormwater Quality Manual. 2004.
MassHighway. Storm Water Handbook for Highways and Bridges. May 2004.

TITLE 5 ON-SITE REVIEW

Deep Hole # D-1 **Date** 8/11/22 **Time** 12:00 **Weather** showers 75°

Location(identify on Site Plan)

Land Use Res / Com **Slope(%)** 0-2 **Surface Stones** Stonewalls

Vegetation Gravel **Landform**

Distances from: Open Water Body – ft. Possible Wet Area 80 ft. Drinking Water Well – ft.

Drainageway – ft. Propertyline 140 ft Other

DEEP OBSERVATION HOLE LOG

Depth From Surface (Inches)	Soil Horizon (USDA	Soil Texture (Munsell)	Soil Color	Soil Mottling	Other: Structures, Stones, Boulders, Consistency,%Gravel
0"-8"	Fill				
8"-14"	A	Loam	10YR3/3		Friable
14"-20"	B	Loamy Sand	10YR5/6		Friable
20"-72"	C1	Loamy Sand	2.5Y6/4	36"	Firm-Friable
72"-108"	C2	Medium Loamy Sand	2.5Y6/4		several cobbles 5%gravel Friable

Parent Material (geologic) Glacial Till **Depth to Bedrock**

Depth to Groundwater: **Standing Water in Hole:** **Weeping from Pit Face** 106

Estimated Seasonal High Groundwater

DETERMINATION FOR SEASONAL HIGH WATER TABLE

Method Used:

___ **Depth observed standing in observation hole:** ___ **inches** ___ **Depth to soil mottles:** ___ **inches**

___ **Depth to weeping from side of observation hole:** 106 **inches** ___ **Groundwater adjustment** ___ **ft**

Index Well # ___ **Reading Date** ___ **Index well level** ___ **Adj.factor** ___ **Adj.Groundwater level** ___

PERCOLATION TEST **Date** **Time**

Observation Hole # **Time at 9"**

Depth of Perc **Time at 6"**

Start Presoak **Time (9"-6")**

End Presoak **Rate Min/Inch**

Site Suitability Assessment: **Site Passed** ___ **Site Failed** ___ **Additional Testing Needed:**

Performed By **Certification #**

Witnessed By

Comments: no water or mottles in the C2 Layer
not sure if mottles @ 36" is true water table
try to avoid putting stormwater in mottles

TITLE 5 ON-SITE REVIEW

Deep Hole # D-2 **Date** 8/11/22 **Time** 12:30 **Weather** showers 75°
Location(identify on Site Plan)________
Land Use Res / Com **Slope(%)** 0-2 **Surface Stones**________
Vegetation weeds **Landform**________

Distances from: Open Water Body____ ft. Possible Wet Area 65 ft. Drinking Water Well — ft.

Drainageway — ft. Propertyline 70 ft Other________

DEEP OBSERVATION HOLE LOG

Depth From Surface (Inches)	Soil Horizon (USDA	Soil Texture (Munsell)	Soil Color	Soil Mottling	Other: Structures, Stones, Boulders, Consistency,%Gravel
0"-120		Fill			Sandy Fill no gravel Scent of organics @ top

Parent Material (geologic) Fill **Depth to Bedrock**________
Depth to Groundwater: **Standing Water in Hole:**____ **Weeping from Pit Face**____
Estimated Seasonal High Groundwater________

DETERMINATION FOR SEASONAL HIGH WATER TABLE

Method Used:
___ **Depth observed standing in observation hole:** ____**inches** ____**Depth to soil mottles:**____ **inches**
___ **Depth to weeping from side of observation hole:**____**inches** ____ **Groundwater adjustment**____**ft**
Index Well #____ **Reading Date**____ **Index well level**____ **Adj.factor**____ **Adj.Groundwater level**____

PERCOLATION TEST **Date**________ **Time**________

Observation Hole #			**Time at 9"**		
Depth of Perc			**Time at 6"**		
Start Presoak			**Time (9"-6")**		
End Presoak			**Rate Min/Inch**		

Site Suitability Assessment: **Site Passed**____ **Site Failed**____ **Additional Testing Needed:**

Performed By________ **Certification #**________

Witnessed By________

Comments:

TITLE 5 ON-SITE REVIEW

Deep Hole # D-3 **Date** 8/11/22 **Time** 12:30 **Weather** Showers 75°
Location(identify on Site Plan)
Land Use Res / Com **Slope(%)** 0-2 **Surface Stones** Stonewalls
Vegetation Grass **Landform**

Distances from: Open Water Body — ft. Possible Wet Area 75 ft. Drinking Water Well — ft.

Drainageway — ft. Propertyline 20 ft Other

DEEP OBSERVATION HOLE LOG

Depth From Surface (Inches)	Soil Horizon (USDA	Soil Texture (Munsell)	Soil Color	Soil Mottling	Other: Structures, Stones, Boulders, Consistency,%Gravel
0"-20"	Fill				
20"-76"	C1	sandy loam	2.5Y 6/4	36"	
76"-108"	C2	Med-coarse Sand	2.5Y 4/4		

Parent Material (geologic) **Depth to Bedrock**
Depth to Groundwater: **Standing Water in Hole:** 72 **Weeping from Pit Face**
Estimated Seasonal High Groundwater 3'-0"

DETERMINATION FOR SEASONAL HIGH WATER TABLE

Method Used:
___ **Depth observed standing in observation hole:** ___ **inches** X **Depth to soil mottles:** 36 **inches**
___ **Depth to weeping from side of observation hole:** ___ **inches** ___ **Groundwater adjustment** ___ **ft**
Index Well # ___ **Reading Date** ___ **Index well level** ___ **Adj.factor** ___ **Adj.Groundwater level** ___

PERCOLATION TEST **Date** **Time**

Observation Hole # **Time at 9"**
Depth of Perc **Time at 6"**
Start Presoak **Time (9"-6")**
End Presoak **Rate Min/Inch**

Site Suitability Assessment: **Site Passed** ___ **Site Failed** ___ **Additional Testing Needed:**

Performed By **Certification #**

Witnessed By

Comments:

TITLE 5 ON-SITE REVIEW

Deep Hole # D-4 **Date** 8/11/22 **Time** 1500 **Weather** Showers 75°
Location(identify on Site Plan)______
Land Use Res / Com **Slope(%)** 0-2 **Surface Stones** stonewalls
Vegetation Gravel **Landform**______

Distances from: Open Water Body — ft. Possible Wet Area 70 ft. Drinking Water Well — ft.
Drainageway — ft. Propertyline 30 ft Other______

DEEP OBSERVATION HOLE LOG

Depth From Surface (Inches)	Soil Horizon (USDA	Soil Texture (Munsell)	Soil Color	Soil Mottling	Other: Structures, Stones, Boulders, Consistency,%Gravel
0"-80"		Fill			
80"-110"	C1	Medium Sand	2.5Y 6/4		
110-126"	C2	Loamy Sand	2.5Y 6/4	114"	Firm in Place clumps of silt Loam

Parent Material (geologic) Glacial Till **Depth to Bedrock**______
Depth to Groundwater: **Standing Water in Hole:** none **Weeping from Pit Face** none
Estimated Seasonal High Groundwater 9'-6"

DETERMINATION FOR SEASONAL HIGH WATER TABLE

Method Used:
___ **Depth observed standing in observation hole:** ___ **inches** X **Depth to soil mottles:** 114 **inches**
___ **Depth to weeping from side of observation hole:** ___ **inches** ___ **Groundwater adjustment** ___ **ft**
Index Well #___ **Reading Date**___ **Index well level**___ **Adj.factor**___ **Adj.Groundwater level**___

PERCOLATION TEST

Date______ **Time**______

Observation Hole #			**Time at 9"**		
Depth of Perc			**Time at 6"**		
Start Presoak			**Time (9"-6")**		
End Presoak			**Rate Min/Inch**		

Site Suitability Assessment: **Site Passed**___ **Site Failed**___ **Additional Testing Needed:**

Performed By______ **Certification #**______

Witnessed By______

Comments:

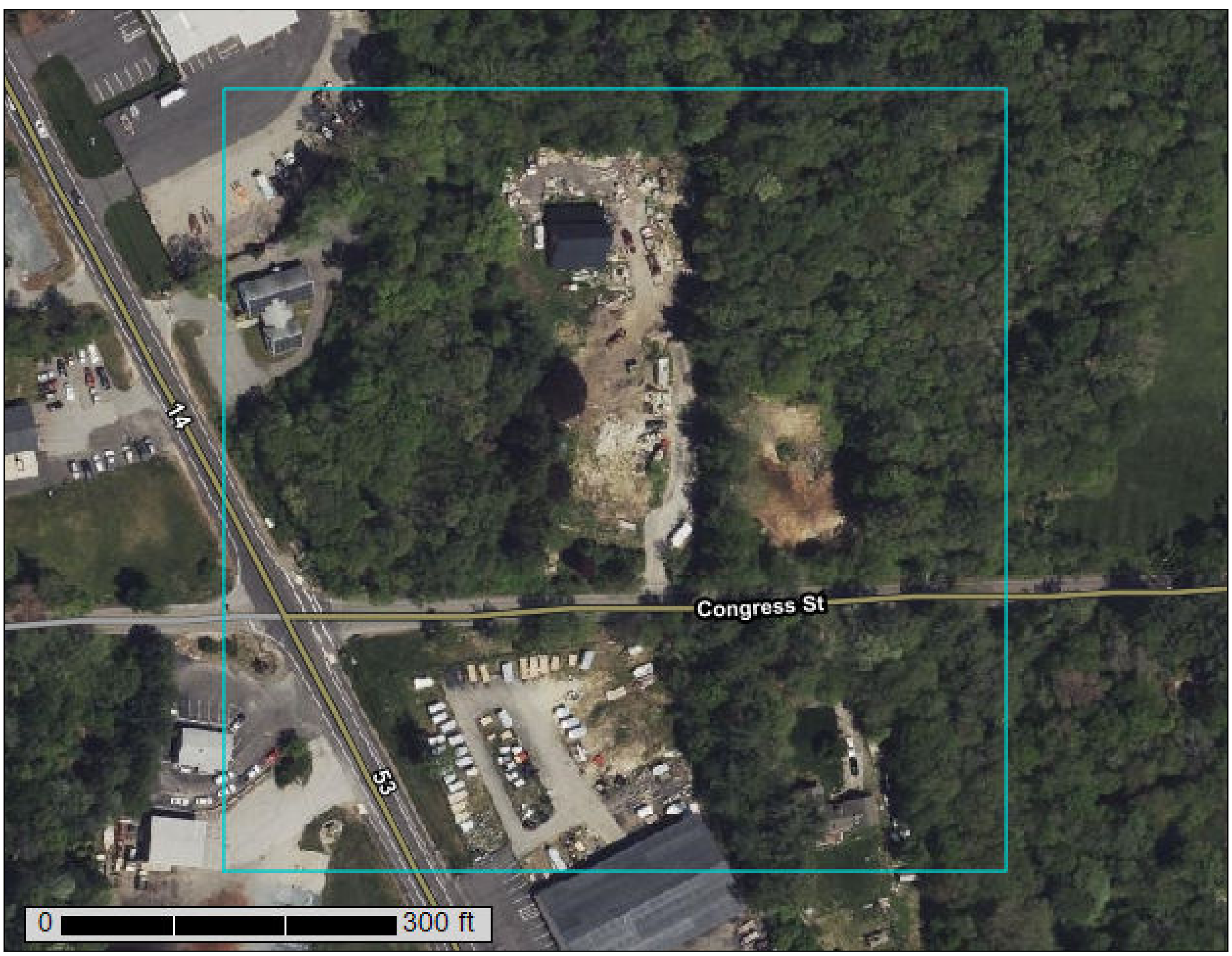
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for
Plymouth County, Massachusetts



March 10, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

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

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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

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

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

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

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

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

Soil Survey Area: Plymouth County, Massachusetts
Survey Area Data: Version 15, Sep 9, 2022

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

Date(s) aerial images were photographed: May 22, 2022—Jun 5, 2022

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
48A	Brockton sandy loam, 0 to 3 percent slopes, extremely stony	4.8	42.9%
49A	Norwell mucky fine sandy loam, 0 to 3 percent slopes, extremely stony	1.3	11.4%
316B	Scituate gravelly sandy loam, 3 to 8 percent slopes, very stony	0.5	4.3%
321A	Birchwood sand, 0 to 3 percent slopes, very stony	2.4	21.7%
636B	Montauk-Urban land complex, 0 to 8 percent slopes	2.2	19.7%
656B	Udorthents - Urban land complex, 0 to 8 percent slopes	0.0	0.0%
Totals for Area of Interest		**11.3**	**100.0%**

Map Unit Descriptions

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

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

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

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

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

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

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

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

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

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

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

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

Plymouth County, Massachusetts

48A—Brockton sandy loam, 0 to 3 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: bqt8
Elevation: 0 to 400 feet
Mean annual precipitation: 41 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Brockton, extremely stony, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Brockton, Extremely Stony

Setting

Landform: Drainageways, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy lodgment till

Typical profile

Oe - 0 to 5 inches: moderately decomposed plant material
A - 5 to 14 inches: sandy loam
Cg - 14 to 20 inches: gravelly loamy sand
Cdg - 20 to 65 inches: gravelly loamy sand

Properties and qualities

Slope: 0 to 3 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 14 to 28 inches to densic material
Drainage class: Very poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.01 to 1.42 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Very low (about 1.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C/D
Ecological site: F149BY008MA - Very Wet Outwash
Hydric soil rating: Yes

Minor Components

Swansea

Percent of map unit: 4 percent
Landform: Marshes, swamps, bogs, kettles, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Mattapoisett, extremely stony

Percent of map unit: 4 percent
Landform: Drainageways, depressions
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Whitman, extremely stony

Percent of map unit: 4 percent
Landform: Drainageways, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Norwell, extremely stony

Percent of map unit: 4 percent
Landform: Depressions, drainageways
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Ridgebury, extremely stony

Percent of map unit: 4 percent
Landform: Drainageways, depressions
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

49A—Norwell mucky fine sandy loam, 0 to 3 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: bd1w
Elevation: 10 to 400 feet
Mean annual precipitation: 41 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Norwell, extremely stony, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Norwell, Extremely Stony

Setting

Landform: Depressions, drainageways
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy supraglacial meltout till over coarse-loamy lodgment till

Typical profile

Oe - 0 to 4 inches: moderately decomposed plant material
A - 4 to 8 inches: mucky fine sandy loam
Bg1 - 8 to 14 inches: gravelly sandy loam
Bg2 - 14 to 19 inches: loamy fine sand
Cdg - 19 to 29 inches: gravelly coarse sandy loam
Cd - 29 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 12 to 20 inches to densic material
Drainage class: Poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Very low (about 2.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: D
Ecological site: F144AY041MA - Very Wet Till Depressions
Hydric soil rating: Yes

Minor Components

Scituate, very stony

Percent of map unit: 5 percent
Landform: Drumlins, ridges
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: No

Brockton, extremely stony

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Mattapoisett, extremely stony

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Ridgebury, extremely stony

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

316B—Scituate gravelly sandy loam, 3 to 8 percent slopes, very stony

Map Unit Setting

National map unit symbol: bczw
Elevation: 10 to 400 feet
Mean annual precipitation: 41 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Scituate, very stony, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Scituate, Very Stony

Setting

Landform: Drumlins, ridges
Landform position (two-dimensional): Shoulder, footslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Coarse-loamy eolian deposits over sandy lodgment till

Typical profile

Ap - 0 to 11 inches: gravelly sandy loam
Bw1 - 11 to 15 inches: gravelly sandy loam
Bw2 - 15 to 20 inches: sandy loam
BC1 - 20 to 25 inches: gravelly sandy loam
BC2 - 25 to 35 inches: sandy loam
Cd1 - 35 to 46 inches: loamy coarse sand
Cd2 - 46 to 60 inches: loamy coarse sand

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.5 percent
Depth to restrictive feature: 20 to 35 inches to densic material
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 15 to 20 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C/D
Ecological site: F144AY037MA - Moist Dense Till Uplands
Hydric soil rating: No

Minor Components

Birchwood, very stony

Percent of map unit: 5 percent
Landform: Till plains, ground moraines, drumlins
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: No

Woodbridge, very stony

Percent of map unit: 5 percent
Landform: Till plains, hills, drumlins
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: No

Norwell, extremely stony

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Montauk, very stony

Percent of map unit: 5 percent
Landform: Ground moraines, drumlins, till plains
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

321A—Birchwood sand, 0 to 3 percent slopes, very stony

Map Unit Setting

National map unit symbol: 9y46
Elevation: 0 to 400 feet
Mean annual precipitation: 41 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Birchwood, very stony, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Birchwood, Very Stony

Setting

Landform: Till plains, ground moraines, drumlins
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Concave
Across-slope shape: Concave

Parent material: Sandy eolian deposits and/or sandy glaciofluvial deposits over coarse-loamy lodgment till

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
Oe - 1 to 3 inches: moderately decomposed plant material
Oa - 3 to 4 inches: highly decomposed plant material
E - 4 to 5 inches: sand
Ap - 5 to 8 inches: loamy sand
Bs - 8 to 13 inches: loamy sand
Bw1 - 13 to 19 inches: loamy sand
Bw2 - 19 to 29 inches: loamy sand
BC - 29 to 40 inches: sand
Cd1 - 40 to 55 inches: gravelly sandy loam
Cd2 - 55 to 75 inches: gravelly sandy loam

Properties and qualities

Slope: 0 to 3 percent
Surface area covered with cobbles, stones or boulders: 1.0 percent
Depth to restrictive feature: 35 to 59 inches to densic material
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 12 to 29 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5s
Hydrologic Soil Group: B/D
Ecological site: F144AY037MA - Moist Dense Till Uplands
Hydric soil rating: No

Minor Components

Poquonock, very stony

Percent of map unit: 6 percent
Landform: Till plains, ground moraines, drumlins
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Mattapoisett, extremely stony

Percent of map unit: 6 percent
Landform: Drainageways, depressions
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Scituate, very stony

Percent of map unit: 5 percent
Landform: Drumlins, ridges
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: No

Newfields, extremely stony

Percent of map unit: 3 percent
Landform: Till plains, hills, moraines
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: No

636B—Montauk-Urban land complex, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2w7zx
Elevation: 0 to 230 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Montauk and similar soils: 50 percent
Urban land: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Montauk

Setting

Landform: Recessionial moraines, ground moraines, hills, drumlins
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 4 inches: fine sandy loam
Bw1 - 4 to 26 inches: fine sandy loam
Bw2 - 26 to 34 inches: sandy loam
2Cd - 34 to 72 inches: gravelly loamy sand

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F149BY009MA - Well Drained Dense Till Uplands
Hydric soil rating: No

Description of Urban Land

Typical profile

M - 0 to 10 inches: cemented material

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: 0 inches to manufactured layer
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Available water supply, 0 to 60 inches: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: Unranked

Minor Components

Scituate

Percent of map unit: 5 percent
Landform: Ground moraines, hills, drumlins
Landform position (two-dimensional): Summit, backslope, footslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Udorthents, loamy

Percent of map unit: 5 percent
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

656B—Udorthents - Urban land complex, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: bd08
Elevation: 0 to 390 feet
Mean annual precipitation: 41 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents, loamy, and similar soils: 45 percent
Urban land: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents, Loamy

Setting

Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-loamy human transported material

Typical profile

^A - 0 to 5 inches: loam
^C1 - 5 to 21 inches: gravelly loam
^C2 - 21 to 80 inches: gravelly sandy loam

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to very high (0.01 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: B
Ecological site: F149BY100NY - Urban Site Complex
Hydric soil rating: No

Minor Components

Udipsamments, wet substratum

Percent of map unit: 5 percent
Landform: Dikes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear, convex
Across-slope shape: Linear
Hydric soil rating: No

Udipsamments

Percent of map unit: 5 percent
Landform: Dikes
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear, convex
Across-slope shape: Linear
Hydric soil rating: No

Udorthents, wet substratum

Percent of map unit: 5 percent
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

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