

Summary for Subcatchment P1A: SUBCAT P1A

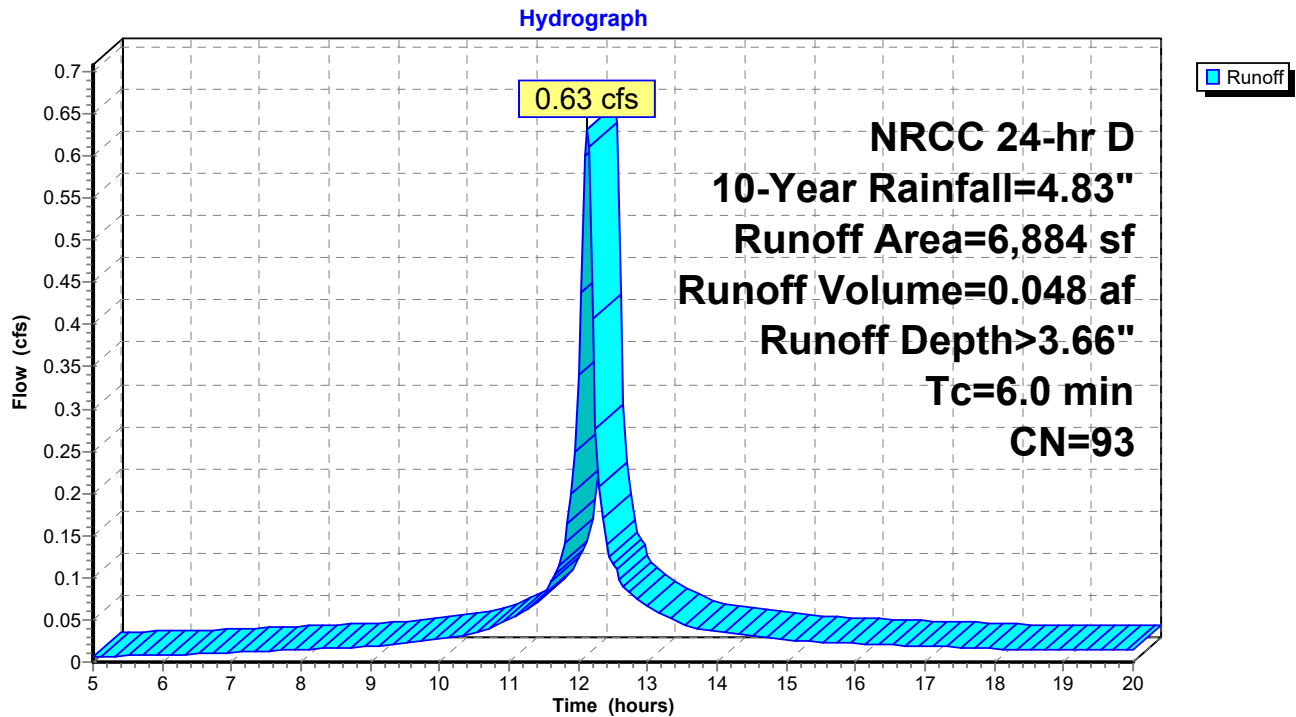
Runoff = 0.63 cfs @ 12.13 hrs, Volume= 0.048 af, Depth> 3.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.83"

Area (sf)	CN	Description
5,204	98	Paved parking, HSG C
1,526	74	>75% Grass cover, Good, HSG C
* 154	98	Retaining Wall
6,884	93	Weighted Average
1,526		22.17% Pervious Area
5,358		77.83% Impervious Area

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

Subcatchment P1A: SUBCAT P1A



Summary for Subcatchment P1B: SUBCAT P1B

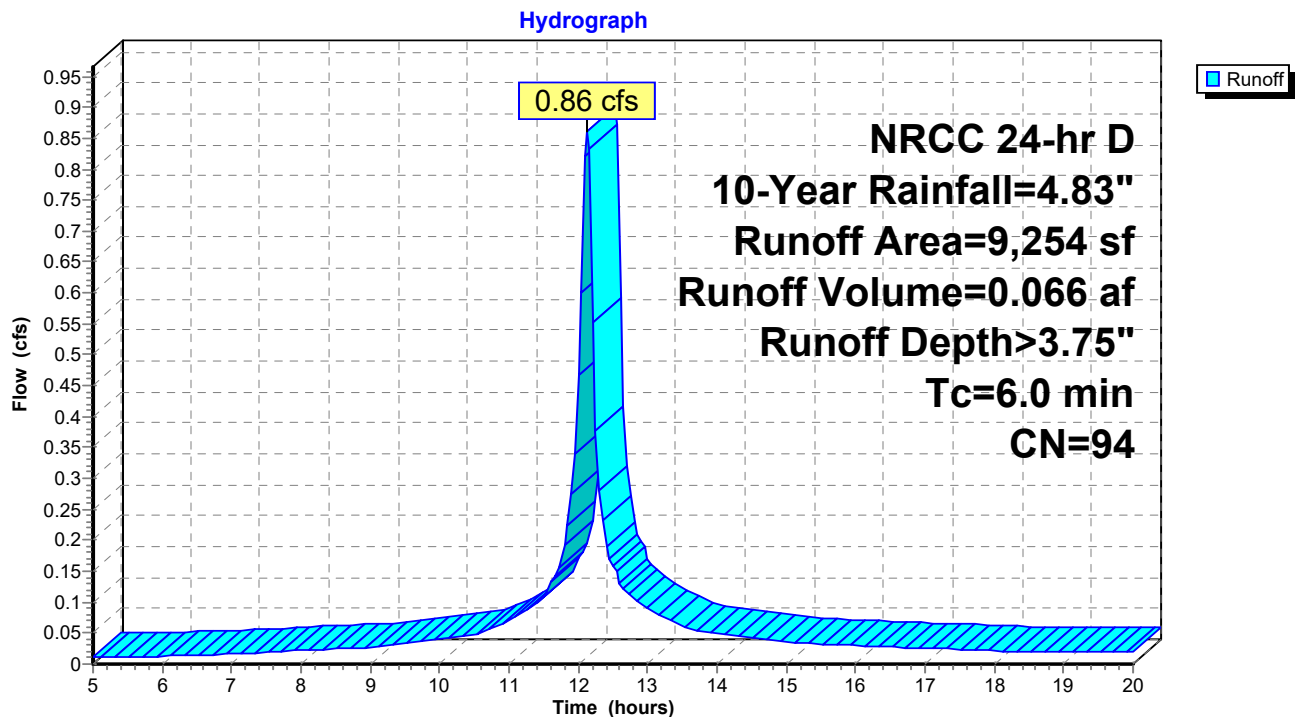
Runoff = 0.86 cfs @ 12.13 hrs, Volume= 0.066 af, Depth> 3.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.83"

Area (sf)	CN	Description
5,436	98	Paved parking, HSG C
1,629	74	>75% Grass cover, Good, HSG C
2,189	98	Roofs, HSG C
9,254	94	Weighted Average
1,629		17.60% Pervious Area
7,625		82.40% Impervious Area

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

Subcatchment P1B: SUBCAT P1B



Summary for Subcatchment P1C: SUBCAT P1C

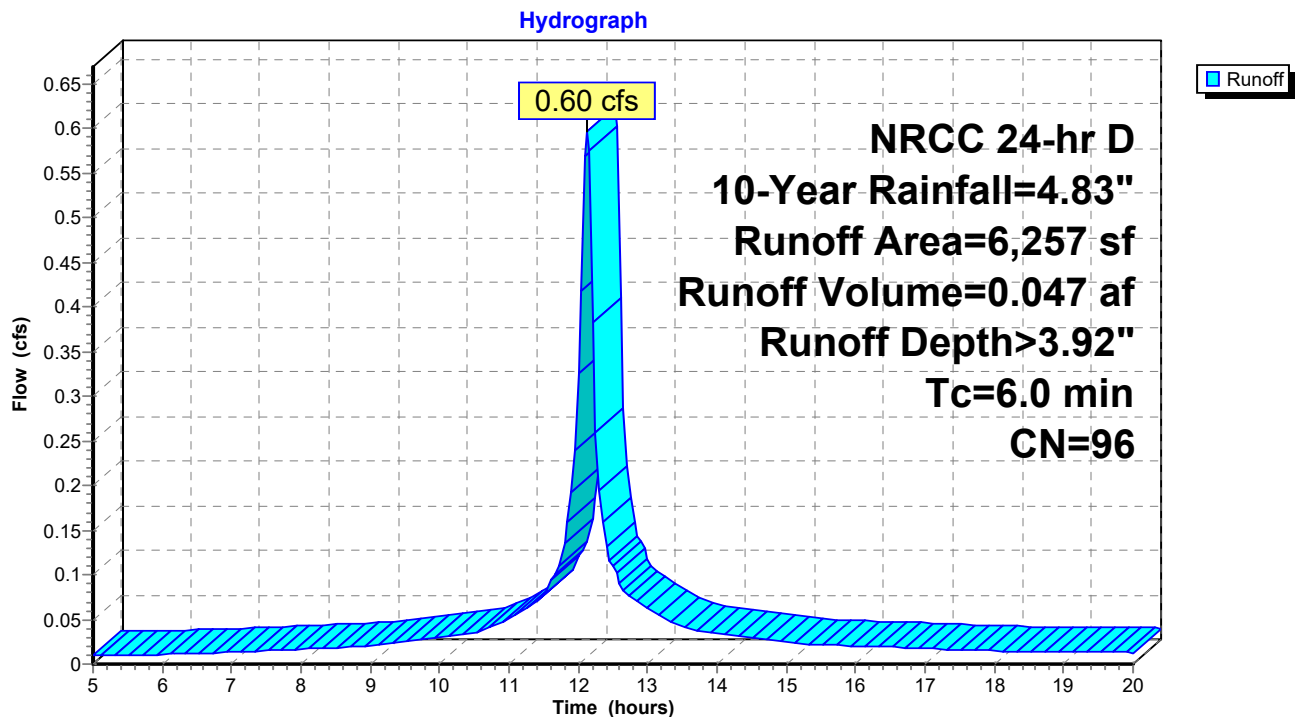
Runoff = 0.60 cfs @ 12.13 hrs, Volume= 0.047 af, Depth> 3.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.83"

Area (sf)	CN	Description
5,731	98	Paved parking, HSG C
438	74	>75% Grass cover, Good, HSG C
*	88	Retaining Wall
6,257	96	Weighted Average
438		7.00% Pervious Area
5,819		93.00% Impervious Area

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

Subcatchment P1C: SUBCAT P1C



Summary for Subcatchment P1D: SUBCAT P1D

Runoff = 0.47 cfs @ 12.13 hrs, Volume= 0.038 af, Depth> 4.06"

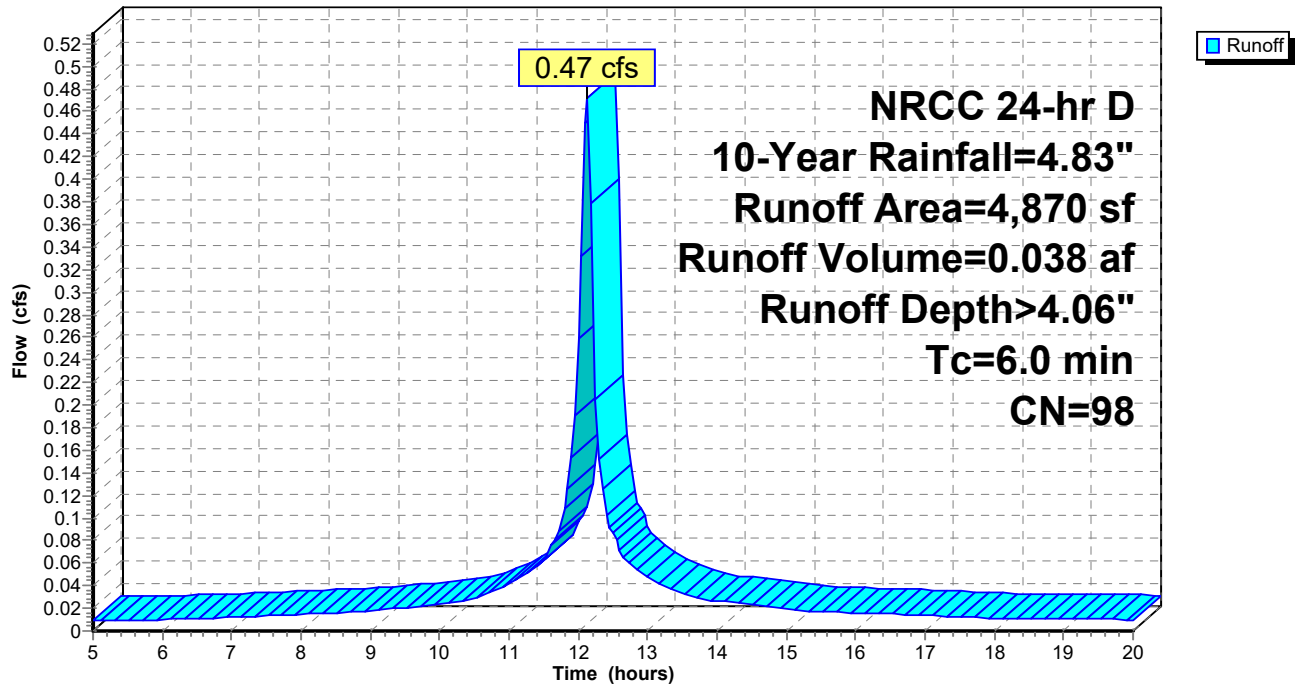
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.83"

Area (sf)	CN	Description
4,870	98	Paved parking, HSG C
4,870		100.00% Impervious Area

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

Subcatchment P1D: SUBCAT P1D

Hydrograph



Summary for Subcatchment P1E: SUBCAT P1E

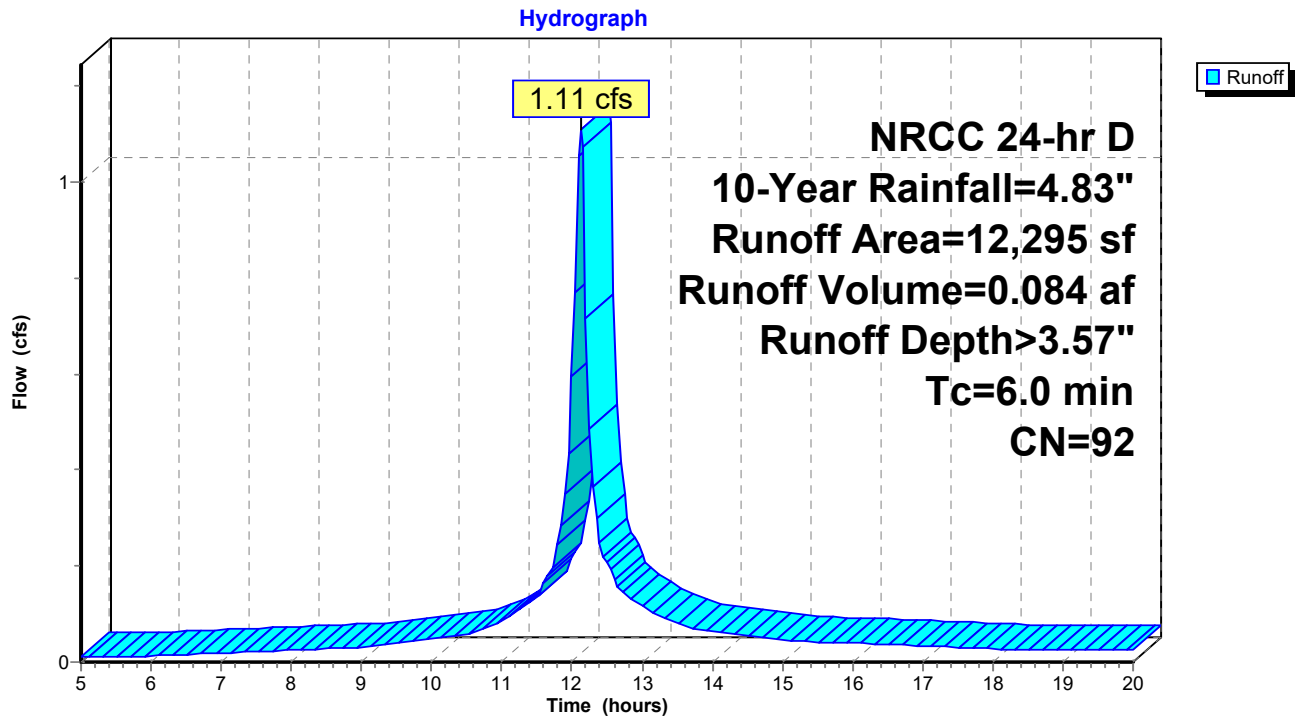
Runoff = 1.11 cfs @ 12.13 hrs, Volume= 0.084 af, Depth> 3.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.83"

Area (sf)	CN	Description
9,384	98	Paved parking, HSG C
2,040	74	>75% Grass cover, Good, HSG C
871	74	>75% Grass cover, Good, HSG C
12,295	92	Weighted Average
2,911		23.68% Pervious Area
9,384		76.32% Impervious Area

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

Subcatchment P1E: SUBCAT P1E



Summary for Subcatchment P1F: SUBCAT P1F

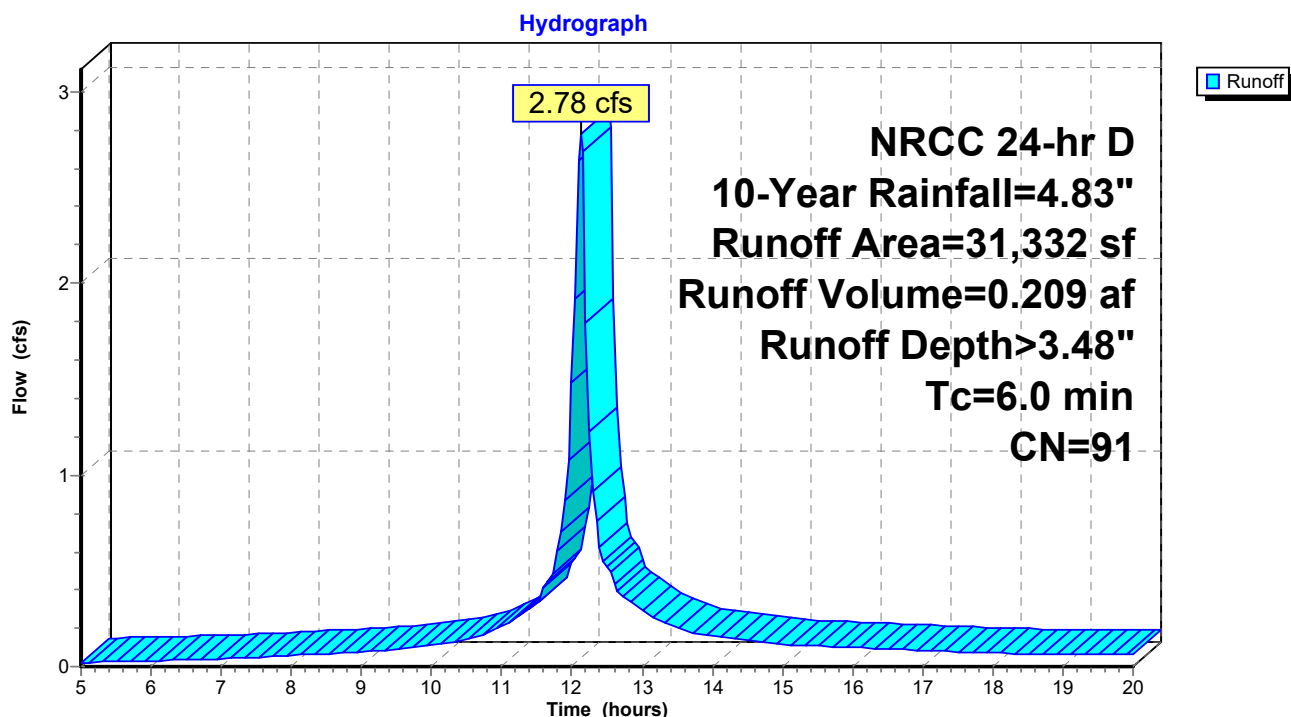
Runoff = 2.78 cfs @ 12.13 hrs, Volume= 0.209 af, Depth> 3.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.83"

Area (sf)	CN	Description
8,438	98	Paved parking, HSG C
9,131	74	>75% Grass cover, Good, HSG C
3,646	96	Gravel surface, HSG C
10,117	98	Roofs, HSG C
31,332	91	Weighted Average
12,777		40.78% Pervious Area
18,555		59.22% Impervious Area

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

Subcatchment P1F: SUBCAT P1F



Summary for Subcatchment P2: SUBCAT P2

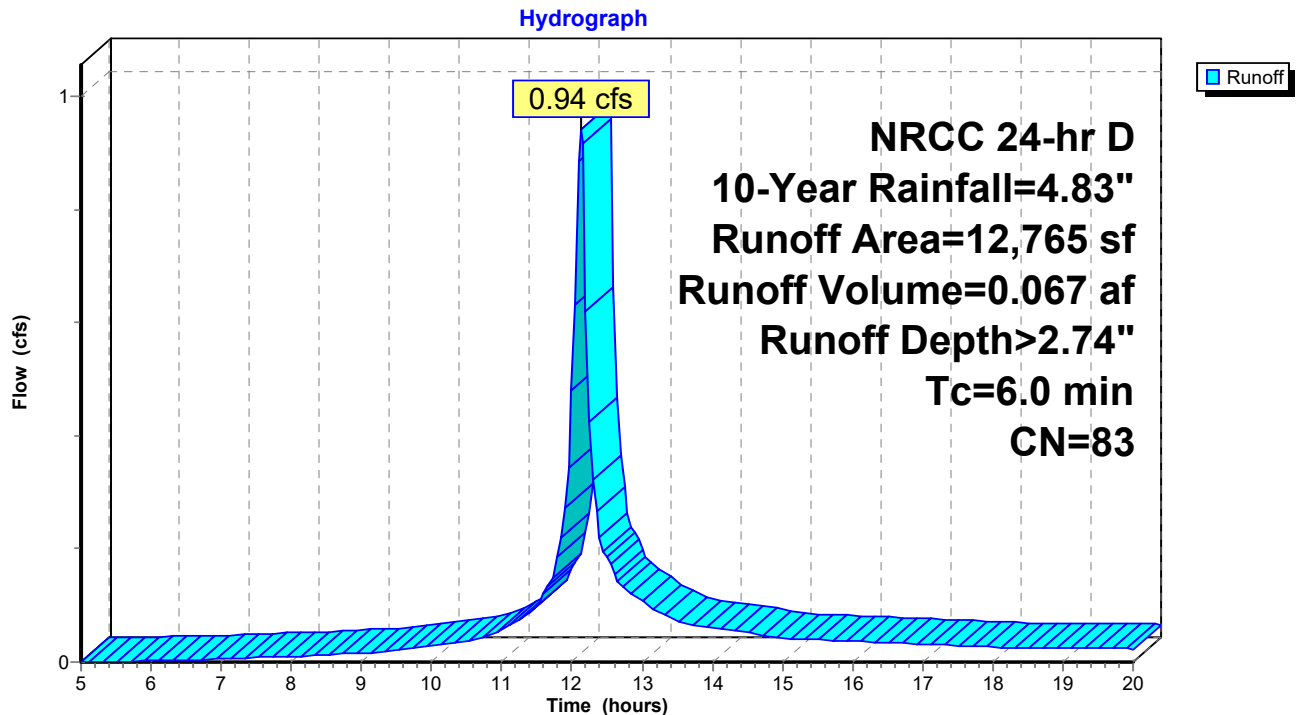
Runoff = 0.94 cfs @ 12.13 hrs, Volume= 0.067 af, Depth> 2.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.83"

Area (sf)	CN	Description
4,782	96	Gravel surface, HSG C
350	98	Roofs, HSG C
7,633	74	>75% Grass cover, Good, HSG C
12,765	83	Weighted Average
12,415		97.26% Pervious Area
350		2.74% Impervious Area

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

Subcatchment P2: SUBCAT P2



Summary for Subcatchment P3: SUBCAT P3

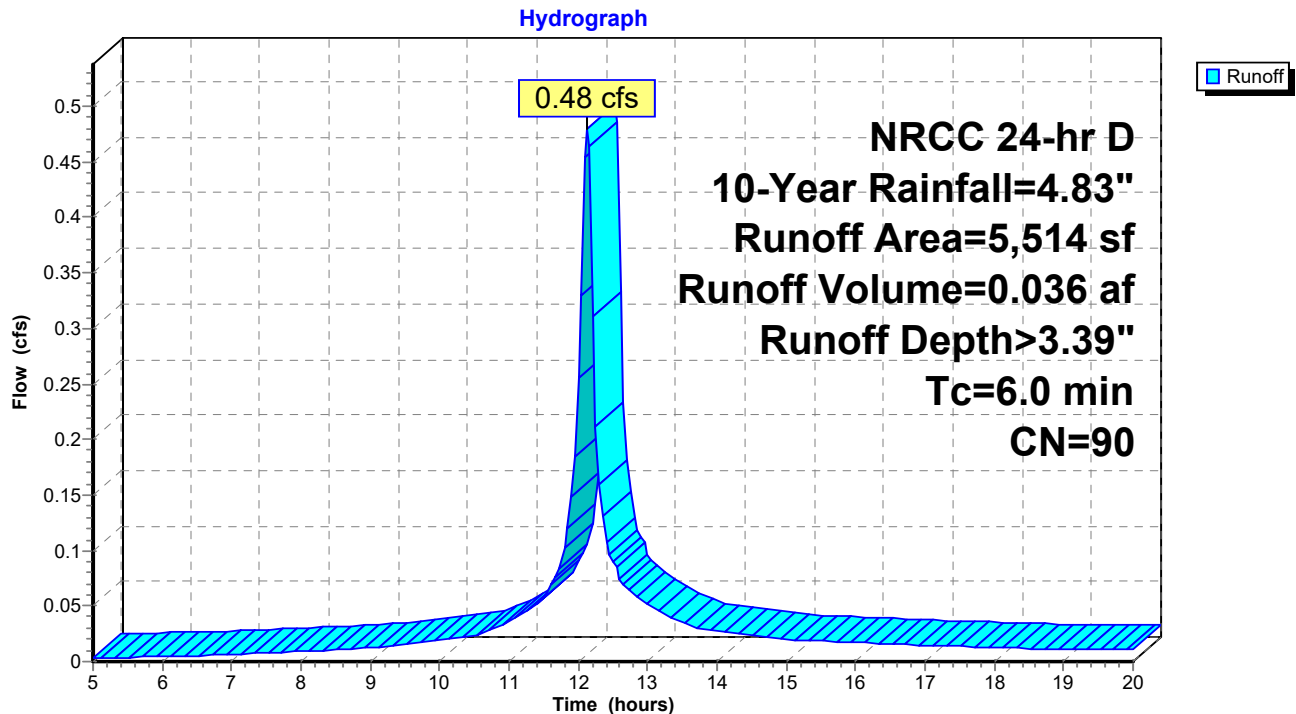
Runoff = 0.48 cfs @ 12.13 hrs, Volume= 0.036 af, Depth> 3.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.83"

Area (sf)	CN	Description
1,639	96	Gravel surface, HSG C
1,300	98	Paved parking, HSG C
842	98	Roofs, HSG C
1,733	74	>75% Grass cover, Good, HSG C
5,514	90	Weighted Average
3,372		61.15% Pervious Area
2,142		38.85% Impervious Area

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

Subcatchment P3: SUBCAT P3



Summary for Pond CB1: CB1

Inflow Area = 0.158 ac, 77.83% Impervious, Inflow Depth > 3.66" for 10-Year event
 Inflow = 0.63 cfs @ 12.13 hrs, Volume= 0.048 af
 Outflow = 0.63 cfs @ 12.13 hrs, Volume= 0.048 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.63 cfs @ 12.13 hrs, Volume= 0.048 af

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

Peak Elev= 7.97' @ 12.13 hrs

Flood Elev= 10.91'

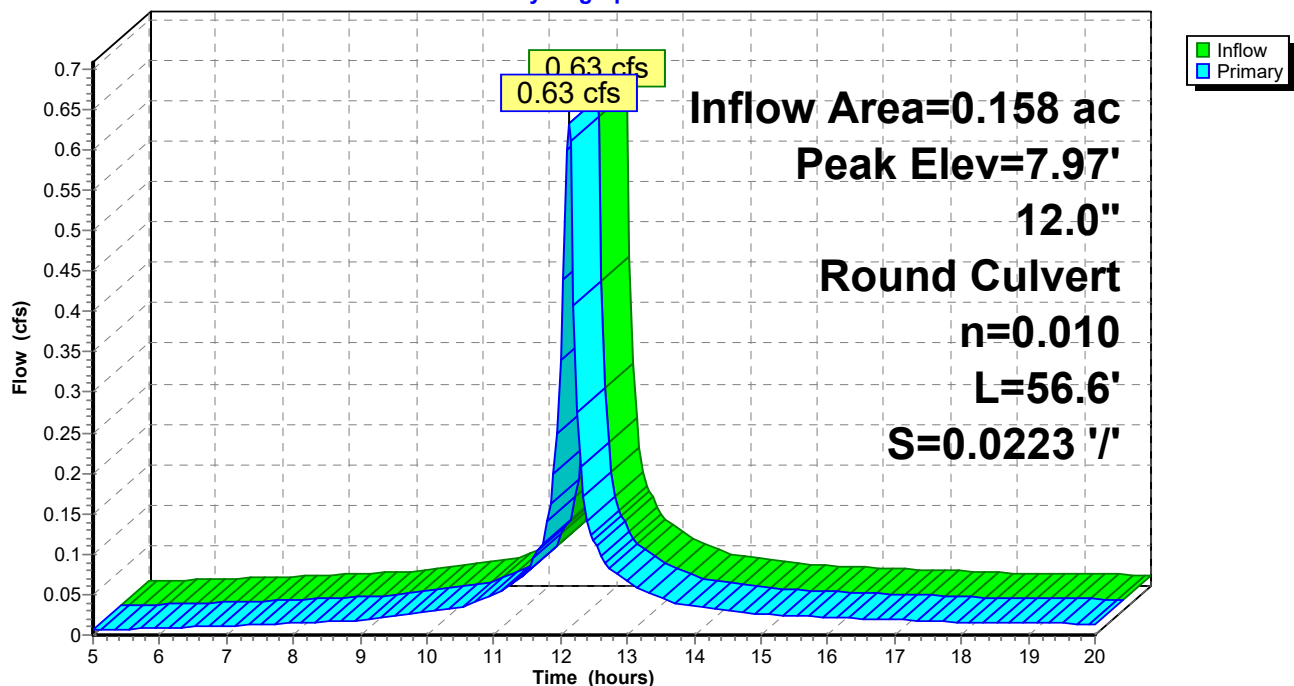
Device	Routing	Invert	Outlet Devices
#1	Primary	7.51'	12.0" Round Culvert L= 56.6' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 7.51' / 6.25' S= 0.0223 '/ Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.61 cfs @ 12.13 hrs HW=7.95' (Free Discharge)

↑**1=Culvert** (Inlet Controls 0.61 cfs @ 1.79 fps)

Pond CB1: CB1

Hydrograph



Summary for Pond CB2: CB2

Inflow Area = 0.212 ac, 82.40% Impervious, Inflow Depth > 3.75" for 10-Year event
 Inflow = 0.86 cfs @ 12.13 hrs, Volume= 0.066 af
 Outflow = 0.86 cfs @ 12.13 hrs, Volume= 0.066 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.86 cfs @ 12.13 hrs, Volume= 0.066 af

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

Peak Elev= 7.03' @ 12.13 hrs

Flood Elev= 9.66'

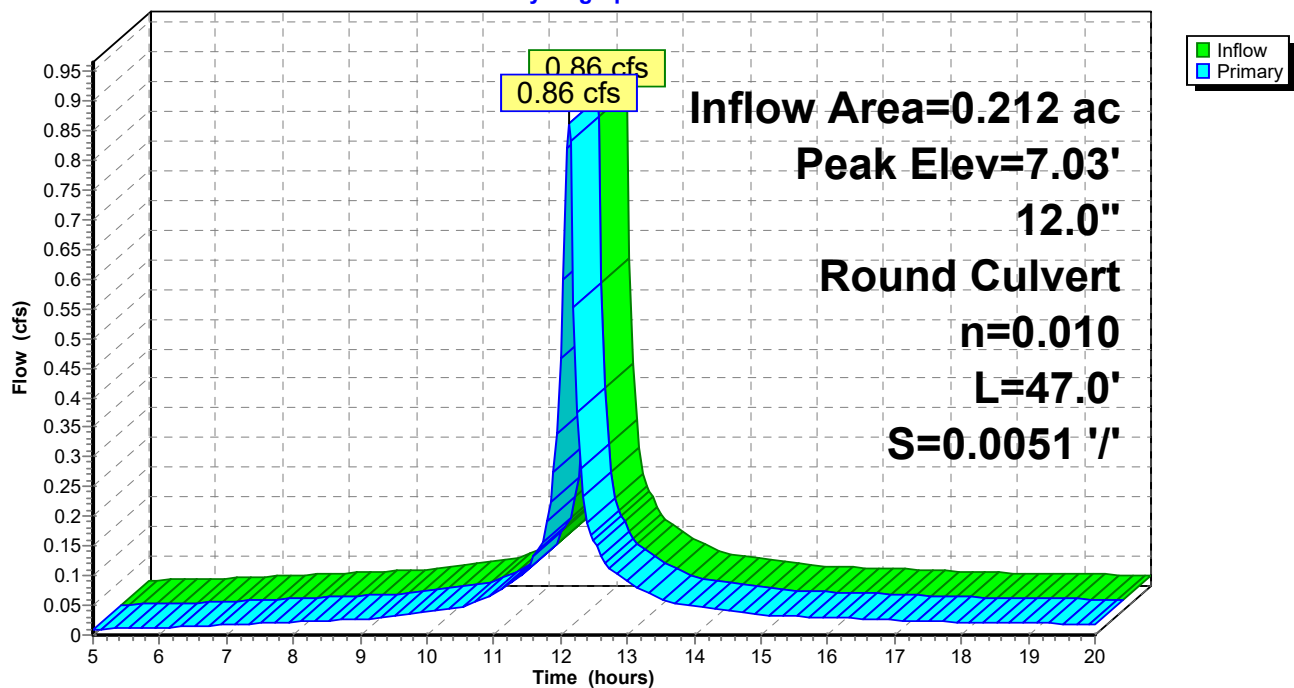
Device	Routing	Invert	Outlet Devices
#1	Primary	6.49'	12.0" Round Culvert L= 47.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.49' / 6.25' S= 0.0051 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.83 cfs @ 12.13 hrs HW=7.02' (Free Discharge)

1=Culvert (Barrel Controls 0.83 cfs @ 2.84 fps)

Pond CB2: CB2

Hydrograph



Summary for Pond CB3: CB3

Inflow Area = 0.144 ac, 93.00% Impervious, Inflow Depth > 3.92" for 10-Year event
 Inflow = 0.60 cfs @ 12.13 hrs, Volume= 0.047 af
 Outflow = 0.60 cfs @ 12.13 hrs, Volume= 0.047 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.60 cfs @ 12.13 hrs, Volume= 0.047 af

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

Peak Elev= 7.14' @ 12.13 hrs

Flood Elev= 10.10'

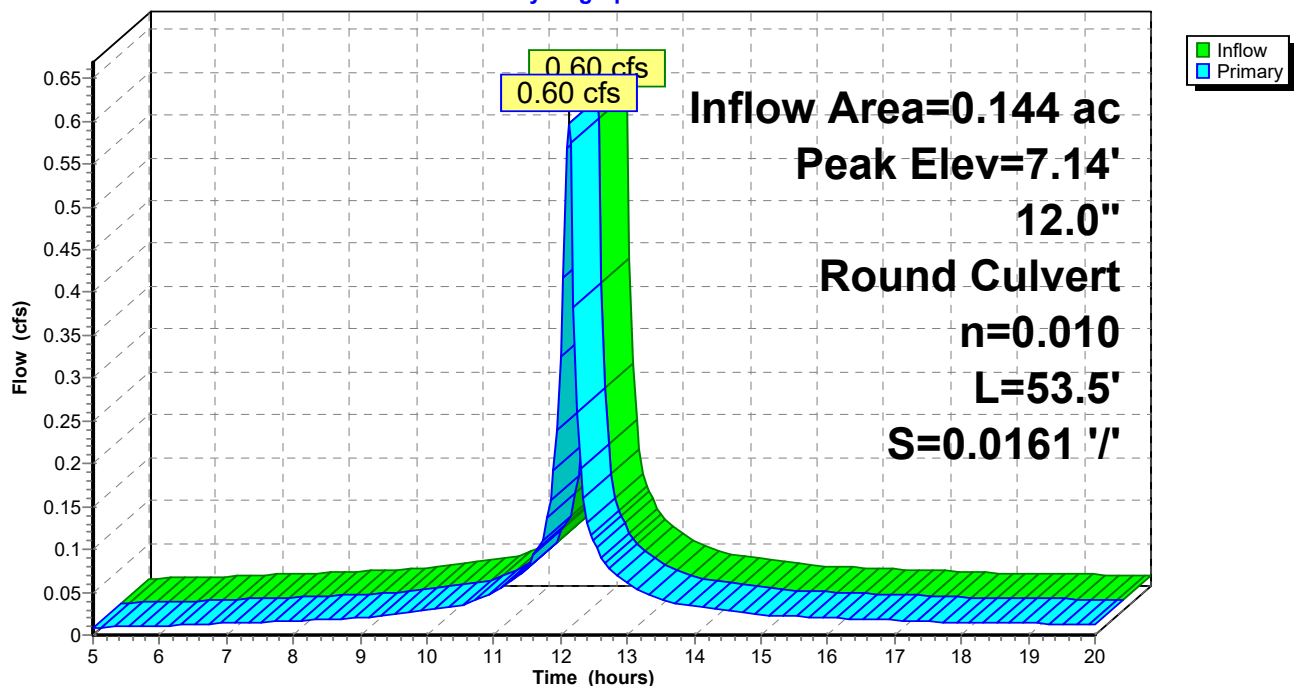
Device	Routing	Invert	Outlet Devices
#1	Primary	6.70'	12.0" Round Culvert L= 53.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.70' / 5.84' S= 0.0161 ' S= 0.0161 ' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.57 cfs @ 12.13 hrs HW=7.13' (Free Discharge)

↑**1=Culvert** (Inlet Controls 0.57 cfs @ 1.76 fps)

Pond CB3: CB3

Hydrograph



Summary for Pond CB4: CB4

Inflow Area = 0.112 ac, 100.00% Impervious, Inflow Depth > 4.06" for 10-Year event
 Inflow = 0.47 cfs @ 12.13 hrs, Volume= 0.038 af
 Outflow = 0.47 cfs @ 12.13 hrs, Volume= 0.038 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.47 cfs @ 12.13 hrs, Volume= 0.038 af

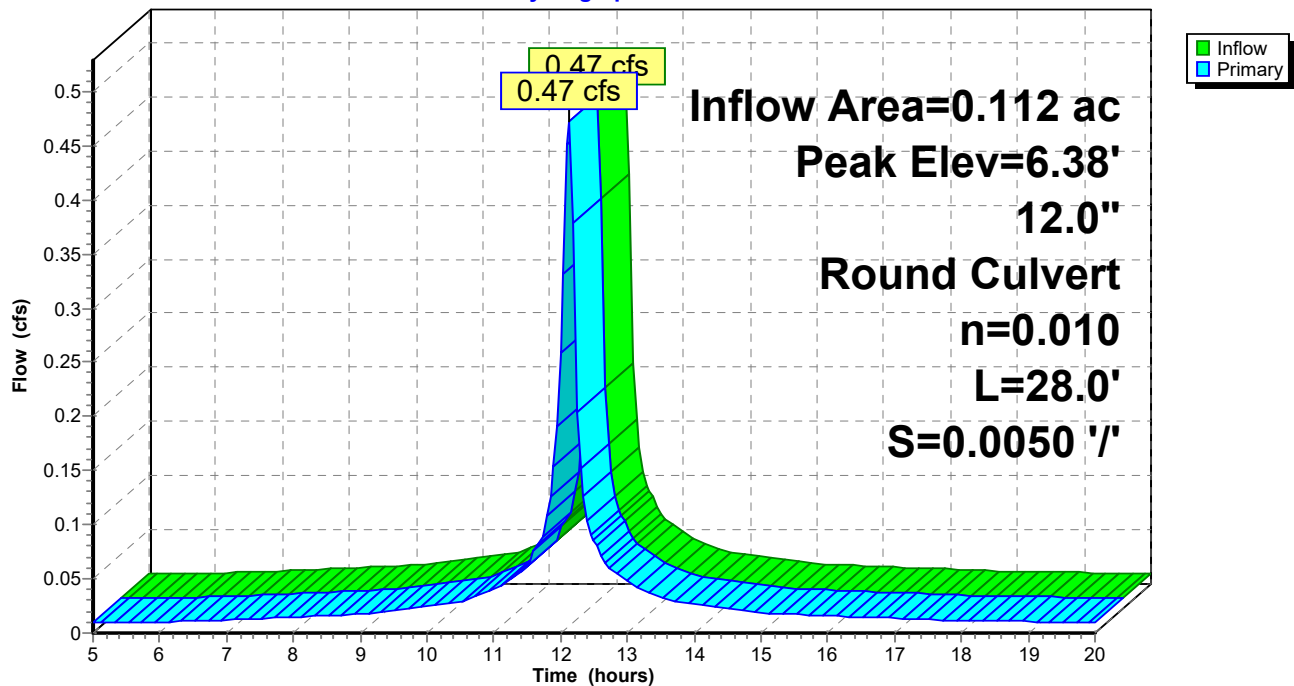
Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 6.38' @ 12.13 hrs
 Flood Elev= 8.48'

Device	Routing	Invert	Outlet Devices
#1	Primary	5.98'	12.0" Round Culvert L= 28.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 5.98' / 5.84' S= 0.0050 '/ Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.45 cfs @ 12.13 hrs HW=6.37' (Free Discharge)
 1=Culvert (Barrel Controls 0.45 cfs @ 2.35 fps)

Pond CB4: CB4

Hydrograph



Summary for Pond CDS: CDS

Inflow Area = 0.626 ac, 86.82% Impervious, Inflow Depth > 3.82" for 10-Year event
 Inflow = 2.56 cfs @ 12.13 hrs, Volume= 0.199 af
 Outflow = 2.56 cfs @ 12.13 hrs, Volume= 0.199 af, Atten= 0%, Lag= 0.0 min
 Primary = 2.56 cfs @ 12.13 hrs, Volume= 0.199 af

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

Peak Elev= 5.69' @ 12.13 hrs

Flood Elev= 8.60'

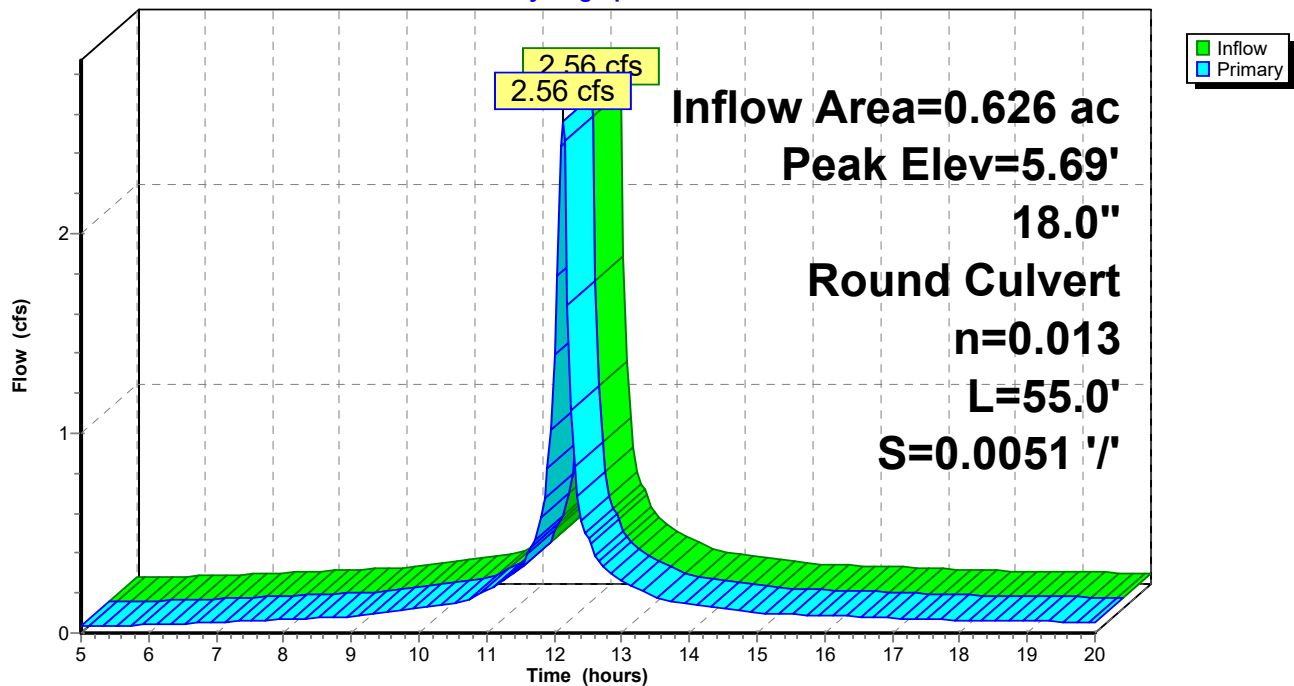
Device	Routing	Invert	Outlet Devices
#1	Primary	4.78'	18.0" Round Culvert L= 55.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 4.78' / 4.50' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.46 cfs @ 12.13 hrs HW=5.66' (Free Discharge)

1=Culvert (Barrel Controls 2.46 cfs @ 3.27 fps)

Pond CDS: CDS

Hydrograph



Summary for Pond DMH1: DMH1

Inflow Area = 0.370 ac, 80.45% Impervious, Inflow Depth > 3.71" for 10-Year event
 Inflow = 1.49 cfs @ 12.13 hrs, Volume= 0.115 af
 Outflow = 1.49 cfs @ 12.13 hrs, Volume= 0.115 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.49 cfs @ 12.13 hrs, Volume= 0.115 af

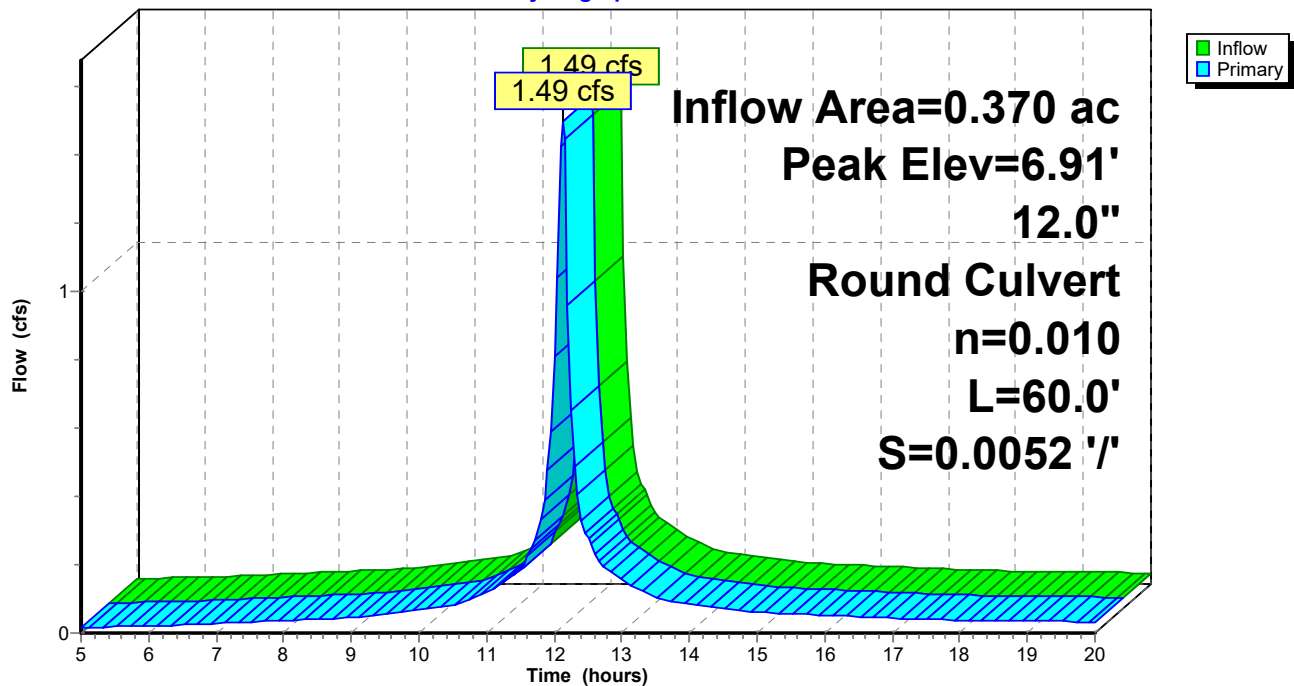
Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 6.91' @ 12.13 hrs
 Flood Elev= 9.62'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.15'	12.0" Round Culvert L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.15' / 5.84' S= 0.0052 '/ Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.43 cfs @ 12.13 hrs HW=6.89' (Free Discharge)
 ↑ **1=Culvert** (Inlet Controls 1.43 cfs @ 2.31 fps)

Pond DMH1: DMH1

Hydrograph



Summary for Pond RG: Rain Garden

Inflow Area = 0.282 ac, 76.32% Impervious, Inflow Depth > 3.57" for 10-Year event
 Inflow = 1.11 cfs @ 12.13 hrs, Volume= 0.084 af
 Outflow = 0.43 cfs @ 12.27 hrs, Volume= 0.082 af, Atten= 61%, Lag= 8.8 min
 Primary = 0.43 cfs @ 12.27 hrs, Volume= 0.082 af
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 5.73' @ 12.27 hrs Surf.Area= 1,053 sf Storage= 999 cf

Plug-Flow detention time= 53.6 min calculated for 0.082 af (97% of inflow)
 Center-of-Mass det. time= 43.6 min (799.4 - 755.8)

Volume	Invert	Avail.Storage	Storage Description
#1	4.45'	1,948 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
4.45	536	0	0
5.00	734	349	349
6.00	1,172	953	1,302
6.50	1,412	646	1,948

Device	Routing	Invert	Outlet Devices
#1	Primary	4.35'	12.0" Round Culvert L= 11.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 4.35' / 4.25' S= 0.0091 ' S= 0.0091 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	6.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	4.45'	2.0" Vert. Orifice/Grate C= 0.600
#4	Device 1	5.00'	4.0" Vert. Orifice/Grate C= 0.600
#5	Secondary	6.17'	6.0' long x 3.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

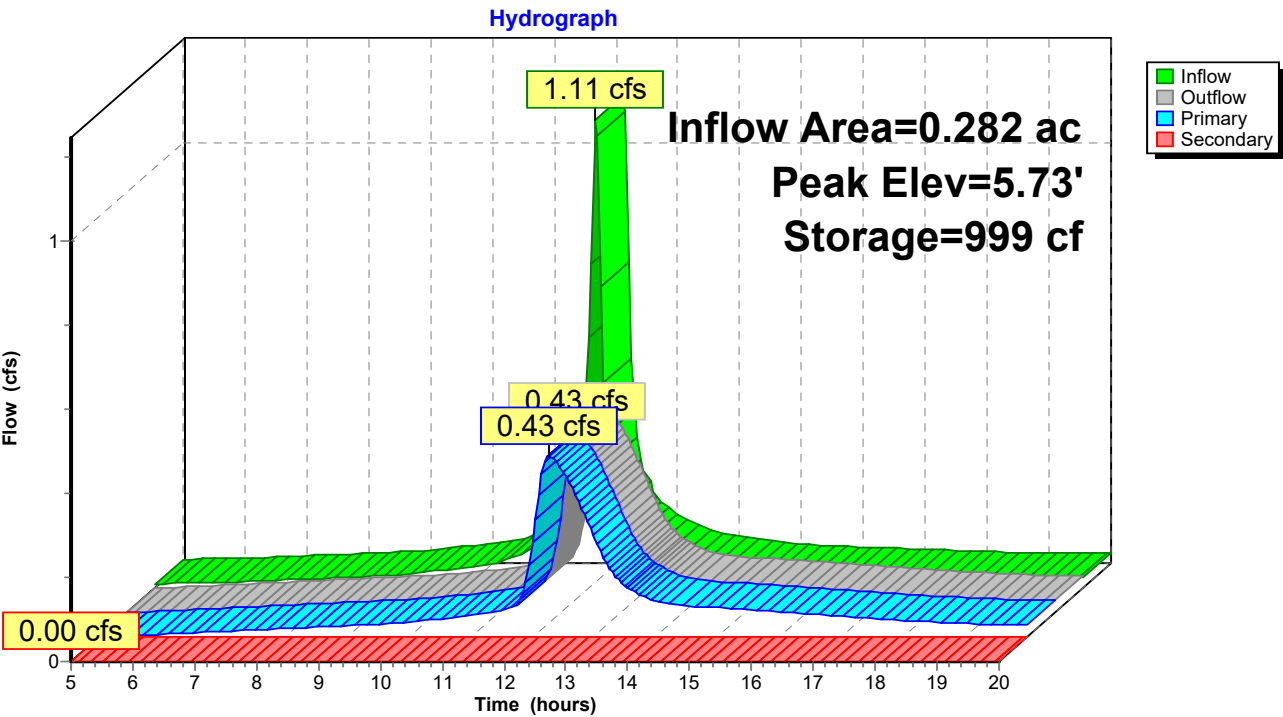
Primary OutFlow Max=0.43 cfs @ 12.27 hrs HW=5.72' (Free Discharge)

1=Culvert (Passes 0.43 cfs of 2.79 cfs potential flow)
 2=Orifice/Grate (Controls 0.00 cfs)
 3=Orifice/Grate (Orifice Controls 0.11 cfs @ 5.25 fps)
 4=Orifice/Grate (Orifice Controls 0.31 cfs @ 3.59 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=4.45' (Free Discharge)

5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond RG: Rain Garden

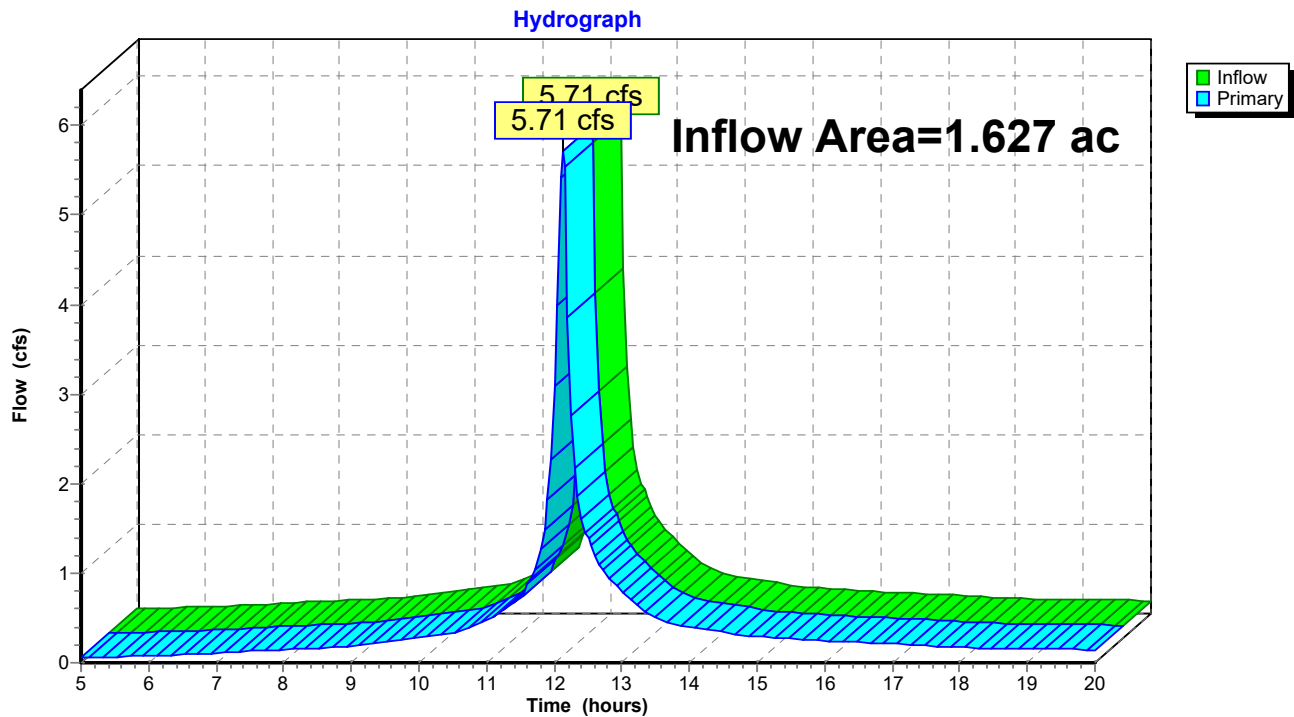


Summary for Link A: Design point 1

Inflow Area = 1.627 ac, 72.80% Impervious, Inflow Depth > 3.61" for 10-Year event
 Inflow = 5.71 cfs @ 12.13 hrs, Volume= 0.490 af
 Primary = 5.71 cfs @ 12.13 hrs, Volume= 0.490 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link A: Design point 1

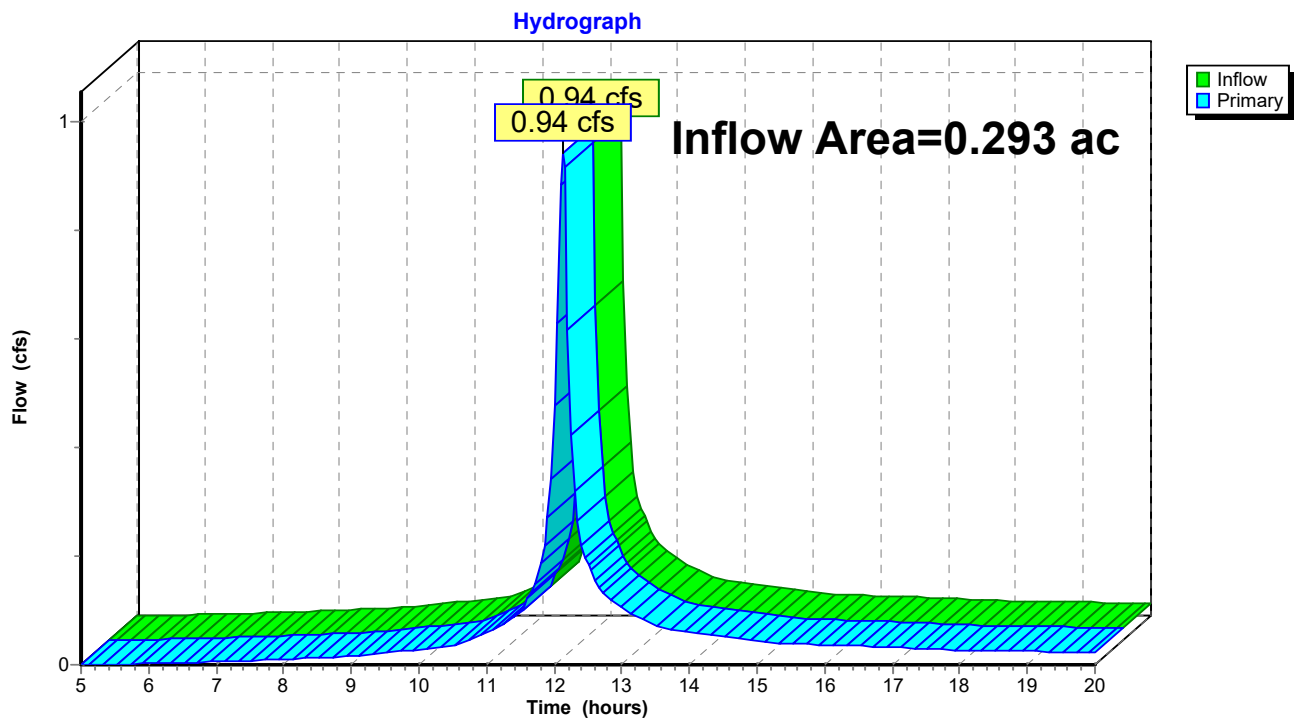


Summary for Link DP2: Design Point 2

Inflow Area = 0.293 ac, 2.74% Impervious, Inflow Depth > 2.74" for 10-Year event
 Inflow = 0.94 cfs @ 12.13 hrs, Volume= 0.067 af
 Primary = 0.94 cfs @ 12.13 hrs, Volume= 0.067 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link DP2: Design Point 2

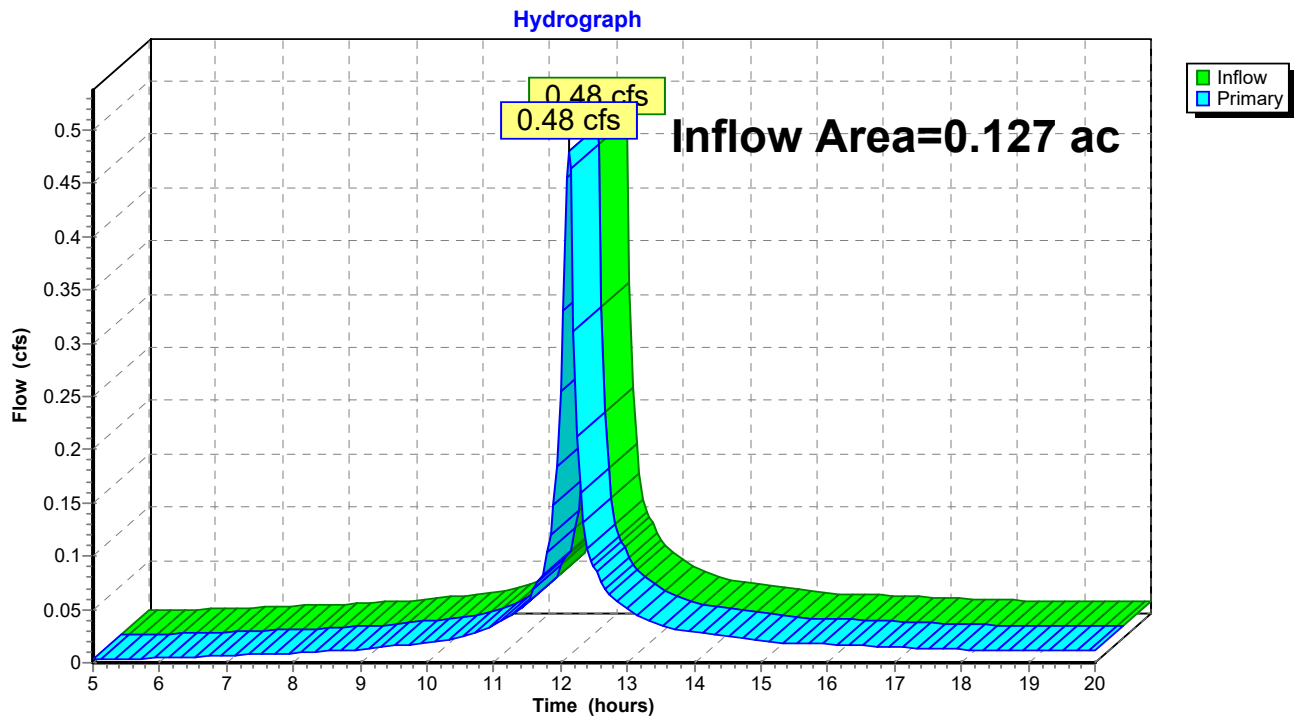


Summary for Link DP3: DESIGN POINT 3

Inflow Area = 0.127 ac, 38.85% Impervious, Inflow Depth > 3.39" for 10-Year event
 Inflow = 0.48 cfs @ 12.13 hrs, Volume= 0.036 af
 Primary = 0.48 cfs @ 12.13 hrs, Volume= 0.036 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link DP3: DESIGN POINT 3



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

SubcatchmentP1A: SUBCAT P1A	Runoff Area=6,884 sf 77.83% Impervious Runoff Depth>7.27" Tc=6.0 min CN=93 Runoff=1.22 cfs 0.096 af
SubcatchmentP1B: SUBCAT P1B	Runoff Area=9,254 sf 82.40% Impervious Runoff Depth>7.35" Tc=6.0 min CN=94 Runoff=1.65 cfs 0.130 af
SubcatchmentP1C: SUBCAT P1C	Runoff Area=6,257 sf 93.00% Impervious Runoff Depth>7.48" Tc=6.0 min CN=96 Runoff=1.12 cfs 0.090 af
SubcatchmentP1D: SUBCAT P1D	Runoff Area=4,870 sf 100.00% Impervious Runoff Depth>7.59" Tc=6.0 min CN=98 Runoff=0.88 cfs 0.071 af
SubcatchmentP1E: SUBCAT P1E	Runoff Area=12,295 sf 76.32% Impervious Runoff Depth>7.18" Tc=6.0 min CN=92 Runoff=2.16 cfs 0.169 af
SubcatchmentP1F: SUBCAT P1F	Runoff Area=31,332 sf 59.22% Impervious Runoff Depth>7.09" Tc=6.0 min CN=91 Runoff=5.47 cfs 0.425 af
SubcatchmentP2: SUBCAT P2	Runoff Area=12,765 sf 2.74% Impervious Runoff Depth>6.27" Tc=6.0 min CN=83 Runoff=2.06 cfs 0.153 af
SubcatchmentP3: SUBCAT P3	Runoff Area=5,514 sf 38.85% Impervious Runoff Depth>7.00" Tc=6.0 min CN=90 Runoff=0.96 cfs 0.074 af
Pond CB1: CB1	Peak Elev=8.18' Inflow=1.22 cfs 0.096 af 12.0" Round Culvert n=0.010 L=56.6' S=0.0223 ' Outflow=1.22 cfs 0.096 af
Pond CB2: CB2	Peak Elev=7.30' Inflow=1.65 cfs 0.130 af 12.0" Round Culvert n=0.010 L=47.0' S=0.0051 ' Outflow=1.65 cfs 0.130 af
Pond CB3: CB3	Peak Elev=7.33' Inflow=1.12 cfs 0.090 af 12.0" Round Culvert n=0.010 L=53.5' S=0.0161 ' Outflow=1.12 cfs 0.090 af
Pond CB4: CB4	Peak Elev=6.56' Inflow=0.88 cfs 0.071 af 12.0" Round Culvert n=0.010 L=28.0' S=0.0050 ' Outflow=0.88 cfs 0.071 af
Pond CDS: CDS	Peak Elev=6.13' Inflow=4.86 cfs 0.386 af 18.0" Round Culvert n=0.013 L=55.0' S=0.0051 ' Outflow=4.86 cfs 0.386 af
Pond DMH1: DMH1	Peak Elev=7.56' Inflow=2.86 cfs 0.226 af 12.0" Round Culvert n=0.010 L=60.0' S=0.0052 ' Outflow=2.86 cfs 0.226 af
Pond RG: Rain Garden	Peak Elev=6.15' Storage=1,486 cf Inflow=2.16 cfs 0.169 af Primary=2.06 cfs 0.164 af Secondary=0.00 cfs 0.000 af Outflow=2.06 cfs 0.164 af
Link A: Design point 1	Inflow=12.03 cfs 0.975 af Primary=12.03 cfs 0.975 af

POST Dev 1-16-24*NRCC 24-hr D 100-Year Rainfall=8.94"*

Prepared by {enter your company name here}

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Link DP2: Design Point 2

Inflow=2.06 cfs 0.153 af

Primary=2.06 cfs 0.153 af

Link DP3: DESIGN POINT 3

Inflow=0.96 cfs 0.074 af

Primary=0.96 cfs 0.074 af

Total Runoff Area = 2.047 ac Runoff Volume = 1.207 af Average Runoff Depth = 7.07"
39.33% Pervious = 0.805 ac 60.67% Impervious = 1.242 ac

Summary for Subcatchment P1A: SUBCAT P1A

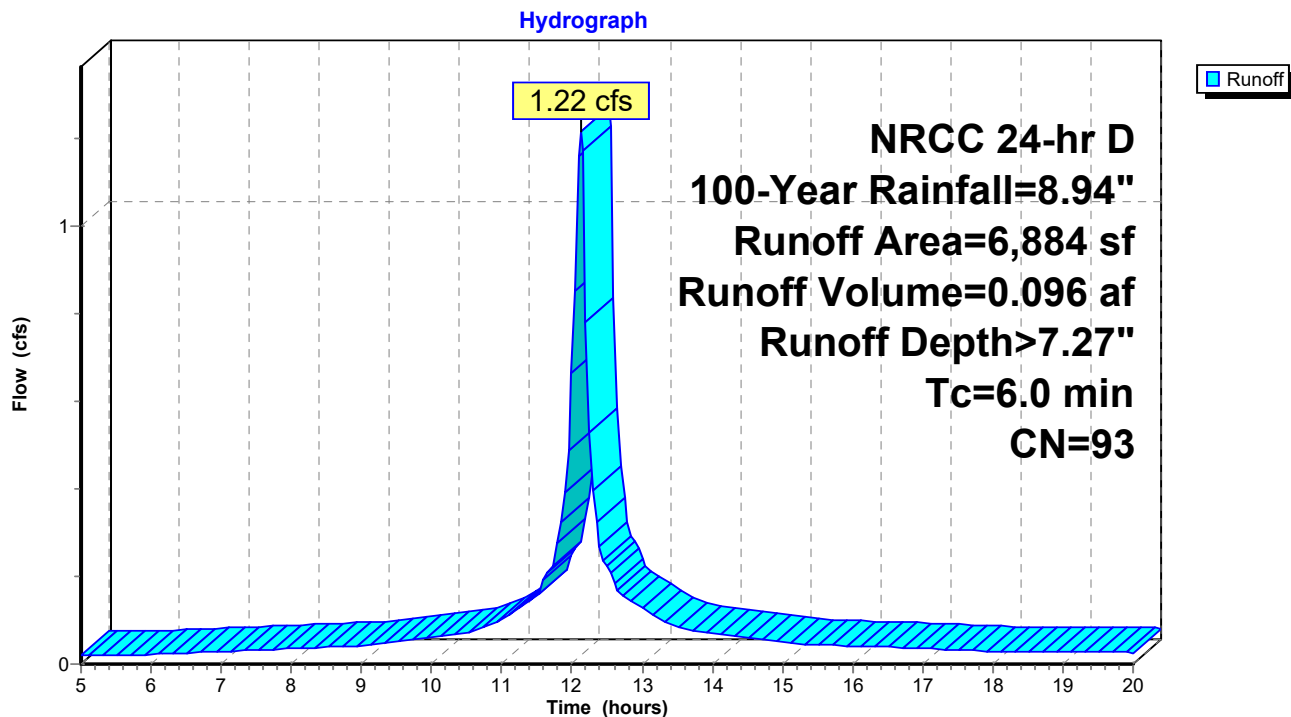
Runoff = 1.22 cfs @ 12.13 hrs, Volume= 0.096 af, Depth> 7.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=8.94"

Area (sf)	CN	Description
5,204	98	Paved parking, HSG C
1,526	74	>75% Grass cover, Good, HSG C
* 154	98	Retaining Wall
6,884	93	Weighted Average
1,526		22.17% Pervious Area
5,358		77.83% Impervious Area

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

Subcatchment P1A: SUBCAT P1A



Summary for Subcatchment P1B: SUBCAT P1B

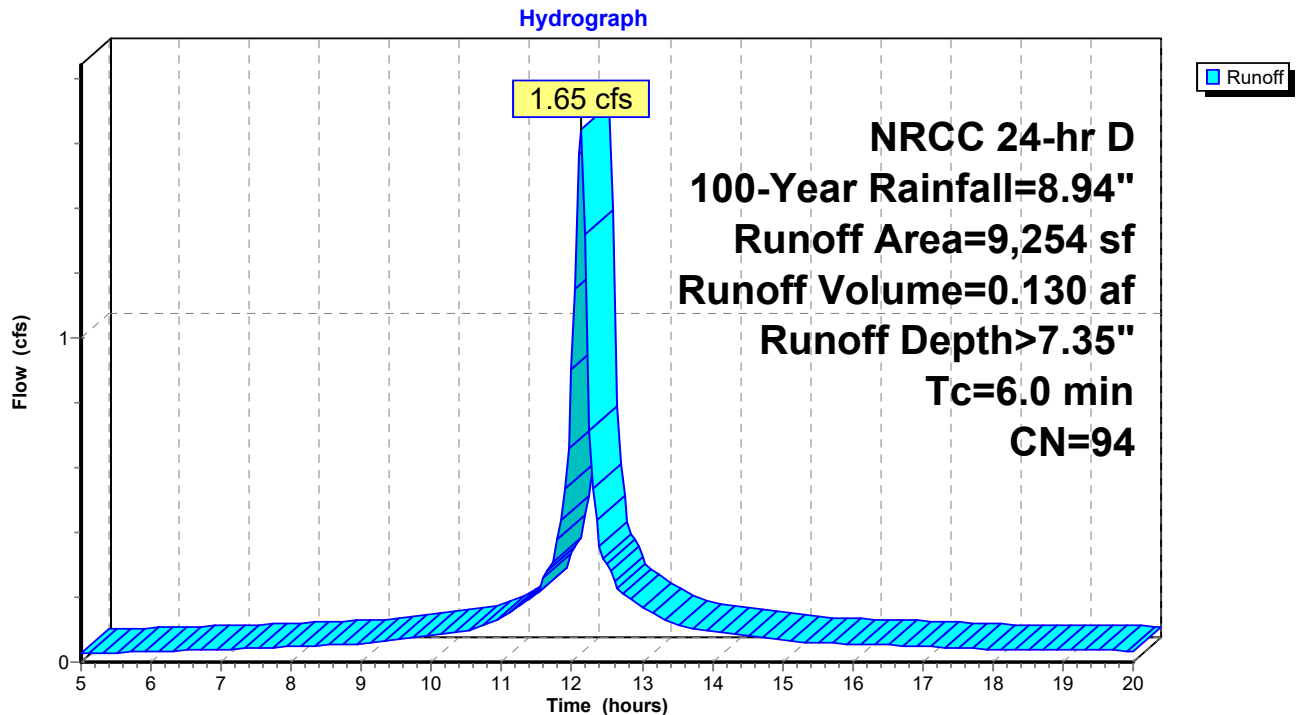
Runoff = 1.65 cfs @ 12.13 hrs, Volume= 0.130 af, Depth> 7.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=8.94"

Area (sf)	CN	Description
5,436	98	Paved parking, HSG C
1,629	74	>75% Grass cover, Good, HSG C
2,189	98	Roofs, HSG C
9,254	94	Weighted Average
1,629		17.60% Pervious Area
7,625		82.40% Impervious Area

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

Subcatchment P1B: SUBCAT P1B



Summary for Subcatchment P1C: SUBCAT P1C

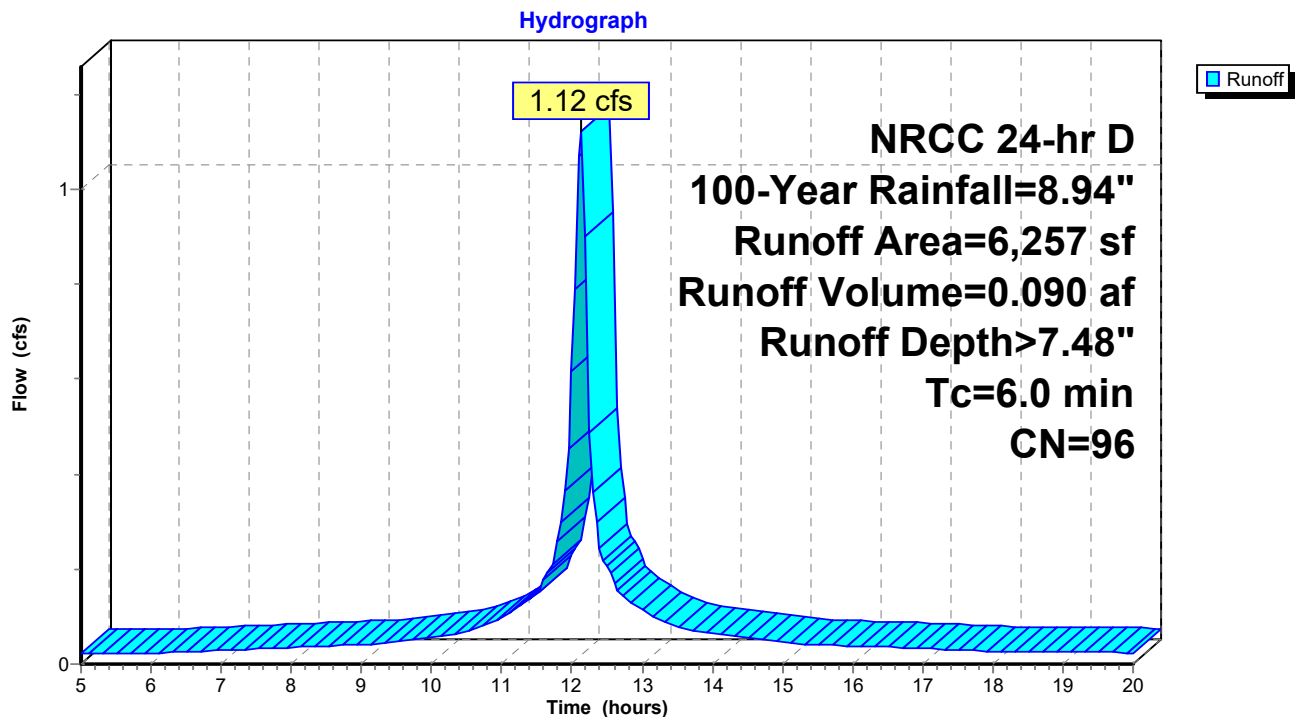
Runoff = 1.12 cfs @ 12.13 hrs, Volume= 0.090 af, Depth> 7.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=8.94"

Area (sf)	CN	Description
5,731	98	Paved parking, HSG C
438	74	>75% Grass cover, Good, HSG C
* 88	98	Retaining Wall
6,257	96	Weighted Average
438		7.00% Pervious Area
5,819		93.00% Impervious Area

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

Subcatchment P1C: SUBCAT P1C



Summary for Subcatchment P1D: SUBCAT P1D

Runoff = 0.88 cfs @ 12.13 hrs, Volume= 0.071 af, Depth> 7.59"

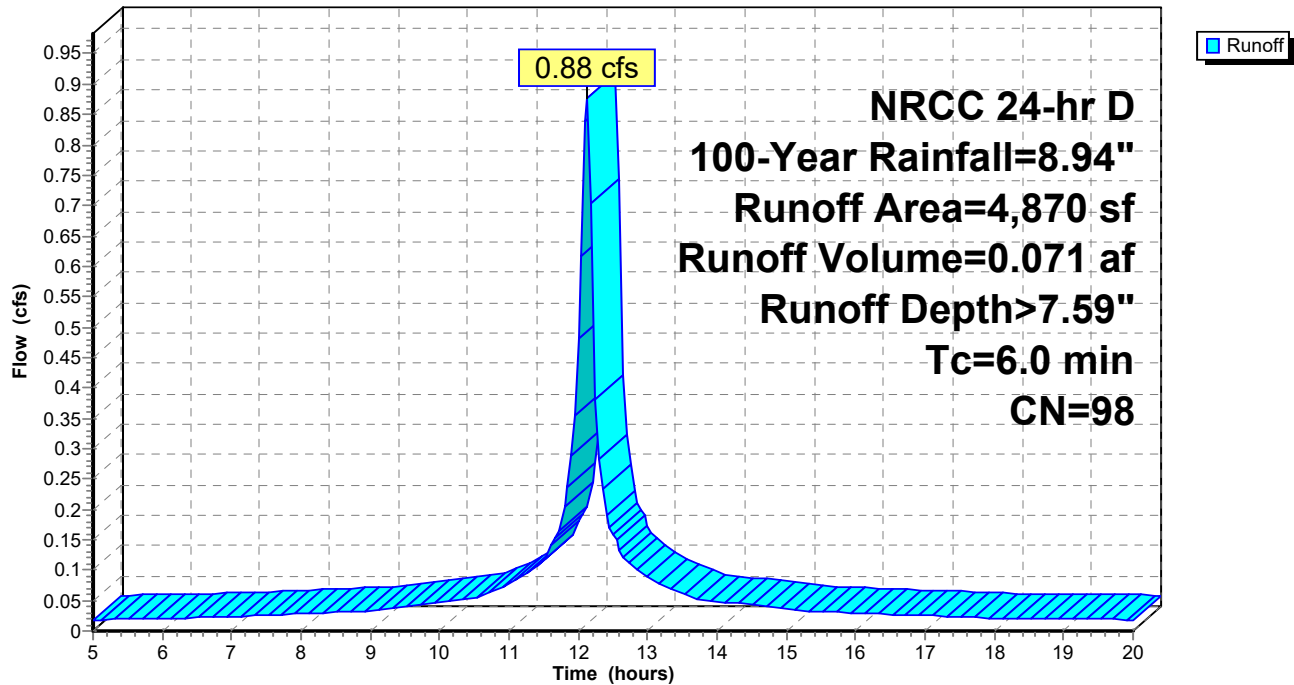
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=8.94"

Area (sf)	CN	Description
4,870	98	Paved parking, HSG C
4,870		100.00% Impervious Area

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

Subcatchment P1D: SUBCAT P1D

Hydrograph



Summary for Subcatchment P1E: SUBCAT P1E

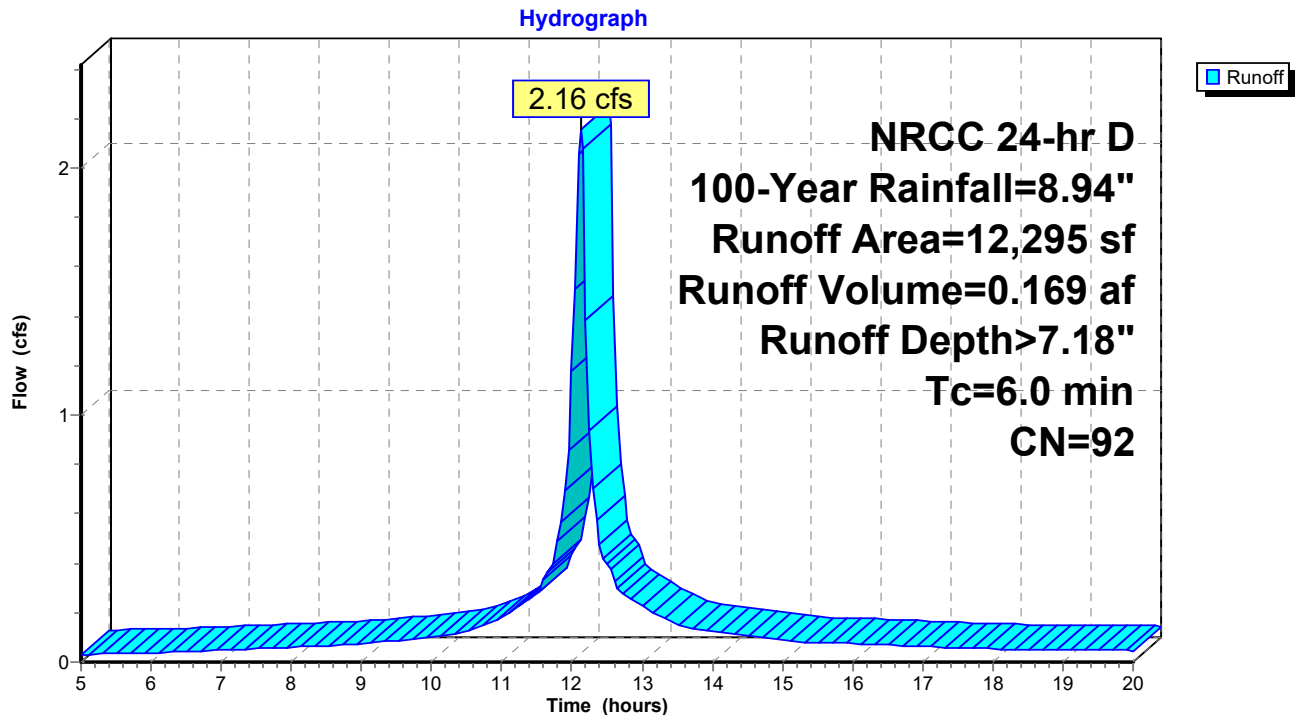
Runoff = 2.16 cfs @ 12.13 hrs, Volume= 0.169 af, Depth> 7.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=8.94"

Area (sf)	CN	Description
9,384	98	Paved parking, HSG C
2,040	74	>75% Grass cover, Good, HSG C
871	74	>75% Grass cover, Good, HSG C
12,295	92	Weighted Average
2,911		23.68% Pervious Area
9,384		76.32% Impervious Area

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

Subcatchment P1E: SUBCAT P1E



Summary for Subcatchment P1F: SUBCAT P1F

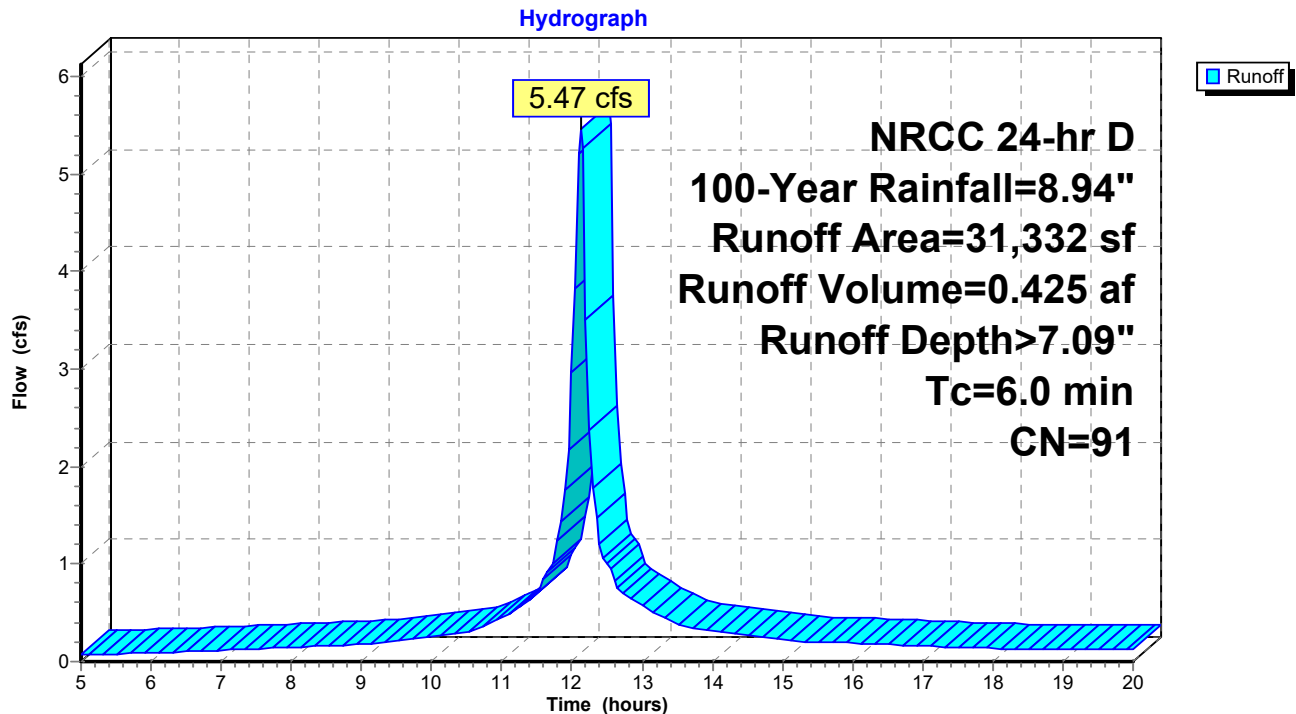
Runoff = 5.47 cfs @ 12.13 hrs, Volume= 0.425 af, Depth> 7.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=8.94"

Area (sf)	CN	Description
8,438	98	Paved parking, HSG C
9,131	74	>75% Grass cover, Good, HSG C
3,646	96	Gravel surface, HSG C
10,117	98	Roofs, HSG C
31,332	91	Weighted Average
12,777		40.78% Pervious Area
18,555		59.22% Impervious Area

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

Subcatchment P1F: SUBCAT P1F



Summary for Subcatchment P2: SUBCAT P2

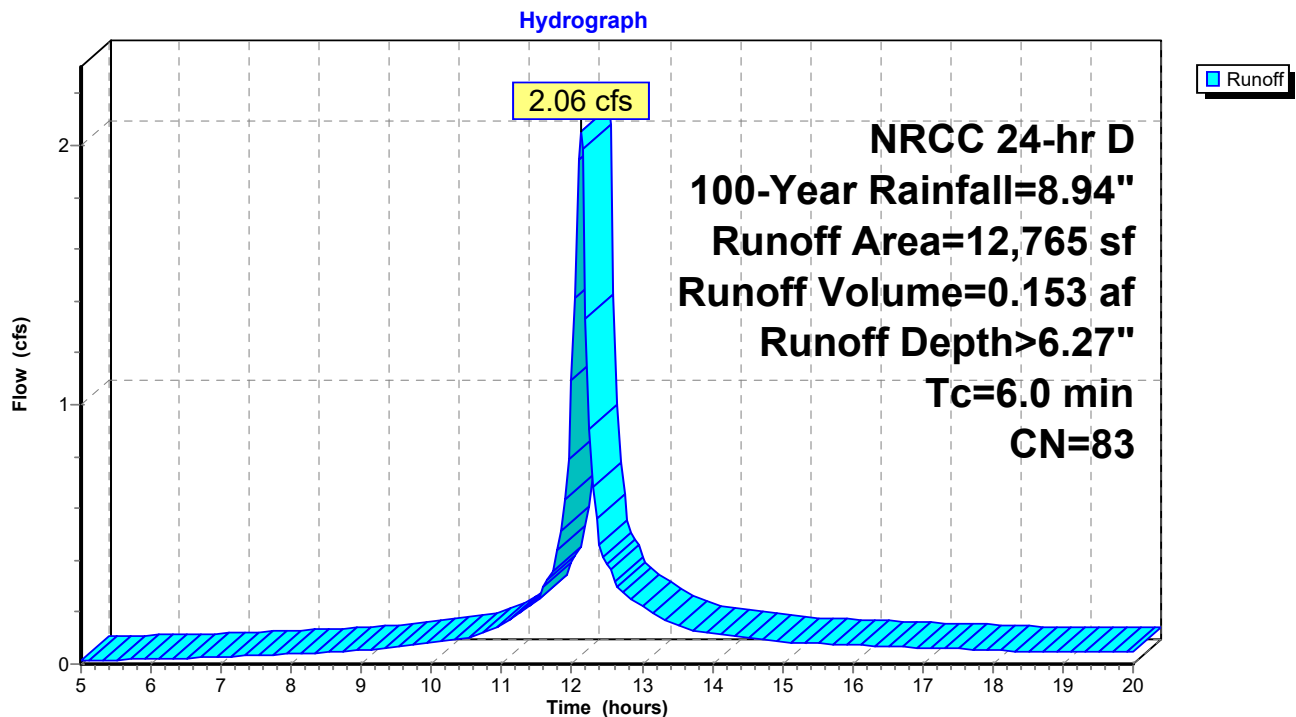
Runoff = 2.06 cfs @ 12.13 hrs, Volume= 0.153 af, Depth> 6.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=8.94"

Area (sf)	CN	Description
4,782	96	Gravel surface, HSG C
350	98	Roofs, HSG C
7,633	74	>75% Grass cover, Good, HSG C
12,765	83	Weighted Average
12,415		97.26% Pervious Area
350		2.74% Impervious Area

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

Subcatchment P2: SUBCAT P2



Summary for Subcatchment P3: SUBCAT P3

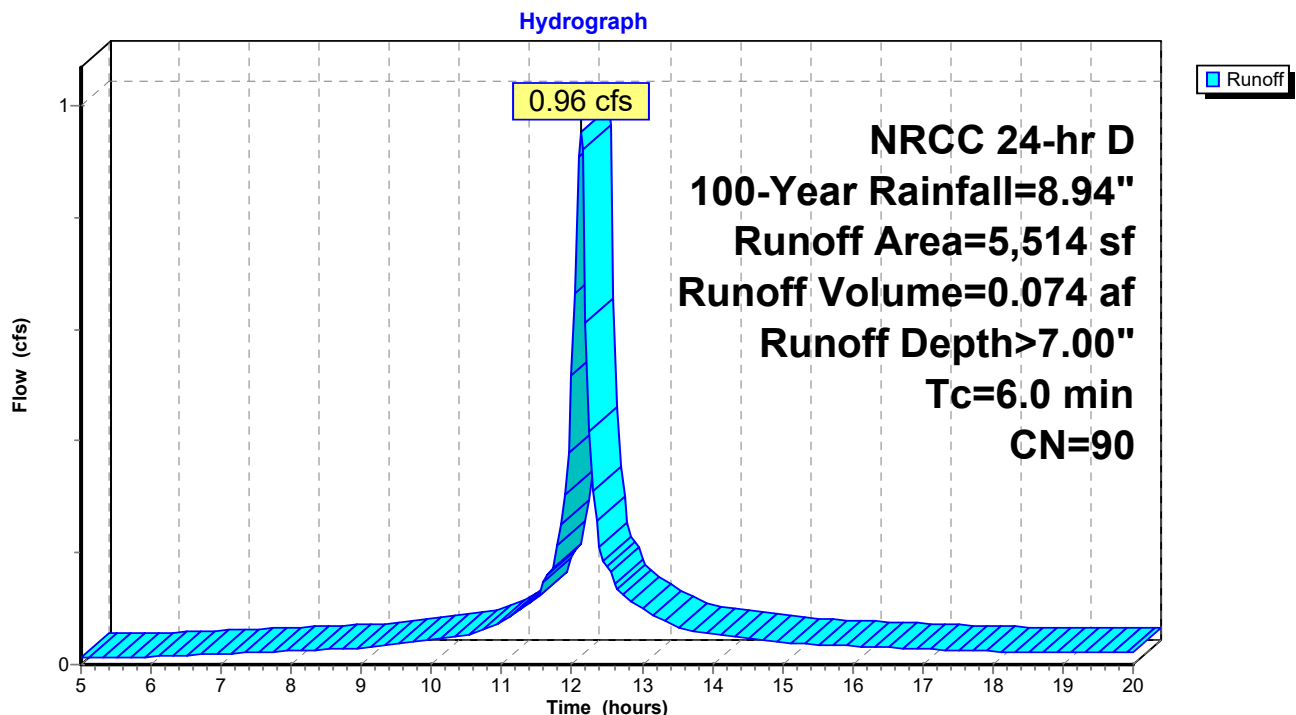
Runoff = 0.96 cfs @ 12.13 hrs, Volume= 0.074 af, Depth> 7.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=8.94"

Area (sf)	CN	Description
1,639	96	Gravel surface, HSG C
1,300	98	Paved parking, HSG C
842	98	Roofs, HSG C
1,733	74	>75% Grass cover, Good, HSG C
5,514	90	Weighted Average
3,372		61.15% Pervious Area
2,142		38.85% Impervious Area

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

Subcatchment P3: SUBCAT P3



Summary for Pond CB1: CB1

Inflow Area = 0.158 ac, 77.83% Impervious, Inflow Depth > 7.27" for 100-Year event
 Inflow = 1.22 cfs @ 12.13 hrs, Volume= 0.096 af
 Outflow = 1.22 cfs @ 12.13 hrs, Volume= 0.096 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.22 cfs @ 12.13 hrs, Volume= 0.096 af

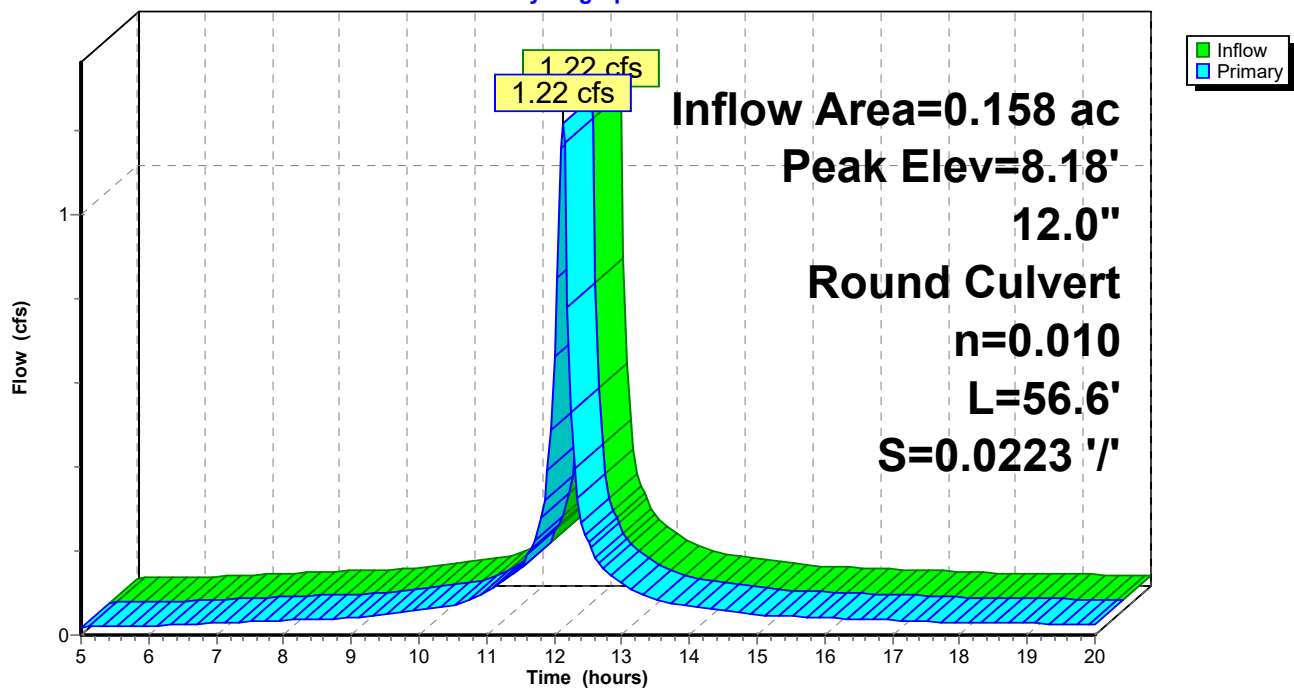
Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 8.18' @ 12.13 hrs
 Flood Elev= 10.91'

Device	Routing	Invert	Outlet Devices
#1	Primary	7.51'	12.0" Round Culvert L= 56.6' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 7.51' / 6.25' S= 0.0223 '/ Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.17 cfs @ 12.13 hrs HW=8.16' (Free Discharge)
 ↑ **1=Culvert** (Inlet Controls 1.17 cfs @ 2.16 fps)

Pond CB1: CB1

Hydrograph



Summary for Pond CB2: CB2

Inflow Area = 0.212 ac, 82.40% Impervious, Inflow Depth > 7.35" for 100-Year event
 Inflow = 1.65 cfs @ 12.13 hrs, Volume= 0.130 af
 Outflow = 1.65 cfs @ 12.13 hrs, Volume= 0.130 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.65 cfs @ 12.13 hrs, Volume= 0.130 af

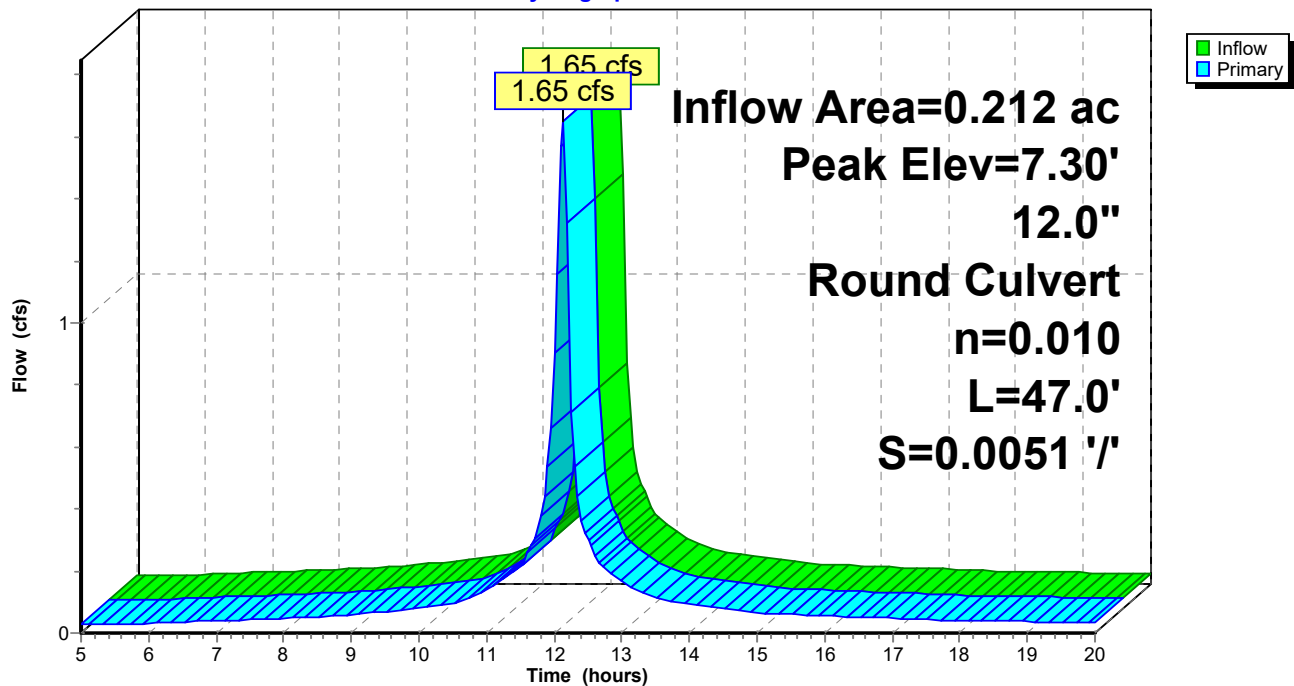
Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 7.30' @ 12.13 hrs
 Flood Elev= 9.66'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.49'	12.0" Round Culvert L= 47.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.49' / 6.25' S= 0.0051 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.58 cfs @ 12.13 hrs HW=7.28' (Free Discharge)
 1=Culvert (Barrel Controls 1.58 cfs @ 3.25 fps)

Pond CB2: CB2

Hydrograph



Summary for Pond CB3: CB3

Inflow Area = 0.144 ac, 93.00% Impervious, Inflow Depth > 7.48" for 100-Year event
 Inflow = 1.12 cfs @ 12.13 hrs, Volume= 0.090 af
 Outflow = 1.12 cfs @ 12.13 hrs, Volume= 0.090 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.12 cfs @ 12.13 hrs, Volume= 0.090 af

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

Peak Elev= 7.33' @ 12.13 hrs

Flood Elev= 10.10'

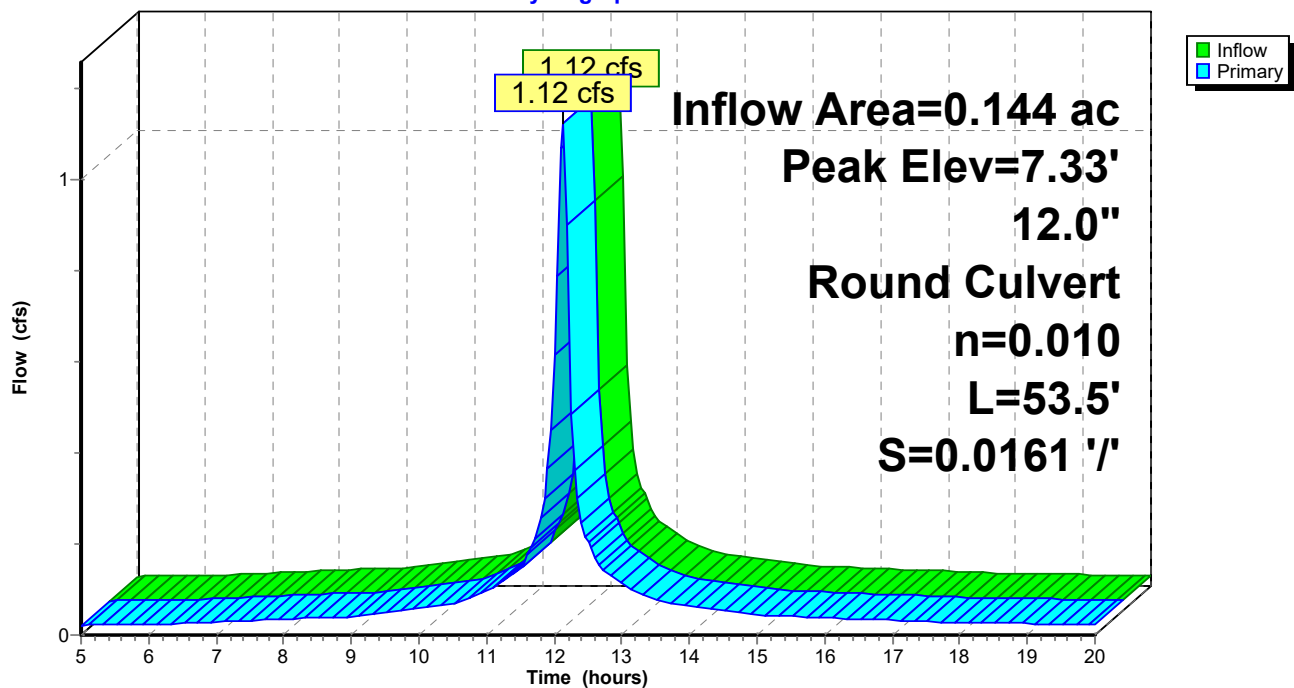
Device	Routing	Invert	Outlet Devices
#1	Primary	6.70'	12.0" Round Culvert L= 53.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.70' / 5.84' S= 0.0161 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.08 cfs @ 12.13 hrs HW=7.32' (Free Discharge)

↑1=Culvert (Inlet Controls 1.08 cfs @ 2.11 fps)

Pond CB3: CB3

Hydrograph



Summary for Pond CB4: CB4

Inflow Area = 0.112 ac, 100.00% Impervious, Inflow Depth > 7.59" for 100-Year event
 Inflow = 0.88 cfs @ 12.13 hrs, Volume= 0.071 af
 Outflow = 0.88 cfs @ 12.13 hrs, Volume= 0.071 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.88 cfs @ 12.13 hrs, Volume= 0.071 af

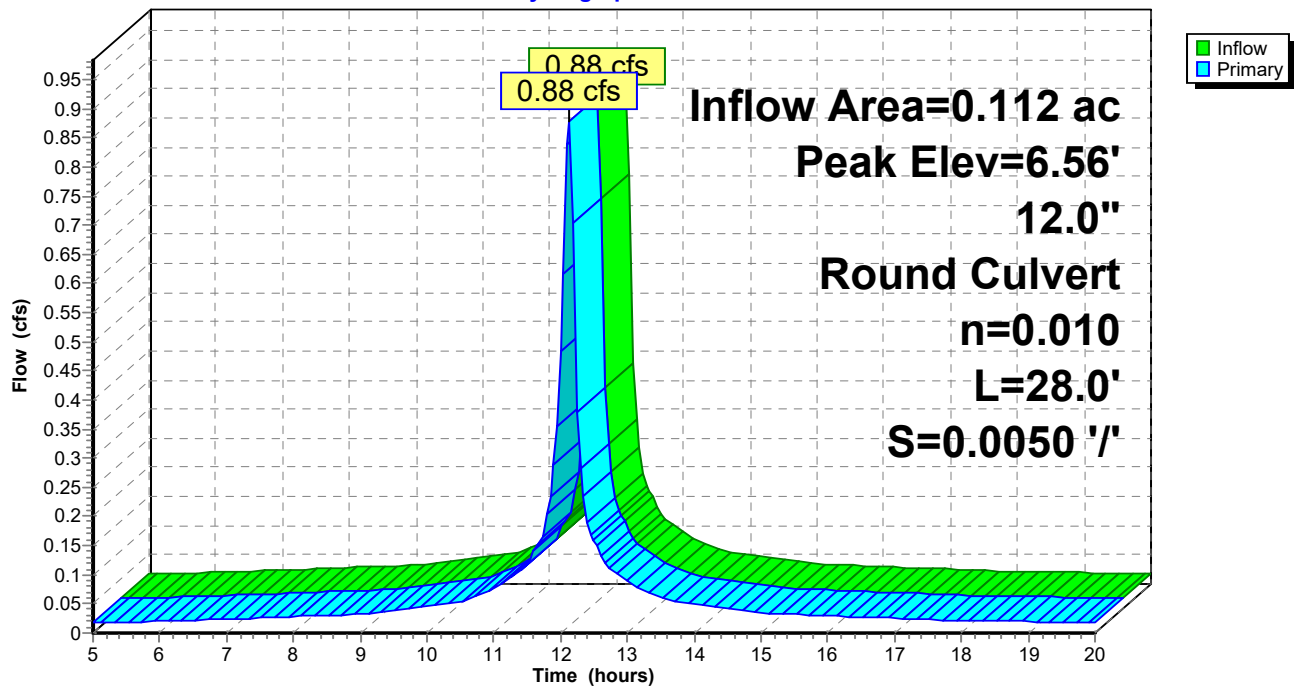
Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 6.56' @ 12.13 hrs
 Flood Elev= 8.48'

Device	Routing	Invert	Outlet Devices
#1	Primary	5.98'	12.0" Round Culvert L= 28.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 5.98' / 5.84' S= 0.0050 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.84 cfs @ 12.13 hrs HW=6.54' (Free Discharge)
 ↳ **1=Culvert** (Barrel Controls 0.84 cfs @ 2.68 fps)

Pond CB4: CB4

Hydrograph



Summary for Pond CDS: CDS

Inflow Area = 0.626 ac, 86.82% Impervious, Inflow Depth > 7.40" for 100-Year event
 Inflow = 4.86 cfs @ 12.13 hrs, Volume= 0.386 af
 Outflow = 4.86 cfs @ 12.13 hrs, Volume= 0.386 af, Atten= 0%, Lag= 0.0 min
 Primary = 4.86 cfs @ 12.13 hrs, Volume= 0.386 af

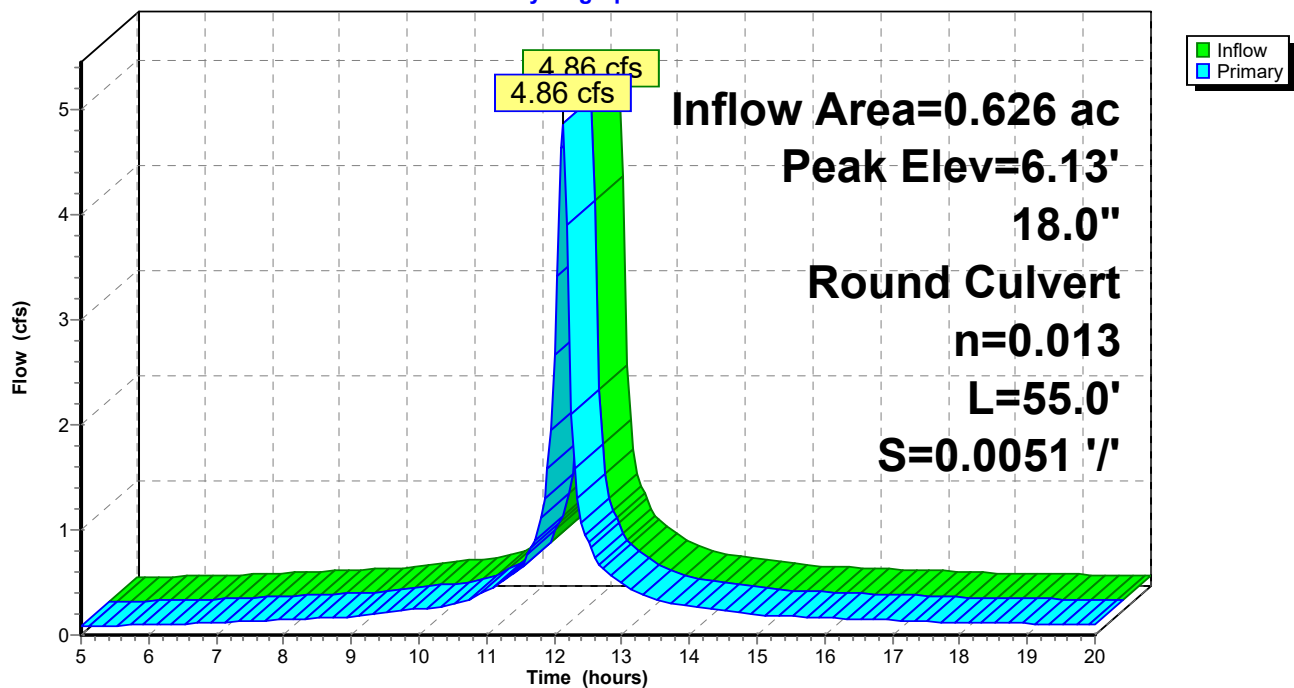
Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 6.13' @ 12.13 hrs
 Flood Elev= 8.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	4.78'	18.0" Round Culvert L= 55.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 4.78' / 4.50' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.66 cfs @ 12.13 hrs HW=6.09' (Free Discharge)
 1=Culvert (Barrel Controls 4.66 cfs @ 3.79 fps)

Pond CDS: CDS

Hydrograph



Summary for Pond DMH1: DMH1

Inflow Area = 0.370 ac, 80.45% Impervious, Inflow Depth > 7.31" for 100-Year event
 Inflow = 2.86 cfs @ 12.13 hrs, Volume= 0.226 af
 Outflow = 2.86 cfs @ 12.13 hrs, Volume= 0.226 af, Atten= 0%, Lag= 0.0 min
 Primary = 2.86 cfs @ 12.13 hrs, Volume= 0.226 af

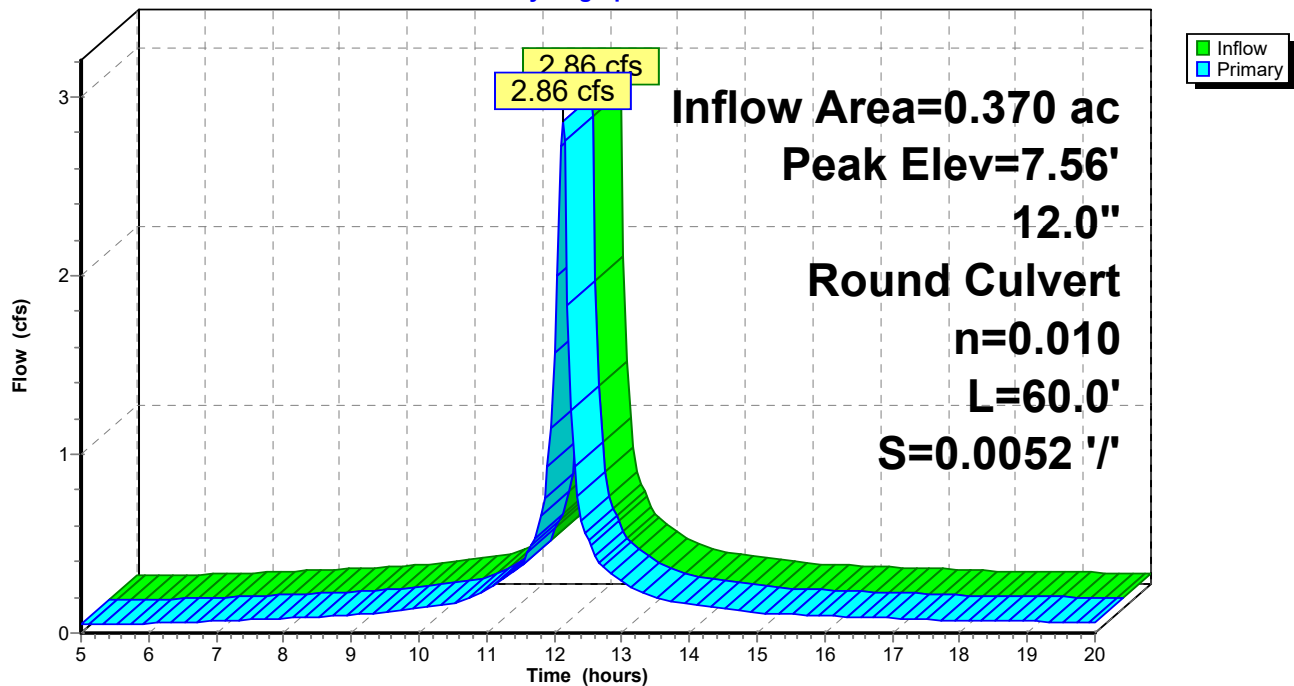
Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 7.56' @ 12.13 hrs
 Flood Elev= 9.62'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.15'	12.0" Round Culvert L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.15' / 5.84' S= 0.0052 '/ Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.74 cfs @ 12.13 hrs HW=7.49' (Free Discharge)
 1=Culvert (Inlet Controls 2.74 cfs @ 3.49 fps)

Pond DMH1: DMH1

Hydrograph



Summary for Pond RG: Rain Garden

Inflow Area = 0.282 ac, 76.32% Impervious, Inflow Depth > 7.18" for 100-Year event
 Inflow = 2.16 cfs @ 12.13 hrs, Volume= 0.169 af
 Outflow = 2.06 cfs @ 12.17 hrs, Volume= 0.164 af, Atten= 5%, Lag= 2.4 min
 Primary = 2.06 cfs @ 12.17 hrs, Volume= 0.164 af
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 6.15' @ 12.17 hrs Surf.Area= 1,245 sf Storage= 1,486 cf

Plug-Flow detention time= 47.2 min calculated for 0.164 af (97% of inflow)
 Center-of-Mass det. time= 34.0 min (778.3 - 744.4)

Volume	Invert	Avail.Storage	Storage Description
#1	4.45'	1,948 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
4.45	536	0	0
5.00	734	349	349
6.00	1,172	953	1,302
6.50	1,412	646	1,948

Device	Routing	Invert	Outlet Devices
#1	Primary	4.35'	12.0" Round Culvert L= 11.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 4.35' / 4.25' S= 0.0091 ' S= 0.0091 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	6.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	4.45'	2.0" Vert. Orifice/Grate C= 0.600
#4	Device 1	5.00'	4.0" Vert. Orifice/Grate C= 0.600
#5	Secondary	6.17'	6.0' long x 3.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

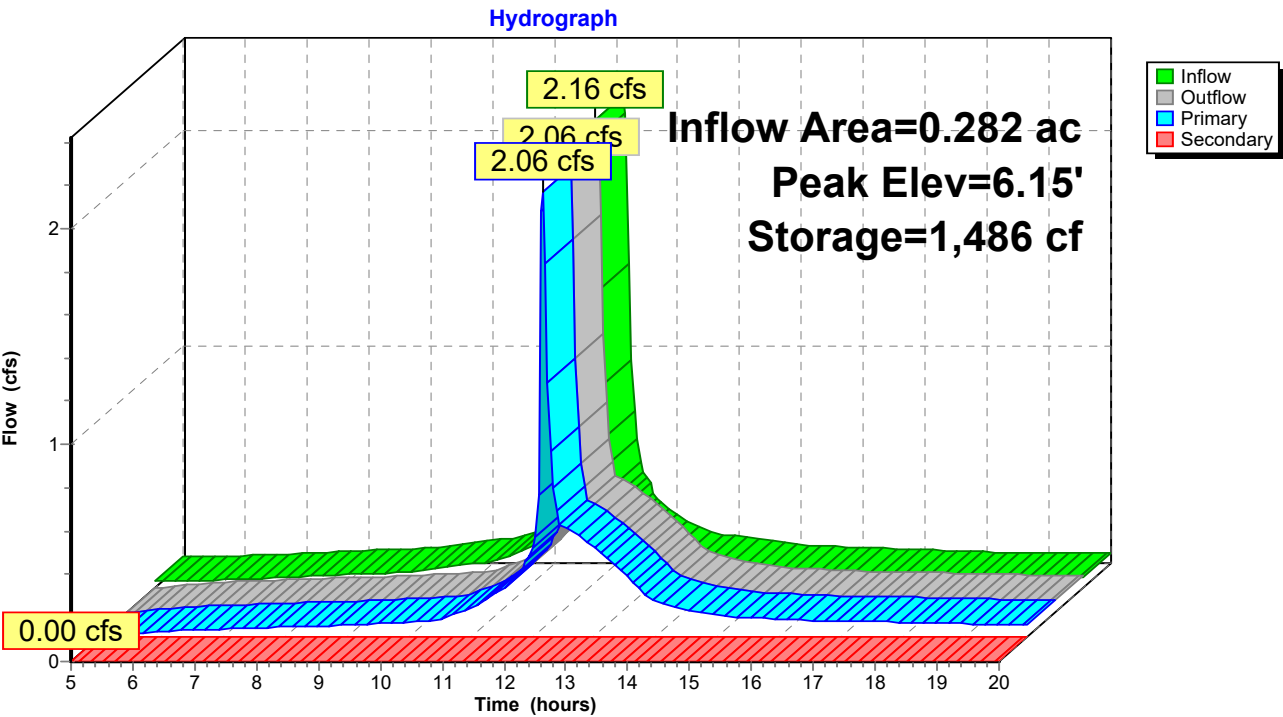
Primary OutFlow Max=1.88 cfs @ 12.17 hrs HW=6.14' (Free Discharge)

1=Culvert (Passes 1.88 cfs of 3.39 cfs potential flow)
 2=Orifice/Grate (Weir Controls 1.33 cfs @ 1.21 fps)
 3=Orifice/Grate (Orifice Controls 0.13 cfs @ 6.10 fps)
 4=Orifice/Grate (Orifice Controls 0.41 cfs @ 4.74 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=4.46' (Free Discharge)

5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond RG: Rain Garden

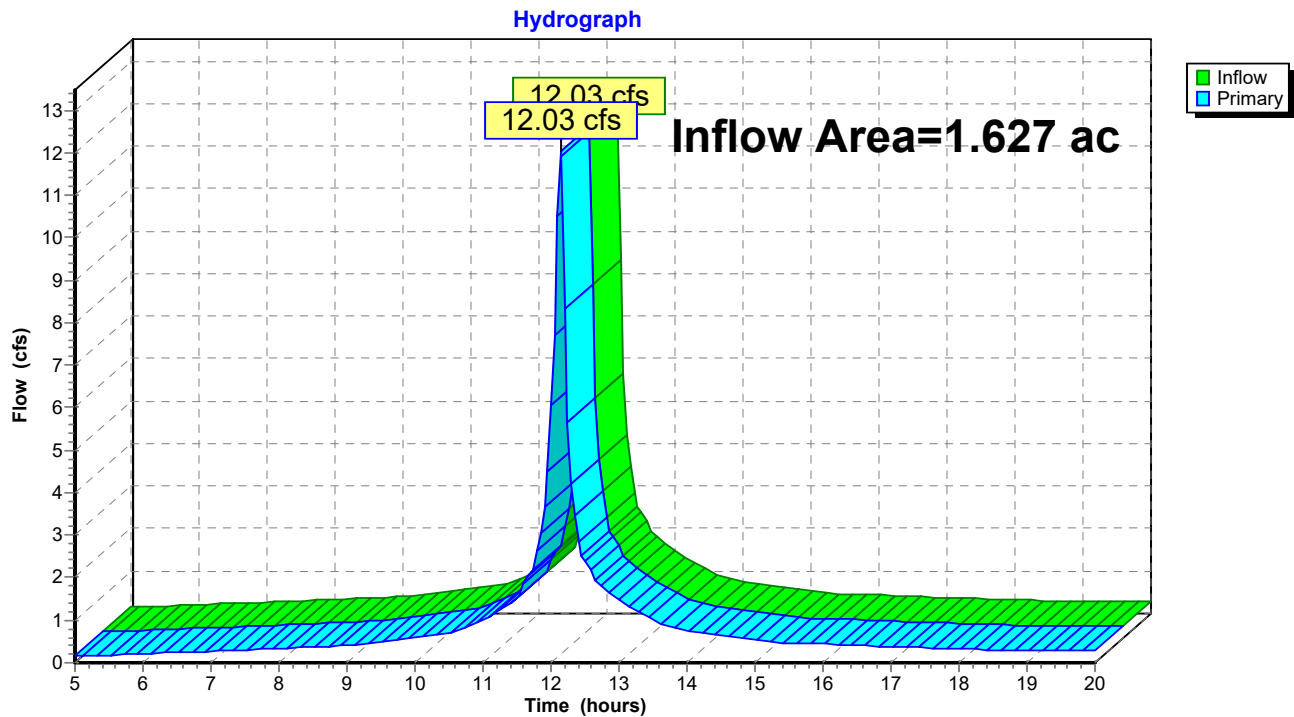


Summary for Link A: Design point 1

Inflow Area = 1.627 ac, 72.80% Impervious, Inflow Depth > 7.19" for 100-Year event
 Inflow = 12.03 cfs @ 12.14 hrs, Volume= 0.975 af
 Primary = 12.03 cfs @ 12.14 hrs, Volume= 0.975 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link A: Design point 1

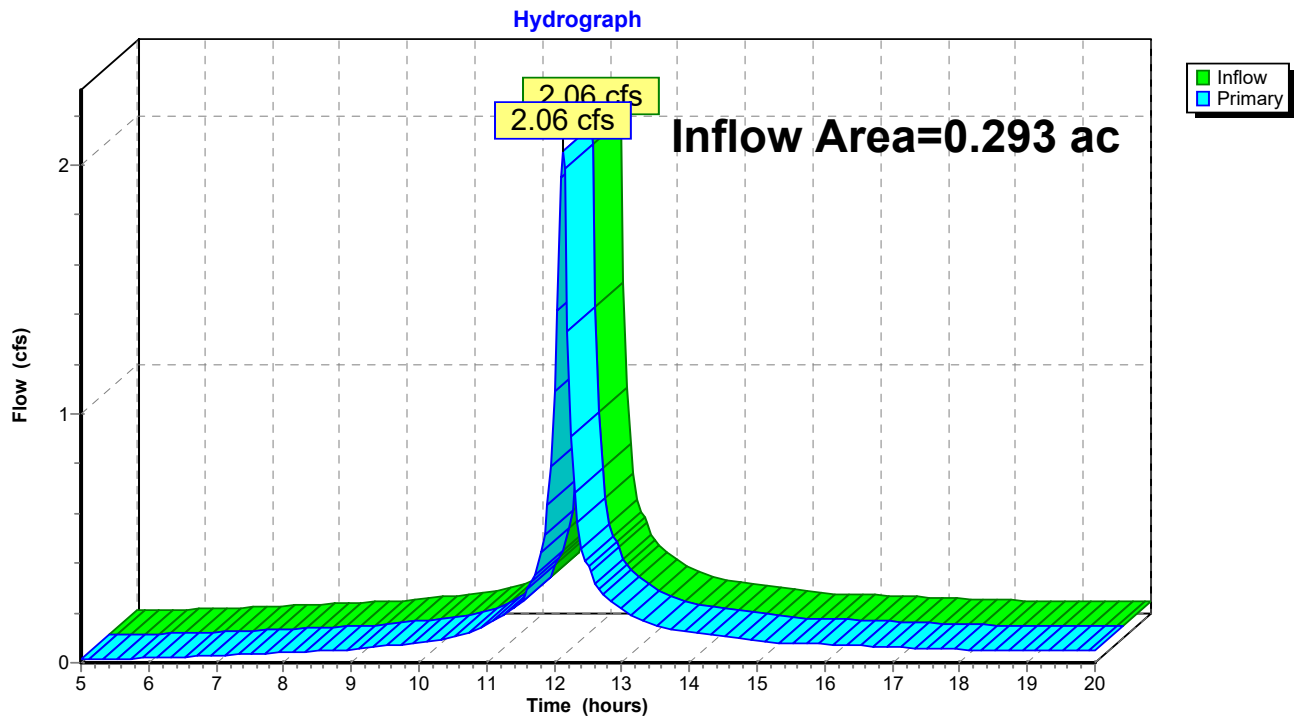


Summary for Link DP2: Design Point 2

Inflow Area = 0.293 ac, 2.74% Impervious, Inflow Depth > 6.27" for 100-Year event
 Inflow = 2.06 cfs @ 12.13 hrs, Volume= 0.153 af
 Primary = 2.06 cfs @ 12.13 hrs, Volume= 0.153 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link DP2: Design Point 2

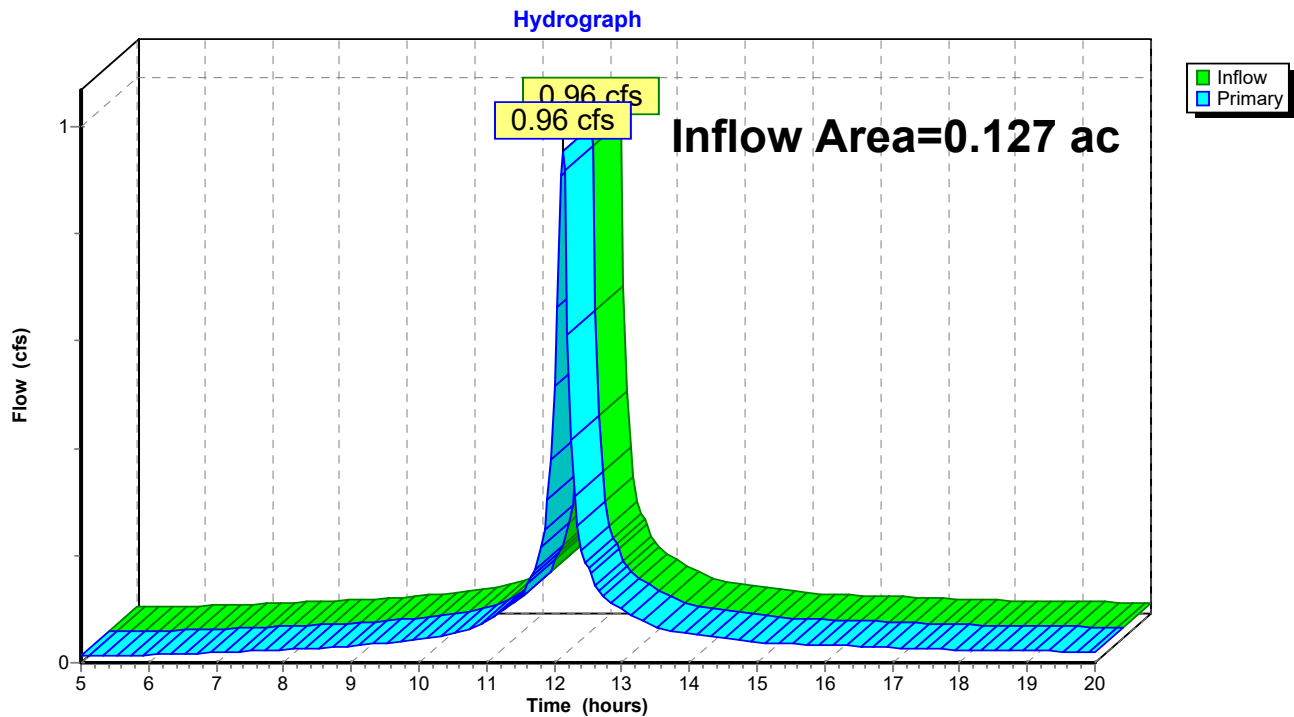


Summary for Link DP3: DESIGN POINT 3

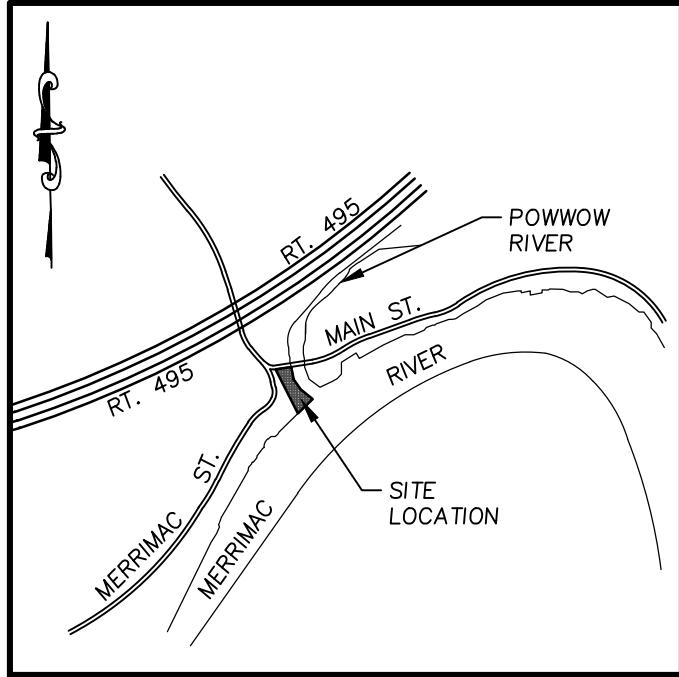
Inflow Area = 0.127 ac, 38.85% Impervious, Inflow Depth > 7.00" for 100-Year event
 Inflow = 0.96 cfs @ 12.13 hrs, Volume= 0.074 af
 Primary = 0.96 cfs @ 12.13 hrs, Volume= 0.074 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

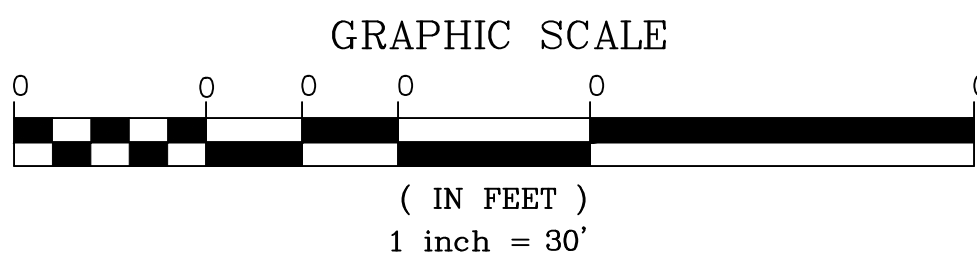
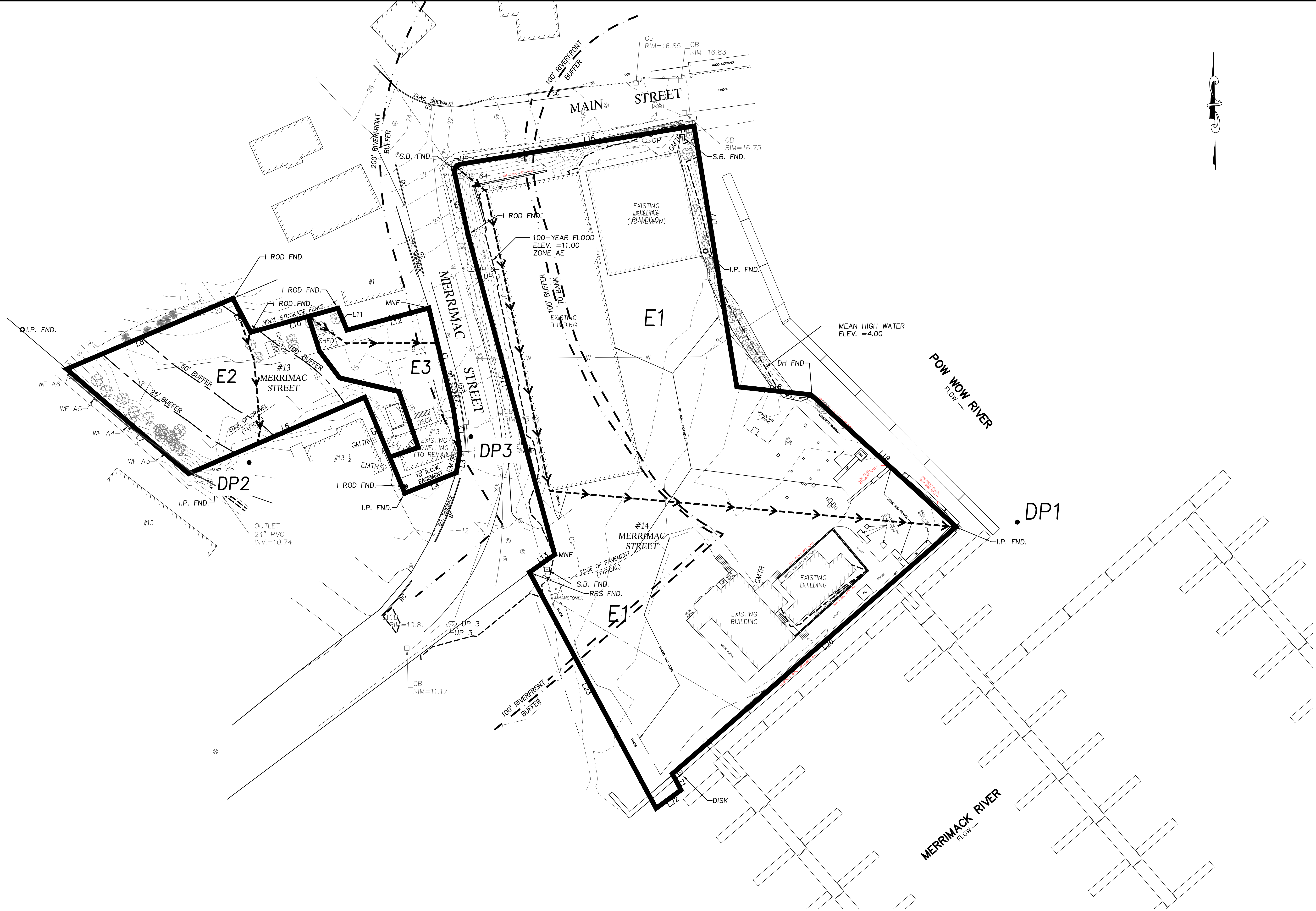
Link DP3: DESIGN POINT 3



d. Watershed Maps

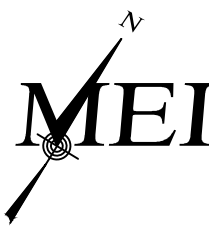


LOCUS MAP
N.T.S.



PREPARED FOR
14 MERRIMAC STREET, LLC
14 MERRIMAC STREET
AMESBURY, MA 01913

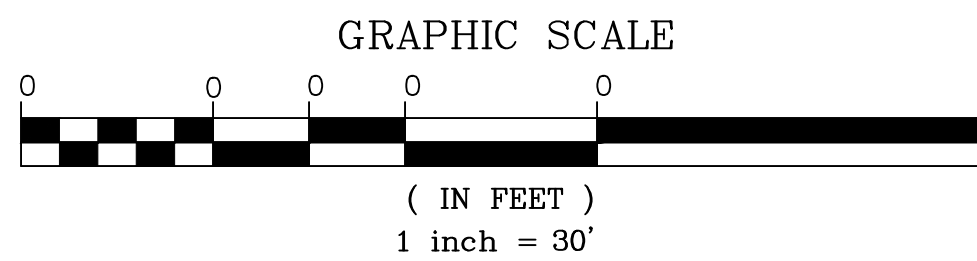
NO.	DATE	DESCRIPTION	BY



MILLENNIUM ENGINEERING, INC.
ENGINEERING AND LAND SURVEYING
62 ELM ST. SALISBURY, MA 01952 (978) 463-8980
13 HAMPTON RD. EXETER, NH 03833 (603) 778-0528

SCALE: 1"=30'	CALC. BY: S.R.C.	PROJECT: M214054
DATE: MAR. 11, 2024	CHKD. BY: J.T.M.	

SITE PLAN
IN
AMESBURY, MA
AT
14 MERRIMAC STREET



PREPARED FOR

14 MERRIMAC STREET, LLC
14 MERRIMAC STREET
AMESBURY, MA 01913

[illegible]

SCALE: 1"=30'	CALC. BY: S.R.C.	PROJECT: M214054
DATE: MAR. 11, 2024	CHKD. BY: J.T.M.	

SITE PLAN
IN
AMESBURY, MA
AT
14 MERRIMAC STREET

POST- WATERSHED PLAN

SHEET: 2 OF 2