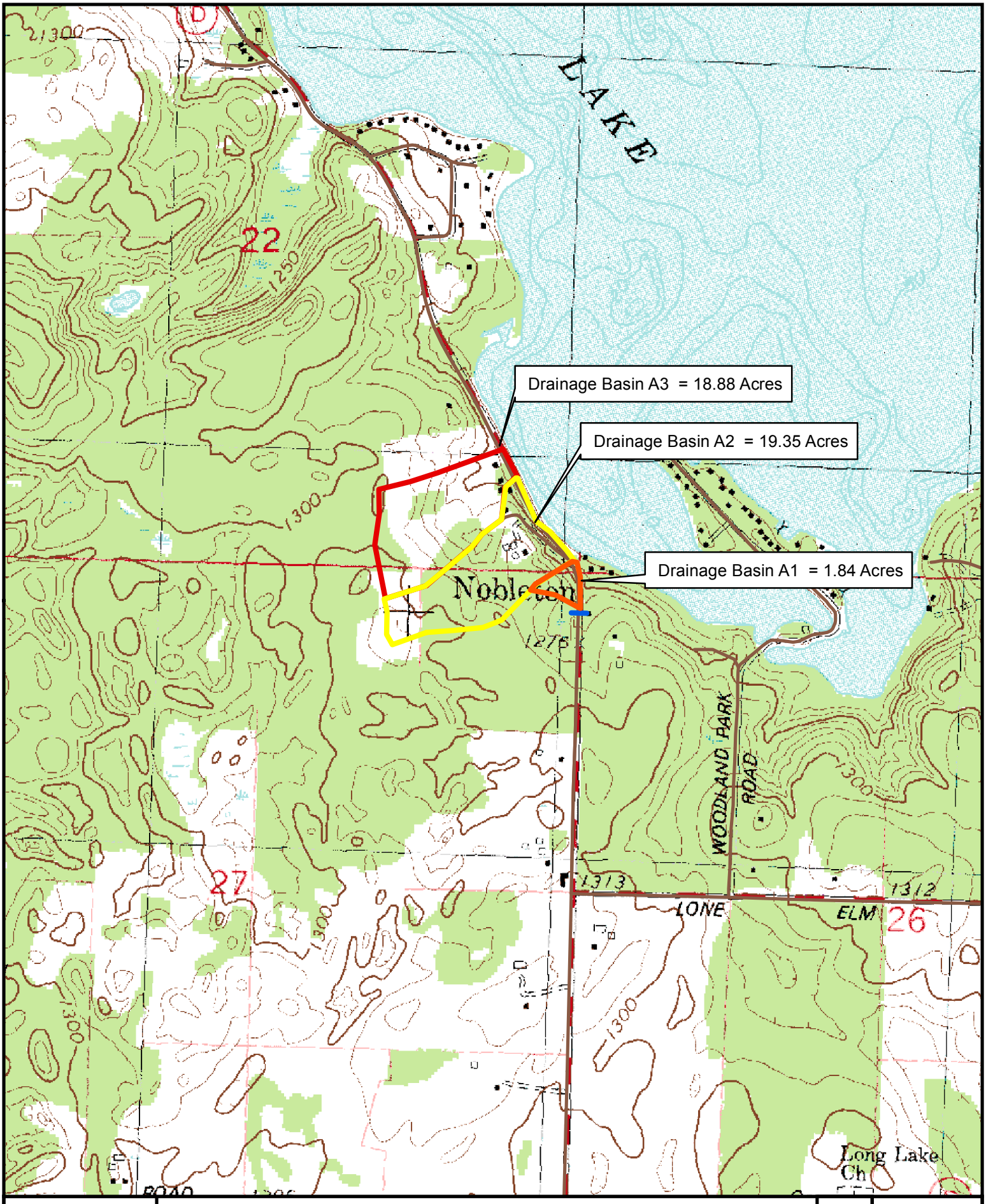


CORRE

Proposed Drainage Basins

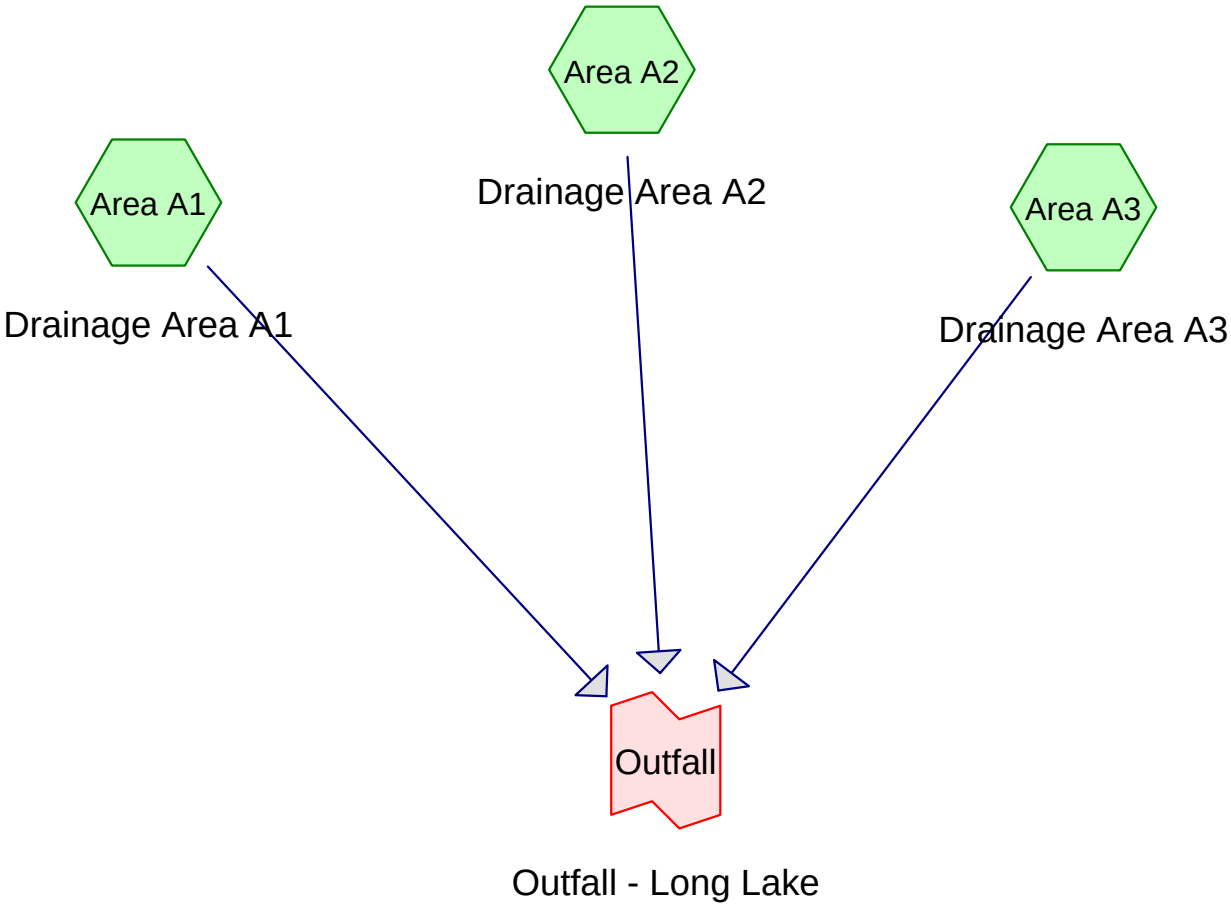
CTH M

Washburn County

1 inch = 1,000 feet

N

WISCONSIN DEPARTMENT OF TRANSPORTATION



Subcat Reach Pond Link

Routing Diagram for Existing Conditions
Prepared by CORRE, Inc., Printed 1/23/2017

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.270	65	2 acre lots, 12% imp, HSG B (Area A1, Area A2, Area A3)
0.600	98	Paved parking, HSG B (Area A1, Area A2, Area A3)
0.178	89	Paved roads w/open ditches, 50% imp, HSG B (Area A1, Area A2, Area A3)
1.350	98	Roofs, HSG B (Area A1, Area A2, Area A3)
33.322	65	Woods/grass comb., Fair, HSG B (Area A2, Area A3)
1.350	76	Woods/grass comb., Fair, HSG C (Area A1)
40.070	**67**	**TOTAL AREA**

Time span=1.00-72.00 hrs, dt=0.01 hrs, 7101 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment Area A1: Drainage Area A1 Runoff Area=1.840 ac 18.04% Impervious Runoff Depth=0.77"
Flow Length=850' Tc=55.3 min CN=79 Runoff=0.74 cfs 0.118 af

Subcatchment Area A2: Drainage Area A2 Runoff Area=19.350 ac 7.59% Impervious Runoff Depth=0.32"
Flow Length=1,701' Tc=70.5 min CN=67 Runoff=1.83 cfs 0.509 af

Subcatchment Area A3: Drainage Area A3 Runoff Area=18.880 ac 3.34% Impervious Runoff Depth=0.29"
Flow Length=1,000' Tc=44.1 min CN=66 Runoff=2.08 cfs 0.453 af

Link Outfall: Outfall - Long Lake Inflow=4.24 cfs 1.080 af
Primary=4.24 cfs 1.080 af

Total Runoff Area = 40.070 ac Runoff Volume = 1.080 af Average Runoff Depth = 0.32"
93.93% Pervious = 37.639 ac 6.07% Impervious = 2.431 ac

Summary for Subcatchment Area A1: Drainage Area A1

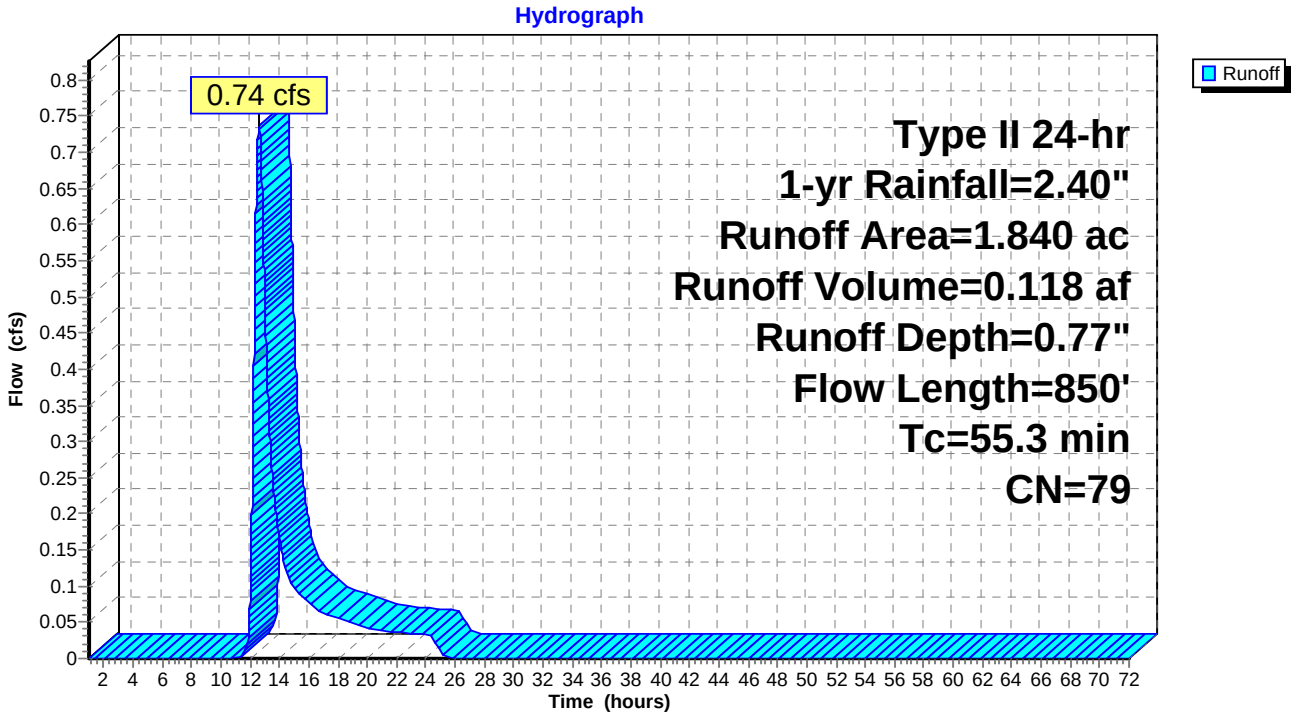
Runoff = 0.74 cfs @ 12.60 hrs, Volume= 0.118 af, Depth= 0.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.40"

Area (ac)	CN	Description
0.100	98	Paved parking, HSG B
0.150	98	Roofs, HSG B
0.140	89	Paved roads w/open ditches, 50% imp, HSG B
0.100	65	2 acre lots, 12% imp, HSG B
1.350	76	Woods/grass comb., Fair, HSG C
1.840	79	Weighted Average
1.508		81.96% Pervious Area
0.332		18.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
53.7	100	0.0100	0.03		**Sheet Flow, sheet** Woods: Dense underbrush n= 0.800 P2= 2.70"
1.2	300	0.0700	4.26		**Shallow Concentrated Flow, shallow** Unpaved Kv= 16.1 fps
0.4	450	0.0900	20.05	40.11	**Trap/Vee/Rect Channel Flow, channel** Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00' n= 0.013 Corrugated PE, smooth interior
55.3	850	Total			

Subcatchment Area A1: Drainage Area A1



Summary for Subcatchment Area A2: Drainage Area A2

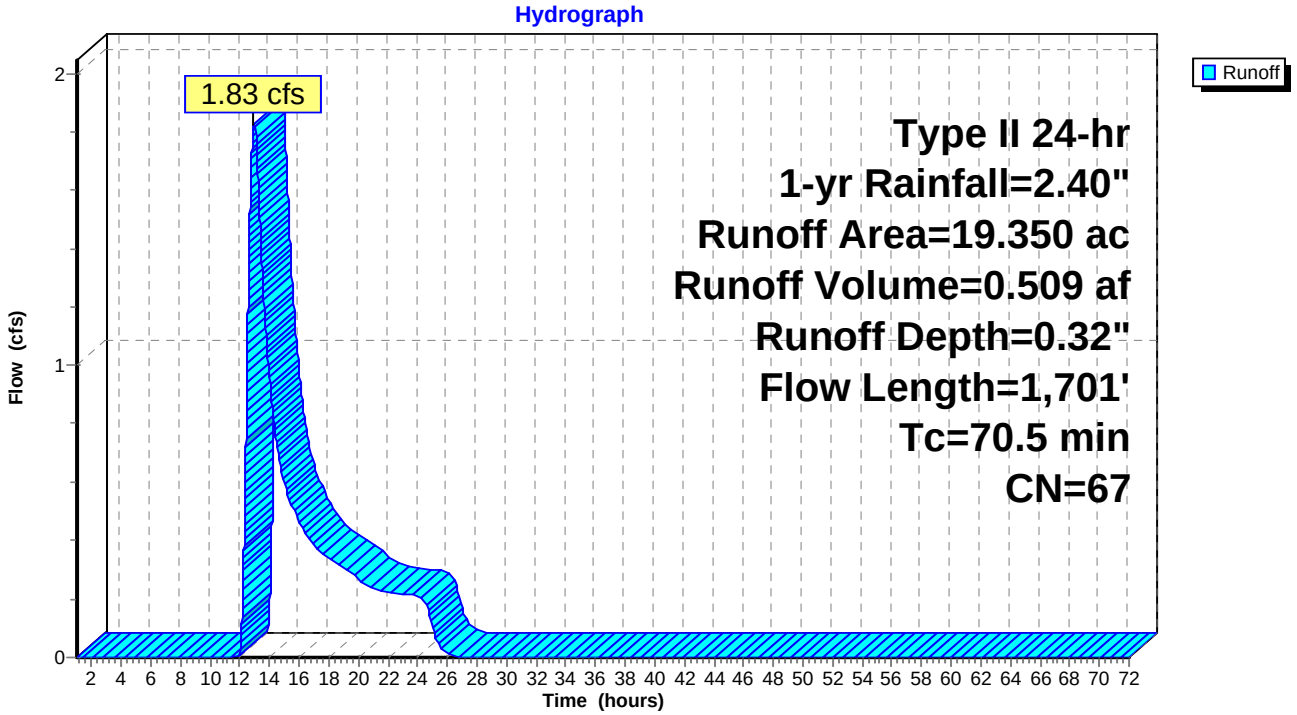
Runoff = 1.83 cfs @ 12.93 hrs, Volume= 0.509 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.40"

Area (ac)	CN	Description
0.250	98	Paved parking, HSG B
1.000	98	Roofs, HSG B
0.036	89	Paved roads w/open ditches, 50% imp, HSG B
1.670	65	2 acre lots, 12% imp, HSG B
16.394	65	Woods/grass comb., Fair, HSG B
19.350	67	Weighted Average
17.882		92.41% Pervious Area
1.468		7.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.7	100	0.0200	0.04		**Sheet Flow, sheet** Woods: Dense underbrush n= 0.800 P2= 2.70"
29.8	1,601	0.0320	0.89		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
70.5	1,701	Total			

Subcatchment Area A2: Drainage Area A2



Summary for Subcatchment Area A3: Drainage Area A3

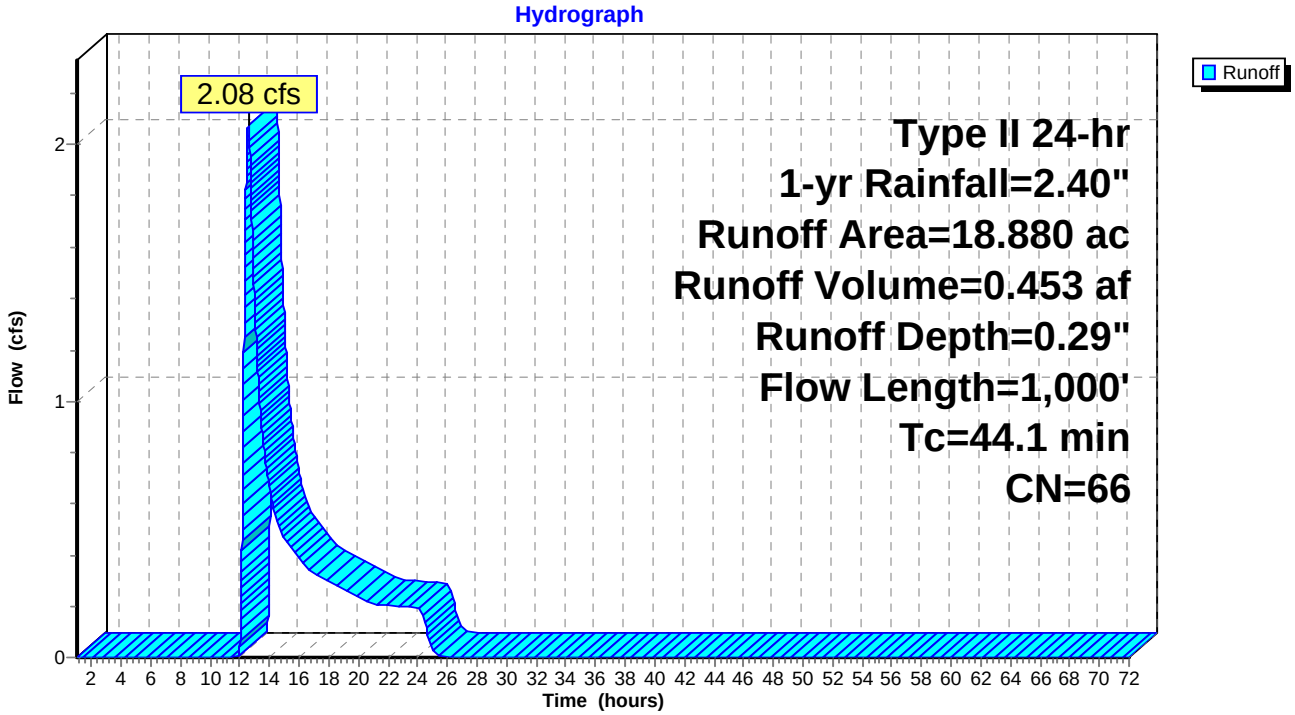
Runoff = 2.08 cfs @ 12.59 hrs, Volume= 0.453 af, Depth= 0.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.40"

Area (ac)	CN	Description
0.250	98	Paved parking, HSG B
0.200	98	Roofs, HSG B
0.002	89	Paved roads w/open ditches, 50% imp, HSG B
1.500	65	2 acre lots, 12% imp, HSG B
16.928	65	Woods/grass comb., Fair, HSG B
18.880	66	Weighted Average
18.249		96.66% Pervious Area
0.631		3.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.7	100	0.0200	0.04		**Sheet Flow, sheet** Woods: Dense underbrush n= 0.800 P2= 2.70"
3.4	900	0.0770	4.47		**Shallow Concentrated Flow, shallow** Unpaved Kv= 16.1 fps
44.1	1,000	Total			

Subcatchment Area A3: Drainage Area A3

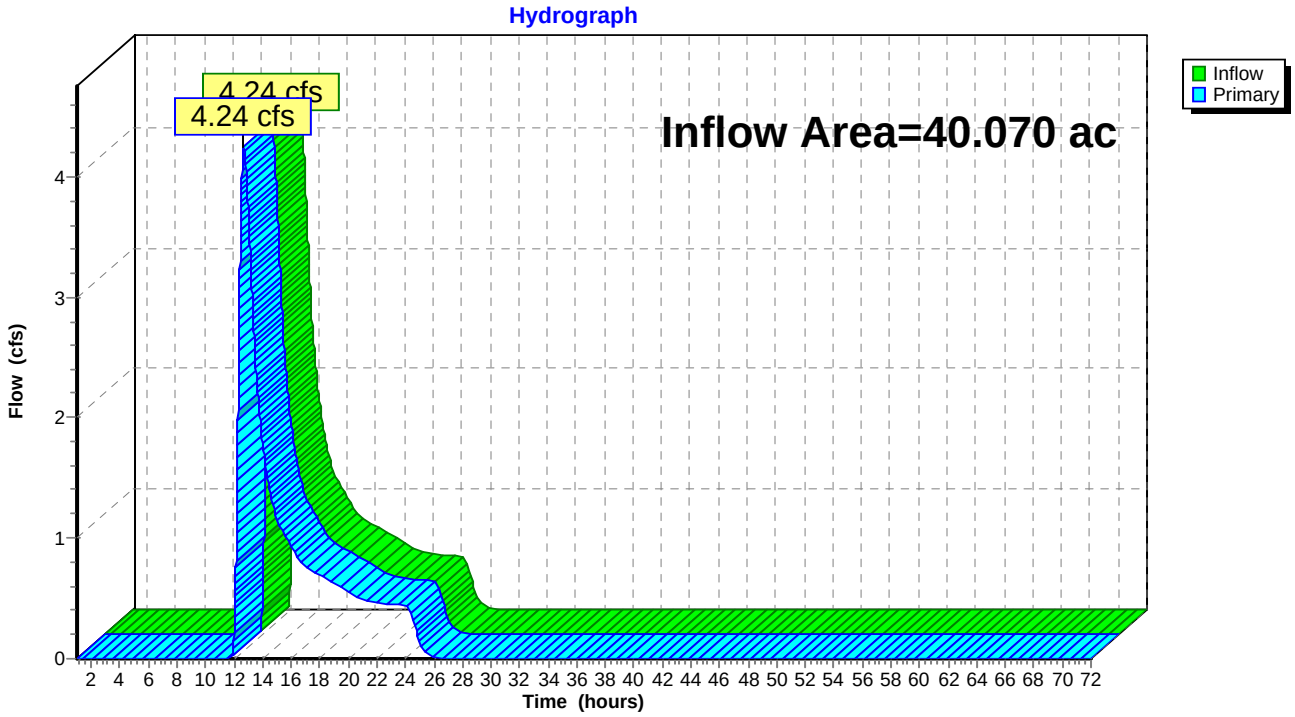


Summary for Link Outfall: Outfall - Long Lake

Inflow Area = 40.070 ac, 6.07% Impervious, Inflow Depth = 0.32" for 1-yr event
Inflow = 4.24 cfs @ 12.69 hrs, Volume= 1.080 af
Primary = 4.24 cfs @ 12.69 hrs, Volume= 1.080 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs

Link Outfall: Outfall - Long Lake



Time span=1.00-72.00 hrs, dt=0.01 hrs, 7101 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment Area A1: Drainage Area A1 Runoff Area=1.840 ac 18.04% Impervious Runoff Depth=0.97"
Flow Length=850' Tc=55.3 min CN=79 Runoff=0.96 cfs 0.149 af

Subcatchment Area A2: Drainage Area A2 Runoff Area=19.350 ac 7.59% Impervious Runoff Depth=0.44"
Flow Length=1,701' Tc=70.5 min CN=67 Runoff=2.88 cfs 0.714 af

Subcatchment Area A3: Drainage Area A3 Runoff Area=18.880 ac 3.34% Impervious Runoff Depth=0.41"
Flow Length=1,000' Tc=44.1 min CN=66 Runoff=3.43 cfs 0.643 af

Link Outfall: Outfall - Long Lake Inflow=6.61 cfs 1.507 af
Primary=6.61 cfs 1.507 af

Total Runoff Area = 40.070 ac Runoff Volume = 1.507 af Average Runoff Depth = 0.45"
93.93% Pervious = 37.639 ac 6.07% Impervious = 2.431 ac

Summary for Subcatchment Area A1: Drainage Area A1

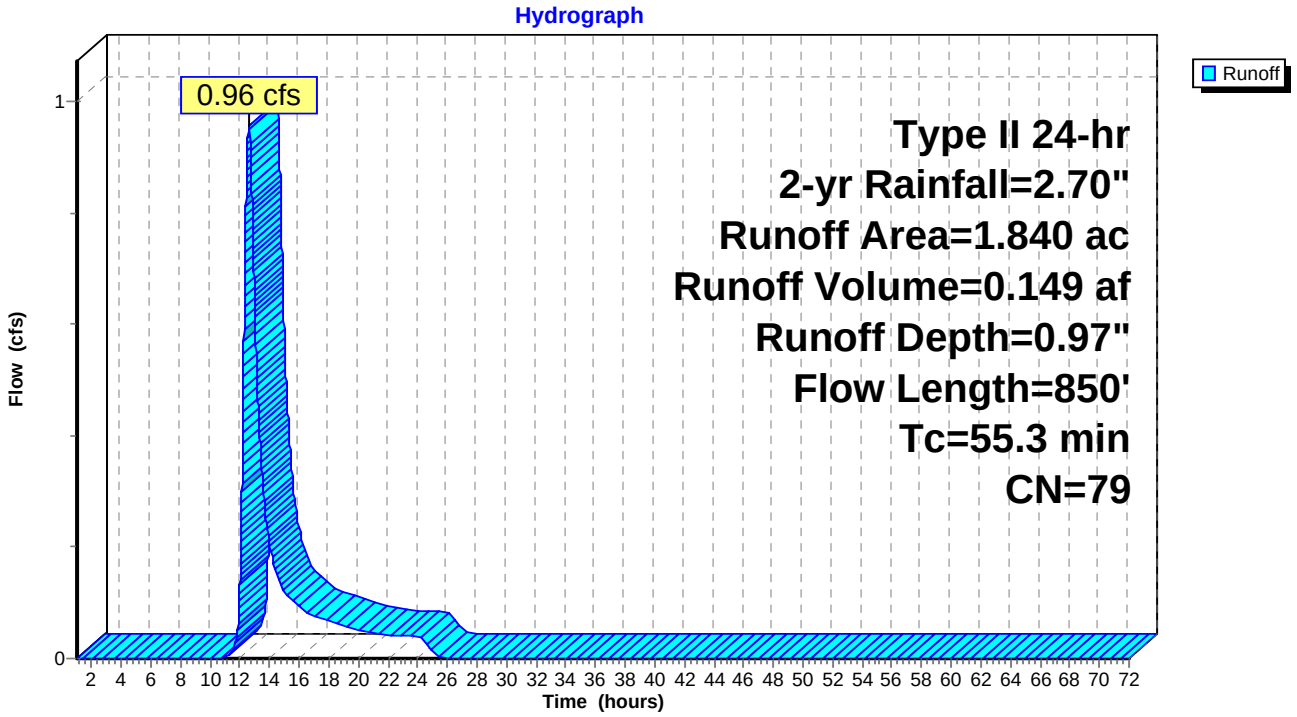
Runoff = 0.96 cfs @ 12.60 hrs, Volume= 0.149 af, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr Rainfall=2.70"

Area (ac)	CN	Description
0.100	98	Paved parking, HSG B
0.150	98	Roofs, HSG B
0.140	89	Paved roads w/open ditches, 50% imp, HSG B
0.100	65	2 acre lots, 12% imp, HSG B
1.350	76	Woods/grass comb., Fair, HSG C
1.840	79	Weighted Average
1.508		81.96% Pervious Area
0.332		18.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
53.7	100	0.0100	0.03		**Sheet Flow, sheet** Woods: Dense underbrush n= 0.800 P2= 2.70"
1.2	300	0.0700	4.26		**Shallow Concentrated Flow, shallow** Unpaved Kv= 16.1 fps
0.4	450	0.0900	20.05	40.11	**Trap/Vee/Rect Channel Flow, channel** Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00' n= 0.013 Corrugated PE, smooth interior
55.3	850	Total			

Subcatchment Area A1: Drainage Area A1



Summary for Subcatchment Area A2: Drainage Area A2

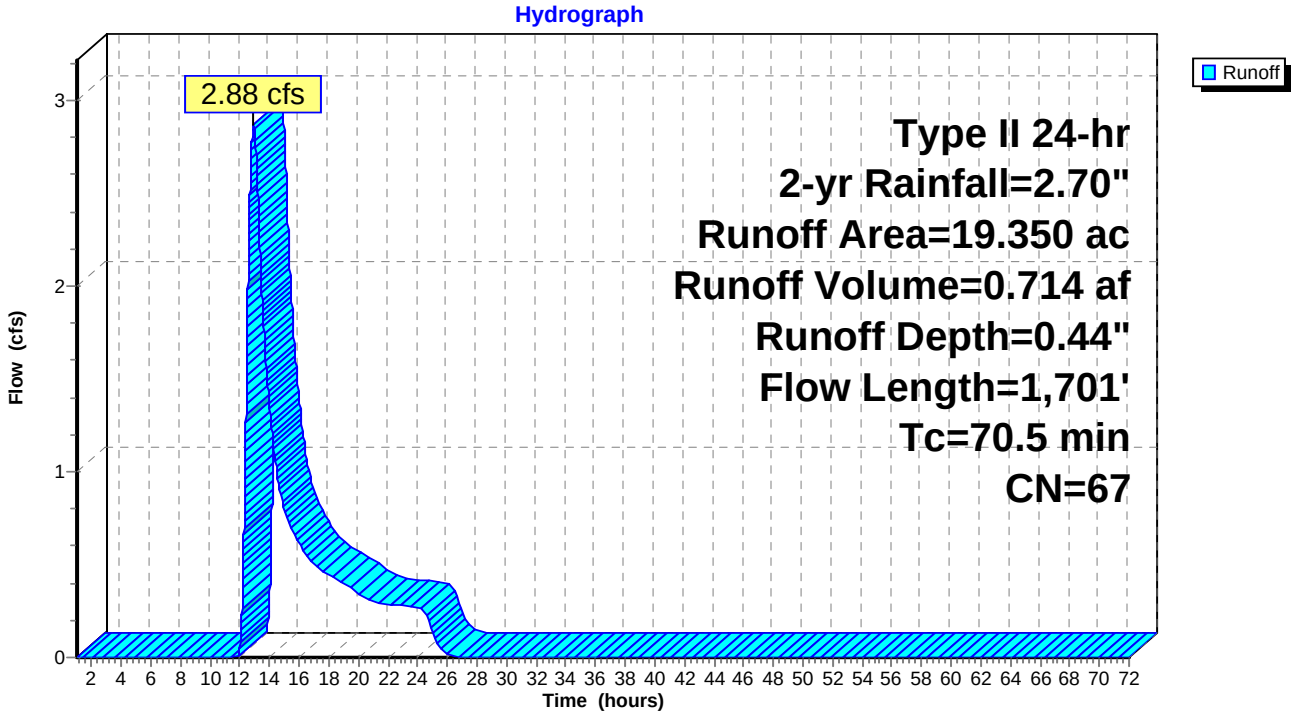
Runoff = 2.88 cfs @ 12.93 hrs, Volume= 0.714 af, Depth= 0.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr Rainfall=2.70"

Area (ac)	CN	Description
0.250	98	Paved parking, HSG B
1.000	98	Roofs, HSG B
0.036	89	Paved roads w/open ditches, 50% imp, HSG B
1.670	65	2 acre lots, 12% imp, HSG B
16.394	65	Woods/grass comb., Fair, HSG B
19.350	67	Weighted Average
17.882		92.41% Pervious Area
1.468		7.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.7	100	0.0200	0.04		**Sheet Flow, sheet** Woods: Dense underbrush n= 0.800 P2= 2.70"
29.8	1,601	0.0320	0.89		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
70.5	1,701	Total			

Subcatchment Area A2: Drainage Area A2



Summary for Subcatchment Area A3: Drainage Area A3

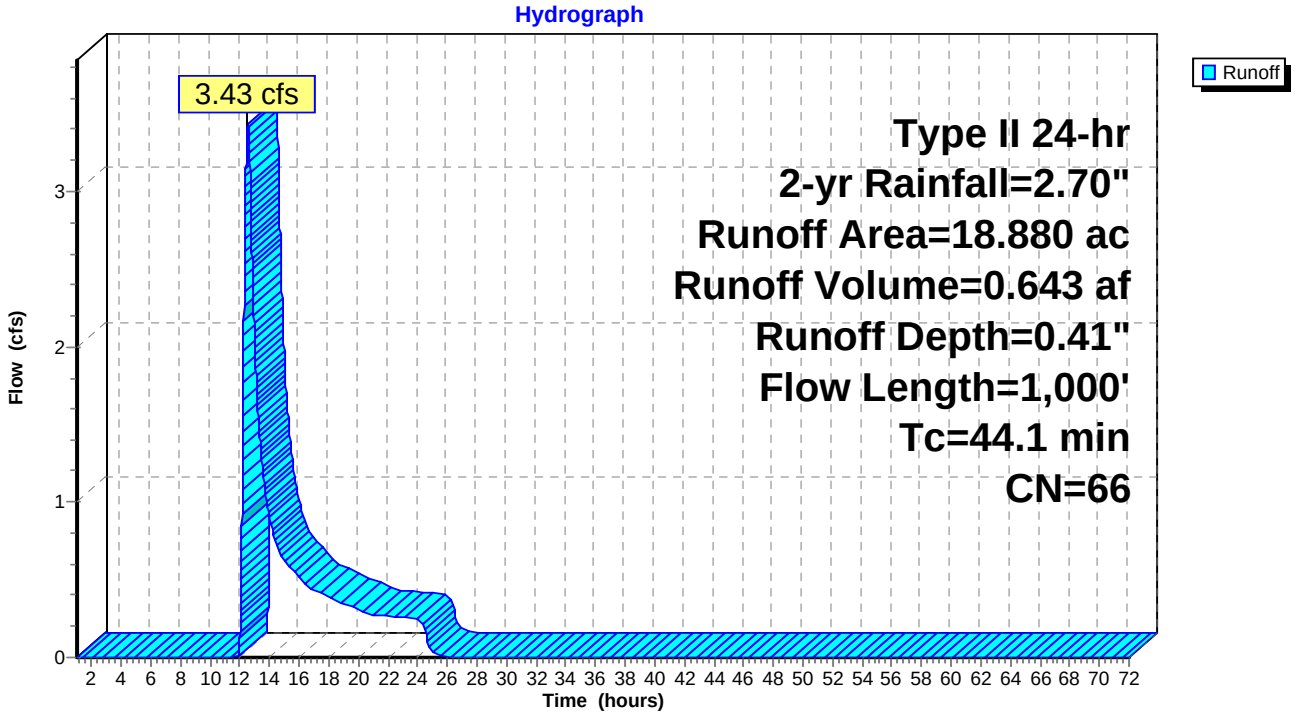
Runoff = 3.43 cfs @ 12.50 hrs, Volume= 0.643 af, Depth= 0.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr Rainfall=2.70"

Area (ac)	CN	Description
0.250	98	Paved parking, HSG B
0.200	98	Roofs, HSG B
0.002	89	Paved roads w/open ditches, 50% imp, HSG B
1.500	65	2 acre lots, 12% imp, HSG B
16.928	65	Woods/grass comb., Fair, HSG B
18.880	66	Weighted Average
18.249		96.66% Pervious Area
0.631		3.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.7	100	0.0200	0.04		**Sheet Flow, sheet** Woods: Dense underbrush n= 0.800 P2= 2.70"
3.4	900	0.0770	4.47		**Shallow Concentrated Flow, shallow** Unpaved Kv= 16.1 fps
44.1	1,000	Total			

Subcatchment Area A3: Drainage Area A3

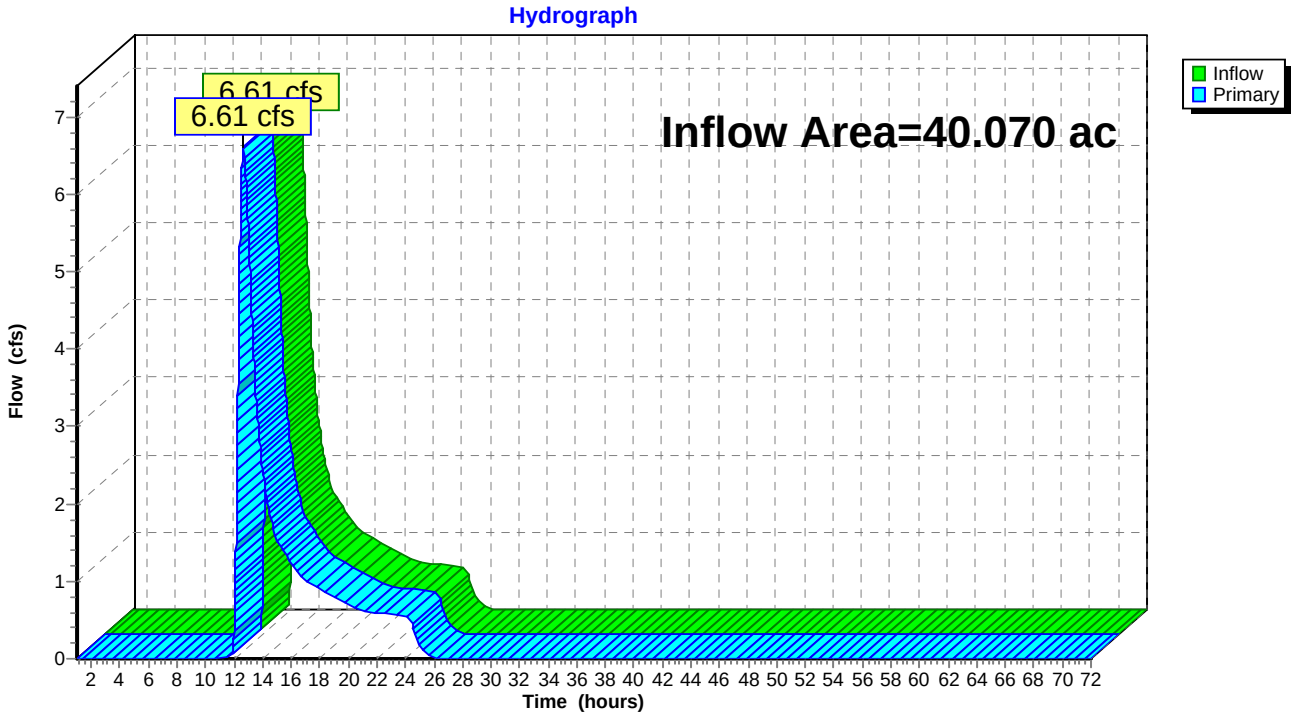


Summary for Link Outfall: Outfall - Long Lake

Inflow Area = 40.070 ac, 6.07% Impervious, Inflow Depth = 0.45" for 2-yr event
Inflow = 6.61 cfs @ 12.64 hrs, Volume= 1.507 af
Primary = 6.61 cfs @ 12.64 hrs, Volume= 1.507 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs

Link Outfall: Outfall - Long Lake



Time span=1.00-72.00 hrs, dt=0.01 hrs, 7101 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment Area A1: Drainage Area A1 Runoff Area=1.840 ac 18.04% Impervious Runoff Depth=1.96"
Flow Length=850' Tc=55.3 min CN=79 Runoff=2.03 cfs 0.301 af

Subcatchment Area A2: Drainage Area A2 Runoff Area=19.350 ac 7.59% Impervious Runoff Depth=1.14"
Flow Length=1,701' Tc=70.5 min CN=67 Runoff=9.23 cfs 1.846 af

Subcatchment Area A3: Drainage Area A3 Runoff Area=18.880 ac 3.34% Impervious Runoff Depth=1.09"
Flow Length=1,000' Tc=44.1 min CN=66 Runoff=11.95 cfs 1.709 af

Link Outfall: Outfall - Long Lake Inflow=21.14 cfs 3.856 af
Primary=21.14 cfs 3.856 af

Total Runoff Area = 40.070 ac Runoff Volume = 3.856 af Average Runoff Depth = 1.15"
93.93% Pervious = 37.639 ac 6.07% Impervious = 2.431 ac

Summary for Subcatchment Area A1: Drainage Area A1

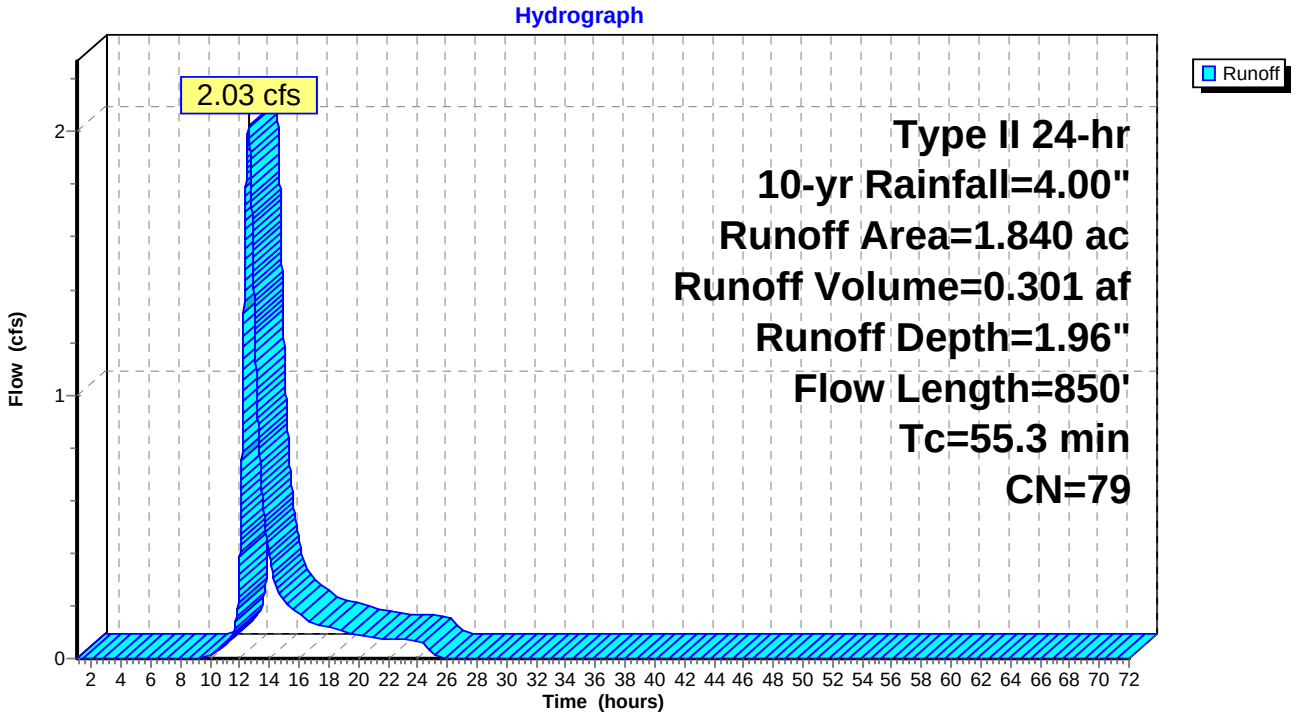
Runoff = 2.03 cfs @ 12.59 hrs, Volume= 0.301 af, Depth= 1.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=4.00"

Area (ac)	CN	Description
0.100	98	Paved parking, HSG B
0.150	98	Roofs, HSG B
0.140	89	Paved roads w/open ditches, 50% imp, HSG B
0.100	65	2 acre lots, 12% imp, HSG B
1.350	76	Woods/grass comb., Fair, HSG C
1.840	79	Weighted Average
1.508		81.96% Pervious Area
0.332		18.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
53.7	100	0.0100	0.03		**Sheet Flow, sheet** Woods: Dense underbrush n= 0.800 P2= 2.70"
1.2	300	0.0700	4.26		**Shallow Concentrated Flow, shallow** Unpaved Kv= 16.1 fps
0.4	450	0.0900	20.05	40.11	**Trap/Vee/Rect Channel Flow, channel** Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00' n= 0.013 Corrugated PE, smooth interior
55.3	850	Total			

Subcatchment Area A1: Drainage Area A1



Summary for Subcatchment Area A2: Drainage Area A2

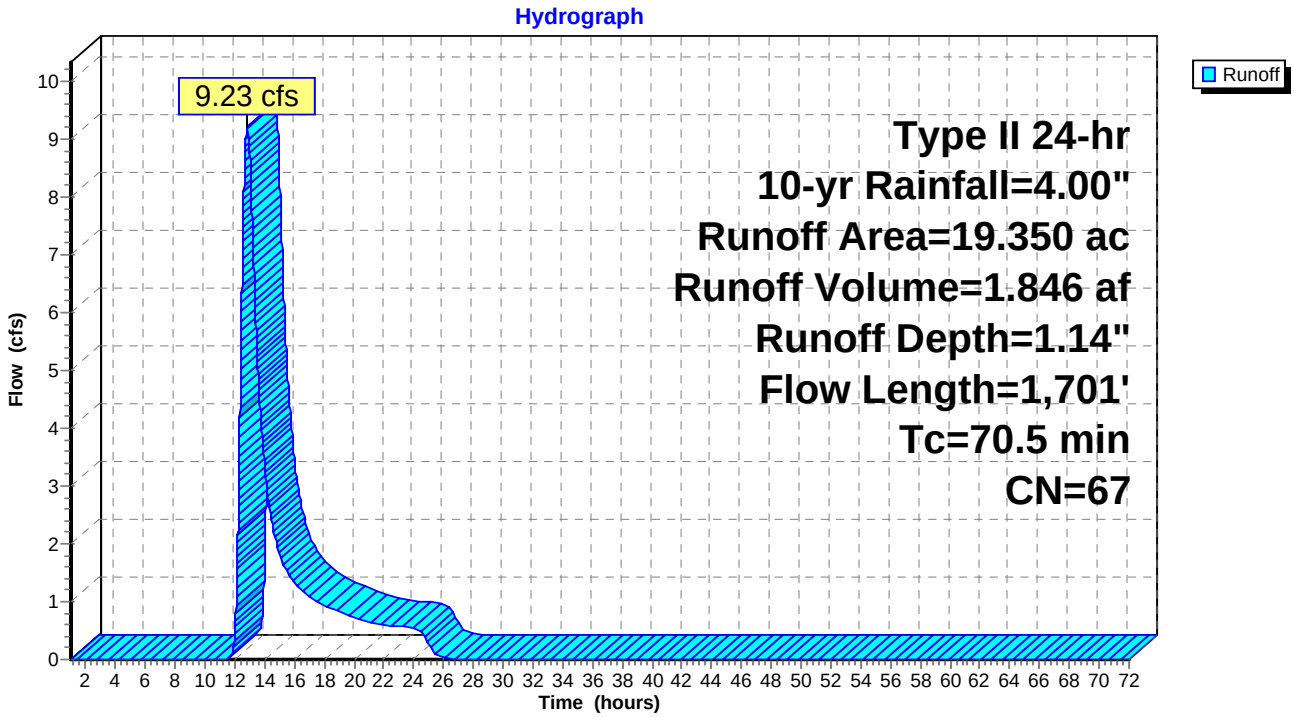
Runoff = 9.23 cfs @ 12.84 hrs, Volume= 1.846 af, Depth= 1.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=4.00"

Area (ac)	CN	Description
0.250	98	Paved parking, HSG B
1.000	98	Roofs, HSG B
0.036	89	Paved roads w/open ditches, 50% imp, HSG B
1.670	65	2 acre lots, 12% imp, HSG B
16.394	65	Woods/grass comb., Fair, HSG B
19.350	67	Weighted Average
17.882		92.41% Pervious Area
1.468		7.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.7	100	0.0200	0.04		**Sheet Flow, sheet** Woods: Dense underbrush n= 0.800 P2= 2.70"
29.8	1,601	0.0320	0.89		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
70.5	1,701	Total			

Subcatchment Area A2: Drainage Area A2



Summary for Subcatchment Area A3: Drainage Area A3

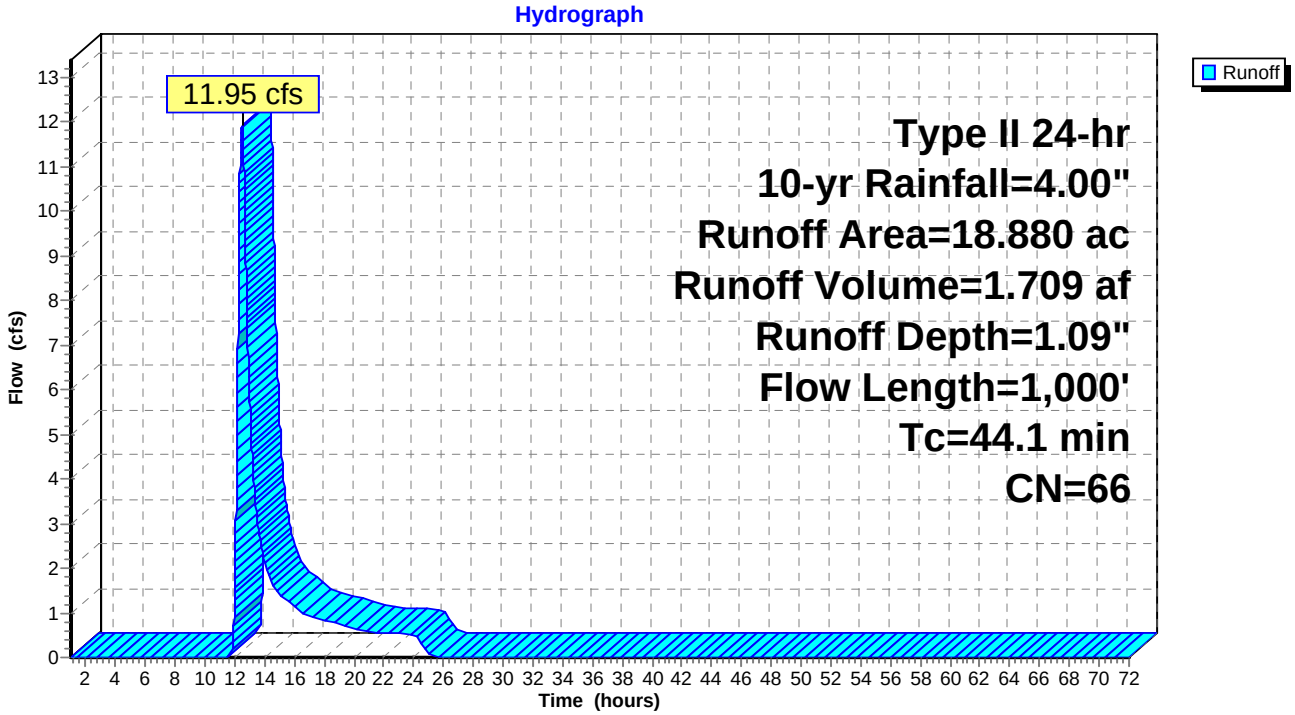
Runoff = 11.95 cfs @ 12.49 hrs, Volume= 1.709 af, Depth= 1.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=4.00"

Area (ac)	CN	Description
0.250	98	Paved parking, HSG B
0.200	98	Roofs, HSG B
0.002	89	Paved roads w/open ditches, 50% imp, HSG B
1.500	65	2 acre lots, 12% imp, HSG B
16.928	65	Woods/grass comb., Fair, HSG B
18.880	66	Weighted Average
18.249		96.66% Pervious Area
0.631		3.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.7	100	0.0200	0.04		**Sheet Flow, sheet** Woods: Dense underbrush n= 0.800 P2= 2.70"
3.4	900	0.0770	4.47		**Shallow Concentrated Flow, shallow** Unpaved Kv= 16.1 fps
44.1	1,000	Total			

Subcatchment Area A3: Drainage Area A3

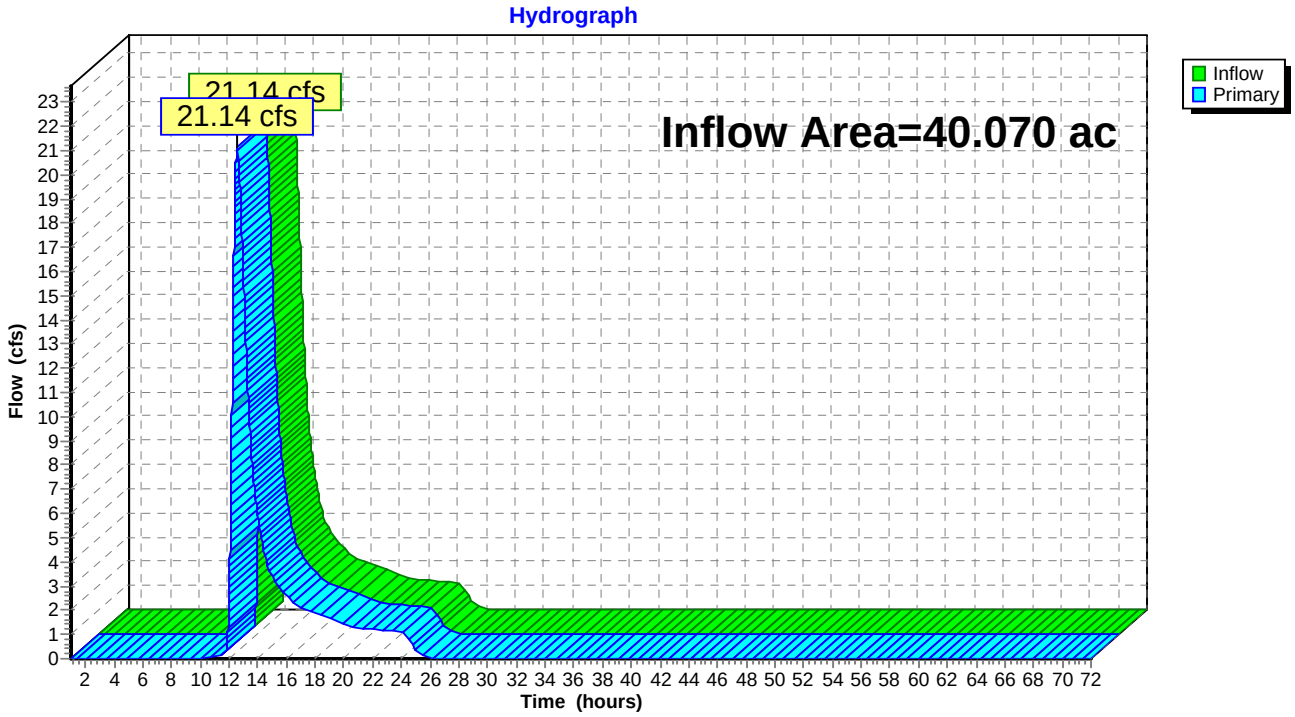


Summary for Link Outfall: Outfall - Long Lake

Inflow Area = 40.070 ac, 6.07% Impervious, Inflow Depth = 1.15" for 10-yr event
Inflow = 21.14 cfs @ 12.59 hrs, Volume= 3.856 af
Primary = 21.14 cfs @ 12.59 hrs, Volume= 3.856 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs

Link Outfall: Outfall - Long Lake



Time span=1.00-72.00 hrs, dt=0.01 hrs, 7101 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment Area A1: Drainage Area A1 Runoff Area=1.840 ac 18.04% Impervious Runoff Depth=3.32"
Flow Length=850' Tc=55.3 min CN=79 Runoff=3.47 cfs 0.510 af

Subcatchment Area A2: Drainage Area A2 Runoff Area=19.350 ac 7.59% Impervious Runoff Depth=2.23"
Flow Length=1,701' Tc=70.5 min CN=67 Runoff=19.62 cfs 3.600 af

Subcatchment Area A3: Drainage Area A3 Runoff Area=18.880 ac 3.34% Impervious Runoff Depth=2.15"
Flow Length=1,000' Tc=44.1 min CN=66 Runoff=25.81 cfs 3.380 af

Link Outfall: Outfall - Long Lake Inflow=44.60 cfs 7.489 af
Primary=44.60 cfs 7.489 af

Total Runoff Area = 40.070 ac Runoff Volume = 7.489 af Average Runoff Depth = 2.24"
93.93% Pervious = 37.639 ac 6.07% Impervious = 2.431 ac

Summary for Subcatchment Area A1: Drainage Area A1

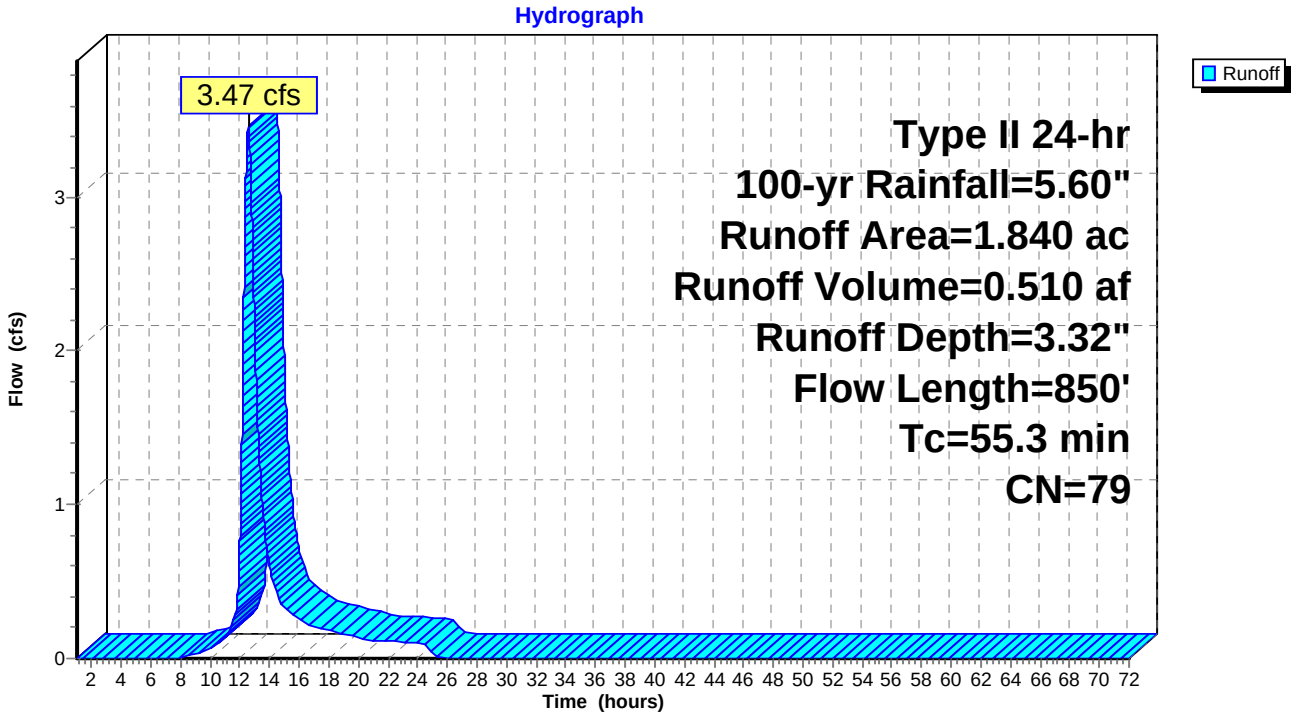
Runoff = 3.47 cfs @ 12.59 hrs, Volume= 0.510 af, Depth= 3.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.60"

Area (ac)	CN	Description
0.100	98	Paved parking, HSG B
0.150	98	Roofs, HSG B
0.140	89	Paved roads w/open ditches, 50% imp, HSG B
0.100	65	2 acre lots, 12% imp, HSG B
1.350	76	Woods/grass comb., Fair, HSG C
1.840	79	Weighted Average
1.508		81.96% Pervious Area
0.332		18.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
53.7	100	0.0100	0.03		**Sheet Flow, sheet** Woods: Dense underbrush n= 0.800 P2= 2.70"
1.2	300	0.0700	4.26		**Shallow Concentrated Flow, shallow** Unpaved Kv= 16.1 fps
0.4	450	0.0900	20.05	40.11	**Trap/Vee/Rect Channel Flow, channel** Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00' n= 0.013 Corrugated PE, smooth interior
55.3	850	Total			

Subcatchment Area A1: Drainage Area A1



Summary for Subcatchment Area A2: Drainage Area A2

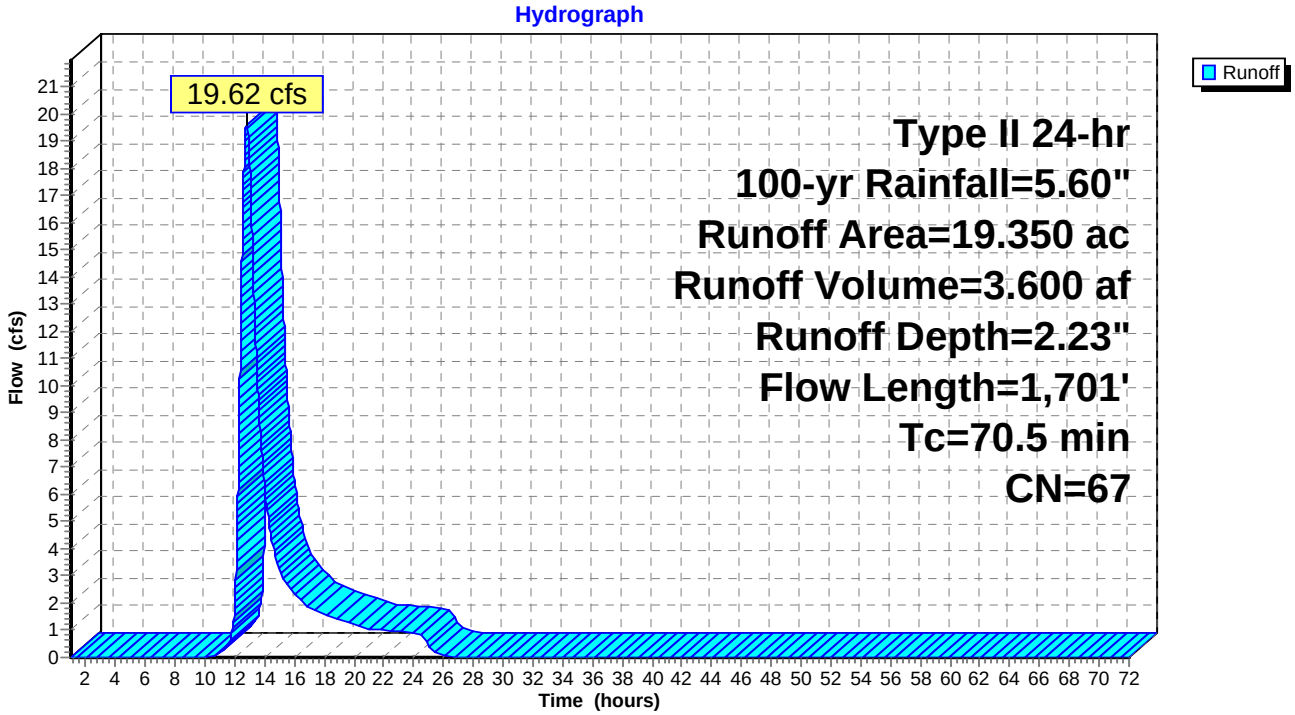
Runoff = 19.62 cfs @ 12.77 hrs, Volume= 3.600 af, Depth= 2.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.60"

Area (ac)	CN	Description
0.250	98	Paved parking, HSG B
1.000	98	Roofs, HSG B
0.036	89	Paved roads w/open ditches, 50% imp, HSG B
1.670	65	2 acre lots, 12% imp, HSG B
16.394	65	Woods/grass comb., Fair, HSG B
19.350	67	Weighted Average
17.882		92.41% Pervious Area
1.468		7.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.7	100	0.0200	0.04		**Sheet Flow, sheet** Woods: Dense underbrush n= 0.800 P2= 2.70"
29.8	1,601	0.0320	0.89		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
70.5	1,701	Total			

Subcatchment Area A2: Drainage Area A2



Summary for Subcatchment Area A3: Drainage Area A3

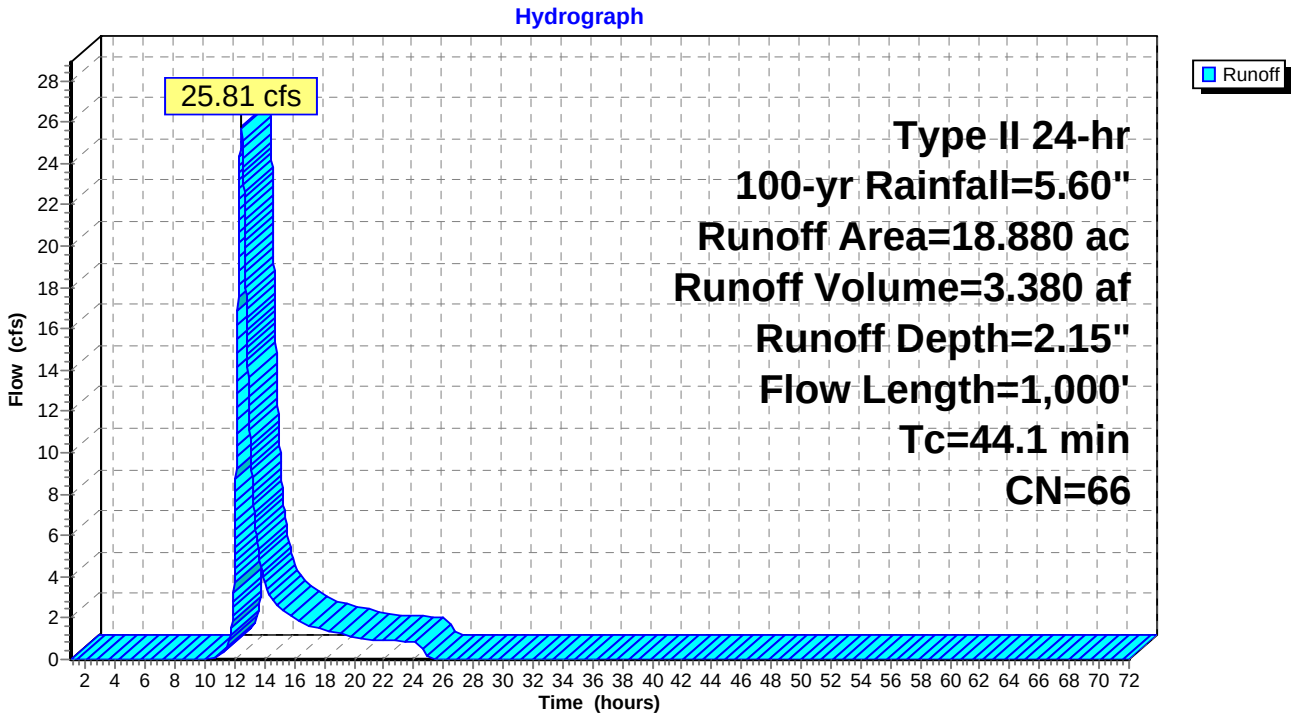
Runoff = 25.81 cfs @ 12.44 hrs, Volume= 3.380 af, Depth= 2.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.60"

Area (ac)	CN	Description
0.250	98	Paved parking, HSG B
0.200	98	Roofs, HSG B
0.002	89	Paved roads w/open ditches, 50% imp, HSG B
1.500	65	2 acre lots, 12% imp, HSG B
16.928	65	Woods/grass comb., Fair, HSG B
18.880	66	Weighted Average
18.249		96.66% Pervious Area
0.631		3.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.7	100	0.0200	0.04		**Sheet Flow, sheet** Woods: Dense underbrush n= 0.800 P2= 2.70"
3.4	900	0.0770	4.47		**Shallow Concentrated Flow, shallow** Unpaved Kv= 16.1 fps
44.1	1,000	Total			

Subcatchment Area A3: Drainage Area A3

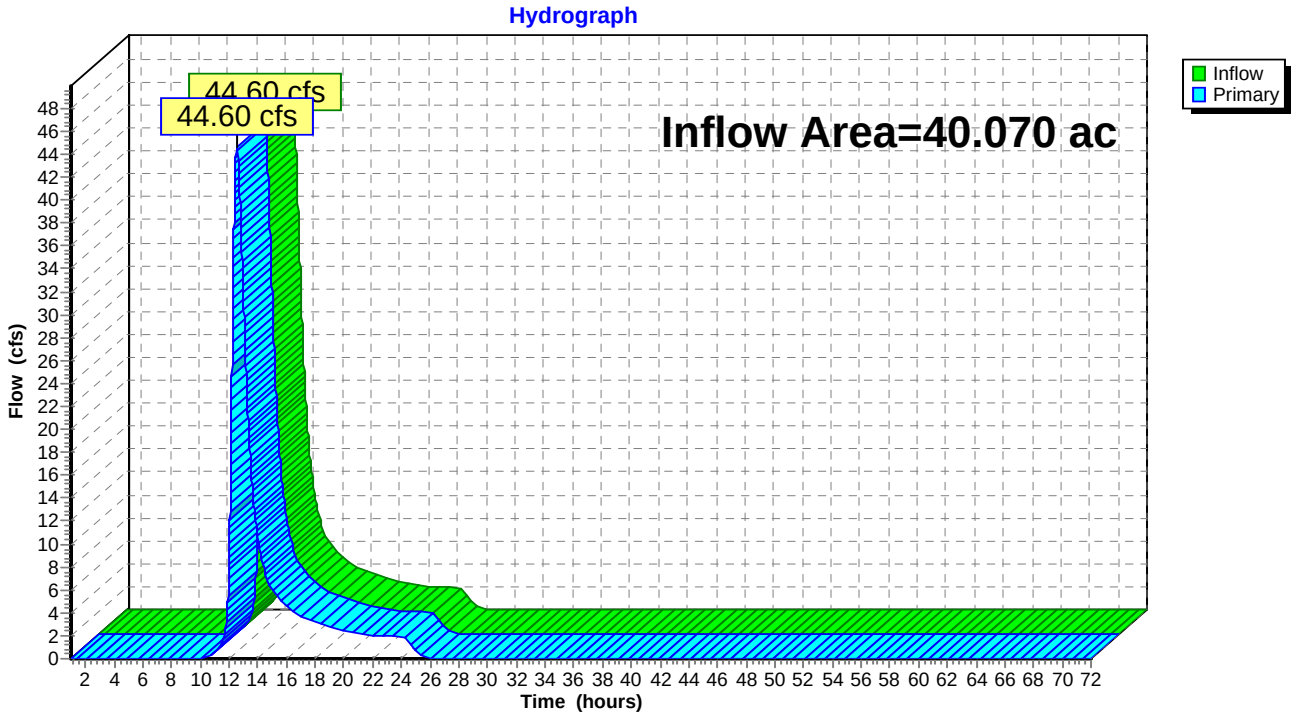


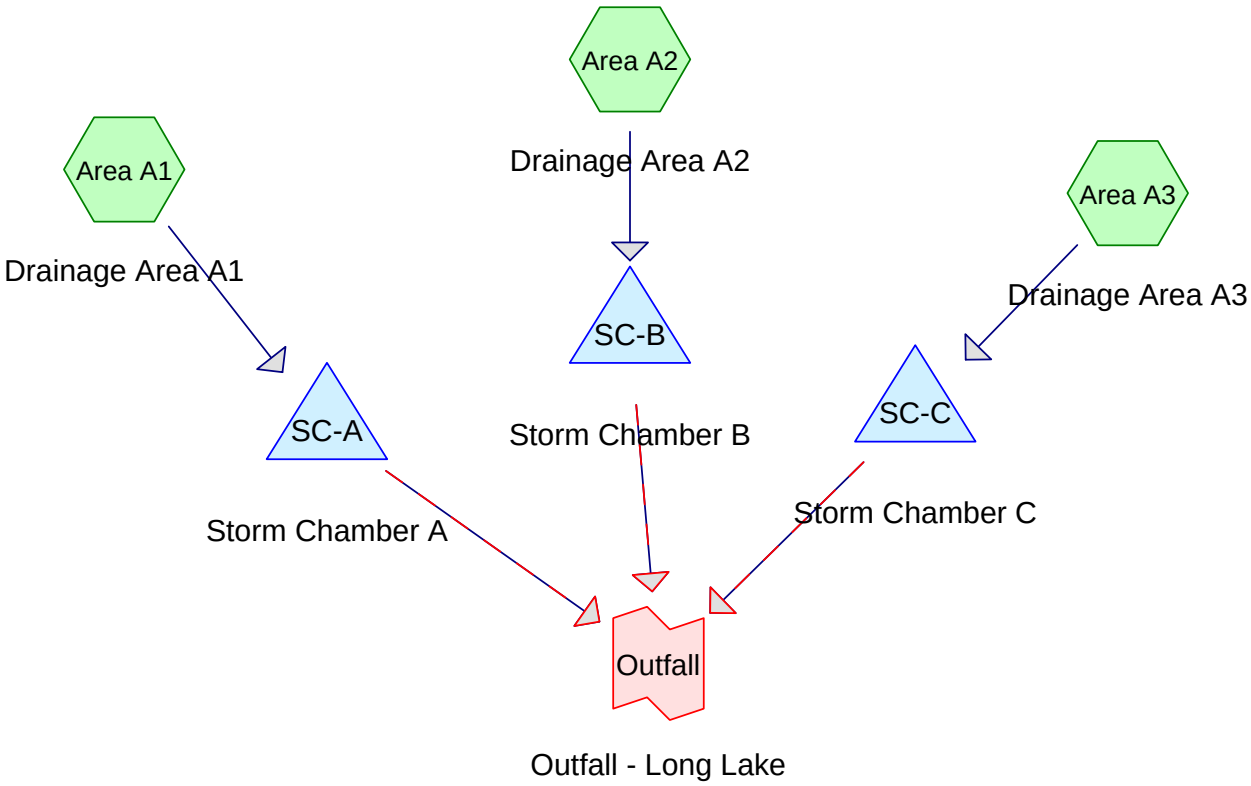
Summary for Link Outfall: Outfall - Long Lake

Inflow Area = 40.070 ac, 6.07% Impervious, Inflow Depth = 2.24" for 100-yr event
Inflow = 44.60 cfs @ 12.54 hrs, Volume= 7.489 af
Primary = 44.60 cfs @ 12.54 hrs, Volume= 7.489 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs

Link Outfall: Outfall - Long Lake





Subcat Reach Pond Link

Routing Diagram for Proposed Conditions
Prepared by CORRE, Inc., Printed 1/23/2017

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.270	65	2 acre lots, 12% imp, HSG B (Area A1, Area A2, Area A3)
0.600	98	Paved parking, HSG B (Area A1, Area A2, Area A3)
0.178	89	Paved roads w/open ditches, 50% imp, HSG B (Area A1, Area A2, Area A3)
1.350	98	Roofs, HSG B (Area A1, Area A2, Area A3)
33.322	65	Woods/grass comb., Fair, HSG B (Area A2, Area A3)
1.350	76	Woods/grass comb., Fair, HSG C (Area A1)
40.070	**67**	**TOTAL AREA**

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	SC-A	1,228.40	1,227.40	45.0	0.0222	0.013	24.0	0.0	0.0
2	SC-B	1,226.00	1,225.10	50.0	0.0180	0.013	24.0	0.0	0.0
3	SC-C	1,226.10	1,225.10	50.0	0.0200	0.013	24.0	0.0	0.0

Time span=1.00-72.00 hrs, dt=0.01 hrs, 7101 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment Area A1: Drainage Area A1 Runoff Area=1.840 ac 18.04% Impervious Runoff Depth=0.77"
Flow Length=850' Tc=55.4 min CN=79 Runoff=0.74 cfs 0.118 af

Subcatchment Area A2: Drainage Area A2 Runoff Area=19.350 ac 7.59% Impervious Runoff Depth=0.32"
Flow Length=1,701' Tc=70.5 min CN=67 Runoff=1.83 cfs 0.509 af

Subcatchment Area A3: Drainage Area A3 Runoff Area=18.880 ac 3.34% Impervious Runoff Depth=0.29"
Flow Length=1,000' Tc=44.1 min CN=66 Runoff=2.08 cfs 0.453 af

Pond SC-A: Storm Chamber A Peak Elev=1,228.75' Storage=0.013 af Inflow=0.74 cfs 0.118 af
Primary=0.73 cfs 0.108 af Secondary=0.00 cfs 0.000 af Outflow=0.73 cfs 0.108 af

Pond SC-B: Storm Chamber B Peak Elev=1,226.56' Storage=0.019 af Inflow=1.83 cfs 0.509 af
Primary=1.82 cfs 0.496 af Secondary=0.00 cfs 0.000 af Outflow=1.82 cfs 0.496 af

Pond SC-C: Storm Chamber C Peak Elev=1,226.70' Storage=0.011 af Inflow=2.08 cfs 0.453 af
Primary=2.08 cfs 0.445 af Secondary=0.00 cfs 0.000 af Outflow=2.08 cfs 0.445 af

Link Outfall: Outfall - Long Lake Inflow=4.21 cfs 1.050 af
Primary=4.21 cfs 1.050 af

Total Runoff Area = 40.070 ac Runoff Volume = 1.080 af Average Runoff Depth = 0.32"
93.93% Pervious = 37.639 ac 6.07% Impervious = 2.431 ac

Summary for Subcatchment Area A1: Drainage Area A1

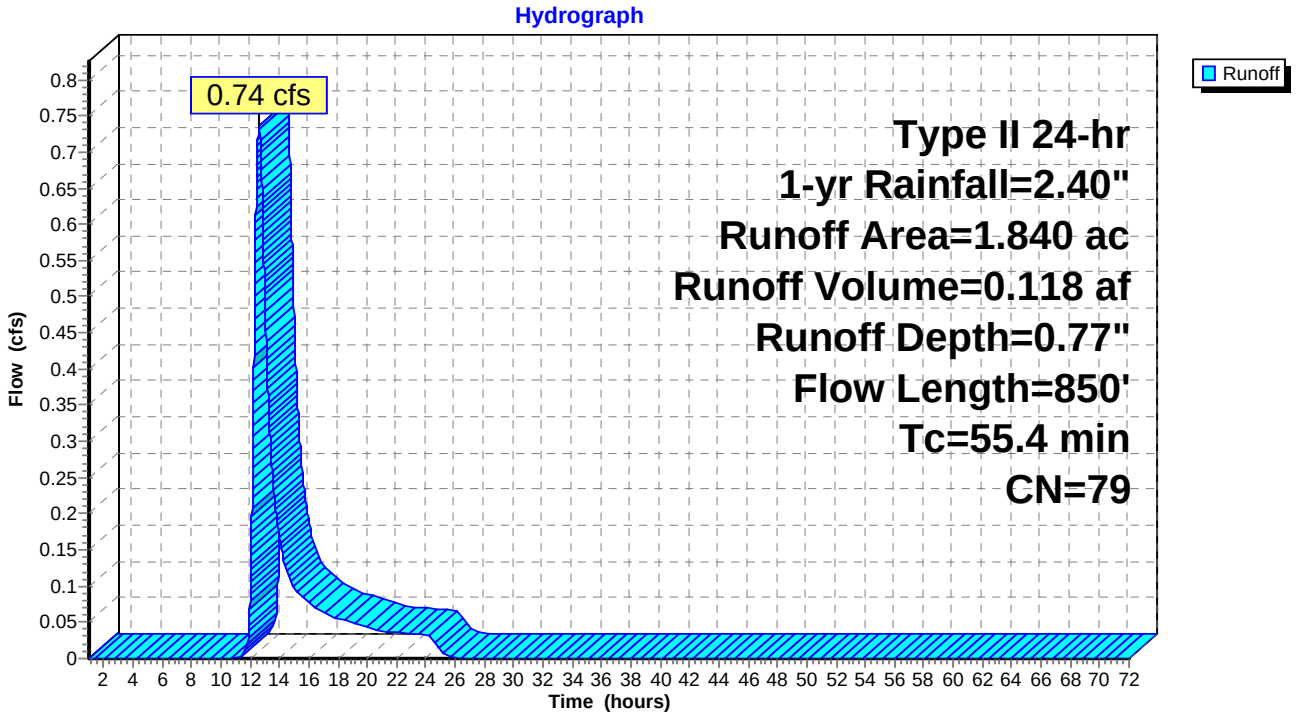
Runoff = 0.74 cfs @ 12.62 hrs, Volume= 0.118 af, Depth= 0.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.40"

Area (ac)	CN	Description
0.100	98	Paved parking, HSG B
0.150	98	Roofs, HSG B
0.140	89	Paved roads w/open ditches, 50% imp, HSG B
0.100	65	2 acre lots, 12% imp, HSG B
1.350	76	Woods/grass comb., Fair, HSG C
1.840	79	Weighted Average
1.508		81.96% Pervious Area
0.332		18.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
53.7	100	0.0100	0.03		**Sheet Flow, sheet** Woods: Dense underbrush n= 0.800 P2= 2.70"
1.2	300	0.0700	4.26		**Shallow Concentrated Flow, shallow** Unpaved Kv= 16.1 fps
0.5	450	0.0500	14.95	29.90	**Trap/Vee/Rect Channel Flow, channel** Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00' n= 0.013 Corrugated PE, smooth interior
55.4	850	Total			

Subcatchment Area A1: Drainage Area A1



Summary for Subcatchment Area A2: Drainage Area A2

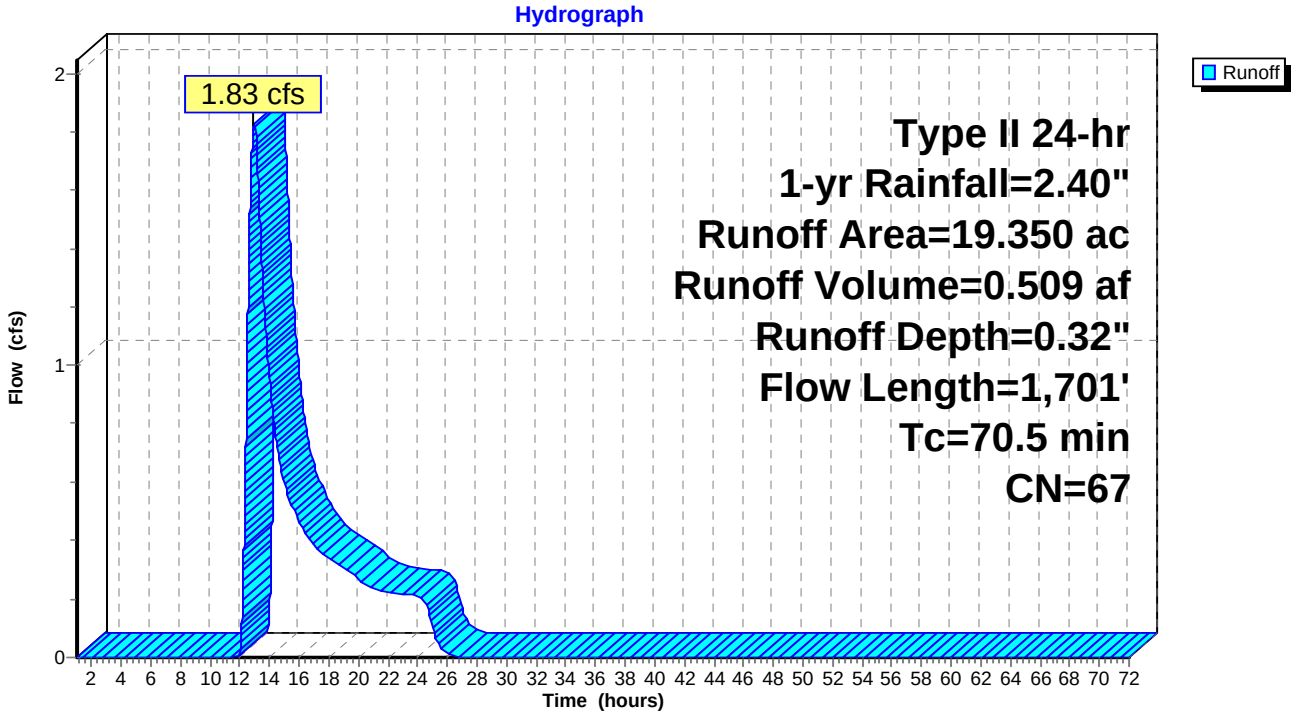
Runoff = 1.83 cfs @ 12.93 hrs, Volume= 0.509 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.40"

Area (ac)	CN	Description
0.250	98	Paved parking, HSG B
1.000	98	Roofs, HSG B
0.036	89	Paved roads w/open ditches, 50% imp, HSG B
1.670	65	2 acre lots, 12% imp, HSG B
16.394	65	Woods/grass comb., Fair, HSG B
19.350	67	Weighted Average
17.882		92.41% Pervious Area
1.468		7.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.7	100	0.0200	0.04		**Sheet Flow, sheet** Woods: Dense underbrush n= 0.800 P2= 2.70"
29.8	1,601	0.0320	0.89		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
70.5	1,701	Total			

Subcatchment Area A2: Drainage Area A2



Summary for Subcatchment Area A3: Drainage Area A3

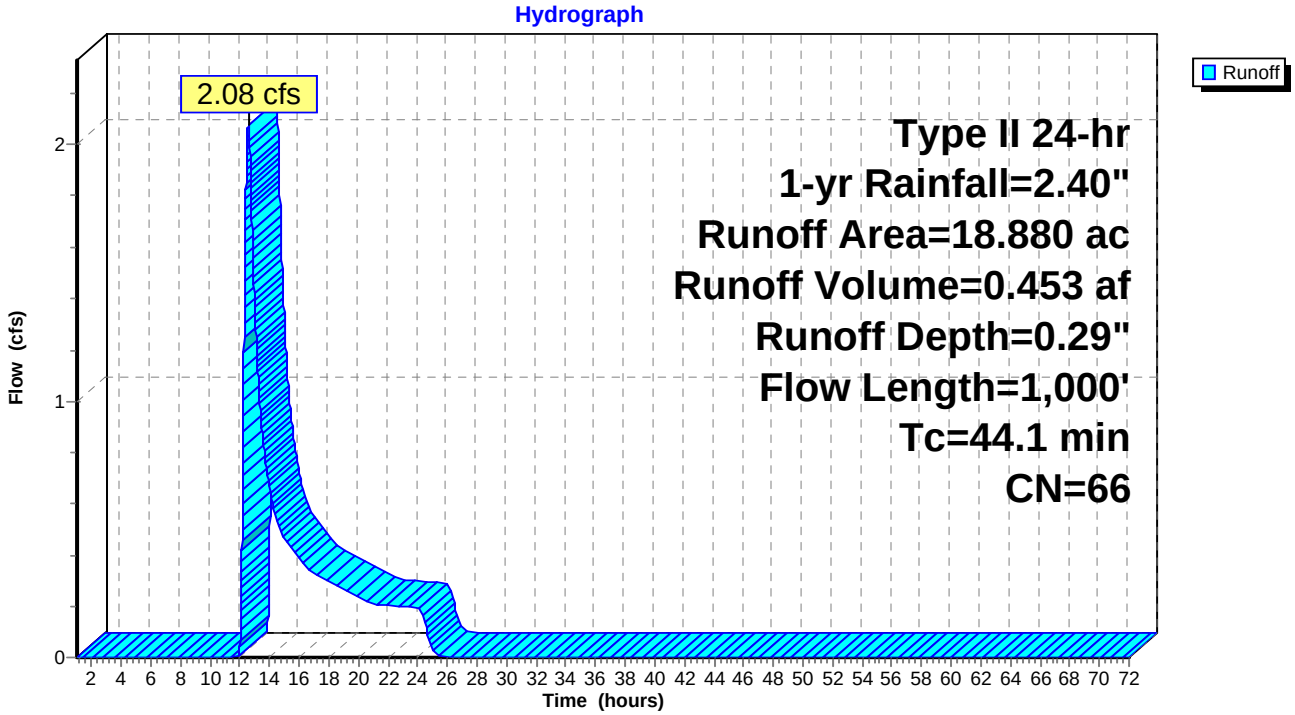
Runoff = 2.08 cfs @ 12.59 hrs, Volume= 0.453 af, Depth= 0.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.40"

Area (ac)	CN	Description
0.250	98	Paved parking, HSG B
0.200	98	Roofs, HSG B
0.002	89	Paved roads w/open ditches, 50% imp, HSG B
1.500	65	2 acre lots, 12% imp, HSG B
16.928	65	Woods/grass comb., Fair, HSG B
18.880	66	Weighted Average
18.249		96.66% Pervious Area
0.631		3.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.7	100	0.0200	0.04		**Sheet Flow, sheet** Woods: Dense underbrush n= 0.800 P2= 2.70"
3.4	900	0.0770	4.47		**Shallow Concentrated Flow, shallow** Unpaved Kv= 16.1 fps
44.1	1,000	Total			

Subcatchment Area A3: Drainage Area A3



Summary for Pond SC-A: Storm Chamber A

Inflow Area = 1.840 ac, 18.04% Impervious, Inflow Depth = 0.77" for 1-yr event
Inflow = 0.74 cfs @ 12.62 hrs, Volume= 0.118 af
Outflow = 0.73 cfs @ 12.63 hrs, Volume= 0.108 af, Atten= 0%, Lag= 0.8 min
Primary = 0.73 cfs @ 12.63 hrs, Volume= 0.108 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 1,228.75' @ 12.63 hrs Surf.Area= 0.013 ac Storage= 0.013 af

Plug-Flow detention time= 66.4 min calculated for 0.108 af (92% of inflow)
Center-of-Mass det. time= 22.0 min (927.1 - 905.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	1,226.40'	0.029 af	**10.33'W x 52.50'L x 6.54'H Field A** 0.081 af Overall - 0.009 af Embedded = 0.073 af x 40.0% Voids
#2A	1,228.40'	0.009 af	**Cultec R-330XLHD** x 7 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 1 rows
#3	1,228.40'	0.002 af	**4.00'D x 6.24'H Vertical Cone/Cylinder**
#4	1,232.67'	0.005 af	**3.00'W x 61.00'L x 3.00'H Underdrain** 0.013 af Overall - 0.000 af Embedded = 0.012 af x 40.0% Voids
#5	1,232.67'	0.000 af	**8.0" Round Pipe Storage** Inside #4 L= 61.0'
#6	1,234.00'	0.014 af	**3.00'W x 175.00'L x 3.00'H Underdrain** 0.036 af Overall - 0.001 af Embedded = 0.035 af x 40.0% Voids
#7	1,234.00'	0.001 af	**8.0" Round Pipe Storage** Inside #6 L= 175.0'
#8	1,245.62'	0.012 af	**3.00'W x 150.00'L x 3.00'H Underdrain** 0.031 af Overall - 0.001 af Embedded = 0.030 af x 40.0% Voids
#9	1,245.62'	0.001 af	**8.0" Round Pipe Storage** Inside #8 L= 150.0'
#10	1,231.30'	0.003 af	**3.00'W x 38.00'L x 3.00'H Underdrain** 0.008 af Overall - 0.000 af Embedded = 0.008 af x 40.0% Voids
#11	1,231.30'	0.000 af	**8.0" Round Pipe Storage** Inside #10 L= 38.0'
#12	1,231.99'	0.001 af	**3.00'W x 10.00'L x 3.00'H Underdrain** 0.002 af Overall - 0.000 af Embedded = 0.002 af x 40.0% Voids
#13	1,231.99'	0.000 af	**8.0" Round Pipe Storage** Inside #12 L= 10.0'
#14	1,234.97'	0.003 af	**3.00'W x 40.00'L x 3.00'H Underdrain** 0.008 af Overall - 0.000 af Embedded = 0.008 af x 40.0% Voids
#15	1,234.97'	0.000 af	**8.0" Round Pipe Storage** Inside #14 L= 40.0'
		0.081 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	1,228.40'	**24.0" Round RCP_Round 24"** L= 45.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,228.40' / 1,227.40' S= 0.0222 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	1,234.60'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.73 cfs @ 12.63 hrs HW=1,228.75' (Free Discharge)
↑—**1=RCP_Round 24"** (Inlet Controls 0.73 cfs @ 2.00 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=1,226.40' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond SC-A: Storm Chamber A - Chamber Wizard Field A

Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)
Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
Row Length Adjustment= +1.50' x 7.45 sf x 1 rows

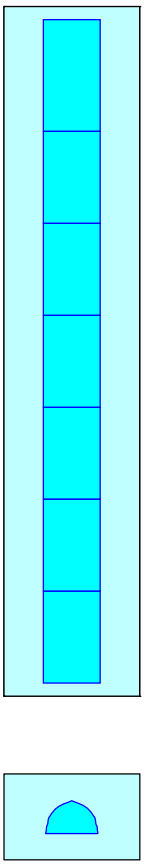
7 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 50.50' Row Length +12.0" End Stone x 2 = 52.50' Base Length
1 Rows x 52.0" Wide + 36.0" Side Stone x 2 = 10.33' Base Width
24.0" Base + 30.5" Chamber Height + 24.0" Cover = 6.54' Field Height

7 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 1 Rows = 376.3 cf Chamber Storage

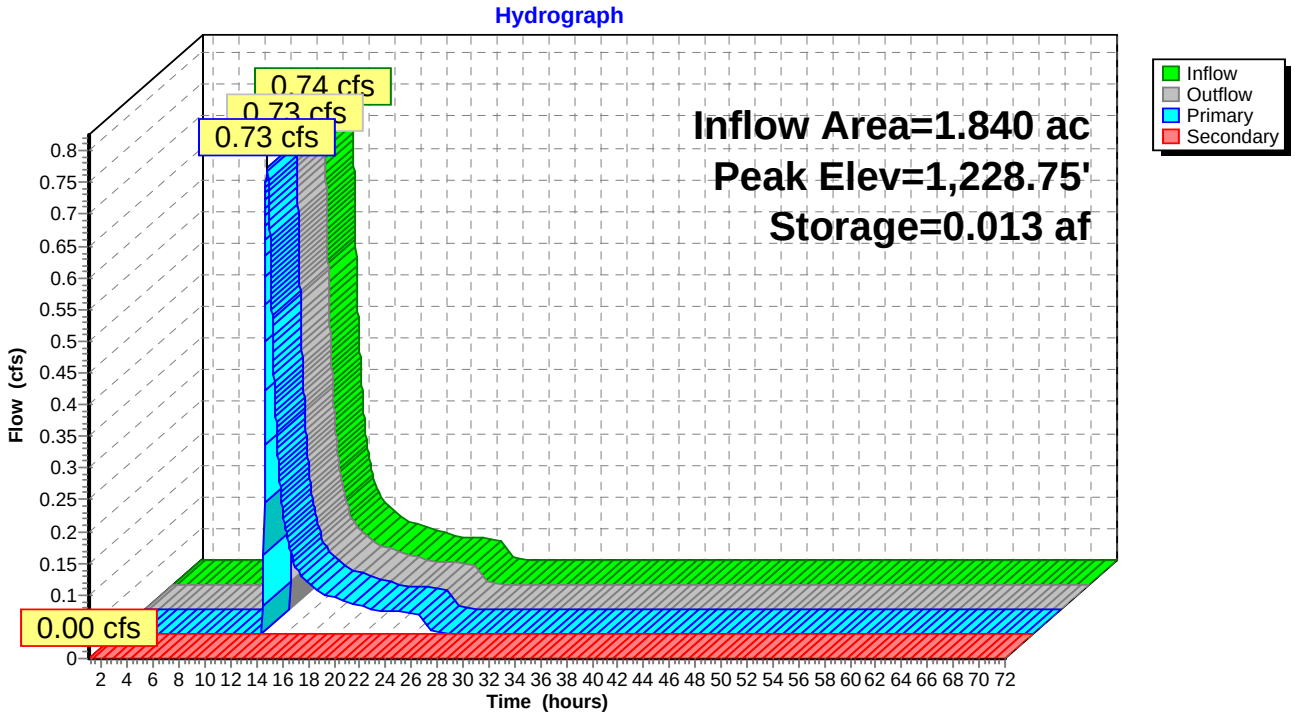
3,548.9 cf Field - 376.3 cf Chambers = 3,172.6 cf Stone x 40.0% Voids = 1,269.0 cf Stone Storage

Chamber Storage + Stone Storage = 1,645.3 cf = 0.038 af
Overall Storage Efficiency = 46.4%
Overall System Size = 52.50' x 10.33' x 6.54'

7 Chambers
131.4 cy Field
117.5 cy Stone



Pond SC-A: Storm Chamber A



Summary for Pond SC-B: Storm Chamber B

Inflow Area = 19.350 ac, 7.59% Impervious, Inflow Depth = 0.32" for 1-yr event
Inflow = 1.83 cfs @ 12.93 hrs, Volume= 0.509 af
Outflow = 1.82 cfs @ 12.97 hrs, Volume= 0.496 af, Atten= 0%, Lag= 2.5 min
Primary = 1.82 cfs @ 12.97 hrs, Volume= 0.496 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 1,226.56' @ 12.97 hrs Surf.Area= 0.017 ac Storage= 0.019 af

Plug-Flow detention time= 24.1 min calculated for 0.496 af (97% of inflow)
Center-of-Mass det. time= 10.1 min (987.0 - 976.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	1,224.10'	0.041 af	**10.33'W x 73.50'L x 6.54'H Field A** 0.114 af Overall - 0.012 af Embedded = 0.102 af x 40.0% Voids
#2A	1,226.10'	0.012 af	**Cultec R-330XLHD** x 10 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 1 rows
#3	1,226.80'	0.001 af	**3.00'D x 4.50'H Vertical Cone/Cylinder**
#4	1,227.00'	0.002 af	**3.00'W x 28.00'L x 3.00'H Underdrain** 0.006 af Overall - 0.001 af Embedded = 0.005 af x 40.0% Voids
#5	1,227.00'	0.001 af	**12.0" Round Pipe Storage** Inside #4 L= 28.0'
#6	1,227.50'	0.000 af	**3.00'W x 5.00'L x 3.00'H Underdrain** 0.001 af Overall - 0.000 af Embedded = 0.001 af x 40.0% Voids
#7	1,227.50'	0.000 af	**12.0" Round Pipe Storage** Inside #6 L= 5.0'
#8	1,230.90'	0.004 af	**3.00'W x 50.00'L x 3.00'H Underdrain** 0.010 af Overall - 0.001 af Embedded = 0.009 af x 40.0% Voids
#9	1,230.90'	0.001 af	**12.0" Round Pipe Storage** Inside #8 L= 50.0'
#10	1,232.51'	0.017 af	**3.00'W x 220.00'L x 3.00'H Underdrain** 0.045 af Overall - 0.004 af Embedded = 0.041 af x 40.0% Voids
#11	1,232.51'	0.004 af	**12.0" Round Pipe Storage** Inside #10 L= 220.0'
#12	1,234.60'	0.012 af	**3.00'W x 155.00'L x 3.00'H Underdrain** 0.032 af Overall - 0.003 af Embedded = 0.029 af x 40.0% Voids
#13	1,234.60'	0.003 af	**12.0" Round Pipe Storage** Inside #12 L= 155.0'
#14	1,235.33'	0.007 af	**3.00'W x 95.00'L x 3.00'H Underdrain** 0.020 af Overall - 0.002 af Embedded = 0.018 af x 40.0% Voids
#15	1,235.33'	0.002 af	**12.0" Round Pipe Storage** Inside #14 L= 95.0'
		0.105 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	1,226.00'	**24.0" Round RCP_Round 24"** L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,226.00' / 1,225.10' S= 0.0180 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	1,231.50'	**36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.82 cfs @ 12.97 hrs HW=1,226.56' (Free Discharge)
└**1=RCP_Round 24"** (Inlet Controls 1.82 cfs @ 2.54 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=1,224.10' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond SC-B: Storm Chamber B - Chamber Wizard Field A

Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)
Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
Row Length Adjustment= +1.50' x 7.45 sf x 1 rows

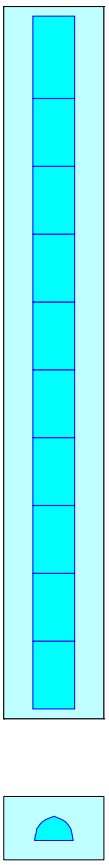
10 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 71.50' Row Length +12.0" End Stone x 2 = 73.50' Base Length
1 Rows x 52.0" Wide + 36.0" Side Stone x 2 = 10.33' Base Width
24.0" Base + 30.5" Chamber Height + 24.0" Cover = 6.54' Field Height

10 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 1 Rows = 532.7 cf Chamber Storage

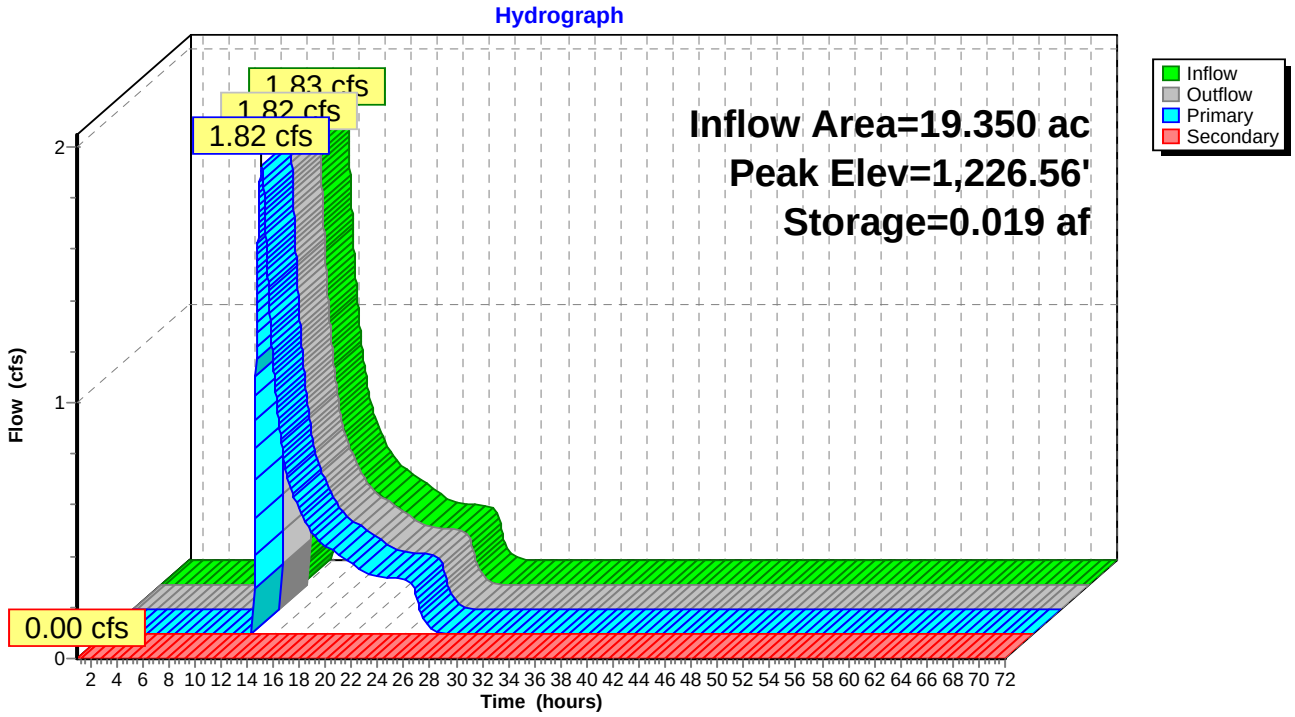
4,968.4 cf Field - 532.7 cf Chambers = 4,435.6 cf Stone x 40.0% Voids = 1,774.3 cf Stone Storage

Chamber Storage + Stone Storage = 2,307.0 cf = 0.053 af
Overall Storage Efficiency = 46.4%
Overall System Size = 73.50' x 10.33' x 6.54'

10 Chambers
184.0 cy Field
164.3 cy Stone



Pond SC-B: Storm Chamber B



Summary for Pond SC-C: Storm Chamber C

Inflow Area = 18.880 ac, 3.34% Impervious, Inflow Depth = 0.29" for 1-yr event
Inflow = 2.08 cfs @ 12.59 hrs, Volume= 0.453 af
Outflow = 2.08 cfs @ 12.59 hrs, Volume= 0.445 af, Atten= 0%, Lag= 0.0 min
Primary = 2.08 cfs @ 12.59 hrs, Volume= 0.445 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 1,226.70' @ 12.59 hrs Surf.Area= 0.009 ac Storage= 0.011 af

Plug-Flow detention time= 14.6 min calculated for 0.445 af (98% of inflow)
Center-of-Mass det. time= 6.2 min (965.3 - 959.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	1,224.10'	0.021 af	**10.33'W x 38.50'L x 6.54'H Field A** 0.060 af Overall - 0.006 af Embedded = 0.054 af x 40.0% Voids
#2A	1,226.10'	0.006 af	**Cultec R-330XLHD** x 5 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 1 rows
#3	1,226.46'	0.001 af	**3.00'D x 5.54'H Vertical Cone/Cylinder**
		0.029 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	1,226.10'	**24.0" Round RCP_Round 24"** L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,226.10' / 1,225.10' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	1,231.54'	**36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.08 cfs @ 12.59 hrs HW=1,226.70' (Free Discharge)
↑—**1=RCP_Round 24"** (Inlet Controls 2.08 cfs @ 2.63 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=1,224.10' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond SC-C: Storm Chamber C - Chamber Wizard Field A

Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)
Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
Row Length Adjustment= +1.50' x 7.45 sf x 1 rows

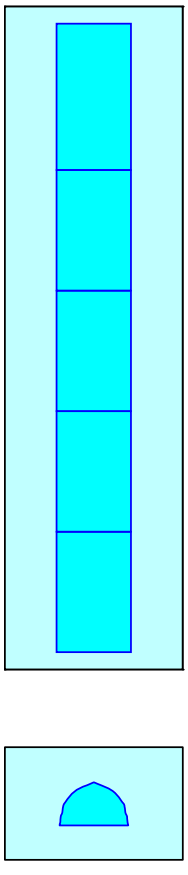
5 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 36.50' Row Length +12.0" End Stone x 2 = 38.50' Base Length
1 Rows x 52.0" Wide + 36.0" Side Stone x 2 = 10.33' Base Width
24.0" Base + 30.5" Chamber Height + 24.0" Cover = 6.54' Field Height

5 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 1 Rows = 272.0 cf Chamber Storage

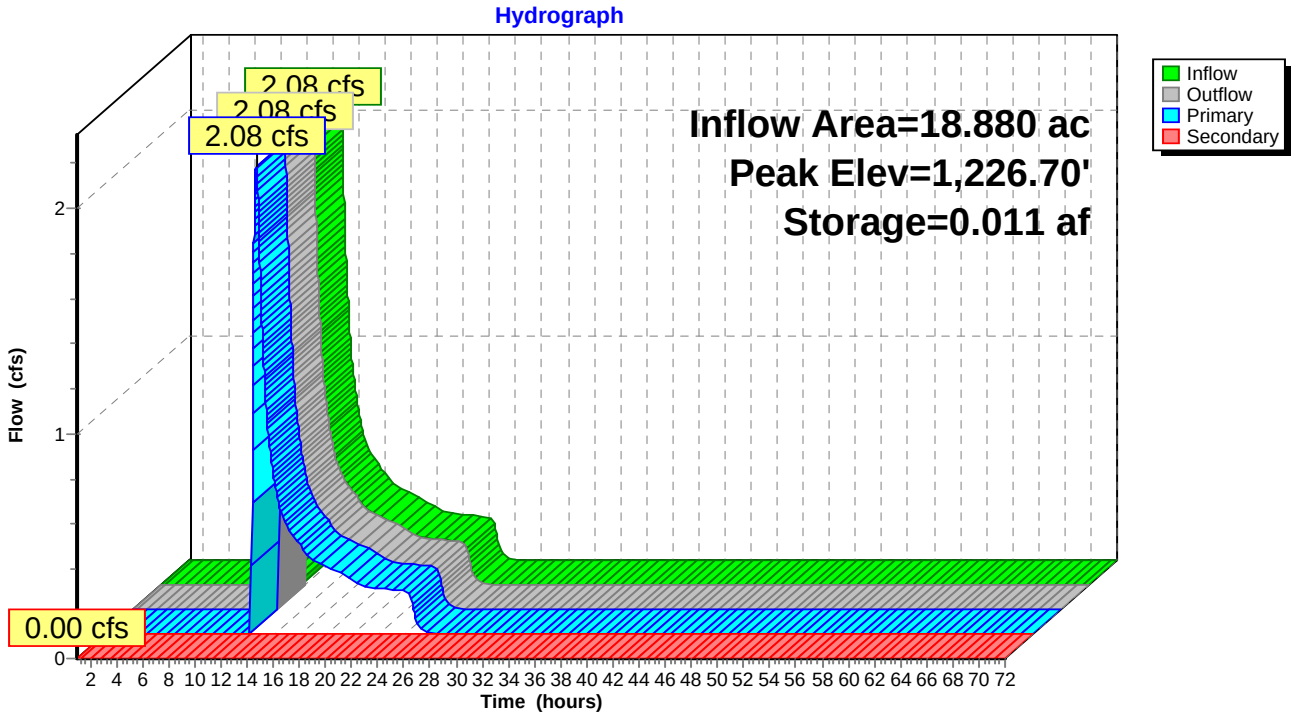
2,602.5 cf Field - 272.0 cf Chambers = 2,330.5 cf Stone x 40.0% Voids = 932.2 cf Stone Storage

Chamber Storage + Stone Storage = 1,204.2 cf = 0.028 af
Overall Storage Efficiency = 46.3%
Overall System Size = 38.50' x 10.33' x 6.54'

5 Chambers
96.4 cy Field
86.3 cy Stone



Pond SC-C: Storm Chamber C

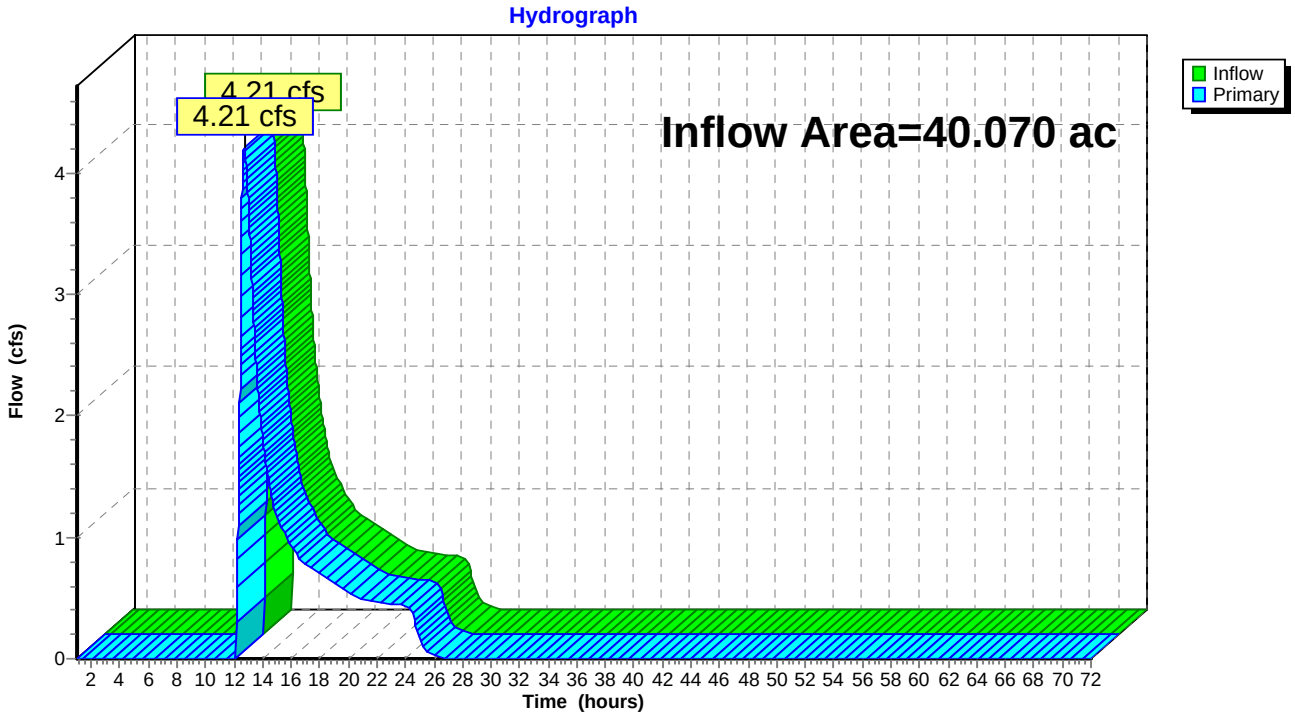


Summary for Link Outfall: Outfall - Long Lake

Inflow Area = 40.070 ac, 6.07% Impervious, Inflow Depth = 0.31" for 1-yr event
Inflow = 4.21 cfs @ 12.70 hrs, Volume= 1.050 af
Primary = 4.21 cfs @ 12.70 hrs, Volume= 1.050 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs

Link Outfall: Outfall - Long Lake



Time span=1.00-72.00 hrs, dt=0.01 hrs, 7101 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment Area A1: Drainage Area A1 Runoff Area=1.840 ac 18.04% Impervious Runoff Depth=0.97"
Flow Length=850' Tc=55.4 min CN=79 Runoff=0.96 cfs 0.149 af

Subcatchment Area A2: Drainage Area A2 Runoff Area=19.350 ac 7.59% Impervious Runoff Depth=0.44"
Flow Length=1,701' Tc=70.5 min CN=67 Runoff=2.88 cfs 0.714 af

Subcatchment Area A3: Drainage Area A3 Runoff Area=18.880 ac 3.34% Impervious Runoff Depth=0.41"
Flow Length=1,000' Tc=44.1 min CN=66 Runoff=3.43 cfs 0.643 af

Pond SC-A: Storm Chamber A Peak Elev=1,228.80' Storage=0.013 af Inflow=0.96 cfs 0.149 af
Primary=0.95 cfs 0.139 af Secondary=0.00 cfs 0.000 af Outflow=0.95 cfs 0.139 af

Pond SC-B: Storm Chamber B Peak Elev=1,226.71' Storage=0.021 af Inflow=2.88 cfs 0.714 af
Primary=2.87 cfs 0.701 af Secondary=0.00 cfs 0.000 af Outflow=2.87 cfs 0.701 af

Pond SC-C: Storm Chamber C Peak Elev=1,226.88' Storage=0.012 af Inflow=3.43 cfs 0.643 af
Primary=3.43 cfs 0.636 af Secondary=0.00 cfs 0.000 af Outflow=3.43 cfs 0.636 af

Link Outfall: Outfall - Long Lake Inflow=6.57 cfs 1.476 af
Primary=6.57 cfs 1.476 af

Total Runoff Area = 40.070 ac Runoff Volume = 1.507 af Average Runoff Depth = 0.45"
93.93% Pervious = 37.639 ac 6.07% Impervious = 2.431 ac

Summary for Subcatchment Area A1: Drainage Area A1

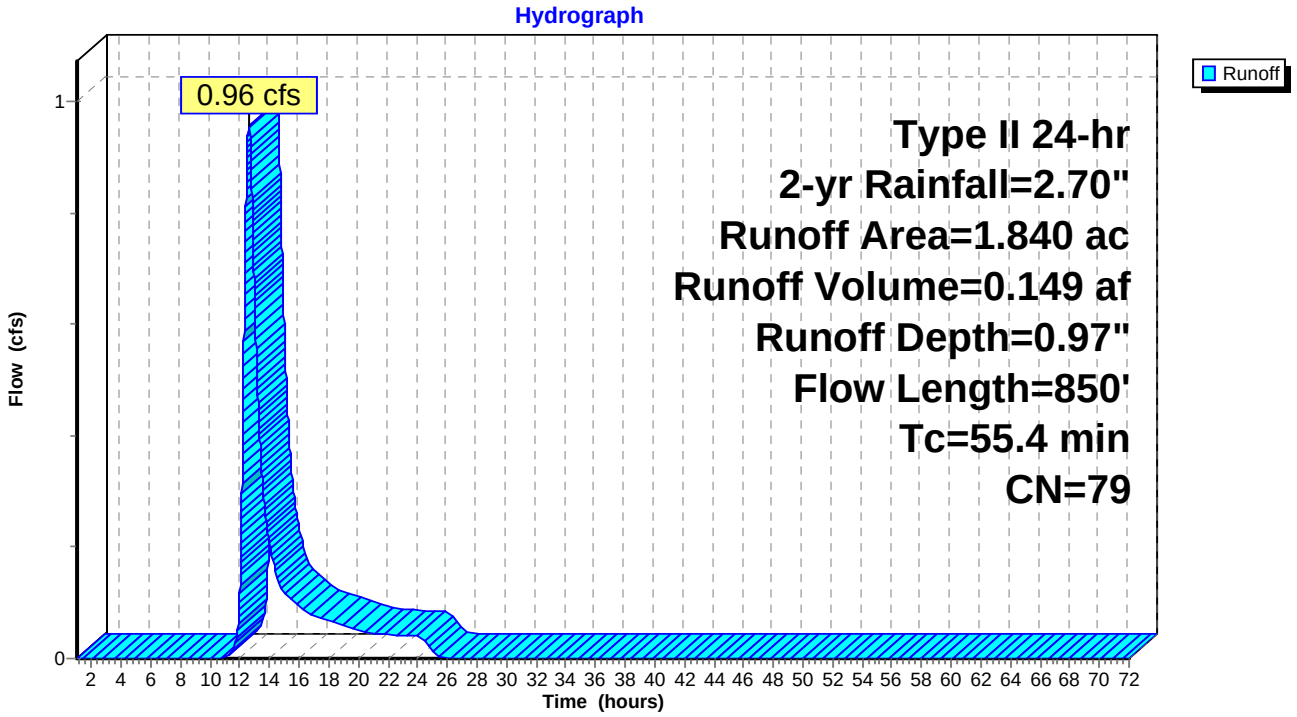
Runoff = 0.96 cfs @ 12.62 hrs, Volume= 0.149 af, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr Rainfall=2.70"

Area (ac)	CN	Description
0.100	98	Paved parking, HSG B
0.150	98	Roofs, HSG B
0.140	89	Paved roads w/open ditches, 50% imp, HSG B
0.100	65	2 acre lots, 12% imp, HSG B
1.350	76	Woods/grass comb., Fair, HSG C
1.840	79	Weighted Average
1.508		81.96% Pervious Area
0.332		18.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
53.7	100	0.0100	0.03		**Sheet Flow, sheet** Woods: Dense underbrush n= 0.800 P2= 2.70"
1.2	300	0.0700	4.26		**Shallow Concentrated Flow, shallow** Unpaved Kv= 16.1 fps
0.5	450	0.0500	14.95	29.90	**Trap/Vee/Rect Channel Flow, channel** Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00' n= 0.013 Corrugated PE, smooth interior
55.4	850	Total			

Subcatchment Area A1: Drainage Area A1



Summary for Subcatchment Area A2: Drainage Area A2

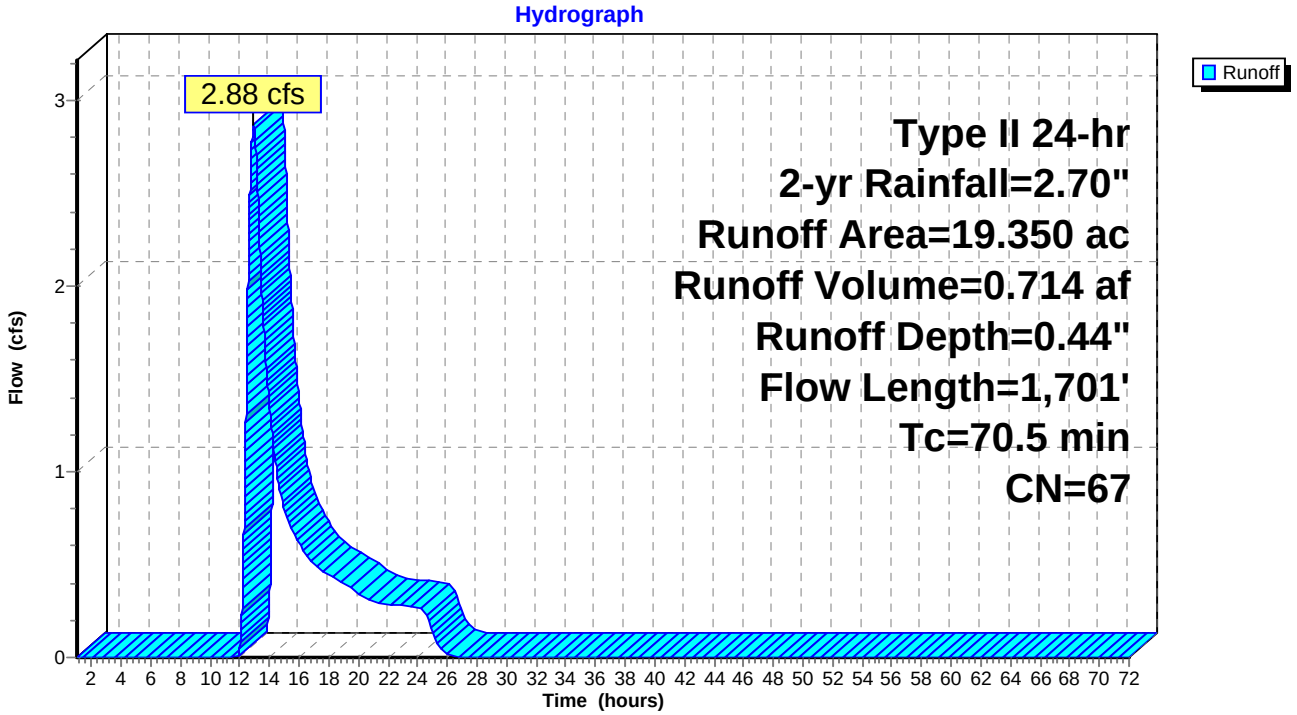
Runoff = 2.88 cfs @ 12.93 hrs, Volume= 0.714 af, Depth= 0.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr Rainfall=2.70"

Area (ac)	CN	Description
0.250	98	Paved parking, HSG B
1.000	98	Roofs, HSG B
0.036	89	Paved roads w/open ditches, 50% imp, HSG B
1.670	65	2 acre lots, 12% imp, HSG B
16.394	65	Woods/grass comb., Fair, HSG B
19.350	67	Weighted Average
17.882		92.41% Pervious Area
1.468		7.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.7	100	0.0200	0.04		**Sheet Flow, sheet** Woods: Dense underbrush n= 0.800 P2= 2.70"
29.8	1,601	0.0320	0.89		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
70.5	1,701	Total			

Subcatchment Area A2: Drainage Area A2



Summary for Subcatchment Area A3: Drainage Area A3

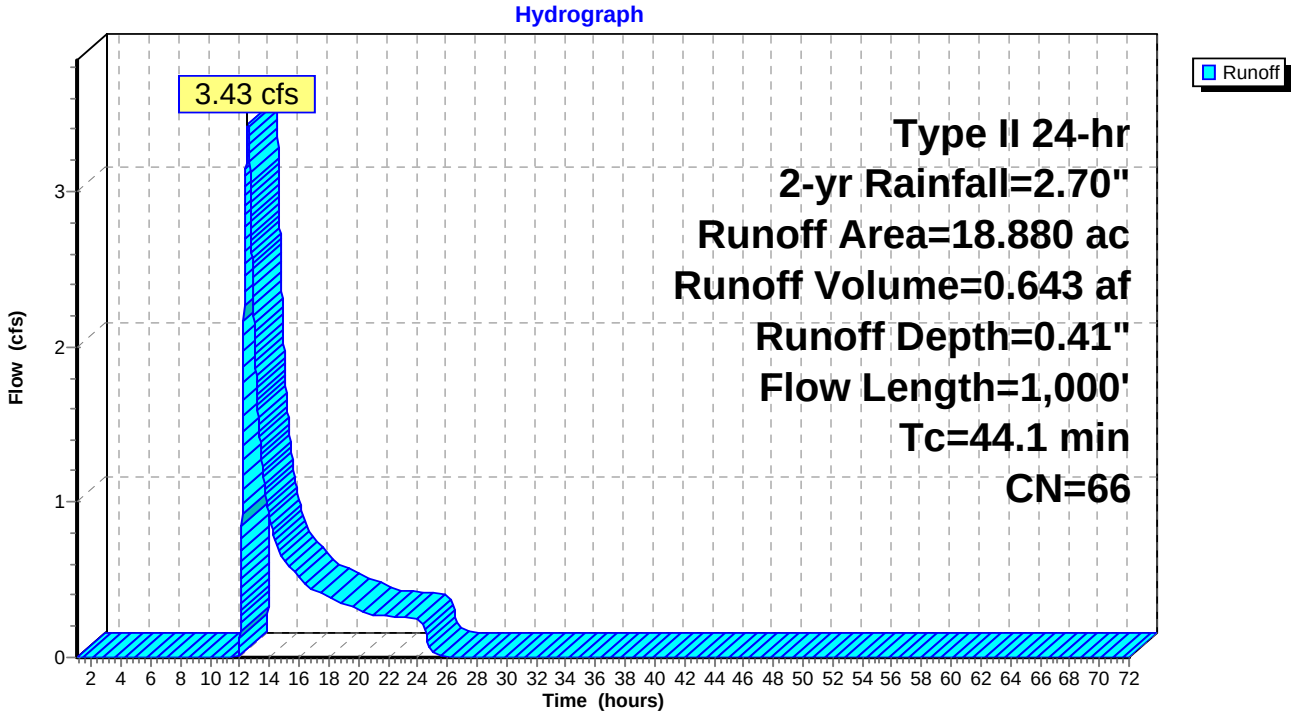
Runoff = 3.43 cfs @ 12.50 hrs, Volume= 0.643 af, Depth= 0.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr Rainfall=2.70"

Area (ac)	CN	Description
0.250	98	Paved parking, HSG B
0.200	98	Roofs, HSG B
0.002	89	Paved roads w/open ditches, 50% imp, HSG B
1.500	65	2 acre lots, 12% imp, HSG B
16.928	65	Woods/grass comb., Fair, HSG B
18.880	66	Weighted Average
18.249		96.66% Pervious Area
0.631		3.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.7	100	0.0200	0.04		**Sheet Flow, sheet** Woods: Dense underbrush n= 0.800 P2= 2.70"
3.4	900	0.0770	4.47		**Shallow Concentrated Flow, shallow** Unpaved Kv= 16.1 fps
44.1	1,000	Total			

Subcatchment Area A3: Drainage Area A3



Summary for Pond SC-A: Storm Chamber A

Inflow Area = 1.840 ac, 18.04% Impervious, Inflow Depth = 0.97" for 2-yr event
Inflow = 0.96 cfs @ 12.62 hrs, Volume= 0.149 af
Outflow = 0.95 cfs @ 12.63 hrs, Volume= 0.139 af, Atten= 0%, Lag= 0.6 min
Primary = 0.95 cfs @ 12.63 hrs, Volume= 0.139 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 1,228.80' @ 12.63 hrs Surf.Area= 0.013 ac Storage= 0.013 af

Plug-Flow detention time= 53.8 min calculated for 0.139 af (93% of inflow)
Center-of-Mass det. time= 17.7 min (915.6 - 897.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	1,226.40'	0.029 af	**10.33'W x 52.50'L x 6.54'H Field A** 0.081 af Overall - 0.009 af Embedded = 0.073 af x 40.0% Voids
#2A	1,228.40'	0.009 af	**Cultec R-330XLHD** x 7 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 1 rows
#3	1,228.40'	0.002 af	**4.00'D x 6.24'H Vertical Cone/Cylinder**
#4	1,232.67'	0.005 af	**3.00'W x 61.00'L x 3.00'H Underdrain** 0.013 af Overall - 0.000 af Embedded = 0.012 af x 40.0% Voids
#5	1,232.67'	0.000 af	**8.0" Round Pipe Storage** Inside #4 L= 61.0'
#6	1,234.00'	0.014 af	**3.00'W x 175.00'L x 3.00'H Underdrain** 0.036 af Overall - 0.001 af Embedded = 0.035 af x 40.0% Voids
#7	1,234.00'	0.001 af	**8.0" Round Pipe Storage** Inside #6 L= 175.0'
#8	1,245.62'	0.012 af	**3.00'W x 150.00'L x 3.00'H Underdrain** 0.031 af Overall - 0.001 af Embedded = 0.030 af x 40.0% Voids
#9	1,245.62'	0.001 af	**8.0" Round Pipe Storage** Inside #8 L= 150.0'
#10	1,231.30'	0.003 af	**3.00'W x 38.00'L x 3.00'H Underdrain** 0.008 af Overall - 0.000 af Embedded = 0.008 af x 40.0% Voids
#11	1,231.30'	0.000 af	**8.0" Round Pipe Storage** Inside #10 L= 38.0'
#12	1,231.99'	0.001 af	**3.00'W x 10.00'L x 3.00'H Underdrain** 0.002 af Overall - 0.000 af Embedded = 0.002 af x 40.0% Voids
#13	1,231.99'	0.000 af	**8.0" Round Pipe Storage** Inside #12 L= 10.0'
#14	1,234.97'	0.003 af	**3.00'W x 40.00'L x 3.00'H Underdrain** 0.008 af Overall - 0.000 af Embedded = 0.008 af x 40.0% Voids
#15	1,234.97'	0.000 af	**8.0" Round Pipe Storage** Inside #14 L= 40.0'
		0.081 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	1,228.40'	**24.0" Round RCP_Round 24"** L= 45.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,228.40' / 1,227.40' S= 0.0222 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	1,234.60'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.95 cfs @ 12.63 hrs HW=1,228.80' (Free Discharge)
↑—**1=RCP_Round 24"** (Inlet Controls 0.95 cfs @ 2.14 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=1,226.40' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond SC-A: Storm Chamber A - Chamber Wizard Field A

Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)
Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
Row Length Adjustment= +1.50' x 7.45 sf x 1 rows

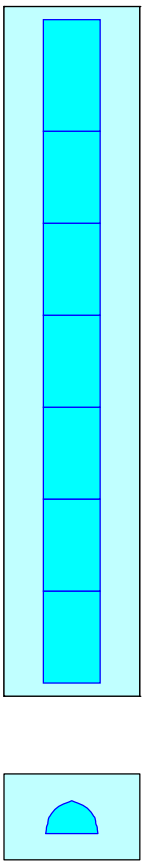
7 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 50.50' Row Length +12.0" End Stone x 2 = 52.50' Base Length
1 Rows x 52.0" Wide + 36.0" Side Stone x 2 = 10.33' Base Width
24.0" Base + 30.5" Chamber Height + 24.0" Cover = 6.54' Field Height

7 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 1 Rows = 376.3 cf Chamber Storage

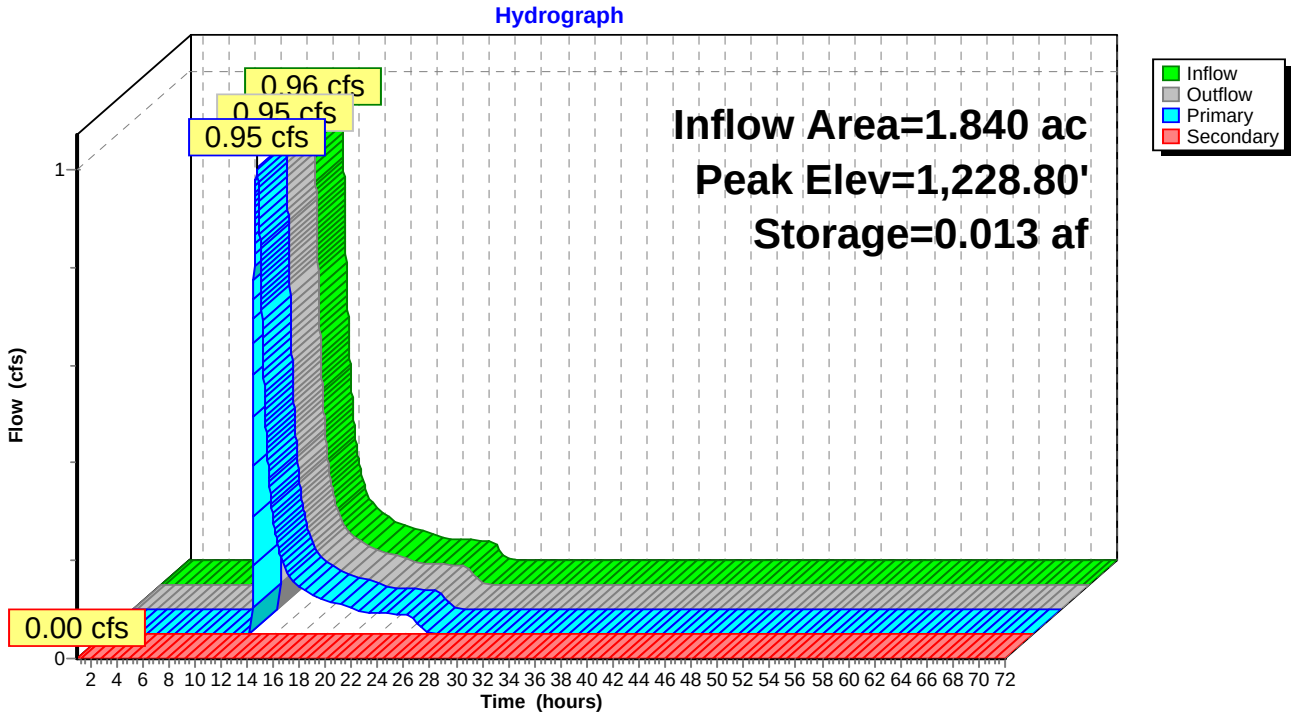
3,548.9 cf Field - 376.3 cf Chambers = 3,172.6 cf Stone x 40.0% Voids = 1,269.0 cf Stone Storage

Chamber Storage + Stone Storage = 1,645.3 cf = 0.038 af
Overall Storage Efficiency = 46.4%
Overall System Size = 52.50' x 10.33' x 6.54'

7 Chambers
131.4 cy Field
117.5 cy Stone



Pond SC-A: Storm Chamber A



Summary for Pond SC-B: Storm Chamber B

Inflow Area = 19.350 ac, 7.59% Impervious, Inflow Depth = 0.44" for 2-yr event
Inflow = 2.88 cfs @ 12.93 hrs, Volume= 0.714 af
Outflow = 2.87 cfs @ 12.94 hrs, Volume= 0.701 af, Atten= 0%, Lag= 0.8 min
Primary = 2.87 cfs @ 12.94 hrs, Volume= 0.701 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 1,226.71' @ 12.94 hrs Surf.Area= 0.017 ac Storage= 0.021 af

Plug-Flow detention time= 17.7 min calculated for 0.701 af (98% of inflow)
Center-of-Mass det. time= 7.5 min (969.2 - 961.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	1,224.10'	0.041 af	**10.33'W x 73.50'L x 6.54'H Field A** 0.114 af Overall - 0.012 af Embedded = 0.102 af x 40.0% Voids
#2A	1,226.10'	0.012 af	**Cultec R-330XLHD** x 10 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 1 rows
#3	1,226.80'	0.001 af	**3.00'D x 4.50'H Vertical Cone/Cylinder**
#4	1,227.00'	0.002 af	**3.00'W x 28.00'L x 3.00'H Underdrain** 0.006 af Overall - 0.001 af Embedded = 0.005 af x 40.0% Voids
#5	1,227.00'	0.001 af	**12.0" Round Pipe Storage** Inside #4 L= 28.0'
#6	1,227.50'	0.000 af	**3.00'W x 5.00'L x 3.00'H Underdrain** 0.001 af Overall - 0.000 af Embedded = 0.001 af x 40.0% Voids
#7	1,227.50'	0.000 af	**12.0" Round Pipe Storage** Inside #6 L= 5.0'
#8	1,230.90'	0.004 af	**3.00'W x 50.00'L x 3.00'H Underdrain** 0.010 af Overall - 0.001 af Embedded = 0.009 af x 40.0% Voids
#9	1,230.90'	0.001 af	**12.0" Round Pipe Storage** Inside #8 L= 50.0'
#10	1,232.51'	0.017 af	**3.00'W x 220.00'L x 3.00'H Underdrain** 0.045 af Overall - 0.004 af Embedded = 0.041 af x 40.0% Voids
#11	1,232.51'	0.004 af	**12.0" Round Pipe Storage** Inside #10 L= 220.0'
#12	1,234.60'	0.012 af	**3.00'W x 155.00'L x 3.00'H Underdrain** 0.032 af Overall - 0.003 af Embedded = 0.029 af x 40.0% Voids
#13	1,234.60'	0.003 af	**12.0" Round Pipe Storage** Inside #12 L= 155.0'
#14	1,235.33'	0.007 af	**3.00'W x 95.00'L x 3.00'H Underdrain** 0.020 af Overall - 0.002 af Embedded = 0.018 af x 40.0% Voids
#15	1,235.33'	0.002 af	**12.0" Round Pipe Storage** Inside #14 L= 95.0'
		0.105 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	1,226.00'	**24.0" Round RCP_Round 24"** L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,226.00' / 1,225.10' S= 0.0180 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	1,231.50'	**36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.86 cfs @ 12.94 hrs HW=1,226.71' (Free Discharge)
↑—**1=RCP_Round 24"** (Inlet Controls 2.86 cfs @ 2.87 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=1,224.10' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond SC-B: Storm Chamber B - Chamber Wizard Field A

Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)
Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
Row Length Adjustment= +1.50' x 7.45 sf x 1 rows

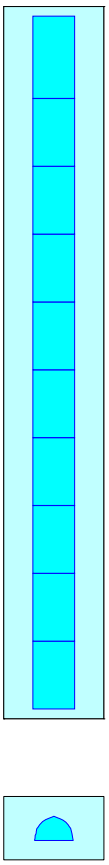
10 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 71.50' Row Length +12.0" End Stone x 2 = 73.50' Base Length
1 Rows x 52.0" Wide + 36.0" Side Stone x 2 = 10.33' Base Width
24.0" Base + 30.5" Chamber Height + 24.0" Cover = 6.54' Field Height

10 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 1 Rows = 532.7 cf Chamber Storage

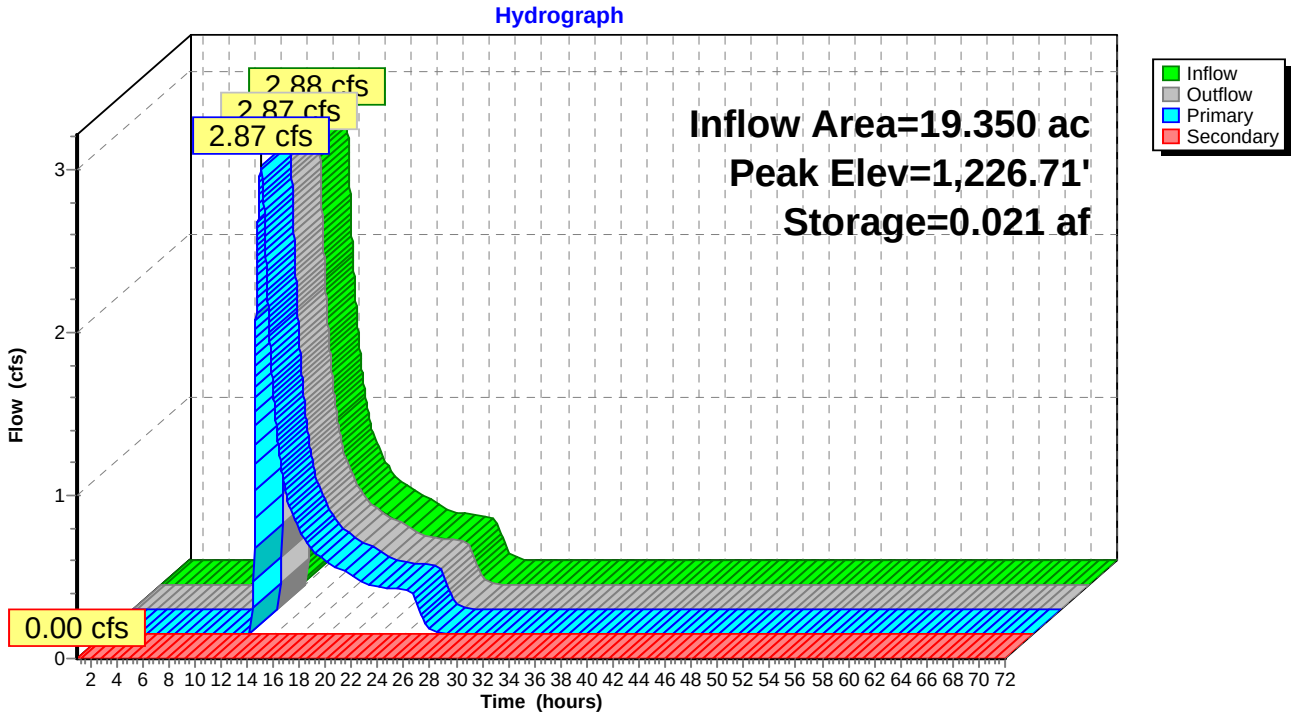
4,968.4 cf Field - 532.7 cf Chambers = 4,435.6 cf Stone x 40.0% Voids = 1,774.3 cf Stone Storage

Chamber Storage + Stone Storage = 2,307.0 cf = 0.053 af
Overall Storage Efficiency = 46.4%
Overall System Size = 73.50' x 10.33' x 6.54'

10 Chambers
184.0 cy Field
164.3 cy Stone



Pond SC-B: Storm Chamber B



Summary for Pond SC-C: Storm Chamber C

Inflow Area = 18.880 ac, 3.34% Impervious, Inflow Depth = 0.41" for 2-yr event
Inflow = 3.43 cfs @ 12.50 hrs, Volume= 0.643 af
Outflow = 3.43 cfs @ 12.53 hrs, Volume= 0.636 af, Atten= 0%, Lag= 1.8 min
Primary = 3.43 cfs @ 12.53 hrs, Volume= 0.636 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 1,226.88' @ 12.53 hrs Surf.Area= 0.009 ac Storage= 0.012 af

Plug-Flow detention time= 10.7 min calculated for 0.636 af (99% of inflow)
Center-of-Mass det. time= 4.5 min (947.1 - 942.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	1,224.10'	0.021 af	**10.33'W x 38.50'L x 6.54'H Field A** 0.060 af Overall - 0.006 af Embedded = 0.054 af x 40.0% Voids
#2A	1,226.10'	0.006 af	**Cultec R-330XLHD** x 5 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 1 rows
#3	1,226.46'	0.001 af	**3.00'D x 5.54'H Vertical Cone/Cylinder**
		0.029 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	1,226.10'	**24.0" Round RCP_Round 24"** L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,226.10' / 1,225.10' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	1,231.54'	**36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.43 cfs @ 12.53 hrs HW=1,226.88' (Free Discharge)
↑—**1=RCP_Round 24"** (Inlet Controls 3.43 cfs @ 3.01 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=1,224.10' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond SC-C: Storm Chamber C - Chamber Wizard Field A

Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)
Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
Row Length Adjustment= +1.50' x 7.45 sf x 1 rows

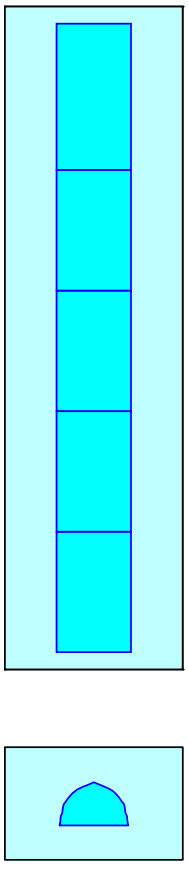
5 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 36.50' Row Length +12.0" End Stone x 2 = 38.50' Base Length
1 Rows x 52.0" Wide + 36.0" Side Stone x 2 = 10.33' Base Width
24.0" Base + 30.5" Chamber Height + 24.0" Cover = 6.54' Field Height

5 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 1 Rows = 272.0 cf Chamber Storage

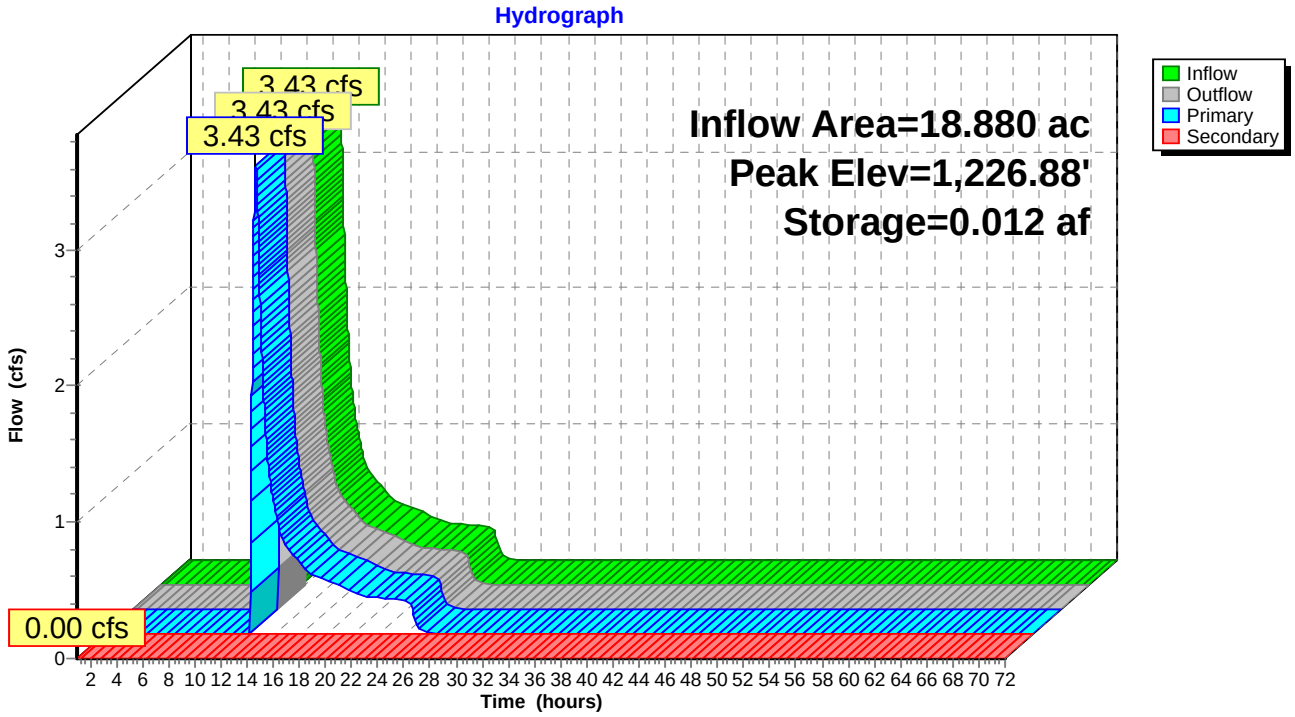
2,602.5 cf Field - 272.0 cf Chambers = 2,330.5 cf Stone x 40.0% Voids = 932.2 cf Stone Storage

Chamber Storage + Stone Storage = 1,204.2 cf = 0.028 af
Overall Storage Efficiency = 46.3%
Overall System Size = 38.50' x 10.33' x 6.54'

5 Chambers
96.4 cy Field
86.3 cy Stone



Pond SC-C: Storm Chamber C

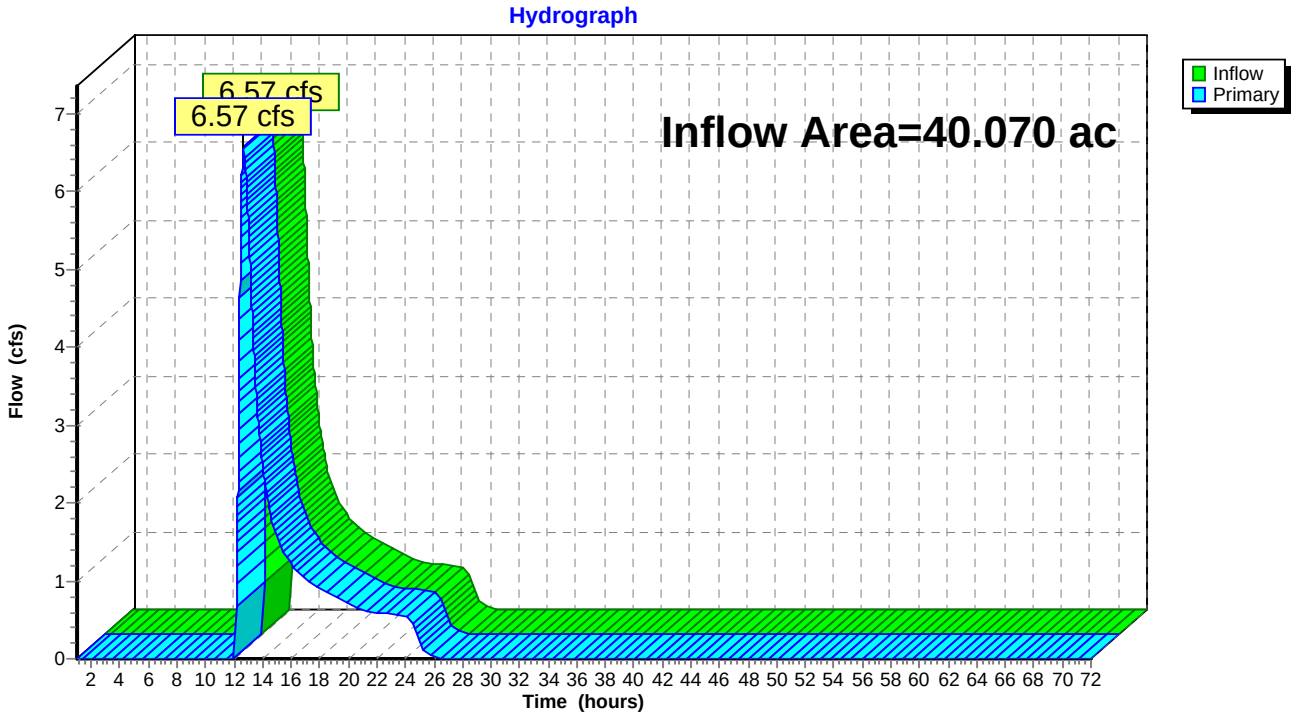


Summary for Link Outfall: Outfall - Long Lake

Inflow Area = 40.070 ac, 6.07% Impervious, Inflow Depth = 0.44" for 2-yr event
Inflow = 6.57 cfs @ 12.66 hrs, Volume= 1.476 af
Primary = 6.57 cfs @ 12.66 hrs, Volume= 1.476 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs

Link Outfall: Outfall - Long Lake



Time span=1.00-72.00 hrs, dt=0.01 hrs, 7101 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment Area A1: Drainage Area A1 Runoff Area=1.840 ac 18.04% Impervious Runoff Depth=1.96"
Flow Length=850' Tc=55.4 min CN=79 Runoff=2.02 cfs 0.301 af

Subcatchment Area A2: Drainage Area A2 Runoff Area=19.350 ac 7.59% Impervious Runoff Depth=1.14"
Flow Length=1,701' Tc=70.5 min CN=67 Runoff=9.23 cfs 1.846 af

Subcatchment Area A3: Drainage Area A3 Runoff Area=18.880 ac 3.34% Impervious Runoff Depth=1.09"
Flow Length=1,000' Tc=44.1 min CN=66 Runoff=11.95 cfs 1.709 af

Pond SC-A: Storm Chamber A Peak Elev=1,228.99' Storage=0.015 af Inflow=2.02 cfs 0.301 af
Primary=2.02 cfs 0.291 af Secondary=0.00 cfs 0.000 af Outflow=2.02 cfs 0.291 af

Pond SC-B: Storm Chamber B Peak Elev=1,227.38' Storage=0.028 af Inflow=9.23 cfs 1.846 af
Primary=9.23 cfs 1.833 af Secondary=0.00 cfs 0.000 af Outflow=9.23 cfs 1.833 af

Pond SC-C: Storm Chamber C Peak Elev=1,227.73' Storage=0.016 af Inflow=11.95 cfs 1.709 af
Primary=11.94 cfs 1.701 af Secondary=0.00 cfs 0.000 af Outflow=11.94 cfs 1.701 af

Link Outfall: Outfall - Long Lake Inflow=21.03 cfs 3.825 af
Primary=21.03 cfs 3.825 af

Total Runoff Area = 40.070 ac Runoff Volume = 3.856 af Average Runoff Depth = 1.15"
93.93% Pervious = 37.639 ac 6.07% Impervious = 2.431 ac

Summary for Subcatchment Area A1: Drainage Area A1

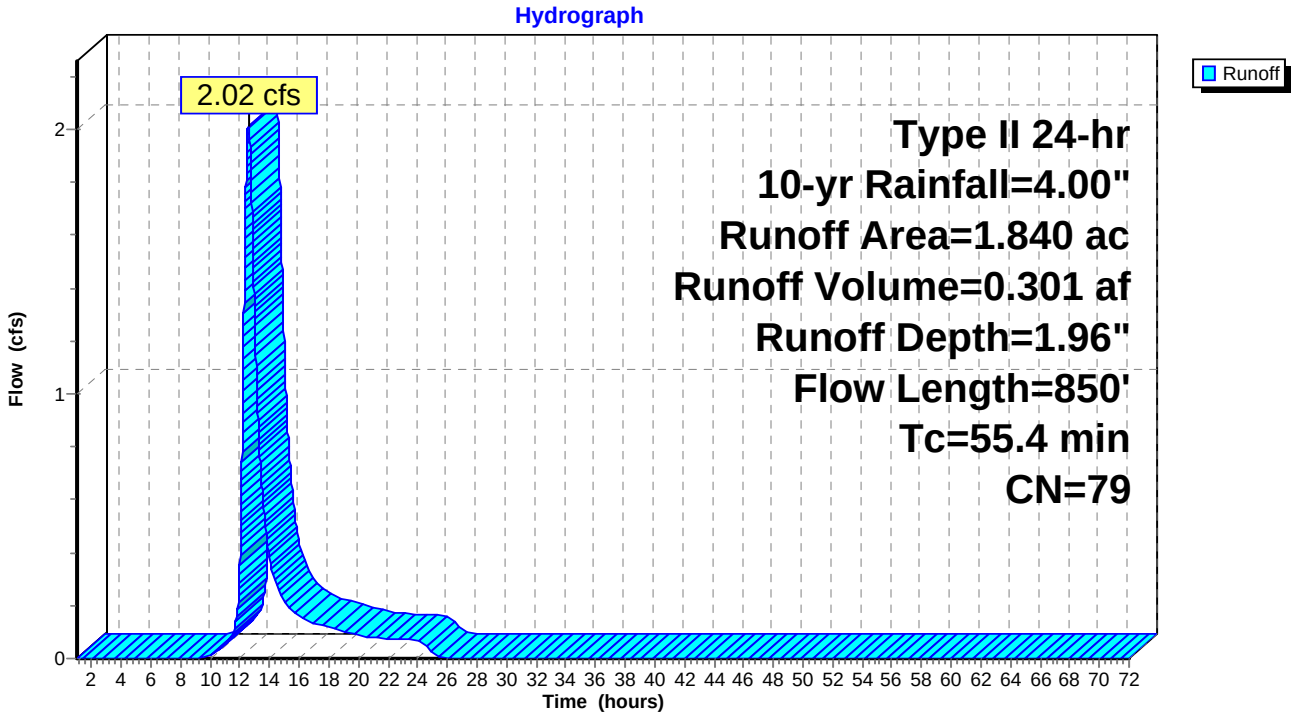
Runoff = 2.02 cfs @ 12.56 hrs, Volume= 0.301 af, Depth= 1.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=4.00"

Area (ac)	CN	Description
0.100	98	Paved parking, HSG B
0.150	98	Roofs, HSG B
0.140	89	Paved roads w/open ditches, 50% imp, HSG B
0.100	65	2 acre lots, 12% imp, HSG B
1.350	76	Woods/grass comb., Fair, HSG C
1.840	79	Weighted Average
1.508		81.96% Pervious Area
0.332		18.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
53.7	100	0.0100	0.03		**Sheet Flow, sheet** Woods: Dense underbrush n= 0.800 P2= 2.70"
1.2	300	0.0700	4.26		**Shallow Concentrated Flow, shallow** Unpaved Kv= 16.1 fps
0.5	450	0.0500	14.95	29.90	**Trap/Vee/Rect Channel Flow, channel** Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00' n= 0.013 Corrugated PE, smooth interior
55.4	850	Total			

Subcatchment Area A1: Drainage Area A1



Summary for Subcatchment Area A2: Drainage Area A2

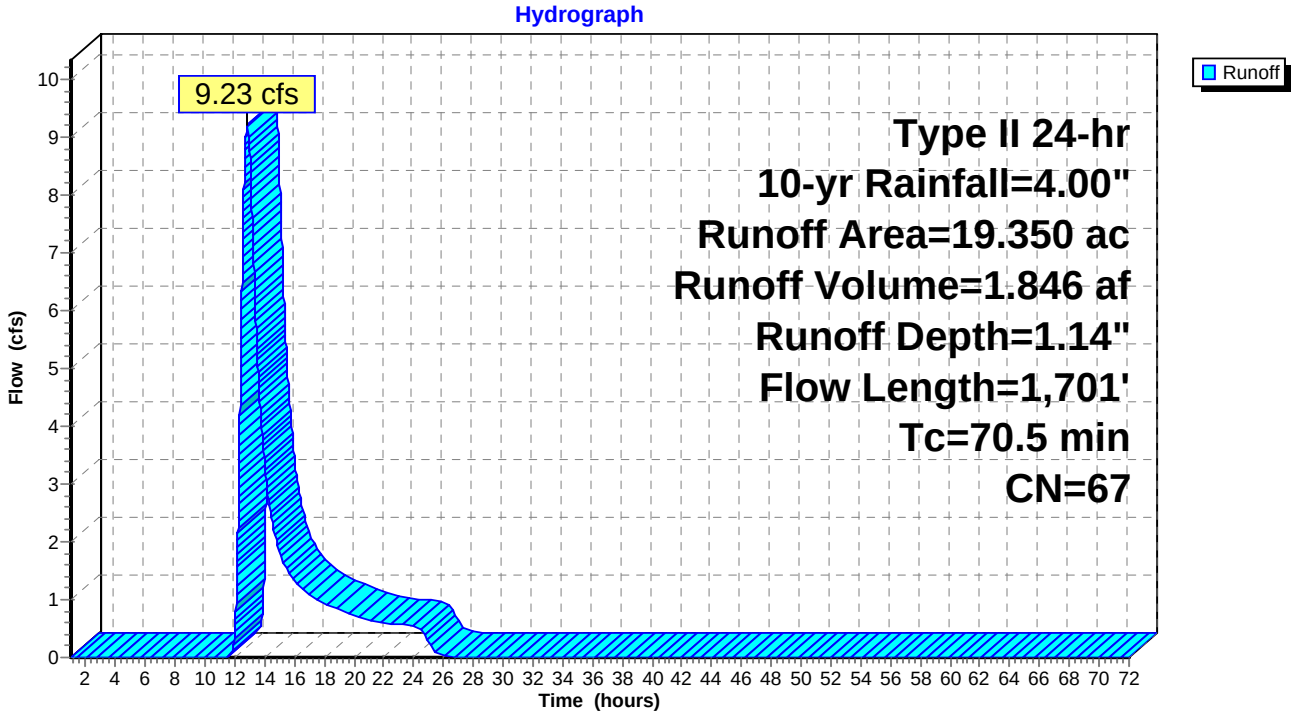
Runoff = 9.23 cfs @ 12.84 hrs, Volume= 1.846 af, Depth= 1.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=4.00"

Area (ac)	CN	Description
0.250	98	Paved parking, HSG B
1.000	98	Roofs, HSG B
0.036	89	Paved roads w/open ditches, 50% imp, HSG B
1.670	65	2 acre lots, 12% imp, HSG B
16.394	65	Woods/grass comb., Fair, HSG B
19.350	67	Weighted Average
17.882		92.41% Pervious Area
1.468		7.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.7	100	0.0200	0.04		**Sheet Flow, sheet** Woods: Dense underbrush n= 0.800 P2= 2.70"
29.8	1,601	0.0320	0.89		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
70.5	1,701	Total			

Subcatchment Area A2: Drainage Area A2



Summary for Subcatchment Area A3: Drainage Area A3

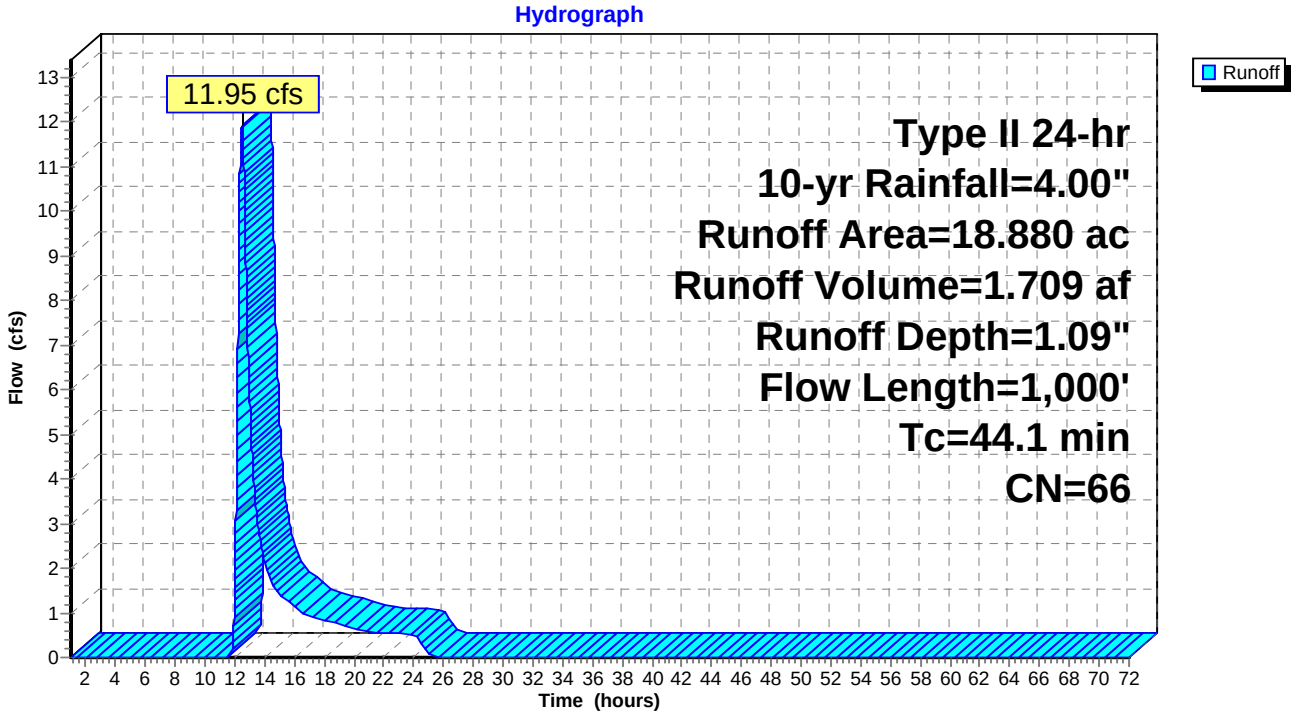
Runoff = 11.95 cfs @ 12.49 hrs, Volume= 1.709 af, Depth= 1.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=4.00"

Area (ac)	CN	Description
0.250	98	Paved parking, HSG B
0.200	98	Roofs, HSG B
0.002	89	Paved roads w/open ditches, 50% imp, HSG B
1.500	65	2 acre lots, 12% imp, HSG B
16.928	65	Woods/grass comb., Fair, HSG B
18.880	66	Weighted Average
18.249		96.66% Pervious Area
0.631		3.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.7	100	0.0200	0.04		**Sheet Flow, sheet** Woods: Dense underbrush n= 0.800 P2= 2.70"
3.4	900	0.0770	4.47		**Shallow Concentrated Flow, shallow** Unpaved Kv= 16.1 fps
44.1	1,000	Total			

Subcatchment Area A3: Drainage Area A3



Summary for Pond SC-A: Storm Chamber A

Inflow Area = 1.840 ac, 18.04% Impervious, Inflow Depth = 1.96" for 10-yr event
Inflow = 2.02 cfs @ 12.56 hrs, Volume= 0.301 af
Outflow = 2.02 cfs @ 12.59 hrs, Volume= 0.291 af, Atten= 0%, Lag= 1.7 min
Primary = 2.02 cfs @ 12.59 hrs, Volume= 0.291 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 1,228.99' @ 12.59 hrs Surf.Area= 0.013 ac Storage= 0.015 af

Plug-Flow detention time= 30.2 min calculated for 0.291 af (97% of inflow)
Center-of-Mass det. time= 10.7 min (888.1 - 877.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	1,226.40'	0.029 af	**10.33'W x 52.50'L x 6.54'H Field A** 0.081 af Overall - 0.009 af Embedded = 0.073 af x 40.0% Voids
#2A	1,228.40'	0.009 af	**Cultec R-330XLHD** x 7 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 1 rows
#3	1,228.40'	0.002 af	**4.00'D x 6.24'H Vertical Cone/Cylinder**
#4	1,232.67'	0.005 af	**3.00'W x 61.00'L x 3.00'H Underdrain** 0.013 af Overall - 0.000 af Embedded = 0.012 af x 40.0% Voids
#5	1,232.67'	0.000 af	**8.0" Round Pipe Storage** Inside #4 L= 61.0'
#6	1,234.00'	0.014 af	**3.00'W x 175.00'L x 3.00'H Underdrain** 0.036 af Overall - 0.001 af Embedded = 0.035 af x 40.0% Voids
#7	1,234.00'	0.001 af	**8.0" Round Pipe Storage** Inside #6 L= 175.0'
#8	1,245.62'	0.012 af	**3.00'W x 150.00'L x 3.00'H Underdrain** 0.031 af Overall - 0.001 af Embedded = 0.030 af x 40.0% Voids
#9	1,245.62'	0.001 af	**8.0" Round Pipe Storage** Inside #8 L= 150.0'
#10	1,231.30'	0.003 af	**3.00'W x 38.00'L x 3.00'H Underdrain** 0.008 af Overall - 0.000 af Embedded = 0.008 af x 40.0% Voids
#11	1,231.30'	0.000 af	**8.0" Round Pipe Storage** Inside #10 L= 38.0'
#12	1,231.99'	0.001 af	**3.00'W x 10.00'L x 3.00'H Underdrain** 0.002 af Overall - 0.000 af Embedded = 0.002 af x 40.0% Voids
#13	1,231.99'	0.000 af	**8.0" Round Pipe Storage** Inside #12 L= 10.0'
#14	1,234.97'	0.003 af	**3.00'W x 40.00'L x 3.00'H Underdrain** 0.008 af Overall - 0.000 af Embedded = 0.008 af x 40.0% Voids
#15	1,234.97'	0.000 af	**8.0" Round Pipe Storage** Inside #14 L= 40.0'
		0.081 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	1,228.40'	**24.0" Round RCP_Round 24"** L= 45.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,228.40' / 1,227.40' S= 0.0222 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	1,234.60'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.01 cfs @ 12.59 hrs HW=1,228.99' (Free Discharge)
↑—**1=RCP_Round 24"** (Inlet Controls 2.01 cfs @ 2.61 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=1,226.40' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond SC-A: Storm Chamber A - Chamber Wizard Field A

Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)
Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
Row Length Adjustment= +1.50' x 7.45 sf x 1 rows

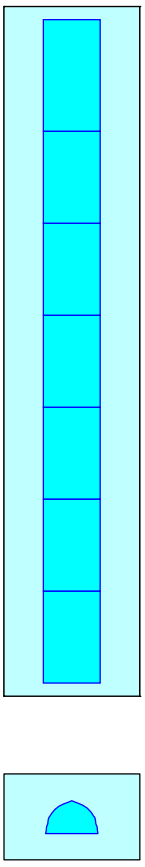
7 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 50.50' Row Length +12.0" End Stone x 2 = 52.50' Base Length
1 Rows x 52.0" Wide + 36.0" Side Stone x 2 = 10.33' Base Width
24.0" Base + 30.5" Chamber Height + 24.0" Cover = 6.54' Field Height

7 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 1 Rows = 376.3 cf Chamber Storage

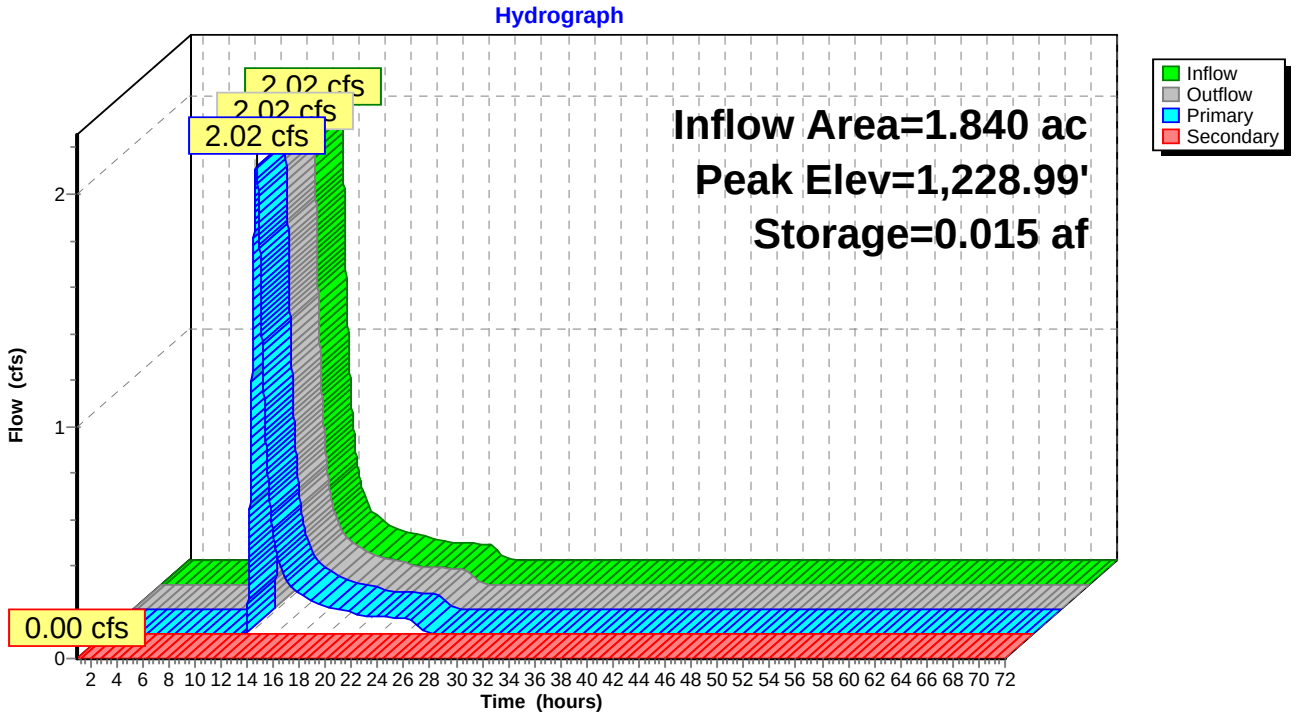
3,548.9 cf Field - 376.3 cf Chambers = 3,172.6 cf Stone x 40.0% Voids = 1,269.0 cf Stone Storage

Chamber Storage + Stone Storage = 1,645.3 cf = 0.038 af
Overall Storage Efficiency = 46.4%
Overall System Size = 52.50' x 10.33' x 6.54'

7 Chambers
131.4 cy Field
117.5 cy Stone



Pond SC-A: Storm Chamber A



Summary for Pond SC-B: Storm Chamber B

Inflow Area = 19.350 ac, 7.59% Impervious, Inflow Depth = 1.14" for 10-yr event
Inflow = 9.23 cfs @ 12.84 hrs, Volume= 1.846 af
Outflow = 9.23 cfs @ 12.85 hrs, Volume= 1.833 af, Atten= 0%, Lag= 0.5 min
Primary = 9.23 cfs @ 12.85 hrs, Volume= 1.833 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 1,227.38' @ 12.85 hrs Surf.Area= 0.020 ac Storage= 0.028 af

Plug-Flow detention time= 7.9 min calculated for 1.833 af (99% of inflow)
Center-of-Mass det. time= 3.6 min (929.8 - 926.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	1,224.10'	0.041 af	**10.33'W x 73.50'L x 6.54'H Field A** 0.114 af Overall - 0.012 af Embedded = 0.102 af x 40.0% Voids
#2A	1,226.10'	0.012 af	**Cultec R-330XLHD** x 10 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 1 rows
#3	1,226.80'	0.001 af	**3.00'D x 4.50'H Vertical Cone/Cylinder**
#4	1,227.00'	0.002 af	**3.00'W x 28.00'L x 3.00'H Underdrain** 0.006 af Overall - 0.001 af Embedded = 0.005 af x 40.0% Voids
#5	1,227.00'	0.001 af	**12.0" Round Pipe Storage** Inside #4 L= 28.0'
#6	1,227.50'	0.000 af	**3.00'W x 5.00'L x 3.00'H Underdrain** 0.001 af Overall - 0.000 af Embedded = 0.001 af x 40.0% Voids
#7	1,227.50'	0.000 af	**12.0" Round Pipe Storage** Inside #6 L= 5.0'
#8	1,230.90'	0.004 af	**3.00'W x 50.00'L x 3.00'H Underdrain** 0.010 af Overall - 0.001 af Embedded = 0.009 af x 40.0% Voids
#9	1,230.90'	0.001 af	**12.0" Round Pipe Storage** Inside #8 L= 50.0'
#10	1,232.51'	0.017 af	**3.00'W x 220.00'L x 3.00'H Underdrain** 0.045 af Overall - 0.004 af Embedded = 0.041 af x 40.0% Voids
#11	1,232.51'	0.004 af	**12.0" Round Pipe Storage** Inside #10 L= 220.0'
#12	1,234.60'	0.012 af	**3.00'W x 155.00'L x 3.00'H Underdrain** 0.032 af Overall - 0.003 af Embedded = 0.029 af x 40.0% Voids
#13	1,234.60'	0.003 af	**12.0" Round Pipe Storage** Inside #12 L= 155.0'
#14	1,235.33'	0.007 af	**3.00'W x 95.00'L x 3.00'H Underdrain** 0.020 af Overall - 0.002 af Embedded = 0.018 af x 40.0% Voids
#15	1,235.33'	0.002 af	**12.0" Round Pipe Storage** Inside #14 L= 95.0'
		0.105 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	1,226.00'	**24.0" Round RCP_Round 24"** L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,226.00' / 1,225.10' S= 0.0180 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	1,231.50'	**36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=9.23 cfs @ 12.85 hrs HW=1,227.38' (Free Discharge)
└**1=RCP_Round 24"** (Inlet Controls 9.23 cfs @ 4.00 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=1,224.10' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond SC-B: Storm Chamber B - Chamber Wizard Field A

Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)
Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
Row Length Adjustment= +1.50' x 7.45 sf x 1 rows

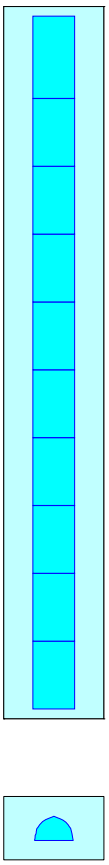
10 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 71.50' Row Length +12.0" End Stone x 2 = 73.50' Base Length
1 Rows x 52.0" Wide + 36.0" Side Stone x 2 = 10.33' Base Width
24.0" Base + 30.5" Chamber Height + 24.0" Cover = 6.54' Field Height

10 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 1 Rows = 532.7 cf Chamber Storage

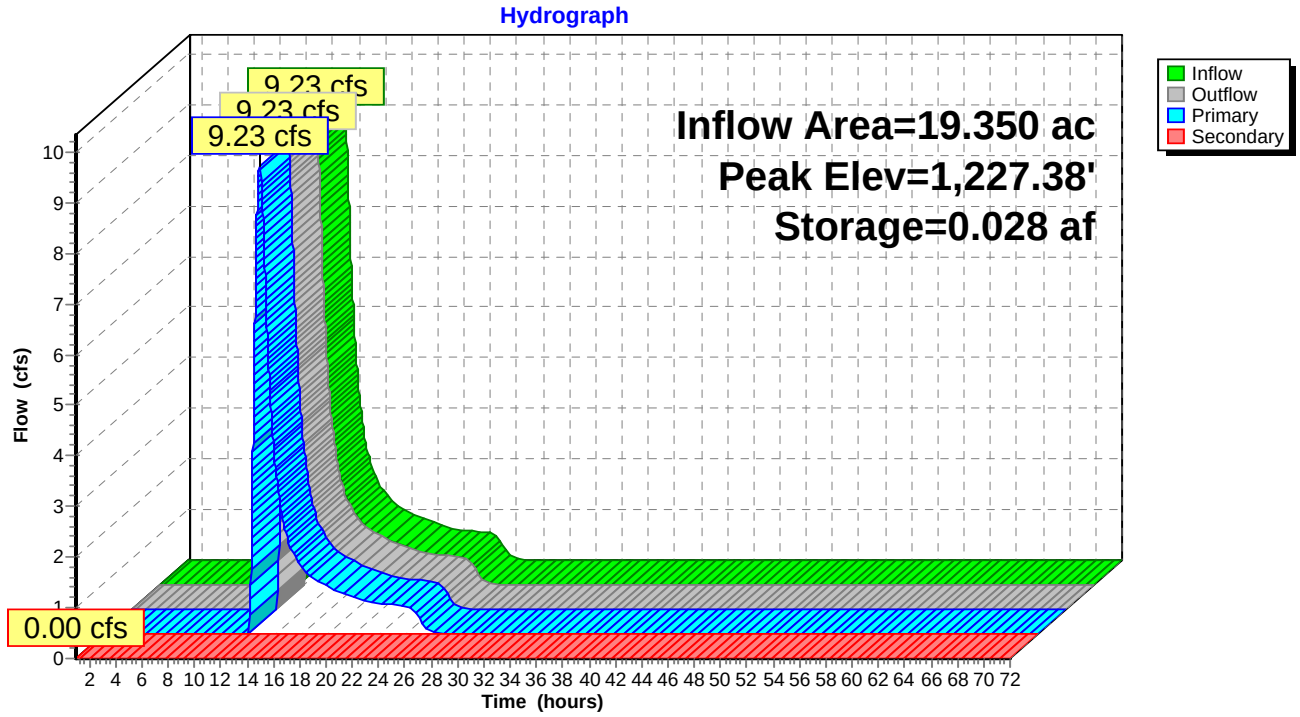
4,968.4 cf Field - 532.7 cf Chambers = 4,435.6 cf Stone x 40.0% Voids = 1,774.3 cf Stone Storage

Chamber Storage + Stone Storage = 2,307.0 cf = 0.053 af
Overall Storage Efficiency = 46.4%
Overall System Size = 73.50' x 10.33' x 6.54'

10 Chambers
184.0 cy Field
164.3 cy Stone



Pond SC-B: Storm Chamber B



Summary for Pond SC-C: Storm Chamber C

Inflow Area = 18.880 ac, 3.34% Impervious, Inflow Depth = 1.09" for 10-yr event
Inflow = 11.95 cfs @ 12.49 hrs, Volume= 1.709 af
Outflow = 11.94 cfs @ 12.49 hrs, Volume= 1.701 af, Atten= 0%, Lag= 0.1 min
Primary = 11.94 cfs @ 12.49 hrs, Volume= 1.701 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 1,227.73' @ 12.49 hrs Surf.Area= 0.009 ac Storage= 0.016 af

Plug-Flow detention time= 4.5 min calculated for 1.701 af (100% of inflow)
Center-of-Mass det. time= 2.0 min (907.0 - 905.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	1,224.10'	0.021 af	**10.33'W x 38.50'L x 6.54'H Field A** 0.060 af Overall - 0.006 af Embedded = 0.054 af x 40.0% Voids
#2A	1,226.10'	0.006 af	**Cultec R-330XLHD** x 5 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 1 rows
#3	1,226.46'	0.001 af	**3.00'D x 5.54'H Vertical Cone/Cylinder**
		0.029 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	1,226.10'	**24.0" Round RCP_Round 24"** L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,226.10' / 1,225.10' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	1,231.54'	**36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=11.94 cfs @ 12.49 hrs HW=1,227.73' (Free Discharge)
↑—**1=RCP_Round 24"** (Inlet Controls 11.94 cfs @ 4.35 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=1,224.10' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond SC-C: Storm Chamber C - Chamber Wizard Field A

Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)
Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
Row Length Adjustment= +1.50' x 7.45 sf x 1 rows

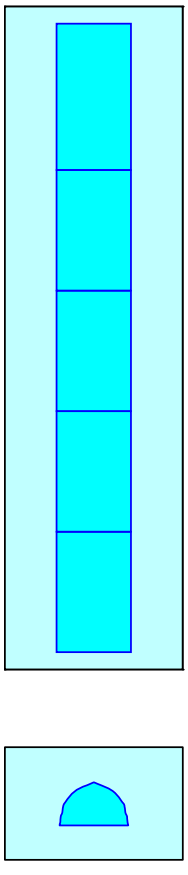
5 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 36.50' Row Length +12.0" End Stone x 2 = 38.50' Base Length
1 Rows x 52.0" Wide + 36.0" Side Stone x 2 = 10.33' Base Width
24.0" Base + 30.5" Chamber Height + 24.0" Cover = 6.54' Field Height

5 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 1 Rows = 272.0 cf Chamber Storage

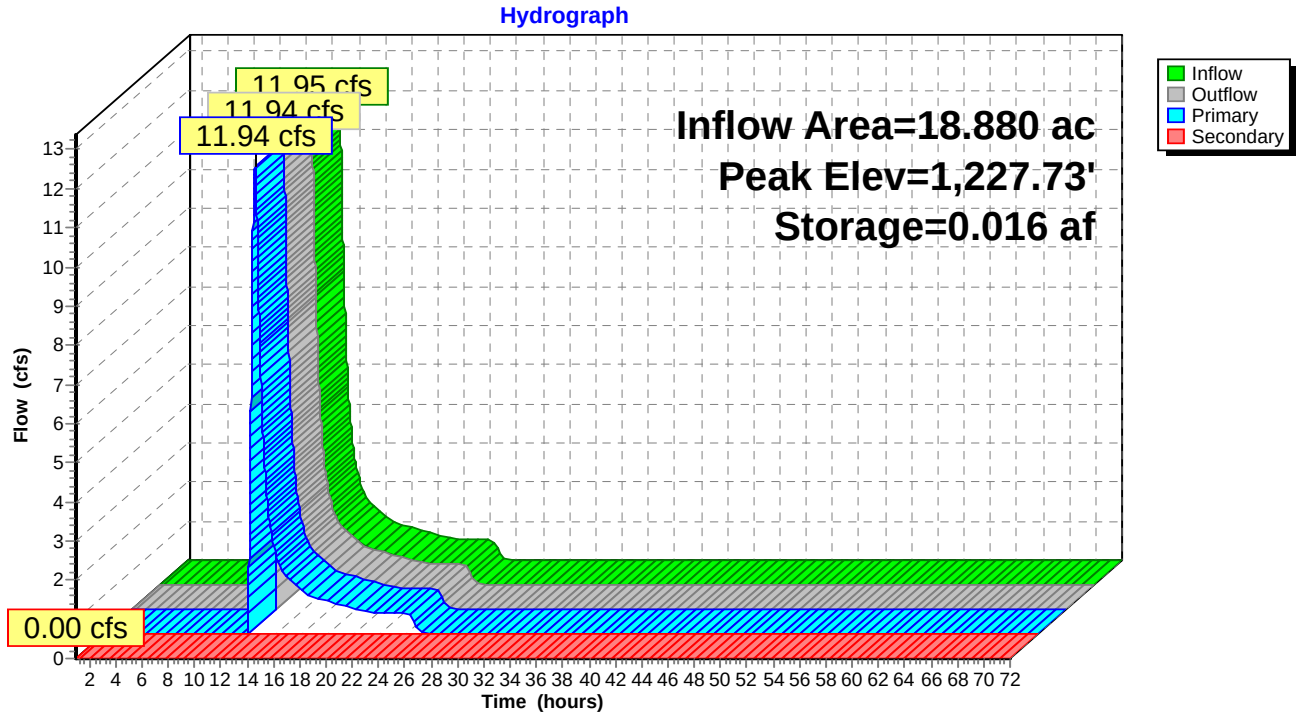
2,602.5 cf Field - 272.0 cf Chambers = 2,330.5 cf Stone x 40.0% Voids = 932.2 cf Stone Storage

Chamber Storage + Stone Storage = 1,204.2 cf = 0.028 af
Overall Storage Efficiency = 46.3%
Overall System Size = 38.50' x 10.33' x 6.54'

5 Chambers
96.4 cy Field
86.3 cy Stone



Pond SC-C: Storm Chamber C

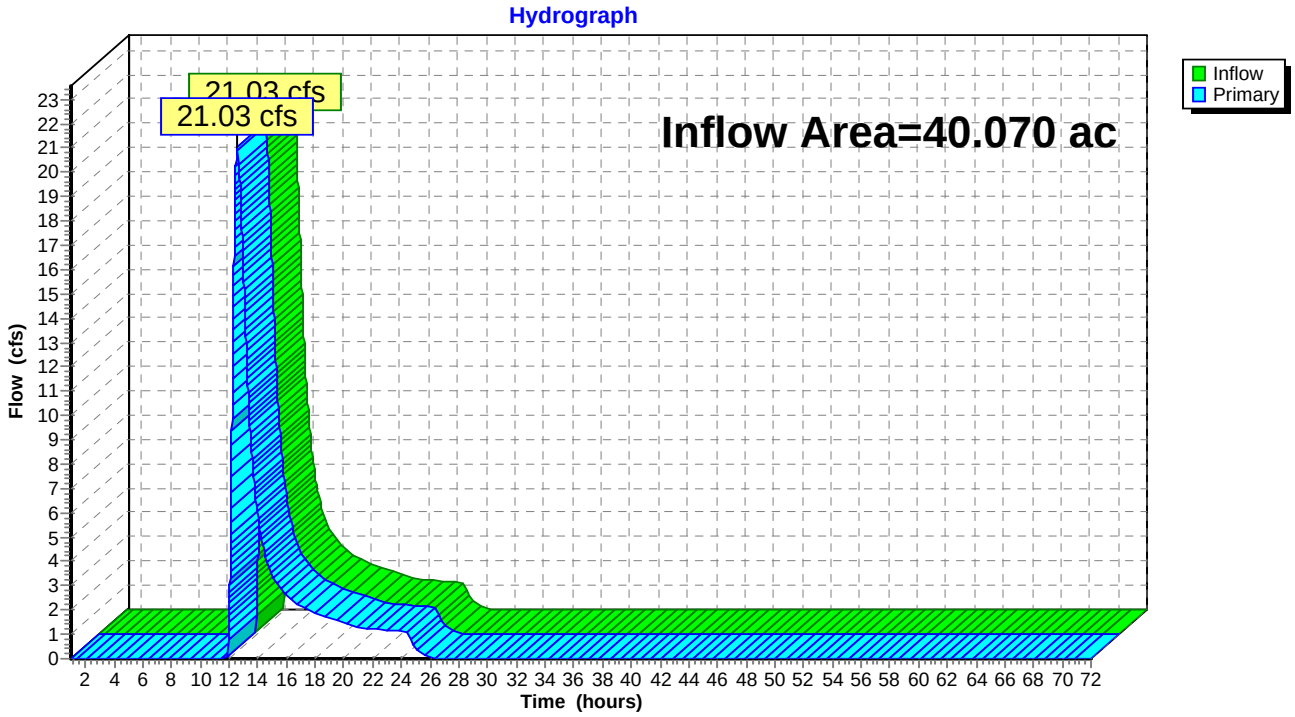


Summary for Link Outfall: Outfall - Long Lake

Inflow Area = 40.070 ac, 6.07% Impervious, Inflow Depth = 1.15" for 10-yr event
Inflow = 21.03 cfs @ 12.60 hrs, Volume= 3.825 af
Primary = 21.03 cfs @ 12.60 hrs, Volume= 3.825 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs

Link Outfall: Outfall - Long Lake



Time span=1.00-72.00 hrs, dt=0.01 hrs, 7101 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment Area A1: Drainage Area A1 Runoff Area=1.840 ac 18.04% Impervious Runoff Depth=3.32"
Flow Length=850' Tc=55.4 min CN=79 Runoff=3.46 cfs 0.510 af

Subcatchment Area A2: Drainage Area A2 Runoff Area=19.350 ac 7.59% Impervious Runoff Depth=2.23"
Flow Length=1,701' Tc=70.5 min CN=67 Runoff=19.62 cfs 3.600 af

Subcatchment Area A3: Drainage Area A3 Runoff Area=18.880 ac 3.34% Impervious Runoff Depth=2.15"
Flow Length=1,000' Tc=44.1 min CN=66 Runoff=25.81 cfs 3.380 af

Pond SC-A: Storm Chamber A Peak Elev=1,229.19' Storage=0.016 af Inflow=3.46 cfs 0.510 af
Primary=3.46 cfs 0.500 af Secondary=0.00 cfs 0.000 af Outflow=3.46 cfs 0.500 af

Pond SC-B: Storm Chamber B Peak Elev=1,228.67' Storage=0.041 af Inflow=19.62 cfs 3.600 af
Primary=19.57 cfs 3.586 af Secondary=0.00 cfs 0.000 af Outflow=19.57 cfs 3.586 af

Pond SC-C: Storm Chamber C Peak Elev=1,230.01' Storage=0.026 af Inflow=25.81 cfs 3.380 af
Primary=25.79 cfs 3.372 af Secondary=0.00 cfs 0.000 af Outflow=25.79 cfs 3.372 af

Link Outfall: Outfall - Long Lake Inflow=44.38 cfs 7.459 af
Primary=44.38 cfs 7.459 af

Total Runoff Area = 40.070 ac Runoff Volume = 7.489 af Average Runoff Depth = 2.24"
93.93% Pervious = 37.639 ac 6.07% Impervious = 2.431 ac

Summary for Subcatchment Area A1: Drainage Area A1

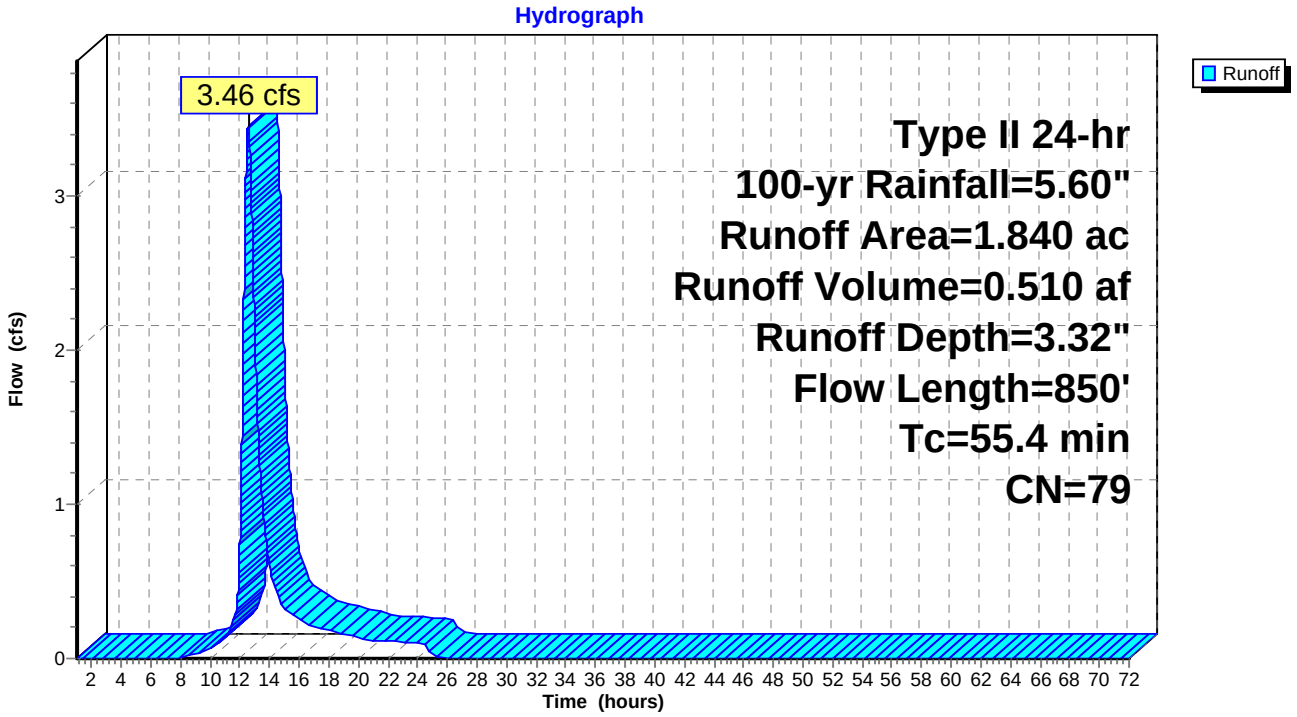
Runoff = 3.46 cfs @ 12.56 hrs, Volume= 0.510 af, Depth= 3.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.60"

Area (ac)	CN	Description
0.100	98	Paved parking, HSG B
0.150	98	Roofs, HSG B
0.140	89	Paved roads w/open ditches, 50% imp, HSG B
0.100	65	2 acre lots, 12% imp, HSG B
1.350	76	Woods/grass comb., Fair, HSG C
1.840	79	Weighted Average
1.508		81.96% Pervious Area
0.332		18.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
53.7	100	0.0100	0.03		**Sheet Flow, sheet** Woods: Dense underbrush n= 0.800 P2= 2.70"
1.2	300	0.0700	4.26		**Shallow Concentrated Flow, shallow** Unpaved Kv= 16.1 fps
0.5	450	0.0500	14.95	29.90	**Trap/Vee/Rect Channel Flow, channel** Bot.W=0.00' D=1.00' Z= 2.0 '/' Top.W=4.00' n= 0.013 Corrugated PE, smooth interior
55.4	850	Total			

Subcatchment Area A1: Drainage Area A1



Summary for Subcatchment Area A2: Drainage Area A2

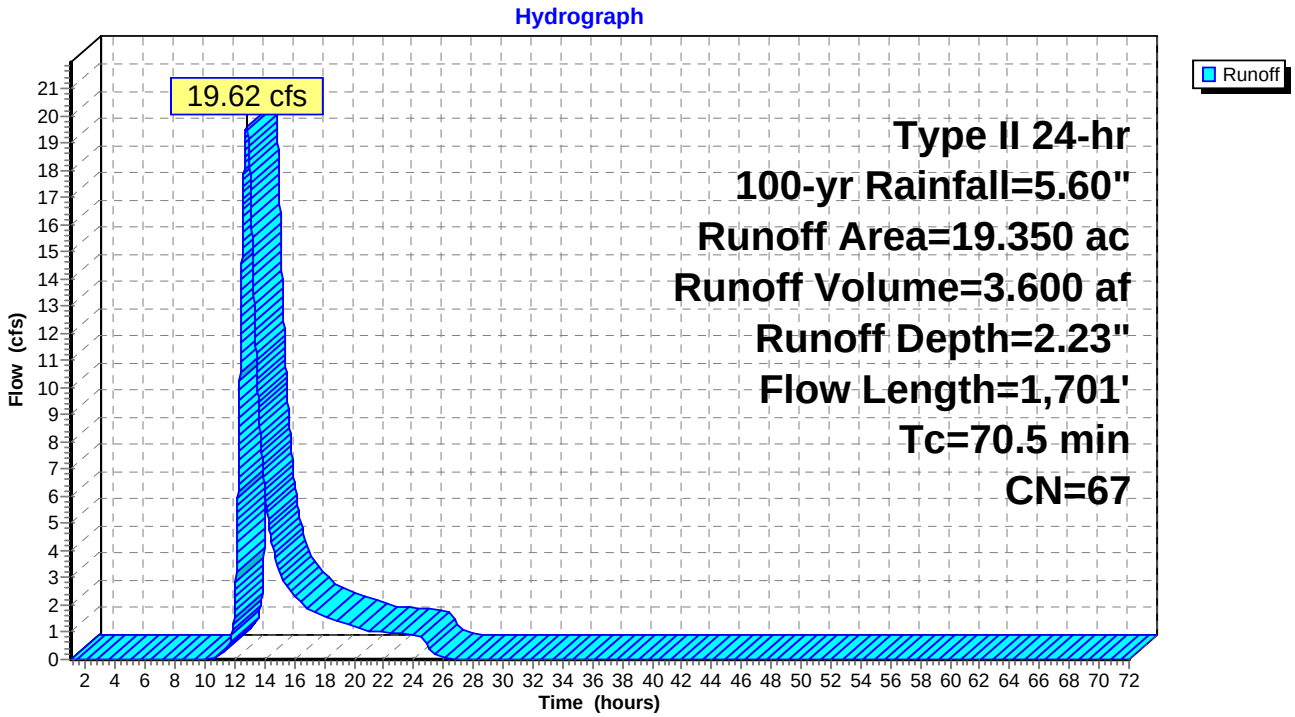
Runoff = 19.62 cfs @ 12.77 hrs, Volume= 3.600 af, Depth= 2.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.60"

Area (ac)	CN	Description
0.250	98	Paved parking, HSG B
1.000	98	Roofs, HSG B
0.036	89	Paved roads w/open ditches, 50% imp, HSG B
1.670	65	2 acre lots, 12% imp, HSG B
16.394	65	Woods/grass comb., Fair, HSG B
19.350	67	Weighted Average
17.882		92.41% Pervious Area
1.468		7.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.7	100	0.0200	0.04		**Sheet Flow, sheet** Woods: Dense underbrush n= 0.800 P2= 2.70"
29.8	1,601	0.0320	0.89		**Shallow Concentrated Flow, shallow** Woodland Kv= 5.0 fps
70.5	1,701	Total			

Subcatchment Area A2: Drainage Area A2



Summary for Subcatchment Area A3: Drainage Area A3

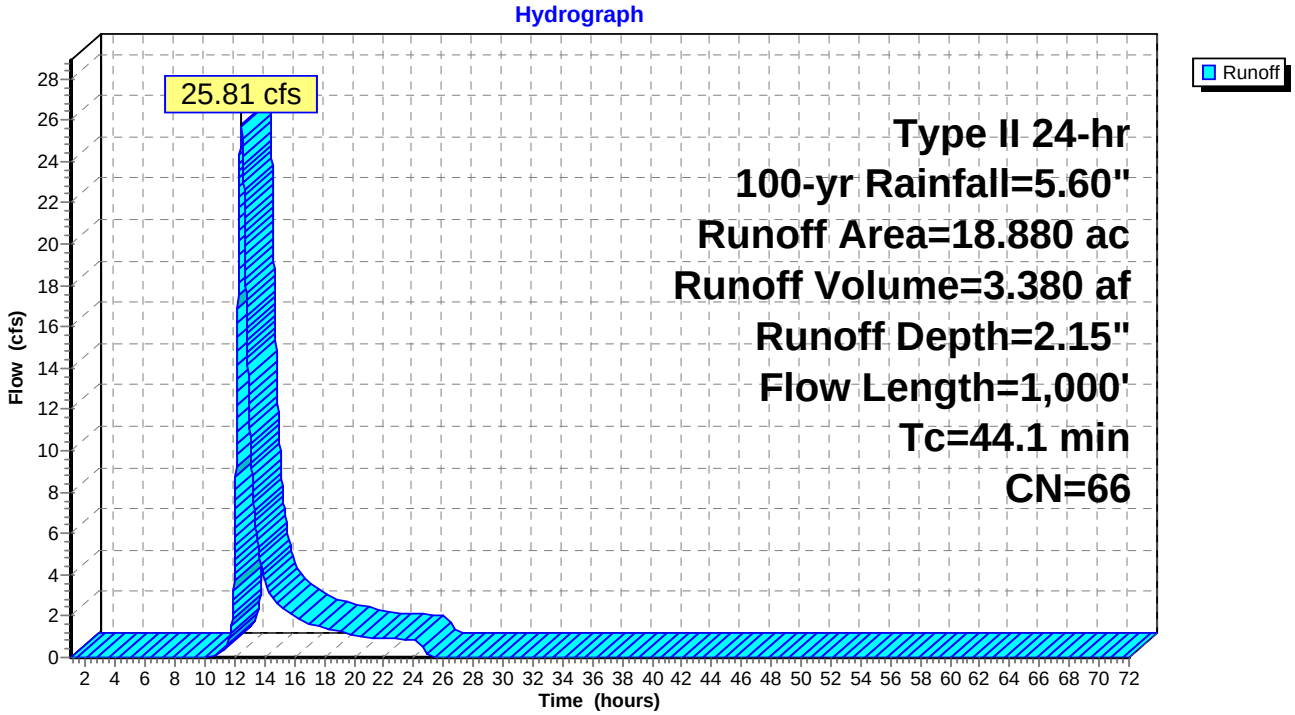
Runoff = 25.81 cfs @ 12.44 hrs, Volume= 3.380 af, Depth= 2.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.60"

Area (ac)	CN	Description
0.250	98	Paved parking, HSG B
0.200	98	Roofs, HSG B
0.002	89	Paved roads w/open ditches, 50% imp, HSG B
1.500	65	2 acre lots, 12% imp, HSG B
16.928	65	Woods/grass comb., Fair, HSG B
18.880	66	Weighted Average
18.249		96.66% Pervious Area
0.631		3.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.7	100	0.0200	0.04		**Sheet Flow, sheet** Woods: Dense underbrush n= 0.800 P2= 2.70"
3.4	900	0.0770	4.47		**Shallow Concentrated Flow, shallow** Unpaved Kv= 16.1 fps
44.1	1,000	Total			

Subcatchment Area A3: Drainage Area A3



Summary for Pond SC-A: Storm Chamber A

Inflow Area = 1.840 ac, 18.04% Impervious, Inflow Depth = 3.32" for 100-yr event
Inflow = 3.46 cfs @ 12.56 hrs, Volume= 0.510 af
Outflow = 3.46 cfs @ 12.57 hrs, Volume= 0.500 af, Atten= 0%, Lag= 0.7 min
Primary = 3.46 cfs @ 12.57 hrs, Volume= 0.500 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 1,229.19' @ 12.57 hrs Surf.Area= 0.013 ac Storage= 0.016 af

Plug-Flow detention time= 20.5 min calculated for 0.500 af (98% of inflow)
Center-of-Mass det. time= 8.5 min (870.8 - 862.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	1,226.40'	0.029 af	**10.33'W x 52.50'L x 6.54'H Field A** 0.081 af Overall - 0.009 af Embedded = 0.073 af x 40.0% Voids
#2A	1,228.40'	0.009 af	**Cultec R-330XLHD** x 7 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 1 rows
#3	1,228.40'	0.002 af	**4.00'D x 6.24'H Vertical Cone/Cylinder**
#4	1,232.67'	0.005 af	**3.00'W x 61.00'L x 3.00'H Underdrain** 0.013 af Overall - 0.000 af Embedded = 0.012 af x 40.0% Voids
#5	1,232.67'	0.000 af	**8.0" Round Pipe Storage** Inside #4 L= 61.0'
#6	1,234.00'	0.014 af	**3.00'W x 175.00'L x 3.00'H Underdrain** 0.036 af Overall - 0.001 af Embedded = 0.035 af x 40.0% Voids
#7	1,234.00'	0.001 af	**8.0" Round Pipe Storage** Inside #6 L= 175.0'
#8	1,245.62'	0.012 af	**3.00'W x 150.00'L x 3.00'H Underdrain** 0.031 af Overall - 0.001 af Embedded = 0.030 af x 40.0% Voids
#9	1,245.62'	0.001 af	**8.0" Round Pipe Storage** Inside #8 L= 150.0'
#10	1,231.30'	0.003 af	**3.00'W x 38.00'L x 3.00'H Underdrain** 0.008 af Overall - 0.000 af Embedded = 0.008 af x 40.0% Voids
#11	1,231.30'	0.000 af	**8.0" Round Pipe Storage** Inside #10 L= 38.0'
#12	1,231.99'	0.001 af	**3.00'W x 10.00'L x 3.00'H Underdrain** 0.002 af Overall - 0.000 af Embedded = 0.002 af x 40.0% Voids
#13	1,231.99'	0.000 af	**8.0" Round Pipe Storage** Inside #12 L= 10.0'
#14	1,234.97'	0.003 af	**3.00'W x 40.00'L x 3.00'H Underdrain** 0.008 af Overall - 0.000 af Embedded = 0.008 af x 40.0% Voids
#15	1,234.97'	0.000 af	**8.0" Round Pipe Storage** Inside #14 L= 40.0'
		0.081 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	1,228.40'	**24.0" Round RCP_Round 24"** L= 45.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,228.40' / 1,227.40' S= 0.0222 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	1,234.60'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.45 cfs @ 12.57 hrs HW=1,229.19' (Free Discharge)
↑—**1=RCP_Round 24"** (Inlet Controls 3.45 cfs @ 3.02 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=1,226.40' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond SC-A: Storm Chamber A - Chamber Wizard Field A

Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)
Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
Row Length Adjustment= +1.50' x 7.45 sf x 1 rows

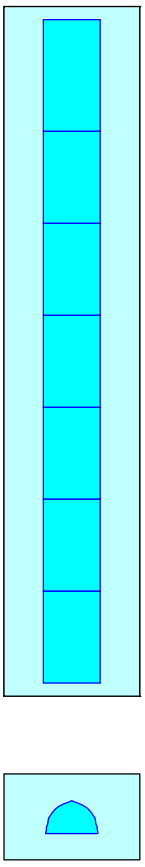
7 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 50.50' Row Length +12.0" End Stone x 2 = 52.50' Base Length
1 Rows x 52.0" Wide + 36.0" Side Stone x 2 = 10.33' Base Width
24.0" Base + 30.5" Chamber Height + 24.0" Cover = 6.54' Field Height

7 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 1 Rows = 376.3 cf Chamber Storage

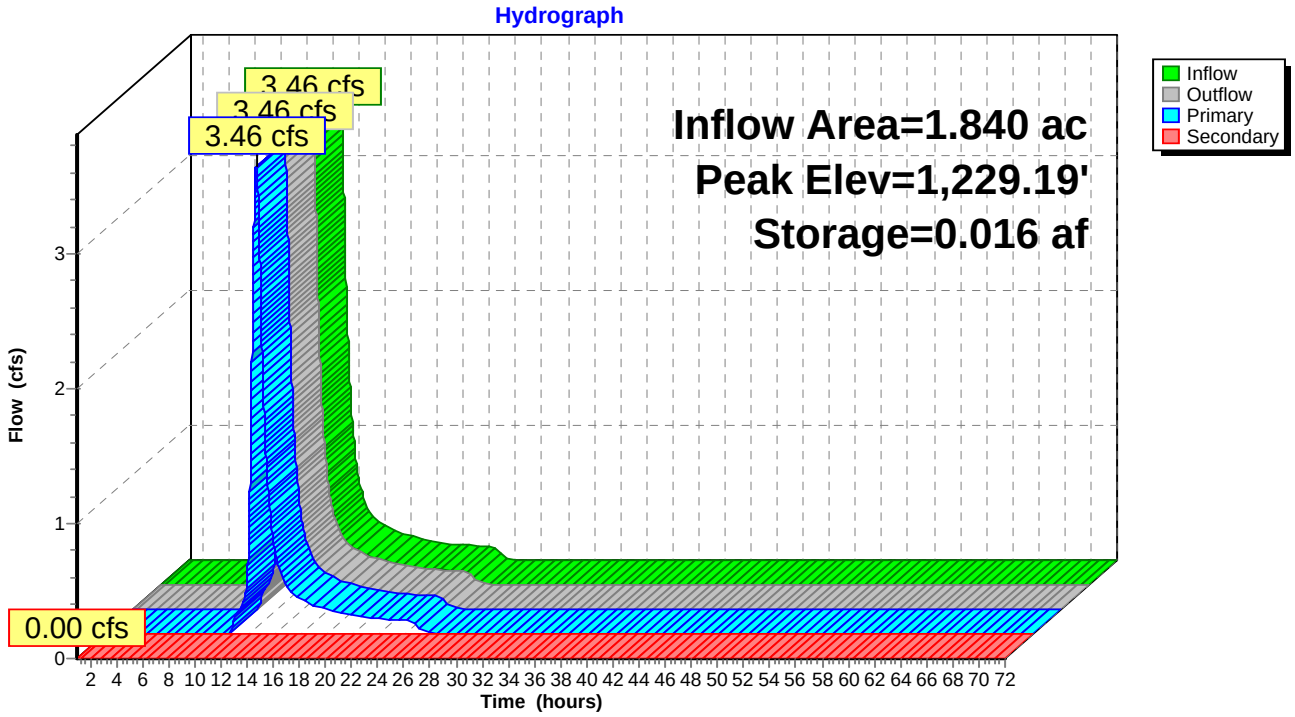
3,548.9 cf Field - 376.3 cf Chambers = 3,172.6 cf Stone x 40.0% Voids = 1,269.0 cf Stone Storage

Chamber Storage + Stone Storage = 1,645.3 cf = 0.038 af
Overall Storage Efficiency = 46.4%
Overall System Size = 52.50' x 10.33' x 6.54'

7 Chambers
131.4 cy Field
117.5 cy Stone



Pond SC-A: Storm Chamber A



Summary for Pond SC-B: Storm Chamber B

Inflow Area = 19.350 ac, 7.59% Impervious, Inflow Depth = 2.23" for 100-yr event
Inflow = 19.62 cfs @ 12.77 hrs, Volume= 3.600 af
Outflow = 19.57 cfs @ 12.79 hrs, Volume= 3.586 af, Atten= 0%, Lag= 1.2 min
Primary = 19.57 cfs @ 12.79 hrs, Volume= 3.586 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 1,228.67' @ 12.79 hrs Surf.Area= 0.020 ac Storage= 0.041 af

Plug-Flow detention time= 4.8 min calculated for 3.586 af (100% of inflow)
Center-of-Mass det. time= 2.5 min (908.0 - 905.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	1,224.10'	0.041 af	**10.33'W x 73.50'L x 6.54'H Field A** 0.114 af Overall - 0.012 af Embedded = 0.102 af x 40.0% Voids
#2A	1,226.10'	0.012 af	**Cultec R-330XLHD** x 10 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 1 rows
#3	1,226.80'	0.001 af	**3.00'D x 4.50'H Vertical Cone/Cylinder**
#4	1,227.00'	0.002 af	**3.00'W x 28.00'L x 3.00'H Underdrain** 0.006 af Overall - 0.001 af Embedded = 0.005 af x 40.0% Voids
#5	1,227.00'	0.001 af	**12.0" Round Pipe Storage** Inside #4 L= 28.0'
#6	1,227.50'	0.000 af	**3.00'W x 5.00'L x 3.00'H Underdrain** 0.001 af Overall - 0.000 af Embedded = 0.001 af x 40.0% Voids
#7	1,227.50'	0.000 af	**12.0" Round Pipe Storage** Inside #6 L= 5.0'
#8	1,230.90'	0.004 af	**3.00'W x 50.00'L x 3.00'H Underdrain** 0.010 af Overall - 0.001 af Embedded = 0.009 af x 40.0% Voids
#9	1,230.90'	0.001 af	**12.0" Round Pipe Storage** Inside #8 L= 50.0'
#10	1,232.51'	0.017 af	**3.00'W x 220.00'L x 3.00'H Underdrain** 0.045 af Overall - 0.004 af Embedded = 0.041 af x 40.0% Voids
#11	1,232.51'	0.004 af	**12.0" Round Pipe Storage** Inside #10 L= 220.0'
#12	1,234.60'	0.012 af	**3.00'W x 155.00'L x 3.00'H Underdrain** 0.032 af Overall - 0.003 af Embedded = 0.029 af x 40.0% Voids
#13	1,234.60'	0.003 af	**12.0" Round Pipe Storage** Inside #12 L= 155.0'
#14	1,235.33'	0.007 af	**3.00'W x 95.00'L x 3.00'H Underdrain** 0.020 af Overall - 0.002 af Embedded = 0.018 af x 40.0% Voids
#15	1,235.33'	0.002 af	**12.0" Round Pipe Storage** Inside #14 L= 95.0'
		0.105 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	1,226.00'	**24.0" Round RCP_Round 24"** L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,226.00' / 1,225.10' S= 0.0180 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	1,231.50'	**36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=19.57 cfs @ 12.79 hrs HW=1,228.67' (Free Discharge)
↑—**1=RCP_Round 24"** (Inlet Controls 19.57 cfs @ 6.23 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=1,224.10' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond SC-B: Storm Chamber B - Chamber Wizard Field A

Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)
Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
Row Length Adjustment= +1.50' x 7.45 sf x 1 rows

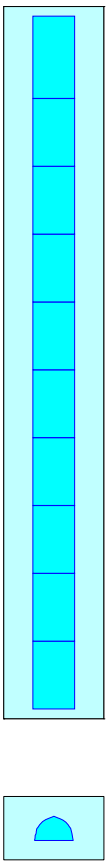
10 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 71.50' Row Length +12.0" End Stone x 2 = 73.50' Base Length
1 Rows x 52.0" Wide + 36.0" Side Stone x 2 = 10.33' Base Width
24.0" Base + 30.5" Chamber Height + 24.0" Cover = 6.54' Field Height

10 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 1 Rows = 532.7 cf Chamber Storage

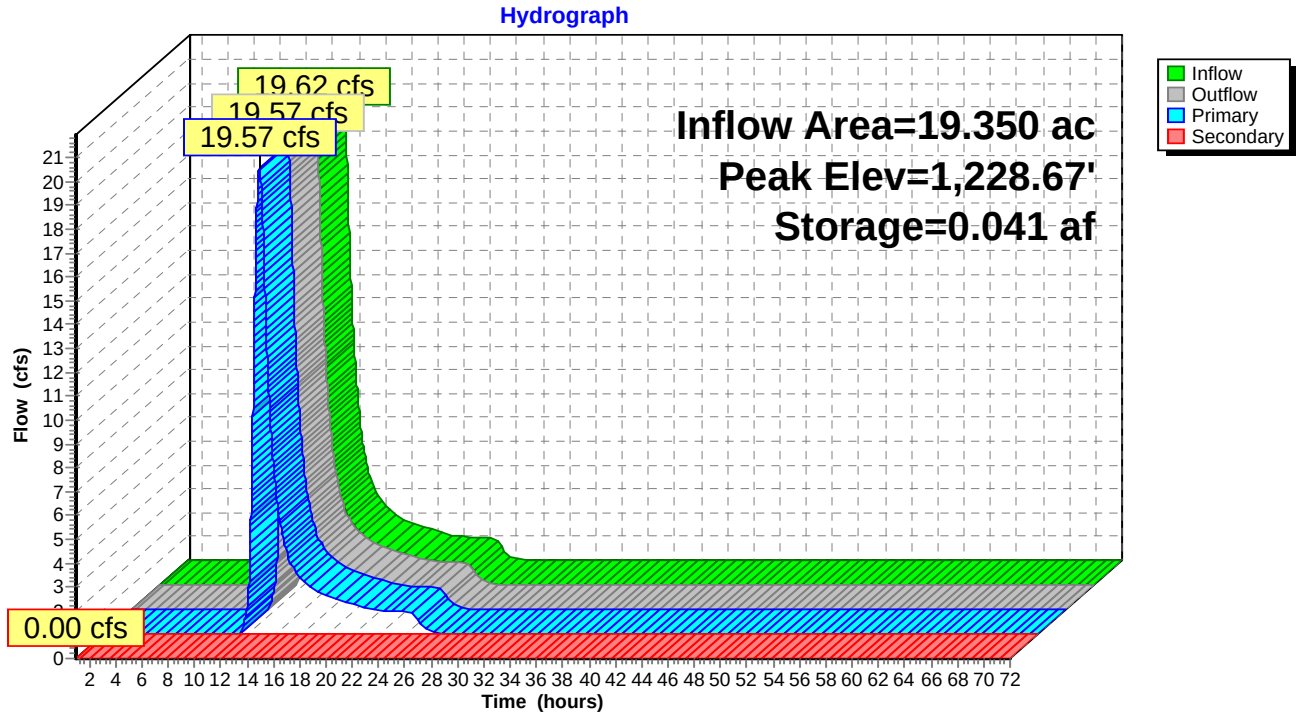
4,968.4 cf Field - 532.7 cf Chambers = 4,435.6 cf Stone x 40.0% Voids = 1,774.3 cf Stone Storage

Chamber Storage + Stone Storage = 2,307.0 cf = 0.053 af
Overall Storage Efficiency = 46.4%
Overall System Size = 73.50' x 10.33' x 6.54'

10 Chambers
184.0 cy Field
164.3 cy Stone



Pond SC-B: Storm Chamber B



Summary for Pond SC-C: Storm Chamber C

Inflow Area = 18.880 ac, 3.34% Impervious, Inflow Depth = 2.15" for 100-yr event
Inflow = 25.81 cfs @ 12.44 hrs, Volume= 3.380 af
Outflow = 25.79 cfs @ 12.45 hrs, Volume= 3.372 af, Atten= 0%, Lag= 0.5 min
Primary = 25.79 cfs @ 12.45 hrs, Volume= 3.372 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 1,230.01' @ 12.45 hrs Surf.Area= 0.009 ac Storage= 0.026 af

Plug-Flow detention time= 2.7 min calculated for 3.372 af (100% of inflow)
Center-of-Mass det. time= 1.4 min (884.9 - 883.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	1,224.10'	0.021 af	**10.33'W x 38.50'L x 6.54'H Field A** 0.060 af Overall - 0.006 af Embedded = 0.054 af x 40.0% Voids
#2A	1,226.10'	0.006 af	**Cultec R-330XLHD** x 5 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 1 rows
#3	1,226.46'	0.001 af	**3.00'D x 5.54'H Vertical Cone/Cylinder**
		0.029 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	1,226.10'	**24.0" Round RCP_Round 24"** L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,226.10' / 1,225.10' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Secondary	1,231.54'	**36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=25.79 cfs @ 12.45 hrs HW=1,230.01' (Free Discharge)
↑—**1=RCP_Round 24"** (Inlet Controls 25.79 cfs @ 8.21 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=1,224.10' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond SC-C: Storm Chamber C - Chamber Wizard Field A

Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)
Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
Row Length Adjustment= +1.50' x 7.45 sf x 1 rows

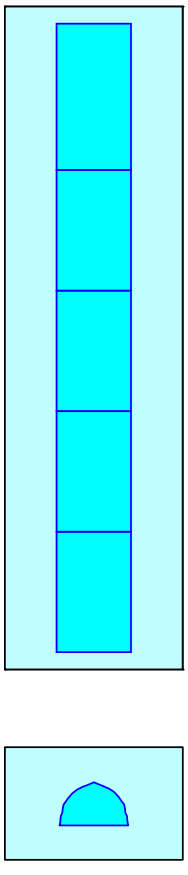
5 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 36.50' Row Length +12.0" End Stone x 2 = 38.50' Base Length
1 Rows x 52.0" Wide + 36.0" Side Stone x 2 = 10.33' Base Width
24.0" Base + 30.5" Chamber Height + 24.0" Cover = 6.54' Field Height

5 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 1 Rows = 272.0 cf Chamber Storage

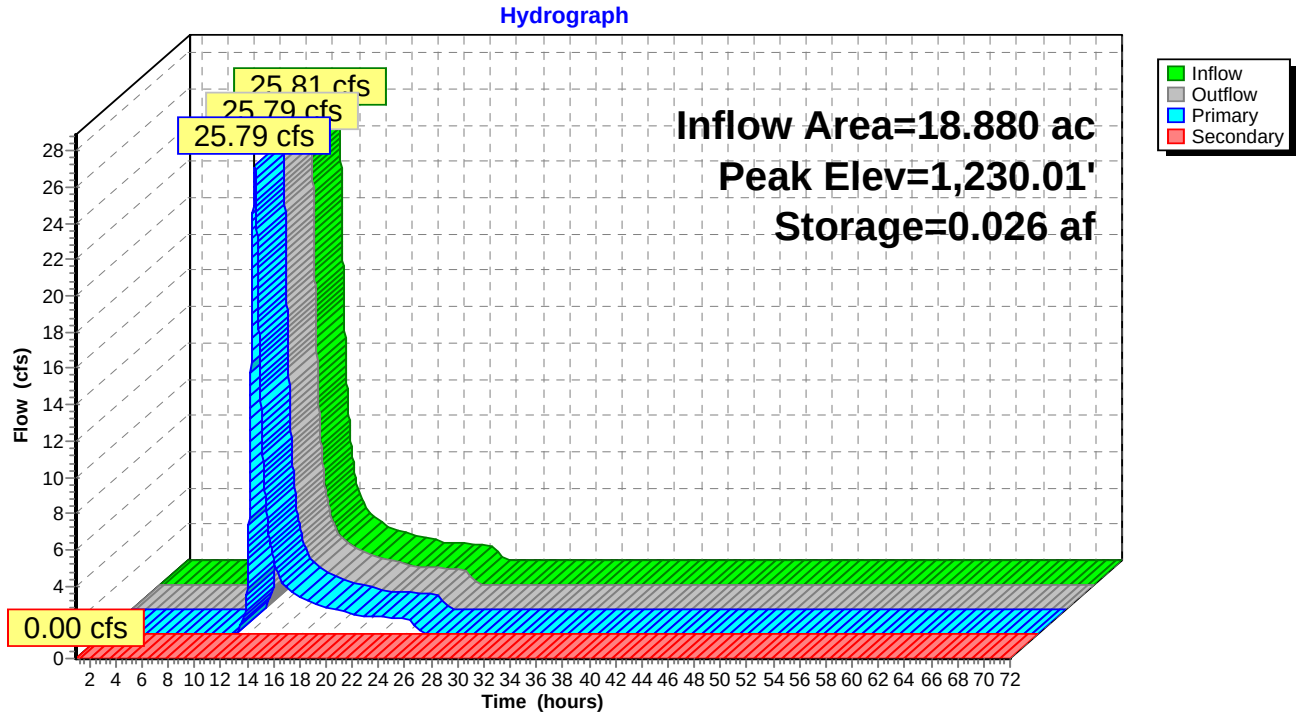
2,602.5 cf Field - 272.0 cf Chambers = 2,330.5 cf Stone x 40.0% Voids = 932.2 cf Stone Storage

Chamber Storage + Stone Storage = 1,204.2 cf = 0.028 af
Overall Storage Efficiency = 46.3%
Overall System Size = 38.50' x 10.33' x 6.54'

5 Chambers
96.4 cy Field
86.3 cy Stone



Pond SC-C: Storm Chamber C

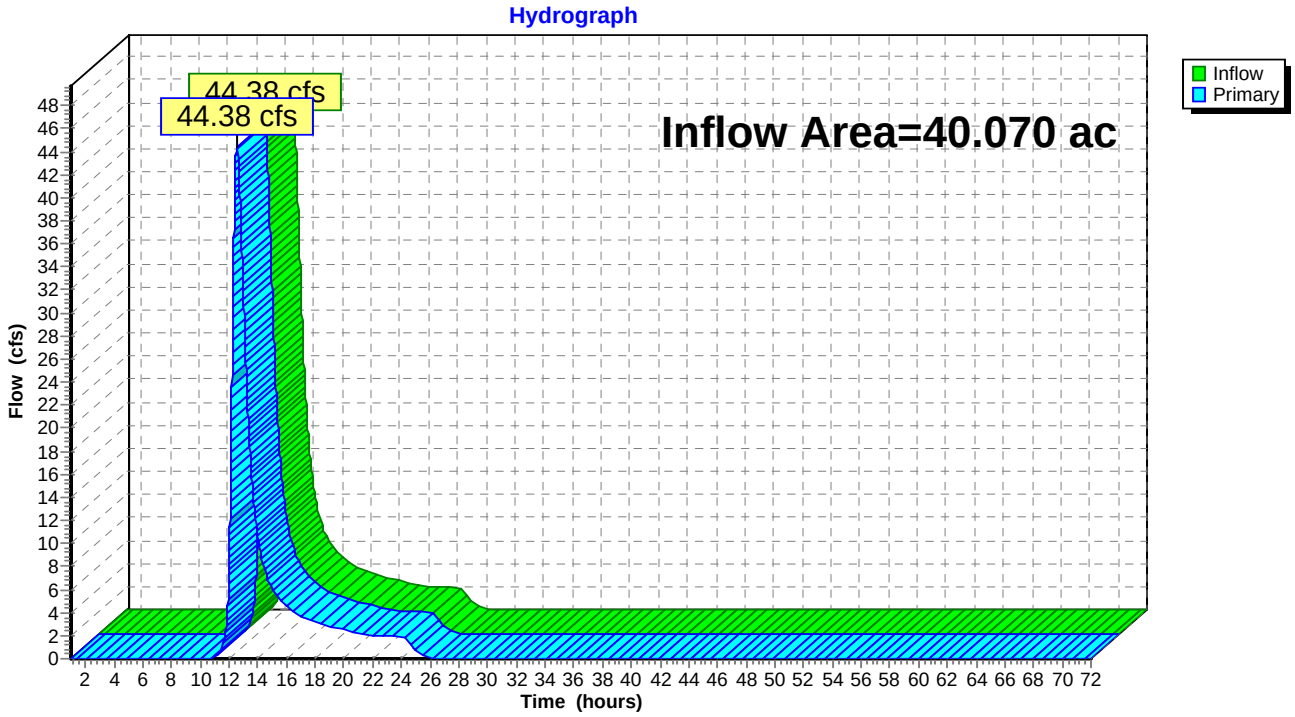


Summary for Link Outfall: Outfall - Long Lake

Inflow Area = 40.070 ac, 6.07% Impervious, Inflow Depth = 2.23" for 100-yr event
Inflow = 44.38 cfs @ 12.56 hrs, Volume= 7.459 af
Primary = 44.38 cfs @ 12.56 hrs, Volume= 7.459 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs

Link Outfall: Outfall - Long Lake



Data file name: S:\Projects\NW\Washburn County\CTH M\Stormwater\WinSLAMM\Existing - no controls.mdb
WinSLAMM Version 10.2.1
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Madison WI 1981.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
Seed for random number generator: -42
Study period starting date: 01/01/81 Study period ending date: 12/31/81
Start of Winter Season: 12/02 End of Winter Season: 03/12
Date: 01-23-2017 Time: 11:26:49
Site information:

LU# 1 - Residential: Drainage Area A1 Total area (ac): 1.840
1 - Roofs 1: 0.150 ac. Pitched Disconnected Normal Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 0.100 ac. Disconnected Normal Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
37 - Streets 1: 0.140 ac. Smooth Street Length = 0.085 curb-mi Street Width (assuming two curb-mi per street mile) = 27.17647 ft
Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 0.100 ac. Normal Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
57 - Undeveloped Areas 1: 1.350 ac. Normal Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 2 - Residential: Drainage Area A2 Total area (ac): 19.350
1 - Roofs 1: 1.000 ac. Pitched Disconnected Normal Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 0.250 ac. Disconnected Normal Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
37 - Streets 1: 0.036 ac. Smooth Street Length = 0.033 curb-mi Street Width (assuming two curb-mi per street mile) = 18 ft
Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 1.670 ac. Normal Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
57 - Undeveloped Areas 1: 16.394 ac. Normal Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 3 - Residential: Drainage Area A3 Total area (ac): 18.880
1 - Roofs 1: 0.200 ac. Pitched Disconnected Normal Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 0.250 ac. Disconnected Normal Sandy Source Area PSD File: C:\WinSLAMM

Files\NURP.cpz
37 - Streets 1: 0.002 ac. Smooth Street Length = 0.019 curb-mi Street Width (assuming two curb-mi per street mile) = 1.736842 ft
Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 1.500 ac. Normal Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
57 - Undeveloped Areas 1: 16.928 ac. Normal Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

Data file name: S:\Projects\NW\Washburn County\CTH M\Stormwater\WinSLAMM\Proposed - with controls.mdb
WinSLAMM Version 10.2.1
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Madison WI 1981.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
Seed for random number generator: -42
Study period starting date: 01/01/81 Study period ending date: 12/31/81
Start of Winter Season: 12/02 End of Winter Season: 03/12
Date: 01-23-2017 Time: 11:28:35
Site information:

LU# 1 - Residential: Drainage Area A1 Total area (ac): 1.840
1 - Roofs 1: 0.150 ac. Pitched Disconnected Normal Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 0.100 ac. Disconnected Normal Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
37 - Streets 1: 0.140 ac. Smooth Street Length = 0.085 curb-mi Street Width (assuming two curb-mi per street mile) = 27.17647 ft
Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 0.100 ac. Normal Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
57 - Undeveloped Areas 1: 1.350 ac. Normal Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 2 - Residential: Drainage Area A2 Total area (ac): 19.350
1 - Roofs 1: 1.000 ac. Pitched Disconnected Normal Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 0.250 ac. Disconnected Normal Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
37 - Streets 1: 0.036 ac. Smooth Street Length = 0.033 curb-mi Street Width (assuming two curb-mi per street mile) = 18 ft
Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 1.670 ac. Normal Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
57 - Undeveloped Areas 1: 16.394 ac. Normal Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 3 - Residential: Drainage Area A3 Total area (ac): 18.880
1 - Roofs 1: 0.200 ac. Pitched Disconnected Normal Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 0.250 ac. Disconnected Normal Sandy Source Area PSD File: C:\WinSLAMM

Files\NURP.cpz
37 - Streets 1: 0.002 ac. Smooth Street Length = 0.019 curb-mi Street Width (assuming two curb-mi per street mile) = 1.736842 ft
Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 1.500 ac. Normal Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
57 - Undeveloped Areas 1: 16.928 ac. Normal Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

Control Practice 1: Catchbasin Cleaning CP# 1 (DS) - Catch Basin A1

1. Fraction of area served by catchbasins = 1.00
2. Number of catchbasins = 1
3. Average sump depth below catchbasin outlet invert (feet) = 2
4. Depth of sediment in catchbasin sump at beginning of study period (ft) = 0
5. Typical outlet pipe diameter (ft) = 2
6. Typical outlet pipe Mannings n = 0.013
7. Typical outlet pipe slope (ft/ft) = 0.024
8. Typical catchbasin sump surface area (square feet) = 125
9. Total catchbasin depth (feet) = 7.5
10. Inflow hydrograph peak to average flow ratio = 3.8
11. Leakage rate through sump bottom (in/hr) = 0
12. Catchbasin Critical Particle Size File Name: Not needed - calculated by program
13. Catchbasin cleaning frequency: Annually

Control Practice 2: Catchbasin Cleaning CP# 2 (DS) - Catch Basin A2

1. Fraction of area served by catchbasins = 1.00
2. Number of catchbasins = 1
3. Average sump depth below catchbasin outlet invert (feet) = 2
4. Depth of sediment in catchbasin sump at beginning of study period (ft) = 0
5. Typical outlet pipe diameter (ft) = 2
6. Typical outlet pipe Mannings n = 0.013
7. Typical outlet pipe slope (ft/ft) = 0.024
8. Typical catchbasin sump surface area (square feet) = 175
9. Total catchbasin depth (feet) = 7.7
10. Inflow hydrograph peak to average flow ratio = 3.8
11. Leakage rate through sump bottom (in/hr) = 0
12. Catchbasin Critical Particle Size File Name: Not needed - calculated by program
13. Catchbasin cleaning frequency: Annually

Control Practice 3: Catchbasin Cleaning CP# 3 (DS) - Catch Basin A3

1. Fraction of area served by catchbasins = 1.00
2. Number of catchbasins = 1
3. Average sump depth below catchbasin outlet invert (feet) = 2
4. Depth of sediment in catchbasin sump at beginning of study period (ft) = 0
5. Typical outlet pipe diameter (ft) = 2
6. Typical outlet pipe Mannings n = 0.013
7. Typical outlet pipe slope (ft/ft) = 0.024
8. Typical catchbasin sump surface area (square feet) = 90
9. Total catchbasin depth (feet) = 7.5

10. Inflow hydrograph peak to average flow ratio = 3.8
11. Leakage rate through sump bottom (in/hr) = 0
12. Catchbasin Critical Particle Size File Name: Not needed - calculated by program
13. Catchbasin cleaning frequency: Annually

CTH M - Washburn County
WinSLAMM Output Summary
1/20/2017

Control Practice No.	Control Practice Type	Control Practice Name or Location	Total Inflow Volume (cf)	Total Outflow Volume (cf)	Percent Volume Reduction	Total Influent Load (lbs)	Total Effluent Load (lbs)	Percent Load Reduction	Flow Weighted Influent Conc (mg/L)	Flow Weighted Effluent Conc (mg/L)	Percent Conc. Reduction	Influent Median Part. Size (microns)	Effluent Median Part. Size (microns)
1	Catchbasin Cleaning	Catch Basin A1	13966	13966	0	160.7	78.43	51.19	184.4	89.96	51.21	7.8	3.38
2	Catchbasin Cleaning	Catch Basin A2	23454	23454	0	107.8	55.55	48.47	73.65	37.94	48.486	7.8	3.84
3	Catchbasin Cleaning	Catch Basin A3	20038	20038	0	78.15	44.97	42.46	62.47	35.95	42.455	7.8	4.35

	Concentration No Controls (mg/L)	Concentration With Controls (mg/L)	Pollutant Yield No Controls (lbs)	Pollutant Yield With Controls (lbs)	Percent Reduction
Particulate Solids	96.66	49.89	346.7	179	48.37%
Particulate Phosphorus	0.2343	0.1217	0.8404	0.4365	48.06%

CTH M - Washburn County
WinSLAMM Output Summary
1/20/2017

Control Practice No.	Control Practice Type	Control Practice Name or Location	Notes	Maximum Flushing Ratio	Maximum Peak Reduction Factor	Maximum Stage (ft)	Hydraulic Volume Out (cf)	Minimum Volume (cf)	% Device Volume Full	Bypass Volume (cf)	Treated Volume (cf)	Number of Cartridges	Days Dry (days)	Percent of Clogging Factor	Maximum Surface Ponding Time (hrs)
1	Catchbasin Cleaning	Catch Basin A1							0.70%	0	14002				
2	Catchbasin Cleaning	Catch Basin A2							0.30%	0	23502				
3	Catchbasin Cleaning	Catch Basin A3							0.40%	0	20077				

CTH M - Washburn County
WinSLAMM Output Summary
1/20/2017

Control Practice No.	Control Practice Type	Control Practice Name or Location	Maximum Subsurface Ponding Time (hrs)	Volume Infiltrated (cf)	Underdrain Discharge Vol. (cf)	Evapo-Transpir. Vol. (cf)	Minimum Soil Moist. (frac)	Surface Discharge Bypass Vol. (cf)	Evap. Vol. (cf)	Volume Supplemtl. Irrig.(cf)	Final Surface Infiltration Rate (in/hr)	Final Loading (lb/sf)	Maximum Velocity (ft/s)	Surface Ponding Events >72 hrs (Count)	Runoff Producing Events/ Ttl. Rains
1	Catchbasin Cleaning	Catch Basin A1													70/90
2	Catchbasin Cleaning	Catch Basin A2													70/90
3	Catchbasin Cleaning	Catch Basin A3													70/90