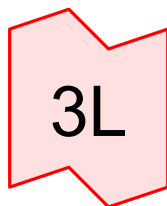
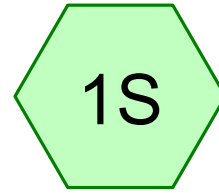


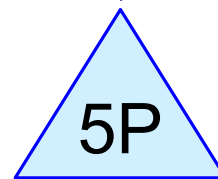
Existing conditions



Existing conditions



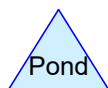
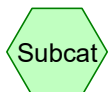
Proposed Addition



N-12 chamber



Proposed Conditions



Routing Diagram for 22-119 calcs

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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.035	80	>75% Grass cover, Good, HSG D (2S)
0.035	98	Unconnected roofs, HSG D (1S)
0.070	89	TOTAL AREA

22-119 calcs

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Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.070	HSG D	1S, 2S
0.000	Other	
0.070		TOTAL AREA

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Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.035	0.000	0.035	>75% Grass cover, Good	2S
0.000	0.000	0.000	0.035	0.000	0.035	Unconnected roofs	1S
0.000	0.000	0.000	0.070	0.000	0.070	TOTAL AREA	

22-119 calcs

NRCC 24-hr A 1 -year Rainfall=1.89"

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Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Proposed Addition Runoff Area=0.035 ac 100.00% Impervious Runoff Depth=1.67"
Tc=6.0 min CN=98 Runoff=0.08 cfs 0.005 af

Subcatchment2S: Existing conditions Runoff Area=0.035 ac 0.00% Impervious Runoff Depth=0.50"
Tc=6.0 min CN=80 Runoff=0.03 cfs 0.001 af

Pond 5P: N-12 chamber Peak Elev=789.30' Storage=60 cf Inflow=0.08 cfs 0.005 af
Discarded=0.01 cfs 0.004 af Primary=0.02 cfs 0.001 af Outflow=0.03 cfs 0.005 af

Link 3L: Existing conditions Inflow=0.03 cfs 0.001 af
Primary=0.03 cfs 0.001 af

Link 4L: Proposed Conditions Inflow=0.02 cfs 0.001 af
Primary=0.02 cfs 0.001 af

Total Runoff Area = 0.070 ac Runoff Volume = 0.006 af Average Runoff Depth = 1.08"
50.00% Pervious = 0.035 ac 50.00% Impervious = 0.035 ac

22-119 calcs

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Summary for Subcatchment 1S: Proposed Addition

Runoff = 0.08 cfs @ 12.13 hrs, Volume= 0.005 af, Depth= 1.67"

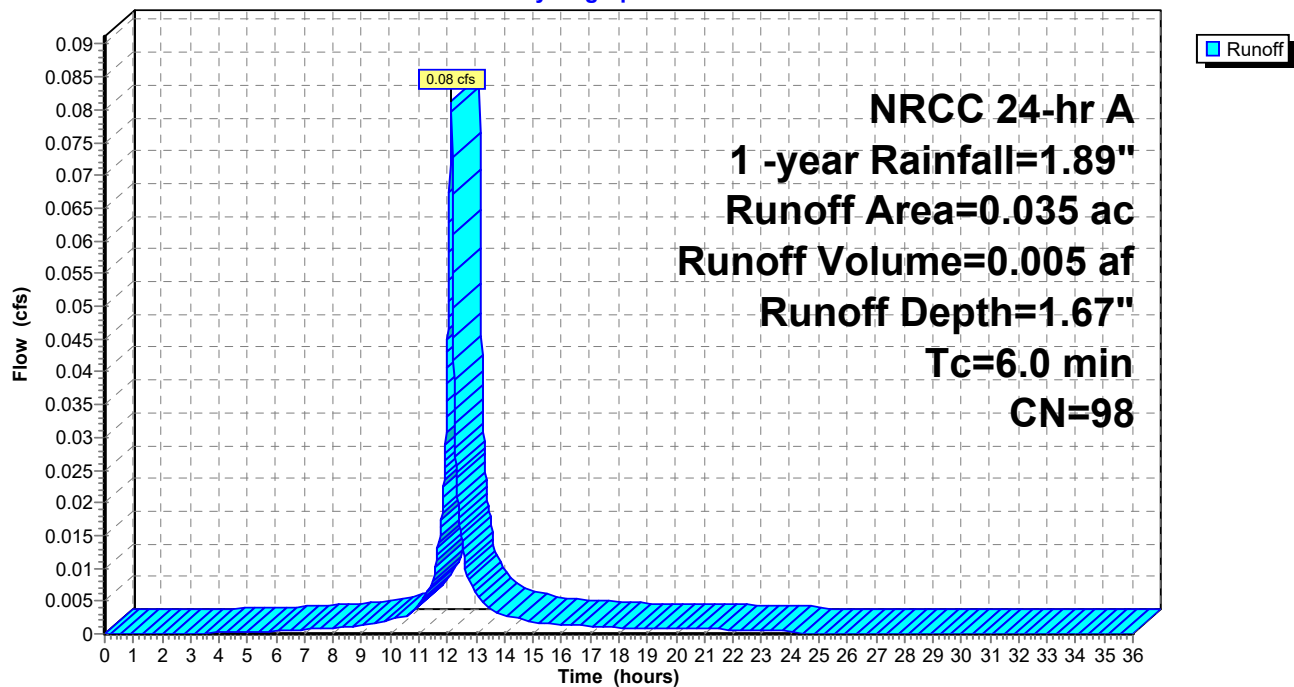
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr A 1 -year Rainfall=1.89"

Area (ac)	CN	Description
0.035	98	Unconnected roofs, HSG D
0.035		100.00% Impervious Area
0.035		100.00% Unconnected

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

Subcatchment 1S: Proposed Addition

Hydrograph



22-119 calcs

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NRCC 24-hr A 1 -year Rainfall=1.89"

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Summary for Subcatchment 2S: Existing conditions

Runoff = 0.03 cfs @ 12.14 hrs, Volume= 0.001 af, Depth= 0.50"

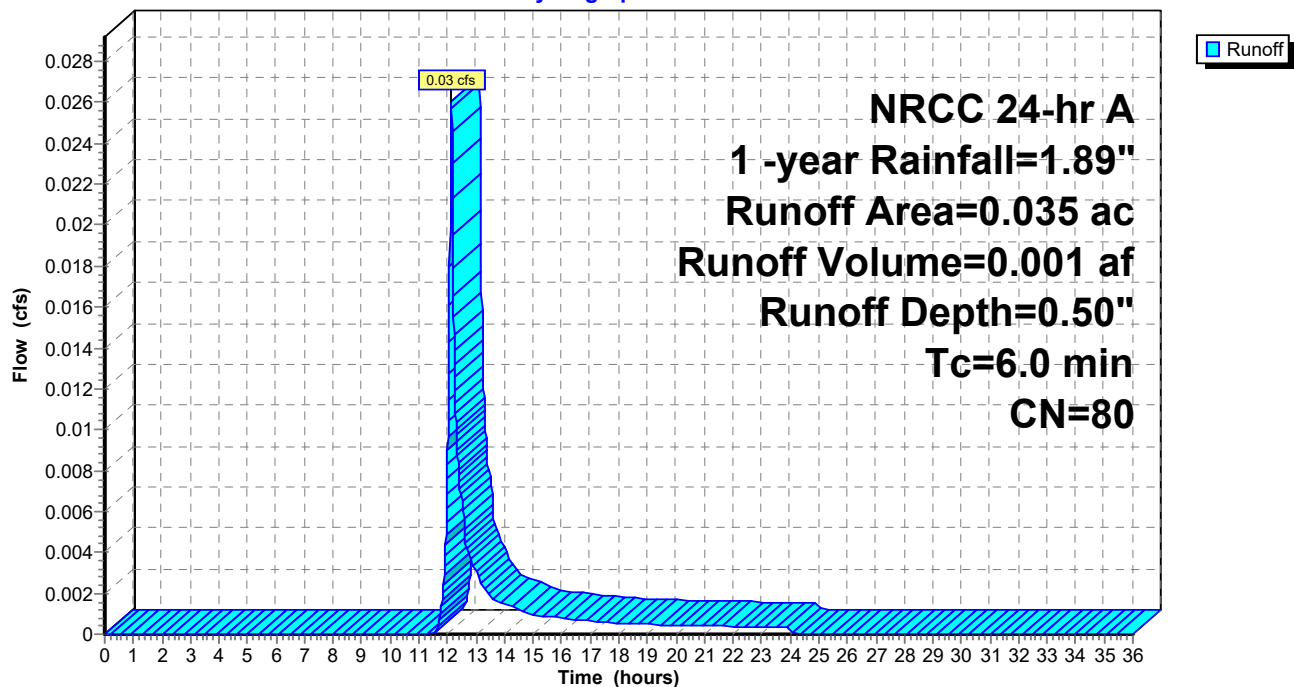
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr A 1 -year Rainfall=1.89"

Area (ac)	CN	Description
0.035	80	>75% Grass cover, Good, HSG D
0.035		100.00% Pervious Area

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

Subcatchment 2S: Existing conditions

Hydrograph



22-119 calcs

NRCC 24-hr A 1 -year Rainfall=1.89"

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Summary for Pond 5P: N-12 chamber

Inflow Area = 0.035 ac, 100.00% Impervious, Inflow Depth = 1.67" for 1 -year event
 Inflow = 0.08 cfs @ 12.13 hrs, Volume= 0.005 af
 Outflow = 0.03 cfs @ 12.25 hrs, Volume= 0.005 af, Atten= 58%, Lag= 7.3 min
 Discarded = 0.01 cfs @ 12.25 hrs, Volume= 0.004 af
 Primary = 0.02 cfs @ 12.25 hrs, Volume= 0.001 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Peak Elev= 789.30' @ 12.25 hrs Surf.Area= 442 sf Storage= 60 cf

Plug-Flow detention time= 31.7 min calculated for 0.005 af (100% of inflow)

Center-of-Mass det. time= 31.7 min (798.2 - 766.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	788.90'	164 cf	4.66'W x 61.33'L x 1.88'H Field A 536 cf Overall - 126 cf Embedded = 410 cf x 40.0% Voids
#2A	789.23'	97 cf	ADS N-12 12" x 6 Inside #1 Inside= 12.2"W x 12.2"H => 0.81 sf x 20.00'L = 16.2 cf Outside= 14.5"W x 14.5"H => 1.05 sf x 20.00'L = 20.9 cf 6 Chambers in 2 Rows
#3	789.20'	140 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		401 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
789.20	150	0	0
790.00	200	140	140

Device	Routing	Invert	Outlet Devices
#1	Primary	789.20'	4.0" Vert. 4" pop-up emitter C= 0.600
#2	Discarded	788.90'	1.000 in/hr Exfiltration over Surface area
#3	Primary	789.65'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.01 cfs @ 12.25 hrs HW=789.30' (Free Discharge)↑ **2=Exfiltration** (Exfiltration Controls 0.01 cfs)**Primary OutFlow** Max=0.02 cfs @ 12.25 hrs HW=789.30' (Free Discharge)↑ **1=4" pop-up emitter** (Orifice Controls 0.02 cfs @ 1.08 fps)↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

22-119 calcs

NRCC 24-hr A 1 -year Rainfall=1.89"

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Pond 5P: N-12 chamber - Chamber Wizard Field A

Chamber Model = ADS N-12 12" (ADS N-12® Pipe)

Inside= 12.2"W x 12.2"H => 0.81 sf x 20.00'L = 16.2 cf

Outside= 14.5"W x 14.5"H => 1.05 sf x 20.00'L = 20.9 cf

14.5" Wide + 10.9" Spacing = 25.4" C-C Row Spacing

3 Chambers/Row x 20.00' Long = 60.00' Row Length +8.0" End Stone x 2 = 61.33' Base Length

2 Rows x 14.5" Wide + 10.9" Spacing x 1 + 8.0" Side Stone x 2 = 4.66' Base Width

4.0" Base + 14.5" Chamber Height + 4.0" Cover = 1.88' Field Height

6 Chambers x 16.2 cf = 97.2 cf Chamber Storage

6 Chambers x 20.9 cf = 125.6 cf Displacement

536.0 cf Field - 125.6 cf Chambers = 410.4 cf Stone x 40.0% Voids = 164.2 cf Stone Storage

Chamber Storage + Stone Storage = 261.4 cf = 0.006 af

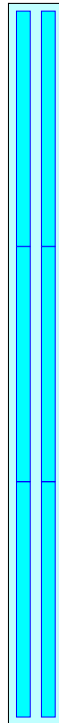
Overall Storage Efficiency = 48.8%

Overall System Size = 61.33' x 4.66' x 1.88'

6 Chambers

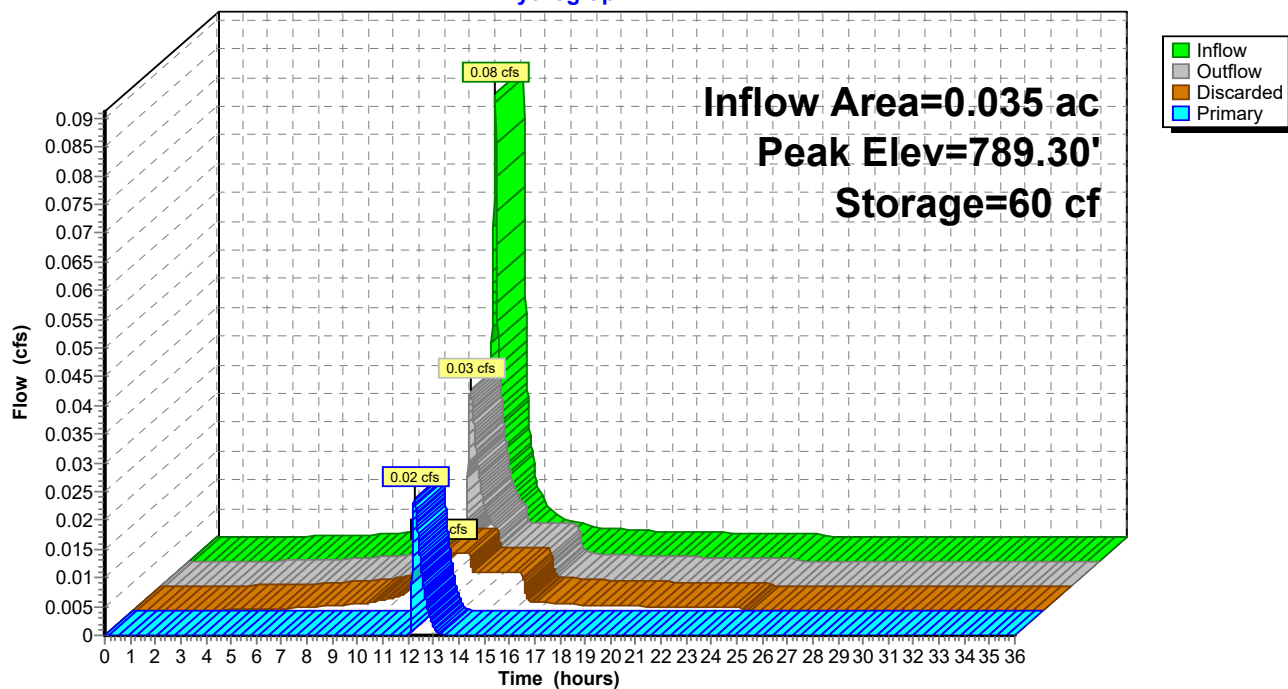
19.9 cy Field

15.2 cy Stone



Pond 5P: N-12 chamber

Hydrograph



22-119 calcs

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NRCC 24-hr A 1 -year Rainfall=1.89"

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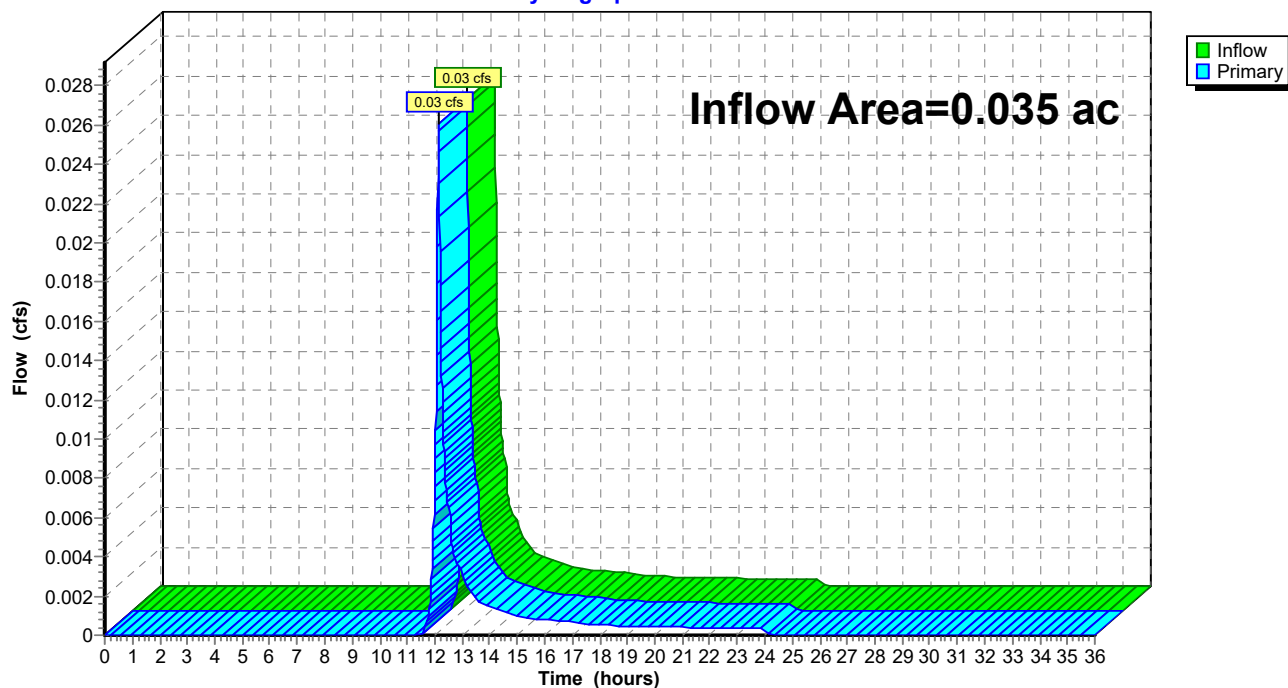
Summary for Link 3L: Existing conditions

Inflow Area = 0.035 ac, 0.00% Impervious, Inflow Depth = 0.50" for 1 -year event
Inflow = 0.03 cfs @ 12.14 hrs, Volume= 0.001 af
Primary = 0.03 cfs @ 12.14 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 3L: Existing conditions

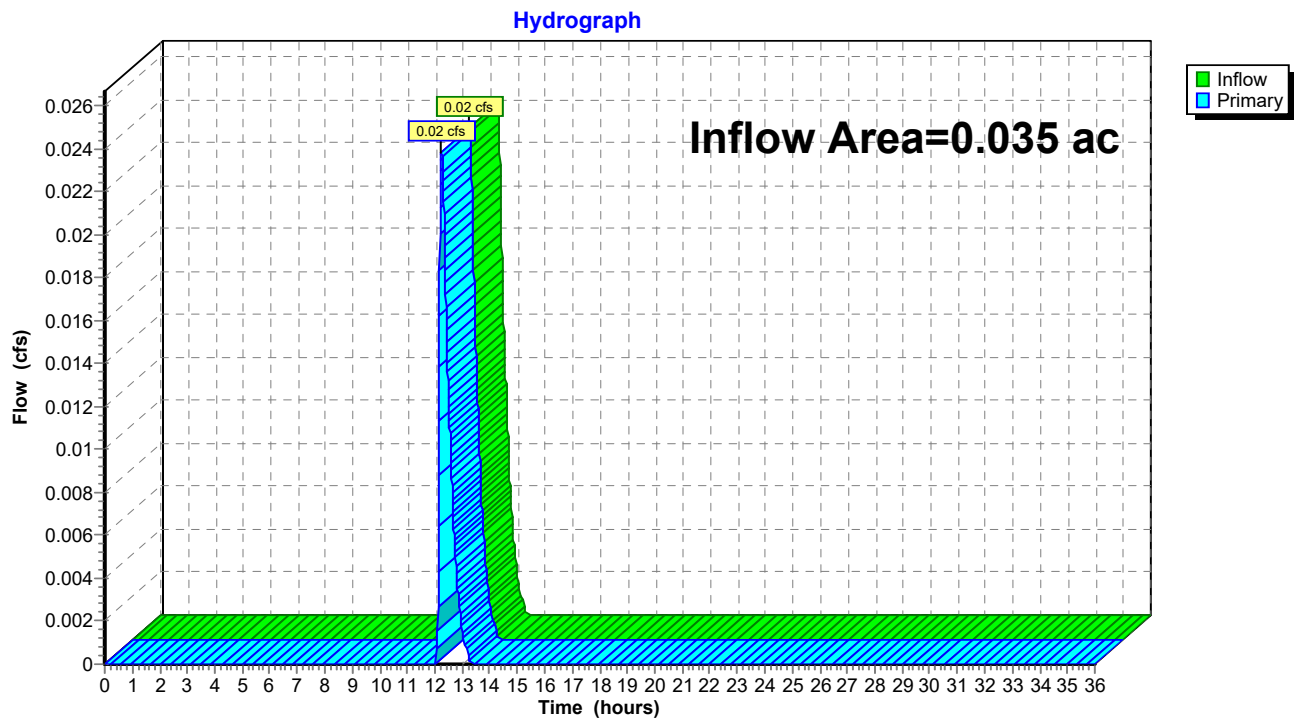
Hydrograph



Summary for Link 4L: Proposed Conditions

Inflow Area = 0.035 ac, 100.00% Impervious, Inflow Depth = 0.28" for 1 -year event
Inflow = 0.02 cfs @ 12.25 hrs, Volume= 0.001 af
Primary = 0.02 cfs @ 12.25 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 4L: Proposed Conditions

22-119 calcs

NRCC 24-hr A 2-year Rainfall=2.19"

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Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Proposed Addition Runoff Area=0.035 ac 100.00% Impervious Runoff Depth=1.96"
Tc=6.0 min CN=98 Runoff=0.10 cfs 0.006 af

Subcatchment2S: Existing conditions Runoff Area=0.035 ac 0.00% Impervious Runoff Depth=0.68"
Tc=6.0 min CN=80 Runoff=0.04 cfs 0.002 af

Pond 5P: N-12 chamber Peak Elev=789.33' Storage=67 cf Inflow=0.10 cfs 0.006 af
Discarded=0.01 cfs 0.004 af Primary=0.04 cfs 0.001 af Outflow=0.05 cfs 0.006 af

Link 3L: Existing conditions Inflow=0.04 cfs 0.002 af
Primary=0.04 cfs 0.002 af

Link 4L: Proposed Conditions Inflow=0.04 cfs 0.001 af
Primary=0.04 cfs 0.001 af

Total Runoff Area = 0.070 ac Runoff Volume = 0.008 af Average Runoff Depth = 1.32"
50.00% Pervious = 0.035 ac 50.00% Impervious = 0.035 ac

22-119 calcs

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Summary for Subcatchment 1S: Proposed Addition

Runoff = 0.10 cfs @ 12.13 hrs, Volume= 0.006 af, Depth= 1.96"

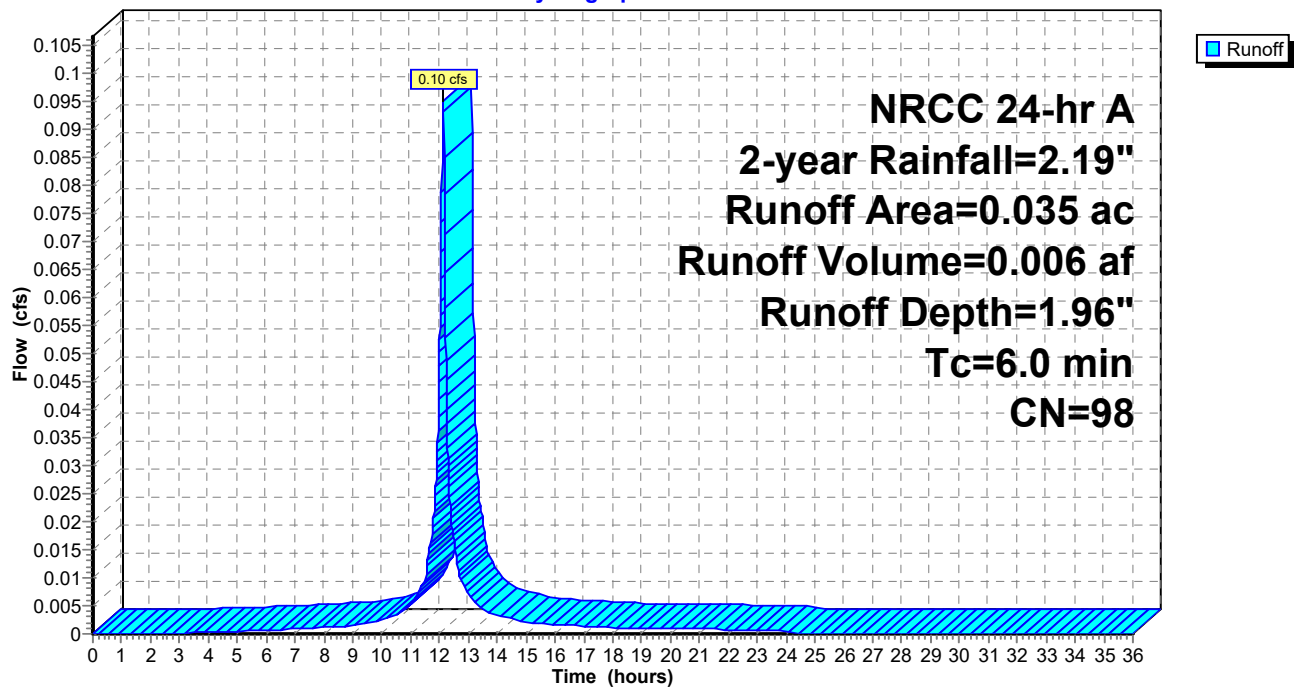
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr A 2-year Rainfall=2.19"

Area (ac)	CN	Description
0.035	98	Unconnected roofs, HSG D
0.035		100.00% Impervious Area
0.035		100.00% Unconnected

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

Subcatchment 1S: Proposed Addition

Hydrograph



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NRCC 24-hr A 2-year Rainfall=2.19"

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Summary for Subcatchment 2S: Existing conditions

Runoff = 0.04 cfs @ 12.14 hrs, Volume= 0.002 af, Depth= 0.68"

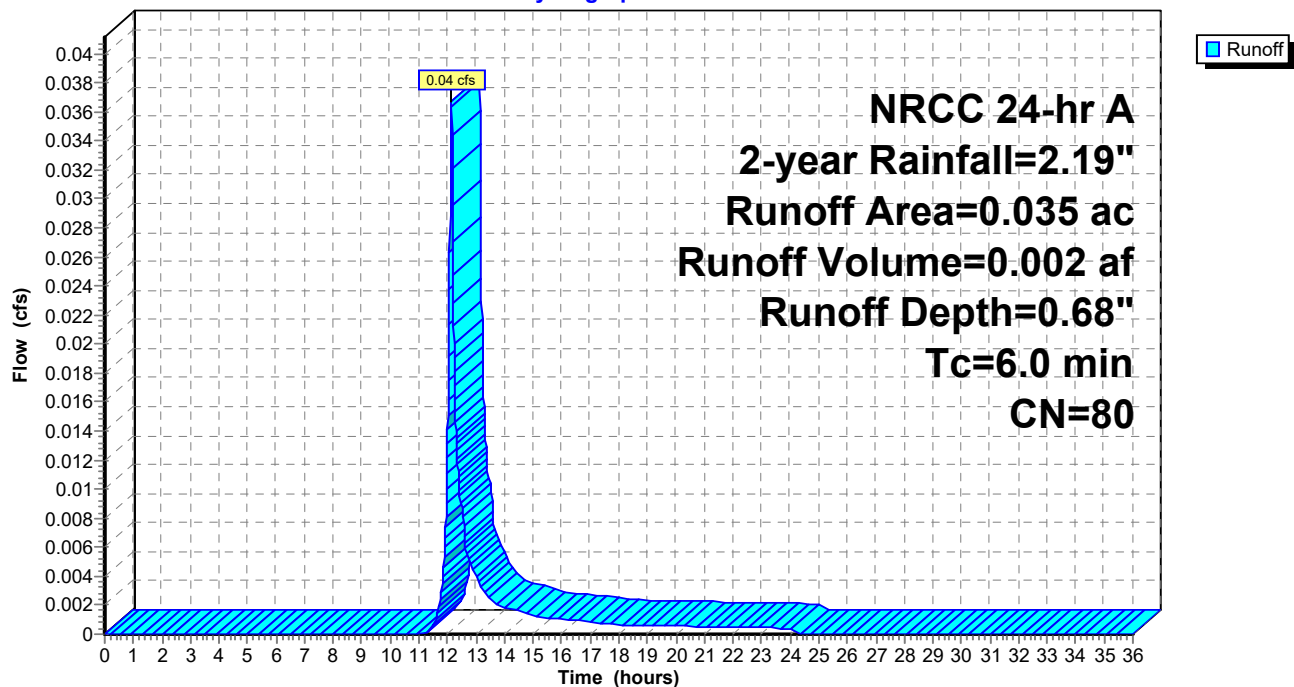
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NRCC 24-hr A 2-year Rainfall=2.19"

Area (ac)	CN	Description
0.035	80	>75% Grass cover, Good, HSG D
0.035		100.00% Pervious Area

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

Subcatchment 2S: Existing conditions

Hydrograph



22-119 calcs

NRCC 24-hr A 2-year Rainfall=2.19"

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Summary for Pond 5P: N-12 chamber

Inflow Area = 0.035 ac, 100.00% Impervious, Inflow Depth = 1.96" for 2-year event
 Inflow = 0.10 cfs @ 12.13 hrs, Volume= 0.006 af
 Outflow = 0.05 cfs @ 12.22 hrs, Volume= 0.006 af, Atten= 48%, Lag= 5.5 min
 Discarded = 0.01 cfs @ 12.22 hrs, Volume= 0.004 af
 Primary = 0.04 cfs @ 12.22 hrs, Volume= 0.001 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Peak Elev= 789.33' @ 12.22 hrs Surf.Area= 444 sf Storage= 67 cf

Plug-Flow detention time= 30.2 min calculated for 0.006 af (100% of inflow)

Center-of-Mass det. time= 30.2 min (793.3 - 763.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	788.90'	164 cf	4.66'W x 61.33'L x 1.88'H Field A 536 cf Overall - 126 cf Embedded = 410 cf x 40.0% Voids
#2A	789.23'	97 cf	ADS N-12 12" x 6 Inside #1 Inside= 12.2"W x 12.2"H => 0.81 sf x 20.00'L = 16.2 cf Outside= 14.5"W x 14.5"H => 1.05 sf x 20.00'L = 20.9 cf 6 Chambers in 2 Rows
#3	789.20'	140 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		401 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
789.20	150	0	0
790.00	200	140	140

Device	Routing	Invert	Outlet Devices
#1	Primary	789.20'	4.0" Vert. 4" pop-up emitter C= 0.600
#2	Discarded	788.90'	1.000 in/hr Exfiltration over Surface area
#3	Primary	789.65'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.01 cfs @ 12.22 hrs HW=789.33' (Free Discharge)↑ **2=Exfiltration** (Exfiltration Controls 0.01 cfs)**Primary OutFlow** Max=0.04 cfs @ 12.22 hrs HW=789.33' (Free Discharge)↑ **1=4" pop-up emitter** (Orifice Controls 0.04 cfs @ 1.23 fps)↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

22-119 calcs

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Pond 5P: N-12 chamber - Chamber Wizard Field A

Chamber Model = ADS N-12 12" (ADS N-12® Pipe)

Inside= 12.2"W x 12.2"H => 0.81 sf x 20.00'L = 16.2 cf

Outside= 14.5"W x 14.5"H => 1.05 sf x 20.00'L = 20.9 cf

14.5" Wide + 10.9" Spacing = 25.4" C-C Row Spacing

3 Chambers/Row x 20.00' Long = 60.00' Row Length +8.0" End Stone x 2 = 61.33' Base Length

2 Rows x 14.5" Wide + 10.9" Spacing x 1 + 8.0" Side Stone x 2 = 4.66' Base Width

4.0" Base + 14.5" Chamber Height + 4.0" Cover = 1.88' Field Height

6 Chambers x 16.2 cf = 97.2 cf Chamber Storage

6 Chambers x 20.9 cf = 125.6 cf Displacement

536.0 cf Field - 125.6 cf Chambers = 410.4 cf Stone x 40.0% Voids = 164.2 cf Stone Storage

Chamber Storage + Stone Storage = 261.4 cf = 0.006 af

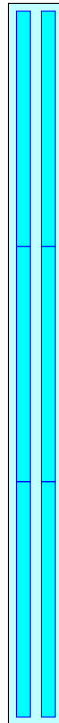
Overall Storage Efficiency = 48.8%

Overall System Size = 61.33' x 4.66' x 1.88'

6 Chambers

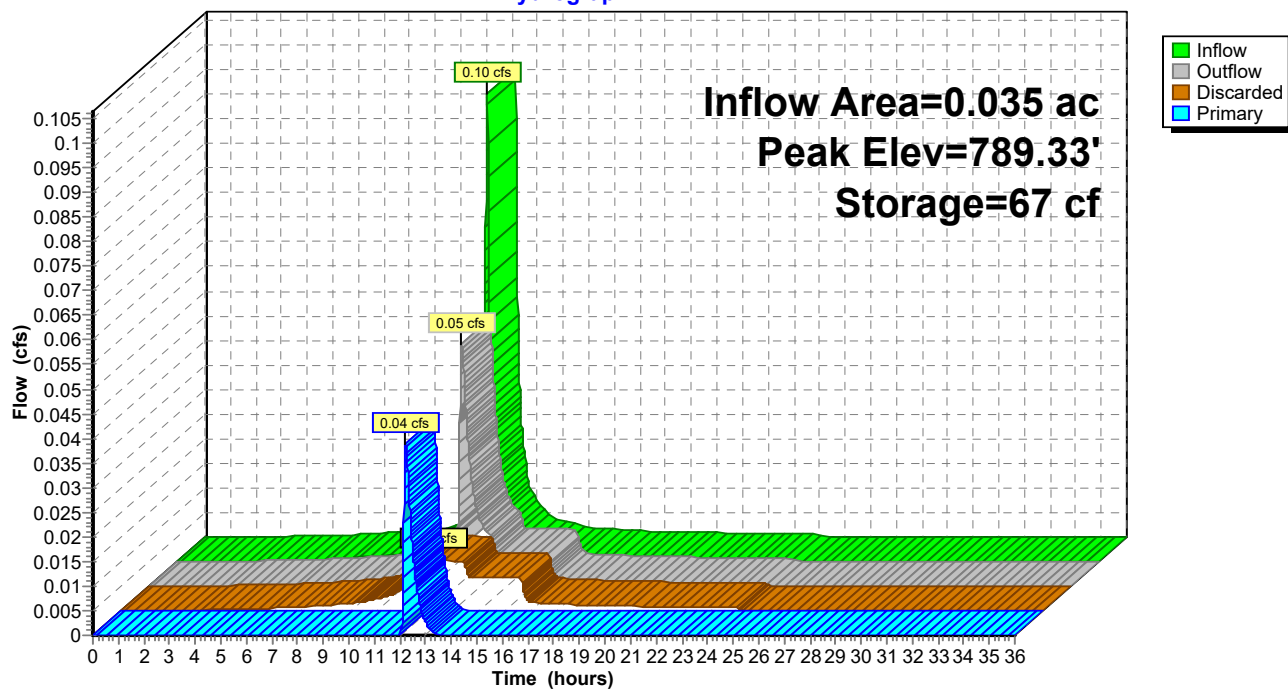
19.9 cy Field

15.2 cy Stone



Pond 5P: N-12 chamber

Hydrograph



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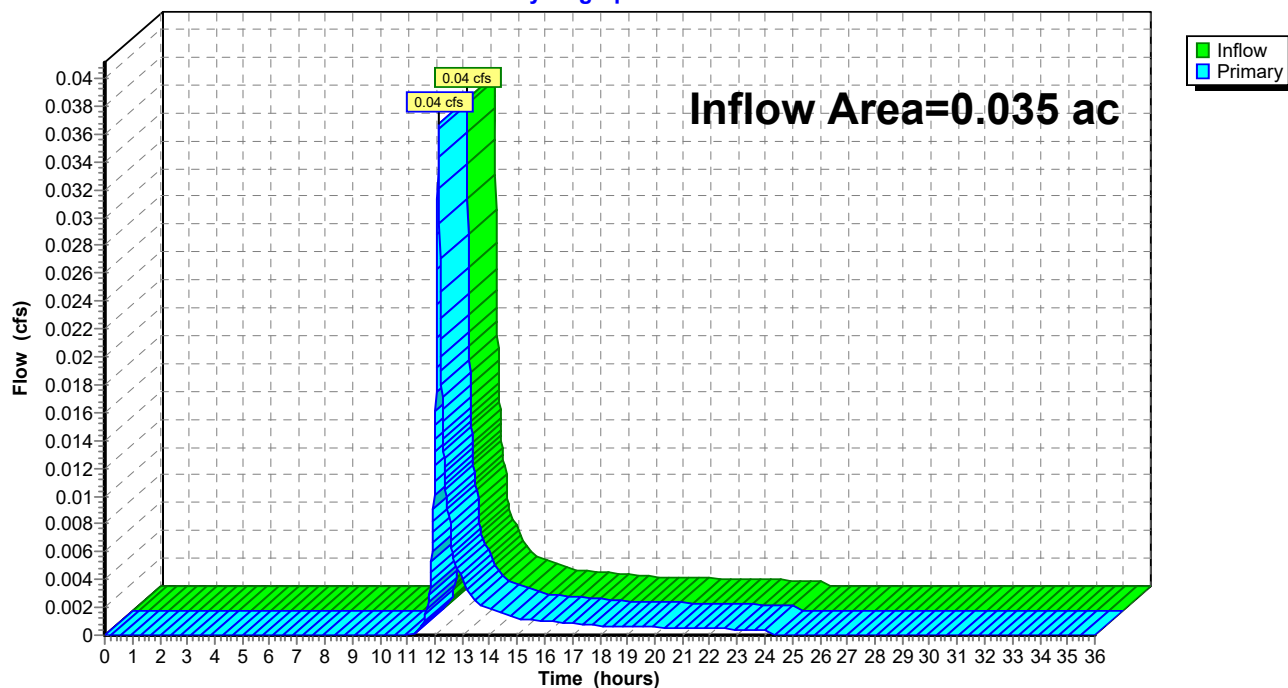
Summary for Link 3L: Existing conditions

Inflow Area = 0.035 ac, 0.00% Impervious, Inflow Depth = 0.68" for 2-year event
Inflow = 0.04 cfs @ 12.14 hrs, Volume= 0.002 af
Primary = 0.04 cfs @ 12.14 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 3L: Existing conditions

Hydrograph



22-119 calcs

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Summary for Link 4L: Proposed Conditions

Inflow Area = 0.035 ac, 100.00% Impervious, Inflow Depth = 0.44" for 2-year event
Inflow = 0.04 cfs @ 12.22 hrs, Volume= 0.001 af
Primary = 0.04 cfs @ 12.22 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 4L: Proposed Conditions

