

# ***DRAINAGE ANALYSIS***

***53 HANCOCK STREET  
LEXINGTON, MA***



***JANUARY 31, 2020  
(REVISED JUNE 5, 2020)***

## 53 Hancock Street Drainage Summary

The property contains approximately 1.08 acres of land, containing woods and lawn and an existing single-family dwelling. No wetlands exist on or near the property. The proposed development shows the creation of three lots under SECTION 135-6.0: SPECIAL REGULATIONS. One lot will contain the existing dwelling at 53 Hancock Street and the other two lots will contain a new single-family dwelling. Approximately 41,000+/-sf of disturbance is proposed.

In order to offset the proposed increase in impervious cover, downspouts and roof drains for the proposed dwellings and garage along with the driveway for Lot 5 and a portion of the driveway for Lot 4 will connect to three infiltration systems adequately designed for the 100-year storm event, using a 6.50 inch rainfall.

Soils investigations, including two deep-hole observations to establish the estimated annual high water table and soil texture were conducted on-site. Information obtained from this investigation was used in designing the proposed underground infiltration system.

In summary by utilizing the proposed subsurface infiltration systems to mitigate stormwater runoff generated by the proposed dwellings and garage and portions of the driveways, peak rates and volume of runoff will be reduced or maintained for post development conditions.

**Pre-Development vs. Post-Development Drainage Summary Table**

Storm Event	Pre-Development		Post-Development	
	Rate (cfs)	Volume (cf)	Rate (cfs)	Volume (af)
2	0.02	428	0.02	413
10	0.29	2,034	0.28	1,811
100	1.28	5,482	1.13	4,740

EXIST

PROP

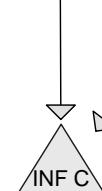
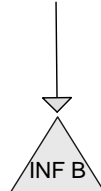
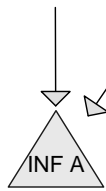
ROOF A

DRIVEWAY

ROOF B

PROP GARAGE

DRIVEWAY.



Subcat

Reach

Pond

Link

**53 Hancock Street 06-02-20**

Type III 24-hr 2 yr storm Rainfall=3.10"

Prepared by Frederick W. Russell, PE

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Time span=0.00-30.00 hrs, dt=0.02 hrs, 1501 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 DRIVEWAY:** Runoff Area=980 sf 100.00% Impervious Runoff Depth=2.87"  
 Tc=5.0 min CN=98 Runoff=0.07 cfs 234 cf

**Subcatchment DRIVEWAY.:** Runoff Area=600 sf 100.00% Impervious Runoff Depth=2.87"  
 Tc=5.0 min CN=98 Runoff=0.04 cfs 143 cf

**Subcatchment EXIST:** Runoff Area=47,107 sf 19.81% Impervious Runoff Depth=0.11"  
 Tc=10.0 min CN=50 Runoff=0.02 cfs 428 cf

**Pond INF A:** Peak Elev=237.58' Storage=124 cf Inflow=0.30 cfs 999 cf  
 Outflow=0.10 cfs 999 cf

**Pond INF B:** Peak Elev=244.07' Storage=97 cf Inflow=0.24 cfs 789 cf  
 Outflow=0.08 cfs 789 cf

**Pond INF C:** Peak Elev=236.24' Storage=73 cf Inflow=0.08 cfs 270 cf  
 Outflow=0.01 cfs 270 cf

**Subcatchment PROP:** Runoff Area=38,497 sf 20.81% Impervious Runoff Depth=0.13"  
 Tc=10.0 min CN=51 Runoff=0.02 cfs 413 cf

**Subcatchment PROP GARAGE:** Runoff Area=530 sf 100.00% Impervious Runoff Depth=2.87"  
 Tc=5.0 min CN=98 Runoff=0.04 cfs 127 cf

**Subcatchment ROOF A:** Runoff Area=3,200 sf 100.00% Impervious Runoff Depth=2.87"  
 Tc=5.0 min CN=98 Runoff=0.23 cfs 765 cf

**Subcatchment ROOF B:** Runoff Area=3,300 sf 100.00% Impervious Runoff Depth=2.87"  
 Tc=5.0 min CN=98 Runoff=0.24 cfs 789 cf

**Total Runoff Area = 94,214 sf Runoff Volume = 2,899 cf Average Runoff Depth = 0.37"**  
**72.46% Pervious = 68,264 sf 27.54% Impervious = 25,950 sf**

**Summary for Subcatchment DRIVEWAY:**

Runoff = 0.07 cfs @ 12.07 hrs, Volume= 234 cf, Depth= 2.87"

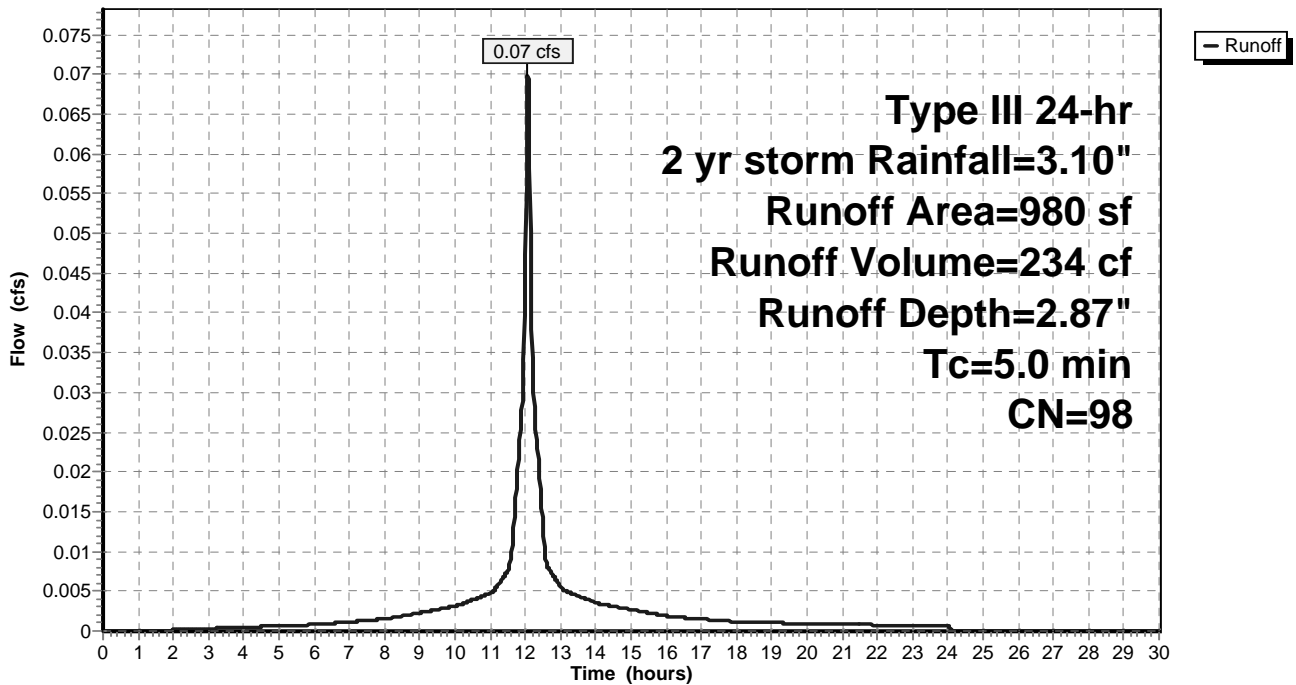
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs  
 Type III 24-hr 2 yr storm Rainfall=3.10"

Area (sf)	CN	Description
980	98	Paved parking, HSG A
980		100.00% Impervious Area

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

**Subcatchment DRIVEWAY:**

Hydrograph



**Summary for Subcatchment DRIVEWAY.:**

Runoff = 0.04 cfs @ 12.07 hrs, Volume= 143 cf, Depth= 2.87"

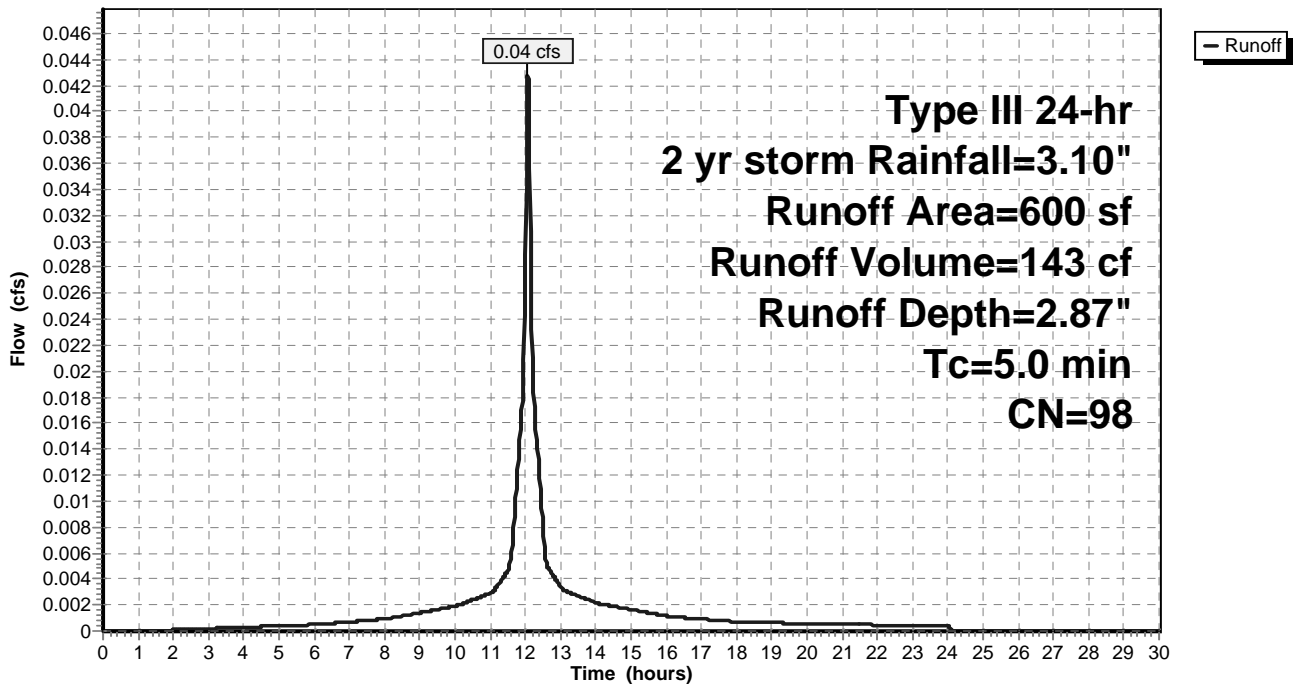
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs  
 Type III 24-hr 2 yr storm Rainfall=3.10"

Area (sf)	CN	Description
600	98	Paved parking, HSG A
600		100.00% Impervious Area

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

**Subcatchment DRIVEWAY.:**

Hydrograph



**Summary for Subcatchment EXIST:**

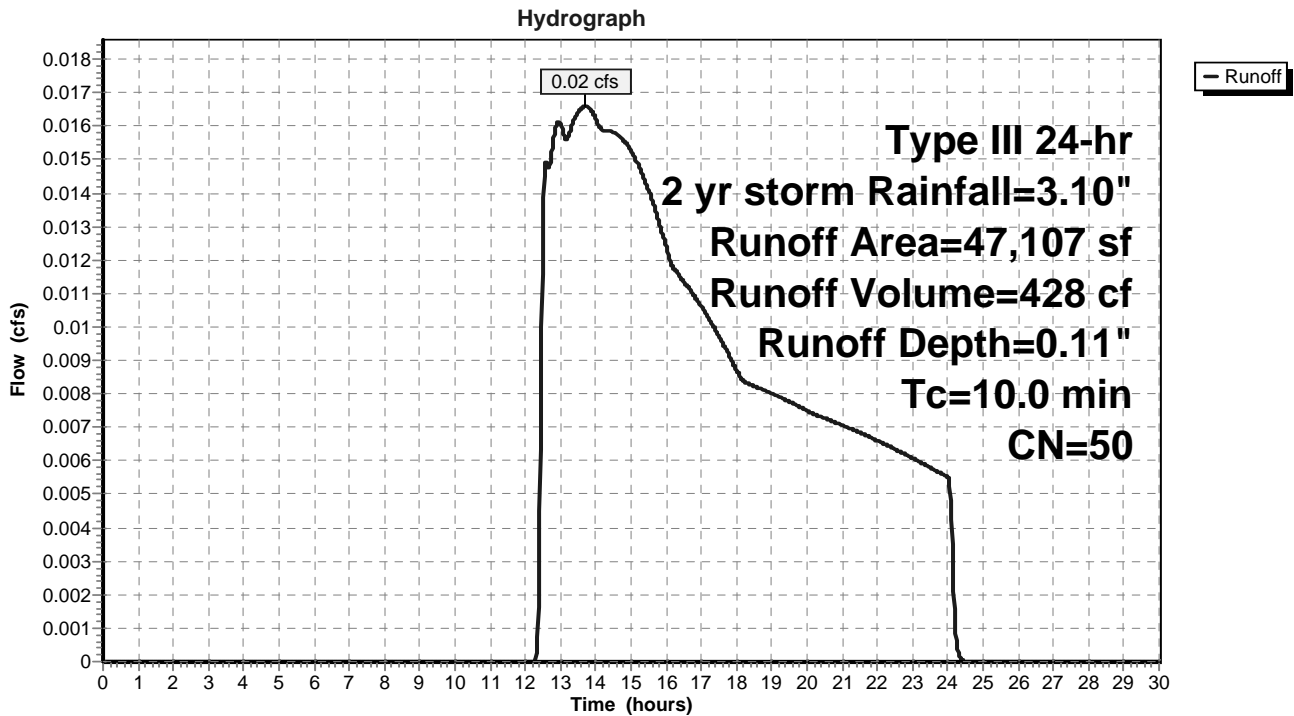
Runoff = 0.02 cfs @ 13.70 hrs, Volume= 428 cf, Depth= 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs  
 Type III 24-hr 2 yr storm Rainfall=3.10"

Area (sf)	CN	Description
4,210	98	Roofs, HSG A
5,120	98	Paved parking, HSG A
2,800	30	Woods, Good, HSG A
34,977	39	>75% Grass cover, Good, HSG A
47,107	50	Weighted Average
37,777		80.19% Pervious Area
9,330		19.81% Impervious Area

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

**Subcatchment EXIST:**



**Summary for Pond INF A:**

Inflow Area = 4,180 sf, 100.00% Impervious, Inflow Depth = 2.87" for 2 yr storm event  
 Inflow = 0.30 cfs @ 12.07 hrs, Volume= 999 cf  
 Outflow = 0.10 cfs @ 11.86 hrs, Volume= 999 cf, Atten= 65%, Lag= 0.0 min  
 Discarded = 0.10 cfs @ 11.86 hrs, Volume= 999 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs  
 Peak Elev= 237.58' @ 12.32 hrs Surf.Area= 544 sf Storage= 124 cf

Plug-Flow detention time= 5.0 min calculated for 998 cf (100% of inflow)  
 Center-of-Mass det. time= 5.0 min ( 761.1 - 756.1 )

Volume	Invert	Avail.Storage	Storage Description
#1A	237.00'	362 cf	<b>17.00'W x 32.01'L x 2.33'H Field A</b> 1,270 cf Overall - 236 cf Embedded = 1,034 cf x 35.0% Voids
#2A	237.50'	236 cf	<b>ADS_StormTech SC-310 +Cap</b> x 16 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 16 Chambers in 4 Rows
		598 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	237.00'	<b>8.270 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.10 cfs @ 11.86 hrs HW=237.02' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.10 cfs)



**Pond INF A: - Chamber Wizard Field A**

**Chamber Model = ADS\_StormTech SC-310 +Cap (ADS StormTech® SC-310 with cap length)**

Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf

Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 12.0" Spacing = 46.0" C-C Row Spacing

4 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 29.68' Row Length +14.0" End Stone x 2 = 32.01' Base Length

4 Rows x 34.0" Wide + 12.0" Spacing x 3 + 16.0" Side Stone x 2 = 17.00' Base Width

6.0" Base + 16.0" Chamber Height + 6.0" Cover = 2.33' Field Height

16 Chambers x 14.7 cf = 235.9 cf Chamber Storage

1,269.9 cf Field - 235.9 cf Chambers = 1,034.0 cf Stone x 35.0% Voids = 361.9 cf Stone Storage

Chamber Storage + Stone Storage = 597.8 cf = 0.014 af

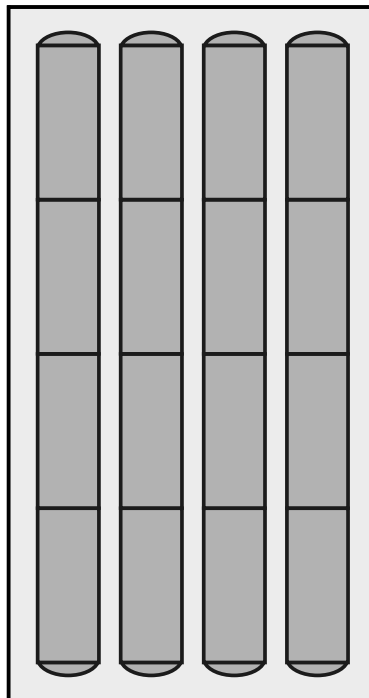
Overall Storage Efficiency = 47.1%

Overall System Size = 32.01' x 17.00' x 2.33'

16 Chambers

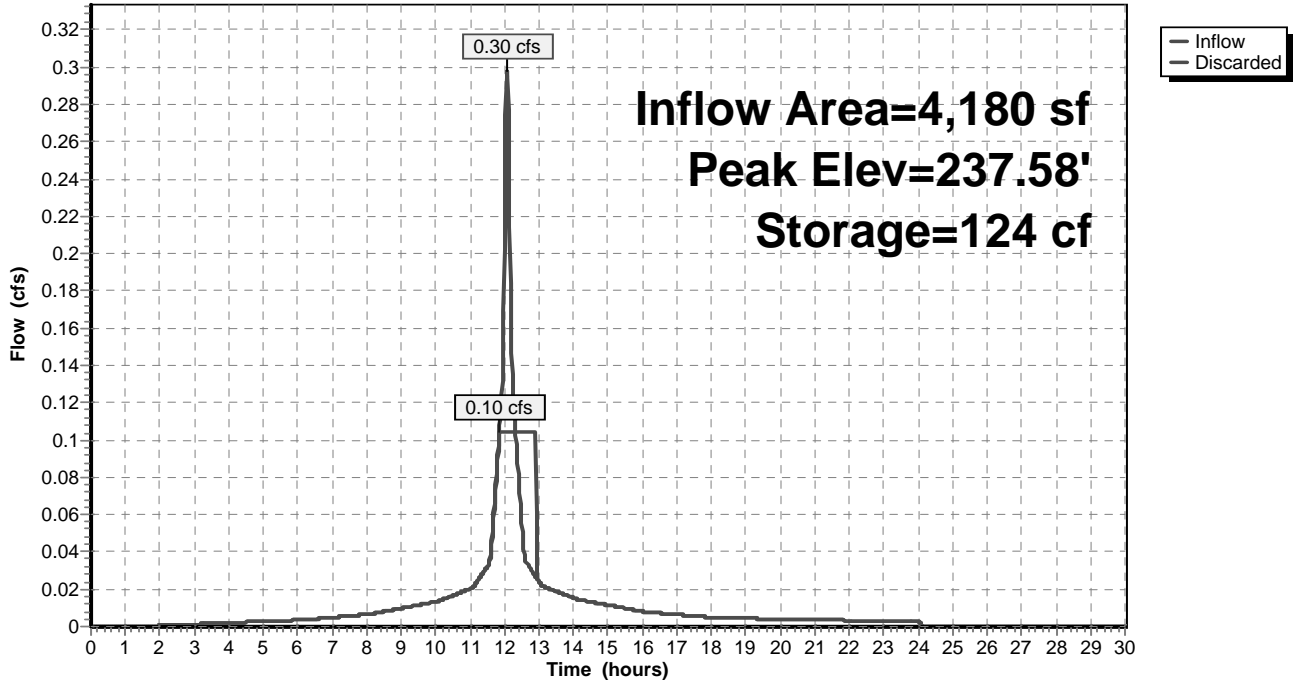
47.0 cy Field

38.3 cy Stone



**Pond INF A:**

Hydrograph



**Summary for Pond INF B:**

Inflow Area = 3,300 sf, 100.00% Impervious, Inflow Depth = 2.87" for 2 yr storm event  
 Inflow = 0.24 cfs @ 12.07 hrs, Volume= 789 cf  
 Outflow = 0.08 cfs @ 11.88 hrs, Volume= 789 cf, Atten= 65%, Lag= 0.0 min  
 Discarded = 0.08 cfs @ 11.88 hrs, Volume= 789 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs  
 Peak Elev= 244.07' @ 12.31 hrs Surf.Area= 432 sf Storage= 97 cf

Plug-Flow detention time= 4.9 min calculated for 788 cf (100% of inflow)  
 Center-of-Mass det. time= 4.9 min ( 761.1 - 756.1 )

Volume	Invert	Avail.Storage	Storage Description
#1A	243.50'	291 cf	<b>13.50'W x 32.01'L x 2.33'H Field A</b> 1,008 cf Overall - 177 cf Embedded = 832 cf x 35.0% Voids
#2A	244.00'	177 cf	<b>ADS_StormTech SC-310 +Cap</b> x 12 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 12 Chambers in 3 Rows
		468 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	243.50'	<b>8.270 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.08 cfs @ 11.88 hrs HW=243.53' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.08 cfs)

**Pond INF B: - Chamber Wizard Field A**

**Chamber Model = ADS\_StormTech SC-310 +Cap (ADS StormTech® SC-310 with cap length)**

Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf

Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 14.0" Spacing = 48.0" C-C Row Spacing

4 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 29.68' Row Length +14.0" End Stone x 2 = 32.01' Base Length

3 Rows x 34.0" Wide + 14.0" Spacing x 2 + 16.0" Side Stone x 2 = 13.50' Base Width

6.0" Base + 16.0" Chamber Height + 6.0" Cover = 2.33' Field Height

12 Chambers x 14.7 cf = 176.9 cf Chamber Storage

1,008.4 cf Field - 176.9 cf Chambers = 831.5 cf Stone x 35.0% Voids = 291.0 cf Stone Storage

Chamber Storage + Stone Storage = 467.9 cf = 0.011 af

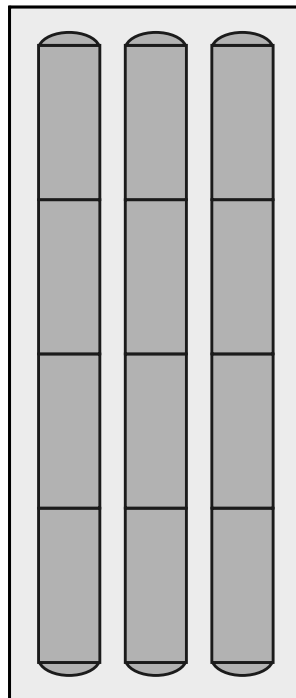
Overall Storage Efficiency = 46.4%

Overall System Size = 32.01' x 13.50' x 2.33'

12 Chambers

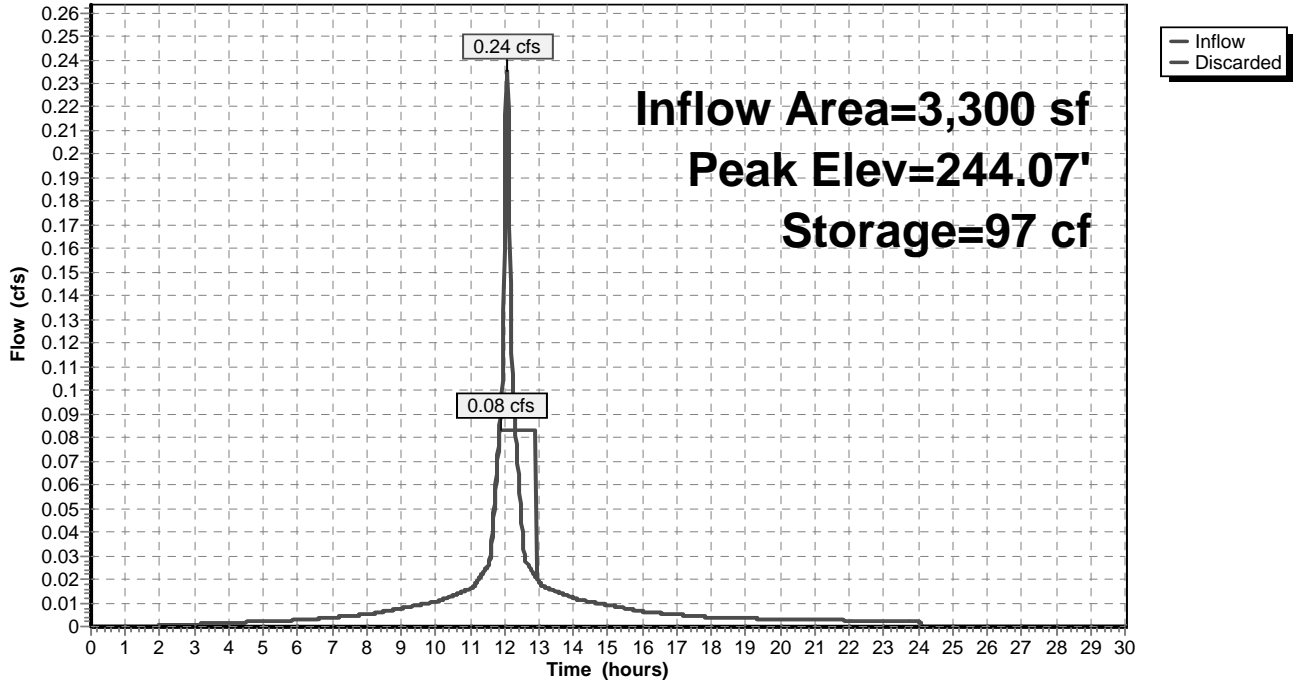
37.3 cy Field

30.8 cy Stone



### Pond INF B:

Hydrograph



**Summary for Pond INF C:**

Inflow Area = 1,130 sf, 100.00% Impervious, Inflow Depth = 2.87" for 2 yr storm event  
 Inflow = 0.08 cfs @ 12.07 hrs, Volume= 270 cf  
 Outflow = 0.01 cfs @ 11.66 hrs, Volume= 270 cf, Atten= 85%, Lag= 0.0 min  
 Discarded = 0.01 cfs @ 11.66 hrs, Volume= 270 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs  
 Peak Elev= 236.24' @ 12.54 hrs Surf.Area= 221 sf Storage= 73 cf

Plug-Flow detention time= 33.9 min calculated for 270 cf (100% of inflow)  
 Center-of-Mass det. time= 33.8 min ( 790.0 - 756.1 )

Volume	Invert	Avail.Storage	Storage Description
#1A	235.50'	150 cf	<b>9.00'W x 24.56'L x 2.33'H Field A</b> 516 cf Overall - 88 cf Embedded = 427 cf x 35.0% Voids
#2A	236.00'	88 cf	<b>ADS_StormTech SC-310 +Cap</b> x 6 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 6 Chambers in 2 Rows
		238 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	235.50'	<b>2.410 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.01 cfs @ 11.66 hrs HW=235.52' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.01 cfs)

**Pond INF C: - Chamber Wizard Field A**

**Chamber Model = ADS\_StormTech SC-310 +Cap (ADS StormTech® SC-310 with cap length)**

Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf

Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 12.0" Spacing = 46.0" C-C Row Spacing

3 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 22.56' Row Length +12.0" End Stone x 2 = 24.56' Base Length

2 Rows x 34.0" Wide + 12.0" Spacing x 1 + 14.0" Side Stone x 2 = 9.00' Base Width

6.0" Base + 16.0" Chamber Height + 6.0" Cover = 2.33' Field Height

6 Chambers x 14.7 cf = 88.5 cf Chamber Storage

515.8 cf Field - 88.5 cf Chambers = 427.3 cf Stone x 35.0% Voids = 149.6 cf Stone Storage

Chamber Storage + Stone Storage = 238.0 cf = 0.005 af

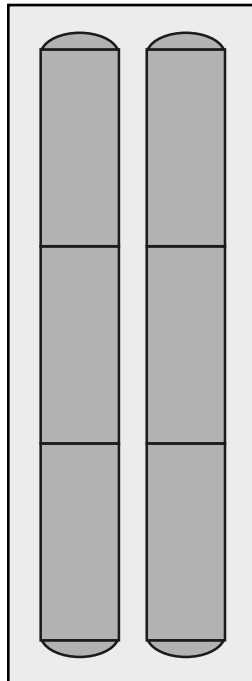
Overall Storage Efficiency = 46.1%

Overall System Size = 24.56' x 9.00' x 2.33'

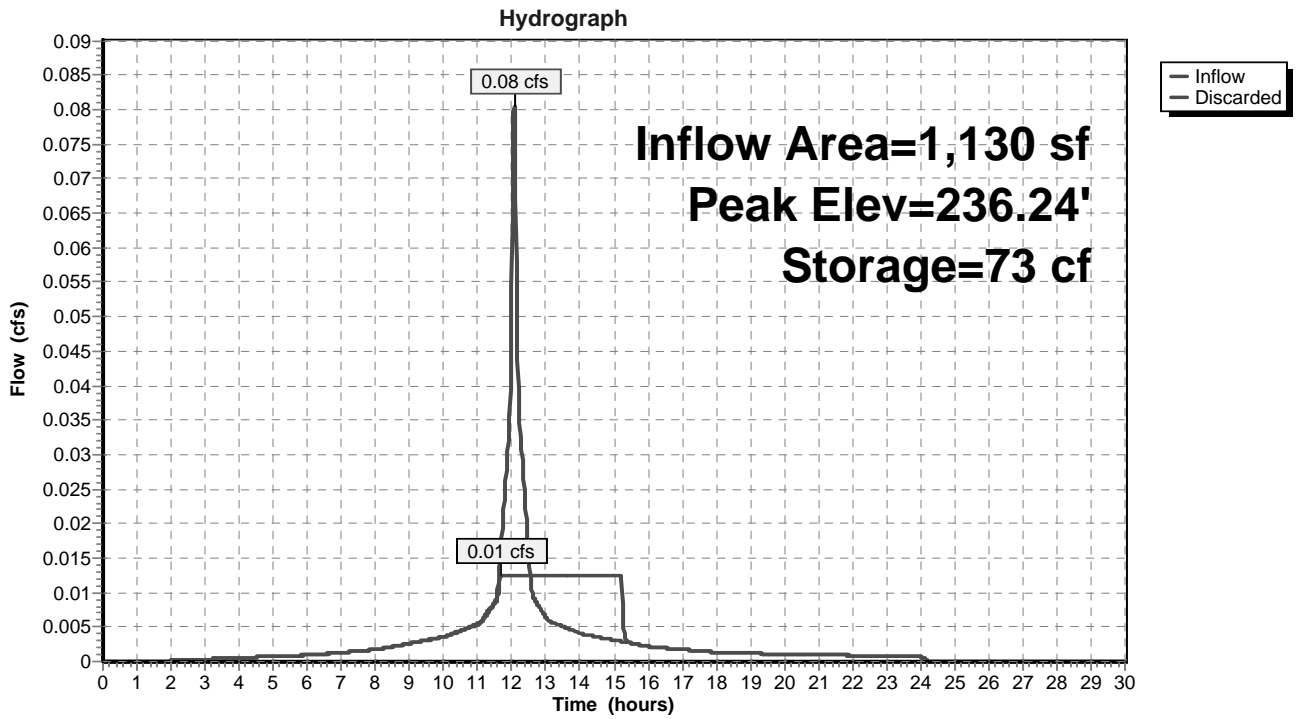
6 Chambers

19.1 cy Field

15.8 cy Stone



**Pond INF C:**





**Summary for Subcatchment PROP:**

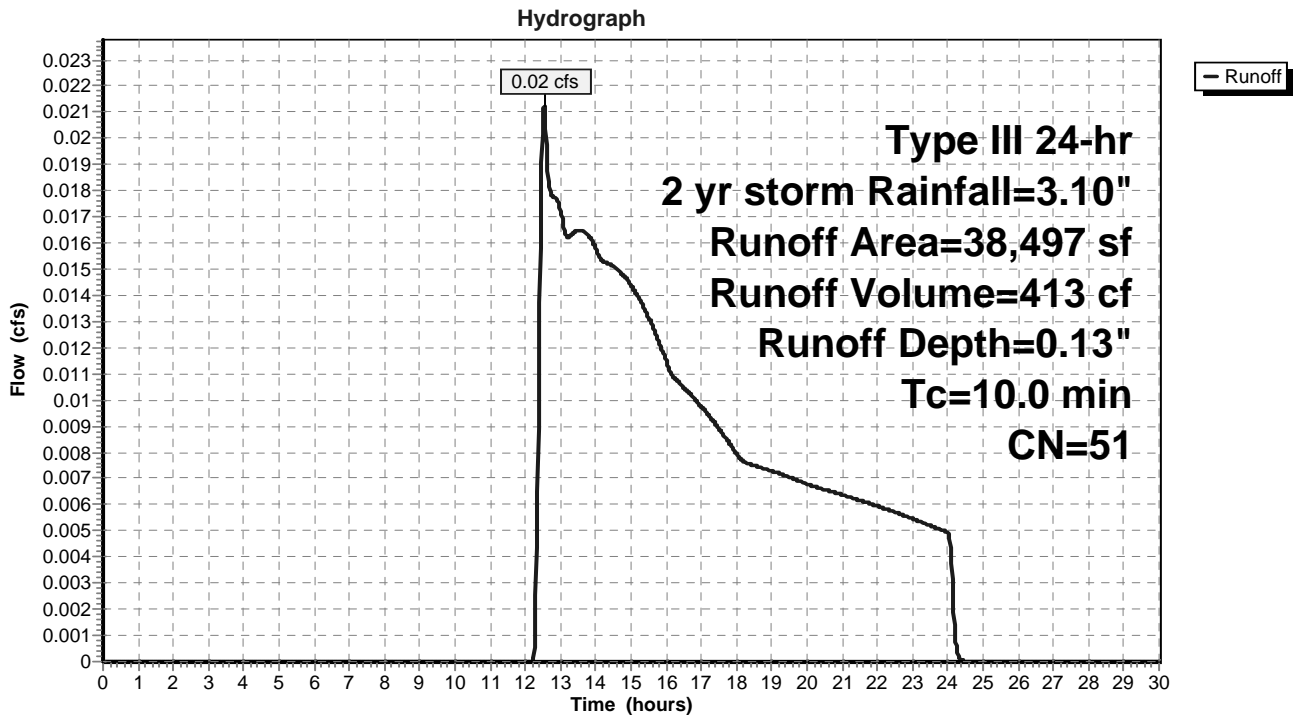
Runoff = 0.02 cfs @ 12.53 hrs, Volume= 413 cf, Depth= 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs  
 Type III 24-hr 2 yr storm Rainfall=3.10"

Area (sf)	CN	Description
3,410	98	Roofs, HSG A
4,600	98	Paved parking, HSG A
1,600	30	Woods, Good, HSG A
28,887	39	>75% Grass cover, Good, HSG A
38,497	51	Weighted Average
30,487		79.19% Pervious Area
8,010		20.81% Impervious Area

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

**Subcatchment PROP:**



**Summary for Subcatchment PROP GARAGE:**

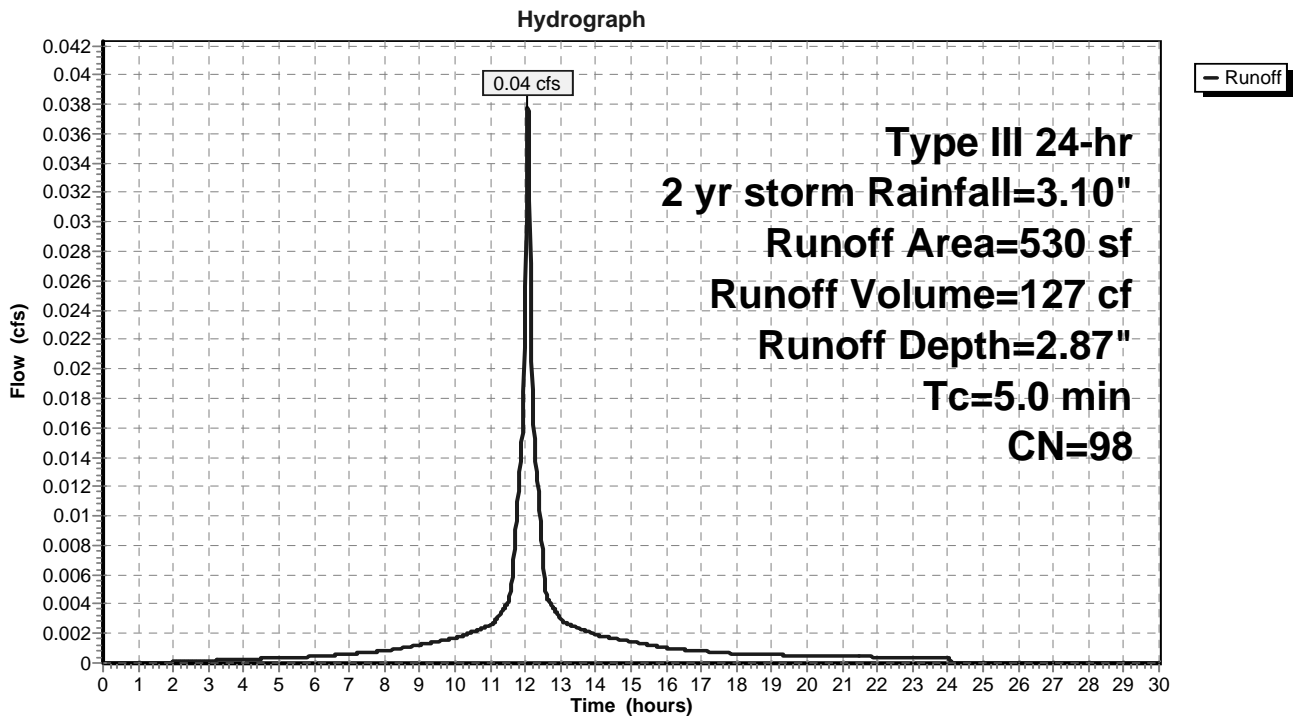
Runoff = 0.04 cfs @ 12.07 hrs, Volume= 127 cf, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs  
 Type III 24-hr 2 yr storm Rainfall=3.10"

Area (sf)	CN	Description
530	98	Roofs, HSG A
530		100.00% Impervious Area

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

**Subcatchment PROP GARAGE:**



**Summary for Subcatchment ROOF A:**

Runoff = 0.23 cfs @ 12.07 hrs, Volume= 765 cf, Depth= 2.87"

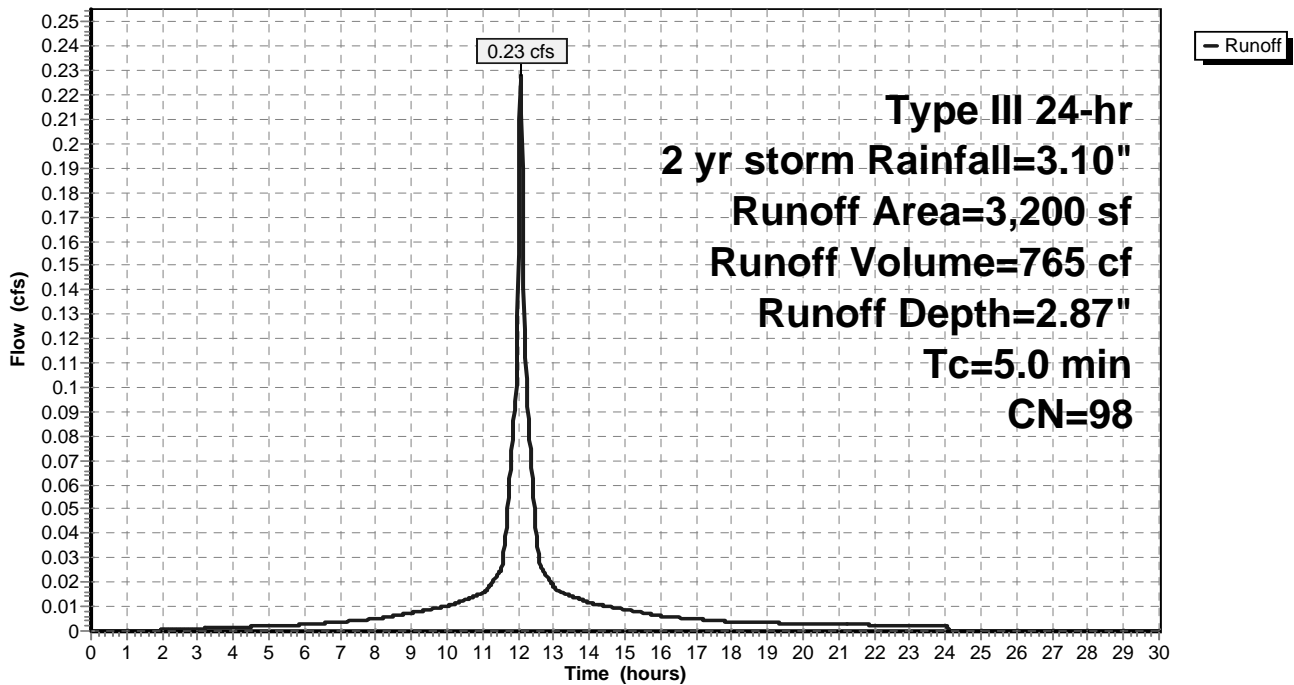
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs  
 Type III 24-hr 2 yr storm Rainfall=3.10"

Area (sf)	CN	Description
3,200	98	Roofs, HSG A
3,200		100.00% Impervious Area

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

**Subcatchment ROOF A:**

Hydrograph



**Summary for Subcatchment ROOF B:**

Runoff = 0.24 cfs @ 12.07 hrs, Volume= 789 cf, Depth= 2.87"

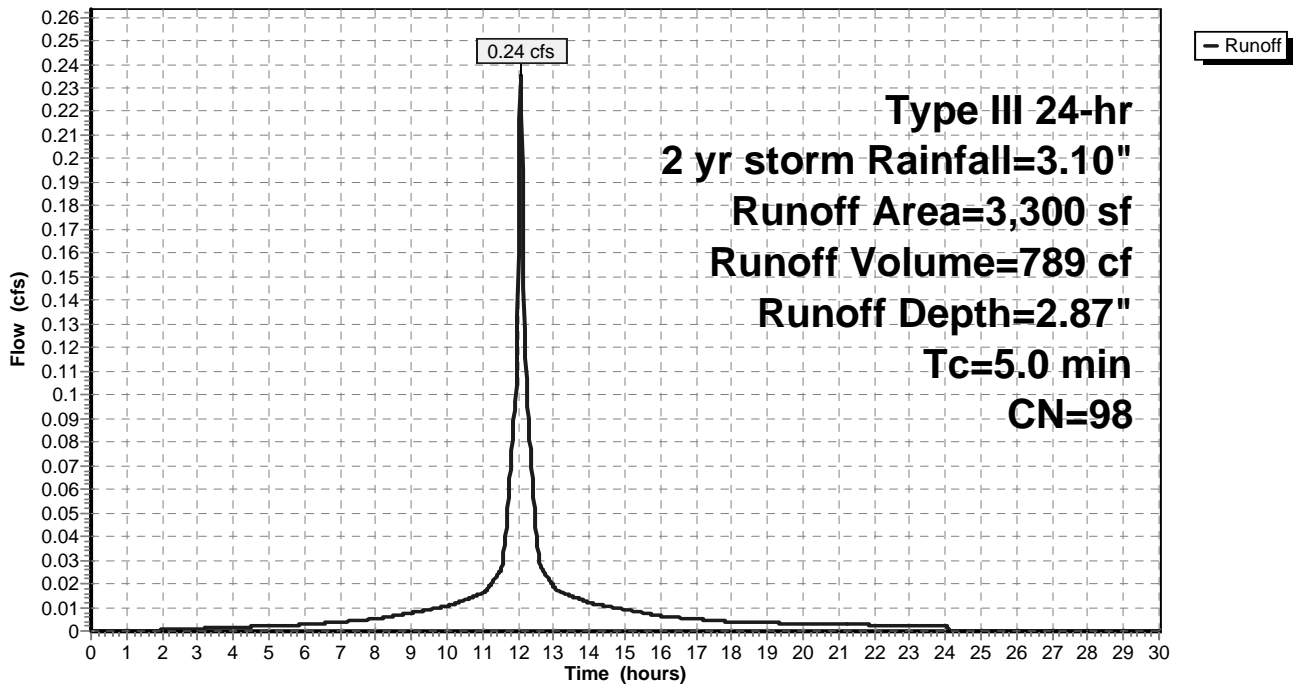
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs  
 Type III 24-hr 2 yr storm Rainfall=3.10"

Area (sf)	CN	Description
3,300	98	Roofs, HSG A
3,300		100.00% Impervious Area

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

**Subcatchment ROOF B:**

Hydrograph



**53 Hancock Street 06-02-20**

Type III 24-hr 10 yr storm Rainfall=4.55"

Prepared by Frederick W. Russell, PE

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Time span=0.00-30.00 hrs, dt=0.02 hrs, 1501 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 DRIVEWAY:** Runoff Area=980 sf 100.00% Impervious Runoff Depth=4.31"  
Tc=5.0 min CN=98 Runoff=0.10 cfs 352 cf

**Subcatchment DRIVEWAY.:** Runoff Area=600 sf 100.00% Impervious Runoff Depth=4.31"  
Tc=5.0 min CN=98 Runoff=0.06 cfs 216 cf

**Subcatchment EXIST:** Runoff Area=47,107 sf 19.81% Impervious Runoff Depth=0.52"  
Tc=10.0 min CN=50 Runoff=0.29 cfs 2,034 cf

**Pond INF A:** Peak Elev=238.04' Storage=288 cf Inflow=0.44 cfs 1,503 cf  
Outflow=0.10 cfs 1,503 cf

**Pond INF B:** Peak Elev=244.55' Storage=226 cf Inflow=0.35 cfs 1,186 cf  
Outflow=0.08 cfs 1,186 cf

**Pond INF C:** Peak Elev=236.66' Storage=130 cf Inflow=0.12 cfs 406 cf  
Outflow=0.01 cfs 406 cf

**Subcatchment PROP:** Runoff Area=38,497 sf 20.81% Impervious Runoff Depth=0.56"  
Tc=10.0 min CN=51 Runoff=0.28 cfs 1,811 cf

**Subcatchment PROP GARAGE:** Runoff Area=530 sf 100.00% Impervious Runoff Depth=4.31"  
Tc=5.0 min CN=98 Runoff=0.06 cfs 191 cf

**Subcatchment ROOF A:** Runoff Area=3,200 sf 100.00% Impervious Runoff Depth=4.31"  
Tc=5.0 min CN=98 Runoff=0.34 cfs 1,150 cf

**Subcatchment ROOF B:** Runoff Area=3,300 sf 100.00% Impervious Runoff Depth=4.31"  
Tc=5.0 min CN=98 Runoff=0.35 cfs 1,186 cf

**Total Runoff Area = 94,214 sf Runoff Volume = 6,941 cf Average Runoff Depth = 0.88"**  
**72.46% Pervious = 68,264 sf 27.54% Impervious = 25,950 sf**

**Summary for Subcatchment DRIVEWAY:**

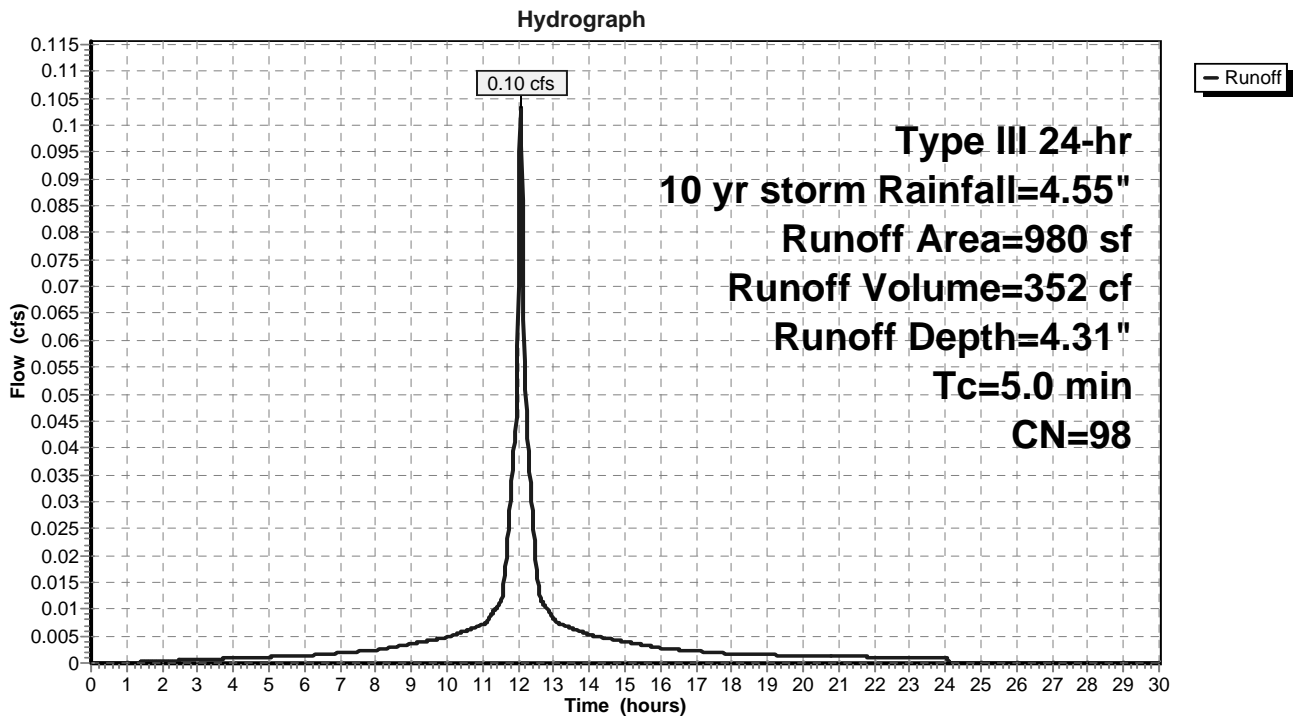
Runoff = 0.10 cfs @ 12.07 hrs, Volume= 352 cf, Depth= 4.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs  
 Type III 24-hr 10 yr storm Rainfall=4.55"

Area (sf)	CN	Description
980	98	Paved parking, HSG A
980		100.00% Impervious Area

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

**Subcatchment DRIVEWAY:**



**Summary for Subcatchment DRIVEWAY.:**

Runoff = 0.06 cfs @ 12.07 hrs, Volume= 216 cf, Depth= 4.31"

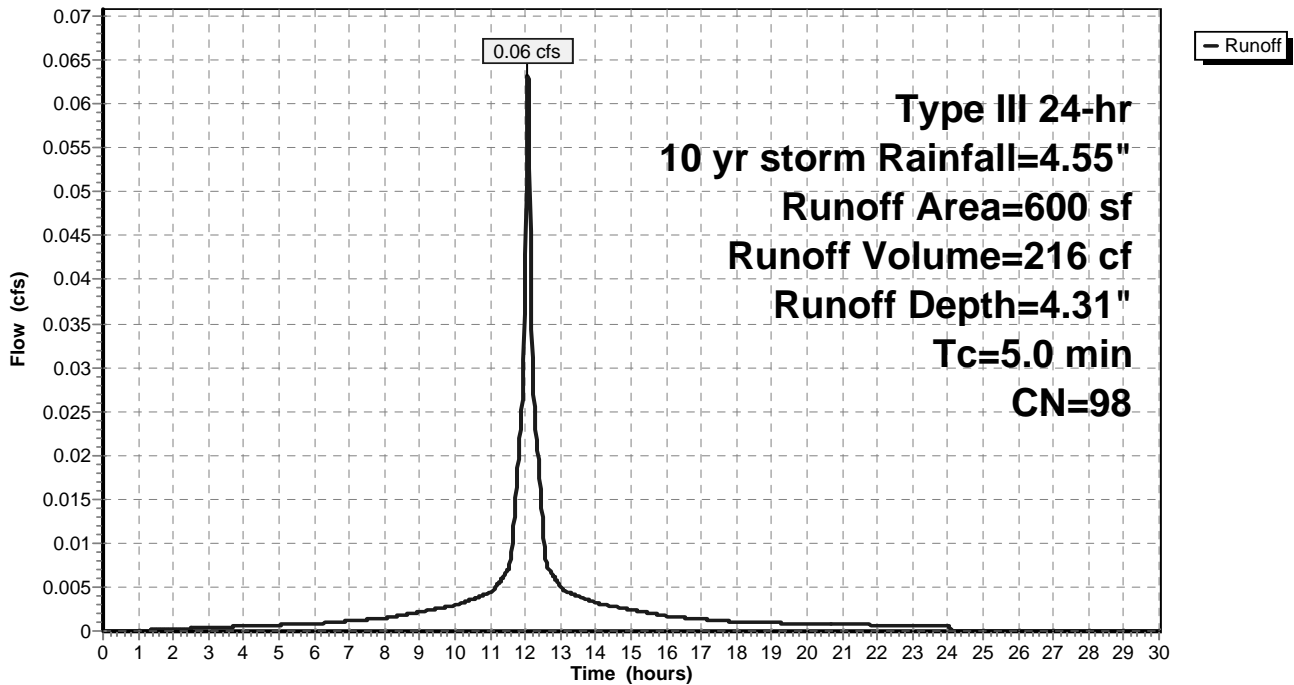
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs  
 Type III 24-hr 10 yr storm Rainfall=4.55"

Area (sf)	CN	Description
600	98	Paved parking, HSG A
600		100.00% Impervious Area

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

**Subcatchment DRIVEWAY.:**

Hydrograph



**Summary for Subcatchment EXIST:**

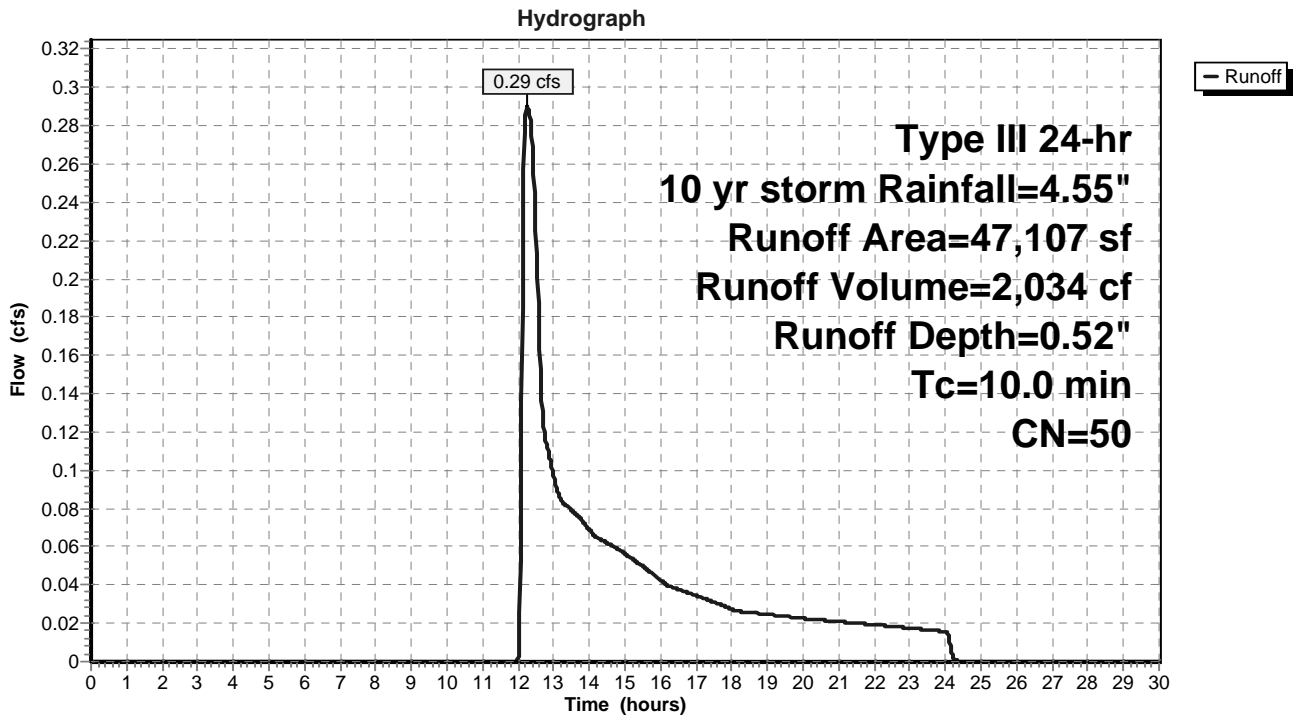
Runoff = 0.29 cfs @ 12.24 hrs, Volume= 2,034 cf, Depth= 0.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs  
 Type III 24-hr 10 yr storm Rainfall=4.55"

Area (sf)	CN	Description
4,210	98	Roofs, HSG A
5,120	98	Paved parking, HSG A
2,800	30	Woods, Good, HSG A
34,977	39	>75% Grass cover, Good, HSG A
47,107	50	Weighted Average
37,777		80.19% Pervious Area
9,330		19.81% Impervious Area

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

**Subcatchment EXIST:**





**Summary for Pond INF A:**

Inflow Area = 4,180 sf, 100.00% Impervious, Inflow Depth = 4.31" for 10 yr storm event  
 Inflow = 0.44 cfs @ 12.07 hrs, Volume= 1,503 cf  
 Outflow = 0.10 cfs @ 11.74 hrs, Volume= 1,503 cf, Atten= 76%, Lag= 0.0 min  
 Discarded = 0.10 cfs @ 11.74 hrs, Volume= 1,503 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs  
 Peak Elev= 238.04' @ 12.44 hrs Surf.Area= 544 sf Storage= 288 cf

Plug-Flow detention time= 12.6 min calculated for 1,502 cf (100% of inflow)  
 Center-of-Mass det. time= 12.6 min ( 761.3 - 748.7 )

Volume	Invert	Avail.Storage	Storage Description
#1A	237.00'	362 cf	<b>17.00'W x 32.01'L x 2.33'H Field A</b> 1,270 cf Overall - 236 cf Embedded = 1,034 cf x 35.0% Voids
#2A	237.50'	236 cf	<b>ADS_StormTech SC-310 +Cap</b> x 16 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 16 Chambers in 4 Rows
		598 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	237.00'	<b>8.270 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.10 cfs @ 11.74 hrs HW=237.03' (Free Discharge)  
 ↳ **1=Exfiltration** (Exfiltration Controls 0.10 cfs)

**Pond INF A: - Chamber Wizard Field A**

**Chamber Model = ADS\_StormTech SC-310 +Cap (ADS StormTech® SC-310 with cap length)**

Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf

Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 12.0" Spacing = 46.0" C-C Row Spacing

4 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 29.68' Row Length +14.0" End Stone x 2 = 32.01' Base Length

4 Rows x 34.0" Wide + 12.0" Spacing x 3 + 16.0" Side Stone x 2 = 17.00' Base Width

6.0" Base + 16.0" Chamber Height + 6.0" Cover = 2.33' Field Height

16 Chambers x 14.7 cf = 235.9 cf Chamber Storage

1,269.9 cf Field - 235.9 cf Chambers = 1,034.0 cf Stone x 35.0% Voids = 361.9 cf Stone Storage

Chamber Storage + Stone Storage = 597.8 cf = 0.014 af

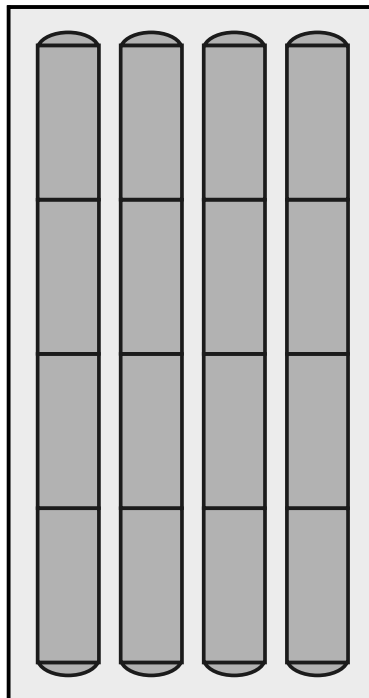
Overall Storage Efficiency = 47.1%

Overall System Size = 32.01' x 17.00' x 2.33'

16 Chambers

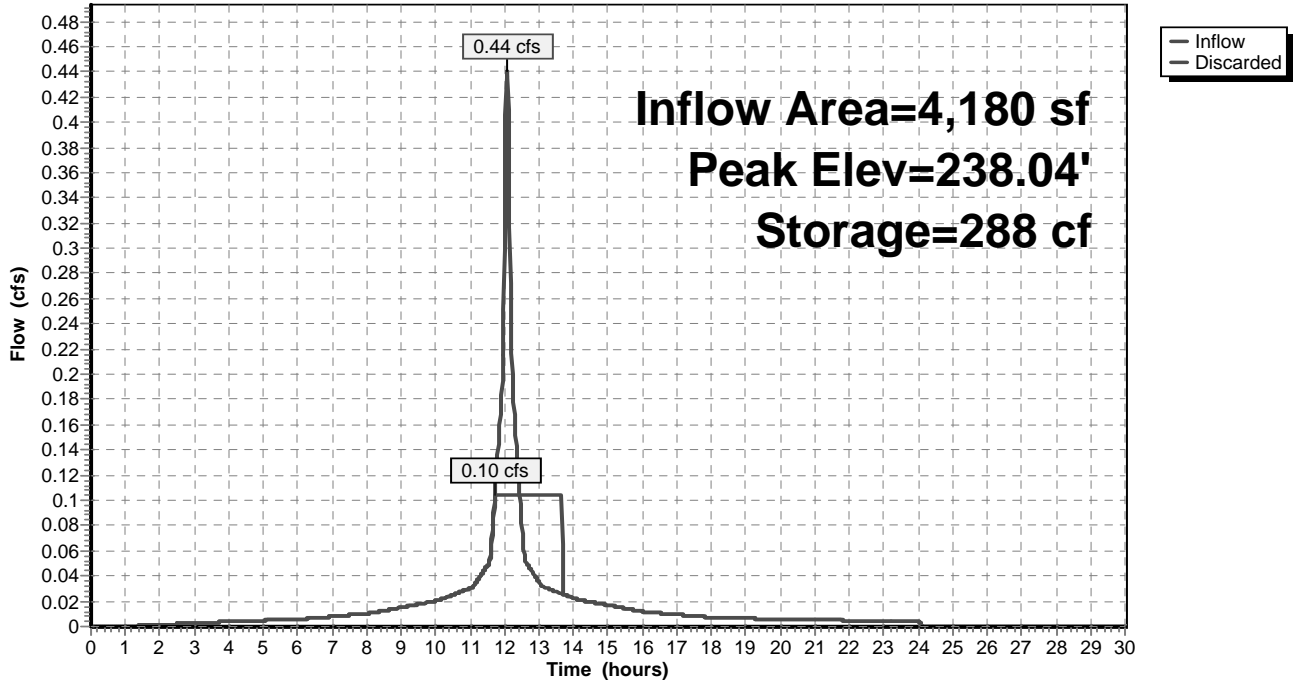
47.0 cy Field

38.3 cy Stone



### Pond INF A:

Hydrograph



**Summary for Pond INF B:**

Inflow Area = 3,300 sf, 100.00% Impervious, Inflow Depth = 4.31" for 10 yr storm event  
 Inflow = 0.35 cfs @ 12.07 hrs, Volume= 1,186 cf  
 Outflow = 0.08 cfs @ 11.74 hrs, Volume= 1,186 cf, Atten= 76%, Lag= 0.0 min  
 Discarded = 0.08 cfs @ 11.74 hrs, Volume= 1,186 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs  
 Peak Elev= 244.55' @ 12.44 hrs Surf.Area= 432 sf Storage= 226 cf

Plug-Flow detention time= 12.5 min calculated for 1,186 cf (100% of inflow)  
 Center-of-Mass det. time= 12.5 min ( 761.2 - 748.7 )

Volume	Invert	Avail.Storage	Storage Description
#1A	243.50'	291 cf	<b>13.50'W x 32.01'L x 2.33'H Field A</b> 1,008 cf Overall - 177 cf Embedded = 832 cf x 35.0% Voids
#2A	244.00'	177 cf	<b>ADS_StormTech SC-310 +Cap</b> x 12 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 12 Chambers in 3 Rows
		468 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	243.50'	<b>8.270 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.08 cfs @ 11.74 hrs HW=243.53' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.08 cfs)

**Pond INF B: - Chamber Wizard Field A**

**Chamber Model = ADS\_StormTech SC-310 +Cap (ADS StormTech® SC-310 with cap length)**

Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf

Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 14.0" Spacing = 48.0" C-C Row Spacing

4 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 29.68' Row Length +14.0" End Stone x 2 = 32.01' Base Length

3 Rows x 34.0" Wide + 14.0" Spacing x 2 + 16.0" Side Stone x 2 = 13.50' Base Width

6.0" Base + 16.0" Chamber Height + 6.0" Cover = 2.33' Field Height

12 Chambers x 14.7 cf = 176.9 cf Chamber Storage

1,008.4 cf Field - 176.9 cf Chambers = 831.5 cf Stone x 35.0% Voids = 291.0 cf Stone Storage

Chamber Storage + Stone Storage = 467.9 cf = 0.011 af

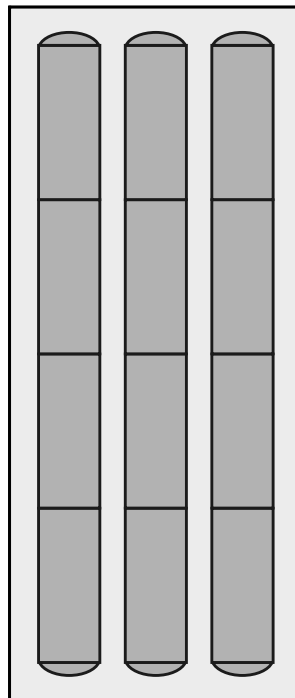
Overall Storage Efficiency = 46.4%

Overall System Size = 32.01' x 13.50' x 2.33'

12 Chambers

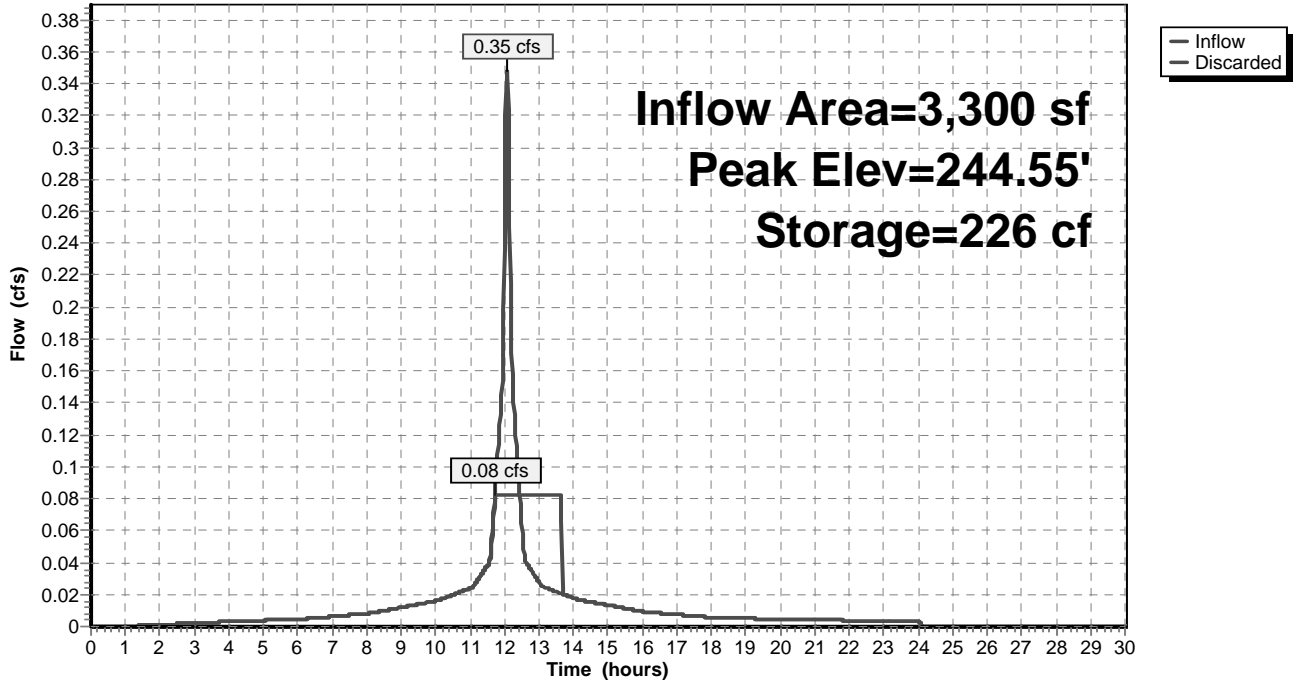
37.3 cy Field

30.8 cy Stone



**Pond INF B:**

Hydrograph



**Summary for Pond INF C:**

Inflow Area = 1,130 sf, 100.00% Impervious, Inflow Depth = 4.31" for 10 yr storm event  
 Inflow = 0.12 cfs @ 12.07 hrs, Volume= 406 cf  
 Outflow = 0.01 cfs @ 11.48 hrs, Volume= 406 cf, Atten= 90%, Lag= 0.0 min  
 Discarded = 0.01 cfs @ 11.48 hrs, Volume= 406 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs  
 Peak Elev= 236.66' @ 12.74 hrs Surf.Area= 221 sf Storage= 130 cf

Plug-Flow detention time= 68.2 min calculated for 406 cf (100% of inflow)  
 Center-of-Mass det. time= 68.1 min ( 816.8 - 748.7 )

Volume	Invert	Avail.Storage	Storage Description
#1A	235.50'	150 cf	<b>9.00'W x 24.56'L x 2.33'H Field A</b> 516 cf Overall - 88 cf Embedded = 427 cf x 35.0% Voids
#2A	236.00'	88 cf	<b>ADS StormTech SC-310 +Cap</b> x 6 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 6 Chambers in 2 Rows
		238 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	235.50'	<b>2.410 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.01 cfs @ 11.48 hrs HW=235.52' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.01 cfs)

**Pond INF C: - Chamber Wizard Field A**

**Chamber Model = ADS\_StormTech SC-310 +Cap (ADS StormTech® SC-310 with cap length)**

Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf

Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 12.0" Spacing = 46.0" C-C Row Spacing

3 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 22.56' Row Length +12.0" End Stone x 2 = 24.56' Base Length

2 Rows x 34.0" Wide + 12.0" Spacing x 1 + 14.0" Side Stone x 2 = 9.00' Base Width

6.0" Base + 16.0" Chamber Height + 6.0" Cover = 2.33' Field Height

6 Chambers x 14.7 cf = 88.5 cf Chamber Storage

515.8 cf Field - 88.5 cf Chambers = 427.3 cf Stone x 35.0% Voids = 149.6 cf Stone Storage

Chamber Storage + Stone Storage = 238.0 cf = 0.005 af

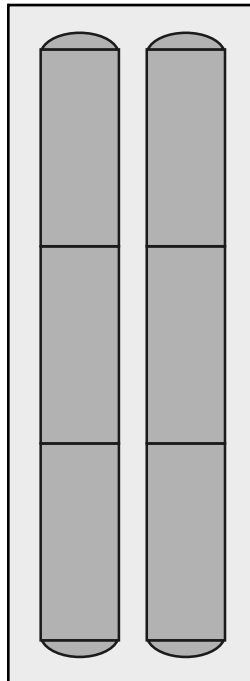
Overall Storage Efficiency = 46.1%

Overall System Size = 24.56' x 9.00' x 2.33'

6 Chambers

19.1 cy Field

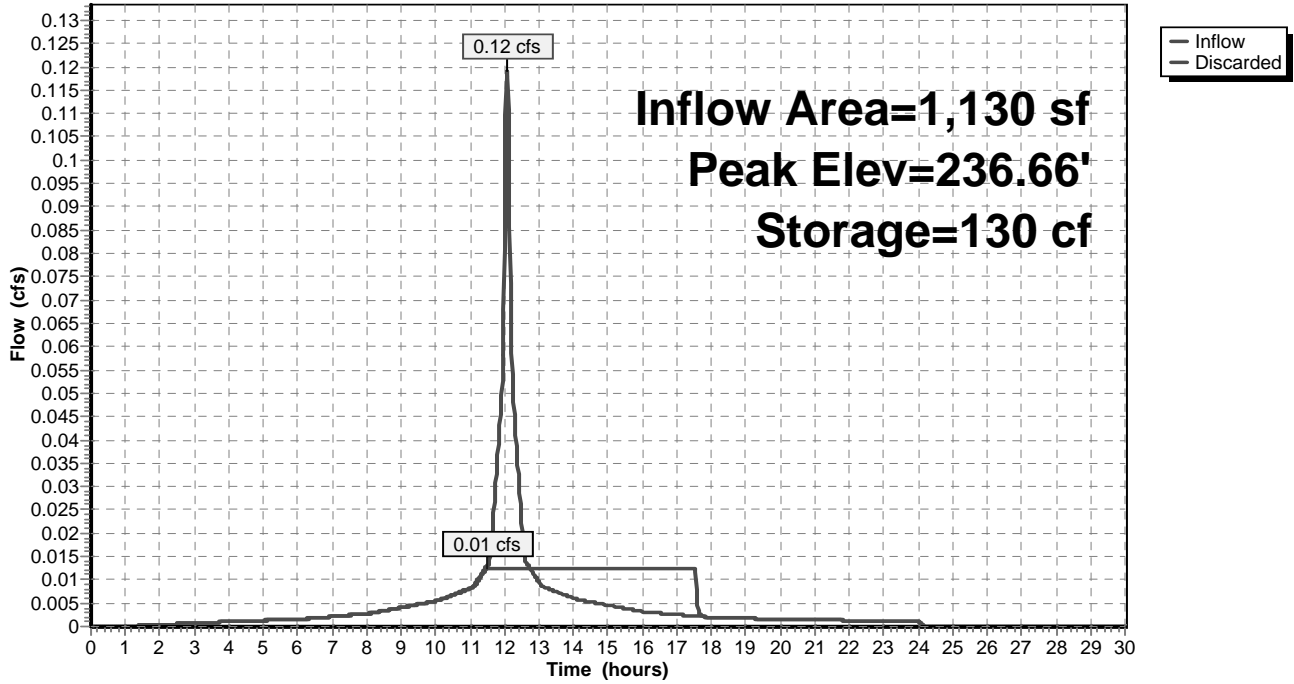
15.8 cy Stone





### Pond INF C:

Hydrograph



**Summary for Subcatchment PROP:**

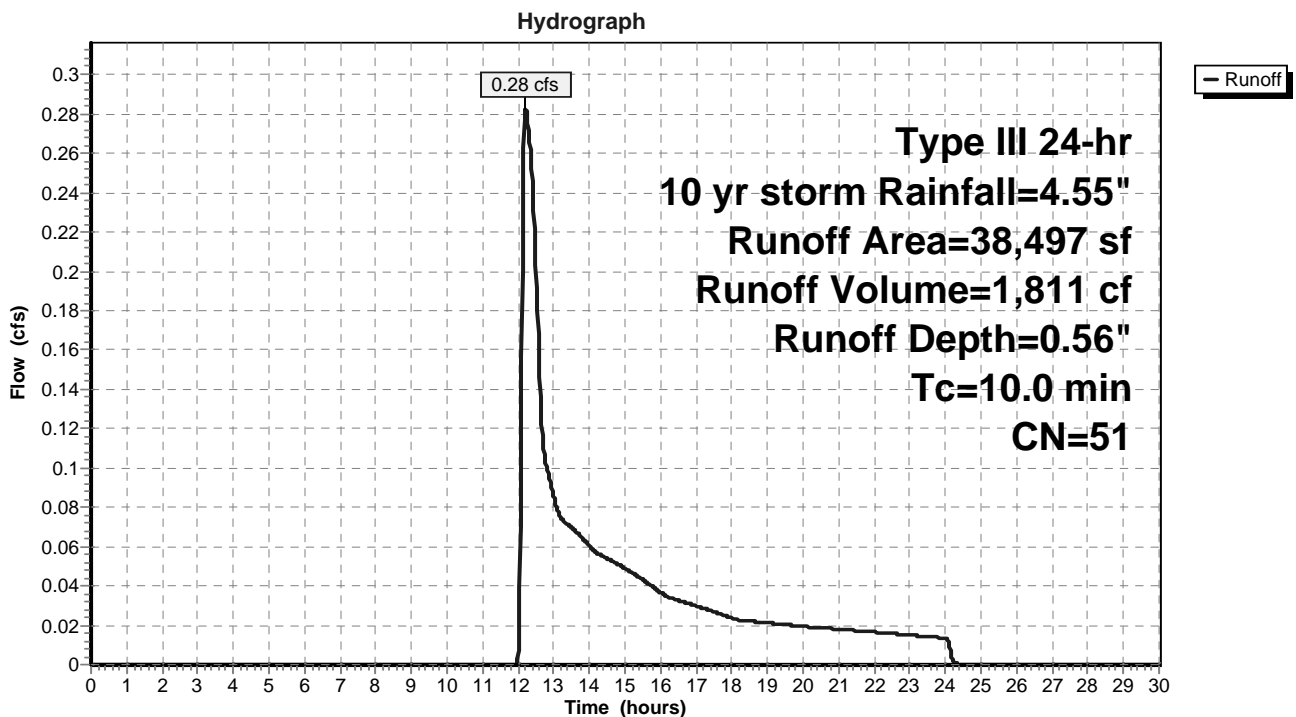
Runoff = 0.28 cfs @ 12.21 hrs, Volume= 1,811 cf, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs  
 Type III 24-hr 10 yr storm Rainfall=4.55"

Area (sf)	CN	Description
3,410	98	Roofs, HSG A
4,600	98	Paved parking, HSG A
1,600	30	Woods, Good, HSG A
28,887	39	>75% Grass cover, Good, HSG A
38,497	51	Weighted Average
30,487		79.19% Pervious Area
8,010		20.81% Impervious Area

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

**Subcatchment PROP:**



**Summary for Subcatchment PROP GARAGE:**

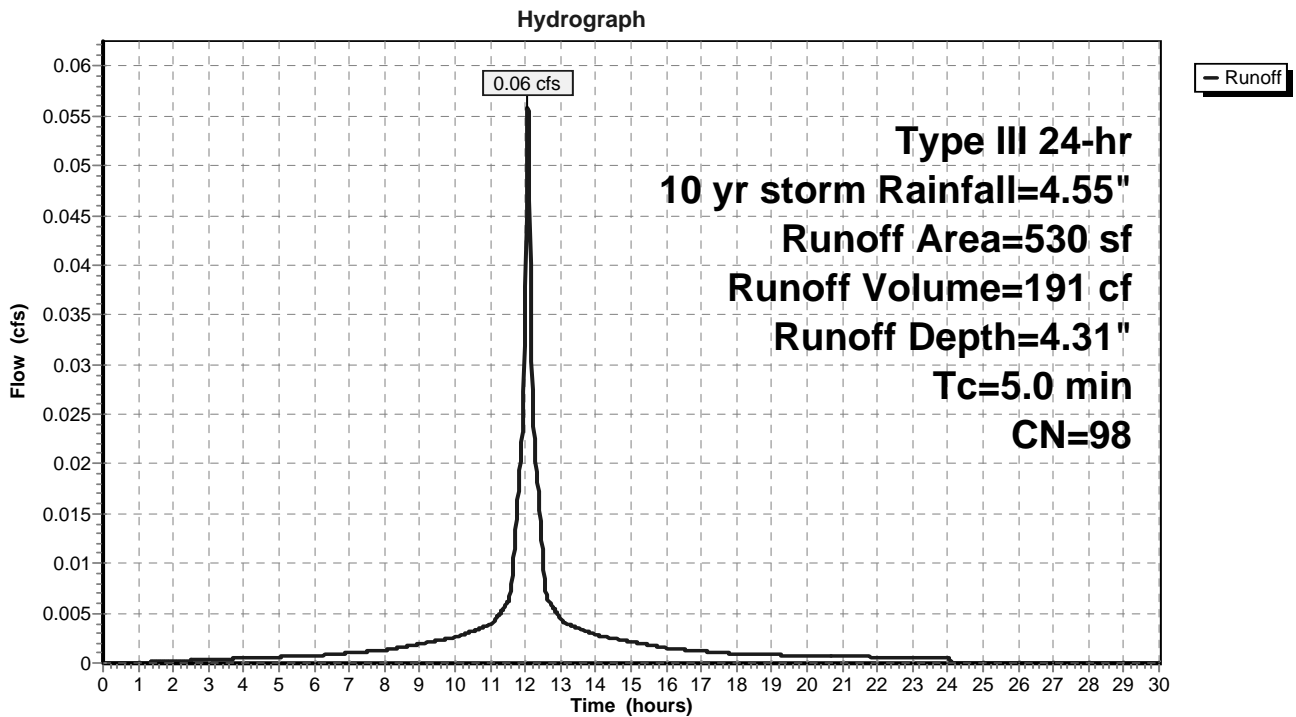
Runoff = 0.06 cfs @ 12.07 hrs, Volume= 191 cf, Depth= 4.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs  
 Type III 24-hr 10 yr storm Rainfall=4.55"

Area (sf)	CN	Description
530	98	Roofs, HSG A
530		100.00% Impervious Area

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

**Subcatchment PROP GARAGE:**



**Summary for Subcatchment ROOF A:**

Runoff = 0.34 cfs @ 12.07 hrs, Volume= 1,150 cf, Depth= 4.31"

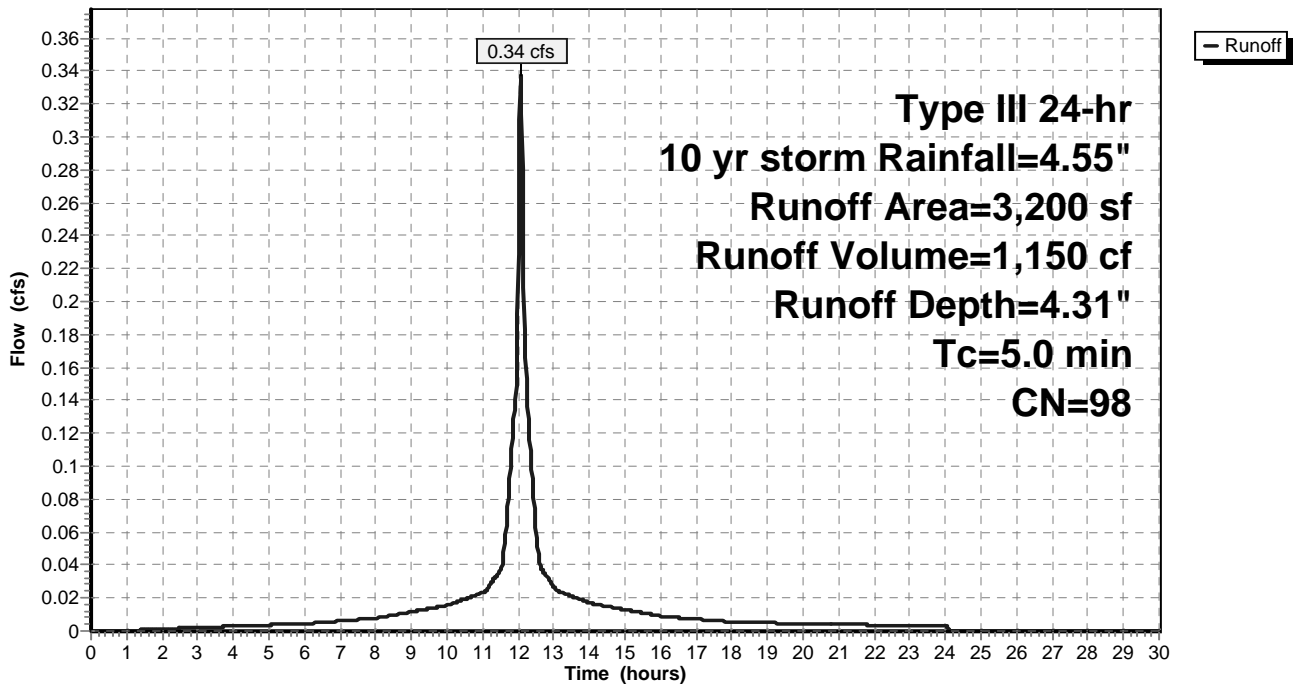
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs  
 Type III 24-hr 10 yr storm Rainfall=4.55"

Area (sf)	CN	Description
3,200	98	Roofs, HSG A
3,200		100.00% Impervious Area

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

**Subcatchment ROOF A:**

Hydrograph



**Summary for Subcatchment ROOF B:**

Runoff = 0.35 cfs @ 12.07 hrs, Volume= 1,186 cf, Depth= 4.31"

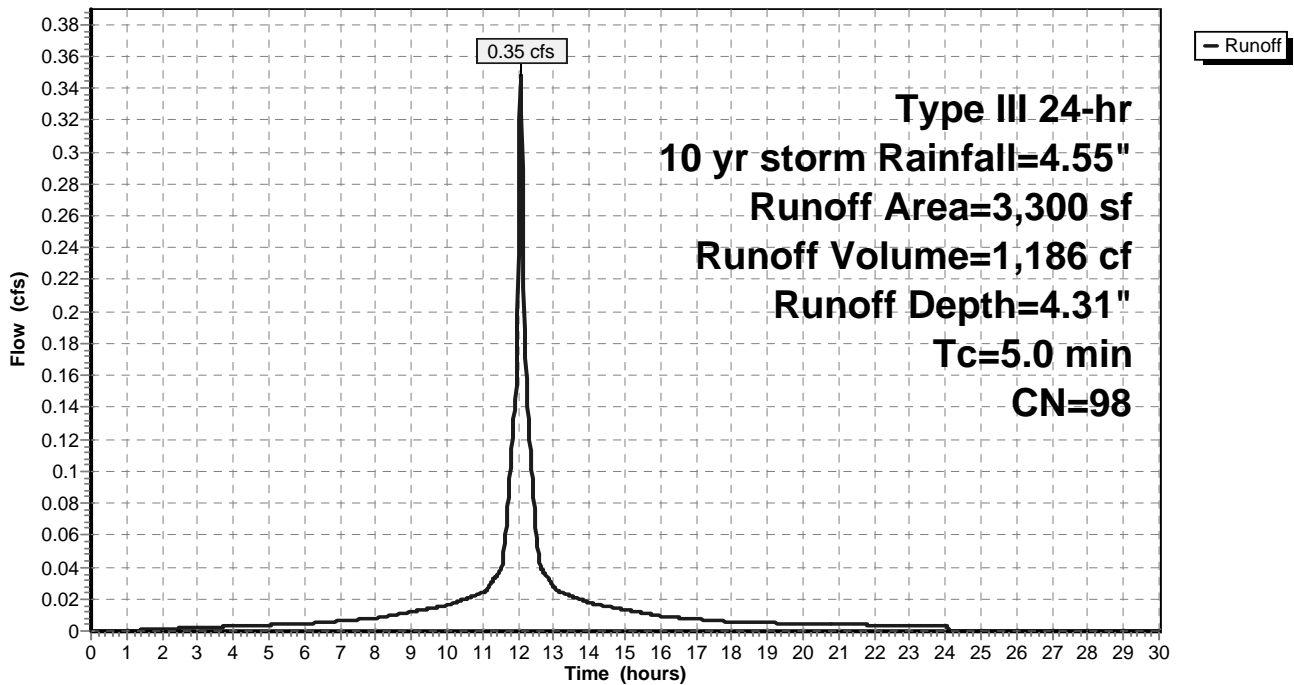
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs  
 Type III 24-hr 10 yr storm Rainfall=4.55"

Area (sf)	CN	Description
3,300	98	Roofs, HSG A
3,300		100.00% Impervious Area

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

**Subcatchment ROOF B:**

Hydrograph



**53 Hancock Street 06-02-20**

Type III 24-hr 100 yr storm Rainfall=6.50"

Prepared by Frederick W. Russell, PE

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Time span=0.00-30.00 hrs, dt=0.02 hrs, 1501 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 DRIVEWAY:** Runoff Area=980 sf 100.00% Impervious Runoff Depth=6.26"  
 Tc=5.0 min CN=98 Runoff=0.15 cfs 511 cf

**Subcatchment DRIVEWAY.:** Runoff Area=600 sf 100.00% Impervious Runoff Depth=6.26"  
 Tc=5.0 min CN=98 Runoff=0.09 cfs 313 cf

**Subcatchment EXIST:** Runoff Area=47,107 sf 19.81% Impervious Runoff Depth=1.40"  
 Tc=10.0 min CN=50 Runoff=1.28 cfs 5,482 cf

**Pond INF A:** Peak Elev=239.05' Storage=543 cf Inflow=0.63 cfs 2,181 cf  
 Outflow=0.10 cfs 2,181 cf

**Pond INF B:** Peak Elev=245.56' Storage=427 cf Inflow=0.50 cfs 1,722 cf  
 Outflow=0.08 cfs 1,722 cf

**Pond INF C:** Peak Elev=237.57' Storage=218 cf Inflow=0.17 cfs 590 cf  
 Outflow=0.01 cfs 590 cf

**Subcatchment PROP:** Runoff Area=38,497 sf 20.81% Impervious Runoff Depth=1.48"  
 Tc=10.0 min CN=51 Runoff=1.13 cfs 4,740 cf

**Subcatchment PROP GARAGE:** Runoff Area=530 sf 100.00% Impervious Runoff Depth=6.26"  
 Tc=5.0 min CN=98 Runoff=0.08 cfs 277 cf

**Subcatchment ROOF A:** Runoff Area=3,200 sf 100.00% Impervious Runoff Depth=6.26"  
 Tc=5.0 min CN=98 Runoff=0.48 cfs 1,670 cf

**Subcatchment ROOF B:** Runoff Area=3,300 sf 100.00% Impervious Runoff Depth=6.26"  
 Tc=5.0 min CN=98 Runoff=0.50 cfs 1,722 cf

**Total Runoff Area = 94,214 sf Runoff Volume = 14,715 cf Average Runoff Depth = 1.87"**  
**72.46% Pervious = 68,264 sf 27.54% Impervious = 25,950 sf**

**Summary for Subcatchment DRIVEWAY:**

Runoff = 0.15 cfs @ 12.07 hrs, Volume= 511 cf, Depth= 6.26"

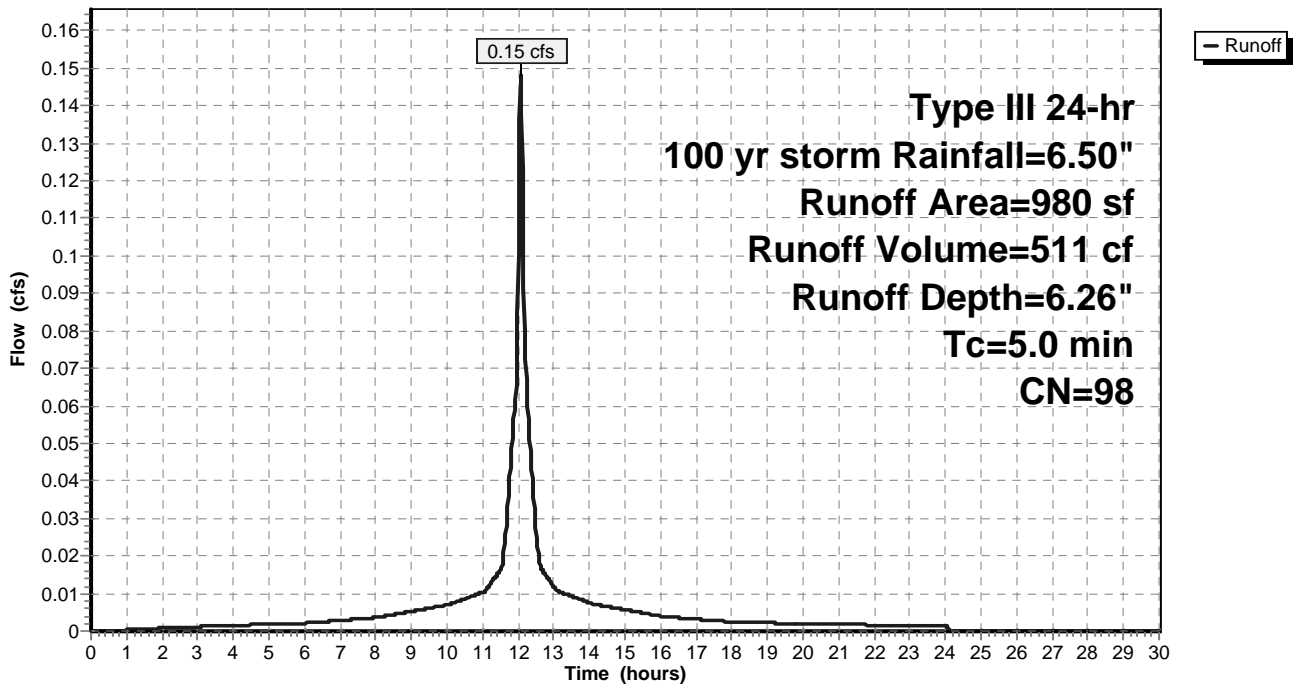
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs  
 Type III 24-hr 100 yr storm Rainfall=6.50"

Area (sf)	CN	Description
980	98	Paved parking, HSG A
980		100.00% Impervious Area

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

**Subcatchment DRIVEWAY:**

Hydrograph



**Summary for Subcatchment DRIVEWAY.:**

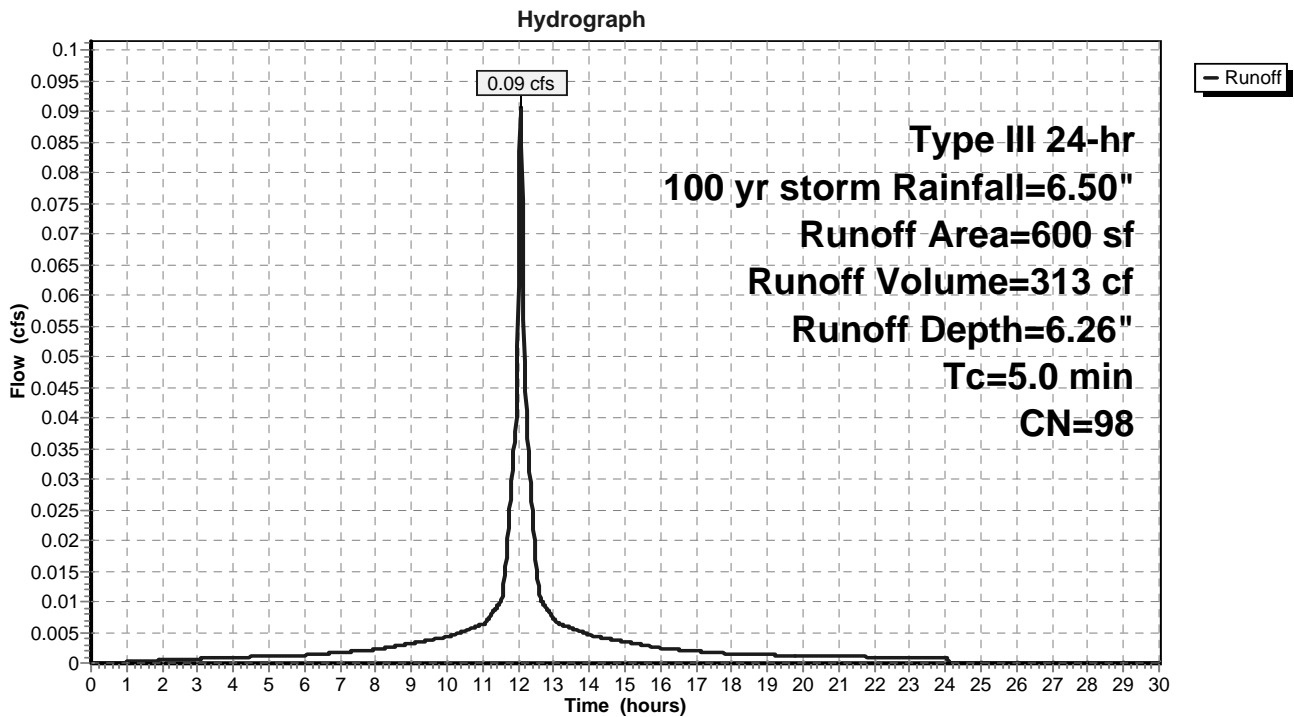
Runoff = 0.09 cfs @ 12.07 hrs, Volume= 313 cf, Depth= 6.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs  
 Type III 24-hr 100 yr storm Rainfall=6.50"

Area (sf)	CN	Description
600	98	Paved parking, HSG A
600		100.00% Impervious Area

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

**Subcatchment DRIVEWAY.:**





**Summary for Subcatchment EXIST:**

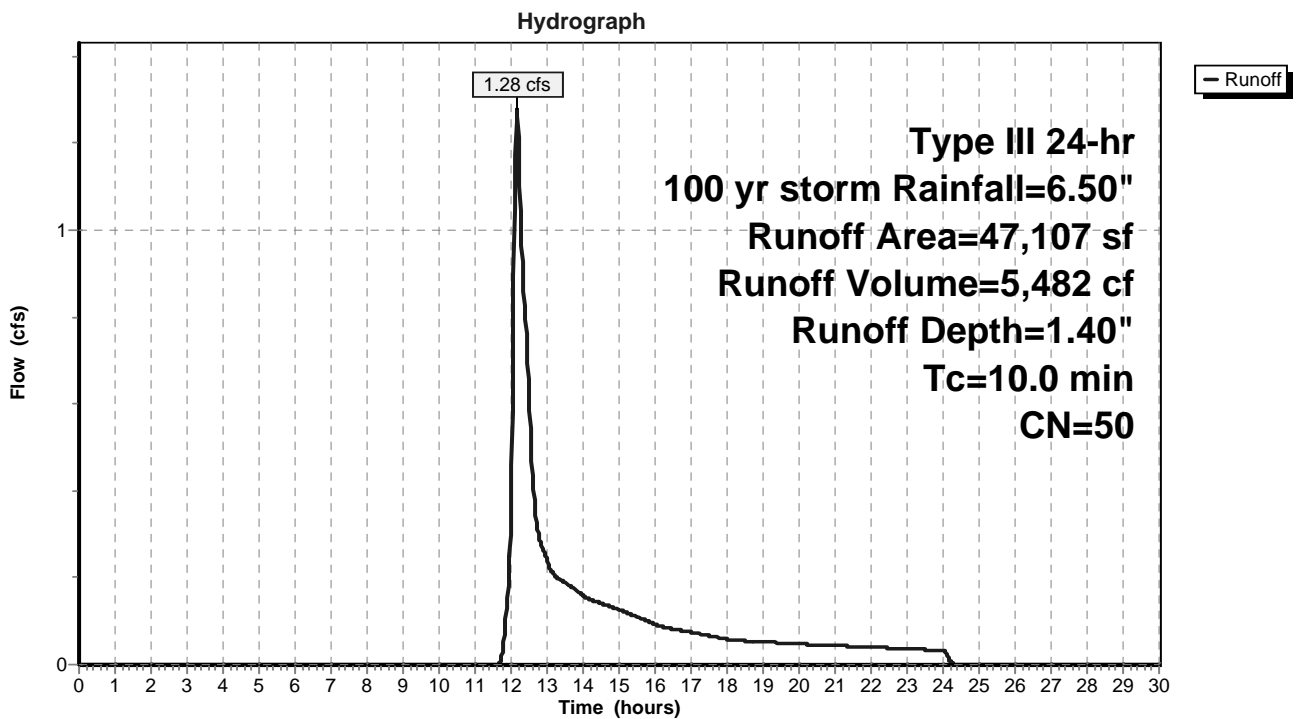
Runoff = 1.28 cfs @ 12.16 hrs, Volume= 5,482 cf, Depth= 1.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs  
 Type III 24-hr 100 yr storm Rainfall=6.50"

Area (sf)	CN	Description
4,210	98	Roofs, HSG A
5,120	98	Paved parking, HSG A
2,800	30	Woods, Good, HSG A
34,977	39	>75% Grass cover, Good, HSG A
47,107	50	Weighted Average
37,777		80.19% Pervious Area
9,330		19.81% Impervious Area

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

**Subcatchment EXIST:**



**Summary for Pond INF A:**

Inflow Area = 4,180 sf, 100.00% Impervious, Inflow Depth = 6.26" for 100 yr storm event  
 Inflow = 0.63 cfs @ 12.07 hrs, Volume= 2,181 cf  
 Outflow = 0.10 cfs @ 11.66 hrs, Volume= 2,181 cf, Atten= 83%, Lag= 0.0 min  
 Discarded = 0.10 cfs @ 11.66 hrs, Volume= 2,181 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs  
 Peak Elev= 239.05' @ 12.52 hrs Surf.Area= 544 sf Storage= 543 cf

Plug-Flow detention time= 27.0 min calculated for 2,181 cf (100% of inflow)  
 Center-of-Mass det. time= 27.0 min ( 770.0 - 743.1 )

Volume	Invert	Avail.Storage	Storage Description
#1A	237.00'	362 cf	<b>17.00'W x 32.01'L x 2.33'H Field A</b> 1,270 cf Overall - 236 cf Embedded = 1,034 cf x 35.0% Voids
#2A	237.50'	236 cf	<b>ADS_StormTech SC-310 +Cap</b> x 16 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 16 Chambers in 4 Rows
		598 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	237.00'	<b>8.270 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.10 cfs @ 11.66 hrs HW=237.03' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.10 cfs)

**Pond INF A: - Chamber Wizard Field A**

**Chamber Model = ADS\_StormTech SC-310 +Cap (ADS StormTech® SC-310 with cap length)**

Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf

Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 12.0" Spacing = 46.0" C-C Row Spacing

4 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 29.68' Row Length +14.0" End Stone x 2 = 32.01' Base Length

4 Rows x 34.0" Wide + 12.0" Spacing x 3 + 16.0" Side Stone x 2 = 17.00' Base Width

6.0" Base + 16.0" Chamber Height + 6.0" Cover = 2.33' Field Height

16 Chambers x 14.7 cf = 235.9 cf Chamber Storage

1,269.9 cf Field - 235.9 cf Chambers = 1,034.0 cf Stone x 35.0% Voids = 361.9 cf Stone Storage

Chamber Storage + Stone Storage = 597.8 cf = 0.014 af

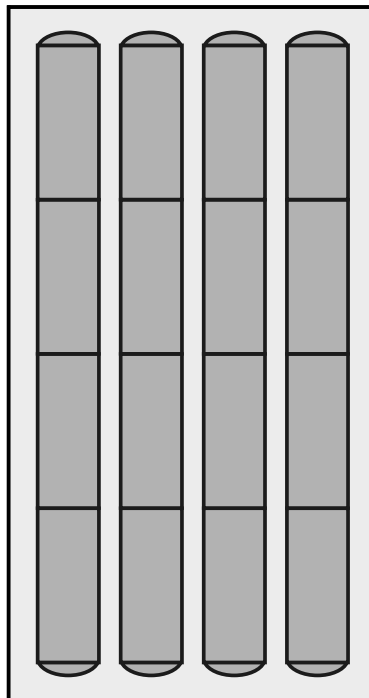
Overall Storage Efficiency = 47.1%

Overall System Size = 32.01' x 17.00' x 2.33'

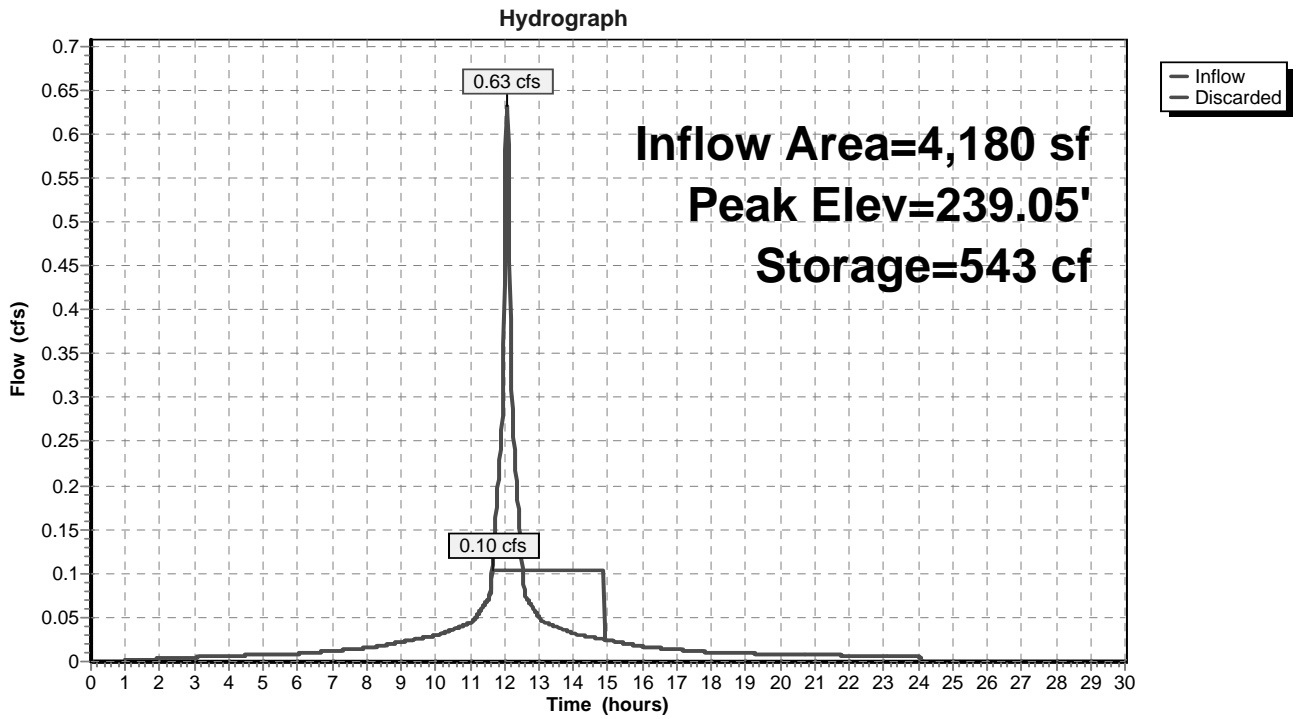
16 Chambers

47.0 cy Field

38.3 cy Stone



### Pond INF A:



**Summary for Pond INF B:**

Inflow Area = 3,300 sf, 100.00% Impervious, Inflow Depth = 6.26" for 100 yr storm event  
 Inflow = 0.50 cfs @ 12.07 hrs, Volume= 1,722 cf  
 Outflow = 0.08 cfs @ 11.66 hrs, Volume= 1,722 cf, Atten= 83%, Lag= 0.0 min  
 Discarded = 0.08 cfs @ 11.66 hrs, Volume= 1,722 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs  
 Peak Elev= 245.56' @ 12.52 hrs Surf.Area= 432 sf Storage= 427 cf

Plug-Flow detention time= 26.7 min calculated for 1,721 cf (100% of inflow)  
 Center-of-Mass det. time= 26.6 min ( 769.7 - 743.1 )

Volume	Invert	Avail.Storage	Storage Description
#1A	243.50'	291 cf	<b>13.50'W x 32.01'L x 2.33'H Field A</b> 1,008 cf Overall - 177 cf Embedded = 832 cf x 35.0% Voids
#2A	244.00'	177 cf	<b>ADS_StormTech SC-310 +Cap</b> x 12 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 12 Chambers in 3 Rows
		468 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	243.50'	<b>8.270 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.08 cfs @ 11.66 hrs HW=243.53' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.08 cfs)

**Pond INF B: - Chamber Wizard Field A**

**Chamber Model = ADS\_StormTech SC-310 +Cap (ADS StormTech® SC-310 with cap length)**

Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf

Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 14.0" Spacing = 48.0" C-C Row Spacing

4 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 29.68' Row Length +14.0" End Stone x 2 = 32.01' Base Length

3 Rows x 34.0" Wide + 14.0" Spacing x 2 + 16.0" Side Stone x 2 = 13.50' Base Width

6.0" Base + 16.0" Chamber Height + 6.0" Cover = 2.33' Field Height

12 Chambers x 14.7 cf = 176.9 cf Chamber Storage

1,008.4 cf Field - 176.9 cf Chambers = 831.5 cf Stone x 35.0% Voids = 291.0 cf Stone Storage

Chamber Storage + Stone Storage = 467.9 cf = 0.011 af

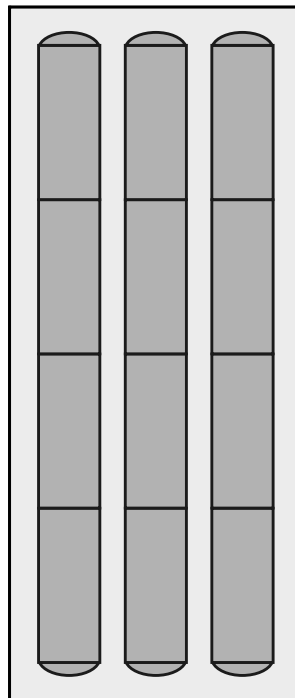
Overall Storage Efficiency = 46.4%

Overall System Size = 32.01' x 13.50' x 2.33'

12 Chambers

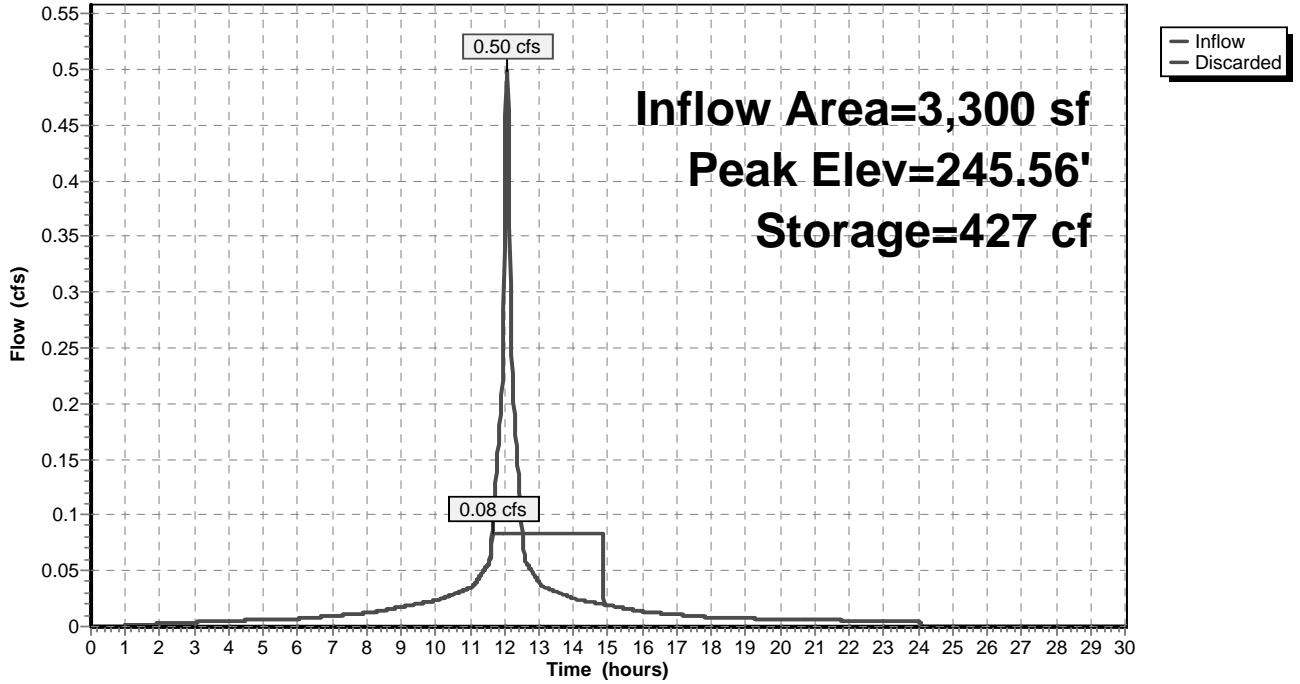
37.3 cy Field

30.8 cy Stone



### Pond INF B:

Hydrograph



**Summary for Pond INF C:**

Inflow Area = 1,130 sf, 100.00% Impervious, Inflow Depth = 6.26" for 100 yr storm event  
 Inflow = 0.17 cfs @ 12.07 hrs, Volume= 590 cf  
 Outflow = 0.01 cfs @ 11.12 hrs, Volume= 590 cf, Atten= 93%, Lag= 0.0 min  
 Discarded = 0.01 cfs @ 11.12 hrs, Volume= 590 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs  
 Peak Elev= 237.57' @ 13.11 hrs Surf.Area= 221 sf Storage= 218 cf

Plug-Flow detention time= 127.3 min calculated for 590 cf (100% of inflow)  
 Center-of-Mass det. time= 127.3 min ( 870.3 - 743.1 )

Volume	Invert	Avail.Storage	Storage Description
#1A	235.50'	150 cf	<b>9.00'W x 24.56'L x 2.33'H Field A</b> 516 cf Overall - 88 cf Embedded = 427 cf x 35.0% Voids
#2A	236.00'	88 cf	<b>ADS_StormTech SC-310 +Cap</b> x 6 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 6 Chambers in 2 Rows
		238 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	235.50'	<b>2.410 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.01 cfs @ 11.12 hrs HW=235.52' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.01 cfs)



**Pond INF C: - Chamber Wizard Field A**

**Chamber Model = ADS\_StormTech SC-310 +Cap (ADS StormTech® SC-310 with cap length)**

Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf

Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 12.0" Spacing = 46.0" C-C Row Spacing

3 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 22.56' Row Length +12.0" End Stone x 2 = 24.56' Base Length

2 Rows x 34.0" Wide + 12.0" Spacing x 1 + 14.0" Side Stone x 2 = 9.00' Base Width

6.0" Base + 16.0" Chamber Height + 6.0" Cover = 2.33' Field Height

6 Chambers x 14.7 cf = 88.5 cf Chamber Storage

515.8 cf Field - 88.5 cf Chambers = 427.3 cf Stone x 35.0% Voids = 149.6 cf Stone Storage

Chamber Storage + Stone Storage = 238.0 cf = 0.005 af

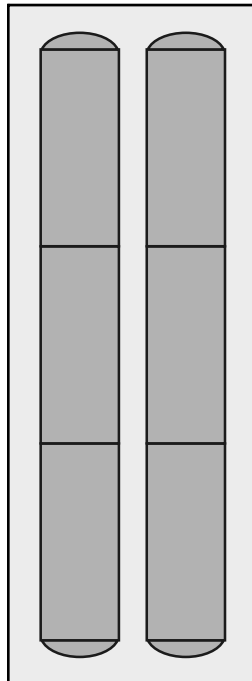
Overall Storage Efficiency = 46.1%

Overall System Size = 24.56' x 9.00' x 2.33'

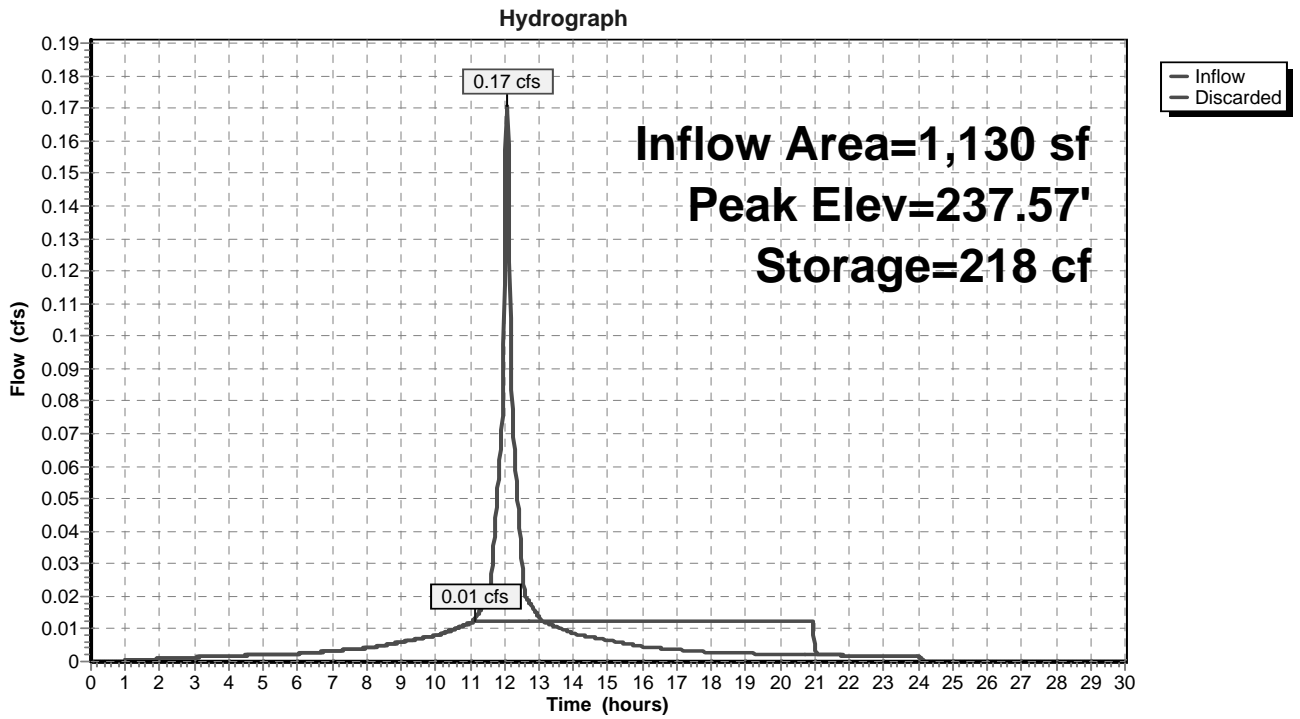
6 Chambers

19.1 cy Field

15.8 cy Stone



**Pond INF C:**



**Summary for Subcatchment PROP:**

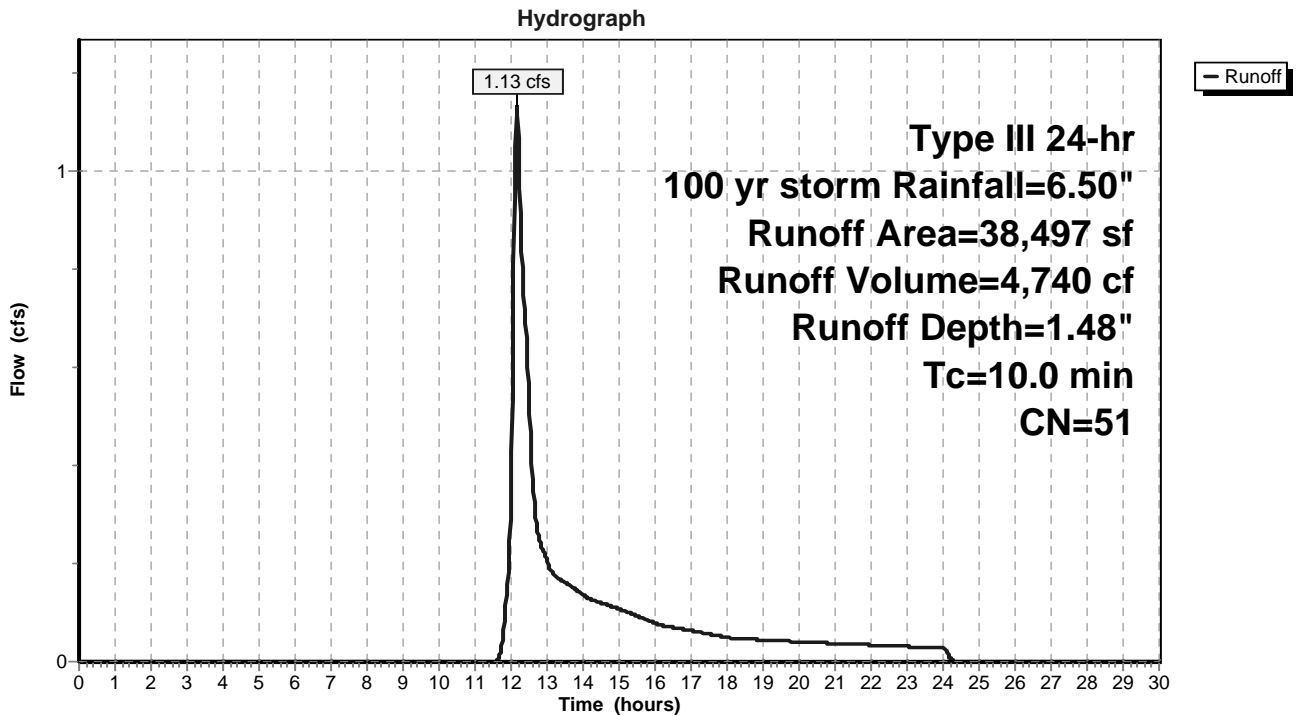
Runoff = 1.13 cfs @ 12.16 hrs, Volume= 4,740 cf, Depth= 1.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs  
 Type III 24-hr 100 yr storm Rainfall=6.50"

Area (sf)	CN	Description
3,410	98	Roofs, HSG A
4,600	98	Paved parking, HSG A
1,600	30	Woods, Good, HSG A
28,887	39	>75% Grass cover, Good, HSG A
38,497	51	Weighted Average
30,487		79.19% Pervious Area
8,010		20.81% Impervious Area

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

**Subcatchment PROP:**



**Summary for Subcatchment PROP GARAGE:**

Runoff = 0.08 cfs @ 12.07 hrs, Volume= 277 cf, Depth= 6.26"

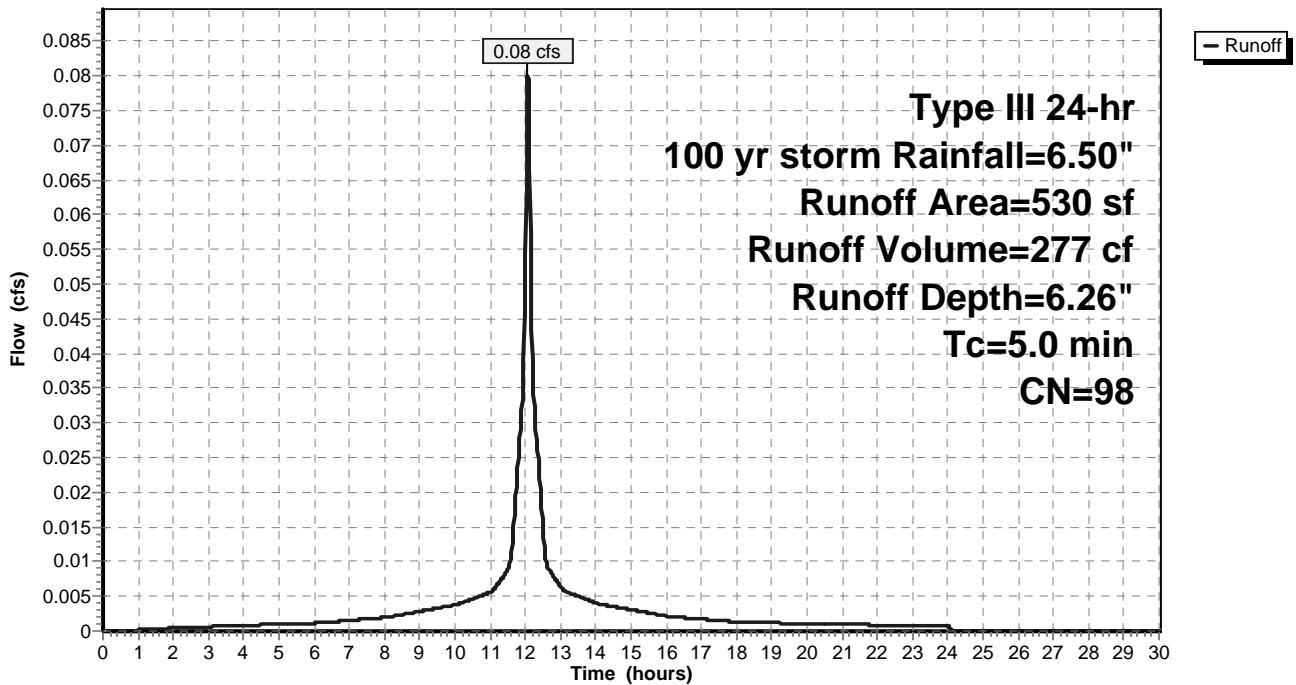
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs  
 Type III 24-hr 100 yr storm Rainfall=6.50"

Area (sf)	CN	Description
530	98	Roofs, HSG A
530		100.00% Impervious Area

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

**Subcatchment PROP GARAGE:**

Hydrograph



**Summary for Subcatchment ROOF A:**

Runoff = 0.48 cfs @ 12.07 hrs, Volume= 1,670 cf, Depth= 6.26"

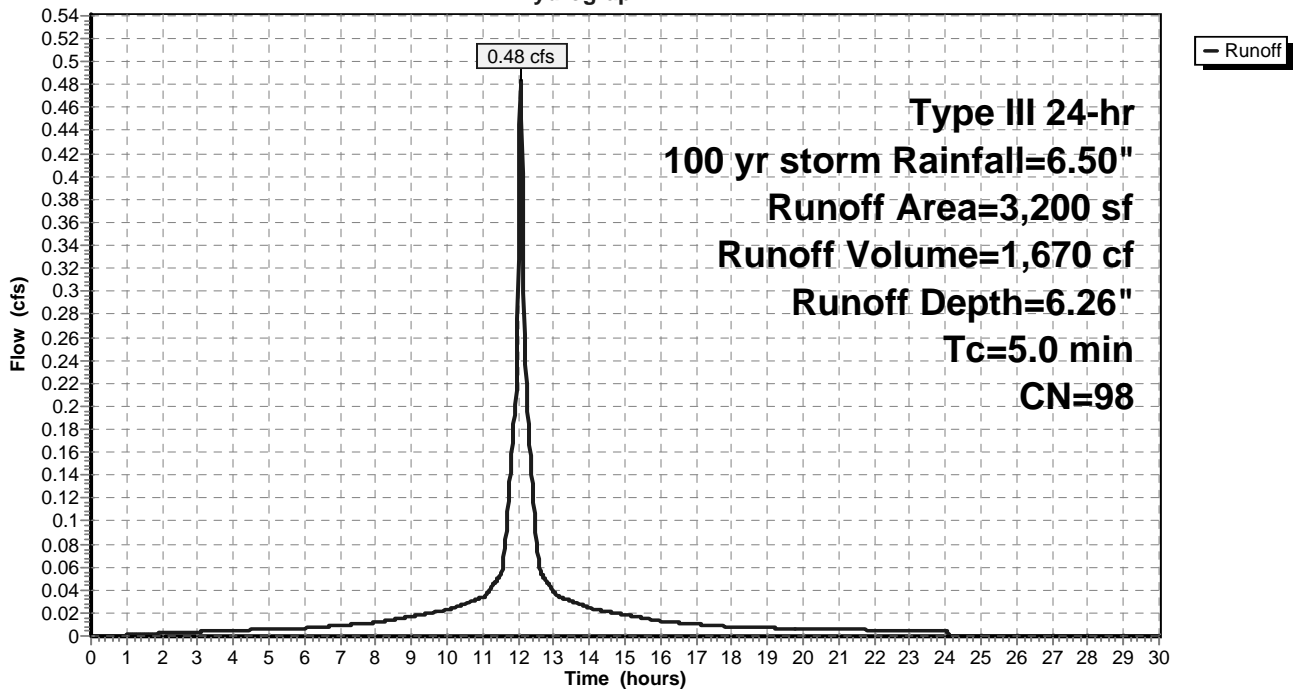
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs  
 Type III 24-hr 100 yr storm Rainfall=6.50"

Area (sf)	CN	Description
3,200	98	Roofs, HSG A
3,200		100.00% Impervious Area

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

**Subcatchment ROOF A:**

Hydrograph



**Summary for Subcatchment ROOF B:**

Runoff = 0.50 cfs @ 12.07 hrs, Volume= 1,722 cf, Depth= 6.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.02 hrs  
 Type III 24-hr 100 yr storm Rainfall=6.50"

Area (sf)	CN	Description
3,300	98	Roofs, HSG A
3,300		100.00% Impervious Area

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

**Subcatchment ROOF B:**

Hydrograph

