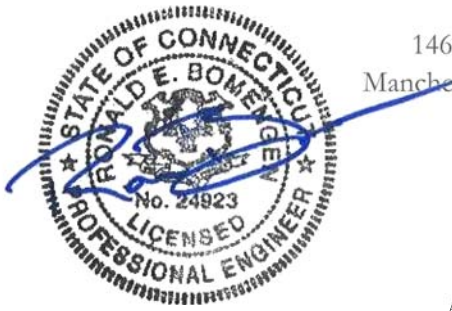
Stormwater Management Narrative

Anthony Properties Development
Southington

Southington, Connecticut

December 7, 2022





146 Hartford Road
Manchester, CT 06040

Prepared for:

Anthony Properties
12770 Coit Road, Suite 970
Dallas, TX 75251

Anthony Properties Development
Southington, Connecticut

Stormwater Management Narrative
December 7, 2022

Fuss & O'Neill prepared calculations to evaluate the effects of the proposed stormwater management improvements associated with the mixed use/multifamily residential housing development located at 1177, 1193, and 1303 West Street in Southington, Connecticut. A site location map is included as *Figure 1*.

The project includes the demolition of the two existing buildings and parking lot to construct a new mixed use/residential development consisting of eight residential buildings, clubhouse, and two commercial building at the corner of West Street and Curtiss Street. Fuss & O'Neill evaluated existing (pre-development) and proposed (post-development) hydrologic conditions for the entire project site which includes the new buildings parking areas, and roadways. There will be a decrease in the stormwater peak flowrates from the site to the receiving watershed for the 2-, 10-, 25-, and 100-year storm events.

Stormwater runoff from the developed site will be conveyed by a storm drainage network and treated with hydrodynamic separators and stormwater quality basins prior to being discharged off-site. The hydrodynamic separators were sized to treat the water quality flow (WQF) of the contributing areas in accordance with the 2004 Connecticut Stormwater Quality Manual.

Existing Conditions

The total subject property is 41.7 acres but only the southern portion of the property will be developed. This area is approximately 26.3 acres with 4% impervious ground cover. The property is surrounded by West Street (CT 229) to the west, two undeveloped lots to the north, a residential subdivision to the northeast, the New Haven & North Hampton Canal to the east, and Curtiss Street to the south. There are commercial and residential properties across the street to the south and west, and a commercial property to the east across the canal.

The project includes the demolition of the two existing vacant buildings at 1177 West Street. The parcel at 1193 West Street is vacant and the parcel at 1303 West Street is undeveloped except for two utility easements traversing the property from east to west. The total existing impervious area is approximately 1.07 acres.

Currently, stormwater runoff from the existing parcels is conveyed via sheet flow to the east ultimately being captured in the New Haven & North Hampton Canal along the eastern property line. There is no existing drainage network on-site. The Existing Watershed Map and analysis is included in *Appendix A*.

The NRCS soil mapping, which is attached as *Figure 2*, shows that the project site is composed of several different soil types with a Hydrologic Soil Group rating of 'B', 'C', and 'C/D'.

Federal Emergency Management Agency (FEMA) mapping shows that no portion of the project site lies within the 500-year flood plain, denoted as "Zone X". A portion of the relevant FEMA – Flood Insurance Rate Map for Hartford County, Connecticut (Panel Number 09003C0469G and 09003C0582G, Effective Date: May 16, 2017) is presented as *Figure 3*.

The property is located in the Quinnipiac River Basin and is a sub-watershed of the South Central Coast Major Basin. The project site location relative to the major Connecticut drainage basins is presented as *Figure 4*.

Proposed Improvements

Under proposed conditions, the project site will be developed with eight multi-story residential housing buildings with walk out bottom floors, a clubhouse, and two buildings for commercial use. The project also consists of 617 total parking spaces, new sidewalks, bituminous curbing, and stormwater quality basins with landscaped areas added throughout the project site. Entrance driveways will be off Curtiss Street with roadways meandering through the development. The total impervious area will be increased from approximately 1.04 acres (4%) to approximately 9.09 acres (34%). To mitigate the increase in the impervious area, several underground infiltration systems will be utilized in addition to four stormwater quality basins.

Stormwater runoff will be captured in a new stormwater management system consisting of deep-sump catch basins, manholes, underground infiltration systems with hydrodynamic separators and stormwater quality basins. The prosed stormwater hydrology patterns will not be changed from the existing condition and will continue to discharge to the New Haven & North Hampton Canal to the east.

The system will include 17 hydrodynamic separators sized to treat the water quality flow from the existing parking lot, roadways, and building roof areas. The total volume of the ten underground infiltration systems is 104,140 cubic feet with 10,570 cubic feet (CF) of water quality retention. The four stormwater quality basins provide an additional water quality volume of 20,730 CF for a total of 31,300 CF of water quality (104.7% of the required 29,890 CF). According to the NRCS soils map, the underlying soils are hydrologic soil group 'B', 'C'. and 'C/D'. To model the infiltration system, an infiltration rate of 0.5-inch per hour was assumed.

The proposed drainage network will continue to discharge to the same design point as the existing conditions, the New Haven & North Hampton Canal along the eastern property line. The Proposed Watershed Map and analysis is included in *Appendix B*. Design Point '10L' is the canal.

EXISTING & PROPOSED WATERSHED RESULTS

Storm Event	Design Point – '10L' Existing Canal		
	Peak Flowrate Discharge (cfs)		
	Existing Flowrate	Proposed Flowrate	Net Change
2	7.84	7.83	-0.01
10	23.77	23.69	-0.08
25	38.81	38.39	-0.42
100	72.92	72.74	-0.18

The watershed modeling shows a net decrease in stormwater peak flow rate discharges to the design point for the 2-year through 100-year design storm events. Watershed mapping and hydrologic analysis for Existing Conditions are provided in *Appendix A* and Proposed Conditions in *Appendix B*.

The drainage analyses for the proposed stormwater networks associated with the proposed development improvements were modeled using the 25-year storm event. The model shows that the proposed drainage network will be able to safely convey the storm event to the existing stormwater canal. The proposed model results and the Site Grading & Drainage Plans (sheet CG-104-104) which shows the proposed storm network are included in *Appendix C*.

Post-Construction Water Quality

The water quality of stormwater runoff from the developed site will be improved using Best Management Practices (BMP's). Deep sumps in catch basins, hydrodynamic separators, underground infiltration systems, and stormwater quality basins will be used to achieve the removal of 80% of Total Suspended Solids (TSS) that may be present in the stormwater runoff. The design meets the intent of the guidelines of the Connecticut Stormwater Quality Manual (CTSWQM). The Water Quality Volume (WQV) and Water Quality Flow (WQF) are provided in *Appendix D*.

A detailed Erosion & Sediment (E&S) Control Plan has been prepared for the site. E&S control measures will protect the receiving drainage systems during construction, until the site is stabilized.

Methods

The drainage analysis for the proposed development was completed using the HydroCAD Software Solutions computer program. The HydroCAD program runoff method selected for the watershed modeling is based on NRCS TR-20 methods. The hydrology for both existing and proposed conditions was modeled using a Type III 24-hour storm duration with the NOAA Atlas-14 rainfall data for Hartford County. The methods described in the NRCS TR-55 manual were followed to calculate the curve number and time of concentration input data for this model.

The drainage analysis for the proposed stormwater management systems was completed using Bentley System's StormCAD computer program. Input information for the model was derived using the Rational Formula and times of concentration for paved areas were assumed to be the minimum allowable time of 5 minutes. Precipitation frequency estimates for storm events were obtained from the NOAA Atlas-14 rainfall data specific to the project site.

Summary

The storm water network for the proposed development has been designed to effectively convey the peak discharge flowrates leaving the site. Under the proposed conditions, there will be a reduction in the peak discharge flowrates compared to existing conditions for the 2-, 10-, 25-, and 100-year storm events. Underground infiltration systems and stormwater quality basins will be used to mitigate the increase in impervious area of the development. Deep sump catch basins, hydrodynamic separators, underground infiltration systems, and stormwater quality basins have been added to retain the water quality volume and enhance water quality. The design meets the intent of the guidelines of the 2004 Connecticut Stormwater Quality Manual. The on-site stormwater management pipe network has been designed to safely convey the 25-year design storm event using NOAA Atlas-14 rainfall data.

Figures

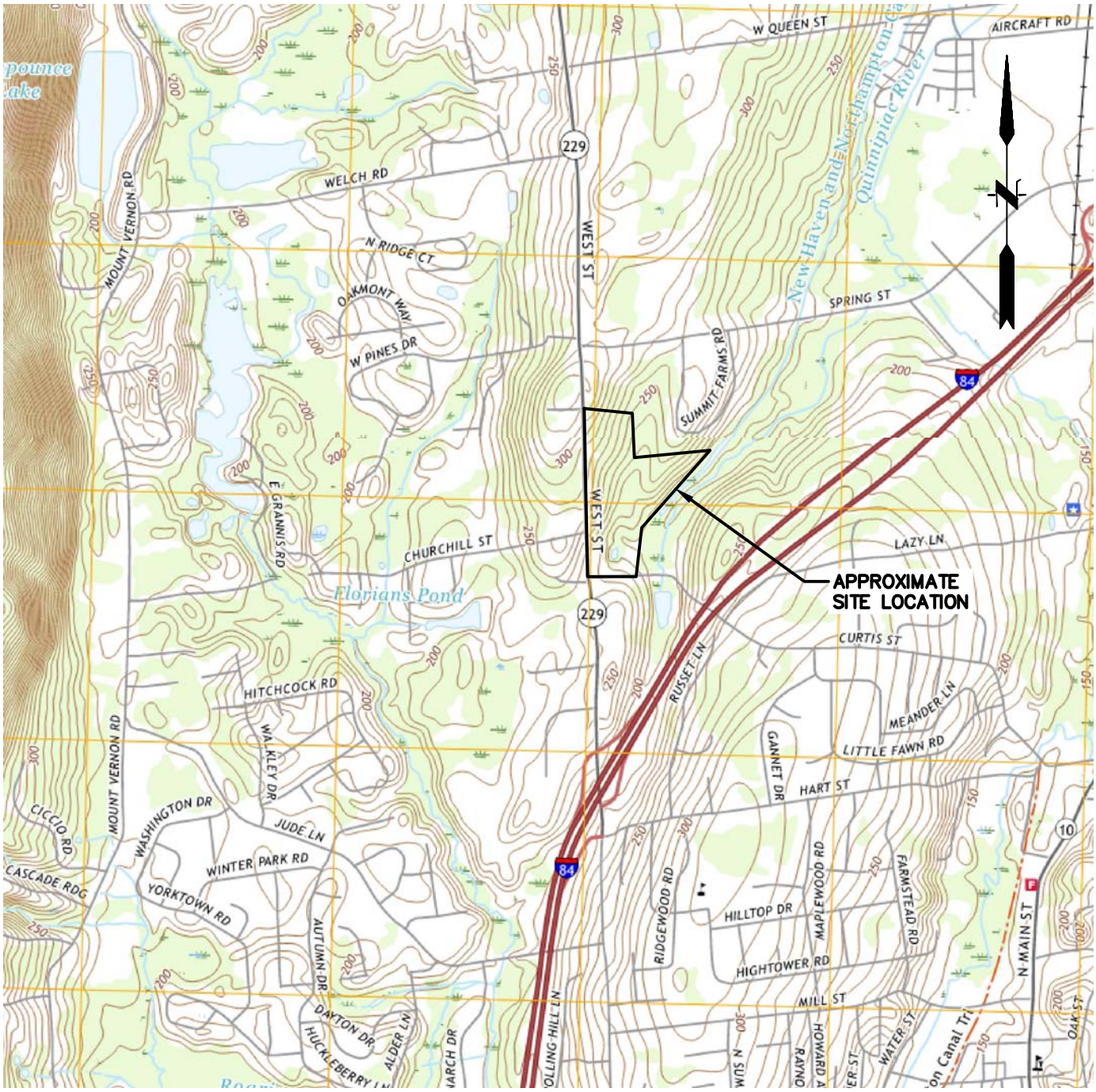
1 Site Location Map
2 NRCS Soil Map
3 FEMA – Flood Insurance Rate Map
4 Connecticut Drainage Basin Map

Appendices

A Existing Watershed Mapping and HydroCAD Analysis
B Proposed Watershed Mapping and HydroCAD Analysis
C Proposed Stormwater Drainage Network Model – Site Grading & Drainage Plan (CG-101-104), & Proposed Storm Network Modeling
D Water Quality Calculations

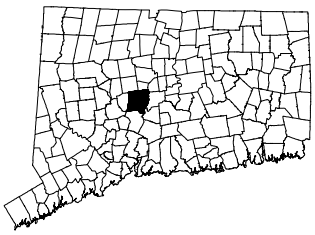
Figure 1

Site Location Map



MAP REFERENCE

THIS MAP WAS PREPARED FROM THE FOLLOWING 7.5 MINUTE USGS TOPOGRAPHICAL MAP: SOUTHINGTON, CONNECTICUT–NEW YORK, 2021



SCALE:
HORZ.: 1" = 2000'
VERT.:
DATUM:
HORZ.:
VERT.:
0 1000 2000
GRAPHIC SCALE

FUSS & O'NEILL
146 HARTFORD ROAD
MANCHESTER, CONNECTICUT 06040
860.646.2469
www.fando.com

ANTHONY PROPERTIES

OVERVIEW MAP

1303 WEST STREET

SOUTHINGTON CONNECTICUT

PROJ. No.: 20210063A10
DATE: August 2022

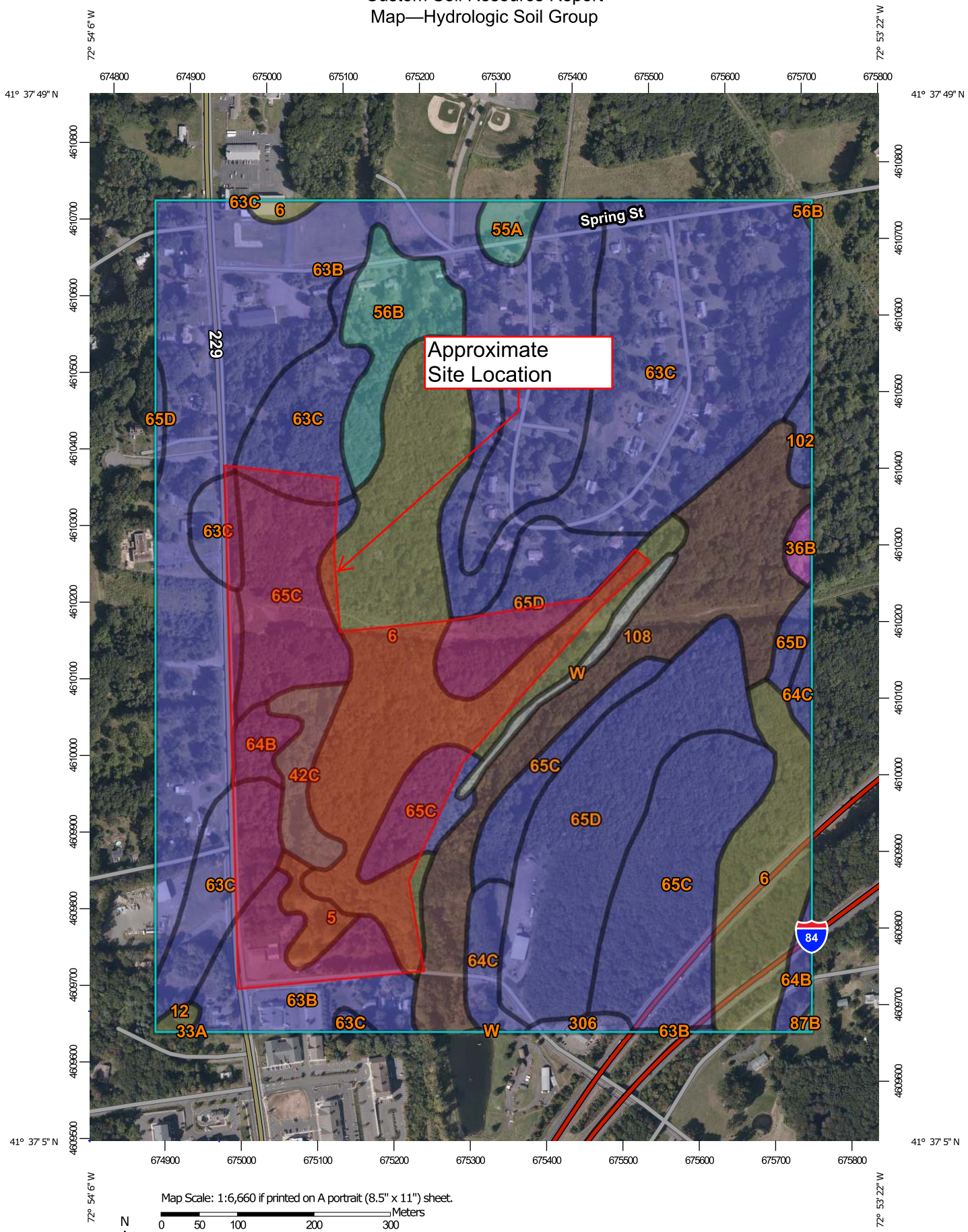
FIGURE 1

File: J:\DWG\P2021\0063\A10\Civil\Plan\20210063A10_LOC01.dwg Layout: FIGURE-01 Plotted: 2022-08-10 9:23 AM Saved: 2022-08-10 9:23 AM User: SShay
PC3: DWG TO PDF.PC3 STB/CTB: FO.STB
LAYER STATE:
MS VIEW:

Figure 2

NRCS Soil Map

Custom Soil Resource Report
Map—Hydrologic Soil Group



Map Scale: 1:6,660 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 50 100 200 300

Feet
0 300 600 1200 1800

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut
Survey Area Data: Version 22, Sep 12, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 30, 2019—Oct 15, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
5	Wilbraham silt loam, 0 to 3 percent slopes	C/D	1.7	0.7%
6	Wilbraham and Menlo soils, 0 to 8 percent slopes, extremely stony	C/D	38.5	16.6%
12	Raypol silt loam	C/D	0.4	0.2%
33A	Hartford sandy loam, 0 to 3 percent slopes	A	0.0	0.0%
36B	Windsor loamy sand, 3 to 8 percent slopes	A	0.7	0.3%
42C	Ludlow silt loam, 2 to 15 percent slopes, extremely stony	C	3.1	1.4%
55A	Watchaug fine sandy loam, 0 to 3 percent slopes	C	1.4	0.6%
56B	Watchaug fine sandy loam, 2 to 8 percent slopes, very stony	C	6.2	2.7%
63B	Cheshire fine sandy loam, 3 to 8 percent slopes	B	54.1	23.3%
63C	Cheshire fine sandy loam, 8 to 15 percent slopes	B	45.5	19.7%
64B	Cheshire fine sandy loam, 3 to 8 percent slopes, very stony	B	2.8	1.2%
64C	Cheshire fine sandy loam, 8 to 15 percent slopes, very stony	B	3.0	1.3%
65C	Cheshire fine sandy loam, 3 to 15 percent slopes, extremely stony	B	28.5	12.3%
65D	Cheshire fine sandy loam, 15 to 35 percent slopes, extremely stony	B	25.2	10.9%
87B	Wethersfield loam, 3 to 8 percent slopes	C	0.1	0.0%
102	Pootatuck fine sandy loam	B	0.8	0.4%
108	Saco silt loam	B/D	17.3	7.5%
306	Udorthents-Urban land complex	B	0.7	0.3%
W	Water		1.5	0.7%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Totals for Area of Interest			**231.5**	**100.0%**

Rating Options—Hydrologic Soil Group

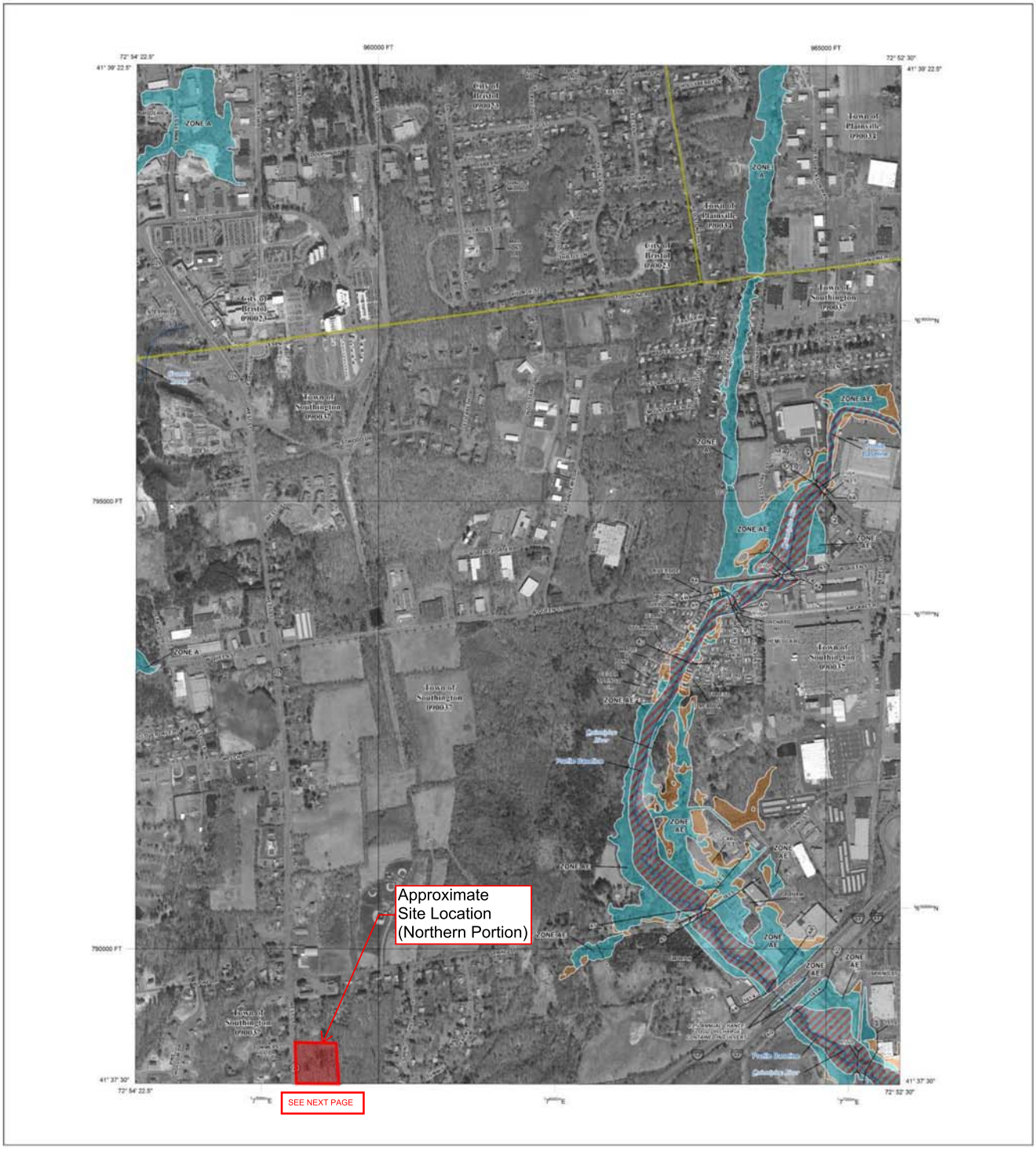
Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Figure 3

FEMA – Flood Insurance Rate Map



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) Zone A, V, A99
- With BFE or Depth Zone AE, AO, AH, VE, AR
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
- Future Conditions 1% Annual Chance Flood Hazard Zone X
- Area with Reduced Flood Risk due to Levee See Notes. Zone X

OTHER AREAS
- NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain Zone X
- Area of Undetermined Flood Hazard Zone D

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall
- 16.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
- Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- 513 Base Flood Elevation Line (BFE)

OTHER FEATURES
- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on the FIRM was provided by the U.S. Geological Survey at a GSD of 0.20 meter.

SCALE

Map Projection: State Plane Connecticut FIPS 0600 Feet. North American Datum 1983 Western Hemisphere. Vertical Datum: NAVD 88

1 inch = 500 feet 1:6,000

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

Hartford County, CT
(ALL JURISDICTIONS)
PANEL 0469 OF 0675

FEMA

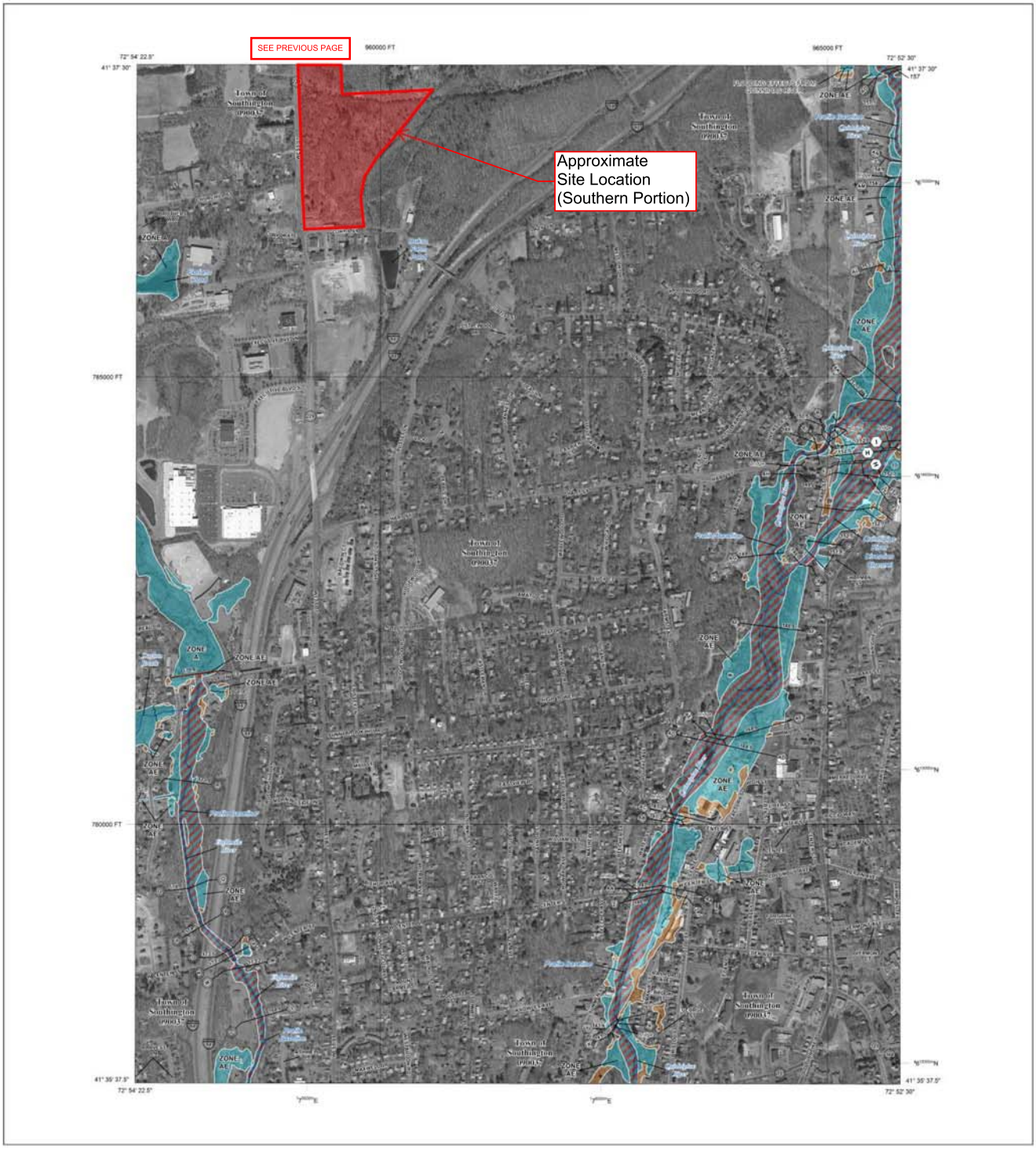
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COMMUNITY	NUMBER	PANEL	SUFFIX
BRISTOL, CITY OF	090023	0469	G
PLAINVILLE, TOWN OF	090034	0469	G
SOUTHINGTON, TOWN OF	090037	0469	G

VERSION NUMBER
2.3.3.2

MAP NUMBER
09003C0469G

MAP REVISED
May 16, 2017



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS
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- With BFE or Depth Zone AE, AO, AH, VE, AR
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
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- Future Conditions 1% Annual Chance Flood Hazard Zone X
- Area with Reduced Flood Risk due to Levee See Notes Zone X

OTHER AREAS
- NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain Zone X
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GENERAL STRUCTURES
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OTHER FEATURES
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- Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary

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Base map information shown on the FIRM was provided by the U.S. Geological Survey at a GSD of 0.20 meter.

SCALE

Map Projection:
State Plane Connecticut FIPS 0600 Feet. North American Datum 1983
Western Hemisphere. Vertical Datum: NAVD 88

1 inch = 500 feet 1:6,000

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

Hartford County, CT
(ALL JURISDICTIONS)
PANEL 0582 OF 0675

FEMA

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
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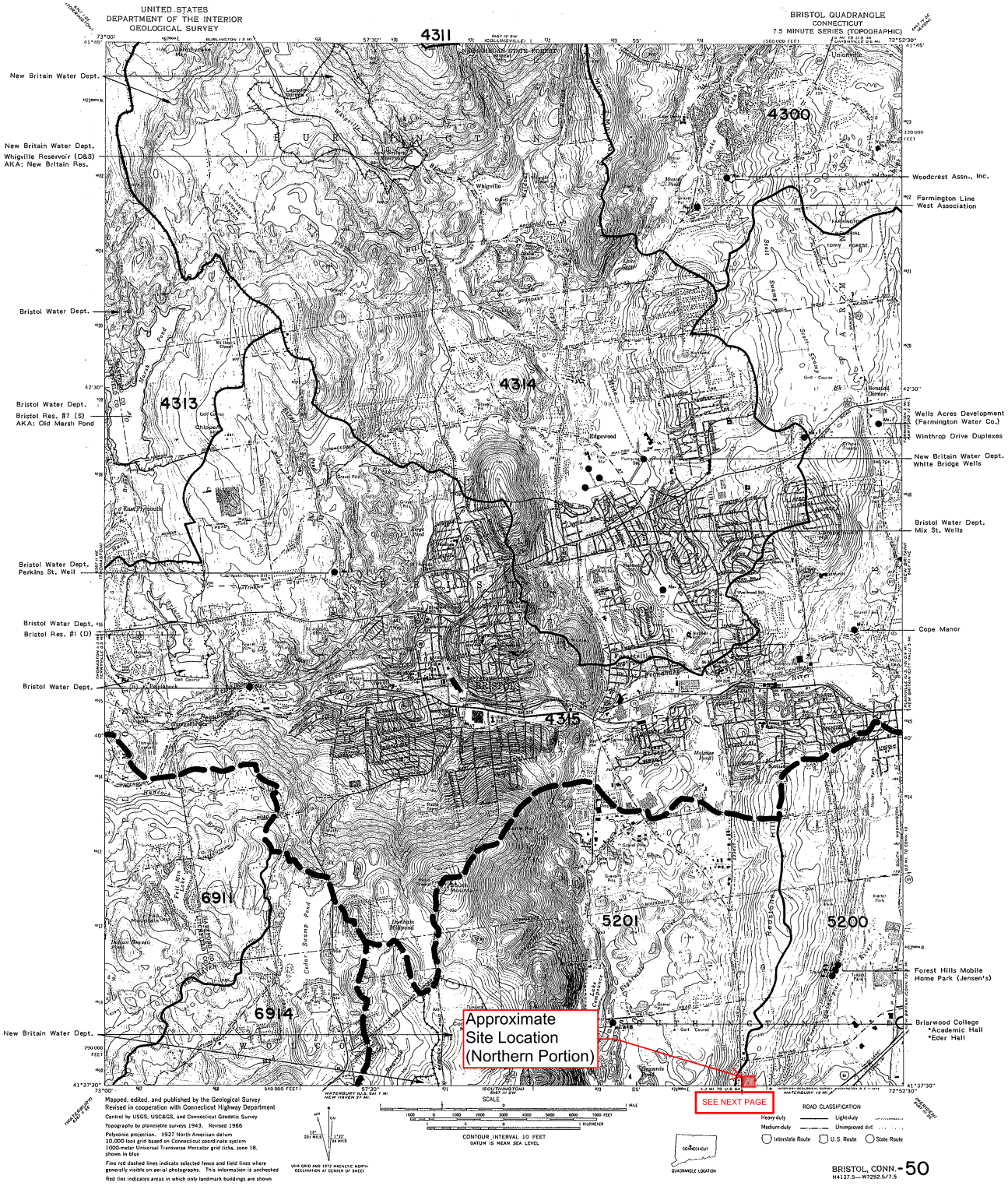
VERSION NUMBER
2.3.3.2

MAP NUMBER
09003C0582G

MAP REVISED
May 16, 2017

Figure 4

Connecticut Drainage Basin Map



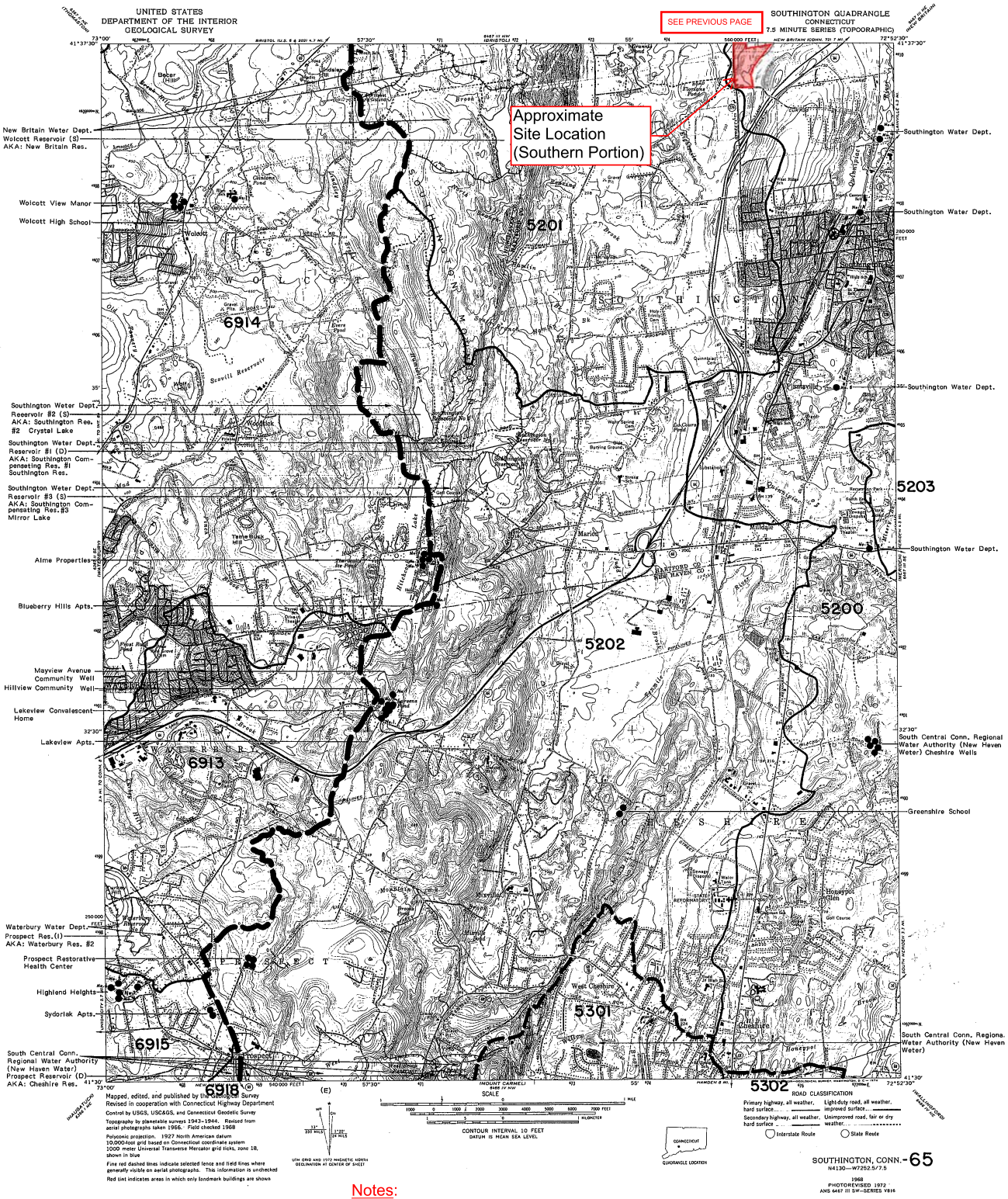
Notes:

5 South Central Coast Major Basin

52 CT Main Stem Reg. Basin

5200 Quinnipiac River

5200 Quinnipiac River



Notes:

5 South Central Coast Major Basin

52 CT Main Stem Reg. Basin

5200 Quinnipiac River

5200 Quinnipiac River

Appendix A

Existing Watershed Mapping and HydroCAD Analysis

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MS VIEW: | LAYER STATE: | PC3: AUTOCAD PDF (GENERAL DOCUMENTATION).PC3 STB/CTB: FO.STB



DRA-01

PROJ. No.: 20210063.A10
DATE: DECEMBER 2022

ANTHONY PROPERTIES

EXISTING CONDITIONS
WATERSHED DRAINAGE MAP

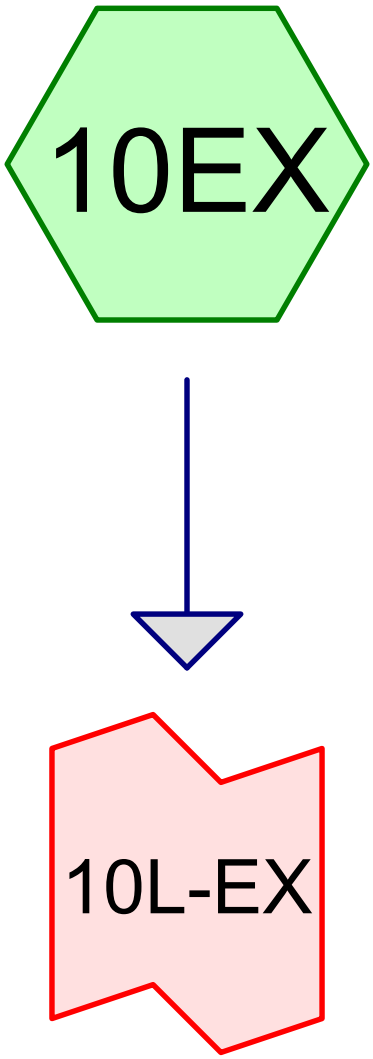
ANTHONY PROPERTIES DEVELOPMENT - SOUTHINGTON

SOUTHINGTON CONNECTICUT

FUSS&O'NEILL
146 HARTFORD ROAD
MANCHESTER, CONNECTICUT 06040
860.646.2469
www.fando.com

SCALE:
HORZ.: 1" = 60'
VERT.:
DATUM:
HORZ.:
VERT.:
60 30 0 60
GRAPHIC SCALE

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER



DESIGN POINT - 01

Subcat Reach Pond Link

Routing Diagram for 20210063_EXISTING
Prepared by Fuss & O'Neill, Printed 12/2/2022
HydroCAD® 10.20-2d s/n 01614 © 2021 HydroCAD Software Solutions LLC

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	Type III 24-hr		Default	24.00	1	3.26	2
2	10-Year	Type III 24-hr		Default	24.00	1	4.86	2
3	25-Year	Type III 24-hr		Default	24.00	1	6.11	2
4	100-Year	Type III 24-hr		Default	24.00	1	8.63	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.351	61	>75% Grass cover, Good, HSG B (10EX)
1.601	74	>75% Grass cover, Good, HSG C (10EX)
0.034	98	Paved parking, HSG C (10EX)
0.774	98	Unconnected pavement, HSG B (10EX)
0.259	98	Unconnected roofs, HSG B (10EX)
10.244	55	Woods, Good, HSG B (10EX)
11.056	70	Woods, Good, HSG C (10EX)
26.319	**65**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
13.628	HSG B	10EX
12.690	HSG C	10EX
0.000	HSG D	
0.000	Other	
26.319		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	2.351	1.601	0.000	0.000	3.952	>75% Grass cover, Good	10EX
0.000	0.000	0.034	0.000	0.000	0.034	Paved parking	10EX
0.000	0.774	0.000	0.000	0.000	0.774	Unconnected pavement	10EX
0.000	0.259	0.000	0.000	0.000	0.259	Unconnected roofs	10EX
0.000	10.244	11.056	0.000	0.000	21.300	Woods, Good	10EX
0.000	**13.628**	**12.690**	**0.000**	**0.000**	**26.319**	**TOTAL AREA**	

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

Subcatchment10EX: Runoff Area=1,146,438 sf 4.05% Impervious Runoff Depth=0.59"
Flow Length=1,218' Tc=31.5 min UI Adjusted CN=64 Runoff=7.84 cfs 1.288 af

Link 10L-EX: DESIGN POINT - 01 Inflow=7.84 cfs 1.288 af
Primary=7.84 cfs 1.288 af

Total Runoff Area = 26.319 ac Runoff Volume = 1.288 af Average Runoff Depth = 0.59"
95.95% Pervious = 25.252 ac 4.05% Impervious = 1.067 ac

Summary for Subcatchment 10EX:

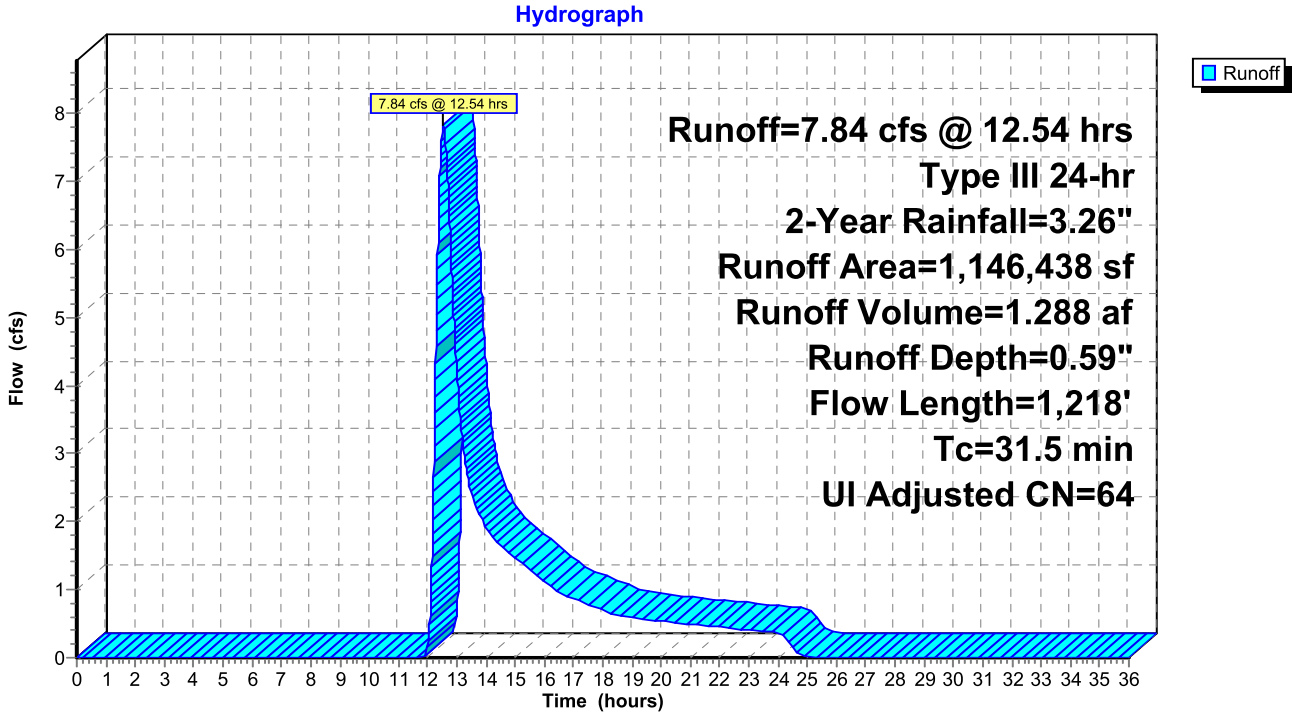
Runoff = 7.84 cfs @ 12.54 hrs, Volume= 1.288 af, Depth= 0.59"
Routed to Link 10L-EX : DESIGN POINT - 01

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.26"

Area (sf)	CN	Adj	Description
481,583	70		Woods, Good, HSG C
69,745	74		>75% Grass cover, Good, HSG C
446,249	55		Woods, Good, HSG B
102,400	61		>75% Grass cover, Good, HSG B
0	98		Unconnected roofs, HSG C
11,300	98		Unconnected roofs, HSG B
1,460	98		Paved parking, HSG C
33,701	98		Unconnected pavement, HSG B
1,146,438	65	64	Weighted Average, UI Adjusted
1,099,977			95.95% Pervious Area
46,461			4.05% Impervious Area
45,001			96.86% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	100	0.1700	0.28		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.26"
0.7	91	0.0989	2.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.8	1,027	0.0764	0.69		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
31.5	1,218	Total			

Subcatchment 10EX:

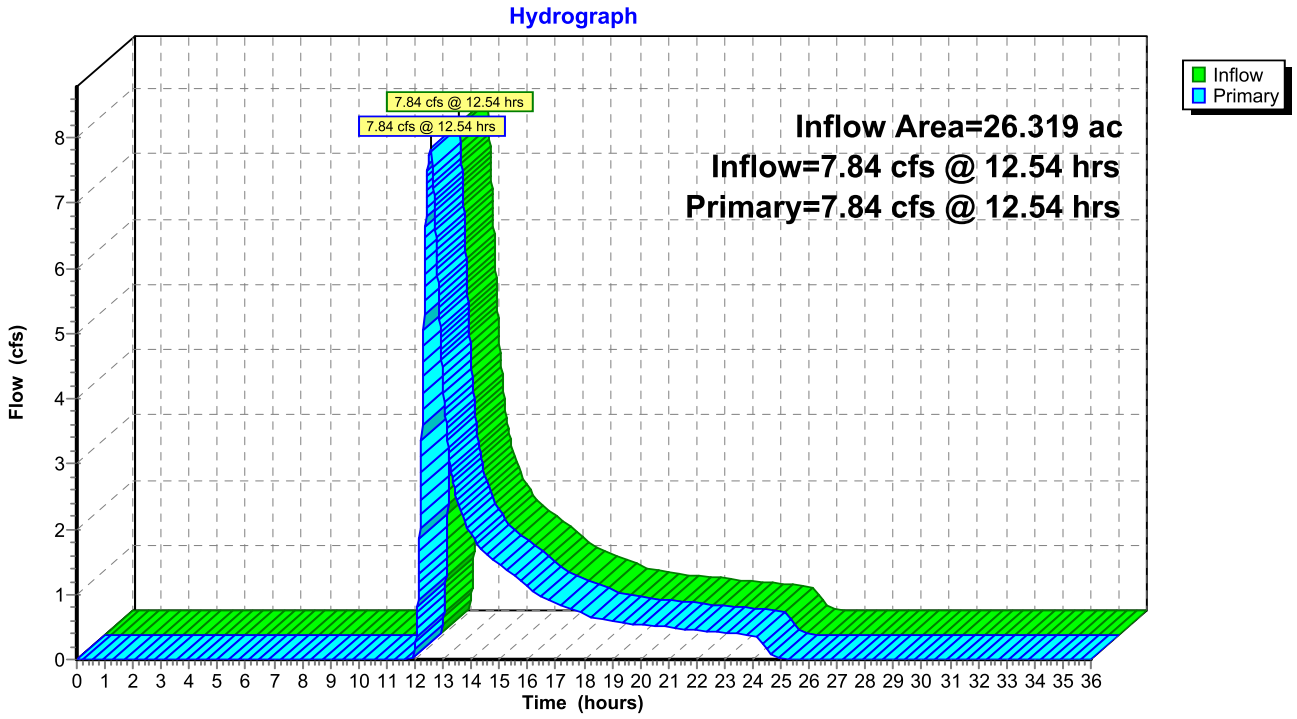


Summary for Link 10L-EX: DESIGN POINT - 01

Inflow Area = 26.319 ac, 4.05% Impervious, Inflow Depth = 0.59" for 2-Year event
Inflow = 7.84 cfs @ 12.54 hrs, Volume= 1.288 af
Primary = 7.84 cfs @ 12.54 hrs, Volume= 1.288 af, Atten= 0%, Lag= 0.0 min

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

Link 10L-EX: DESIGN POINT - 01



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

Subcatchment10EX: Runoff Area=1,146,438 sf 4.05% Impervious Runoff Depth=1.49"
Flow Length=1,218' Tc=31.5 min UI Adjusted CN=64 Runoff=23.77 cfs 3.269 af

Link 10L-EX: DESIGN POINT - 01 Inflow=23.77 cfs 3.269 af
Primary=23.77 cfs 3.269 af

Total Runoff Area = 26.319 ac Runoff Volume = 3.269 af Average Runoff Depth = 1.49"
95.95% Pervious = 25.252 ac 4.05% Impervious = 1.067 ac

Summary for Subcatchment 10EX:

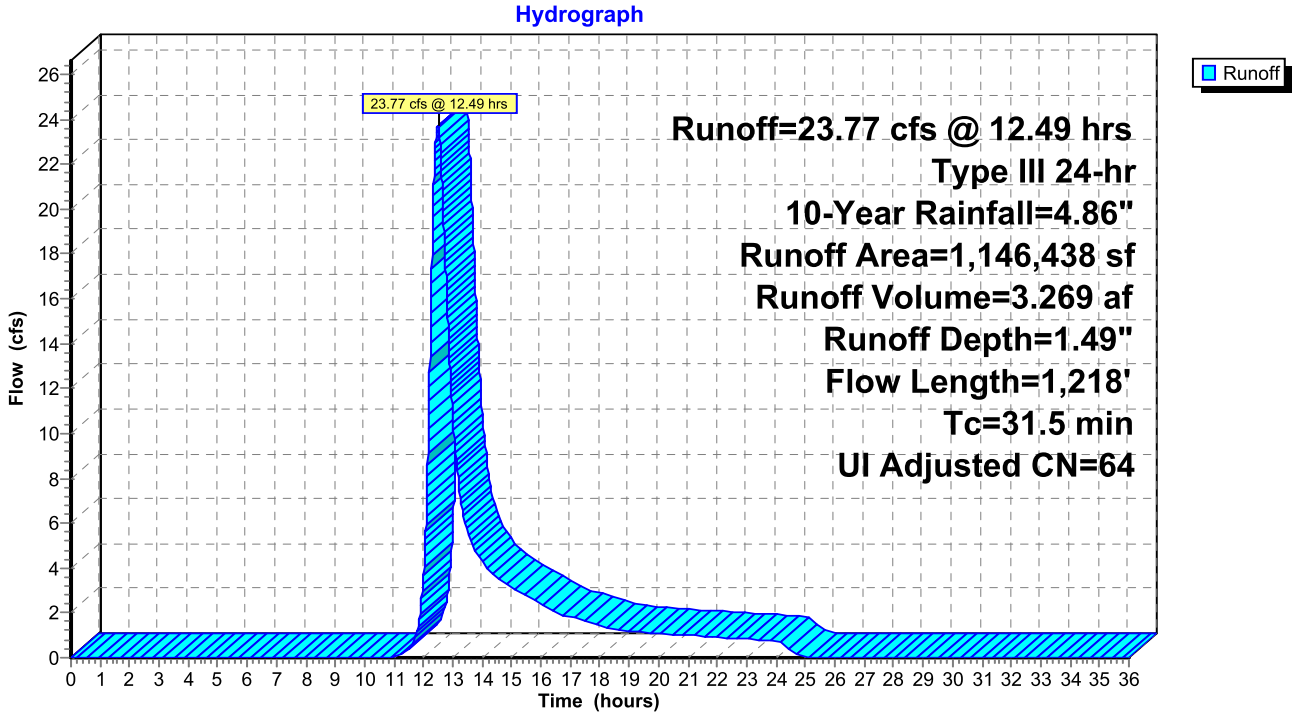
Runoff = 23.77 cfs @ 12.49 hrs, Volume= 3.269 af, Depth= 1.49"
Routed to Link 10L-EX : DESIGN POINT - 01

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.86"

Area (sf)	CN	Adj	Description
481,583	70		Woods, Good, HSG C
69,745	74		>75% Grass cover, Good, HSG C
446,249	55		Woods, Good, HSG B
102,400	61		>75% Grass cover, Good, HSG B
0	98		Unconnected roofs, HSG C
11,300	98		Unconnected roofs, HSG B
1,460	98		Paved parking, HSG C
33,701	98		Unconnected pavement, HSG B
1,146,438	65	64	Weighted Average, UI Adjusted
1,099,977			95.95% Pervious Area
46,461			4.05% Impervious Area
45,001			96.86% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	100	0.1700	0.28		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.26"
0.7	91	0.0989	2.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.8	1,027	0.0764	0.69		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
31.5	1,218	Total			

Subcatchment 10EX:

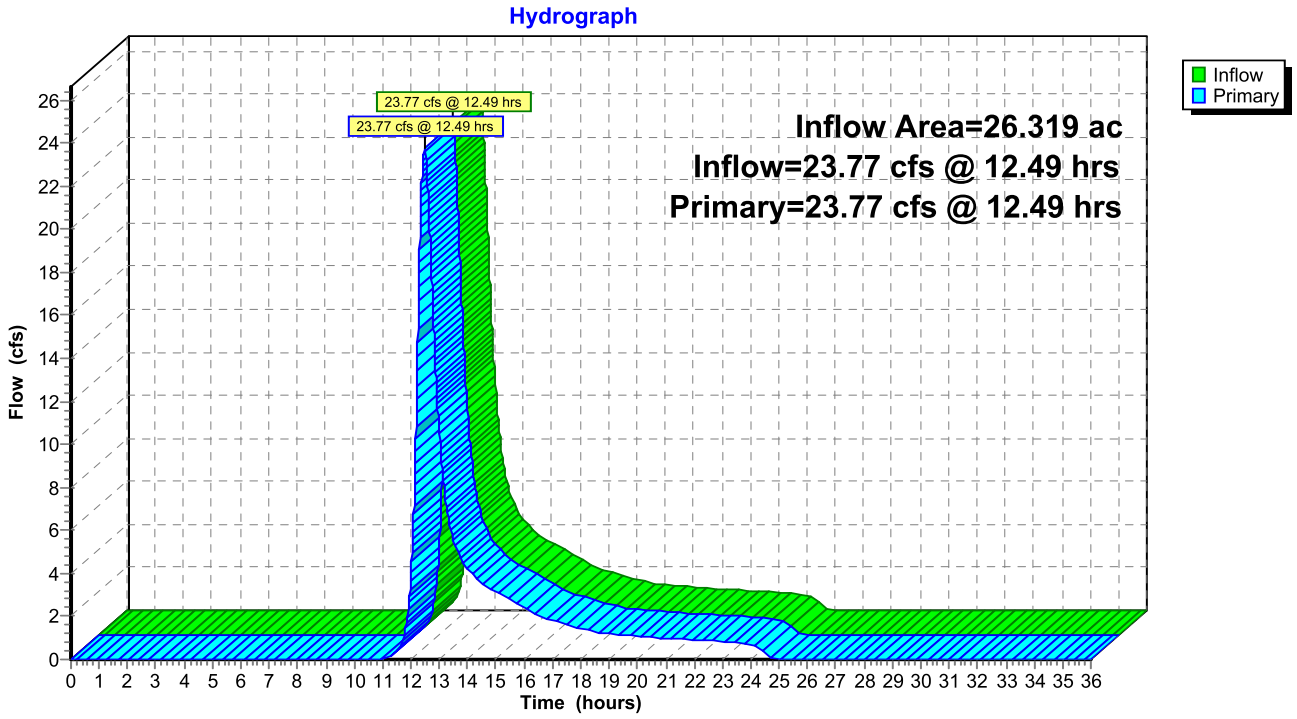


Summary for Link 10L-EX: DESIGN POINT - 01

Inflow Area = 26.319 ac, 4.05% Impervious, Inflow Depth = 1.49" for 10-Year event
Inflow = 23.77 cfs @ 12.49 hrs, Volume= 3.269 af
Primary = 23.77 cfs @ 12.49 hrs, Volume= 3.269 af, Atten= 0%, Lag= 0.0 min

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

Link 10L-EX: DESIGN POINT - 01



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

Subcatchment10EX: Runoff Area=1,146,438 sf 4.05% Impervious Runoff Depth=2.34"
Flow Length=1,218' Tc=31.5 min UI Adjusted CN=64 Runoff=38.81 cfs 5.137 af

Link 10L-EX: DESIGN POINT - 01 Inflow=38.81 cfs 5.137 af
Primary=38.81 cfs 5.137 af

Total Runoff Area = 26.319 ac Runoff Volume = 5.137 af Average Runoff Depth = 2.34"
95.95% Pervious = 25.252 ac 4.05% Impervious = 1.067 ac

Summary for Subcatchment 10EX:

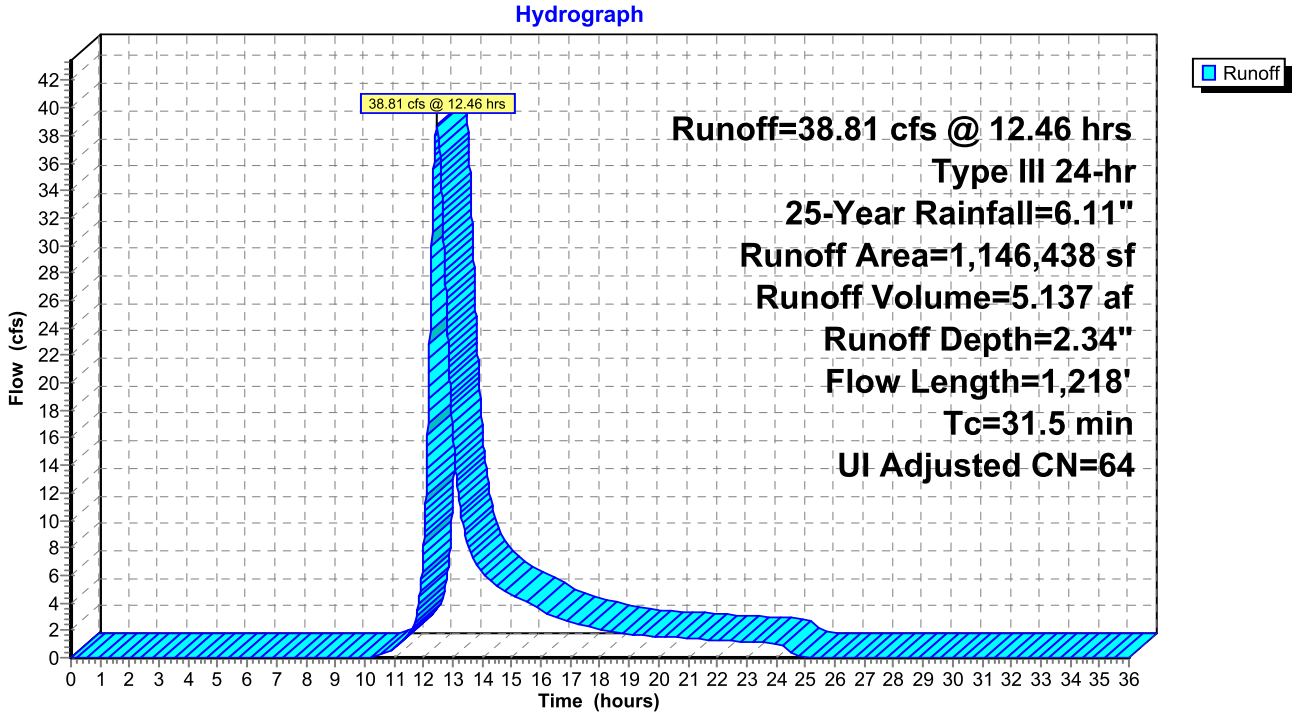
Runoff = 38.81 cfs @ 12.46 hrs, Volume= 5.137 af, Depth= 2.34"
Routed to Link 10L-EX : DESIGN POINT - 01

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.11"

Area (sf)	CN	Adj	Description
481,583	70		Woods, Good, HSG C
69,745	74		>75% Grass cover, Good, HSG C
446,249	55		Woods, Good, HSG B
102,400	61		>75% Grass cover, Good, HSG B
0	98		Unconnected roofs, HSG C
11,300	98		Unconnected roofs, HSG B
1,460	98		Paved parking, HSG C
33,701	98		Unconnected pavement, HSG B
1,146,438	65	64	Weighted Average, UI Adjusted
1,099,977			95.95% Pervious Area
46,461			4.05% Impervious Area
45,001			96.86% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	100	0.1700	0.28		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.26"
0.7	91	0.0989	2.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.8	1,027	0.0764	0.69		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
31.5	1,218	Total			

Subcatchment 10EX:

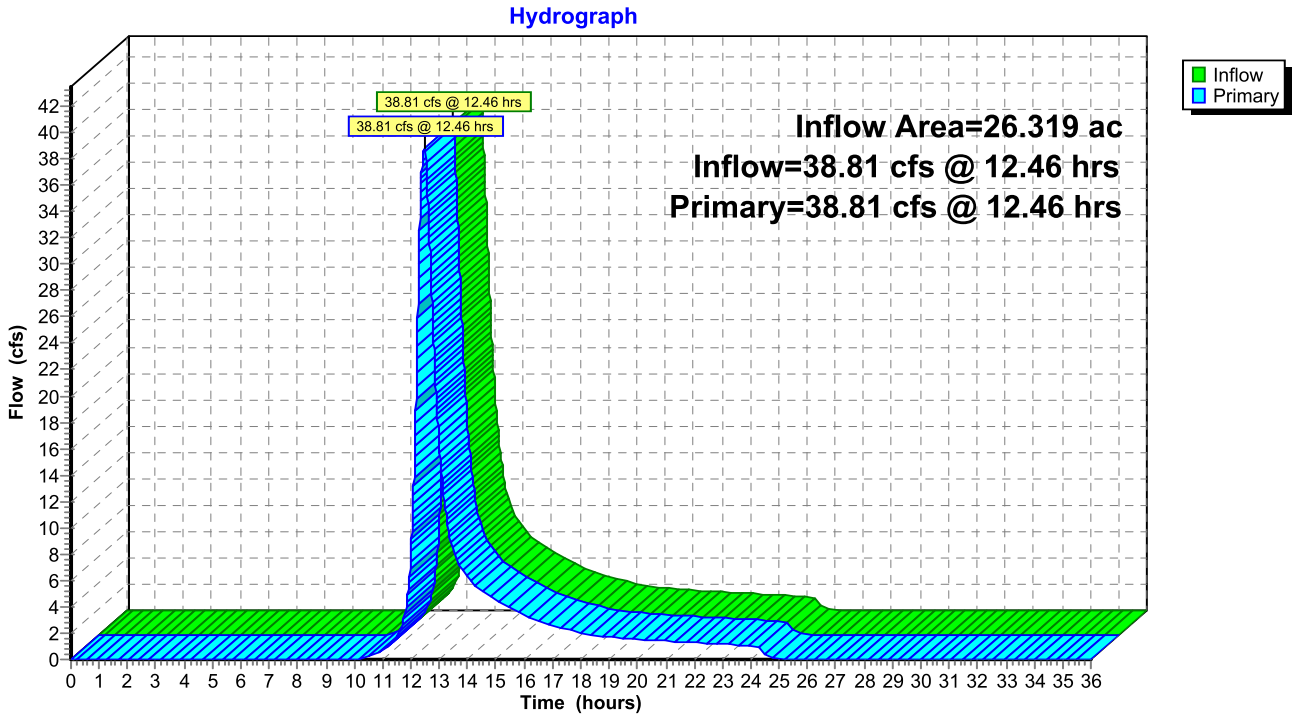


Summary for Link 10L-EX: DESIGN POINT - 01

Inflow Area = 26.319 ac, 4.05% Impervious, Inflow Depth = 2.34" for 25-Year event
Inflow = 38.81 cfs @ 12.46 hrs, Volume= 5.137 af
Primary = 38.81 cfs @ 12.46 hrs, Volume= 5.137 af, Atten= 0%, Lag= 0.0 min

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

Link 10L-EX: DESIGN POINT - 01



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

Subcatchment10EX: Runoff Area=1,146,438 sf 4.05% Impervious Runoff Depth=4.29"
Flow Length=1,218' Tc=31.5 min UI Adjusted CN=64 Runoff=72.92 cfs 9.408 af

Link 10L-EX: DESIGN POINT - 01 Inflow=72.92 cfs 9.408 af
Primary=72.92 cfs 9.408 af

Total Runoff Area = 26.319 ac Runoff Volume = 9.408 af Average Runoff Depth = 4.29"
95.95% Pervious = 25.252 ac 4.05% Impervious = 1.067 ac

Summary for Subcatchment 10EX:

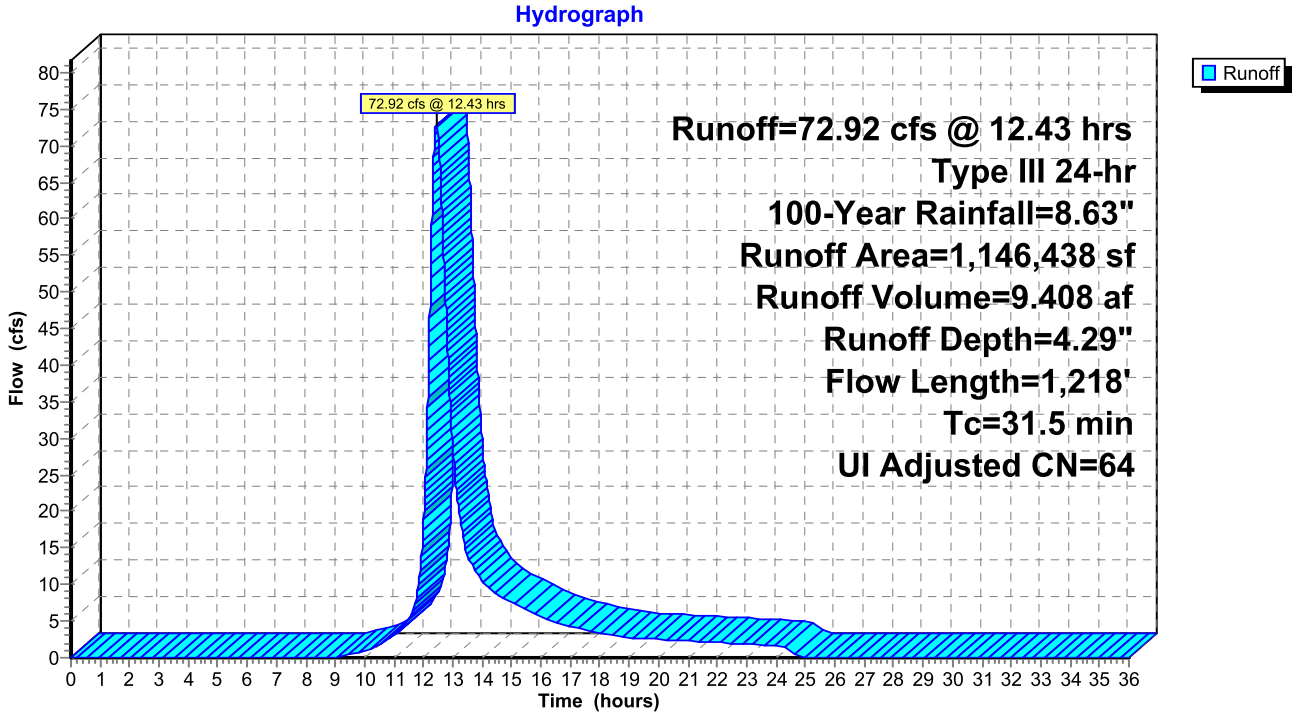
Runoff = 72.92 cfs @ 12.43 hrs, Volume= 9.408 af, Depth= 4.29"
Routed to Link 10L-EX : DESIGN POINT - 01

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.63"

Area (sf)	CN	Adj	Description
481,583	70		Woods, Good, HSG C
69,745	74		>75% Grass cover, Good, HSG C
446,249	55		Woods, Good, HSG B
102,400	61		>75% Grass cover, Good, HSG B
0	98		Unconnected roofs, HSG C
11,300	98		Unconnected roofs, HSG B
1,460	98		Paved parking, HSG C
33,701	98		Unconnected pavement, HSG B
1,146,438	65	64	Weighted Average, UI Adjusted
1,099,977			95.95% Pervious Area
46,461			4.05% Impervious Area
45,001			96.86% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	100	0.1700	0.28		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.26"
0.7	91	0.0989	2.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
24.8	1,027	0.0764	0.69		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
31.5	1,218	Total			

Subcatchment 10EX:

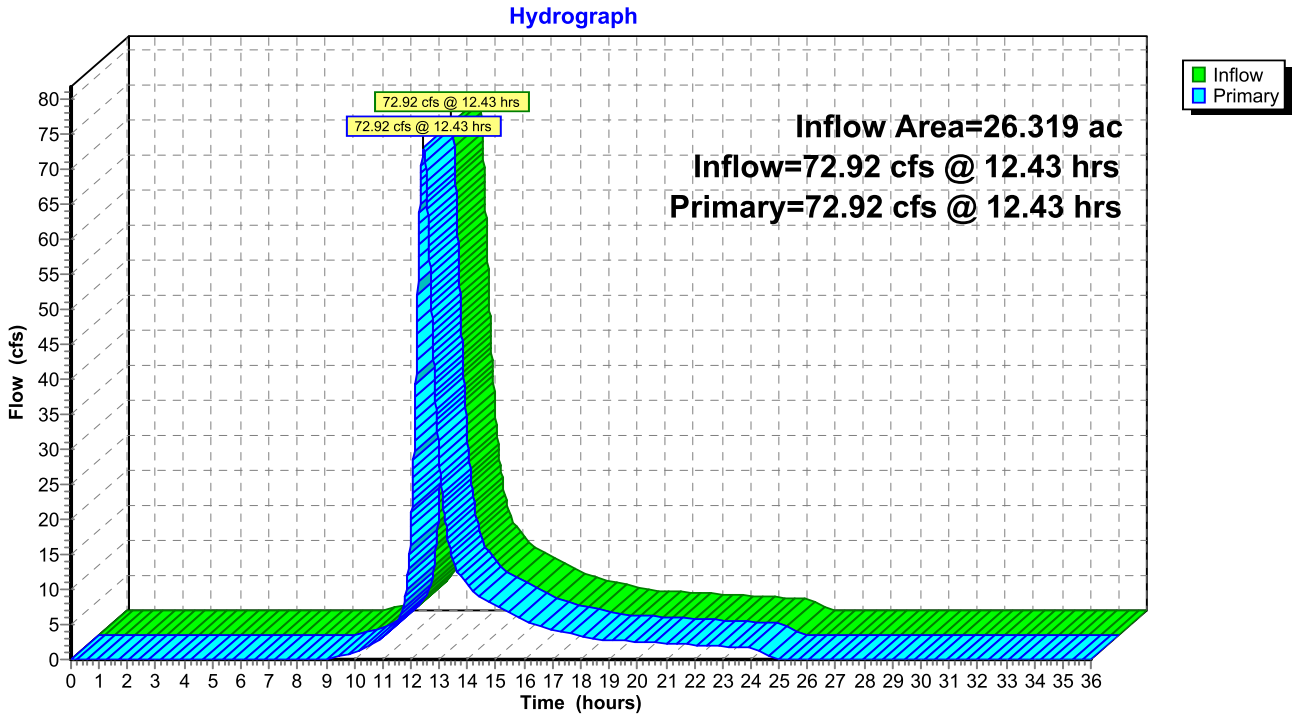


Summary for Link 10L-EX: DESIGN POINT - 01

Inflow Area = 26.319 ac, 4.05% Impervious, Inflow Depth = 4.29" for 100-Year event
Inflow = 72.92 cfs @ 12.43 hrs, Volume= 9.408 af
Primary = 72.92 cfs @ 12.43 hrs, Volume= 9.408 af, Atten= 0%, Lag= 0.0 min

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

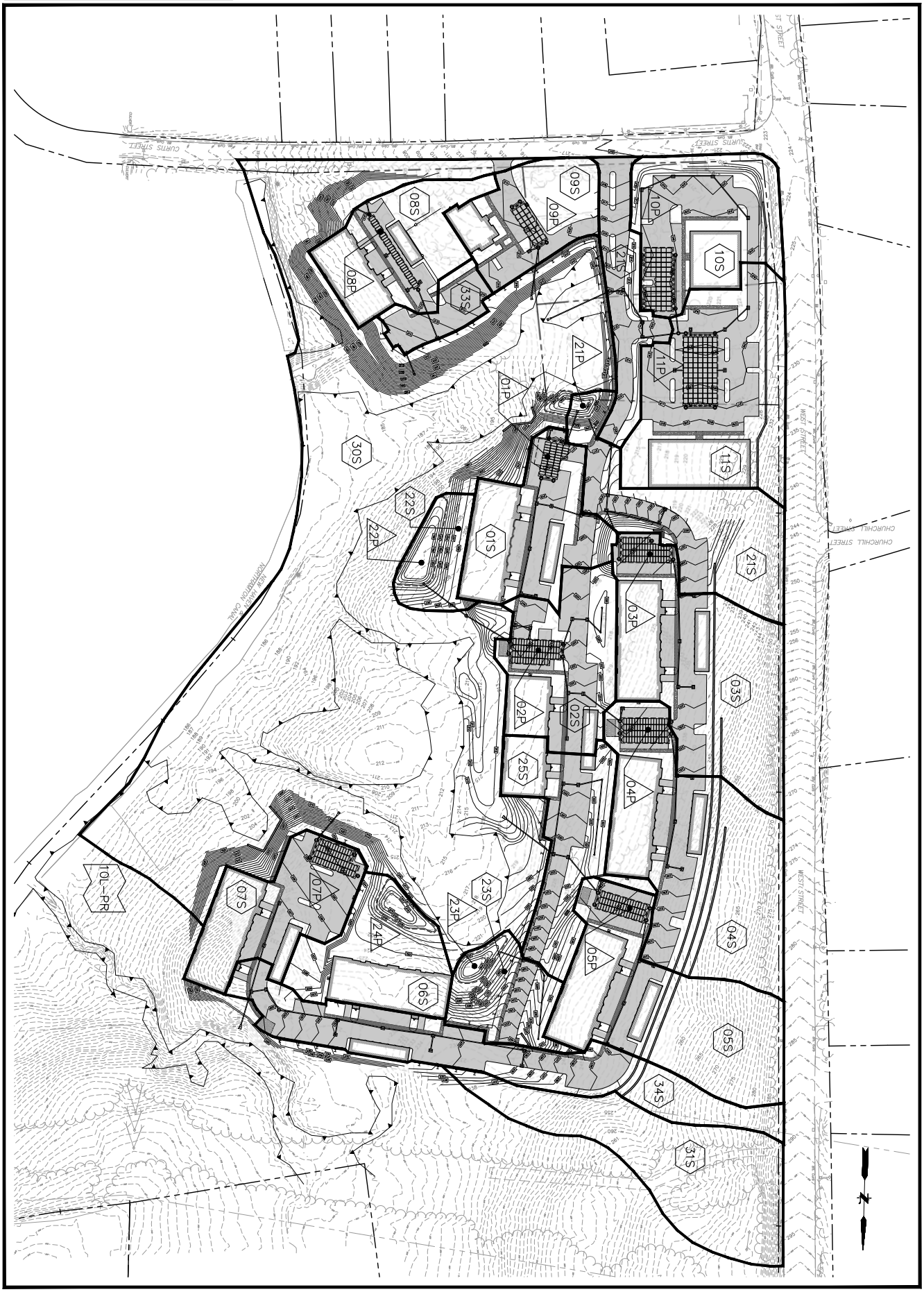
Link 10L-EX: DESIGN POINT - 01



Appendix B

Proposed Watershed Mapping and HydroCAD Analysis

File: \\private\DFS\CadProj\DWG\P2021\0063\A10\Civil\Plan\20210063A10_DRA02.dwg Layout: DRA-02 Plotted: 2022-12-01 4:31 PM Saved: 2022-12-01 4:22 PM User: stanski
MS VIEW: | LAYER STATE: | PC3: AUTOCAD PDF (GENERAL DOCUMENTATION).PC3 STB/CTB: FO.STB



DRA-02

PROJ. No.: 20210063.A10
DATE: DECEMBER 2022

ANTHONY PROPERTIES

PROPOSED CONDITIONS
WATERSHED DRAINAGE MAP

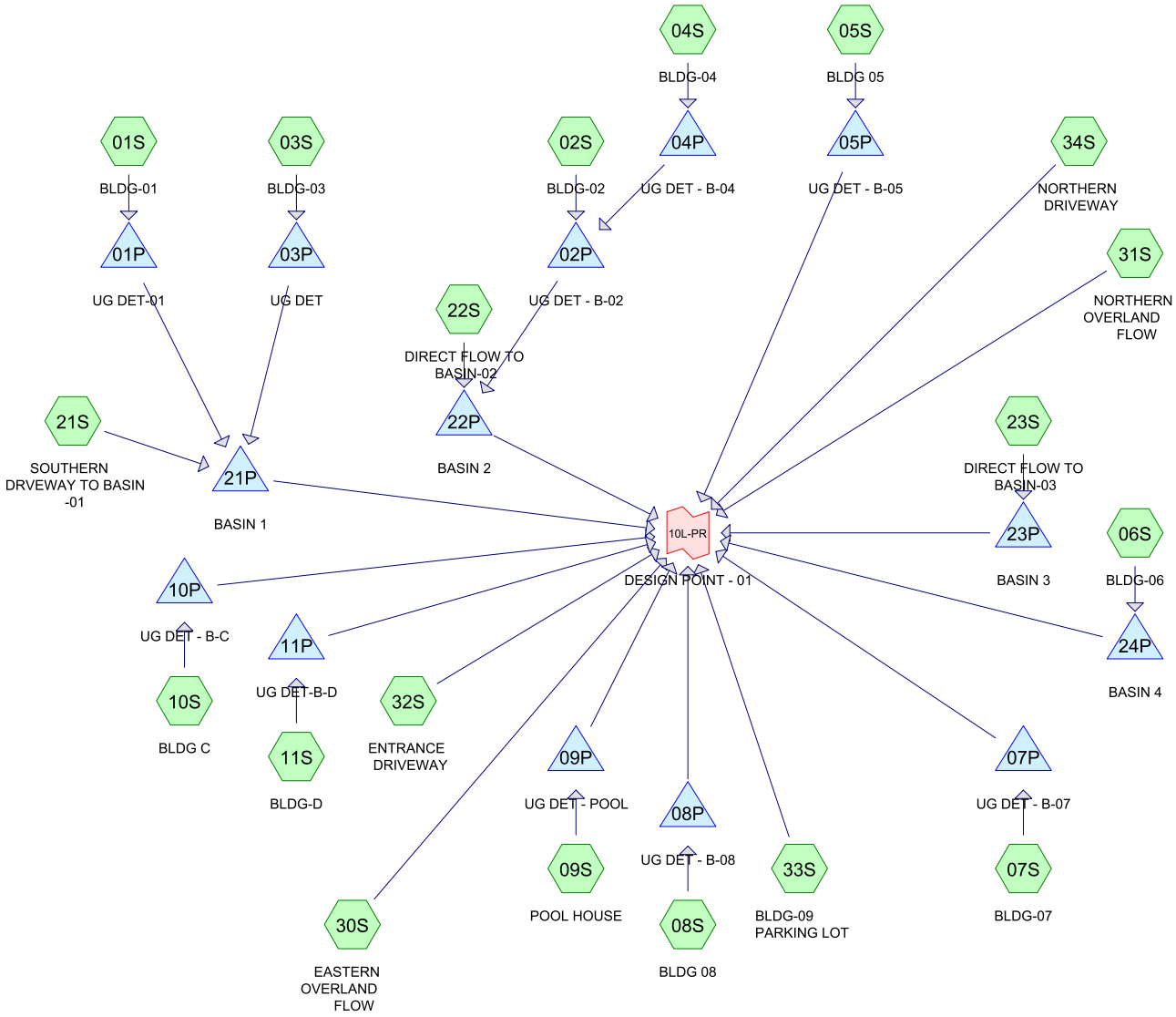
ANTHONY PROPERTIES DEVELOPMENT - SOUTHINGTON

SOUTHINGTON CONNECTICUT

FUSS&O'NEILL
146 HARTFORD ROAD
MANCHESTER, CONNECTICUT 06040
860.646.2469
www.fando.com

SCALE:
HORZ.: 1" = 60'
VERT.:
DATUM:
HORZ.:
VERT.:
60 30 0 60
GRAPHIC SCALE

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER



Routing Diagram for 20210063_PROPOSED
Prepared by Fuss & O'Neill, Printed 12/2/2022
HydroCAD® 10.20-2d s/n 01614 © 2021 HydroCAD Software Solutions LLC

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	Type III 24-hr		Default	24.00	1	3.26	2
2	10-Year	Type III 24-hr		Default	24.00	1	4.86	2
3	25-Year	Type III 24-hr		Default	24.00	1	6.11	2
4	100-Year	Type III 24-hr		Default	24.00	1	8.63	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.257	61	>75% Grass cover, Good, HSG B (03S, 04S, 08S, 09S, 10S, 11S, 21S, 23S, 30S, 34S)
3.811	74	>75% Grass cover, Good, HSG C (01S, 02S, 04S, 05S, 06S, 09S, 21S, 22S, 23S, 30S, 32S, 34S)
1.795	98	Paved parking, HSG B (08S, 32S, 33S, 34S)
4.265	98	Unconnected pavement, HSG B (01S, 02S, 03S, 04S, 05S, 07S, 09S, 10S, 11S, 21S, 23S)
3.002	98	Unconnected roofs, HSG B (01S, 02S, 03S, 04S, 05S, 06S, 07S, 08S, 09S, 10S, 11S, 32S)
0.034	98	Unconnected roofs, HSG C (08S)
3.666	55	Woods, Good, HSG B (30S, 31S)
4.741	70	Woods, Good, HSG C (30S)
2.688	58	Woods/grass comb., Good, HSG B (03S, 04S, 05S, 21S)
26.259	**76**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
17.673	HSG B	01S, 02S, 03S, 04S, 05S, 06S, 07S, 08S, 09S, 10S, 11S, 21S, 23S, 30S, 31S, 32S, 33S, 34S
8.586	HSG C	01S, 02S, 04S, 05S, 06S, 08S, 09S, 21S, 22S, 23S, 30S, 32S, 34S
0.000	HSG D	
0.000	Other	
26.259		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	2.257	3.811	0.000	0.000	6.067	>75% Grass cover, Good	01S, 02S, 03S, 04S, 05S, 06S, 08S, 09S, 10S, 11S, 21S, 22S, 23S, 30S, 32S, 34S
0.000	1.795	0.000	0.000	0.000	1.795	Paved parking	08S, 32S, 33S, 34S
0.000	4.265	0.000	0.000	0.000	4.265	Unconnected pavement	01S, 02S, 03S, 04S, 05S, 07S, 09S, 10S, 11S, 21S, 23S
0.000	3.002	0.034	0.000	0.000	3.036	Unconnected roofs	01S, 02S, 03S, 04S, 05S, 06S, 07S, 08S, 09S, 10S, 11S, 32S

Ground Covers (all nodes) (continued)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	3.666	4.741	0.000	0.000	8.407	Woods, Good	30S, 31S
0.000	2.688	0.000	0.000	0.000	2.688	Woods/grass comb., Good	03S, 04S, 05S, 21S
0.000	**17.673**	**8.586**	**0.000**	**0.000**	**26.259**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
1	02S	0.00	0.00	300.0	0.0100	0.012	0.0	15.0	0.0
2	01P	208.00	207.75	42.0	0.0060	0.012	0.0	15.0	0.0
3	02P	208.00	205.00	73.0	0.0411	0.012	0.0	15.0	0.0
4	03P	216.00	215.25	47.0	0.0160	0.012	0.0	15.0	0.0
5	04P	219.00	217.20	67.0	0.0269	0.012	0.0	15.0	0.0
6	05P	220.00	215.40	68.0	0.0676	0.012	0.0	15.0	0.0
7	07P	215.00	213.00	47.0	0.0426	0.012	0.0	15.0	0.0
8	08P	204.00	203.60	77.0	0.0052	0.012	0.0	15.0	0.0
9	09P	206.00	205.50	71.0	0.0070	0.012	0.0	15.0	0.0
10	10P	209.00	208.60	36.0	0.0111	0.012	0.0	15.0	0.0
11	11P	208.60	208.30	53.0	0.0057	0.012	0.0	15.0	0.0

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

Subcatchment01S: BLDG-01 Runoff Area=37,300 sf 83.38% Impervious Runoff Depth=2.60"
Tc=8.0 min CN=94 Runoff=2.34 cfs 0.186 af

Subcatchment02S: BLDG-02 Runoff Area=37,956 sf 65.75% Impervious Runoff Depth=2.22"
Flow Length=400' Tc=10.6 min CN=90 Runoff=1.93 cfs 0.162 af

Subcatchment03S: BLDG-03 Runoff Area=65,900 sf 49.17% Impervious Runoff Depth=1.32"
Tc=12.0 min CN=78 Runoff=1.88 cfs 0.166 af

Subcatchment04S: BLDG-04 Runoff Area=74,800 sf 44.52% Impervious Runoff Depth=1.19"
Tc=12.0 min CN=76 Runoff=1.90 cfs 0.171 af

Subcatchment05S: BLDG 05 Runoff Area=61,900 sf 44.26% Impervious Runoff Depth=1.25"
Tc=12.0 min CN=77 Runoff=1.67 cfs 0.149 af

Subcatchment06S: BLDG-06 Runoff Area=32,800 sf 36.59% Impervious Runoff Depth=1.66"
Flow Length=75' Slope=0.0200 '/' Tc=7.7 min CN=83 Runoff=1.38 cfs 0.104 af

Subcatchment07S: BLDG-07 Runoff Area=33,900 sf 100.00% Impervious Runoff Depth=3.03"
Tc=6.0 min CN=98 Runoff=2.46 cfs 0.196 af

Subcatchment08S: BLDG 08 Runoff Area=33,400 sf 78.44% Impervious Runoff Depth=2.22"
Tc=10.0 min CN=90 Runoff=1.73 cfs 0.142 af

Subcatchment09S: POOL HOUSE Runoff Area=27,900 sf 52.69% Impervious Runoff Depth=1.52"
Tc=8.0 min CN=81 Runoff=1.06 cfs 0.081 af

Subcatchment10S: BLDG C Runoff Area=42,700 sf 69.09% Impervious Runoff Depth=1.97"
Tc=10.0 min CN=87 Runoff=1.97 cfs 0.161 af

Subcatchment11S: BLDG-D Runoff Area=63,700 sf 74.88% Impervious Runoff Depth=2.14"
Tc=10.0 min CN=89 Runoff=3.18 cfs 0.260 af

Subcatchment21S: SOUTHERN Runoff Area=44,600 sf 23.32% Impervious Runoff Depth=0.63"
Tc=12.0 min UI Adjusted CN=65 Runoff=0.49 cfs 0.054 af

Subcatchment22S: DIRECT FLOW TO Runoff Area=14,300 sf 0.00% Impervious Runoff Depth=1.08"
Tc=8.0 min CN=74 Runoff=0.37 cfs 0.029 af

Subcatchment23S: DIRECT FLOW TO Runoff Area=20,400 sf 18.14% Impervious Runoff Depth=0.91"
Flow Length=110' Slope=0.0400 '/' Tc=7.9 min UI Adjusted CN=71 Runoff=0.43 cfs 0.036 af

Subcatchment30S: EASTERN Runoff Area=403,100 sf 0.00% Impervious Runoff Depth=0.67"
Flow Length=950' Tc=23.7 min CN=66 Runoff=3.77 cfs 0.519 af

Subcatchment31S: NORTHERN Runoff Area=52,900 sf 0.00% Impervious Runoff Depth=0.27"
Tc=15.0 min CN=55 Runoff=0.13 cfs 0.027 af

Subcatchment32S: ENTRANCE Runoff Area=34,300 sf 54.23% Impervious Runoff Depth=1.97"
Tc=6.0 min CN=87 Runoff=1.81 cfs 0.129 af

Subcatchment33S: BLDG-09 Runoff Area=10,300 sf 100.00% Impervious Runoff Depth=3.03"
Tc=5.0 min CN=98 Runoff=0.78 cfs 0.060 af

Subcatchment34S: NORTHERN Runoff Area=51,700 sf 77.56% Impervious Runoff Depth=2.22"
Tc=12.0 min CN=90 Runoff=2.52 cfs 0.220 af

Pond 01P: UG DET-01 Peak Elev=211.08' Storage=3,735 cf Inflow=2.34 cfs 0.186 af
Discarded=0.03 cfs 0.053 af Primary=0.44 cfs 0.132 af Outflow=0.47 cfs 0.186 af

Pond 02P: UG DET - B-02 Peak Elev=210.25' Storage=3,915 cf Inflow=1.93 cfs 0.269 af
Discarded=0.04 cfs 0.076 af Primary=0.48 cfs 0.193 af Outflow=0.52 cfs 0.269 af

Pond 03P: UG DET Peak Elev=219.99' Storage=3,145 cf Inflow=1.88 cfs 0.166 af
Discarded=0.03 cfs 0.061 af Primary=0.22 cfs 0.105 af Outflow=0.25 cfs 0.166 af

Pond 04P: UG DET - B-04 Peak Elev=222.79' Storage=2,885 cf Inflow=1.90 cfs 0.171 af
Discarded=0.03 cfs 0.063 af Primary=0.33 cfs 0.107 af Outflow=0.37 cfs 0.171 af

Pond 05P: UG DET - B-05 Peak Elev=230.01' Storage=2,703 cf Inflow=1.67 cfs 0.149 af
Discarded=0.03 cfs 0.051 af Primary=0.22 cfs 0.098 af Outflow=0.25 cfs 0.149 af

Pond 07P: UG DET - B-07 Peak Elev=217.62' Storage=4,179 cf Inflow=2.46 cfs 0.196 af
Discarded=0.03 cfs 0.073 af Primary=0.29 cfs 0.123 af Outflow=0.32 cfs 0.196 af

Pond 08P: UG DET - B-08 Peak Elev=206.65' Storage=2,286 cf Inflow=1.73 cfs 0.142 af
Discarded=0.03 cfs 0.039 af Primary=0.51 cfs 0.103 af Outflow=0.54 cfs 0.142 af

Pond 09P: UG DET - POOL Peak Elev=207.71' Storage=1,409 cf Inflow=1.06 cfs 0.081 af
Discarded=0.02 cfs 0.036 af Primary=0.18 cfs 0.045 af Outflow=0.20 cfs 0.081 af

Pond 10P: UG DET - B-C Peak Elev=209.56' Storage=3,140 cf Inflow=1.97 cfs 0.161 af
Discarded=0.05 cfs 0.088 af Primary=0.26 cfs 0.072 af Outflow=0.31 cfs 0.161 af

Pond 11P: UG DET-B-D Peak Elev=209.75' Storage=5,415 cf Inflow=3.18 cfs 0.260 af
Discarded=0.07 cfs 0.137 af Primary=0.32 cfs 0.124 af Outflow=0.39 cfs 0.260 af

Pond 21P: BASIN 1 Peak Elev=209.06' Storage=4,077 cf Inflow=0.91 cfs 0.291 af
Discarded=0.03 cfs 0.059 af Primary=0.55 cfs 0.168 af Outflow=0.59 cfs 0.228 af

Pond 22P: BASIN 2 Peak Elev=200.67' Storage=7,555 cf Inflow=0.52 cfs 0.222 af
Discarded=0.06 cfs 0.106 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.106 af

Pond 23P: BASIN 3 Peak Elev=220.72' Storage=1,094 cf Inflow=0.43 cfs 0.036 af
Discarded=0.01 cfs 0.021 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.021 af

Pond 24P: BASIN 4 Peak Elev=217.28' Storage=3,347 cf Inflow=1.38 cfs 0.104 af
Discarded=0.03 cfs 0.054 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.054 af

Link 10L-PR: DESIGN POINT - 01 Inflow=7.83 cfs 1.689 af
Primary=7.83 cfs 1.689 af

Total Runoff Area = 26.259 ac Runoff Volume = 2.852 af Average Runoff Depth = 1.30"
65.36% Pervious = 17.163 ac 34.64% Impervious = 9.097 ac

Summary for Subcatchment 01S: BLDG-01

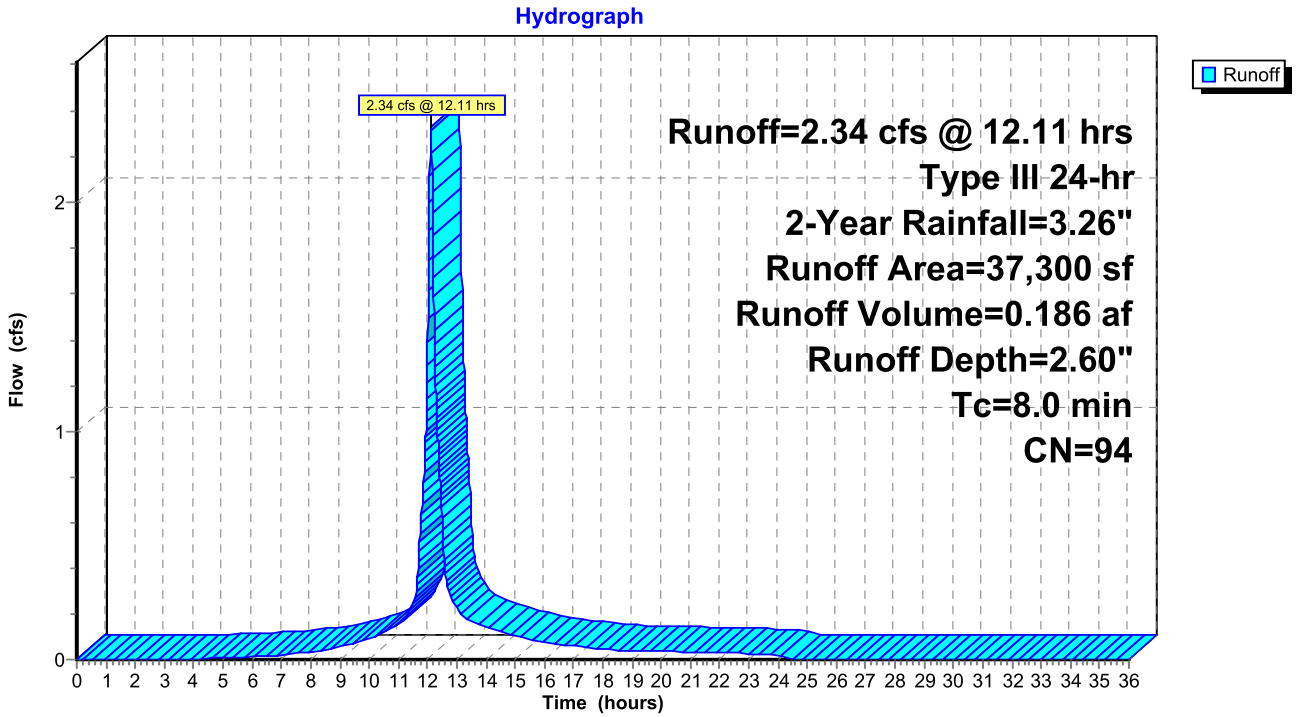
Runoff = 2.34 cfs @ 12.11 hrs, Volume= 0.186 af, Depth= 2.60"
Routed to Pond 01P : UG DET-01

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.26"

Area (sf)	CN	Description
17,100	98	Unconnected pavement, HSG B
2,000	98	Unconnected roofs, HSG B
6,500	98	Unconnected roofs, HSG B
5,500	98	Unconnected roofs, HSG B
6,200	74	>75% Grass cover, Good, HSG C
37,300	94	Weighted Average
6,200		16.62% Pervious Area
31,100		83.38% Impervious Area
31,100		100.00% Unconnected

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

Subcatchment 01S: BLDG-01



Summary for Subcatchment 02S: BLDG-02

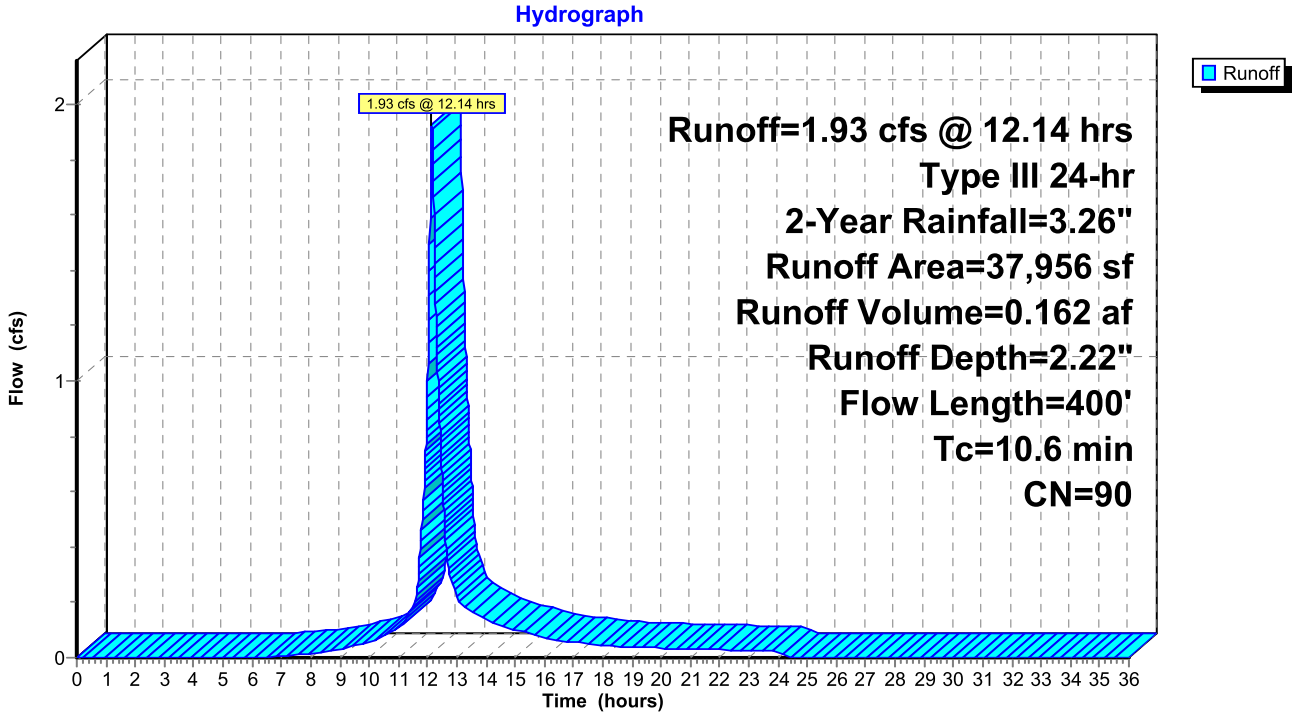
Runoff = 1.93 cfs @ 12.14 hrs, Volume= 0.162 af, Depth= 2.22"
Routed to Pond 02P : UG DET - B-02

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.26"

Area (sf)	CN	Description
17,700	98	Unconnected pavement, HSG B
1,500	98	Unconnected roofs, HSG B
3,250	98	Unconnected roofs, HSG B
2,500	98	Unconnected roofs, HSG B
6	98	Unconnected roofs, HSG B
13,000	74	>75% Grass cover, Good, HSG C
37,956	90	Weighted Average
13,000		34.25% Pervious Area
24,956		65.75% Impervious Area
24,956		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0200	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.26"
0.9	300	0.0100	5.70	7.00	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
10.6	400	Total			

Subcatchment 02S: BLDG-02



Summary for Subcatchment 03S: BLDG-03

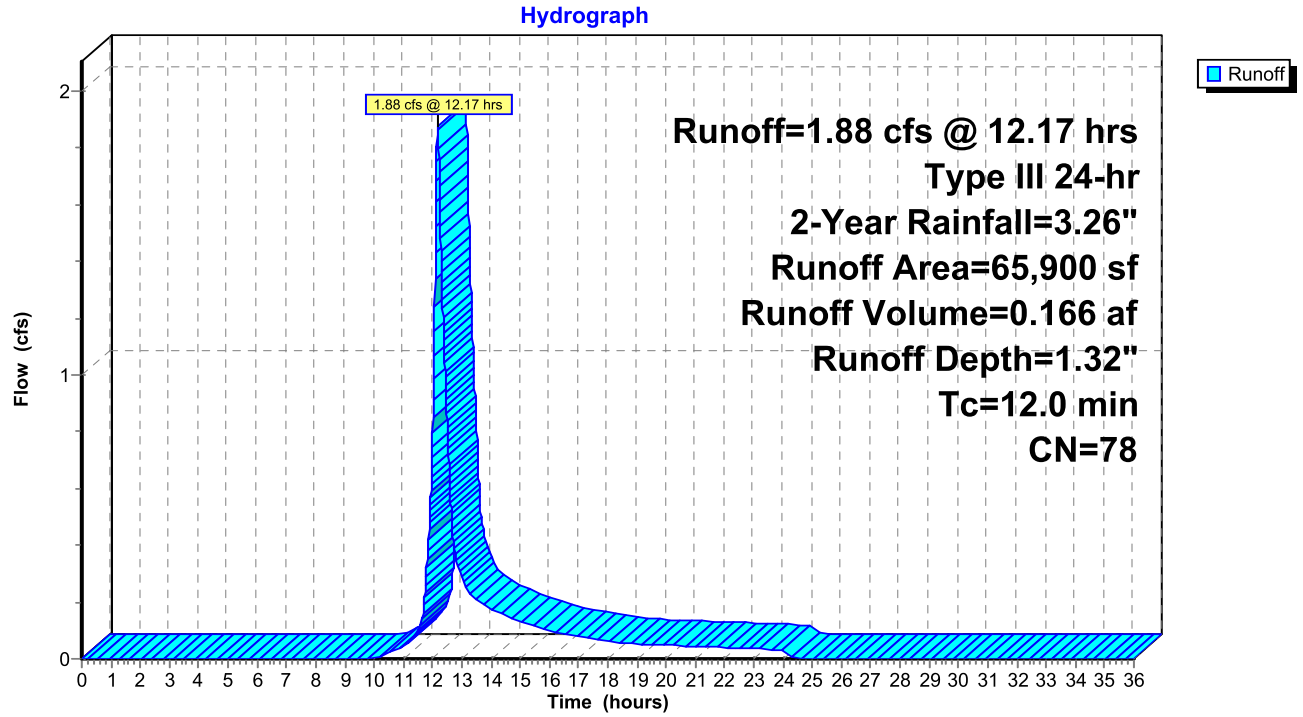
Runoff = 1.88 cfs @ 12.17 hrs, Volume= 0.166 af, Depth= 1.32"
Routed to Pond 03P : UG DET

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.26"

Area (sf)	CN	Description
18,400	98	Unconnected pavement, HSG B
2,000	98	Unconnected roofs, HSG B
6,500	98	Unconnected roofs, HSG B
5,500	98	Unconnected roofs, HSG B
5,800	61	>75% Grass cover, Good, HSG B
27,700	58	Woods/grass comb., Good, HSG B
65,900	78	Weighted Average
33,500		50.83% Pervious Area
32,400		49.17% Impervious Area
32,400		100.00% Unconnected

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

Subcatchment 03S: BLDG-03



Summary for Subcatchment 04S: BLDG-04

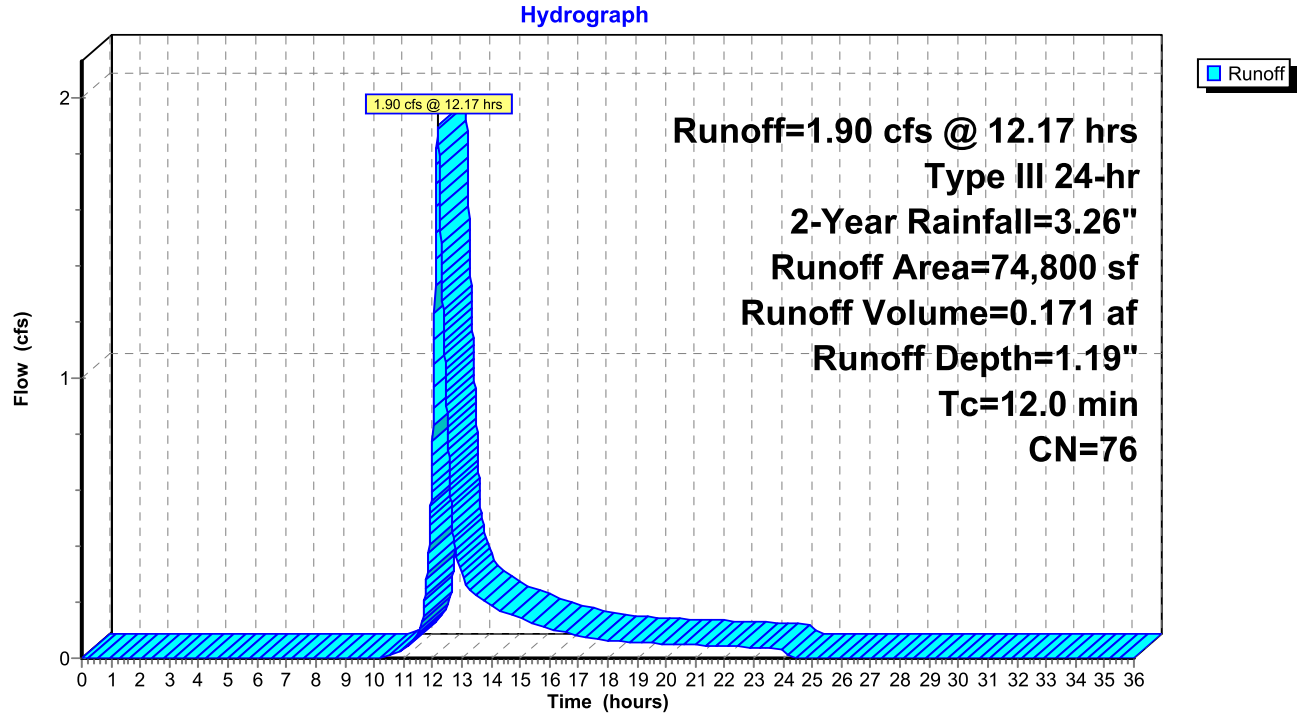
Runoff = 1.90 cfs @ 12.17 hrs, Volume= 0.171 af, Depth= 1.19"
Routed to Pond 04P : UG DET - B-04

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.26"

Area (sf)	CN	Description
19,300	98	Unconnected pavement, HSG B
2,000	98	Unconnected roofs, HSG B
6,500	98	Unconnected roofs, HSG B
5,500	98	Unconnected roofs, HSG B
4,500	61	>75% Grass cover, Good, HSG B
2,000	74	>75% Grass cover, Good, HSG C
35,000	58	Woods/grass comb., Good, HSG B
74,800	76	Weighted Average
41,500		55.48% Pervious Area
33,300		44.52% Impervious Area
33,300		100.00% Unconnected

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

Subcatchment 04S: BLDG-04



Summary for Subcatchment 05S: BLDG 05

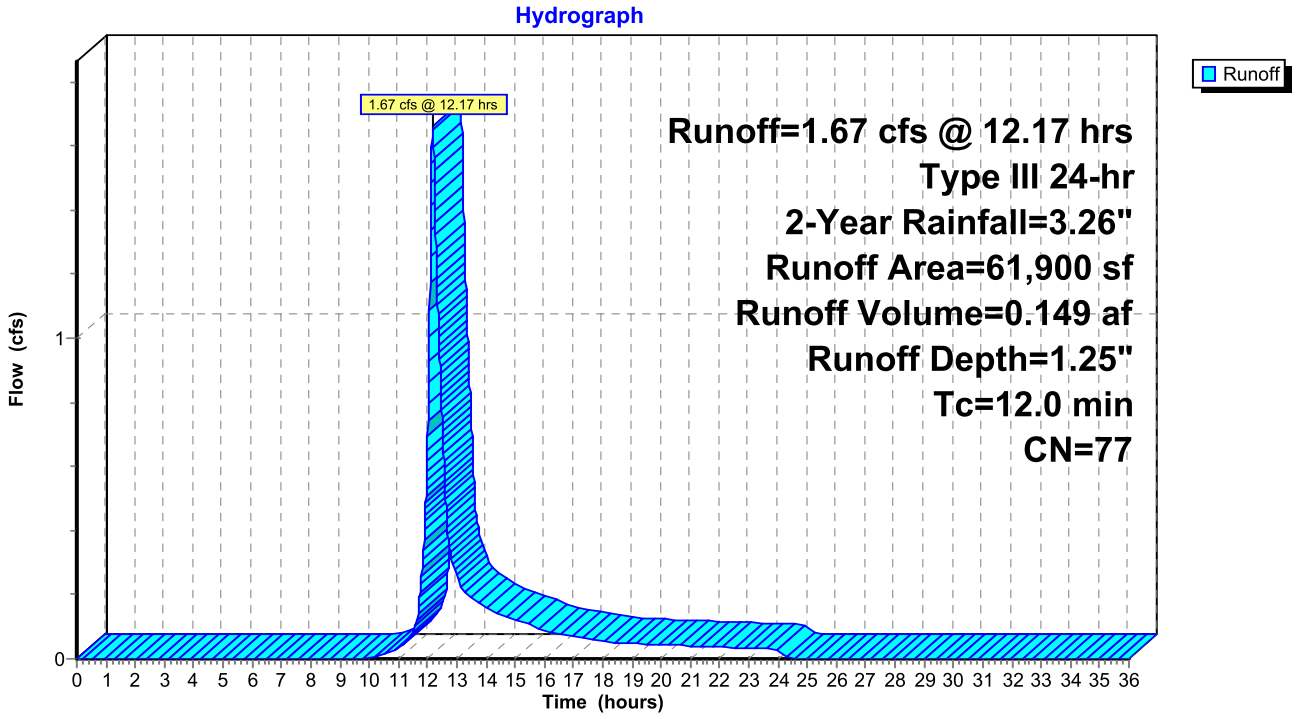
Runoff = 1.67 cfs @ 12.17 hrs, Volume= 0.149 af, Depth= 1.25"
Routed to Pond 05P : UG DET - B-05

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.26"

Area (sf)	CN	Description
13,400	98	Unconnected pavement, HSG B
2,000	98	Unconnected roofs, HSG B
6,500	98	Unconnected roofs, HSG B
5,500	98	Unconnected roofs, HSG B
5,000	74	>75% Grass cover, Good, HSG C
29,500	58	Woods/grass comb., Good, HSG B
61,900	77	Weighted Average
34,500		55.74% Pervious Area
27,400		44.26% Impervious Area
27,400		100.00% Unconnected

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

Subcatchment 05S: BLDG 05



Summary for Subcatchment 06S: BLDG-06

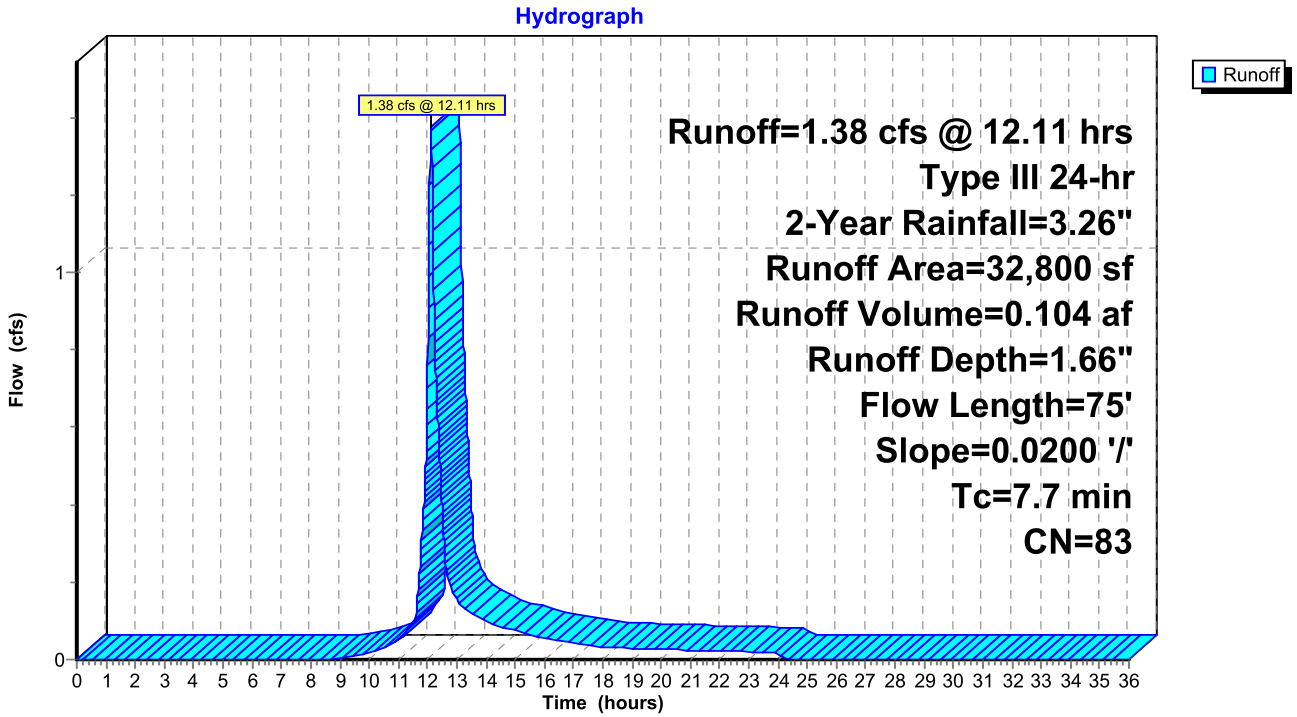
Runoff = 1.38 cfs @ 12.11 hrs, Volume= 0.104 af, Depth= 1.66"
Routed to Pond 24P : BASIN 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.26"

Area (sf)	CN	Description
0	98	Unconnected pavement, HSG B
6,500	98	Unconnected roofs, HSG B
5,500	98	Unconnected roofs, HSG B
20,800	74	>75% Grass cover, Good, HSG C
32,800	83	Weighted Average
20,800		63.41% Pervious Area
12,000		36.59% Impervious Area
12,000		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	75	0.0200	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.26"

Subcatchment 06S: BLDG-06



Summary for Subcatchment 07S: BLDG-07

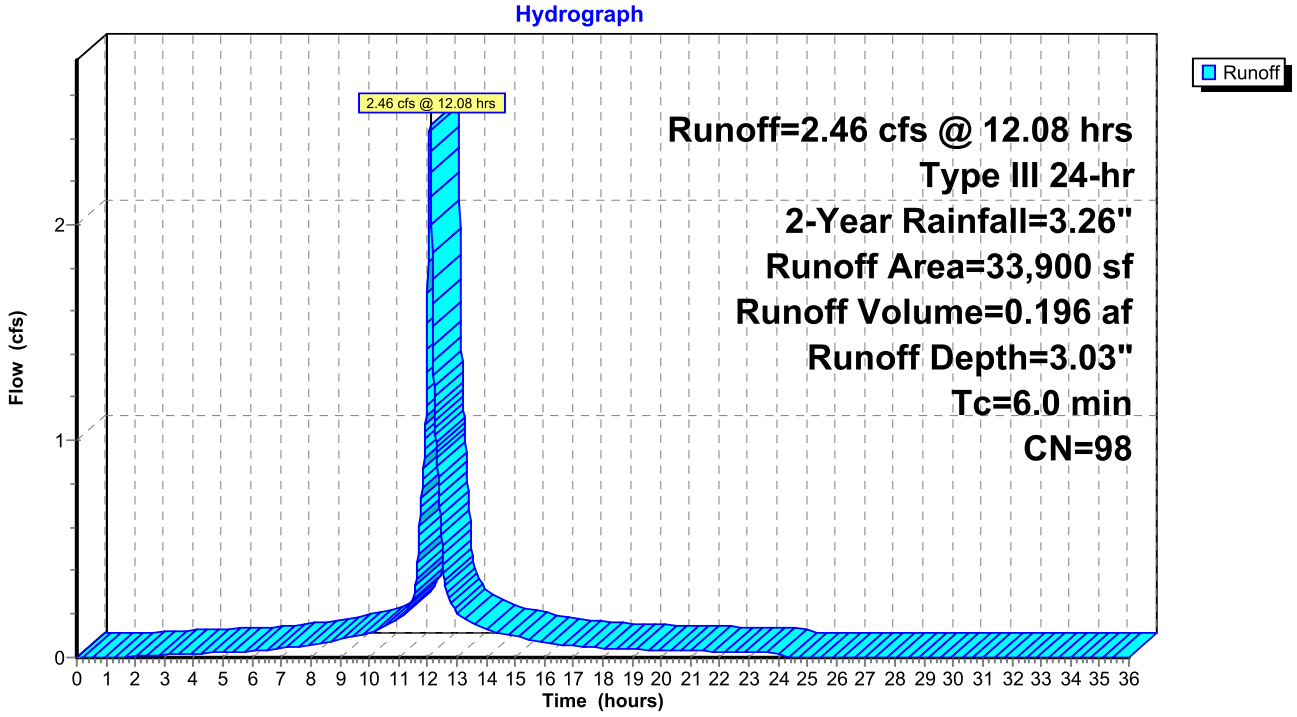
Runoff = 2.46 cfs @ 12.08 hrs, Volume= 0.196 af, Depth= 3.03"
Routed to Pond 07P : UG DET - B-07

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.26"

Area (sf)	CN	Description
19,900	98	Unconnected pavement, HSG B
2,000	98	Unconnected roofs, HSG B
6,500	98	Unconnected roofs, HSG B
5,500	98	Unconnected roofs, HSG B
33,900	98	Weighted Average
33,900		100.00% Impervious Area
33,900		100.00% Unconnected

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

Subcatchment 07S: BLDG-07



Summary for Subcatchment 08S: BLDG 08

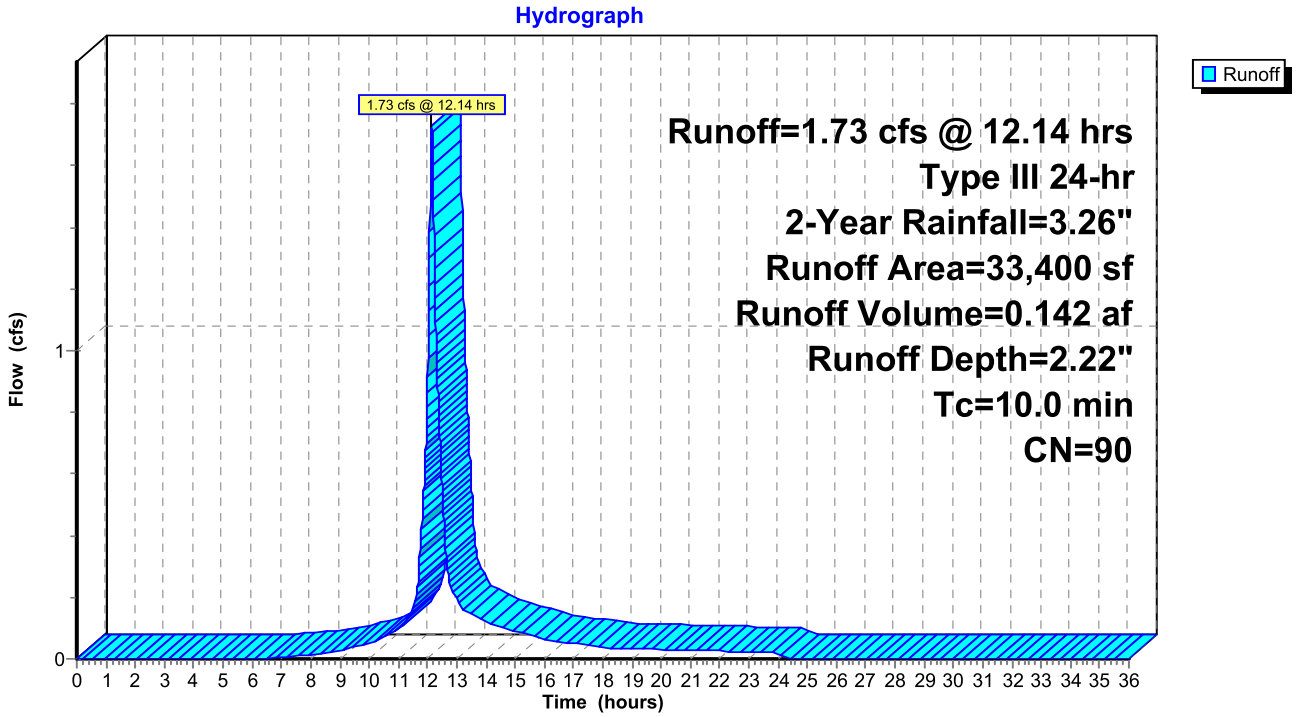
Runoff = 1.73 cfs @ 12.14 hrs, Volume= 0.142 af, Depth= 2.22"
Routed to Pond 08P : UG DET - B-08

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.26"

Area (sf)	CN	Description
15,700	98	Paved parking, HSG B
1,500	98	Unconnected roofs, HSG C
9,000	98	Unconnected roofs, HSG B
7,200	61	>75% Grass cover, Good, HSG B
33,400	90	Weighted Average
7,200		21.56% Pervious Area
26,200		78.44% Impervious Area
10,500		40.08% Unconnected

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

Subcatchment 08S: BLDG 08



Summary for Subcatchment 09S: POOL HOUSE

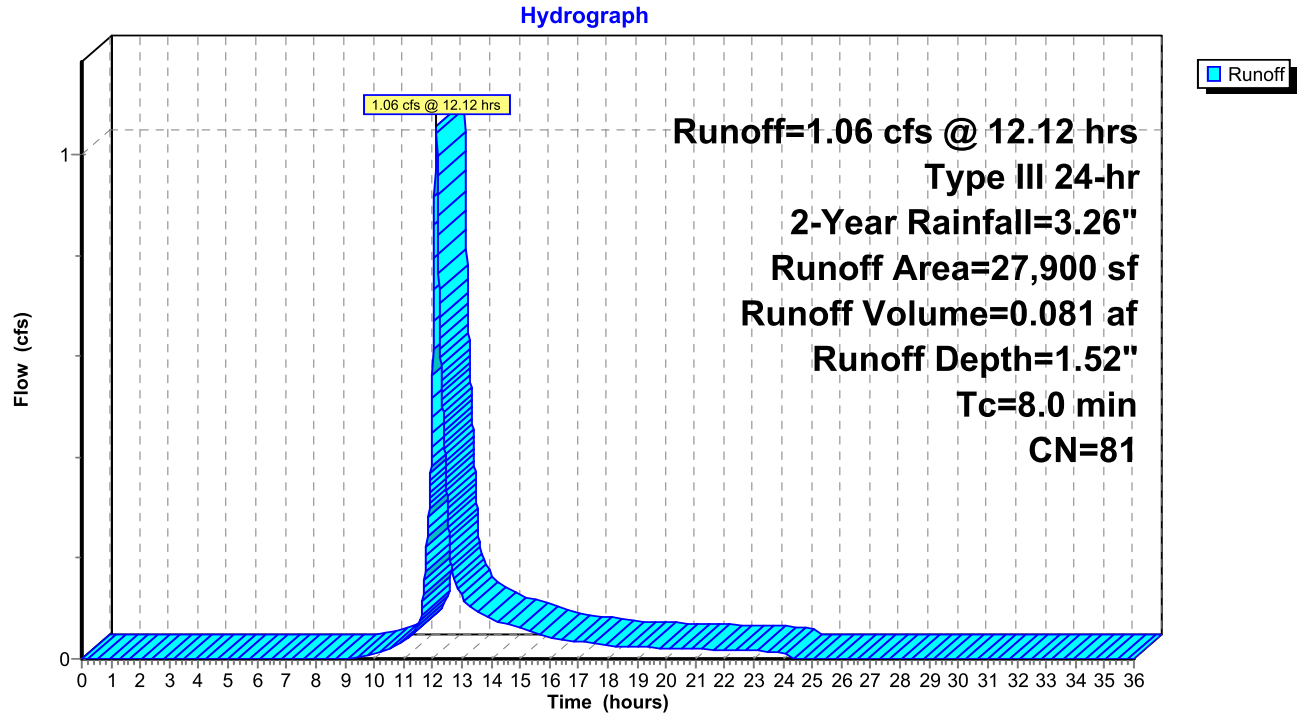
Runoff = 1.06 cfs @ 12.12 hrs, Volume= 0.081 af, Depth= 1.52"
Routed to Pond 09P : UG DET - POOL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.26"

Area (sf)	CN	Description
10,100	98	Unconnected pavement, HSG B
4,600	98	Unconnected roofs, HSG B
11,200	61	>75% Grass cover, Good, HSG B
2,000	74	>75% Grass cover, Good, HSG C
27,900	81	Weighted Average
13,200		47.31% Pervious Area
14,700		52.69% Impervious Area
14,700		100.00% Unconnected

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

Subcatchment 09S: POOL HOUSE



Summary for Subcatchment 10S: BLDG C

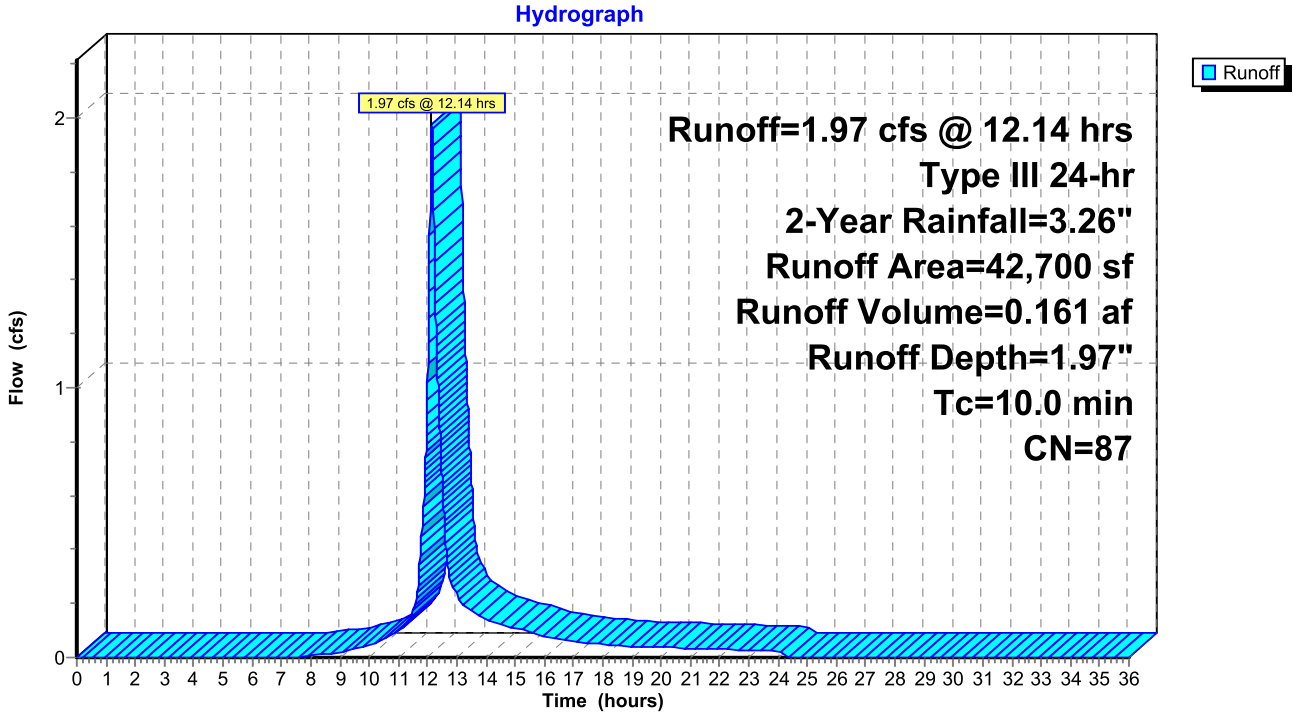
Runoff = 1.97 cfs @ 12.14 hrs, Volume= 0.161 af, Depth= 1.97"
Routed to Pond 10P : UG DET - B-C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.26"

Area (sf)	CN	Description
23,100	98	Unconnected pavement, HSG B
6,400	98	Unconnected roofs, HSG B
13,200	61	>75% Grass cover, Good, HSG B
42,700	87	Weighted Average
13,200		30.91% Pervious Area
29,500		69.09% Impervious Area
29,500		100.00% Unconnected

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

Subcatchment 10S: BLDG C



Summary for Subcatchment 11S: BLDG-D

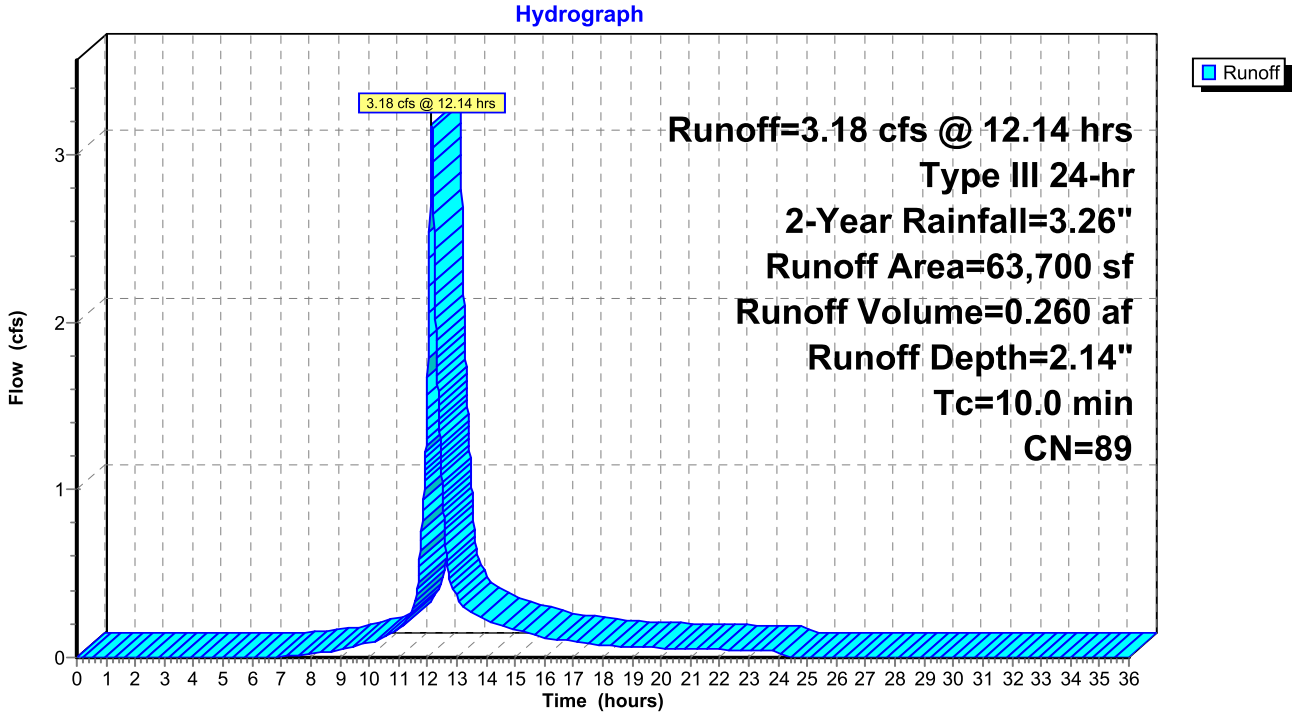
Runoff = 3.18 cfs @ 12.14 hrs, Volume= 0.260 af, Depth= 2.14"
Routed to Pond 11P : UG DET-B-D

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.26"

Area (sf)	CN	Description
32,700	98	Unconnected pavement, HSG B
15,000	98	Unconnected roofs, HSG B
16,000	61	>75% Grass cover, Good, HSG B
63,700	89	Weighted Average
16,000		25.12% Pervious Area
47,700		74.88% Impervious Area
47,700		100.00% Unconnected

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

Subcatchment 11S: BLDG-D



Summary for Subcatchment 21S: SOUTHERN DRVEWAY TO BASIN -01

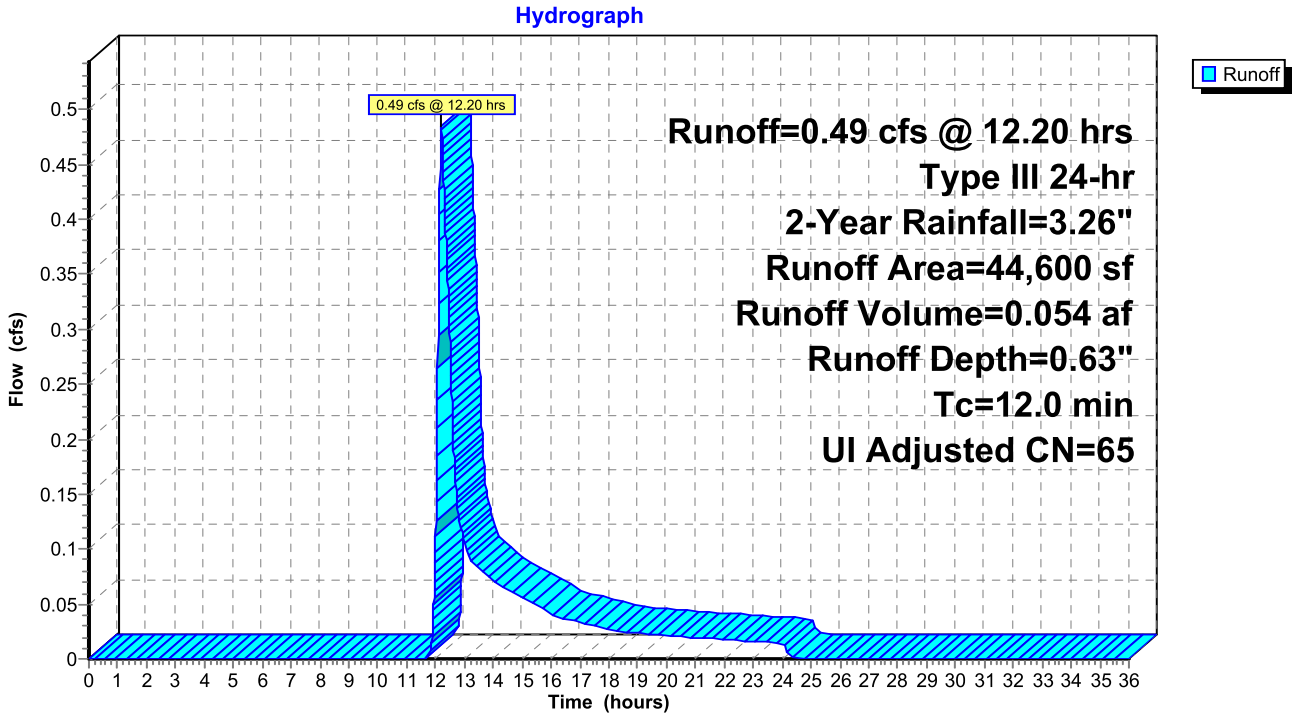
Runoff = 0.49 cfs @ 12.20 hrs, Volume= 0.054 af, Depth= 0.63"
Routed to Pond 21P : BASIN 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.26"

Area (sf)	CN	Adj	Description
10,400	98		Unconnected pavement, HSG B
5,800	61		>75% Grass cover, Good, HSG B
3,500	74		>75% Grass cover, Good, HSG C
24,900	58		Woods/grass comb., Good, HSG B
44,600	69	65	Weighted Average, UI Adjusted
34,200			76.68% Pervious Area
10,400			23.32% Impervious Area
10,400			100.00% Unconnected

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

Subcatchment 21S: SOUTHERN DRVEWAY TO BASIN -01



Summary for Subcatchment 22S: DIRECT FLOW TO BASIN-02

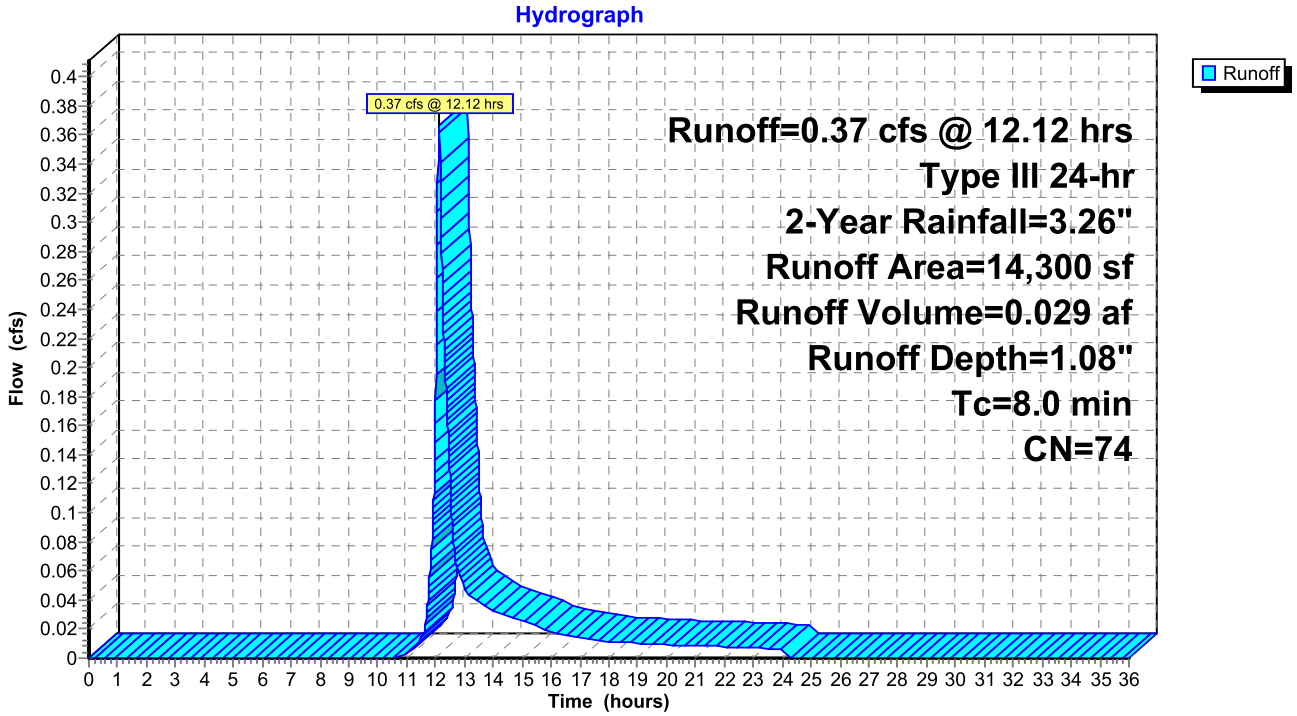
Runoff = 0.37 cfs @ 12.12 hrs, Volume= 0.029 af, Depth= 1.08"
Routed to Pond 22P : BASIN 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.26"

Area (sf)	CN	Description
14,300	74	>75% Grass cover, Good, HSG C
14,300		100.00% Pervious Area

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

Subcatchment 22S: DIRECT FLOW TO BASIN-02



Summary for Subcatchment 23S: DIRECT FLOW TO BASIN-03

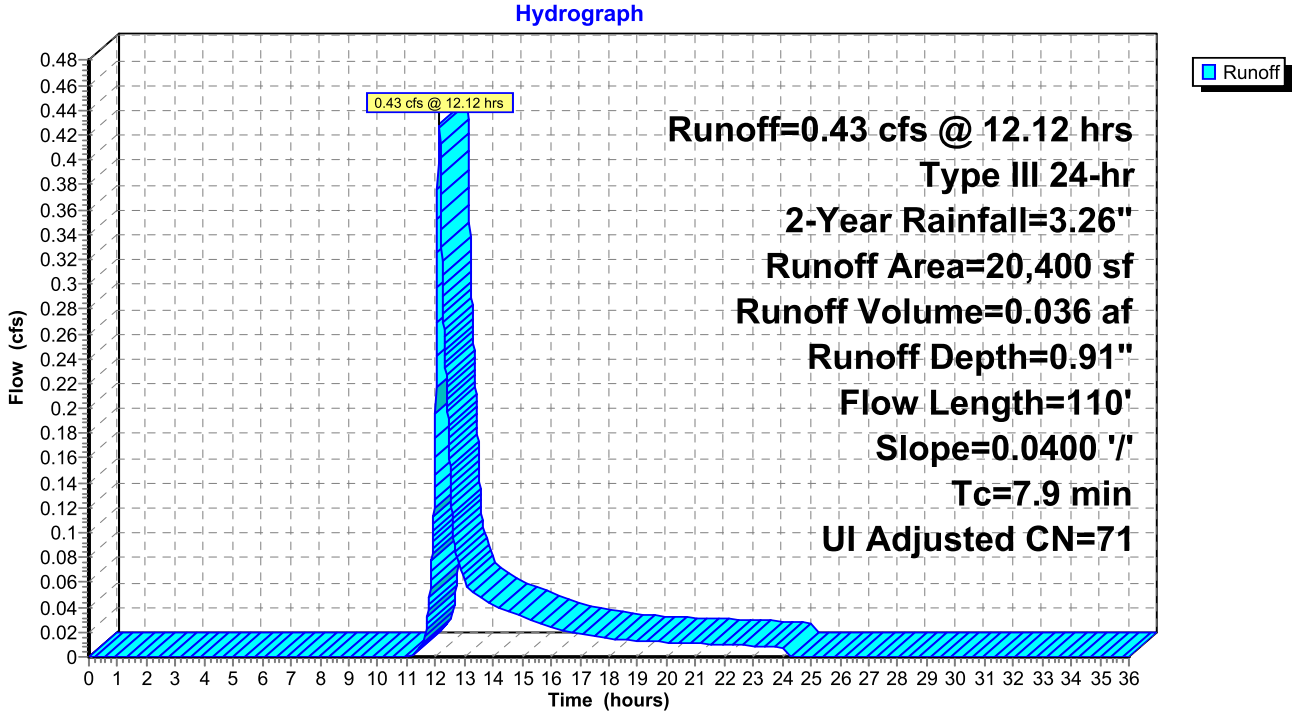
Runoff = 0.43 cfs @ 12.12 hrs, Volume= 0.036 af, Depth= 0.91"
Routed to Pond 23P : BASIN 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.26"

Area (sf)	CN	Adj	Description
3,700	98		Unconnected pavement, HSG B
8,000	61		>75% Grass cover, Good, HSG B
8,700	74		>75% Grass cover, Good, HSG C
20,400	73	71	Weighted Average, UI Adjusted
16,700			81.86% Pervious Area
3,700			18.14% Impervious Area
3,700			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	110	0.0400	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.26"

Subcatchment 23S: DIRECT FLOW TO BASIN-03



Summary for Subcatchment 30S: EASTERN OVERLAND FLOW

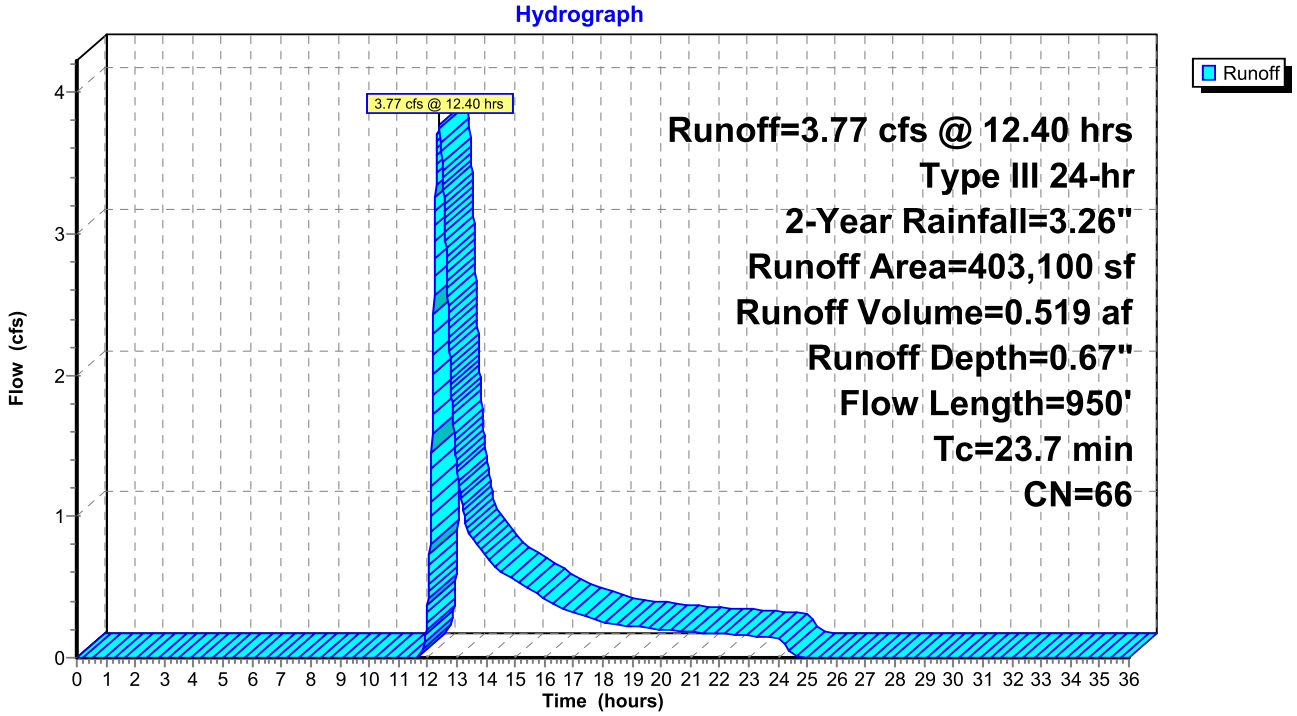
Runoff = 3.77 cfs @ 12.40 hrs, Volume= 0.519 af, Depth= 0.67"
Routed to Link 10L-PR : DESIGN POINT - 01

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.26"

Area (sf)	CN	Description
206,500	70	Woods, Good, HSG C
74,200	74	>75% Grass cover, Good, HSG C
106,800	55	Woods, Good, HSG B
15,600	61	>75% Grass cover, Good, HSG B
403,100	66	Weighted Average
403,100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.0450	0.16		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.26"
11.3	450	0.0700	0.66		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
2.2	400	0.0025	3.05	18.28	**Channel Flow,** Area= 6.0 sf Perim= 7.0' r= 0.86' n= 0.022 Earth, clean & straight
23.7	950	Total			

Subcatchment 30S: EASTERN OVERLAND FLOW



Summary for Subcatchment 31S: NORTHERN OVERLAND FLOW

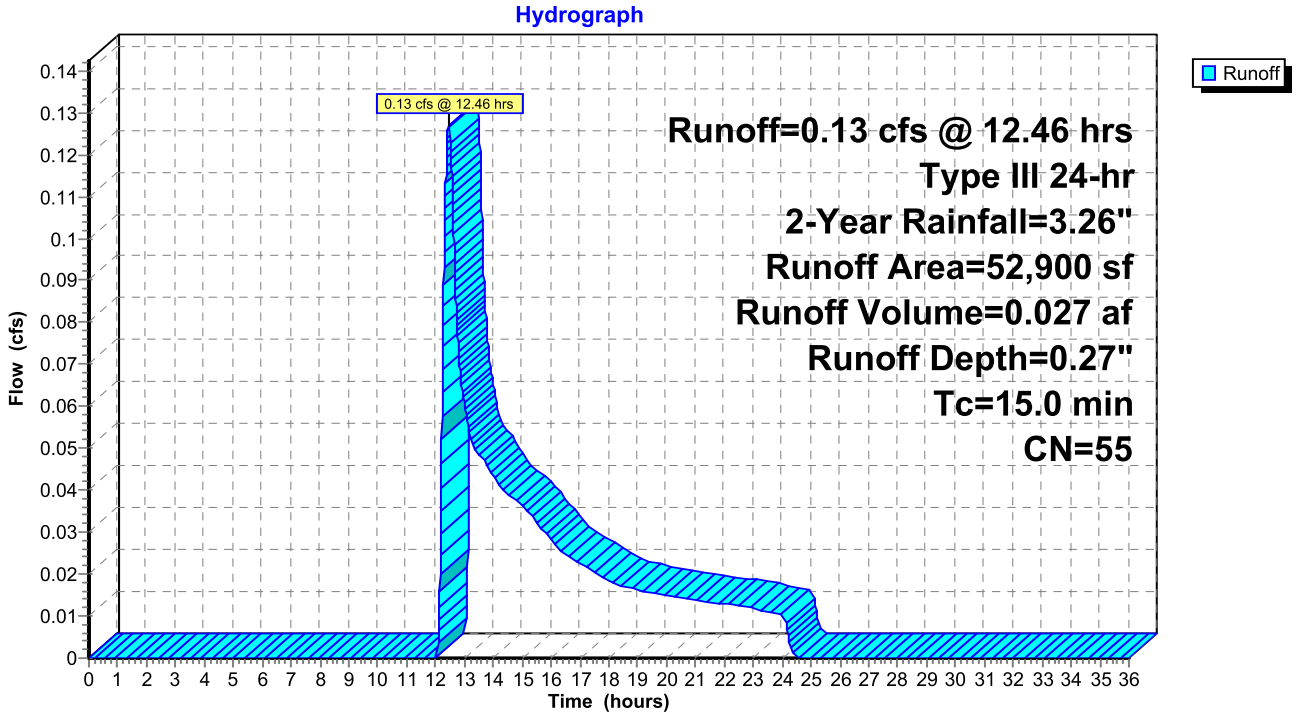
Runoff = 0.13 cfs @ 12.46 hrs, Volume= 0.027 af, Depth= 0.27"
Routed to Link 10L-PR : DESIGN POINT - 01

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.26"

Area (sf)	CN	Description
52,900	55	Woods, Good, HSG B
52,900		100.00% Pervious Area

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

Subcatchment 31S: NORTHERN OVERLAND FLOW



Summary for Subcatchment 32S: ENTRANCE DRIVEWAY

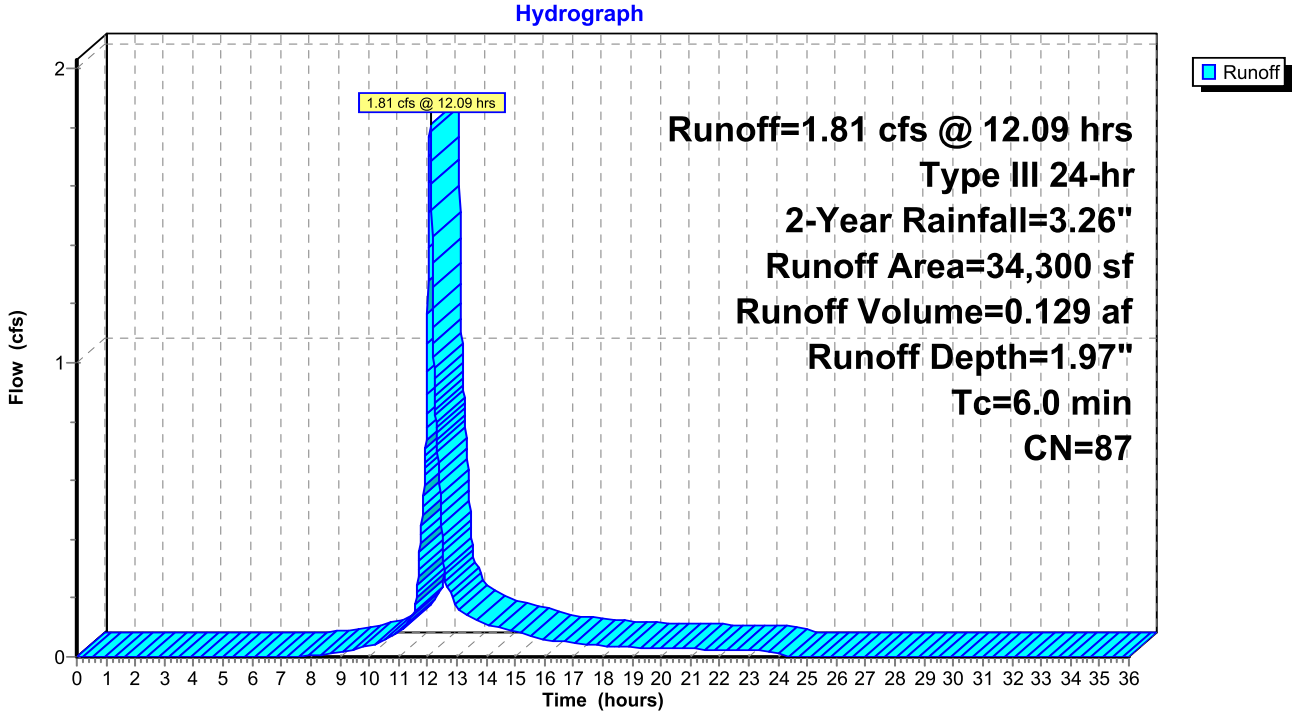
Runoff = 1.81 cfs @ 12.09 hrs, Volume= 0.129 af, Depth= 1.97"
Routed to Link 10L-PR : DESIGN POINT - 01

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.26"

Area (sf)	CN	Description
12,100	98	Paved parking, HSG B
500	98	Unconnected roofs, HSG B
6,000	98	Unconnected roofs, HSG B
15,700	74	>75% Grass cover, Good, HSG C
34,300	87	Weighted Average
15,700		45.77% Pervious Area
18,600		54.23% Impervious Area
6,500		34.95% Unconnected

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

Subcatchment 32S: ENTRANCE DRIVEWAY



Summary for Subcatchment 33S: BLDG-09 PARKING LOT

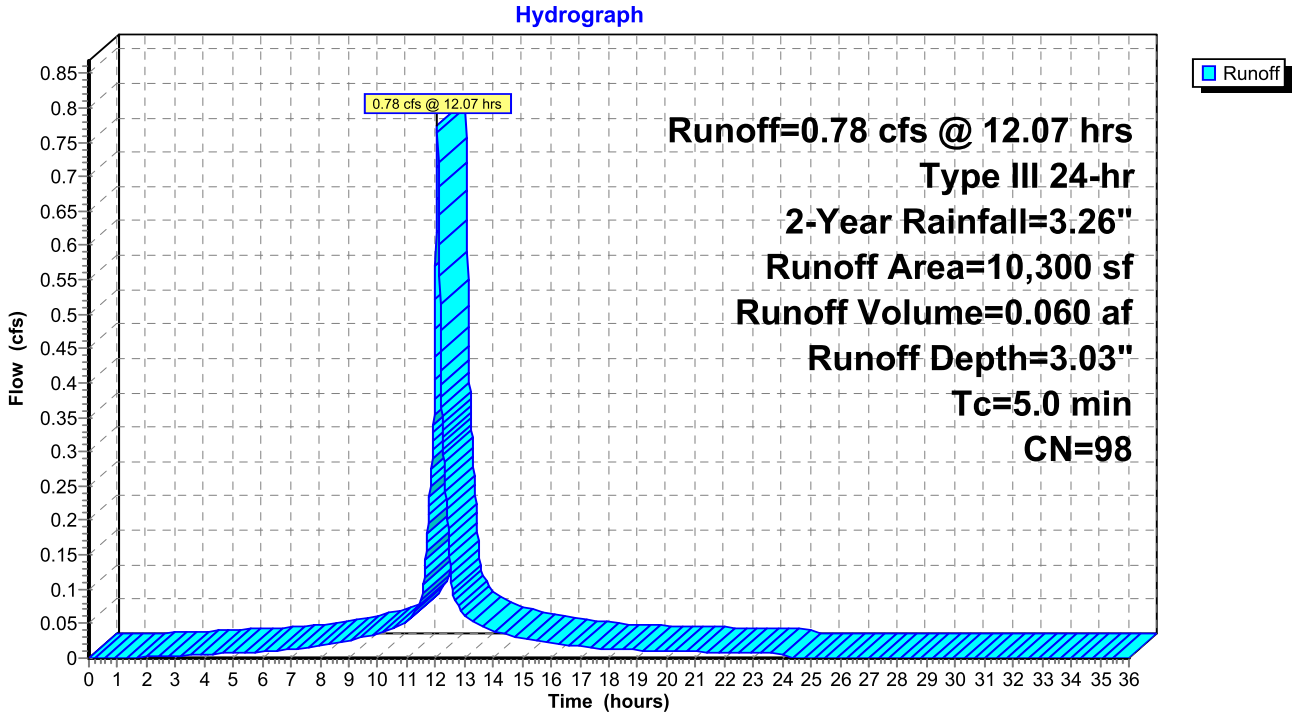
Runoff = 0.78 cfs @ 12.07 hrs, Volume= 0.060 af, Depth= 3.03"
Routed to Link 10L-PR : DESIGN POINT - 01

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.26"

Area (sf)	CN	Description
10,300	98	Paved parking, HSG B
10,300		100.00% Impervious Area

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

Subcatchment 33S: BLDG-09 PARKING LOT



Summary for Subcatchment 34S: NORTHERN DRIVEWAY

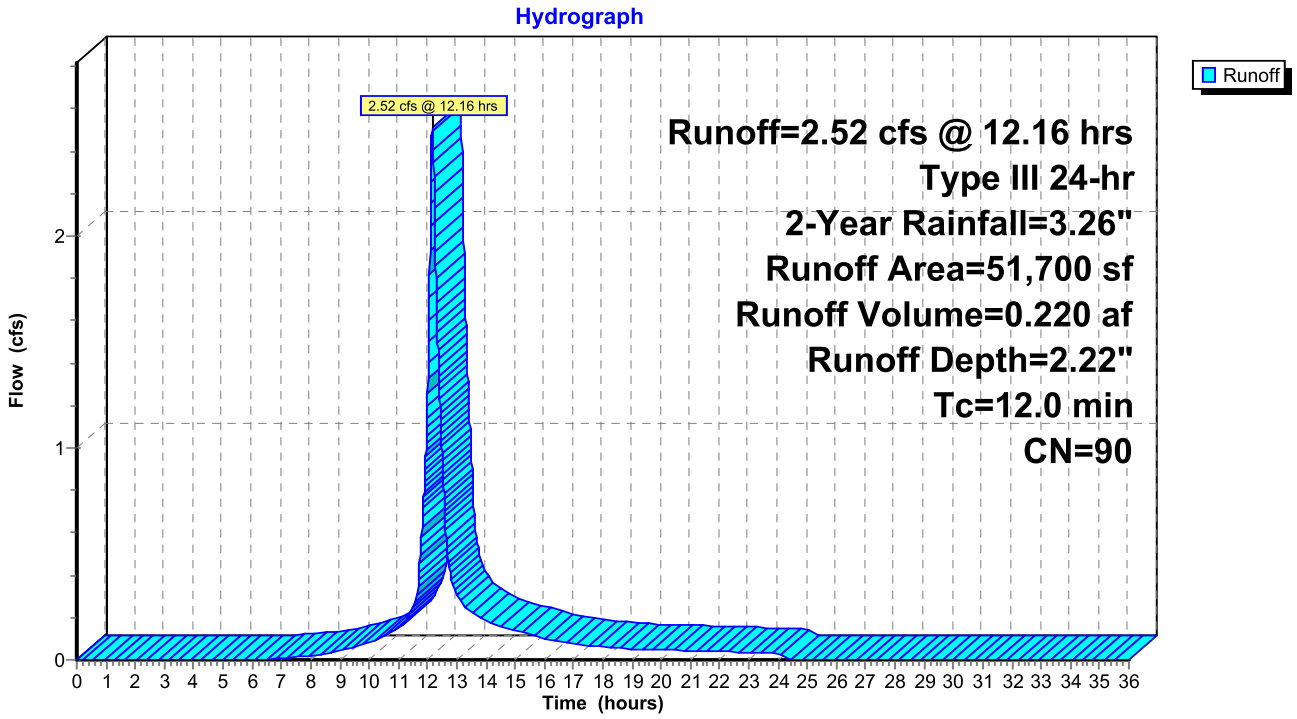
Runoff = 2.52 cfs @ 12.16 hrs, Volume= 0.220 af, Depth= 2.22"
Routed to Link 10L-PR : DESIGN POINT - 01

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.26"

Area (sf)	CN	Description
40,100	98	Paved parking, HSG B
11,000	61	>75% Grass cover, Good, HSG B
600	74	>75% Grass cover, Good, HSG C
51,700	90	Weighted Average
11,600		22.44% Pervious Area
40,100		77.56% Impervious Area

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

Subcatchment 34S: NORTHERN DRIVEWAY



Summary for Pond 01P: UG DET-01

Inflow Area = 0.856 ac, 83.38% Impervious, Inflow Depth = 2.60" for 2-Year event
Inflow = 2.34 cfs @ 12.11 hrs, Volume= 0.186 af
Outflow = 0.47 cfs @ 12.56 hrs, Volume= 0.186 af, Atten= 80%, Lag= 27.0 min
Discarded = 0.03 cfs @ 12.56 hrs, Volume= 0.053 af
Primary = 0.44 cfs @ 12.56 hrs, Volume= 0.132 af
Routed to Pond 21P : BASIN 1

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 211.08' @ 12.56 hrs Surf.Area= 1,793 sf Storage= 3,735 cf

Plug-Flow detention time= 188.0 min calculated for 0.186 af (100% of inflow)
Center-of-Mass det. time= 188.1 min (976.4 - 788.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	208.00'	3,191 cf	**37.58'W x 47.72'L x 7.00'H Field A** 12,553 cf Overall - 4,576 cf Embedded = 7,978 cf x 40.0% Voids
#2A	209.00'	4,576 cf	**ADS_StormTech MC-4500 b +Cap**x 40 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 40 Chambers in 4 Rows Cap Storage= 39.5 cf x 2 x 4 rows = 316.0 cf
		7,767 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	208.00'	**15.0" Round Culvert** L= 42.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 208.00' / 207.75' S= 0.0060 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	209.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	210.90'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	214.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	208.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.03 cfs @ 12.56 hrs HW=211.08' (Free Discharge)
└**5=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=0.44 cfs @ 12.56 hrs HW=211.08' (Free Discharge)
└**1=Culvert** (Passes 0.44 cfs of 9.26 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.33 cfs @ 6.73 fps)
  ├**3=Orifice/Grate** (Orifice Controls 0.11 cfs @ 1.44 fps)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 01P: UG DET-01 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-4500 b +Cap (ADS StormTech®MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= 39.5 cf x 2 x 4 rows = 316.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

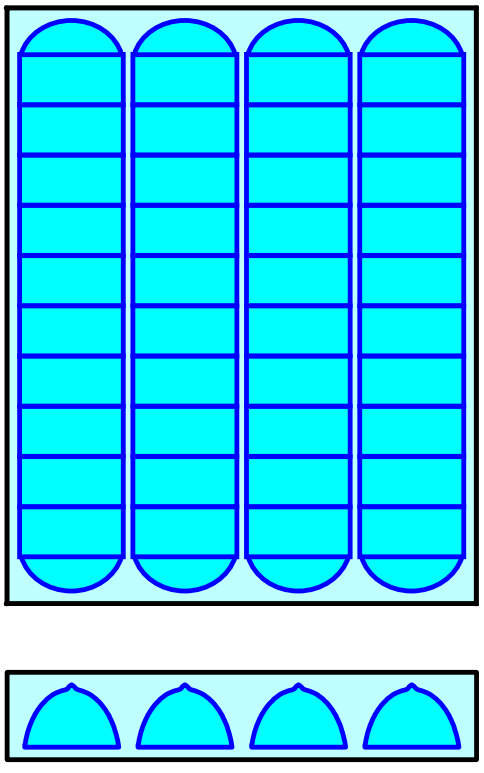
10 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 45.72' Row Length +12.0" End Stone x 2 = 47.72' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
12.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 7.00' Field Height

40 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 4 Rows = 4,575.6 cf Chamber Storage

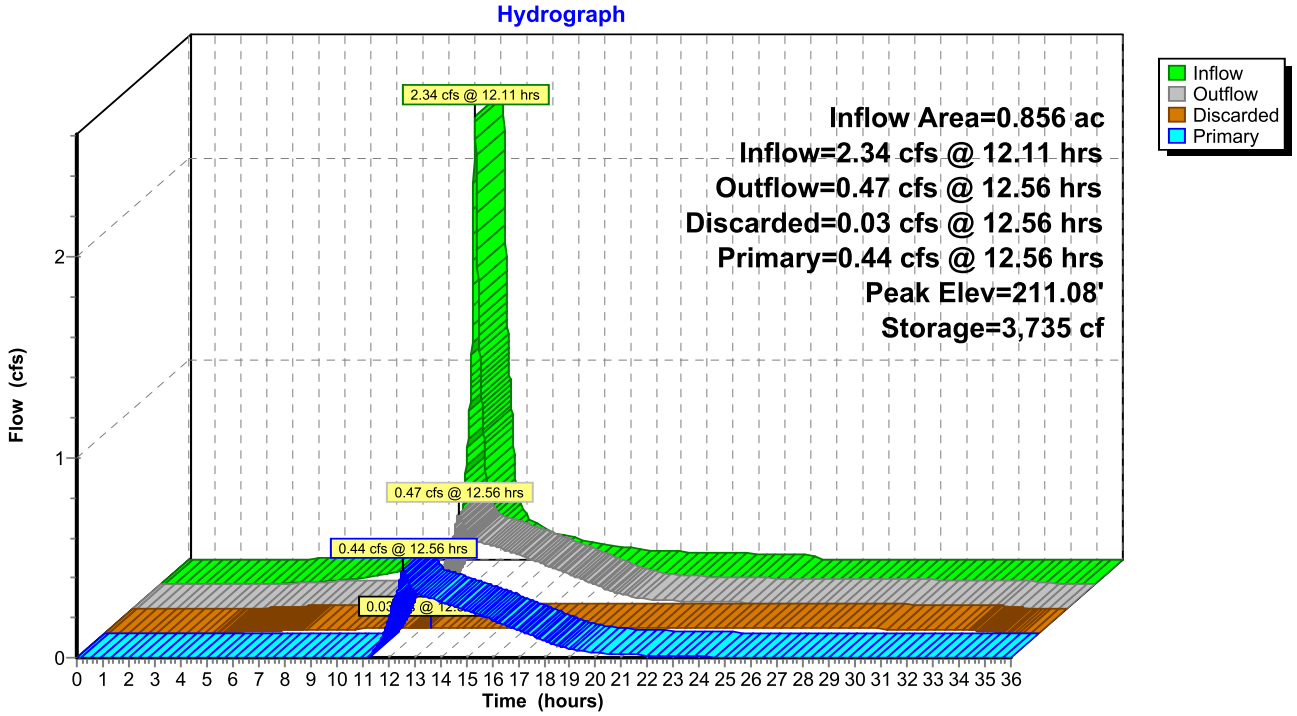
12,553.5 cf Field - 4,575.6 cf Chambers = 7,977.8 cf Stone x 40.0% Voids = 3,191.1 cf Stone Storage

Chamber Storage + Stone Storage = 7,766.8 cf = 0.178 af
Overall Storage Efficiency = 61.9%
Overall System Size = 47.72' x 37.58' x 7.00'

40 Chambers
464.9 cy Field
295.5 cy Stone



Pond 01P: UG DET-01



Summary for Pond 02P: UG DET - B-02

Inflow Area = 2.589 ac, 51.67% Impervious, Inflow Depth = 1.25" for 2-Year event
Inflow = 1.93 cfs @ 12.15 hrs, Volume= 0.269 af
Outflow = 0.52 cfs @ 13.15 hrs, Volume= 0.269 af, Atten= 73%, Lag= 60.3 min
Discarded = 0.04 cfs @ 13.15 hrs, Volume= 0.076 af
Primary = 0.48 cfs @ 13.15 hrs, Volume= 0.193 af
Routed to Pond 22P : BASIN 2

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 210.25' @ 13.15 hrs Surf.Area= 2,701 sf Storage= 3,915 cf

Plug-Flow detention time= 199.2 min calculated for 0.269 af (100% of inflow)
Center-of-Mass det. time= 199.0 min (1,047.1 - 848.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	208.00'	4,710 cf	**37.58'W x 71.87'L x 7.00'H Field A** 18,907 cf Overall - 7,131 cf Embedded = 11,776 cf x 40.0% Voids
#2A	209.00'	7,131 cf	**ADS_StormTech MC-4500 b +Cap**x 64 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 64 Chambers in 4 Rows Cap Storage= 39.5 cf x 2 x 4 rows = 316.0 cf
		11,842 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	208.00'	**15.0" Round Culvert** L= 73.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 208.00' / 205.00' S= 0.0411 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	209.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	210.00'	**9.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	214.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	208.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.04 cfs @ 13.15 hrs HW=210.25' (Free Discharge)
└**5=Exfiltration** (Controls 0.04 cfs)

Primary OutFlow Max=0.48 cfs @ 13.15 hrs HW=210.25' (Free Discharge)
└**1=Culvert** (Passes 0.48 cfs of 7.54 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.25 cfs @ 5.11 fps)
  ├**3=Orifice/Grate** (Orifice Controls 0.22 cfs @ 1.71 fps)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 02P: UG DET - B-02 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-4500 b +Cap (ADS StormTech®MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= 39.5 cf x 2 x 4 rows = 316.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

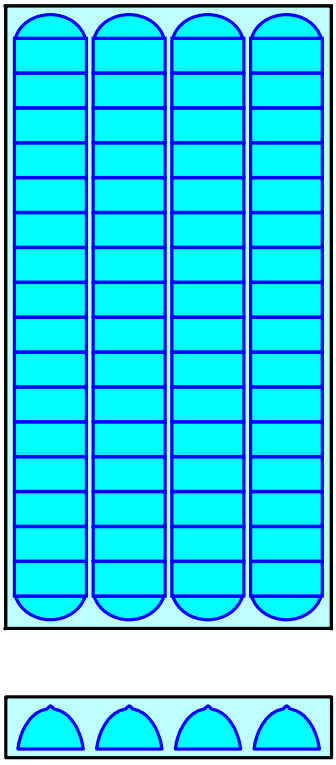
16 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 69.87' Row Length +12.0" End Stone x 2 = 71.87' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
12.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 7.00' Field Height

64 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 4 Rows = 7,131.4 cf Chamber Storage

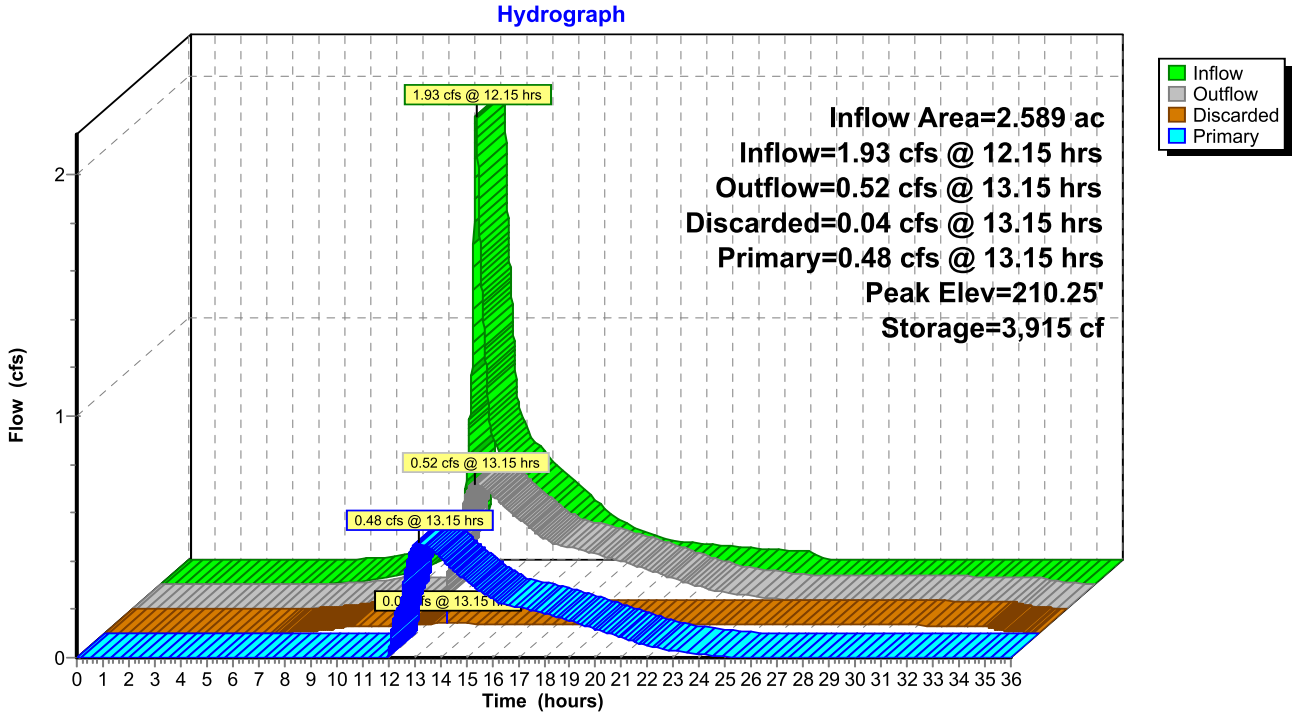
18,906.9 cf Field - 7,131.4 cf Chambers = 11,775.5 cf Stone x 40.0% Voids = 4,710.2 cf Stone Storage

Chamber Storage + Stone Storage = 11,841.6 cf = 0.272 af
Overall Storage Efficiency = 62.6%
Overall System Size = 71.87' x 37.58' x 7.00'

64 Chambers
700.3 cy Field
436.1 cy Stone



Pond 02P: UG DET - B-02



Summary for Pond 03P: UG DET

Inflow Area = 1.513 ac, 49.17% Impervious, Inflow Depth = 1.32" for 2-Year event
Inflow = 1.88 cfs @ 12.17 hrs, Volume= 0.166 af
Outflow = 0.25 cfs @ 13.12 hrs, Volume= 0.166 af, Atten= 87%, Lag= 56.6 min
Discarded = 0.03 cfs @ 13.12 hrs, Volume= 0.061 af
Primary = 0.22 cfs @ 13.12 hrs, Volume= 0.105 af
Routed to Pond 21P : BASIN 1

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 219.99' @ 13.12 hrs Surf.Area= 2,550 sf Storage= 3,145 cf

Plug-Flow detention time= 242.9 min calculated for 0.166 af (100% of inflow)
Center-of-Mass det. time= 242.6 min (1,096.3 - 853.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	218.00'	4,457 cf	**37.58'W x 67.84'L x 7.00'H Field A** 17,848 cf Overall - 6,705 cf Embedded = 11,143 cf x 40.0% Voids
#2A	219.00'	6,705 cf	**ADS_StormTech MC-4500 b +Cap**x 60 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 60 Chambers in 4 Rows Cap Storage= 39.5 cf x 2 x 4 rows = 316.0 cf
		11,162 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	216.00'	**15.0" Round Culvert** L= 47.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 216.00' / 215.25' S= 0.0160 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	219.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	220.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	224.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	218.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.03 cfs @ 13.12 hrs HW=219.99' (Free Discharge)
└**5=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=0.22 cfs @ 13.12 hrs HW=219.99' (Free Discharge)
└**1=Culvert** (Passes 0.22 cfs of 10.84 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.22 cfs @ 4.49 fps)
  ├**3=Orifice/Grate** (Controls 0.00 cfs)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 03P: UG DET - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-4500 b +Cap (ADS StormTech®MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= 39.5 cf x 2 x 4 rows = 316.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

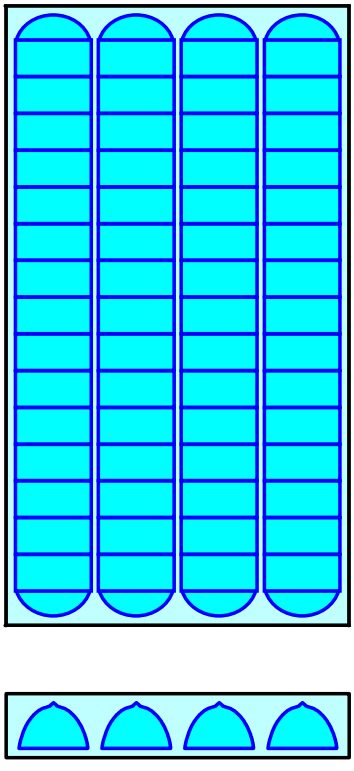
15 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 65.84' Row Length +12.0" End Stone x 2 = 67.84' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
12.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 7.00' Field Height

60 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 4 Rows = 6,705.4 cf Chamber Storage

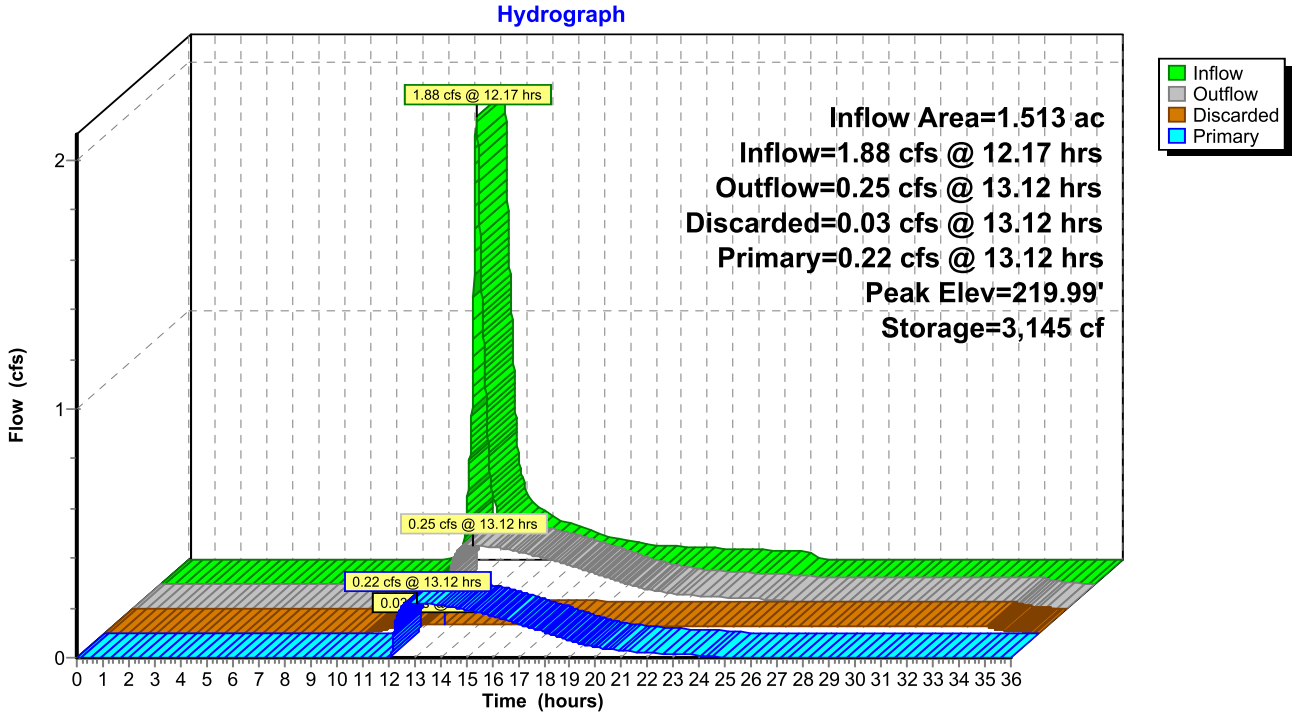
17,848.0 cf Field - 6,705.4 cf Chambers = 11,142.6 cf Stone x 40.0% Voids = 4,457.0 cf Stone Storage

Chamber Storage + Stone Storage = 11,162.5 cf = 0.256 af
Overall Storage Efficiency = 62.5%
Overall System Size = 67.84' x 37.58' x 7.00'

60 Chambers
661.0 cy Field
412.7 cy Stone



Pond 03P: UG DET



Summary for Pond 04P: UG DET - B-04

Inflow Area = 1.717 ac, 44.52% Impervious, Inflow Depth = 1.19" for 2-Year event
Inflow = 1.90 cfs @ 12.17 hrs, Volume= 0.171 af
Outflow = 0.37 cfs @ 12.81 hrs, Volume= 0.171 af, Atten= 81%, Lag= 38.3 min
Discarded = 0.03 cfs @ 12.81 hrs, Volume= 0.063 af
Primary = 0.33 cfs @ 12.81 hrs, Volume= 0.107 af
Routed to Pond 02P : UG DET - B-02

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 222.79' @ 12.81 hrs Surf.Area= 2,701 sf Storage= 2,885 cf

Plug-Flow detention time= 214.4 min calculated for 0.171 af (100% of inflow)
Center-of-Mass det. time= 214.3 min (1,074.3 - 860.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	221.00'	4,710 cf	**37.58'W x 71.87'L x 7.00'H Field A** 18,907 cf Overall - 7,131 cf Embedded = 11,776 cf x 40.0% Voids
#2A	222.00'	7,131 cf	**ADS_StormTech MC-4500 b +Cap**x 64 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 64 Chambers in 4 Rows Cap Storage= 39.5 cf x 2 x 4 rows = 316.0 cf
		11,842 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	219.00'	**15.0" Round Culvert** L= 67.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 219.00' / 217.20' S= 0.0269 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	222.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	223.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	227.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	221.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.03 cfs @ 12.81 hrs HW=222.79' (Free Discharge)
└**5=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=0.33 cfs @ 12.81 hrs HW=222.79' (Free Discharge)
└**1=Culvert** (Passes 0.33 cfs of 10.52 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.33 cfs @ 3.81 fps)
  ├**3=Orifice/Grate** (Controls 0.00 cfs)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 04P: UG DET - B-04 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-4500 b +Cap (ADS StormTech®MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= 39.5 cf x 2 x 4 rows = 316.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

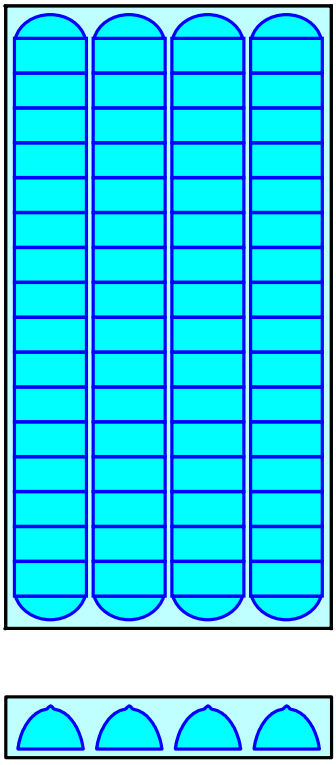
16 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 69.87' Row Length +12.0" End Stone x 2 = 71.87' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
12.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 7.00' Field Height

64 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 4 Rows = 7,131.4 cf Chamber Storage

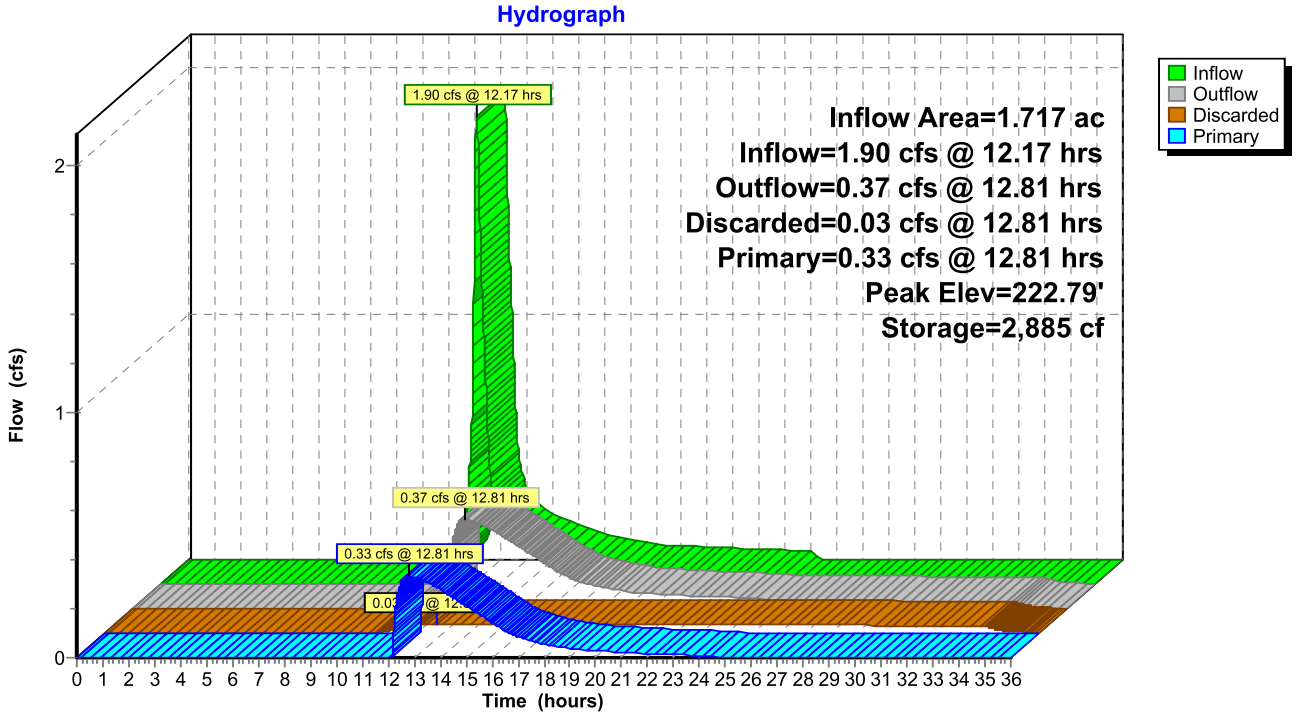
18,906.9 cf Field - 7,131.4 cf Chambers = 11,775.5 cf Stone x 40.0% Voids = 4,710.2 cf Stone Storage

Chamber Storage + Stone Storage = 11,841.6 cf = 0.272 af
Overall Storage Efficiency = 62.6%
Overall System Size = 71.87' x 37.58' x 7.00'

64 Chambers
700.3 cy Field
436.1 cy Stone



Pond 04P: UG DET - B-04



Summary for Pond 05P: UG DET - B-05

Inflow Area = 1.421 ac, 44.26% Impervious, Inflow Depth = 1.25" for 2-Year event
Inflow = 1.67 cfs @ 12.17 hrs, Volume= 0.149 af
Outflow = 0.25 cfs @ 13.02 hrs, Volume= 0.149 af, Atten= 85%, Lag= 51.0 min
Discarded = 0.03 cfs @ 13.02 hrs, Volume= 0.051 af
Primary = 0.22 cfs @ 13.02 hrs, Volume= 0.098 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 230.01' @ 13.02 hrs Surf.Area= 2,163 sf Storage= 2,703 cf

Plug-Flow detention time= 225.0 min calculated for 0.148 af (100% of inflow)
Center-of-Mass det. time= 224.8 min (1,081.7 - 856.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	228.00'	3,789 cf	**28.50'W x 75.89'L x 7.00'H Field A** 15,140 cf Overall - 5,668 cf Embedded = 9,472 cf x 40.0% Voids
#2A	229.00'	5,668 cf	**ADS_StormTech MC-4500 b +Cap**x 51 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 51 Chambers in 3 Rows Cap Storage= 39.5 cf x 2 x 3 rows = 237.0 cf
		9,457 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	220.00'	**15.0" Round Culvert** L= 68.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 220.00' / 215.40' S= 0.0676 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	229.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	230.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	234.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	228.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.03 cfs @ 13.02 hrs HW=230.01' (Free Discharge)
└**5=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=0.22 cfs @ 13.02 hrs HW=230.01' (Free Discharge)
└**1=Culvert** (Passes 0.22 cfs of 18.11 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.22 cfs @ 4.54 fps)
  ├**3=Orifice/Grate** (Orifice Controls 0.00 cfs @ 0.41 fps)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 05P: UG DET - B-05 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-4500 b +Cap (ADS StormTech®MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= 39.5 cf x 2 x 3 rows = 237.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

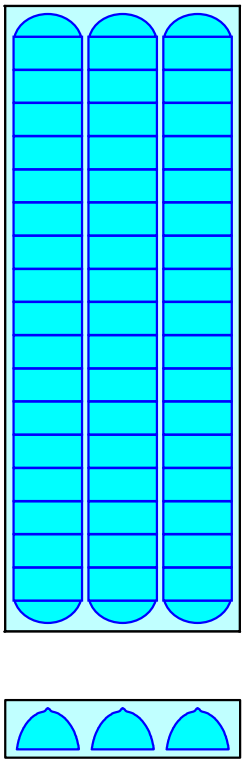
17 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 73.89' Row Length +12.0" End Stone x 2 = 75.89' Base Length
3 Rows x 100.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 28.50' Base Width
12.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 7.00' Field Height

51 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 3 Rows = 5,668.0 cf Chamber Storage

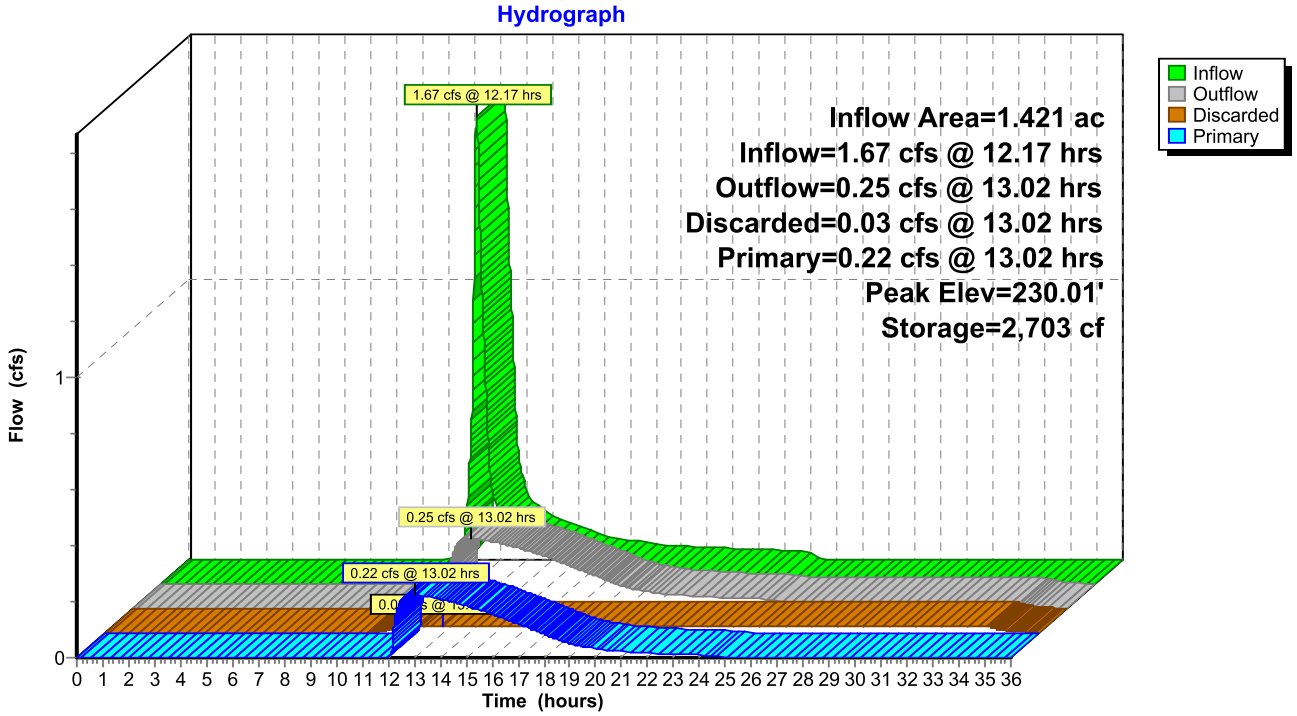
15,140.4 cf Field - 5,668.0 cf Chambers = 9,472.4 cf Stone x 40.0% Voids = 3,789.0 cf Stone Storage

Chamber Storage + Stone Storage = 9,457.0 cf = 0.217 af
Overall Storage Efficiency = 62.5%
Overall System Size = 75.89' x 28.50' x 7.00'

51 Chambers
560.8 cy Field
350.8 cy Stone



Pond 05P: UG DET - B-05



Summary for Pond 07P: UG DET - B-07

Inflow Area = 0.778 ac,100.00% Impervious, Inflow Depth = 3.03" for 2-Year event
Inflow = 2.46 cfs @ 12.08 hrs, Volume= 0.196 af
Outflow = 0.32 cfs @ 12.61 hrs, Volume= 0.196 af, Atten= 87%, Lag= 31.5 min
Discarded = 0.03 cfs @ 12.61 hrs, Volume= 0.073 af
Primary = 0.29 cfs @ 12.61 hrs, Volume= 0.123 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 217.62' @ 12.61 hrs Surf.Area= 2,415 sf Storage= 4,179 cf

Plug-Flow detention time= 230.9 min calculated for 0.196 af (100% of inflow)
Center-of-Mass det. time= 230.9 min (986.9 - 756.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	215.00'	4,260 cf	**46.67'W x 51.74'L x 7.00'H Field A** 16,902 cf Overall - 6,252 cf Embedded = 10,650 cf x 40.0% Voids
#2A	216.00'	6,252 cf	**ADS_StormTech MC-4500 b +Cap**x 55 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 55 Chambers in 5 Rows Cap Storage= 39.5 cf x 2 x 5 rows = 395.0 cf
		10,512 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	215.00'	**15.0" Round Culvert** L= 47.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 215.00' / 213.00' S= 0.0426 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	216.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	218.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	221.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	215.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.03 cfs @ 12.61 hrs HW=217.62' (Free Discharge)
└**5=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=0.29 cfs @ 12.61 hrs HW=217.62' (Free Discharge)
└**1=Culvert** (Passes 0.29 cfs of 8.34 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.29 cfs @ 5.88 fps)
  ├**3=Orifice/Grate** (Controls 0.00 cfs)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 07P: UG DET - B-07 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-4500 b +Cap (ADS StormTech®MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= 39.5 cf x 2 x 5 rows = 395.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

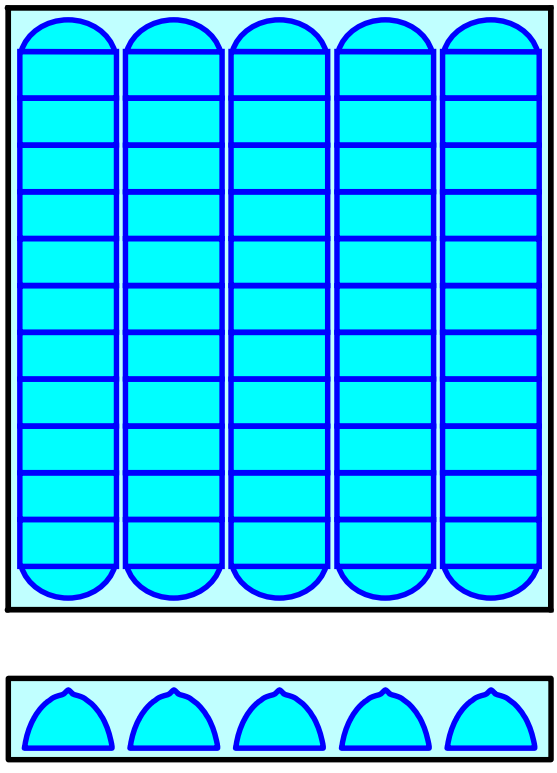
11 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 49.74' Row Length +12.0" End Stone x 2 = 51.74' Base Length
5 Rows x 100.0" Wide + 9.0" Spacing x 4 + 12.0" Side Stone x 2 = 46.67' Base Width
12.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 7.00' Field Height

55 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 5 Rows = 6,252.0 cf Chamber Storage

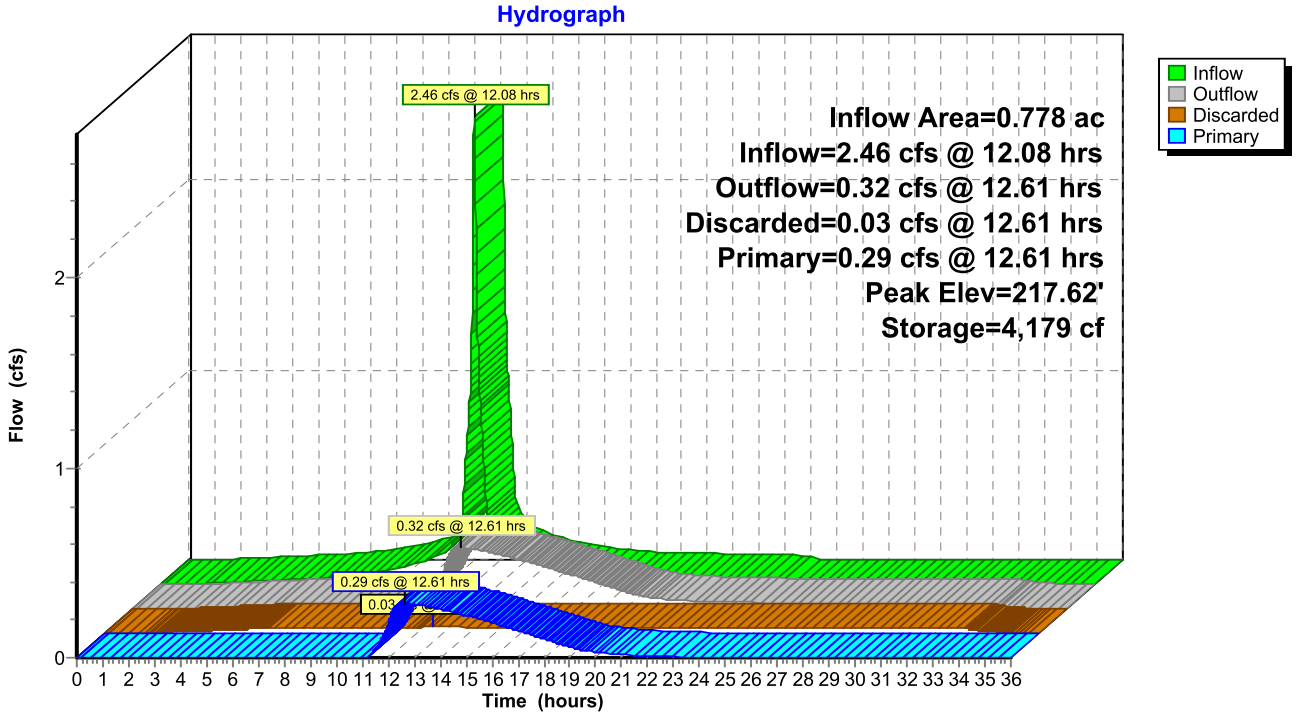
16,902.3 cf Field - 6,252.0 cf Chambers = 10,650.3 cf Stone x 40.0% Voids = 4,260.1 cf Stone Storage

Chamber Storage + Stone Storage = 10,512.1 cf = 0.241 af
Overall Storage Efficiency = 62.2%
Overall System Size = 51.74' x 46.67' x 7.00'

55 Chambers
626.0 cy Field
394.5 cy Stone



Pond 07P: UG DET - B-07



Summary for Pond 08P: UG DET - B-08

Inflow Area = 0.767 ac, 78.44% Impervious, Inflow Depth = 2.22" for 2-Year event
Inflow = 1.73 cfs @ 12.14 hrs, Volume= 0.142 af
Outflow = 0.54 cfs @ 12.51 hrs, Volume= 0.142 af, Atten= 69%, Lag= 22.5 min
Discarded = 0.03 cfs @ 12.51 hrs, Volume= 0.039 af
Primary = 0.51 cfs @ 12.51 hrs, Volume= 0.103 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 206.65' @ 12.51 hrs Surf.Area= 1,325 sf Storage= 2,286 cf

Plug-Flow detention time= 131.2 min calculated for 0.142 af (100% of inflow)
Center-of-Mass det. time= 131.3 min (941.2 - 809.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	204.00'	2,400 cf	**10.33'W x 128.22'L x 7.00'H Field A** 9,274 cf Overall - 3,274 cf Embedded = 6,001 cf x 40.0% Voids
#2A	205.00'	3,274 cf	**ADS_StormTech MC-4500 b +Cap**x 30 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= 39.5 cf x 2 x 1 rows = 79.0 cf
		5,674 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	204.00'	**15.0" Round Culvert** L= 77.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 204.00' / 203.60' S= 0.0052 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	205.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	207.00'	**7.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	210.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	204.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.03 cfs @ 12.51 hrs HW=206.65' (Free Discharge)
└**5=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=0.51 cfs @ 12.51 hrs HW=206.65' (Free Discharge)
└**1=Culvert** (Passes 0.51 cfs of 7.59 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 0.51 cfs @ 5.86 fps)
├**3=Orifice/Grate** (Controls 0.00 cfs)
└**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 08P: UG DET - B-08 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-4500 b +Cap (ADS StormTech®MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= 39.5 cf x 2 x 1 rows = 79.0 cf

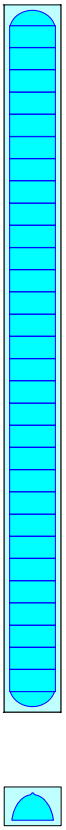
30 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 126.22' Row Length +12.0" End Stone x 2 = 128.22' Base Length
1 Rows x 100.0" Wide + 12.0" Side Stone x 2 = 10.33' Base Width
12.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 7.00' Field Height

30 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 1 Rows = 3,273.7 cf Chamber Storage

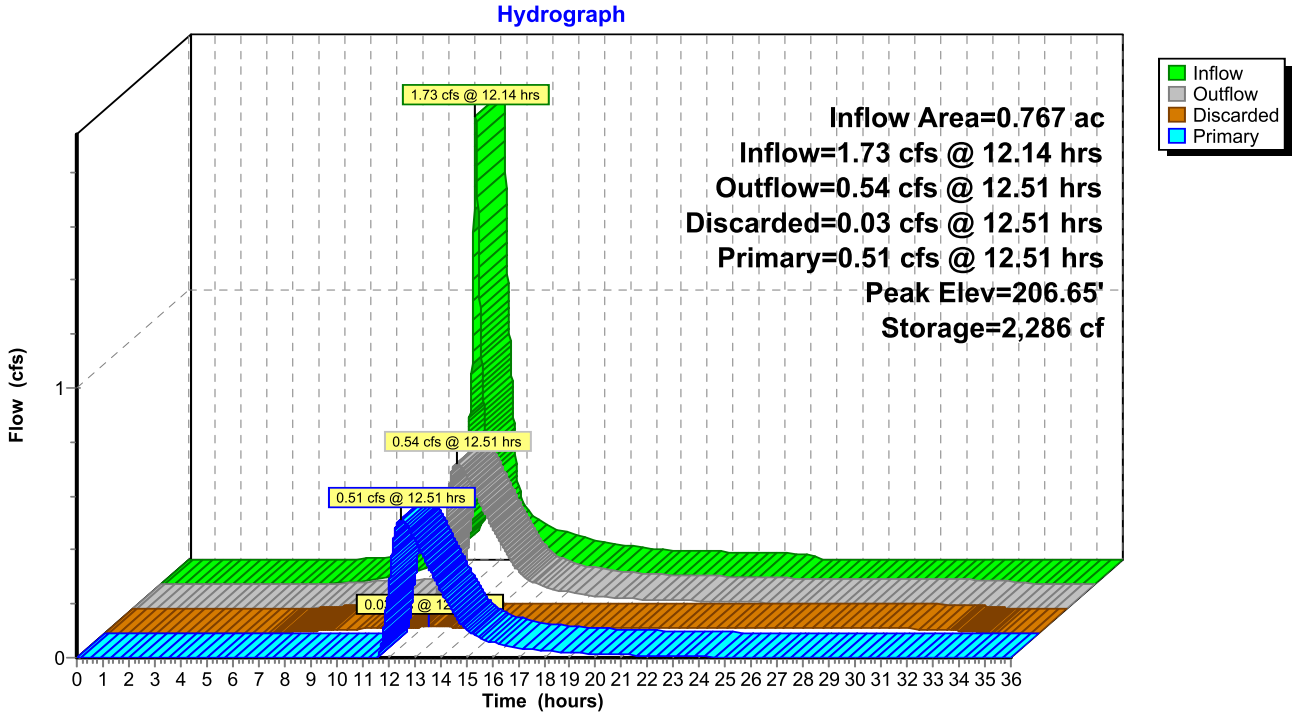
9,274.3 cf Field - 3,273.7 cf Chambers = 6,000.6 cf Stone x 40.0% Voids = 2,400.3 cf Stone Storage

Chamber Storage + Stone Storage = 5,674.0 cf = 0.130 af
Overall Storage Efficiency = 61.2%
Overall System Size = 128.22' x 10.33' x 7.00'

30 Chambers
343.5 cy Field
222.2 cy Stone



Pond 08P: UG DET - B-08



Summary for Pond 09P: UG DET - POOL

Inflow Area = 0.640 ac, 52.69% Impervious, Inflow Depth = 1.52" for 2-Year event
Inflow = 1.06 cfs @ 12.12 hrs, Volume= 0.081 af
Outflow = 0.20 cfs @ 12.62 hrs, Volume= 0.081 af, Atten= 81%, Lag= 29.9 min
Discarded = 0.02 cfs @ 12.62 hrs, Volume= 0.036 af
Primary = 0.18 cfs @ 12.62 hrs, Volume= 0.045 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 207.71' @ 12.62 hrs Surf.Area= 1,435 sf Storage= 1,409 cf

Plug-Flow detention time= 205.8 min calculated for 0.081 af (100% of inflow)
Center-of-Mass det. time= 205.9 min (1,046.4 - 840.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	206.00'	2,208 cf	**22.75'W x 63.06'L x 5.75'H Field A** 8,249 cf Overall - 2,728 cf Embedded = 5,521 cf x 40.0% Voids
#2A	207.00'	2,728 cf	**ADS_StormTech MC-3500 d +Cap**x 24 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 24 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		4,937 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	206.00'	**15.0" Round Culvert** L= 71.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 206.00' / 205.50' S= 0.0070 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	207.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	209.50'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	210.75'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	206.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.02 cfs @ 12.62 hrs HW=207.71' (Free Discharge)
└**5=Exfiltration** (Controls 0.02 cfs)

Primary OutFlow Max=0.18 cfs @ 12.62 hrs HW=207.71' (Free Discharge)
└**1=Culvert** (Passes 0.18 cfs of 5.64 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.18 cfs @ 3.67 fps)
  ├**3=Orifice/Grate** (Controls 0.00 cfs)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 09P: UG DET - POOL - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech®MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

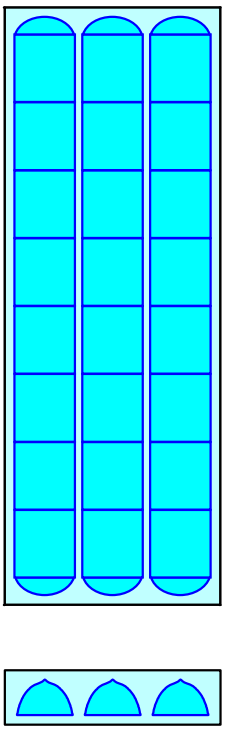
8 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 61.06' Row Length +12.0" End Stone x 2 = 63.06' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
12.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.75' Field Height

24 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 2,728.2 cf Chamber Storage

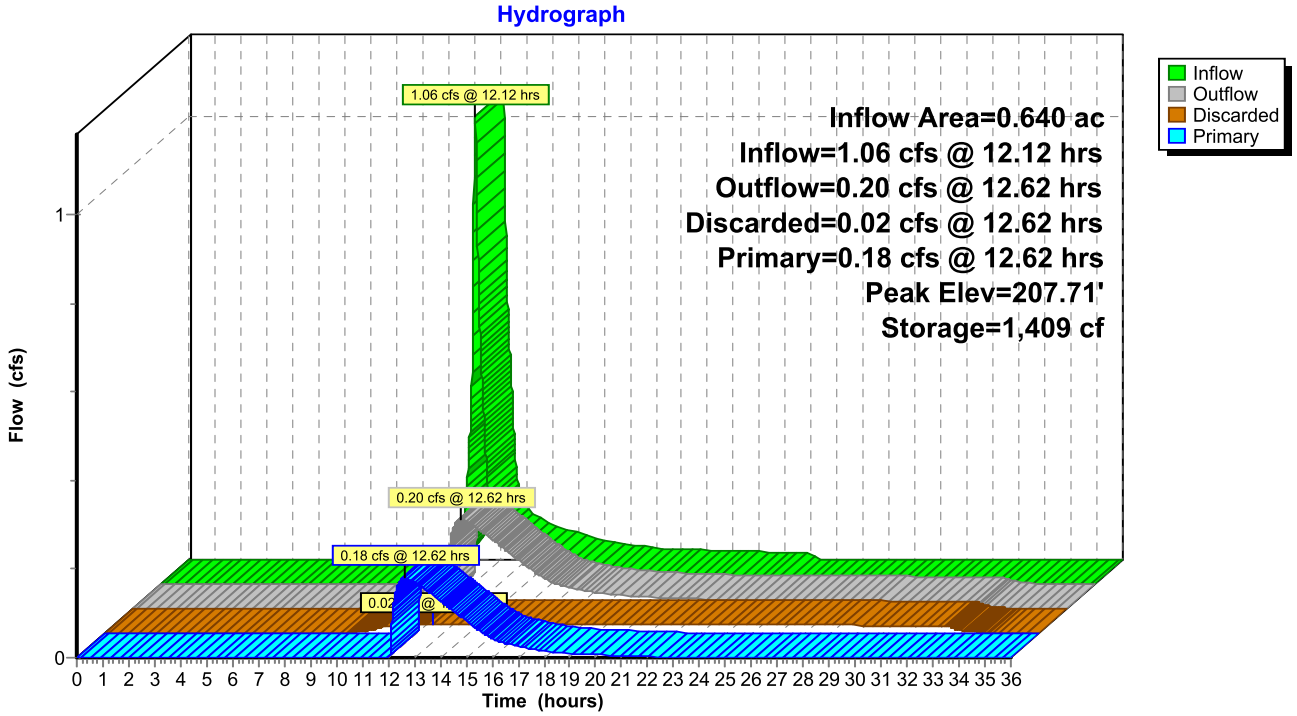
8,249.0 cf Field - 2,728.2 cf Chambers = 5,520.8 cf Stone x 40.0% Voids = 2,208.3 cf Stone Storage

Chamber Storage + Stone Storage = 4,936.6 cf = 0.113 af
Overall Storage Efficiency = 59.8%
Overall System Size = 63.06' x 22.75' x 5.75'

24 Chambers
305.5 cy Field
204.5 cy Stone



Pond 09P: UG DET - POOL



Summary for Pond 10P: UG DET - B-C

Inflow Area = 0.980 ac, 69.09% Impervious, Inflow Depth = 1.97" for 2-Year event
Inflow = 1.97 cfs @ 12.14 hrs, Volume= 0.161 af
Outflow = 0.31 cfs @ 12.73 hrs, Volume= 0.161 af, Atten= 84%, Lag= 35.7 min
Discarded = 0.05 cfs @ 12.73 hrs, Volume= 0.088 af
Primary = 0.26 cfs @ 12.73 hrs, Volume= 0.072 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 209.56' @ 12.73 hrs Surf.Area= 3,611 sf Storage= 3,140 cf

Plug-Flow detention time= 255.8 min calculated for 0.161 af (100% of inflow)
Center-of-Mass det. time= 255.8 min (1,077.6 - 821.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	208.00'	5,451 cf	**51.42'W x 70.23'L x 5.75'H Field A** 20,763 cf Overall - 7,136 cf Embedded = 13,628 cf x 40.0% Voids
#2A	209.00'	7,136 cf	**ADS_StormTech MC-3500 d +Cap**x 63 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 63 Chambers in 7 Rows Cap Storage= 14.9 cf x 2 x 7 rows = 208.6 cf
		12,587 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	209.00'	**15.0" Round Culvert** L= 36.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 209.00' / 208.60' S= 0.0111 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	209.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	212.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	212.75'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	208.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.05 cfs @ 12.73 hrs HW=209.56' (Free Discharge)
└**5=Exfiltration** (Controls 0.05 cfs)

Primary OutFlow Max=0.26 cfs @ 12.73 hrs HW=209.56' (Free Discharge)
└**1=Culvert** (Passes 0.26 cfs of 1.32 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.26 cfs @ 3.00 fps)
  ├**3=Orifice/Grate** (Controls 0.00 cfs)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 10P: UG DET - B-C - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech®MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 7 rows = 208.6 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

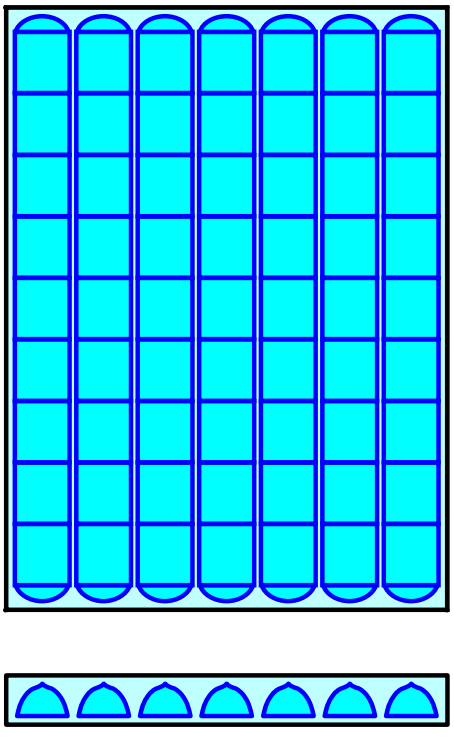
9 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 68.23' Row Length +12.0" End Stone x 2 = 70.23' Base Length
7 Rows x 77.0" Wide + 9.0" Spacing x 6 + 12.0" Side Stone x 2 = 51.42' Base Width
12.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.75' Field Height

63 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 7 Rows = 7,135.6 cf Chamber Storage

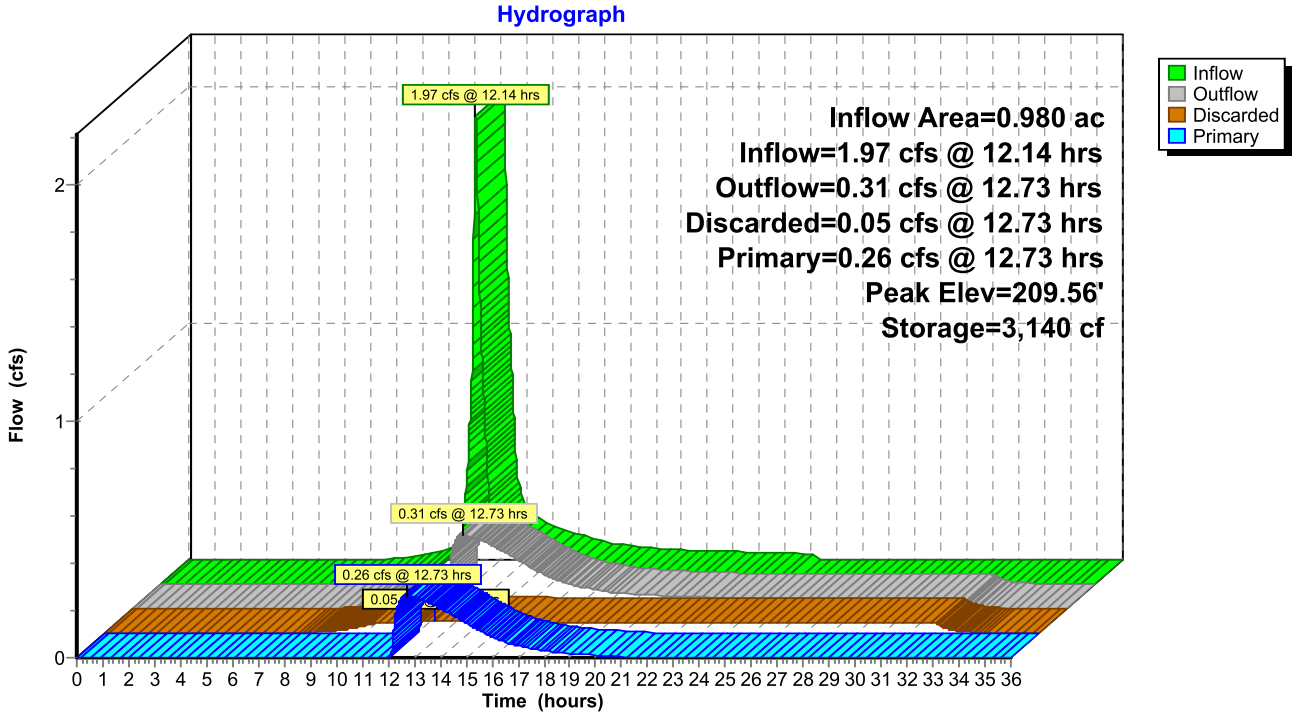
20,763.2 cf Field - 7,135.6 cf Chambers = 13,627.6 cf Stone x 40.0% Voids = 5,451.1 cf Stone Storage

Chamber Storage + Stone Storage = 12,586.6 cf = 0.289 af
Overall Storage Efficiency = 60.6%
Overall System Size = 70.23' x 51.42' x 5.75'

63 Chambers
769.0 cy Field
504.7 cy Stone



Pond 10P: UG DET - B-C



Summary for Pond 11P: UG DET-B-D

Inflow Area = 1.462 ac, 74.88% Impervious, Inflow Depth = 2.14" for 2-Year event
Inflow = 3.18 cfs @ 12.14 hrs, Volume= 0.260 af
Outflow = 0.39 cfs @ 12.92 hrs, Volume= 0.260 af, Atten= 88%, Lag= 47.0 min
Discarded = 0.07 cfs @ 12.92 hrs, Volume= 0.137 af
Primary = 0.32 cfs @ 12.92 hrs, Volume= 0.124 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 209.75' @ 12.92 hrs Surf.Area= 5,277 sf Storage= 5,415 cf

Plug-Flow detention time= 273.3 min calculated for 0.260 af (100% of inflow)
Center-of-Mass det. time= 273.4 min (1,087.5 - 814.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	208.00'	7,980 cf	**94.42'W x 55.89'L x 5.75'H Field A** 30,342 cf Overall - 10,393 cf Embedded = 19,949 cf x 40.0% Voids
#2A	209.00'	10,393 cf	**ADS_StormTech MC-3500 d +Cap**x 91 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 91 Chambers in 13 Rows Cap Storage= 14.9 cf x 2 x 13 rows = 387.4 cf
		18,373 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	208.60'	**15.0" Round Culvert** L= 53.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 208.60' / 208.30' S= 0.0057 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	209.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	210.90'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	212.75'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	208.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.07 cfs @ 12.92 hrs HW=209.75' (Free Discharge)
└**5=Exfiltration** (Controls 0.07 cfs)

Primary OutFlow Max=0.32 cfs @ 12.92 hrs HW=209.75' (Free Discharge)
└**1=Culvert** (Passes 0.32 cfs of 3.61 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.32 cfs @ 3.66 fps)
  ├**3=Orifice/Grate** (Controls 0.00 cfs)
  └**4=Sharp-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 11P: UG DET-B-D - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech®MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 13 rows = 387.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

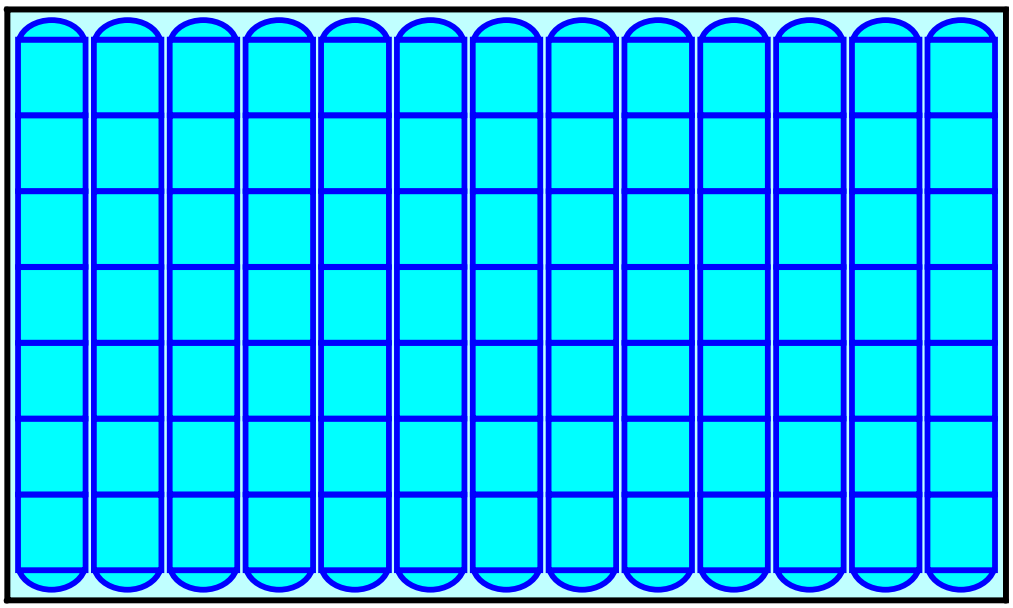
7 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 53.89' Row Length +12.0" End Stone x 2 = 55.89' Base Length
13 Rows x 77.0" Wide + 9.0" Spacing x 12 + 12.0" Side Stone x 2 = 94.42' Base Width
12.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.75' Field Height

91 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 13 Rows = 10,393.0 cf Chamber Storage

30,342.4 cf Field - 10,393.0 cf Chambers = 19,949.4 cf Stone x 40.0% Voids = 7,979.8 cf Stone Storage

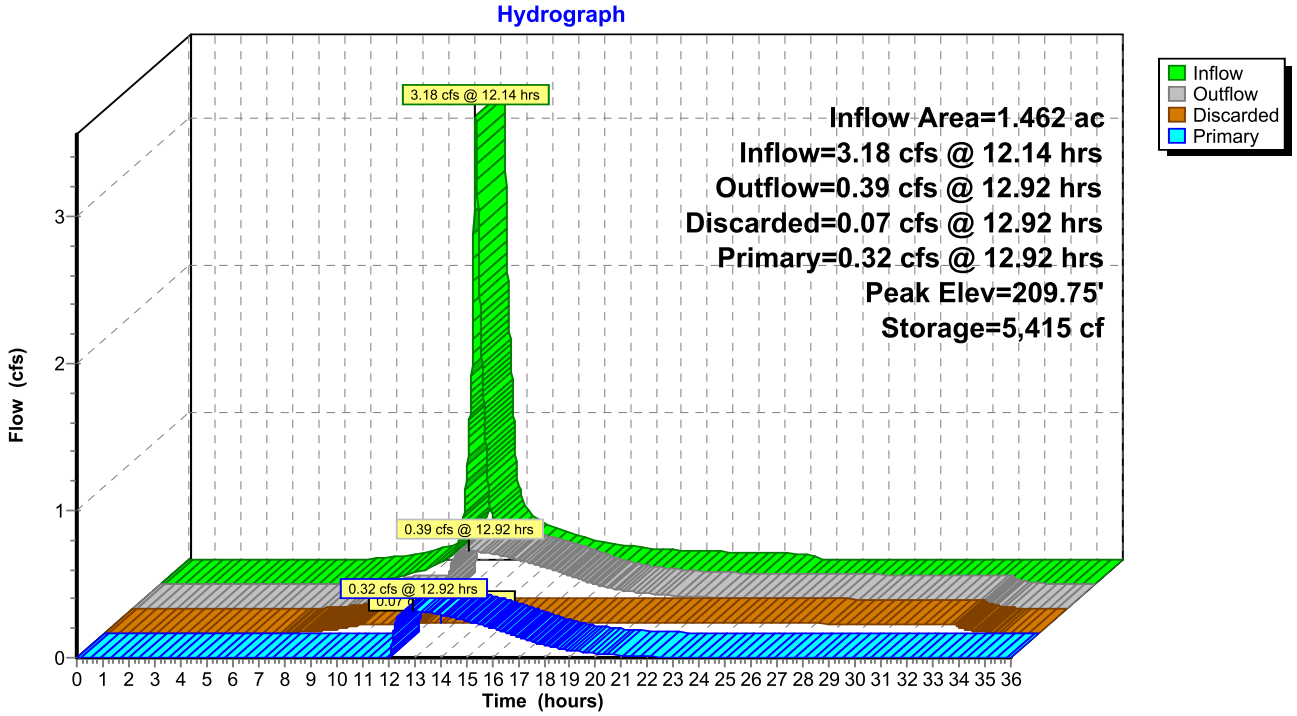
Chamber Storage + Stone Storage = 18,372.8 cf = 0.422 af
Overall Storage Efficiency = 60.6%
Overall System Size = 55.89' x 94.42' x 5.75'

91 Chambers
1,123.8 cy Field
738.9 cy Stone





Pond 11P: UG DET-B-D



Summary for Pond 21P: BASIN 1

Inflow Area = 3.393 ac, 50.00% Impervious, Inflow Depth = 1.03" for 2-Year event
Inflow = 0.91 cfs @ 12.48 hrs, Volume= 0.291 af
Outflow = 0.59 cfs @ 13.75 hrs, Volume= 0.228 af, Atten= 36%, Lag= 76.0 min
Discarded = 0.03 cfs @ 13.75 hrs, Volume= 0.059 af
Primary = 0.55 cfs @ 13.75 hrs, Volume= 0.168 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 209.06' @ 13.75 hrs Surf.Area= 2,165 sf Storage= 4,077 cf

Plug-Flow detention time= 237.8 min calculated for 0.228 af (78% of inflow)
Center-of-Mass det. time= 171.1 min (1,082.6 - 911.5)

Volume	Invert	Avail.Storage	Storage Description
#1	206.00'	6,225 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

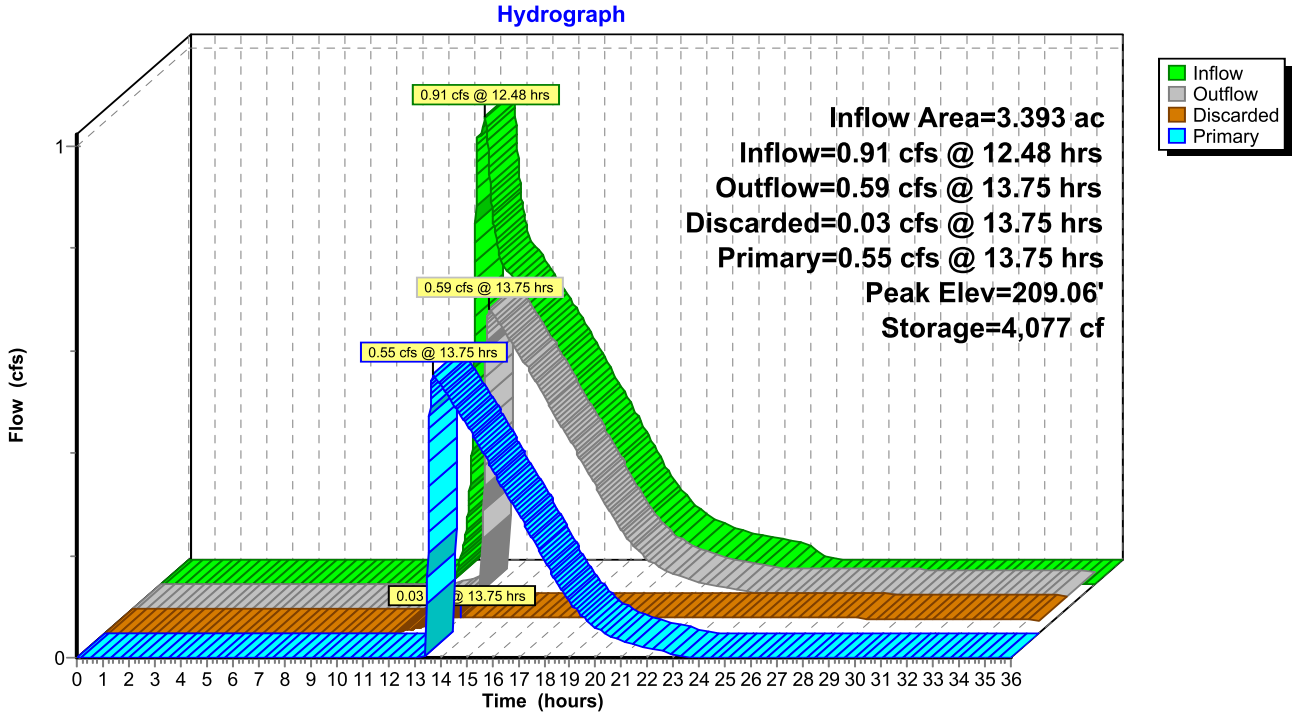
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
206.00	610	0	0
207.00	1,030	820	820
208.00	1,540	1,285	2,105
209.00	2,150	1,845	3,950
210.00	2,400	2,275	6,225

Device	Routing	Invert	Outlet Devices
#1	Primary	209.00'	**15.0' long + 3.0 '/' SideZ x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	206.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.03 cfs @ 13.75 hrs HW=209.06' (Free Discharge)
2=Exfiltration (Controls 0.03 cfs)

Primary OutFlow Max=0.53 cfs @ 13.75 hrs HW=209.06' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 0.53 cfs @ 0.59 fps)

Pond 21P: BASIN 1



Summary for Pond 22P: BASIN 2

Inflow Area = 2.917 ac, 45.85% Impervious, Inflow Depth = 0.91" for 2-Year event
Inflow = 0.52 cfs @ 13.11 hrs, Volume= 0.222 af
Outflow = 0.06 cfs @ 21.89 hrs, Volume= 0.106 af, Atten= 88%, Lag= 527.2 min
Discarded = 0.06 cfs @ 21.89 hrs, Volume= 0.106 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 200.67' @ 21.89 hrs Surf.Area= 4,124 sf Storage= 7,555 cf

Plug-Flow detention time= 658.1 min calculated for 0.106 af (48% of inflow)
Center-of-Mass det. time= 516.3 min (1,460.6 - 944.3)

Volume	Invert	Avail.Storage	Storage Description
#1	198.00'	14,215 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

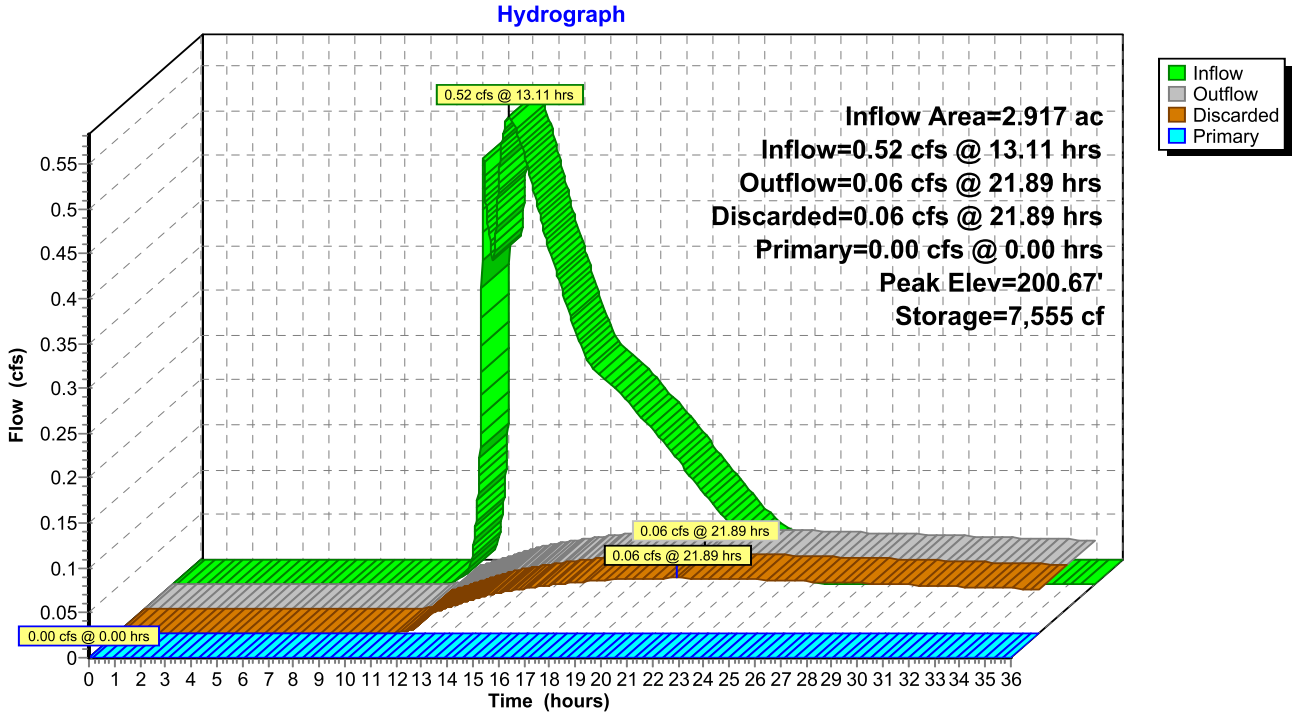
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
198.00	1,710	0	0
199.00	2,480	2,095	2,095
200.00	3,400	2,940	5,035
201.00	4,480	3,940	8,975
202.00	6,000	5,240	14,215

Device	Routing	Invert	Outlet Devices
#1	Primary	201.00'	**12.0' long + 3.0 '/' SideZ x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	198.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 192.00'

Discarded OutFlow Max=0.06 cfs @ 21.89 hrs HW=200.67' (Free Discharge)
└**2=Exfiltration** (Controls 0.06 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=198.00' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 22P: BASIN 2



Summary for Pond 23P: BASIN 3

Inflow Area = 0.468 ac, 18.14% Impervious, Inflow Depth = 0.91" for 2-Year event
Inflow = 0.43 cfs @ 12.12 hrs, Volume= 0.036 af
Outflow = 0.01 cfs @ 20.51 hrs, Volume= 0.021 af, Atten= 97%, Lag= 503.4 min
Discarded = 0.01 cfs @ 20.51 hrs, Volume= 0.021 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 220.72' @ 20.51 hrs Surf.Area= 935 sf Storage= 1,094 cf

Plug-Flow detention time= 673.6 min calculated for 0.021 af (59% of inflow)
Center-of-Mass det. time= 548.6 min (1,421.3 - 872.6)

Volume	Invert	Avail.Storage	Storage Description
#1	219.00'	4,225 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

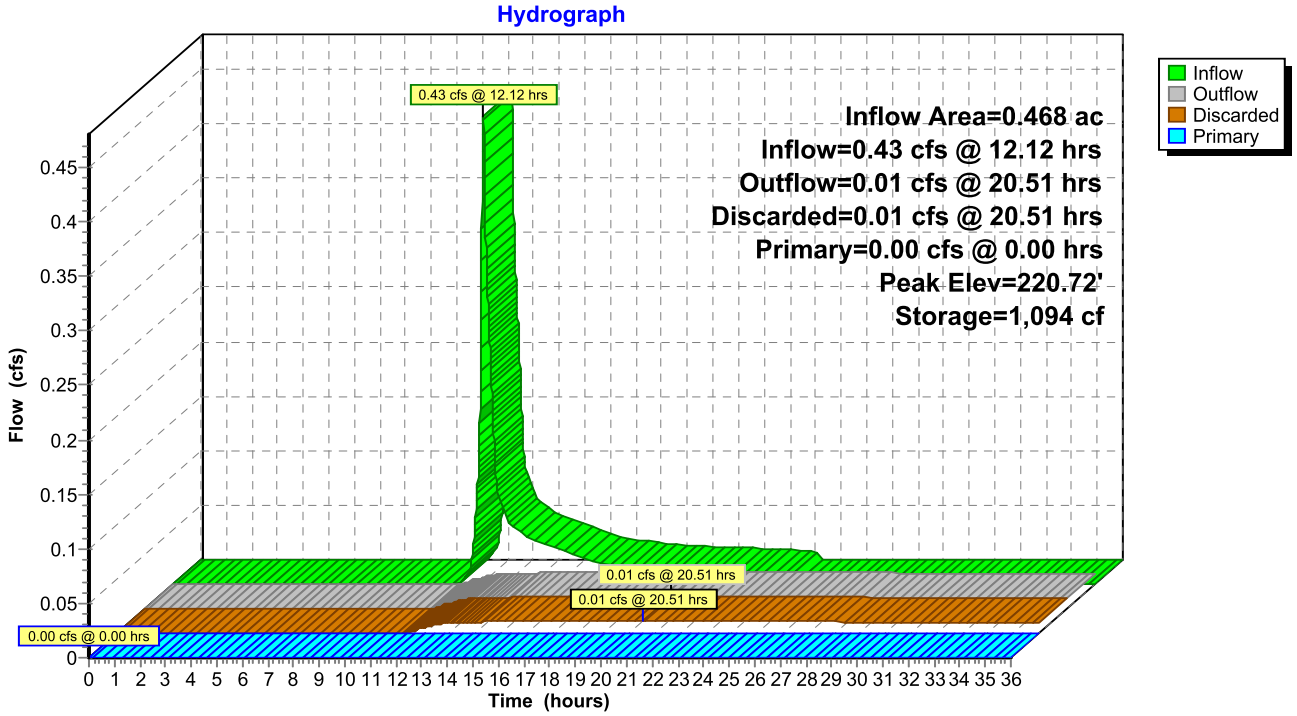
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
219.00	370	0	0
220.00	670	520	520
221.00	1,040	855	1,375
222.00	1,480	1,260	2,635
223.00	1,700	1,590	4,225

Device	Routing	Invert	Outlet Devices
#1	Primary	222.00'	**12.0' long + 3.0 '/' SideZ x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	219.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.01 cfs @ 20.51 hrs HW=220.72' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=219.00' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 23P: BASIN 3



Summary for Pond 24P: BASIN 4

Inflow Area = 0.753 ac, 36.59% Impervious, Inflow Depth = 1.66" for 2-Year event
Inflow = 1.38 cfs @ 12.11 hrs, Volume= 0.104 af
Outflow = 0.03 cfs @ 19.32 hrs, Volume= 0.054 af, Atten= 98%, Lag= 432.4 min
Discarded = 0.03 cfs @ 19.32 hrs, Volume= 0.054 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 217.28' @ 19.32 hrs Surf.Area= 2,249 sf Storage= 3,347 cf

Plug-Flow detention time= 678.1 min calculated for 0.054 af (52% of inflow)
Center-of-Mass det. time= 561.6 min (1,395.3 - 833.6)

Volume	Invert	Avail.Storage	Storage Description
#1	215.00'	8,345 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

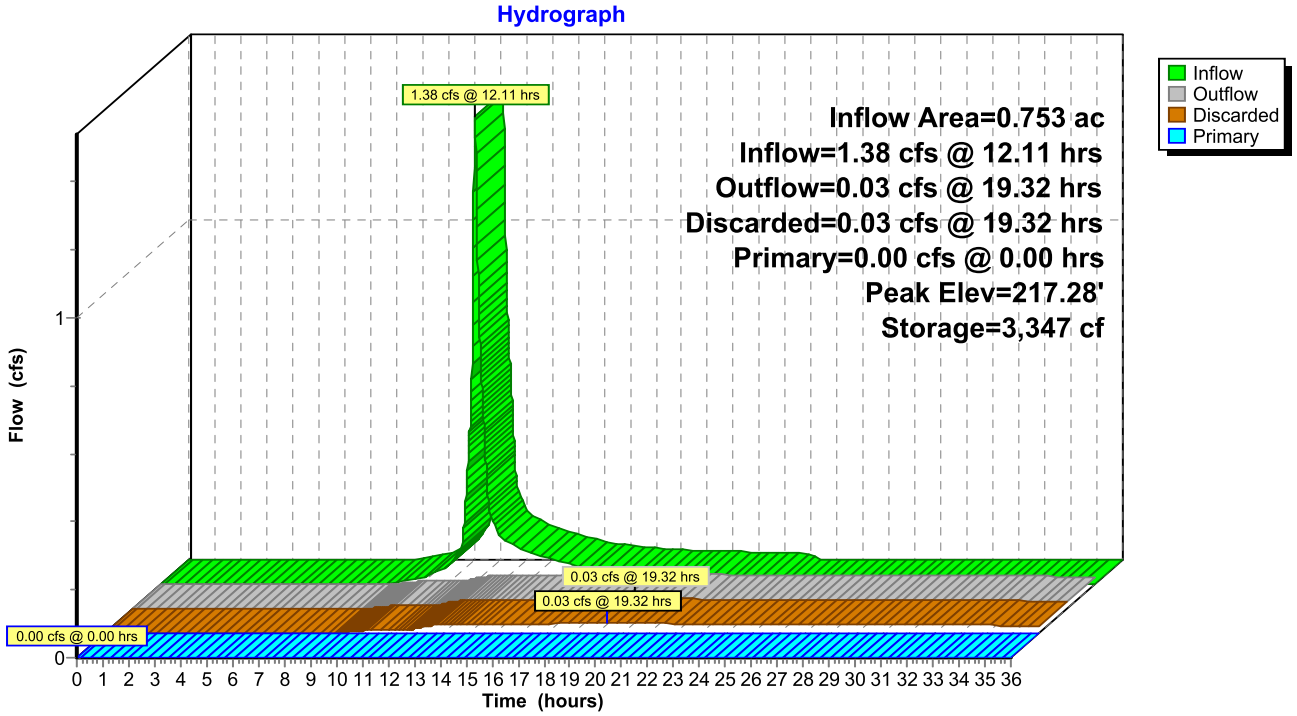
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
215.00	790	0	0
216.00	1,340	1,065	1,065
217.00	2,010	1,675	2,740
218.00	2,850	2,430	5,170
219.00	3,500	3,175	8,345

Device	Routing	Invert	Outlet Devices
#1	Primary	218.00'	**12.0' long + 3.0 '/' SideZ x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	215.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.03 cfs @ 19.32 hrs HW=217.28' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=215.00' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 24P: BASIN 4

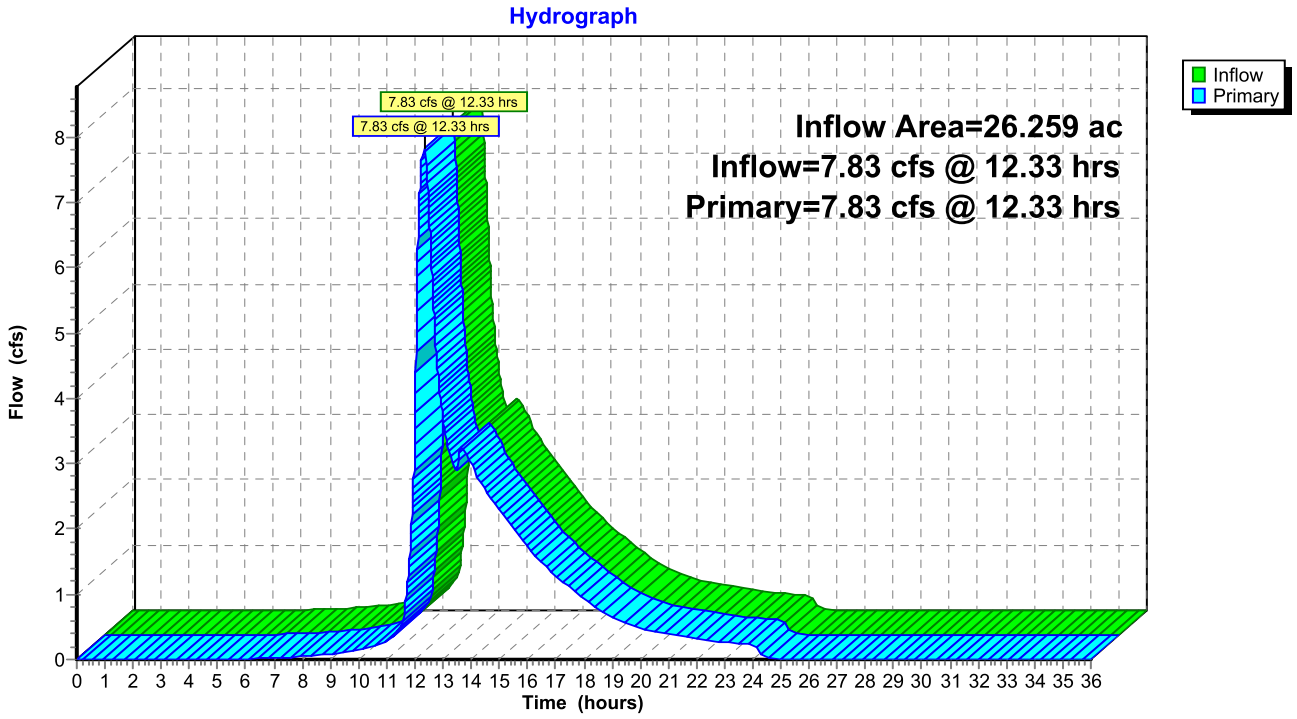


Summary for Link 10L-PR: DESIGN POINT - 01

Inflow Area = 26.259 ac, 34.64% Impervious, Inflow Depth = 0.77" for 2-Year event
Inflow = 7.83 cfs @ 12.33 hrs, Volume= 1.689 af
Primary = 7.83 cfs @ 12.33 hrs, Volume= 1.689 af, Atten= 0%, Lag= 0.0 min

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

Link 10L-PR: DESIGN POINT - 01



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

Subcatchment01S: BLDG-01 Runoff Area=37,300 sf 83.38% Impervious Runoff Depth=4.17"
Tc=8.0 min CN=94 Runoff=3.64 cfs 0.298 af

Subcatchment02S: BLDG-02 Runoff Area=37,956 sf 65.75% Impervious Runoff Depth=3.74"
Flow Length=400' Tc=10.6 min CN=90 Runoff=3.18 cfs 0.272 af

Subcatchment03S: BLDG-03 Runoff Area=65,900 sf 49.17% Impervious Runoff Depth=2.59"
Tc=12.0 min CN=78 Runoff=3.78 cfs 0.327 af

Subcatchment04S: BLDG-04 Runoff Area=74,800 sf 44.52% Impervious Runoff Depth=2.42"
Tc=12.0 min CN=76 Runoff=3.99 cfs 0.346 af

Subcatchment05S: BLDG 05 Runoff Area=61,900 sf 44.26% Impervious Runoff Depth=2.51"
Tc=12.0 min CN=77 Runoff=3.43 cfs 0.297 af

Subcatchment06S: BLDG-06 Runoff Area=32,800 sf 36.59% Impervious Runoff Depth=3.05"
Flow Length=75' Slope=0.0200 '/' Tc=7.7 min CN=83 Runoff=2.53 cfs 0.191 af

Subcatchment07S: BLDG-07 Runoff Area=33,900 sf 100.00% Impervious Runoff Depth=4.62"
Tc=6.0 min CN=98 Runoff=3.70 cfs 0.300 af

Subcatchment08S: BLDG 08 Runoff Area=33,400 sf 78.44% Impervious Runoff Depth=3.74"
Tc=10.0 min CN=90 Runoff=2.85 cfs 0.239 af

Subcatchment09S: POOL HOUSE Runoff Area=27,900 sf 52.69% Impervious Runoff Depth=2.86"
Tc=8.0 min CN=81 Runoff=2.00 cfs 0.153 af

Subcatchment10S: BLDG C Runoff Area=42,700 sf 69.09% Impervious Runoff Depth=3.44"
Tc=10.0 min CN=87 Runoff=3.40 cfs 0.281 af

Subcatchment11S: BLDG-D Runoff Area=63,700 sf 74.88% Impervious Runoff Depth=3.64"
Tc=10.0 min CN=89 Runoff=5.31 cfs 0.443 af

Subcatchment21S: SOUTHERN Runoff Area=44,600 sf 23.32% Impervious Runoff Depth=1.56"
Tc=12.0 min UI Adjusted CN=65 Runoff=1.45 cfs 0.133 af

Subcatchment22S: DIRECT FLOW TO Runoff Area=14,300 sf 0.00% Impervious Runoff Depth=2.25"
Tc=8.0 min CN=74 Runoff=0.80 cfs 0.062 af

Subcatchment23S: DIRECT FLOW TO Runoff Area=20,400 sf 18.14% Impervious Runoff Depth=2.01"
Flow Length=110' Slope=0.0400 '/' Tc=7.9 min UI Adjusted CN=71 Runoff=1.02 cfs 0.078 af

Subcatchment30S: EASTERN Runoff Area=403,100 sf 0.00% Impervious Runoff Depth=1.63"
Flow Length=950' Tc=23.7 min CN=66 Runoff=10.56 cfs 1.259 af

Subcatchment31S: NORTHERN Runoff Area=52,900 sf 0.00% Impervious Runoff Depth=0.91"
Tc=15.0 min CN=55 Runoff=0.76 cfs 0.092 af

Subcatchment32S: ENTRANCE Runoff Area=34,300 sf 54.23% Impervious Runoff Depth=3.44"
Tc=6.0 min CN=87 Runoff=3.12 cfs 0.225 af

Subcatchment33S: BLDG-09 Runoff Area=10,300 sf 100.00% Impervious Runoff Depth=4.62"
Tc=5.0 min CN=98 Runoff=1.16 cfs 0.091 af

Subcatchment34S: NORTHERN Runoff Area=51,700 sf 77.56% Impervious Runoff Depth=3.74"
Tc=12.0 min CN=90 Runoff=4.15 cfs 0.370 af

Pond 01P: UG DET-01 Peak Elev=211.80' Storage=4,704 cf Inflow=3.64 cfs 0.298 af
Discarded=0.03 cfs 0.058 af Primary=1.65 cfs 0.239 af Outflow=1.68 cfs 0.298 af

Pond 02P: UG DET - B-02 Peak Elev=211.18' Storage=5,911 cf Inflow=3.54 cfs 0.548 af
Discarded=0.04 cfs 0.086 af Primary=2.24 cfs 0.462 af Outflow=2.29 cfs 0.548 af

Pond 03P: UG DET Peak Elev=220.90' Storage=5,019 cf Inflow=3.78 cfs 0.327 af
Discarded=0.03 cfs 0.068 af Primary=1.58 cfs 0.259 af Outflow=1.61 cfs 0.327 af

Pond 04P: UG DET - B-04 Peak Elev=223.80' Storage=5,115 cf Inflow=3.99 cfs 0.346 af
Discarded=0.04 cfs 0.069 af Primary=1.69 cfs 0.277 af Outflow=1.72 cfs 0.346 af

Pond 05P: UG DET - B-05 Peak Elev=230.91' Storage=4,265 cf Inflow=3.43 cfs 0.297 af
Discarded=0.03 cfs 0.056 af Primary=1.59 cfs 0.241 af Outflow=1.62 cfs 0.297 af

Pond 07P: UG DET - B-07 Peak Elev=218.52' Storage=5,881 cf Inflow=3.70 cfs 0.300 af
Discarded=0.03 cfs 0.079 af Primary=0.86 cfs 0.221 af Outflow=0.90 cfs 0.300 af

Pond 08P: UG DET - B-08 Peak Elev=207.62' Storage=3,258 cf Inflow=2.85 cfs 0.239 af
Discarded=0.03 cfs 0.043 af Primary=1.40 cfs 0.196 af Outflow=1.43 cfs 0.239 af

Pond 09P: UG DET - POOL Peak Elev=209.01' Storage=2,864 cf Inflow=2.00 cfs 0.153 af
Discarded=0.02 cfs 0.040 af Primary=0.32 cfs 0.113 af Outflow=0.35 cfs 0.153 af

Pond 10P: UG DET - B-C Peak Elev=210.44' Storage=5,744 cf Inflow=3.40 cfs 0.281 af
Discarded=0.05 cfs 0.101 af Primary=0.47 cfs 0.180 af Outflow=0.53 cfs 0.281 af

Pond 11P: UG DET-B-D Peak Elev=210.78' Storage=9,769 cf Inflow=5.31 cfs 0.443 af
Discarded=0.08 cfs 0.158 af Primary=0.53 cfs 0.286 af Outflow=0.62 cfs 0.443 af

Pond 21P: BASIN 1 Peak Elev=209.22' Storage=4,431 cf Inflow=4.10 cfs 0.632 af
Discarded=0.03 cfs 0.062 af Primary=3.97 cfs 0.505 af Outflow=4.00 cfs 0.567 af

Pond 22P: BASIN 2 Peak Elev=201.10' Storage=9,443 cf Inflow=2.43 cfs 0.523 af
Discarded=0.07 cfs 0.130 af Primary=1.00 cfs 0.242 af Outflow=1.07 cfs 0.372 af

Pond 23P: BASIN 3 Peak Elev=222.00' Storage=2,634 cf Inflow=1.02 cfs 0.078 af
Discarded=0.02 cfs 0.035 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.035 af

Pond 24P: BASIN 4 Peak Elev=218.03' Storage=5,246 cf Inflow=2.53 cfs 0.191 af
Discarded=0.04 cfs 0.073 af Primary=0.16 cfs 0.033 af Outflow=0.19 cfs 0.106 af

Link 10L-PR: DESIGN POINT - 01

Inflow=23.69 cfs 4.053 af
Primary=23.69 cfs 4.053 af

Total Runoff Area = 26.259 ac Runoff Volume = 5.458 af Average Runoff Depth = 2.49"
65.36% Pervious = 17.163 ac 34.64% Impervious = 9.097 ac

Summary for Subcatchment 01S: BLDG-01

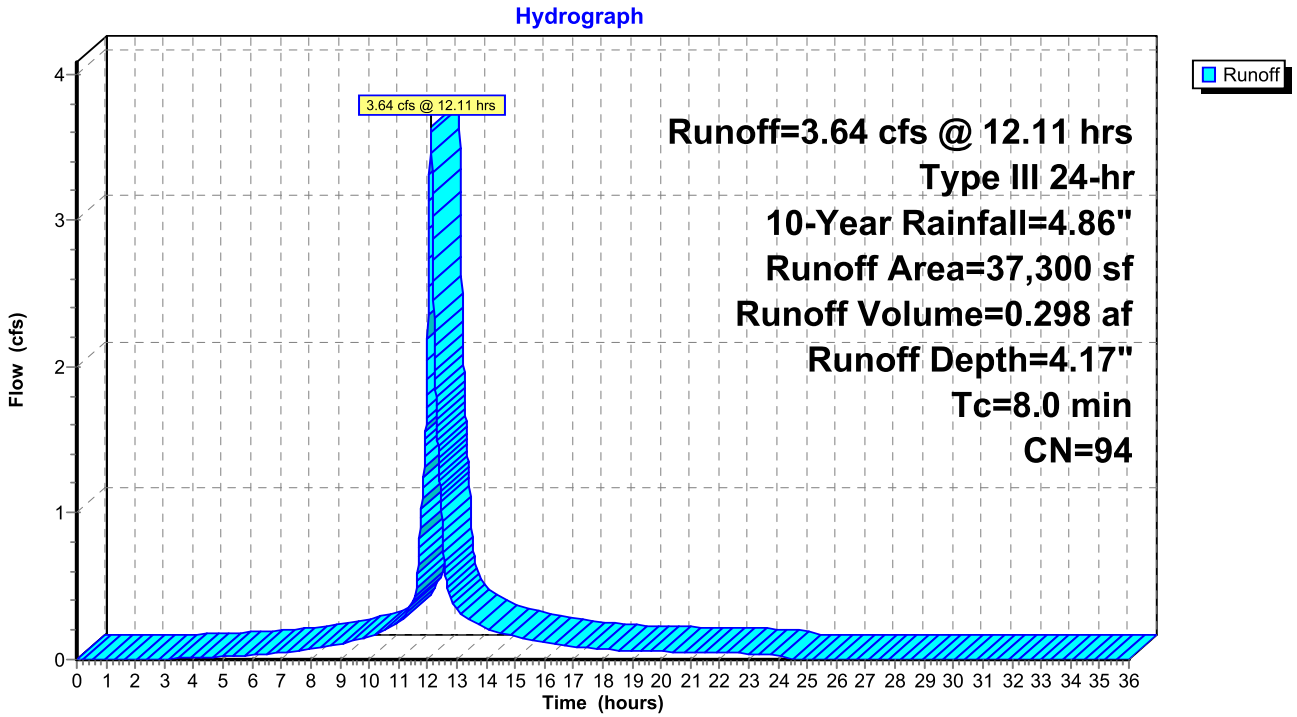
Runoff = 3.64 cfs @ 12.11 hrs, Volume= 0.298 af, Depth= 4.17"
Routed to Pond 01P : UG DET-01

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.86"

Area (sf)	CN	Description
17,100	98	Unconnected pavement, HSG B
2,000	98	Unconnected roofs, HSG B
6,500	98	Unconnected roofs, HSG B
5,500	98	Unconnected roofs, HSG B
6,200	74	>75% Grass cover, Good, HSG C
37,300	94	Weighted Average
6,200		16.62% Pervious Area
31,100		83.38% Impervious Area
31,100		100.00% Unconnected

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

Subcatchment 01S: BLDG-01



Summary for Subcatchment 02S: BLDG-02

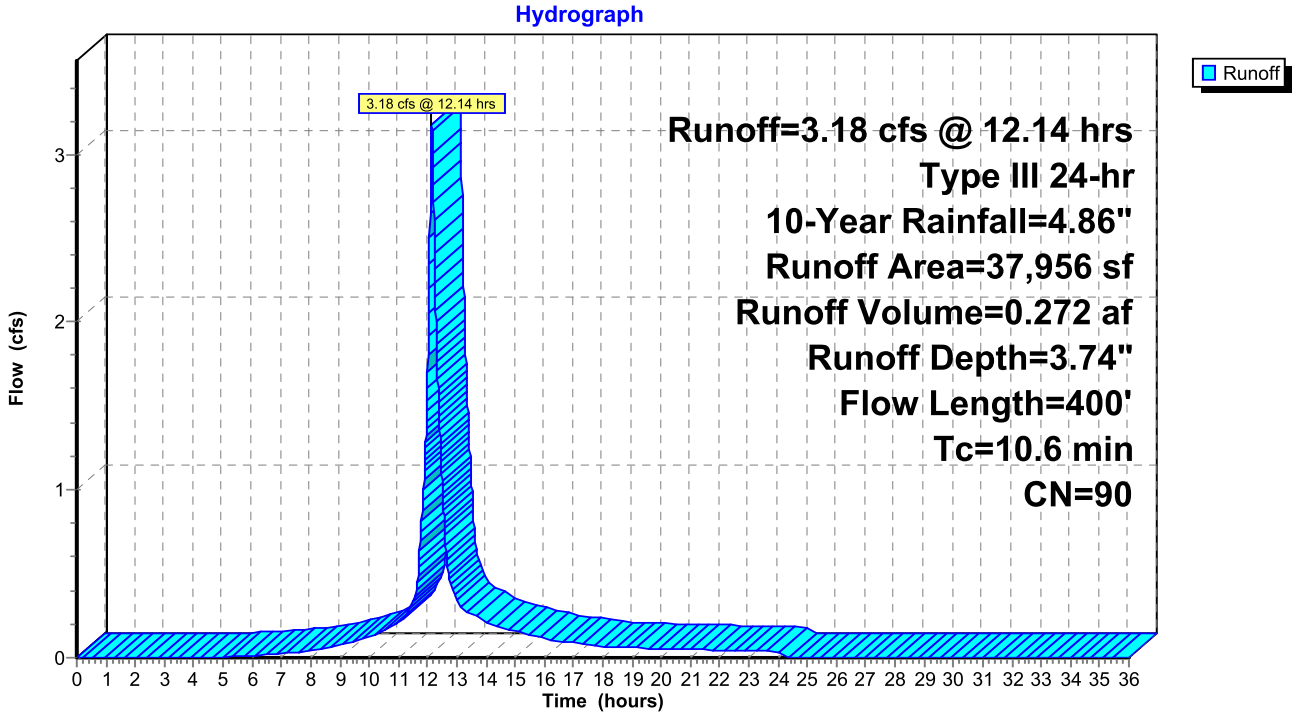
Runoff = 3.18 cfs @ 12.14 hrs, Volume= 0.272 af, Depth= 3.74"
Routed to Pond 02P : UG DET - B-02

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.86"

Area (sf)	CN	Description
17,700	98	Unconnected pavement, HSG B
1,500	98	Unconnected roofs, HSG B
3,250	98	Unconnected roofs, HSG B
2,500	98	Unconnected roofs, HSG B
6	98	Unconnected roofs, HSG B
13,000	74	>75% Grass cover, Good, HSG C
37,956	90	Weighted Average
13,000		34.25% Pervious Area
24,956		65.75% Impervious Area
24,956		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0200	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.26"
0.9	300	0.0100	5.70	7.00	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
10.6	400	Total			

Subcatchment 02S: BLDG-02



Summary for Subcatchment 03S: BLDG-03

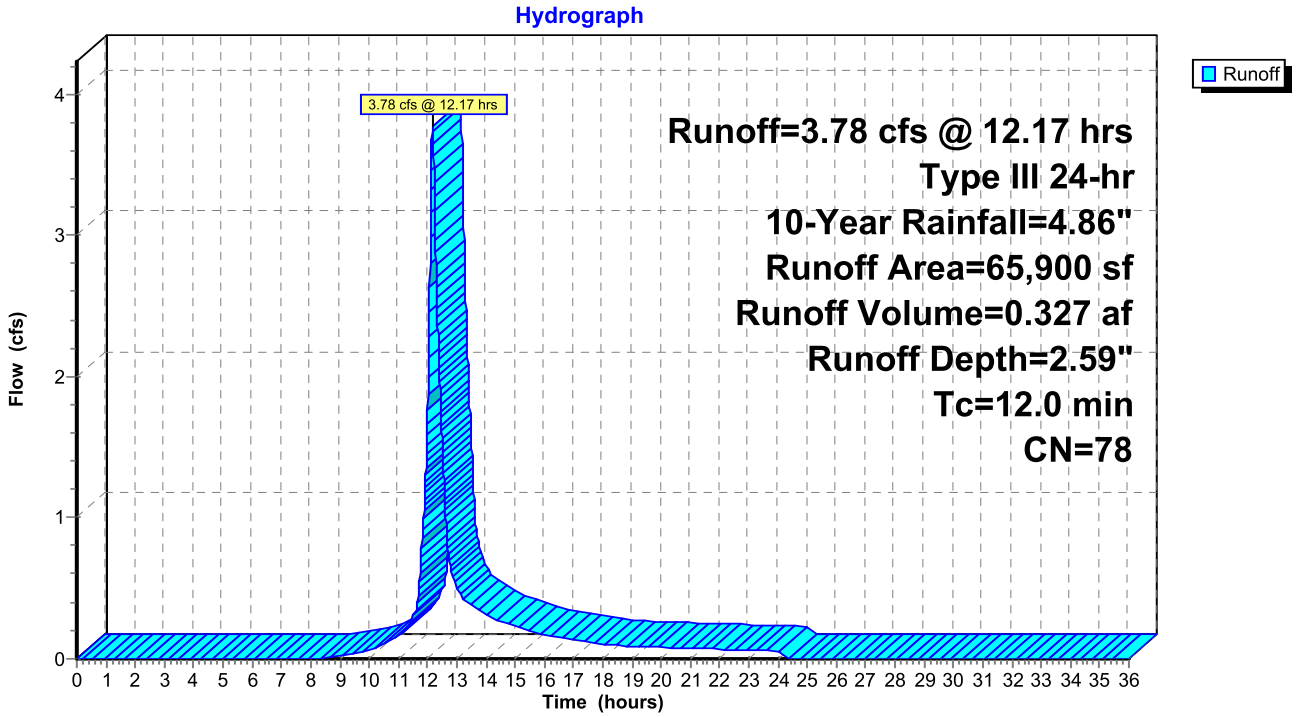
Runoff = 3.78 cfs @ 12.17 hrs, Volume= 0.327 af, Depth= 2.59"
Routed to Pond 03P : UG DET

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.86"

Area (sf)	CN	Description
18,400	98	Unconnected pavement, HSG B
2,000	98	Unconnected roofs, HSG B
6,500	98	Unconnected roofs, HSG B
5,500	98	Unconnected roofs, HSG B
5,800	61	>75% Grass cover, Good, HSG B
27,700	58	Woods/grass comb., Good, HSG B
65,900	78	Weighted Average
33,500		50.83% Pervious Area
32,400		49.17% Impervious Area
32,400		100.00% Unconnected

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

Subcatchment 03S: BLDG-03



Summary for Subcatchment 04S: BLDG-04

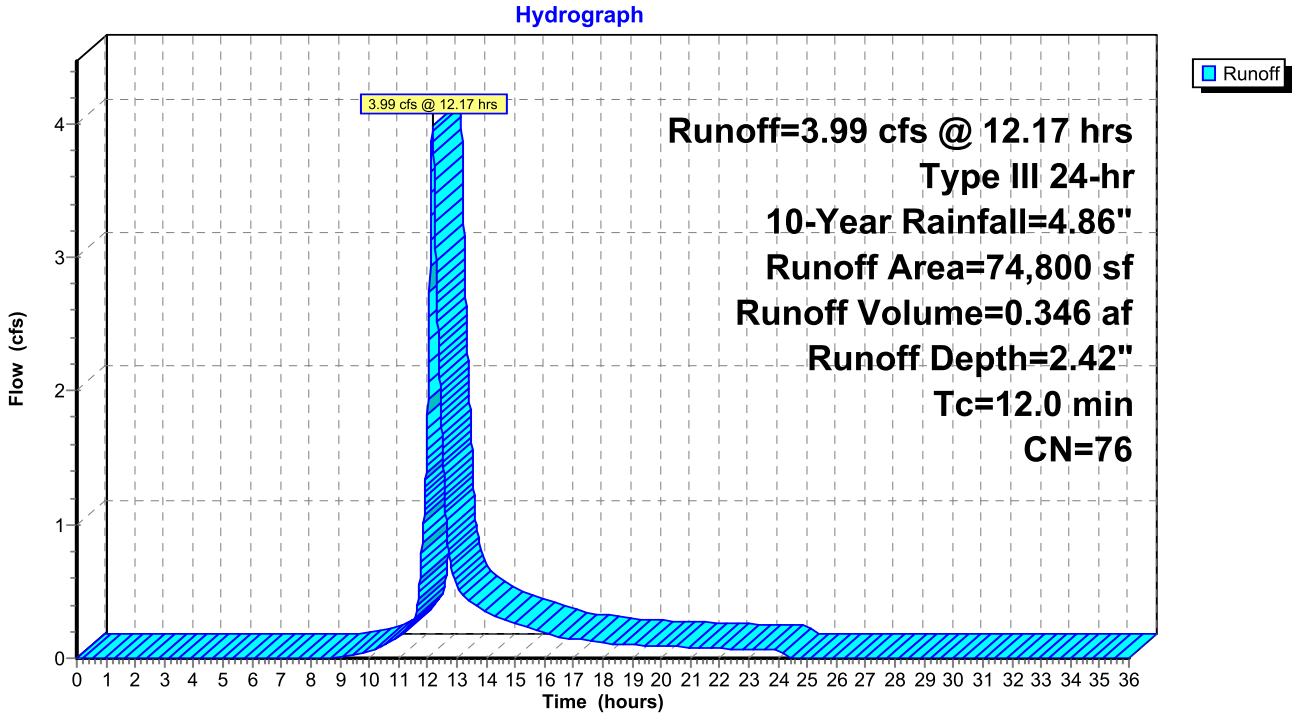
Runoff = 3.99 cfs @ 12.17 hrs, Volume= 0.346 af, Depth= 2.42"
Routed to Pond 04P : UG DET - B-04

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.86"

Area (sf)	CN	Description
19,300	98	Unconnected pavement, HSG B
2,000	98	Unconnected roofs, HSG B
6,500	98	Unconnected roofs, HSG B
5,500	98	Unconnected roofs, HSG B
4,500	61	>75% Grass cover, Good, HSG B
2,000	74	>75% Grass cover, Good, HSG C
35,000	58	Woods/grass comb., Good, HSG B
74,800	76	Weighted Average
41,500		55.48% Pervious Area
33,300		44.52% Impervious Area
33,300		100.00% Unconnected

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

Subcatchment 04S: BLDG-04



Summary for Subcatchment 05S: BLDG 05

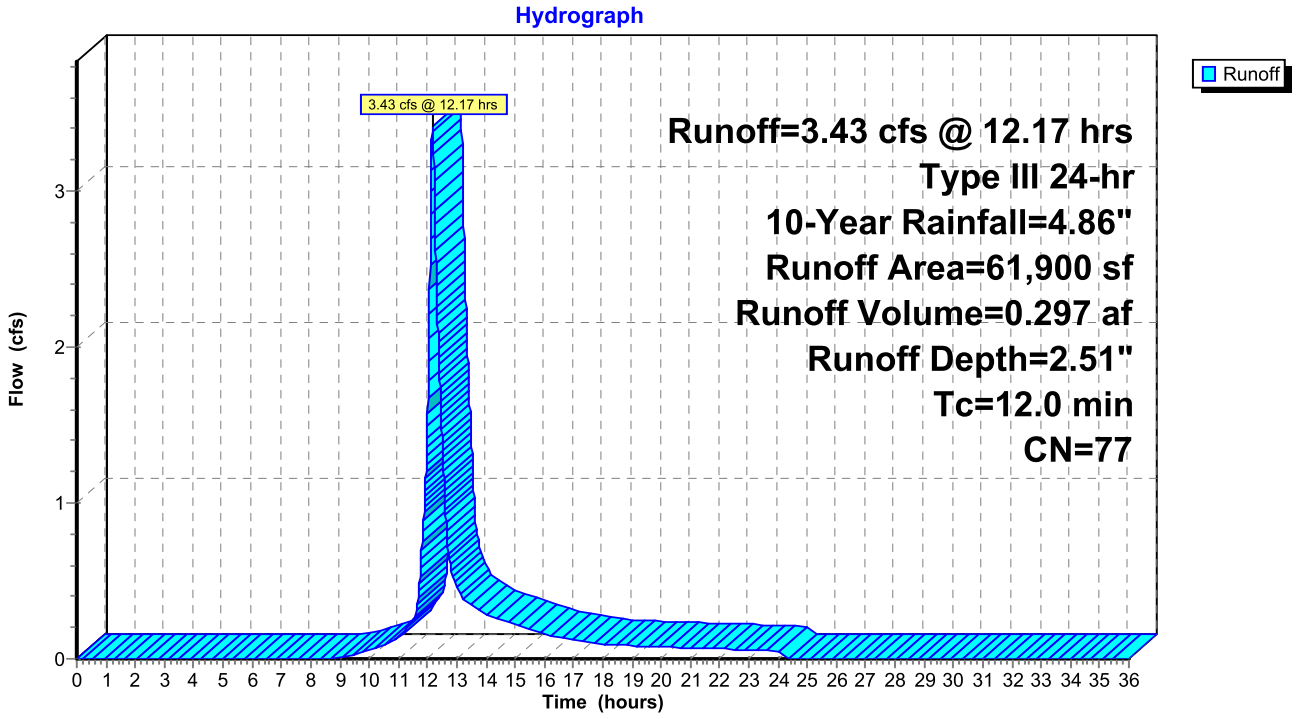
Runoff = 3.43 cfs @ 12.17 hrs, Volume= 0.297 af, Depth= 2.51"
Routed to Pond 05P : UG DET - B-05

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.86"

Area (sf)	CN	Description
13,400	98	Unconnected pavement, HSG B
2,000	98	Unconnected roofs, HSG B
6,500	98	Unconnected roofs, HSG B
5,500	98	Unconnected roofs, HSG B
5,000	74	>75% Grass cover, Good, HSG C
29,500	58	Woods/grass comb., Good, HSG B
61,900	77	Weighted Average
34,500		55.74% Pervious Area
27,400		44.26% Impervious Area
27,400		100.00% Unconnected

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

Subcatchment 05S: BLDG 05



Summary for Subcatchment 06S: BLDG-06

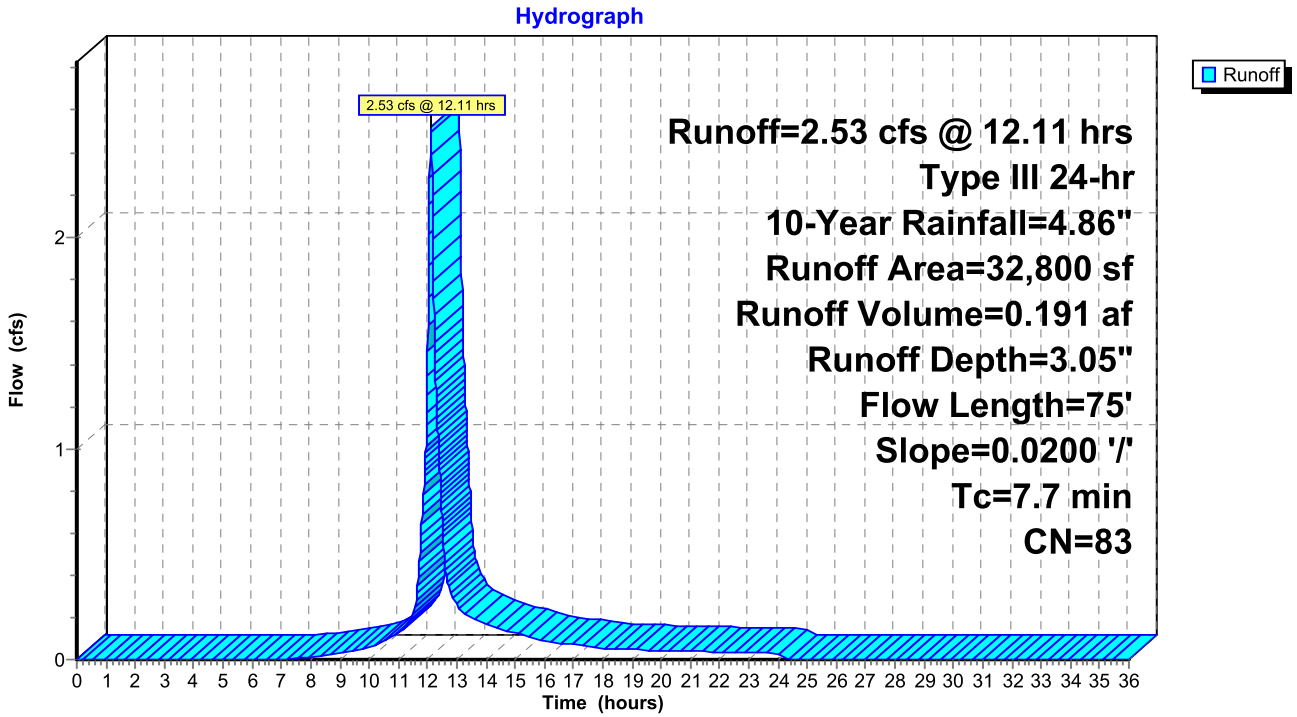
Runoff = 2.53 cfs @ 12.11 hrs, Volume= 0.191 af, Depth= 3.05"
Routed to Pond 24P : BASIN 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.86"

Area (sf)	CN	Description
0	98	Unconnected pavement, HSG B
6,500	98	Unconnected roofs, HSG B
5,500	98	Unconnected roofs, HSG B
20,800	74	>75% Grass cover, Good, HSG C
32,800	83	Weighted Average
20,800		63.41% Pervious Area
12,000		36.59% Impervious Area
12,000		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	75	0.0200	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.26"

Subcatchment 06S: BLDG-06



Summary for Subcatchment 07S: BLDG-07

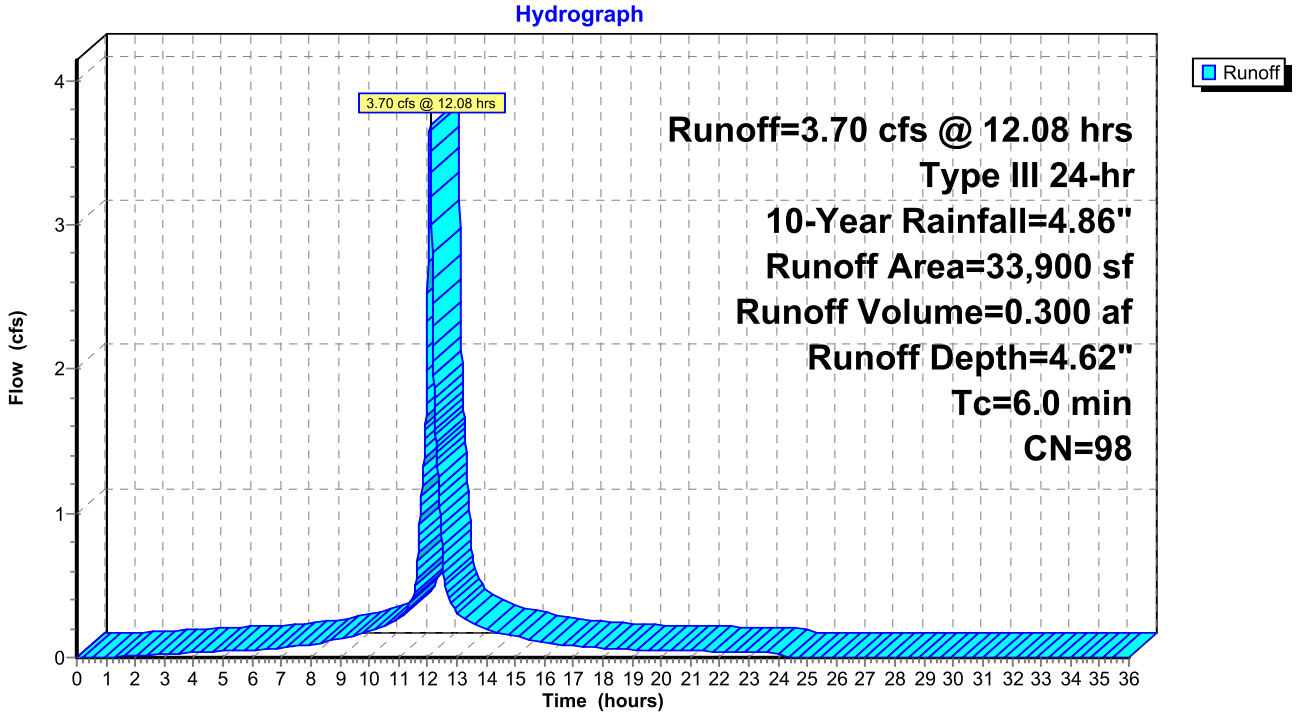
Runoff = 3.70 cfs @ 12.08 hrs, Volume= 0.300 af, Depth= 4.62"
Routed to Pond 07P : UG DET - B-07

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.86"

Area (sf)	CN	Description
19,900	98	Unconnected pavement, HSG B
2,000	98	Unconnected roofs, HSG B
6,500	98	Unconnected roofs, HSG B
5,500	98	Unconnected roofs, HSG B
33,900	98	Weighted Average
33,900		100.00% Impervious Area
33,900		100.00% Unconnected

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

Subcatchment 07S: BLDG-07



Summary for Subcatchment 08S: BLDG 08

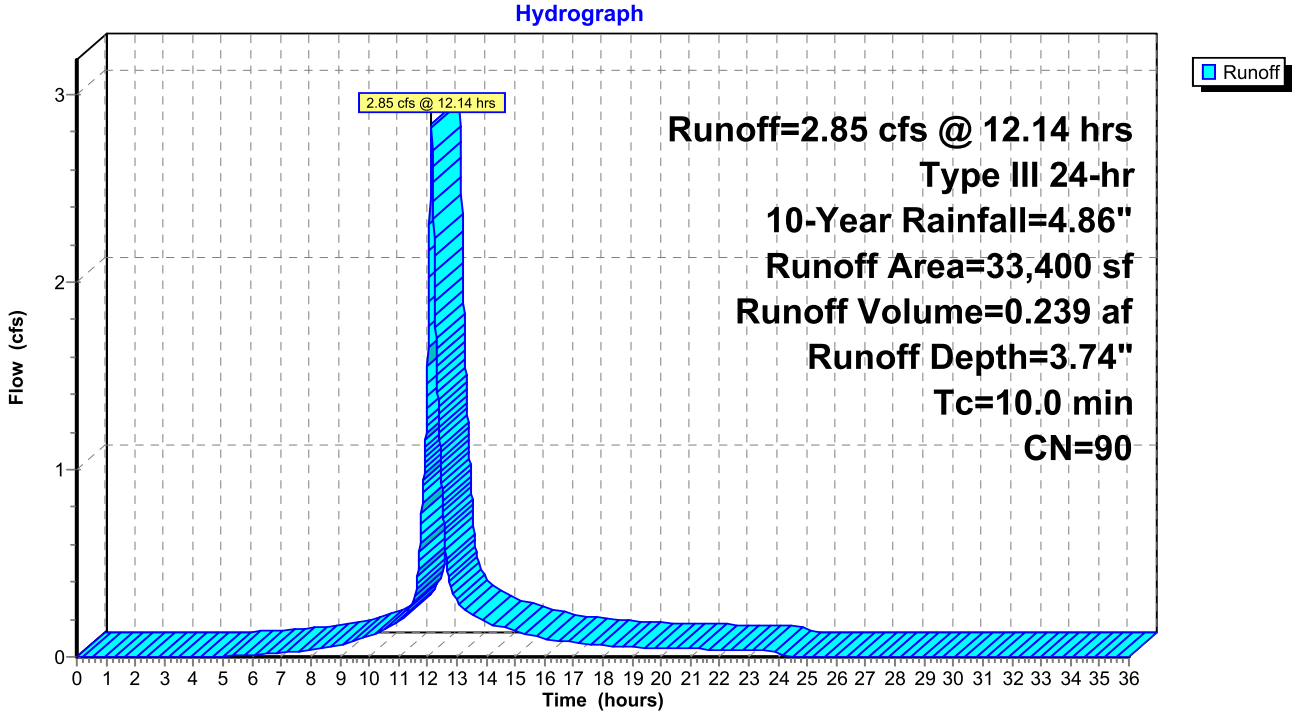
Runoff = 2.85 cfs @ 12.14 hrs, Volume= 0.239 af, Depth= 3.74"
Routed to Pond 08P : UG DET - B-08

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.86"

Area (sf)	CN	Description
15,700	98	Paved parking, HSG B
1,500	98	Unconnected roofs, HSG C
9,000	98	Unconnected roofs, HSG B
7,200	61	>75% Grass cover, Good, HSG B
33,400	90	Weighted Average
7,200		21.56% Pervious Area
26,200		78.44% Impervious Area
10,500		40.08% Unconnected

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

Subcatchment 08S: BLDG 08



Summary for Subcatchment 09S: POOL HOUSE

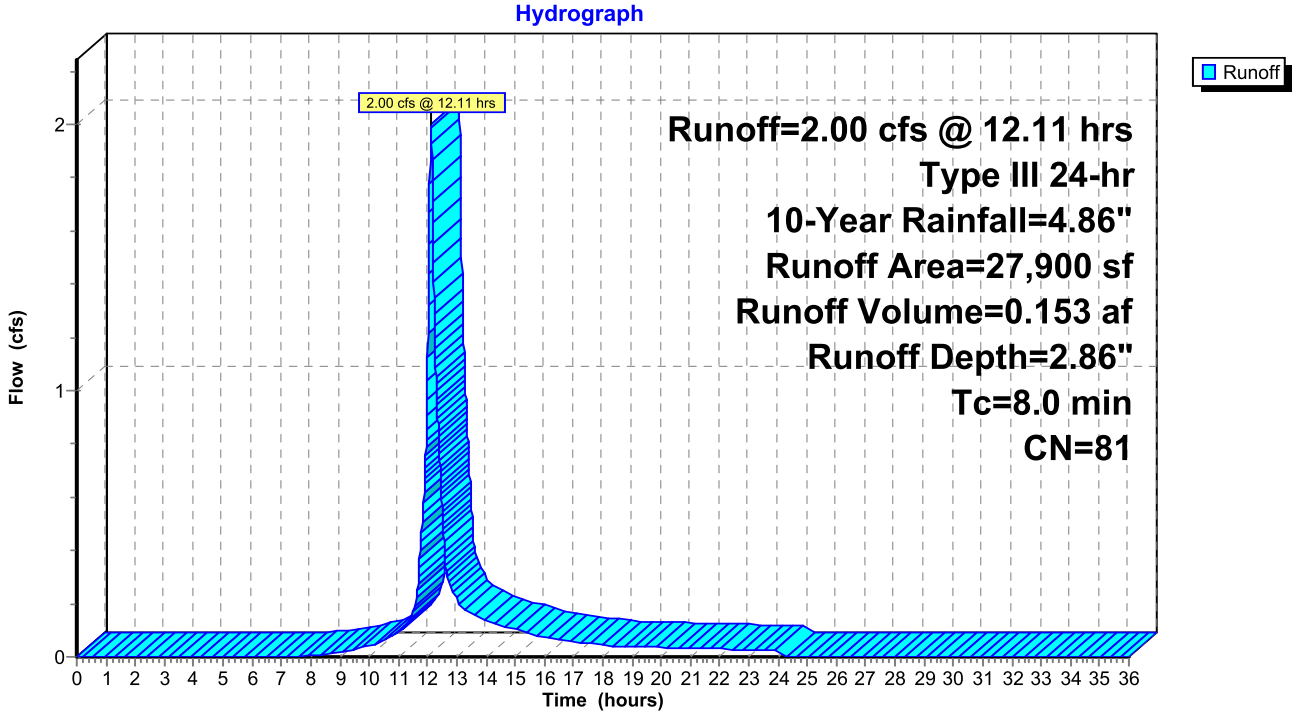
Runoff = 2.00 cfs @ 12.11 hrs, Volume= 0.153 af, Depth= 2.86"
Routed to Pond 09P : UG DET - POOL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.86"

Area (sf)	CN	Description
10,100	98	Unconnected pavement, HSG B
4,600	98	Unconnected roofs, HSG B
11,200	61	>75% Grass cover, Good, HSG B
2,000	74	>75% Grass cover, Good, HSG C
27,900	81	Weighted Average
13,200		47.31% Pervious Area
14,700		52.69% Impervious Area
14,700		100.00% Unconnected

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

Subcatchment 09S: POOL HOUSE



Summary for Subcatchment 10S: BLDG C

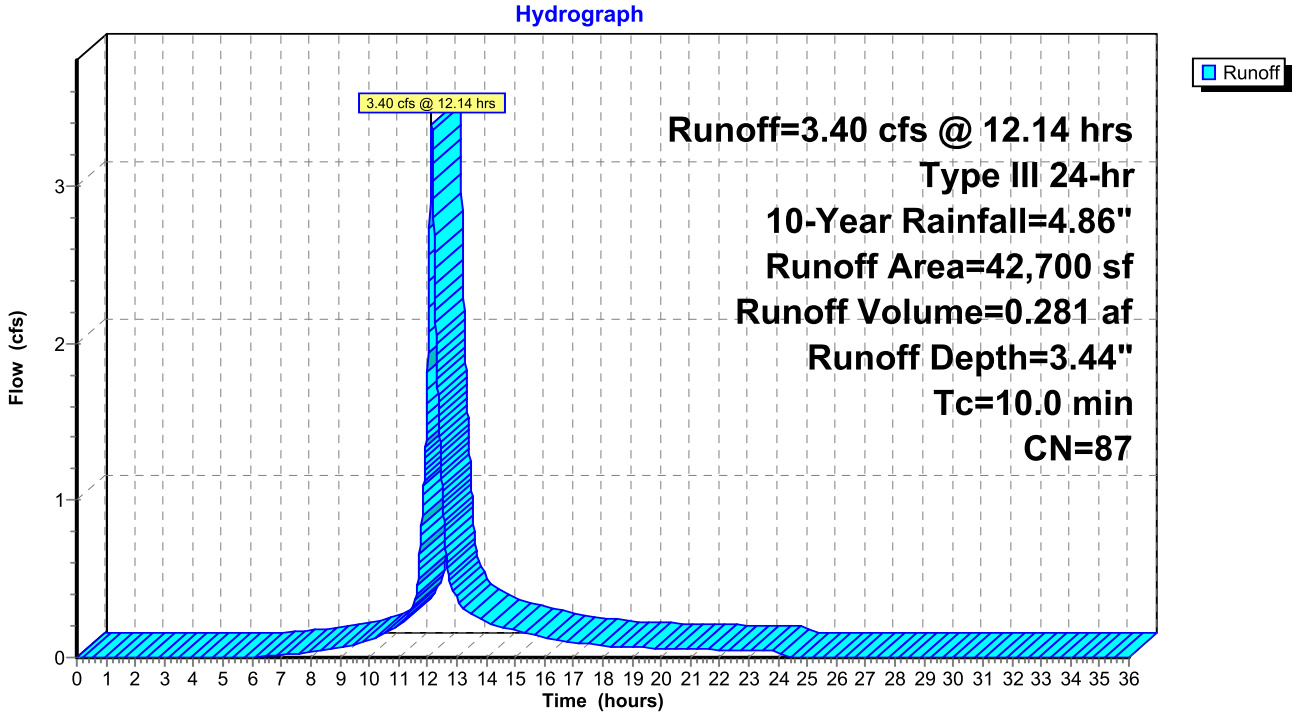
Runoff = 3.40 cfs @ 12.14 hrs, Volume= 0.281 af, Depth= 3.44"
Routed to Pond 10P : UG DET - B-C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.86"

Area (sf)	CN	Description
23,100	98	Unconnected pavement, HSG B
6,400	98	Unconnected roofs, HSG B
13,200	61	>75% Grass cover, Good, HSG B
42,700	87	Weighted Average
13,200		30.91% Pervious Area
29,500		69.09% Impervious Area
29,500		100.00% Unconnected

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

Subcatchment 10S: BLDG C



Summary for Subcatchment 11S: BLDG-D

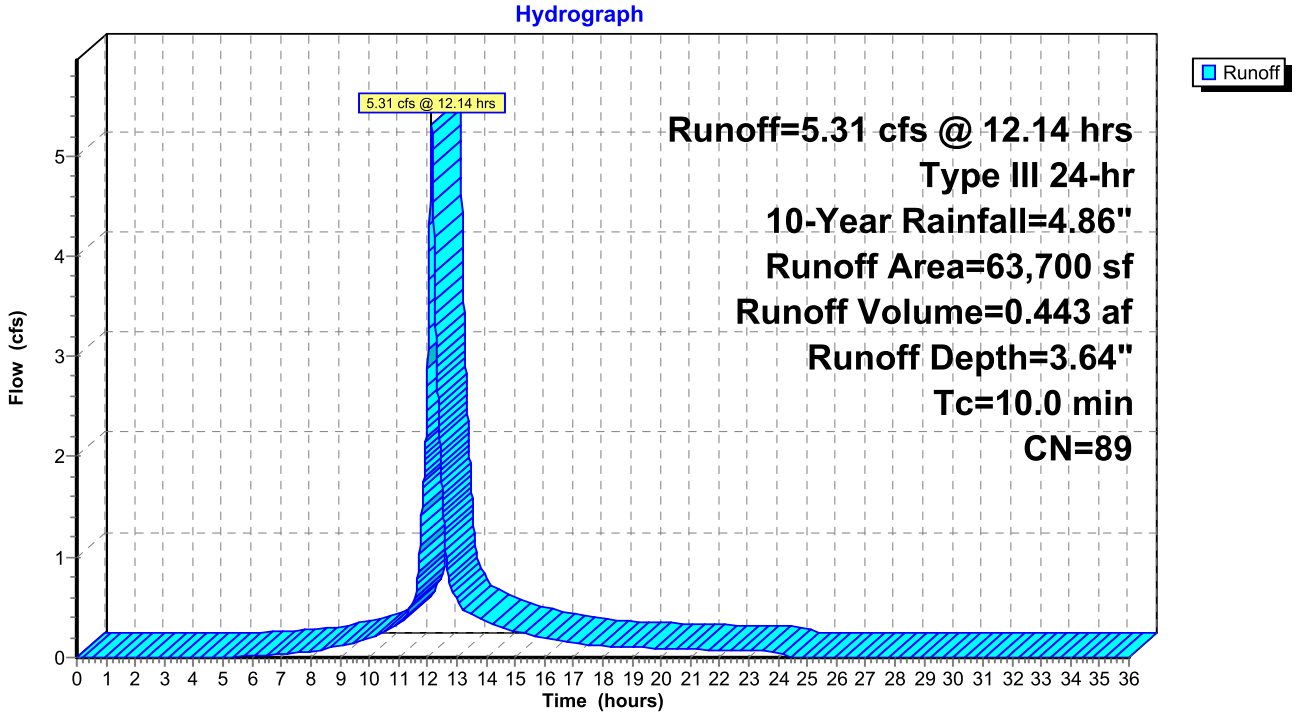
Runoff = 5.31 cfs @ 12.14 hrs, Volume= 0.443 af, Depth= 3.64"
Routed to Pond 11P : UG DET-B-D

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.86"

Area (sf)	CN	Description
32,700	98	Unconnected pavement, HSG B
15,000	98	Unconnected roofs, HSG B
16,000	61	>75% Grass cover, Good, HSG B
63,700	89	Weighted Average
16,000		25.12% Pervious Area
47,700		74.88% Impervious Area
47,700		100.00% Unconnected

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

Subcatchment 11S: BLDG-D



Summary for Subcatchment 21S: SOUTHERN DRVEWAY TO BASIN -01

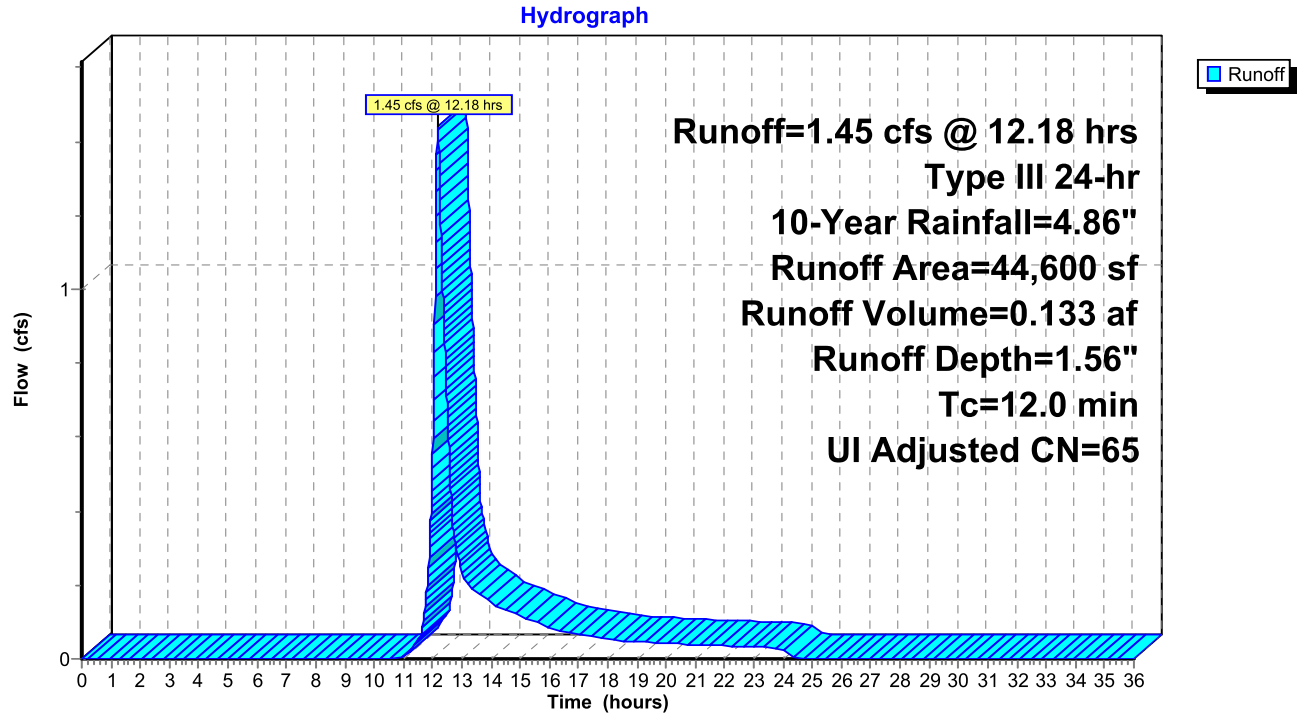
Runoff = 1.45 cfs @ 12.18 hrs, Volume= 0.133 af, Depth= 1.56"
Routed to Pond 21P : BASIN 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.86"

Area (sf)	CN	Adj	Description
10,400	98		Unconnected pavement, HSG B
5,800	61		>75% Grass cover, Good, HSG B
3,500	74		>75% Grass cover, Good, HSG C
24,900	58		Woods/grass comb., Good, HSG B
44,600	69	65	Weighted Average, UI Adjusted
34,200			76.68% Pervious Area
10,400			23.32% Impervious Area
10,400			100.00% Unconnected

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

Subcatchment 21S: SOUTHERN DRVEWAY TO BASIN -01



Summary for Subcatchment 22S: DIRECT FLOW TO BASIN-02

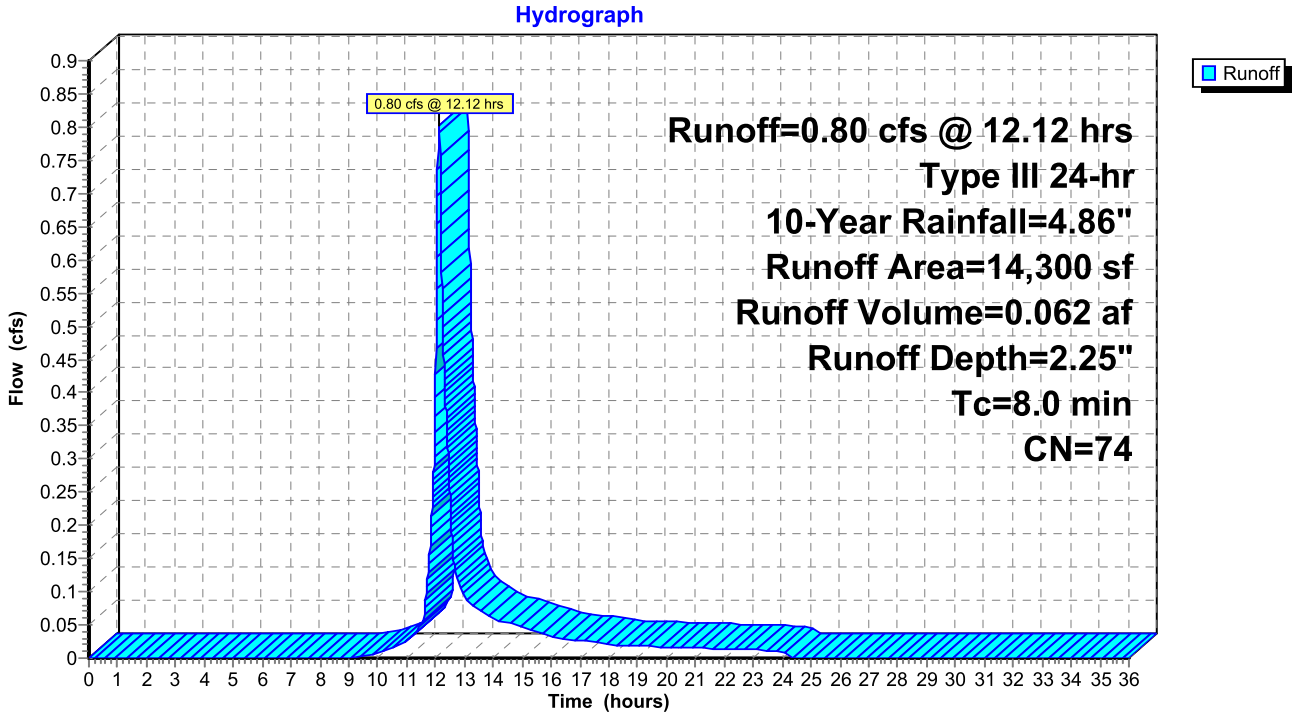
Runoff = 0.80 cfs @ 12.12 hrs, Volume= 0.062 af, Depth= 2.25"
Routed to Pond 22P : BASIN 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.86"

Area (sf)	CN	Description
14,300	74	>75% Grass cover, Good, HSG C
14,300		100.00% Pervious Area

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

Subcatchment 22S: DIRECT FLOW TO BASIN-02



Summary for Subcatchment 23S: DIRECT FLOW TO BASIN-03

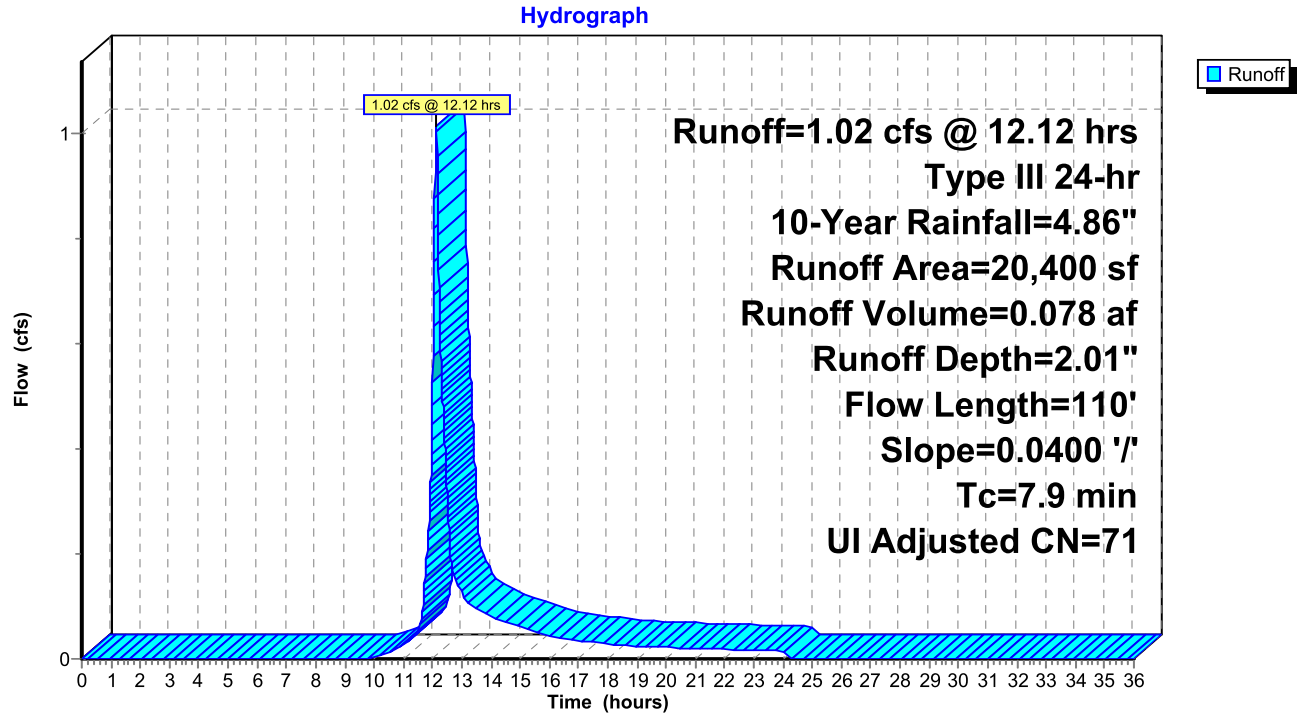
Runoff = 1.02 cfs @ 12.12 hrs, Volume= 0.078 af, Depth= 2.01"
Routed to Pond 23P : BASIN 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.86"

Area (sf)	CN	Adj	Description
3,700	98		Unconnected pavement, HSG B
8,000	61		>75% Grass cover, Good, HSG B
8,700	74		>75% Grass cover, Good, HSG C
20,400	73	71	Weighted Average, UI Adjusted
16,700			81.86% Pervious Area
3,700			18.14% Impervious Area
3,700			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	110	0.0400	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.26"

Subcatchment 23S: DIRECT FLOW TO BASIN-03



Summary for Subcatchment 30S: EASTERN OVERLAND FLOW

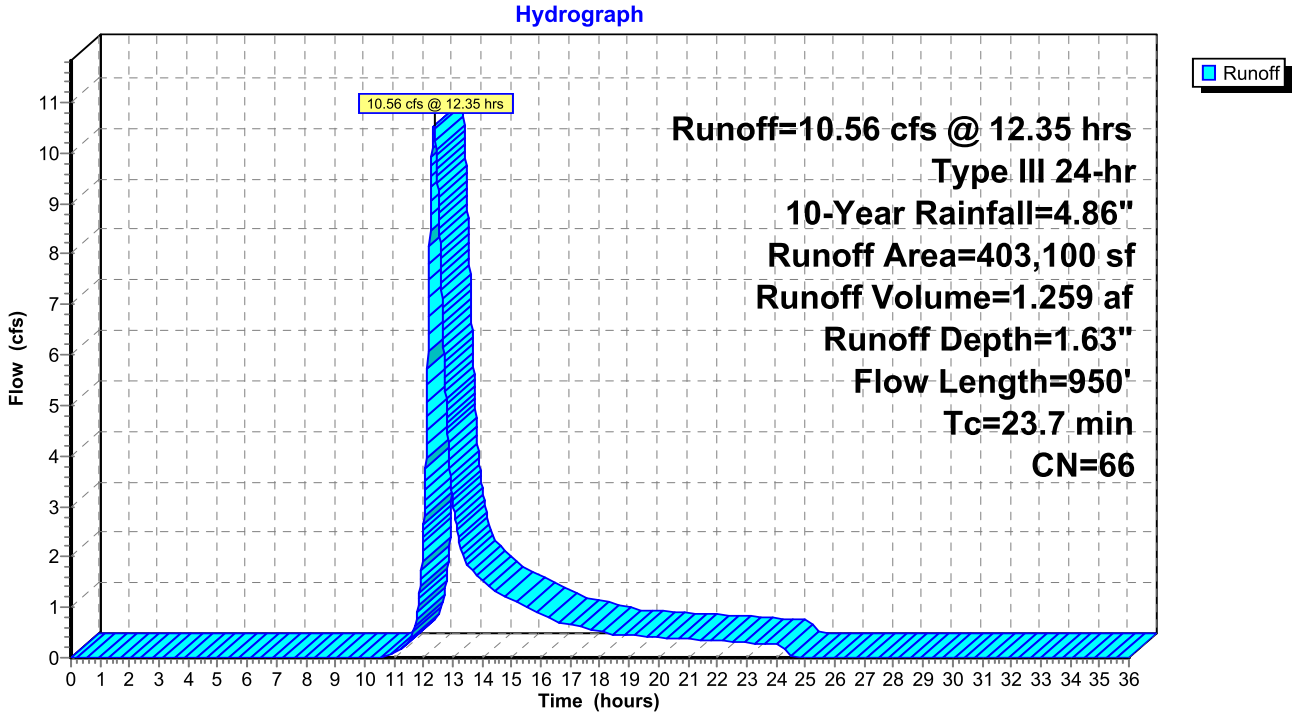
Runoff = 10.56 cfs @ 12.35 hrs, Volume= 1.259 af, Depth= 1.63"
Routed to Link 10L-PR : DESIGN POINT - 01

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.86"

Area (sf)	CN	Description
206,500	70	Woods, Good, HSG C
74,200	74	>75% Grass cover, Good, HSG C
106,800	55	Woods, Good, HSG B
15,600	61	>75% Grass cover, Good, HSG B
403,100	66	Weighted Average
403,100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.0450	0.16		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.26"
11.3	450	0.0700	0.66		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
2.2	400	0.0025	3.05	18.28	**Channel Flow,** Area= 6.0 sf Perim= 7.0' r= 0.86' n= 0.022 Earth, clean & straight
23.7	950	Total			

Subcatchment 30S: EASTERN OVERLAND FLOW



Summary for Subcatchment 31S: NORTHERN OVERLAND FLOW

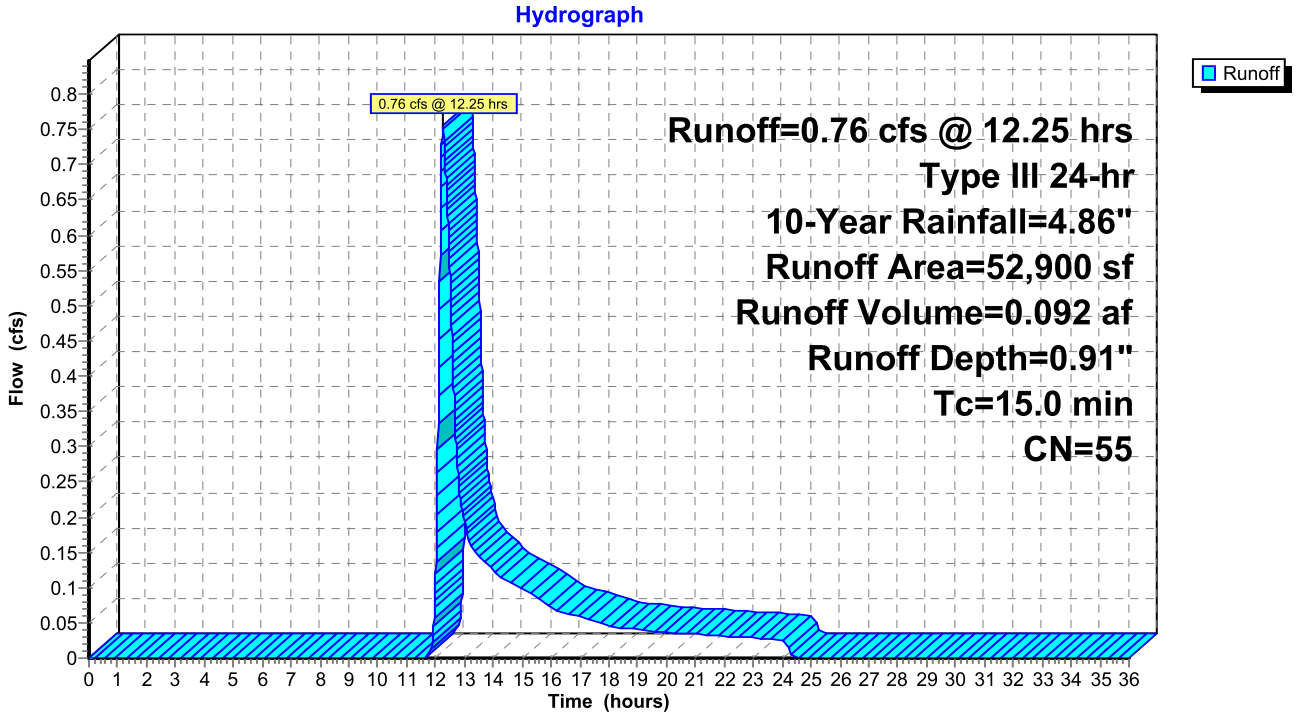
Runoff = 0.76 cfs @ 12.25 hrs, Volume= 0.092 af, Depth= 0.91"
Routed to Link 10L-PR : DESIGN POINT - 01

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.86"

Area (sf)	CN	Description
52,900	55	Woods, Good, HSG B
52,900		100.00% Pervious Area

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

Subcatchment 31S: NORTHERN OVERLAND FLOW



Summary for Subcatchment 32S: ENTRANCE DRIVEWAY

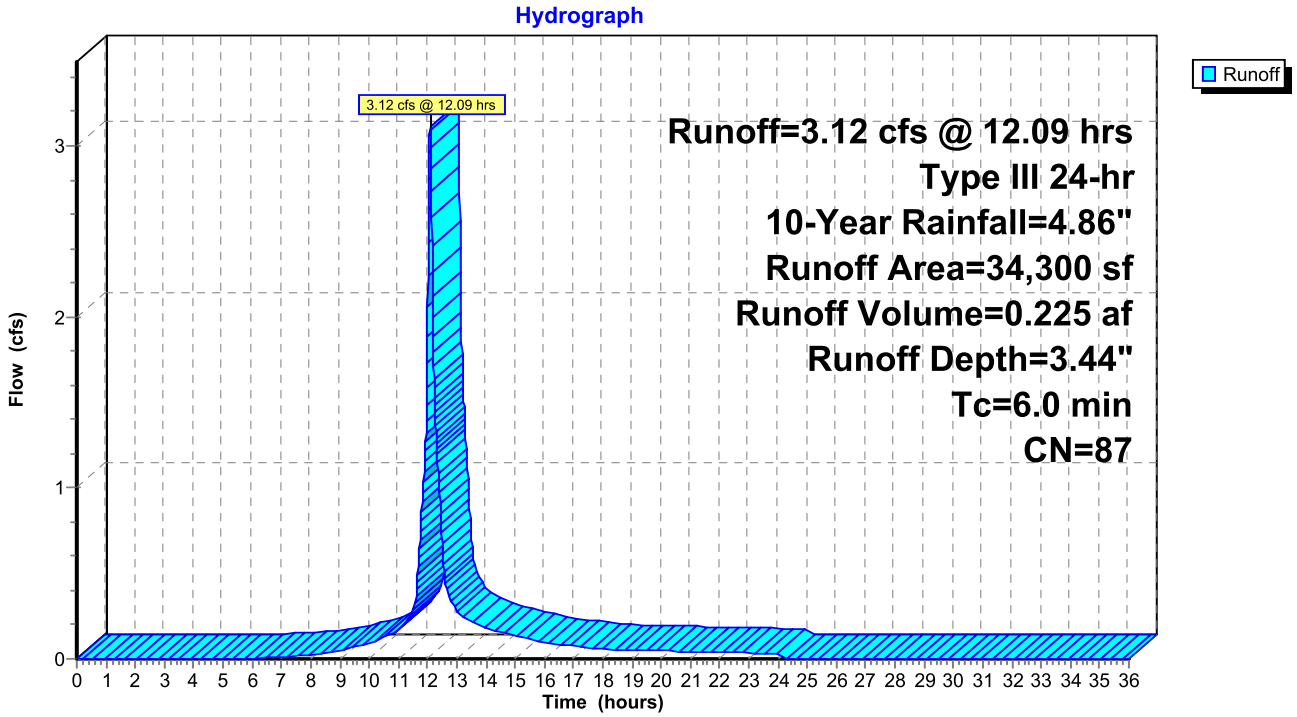
Runoff = 3.12 cfs @ 12.09 hrs, Volume= 0.225 af, Depth= 3.44"
Routed to Link 10L-PR : DESIGN POINT - 01

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.86"

Area (sf)	CN	Description
12,100	98	Paved parking, HSG B
500	98	Unconnected roofs, HSG B
6,000	98	Unconnected roofs, HSG B
15,700	74	>75% Grass cover, Good, HSG C
34,300	87	Weighted Average
15,700		45.77% Pervious Area
18,600		54.23% Impervious Area
6,500		34.95% Unconnected

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

Subcatchment 32S: ENTRANCE DRIVEWAY



Summary for Subcatchment 33S: BLDG-09 PARKING LOT

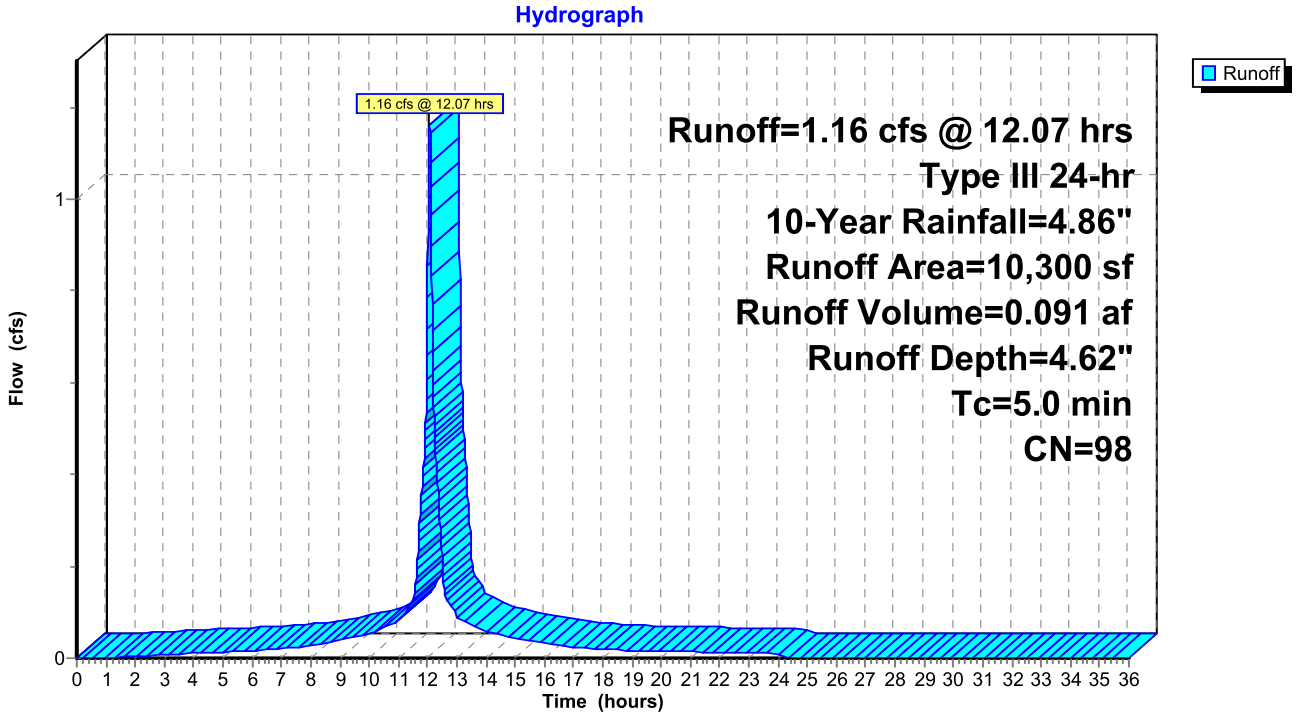
Runoff = 1.16 cfs @ 12.07 hrs, Volume= 0.091 af, Depth= 4.62"
Routed to Link 10L-PR : DESIGN POINT - 01

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.86"

Area (sf)	CN	Description
10,300	98	Paved parking, HSG B
10,300		100.00% Impervious Area

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

Subcatchment 33S: BLDG-09 PARKING LOT



Summary for Subcatchment 34S: NORTHERN DRIVEWAY

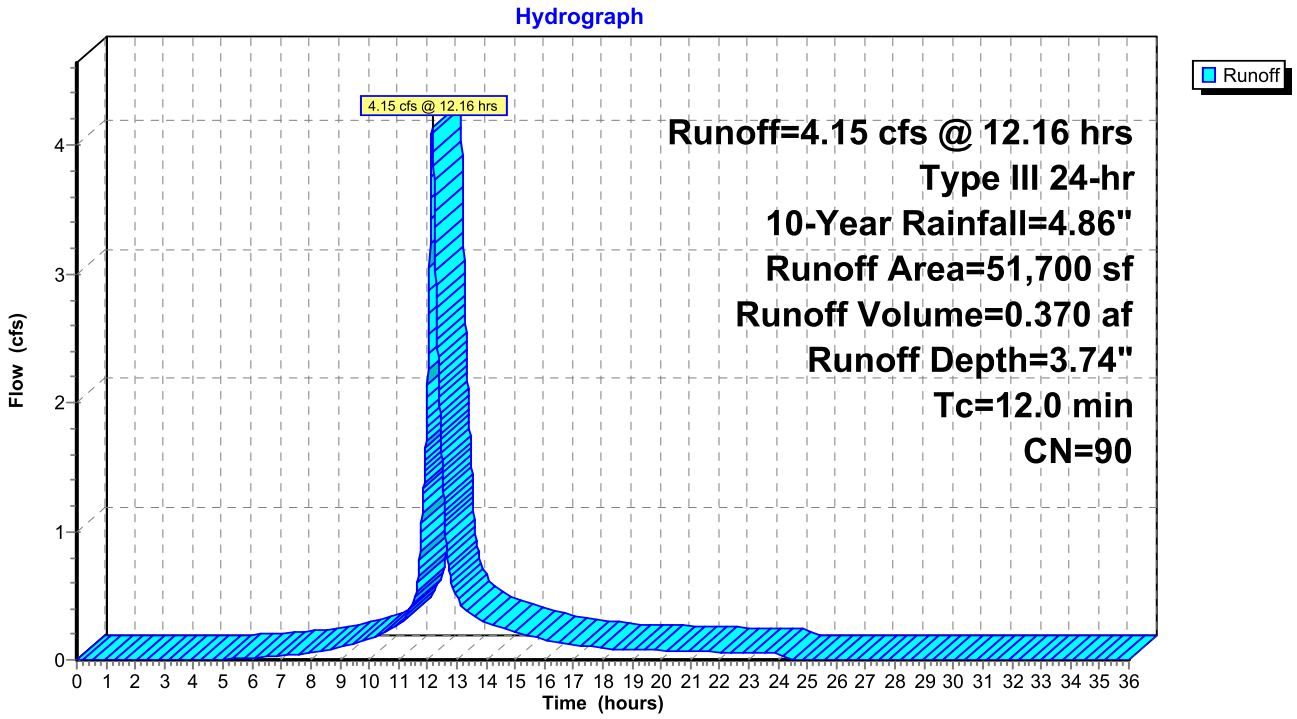
Runoff = 4.15 cfs @ 12.16 hrs, Volume= 0.370 af, Depth= 3.74"
Routed to Link 10L-PR : DESIGN POINT - 01

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=4.86"

Area (sf)	CN	Description
40,100	98	Paved parking, HSG B
11,000	61	>75% Grass cover, Good, HSG B
600	74	>75% Grass cover, Good, HSG C
51,700	90	Weighted Average
11,600		22.44% Pervious Area
40,100		77.56% Impervious Area

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

Subcatchment 34S: NORTHERN DRIVEWAY



Summary for Pond 01P: UG DET-01

Inflow Area = 0.856 ac, 83.38% Impervious, Inflow Depth = 4.17" for 10-Year event
Inflow = 3.64 cfs @ 12.11 hrs, Volume= 0.298 af
Outflow = 1.68 cfs @ 12.31 hrs, Volume= 0.298 af, Atten= 54%, Lag= 12.1 min
Discarded = 0.03 cfs @ 12.31 hrs, Volume= 0.058 af
Primary = 1.65 cfs @ 12.31 hrs, Volume= 0.239 af
Routed to Pond 21P : BASIN 1

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 211.80' @ 12.31 hrs Surf.Area= 1,793 sf Storage= 4,704 cf

Plug-Flow detention time= 146.1 min calculated for 0.297 af (100% of inflow)
Center-of-Mass det. time= 146.2 min (922.3 - 776.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	208.00'	3,191 cf	**37.58'W x 47.72'L x 7.00'H Field A** 12,553 cf Overall - 4,576 cf Embedded = 7,978 cf x 40.0% Voids
#2A	209.00'	4,576 cf	**ADS_StormTech MC-4500 b +Cap**x 40 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 40 Chambers in 4 Rows Cap Storage= 39.5 cf x 2 x 4 rows = 316.0 cf
		7,767 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	208.00'	**15.0" Round Culvert** L= 42.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 208.00' / 207.75' S= 0.0060 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	209.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	210.90'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	214.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	208.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.03 cfs @ 12.31 hrs HW=211.80' (Free Discharge)
└**5=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=1.65 cfs @ 12.31 hrs HW=211.80' (Free Discharge)
└**1=Culvert** (Passes 1.65 cfs of 10.53 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.39 cfs @ 7.87 fps)
  ├**3=Orifice/Grate** (Orifice Controls 1.27 cfs @ 3.62 fps)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 01P: UG DET-01 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-4500 b +Cap (ADS StormTech®MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= 39.5 cf x 2 x 4 rows = 316.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

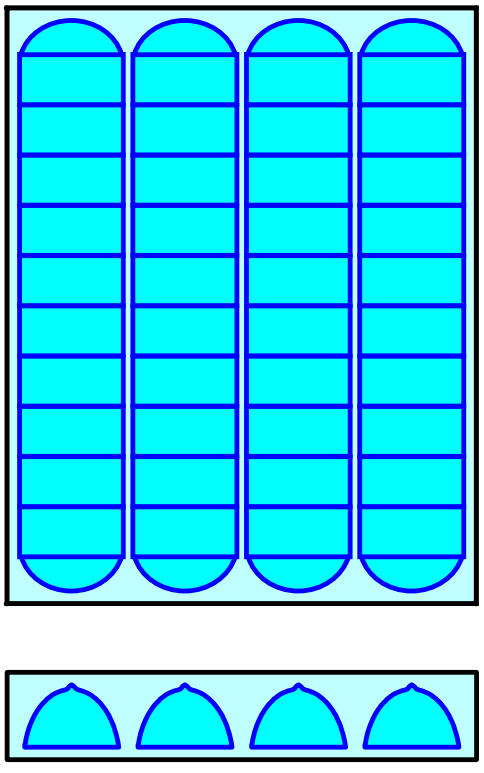
10 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 45.72' Row Length +12.0" End Stone x 2 = 47.72' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
12.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 7.00' Field Height

40 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 4 Rows = 4,575.6 cf Chamber Storage

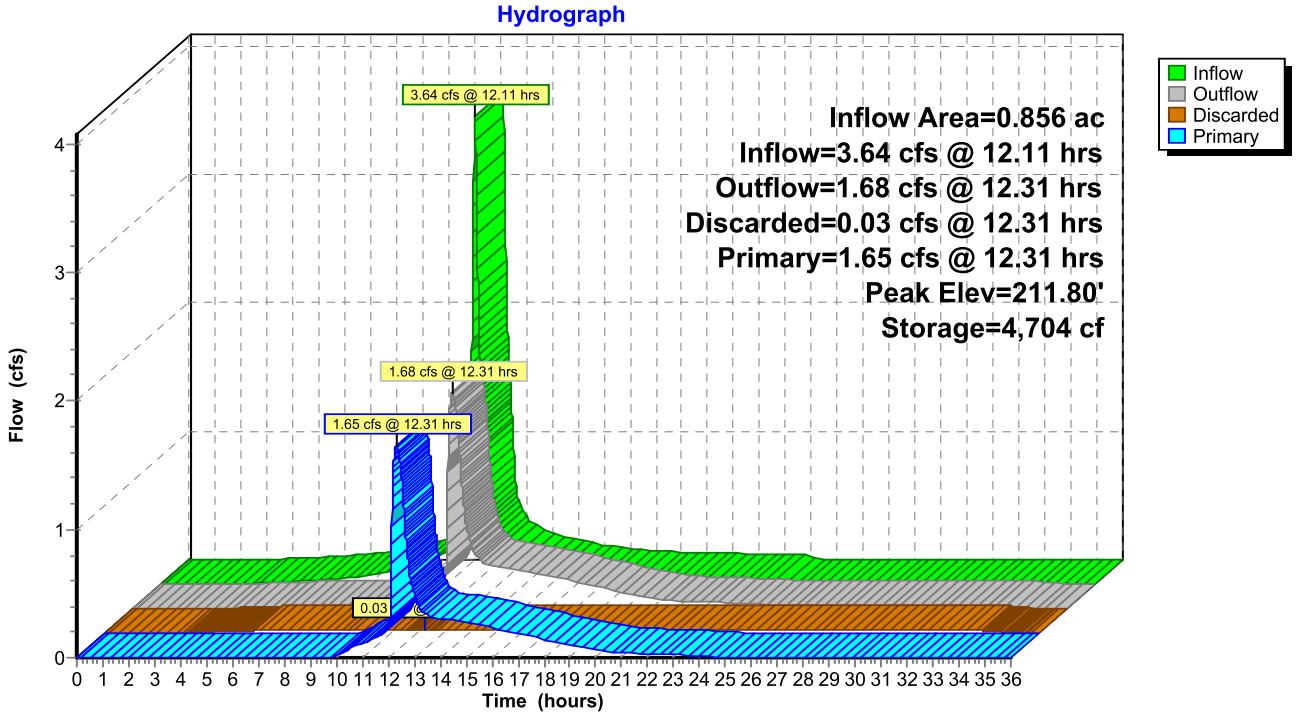
12,553.5 cf Field - 4,575.6 cf Chambers = 7,977.8 cf Stone x 40.0% Voids = 3,191.1 cf Stone Storage

Chamber Storage + Stone Storage = 7,766.8 cf = 0.178 af
Overall Storage Efficiency = 61.9%
Overall System Size = 47.72' x 37.58' x 7.00'

40 Chambers
464.9 cy Field
295.5 cy Stone



Pond 01P: UG DET-01



Summary for Pond 02P: UG DET - B-02

Inflow Area = 2.589 ac, 51.67% Impervious, Inflow Depth = 2.54" for 10-Year event
Inflow = 3.54 cfs @ 12.15 hrs, Volume= 0.548 af
Outflow = 2.29 cfs @ 12.61 hrs, Volume= 0.548 af, Atten= 35%, Lag= 27.9 min
Discarded = 0.04 cfs @ 12.61 hrs, Volume= 0.086 af
Primary = 2.24 cfs @ 12.61 hrs, Volume= 0.462 af
Routed to Pond 22P : BASIN 2

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 211.18' @ 12.61 hrs Surf.Area= 2,701 sf Storage= 5,911 cf

Plug-Flow detention time= 128.7 min calculated for 0.548 af (100% of inflow)
Center-of-Mass det. time= 127.8 min (971.8 - 843.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	208.00'	4,710 cf	**37.58'W x 71.87'L x 7.00'H Field A** 18,907 cf Overall - 7,131 cf Embedded = 11,776 cf x 40.0% Voids
#2A	209.00'	7,131 cf	**ADS_StormTech MC-4500 b +Cap**x 64 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 64 Chambers in 4 Rows Cap Storage= 39.5 cf x 2 x 4 rows = 316.0 cf
		11,842 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	208.00'	**15.0" Round Culvert** L= 73.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 208.00' / 205.00' S= 0.0411 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	209.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	210.00'	**9.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	214.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	208.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.04 cfs @ 12.61 hrs HW=211.18' (Free Discharge)
└**5=Exfiltration** (Controls 0.04 cfs)

Primary OutFlow Max=2.24 cfs @ 12.61 hrs HW=211.18' (Free Discharge)
└**1=Culvert** (Passes 2.24 cfs of 9.44 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.34 cfs @ 6.90 fps)
  ├**3=Orifice/Grate** (Orifice Controls 1.90 cfs @ 4.31 fps)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 02P: UG DET - B-02 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-4500 b +Cap (ADS StormTech®MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= 39.5 cf x 2 x 4 rows = 316.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

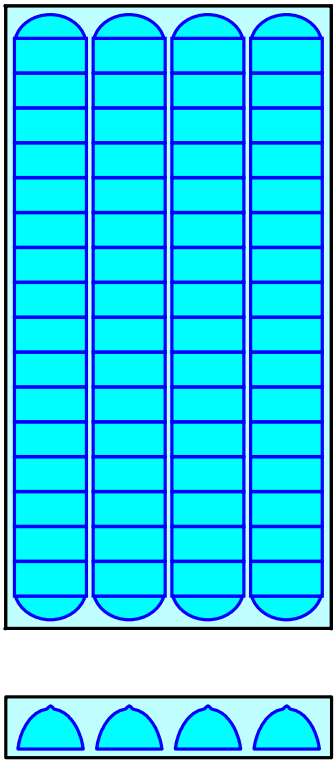
16 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 69.87' Row Length +12.0" End Stone x 2 = 71.87' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
12.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 7.00' Field Height

64 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 4 Rows = 7,131.4 cf Chamber Storage

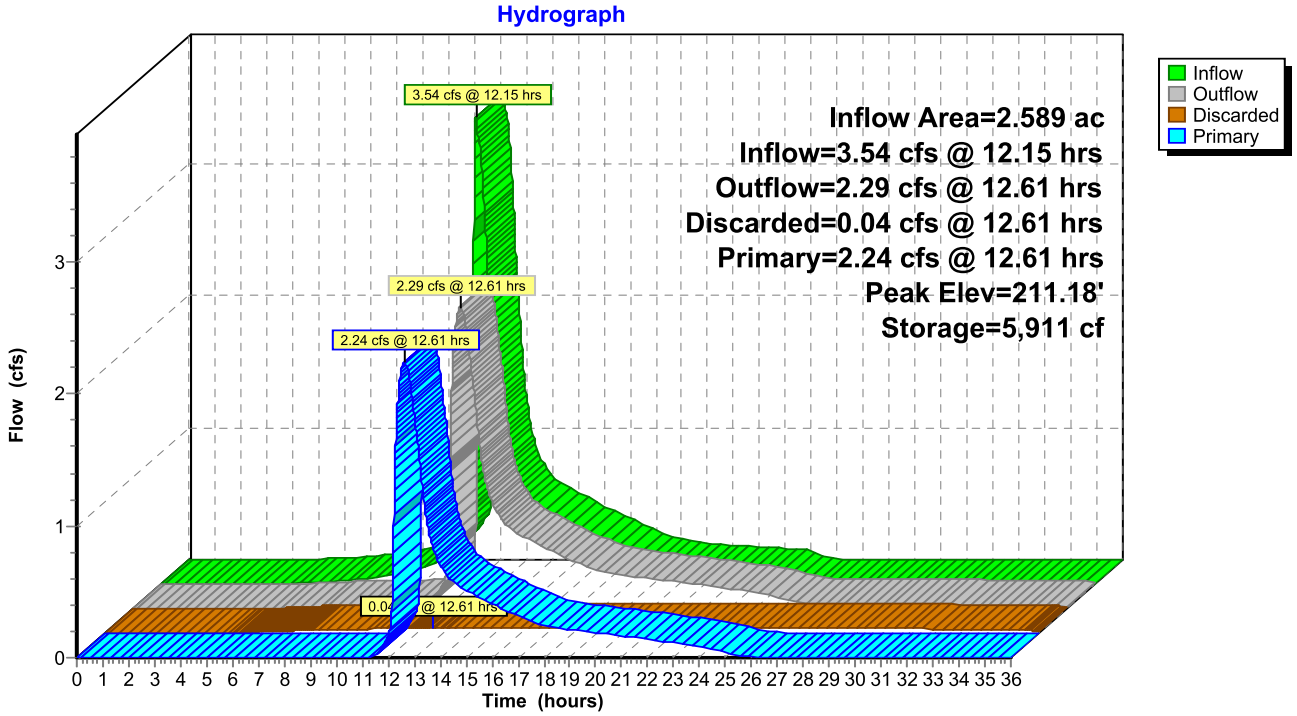
18,906.9 cf Field - 7,131.4 cf Chambers = 11,775.5 cf Stone x 40.0% Voids = 4,710.2 cf Stone Storage

Chamber Storage + Stone Storage = 11,841.6 cf = 0.272 af
Overall Storage Efficiency = 62.6%
Overall System Size = 71.87' x 37.58' x 7.00'

64 Chambers
700.3 cy Field
436.1 cy Stone



Pond 02P: UG DET - B-02



Summary for Pond 03P: UG DET

Inflow Area = 1.513 ac, 49.17% Impervious, Inflow Depth = 2.59" for 10-Year event
Inflow = 3.78 cfs @ 12.17 hrs, Volume= 0.327 af
Outflow = 1.61 cfs @ 12.49 hrs, Volume= 0.327 af, Atten= 57%, Lag= 19.3 min
Discarded = 0.03 cfs @ 12.49 hrs, Volume= 0.068 af
Primary = 1.58 cfs @ 12.49 hrs, Volume= 0.259 af
Routed to Pond 21P : BASIN 1

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 220.90' @ 12.49 hrs Surf.Area= 2,550 sf Storage= 5,019 cf

Plug-Flow detention time= 162.7 min calculated for 0.327 af (100% of inflow)
Center-of-Mass det. time= 162.1 min (996.1 - 834.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	218.00'	4,457 cf	**37.58'W x 67.84'L x 7.00'H Field A** 17,848 cf Overall - 6,705 cf Embedded = 11,143 cf x 40.0% Voids
#2A	219.00'	6,705 cf	**ADS_StormTech MC-4500 b +Cap**x 60 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 60 Chambers in 4 Rows Cap Storage= 39.5 cf x 2 x 4 rows = 316.0 cf
		11,162 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	216.00'	**15.0" Round Culvert** L= 47.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 216.00' / 215.25' S= 0.0160 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	219.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	220.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	224.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	218.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.03 cfs @ 12.49 hrs HW=220.90' (Free Discharge)
└**5=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=1.58 cfs @ 12.49 hrs HW=220.90' (Free Discharge)
└**1=Culvert** (Passes 1.58 cfs of 12.22 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.31 cfs @ 6.42 fps)
  ├**3=Orifice/Grate** (Orifice Controls 1.27 cfs @ 3.63 fps)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 03P: UG DET - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-4500 b +Cap (ADS StormTech®MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= 39.5 cf x 2 x 4 rows = 316.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

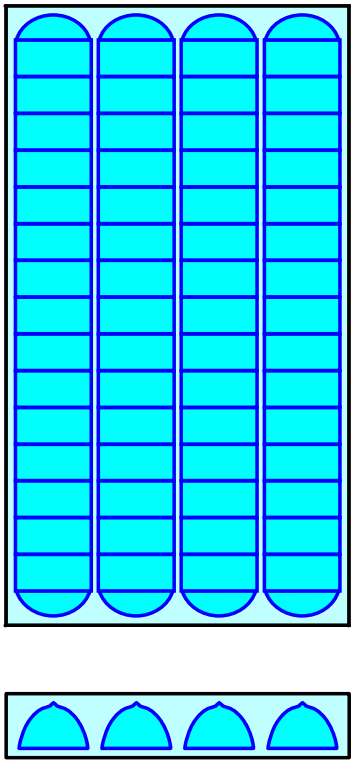
15 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 65.84' Row Length +12.0" End Stone x 2 = 67.84' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
12.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 7.00' Field Height

60 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 4 Rows = 6,705.4 cf Chamber Storage

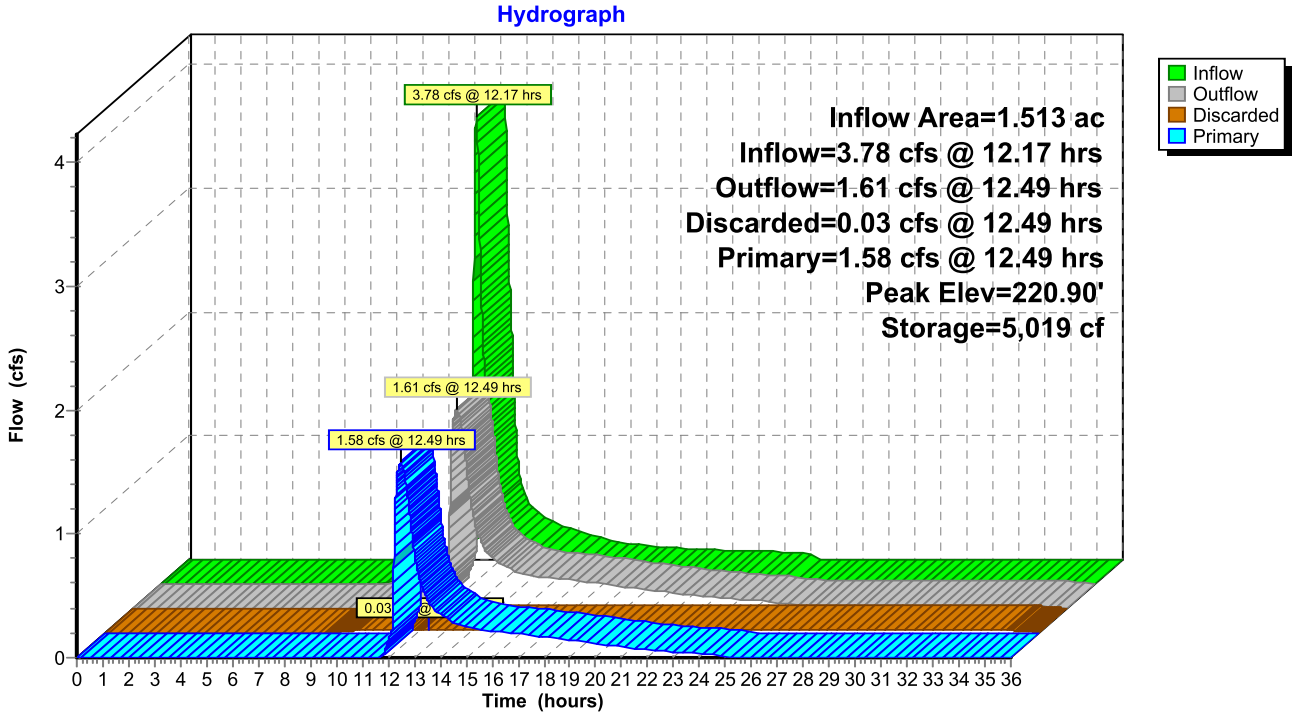
17,848.0 cf Field - 6,705.4 cf Chambers = 11,142.6 cf Stone x 40.0% Voids = 4,457.0 cf Stone Storage

Chamber Storage + Stone Storage = 11,162.5 cf = 0.256 af
Overall Storage Efficiency = 62.5%
Overall System Size = 67.84' x 37.58' x 7.00'

60 Chambers
661.0 cy Field
412.7 cy Stone



Pond 03P: UG DET



Summary for Pond 04P: UG DET - B-04

Inflow Area = 1.717 ac, 44.52% Impervious, Inflow Depth = 2.42" for 10-Year event
Inflow = 3.99 cfs @ 12.17 hrs, Volume= 0.346 af
Outflow = 1.72 cfs @ 12.49 hrs, Volume= 0.346 af, Atten= 57%, Lag= 19.4 min
Discarded = 0.04 cfs @ 12.49 hrs, Volume= 0.069 af
Primary = 1.69 cfs @ 12.49 hrs, Volume= 0.277 af
Routed to Pond 02P : UG DET - B-02

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 223.80' @ 12.49 hrs Surf.Area= 2,701 sf Storage= 5,115 cf

Plug-Flow detention time= 142.0 min calculated for 0.346 af (100% of inflow)
Center-of-Mass det. time= 141.7 min (980.9 - 839.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	221.00'	4,710 cf	**37.58'W x 71.87'L x 7.00'H Field A** 18,907 cf Overall - 7,131 cf Embedded = 11,776 cf x 40.0% Voids
#2A	222.00'	7,131 cf	**ADS_StormTech MC-4500 b +Cap**x 64 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 64 Chambers in 4 Rows Cap Storage= 39.5 cf x 2 x 4 rows = 316.0 cf
		11,842 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	219.00'	**15.0" Round Culvert** L= 67.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 219.00' / 217.20' S= 0.0269 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	222.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	223.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	227.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	221.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.04 cfs @ 12.49 hrs HW=223.80' (Free Discharge)
└**5=Exfiltration** (Controls 0.04 cfs)

Primary OutFlow Max=1.69 cfs @ 12.49 hrs HW=223.80' (Free Discharge)
└**1=Culvert** (Passes 1.69 cfs of 12.08 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.54 cfs @ 6.16 fps)
  ├**3=Orifice/Grate** (Orifice Controls 1.15 cfs @ 3.30 fps)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 04P: UG DET - B-04 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-4500 b +Cap (ADS StormTech®MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= 39.5 cf x 2 x 4 rows = 316.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

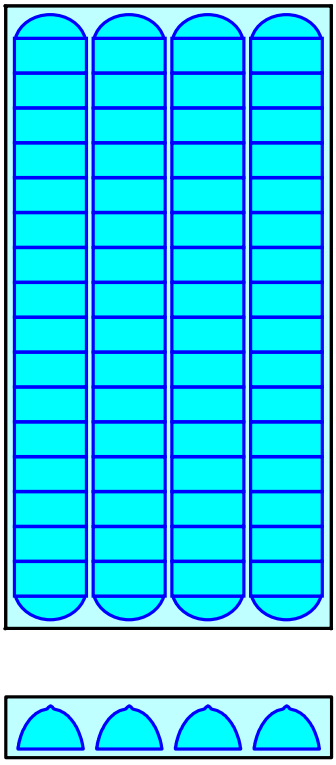
16 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 69.87' Row Length +12.0" End Stone x 2 = 71.87' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
12.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 7.00' Field Height

64 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 4 Rows = 7,131.4 cf Chamber Storage

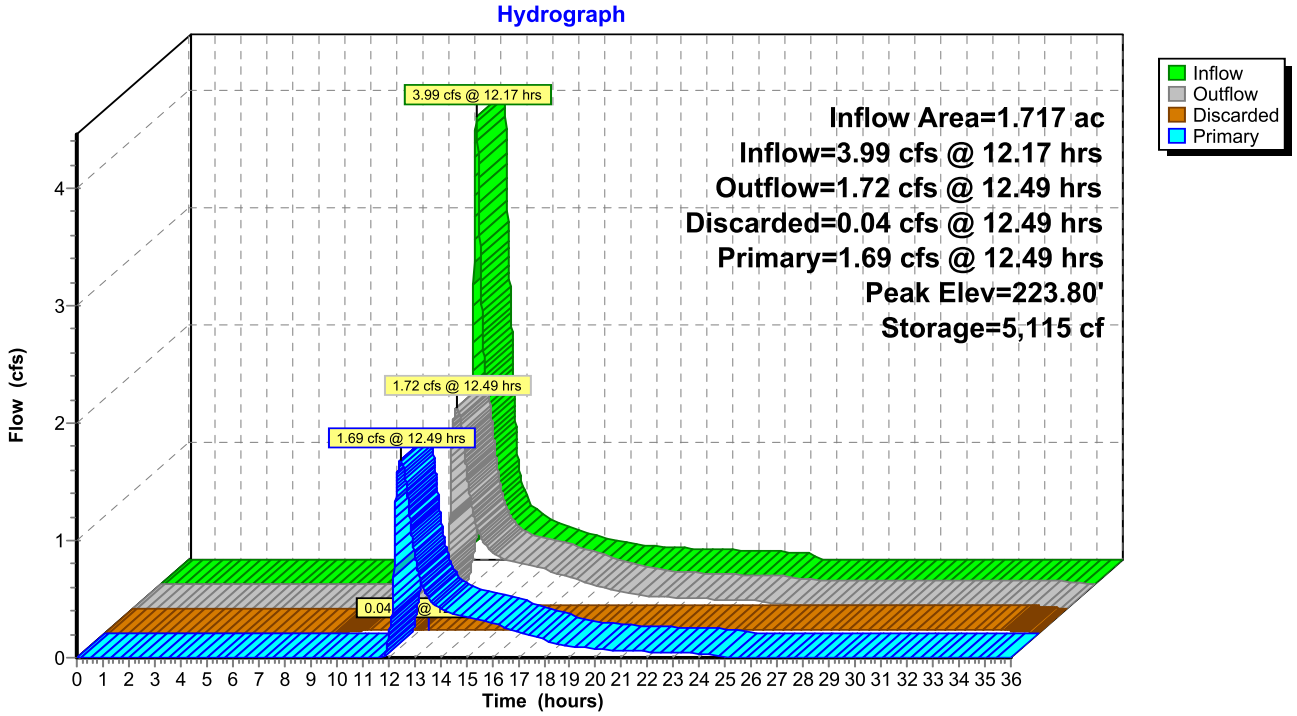
18,906.9 cf Field - 7,131.4 cf Chambers = 11,775.5 cf Stone x 40.0% Voids = 4,710.2 cf Stone Storage

Chamber Storage + Stone Storage = 11,841.6 cf = 0.272 af
Overall Storage Efficiency = 62.6%
Overall System Size = 71.87' x 37.58' x 7.00'

64 Chambers
700.3 cy Field
436.1 cy Stone



Pond 04P: UG DET - B-04



Summary for Pond 05P: UG DET - B-05

Inflow Area = 1.421 ac, 44.26% Impervious, Inflow Depth = 2.51" for 10-Year event
Inflow = 3.43 cfs @ 12.17 hrs, Volume= 0.297 af
Outflow = 1.62 cfs @ 12.46 hrs, Volume= 0.297 af, Atten= 53%, Lag= 17.4 min
Discarded = 0.03 cfs @ 12.46 hrs, Volume= 0.056 af
Primary = 1.59 cfs @ 12.46 hrs, Volume= 0.241 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 230.91' @ 12.46 hrs Surf.Area= 2,163 sf Storage= 4,265 cf

Plug-Flow detention time= 146.9 min calculated for 0.297 af (100% of inflow)
Center-of-Mass det. time= 146.5 min (983.1 - 836.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	228.00'	3,789 cf	**28.50'W x 75.89'L x 7.00'H Field A** 15,140 cf Overall - 5,668 cf Embedded = 9,472 cf x 40.0% Voids
#2A	229.00'	5,668 cf	**ADS_StormTech MC-4500 b +Cap**x 51 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 51 Chambers in 3 Rows Cap Storage= 39.5 cf x 2 x 3 rows = 237.0 cf
		9,457 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	220.00'	**15.0" Round Culvert** L= 68.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 220.00' / 215.40' S= 0.0676 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	229.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	230.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	234.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	228.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.03 cfs @ 12.46 hrs HW=230.91' (Free Discharge)
└**5=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=1.59 cfs @ 12.46 hrs HW=230.91' (Free Discharge)
└**1=Culvert** (Passes 1.59 cfs of 18.95 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.32 cfs @ 6.43 fps)
  ├**3=Orifice/Grate** (Orifice Controls 1.27 cfs @ 3.65 fps)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 05P: UG DET - B-05 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-4500 b +Cap (ADS StormTech®MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= 39.5 cf x 2 x 3 rows = 237.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

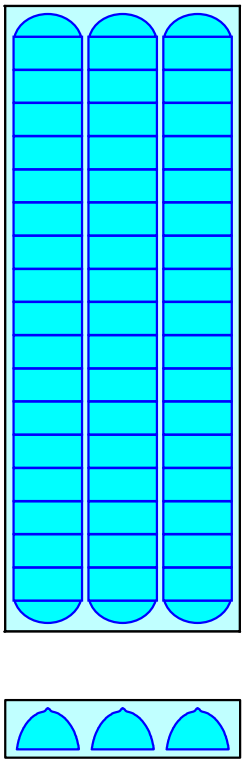
17 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 73.89' Row Length +12.0" End Stone x 2 = 75.89' Base Length
3 Rows x 100.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 28.50' Base Width
12.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 7.00' Field Height

51 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 3 Rows = 5,668.0 cf Chamber Storage

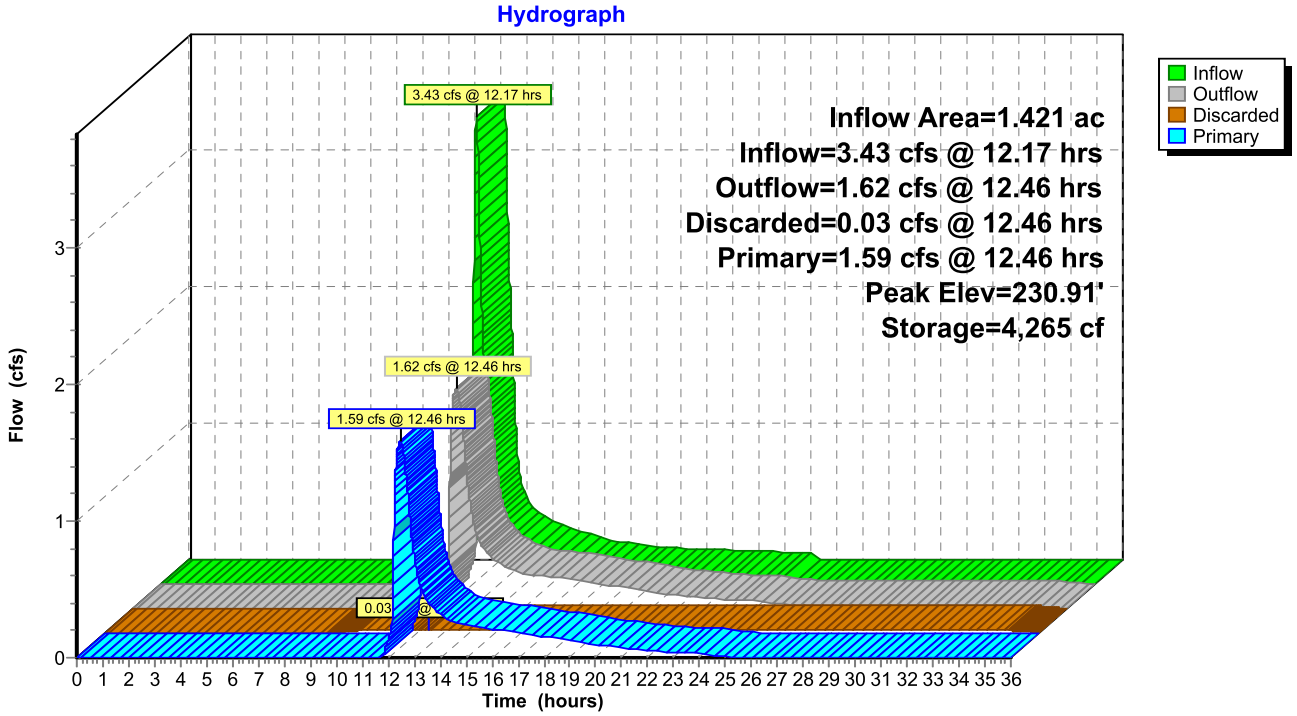
15,140.4 cf Field - 5,668.0 cf Chambers = 9,472.4 cf Stone x 40.0% Voids = 3,789.0 cf Stone Storage

Chamber Storage + Stone Storage = 9,457.0 cf = 0.217 af
Overall Storage Efficiency = 62.5%
Overall System Size = 75.89' x 28.50' x 7.00'

51 Chambers
560.8 cy Field
350.8 cy Stone



Pond 05P: UG DET - B-05



Summary for Pond 07P: UG DET - B-07

Inflow Area = 0.778 ac,100.00% Impervious, Inflow Depth = 4.62" for 10-Year event
Inflow = 3.70 cfs @ 12.08 hrs, Volume= 0.300 af
Outflow = 0.90 cfs @ 12.46 hrs, Volume= 0.300 af, Atten= 76%, Lag= 22.6 min
Discarded = 0.03 cfs @ 12.46 hrs, Volume= 0.079 af
Primary = 0.86 cfs @ 12.46 hrs, Volume= 0.221 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 218.52' @ 12.46 hrs Surf.Area= 2,415 sf Storage= 5,881 cf

Plug-Flow detention time= 208.1 min calculated for 0.300 af (100% of inflow)
Center-of-Mass det. time= 208.1 min (956.5 - 748.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	215.00'	4,260 cf	**46.67'W x 51.74'L x 7.00'H Field A** 16,902 cf Overall - 6,252 cf Embedded = 10,650 cf x 40.0% Voids
#2A	216.00'	6,252 cf	**ADS_StormTech MC-4500 b +Cap**x 55 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 55 Chambers in 5 Rows Cap Storage= 39.5 cf x 2 x 5 rows = 395.0 cf
		10,512 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	215.00'	**15.0" Round Culvert** L= 47.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 215.00' / 213.00' S= 0.0426 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	216.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	218.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	221.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	215.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.03 cfs @ 12.46 hrs HW=218.52' (Free Discharge)
└**5=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=0.86 cfs @ 12.46 hrs HW=218.52' (Free Discharge)
└**1=Culvert** (Passes 0.86 cfs of 10.06 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.37 cfs @ 7.46 fps)
  ├**3=Orifice/Grate** (Orifice Controls 0.50 cfs @ 2.52 fps)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 07P: UG DET - B-07 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-4500 b +Cap (ADS StormTech®MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= 39.5 cf x 2 x 5 rows = 395.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

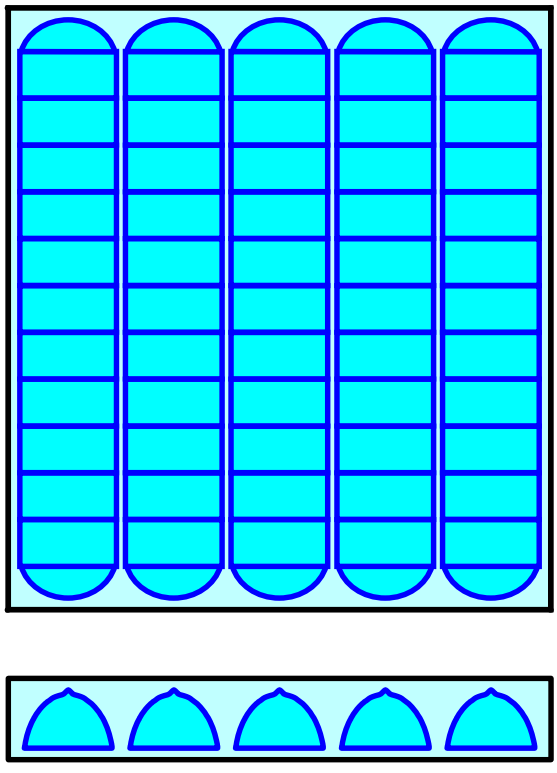
11 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 49.74' Row Length +12.0" End Stone x 2 = 51.74' Base Length
5 Rows x 100.0" Wide + 9.0" Spacing x 4 + 12.0" Side Stone x 2 = 46.67' Base Width
12.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 7.00' Field Height

55 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 5 Rows = 6,252.0 cf Chamber Storage

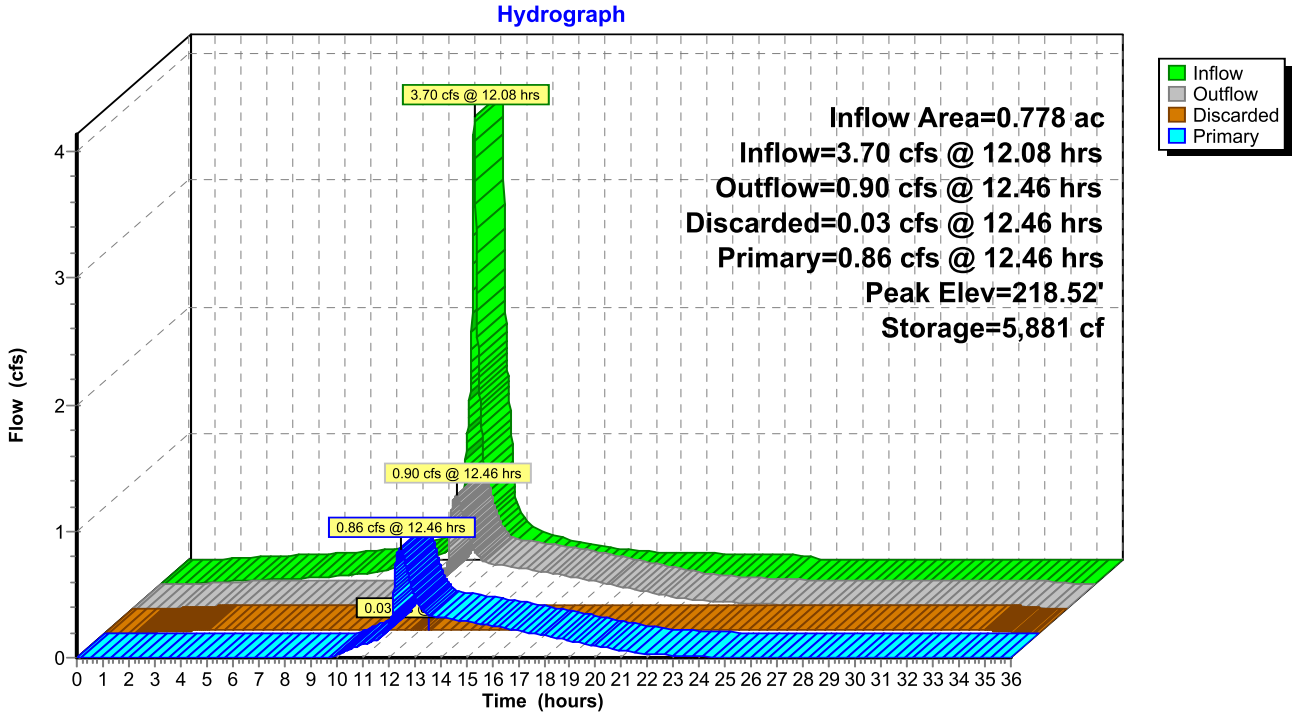
16,902.3 cf Field - 6,252.0 cf Chambers = 10,650.3 cf Stone x 40.0% Voids = 4,260.1 cf Stone Storage

Chamber Storage + Stone Storage = 10,512.1 cf = 0.241 af
Overall Storage Efficiency = 62.2%
Overall System Size = 51.74' x 46.67' x 7.00'

55 Chambers
626.0 cy Field
394.5 cy Stone



Pond 07P: UG DET - B-07



Summary for Pond 08P: UG DET - B-08

Inflow Area = 0.767 ac, 78.44% Impervious, Inflow Depth = 3.74" for 10-Year event
Inflow = 2.85 cfs @ 12.14 hrs, Volume= 0.239 af
Outflow = 1.43 cfs @ 12.35 hrs, Volume= 0.239 af, Atten= 50%, Lag= 12.7 min
Discarded = 0.03 cfs @ 12.35 hrs, Volume= 0.043 af
Primary = 1.40 cfs @ 12.35 hrs, Volume= 0.196 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 207.62' @ 12.35 hrs Surf.Area= 1,325 sf Storage= 3,258 cf

Plug-Flow detention time= 100.0 min calculated for 0.239 af (100% of inflow)
Center-of-Mass det. time= 100.2 min (895.6 - 795.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	204.00'	2,400 cf	**10.33'W x 128.22'L x 7.00'H Field A** 9,274 cf Overall - 3,274 cf Embedded = 6,001 cf x 40.0% Voids
#2A	205.00'	3,274 cf	**ADS_StormTech MC-4500 b +Cap**x 30 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= 39.5 cf x 2 x 1 rows = 79.0 cf
		5,674 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	204.00'	**15.0" Round Culvert** L= 77.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 204.00' / 203.60' S= 0.0052 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	205.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	207.00'	**7.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	210.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	204.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.03 cfs @ 12.35 hrs HW=207.62' (Free Discharge)
└**5=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=1.40 cfs @ 12.35 hrs HW=207.62' (Free Discharge)
└**1=Culvert** (Passes 1.40 cfs of 9.42 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 0.66 cfs @ 7.54 fps)
├**3=Orifice/Grate** (Orifice Controls 0.74 cfs @ 2.76 fps)
└**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 08P: UG DET - B-08 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-4500 b +Cap (ADS StormTech®MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= 39.5 cf x 2 x 1 rows = 79.0 cf

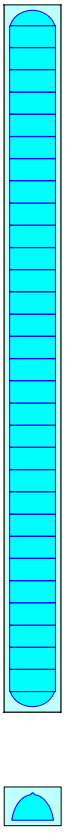
30 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 126.22' Row Length +12.0" End Stone x 2 = 128.22' Base Length
1 Rows x 100.0" Wide + 12.0" Side Stone x 2 = 10.33' Base Width
12.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 7.00' Field Height

30 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 1 Rows = 3,273.7 cf Chamber Storage

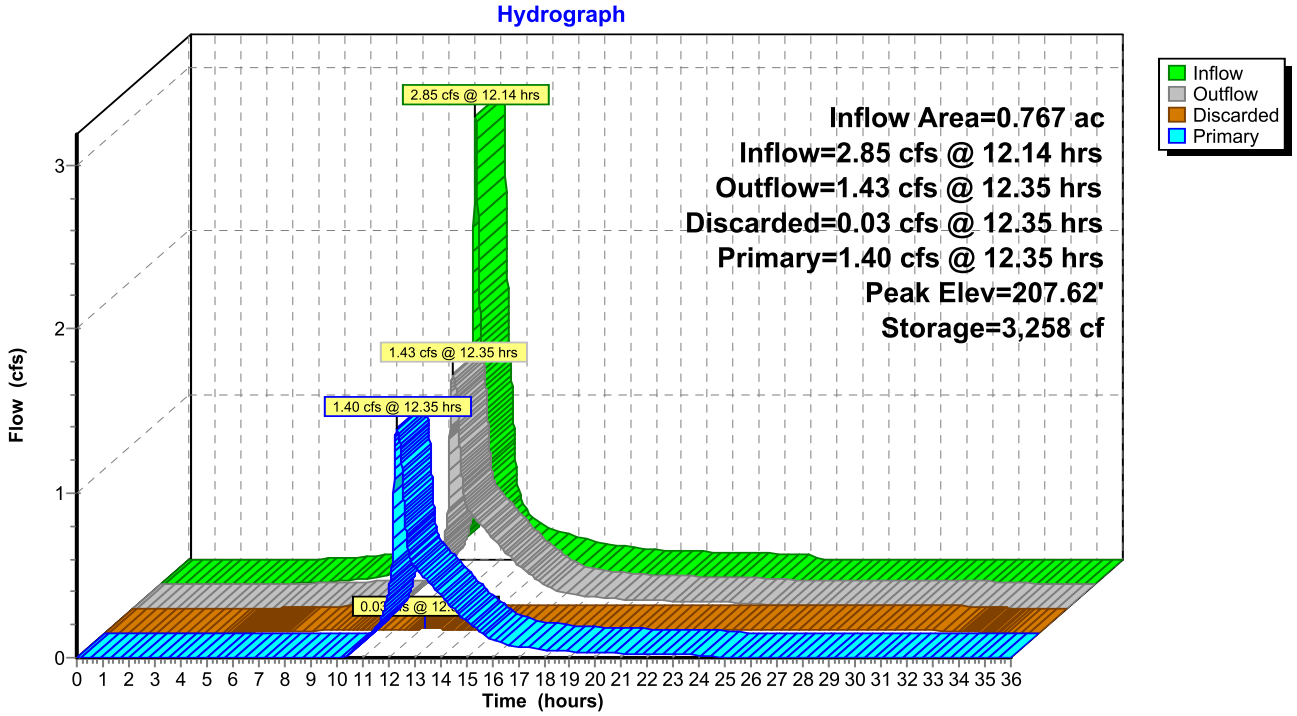
9,274.3 cf Field - 3,273.7 cf Chambers = 6,000.6 cf Stone x 40.0% Voids = 2,400.3 cf Stone Storage

Chamber Storage + Stone Storage = 5,674.0 cf = 0.130 af
Overall Storage Efficiency = 61.2%
Overall System Size = 128.22' x 10.33' x 7.00'

30 Chambers
343.5 cy Field
222.2 cy Stone



Pond 08P: UG DET - B-08



Summary for Pond 09P: UG DET - POOL

Inflow Area = 0.640 ac, 52.69% Impervious, Inflow Depth = 2.86" for 10-Year event
Inflow = 2.00 cfs @ 12.11 hrs, Volume= 0.153 af
Outflow = 0.35 cfs @ 12.62 hrs, Volume= 0.153 af, Atten= 83%, Lag= 30.3 min
Discarded = 0.02 cfs @ 12.62 hrs, Volume= 0.040 af
Primary = 0.32 cfs @ 12.62 hrs, Volume= 0.113 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 209.01' @ 12.62 hrs Surf.Area= 1,435 sf Storage= 2,864 cf

Plug-Flow detention time= 164.8 min calculated for 0.153 af (100% of inflow)
Center-of-Mass det. time= 164.9 min (987.0 - 822.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	206.00'	2,208 cf	**22.75'W x 63.06'L x 5.75'H Field A** 8,249 cf Overall - 2,728 cf Embedded = 5,521 cf x 40.0% Voids
#2A	207.00'	2,728 cf	**ADS_StormTech MC-3500 d +Cap**x 24 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 24 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		4,937 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	206.00'	**15.0" Round Culvert** L= 71.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 206.00' / 205.50' S= 0.0070 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	207.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	209.50'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	210.75'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	206.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.02 cfs @ 12.62 hrs HW=209.01' (Free Discharge)
└**5=Exfiltration** (Controls 0.02 cfs)

Primary OutFlow Max=0.32 cfs @ 12.62 hrs HW=209.01' (Free Discharge)
└**1=Culvert** (Passes 0.32 cfs of 8.67 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.32 cfs @ 6.60 fps)
  ├**3=Orifice/Grate** (Controls 0.00 cfs)
  └**4=Sharp-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 09P: UG DET - POOL - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech®MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

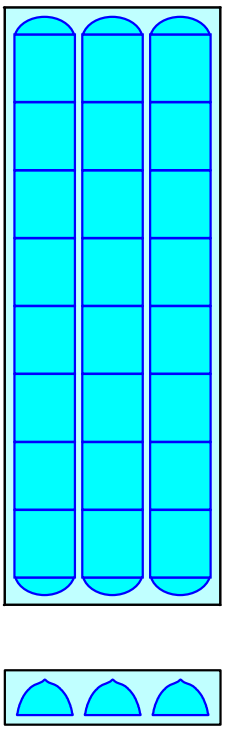
8 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 61.06' Row Length +12.0" End Stone x 2 = 63.06' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
12.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.75' Field Height

24 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 2,728.2 cf Chamber Storage

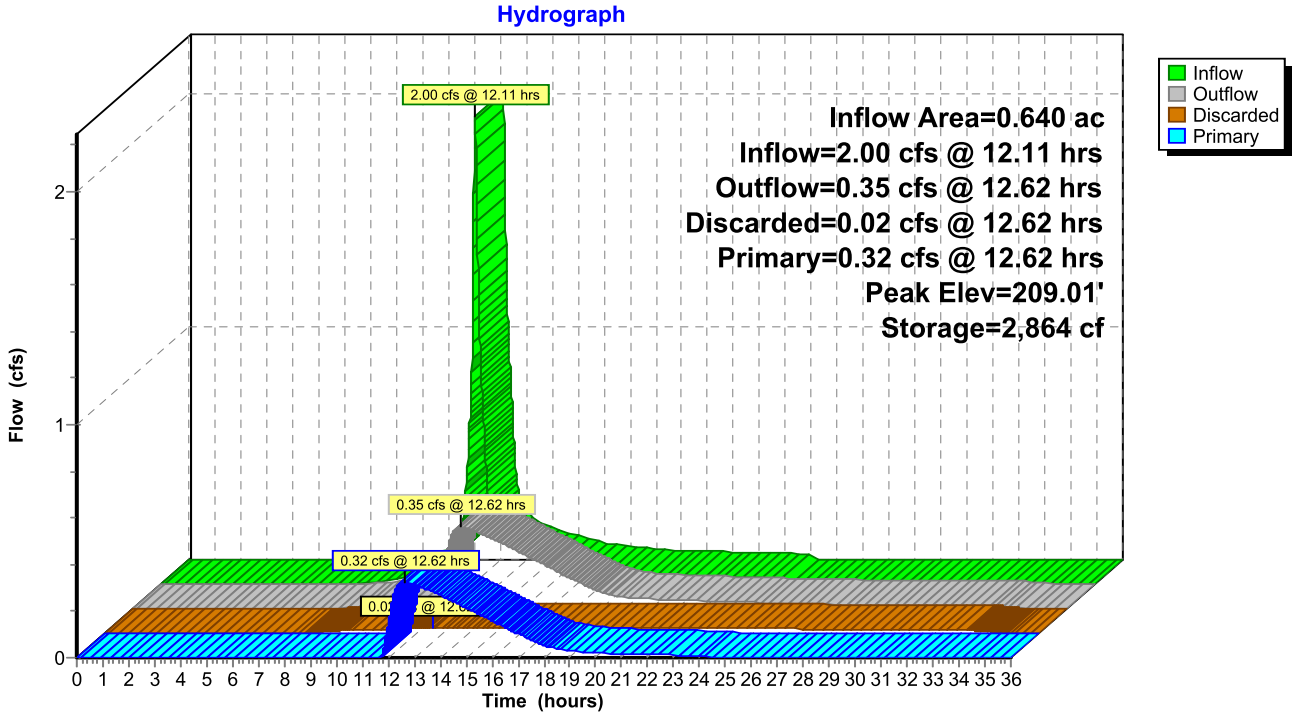
8,249.0 cf Field - 2,728.2 cf Chambers = 5,520.8 cf Stone x 40.0% Voids = 2,208.3 cf Stone Storage

Chamber Storage + Stone Storage = 4,936.6 cf = 0.113 af
Overall Storage Efficiency = 59.8%
Overall System Size = 63.06' x 22.75' x 5.75'

24 Chambers
305.5 cy Field
204.5 cy Stone



Pond 09P: UG DET - POOL



Summary for Pond 10P: UG DET - B-C

Inflow Area = 0.980 ac, 69.09% Impervious, Inflow Depth = 3.44" for 10-Year event
Inflow = 3.40 cfs @ 12.14 hrs, Volume= 0.281 af
Outflow = 0.53 cfs @ 12.71 hrs, Volume= 0.281 af, Atten= 84%, Lag= 34.5 min
Discarded = 0.05 cfs @ 12.71 hrs, Volume= 0.101 af
Primary = 0.47 cfs @ 12.71 hrs, Volume= 0.180 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 210.44' @ 12.71 hrs Surf.Area= 3,611 sf Storage= 5,744 cf

Plug-Flow detention time= 216.7 min calculated for 0.281 af (100% of inflow)
Center-of-Mass det. time= 216.8 min (1,022.8 - 806.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	208.00'	5,451 cf	**51.42'W x 70.23'L x 5.75'H Field A** 20,763 cf Overall - 7,136 cf Embedded = 13,628 cf x 40.0% Voids
#2A	209.00'	7,136 cf	**ADS_StormTech MC-3500 d +Cap**x 63 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 63 Chambers in 7 Rows Cap Storage= 14.9 cf x 2 x 7 rows = 208.6 cf
		12,587 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	209.00'	**15.0" Round Culvert** L= 36.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 209.00' / 208.60' S= 0.0111 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	209.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	212.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	212.75'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	208.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.05 cfs @ 12.71 hrs HW=210.44' (Free Discharge)
└**5=Exfiltration** (Controls 0.05 cfs)

Primary OutFlow Max=0.47 cfs @ 12.71 hrs HW=210.44' (Free Discharge)
└**1=Culvert** (Passes 0.47 cfs of 5.33 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.47 cfs @ 5.43 fps)
  ├**3=Orifice/Grate** (Controls 0.00 cfs)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 10P: UG DET - B-C - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech®MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 7 rows = 208.6 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

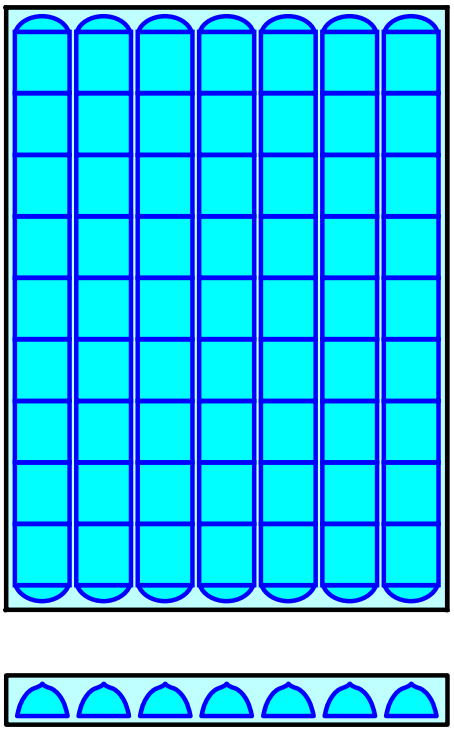
9 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 68.23' Row Length +12.0" End Stone x 2 = 70.23' Base Length
7 Rows x 77.0" Wide + 9.0" Spacing x 6 + 12.0" Side Stone x 2 = 51.42' Base Width
12.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.75' Field Height

63 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 7 Rows = 7,135.6 cf Chamber Storage

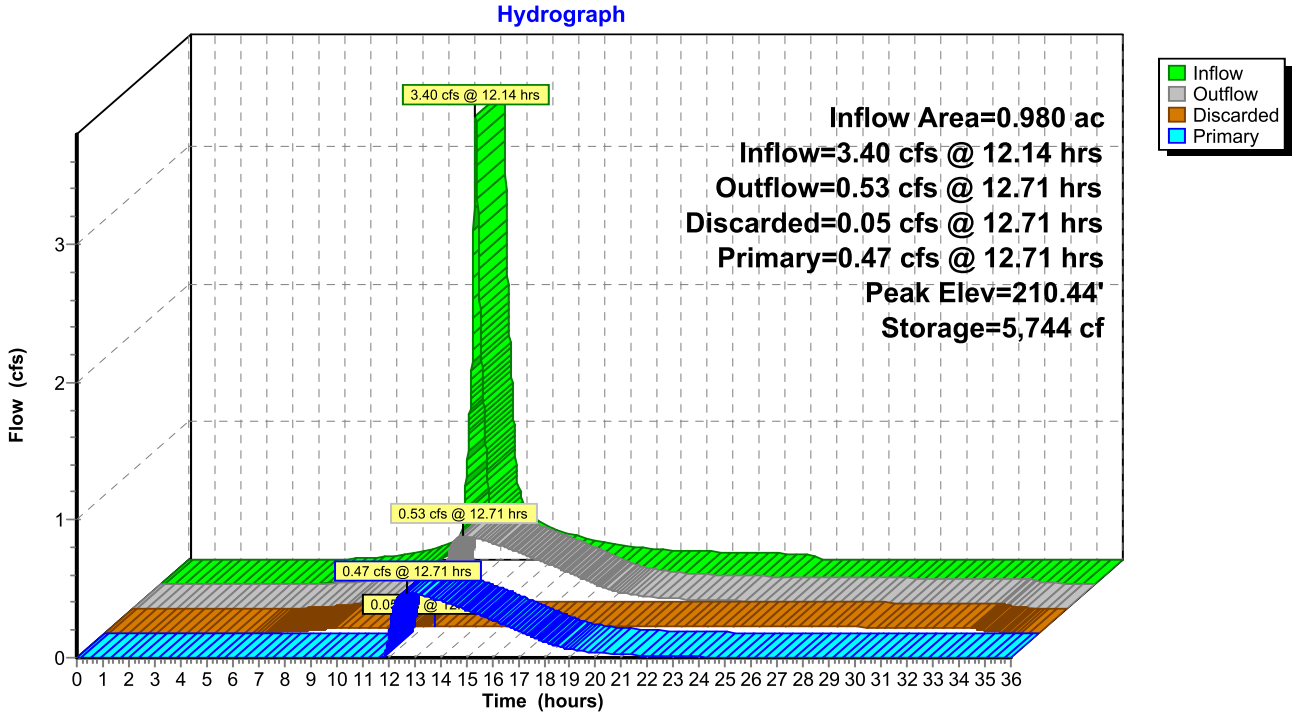
20,763.2 cf Field - 7,135.6 cf Chambers = 13,627.6 cf Stone x 40.0% Voids = 5,451.1 cf Stone Storage

Chamber Storage + Stone Storage = 12,586.6 cf = 0.289 af
Overall Storage Efficiency = 60.6%
Overall System Size = 70.23' x 51.42' x 5.75'

63 Chambers
769.0 cy Field
504.7 cy Stone



Pond 10P: UG DET - B-C



Summary for Pond 11P: UG DET-B-D

Inflow Area = 1.462 ac, 74.88% Impervious, Inflow Depth = 3.64" for 10-Year event
Inflow = 5.31 cfs @ 12.14 hrs, Volume= 0.443 af
Outflow = 0.62 cfs @ 12.94 hrs, Volume= 0.443 af, Atten= 88%, Lag= 48.3 min
Discarded = 0.08 cfs @ 12.94 hrs, Volume= 0.158 af
Primary = 0.53 cfs @ 12.94 hrs, Volume= 0.286 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 210.78' @ 12.94 hrs Surf.Area= 5,277 sf Storage= 9,769 cf

Plug-Flow detention time= 259.9 min calculated for 0.443 af (100% of inflow)
Center-of-Mass det. time= 259.8 min (1,058.9 - 799.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	208.00'	7,980 cf	**94.42'W x 55.89'L x 5.75'H Field A** 30,342 cf Overall - 10,393 cf Embedded = 19,949 cf x 40.0% Voids
#2A	209.00'	10,393 cf	**ADS_StormTech MC-3500 d +Cap**x 91 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 91 Chambers in 13 Rows Cap Storage= 14.9 cf x 2 x 13 rows = 387.4 cf
		18,373 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	208.60'	**15.0" Round Culvert** L= 53.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 208.60' / 208.30' S= 0.0057 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	209.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	210.90'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	212.75'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	208.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.08 cfs @ 12.94 hrs HW=210.78' (Free Discharge)
└**5=Exfiltration** (Controls 0.08 cfs)

Primary OutFlow Max=0.53 cfs @ 12.94 hrs HW=210.78' (Free Discharge)
└**1=Culvert** (Passes 0.53 cfs of 6.83 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.53 cfs @ 6.11 fps)
  ├**3=Orifice/Grate** (Controls 0.00 cfs)
  └**4=Sharp-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 11P: UG DET-B-D - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech®MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 13 rows = 387.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

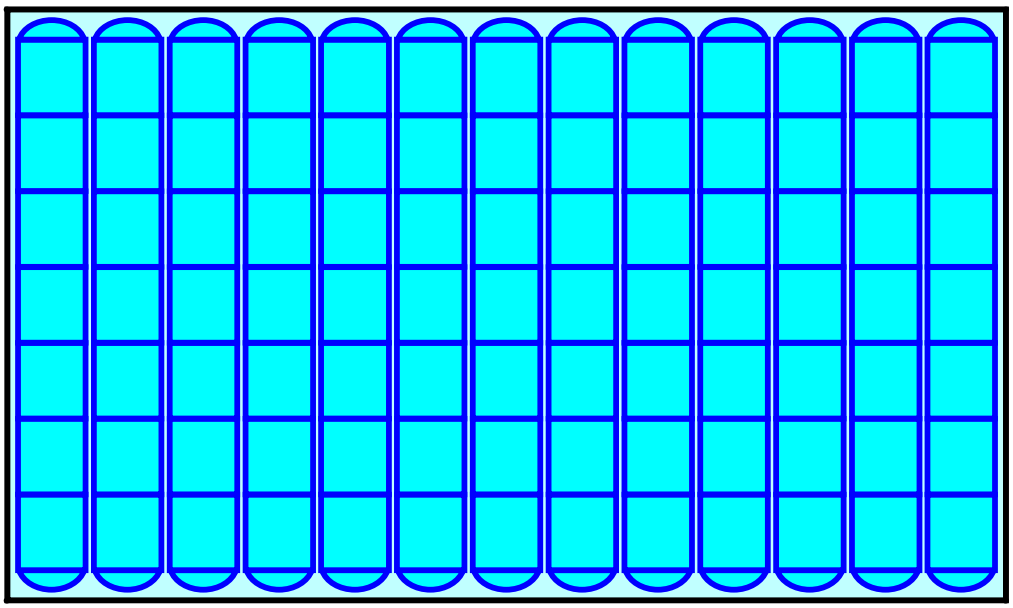
7 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 53.89' Row Length +12.0" End Stone x 2 = 55.89' Base Length
13 Rows x 77.0" Wide + 9.0" Spacing x 12 + 12.0" Side Stone x 2 = 94.42' Base Width
12.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.75' Field Height

91 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 13 Rows = 10,393.0 cf Chamber Storage

30,342.4 cf Field - 10,393.0 cf Chambers = 19,949.4 cf Stone x 40.0% Voids = 7,979.8 cf Stone Storage

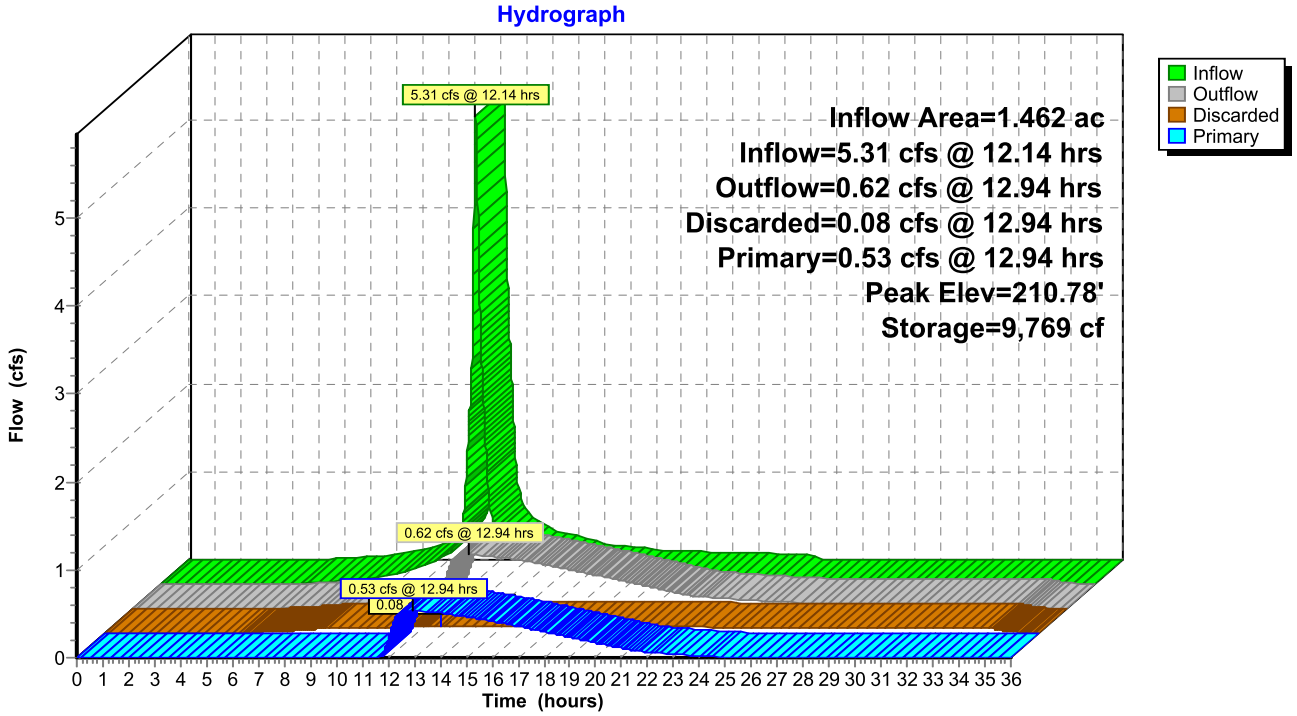
Chamber Storage + Stone Storage = 18,372.8 cf = 0.422 af
Overall Storage Efficiency = 60.6%
Overall System Size = 55.89' x 94.42' x 5.75'

91 Chambers
1,123.8 cy Field
738.9 cy Stone





Pond 11P: UG DET-B-D



Summary for Pond 21P: BASIN 1

Inflow Area = 3.393 ac, 50.00% Impervious, Inflow Depth = 2.23" for 10-Year event
Inflow = 4.10 cfs @ 12.33 hrs, Volume= 0.632 af
Outflow = 4.00 cfs @ 12.41 hrs, Volume= 0.567 af, Atten= 2%, Lag= 5.1 min
Discarded = 0.03 cfs @ 12.41 hrs, Volume= 0.062 af
Primary = 3.97 cfs @ 12.41 hrs, Volume= 0.505 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 209.22' @ 12.41 hrs Surf.Area= 2,205 sf Storage= 4,431 cf

Plug-Flow detention time= 117.6 min calculated for 0.567 af (90% of inflow)
Center-of-Mass det. time= 72.8 min (956.6 - 883.8)

Volume	Invert	Avail.Storage	Storage Description
#1	206.00'	6,225 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

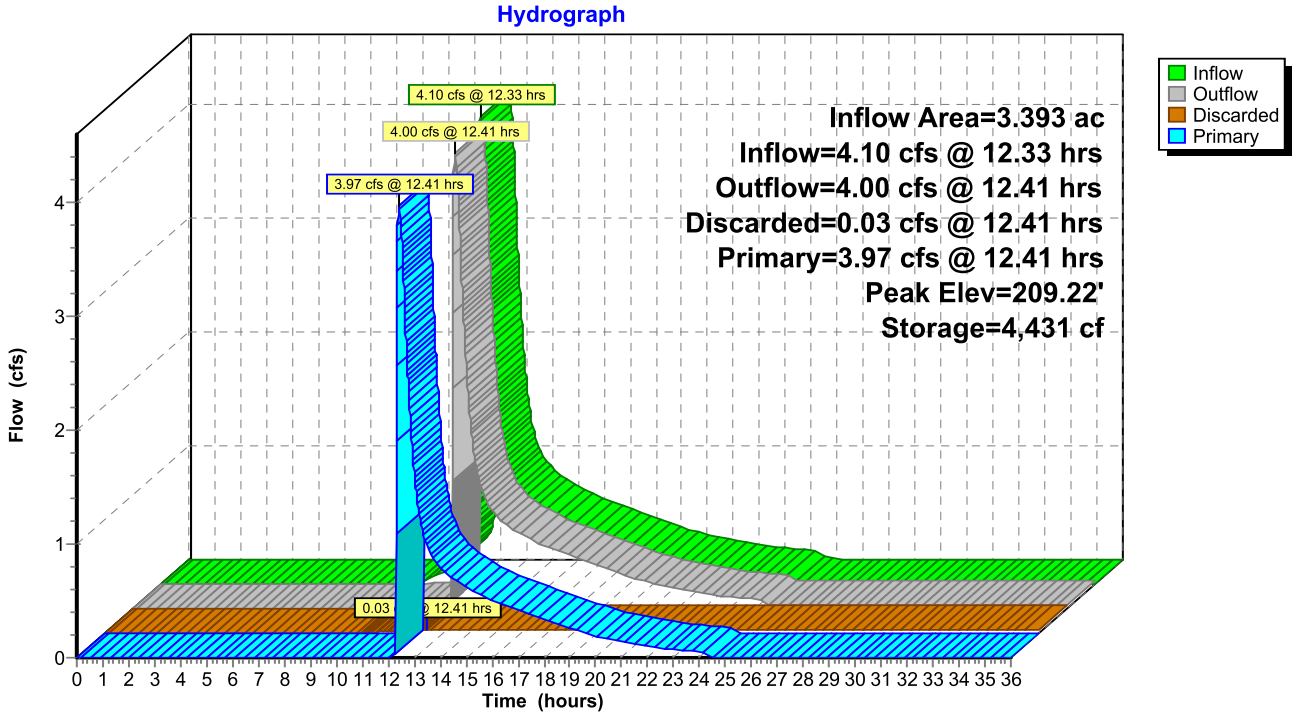
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
206.00	610	0	0
207.00	1,030	820	820
208.00	1,540	1,285	2,105
209.00	2,150	1,845	3,950
210.00	2,400	2,275	6,225

Device	Routing	Invert	Outlet Devices
#1	Primary	209.00'	**15.0' long + 3.0 '/' SideZ x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	206.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.03 cfs @ 12.41 hrs HW=209.22' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=3.95 cfs @ 12.41 hrs HW=209.22' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 3.95 cfs @ 1.14 fps)

Pond 21P: BASIN 1



Summary for Pond 22P: BASIN 2

Inflow Area = 2.917 ac, 45.85% Impervious, Inflow Depth = 2.15" for 10-Year event
Inflow = 2.43 cfs @ 12.52 hrs, Volume= 0.523 af
Outflow = 1.07 cfs @ 13.53 hrs, Volume= 0.372 af, Atten= 56%, Lag= 60.1 min
Discarded = 0.07 cfs @ 13.53 hrs, Volume= 0.130 af
Primary = 1.00 cfs @ 13.53 hrs, Volume= 0.242 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 201.10' @ 13.53 hrs Surf.Area= 4,636 sf Storage= 9,443 cf

Plug-Flow detention time= 332.9 min calculated for 0.372 af (71% of inflow)
Center-of-Mass det. time= 227.3 min (1,136.0 - 908.7)

Volume	Invert	Avail.Storage	Storage Description
#1	198.00'	14,215 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

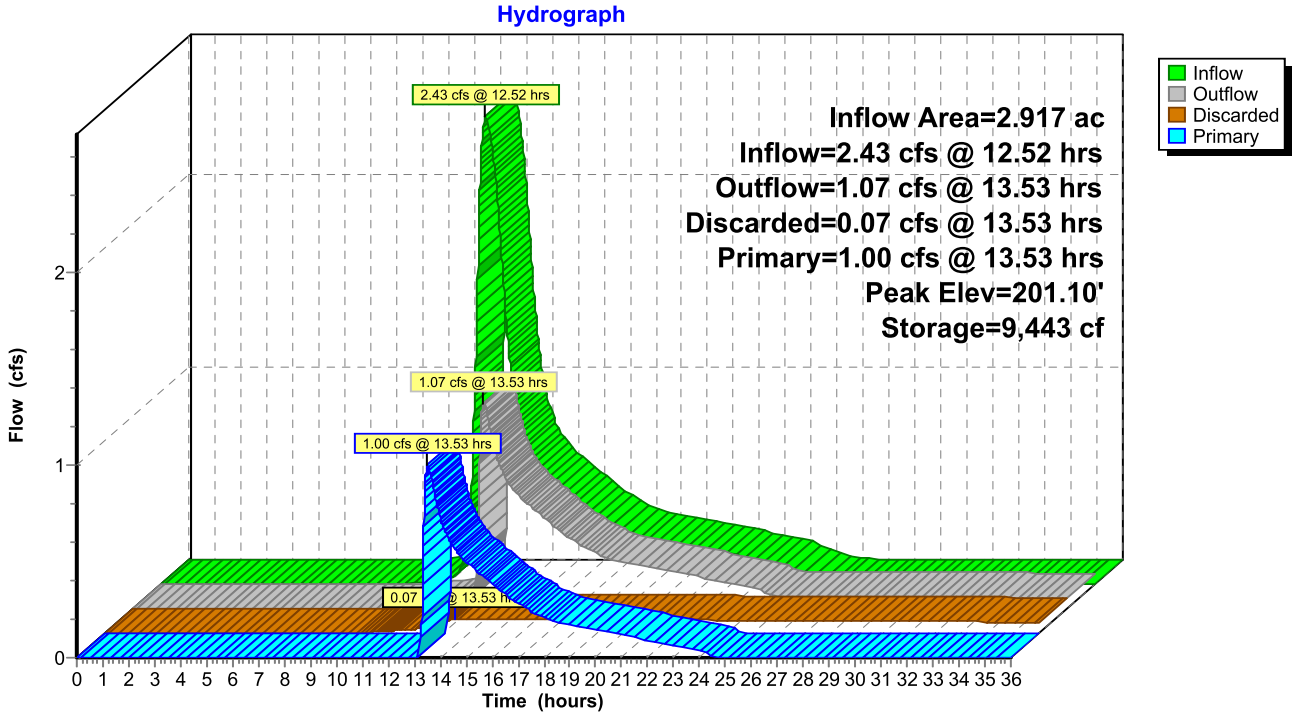
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
198.00	1,710	0	0
199.00	2,480	2,095	2,095
200.00	3,400	2,940	5,035
201.00	4,480	3,940	8,975
202.00	6,000	5,240	14,215

Device	Routing	Invert	Outlet Devices
#1	Primary	201.00'	**12.0' long + 3.0 '/' SideZ x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	198.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 192.00'

Discarded OutFlow Max=0.07 cfs @ 13.53 hrs HW=201.10' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.07 cfs)

Primary OutFlow Max=0.98 cfs @ 13.53 hrs HW=201.10' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 0.98 cfs @ 0.78 fps)

Pond 22P: BASIN 2



Summary for Pond 23P: BASIN 3

Inflow Area = 0.468 ac, 18.14% Impervious, Inflow Depth = 2.01" for 10-Year event
Inflow = 1.02 cfs @ 12.12 hrs, Volume= 0.078 af
Outflow = 0.02 cfs @ 21.92 hrs, Volume= 0.035 af, Atten= 98%, Lag= 588.0 min
Discarded = 0.02 cfs @ 21.92 hrs, Volume= 0.035 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 222.00' @ 21.92 hrs Surf.Area= 1,480 sf Storage= 2,634 cf

Plug-Flow detention time= 698.7 min calculated for 0.035 af (45% of inflow)
Center-of-Mass det. time= 572.2 min (1,420.5 - 848.4)

Volume	Invert	Avail.Storage	Storage Description
#1	219.00'	4,225 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

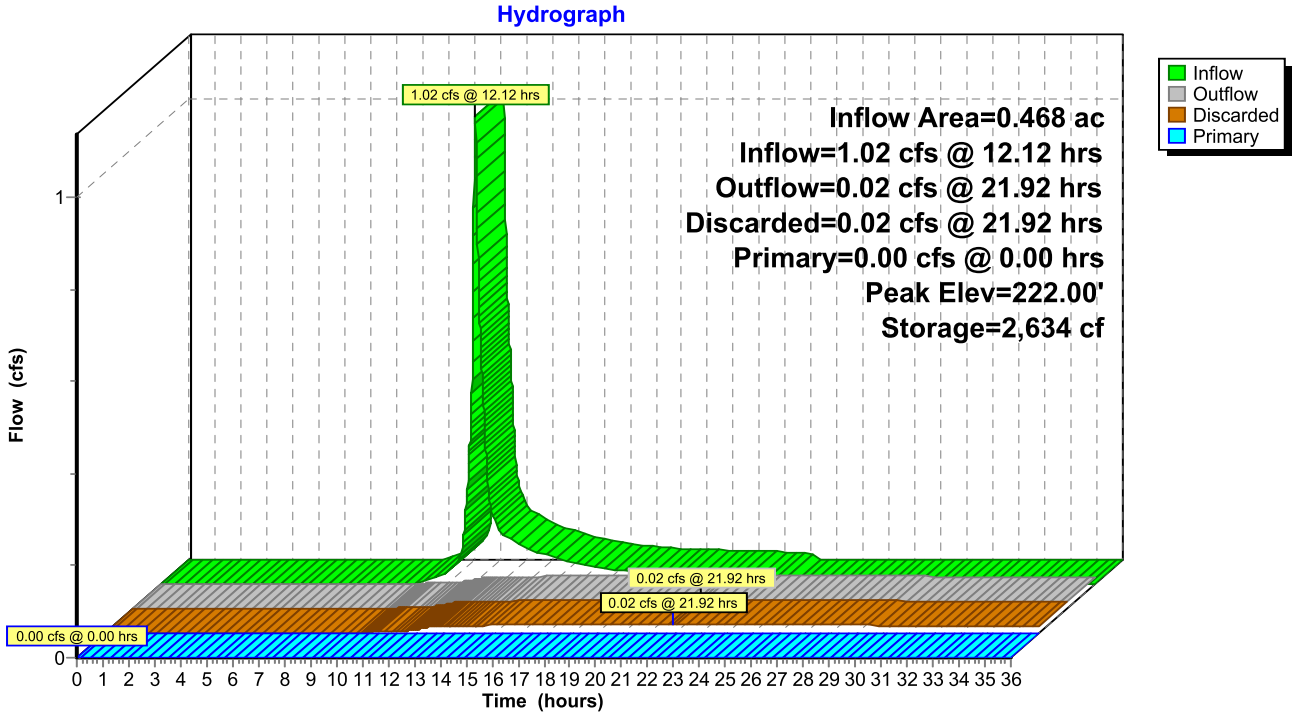
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
219.00	370	0	0
220.00	670	520	520
221.00	1,040	855	1,375
222.00	1,480	1,260	2,635
223.00	1,700	1,590	4,225

Device	Routing	Invert	Outlet Devices
#1	Primary	222.00'	**12.0' long + 3.0 '/' SideZ x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	219.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.02 cfs @ 21.92 hrs HW=222.00' (Free Discharge)
2=Exfiltration (Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=219.00' (Free Discharge)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 23P: BASIN 3



Summary for Pond 24P: BASIN 4

Inflow Area = 0.753 ac, 36.59% Impervious, Inflow Depth = 3.05" for 10-Year event
Inflow = 2.53 cfs @ 12.11 hrs, Volume= 0.191 af
Outflow = 0.19 cfs @ 13.60 hrs, Volume= 0.106 af, Atten= 92%, Lag= 89.4 min
Discarded = 0.04 cfs @ 13.60 hrs, Volume= 0.073 af
Primary = 0.16 cfs @ 13.60 hrs, Volume= 0.033 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 218.03' @ 13.60 hrs Surf.Area= 2,867 sf Storage= 5,246 cf

Plug-Flow detention time= 527.6 min calculated for 0.106 af (56% of inflow)
Center-of-Mass det. time= 418.2 min (1,234.4 - 816.2)

Volume	Invert	Avail.Storage	Storage Description
#1	215.00'	8,345 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

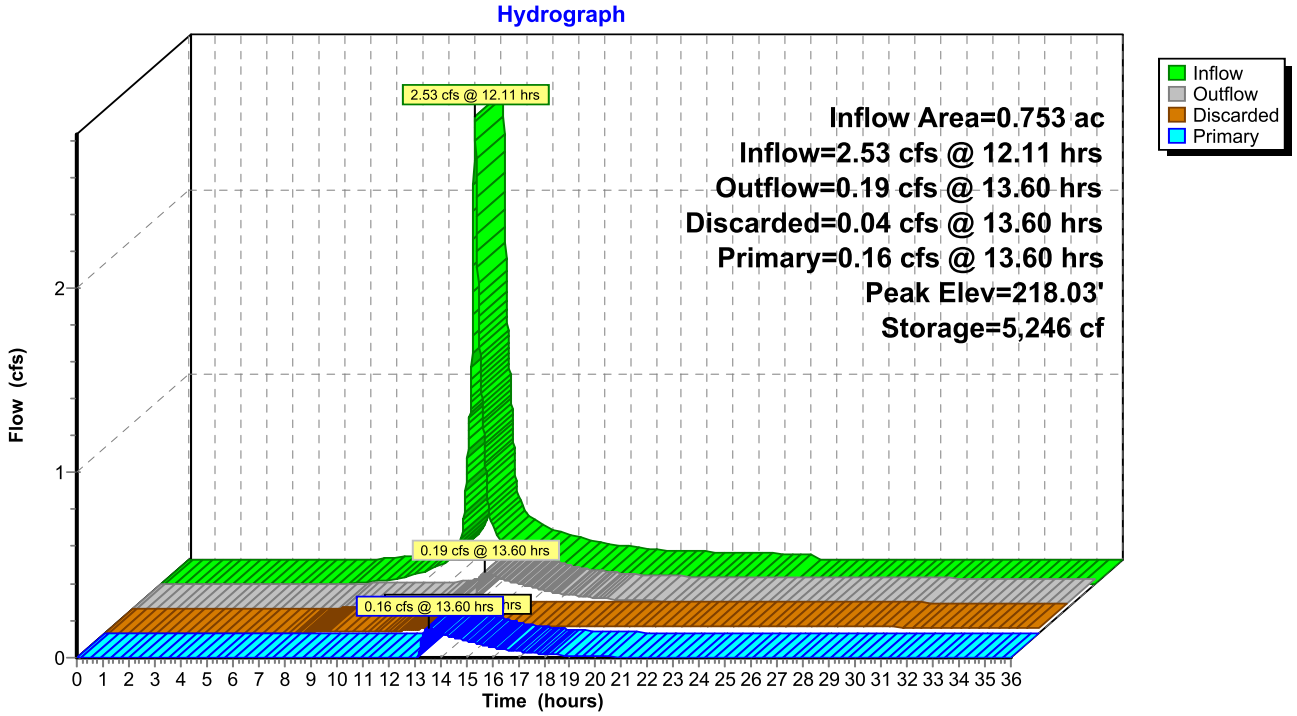
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
215.00	790	0	0
216.00	1,340	1,065	1,065
217.00	2,010	1,675	2,740
218.00	2,850	2,430	5,170
219.00	3,500	3,175	8,345

Device	Routing	Invert	Outlet Devices
#1	Primary	218.00'	**12.0' long + 3.0 '/' SideZ x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	215.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.04 cfs @ 13.60 hrs HW=218.03' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.04 cfs)

Primary OutFlow Max=0.13 cfs @ 13.60 hrs HW=218.03' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 0.13 cfs @ 0.40 fps)

Pond 24P: BASIN 4

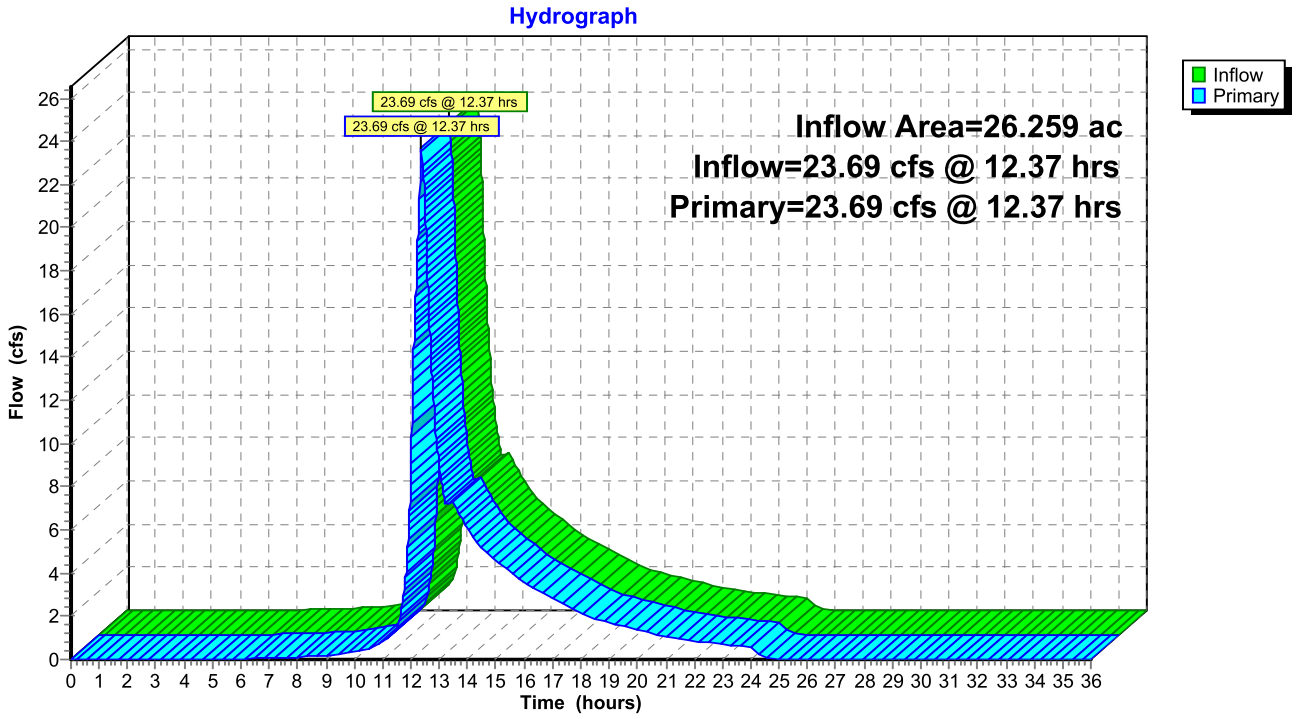


Summary for Link 10L-PR: DESIGN POINT - 01

Inflow Area = 26.259 ac, 34.64% Impervious, Inflow Depth = 1.85" for 10-Year event
Inflow = 23.69 cfs @ 12.37 hrs, Volume= 4.053 af
Primary = 23.69 cfs @ 12.37 hrs, Volume= 4.053 af, Atten= 0%, Lag= 0.0 min

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

Link 10L-PR: DESIGN POINT - 01



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

Subcatchment01S: BLDG-01 Runoff Area=37,300 sf 83.38% Impervious Runoff Depth=5.41"
Tc=8.0 min CN=94 Runoff=4.66 cfs 0.386 af

Subcatchment02S: BLDG-02 Runoff Area=37,956 sf 65.75% Impervious Runoff Depth=4.95"
Flow Length=400' Tc=10.6 min CN=90 Runoff=4.15 cfs 0.360 af

Subcatchment03S: BLDG-03 Runoff Area=65,900 sf 49.17% Impervious Runoff Depth=3.68"
Tc=12.0 min CN=78 Runoff=5.36 cfs 0.463 af

Subcatchment04S: BLDG-04 Runoff Area=74,800 sf 44.52% Impervious Runoff Depth=3.48"
Tc=12.0 min CN=76 Runoff=5.75 cfs 0.497 af

Subcatchment05S: BLDG 05 Runoff Area=61,900 sf 44.26% Impervious Runoff Depth=3.58"
Tc=12.0 min CN=77 Runoff=4.90 cfs 0.423 af

Subcatchment06S: BLDG-06 Runoff Area=32,800 sf 36.59% Impervious Runoff Depth=4.19"
Flow Length=75' Slope=0.0200 '/' Tc=7.7 min CN=83 Runoff=3.45 cfs 0.263 af

Subcatchment07S: BLDG-07 Runoff Area=33,900 sf 100.00% Impervious Runoff Depth=5.87"
Tc=6.0 min CN=98 Runoff=4.66 cfs 0.381 af

Subcatchment08S: BLDG 08 Runoff Area=33,400 sf 78.44% Impervious Runoff Depth=4.95"
Tc=10.0 min CN=90 Runoff=3.72 cfs 0.316 af

Subcatchment09S: POOL HOUSE Runoff Area=27,900 sf 52.69% Impervious Runoff Depth=3.98"
Tc=8.0 min CN=81 Runoff=2.77 cfs 0.213 af

Subcatchment10S: BLDG C Runoff Area=42,700 sf 69.09% Impervious Runoff Depth=4.62"
Tc=10.0 min CN=87 Runoff=4.52 cfs 0.378 af

Subcatchment11S: BLDG-D Runoff Area=63,700 sf 74.88% Impervious Runoff Depth=4.84"
Tc=10.0 min CN=89 Runoff=6.97 cfs 0.590 af

Subcatchment21S: SOUTHERN Runoff Area=44,600 sf 23.32% Impervious Runoff Depth=2.43"
Tc=12.0 min UI Adjusted CN=65 Runoff=2.34 cfs 0.207 af

Subcatchment22S: DIRECT FLOW TO Runoff Area=14,300 sf 0.00% Impervious Runoff Depth=3.28"
Tc=8.0 min CN=74 Runoff=1.18 cfs 0.090 af

Subcatchment23S: DIRECT FLOW TO Runoff Area=20,400 sf 18.14% Impervious Runoff Depth=2.99"
Flow Length=110' Slope=0.0400 '/' Tc=7.9 min UI Adjusted CN=71 Runoff=1.53 cfs 0.117 af

Subcatchment30S: EASTERN Runoff Area=403,100 sf 0.00% Impervious Runoff Depth=2.52"
Flow Length=950' Tc=23.7 min CN=66 Runoff=16.83 cfs 1.945 af

Subcatchment31S: NORTHERN Runoff Area=52,900 sf 0.00% Impervious Runoff Depth=1.58"
Tc=15.0 min CN=55 Runoff=1.51 cfs 0.160 af

Subcatchment32S: ENTRANCE Runoff Area=34,300 sf 54.23% Impervious Runoff Depth=4.62"
Tc=6.0 min CN=87 Runoff=4.14 cfs 0.303 af

Subcatchment33S: BLDG-09 Runoff Area=10,300 sf 100.00% Impervious Runoff Depth=5.87"
Tc=5.0 min CN=98 Runoff=1.47 cfs 0.116 af

Subcatchment34S: NORTHERN Runoff Area=51,700 sf 77.56% Impervious Runoff Depth=4.95"
Tc=12.0 min CN=90 Runoff=5.42 cfs 0.490 af

Pond 01P: UG DET-01 Peak Elev=212.48' Storage=5,558 cf Inflow=4.66 cfs 0.386 af
Discarded=0.03 cfs 0.061 af Primary=2.31 cfs 0.325 af Outflow=2.34 cfs 0.386 af

Pond 02P: UG DET - B-02 Peak Elev=212.21' Storage=7,998 cf Inflow=5.76 cfs 0.784 af
Discarded=0.05 cfs 0.091 af Primary=3.30 cfs 0.691 af Outflow=3.35 cfs 0.781 af

Pond 03P: UG DET Peak Elev=221.77' Storage=6,714 cf Inflow=5.36 cfs 0.463 af
Discarded=0.04 cfs 0.071 af Primary=2.40 cfs 0.392 af Outflow=2.43 cfs 0.463 af

Pond 04P: UG DET - B-04 Peak Elev=224.67' Storage=6,922 cf Inflow=5.75 cfs 0.497 af
Discarded=0.04 cfs 0.073 af Primary=2.61 cfs 0.424 af Outflow=2.64 cfs 0.497 af

Pond 05P: UG DET - B-05 Peak Elev=231.78' Storage=5,700 cf Inflow=4.90 cfs 0.423 af
Discarded=0.03 cfs 0.058 af Primary=2.40 cfs 0.365 af Outflow=2.43 cfs 0.423 af

Pond 07P: UG DET - B-07 Peak Elev=219.12' Storage=6,938 cf Inflow=4.66 cfs 0.381 af
Discarded=0.04 cfs 0.082 af Primary=1.29 cfs 0.299 af Outflow=1.33 cfs 0.381 af

Pond 08P: UG DET - B-08 Peak Elev=208.26' Storage=3,856 cf Inflow=3.72 cfs 0.316 af
Discarded=0.03 cfs 0.046 af Primary=2.01 cfs 0.271 af Outflow=2.04 cfs 0.316 af

Pond 09P: UG DET - POOL Peak Elev=209.91' Storage=3,754 cf Inflow=2.77 cfs 0.213 af
Discarded=0.03 cfs 0.043 af Primary=0.89 cfs 0.170 af Outflow=0.92 cfs 0.213 af

Pond 10P: UG DET - B-C Peak Elev=211.23' Storage=7,926 cf Inflow=4.52 cfs 0.378 af
Discarded=0.06 cfs 0.108 af Primary=0.60 cfs 0.269 af Outflow=0.66 cfs 0.378 af

Pond 11P: UG DET-B-D Peak Elev=211.46' Storage=12,411 cf Inflow=6.97 cfs 0.590 af
Discarded=0.09 cfs 0.169 af Primary=1.43 cfs 0.421 af Outflow=1.52 cfs 0.590 af

Pond 21P: BASIN 1 Peak Elev=209.30' Storage=4,597 cf Inflow=6.42 cfs 0.924 af
Discarded=0.03 cfs 0.064 af Primary=6.36 cfs 0.795 af Outflow=6.39 cfs 0.859 af

Pond 22P: BASIN 2 Peak Elev=201.21' Storage=9,969 cf Inflow=3.59 cfs 0.780 af
Discarded=0.07 cfs 0.134 af Primary=3.05 cfs 0.491 af Outflow=3.12 cfs 0.625 af

Pond 23P: BASIN 3 Peak Elev=222.03' Storage=2,682 cf Inflow=1.53 cfs 0.117 af
Discarded=0.02 cfs 0.037 af Primary=0.19 cfs 0.036 af Outflow=0.21 cfs 0.073 af

Pond 24P: BASIN 4 Peak Elev=218.12' Storage=5,516 cf Inflow=3.45 cfs 0.263 af
Discarded=0.04 cfs 0.075 af Primary=1.24 cfs 0.102 af Outflow=1.28 cfs 0.177 af

Link 10L-PR: DESIGN POINT - 01

Inflow=38.39 cfs 6.232 af
Primary=38.39 cfs 6.232 af

Total Runoff Area = 26.259 ac Runoff Volume = 7.698 af Average Runoff Depth = 3.52"
65.36% Pervious = 17.163 ac 34.64% Impervious = 9.097 ac

Summary for Subcatchment 01S: BLDG-01

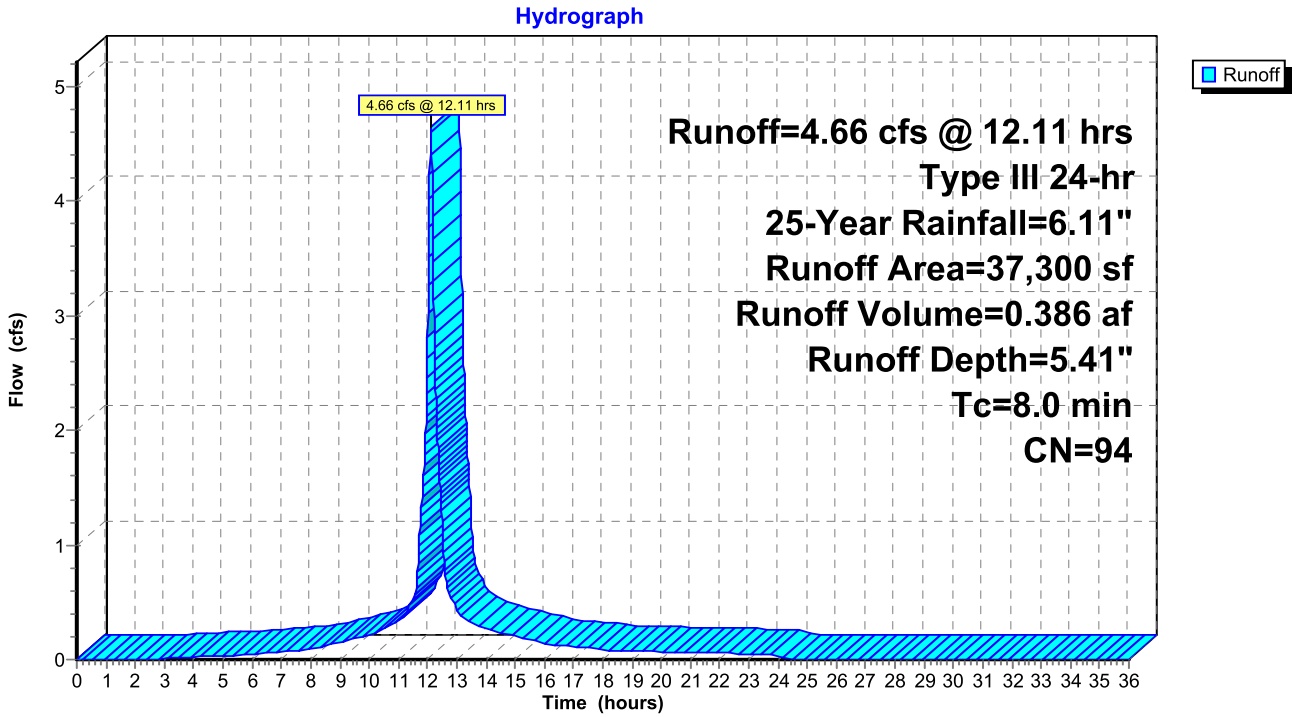
Runoff = 4.66 cfs @ 12.11 hrs, Volume= 0.386 af, Depth= 5.41"
Routed to Pond 01P : UG DET-01

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.11"

Area (sf)	CN	Description
17,100	98	Unconnected pavement, HSG B
2,000	98	Unconnected roofs, HSG B
6,500	98	Unconnected roofs, HSG B
5,500	98	Unconnected roofs, HSG B
6,200	74	>75% Grass cover, Good, HSG C
37,300	94	Weighted Average
6,200		16.62% Pervious Area
31,100		83.38% Impervious Area
31,100		100.00% Unconnected

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

Subcatchment 01S: BLDG-01



Summary for Subcatchment 02S: BLDG-02

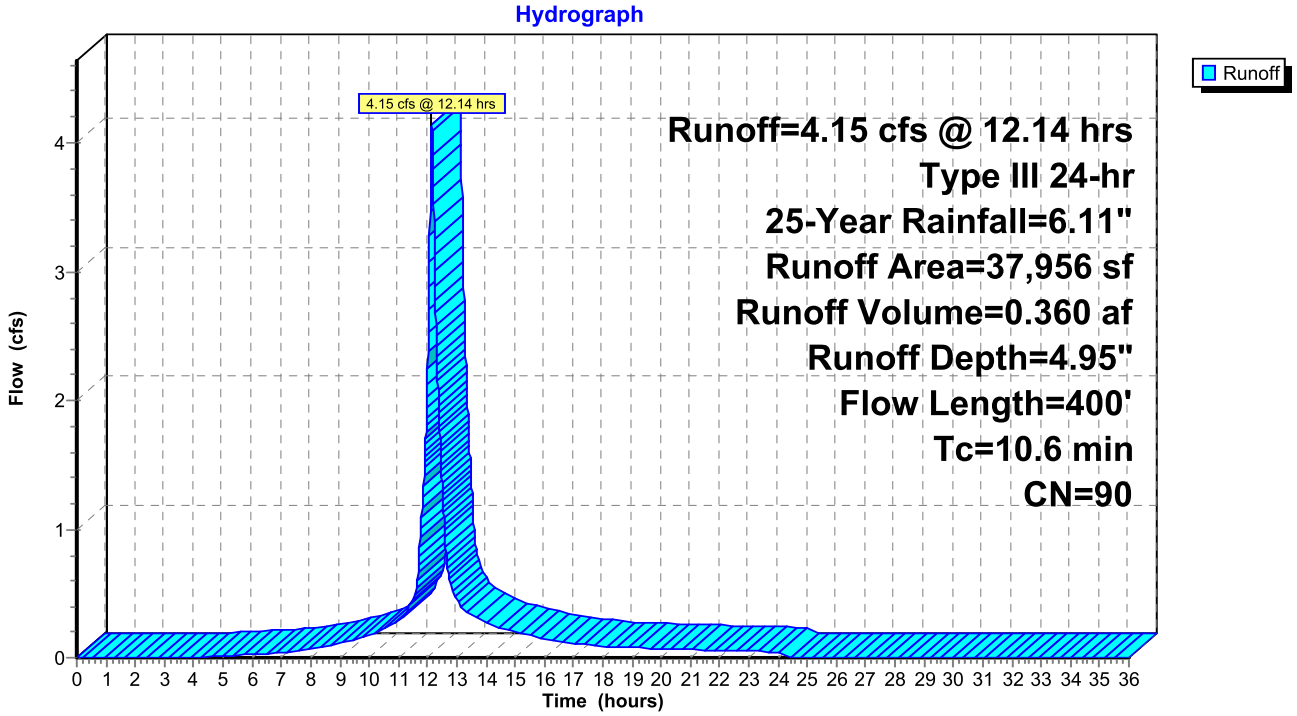
Runoff = 4.15 cfs @ 12.14 hrs, Volume= 0.360 af, Depth= 4.95"
Routed to Pond 02P : UG DET - B-02

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.11"

Area (sf)	CN	Description
17,700	98	Unconnected pavement, HSG B
1,500	98	Unconnected roofs, HSG B
3,250	98	Unconnected roofs, HSG B
2,500	98	Unconnected roofs, HSG B
6	98	Unconnected roofs, HSG B
13,000	74	>75% Grass cover, Good, HSG C
37,956	90	Weighted Average
13,000		34.25% Pervious Area
24,956		65.75% Impervious Area
24,956		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0200	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.26"
0.9	300	0.0100	5.70	7.00	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
10.6	400	Total			

Subcatchment 02S: BLDG-02



Summary for Subcatchment 03S: BLDG-03

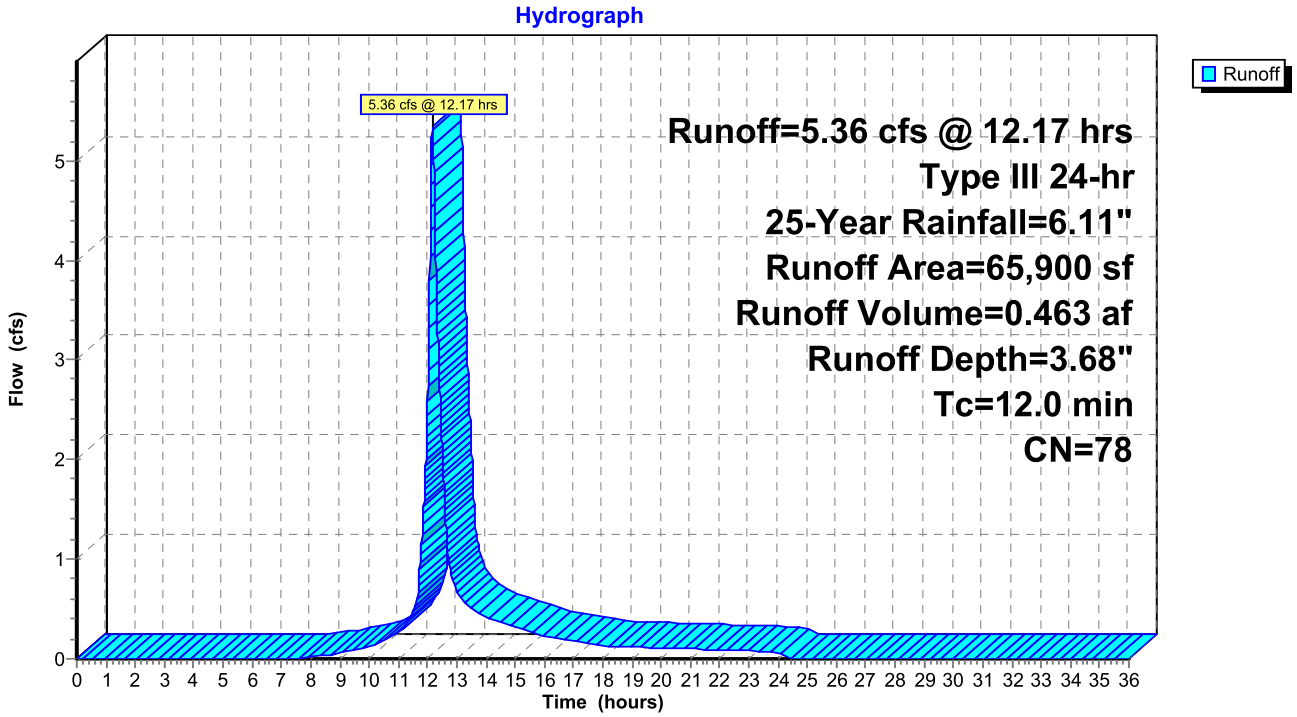
Runoff = 5.36 cfs @ 12.17 hrs, Volume= 0.463 af, Depth= 3.68"
Routed to Pond 03P : UG DET

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.11"

Area (sf)	CN	Description
18,400	98	Unconnected pavement, HSG B
2,000	98	Unconnected roofs, HSG B
6,500	98	Unconnected roofs, HSG B
5,500	98	Unconnected roofs, HSG B
5,800	61	>75% Grass cover, Good, HSG B
27,700	58	Woods/grass comb., Good, HSG B
65,900	78	Weighted Average
33,500		50.83% Pervious Area
32,400		49.17% Impervious Area
32,400		100.00% Unconnected

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

Subcatchment 03S: BLDG-03



Summary for Subcatchment 04S: BLDG-04

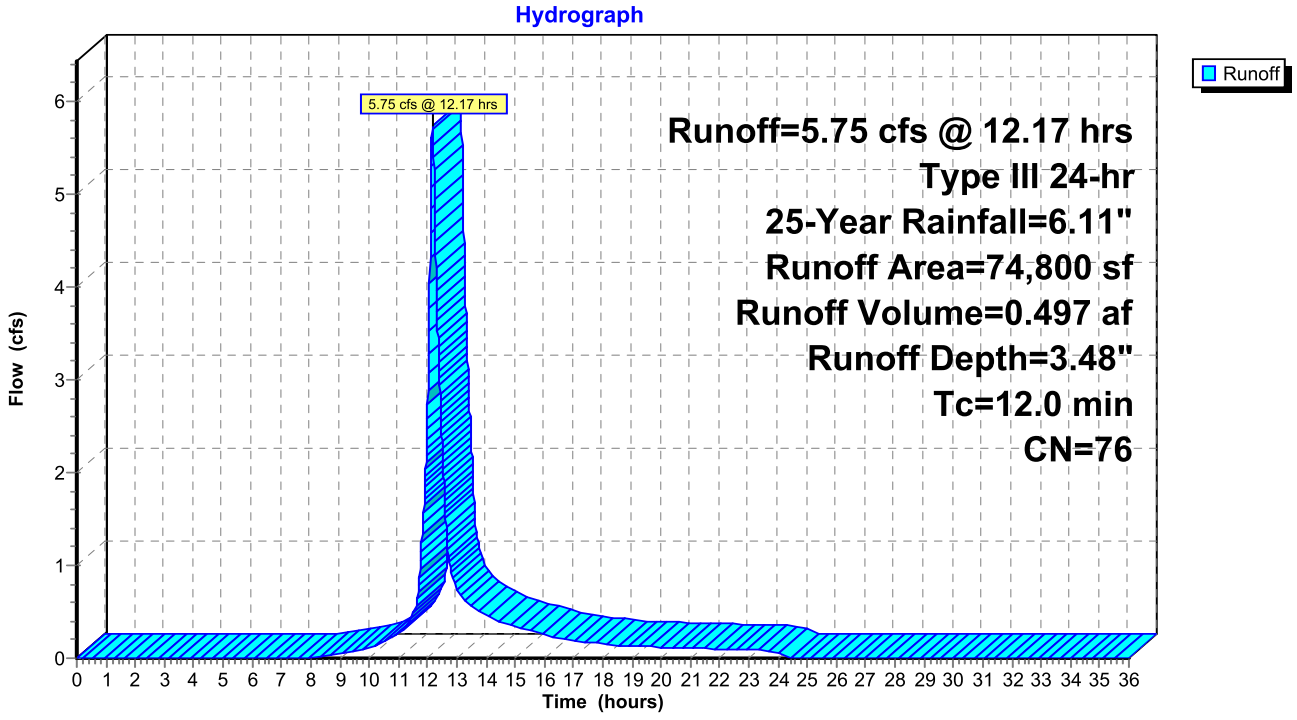
Runoff = 5.75 cfs @ 12.17 hrs, Volume= 0.497 af, Depth= 3.48"
Routed to Pond 04P : UG DET - B-04

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.11"

Area (sf)	CN	Description
19,300	98	Unconnected pavement, HSG B
2,000	98	Unconnected roofs, HSG B
6,500	98	Unconnected roofs, HSG B
5,500	98	Unconnected roofs, HSG B
4,500	61	>75% Grass cover, Good, HSG B
2,000	74	>75% Grass cover, Good, HSG C
35,000	58	Woods/grass comb., Good, HSG B
74,800	76	Weighted Average
41,500		55.48% Pervious Area
33,300		44.52% Impervious Area
33,300		100.00% Unconnected

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

Subcatchment 04S: BLDG-04



Summary for Subcatchment 05S: BLDG 05

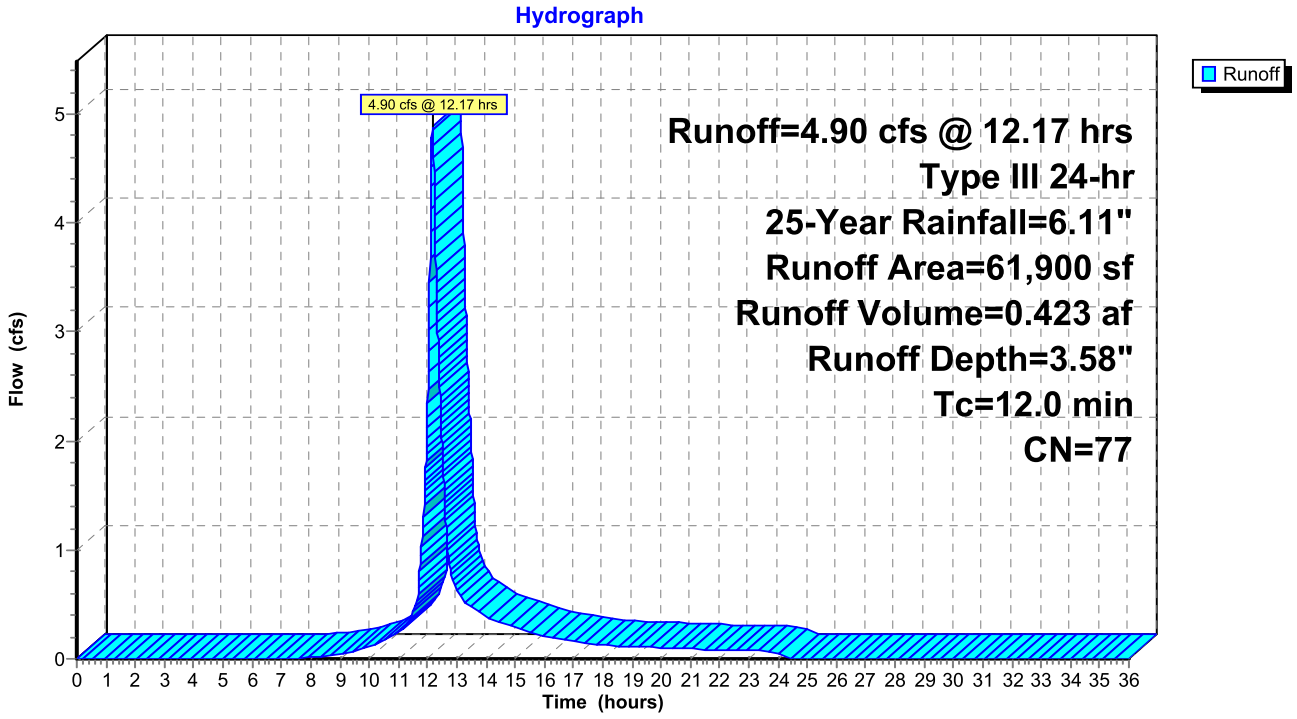
Runoff = 4.90 cfs @ 12.17 hrs, Volume= 0.423 af, Depth= 3.58"
Routed to Pond 05P : UG DET - B-05

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.11"

Area (sf)	CN	Description
13,400	98	Unconnected pavement, HSG B
2,000	98	Unconnected roofs, HSG B
6,500	98	Unconnected roofs, HSG B
5,500	98	Unconnected roofs, HSG B
5,000	74	>75% Grass cover, Good, HSG C
29,500	58	Woods/grass comb., Good, HSG B
61,900	77	Weighted Average
34,500		55.74% Pervious Area
27,400		44.26% Impervious Area
27,400		100.00% Unconnected

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

Subcatchment 05S: BLDG 05



Summary for Subcatchment 06S: BLDG-06

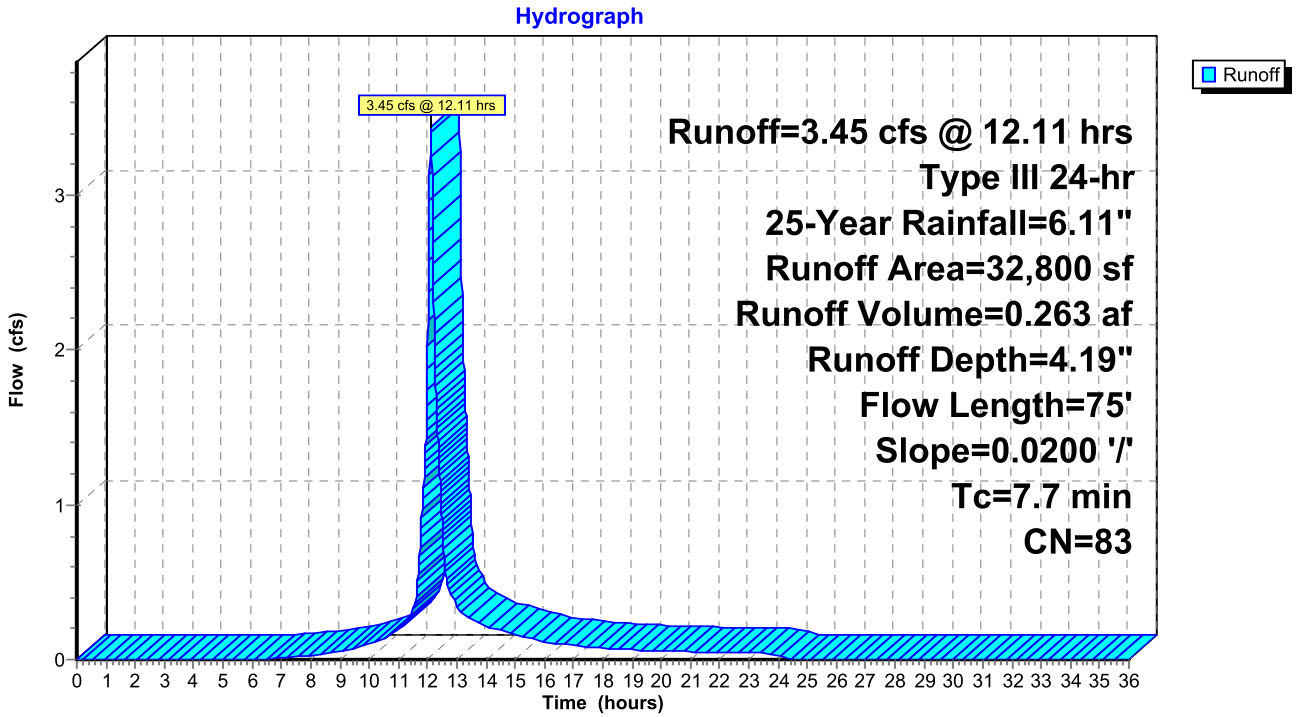
Runoff = 3.45 cfs @ 12.11 hrs, Volume= 0.263 af, Depth= 4.19"
Routed to Pond 24P : BASIN 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.11"

Area (sf)	CN	Description
0	98	Unconnected pavement, HSG B
6,500	98	Unconnected roofs, HSG B
5,500	98	Unconnected roofs, HSG B
20,800	74	>75% Grass cover, Good, HSG C
32,800	83	Weighted Average
20,800		63.41% Pervious Area
12,000		36.59% Impervious Area
12,000		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	75	0.0200	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.26"

Subcatchment 06S: BLDG-06



Summary for Subcatchment 07S: BLDG-07

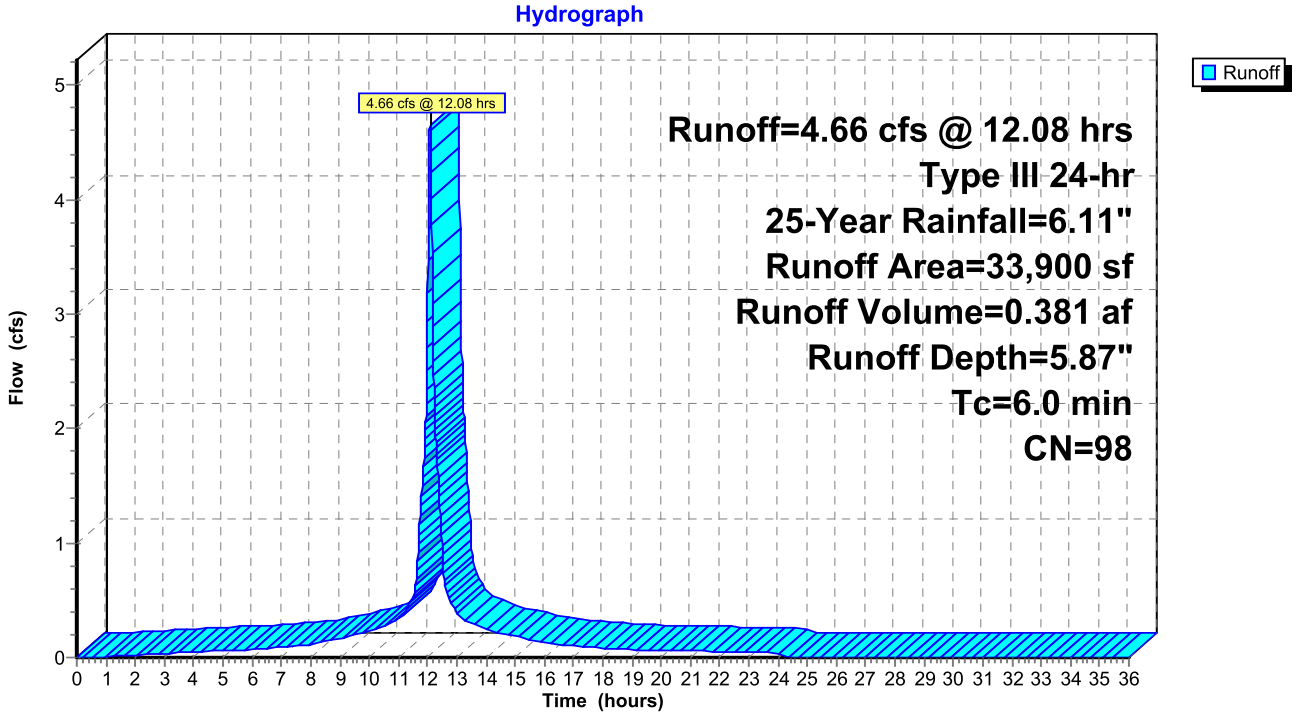
Runoff = 4.66 cfs @ 12.08 hrs, Volume= 0.381 af, Depth= 5.87"
Routed to Pond 07P : UG DET - B-07

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.11"

Area (sf)	CN	Description
19,900	98	Unconnected pavement, HSG B
2,000	98	Unconnected roofs, HSG B
6,500	98	Unconnected roofs, HSG B
5,500	98	Unconnected roofs, HSG B
33,900	98	Weighted Average
33,900		100.00% Impervious Area
33,900		100.00% Unconnected

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

Subcatchment 07S: BLDG-07



Summary for Subcatchment 08S: BLDG 08

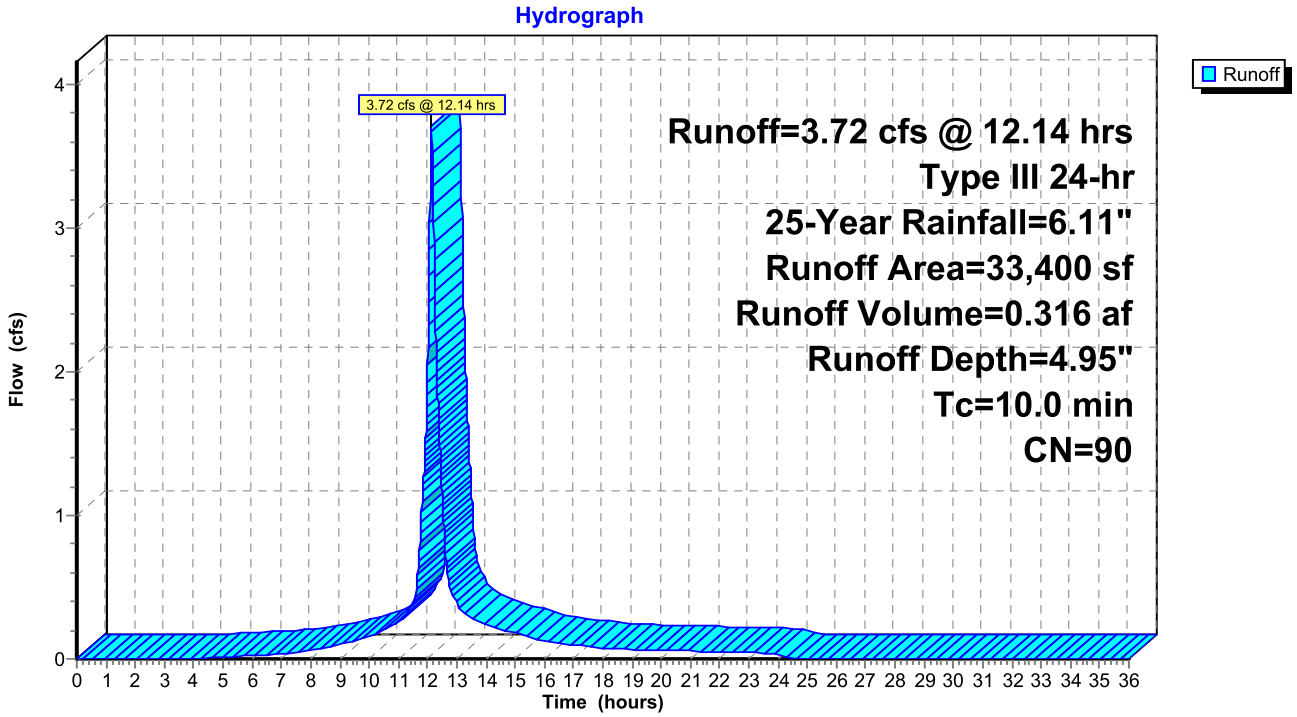
Runoff = 3.72 cfs @ 12.14 hrs, Volume= 0.316 af, Depth= 4.95"
Routed to Pond 08P : UG DET - B-08

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.11"

Area (sf)	CN	Description
15,700	98	Paved parking, HSG B
1,500	98	Unconnected roofs, HSG C
9,000	98	Unconnected roofs, HSG B
7,200	61	>75% Grass cover, Good, HSG B
33,400	90	Weighted Average
7,200		21.56% Pervious Area
26,200		78.44% Impervious Area
10,500		40.08% Unconnected

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

Subcatchment 08S: BLDG 08



Summary for Subcatchment 09S: POOL HOUSE

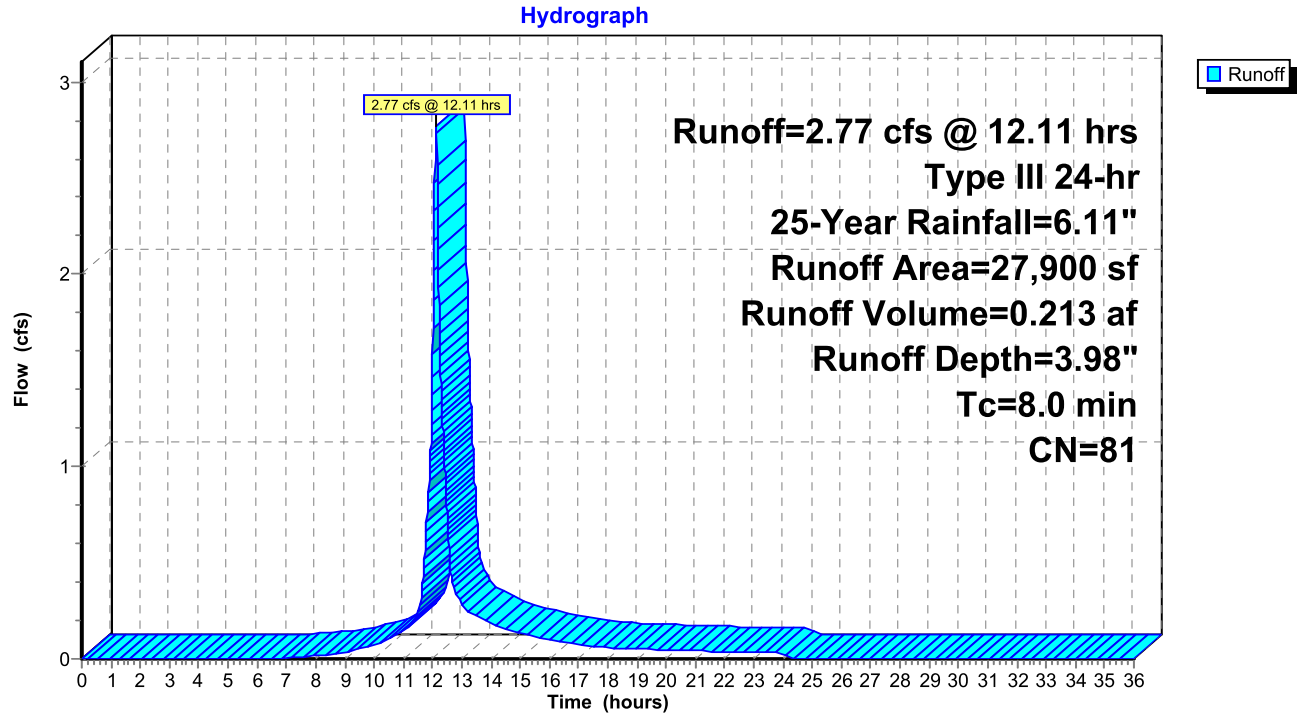
Runoff = 2.77 cfs @ 12.11 hrs, Volume= 0.213 af, Depth= 3.98"
Routed to Pond 09P : UG DET - POOL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.11"

Area (sf)	CN	Description
10,100	98	Unconnected pavement, HSG B
4,600	98	Unconnected roofs, HSG B
11,200	61	>75% Grass cover, Good, HSG B
2,000	74	>75% Grass cover, Good, HSG C
27,900	81	Weighted Average
13,200		47.31% Pervious Area
14,700		52.69% Impervious Area
14,700		100.00% Unconnected

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

Subcatchment 09S: POOL HOUSE



Summary for Subcatchment 10S: BLDG C

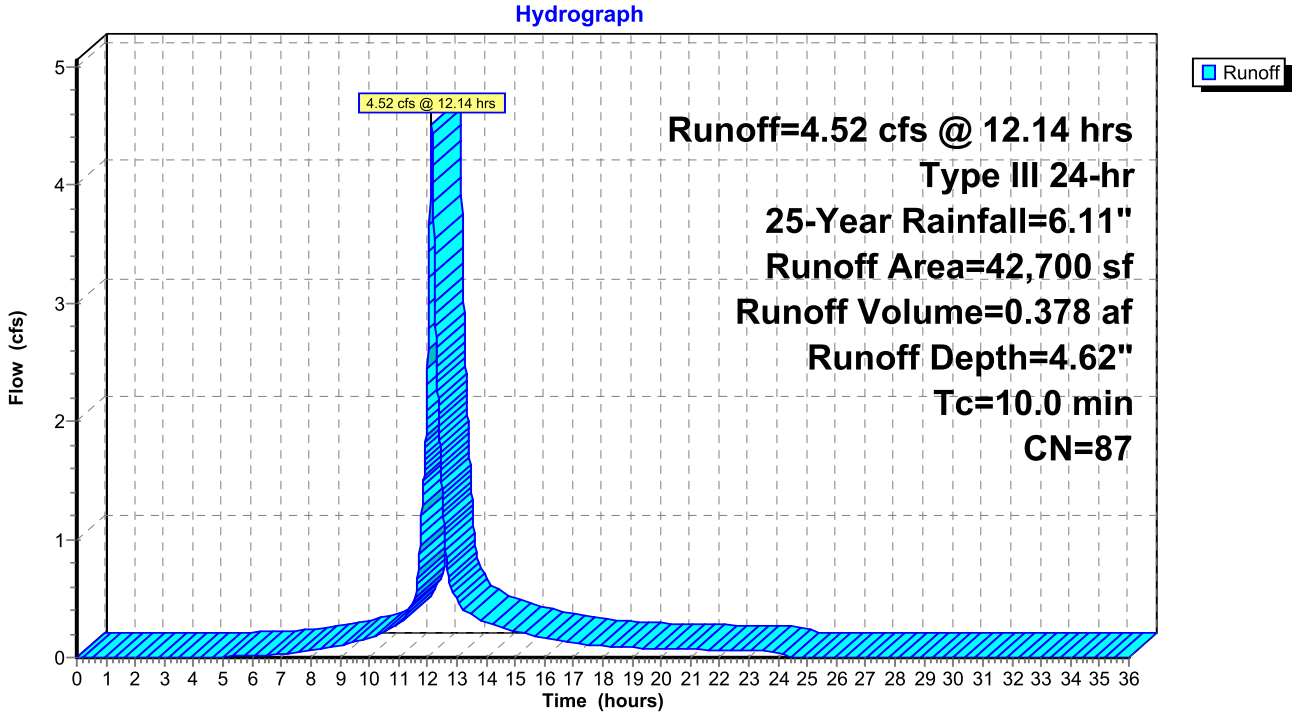
Runoff = 4.52 cfs @ 12.14 hrs, Volume= 0.378 af, Depth= 4.62"
Routed to Pond 10P : UG DET - B-C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.11"

Area (sf)	CN	Description
23,100	98	Unconnected pavement, HSG B
6,400	98	Unconnected roofs, HSG B
13,200	61	>75% Grass cover, Good, HSG B
42,700	87	Weighted Average
13,200		30.91% Pervious Area
29,500		69.09% Impervious Area
29,500		100.00% Unconnected

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

Subcatchment 10S: BLDG C



Summary for Subcatchment 11S: BLDG-D

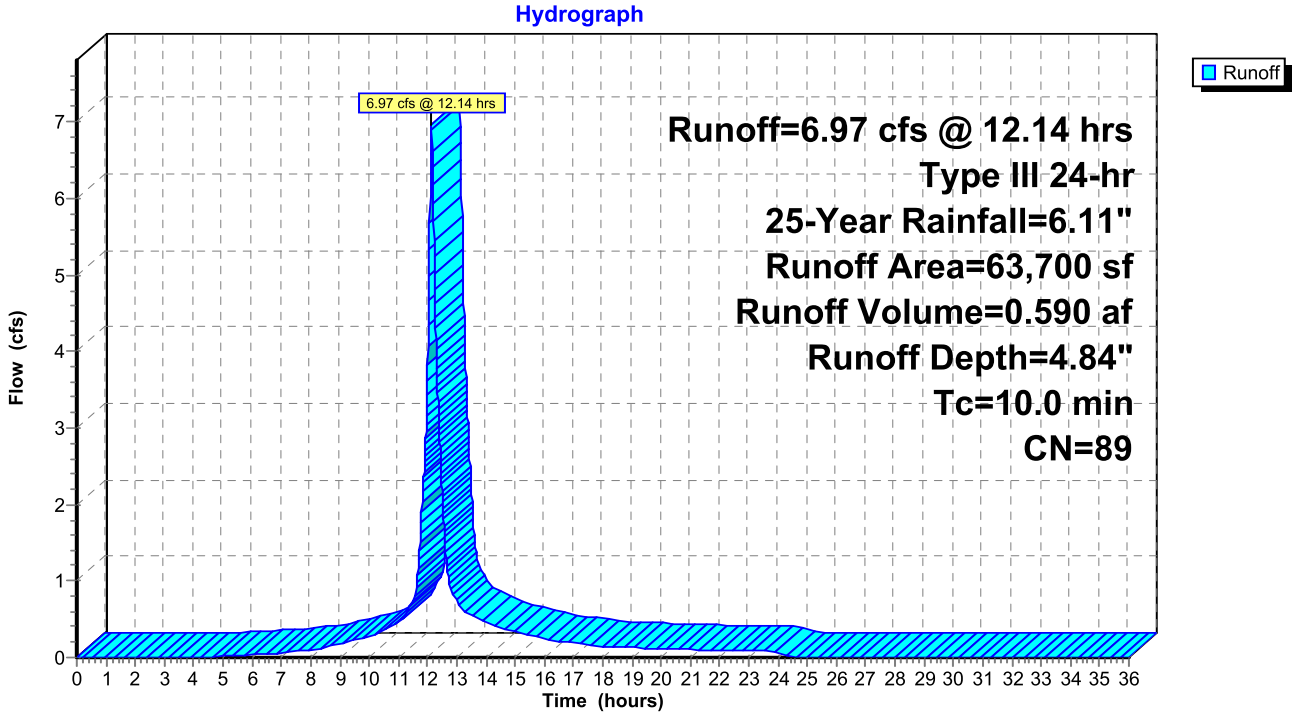
Runoff = 6.97 cfs @ 12.14 hrs, Volume= 0.590 af, Depth= 4.84"
Routed to Pond 11P : UG DET-B-D

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.11"

Area (sf)	CN	Description
32,700	98	Unconnected pavement, HSG B
15,000	98	Unconnected roofs, HSG B
16,000	61	>75% Grass cover, Good, HSG B
63,700	89	Weighted Average
16,000		25.12% Pervious Area
47,700		74.88% Impervious Area
47,700		100.00% Unconnected

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

Subcatchment 11S: BLDG-D



Summary for Subcatchment 21S: SOUTHERN DRVEWAY TO BASIN -01

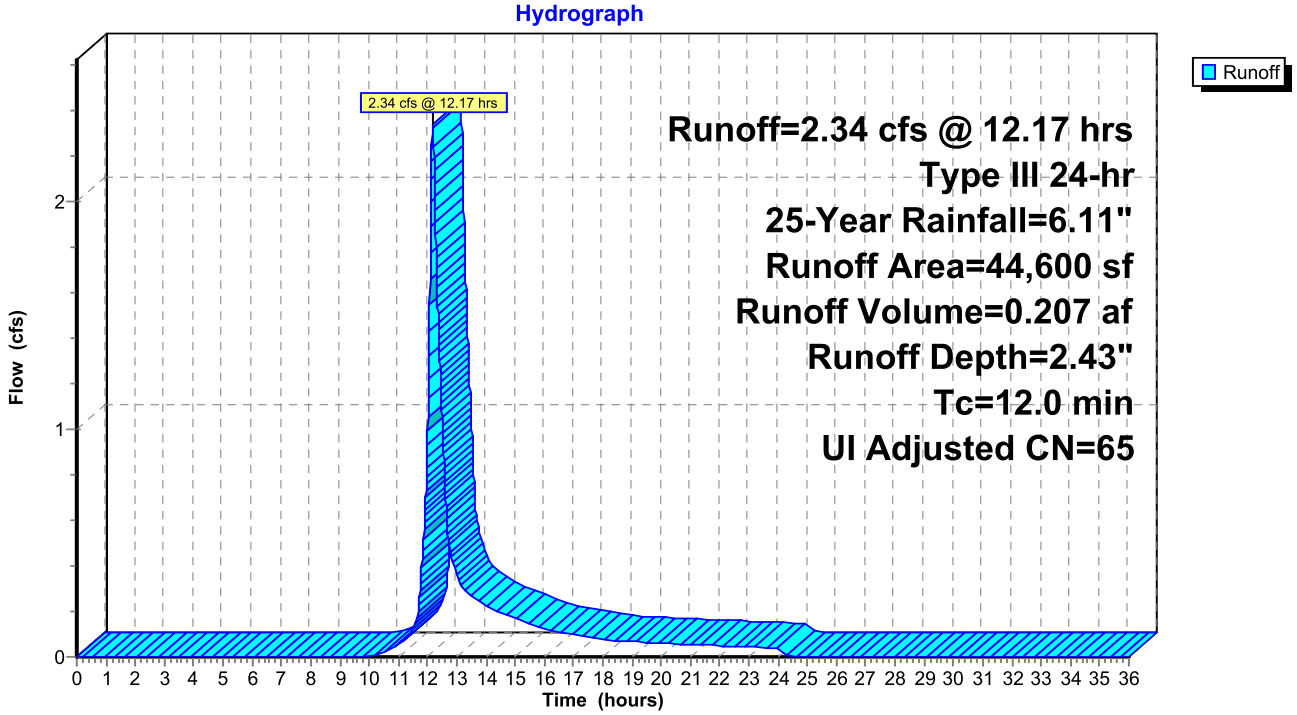
Runoff = 2.34 cfs @ 12.17 hrs, Volume= 0.207 af, Depth= 2.43"
Routed to Pond 21P : BASIN 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.11"

Area (sf)	CN	Adj	Description
10,400	98		Unconnected pavement, HSG B
5,800	61		>75% Grass cover, Good, HSG B
3,500	74		>75% Grass cover, Good, HSG C
24,900	58		Woods/grass comb., Good, HSG B
44,600	69	65	Weighted Average, UI Adjusted
34,200			76.68% Pervious Area
10,400			23.32% Impervious Area
10,400			100.00% Unconnected

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

Subcatchment 21S: SOUTHERN DRVEWAY TO BASIN -01



Summary for Subcatchment 22S: DIRECT FLOW TO BASIN-02

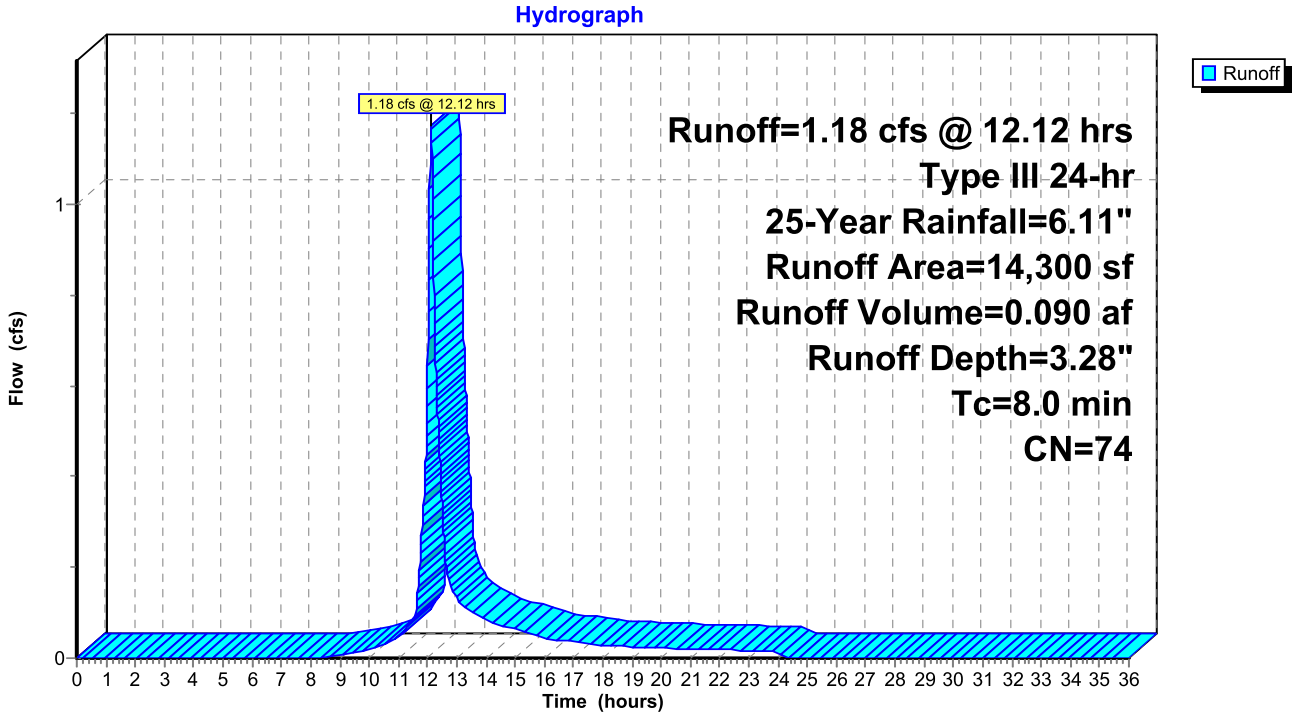
Runoff = 1.18 cfs @ 12.12 hrs, Volume= 0.090 af, Depth= 3.28"
Routed to Pond 22P : BASIN 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.11"

Area (sf)	CN	Description
14,300	74	>75% Grass cover, Good, HSG C
14,300		100.00% Pervious Area

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

Subcatchment 22S: DIRECT FLOW TO BASIN-02



Summary for Subcatchment 23S: DIRECT FLOW TO BASIN-03

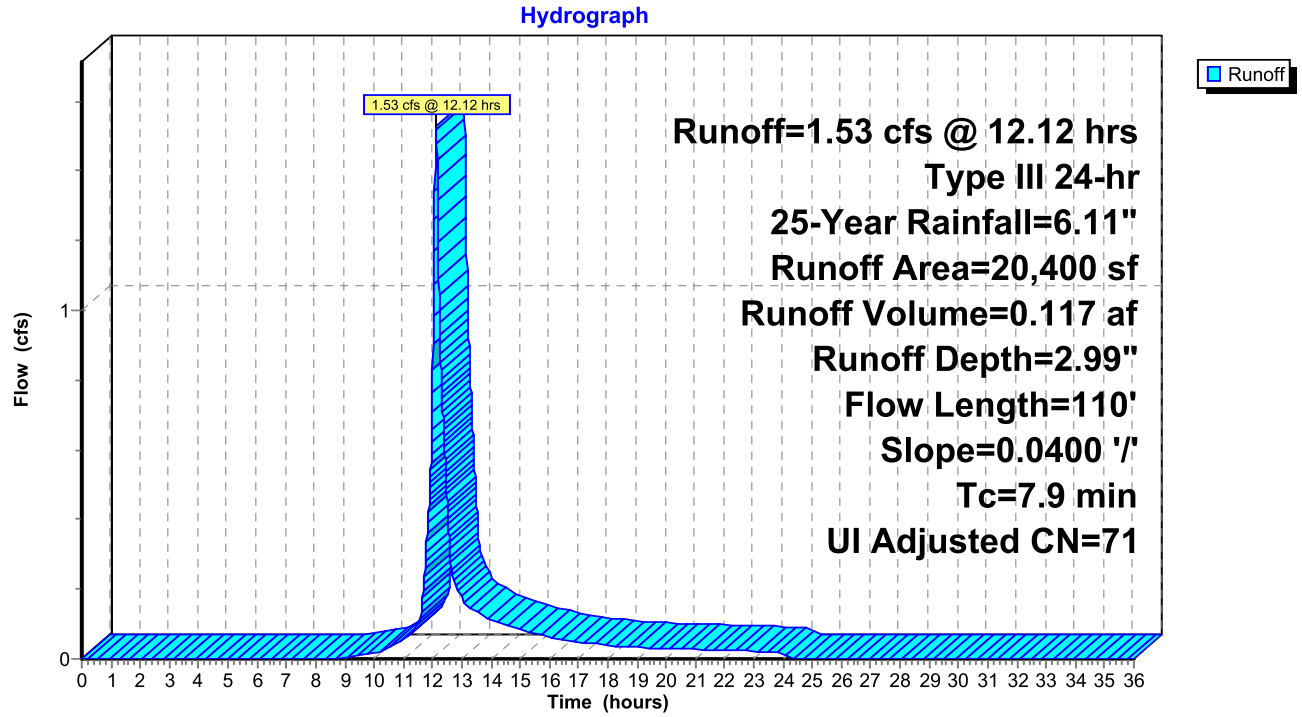
Runoff = 1.53 cfs @ 12.12 hrs, Volume= 0.117 af, Depth= 2.99"
Routed to Pond 23P : BASIN 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.11"

Area (sf)	CN	Adj	Description
3,700	98		Unconnected pavement, HSG B
8,000	61		>75% Grass cover, Good, HSG B
8,700	74		>75% Grass cover, Good, HSG C
20,400	73	71	Weighted Average, UI Adjusted
16,700			81.86% Pervious Area
3,700			18.14% Impervious Area
3,700			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	110	0.0400	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.26"

Subcatchment 23S: DIRECT FLOW TO BASIN-03



Summary for Subcatchment 30S: EASTERN OVERLAND FLOW

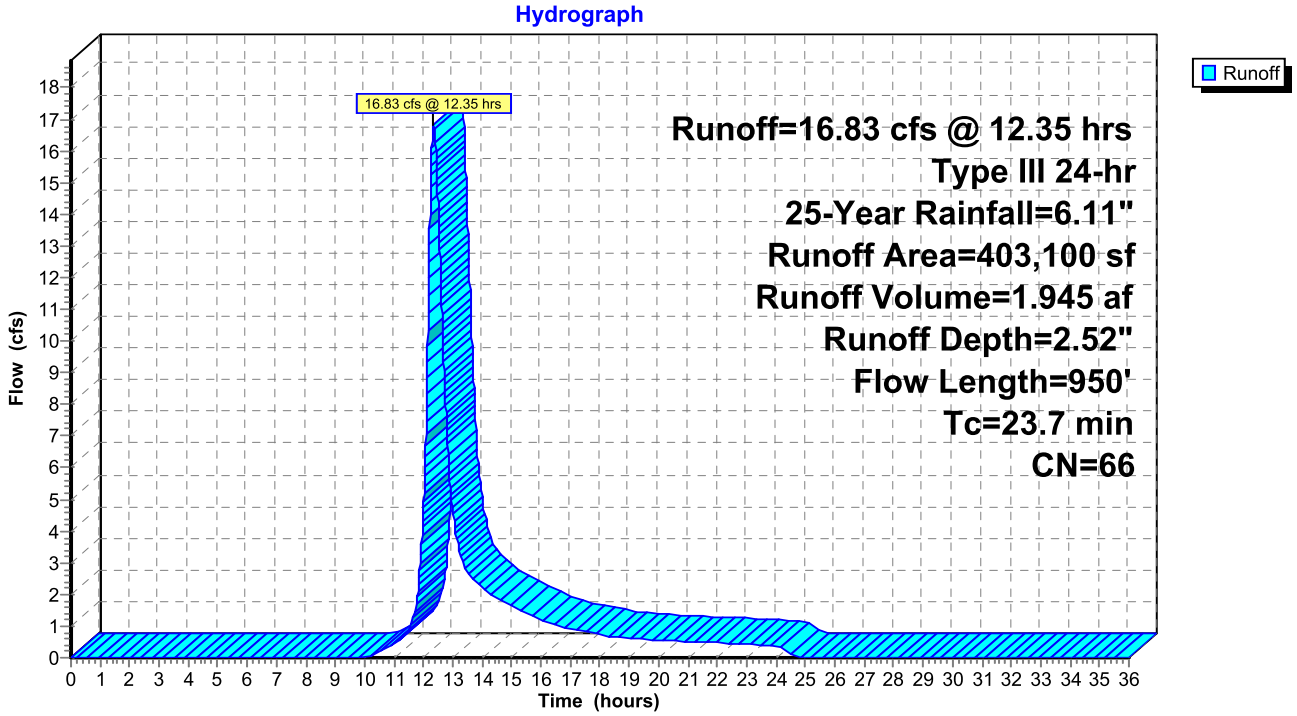
Runoff = 16.83 cfs @ 12.35 hrs, Volume= 1.945 af, Depth= 2.52"
Routed to Link 10L-PR : DESIGN POINT - 01

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.11"

Area (sf)	CN	Description
206,500	70	Woods, Good, HSG C
74,200	74	>75% Grass cover, Good, HSG C
106,800	55	Woods, Good, HSG B
15,600	61	>75% Grass cover, Good, HSG B
403,100	66	Weighted Average
403,100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.0450	0.16		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.26"
11.3	450	0.0700	0.66		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
2.2	400	0.0025	3.05	18.28	**Channel Flow,** Area= 6.0 sf Perim= 7.0' r= 0.86' n= 0.022 Earth, clean & straight
23.7	950	Total			

Subcatchment 30S: EASTERN OVERLAND FLOW



Summary for Subcatchment 31S: NORTHERN OVERLAND FLOW

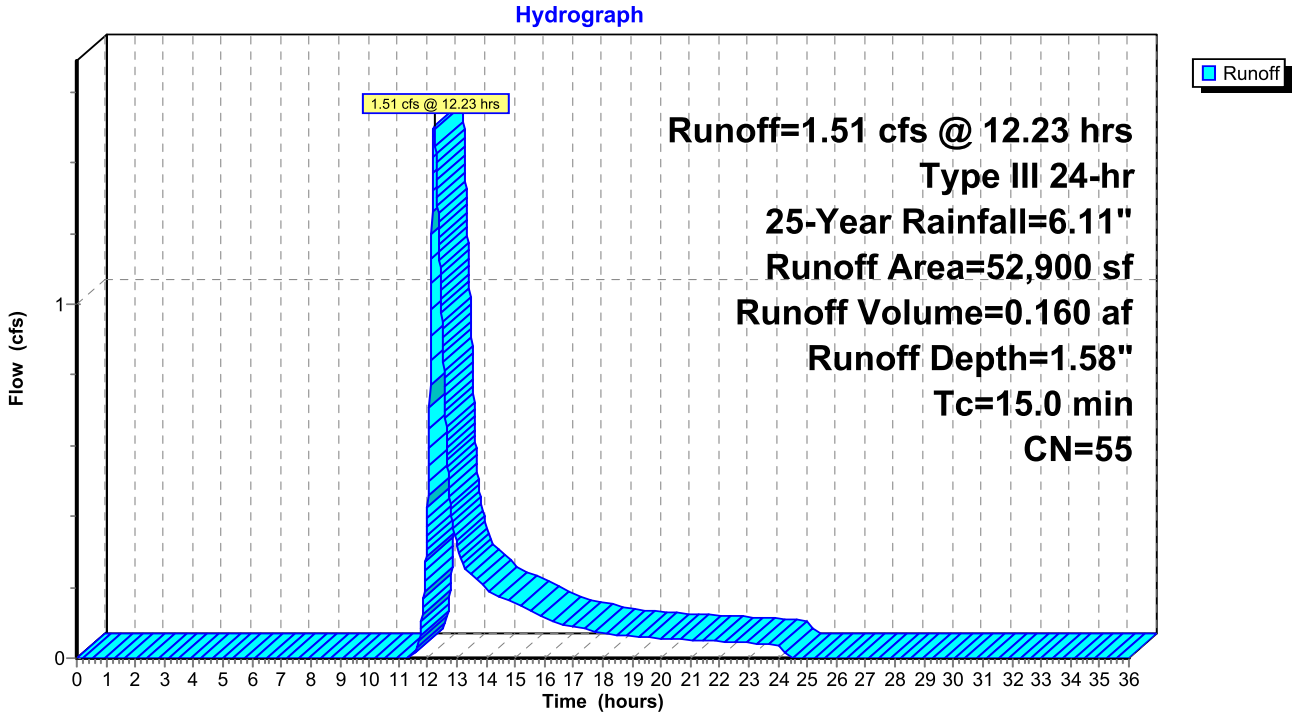
Runoff = 1.51 cfs @ 12.23 hrs, Volume= 0.160 af, Depth= 1.58"
Routed to Link 10L-PR : DESIGN POINT - 01

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.11"

Area (sf)	CN	Description
52,900	55	Woods, Good, HSG B
52,900		100.00% Pervious Area

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

Subcatchment 31S: NORTHERN OVERLAND FLOW



Summary for Subcatchment 32S: ENTRANCE DRIVEWAY

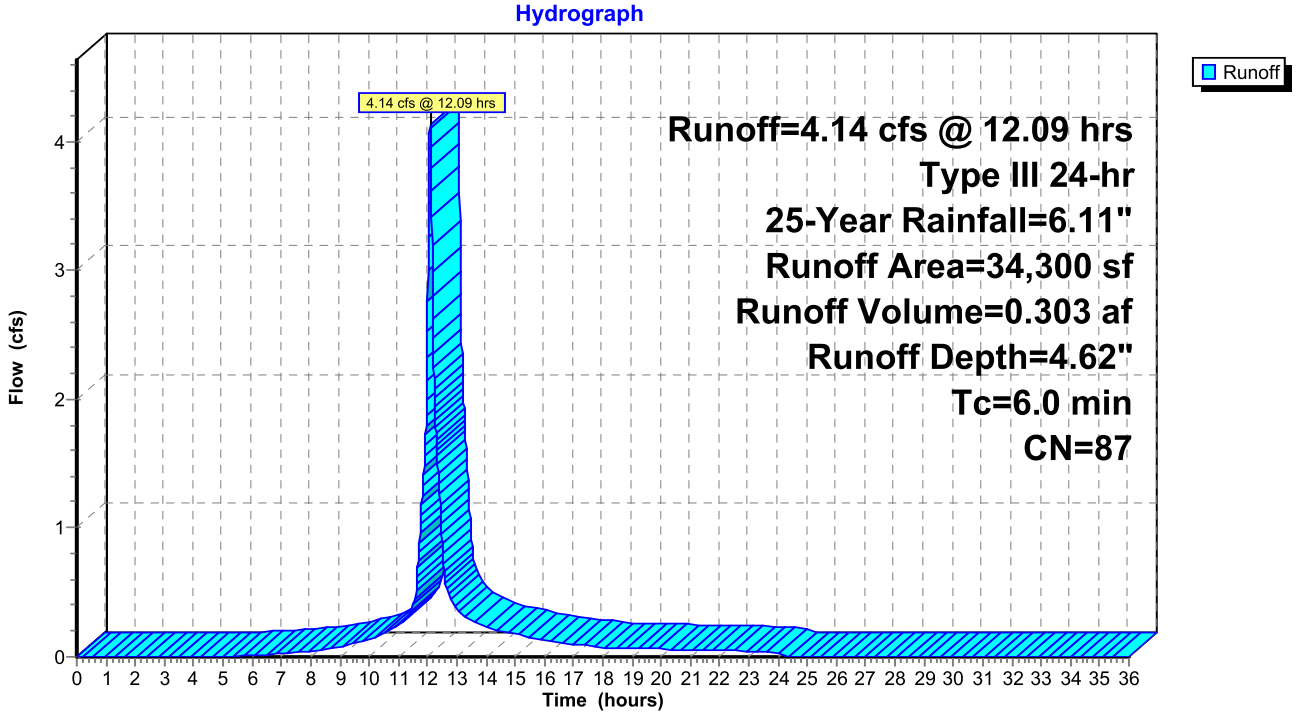
Runoff = 4.14 cfs @ 12.09 hrs, Volume= 0.303 af, Depth= 4.62"
Routed to Link 10L-PR : DESIGN POINT - 01

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.11"

Area (sf)	CN	Description
12,100	98	Paved parking, HSG B
500	98	Unconnected roofs, HSG B
6,000	98	Unconnected roofs, HSG B
15,700	74	>75% Grass cover, Good, HSG C
34,300	87	Weighted Average
15,700		45.77% Pervious Area
18,600		54.23% Impervious Area
6,500		34.95% Unconnected

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

Subcatchment 32S: ENTRANCE DRIVEWAY



Summary for Subcatchment 33S: BLDG-09 PARKING LOT

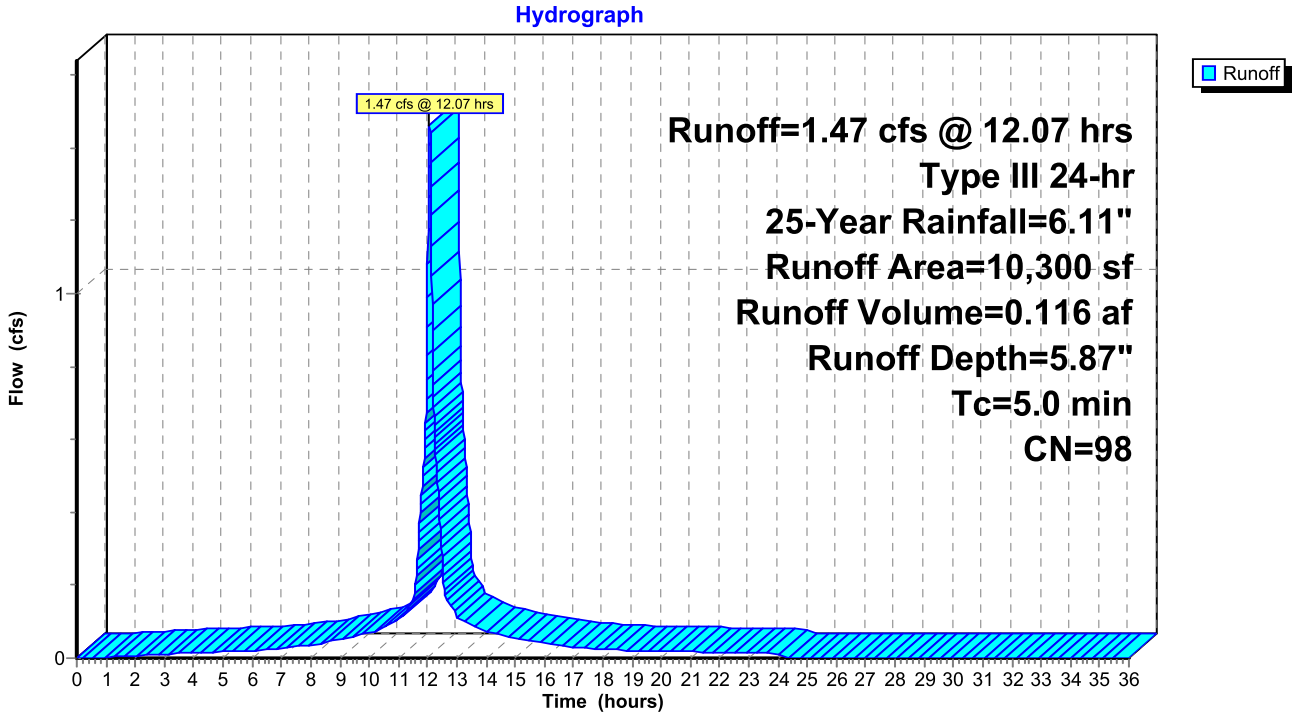
Runoff = 1.47 cfs @ 12.07 hrs, Volume= 0.116 af, Depth= 5.87"
Routed to Link 10L-PR : DESIGN POINT - 01

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.11"

Area (sf)	CN	Description
10,300	98	Paved parking, HSG B
10,300		100.00% Impervious Area

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

Subcatchment 33S: BLDG-09 PARKING LOT



Summary for Subcatchment 34S: NORTHERN DRIVEWAY

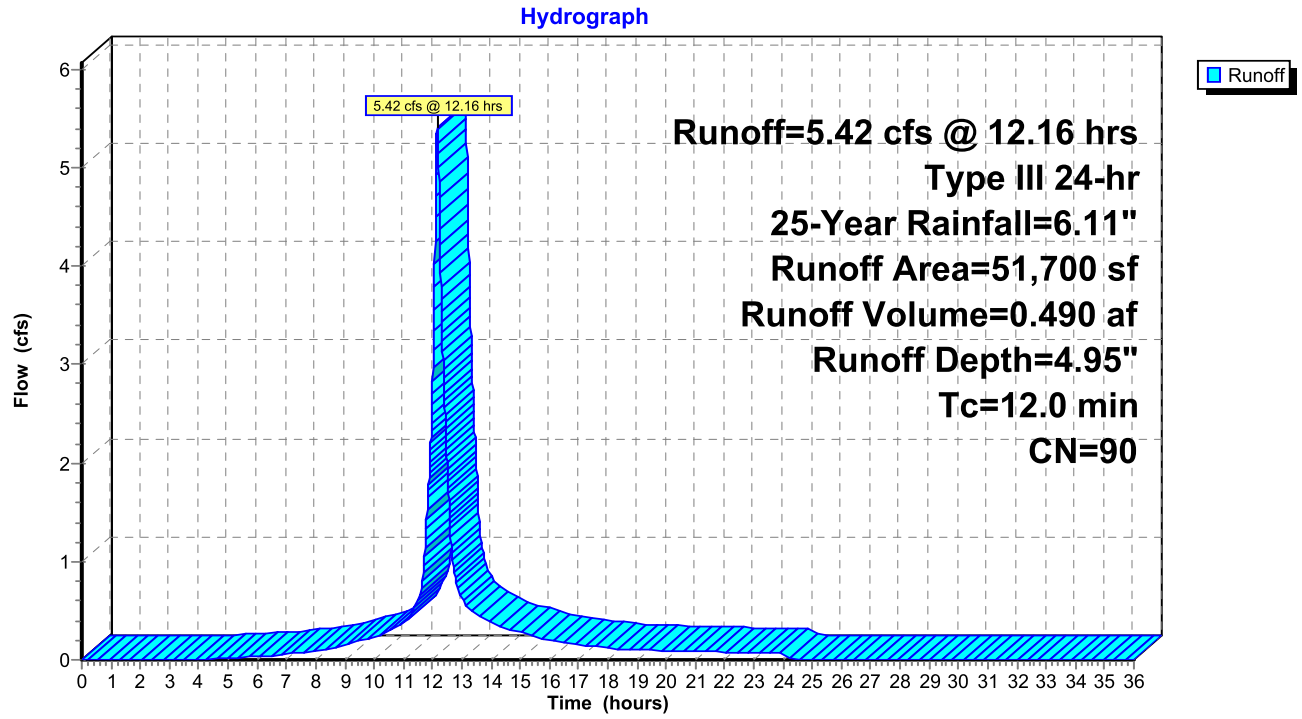
Runoff = 5.42 cfs @ 12.16 hrs, Volume= 0.490 af, Depth= 4.95"
Routed to Link 10L-PR : DESIGN POINT - 01

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.11"

Area (sf)	CN	Description
40,100	98	Paved parking, HSG B
11,000	61	>75% Grass cover, Good, HSG B
600	74	>75% Grass cover, Good, HSG C
51,700	90	Weighted Average
11,600		22.44% Pervious Area
40,100		77.56% Impervious Area

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

Subcatchment 34S: NORTHERN DRIVEWAY



Summary for Pond 01P: UG DET-01

Inflow Area = 0.856 ac, 83.38% Impervious, Inflow Depth = 5.41" for 25-Year event
Inflow = 4.66 cfs @ 12.11 hrs, Volume= 0.386 af
Outflow = 2.34 cfs @ 12.28 hrs, Volume= 0.386 af, Atten= 50%, Lag= 10.4 min
Discarded = 0.03 cfs @ 12.28 hrs, Volume= 0.061 af
Primary = 2.31 cfs @ 12.28 hrs, Volume= 0.325 af
Routed to Pond 21P : BASIN 1

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 212.48' @ 12.28 hrs Surf.Area= 1,793 sf Storage= 5,558 cf

Plug-Flow detention time= 129.0 min calculated for 0.386 af (100% of inflow)
Center-of-Mass det. time= 128.9 min (898.8 - 769.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	208.00'	3,191 cf	**37.58'W x 47.72'L x 7.00'H Field A** 12,553 cf Overall - 4,576 cf Embedded = 7,978 cf x 40.0% Voids
#2A	209.00'	4,576 cf	**ADS_StormTech MC-4500 b +Cap**x 40 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 40 Chambers in 4 Rows Cap Storage= 39.5 cf x 2 x 4 rows = 316.0 cf
		7,767 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	208.00'	**15.0" Round Culvert** L= 42.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 208.00' / 207.75' S= 0.0060 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	209.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	210.90'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	214.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	208.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.03 cfs @ 12.28 hrs HW=212.48' (Free Discharge)
└**5=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=2.31 cfs @ 12.28 hrs HW=212.48' (Free Discharge)
└**1=Culvert** (Passes 2.31 cfs of 11.60 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.43 cfs @ 8.82 fps)
  ├**3=Orifice/Grate** (Orifice Controls 1.88 cfs @ 5.38 fps)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 01P: UG DET-01 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-4500 b +Cap (ADS StormTech®MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= 39.5 cf x 2 x 4 rows = 316.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

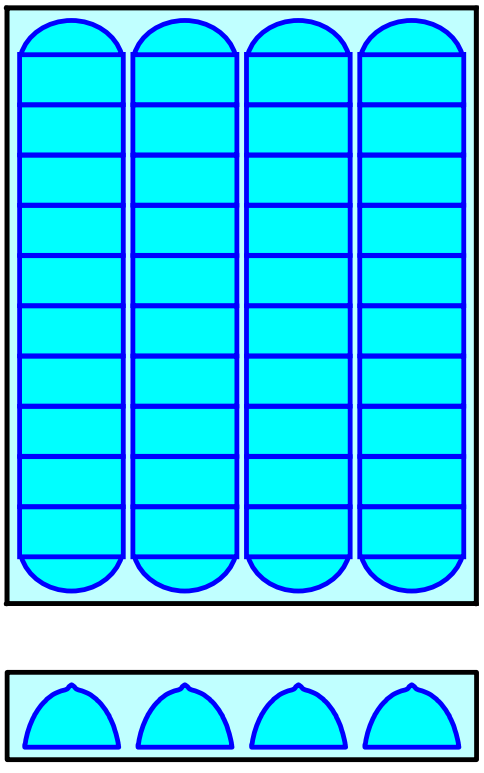
10 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 45.72' Row Length +12.0" End Stone x 2 = 47.72' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
12.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 7.00' Field Height

40 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 4 Rows = 4,575.6 cf Chamber Storage

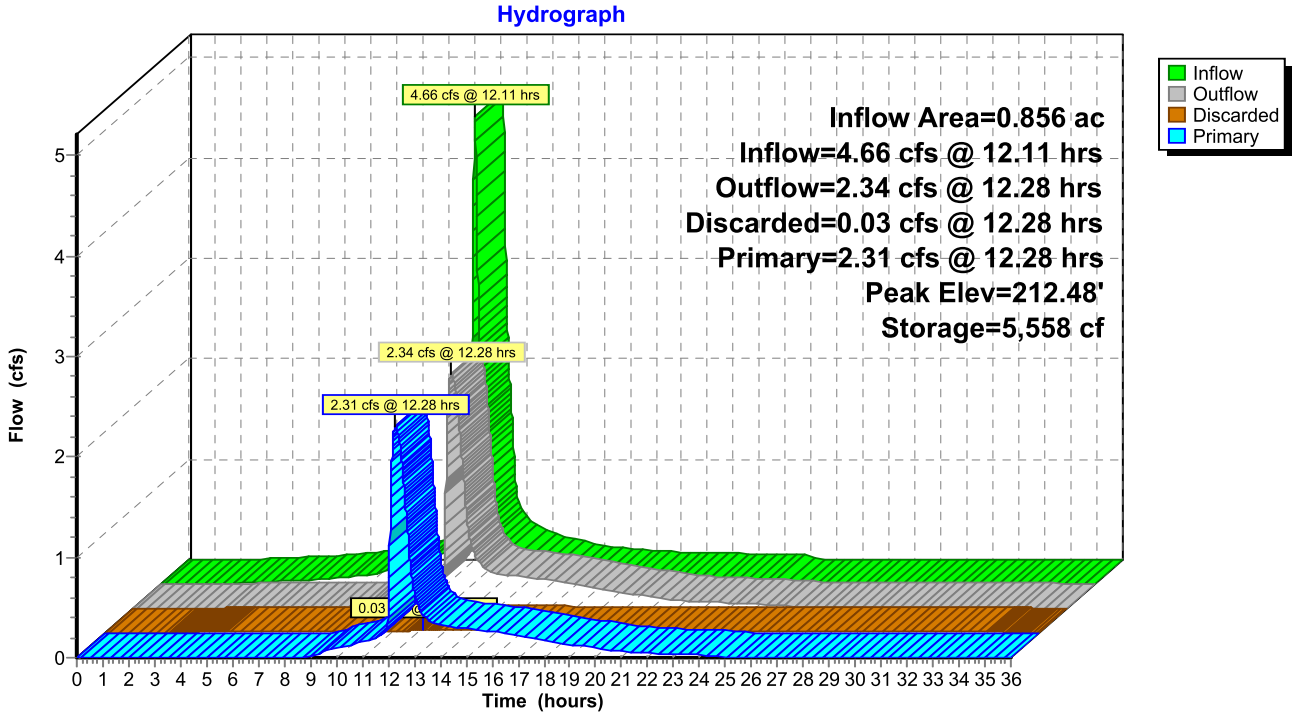
12,553.5 cf Field - 4,575.6 cf Chambers = 7,977.8 cf Stone x 40.0% Voids = 3,191.1 cf Stone Storage

Chamber Storage + Stone Storage = 7,766.8 cf = 0.178 af
Overall Storage Efficiency = 61.9%
Overall System Size = 47.72' x 37.58' x 7.00'

40 Chambers
464.9 cy Field
295.5 cy Stone



Pond 01P: UG DET-01



Summary for Pond 02P: UG DET - B-02

Inflow Area = 2.589 ac, 51.67% Impervious, Inflow Depth = 3.63" for 25-Year event
Inflow = 5.76 cfs @ 12.17 hrs, Volume= 0.784 af
Outflow = 3.35 cfs @ 12.61 hrs, Volume= 0.781 af, Atten= 42%, Lag= 26.6 min
Discarded = 0.05 cfs @ 12.61 hrs, Volume= 0.091 af
Primary = 3.30 cfs @ 12.61 hrs, Volume= 0.691 af
Routed to Pond 22P : BASIN 2

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 212.21' @ 12.61 hrs Surf.Area= 2,701 sf Storage= 7,998 cf

Plug-Flow detention time= 105.1 min calculated for 0.781 af (100% of inflow)
Center-of-Mass det. time= 103.3 min (940.9 - 837.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	208.00'	4,710 cf	**37.58'W x 71.87'L x 7.00'H Field A** 18,907 cf Overall - 7,131 cf Embedded = 11,776 cf x 40.0% Voids
#2A	209.00'	7,131 cf	**ADS_StormTech MC-4500 b +Cap**x 64 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 64 Chambers in 4 Rows Cap Storage= 39.5 cf x 2 x 4 rows = 316.0 cf
		11,842 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	208.00'	**15.0" Round Culvert** L= 73.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 208.00' / 205.00' S= 0.0411 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	209.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	210.00'	**9.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	214.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	208.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.05 cfs @ 12.61 hrs HW=212.21' (Free Discharge)
└**5=Exfiltration** (Controls 0.05 cfs)

Primary OutFlow Max=3.30 cfs @ 12.61 hrs HW=212.21' (Free Discharge)
└**1=Culvert** (Passes 3.30 cfs of 11.20 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.42 cfs @ 8.46 fps)
  ├**3=Orifice/Grate** (Orifice Controls 2.89 cfs @ 6.53 fps)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 02P: UG DET - B-02 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-4500 b +Cap (ADS StormTech®MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= 39.5 cf x 2 x 4 rows = 316.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

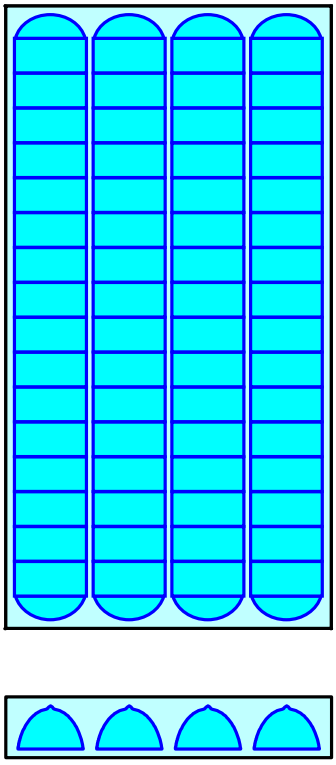
16 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 69.87' Row Length +12.0" End Stone x 2 = 71.87' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
12.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 7.00' Field Height

64 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 4 Rows = 7,131.4 cf Chamber Storage

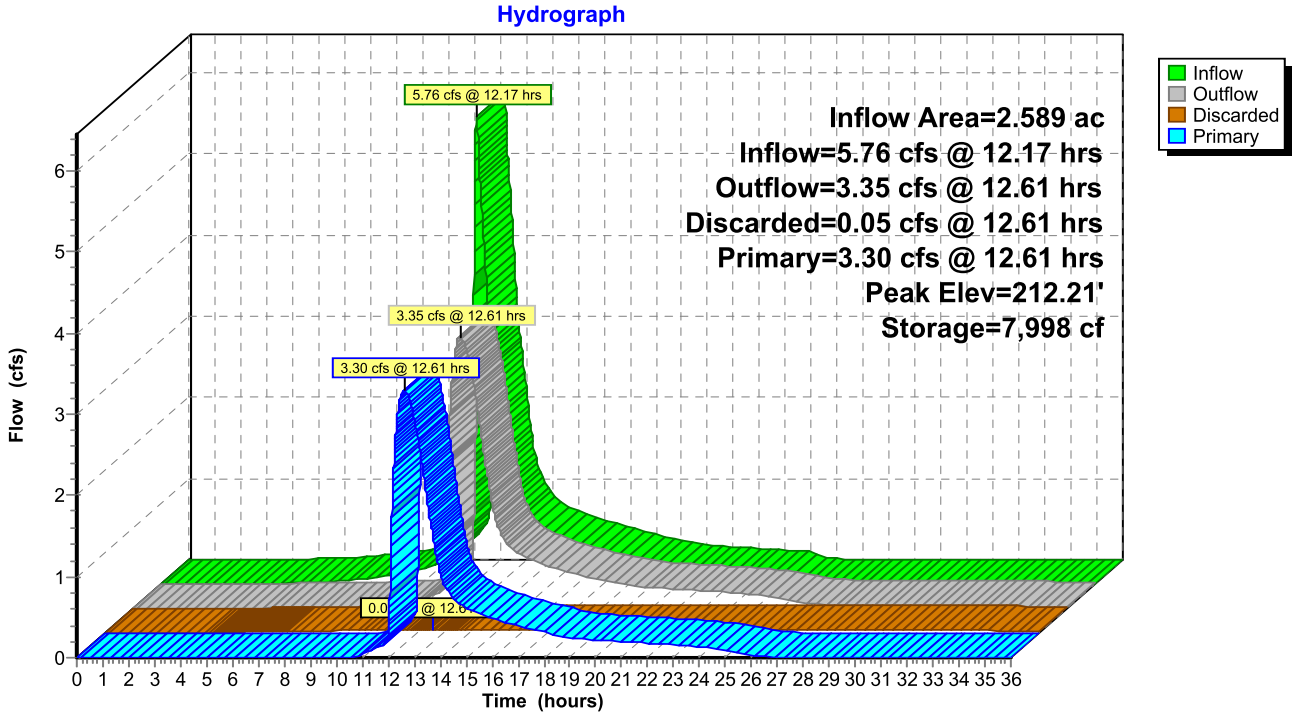
18,906.9 cf Field - 7,131.4 cf Chambers = 11,775.5 cf Stone x 40.0% Voids = 4,710.2 cf Stone Storage

Chamber Storage + Stone Storage = 11,841.6 cf = 0.272 af
Overall Storage Efficiency = 62.6%
Overall System Size = 71.87' x 37.58' x 7.00'

64 Chambers
700.3 cy Field
436.1 cy Stone



Pond 02P: UG DET - B-02



Summary for Pond 03P: UG DET

Inflow Area = 1.513 ac, 49.17% Impervious, Inflow Depth = 3.68" for 25-Year event
Inflow = 5.36 cfs @ 12.17 hrs, Volume= 0.463 af
Outflow = 2.43 cfs @ 12.46 hrs, Volume= 0.463 af, Atten= 55%, Lag= 17.5 min
Discarded = 0.04 cfs @ 12.46 hrs, Volume= 0.071 af
Primary = 2.40 cfs @ 12.46 hrs, Volume= 0.392 af
Routed to Pond 21P : BASIN 1

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 221.77' @ 12.46 hrs Surf.Area= 2,550 sf Storage= 6,714 cf

Plug-Flow detention time= 133.5 min calculated for 0.463 af (100% of inflow)
Center-of-Mass det. time= 132.8 min (956.7 - 823.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	218.00'	4,457 cf	**37.58'W x 67.84'L x 7.00'H Field A** 17,848 cf Overall - 6,705 cf Embedded = 11,143 cf x 40.0% Voids
#2A	219.00'	6,705 cf	**ADS_StormTech MC-4500 b +Cap**x 60 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 60 Chambers in 4 Rows Cap Storage= 39.5 cf x 2 x 4 rows = 316.0 cf
		11,162 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	216.00'	**15.0" Round Culvert** L= 47.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 216.00' / 215.25' S= 0.0160 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	219.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	220.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	224.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	218.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.04 cfs @ 12.46 hrs HW=221.77' (Free Discharge)
└**5=Exfiltration** (Controls 0.04 cfs)

Primary OutFlow Max=2.40 cfs @ 12.46 hrs HW=221.77' (Free Discharge)
└**1=Culvert** (Passes 2.40 cfs of 13.40 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.38 cfs @ 7.83 fps)
  ├**3=Orifice/Grate** (Orifice Controls 2.01 cfs @ 5.77 fps)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 03P: UG DET - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-4500 b +Cap (ADS StormTech®MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= 39.5 cf x 2 x 4 rows = 316.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

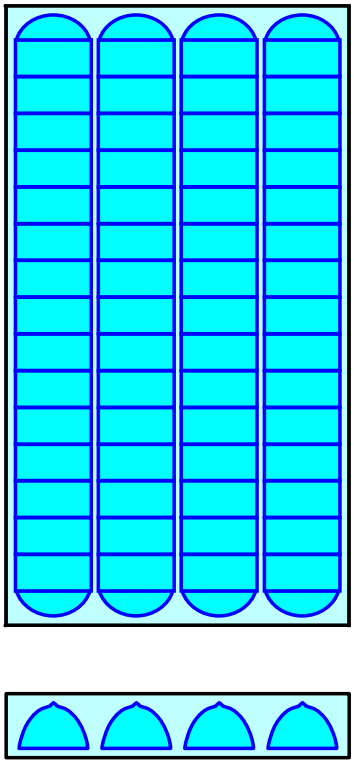
15 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 65.84' Row Length +12.0" End Stone x 2 = 67.84' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
12.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 7.00' Field Height

60 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 4 Rows = 6,705.4 cf Chamber Storage

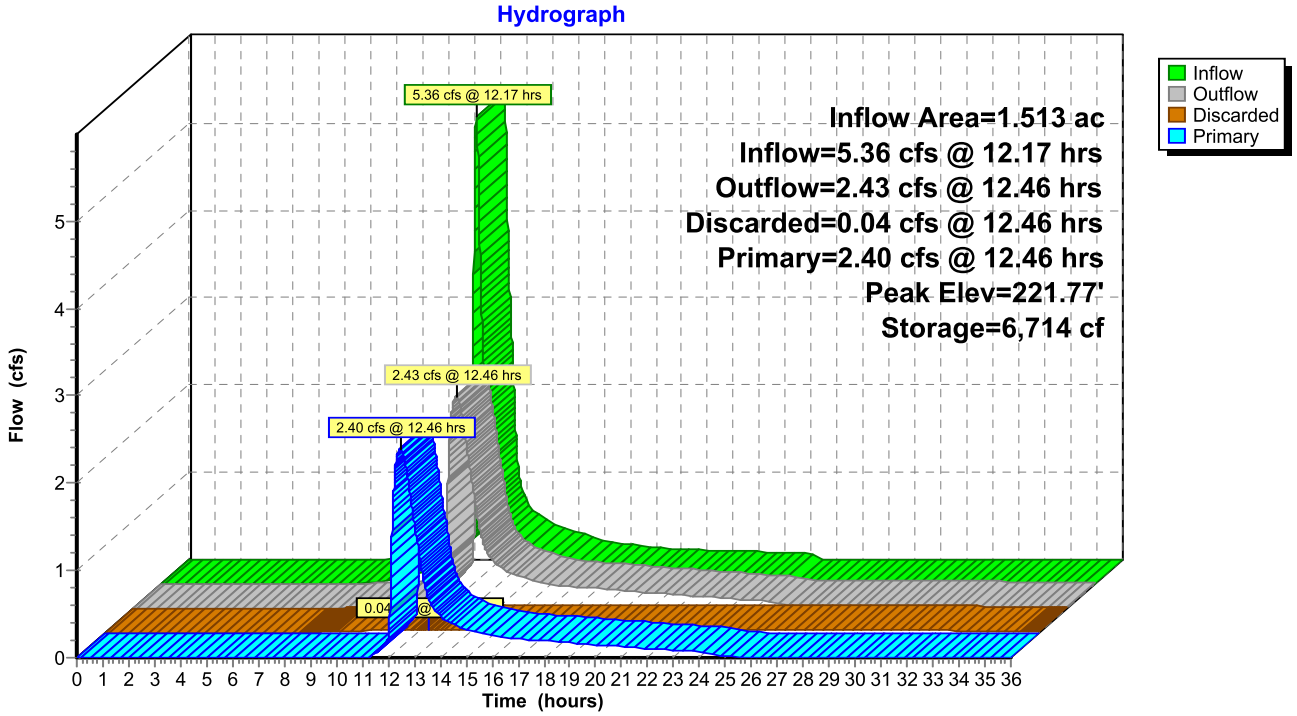
17,848.0 cf Field - 6,705.4 cf Chambers = 11,142.6 cf Stone x 40.0% Voids = 4,457.0 cf Stone Storage

Chamber Storage + Stone Storage = 11,162.5 cf = 0.256 af
Overall Storage Efficiency = 62.5%
Overall System Size = 67.84' x 37.58' x 7.00'

60 Chambers
661.0 cy Field
412.7 cy Stone



Pond 03P: UG DET



Summary for Pond 04P: UG DET - B-04

Inflow Area = 1.717 ac, 44.52% Impervious, Inflow Depth = 3.48" for 25-Year event
Inflow = 5.75 cfs @ 12.17 hrs, Volume= 0.497 af
Outflow = 2.64 cfs @ 12.46 hrs, Volume= 0.497 af, Atten= 54%, Lag= 17.5 min
Discarded = 0.04 cfs @ 12.46 hrs, Volume= 0.073 af
Primary = 2.61 cfs @ 12.46 hrs, Volume= 0.424 af
Routed to Pond 02P : UG DET - B-02

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 224.67' @ 12.46 hrs Surf.Area= 2,701 sf Storage= 6,922 cf

Plug-Flow detention time= 115.4 min calculated for 0.497 af (100% of inflow)
Center-of-Mass det. time= 114.9 min (943.7 - 828.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	221.00'	4,710 cf	**37.58'W x 71.87'L x 7.00'H Field A** 18,907 cf Overall - 7,131 cf Embedded = 11,776 cf x 40.0% Voids
#2A	222.00'	7,131 cf	**ADS_StormTech MC-4500 b +Cap**x 64 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 64 Chambers in 4 Rows Cap Storage= 39.5 cf x 2 x 4 rows = 316.0 cf
		11,842 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	219.00'	**15.0" Round Culvert** L= 67.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 219.00' / 217.20' S= 0.0269 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	222.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	223.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	227.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	221.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.04 cfs @ 12.46 hrs HW=224.67' (Free Discharge)
└**5=Exfiltration** (Controls 0.04 cfs)

Primary OutFlow Max=2.61 cfs @ 12.46 hrs HW=224.67' (Free Discharge)
└**1=Culvert** (Passes 2.61 cfs of 13.27 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.66 cfs @ 7.61 fps)
  ├**3=Orifice/Grate** (Orifice Controls 1.94 cfs @ 5.56 fps)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 04P: UG DET - B-04 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-4500 b +Cap (ADS StormTech®MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= 39.5 cf x 2 x 4 rows = 316.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

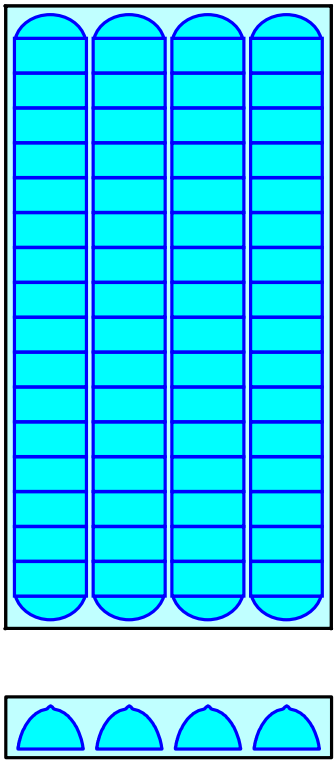
16 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 69.87' Row Length +12.0" End Stone x 2 = 71.87' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
12.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 7.00' Field Height

64 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 4 Rows = 7,131.4 cf Chamber Storage

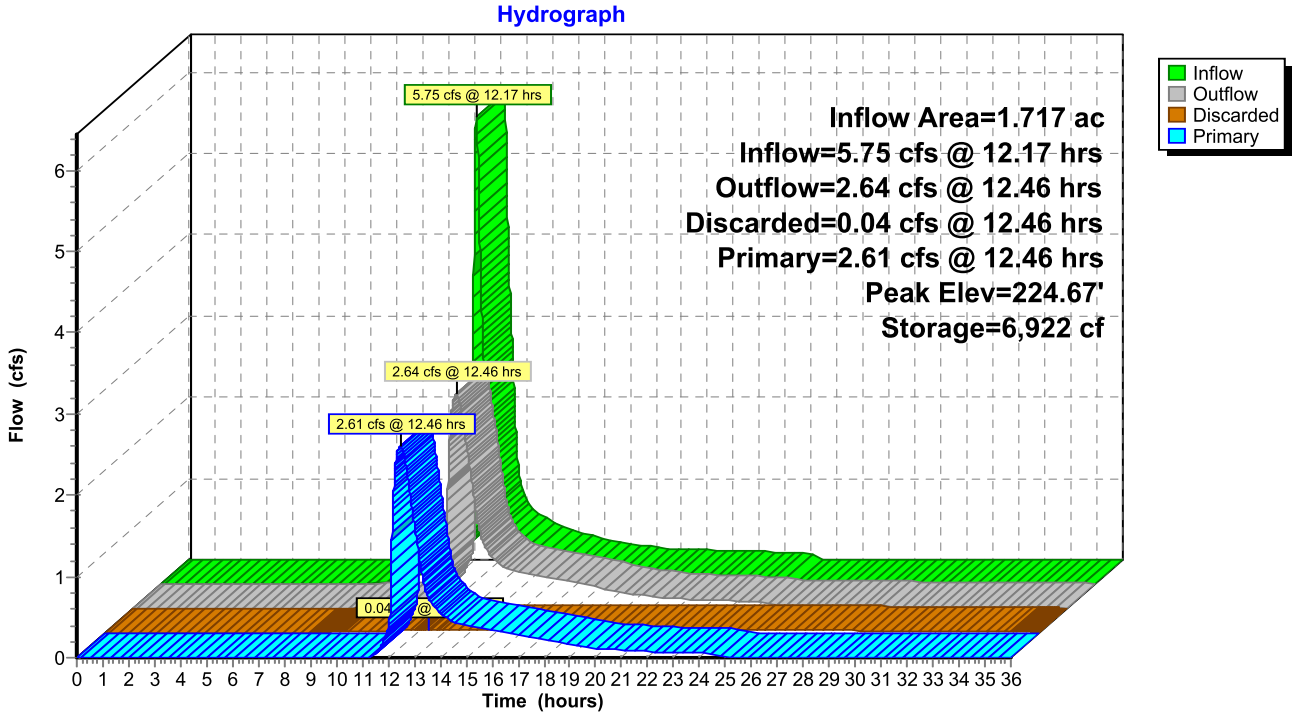
18,906.9 cf Field - 7,131.4 cf Chambers = 11,775.5 cf Stone x 40.0% Voids = 4,710.2 cf Stone Storage

Chamber Storage + Stone Storage = 11,841.6 cf = 0.272 af
Overall Storage Efficiency = 62.6%
Overall System Size = 71.87' x 37.58' x 7.00'

64 Chambers
700.3 cy Field
436.1 cy Stone



Pond 04P: UG DET - B-04



Summary for Pond 05P: UG DET - B-05

Inflow Area = 1.421 ac, 44.26% Impervious, Inflow Depth = 3.58" for 25-Year event
Inflow = 4.90 cfs @ 12.17 hrs, Volume= 0.423 af
Outflow = 2.43 cfs @ 12.43 hrs, Volume= 0.423 af, Atten= 50%, Lag= 15.7 min
Discarded = 0.03 cfs @ 12.43 hrs, Volume= 0.058 af
Primary = 2.40 cfs @ 12.43 hrs, Volume= 0.365 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 231.78' @ 12.43 hrs Surf.Area= 2,163 sf Storage= 5,700 cf

Plug-Flow detention time= 119.6 min calculated for 0.423 af (100% of inflow)
Center-of-Mass det. time= 119.1 min (945.5 - 826.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	228.00'	3,789 cf	**28.50'W x 75.89'L x 7.00'H Field A** 15,140 cf Overall - 5,668 cf Embedded = 9,472 cf x 40.0% Voids
#2A	229.00'	5,668 cf	**ADS_StormTech MC-4500 b +Cap**x 51 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 51 Chambers in 3 Rows Cap Storage= 39.5 cf x 2 x 3 rows = 237.0 cf
		9,457 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	220.00'	**15.0" Round Culvert** L= 68.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 220.00' / 215.40' S= 0.0676 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	229.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	230.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	234.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	228.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.03 cfs @ 12.43 hrs HW=231.78' (Free Discharge)
└**5=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=2.40 cfs @ 12.43 hrs HW=231.78' (Free Discharge)
└**1=Culvert** (Passes 2.40 cfs of 19.73 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.38 cfs @ 7.84 fps)
  ├**3=Orifice/Grate** (Orifice Controls 2.02 cfs @ 5.78 fps)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 05P: UG DET - B-05 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-4500 b +Cap (ADS StormTech®MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= 39.5 cf x 2 x 3 rows = 237.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

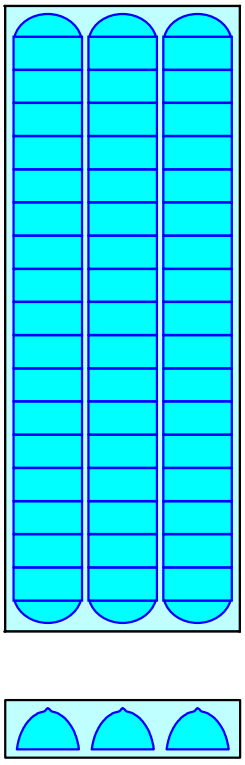
17 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 73.89' Row Length +12.0" End Stone x 2 = 75.89' Base Length
3 Rows x 100.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 28.50' Base Width
12.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 7.00' Field Height

51 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 3 Rows = 5,668.0 cf Chamber Storage

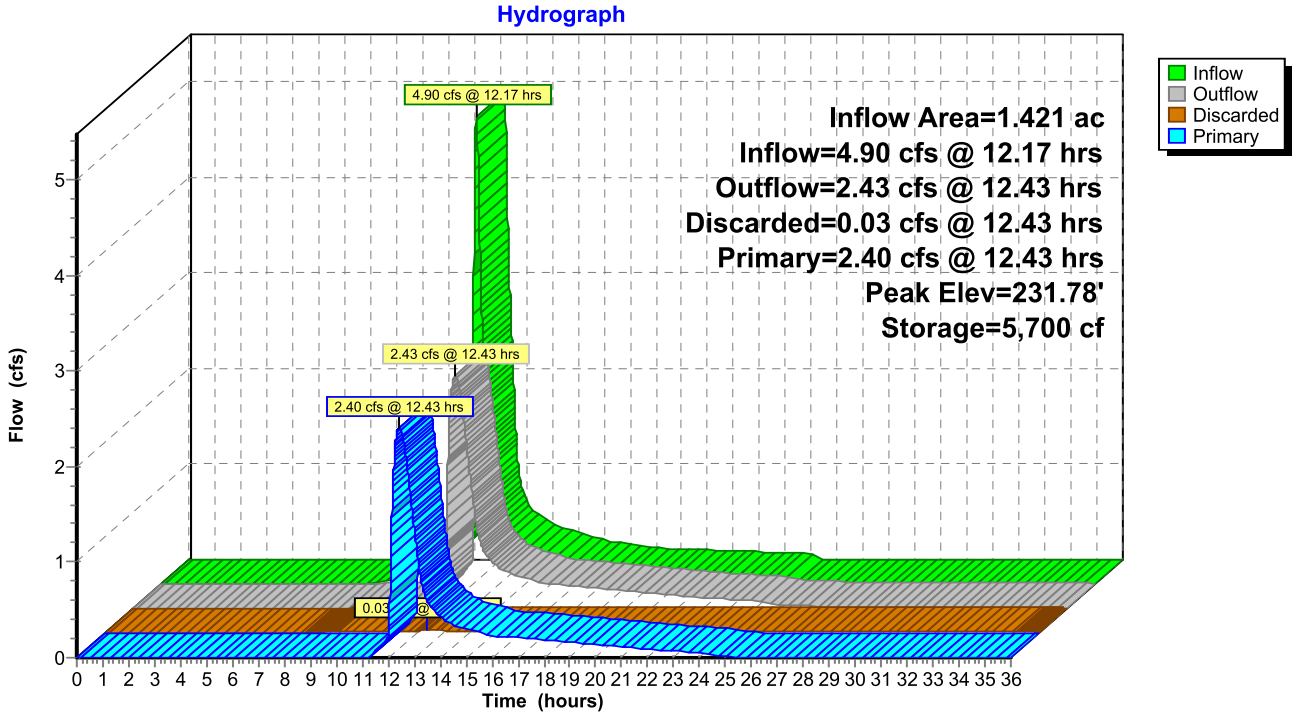
15,140.4 cf Field - 5,668.0 cf Chambers = 9,472.4 cf Stone x 40.0% Voids = 3,789.0 cf Stone Storage

Chamber Storage + Stone Storage = 9,457.0 cf = 0.217 af
Overall Storage Efficiency = 62.5%
Overall System Size = 75.89' x 28.50' x 7.00'

51 Chambers
560.8 cy Field
350.8 cy Stone



Pond 05P: UG DET - B-05



Summary for Pond 07P: UG DET - B-07

Inflow Area = 0.778 ac,100.00% Impervious, Inflow Depth = 5.87" for 25-Year event
Inflow = 4.66 cfs @ 12.08 hrs, Volume= 0.381 af
Outflow = 1.33 cfs @ 12.41 hrs, Volume= 0.381 af, Atten= 71%, Lag= 19.7 min
Discarded = 0.04 cfs @ 12.41 hrs, Volume= 0.082 af
Primary = 1.29 cfs @ 12.41 hrs, Volume= 0.299 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 219.12' @ 12.41 hrs Surf.Area= 2,415 sf Storage= 6,938 cf

Plug-Flow detention time= 187.2 min calculated for 0.381 af (100% of inflow)
Center-of-Mass det. time= 187.1 min (931.9 - 744.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	215.00'	4,260 cf	**46.67'W x 51.74'L x 7.00'H Field A** 16,902 cf Overall - 6,252 cf Embedded = 10,650 cf x 40.0% Voids
#2A	216.00'	6,252 cf	**ADS_StormTech MC-4500 b +Cap**x 55 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 55 Chambers in 5 Rows Cap Storage= 39.5 cf x 2 x 5 rows = 395.0 cf
		10,512 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	215.00'	**15.0" Round Culvert** L= 47.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 215.00' / 213.00' S= 0.0426 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	216.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	218.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	221.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	215.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.04 cfs @ 12.41 hrs HW=219.12' (Free Discharge)
└**5=Exfiltration** (Controls 0.04 cfs)

Primary OutFlow Max=1.29 cfs @ 12.41 hrs HW=219.12' (Free Discharge)
└**1=Culvert** (Passes 1.29 cfs of 11.05 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.41 cfs @ 8.34 fps)
  ├**3=Orifice/Grate** (Orifice Controls 0.88 cfs @ 4.50 fps)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 07P: UG DET - B-07 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-4500 b +Cap (ADS StormTech®MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= 39.5 cf x 2 x 5 rows = 395.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

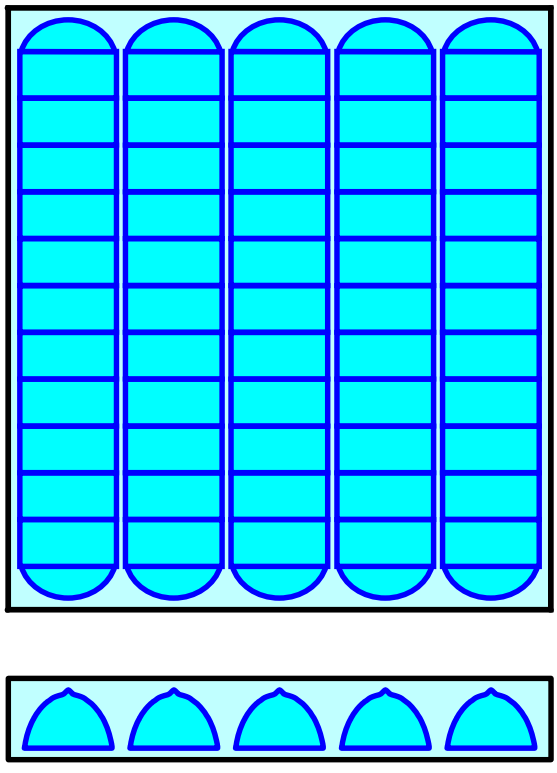
11 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 49.74' Row Length +12.0" End Stone x 2 = 51.74' Base Length
5 Rows x 100.0" Wide + 9.0" Spacing x 4 + 12.0" Side Stone x 2 = 46.67' Base Width
12.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 7.00' Field Height

55 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 5 Rows = 6,252.0 cf Chamber Storage

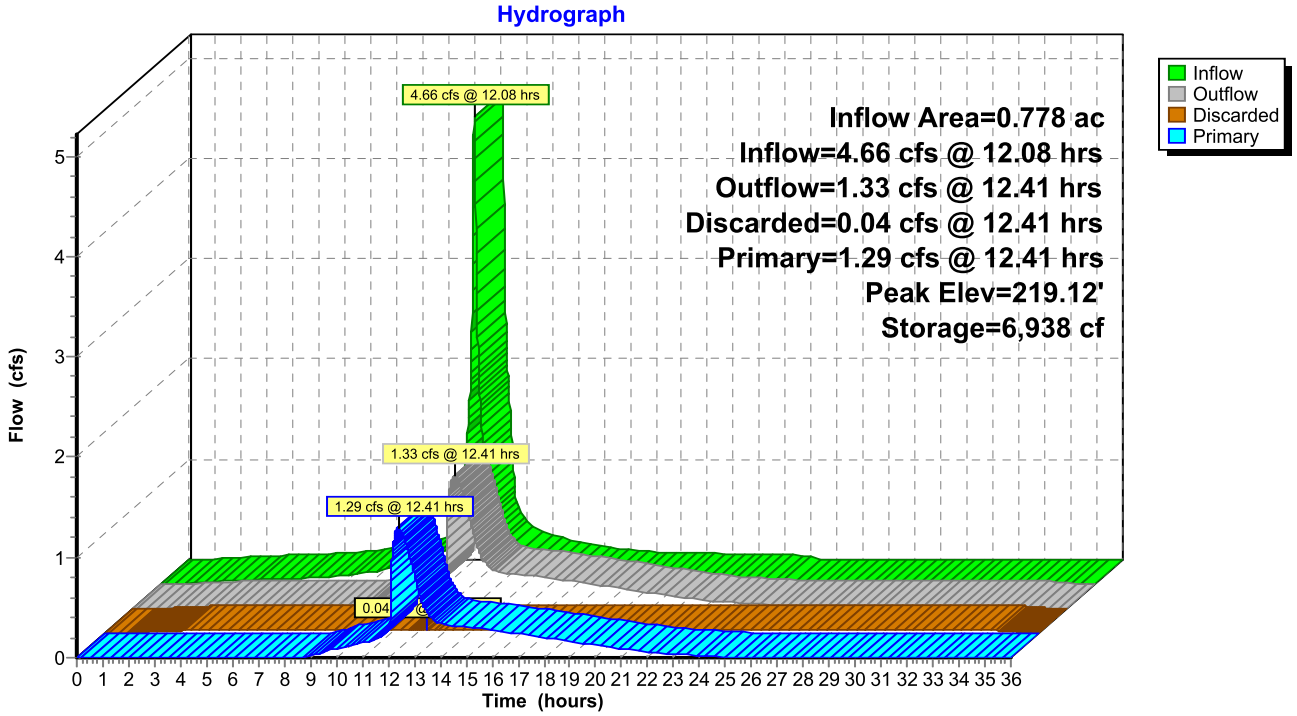
16,902.3 cf Field - 6,252.0 cf Chambers = 10,650.3 cf Stone x 40.0% Voids = 4,260.1 cf Stone Storage

Chamber Storage + Stone Storage = 10,512.1 cf = 0.241 af
Overall Storage Efficiency = 62.2%
Overall System Size = 51.74' x 46.67' x 7.00'

55 Chambers
626.0 cy Field
394.5 cy Stone



Pond 07P: UG DET - B-07



Summary for Pond 08P: UG DET - B-08

Inflow Area = 0.767 ac, 78.44% Impervious, Inflow Depth = 4.95" for 25-Year event
Inflow = 3.72 cfs @ 12.14 hrs, Volume= 0.316 af
Outflow = 2.04 cfs @ 12.31 hrs, Volume= 0.316 af, Atten= 45%, Lag= 10.8 min
Discarded = 0.03 cfs @ 12.31 hrs, Volume= 0.046 af
Primary = 2.01 cfs @ 12.31 hrs, Volume= 0.271 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 208.26' @ 12.31 hrs Surf.Area= 1,325 sf Storage= 3,856 cf

Plug-Flow detention time= 85.5 min calculated for 0.316 af (100% of inflow)
Center-of-Mass det. time= 85.7 min (873.5 - 787.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	204.00'	2,400 cf	**10.33'W x 128.22'L x 7.00'H Field A** 9,274 cf Overall - 3,274 cf Embedded = 6,001 cf x 40.0% Voids
#2A	205.00'	3,274 cf	**ADS_StormTech MC-4500 b +Cap**x 30 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= 39.5 cf x 2 x 1 rows = 79.0 cf
		5,674 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	204.00'	**15.0" Round Culvert** L= 77.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 204.00' / 203.60' S= 0.0052 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	205.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	207.00'	**7.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	210.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	204.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.03 cfs @ 12.31 hrs HW=208.26' (Free Discharge)
└**5=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=2.01 cfs @ 12.31 hrs HW=208.26' (Free Discharge)
└**1=Culvert** (Passes 2.01 cfs of 10.45 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 0.74 cfs @ 8.47 fps)
├**3=Orifice/Grate** (Orifice Controls 1.27 cfs @ 4.74 fps)
└**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 08P: UG DET - B-08 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-4500 b +Cap (ADS StormTech®MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= 39.5 cf x 2 x 1 rows = 79.0 cf

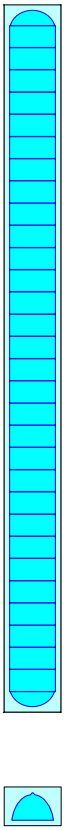
30 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 126.22' Row Length +12.0" End Stone x 2 = 128.22' Base Length
1 Rows x 100.0" Wide + 12.0" Side Stone x 2 = 10.33' Base Width
12.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 7.00' Field Height

30 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 1 Rows = 3,273.7 cf Chamber Storage

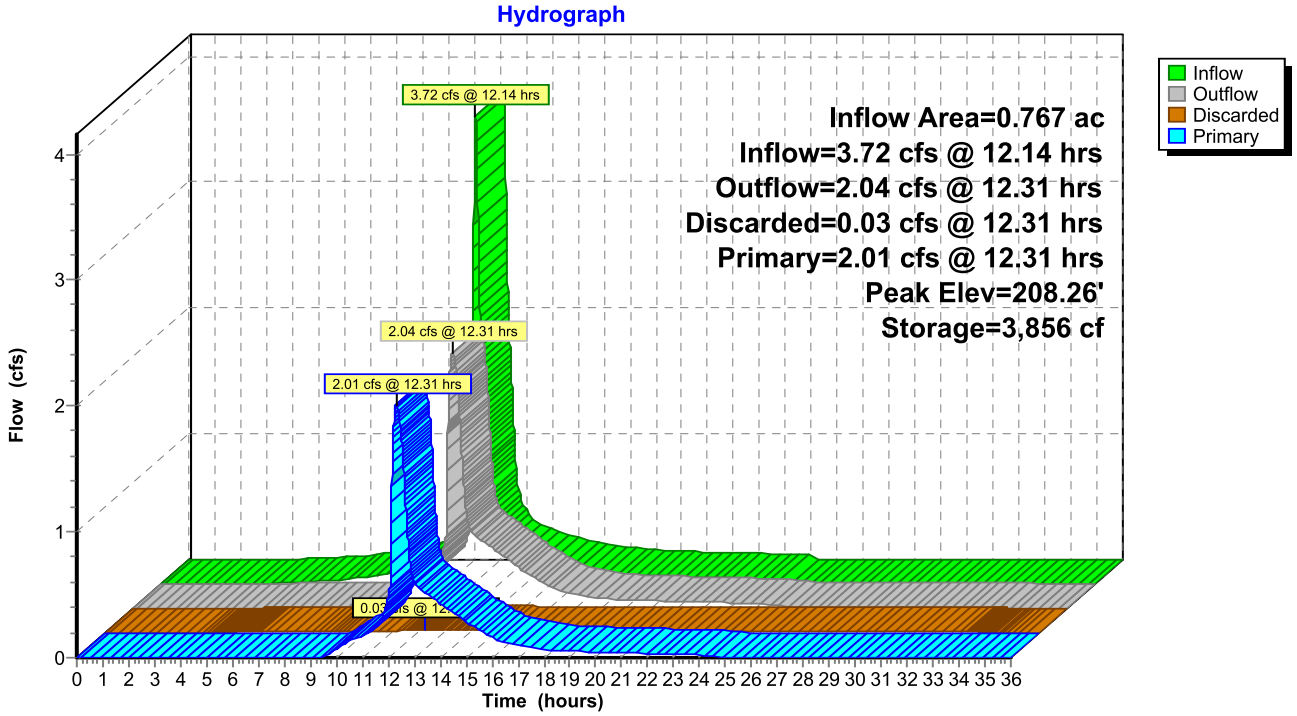
9,274.3 cf Field - 3,273.7 cf Chambers = 6,000.6 cf Stone x 40.0% Voids = 2,400.3 cf Stone Storage

Chamber Storage + Stone Storage = 5,674.0 cf = 0.130 af
Overall Storage Efficiency = 61.2%
Overall System Size = 128.22' x 10.33' x 7.00'

30 Chambers
343.5 cy Field
222.2 cy Stone



Pond 08P: UG DET - B-08



Summary for Pond 09P: UG DET - POOL

Inflow Area = 0.640 ac, 52.69% Impervious, Inflow Depth = 3.98" for 25-Year event
Inflow = 2.77 cfs @ 12.11 hrs, Volume= 0.213 af
Outflow = 0.92 cfs @ 12.45 hrs, Volume= 0.213 af, Atten= 67%, Lag= 20.0 min
Discarded = 0.03 cfs @ 12.45 hrs, Volume= 0.043 af
Primary = 0.89 cfs @ 12.45 hrs, Volume= 0.170 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 209.91' @ 12.45 hrs Surf.Area= 1,435 sf Storage= 3,754 cf

Plug-Flow detention time= 147.5 min calculated for 0.213 af (100% of inflow)
Center-of-Mass det. time= 147.5 min (960.2 - 812.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	206.00'	2,208 cf	**22.75'W x 63.06'L x 5.75'H Field A** 8,249 cf Overall - 2,728 cf Embedded = 5,521 cf x 40.0% Voids
#2A	207.00'	2,728 cf	**ADS_StormTech MC-3500 d +Cap**x 24 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 24 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		4,937 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	206.00'	**15.0" Round Culvert** L= 71.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 206.00' / 205.50' S= 0.0070 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	207.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	209.50'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	210.75'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	206.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.03 cfs @ 12.45 hrs HW=209.91' (Free Discharge)
└**5=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=0.89 cfs @ 12.45 hrs HW=209.91' (Free Discharge)
└**1=Culvert** (Passes 0.89 cfs of 10.27 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.39 cfs @ 8.04 fps)
  ├**3=Orifice/Grate** (Orifice Controls 0.50 cfs @ 2.19 fps)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 09P: UG DET - POOL - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech®MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

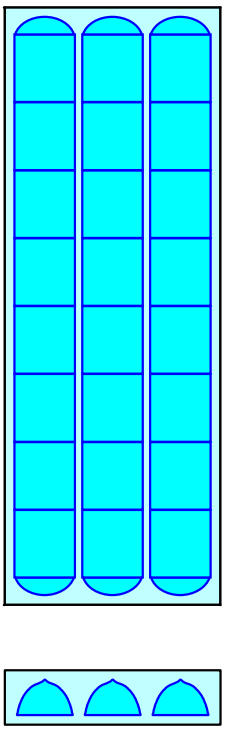
8 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 61.06' Row Length +12.0" End Stone x 2 = 63.06' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
12.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.75' Field Height

24 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 2,728.2 cf Chamber Storage

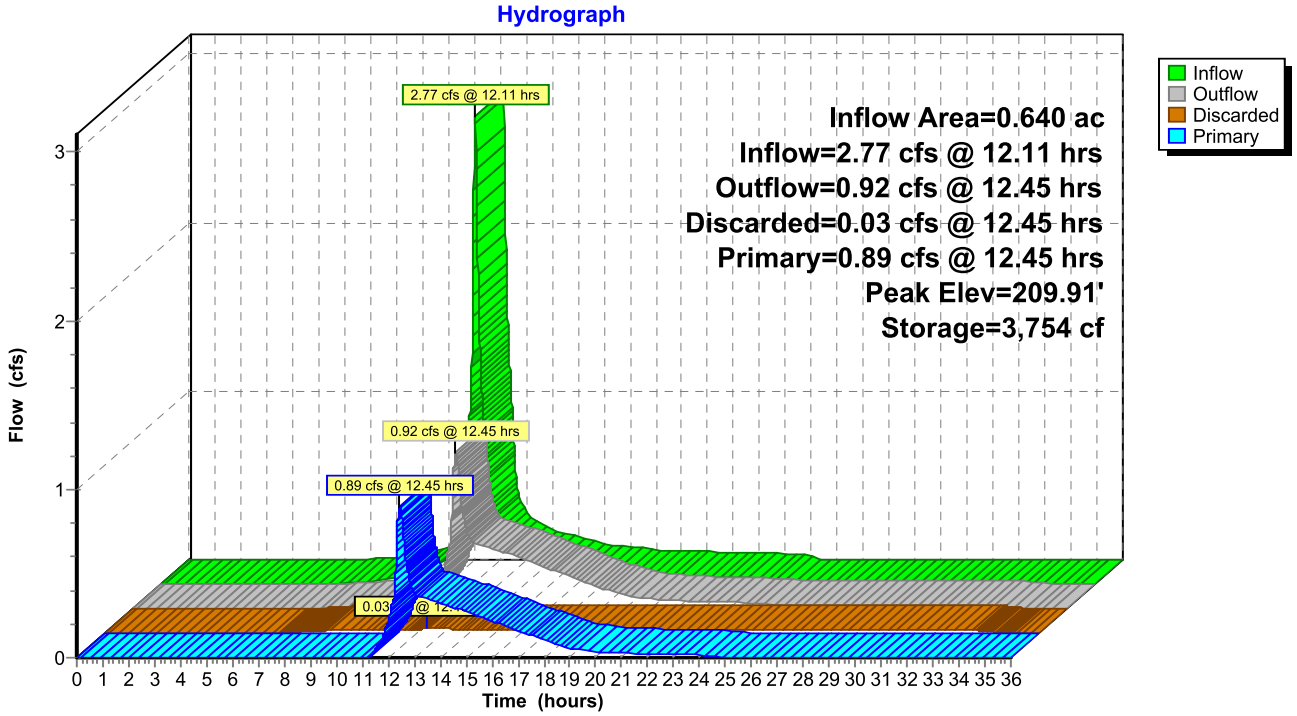
8,249.0 cf Field - 2,728.2 cf Chambers = 5,520.8 cf Stone x 40.0% Voids = 2,208.3 cf Stone Storage

Chamber Storage + Stone Storage = 4,936.6 cf = 0.113 af
Overall Storage Efficiency = 59.8%
Overall System Size = 63.06' x 22.75' x 5.75'

24 Chambers
305.5 cy Field
204.5 cy Stone



Pond 09P: UG DET - POOL



Summary for Pond 10P: UG DET - B-C

Inflow Area = 0.980 ac, 69.09% Impervious, Inflow Depth = 4.62" for 25-Year event
Inflow = 4.52 cfs @ 12.14 hrs, Volume= 0.378 af
Outflow = 0.66 cfs @ 12.73 hrs, Volume= 0.378 af, Atten= 85%, Lag= 35.8 min
Discarded = 0.06 cfs @ 12.73 hrs, Volume= 0.108 af
Primary = 0.60 cfs @ 12.73 hrs, Volume= 0.269 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 211.23' @ 12.73 hrs Surf.Area= 3,611 sf Storage= 7,926 cf

Plug-Flow detention time= 209.8 min calculated for 0.377 af (100% of inflow)
Center-of-Mass det. time= 209.9 min (1,007.6 - 797.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	208.00'	5,451 cf	**51.42'W x 70.23'L x 5.75'H Field A** 20,763 cf Overall - 7,136 cf Embedded = 13,628 cf x 40.0% Voids
#2A	209.00'	7,136 cf	**ADS_StormTech MC-3500 d +Cap**x 63 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 63 Chambers in 7 Rows Cap Storage= 14.9 cf x 2 x 7 rows = 208.6 cf
		12,587 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	209.00'	**15.0" Round Culvert** L= 36.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 209.00' / 208.60' S= 0.0111 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	209.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	212.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	212.75'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	208.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.06 cfs @ 12.73 hrs HW=211.23' (Free Discharge)
└**5=Exfiltration** (Controls 0.06 cfs)

Primary OutFlow Max=0.60 cfs @ 12.73 hrs HW=211.23' (Free Discharge)
└**1=Culvert** (Passes 0.60 cfs of 7.50 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.60 cfs @ 6.92 fps)
  ├**3=Orifice/Grate** (Controls 0.00 cfs)
  └**4=Sharp-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 10P: UG DET - B-C - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech®MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 7 rows = 208.6 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

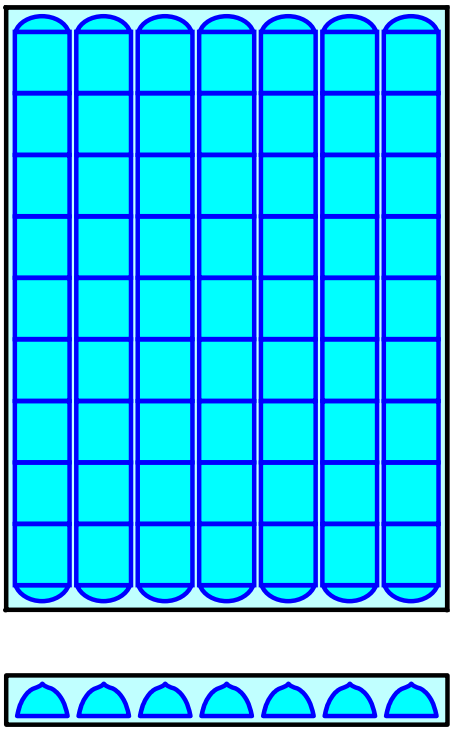
9 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 68.23' Row Length +12.0" End Stone x 2 = 70.23' Base Length
7 Rows x 77.0" Wide + 9.0" Spacing x 6 + 12.0" Side Stone x 2 = 51.42' Base Width
12.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.75' Field Height

63 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 7 Rows = 7,135.6 cf Chamber Storage

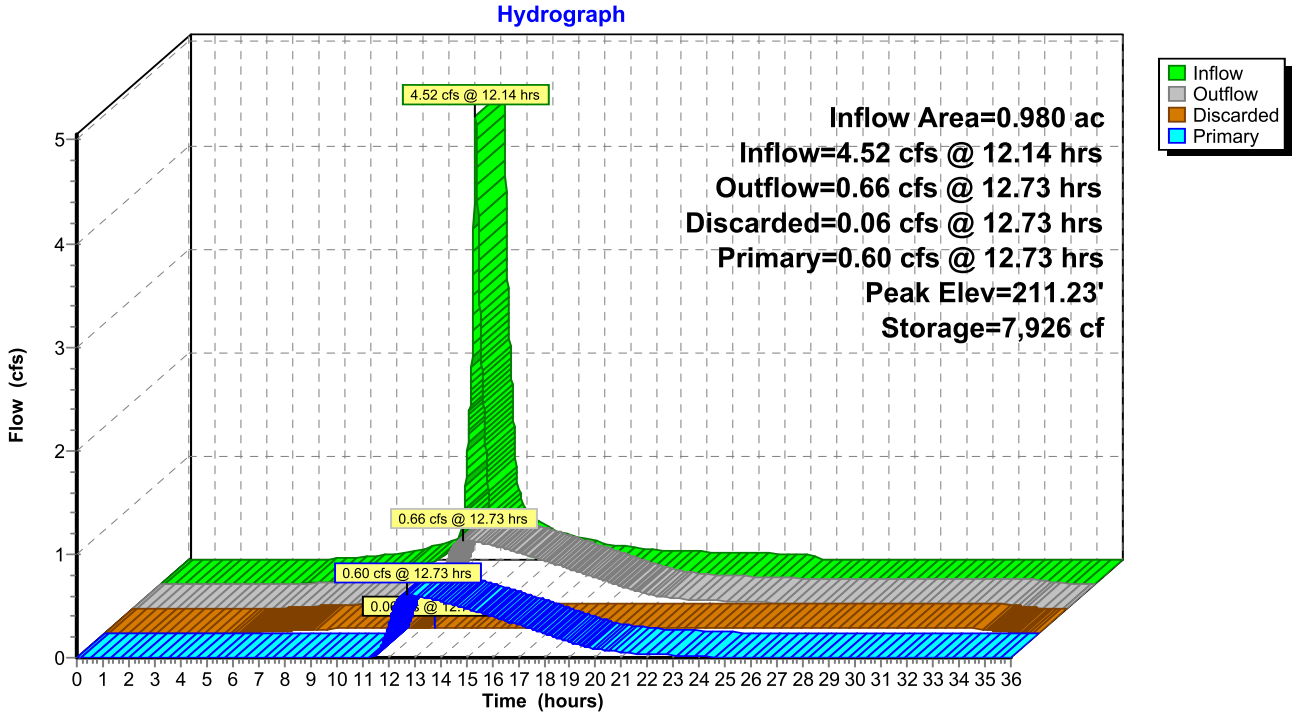
20,763.2 cf Field - 7,135.6 cf Chambers = 13,627.6 cf Stone x 40.0% Voids = 5,451.1 cf Stone Storage

Chamber Storage + Stone Storage = 12,586.6 cf = 0.289 af
Overall Storage Efficiency = 60.6%
Overall System Size = 70.23' x 51.42' x 5.75'

63 Chambers
769.0 cy Field
504.7 cy Stone



Pond 10P: UG DET - B-C



Summary for Pond 11P: UG DET-B-D

Inflow Area = 1.462 ac, 74.88% Impervious, Inflow Depth = 4.84" for 25-Year event
Inflow = 6.97 cfs @ 12.14 hrs, Volume= 0.590 af
Outflow = 1.52 cfs @ 12.59 hrs, Volume= 0.590 af, Atten= 78%, Lag= 27.3 min
Discarded = 0.09 cfs @ 12.59 hrs, Volume= 0.169 af
Primary = 1.43 cfs @ 12.59 hrs, Volume= 0.421 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 211.46' @ 12.59 hrs Surf.Area= 5,277 sf Storage= 12,411 cf

Plug-Flow detention time= 238.5 min calculated for 0.590 af (100% of inflow)
Center-of-Mass det. time= 238.1 min (1,029.4 - 791.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	208.00'	7,980 cf	**94.42'W x 55.89'L x 5.75'H Field A** 30,342 cf Overall - 10,393 cf Embedded = 19,949 cf x 40.0% Voids
#2A	209.00'	10,393 cf	**ADS_StormTech MC-3500 d +Cap**x 91 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 91 Chambers in 13 Rows Cap Storage= 14.9 cf x 2 x 13 rows = 387.4 cf
		18,373 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	208.60'	**15.0" Round Culvert** L= 53.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 208.60' / 208.30' S= 0.0057 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	209.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	210.90'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	212.75'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	208.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.09 cfs @ 12.59 hrs HW=211.46' (Free Discharge)
└**5=Exfiltration** (Controls 0.09 cfs)

Primary OutFlow Max=1.43 cfs @ 12.59 hrs HW=211.46' (Free Discharge)
└**1=Culvert** (Passes 1.43 cfs of 8.52 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.64 cfs @ 7.29 fps)
  ├**3=Orifice/Grate** (Orifice Controls 0.80 cfs @ 2.55 fps)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 11P: UG DET-B-D - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech®MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 13 rows = 387.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

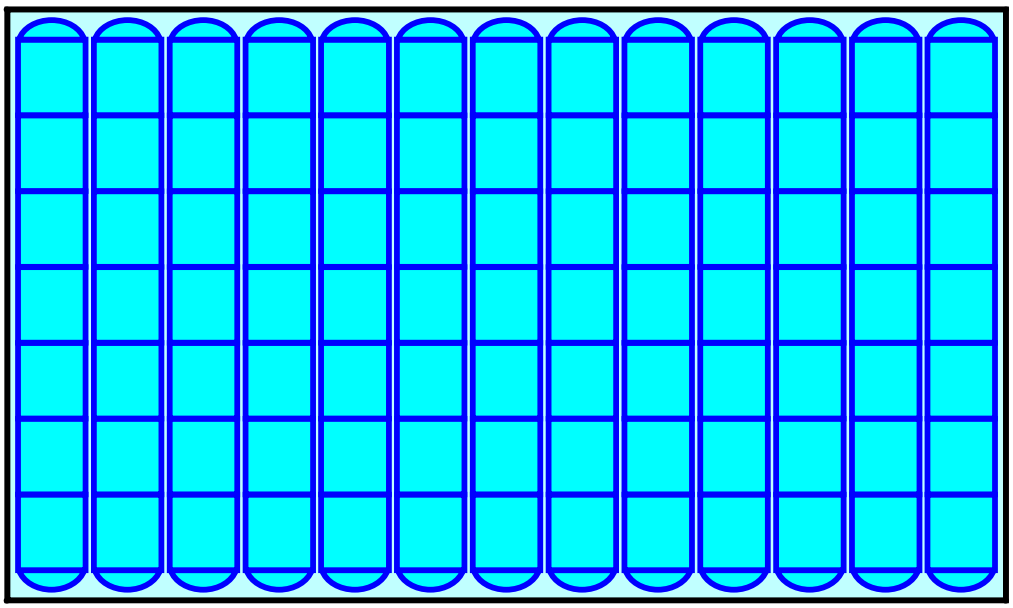
7 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 53.89' Row Length +12.0" End Stone x 2 = 55.89' Base Length
13 Rows x 77.0" Wide + 9.0" Spacing x 12 + 12.0" Side Stone x 2 = 94.42' Base Width
12.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.75' Field Height

91 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 13 Rows = 10,393.0 cf Chamber Storage

30,342.4 cf Field - 10,393.0 cf Chambers = 19,949.4 cf Stone x 40.0% Voids = 7,979.8 cf Stone Storage

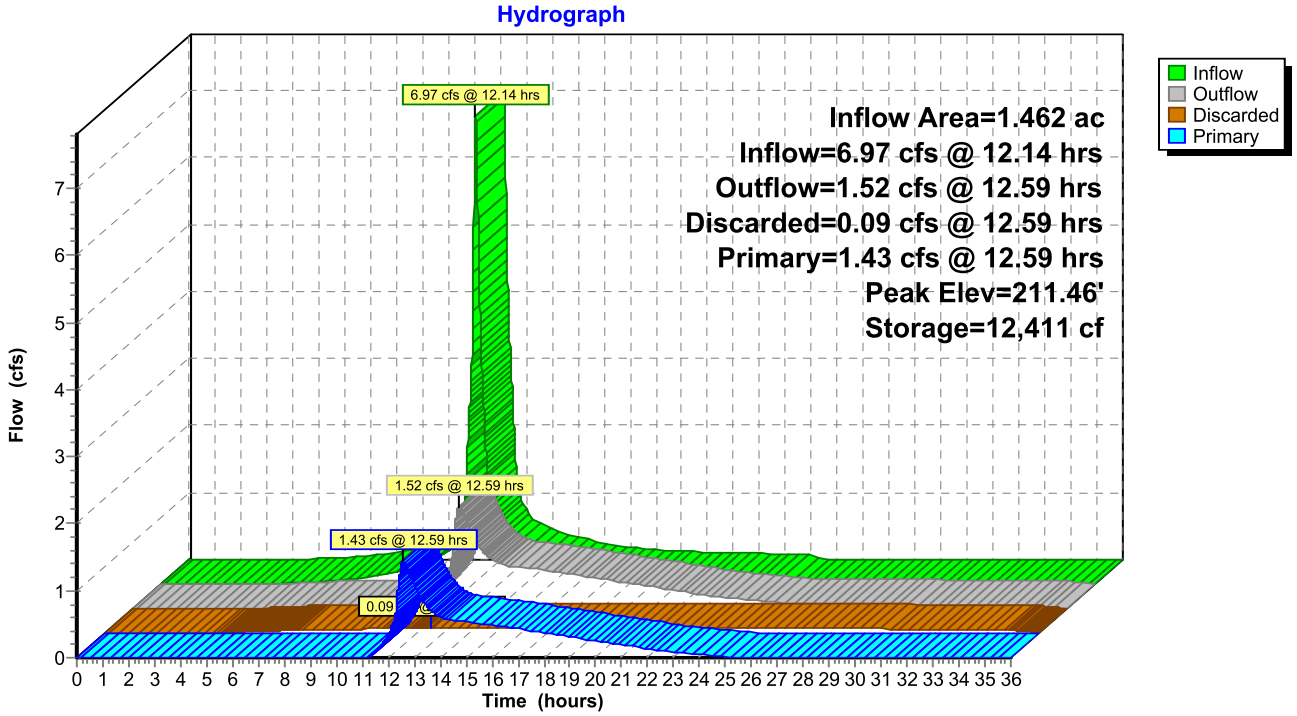
Chamber Storage + Stone Storage = 18,372.8 cf = 0.422 af
Overall Storage Efficiency = 60.6%
Overall System Size = 55.89' x 94.42' x 5.75'

91 Chambers
1,123.8 cy Field
738.9 cy Stone





Pond 11P: UG DET-B-D



Summary for Pond 21P: BASIN 1

Inflow Area = 3.393 ac, 50.00% Impervious, Inflow Depth = 3.27" for 25-Year event
Inflow = 6.42 cfs @ 12.23 hrs, Volume= 0.924 af
Outflow = 6.39 cfs @ 12.26 hrs, Volume= 0.859 af, Atten= 0%, Lag= 1.7 min
Discarded = 0.03 cfs @ 12.26 hrs, Volume= 0.064 af
Primary = 6.36 cfs @ 12.26 hrs, Volume= 0.795 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 209.30' @ 12.26 hrs Surf.Area= 2,224 sf Storage= 4,597 cf

Plug-Flow detention time= 84.9 min calculated for 0.859 af (93% of inflow)
Center-of-Mass det. time= 49.6 min (920.0 - 870.4)

Volume	Invert	Avail.Storage	Storage Description
#1	206.00'	6,225 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

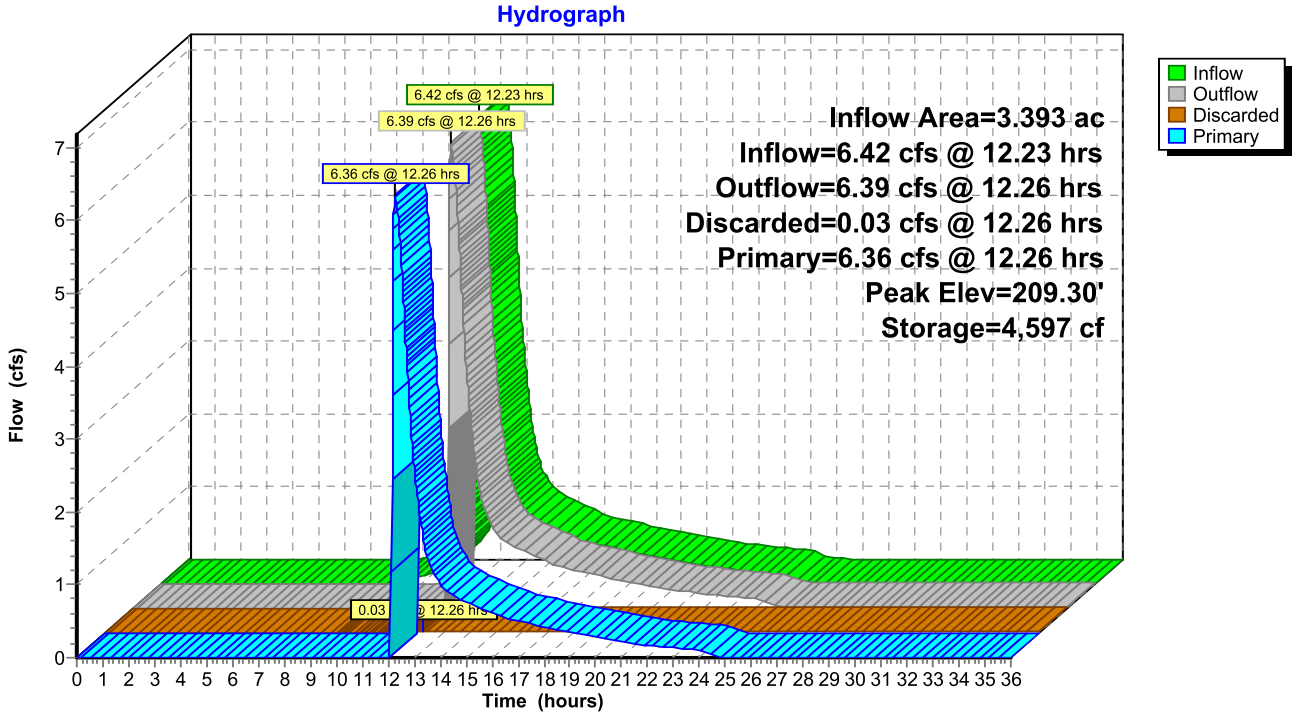
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
206.00	610	0	0
207.00	1,030	820	820
208.00	1,540	1,285	2,105
209.00	2,150	1,845	3,950
210.00	2,400	2,275	6,225

Device	Routing	Invert	Outlet Devices
#1	Primary	209.00'	**15.0' long + 3.0 '/' SideZ x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	206.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.03 cfs @ 12.26 hrs HW=209.30' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=6.34 cfs @ 12.26 hrs HW=209.30' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 6.34 cfs @ 1.35 fps)

Pond 21P: BASIN 1



Summary for Pond 22P: BASIN 2

Inflow Area = 2.917 ac, 45.85% Impervious, Inflow Depth = 3.21" for 25-Year event
Inflow = 3.59 cfs @ 12.48 hrs, Volume= 0.780 af
Outflow = 3.12 cfs @ 12.97 hrs, Volume= 0.625 af, Atten= 13%, Lag= 29.5 min
Discarded = 0.07 cfs @ 12.97 hrs, Volume= 0.134 af
Primary = 3.05 cfs @ 12.97 hrs, Volume= 0.491 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 201.21' @ 12.97 hrs Surf.Area= 4,805 sf Storage= 9,969 cf

Plug-Flow detention time= 221.5 min calculated for 0.625 af (80% of inflow)
Center-of-Mass det. time= 136.4 min (1,029.9 - 893.5)

Volume	Invert	Avail.Storage	Storage Description
#1	198.00'	14,215 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

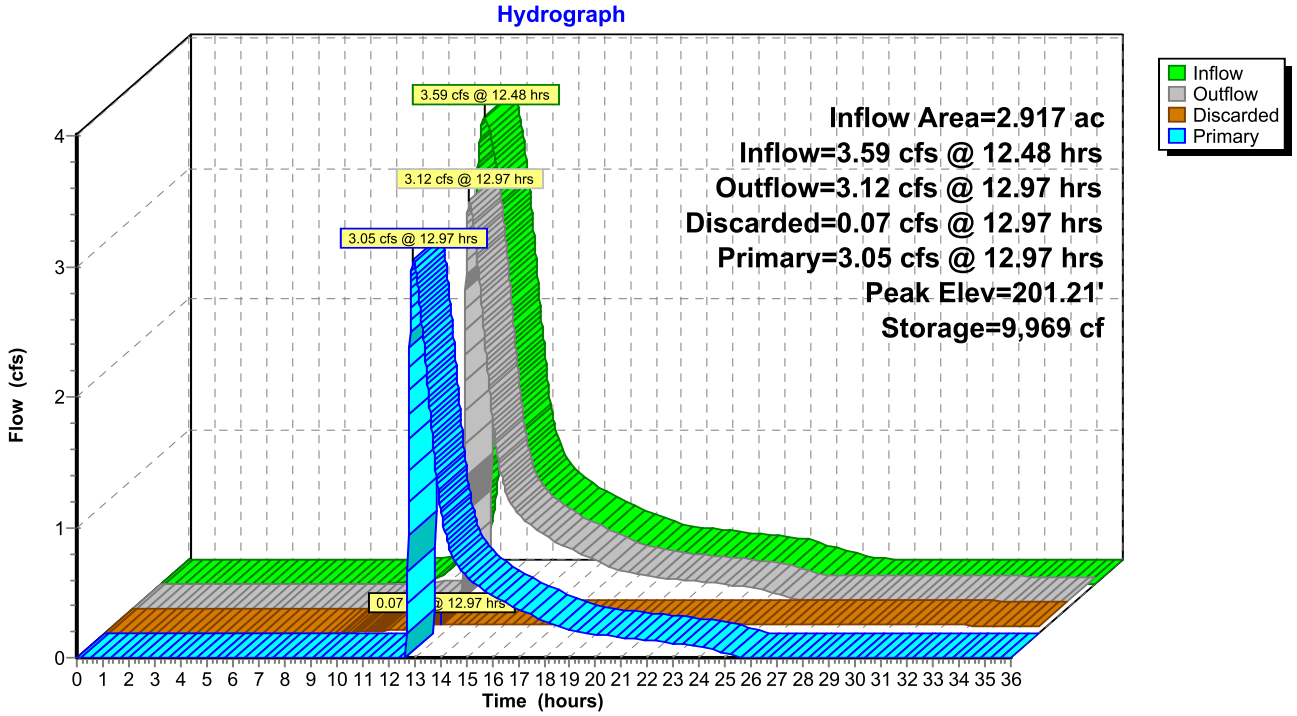
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
198.00	1,710	0	0
199.00	2,480	2,095	2,095
200.00	3,400	2,940	5,035
201.00	4,480	3,940	8,975
202.00	6,000	5,240	14,215

Device	Routing	Invert	Outlet Devices
#1	Primary	201.00'	**12.0' long + 3.0 '/' SideZ x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	198.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 192.00'

Discarded OutFlow Max=0.07 cfs @ 12.97 hrs HW=201.21' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.07 cfs)

Primary OutFlow Max=3.04 cfs @ 12.97 hrs HW=201.21' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 3.04 cfs @ 1.12 fps)

Pond 22P: BASIN 2



Summary for Pond 23P: BASIN 3

Inflow Area = 0.468 ac, 18.14% Impervious, Inflow Depth = 2.99" for 25-Year event
Inflow = 1.53 cfs @ 12.12 hrs, Volume= 0.117 af
Outflow = 0.21 cfs @ 12.83 hrs, Volume= 0.073 af, Atten= 86%, Lag= 43.1 min
Discarded = 0.02 cfs @ 12.83 hrs, Volume= 0.037 af
Primary = 0.19 cfs @ 12.83 hrs, Volume= 0.036 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 222.03' @ 12.83 hrs Surf.Area= 1,487 sf Storage= 2,682 cf

Plug-Flow detention time= 426.4 min calculated for 0.073 af (63% of inflow)
Center-of-Mass det. time= 317.9 min (1,154.7 - 836.8)

Volume	Invert	Avail.Storage	Storage Description
#1	219.00'	4,225 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

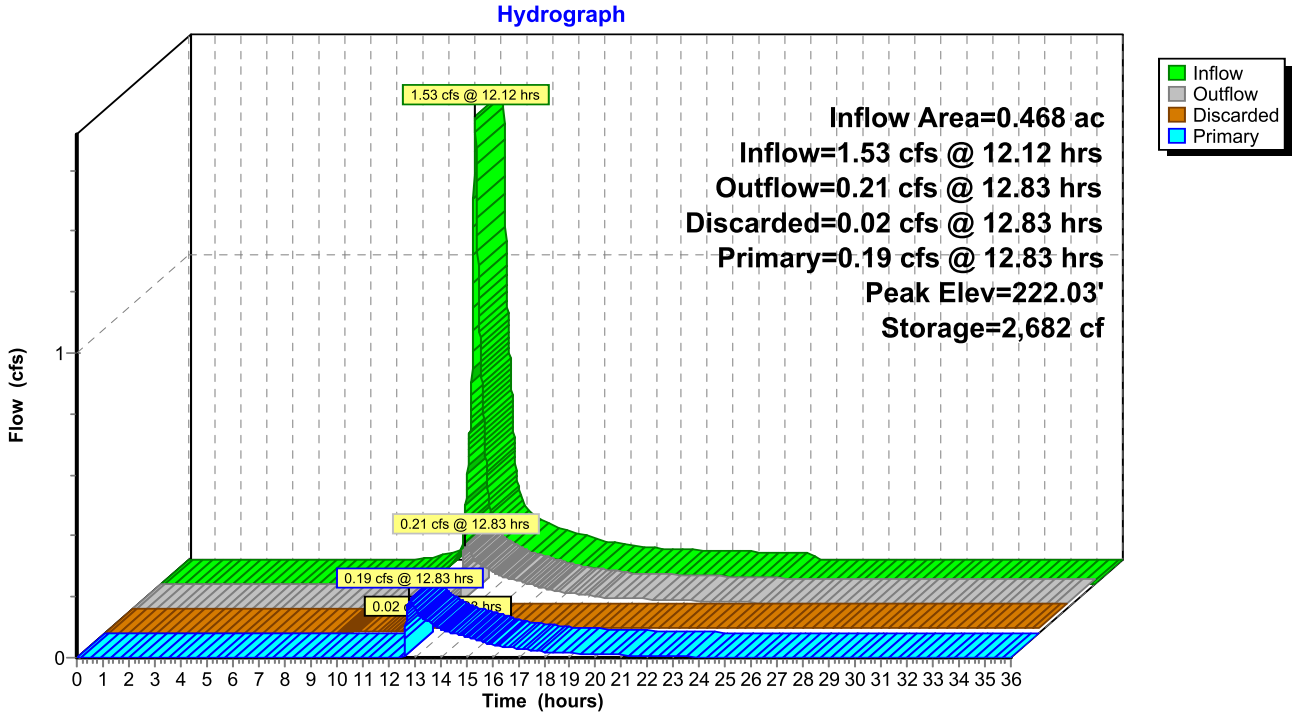
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
219.00	370	0	0
220.00	670	520	520
221.00	1,040	855	1,375
222.00	1,480	1,260	2,635
223.00	1,700	1,590	4,225

Device	Routing	Invert	Outlet Devices
#1	Primary	222.00'	**12.0' long + 3.0 '/' SideZ x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	219.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.02 cfs @ 12.83 hrs HW=222.03' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.02 cfs)

Primary OutFlow Max=0.17 cfs @ 12.83 hrs HW=222.03' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 0.17 cfs @ 0.43 fps)

Pond 23P: BASIN 3



Summary for Pond 24P: BASIN 4

Inflow Area = 0.753 ac, 36.59% Impervious, Inflow Depth = 4.19" for 25-Year event
Inflow = 3.45 cfs @ 12.11 hrs, Volume= 0.263 af
Outflow = 1.28 cfs @ 12.40 hrs, Volume= 0.177 af, Atten= 63%, Lag= 17.2 min
Discarded = 0.04 cfs @ 12.40 hrs, Volume= 0.075 af
Primary = 1.24 cfs @ 12.40 hrs, Volume= 0.102 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 218.12' @ 12.40 hrs Surf.Area= 2,928 sf Storage= 5,516 cf

Plug-Flow detention time= 357.8 min calculated for 0.177 af (67% of inflow)
Center-of-Mass det. time= 261.4 min (1,068.6 - 807.1)

Volume	Invert	Avail.Storage	Storage Description
#1	215.00'	8,345 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

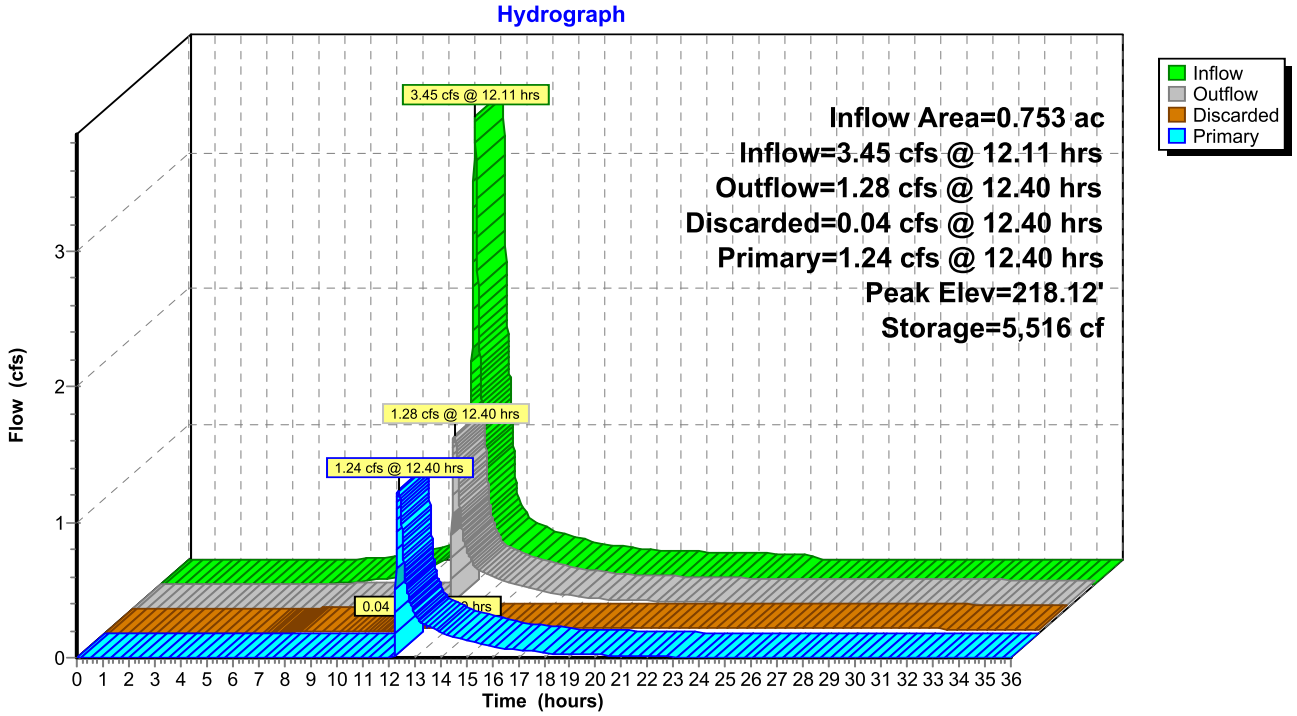
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
215.00	790	0	0
216.00	1,340	1,065	1,065
217.00	2,010	1,675	2,740
218.00	2,850	2,430	5,170
219.00	3,500	3,175	8,345

Device	Routing	Invert	Outlet Devices
#1	Primary	218.00'	**12.0' long + 3.0 '/' SideZ x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	215.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.04 cfs @ 12.40 hrs HW=218.12' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.04 cfs)

Primary OutFlow Max=1.24 cfs @ 12.40 hrs HW=218.12' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 1.24 cfs @ 0.84 fps)

Pond 24P: BASIN 4

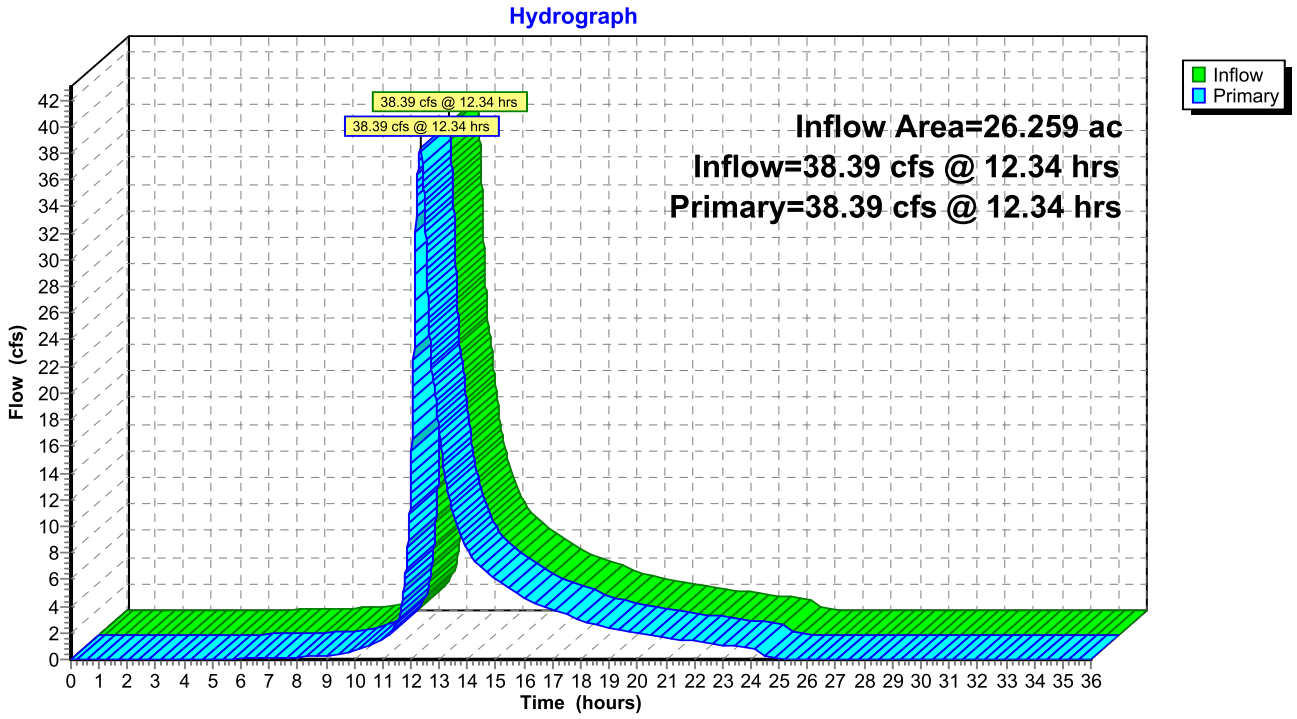


Summary for Link 10L-PR: DESIGN POINT - 01

Inflow Area = 26.259 ac, 34.64% Impervious, Inflow Depth = 2.85" for 25-Year event
Inflow = 38.39 cfs @ 12.34 hrs, Volume= 6.232 af
Primary = 38.39 cfs @ 12.34 hrs, Volume= 6.232 af, Atten= 0%, Lag= 0.0 min

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

Link 10L-PR: DESIGN POINT - 01



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

Subcatchment01S: BLDG-01 Runoff Area=37,300 sf 83.38% Impervious Runoff Depth=7.91"
Tc=8.0 min CN=94 Runoff=6.68 cfs 0.564 af

Subcatchment02S: BLDG-02 Runoff Area=37,956 sf 65.75% Impervious Runoff Depth=7.43"
Flow Length=400' Tc=10.6 min CN=90 Runoff=6.08 cfs 0.539 af

Subcatchment03S: BLDG-03 Runoff Area=65,900 sf 49.17% Impervious Runoff Depth=5.98"
Tc=12.0 min CN=78 Runoff=8.61 cfs 0.753 af

Subcatchment04S: BLDG-04 Runoff Area=74,800 sf 44.52% Impervious Runoff Depth=5.73"
Tc=12.0 min CN=76 Runoff=9.42 cfs 0.821 af

Subcatchment05S: BLDG 05 Runoff Area=61,900 sf 44.26% Impervious Runoff Depth=5.86"
Tc=12.0 min CN=77 Runoff=7.94 cfs 0.693 af

Subcatchment06S: BLDG-06 Runoff Area=32,800 sf 36.59% Impervious Runoff Depth=6.58"
Flow Length=75' Slope=0.0200 '/' Tc=7.7 min CN=83 Runoff=5.31 cfs 0.413 af

Subcatchment07S: BLDG-07 Runoff Area=33,900 sf 100.00% Impervious Runoff Depth=8.39"
Tc=6.0 min CN=98 Runoff=6.60 cfs 0.544 af

Subcatchment08S: BLDG 08 Runoff Area=33,400 sf 78.44% Impervious Runoff Depth=7.43"
Tc=10.0 min CN=90 Runoff=5.45 cfs 0.475 af

Subcatchment09S: POOL HOUSE Runoff Area=27,900 sf 52.69% Impervious Runoff Depth=6.34"
Tc=8.0 min CN=81 Runoff=4.34 cfs 0.338 af

Subcatchment10S: BLDG C Runoff Area=42,700 sf 69.09% Impervious Runoff Depth=7.06"
Tc=10.0 min CN=87 Runoff=6.75 cfs 0.577 af

Subcatchment11S: BLDG-D Runoff Area=63,700 sf 74.88% Impervious Runoff Depth=7.31"
Tc=10.0 min CN=89 Runoff=10.29 cfs 0.890 af

Subcatchment21S: SOUTHERN Runoff Area=44,600 sf 23.32% Impervious Runoff Depth=4.41"
Tc=12.0 min UI Adjusted CN=65 Runoff=4.34 cfs 0.376 af

Subcatchment22S: DIRECT FLOW TO Runoff Area=14,300 sf 0.00% Impervious Runoff Depth=5.49"
Tc=8.0 min CN=74 Runoff=1.96 cfs 0.150 af

Subcatchment23S: DIRECT FLOW TO Runoff Area=20,400 sf 18.14% Impervious Runoff Depth=5.13"
Flow Length=110' Slope=0.0400 '/' Tc=7.9 min UI Adjusted CN=71 Runoff=2.64 cfs 0.200 af

Subcatchment30S: EASTERN Runoff Area=403,100 sf 0.00% Impervious Runoff Depth=4.53"
Flow Length=950' Tc=23.7 min CN=66 Runoff=30.76 cfs 3.493 af

Subcatchment31S: NORTHERN Runoff Area=52,900 sf 0.00% Impervious Runoff Depth=3.22"
Tc=15.0 min CN=55 Runoff=3.35 cfs 0.326 af

Subcatchment32S: ENTRANCE Runoff Area=34,300 sf 54.23% Impervious Runoff Depth=7.06"
Tc=6.0 min CN=87 Runoff=6.19 cfs 0.464 af

Subcatchment33S: BLDG-09 Runoff Area=10,300 sf 100.00% Impervious Runoff Depth=8.39"
Tc=5.0 min CN=98 Runoff=2.08 cfs 0.165 af

Subcatchment34S: NORTHERN Runoff Area=51,700 sf 77.56% Impervious Runoff Depth=7.43"
Tc=12.0 min CN=90 Runoff=7.94 cfs 0.735 af

Pond 01P: UG DET-01 Peak Elev=214.11' Storage=7,128 cf Inflow=6.68 cfs 0.564 af
Discarded=0.04 cfs 0.065 af Primary=3.87 cfs 0.499 af Outflow=3.90 cfs 0.564 af

Pond 02P: UG DET - B-02 Peak Elev=214.30' Storage=11,088 cf Inflow=9.00 cfs 1.281 af
Discarded=0.06 cfs 0.098 af Primary=6.90 cfs 1.178 af Outflow=6.96 cfs 1.275 af

Pond 03P: UG DET Peak Elev=224.11' Storage=10,251 cf Inflow=8.61 cfs 0.753 af
Discarded=0.04 cfs 0.076 af Primary=4.26 cfs 0.675 af Outflow=4.29 cfs 0.751 af

Pond 04P: UG DET - B-04 Peak Elev=227.08' Storage=10,850 cf Inflow=9.42 cfs 0.821 af
Discarded=0.04 cfs 0.078 af Primary=4.50 cfs 0.742 af Outflow=4.54 cfs 0.820 af

Pond 05P: UG DET - B-05 Peak Elev=234.11' Storage=8,685 cf Inflow=7.94 cfs 0.693 af
Discarded=0.03 cfs 0.063 af Primary=4.27 cfs 0.629 af Outflow=4.30 cfs 0.692 af

Pond 07P: UG DET - B-07 Peak Elev=220.73' Storage=9,272 cf Inflow=6.60 cfs 0.544 af
Discarded=0.04 cfs 0.086 af Primary=2.00 cfs 0.458 af Outflow=2.03 cfs 0.544 af

Pond 08P: UG DET - B-08 Peak Elev=210.02' Storage=5,155 cf Inflow=5.45 cfs 0.475 af
Discarded=0.04 cfs 0.049 af Primary=3.09 cfs 0.425 af Outflow=3.13 cfs 0.475 af

Pond 09P: UG DET - POOL Peak Elev=210.92' Storage=4,462 cf Inflow=4.34 cfs 0.338 af
Discarded=0.03 cfs 0.047 af Primary=3.15 cfs 0.292 af Outflow=3.18 cfs 0.338 af

Pond 10P: UG DET - B-C Peak Elev=212.86' Storage=11,308 cf Inflow=6.75 cfs 0.577 af
Discarded=0.07 cfs 0.120 af Primary=2.06 cfs 0.457 af Outflow=2.13 cfs 0.577 af

Pond 11P: UG DET-B-D Peak Elev=212.91' Storage=16,597 cf Inflow=10.29 cfs 0.890 af
Discarded=0.10 cfs 0.184 af Primary=3.82 cfs 0.705 af Outflow=3.91 cfs 0.889 af

Pond 21P: BASIN 1 Peak Elev=209.41' Storage=4,853 cf Inflow=10.97 cfs 1.550 af
Discarded=0.03 cfs 0.067 af Primary=10.86 cfs 1.416 af Outflow=10.90 cfs 1.483 af

Pond 22P: BASIN 2 Peak Elev=201.36' Storage=10,674 cf Inflow=7.59 cfs 1.328 af
Discarded=0.08 cfs 0.140 af Primary=7.01 cfs 1.027 af Outflow=7.09 cfs 1.167 af

Pond 23P: BASIN 3 Peak Elev=222.17' Storage=2,885 cf Inflow=2.64 cfs 0.200 af
Discarded=0.02 cfs 0.038 af Primary=2.07 cfs 0.119 af Outflow=2.09 cfs 0.156 af

Pond 24P: BASIN 4 Peak Elev=218.28' Storage=6,004 cf Inflow=5.31 cfs 0.413 af
Discarded=0.04 cfs 0.078 af Primary=4.79 cfs 0.249 af Outflow=4.83 cfs 0.327 af

Link 10L-PR: DESIGN POINT - 01

Inflow=72.74 cfs 10.959 af
Primary=72.74 cfs 10.959 af

Total Runoff Area = 26.259 ac Runoff Volume = 12.517 af Average Runoff Depth = 5.72"
65.36% Pervious = 17.163 ac 34.64% Impervious = 9.097 ac

Summary for Subcatchment 01S: BLDG-01

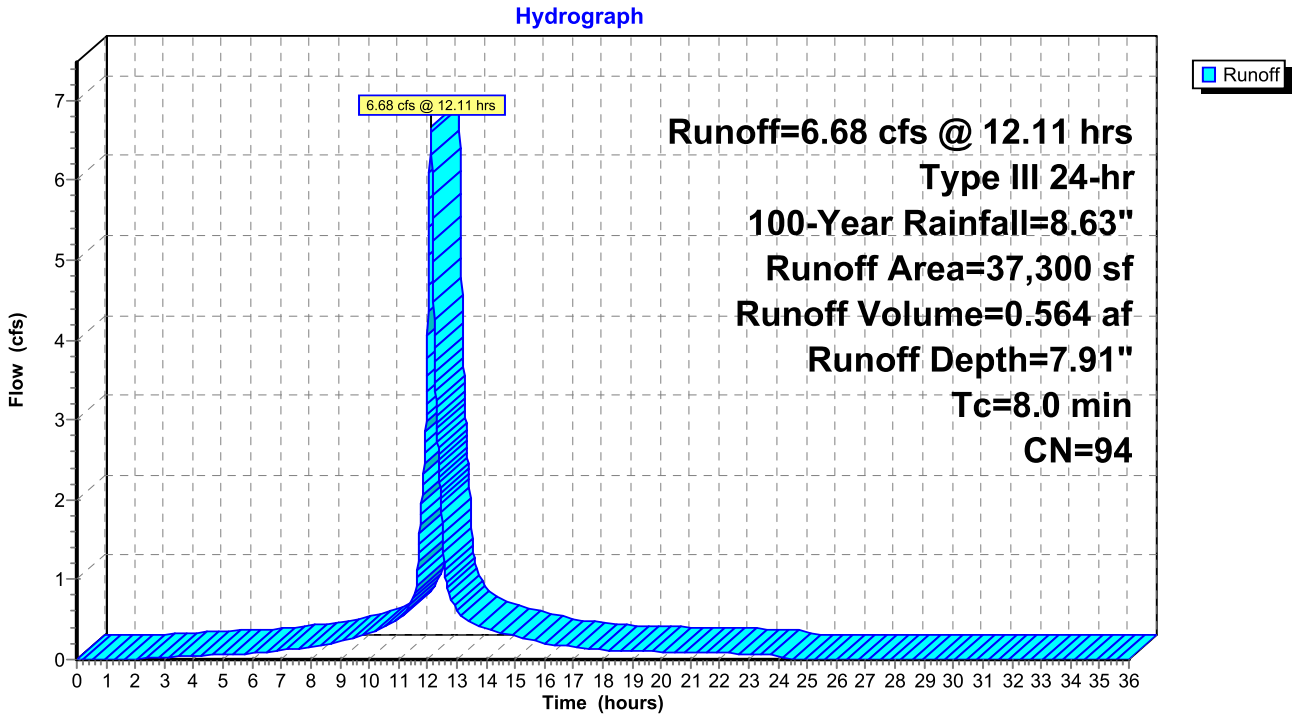
Runoff = 6.68 cfs @ 12.11 hrs, Volume= 0.564 af, Depth= 7.91"
Routed to Pond 01P : UG DET-01

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.63"

Area (sf)	CN	Description
17,100	98	Unconnected pavement, HSG B
2,000	98	Unconnected roofs, HSG B
6,500	98	Unconnected roofs, HSG B
5,500	98	Unconnected roofs, HSG B
6,200	74	>75% Grass cover, Good, HSG C
37,300	94	Weighted Average
6,200		16.62% Pervious Area
31,100		83.38% Impervious Area
31,100		100.00% Unconnected

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

Subcatchment 01S: BLDG-01



Summary for Subcatchment 02S: BLDG-02

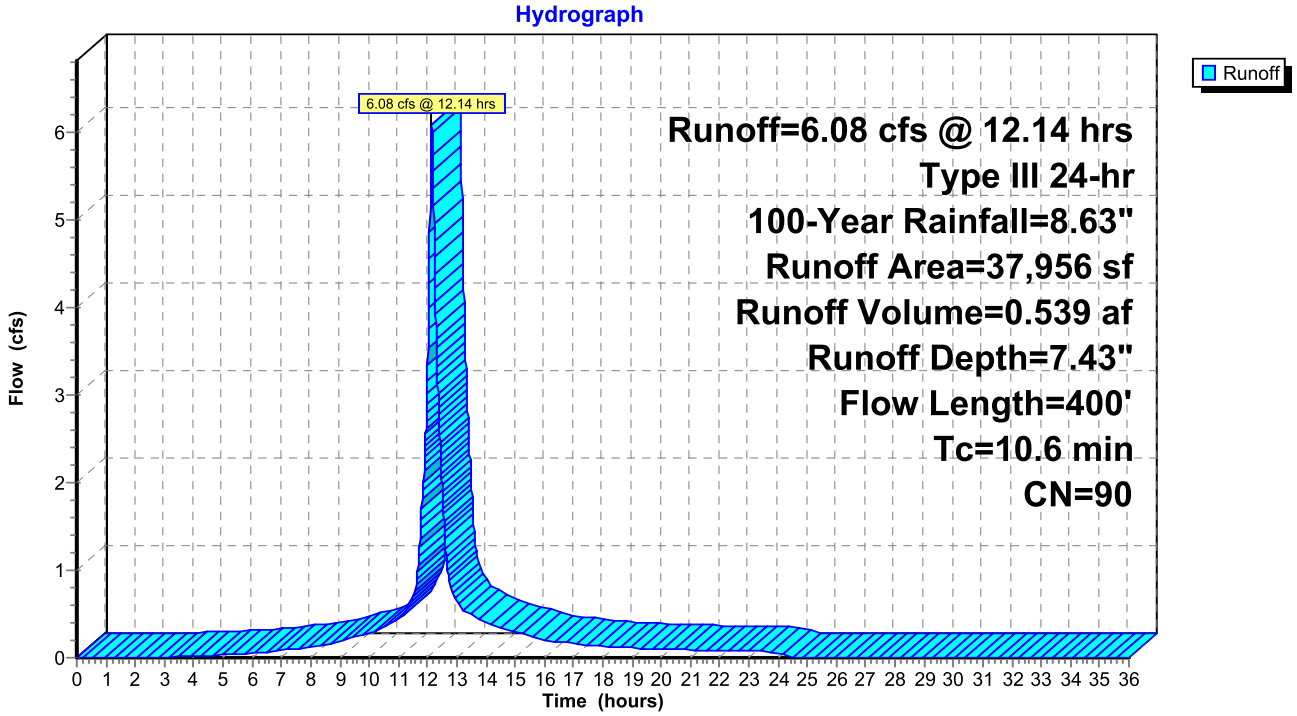
Runoff = 6.08 cfs @ 12.14 hrs, Volume= 0.539 af, Depth= 7.43"
Routed to Pond 02P : UG DET - B-02

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.63"

Area (sf)	CN	Description
17,700	98	Unconnected pavement, HSG B
1,500	98	Unconnected roofs, HSG B
3,250	98	Unconnected roofs, HSG B
2,500	98	Unconnected roofs, HSG B
6	98	Unconnected roofs, HSG B
13,000	74	>75% Grass cover, Good, HSG C
37,956	90	Weighted Average
13,000		34.25% Pervious Area
24,956		65.75% Impervious Area
24,956		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0200	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.26"
0.9	300	0.0100	5.70	7.00	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
10.6	400	Total			

Subcatchment 02S: BLDG-02



Summary for Subcatchment 03S: BLDG-03

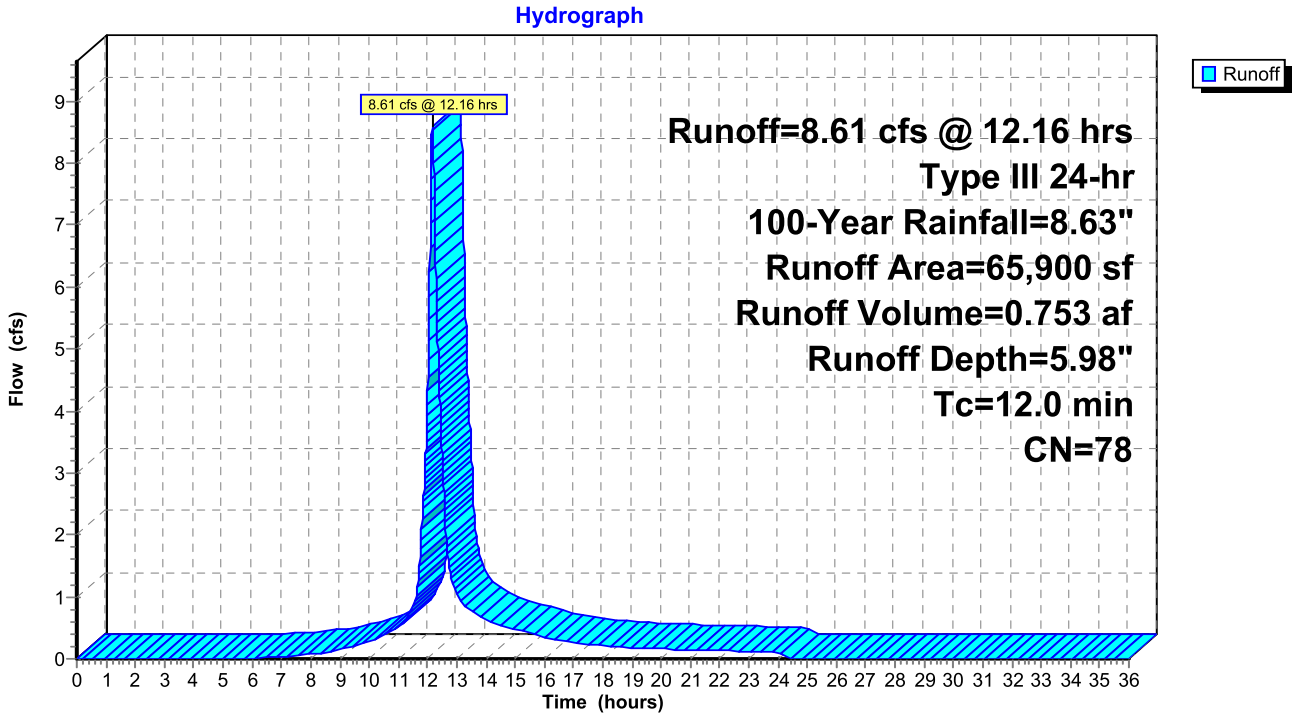
Runoff = 8.61 cfs @ 12.16 hrs, Volume= 0.753 af, Depth= 5.98"
Routed to Pond 03P : UG DET

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.63"

Area (sf)	CN	Description
18,400	98	Unconnected pavement, HSG B
2,000	98	Unconnected roofs, HSG B
6,500	98	Unconnected roofs, HSG B
5,500	98	Unconnected roofs, HSG B
5,800	61	>75% Grass cover, Good, HSG B
27,700	58	Woods/grass comb., Good, HSG B
65,900	78	Weighted Average
33,500		50.83% Pervious Area
32,400		49.17% Impervious Area
32,400		100.00% Unconnected

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

Subcatchment 03S: BLDG-03



Summary for Subcatchment 04S: BLDG-04

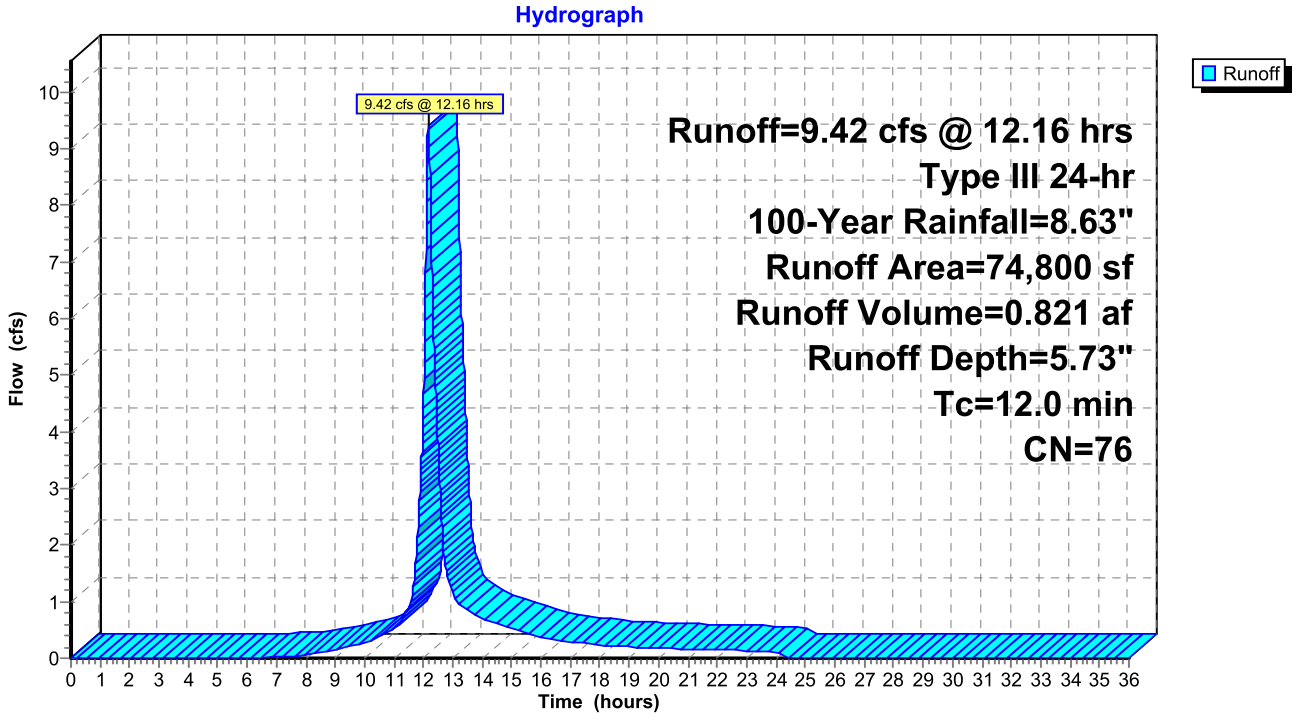
Runoff = 9.42 cfs @ 12.16 hrs, Volume= 0.821 af, Depth= 5.73"
Routed to Pond 04P : UG DET - B-04

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.63"

Area (sf)	CN	Description
19,300	98	Unconnected pavement, HSG B
2,000	98	Unconnected roofs, HSG B
6,500	98	Unconnected roofs, HSG B
5,500	98	Unconnected roofs, HSG B
4,500	61	>75% Grass cover, Good, HSG B
2,000	74	>75% Grass cover, Good, HSG C
35,000	58	Woods/grass comb., Good, HSG B
74,800	76	Weighted Average
41,500		55.48% Pervious Area
33,300		44.52% Impervious Area
33,300		100.00% Unconnected

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

Subcatchment 04S: BLDG-04



Summary for Subcatchment 05S: BLDG 05

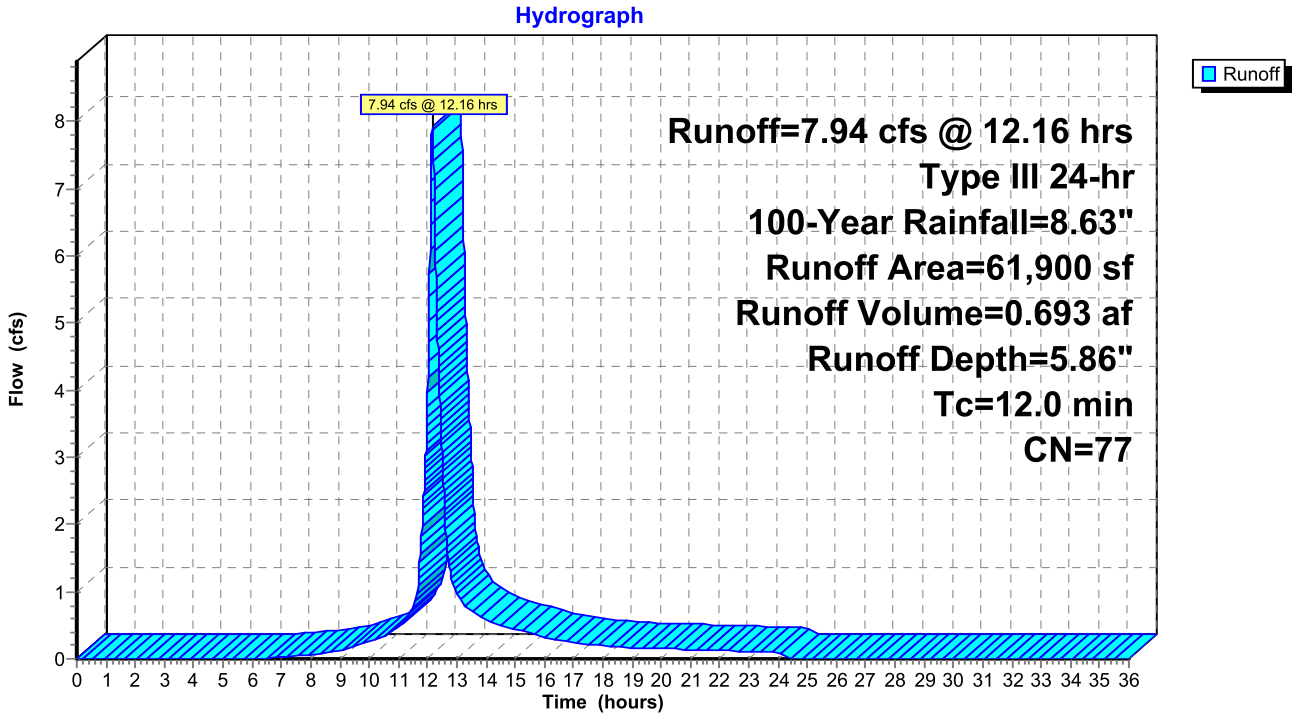
Runoff = 7.94 cfs @ 12.16 hrs, Volume= 0.693 af, Depth= 5.86"
Routed to Pond 05P : UG DET - B-05

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.63"

Area (sf)	CN	Description
13,400	98	Unconnected pavement, HSG B
2,000	98	Unconnected roofs, HSG B
6,500	98	Unconnected roofs, HSG B
5,500	98	Unconnected roofs, HSG B
5,000	74	>75% Grass cover, Good, HSG C
29,500	58	Woods/grass comb., Good, HSG B
61,900	77	Weighted Average
34,500		55.74% Pervious Area
27,400		44.26% Impervious Area
27,400		100.00% Unconnected

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

Subcatchment 05S: BLDG 05



Summary for Subcatchment 06S: BLDG-06

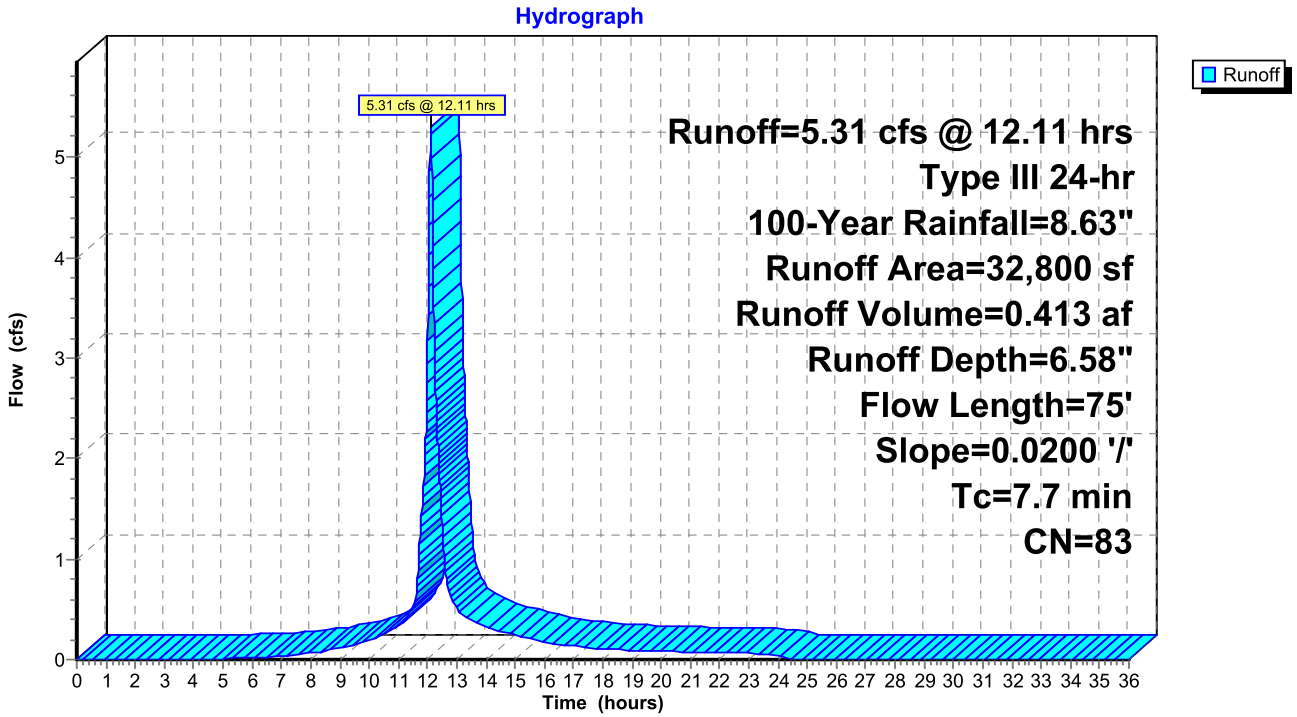
Runoff = 5.31 cfs @ 12.11 hrs, Volume= 0.413 af, Depth= 6.58"
Routed to Pond 24P : BASIN 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.63"

Area (sf)	CN	Description
0	98	Unconnected pavement, HSG B
6,500	98	Unconnected roofs, HSG B
5,500	98	Unconnected roofs, HSG B
20,800	74	>75% Grass cover, Good, HSG C
32,800	83	Weighted Average
20,800		63.41% Pervious Area
12,000		36.59% Impervious Area
12,000		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	75	0.0200	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.26"

Subcatchment 06S: BLDG-06



Summary for Subcatchment 07S: BLDG-07

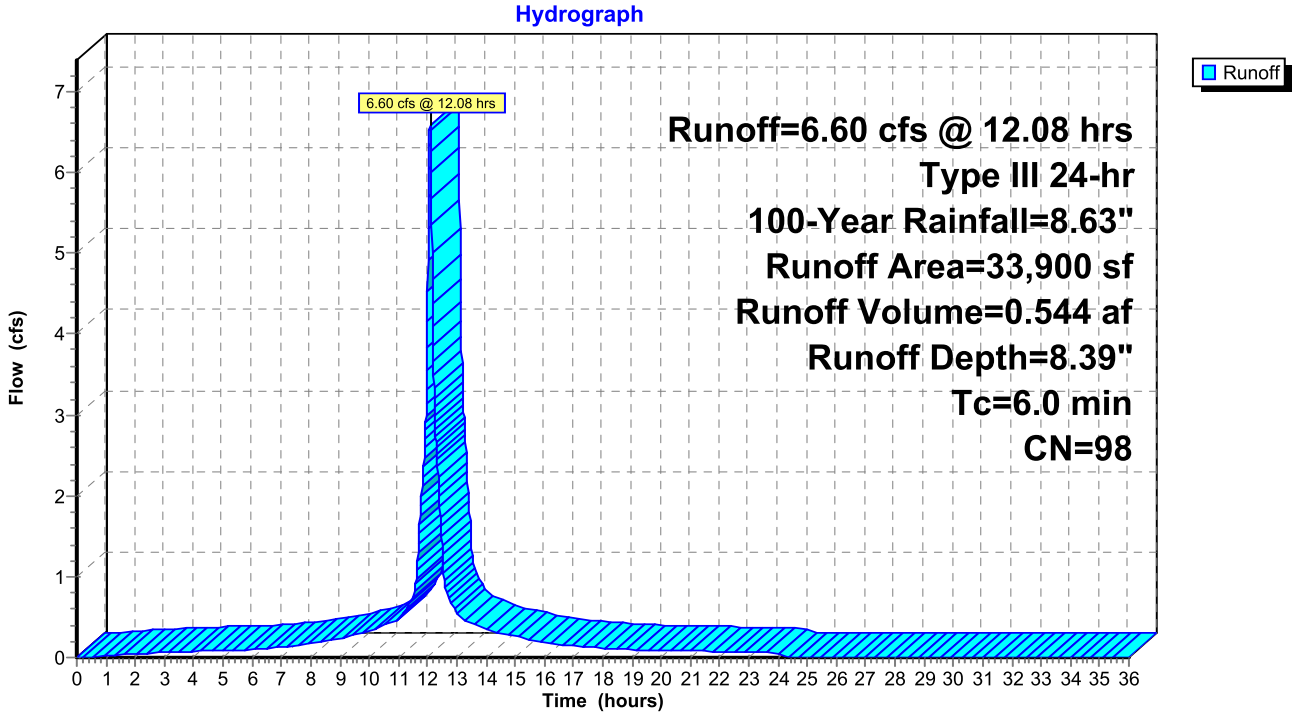
Runoff = 6.60 cfs @ 12.08 hrs, Volume= 0.544 af, Depth= 8.39"
Routed to Pond 07P : UG DET - B-07

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.63"

Area (sf)	CN	Description
19,900	98	Unconnected pavement, HSG B
2,000	98	Unconnected roofs, HSG B
6,500	98	Unconnected roofs, HSG B
5,500	98	Unconnected roofs, HSG B
33,900	98	Weighted Average
33,900		100.00% Impervious Area
33,900		100.00% Unconnected

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

Subcatchment 07S: BLDG-07



Summary for Subcatchment 08S: BLDG 08

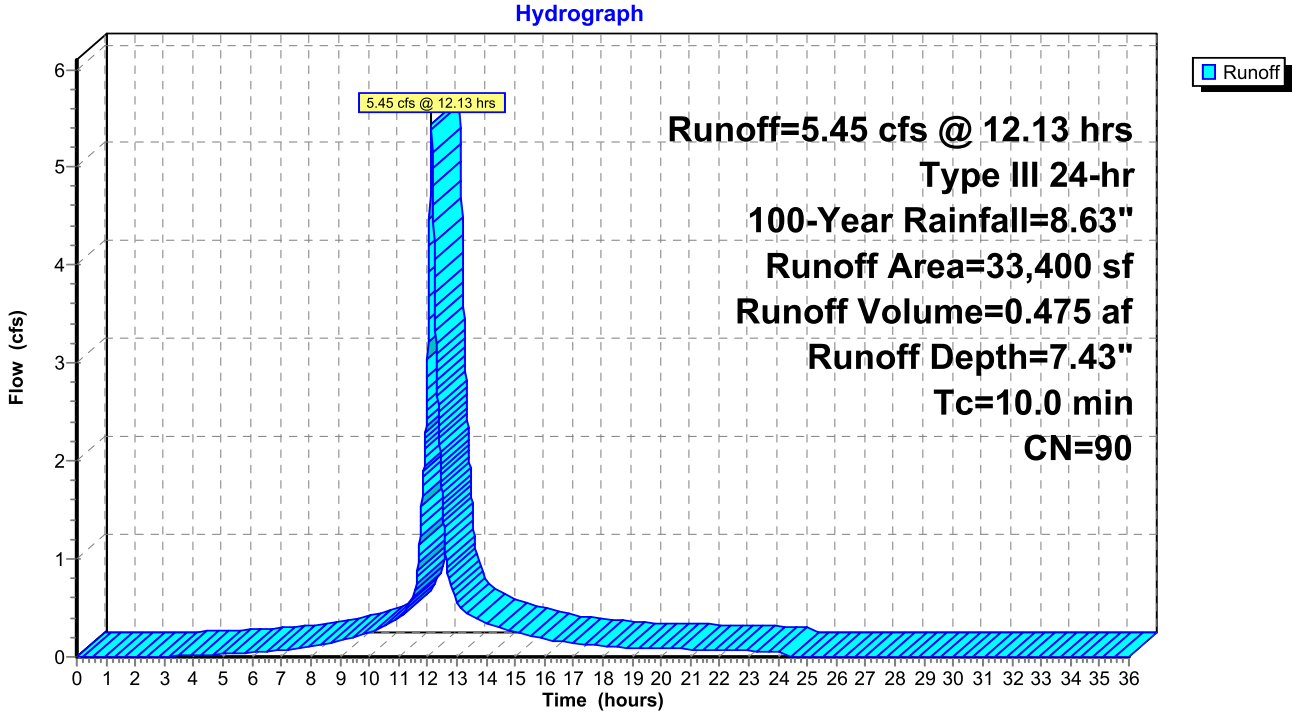
Runoff = 5.45 cfs @ 12.13 hrs, Volume= 0.475 af, Depth= 7.43"
Routed to Pond 08P : UG DET - B-08

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.63"

Area (sf)	CN	Description
15,700	98	Paved parking, HSG B
1,500	98	Unconnected roofs, HSG C
9,000	98	Unconnected roofs, HSG B
7,200	61	>75% Grass cover, Good, HSG B
33,400	90	Weighted Average
7,200		21.56% Pervious Area
26,200		78.44% Impervious Area
10,500		40.08% Unconnected

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

Subcatchment 08S: BLDG 08



Summary for Subcatchment 09S: POOL HOUSE

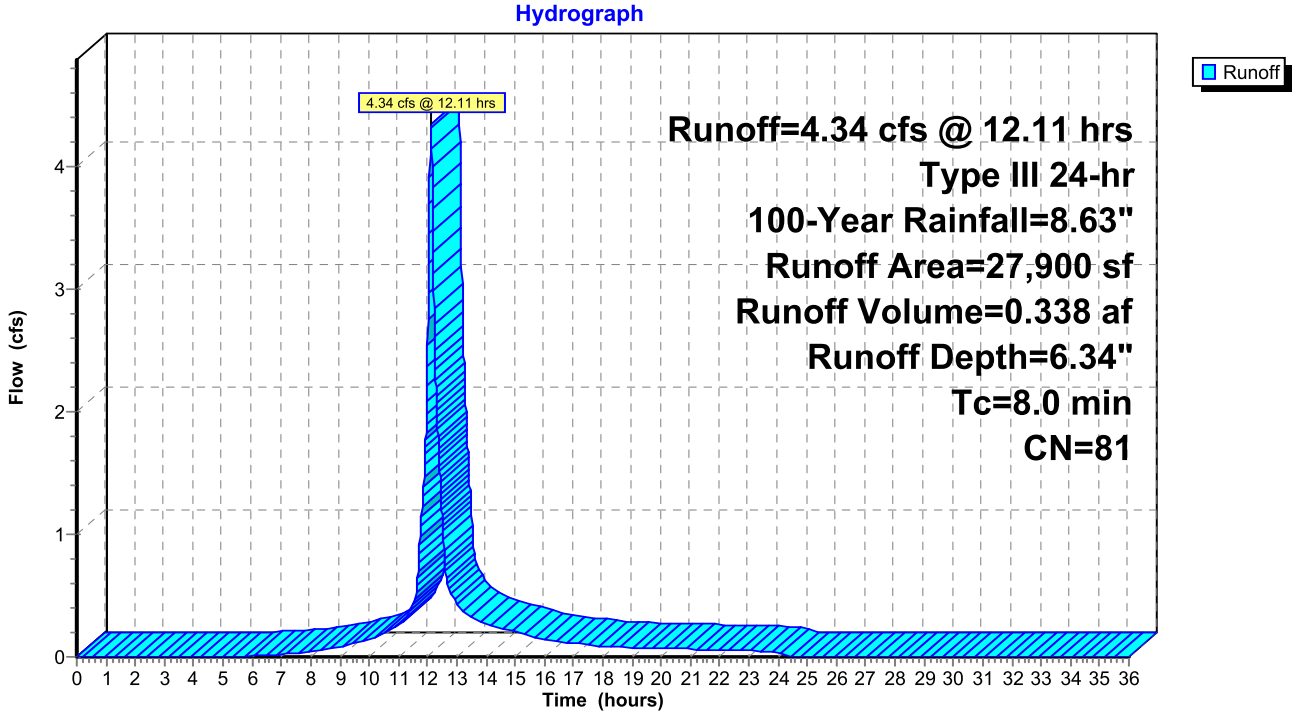
Runoff = 4.34 cfs @ 12.11 hrs, Volume= 0.338 af, Depth= 6.34"
Routed to Pond 09P : UG DET - POOL

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.63"

Area (sf)	CN	Description
10,100	98	Unconnected pavement, HSG B
4,600	98	Unconnected roofs, HSG B
11,200	61	>75% Grass cover, Good, HSG B
2,000	74	>75% Grass cover, Good, HSG C
27,900	81	Weighted Average
13,200		47.31% Pervious Area
14,700		52.69% Impervious Area
14,700		100.00% Unconnected

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

Subcatchment 09S: POOL HOUSE



Summary for Subcatchment 10S: BLDG C

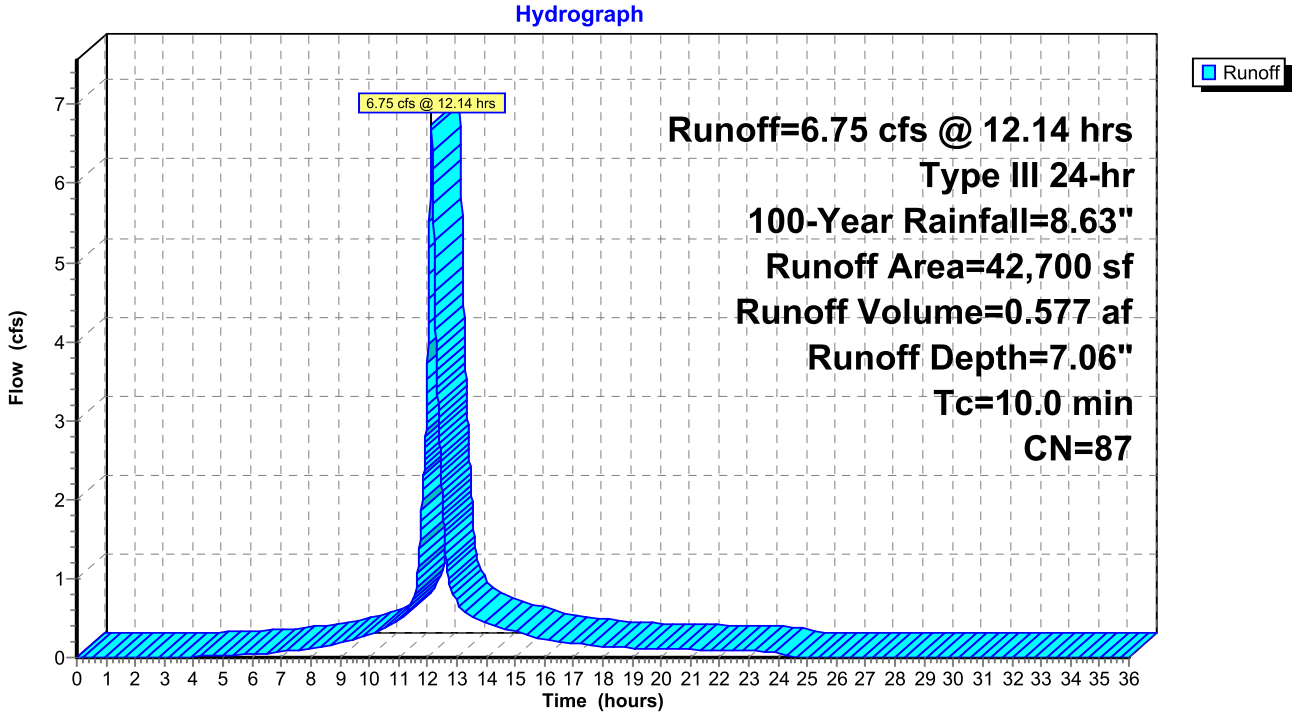
Runoff = 6.75 cfs @ 12.14 hrs, Volume= 0.577 af, Depth= 7.06"
Routed to Pond 10P : UG DET - B-C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.63"

Area (sf)	CN	Description
23,100	98	Unconnected pavement, HSG B
6,400	98	Unconnected roofs, HSG B
13,200	61	>75% Grass cover, Good, HSG B
42,700	87	Weighted Average
13,200		30.91% Pervious Area
29,500		69.09% Impervious Area
29,500		100.00% Unconnected

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

Subcatchment 10S: BLDG C



Summary for Subcatchment 11S: BLDG-D

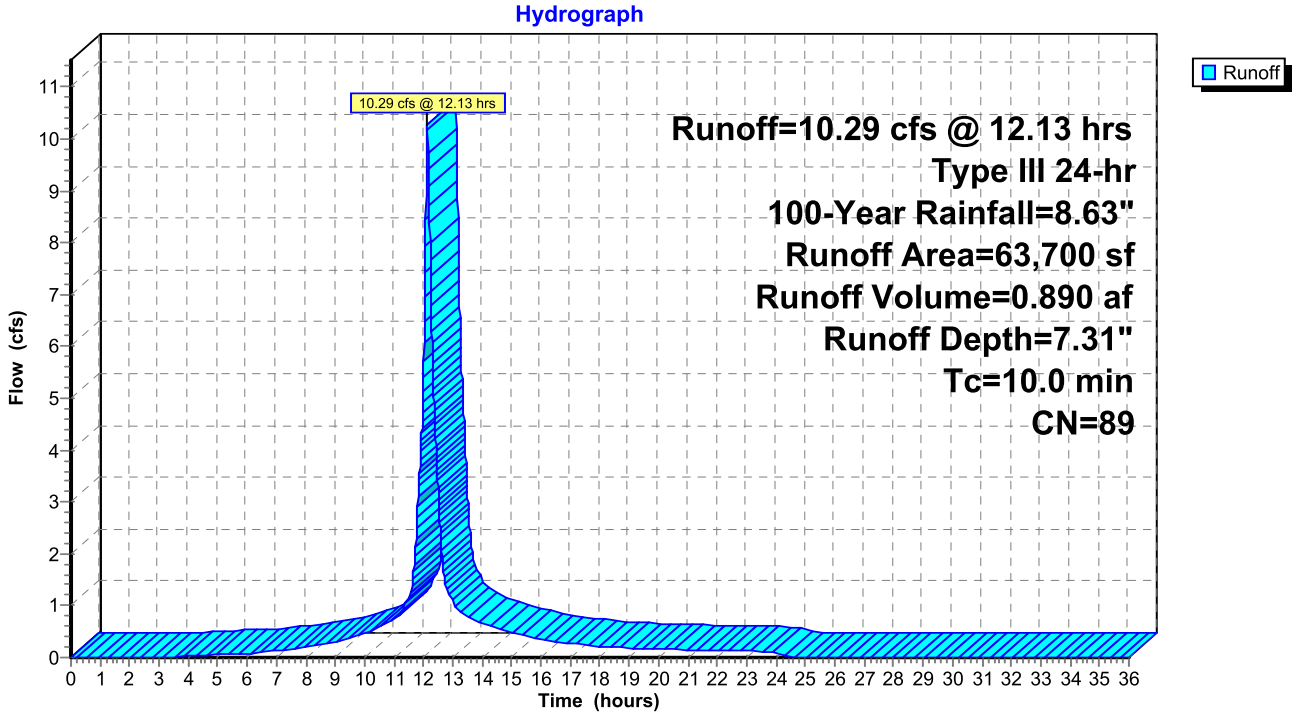
Runoff = 10.29 cfs @ 12.13 hrs, Volume= 0.890 af, Depth= 7.31"
Routed to Pond 11P : UG DET-B-D

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.63"

Area (sf)	CN	Description
32,700	98	Unconnected pavement, HSG B
15,000	98	Unconnected roofs, HSG B
16,000	61	>75% Grass cover, Good, HSG B
63,700	89	Weighted Average
16,000		25.12% Pervious Area
47,700		74.88% Impervious Area
47,700		100.00% Unconnected

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

Subcatchment 11S: BLDG-D



Summary for Subcatchment 21S: SOUTHERN DRVEWAY TO BASIN -01

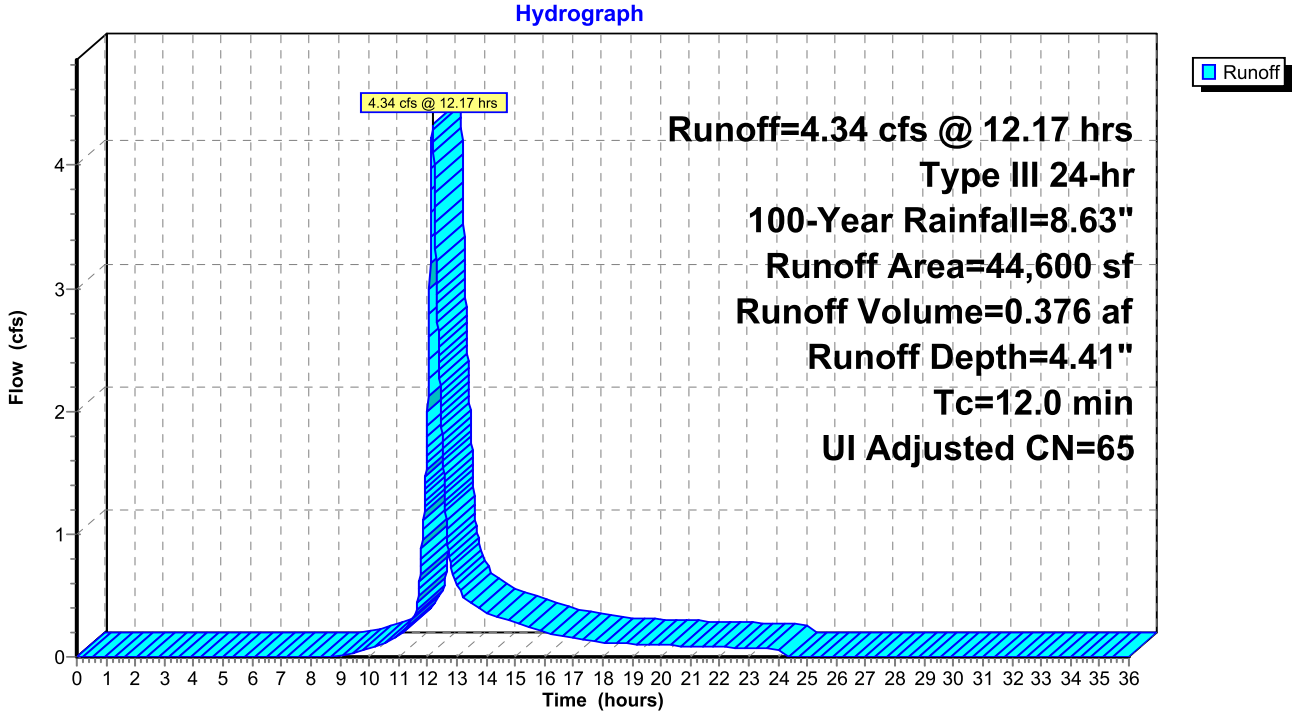
Runoff = 4.34 cfs @ 12.17 hrs, Volume= 0.376 af, Depth= 4.41"
Routed to Pond 21P : BASIN 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.63"

Area (sf)	CN	Adj	Description
10,400	98		Unconnected pavement, HSG B
5,800	61		>75% Grass cover, Good, HSG B
3,500	74		>75% Grass cover, Good, HSG C
24,900	58		Woods/grass comb., Good, HSG B
44,600	69	65	Weighted Average, UI Adjusted
34,200			76.68% Pervious Area
10,400			23.32% Impervious Area
10,400			100.00% Unconnected

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

Subcatchment 21S: SOUTHERN DRVEWAY TO BASIN -01



Summary for Subcatchment 22S: DIRECT FLOW TO BASIN-02

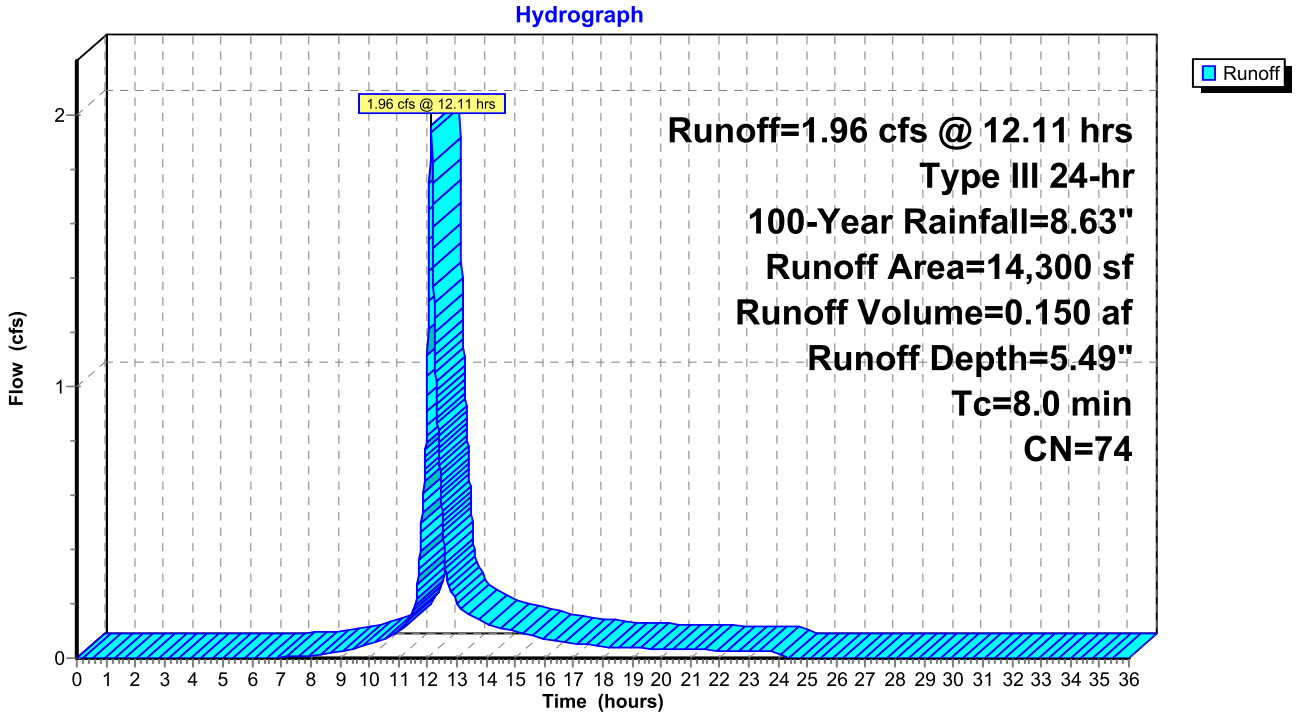
Runoff = 1.96 cfs @ 12.11 hrs, Volume= 0.150 af, Depth= 5.49"
Routed to Pond 22P : BASIN 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.63"

Area (sf)	CN	Description
14,300	74	>75% Grass cover, Good, HSG C
14,300		100.00% Pervious Area

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

Subcatchment 22S: DIRECT FLOW TO BASIN-02



Summary for Subcatchment 23S: DIRECT FLOW TO BASIN-03

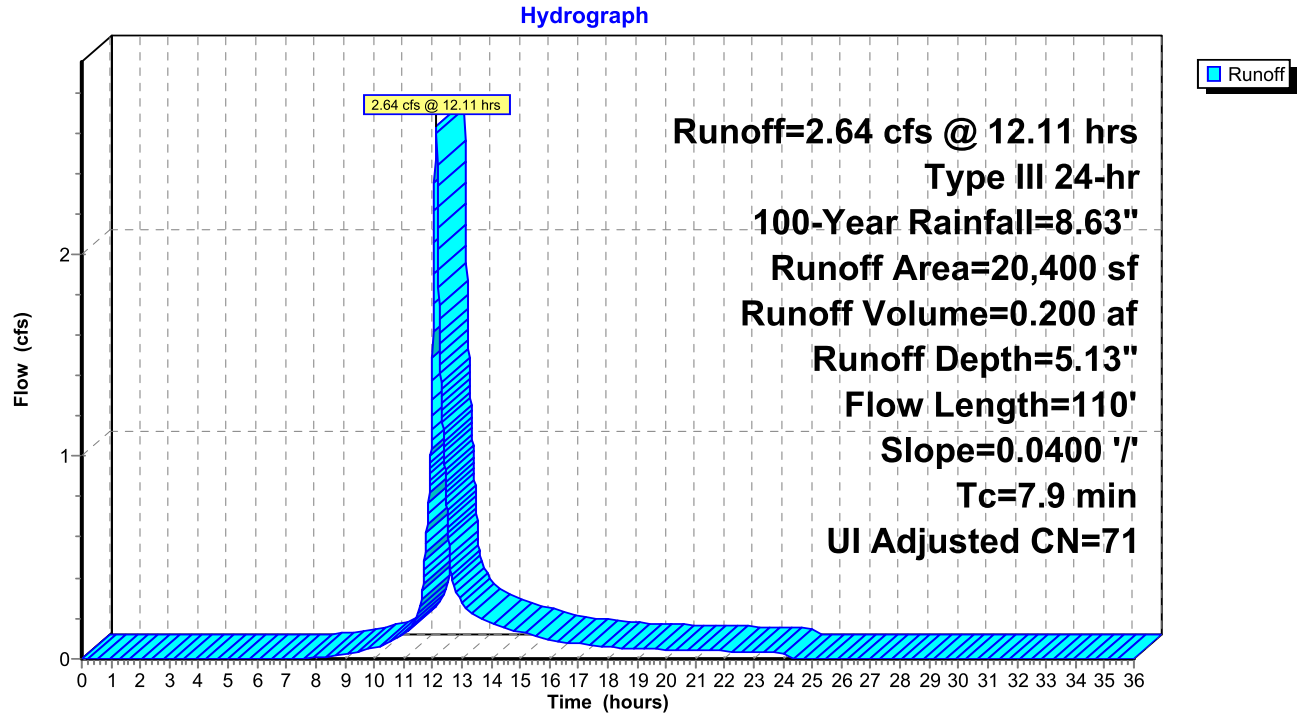
Runoff = 2.64 cfs @ 12.11 hrs, Volume= 0.200 af, Depth= 5.13"
Routed to Pond 23P : BASIN 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.63"

Area (sf)	CN	Adj	Description
3,700	98		Unconnected pavement, HSG B
8,000	61		>75% Grass cover, Good, HSG B
8,700	74		>75% Grass cover, Good, HSG C
20,400	73	71	Weighted Average, UI Adjusted
16,700			81.86% Pervious Area
3,700			18.14% Impervious Area
3,700			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	110	0.0400	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.26"

Subcatchment 23S: DIRECT FLOW TO BASIN-03



Summary for Subcatchment 30S: EASTERN OVERLAND FLOW

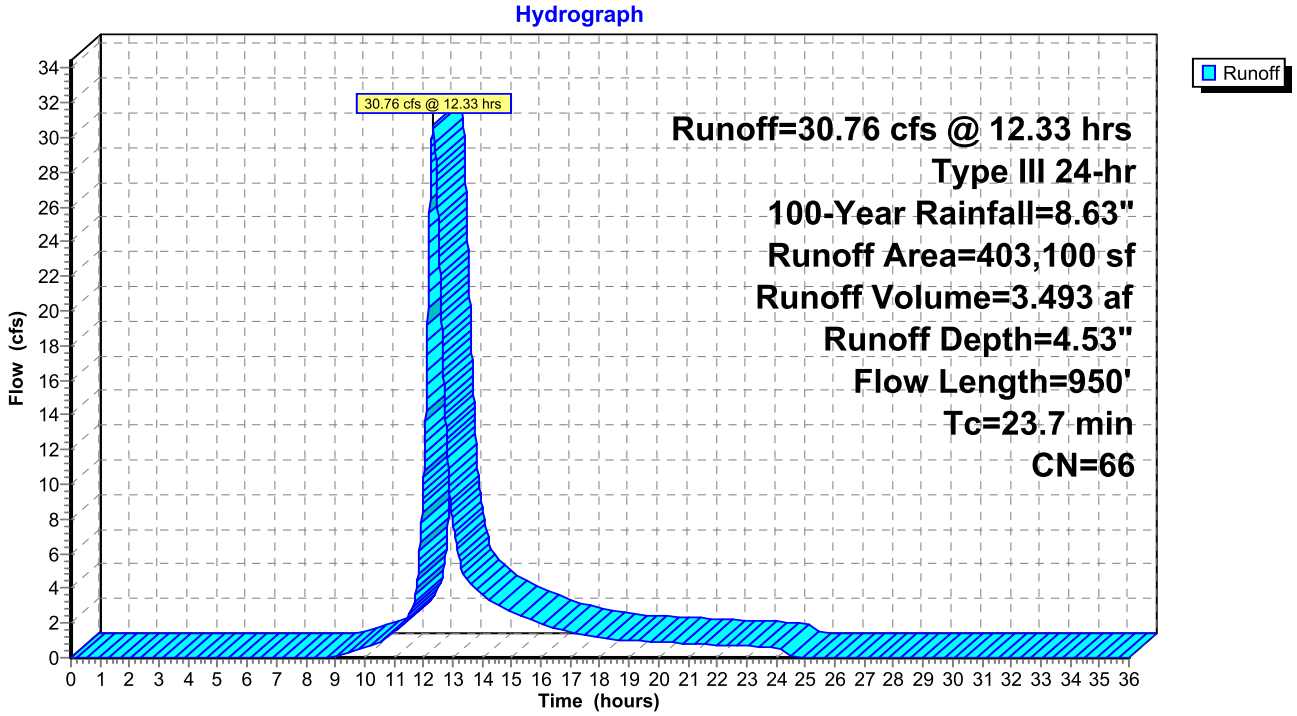
Runoff = 30.76 cfs @ 12.33 hrs, Volume= 3.493 af, Depth= 4.53"
Routed to Link 10L-PR : DESIGN POINT - 01

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.63"

Area (sf)	CN	Description
206,500	70	Woods, Good, HSG C
74,200	74	>75% Grass cover, Good, HSG C
106,800	55	Woods, Good, HSG B
15,600	61	>75% Grass cover, Good, HSG B
403,100	66	Weighted Average
403,100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.0450	0.16		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.26"
11.3	450	0.0700	0.66		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
2.2	400	0.0025	3.05	18.28	**Channel Flow,** Area= 6.0 sf Perim= 7.0' r= 0.86' n= 0.022 Earth, clean & straight
23.7	950	Total			

Subcatchment 30S: EASTERN OVERLAND FLOW



Summary for Subcatchment 31S: NORTHERN OVERLAND FLOW

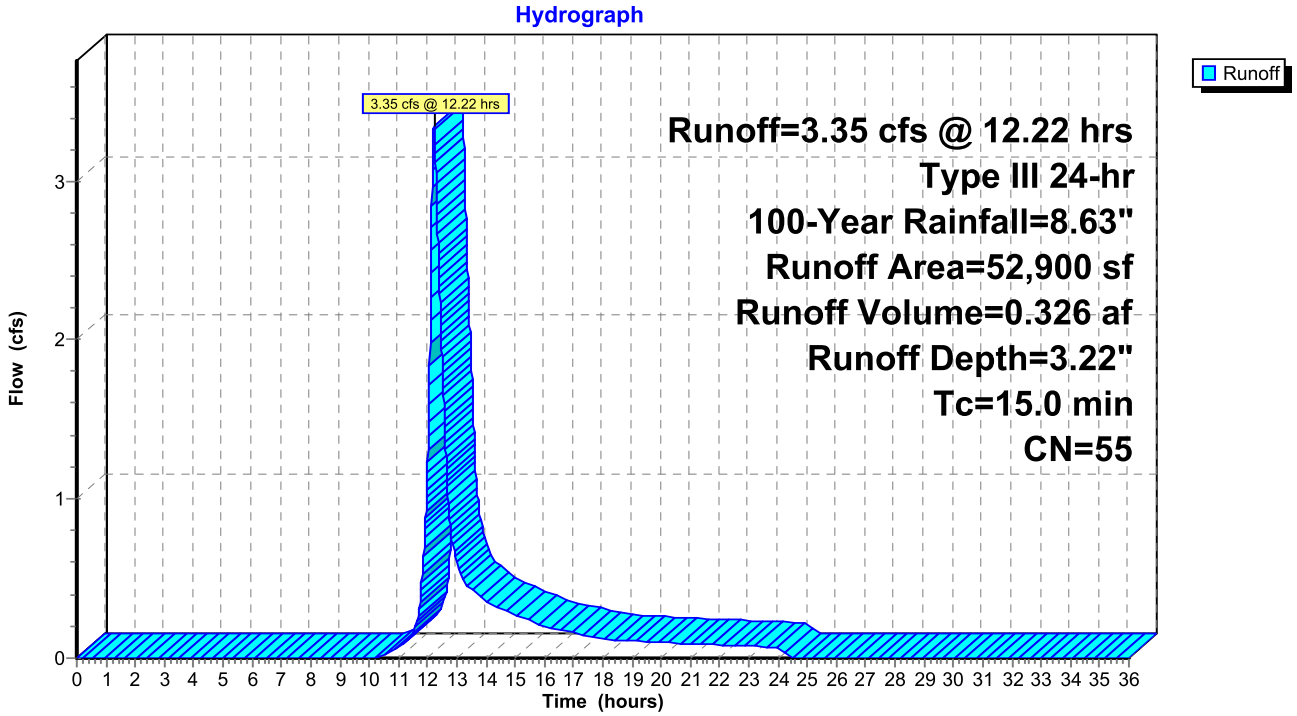
Runoff = 3.35 cfs @ 12.22 hrs, Volume= 0.326 af, Depth= 3.22"
Routed to Link 10L-PR : DESIGN POINT - 01

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.63"

Area (sf)	CN	Description
52,900	55	Woods, Good, HSG B
52,900		100.00% Pervious Area

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

Subcatchment 31S: NORTHERN OVERLAND FLOW



Summary for Subcatchment 32S: ENTRANCE DRIVEWAY

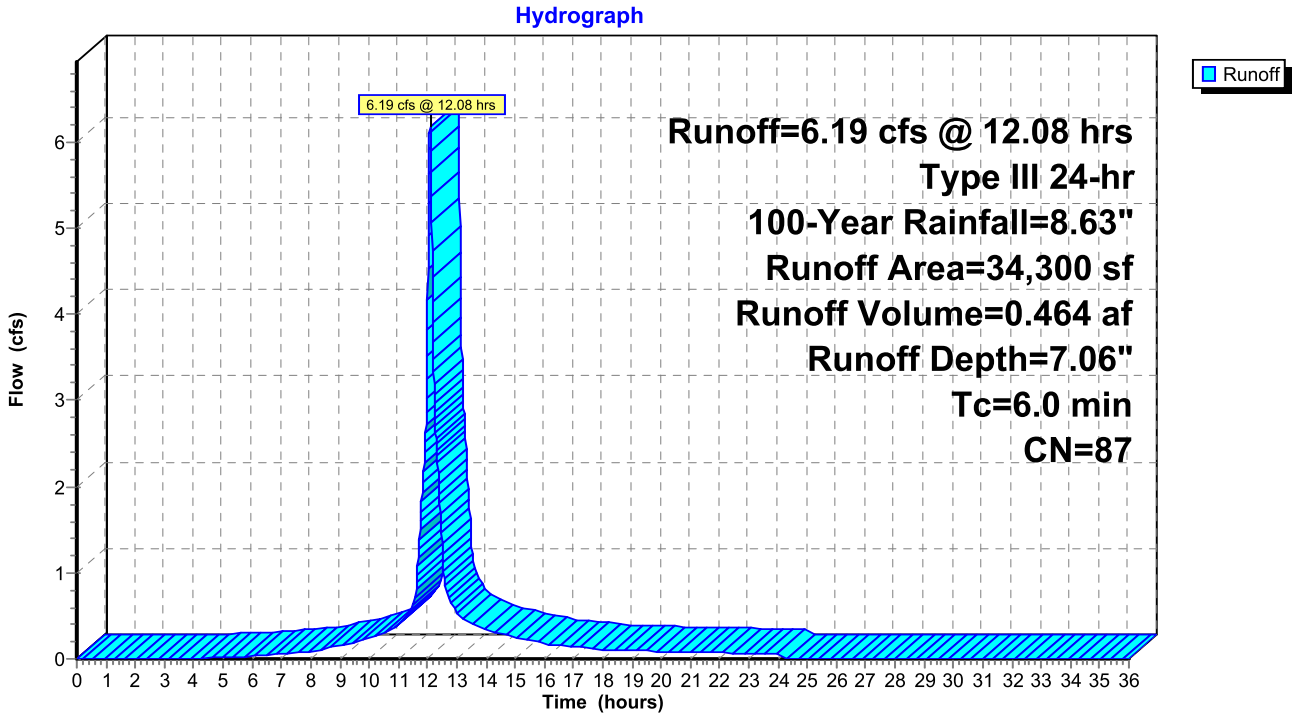
Runoff = 6.19 cfs @ 12.08 hrs, Volume= 0.464 af, Depth= 7.06"
Routed to Link 10L-PR : DESIGN POINT - 01

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.63"

Area (sf)	CN	Description
12,100	98	Paved parking, HSG B
500	98	Unconnected roofs, HSG B
6,000	98	Unconnected roofs, HSG B
15,700	74	>75% Grass cover, Good, HSG C
34,300	87	Weighted Average
15,700		45.77% Pervious Area
18,600		54.23% Impervious Area
6,500		34.95% Unconnected

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

Subcatchment 32S: ENTRANCE DRIVEWAY



Summary for Subcatchment 33S: BLDG-09 PARKING LOT

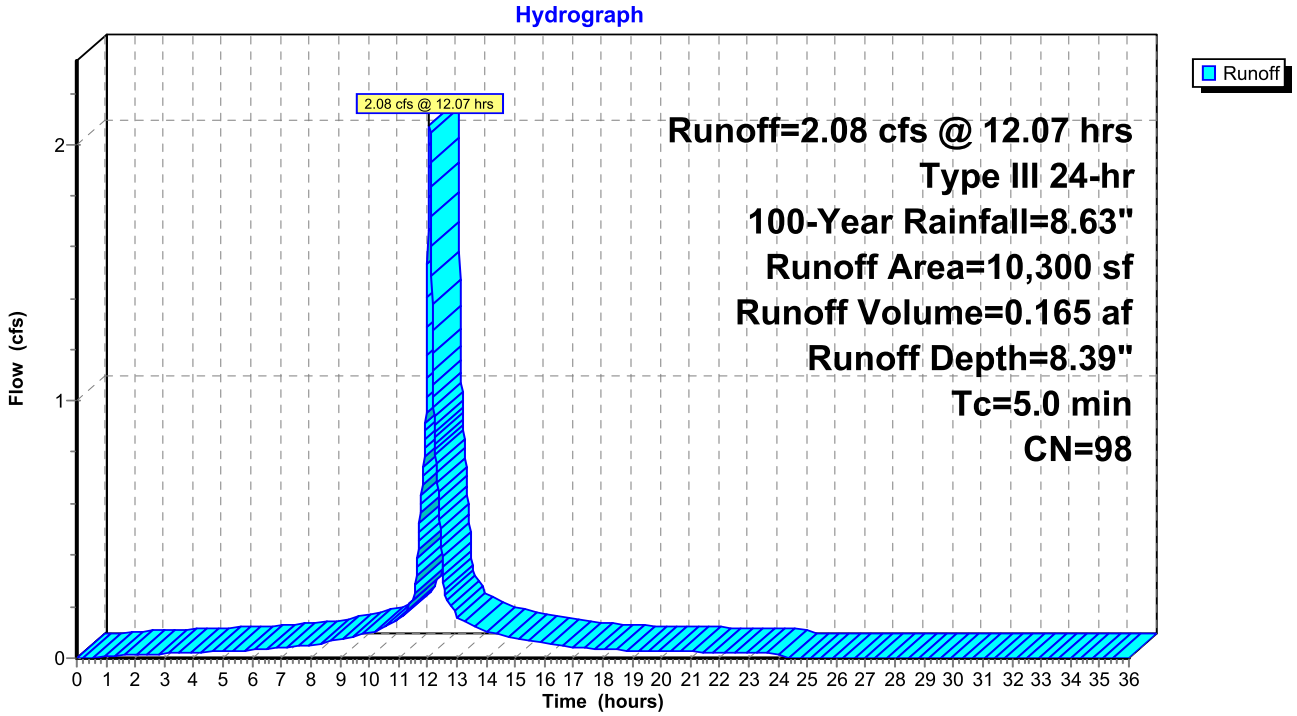
Runoff = 2.08 cfs @ 12.07 hrs, Volume= 0.165 af, Depth= 8.39"
Routed to Link 10L-PR : DESIGN POINT - 01

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.63"

Area (sf)	CN	Description
10,300	98	Paved parking, HSG B
10,300		100.00% Impervious Area

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

Subcatchment 33S: BLDG-09 PARKING LOT



Summary for Subcatchment 34S: NORTHERN DRIVEWAY

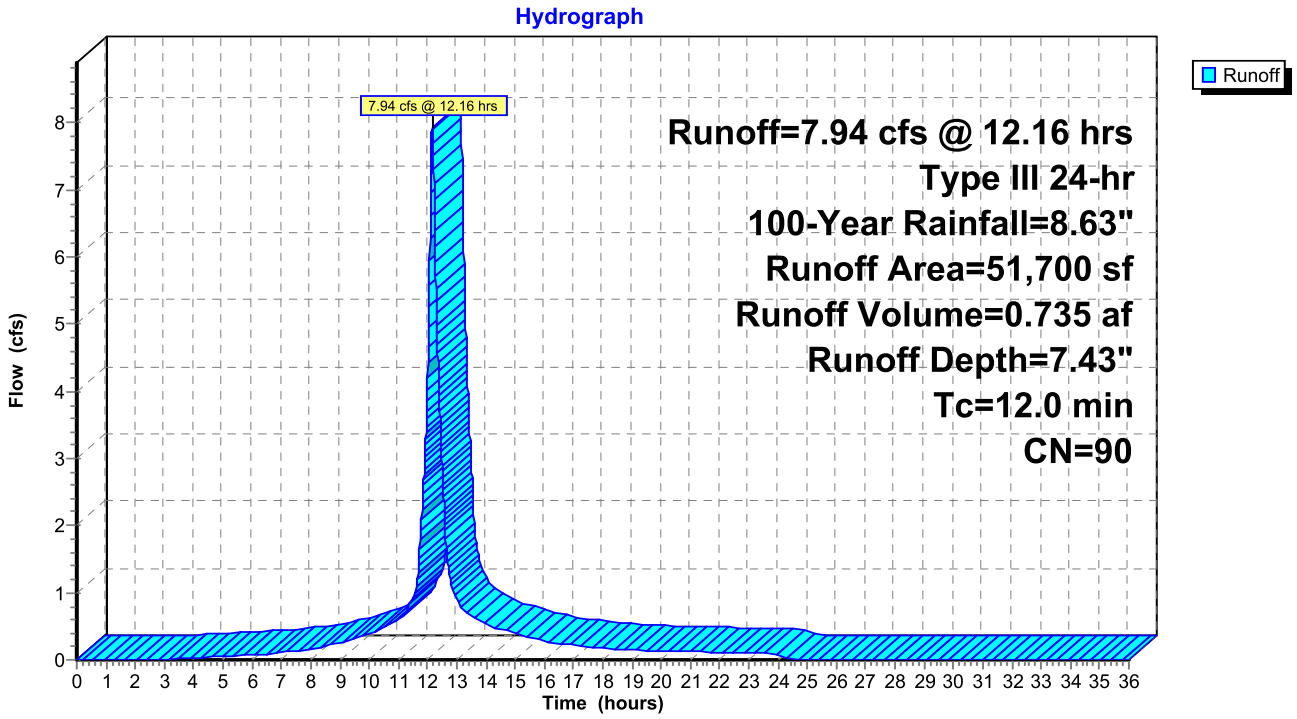
Runoff = 7.94 cfs @ 12.16 hrs, Volume= 0.735 af, Depth= 7.43"
Routed to Link 10L-PR : DESIGN POINT - 01

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.63"

Area (sf)	CN	Description
40,100	98	Paved parking, HSG B
11,000	61	>75% Grass cover, Good, HSG B
600	74	>75% Grass cover, Good, HSG C
51,700	90	Weighted Average
11,600		22.44% Pervious Area
40,100		77.56% Impervious Area

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

Subcatchment 34S: NORTHERN DRIVEWAY



Summary for Pond 01P: UG DET-01

Inflow Area = 0.856 ac, 83.38% Impervious, Inflow Depth = 7.91" for 100-Year event
Inflow = 6.68 cfs @ 12.11 hrs, Volume= 0.564 af
Outflow = 3.90 cfs @ 12.24 hrs, Volume= 0.564 af, Atten= 42%, Lag= 7.9 min
Discarded = 0.04 cfs @ 12.24 hrs, Volume= 0.065 af
Primary = 3.87 cfs @ 12.24 hrs, Volume= 0.499 af
Routed to Pond 21P : BASIN 1

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 214.11' @ 12.24 hrs Surf.Area= 1,793 sf Storage= 7,128 cf

Plug-Flow detention time= 109.5 min calculated for 0.564 af (100% of inflow)
Center-of-Mass det. time= 109.4 min (870.9 - 761.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	208.00'	3,191 cf	**37.58'W x 47.72'L x 7.00'H Field A** 12,553 cf Overall - 4,576 cf Embedded = 7,978 cf x 40.0% Voids
#2A	209.00'	4,576 cf	**ADS_StormTech MC-4500 b +Cap**x 40 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 40 Chambers in 4 Rows Cap Storage= 39.5 cf x 2 x 4 rows = 316.0 cf
		7,767 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	208.00'	**15.0" Round Culvert** L= 42.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 208.00' / 207.75' S= 0.0060 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	209.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	210.90'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	214.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	208.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.04 cfs @ 12.24 hrs HW=214.11' (Free Discharge)
└**5=Exfiltration** (Controls 0.04 cfs)

Primary OutFlow Max=3.85 cfs @ 12.24 hrs HW=214.11' (Free Discharge)
└**1=Culvert** (Passes 3.85 cfs of 13.84 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.53 cfs @ 10.75 fps)
  ├**3=Orifice/Grate** (Orifice Controls 2.85 cfs @ 8.17 fps)
  └**4=Sharp-Crested Rectangular Weir**(Weir Controls 0.47 cfs @ 1.08 fps)

Pond 01P: UG DET-01 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-4500 b +Cap (ADS StormTech®MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= 39.5 cf x 2 x 4 rows = 316.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

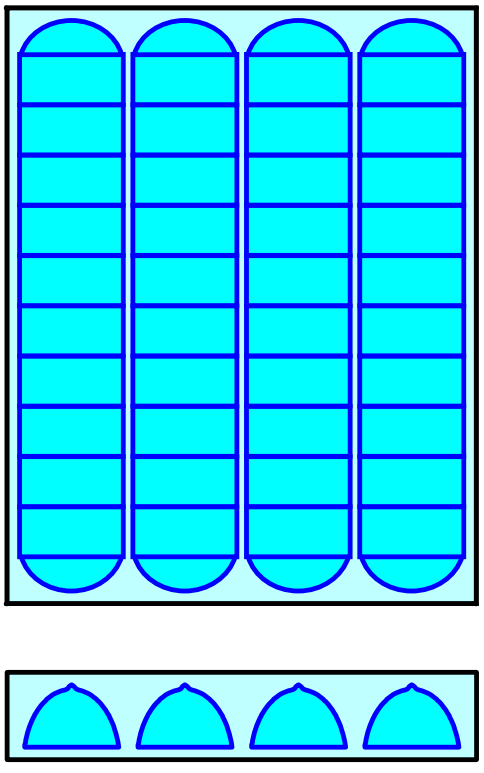
10 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 45.72' Row Length +12.0" End Stone x 2 = 47.72' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
12.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 7.00' Field Height

40 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 4 Rows = 4,575.6 cf Chamber Storage

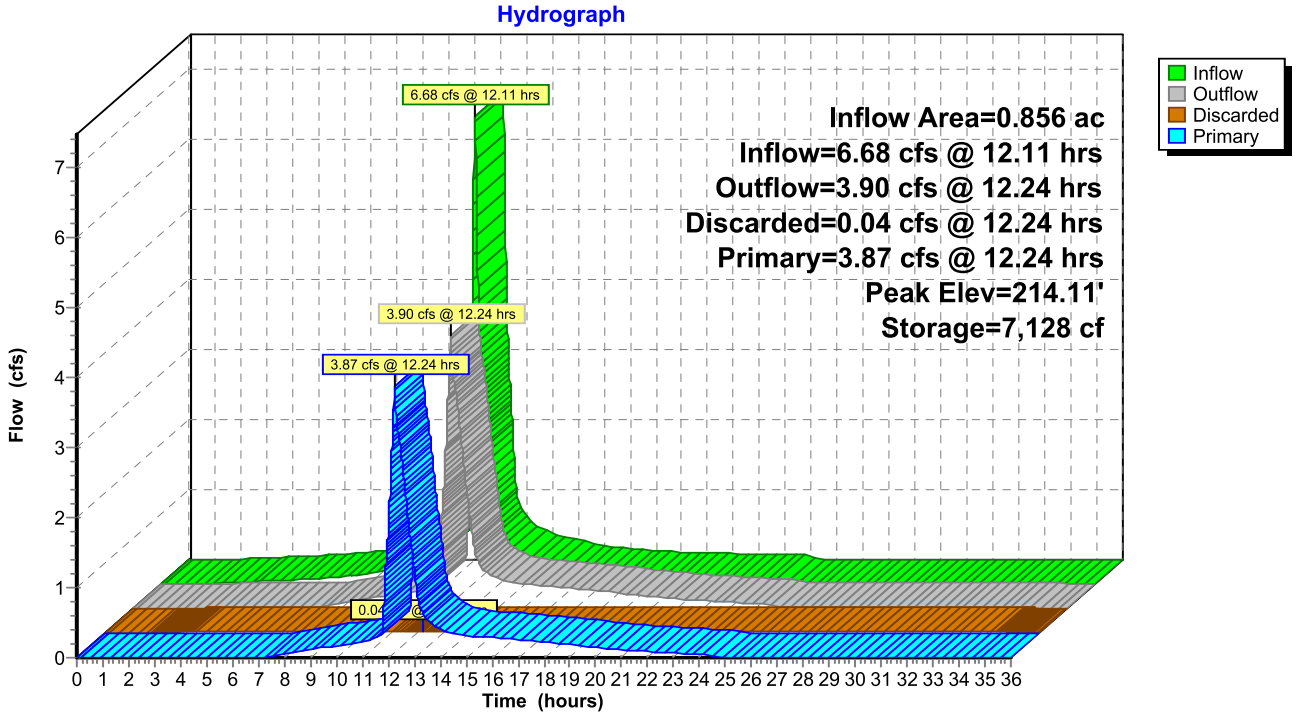
12,553.5 cf Field - 4,575.6 cf Chambers = 7,977.8 cf Stone x 40.0% Voids = 3,191.1 cf Stone Storage

Chamber Storage + Stone Storage = 7,766.8 cf = 0.178 af
Overall Storage Efficiency = 61.9%
Overall System Size = 47.72' x 37.58' x 7.00'

40 Chambers
464.9 cy Field
295.5 cy Stone



Pond 01P: UG DET-01



Summary for Pond 02P: UG DET - B-02

Inflow Area = 2.589 ac, 51.67% Impervious, Inflow Depth = 5.94" for 100-Year event
Inflow = 9.00 cfs @ 12.16 hrs, Volume= 1.281 af
Outflow = 6.96 cfs @ 12.43 hrs, Volume= 1.275 af, Atten= 23%, Lag= 16.3 min
Discarded = 0.06 cfs @ 12.43 hrs, Volume= 0.098 af
Primary = 6.90 cfs @ 12.43 hrs, Volume= 1.178 af
Routed to Pond 22P : BASIN 2

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 214.30' @ 12.43 hrs Surf.Area= 2,701 sf Storage= 11,088 cf

Plug-Flow detention time= 81.7 min calculated for 1.275 af (100% of inflow)
Center-of-Mass det. time= 78.8 min (907.2 - 828.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	208.00'	4,710 cf	**37.58'W x 71.87'L x 7.00'H Field A** 18,907 cf Overall - 7,131 cf Embedded = 11,776 cf x 40.0% Voids
#2A	209.00'	7,131 cf	**ADS_StormTech MC-4500 b +Cap**x 64 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 64 Chambers in 4 Rows Cap Storage= 39.5 cf x 2 x 4 rows = 316.0 cf
		11,842 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	208.00'	**15.0" Round Culvert** L= 73.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 208.00' / 205.00' S= 0.0411 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	209.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	210.00'	**9.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	214.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	208.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.06 cfs @ 12.43 hrs HW=214.30' (Free Discharge)
└**5=Exfiltration** (Controls 0.06 cfs)

Primary OutFlow Max=6.90 cfs @ 12.43 hrs HW=214.30' (Free Discharge)
└**1=Culvert** (Passes 6.90 cfs of 14.08 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.54 cfs @ 10.96 fps)
  ├**3=Orifice/Grate** (Orifice Controls 4.22 cfs @ 9.54 fps)
  └**4=Sharp-Crested Rectangular Weir** (Weir Controls 2.14 cfs @ 1.80 fps)

Pond 02P: UG DET - B-02 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-4500 b +Cap (ADS StormTech®MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= 39.5 cf x 2 x 4 rows = 316.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

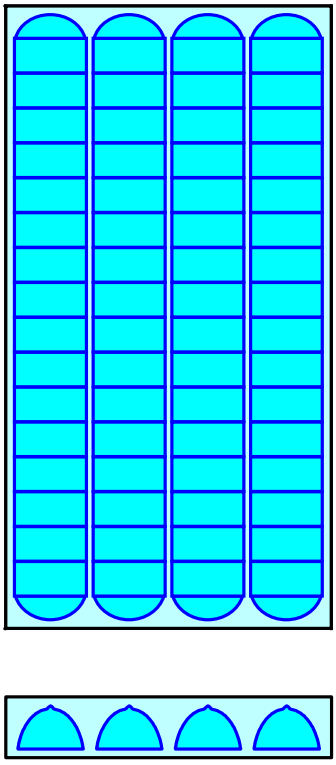
16 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 69.87' Row Length +12.0" End Stone x 2 = 71.87' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
12.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 7.00' Field Height

64 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 4 Rows = 7,131.4 cf Chamber Storage

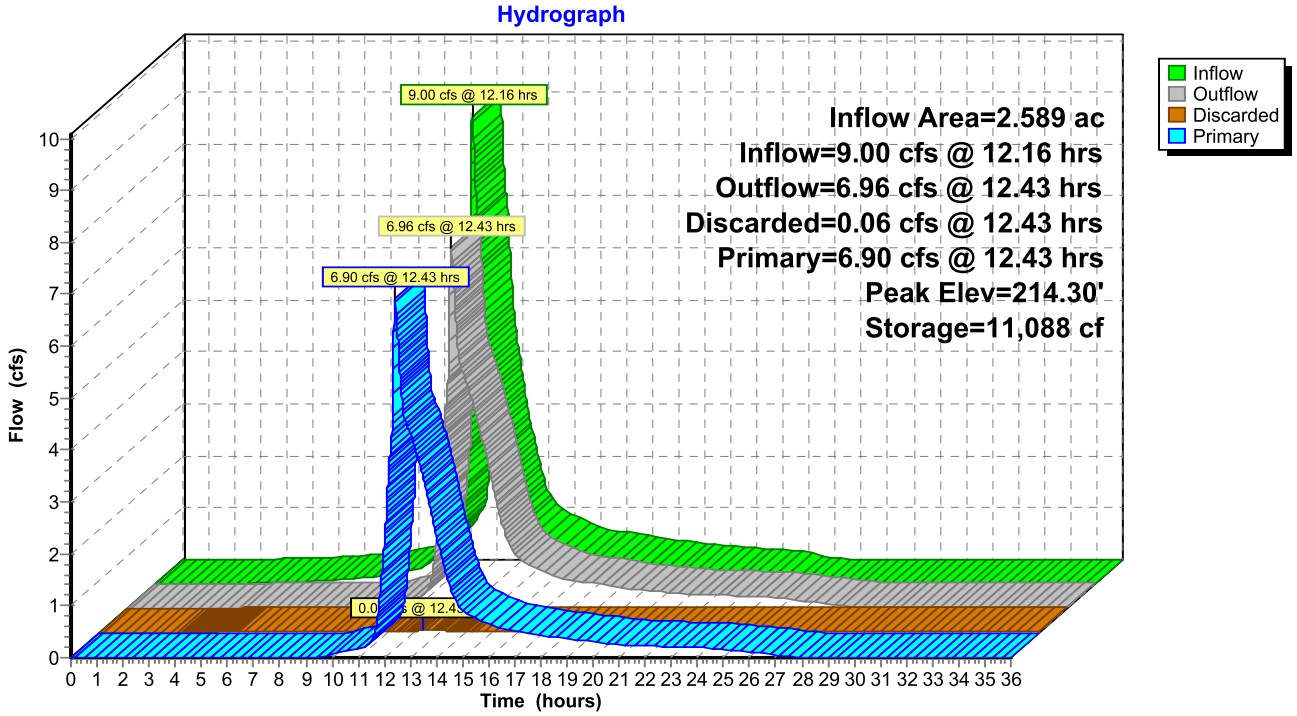
18,906.9 cf Field - 7,131.4 cf Chambers = 11,775.5 cf Stone x 40.0% Voids = 4,710.2 cf Stone Storage

Chamber Storage + Stone Storage = 11,841.6 cf = 0.272 af
Overall Storage Efficiency = 62.6%
Overall System Size = 71.87' x 37.58' x 7.00'

64 Chambers
700.3 cy Field
436.1 cy Stone



Pond 02P: UG DET - B-02



Summary for Pond 03P: UG DET

Inflow Area = 1.513 ac, 49.17% Impervious, Inflow Depth = 5.98" for 100-Year event
Inflow = 8.61 cfs @ 12.16 hrs, Volume= 0.753 af
Outflow = 4.29 cfs @ 12.41 hrs, Volume= 0.751 af, Atten= 50%, Lag= 15.0 min
Discarded = 0.04 cfs @ 12.41 hrs, Volume= 0.076 af
Primary = 4.26 cfs @ 12.41 hrs, Volume= 0.675 af
Routed to Pond 21P : BASIN 1

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 224.11' @ 12.41 hrs Surf.Area= 2,550 sf Storage= 10,251 cf

Plug-Flow detention time= 105.3 min calculated for 0.751 af (100% of inflow)
Center-of-Mass det. time= 103.7 min (913.8 - 810.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	218.00'	4,457 cf	**37.58'W x 67.84'L x 7.00'H Field A** 17,848 cf Overall - 6,705 cf Embedded = 11,143 cf x 40.0% Voids
#2A	219.00'	6,705 cf	**ADS_StormTech MC-4500 b +Cap**x 60 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 60 Chambers in 4 Rows Cap Storage= 39.5 cf x 2 x 4 rows = 316.0 cf
		11,162 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	216.00'	**15.0" Round Culvert** L= 47.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 216.00' / 215.25' S= 0.0160 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	219.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	220.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	224.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	218.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.04 cfs @ 12.41 hrs HW=224.11' (Free Discharge)
└**5=Exfiltration** (Controls 0.04 cfs)

Primary OutFlow Max=4.24 cfs @ 12.41 hrs HW=224.11' (Free Discharge)
└**1=Culvert** (Passes 4.24 cfs of 16.16 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.53 cfs @ 10.75 fps)
  ├**3=Orifice/Grate** (Orifice Controls 3.26 cfs @ 9.35 fps)
  └**4=Sharp-Crested Rectangular Weir**(Weir Controls 0.45 cfs @ 1.06 fps)

Pond 03P: UG DET - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-4500 b +Cap (ADS StormTech®MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= 39.5 cf x 2 x 4 rows = 316.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

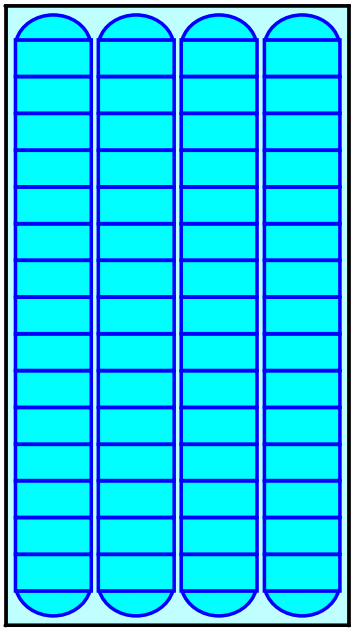
15 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 65.84' Row Length +12.0" End Stone x 2 = 67.84' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
12.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 7.00' Field Height

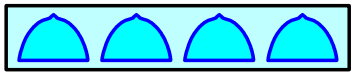
60 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 4 Rows = 6,705.4 cf Chamber Storage

17,848.0 cf Field - 6,705.4 cf Chambers = 11,142.6 cf Stone x 40.0% Voids = 4,457.0 cf Stone Storage

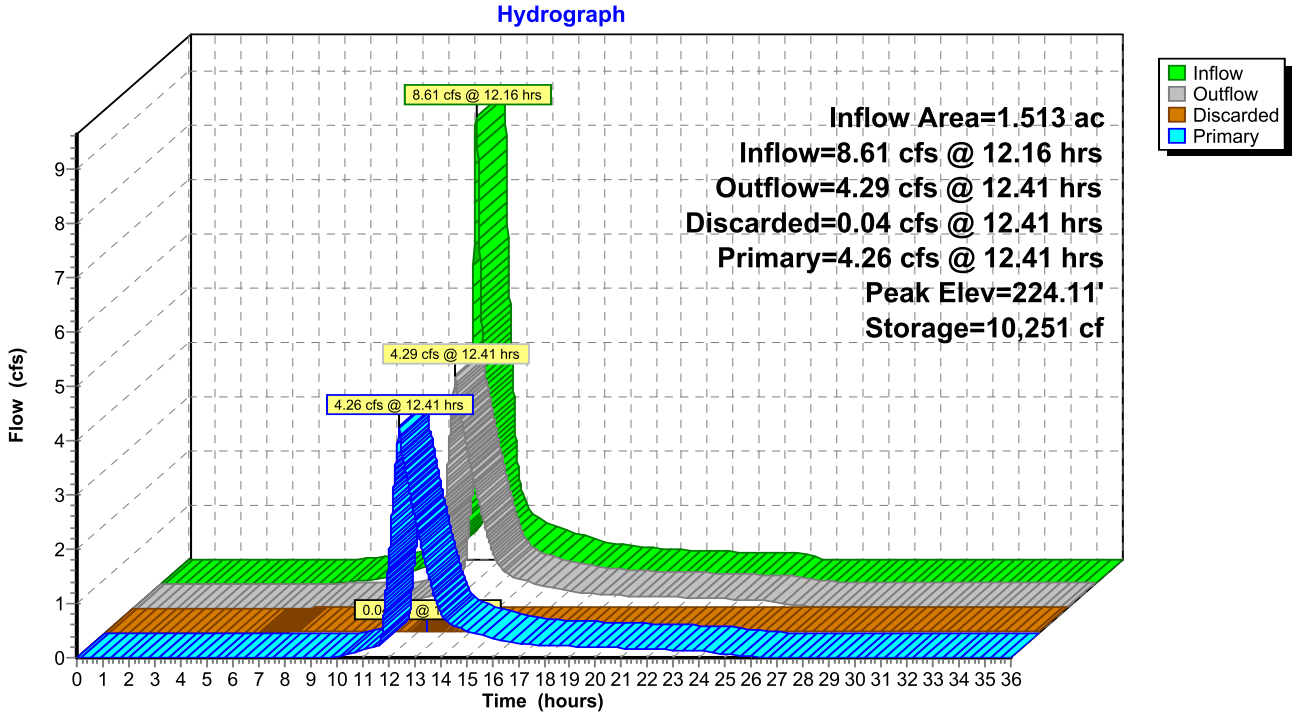
Chamber Storage + Stone Storage = 11,162.5 cf = 0.256 af
Overall Storage Efficiency = 62.5%
Overall System Size = 67.84' x 37.58' x 7.00'

60 Chambers
661.0 cy Field
412.7 cy Stone





Pond 03P: UG DET



Summary for Pond 04P: UG DET - B-04

Inflow Area = 1.717 ac, 44.52% Impervious, Inflow Depth = 5.73" for 100-Year event
Inflow = 9.42 cfs @ 12.16 hrs, Volume= 0.821 af
Outflow = 4.54 cfs @ 12.43 hrs, Volume= 0.820 af, Atten= 52%, Lag= 15.9 min
Discarded = 0.04 cfs @ 12.43 hrs, Volume= 0.078 af
Primary = 4.50 cfs @ 12.43 hrs, Volume= 0.742 af
Routed to Pond 02P : UG DET - B-02

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 227.08' @ 12.43 hrs Surf.Area= 2,701 sf Storage= 10,850 cf

Plug-Flow detention time= 90.7 min calculated for 0.820 af (100% of inflow)
Center-of-Mass det. time= 90.2 min (904.7 - 814.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	221.00'	4,710 cf	**37.58'W x 71.87'L x 7.00'H Field A** 18,907 cf Overall - 7,131 cf Embedded = 11,776 cf x 40.0% Voids
#2A	222.00'	7,131 cf	**ADS_StormTech MC-4500 b +Cap**x 64 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 64 Chambers in 4 Rows Cap Storage= 39.5 cf x 2 x 4 rows = 316.0 cf
		11,842 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	219.00'	**15.0" Round Culvert** L= 67.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 219.00' / 217.20' S= 0.0269 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	222.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	223.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	227.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	221.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.04 cfs @ 12.43 hrs HW=227.08' (Free Discharge)
└**5=Exfiltration** (Controls 0.04 cfs)

Primary OutFlow Max=4.49 cfs @ 12.43 hrs HW=227.08' (Free Discharge)
└**1=Culvert** (Passes 4.49 cfs of 16.14 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.93 cfs @ 10.67 fps)
  ├**3=Orifice/Grate** (Orifice Controls 3.25 cfs @ 9.32 fps)
  └**4=Sharp-Crested Rectangular Weir**(Weir Controls 0.30 cfs @ 0.93 fps)

Pond 04P: UG DET - B-04 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-4500 b +Cap (ADS StormTech®MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= 39.5 cf x 2 x 4 rows = 316.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

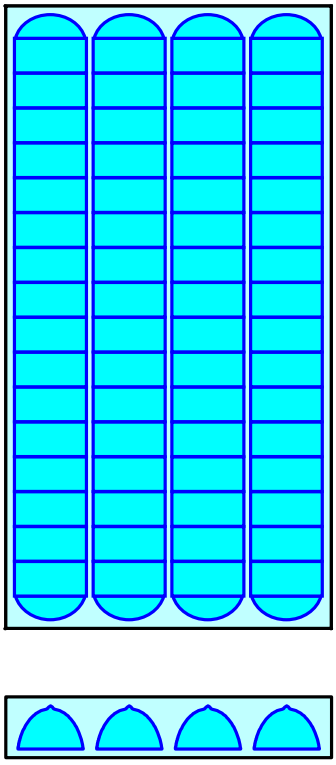
16 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 69.87' Row Length +12.0" End Stone x 2 = 71.87' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
12.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 7.00' Field Height

64 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 4 Rows = 7,131.4 cf Chamber Storage

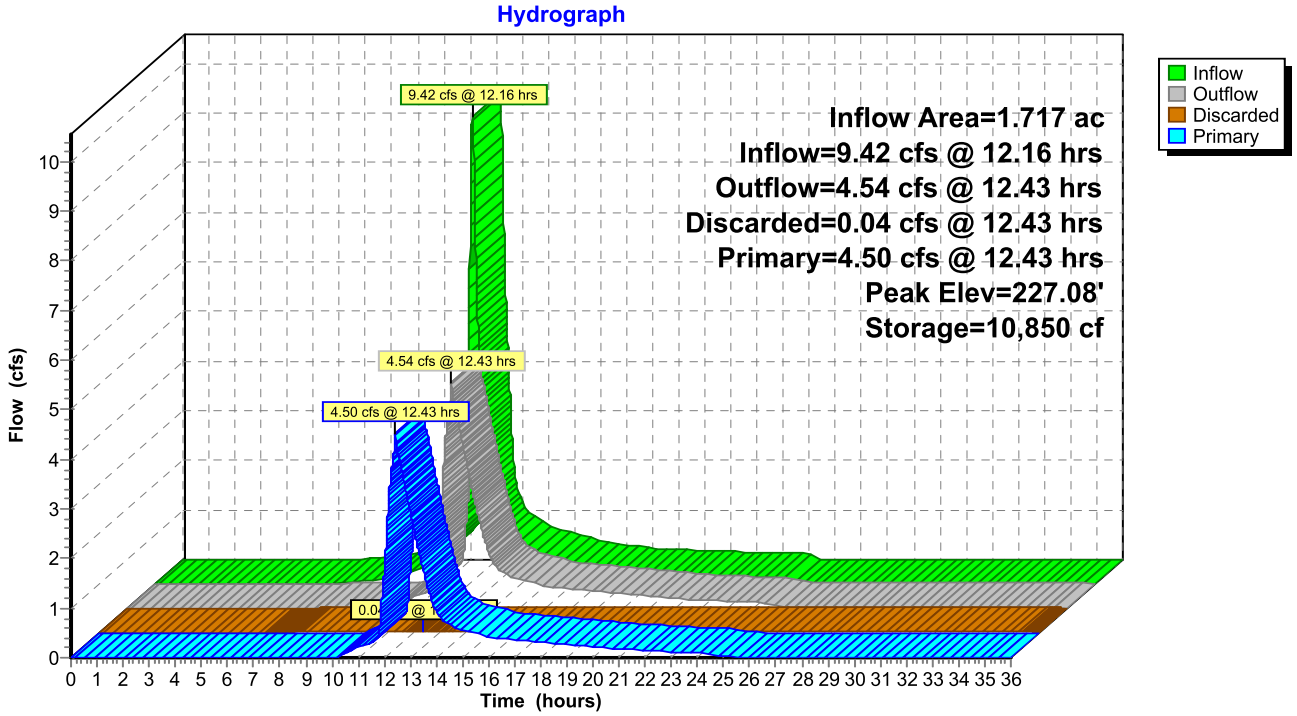
18,906.9 cf Field - 7,131.4 cf Chambers = 11,775.5 cf Stone x 40.0% Voids = 4,710.2 cf Stone Storage

Chamber Storage + Stone Storage = 11,841.6 cf = 0.272 af
Overall Storage Efficiency = 62.6%
Overall System Size = 71.87' x 37.58' x 7.00'

64 Chambers
700.3 cy Field
436.1 cy Stone



Pond 04P: UG DET - B-04



Summary for Pond 05P: UG DET - B-05

Inflow Area = 1.421 ac, 44.26% Impervious, Inflow Depth = 5.86" for 100-Year event
Inflow = 7.94 cfs @ 12.16 hrs, Volume= 0.693 af
Outflow = 4.30 cfs @ 12.39 hrs, Volume= 0.692 af, Atten= 46%, Lag= 13.3 min
Discarded = 0.03 cfs @ 12.39 hrs, Volume= 0.063 af
Primary = 4.27 cfs @ 12.39 hrs, Volume= 0.629 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 234.11' @ 12.39 hrs Surf.Area= 2,163 sf Storage= 8,685 cf

Plug-Flow detention time= 94.1 min calculated for 0.692 af (100% of inflow)
Center-of-Mass det. time= 93.0 min (905.3 - 812.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	228.00'	3,789 cf	**28.50'W x 75.89'L x 7.00'H Field A** 15,140 cf Overall - 5,668 cf Embedded = 9,472 cf x 40.0% Voids
#2A	229.00'	5,668 cf	**ADS_StormTech MC-4500 b +Cap**x 51 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 51 Chambers in 3 Rows Cap Storage= 39.5 cf x 2 x 3 rows = 237.0 cf
		9,457 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	220.00'	**15.0" Round Culvert** L= 68.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 220.00' / 215.40' S= 0.0676 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	229.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	230.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	234.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	228.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.03 cfs @ 12.39 hrs HW=234.11' (Free Discharge)
└**5=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=4.25 cfs @ 12.39 hrs HW=234.11' (Free Discharge)
└**1=Culvert** (Passes 4.25 cfs of 21.70 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.53 cfs @ 10.75 fps)
  ├**3=Orifice/Grate** (Orifice Controls 3.27 cfs @ 9.35 fps)
  └**4=Sharp-Crested Rectangular Weir** (Weir Controls 0.46 cfs @ 1.07 fps)

Pond 05P: UG DET - B-05 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-4500 b +Cap (ADS StormTech®MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= 39.5 cf x 2 x 3 rows = 237.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

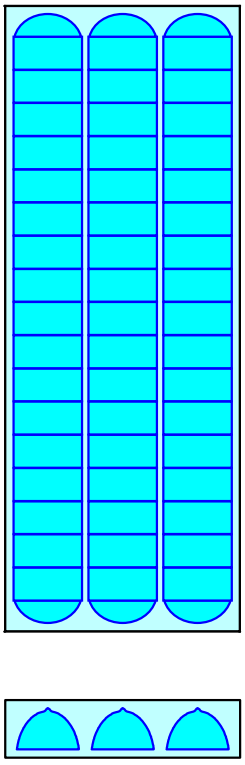
17 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 73.89' Row Length +12.0" End Stone x 2 = 75.89' Base Length
3 Rows x 100.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 28.50' Base Width
12.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 7.00' Field Height

51 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 3 Rows = 5,668.0 cf Chamber Storage

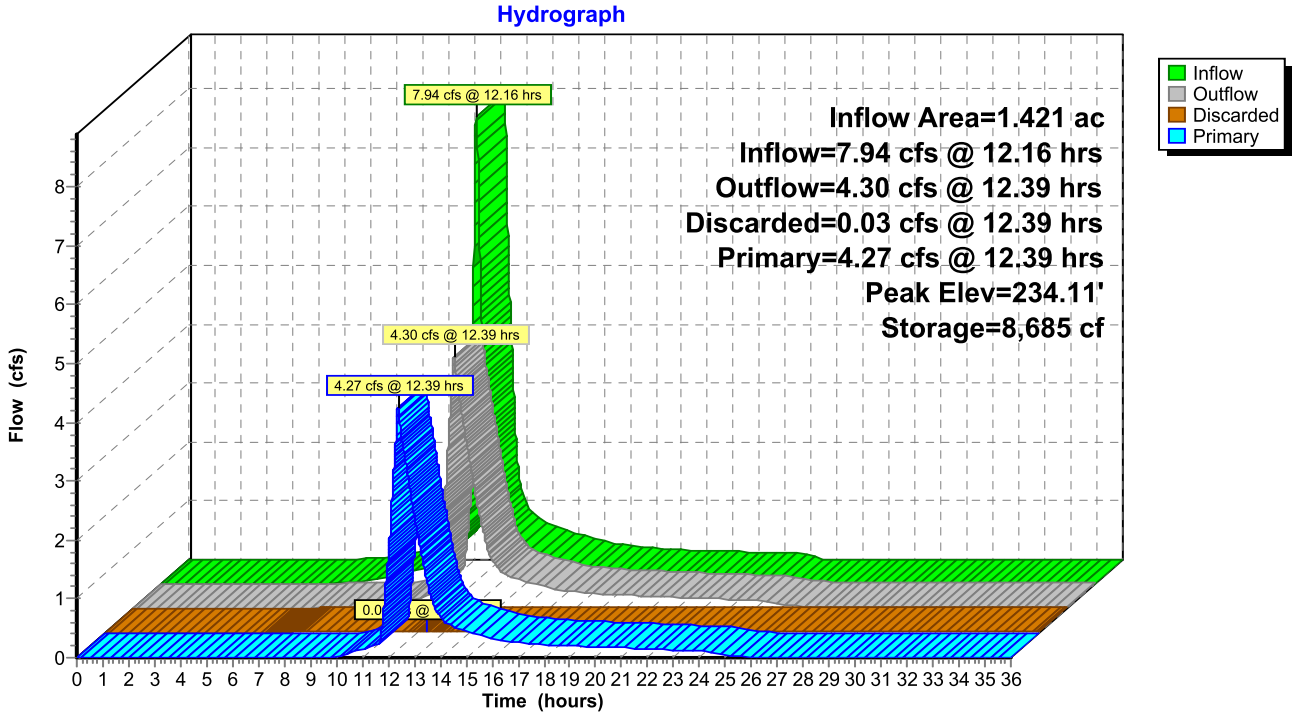
15,140.4 cf Field - 5,668.0 cf Chambers = 9,472.4 cf Stone x 40.0% Voids = 3,789.0 cf Stone Storage

Chamber Storage + Stone Storage = 9,457.0 cf = 0.217 af
Overall Storage Efficiency = 62.5%
Overall System Size = 75.89' x 28.50' x 7.00'

51 Chambers
560.8 cy Field
350.8 cy Stone



Pond 05P: UG DET - B-05



Summary for Pond 07P: UG DET - B-07

Inflow Area = 0.778 ac,100.00% Impervious, Inflow Depth = 8.39" for 100-Year event
Inflow = 6.60 cfs @ 12.08 hrs, Volume= 0.544 af
Outflow = 2.03 cfs @ 12.39 hrs, Volume= 0.544 af, Atten= 69%, Lag= 18.2 min
Discarded = 0.04 cfs @ 12.39 hrs, Volume= 0.086 af
Primary = 2.00 cfs @ 12.39 hrs, Volume= 0.458 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 220.73' @ 12.39 hrs Surf.Area= 2,415 sf Storage= 9,272 cf

Plug-Flow detention time= 162.7 min calculated for 0.544 af (100% of inflow)
Center-of-Mass det. time= 162.5 min (902.8 - 740.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	215.00'	4,260 cf	**46.67'W x 51.74'L x 7.00'H Field A** 16,902 cf Overall - 6,252 cf Embedded = 10,650 cf x 40.0% Voids
#2A	216.00'	6,252 cf	**ADS_StormTech MC-4500 b +Cap**x 55 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 55 Chambers in 5 Rows Cap Storage= 39.5 cf x 2 x 5 rows = 395.0 cf
		10,512 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	215.00'	**15.0" Round Culvert** L= 47.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 215.00' / 213.00' S= 0.0426 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	216.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	218.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	221.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	215.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.04 cfs @ 12.39 hrs HW=220.73' (Free Discharge)
└**5=Exfiltration** (Controls 0.04 cfs)

Primary OutFlow Max=2.00 cfs @ 12.39 hrs HW=220.73' (Free Discharge)
└**1=Culvert** (Passes 2.00 cfs of 13.35 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.51 cfs @ 10.33 fps)
  ├**3=Orifice/Grate** (Orifice Controls 1.49 cfs @ 7.58 fps)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 07P: UG DET - B-07 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-4500 b +Cap (ADS StormTech®MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= 39.5 cf x 2 x 5 rows = 395.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

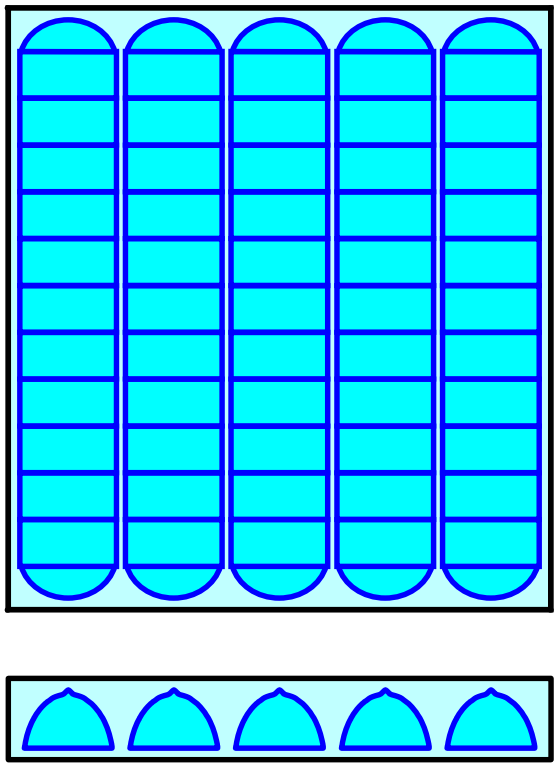
11 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 49.74' Row Length +12.0" End Stone x 2 = 51.74' Base Length
5 Rows x 100.0" Wide + 9.0" Spacing x 4 + 12.0" Side Stone x 2 = 46.67' Base Width
12.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 7.00' Field Height

55 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 5 Rows = 6,252.0 cf Chamber Storage

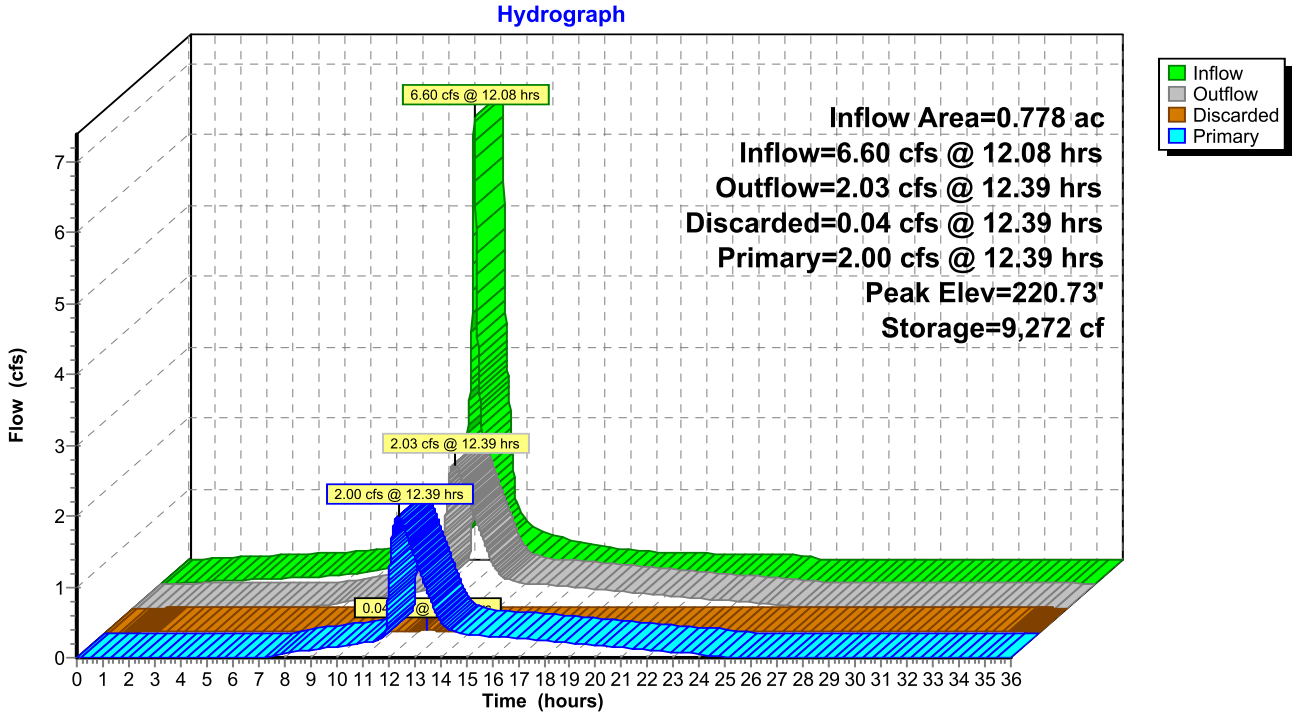
16,902.3 cf Field - 6,252.0 cf Chambers = 10,650.3 cf Stone x 40.0% Voids = 4,260.1 cf Stone Storage

Chamber Storage + Stone Storage = 10,512.1 cf = 0.241 af
Overall Storage Efficiency = 62.2%
Overall System Size = 51.74' x 46.67' x 7.00'

55 Chambers
626.0 cy Field
394.5 cy Stone



Pond 07P: UG DET - B-07



Summary for Pond 08P: UG DET - B-08

Inflow Area = 0.767 ac, 78.44% Impervious, Inflow Depth = 7.43" for 100-Year event
Inflow = 5.45 cfs @ 12.13 hrs, Volume= 0.475 af
Outflow = 3.13 cfs @ 12.30 hrs, Volume= 0.475 af, Atten= 42%, Lag= 9.8 min
Discarded = 0.04 cfs @ 12.30 hrs, Volume= 0.049 af
Primary = 3.09 cfs @ 12.30 hrs, Volume= 0.425 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 210.02' @ 12.30 hrs Surf.Area= 1,325 sf Storage= 5,155 cf

Plug-Flow detention time= 70.4 min calculated for 0.475 af (100% of inflow)
Center-of-Mass det. time= 70.4 min (847.8 - 777.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	204.00'	2,400 cf	**10.33'W x 128.22'L x 7.00'H Field A** 9,274 cf Overall - 3,274 cf Embedded = 6,001 cf x 40.0% Voids
#2A	205.00'	3,274 cf	**ADS_StormTech MC-4500 b +Cap**x 30 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= 39.5 cf x 2 x 1 rows = 79.0 cf
		5,674 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	204.00'	**15.0" Round Culvert** L= 77.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 204.00' / 203.60' S= 0.0052 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	205.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	207.00'	**7.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	210.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	204.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.04 cfs @ 12.30 hrs HW=210.02' (Free Discharge)
└**5=Exfiltration** (Controls 0.04 cfs)

Primary OutFlow Max=3.09 cfs @ 12.30 hrs HW=210.02' (Free Discharge)
└**1=Culvert** (Passes 3.09 cfs of 12.86 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 0.93 cfs @ 10.61 fps)
├**3=Orifice/Grate** (Orifice Controls 2.13 cfs @ 7.95 fps)
└**4=Sharp-Crested Rectangular Weir** (Weir Controls 0.04 cfs @ 0.47 fps)

Pond 08P: UG DET - B-08 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-4500 b +Cap (ADS StormTech®MC-4500 with cap volume)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= 39.5 cf x 2 x 1 rows = 79.0 cf

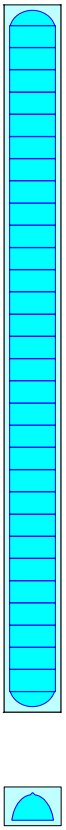
30 Chambers/Row x 4.02' Long +2.73' Cap Length x 2 = 126.22' Row Length +12.0" End Stone x 2 = 128.22' Base Length
1 Rows x 100.0" Wide + 12.0" Side Stone x 2 = 10.33' Base Width
12.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 7.00' Field Height

30 Chambers x 106.5 cf + 39.5 cf Cap Volume x 2 x 1 Rows = 3,273.7 cf Chamber Storage

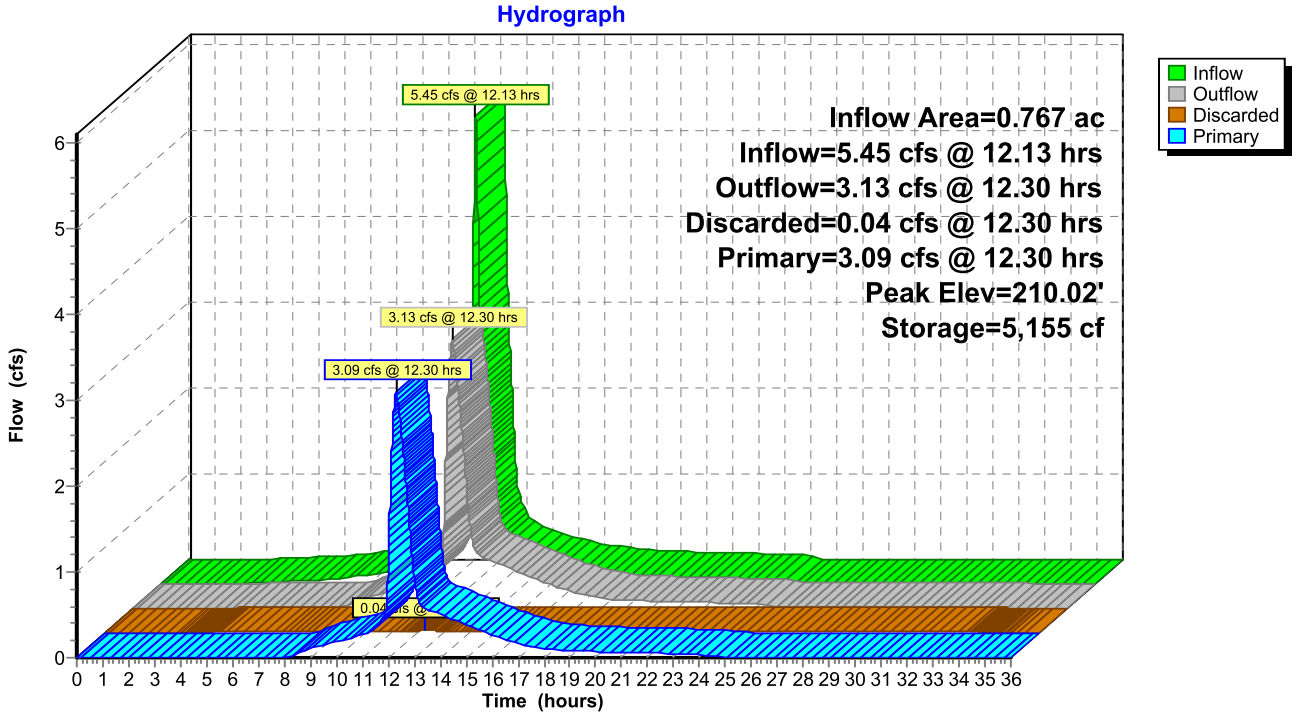
9,274.3 cf Field - 3,273.7 cf Chambers = 6,000.6 cf Stone x 40.0% Voids = 2,400.3 cf Stone Storage

Chamber Storage + Stone Storage = 5,674.0 cf = 0.130 af
Overall Storage Efficiency = 61.2%
Overall System Size = 128.22' x 10.33' x 7.00'

30 Chambers
343.5 cy Field
222.2 cy Stone



Pond 08P: UG DET - B-08



Summary for Pond 09P: UG DET - POOL

Inflow Area = 0.640 ac, 52.69% Impervious, Inflow Depth = 6.34" for 100-Year event
Inflow = 4.34 cfs @ 12.11 hrs, Volume= 0.338 af
Outflow = 3.18 cfs @ 12.20 hrs, Volume= 0.338 af, Atten= 27%, Lag= 5.2 min
Discarded = 0.03 cfs @ 12.20 hrs, Volume= 0.047 af
Primary = 3.15 cfs @ 12.20 hrs, Volume= 0.292 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 210.92' @ 12.20 hrs Surf.Area= 1,435 sf Storage= 4,462 cf

Plug-Flow detention time= 114.1 min calculated for 0.338 af (100% of inflow)
Center-of-Mass det. time= 114.0 min (913.6 - 799.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	206.00'	2,208 cf	**22.75'W x 63.06'L x 5.75'H Field A** 8,249 cf Overall - 2,728 cf Embedded = 5,521 cf x 40.0% Voids
#2A	207.00'	2,728 cf	**ADS_StormTech MC-3500 d +Cap**x 24 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 24 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		4,937 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	206.00'	**15.0" Round Culvert** L= 71.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 206.00' / 205.50' S= 0.0070 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	207.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	209.50'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	210.75'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	206.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.03 cfs @ 12.20 hrs HW=210.92' (Free Discharge)
└**5=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=3.14 cfs @ 12.20 hrs HW=210.92' (Free Discharge)
└**1=Culvert** (Passes 3.14 cfs of 11.79 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.46 cfs @ 9.38 fps)
  ├**3=Orifice/Grate** (Orifice Controls 1.75 cfs @ 5.02 fps)
  └**4=Sharp-Crested Rectangular Weir** (Weir Controls 0.92 cfs @ 1.35 fps)

Pond 09P: UG DET - POOL - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech®MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

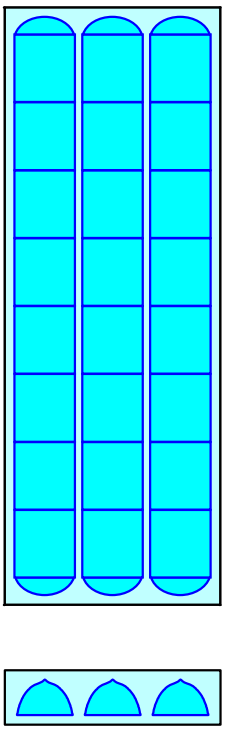
8 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 61.06' Row Length +12.0" End Stone x 2 = 63.06' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
12.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.75' Field Height

24 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 2,728.2 cf Chamber Storage

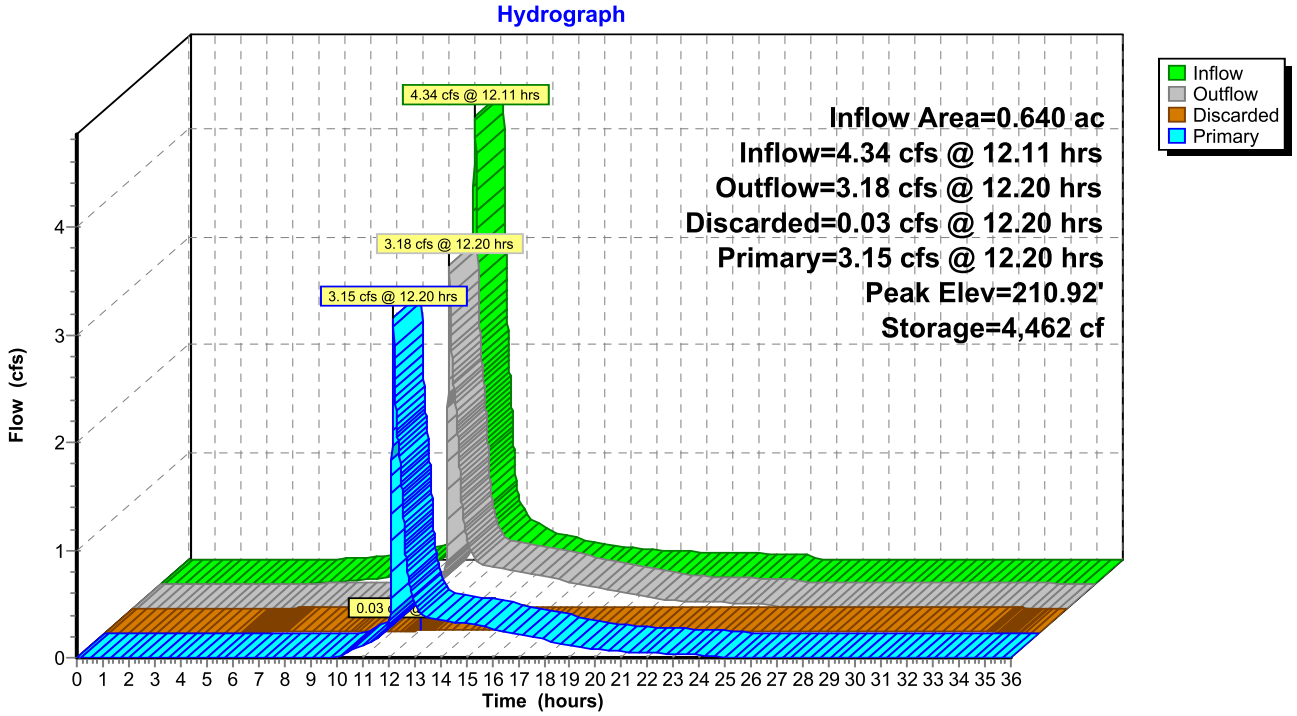
8,249.0 cf Field - 2,728.2 cf Chambers = 5,520.8 cf Stone x 40.0% Voids = 2,208.3 cf Stone Storage

Chamber Storage + Stone Storage = 4,936.6 cf = 0.113 af
Overall Storage Efficiency = 59.8%
Overall System Size = 63.06' x 22.75' x 5.75'

24 Chambers
305.5 cy Field
204.5 cy Stone



Pond 09P: UG DET - POOL



Summary for Pond 10P: UG DET - B-C

Inflow Area = 0.980 ac, 69.09% Impervious, Inflow Depth = 7.06" for 100-Year event
Inflow = 6.75 cfs @ 12.14 hrs, Volume= 0.577 af
Outflow = 2.13 cfs @ 12.50 hrs, Volume= 0.577 af, Atten= 68%, Lag= 21.6 min
Discarded = 0.07 cfs @ 12.50 hrs, Volume= 0.120 af
Primary = 2.06 cfs @ 12.50 hrs, Volume= 0.457 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 212.86' @ 12.50 hrs Surf.Area= 3,611 sf Storage= 11,308 cf

Plug-Flow detention time= 191.1 min calculated for 0.577 af (100% of inflow)
Center-of-Mass det. time= 191.0 min (977.3 - 786.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	208.00'	5,451 cf	**51.42'W x 70.23'L x 5.75'H Field A** 20,763 cf Overall - 7,136 cf Embedded = 13,628 cf x 40.0% Voids
#2A	209.00'	7,136 cf	**ADS_StormTech MC-3500 d +Cap**x 63 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 63 Chambers in 7 Rows Cap Storage= 14.9 cf x 2 x 7 rows = 208.6 cf
		12,587 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	209.00'	**15.0" Round Culvert** L= 36.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 209.00' / 208.60' S= 0.0111 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	209.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	212.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	212.75'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	208.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.07 cfs @ 12.50 hrs HW=212.86' (Free Discharge)
└**5=Exfiltration** (Controls 0.07 cfs)

Primary OutFlow Max=2.05 cfs @ 12.50 hrs HW=212.86' (Free Discharge)
└**1=Culvert** (Passes 2.05 cfs of 10.63 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.81 cfs @ 9.26 fps)
  ├**3=Orifice/Grate** (Orifice Controls 0.74 cfs @ 3.77 fps)
  └**4=Sharp-Crested Rectangular Weir**(Weir Controls 0.50 cfs @ 1.11 fps)

Pond 10P: UG DET - B-C - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech®MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 7 rows = 208.6 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

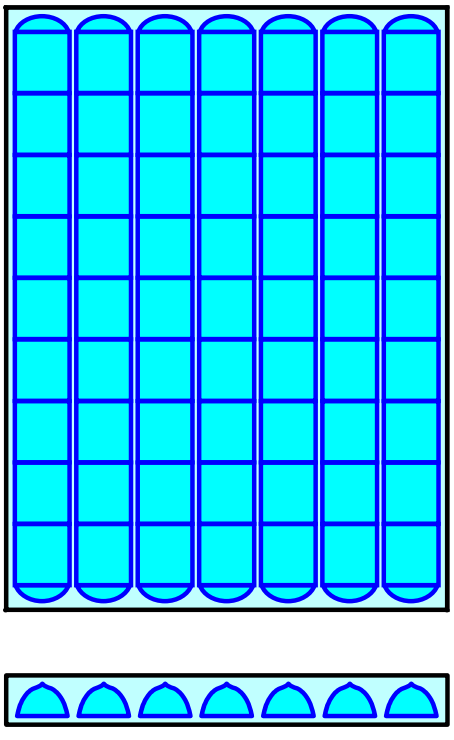
9 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 68.23' Row Length +12.0" End Stone x 2 = 70.23' Base Length
7 Rows x 77.0" Wide + 9.0" Spacing x 6 + 12.0" Side Stone x 2 = 51.42' Base Width
12.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.75' Field Height

63 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 7 Rows = 7,135.6 cf Chamber Storage

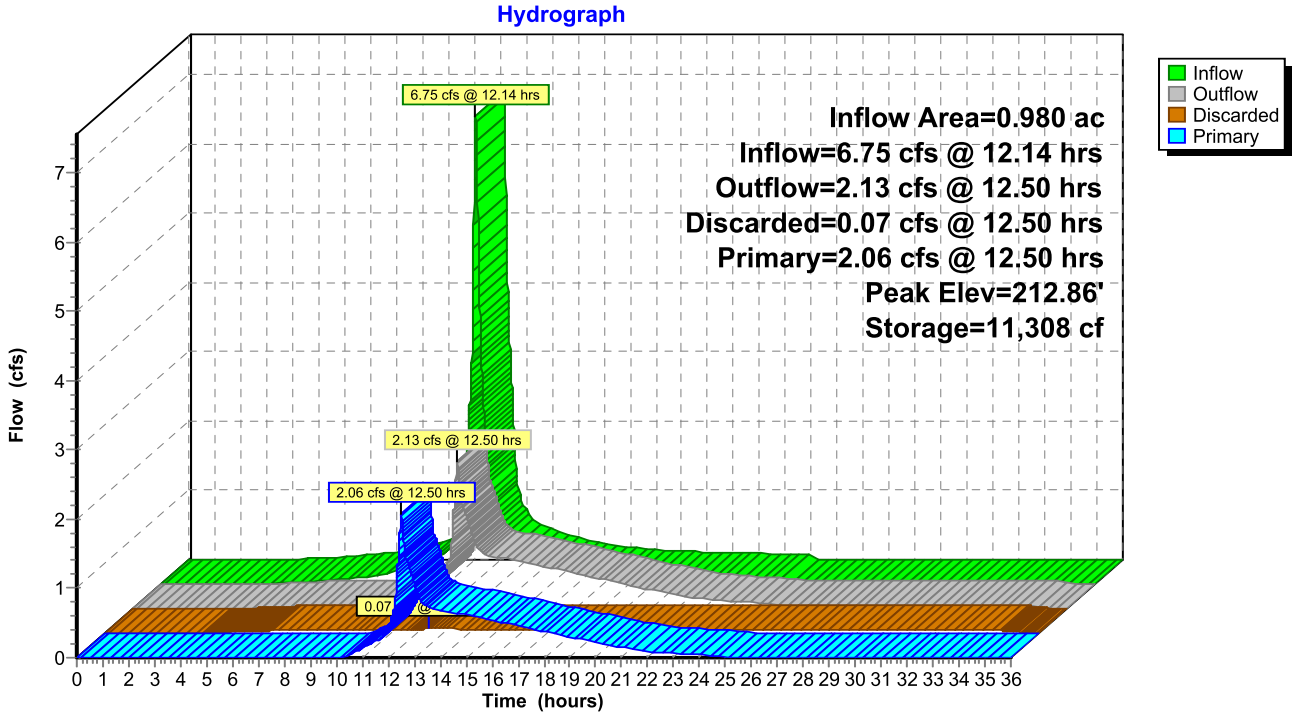
20,763.2 cf Field - 7,135.6 cf Chambers = 13,627.6 cf Stone x 40.0% Voids = 5,451.1 cf Stone Storage

Chamber Storage + Stone Storage = 12,586.6 cf = 0.289 af
Overall Storage Efficiency = 60.6%
Overall System Size = 70.23' x 51.42' x 5.75'

63 Chambers
769.0 cy Field
504.7 cy Stone



Pond 10P: UG DET - B-C



Summary for Pond 11P: UG DET-B-D

Inflow Area = 1.462 ac, 74.88% Impervious, Inflow Depth = 7.31" for 100-Year event
Inflow = 10.29 cfs @ 12.13 hrs, Volume= 0.890 af
Outflow = 3.91 cfs @ 12.44 hrs, Volume= 0.889 af, Atten= 62%, Lag= 18.1 min
Discarded = 0.10 cfs @ 12.44 hrs, Volume= 0.184 af
Primary = 3.82 cfs @ 12.44 hrs, Volume= 0.705 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 212.91' @ 12.44 hrs Surf.Area= 5,277 sf Storage= 16,597 cf

Plug-Flow detention time= 194.6 min calculated for 0.889 af (100% of inflow)
Center-of-Mass det. time= 193.6 min (974.1 - 780.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	208.00'	7,980 cf	**94.42'W x 55.89'L x 5.75'H Field A** 30,342 cf Overall - 10,393 cf Embedded = 19,949 cf x 40.0% Voids
#2A	209.00'	10,393 cf	**ADS_StormTech MC-3500 d +Cap**x 91 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 91 Chambers in 13 Rows Cap Storage= 14.9 cf x 2 x 13 rows = 387.4 cf
		18,373 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	208.60'	**15.0" Round Culvert** L= 53.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 208.60' / 208.30' S= 0.0057 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	209.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	210.90'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	212.75'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#5	Discarded	208.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.10 cfs @ 12.44 hrs HW=212.91' (Free Discharge)
└**5=Exfiltration** (Controls 0.10 cfs)

Primary OutFlow Max=3.80 cfs @ 12.44 hrs HW=212.91' (Free Discharge)
└**1=Culvert** (Passes 3.80 cfs of 11.29 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.81 cfs @ 9.31 fps)
  ├**3=Orifice/Grate** (Orifice Controls 2.18 cfs @ 6.23 fps)
  └**4=Sharp-Crested Rectangular Weir** (Weir Controls 0.82 cfs @ 1.30 fps)

Pond 11P: UG DET-B-D - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech®MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 13 rows = 387.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

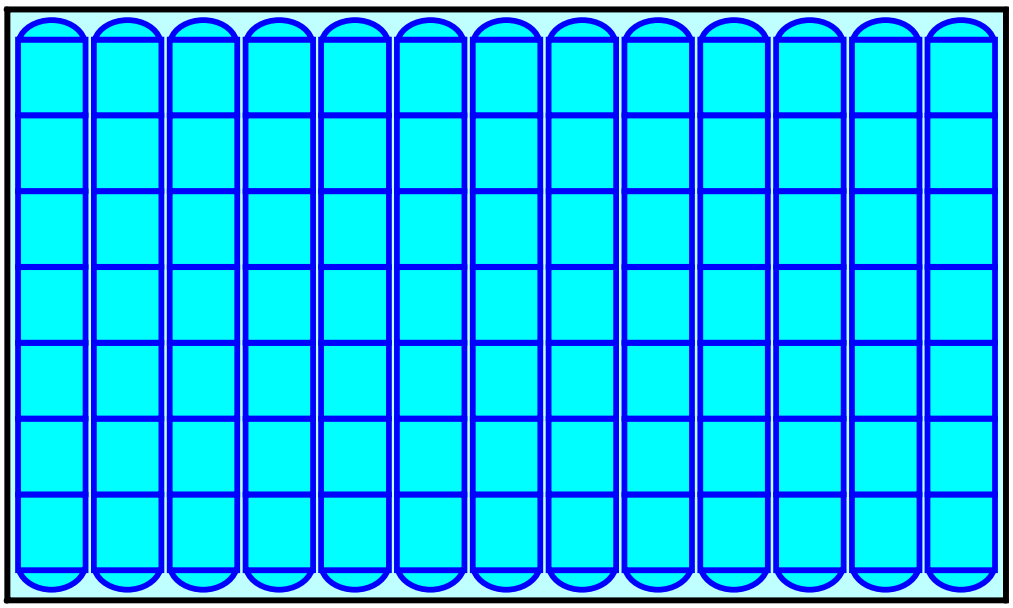
7 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 53.89' Row Length +12.0" End Stone x 2 = 55.89' Base Length
13 Rows x 77.0" Wide + 9.0" Spacing x 12 + 12.0" Side Stone x 2 = 94.42' Base Width
12.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.75' Field Height

91 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 13 Rows = 10,393.0 cf Chamber Storage

30,342.4 cf Field - 10,393.0 cf Chambers = 19,949.4 cf Stone x 40.0% Voids = 7,979.8 cf Stone Storage

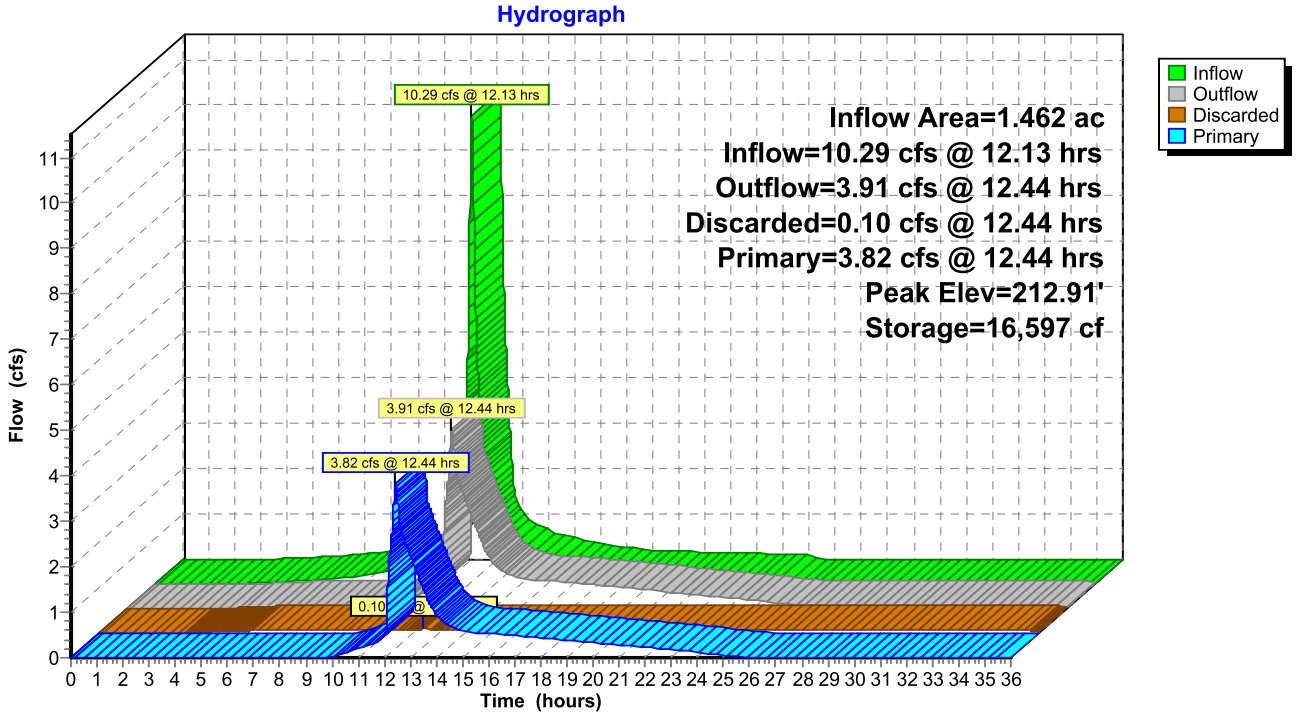
Chamber Storage + Stone Storage = 18,372.8 cf = 0.422 af
Overall Storage Efficiency = 60.6%
Overall System Size = 55.89' x 94.42' x 5.75'

91 Chambers
1,123.8 cy Field
738.9 cy Stone





Pond 11P: UG DET-B-D



Summary for Pond 21P: BASIN 1

Inflow Area = 3.393 ac, 50.00% Impervious, Inflow Depth = 5.48" for 100-Year event
Inflow = 10.97 cfs @ 12.23 hrs, Volume= 1.550 af
Outflow = 10.90 cfs @ 12.25 hrs, Volume= 1.483 af, Atten= 1%, Lag= 0.8 min
Discarded = 0.03 cfs @ 12.25 hrs, Volume= 0.067 af
Primary = 10.86 cfs @ 12.25 hrs, Volume= 1.416 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 209.41' @ 12.25 hrs Surf.Area= 2,253 sf Storage= 4,853 cf

Plug-Flow detention time= 56.4 min calculated for 1.483 af (96% of inflow)
Center-of-Mass det. time= 31.6 min (885.2 - 853.5)

Volume	Invert	Avail.Storage	Storage Description
#1	206.00'	6,225 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

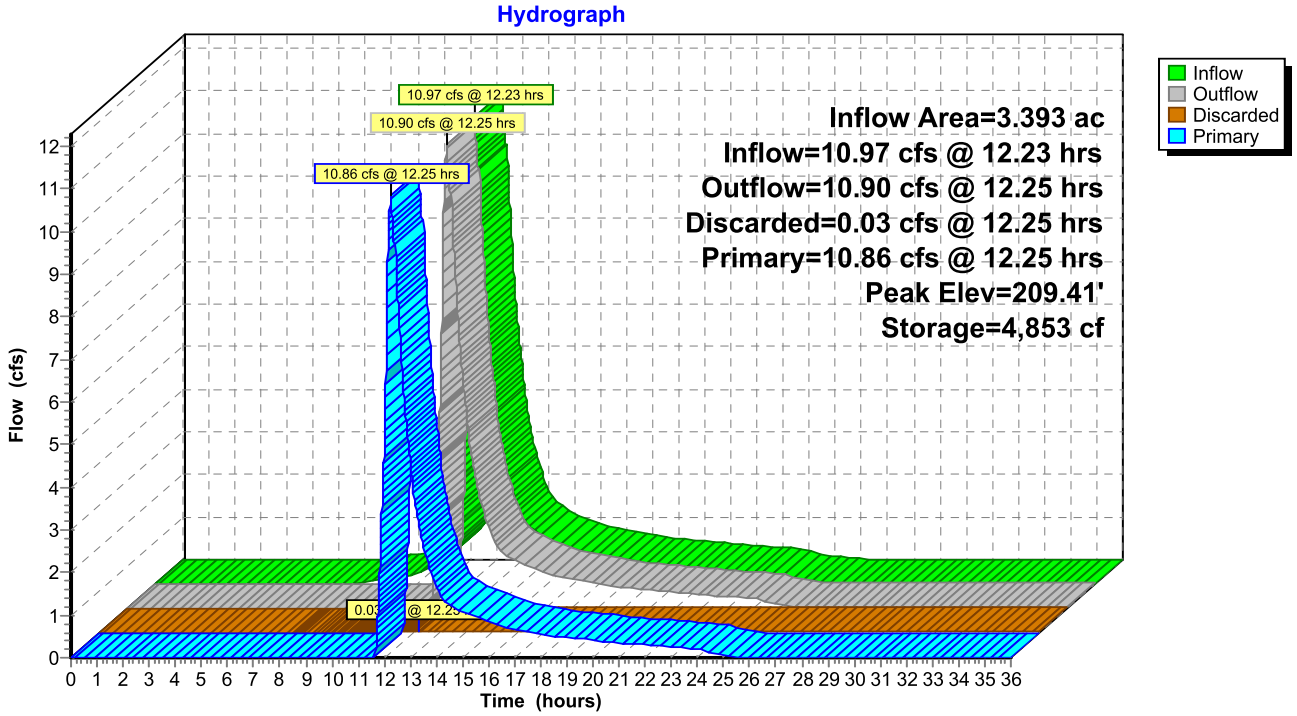
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
206.00	610	0	0
207.00	1,030	820	820
208.00	1,540	1,285	2,105
209.00	2,150	1,845	3,950
210.00	2,400	2,275	6,225

Device	Routing	Invert	Outlet Devices
#1	Primary	209.00'	**15.0' long + 3.0 '/' SideZ x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	206.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.03 cfs @ 12.25 hrs HW=209.41' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=10.85 cfs @ 12.25 hrs HW=209.41' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 10.85 cfs @ 1.63 fps)

Pond 21P: BASIN 1



Summary for Pond 22P: BASIN 2

Inflow Area = 2.917 ac, 45.85% Impervious, Inflow Depth = 5.46" for 100-Year event
Inflow = 7.59 cfs @ 12.42 hrs, Volume= 1.328 af
Outflow = 7.09 cfs @ 12.49 hrs, Volume= 1.167 af, Atten= 7%, Lag= 3.9 min
Discarded = 0.08 cfs @ 12.49 hrs, Volume= 0.140 af
Primary = 7.01 cfs @ 12.49 hrs, Volume= 1.027 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 201.36' @ 12.49 hrs Surf.Area= 5,023 sf Storage= 10,674 cf

Plug-Flow detention time= 136.0 min calculated for 1.167 af (88% of inflow)
Center-of-Mass det. time= 74.2 min (949.8 - 875.6)

Volume	Invert	Avail.Storage	Storage Description
#1	198.00'	14,215 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

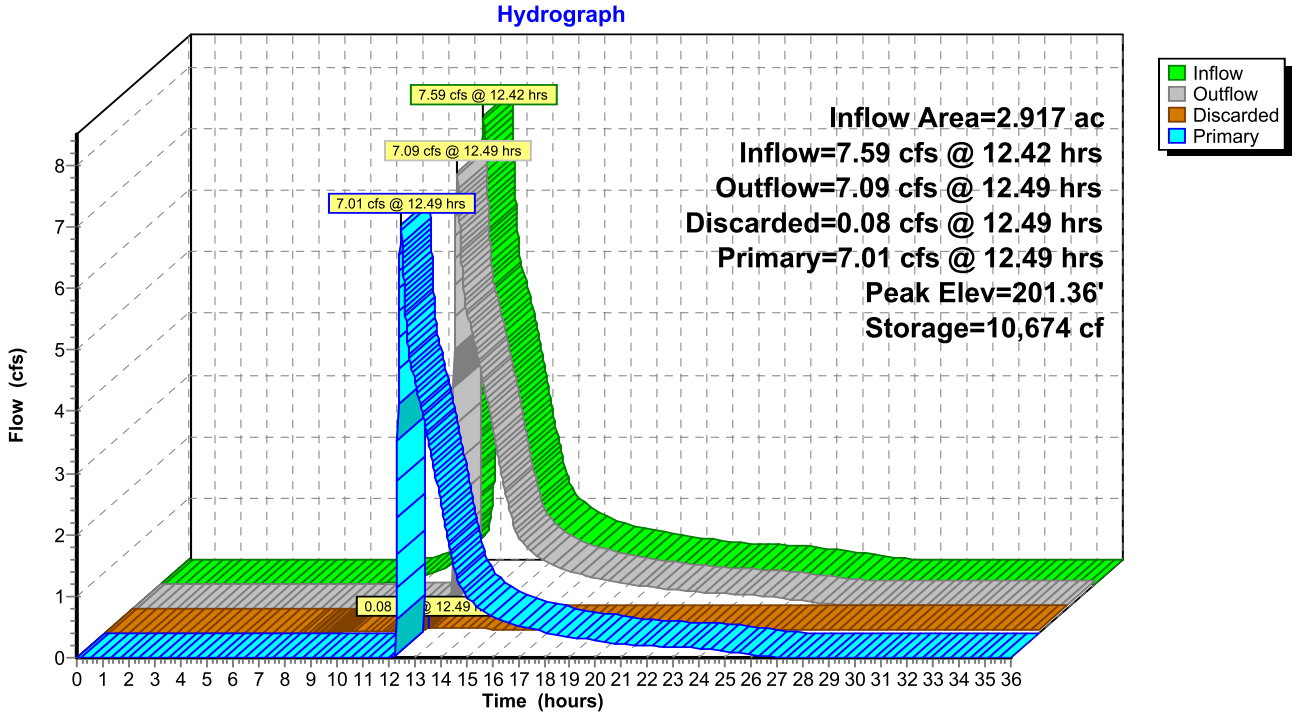
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
198.00	1,710	0	0
199.00	2,480	2,095	2,095
200.00	3,400	2,940	5,035
201.00	4,480	3,940	8,975
202.00	6,000	5,240	14,215

Device	Routing	Invert	Outlet Devices
#1	Primary	201.00'	**12.0' long + 3.0 '/' SideZ x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	198.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 192.00'

Discarded OutFlow Max=0.08 cfs @ 12.49 hrs HW=201.36' (Free Discharge)
└**2=Exfiltration** (Controls 0.08 cfs)

Primary OutFlow Max=7.01 cfs @ 12.49 hrs HW=201.36' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 7.01 cfs @ 1.50 fps)

Pond 22P: BASIN 2



Summary for Pond 23P: BASIN 3

Inflow Area = 0.468 ac, 18.14% Impervious, Inflow Depth = 5.13" for 100-Year event
Inflow = 2.64 cfs @ 12.11 hrs, Volume= 0.200 af
Outflow = 2.09 cfs @ 12.18 hrs, Volume= 0.156 af, Atten= 21%, Lag= 4.3 min
Discarded = 0.02 cfs @ 12.18 hrs, Volume= 0.038 af
Primary = 2.07 cfs @ 12.18 hrs, Volume= 0.119 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 222.17' @ 12.18 hrs Surf.Area= 1,517 sf Storage= 2,885 cf

Plug-Flow detention time= 237.0 min calculated for 0.156 af (78% of inflow)
Center-of-Mass det. time= 156.1 min (977.3 - 821.2)

Volume	Invert	Avail.Storage	Storage Description
#1	219.00'	4,225 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

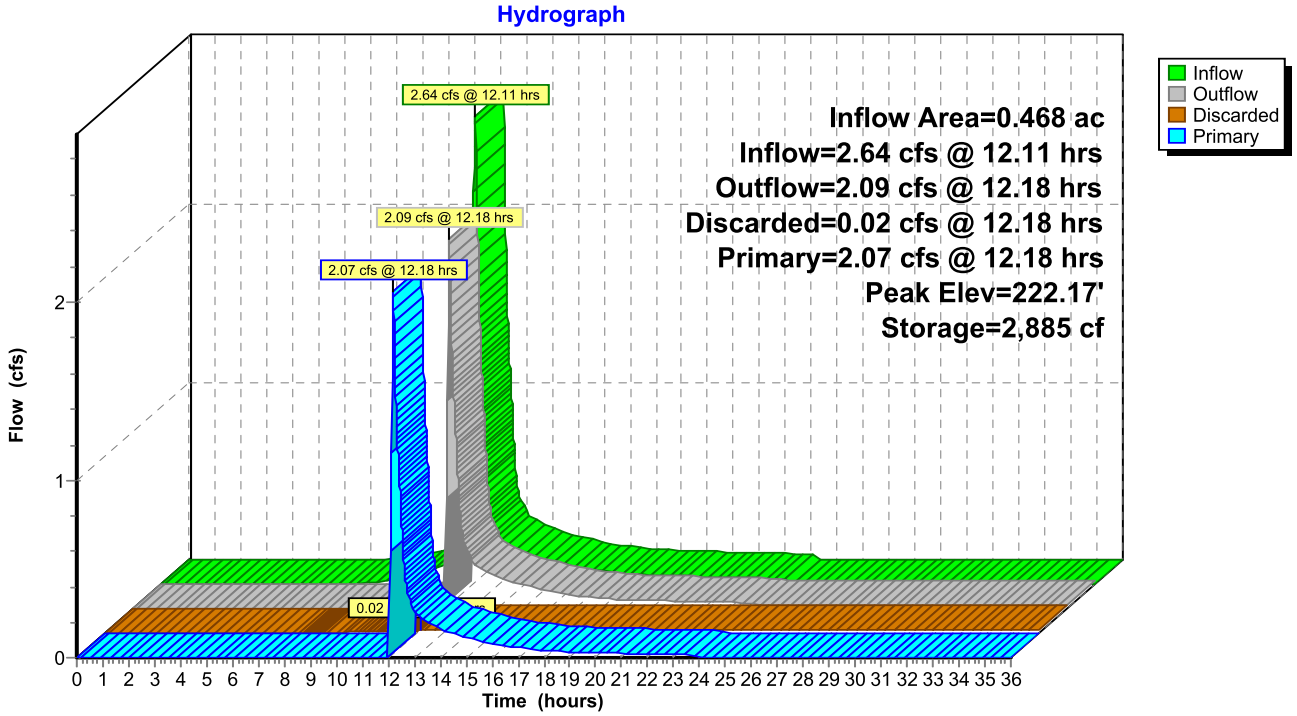
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
219.00	370	0	0
220.00	670	520	520
221.00	1,040	855	1,375
222.00	1,480	1,260	2,635
223.00	1,700	1,590	4,225

Device	Routing	Invert	Outlet Devices
#1	Primary	222.00'	**12.0' long + 3.0 '/' SideZ x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	219.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.02 cfs @ 12.18 hrs HW=222.17' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.02 cfs)

Primary OutFlow Max=2.05 cfs @ 12.18 hrs HW=222.17' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 2.05 cfs @ 0.99 fps)

Pond 23P: BASIN 3



Summary for Pond 24P: BASIN 4

Inflow Area = 0.753 ac, 36.59% Impervious, Inflow Depth = 6.58" for 100-Year event
Inflow = 5.31 cfs @ 12.11 hrs, Volume= 0.413 af
Outflow = 4.83 cfs @ 12.15 hrs, Volume= 0.327 af, Atten= 9%, Lag= 2.5 min
Discarded = 0.04 cfs @ 12.15 hrs, Volume= 0.078 af
Primary = 4.79 cfs @ 12.15 hrs, Volume= 0.249 af
Routed to Link 10L-PR : DESIGN POINT - 01

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 218.28' @ 12.15 hrs Surf.Area= 3,034 sf Storage= 6,004 cf

Plug-Flow detention time= 231.0 min calculated for 0.327 af (79% of inflow)
Center-of-Mass det. time= 154.2 min (948.7 - 794.6)

Volume	Invert	Avail.Storage	Storage Description
#1	215.00'	8,345 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

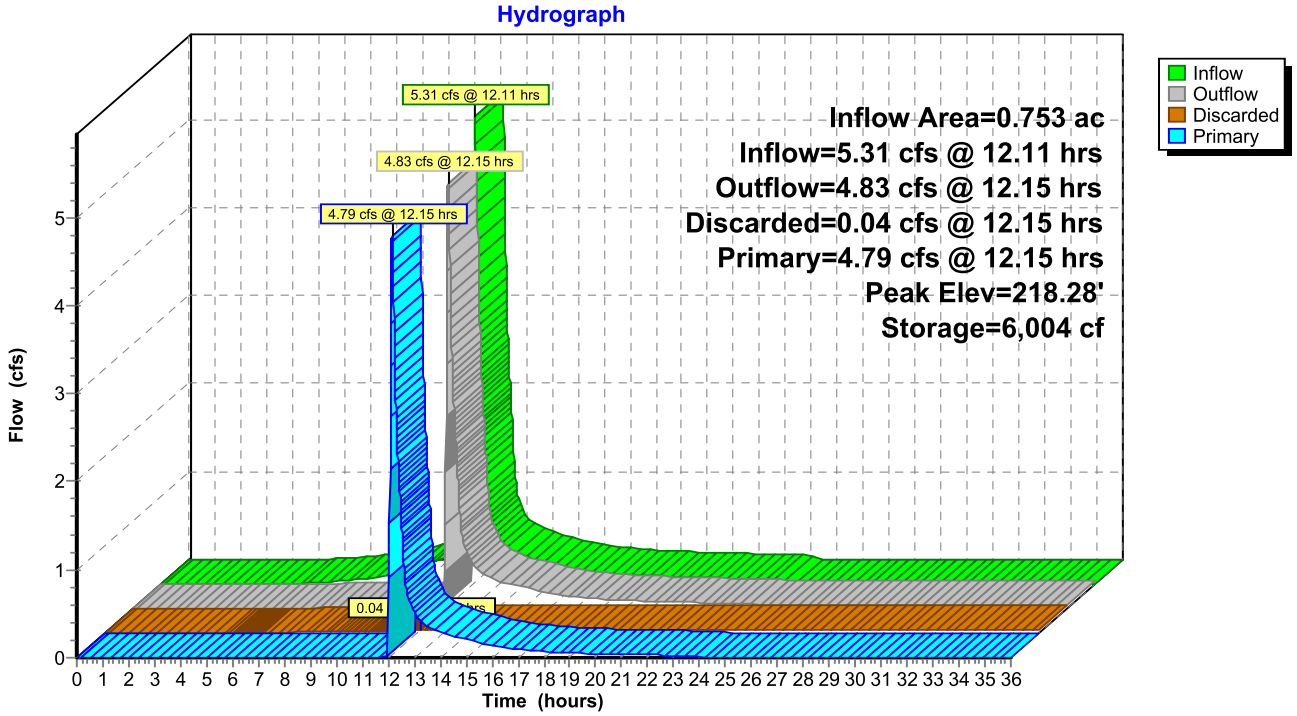
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
215.00	790	0	0
216.00	1,340	1,065	1,065
217.00	2,010	1,675	2,740
218.00	2,850	2,430	5,170
219.00	3,500	3,175	8,345

Device	Routing	Invert	Outlet Devices
#1	Primary	218.00'	**12.0' long + 3.0 '/' SideZ x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	215.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 200.00'

Discarded OutFlow Max=0.04 cfs @ 12.15 hrs HW=218.28' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.04 cfs)

Primary OutFlow Max=4.78 cfs @ 12.15 hrs HW=218.28' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 4.78 cfs @ 1.31 fps)

Pond 24P: BASIN 4

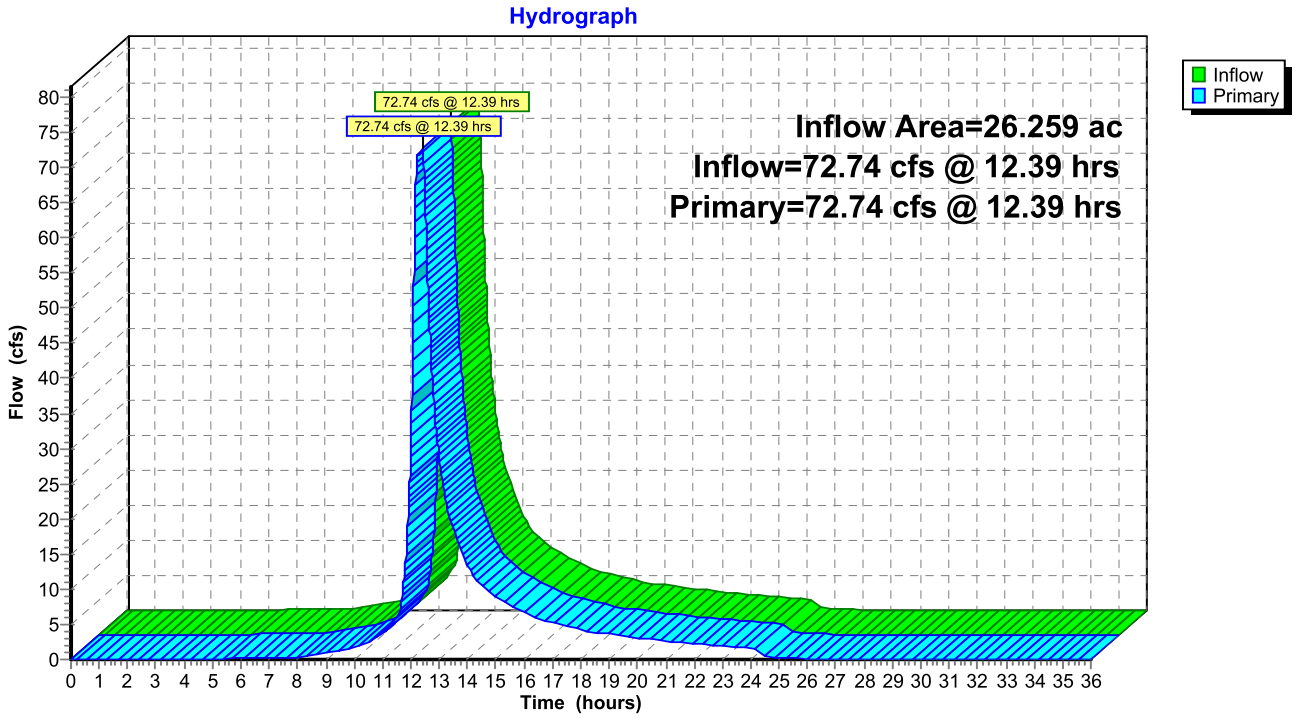


Summary for Link 10L-PR: DESIGN POINT - 01

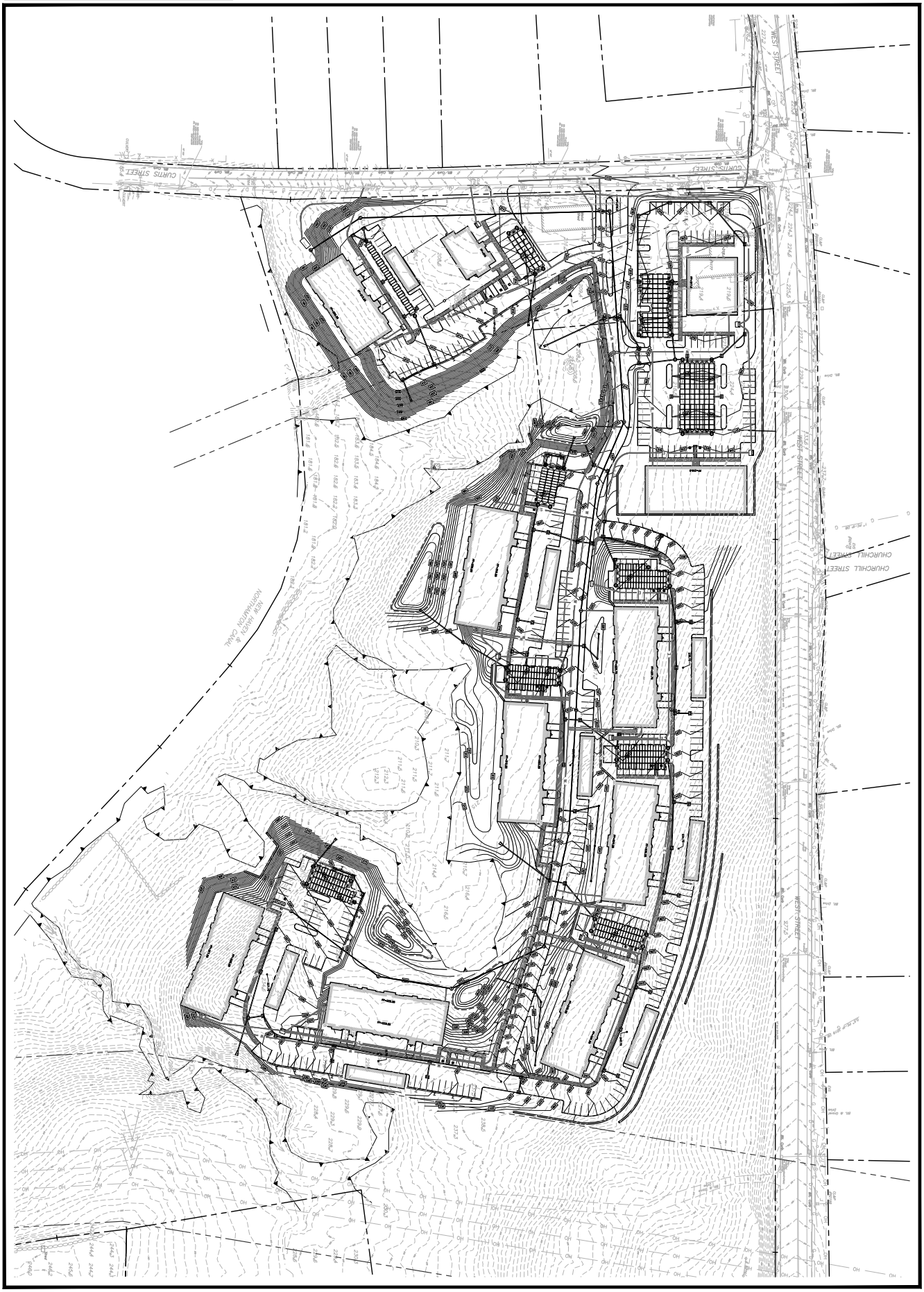
Inflow Area = 26.259 ac, 34.64% Impervious, Inflow Depth = 5.01" for 100-Year event
Inflow = 72.74 cfs @ 12.39 hrs, Volume= 10.959 af
Primary = 72.74 cfs @ 12.39 hrs, Volume= 10.959 af, Atten= 0%, Lag= 0.0 min

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

Link 10L-PR: DESIGN POINT - 01



File: J:\DWG\P2021\0063\A10\Civil\Plan\20210063A10_GRD01.dwg Layout: CG-100 Plotted: 2022-12-01 5:25 PM Saved: 2022-12-01 5:21 PM User: KGoodrow
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CG-100

PROJ. NO.: 20210063.A10
DATE: MM/DD/YYYY

ANTHONY PROPERTIES

SITE GRADING & DRAINAGE PLAN

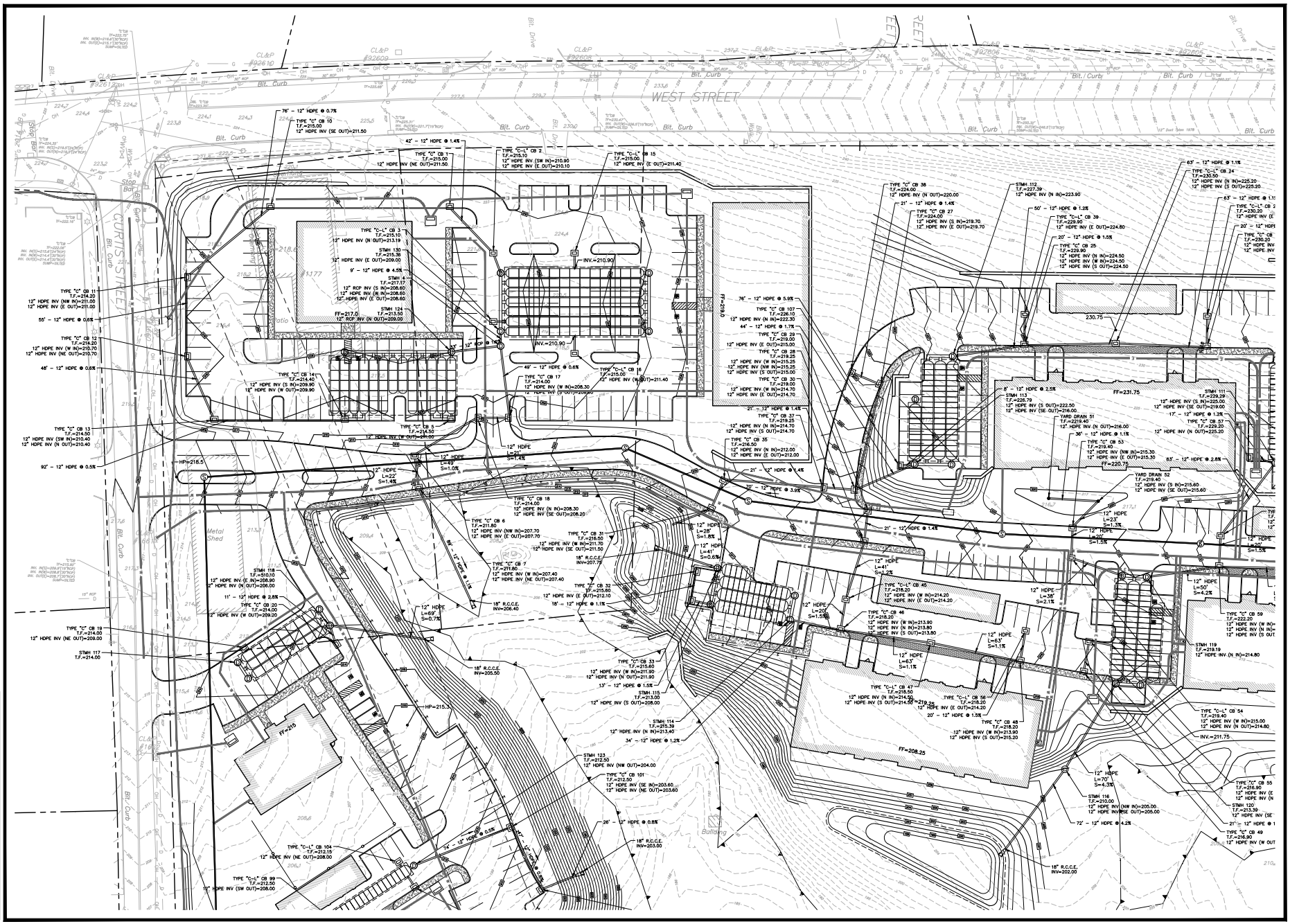
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DATUM:
HORZ.:
VERT.:
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GRAPHIC SCALE

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER



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LAYER STATE:
MS VIEW:

No.	DATE	DESCRIPTION	DESIGNER REVIEWER

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ANTHONY PROPERTIES

SITE GRADING & DRAINAGE PLAN

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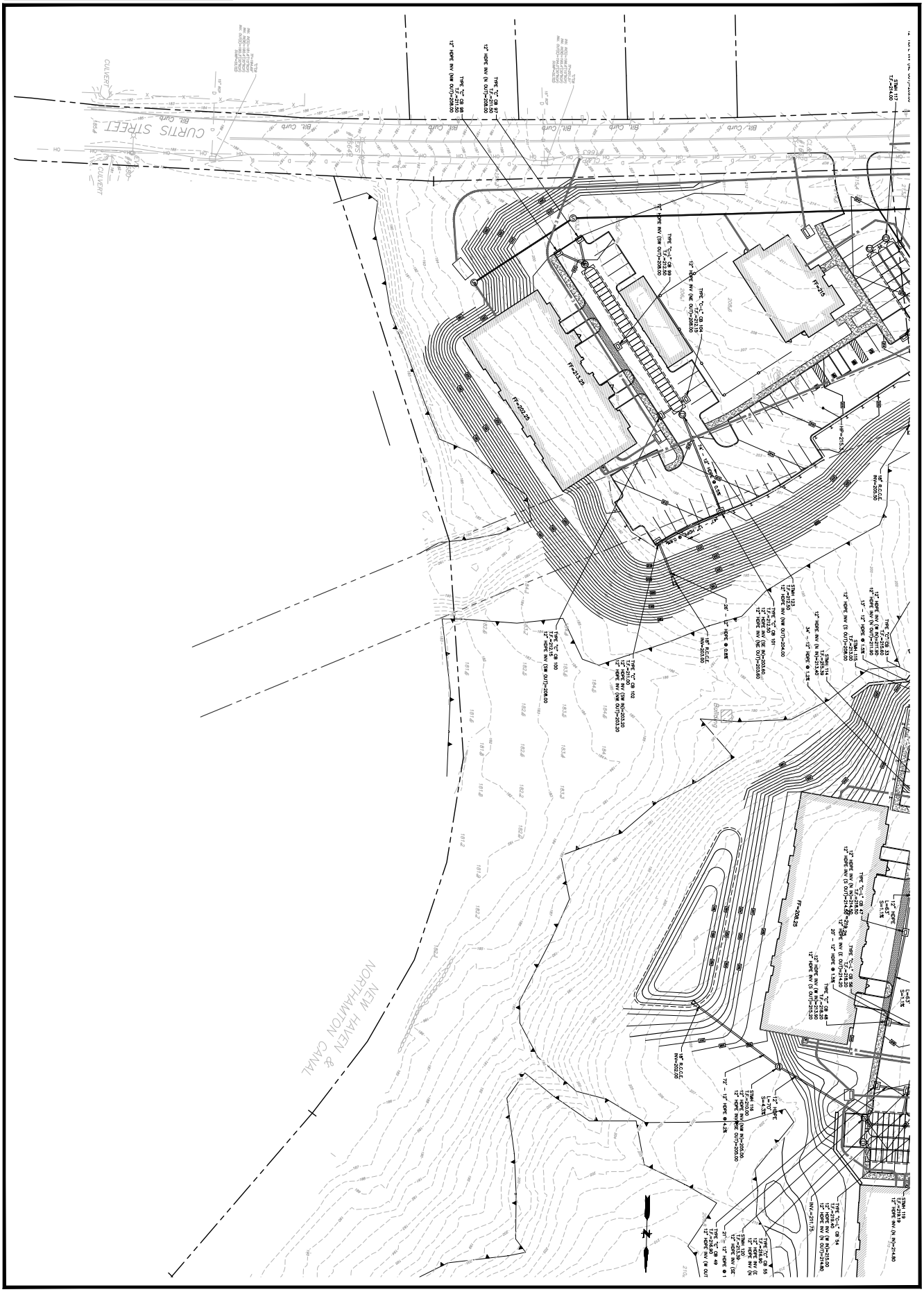
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CG-101

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CG-102

PROJ. NO.: 20210063.A10
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ANTHONY PROPERTIES

SITE GRADING & DRAINAGE PLAN

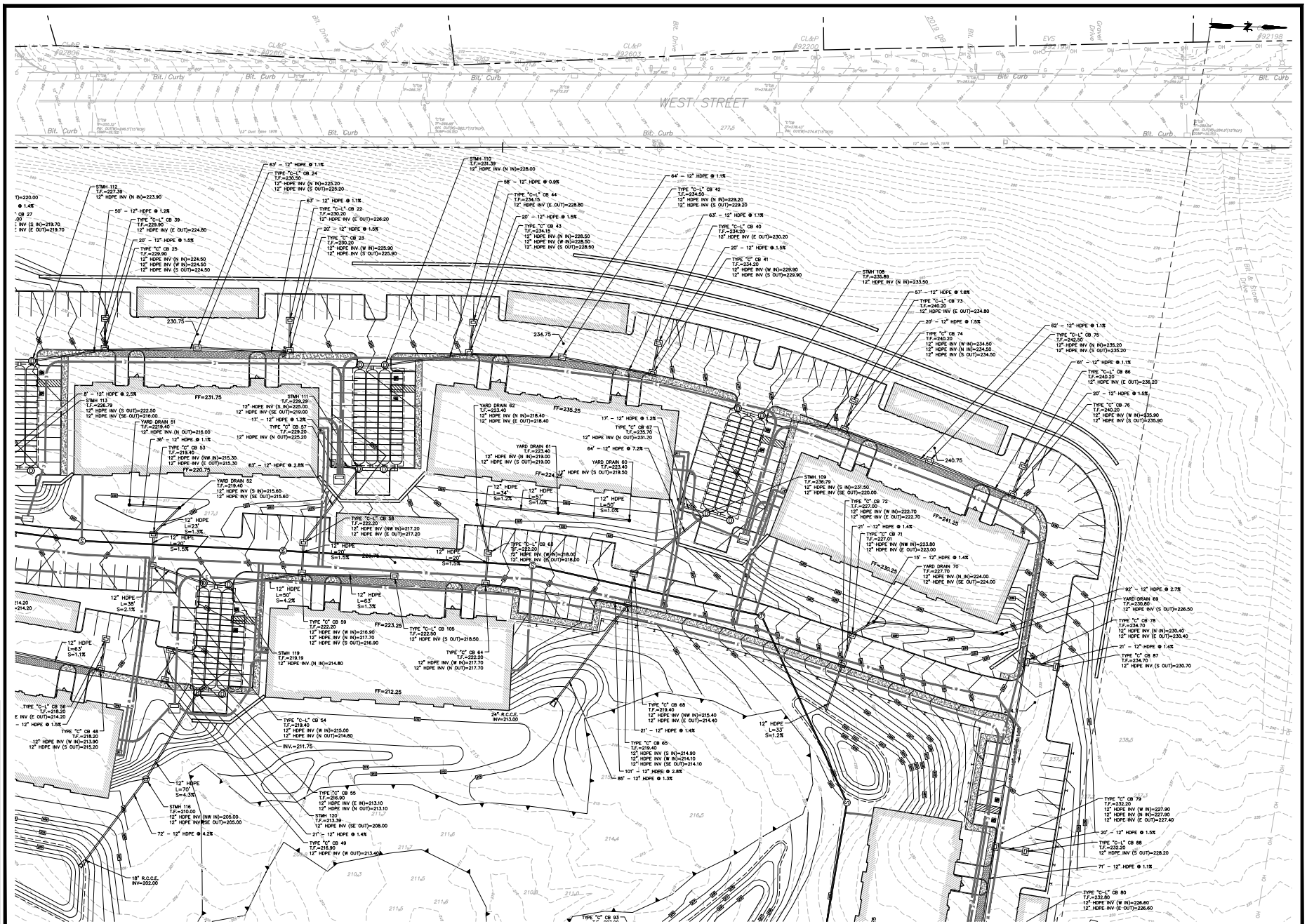
ANTHONY PROPERTIES DEVELOPMENT - SOUTHINGTON

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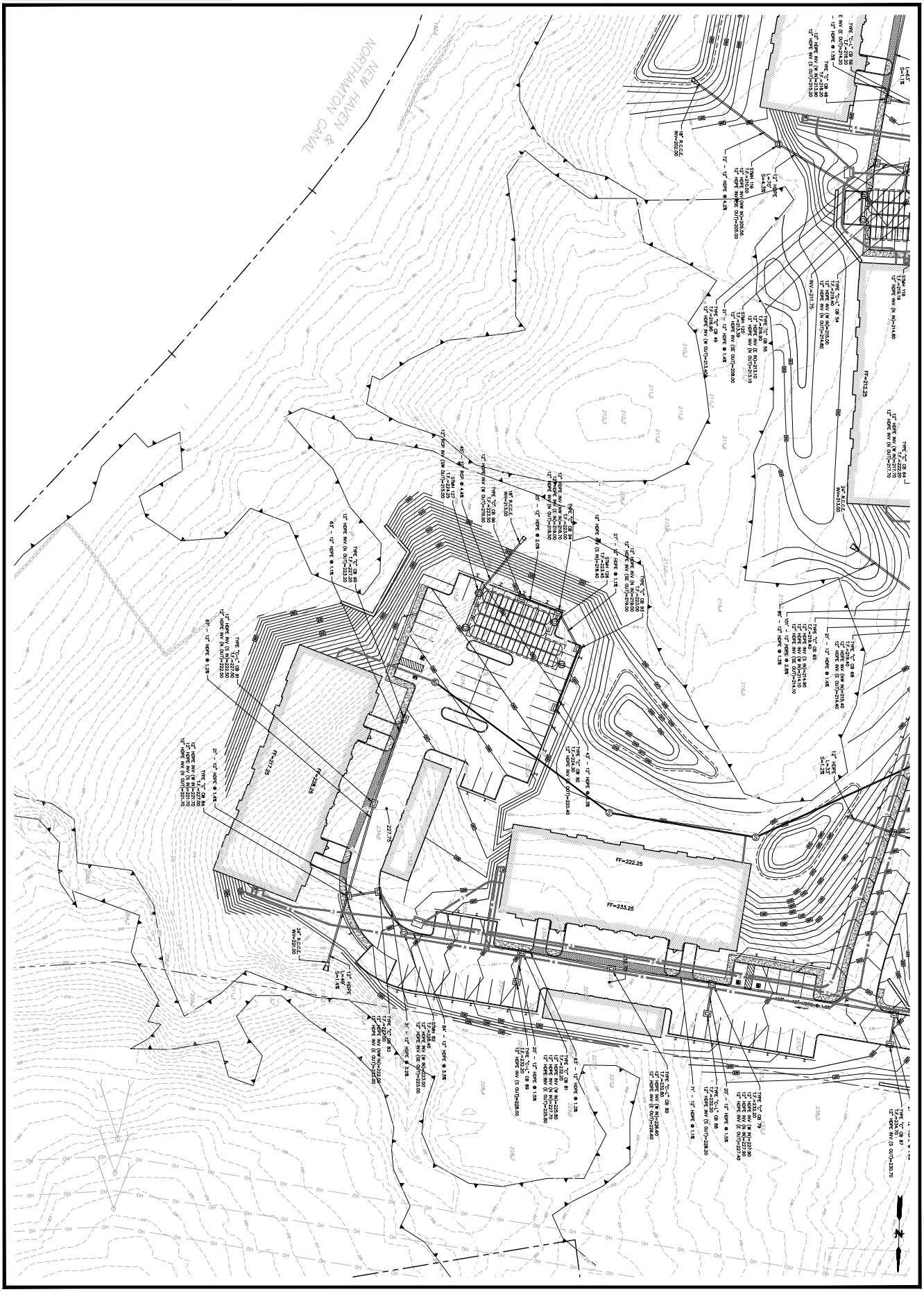
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DATUM:
HORZ.:
VERT.:
30 15 0 30
GRAPHIC SCALE

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER


WEST STREET
Bit. Curb
CL&P
STMH 110
T/F.=231.39
12" HDPE INV (N IN)=228.00
STMH 112
T/F.=227.39
12" HDPE INV (N IN)=223.90
STMH 111
T/F.=229.29
12" HDPE INV (S IN)=225.00
12" HDPE INV (SE OUT)=219.00
STMH 113
T/F.=226.79
12" HDPE INV (S OUT)=222.50
12" HDPE INV (SE OUT)=216.00
STMH 109
T/F.=236.79
12" HDPE INV (S IN)=231.50
12" HDPE INV (SE OUT)=220.00
STMH 108
T/F.=235.89
12" HDPE INV (N IN)=233.50
STMH 119
T/F.=219.19
12" HDPE INV (N IN)=214.80
STMH 120
T/F.=213.39
12" HDPE INV (SE OUT)=208.00
STMH 116
T/F.=210.00
12" HDPE INV (NW IN)=205.00
12" HDPE INV (SE OUT)=205.00
YARD DRAIN 51
T/F.=219.40
12" HDPE INV (N OUT)=216.00
YARD DRAIN 52
T/F.=219.40
12" HDPE INV (S IN)=215.60
12" HDPE INV (SE OUT)=215.60
YARD DRAIN 60
T/F.=223.40
12" HDPE INV (S OUT)=219.50
YARD DRAIN 61
T/F.=223.40
12" HDPE INV (N IN)=219.00
12" HDPE INV (S OUT)=219.00
YARD DRAIN 62
T/F.=223.40
12" HDPE INV (N IN)=218.40
12" HDPE INV (E OUT)=218.40
YARD DRAIN 69
T/F.=230.60
12" HDPE INV (S OUT)=226.50
YARD DRAIN 70
T/F.=227.70
12" HDPE INV (N IN)=224.00
12" HDPE INV (SE OUT)=224.00
TYPE "C" CB 27
TYPE "C-L" CB 39
TYPE "C" CB 25
TYPE "C" CB 53
TYPE "C" CB 57
TYPE "C-L" CB 58
TYPE "C" CB 59
TYPE "C-L" CB 105
TYPE "C" CB 64
TYPE "C-L" CB 54
TYPE "C" CB 55
TYPE "C" CB 49
TYPE "C" CB 93
TYPE "C-L" CB 24
TYPE "C-L" CB 22
TYPE "C" CB 23
TYPE "C-L" CB 44
TYPE "C" CB 43
TYPE "C-L" CB 42
TYPE "C-L" CB 40
TYPE "C" CB 41
TYPE "C-L" CB 73
TYPE "C" CB 74
TYPE "C-L" CB 75
TYPE "C-L" CB 86
TYPE "C" CB 76
TYPE "C" CB 72
TYPE "C" CB 71
TYPE "C" CB 78
TYPE "C" CB 87
TYPE "C" CB 79
TYPE "C-L" CB 88
TYPE "C-L" CB 80
TYPE "C" CB 68
TYPE "C" CB 65
TYPE "C-L" CB 56
TYPE "C" CB 48
TYPE "C-L" CB 66
63' – 12" HDPE @ 1.1%
58' – 12" HDPE @ 0.9%
64' – 12" HDPE @ 1.1%
20' – 12" HDPE @ 1.5%
50' – 12" HDPE @ 1.3%
36' – 12" HDPE @ 1.1%
8' – 12" HDPE @ 2.5%
17' – 12" HDPE @ 1.2%
64' – 12" HDPE @ 7.2%
63' – 12" HDPE @ 2.8%
72' – 12" HDPE @ 4.2%
101' – 12" HDPE @ 2.8%
85' – 12" HDPE @ 1.3%
57' – 12" HDPE @ 1.6%
62' – 12" HDPE @ 1.1%
61' – 12" HDPE @ 1.1%
92' – 12" HDPE @ 2.7%
71' – 12" HDPE @ 1.1%
21' – 12" HDPE @ 1.4%
15' – 12" HDPE @ 1.4%
12" HDPE L=23' S=1.5%
12" HDPE L=20' S=1.5%
12" HDPE L=50' S=4.2%
12" HDPE L=63' S=1.3%
12" HDPE L=36' S=2.1%
12" HDPE L=63' S=1.1%
12" HDPE L=70' S=4.3%
12" HDPE L=54' S=1.2%
12" HDPE L=57' S=1.0%
12" HDPE L=50' S=1.0%
12" HDPE L=33' S=1.2%
24" R.C.C.E. INV=213.00
18" R.C.C.E. INV=202.00
INV.=211.75
FF=231.75
FF=235.25
FF=224.75
FF=241.25
FF=230.25
FF=223.25
FF=212.25
230.75
234.75
240.75
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ANTHONY PROPERTIES DEVELOPMENT - SOUTHINGTON
SOUTHINGTON CONNECTICUT
SCALE: HORZ.: 1" = 30'
VERT.:
DATUM: HORZ.:
VERT.:
GRAPHIC SCALE
30 0 30
30 15 0 30
No. DATE DESCRIPTION DESIGNER REVIEWER
PROJ. No.: 20210063.A10
DATE: MM/DD/YYYY
CG-103
LAYER STATE:
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PC3: AUTOCAD PDF (GENERAL DOCUMENTATION).PC3 STB/CTB: FO.STB

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CG-104

PROJ. NO.: P2021\0063\A10
DATE: MM/DD/YYYY

ANTHONY PROPERTIES

SITE GRADING & DRAINAGE PLAN

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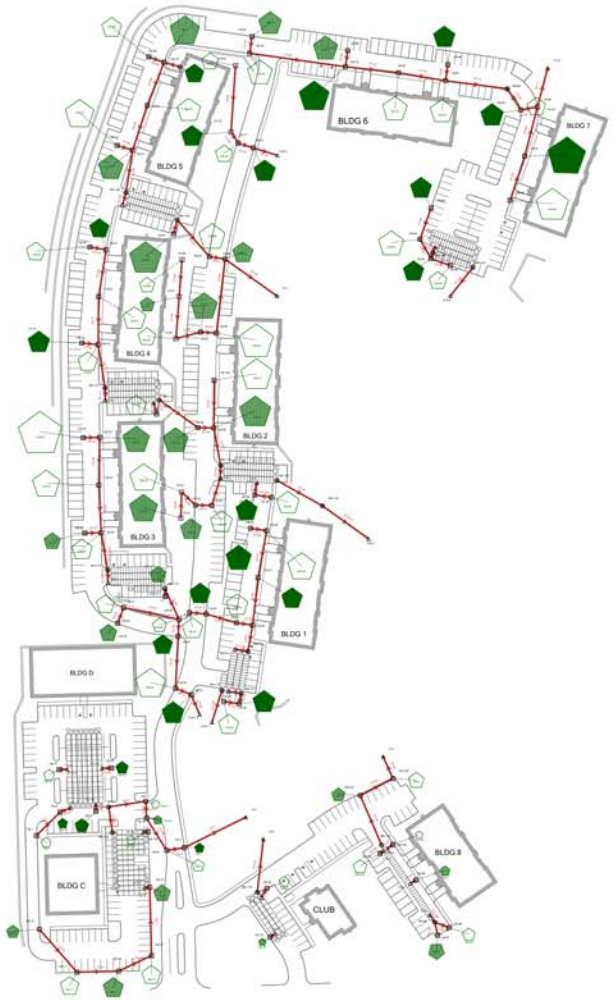
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VERT.:
30 15 0 30
GRAPHIC SCALE

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

Scenario: 25-Year



FlexTable: Conduit Table

Label	Start Node	Invert (Start) (ft)	Stop Node	Invert (Stop) (ft)	Length (Scaled) (ft)	Slope (Calculated) (%)	Diameter (in)	System Intensity (in/h)	System CA (ft²)	System Rational Flow (cfs)	Capacity (Full Flow) (cfs)	Velocity (ft/s)	Hydraulic Grade Line (In) (ft)	Elevation Ground (Start) (ft)	Hydraulic Grade Line (Out) (ft)	Elevation Ground (Stop) (ft)
CO-1	CB-1	211.50	CB-2	210.10	47.1	3.0	12.0	6.470	2,922	0.44	6.66	4.79	211.77	215.00	211.49	215.10
CO-2	CB-2	210.10	O-11.1	209.90	15.6	1.3	12.0	6.424	10,434	1.55	4.37	1.98	211.49	215.10	211.46	215.00
CO-3	CB-3	211.10	O-11.4	210.90	9.3	2.1	12.0	9.130	7,200	1.52	5.65	1.94	211.59	215.10	211.42	215.00
CO-4	MH-4	208.60	CB-17	208.30	53.0	0.6	15.0	11.699	0	0.00	5.27	3.65	209.07	215.80	208.81	214.00
CO-6	CB-6	207.70	CB-7	207.40	25.2	1.2	18.0	8.972	12,488	2.59	12.42	6.27	208.47	211.80	208.28	211.80
CO-7	CB-7	207.40	O-3	206.00	96.8	1.4	18.0	8.936	18,244	3.77	13.68	7.22	208.28	211.80	206.64	207.50
CO-10	CB-10	211.50	CB-11	211.00	80.4	0.6	12.0	6.470	2,816	0.42	3.04	2.72	211.94	215.00	211.94	214.20
CO-11	CB-11	211.00	CB-12	210.70	58.5	0.5	12.0	6.333	11,825	1.73	2.76	3.72	211.94	214.20	211.83	214.20
CO-12	CB-12	210.70	CB-13	210.40	51.6	0.6	12.0	6.260	15,201	2.20	2.94	2.80	211.83	214.20	211.66	214.50
CO-13	CB-13	210.40	CB-14	209.90	96.3	0.5	12.0	6.175	16,981	2.43	2.78	3.09	211.66	214.50	211.28	214.40
CO-14	CB-14	209.90	O-10.1	209.80	7.0	1.4	12.0	6.031	22,785	3.18	4.61	4.05	211.28	214.40	211.23	214.50
CO-15	CB-15	211.40	O-11.2	210.90	11.4	4.4	12.0	6.470	17,147	2.57	8.07	9.12	212.09	215.00	211.36	215.20
CO-16	CB-16	211.40	O-11.3	210.90	13.3	3.8	12.0	9.130	17,839	3.77	7.49	9.56	212.23	215.00	211.49	215.20
CO-17	CB-17	208.30	CB-18	208.10	24.0	0.8	15.0	9.130	1,102	0.23	6.39	4.38	208.81	214.00	208.64	214.00
CO-18	CB-18	208.10	CB-6	207.70	53.6	0.7	15.0	9.081	1,968	0.41	6.05	4.33	208.64	214.00	208.47	211.80
CO-19	CB-19	209.20	O-9.1	208.80	7.8	5.1	12.0	9.130	14,250	3.01	8.73	10.08	209.94	214.00	209.91	214.00
CO-20	CB-20	209.20	O-9.2	208.90	15.1	2.0	12.0	9.130	6,162	1.30	5.44	5.69	209.89	214.00	209.91	214.20
CO-22	CB-22	226.20	CB-23	225.90	23.0	1.3	12.0	6.192	25,559	3.66	4.41	6.27	227.02	230.20	226.76	230.20
CO-23	CB-23	225.90	CB-24	225.20	67.3	1.0	15.0	6.175	31,837	4.55	7.13	6.16	226.76	230.20	226.14	230.50
CO-24	CB-24	225.20	CB-25	224.50	67.4	1.0	15.0	6.124	37,566	5.32	7.13	6.37	226.14	230.50	225.49	229.90
CO-25	CB-25	224.50	MH-112	223.90	53.5	1.1	15.0	6.075	42,236	5.94	7.41	6.71	225.49	229.90	224.75	228.60
CO-27	CB-27	219.70	CB-28	215.00	79.8	5.9	12.0	5.887	6,266	0.85	9.37	7.42	220.09	224.00	215.58	219.25
CO-28	CB-28	215.00	CB-37	214.70	24.0	1.3	15.0	5.837	15,637	2.11	7.83	5.42	215.58	219.25	215.37	219.25
CO-29	CB-29	215.00	CB-30	214.70	24.0	1.3	12.0	9.130	1,350	0.29	4.32	3.11	215.22	219.00	215.01	219.00
CO-30	CB-30	214.70	CB-45	213.80	44.5	2.0	12.0	9.062	2,575	0.54	5.49	4.45	215.01	219.00	214.18	218.20
CO-31	CB-31	211.50	O-B-1.2	211.00	30.4	1.6	15.0	5.762	25,368	3.38	8.98	6.80	212.24	216.50	211.55	212.25
CO-32	CB-32	212.10	CB-33	211.90	21.7	0.9	12.0	9.130	3,726	0.79	3.71	3.75	212.47	215.60	212.41	215.60
CO-33	CB-33	211.90	MH-131	211.70	14.8	1.4	12.0	9.079	6,834	1.44	4.49	5.08	212.41	215.60	212.48	216.00
CO-35	CB-35	212.00	CB-31	211.50	24.0	2.1	15.0	5.777	23,735	3.17	10.09	7.28	212.72	216.50	212.24	216.50
CO-37	CB-37	214.70	CB-35	212.00	73.2	3.7	15.0	5.816	20,448	2.75	13.44	8.61	215.37	219.25	212.72	216.50
CO-38	CB-38	220.00	CB-27	219.70	23.5	1.3	12.0	5.914	4,815	0.66	4.36	4.00	220.34	224.00	220.09	224.00
CO-39	CB-39	224.80	CB-25	224.50	23.0	1.3	12.0	6.192	3,117	0.45	4.41	3.60	225.48	229.90	225.49	229.90
CO-40	CB-40	230.20	CB-41	229.90	23.0	1.3	12.0	5.914	15,337	2.10	4.41	5.54	230.82	234.20	230.62	234.20
CO-41	CB-41	229.90	CB-42	229.20	66.9	1.0	12.0	5.895	20,648	2.82	3.95	5.46	230.62	234.20	230.03	234.50
CO-42	CB-42	229.20	CB-43	228.50	67.8	1.0	12.0	5.838	28,042	3.79	3.92	5.69	230.03	234.50	229.38	234.20
CO-43	CB-43	228.50	MH-110	228.00	61.9	0.8	15.0	5.783	34,805	4.66	6.29	5.61	229.38	234.20	228.80	232.50
CO-44	CB-44	228.80	CB-43	228.50	23.1	1.3	12.0	6.192	3,299	0.47	4.39	3.65	229.37	234.20	229.38	234.20
CO-45	CB-45	213.80	CB-46	213.50	23.0	1.3	12.0	8.973	3,901	0.81	4.41	4.28	214.18	218.20	213.79	218.20
CO-46	CB-46	212.50	MH-114	212.10	37.8	1.1	15.0	8.826	15,133	3.09	7.20	5.64	213.21	218.20	212.68	217.80
CO-47	CB-47	213.20	CB-46	212.50	67.4	1.0	12.0	8.940	11,231	2.32	3.93	5.22	213.85	218.50	213.21	218.20
CO-48	CB-48	213.90	CB-47	213.20	67.4	1.0	12.0	9.074	6,062	1.27	3.93	4.47	214.38	218.20	213.85	218.50
CO-49	CB-49	212.60	CB-55	212.40	23.9	0.8	12.0	9.130	4,418	0.93	3.53	1.19	213.29	216.90	213.25	216.90
CO-51	YD-51	216.00	YD-52	215.60	36.6	1.1	12.0	9.130	783	0.17	4.04	2.53	216.17	219.40	215.88	219.40
CO-52	YD-52	215.60	CB-53	215.30	26.8	1.1	12.0	9.002	2,264	0.47	4.08	3.46	215.88	219.40	215.75	219.40
CO-53	CB-53	215.30	CB-54	215.00	22.9	1.3	12.0	8.933	5,508	1.14	4.42	4.71	215.75	219.40	215.35	219.40
CO-54	CB-54	214.80	O-2.1	209.00	40.1	14.5	12.0	8.890	10,085	2.07	14.68	13.22	215.41	219.40	212.21	219.60
CO-55	CB-55	212.40	O-2.2	211.90	17.5	2.9	12.0	8.951	11,223	2.32	6.53	8.60	213.25	216.90	212.32	216.60
CO-56	CB-56	214.20	CB-48	213.90	23.0	1.3	12.0	9.130	2,147	0.45	4.41	3.62	214.48	218.20	214.38	218.20

FlexTable: Conduit Table

Label	Start Node	Invert (Start) (ft)	Stop Node	Invert (Stop) (ft)	Length (Scaled) (ft)	Slope (Calculated) (%)	Diameter (in)	System Intensity (in/h)	System CA (ft²)	System Rational Flow (cfs)	Capacity (Full Flow) (cfs)	Velocity (ft/s)	Hydraulic Grade Line (In) (ft)	Elevation Ground (Start) (ft)	Hydraulic Grade Line (Out) (ft)	Elevation Ground (Stop) (ft)
CO-57	CB-57	225.50	O-32	225.30	16.4	1.2	12.0	9.130	9,958	2.10	4.27	5.41	226.12	229.10	225.81	229.25
CO-58	CB-58	217.20	CB-59	216.90	22.3	1.3	15.0	9.130	1,208	0.26	8.12	6.04	217.88	222.20	217.76	222.20
CO-59	CB-59	216.90	MH-119	214.80	54.1	3.9	15.0	8.996	9,231	1.92	13.79	10.07	217.76	222.20	215.30	219.80
CO-60	YD-60	219.50	YD-61	219.00	52.3	1.0	12.0	9.130	311	0.07	3.77	1.83	219.60	223.40	219.15	223.40
CO-61	YD-61	219.00	YD-62	218.40	59.4	1.0	12.0	8.876	626	0.13	3.88	2.28	219.15	223.40	218.61	223.40
CO-62	YD-62	218.40	CB-63	218.00	36.2	1.1	12.0	8.645	1,253	0.25	4.06	2.87	218.61	223.40	218.39	222.20
CO-63	CB-63	218.00	CB-64	217.70	22.2	1.4	12.0	8.534	4,403	0.87	4.48	4.42	218.39	222.20	218.26	222.20
CO-64	CB-64	217.70	CB-65	214.90	105.0	2.7	12.0	8.489	8,959	1.76	6.30	6.88	218.26	222.20	215.26	219.40
CO-65	CB-65	214.10	O-7	213.00	89.2	1.2	18.0	8.354	30,573	5.91	12.63	7.63	215.22	219.40	213.89	214.50
CO-67	CB-67	231.70	MH-109	231.50	20.0	1.0	12.0	9.130	9,009	1.90	3.56	4.61	232.29	235.70	232.02	235.00
CO-68	CB-68	214.40	CB-65	214.10	22.5	1.3	15.0	9.041	15,496	3.24	8.08	7.12	215.36	219.40	215.22	219.40
CO-69	YD-69	226.50	YD-70	224.00	93.8	2.7	12.0	9.130	295	0.06	6.30	2.58	226.60	230.80	224.20	227.20
CO-70	YD-70	224.00	CB-71	223.80	18.7	1.1	12.0	8.807	1,128	0.23	3.99	2.76	224.20	227.20	223.96	227.00
CO-71	CB-71	223.00	CB-72	222.70	22.2	1.4	12.0	8.747	2,893	0.59	4.49	3.95	223.32	227.00	223.11	227.00
CO-72	CB-72	222.70	O-B-3	222.00	35.7	2.0	12.0	8.697	4,685	0.94	5.40	5.17	223.11	227.00	222.28	223.25
CO-73	CB-73	234.80	CB-74	234.50	23.0	1.3	12.0	5.914	4,697	0.64	4.41	4.01	235.37	240.20	235.37	240.20
CO-74	CB-74	234.50	MH-108	233.50	60.7	1.6	12.0	5.775	32,363	4.32	4.95	7.11	235.37	240.20	234.22	237.70
CO-75	CB-75	235.20	CB-74	234.50	66.3	1.1	12.0	5.829	24,194	3.26	3.96	5.64	235.97	242.50	235.37	240.20
CO-76	CB-76	235.90	CB-75	235.20	65.2	1.1	12.0	5.885	18,767	2.56	4.00	5.40	236.59	240.20	235.97	242.50
CO-78	CB-78	230.40	CB-79	227.40	136.5	2.2	12.0	5.608	8,933	1.16	5.72	5.71	230.85	234.70	228.15	232.20
CO-79	CB-79	227.40	CB-80	226.60	75.1	1.1	12.0	5.497	24,139	3.07	3.98	5.60	228.15	232.20	227.37	232.80
CO-80	CB-80	226.60	CB-81	225.80	67.4	1.2	12.0	5.435	25,489	3.21	3.88	5.52	227.37	232.80	226.61	232.20
CO-81	CB-81	225.80	MH-82	223.00	88.0	3.2	12.0	5.379	28,596	3.56	6.35	8.32	226.61	232.20	223.54	228.40
CO-82	MH-82	223.00	CB-83	222.00	35.4	2.8	12.0	5.330	28,596	3.53	6.49	8.43	223.80	228.40	222.82	227.00
CO-83	CB-83	222.00	CB-84	221.70	24.0	1.2	15.0	5.310	33,193	4.08	7.82	6.44	222.82	227.00	222.70	227.00
CO-84	CB-84	221.70	O-10	221.00	56.7	1.2	15.0	5.293	50,540	6.19	7.78	7.04	222.70	227.00	221.85	221.00
CO-86	CB-86	236.20	CB-76	235.90	23.0	1.3	12.0	5.914	3,653	0.50	4.41	3.73	236.55	240.20	236.59	240.20
CO-87	CB-87	230.70	CB-78	230.40	23.9	1.3	12.0	5.636	6,097	0.80	3.99	3.96	231.07	234.70	230.85	234.70
CO-88	CB-88	228.20	CB-79	227.90	23.0	1.3	12.0	9.130	9,529	2.01	4.41	5.49	228.81	232.20	228.39	232.20
CO-89	CB-89	228.00	CB-81	227.70	22.9	1.3	12.0	9.130	1,919	0.41	4.42	3.51	228.26	232.20	227.90	232.20
CO-90	CB-90	223.20	CB-91	222.50	65.7	1.1	12.0	9.130	3,003	0.63	3.98	3.71	223.53	227.20	223.01	227.50
CO-91	CB-91	222.50	CB-84	221.70	71.8	1.1	12.0	8.973	7,052	1.46	4.08	4.77	223.01	227.50	222.70	227.00
CO-92	CB-92	220.40	CB-93	219.00	46.7	3.0	12.0	9.130	1,515	0.32	6.68	4.38	220.63	224.30	219.55	223.00
CO-93	CB-93	219.00	CB-94	218.70	31.4	1.0	12.0	9.035	7,958	1.66	3.77	4.65	219.55	223.00	219.17	223.00
CO-94	CB-94	218.50	MH-126	218.40	8.4	1.2	18.0	8.976	17,032	3.54	12.42	6.06	219.22	223.00	219.20	223.50
CO-96	CB-96	219.50	CB-94	219.00	28.9	1.7	12.0	9.130	3,219	0.68	5.08	4.50	219.84	223.50	219.25	223.00
CO-97	CB-97	208.00	MH-132	207.80	18.6	1.1	12.0	7.534	5,941	1.04	4.00	4.27	208.43	211.50	208.26	211.80
CO-98	CB-98	208.00	MH-132	207.80	21.3	0.9	12.0	9.130	4,052	0.86	3.74	3.86	208.39	211.50	208.26	211.80
CO-99	CB-99	208.00	O-8.2	207.80	9.7	2.1	12.0	9.130	5,503	1.16	5.55	5.59	208.45	212.50	208.26	212.75
CO-100	CB-100	208.00	O-8.4	207.80	9.7	2.1	12.0	9.130	4,492	0.95	5.55	5.28	208.41	212.15	208.26	212.20
CO-101	CB-101	204.00	CB-102	203.50	51.9	1.0	15.0	9.130	5,524	1.17	6.87	5.49	204.72	212.50	204.29	211.00
CO-102	CB-102	203.50	O-1	203.00	34.2	1.5	15.0	9.046	8,694	1.82	8.46	6.72	204.29	211.00	203.61	204.25
CO-103	CB-103	211.00	O-10.2	210.90	7.0	1.4	12.0	9.130	3,386	0.72	4.60	4.26	211.35	214.50	211.18	214.60
CO-104	CB-104	208.00	O-8.3	207.80	6.3	3.2	12.0	9.130	4,232	0.89	6.88	6.05	208.40	212.15	208.26	212.20
CO-105	CB-105	218.50	CB-59	217.70	67.3	1.2	12.0	9.130	5,016	1.06	4.21	4.46	218.93	222.50	218.04	222.20
CO-107	CB-107	222.30	MH-113	222.10	10.6	1.9	12.0	9.130	7,537	1.59	5.31	2.03	223.20	226.10	223.04	227.00
CO-108	MH-108	229.00	O-5	229.00	17.9	0.0	18.0	5.735	32,363	4.30	0.11	2.43	231.81	237.70	231.78	237.50
CO-109	MH-109	220.00	CB-68	215.40	68.5	6.7	15.0	9.092	9,009	1.90	18.14	12.11	220.84	235.00	215.81	219.40

FlexTable: Conduit Table

Label	Start Node	Invert (Start) (ft)	Stop Node	Invert (Stop) (ft)	Length (Scaled) (ft)	Slope (Calculated) (%)	Diameter (in)	System Intensity (in/h)	System CA (ft²)	System Rational Flow (cfs)	Capacity (Full Flow) (cfs)	Velocity (ft/s)	Hydraulic Grade Line (In) (ft)	Elevation Ground (Start) (ft)	Hydraulic Grade Line (Out) (ft)	Elevation Ground (Stop) (ft)
CO-110	MH-110	222.00	O-4	222.00	17.6	0.0	18.0	5.732	34,805	4.62	0.11	2.61	224.70	232.50	224.67	232.30
CO-111	MH-111	219.00	CB-58	217.20	67.0	2.7	15.0	9.130	0	0.00	11.47	7.56	219.65	229.80	217.88	222.20
CO-112	MH-112	219.00	O-3	219.00	17.7	0.0	18.0	6.038	42,236	5.90	0.11	3.34	221.82	228.60	221.77	227.00
CO-113	MH-113	216.00	CB-28	215.00	47.5	2.1	15.0	9.084	7,537	1.58	10.15	6.02	216.50	227.00	215.58	219.25
CO-114	MH-114	209.00	O-1.1	209.00	18.2	0.0	18.0	8.766	15,133	3.07	0.11	1.74	212.49	217.80	212.48	217.00
CO-115	MH-115	208.50	O-B-1.1	208.00	46.8	1.1	15.0	9.130	0	0.00	7.24	5.07	209.07	213.00	208.46	209.25
CO-116	MH-116	205.00	O-B-2	202.00	79.9	3.8	15.0	11.727	0	0.00	13.56	9.11	205.73	210.00	202.42	203.25
CO-118	MH-118	207.70	O-2	205.75	75.4	2.6	15.0	9.130	0	0.00	11.26	4.82	208.00	214.15	205.94	207.00
CO-119	MH-119	209.00	O-2.1	209.00	17.9	0.0	18.0	8.949	9,231	1.91	0.11	2.56	212.24	219.80	212.21	219.60
CO-120	MH-120	209.00	MH-116	205.00	73.5	5.4	15.0	9.130	0	0.00	16.33	10.42	209.73	218.50	205.38	210.00
CO-123	MH-123	205.00	CB-101	204.00	76.1	1.3	15.0	9.130	0	0.00	8.02	5.44	205.56	212.90	204.72	212.50
CO-124	MH-124	209.00	MH-4	208.60	36.6	1.1	15.0	9.130	0	0.00	7.32	3.56	209.30	216.20	209.07	215.80
CO-126	MH-126	216.00	O-7	216.00	9.2	0.0	12.0	8.963	17,032	3.53	0.04	4.50	219.20	223.50	219.12	223.50
CO-127	MH-127	215.00	O-B-4	213.00	51.3	3.9	15.0	9.130	0	0.00	13.81	7.01	215.44	224.25	213.26	214.25
CO-131	MH-131	209.00	O-1.2	209.00	18.3	0.0	18.0	9.053	6,834	1.43	0.11	0.81	212.48	216.00	212.48	216.20
CO-132	MH-132	205.00	O-8.1	205.00	12.7	0.0	18.0	7.495	9,994	1.73	0.11	0.98	208.26	211.80	208.26	211.60
CO-T-1	T-1	236.25	CB-76	235.90	23.1	1.5	12.0	9.130	11,700	2.47	4.75	6.11	236.92	241.25	236.59	240.20

FlexTable: Catch Basin Table

Label	Elevation (Ground) (ft)	Elevation (Invert) (ft)	Inlet Drainage Area (ft²)	Inlet C	Local Flow Time (min)	Flow (Captured) (cfs)	Flow (Total Out) (cfs)	Inlet Location	Depth (Gutter) (in)	Spread / Top Width (ft)	Longitudinal Slope (Inlet) (%)
CB-1	215.00	211.50	6,563	0.45	10.0	0.44	0.44	In Sag	1.7	2.9	
CB-2	215.10	210.10	8,756	0.86	5.0	1.59	1.55	In Sag	2.6	10.9	
CB-3	215.10	211.10	8,000	0.90	5.0	1.52	1.52	In Sag	2.5	10.6	
CB-6	211.80	207.70	12,292	0.69	5.0	2.22	4.02	In Sag	3.4	10.2	
CB-7	211.80	207.40	5,910	0.90	5.0	1.22	5.20	In Sag	2.6	6.6	
CB-10	215.00	211.50	6,096	0.46	10.0	0.42	0.42	In Sag	1.7	2.8	
CB-11	214.20	211.00	14,354	0.63	5.0	1.90	1.73	In Sag	3.2	9.2	
CB-12	214.20	210.70	5,655	0.60	5.0	0.71	2.20	In Sag	1.2	5.2	
CB-13	214.50	210.40	2,284	0.78	5.0	0.38	2.43	In Sag	1.6	2.5	
CB-14	214.40	209.90	7,587	0.77	5.0	1.23	3.18	In Sag	2.6	6.7	
CB-15	215.00	211.40	26,195	0.65	10.0	2.57	2.57	In Sag	3.7	11.3	
CB-16	215.00	211.40	20,336	0.88	5.0	3.77	3.77	In Sag	4.4	18.4	
CB-17	214.00	208.30	1,462	0.88	5.0	0.23	1.66	On Grade	0.9	3.6	2.0
CB-18	214.00	208.10	1,151	0.84	5.0	0.18	1.84	On Grade	0.8	3.2	2.0
CB-19	214.00	209.20	23,702	0.60	5.0	3.01	3.01	In Sag	4.0	12.6	
CB-20	214.00	209.20	7,378	0.84	5.0	1.30	1.30	In Sag	2.7	7.0	
CB-22	230.20	226.20	27,028	0.90	11.0	3.66	3.66	In Sag	4.3	18.1	
CB-23	230.20	225.90	7,474	0.84	5.0	1.33	4.55	In Sag	2.7	7.0	
CB-24	230.50	225.20	6,366	0.90	11.0	0.82	5.32	In Sag	1.8	7.4	
CB-25	229.90	224.50	3,813	0.51	5.0	0.33	5.94	On Grade	1.0	4.2	2.0
CB-27	224.00	219.70	2,039	0.81	12.0	0.20	0.85	On Grade	0.8	3.3	2.0
CB-28	219.25	215.00	2,812	0.58	5.0	0.39	2.11	On Grade	1.0	4.1	2.0
CB-29	219.00	215.00	2,812	0.58	5.0	0.29	0.29	On Grade	0.9	3.9	2.0
CB-30	219.00	214.70	1,883	0.77	5.0	0.26	0.54	On Grade	0.9	3.8	2.0
CB-31	216.50	211.50	2,540	0.72	5.0	0.34	3.38	On Grade	1.0	4.3	2.0
CB-32	215.60	212.10	4,870	0.71	5.0	0.79	0.79	In Sag	2.1	4.7	
CB-33	215.60	211.90	3,700	0.84	5.0	0.66	1.44	In Sag	2.0	4.1	
CB-35	216.50	212.00	3,258	0.71	5.0	0.69	3.17	On Grade	1.4	6.0	2.0
CB-37	219.25	214.70	13,955	0.34	12.0	0.66	2.75	On Grade	1.4	5.9	2.0
CB-38	224.00	220.00	14,394	0.43	12.0	0.66	0.66	On Grade	1.4	5.9	2.0
CB-39	229.90	224.80	11,175	0.38	11.0	0.45	0.45	On Grade	1.2	4.8	2.0
CB-40	234.20	230.20	32,986	0.39	12.0	2.10	2.10	In Sag	3.1	12.8	
CB-41	234.20	229.90	6,346	0.84	5.0	1.12	2.82	In Sag	2.1	8.9	
CB-42	234.50	229.20	8,215	0.90	5.0	1.56	3.79	In Sag	2.6	10.7	
CB-43	234.20	228.50	6,150	0.89	5.0	0.73	4.66	On Grade	1.5	6.2	2.0
CB-44	234.20	228.80	12,183	0.37	11.0	0.47	0.47	On Grade	1.2	5.0	2.0
CB-45	218.20	213.80	1,783	0.90	5.0	0.28	0.81	On Grade	0.9	3.9	2.0
CB-46	218.20	212.50	1,800	0.90	5.0	0.00	3.09	On Grade	0.0	0.0	2.0
CB-47	218.50	213.20	5,744	0.90	5.0	1.09	2.32	In Sag	2.4	6.1	
CB-48	218.20	213.90	7,556	0.85	5.0	0.83	1.27	On Grade	1.6	6.6	2.0
CB-49	216.90	212.60	2,136	0.90	5.0	0.93	0.93	In Sag	2.3	5.4	
CB-53	219.40	215.30	3,868	0.78	5.0	0.69	1.14	In Sag	2.0	4.2	
CB-54	219.40	214.80	3,470	0.89	5.0	0.97	2.07	In Sag	2.0	8.1	
CB-55	216.90	212.40	7,432	0.81	5.0	1.44	2.32	In Sag	2.8	7.5	
CB-56	218.20	214.20	4,382	0.67	5.0	0.45	0.45	On Grade	1.2	4.9	2.0
CB-57	229.10	225.50	9,500	0.84	5.0	2.10	2.10	In Sag	3.3	9.8	
CB-58	222.20	217.20	1,593	0.90	5.0	0.26	2.87	On Grade	0.9	3.7	2.0
CB-59	222.20	216.90	5,014	0.90	5.0	0.64	4.53	On Grade	1.4	5.8	2.0
CB-63	222.20	218.00	7,039	0.68	5.0	0.67	0.87	On Grade	1.4	5.9	2.0

FlexTable: Catch Basin Table

Label	Elevation (Ground) (ft)	Elevation (Invert) (ft)	Inlet Drainage Area (ft²)	Inlet C	Local Flow Time (min)	Flow (Captured) (cfs)	Flow (Total Out) (cfs)	Inlet Location	Depth (Gutter) (in)	Spread / Top Width (ft)	Longitudinal Slope (Inlet) (%)
CB-64	222.20	217.70	9,236	0.85	5.0	0.96	1.76	On Grade	1.7	7.1	2.0
CB-65	219.40	214.10	2,521	0.90	5.0	1.29	8.31	In Sag	2.6	6.9	
CB-67	235.70	231.70	9,252	0.76	5.0	1.90	1.90	In Sag	3.2	9.2	
CB-68	219.40	214.40	9,603	0.42	5.0	1.37	5.64	In Sag	2.7	7.2	
CB-71	227.00	223.00	3,040	0.75	5.0	0.37	0.59	On Grade	1.1	4.5	2.0
CB-72	227.00	222.70	2,582	0.90	5.0	0.38	0.94	On Grade	1.1	4.5	2.0
CB-73	240.20	234.80	20,710	0.34	12.0	0.64	0.64	On Grade	1.4	5.8	2.0
CB-74	240.20	234.50	6,065	0.90	5.0	0.73	4.32	On Grade	1.5	6.2	2.0
CB-75	242.50	235.20	6,030	0.90	5.0	1.15	3.26	In Sag	2.2	9.0	
CB-76	240.20	235.90	6,030	0.89	5.0	0.72	2.56	On Grade	1.5	6.1	2.0
CB-78	234.70	230.40	2,893	0.78	5.0	0.60	1.16	On Grade	1.3	5.6	2.0
CB-79	232.20	227.40	4,815	0.90	5.0	1.20	3.07	In Sag	2.6	6.5	
CB-80	232.80	226.60	1,500	0.90	5.0	0.29	3.21	In Sag	1.4	2.3	
CB-81	232.20	225.80	1,700	0.83	5.0	0.25	3.56	On Grade	0.9	3.7	2.0
CB-83	227.00	222.00	6,255	0.70	5.0	0.97	4.08	In Sag	2.3	5.6	
CB-84	227.00	221.70	11,610	0.83	5.0	2.17	6.19	In Sag	3.4	10.1	
CB-86	240.20	236.20	14,292	0.36	12.0	0.50	0.50	On Grade	1.2	5.1	2.0
CB-87	234.70	230.70	19,049	0.44	13.0	0.80	0.80	On Grade	1.5	6.4	2.0
CB-88	232.20	228.20	7,680	0.75	5.0	2.01	2.01	In Sag	3.0	12.5	
CB-89	232.20	228.00	2,870	0.88	5.0	0.41	0.41	On Grade	1.1	4.6	2.0
CB-90	227.20	223.20	5,005	0.90	5.0	0.63	0.63	On Grade	1.4	5.7	2.0
CB-91	227.50	222.50	4,499	0.90	5.0	0.86	1.46	In Sag	2.2	5.0	
CB-92	224.30	220.40	2,389	0.79	5.0	0.32	0.32	On Grade	1.0	4.1	2.0
CB-93	223.00	219.00	6,745	0.90	5.0	1.36	1.66	In Sag	2.7	7.2	
CB-94	223.00	218.50	4,598	0.90	5.0	1.24	3.54	In Sag	2.6	6.7	
CB-96	223.50	219.50	3,816	0.90	5.0	0.68	0.68	On Grade	1.4	5.9	2.0
CB-97	211.50	208.00	11,691	0.51	8.0	1.04	1.04	In Sag	2.4	5.9	
CB-98	211.50	208.00	4,955	0.82	5.0	0.86	0.86	In Sag	2.2	5.0	
CB-99	212.50	208.00	6,114	0.90	5.0	1.16	1.16	In Sag	2.5	6.4	
CB-100	212.15	208.00	5,525	0.81	5.0	0.95	0.95	In Sag	2.3	5.5	
CB-101	212.50	204.00	6,833	0.81	5.0	1.17	3.18	On Grade	1.5	6.2	2.0
CB-102	211.00	203.50	3,761	0.84	5.0	0.67	3.83	In Sag	1.2	5.0	
CB-103	214.50	211.00	4,419	0.77	5.0	0.72	0.72	In Sag	2.0	4.4	
CB-104	212.15	208.00	4,967	0.85	5.0	0.89	0.89	In Sag	1.9	7.8	
CB-105	222.50	218.50	5,573	0.90	5.0	1.06	1.06	In Sag	2.1	8.6	
CB-107	226.10	222.30	8,853	0.81	5.0	1.59	1.59	In Sag	2.9	8.0	
YD-51	219.40	216.00	2,611	0.30	5.0	0.17	0.17	In Sag	0.9	3.8	
YD-52	219.40	215.60	4,934	0.30	5.0	0.31	0.47	In Sag	1.3	5.3	
YD-60	223.40	219.50	1,038	0.30	5.0	0.07	0.07	In Sag	0.6	2.4	
YD-61	223.40	219.00	1,048	0.30	5.0	0.07	0.13	In Sag	0.6	2.4	
YD-62	223.40	218.40	2,090	0.30	5.0	0.13	0.25	In Sag	0.8	3.4	
YD-69	230.80	226.50	1,059	0.30	5.0	0.06	0.06	On Grade	0.5	2.1	2.0
YD-70	227.20	224.00	3,685	0.30	5.0	0.18	0.23	On Grade	0.8	3.4	2.0

FlexTable: Catchment Table

Label	Outflow Element	Area (User Defined) (ft²)	Runoff Coefficient (Rational)	Catchment CA (ft²)	Time of Concentration (min)	Catchment Intensity (in/h)	Catchment Rational Flow (cfs)	Time of Concentration (Composite) (min)
CM-1	CB-1	6,563	0.45	2,922	10.0	6.470	0.44	10.0
CM-2	CB-2	8,756	0.86	7,513	5.0	9.130	1.59	5.0
CM-3	CB-3	8,000	0.90	7,200	5.0	9.130	1.52	5.0
CM-6	CB-6	12,292	0.69	8,445	5.0	9.130	1.78	5.0
CM-7	CB-7	5,910	0.90	5,319	5.0	9.130	1.12	5.0
CM-10	CB-10	6,096	0.46	2,816	10.0	6.470	0.42	10.0
CM-11	CB-11	14,354	0.63	9,009	5.0	9.130	1.90	5.0
CM-12	CB-12	5,655	0.60	3,376	5.0	9.130	0.71	5.0
CM-13	CB-13	2,284	0.78	1,780	5.0	9.130	0.38	5.0
CM-14	CB-14	7,587	0.77	5,804	5.0	9.130	1.23	5.0
CM-15	CB-15	26,195	0.65	17,147	10.0	6.470	2.57	10.0
CM-16	CB-16	20,336	0.88	17,839	5.0	9.130	3.77	5.0
CM-17	CB-17	1,462	0.88	1,285	5.0	9.130	0.27	5.0
CM-18	CB-18	1,151	0.84	969	5.0	9.130	0.20	5.0
CM-19	CB-19	23,702	0.60	14,250	5.0	9.130	3.01	5.0
CM-20	CB-20	7,378	0.84	6,162	5.0	9.130	1.30	5.0
CM-22	CB-22	27,028	0.90	24,325	11.0	6.192	3.49	11.0
CM-23	CB-23	7,474	0.84	6,278	5.0	9.130	1.33	5.0
CM-24	CB-24	6,366	0.90	5,729	11.0	6.192	0.82	11.0
CM-25	CB-25	3,813	0.51	1,945	5.0	9.130	0.41	5.0
CM-27	CB-27	2,039	0.81	1,645	12.0	5.914	0.23	12.0
CM-28	CB-28	2,812	0.58	1,640	5.0	9.130	0.35	5.0
CM-29	CB-29	2,812	0.58	1,640	5.0	9.130	0.35	5.0
CM-30	CB-30	1,883	0.77	1,457	5.0	9.130	0.31	5.0
CM-31	CB-31	2,540	0.72	1,836	5.0	9.130	0.39	5.0
CM-32	CB-32	4,870	0.71	3,448	5.0	9.130	0.73	5.0
CM-33	CB-33	3,700	0.84	3,108	5.0	9.130	0.66	5.0
CM-35	CB-35	3,258	0.71	2,297	5.0	9.130	0.49	5.0
CM-37	CB-37	13,955	0.34	4,806	12.0	5.914	0.66	12.0
CM-38	CB-38	14,394	0.43	6,210	12.0	5.914	0.85	12.0
CM-39	CB-89	2,870	0.88	2,531	5.0	9.130	0.53	5.0
CM-39	CB-39	11,175	0.38	4,217	11.0	6.192	0.60	11.0
CM-40	CB-40	32,986	0.39	12,963	12.0	5.914	1.77	12.0
CM-41	CB-41	6,346	0.84	5,312	5.0	9.130	1.12	5.0
CM-42	CB-42	8,215	0.90	7,394	5.0	9.130	1.56	5.0
CM-43	CB-43	6,150	0.89	5,443	5.0	9.130	1.15	5.0
CM-44	CB-44	12,183	0.37	4,532	11.0	6.192	0.65	11.0
CM-45	CB-45	1,783	0.90	1,605	5.0	9.130	0.34	5.0
CM-46	CB-46	1,800	0.90	1,620	5.0	9.130	0.34	5.0
CM-47	CB-47	5,744	0.90	5,170	5.0	9.130	1.09	5.0
CM-48	CB-48	7,556	0.85	6,411	5.0	9.130	1.35	5.0
CM-49	CB-49	2,136	0.90	1,922	5.0	9.130	0.41	5.0
CM-51	YD-51	2,611	0.30	783	5.0	9.130	0.17	5.0
CM-52	YD-52	4,934	0.30	1,480	5.0	9.130	0.31	5.0
CM-53	CB-53	3,868	0.78	3,019	5.0	9.130	0.64	5.0
CM-54	CB-54	3,470	0.89	3,071	5.0	9.130	0.65	5.0
CM-55	CB-55	7,432	0.81	6,033	5.0	9.130	1.27	5.0
CM-56	CB-56	4,382	0.67	2,918	5.0	9.130	0.62	5.0

FlexTable: Catchment Table

Label	Outflow Element	Area (User Defined) (ft²)	Runoff Coefficient (Rational)	Catchment CA (ft²)	Time of Concentration (min)	Catchment Intensity (in/h)	Catchment Rational Flow (cfs)	Time of Concentration (Composite) (min)
CM-57	CB-57	9,500	0.84	7,980	5.0	9.130	1.69	5.0
CM-58	CB-58	1,593	0.90	1,434	5.0	9.130	0.30	5.0
CM-59	CB-59	5,014	0.90	4,513	5.0	9.130	0.95	5.0
CM-60	YD-60	1,038	0.30	311	5.0	9.130	0.07	5.0
CM-61	YD-61	1,048	0.30	314	5.0	9.130	0.07	5.0
CM-62	YD-62	2,090	0.30	627	5.0	9.130	0.13	5.0
CM-63	CB-63	7,039	0.68	4,794	5.0	9.130	1.01	5.0
CM-64	CB-64	9,236	0.85	7,875	5.0	9.130	1.66	5.0
CM-65	CB-65	2,521	0.90	2,269	5.0	9.130	0.48	5.0
CM-67	CB-67	9,252	0.76	7,022	5.0	9.130	1.48	5.0
CM-68	CB-68	9,603	0.42	4,033	5.0	9.130	0.85	5.0
CM-69	YD-69	1,059	0.30	318	5.0	9.130	0.07	5.0
CM-70	YD-70	3,685	0.30	1,106	5.0	9.130	0.23	5.0
CM-71	CB-71	3,040	0.75	2,280	5.0	9.130	0.48	5.0
CM-72	CB-72	2,582	0.90	2,324	5.0	9.130	0.49	5.0
CM-73	CB-73	20,710	0.34	7,070	12.0	5.914	0.97	12.0
CM-74	CB-74	6,065	0.90	5,459	5.0	9.130	1.15	5.0
CM-75	CB-75	6,030	0.90	5,427	5.0	9.130	1.15	5.0
CM-76	CB-76	6,030	0.89	5,337	5.0	9.130	1.13	5.0
CM-78	CB-78	2,893	0.78	2,257	5.0	9.130	0.48	5.0
CM-79	CB-79	4,815	0.90	4,334	5.0	9.130	0.92	5.0
CM-80	CB-80	1,500	0.90	1,350	5.0	9.130	0.29	5.0
CM-81	CB-81	1,700	0.83	1,406	5.0	9.130	0.30	5.0
CM-83	CB-83	6,255	0.70	4,380	5.0	9.130	0.93	5.0
CM-84	CB-84	11,610	0.83	9,683	5.0	9.130	2.05	5.0
CM-86	CB-86	14,292	0.36	5,102	12.0	5.914	0.70	12.0
CM-87	CB-87	19,049	0.44	8,400	13.0	5.636	1.10	13.0
CM-88	CB-88	7,680	0.75	5,777	5.0	9.130	1.22	5.0
CM-90	CB-90	5,005	0.90	4,505	5.0	9.130	0.95	5.0
CM-91	CB-91	4,499	0.90	4,049	5.0	9.130	0.86	5.0
CM-92	CB-92	2,389	0.79	1,888	5.0	9.130	0.40	5.0
CM-93	CB-93	6,745	0.90	6,071	5.0	9.130	1.28	5.0
CM-94	CB-94	4,598	0.90	4,138	5.0	9.130	0.87	5.0
CM-96	CB-96	3,816	0.90	3,434	5.0	9.130	0.73	5.0
CM-97	CB-97	11,691	0.51	5,941	8.0	7.534	1.04	8.0
CM-98	CB-98	4,955	0.82	4,052	5.0	9.130	0.86	5.0
CM-99	CB-99	6,114	0.90	5,503	5.0	9.130	1.16	5.0
CM-100	CB-100	5,525	0.81	4,492	5.0	9.130	0.95	5.0
CM-101	CB-101	6,833	0.81	5,524	5.0	9.130	1.17	5.0
CM-102	CB-102	3,761	0.84	3,171	5.0	9.130	0.67	5.0
CM-103	CB-103	4,419	0.77	3,386	5.0	9.130	0.72	5.0
CM-104	CB-104	4,967	0.85	4,232	5.0	9.130	0.89	5.0
CM-105	CB-105	5,573	0.90	5,016	5.0	9.130	1.06	5.0
CM-107	CB-107	8,853	0.81	7,144	5.0	9.130	1.51	5.0
CM-T-1	T-1	13,000	0.90	11,700	5.0	9.130	2.47	5.0

Appendix C

Proposed Stormwater Drainage Network Model

Appendix D

Water Quality Calculations

FUSS & O'NEILL

Water Quality Volume Calculation
ANTHONY PROPERTIES DEVELOPMENT
1303 West Street
Southington, Connecticut

Required Water Quality Volume

	Description	Symbol	Unit of Measure	Quantity
Water Quality Volume (WQV)	**Input**			
	Basin or Watershed Area	**Project Site**		
	Drainage Area	A	AC	16.99
	Percent Impervious Cover	I	%	48%
	Volumetric Runoff Coefficient	R		0.482
	Water Quality Volume Required	WQV	ac-ft	**0.682**
	Water Quality Volume Provided	WQV	ac-ft	**0.718**

Date: December 2022	Prepared By: KPG

Notes:
1. All water quality calculations based on 2004 Connecticut Stormwater Quality Manual.
2. Shaded cells indicate numbers inputted from other sources.

FUSS & O'NEILL

Water Quality Volume & Flow Calculations
ANTHONY PROPERTIES DEVELOPMENT
Southington, Connecticut

Separator MH-108

	Description	Symbol	Unit of Measure	Quantity
Water Quality Volume (WQV)	**Input**			
	Upstream Drainage Area	A	AC	1.421
	Percent Impervious Cover	I	%	44%
	Volumetric Runoff Coefficient	R		0.448
	Water Quality Volume	WQV	ac-ft	**0.053**

Water Quality Flow (WQF)	**Input**			
	Design Precipitation	P	IN	1.2
	Calculations			
	Runoff Depth	Q	IN	0.448
	Runoff Curve Number	CN		90
	Initial Abstraction (From Table 4-1, Ch 4, TR-55 Manual)	I_A		0.222
	I_A/P			0.19
	Time of Concentration (Min .083 Hours)	T_C	Hr	0.200
	Unit Peak Discharge (from Exhibit 4-III, Ch 4, TR-55 Manual)	q_u	csm/ (mi^2*in)	680
	Drainage Area	A	mi^2	0.002
	Water Quality Flow	WQF	cfs	**0.68**
Date: 12/07/2022		Prepared By: KPG		

Notes:
1. All water quality calculations based on 2004 Connecticut Stormwater Quality Manual.
2. Shaded cells indicate numbers inputted from other sources.

FUSS & O'NEILL

Water Quality Volume & Flow Calculations
ANTHONY PROPERTIES DEVELOPMENT
Southington, Connecticut

Separator CB-67

	Description	Symbol	Unit of Measure	Quantity
Water Quality Volume (WQV)	**Input**			
	Upstream Drainage Area	A	AC	0.212
	Percent Impervious Cover	I	%	77%
	Volumetric Runoff Coefficient	R		0.739
	Water Quality Volume	WQV	ac-ft	**0.013**

Water Quality Flow (WQF)	**Input**			
	Design Precipitation	P	IN	1.2
	Calculations			
	Runoff Depth	Q	IN	0.739
	Runoff Curve Number	CN		95
	Initial Abstraction (From Table 4-1, Ch 4, TR-55 Manual)	I_A		0.105
	I_A/P			0.09
	Time of Concentration (Min .083 Hours)	T_C	Hr	0.083
	Unit Peak Discharge (from Exhibit 4-III, Ch 4, TR-55 Manual)	q_u	csm/ (mi^2*in)	680
	Drainage Area	A	mi^2	0.000
	Water Quality Flow	WQF	cfs	**0.17**
Date: 12/07/2022		Prepared By: KPG		

Notes:
1. All water quality calculations based on 2004 Connecticut Stormwater Quality Manual.
2. Shaded cells indicate numbers inputted from other sources.

FUSS & O'NEILL

Water Quality Volume & Flow Calculations
ANTHONY PROPERTIES DEVELOPMENT
Southington, Connecticut

Separator MH-110

	Description	Symbol	Unit of Measure	Quantity
Water Quality Volume (WQV)	**Input**			
	Upstream Drainage Area	A	AC	1.717
	Percent Impervious Cover	I	%	44%
	Volumetric Runoff Coefficient	R		0.446
	Water Quality Volume	WQV	ac-ft	**0.064**

Water Quality Flow (WQF)	**Input**			
	Design Precipitation	P	IN	1.2
	Calculations			
	Runoff Depth	Q	IN	0.446
	Runoff Curve Number	CN		90
	Initial Abstraction (From Table 4-1, Ch 4, TR-55 Manual)	I_A		0.222
	I_A/P			0.19
	Time of Concentration (Min .083 Hours)	T_C	Hr	0.200
	Unit Peak Discharge (from Exhibit 4-III, Ch 4, TR-55 Manual)	q_u	csm/ (mi^2*in)	680
	Drainage Area	A	mi^2	0.003
	Water Quality Flow	WQF	cfs	**0.81**
Date: 12/07/2022		Prepared By: KPG		

Notes:
1. All water quality calculations based on 2004 Connecticut Stormwater Quality Manual.
2. Shaded cells indicate numbers inputted from other sources.

FUSS & O'NEILL

Water Quality Volume & Flow Calculations
ANTHONY PROPERTIES DEVELOPMENT
Southington, Connecticut

Separator CB-57

	Description	Symbol	Unit of Measure	Quantity
Water Quality Volume (WQV)	**Input**			
	Upstream Drainage Area	A	AC	0.218
	Percent Impervious Cover	I	%	90%
	Volumetric Runoff Coefficient	R		0.860
	Water Quality Volume	WQV	ac-ft	**0.016**
Water Quality Flow (WQF)	**Input**			
	Design Precipitation	P	IN	1.2
	Calculations			
	Runoff Depth	Q	IN	0.860
	Runoff Curve Number	CN		97
	Initial Abstraction (From Table 4-1, Ch 4, TR-55 Manual)	I_A		0.062
	I_A/P (Rounded)			0.05
	Time of Concentration (Min .083 Hours)	T_C	Hr	0.083
	Unit Peak Discharge (from Exhibit 4-III, Ch 4, TR-55 Manual)	q_u	csm/ (mi^2*in)	680
	Drainage Area	A	mi^2	0.000
	Water Quality Flow	WQF	cfs	**0.20**
Date: 12/07/2022		Prepared By: KPG		

Notes:
1. All water quality calculations based on 2004 Connecticut Stormwater Quality Manual.
2. Shaded cells indicate numbers inputted from other sources.

FUSS & O'NEILL

Water Quality Volume & Flow Calculations
ANTHONY PROPERTIES DEVELOPMENT
Southington, Connecticut

Separator MH-112

	Description	Symbol	Unit of Measure	Quantity
Water Quality Volume (WQV)	**Input**			
	Upstream Drainage Area	A	AC	1.513
	Percent Impervious Cover	I	%	49%
	Volumetric Runoff Coefficient	R		0.492
	Water Quality Volume	WQV	ac-ft	**0.062**

Water Quality Flow (WQF)	**Input**			
	Design Precipitation	P	IN	1.2
	Calculations			
	Runoff Depth	Q	IN	0.492
	Runoff Curve Number	CN		91
	Initial Abstraction (From Table 4-1, Ch 4, TR-55 Manual)	I_A		0.198
	I_A/P (Rounded)			0.16
	Time of Concentration (Min .083 Hours)	T_C	Hr	0.200
	Unit Peak Discharge (from Exhibit 4-III, Ch 4, TR-55 Manual)	q_u	csm/ (mi^2*in)	680
	Drainage Area	A	mi^2	0.002
	Water Quality Flow	WQF	cfs	**0.79**
Date: 12/07/2022		Prepared By: KPG		

Notes:
1. All water quality calculations based on 2004 Connecticut Stormwater Quality Manual.
2. Shaded cells indicate numbers inputted from other sources.

FUSS & O'NEILL

Water Quality Volume & Flow Calculations
ANTHONY PROPERTIES DEVELOPMENT
Southington, Connecticut

Separator CB-107

	Description	Symbol	Unit of Measure	Quantity
Water Quality Volume (WQV)	**Input**			
	Upstream Drainage Area	A	AC	0.203
	Percent Impervious Cover	I	%	85%
	Volumetric Runoff Coefficient	R		0.811
	Water Quality Volume	WQV	ac-ft	**0.014**
Water Quality Flow (WQF)	**Input**			
	Design Precipitation	P	IN	1.2
	Calculations			
	Runoff Depth	Q	IN	0.811
	Runoff Curve Number	CN		96
	Initial Abstraction (From Table 4-1, Ch 4, TR-55 Manual)	I_A		0.083
	I_A/P (Rounded)			0.07
	Time of Concentration (Min .083 Hours)	T_C	Hr	0.083
	Unit Peak Discharge (from Exhibit 4-III, Ch 4, TR-55 Manual)	q_u	csm/ (mi^2*in)	680
	Drainage Area	A	mi^2	0.000
	Water Quality Flow	WQF	cfs	**0.17**
Date: 12/07/2022		Prepared By: KPG		

Notes:
1. All water quality calculations based on 2004 Connecticut Stormwater Quality Manual.
2. Shaded cells indicate numbers inputted from other sources.

FUSS & O'NEILL

Water Quality Volume & Flow Calculations
ANTHONY PROPERTIES DEVELOPMENT
Southington, Connecticut

Separator MH-126

	Description	Symbol	Unit of Measure	Quantity
Water Quality Volume (WQV)	**Input**			
	Upstream Drainage Area	A	AC	0.778
	Percent Impervious Cover	I	%	100%
	Volumetric Runoff Coefficient	R		0.950
	Water Quality Volume	WQV	ac-ft	**0.062**

Water Quality Flow (WQF)	**Input**			
	Design Precipitation	P	IN	1.2
	Calculations			
	Runoff Depth	Q	IN	0.950
	Runoff Curve Number	CN		98
	Initial Abstraction (From Table 4-1, Ch 4, TR-55 Manual)	I_A		0.041
	I_A/P (Rounded)			0.03
	Time of Concentration (Min .083 Hours)	T_C	Hr	0.100
	Unit Peak Discharge (from Exhibit 4-III, Ch 4, TR-55 Manual)	q_u	csm/ (mi^2*in)	680
	Drainage Area	A	mi^2	0.001
	Water Quality Flow	WQF	cfs	**0.79**
Date: 12/07/2022		Prepared By: KPG		

Notes:
1. All water quality calculations based on 2004 Connecticut Stormwater Quality Manual.
2. Shaded cells indicate numbers inputted from other sources.

FUSS & O'NEILL

Water Quality Volume & Flow Calculations
ANTHONY PROPERTIES DEVELOPMENT
Southington, Connecticut

Separator MH-119

	Description	Symbol	Unit of Measure	Quantity
Water Quality Volume (WQV)	**Input**			
	Upstream Drainage Area	A	AC	0.913
	Percent Impervious Cover	I	%	63%
	Volumetric Runoff Coefficient	R		0.615
	Water Quality Volume	WQV	ac-ft	**0.047**

Water Quality Flow (WQF)	**Input**			
	Design Precipitation	P	IN	1.2
	Calculations			
	Runoff Depth	Q	IN	0.615
	Runoff Curve Number	CN		93
	Initial Abstraction (From Table 4-1, Ch 4, TR-55 Manual)	I_A		0.151
	I_A/P (Rounded)			0.13
	Time of Concentration (Min .083 Hours)	T_C	Hr	0.167
	Unit Peak Discharge (from Exhibit 4-III, Ch 4, TR-55 Manual)	q_u	csm/ (mi^2*in)	680
	Drainage Area	A	mi^2	0.001
	Water Quality Flow	WQF	cfs	**0.60**
Date: 12/07/2022		Prepared By: KPG		

Notes:
1. All water quality calculations based on 2004 Connecticut Stormwater Quality Manual.
2. Shaded cells indicate numbers inputted from other sources.

FUSS & O'NEILL

Water Quality Volume & Flow Calculations
ANTHONY PROPERTIES DEVELOPMENT
Southington, Connecticut

Separator CB-55

	Description	Symbol	Unit of Measure	Quantity
Water Quality Volume (WQV)	**Input**			
	Upstream Drainage Area	A	AC	0.219
	Percent Impervious Cover	I	%	88%
	Volumetric Runoff Coefficient	R		0.841
	Water Quality Volume	WQV	ac-ft	**0.015**

Water Quality Flow (WQF)	**Input**			
	Design Precipitation	P	IN	1.2
	Calculations			
	Runoff Depth	Q	IN	0.841
	Runoff Curve Number	CN		96
	Initial Abstraction (From Table 4-1, Ch 4, TR-55 Manual)	I_A		0.083
	I_A/P (Rounded)			0.07
	Time of Concentration (Min .083 Hours)	T_C	Hr	0.083
	Unit Peak Discharge (from Exhibit 4-III, Ch 4, TR-55 Manual)	q_u	csm/ (mi^2*in)	680
	Drainage Area	A	mi^2	0.000
	Water Quality Flow	WQF	cfs	**0.20**
Date: 12/07/2022		Prepared By: KPG		

Notes:
1. All water quality calculations based on 2004 Connecticut Stormwater Quality Manual.
2. Shaded cells indicate numbers inputted from other sources.

FUSS & O'NEILL

Water Quality Volume & Flow Calculations
ANTHONY PROPERTIES DEVELOPMENT
Southington, Connecticut

Separator MH-114

	Description	Symbol	Unit of Measure	Quantity
Water Quality Volume (WQV)	**Input**			
	Upstream Drainage Area	A	AC	0.856
	Percent Impervious Cover	I	%	83%
	Volumetric Runoff Coefficient	R		0.800
	Water Quality Volume	WQV	ac-ft	**0.057**

Water Quality Flow (WQF)	**Input**			
	Design Precipitation	P	IN	1.2
	Calculations			
	Runoff Depth	Q	IN	0.800
	Runoff Curve Number	CN		96
	Initial Abstraction (From Table 4-1, Ch 4, TR-55 Manual)	I_A		0.083
	I_A/P (Rounded)			0.07
	Time of Concentration (Min .083 Hours)	T_C	Hr	0.133
	Unit Peak Discharge (from Exhibit 4-III, Ch 4, TR-55 Manual)	q_u	csm/ (mi^2*in)	680
	Drainage Area	A	mi^2	0.001
	Water Quality Flow	WQF	cfs	**0.73**
Date: 12/07/2022		Prepared By: KPG		

Notes:
1. All water quality calculations based on 2004 Connecticut Stormwater Quality Manual.
2. Shaded cells indicate numbers inputted from other sources.

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Water Quality Volume & Flow Calculations
ANTHONY PROPERTIES DEVELOPMENT
Southington, Connecticut

Separator CB-33

	Description	Symbol	Unit of Measure	Quantity
Water Quality Volume (WQV)	**Input**			
	Upstream Drainage Area	A	AC	0.197
	Percent Impervious Cover	I	%	77%
	Volumetric Runoff Coefficient	R		0.740
	Water Quality Volume	WQV	ac-ft	**0.012**

Water Quality Flow (WQF)	**Input**			
	Design Precipitation	P	IN	1.2
	Calculations			
	Runoff Depth	Q	IN	0.740
	Runoff Curve Number	CN		95
	Initial Abstraction (From Table 4-1, Ch 4, TR-55 Manual)	I_A		0.105
	I_A/P (Rounded)			0.09
	Time of Concentration (Min .083 Hours)	T_C	Hr	0.083
	Unit Peak Discharge (from Exhibit 4-III, Ch 4, TR-55 Manual)	q_u	csm/ (mi^2*in)	680
	Drainage Area	A	mi^2	0.000
	Water Quality Flow	WQF	cfs	**0.15**
Date: 12/07/2022		Prepared By: KPG		

Notes:
1. All water quality calculations based on 2004 Connecticut Stormwater Quality Manual.
2. Shaded cells indicate numbers inputted from other sources.

FUSS & O'NEILL

Water Quality Volume & Flow Calculations
ANTHONY PROPERTIES DEVELOPMENT
Southington, Connecticut

Separator CB-19

	Description	Symbol	Unit of Measure	Quantity
Water Quality Volume (WQV)	**Input**			
	Upstream Drainage Area	A	AC	0.544
	Percent Impervious Cover	I	%	51%
	Volumetric Runoff Coefficient	R		0.506
	Water Quality Volume	WQV	ac-ft	**0.023**

Water Quality Flow (WQF)	**Input**			
	Design Precipitation	P	IN	1.2
	Calculations			
	Runoff Depth	Q	IN	0.506
	Runoff Curve Number	CN		91
	Initial Abstraction (From Table 4-1, Ch 4, TR-55 Manual)	I_A		0.198
	I_A/P (Rounded)			0.16
	Time of Concentration (Min .083 Hours)	T_C	Hr	0.083
	Unit Peak Discharge (from Exhibit 4-III, Ch 4, TR-55 Manual)	q_u	csm/ (mi^2*in)	680
	Drainage Area	A	mi^2	0.001
	Water Quality Flow	WQF	cfs	**0.29**
Date: 12/07/2022		Prepared By: KPG		

Notes:
1. All water quality calculations based on 2004 Connecticut Stormwater Quality Manual.
2. Shaded cells indicate numbers inputted from other sources.

FUSS & O'NEILL

Water Quality Volume & Flow Calculations
ANTHONY PROPERTIES DEVELOPMENT
Southington, Connecticut

Separator CB-20

	Description	Symbol	Unit of Measure	Quantity
Water Quality Volume (WQV)	**Input**			
	Upstream Drainage Area	A	AC	0.169
	Percent Impervious Cover	I	%	89%
	Volumetric Runoff Coefficient	R		0.855
	Water Quality Volume	WQV	ac-ft	**0.012**

Water Quality Flow (WQF)	**Input**			
	Design Precipitation	P	IN	1.2
	Calculations			
	Runoff Depth	Q	IN	0.855
	Runoff Curve Number	CN		97
	Initial Abstraction (From Table 4-1, Ch 4, TR-55 Manual)	I_A		0.062
	I_A/P (Rounded)			0.05
	Time of Concentration (Min .083 Hours)	T_C	Hr	0.083
	Unit Peak Discharge (from Exhibit 4-III, Ch 4, TR-55 Manual)	q_u	csm/ (mi^2*in)	680
	Drainage Area	A	mi^2	0.000
	Water Quality Flow	WQF	cfs	**0.15**
Date: 12/07/2022		Prepared By: KPG		

Notes:
1. All water quality calculations based on 2004 Connecticut Stormwater Quality Manual.
2. Shaded cells indicate numbers inputted from other sources.

FUSS & O'NEILL

Water Quality Volume & Flow Calculations
ANTHONY PROPERTIES DEVELOPMENT
Southington, Connecticut

Separator CB-104

	Description	Symbol	Unit of Measure	Quantity
Water Quality Volume (WQV)	**Input**			
	Upstream Drainage Area	A	AC	0.115
	Percent Impervious Cover	I	%	92%
	Volumetric Runoff Coefficient	R		0.878
	Water Quality Volume	WQV	ac-ft	**0.008**

Water Quality Flow (WQF)	**Input**			
	Design Precipitation	P	IN	1.2
	Calculations			
	Runoff Depth	Q	IN	0.878
	Runoff Curve Number	CN		97
	Initial Abstraction (From Table 4-1, Ch 4, TR-55 Manual)	I_A		0.062
	I_A/P (Rounded)			0.05
	Time of Concentration (Min .083 Hours)	T_C	Hr	0.083
	Unit Peak Discharge (from Exhibit 4-III, Ch 4, TR-55 Manual)	q_u	csm/ (mi^2*in)	680
	Drainage Area	A	mi^2	0.000
	Water Quality Flow	WQF	cfs	**0.11**
Date: 12/07/2022		Prepared By: KPG		

Notes:
1. All water quality calculations based on 2004 Connecticut Stormwater Quality Manual.
2. Shaded cells indicate numbers inputted from other sources.

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Water Quality Volume & Flow Calculations
ANTHONY PROPERTIES DEVELOPMENT
Southington, Connecticut

Separator CB-100

	Description	Symbol	Unit of Measure	Quantity
Water Quality Volume (WQV)	**Input**			
	Upstream Drainage Area	A	AC	0.127
	Percent Impervious Cover	I	%	85%
	Volumetric Runoff Coefficient	R		0.815
	Water Quality Volume	WQV	ac-ft	**0.009**
Water Quality Flow (WQF)	**Input**			
	Design Precipitation	P	IN	1.2
	Calculations			
	Runoff Depth	Q	IN	0.815
	Runoff Curve Number	CN		96
	Initial Abstraction (From Table 4-1, Ch 4, TR-55 Manual)	I_A		0.083
	I_A/P (Rounded)			0.07
	Time of Concentration (Min .083 Hours)	T_C	Hr	0.083
	Unit Peak Discharge (from Exhibit 4-III, Ch 4, TR-55 Manual)	q_u	csm/ (mi^2*in)	680
	Drainage Area	A	mi^2	0.000
	Water Quality Flow	WQF	cfs	**0.11**
Date: 12/07/2022		Prepared By: KPG		

Notes:
1. All water quality calculations based on 2004 Connecticut Stormwater Quality Manual.
2. Shaded cells indicate numbers inputted from other sources.

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Water Quality Volume & Flow Calculations
ANTHONY PROPERTIES DEVELOPMENT
Southington, Connecticut

Separator CB-99

	Description	Symbol	Unit of Measure	Quantity
Water Quality Volume (WQV)	**Input**			
	Upstream Drainage Area	A	AC	0.140
	Percent Impervious Cover	I	%	100%
	Volumetric Runoff Coefficient	R		0.950
	Water Quality Volume	WQV	ac-ft	**0.011**

Water Quality Flow (WQF)	**Input**			
	Design Precipitation	P	IN	1.2
	Calculations			
	Runoff Depth	Q	IN	0.950
	Runoff Curve Number	CN		98
	Initial Abstraction (From Table 4-1, Ch 4, TR-55 Manual)	I_A		0.041
	I_A/P (Rounded)			0.03
	Time of Concentration (Min .083 Hours)	T_C	Hr	0.083
	Unit Peak Discharge (from Exhibit 4-III, Ch 4, TR-55 Manual)	q_u	csm/ (mi^2*in)	680
	Drainage Area	A	mi^2	0.000
	Water Quality Flow	WQF	cfs	**0.14**
Date: 12/07/2022		Prepared By: KPG		

Notes:
1. All water quality calculations based on 2004 Connecticut Stormwater Quality Manual.
2. Shaded cells indicate numbers inputted from other sources.

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Water Quality Volume & Flow Calculations
ANTHONY PROPERTIES DEVELOPMENT
Southington, Connecticut

Separator MH-132

	Description	Symbol	Unit of Measure	Quantity
Water Quality Volume (WQV)	**Input**			
	Upstream Drainage Area	A	AC	0.382
	Percent Impervious Cover	I	%	56%
	Volumetric Runoff Coefficient	R		0.553
	Water Quality Volume	WQV	ac-ft	**0.018**

Water Quality Flow (WQF)	**Input**			
	Design Precipitation	P	IN	1.2
	Calculations			
	Runoff Depth	Q	IN	0.553
	Runoff Curve Number	CN		92
	Initial Abstraction (From Table 4-1, Ch 4, TR-55 Manual)	I_A		0.174
	I_A/P (Rounded)			0.14
	Time of Concentration (Min .083 Hours)	T_C	Hr	0.133
	Unit Peak Discharge (from Exhibit 4-III, Ch 4, TR-55 Manual)	q_u	csm/ (mi^2*in)	680
	Drainage Area	A	mi^2	0.001
	Water Quality Flow	WQF	cfs	**0.22**
Date: 12/07/2022		Prepared By: KPG		

Notes:
1. All water quality calculations based on 2004 Connecticut Stormwater Quality Manual.
2. Shaded cells indicate numbers inputted from other sources.