PETRUCCELLI ENGINEERING

PAUL BERTÉ, P.E.
PRINCIPAL

Hidden Cove Development

Proposed 137 Unit Residential Development And Off-Site Road improvements to North Water Street

Village of Ossining
Westchester County, New York

STORMWATER POLLUTION PREVENTION PLAN

Prepared for:

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Prepared by:
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09-17-08
Revised
09-10-12
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02-28-17
04-09-18

I Paul Berté, PE certifies that this Stormwater Pollution Prevention Plan has been prepared in accordance with NYSDEC rules and regulations and in accordance with the Village of Ossining Code.

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Village of Ossining

WESTCHESTER COUNTY, NEW YORK

STORMWATER POLLUTION PREVENTION PLAN

1. General

a. Introduction

This Stormwater Pollution Prevention Plan has been prepared pursuant to the Phase II regulations under General Permit (GP -0-15-002) as required by the New York State Department of Environmental Conservation (NYSDEC).

The proposal is for the construction of Hidden Cove, a new 6 story multi-family building, hereafter referred to as the Project located on Section 89.14, Block, 1, Lot 11. Additionally, the Project includes the reconstruction of North Water Street from Snowden Avenue to the site parcel (hereinafter referred to as Off-Site Improvements), situated in the Village of Ossining, Westchester County, New York. Hidden Cove will consist of 137 apartments within 6 floors over an interior parking garage having 150 spaces supplemented by 46 surface parking spaces located in front of the building. The Off-Site Improvements include the reconstruction of North Water Street to include a 24' roadway, 4' sidewalk, curbs and retaining walls within a 30' right-of-way over easements on adjacent parcels.

The site discharges directly to the Hudson River which is a 5th order stream/tidal water and thus attenuation is not required for the CpV- Channel Protection Volume (1 year storm), the Qp- Overbank Flood Control (10 year storm) or Qf- Extreme Flood Control (100 year storm). Attenuation is required for the WQv- Water Quality / RRv- Runoff Reduction volume and is calculated in accordance with the NYSDEC Stormwater Design Manual.

Attenuation of the WQv will be managed with various practices, including green techniques such as green and white roofs on top of the proposed building, porous pavement within the exterior parking lots, and hydrodynamic separators to address the runoff from the reconstructed portion of North Water Street. All practices have been designed in accordance with the New York State Stormwater Management Design Manual (SWMDM). The parcel is not located within the East of Hudson Watershed (EOH).

b. Stormwater Management Objectives

A primary stormwater management objective of this project is to control runoff and pollutants during construction. This is done by providing temporary erosion and sediment control measures for the project that are in conformance with the "New York State Standards and Specifications for Erosion and Sediment Control" and General Permit GP -0-15-002.

A second stormwater management objective is to provide permanent measures to control the stormwater runoff quality and quantity after construction is complete. This objective is achieved by using Standard Stormwater Practices that are listed in chapter 5.0 and table 7.1 of the SWMDM.

c. Existing Site Description

The site is located on North Water Street in the Village of Ossining, New York on the former site of the Brandeth Pill Building. The existing building was in a state of disrepair and was deemed unsafe after the flood in November 2012. The building was demolished in 2014 upon approval of a demolition permit.

The site consists of slopes varying from 0-15% to slopes exceeding 25% and is comprised mainly of rock with very little overburden in soil areas. A brook runs through the site from the eastern property line to the eastern side of the existing Mill Building. The brook was integral to the existing building and provided hydrodynamic power for the factory. Within the project area, the brook was channeled within man made open and closed culverts. The brook ultimately discharges to the Hudson River via an open defined channel under the MTA railroad.

Currently the stormwater runoff from the site is collected in drainage inlets and diverted to Hudson River.

For the purpose of this report, the site has been broken up into distinct drainage areas which discharge to two (2) distinct discharge points, this is shown on the pre-development and post-development drainage maps. These points have been selected based on the topography available on the survey. The design points were chosen since they were the lowest points along the respective flow routes of each drainage area and hence, are the points where the stormwater runoff leaves the project area. Based on the USGS maps the receiving water is the Hudson River and the stormwater interactive map provided on the NYSDEC website illustrates that the site is in a TMDL watershed (MS4) but does not contain and is not adjacent to any 303d listed streams.

The stormwater runoff from the site is conveyed via overland flow to the discharge points illustrated on the Pre-Development Map.

d. Project Description

Construction will consist of new (6) story residential building with 137 apartment units. For purposes of comparing the pre and post cover types, this analysis takes into account the former Mill Building, even though it has been demolished. The site construction also includes surface parking areas and an underground parking structure. There will also be the construction of a new roadway and stormwater management facilities. The total land disturbance associated with this construction is approximately 5.54 acres.

i. Soils

The soils in the project area are mapped as follows;

Map Unit Symbol	Map Unit Name	Hydrologic Soil Group	Acres in AOI	Percent of AOI
CrC	Charlton-Chatfield Complex, rolling, very rocky	B	0.3	0.6%
ChE	Charlton Loam, 25 to 35% slopes	B	0.7	1.4%
CsD	Chatfield-Hollis-Rock complex, hilly, very rocky	B	18.1	34.6%
HrF	Hollis-rock outcrop complex, very steep	D	4.5	8.7%
LcB	Leicester loam, 3 to 8% slopes, stony	C	2.0	3.9%
RhE	Riverhead loam, 25 to 50% slopes	B	0.7	1.3%
Ub	Udorthents, smoothed	A	0.7	1.3%
Uc	Udorthents, wet substratum	A	5.5	10.5%
Uf	Urban land	A	5.8	11.1%
W	Water	-	14.0	26.7%
	Total		27.3	100.00

ii. Grading and Drainage

The grading and drainage plan has been designed to capture and treat the stormwater runoff from the new and existing impervious surfaces and disturbed areas at each improvement location. The stormwater runoff generated by the new impervious areas for DA 1 has been further divided into drainage areas based on whether they are roof gardens, porous pavement or white roofs. Refer to the drainage map to view each new area. The stormwater drainage systems have been designed to treat the Water Quality Volume (WQv). The drainage will be collected by way of curbs, walls or flow routing. It will then be directed to the various treatment methods mentioned previously. The stormwater runoff for the roof gardens and the porous pavement will flow into the ground by way of infiltration. The stormwater runoff that flows into the white roof areas will be collected where it falls and then slowly drained out in a timely and controlled fashion. The stormwater runoff generated by the new impervious areas for the access road water street will be collected by way of curbs and directed to catch basins and then directed to hydrodynamic separators.

Storm water runoff rates for the water quality volume will be attenuated such that the project areas will not represent a negative impact or degradation in water quality to the Hudson River. The stormwater design was modeled utilizing computer software "HydroCAD 10.0" The design assumptions are provided in the appendix of this report

e. Stormwater Conveyance

Presently the stormwater from the site flows overland through woodland cover or paved asphalt to each of two design points. The site discharges directly to the Hudson river which is classified as a seventh order stream and does not require channel protection volume, overbank flood control and extreme flood.

Design point 1 analyzes the disturbed areas within the project property. This includes the building, parking lot and a small portion of the roadway water street. The runoff to design point 1 will be treated by hydrodynamic separators, roof gardens, the white roof, porous pavement and infiltration trenches.

The Infiltration Trench has been designed to fully infiltrate the 1 year storm event. Runoff is directed to the two aforementioned catchbasins where it flows through an 8" PVC pipe. The flow is then directed to a 300' long perforated 8" PVC pipe, where it will then be evenly dispersed (slope of 0.002%) to infiltrate into the infiltration trench media as designed. The media consists of a top layer of ¾" crushed stone which surrounds the 8" perforated PVC pipe, followed by a 2" layer of pea gravel, a 2.5' layer of 1.5-2.5" diameter crushed stone and at the bottom a 9" layer of sand. In the event of a large storm event, greater than what the system

was designed for, the excess runoff will flow back up through the CB #2 (rim 7.6). It will then flow overland into the existing watercourse, which is what the runoff does in its current state.

The rainwater that will fall into WR is detained by a white roof system. The White Roof system was designed to detain the rainwater and then slowly release the water over a controlled time period by way of roof drains.

Design point 2 analyzes all areas that are related with the Offsite Road Improvements. The road is proposed to be redefined to provide proper access to the multi family building. The road is currently undefined allowing traffic to freely move on and off the adjacent properties without using a controlled access. The new road will be redefined with curbs, a sidewalk, and curb cuts to the project site and adjoining properties. Water quality treatment is proposed by means of a hydrodynamic separator. Runoff is collected by inlets along the roadway and directed to a single hydrodynamic separator to treat the water quality flow rate prior to being discharged into the Hudson River. The hydrodynamic separator has been sized utilizing the peak flow rates from the HydroCAD model.

This project includes 2 alternative roadway locations. Both layouts include roadway from Snowden Avenue to the project site. One layout shows the improved road through the Conga property generally within the existing traveled way within the center of the property. The other layout shows this portion of the road within the Conga property shifted 25' to the west along the MTA railroad property. The stormwater management design is the same for both options as the cover types and impervious areas for both alternatives is the same. All existing drainage paths are maintained in both layouts.

f. Stormwater Management Planning

i. Site Planning

- Maps identifying all natural resources (Wetlands, Water, Topography, etc.) and drainage patterns have been included in the Drainage Plans.
- All natural resources have been preserved to the greatest extent possible.
- Natural drainage design points were maintained.
- The area of disturbance was kept as small as possible in order to maximize the retention of woodland cover and minimize the amount of undisturbed soils.
- Erodible soils and mass grading were avoided.
- Proposed impervious surfaces were kept to a minimum in order to reduce the amount of runoff and maintain as much natural areas as possible.
- Runoff was minimized and the pre-construction hydrology was either

maintained or reduced wherever possible (see tables 1-9 for detailed analysis).

ii. Determine Water Quality Treatment Volume (WQv)

- The onsite WQv was equated utilizing the 90% rainfall. Calculations can be seen in appendix B. While it was not necessary to attenuate the 10yr (Qp) and the Qf (100)yr), it was done anyway due to the design of the parking garage and parapet wall heights. The areas that were treated by the white roof and green roofs are contained by a parapet wall that is a least 30" high and well above the 100 yr storm high water elevation. In effect the high parapet wall attenuates by default. Also the white roof system was designed with three (3) roof drains that will slowly drain the water from the each storm event.
- The offsite WQv was equated utilizing the 90% rainfall number. Calculations can be seen in Appendix B.

iii. Runoff Reduction by Applying Green Infrastructure Techniques and Standard SMPs with RRv Capacity (e.g. infiltration practices, detention pipes, sand filter and infiltration trench).

- The standard SMPs with RRv capacity listed in Tables 3.4 & 3.5 of the SWMDM were used to reduce the required WQv. These include Infiltration Practices (Infiltration trenches & porous pavement). The practices have been designed as localized systems that are to be installed at each runoff source. The calculations for RRv are included in Appendix B. The onsite WQv has been reduced by 100% in all affected areas as specified in SWMDM.
- The white roof design is not included in the NYS Stormwater Management Design manual. However, the roof will be designed to hold and store stormwater from 1 year to 100 years. The one (1) year storm will be held long enough for water quality. All other storms, up to 100 years, will be metered out by the use of roof drains, so that no increase in stormwater will discharge into the stream and to the Hudson than is presently being discharged. For the purposes of clarification, it should be noted that only the proposed white roof is not a practice included in the New York State Stormwater Management Design Manual (NYS SMDM) and all other proposed practices will be designed in accordance with the NYS SMDM.
- There are no runoff reduction techniques proposed for the offsite portion of the project. The new roadway is proposed to only be treated by means of hydrodynamic separators.

iv. Apply Standard Stormwater Management Practices to Address Remaining Water Quality Volume

- The onsite RRv requirement has been met or exceeded in all cases. Refer to

Appendix B for RRv calculations and Post-Development Drainage Analysis.

- Hydrodynamic separators are proposed to treat all runoff from water street prior to being discharged into the Hudson river. The two units have been sized utilizing the HydroCAD peak flow numbers to properly treat the water quality flow rate.

v. Apply Volume and Peak Rate Control Practices if Still Needed to Meet Requirements

- The Channel Protection Volume (Cp_v), Overbank Flood Control (Qp) and Extreme Flood Control (Qf) are not required for this project.

g. Parties Responsible for Long Term Maintenance

The improved Road and all drainage improvements will be initially maintained by:

Plateau Associates, L.L.C. c/o Peter Stolatis
427 Bedford Road
Pleasantville, NY 10570

At such time that adjacent parcel owners improve their properties, they may be required to share in the maintenance obligations.

2. Stormwater Management Methodology

The Pre and Post-Construction Drainage Divide Maps are included in Appendix B of this report. The time of concentration, coverage types, and hydrograph/stormwater calculations for the pre and post-construction conditions as provided in the stormwater routings are also provided for in Appendix B.

Storm water quality and quantity computations are based upon the following publications.

- Soil Conservation Service (SCS) - TR-20.
- Urban Hydrology for Small Watersheds - TR-55.
- NYSDEC 'New York State Stormwater Management Design Manual', January 2015 edition.
- Controlling Urban Runoff: A practical Manual for Planning and Designing Urban BMP'S, by the Metropolitan Washington Council of Governments.
- Computer software "HydroCAD® 10.0"has been utilized for the stormwater analysis. This program is on USDA Soil Conservation Service (SCS) Technical Release 55 (TR 55).

3. Pre-Development and Post-Development Peak Flow Summary

Table 1. Stormwater Practices:

Practice	SMP Type	SWMDM Designation	Justification (page)
Roof Garden	Filtering Practice	F – 3	6-49
White Roof	Detention	Attenuation	n/a
Infiltration Trench	Infiltration Practice	I - 1	6-32
Porous Pavement	Infiltration Practice	I - 2	5-105
HydroDynamic Separator	Filtering Practice	Alternative Practice	9-7

Table 2. Summary of Flows DP-1

DP - 1				
Design Storm (yr)	**Pre-Development Peak Runoff (cfs)**	**Post-Development Peak Runoff (cfs)**	**Pre-Development Peak Volume (af)**	**Post-Development Peak Volume (af)**
1	1.96	1.57	0.230	0.277
10	9.12	5.67	0.863	0.828
100	25.04	19.09	2.312	2.141

Table 3. Summary of Flows DP-2

DP - 2				
Design Storm (yr)	**Pre-Development Peak Runoff (cfs)**	**Post-Development Peak Runoff (cfs)**	**Pre-Development Peak Volume (af)**	**Post-Development Peak Volume (af)**
1	4.22	5.08	0.385	0.345
10	9.02	10.89	0.883	0.757
100	17.64	21.21	1.822	1.515

a. Results of WQV, RRV and CPV Calculations

Table 7. RRv, WQv and Cpv requirements (ONSITE)

Technique	WQv Provided (ac-ft)	RRv Provided (ac-ft)
Infiltration Trench	1994	1994
Green Roof	2327	2327
Hydrodynamic Separator	1954	0
Porous Pavement	8266	8266
White Roof	7930	0
Total	**22471**	**12587**
Required	**3737**	**3737**

Table 7. RRv, WQv and Cpv requirements (OFFSITE)

Technique	WQv Provided (ac-ft)	RRv Provided (ac-ft)
Hydrodynamic Separator	6909	0
Total	**6909**	**0**
Required	**2128**	**2128**

b. Water Quality Volume

Stormwater quality and quantity have been analyzed in accordance with the guidelines set forth in the New York State General Permit for Storm Water Discharge, GP--0-15-002. The water quality volume for stormwater practices have been computed utilizing the NYSDEC equation $WQ_V = P \times R_v \times A/12$. Water Quality volume and invert elevations of the low flow orifices, where applicable, have been included in the Appendix. The calculations for WQv were done using the 90% rainfall number and are in Appendix B. The SWMDM states on page 4-8, 4-10, and 4-12 that Cpv, Qp and Qf are not required because the site discharges directly to a fifth order or larger stream. All storm events (1-yr, 10-yr, and 100-yr) were analyzed using HydroCAD 10.0.

The Infiltration Trenches, Roof Gardens and porous pavement have been designed to fully infiltrate the 1-year 24 hour runoff volume in accordance with Chapter 10 of the SWMDM.

4. Construction and Maintenance Description

a. Erosion and Sediment Control Plan

i. Temporary Structural Measures:

The temporary soil erosion and sediment control devices include protective earthmoving procedures and grading practices, vegetated cover, silt fencing, stabilized construction entrance, dust control, construction road stabilization, silt traps, inlet protections and sediment basins. The methodology of the plan is to control erosion & sedimentation, and to re-establish vegetation as soon as possible. These temporary controls will be installed prior to commencement of earthmoving activities where possible.

All proposed erosion and sediment controls and details as well as the stormwater management facilities are shown on various plans prepared by Petruccelli Engineering. All proposed soil erosion and sediment control practices are designed in accordance with the following publications:

- New York State Guidelines for Urban Erosion and Sediment Control, latest edition
- New York State General Permit for Stormwater Discharges, GP -0-15-002
- "Reducing the Impacts of Stormwater Runoff from New Development", as published by the New York State Department of Environmental Conservation (NYSDEC), second edition, April 1993.

ii. Permanent Structural Measures:

Rock outlet protections will be installed at the inflow of the proposed infiltration trenches. All other temporary devices such as silt fencing, hay bales and diversions will be removed during the course of construction.

iii. Pollution Prevention Measures and Materials Storage/Disposal:

The construction materials and vehicles expected to be present during construction include but are not limited to drainage pipe, pre-cast concrete drainage structures, earth moving equipment, concrete trucks, asphalt trucks, pavement marking machinery, and worker vehicles.

All construction related debris will be collected and removed from the area on a regular basis. Concrete wash out areas will be provided where necessary and existing and or excess asphalt material will be removed from the site and disposed of in the proper manner.

Sediment spoils will be disposed in an approved off-site location along with temporary erosion control devices.

b. Narrative Report

The primary goal of the soil erosion and sediment control measures is to reduce soil erosion from areas stripped of vegetation during and after construction, and to prevent discharge of silt offsite. Erosion control barriers shall be placed around exposed areas during construction. The barriers shall consist of silt fence. Temporary sediment basins or traps will be used at stormwater collection points to allow sediment removal prior to releasing the stormwater offsite.

Any areas stripped of vegetation during construction will be left bare for the shortest time possible. Any topsoil removed during construction will be temporarily stockpiled for future use in grading and landscaping. A stockpile location has been provided on the Erosion Control Plan and shall be contained within a silt fence barrier.

Temporary vegetation will be established to protect exposed soil areas during construction. If growing conditions are not suitable for the temporary vegetation, mulch will be used. Materials that may be used for mulching include; straw, hay, salt hay, wood fiber, synthetic soil stabilizers, mulch netting, and sod. A permanent vegetative cover will be established upon completion of construction of those areas that have been brought to finished grade and to remain undisturbed.

A temporary stabilized construction entrance comprised of three inches clean stone will be constructed at the entrances to the site. The purpose of a stabilized entrance is to remove soil from the construction vehicle tires prior to exiting the site and traveling on the existing roadways. During construction, inlet protection will be installed at each storm sewer inlet to minimize the conveyance of silt and sediment through the storm sewer system.

c. Maintenance Requirements

1. The owner shall erect or post signage displaying the project sponsor and 24 hour contact information of the person responsible for the implementation of GP-0-15-002.
2. The current owner of the parcel will be responsible for the maintenance and long term operation of their respective stormwater management practices.
3. When the properties are developed Plateau Associates will remain in control of all subsequent drainage facilities. It will be their responsibility to deal with the long term maintenance of the stormwater management practices.
4. Copies of each type of practice, along with the design specifications are included in the Appendixes.

5. Maintenance requirements, maintenance logs and maintenance frequencies are included in Appendix D

d. Stormwater Management Facilities Maintenance Program

The following maintenance program is proposed in order to maintain the proper function of all drainage and erosion and sediment control facilities:

- Inspect Infiltration Trenches and if necessary remove invasive woody vegetation that may have grown on the ground cover to prevent it from becoming established (Infiltration Trench #1).
- During the construction of the project, the site erosion and sediment control measures as well as outlet structures will be inspected by the project superintendent once a week and/or immediately following a rainstorm. Any repairs required shall be performed in a timely manner. All sediment removal and/or repairs will be followed immediately by re-vegetation.
- The Green Roofs (Roof Gardens) shall be watered twice a month and fertilizing and weeding shall be performed for the first two years after construction to allow the plants to become established.
- Roof drains in the Green Roofs and White Roof shall be cleared when the soil substrate, vegetation, debris or liter clog the drain inlets.
- The Green and White Roofs shall be inspected monthly for a period of two years and yearly after that to look for leaks, plant establishment and any structural concerns that may develop.
- The Green Roof maintenance, after the first year shall consist of two visits per year for weeding of invasive species and safety and membrane inspections.
- Porous pavement shall be inspected monthly to ensure that the area is clear of debris.
    - Shall be inspected monthly and after each rainfall greater than 0.5" to ensure that it dewatered properly.
    - Shall be inspected monthly to ensure that the area is clear of sediments.
    - Shall be vacuum sweeped to keep the surface free of sediments 3 to 4 times a year.
    - Shall be inspected annually to inspect for deterioration and spalling.
- Infiltration Trenches
    - Refer to Appendix D for detailed maintenance checklists.
- Clean catch basins and other drainage structures from silt regularly, but not less than twice a year.
- Restore and re-seed any eroded areas and gullies as soon as possible.

e. Requirements of Part IV of the General Permit -0-15-002

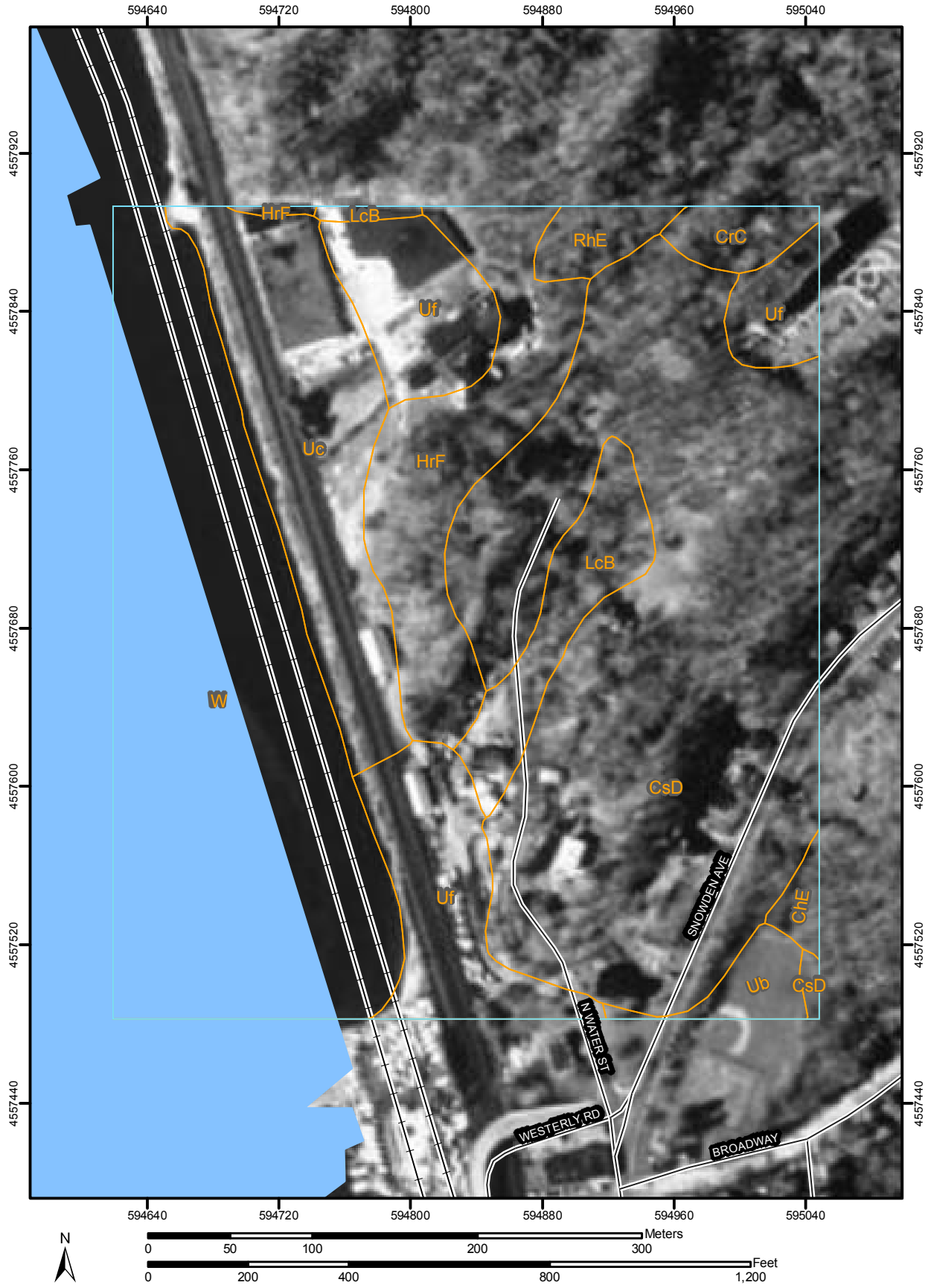
- "The Owner/Operator must ensure that all erosion control practices and all post-construction stormwater management practices identified [in this] SWPPP are maintained in effective operating condition at all times."
- "The terms of the [GP -0-15-002 permit] shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York, or protect the public health and safety and/or environment".
- Refer to Part IV of GP--0-15-002 for a more detailed list of requirements. Part IV is attached to Appendix E.

f. Conclusions

The incorporation of the Best Management Practices will significantly reduce the pollutant loadings in the post-construction condition by capturing and treating the runoff from the new and existing impervious surfaces and disturbed areas to the greatest extent possible, this plan meets the requirements of the NYSDEC & NYCDEP for Water Quality and Quantity, providing minimal impact to downstream waters.

APPENDIX A

- *SOIL INFORMATION*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100
200
300
Feet
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400
800
1,200

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features

Municipalities
- Cities
- Urban Areas

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails

Roads
- Interstate Highways
- US Routes
- State Highways
- Local Roads
- Other Roads

MAP INFORMATION

Original soil survey map sheets were prepared at publication scale. Viewing scale and printing scale, however, may vary from the original. Please rely on the bar scale on each map sheet for proper map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 18N

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

Soil Survey Area: Westchester County, New York
Survey Area Data: Version 4, Dec 14, 2006

Date(s) aerial images were photographed: 1994

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.

Map Unit Legend

Westchester County, New York (NY119)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
ChE	Charlton loam, 25 to 35 percent slopes	0.3	0.6%
CrC	Charlton-Chatfield complex, rolling, very rocky	0.7	1.3%
CsD	Chatfield-Charlton complex, hilly, very rocky	18.1	34.6%
HrF	Hollis-Rock outcrop complex, very steep	4.5	8.7%
LcB	Leicester loam, 3 to 8 percent slopes, stony	2.0	3.9%
RhE	Riverhead loam, 25 to 50 percent slopes	0.7	1.3%
Ub	Udorthents, smoothed	0.7	1.3%
Uc	Udorthents, wet substratum	5.5	10.5%
Uf	Urban land	5.8	11.1%
W	Water	14.0	26.7%
Totals for Area of Interest (AOI)		52.3	100.0%

APPENDIX B

- *STORMWATER MANAGEMENT REPORT*

    - *RUNOFF REDUCTION VOLUME CALCULATIONS*
    - *PRE-DEVELOPMENT DRAINAGE DIVIDE MAP AND ROUTINGS*
    - *POST-DEVELOPMENT DRAINAGE DIVIDE MAP AND ROUTINGS*

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PAUL BERTÉ, P.E.
PRINCIPAL

Project **HIDDEN COVE ON THE HUDSON**
OSSINING NEW YORK

Revised

WATER QUALITY COMPUTATIONS, WQv (ONSITE AREA)

A = Total Site Area (Limit of Disturbance) = 2.878 ac = 125,361 s.f.

Ai = Impervious Area at Post Development Condition = 1.105 ac = 48,151 s.f. Total area reconstruced within existing limits

I = percent Impervious Area = [(Ai)(100)]/(A)=

I = percent Impervious Area = [(1.105 ac)(100)]/(2.878 ac)= 38 %

Rv = Volumetric Runoff Coeff. = (se +[(0.009)(38.41)]=

Rv = Volumetric Runoff Coeff. = (0.05 +[(0.009)(38.41)]= 0.396

P = Precipitation Depth = 1.5 in.

WQv = Water Quality Volume = [(P)(Rv)(A)]/ 12

WQv (required) [(1.5 in.)(0.396)(2.878 ac)]/ 12 = 0.142 ac.ft = 6,200 cf

WQv = 0.142 ac.ft = 6,200 cf

25% WQv (required per re-development) = 0.036 ac.ft = **1,550 cf**

A = Total Site Area (Limit of Disturbance) = 1.015 ac = 44,215 s.f.

Ai = Impervious Area at Post Development Condition = 0.390 ac = 16,983 s.f. Expanded Impervious Cover

I = percent Impervious Area = [(Ai)(100)]/(A)=

I = percent Impervious Area = [(0.390 ac)(100)]/(1.015 ac)= 38 %

Rv = Volumetric Runoff Coeff. = (se +[(0.009)(squired W)]=

Rv = Volumetric Runoff Coeff. = (0.05 +[(0.009)(38.41)]= 0.396

P = Precipitation Depth = 1.5 in.

WQv = Water Quality Volume = [(P)(Rv)(A)]/ 12

WQv (required) [(1.5 in.)(0.396)(1.015 ac)]/ 12 = 0.050 ac.ft = 2,187 cf

WQv = 0.050 ac.ft = 2,187 cf

Total WQv 90% Rainfall Event = 0.086 ac.ft = 3,737 cf

Required WQv = 0.086 ac.ft = **3,737 cf**

Infiltration Trench = 0.046 ac.ft 1,994 cf

Green Roof = 0.053 ac.ft 2,327 cf

White roof = 0.182 ac.ft 7,930 cf

Total WQv (Provided) = **0.281 ac.ft** = **12,251 cf**

Note: See HydroCAD for storm routings

PETRUCCELLI ENGINEERING

PAUL BERTÉ, P.E.
PRINCIPAL

Project **HIDDEN COVE ON THE HUDSON**
OSSINING NEW YORK

Revised

WATER QUALITY COMPUTATIONS, WQv (OFFSITE AREA)

A = Total Site Area (Limit of Disturbance) = 1.472 ac = 64,110 s.f.

Ai = Impervious Area at Post Development Condition = 1.089 ac = 47,417 s.f. Total area reconstruced within existing limits

I = percent Impervious Area = [(Ai)(100)]/(A)=

I = percent Impervious Area = [(1.089 ac)(100)]/(1.472 ac)= 74 %

Rv = Volumetric Runoff Coeff. = (se +[(0.009)(73.96)]=

Rv = Volumetric Runoff Coeff. = (0.05 +[(0.009)(73.96)]= 0.716

P = Precipitation Depth = 1.5 in.

WQv = Water Quality Volume = [(P)(Rv)(A)]/ 12

WQv (required) [(1.5 in.)(0.716)(1.472 ac)]/ 12 = 0.132 ac.ft = 5,735 cf

WQv = 0.132 ac.ft = 5,735 cf

25% WQv (required per re-development) = 0.033 ac.ft = **1,434 cf**

A = Total Site Area (Limit of Disturbance) = 0.178 ac = 7,760 s.f.

Ai = Impervious Area at Post Development Condition = 0.132 ac = 5,740 s.f. Expanded Impervious Cover

I = percent Impervious Area = [(Ai)(100)]/(A)=

I = percent Impervious Area = [(0.132 ac)(100)]/(0.178 ac)= 74 %

Rv = Volumetric Runoff Coeff. = (se +[(0.009)(squired W)]=

Rv = Volumetric Runoff Coeff. = (0.05 +[(0.009)(73.97)]= 0.716

P = Precipitation Depth = 1.5 in.

WQv = Water Quality Volume = [(P)(Rv)(A)]/ 12

WQv (required) [(1.5 in.)(0.716)(0.178 ac)]/ 12 = 0.016 ac.ft = 0,694 cf

WQv = 0.016 ac.ft = 0,694 cf

Total WQv 90% Rainfall Event = 0.049 ac.ft = 2,128 cf

Required WQv = 0.049 ac.ft = **2,128 cf**

Note: See HydroCAD for storm routings

Hydrodynamic Separator Flow Treatment = 0.159 ac.ft 6,909 cf

Total WQv (Provided) = **0.159 ac.ft** = **6,909 cf**

NOTE: UNAUTHORIZED ALTERATIONS TO THIS DRAWING IS A VIOLATION OF SECTION 7209-2 OF THE NEW YORK STATE EDUCATION LAW.

NOTE: THIS PLAN IS NULL AND VOID UNLESS IT BEARS THE ORIGINAL SEAL AND SIGNATURE OF THE ENGINEER.

JOB NO.	DATE	SCALE	DRAWN BY:	CHKD BY:
01-127	09-10-12	1"=60'	KMM	R.C.P.

REVISIONS

PETRUCCELLI ENGINEERING
392 COLUMBUS AVENUE
VALHALLA, NEW YORK 10595
914 • 948 • 3629
RUDOLPH C. PETRUCCELLI, P.E.

DRAINAGE AREAS (EXISTING)

FOR

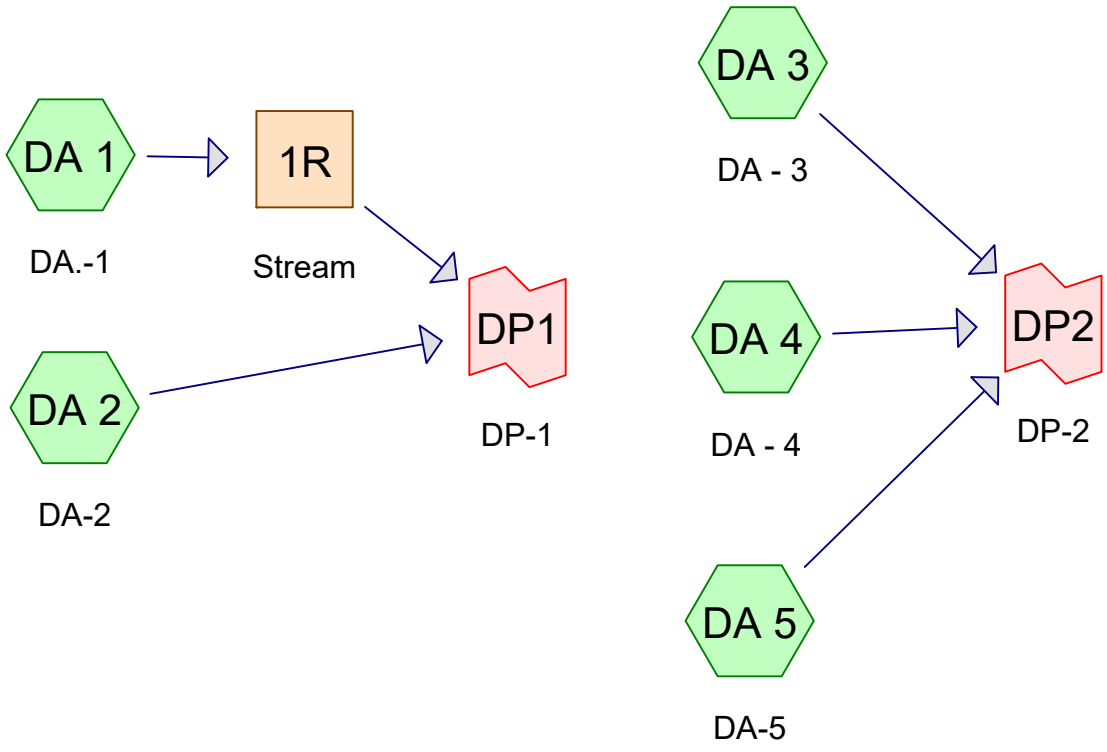
HIDDEN COVE ON THE HUDSON

36 NORTH WATER STREET

VILLAGE OF OSSINING NEW YORK

SHEET NO.

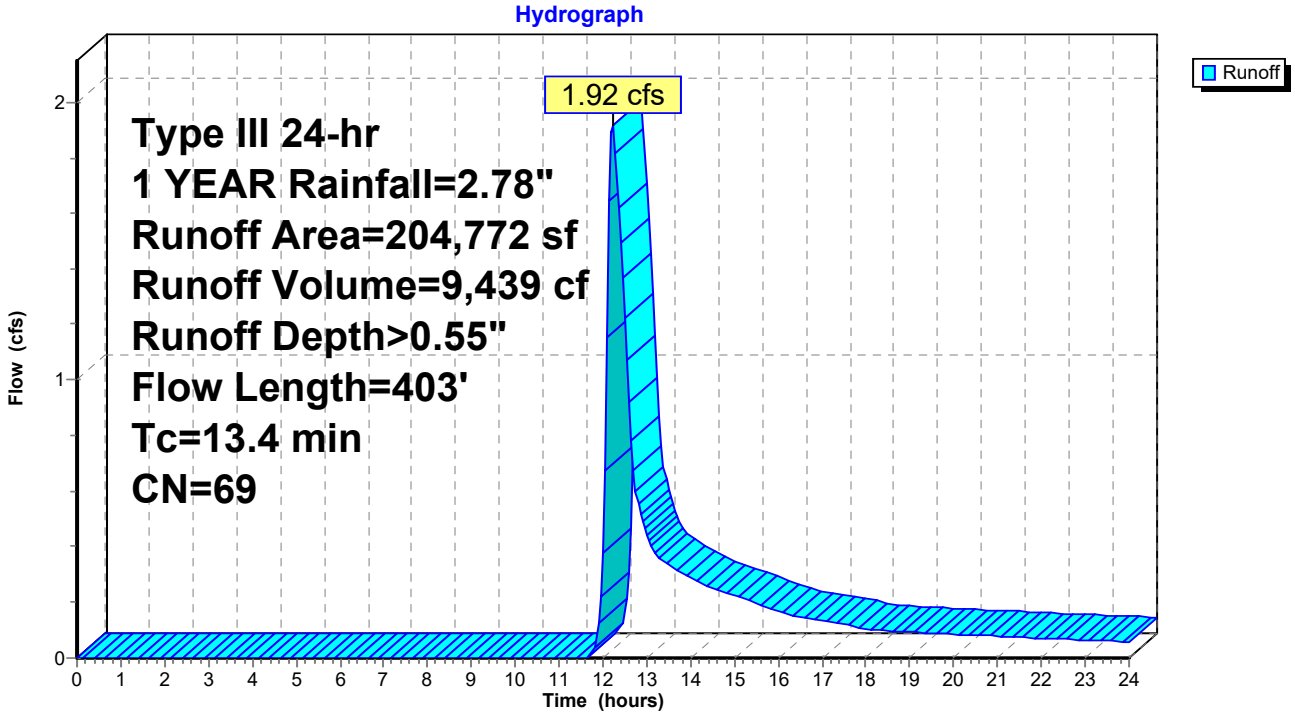
1 / 2



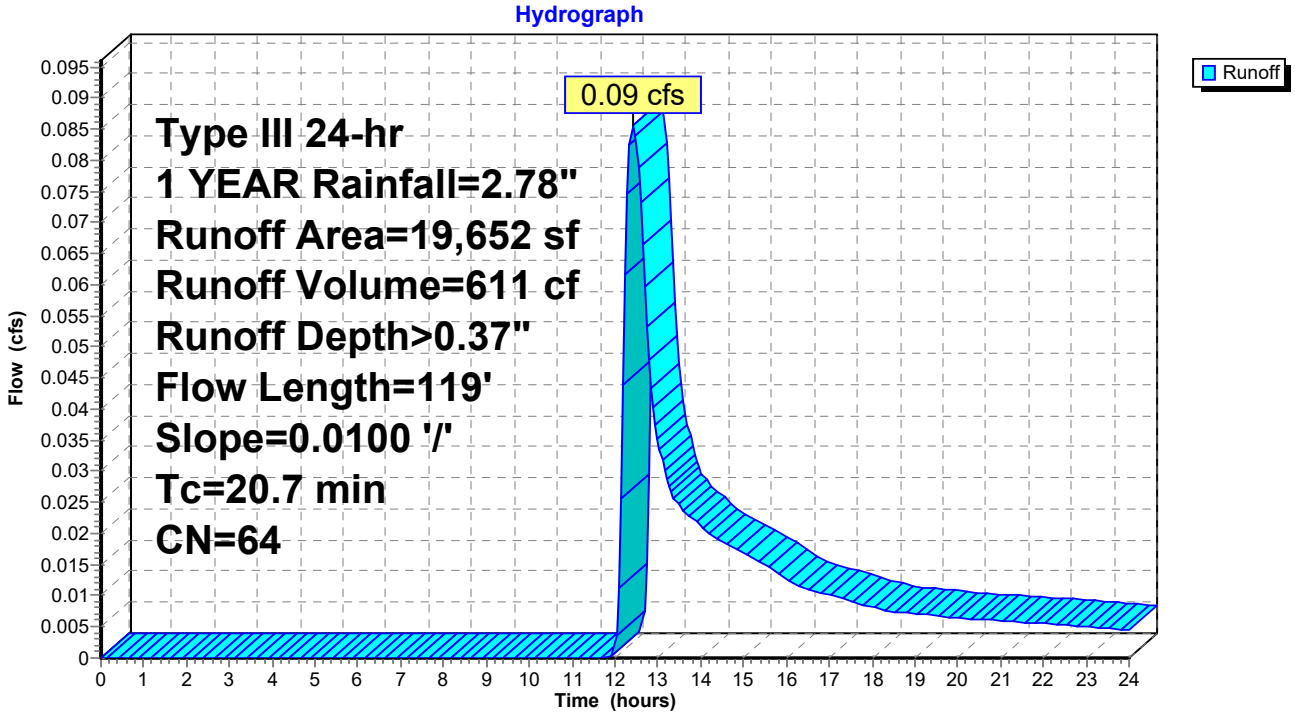
Subcat Reach Pond Link

Routing Diagram for POST DEVELOPMENT Rev_Feb 28 2017
Prepared by PETRUCCELLI ENGINEERING, Printed 4/7/2018

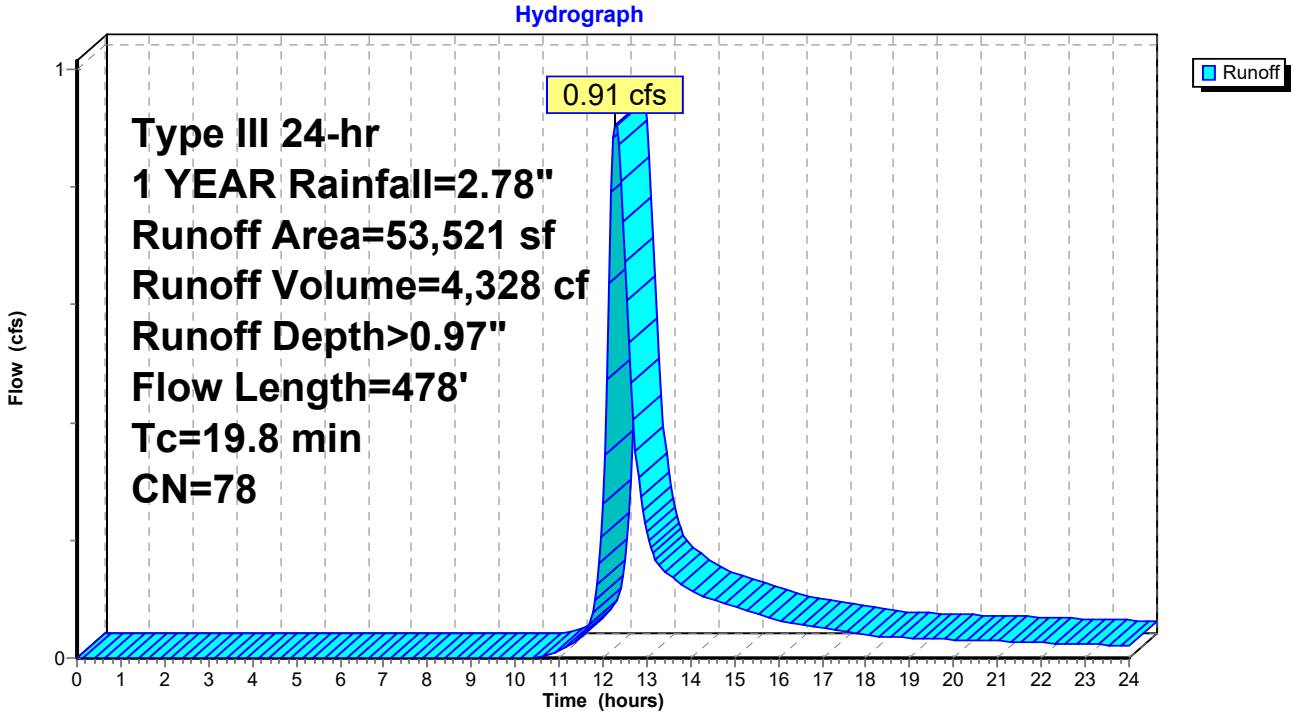
Subcatchment DA 1: DA.-1



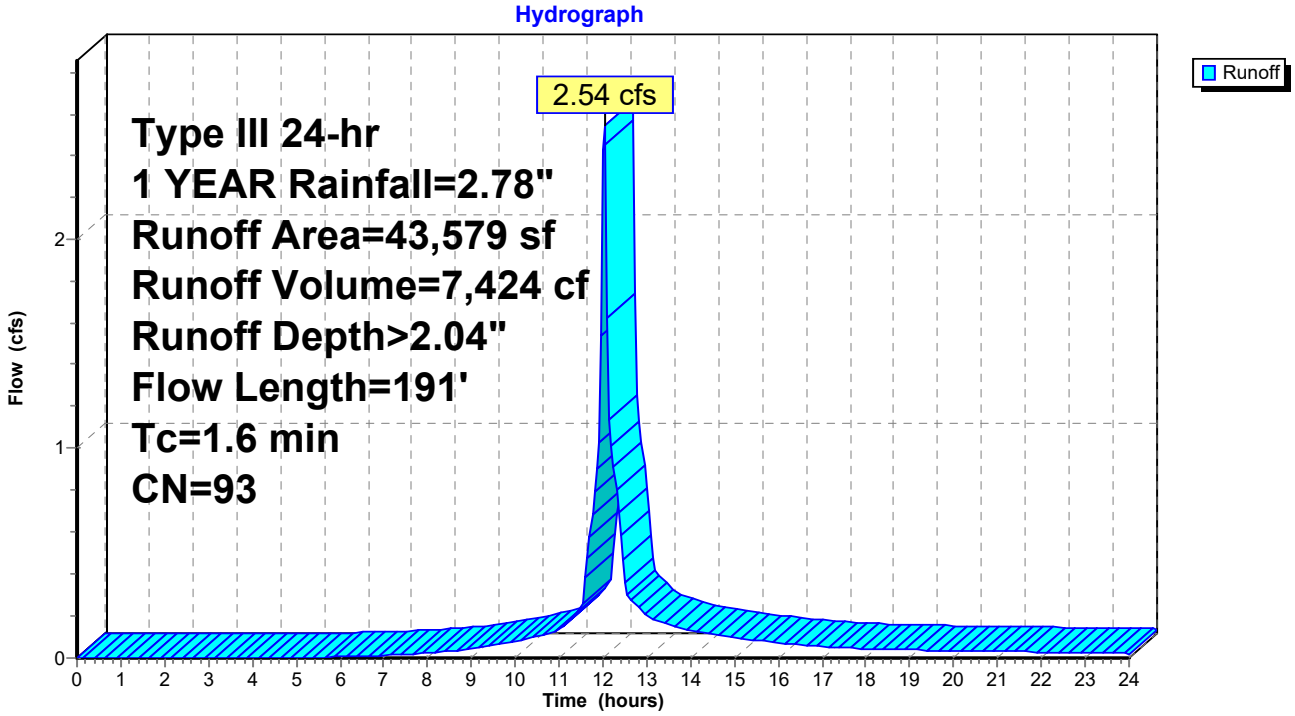
Subcatchment DA 2: DA-2



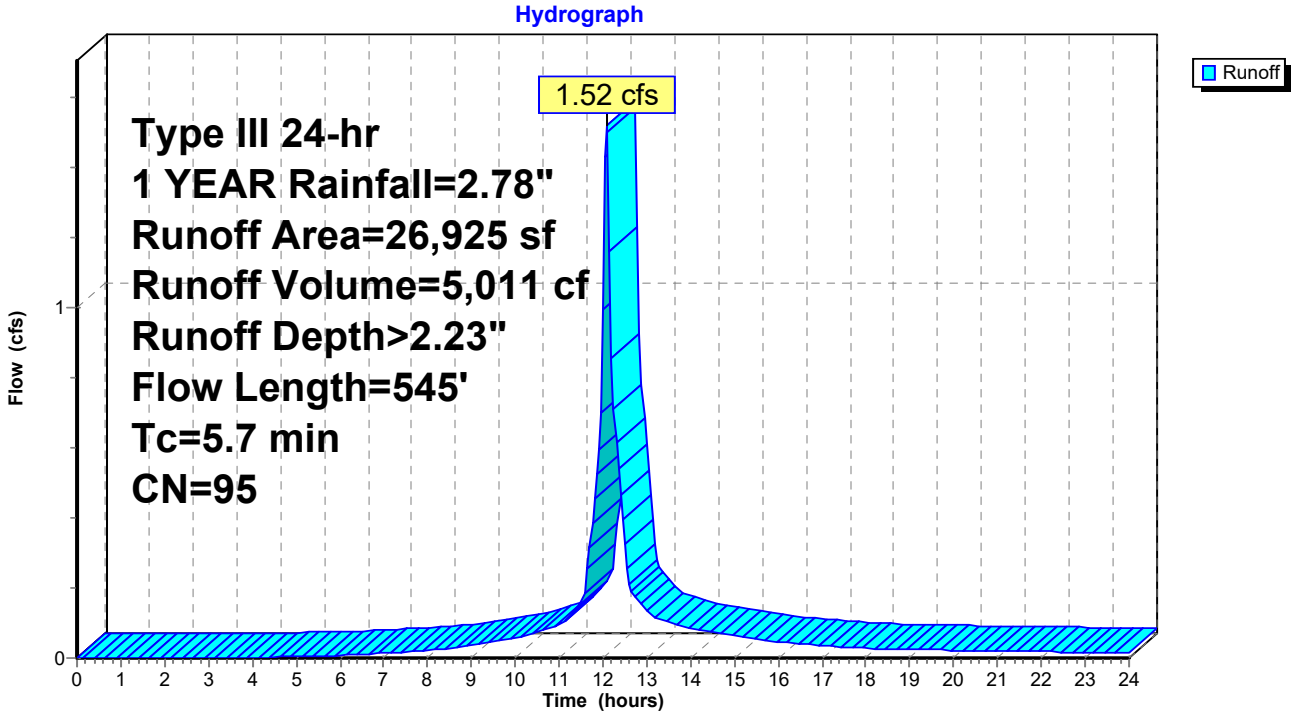
Subcatchment DA 3: DA - 3



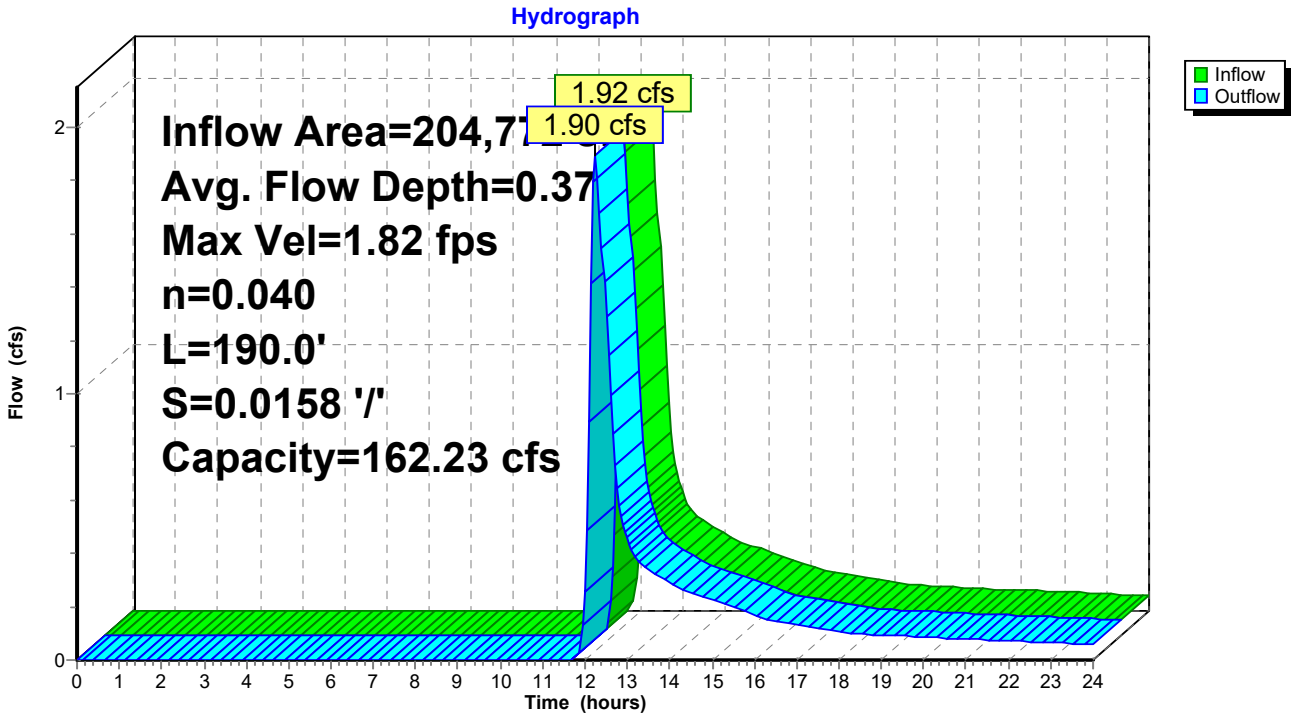
Subcatchment DA 4: DA - 4



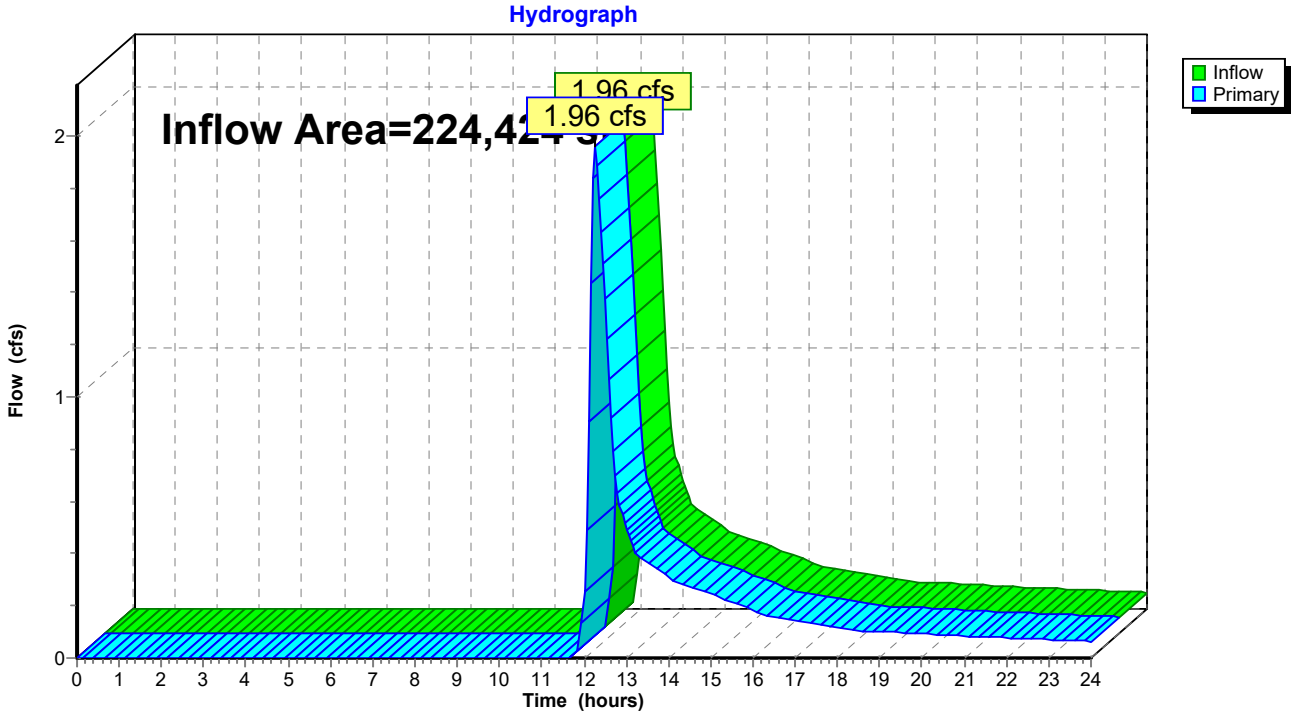
Subcatchment DA 5: DA-5



Reach 1R: Stream



Link DP1: DP-1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1.96 cfs
1.96 cfs
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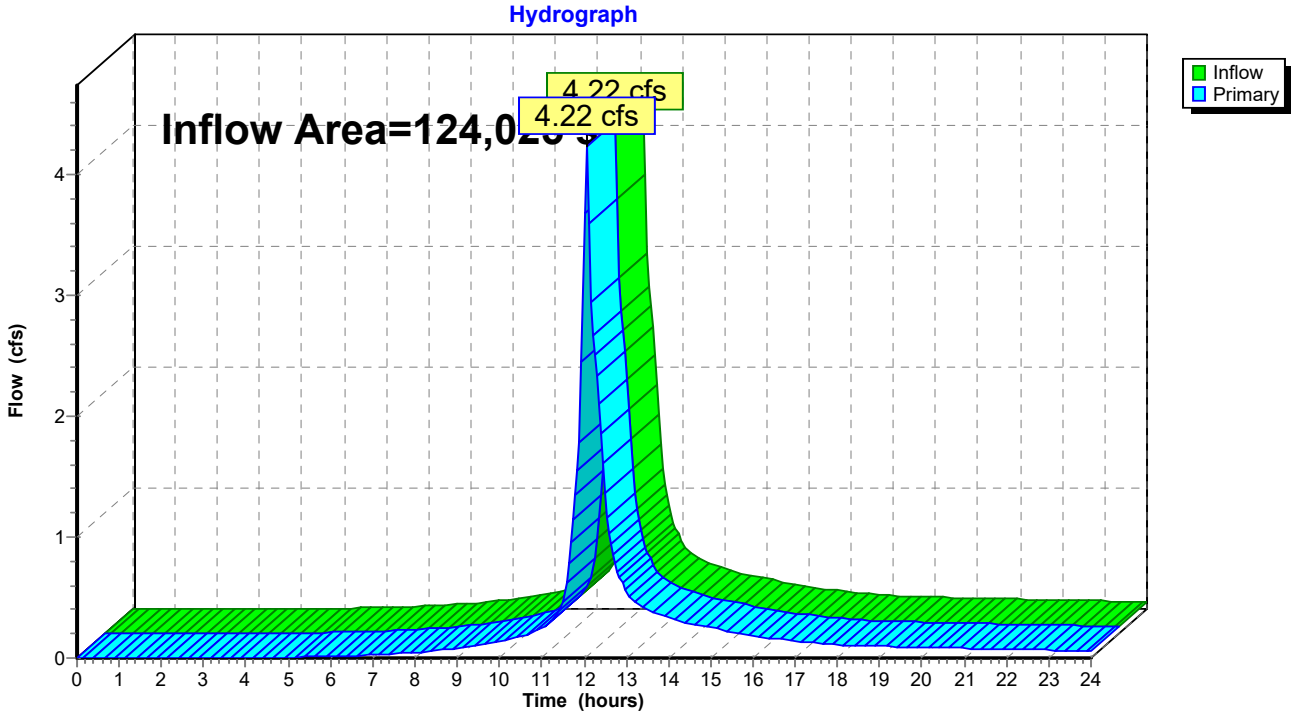
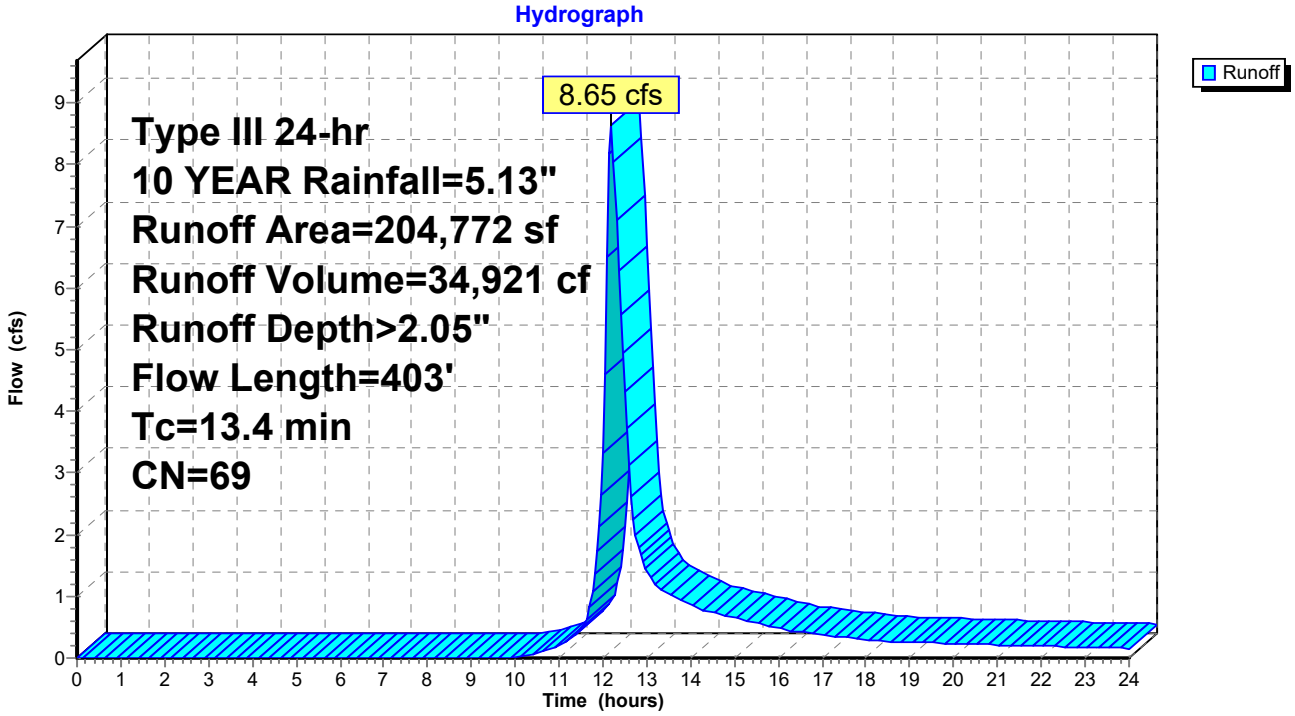
Inflow
Primary
Flow (cfs)
0
1
2
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Time (hours)

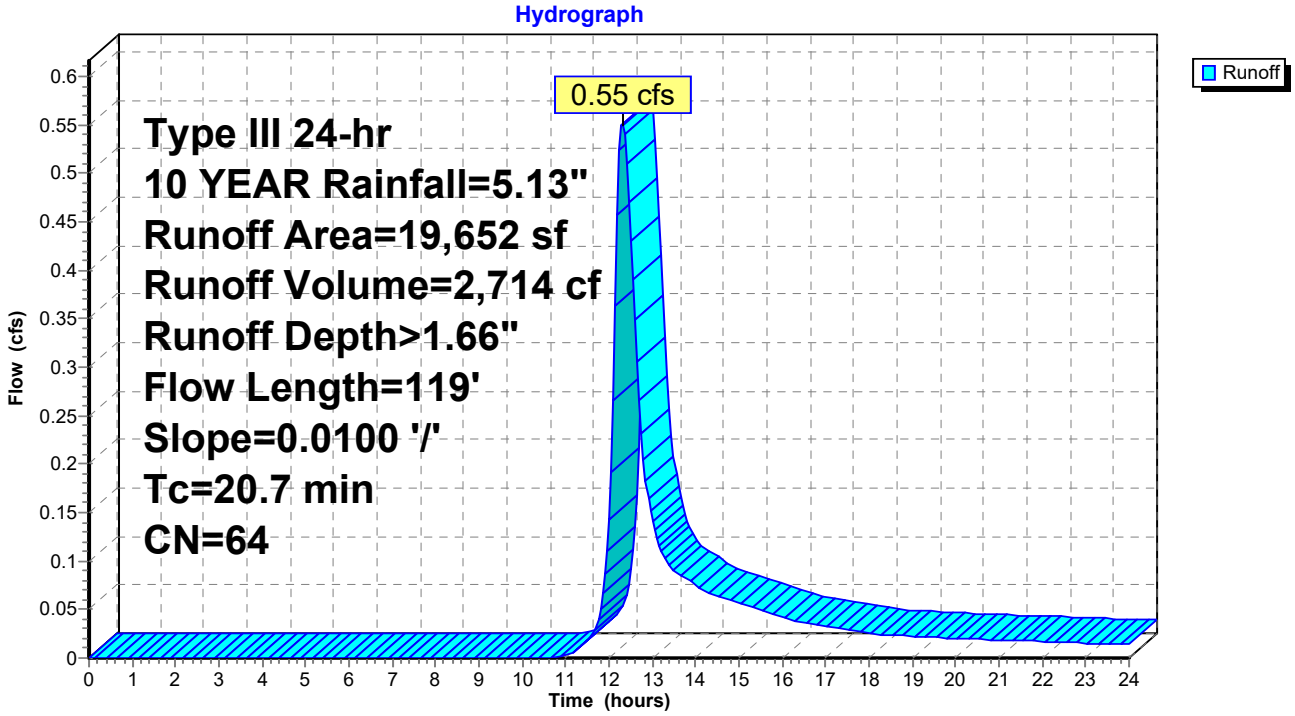
Link DP2: DP-2


Hydrograph
Inflow Area=124,0
4.22 cfs
4.22 cfs
Inflow
Primary
Flow (cfs)
0
1
2
3
4
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Time (hours)

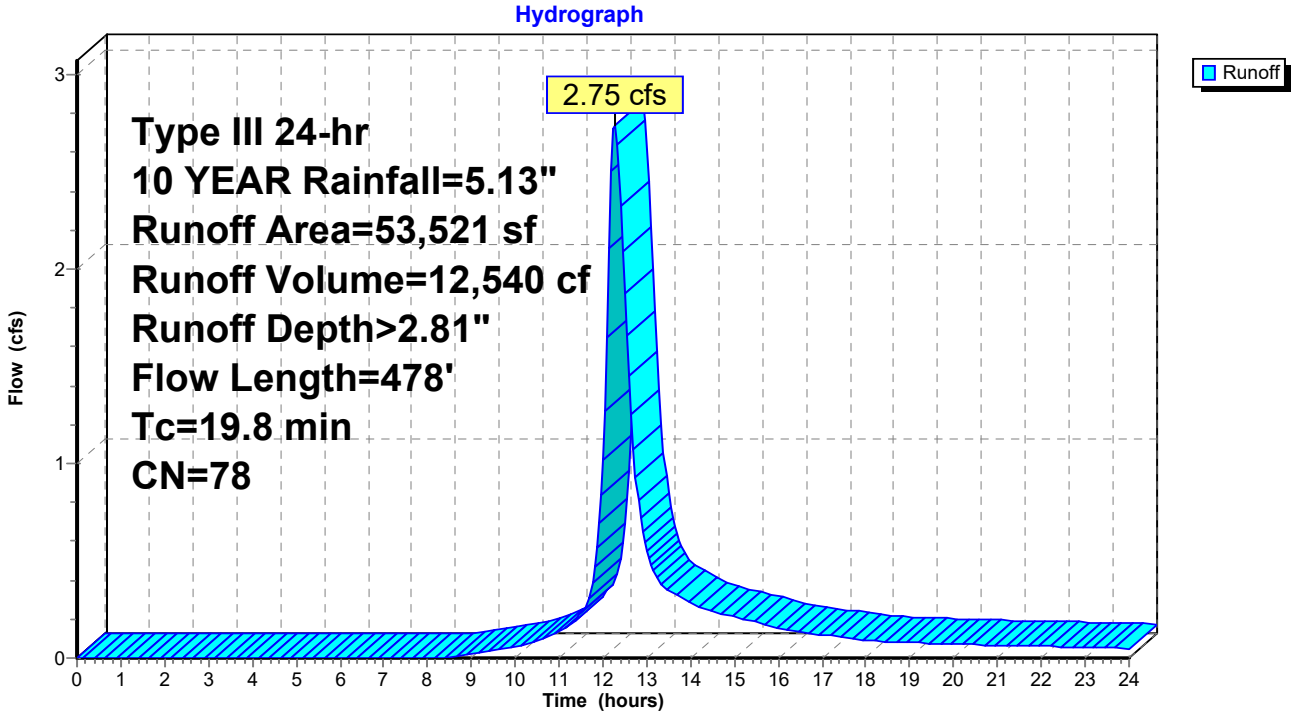
Subcatchment DA 1: DA.-1



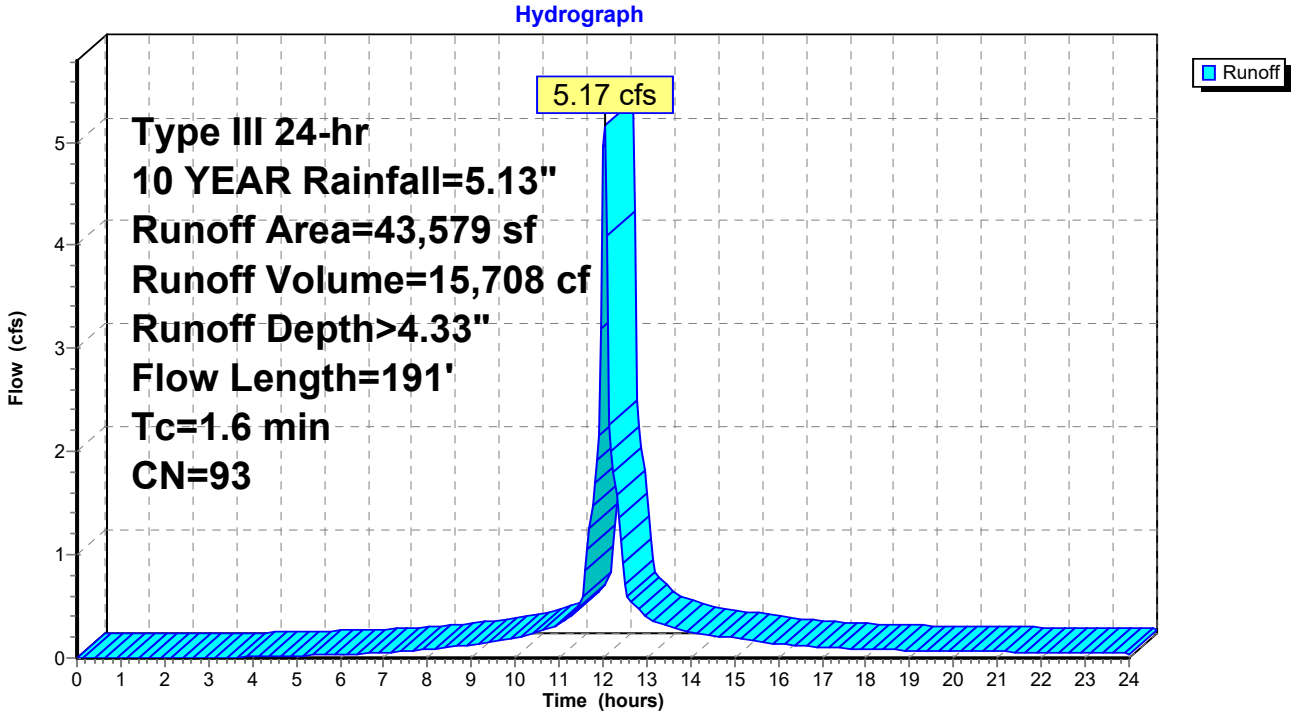
Subcatchment DA 2: DA-2



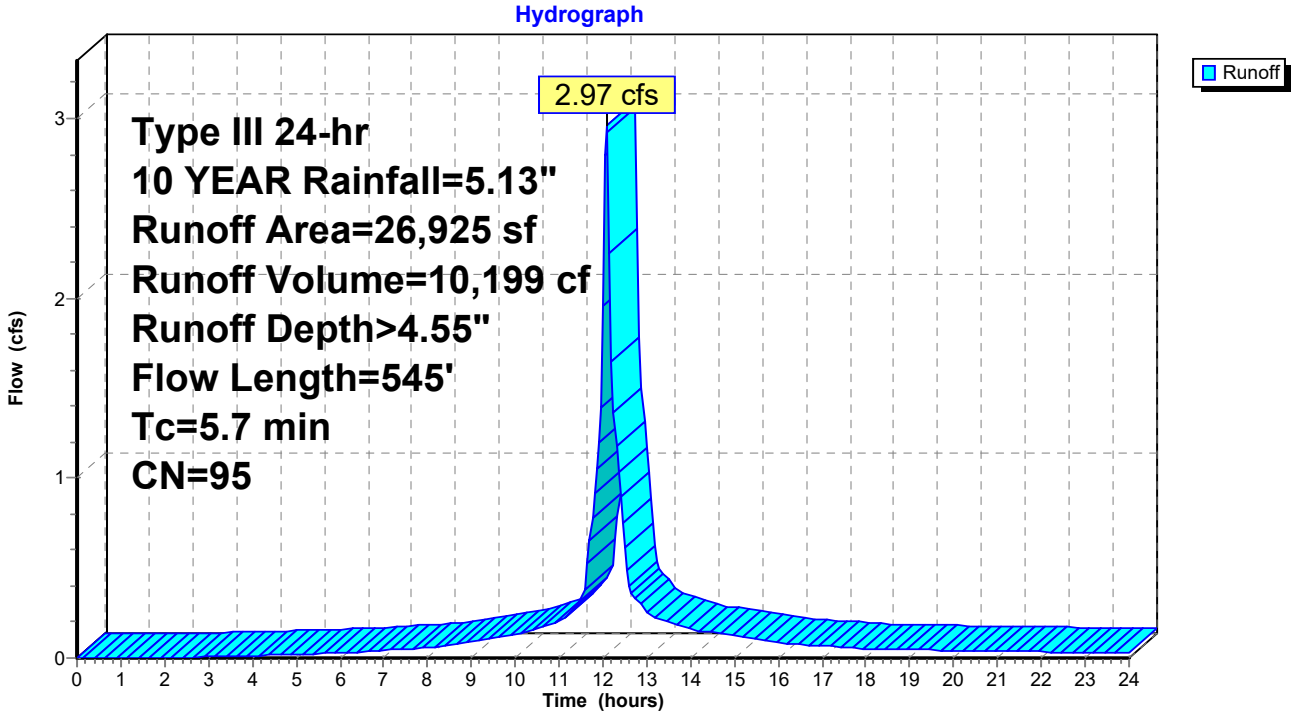
Subcatchment DA 3: DA - 3



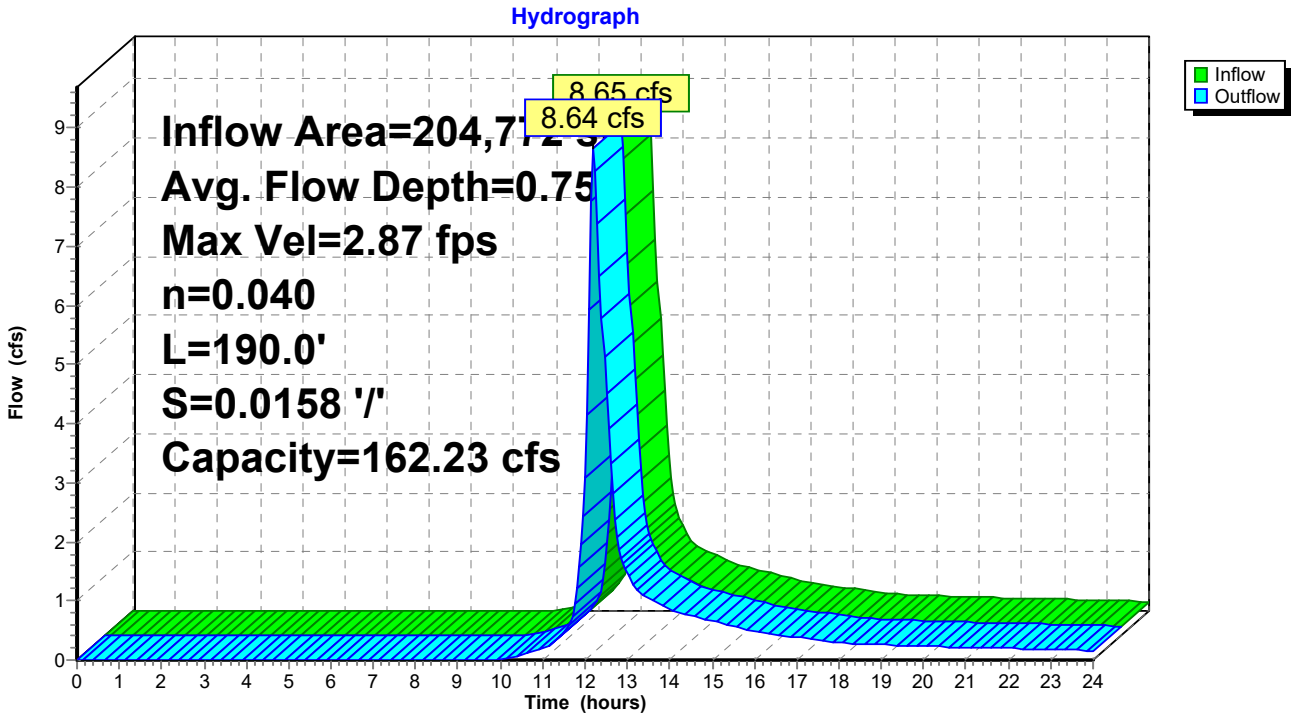
Subcatchment DA 4: DA - 4



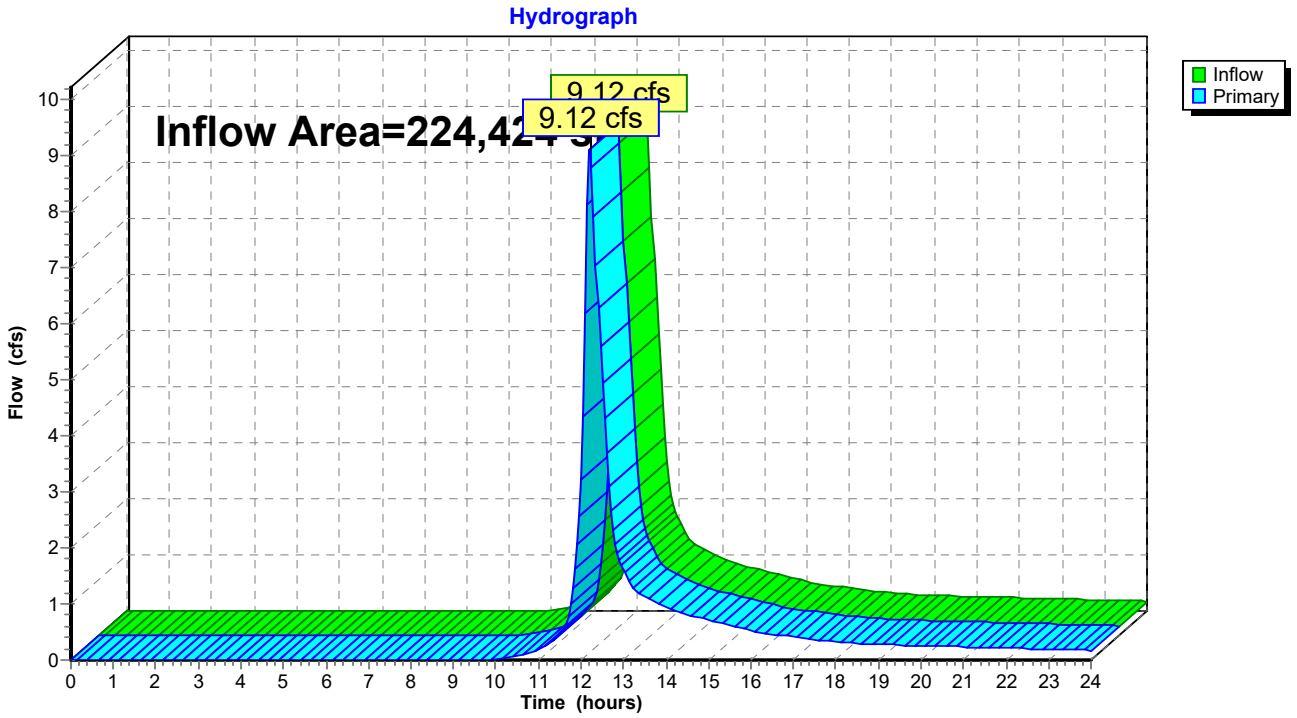
Subcatchment DA 5: DA-5



Reach 1R: Stream



Link DP1: DP-1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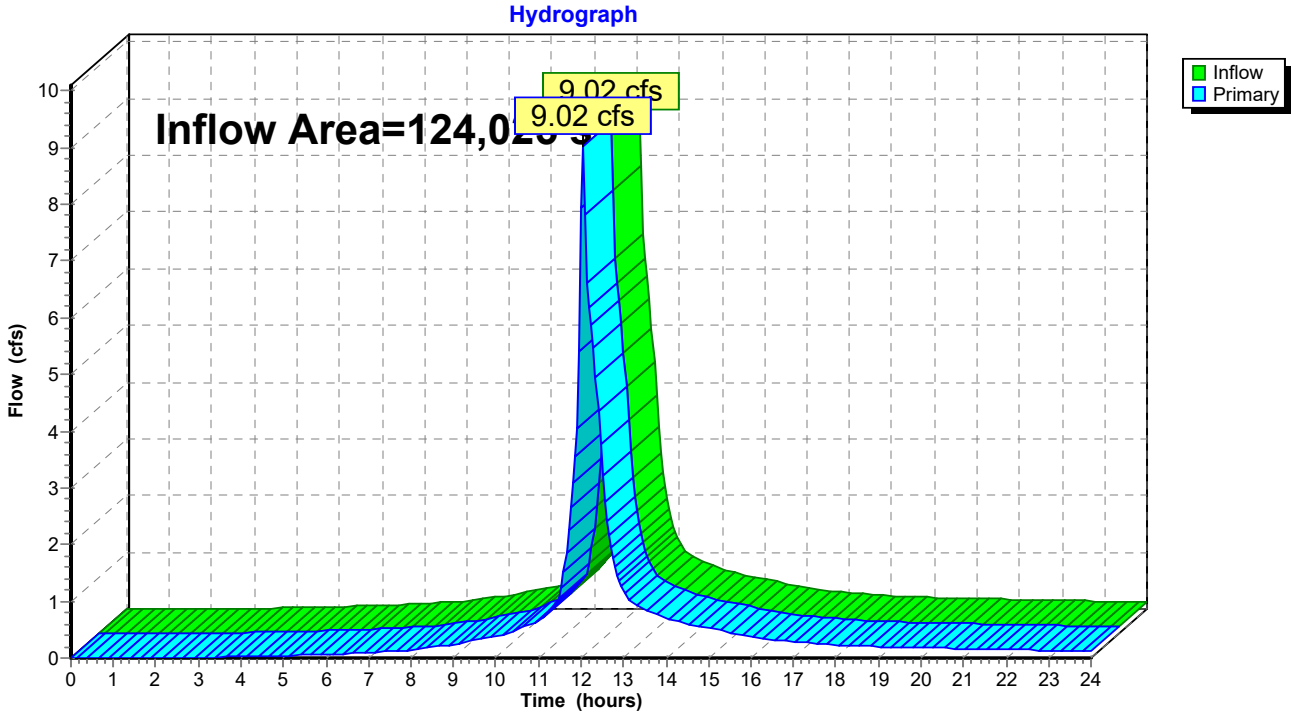
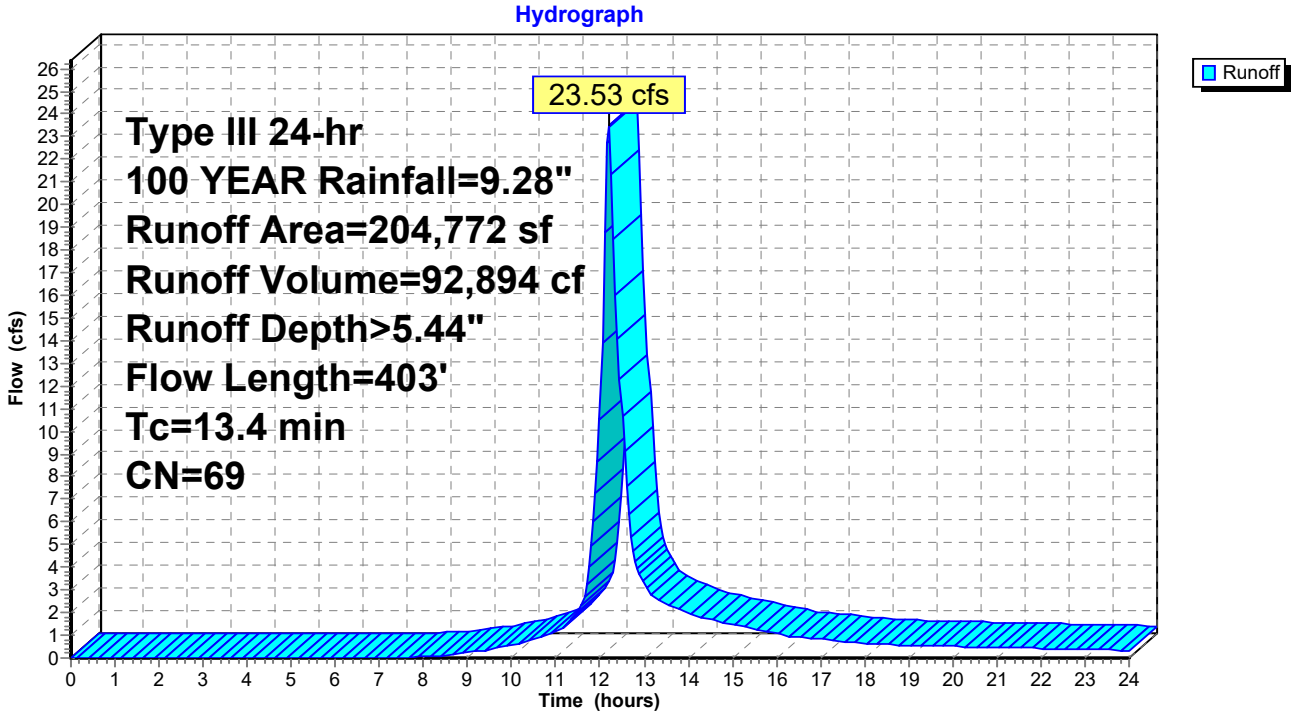
Inflow Area=224,424 s
9.12 cfs
9.12 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

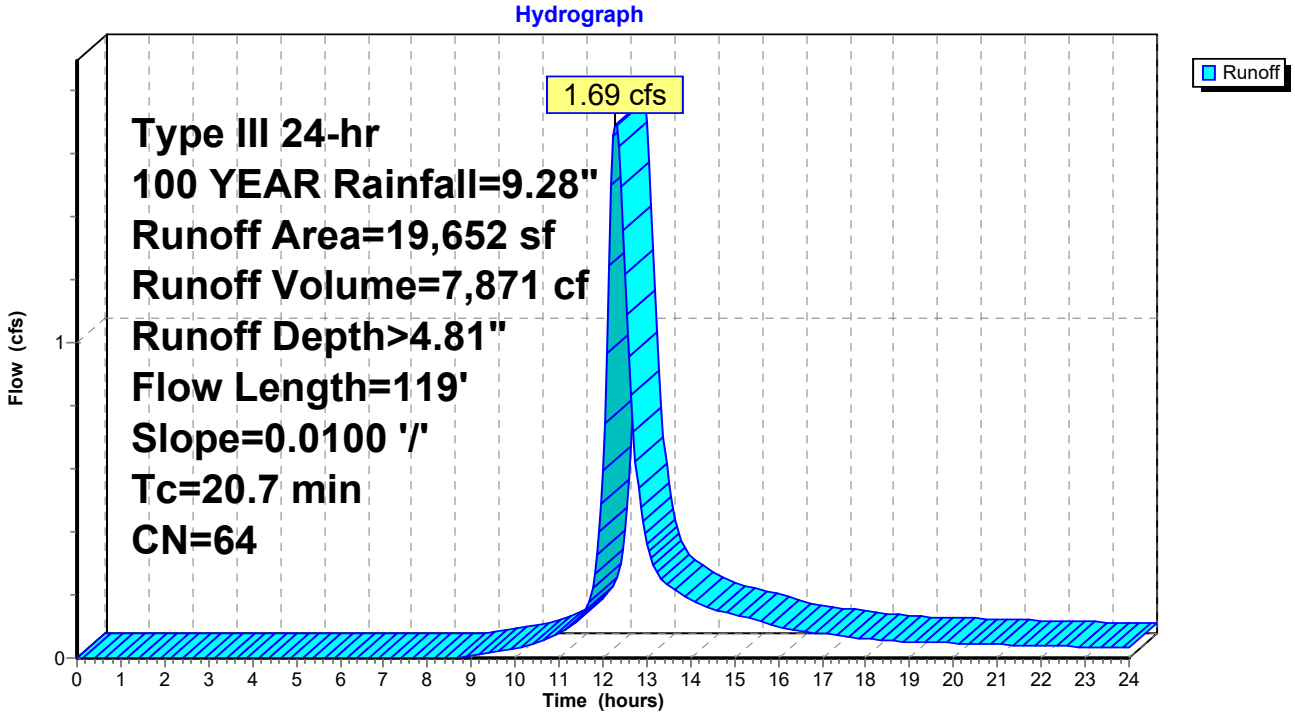
Link DP2: DP-2


Hydrograph
Inflow Area=124,0
9.02 cfs
9.02 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

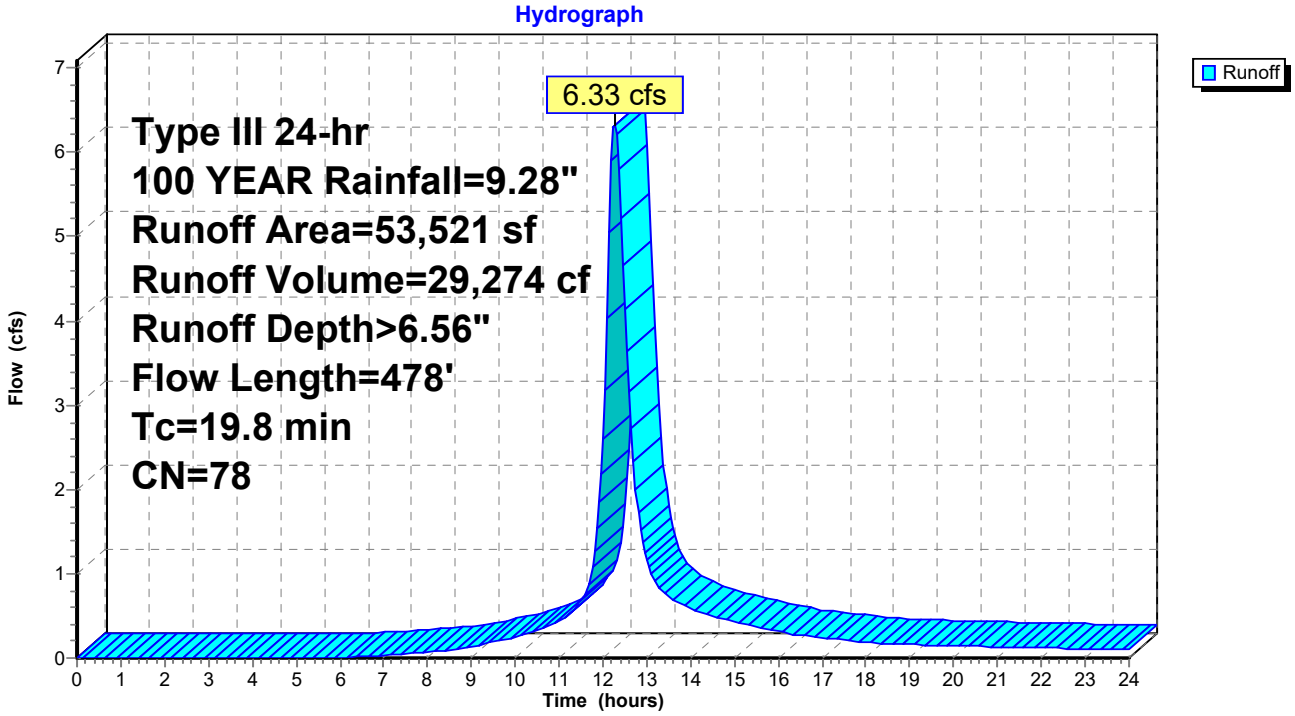
Subcatchment DA 1: DA.-1



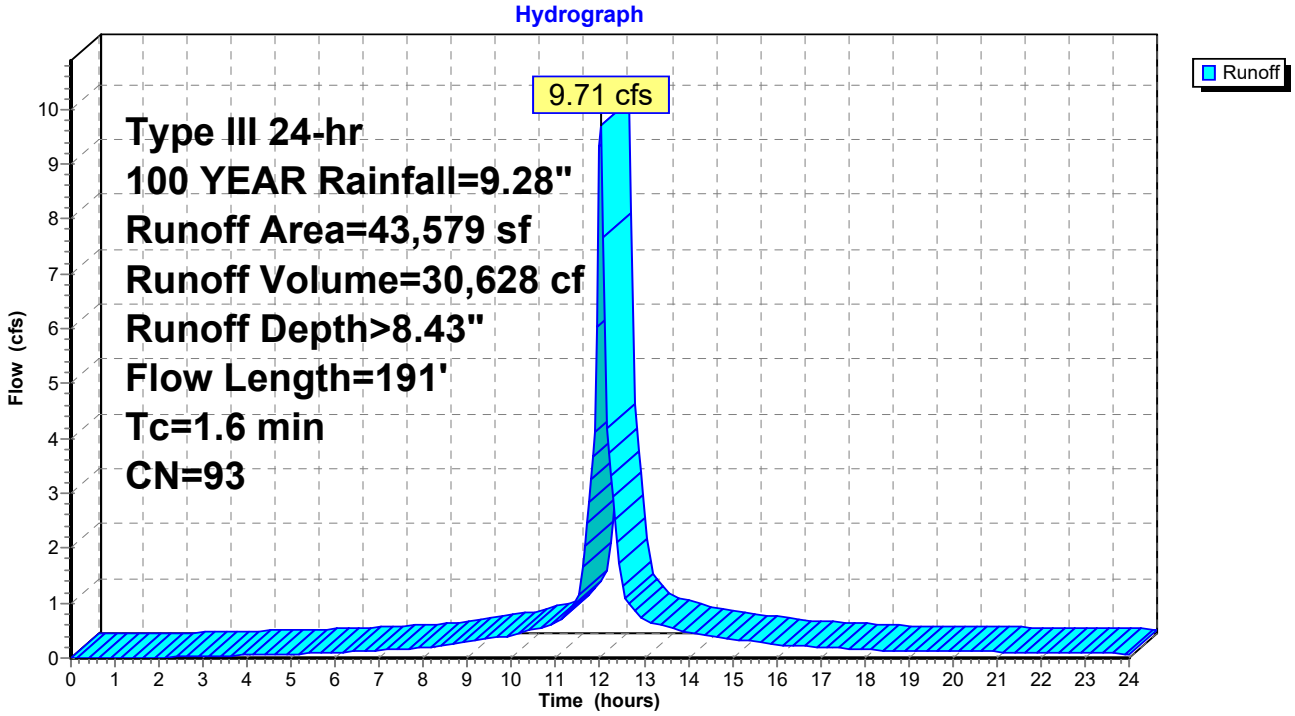
Subcatchment DA 2: DA-2



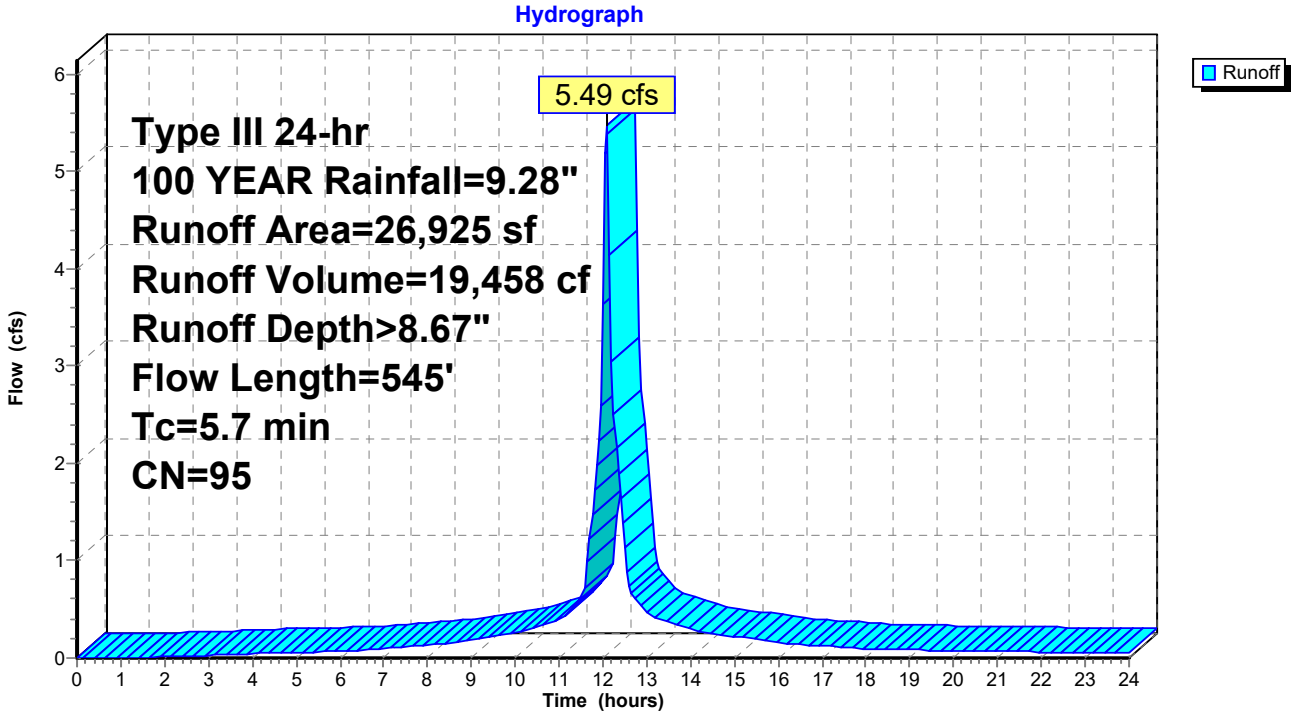
Subcatchment DA 3: DA - 3



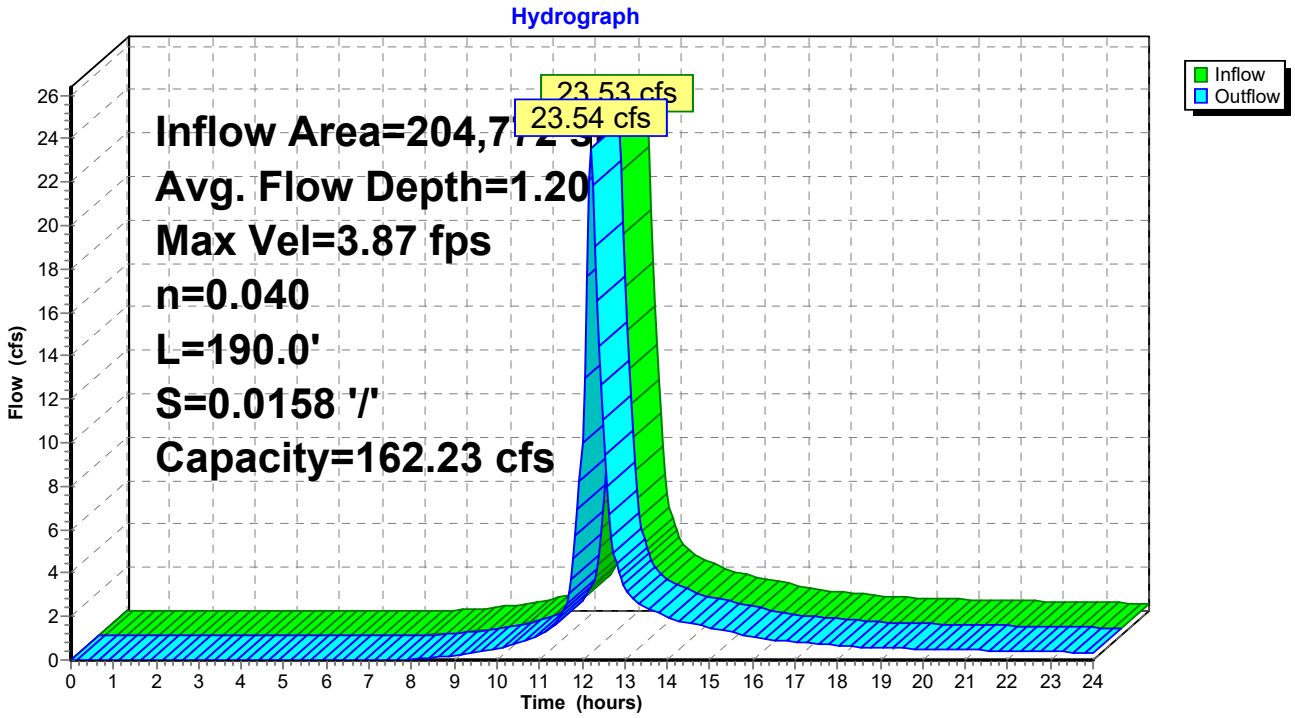
Subcatchment DA 4: DA - 4



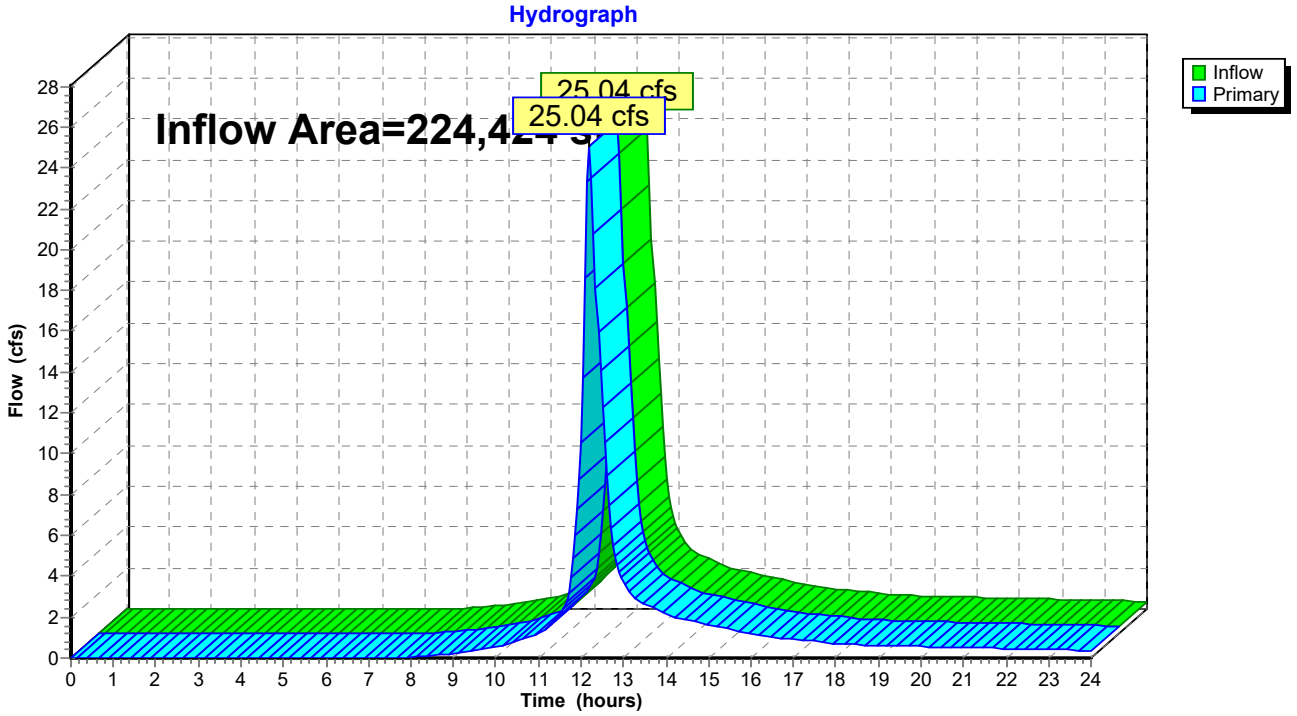
Subcatchment DA 5: DA-5



Reach 1R: Stream



Link DP1: DP-1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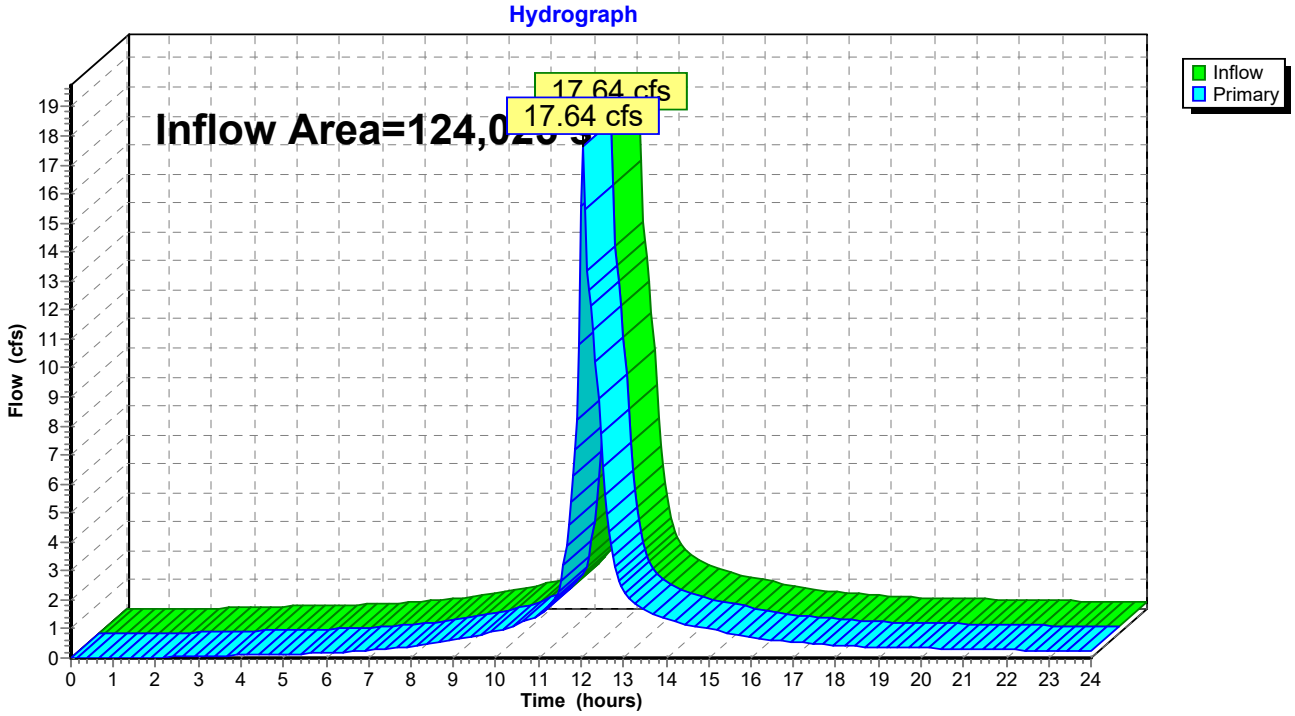
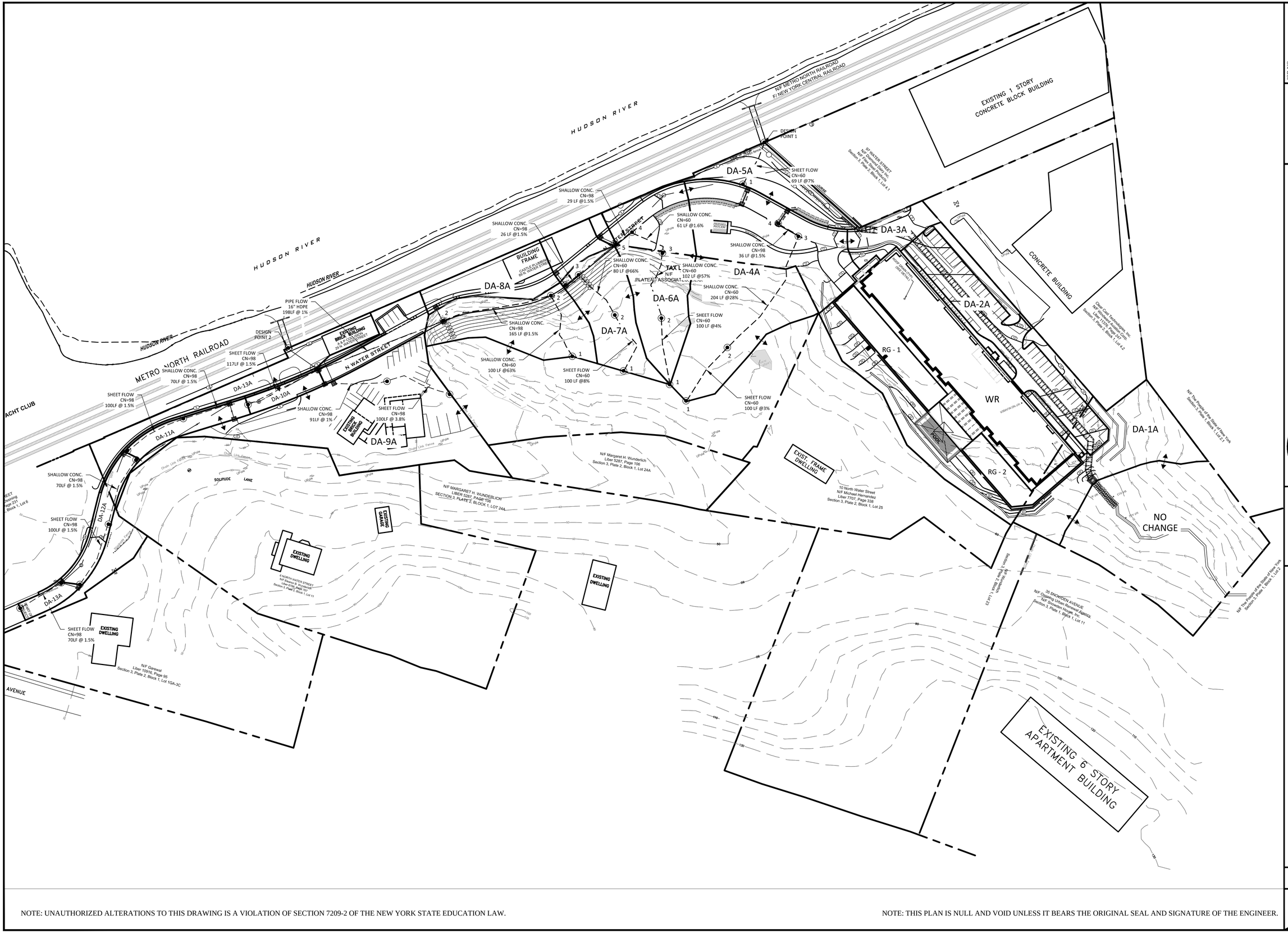
25.04 cfs
25.04 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

Link DP2: DP-2


Hydrograph
17.64 cfs
17.64 cfs
Inflow Area=124,0
Inflow
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24



NOTE: UNAUTHORIZED ALTERATIONS TO THIS DRAWING IS A VIOLATION OF SECTION 7209-2 OF THE NEW YORK STATE EDUCATION LAW.

NOTE: THIS PLAN IS NULL AND VOID UNLESS IT BEARS THE ORIGINAL SEAL AND SIGNATURE OF THE ENGINEER.

PETRUCCELLI ENGINEERING
600 NORTH BROADWAY
WHITE PLAINS, N.Y. 10603
914.948.3629
PAUL BERTE, P.E.

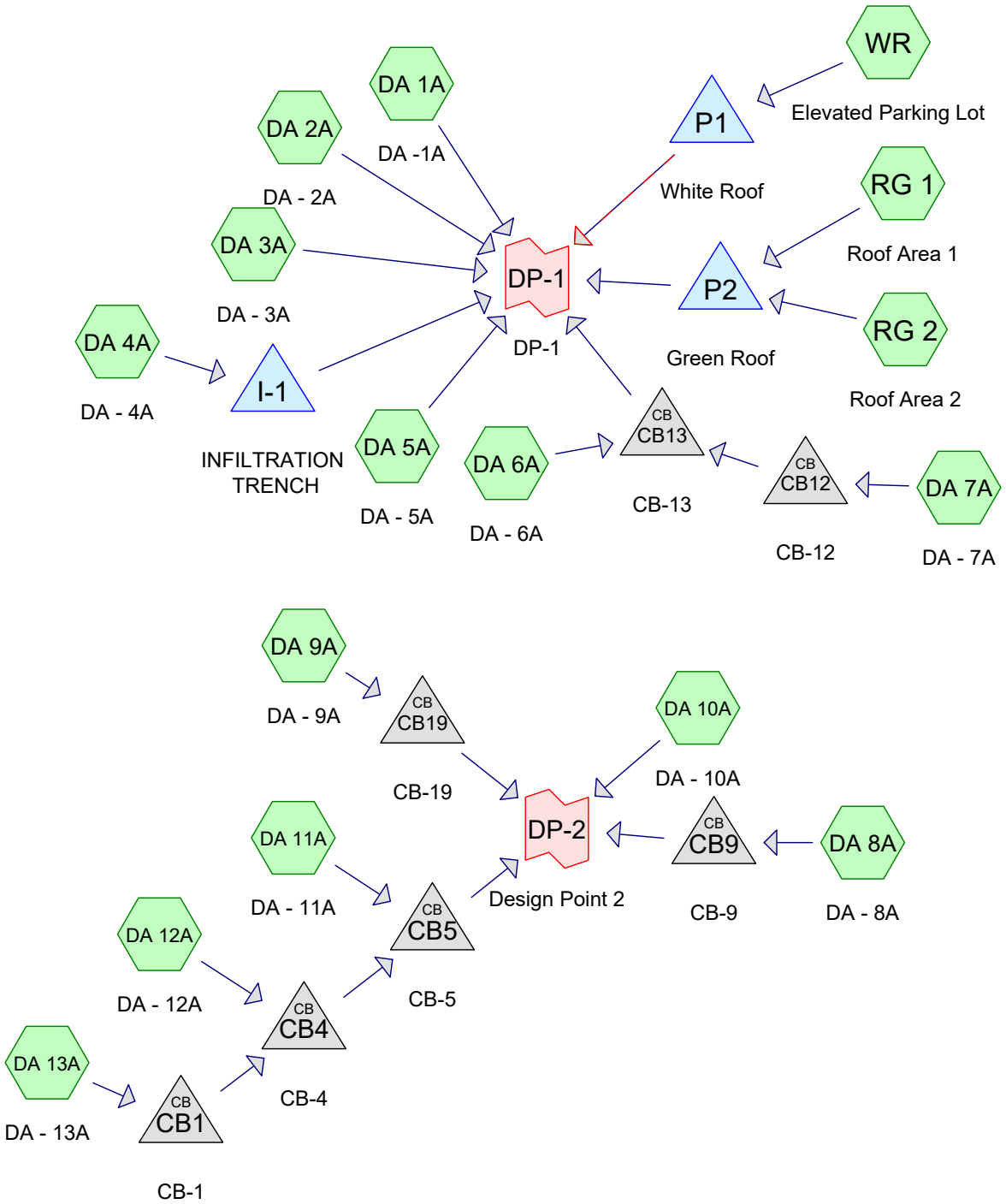
JOB NO.	DATE:	SCALE:	DRAWN BY:	CHECKED BY:
2001	02.28.17	AS NOTED	KMM	P.B.

REVISIONS

POST-DEVELOPMENT MAP

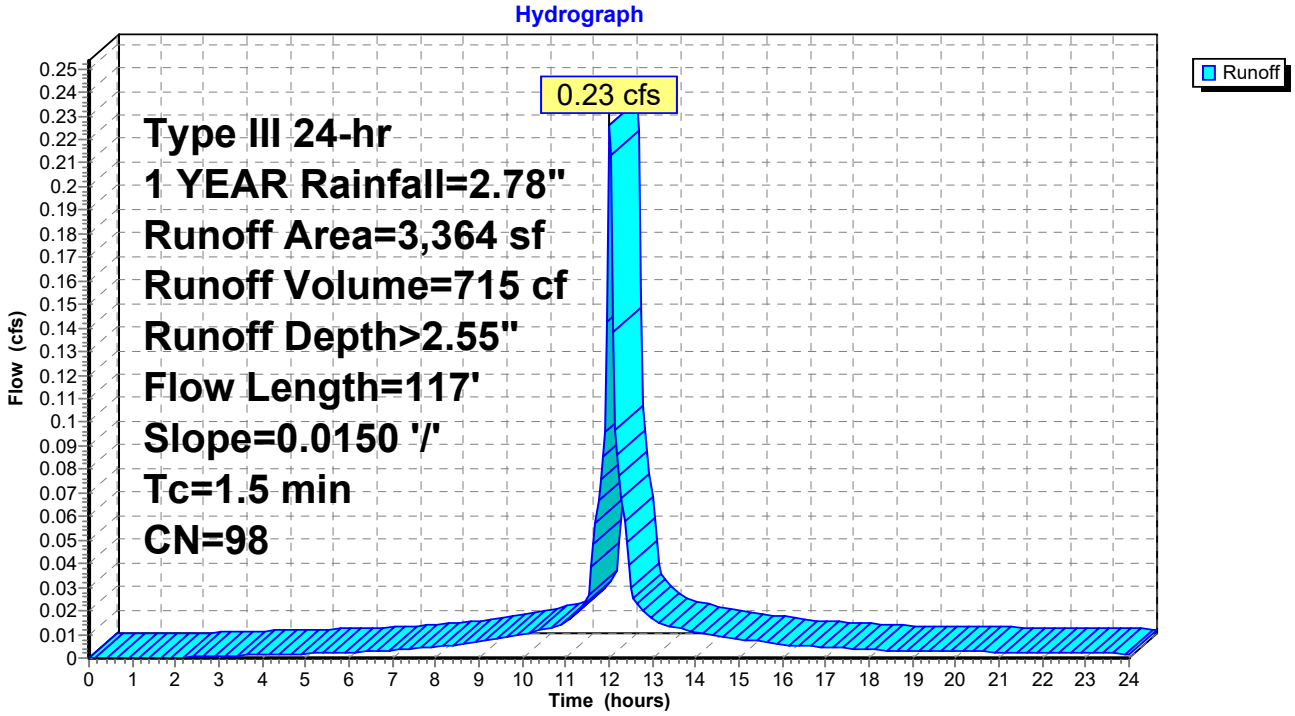
HIDDEN COVE ON THE HUDSON
36 NORTH WATER STREET
VILLAGE OF OSSINING
NEW YORK

SHEET NO.
2 / 2

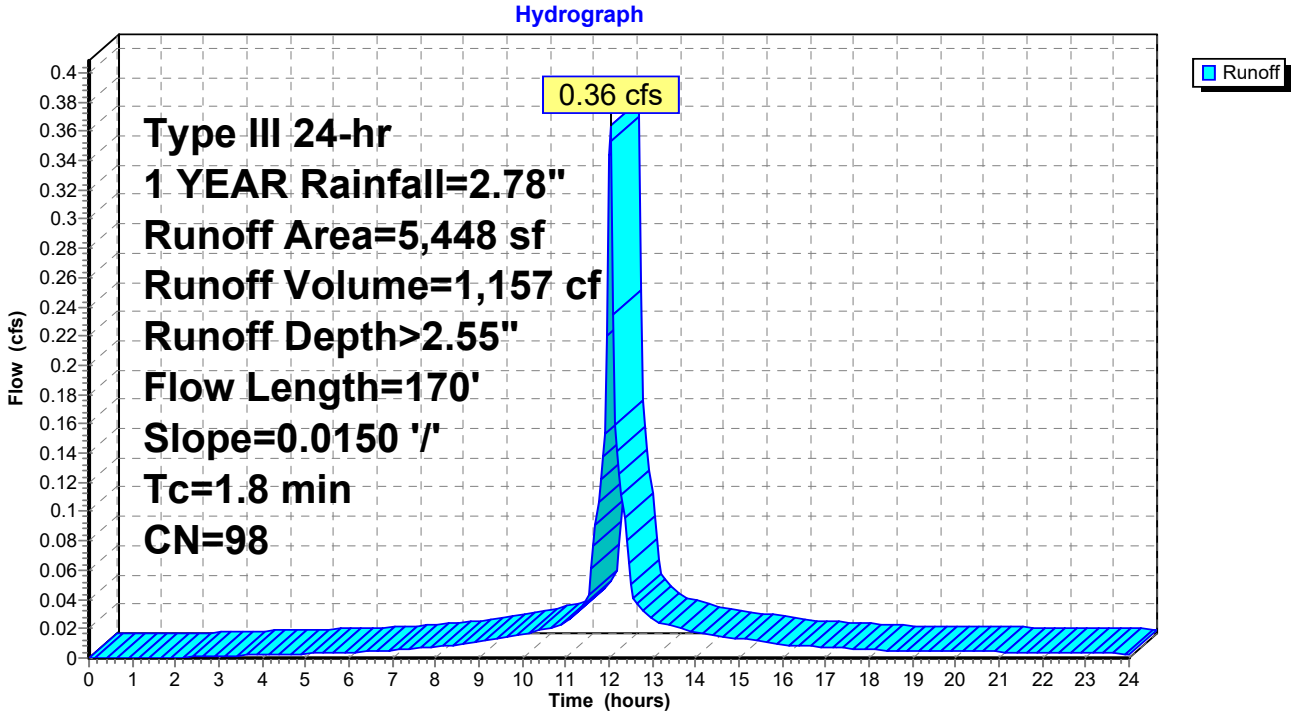


Routing Diagram for POST DEVELOPMENT Rev_Feb 28 2017
Prepared by PETRUCCELLI ENGINEERING, Printed 4/7/2018

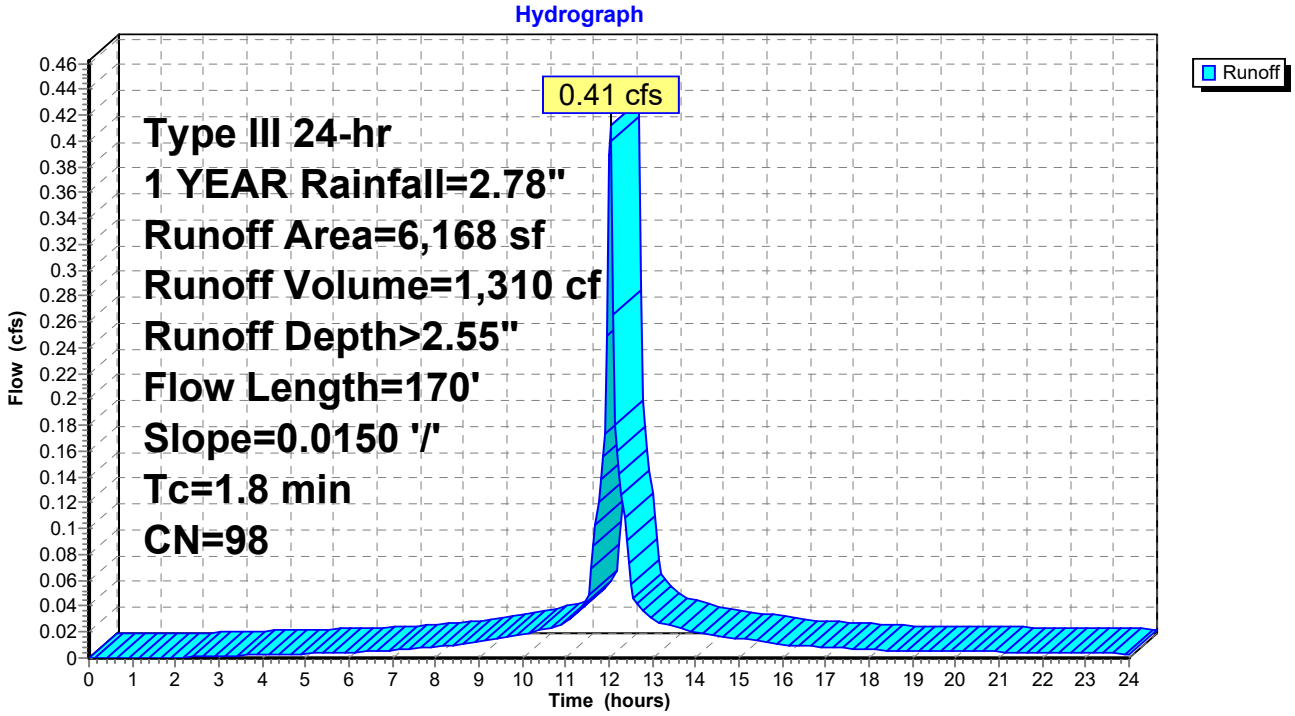
Subcatchment DA 10A: DA - 10A



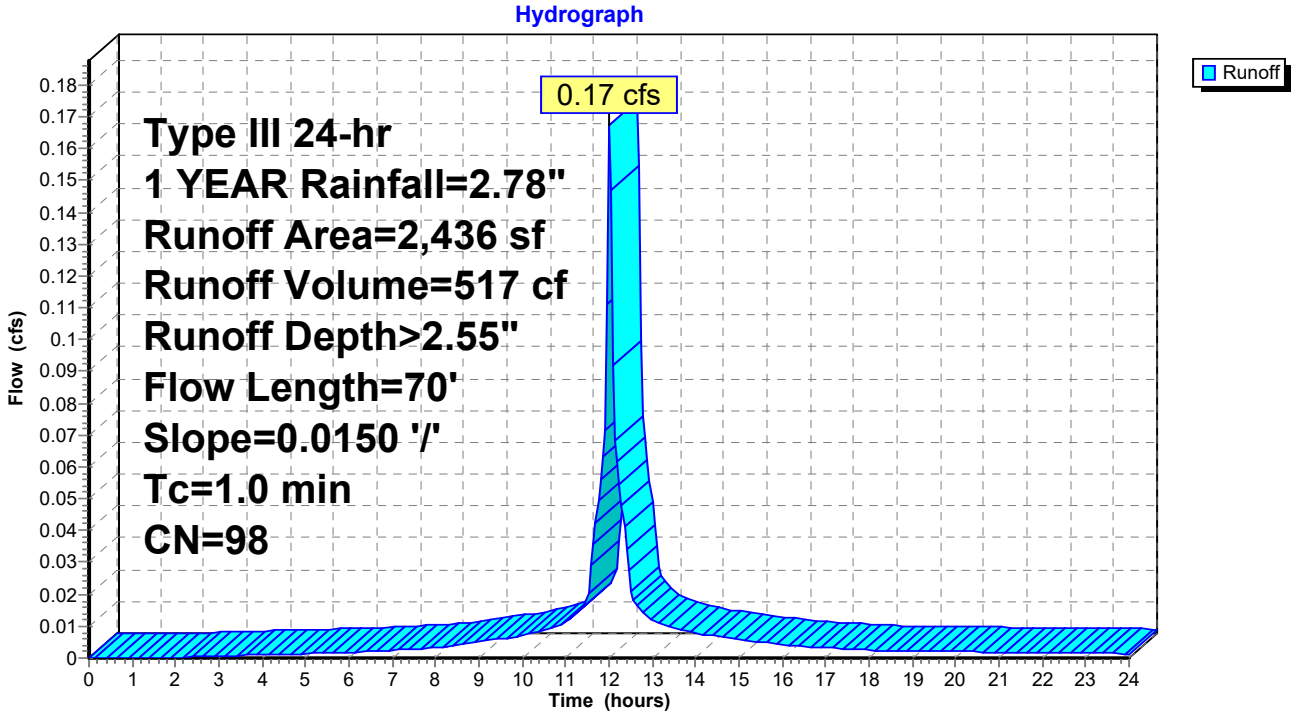
Subcatchment DA 11A: DA - 11A



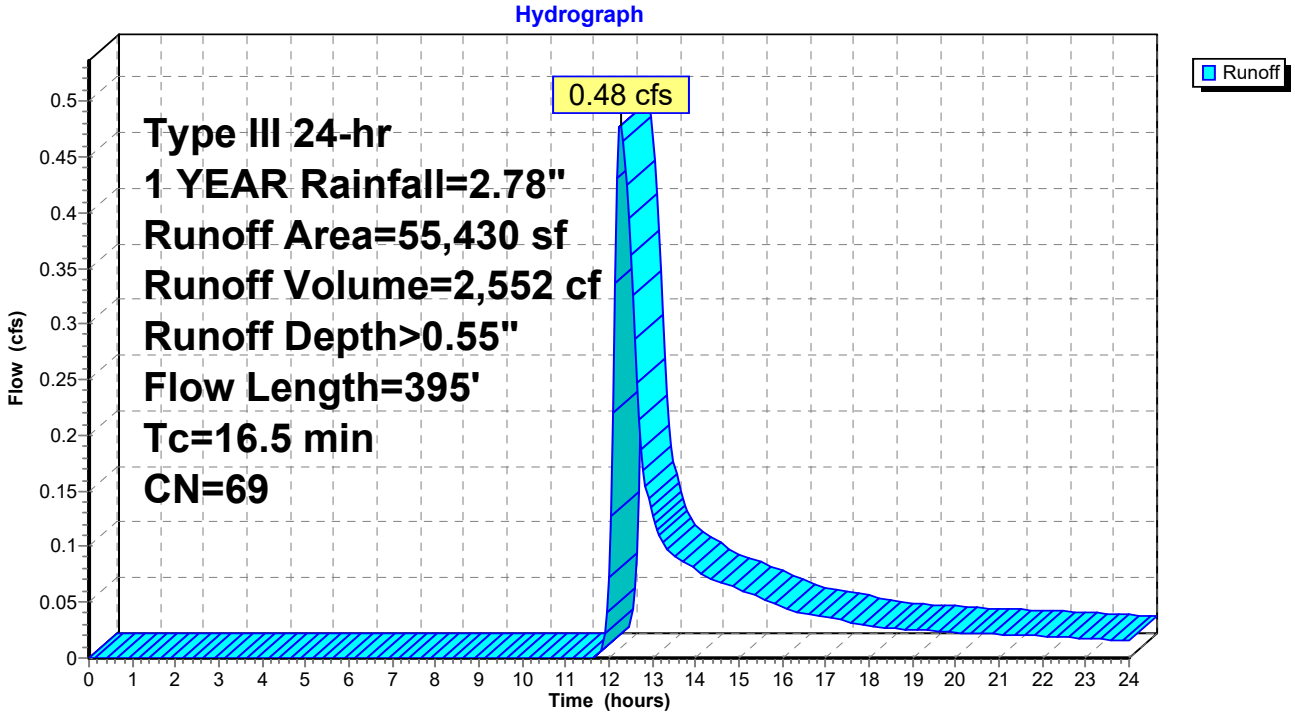
Subcatchment DA 12A: DA - 12A



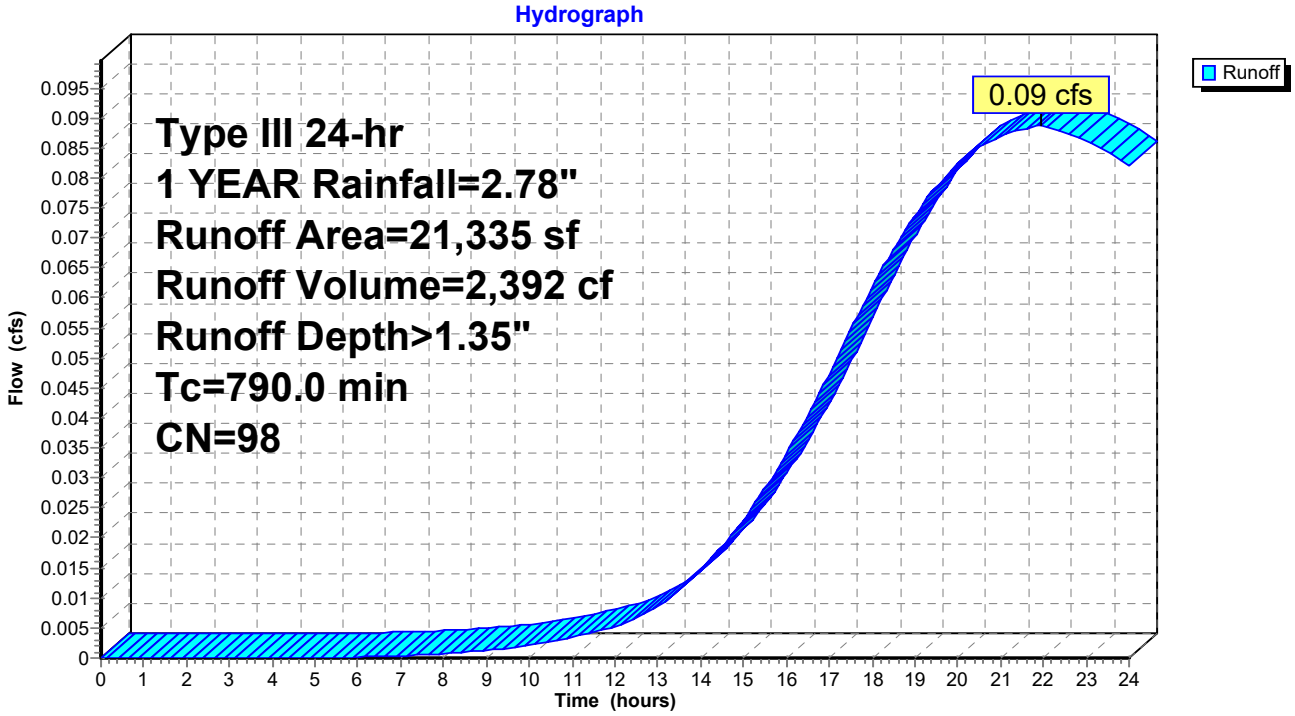
Subcatchment DA 13A: DA - 13A



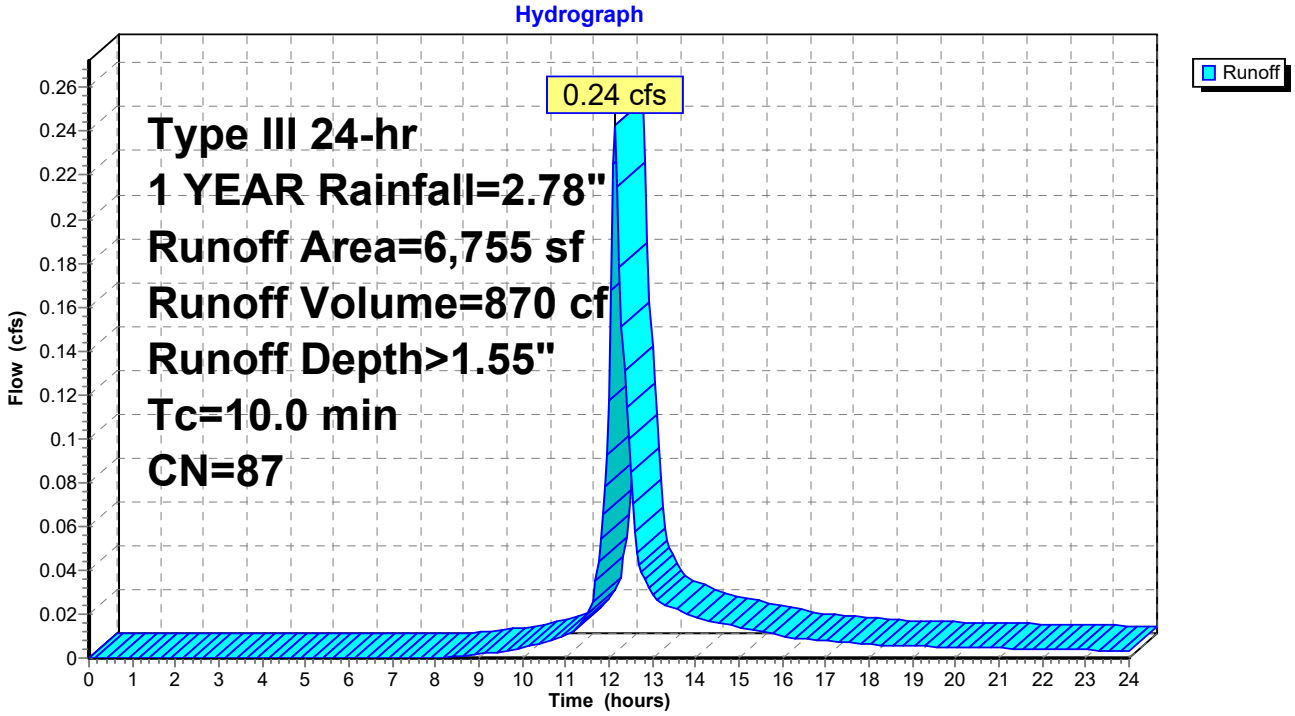
Subcatchment DA 1A: DA -1A



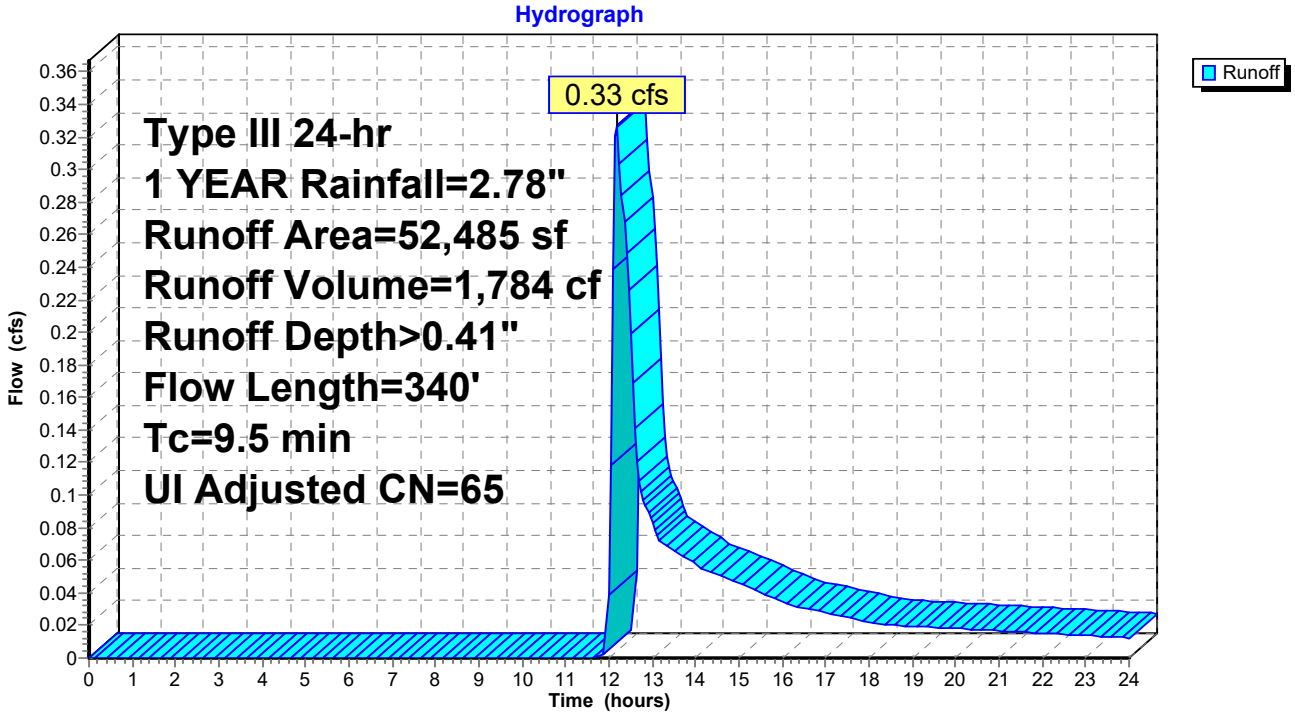
Subcatchment DA 2A: DA - 2A



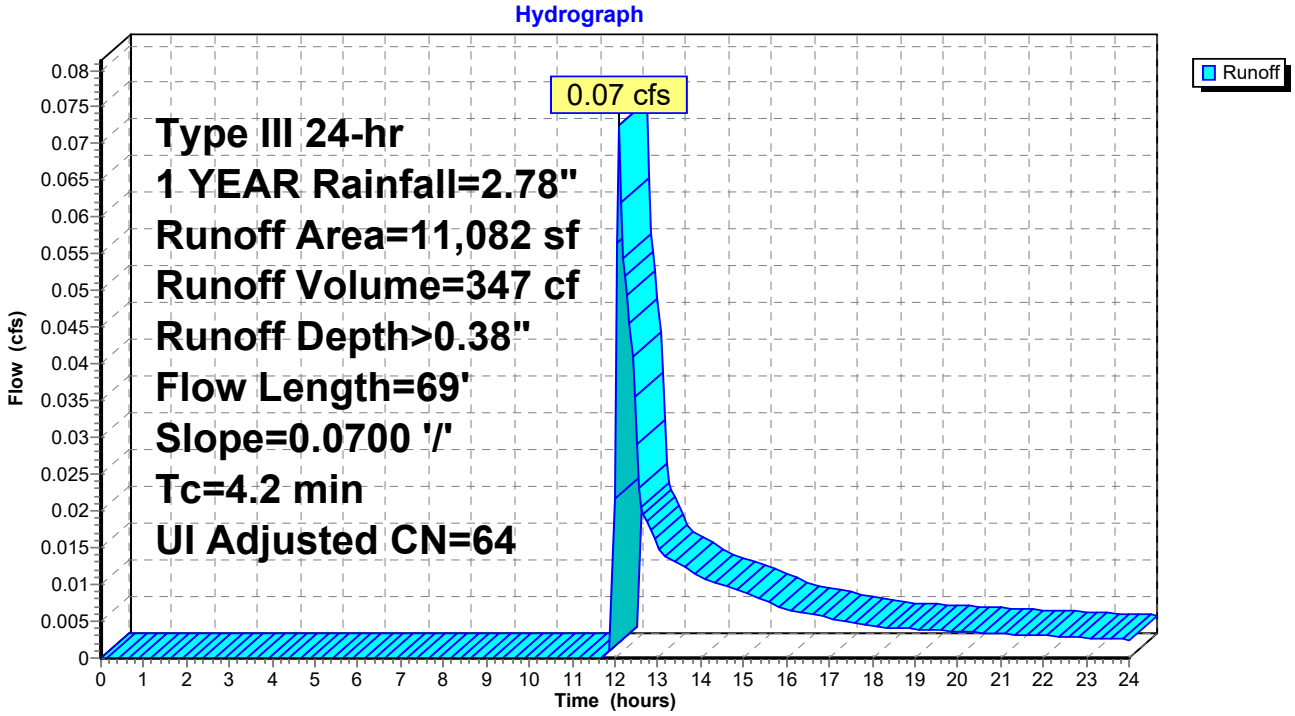
Subcatchment DA 3A: DA - 3A



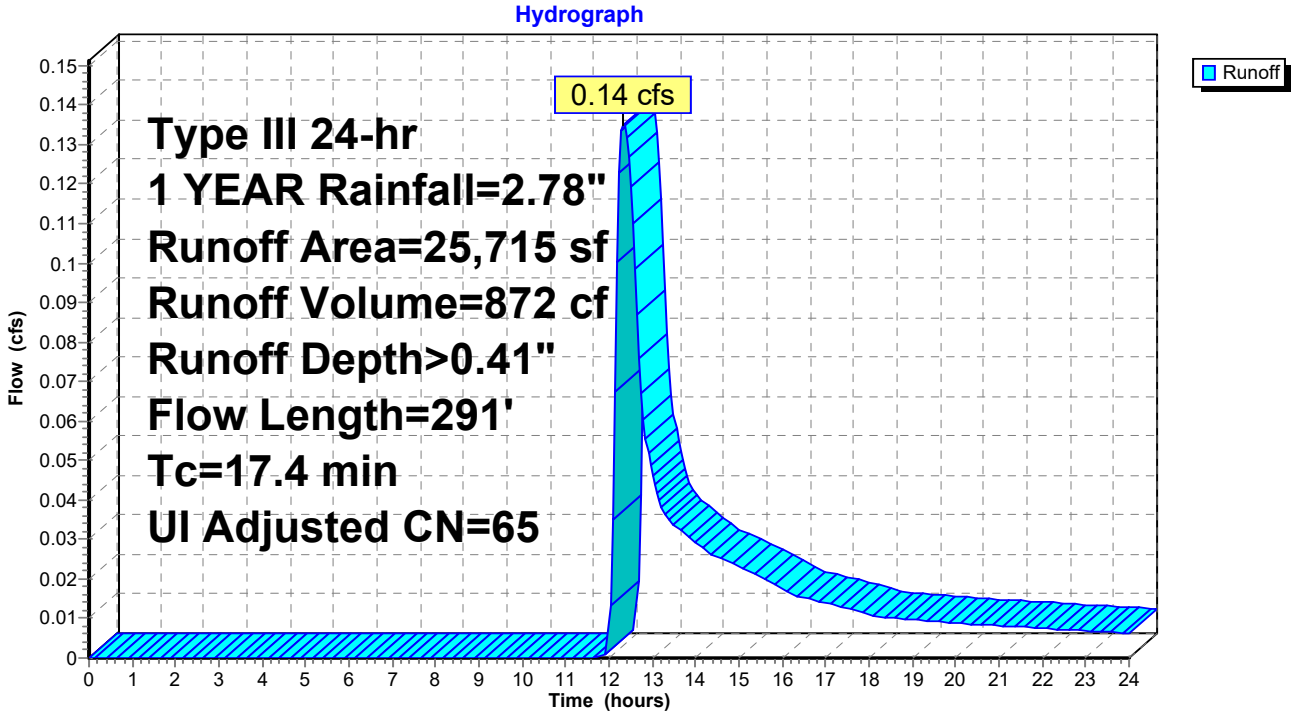
Subcatchment DA 4A: DA - 4A



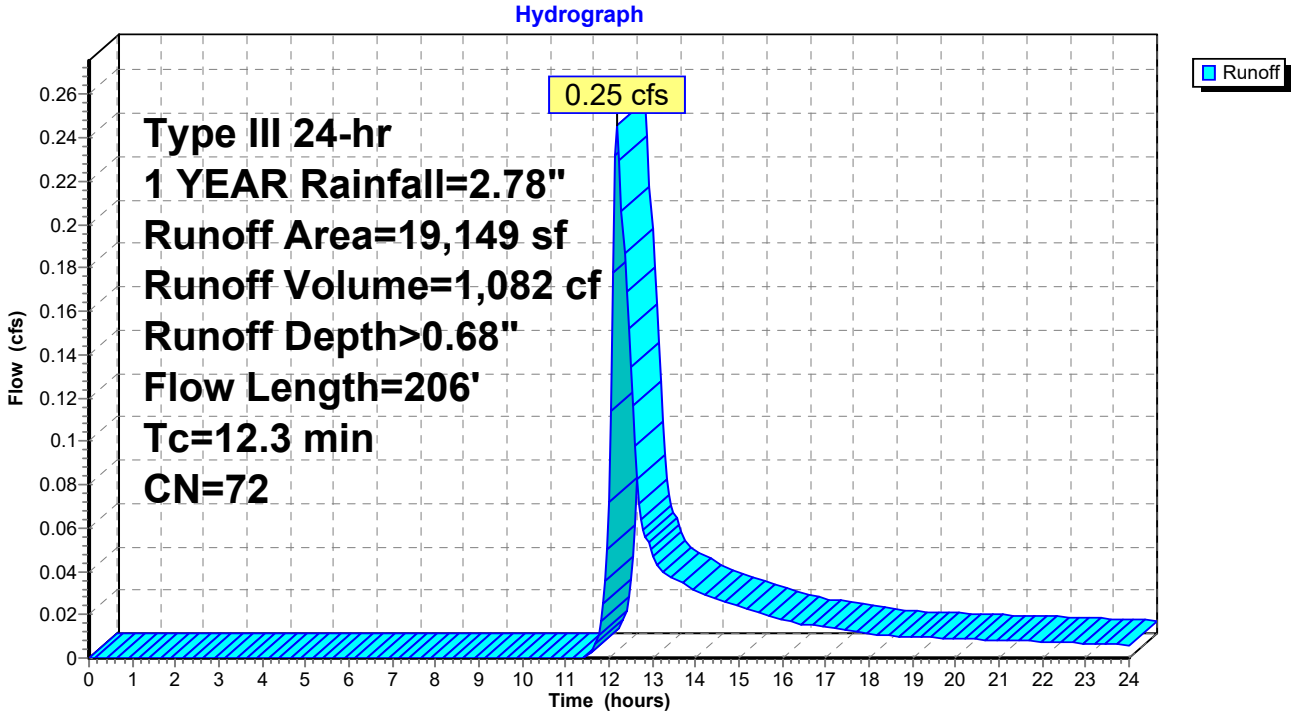
Subcatchment DA 5A: DA - 5A



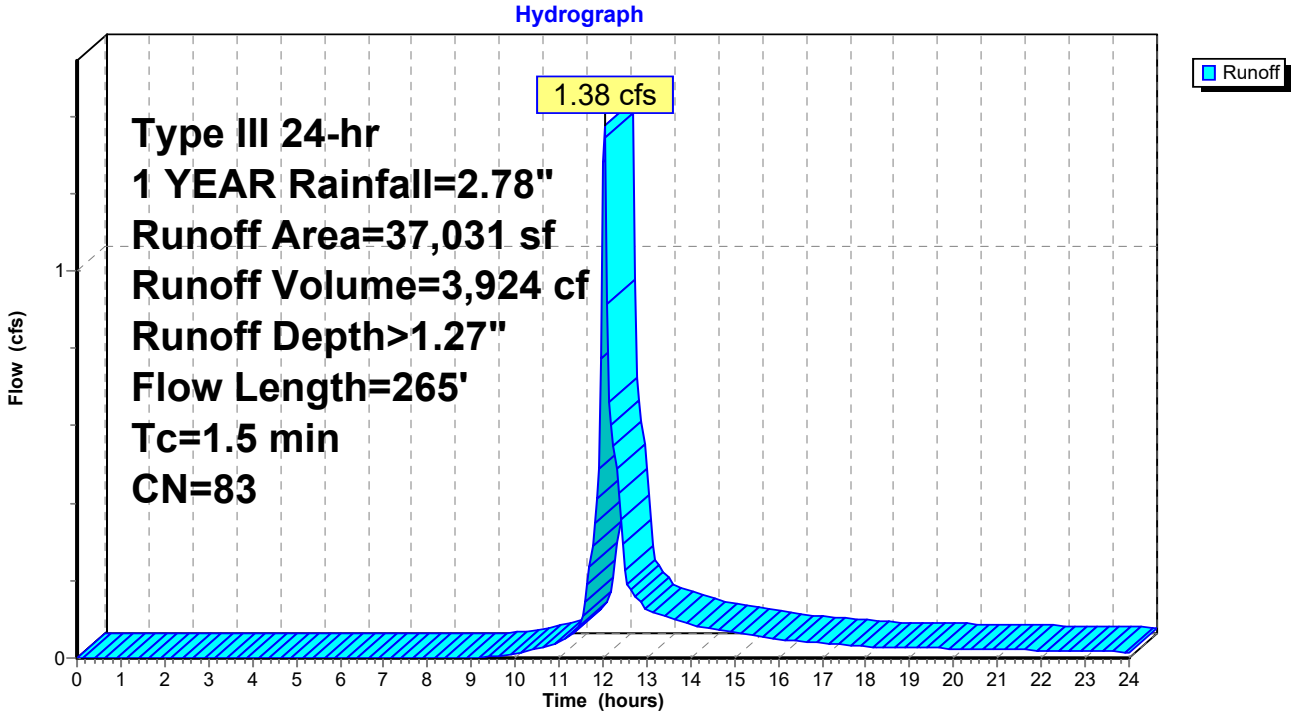
Subcatchment DA 6A: DA - 6A



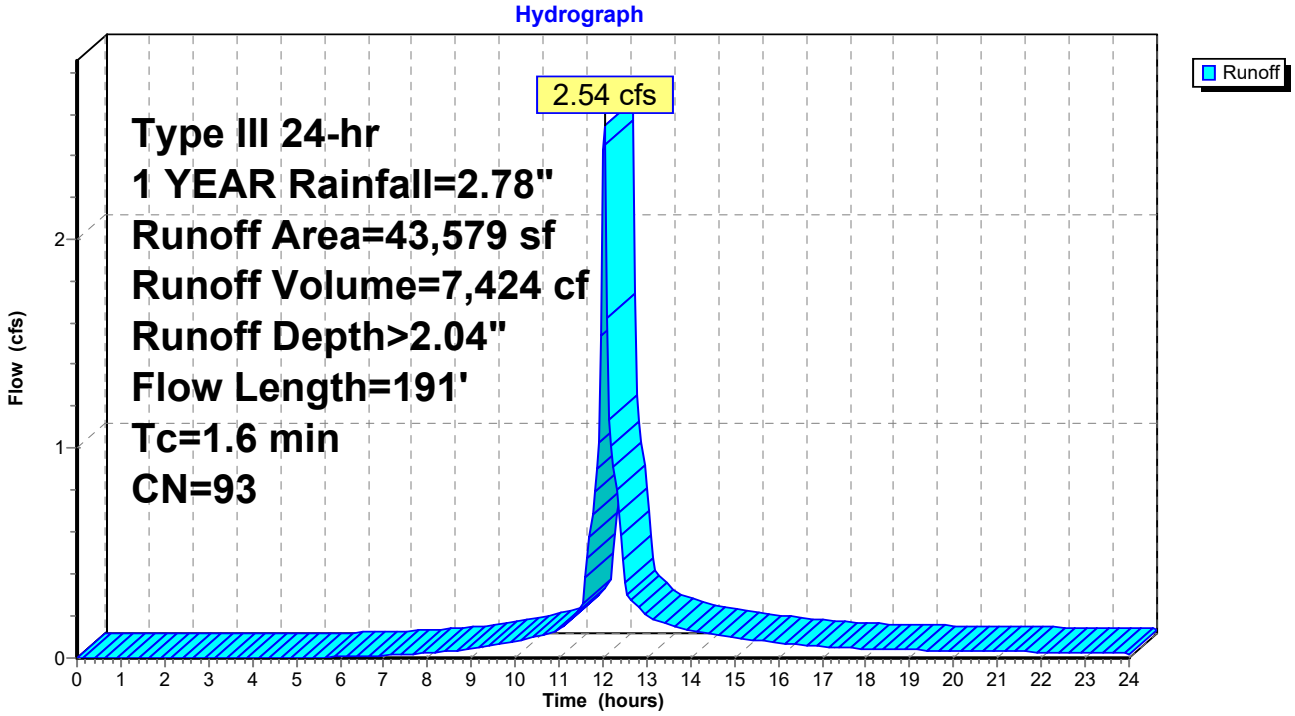
Subcatchment DA 7A: DA - 7A



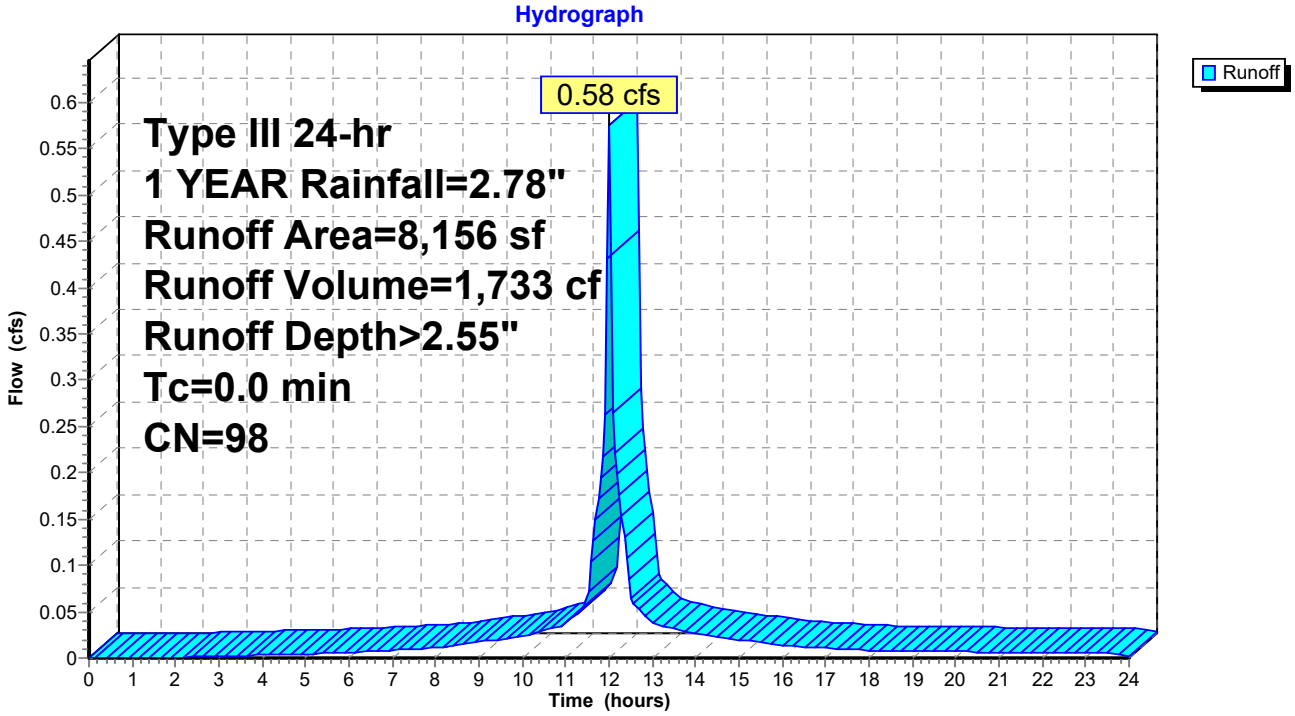
Subcatchment DA 8A: DA - 8A



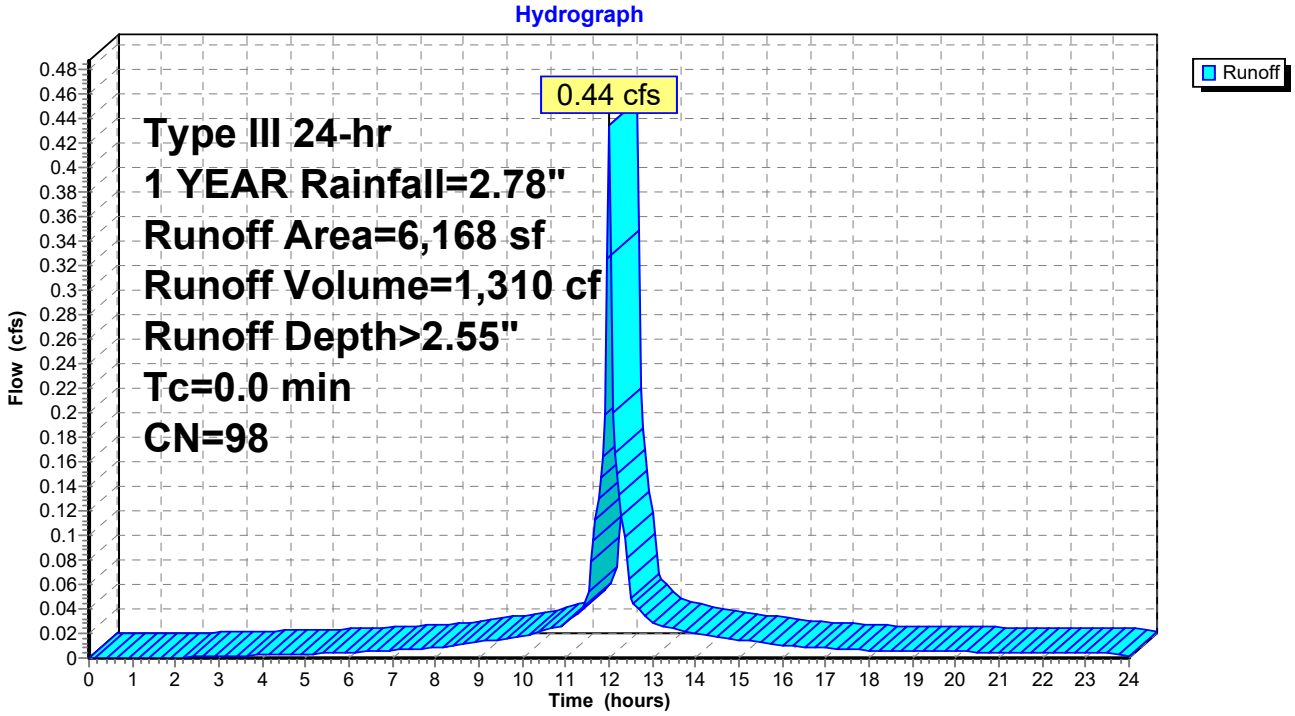
Subcatchment DA 9A: DA - 9A



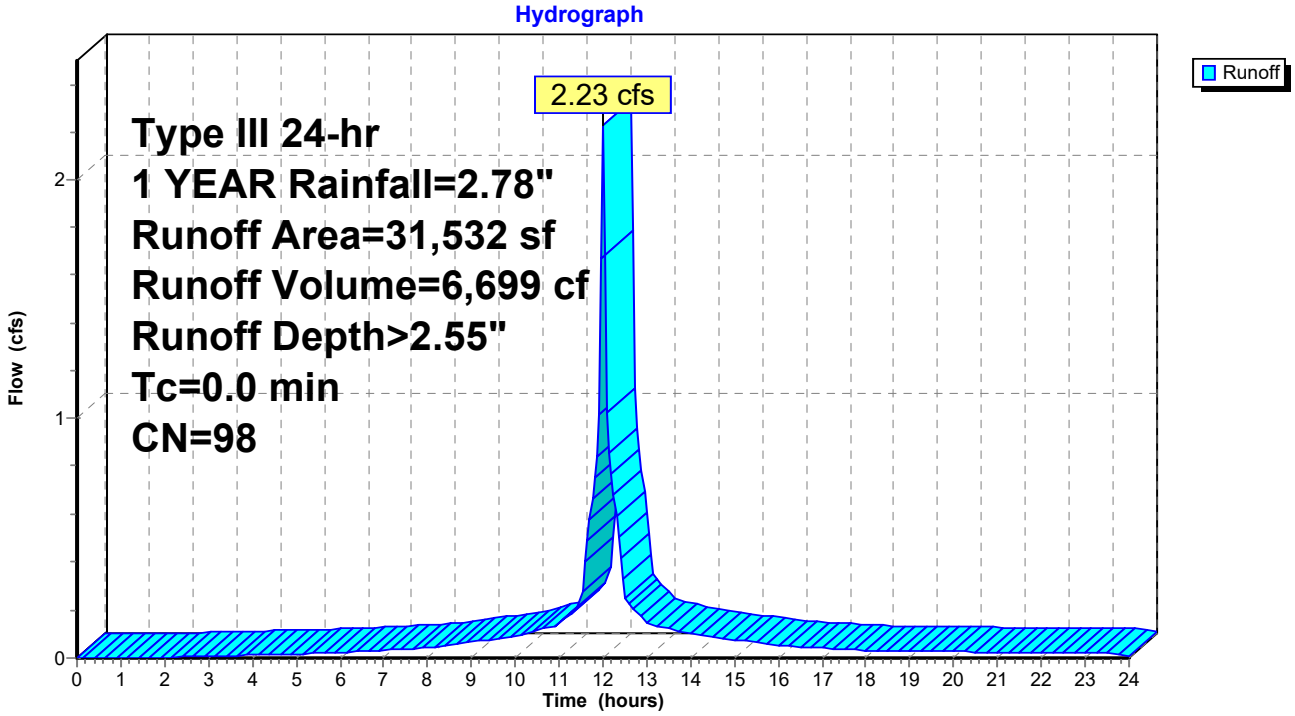
Subcatchment RG 1: Roof Area 1



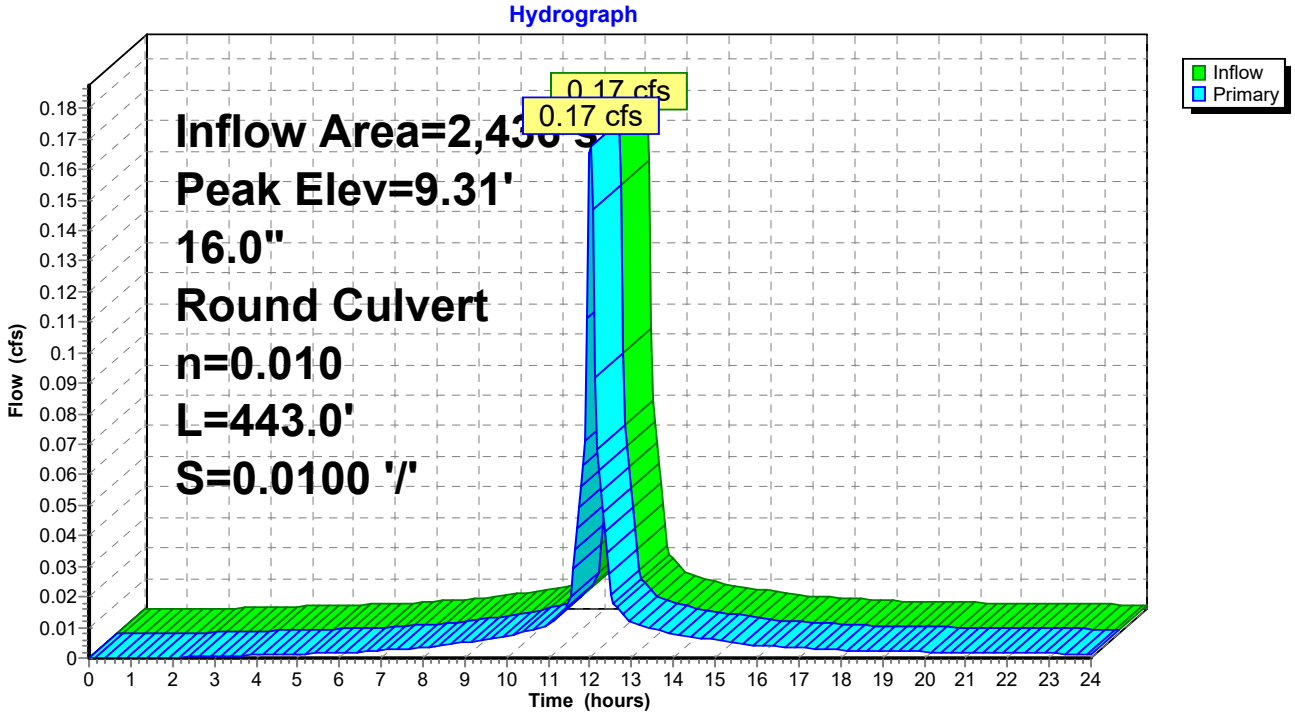
Subcatchment RG 2: Roof Area 2



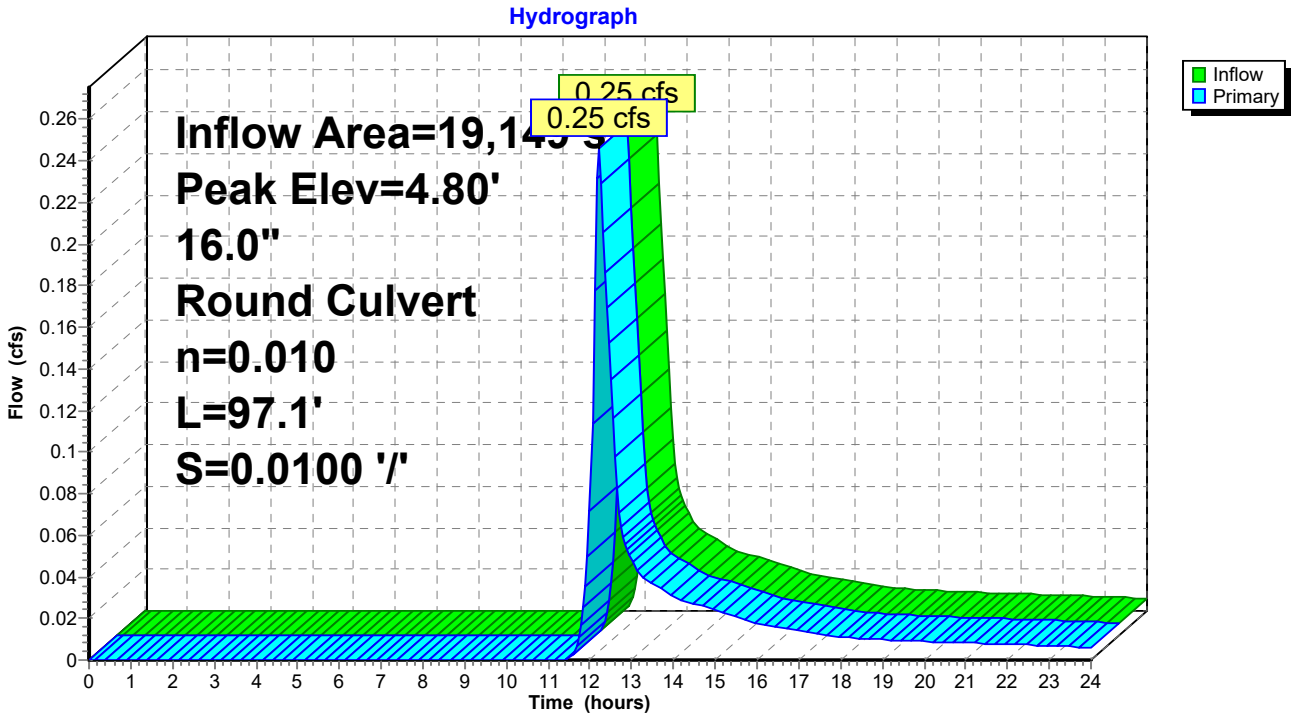
Subcatchment WR: Elevated Parking Lot



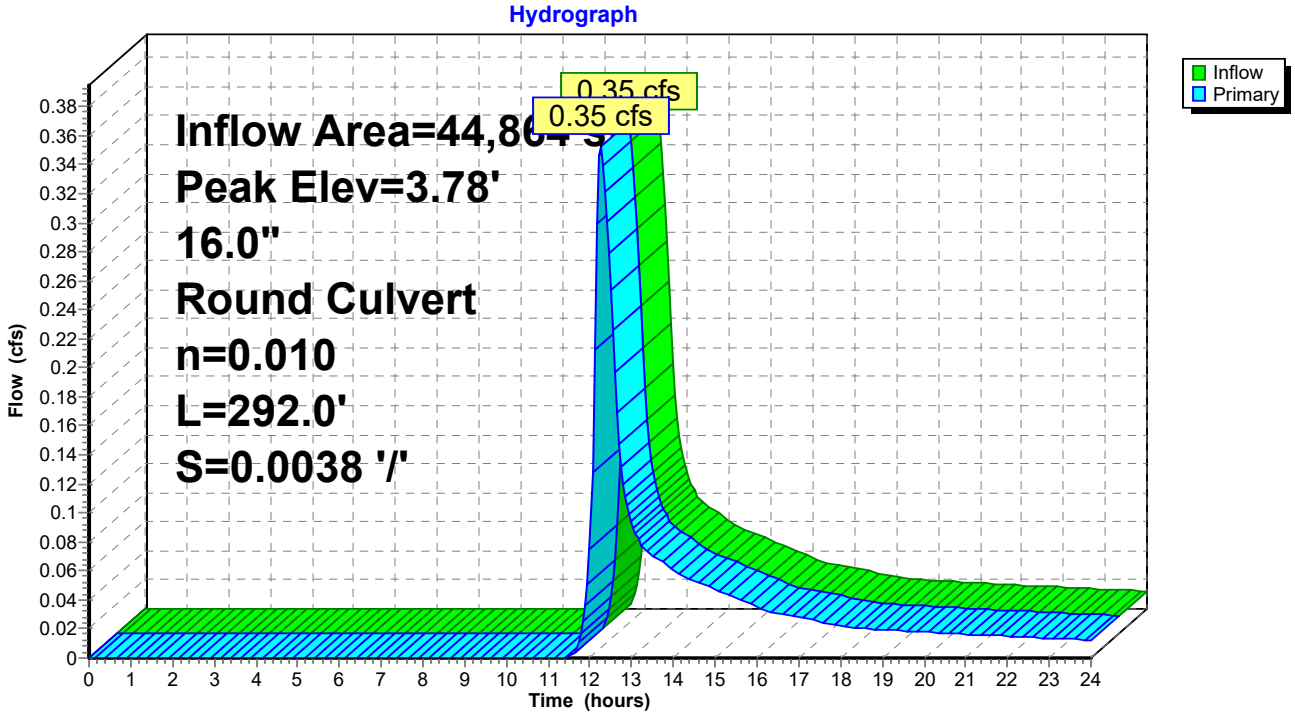
Pond CB1: CB-1


Hydrograph
Inflow
Primary
0.17 cfs
0.17 cfs
Inflow Area=2,436 s
Peak Elev=9.31'
16.0"
Round Culvert
n=0.010
L=443.0'
S=0.0100 '/'
Flow (cfs)
Time (hours)

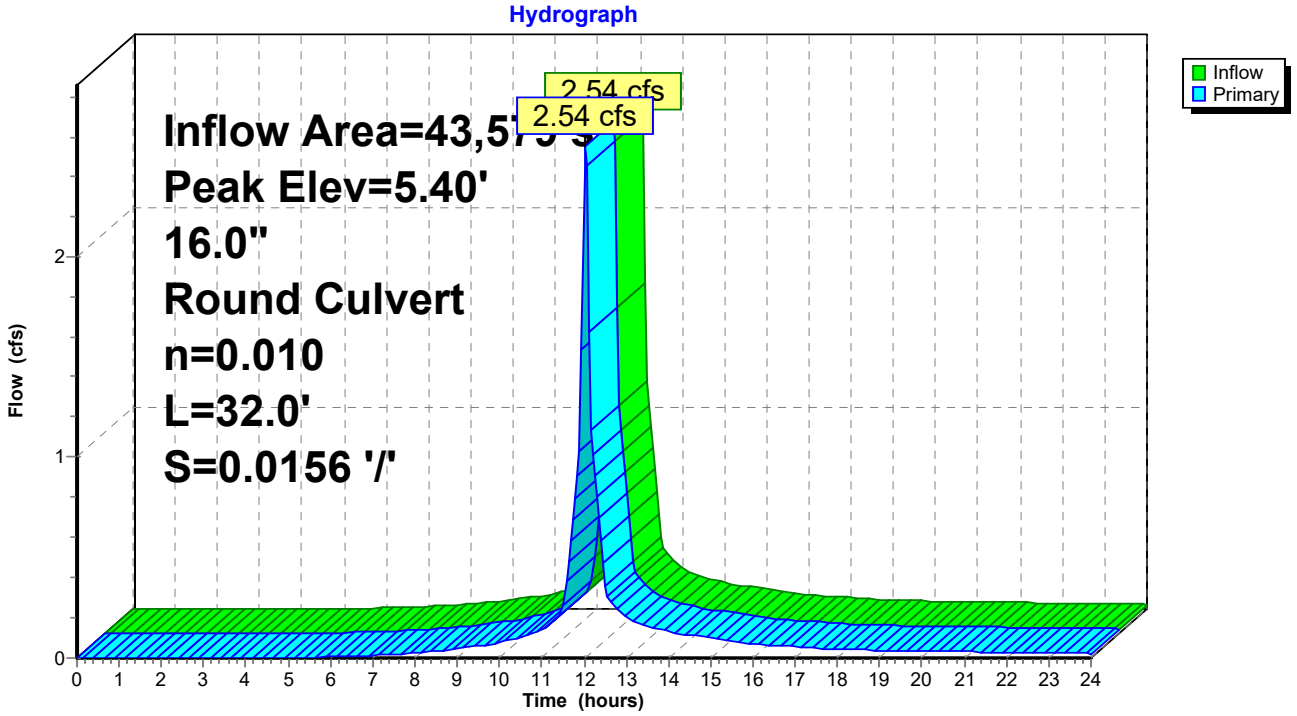
Pond CB12: CB-12



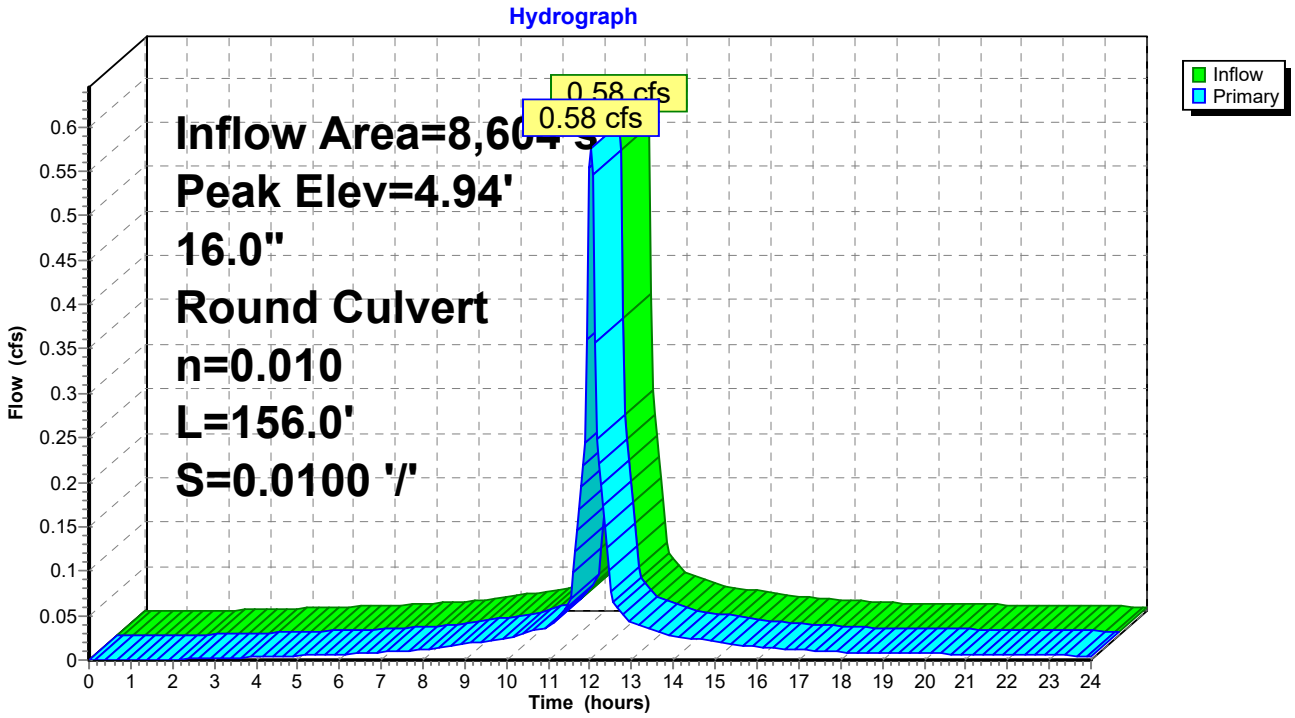
Pond CB13: CB-13



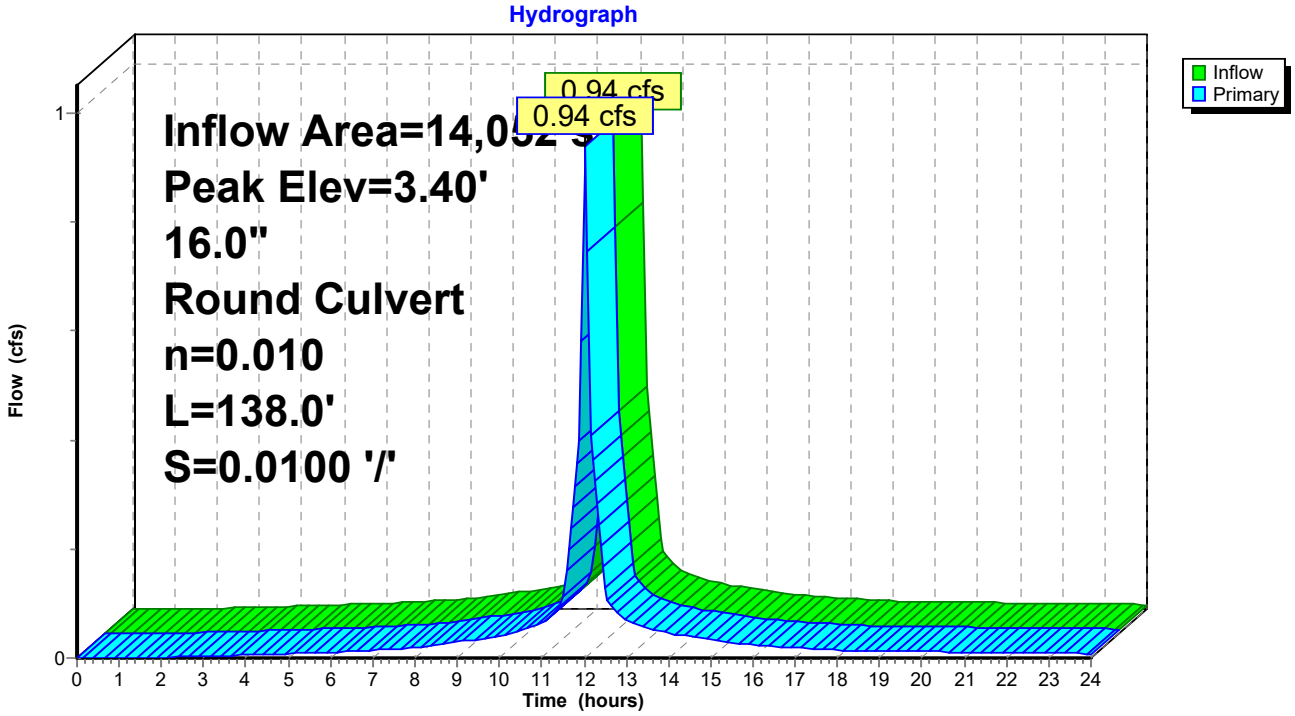
Pond CB19: CB-19



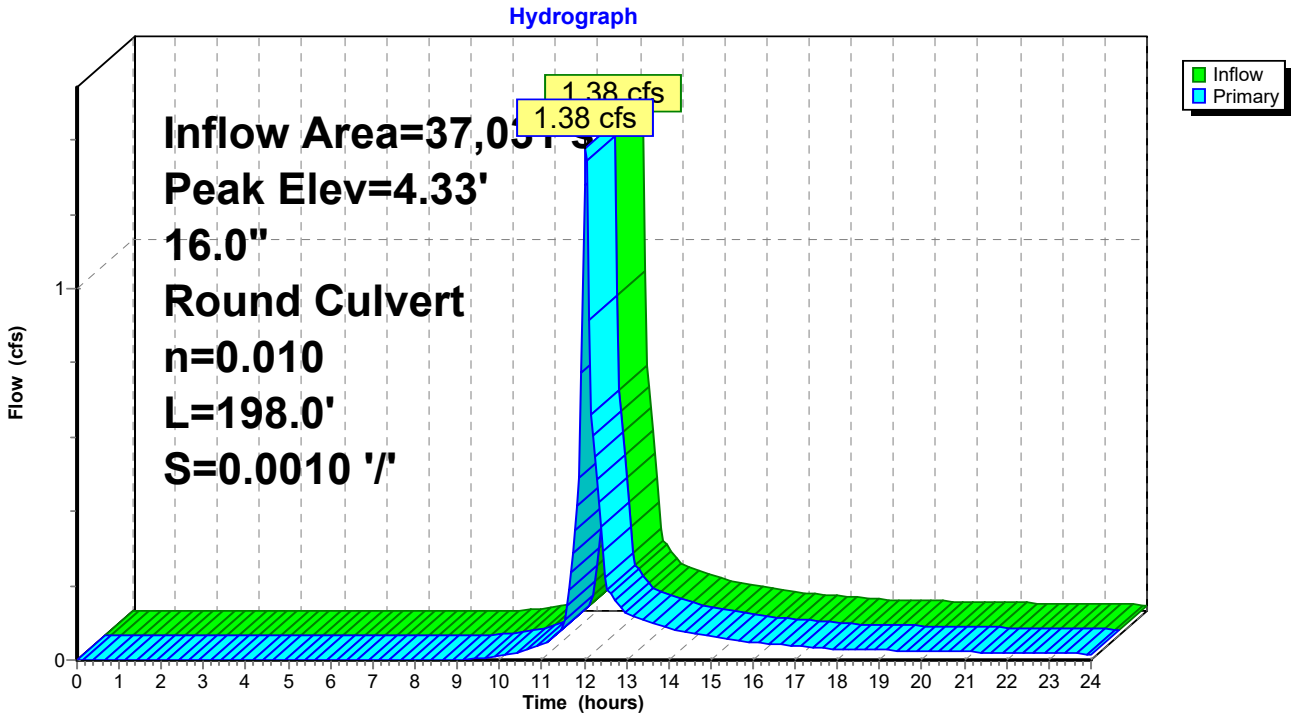
Pond CB4: CB-4


Hydrograph
Inflow
Primary
0.58 cfs
0.58 cfs
Inflow Area=8,604 s
Peak Elev=4.94'
16.0"
Round Culvert
n=0.010
L=156.0'
S=0.0100 '/'
Flow (cfs)
Time (hours)
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
0.55
0.6
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

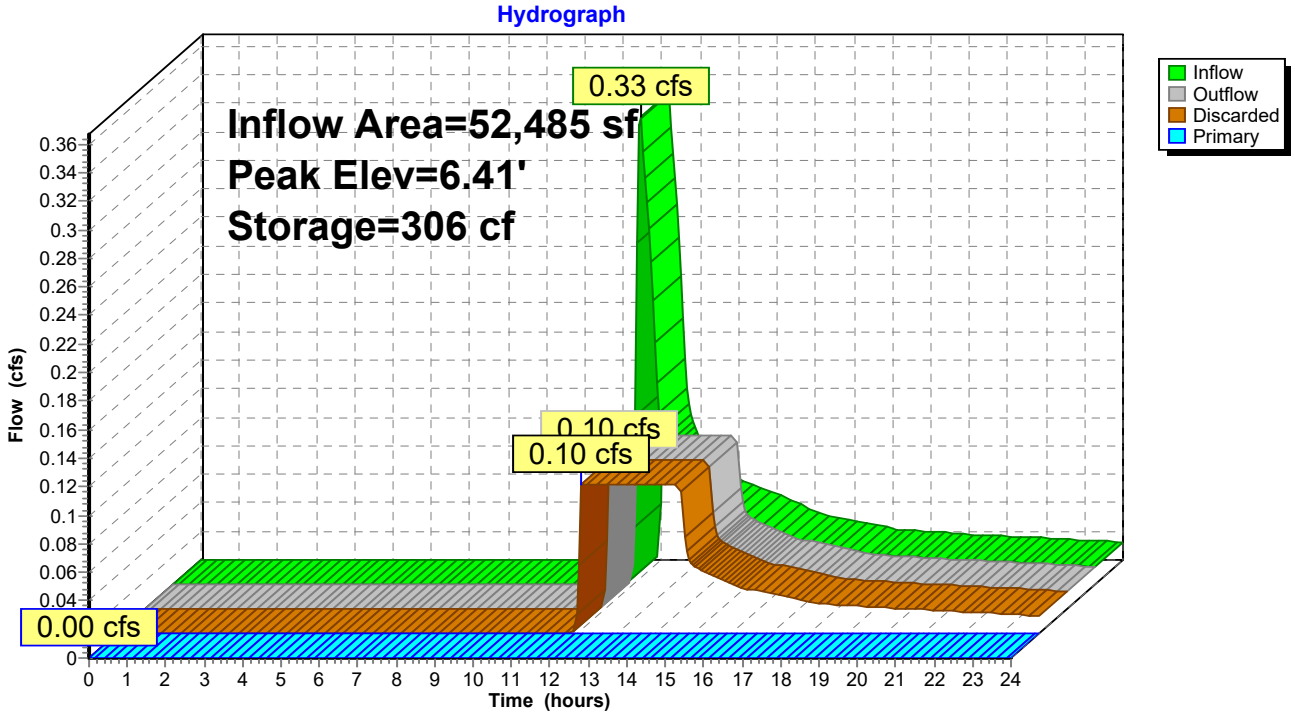
Pond CB5: CB-5


Hydrograph
Inflow
Primary
0.94 cfs
0.94 cfs
Inflow Area=14,052 s
Peak Elev=3.40'
16.0"
Round Culvert
n=0.010
L=138.0'
S=0.0100 '/'
Flow (cfs)
0
1
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Time (hours)

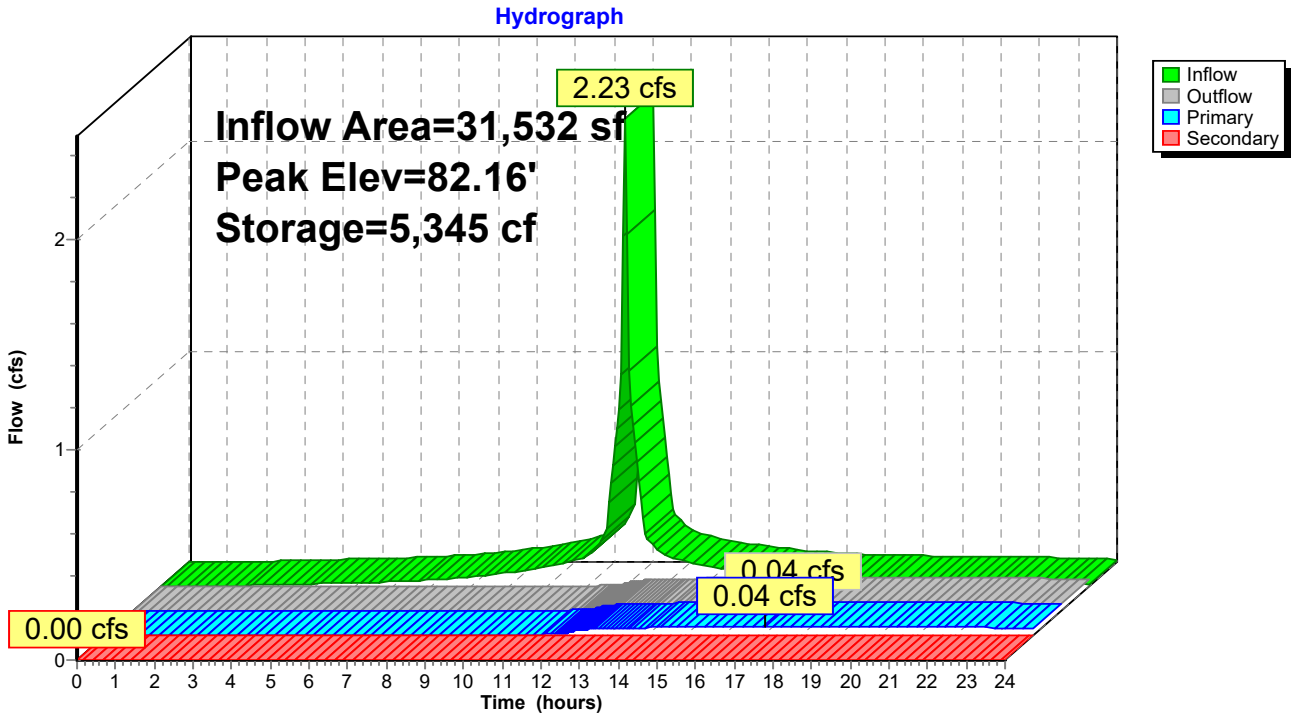
Pond CB9: CB-9


Hydrograph
Inflow
Primary
1.38 cfs
1.38 cfs
Inflow Area=37,05
Peak Elev=4.33'
16.0"
Round Culvert
n=0.010
L=198.0'
S=0.0010 '/'
Flow (cfs)
0
1
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Time (hours)

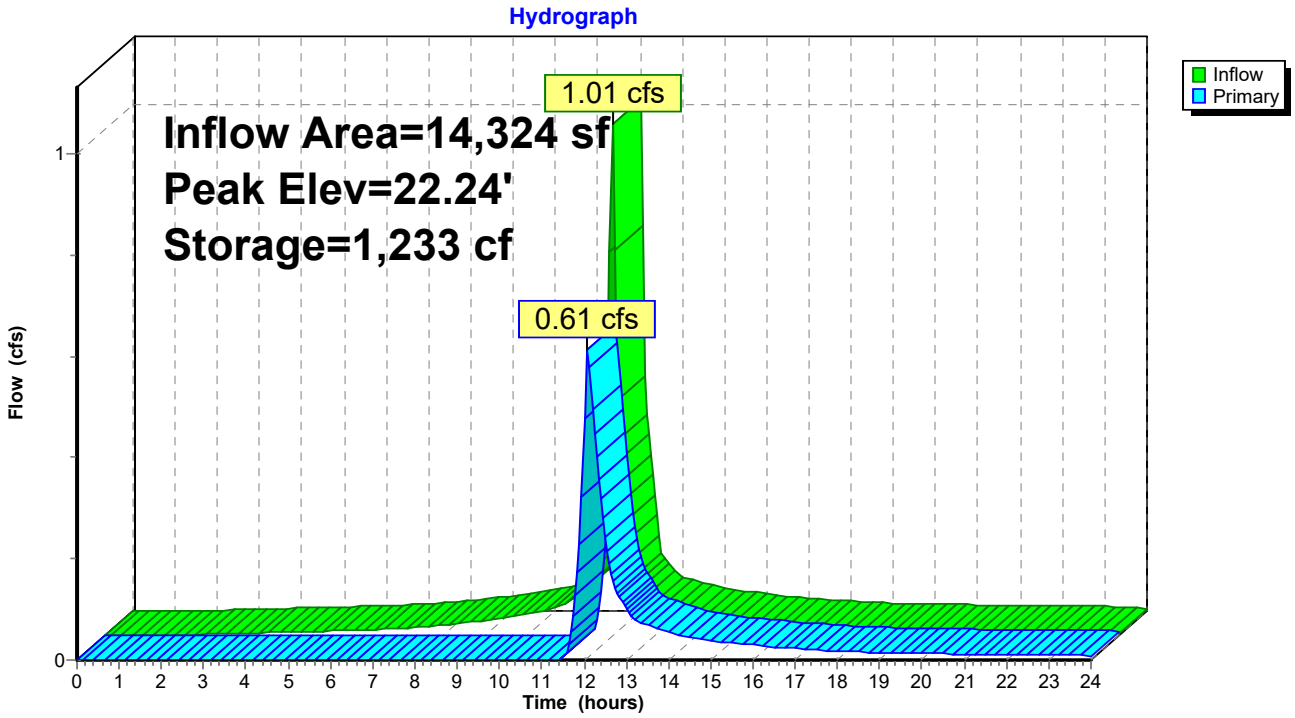
Pond I-1: INFILTRATION TRENCH



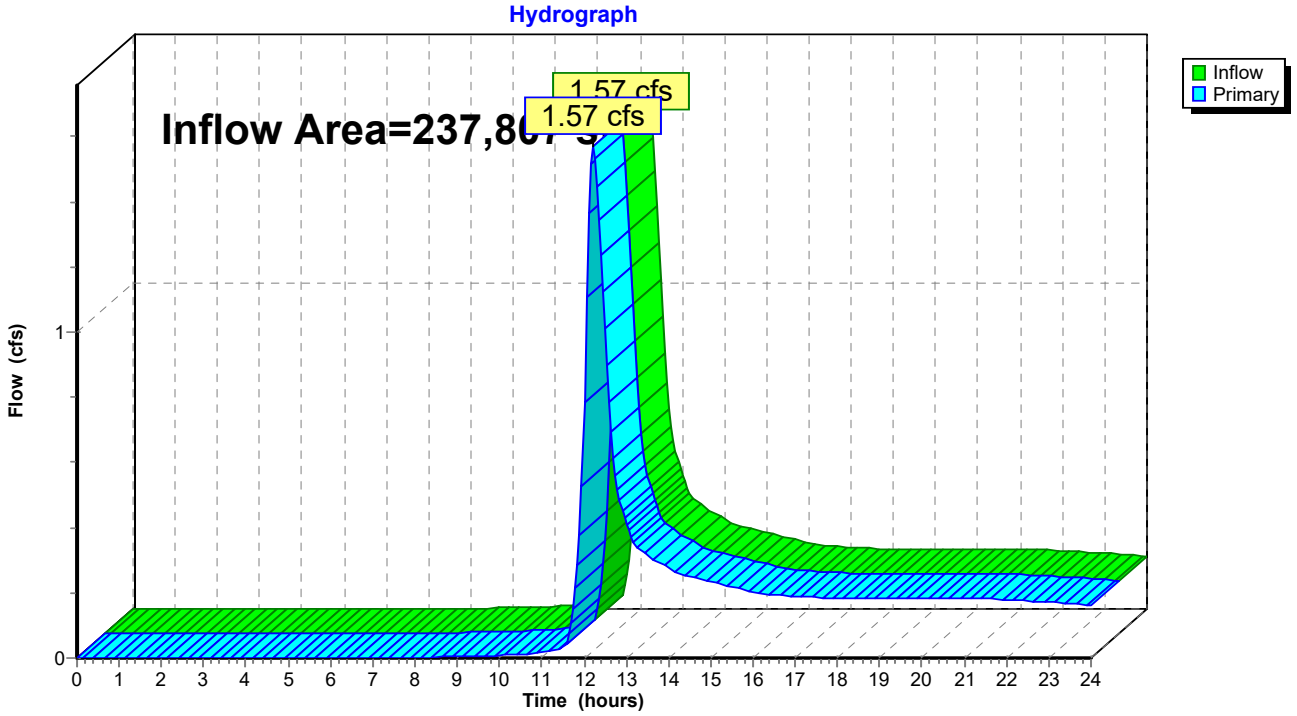
Pond P1: White Roof



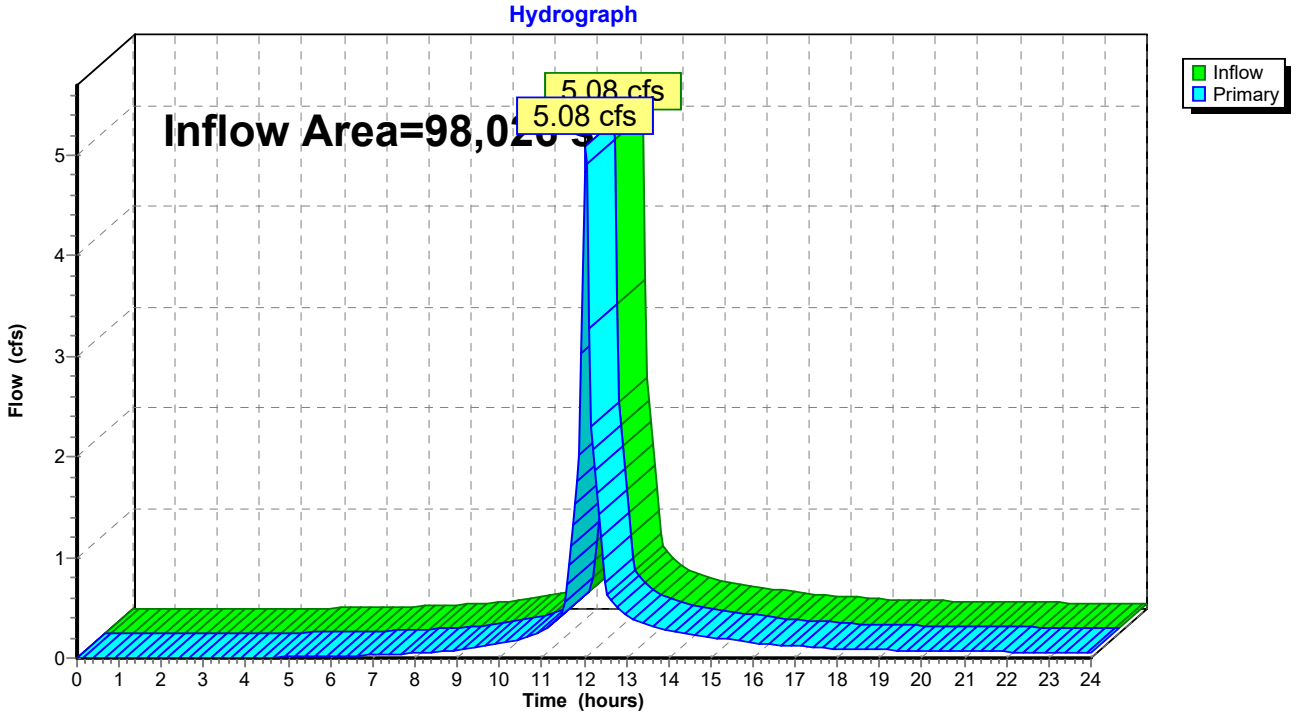
Pond P2: Green Roof



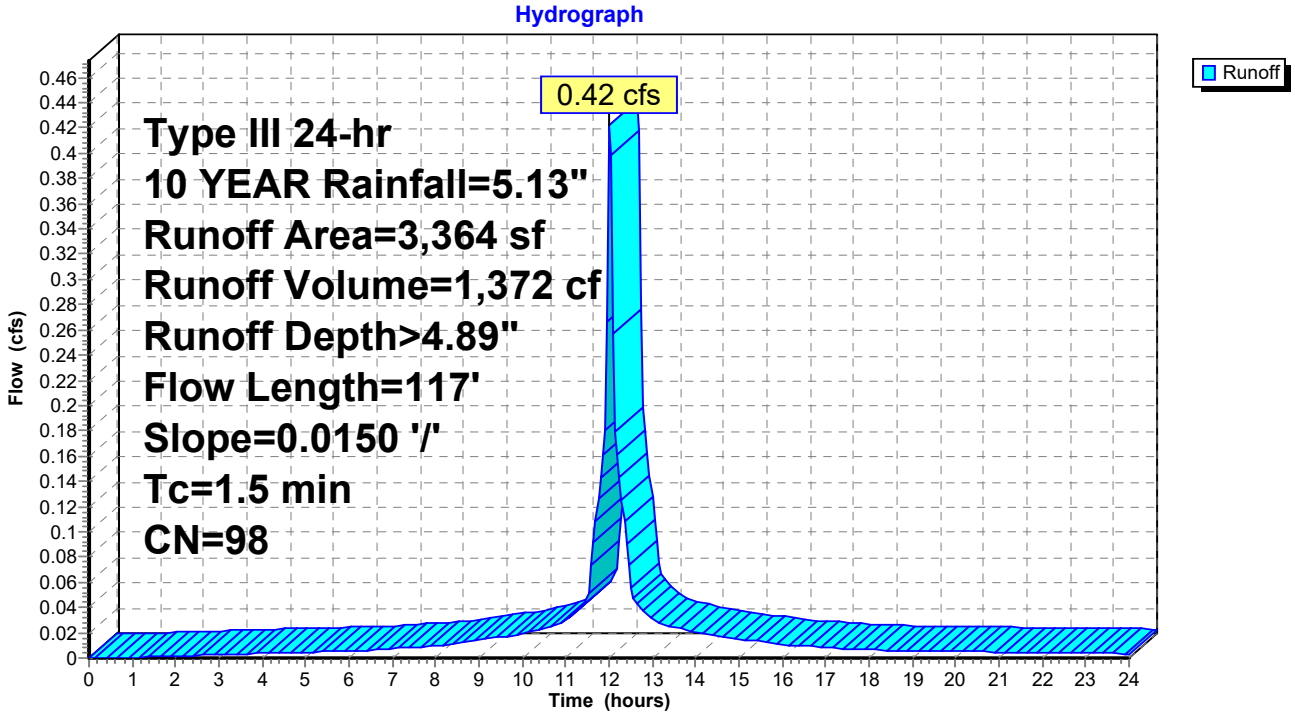
Link DP-1: DP-1


Hydrograph
Inflow Area=237,80
1.57 cfs
1.57 cfs
Inflow
Primary
Flow (cfs)
0
1
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Time (hours)

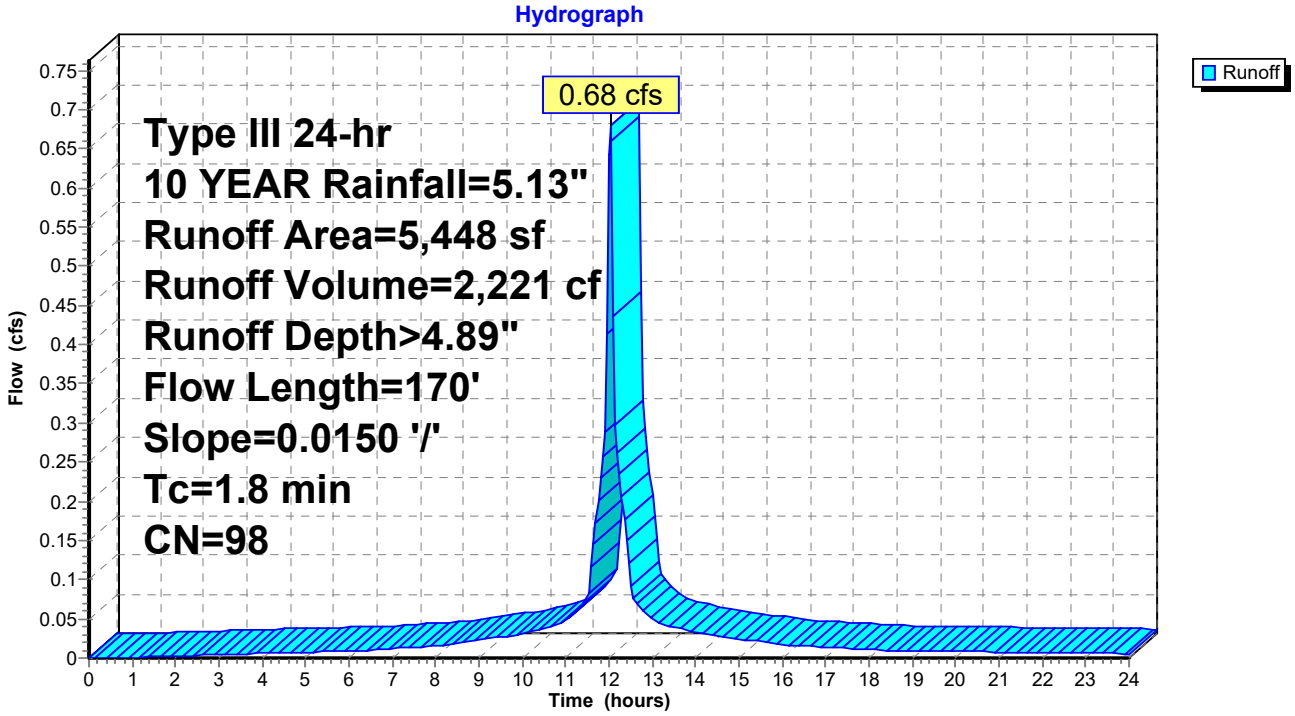
Link DP-2: Design Point 2



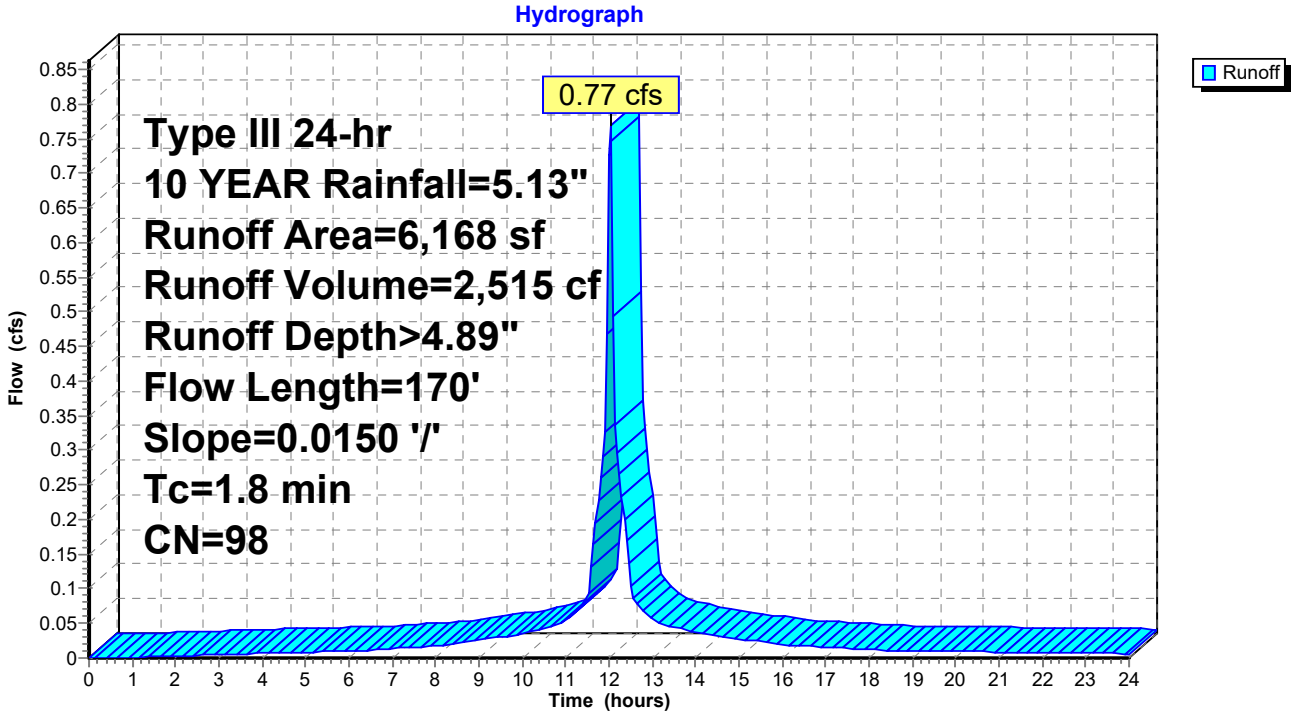
Subcatchment DA 10A: DA - 10A



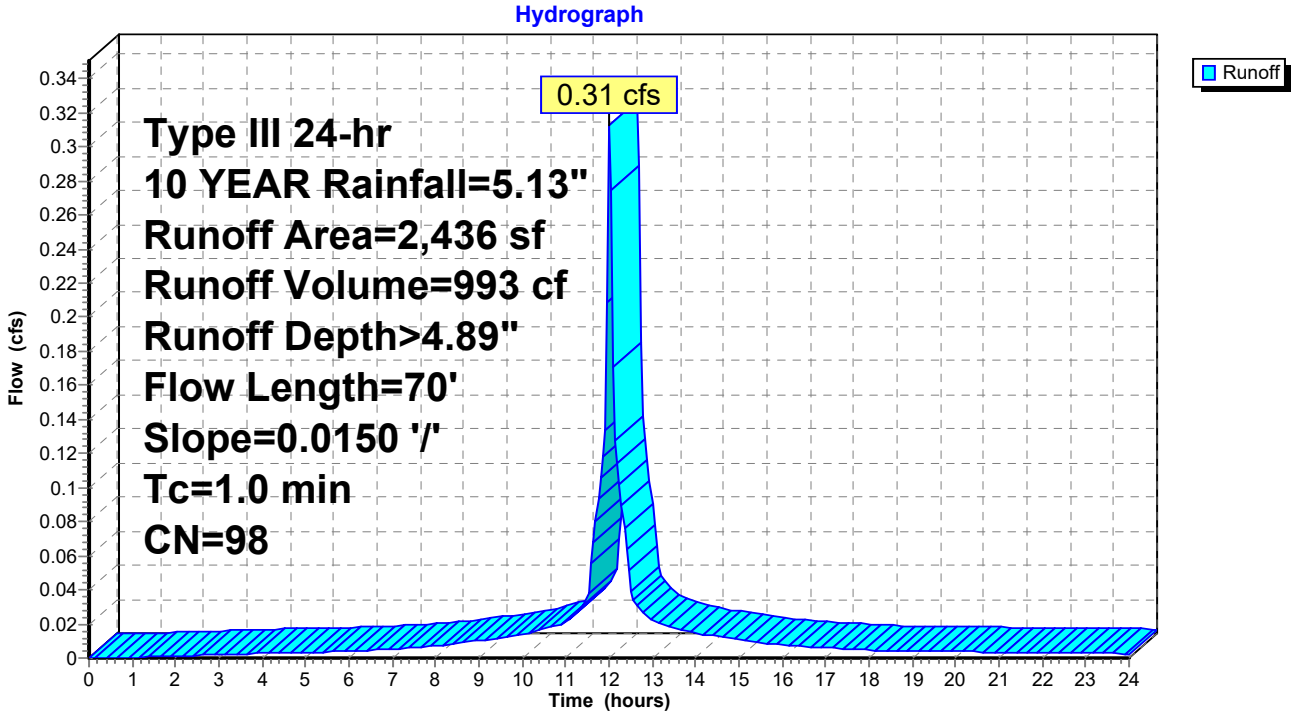
Subcatchment DA 11A: DA - 11A



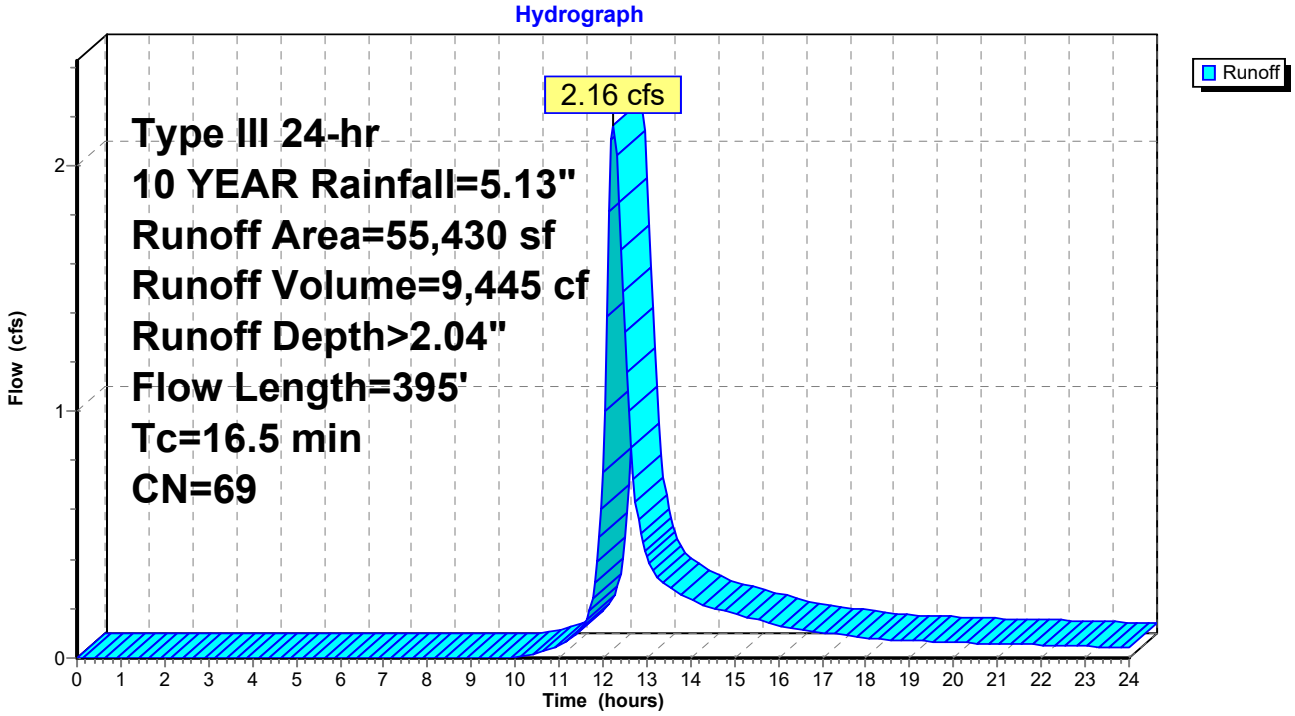
Subcatchment DA 12A: DA - 12A



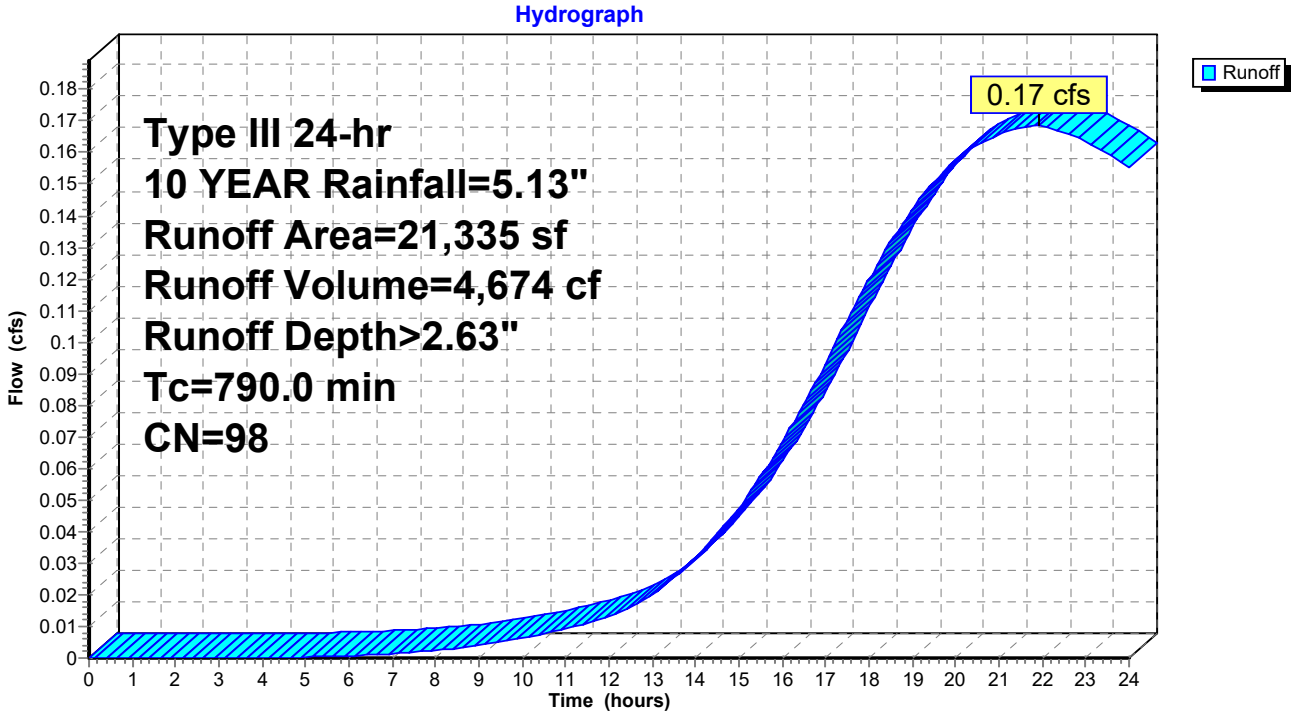
Subcatchment DA 13A: DA - 13A



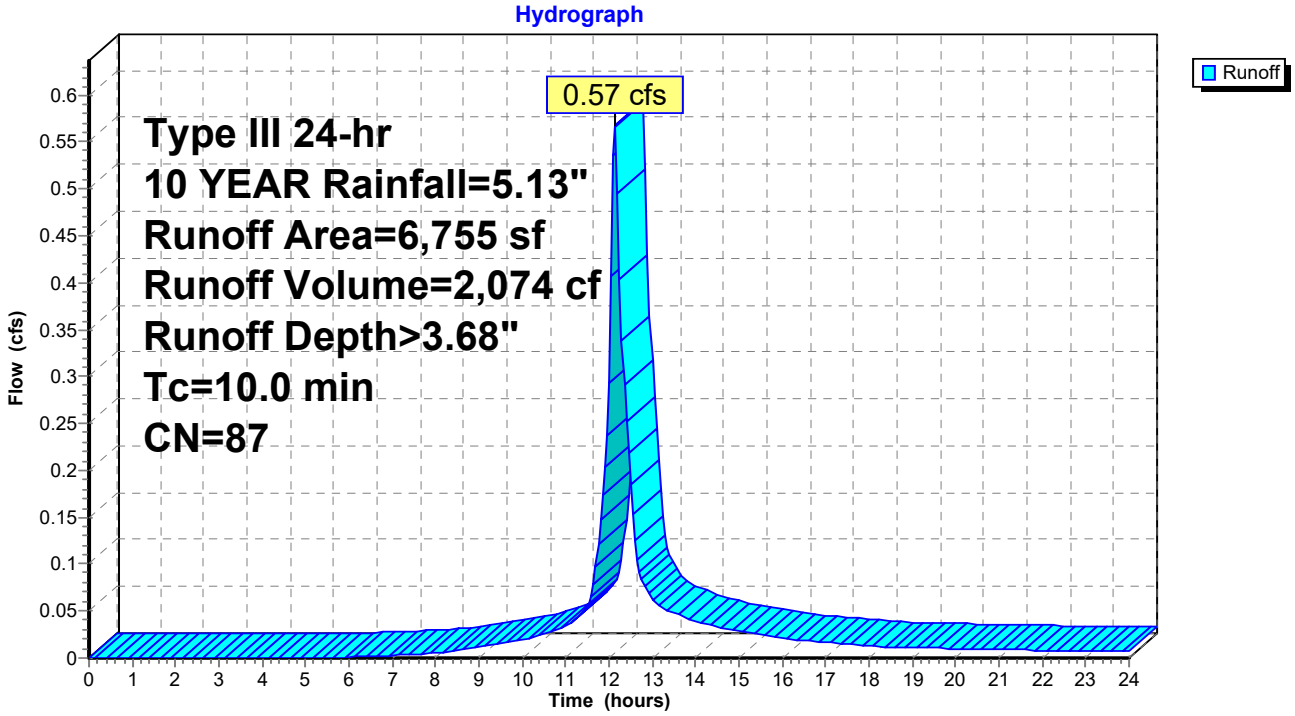
Subcatchment DA 1A: DA -1A



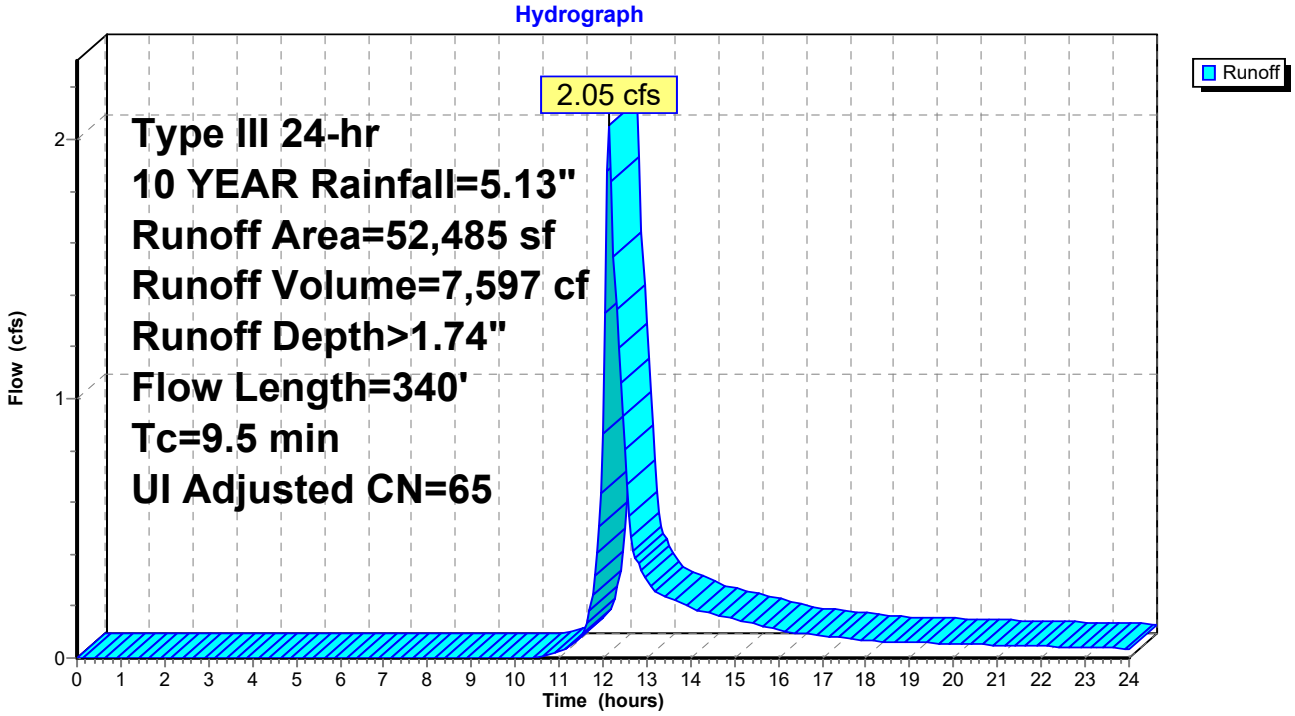
Subcatchment DA 2A: DA - 2A



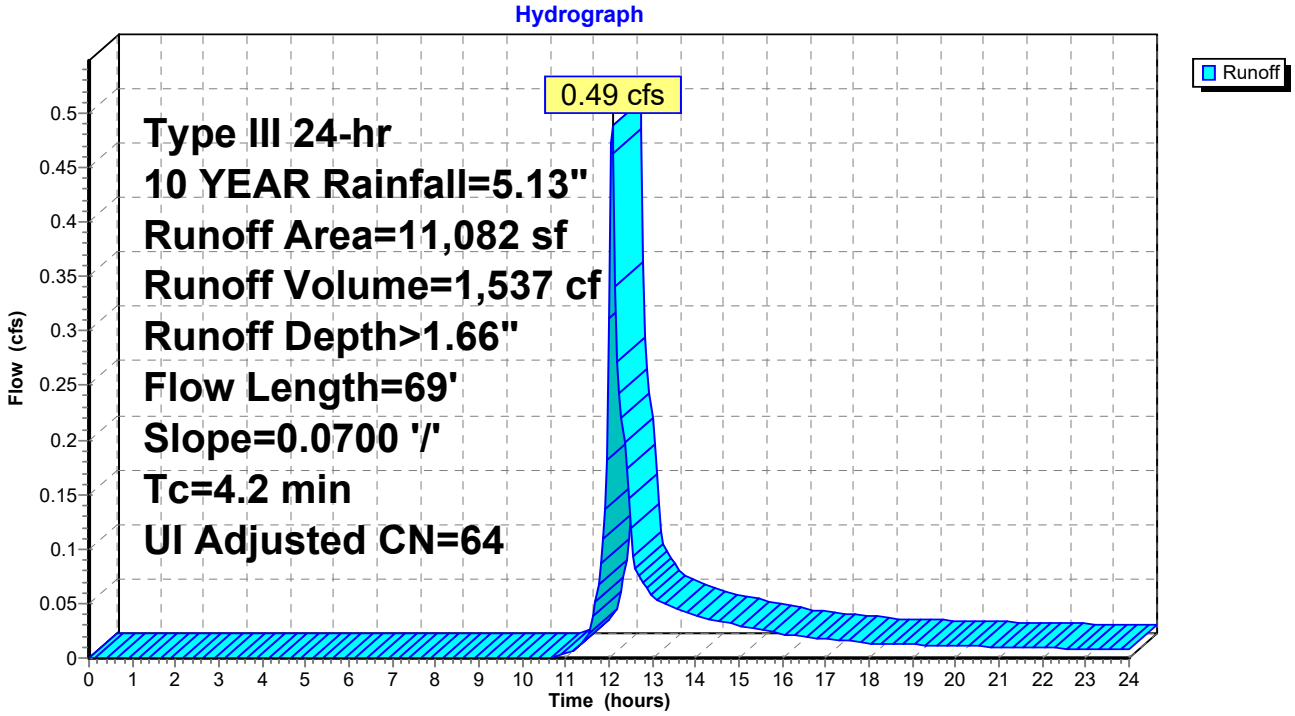
Subcatchment DA 3A: DA - 3A



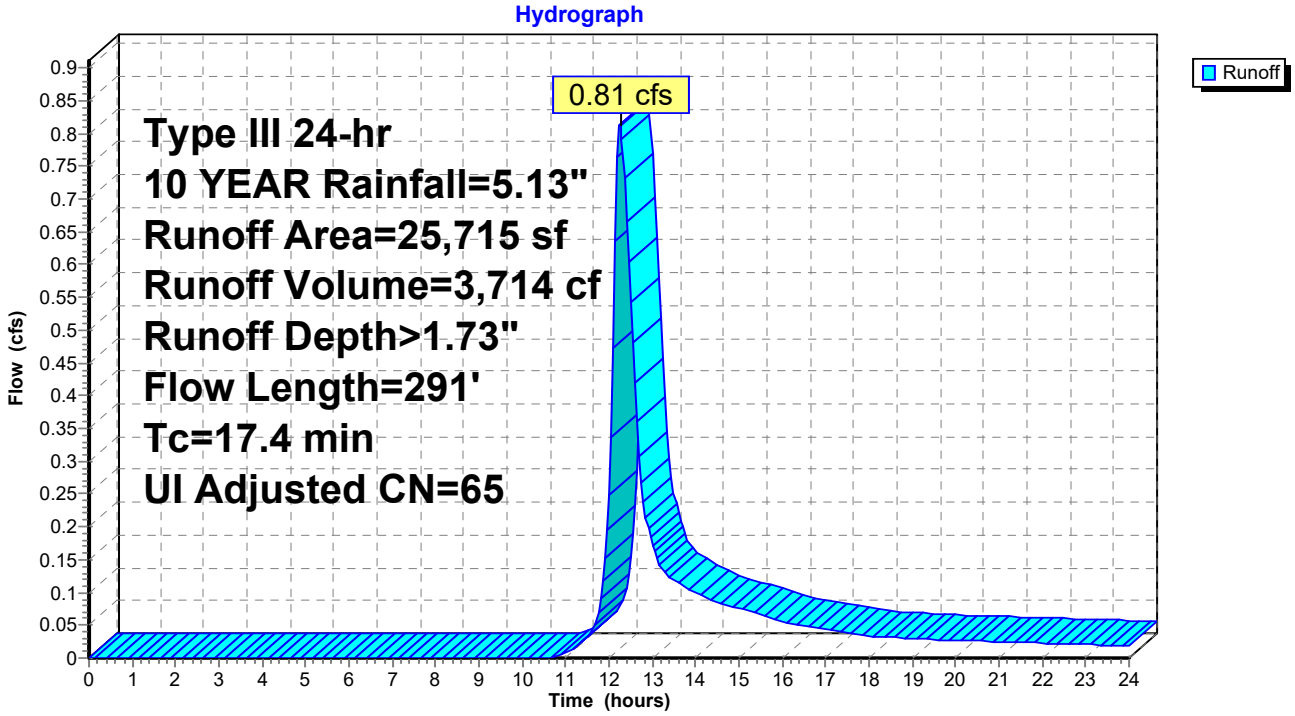
Subcatchment DA 4A: DA - 4A



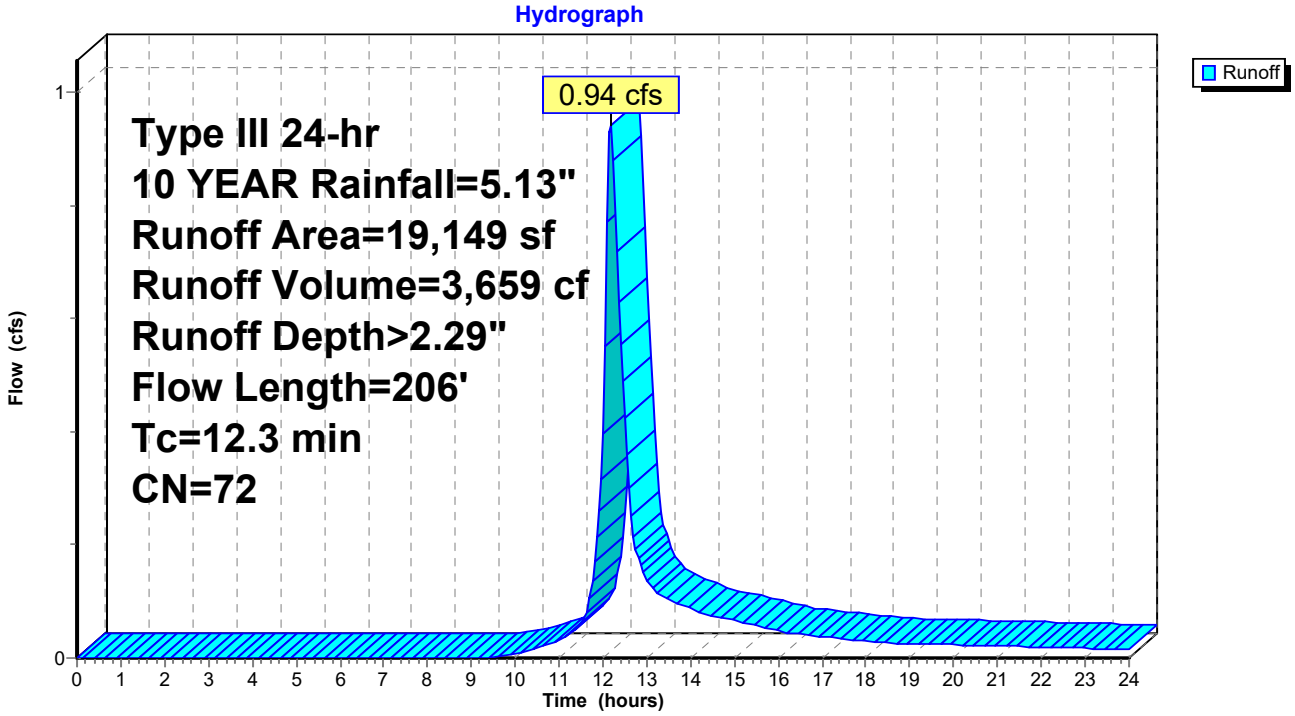
Subcatchment DA 5A: DA - 5A



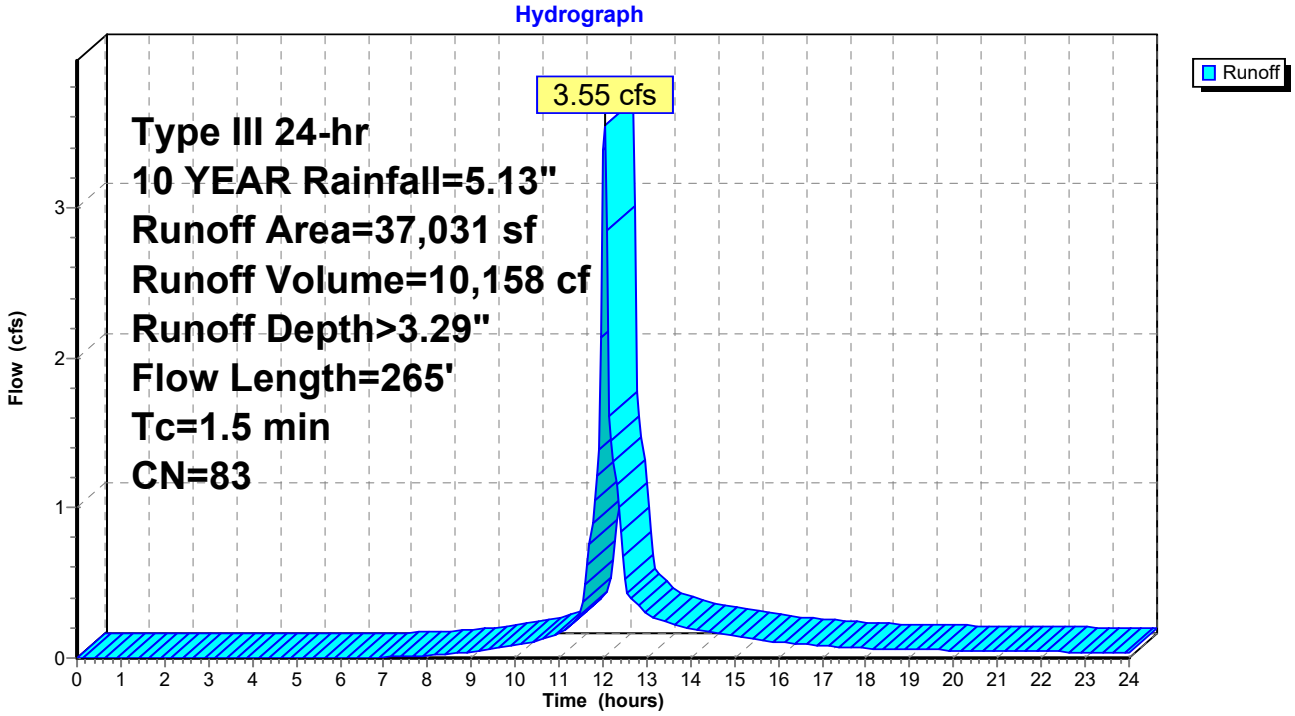
Subcatchment DA 6A: DA - 6A



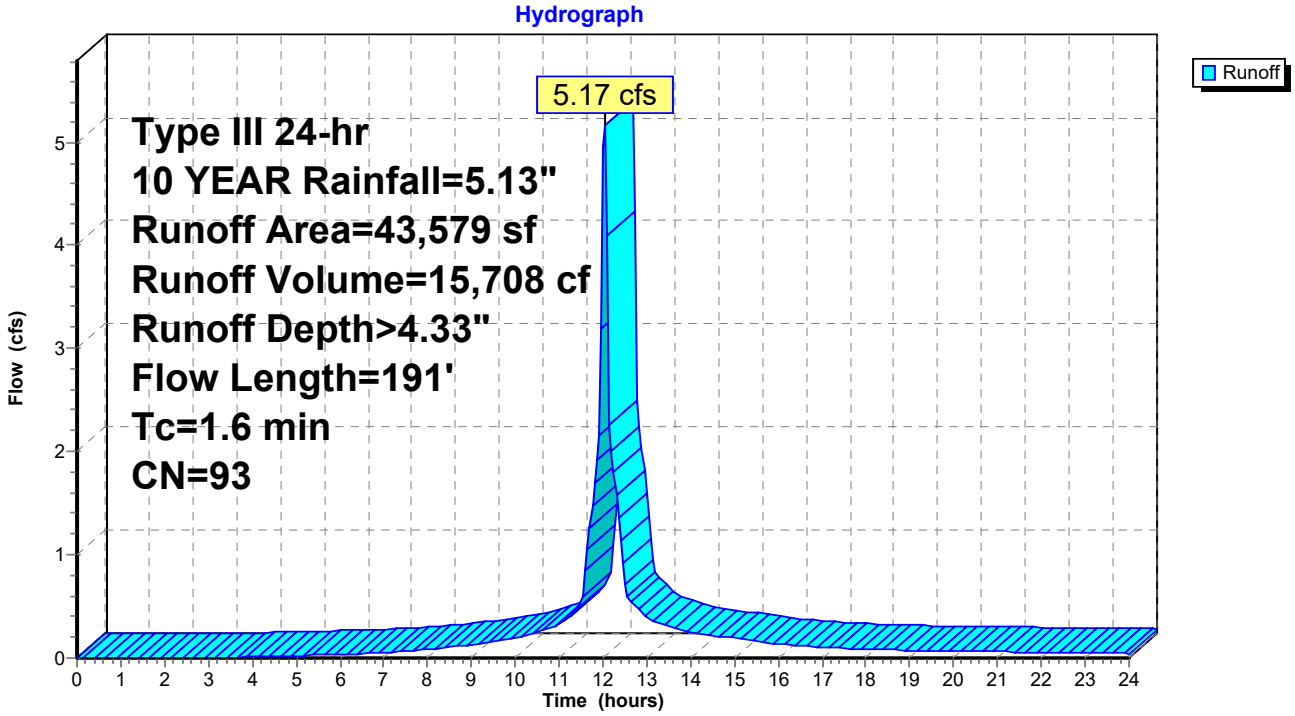
Subcatchment DA 7A: DA - 7A



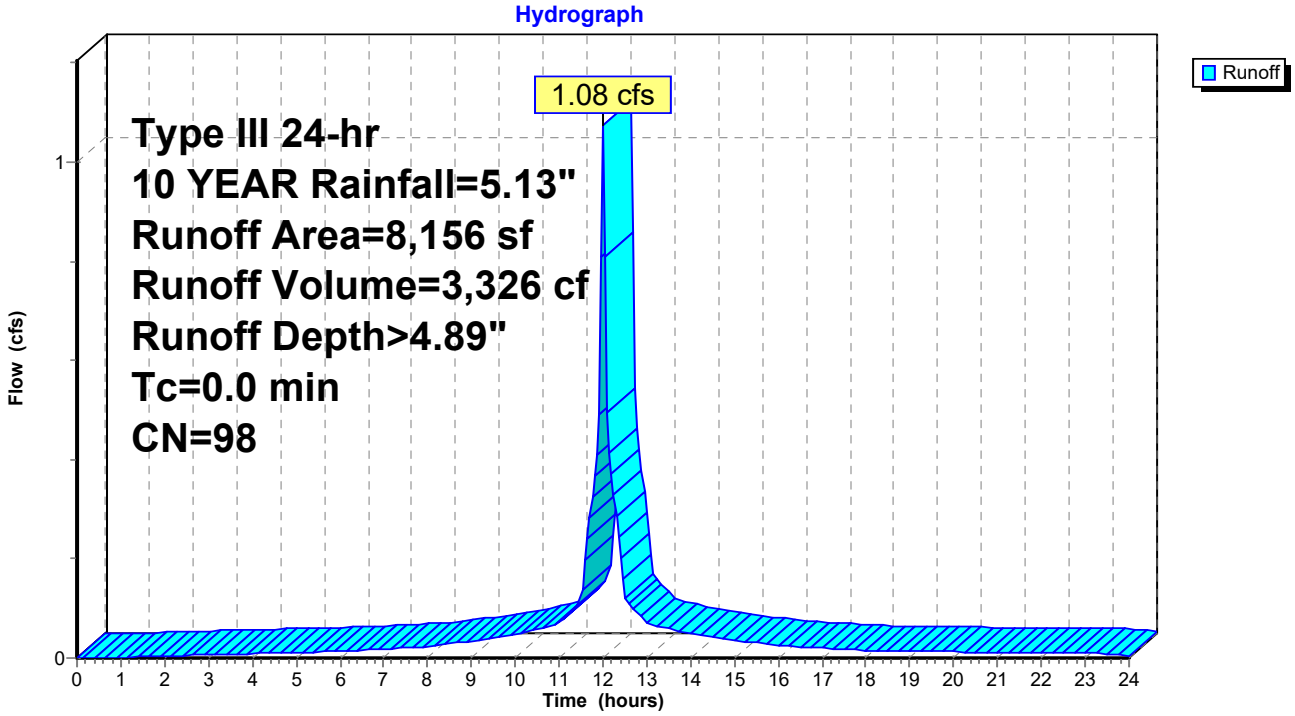
Subcatchment DA 8A: DA - 8A



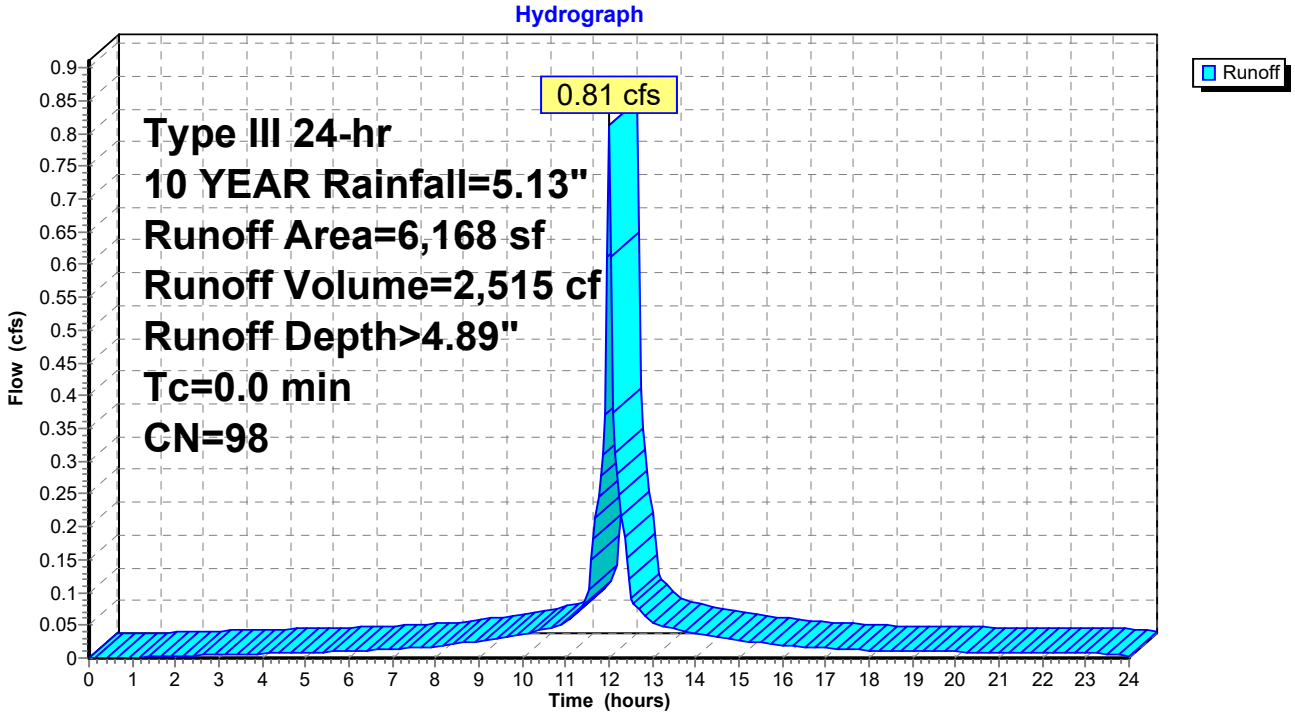
Subcatchment DA 9A: DA - 9A



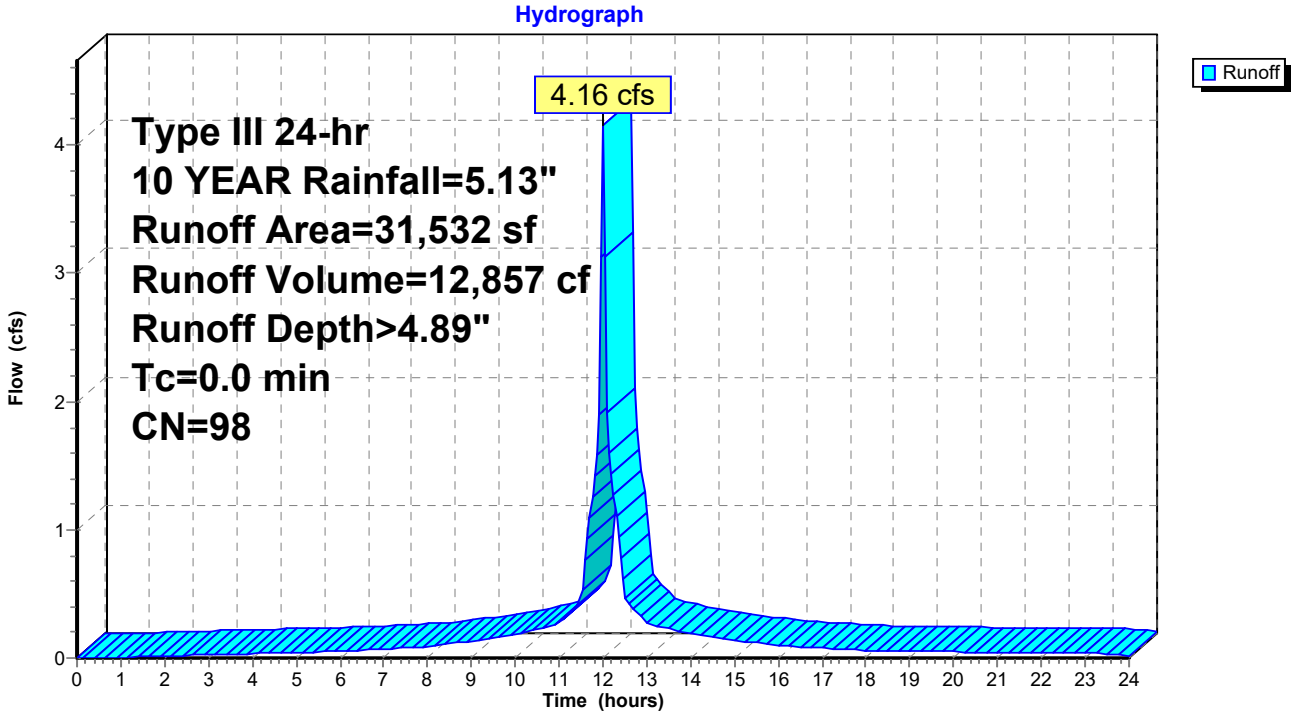
Subcatchment RG 1: Roof Area 1



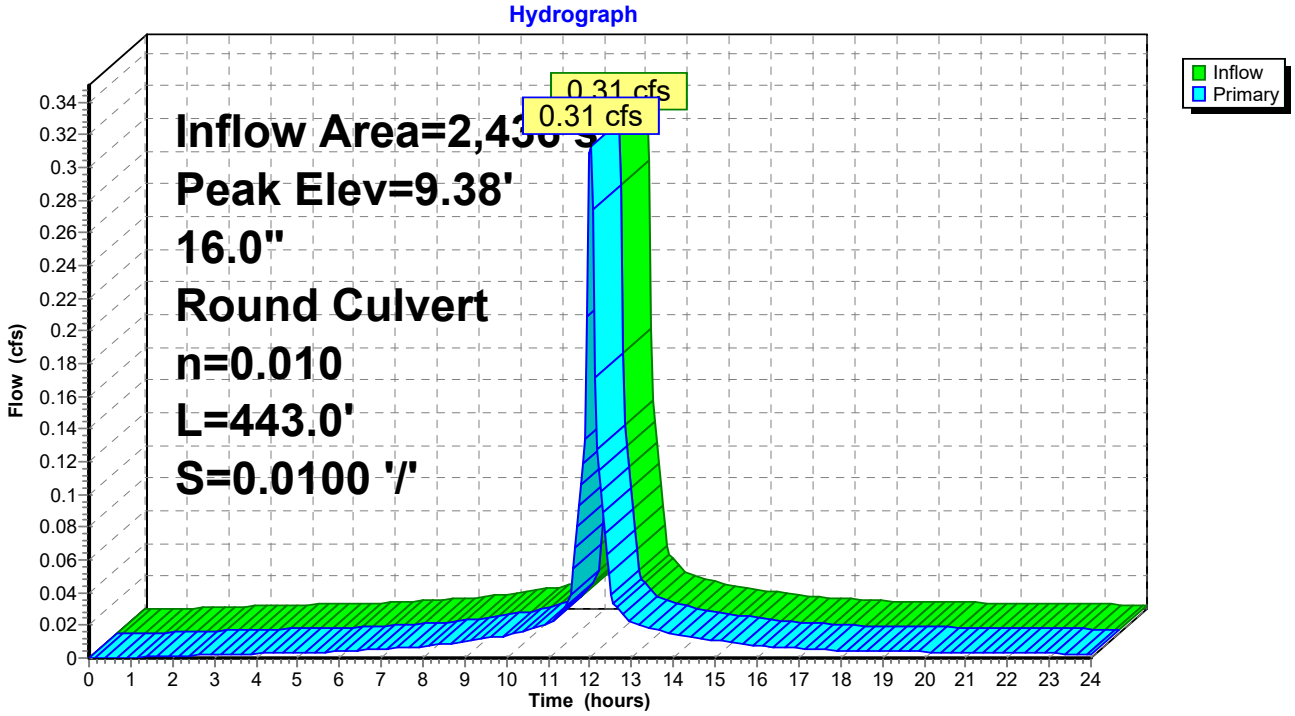
Subcatchment RG 2: Roof Area 2



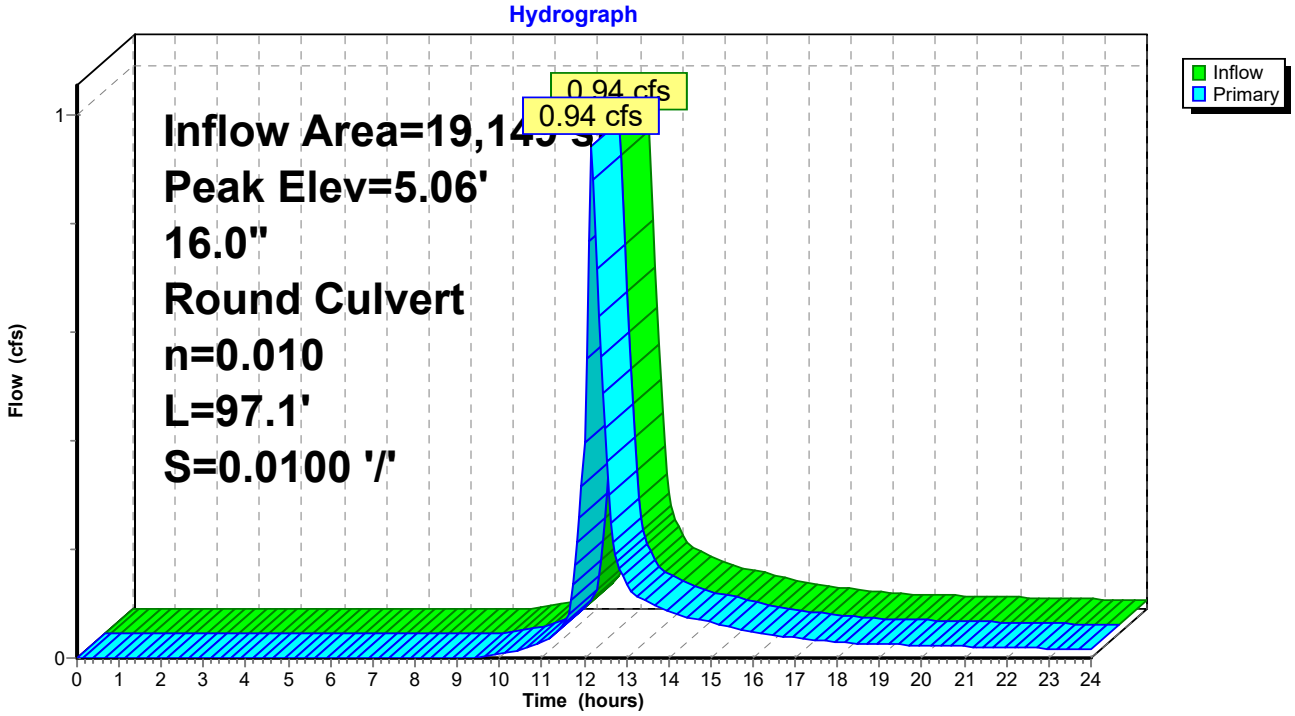
Subcatchment WR: Elevated Parking Lot



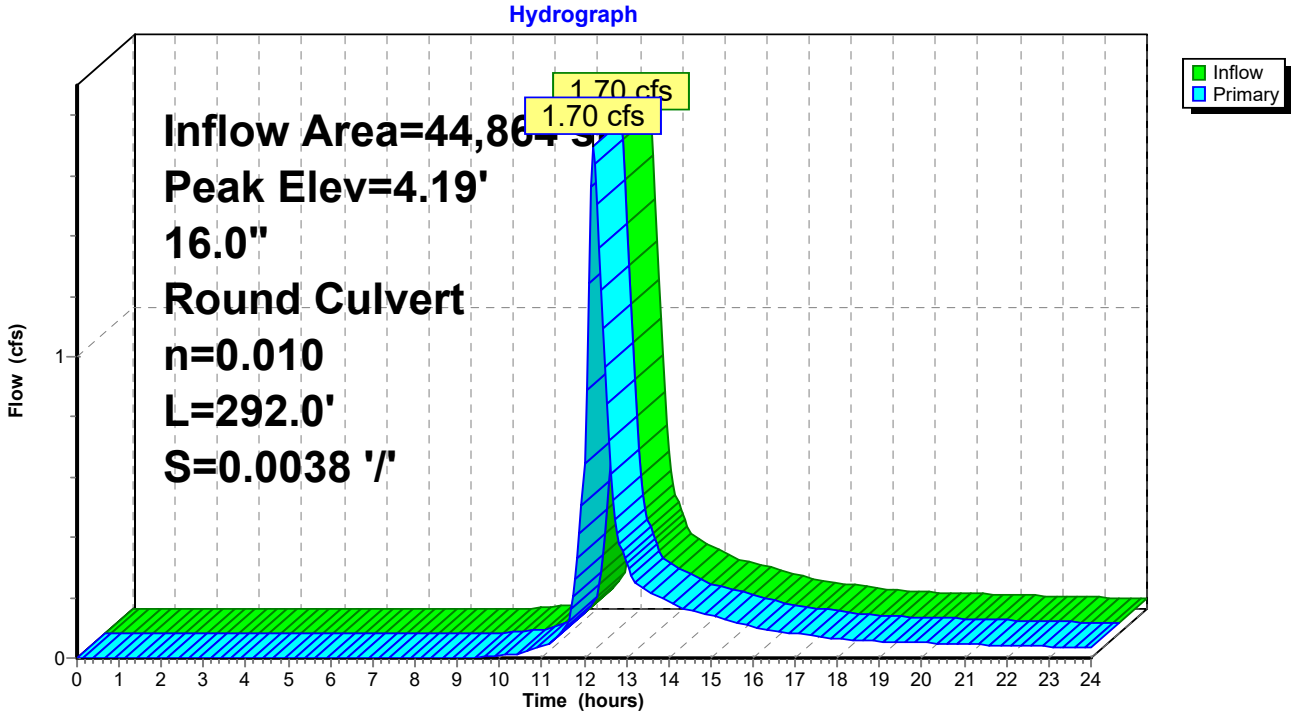
Pond CB1: CB-1


Hydrograph
Inflow
Primary
0.31 cfs
0.31 cfs
Inflow Area=2,436
Peak Elev=9.38'
16.0"
Round Culvert
n=0.010
L=443.0'
S=0.0100 '/'
Flow (cfs)
Time (hours)

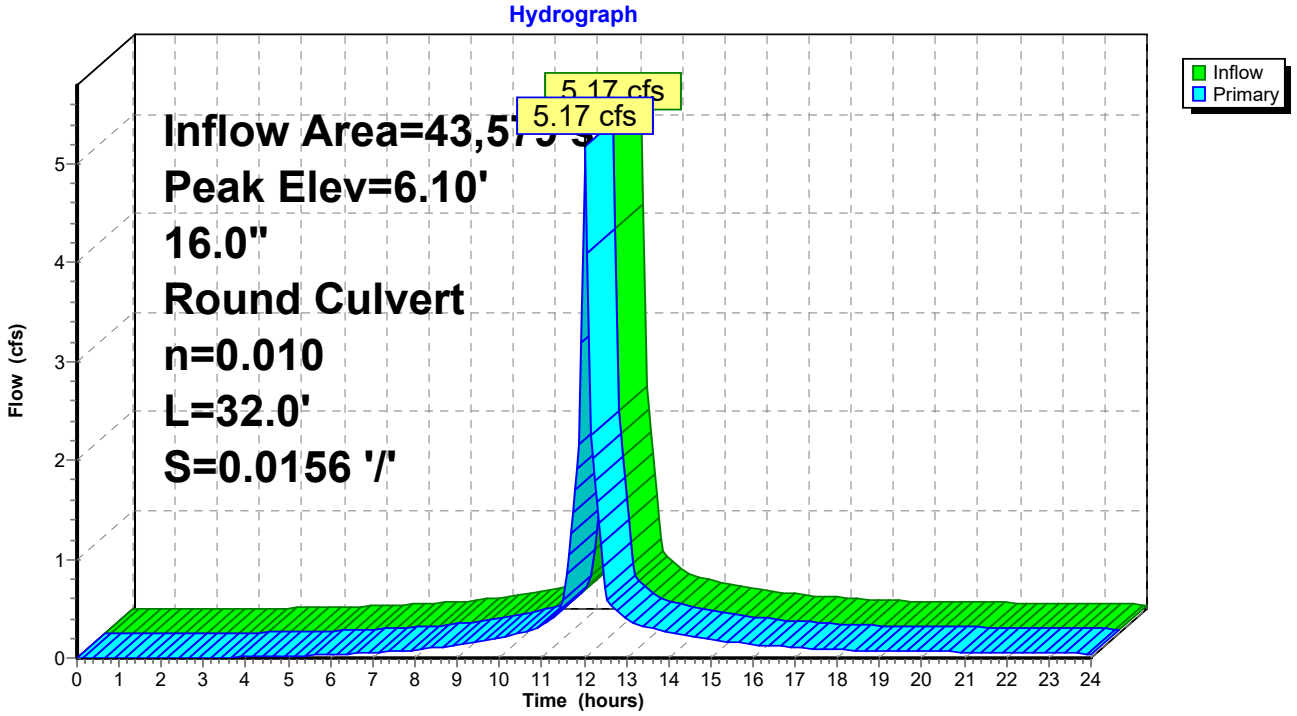
Pond CB12: CB-12



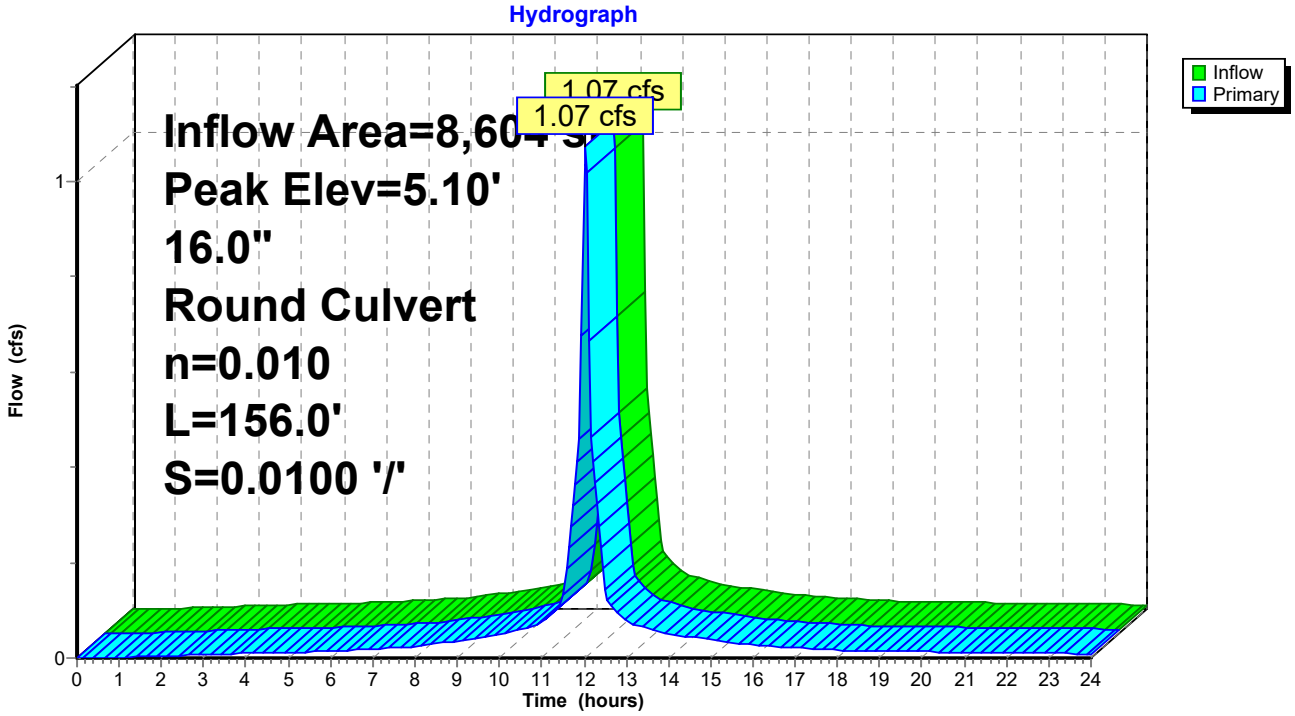
Pond CB13: CB-13



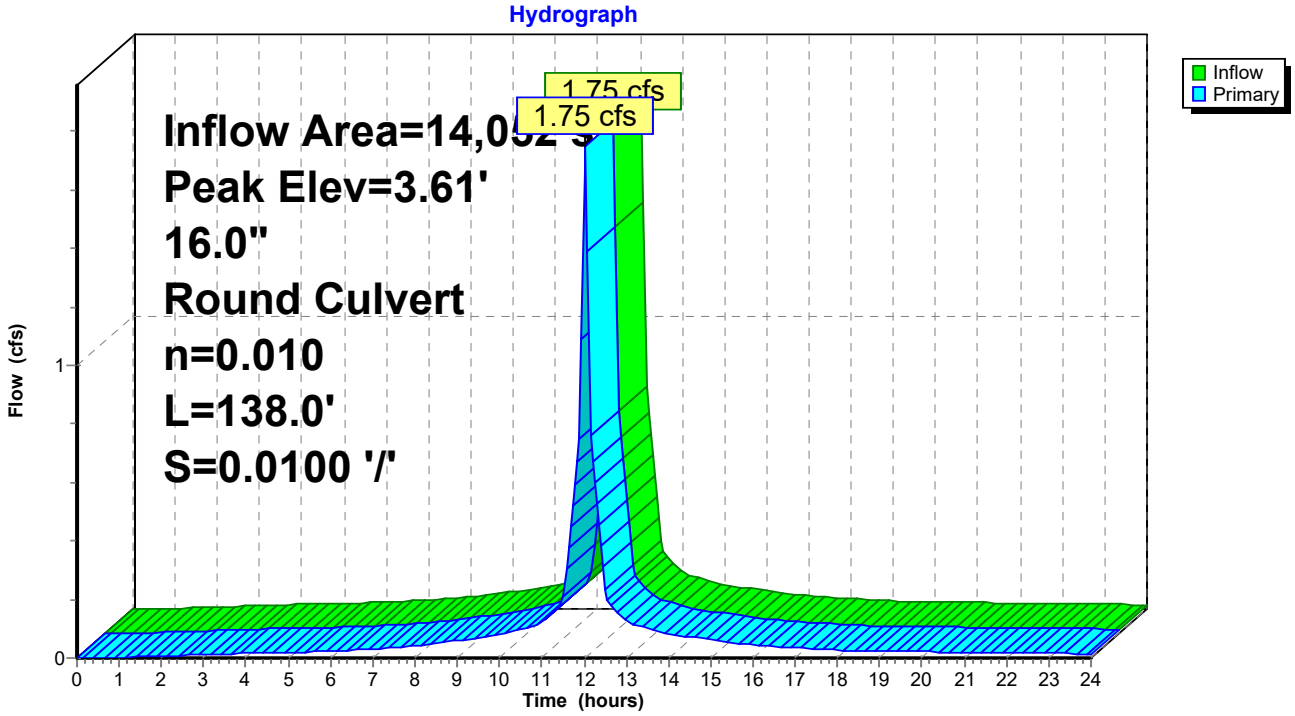
Pond CB19: CB-19



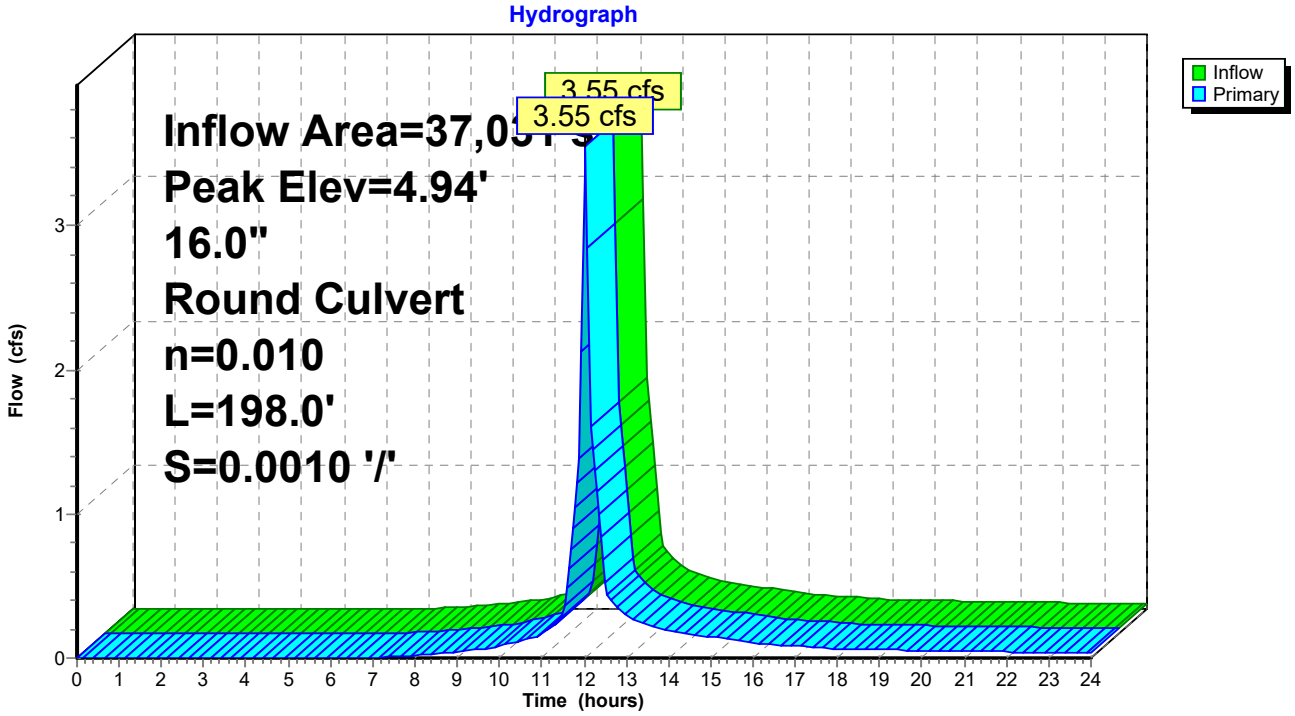
Pond CB4: CB-4


Hydrograph
Inflow
Primary
1.07 cfs
1.07 cfs
Inflow Area=8,604 s
Peak Elev=5.10'
16.0"
Round Culvert
n=0.010
L=156.0'
S=0.0100 '/'
Flow (cfs)
0
1
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Time (hours)

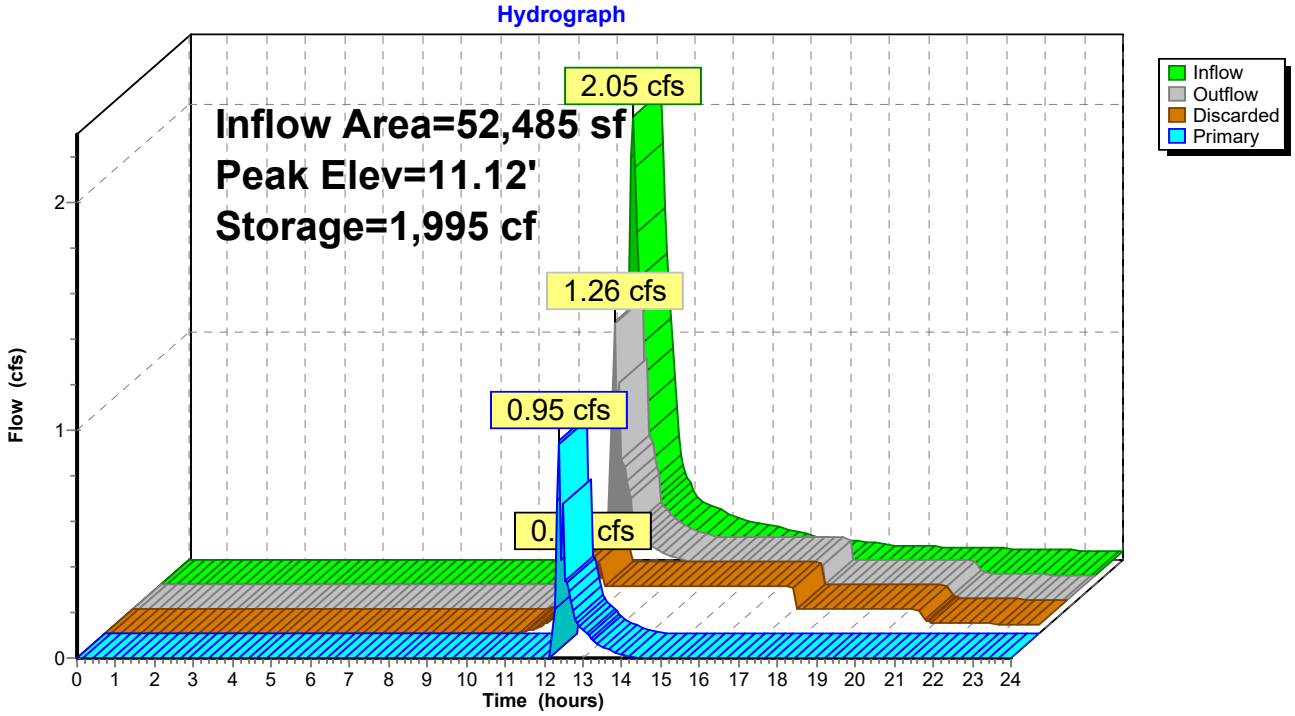
Pond CB5: CB-5


Hydrograph
Inflow
Primary
1.75 cfs
1.75 cfs
Inflow Area=14,052 s
Peak Elev=3.61'
16.0"
Round Culvert
n=0.010
L=138.0'
S=0.0100 '/'
Flow (cfs)
0
1
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Time (hours)

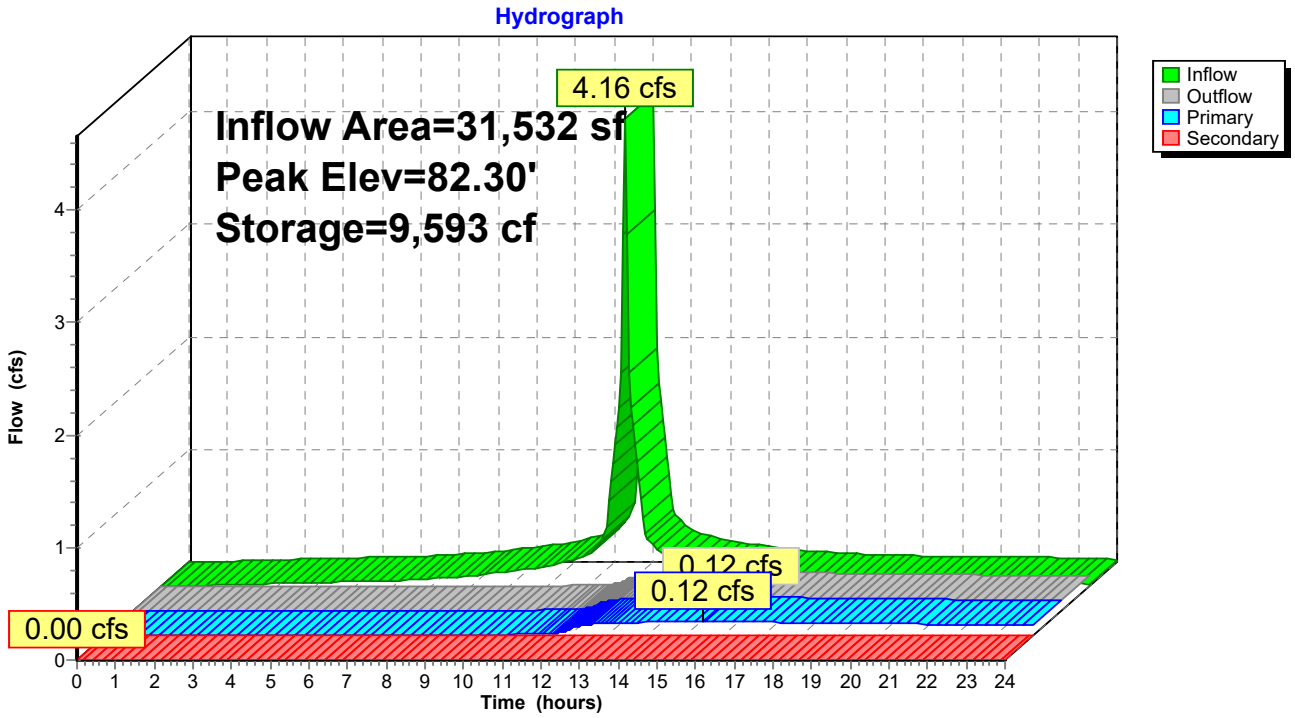
Pond CB9: CB-9


Hydrograph
Inflow
Primary
3.55 cfs
3.55 cfs
Inflow Area=37,05
Peak Elev=4.94'
16.0"
Round Culvert
n=0.010
L=198.0'
S=0.0010 '/'
Flow (cfs)
0
1
2
3
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Time (hours)

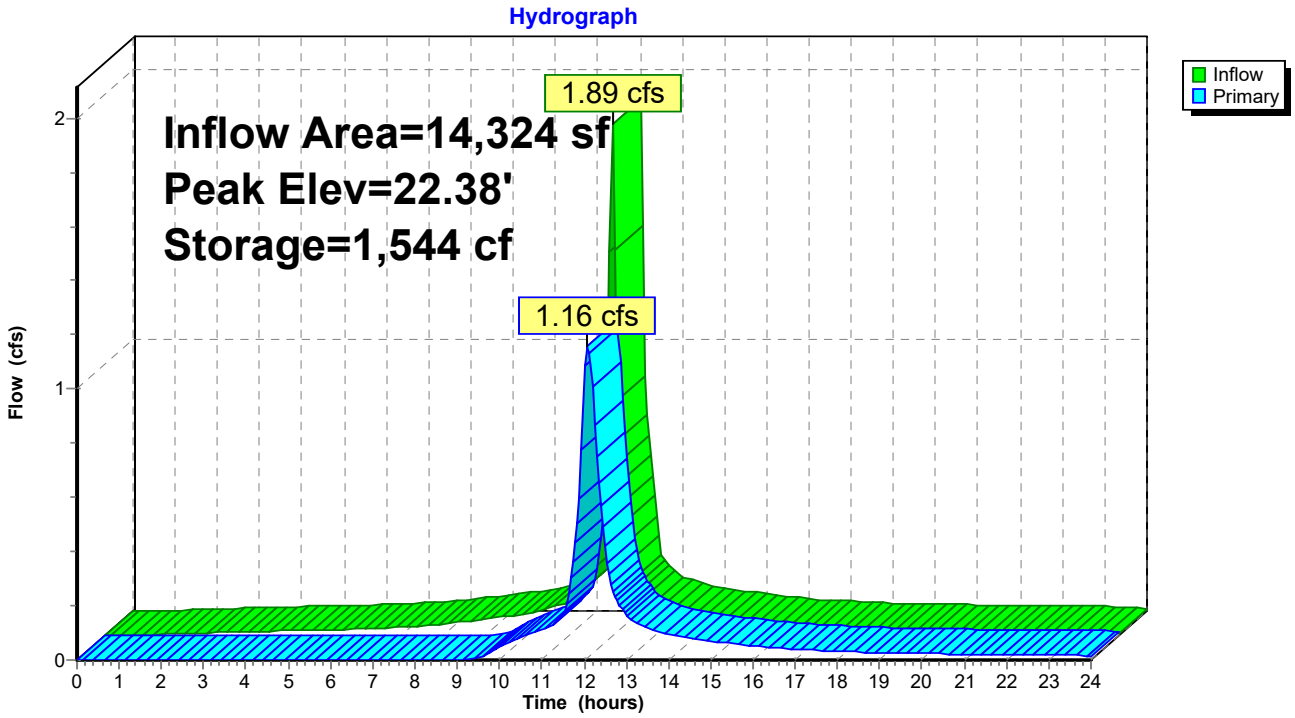
Pond I-1: INFILTRATION TRENCH



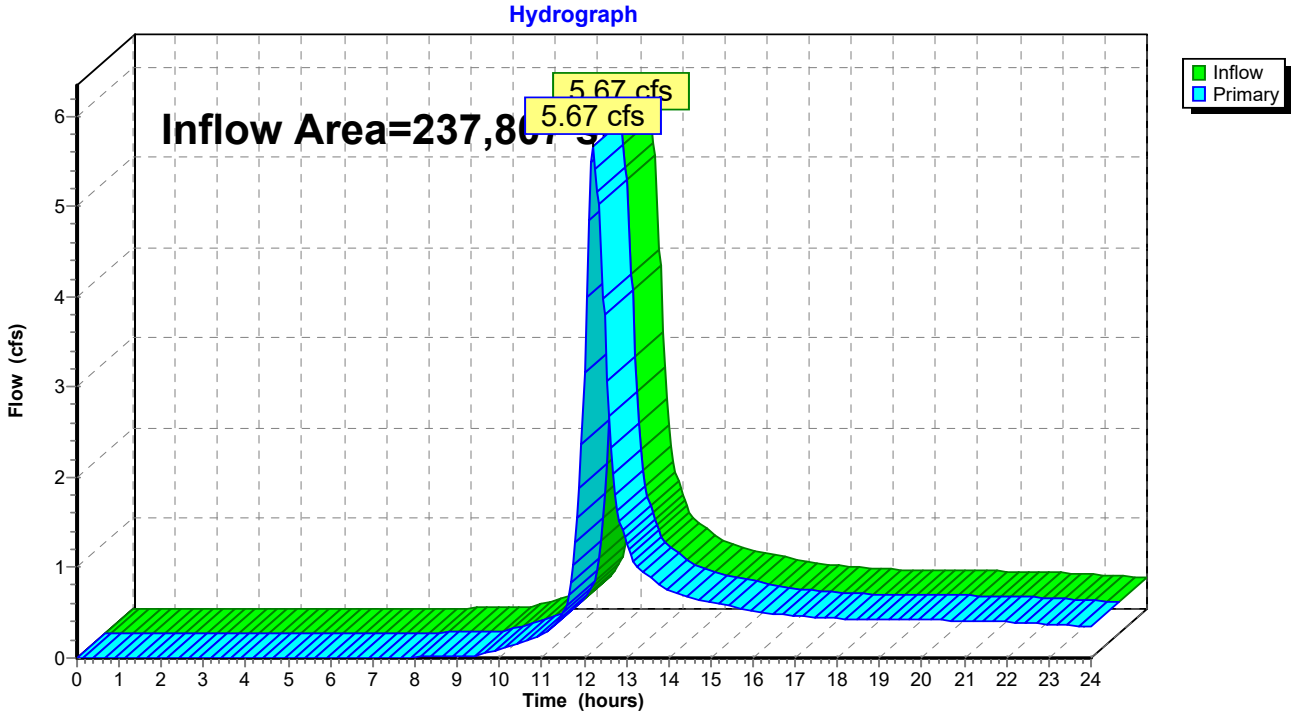
Pond P1: White Roof



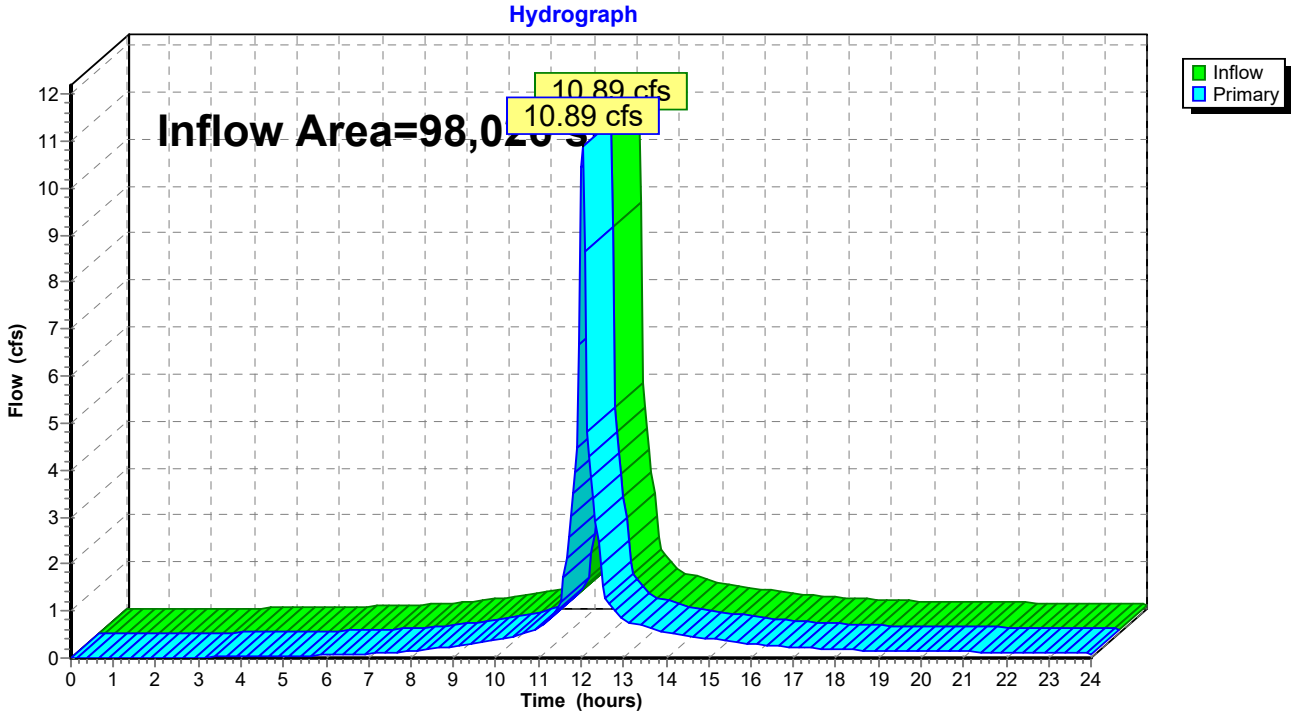
Pond P2: Green Roof



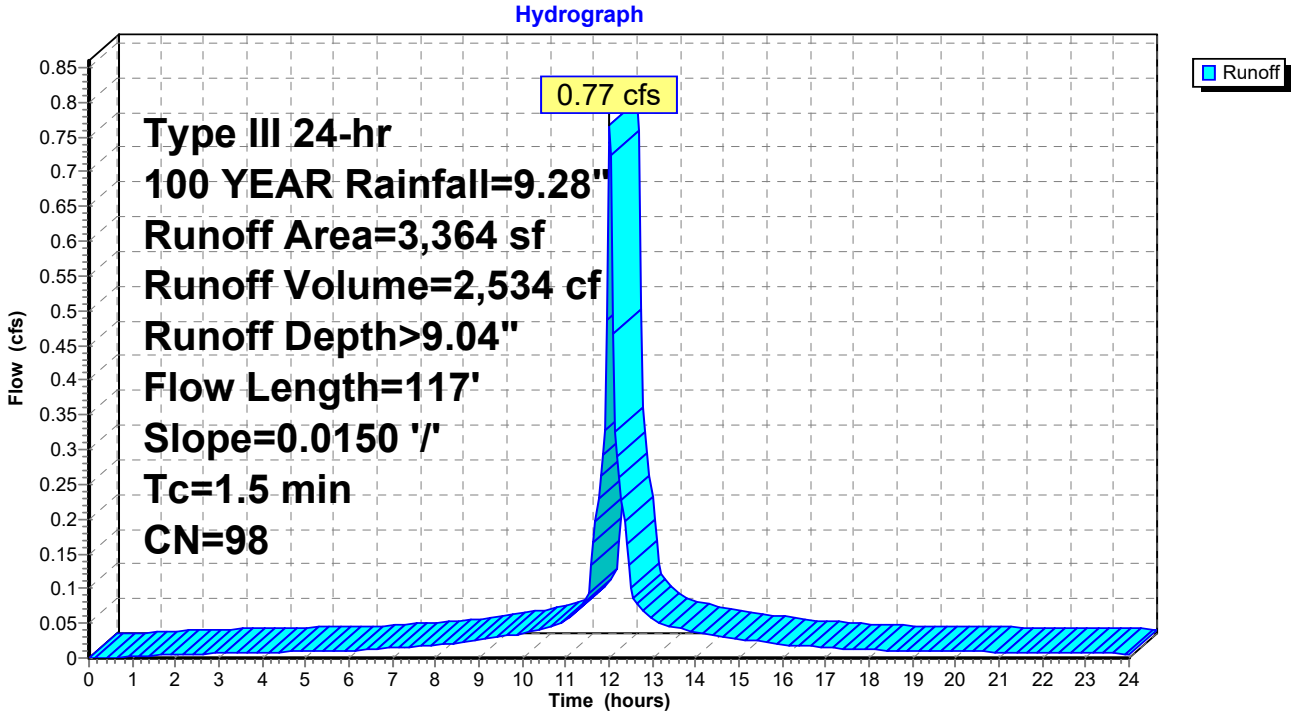
Link DP-1: DP-1


Hydrograph
Inflow Area=237,80
5.67 cfs
5.67 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

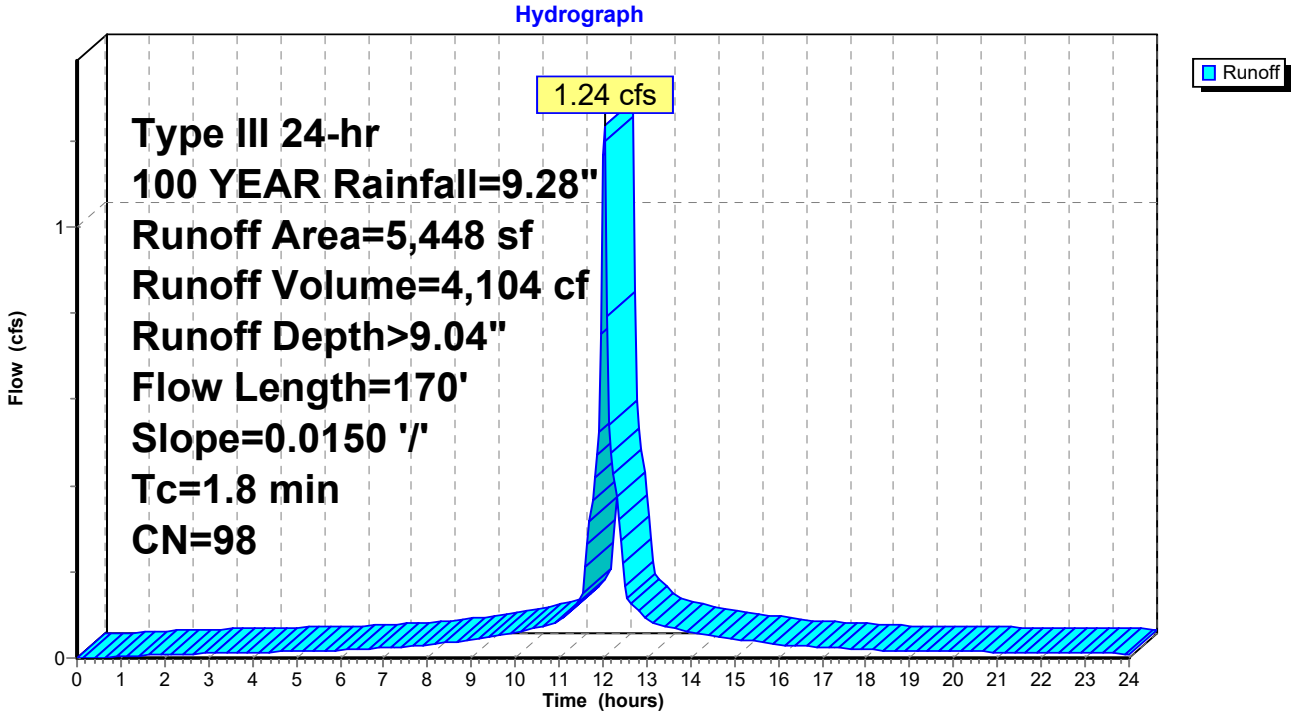
Link DP-2: Design Point 2



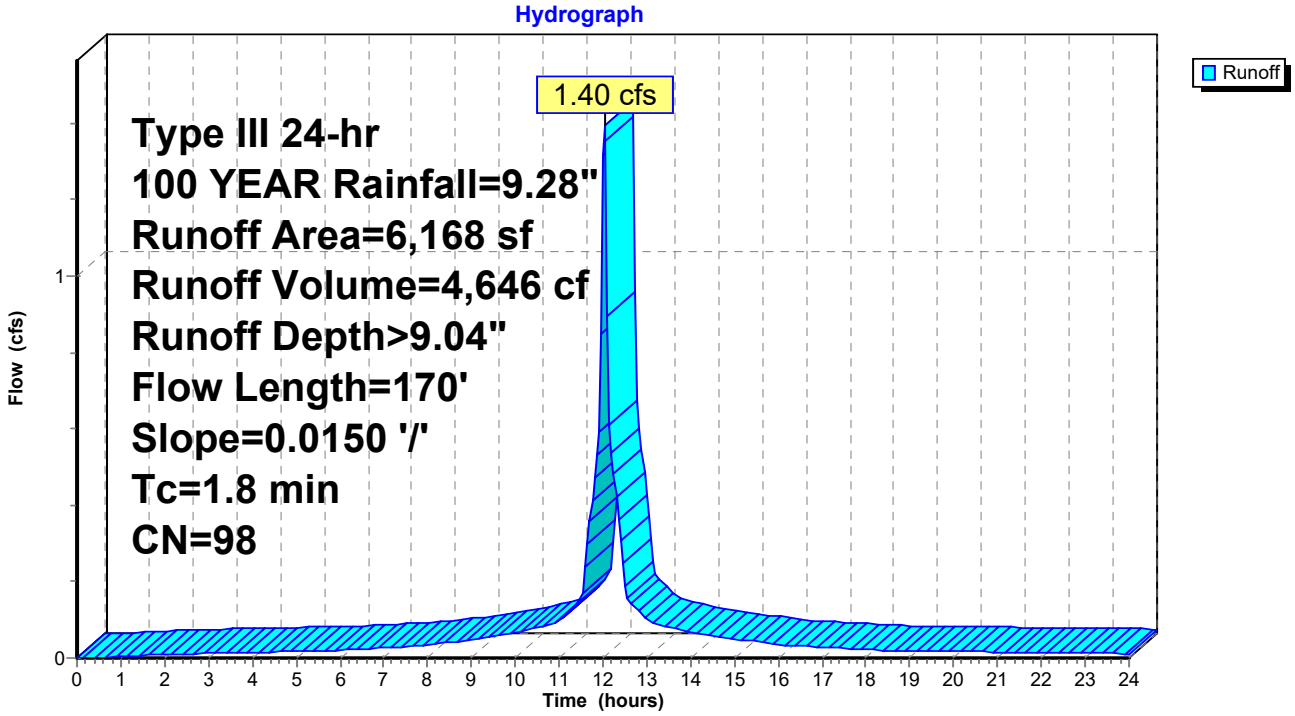
Subcatchment DA 10A: DA - 10A



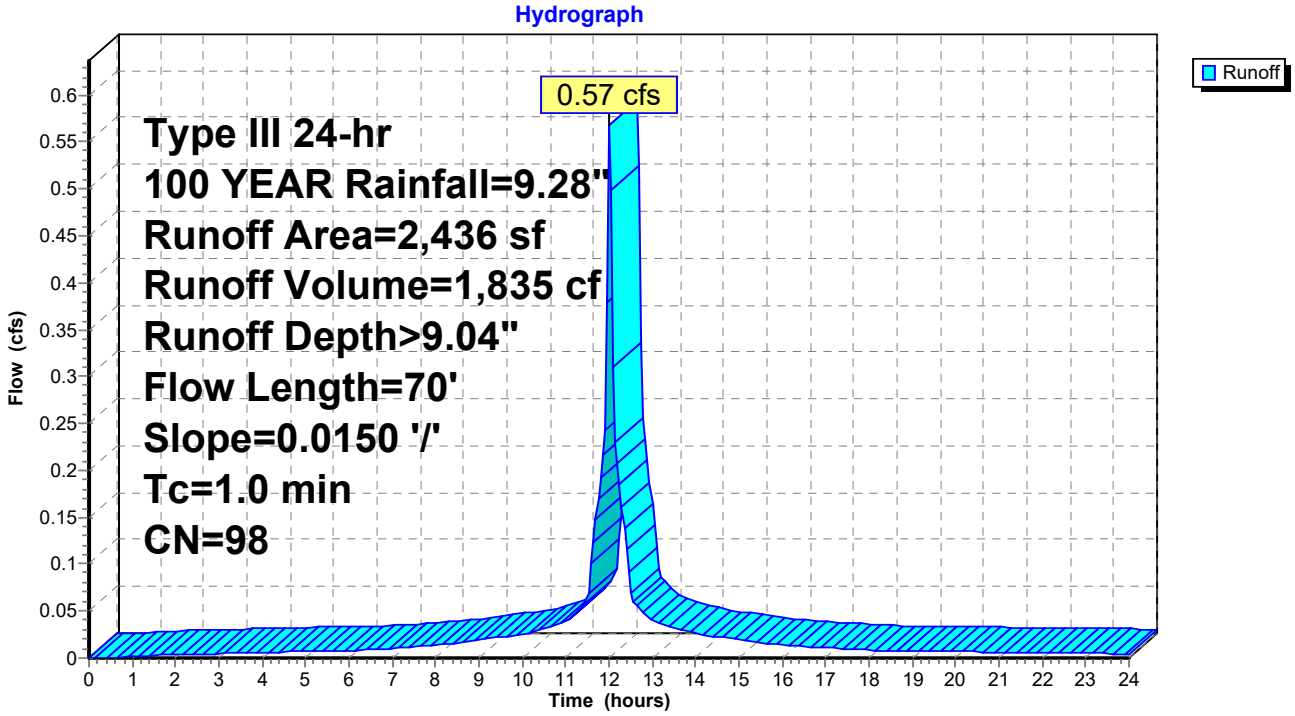
Subcatchment DA 11A: DA - 11A



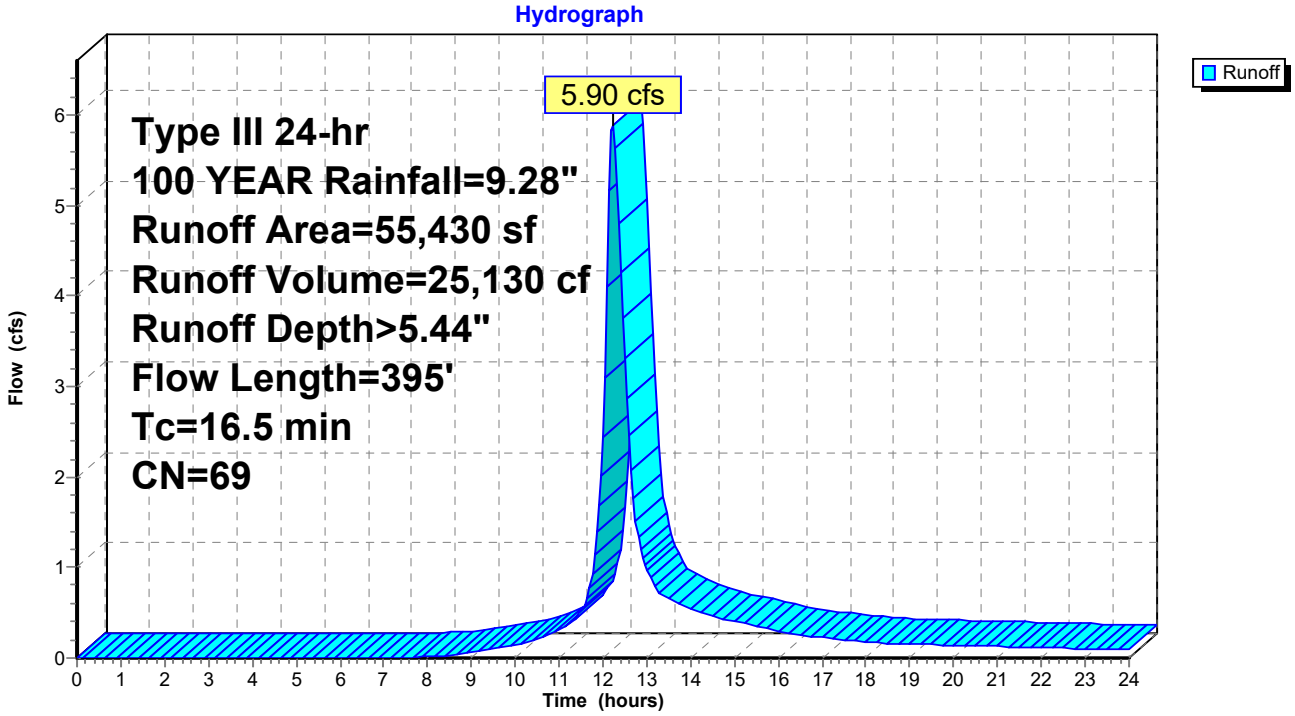
Subcatchment DA 12A: DA - 12A



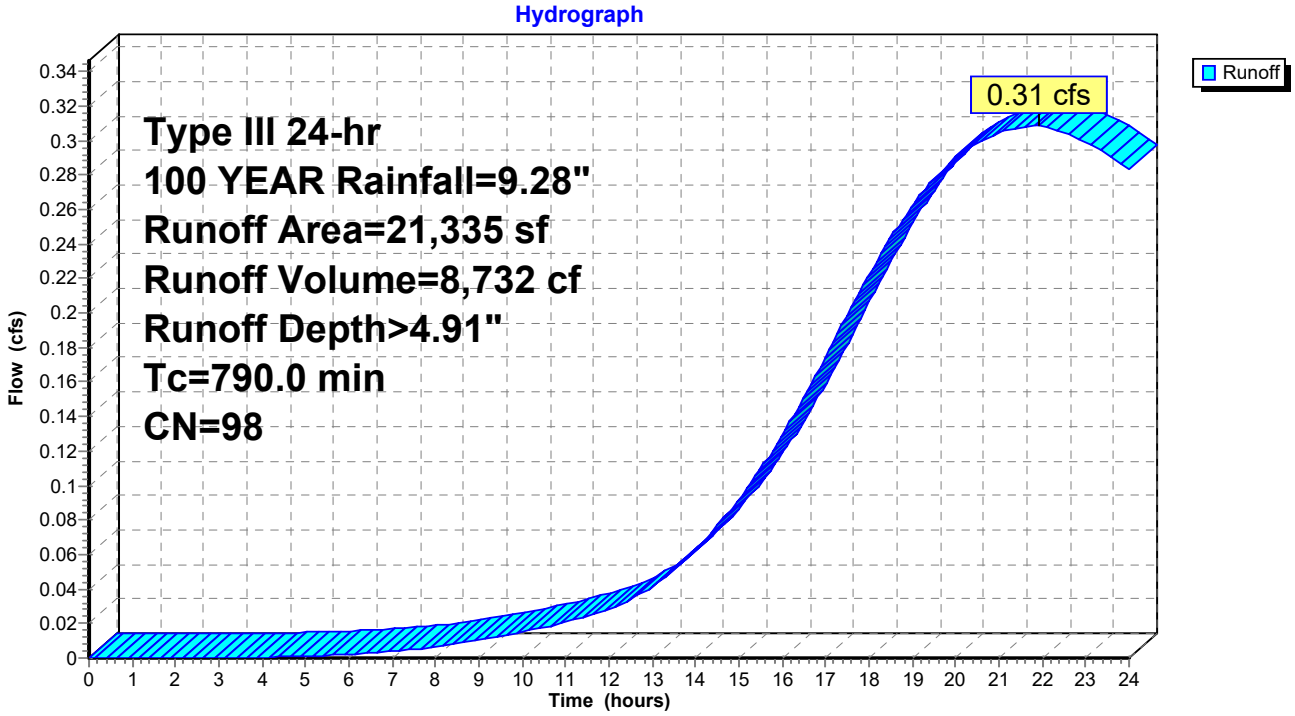
Subcatchment DA 13A: DA - 13A



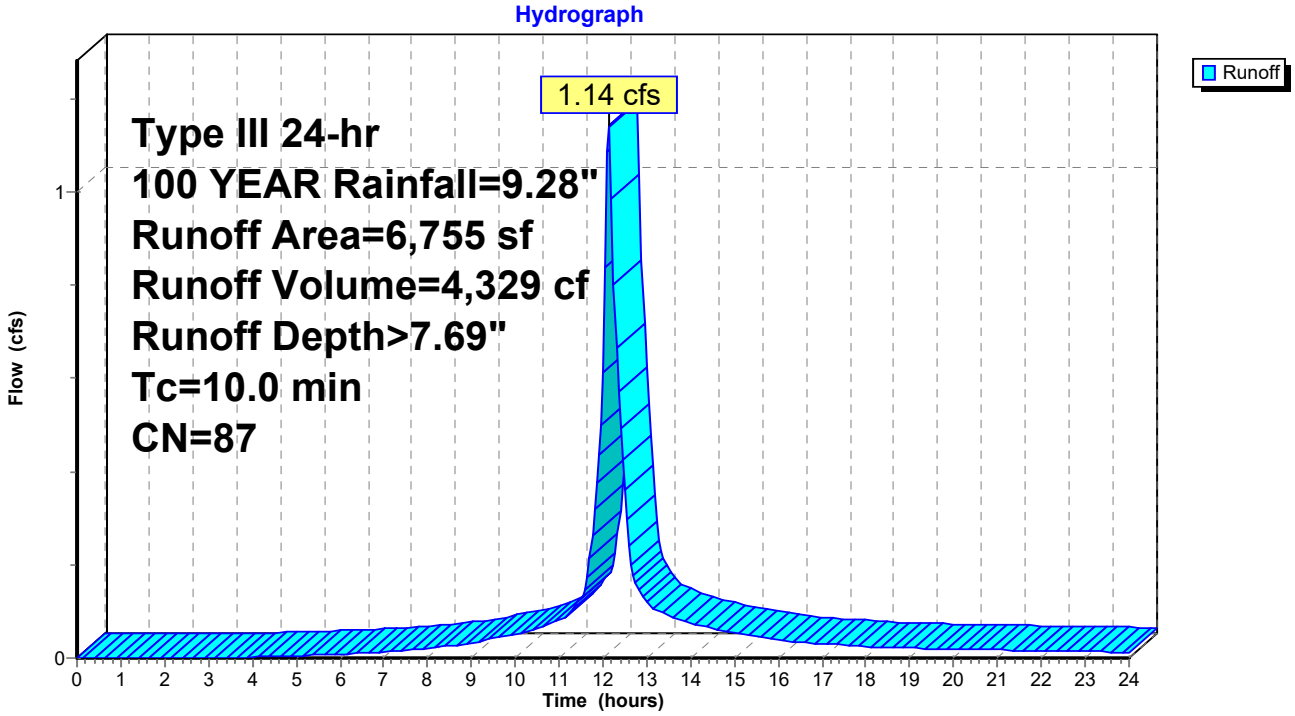
Subcatchment DA 1A: DA -1A



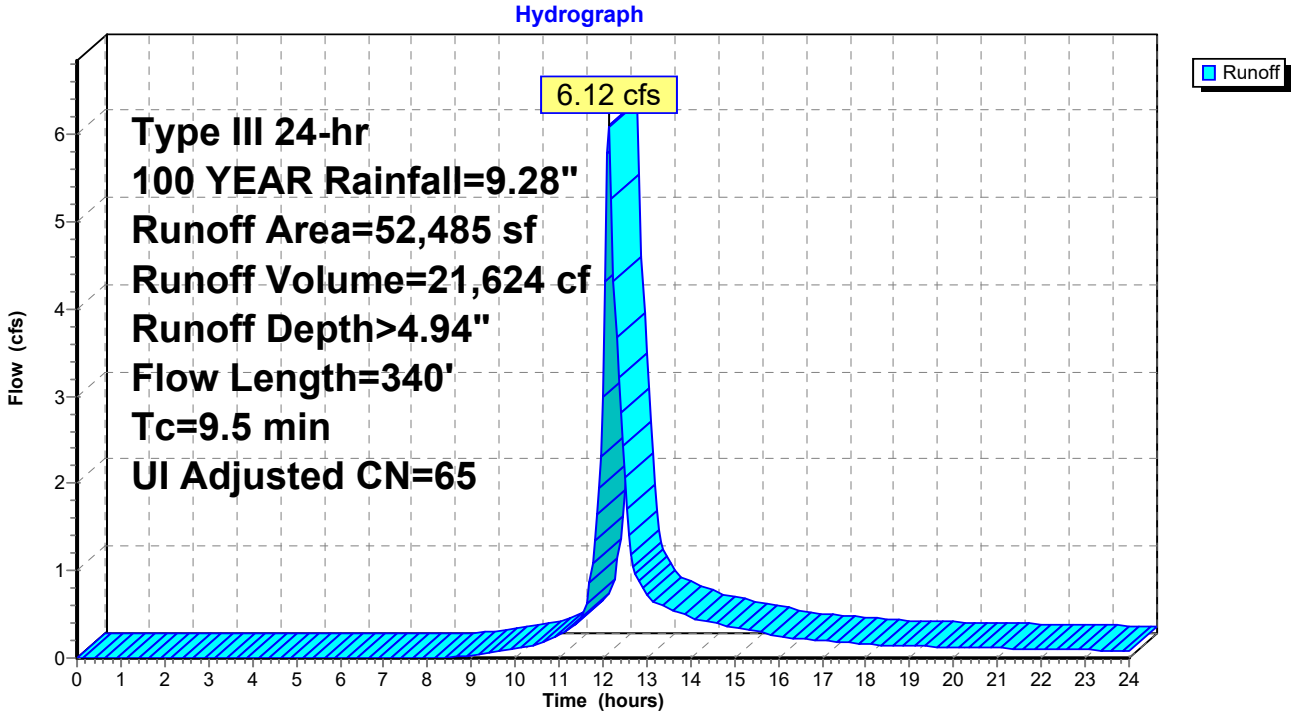
Subcatchment DA 2A: DA - 2A



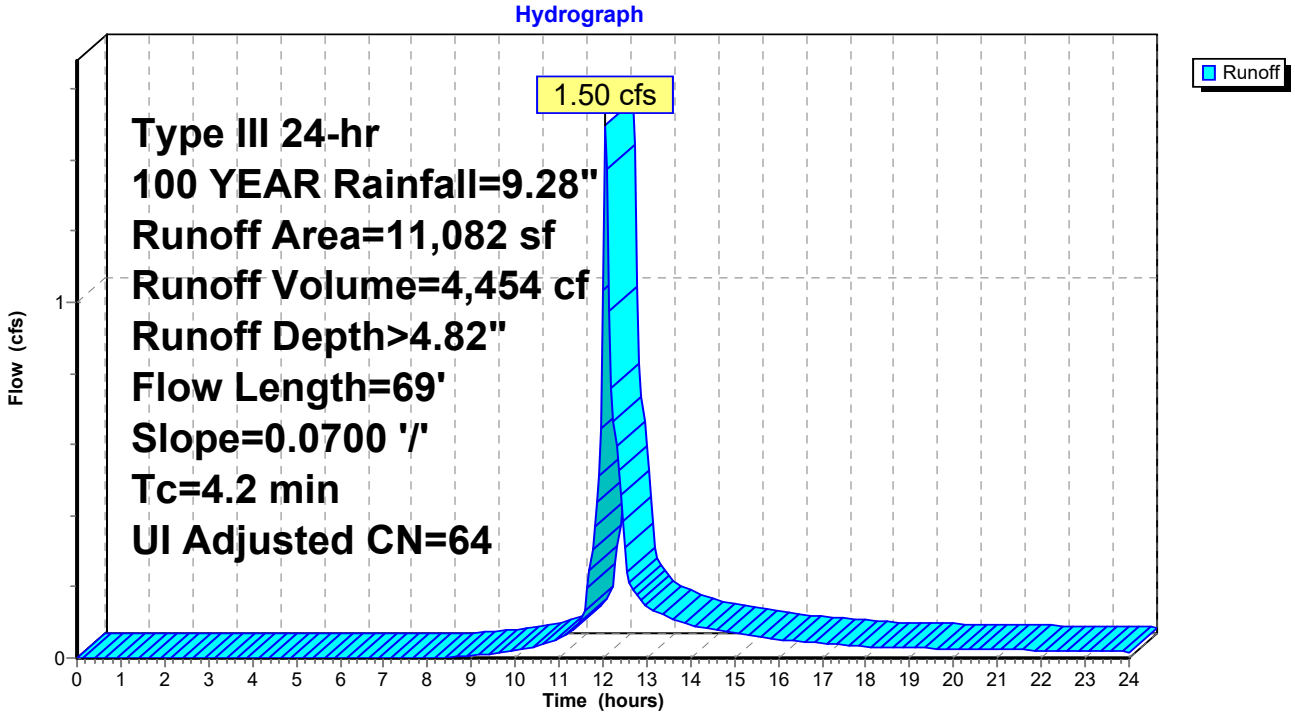
Subcatchment DA 3A: DA - 3A



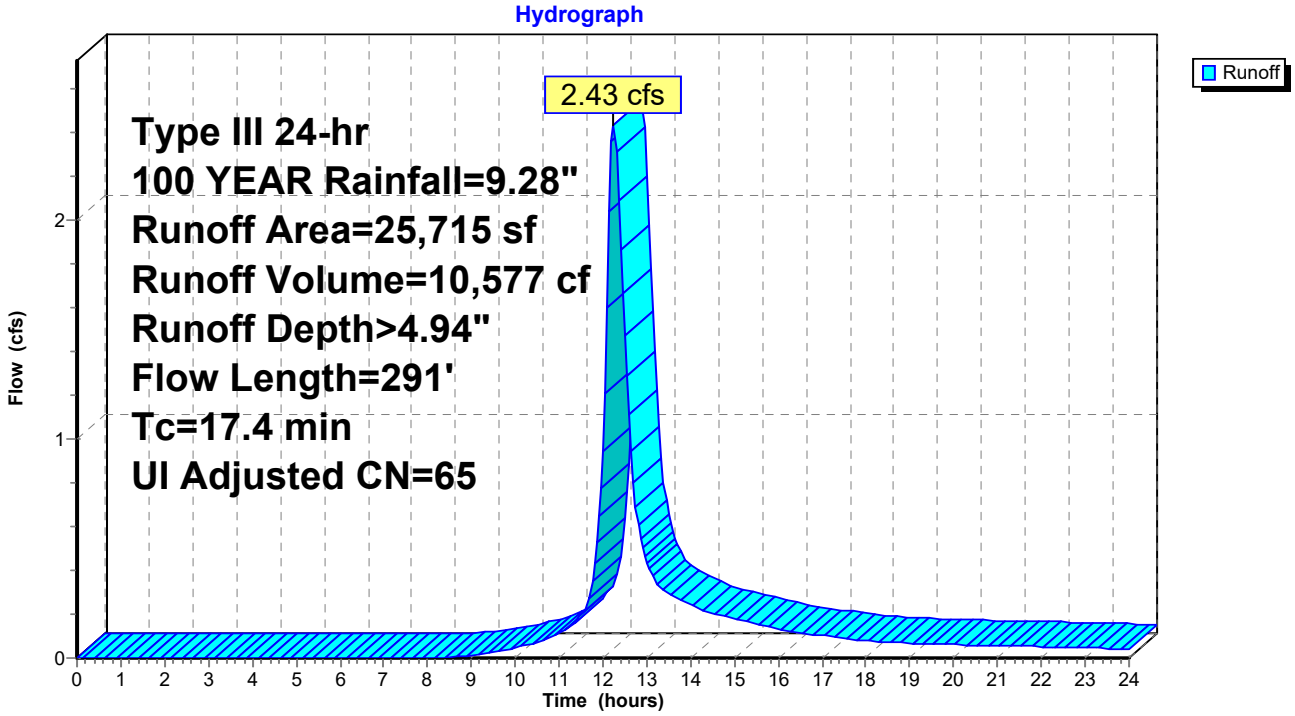
Subcatchment DA 4A: DA - 4A



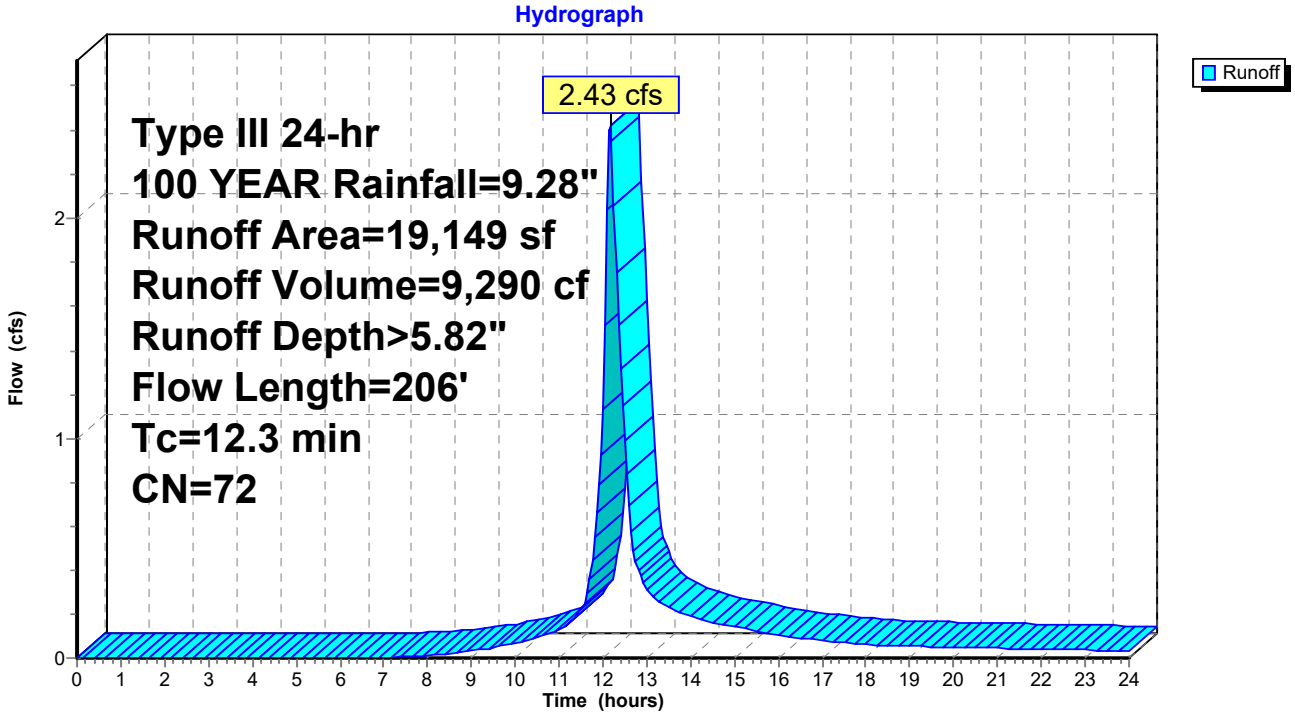
Subcatchment DA 5A: DA - 5A



Subcatchment DA 6A: DA - 6A



Subcatchment DA 7A: DA - 7A



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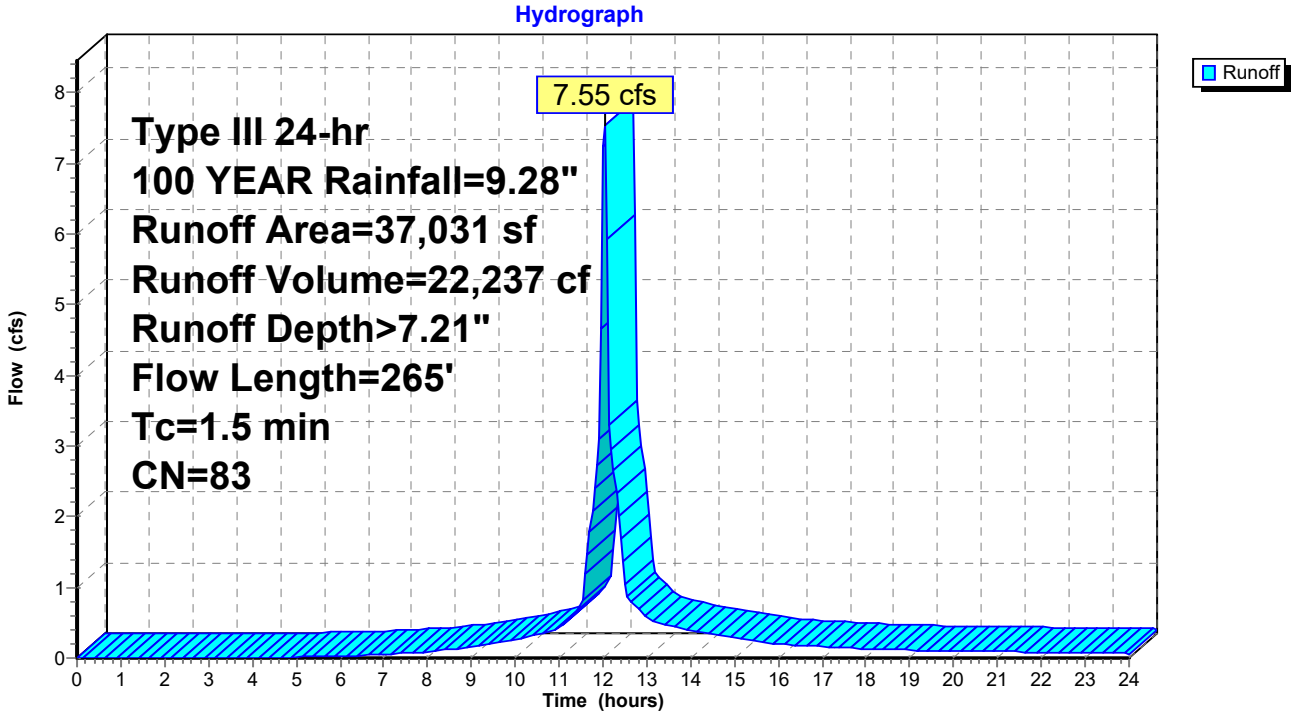
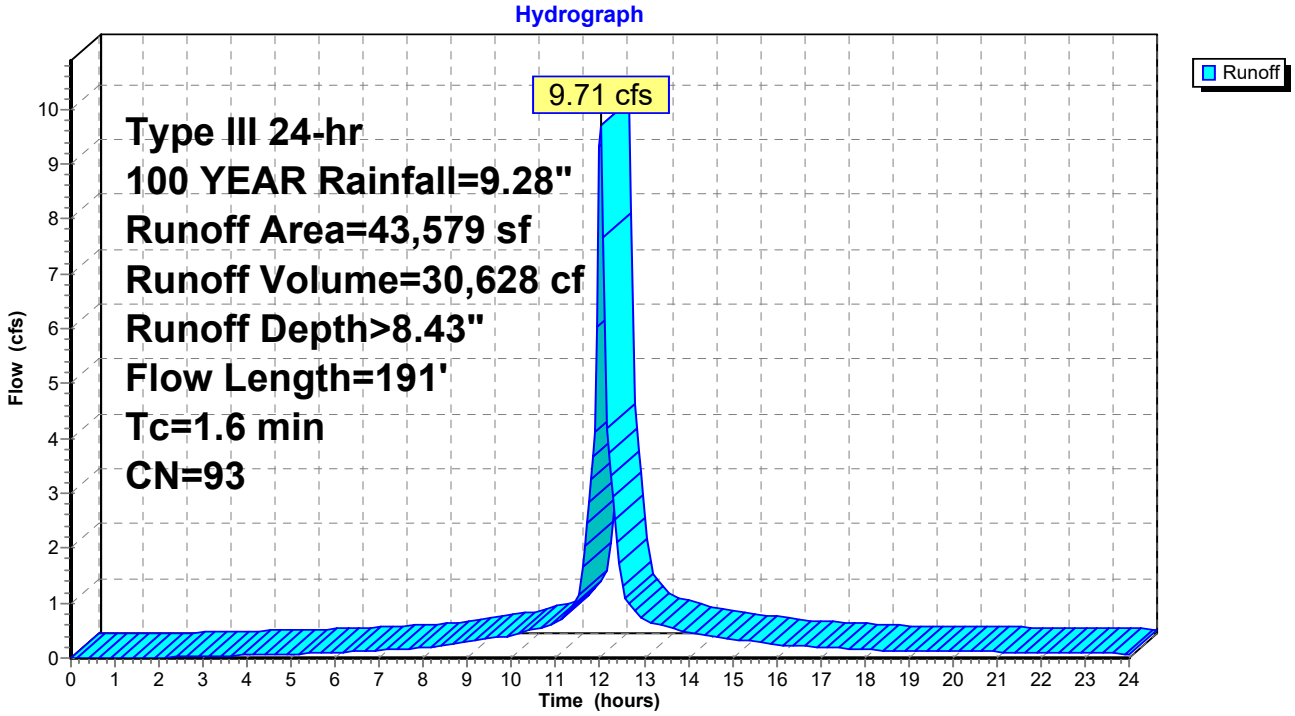
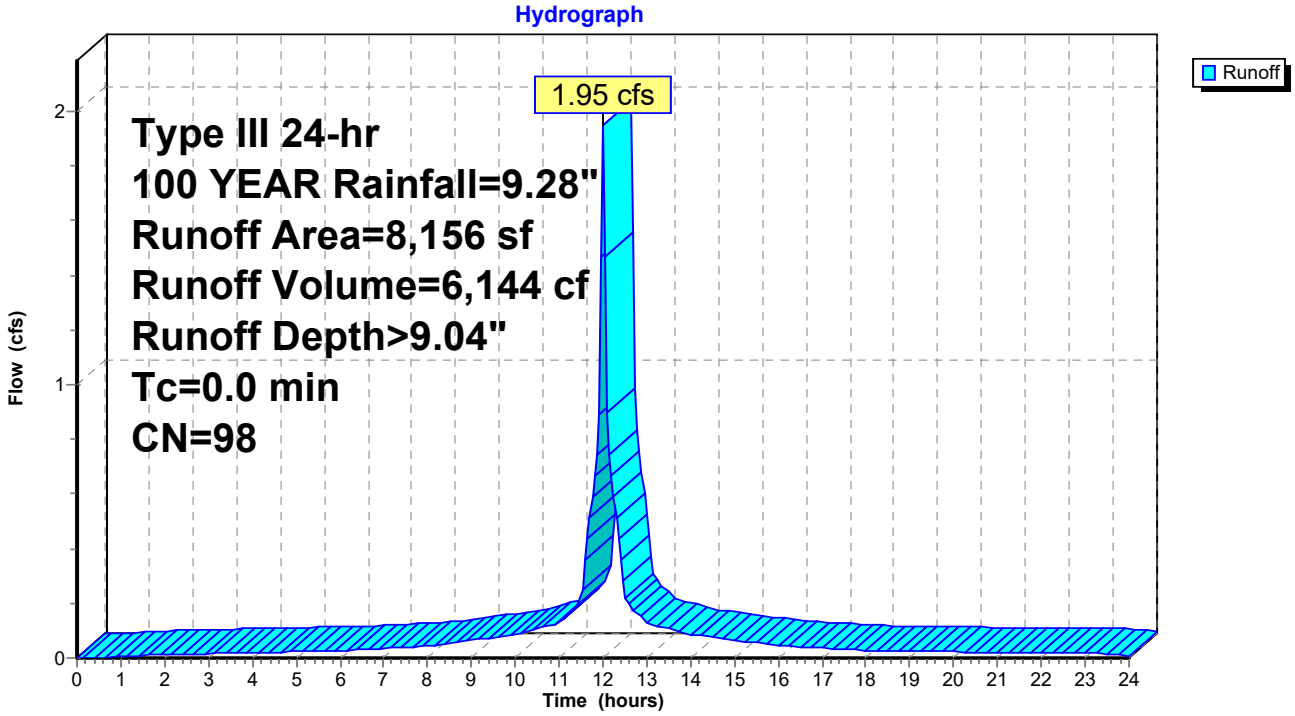


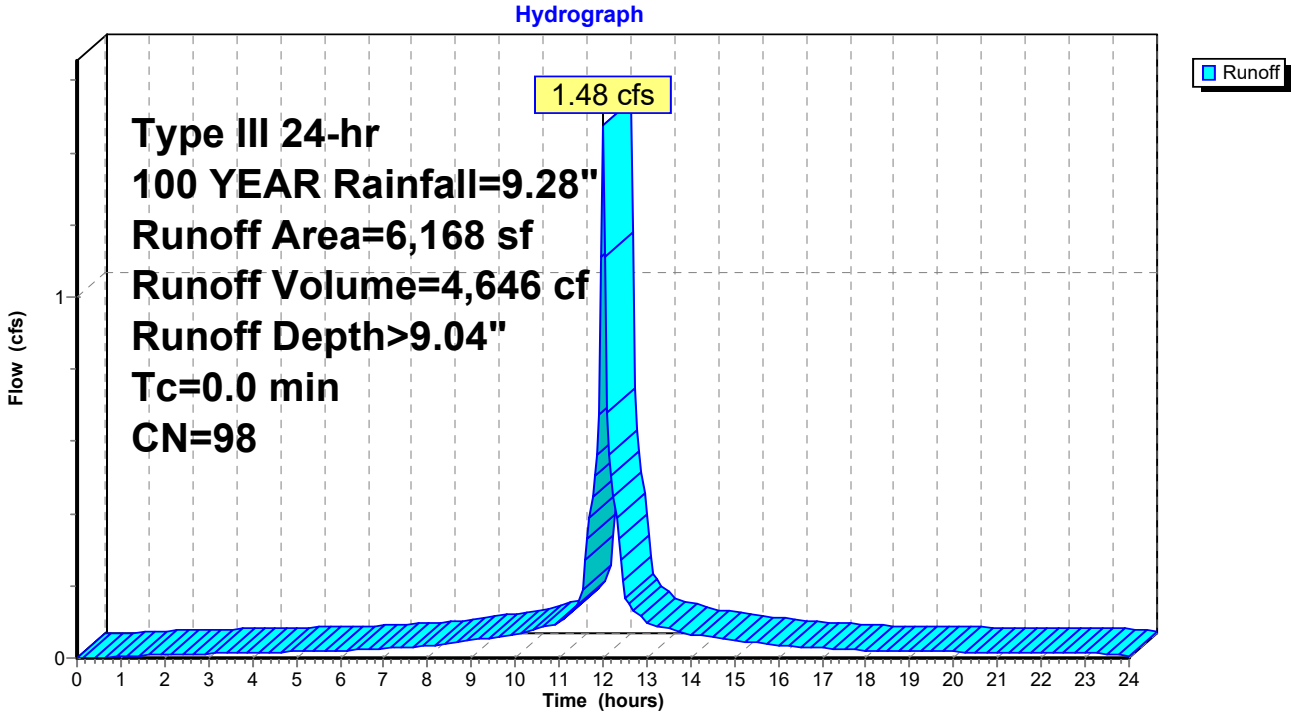
Subcatchment DA 9A: DA - 9A



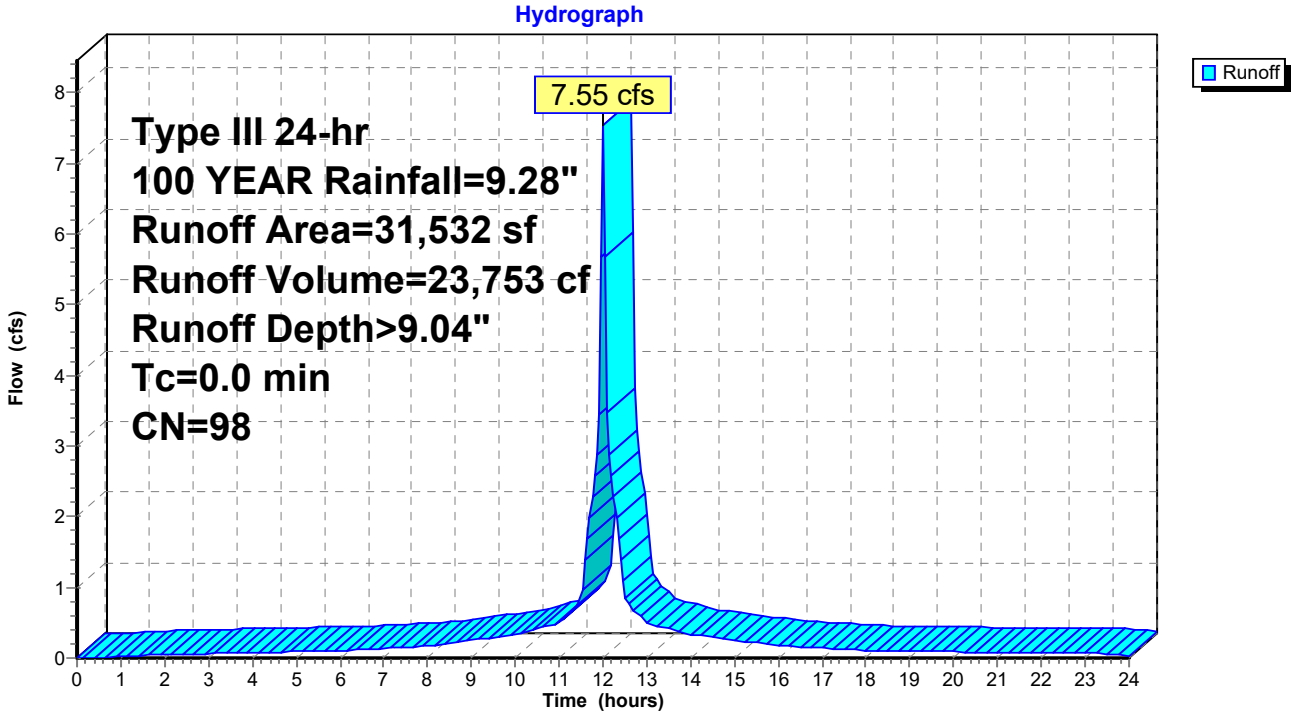
Subcatchment RG 1: Roof Area 1



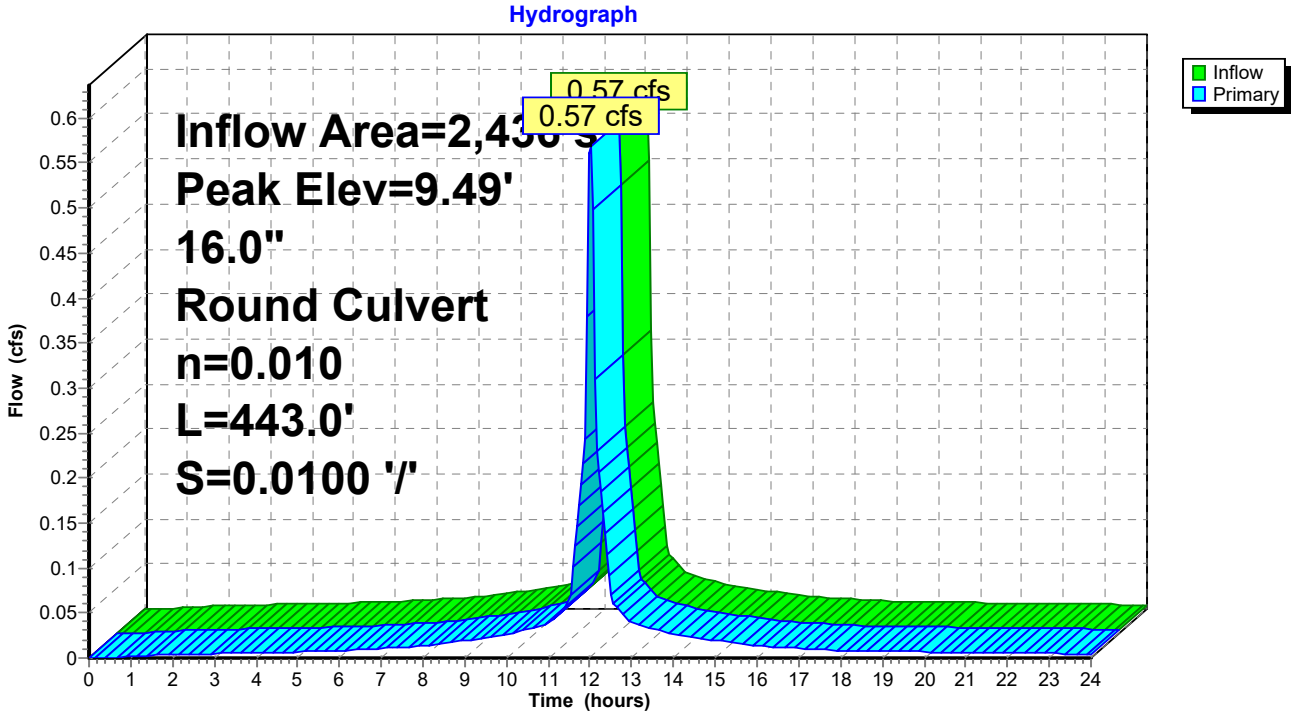
Subcatchment RG 2: Roof Area 2



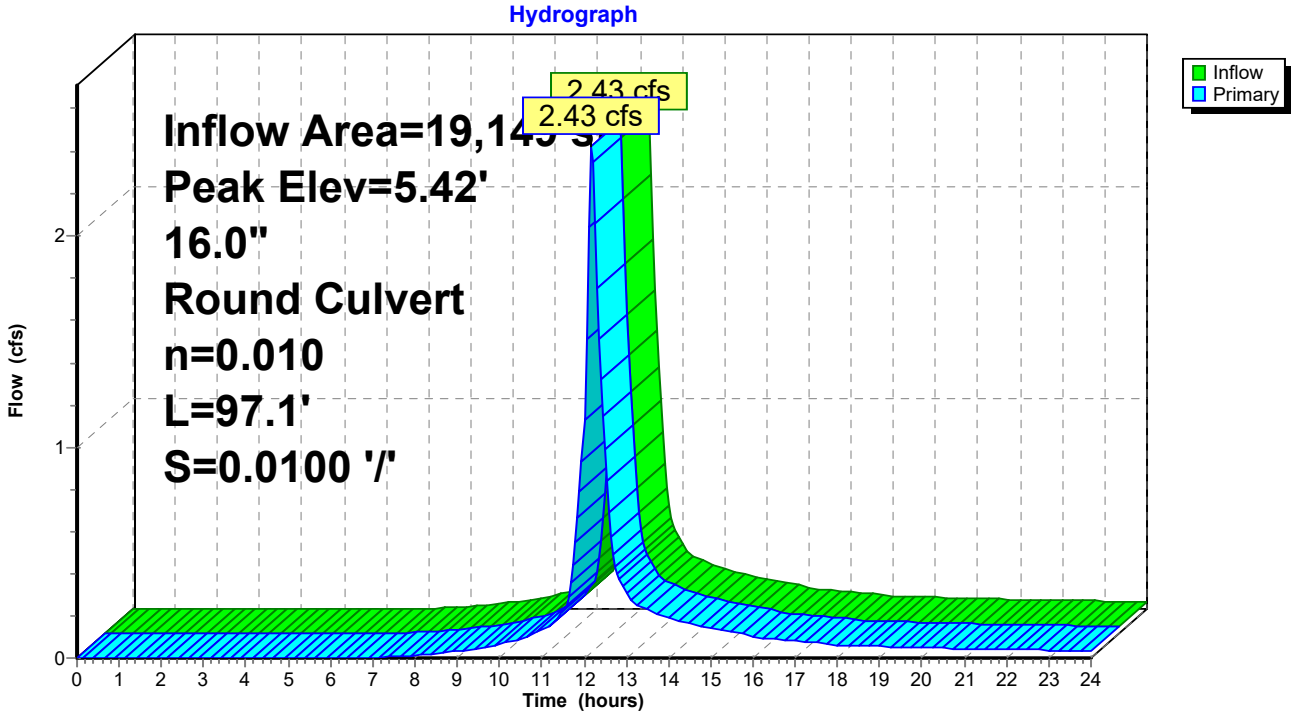
Subcatchment WR: Elevated Parking Lot



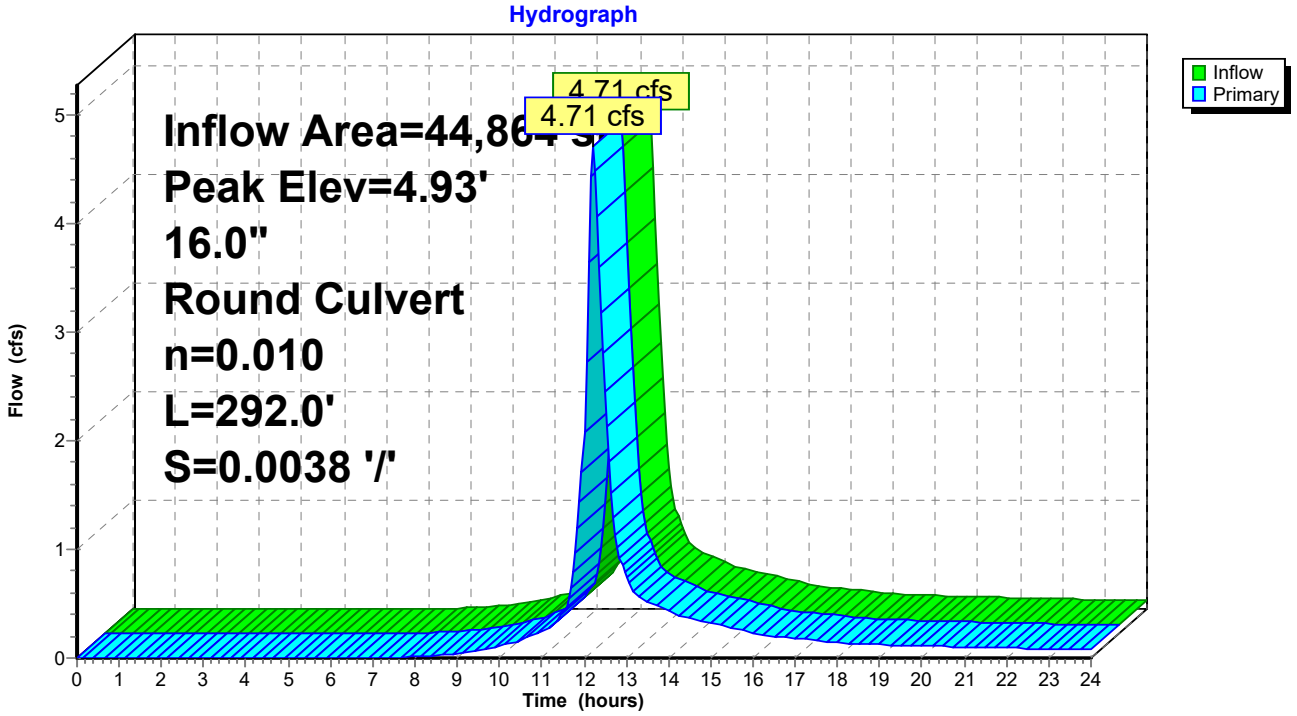
Pond CB1: CB-1


Hydrograph
Inflow
Primary
0.57 cfs
0.57 cfs
Inflow Area=2,436
Peak Elev=9.49'
16.0"
Round Culvert
n=0.010
L=443.0'
S=0.0100 '/'
Flow (cfs)
Time (hours)
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
0.55
0.6
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

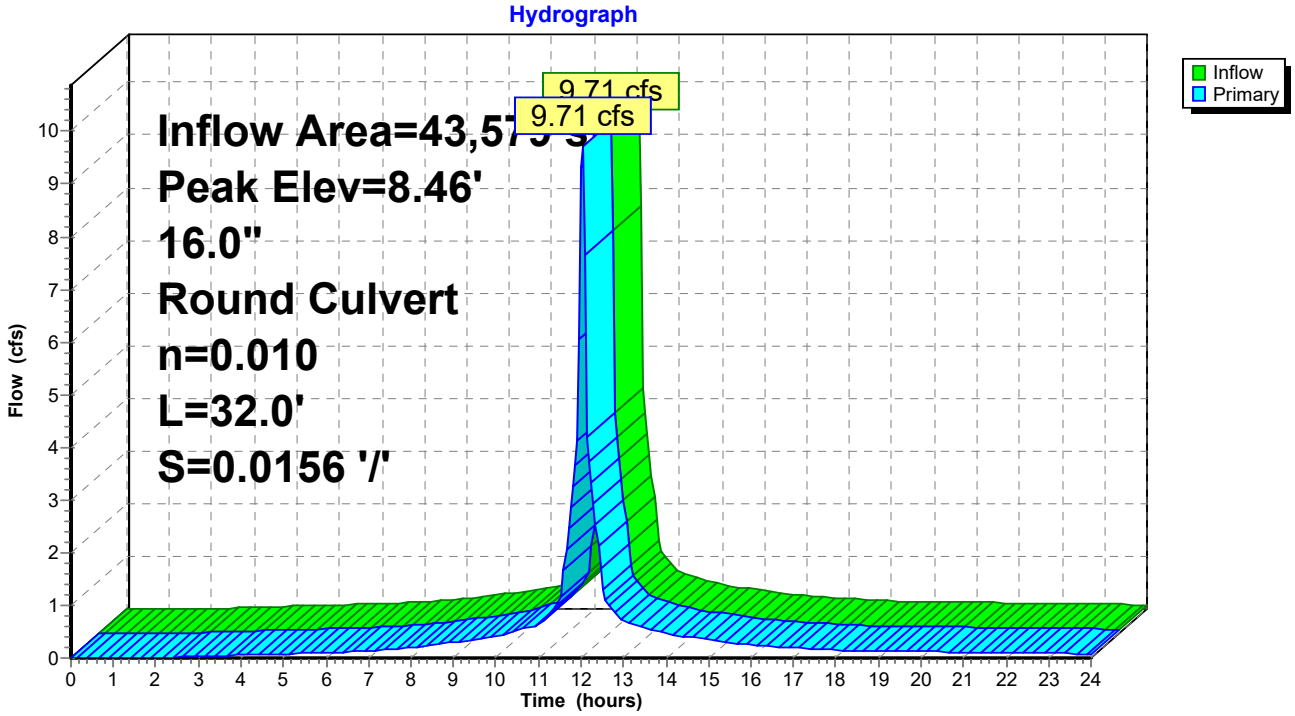
Pond CB12: CB-12



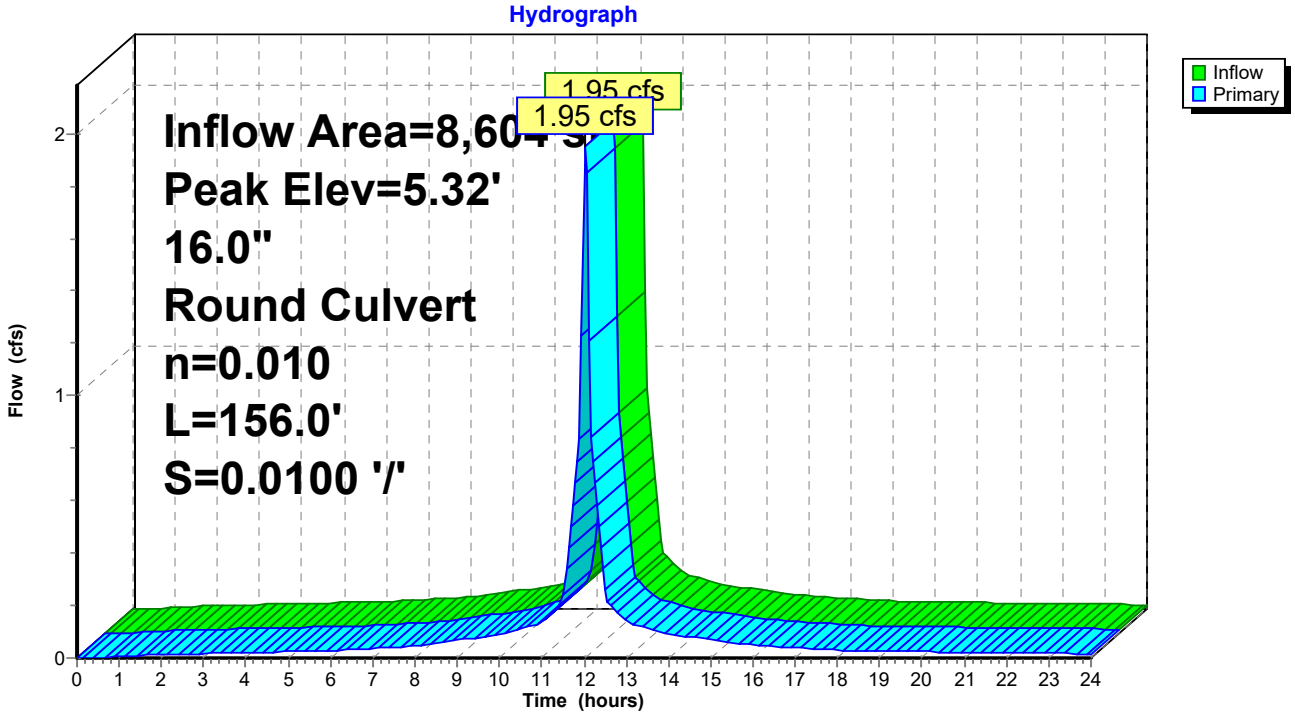
Pond CB13: CB-13



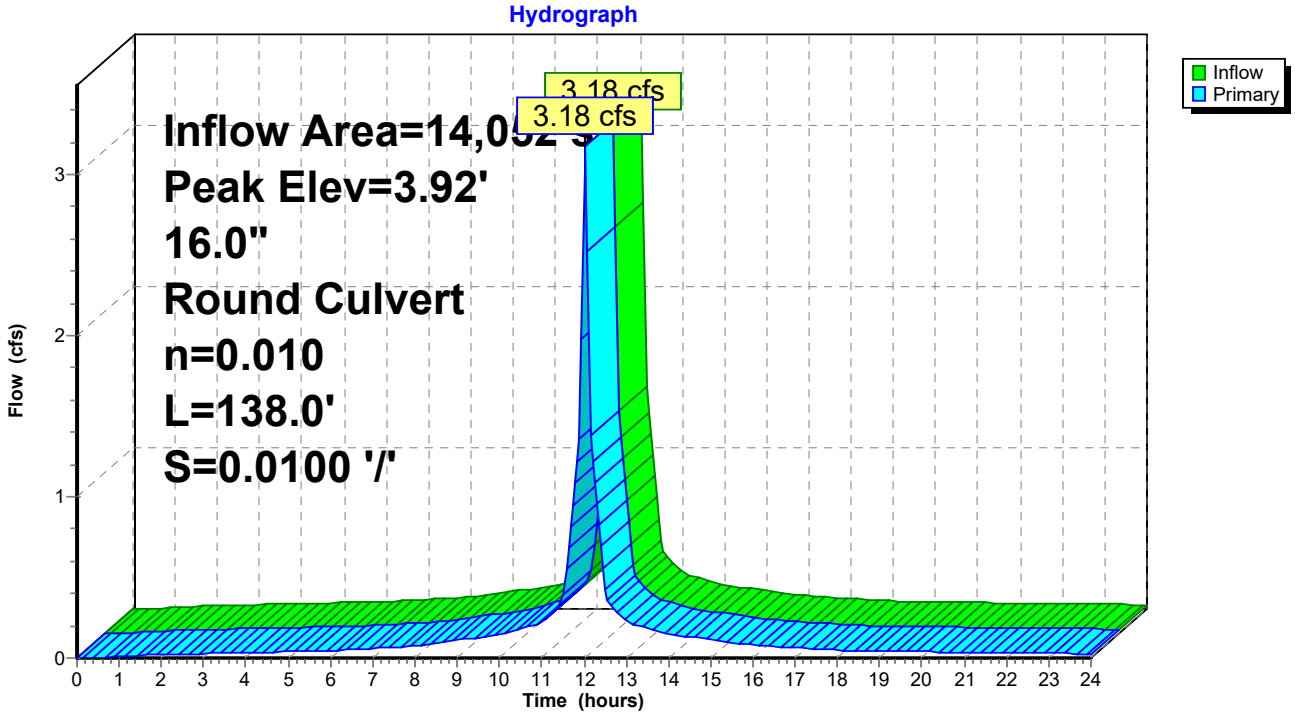
Pond CB19: CB-19



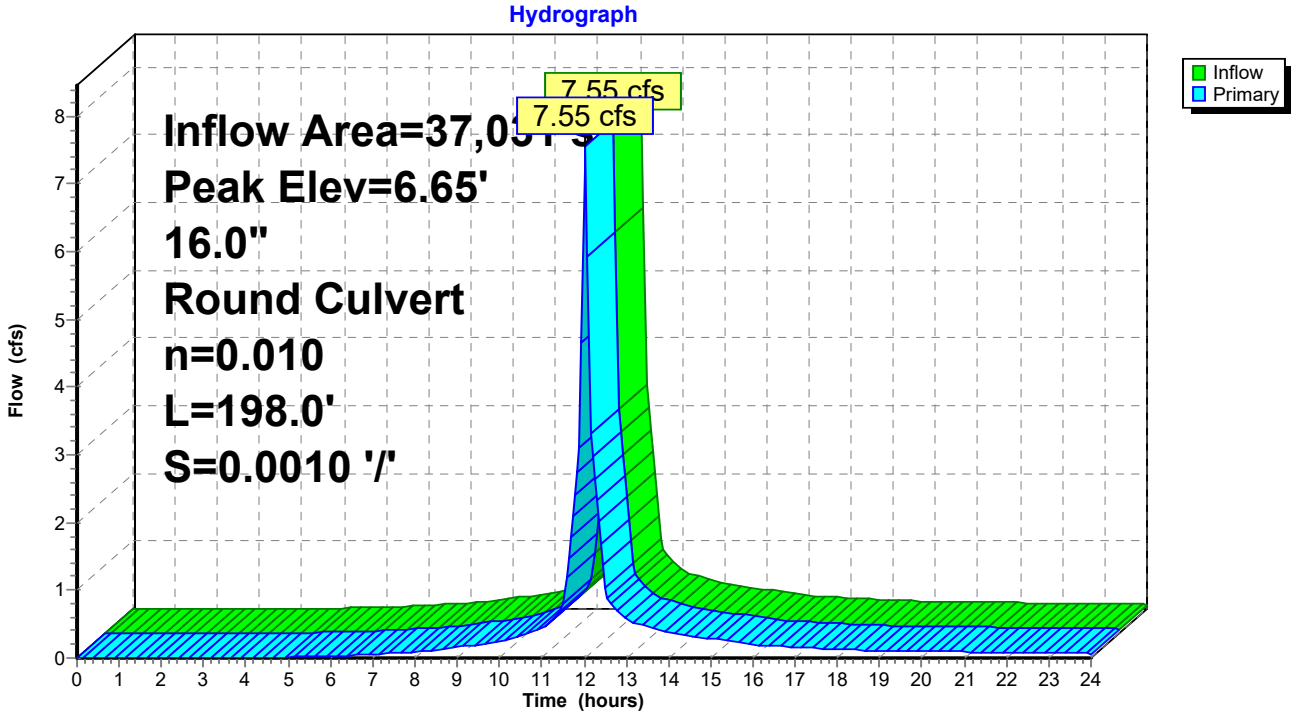
Pond CB4: CB-4


Hydrograph
Inflow
Primary
1.95 cfs
1.95 cfs
Inflow Area=8,604 s
Peak Elev=5.32'
16.0"
Round Culvert
n=0.010
L=156.0'
S=0.0100 '/'
Flow (cfs)
0
1
2
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

Pond CB5: CB-5


Hydrograph
3.18 cfs
3.18 cfs
Inflow Area=14,052 s
Peak Elev=3.92'
16.0"
Round Culvert
n=0.010
L=138.0'
S=0.0100 '/'
Inflow
Primary
Flow (cfs)
0
1
2
3
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Time (hours)

Pond CB9: CB-9


Hydrograph
Inflow
Primary
7.55 cfs
7.55 cfs
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Peak Elev=6.65'
16.0"
Round Culvert
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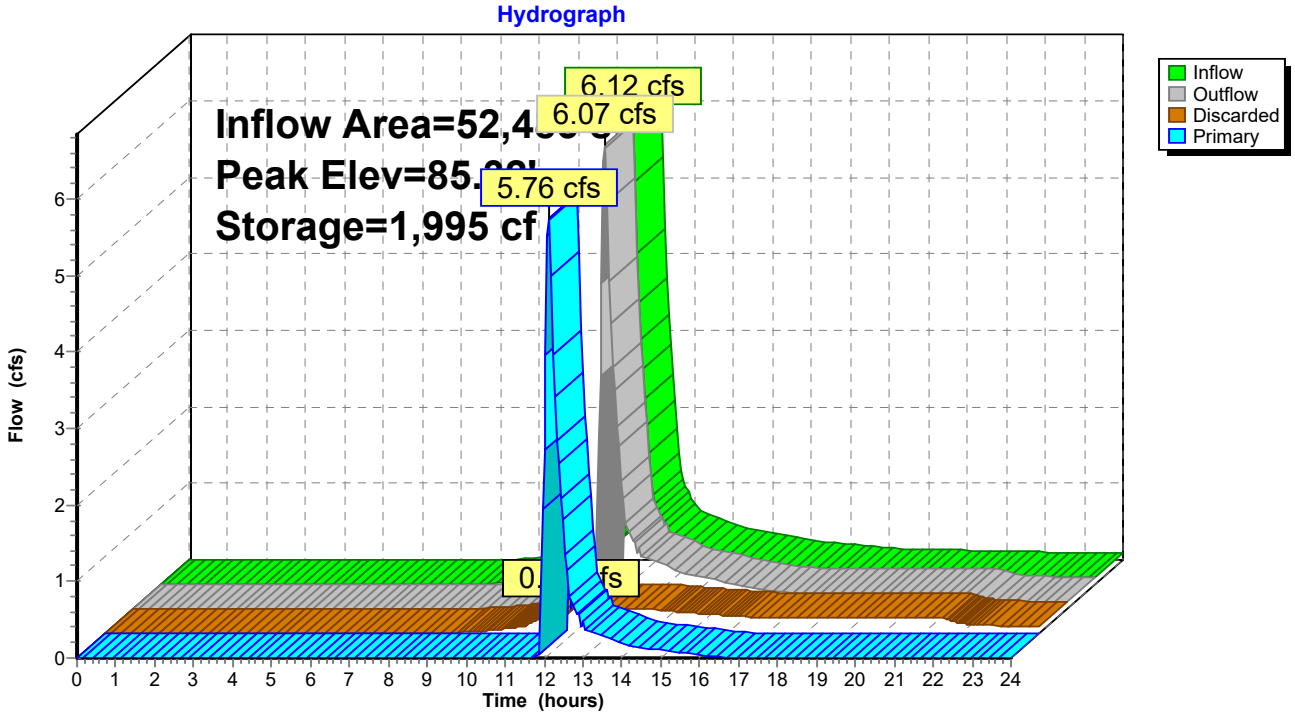
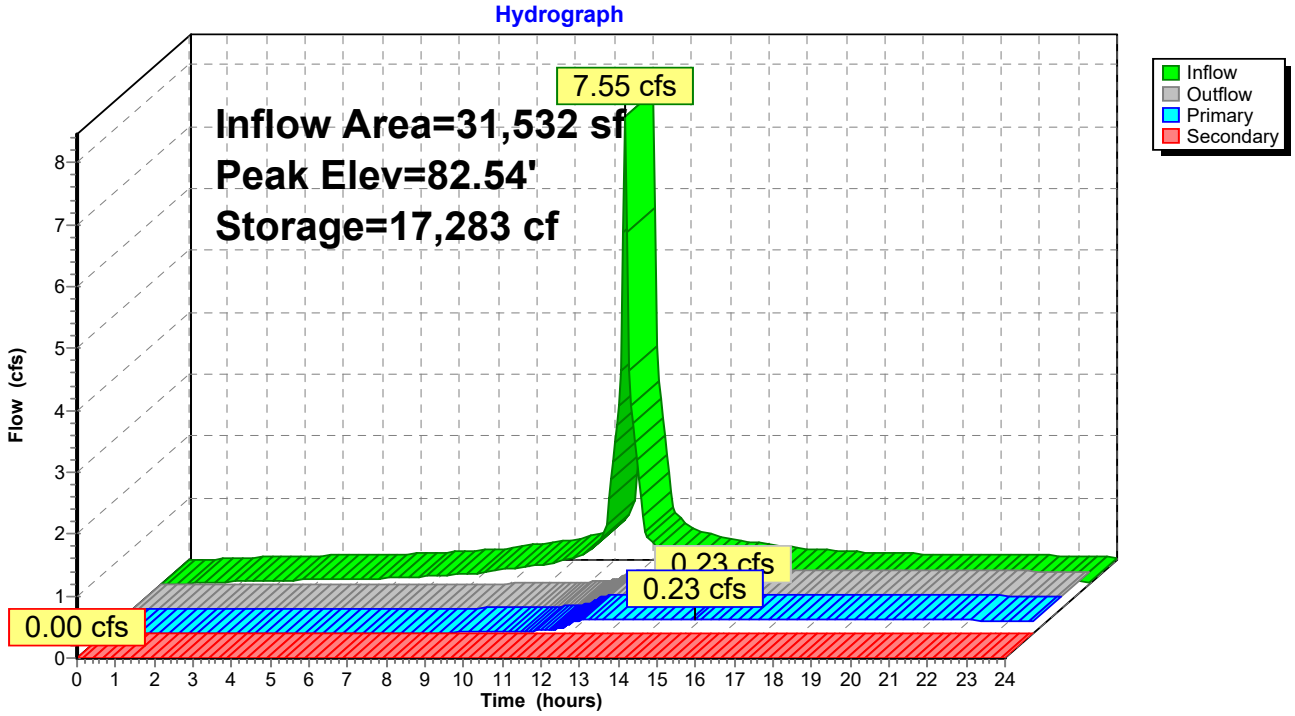
L=198.0'
S=0.0010 '/'
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

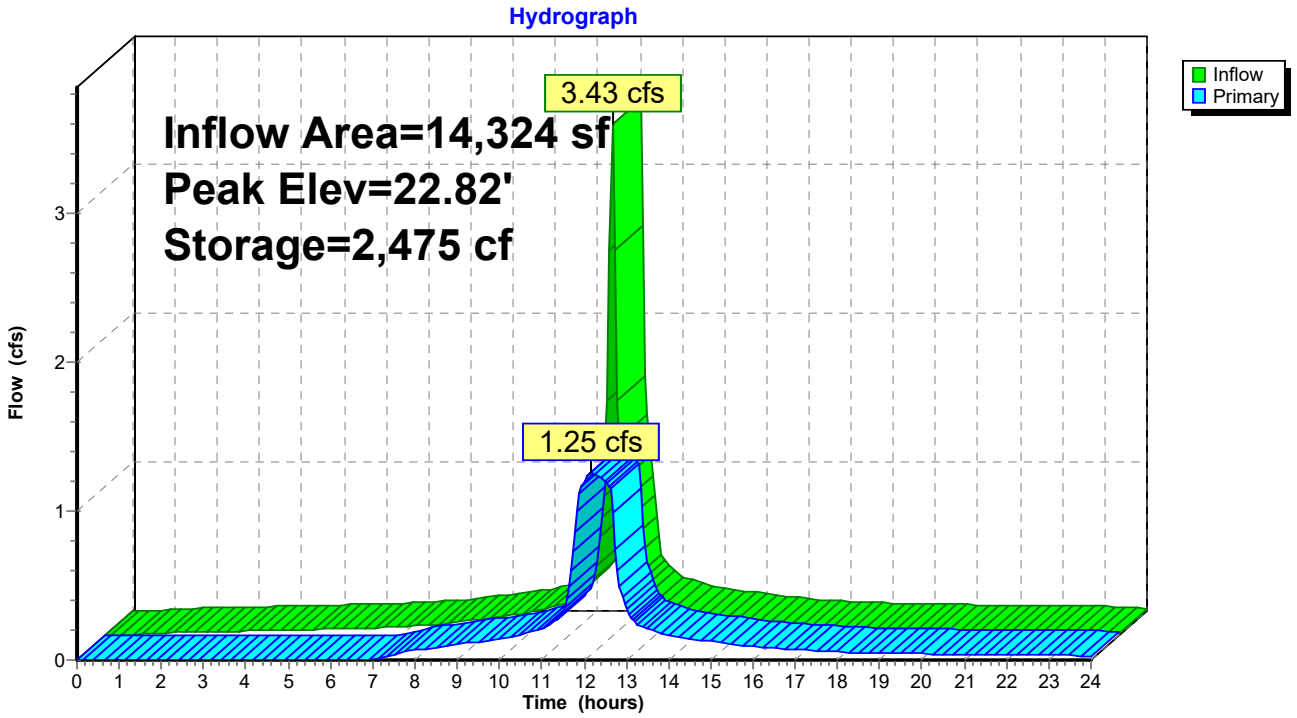
Pond I-1: INFILTRATION TRENCH



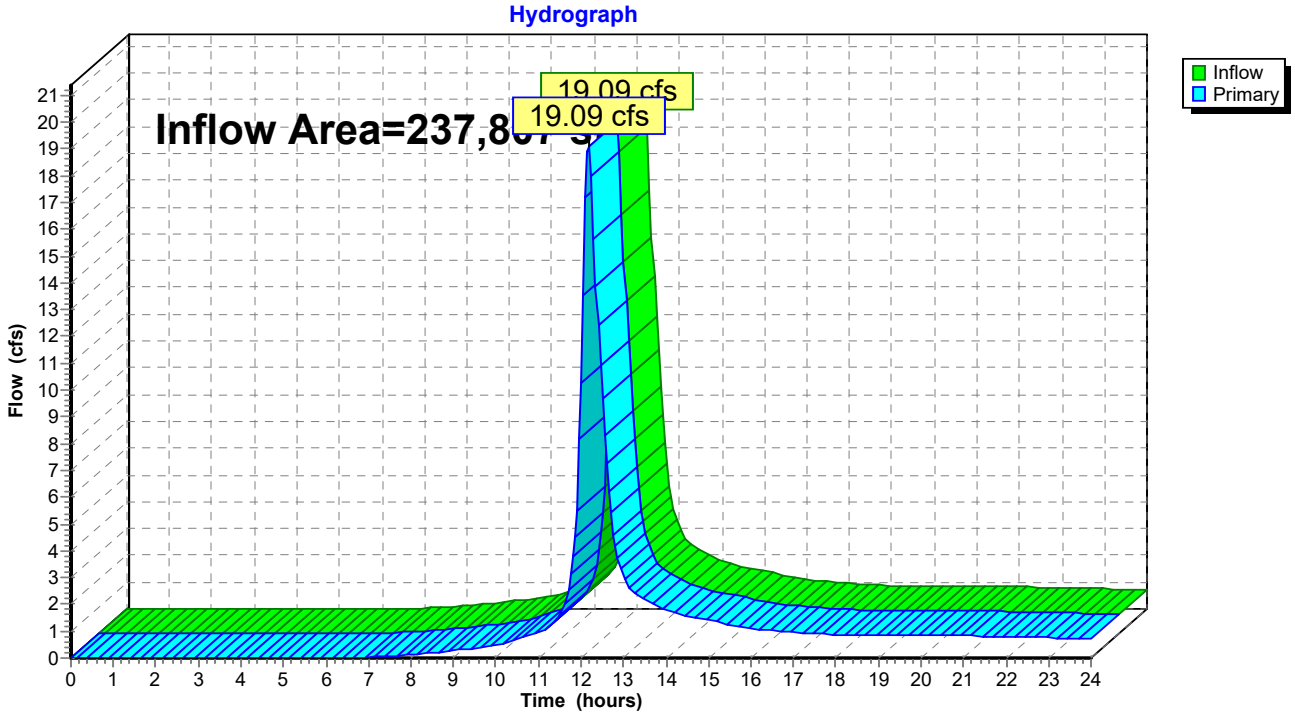
Pond P1: White Roof



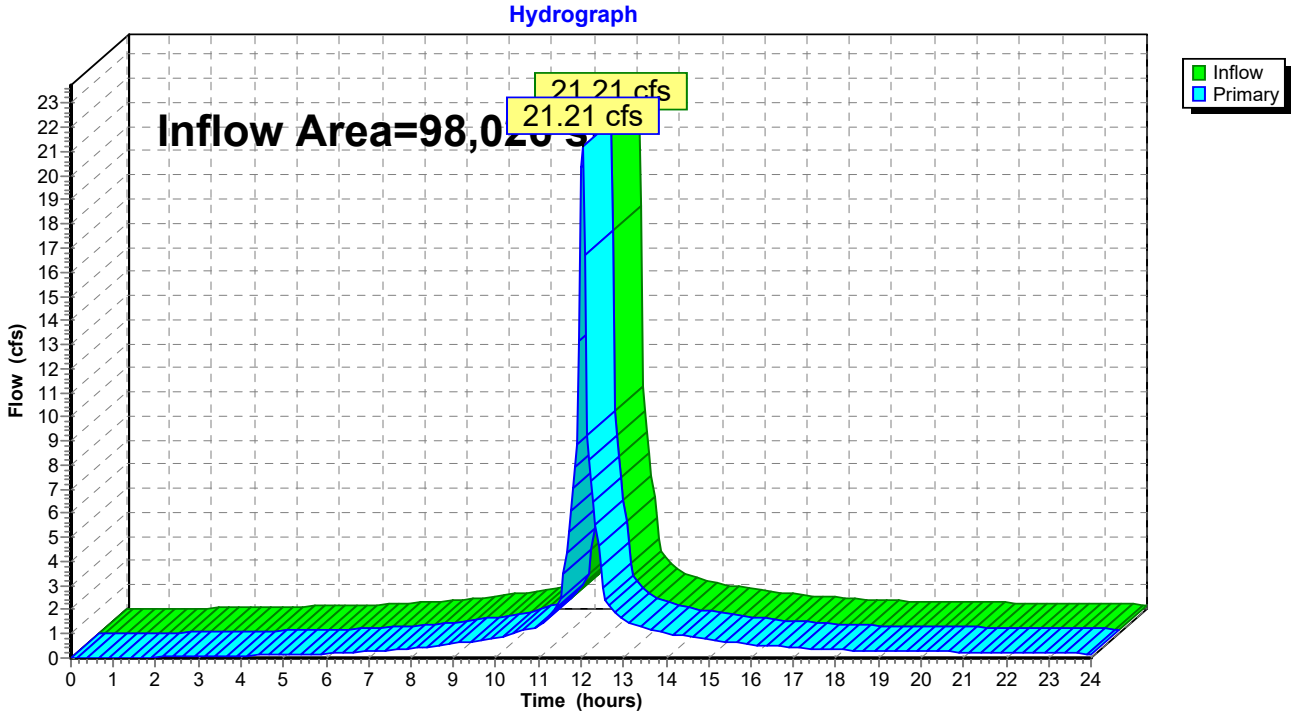
Pond P2: Green Roof



Link DP-1: DP-1


Hydrograph
Inflow Area=237,80
19.09 cfs
19.09 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

Link DP-2: Design Point 2



APPENDIX C

- *MISCELLANEOUS INFORMATION*

  - *Owner Certification Statement*
  - *Operator Certification Statement*

PLATEAU ASSOCIATES

VILLAGE OF OSSINING

WESTCHESTER COUNTY, NEW YORK

OPERATOR CERTIFICATION STATEMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to sections 210.45 of the Penal Law.

Operator

Signature

Print Name

Title

Date

Address

Telephone Number

CONTRACTOR'S CERTIFICATION

"I hereby certify that I understand and agree to comply with the terms and conditions of the SPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the owner or operator must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings. "

SIGNED: _____ DATE: _____

NAME: _____

FIRM: _____

ADDRESS: _____

_____

PHONE: _____

SITE: _____

SPPP IMPLEMENTER'S NAME _____

SPPP IMPLEMENTER'S TITLE _____

CONTRACTOR'S SCOPE _____

TRAINED CONTRACTOR'S NAME _____

TRAINED CONTRACTOR'S TITLE _____

*The SPPP Implementer must be a trained contractor responsible for SPPP implementation, an employee of the firm who has received training in accordance with SPEDES GP-0-10-001.

APPENDIX D

- CONSTRUCTION SITE LOG BOOK AND CHECKLISTS
- CONSTRUCTION SPECIFICATIONS FOR INFILTRATION PRACTICES
- INFILTRATION TRENCH CONSTRUCTION INSPECTION CHECKLIST
- INFILTRATION TRENCH OPERATION, MAINTENANCE AND MANAGEMENT INSPECTION CHECKLIST
- GRASS PAVE TECHNICAL SPECIFICATIONS
- RAINTROL SPECIFICATIONS

APPENDIX H

STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM FOR CONSTRUCTION ACTIVITIES

CONSTRUCTION SITE LOG BOOK

Table of Contents

Properly completing forms such as those contained in Appendix H meet the inspection requirement of NYS-DEC SPDES GP for Construction Activities. Completed forms shall be kept on site at all times and made available to authorities upon request.

I. PRE-CONSTRUCTION MEETING DOCUMENTS

Project Name _____

Permit No. _____ **Date of Authorization** _____

Name of Operator _____

Prime Contractor _____

a. Preamble to Site Assessment and Inspections

The Following Information To Be Read By All Person's Involved in The Construction of Stormwater Related Activities:

The Operator agrees to have a qualified professional[1] conduct an assessment of the site prior to the commencement of construction[2] and certify in this inspection report that the appropriate erosion and sediment controls described in the SWPPP have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction.

Prior to the commencement of construction, the Operator shall certify in this site logbook that the SWPPP has been prepared in accordance with the State's standards and meets all Federal, State and local erosion and sediment control requirements.

When construction starts, site inspections shall be conducted by the qualified professional at least every 7 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater (Construction Duration Inspections). The Operator shall maintain a record of all inspection reports in this site logbook. The site logbook shall be maintained on site and be made available to the permitting authorities upon request. The Operator shall post at the site, in a publicly accessible location, a summary of the site inspection activities on a monthly basis (Monthly Summary Report).

The operator shall also prepare a written summary of compliance with this general permit at a minimum frequency of every three months (Operator's Compliance Response Form), while coverage exists. The summary should address the status of achieving each component of the SWPPP.

Prior to filing the Notice of Termination or the end of permit term, the Operator shall have a qualified professional perform a final site inspection. The qualified professional shall certify that the site has undergone final stabilization[3] using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed. In addition, the Operator must identify and certify that all permanent structures described in the SWPPP have been constructed and provide the owner(s) with an operation and maintenance plan that ensures the structure(s) continuously functions as designed.

1 "Qualified Professional means a person knowledgeable in the principles and practice of erosion and sediment controls, such as a Certified Professional in Erosion and Sediment Control (CPESC), soil scientist, licensed engineer or someone working under the direction and supervision of a licensed engineer (person must have experience in the principles and practices of erosion and sediment control).

2 "Commencement of construction" means the initial removal of vegetation and disturbance of soils associated with clearing, grading or excavating activities or other construction activities.

3 "Final stabilization" means that all soil-disturbing activities at the site have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

b. Operators Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. Further, I hereby certify that the SWPPP meets all Federal, State, and local erosion and sediment control requirements. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law.

Name (please print): _____

Title _____ **Date:** _____

Address: _____

Phone: _____ **Email:** _____

Signature: _____

c. Qualified Professional's Credentials & Certification

"I hereby certify that I meet the criteria set forth in the General Permit to conduct site inspections for this project and that the appropriate erosion and sediment controls described in the SWPPP and as described in the following Pre-construction Site Assessment Checklist have been adequately installed or implemented, ensuring the overall preparedness of this site for the commencement of construction."

Name (please print): _____

Title _____ **Date:** _____

Address: _____

Phone: _____ **Email:** _____

Signature: _____

d. Pre-construction Site Assessment Checklist
(NOTE: Provide comments below as necessary)

1. Notice of Intent, SWPPP, and Contractors Certification:

Yes No NA

[ ] [ ] [ ] Has a Notice of Intent been filed with the NYS Department of Conservation?
[ ] [ ] [ ] Is the SWPPP on-site? Where?_____
[ ] [ ] [ ] Is the Plan current? What is the latest revision date?_____
[ ] [ ] [ ] Is a copy of the NOI (with brief description) onsite? Where?_____
[ ] [ ] [ ] Have all contractors involved with stormwater related activities signed a contractor's certification?

2. Resource Protection

Yes No NA

[ ] [ ] [ ] Are construction limits clearly flagged or fenced?
[ ] [ ] [ ] Important trees and associated rooting zones, on-site septic system absorption fields, existing vegetated areas suitable for filter strips, especially in perimeter areas, have been flagged for protection.
[ ] [ ] [ ] Creek crossings installed prior to land-disturbing activity, including clearing and blasting.

3. Surface Water Protection

Yes No NA

[ ] [ ] [ ] Clean stormwater runoff has been diverted from areas to be disturbed.
[ ] [ ] [ ] Bodies of water located either on site or in the vicinity of the site have been identified and protected.
[ ] [ ] [ ] Appropriate practices to protect on-site or downstream surface water are installed.
[ ] [ ] [ ] Are clearing and grading operations divided into areas <5 acres?

4. Stabilized Construction Entrance

Yes No NA

[ ] [ ] [ ] A temporary construction entrance to capture mud and debris from construction vehicles before they enter the public highway has been installed.
[ ] [ ] [ ] Other access areas (entrances, construction routes, equipment parking areas) are stabilized immediately as work takes place with gravel or other cover.
[ ] [ ] [ ] Sediment tracked onto public streets is removed or cleaned on a regular basis.

5. Perimeter Sediment Controls

Yes No NA

[ ] [ ] [ ] Silt fence material and installation comply with the standard drawing and specifications.
[ ] [ ] [ ] Silt fences are installed at appropriate spacing intervals
[ ] [ ] [ ] Sediment/detention basin was installed as first land disturbing activity.
[ ] [ ] [ ] Sediment traps and barriers are installed.

6. Pollution Prevention for Waste and Hazardous Materials

Yes No NA

[ ] [ ] [ ] The Operator or designated representative has been assigned to implement the spill prevention avoidance and response plan.
[ ] [ ] [ ] The plan is contained in the SWPPP on page _____
[ ] [ ] [ ] Appropriate materials to control spills are onsite. Where? _____

II. CONSTRUCTION DURATION INSPECTIONS

a. Directions:
Inspection Forms will be filled out during the entire construction phase of the project.
Required Elements:

(1) On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;

(2) Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;

(3) Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period;

(4) Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of sediment storage volume (for example, 10 percent, 20 percent, 50 percent);

(5) Inspect all erosion and sediment control practices and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and containment systems (sediment basins and sediment traps). Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters around perforated riser pipes to pass
water; and

(6) Immediately report to the Operator any deficiencies that are identified with the implementation of the SWPPP.

SITE PLAN/SKETCH

_____ _____

Inspector (print name) **Date of Inspection**

_____ _____

Qualified Professional (print name) **Qualified Professional Signature**

The above signed acknowledges that, to the best of his/her knowledge, all information provided on the forms is accurate and complete.

Maintaining Water Quality

Yes No NA
[ ] [ ] [ ] Is there an increase in turbidity causing a substantial visible contrast to natural conditions?
[ ] [ ] [ ] Is there residue from oil and floating substances, visible oil film, or globules or grease?
[ ] [ ] [ ] All disturbance is within the limits of the approved plans.
[ ] [ ] [ ] Have receiving lake/bay, stream, and/or wetland been impacted by silt from project?

Housekeeping

1. General Site Conditions
Yes No NA
[ ] [ ] [ ] Is construction site litter and debris appropriately managed?
[ ] [ ] [ ] Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained?
[ ] [ ] [ ] Is construction impacting the adjacent property?
[ ] [ ] [ ] Is dust adequately controlled?

2. Temporary Stream Crossing
Yes No NA
[ ] [ ] [ ] Maximum diameter pipes necessary to span creek without dredging are installed.
[ ] [ ] [ ] Installed non-woven geotextile fabric beneath approaches.
[ ] [ ] [ ] Is fill composed of aggregate (no earth or soil)?
[ ] [ ] [ ] Rock on approaches is clean enough to remove mud from vehicles & prevent sediment from entering stream during high flow.

Runoff Control Practices

1. Excavation Dewatering
Yes No NA
[ ] [ ] [ ] Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.
[ ] [ ] [ ] Clean water from upstream pool is being pumped to the downstream pool.
[ ] [ ] [ ] Sediment laden water from work area is being discharged to a silt-trapping device.
[ ] [ ] [ ] Constructed upstream berm with one-foot minimum freeboard.

2. Level Spreader
Yes No NA
[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Constructed on undisturbed soil, not on fill, receiving only clear, non-sediment laden flow.
[ ] [ ] [ ] Flow sheets out of level spreader without erosion on downstream edge.

3. Interceptor Dikes and Swales
Yes No NA
[ ] [ ] [ ] Installed per plan with minimum side slopes 2H:1V or flatter.
[ ] [ ] [ ] Stabilized by geotextile fabric, seed, or mulch with no erosion occurring.
[ ] [ ] [ ] Sediment-laden runoff directed to sediment trapping structure

4. Stone Check Dam

Yes No NA

[ ] [ ] [ ] Is channel stable? (flow is not eroding soil underneath or around the structure).
[ ] [ ] [ ] Check is in good condition (rocks in place and no permanent pools behind the structure).
[ ] [ ] [ ] Has accumulated sediment been removed?.

5. Rock Outlet Protection

Yes No NA

[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Installed concurrently with pipe installation.

Soil Stabilization

1. Topsoil and Spoil Stockpiles

Yes No NA

[ ] [ ] [ ] Stockpiles are stabilized with vegetation and/or mulch.
[ ] [ ] [ ] Sediment control is installed at the toe of the slope.

2. Revegetation

Yes No NA

[ ] [ ] [ ] Temporary seedings and mulch have been applied to idle areas.
[ ] [ ] [ ] 4 inches minimum of topsoil has been applied under permanent seedings

Sediment Control Practices

1. Stabilized Construction Entrance

Yes No NA

[ ] [ ] [ ] Stone is clean enough to effectively remove mud from vehicles.
[ ] [ ] [ ] Installed per standards and specifications?
[ ] [ ] [ ] Does all traffic use the stabilized entrance to enter and leave site?
[ ] [ ] [ ] Is adequate drainage provided to prevent ponding at entrance?

2. Silt Fence

Yes No NA

[ ] [ ] [ ] Installed on Contour, 10 feet from toe of slope (not across conveyance channels).
[ ] [ ] [ ] Joints constructed by wrapping the two ends together for continuous support.
[ ] [ ] [ ] Fabric buried 6 inches minimum.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.
Sediment accumulation is ___% of design capacity.

Sediment Control Practices (continued)

3. Storm Drain Inlet Protection (Use for Stone & Block; Filter Fabric; Curb; or, Excavated practices)

Yes No NA

[ ] [ ] [ ] Installed concrete blocks lengthwise so open ends face outward, not upward.
[ ] [ ] [ ] Placed wire screen between No. 3 crushed stone and concrete blocks.
[ ] [ ] [ ] Drainage area is 1acre or less.
[ ] [ ] [ ] Excavated area is 900 cubic feet.
[ ] [ ] [ ] Excavated side slopes should be 2:1.
[ ] [ ] [ ] 2" x 4" frame is constructed and structurally sound.
[ ] [ ] [ ] Posts 3-foot maximum spacing between posts.
[ ] [ ] [ ] Fabric is embedded 1 to 1.5 feet below ground and secured to frame/posts with staples at max 8-inch spacing.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.

Sediment accumulation ___% of design capacity.

4. Temporary Sediment Trap

Yes No NA

[ ] [ ] [ ] Outlet structure is constructed per the approved plan or drawing.
[ ] [ ] [ ] Geotextile fabric has been placed beneath rock fill.

Sediment accumulation is ___% of design capacity.

5. Temporary Sediment Basin

Yes No NA

[ ] [ ] [ ] Basin and outlet structure constructed per the approved plan.
[ ] [ ] [ ] Basin side slopes are stabilized with seed/mulch.
[ ] [ ] [ ] Drainage structure flushed and basin surface restored upon removal of sediment basin facility.

Sediment accumulation is ___% of design capacity.

Note: Not all erosion and sediment control practices are included in this listing. Add additional pages to this list as required by site specific design.
Construction inspection checklists for post-development stormwater management practices can be found in Appendix F of the New York Stormwater Management Design Manual.

CONSTRUCTION DURATION INSPECTIONS

b. Modifications to the SWPPP (To be completed as described below)

The Operator shall amend the SWPPP whenever:
1. There is a significant change in design, construction, operation, or maintenance which may have a significant effect on the potential for the discharge of pollutants to the waters of the United States and which has not otherwise been addressed in the SWPPP; or
2. The SWPPP proves to be ineffective in:
   a. Eliminating or significantly minimizing pollutants from sources identified in the SWPPP and as required by this permit; or
   b. Achieving the general objectives of controlling pollutants in stormwater discharges from permitted construction activity; and
3. Additionally, the SWPPP shall be amended to identify any new contractor or subcontractor that will implement any measure of the SWPPP.

Modification & Reason:

C.2 Construction Specifications for Infiltration Practices

Infiltration Trench General Notes and Specifications

The infiltration trench systems may not receive run-off until the entire contributing drainage area to the infiltration system has received final stabilization.

1. Heavy equipment and traffic shall be restricted from traveling over the infiltration trench to minimize compaction of the soil.

2. Excavate the infiltration trench to the design dimensions. Excavated materials shall be placed away from the trench sides to enhance trench wall stability. Large tree roots must be trimmed flush with the trench sides in order to prevent fabric puncturing or tearing of the filter fabric during subsequent installation procedures. The side walls of the trench shall be roughened where sheared and sealed by heavy equipment.

3. A Class "C" geotextile or better shall interface between the trench side walls and between the stone reservoir and gravel filter layers. A partial list of non-woven filter fabrics that meet the Class "C" criteria is contained below. Any alternative filter fabric must be approved by the local municipality prior to installation.

   Mirafi 180-N
   Amoco 4552
   WEBTEC N70
   GEOLON N70
   Carthage FX-80S

   The width of the geotextile must include sufficient material to conform to trench perimeter irregularities and for a 6-inch minimum top overlap. The filter fabric shall be tucked under the sand layer on the bottom of the infiltration trench for a distance of 6 to 12 inches. Stones or other anchoring objects should be placed on the fabric at the edge of the trench to keep the trench open during windy periods. When overlaps are required between rolls, the uphill roll should lap a minimum of 2 feet over the downhill roll in order to provide a shingled effect.

4. A 6 inch sand layer may be placed on the bottom of the infiltration trench in lieu of filter fabric, and shall be compacted using plate compactors. The sand for the infiltration trench shall be washed and meet AASHTO Std. M-43, Size No. 9 or No. 10. Any alternative sand gradation must be approved by the Engineer or the local municipality.

5. The stone aggregate should be placed in lifts and compacted using plate compactors. A maximum loose lift thickness of 12 inches is recommended. Gravel filling (rounded bank run gravel is preferred) for the infiltration trench shall be washed and meet one of the following: AASHTO Std. M-43; Size No. 2 or No. 3.

6. Following the stone aggregate placement, the filter fabric shall be folded over the stone aggregate to form a 6-inch minimum longitudinal lap. The desired fill soil or stone aggregate shall be placed over the lap at sufficient intervals to maintain the lap during subsequent backfilling.

7. Care shall be exercised to prevent natural or fill soils from intermixing with the stone aggregate. All contaminated stone aggregate shall be removed and replaced with uncontaminated stone aggregate.

8. Voids can be created between the fabric and the excavation sides and shall be avoided. Removing boulders or other obstacles from the trench walls is one source of such voids, therefore, natural soils should be placed in these voids at the most convenient time during construction to ensure fabric conformity to the excavation sides.

9. Vertically excavated walls may be difficult to maintain in areas where soil moisture is high or where soft cohesive or cohesionless soils are predominate. These conditions may require laying back of the side slopes to maintain stability.

10. PVC distribution pipes shall be Schedule 40 and meet ASTM Std. D 1784. All fittings and perforations (1/2 inch in diameter) shall meet ASTM Std. D 2729. A perforated pipe shall be provided only within the infiltration trench and shall terminate 1 foot short of the infiltration trench wall. The end of the PVC pipe shall be capped.

11. Corrugated metal distribution pipes shall conform to AASHTO Std. M-36, and shall be aluminized in accordance with AASHTO Std. M-274. Coat aluminized pipe in contact with concrete with an inert compound capable of effecting isolation of the deleterious effect of the aluminum on the concrete. Perforated distribution pipe shall be provided only within the infiltration trench and shall terminate 1 foot short of the infiltration trench wall. An aluminized metal plate shall be welded to the end of the pipe.

12. The observation well is to consist of 6-inch diameter PVC Schedule 40 pipe (ASTM Std. D 1784) with a cap set 6 inches above ground level and is to be located near the longitudinal center of the infiltration trench. Preferably the observation well will not be located in vehicular traffic areas. The pipe shall have a plastic collar with ribs to prevent rotation when removing cap. The screw top lid shall be a "Panella" type cleanout with a locking mechanism or special bolt to discourage vandalism. A perforated (1/2 inch in diameter) PVC Schedule 40 pipe shall be provided and placed vertically within the gravel portion of the infiltration trench and a cap provided at the bottom of the pipe. The bottom of the cap shall rest on the infiltration trench bottom.

13. If a distribution structure with a wet well is used, a 4-inch PVC drain pipe shall be provided at opposite ends of the infiltration trench distribution structure. Two (2) cubic feet of porous backfill meeting AASHTO Std. M-43 Size No. 57 shall be provided at each drain.

14. If a distribution structure is used, the manhole cover shall be bolted to the frame.

NOTE: PVC pipe with a wall thickness classification of SDR-35 meeting ASTM standard D3034 is an acceptable substitution for PVC Schedule 40 pipe.

Infiltration Basins Notes and Specifications

1. The sequence of various phases of basin construction shall be coordinated with the overall project construction schedule. A program should schedule rough excavation of the basin (to not less than 2' from final grade) with the rough grading phase of the project to permit use of the material as fill in earthwork areas. The partially excavated basin, however, **cannot** serve as a sedimentation basin.

Specifications for basin construction should state: (1) the earliest point in progress when storm drainage may be directed to the basin, and (2) the means by which this delay in use is to be

accomplished. Due to the wide variety of conditions encountered among projects, each should be separately evaluated in order to postpone use as long as is reasonably possible.

2. Initial basin excavation should be carried to within 2 feet of the final elevation of the basin floor. Final excavation to the finished grade should be deferred until all disturbed areas on the watershed have been stabilized or protected. The final phase excavation should remove all accumulated sediment. Relatively light tracked equipment is recommended for this operation to avoid compaction of the basin floor. After the final grading is completed, the basin should retain a highly porous surface texture.

3. Infiltration basins may be lined with a 6- to 12-inch layer of filter material such as coarse sand (AASHTO Std. M-43, Sizes 9 or 10) to help prevent the buildup of impervious deposits on the soil surface. The filter layer can be replaced or cleaned when it becomes clogged. When a 6-inch layer of coarse organic material is specified for discing (such as hulls, leaves, stems, etc.) or spading into the basin floor to increase the permeability of the soils, the basin floor should be soaked or inundated for a brief period, then allowed to dry subsequent to this operation. This induces the organic material to decay rapidly, loosening the upper soil layer.

4. Establishing dense vegetation on the basin side slopes and floor is recommended. A dense vegetative stand will not only prevent erosion and sloughing, but will also provide a natural means of maintaining relatively high infiltration rates. Erosion protection of inflow points to the basin shall also be provided.

5. Selection of suitable vegetative materials for the side slope and all other areas to be stabilized with vegetation and application of required lime, fertilizer, etc. shall be done in accordance with the NRCS Standards and Specifications or your local Standards and Specifications for Soil Erosion and Sediment Control.

6. Grasses of the fescue family are recommended for seeding primarily due to their adaptability to dry sandy soils, drought resistance, hardiness, and ability to withstand brief inundations. The use of fescues will also permit long intervals between mowings. This is important due to the relatively steep slopes which make mowing difficult. Mowing twice a year, once in June and again in September, is generally satisfactory.

Infiltration Trench Construction Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
1. Pre-Construction		
Pre-construction meeting		
Runoff diverted		
Soil permeability tested		
Groundwater / bedrock sufficient at depth		
2. Excavation		
Size and location		
Side slopes stable		
Excavation does not compact subsoils		
3. Filter Fabric Placement		
Fabric specifications		
Placed on bottom, sides, and top		

CONSTRUCTION SEQUENCE	SATISFACTORY / UNSATISFACTORY	COMMENTS
4. Aggregate Material		
Size as specified		
Clean / washed material		
Placed properly		
5. Observation Well		
Pipe size		
Removable cap / footplate		
Initial depth =_____feet		
6. Final Inspection		
Pretreatment facility in place		
Contributing watershed stabilized prior to flow diversion		
Outlet		

Comments:

III. Monthly Summary of Site Inspection Activities

Name of Permitted Facility:	Today's Date:	Reporting Month:
Location:	Permit Identification #:	
Name and Telephone Number of Site Inspector:		

Date of Inspection	Regular / Rainfall based Inspection	Name of Inspector	Items of Concern

Owner/Operator Certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law."

Signature of Permittee or Duly Authorized Representative

Name of Permittee or Duly Authorized Representative Date

Duly authorized representatives must have written authorization, submitted to DEC, to sign any permit documents.

Actions to be Taken:

Infiltration Trench Operation, Maintenance, and Management Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
1. Debris Cleanout (Monthly)		
Trench surface clear of debris		
Inflow pipes clear of debris		
Overflow spillway clear of debris		
Inlet area clear of debris		
2. Sediment Traps or Forebays (Annual)		
Obviously trapping sediment		
Greater than 50% of storage volume remaining		
3. Dewatering (Monthly)		
Trench dewaters between storms		
4. Sediment Cleanout of Trench (Annual)		
No evidence of sedimentation in trench		
Sediment accumulation doesn't yet require cleanout		
5. Inlets (Annual)		

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
Good condition		
No evidence of erosion		
6. Outlet/Overflow Spillway (Annual)		
Good condition, no need for repair		
No evidence of erosion		
7. Aggregate Repairs (Annual)		
Surface of aggregate clean		
Top layer of stone does not need replacement		
Trench does not need rehabilitation		

Comments:

Actions to be Taken:

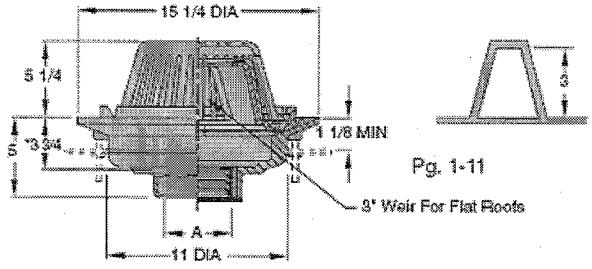
RAINTROL® SPECIFICATIONS

The RAINTROL® drain is offered in two basic designs. The three inch high weir is principally for flat roofs. Though this may be used on sloped roofs, the limited factor is the build up which can not exceed 3". The second design is the six inch weir which can be used on all roofs up to and including a sloped roof with a 6" rise. The flow rates for all RAINTROL® drains are shown on Table 2.

NOTE: The roof drains are supplied in increments of weir openings. They are shipped from the factory with the correct weir openings in accordance with the specifications.

However, should some requirements or conditions change, the drain can be adjusted. Vandal proof fasteners prevent unauthorized tampering with the setting.

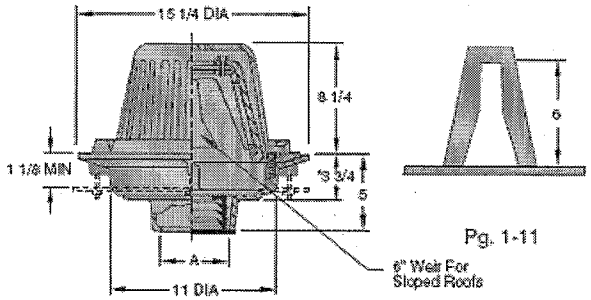
Included in this section are tables of data for a number of localities. For locations not listed, use values for similar or nearby locations. For specific conditions which require more information, contact Jay R. Smith Mfg. Co., Montgomery, Alabama.



FLAT ROOF TYPE

Fig. 1083 .....BOTTOM OUTLET
Fig. 1088 .....SIDE OUTLET

*This Dimension to Internal Stop of Speedi-Set Gasket



SLOPED ROOF TYPE

Fig. 1085 .....BOTTOM OUTLET
Fig. 1089 .....SIDE OUTLET

DRAIN SYSTEMS

The engineer should lay out the roof drain system consistent with the structural design strength of the roof. Normally for a flat roof with a 30 lb. sq. ft. design load, the water depth or build-up would be limited to 3". This will keep the load down to approximately 15 lbs. per square foot. For sloped roofs, the allowed water depth can be greater, but only to the point where the stresses will be within the design limitations. This will be up to the discretion of the engineer.

The roof drainage design can be based

DESIGN CONSIDERATIONS

When designing the roof drain system, the engineer must remember that the roof is being utilized as a temporary reservoir to retain some water. Flashing and water proofing should be high enough to prevent any leakage. The engineer must also provide adequate strength for structural safety. In addition, the following considerations should be observed:

These are not absolute requirements, but are suggestions to be considered. The final design is at the discretion of the design engineer and should be consistent with the roof requirements.

a. On all roofs, use minimum of two drains, if possible.
b. On larger roofs, use a greater number of drains as dictated by design layout.
c. Limit roof area to 25,000 sq. ft. per weir opening.

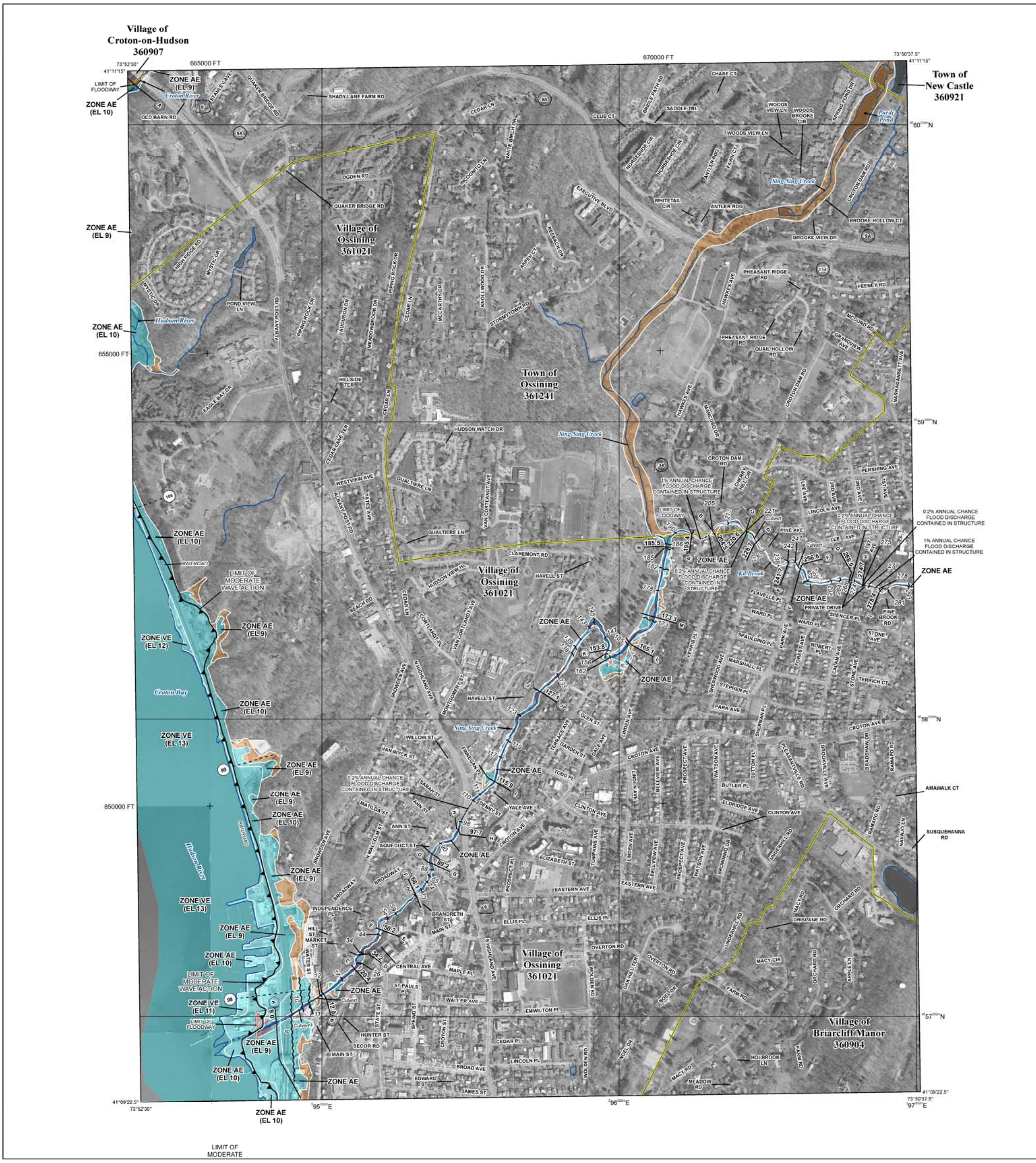
on a number of factors. The prime consideration could be economy, using minimum leaders and storm sewers. The allowable roof load or build-up could limit the design. Or possibly, drain down time could be the limiting design criteria. In any case, knowing the maximum flow rates, which are controlled, the engineer can properly size leaders and storm sewers economically consistent with his selected design criteria.

d. Recommended maximum distance from roof edge to drain is 50 ft. (flat roofs).
e. Recommended maximum distance from end of valley to drain is 50 ft. (sloped roofs).
f. Recommended maximum distance between drains is 200 ft. g. Provide adequate flashing at parapets, openings, walls, joints, etc.
h. Limit parapet walls or provide overflow scuppers. These should be located at the anticipated maximum water depth (build-up). If located in a higher position which could result in a greater flow rate, piping must be sized accordingly.
i. Consider wind effect in locating the drains, and the number of drains.
j. Possible roof deflection due to load. This could create low spots and adversely affect drainage and/or structural safety.

Previous Raintrol Technical Data Index Next

APPENDIX E

- FEMA FLOOD 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 Area of Minimal Flood Hazard *Zone X*
	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer
	Levee, Dike, or Floodwall
	E 18.2 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
	8 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 map, available products associated with this FIRM including historic versions of this FIRM, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA 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. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

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 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 this FIRM was provided in digital format by New York State Cyber and Critical Infrastructure. This information was derived from digital orthophotography at a 0.5 foot ground resolution from imagery flown in April 2013.

LIMIT OF MODERATE WAVE ACTION: Zone AE has been divided by a Limit of Moderate Wave Action (LiMWA). The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. The effects of wave hazards between the VE Zone and the LiMWA (or between the shoreline and the LiMWA for areas where VE Zones are not identified) will be similar to, but less severe than those in the VE Zone.

Limit of Moderate Wave Action (LiMWA)

SCALE

N

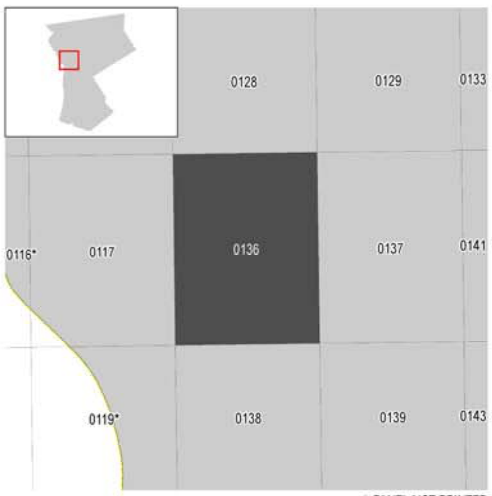
Map Projection:
Universal Transverse Mercator Zone 18N; North American Datum 1983; GRS_1980 Spheroid; North American Vertical Datum of 1988

1 inch = 500 feet 1:6,000

0 500 1,000 2,000 Feet

0 130 260 520 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA
National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

WESTCHESTER COUNTY, NEW YORK
All Jurisdictions

PANEL 136 OF 426

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
BRIARCLIFF MANOR, VILLAGE OF	360904	0136	G
CROTON ON HUDSON, VILLAGE OF	360907	0136	G
NEW CASTLE, TOWN OF	360921	0136	G
OSSINING, TOWN OF	361241	0136	G
OSSINING, VILLAGE OF	361021	0136	G

PRELIMINARY
DECEMBER 8, 2014

VERSION NUMBER
2.2.2.1

MAP NUMBER
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MAP REVISED