STORMWATER POLLUTION PREVENTION PLAN

Prepared for

THE VILLAGES IN THE HUDSON VALLEY

Located at

NYS Route 9W
Town of Lloyd, Ulster County, NY

Submitted

August 4, 2021

Prepared for

The Village in the Hudson Valley

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TABLE OF CONTENTS

APPENDICES

Appendix A: Construction Site Log Book
Owner/Developer and Contractor Certification Forms
Pre/Duration Construction Maintenance Inspection Checklist (NYSDEC Sample)
Post Construction Operation and Maintenance

Appendix B: Notice of Intent (NOI)
Notice of Termination (NOT)
NYSDEC SPDES General Permit GP-0-20-001
MS4 Acceptance Form

Appendix C: Pre-Development and Post-Development Run-off Calculations

Appendix D: Supporting Design Information and Calculations
NYSOPRHP Correspondence

Appendix E: Soils Map
Map Pocket: Pre- & Post-Development Drainage Area Maps

1.0 INTRODUCTION

This Water Quality and Quantity Plan and Stormwater Pollution Prevention Plan (SWPPP) have been prepared pursuant to the Environmental Protection Agencies' (EPA) and the New York State Department of Environmental Conservations (NYSDEC) Phase II Storm Water Regulations. All parties, as defined below, are responsible for executing the SWPPP and for complying with the requirements set forth in the EPA's National Pollution Discharge Elimination System (NPDES) General Permit, the NYSDEC's State Pollution Discharge Elimination System (SPDES) General Permit GP-0-20-001, and any local governing agencies having jurisdiction with regard to erosion and sediment control.

The purpose of the SWPPP, described herein, is to provide for the proper control and treatment of water quality and quantity impacts due to the proposed project. These controls and treatments will be achieved through the use of appropriate features such as conveyance piping, underground infiltration chamber and porous pavement. The goal is to manage the post-development storm water discharge to match or improve on the pre-development conditions, provide necessary water quality treatment and quality control for the new development and prevent discharge of pollutants into receiving waters, in keeping with the afore-noted regulations and best management practices as described within the New York State Erosion and Sediment Control Manual and the New York State Stormwater Design Manual.

This SWPPP outlines methods that Owner/Developers and Contractors can use to adjust construction practices in a way that will retain surface water quality and prevent sediment laden runoff from entering rivers, streams, estuaries, wetlands and other sensitive environments. This SWPPP describes methods for permanent stormwater management features in the design and runoff management during the construction phase.

1.1 Responsibilities of the Participants

It is the responsibility of the Owner/Developer, General Contractor and subcontractors to comply with the measures set forth in this SWPPP and implement pollutant control measures which retain surface water quality and prevent sediment laden runoff from entering rivers, streams, estuaries, wetlands and other sensitive environments. The following outlines the responsibilities of all participants.

Owner/Developer's Qualified Representative

1. Prepare this Water Quality and Water Quantity Report and SWPPP using good Engineering practices, best management practices and in compliance with NYSDEC Phase II Storm Water Regulations. The Owner/Developer, General Contractor and all Sub Contractors involved in earth disturbance during construction must certify this Plan by signing the certifying statement contained in **Appendix A**.
2. Prepare the Notice of Intent (NOI) for the Owner/Developer for submission to the NYSDEC at least 5 days prior to commencement of construction.
3. The SWPPP that has been prepared for the job site shall include certification forms and a completed and signed NOI.
4. Provide copies of the SWPPP and the "Acknowledgement of Notice of Intent" to the local government agencies having jurisdiction or regulatory control over the project.
5. Review the site prior to the beginning of construction and certify in an inspection report that the appropriate pre-construction erosion and sediment control measures outlined herein, and

that are required by the NYSDEC SPDES General Permit, have been installed and will operate as designed.

6. Conduct on-site inspections every 7 days for general compliance with the SWPPP and the NYSDEC SPDES General Permit. Inspection reports will be provided to the Owner/Developer within 24-hours of the field inspection. Any problem areas or areas in need of additional stabilization shall be made clear to the Owner/Developer. The Owner/Developer and the authorized person who is responsible for the overall operation of the site, such as a project manager or site superintendent, must certify these reports by signing the certifying statements contained at the end of the reports and must be maintained in the on-site log book as described below.
7. Review onsite Contractors SWPPP records to ensure compliance and update them as required or necessary.
8. Update the SWPPP each time there is a significant modification to the design or construction which may have a significant effect on the potential for discharge of pollutants into receiving waters.
9. When construction is complete, provide the Owner/Developer with certification that an inspection has been completed verifying that the site has undergone final stabilization.
10. When the site has undergone final stabilization, prepare the Notice of Termination (NOT) for the Owner/Developer for submission to the NYSDEC.

Owner/Developer/Operator/Permittee

The following is a summary of the Owner/Developer's responsibilities:

1. Sign the NOI contained in **Appendix B** and certify the SWPPP by signing the Owner/Developer's Certification statement contained in **Appendix A** of this report. The NOI should be submitted to:

   NYSDEC "Notice of Intent"
   Bureau of Water Permits
   625 Broadway
   Albany, New York 12233-3505

2. When the Owner/Developer receives a letter of "Acknowledgement of Notice of Intent" from the NYSDEC, post a copy of this letter at the site for public viewing on a kiosk, in a construction field trailer, in model home, etc. A copy should also be forwarded to the Owner/Developer's Qualified Representative for the project file.
3. Post at the site with the "Acknowledgement of Notice of Intent" a SWPPP inspection activity log for public viewing on a monthly basis.
4. Ensure that a log book, containing all the required documentation, is kept on site and made available for inspection upon request. The book should contain an extra copy of the "Acknowledgement of Notice of Intent", a copy of this Water Quality and Water Quantity and SWPPP report, weekly SWPPP inspection reports, SWPPP inspection quarterly reports and a copy of the SPDES General Permit.
5. Ensure the SWPPP report, inspection reports and inspection quarterly summaries are certified by an authorized person who has responsibility for the overall operation of the site such as a project manager or site superintendent. Certification of these documents is executed by signing the certifying statements contained in **Appendix A** and at the end of the inspection reports.

6. Require the General Contractor and all Sub Contractors involved with construction activity that disturbs site soils, to fully implement the SWPPP and the requirements set forth in the SPDES General Permit. The SWPPP should be certified by the General Contractor and all Sub Contractors involved with earth disturbance during construction by signing the certifying statement in **Appendix A**.

7. Upon project completion and when the site has reached final stabilization, the Owner/Developer should sign the Notice of Termination (NOT) prepared by the Owner/Developer's Qualified Representative and submit to:

   NYSDEC "Notice of Termination"
   Bureau of Water Permits
   625 Broadway
   Albany, New York 12233-3505

8. Retain all site records and documentation including Engineering reports, SWPPP reports, SWPPP inspection reports and all records of data used to complete the NOI for a minimum of 3 years from the date the site reached final stabilization.

9. Provide an Operation & Maintenance (O&M) manual to the new Owner/Developer who is expected to conduct the necessary O&M over the life of the structures as described in Section 10.0 of this report.

Contractors and Sub-Contractors

The following is a summary of the Contractor's responsibilities:

1.0 Implement fully the SWPPP while following the Phasing Plan and the requirements set forth in the SPDES General Permit. Certify the SWPPP by signing the Contractor's Certification statement contained in **Appendix A** of this report.

2.0 Provide the names and addresses of all subcontractors' involved in construction activities that disturb site soils for inclusion in the SWPPP.

3.0 Ensure all Sub Contractors involved in construction activities that disturb site soils implement fully the SWPPP and the requirements set forth in the SPDES General Permit. All Sub Contractors must certify the SWPPP by signing the Contractor's Certification statement contained in **Appendix A** of this report.

4.0 Conduct inspections on a regular basis of the erosion and sedimentation controls installed at the site. Maintain and repair as necessary all erosion and sedimentation controls.

1.2 Participant Contact Information

Owner/Developer/Operator	**Owner/Developer's Qualified Representative**	**Contractor's & Sub- Contractors**
The Village in the Hudson Valley 3180 Washington Road West Palm Beach, FL 33405	**LRC Engineering & Surveying, PC** 85 Civic Center Plaza, Suite 103 Poughkeepsie, NY 12601 (845) 243-2880	**TBD**

2.0 SITE DESCRIPTION

This section briefly describes existing and proposed hydrologic and hydraulic conditions at and around the project site as they relate to Surface Water Management planning considerations. Subsequent sections contain a description of the manner in which site runoff will be managed to minimize effects on areas adjacent to the site.

2.1 Location

The subject property consists of five existing parcels with a total of 53.0 acres located at NYS Route 9W in the Town of Lloyd, NY. The project parcels are identified as Tax Parcels 95.2-2-3.21, 95.2-2-9, 95.2-2-10, 95.2-2-34.110, 95.12-1-1, 95.12-1-5, and 95.12-1-15.1 according to the Ulster County Parcel Viewer. The seven lots will be reconfigured into two proposed lots. The site is located on the west side of NYS Route 9W, the north side of Mayer Drive, the end of Apple Lane, the west side of the on ramp to NYS Route 44 Mid-Hudson Bridge and the north to NYS Route 55 (Vineyard Avenue). The project has UTM coordinates of 585842 Easting and 4617292 Northing.

2.2 Topography

Elevations vary dramatically throughout the overall site. The proposed work area is situated on a relatively steep portion of the site draining west to east. The proposed building will be set into the hillside. The front part of the building (Building "A") will have a finished floor elevation of 350 and the rear portion of the building (Building "B") will have a finished floor elevation of 377. The site has several drainage sub sheds that contribute to the drainage system in NYS Route 9W and unnamed tributary that will eventually make its way to the Hudson River.

2.3 Land Cover and Site Development

The existing land cover consists of a combination of partially wooded, meadow areas and orchard with most of the proposed development occurring in the open meadow and orchard areas. The proposed development will be part of a two-phase development. The first phase will add 3.3 acres of impervious surface to the existing watershed for a total of 7 acres of impervious surface. The second phase of the development is still in the design phase but will be designed to meet the NYDEC standards.

Offsite drainage areas have been compiled from available mapping, site inspections, and county topographic data. Impervious calculations in this report and used for stormwater calculations are based on total watershed area and may differ from other calculations which are site specific. Detailed land use values for each drainage area can be found in the Hydro CAD reports included in **Appendix C**.

2.4 Soils

Soils mantling the site have been classified by the United States Department of Agriculture (USDA) Soil Survey of Ulster County, New York. The following soils groups are present, based on the afore-noted mapping:

1. Atherton (At): Silt Loam
2. Bath (BgC, BgD): Gravelly Silt Loam
3. Bath (BHE): Very Stony Soils)
4. Bath-Nassau Complex (BnC)
5. Hoosic (HgC): Gravelly Loam
6. Mardin (MdB): Gravelly Silt Loam
7. Red Hook (Re): Gravelly Silt Loam
8. Volusia (VoB): Gravelly Silt Loam

According to NRCS soil hydraulic classifications are all “Class C”. On-site deep testing and infiltration testing around the site stormwater improvements revealed, primarily, a consistent well-draining “Class C” soil type. The results of the onsite soil tests can be found in **Appendix D**.

2.5 Rainfall Data

Rainfall data utilized in the modeling and the analysis was obtained from NRCS & NRCC Extreme Precipitation in New York and New England, an interactive web tool for extreme precipitation analysis. The data used is specific to Lloyd NY and various 24-hour storm events are presented below. A record of the extreme precipitation data is included in **Appendix D**.

24-Hour Storm Event	24-hour rainfall
1 year	2.62
2 year	3.17
10 year	4.68
25 year	5.85
100 year	8.21

2.6 Streams and Water Bodies

There are no streams or water bodies located onsite. The nearest water body is the Hudson River. According to NYSDEC Environmental Resource Mapper and USFWS Wetland Mapper there are no ACOE or NYS DEC wetlands located on site. According to FEMA mapping there are no floodplains located onsite.

2.7 Wetlands and Floodplains

There is no federal ACOE wetland located onsite.

2.8 Historical and Cultural Resources

The project area has been reviewed in accordance with Section 106 of the National Historic Preservation Act of 1966. The project will have no effect upon cultural resources in or eligible for inclusion in the National Registers of Historic Places. A letter from the New York State Office of Parks, Recreations and Historic Preservation is included in **Appendix D**.

3.0 PROJECT DESCRIPTION

The proposed project will develop an existing orchard area. The development will be phased into two phases, one being an assisted living facility (ALF) which is phase 1 and the other being a planned residential retirement development (PRRD). The ALF will have a total disturbance of 7.3 acres, comprising of construction of a 2-story building with a total area of 57,100 square feet, associated roadway (Health Care Center Lane), sidewalks, retaining walls, parking areas, utility infrastructure and stormwater conveyance and management practices. The ALF will add 3.3 acres of impervious area to the existing watershed.

4.0 METHODOLOGY

The stormwater design approach for this project will accommodate all NYS DEC requirements and will ensure that water quality and water quantity volumes are managed accordingly. The methodology for designing the stormwater management, as well as, the erosion and sediment control structures for this project are as follows:

1. Evaluate the hydrologic condition of the tributary area using the USDA-SCS Technical Release No. 20 (June 1986) Methods.

2. Determine peak flows from each watershed, for various storm events, using the Hydro CAD computer program.
3. Determine the water quality volume, runoff reduction volume, channel protection volume, overbank flood protection volume and extreme storm flood protection volume for each drainage area that requires mitigation. Design the mitigation program to the DEC water quality and quantity methodology for each affected area.
4. Perform hydrologic routings for the selected stormwater systems using the Hydro CAD computer program. Examine and compare the output for the DEC design criteria, and also for peak elevations and peak outflows for both pre and post-development conditions as may be prescribed by the local authority.
5. Design the erosion and sedimentation control structures, and prepare engineering calculations for the design of channels and conveyance piping in accordance with the "New York Standards and Specifications for Erosion and Sediment Control", July 2016, New York State Department of Environmental Conservation".

4.1 Green Infrastructure Planning Guidelines

The proposed project has been designed to implement as many green infrastructure planning guidelines as possible. All of the guidelines are not always applicable or cannot be achieved. The planning methods are discussed below.

Preservation of Buffers

There are no existing stream, river, or wetland vegetated buffers on the project site. A proposed 3-4 foot high berm will be constructed to shield the view from existing residential properties to the northwest of the development.

Reduction of Clearing and Grading

The proposed project is located away from the steep slopes which exist in the eastern and western portion of the property.

Locating Development in Less Sensitive Areas

As described above, the project is located in an area of the site that has been previously disturbed and the proposed development is located away from the steep slopes.

Soil Restoration

There will be no pavement reduction or building removal with this project. Any soil disturbed during the course of construction will be restored in accordance with the NYSDEC Stormwater Design Manual, Section 5.1.6.

Roadway Reduction

All proposed roads are proposed at the minimum allowed by Town Code.

Sidewalk Reduction

The proposed sidewalks are proposed to the minimum by Town Code.

Driveway Reduction

The drive aisles are 28 foot wide. This exceeds the minimum town required width of 26 feet. We did evaluate a reduced drive aisle but have found it is not beneficial for this development. The 28 foot is the minimum width needed to achieve both fire truck access and maintain circulation while vehicles may be parked at storage units.

Cul-de-sac Reduction

There are no proposed cul-de-sacs or dead ends. The layout has a continuous drive aisle to achieve sufficient vehicle access while eliminating the need for large unnecessary dead ends.

Building Footprint Reduction

No buildings will be reduced or removed as part of this project.

Parking Reduction

The project has been designed to provide the minimum amount of parking required by the Town.

5.0 HYDROLOGIC AND HYDRAULIC ANALYSIS

Stormwater Management Design has the purpose of improving the quality of surface water runoff from all impervious areas and providing retention for increased runoff quantities that may occur. For the proposed project, the appropriate methodology to manage stormwater is to capture and treat runoff for quality and quantity control for the site.

The hydrologic analysis was performed uses the Hydro CAD stormwater modeling software, and all data regarding areas has been calculated in AutoCAD. Soils information has been obtained through mapping per the NRCS Dutchess County Soils Survey, onsite deep tests and infiltration tests. The results of the Hydraulic Analysis can be found in **Appendix C**.

5.1 Proposed Runoff Treatment – Water Quality

By allowing stormwater runoff to infiltrate back into the ground we are able to minimize the impacts on the surround surface waters and treat the runoff through exfiltration into the sub surface soils. The evaluation of the site to determine the water quality volumetric requirements follow strictly the procedures presented in chapters 4 & 5 of the New York State Stormwater Design Manual, and is provided in full in **Appendix D**.

The table below summarizes the volumes required and provided for runoff reduction and water quality; The first phase of proposed development is primarily contained within all drainage areas except DA-1 as shown on the pre and post drainage area maps in **Appendix E**.

Water Quality Volume Calculations			STANDARD
Trib Area	12.73	ac	
Imperv Cover:	3.94	ac	
Imperv. %	30.93		

Stormwater Management Practice Selection:

Underground Infiltration Chambers and Porous Pavement

Uniform Sizing Criteria:

Water Quality (WQv)	P=	1.05	
	I=	*30.9*	
	Rv=	0.3284	
	A=	12.73	
	WQv=	**0.37**	**AC-FT**
		15,938.8	**CF**

Minimum Runoff Reduction Requirements

RRV = 90% rain (P) x Rv* x S x total impervious area (AI from #2) / 12
with S = .55 (A soils); .40 (B soils); .30 (C soils); .20(D soils) OR weighted HSG average in DA

Weighted HSG= 0.3

Min RRV =	**0.098**	**ac-ft**
Min RRV =	**4,279**	**cu-ft**

The total impervious surface created and or modified by the proposed project is 3.32 acres. The impervious surface treated by the proposed Underground Chambers totals 2.46 acres as shown in the calculations above.

Water quality requirements for the proposed project will be achieved via a runoff reduction practice. Runoff reduction practices will satisfy the minimum required runoff reduction volume (RRv) by use of direct infiltration via underground infiltration chambers, stone recharge area and porous pavement. For this design the entire WQv is provided in a runoff reduction practice so 100% of the RRv will be achieved.

WQv REQUIRED	
UGC-1	6248
PP-1	757
PP-2	214
PP-3	231
PP-4	320
PP-5	634
TOTAL (CU FT)	**8,405**
TOTAL (AC FT)	**0.19**

RRv REQUIRED	
UGC-1	1523
PP-1	113
PP-2	59
PP-3	64
PP-4	95
PP-5	45
TOTAL (CU FT)	**1,900**
TOTAL (AC FT)	**0.04**

Water Quality is provided by a combination of 7 treatment areas which include porous pavement, a stone recharge bed and underground infiltration. The table below summarizes the volumes provided for runoff reductions and water quality. Detailed calculations for the overall WQv provided by each practice are included in **Appendix D.**

WQv PROVIDED	
UGC-1	9437
PP-1	567
PP-2	1610
PP-3	1610
PP-4	1810
PP-5	1702
SR-1	7727
TOTAL (CU FT)	**24,463**
TOTAL (AC FT)	**0.56**

RRv PROVIDED	
UGC-1	6248
PP-1	510
PP-2	214
PP-3	231
PP-4	320
PP-5	634
SR-1	7727
TOTAL (CU FT)	**15,885**
TOTAL (AC FT)	**0.36**

Pretreatment

UGC-1

For underground infiltration practices designed to treat stormwater runoff through infiltration, the stone bed surface area is the mechanism to provide treatment. The system must be sized to store runoff long enough it can be infiltrated into the subsurface soils. Pretreatment is required to prevent sediments from clogging the stone bed and preventing infiltration. For underground chambers pretreatment is typically provided in isolator rows.

According to the NYSDEC Stormwater Design Manual infiltration practices require 100% pretreatment when the underlying soil infiltration rate exceeds 5 inches per hour. One of the methods for pretreatment is a pretreatment settling chamber (Isolator Row). The settling chamber should be sized in accordance with 6.4.3 of the design Manual.

SIB-1

The stone infiltration be is designed to function the same way as a roof leader to porous pavement practice without the porous pavement on top. The practice has the benefits of infiltration and treatment without the maintenance concerns associated with porous pavement area. Pretreatment has been provided for the runoff directed from surface water via storm drains. All inlet structures will include a 24” sump to gather solids.

5.2 Proposed Stormwater Management – Water Quality

The design observation points have been modeled in Hydro CAD and represents the total flow leaving the project drainage areas. One drainage point has been evaluated based on the proposed site development. The drainage analysis points are shown on the pre and post drainage area maps in **Appendix E.** The table below displays the peak discharge rates for the design points and demonstrates that discharge rates for post construction are less than or equal to what is currently produced at the design points meeting the requirements of Overbank Flood Protection and Extreme Flood protection.

Channel Protection Volume is not required if the Runoff Reduction volume is reduced onsite through runoff reduction techniques or infiltration practices.

Peak Flow Discharge Rate DP-1			
Storm Event	**Pre (cfs)**	**Post (cfs)**	**Net Reduction (cfs)**
1	21.8	12.4	**-9.5**
2	31.7	17.4	**-14.3**
10	61.7	30.5	**-31.2**
100	136.5	61.9	**-74.6**

6.0 PERMANENT STORMWATER MANAGEMENT FEATURES

6.1 Conveyance Piping

Storm runoff from developed areas will be conveyed to and through the stormwater system by a series of underground piping and surface flows. Due to relatively small watershed areas associated with each catch basin, the SCS Unit Hydrograph TR-55/TR-20 Method and inlet capacities for circular pipes were used for pipe sizing. In general, piping is designed such that:

- All proposed piping is sized to accommodate the peak flow from the 25-year 24-hour storm, as prescribed by the local authority.
- Flow capacity is sufficient to convey runoff to the receiving discharge points
- Strength is sufficient to withstand the soil cover and vehicle loads.
- In some instances the existing site drainage system is not capable of conveying all of the runoff contributing to the drainage structure. The model shows that the basins fill and sheet flow overland to the next available drainage structure in large storm events. In no cases does the “surcharging” exceed 6 inches. In these locations the post condition has been improved to convey the flow or reduce the “surcharging”.

6.2 Stormtech Underground Infiltration Chambers

Stormtech underground infiltrator units are design to detain runoff and allow it to infiltrate into the existing site soils. Infiltrator chambers are ideal on sites with well-draining soils and limited open areas for open air vegetated practices. Infiltrator chambers provide storage within the chamber and within the voids that existing in the stone media surrounding the units.

- Flow capacity is sufficient to infiltrate into existing soils.
- Strength is sufficient to withstand the soil cover and vehicle loads.
- Isolator row is accessible via storm structure and 24" diameter conveyance piping.

6.3 Porous Pavement

Porous Pavement provides an alternative to conventional asphalt or concrete pavement surfaces and is designed to convey rainfall through the surface and into an underlying reservoir where it can infiltrate. Porous Pavement is a NYSDEC Approved runoff reduction practice and if designed properly can provide the detention needed to meet the water quantity requirements as described in Section 5.2.

The porous pavement will be limited to the parking stall which will have minimal traffic movement. Traditional paving methods will be used for all access aisles and not porous pavement areas. The porous pavement stone reservoir may extend under the traditional pavement in some locations as needed to accommodate the runoff detention.

- Flow capacity is sufficient to infiltrate into existing soils.
- Storage and exfiltration rates are sufficient to accommodate water quality volumes.

7.0 STORMWATER EROSION AND SEDIMENT CONTROLS

Several types of permanent and temporary storm water pollutant controls are required to be installed and implemented for pre-construction, during construction and post-construction as shown on the Construction Plans and per the NYSDEC SPDES General Permit. Guidelines and recommendations can be found in the "New York State Standards and Specifications for Erosion and Sediment Control."

The permanent storm water management system has been designed to accommodate peak storm flows utilizing catch basins, piping and grass swales.

Selection of temporary storm water controls will be on an "as needed basis" and will depend on the specific conditions of the site. Since site characteristics can change significantly during construction, it is important to monitor the site regularly to ensure the proper selection and implementation of the necessary controls. These controls include, but are not limited to, silt fence, drainage swales, check dams, hay bales, stone construction entrances, sediment traps and seeding and mulching.

7.1 Erosion and Sediment Controls

Temporary Stabilization

Silt fences, drainage swales, stabilized stone construction entrances, erosion control blankets, and seeding and mulching, as well as, other controls will be utilized as temporary surface water management features. See the Erosion and Sediment Control Plan(s) and details sheets for the location, size, quantity and details of the temporary stormwater management features as described below.

Silt Fence

Silt fence will be used as necessary to reduce the sediment load in the receiving drainage ditches and as a perimeter sediment control device. In addition, silt fencing will be placed on the downslope sides of all disturbed areas 5 ft. from the toe of the slope until more permanent drainage and erosion control structures are established. In cases with environmentally sensitive areas adjacent to the downslope sides of disturbed areas, silt fencing should be placed at the toe of the slope outside the sensitive area. All silt fence are to be 36" minimum length with built in woven wire mesh (min. 6X6 14 ½ gauge) unless otherwise specified on the construction details.

Check Dam

Check dams are small improvised barriers in channels of drainage swales used to retard the flow of water and allow sedimentation. Check dams will be placed along the permanent or temporary drainage ditches in which vegetation is being established where runoff will be directed. Stone check dams will be placed in ditches to control flow velocity and reduce sediment flowing downstream.

Inlet Protection

Storm drain inlet protection measures prevent soils, sediment, and debris from entering storm basins. In unpaved areas inlet protection shall consist of a row of silt fence completely encircling the drain inlet. In paved areas inlet protection can consist of stone and block, silt sox, or hanging filter traps as specified on the plans.

Stabilized Stone Construction Entrance

A construction entrance is used at all entrances and exists to construction activities. The stone construction entrance is stabilized to reduce tracking of mud and dirt onto surrounding roads and surfaces.

Erosion Control Blanket

Erosion control blankets are used on steep slopes to provide adequate protection after the slopes has been graded and prior to the establishment of proper vegetation. Blankets are made from many forms of materials and products. Refer to the site specific details for the erosion control blankets to be used for this job. Erosion control mats are required on all slopes which exceed 1V:2H.

Seeding and Mulching

Seeding and mulching is one of the most important and underutilized erosion control practices. Exposed earths pose the greatest risks for erosion and sediment. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) days from the date the current soil disturbance activity ceased. Temporarily Ceased means that an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Soil Stockpile

A soil stockpile is formed with soil excavated to provide proper building elevations. Stockpiled soil is later used to contour the surface to the desired grades, removed from the site, or the material is used for reclamation/restoration of the region following the removal of roads and facilities. All soils piled onsite must be completely enclosed by silt fence around the toe of the slope. The site fence should be installed a minimum of 2 feet from the toe of the slope. The soil pile should have a maximum side slope of 1V:2H. All soil piles must be stabilized with seed and mulch or covered with a plastic tarp if the soil will not be used within fourteen (14) days from the date the current soil pile was created.

Permanent Stabilization

Permanent stormwater stabilization measures include catch basins, piping and other stormwater structures as described in sections 5 and 6. In all instances, the structures associated with the stormwater management system have been sized to accommodate peak flows from the appropriate storm events as required by the governing municipality. All lawns, basins and swales will be permanently seeded and mulched and maintained as necessary to prevent over growth.

Concrete Washout Areas

Concrete washouts are used to contain concrete and liquids when the chutes of concrete mixers and hoppers are cleaned after a delivery. The washout facility consolidates the liquids and allows them to harden for easy disposal. This prevents contaminated liquids from flowing offsite or leaching into the groundwater aquifer.

7.2 Other Pollutant Controls

Paints and Solvents

During construction temporary structures such as construction trailers may be moved on site to store items such as paints, solvents and gasoline pertinent to the continuation of construction activities. The intention of these structures is to shelter potential contaminants from stormwater and reduce the potential of toxic chemicals from entering the stormwater runoff due to construction activities.

Solvents and detergents that will be used for regular cleaning and maintenance of construction vehicles or temporary structures may be stored on-site. Solvents shall be used in cleaning machinery pursuant to 6 NYCRR Part 750. After use, solvents shall be disposed of in approved containers and removed from site at scheduled intervals.

Fuels

Fuel for construction equipment shall either be obtained from a licensed distributor of petroleum products or from an approved above ground storage tank on site. A distributor may be contracted to arrive on site periodically and fill all equipment as necessary. All distributors of petroleum products must have adequate liability insurance to mitigate and clean up any spills that occur on site as well as obtain appropriate permits and licenses from the NYSDEC. All above ground storage tanks with a combined capacity of 1,100 gallons shall be registered with the NYSDEC pursuant to 6 NYCRR Part 614 Standards for New and Substantially Modified Petroleum Storage Facilities.

Fuel from construction vehicles may come into contact with stormwater when vehicles are stored outside. Good housekeeping and preventative maintenance procedures shall be implemented to ensure fuel spills and leaks are minimized during refueling and storage. Any small-scale fuel or oil spills must be remedied immediately and contaminated soils shall be disposed of appropriately. A licensed spill prevention and response team shall handle large-scale gasoline spills.

Oil and other petroleum products may be stored on site, in limited quantities, to ensure the continued operation of construction equipment in the event a scheduled delivery is unavailable. Items shall be stored in their original containers within temporary structures and shall not be exposed to stormwater. Used oil and petroleum products shall be stored in approved containers until recycled or disposed of at an approved disposal facility.

Temporary Facilities

Temporary sanitary facilities may be located on site for construction workers. This facility shall be located in an accessible and visible location. Such a facility shall be leak and tip proof. A waste management company may be contracted to arrive on site and provide the routine pumping and sanitization of the facility. Such a company shall have adequate liability insurance to mitigate and clean up any spills that occur on site as well as appropriate permits and licenses from the NYSDEC.

Dust Control

Construction vehicles shall enter and exit the site at the stabilized construction entrance. The construction entrance will trap dust and mud that would otherwise be carried off-site by construction traffic. Water trucks will be used as needed during construction to reduce dust generated on the site. The general contractor will provide dust control in compliance with applicable local and state dust control regulations. The construction entrances will be maintained during the life of the construction and repaired, and/or cleaned, periodically to ensure proper function.

Dewatering

If dewatering is required the water must be free of silt and sediment prior to discharge offsite or to any existing water bodies. If sediment is present, methods of sediment removal may include, but are not limited to; silt bags, temporary sediment traps, temporary sediment basins, or sheet flow across stabilized vegetated surfaces. As the quantity and quality of water cannot accurately be determined prior to excavation dewatering practices must be determined during construction and should be approved by the site engineer prior to commencing any dewatering activities.

Solid Waste

No solid materials are allowed to be discharged from the site with stormwater. All solid waste shall be collected and placed in containers. The containers will be emptied periodically by a contract trash disposal service and hauled away from the site.

Thermal Pollution

Stormwater that comes in contact with roadways, driveways, parking lots or other impermeable surfaces may increase in temperature during warm weather. If stormwater is discharged into surface water bodies, the temperature of the water body may also increase, potentially threatening plant and animal species sensitive to temperature changes as well as providing an environment that may cause nuisance species to flourish.

After development is complete, impervious areas shall be graded to channel water to catch basins and culverts, which in turn convey stormwater to the stormwater management basin. All stormwater shall be stored and treated within the basins and shall be released over a 24 hour period, which shall minimize the potential for raising the temperature of any downstream water bodies.

7.3 Best Management Practices

Throughout construction, care shall be taken to ensure sediment does not enter surface water bodies and chemicals do not enter stormwater, potentially contaminating surface and groundwater supplies. The following Best Management Practices (BMP) shall be observed to maintain responsible environmental practices on the construction site.

Good Housekeeping

Good housekeeping is essential to reducing the risk of contaminating runoff waters during every stage of construction. The General Contractor shall ensure supervisors train each employee in good housekeeping practices as they pertain to the implementation of this SWPPP.

Immediately following mobilization, the General Contractor shall take an inventory of all equipment and containers containing hazardous or toxic materials and submit this inventory to the Owner/Developer to keep on-site with this Stormwater Pollution Prevention Plan. This inventory shall be updated regularly to reflect changes in the quantity or type of hazardous and toxic materials stored on site. In the event of a spill, the Spill Response Team can refer to the inventory if the contents of the spill are unknown.

All equipment shall be operational while it is stored on site. Inspections shall be conducted regularly to ensure all equipment is free of leaks and that oil and grease are not in contact with soils or stormwater. Portable equipment such as chain saws, drills, as well as hand tools, must be placed within a trailer or under cover at the end of each work day.

A storage area shall be designated on-site where all hazardous or toxic materials are stored. Each employee shall return the materials to the designated storage area following use. Chemicals including oil, grease, solvents and detergents shall be stored on-site in approved containers only. Used chemicals shall be disposed of in refuse containers and removed periodically. Containers shall be regularly inspected to ensure the integrity of the container and sealed to prevent leaks.

A scheduled clean-up shall occur at the end of each workweek. During this clean up, empty containers of solvents, oils, grease, paints and detergents shall be disposed of, containers of gasoline shall be placed in trailers where they are not in contact with stormwater and the inventory shall be updated. Empty containers shall not be permitted on the ground.

<u>Preventative Maintenance</u>

All on-site vehicles must be inspected regularly for oil and grease leaks. All leaks shall be repaired immediately upon obtaining the appropriate equipment. If the leak cannot be fixed immediately, it shall be temporarily mitigated to prevent the flow of contaminants onto the soil and potentially into the stormwater. If necessary, the reservoir will be drained to stop the flow of contaminants or the vehicle will be moved under cover. Drip pans shall be used when performing any maintenance or cleaning on construction vehicles.

<u>Spill Prevention and Response</u>

The safety of employees and neighbors shall be of utmost concern when hazardous or toxic chemicals are stored or utilized on-site. Safety Data Sheets (SDS) shall be obtained for all toxic or hazardous substances that are stored on-site to provide employees with a valuable database in assessing risk in the event of a spill.

Any above ground storage tanks on site shall be installed pursuant to 6 NYCRR Part 614. According to the New York State "Minimum Standards for New and Substantially Modified Above Ground Storage Facilities", all tanks installed must meet or exceed the design criteria in one or more of the following design or manufacturing standards: UL No. 142, UL No. 58, API Standard No. 650, API Standard No. 620, CAN4-S601-M84 or CAN4-S630-M84. Tanks constructed of wood, concrete, aluminum, fiberglass reinforced plastic as well as riveted or bolted steel tanks are not permitted. All tanks must have installed leak detection systems, secondary containment, corrosion protection, and undergo periodic monitoring pursuant to all Part 614 requirements.

Should a spill occur, a licensed spill contractor will be contacted to mitigate the potential negative effects of a spill. Additionally, the NYSDEC must be notified of a release of petroleum products. The General Contractor shall have trained employees knowledgeable in the location of sorbent, brooms, rags and mops in the event of a small-scale spill. An inventory of equipment and its location shall be posted in a visible location as well as kept in proximity to this Pollution Prevention Plan. If the General Contractor does not have Hazardous Materials trained employees on site, a firm that specializes in handling spills, soil and water contamination shall be called.

After a spill occurs, all personnel not trained in hazardous materials spill response shall be asked to evacuate the immediate area. The NYSDEC Spill Response Team shall be called to investigate the spill and determine if additional actions should be taken to ensure the safety of personnel and nearby residents. Should any employee have a suspected injury, a local emergency squad must be contacted immediately.

8.0 CONSTRUCTION SEQUENCE SCHEDULING

The scale of site construction does not necessitate that this project be a phased construction project; However, the construction will be sequenced to limit the exposed soils to reduce the amount of sediments in runoff water and ultimately preserve the quality of surface waters. The construction method selected is designed to combine development with responsible land management as well as protection of sensitive environments both within the proposed development and the surrounding area.

Temporary and permanent stabilization methods will be implemented before construction begins and will be continuously modified throughout the project to provide the best methods for stormwater management and pollution prevention. For more details pertaining to construction sequence, please refer to the "NYSDEC Instruction Manual for Stormwater Construction Permit" pages 23-26. A typical and sample ordering of site construction activities is as follows:

Pre-Construction Activities

- Identify all natural resources and mark and protect them as necessary i.e trees, vegetation, limits of disturbance.
- Identify on-site and downstream surface water bodies and install controls to protect them from sedimentation.
- Establish temporary stone construction entrance pads to capture mud and debris from the tires of construction vehicles.
- Install perimeter sediment controls such as silt fences, as shown on the project plans.
- Install temporary construction fencing as shown on the project plans or as directed by the site engineer.
- All earth disturbances during this phase should be limited to work necessary to install erosion and sedimentation controls.

During Construction Activities

- Complete building demolition in accordance with notes and procedures identified on the demolition plan.
- As site grading is completed install runoff and drainage controls as shown on the project plans and as necessary. These controls should reduce run-off flow rates and velocities, as well as, divert off site and clean run-off.
- Stabilize the conveyance system i.e. ditches, swales, berms etc. by seeding, mulching and installing rock check dams.
- Utilize practices to infiltrate stormwater runoff as much as possible when applicable.
- Stabilize all stormwater runoff outlets as shown on the project plans and as necessary.
- Limit soil disturbance to small areas and preserve as much of the existing vegetation as practical.

- Complete all underground utility improvements prior to installation of hard surface improvements.
- All topsoil stockpiles should be staged in an area away from surface waters and storm drains and should be protected and stabilized.
- Earth disturbance is not allowed in established buffers, within any regulated distance from wetlands, or within the high water line of a body of water affected by tidal action or other such protected zones.
- At any location where surface run-off from disturbed or graded areas may flow off-site, sedimentation control measures must be installed to prevent sedimentation from being transported.
- Regular inspections and maintenance should be performed as described in the following section.

Post-Construction Activities

- Identify the permanent structural or non-structural practices that will remain on the site.
- Provide an Operation & Maintenance (O&M) manual to the new Owner/Developer who is expected to conduct the necessary O&M over the life of the structures as described in Section 10.0 of this report.

9.0 IMPLEMENTING THE SWPP

9.1 Employee Training

All employees involved in site-development activities shall be aware of the stipulations outlined in this SWPPP as it pertains to their everyday activities. All such employees must be able to recognize potential problems and have the ability to provide either temporary or permanent stabilization measures, as appropriate, to mitigate stormwater runoff before problems occur. The NYSDEC periodically holds workshops on erosion and sediment control. It is recommended that the affected and responsible on-site personnel attend these workshops to ensure training is current and up to date. Contact the NYSDEC for more information.

9.2 Site Inspections

The Owner/Developer must have a qualified professional conduct an assessment of the site prior to the commencement of construction and certify in an inspection report that the appropriate erosion and sediment controls described in this SWPPP have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction. A qualified professional is defined as a Professional Engineer or Landscape Architect licensed to practice in New York State, or is a Certified Professional in Erosion and Sediment Control (CPESC). Once construction begins regular inspection of construction activities by the qualified professional are required at least once every 7 days to ensure deficiencies regarding erosion and sedimentation are reported and corrected. It is the responsibility of the Contractor to continuously monitor construction activities to ensure the measures outlined in this report are being implemented.

Areas which have not been fully stabilized, areas used for materials storage and all structural control measures must be inspected once every 7 calendar days to monitor erosion and assess the risk of sedimentation. For sites where soil disturbance activities are on-going and the owner operator has received authorization in accordance with Part II.C.3 to disturb greater than five (5) acres of soil at any one time, the qualified inspector shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days. For areas construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and temporary stabilization measures have been applied to all disturbed areas, the qualified inspector shall conduct a site inspection at least once every (30) calendar days.

A thorough site evaluation shall be performed to determine the continued applicability of the permit, and assess the need to make any changes that have not already been reflected in this SWPPP. The SWPPP shall be reviewed to evaluate its overall effectiveness in preventing sediment laden stormwater runoff. Temporary and permanent stabilization methods shall be assessed and new methods shall be established, should any method be determined to be inadequate.

A copy of the SWPPP must be maintained on site at all times in the field log book. The Owner/Developer must maintain a record of all inspection reports with the on site SWPPP. The SWPPP and inspection reports must be maintained on site and be made available to the permitting authority upon request.

9.3 Maintenance

It shall be necessary to maintain all temporary controls installed as well as vegetative measures across the site. Maintenance shall also be necessary to ensure the permanent structural features, such as underground chambers, catch basins and conveyance piping remain optimally functional and continue to reduce the risk of sediment loading of surface water bodies. All controls shall be repaired or replaced as necessary and as noted on the inspection reports as prepared by the Owner/Developer's Qualified Representative.

During construction, maintenance of these stabilization measures shall be the responsibility of the General Contractor or appropriate Sub Contractors. Vegetative plantings must not be allowed to become overgrown. Vegetation shall be removed should it be ineffective and be replaced with a variety of grasses, trees and shrubs more suitable for preventing stormwater runoff. Silt fences must be inspected regularly to ensure that they are still effective and their capability to reduce stormwater runoff has not been reduced due to prolonged sun exposure.

Piping and catch basin sumps shall be cleaned out periodically to prevent the collection of sediment that will reduce the maximum flow. Sediment must be removed from sediment basins, infiltration basins or traps whenever their capacity has been reduced by 50 percent of their design capacity.

Guidelines and recommendations for installation and maintenance practices can be found in the "New York State Standards and Specifications for Erosion and Sediment Control"

9.4 Progress Reports and Summaries

Progress reports shall be completed by the General Contractor and all Sub Contractors weekly to document any conditions, which may affect adherence to the construction schedule and may ultimately result in changes to the stormwater pollution prevention plan.

Each progress report must contain the project, date, weather conditions and a brief description of progress made throughout the week, including the use of temporary and permanent stabilization measures on all exposed soils. The progress reports shall be filed with this SWPPP in the on-site log book.

Additionally, as described in Section 1.1 of this report, the Owner/Developer's Qualified Representative will prepare weekly inspection reports and quarterly summaries. These reports should be maintained in the on site log book as well.

9.5 Certification

Prior to starting construction, the Owner/Developer must certify that to the best of their knowledge this SWPPP was prepared in accordance with the requirements in the NYSDEC SPDES General Permit and that it meets all federal, state and local erosion and sediment control requirements. The certifying statement is presented in **Appendix A** of this report.

The General Contractor and all appropriate Sub Contractors are responsible for reading and understanding the SWPPP and are also required to certify the SWPPP by signing the certifying statement presented in **Appendix A** of this report.

All inspection reports and inspection quarterly summaries are to be certified by an authorized person who has responsibility for the overall operation of the site such as a project manager or site superintendent. Certification of these documents is executed by signing the certifying statements presented at the end of the inspection reports.

10.0 POST CONSTRUCTION INSPECTION & MAINTENANCE

Post-construction, regularly scheduled inspections and maintenance will be necessary to ensure the permanent structural features such as the stormwater management basins and the conveyance system components remain optimally functional and continue to reduce the risk of sediment loading of surface water bodies. Follow manufactures guidelines and the detailed construction installation and maintenance guidelines included in **Appendix A** for all stormwater management practices.

When construction is complete, the Contractor will remain responsible for the site until the entire site has reached final stabilization. The site is considered stabilized when all soil disturbing activities have been completed and a uniform, perennial vegetative cover, with a density of 80%, 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. Weekly inspections should continue until the site has reached this point.

At the time of final stabilization, the Owner/Developer's Qualified Representative shall perform a final inspection of the site and certify that the site has successfully undergone final stabilization using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls such as silt fence, not needed for long term use, have been removed. All storm water practices must be clean and free of sediment and or debris or must be cleaned by the contractor prior to turning the maintenance responsibilities over to the Owner/Developer. At this point, the Owner/Developer is responsible for the following:

1. Submit to the NYSDEC a NOT prepared by the Owner/Developer's Qualified Representative as described in Section 1.1 of this report.
2. Identify all the permanent stormwater management structures that have been constructed and provide the New Owner/Developer with an Operations and Maintenance (O&M) manual that will be necessary in order for the structures to function properly after the site has been stabilized. Section 10.0 of this report satisfies the O&M requirements
3. Transfer the Water Quality and Quantity Report and SWPPP to the New Owner/Developer.
4. Certify that the permanent structures have been constructed as described by this plan and the drawings.

The new Owner/Developer shall overtake responsibility of inspecting and maintaining drainage and erosion control features over the lifetime of the structures. Maintenance personnel, employed by the

New Owner/Developer, must be aware of the SWPPP and should be trained to recognize signs that stabilization measures may not be performing optimally or are failing. The inspection of on-site stabilization measures will become part of routine preventative maintenance practiced by the New Owner/Developer and his employees.

10.1 Inspection

Overall Site Inspection

The overall site, embankments, vegetation and stormwater conveyance system components including catch basins, culverts, swales and outlets should be inspected regularly. The inspections should include but are not limited to:

1. Density and condition of vegetation and ground cover.
2. Erosion, differential settlement or cracking of embankment.
3. Bulging or sliding of toe of embankments.
4. Sedimentation of on-site or downstream water bodies.
5. Sedimentation of culverts or swales.
6. Sedimentation of lawn areas, paved areas, within the sand filter units or catch basin sumps.
7. Accumulation of pollutants, including oils or grease in catch basin sumps.
8. Damage or fatigue of storm sewer structures or associated components.

Water Quality Practice Inspection (if applicable)

All water quality practices and all associated features should be inspected regularly. The inspections should include but are not limited to:

1. Density and condition of vegetation and ground cover.
2. All features of the practice should be clear of brush and tree growth.
3. Erosion, differential settlement or cracking of basin embankments.
4. Bulging or sliding of toe of embankments.
5. Presence of animal burrows.
6. Evidence of clogging or sedimentation at inlets or outlets.
7. Erosion of the flow path through the detention basin.
8. Spillways should be inspected for structural integrity.
9. Spillways should be clear of obstructions.
10. Inlet/outlet riprap should be inspected for scour and dislodged stones and obstructions should be removed.
11. Accumulation of sediments at inlets, outlets and silt traps.

Detailed inspection checklists for each of the Stormwater Management Practices can be found in **Appendix A**.

10.2 Maintenance

Overall Site Maintenance

Maintaining vegetative and structural measures for soil protection is necessary to keep the storm water system functioning properly. Maintenance should occur on a regular basis and should include but is not limited to:

Seasonal Maintenance

1. Vegetated areas should be maintained to promote vigorous and dense growth. Lawn areas should be mowed at least three times a year but may require more frequent mowing's depending on the growth rate.

2. Trees and unwanted vegetation should be removed from inlet structures, outlet structures, banks, and berms to prevent clogging or weakening of the berms and structures.
3. Paved areas should be swept at least twice a year and in the early spring for removal of deicing materials.
4. Accumulation of litter and debris should be removed during each mowing or sweep operation.
5. Structural components of the storm sewer system such as culverts and catch basins which require repair or replacement should be addressed immediately following identification.
6. Cleanout of catch basin sumps should occur when accumulation of sediments and debris are within six inches of the catch basin outlet pipe.
7. Swale and drainage way maintenance will include periodic mowing, occasional spot reseeding and weed control. Weeds and woody plants should be eradicated or cut back since they reduce the efficiency of the drainage way.
8. Rip rap lined inlet and outlets that show signs of scour should be repaired. Weed and brush growth at the inlets and outlets should be controlled as needed.

Winter Maintenance

1. Remove snow and ice from inlet structures, basin inlet and outlet structures and away from culvert end sections.
2. Snow removed from paved areas should not be piled at inlets/outlets of the stormwater management basin.
3. Use of deicing materials should be limited to sand and environmentally friendly chemical products. Use of salt mixtures should be kept to a minimum.
4. Sand used for deicing should be clean, course material free of fines, silt, and clay.
5. Materials used for de-icing should be removed during the early spring by sweeping and/or vacuuming.

Underground Practices Maintenance

1. A consistent schedule of inspection shall be observed for all system components to insure continued effective operation.
2. Areas surrounding the surface access points shall be kept clear of overgrowth.
3. All inspections shall be logged. A specific schedule, on a quarterly basis, shall be maintained by the system owner/operator and a periodic replacement of the water quality practice media shall be schedule for minimally every two years.
4. Accumulation of litter and debris should be removed during each mowing or sweep operation.
5. Structural components of the system which require repair or replacement should be addressed immediately following identification.
6. Spillways should be cleared of obstructions.
7. Inlet/outlet riprap damage due to scour should be repaired.

For any proprietary practices refer to manufacturer specifications for additional maintenance requirements. Detailed maintenance checklists for each of the Stormwater Management Practices can be found in **Appendix A**.

11.0 CONCLUSION

The Engineer has designed a NYSDEC-compliant Stormwater Management Plan for The Villages in the Hudson Valley project. Overall, the proposed stormwater management system reduces and/or eliminates the impacts of the proposed development by controlling and treating stormwater through the use of catch basins, storm-sewer piping, porous

pavement and underground infiltration chambers. Offsite storm discharges and velocities for the proposed project are less than what currently exists. The stormwater management system will function adequately and will not adversely affect adjacent or downstream properties provided it is constructed and maintained as outlined in this plan and as shown on the site plans.

APPENDIX A

Construction Site Log Book
Owner/Developer and Contractor Certification Forms
Pre/Duration Construction Maintenance Inspection Checklists (NYSDEC Sample)
Post Construction Operation and Maintenance

STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM
FOR CONSTRUCTION ACTIVITIES

CONSTRUCTION SITE LOG BOOK

Table of Contents

Properly completing forms such as those contained in this document meet the inspection requirement of NYSDEC 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?

Pre-construction Site Assessment Checklist (continued)

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;

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

Runoff Control Practices (continued)

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
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 (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:

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.

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Owner/Operator Certification Form

SPDES General Permit For Stormwater Discharges From Construction Activity (GP-0-20-001)

Project/Site Name: ____________________

eNOI Submission Number: ____________________

eNOI Submitted by: ☐ **Owner/Operator** ☐ **SWPPP Preparer** ☐ **Other**

Certification Statement - Owner/Operator

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Owner/Operator First Name M.I. Last Name

____

Signature

____

Date

CONTRACTOR CERTIFICATION

I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP 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 am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations."

Contractor Signature	Title	Date
Contractor Signature	Title	Date
Contractor Signature	Title	Date
Contractor Signature	Title	Date

85 Civic Center Plaza, Suite 103
Poughkeepsie, NY 12601
Phone: (845) 243-2880
Fax: (845) 265-8175

Porous Pavement Operation and Maintenance Checklist

Location:	
Site Status:	
Date:	
Time:	
Inspector:	

1. SEASONAL MAINTENANCE		
Construction Sequence	**Satisfactory / Unsatisfactory**	**Comments**
Vegetated areas maintained		
Paved areas swept		
Litter and debris removed after mowing / sweep operation		
Leaves removed to prevent clogging of porous pavement		
Catch basin sumps cleaned		
Trash racks or hoods cleaned of debris		
2. WINTER MAINTENANCE		
Construction Sequence	**Satisfactory / Unsatisfactory**	**Comments**
Snow removed from porous pavement		
Environmentally friendly deicing materials used		
Sweeping and/or vacuuming of deicing materials		
3. UNDERGROUND PRACTICES MAINTENANCE		
Construction Sequence	**Satisfactory / Unsatisfactory**	**Comments**

Outlets installed correctly		
Underdrain		
Pretreatment devices installed		
Soil bed composition and texture		
4. VEGETATION		
Construction Sequence	**Satisfactory / Unsatisfactory**	**Comments**
Complies with planting specs		
Topsoil adequate in composition and placement		
Adequate erosion control measures in place		
5. FINAL INSPECTION		
Construction Sequence	**Satisfactory / Unsatisfactory**	**Comments**
Dimensions		
Proper stone diaphragm		
Proper outlet		
Soil/filter bed permeability testing		
Effective stand of vegetation and stabilization		
Construction generated sediments removed		
Contributing watershed stabilized before flow is diverted to the practice		

Comments:

Actions to be Taken:

SC-310/SC-740/DC-780

StormTech®

Detention • Retention • Water Quality

A division of ADS

StormTech Construction Guide

REQUIRED MATERIALS AND EQUIPMENT LIST

- Acceptable fill materials per **Table 1**
- Woven and non-woven geotextiles
- StormTech solid end caps and pre-cored end caps
- StormTech chambers
- StormTech manifolds and fittings

IMPORTANT NOTES:

A. This installation guide provides the minimum requirements for proper installation of chambers. Non-adherence to this guide may result in damage to chambers during installation. Replacement of damaged chambers during or after backfilling is costly and very time consuming. It is recommended that all installers are familiar with this guide, and that the contractor inspects the chambers for distortion, damage and joint integrity as work progresses.

B. Use of a dozer to push embedment stone between the rows of chambers may cause damage to chambers and is not an acceptable backfill method. Any chambers damaged by using the "dump and push" method are not covered under the StormTech standard warranty.

C. Care should be taken in the handling of chambers and end caps. Avoid dropping, prying or excessive force on chambers during removal from pallet and initial placement.

Requirements for System Installation

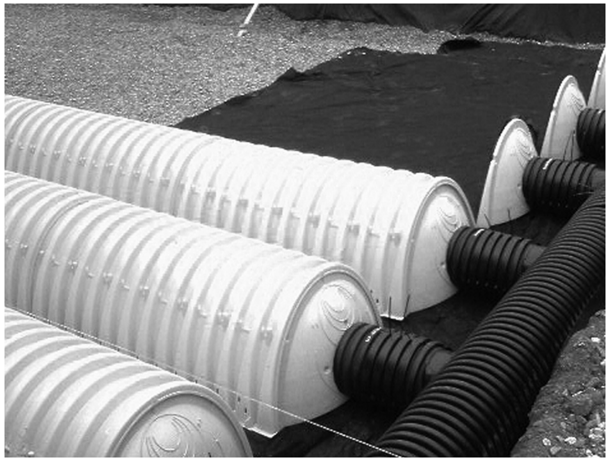
Excavate bed and prepare subgrade per engineer's plans.

Place non-woven geotextile over prepared soils and up excavation walls.

Place clean, crushed, angular stone foundation 6" (150 mm) min. Install underdrains if required. Compact to achieve a flat surface.

Manifold, Scour Fabric and Chamber Assembly

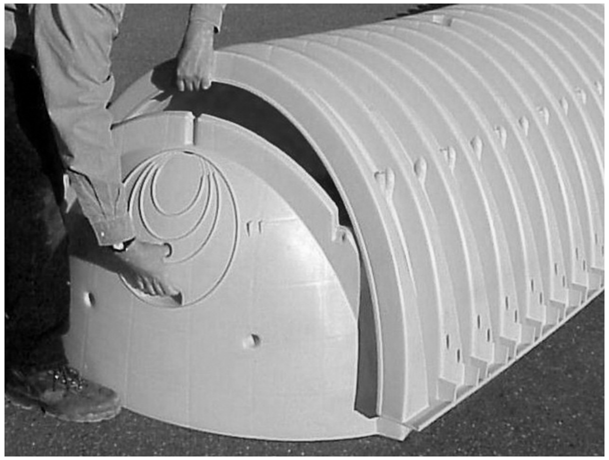
Install manifolds and lay out woven scour geotextile at inlet rows [min. 12.5 ft (3.8 m)] at each inlet end cap. Place a continuous piece (no seams, double layer) along entire length of Isolator® Row(s).



Align the first chamber and end cap of each row with inlet pipes. Contractor may choose to postpone stone placement around end chambers and leave ends of rows open for easy inspection of chambers during the backfill process.

Construct the chamber bed by overlapping the chambers lengthwise in rows. Attach chambers by overlapping the end corrugation of one chamber on to the end corrugation of the last chamber in the row. Be sure that the chamber placement does not exceed the reach of the construction equipment used to place the stone.

Attaching the End Caps



Lift the end of the chamber a few inches off the ground. With the curved face of the end cap facing outward, place the end cap into the chamber's end corrugation.

Prefabricated End Caps

24" (600 mm) inlets are the maximum size that can fit into a SC-740/DC-780 end cap and must be prefabricated with a 24" (600 mm) pipe stub. SC-310 chambers with a 12" (300 mm) inlet pipe must use a prefabricated end cap with a 12" (300 mm) pipe stub.

Isolator Row

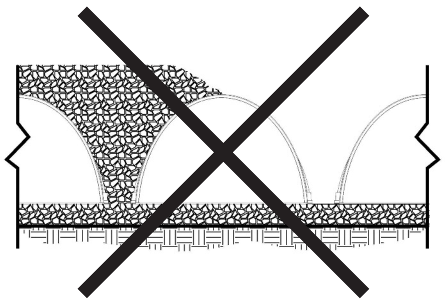
Drape a strip of ADS non-woven geotextile over the row of chambers (not required over DC-780). This is the same type of non-woven geotextile used as a separation layer around the angular stone of the StormTech system.

Initial Anchoring of Chambers – Embedment Stone

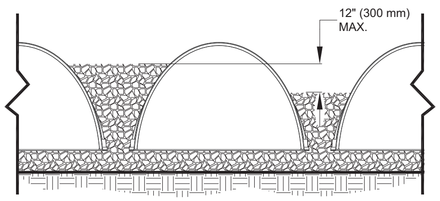
Initial embedment shall be spotted along the centerline of the chamber evenly anchoring the lower portion of the chamber. This is best accomplished with a stone conveyor or excavator reaching along the row.

No equipment shall be operated on the bed at this stage of the installation. Excavators must be located off the bed. Dump trucks shall not dump stone directly on to the bed. Dozers or loaders are not allowed on the bed at this time.

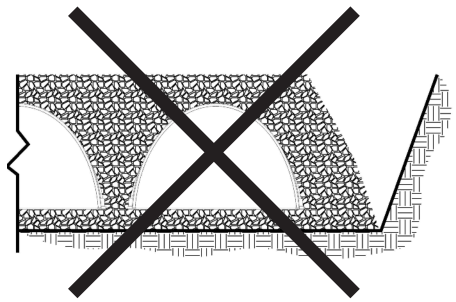
Backfill of Chambers – Embedment Stone



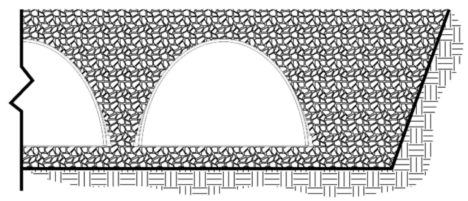
UNEVEN BACKFILL



EVEN BACKFILL



PERIMETER NOT BACKFILLED

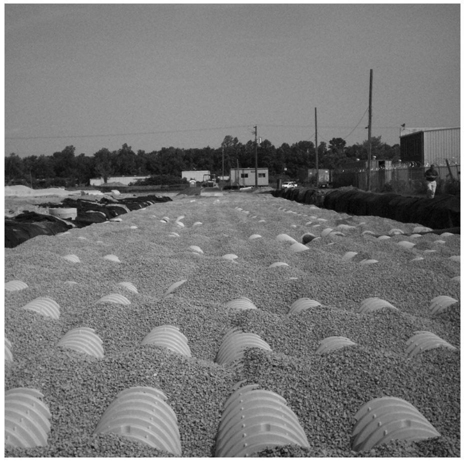


PERIMETER FULLY BACKFILLED

Backfill chambers evenly. Stone column height should never differ by more than 12" (300 mm) between adjacent chamber rows or between chamber rows and perimeter.

Perimeter stone must be brought up evenly with chamber rows. Perimeter must be fully backfilled, with stone extended horizontally to the excavation wall.

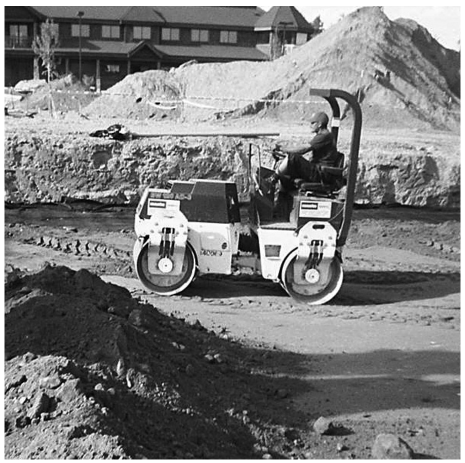
Backfill of Chambers – Embedment Stone and Cover Stone



Continue evenly backfilling between rows and around perimeter until embedment stone reaches tops of chambers. Perimeter stone must extend horizontally to the excavation wall for both straight or sloped sidewalls. **Only after chambers have been backfilled to top of chamber and with a minimum 6" (150 mm) of cover stone on top of chambers can small dozers be used over the chambers for backfilling remaining cover stone.**

Small dozers and skid loaders may be used to finish grading stone backfill in accordance with ground pressure limits in Table 2. They must push material parallel to rows only. Never push perpendicular to rows. StormTech recommends that the contractor inspect chambers before placing final backfill. Any chambers damaged by construction shall be removed & replaced.

Final Backfill of Chambers – Fill Material



Install non-woven geotextile over stone. Geotextile must overlap 24" (600 mm) min. where edges meet. Compact each lift of backfill as specified in the site design engineer's drawings. Roller travel parallel with rows.

StormTech Isolator Row Detail

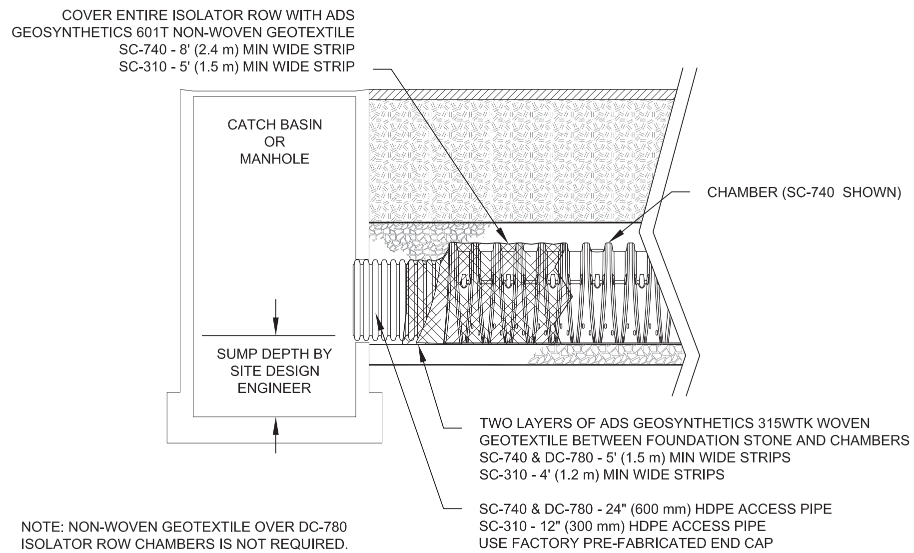


Table 1 – Acceptable Fill Materials

Material Location	Description	AASHTO M43 Designation[1]	Compaction/Density Requirement
D **Final Fill:** Fill Material for layer 'D' starts from the top of the 'C' layer to the bottom of flexible pavement or unpaved finished grade above. Note that the pavement subbase may be part of the 'D' layer.	Any soil/rock materials, native soils or per engineer's plans. Check plans for pavement subgrade requirements.	N/A	Prepare per site design engineer's plans. Paved installations may have stringent material and preparation requirements.
C **Initial Fill:** Fill Material for layer 'C' starts from the top of the embedment stone ('B' layer) to 18" (450 mm) above the top of the chamber. Note that pavement subbase may be part of the 'C' layer.	Granular well-graded soil/aggregate mixtures, <35% fines or processed aggregate. Most pavement subbase materials can be used in lieu of this layer.	AASHTO M45 A-1, A-2-4, A-3 or AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	Begin compaction after min. 12" (300 mm) of material over the chambers is reached. Compact additional layers in 6" (150 mm) max. lifts to a min. 95% Proctor density for well-graded material and 95% relative density for processed aggregate materials. Roller gross vehicle weight not to exceed 12,000 lbs (53 kN). Dynamic force not to exceed 20,000 lbs (89 kN).
B **Embedment Stone:** Embedment Stone surrounding chambers from the foundation stone to the 'C' layer above.	Clean, crushed, angular stone nominal size distribution 3/4 - 2" (20 mm - 50 mm)	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	No compaction required.
A **Foundation Stone:** Foundation Stone below the chambers from the subgrade up to the foot (bottom) of the chamber.	Clean, crushed, angular stone, nominal size distribution 3/4 - 2" (20 mm - 50 mm)	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	Place and compact in 6" (150 mm) lifts using two full coverages with a vibratory compactor.[2,3]

PLEASE NOTE:

1. ***The listed AASHTO designations are for gradations only. The stone must also be clean, crushed, angular. For example, a specification for #4 stone would state: "clean, crushed, angular no. 4 (AASHTO M43) stone".***
2. ***StormTech compaction requirements are met for 'A' location materials when placed and compacted in 6" (150 mm) (max) lifts using two full coverages with a vibratory compactor.***
3. ***Where infiltration surfaces may be comprised by compaction, for standard installations and standard design load conditions, a flat surface may be achieved by raking or dragging without compaction equipment. For special load designs, contact StormTech for compaction requirements.***

Figure 1 – Inspection Port Detail

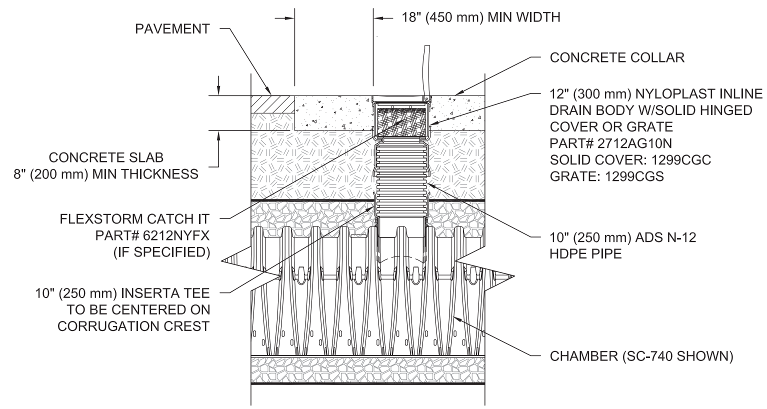
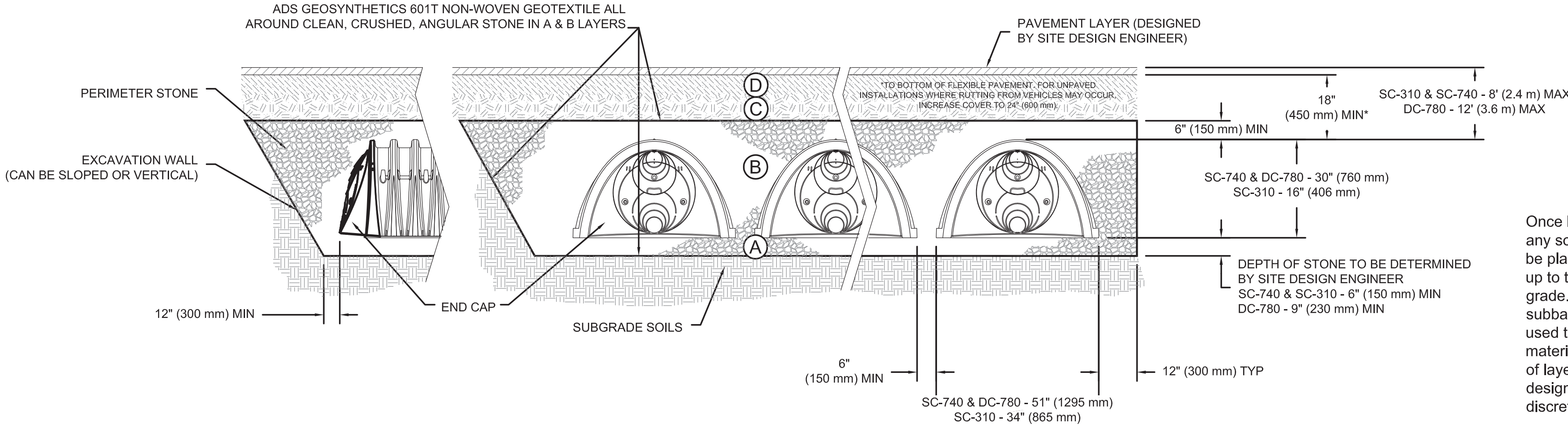


Figure 2 – Fill Material Locations



Once layer 'C' is placed any soil/material can be placed in layer 'D' up to the finished grade. Most pavement subbase soils can be used to replace the materials requirements of layer 'C' or 'D' at the design engineer's discretion.

NOTES:

1. *36" (900 mm) of stabilized cover materials over the chambers is required for full dump truck travel and dumping.*

2. *During paving operations, dump truck axle loads on 18" (450 mm) of cover may be necessary. Precautions should be taken to avoid rutting of the road base layer, to ensure that compaction requirements have been met, and that a minimum of 18" (450 mm) of cover exists over the chambers. Contact StormTech for additional guidance on allowable axle loads during paving.*

3. *Ground pressure for track dozers is the vehicle operating weight divided by total ground contact area for both tracks. Excavators will exert higher ground pressures based on loaded bucket weight and boom extension.*

4. *Mini-excavators (< 8,000lbs/3,628 kg) can be used with at least 12" (300 mm) of stone over the chambers and are limited by the maximum ground pressures in Table 2 based on a full bucket at maximum boom extension.*

5. *Storage of materials such as construction materials, equipment, spoils, etc. should not be located over the StormTech system. The use of equipment over the StormTech system not covered in Table 2 (ex. soil mixing equipment, cranes, etc) is limited. Please contact StormTech for more information.*

6. *Allowable track loads based on vehicle travel only. Excavators shall not operate on chamber beds until the total backfill reaches 3 feet (900 mm) over the entire bed.*

Table 2 – Maximum Allowable Construction Vehicle Loads[5]

Material Location	Fill Depth over Chambers in. [mm]	Maximum Allowable Wheel Loads: Max Axle Load for Trucks lbs [kN]	Maximum Allowable Wheel Loads: Max Wheel Load for Loaders lbs [kN]	Maximum Allowable Track Loads[6]: Track Width in. [mm]	Maximum Allowable Track Loads[6]: Max Ground Pressure psf [kPa]	Maximum Allowable Roller Loads: Max Drum Weight or Dynamic Force lbs [kN]
Ⓓ Final Fill Material	36" [900] Compacted	32,000 [142]	16,000 [71]	12" [305] 18" [457] 24" [610] 30" [762] 36" [914]	3420 [164] 2350 [113] 1850 [89] 1510 [72] 1310 [63]	38,000 [169]
Ⓒ Initial Fill Material	24" [600] Compacted	32,000 [142]	16,000 [71]	12" [305] 18" [457] 24" [610] 30" [762] 36" [914]	2480 [119] 1770 [85] 1430 [68] 1210 [58] 1070 [51]	20,000 [89]
	24" [600] Loose/Dumped	32,000 [142]	16,000 [71]	12" [305] 18" [457] 24" [610] 30" [762] 36" [914]	2245 [107] 1625 [78] 1325 [63] 1135 [54] 1010 [48]	20,000 [89] Roller gross vehicle weight not to exceed 12,000 lbs. [53 kN]
	18" [450]	32,000 [142]	16,000 [71]	12" [305] 18" [457] 24" [610] 30" [762] 36" [914]	2010 [96] 1480 [71] 1220 [58] 1060 [51] 950 [45]	20,000 [89] Roller gross vehicle weight not to exceed 12,000 lbs. [53 kN]
Ⓑ Embedment Stone	12" [300]	16,000 [71]	NOT ALLOWED	12" [305] 18" [457] 24" [610] 30" [762] 36" [914]	1540 [74] 1190 [57] 1010 [48] 910 [43] 840 [40]	20,000 [89] Roller gross vehicle weight not to exceed 12,000 lbs. [53 kN]
	6" [150]	8,000 [35]	NOT ALLOWED	12" [305] 18" [457] 24" [610] 30" [762] 36" [914]	1070 [51] 900 [43] 800 [38] 760 [36] 720 [34]	NOT ALLOWED

Table 3 – Placement Methods and Descriptions

Material Location	Placement Methods/ Restrictions	Wheel Load Restrictions	Track Load Restrictions	Roller Load Restrictions
		See Table 2 for Maximum Construction Loads		
Ⓓ Final Fill Material	A variety of placement methods may be used. All construction loads must not exceed the maximum limits in Table 2.	36" (900 mm) minimum cover required for dump trucks to dump over chambers.	Dozers to push parallel to rows until 36" (900mm) compaced cover is reached.[4]	Roller travel parallel to rows only until 36" (900 mm) compacted cover is reached.
Ⓒ Initial Fill Material	Excavator positioned off bed recom-mended. Small excavator allowed over chambers. Small dozer allowed.	Asphalt can be dumped into paver when compacted pavement subbase reaches 18" (450 mm) above top of chambers.	Small LGP track dozers & skid loaders allowed to grade cover stone with at least 6" (150 mm) stone under tracks at all times. Equipment must push parallel to rows at all times.	Use dynamic force of roller only after compacted fill depth reaches 12" (300 mm) over chambers. Roller travel parallel to chamber rows only.
Ⓑ Embedment Stone	No equipment allowed on bare cham-bers. Use excavator or stone conveyor positioned off bed or on foundation stone to evenly fill around all cham-bers to at least the top of chambers.	No wheel loads allowed. Material must be placed outside the limits of the chamber bed.	No tracked equipment is allowed on chambers until a min. 6" (150 mm) cover stone is in place.	No rollers allowed.
Ⓐ Foundation Stone	No StormTech restrictions. Contractor responsible for any conditions or requirements by others relative to subgrade bearing capacity, dewatering or protection of subgrade.			

APPENDIX B

Notice of Intent (NOI)
Notice of Termination (NOT)
NYSDEC SPDES General Permit GP-0-20-001
MS4 Acceptance Form

0644089821

NOTICE OF INTENT

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

NYR ______ (for DEC use only)

Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-0-20-001

All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of the permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required.

-IMPORTANT-
RETURN THIS FORM TO THE ADDRESS ABOVE
OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)
The Villages in the Hudson Valley

Owner/Operator Contact Person Last Name (NOT CONSULTANT)
Sanderson

Owner/Operator Contact Person First Name
Mark

Owner/Operator Mailing Address
3180 Washington Road

City
West Palm Beach

State
FL

Zip
33405 -

Phone (Owner/Operator)
561-310-4454

Fax (Owner/Operator)
- -

Email (Owner/Operator)
omsanderson2@gmail.com

FED TAX ID
\- (not required for individuals)

Project Site Information

Project/Site Name
The Villages in the Hudson Valley

Street Address (NOT P.O. BOX)
NYS Route 9W

Side of Street
○ **North** ○ **South** ○ **East** ● **West**

City/Town/Village (THAT ISSUES BUILDING PERMIT)
Town of Lloyd

State	Zip	County	DEC Region
NY	12528 -	Ulster	3

Name of Nearest Cross Street
Mayer Drive

Distance to Nearest Cross Street (Feet)
20

Project In Relation to Cross Street
○ **North** ● **South** ○ **East** ○ **West**

Tax Map Numbers
Section-Block-Parcel

Tax Map Numbers

1. Provide the Geographic Coordinates for the project site in NYTM Units. To do this you **must** go to the NYSDEC Stormwater Interactive Map on the DEC website at:

www.dec.ny.gov/imsmaps/stormwater/viewer.htm

Zoom into your Project Location such that you can accurately click on the centroid of your site. Once you have located your project site, go to the tool boxes on the top and choose "i"(identify). Then click on the center of your site and a new window containing the X, Y coordinates in UTM will pop up. Transcribe these coordinates into the boxes below. For problems with the interactive map use the help function.

X Coordinates (Easting)	**Y Coordinates (Northing)**
585683	4617761

2. What is the nature of this construction project?

● **New Construction**

○ **Redevelopment with increase in impervious area**

○ **Redevelopment with no increase in impervious area**

3. Select the predominant land use for both pre and post development conditions.
SELECT ONLY ONE CHOICE FOR EACH

Pre-Development Existing Land Use

- ○ FOREST
- ○ PASTURE/OPEN LAND
- ● CULTIVATED LAND
- ○ SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION
- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ○ COMMERCIAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY
- ○ PARKING LOT
- ○ OTHER

Post-Development Future Land Use

- ○ SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION
- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ○ COMMERCIAL
- ○ MUNICIPAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY (water, sewer, gas, etc.)
- ○ PARKING LOT
- ○ CLEARING/GRADING ONLY
- ○ DEMOLITION, NO REDEVELOPMENT
- ○ WELL DRILLING ACTIVITY *(Oil, Gas, etc.)
- ● OTHER

Residential

Number of Lots

*__Note__: for gas well drilling, non-high volume hydraulic fractured wells only

4. In accordance with the larger common plan of development or sale, enter the total project site area; the total area to be disturbed; existing impervious area to be disturbed (for redevelopment activities); and the future impervious area constructed within the disturbed area. (Round to the nearest tenth of an acre.)

Total Site Area	**Total Area To Be Disturbed**	**Existing Impervious Area To Be Disturbed**	**Future Impervious Area Within Disturbed Area**
53.503.0	7.37.3	0.30.3	3.33.3

5. Do you plan to disturb more than 5 acres of soil at any one time? ● **Yes** ○ **No**

6. Indicate the percentage of each Hydrologic Soil Group(HSG) at the site.

A	**B**	**C**	**D**
%	%	100 %	%

7. Is this a phased project? ● **Yes** ○ **No**

8. Enter the planned start and end dates of the disturbance activities.

Start Date 10/01/2021 - **End Date** 10/01/2023

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9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.

Name

Unnamed Tributary to the Hudson Valley

9a. Type of waterbody identified in Question 9?

- ○ Wetland / State Jurisdiction On Site (Answer 9b)
- ○ Wetland / State Jurisdiction Off Site
- ○ Wetland / Federal Jurisdiction On Site (Answer 9b)
- ○ Wetland / Federal Jurisdiction Off Site
- ○ Stream / Creek On Site
- ● Stream / Creek Off Site
- ○ River On Site
- ○ River Off Site
- ○ Lake On Site
- ○ Lake Off Site
- ○ Other Type On Site
- ○ Other Type Off Site

9b. How was the wetland identified?

- ○ Regulatory Map
- ○ Delineated by Consultant
- ○ Delineated by Army Corps of Engineers
- ○ Other (identify)

10. Has the surface waterbody(ies) in question 9 been identified as a 303(d) segment in Appendix E of GP-0-20-001? ○ **Yes** ● **No**

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001? ○ **Yes** ● **No**

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters?
If no, skip question 13. ○ **Yes** ● **No**

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey? ○ **Yes** ● **No**
If Yes, what is the acreage to be disturbed?

____ . _

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area? ○ **Yes** ● **No**

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)? ● Yes ○ No ○ Unknown

16. What is the name of the municipality/entity that owns the separate storm sewer system?

NYSDOT

17. Does any runoff from the site enter a sewer classified as a Combined Sewer? ○ Yes ● No ○ Unknown

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law? ○ Yes ● No

19. Is this property owned by a state authority, state agency, federal government or local government? ○ Yes ● No

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.) ○ Yes ● No

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)? ● Yes ○ No

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)? **If No, skip questions 23 and 27-39.** ● Yes ○ No

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual? ● Yes ○ No

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

- ● **Professional Engineer (P.E.)**
- ○ **Soil and Water Conservation District (SWCD)**
- ○ **Registered Landscape Architect (R.L.A)**
- ○ **Certified Professional in Erosion and Sediment Control (CPESC)**
- ○ **Owner/Operator**
- ○ **Other**

SWPPP Preparer
LRC Engineering & Surveying, DPC

Contact Name (Last, Space, First)
Morrison, Rodney

Mailing Address
85 Civic Center Plaza, Suite 103

City
Poughkeepsie

State: NY Zip: 12601 -

Phone: 845-243-2880 Fax: - -

Email
rmorrison@lrcconsult.com

SWPPP Preparer Certification

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-20-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

First Name: Rodney **MI**: E

Last Name: Morrison

Signature

Date / /

25. Has a construction sequence schedule for the planned management practices been prepared? ● Yes ○ No

26. Select **all** of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural

- ● Check Dams
- ● Construction Road Stabilization
- ● Dust Control
- ○ Earth Dike
- ○ Level Spreader
- ○ Perimeter Dike/Swale
- ○ Pipe Slope Drain
- ○ Portable Sediment Tank
- ○ Rock Dam
- ● Sediment Basin
- ○ Sediment Traps
- ● Silt Fence
- ● Stabilized Construction Entrance
- ● Storm Drain Inlet Protection
- ○ Straw/Hay Bale Dike
- ○ Temporary Access Waterway Crossing
- ○ Temporary Stormdrain Diversion
- ○ Temporary Swale
- ○ Turbidity Curtain
- ○ Water bars

Biotechnical

- ○ Brush Matting
- ○ Wattling

Vegetative Measures

- ○ Brush Matting
- ○ Dune Stabilization
- ○ Grassed Waterway
- ● Mulching
- ○ Protecting Vegetation
- ○ Recreation Area Improvement
- ● Seeding
- ○ Sodding
- ○ Straw/Hay Bale Dike
- ○ Streambank Protection
- ○ Temporary Swale
- ● Topsoiling
- ○ Vegetating Waterways

Permanent Structural

- ○ Debris Basin
- ○ Diversion
- ○ Grade Stabilization Structure
- ● Land Grading
- ○ Lined Waterway (Rock)
- ○ Paved Channel (Concrete)
- ○ Paved Flume
- ● Retaining Wall
- ● Riprap Slope Protection
- ○ Rock Outlet Protection
- ○ Streambank Protection

Other

Post-construction Stormwater Management Practice (SMP) Requirements

Important: Completion of Questions 27-39 is not required if response to Question 22 is No.

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.

- ○ **Preservation of Undisturbed Areas**
- ● **Preservation of Buffers**
- ● **Reduction of Clearing and Grading**
- ● **Locating Development in Less Sensitive Areas**
- ○ **Roadway Reduction**
- ● **Sidewalk Reduction**
- ○ **Driveway Reduction**
- ● **Cul-de-sac Reduction**
- ● **Building Footprint Reduction**
- ● **Parking Reduction**

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).

- ● All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).

- ○ Compacted areas were considered as impervious cover when calculating the **WQv Required**, and the compacted areas were assigned a post-construction Hydrologic Soil Group (HSG) designation that is one level less permeable than existing conditions for the hydrology analysis.

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout).

Total WQv Required

0 . 30 7. 3 7 **acre-feet**

29. Identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity in Table 1 (See Page 9) that were used to reduce the Total WQv Required(#28).

Also, provide in Table 1 the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use Tables 1 and 2 to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

Table 1 - Runoff Reduction (RR) Techniques and Standard Stormwater Management Practices (SMPs)

RR Techniques (Area Reduction)	Total Contributing Area (acres)		Total Contributing Impervious Area(acres)
○ Conservation of Natural Areas (RR-1) ...	.	and/or	.
○ Sheetflow to Riparian Buffers/Filters Strips (RR-2)	.	and/or	.
○ Tree Planting/Tree Pit (RR-3)	.	and/or	.
○ Disconnection of Rooftop Runoff (RR-4)..	.	and/or	.
RR Techniques (Volume Reduction)			
○ Vegetated Swale (RR-5)			.
○ Rain Garden (RR-6)			.
○ Stormwater Planter (RR-7)			.
○ Rain Barrel/Cistern (RR-8)			.
○ Porous Pavement (RR-9)			0 . 5 0 6 5 6
○ Green Roof (RR-10)			.
Standard SMPs with RRv Capacity			
○ Infiltration Trench (I-1)			.
○ Infiltration Basin (I-2)			.
○ Dry Well (I-3)			.
○ Underground Infiltration System (I-4)			3 . 0 3 3 0 3
○ Bioretention (F-5)			.
○ Dry Swale (O-1)			.
Standard SMPs			
○ Micropool Extended Detention (P-1)			.
○ Wet Pond (P-2)			.
○ Wet Extended Detention (P-3)			.
○ Multiple Pond System (P-4)			.
○ Pocket Pond (P-5)			.
○ Surface Sand Filter (F-1)			.
○ Underground Sand Filter (F-2)			.
○ Perimeter Sand Filter (F-3)			.
○ Organic Filter (F-4)			.
○ Shallow Wetland (W-1)			.
○ Extended Detention Wetland (W-2)			.
○ Pond/Wetland System (W-3)			.
○ Pocket Wetland (W-4)			.
○ Wet Swale (O-2)			.

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Table 2 - Alternative SMPs
(DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)

Alternative SMP	**Total Contributing Impervious Area(acres)**
○ **Hydrodynamic**	.
○ **Wet Vault**	.
○ **Media Filter**	.
○ **Other**	.

Provide the name and manufacturer of the Alternative SMPs (i.e. proprietary practice(s)) being used for WQv treatment.

Name

Manufacturer

Note: Redevelopment projects which do not use RR techniques, shall use questions 28, 29, 33 and 33a to provide SMPs used, total WQv required and total WQv provided for the project.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29.

Total RRv provided

0 . 3 0 6 . 3 6 **acre-feet**

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28).

○ **Yes** ● **No**

If Yes, go to question 36.
If No, go to question 32.

32. Provide the Minimum RRv required based on HSG.
[Minimum RRv Required = (P)(0.95)(Ai)/12, Ai=(S)(Aic)]

Minimum RRv Required

0 . 0 0 4 . 0 4 **acre-feet**

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?

● **Yes** ○ **No**

If Yes, go to question 33.
Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. Identify the Standard SMPs in Table 1 and, if applicable, the Alternative SMPs in Table 2 that were used to treat the remaining total WQv(=Total WQv Required in 28 - Total RRv Provided in 30).

Also, provide in Table 1 and 2 the total impervious area that contributes runoff to each practice selected.

Note: Use Tables 1 and 2 to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question 29.

WQv Provided

0.506 **acre-feet**

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - RRv provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a). 0.600

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)? ● **Yes** ○ **No**

If Yes, go to question 36.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv) required and provided or select waiver (36a), if applicable.

CPv Required . **acre-feet**

CPv Provided . **acre-feet**

36a. The need to provide channel protection has been waived because:

○ Site discharges directly to tidal waters or a fifth order or larger stream.

● Reduction of the total CPv is achieved on site through runoff reduction techniques or infiltration systems.

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (37a), if applicable.

Total Overbank Flood Control Criteria (Qp)

Pre-Development 61.17 **CFS**

Post-development 30.550 **CFS**

Total Extreme Flood Control Criteria (Qf)

Pre-Development 136.5 **CFS**

Post-development 61.190 **CFS**

37a. The need to meet the Qp and Qf criteria has been waived because:

- ○ Site discharges directly to tidal waters or a fifth order or larger stream.
- ● Downstream analysis reveals that the Qp and Qf controls are not required

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed? ● Yes ○ No

If Yes, Identify the entity responsible for the long term Operation and Maintenance

oWNER

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required(#28). (See question 32a) This space can also be used for other pertinent project information.

The proximity to ground water makes it so the additional porous pavement onsite can't be taken into account for stormwater calculations. There are 4 additional porous pavement areas totaling 8,200 square feet that isn't being taken into account.

40. Identify other DEC permits, existing and new, that are required for this project/facility.

- ○ Air Pollution Control
- ○ Coastal Erosion
- ○ Hazardous Waste
- ○ Long Island Wells
- ○ Mined Land Reclamation
- ○ Solid Waste
- ○ Navigable Waters Protection / Article 15
- ○ Water Quality Certificate
- ○ Dam Safety
- ○ Water Supply
- ○ Freshwater Wetlands/Article 24
- ○ Tidal Wetlands
- ○ Wild, Scenic and Recreational Rivers
- ○ Stream Bed or Bank Protection / Article 15
- ○ Endangered or Threatened Species(Incidental Take Permit)
- ○ Individual SPDES
- ○ SPDES Multi-Sector GP NYR
- ○ Other
- ● None

41. Does this project require a US Army Corps of Engineers Wetland Permit? ○ Yes ● No
If Yes, Indicate Size of Impact. .

42. Is this project subject to the requirements of a regulated, traditional land use control MS4? ● Yes ○ No
(If No, skip question 43)

43. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI? ● Yes ○ No

44. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned. NYR

Owner/Operator Certification

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Print First Name: OWEN

MI:

Print Last Name: SANDERSON

Owner/Operator Signature:

Date: / /

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505
(NOTE: Submit completed form to address above)

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity

Please indicate your permit identification number: NYR ___ ___ ___ ___ ___ ___

I. Owner or Operator Information

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person: | 4a.Telephone:

4b. Contact Person E-Mail:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

III. Reason for Termination

9a. □ All disturbed areas have achieved final stabilization in accordance with the general permit and SWPPP. ***Date final stabilization completed** (month/year): ______________________________

9b. □ Permit coverage has been transferred to new owner/operator. Indicate new owner/operator's permit identification number: NYR ___ ___ ___ ___ ___ ___
(Note: Permit coverage can not be terminated by owner identified in I.1. above until new owner/operator obtains coverage under the general permit)

9c. □ Other (Explain on Page 2)

IV. Final Site Information:

10a. Did this construction activity require the development of a SWPPP that includes post-construction stormwater management practices? □ yes □ no (If no, go to question 10f.)

10b. Have all post-construction stormwater management practices included in the final SWPPP been constructed? □ yes □ no (If no, explain on Page 2)

10c. Identify the entity responsible for long-term operation and maintenance of practice(s)?

____

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

10d. Has the entity responsible for long-term operation and maintenance been given a copy of the operation and maintenance plan required by the general permit? □ yes □ no

10e. Indicate the method used to ensure long-term operation and maintenance of the post-construction stormwater management practice(s):

□ Post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain practice(s) have been deeded to the municipality.

□ Executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s).

□ For post-construction stormwater management practices that are privately owned, a mechanism is in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the owner or operator's deed of record.

□ For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university or hospital), government agency or authority, or public utility; policy and procedures are in place that ensures operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

10f. Provide the total area of impervious surface (i.e. roof, pavement, concrete, gravel, etc.) constructed within the disturbance area? ______________________________ (acres)

11. Is this project subject to the requirements of a regulated, traditional land use control MS4? □ yes □ no

(If Yes, complete section VI - "MS4 Acceptance" statement

V. Additional Information/Explanation:

(Use this section to answer questions 9c. and 10b., if applicable)

VI. MS4 Acceptance - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative (Note: Not required when 9b. is checked -transfer of coverage)

I have determined that it is acceptable for the owner or operator of the construction project identified in question 5 to submit the Notice of Termination at this time.

Printed Name:

Title/Position:

Signature:	Date:

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

VII. Qualified Inspector Certification - Final Stabilization:	
I hereby certify that all disturbed areas have achieved final stabilization as defined in the current version of the general permit, and that all temporary, structural erosion and sediment control measures have been removed. 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.	
Printed Name:	
Title/Position:	
Signature:	Date:
VIII. Qualified Inspector Certification - Post-construction Stormwater Management Practice(s):	
I hereby certify that all post-construction stormwater management practices have been constructed in conformance with the SWPPP. 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.	
Printed Name:	
Title/Position:	
Signature:	Date:
IX. Owner or Operator Certification	
I hereby certify that this document was prepared by me or under my direction or supervision. My determination, based upon my inquiry of the person(s) who managed the construction activity, or those persons directly responsible for gathering the information, is that the information provided in this document is true, accurate and complete. 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.	
Printed Name:	
Title/Position:	
Signature:	Date:

(NYS DEC Notice of Termination - January 2015)

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP- 0-20-001

Issued Pursuant to Article 17, Titles 7, 8 and Article 70

of the Environmental Conservation Law

Effective Date: January 29, 2020

Expiration Date: January 28, 2025

John J. Ferguson

Chief Permit Administrator

Authorized Signature

1-23-20

Date

Address: NYS DEC
Division of Environmental Permits
625 Broadway, 4th Floor
Albany, N.Y. 12233-1750

PREFACE

Pursuant to Section 402 of the Clean Water Act ("CWA"), stormwater *discharges* from certain *construction activities* are unlawful unless they are authorized by a *National Pollutant Discharge Elimination System ("NPDES")* permit or by a state permit program. New York administers the approved State Pollutant Discharge Elimination System (SPDES) program with permits issued in accordance with the New York State Environmental Conservation Law (ECL) Article 17, Titles 7, 8 and Article 70.

An *owner or operator* of a *construction activity* that is eligible for coverage under this permit must obtain coverage prior to the *commencement of construction activity*. Activities that fit the definition of "*construction activity*", as defined under 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), constitute construction of a *point source* and therefore, pursuant to ECL section 17-0505 and 17-0701, the *owner or operator* must have coverage under a SPDES permit prior to *commencing construction activity*. The *owner or operator* cannot wait until there is an actual *discharge* from the *construction site* to obtain permit coverage.

***Note: The italicized words/phrases within this permit are defined in Appendix A.**

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES

Table of Contents

Part 1. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

This permit authorizes stormwater *discharges* to *surface waters of the State* from the following *construction activities* identified within 40 CFR Parts 122.26(b)(14)(x), 122.26(b)(15)(i) and 122.26(b)(15)(ii), provided all of the eligibility provisions of this permit are met:

1. *Construction activities* involving soil disturbances of one (1) or more acres; including disturbances of less than one acre that are part of a *larger common plan of development or sale* that will ultimately disturb one or more acres of land; excluding *routine maintenance activity* that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility;

2. *Construction activities* involving soil disturbances of less than one (1) acre where the Department has determined that a *SPDES* permit is required for stormwater *discharges* based on the potential for contribution to a violation of a *water quality standard* or for significant contribution of *pollutants* to *surface waters of the State.*

3. *Construction activities* located in the watershed(s) identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

B. Effluent Limitations Applicable to Discharges from Construction Activities

*Discharge*s authorized by this permit must achieve, at a minimum, the effluent limitations in Part I.B.1. (a) – (f) of this permit. These limitations represent the degree of effluent reduction attainable by the application of best practicable technology currently available.

1. Erosion and Sediment Control Requirements - The *owner or operator* must select, design, install, implement and maintain control measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. The selection, design, installation, implementation, and maintenance of these control measures must meet the non-numeric effluent limitations in Part I.B.1.(a) – (f) of this permit and be in accordance with the New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, using sound engineering judgment. Where control measures are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must include in the *Stormwater Pollution Prevention Plan* ("SWPPP") the reason(s) for the

deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

a. **Erosion and Sediment Controls.** Design, install and maintain effective erosion and sediment controls to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such controls must be designed, installed and maintained to:

(i) *Minimize* soil erosion through application of runoff control and soil stabilization control measure to *minimize pollutant discharges*;

(ii) Control stormwater *discharge*s, including both peak flowrates and total stormwater volume, to *minimize* channel and *streambank* erosion and scour in the immediate vicinity of the *discharge* points;

(iii) *Minimize* the amount of soil exposed during *construction activity*;

(iv) *Minimize* the disturbance of *steep slopes*;

(v) *Minimize* sediment *discharge*s from the site;

(vi) Provide and maintain *natural buffer*s around surface waters, direct stormwater to vegetated areas and maximize stormwater infiltration to reduce *pollutant discharge*s, unless *infeasible*;

(vii) *Minimize* soil compaction. Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted;

(viii) Unless *infeasible*, preserve a sufficient amount of topsoil to complete soil restoration and establish a uniform, dense vegetative cover; and

(ix) *Minimize* dust. On areas of exposed soil, *minimize* dust through the appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged from the site.

b. **Soil Stabilization**. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) days from the date the current soil disturbance activity ceased. For construction sites that *directly discharge* to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. See Appendix A for definition of *Temporarily Ceased*.

c. **Dewatering**. *Discharge*s from *dewatering* activities, including *discharge*s from *dewatering* of trenches and excavations, must be managed by appropriate control measures.

d. **Pollution Prevention Measures**. Design, install, implement, and maintain effective pollution prevention measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such measures must be designed, installed, implemented and maintained to:

   (i) *Minimize* the *discharge* of *pollutants* from equipment and vehicle washing, wheel wash water, and other wash waters. This applies to washing operations that use clean water only. Soaps, detergents and solvents cannot be used;

   (ii) *Minimize* the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, hazardous and toxic waste, and other materials present on the site to precipitation and to stormwater. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a *discharge* of *pollutants*, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use) ; and

   (iii) Prevent the *discharge* of *pollutants* from spills and leaks and implement chemical spill and leak prevention and response procedures.

e. **Prohibited *Discharge*s.** The following *discharge*s are prohibited:

   (i) Wastewater from washout of concrete;

   (ii) Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;

(iii) Fuels, oils, or other *pollutants* used in vehicle and equipment operation and maintenance;

(iv) Soaps or solvents used in vehicle and equipment washing; and

(v) Toxic or hazardous substances from a spill or other release.

f. Surface Outlets. When discharging from basins and impoundments, the outlets shall be designed, constructed and maintained in such a manner that sediment does not leave the basin or impoundment and that erosion at or below the outlet does not occur.

C. Post-construction Stormwater Management Practice Requirements

1. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must select, design, install, and maintain the practices to meet the *performance criteria* in the New York State Stormwater Management Design Manual (“Design Manual”), dated January 2015, using sound engineering judgment. Where post-construction stormwater management practices (“SMPs”) are not designed in conformance with the *performance criteria* in the Design Manual, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must design the practices to meet the applicable *sizing criteria* in Part I.C.2.a., b., c. or d. of this permit.

a. Sizing Criteria for New Development

(i) Runoff Reduction Volume (“RRv”): Reduce the total Water Quality Volume (“WQv”) by application of RR techniques and standard SMPs with RRv capacity. The total WQv shall be calculated in accordance with the criteria in Section 4.2 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: Construction activities that cannot meet the criteria in Part I.C.2.a.(i) of this permit due to site limitations shall direct runoff from all newly constructed impervious areas to a RR technique or standard SMP with RRv capacity unless infeasible. The specific site limitations that prevent the reduction of 100% of the WQv shall be documented in the SWPPP.

For each impervious area that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered infeasible.

In no case shall the runoff reduction achieved from the newly constructed impervious areas be less than the Minimum RRv as calculated using the criteria in Section 4.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume (“Cpv”): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site discharges directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria (“Qp”): Requires storage to attenuate the post-development 10-year, 24-hour peak discharge rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria (“Qf”): Requires storage to attenuate the post-development 100-year, 24-hour peak discharge rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

b. *Sizing Criteria* for *New Development* in Enhanced Phosphorus Removal Watershed

(i) Runoff Reduction Volume (RRv): Reduce the total Water Quality Volume (WQv) by application of RR techniques and standard SMPs with RRv capacity. The total WQv is the runoff volume from the 1-year, 24 hour design storm over the post-developed watershed and shall be calculated in accordance with the criteria in Section 10.3 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the criteria in Part I.C.2.b.(i) of this permit due to *site limitations* shall direct runoff from all newly constructed *impervious areas* to a RR technique or standard SMP with RRv capacity unless *infeasible*. The specific *site limitations* that prevent the reduction of 100% of the WQv shall be documented in the SWPPP. For each *impervious area* that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered *infeasible.*

In no case shall the runoff reduction achieved from the newly constructed *impervious areas* be less than the Minimum RRv as calculated using the criteria in Section 10.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume (Cpv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site *discharge*s directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria (Qp): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria (Qf): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

c. Sizing Criteria for Redevelopment Activity

(i) Water Quality Volume (WQv): The WQv treatment objective for *redevelopment activity* shall be addressed by one of the following options. *Redevelopment activities* located in an Enhanced Phosphorus Removal Watershed (see Part III.B.3. and Appendix C of this permit) shall calculate the WQv in accordance with Section 10.3 of the Design Manual. All other *redevelopment activities* shall calculate the WQv in accordance with Section 4.2 of the Design Manual.

(1) Reduce the existing *impervious cover* by a minimum of 25% of the total disturbed, *impervious area*. The Soil Restoration criteria in Section 5.1.6 of the Design Manual must be applied to all newly created pervious areas, or

(2) Capture and treat a minimum of 25% of the WQv from the disturbed, *impervious area* by the application of standard SMPs; or reduce 25% of the WQv from the disturbed, *impervious area* by the application of RR techniques or standard SMPs with RRv capacity., or

(3) Capture and treat a minimum of 75% of the WQv from the disturbed, *impervious area* as well as any additional runoff from tributary areas by application of the alternative practices discussed in Sections 9.3 and 9.4 of the Design Manual., or

(4) Application of a combination of 1, 2 and 3 above that provide a weighted average of at least two of the above methods. Application of this method shall be in accordance with the criteria in Section 9.2.1(B) (IV) of the Design Manual.

If there is an existing post-construction stormwater management practice located on the site that captures and treats runoff from the *impervious area* that is being disturbed, the WQv treatment option selected must, at a minimum, provide treatment equal to the treatment that was being provided by the existing practice(s) if that treatment is greater than the treatment required by options 1 – 4 above.

(ii) Channel Protection Volume (Cpv): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iii) *Overbank* Flood Control Criteria (Qp): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iv) Extreme Flood Control Criteria (Qf): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site

d. Sizing Criteria for Combination of Redevelopment Activity and New Development

Construction projects that include both New Development and Redevelopment Activity shall provide post-construction stormwater management controls that meet the sizing criteria calculated as an aggregate of the Sizing Criteria in Part I.C.2.a. or b. of this permit for the New Development portion of the project and Part I.C.2.c of this permit for Redevelopment Activity portion of the project.

D. Maintaining Water Quality

The Department expects that compliance with the conditions of this permit will control *discharge*s necessary to meet applicable *water quality standards*. It shall be a violation of the *ECL* for any discharge to either cause or contribute to a violation of *water quality standards* as contained in Parts 700 through 705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, such as:

1. There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions;

2. There shall be no increase in suspended, colloidal or settleable solids that will cause deposition or impair the waters for their best usages; and

3. There shall be no residue from oil and floating substances, nor visible oil film, nor globules of grease.

If there is evidence indicating that the stormwater *discharge*s authorized by this permit are causing, have the reasonable potential to cause, or are contributing to a violation of the *water quality standards*; the *owner or operator* must take appropriate corrective action in accordance with Part IV.C.5. of this general permit and document in accordance with Part IV.C.4. of this general permit. To address the *water quality standard* violation the *owner or operator* may need to provide additional information, include and implement appropriate controls in the SWPPP to correct the problem, or obtain an individual SPDES permit.

If there is evidence indicating that despite compliance with the terms and conditions of this general permit it is demonstrated that the stormwater *discharge*s authorized by this permit are causing or contributing to a violation of *water quality standards*, or if the Department determines that a modification of the permit is necessary to prevent a violation of *water quality standards*, the authorized *discharge*s will no longer be eligible for coverage under this permit. The Department may require the *owner or operator* to obtain an individual SPDES permit to continue discharging.

E. Eligibility Under This General Permit

1. This permit may authorize all *discharges* of stormwater from *construction activity* to *surface waters of the State* and *groundwaters* except for ineligible *discharges* identified under subparagraph F. of this Part.

2. Except for non-stormwater *discharges* explicitly listed in the next paragraph, this permit only authorizes stormwater *discharge*s; including stormwater runoff, snowmelt runoff, and surface runoff and drainage, from *construction activities*.

3. Notwithstanding paragraphs E.1 and E.2 above, the following non-stormwater discharges are authorized by this permit: those listed in 6 NYCRR 750-1.2(a)(29)(vi), with the following exception: "Discharges from firefighting activities are authorized only when the firefighting activities are emergencies/unplanned"; waters to which other components have not been added that are used to control dust in accordance with the SWPPP; and uncontaminated *discharge*s from *construction site* de-watering operations. All non-stormwater discharges must be identified in the SWPPP. Under all circumstances, the *owner or operator* must still comply with *water quality standards* in Part I.D of this permit.

4. The *owner or operator* must maintain permit eligibility to *discharge* under this permit. Any *discharges* that are not compliant with the eligibility conditions of this permit are not authorized by the permit and the *owner or operator* must either apply for a separate permit to cover those ineligible *discharges* or take steps necessary to make the *discharge* eligible for coverage.

F. Activities Which Are Ineligible for Coverage Under This General Permit

All of the following are **<u>not</u>** authorized by this permit:

1. *Discharge*s after *construction activities* have been completed and the site has undergone *final stabilization*;

2. *Discharge*s that are mixed with sources of non-stormwater other than those expressly authorized under subsection E.3. of this Part and identified in the SWPPP required by this permit;

3. *Discharges* that are required to obtain an individual SPDES permit or another SPDES general permit pursuant to Part VII.K. of this permit;

4. *Construction activities* or *discharges* from *construction activities* that may adversely affect an *endangered or threatened species* unless the *owner or*

operator has obtained a permit issued pursuant to 6 NYCRR Part 182 for the project or the Department has issued a letter of non-jurisdiction for the project. All documentation necessary to demonstrate eligibility shall be maintained on site in accordance with Part II.D.2 of this permit;

5. *Discharges* which either cause or contribute to a violation of *water quality standards* adopted pursuant to the *ECL* and its accompanying regulations;

6. *Construction activities* for residential, commercial and institutional projects:

   a. Where the *discharge*s from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb one (1) or more acres of land designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

7. *Construction activities* for linear transportation projects and linear utility projects:

   a. Where the *discharge*s from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb two (2) or more acres of land designated on the current USDA Soil Survey as Soil Slope Phase "D" (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

8. *Construction activities* that have the potential to affect an *historic property*, unless there is documentation that such impacts have been resolved. The following documentation necessary to demonstrate eligibility with this requirement shall be maintained on site in accordance with Part II.D.2 of this permit and made available to the Department in accordance with Part VII.F of this permit:

   a. Documentation that the *construction activity* is not within an archeologically sensitive area indicated on the sensitivity map, and that the *construction activity* is not located on or immediately adjacent to a property listed or determined to be eligible for listing on the National or State Registers of Historic Places, and that there is no new permanent building on the *construction site* within the following distances from a building, structure, or object that is more than 50 years old, or if there is such a new permanent building on the *construction site* within those parameters that NYS Office of Parks, Recreation and Historic Preservation (OPRHP), a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined that the building, structure, or object more than 50 years old is not historically/archeologically significant.

      - 1-5 acres of disturbance - 20 feet
      - 5-20 acres of disturbance - 50 feet
      - 20+ acres of disturbance - 100 feet, or

   b. DEC consultation form sent to OPRHP, and copied to the NYS DEC Agency Historic Preservation Officer (APO), and
      (i) the State Environmental Quality Review (SEQR) Environmental Assessment Form (EAF) with a negative declaration or the Findings Statement, with documentation of OPRHP's agreement with the resolution; or
      (ii) documentation from OPRHP that the *construction activity* will result in No Impact; or
      (iii) documentation from OPRHP providing a determination of No Adverse Impact; or
      (iv) a Letter of Resolution signed by the owner/operator, OPRHP and the DEC APO which allows for this *construction activity* to be eligible for coverage under the general permit in terms of the State Historic Preservation Act (SHPA); or

   c. Documentation of satisfactory compliance with Section 106 of the National Historic Preservation Act for a coterminous project area:

(i) No Affect
(ii) No Adverse Affect
(iii) Executed Memorandum of Agreement, or

d. Documentation that:

(i) SHPA Section 14.09 has been completed by NYS DEC or another state agency.

9. *Discharge*s from *construction activities* that are subject to an existing SPDES individual or general permit where a SPDES permit for *construction activity* has been terminated or denied; or where the *owner or operator* has failed to renew an expired individual permit.

Part II. PERMIT COVERAGE

A. How to Obtain Coverage

1. An *owner or operator* of a *construction activity* that is not subject to the requirements of a regulated, traditional land use control MS4 must first prepare a SWPPP in accordance with all applicable requirements of this permit and then submit a completed Notice of Intent (NOI) to the Department to be authorized to discharge under this permit.

2. An *owner or operator* of a *construction activity* that is subject to the requirements of a *regulated, traditional land use control MS4* must first prepare a SWPPP in accordance with all applicable requirements of this permit and then have the SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department. The *owner or operator* shall have the “MS4 SWPPP Acceptance” form signed in accordance with Part VII.H., and then submit that form along with a completed NOI to the Department.

3. The requirement for an *owner or operator* to have its SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department does not apply to an *owner or operator* that is obtaining permit coverage in accordance with the requirements in Part II.F. (Change of *Owner or Operator*) or where the *owner or operator* of the *construction activity* is the *regulated, traditional land use control MS4* . This exemption does not apply to *construction activities* subject to the New York City Administrative Code.

B. Notice of Intent (NOI) Submittal

1. Prior to December 21, 2020, an owner or operator shall use either the electronic (eNOI) or paper version of the NOI that the Department prepared. Both versions of the NOI are located on the Department's website (http://www.dec.ny.gov/). The paper version of the NOI shall be signed in accordance with Part VII.H. of this permit and submitted to the following address:

   NOTICE OF INTENT
   NYS DEC, Bureau of Water Permits
   625 Broadway, 4th Floor
   Albany, New York 12233-3505

2. Beginning December 21, 2020 and in accordance with EPA's 2015 NPDES Electronic Reporting Rule (40 CFR Part 127), the *owner or operator* must submit the NOI electronically using the *Department's* online NOI.

3. The *owner or operator* shall have the SWPPP preparer sign the "SWPPP Preparer Certification" statement on the NOI prior to submitting the form to the Department.

4. As of the date the NOI is submitted to the Department, the *owner or operator* shall make the NOI and SWPPP available for review and copying in accordance with the requirements in Part VII.F. of this permit.

C. Permit Authorization

1. An *owner or operator* shall not *commence construction activity* until their authorization to *discharge* under this permit goes into effect.

2. Authorization to *discharge* under this permit will be effective when the *owner or operator* has satisfied all of the following criteria:

   a. project review pursuant to the State Environmental Quality Review Act ("SEQRA") have been satisfied, when SEQRA is applicable. See the Department's website (http://www.dec.ny.gov/) for more information,

   b. where required, all necessary Department permits subject to the *Uniform Procedures Act ("UPA")* (see 6 NYCRR Part 621), or the equivalent from another New York State agency, have been obtained, unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4). *Owners or operators* of *construction activities* that are required to obtain *UPA* permits must submit a preliminary SWPPP to the appropriate DEC Permit Administrator at the Regional Office listed in Appendix F at the time all other necessary *UPA* permit applications are submitted. The preliminary SWPPP must include sufficient information to demonstrate that the *construction activity* qualifies for authorization under this permit,

c. the final SWPPP has been prepared, and

d. a complete NOI has been submitted to the Department in accordance with the requirements of this permit.

3. An *owner or operator* that has satisfied the requirements of Part II.C.2 above will be authorized to *discharge* stormwater from their *construction activity* in accordance with the following schedule:

   a. For *construction activities* that are not subject to the requirements of a *regulated, traditional land use control MS4*:

      (i) Five (5) business days from the date the Department receives a complete electronic version of the NOI (eNOI) for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.; or

      (ii) Sixty (60) business days from the date the Department receives a complete NOI (electronic or paper version) for *construction activities* with a SWPPP that has not been prepared in conformance with the design criteria in technical standard referenced in Part III.B.1. or, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C., the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, or;

      (iii) Ten (10) business days from the date the Department receives a complete paper version of the NOI for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.

b. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*:

(i) Five (5) business days from the date the Department receives both a complete electronic version of the NOI (eNOI) and signed "*MS4* SWPPP Acceptance" form, or

(ii) Ten (10) business days from the date the Department receives both a complete paper version of the NOI and signed "MS4 SWPPP Acceptance" form.

4. Coverage under this permit authorizes stormwater *discharges* from only those areas of disturbance that are identified in the NOI. If an *owner or operator* wishes to have stormwater *discharges* from future or additional areas of disturbance authorized, they must submit a new NOI that addresses that phase of the development, unless otherwise notified by the Department. The *owner or operator* shall not *commence construction activity* on the future or additional areas until their authorization to *discharge* under this permit goes into effect in accordance with Part II.C. of this permit.

D. General Requirements For Owners or Operators With Permit Coverage

1. The *owner or operator* shall ensure that the provisions of the SWPPP are implemented from the *commencement of construction activity* until all areas of disturbance have achieved *final stabilization* and the Notice of Termination ("NOT") has been submitted to the Department in accordance with Part V. of this permit. This includes any changes made to the SWPPP pursuant to Part III.A.4. of this permit.

2. The *owner or operator* shall maintain a copy of the General Permit (GP-0-20-001), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form, inspection reports, responsible contractor's or subcontractor's certification statement (see Part III.A.6.), and all documentation necessary to demonstrate eligibility with this permit at the *construction site* until all disturbed areas have achieved *final stabilization* and the NOT has been submitted to the Department. The documents must be maintained in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.

3. The *owner or operator* of a *construction activity* shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the Department or, in areas under the jurisdiction of a *regulated, traditional land* *use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*). At a minimum, the *owner or operator* must comply with the following requirements in order to be authorized to disturb greater than five (5) acres of soil at any one time:

a. The *owner or operator* shall have a *qualified inspector* conduct **at least** two (2) site inspections in accordance with Part IV.C. of this permit every seven (7) calendar days, for as long as greater than five (5) acres of soil remain disturbed. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

b. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016.

c. The *owner or operator* shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.

d. The *owner or operator* shall install any additional site-specific practices needed to protect water quality.

e. The *owner or operator* shall include the requirements above in their SWPPP.

4. In accordance with statute, regulations, and the terms and conditions of this permit, the Department may suspend or revoke an *owner's or operator's* coverage under this permit at any time if the Department determines that the SWPPP does not meet the permit requirements or consistent with Part VII.K..

5. Upon a finding of significant non-compliance with the practices described in the SWPPP or violation of this permit, the Department may order an immediate stop to all activity at the site until the non-compliance is remedied. The stop work order shall be in writing, describe the non-compliance in detail, and be sent to the *owner or operator*.

6. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*, the *owner or operator* shall notify the

regulated, traditional land use control MS4 in writing of any planned amendments or modifications to the post-construction stormwater management practice component of the SWPPP required by Part III.A. 4. and 5. of this permit. Unless otherwise notified by the *regulated, traditional land use control MS4*, the *owner or operator* shall have the SWPPP amendments or modifications reviewed and accepted by the *regulated, traditional land use control MS4* prior to commencing construction of the post-construction stormwater management practice.

E. Permit Coverage for Discharges Authorized Under GP-0-15-002

1. Upon renewal of SPDES General Permit for Stormwater Discharges from *Construction Activity* (Permit No. GP-0-15-002), an *owner or operator* of *a construction activity* with coverage under GP-0-15-002, as of the effective date of GP- 0-20-001, shall be authorized to *discharge* in accordance with GP- 0-20-001, unless otherwise notified by the Department.

   An *owner or operator* may continue to implement the technical/design components of the post-construction stormwater management controls provided that such design was done in conformance with the technical standards in place at the time of initial project authorization. However, they must comply with the other, non-design provisions of GP-0-20-001.

F. Change of Owner or Operator

1. When property ownership changes or when there is a change in operational control over the construction plans and specifications, the original *owner or operator* must notify the new *owner or operator*, in writing, of the requirement to obtain permit coverage by submitting a NOI with the Department. For *construction activities* subject to the requirements of a *regulated, traditional land use control MS4,* the original *owner or operator* must also notify the MS4, in writing, of the change in ownership at least 30 calendar days prior to the change in ownership.

2. Once the new *owner or operator* obtains permit coverage, the original *owner or operator* shall then submit a completed NOT with the name and permit identification number of the new *owner or operator* to the Department at the address in Part II.B.1. of this permit. If the original *owner or operator* maintains ownership of a portion of the *construction activity* and will disturb soil, they must maintain their coverage under the permit.

3. Permit coverage for the new *owner or operator* will be effective as of the date the Department receives a complete NOI, provided the original *owner or*

operator was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new *owner or operator*.

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

1. A SWPPP shall be prepared and implemented by the *owner or operator* of each *construction activity* covered by this permit. The SWPPP must document the selection, design, installation, implementation and maintenance of the control measures and practices that will be used to meet the effluent limitations in Part I.B. of this permit and where applicable, the post-construction stormwater management practice requirements in Part I.C. of this permit. The SWPPP shall be prepared prior to the submittal of the NOI. The NOI shall be submitted to the Department prior to the *commencement of construction activity*. A copy of the completed, final NOI shall be included in the SWPPP.

2. The SWPPP shall describe the erosion and sediment control practices and where required, post-construction stormwater management practices that will be used and/or constructed to reduce the *pollutants* in stormwater *discharges* and to assure compliance with the terms and conditions of this permit. In addition, the SWPPP shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater *discharges*.

3. All SWPPPs that require the post-construction stormwater management practice component shall be prepared by a *qualified professional* that is knowledgeable in the principles and practices of stormwater management and treatment.

4. The *owner or operator* must keep the SWPPP current so that it at all times accurately documents the erosion and sediment controls practices that are being used or will be used during construction, and all post-construction stormwater management practices that will be constructed on the site. At a minimum, the *owner or operator* shall amend the SWPPP, including construction drawings:

    a. whenever the current provisions prove to be ineffective in minimizing *pollutants* in stormwater *discharges* from the site;

b. whenever there is a change in design, construction, or operation at the *construction site* that has or could have an effect on the *discharge* of *pollutants*;

c. to address issues or deficiencies identified during an inspection by the *qualified inspector,* the Department or other regulatory authority; and

d. to document the final construction conditions.

5. The Department may notify the *owner or operator* at any time that the SWPPP does not meet one or more of the minimum requirements of this permit. The notification shall be in writing and identify the provisions of the SWPPP that require modification. Within fourteen (14) calendar days of such notification, or as otherwise indicated by the Department, the *owner or operator* shall make the required changes to the SWPPP and submit written notification to the Department that the changes have been made. If the *owner or operator* does not respond to the Department's comments in the specified time frame, the Department may suspend the *owner's or operator's* coverage under this permit or require the *owner or operator* to obtain coverage under an individual SPDES permit in accordance with Part II.D.4. of this permit.

6. Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The *owner or operator* shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor.* The *owner or operator* shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.

   The *owner or operator* shall have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before they commence any *construction activity*:

   "I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP 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 *discharge*s from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

In addition to providing the certification statement above, the certification page must also identify the specific elements of the SWPPP that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the *trained contractor* responsible for SWPPP implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement is signed. The *owner or operator* shall attach the certification statement(s) to the copy of the SWPPP that is maintained at the *construction site*. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has commenced, they must also sign the certification statement and provide the information listed above.

7. For projects where the Department requests a copy of the SWPPP or inspection reports, the *owner or operator* shall submit the documents in both electronic (PDF only) and paper format within five (5) business days, unless otherwise notified by the Department.

B. Required SWPPP Contents

1. Erosion and sediment control component - All SWPPPs prepared pursuant to this permit shall include erosion and sediment control practices designed in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Where erosion and sediment control practices are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must demonstrate *equivalence* to the technical standard. At a minimum, the erosion and sediment control component of the SWPPP shall include the following:

   a. Background information about the scope of the project, including the location, type and size of project

b. A site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map shall show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s); floodplain/floodway boundaries; wetlands and drainage patterns that could be affected by the *construction activity*; existing and final contours ; locations of different soil types with boundaries; material, waste, borrow or equipment storage areas located on adjacent properties; and location(s) of the stormwater *discharge*(s);

c. A description of the soil(s) present at the site, including an identification of the Hydrologic Soil Group (HSG);

d. A construction phasing plan and sequence of operations describing the intended order of *construction activities*, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity at the site that results in soil disturbance;

e. A description of the minimum erosion and sediment control practices to be installed or implemented for each *construction activity* that will result in soil disturbance. Include a schedule that identifies the timing of initial placement or implementation of each erosion and sediment control practice and the minimum time frames that each practice should remain in place or be implemented;

f. A temporary and permanent soil stabilization plan that meets the requirements of this general permit and the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, for each stage of the project, including initial land clearing and grubbing to project completion and achievement of *final stabilization*;

g. A site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice;

h. The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices. Include the location and sizing of any temporary sediment basins and structural practices that will be used to divert flows from exposed soils;

i. A maintenance inspection schedule for the contractor(s) identified in Part III.A.6. of this permit, to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection schedule shall be in accordance with the requirements in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016;

j. A description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a *pollutant* source in the stormwater *discharges*;

k. A description and location of any stormwater *discharges* associated with industrial activity other than construction at the site, including, but not limited to, stormwater *discharges* from asphalt plants and concrete plants located on the *construction site*; and

l. Identification of any elements of the design that are not in conformance with the design criteria in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Include the reason for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. Post-construction stormwater management practice component – The *owner or operator* of any construction project identified in Table 2 of Appendix B as needing post-construction stormwater management practices shall prepare a SWPPP that includes practices designed in conformance with the applicable *sizing criteria* in Part I.C.2.a., c. or d. of this permit and the *performance criteria* in the technical standard, New York State Stormwater Management Design Manual dated January 2015

   Where post-construction stormwater management practices are not designed in conformance with the *performance criteria* in the technical standard, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

   The post-construction stormwater management practice component of the SWPPP shall include the following:

   a. Identification of all post-construction stormwater management practices to be constructed as part of the project. Include the dimensions, material specifications and installation details for each post-construction stormwater management practice;

b. A site map/construction drawing(s) showing the specific location and size of each post-construction stormwater management practice;

c. A Stormwater Modeling and Analysis Report that includes:
   (i) Map(s) showing pre-development conditions, including watershed/subcatchments boundaries, flow paths/routing, and design points;

   (ii) Map(s) showing post-development conditions, including watershed/subcatchments boundaries, flow paths/routing, design points and post-construction stormwater management practices;

   (iii) Results of stormwater modeling (i.e. hydrology and hydraulic analysis) for the required storm events. Include supporting calculations (model runs), methodology, and a summary table that compares pre and post-development runoff rates and volumes for the different storm events;

   (iv) Summary table, with supporting calculations, which demonstrates that each post-construction stormwater management practice has been designed in conformance with the *sizing criteria* included in the Design Manual;

   (v) Identification of any *sizing criteria* that is not required based on the requirements included in Part I.C. of this permit; and

   (vi) Identification of any elements of the design that are not in conformance with the *performance criteria* in the Design Manual. Include the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the Design Manual;

d. Soil testing results and locations (test pits, borings);

e. Infiltration test results, when required; and

f. An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each post-construction stormwater management practice. The plan shall identify the entity that will be responsible for the long term operation and maintenance of each practice.

3. Enhanced Phosphorus Removal Standards - All construction projects identified in Table 2 of Appendix B that are located in the watersheds identified in Appendix C shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the applicable *sizing criteria* in Part I.C.2. b., c. or d. of this permit and the *performance criteria,* Enhanced Phosphorus Removal Standards included in the Design Manual. At a minimum, the post-construction stormwater management practice component of the SWPPP shall include items 2.a - 2.f. above.

C. Required SWPPP Components by Project Type

Unless otherwise notified by the Department, *owners or operators* of *construction activities* identified in Table 1 of Appendix B are required to prepare a SWPPP that only includes erosion and sediment control practices designed in conformance with Part III.B.1 of this permit. *Owners or operators* of the *construction activities* identified in Table 2 of Appendix B shall prepare a SWPPP that also includes post-construction stormwater management practices designed in conformance with Part III.B.2 or 3 of this permit.

Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

1. The *owner or operator* must ensure that all erosion and sediment control practices (including pollution prevention measures) and all post-construction stormwater management practices identified in the SWPPP are inspected and maintained in accordance with Part IV.B. and C. of this permit.

2. The terms of this 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 the environment.

B. Contractor Maintenance Inspection Requirements

1. The *owner or operator* of each *construction activity* identified in Tables 1 and 2 of Appendix B shall have a *trained contractor* inspect the erosion and sediment control practices and pollution prevention measures being implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times. If deficiencies are identified, the contractor shall

begin implementing corrective actions within one business day and shall complete the corrective actions in a reasonable time frame.

2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *trained contractor* can stop conducting the maintenance inspections. The *trained contractor* shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of this permit as soon as soil disturbance activities resume.

3. For construction sites where soil disturbance activities have been shut down with partial project completion, the *trained contractor* can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

C. Qualified Inspector Inspection Requirements

The *owner or operator* shall have a *qualified inspector* conduct site inspections in conformance with the following requirements:

[Note: The *trained contractor* identified in Part III.A.6. and IV.B. of this permit **cannot** conduct the *qualified inspector* site inspections unless they meet the *qualified inspector* qualifications included in Appendix A. In order to perform these inspections, the *trained contractor* would have to be a:

- licensed Professional Engineer,
- Certified Professional in Erosion and Sediment Control (CPESC),
- New York State Erosion and Sediment Control Certificate Program holder
- Registered Landscape Architect, or
- someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity].

1. A *qualified inspector* shall conduct site inspections for all *construction activities* identified in Tables 1 and 2 of Appendix B, with the exception of:

   a. the construction of a single family residential subdivision with 25% or less *impervious cover* at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and <u>not</u> directly discharging to one of the 303(d) segments listed in Appendix E;

b. the construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is <u>not</u> located in one of the watersheds listed in Appendix C and <u>not</u> directly discharging to one of the 303(d) segments listed in Appendix E;

c. construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and

d. *construction activities* located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

2. Unless otherwise notified by the Department, the *qualified inspector* shall conduct site inspections in accordance with the following timetable:

   a. For construction sites where soil disturbance activities are on-going, the *qualified inspector* shall conduct a site inspection at least once every seven (7) calendar days.

   b. For construction sites where soil disturbance activities are on-going and the *owner or operator* has received authorization in accordance with Part II.D.3 to disturb greater than five (5) acres of soil at any one time, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

   c. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *qualified inspector* shall conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to reducing the frequency of inspections.

d. For construction sites where soil disturbance activities have been shut down with partial project completion, the *qualified inspector* can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* <u>and</u> all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the *owner or operator* shall have the *qualified inspector* perform a final inspection and certify that all disturbed areas have achieved *final stabilization,* <u>and</u> all temporary, structural erosion and sediment control measures have been removed*;* and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice" certification statements on the NOT. The *owner or operator* shall then submit the completed NOT form to the address in Part II.B.1 of this permit.

e. For construction sites that directly *discharge* to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

3. At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices and pollution prevention measures to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved *final stabilization,* all points of *discharge* to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site*, and all points of *discharge* from the *construction site*.

4. The *qualified inspector* shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

a. Date and time of inspection;

b. Name and title of person(s) performing inspection;

c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;

d. A description of the condition of the runoff at all points of *discharge* from the *construction site*. This shall include identification of any *discharges* of sediment from the *construction site*. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;

e. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site* which receive runoff from disturbed areas. This shall include identification of any *discharges* of sediment to the surface waterbody;

f. Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance;

g. Identification of all erosion and sediment control practices and pollution prevention measures that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;

h. Description and sketch of areas with active soil disturbance activity, areas that have been disturbed but are inactive at the time of the inspection, and areas that have been stabilized (temporary and/or final) since the last inspection;

i. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;

j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices and pollution prevention measures; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s);

k. Identification and status of all corrective actions that were required by previous inspection; and

l. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *qualified inspector* shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.

5. Within one business day of the completion of an inspection, the *qualified inspector* shall notify the *owner or operator* and appropriate contractor or subcontractor identified in Part III.A.6. of this permit of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.

6. All inspection reports shall be signed by the *qualified inspector.* Pursuant to Part II.D.2. of this permit, the inspection reports shall be maintained on site with the SWPPP.

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

1. An *owner or operator* that is eligible to terminate coverage under this permit must submit a completed NOT form to the address in Part II.B.1 of this permit. The NOT form shall be one which is associated with this permit, signed in accordance with Part VII.H of this permit.

2. An *owner or operator* may terminate coverage when one or more the following conditions have been met:

   a. Total project completion - All *construction activity* identified in the SWPPP has been completed; <u>and</u> all areas of disturbance have achieved *final stabilization*; <u>and</u> all temporary, structural erosion and sediment control measures have been removed; <u>and</u> all post-construction stormwater management practices have been constructed in conformance with the SWPPP and are operational;

b. Planned shutdown with partial project completion - All soil disturbance activities have ceased; and all areas disturbed as of the project shutdown date have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational;

c. A new *owner or operator* has obtained coverage under this permit in accordance with Part II.F. of this permit.

d. The *owner or operator* obtains coverage under an alternative SPDES general permit or an individual SPDES permit.

3. For *construction activities* meeting subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *qualified inspector* perform a final site inspection prior to submitting the NOT. The *qualified inspector* shall, by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice certification statements on the NOT, certify that all the requirements in Part V.A.2.a. or b. of this permit have been achieved.

4. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4* and meet subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *regulated, traditional land use control MS4* sign the "MS4 Acceptance" statement on the NOT in accordance with the requirements in Part VII.H. of this permit. The *regulated, traditional land use control MS4* official, by signing this statement, has determined that it is acceptable for the *owner or operator* to submit the NOT in accordance with the requirements of this Part. The *regulated, traditional land use control MS4* can make this determination by performing a final site inspection themselves or by accepting the *qualified inspector*'s final site inspection certification(s) required in Part V.A.3. of this permit.

5. For *construction activities* that require post-construction stormwater management practices and meet subdivision 2a. of this Part, the *owner or operator* must, prior to submitting the NOT, ensure one of the following:

a. the post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain such practice(s) have been deeded to the municipality in which the practice(s) is located,

b. an executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s),

c. for post-construction stormwater management practices that are privately owned, the *owner or operator* has a mechanism in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the *owner or operator's* deed of record,

d. for post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university, hospital), government agency or authority, or public utility; the *owner or operator* has policy and procedures in place that ensures operation and maintenance of the practices in accordance with the operation and maintenance plan.

Part VI. REPORTING AND RETENTION RECORDS

A. Record Retention

The *owner or operator* shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the Department receives a complete NOT submitted in accordance with Part V. of this general permit.

B. Addresses

With the exception of the NOI, NOT, and MS4 SWPPP Acceptance form (which must be submitted to the address referenced in Part II.B.1 of this permit), all written correspondence requested by the Department, including individual permit applications, shall be sent to the address of the appropriate DOW Water (SPDES) Program contact at the Regional Office listed in Appendix F.

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

The *owner or operator* must comply with all conditions of this permit. All contractors and subcontractors associated with the project must comply with the terms of the SWPPP. Any non-compliance with this permit constitutes a violation of the Clean Water

Act (CWA) and the ECL and is grounds for an enforcement action against the *owner or operator* and/or the contractor/subcontractor; permit revocation, suspension or modification; or denial of a permit renewal application. Upon a finding of significant non-compliance with this permit or the applicable SWPPP, the Department may order an immediate stop to all *construction activity* at the site until the non-compliance is remedied. The stop work order shall be in writing, shall describe the non-compliance in detail, and shall be sent to the *owner or operator*.

If any human remains or archaeological remains are encountered during excavation, the *owner or operator* must immediately cease, or cause to cease, all *construction activity* in the area of the remains and notify the appropriate Regional Water Engineer (RWE). *Construction activity* shall not resume until written permission to do so has been received from the RWE.

B. Continuation of the Expired General Permit

This permit expires five (5) years from the effective date. If a new general permit is not issued prior to the expiration of this general permit, an *owner or operator* with coverage under this permit may continue to operate and *discharge* in accordance with the terms and conditions of this general permit, if it is extended pursuant to the State Administrative Procedure Act and 6 NYCRR Part 621, until a new general permit is issued.

C. Enforcement

Failure of the *owner or operator,* its contractors, subcontractors, agents and/or assigns to strictly adhere to any of the permit requirements contained herein shall constitute a violation of this permit. There are substantial criminal, civil, and administrative penalties associated with violating the provisions of this permit. Fines of up to $37,500 per day for each violation and imprisonment for up to fifteen (15) years may be assessed depending upon the nature and degree of the offense.

D. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for an *owner or operator* in an enforcement action that it would have been necessary to halt or reduce the *construction activity* in order to maintain compliance with the conditions of this permit.

E. Duty to Mitigate

The *owner or operator* and its contractors and subcontractors shall take all reasonable steps to *minimize* or prevent any *discharge* in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. Duty to Provide Information

The *owner or operator* shall furnish to the Department, within a reasonable specified time period of a written request, all documentation necessary to demonstrate eligibility and any information to determine compliance with this permit or to determine whether cause exists for modifying or revoking this permit, or suspending or denying coverage under this permit, in accordance with the terms and conditions of this permit. The NOI, SWPPP and inspection reports required by this permit are public documents that the *owner or operator* must make available for review and copying by any person within five (5) business days of the *owner or operator* receiving a written request by any such person to review these documents. Copying of documents will be done at the requester's expense.

G. Other Information

When the *owner or operator* becomes aware that they failed to submit any relevant facts, or submitted incorrect information in the NOI or in any of the documents required by this permit , or have made substantive revisions to the SWPPP (e.g. the scope of the project changes significantly, the type of post-construction stormwater management practice(s) changes, there is a reduction in the sizing of the post-construction stormwater management practice, or there is an increase in the disturbance area or *impervious area*), which were not reflected in the original NOI submitted to the Department, they shall promptly submit such facts or information to the Department using the contact information in Part II.A. of this permit. Failure of the *owner or operator* to correct or supplement any relevant facts within five (5) business days of becoming aware of the deficiency shall constitute a violation of this permit.

H. Signatory Requirements

1. All NOIs and NOTs shall be signed as follows:

   a. For a corporation these forms shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

(i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

(ii) the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

b. For a partnership or sole proprietorship these forms shall be signed by a general partner or the proprietor, respectively; or

c. For a municipality, State, Federal, or other public agency these forms shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

(i) the chief executive officer of the agency, or

(ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

2. The SWPPP and other information requested by the Department shall be signed by a person described in Part VII.H.1. of this permit or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described in Part VII.H.1. of this permit;

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of *equivalent* responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position) and,

c. The written authorization shall include the name, title and signature of the authorized representative and be attached to the SWPPP.

3. All inspection reports shall be signed by the *qualified inspector* that performs the inspection.

4. The MS4 SWPPP Acceptance form shall be signed by the principal executive officer or ranking elected official from the *regulated, traditional land use control MS4,* or by a duly authorized representative of that person.

   It shall constitute a permit violation if an incorrect and/or improper signatory authorizes any required forms, SWPPP and/or inspection reports.

I. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations. *Owners or operators* must obtain any applicable conveyances, easements, licenses and/or access to real property prior to *commencing construction activity*.

J. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

K. Requirement to Obtain Coverage Under an Alternative Permit

1. The Department may require any owner or operator authorized by this permit to apply for and/or obtain either an individual SPDES permit or another SPDES general permit. When the Department requires any discharger authorized by a general permit to apply for an individual SPDES permit, it shall notify the discharger in writing that a permit application is required. This notice shall

include a brief statement of the reasons for this decision, an application form, a statement setting a time frame for the owner or operator to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from owner or operator receipt of the notification letter, whereby the authorization to discharge under this general permit shall be terminated. Applications must be submitted to the appropriate Permit Administrator at the Regional Office. The Department may grant additional time upon demonstration, to the satisfaction of the Department, that additional time to apply for an alternative authorization is necessary or where the Department has not provided a permit determination in accordance with Part 621 of this Title.

2. When an individual SPDES permit is issued to a discharger authorized to *discharge* under a general SPDES permit for the same *discharge*(s), the general permit authorization for outfalls authorized under the individual SPDES permit is automatically terminated on the effective date of the individual permit unless termination is earlier in accordance with 6 NYCRR Part 750.

L. Proper Operation and Maintenance

The *owner or operator* shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the *owner or operator* to achieve compliance with the conditions of this permit and with the requirements of the SWPPP.

M. Inspection and Entry

The *owner or operator* shall allow an authorized representative of the Department, EPA, applicable county health department, or, in the case of a *construction site* which *discharges* through an *MS4*, an authorized representative of the *MS4* receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the owner’s or operator's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;

2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and

3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment), practices or operations regulated or required by this permit.

4. Sample or monitor at reasonable times, for purposes of assuring permit compliance or as otherwise authorized by the Act or ECL, any substances or parameters at any location.

N. Permit Actions

This permit may, at any time, be modified, suspended, revoked, or renewed by the Department in accordance with 6 NYCRR Part 621. The filing of a request by the *owner or operator* for a permit modification, revocation and reissuance, termination, a notification of planned changes or anticipated noncompliance does not limit, diminish and/or stay compliance with any terms of this permit.

O. Definitions

Definitions of key terms are included in Appendix A of this permit.

P. Re-Opener Clause

1. If there is evidence indicating potential or realized impacts on water quality due to any stormwater discharge associated with construction activity covered by this permit, the owner or operator of such discharge may be required to obtain an individual permit or alternative general permit in accordance with Part VII.K. of this permit or the permit may be modified to include different limitations and/or requirements.

2. Any Department initiated permit modification, suspension or revocation will be conducted in accordance with 6 NYCRR Part 621, 6 NYCRR 750-1.18, and 6 NYCRR 750-1.20.

Q. Penalties for Falsification of Forms and Reports

In accordance with 6NYCRR Part 750-2.4 and 750-2.5, any person who knowingly makes any false material statement, representation, or certification in any application, record, report or other document filed or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished in accordance with ECL §71-1933 and or Articles 175 and 210 of the New York State Penal Law.

R. Other Permits

Nothing in this permit relieves the *owner or operator* from a requirement to obtain any other permits required by law.

APPENDIX A – Acronyms and Definitions

Acronyms

APO – Agency Preservation Officer
BMP – Best Management Practice
CPESC – Certified Professional in Erosion and Sediment Control
Cpv – Channel Protection Volume
CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq)
DOW – Division of Water
EAF – Environmental Assessment Form
ECL - Environmental Conservation Law
EPA – U. S. Environmental Protection Agency
HSG – Hydrologic Soil Group
MS4 – Municipal Separate Storm Sewer System
NOI – Notice of Intent
NOT – Notice of Termination
NPDES – National Pollutant Discharge Elimination System
OPRHP – Office of Parks, Recreation and Historic Places
Qf – Extreme Flood
Qp – Overbank Flood
RRv – Runoff Reduction Volume
RWE – Regional Water Engineer
SEQR – State Environmental Quality Review
SEQRA - State Environmental Quality Review Act
SHPA – State Historic Preservation Act
SPDES – State Pollutant Discharge Elimination System
SWPPP – Stormwater Pollution Prevention Plan
TMDL – Total Maximum Daily Load
UPA – Uniform Procedures Act
USDA – United States Department of Agriculture
WQv – Water Quality Volume

Definitions

All definitions in this section are solely for the purposes of this permit.

Agricultural Building – a structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products; excluding any structure designed, constructed or used, in whole or in part, for human habitation, as a place of employment where agricultural products are processed, treated or packaged, or as a place used by the public.

Agricultural Property –means the land for construction of a barn, *agricultural building*, silo, stockyard, pen or other structural practices identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" prepared by the Department in cooperation with agencies of New York Nonpoint Source Coordinating Committee (dated June 2007).

Alter Hydrology from Pre to Post-Development Conditions - means the post-development peak flow rate(s) has increased by more than 5% of the pre-developed condition for the design storm of interest (e.g. 10 yr and 100 yr).

Combined Sewer - means a sewer that is designed to collect and convey both "sewage" and "stormwater".

Commence (Commencement of) Construction Activities - means the initial disturbance of soils associated with clearing, grading or excavation activities; or other construction related activities that disturb or expose soils such as demolition, stockpiling of fill material, and the initial installation of erosion and sediment control practices required in the SWPPP. See definition for "*Construction Activity(ies)*" also.

Construction Activity(ies) - means any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

Construction Site – means the land area where *construction activity(ies)* will occur. See definition for "*Commence (Commencement of) Construction Activities*" and "*Larger Common Plan of Development or Sale*" *also.*

Dewatering – means the act of draining rainwater and/or groundwater from building foundations, vaults or excavations/trenches.

Direct Discharge (to a specific surface waterbody) - means that runoff flows from a *construction site* by overland flow and the first point of discharge is the specific surface waterbody, or runoff flows from a *construction site* to a separate storm sewer system and the first point of discharge from the separate storm sewer system is the specific surface waterbody.

Discharge(s) - means any addition of any pollutant to waters of the State through an outlet or *point source*.

Embankment –means an earthen or rock slope that supports a road/highway.

Endangered or Threatened Species – see 6 NYCRR Part 182 of the Department's rules and regulations for definition of terms and requirements.

Environmental Conservation Law (ECL) - means chapter 43-B of the Consolidated Laws of the State of New York, entitled the Environmental Conservation Law.

Equivalent (Equivalence) – means that the practice or measure meets all the performance, longevity, maintenance, and safety objectives of the technical standard and will provide an equal or greater degree of water quality protection.

Final Stabilization - means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

General SPDES permit - means a SPDES permit issued pursuant to 6 NYCRR Part 750-1.21 and Section 70-0117 of the ECL authorizing a category of discharges.

Groundwater(s) - means waters in the saturated zone. The saturated zone is a subsurface zone in which all the interstices are filled with water under pressure greater than that of the atmosphere. Although the zone may contain gas-filled interstices or interstices filled with fluids other than water, it is still considered saturated.

Historic Property – means any building, structure, site, object or district that is listed on the State or National Registers of Historic Places or is determined to be eligible for listing on the State or National Registers of Historic Places.

Impervious Area (Cover) - means all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and gravel surfaces (i.e. parking lots, driveways, roads, runways and sidewalks); building rooftops and miscellaneous impermeable structures such as patios, pools, and sheds.

Infeasible – means not technologically possible, or not economically practicable and achievable in light of best industry practices.

Larger Common Plan of Development or Sale - means a contiguous area where multiple separate and distinct *construction activities* are occurring, or will occur, under one plan. The term “plan” in “larger common plan of development or sale” is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, marketing plan, advertisement, drawing, permit application, State Environmental Quality Review Act (SEQRA) environmental assessment form or other documents, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that *construction activities* may occur on a specific plot.

For discrete construction projects that are located within a larger common plan of development or sale that are at least 1/4 mile apart, each project can be treated as a separate plan of development or sale provided any interconnecting road, pipeline or utility project that is part of the same “common plan” is not concurrently being disturbed.

Minimize – means reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer (MS4) - a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to surface waters of the State*;*
(ii) Designed or used for collecting or conveying stormwater;
(iii) Which is not a *combined sewer*; and
(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

National Pollutant Discharge Elimination System (NPDES) - means the national system for the issuance of wastewater and stormwater permits under the Federal Water Pollution Control Act (Clean Water Act).

Natural Buffer –means an undisturbed area with natural cover running along a surface water (e.g. wetland, stream, river, lake, etc.).

New Development – means any land disturbance that does not meet the definition of Redevelopment Activity included in this appendix.

New York State Erosion and Sediment Control Certificate Program – a certificate program that establishes and maintains a process to identify and recognize individuals who are capable of developing, designing, inspecting and maintaining erosion and sediment control plans on projects that disturb soils in New York State. The certificate program is administered by the New York State Conservation District Employees Association.

NOI Acknowledgment Letter - means the letter that the Department sends to an owner or operator to acknowledge the Department's receipt and acceptance of a complete Notice of Intent. This letter documents the owner's or operator's authorization to discharge in accordance with the general permit for stormwater discharges from *construction activity*.

Nonpoint Source - means any source of water pollution or pollutants which is not a discrete conveyance or *point source* permitted pursuant to Title 7 or 8 of Article 17 of the Environmental Conservation Law (see ECL Section 17-1403).

Overbank –means flow events that exceed the capacity of the stream channel and spill out into the adjacent floodplain.

Owner or Operator - means the person, persons or legal entity which owns or leases the property on which the *construction activity* is occurring; an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications; and/or an entity that has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions.

Performance Criteria – means the design criteria listed under the "Required Elements" sections in Chapters 5, 6 and 10 of the technical standard, New York State Stormwater Management Design Manual, dated January 2015. It does not include the Sizing Criteria (i.e. WQv, RRv, Cpv, Qp and Qf) in Part I.C.2. of the permit.

Point Source - means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft, or landfill leachate collection system from which *pollutants* are or may be discharged.

Pollutant - means dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast discharged into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards or guidance values adopted as provided in 6 NYCRR Parts 700 et seq .

Qualified Inspector - means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder or other Department endorsed individual(s).

It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years.

It can also mean a person that meets the *Qualified Professional* qualifications in addition to the *Qualified Inspector* qualifications.

Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Qualified Professional - means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

Redevelopment Activity(ies) – means the disturbance and reconstruction of existing impervious area, including impervious areas that were removed from a project site within five (5) years of preliminary project plan submission to the local government (i.e. site plan, subdivision, etc.).

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is authorized to discharge under New York State DEC's

SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) or the City of New York's Individual SPDES Permit for their Municipal Separate Storm Sewer Systems (NY-0287890).

Routine Maintenance Activity - means *construction activity* that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, including, but not limited to:

- Re-grading of gravel roads or parking lots,
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and hydraulic capacity of the ditch,
- Cleaning and shaping of existing roadside ditches that does not maintain the approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch),
- Placement of aggregate shoulder backing that stabilizes the transition between the road shoulder and the ditch or *embankment*,
- Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material,
- Long-term use of equipment storage areas at or near highway maintenance facilities,
- Removal of sediment from the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or *embankment*,
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts.

Site limitations – means site conditions that prevent the use of an infiltration technique and or infiltration of the total WQv. Typical site limitations include: seasonal high groundwater, shallow depth to bedrock, and soils with an infiltration rate less than 0.5 inches/hour. The existence of site limitations shall be confirmed and documented using actual field testing (i.e. test pits, soil borings, and infiltration test) or using information from the most current United States Department of Agriculture (USDA) Soil Survey for the County where the project is located.

Sizing Criteria – means the criteria included in Part I.C.2 of the permit that are used to size post-construction stormwater management control practices. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), *Overbank* Flood (Qp), and Extreme Flood (Qf).

State Pollutant Discharge Elimination System (SPDES) - means the system established pursuant to Article 17 of the ECL and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

Steep Slope – means land area designated on the current United States Department of Agriculture (“USDA”) Soil Survey as Soil Slope Phase “D”, (provided the map unit name is inclusive of slopes greater than 25%) , or Soil Slope Phase E or F, (regardless of the map unit name), or a combination of the three designations.

Streambank – as used in this permit, means the terrain alongside the bed of a creek or stream. The bank consists of the sides of the channel, between which the flow is confined.

Stormwater Pollution Prevention Plan (SWPPP) – means a project specific report, including construction drawings, that among other things: describes the construction activity(ies), identifies the potential sources of pollution at the *construction site*; describes and shows the stormwater controls that will be used to control the pollutants (i.e. erosion and sediment controls; for many projects, includes post-construction stormwater management controls); and identifies procedures the *owner or operator* will implement to comply with the terms and conditions of the permit. See Part III of the permit for a complete description of the information that must be included in the SWPPP.

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Temporarily Ceased – means that an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and *nonpoint source*s. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet *water quality standards*, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for *point source* discharges, load allocations (LAs) for *nonpoint source*s, and a margin of safety (MOS).

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

The *trained contractor* is responsible for the day to day implementation of the SWPPP.

Uniform Procedures Act (UPA) Permit - means a permit required under 6 NYCRR Part 621 of the Environmental Conservation Law (ECL), Article 70.

Water Quality Standard - means such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

APPENDIX B – Required SWPPP Components by Project Type

Table 1
Construction Activities that Require the Preparation of a SWPPP That Only Includes Erosion and Sediment Controls

The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres: • Single family home not located in one of the watersheds listed in Appendix C or not *directly discharging* to one of the 303(d) segments listed in Appendix E • Single family residential subdivisions with 25% or less impervious cover at total site build-out and not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E • Construction of a barn or other *agricultural building*, silo, stock yard or pen.
The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land: All construction activities located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.
The following construction activities that involve soil disturbances of one (1) or more acres of land: • Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains • Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects • Pond construction • Linear bike paths running through areas with vegetative cover, including bike paths surfaced with an impervious cover • Cross-country ski trails and walking/hiking trails • Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are not part of residential, commercial or institutional development; • Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that include incidental shoulder or curb work along an existing highway to support construction of the sidewalk, bike path or walking path. • Slope stabilization projects • Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics

Table 1 (Continued) CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP
THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Spoil areas that will be covered with vegetation
- Vegetated open space projects (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) excluding projects that *alter hydrology from pre to post development* conditions,
- Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* <u>and</u> do not *alter hydrology from pre to post development* conditions
- Demolition project where vegetation will be established, and no redevelopment is planned
- Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*
- Structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State", excluding projects that involve soil disturbances of greater than five acres and construction activities that include the construction or reconstruction of impervious area
- Temporary access roads, median crossovers, detour roads, lanes, or other temporary impervious areas that will be restored to pre-construction conditions once the construction activity is complete

Table 2

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Single family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family home that disturbs five (5) or more acres of land
- Single family residential subdivisions located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% impervious cover at total site build-out
- Single family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a larger common plan of development or sale that will ultimately disturb five or more acres of land
- Multi-family residential developments; includes duplexes, townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- Breweries, cideries, and wineries, including establishments constructed on agricultural land
- Campgrounds
- Cemeteries that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other *agricultural building* (e.g. silo) and structural practices as identified in Table II in the “Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State” that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres.
- Golf courses
- Institutional development; includes hospitals, prisons, schools and colleges
- Industrial facilities; includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW’s, water treatment plants, and water storage tanks
- Office complexes
- Playgrounds that include the construction or reconstruction of impervious area
- Sports complexes
- Racetracks; includes racetracks with earthen (dirt) surface
- Road construction or reconstruction, including roads constructed as part of the construction activities listed in Table 1

Table 2 (Continued)

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Parking lot construction or reconstruction, including parking lots constructed as part of the construction activities listed in Table 1
- Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover,* and constructed as part of an over-head electric transmission line project, wind-power project, cell tower project, oil or gas well drilling project, sewer or water main project or other linear utility project
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a residential, commercial or institutional development
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a highway construction or reconstruction project
- All other construction activities that include the construction or reconstruction of *impervious area* <u>or</u> *alter the hydrology from pre to post development* conditions, <u>and</u> are not listed in Table 1

APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal

Watersheds where *owners or operators* of construction activities identified in Table 2 of Appendix B must prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual ("Design Manual").

- Entire New York City Watershed located east of the Hudson River **-** Figure 1
- Onondaga Lake Watershed **-** Figure 2
- Greenwood Lake Watershed **-**Figure 3
- Oscawana Lake Watershed – Figure 4
- Kinderhook Lake Watershed – Figure 5

Figure 1 - New York City Watershed East of the Hudson

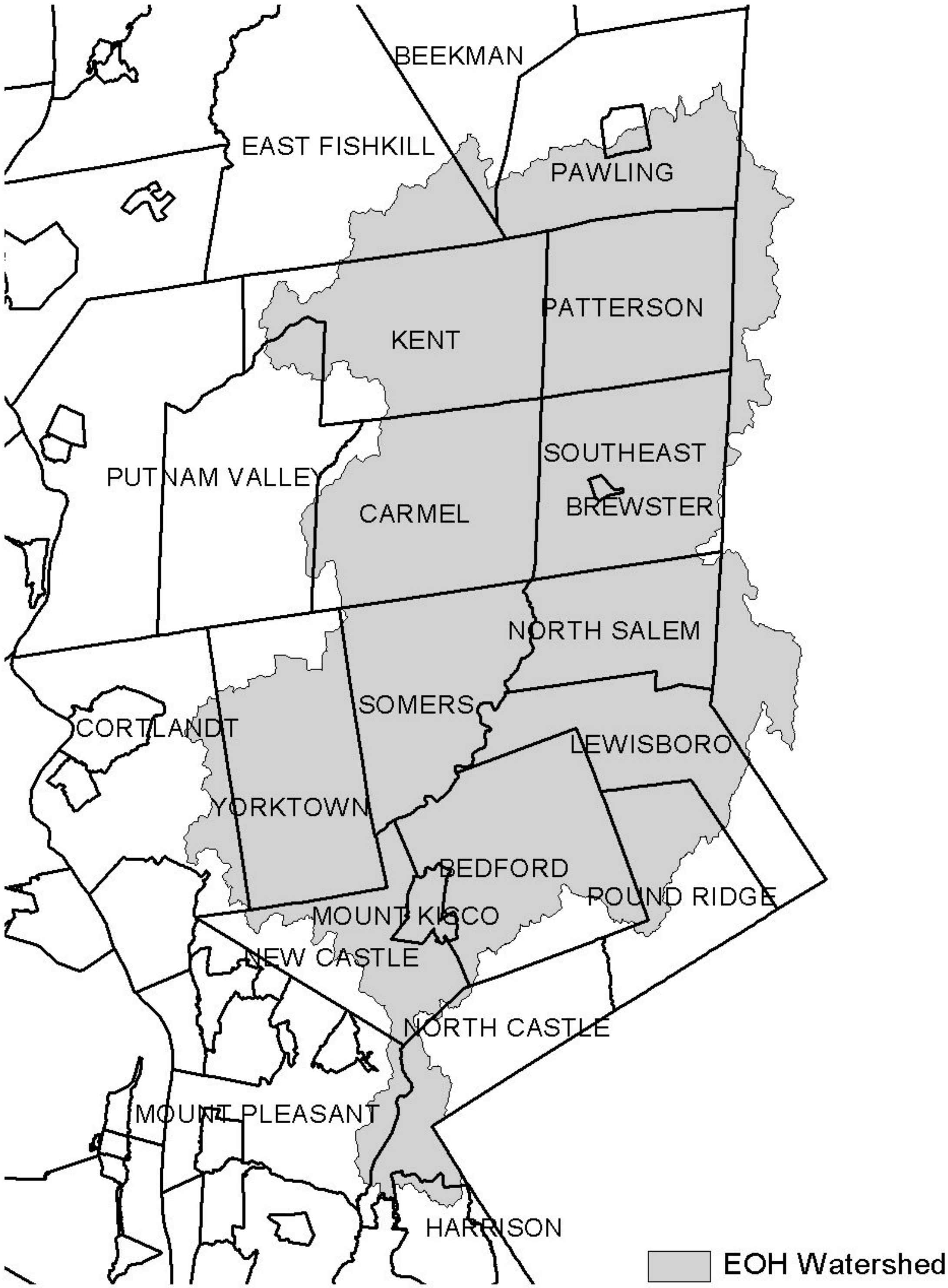


Figure 2 - Onondaga Lake Watershed

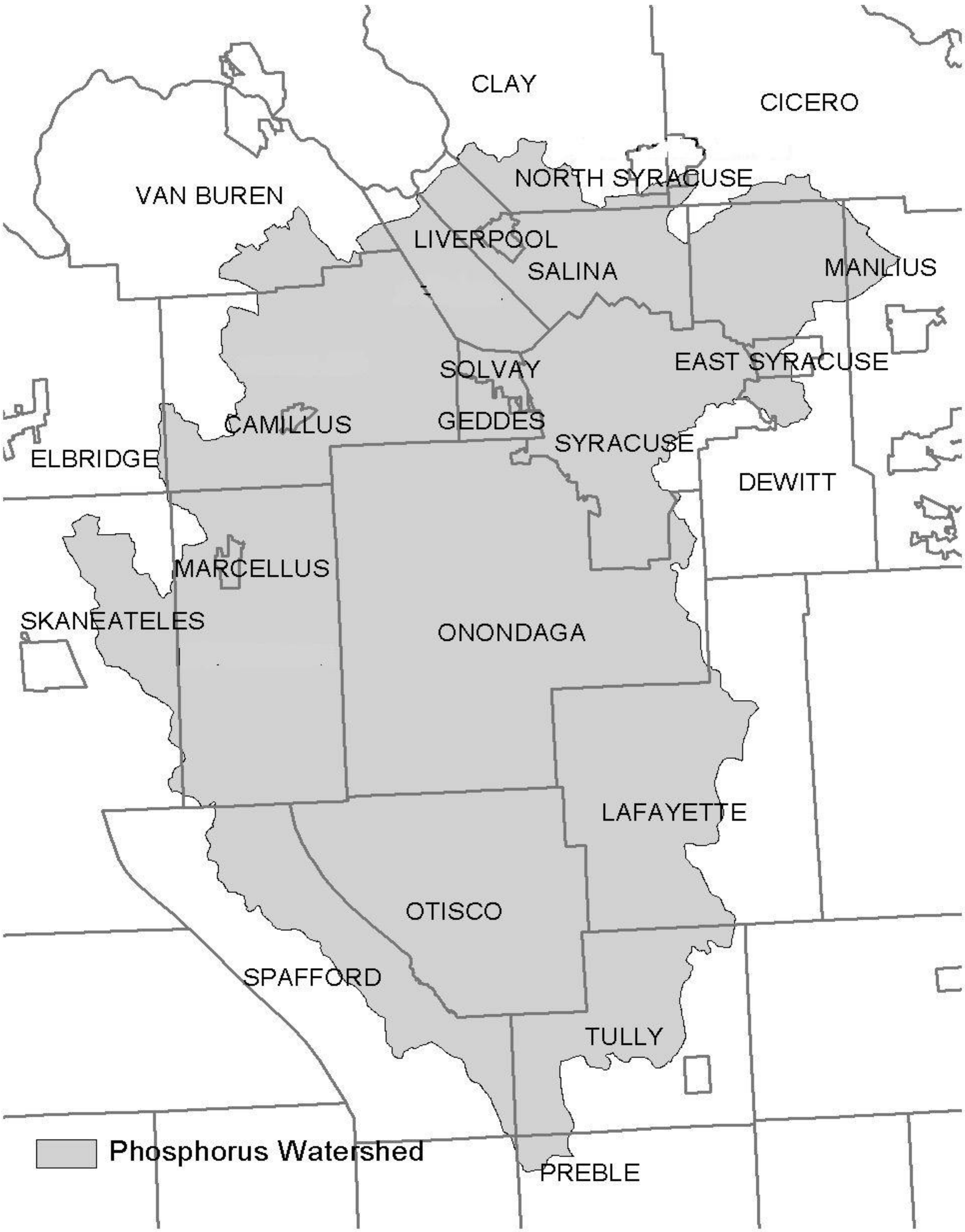


Figure 3 - Greenwood Lake Watershed

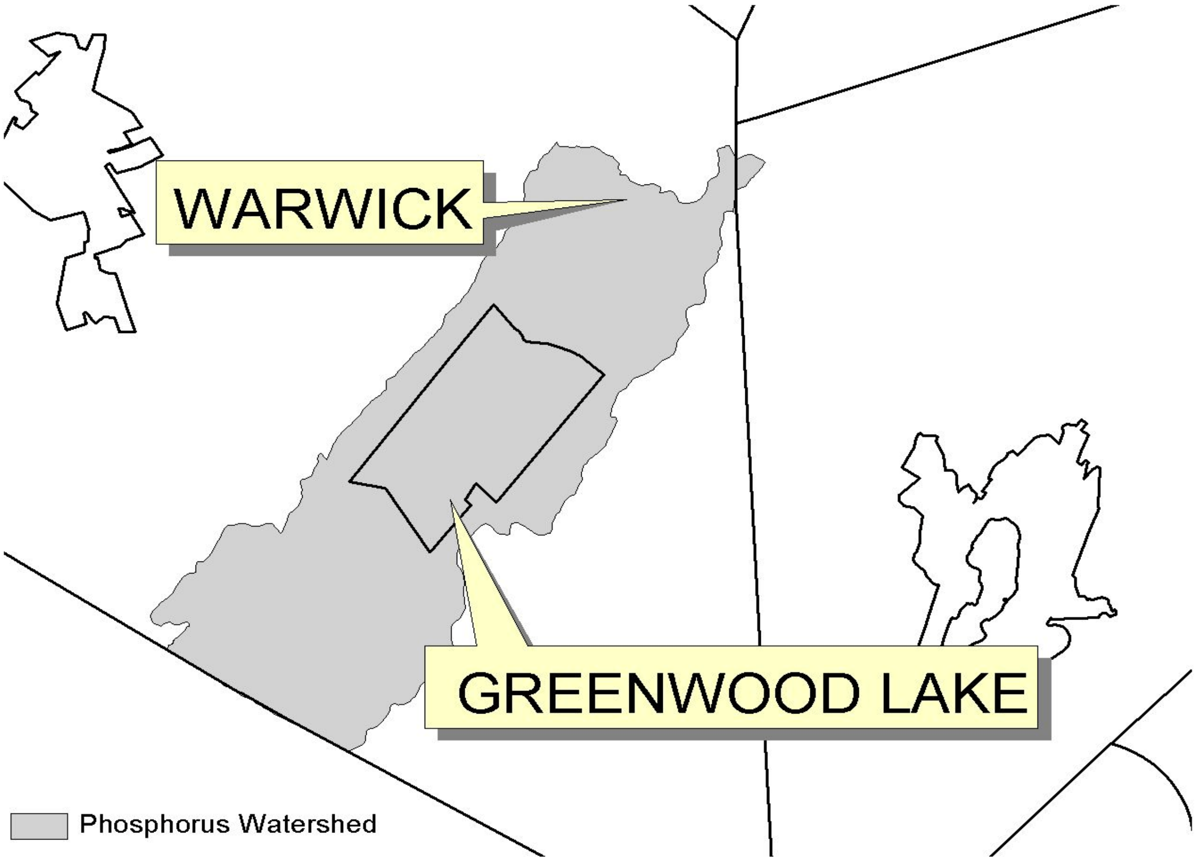


Figure 4 - Oscawana Lake Watershed

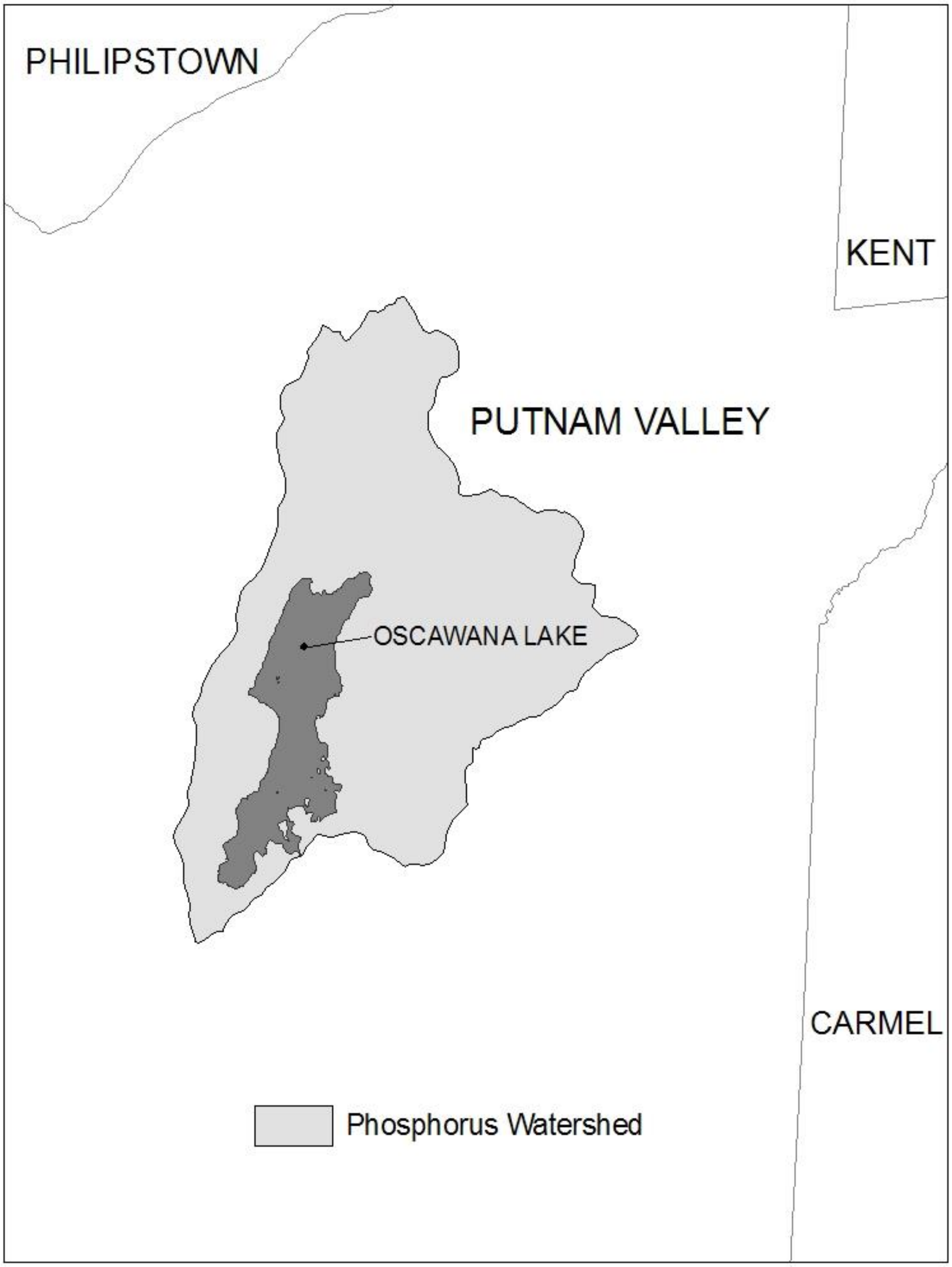
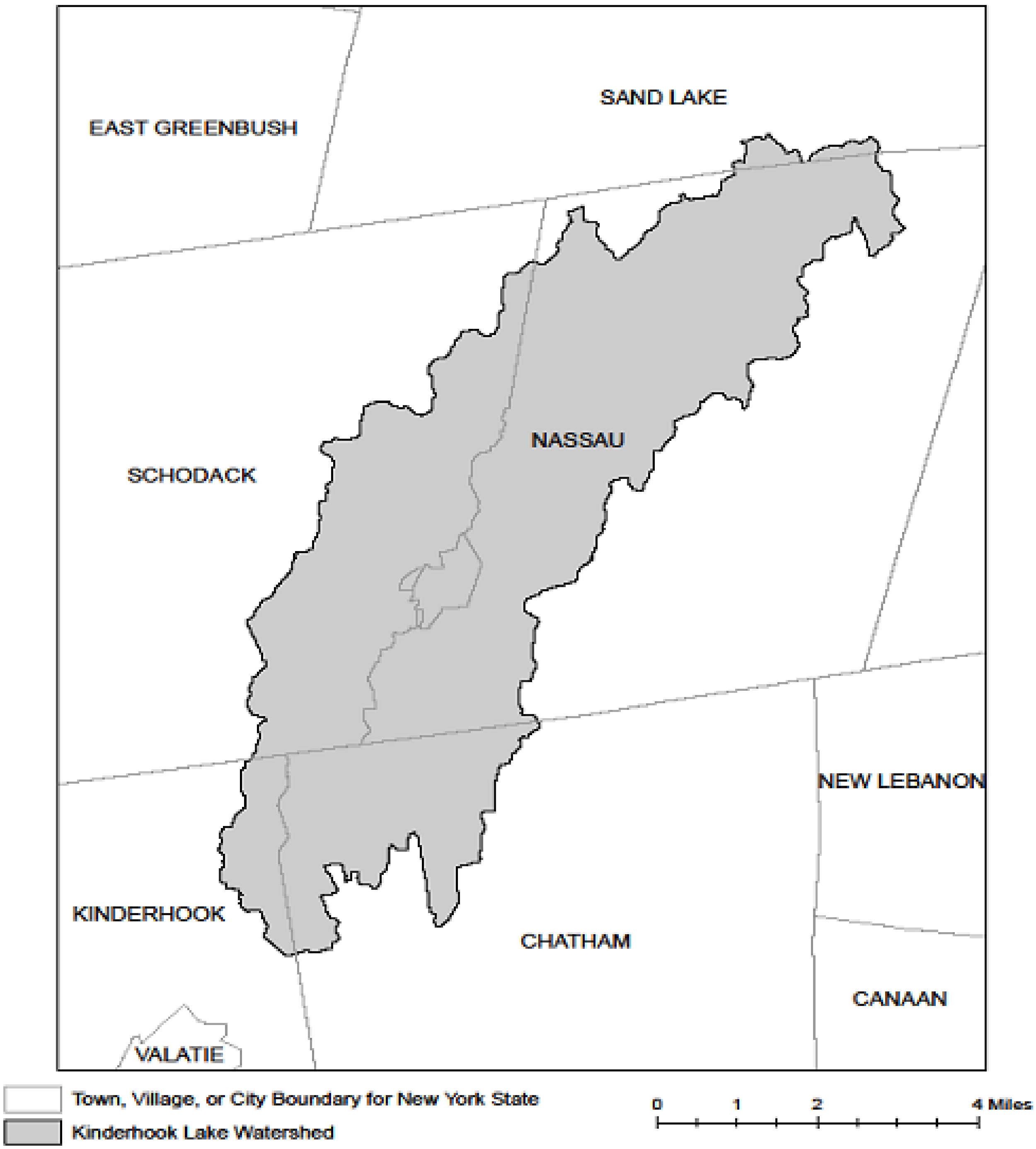


Figure 5 - Kinderhook Lake Watershed



APPENDIX D – Watersheds with Lower Disturbance Threshold

Watersheds where *owners or operators* of construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land must obtain coverage under this permit.

Entire New York City Watershed that is located east of the Hudson River **-** See Figure 1 in Appendix C

APPENDIX E – 303(d) Segments Impaired by Construction Related Pollutant(s)

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). The list was developed using "The Final New York State 2016 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy" dated November 2016. *Owners or operators* of single family home and single family residential subdivisions with 25% or less total impervious cover at total site build-out that involve soil disturbances of one or more acres of land, but less than 5 acres, and *directly discharge* to one of the listed segments below shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015.

COUNTY	WATERBODY	POLLUTANT
Albany	Ann Lee (Shakers) Pond, Stump Pond	Nutrients
Albany	Basic Creek Reservoir	Nutrients
Allegany	Amity Lake, Saunders Pond	Nutrients
Bronx	Long Island Sound, Bronx	Nutrients
Bronx	Van Cortlandt Lake	Nutrients
Broome	Fly Pond, Deer Lake, Sky Lake	Nutrients
Broome	Minor Tribs to Lower Susquehanna (north)	Nutrients
Broome	Whitney Point Lake/Reservoir	Nutrients
Cattaraugus	Allegheny River/Reservoir	Nutrients
Cattaraugus	Beaver (Alma) Lake	Nutrients
Cattaraugus	Case Lake	Nutrients
Cattaraugus	Linlyco/Club Pond	Nutrients
Cayuga	Duck Lake	Nutrients
Cayuga	Little Sodus Bay	Nutrients
Chautauqua	Bear Lake	Nutrients
Chautauqua	Chadakoin River and tribs	Nutrients
Chautauqua	Chautauqua Lake, North	Nutrients
Chautauqua	Chautauqua Lake, South	Nutrients
Chautauqua	Findley Lake	Nutrients
Chautauqua	Hulburt/Clymer Pond	Nutrients
Clinton	Great Chazy River, Lower, Main Stem	Silt/Sediment
Clinton	Lake Champlain, Main Lake, Middle	Nutrients
Clinton	Lake Champlain, Main Lake, North	Nutrients
Columbia	Kinderhook Lake	Nutrients
Columbia	Robinson Pond	Nutrients
Cortland	Dean Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Dutchess	Fall Kill and tribs	Nutrients
Dutchess	Hillside Lake	Nutrients
Dutchess	Wappingers Lake	Nutrients
Dutchess	Wappingers Lake	Silt/Sediment
Erie	Beeman Creek and tribs	Nutrients
Erie	Ellicott Creek, Lower, and tribs	Silt/Sediment
Erie	Ellicott Creek, Lower, and tribs	Nutrients
Erie	Green Lake	Nutrients
Erie	Little Sister Creek, Lower, and tribs	Nutrients
Erie	Murder Creek, Lower, and tribs	Nutrients
Erie	Rush Creek and tribs	Nutrients
Erie	Scajaquada Creek, Lower, and tribs	Nutrients
Erie	Scajaquada Creek, Middle, and tribs	Nutrients
Erie	Scajaquada Creek, Upper, and tribs	Nutrients
Erie	South Branch Smoke Cr, Lower, and tribs	Silt/Sediment
Erie	South Branch Smoke Cr, Lower, and tribs	Nutrients
Essex	Lake Champlain, Main Lake, South	Nutrients
Essex	Lake Champlain, South Lake	Nutrients
Essex	Willsboro Bay	Nutrients
Genesee	Bigelow Creek and tribs	Nutrients
Genesee	Black Creek, Middle, and minor tribs	Nutrients
Genesee	Black Creek, Upper, and minor tribs	Nutrients
Genesee	Bowen Brook and tribs	Nutrients
Genesee	LeRoy Reservoir	Nutrients
Genesee	Oak Orchard Cr, Upper, and tribs	Nutrients
Genesee	Tonawanda Creek, Middle, Main Stem	Nutrients
Greene	Schoharie Reservoir	Silt/Sediment
Greene	Sleepy Hollow Lake	Silt/Sediment
Herkimer	Steele Creek tribs	Silt/Sediment
Herkimer	Steele Creek tribs	Nutrients
Jefferson	Moon Lake	Nutrients
Kings	Hendrix Creek	Nutrients
Kings	Prospect Park Lake	Nutrients
Lewis	Mill Creek/South Branch, and tribs	Nutrients
Livingston	Christie Creek and tribs	Nutrients
Livingston	Conesus Lake	Nutrients
Livingston	Mill Creek and minor tribs	Silt/Sediment
Monroe	Black Creek, Lower, and minor tribs	Nutrients
Monroe	Buck Pond	Nutrients
Monroe	Cranberry Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Monroe	Lake Ontario Shoreline, Western	Nutrients
Monroe	Long Pond	Nutrients
Monroe	Mill Creek and tribs	Nutrients
Monroe	Mill Creek/Blue Pond Outlet and tribs	Nutrients
Monroe	Minor Tribs to Irondequoit Bay	Nutrients
Monroe	Rochester Embayment - East	Nutrients
Monroe	Rochester Embayment - West	Nutrients
Monroe	Shipbuilders Creek and tribs	Nutrients
Monroe	Thomas Creek/White Brook and tribs	Nutrients
Nassau	Beaver Lake	Nutrients
Nassau	Camaans Pond	Nutrients
Nassau	East Meadow Brook, Upper, and tribs	Silt/Sediment
Nassau	East Rockaway Channel	Nutrients
Nassau	Grant Park Pond	Nutrients
Nassau	Hempstead Bay	Nutrients
Nassau	Hempstead Lake	Nutrients
Nassau	Hewlett Bay	Nutrients
Nassau	Hog Island Channel	Nutrients
Nassau	Long Island Sound, Nassau County Waters	Nutrients
Nassau	Massapequa Creek and tribs	Nutrients
Nassau	Milburn/Parsonage Creeks, Upp, and tribs	Nutrients
Nassau	Reynolds Channel, west	Nutrients
Nassau	Tidal Tribs to Hempstead Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Silt/Sediment
Nassau	Tribs to Smith/Halls Ponds	Nutrients
Nassau	Woodmere Channel	Nutrients
New York	Harlem Meer	Nutrients
New York	The Lake in Central Park	Nutrients
Niagara	Bergholtz Creek and tribs	Nutrients
Niagara	Hyde Park Lake	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Oneida	Ballou, Nail Creeks and tribs	Nutrients
Onondaga	Harbor Brook, Lower, and tribs	Nutrients
Onondaga	Ley Creek and tribs	Nutrients
Onondaga	Minor Tribs to Onondaga Lake	Nutrients
Onondaga	Ninemile Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Middle, and tribs	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Onondaga	Onondaga Lake, northern end	Nutrients
Onondaga	Onondaga Lake, southern end	Nutrients
Ontario	Great Brook and minor tribs	Silt/Sediment
Ontario	Great Brook and minor tribs	Nutrients
Ontario	Hemlock Lake Outlet and minor tribs	Nutrients
Ontario	Honeoye Lake	Nutrients
Orange	Greenwood Lake	Nutrients
Orange	Monhagen Brook and tribs	Nutrients
Orange	Orange Lake	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Oswego	Lake Neatahwanta	Nutrients
Oswego	Pleasant Lake	Nutrients
Putnam	Bog Brook Reservoir	Nutrients
Putnam	Boyd Corners Reservoir	Nutrients
Putnam	Croton Falls Reservoir	Nutrients
Putnam	Diverting Reservoir	Nutrients
Putnam	East Branch Reservoir	Nutrients
Putnam	Lake Carmel	Nutrients
Putnam	Middle Branch Reservoir	Nutrients
Putnam	Oscawana Lake	Nutrients
Putnam	Palmer Lake	Nutrients
Putnam	West Branch Reservoir	Nutrients
Queens	Bergen Basin	Nutrients
Queens	Flushing Creek/Bay	Nutrients
Queens	Jamaica Bay, Eastern, and tribs (Queens)	Nutrients
Queens	Kissena Lake	Nutrients
Queens	Meadow Lake	Nutrients
Queens	Willow Lake	Nutrients
Rensselaer	Nassau Lake	Nutrients
Rensselaer	Snyders Lake	Nutrients
Richmond	Grasmere Lake/Bradys Pond	Nutrients
Rockland	Congers Lake, Swartout Lake	Nutrients
Rockland	Rockland Lake	Nutrients
Saratoga	Ballston Lake	Nutrients
Saratoga	Dwaas Kill and tribs	Silt/Sediment
Saratoga	Dwaas Kill and tribs	Nutrients
Saratoga	Lake Lonely	Nutrients
Saratoga	Round Lake	Nutrients
Saratoga	Tribs to Lake Lonely	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Schenectady	Collins Lake	Nutrients
Schenectady	Duane Lake	Nutrients
Schenectady	Mariaville Lake	Nutrients
Schoharie	Engleville Pond	Nutrients
Schoharie	Summit Lake	Nutrients
Seneca	Reeder Creek and tribs	Nutrients
St.Lawrence	Black Lake Outlet/Black Lake	Nutrients
St.Lawrence	Fish Creek and minor tribs	Nutrients
Steuben	Smith Pond	Nutrients
Suffolk	Agawam Lake	Nutrients
Suffolk	Big/Little Fresh Ponds	Nutrients
Suffolk	Canaan Lake	Silt/Sediment
Suffolk	Canaan Lake	Nutrients
Suffolk	Flanders Bay, West/Lower Sawmill Creek	Nutrients
Suffolk	Fresh Pond	Nutrients
Suffolk	Great South Bay, East	Nutrients
Suffolk	Great South Bay, Middle	Nutrients
Suffolk	Great South Bay, West	Nutrients
Suffolk	Lake Ronkonkoma	Nutrients
Suffolk	Long Island Sound, Suffolk County, West	Nutrients
Suffolk	Mattituck (Marratooka) Pond	Nutrients
Suffolk	Meetinghouse/Terrys Creeks and tribs	Nutrients
Suffolk	Mill and Seven Ponds	Nutrients
Suffolk	Millers Pond	Nutrients
Suffolk	Moriches Bay, East	Nutrients
Suffolk	Moriches Bay, West	Nutrients
Suffolk	Peconic River, Lower, and tidal tribs	Nutrients
Suffolk	Quantuck Bay	Nutrients
Suffolk	Shinnecock Bay and Inlet	Nutrients
Suffolk	Tidal tribs to West Moriches Bay	Nutrients
Sullivan	Bodine, Montgomery Lakes	Nutrients
Sullivan	Davies Lake	Nutrients
Sullivan	Evens Lake	Nutrients
Sullivan	Pleasure Lake	Nutrients
Tompkins	Cayuga Lake, Southern End	Nutrients
Tompkins	Cayuga Lake, Southern End	Silt/Sediment
Tompkins	Owasco Inlet, Upper, and tribs	Nutrients
Ulster	Ashokan Reservoir	Silt/Sediment
Ulster	Esopus Creek, Upper, and minor tribs	Silt/Sediment
Warren	Hague Brook and tribs	Silt/Sediment

303(d) Segments Impaired by Construction Related Pollutant(s)

Warren	Huddle/Finkle Brooks and tribs	Silt/Sediment
Warren	Indian Brook and tribs	Silt/Sediment
Warren	Lake George	Silt/Sediment
Warren	Tribs to L.George, Village of L George	Silt/Sediment
Washington	Cossayuna Lake	Nutrients
Washington	Lake Champlain, South Bay	Nutrients
Washington	Tribs to L.George, East Shore	Silt/Sediment
Washington	Wood Cr/Champlain Canal and minor tribs	Nutrients
Wayne	Port Bay	Nutrients
Westchester	Amawalk Reservoir	Nutrients
Westchester	Blind Brook, Upper, and tribs	Silt/Sediment
Westchester	Cross River Reservoir	Nutrients
Westchester	Lake Katonah	Nutrients
Westchester	Lake Lincolndale	Nutrients
Westchester	Lake Meahagh	Nutrients
Westchester	Lake Mohegan	Nutrients
Westchester	Lake Shenorock	Nutrients
Westchester	Long Island Sound, Westchester (East)	Nutrients
Westchester	Mamaroneck River, Lower	Silt/Sediment
Westchester	Mamaroneck River, Upper, and minor tribs	Silt/Sediment
Westchester	Muscoot/Upper New Croton Reservoir	Nutrients
Westchester	New Croton Reservoir	Nutrients
Westchester	Peach Lake	Nutrients
Westchester	Reservoir No.1 (Lake Isle)	Nutrients
Westchester	Saw Mill River, Lower, and tribs	Nutrients
Westchester	Saw Mill River, Middle, and tribs	Nutrients
Westchester	Sheldrake River and tribs	Silt/Sediment
Westchester	Sheldrake River and tribs	Nutrients
Westchester	Silver Lake	Nutrients
Westchester	Teatown Lake	Nutrients
Westchester	Titicus Reservoir	Nutrients
Westchester	Truesdale Lake	Nutrients
Westchester	Wallace Pond	Nutrients
Wyoming	Java Lake	Nutrients
Wyoming	Silver Lake	Nutrients

APPENDIX F – List of NYS DEC Regional Offices

Region	COVERING THE FOLLOWING COUNTIES:	DIVISION OF ENVIRONMENTAL PERMITS (DEP) PERMIT ADMINISTRATORS	DIVISION OF WATER (DOW) WATER (SPDES) PROGRAM
1	NASSAU AND SUFFOLK	50 CIRCLE ROAD STONY BROOK, NY 11790 TEL. (631) 444-0365	50 CIRCLE ROAD STONY BROOK, NY 11790-3409 TEL. (631) 444-0405
2	BRONX, KINGS, NEW YORK, QUEENS AND RICHMOND	1 HUNTERS POINT PLAZA, 47-40 21ST ST. LONG ISLAND CITY, NY 11101-5407 TEL. (718) 482-4997	1 HUNTERS POINT PLAZA, 47-40 21ST ST. LONG ISLAND CITY, NY 11101-5407 TEL. (718) 482-4933
3	DUTCHESS, ORANGE, PUTNAM, ROCKLAND, SULLIVAN, ULSTER AND WESTCHESTER	21 SOUTH PUTT CORNERS ROAD NEW PALTZ, NY 12561-1696 TEL. (845) 256-3059	100 HILLSIDE AVENUE, SUITE 1W WHITE PLAINS, NY 10603 TEL. (914) 428 - 2505
4	ALBANY, COLUMBIA, DELAWARE, GREENE, MONTGOMERY, OTSEGO, RENSSELAER, SCHENECTADY AND SCHOHARIE	1150 NORTH WESTCOTT ROAD SCHENECTADY, NY 12306-2014 TEL. (518) 357-2069	1130 NORTH WESTCOTT ROAD SCHENECTADY, NY 12306-2014 TEL. (518) 357-2045
5	CLINTON, ESSEX, FRANKLIN, FULTON, HAMILTON, SARATOGA, WARREN AND WASHINGTON	1115 STATE ROUTE 86, PO BOX 296 RAY BROOK, NY 12977-0296 TEL. (518) 897-1234	232 GOLF COURSE ROAD WARRENSBURG, NY 12885-1172 TEL. (518) 623-1200
6	HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE	STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245	STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554
7	BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7500
8	CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES	6274 EAST AVON-LIMA ROADAVON, NY 14414-9519 TEL. (585) 226-2466	6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466
9	ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7070

NYS Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form

for

Construction Activities Seeking Authorization Under SPDES General Permit

*(NOTE: Attach Completed Form to Notice Of Intent and Submit to Address Above)

I. Project Owner/Operator Information
1. Owner/Operator Name:
2. Contact Person:
3. Street Address:
4. City/State/Zip:
II. Project Site Information
5. Project/Site Name:
6. Street Address:
7. City/State/Zip:
III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance Information
8. SWPPP Reviewed by:
9. Title/Position:
10. Date Final SWPPP Reviewed and Accepted:
IV. Regulated MS4 Information
11. Name of MS4:
12. MS4 SPDES Permit Identification Number: NYR20A ________________________________
13. Contact Person:
14. Street Address:
15. City/State/Zip:
16. Telephone Number:

MS4 SWPPP Acceptance Form - continued

V. Certification Statement - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative

I hereby certify that the final Stormwater Pollution Prevention Plan (SWPPP) for the construction project identified in question 5 has been reviewed and meets the substantive requirements in the SPDES General Permit For Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s). Note: The MS4, through the acceptance of the SWPPP, assumes no responsibility for the accuracy and adequacy of the design included in the SWPPP. In addition, review and acceptance of the SWPPP by the MS4 does not relieve the owner/operator or their SWPPP preparer of responsibility or liability for errors or omissions in the plan.

Printed Name:

Title/Position:

Signature:

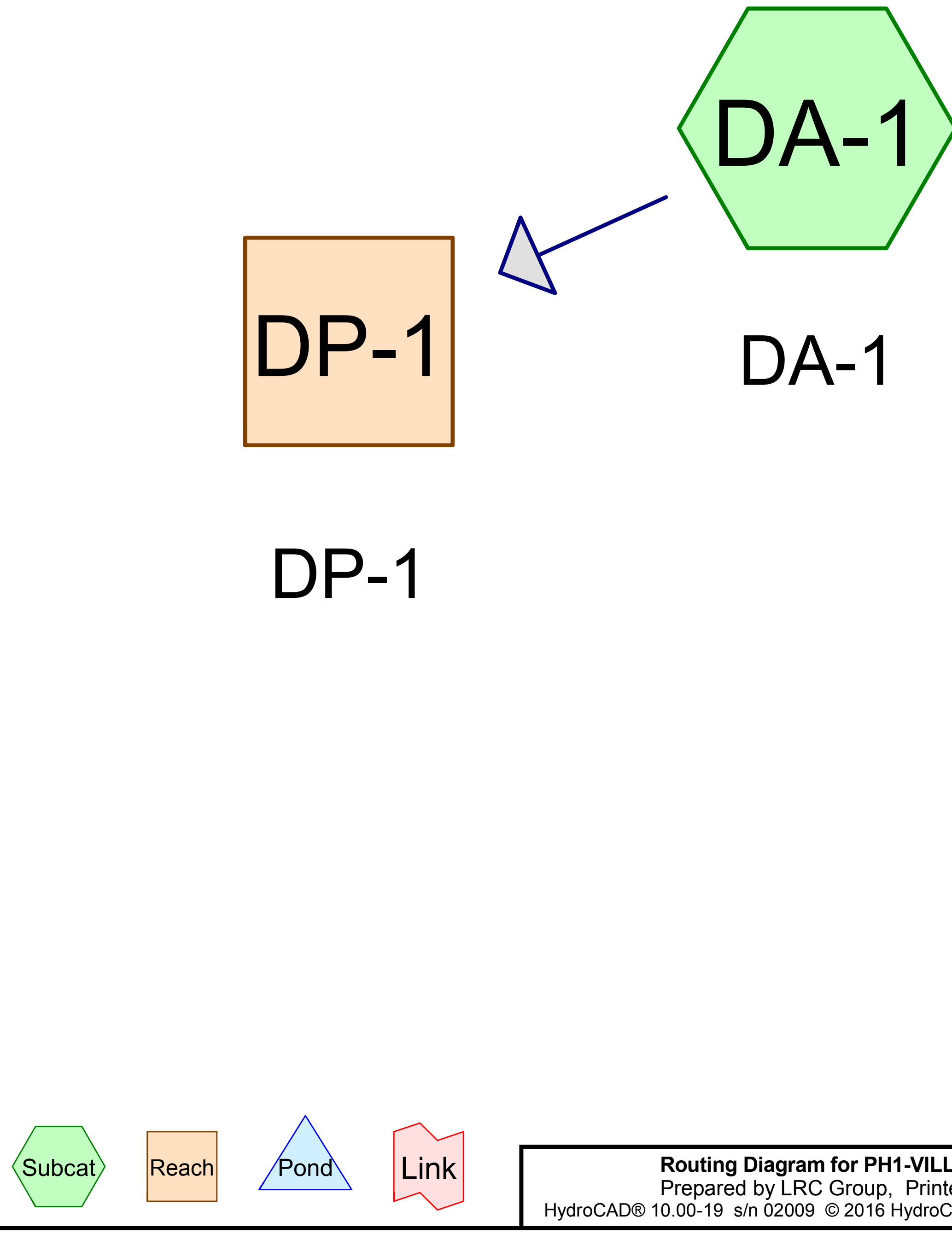
Date:

VI. Additional Information

(NYS DEC - MS4 SWPPP Acceptance Form - January 2015)

APPENDIX C

Pre-Development and Post-Development Run-off Calculations



Routing Diagram for PH1-VILLAGES-PRE
Prepared by LRC Group, Printed 8/4/2021
HydroCAD® 10.00-19 s/n 02009 © 2016 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
844,480	79	Pasture/grassland/range, Fair, HSG C (DA-1)
166,497	98	Paved parking, HSG C (DA-1)
331,390	73	Woods, Fair, HSG C (DA-1)
1,342,367	**80**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
1,342,367	HSG C	DA-1
0	HSG D	
0	Other	
1,342,367		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover
0	0	844,480	0	0	844,480	Pasture/grassland /range, Fair
0	0	166,497	0	0	166,497	Paved parking
0	0	331,390	0	0	331,390	Woods, Fair
0	**0**	**1,342,367**	**0**	**0**	**1,342,367**	**TOTAL AREA**

Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA-1: DA-1 Runoff Area=1,342,367 sf 12.40% Impervious Runoff Depth=0.97"
Flow Length=2,158' Tc=36.1 min CN=80 Runoff=21.82 cfs 108,823 cf

Reach DP-1: DP-1 Inflow=21.82 cfs 108,823 cf
Outflow=21.82 cfs 108,823 cf

Total Runoff Area = 1,342,367 sf Runoff Volume = 108,823 cf Average Runoff Depth = 0.97"
87.60% Pervious = 1,175,870 sf 12.40% Impervious = 166,497 sf

Summary for Subcatchment DA-1: DA-1

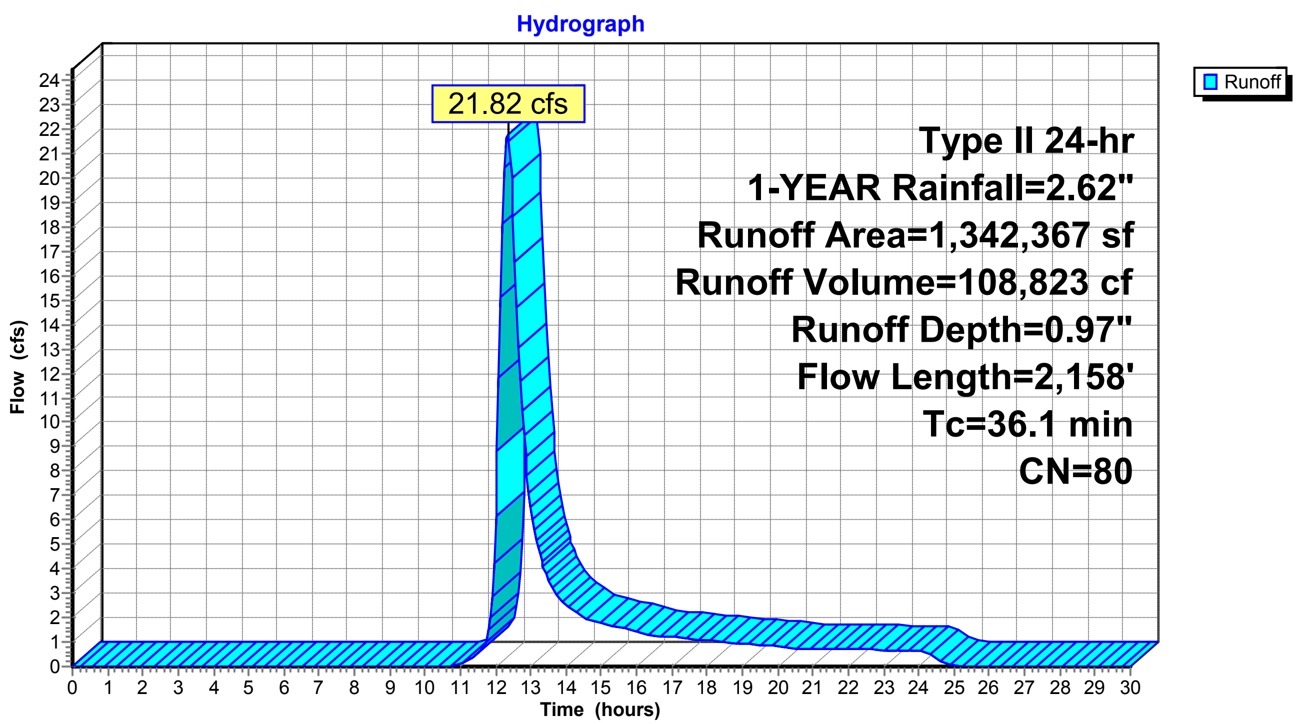
Runoff = 21.82 cfs @ 12.34 hrs, Volume= 108,823 cf, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
844,480	79	Pasture/grassland/range, Fair, HSG C
331,390	73	Woods, Fair, HSG C
166,497	98	Paved parking, HSG C
1,342,367	80	Weighted Average
1,175,870		87.60% Pervious Area
166,497		12.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.1	100	0.0050	0.10		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.17"
7.4	706	0.0520	1.60		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
3.3	333	0.1110	1.67		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
8.3	1,019	0.0850	2.04		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
36.1	2,158	Total			

Subcatchment DA-1: DA-1



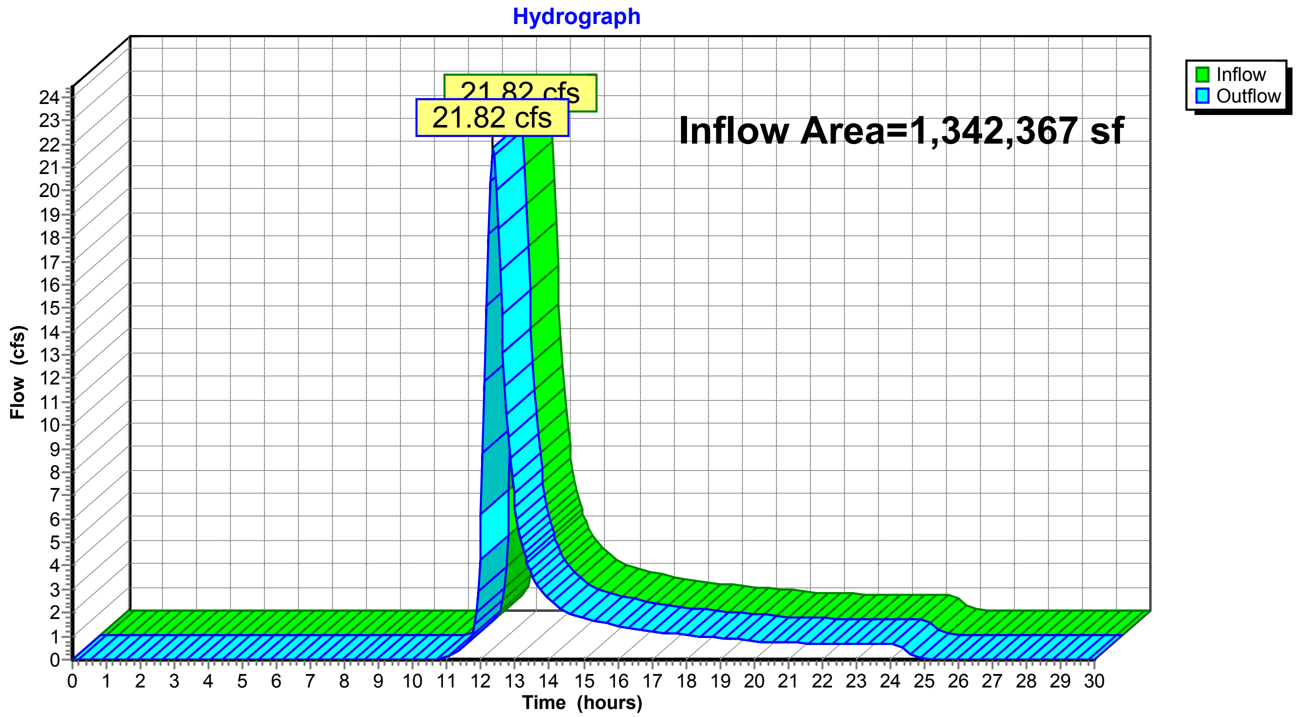
Summary for Reach DP-1: DP-1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	1,342,367 sf, 12.40% Impervious,	Inflow Depth = 0.97"	for 1-YEAR event
Inflow =	21.82 cfs @ 12.34 hrs, Volume=	108,823 cf	
Outflow =	21.82 cfs @ 12.34 hrs, Volume=	108,823 cf, Atten= 0%, Lag= 0.0 min	

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach DP-1: DP-1



Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA-1: DA-1 Runoff Area=1,342,367 sf 12.40% Impervious Runoff Depth=1.38"
Flow Length=2,158' Tc=36.1 min CN=80 Runoff=31.73 cfs 154,249 cf

Reach DP-1: DP-1 Inflow=31.73 cfs 154,249 cf
Outflow=31.73 cfs 154,249 cf

Total Runoff Area = 1,342,367 sf Runoff Volume = 154,249 cf Average Runoff Depth = 1.38"
87.60% Pervious = 1,175,870 sf 12.40% Impervious = 166,497 sf

Summary for Subcatchment DA-1: DA-1

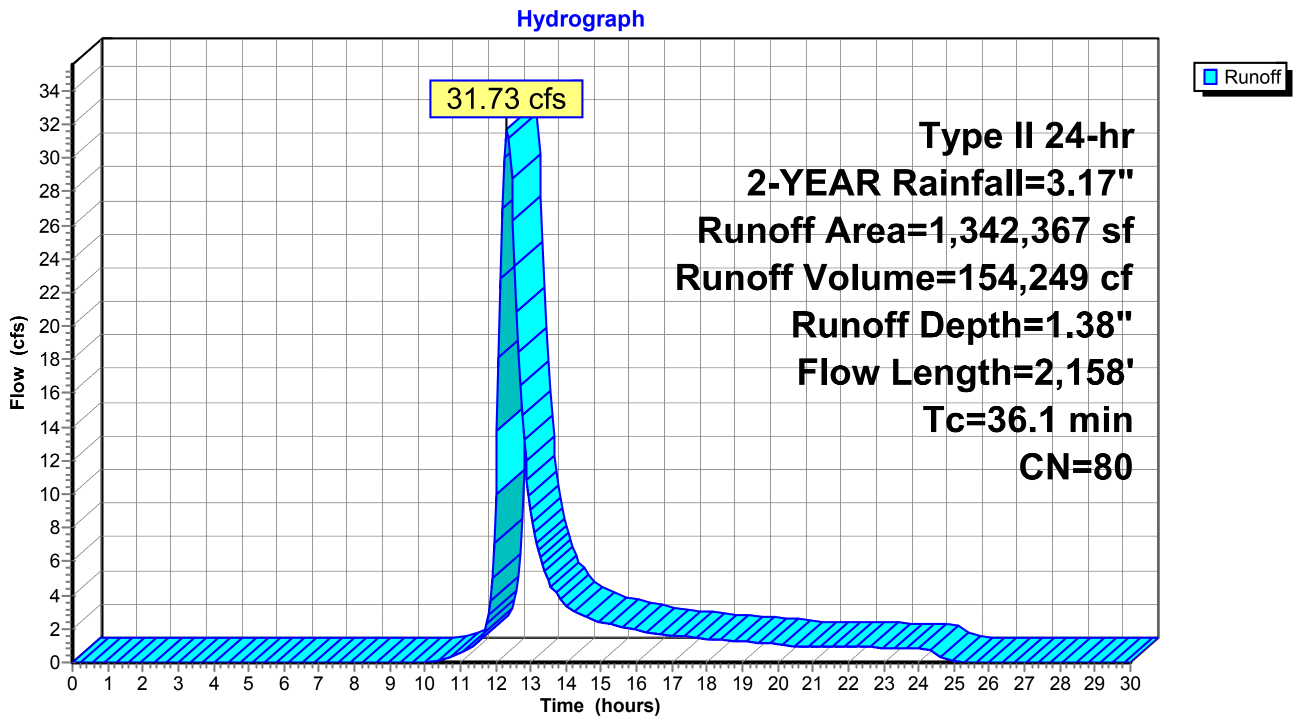
Runoff = 31.73 cfs @ 12.33 hrs, Volume= 154,249 cf, Depth= 1.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
844,480	79	Pasture/grassland/range, Fair, HSG C
331,390	73	Woods, Fair, HSG C
166,497	98	Paved parking, HSG C
1,342,367	80	Weighted Average
1,175,870		87.60% Pervious Area
166,497		12.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.1	100	0.0050	0.10		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.17"
7.4	706	0.0520	1.60		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
3.3	333	0.1110	1.67		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
8.3	1,019	0.0850	2.04		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
36.1	2,158	Total			

Subcatchment DA-1: DA-1



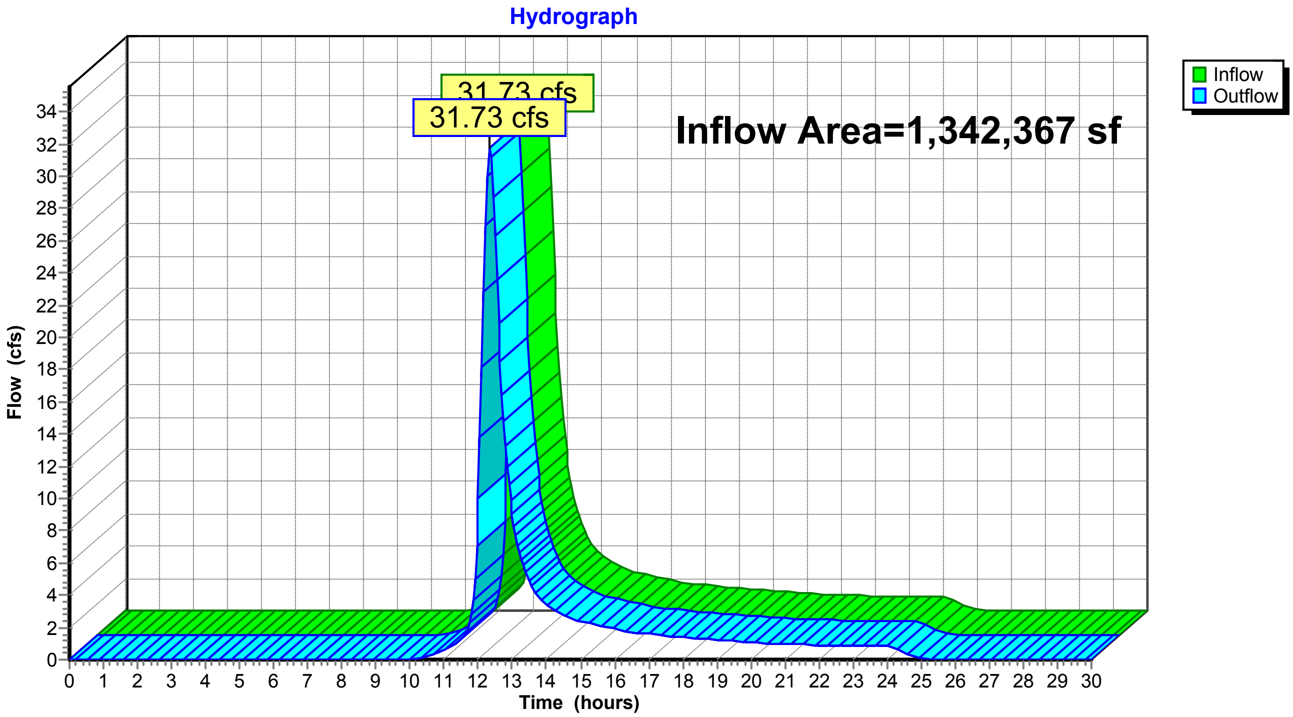
Summary for Reach DP-1: DP-1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	1,342,367 sf, 12.40% Impervious,	Inflow Depth = 1.38"	for 2-YEAR event
Inflow =	31.73 cfs @ 12.33 hrs, Volume=	154,249 cf	
Outflow =	31.73 cfs @ 12.33 hrs, Volume=	154,249 cf, Atten= 0%, Lag= 0.0 min	

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach DP-1: DP-1



Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA-1: DA-1 Runoff Area=1,342,367 sf 12.40% Impervious Runoff Depth=2.62"
Flow Length=2,158' Tc=36.1 min CN=80 Runoff=61.65 cfs 292,594 cf

Reach DP-1: DP-1 Inflow=61.65 cfs 292,594 cf
Outflow=61.65 cfs 292,594 cf

Total Runoff Area = 1,342,367 sf Runoff Volume = 292,594 cf Average Runoff Depth = 2.62"
87.60% Pervious = 1,175,870 sf 12.40% Impervious = 166,497 sf

Summary for Subcatchment DA-1: DA-1

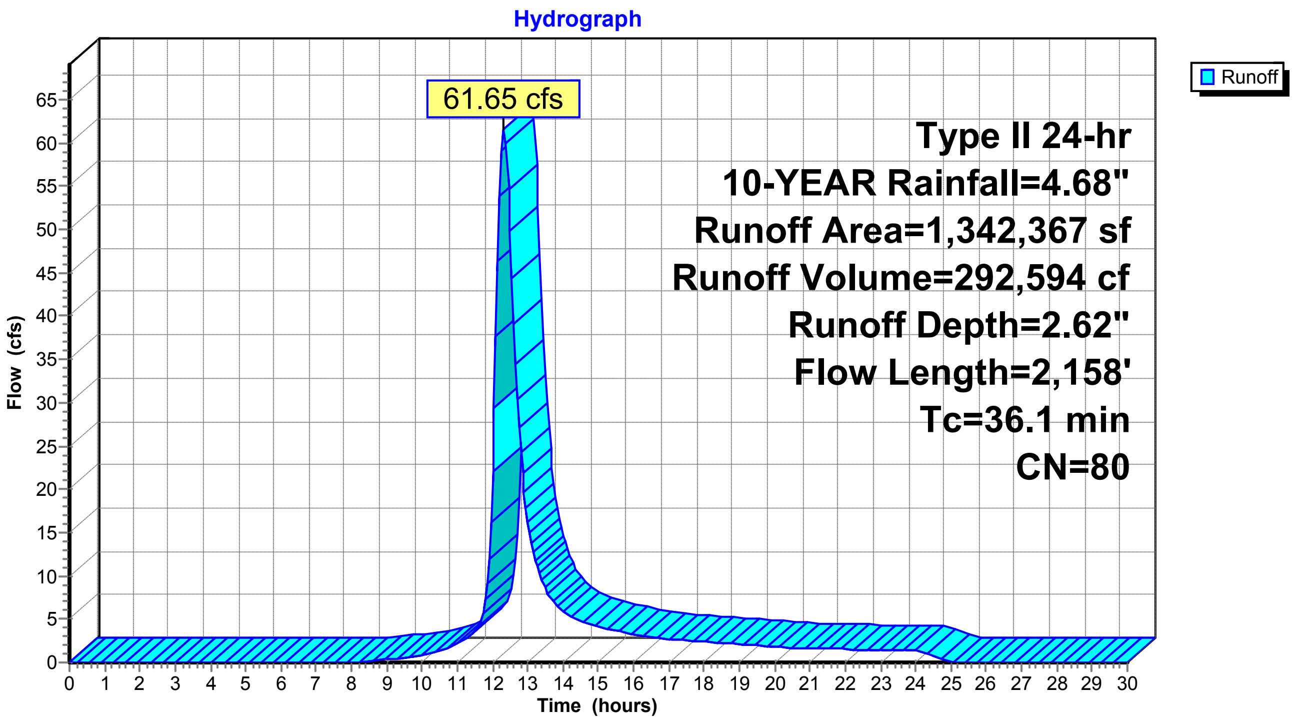
Runoff = 61.65 cfs @ 12.32 hrs, Volume= 292,594 cf, Depth= 2.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
844,480	79	Pasture/grassland/range, Fair, HSG C
331,390	73	Woods, Fair, HSG C
166,497	98	Paved parking, HSG C
1,342,367	80	Weighted Average
1,175,870		87.60% Pervious Area
166,497		12.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.1	100	0.0050	0.10		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.17"
7.4	706	0.0520	1.60		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
3.3	333	0.1110	1.67		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
8.3	1,019	0.0850	2.04		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
36.1	2,158	Total			

Subcatchment DA-1: DA-1



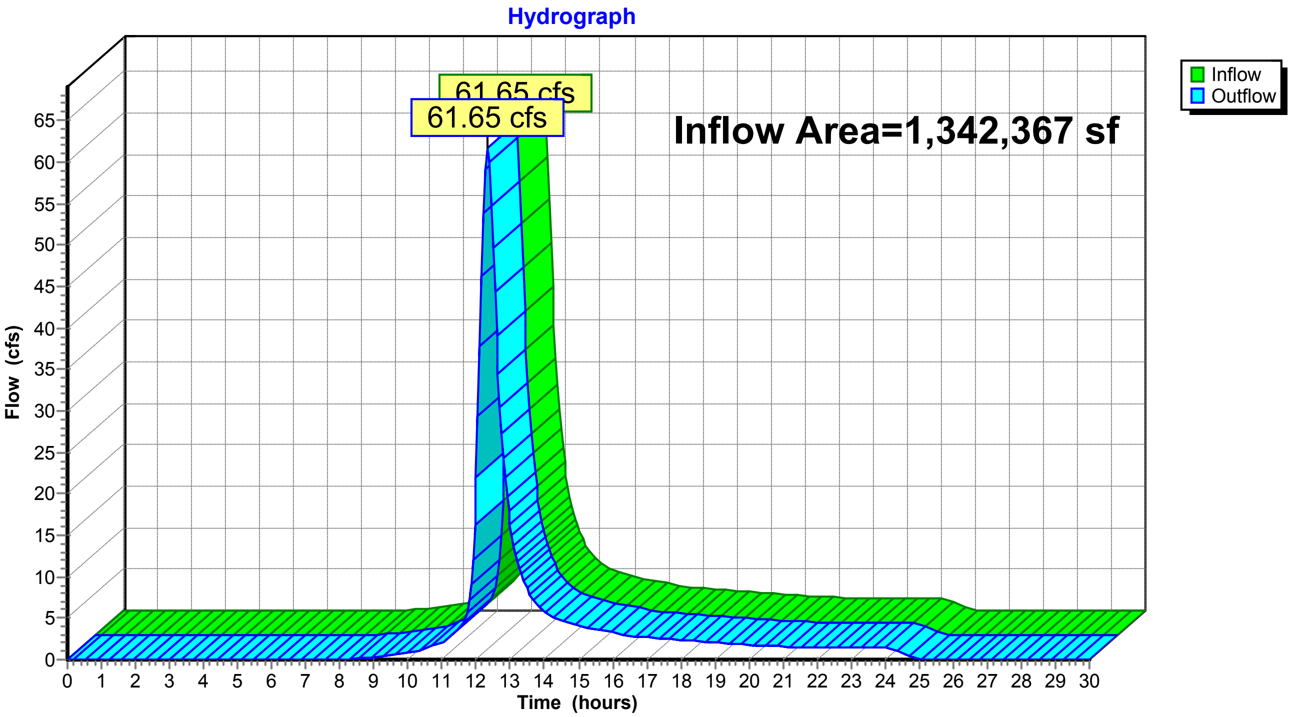
Summary for Reach DP-1: DP-1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1,342,367 sf, 12.40% Impervious, Inflow Depth = 2.62" for 10-YEAR event
Inflow = 61.65 cfs @ 12.32 hrs, Volume= 292,594 cf
Outflow = 61.65 cfs @ 12.32 hrs, Volume= 292,594 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach DP-1: DP-1



Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA-1: DA-1 Runoff Area=1,342,367 sf 12.40% Impervious Runoff Depth=5.82"
Flow Length=2,158' Tc=36.1 min CN=80 Runoff=136.50 cfs 651,288 cf

Reach DP-1: DP-1 Inflow=136.50 cfs 651,288 cf
Outflow=136.50 cfs 651,288 cf

Total Runoff Area = 1,342,367 sf Runoff Volume = 651,288 cf Average Runoff Depth = 5.82"
87.60% Pervious = 1,175,870 sf 12.40% Impervious = 166,497 sf

Summary for Subcatchment DA-1: DA-1

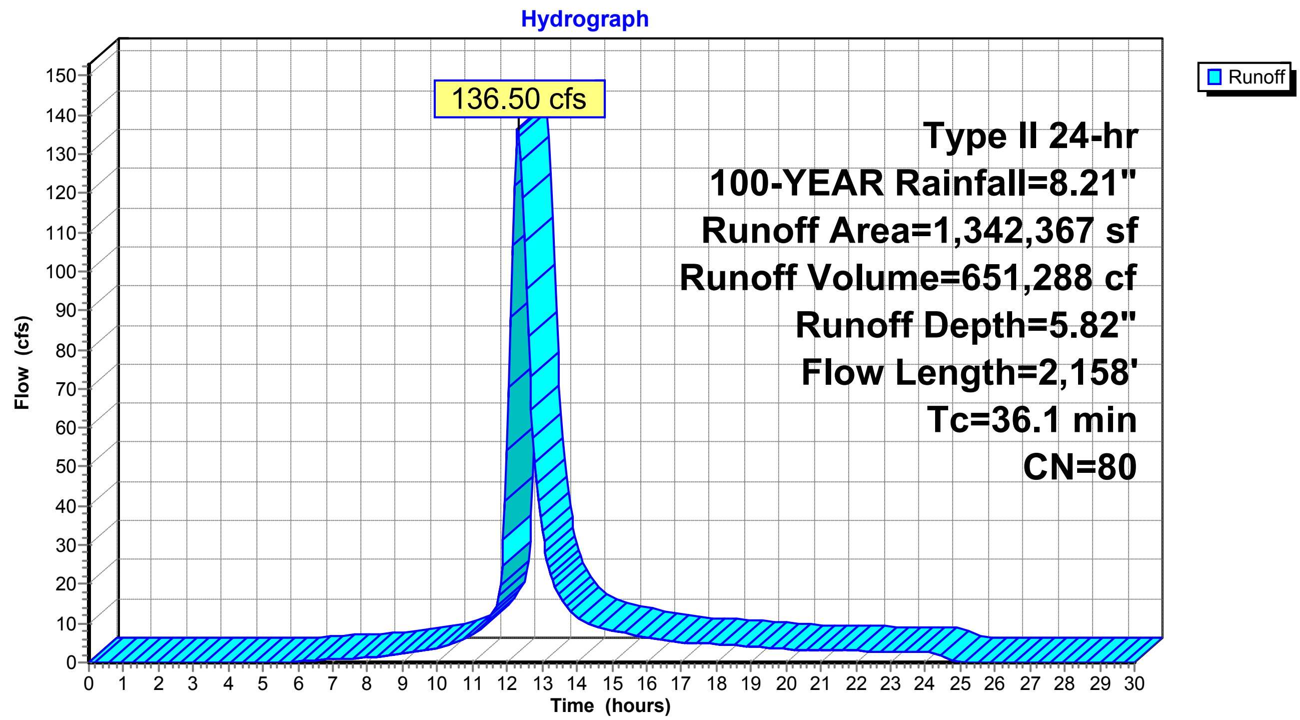
Runoff = 136.50 cfs @ 12.31 hrs, Volume= 651,288 cf, Depth= 5.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
844,480	79	Pasture/grassland/range, Fair, HSG C
331,390	73	Woods, Fair, HSG C
166,497	98	Paved parking, HSG C
1,342,367	80	Weighted Average
1,175,870		87.60% Pervious Area
166,497		12.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.1	100	0.0050	0.10		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.17"
7.4	706	0.0520	1.60		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
3.3	333	0.1110	1.67		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
8.3	1,019	0.0850	2.04		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
36.1	2,158	Total			

Subcatchment DA-1: DA-1



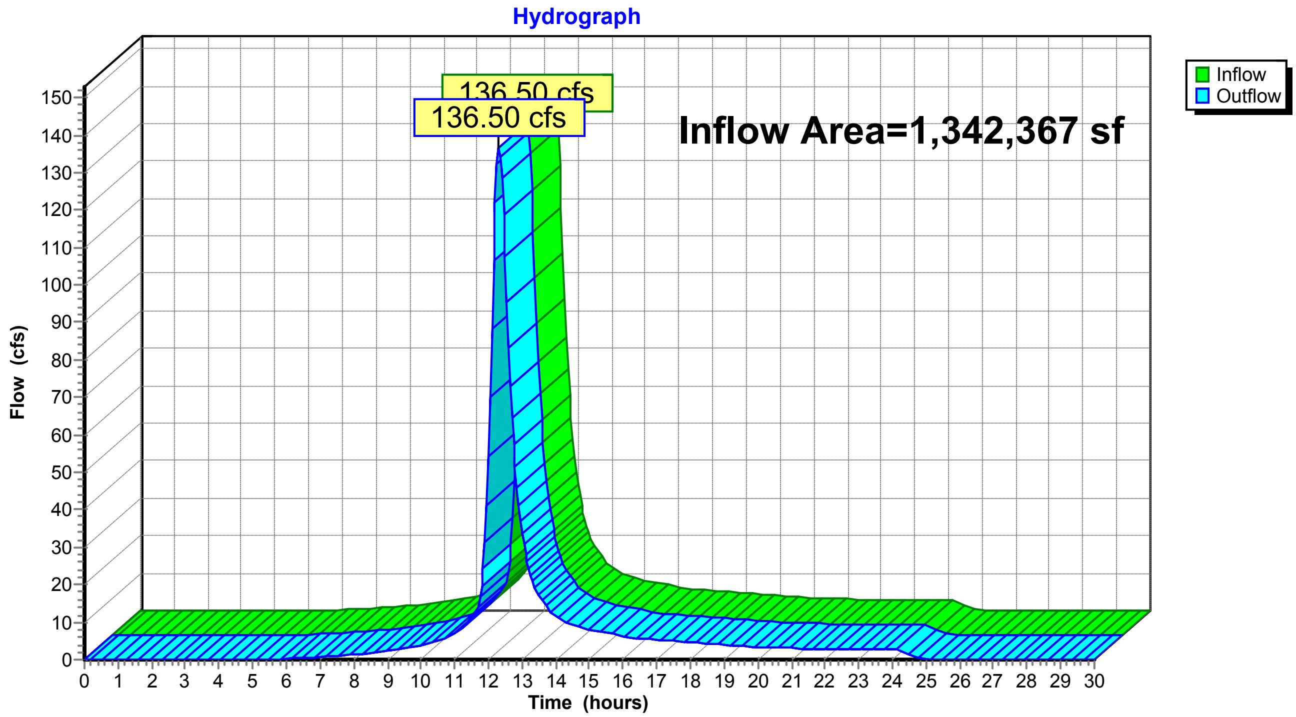
Summary for Reach DP-1: DP-1

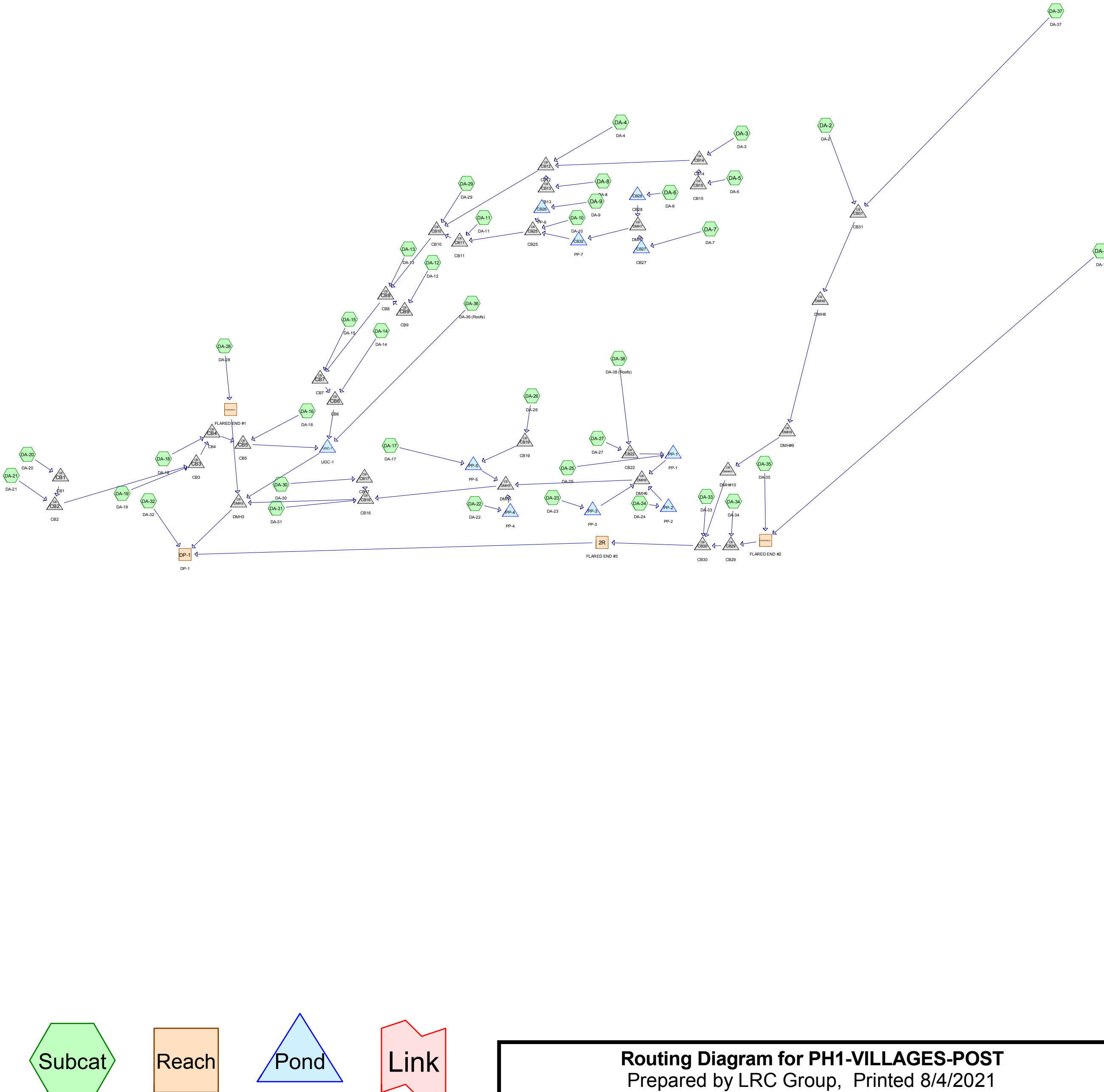
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1,342,367 sf, 12.40% Impervious, Inflow Depth = 5.82" for 100-YEAR event
Inflow = 136.50 cfs @ 12.31 hrs, Volume= 651,288 cf
Outflow = 136.50 cfs @ 12.31 hrs, Volume= 651,288 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach DP-1: DP-1





Routing Diagram for PH1-VILLAGES-POST
Prepared by LRC Group, Printed 8/4/2021
HydroCAD® 10.00-19 s/n 02009 © 2016 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
324,138	74	>75% Grass cover, Good, HSG C (DA-10, DA-11, DA-13, DA-15, DA-17, DA-2, DA-22, DA-23, DA-24, DA-25, DA-26, DA-27, DA-28, DA-29, DA-3, DA-30, DA-32, DA-33, DA-34, DA-35, DA-4, DA-6, DA-7, DA-9)
508,477	79	Pasture/grassland/range, Fair, HSG C (DA-1, DA-37)
295,210	98	Paved parking, HSG C (DA-1, DA-10, DA-11, DA-12, DA-13, DA-14, DA-15, DA-16, DA-17, DA-18, DA-19, DA-2, DA-20, DA-21, DA-22, DA-23, DA-24, DA-25, DA-26, DA-27, DA-28, DA-29, DA-3, DA-30, DA-31, DA-32, DA-33, DA-34, DA-35, DA-37, DA-4, DA-5, DA-6, DA-7, DA-8, DA-9)
53,997	98	Roofs, HSG C (DA-36, DA-38)
178,448	73	Woods, Fair, HSG C (DA-1, DA-28)
1,360,270	**82**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
1,360,270	HSG C	DA-1, DA-10, DA-11, DA-12, DA-13, DA-14, DA-15, DA-16, DA-17, DA-18, DA-19, DA-2, DA-20, DA-21, DA-22, DA-23, DA-24, DA-25, DA-26, DA-27, DA-28, DA-29, DA-3, DA-30, DA-31, DA-32, DA-33, DA-34, DA-35, DA-36, DA-37, DA-38, DA-4, DA-5, DA-6, DA-7, DA-8, DA-9
0	HSG D	
0	Other	
1,360,270		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover
0	0	324,138	0	0	324,138	>75% Grass cover, Good
0	0	508,477	0	0	508,477	Pasture/grassland /range, Fair
0	0	295,210	0	0	295,210	Paved parking
0	0	53,997	0	0	53,997	Roofs
0	0	178,448	0	0	178,448	Woods, Fair
0	**0**	**1,360,270**	**0**	**0**	**1,360,270**	**TOTAL AREA**

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	FLARED END #1	355.00	353.59	120.0	0.0118	0.010	15.0	0.0	0.0
2	FLARED END #2	336.00	335.81	37.0	0.0051	0.025	15.0	0.0	0.0
3	CB1	364.75	364.50	25.0	0.0100	0.010	15.0	0.0	0.0
4	CB10	382.50	378.94	100.0	0.0356	0.010	18.0	0.0	0.0
5	CB11	383.43	383.18	25.0	0.0100	0.010	15.0	0.0	0.0
6	CB12	386.63	384.78	143.0	0.0129	0.010	18.0	0.0	0.0
7	CB13	386.84	386.63	21.0	0.0100	0.010	15.0	0.0	0.0
8	CB14	392.54	386.84	181.0	0.0315	0.010	15.0	0.0	0.0
9	CB15	392.75	392.54	21.0	0.0100	0.010	15.0	0.0	0.0
10	CB16	336.84	335.41	143.0	0.0100	0.010	15.0	0.0	0.0
11	CB17	347.94	347.74	21.0	0.0095	0.010	15.0	0.0	0.0
12	CB19	345.71	344.88	83.0	0.0100	0.010	15.0	0.0	0.0
13	CB2	364.50	356.95	171.0	0.0442	0.010	15.0	0.0	0.0
14	CB22	343.30	342.76	54.0	0.0100	0.010	15.0	0.0	0.0
15	CB25	384.36	383.43	92.0	0.0101	0.010	15.0	0.0	0.0
16	CB26	384.96	384.36	41.0	0.0146	0.010	15.0	0.0	0.0
17	CB27	387.36	387.14	22.0	0.0100	0.010	15.0	0.0	0.0
18	CB28	388.00	387.61	39.0	0.0100	0.010	15.0	0.0	0.0
19	CB29	335.81	335.64	35.0	0.0049	0.010	18.0	0.0	0.0
20	CB3	356.95	356.58	37.0	0.0100	0.010	15.0	0.0	0.0
21	CB30	335.64	335.25	25.0	0.0156	0.010	18.0	0.0	0.0
22	CB31	392.40	380.10	82.0	0.1500	0.010	18.0	0.0	0.0
23	CB32	385.45	384.36	50.0	0.0218	0.010	15.0	0.0	0.0
24	CB4	356.58	356.20	38.0	0.0100	0.010	15.0	0.0	0.0
25	CB5	356.20	351.03	54.0	0.0957	0.010	15.0	0.0	0.0
26	CB6	355.79	351.01	64.0	0.0747	0.010	18.0	0.0	0.0
27	CB7	365.50	365.00	24.0	0.0208	0.010	18.0	0.0	0.0
28	CB8	375.00	365.74	128.0	0.0723	0.010	18.0	0.0	0.0
29	CB9	378.94	378.70	24.0	0.0100	0.010	15.0	0.0	0.0
30	DMH#10	337.70	335.60	111.0	0.0189	0.010	18.0	0.0	0.0
31	DMH3	333.00	327.28	97.0	0.0590	0.010	24.0	0.0	0.0
32	DMH5	338.32	336.84	148.0	0.0100	0.010	15.0	0.0	0.0
33	DMH6	340.00	338.32	168.0	0.0100	0.010	15.0	0.0	0.0
34	DMH7	387.13	385.45	79.0	0.0213	0.010	15.0	0.0	0.0
35	DMH8	374.05	351.70	149.0	0.1500	0.010	18.0	0.0	0.0
36	DMH9	338.54	337.70	42.0	0.0200	0.010	18.0	0.0	0.0
37	PP-1	342.76	342.16	60.0	0.0100	0.010	15.0	0.0	0.0
38	PP-2	340.50	340.04	46.0	0.0100	0.010	15.0	0.0	0.0
39	PP-3	344.50	342.94	52.0	0.0300	0.010	15.0	0.0	0.0
40	PP-4	345.50	345.17	33.0	0.0100	0.010	12.0	0.0	0.0
41	PP-5	344.88	344.50	37.0	0.0103	0.010	15.0	0.0	0.0
42	UGC-1	350.50	348.85	59.0	0.0280	0.010	15.0	0.0	0.0

Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA-1: DA-1 Runoff Area=652,997 sf 19.60% Impervious Runoff Depth=1.09"
Flow Length=1,558' Tc=29.6 min CN=82 Runoff=13.87 cfs 59,149 cf

Subcatchment DA-10: DA-10 Runoff Area=11,988 sf 71.77% Impervious Runoff Depth=1.72"
Tc=6.0 min CN=91 Runoff=0.79 cfs 1,718 cf

Subcatchment DA-11: DA-11 Runoff Area=2,984 sf 80.09% Impervious Runoff Depth=1.89"
Tc=6.0 min CN=93 Runoff=0.21 cfs 471 cf

Subcatchment DA-12: DA-12 Runoff Area=1,295 sf 100.00% Impervious Runoff Depth=2.39"
Tc=6.0 min CN=98 Runoff=0.11 cfs 258 cf

Subcatchment DA-13: DA-13 Runoff Area=2,426 sf 54.45% Impervious Runoff Depth=1.41"
Tc=6.0 min CN=87 Runoff=0.13 cfs 285 cf

Subcatchment DA-14: DA-14 Runoff Area=1,839 sf 100.00% Impervious Runoff Depth=2.39"
Tc=6.0 min CN=98 Runoff=0.15 cfs 366 cf

Subcatchment DA-15: DA-15 Runoff Area=3,717 sf 52.06% Impervious Runoff Depth=1.34"
Tc=6.0 min CN=86 Runoff=0.20 cfs 416 cf

Subcatchment DA-16: DA-16 Runoff Area=1,740 sf 100.00% Impervious Runoff Depth=2.39"
Tc=6.0 min CN=98 Runoff=0.14 cfs 347 cf

Subcatchment DA-17: DA-17 Runoff Area=27,430 sf 23.81% Impervious Runoff Depth=0.97"
Flow Length=406' Tc=13.6 min CN=80 Runoff=0.81 cfs 2,224 cf

Subcatchment DA-18: DA-18 Runoff Area=5,718 sf 100.00% Impervious Runoff Depth=2.39"
Tc=6.0 min CN=98 Runoff=0.47 cfs 1,139 cf

Subcatchment DA-19: DA-19 Runoff Area=2,039 sf 100.00% Impervious Runoff Depth=2.39"
Tc=6.0 min CN=98 Runoff=0.17 cfs 406 cf

Subcatchment DA-2: DA-2 Runoff Area=44,834 sf 2.52% Impervious Runoff Depth=0.72"
Flow Length=871' Tc=16.8 min CN=75 Runoff=0.83 cfs 2,696 cf

Subcatchment DA-20: DA-20 Runoff Area=1,093 sf 100.00% Impervious Runoff Depth=2.39"
Tc=6.0 min CN=98 Runoff=0.09 cfs 218 cf

Subcatchment DA-21: DA-21 Runoff Area=1,494 sf 100.00% Impervious Runoff Depth=2.39"
Tc=6.0 min CN=98 Runoff=0.12 cfs 298 cf

Subcatchment DA-22: DA-22 Runoff Area=3,899 sf 98.72% Impervious Runoff Depth=2.39"
Tc=6.0 min CN=98 Runoff=0.32 cfs 777 cf

Subcatchment DA-23: DA-23 Runoff Area=2,974 sf 92.97% Impervious Runoff Depth=2.18"
Tc=6.0 min CN=96 Runoff=0.23 cfs 540 cf

Subcatchment DA-24: DA-24 Runoff Area=2,778 sf 92.40% Impervious Runoff Depth=2.18"
Tc=6.0 min CN=96 Runoff=0.22 cfs 504 cf

Subcatchment DA-25: DA-25 Runoff Area=17,418 sf 49.60% Impervious Runoff Depth=1.34"
Flow Length=309' Tc=14.2 min CN=86 Runoff=0.71 cfs 1,948 cf

Subcatchment DA-26: DA-26 Runoff Area=2,444 sf 45.42% Impervious Runoff Depth=1.27"
Tc=6.0 min CN=85 Runoff=0.12 cfs 260 cf

Subcatchment DA-27: DA-27 Runoff Area=4,118 sf 53.08% Impervious Runoff Depth=1.41"
Tc=6.0 min CN=87 Runoff=0.23 cfs 485 cf

Subcatchment DA-28: DA-28 Runoff Area=244,871 sf 7.43% Impervious Runoff Depth=0.77"
Flow Length=1,550' Tc=22.6 min CN=76 Runoff=4.09 cfs 15,677 cf

Subcatchment DA-29: DA-29 Runoff Area=4,310 sf 61.76% Impervious Runoff Depth=1.56"
Tc=6.0 min CN=89 Runoff=0.26 cfs 560 cf

Subcatchment DA-3: DA-3 Runoff Area=1,320 sf 58.94% Impervious Runoff Depth=1.48"
Tc=6.0 min CN=88 Runoff=0.08 cfs 163 cf

Subcatchment DA-30: DA-30 Runoff Area=8,713 sf 36.19% Impervious Runoff Depth=1.15"
Tc=6.0 min CN=83 Runoff=0.40 cfs 833 cf

Subcatchment DA-31: DA-31 Runoff Area=2,972 sf 100.00% Impervious Runoff Depth=2.39"
Tc=6.0 min CN=98 Runoff=0.24 cfs 592 cf

Subcatchment DA-32: DA-32 Runoff Area=37,379 sf 9.31% Impervious Runoff Depth=0.77"
Flow Length=348' Tc=11.9 min CN=76 Runoff=0.90 cfs 2,393 cf

Subcatchment DA-33: DA-33 Runoff Area=2,907 sf 69.66% Impervious Runoff Depth=1.72"
Tc=6.0 min CN=91 Runoff=0.19 cfs 417 cf

Subcatchment DA-34: DA-34 Runoff Area=6,631 sf 65.10% Impervious Runoff Depth=1.64"
Tc=6.0 min CN=90 Runoff=0.42 cfs 905 cf

Subcatchment DA-35: DA-35 Runoff Area=24,159 sf 15.16% Impervious Runoff Depth=0.87"
Flow Length=389' Tc=6.6 min CN=78 Runoff=0.82 cfs 1,745 cf

Subcatchment DA-36: DA-36 (Roofs) Runoff Area=19,897 sf 100.00% Impervious Runoff Depth=2.39"
Tc=6.0 min CN=98 Runoff=1.64 cfs 3,963 cf

Subcatchment DA-37: DA-37 Runoff Area=152,588 sf 32.55% Impervious Runoff Depth=1.27"
Flow Length=996' Tc=25.9 min CN=85 Runoff=4.21 cfs 16,209 cf

Subcatchment DA-38: DA-38 (Roofs) Runoff Area=34,100 sf 100.00% Impervious Runoff Depth=2.39"
Tc=6.0 min CN=98 Runoff=2.80 cfs 6,792 cf

Subcatchment DA-4: DA-4 Runoff Area=4,793 sf 54.83% Impervious Runoff Depth=1.41"
Tc=6.0 min CN=87 Runoff=0.27 cfs 564 cf

Subcatchment DA-5: DA-5 Runoff Area=1,120 sf 100.00% Impervious Runoff Depth=2.39"
Tc=6.0 min CN=98 Runoff=0.09 cfs 223 cf

Subcatchment DA-6: DA-6 Runoff Area=3,169 sf 64.25% Impervious Runoff Depth=1.56"
Tc=6.0 min CN=89 Runoff=0.19 cfs 412 cf

Subcatchment DA-7: DA-7 Runoff Area=10,524 sf 75.84% Impervious Runoff Depth=1.80"
Tc=6.0 min CN=92 Runoff=0.73 cfs 1,583 cf

Subcatchment DA-8: DA-8 Runoff Area=2,003 sf 100.00% Impervious Runoff Depth=2.39"
Tc=6.0 min CN=98 Runoff=0.16 cfs 399 cf

Subcatchment DA-9: DA-9 Runoff Area=3,589 sf 64.47% Impervious Runoff Depth=1.56"
Tc=6.0 min CN=89 Runoff=0.22 cfs 467 cf

Reach 2R: FLARED END #3 Avg. Flow Depth=0.40' Max Vel=3.86 fps Inflow=7.41 cfs 81,122 cf
n=0.022 L=397.0' S=0.0142 '/' Capacity=148.49 cfs Outflow=7.34 cfs 81,122 cf

Reach DP-1: DP-1 Inflow=12.35 cfs 102,755 cf
Outflow=12.35 cfs 102,755 cf

Reach FLARED END #1: FLARED END Avg. Flow Depth=0.59' Max Vel=7.21 fps Inflow=4.09 cfs 15,677 cf
15.0" Round Pipe n=0.010 L=120.0' S=0.0118 '/' Capacity=9.10 cfs Outflow=4.08 cfs 15,677 cf

Reach FLARED END #2: FLARED END Avg. Flow Depth=1.25' Max Vel=2.21 fps Inflow=14.00 cfs 60,894 cf
15.0" Round Pipe n=0.025 L=37.0' S=0.0051 '/' Capacity=2.41 cfs Outflow=2.41 cfs 60,894 cf

Pond CB1: CB1 Peak Elev=364.90' Inflow=0.09 cfs 218 cf
15.0" Round Culvert n=0.010 L=25.0' S=0.0100 '/' Outflow=0.09 cfs 218 cf

Pond CB10: CB10 Peak Elev=383.21' Inflow=1.87 cfs 4,099 cf
18.0" Round Culvert n=0.010 L=100.0' S=0.0356 '/' Outflow=1.87 cfs 4,099 cf

Pond CB11: CB11 Peak Elev=383.97' Inflow=1.01 cfs 2,189 cf
15.0" Round Culvert n=0.010 L=25.0' S=0.0100 '/' Outflow=1.01 cfs 2,189 cf

Pond CB12: CB12 Peak Elev=387.02' Inflow=0.60 cfs 1,349 cf
18.0" Round Culvert n=0.010 L=143.0' S=0.0129 '/' Outflow=0.60 cfs 1,349 cf

Pond CB13: CB13 Peak Elev=387.05' Inflow=0.16 cfs 399 cf
15.0" Round Culvert n=0.010 L=21.0' S=0.0100 '/' Outflow=0.16 cfs 399 cf

Pond CB14: CB14 Peak Elev=392.75' Inflow=0.17 cfs 386 cf
15.0" Round Culvert n=0.010 L=181.0' S=0.0315 '/' Outflow=0.17 cfs 386 cf

Pond CB15: CB15 Peak Elev=392.90' Inflow=0.09 cfs 223 cf
15.0" Round Culvert n=0.010 L=21.0' S=0.0100 '/' Outflow=0.09 cfs 223 cf

Pond CB16: CB16 Peak Elev=337.32' Inflow=0.82 cfs 3,561 cf
15.0" Round Culvert n=0.010 L=143.0' S=0.0100 '/' Outflow=0.82 cfs 3,561 cf

Pond CB17: CB17 Peak Elev=348.27' Inflow=0.40 cfs 833 cf
15.0" Round Culvert n=0.010 L=21.0' S=0.0095 '/' Outflow=0.40 cfs 833 cf

Pond CB19: CB19 Peak Elev=345.89' Inflow=0.12 cfs 260 cf
15.0" Round Culvert n=0.010 L=83.0' S=0.0100 '/' Outflow=0.12 cfs 260 cf

Pond CB2: CB2 Peak Elev=364.74' Inflow=0.21 cfs 515 cf
15.0" Round Culvert n=0.010 L=171.0' S=0.0442 '/' Outflow=0.21 cfs 515 cf

Pond CB22: CB22 Peak Elev=344.35' Inflow=3.03 cfs 7,276 cf
15.0" Round Culvert n=0.010 L=54.0' S=0.0100 '/' Outflow=3.03 cfs 7,276 cf

Pond CB25: CB25 Peak Elev=384.84' Inflow=0.79 cfs 1,718 cf
15.0" Round Culvert n=0.010 L=92.0' S=0.0101 '/' Outflow=0.79 cfs 1,718 cf

Pond CB26: PP-6 Peak Elev=384.03' Storage=30 cf Inflow=0.22 cfs 467 cf
Discarded=0.20 cfs 467 cf Primary=0.00 cfs 0 cf Outflow=0.20 cfs 467 cf

Pond CB27: CB27 Peak Elev=388.01' Storage=16 cf Inflow=0.73 cfs 1,583 cf
Discarded=0.13 cfs 282 cf Primary=0.60 cfs 1,300 cf Outflow=0.73 cfs 1,583 cf

Pond CB28: CB28 Peak Elev=388.03' Storage=23 cf Inflow=0.19 cfs 412 cf
Discarded=0.18 cfs 402 cf Primary=0.00 cfs 10 cf Outflow=0.18 cfs 412 cf

Pond CB29: CB29 Peak Elev=336.77' Inflow=2.83 cfs 61,799 cf
18.0" Round Culvert n=0.010 L=35.0' S=0.0049 '/' Outflow=2.83 cfs 61,799 cf

Pond CB3: CB3 Peak Elev=357.27' Inflow=0.38 cfs 921 cf
15.0" Round Culvert n=0.010 L=37.0' S=0.0100 '/' Outflow=0.38 cfs 921 cf

Pond CB30: CB30 Peak Elev=337.61' Inflow=7.41 cfs 81,122 cf
18.0" Round Culvert n=0.010 L=25.0' S=0.0156 '/' Outflow=7.41 cfs 81,122 cf

Pond CB31: CB31 Peak Elev=393.68' Inflow=4.90 cfs 18,906 cf
18.0" Round Culvert n=0.010 L=82.0' S=0.1500 '/' Outflow=4.90 cfs 18,906 cf

Pond CB32: PP-7 Peak Elev=384.70' Storage=335 cf Inflow=0.60 cfs 1,310 cf
Discarded=0.14 cfs 1,310 cf Primary=0.00 cfs 0 cf Outflow=0.14 cfs 1,310 cf

Pond CB4: CB4 Peak Elev=357.07' Inflow=0.85 cfs 2,060 cf
15.0" Round Culvert n=0.010 L=38.0' S=0.0100 '/' Outflow=0.85 cfs 2,060 cf

Pond CB5: CB5 Peak Elev=356.74' Inflow=0.99 cfs 2,407 cf
15.0" Round Culvert n=0.010 L=54.0' S=0.0957 '/' Outflow=0.99 cfs 2,407 cf

Pond CB6: CB6 Peak Elev=356.62' Inflow=2.46 cfs 5,424 cf
18.0" Round Culvert n=0.010 L=64.0' S=0.0747 '/' Outflow=2.46 cfs 5,424 cf

Pond CB7: CB7 Peak Elev=366.29' Inflow=2.31 cfs 5,058 cf
18.0" Round Culvert n=0.010 L=24.0' S=0.0208 '/' Outflow=2.31 cfs 5,058 cf

Pond CB8: CB8 Peak Elev=375.76' Inflow=2.11 cfs 4,642 cf
18.0" Round Culvert n=0.010 L=128.0' S=0.0723 '/' Outflow=2.11 cfs 4,642 cf

Pond CB9: CB9 Peak Elev=379.11' Inflow=0.11 cfs 258 cf
15.0" Round Culvert n=0.010 L=24.0' S=0.0100 '/' Outflow=0.11 cfs 258 cf

Pond DMH#10: DMH#10	Peak Elev=338.98' Inflow=4.90 cfs 18,906 cf 18.0" Round Culvert n=0.010 L=111.0' S=0.0189 '/' Outflow=4.90 cfs 18,906 cf
Pond DMH3: DMH3	Peak Elev=334.06' Inflow=4.70 cfs 19,240 cf 24.0" Round Culvert n=0.010 L=97.0' S=0.0590 '/' Outflow=4.70 cfs 19,240 cf
Pond DMH5: DMH5	Peak Elev=338.71' Inflow=0.57 cfs 2,136 cf 15.0" Round Culvert n=0.010 L=148.0' S=0.0100 '/' Outflow=0.57 cfs 2,136 cf
Pond DMH6: DMH6	Peak Elev=340.04' Inflow=0.01 cfs 122 cf 15.0" Round Culvert n=0.010 L=168.0' S=0.0100 '/' Outflow=0.01 cfs 122 cf
Pond DMH7: DMH7	Peak Elev=387.54' Inflow=0.60 cfs 1,310 cf 15.0" Round Culvert n=0.010 L=79.0' S=0.0213 '/' Outflow=0.60 cfs 1,310 cf
Pond DMH8: DMH8	Peak Elev=375.33' Inflow=4.90 cfs 18,906 cf 18.0" Round Culvert n=0.010 L=149.0' S=0.1500 '/' Outflow=4.90 cfs 18,906 cf
Pond DMH9: DMH#9	Peak Elev=339.82' Inflow=4.90 cfs 18,906 cf 18.0" Round Culvert n=0.010 L=42.0' S=0.0200 '/' Outflow=4.90 cfs 18,906 cf
Pond PP-1: PP-1	Peak Elev=340.48' Storage=1,599 cf Inflow=3.53 cfs 9,224 cf Discarded=1.29 cfs 9,224 cf Primary=0.00 cfs 0 cf Outflow=1.29 cfs 9,224 cf
Pond PP-2: PP-2	Peak Elev=340.04' Storage=23 cf Inflow=0.22 cfs 504 cf Discarded=0.21 cfs 504 cf Primary=0.00 cfs 0 cf Outflow=0.21 cfs 504 cf
Pond PP-3: PP-3	Peak Elev=344.55' Storage=351 cf Inflow=0.23 cfs 540 cf Discarded=0.01 cfs 96 cf Primary=0.01 cfs 122 cf Outflow=0.02 cfs 218 cf
Pond PP-4: PP-4	Peak Elev=344.65' Storage=470 cf Inflow=0.32 cfs 777 cf Discarded=0.07 cfs 415 cf Primary=0.00 cfs 0 cf Outflow=0.07 cfs 415 cf
Pond PP-5: PP-5	Peak Elev=345.28' Storage=528 cf Inflow=0.88 cfs 2,483 cf Discarded=0.20 cfs 210 cf Primary=0.57 cfs 2,015 cf Outflow=0.77 cfs 2,224 cf
Pond UGC-1: UGC-1	Peak Elev=350.53' Storage=2,486 cf Inflow=5.09 cfs 11,794 cf Discarded=1.43 cfs 11,792 cf Primary=0.01 cfs 1 cf Outflow=1.44 cfs 11,794 cf

Total Runoff Area = 1,360,270 sf Runoff Volume = 128,401 cf Average Runoff Depth = 1.13"
74.33% Pervious = 1,011,063 sf 25.67% Impervious = 349,207 sf

Summary for Subcatchment DA-1: DA-1

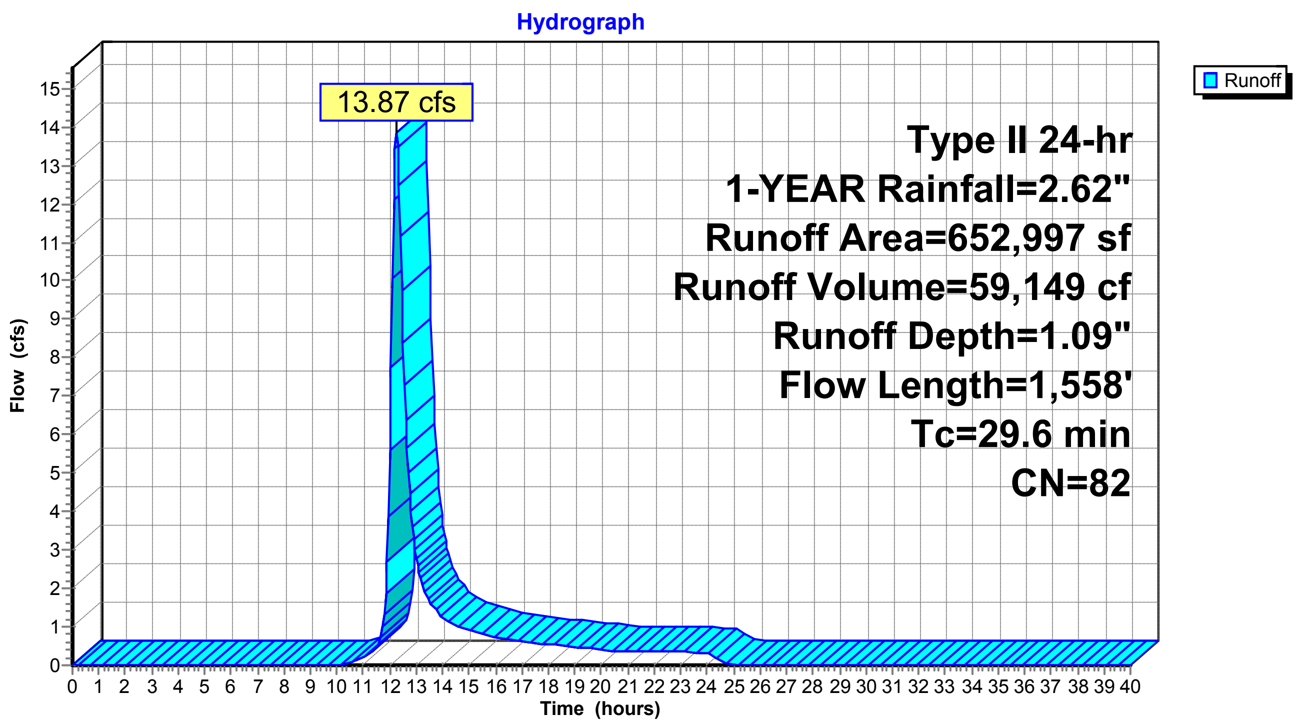
Runoff = 13.87 cfs @ 12.25 hrs, Volume= 59,149 cf, Depth= 1.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
405,559	79	Pasture/grassland/range, Fair, HSG C
119,458	73	Woods, Fair, HSG C
127,980	98	Paved parking, HSG C
652,997	82	Weighted Average
525,017		80.40% Pervious Area
127,980		19.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.9	100	0.0100	0.09		**Sheet Flow, GG-HH** Grass: Dense n= 0.240 P2= 3.17"
10.7	1,458	0.1056	2.27		**Shallow Concentrated Flow, HH-II** Short Grass Pasture Kv= 7.0 fps
29.6	1,558	Total			

Subcatchment DA-1: DA-1



Summary for Subcatchment DA-10: DA-10

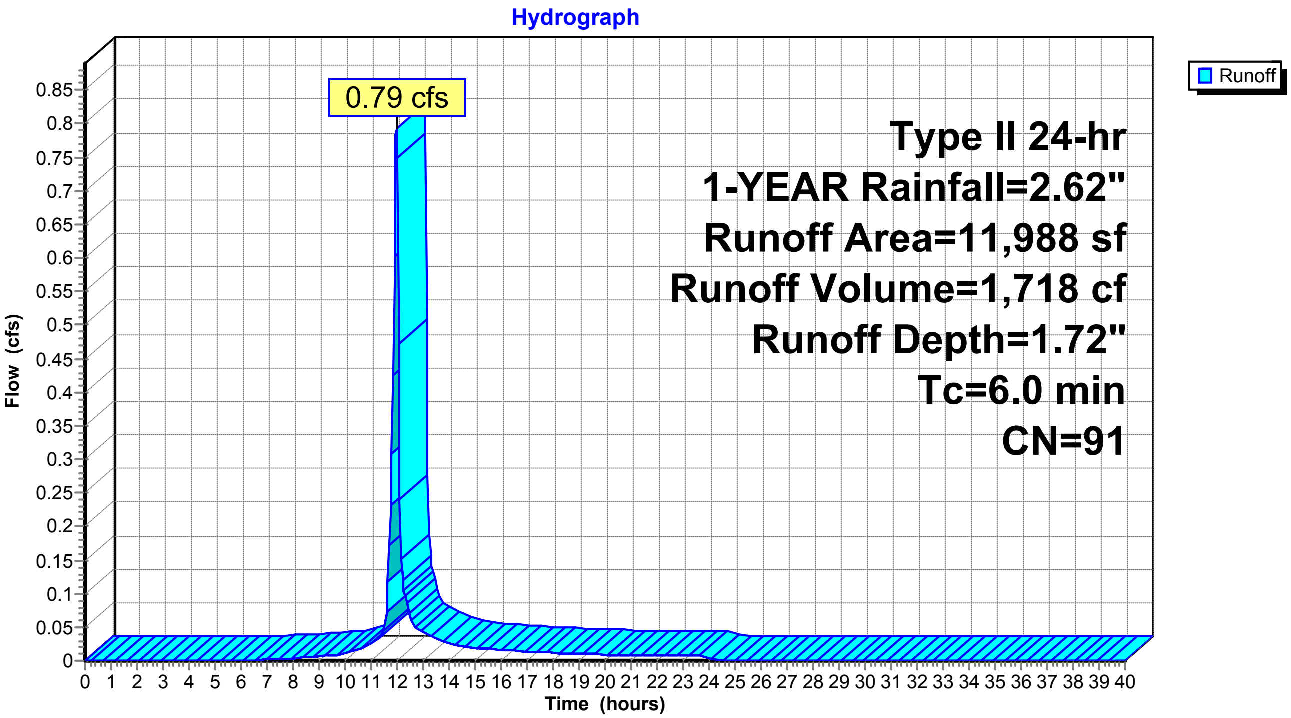
Runoff = 0.79 cfs @ 11.97 hrs, Volume= 1,718 cf, Depth= 1.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
3,384	74	>75% Grass cover, Good, HSG C
8,604	98	Paved parking, HSG C
11,988	91	Weighted Average
3,384		28.23% Pervious Area
8,604		71.77% Impervious Area

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

Subcatchment DA-10: DA-10



Summary for Subcatchment DA-11: DA-11

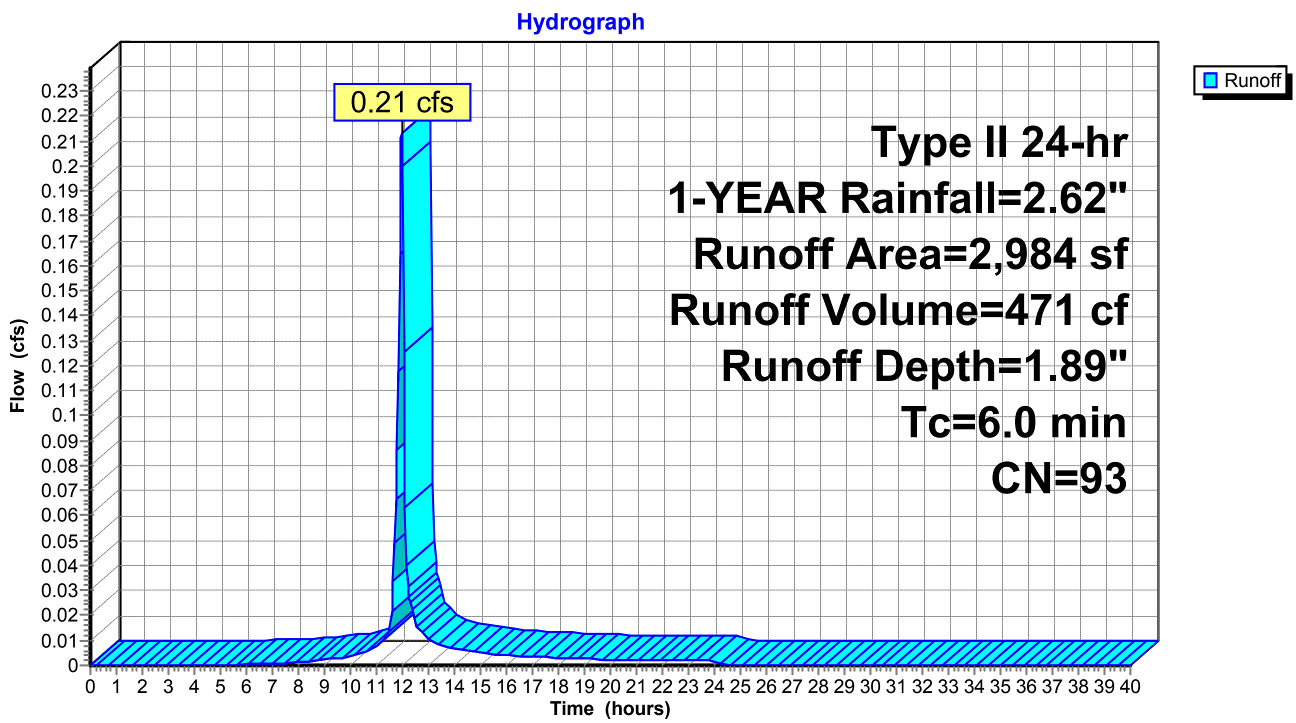
Runoff = 0.21 cfs @ 11.97 hrs, Volume= 471 cf, Depth= 1.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
594	74	>75% Grass cover, Good, HSG C
2,390	98	Paved parking, HSG C
2,984	93	Weighted Average
594		19.91% Pervious Area
2,390		80.09% Impervious Area

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

Subcatchment DA-11: DA-11



Summary for Subcatchment DA-12: DA-12

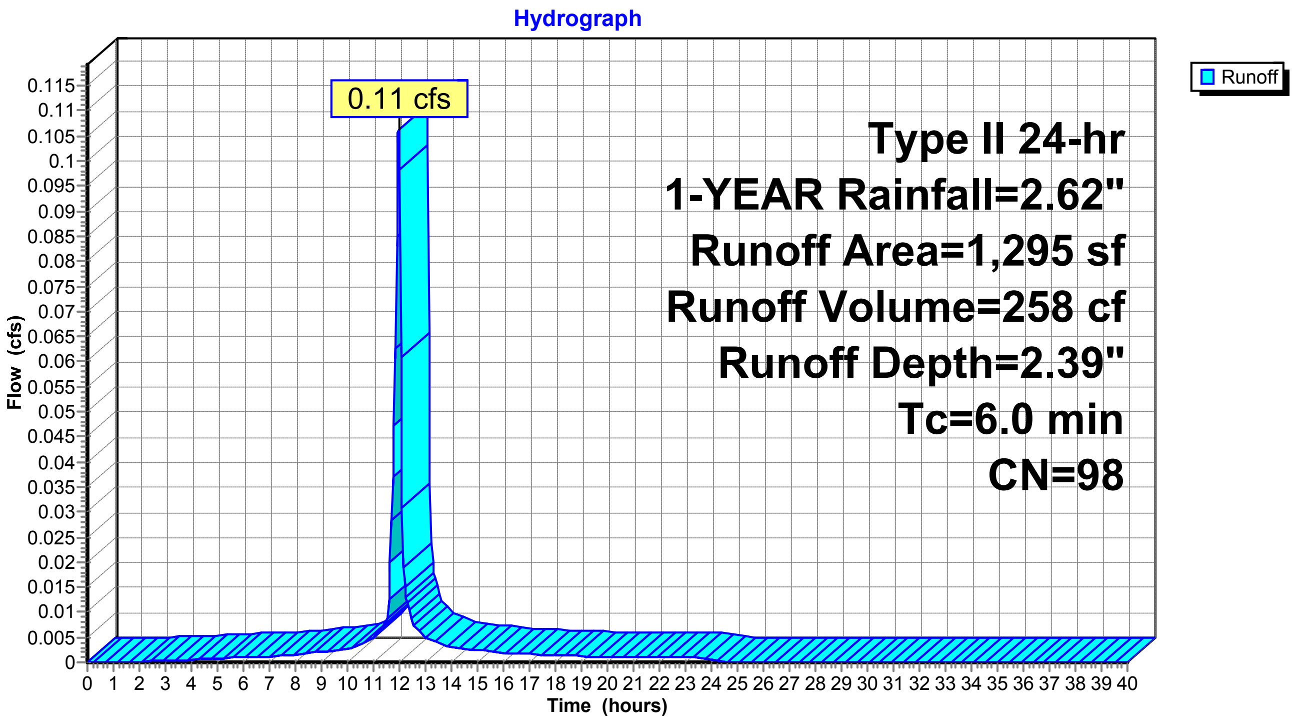
Runoff = 0.11 cfs @ 11.96 hrs, Volume= 258 cf, Depth= 2.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
1,295	98	Paved parking, HSG C
1,295		100.00% Impervious Area

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

Subcatchment DA-12: DA-12



Summary for Subcatchment DA-13: DA-13

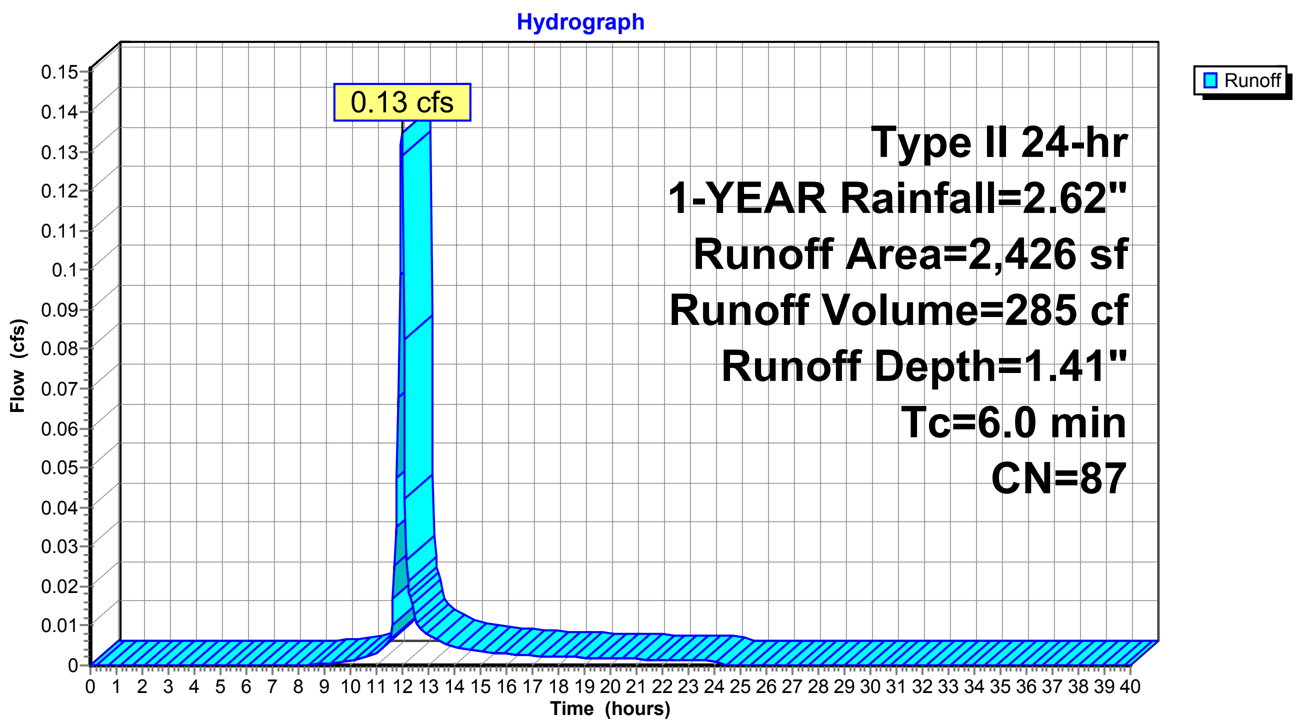
Runoff = 0.13 cfs @ 11.97 hrs, Volume= 285 cf, Depth= 1.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
1,105	74	>75% Grass cover, Good, HSG C
1,321	98	Paved parking, HSG C
2,426	87	Weighted Average
1,105		45.55% Pervious Area
1,321		54.45% Impervious Area

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

Subcatchment DA-13: DA-13



Summary for Subcatchment DA-14: DA-14

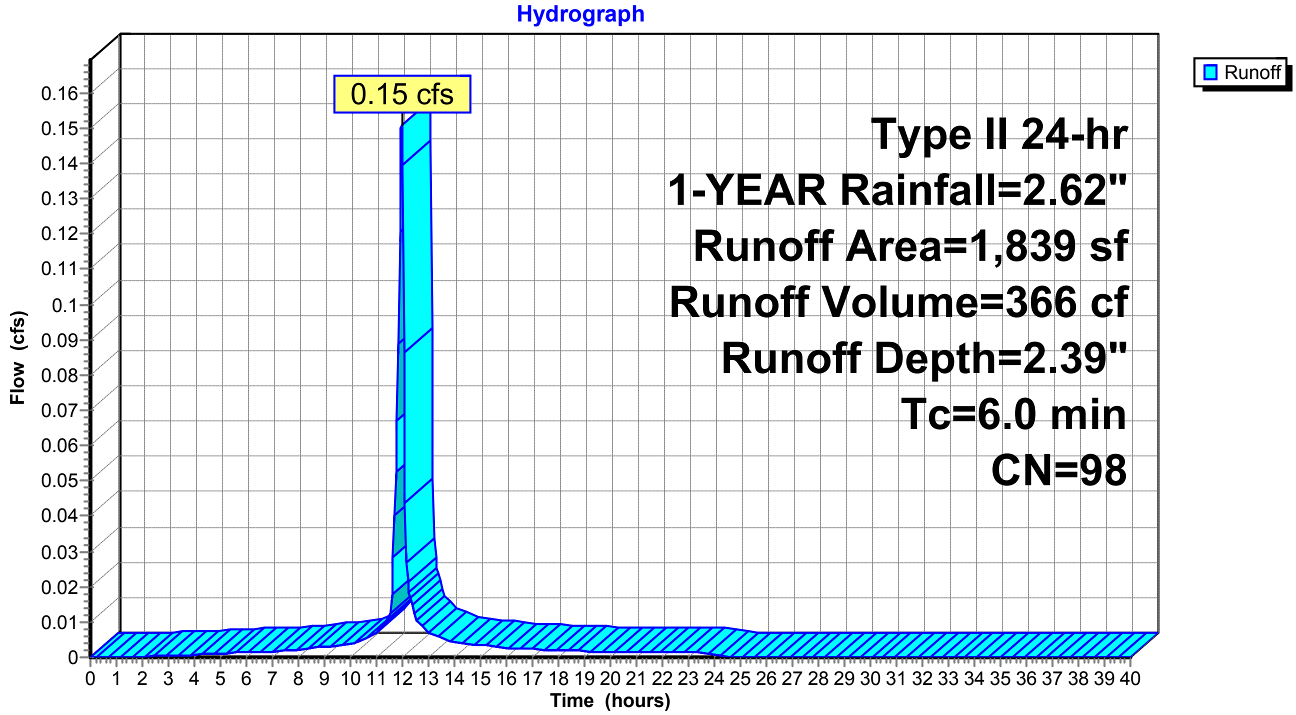
Runoff = 0.15 cfs @ 11.96 hrs, Volume= 366 cf, Depth= 2.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
1,839	98	Paved parking, HSG C
1,839		100.00% Impervious Area

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

Subcatchment DA-14: DA-14



Summary for Subcatchment DA-15: DA-15

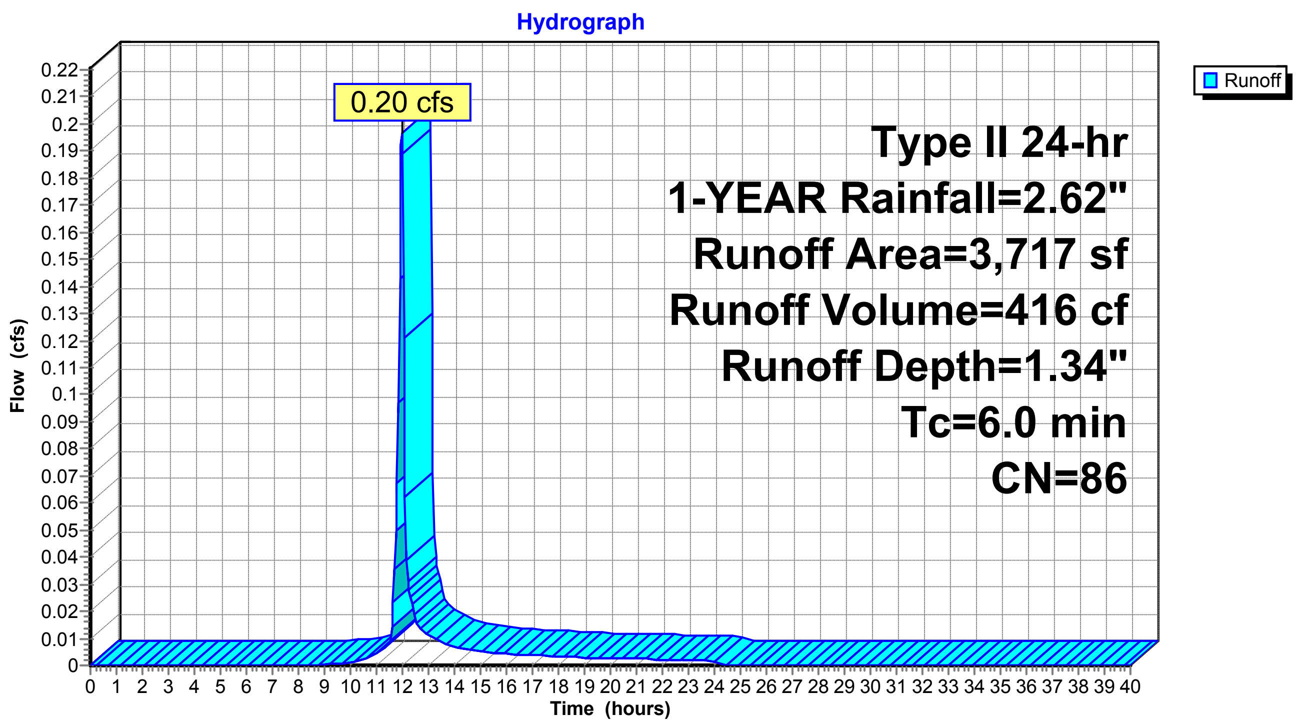
Runoff = 0.20 cfs @ 11.97 hrs, Volume= 416 cf, Depth= 1.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
1,782	74	>75% Grass cover, Good, HSG C
1,935	98	Paved parking, HSG C
3,717	86	Weighted Average
1,782		47.94% Pervious Area
1,935		52.06% Impervious Area

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

Subcatchment DA-15: DA-15



Summary for Subcatchment DA-16: DA-16

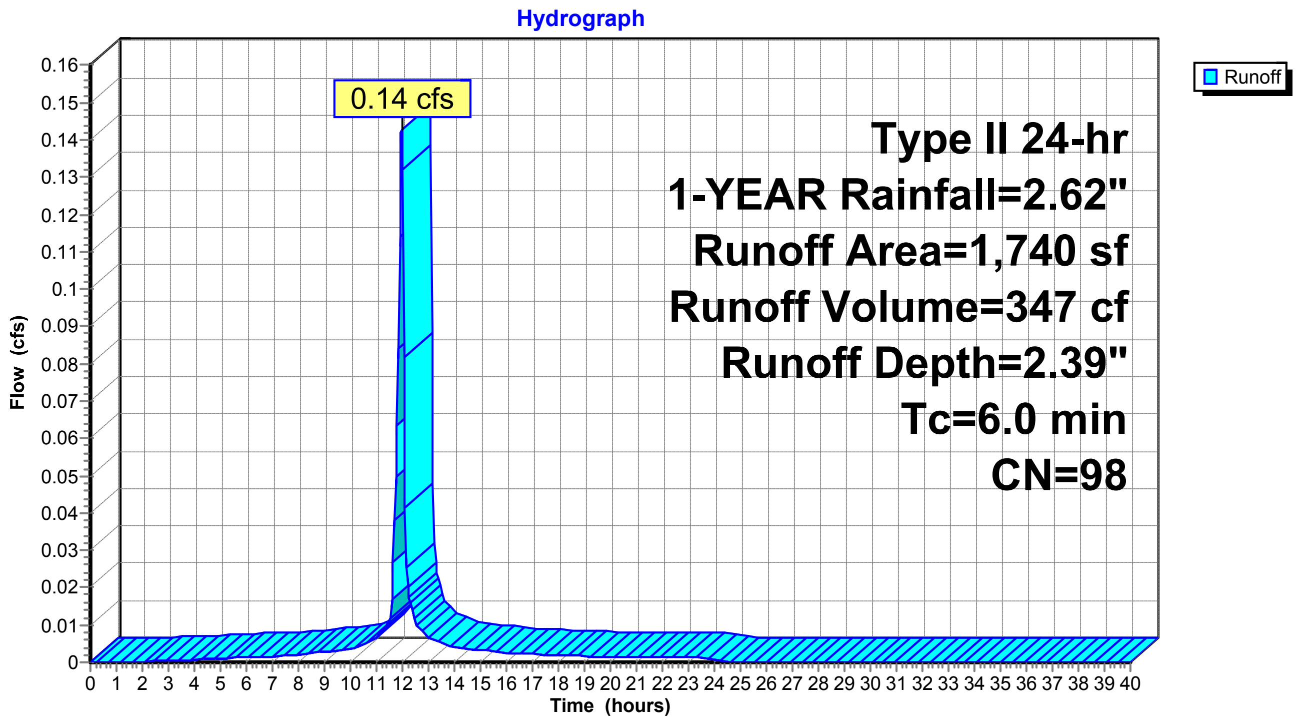
Runoff = 0.14 cfs @ 11.96 hrs, Volume= 347 cf, Depth= 2.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
1,740	98	Paved parking, HSG C
1,740		100.00% Impervious Area

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

Subcatchment DA-16: DA-16



Summary for Subcatchment DA-17: DA-17

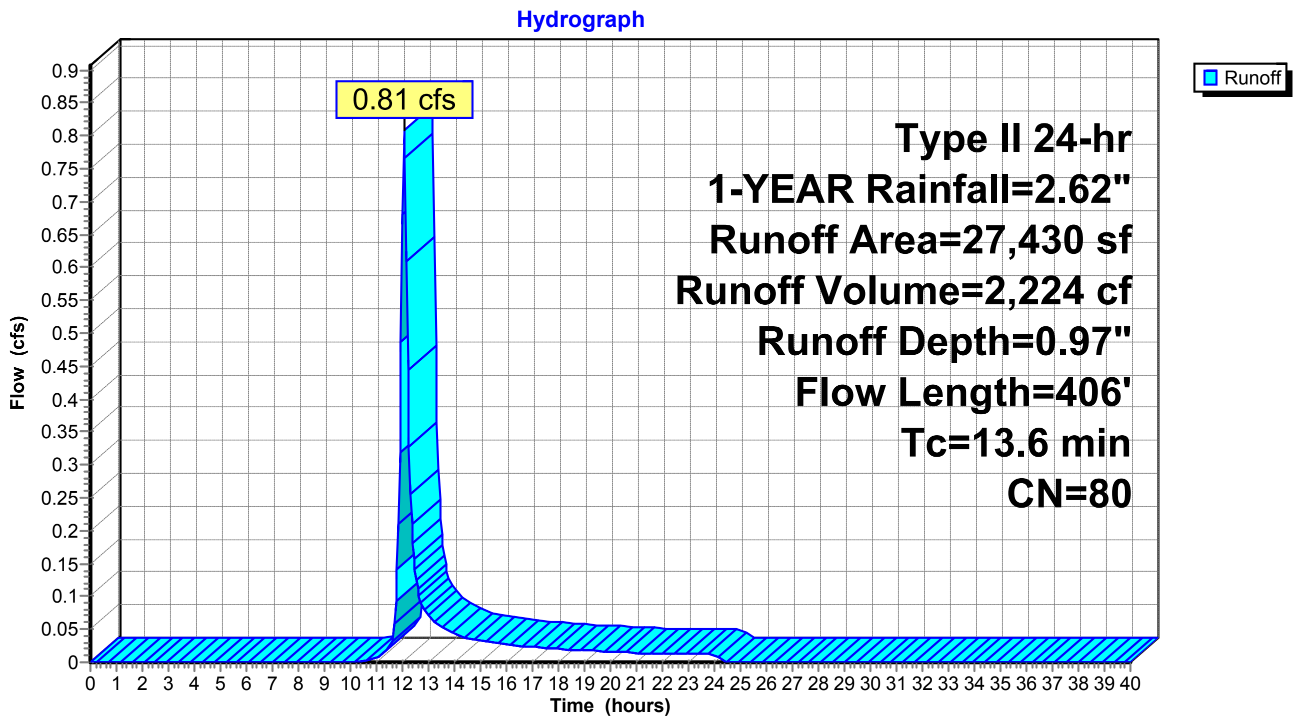
Runoff = 0.81 cfs @ 12.06 hrs, Volume= 2,224 cf, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
20,898	74	>75% Grass cover, Good, HSG C
6,532	98	Paved parking, HSG C
27,430	80	Weighted Average
20,898		76.19% Pervious Area
6,532		23.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.5	100	0.0350	0.15		**Sheet Flow, G-H** Grass: Dense n= 0.240 P2= 3.17"
2.1	306	0.1160	2.38		**Shallow Concentrated Flow, H-I** Short Grass Pasture Kv= 7.0 fps
13.6	406	Total			

Subcatchment DA-17: DA-17



Summary for Subcatchment DA-18: DA-18

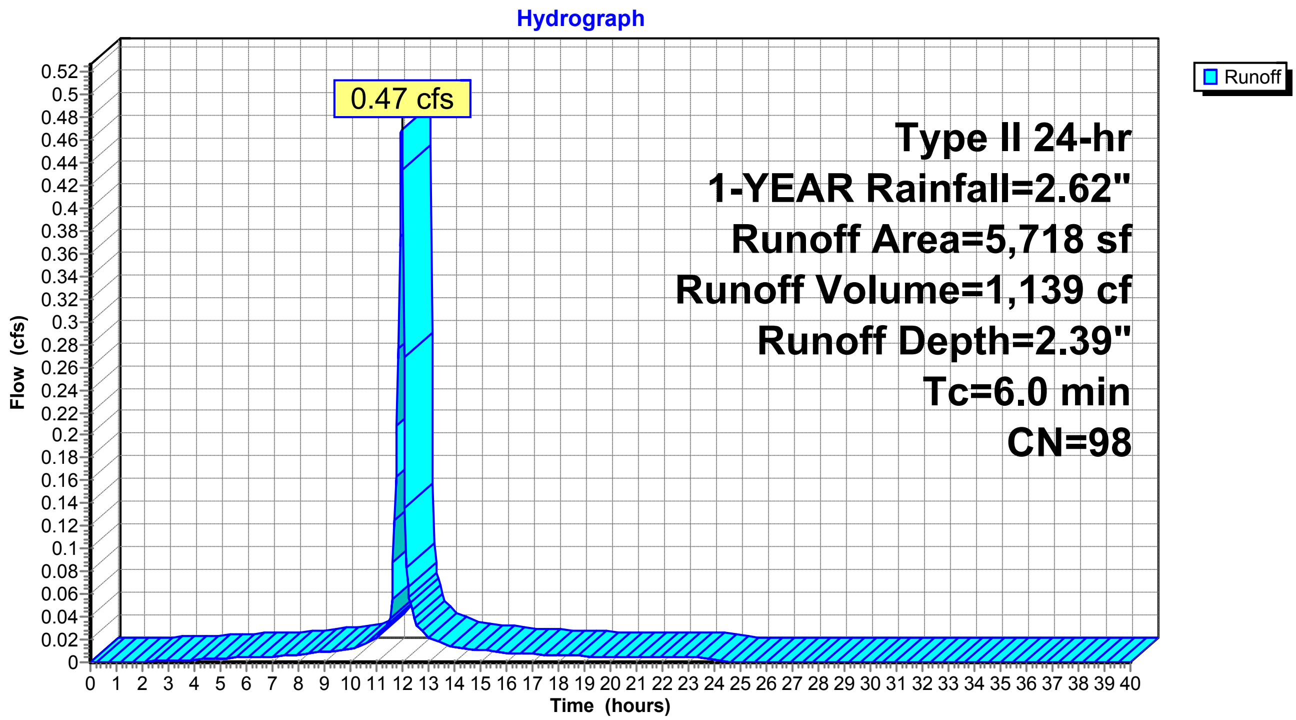
Runoff = 0.47 cfs @ 11.96 hrs, Volume= 1,139 cf, Depth= 2.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
5,718	98	Paved parking, HSG C
5,718		100.00% Impervious Area

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

Subcatchment DA-18: DA-18



Summary for Subcatchment DA-19: DA-19

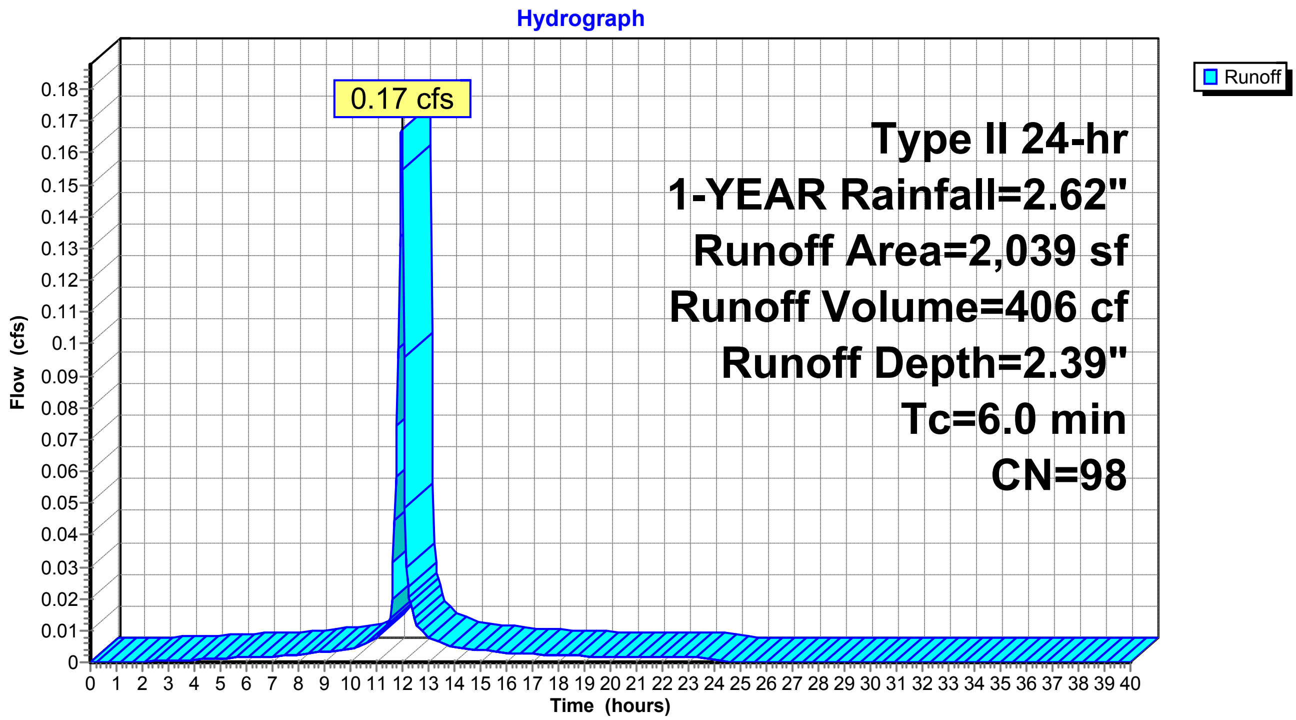
Runoff = 0.17 cfs @ 11.96 hrs, Volume= 406 cf, Depth= 2.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
2,039	98	Paved parking, HSG C
2,039		100.00% Impervious Area

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

Subcatchment DA-19: DA-19



Summary for Subcatchment DA-2: DA-2

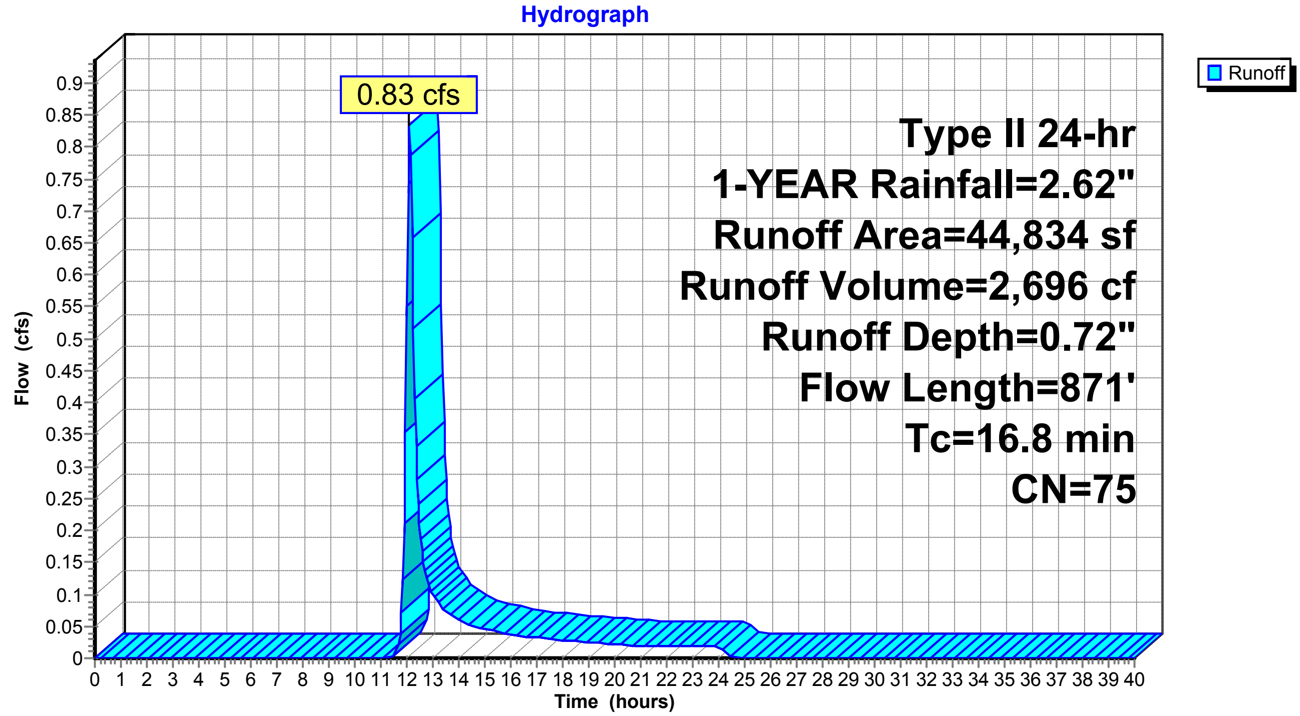
Runoff = 0.83 cfs @ 12.11 hrs, Volume= 2,696 cf, Depth= 0.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
43,705	74	>75% Grass cover, Good, HSG C
1,129	98	Paved parking, HSG C
44,834	75	Weighted Average
43,705		97.48% Pervious Area
1,129		2.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	100	0.0375	0.15		**Sheet Flow, M-N** Grass: Dense n= 0.240 P2= 3.17"
5.6	771	0.1070	2.29		**Shallow Concentrated Flow, N-O** Short Grass Pasture Kv= 7.0 fps
16.8	871	Total			

Subcatchment DA-2: DA-2



Summary for Subcatchment DA-20: DA-20

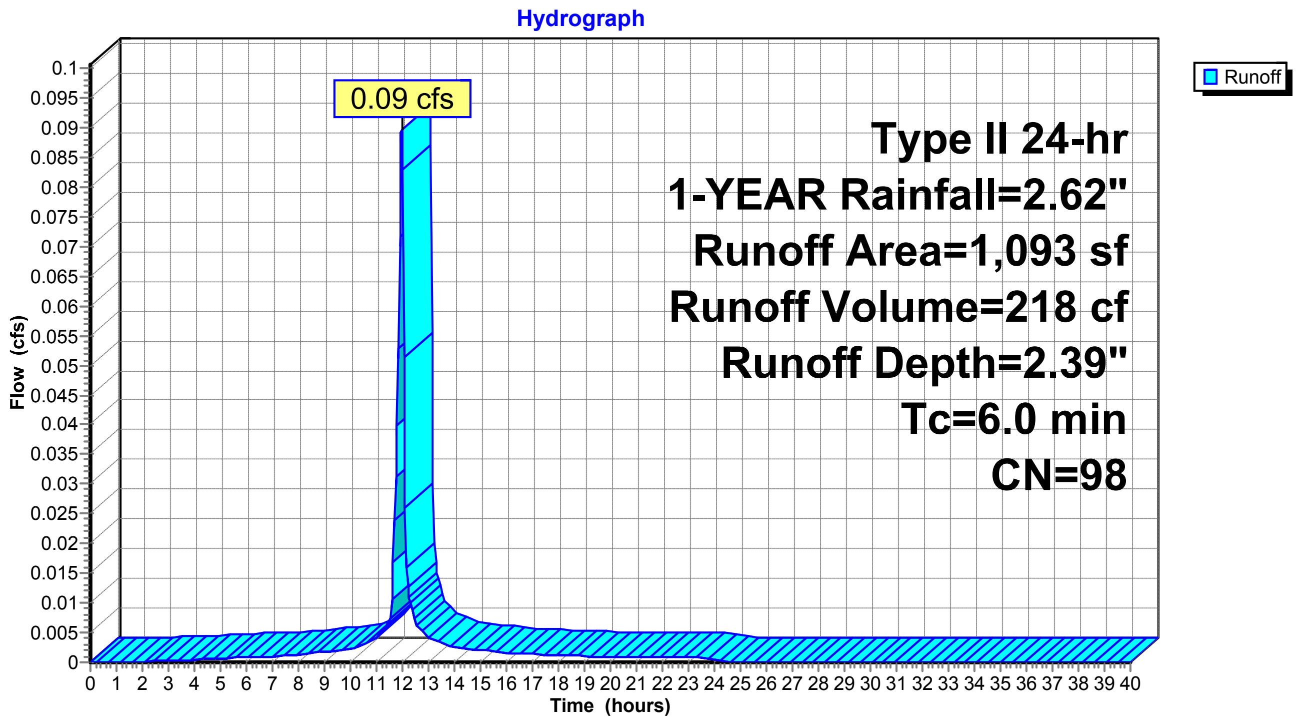
Runoff = 0.09 cfs @ 11.96 hrs, Volume= 218 cf, Depth= 2.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
1,093	98	Paved parking, HSG C
1,093		100.00% Impervious Area

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

Subcatchment DA-20: DA-20



Summary for Subcatchment DA-21: DA-21

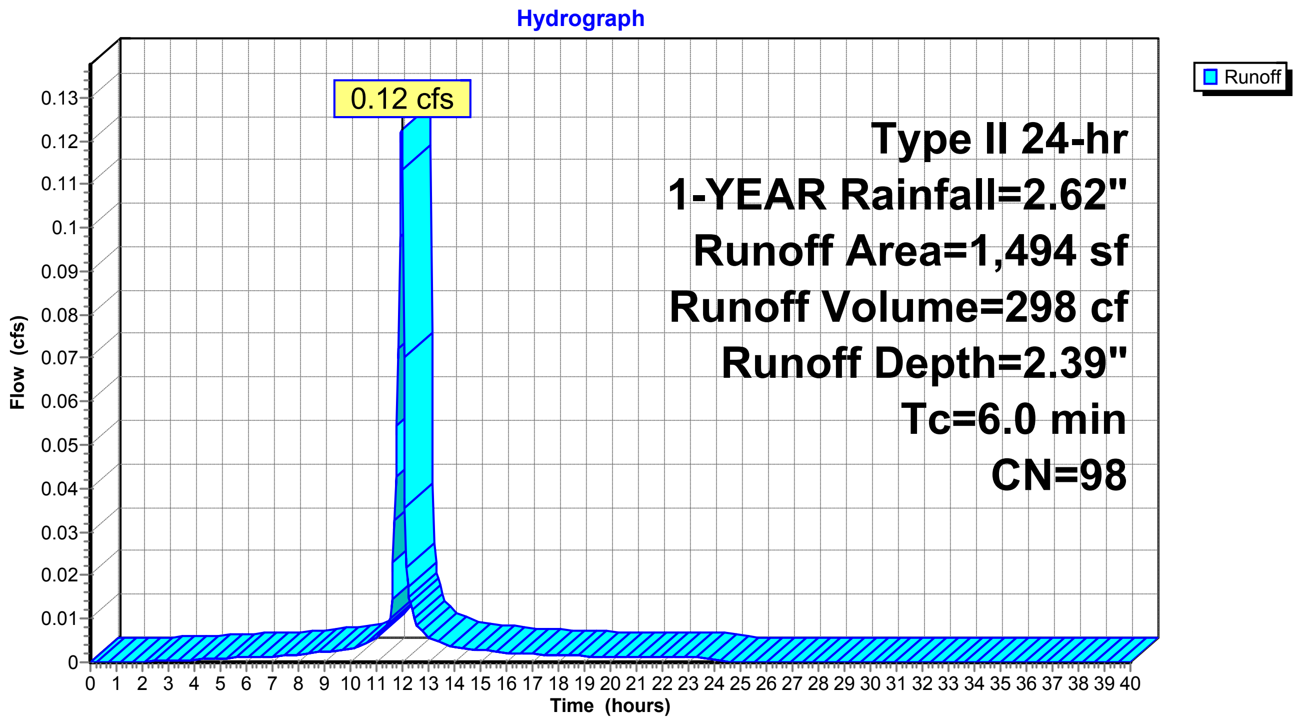
Runoff = 0.12 cfs @ 11.96 hrs, Volume= 298 cf, Depth= 2.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
1,494	98	Paved parking, HSG C
1,494		100.00% Impervious Area

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

Subcatchment DA-21: DA-21



Summary for Subcatchment DA-22: DA-22

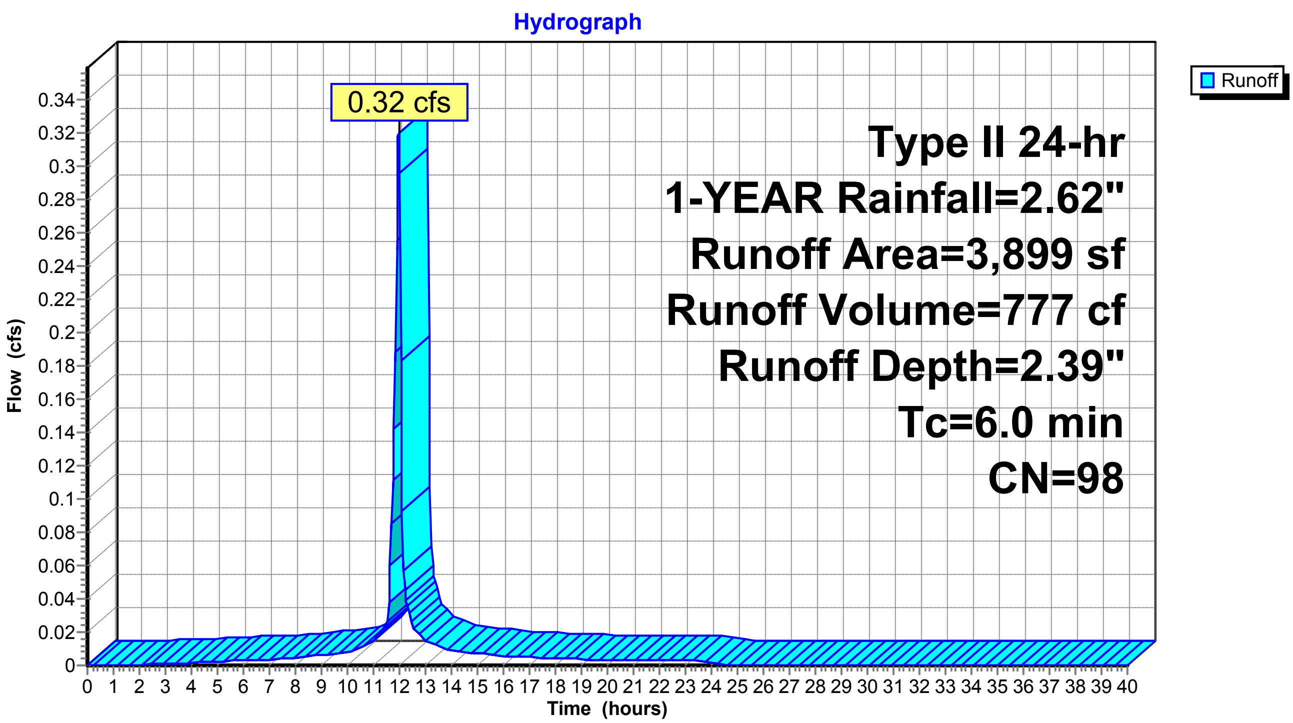
Runoff = 0.32 cfs @ 11.96 hrs, Volume= 777 cf, Depth= 2.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
50	74	>75% Grass cover, Good, HSG C
3,849	98	Paved parking, HSG C
3,899	98	Weighted Average
50		1.28% Pervious Area
3,849		98.72% Impervious Area

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

Subcatchment DA-22: DA-22



Summary for Subcatchment DA-23: DA-23

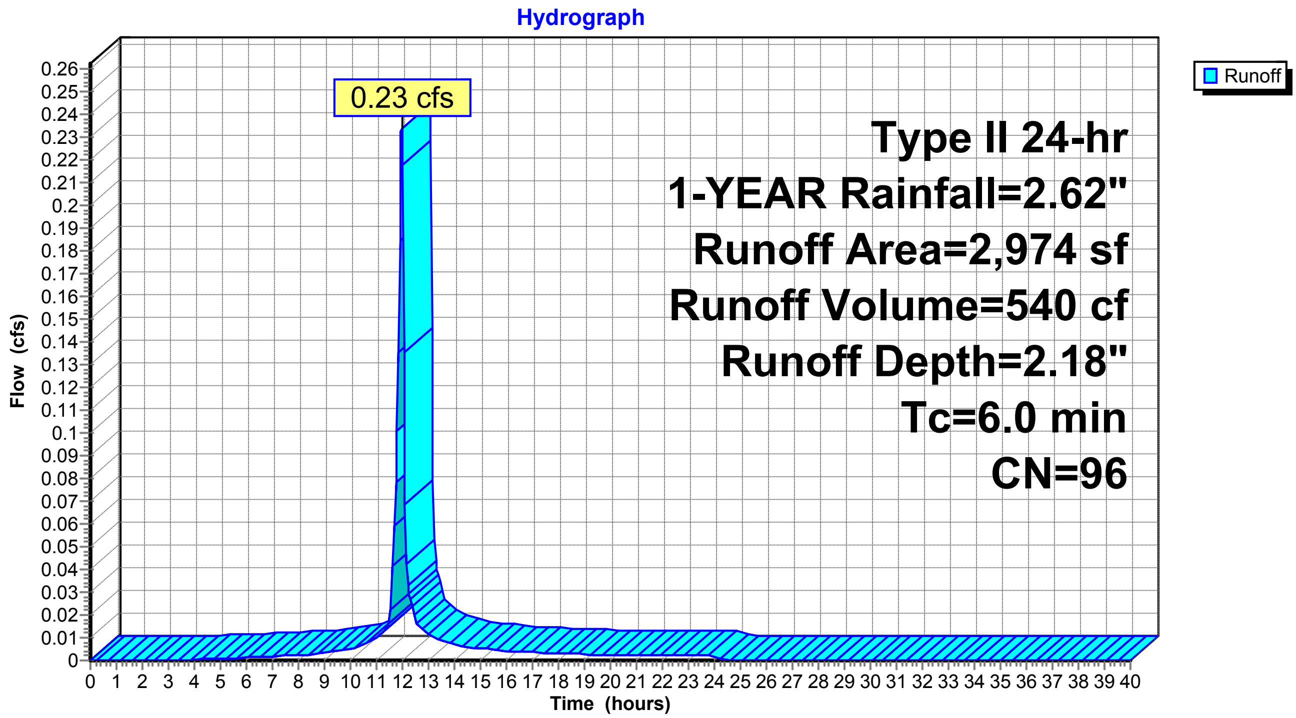
Runoff = 0.23 cfs @ 11.96 hrs, Volume= 540 cf, Depth= 2.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
209	74	>75% Grass cover, Good, HSG C
2,765	98	Paved parking, HSG C
2,974	96	Weighted Average
209		7.03% Pervious Area
2,765		92.97% Impervious Area

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

Subcatchment DA-23: DA-23



Summary for Subcatchment DA-24: DA-24

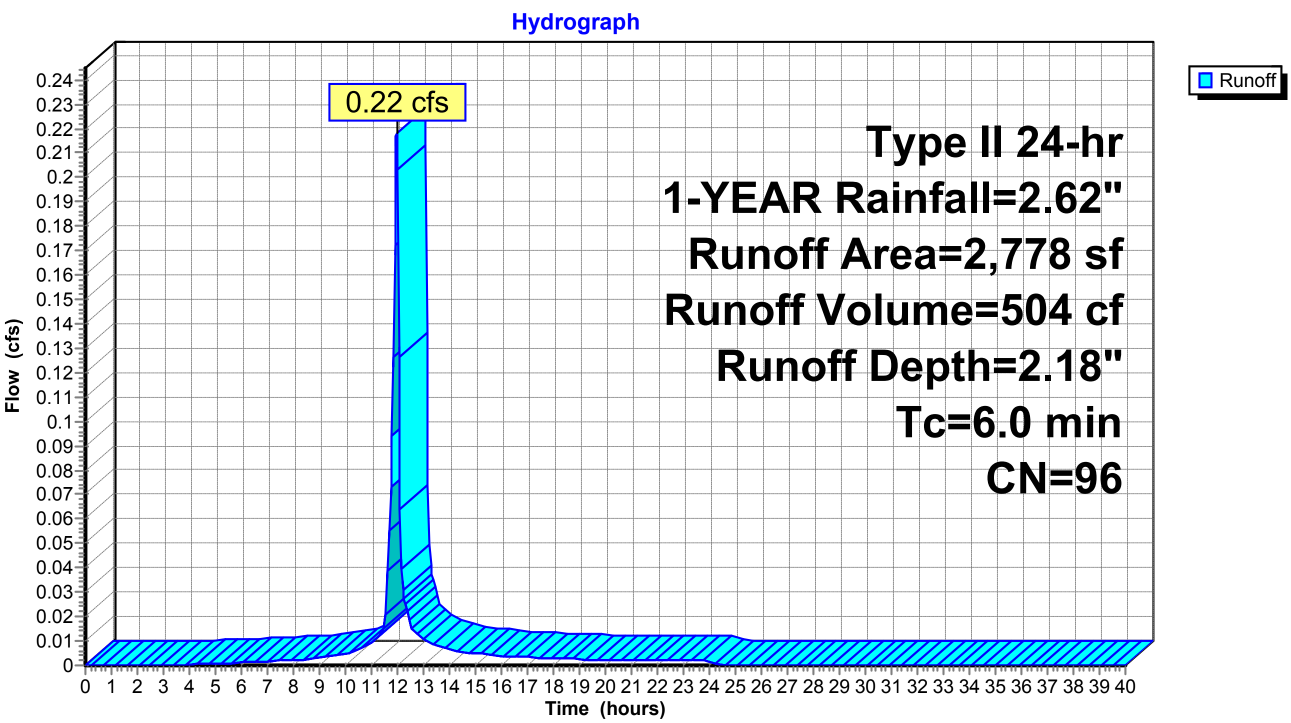
Runoff = 0.22 cfs @ 11.96 hrs, Volume= 504 cf, Depth= 2.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
211	74	>75% Grass cover, Good, HSG C
2,567	98	Paved parking, HSG C
2,778	96	Weighted Average
211		7.60% Pervious Area
2,567		92.40% Impervious Area

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

Subcatchment DA-24: DA-24



Summary for Subcatchment DA-25: DA-25

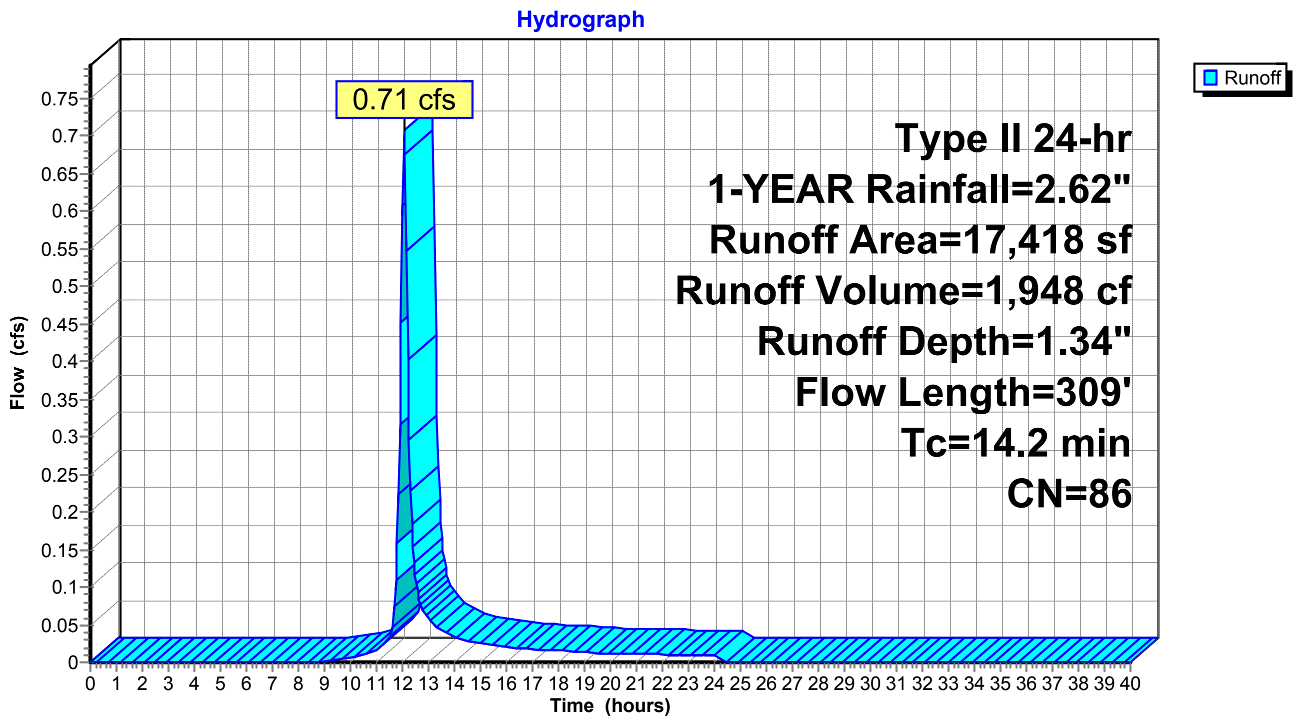
Runoff = 0.71 cfs @ 12.06 hrs, Volume= 1,948 cf, Depth= 1.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
8,778	74	>75% Grass cover, Good, HSG C
8,640	98	Paved parking, HSG C
17,418	86	Weighted Average
8,778		50.40% Pervious Area
8,640		49.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	91	0.0220	0.12		**Sheet Flow, J-K** Grass: Dense n= 0.240 P2= 3.17"
1.4	218	0.0170	2.65		**Shallow Concentrated Flow, J-L** Paved Kv= 20.3 fps
14.2	309	Total			

Subcatchment DA-25: DA-25



Summary for Subcatchment DA-26: DA-26

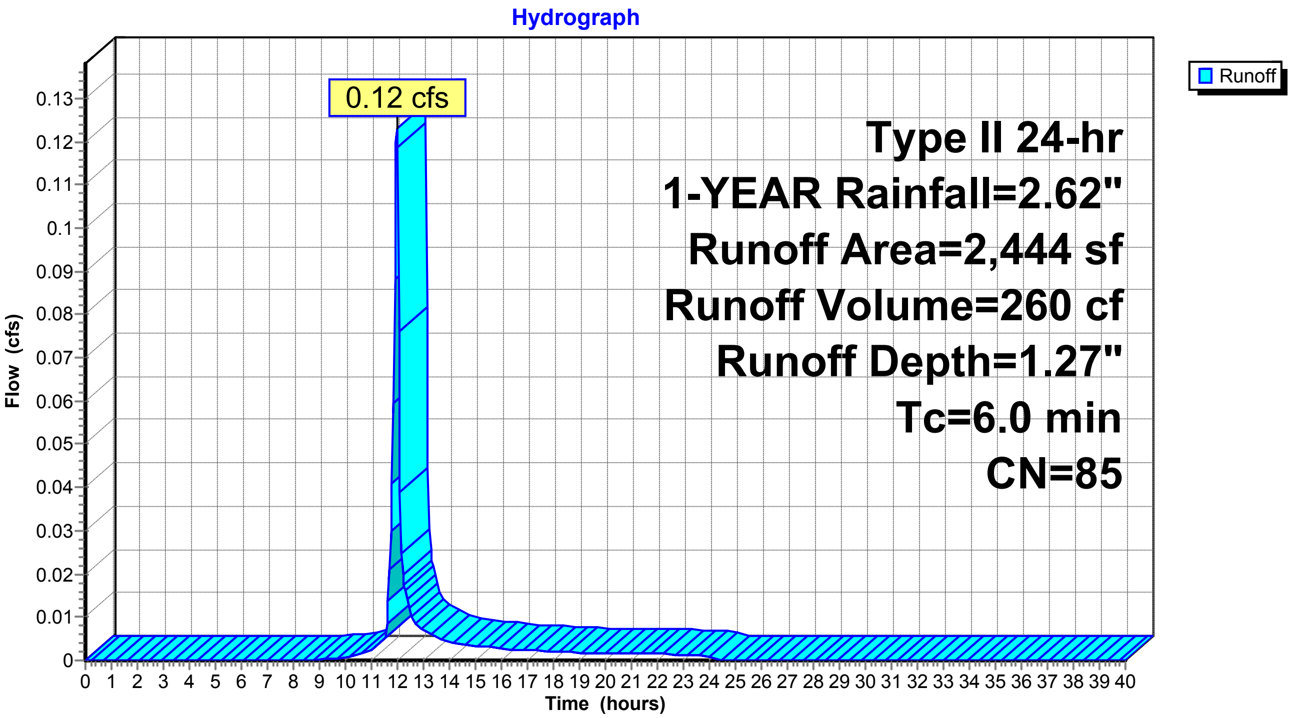
Runoff = 0.12 cfs @ 11.97 hrs, Volume= 260 cf, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
1,334	74	>75% Grass cover, Good, HSG C
1,110	98	Paved parking, HSG C
2,444	85	Weighted Average
1,334		54.58% Pervious Area
1,110		45.42% Impervious Area

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

Subcatchment DA-26: DA-26



Summary for Subcatchment DA-27: DA-27

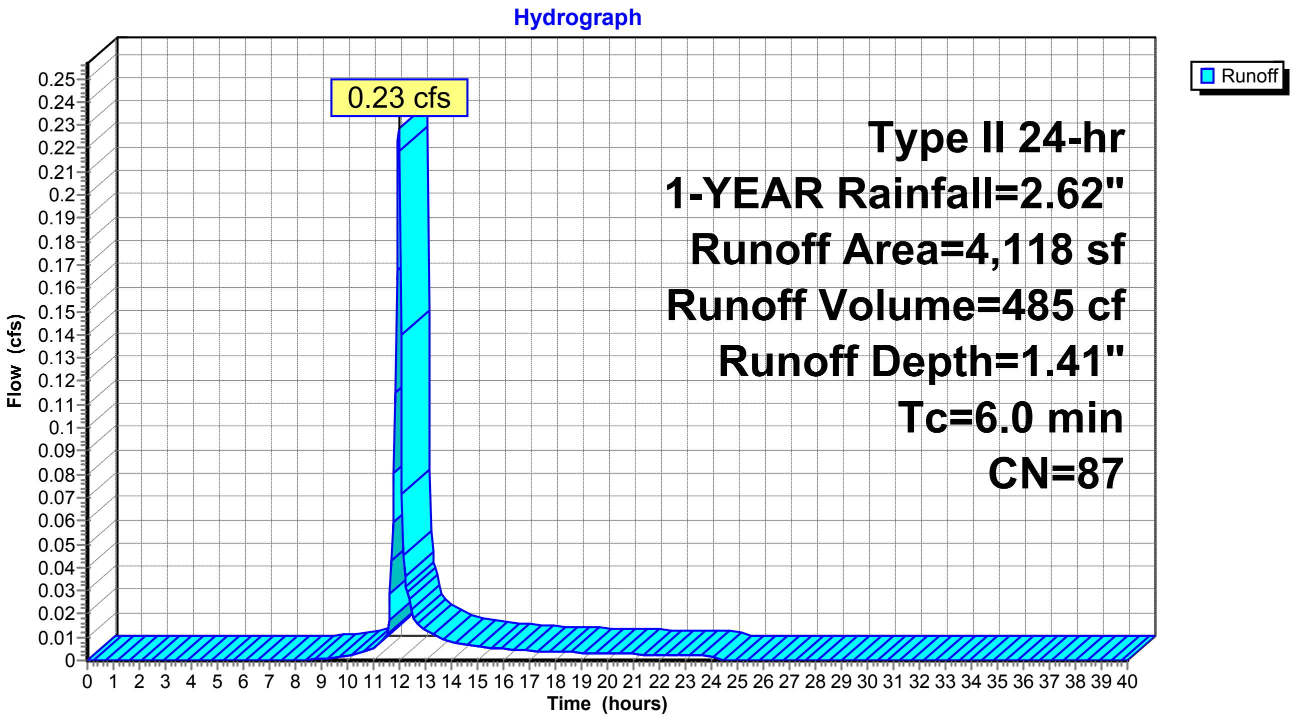
Runoff = 0.23 cfs @ 11.97 hrs, Volume= 485 cf, Depth= 1.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
1,932	74	>75% Grass cover, Good, HSG C
2,186	98	Paved parking, HSG C
4,118	87	Weighted Average
1,932		46.92% Pervious Area
2,186		53.08% Impervious Area

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

Subcatchment DA-27: DA-27



Summary for Subcatchment DA-28: DA-28

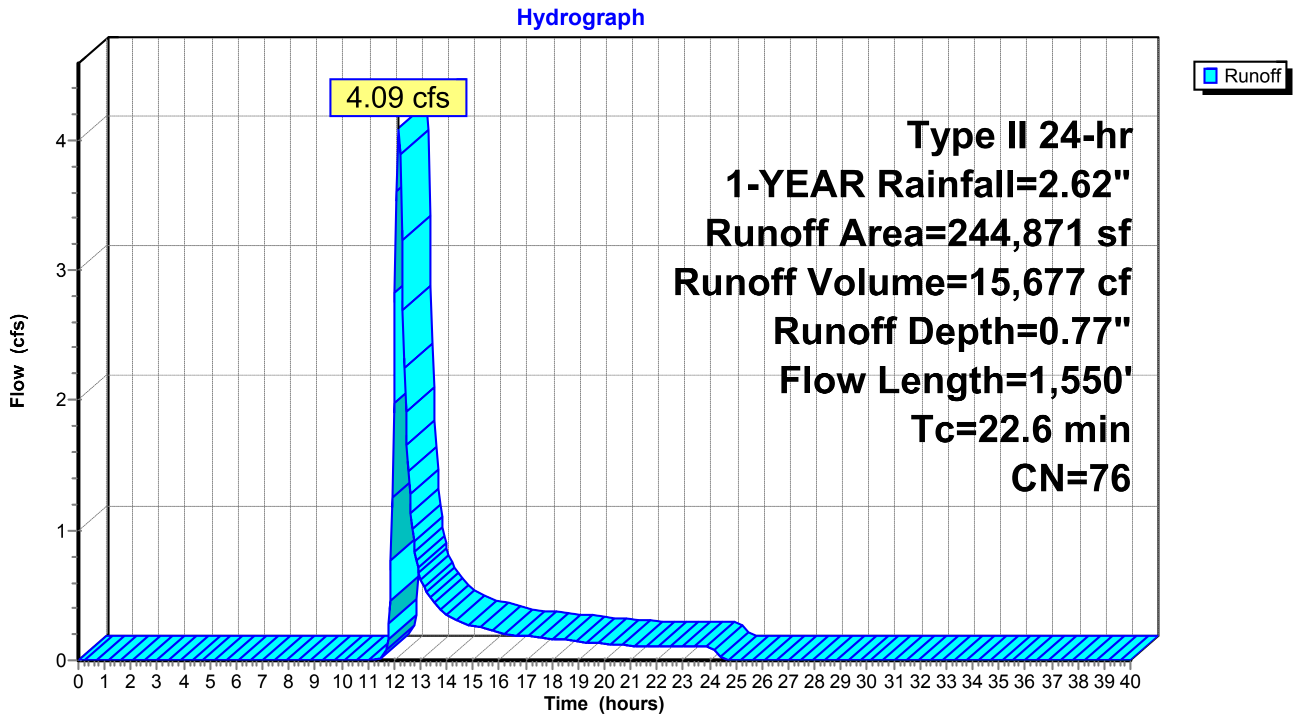
Runoff = 4.09 cfs @ 12.18 hrs, Volume= 15,677 cf, Depth= 0.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
167,699	74	>75% Grass cover, Good, HSG C
58,990	73	Woods, Fair, HSG C
18,182	98	Paved parking, HSG C
244,871	76	Weighted Average
226,689		92.57% Pervious Area
18,182		7.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	100	0.0450	0.16		**Sheet Flow, S-T** Grass: Dense n= 0.240 P2= 3.17"
12.2	1,450	0.0795	1.97		**Shallow Concentrated Flow, T-U** Short Grass Pasture Kv= 7.0 fps
22.6	1,550	Total			

Subcatchment DA-28: DA-28



Summary for Subcatchment DA-29: DA-29

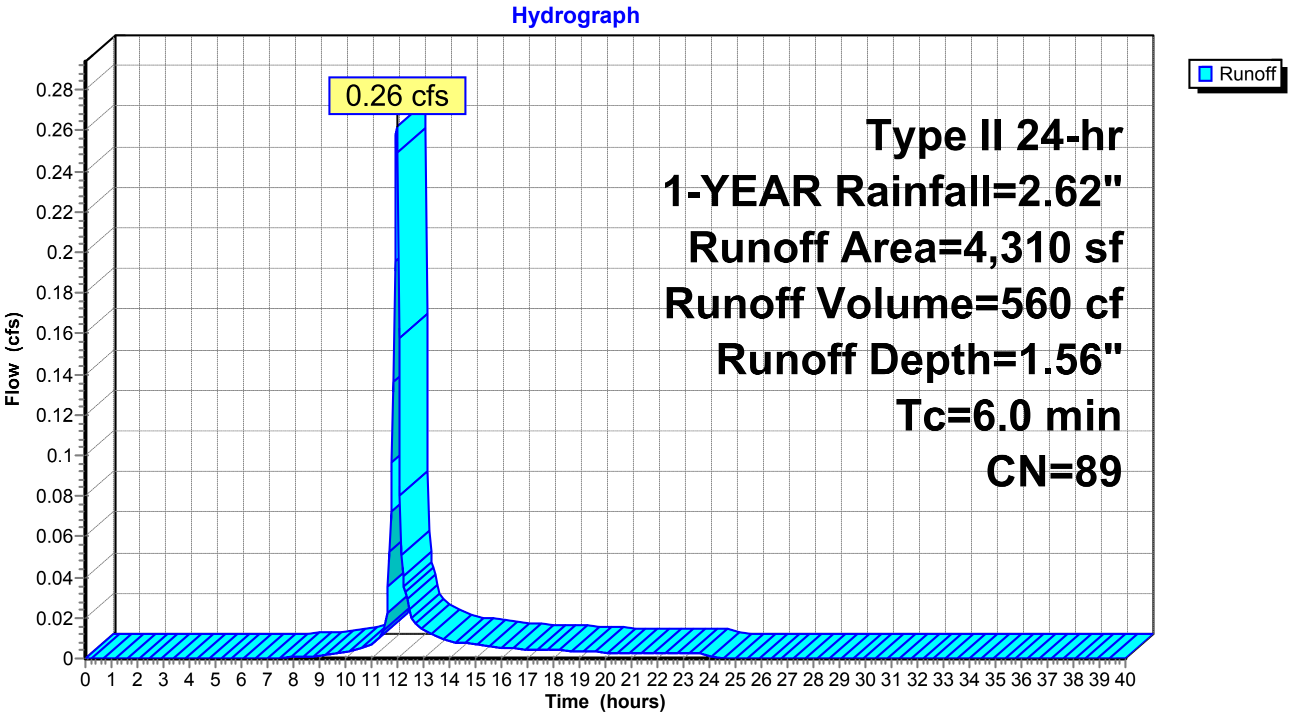
Runoff = 0.26 cfs @ 11.97 hrs, Volume= 560 cf, Depth= 1.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
1,648	74	>75% Grass cover, Good, HSG C
0	73	Woods, Fair, HSG C
2,662	98	Paved parking, HSG C
4,310	89	Weighted Average
1,648		38.24% Pervious Area
2,662		61.76% Impervious Area

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

Subcatchment DA-29: DA-29



Summary for Subcatchment DA-3: DA-3

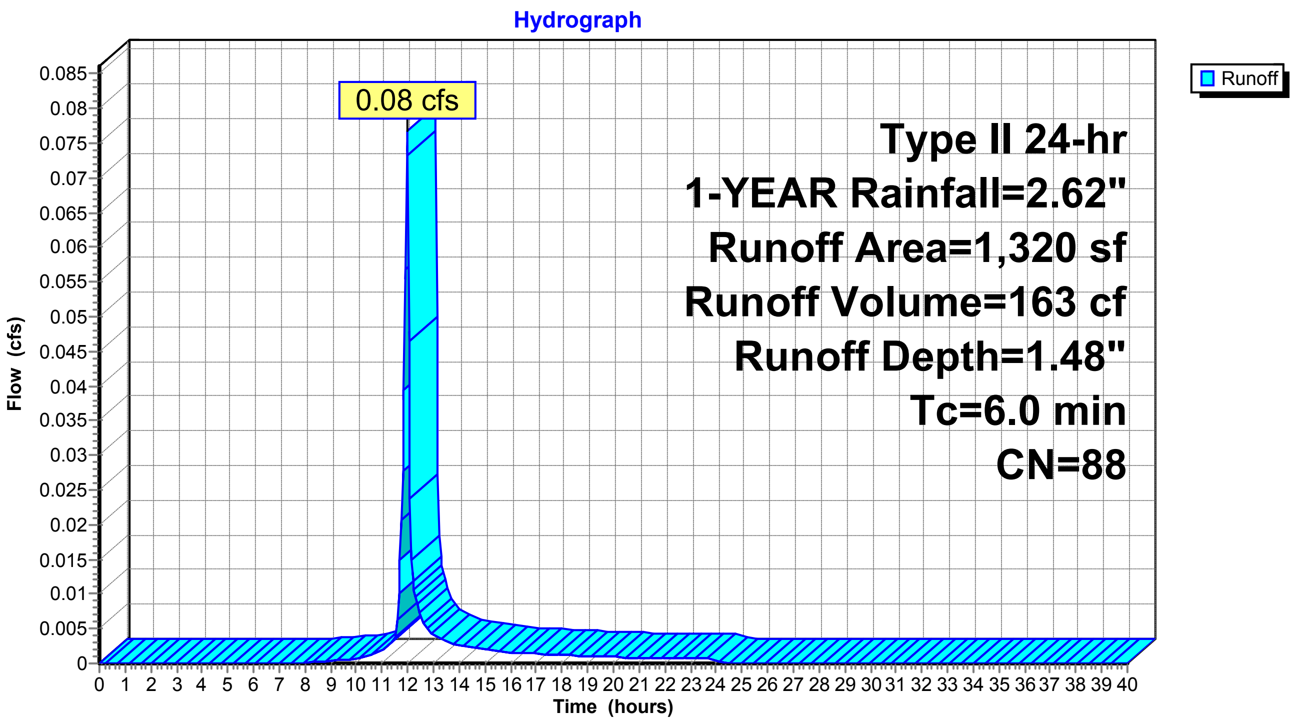
Runoff = 0.08 cfs @ 11.97 hrs, Volume= 163 cf, Depth= 1.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
542	74	>75% Grass cover, Good, HSG C
0	73	Woods, Fair, HSG C
778	98	Paved parking, HSG C
1,320	88	Weighted Average
542		41.06% Pervious Area
778		58.94% Impervious Area

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

Subcatchment DA-3: DA-3



Summary for Subcatchment DA-30: DA-30

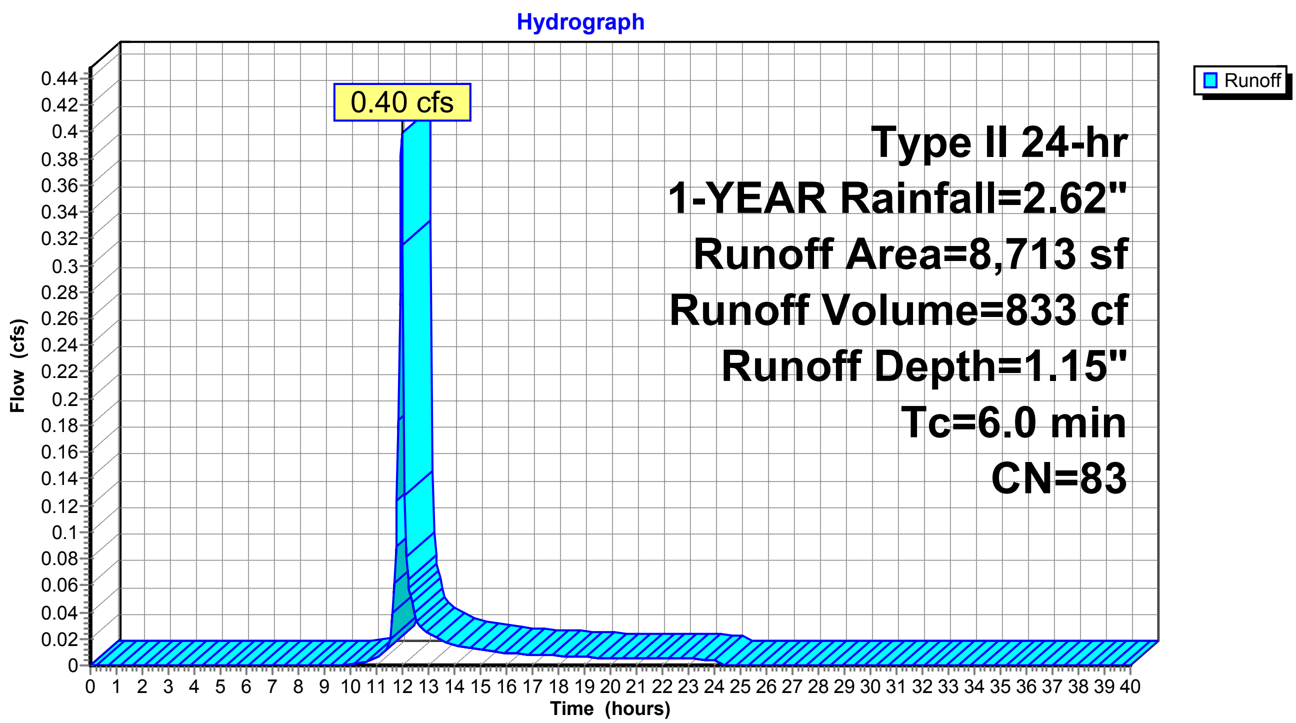
Runoff = 0.40 cfs @ 11.98 hrs, Volume= 833 cf, Depth= 1.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
5,560	74	>75% Grass cover, Good, HSG C
3,153	98	Paved parking, HSG C
8,713	83	Weighted Average
5,560		63.81% Pervious Area
3,153		36.19% Impervious Area

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

Subcatchment DA-30: DA-30



Summary for Subcatchment DA-31: DA-31

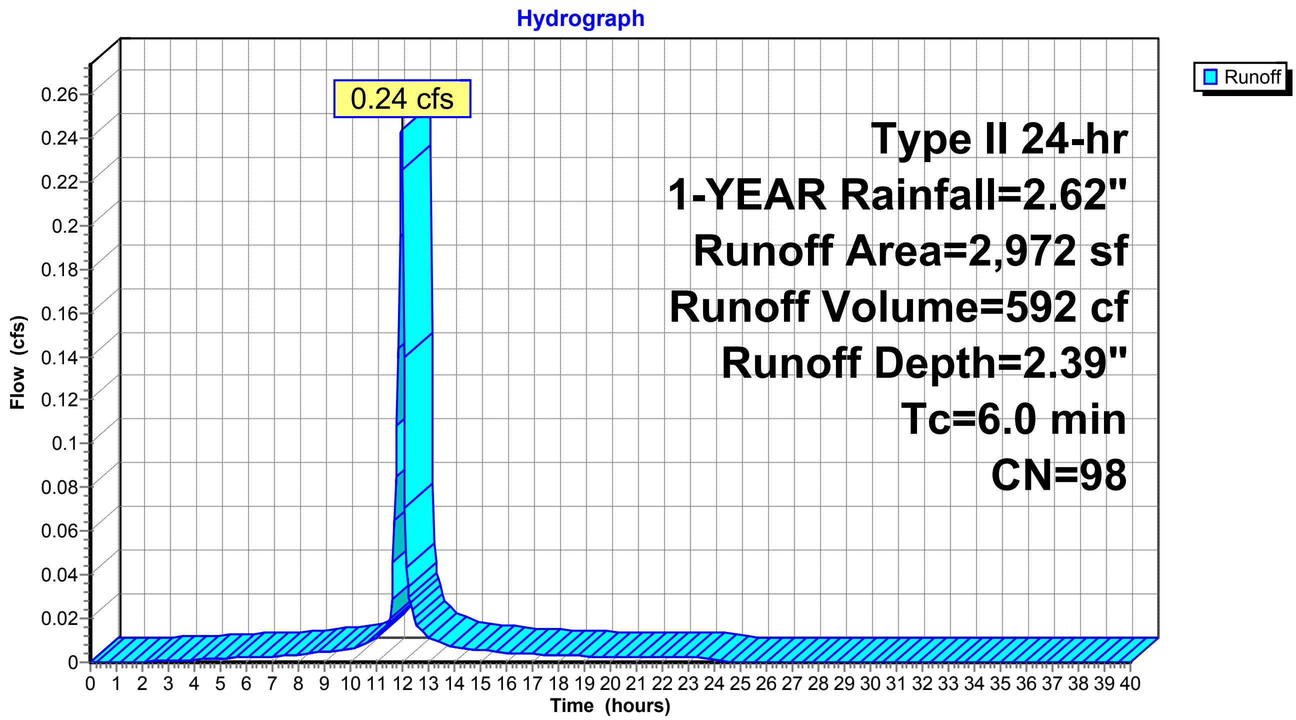
Runoff = 0.24 cfs @ 11.96 hrs, Volume= 592 cf, Depth= 2.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
2,972	98	Paved parking, HSG C
2,972		100.00% Impervious Area

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

Subcatchment DA-31: DA-31



Summary for Subcatchment DA-32: DA-32

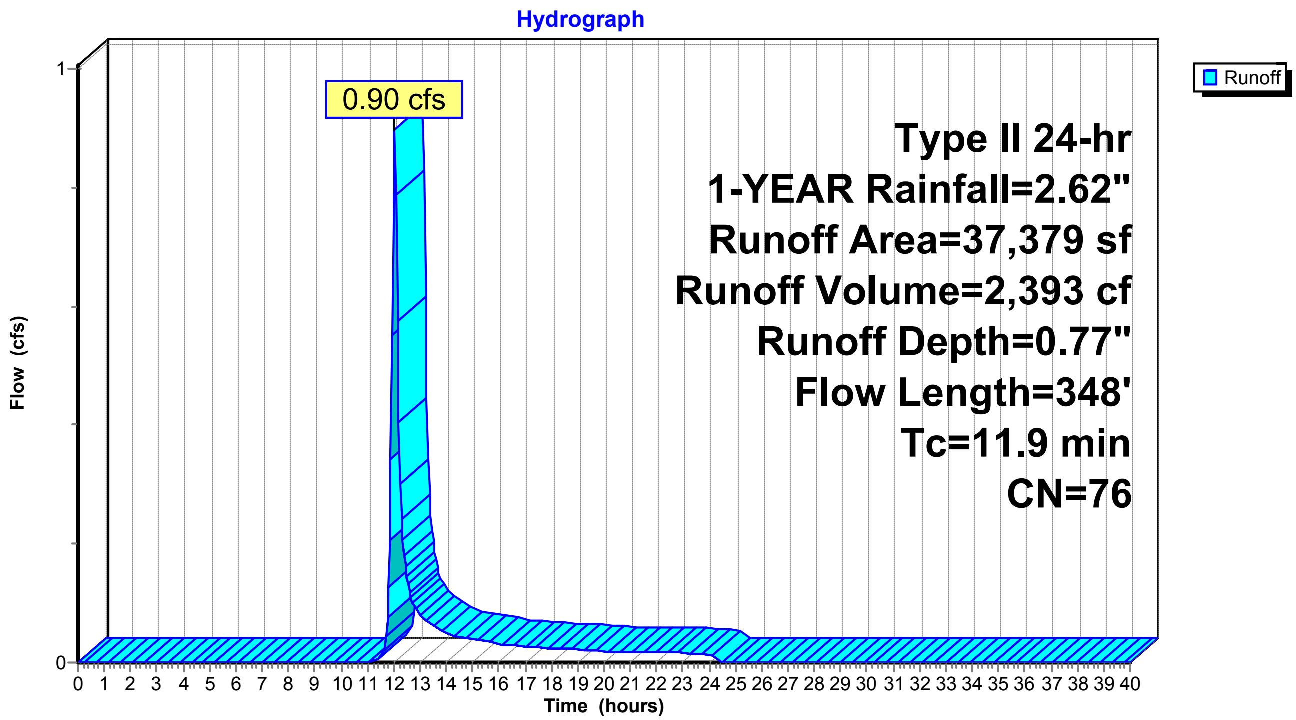
Runoff = 0.90 cfs @ 12.05 hrs, Volume= 2,393 cf, Depth= 0.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
33,898	74	>75% Grass cover, Good, HSG C
3,481	98	Paved parking, HSG C
37,379	76	Weighted Average
33,898		90.69% Pervious Area
3,481		9.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	100	0.1800	0.28		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.17"
5.9	248	0.0100	0.70		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
11.9	348	Total			

Subcatchment DA-32: DA-32



Summary for Subcatchment DA-33: DA-33

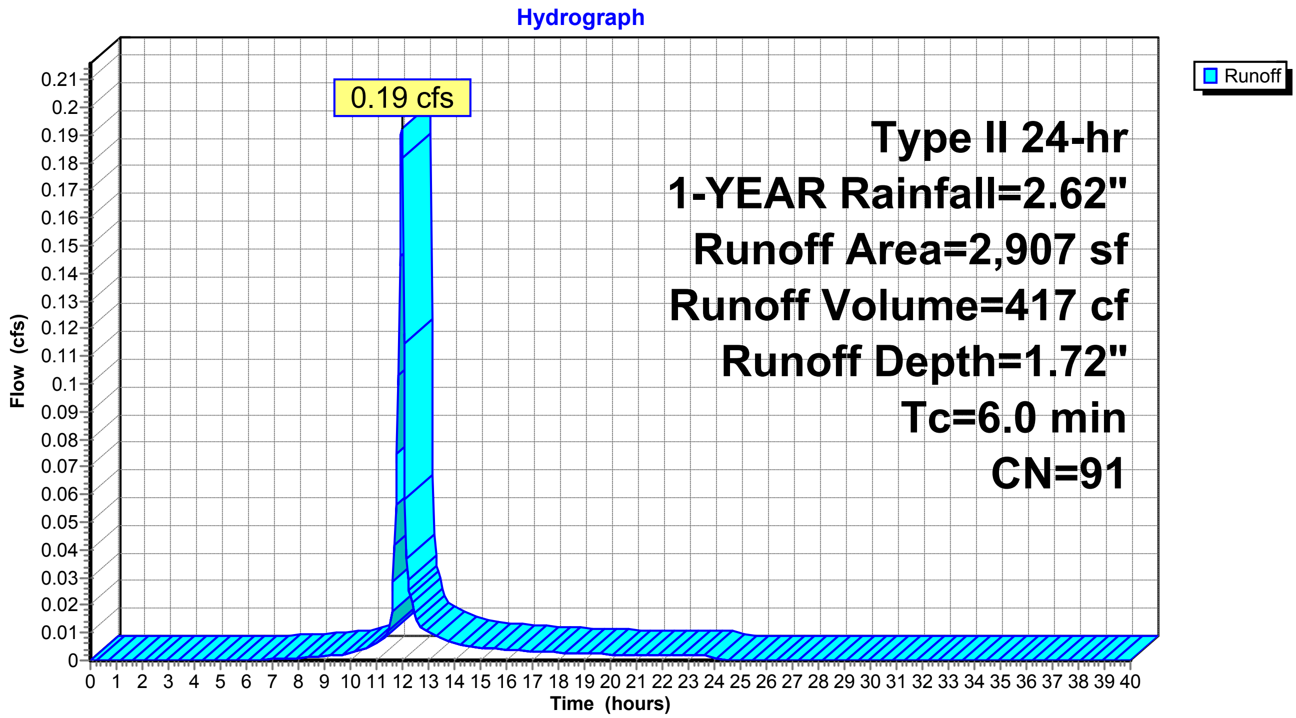
Runoff = 0.19 cfs @ 11.97 hrs, Volume= 417 cf, Depth= 1.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
882	74	>75% Grass cover, Good, HSG C
2,025	98	Paved parking, HSG C
2,907	91	Weighted Average
882		30.34% Pervious Area
2,025		69.66% Impervious Area

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

Subcatchment DA-33: DA-33



Summary for Subcatchment DA-34: DA-34

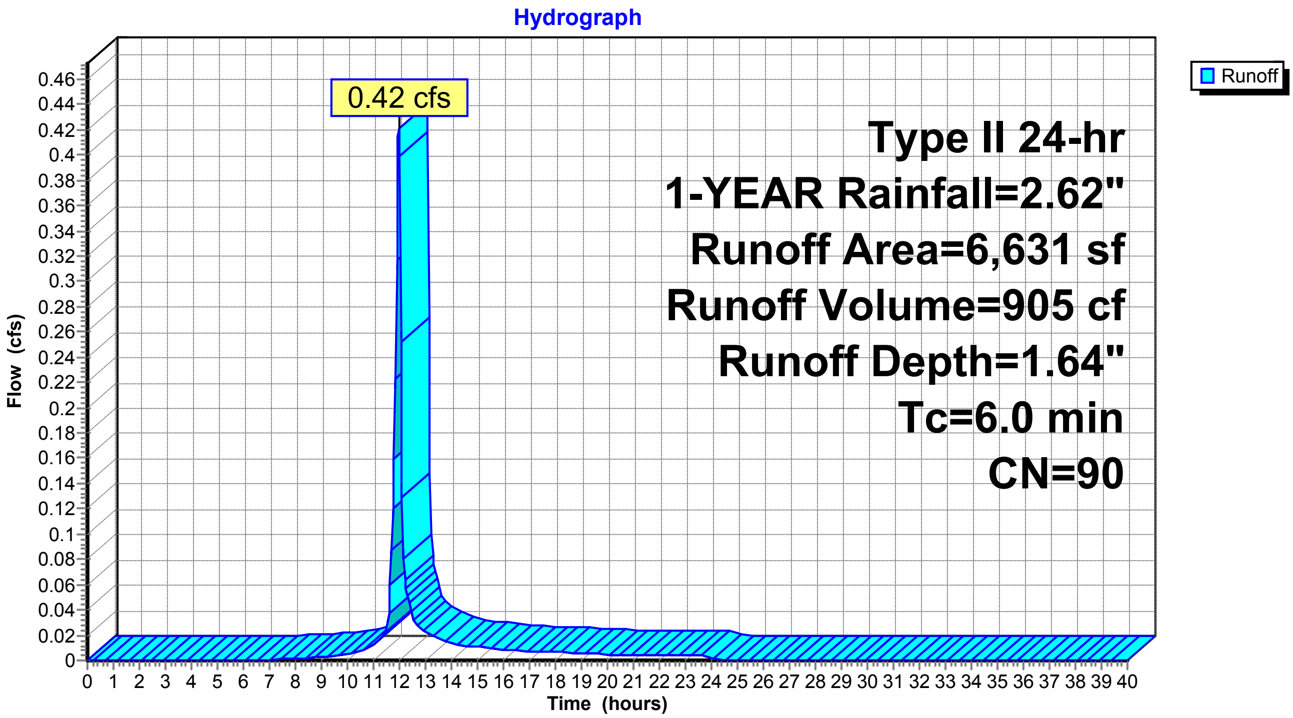
Runoff = 0.42 cfs @ 11.97 hrs, Volume= 905 cf, Depth= 1.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
2,314	74	>75% Grass cover, Good, HSG C
4,317	98	Paved parking, HSG C
6,631	90	Weighted Average
2,314		34.90% Pervious Area
4,317		65.10% Impervious Area

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

Subcatchment DA-34: DA-34



Summary for Subcatchment DA-35: DA-35

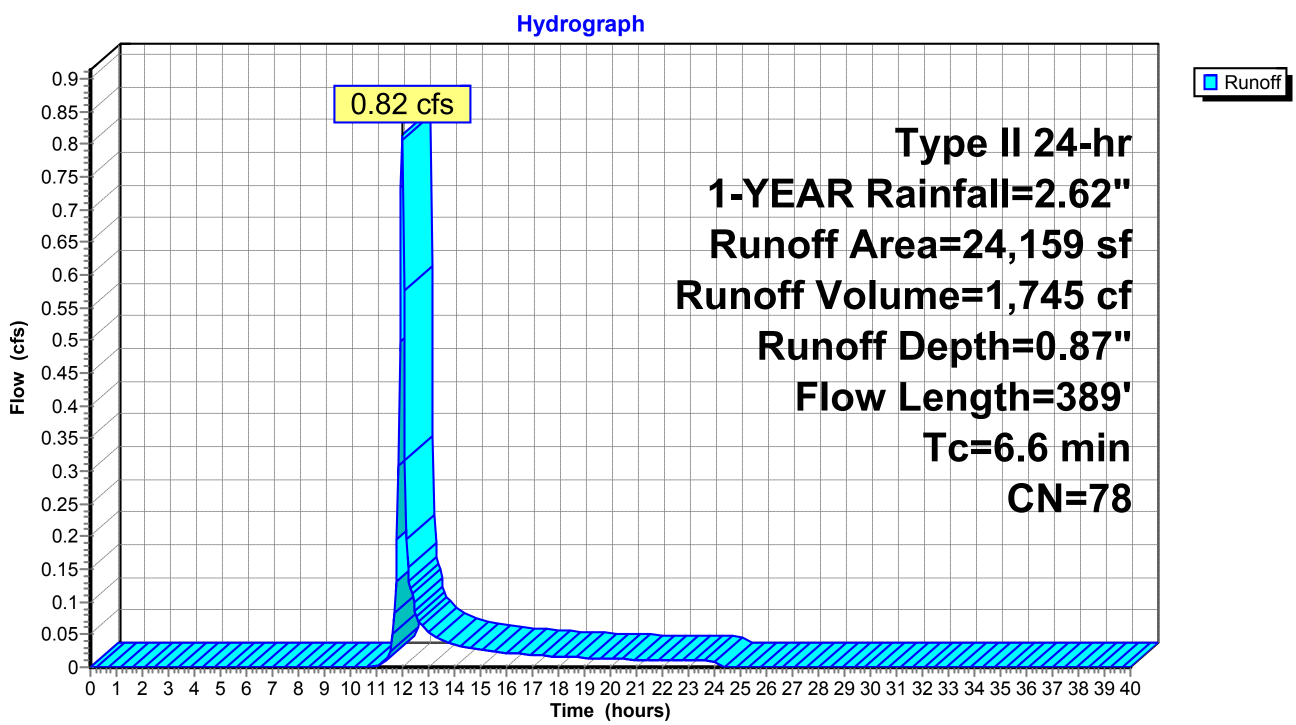
Runoff = 0.82 cfs @ 11.99 hrs, Volume= 1,745 cf, Depth= 0.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
20,497	74	>75% Grass cover, Good, HSG C
3,662	98	Paved parking, HSG C
24,159	78	Weighted Average
20,497		84.84% Pervious Area
3,662		15.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	100	0.2900	0.34		**Sheet Flow, D-E** Grass: Dense n= 0.240 P2= 3.17"
1.7	289	0.1560	2.76		**Shallow Concentrated Flow, E-F** Short Grass Pasture Kv= 7.0 fps
6.6	389	Total			

Subcatchment DA-35: DA-35



Summary for Subcatchment DA-36: DA-36 (Roofs)

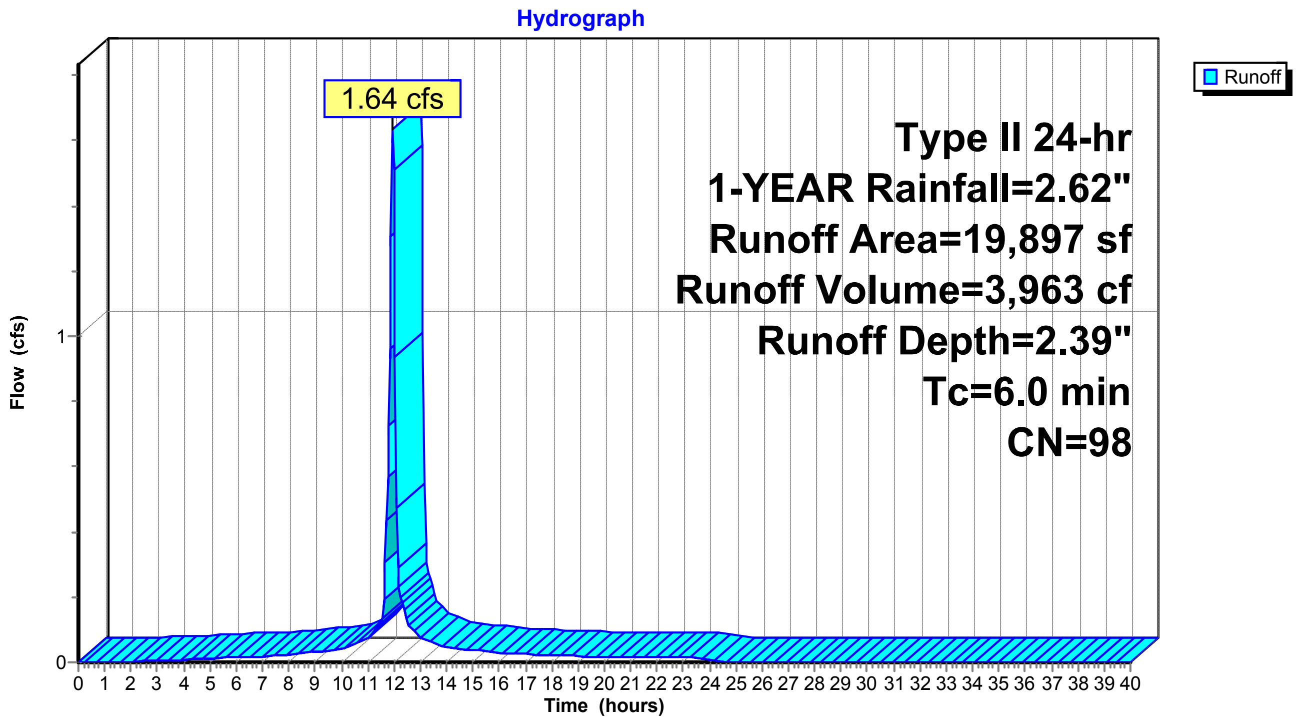
Runoff = 1.64 cfs @ 11.96 hrs, Volume= 3,963 cf, Depth= 2.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
19,897	98	Roofs, HSG C
19,897		100.00% Impervious Area

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

Subcatchment DA-36: DA-36 (Roofs)



Summary for Subcatchment DA-37: DA-37

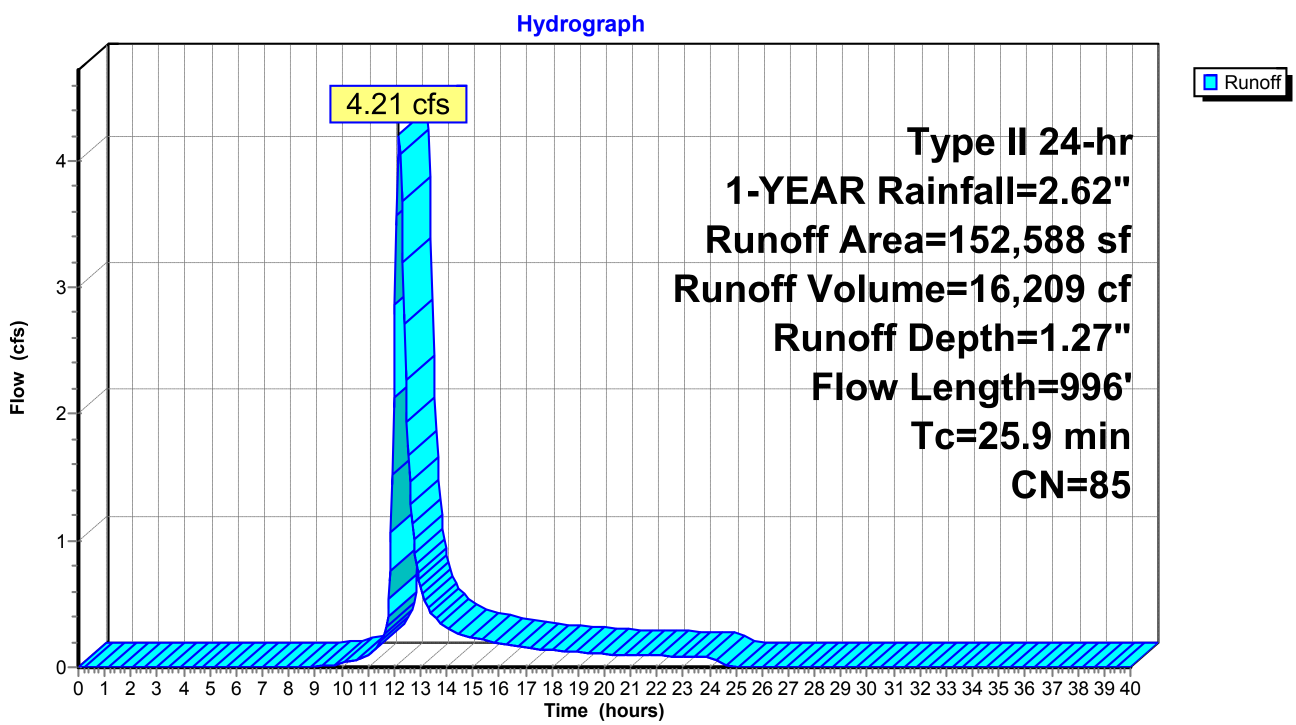
Runoff = 4.21 cfs @ 12.20 hrs, Volume= 16,209 cf, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
102,918	79	Pasture/grassland/range, Fair, HSG C
49,670	98	Paved parking, HSG C
152,588	85	Weighted Average
102,918		67.45% Pervious Area
49,670		32.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.9	100	0.0100	0.09		**Sheet Flow, P-Q** Grass: Dense n= 0.240 P2= 3.17"
7.0	896	0.0926	2.13		**Shallow Concentrated Flow, Q-R** Short Grass Pasture Kv= 7.0 fps
25.9	996	Total			

Subcatchment DA-37: DA-37



Summary for Subcatchment DA-38: DA-38 (Roofs)

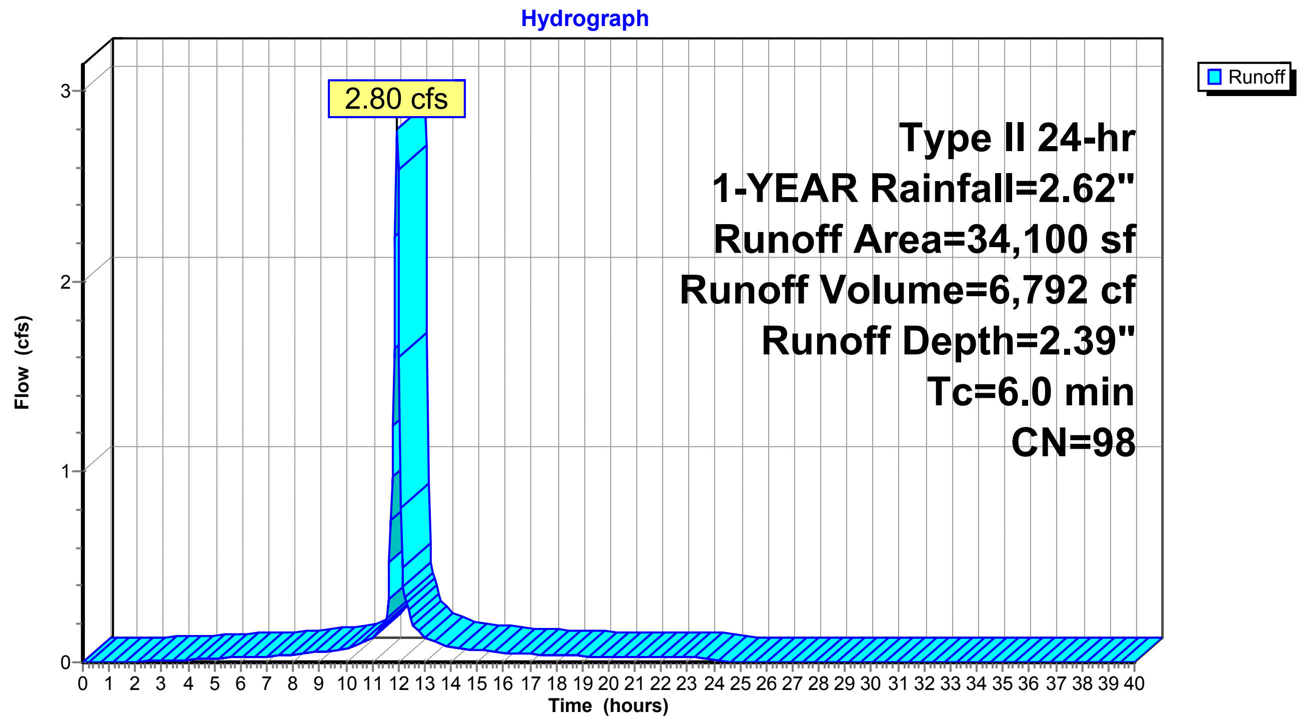
Runoff = 2.80 cfs @ 11.96 hrs, Volume= 6,792 cf, Depth= 2.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
34,100	98	Roofs, HSG C
34,100		100.00% Impervious Area

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

Subcatchment DA-38: DA-38 (Roofs)



Summary for Subcatchment DA-4: DA-4

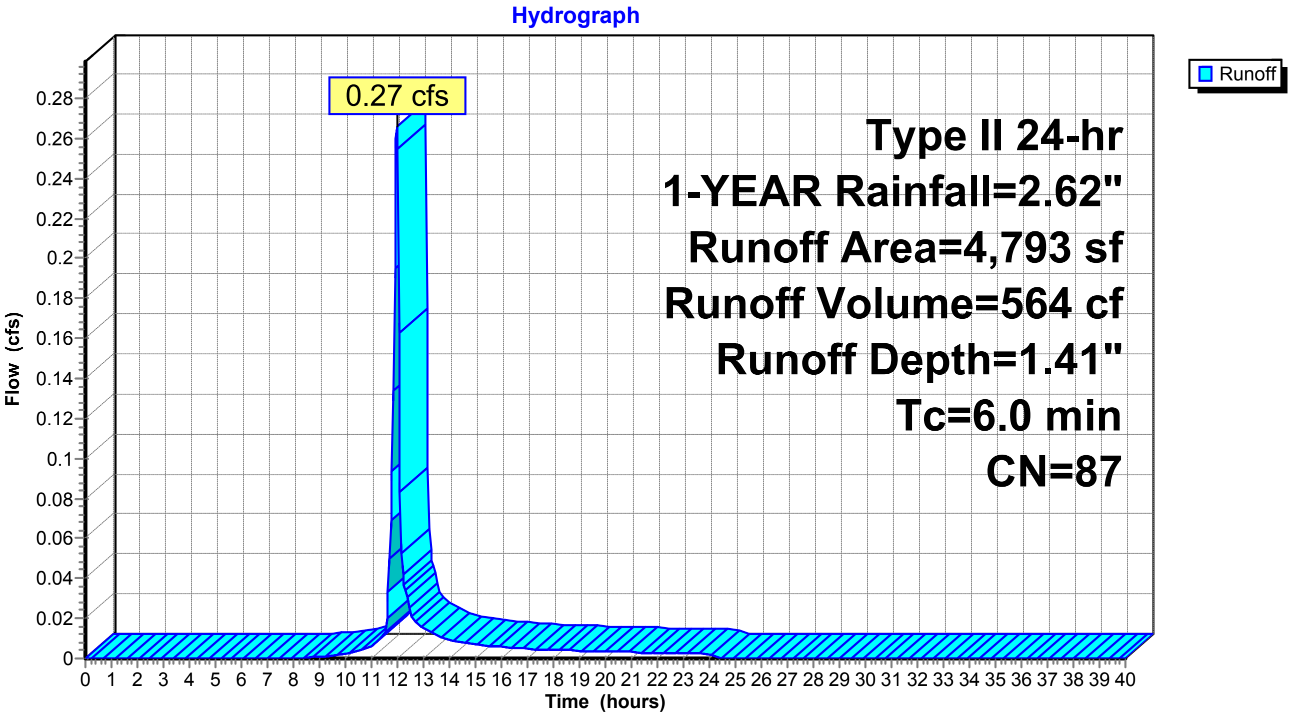
Runoff = 0.27 cfs @ 11.97 hrs, Volume= 564 cf, Depth= 1.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
2,165	74	>75% Grass cover, Good, HSG C
0	73	Woods, Fair, HSG C
2,628	98	Paved parking, HSG C
4,793	87	Weighted Average
2,165		45.17% Pervious Area
2,628		54.83% Impervious Area

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

Subcatchment DA-4: DA-4



Summary for Subcatchment DA-5: DA-5

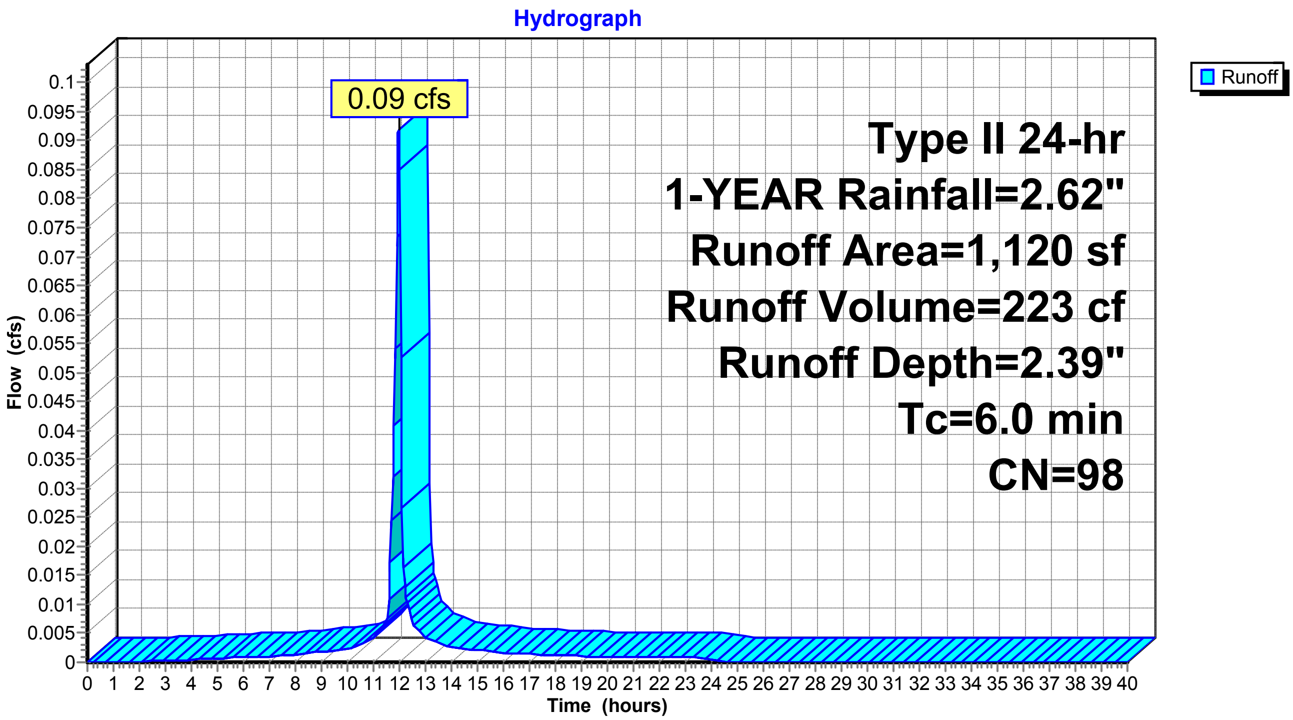
Runoff = 0.09 cfs @ 11.96 hrs, Volume= 223 cf, Depth= 2.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
1,120	98	Paved parking, HSG C
1,120		100.00% Impervious Area

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

Subcatchment DA-5: DA-5



Summary for Subcatchment DA-6: DA-6

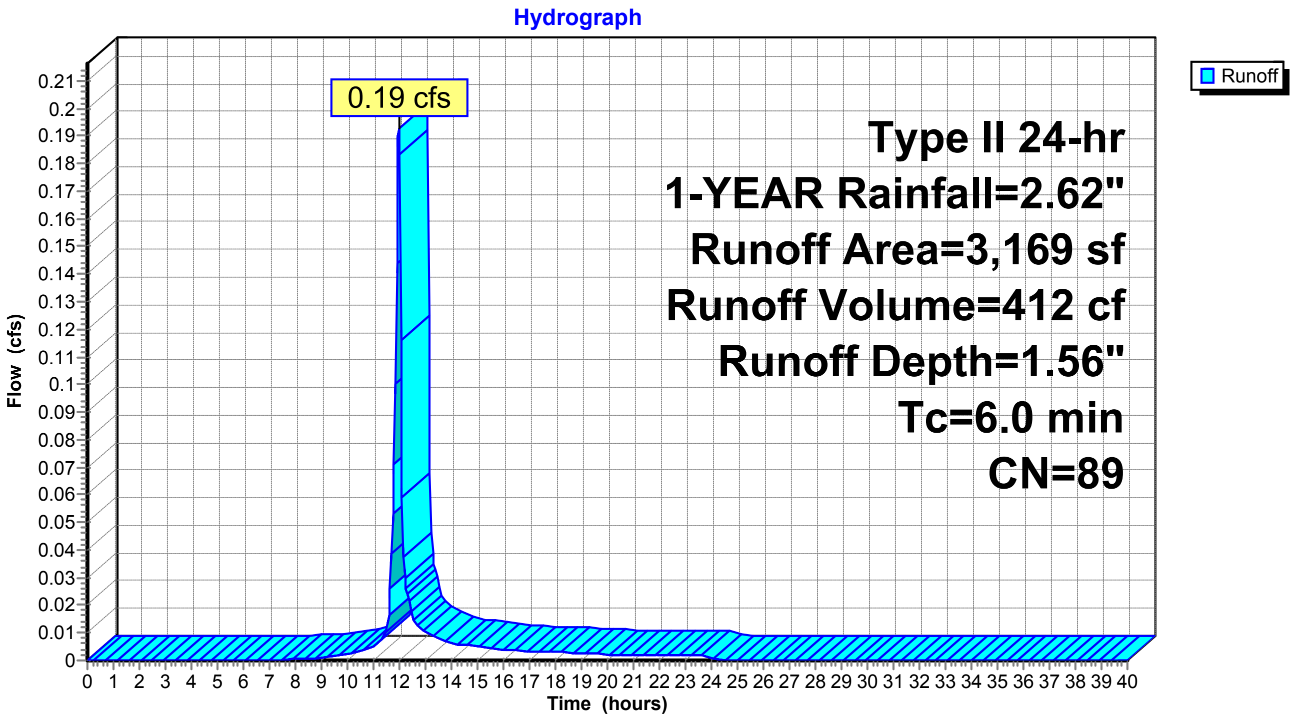
Runoff = 0.19 cfs @ 11.97 hrs, Volume= 412 cf, Depth= 1.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
1,133	74	>75% Grass cover, Good, HSG C
2,036	98	Paved parking, HSG C
3,169	89	Weighted Average
1,133		35.75% Pervious Area
2,036		64.25% Impervious Area

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

Subcatchment DA-6: DA-6



Summary for Subcatchment DA-7: DA-7

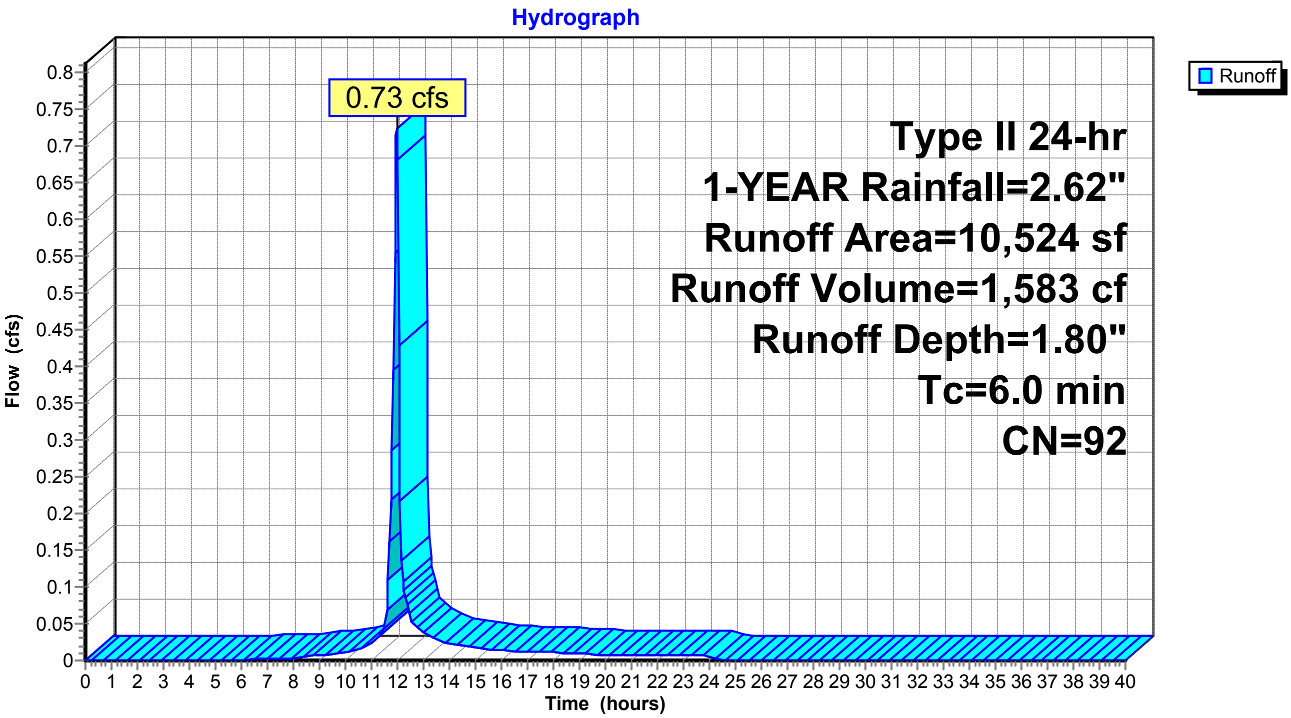
Runoff = 0.73 cfs @ 11.97 hrs, Volume= 1,583 cf, Depth= 1.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
2,543	74	>75% Grass cover, Good, HSG C
7,981	98	Paved parking, HSG C
10,524	92	Weighted Average
2,543		24.16% Pervious Area
7,981		75.84% Impervious Area

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

Subcatchment DA-7: DA-7



Summary for Subcatchment DA-8: DA-8

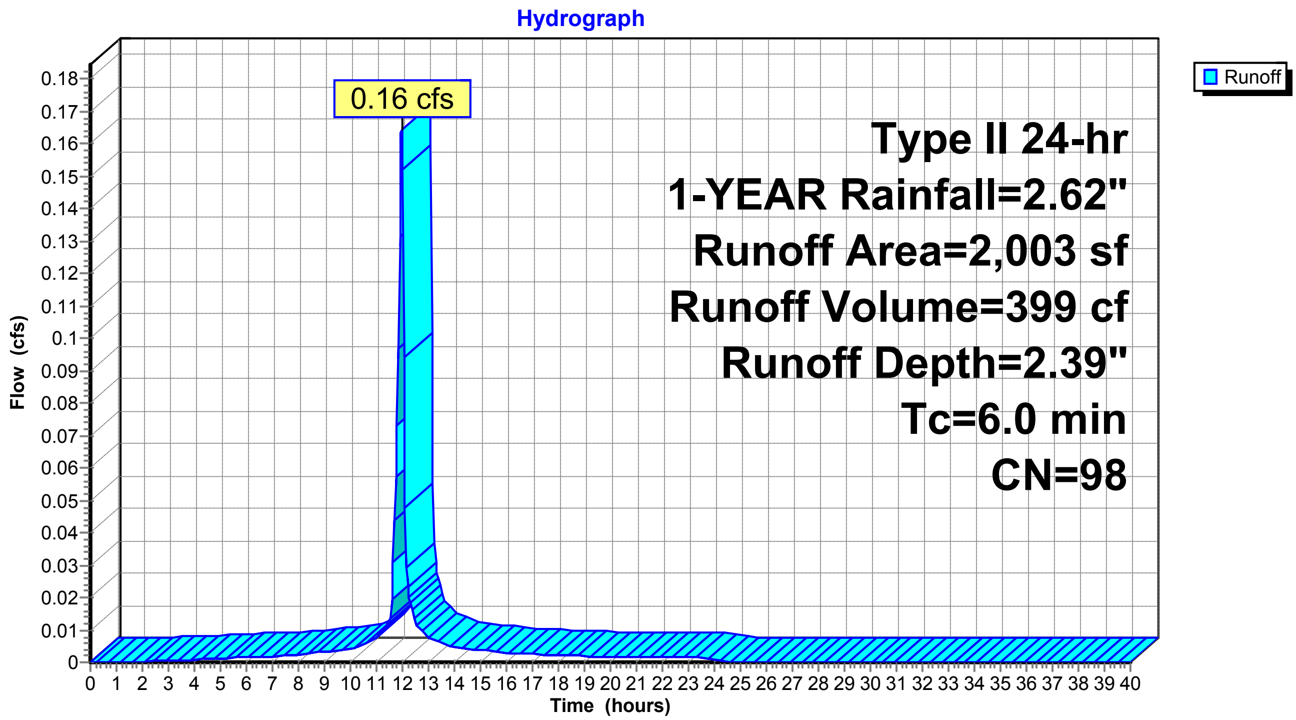
Runoff = 0.16 cfs @ 11.96 hrs, Volume= 399 cf, Depth= 2.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
2,003	98	Paved parking, HSG C
2,003		100.00% Impervious Area

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

Subcatchment DA-8: DA-8



Summary for Subcatchment DA-9: DA-9

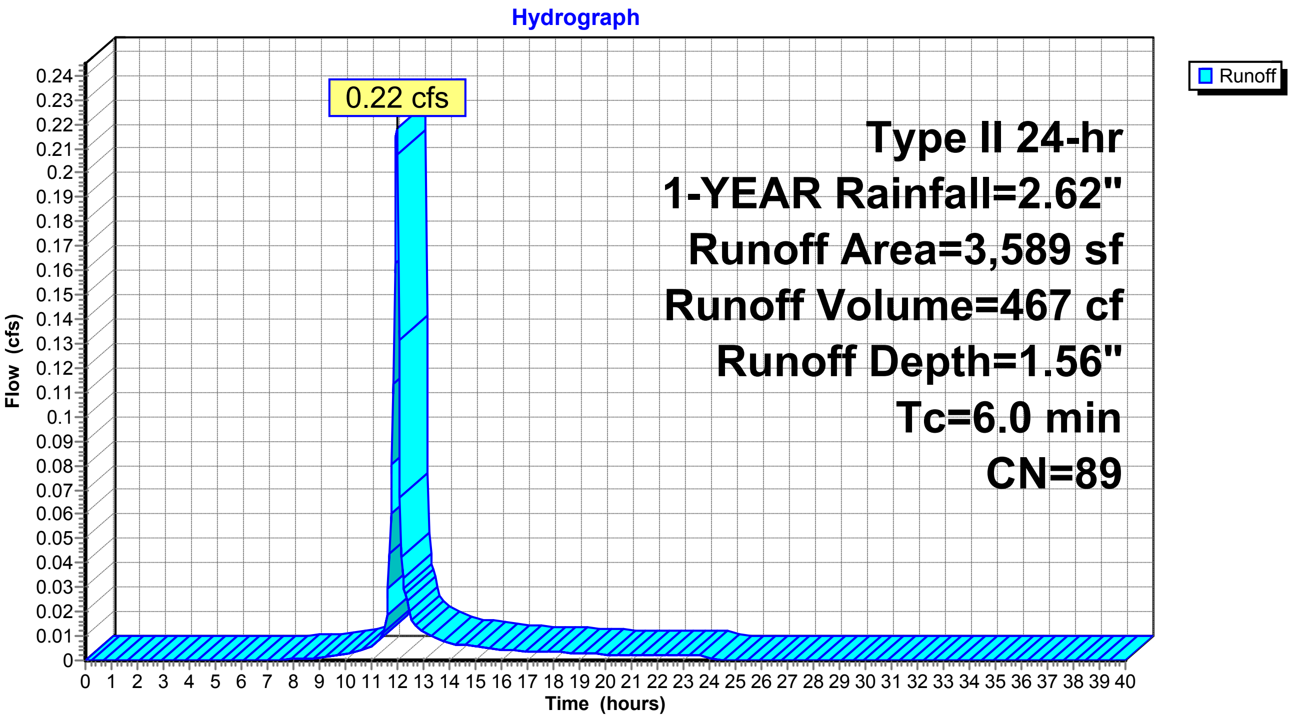
Runoff = 0.22 cfs @ 11.97 hrs, Volume= 467 cf, Depth= 1.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YEAR Rainfall=2.62"

Area (sf)	CN	Description
1,275	74	>75% Grass cover, Good, HSG C
2,314	98	Paved parking, HSG C
3,589	89	Weighted Average
1,275		35.53% Pervious Area
2,314		64.47% Impervious Area

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

Subcatchment DA-9: DA-9



Summary for Reach 2R: FLARED END #3

[79] Warning: Submerged Pond CB30 Primary device # 1 INLET by 0.01'

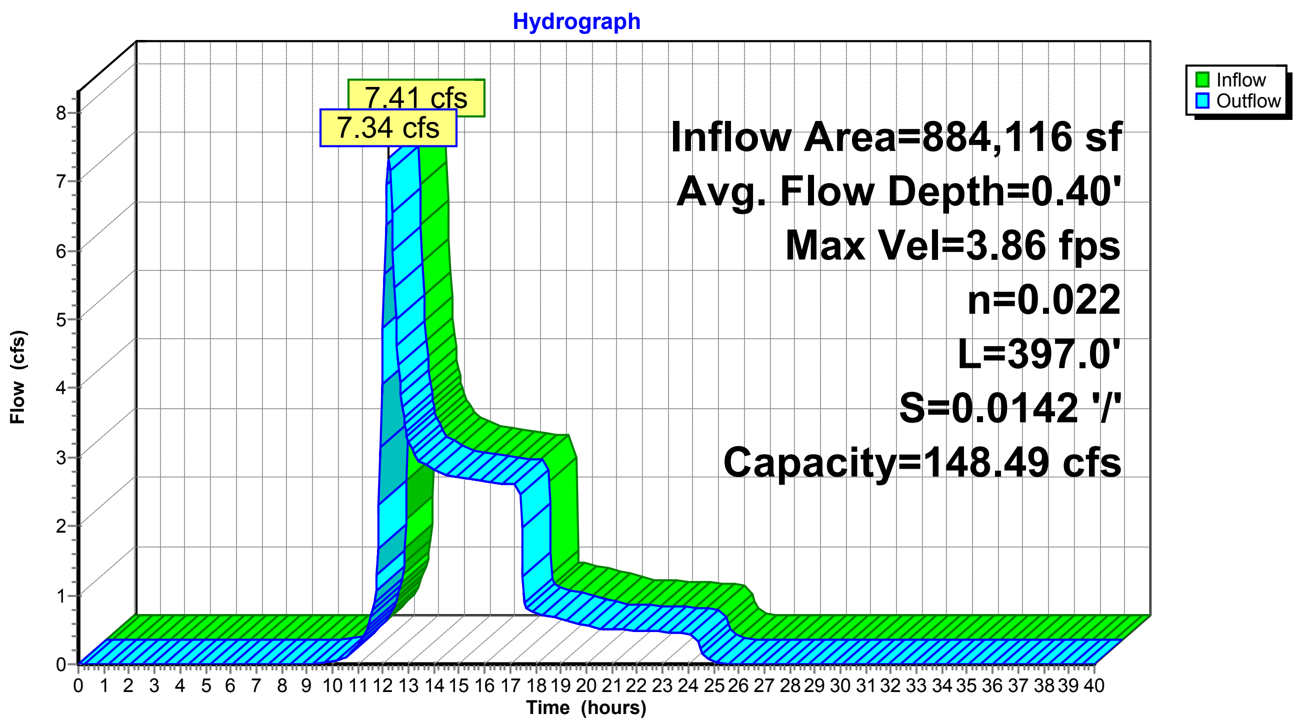
Inflow Area = 884,116 sf, 21.35% Impervious, Inflow Depth = 1.10" for 1-YEAR event
Inflow = 7.41 cfs @ 12.18 hrs, Volume= 81,122 cf
Outflow = 7.34 cfs @ 12.23 hrs, Volume= 81,122 cf, Atten= 1%, Lag= 3.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.86 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 1.61 fps, Avg. Travel Time= 4.1 min

Peak Storage= 760 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.40'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 148.49 cfs

4.00' x 2.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 2.0 '/' Top Width= 12.00'
Length= 397.0' Slope= 0.0142 '/'
Inlet Invert= 335.25', Outlet Invert= 329.60'

Reach 2R: FLARED END #3

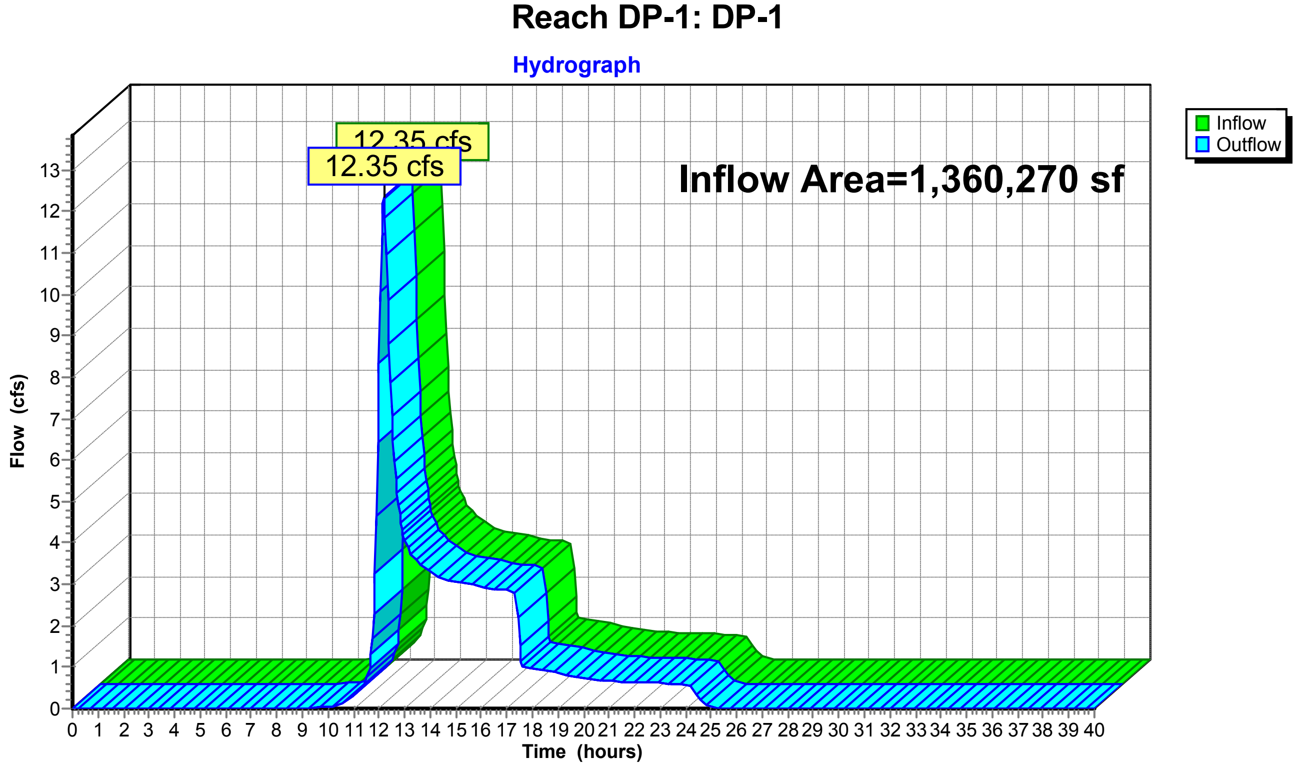


Summary for Reach DP-1: DP-1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	1,360,270 sf, 25.67% Impervious,	Inflow Depth = 0.91"	for 1-YEAR event
Inflow =	12.35 cfs @ 12.19 hrs, Volume=	102,755 cf	
Outflow =	12.35 cfs @ 12.19 hrs, Volume=	102,755 cf, Atten= 0%, Lag= 0.0 min	

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs



Summary for Reach FLARED END #1: FLARED END #1

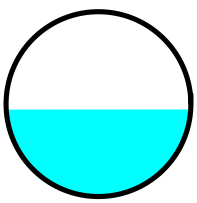
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 244,871 sf, 7.43% Impervious, Inflow Depth = 0.77" for 1-YEAR event
Inflow = 4.09 cfs @ 12.18 hrs, Volume= 15,677 cf
Outflow = 4.08 cfs @ 12.19 hrs, Volume= 15,677 cf, Atten= 0%, Lag= 0.6 min

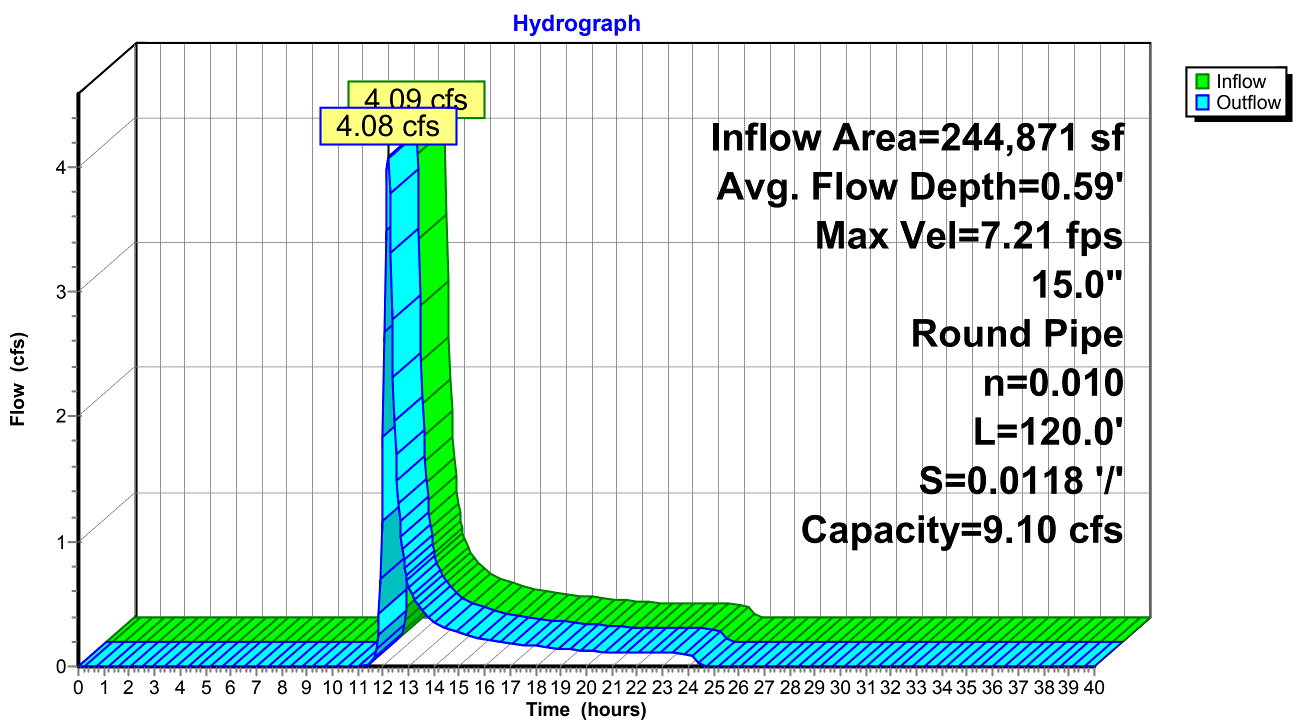
Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.21 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.95 fps, Avg. Travel Time= 0.7 min

Peak Storage= 68 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.59'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.10 cfs

15.0" Round Pipe
n= 0.010
Length= 120.0' Slope= 0.0118 '/'
Inlet Invert= 355.00', Outlet Invert= 353.59'



Reach FLARED END #1: FLARED END #1



Summary for Reach FLARED END #2: FLARED END #2

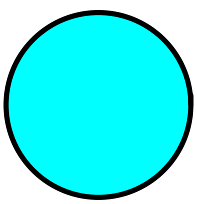
[52] Hint: Inlet/Outlet conditions not evaluated
[55] Hint: Peak inflow is 582% of Manning's capacity
[76] Warning: Detained 21,501 cf (Pond w/culvert advised)

Inflow Area = 677,156 sf, 19.44% Impervious, Inflow Depth = 1.08" for 1-YEAR event
Inflow = 14.00 cfs @ 12.25 hrs, Volume= 60,894 cf
Outflow = 2.41 cfs @ 11.95 hrs, Volume= 60,894 cf, Atten= 83%, Lag= 0.0 min

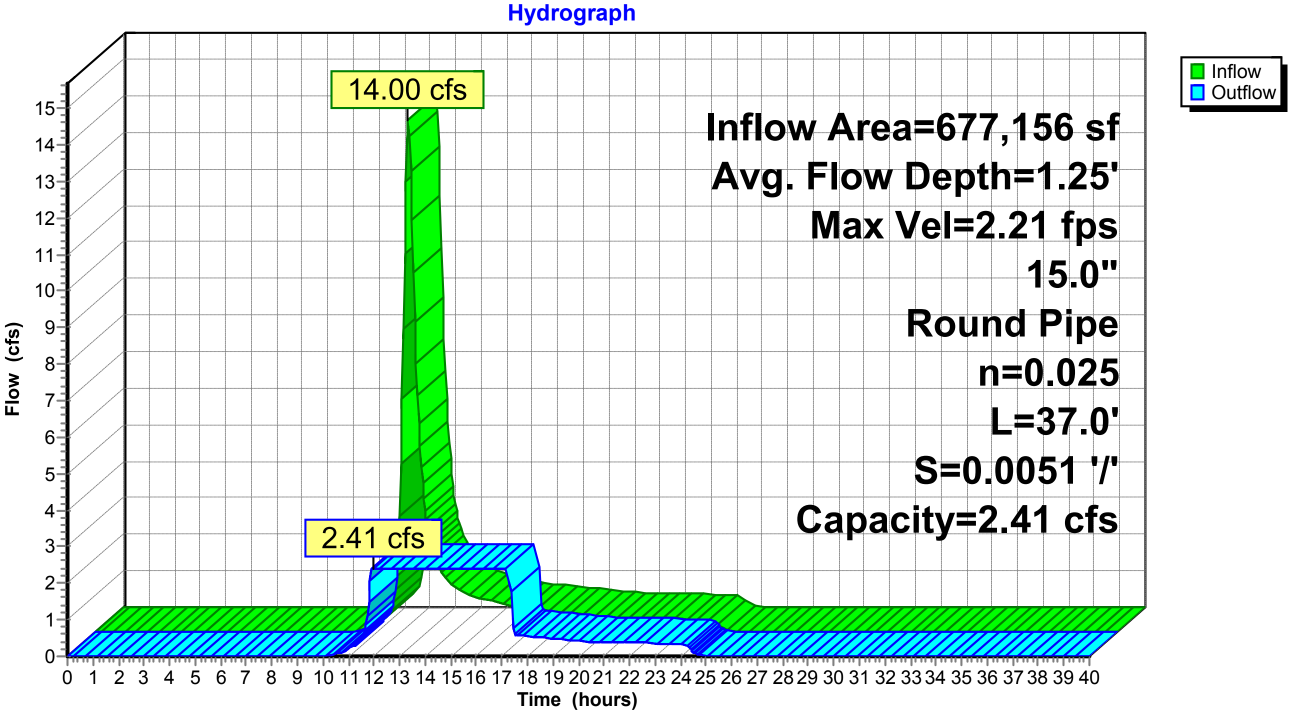
Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.21 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.50 fps, Avg. Travel Time= 0.4 min

Peak Storage= 45 cf @ 11.90 hrs
Average Depth at Peak Storage= 1.25'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 2.41 cfs

15.0" Round Pipe
n= 0.025 Corrugated metal
Length= 37.0' Slope= 0.0051 '/'
Inlet Invert= 336.00', Outlet Invert= 335.81'



Reach FLARED END #2: FLARED END #2



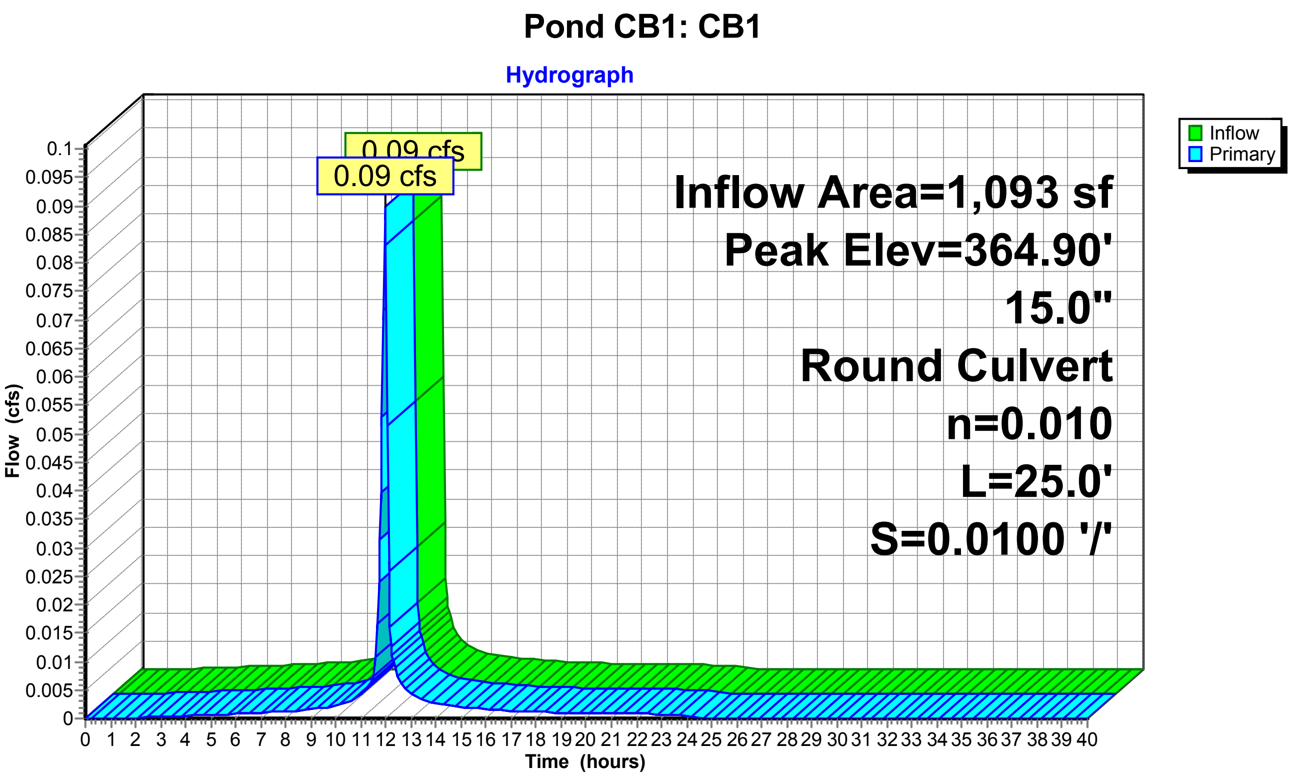
Summary for Pond CB1: CB1

Inflow Area = 1,093 sf,100.00% Impervious, Inflow Depth = 2.39" for 1-YEAR event
Inflow = 0.09 cfs @ 11.96 hrs, Volume= 218 cf
Outflow = 0.09 cfs @ 11.96 hrs, Volume= 218 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.09 cfs @ 11.96 hrs, Volume= 218 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 364.90' @ 11.96 hrs
Flood Elev= 368.04'

Device	Routing	Invert	Outlet Devices
#1	Primary	364.75'	**15.0" Round Culvert** L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 364.75' / 364.50' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=0.09 cfs @ 11.96 hrs HW=364.90' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.09 cfs @ 1.04 fps)



Summary for Pond CB10: CB10

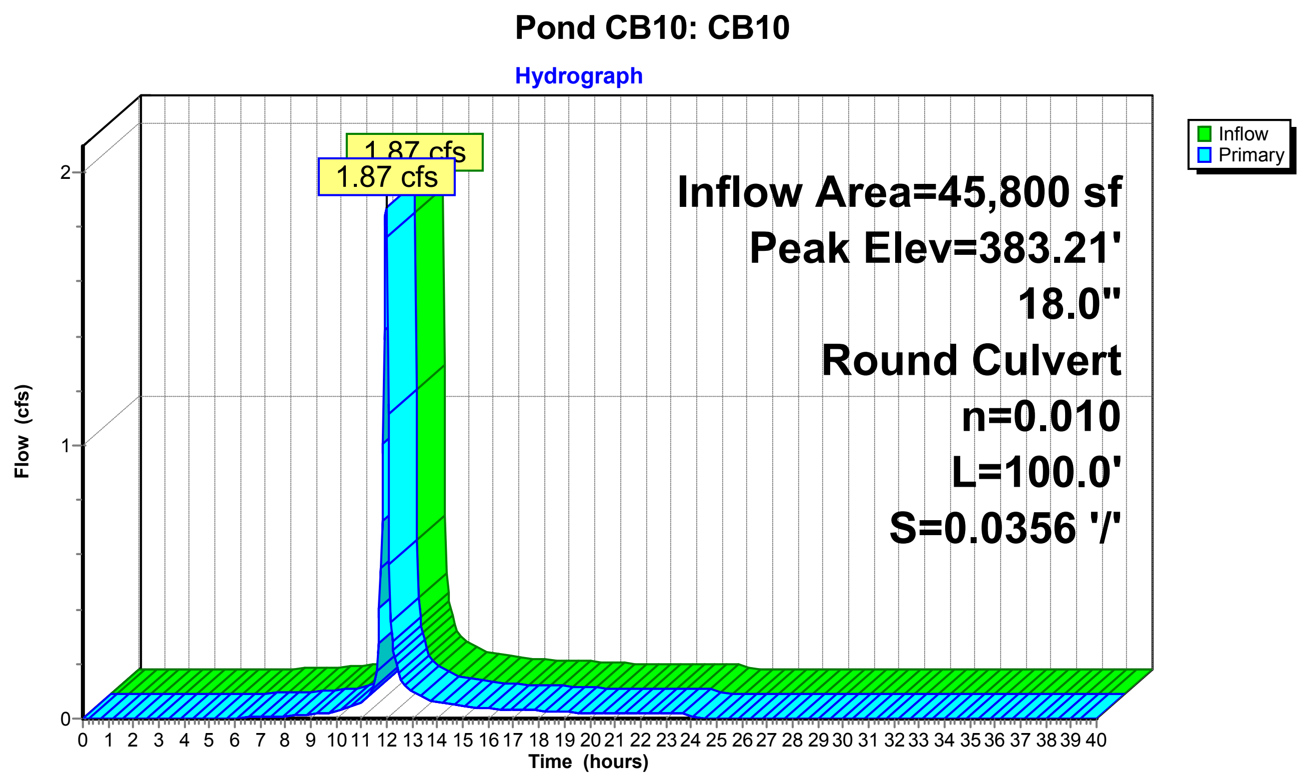
[79] Warning: Submerged Pond CB11 Primary device # 1 OUTLET by 0.02'

Inflow Area =	45,800 sf,	71.00% Impervious,	Inflow Depth = 1.07"	for 1-YEAR event	
Inflow =	1.87 cfs @	11.97 hrs,	Volume=	4,099 cf	
Outflow =	1.87 cfs @	11.97 hrs,	Volume=	4,099 cf,	Atten= 0%, Lag= 0.0 min
Primary =	1.87 cfs @	11.97 hrs,	Volume=	4,099 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 383.21' @ 11.97 hrs
Flood Elev= 388.01'

Device	Routing	Invert	Outlet Devices
#1	Primary	382.50'	**18.0" Round Culvert** L= 100.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 382.50' / 378.94' S= 0.0356 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=1.81 cfs @ 11.97 hrs HW=383.20' (Free Discharge)
└─**1=Culvert** (Inlet Controls 1.81 cfs @ 2.25 fps)



Summary for Pond CB11: CB11

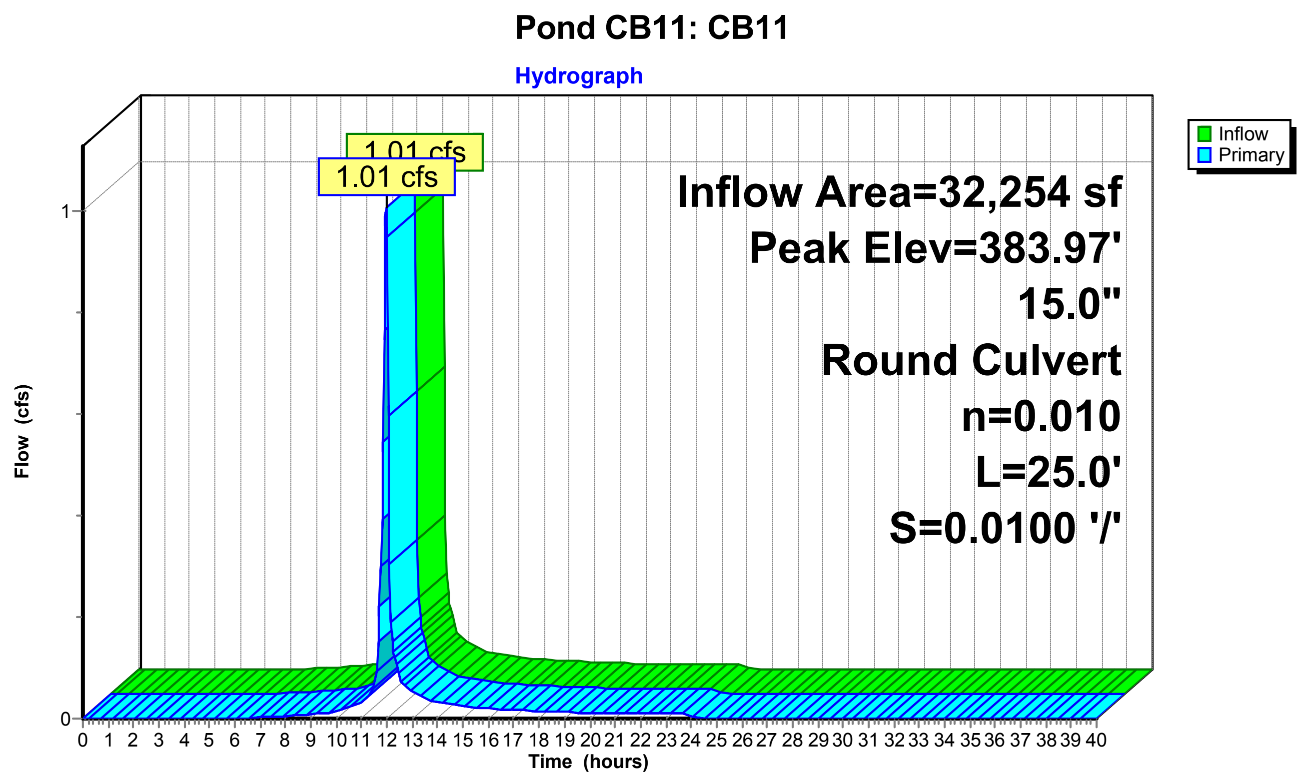
[79] Warning: Submerged Pond CB25 Primary device # 1 OUTLET by 0.54'

Inflow Area =	32,254 sf, 72.32% Impervious,	Inflow Depth = 0.81"	for 1-YEAR event
Inflow =	1.01 cfs @ 11.97 hrs, Volume=	2,189 cf	
Outflow =	1.01 cfs @ 11.97 hrs, Volume=	2,189 cf, Atten= 0%, Lag= 0.0 min	
Primary =	1.01 cfs @ 11.97 hrs, Volume=	2,189 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 383.97' @ 11.97 hrs
Flood Elev= 388.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	383.43'	**15.0" Round Culvert** L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 383.43' / 383.18' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=0.98 cfs @ 11.97 hrs HW=383.96' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.98 cfs @ 1.96 fps)



Summary for Pond CB12: CB12

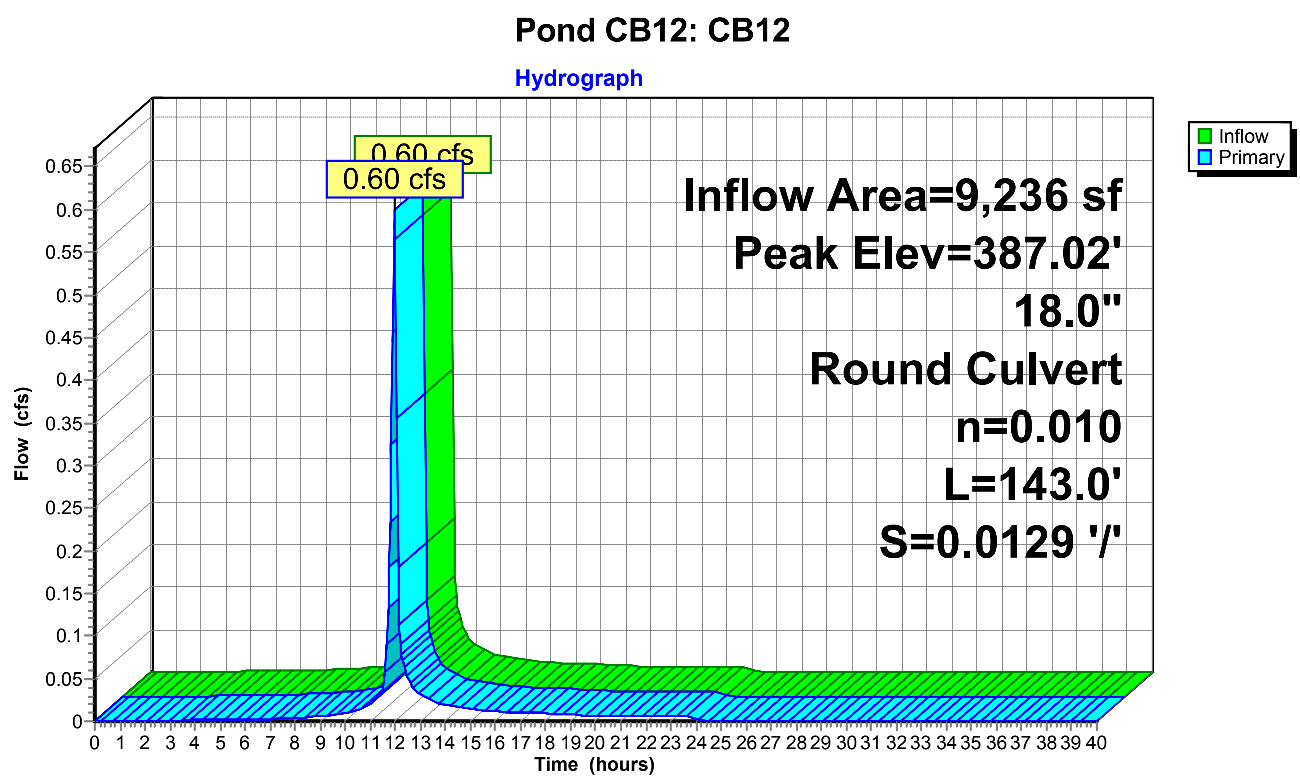
[79] Warning: Submerged Pond CB13 Primary device # 1 INLET by 0.17'
[79] Warning: Submerged Pond CB14 Primary device # 1 OUTLET by 0.17'

Inflow Area =	9,236 sf, 70.69% Impervious,	Inflow Depth = 1.75"	for 1-YEAR event
Inflow =	0.60 cfs @ 11.97 hrs,	Volume=	1,349 cf
Outflow =	0.60 cfs @ 11.97 hrs,	Volume=	1,349 cf, Atten= 0%, Lag= 0.0 min
Primary =	0.60 cfs @ 11.97 hrs,	Volume=	1,349 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 387.02' @ 11.97 hrs
Flood Elev= 390.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	386.63'	**18.0" Round Culvert** L= 143.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 386.63' / 384.78' S= 0.0129 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=0.58 cfs @ 11.97 hrs HW=387.01' (Free Discharge)
1=Culvert (Inlet Controls 0.58 cfs @ 1.66 fps)



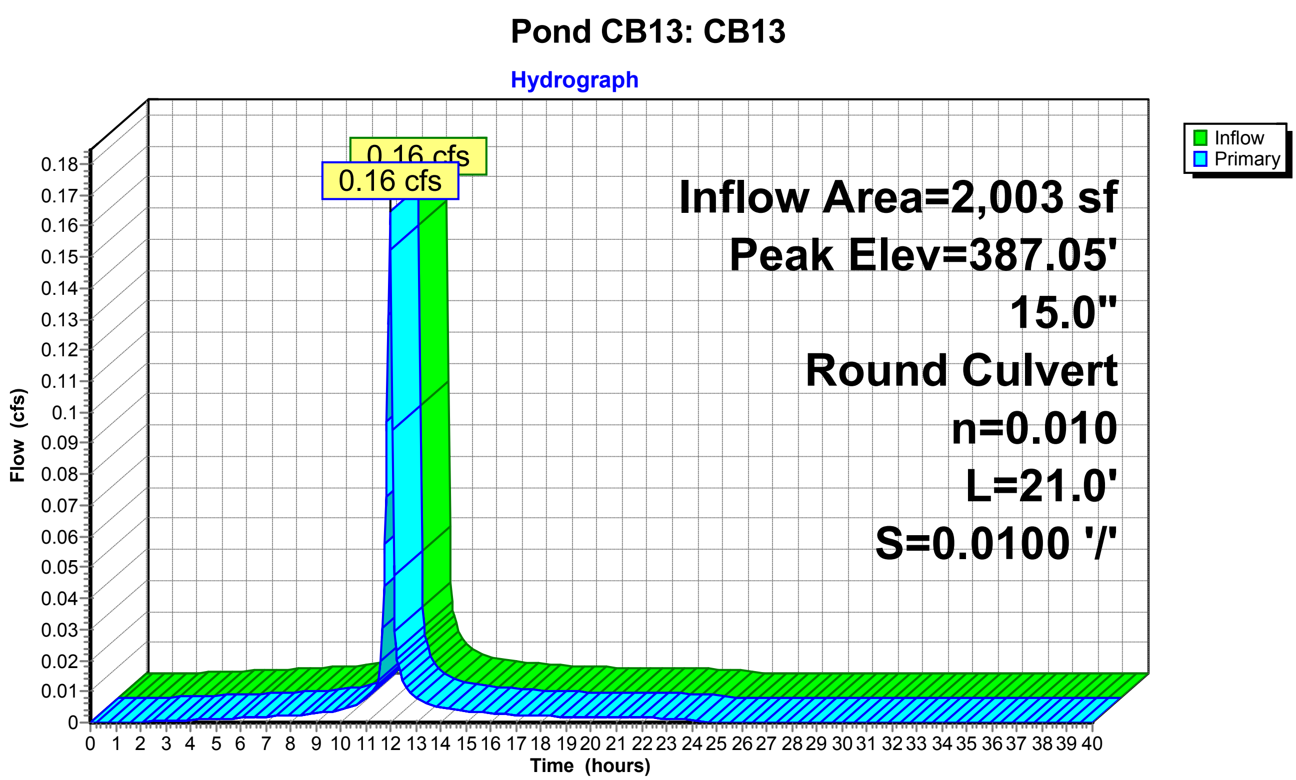
Summary for Pond CB13: CB13

Inflow Area =	2,003 sf,100.00% Impervious,	Inflow Depth = 2.39"	for 1-YEAR event
Inflow =	0.16 cfs @ 11.96 hrs,	Volume=	399 cf
Outflow =	0.16 cfs @ 11.96 hrs,	Volume=	399 cf, Atten= 0%, Lag= 0.0 min
Primary =	0.16 cfs @ 11.96 hrs,	Volume=	399 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 387.05' @ 11.96 hrs
Flood Elev= 390.11'

Device	Routing	Invert	Outlet Devices
#1	Primary	386.84'	**15.0" Round Culvert** L= 21.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 386.84' / 386.63' S= 0.0100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.16 cfs @ 11.96 hrs HW=387.05' (Free Discharge)
↑**1=Culvert** (Inlet Controls 0.16 cfs @ 1.22 fps)



Summary for Pond CB14: CB14

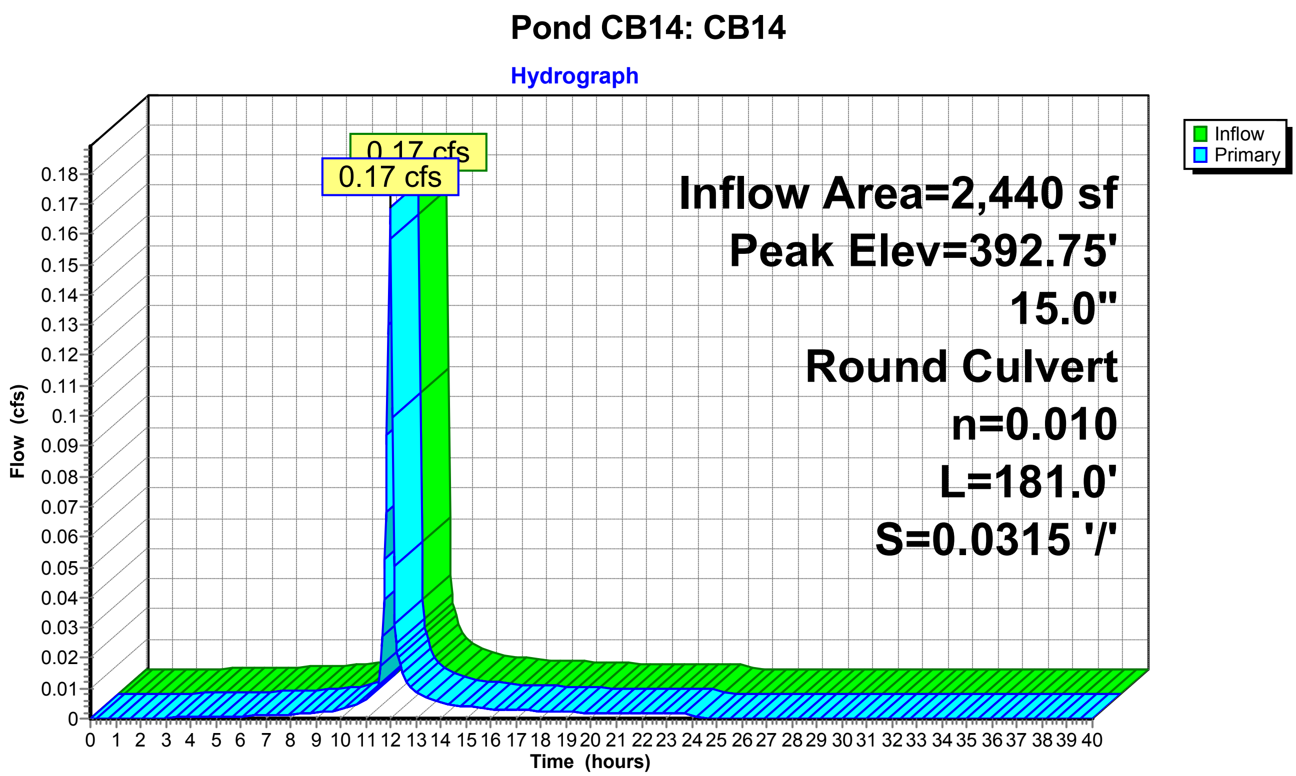
[79] Warning: Submerged Pond CB15 Primary device # 1 OUTLET by 0.21'

Inflow Area = 2,440 sf, 77.79% Impervious, Inflow Depth = 1.90" for 1-YEAR event
Inflow = 0.17 cfs @ 11.97 hrs, Volume= 386 cf
Outflow = 0.17 cfs @ 11.97 hrs, Volume= 386 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.17 cfs @ 11.97 hrs, Volume= 386 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 392.75' @ 11.97 hrs
Flood Elev= 396.07'

Device	Routing	Invert	Outlet Devices
#1	Primary	392.54'	**15.0" Round Culvert** L= 181.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 392.54' / 386.84' S= 0.0315 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.16 cfs @ 11.97 hrs HW=392.75' (Free Discharge)
└─**1=Culvert** (Inlet Controls 0.16 cfs @ 1.22 fps)



Summary for Pond CB15: CB15

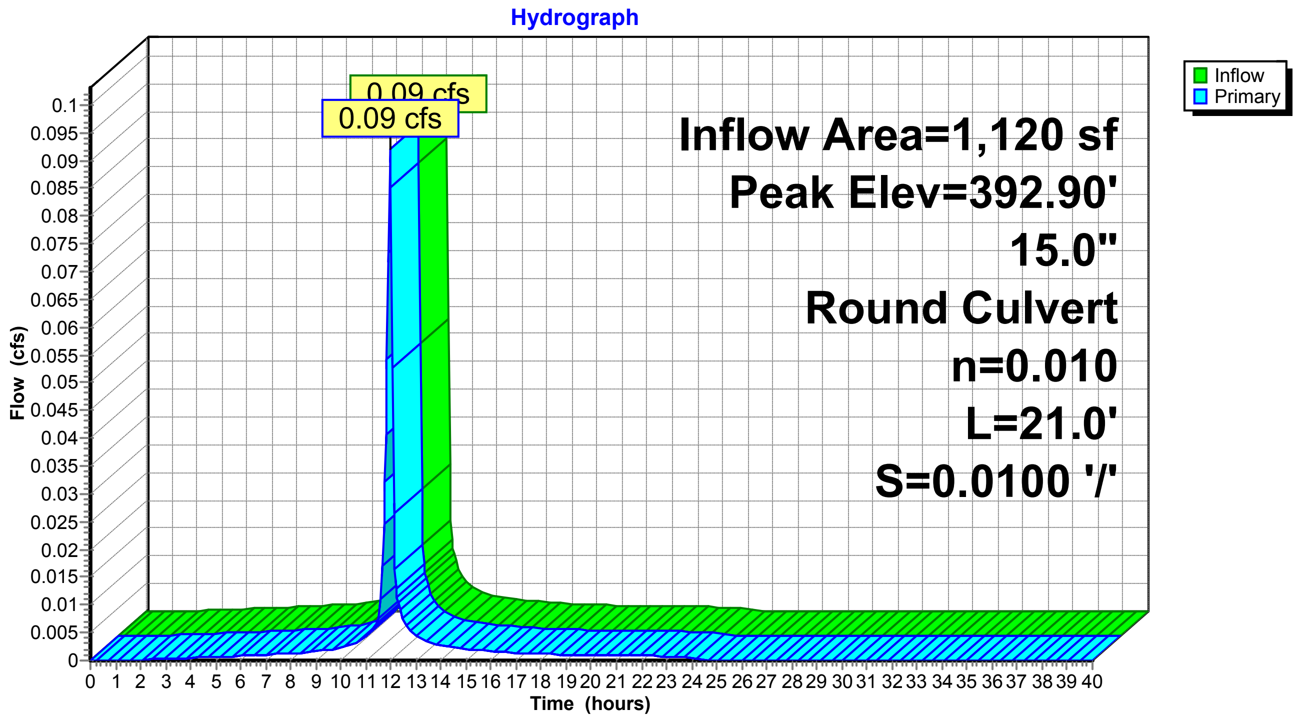
Inflow Area =	1,120 sf,100.00% Impervious,	Inflow Depth = 2.39" for 1-YEAR event			
Inflow =	0.09 cfs @	11.96 hrs,	Volume=	223 cf	
Outflow =	0.09 cfs @	11.96 hrs,	Volume=	223 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.09 cfs @	11.96 hrs,	Volume=	223 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 392.90' @ 11.96 hrs
Flood Elev= 396.05'

Device	Routing	Invert	Outlet Devices
#1	Primary	392.75'	**15.0" Round 15" HDPE** L= 21.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 392.75' / 392.54' S= 0.0100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.09 cfs @ 11.96 hrs HW=392.90' (Free Discharge)
└─**1=15" HDPE** (Inlet Controls 0.09 cfs @ 1.05 fps)

Pond CB15: CB15



Summary for Pond CB16: CB16

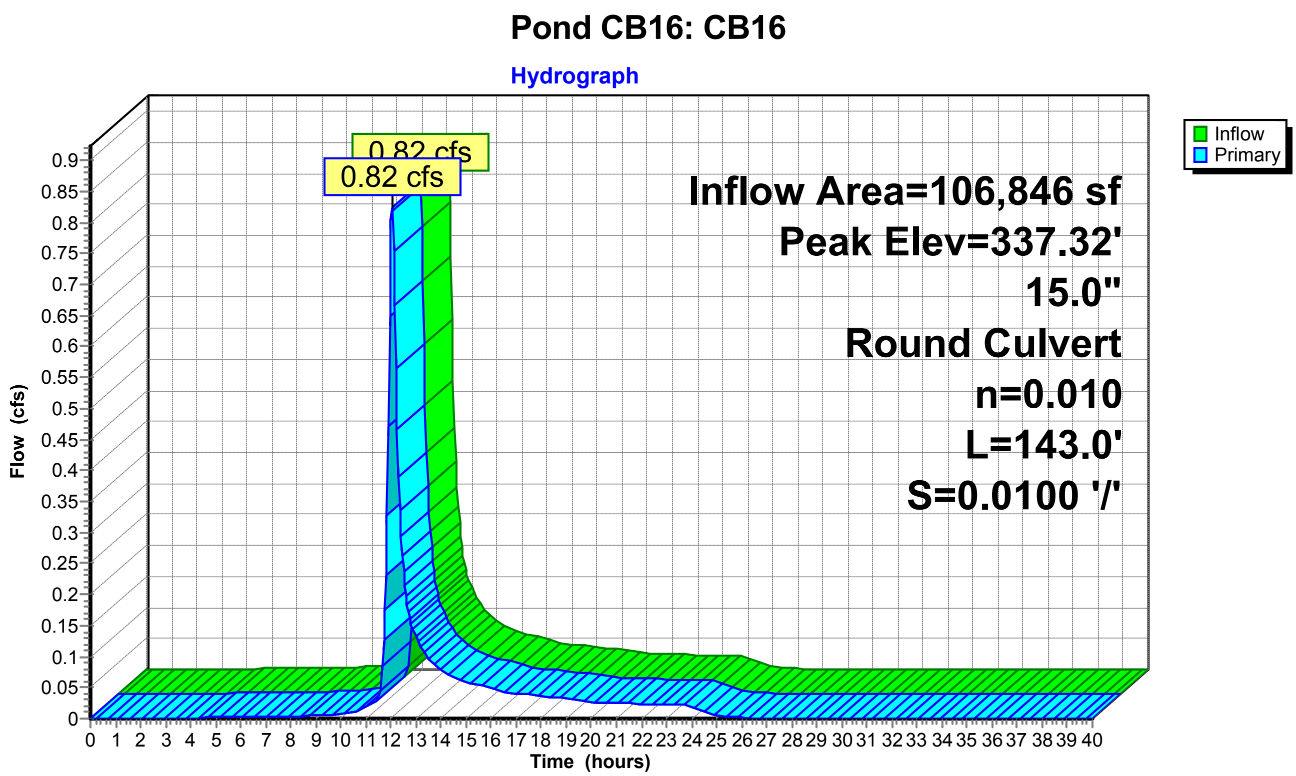
[79] Warning: Submerged Pond DMH5 Primary device # 1 OUTLET by 0.48'

Inflow Area =	106,846 sf,	63.53% Impervious,	Inflow Depth = 0.40"	for 1-YEAR event	
Inflow =	0.82 cfs @	12.03 hrs,	Volume=	3,561 cf	
Outflow =	0.82 cfs @	12.03 hrs,	Volume=	3,561 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.82 cfs @	12.03 hrs,	Volume=	3,561 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 337.32' @ 12.03 hrs
Flood Elev= 352.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	336.84'	**15.0" Round Culvert** L= 143.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 336.84' / 335.41' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=0.81 cfs @ 12.03 hrs HW=337.32' (Free Discharge)
└─**1=Culvert** (Inlet Controls 0.81 cfs @ 1.86 fps)



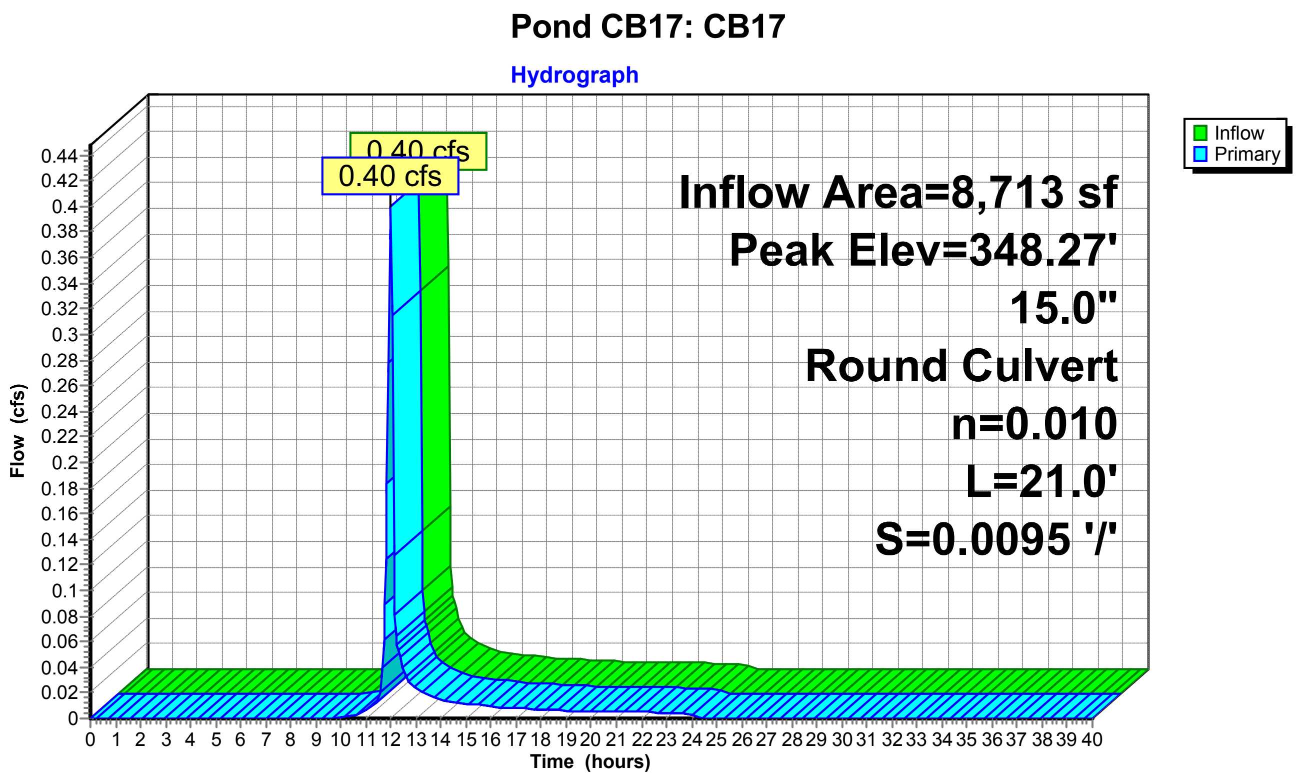
Summary for Pond CB17: CB17

Inflow Area =	8,713 sf,	36.19% Impervious,	Inflow Depth = 1.15"	for 1-YEAR event
Inflow =	0.40 cfs @	11.98 hrs, Volume=	833 cf	
Outflow =	0.40 cfs @	11.98 hrs, Volume=	833 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.40 cfs @	11.98 hrs, Volume=	833 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 348.27' @ 11.98 hrs
Flood Elev= 352.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	347.94'	**15.0" Round Culvert** L= 21.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 347.94' / 347.74' S= 0.0095 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=0.38 cfs @ 11.98 hrs HW=348.26' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.38 cfs @ 1.52 fps)



Summary for Pond CB19: CB19

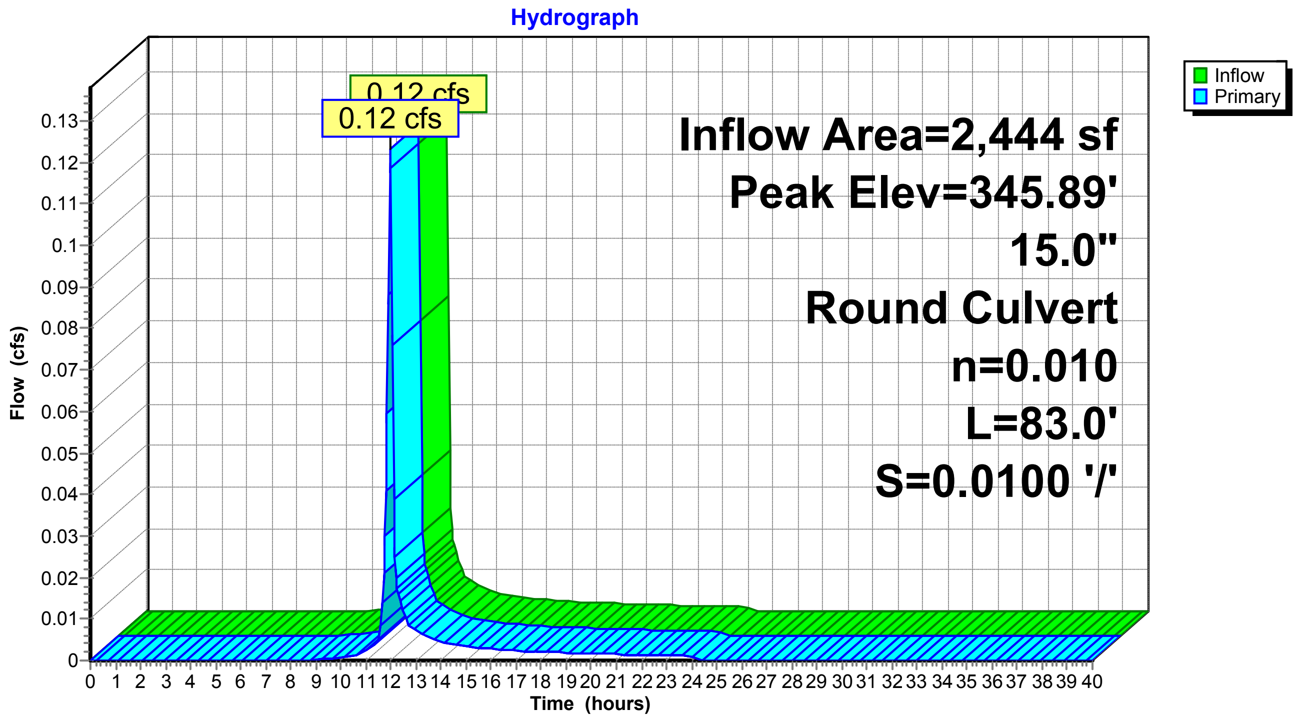
Inflow Area = 2,444 sf, 45.42% Impervious, Inflow Depth = 1.27" for 1-YEAR event
Inflow = 0.12 cfs @ 11.97 hrs, Volume= 260 cf
Outflow = 0.12 cfs @ 11.97 hrs, Volume= 260 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.12 cfs @ 11.97 hrs, Volume= 260 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 345.89' @ 11.97 hrs
Flood Elev= 349.19'

Device	Routing	Invert	Outlet Devices
#1	Primary	345.71'	**15.0" Round Culvert** L= 83.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 345.71' / 344.88' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=0.12 cfs @ 11.97 hrs HW=345.89' (Free Discharge)
1=Culvert (Inlet Controls 0.12 cfs @ 1.13 fps)

Pond CB19: CB19



Summary for Pond CB2: CB2

[79] Warning: Submerged Pond CB1 Primary device # 1 OUTLET by 0.24'

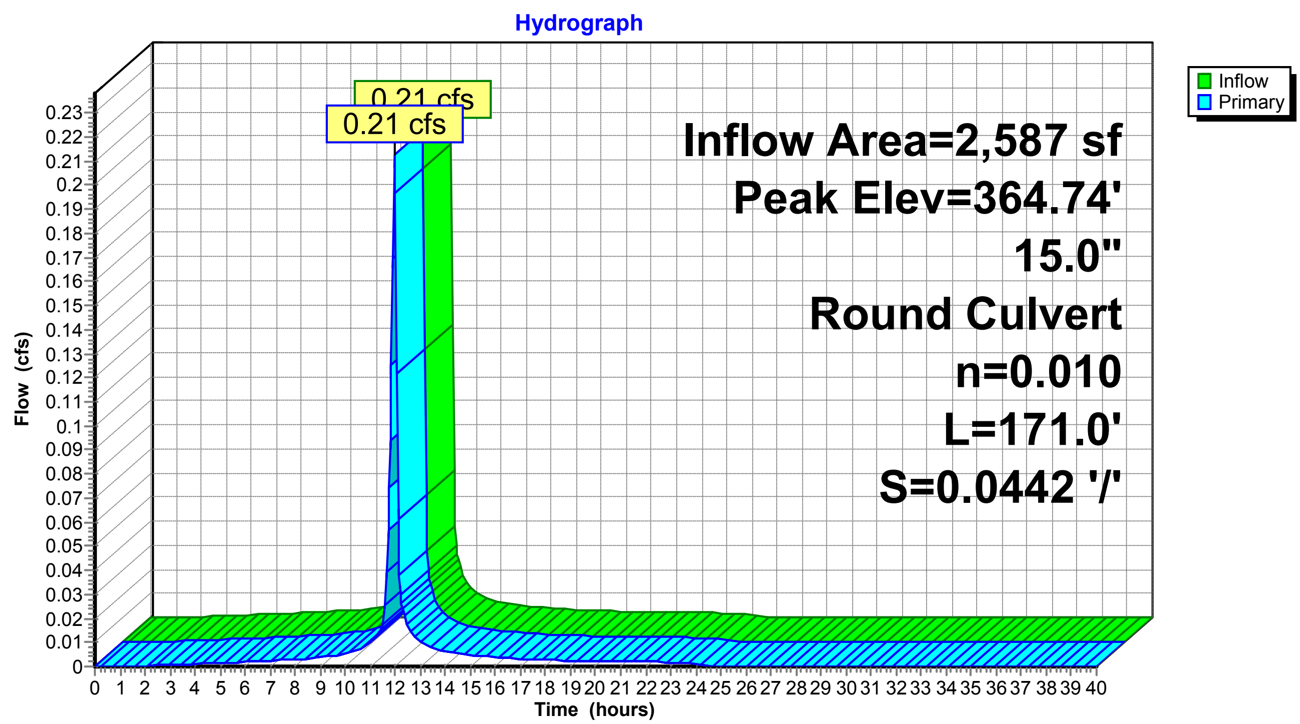
Inflow Area = 2,587 sf,100.00% Impervious, Inflow Depth = 2.39" for 1-YEAR event
Inflow = 0.21 cfs @ 11.96 hrs, Volume= 515 cf
Outflow = 0.21 cfs @ 11.96 hrs, Volume= 515 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.21 cfs @ 11.96 hrs, Volume= 515 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 364.74' @ 11.96 hrs
Flood Elev= 368.03'

Device	Routing	Invert	Outlet Devices
#1	Primary	364.50'	**15.0" Round Culvert** L= 171.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 364.50' / 356.95' S= 0.0442 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=0.21 cfs @ 11.96 hrs HW=364.73' (Free Discharge)
1=Culvert (Inlet Controls 0.21 cfs @ 1.30 fps)

Pond CB2: CB2



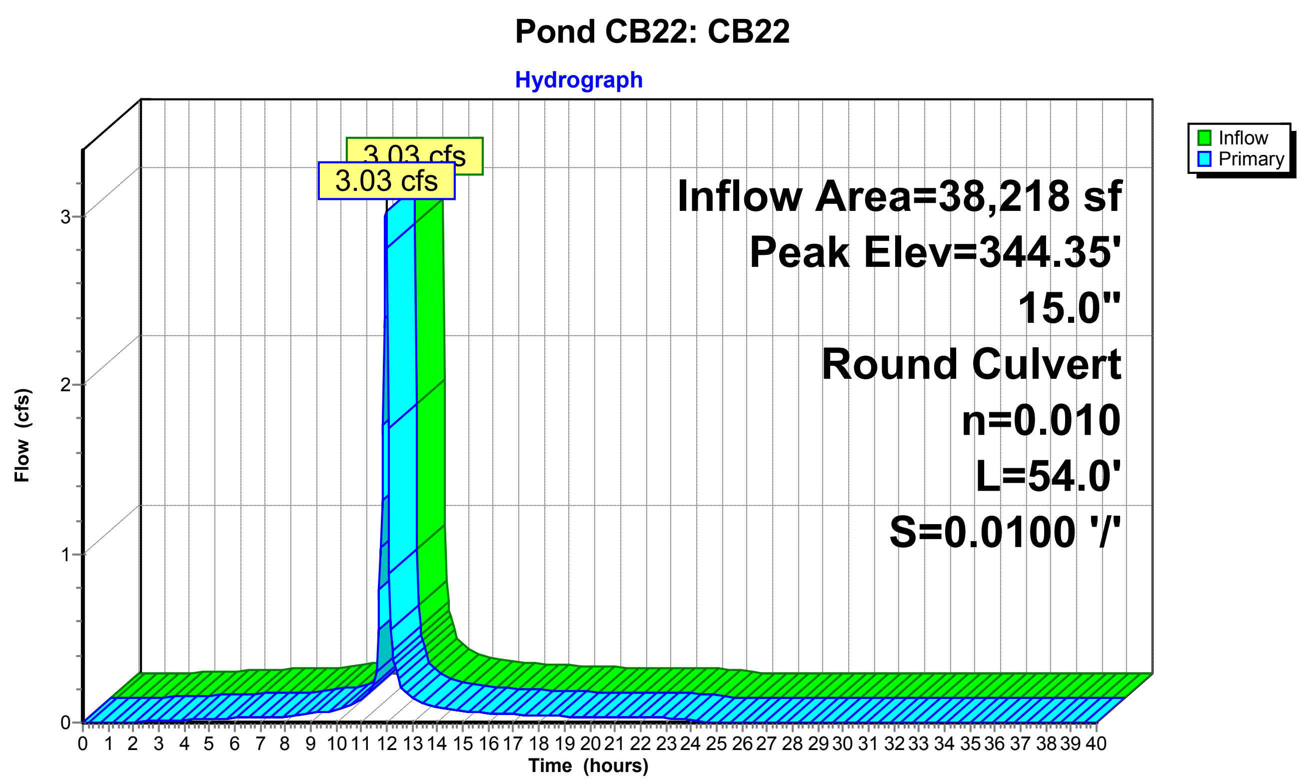
Summary for Pond CB22: CB22

Inflow Area =	38,218 sf, 94.94% Impervious,	Inflow Depth = 2.28" for 1-YEAR event		
Inflow =	3.03 cfs @	11.96 hrs, Volume=	7,276 cf	
Outflow =	3.03 cfs @	11.96 hrs, Volume=	7,276 cf,	Atten= 0%, Lag= 0.0 min
Primary =	3.03 cfs @	11.96 hrs, Volume=	7,276 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 344.35' @ 11.96 hrs
Flood Elev= 346.73'

Device	Routing	Invert	Outlet Devices
#1	Primary	343.30'	**15.0" Round Culvert** L= 54.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 343.30' / 342.76' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=2.96 cfs @ 11.96 hrs HW=344.33' (Free Discharge)
↑**1=Culvert** (Inlet Controls 2.96 cfs @ 2.73 fps)



Summary for Pond CB25: CB25

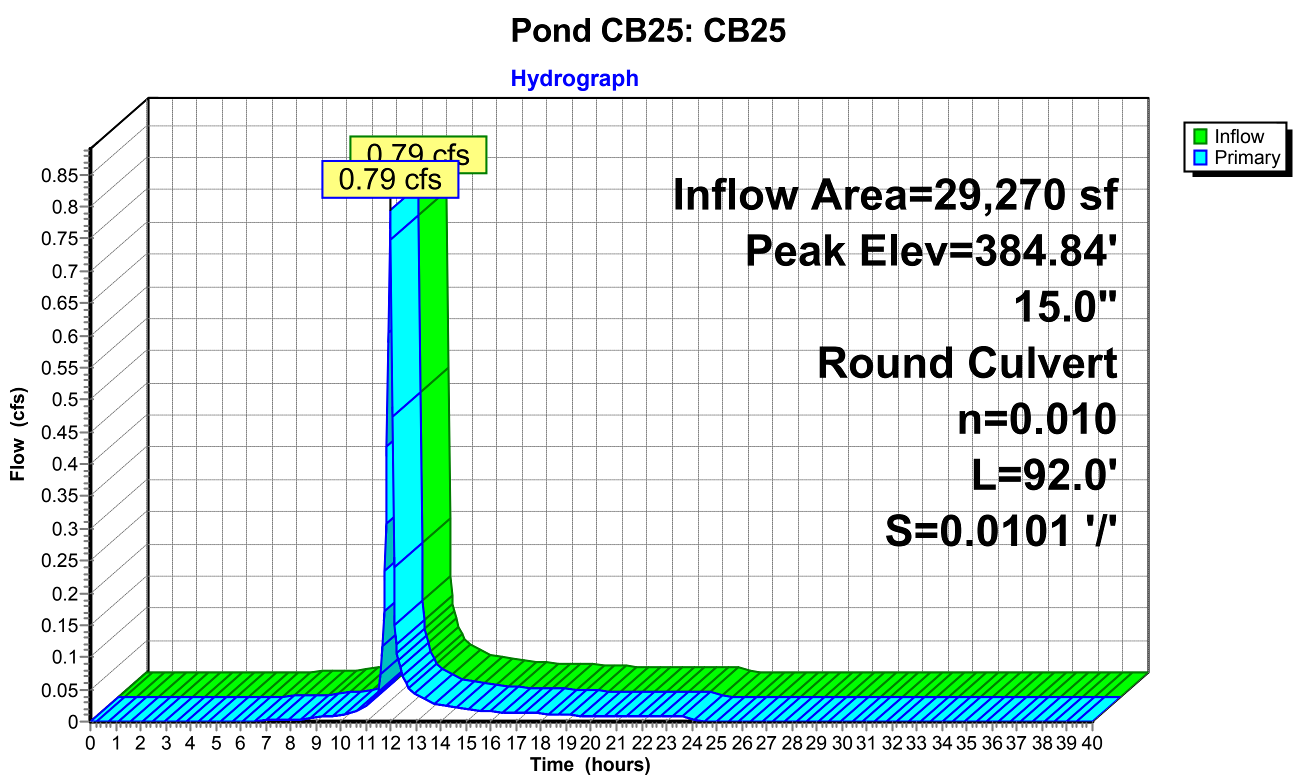
[79] Warning: Submerged Pond CB26 Primary device # 1 OUTLET by 0.47'
[79] Warning: Submerged Pond CB32 Primary device # 1 OUTLET by 0.47'

Inflow Area = 29,270 sf, 71.52% Impervious, Inflow Depth = 0.70" for 1-YEAR event
Inflow = 0.79 cfs @ 11.97 hrs, Volume= 1,718 cf
Outflow = 0.79 cfs @ 11.97 hrs, Volume= 1,718 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.79 cfs @ 11.97 hrs, Volume= 1,718 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 384.84' @ 11.97 hrs
Flood Elev= 387.66'

Device	Routing	Invert	Outlet Devices
#1	Primary	384.36'	**15.0" Round Culvert** L= 92.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 384.36' / 383.43' S= 0.0101 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=0.77 cfs @ 11.97 hrs HW=384.83' (Free Discharge)
↑**1=Culvert** (Inlet Controls 0.77 cfs @ 1.84 fps)



Summary for Pond CB26: PP-6

Inflow Area =	3,589 sf,	64.47% Impervious,	Inflow Depth = 1.56"	for 1-YEAR event
Inflow =	0.22 cfs @	11.97 hrs, Volume=	467 cf	
Outflow =	0.20 cfs @	12.00 hrs, Volume=	467 cf,	Atten= 8%, Lag= 2.0 min
Discarded =	0.20 cfs @	12.00 hrs, Volume=	467 cf	
Primary =	0.00 cfs @	0.00 hrs, Volume=	0 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 384.03' @ 12.00 hrs Surf.Area= 2,200 sf Storage= 30 cf
Flood Elev= 388.26' Surf.Area= 2,200 sf Storage= 3,080 cf

Plug-Flow detention time= 2.5 min calculated for 466 cf (100% of inflow)
Center-of-Mass det. time= 2.5 min (818.7 - 816.2)

Volume	Invert	Avail.Storage	Storage Description
#1	384.00'	3,080 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 7,700 cf Overall x 40.0% Voids

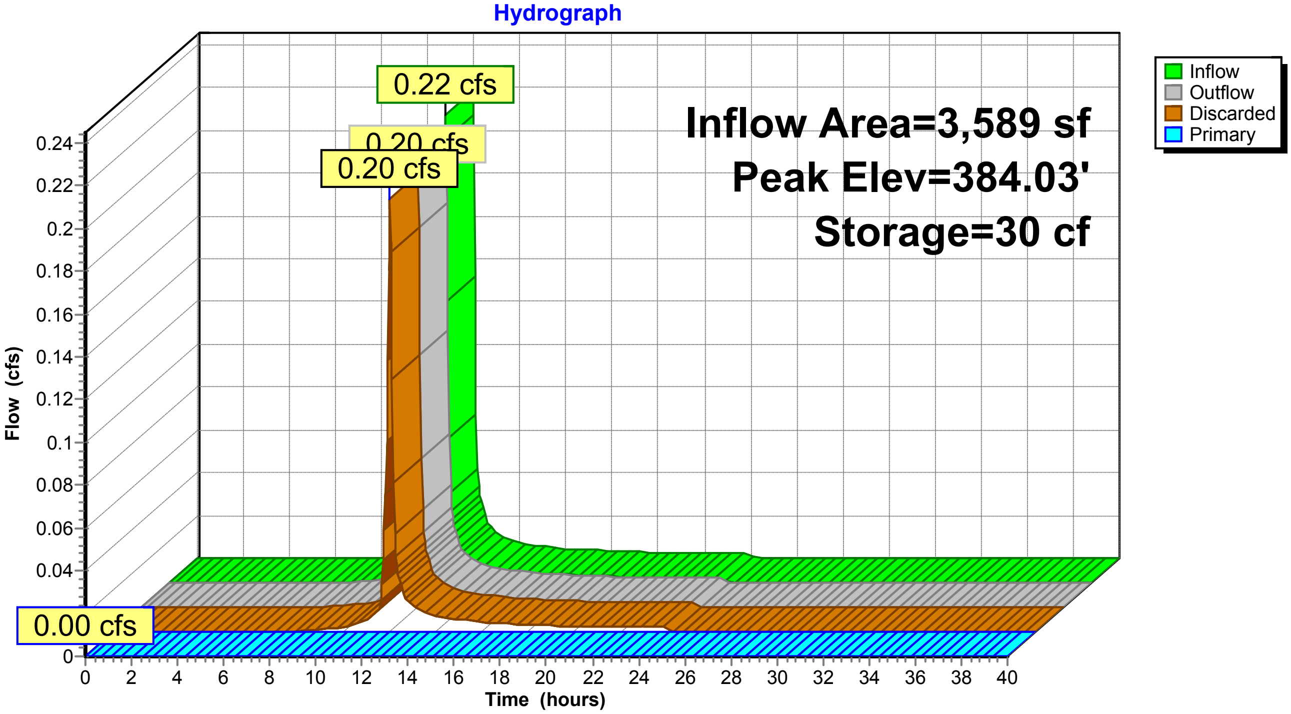
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.00	2,200	0	0
387.50	2,200	7,700	7,700

Device	Routing	Invert	Outlet Devices
#1	Primary	384.96'	**15.0" Round Culvert** L= 41.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 384.96' / 384.36' S= 0.0146 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#2	Discarded	384.00'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.25 cfs @ 12.00 hrs HW=384.03' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 0.25 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=384.00' (Free Discharge)
└─**1=Culvert** (Controls 0.00 cfs)

Pond CB26: PP-6



Summary for Pond CB27: CB27

[88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 10,524 sf, 75.84% Impervious, Inflow Depth = 1.80" for 1-YEAR event
Inflow = 0.73 cfs @ 11.97 hrs, Volume= 1,583 cf
Outflow = 0.73 cfs @ 11.98 hrs, Volume= 1,583 cf, Atten= 0%, Lag= 0.5 min
Discarded = 0.13 cfs @ 11.98 hrs, Volume= 282 cf
Primary = 0.60 cfs @ 11.98 hrs, Volume= 1,300 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 388.01' @ 11.98 hrs Surf.Area= 2,800 sf Storage= 16 cf
Flood Elev= 390.54' Surf.Area= 2,800 sf Storage= 2,845 cf

Plug-Flow detention time= 0.4 min calculated for 1,581 cf (100% of inflow)
Center-of-Mass det. time= 0.4 min (802.4 - 802.1)

Volume	Invert	Avail.Storage	Storage Description
#1	388.00'	3,920 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 9,800 cf Overall x 40.0% Voids

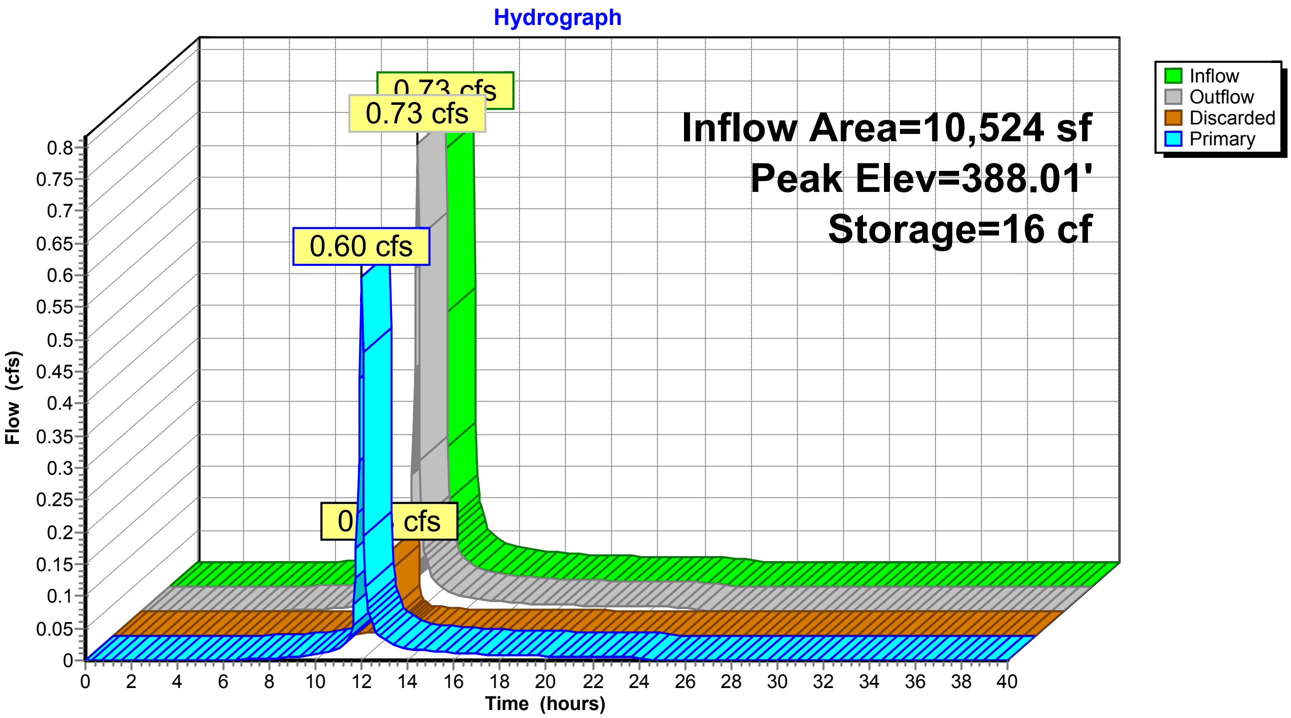
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
388.00	2,800	0	0
391.50	2,800	9,800	9,800

Device	Routing	Invert	Outlet Devices
#1	Primary	387.36'	**15.0" Round Culvert** L= 22.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 387.36' / 387.14' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#2	Discarded	388.00'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.32 cfs @ 11.98 hrs HW=388.01' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 0.32 cfs)

Primary OutFlow Max=1.41 cfs @ 11.98 hrs HW=388.01' (Free Discharge)
└─**1=Culvert** (Inlet Controls 1.41 cfs @ 2.17 fps)

Pond CB27: CB27



Summary for Pond CB28: CB28

Inflow Area = 3,169 sf, 64.25% Impervious, Inflow Depth = 1.56" for 1-YEAR event
Inflow = 0.19 cfs @ 11.97 hrs, Volume= 412 cf
Outflow = 0.18 cfs @ 12.00 hrs, Volume= 412 cf, Atten= 6%, Lag= 1.8 min
Discarded = 0.18 cfs @ 12.00 hrs, Volume= 402 cf
Primary = 0.00 cfs @ 12.00 hrs, Volume= 10 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 388.03' @ 12.00 hrs Surf.Area= 2,000 sf Storage= 23 cf
Flood Elev= 391.82' Surf.Area= 2,000 sf Storage= 2,800 cf

Plug-Flow detention time= 2.1 min calculated for 411 cf (100% of inflow)
Center-of-Mass det. time= 2.1 min (818.4 - 816.2)

Volume	Invert	Avail.Storage	Storage Description
#1	388.00'	2,800 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 7,000 cf Overall x 40.0% Voids

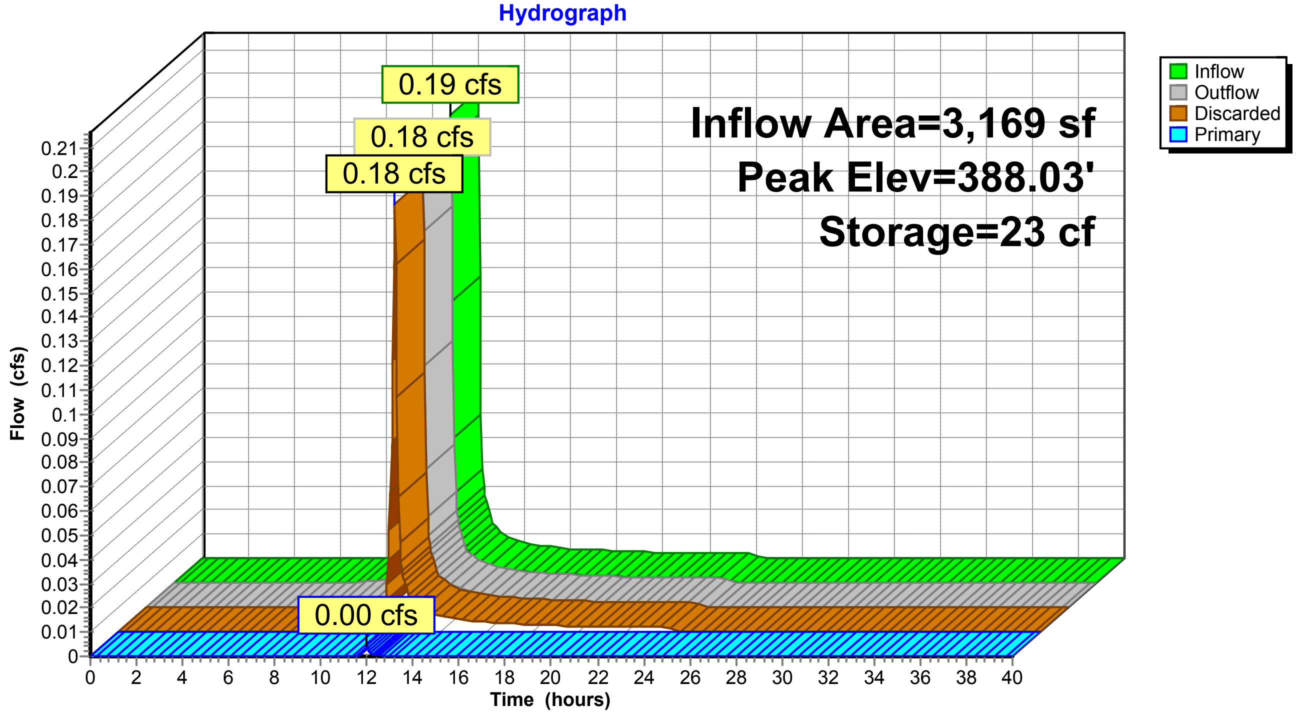
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
388.00	2,000	0	0
391.50	2,000	7,000	7,000

Device	Routing	Invert	Outlet Devices
#1	Primary	388.00'	**15.0" Round Culvert** L= 39.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 388.00' / 387.61' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#2	Discarded	388.00'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.23 cfs @ 12.00 hrs HW=388.03' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=0.00 cfs @ 12.00 hrs HW=388.03' (Free Discharge)
└─**1=Culvert** (Inlet Controls 0.00 cfs @ 0.46 fps)

Pond CB28: CB28



Summary for Pond CB29: CB29

[62] Hint: Exceeded Reach FLARED END #2 OUTLET depth by 0.03' @ 9.75 hrs

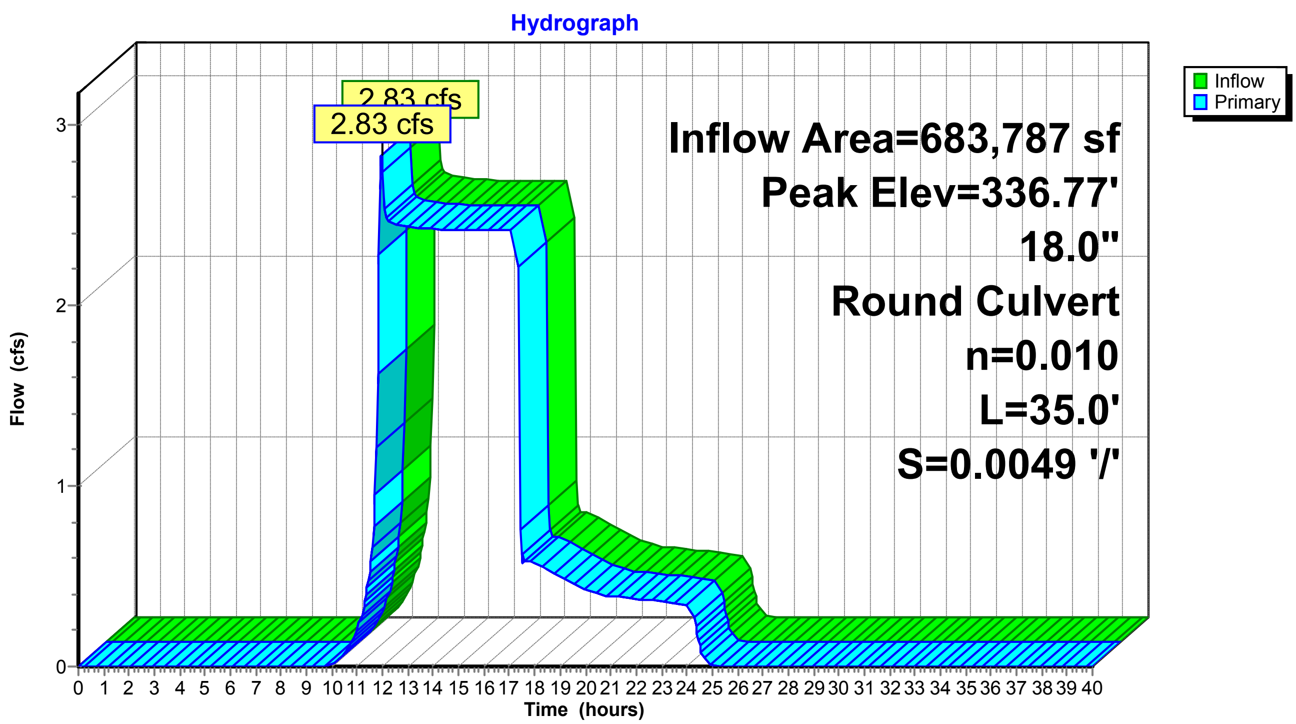
Inflow Area =	683,787 sf,	19.88% Impervious,	Inflow Depth = 1.08"	for 1-YEAR event	
Inflow =	2.83 cfs @	11.97 hrs, Volume=	61,799 cf		
Outflow =	2.83 cfs @	11.97 hrs, Volume=	61,799 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	2.83 cfs @	11.97 hrs, Volume=	61,799 cf		

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 336.77' @ 11.97 hrs
Flood Elev= 338.57'

Device	Routing	Invert	Outlet Devices
#1	Primary	335.81'	**18.0" Round CULVERT** L= 35.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 335.81' / 335.64' S= 0.0049 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.82 cfs @ 11.97 hrs HW=336.76' (Free Discharge)
↑**1=CULVERT** (Barrel Controls 2.82 cfs @ 3.39 fps)

Pond CB29: CB29



Summary for Pond CB3: CB3

[79] Warning: Submerged Pond CB2 Primary device # 1 OUTLET by 0.32'

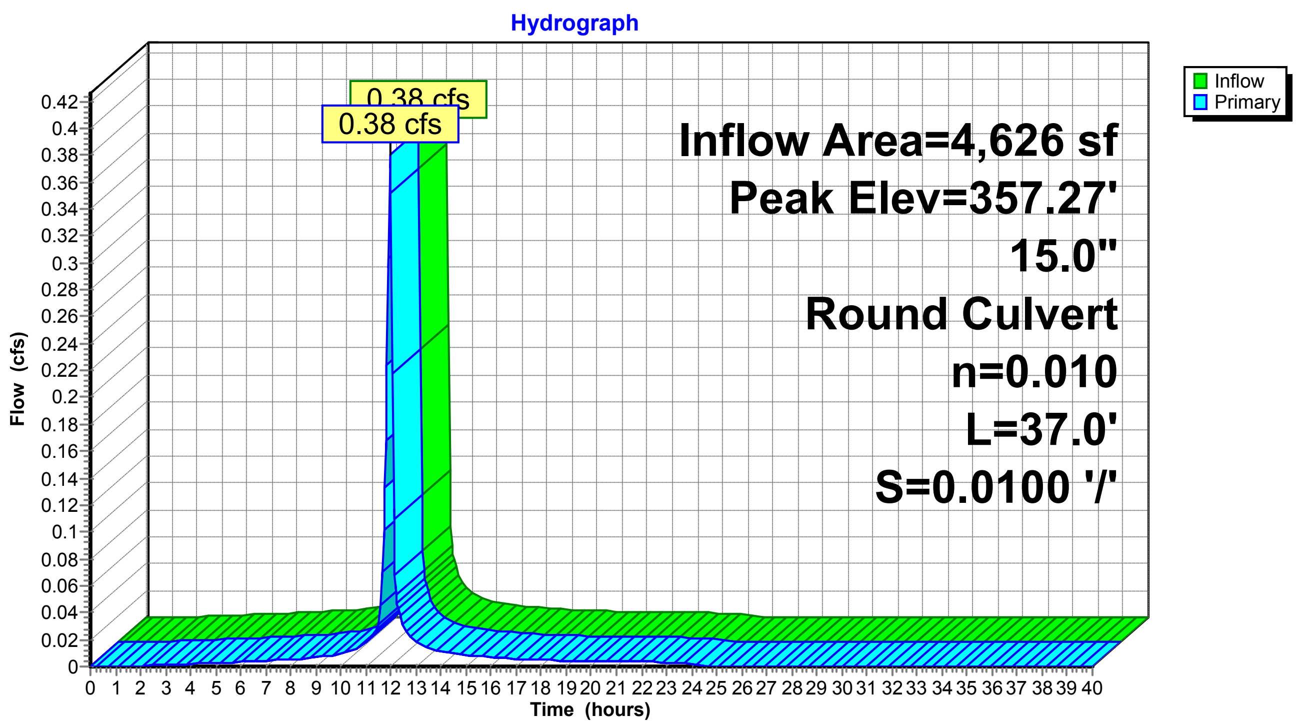
Inflow Area =	4,626 sf,100.00% Impervious,	Inflow Depth = 2.39"	for 1-YEAR event
Inflow =	0.38 cfs @ 11.96 hrs, Volume=	921 cf	
Outflow =	0.38 cfs @ 11.96 hrs, Volume=	921 cf, Atten= 0%, Lag= 0.0 min	
Primary =	0.38 cfs @ 11.96 hrs, Volume=	921 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 357.27' @ 11.96 hrs
Flood Elev= 360.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	356.95'	**15.0" Round Culvert** L= 37.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 356.95' / 356.58' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=0.37 cfs @ 11.96 hrs HW=357.27' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.37 cfs @ 1.51 fps)

Pond CB3: CB3



Summary for Pond CB30: CB30

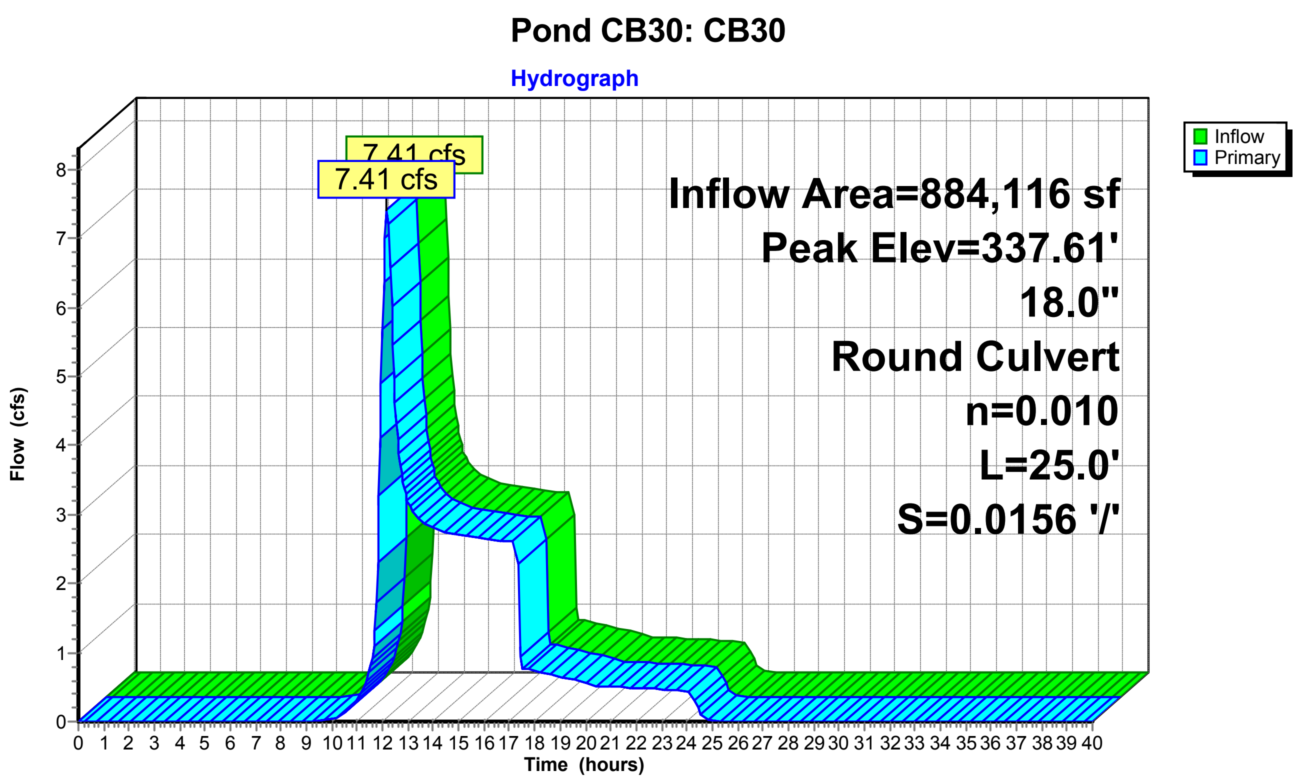
[81] Warning: Exceeded Pond CB29 by 0.90' @ 12.20 hrs
[79] Warning: Submerged Pond DMH#10 Primary device # 1 OUTLET by 1.99'

Inflow Area = 884,116 sf, 21.35% Impervious, Inflow Depth = 1.10" for 1-YEAR event
Inflow = 7.41 cfs @ 12.18 hrs, Volume= 81,122 cf
Outflow = 7.41 cfs @ 12.18 hrs, Volume= 81,122 cf, Atten= 0%, Lag= 0.0 min
Primary = 7.41 cfs @ 12.18 hrs, Volume= 81,122 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 337.61' @ 12.18 hrs
Flood Elev= 338.39'

Device	Routing	Invert	Outlet Devices
#1	Primary	335.64'	**18.0" Round Culvert** L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 335.64' / 335.25' S= 0.0156 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=7.37 cfs @ 12.18 hrs HW=337.59' (Free Discharge)
└─**1=Culvert** (Inlet Controls 7.37 cfs @ 4.17 fps)



Summary for Pond CB31: CB31

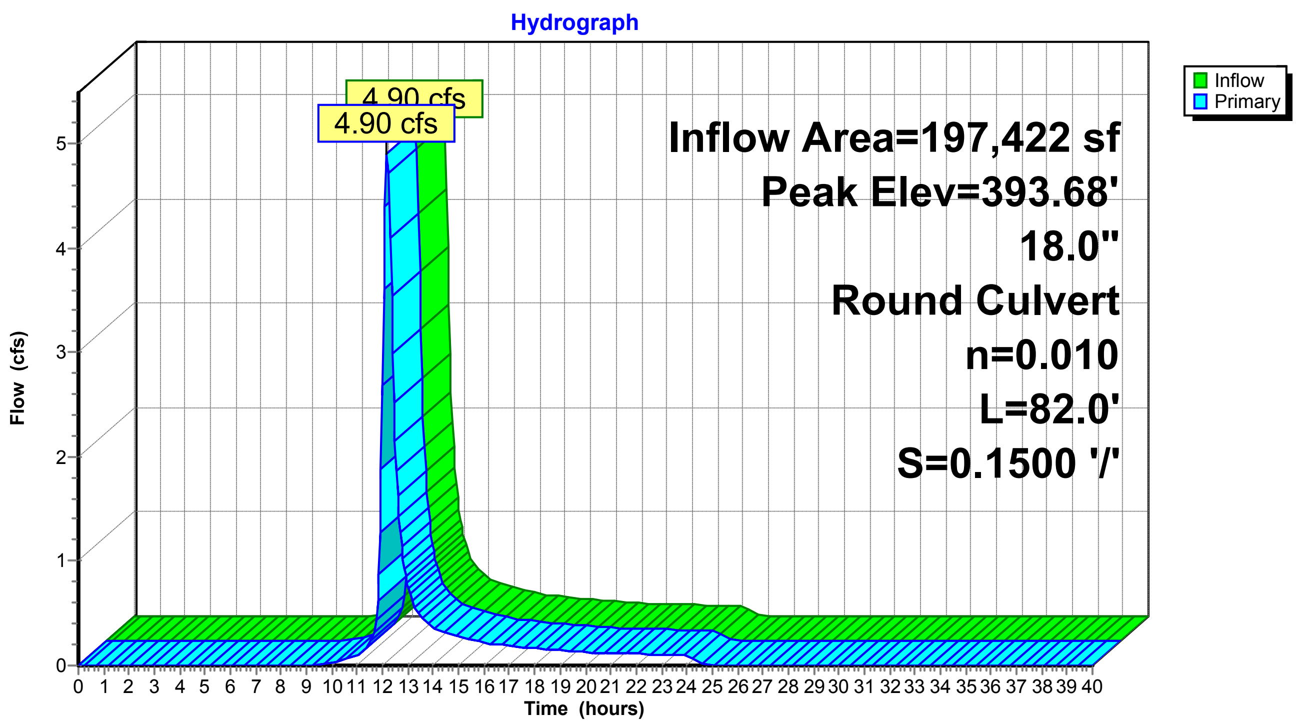
Inflow Area = 197,422 sf, 25.73% Impervious, Inflow Depth = 1.15" for 1-YEAR event
Inflow = 4.90 cfs @ 12.18 hrs, Volume= 18,906 cf
Outflow = 4.90 cfs @ 12.18 hrs, Volume= 18,906 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.90 cfs @ 12.18 hrs, Volume= 18,906 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 393.68' @ 12.18 hrs
Flood Elev= 406.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	392.40'	**18.0" Round Culvert** L= 82.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 392.40' / 380.10' S= 0.1500 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=4.87 cfs @ 12.18 hrs HW=393.68' (Free Discharge)
↑**1=Culvert** (Inlet Controls 4.87 cfs @ 3.04 fps)

Pond CB31: CB31



Summary for Pond CB32: PP-7

Inflow Area = 13,693 sf, 73.15% Impervious, Inflow Depth = 1.15" for 1-YEAR event
Inflow = 0.60 cfs @ 11.98 hrs, Volume= 1,310 cf
Outflow = 0.14 cfs @ 11.75 hrs, Volume= 1,310 cf, Atten= 77%, Lag= 0.0 min
Discarded = 0.14 cfs @ 11.75 hrs, Volume= 1,310 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 384.70' @ 12.14 hrs Surf.Area= 1,200 sf Storage= 335 cf

Plug-Flow detention time= 13.0 min calculated for 1,309 cf (100% of inflow)
Center-of-Mass det. time= 13.0 min (815.5 - 802.6)

Volume	Invert	Avail.Storage	Storage Description
#1	384.00'	1,680 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 4,200 cf Overall x 40.0% Voids

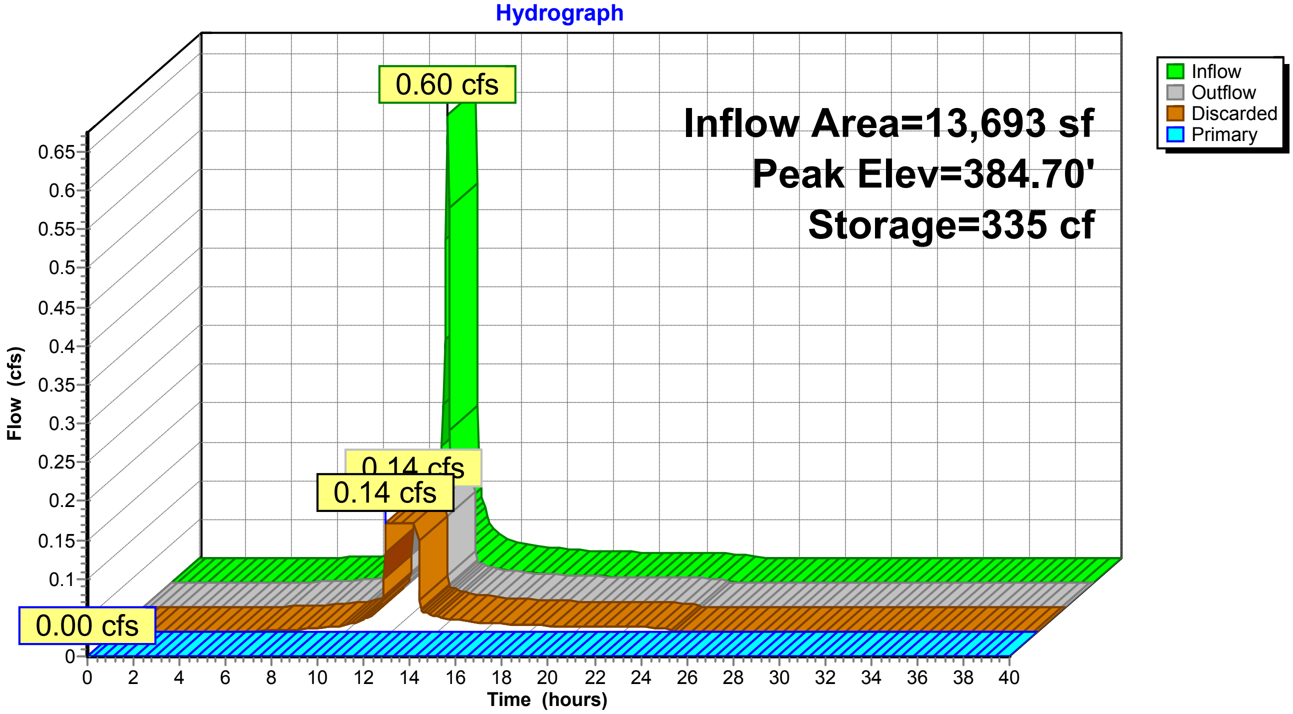
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.00	1,200	0	0
387.50	1,200	4,200	4,200

Device	Routing	Invert	Outlet Devices
#1	Primary	385.45'	**15.0" Round Culvert** L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 385.45' / 384.36' S= 0.0218 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#2	Discarded	384.00'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.14 cfs @ 11.75 hrs HW=384.04' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.14 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=384.00' (Free Discharge)
↑—**1=Culvert** (Controls 0.00 cfs)

Pond CB32: PP-7



Summary for Pond CB4: CB4

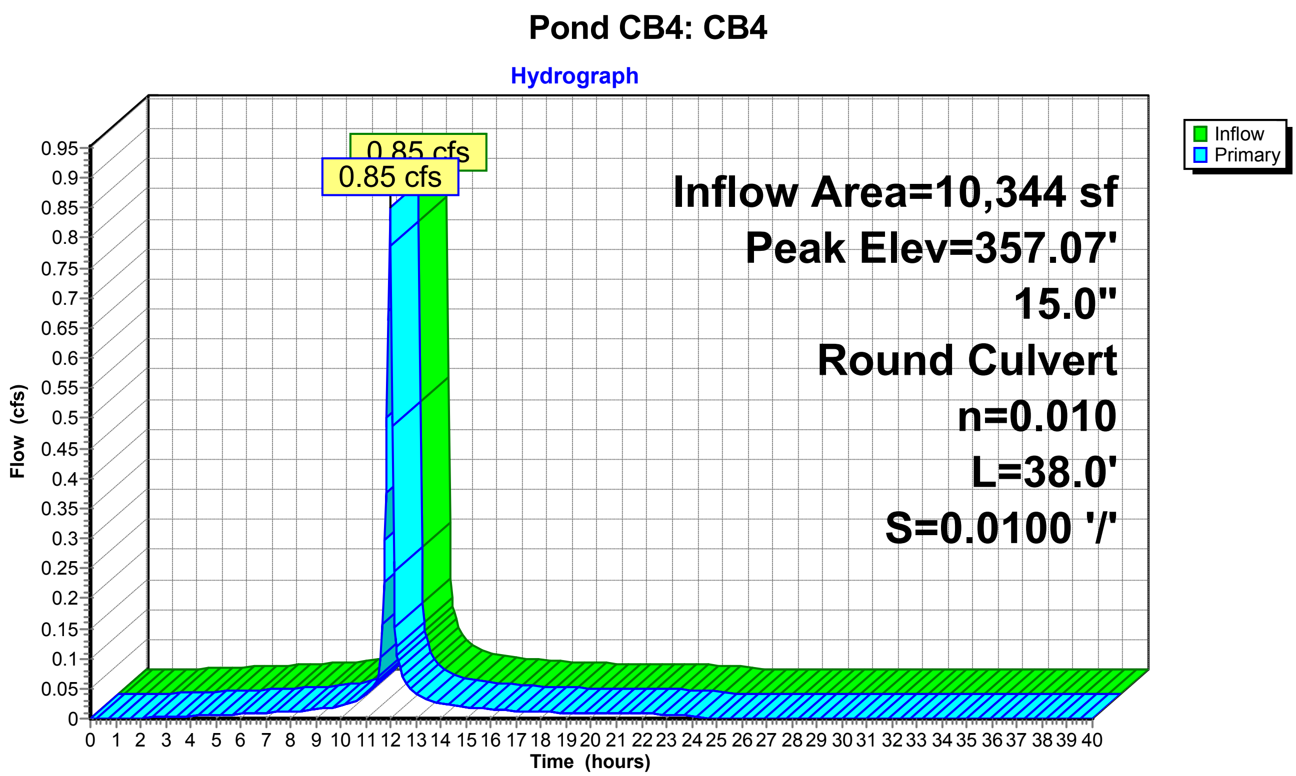
[79] Warning: Submerged Pond CB3 Primary device # 1 INLET by 0.12'

Inflow Area =	10,344 sf,100.00% Impervious,	Inflow Depth = 2.39"	for 1-YEAR event
Inflow =	0.85 cfs @ 11.96 hrs, Volume=	2,060 cf	
Outflow =	0.85 cfs @ 11.96 hrs, Volume=	2,060 cf, Atten= 0%, Lag= 0.0 min	
Primary =	0.85 cfs @ 11.96 hrs, Volume=	2,060 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 357.07' @ 11.96 hrs
Flood Elev= 360.59'

Device	Routing	Invert	Outlet Devices
#1	Primary	356.58'	**15.0" Round Culvert** L= 38.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 356.58' / 356.20' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=0.83 cfs @ 11.96 hrs HW=357.07' (Free Discharge)
└─**1=Culvert** (Inlet Controls 0.83 cfs @ 1.88 fps)



Summary for Pond CB5: CB5

[79] Warning: Submerged Pond CB4 Primary device # 1 INLET by 0.15'

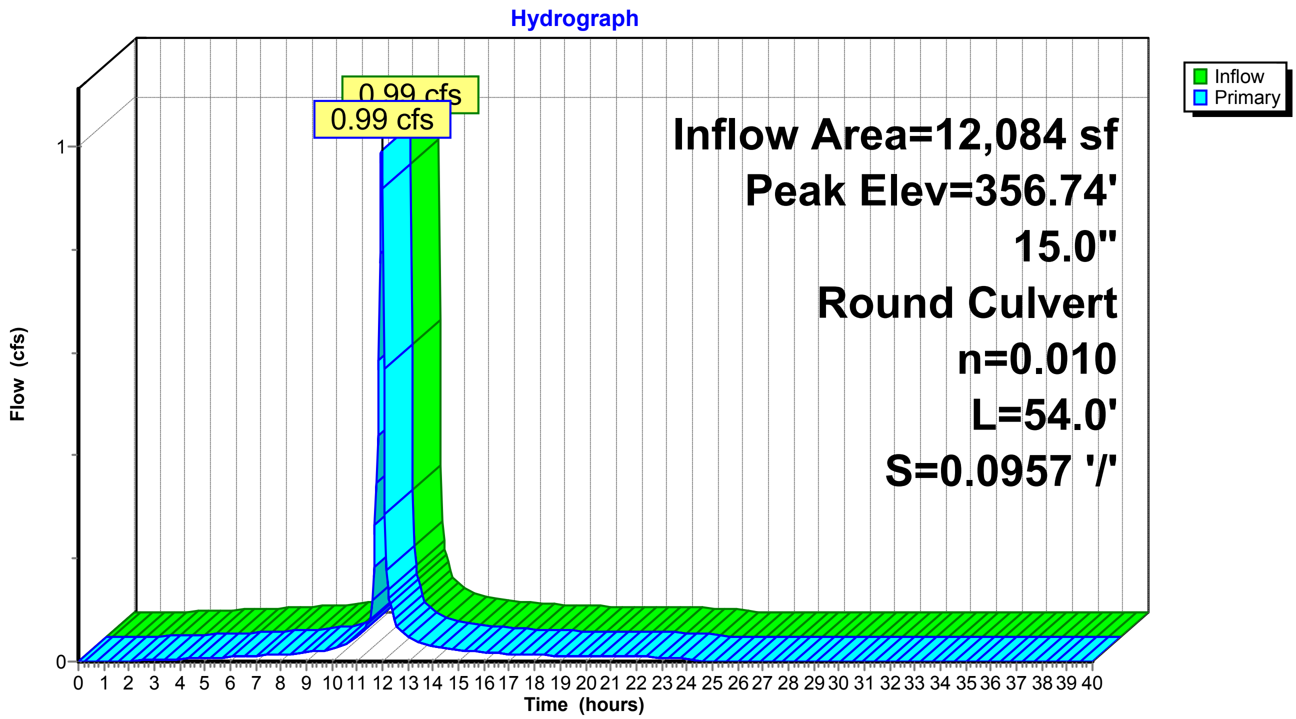
Inflow Area = 12,084 sf,100.00% Impervious, Inflow Depth = 2.39" for 1-YEAR event
Inflow = 0.99 cfs @ 11.96 hrs, Volume= 2,407 cf
Outflow = 0.99 cfs @ 11.96 hrs, Volume= 2,407 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.99 cfs @ 11.96 hrs, Volume= 2,407 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 356.74' @ 11.96 hrs
Flood Elev= 360.78'

Device	Routing	Invert	Outlet Devices
#1	Primary	356.20'	**15.0" Round Culvert** L= 54.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 356.20' / 351.03' S= 0.0957 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=0.97 cfs @ 11.96 hrs HW=356.73' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 0.97 cfs @ 1.96 fps)

Pond CB5: CB5



Summary for Pond CB6: CB6

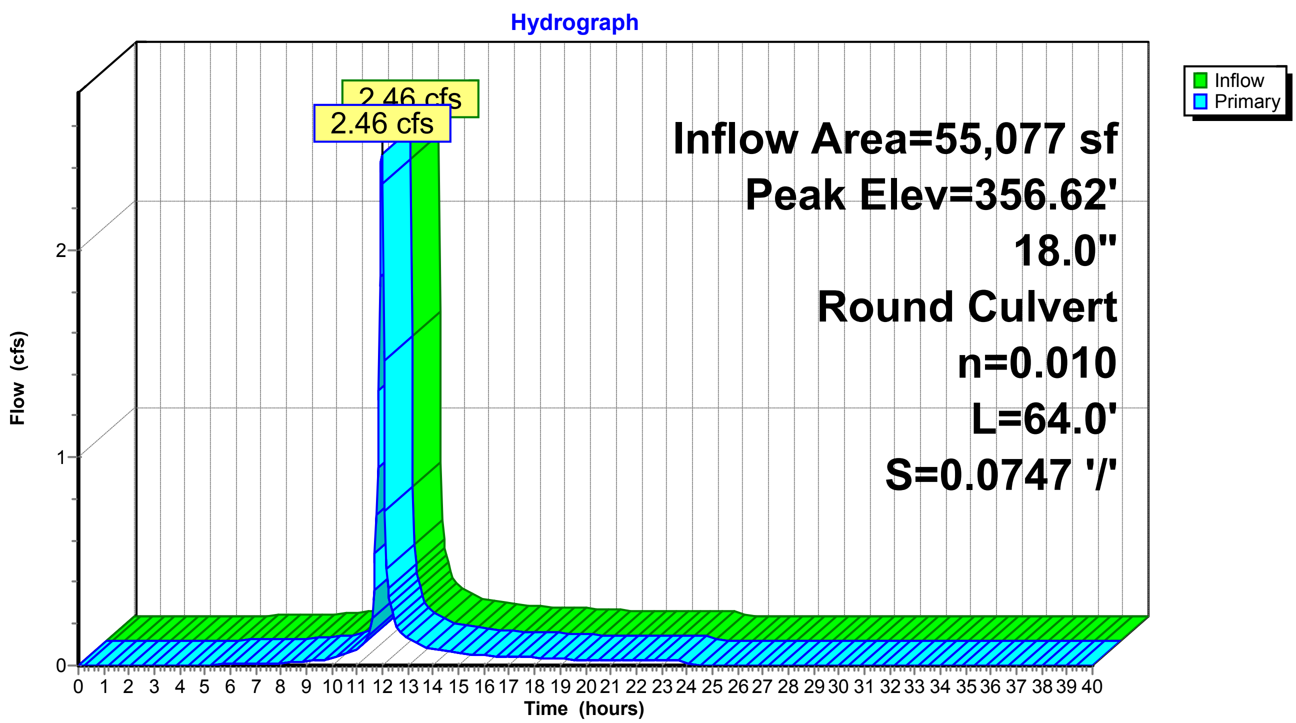
Inflow Area =	55,077 sf,	70.64% Impervious,	Inflow Depth = 1.18"	for 1-YEAR event
Inflow =	2.46 cfs @	11.97 hrs, Volume=	5,424 cf	
Outflow =	2.46 cfs @	11.97 hrs, Volume=	5,424 cf,	Atten= 0%, Lag= 0.0 min
Primary =	2.46 cfs @	11.97 hrs, Volume=	5,424 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 356.62' @ 11.97 hrs
Flood Elev= 368.43'

Device	Routing	Invert	Outlet Devices
#1	Primary	355.79'	**18.0" Round Culvert** L= 64.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 355.79' / 351.01' S= 0.0747 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=2.38 cfs @ 11.97 hrs HW=356.60' (Free Discharge)
└**1=Culvert** (Inlet Controls 2.38 cfs @ 2.43 fps)

Pond CB6: CB6



Summary for Pond CB7: CB7

[79] Warning: Submerged Pond CB8 Primary device # 1 OUTLET by 0.54'

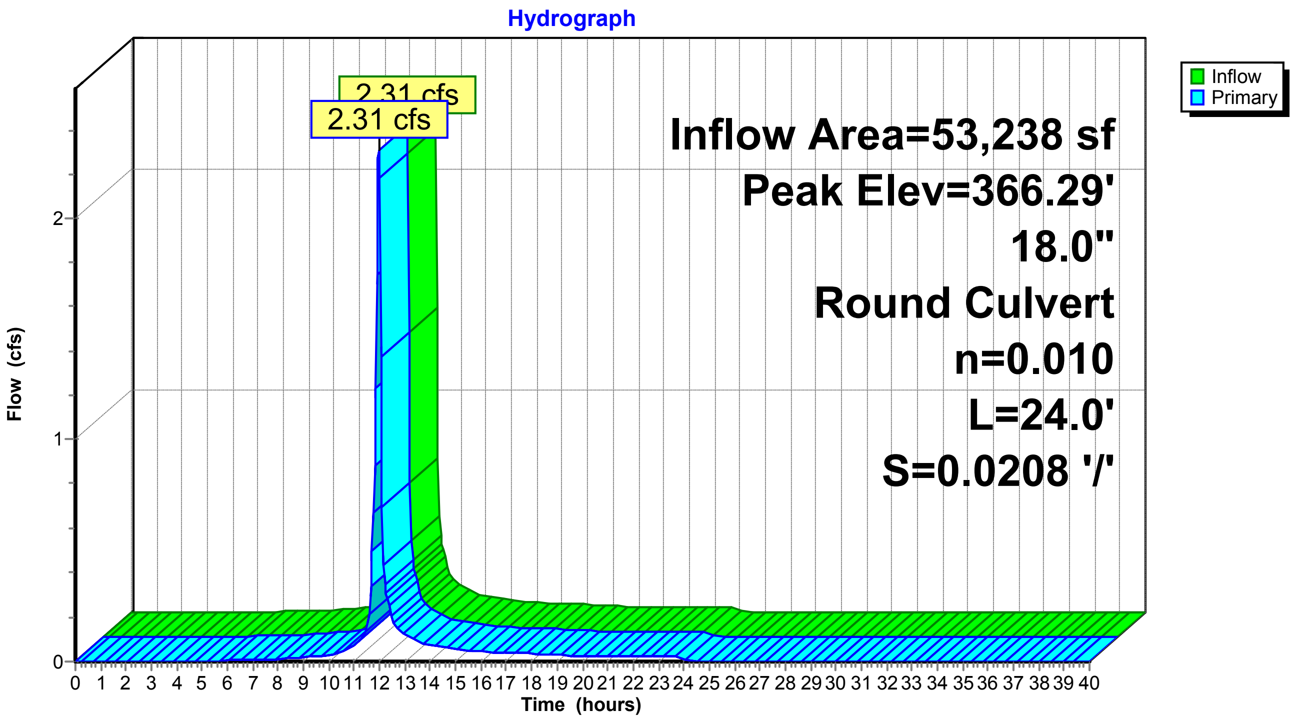
Inflow Area =	53,238 sf, 69.63% Impervious,	Inflow Depth = 1.14"	for 1-YEAR event
Inflow =	2.31 cfs @ 11.97 hrs, Volume=	5,058 cf	
Outflow =	2.31 cfs @ 11.97 hrs, Volume=	5,058 cf, Atten= 0%, Lag= 0.0 min	
Primary =	2.31 cfs @ 11.97 hrs, Volume=	5,058 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 366.29' @ 11.97 hrs
Flood Elev= 396.05'

Device	Routing	Invert	Outlet Devices
#1	Primary	365.50'	**18.0" Round Culvert** L= 24.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 365.50' / 365.00' S= 0.0208 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=2.20 cfs @ 11.97 hrs HW=366.28' (Free Discharge)
└─**1=Culvert** (Inlet Controls 2.20 cfs @ 2.37 fps)

Pond CB7: CB7



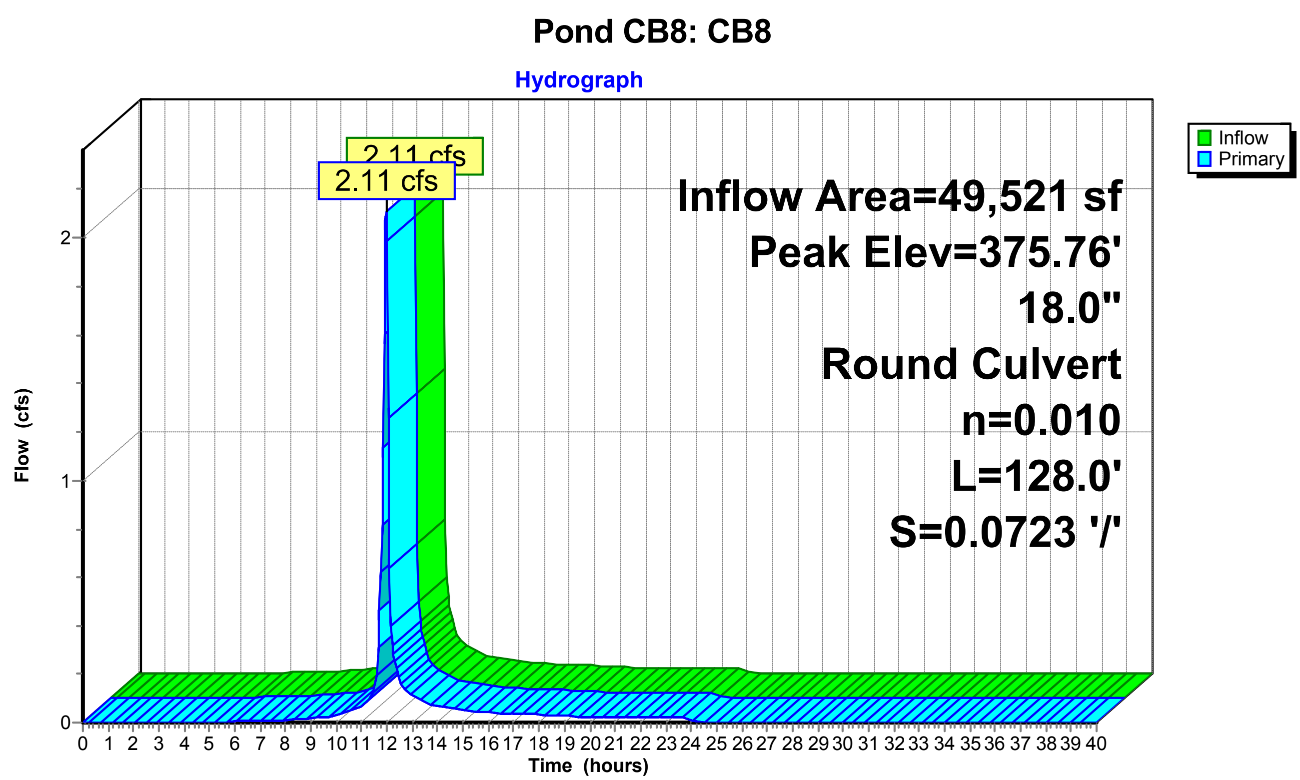
Summary for Pond CB8: CB8

Inflow Area =	49,521 sf,	70.94% Impervious,	Inflow Depth = 1.12"	for 1-YEAR event
Inflow =	2.11 cfs @	11.97 hrs, Volume=	4,642 cf	
Outflow =	2.11 cfs @	11.97 hrs, Volume=	4,642 cf,	Atten= 0%, Lag= 0.0 min
Primary =	2.11 cfs @	11.97 hrs, Volume=	4,642 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 375.76' @ 11.97 hrs
Flood Elev= 383.24'

Device	Routing	Invert	Outlet Devices
#1	Primary	375.00'	**18.0" Round Culvert** L= 128.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 375.00' / 365.74' S= 0.0723 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=2.05 cfs @ 11.97 hrs HW=375.75' (Free Discharge)
↑**1=Culvert** (Inlet Controls 2.05 cfs @ 2.32 fps)



Summary for Pond CB9: CB9

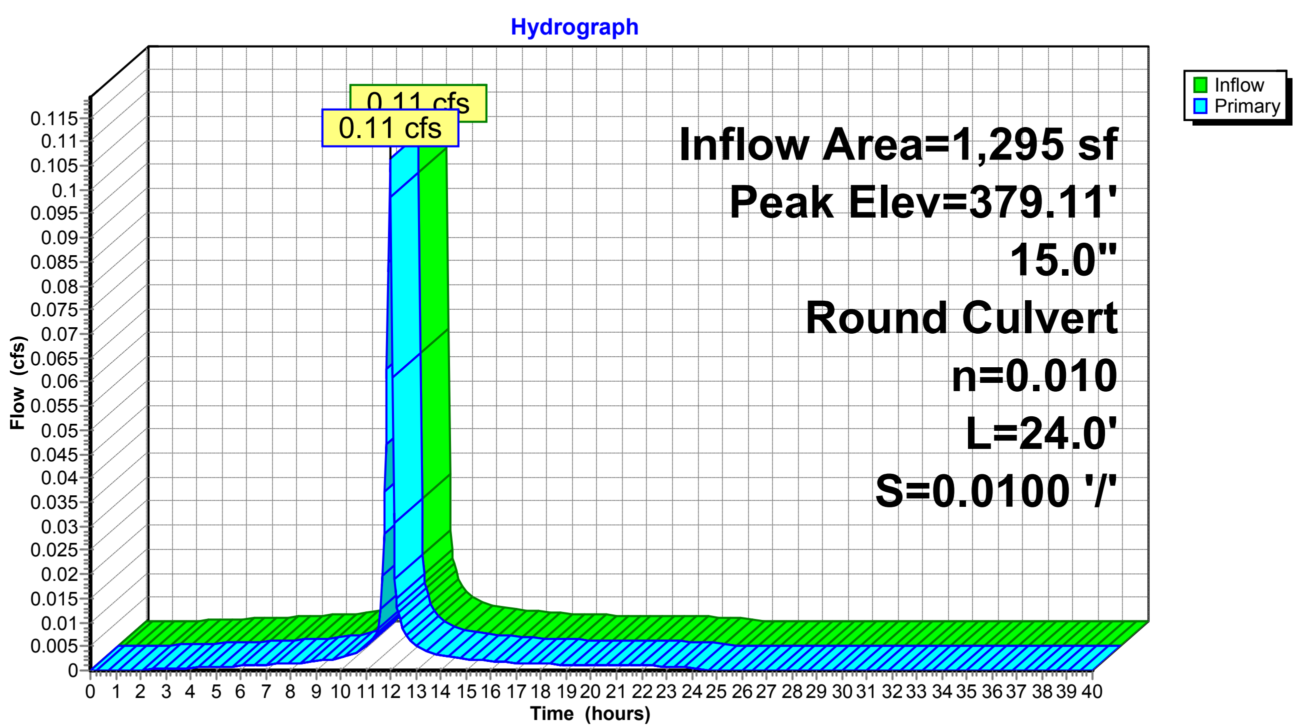
Inflow Area = 1,295 sf,100.00% Impervious, Inflow Depth = 2.39" for 1-YEAR event
Inflow = 0.11 cfs @ 11.96 hrs, Volume= 258 cf
Outflow = 0.11 cfs @ 11.96 hrs, Volume= 258 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.11 cfs @ 11.96 hrs, Volume= 258 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 379.11' @ 11.96 hrs
Flood Elev= 382.42'

Device	Routing	Invert	Outlet Devices
#1	Primary	378.94'	**15.0" Round Culvert** L= 24.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 378.94' / 378.70' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=0.10 cfs @ 11.96 hrs HW=379.10' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.10 cfs @ 1.09 fps)

Pond CB9: CB9



Summary for Pond DMH#10: DMH#10

[79] Warning: Submerged Pond DMH9 Primary device # 1 INLET by 0.44'

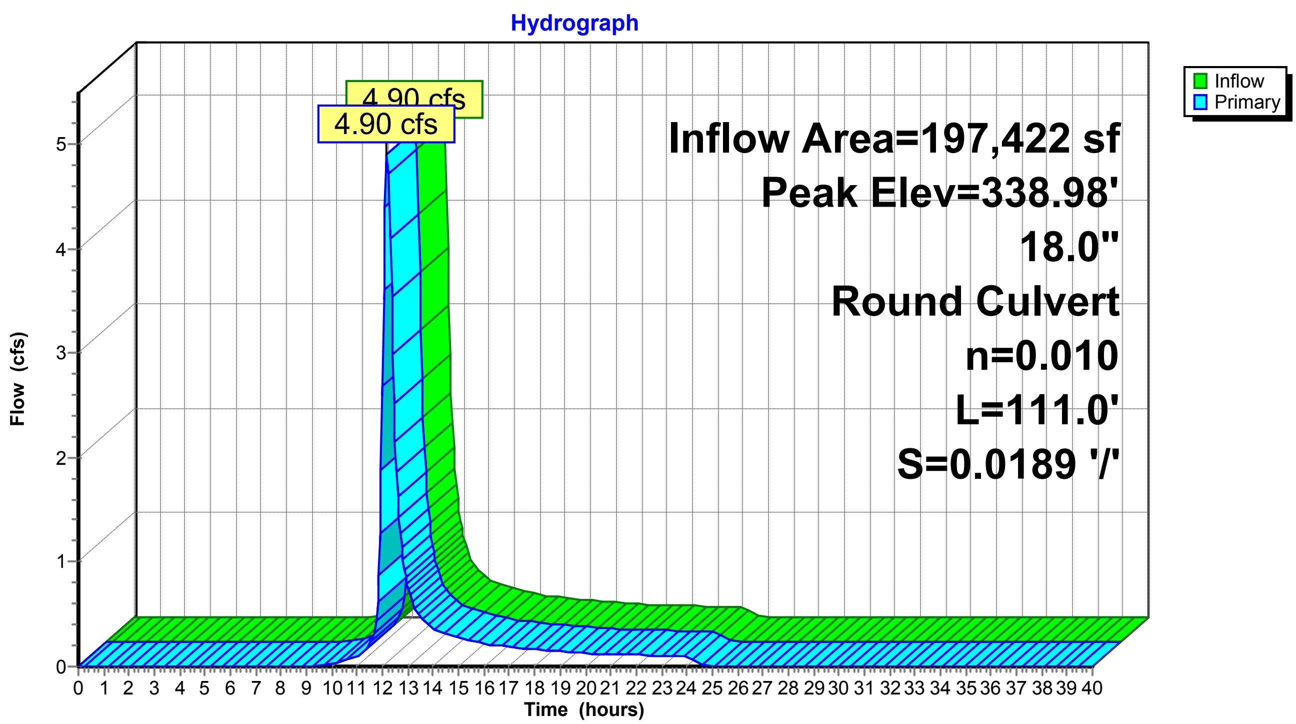
Inflow Area =	197,422 sf,	25.73% Impervious,	Inflow Depth = 1.15"	for 1-YEAR event	
Inflow =	4.90 cfs @	12.18 hrs, Volume=	18,906 cf		
Outflow =	4.90 cfs @	12.18 hrs, Volume=	18,906 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	4.90 cfs @	12.18 hrs, Volume=	18,906 cf		

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 338.98' @ 12.18 hrs
Flood Elev= 345.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	337.70'	**18.0" Round Culvert** L= 111.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 337.70' / 335.60' S= 0.0189 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=4.86 cfs @ 12.18 hrs HW=338.98' (Free Discharge)
└─**1=Culvert** (Inlet Controls 4.86 cfs @ 3.04 fps)

Pond DMH#10: DMH#10



Summary for Pond DMH3: DMH3

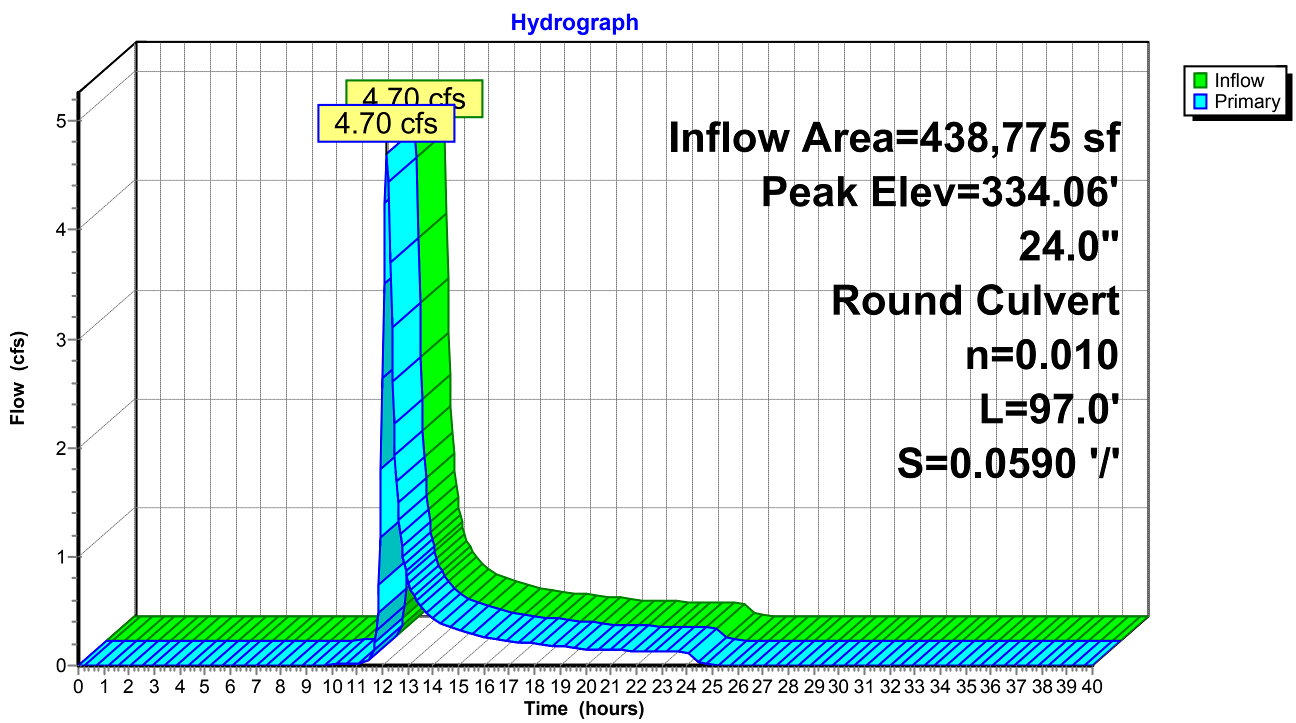
Inflow Area = 438,775 sf, 35.77% Impervious, Inflow Depth = 0.53" for 1-YEAR event
Inflow = 4.70 cfs @ 12.17 hrs, Volume= 19,240 cf
Outflow = 4.70 cfs @ 12.17 hrs, Volume= 19,240 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.70 cfs @ 12.17 hrs, Volume= 19,240 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 334.06' @ 12.17 hrs
Flood Elev= 356.89'

Device	Routing	Invert	Outlet Devices
#1	Primary	333.00'	**24.0" Round Culvert** L= 97.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 333.00' / 327.28' S= 0.0590 '/' Cc= 0.900 n= 0.010, Flow Area= 3.14 sf

Primary OutFlow Max=4.62 cfs @ 12.17 hrs HW=334.05' (Free Discharge)
└─**1=Culvert** (Inlet Controls 4.62 cfs @ 2.76 fps)

Pond DMH3: DMH3



Summary for Pond DMH5: DMH5

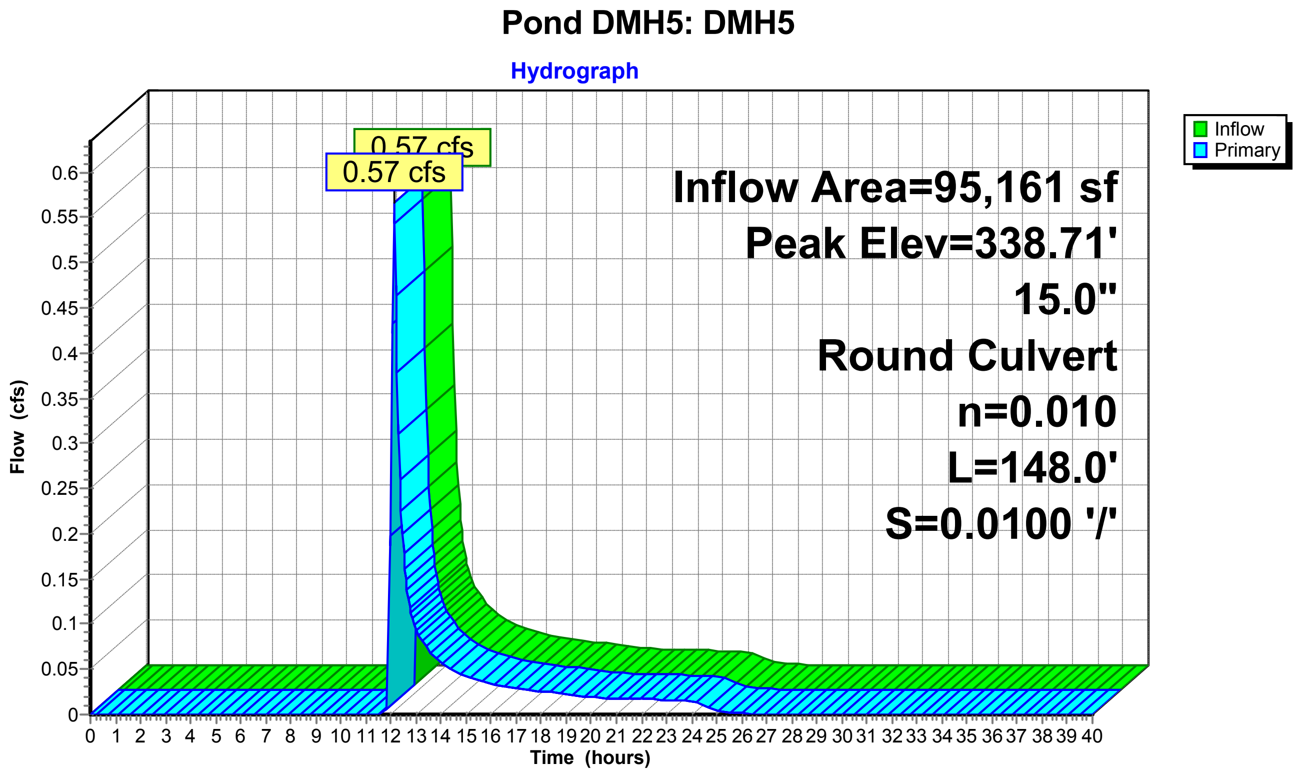
[79] Warning: Submerged Pond DMH6 Primary device # 1 OUTLET by 0.39'

Inflow Area =	95,161 sf, 64.89% Impervious,	Inflow Depth = 0.27"	for 1-YEAR event
Inflow =	0.57 cfs @ 12.12 hrs, Volume=	2,136 cf	
Outflow =	0.57 cfs @ 12.12 hrs, Volume=	2,136 cf, Atten= 0%, Lag= 0.0 min	
Primary =	0.57 cfs @ 12.12 hrs, Volume=	2,136 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 338.71' @ 12.12 hrs
Flood Elev= 349.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	338.32'	**15.0" Round Culvert** L= 148.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 338.32' / 336.84' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=0.54 cfs @ 12.12 hrs HW=338.71' (Free Discharge)
↑**1=Culvert** (Inlet Controls 0.54 cfs @ 1.67 fps)



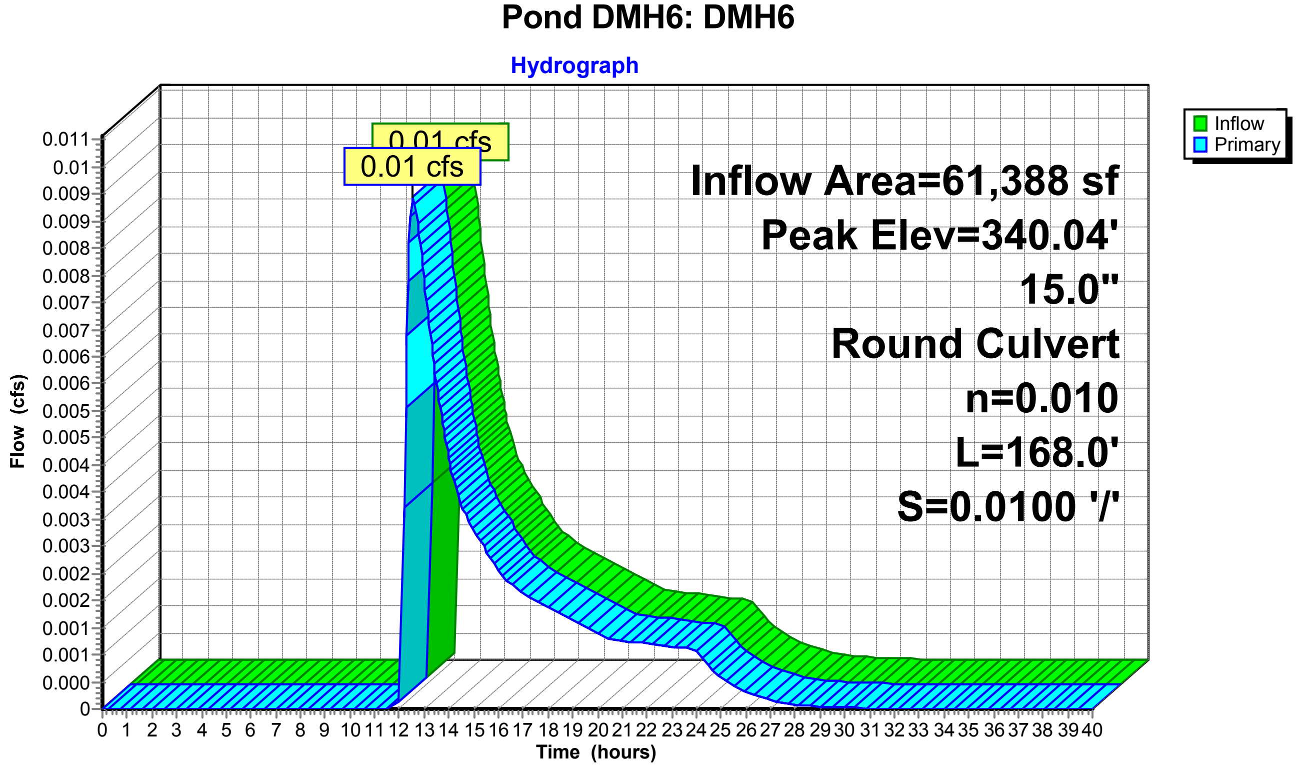
Summary for Pond DMH6: DMH6

Inflow Area =	61,388 sf,	81.87% Impervious,	Inflow Depth = 0.02"	for 1-YEAR event
Inflow =	0.01 cfs @	12.56 hrs, Volume=	122 cf	
Outflow =	0.01 cfs @	12.56 hrs, Volume=	122 cf, Atten= 0%, Lag= 0.0 min	
Primary =	0.01 cfs @	12.56 hrs, Volume=	122 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 340.04' @ 12.56 hrs
Flood Elev= 346.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	340.00'	**15.0" Round Culvert** L= 168.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 340.00' / 338.32' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=0.01 cfs @ 12.56 hrs HW=340.04' (Free Discharge)
↑**1=Culvert** (Inlet Controls 0.01 cfs @ 0.52 fps)



Summary for Pond DMH7: DMH7

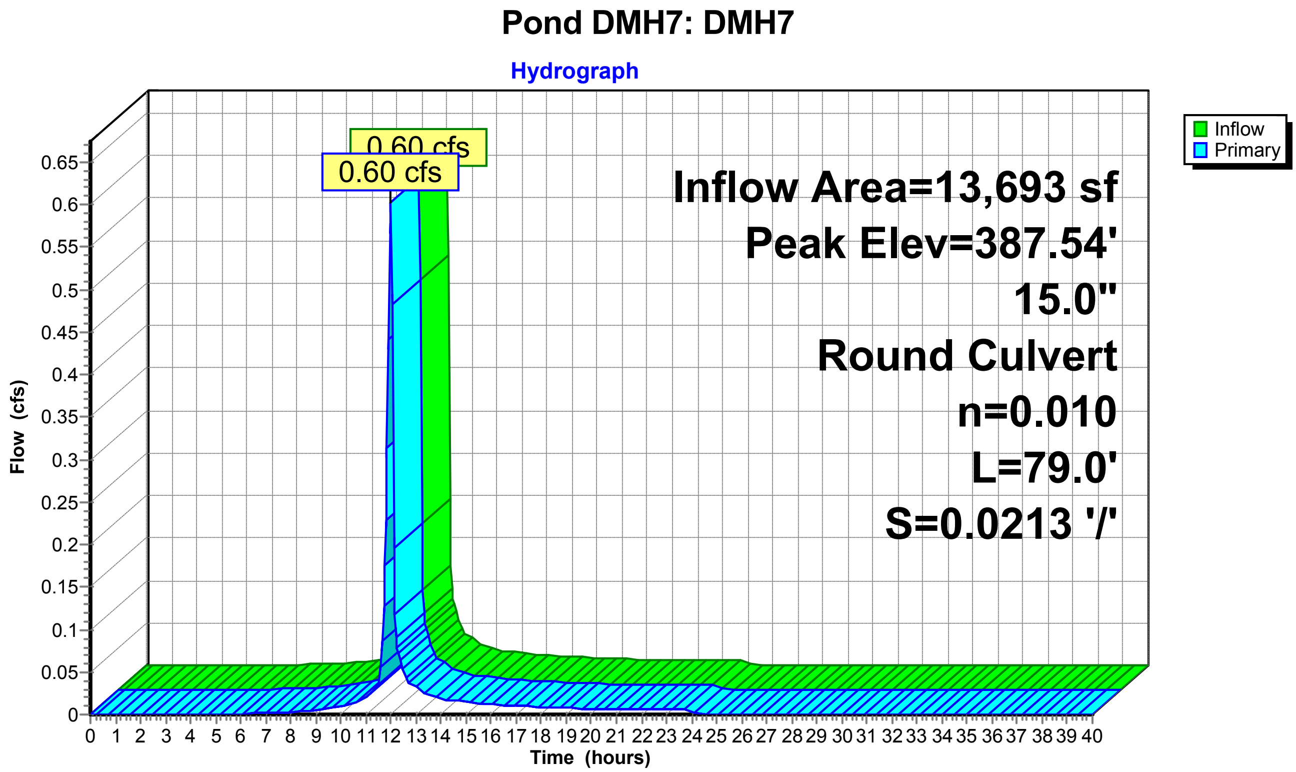
[79] Warning: Submerged Pond CB27 Primary device # 1 INLET by 0.17'

Inflow Area = 13,693 sf, 73.15% Impervious, Inflow Depth = 1.15" for 1-YEAR event
Inflow = 0.60 cfs @ 11.98 hrs, Volume= 1,310 cf
Outflow = 0.60 cfs @ 11.98 hrs, Volume= 1,310 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.60 cfs @ 11.98 hrs, Volume= 1,310 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 387.54' @ 11.98 hrs
Flood Elev= 391.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	387.13'	**15.0" Round Culvert** L= 79.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 387.13' / 385.45' S= 0.0213 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=0.58 cfs @ 11.98 hrs HW=387.53' (Free Discharge)
1=Culvert (Inlet Controls 0.58 cfs @ 1.70 fps)



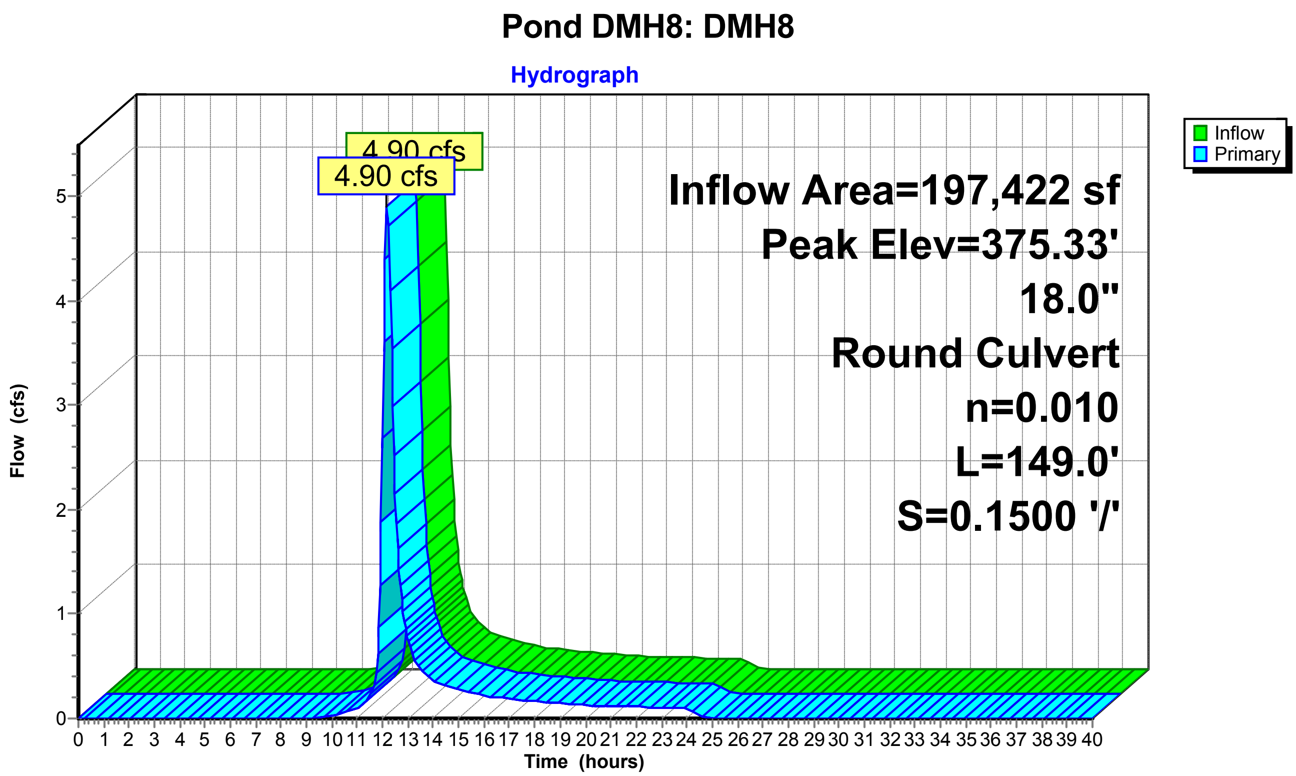
Summary for Pond DMH8: DMH8

Inflow Area = 197,422 sf, 25.73% Impervious, Inflow Depth = 1.15" for 1-YEAR event
Inflow = 4.90 cfs @ 12.18 hrs, Volume= 18,906 cf
Outflow = 4.90 cfs @ 12.18 hrs, Volume= 18,906 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.90 cfs @ 12.18 hrs, Volume= 18,906 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 375.33' @ 12.18 hrs
Flood Elev= 383.39'

Device	Routing	Invert	Outlet Devices
#1	Primary	374.05'	**18.0" Round Culvert** L= 149.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 374.05' / 351.70' S= 0.1500 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=4.86 cfs @ 12.18 hrs HW=375.33' (Free Discharge)
└**1=Culvert** (Inlet Controls 4.86 cfs @ 3.04 fps)



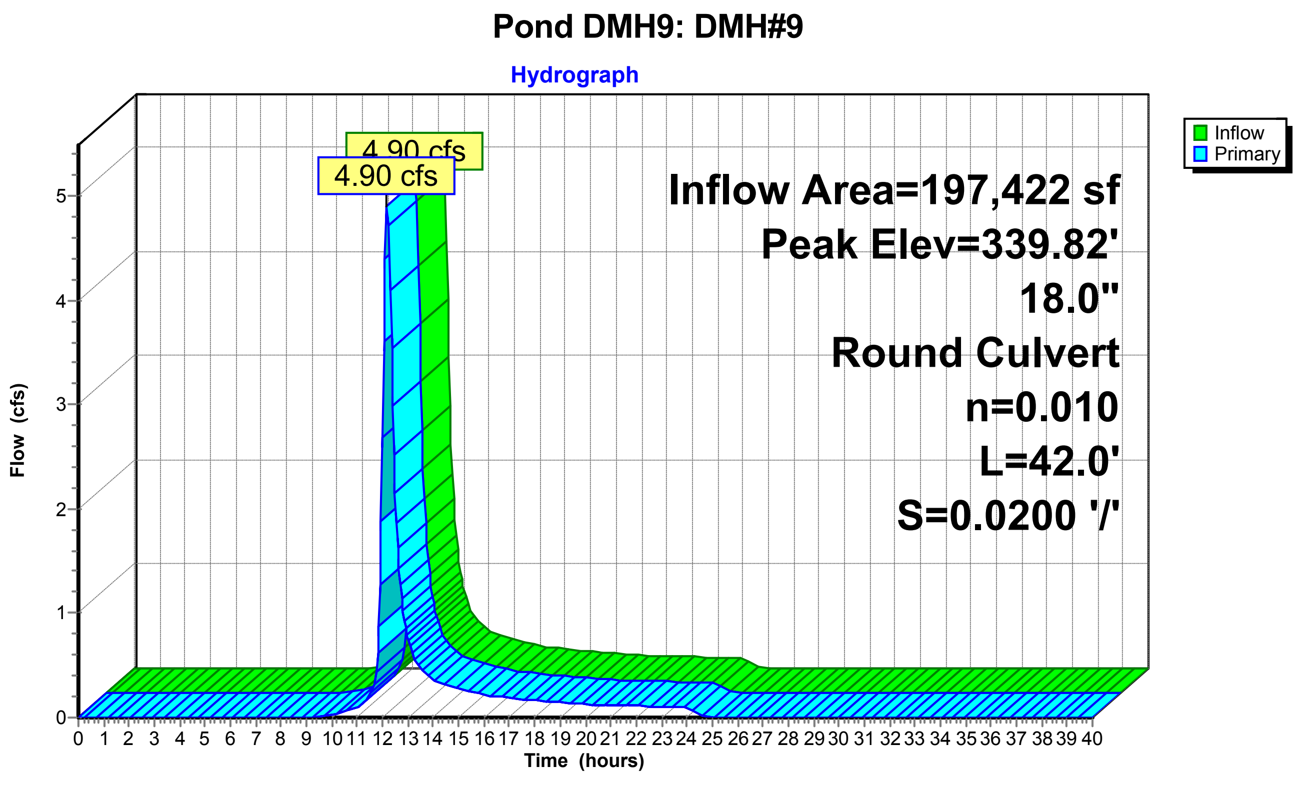
Summary for Pond DMH9: DMH#9

Inflow Area = 197,422 sf, 25.73% Impervious, Inflow Depth = 1.15" for 1-YEAR event
Inflow = 4.90 cfs @ 12.18 hrs, Volume= 18,906 cf
Outflow = 4.90 cfs @ 12.18 hrs, Volume= 18,906 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.90 cfs @ 12.18 hrs, Volume= 18,906 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 339.82' @ 12.18 hrs
Flood Elev= 354.58'

Device	Routing	Invert	Outlet Devices
#1	Primary	338.54'	**18.0" Round Culvert** L= 42.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 338.54' / 337.70' S= 0.0200 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=4.86 cfs @ 12.18 hrs HW=339.82' (Free Discharge)
↑**1=Culvert** (Inlet Controls 4.86 cfs @ 3.04 fps)



Summary for Pond PP-1: PP-1

Inflow Area =	55,636 sf, 80.75% Impervious,	Inflow Depth = 1.99"	for 1-YEAR event
Inflow =	3.53 cfs @ 11.97 hrs,	Volume=	9,224 cf
Outflow =	1.29 cfs @ 11.85 hrs,	Volume=	9,224 cf, Atten= 64%, Lag= 0.0 min
Discarded =	1.29 cfs @ 11.85 hrs,	Volume=	9,224 cf
Primary =	0.00 cfs @ 0.00 hrs,	Volume=	0 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 340.48' @ 12.13 hrs Surf.Area= 8,294 sf Storage= 1,599 cf
Flood Elev= 345.48' Surf.Area= 8,294 sf Storage= 8,294 cf

Plug-Flow detention time= 6.7 min calculated for 9,224 cf (100% of inflow)
Center-of-Mass det. time= 6.7 min (784.0 - 777.2)

Volume	Invert	Avail.Storage	Storage Description
#1	340.00'	8,294 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 20,735 cf Overall x 40.0% Voids

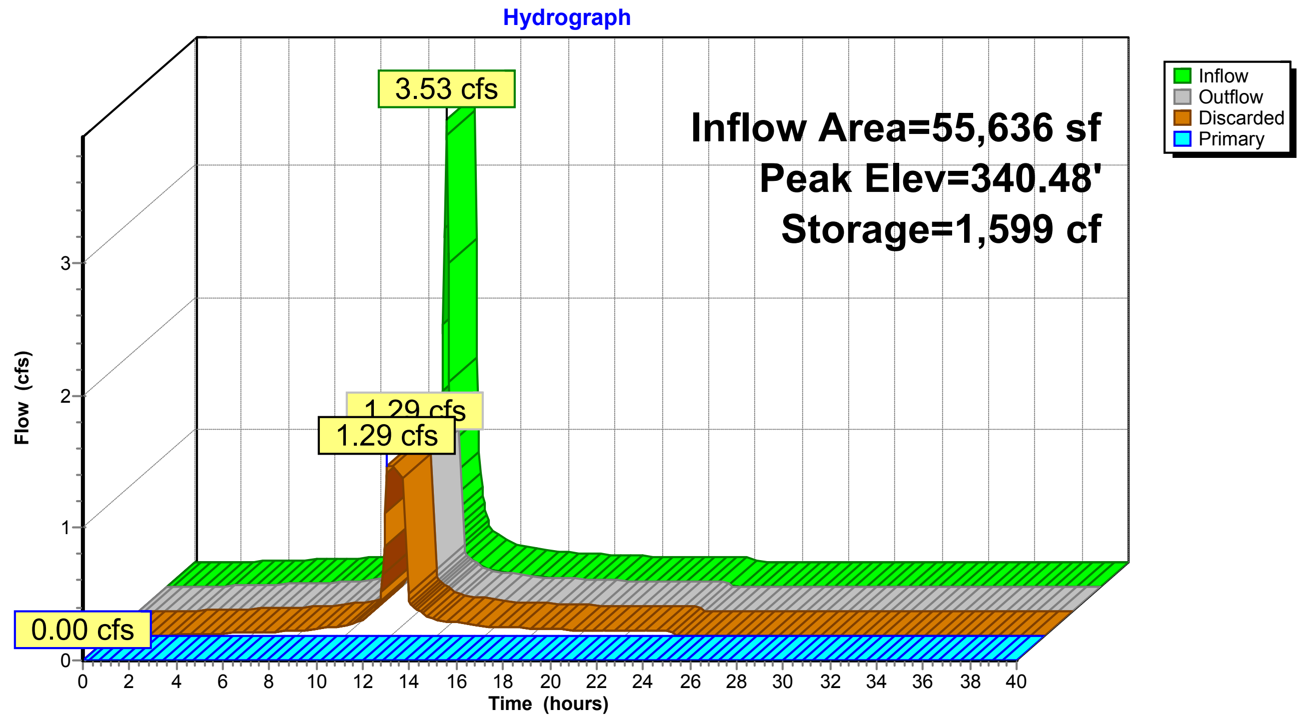
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
340.00	8,294	0	0
342.50	8,294	20,735	20,735

Device	Routing	Invert	Outlet Devices
#1	Discarded	340.00'	**6.700 in/hr Exfiltration over Surface area**
#2	Primary	342.76'	**15.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 342.76' / 342.16' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#3	Primary	340.50'	**6.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=1.29 cfs @ 11.85 hrs HW=340.08' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 1.29 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=340.00' (Free Discharge)
├─**2=Culvert** (Controls 0.00 cfs)
└─**3=Orifice/Grate** (Controls 0.00 cfs)

Pond PP-1: PP-1


Hydrograph
3.53 cfs
1.29 cfs
1.29 cfs
0.00 cfs
Inflow Area=55,636 sf
Peak Elev=340.48'
Storage=1,599 cf
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0
1
2
3
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40

Summary for Pond PP-2: PP-2

Inflow Area =	2,778 sf,	92.40% Impervious,	Inflow Depth = 2.18"	for 1-YEAR event	
Inflow =	0.22 cfs @	11.96 hrs,	Volume=	504 cf	
Outflow =	0.21 cfs @	11.99 hrs,	Volume=	504 cf,	Atten= 4%, Lag= 1.7 min
Discarded =	0.21 cfs @	11.99 hrs,	Volume=	504 cf	
Primary =	0.00 cfs @	0.00 hrs,	Volume=	0 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 340.04' @ 11.99 hrs Surf.Area= 1,610 sf Storage= 23 cf
Flood Elev= 344.22' Surf.Area= 1,610 sf Storage= 1,610 cf

Plug-Flow detention time= 1.8 min calculated for 504 cf (100% of inflow)
Center-of-Mass det. time= 1.8 min (778.4 - 776.5)

Volume	Invert	Avail.Storage	Storage Description
#1	340.00'	1,610 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 4,025 cf Overall x 40.0% Voids

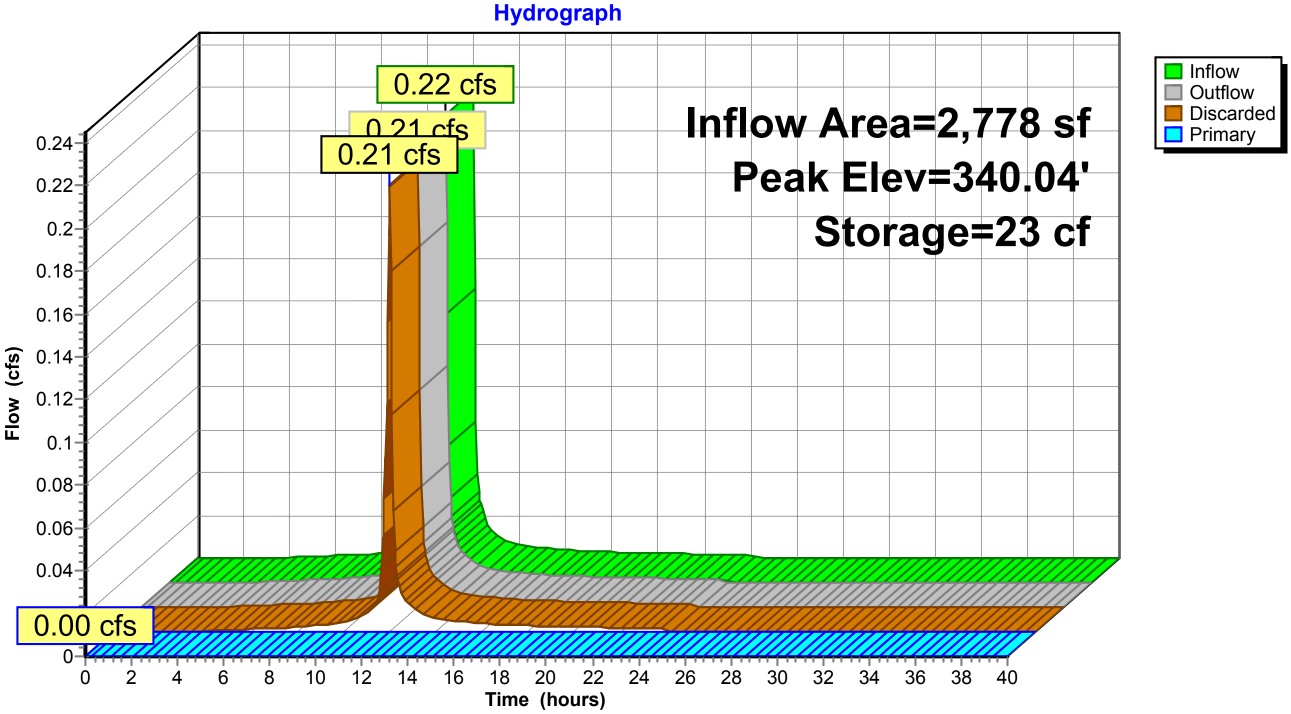
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
340.00	1,610	0	0
342.50	1,610	4,025	4,025

Device	Routing	Invert	Outlet Devices
#1	Discarded	340.00'	**6.700 in/hr Exfiltration over Surface area**
#2	Primary	340.50'	**15.0" Round Culvert** L= 46.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 340.50' / 340.04' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#3	Primary	340.50'	**6.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.25 cfs @ 11.99 hrs HW=340.03' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.25 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=340.00' (Free Discharge)
├─**2=Culvert** (Controls 0.00 cfs)
└─**3=Orifice/Grate** (Controls 0.00 cfs)

Pond PP-2: PP-2


Hydrograph
0.22 cfs
0.21 cfs
0.21 cfs
0.00 cfs
Inflow Area=2,778 sf
Peak Elev=340.04'
Storage=23 cf
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0.24
0.22
0.2
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40

Summary for Pond PP-3: PP-3

Inflow Area = 2,974 sf, 92.97% Impervious, Inflow Depth = 2.18" for 1-YEAR event
Inflow = 0.23 cfs @ 11.96 hrs, Volume= 540 cf
Outflow = 0.02 cfs @ 12.56 hrs, Volume= 218 cf, Atten= 93%, Lag= 35.7 min
Discarded = 0.01 cfs @ 12.56 hrs, Volume= 96 cf
Primary = 0.01 cfs @ 12.56 hrs, Volume= 122 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 344.55' @ 12.56 hrs Surf.Area= 1,610 sf Storage= 351 cf
Flood Elev= 347.97' Surf.Area= 1,610 sf Storage= 1,610 cf

Plug-Flow detention time= 334.4 min calculated for 218 cf (40% of inflow)
Center-of-Mass det. time= 206.9 min (983.4 - 776.5)

Volume	Invert	Avail.Storage	Storage Description
#1	344.00'	1,610 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 4,025 cf Overall x 40.0% Voids

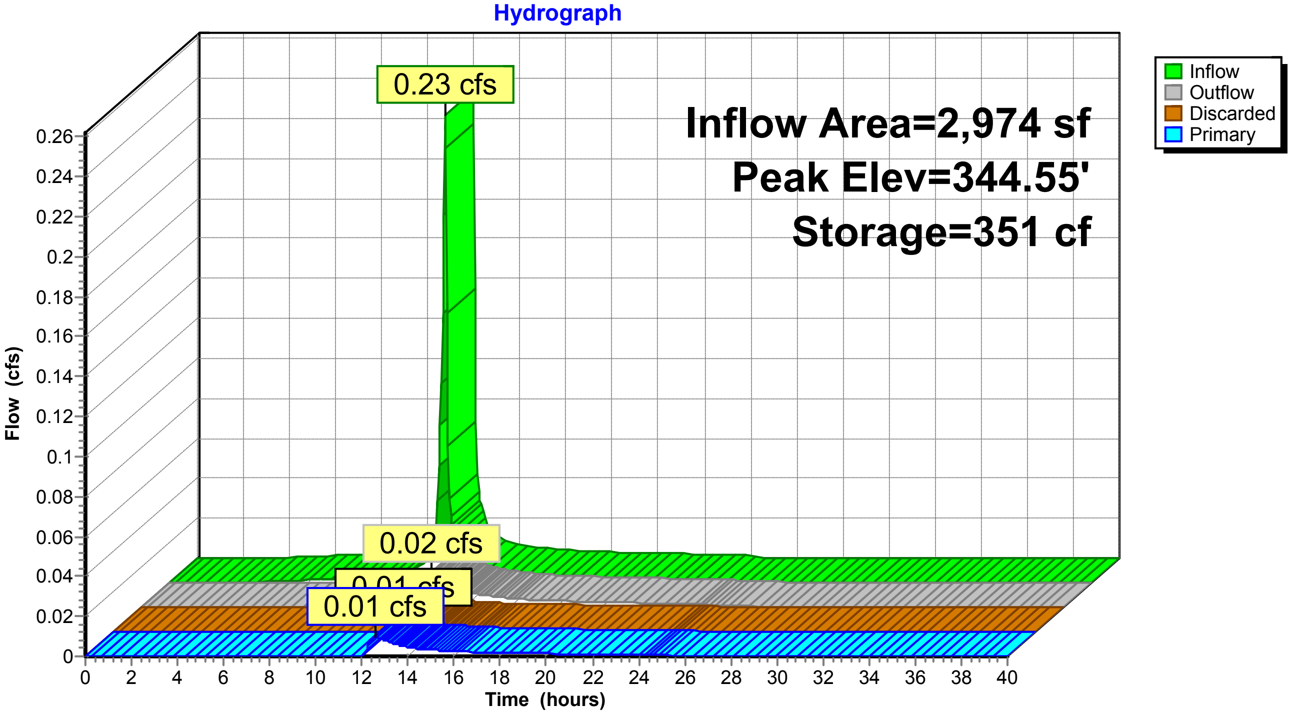
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
344.00	1,610	0	0
346.50	1,610	4,025	4,025

Device	Routing	Invert	Outlet Devices
#1	Discarded	344.00'	**6.700 in/hr Exfiltration over Surface area**
#2	Primary	344.50'	**15.0" Round Culvert** L= 52.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 344.50' / 342.94' S= 0.0300 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#3	Device 1	344.50'	**6.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.01 cfs @ 12.56 hrs HW=344.55' (Free Discharge)
└─**1=Exfiltration** (Passes 0.01 cfs of 0.25 cfs potential flow)
  └─**3=Orifice/Grate** (Orifice Controls 0.01 cfs @ 0.73 fps)

Primary OutFlow Max=0.01 cfs @ 12.56 hrs HW=344.55' (Free Discharge)
└─**2=Culvert** (Inlet Controls 0.01 cfs @ 0.57 fps)

Pond PP-3: PP-3


Hydrograph
0.23 cfs
0.02 cfs
0.01 cfs
0.01 cfs
Inflow Area=2,974 sf
Peak Elev=344.55'
Storage=351 cf
Inflow
Outflow
Discarded
Primary
Flow (cfs)
0.26
0.24
0.22
0.2
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40
Time (hours)

Summary for Pond PP-4: PP-4

Inflow Area = 3,899 sf, 98.72% Impervious, Inflow Depth = 2.39" for 1-YEAR event
Inflow = 0.32 cfs @ 11.96 hrs, Volume= 777 cf
Outflow = 0.07 cfs @ 12.15 hrs, Volume= 415 cf, Atten= 79%, Lag= 11.1 min
Discarded = 0.07 cfs @ 12.15 hrs, Volume= 415 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 344.65' @ 12.15 hrs Surf.Area= 1,810 sf Storage= 470 cf
Flood Elev= 349.27' Surf.Area= 1,810 sf Storage= 1,810 cf

Plug-Flow detention time= 291.3 min calculated for 414 cf (53% of inflow)
Center-of-Mass det. time= 176.0 min (933.0 - 757.0)

Volume	Invert	Avail.Storage	Storage Description
#1	344.00'	1,810 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 4,525 cf Overall x 40.0% Voids

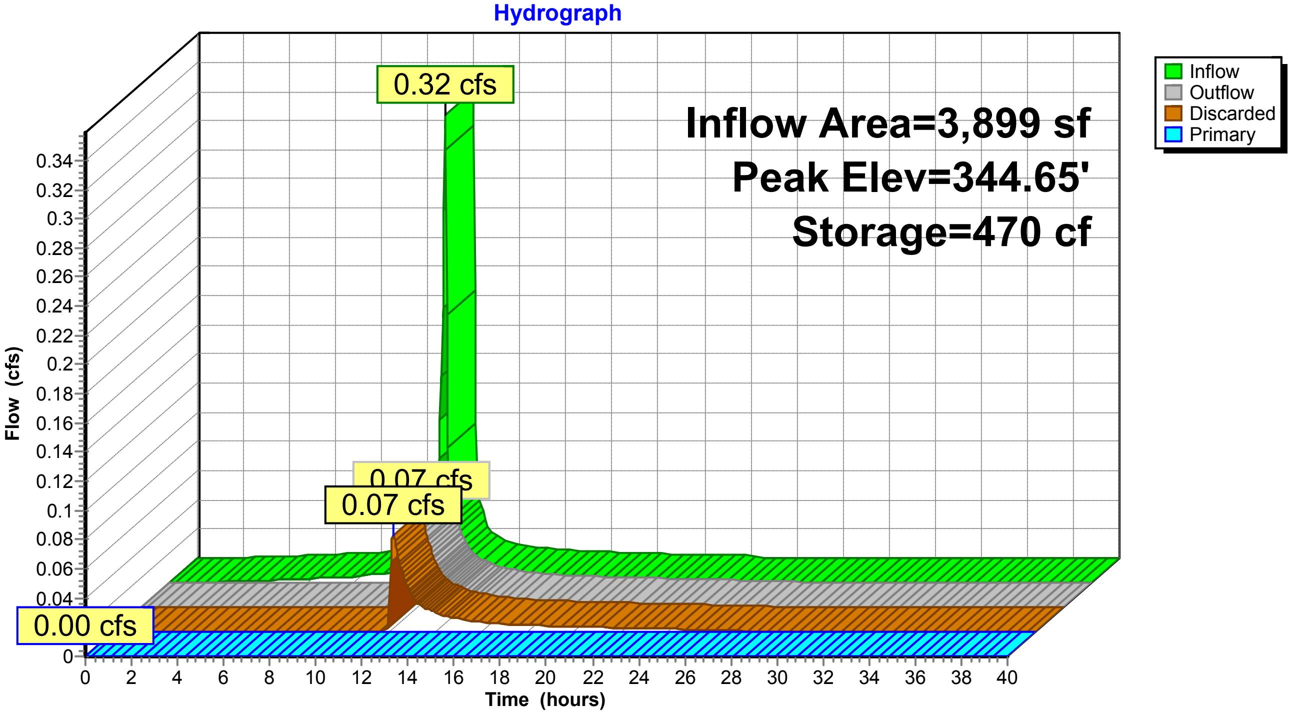
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
344.00	1,810	0	0
346.50	1,810	4,525	4,525

Device	Routing	Invert	Outlet Devices
#1	Discarded	344.00'	**13.300 in/hr Exfiltration over Surface area**
#2	Primary	345.50'	**12.0" Round Culvert** L= 33.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 345.50' / 345.17' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf
#3	Device 1	344.50'	**6.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.06 cfs @ 12.15 hrs HW=344.65' (Free Discharge)
└─**1=Exfiltration** (Passes 0.06 cfs of 0.56 cfs potential flow)
  └─**3=Orifice/Grate** (Orifice Controls 0.06 cfs @ 1.31 fps)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=344.00' (Free Discharge)
└─**2=Culvert** (Controls 0.00 cfs)

Pond PP-4: PP-4


Hydrograph
0.32 cfs
Inflow Area=3,899 sf
Peak Elev=344.65'
Storage=470 cf
0.07 cfs
0.07 cfs
0.00 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0
0.04
0.06
0.08
0.1
0.12
0.14
0.16
0.18
0.2
0.22
0.24
0.26
0.28
0.3
0.32
0.34
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40

Summary for Pond PP-5: PP-5

[79] Warning: Submerged Pond CB19 Primary device # 1 OUTLET by 0.39'

Inflow Area = 29,874 sf, 25.58% Impervious, Inflow Depth = 1.00" for 1-YEAR event
Inflow = 0.88 cfs @ 12.05 hrs, Volume= 2,483 cf
Outflow = 0.77 cfs @ 12.12 hrs, Volume= 2,224 cf, Atten= 13%, Lag= 4.2 min
Discarded = 0.20 cfs @ 12.12 hrs, Volume= 210 cf
Primary = 0.57 cfs @ 12.12 hrs, Volume= 2,015 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 345.28' @ 12.12 hrs Surf.Area= 1,700 sf Storage= 528 cf
Flood Elev= 349.35' Surf.Area= 1,700 sf Storage= 1,700 cf

Plug-Flow detention time= 93.0 min calculated for 2,224 cf (90% of inflow)
Center-of-Mass det. time= 40.0 min (894.7 - 854.7)

Volume	Invert	Avail.Storage	Storage Description
#1	344.50'	1,700 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 4,250 cf Overall x 40.0% Voids

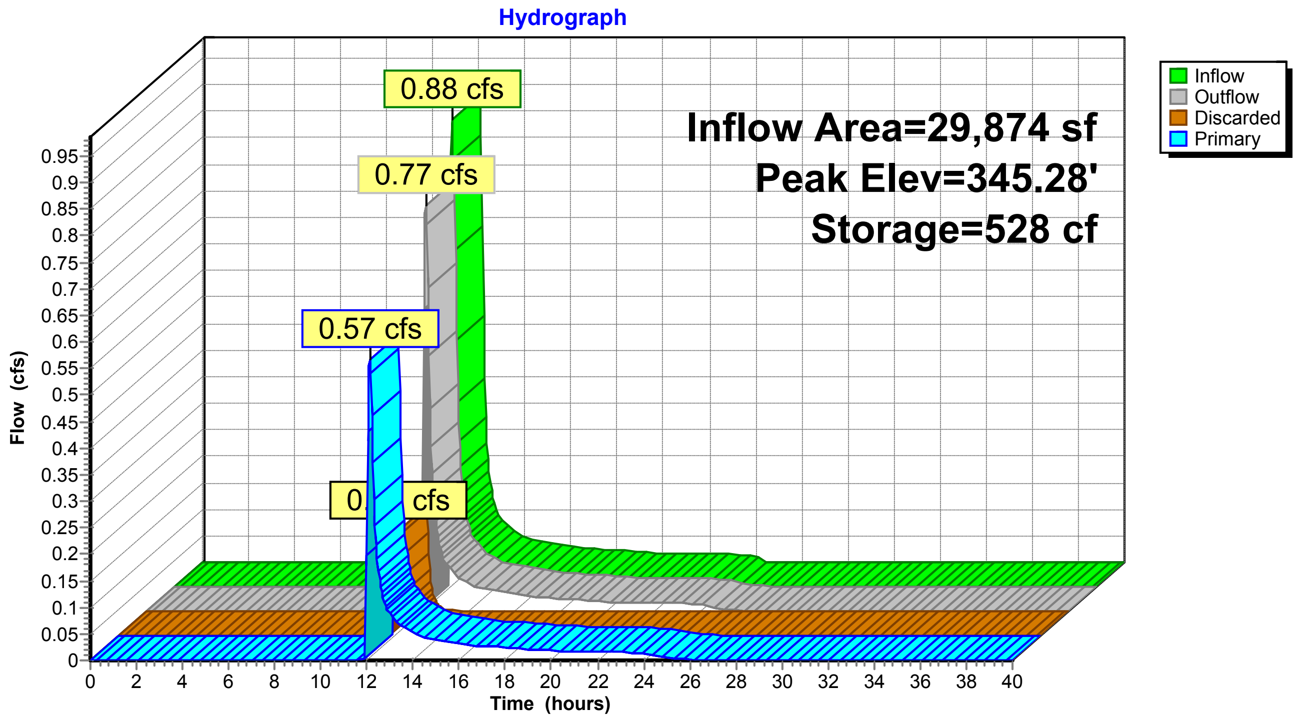
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
344.50	1,700	0	0
347.00	1,700	4,250	4,250

Device	Routing	Invert	Outlet Devices
#1	Discarded	344.50'	**13.300 in/hr Exfiltration over Surface area**
#2	Primary	344.88'	**15.0" Round Culvert** L= 37.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 344.88' / 344.50' S= 0.0103 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#3	Device 1	345.00'	**6.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.19 cfs @ 12.12 hrs HW=345.27' (Free Discharge)
└─**1=Exfiltration** (Passes 0.19 cfs of 0.52 cfs potential flow)
  └─**3=Orifice/Grate** (Orifice Controls 0.19 cfs @ 1.77 fps)

Primary OutFlow Max=0.55 cfs @ 12.12 hrs HW=345.27' (Free Discharge)
└─**2=Culvert** (Inlet Controls 0.55 cfs @ 1.68 fps)

Pond PP-5: PP-5


Hydrograph
0.88 cfs
0.77 cfs
0.57 cfs
cfs
Inflow Area=29,874 sf
Peak Elev=345.28'
Storage=528 cf
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40
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 0.65 0.7 0.75 0.8 0.85 0.9 0.95

Summary for Pond UGC-1: UGC-1

Inflow Area = 87,058 sf, 81.43% Impervious, Inflow Depth = 1.63" for 1-YEAR event
Inflow = 5.09 cfs @ 11.96 hrs, Volume= 11,794 cf
Outflow = 1.44 cfs @ 12.11 hrs, Volume= 11,794 cf, Atten= 72%, Lag= 8.5 min
Discarded = 1.43 cfs @ 11.75 hrs, Volume= 11,792 cf
Primary = 0.01 cfs @ 12.11 hrs, Volume= 1 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 350.53' @ 12.11 hrs Surf.Area= 4,645 sf Storage= 2,486 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 7.9 min (784.9 - 777.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	349.50'	5,581 cf	**44.75'W x 103.80'L x 4.25'H Field A** 19,741 cf Overall - 5,788 cf Embedded = 13,952 cf x 40.0% Voids
#2A	350.25'	5,788 cf	**ADS_StormTech SC-740 +Cap** x 126 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 9 Rows of 14 Chambers
		11,369 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	350.50'	**15.0" Round Culvert** L= 59.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 350.50' / 348.85' S= 0.0280 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#2	Discarded	349.50'	**13.300 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=1.43 cfs @ 11.75 hrs HW=349.55' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 1.43 cfs)

Primary OutFlow Max=0.00 cfs @ 12.11 hrs HW=350.53' (Free Discharge)
└─**1=Culvert** (Inlet Controls 0.00 cfs @ 0.47 fps)

Pond UGC-1: UGC-1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

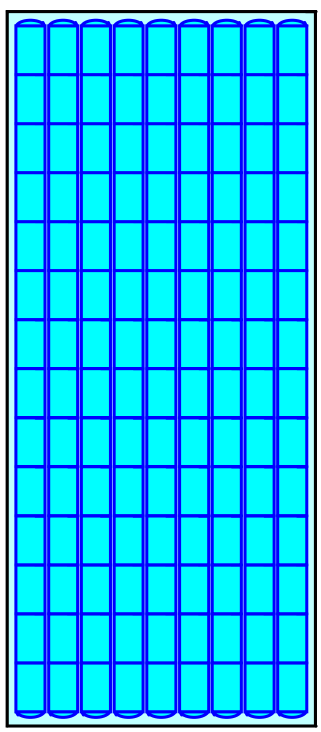
14 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 101.30' Row Length +15.0" End Stone x 2 = 103.80' Base Length
9 Rows x 51.0" Wide + 6.0" Spacing x 8 + 15.0" Side Stone x 2 = 44.75' Base Width
9.0" Base + 30.0" Chamber Height + 12.0" Cover = 4.25' Field Height

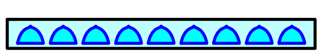
126 Chambers x 45.9 cf = 5,788.4 cf Chamber Storage

19,740.8 cf Field - 5,788.4 cf Chambers = 13,952.4 cf Stone x 40.0% Voids = 5,581.0 cf Stone Storage

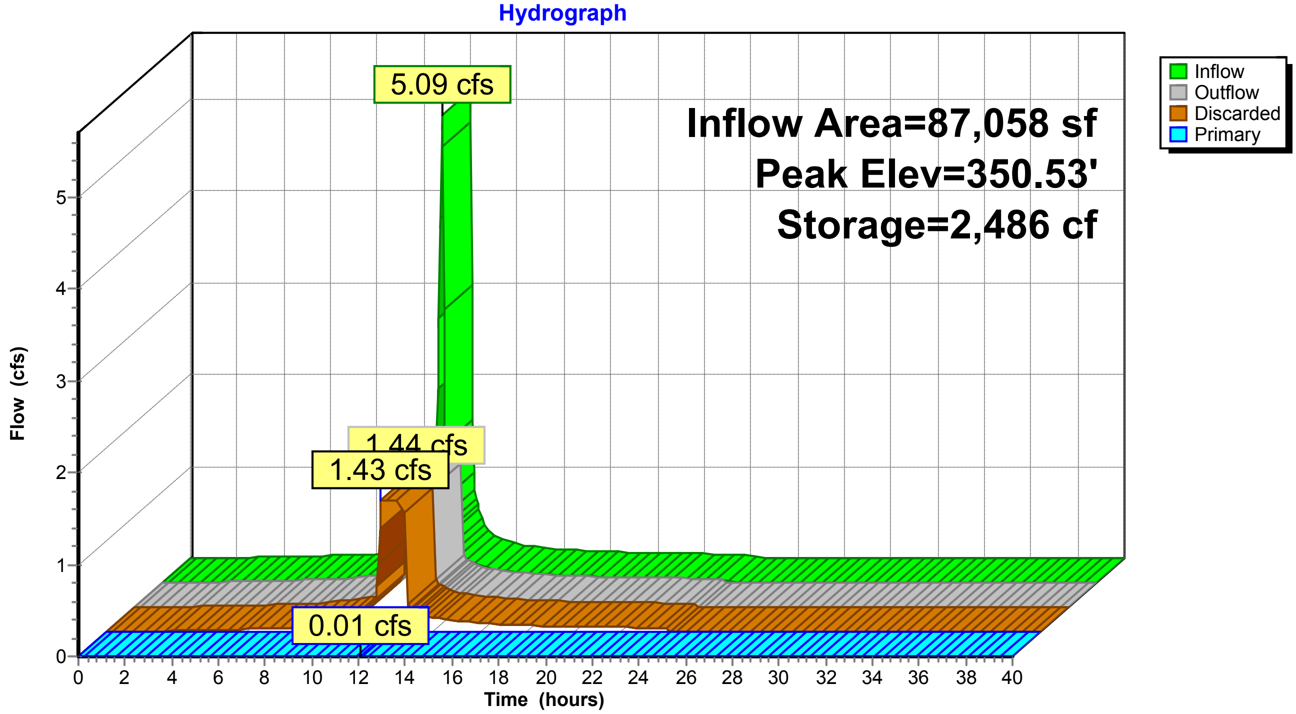
Chamber Storage + Stone Storage = 11,369.4 cf = 0.261 af
Overall Storage Efficiency = 57.6%
Overall System Size = 103.80' x 44.75' x 4.25'

126 Chambers
731.1 cy Field
516.8 cy Stone





Pond UGC-1: UGC-1



Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA-1: DA-1 Runoff Area=652,997 sf 19.60% Impervious Runoff Depth=1.51"
Flow Length=1,558' Tc=29.6 min CN=82 Runoff=19.63 cfs 82,388 cf

Subcatchment DA-10: DA-10 Runoff Area=11,988 sf 71.77% Impervious Runoff Depth=2.23"
Tc=6.0 min CN=91 Runoff=1.02 cfs 2,228 cf

Subcatchment DA-11: DA-11 Runoff Area=2,984 sf 80.09% Impervious Runoff Depth=2.42"
Tc=6.0 min CN=93 Runoff=0.27 cfs 601 cf

Subcatchment DA-12: DA-12 Runoff Area=1,295 sf 100.00% Impervious Runoff Depth=2.94"
Tc=6.0 min CN=98 Runoff=0.13 cfs 317 cf

Subcatchment DA-13: DA-13 Runoff Area=2,426 sf 54.45% Impervious Runoff Depth=1.89"
Tc=6.0 min CN=87 Runoff=0.18 cfs 382 cf

Subcatchment DA-14: DA-14 Runoff Area=1,839 sf 100.00% Impervious Runoff Depth=2.94"
Tc=6.0 min CN=98 Runoff=0.18 cfs 450 cf

Subcatchment DA-15: DA-15 Runoff Area=3,717 sf 52.06% Impervious Runoff Depth=1.81"
Tc=6.0 min CN=86 Runoff=0.26 cfs 560 cf

Subcatchment DA-16: DA-16 Runoff Area=1,740 sf 100.00% Impervious Runoff Depth=2.94"
Tc=6.0 min CN=98 Runoff=0.17 cfs 426 cf

Subcatchment DA-17: DA-17 Runoff Area=27,430 sf 23.81% Impervious Runoff Depth=1.38"
Flow Length=406' Tc=13.6 min CN=80 Runoff=1.16 cfs 3,152 cf

Subcatchment DA-18: DA-18 Runoff Area=5,718 sf 100.00% Impervious Runoff Depth=2.94"
Tc=6.0 min CN=98 Runoff=0.57 cfs 1,400 cf

Subcatchment DA-19: DA-19 Runoff Area=2,039 sf 100.00% Impervious Runoff Depth=2.94"
Tc=6.0 min CN=98 Runoff=0.20 cfs 499 cf

Subcatchment DA-2: DA-2 Runoff Area=44,834 sf 2.52% Impervious Runoff Depth=1.07"
Flow Length=871' Tc=16.8 min CN=75 Runoff=1.30 cfs 4,011 cf

Subcatchment DA-20: DA-20 Runoff Area=1,093 sf 100.00% Impervious Runoff Depth=2.94"
Tc=6.0 min CN=98 Runoff=0.11 cfs 268 cf

Subcatchment DA-21: DA-21 Runoff Area=1,494 sf 100.00% Impervious Runoff Depth=2.94"
Tc=6.0 min CN=98 Runoff=0.15 cfs 366 cf

Subcatchment DA-22: DA-22 Runoff Area=3,899 sf 98.72% Impervious Runoff Depth=2.94"
Tc=6.0 min CN=98 Runoff=0.39 cfs 954 cf

Subcatchment DA-23: DA-23 Runoff Area=2,974 sf 92.97% Impervious Runoff Depth=2.72"
Tc=6.0 min CN=96 Runoff=0.29 cfs 674 cf

Subcatchment DA-24: DA-24	Runoff Area=2,778 sf 92.40% Impervious Runoff Depth=2.72" Tc=6.0 min CN=96 Runoff=0.27 cfs 630 cf
Subcatchment DA-25: DA-25	Runoff Area=17,418 sf 49.60% Impervious Runoff Depth=1.81" Flow Length=309' Tc=14.2 min CN=86 Runoff=0.95 cfs 2,626 cf
Subcatchment DA-26: DA-26	Runoff Area=2,444 sf 45.42% Impervious Runoff Depth=1.73" Tc=6.0 min CN=85 Runoff=0.17 cfs 353 cf
Subcatchment DA-27: DA-27	Runoff Area=4,118 sf 53.08% Impervious Runoff Depth=1.89" Tc=6.0 min CN=87 Runoff=0.30 cfs 648 cf
Subcatchment DA-28: DA-28	Runoff Area=244,871 sf 7.43% Impervious Runoff Depth=1.13" Flow Length=1,550' Tc=22.6 min CN=76 Runoff=6.30 cfs 23,083 cf
Subcatchment DA-29: DA-29	Runoff Area=4,310 sf 61.76% Impervious Runoff Depth=2.05" Tc=6.0 min CN=89 Runoff=0.34 cfs 738 cf
Subcatchment DA-3: DA-3	Runoff Area=1,320 sf 58.94% Impervious Runoff Depth=1.97" Tc=6.0 min CN=88 Runoff=0.10 cfs 217 cf
Subcatchment DA-30: DA-30	Runoff Area=8,713 sf 36.19% Impervious Runoff Depth=1.58" Tc=6.0 min CN=83 Runoff=0.55 cfs 1,151 cf
Subcatchment DA-31: DA-31	Runoff Area=2,972 sf 100.00% Impervious Runoff Depth=2.94" Tc=6.0 min CN=98 Runoff=0.30 cfs 728 cf
Subcatchment DA-32: DA-32	Runoff Area=37,379 sf 9.31% Impervious Runoff Depth=1.13" Flow Length=348' Tc=11.9 min CN=76 Runoff=1.36 cfs 3,524 cf
Subcatchment DA-33: DA-33	Runoff Area=2,907 sf 69.66% Impervious Runoff Depth=2.23" Tc=6.0 min CN=91 Runoff=0.25 cfs 540 cf
Subcatchment DA-34: DA-34	Runoff Area=6,631 sf 65.10% Impervious Runoff Depth=2.14" Tc=6.0 min CN=90 Runoff=0.54 cfs 1,183 cf
Subcatchment DA-35: DA-35	Runoff Area=24,159 sf 15.16% Impervious Runoff Depth=1.25" Flow Length=389' Tc=6.6 min CN=78 Runoff=1.19 cfs 2,519 cf
Subcatchment DA-36: DA-36 (Roofs)	Runoff Area=19,897 sf 100.00% Impervious Runoff Depth=2.94" Tc=6.0 min CN=98 Runoff=1.99 cfs 4,871 cf
Subcatchment DA-37: DA-37	Runoff Area=152,588 sf 32.55% Impervious Runoff Depth=1.73" Flow Length=996' Tc=25.9 min CN=85 Runoff=5.76 cfs 22,024 cf
Subcatchment DA-38: DA-38 (Roofs)	Runoff Area=34,100 sf 100.00% Impervious Runoff Depth=2.94" Tc=6.0 min CN=98 Runoff=3.41 cfs 8,348 cf
Subcatchment DA-4: DA-4	Runoff Area=4,793 sf 54.83% Impervious Runoff Depth=1.89" Tc=6.0 min CN=87 Runoff=0.35 cfs 754 cf
Subcatchment DA-5: DA-5	Runoff Area=1,120 sf 100.00% Impervious Runoff Depth=2.94" Tc=6.0 min CN=98 Runoff=0.11 cfs 274 cf

Subcatchment DA-6: DA-6 Runoff Area=3,169 sf 64.25% Impervious Runoff Depth=2.05"
Tc=6.0 min CN=89 Runoff=0.25 cfs 542 cf

Subcatchment DA-7: DA-7 Runoff Area=10,524 sf 75.84% Impervious Runoff Depth=2.32"
Tc=6.0 min CN=92 Runoff=0.92 cfs 2,037 cf

Subcatchment DA-8: DA-8 Runoff Area=2,003 sf 100.00% Impervious Runoff Depth=2.94"
Tc=6.0 min CN=98 Runoff=0.20 cfs 490 cf

Subcatchment DA-9: DA-9 Runoff Area=3,589 sf 64.47% Impervious Runoff Depth=2.05"
Tc=6.0 min CN=89 Runoff=0.28 cfs 614 cf

Reach 2R: FLARED END #3 Avg. Flow Depth=0.46' Max Vel=4.16 fps Inflow=9.38 cfs 112,666 cf
n=0.022 L=397.0' S=0.0142 '/' Capacity=148.49 cfs Outflow=9.28 cfs 112,666 cf

Reach DP-1: DP-1 Inflow=17.41 cfs 144,604 cf
Outflow=17.41 cfs 144,604 cf

Reach FLARED END #1: FLARED END Avg. Flow Depth=0.76' Max Vel=7.99 fps Inflow=6.30 cfs 23,083 cf
15.0" Round Pipe n=0.010 L=120.0' S=0.0118 '/' Capacity=9.10 cfs Outflow=6.26 cfs 23,083 cf

Reach FLARED END #2: FLARED END Avg. Flow Depth=1.25' Max Vel=2.23 fps Inflow=19.81 cfs 84,907 cf
15.0" Round Pipe n=0.025 L=37.0' S=0.0051 '/' Capacity=2.41 cfs Outflow=2.45 cfs 84,907 cf

Pond CB1: CB1 Peak Elev=364.92' Inflow=0.11 cfs 268 cf
15.0" Round Culvert n=0.010 L=25.0' S=0.0100 '/' Outflow=0.11 cfs 268 cf

Pond CB10: CB10 Peak Elev=383.32' Inflow=2.39 cfs 5,302 cf
18.0" Round Culvert n=0.010 L=100.0' S=0.0356 '/' Outflow=2.39 cfs 5,302 cf

Pond CB11: CB11 Peak Elev=384.05' Inflow=1.29 cfs 2,829 cf
15.0" Round Culvert n=0.010 L=25.0' S=0.0100 '/' Outflow=1.29 cfs 2,829 cf

Pond CB12: CB12 Peak Elev=387.07' Inflow=0.77 cfs 1,735 cf
18.0" Round Culvert n=0.010 L=143.0' S=0.0129 '/' Outflow=0.77 cfs 1,735 cf

Pond CB13: CB13 Peak Elev=387.07' Inflow=0.20 cfs 490 cf
15.0" Round Culvert n=0.010 L=21.0' S=0.0100 '/' Outflow=0.20 cfs 490 cf

Pond CB14: CB14 Peak Elev=392.78' Inflow=0.21 cfs 491 cf
15.0" Round Culvert n=0.010 L=181.0' S=0.0315 '/' Outflow=0.21 cfs 491 cf

Pond CB15: CB15 Peak Elev=392.92' Inflow=0.11 cfs 274 cf
15.0" Round Culvert n=0.010 L=21.0' S=0.0100 '/' Outflow=0.11 cfs 274 cf

Pond CB16: CB16 Peak Elev=337.50' Inflow=1.44 cfs 5,033 cf
15.0" Round Culvert n=0.010 L=143.0' S=0.0100 '/' Outflow=1.44 cfs 5,033 cf

Pond CB17: CB17 Peak Elev=348.33' Inflow=0.55 cfs 1,151 cf
15.0" Round Culvert n=0.010 L=21.0' S=0.0095 '/' Outflow=0.55 cfs 1,151 cf

Pond CB19: CB19 Peak Elev=345.92' Inflow=0.17 cfs 353 cf
15.0" Round Culvert n=0.010 L=83.0' S=0.0100 '/' Outflow=0.17 cfs 353 cf

Pond CB2: CB2 Peak Elev=364.76' Inflow=0.26 cfs 633 cf
15.0" Round Culvert n=0.010 L=171.0' S=0.0442 '/' Outflow=0.26 cfs 633 cf

Pond CB22: CB22 Peak Elev=344.55' Inflow=3.71 cfs 8,996 cf
15.0" Round Culvert n=0.010 L=54.0' S=0.0100 '/' Outflow=3.71 cfs 8,996 cf

Pond CB25: CB25 Peak Elev=384.90' Inflow=1.02 cfs 2,228 cf
15.0" Round Culvert n=0.010 L=92.0' S=0.0101 '/' Outflow=1.02 cfs 2,228 cf

Pond CB26: PP-6 Peak Elev=384.04' Storage=40 cf Inflow=0.28 cfs 614 cf
Discarded=0.25 cfs 614 cf Primary=0.00 cfs 0 cf Outflow=0.25 cfs 614 cf

Pond CB27: CB27 Peak Elev=388.02' Storage=20 cf Inflow=0.92 cfs 2,037 cf
Discarded=0.16 cfs 363 cf Primary=0.75 cfs 1,673 cf Outflow=0.91 cfs 2,037 cf

Pond CB28: CB28 Peak Elev=388.04' Storage=30 cf Inflow=0.25 cfs 542 cf
Discarded=0.23 cfs 529 cf Primary=0.01 cfs 13 cf Outflow=0.24 cfs 542 cf

Pond CB29: CB29 Peak Elev=336.79' Inflow=2.95 cfs 86,090 cf
18.0" Round Culvert n=0.010 L=35.0' S=0.0049 '/' Outflow=2.95 cfs 86,090 cf

Pond CB3: CB3 Peak Elev=357.31' Inflow=0.46 cfs 1,132 cf
15.0" Round Culvert n=0.010 L=37.0' S=0.0100 '/' Outflow=0.46 cfs 1,132 cf

Pond CB30: CB30 Peak Elev=338.34' Inflow=9.38 cfs 112,666 cf
18.0" Round Culvert n=0.010 L=25.0' S=0.0156 '/' Outflow=9.38 cfs 112,666 cf

Pond CB31: CB31 Peak Elev=394.19' Inflow=6.84 cfs 26,036 cf
18.0" Round Culvert n=0.010 L=82.0' S=0.1500 '/' Outflow=6.84 cfs 26,036 cf

Pond CB32: PP-7 Peak Elev=385.02' Storage=488 cf Inflow=0.75 cfs 1,687 cf
Discarded=0.14 cfs 1,687 cf Primary=0.00 cfs 0 cf Outflow=0.14 cfs 1,687 cf

Pond CB4: CB4 Peak Elev=357.13' Inflow=1.03 cfs 2,532 cf
15.0" Round Culvert n=0.010 L=38.0' S=0.0100 '/' Outflow=1.03 cfs 2,532 cf

Pond CB5: CB5 Peak Elev=356.80' Inflow=1.21 cfs 2,958 cf
15.0" Round Culvert n=0.010 L=54.0' S=0.0957 '/' Outflow=1.21 cfs 2,958 cf

Pond CB6: CB6 Peak Elev=356.75' Inflow=3.15 cfs 7,011 cf
18.0" Round Culvert n=0.010 L=64.0' S=0.0747 '/' Outflow=3.15 cfs 7,011 cf

Pond CB7: CB7 Peak Elev=366.43' Inflow=2.97 cfs 6,561 cf
18.0" Round Culvert n=0.010 L=24.0' S=0.0208 '/' Outflow=2.97 cfs 6,561 cf

Pond CB8: CB8 Peak Elev=375.88' Inflow=2.70 cfs 6,001 cf
18.0" Round Culvert n=0.010 L=128.0' S=0.0723 '/' Outflow=2.70 cfs 6,001 cf

Pond CB9: CB9 Peak Elev=379.12' Inflow=0.13 cfs 317 cf
15.0" Round Culvert n=0.010 L=24.0' S=0.0100 '/' Outflow=0.13 cfs 317 cf

Pond DMH#10: DMH#10 Peak Elev=339.49' Inflow=6.84 cfs 26,036 cf
18.0" Round Culvert n=0.010 L=111.0' S=0.0189 '/' Outflow=6.84 cfs 26,036 cf

Pond DMH3: DMH3 Peak Elev=334.42' Inflow=7.61 cfs 28,414 cf
24.0" Round Culvert n=0.010 L=97.0' S=0.0590 '/' Outflow=7.61 cfs 28,414 cf

Pond DMH5: DMH5 Peak Elev=338.86' Inflow=1.01 cfs 3,155 cf
15.0" Round Culvert n=0.010 L=148.0' S=0.0100 '/' Outflow=1.01 cfs 3,155 cf

Pond DMH6: DMH6 Peak Elev=340.21' Inflow=0.17 cfs 316 cf
15.0" Round Culvert n=0.010 L=168.0' S=0.0100 '/' Outflow=0.17 cfs 316 cf

Pond DMH7: DMH7 Peak Elev=387.59' Inflow=0.75 cfs 1,687 cf
15.0" Round Culvert n=0.010 L=79.0' S=0.0213 '/' Outflow=0.75 cfs 1,687 cf

Pond DMH8: DMH8 Peak Elev=375.84' Inflow=6.84 cfs 26,036 cf
18.0" Round Culvert n=0.010 L=149.0' S=0.1500 '/' Outflow=6.84 cfs 26,036 cf

Pond DMH9: DMH#9 Peak Elev=340.33' Inflow=6.84 cfs 26,036 cf
18.0" Round Culvert n=0.010 L=42.0' S=0.0200 '/' Outflow=6.84 cfs 26,036 cf

Pond PP-1: PP-1 Peak Elev=340.72' Storage=2,382 cf Inflow=4.40 cfs 11,622 cf
Discarded=1.29 cfs 11,503 cf Primary=0.13 cfs 119 cf Outflow=1.42 cfs 11,622 cf

Pond PP-2: PP-2 Peak Elev=340.04' Storage=28 cf Inflow=0.27 cfs 630 cf
Discarded=0.25 cfs 630 cf Primary=0.00 cfs 0 cf Outflow=0.25 cfs 630 cf

Pond PP-3: PP-3 Peak Elev=344.61' Storage=390 cf Inflow=0.29 cfs 674 cf
Discarded=0.03 cfs 155 cf Primary=0.04 cfs 197 cf Outflow=0.08 cfs 352 cf

Pond PP-4: PP-4 Peak Elev=344.74' Storage=534 cf Inflow=0.39 cfs 954 cf
Discarded=0.15 cfs 592 cf Primary=0.00 cfs 0 cf Outflow=0.15 cfs 592 cf

Pond PP-5: PP-5 Peak Elev=345.37' Storage=594 cf Inflow=1.26 cfs 3,505 cf
Discarded=0.33 cfs 407 cf Primary=0.85 cfs 2,839 cf Outflow=1.18 cfs 3,246 cf

Pond UGC-1: UGC-1 Peak Elev=350.81' Storage=3,520 cf Inflow=6.35 cfs 14,840 cf
Discarded=1.43 cfs 14,542 cf Primary=0.35 cfs 298 cf Outflow=1.78 cfs 14,840 cf

Total Runoff Area = 1,360,270 sf Runoff Volume = 176,568 cf Average Runoff Depth = 1.56"
74.33% Pervious = 1,011,063 sf 25.67% Impervious = 349,207 sf

Summary for Subcatchment DA-1: DA-1

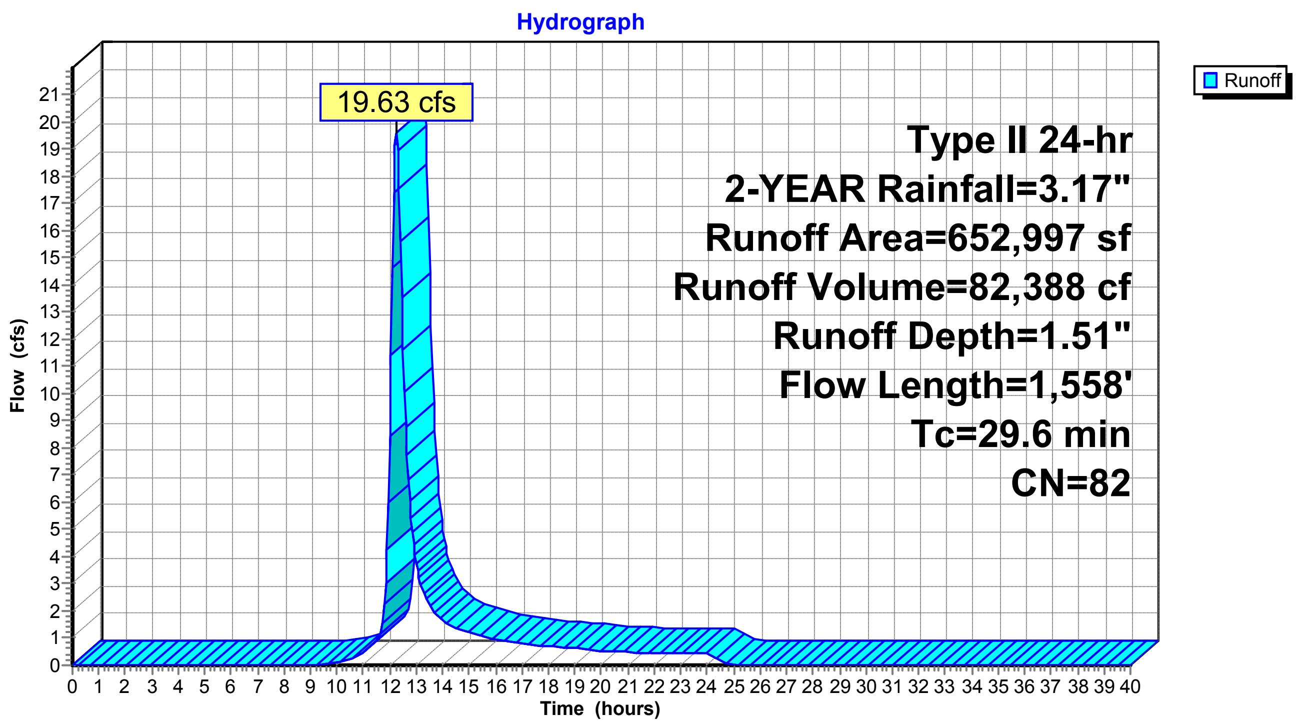
Runoff = 19.63 cfs @ 12.25 hrs, Volume= 82,388 cf, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
405,559	79	Pasture/grassland/range, Fair, HSG C
119,458	73	Woods, Fair, HSG C
127,980	98	Paved parking, HSG C
652,997	82	Weighted Average
525,017		80.40% Pervious Area
127,980		19.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.9	100	0.0100	0.09		**Sheet Flow, GG-HH** Grass: Dense n= 0.240 P2= 3.17"
10.7	1,458	0.1056	2.27		**Shallow Concentrated Flow, HH-II** Short Grass Pasture Kv= 7.0 fps
29.6	1,558	Total			

Subcatchment DA-1: DA-1



Summary for Subcatchment DA-10: DA-10

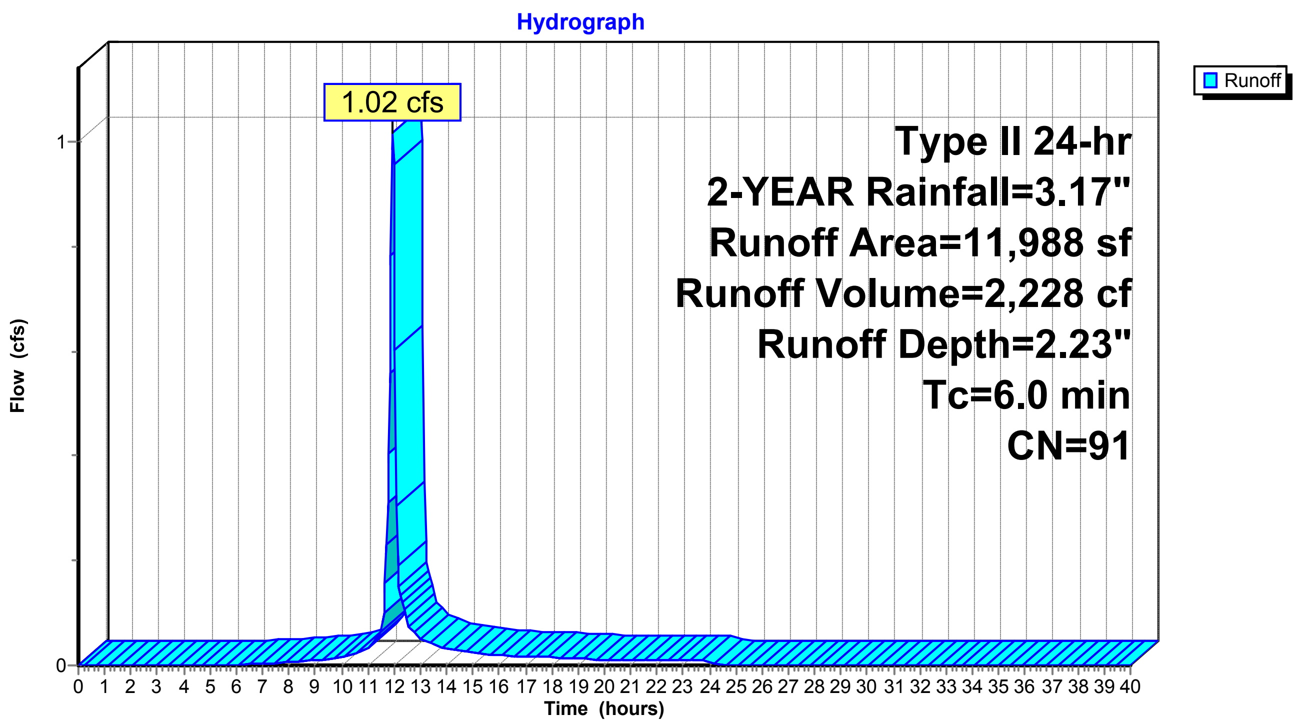
Runoff = 1.02 cfs @ 11.97 hrs, Volume= 2,228 cf, Depth= 2.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
3,384	74	>75% Grass cover, Good, HSG C
8,604	98	Paved parking, HSG C
11,988	91	Weighted Average
3,384		28.23% Pervious Area
8,604		71.77% Impervious Area

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

Subcatchment DA-10: DA-10



Summary for Subcatchment DA-11: DA-11

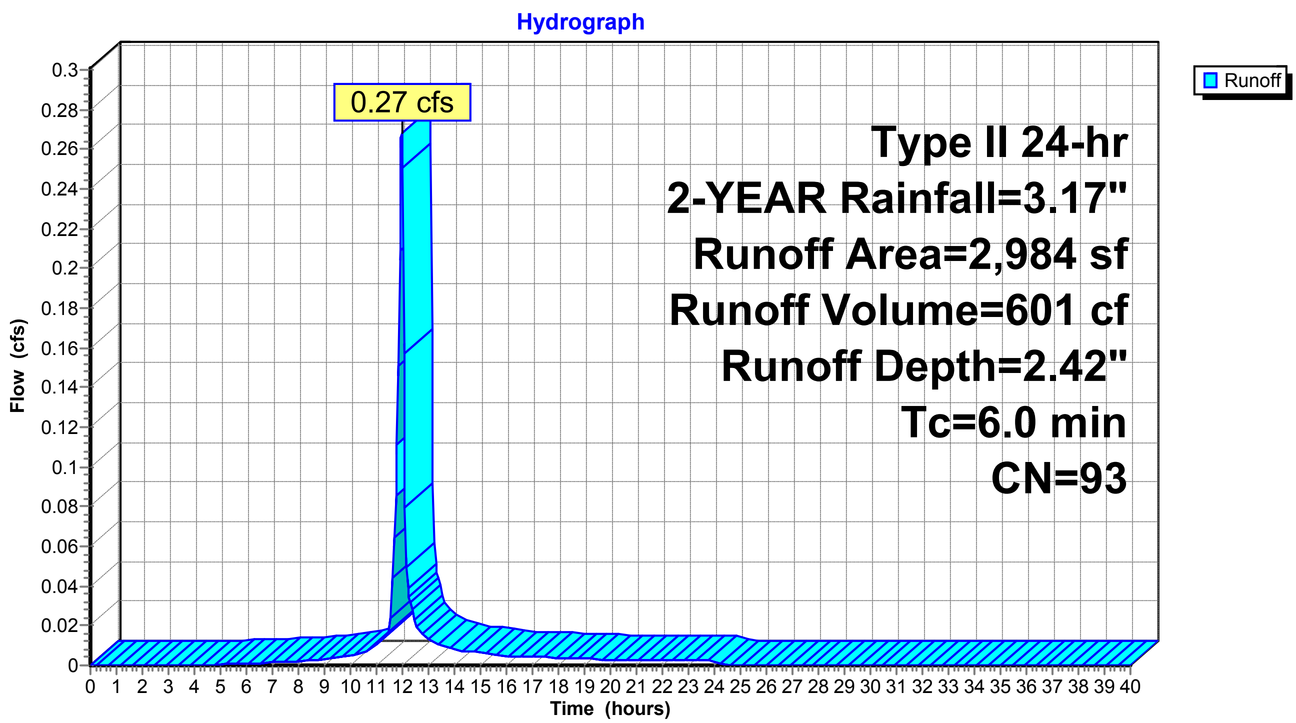
Runoff = 0.27 cfs @ 11.96 hrs, Volume= 601 cf, Depth= 2.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
594	74	>75% Grass cover, Good, HSG C
2,390	98	Paved parking, HSG C
2,984	93	Weighted Average
594		19.91% Pervious Area
2,390		80.09% Impervious Area

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

Subcatchment DA-11: DA-11



Summary for Subcatchment DA-12: DA-12

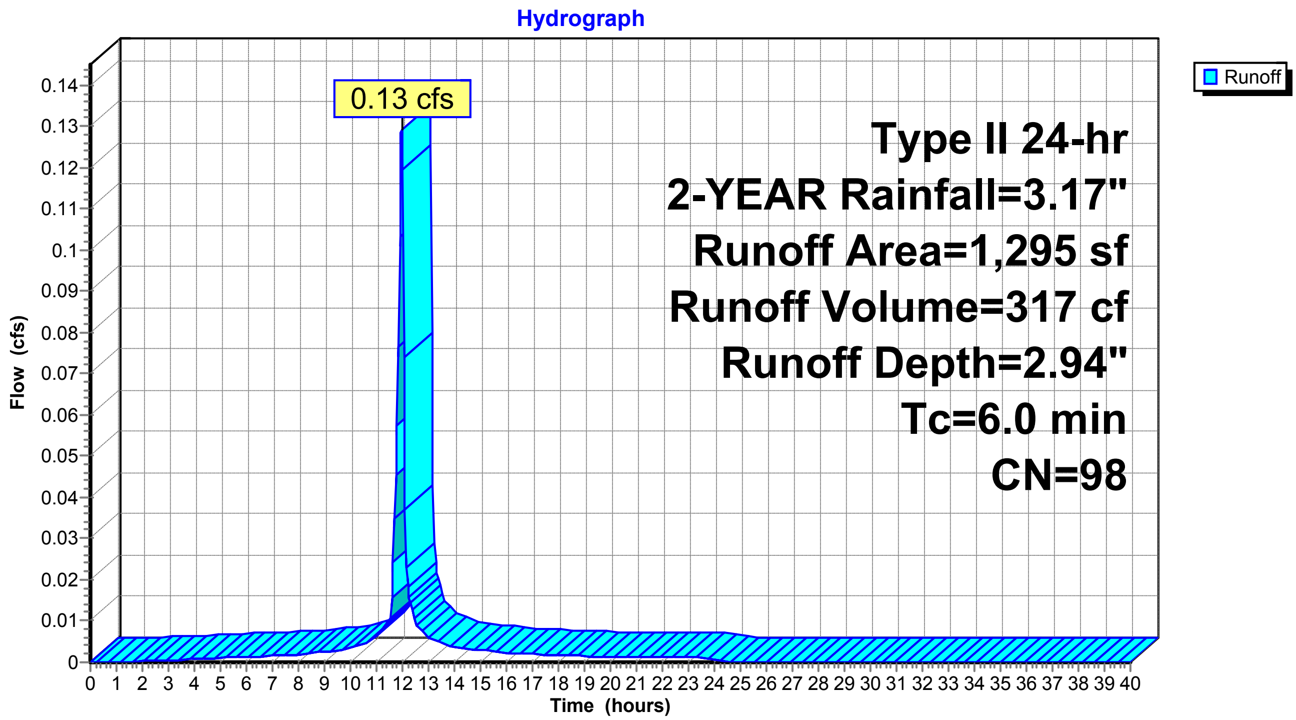
Runoff = 0.13 cfs @ 11.96 hrs, Volume= 317 cf, Depth= 2.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
1,295	98	Paved parking, HSG C
1,295		100.00% Impervious Area

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

Subcatchment DA-12: DA-12



Summary for Subcatchment DA-13: DA-13

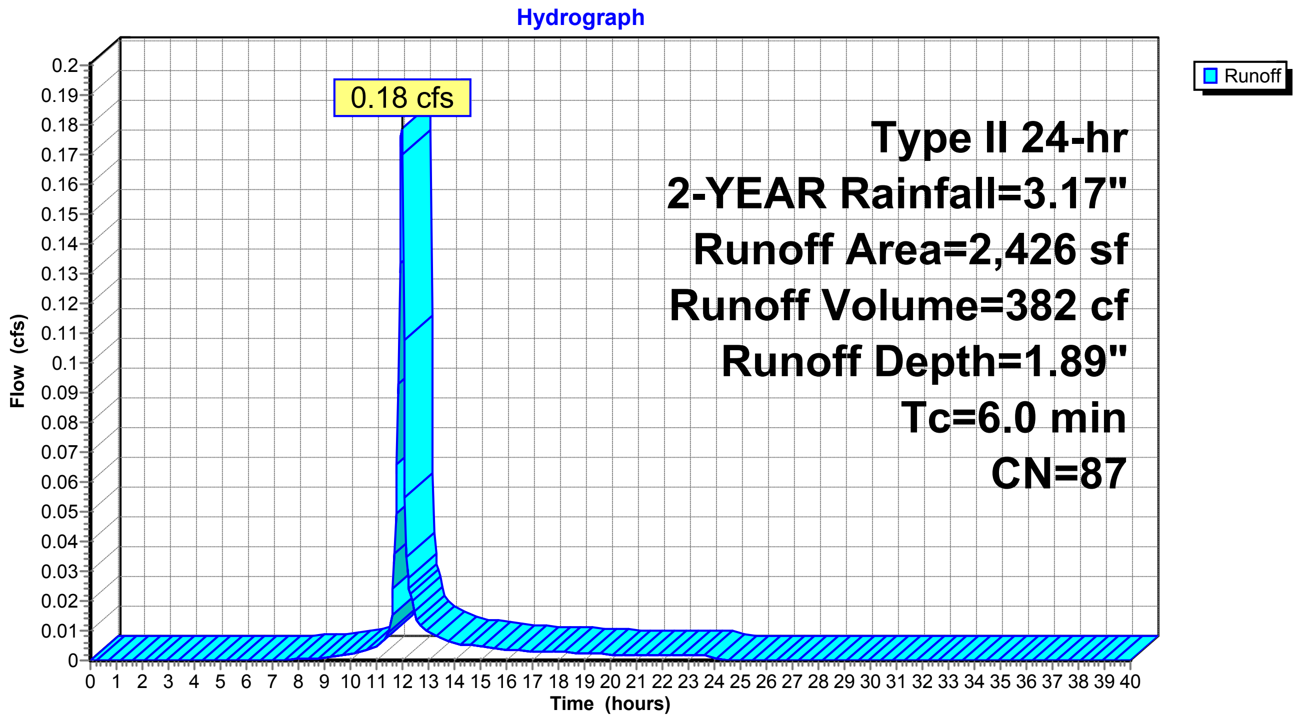
Runoff = 0.18 cfs @ 11.97 hrs, Volume= 382 cf, Depth= 1.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
1,105	74	>75% Grass cover, Good, HSG C
1,321	98	Paved parking, HSG C
2,426	87	Weighted Average
1,105		45.55% Pervious Area
1,321		54.45% Impervious Area

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

Subcatchment DA-13: DA-13



Summary for Subcatchment DA-14: DA-14

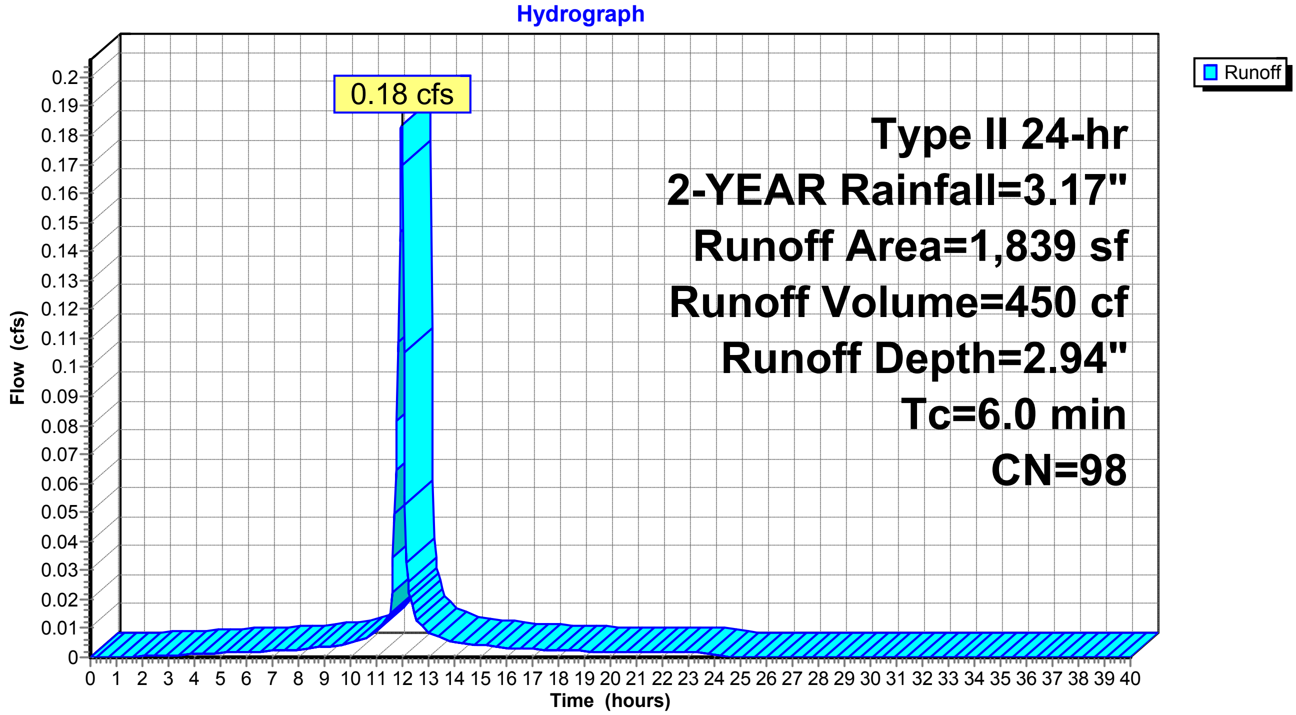
Runoff = 0.18 cfs @ 11.96 hrs, Volume= 450 cf, Depth= 2.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
1,839	98	Paved parking, HSG C
1,839		100.00% Impervious Area

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

Subcatchment DA-14: DA-14



Summary for Subcatchment DA-15: DA-15

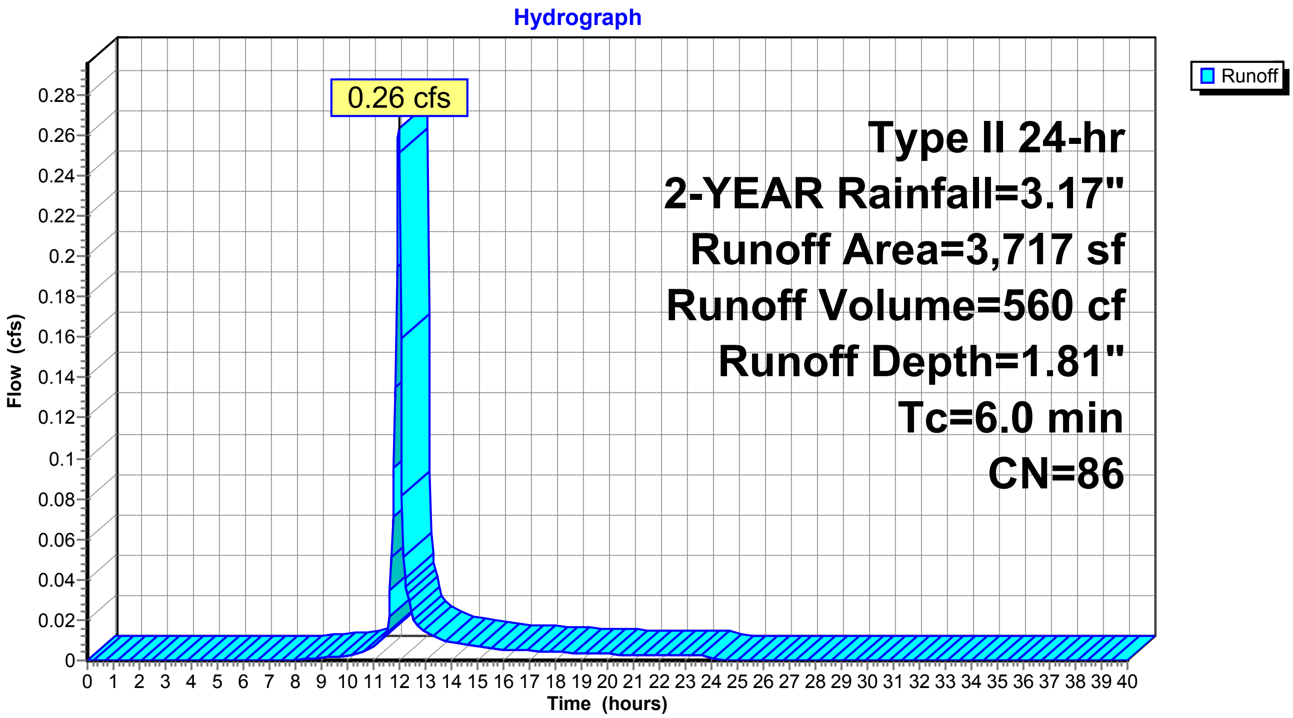
Runoff = 0.26 cfs @ 11.97 hrs, Volume= 560 cf, Depth= 1.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
1,782	74	>75% Grass cover, Good, HSG C
1,935	98	Paved parking, HSG C
3,717	86	Weighted Average
1,782		47.94% Pervious Area
1,935		52.06% Impervious Area

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

Subcatchment DA-15: DA-15



Summary for Subcatchment DA-16: DA-16

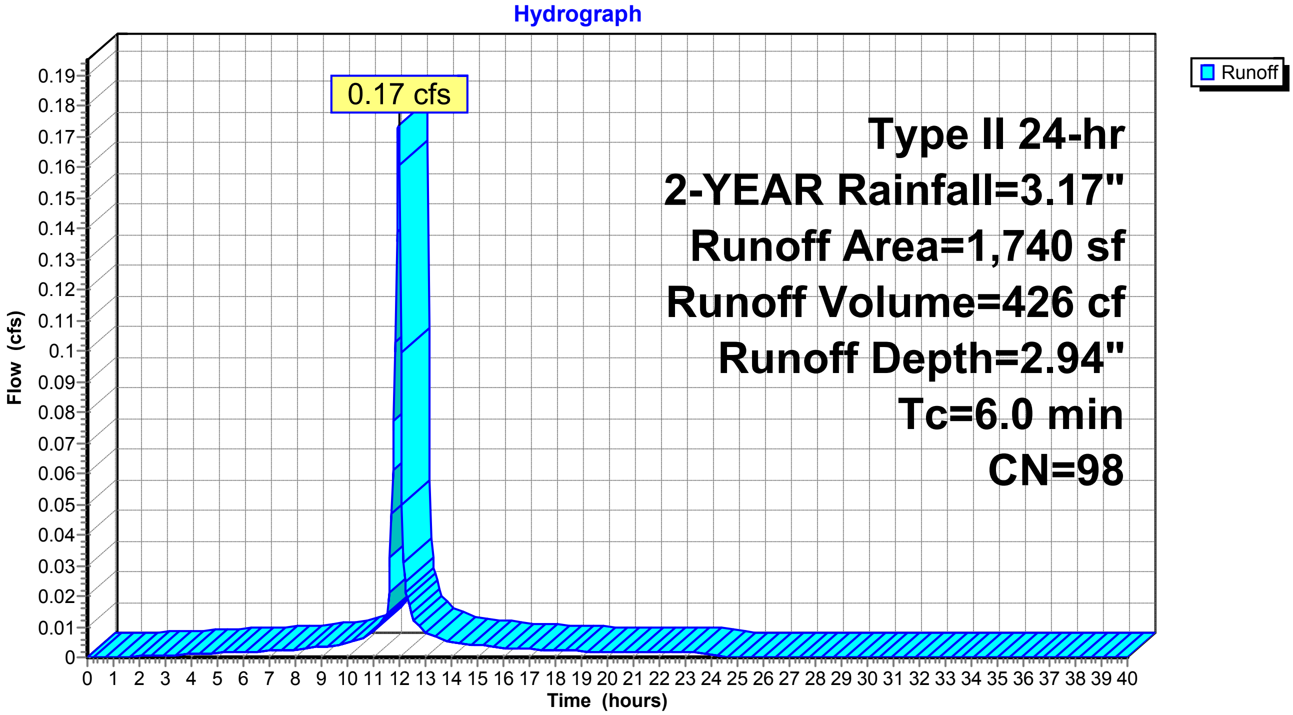
Runoff = 0.17 cfs @ 11.96 hrs, Volume= 426 cf, Depth= 2.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
1,740	98	Paved parking, HSG C
1,740		100.00% Impervious Area

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

Subcatchment DA-16: DA-16



Summary for Subcatchment DA-17: DA-17

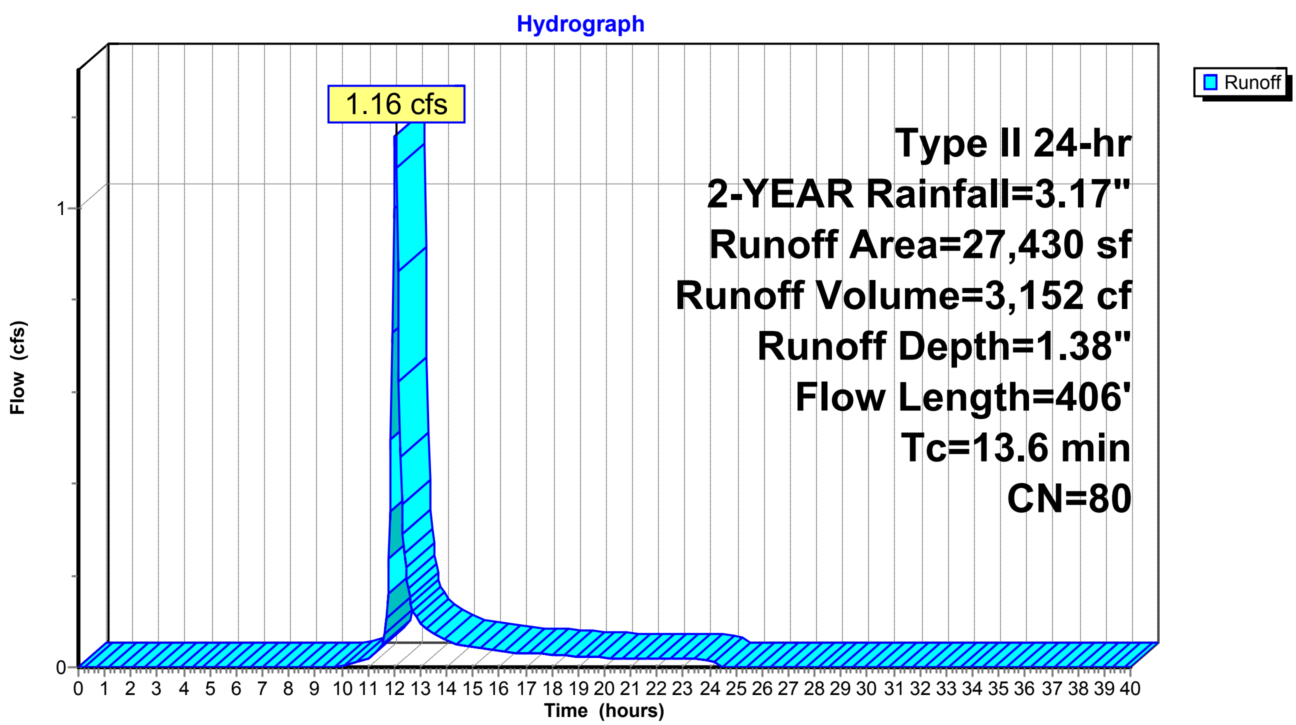
Runoff = 1.16 cfs @ 12.06 hrs, Volume= 3,152 cf, Depth= 1.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
20,898	74	>75% Grass cover, Good, HSG C
6,532	98	Paved parking, HSG C
27,430	80	Weighted Average
20,898		76.19% Pervious Area
6,532		23.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.5	100	0.0350	0.15		**Sheet Flow, G-H** Grass: Dense n= 0.240 P2= 3.17"
2.1	306	0.1160	2.38		**Shallow Concentrated Flow, H-I** Short Grass Pasture Kv= 7.0 fps
13.6	406	Total			

Subcatchment DA-17: DA-17



Summary for Subcatchment DA-18: DA-18

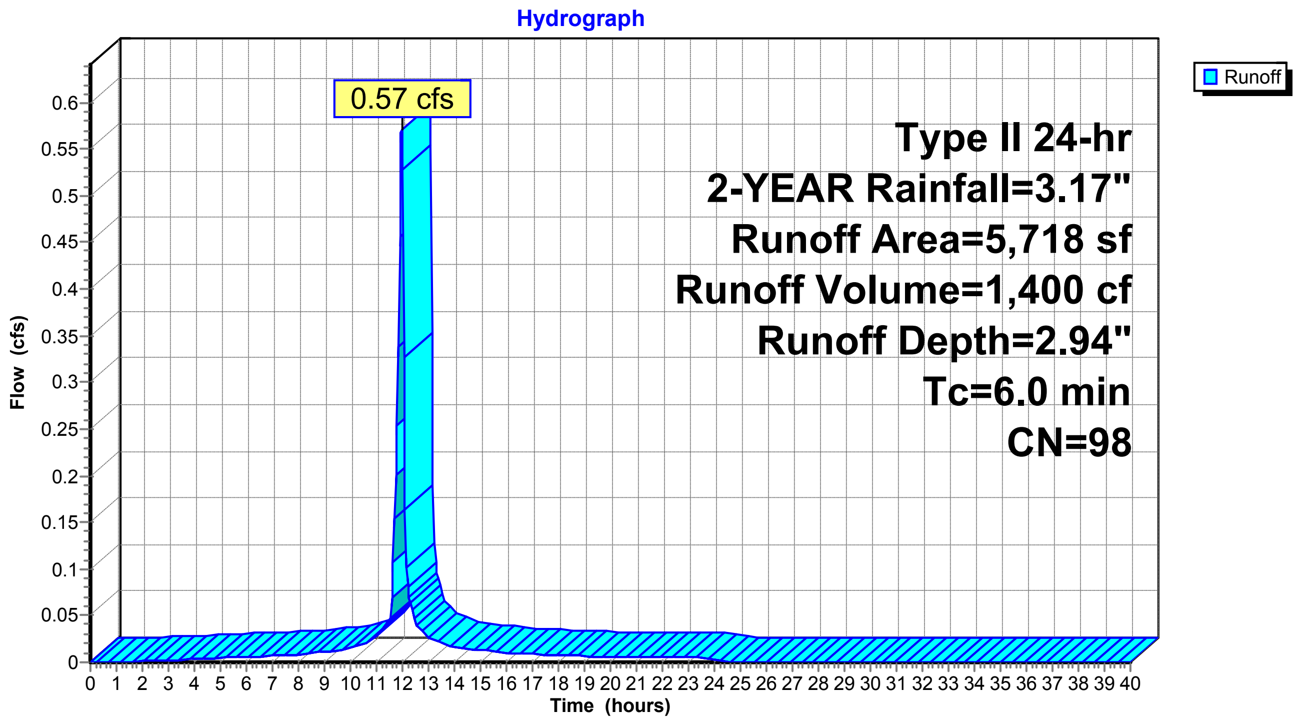
Runoff = 0.57 cfs @ 11.96 hrs, Volume= 1,400 cf, Depth= 2.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
5,718	98	Paved parking, HSG C
5,718		100.00% Impervious Area

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

Subcatchment DA-18: DA-18



Summary for Subcatchment DA-19: DA-19

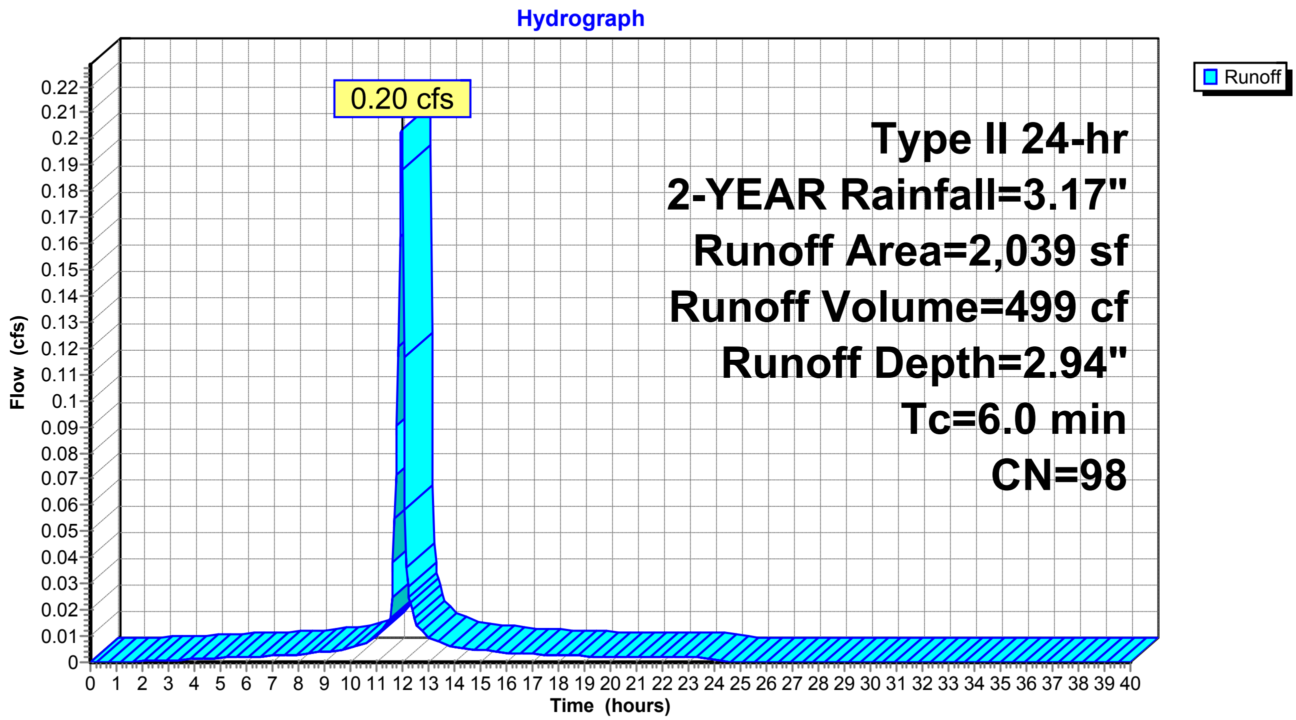
Runoff = 0.20 cfs @ 11.96 hrs, Volume= 499 cf, Depth= 2.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
2,039	98	Paved parking, HSG C
2,039		100.00% Impervious Area

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

Subcatchment DA-19: DA-19



Summary for Subcatchment DA-2: DA-2

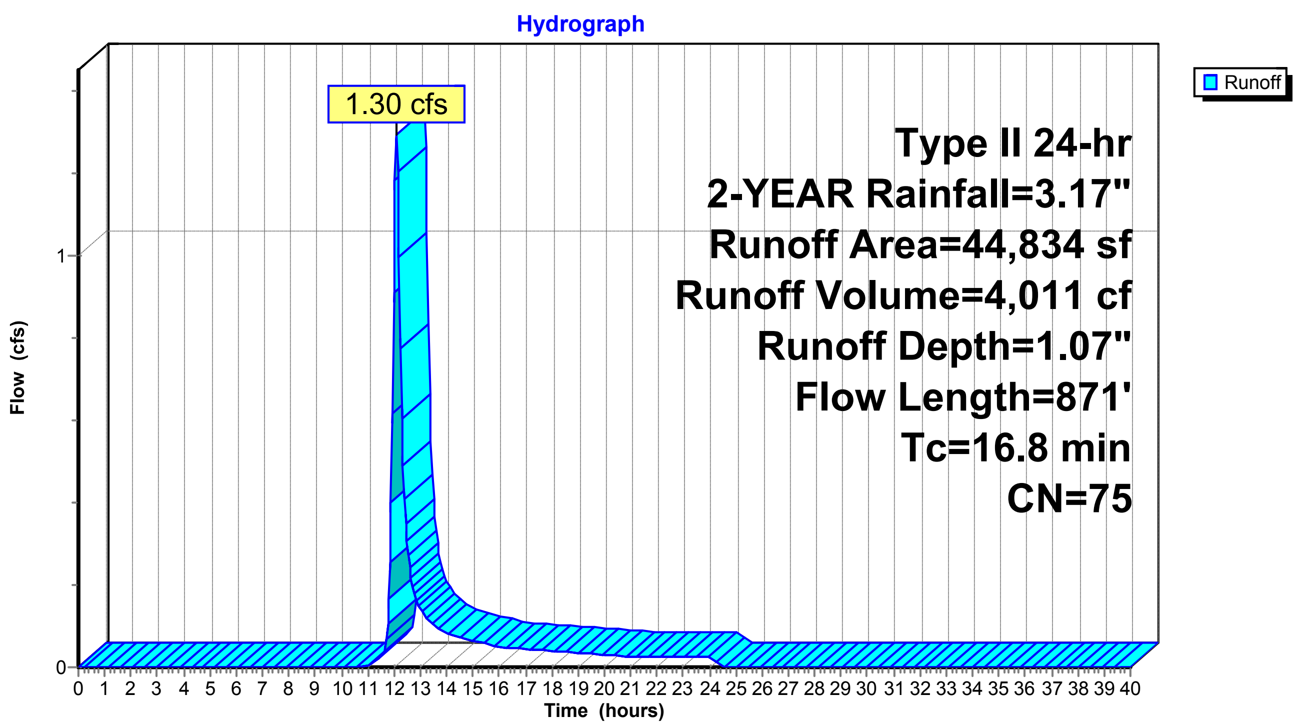
Runoff = 1.30 cfs @ 12.10 hrs, Volume= 4,011 cf, Depth= 1.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
43,705	74	>75% Grass cover, Good, HSG C
1,129	98	Paved parking, HSG C
44,834	75	Weighted Average
43,705		97.48% Pervious Area
1,129		2.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	100	0.0375	0.15		**Sheet Flow, M-N** Grass: Dense n= 0.240 P2= 3.17"
5.6	771	0.1070	2.29		**Shallow Concentrated Flow, N-O** Short Grass Pasture Kv= 7.0 fps
16.8	871	Total			

Subcatchment DA-2: DA-2



Summary for Subcatchment DA-20: DA-20

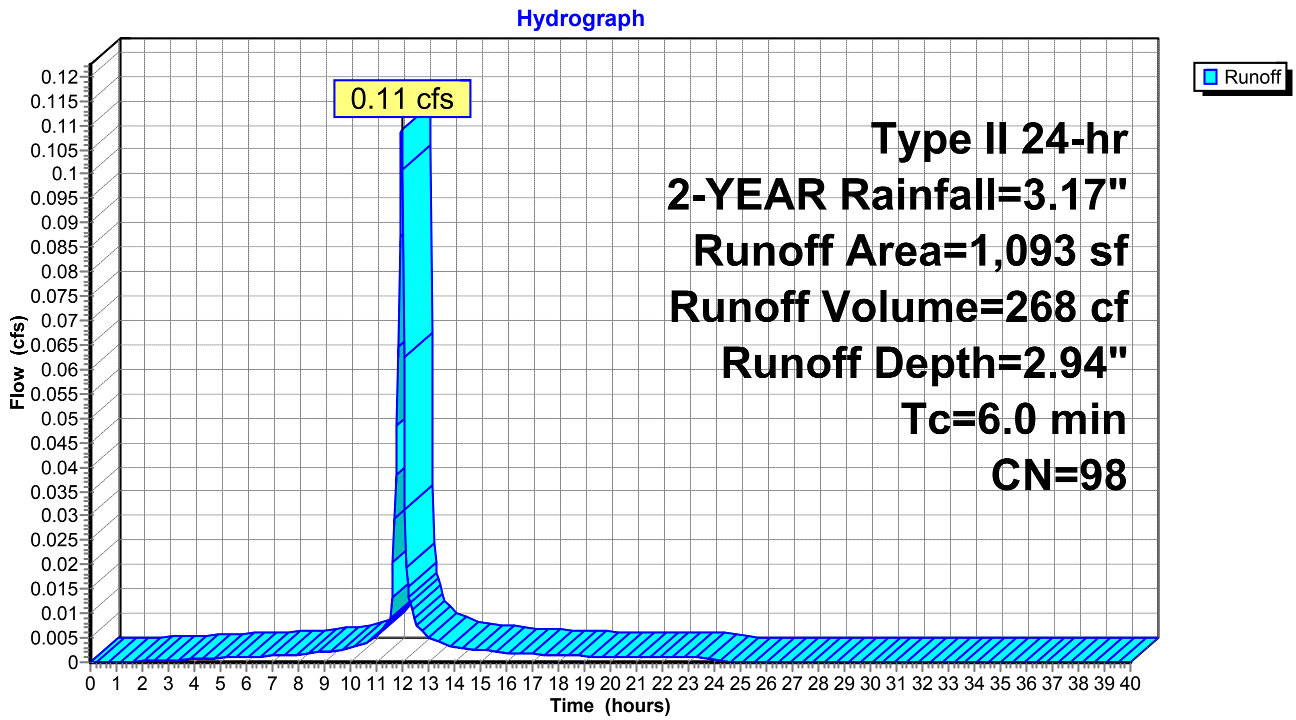
Runoff = 0.11 cfs @ 11.96 hrs, Volume= 268 cf, Depth= 2.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
1,093	98	Paved parking, HSG C
1,093		100.00% Impervious Area

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

Subcatchment DA-20: DA-20



Summary for Subcatchment DA-21: DA-21

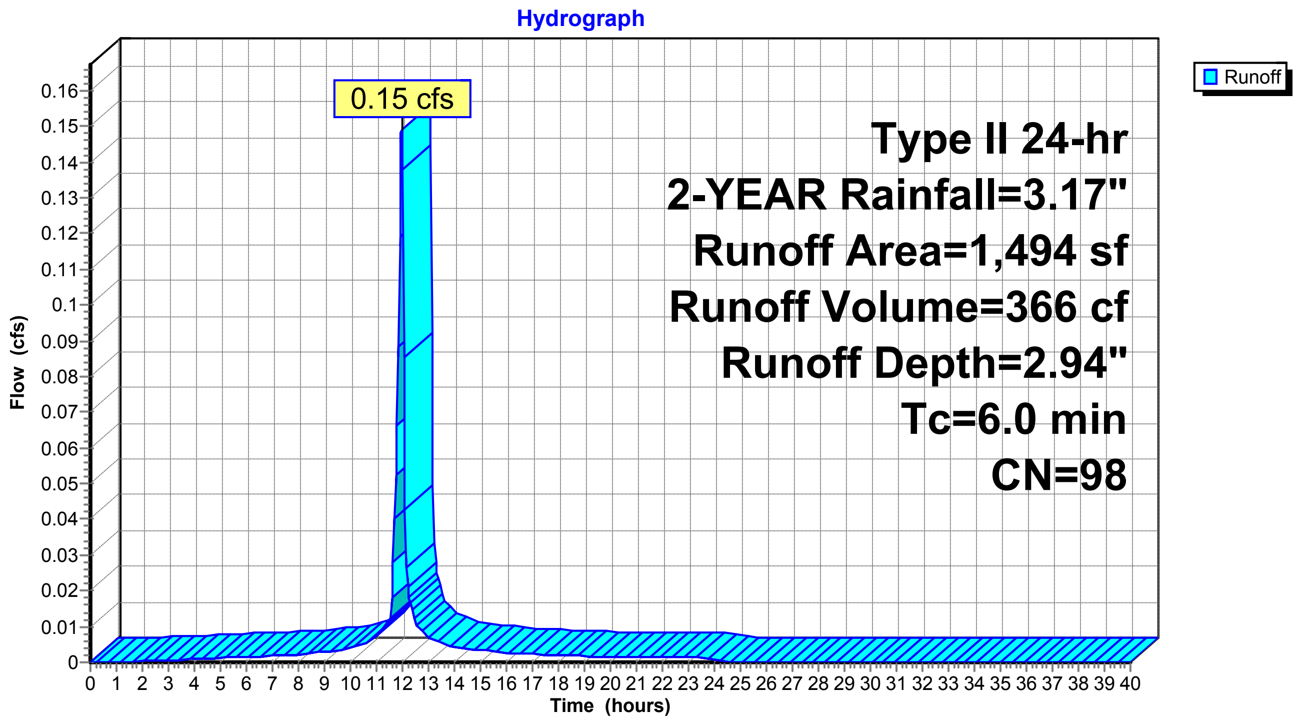
Runoff = 0.15 cfs @ 11.96 hrs, Volume= 366 cf, Depth= 2.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
1,494	98	Paved parking, HSG C
1,494		100.00% Impervious Area

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

Subcatchment DA-21: DA-21



Summary for Subcatchment DA-22: DA-22

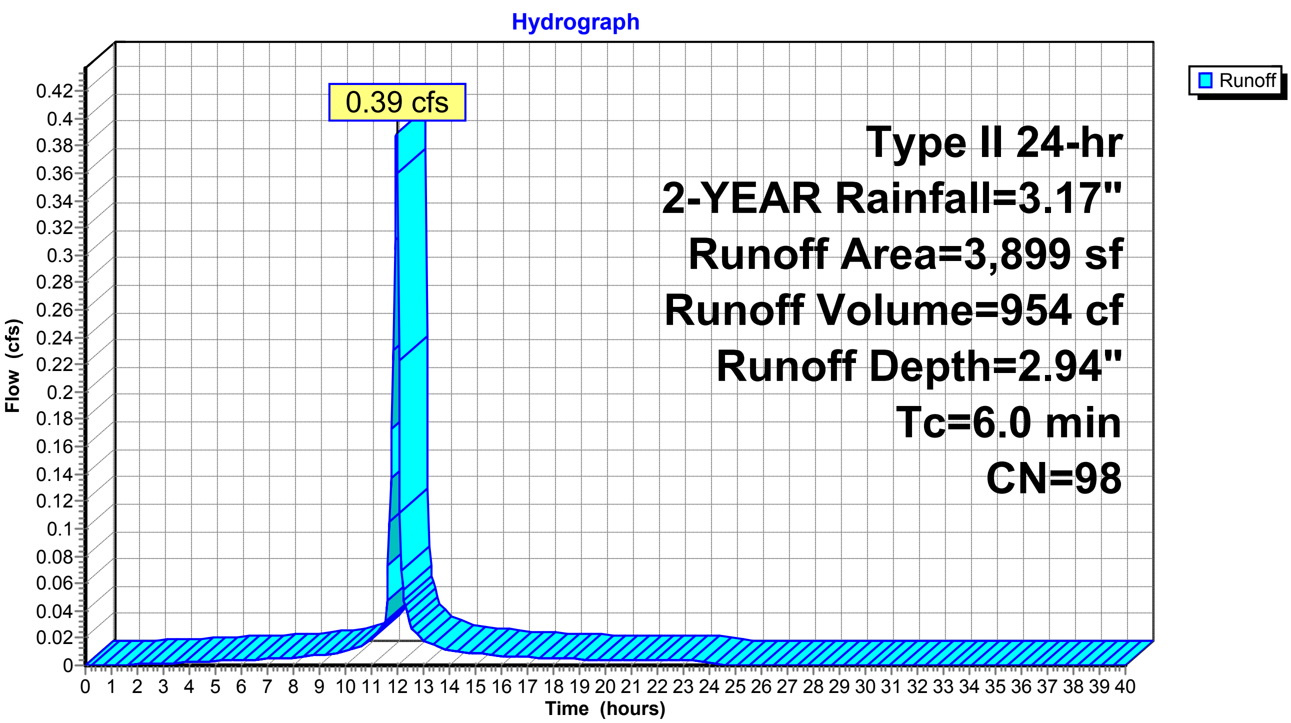
Runoff = 0.39 cfs @ 11.96 hrs, Volume= 954 cf, Depth= 2.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
50	74	>75% Grass cover, Good, HSG C
3,849	98	Paved parking, HSG C
3,899	98	Weighted Average
50		1.28% Pervious Area
3,849		98.72% Impervious Area

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

Subcatchment DA-22: DA-22



Summary for Subcatchment DA-23: DA-23

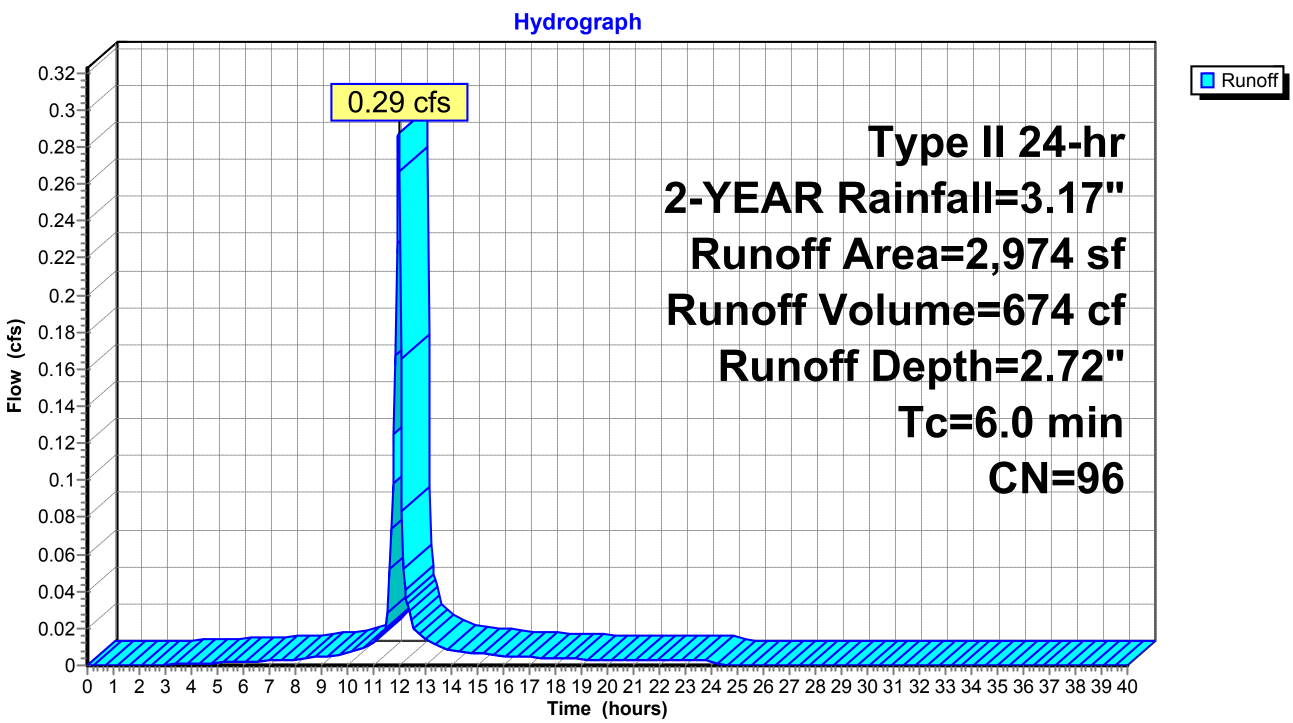
Runoff = 0.29 cfs @ 11.96 hrs, Volume= 674 cf, Depth= 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
209	74	>75% Grass cover, Good, HSG C
2,765	98	Paved parking, HSG C
2,974	96	Weighted Average
209		7.03% Pervious Area
2,765		92.97% Impervious Area

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

Subcatchment DA-23: DA-23



Summary for Subcatchment DA-24: DA-24

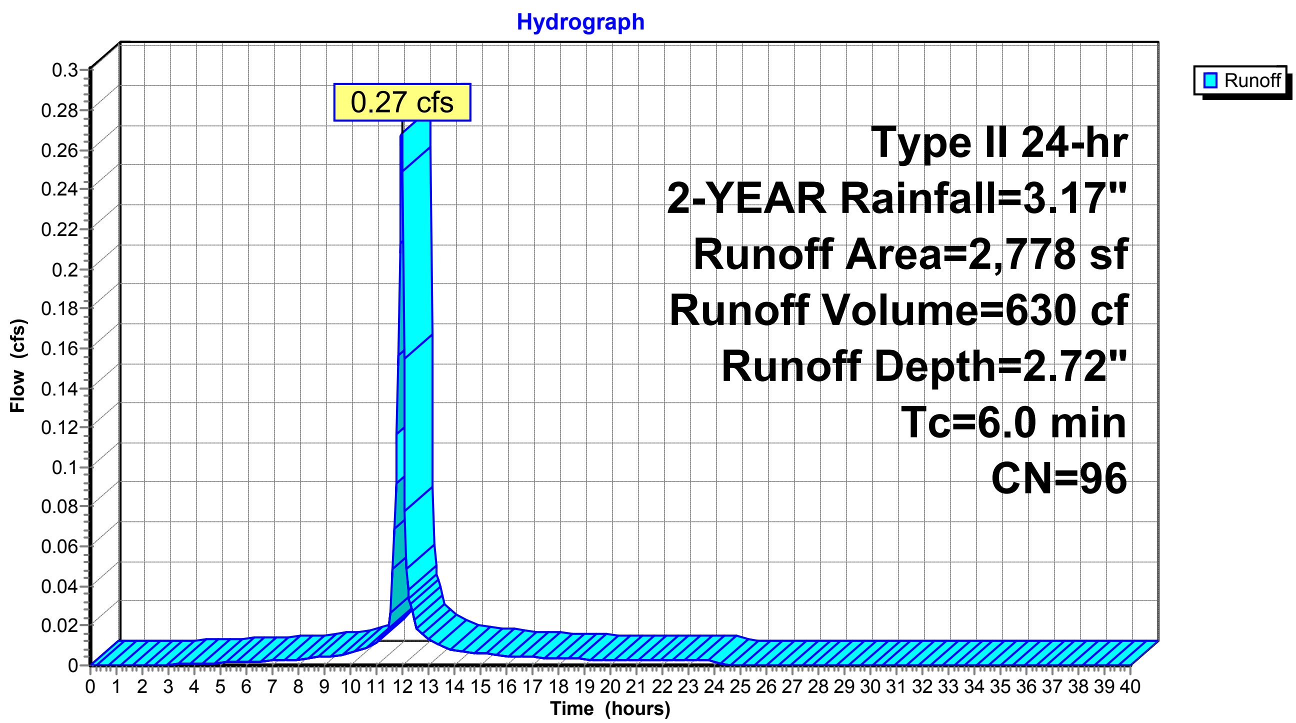
Runoff = 0.27 cfs @ 11.96 hrs, Volume= 630 cf, Depth= 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
211	74	>75% Grass cover, Good, HSG C
2,567	98	Paved parking, HSG C
2,778	96	Weighted Average
211		7.60% Pervious Area
2,567		92.40% Impervious Area

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

Subcatchment DA-24: DA-24



Summary for Subcatchment DA-25: DA-25

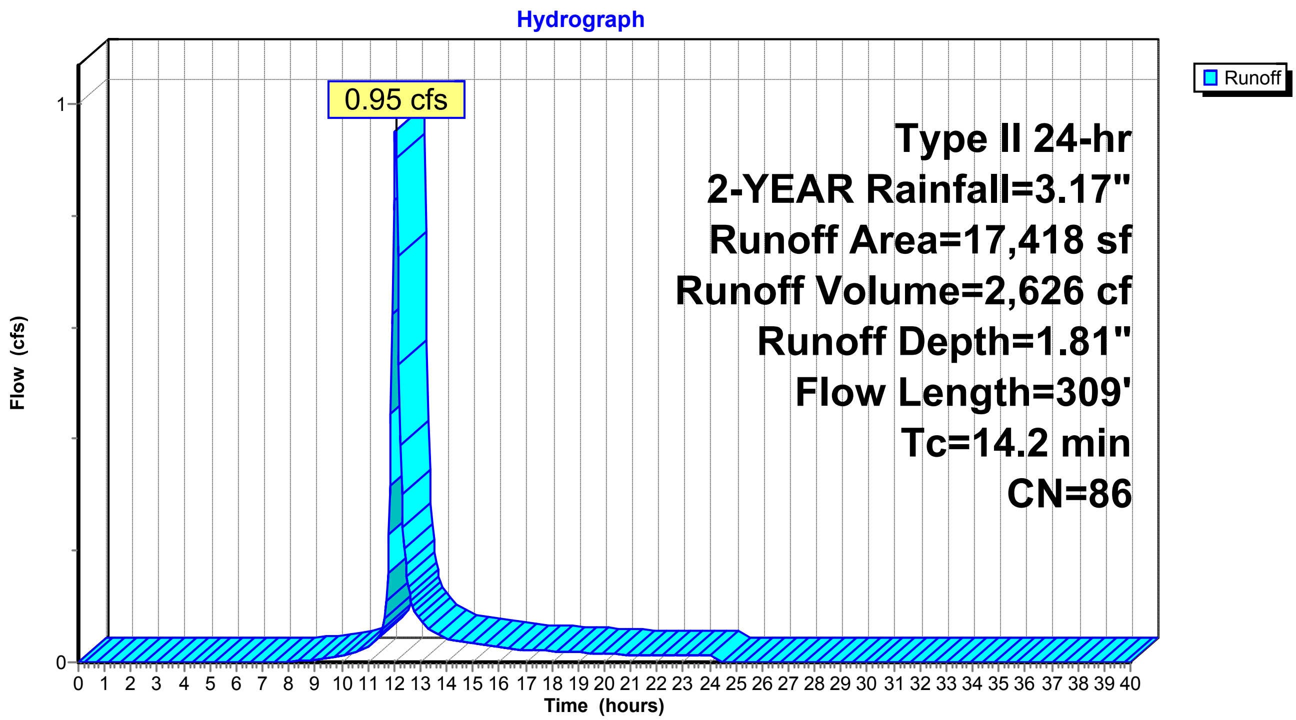
Runoff = 0.95 cfs @ 12.06 hrs, Volume= 2,626 cf, Depth= 1.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
8,778	74	>75% Grass cover, Good, HSG C
8,640	98	Paved parking, HSG C
17,418	86	Weighted Average
8,778		50.40% Pervious Area
8,640		49.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	91	0.0220	0.12		**Sheet Flow, J-K** Grass: Dense n= 0.240 P2= 3.17"
1.4	218	0.0170	2.65		**Shallow Concentrated Flow, J-L** Paved Kv= 20.3 fps
14.2	309	Total			

Subcatchment DA-25: DA-25



Summary for Subcatchment DA-26: DA-26

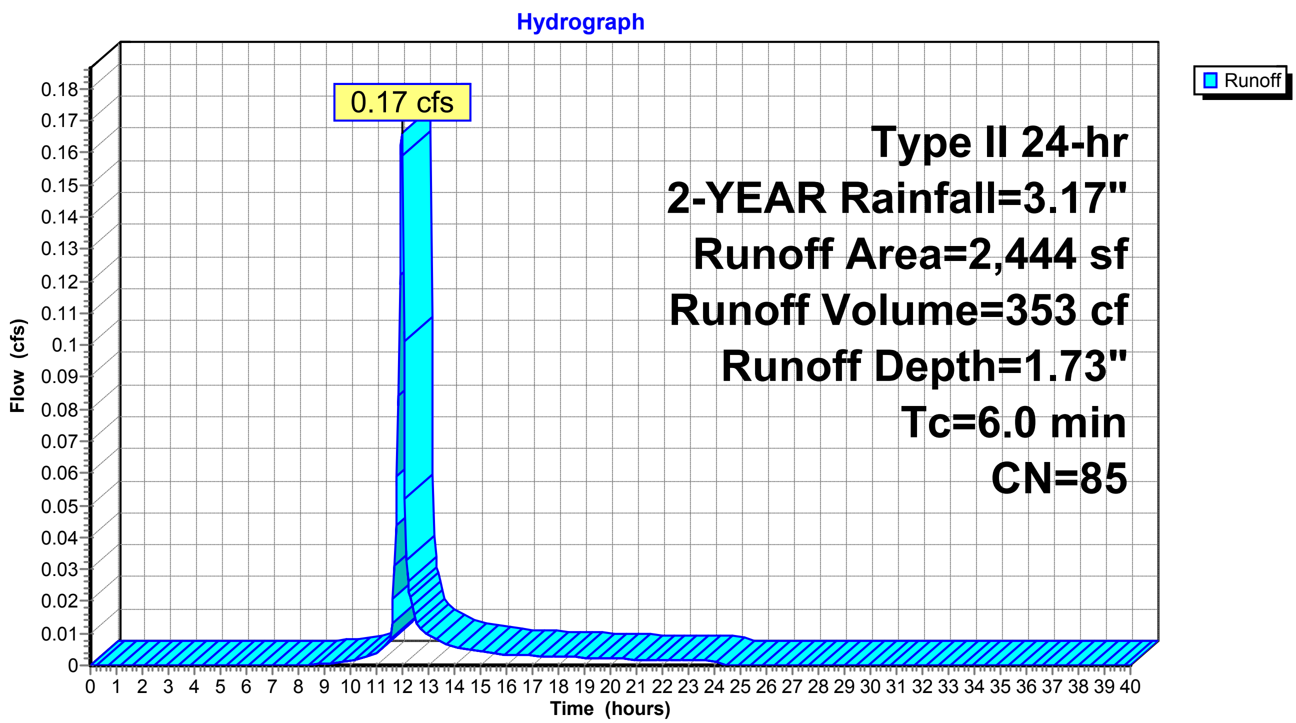
Runoff = 0.17 cfs @ 11.97 hrs, Volume= 353 cf, Depth= 1.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
1,334	74	>75% Grass cover, Good, HSG C
1,110	98	Paved parking, HSG C
2,444	85	Weighted Average
1,334		54.58% Pervious Area
1,110		45.42% Impervious Area

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

Subcatchment DA-26: DA-26



Summary for Subcatchment DA-27: DA-27

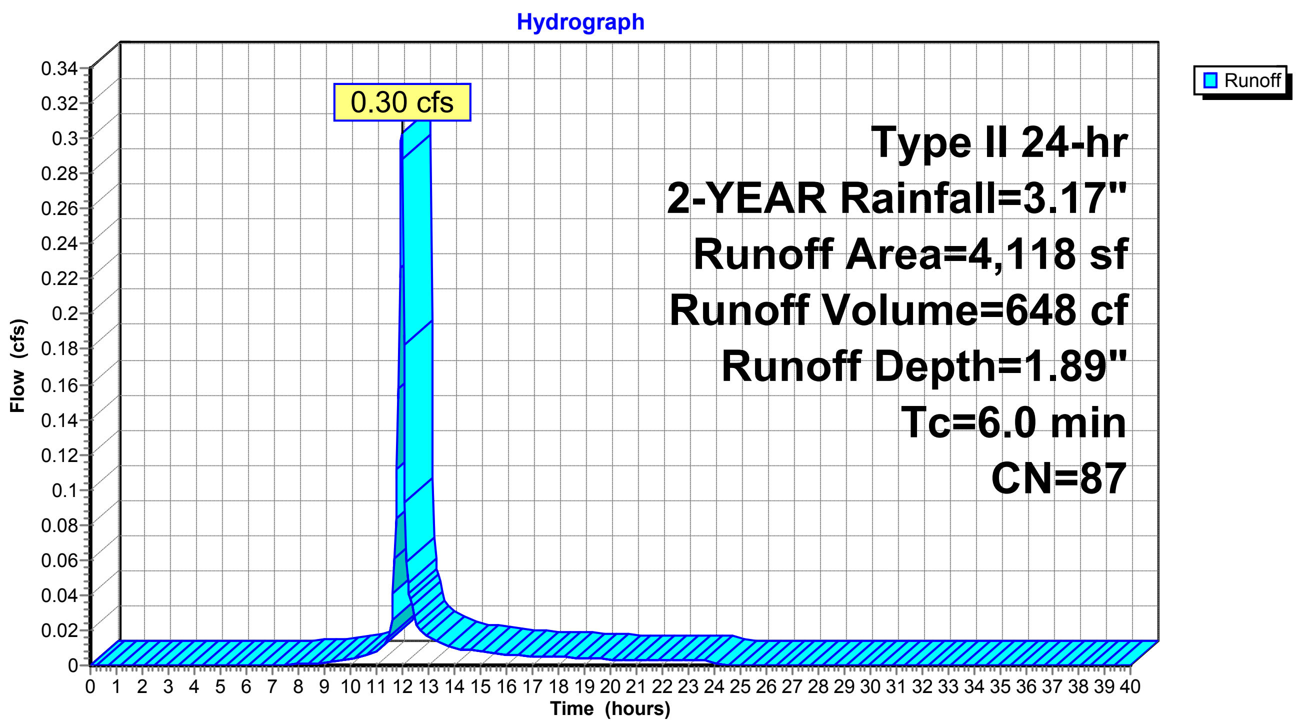
Runoff = 0.30 cfs @ 11.97 hrs, Volume= 648 cf, Depth= 1.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
1,932	74	>75% Grass cover, Good, HSG C
2,186	98	Paved parking, HSG C
4,118	87	Weighted Average
1,932		46.92% Pervious Area
2,186		53.08% Impervious Area

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

Subcatchment DA-27: DA-27



Summary for Subcatchment DA-28: DA-28

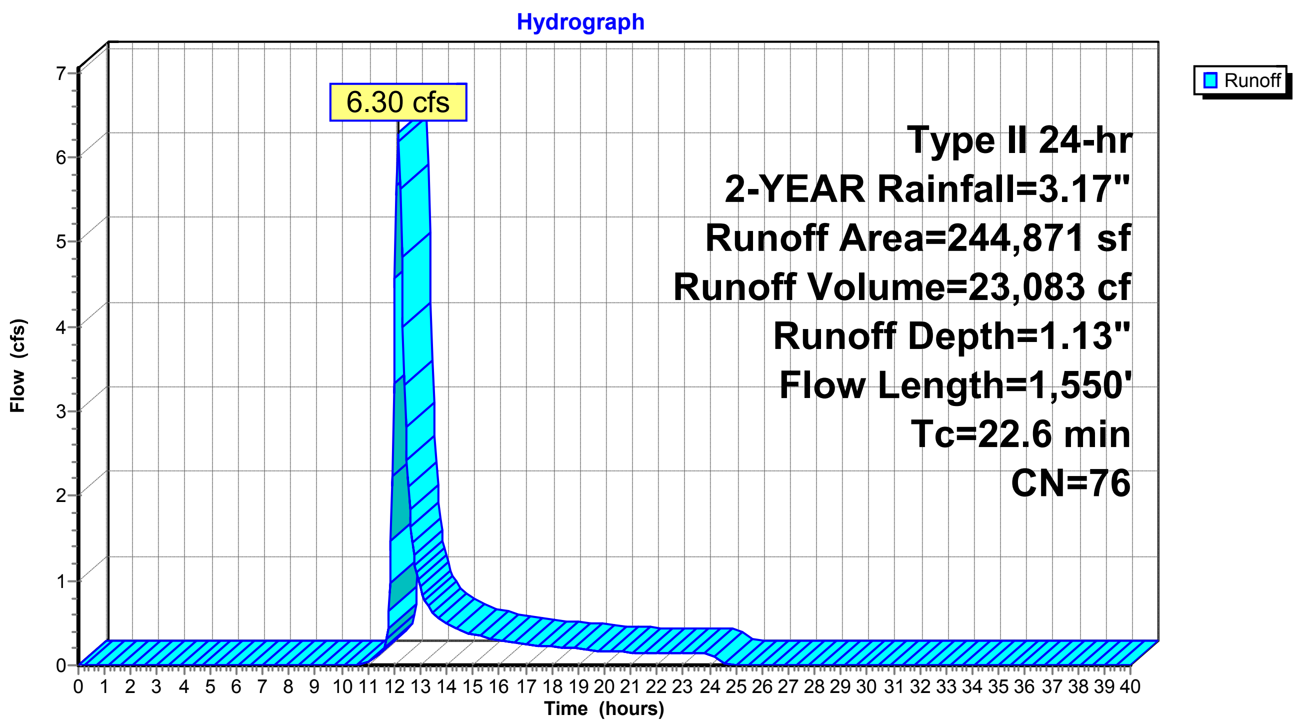
Runoff = 6.30 cfs @ 12.17 hrs, Volume= 23,083 cf, Depth= 1.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
167,699	74	>75% Grass cover, Good, HSG C
58,990	73	Woods, Fair, HSG C
18,182	98	Paved parking, HSG C
244,871	76	Weighted Average
226,689		92.57% Pervious Area
18,182		7.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	100	0.0450	0.16		**Sheet Flow, S-T** Grass: Dense n= 0.240 P2= 3.17"
12.2	1,450	0.0795	1.97		**Shallow Concentrated Flow, T-U** Short Grass Pasture Kv= 7.0 fps
22.6	1,550	Total			

Subcatchment DA-28: DA-28



Summary for Subcatchment DA-29: DA-29

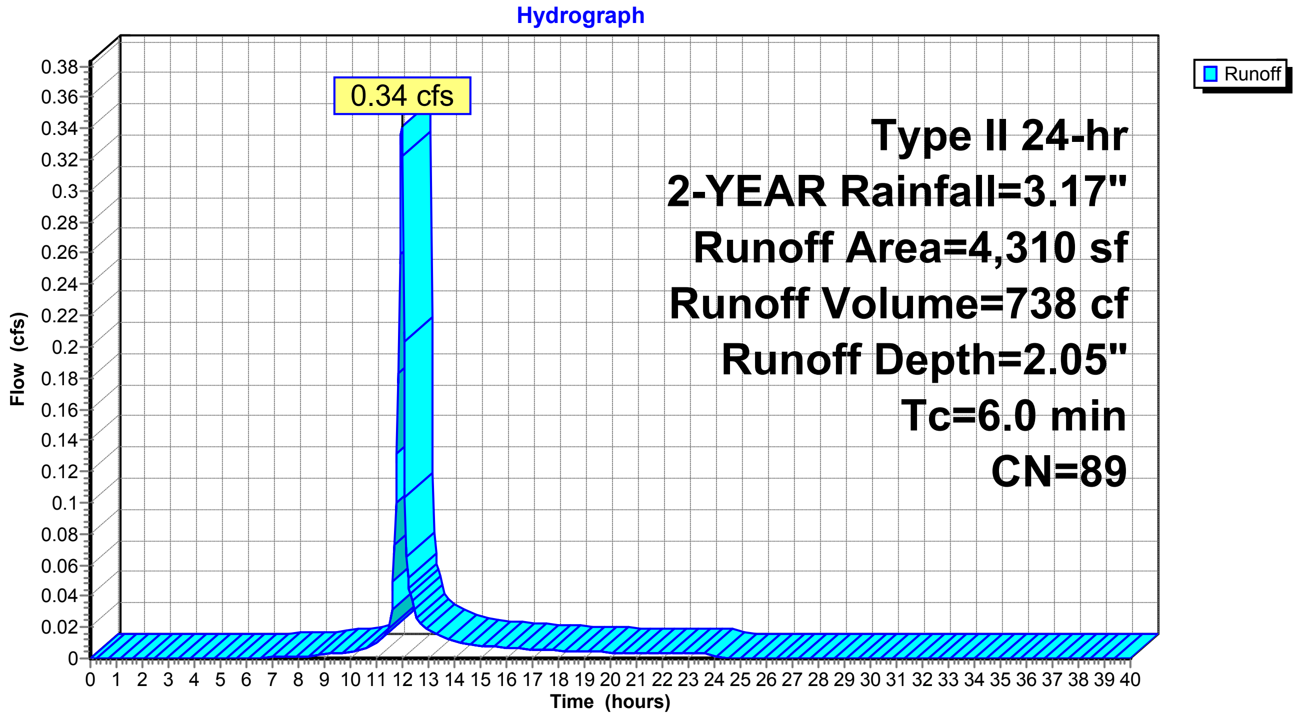
Runoff = 0.34 cfs @ 11.97 hrs, Volume= 738 cf, Depth= 2.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
1,648	74	>75% Grass cover, Good, HSG C
0	73	Woods, Fair, HSG C
2,662	98	Paved parking, HSG C
4,310	89	Weighted Average
1,648		38.24% Pervious Area
2,662		61.76% Impervious Area

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

Subcatchment DA-29: DA-29



Summary for Subcatchment DA-3: DA-3

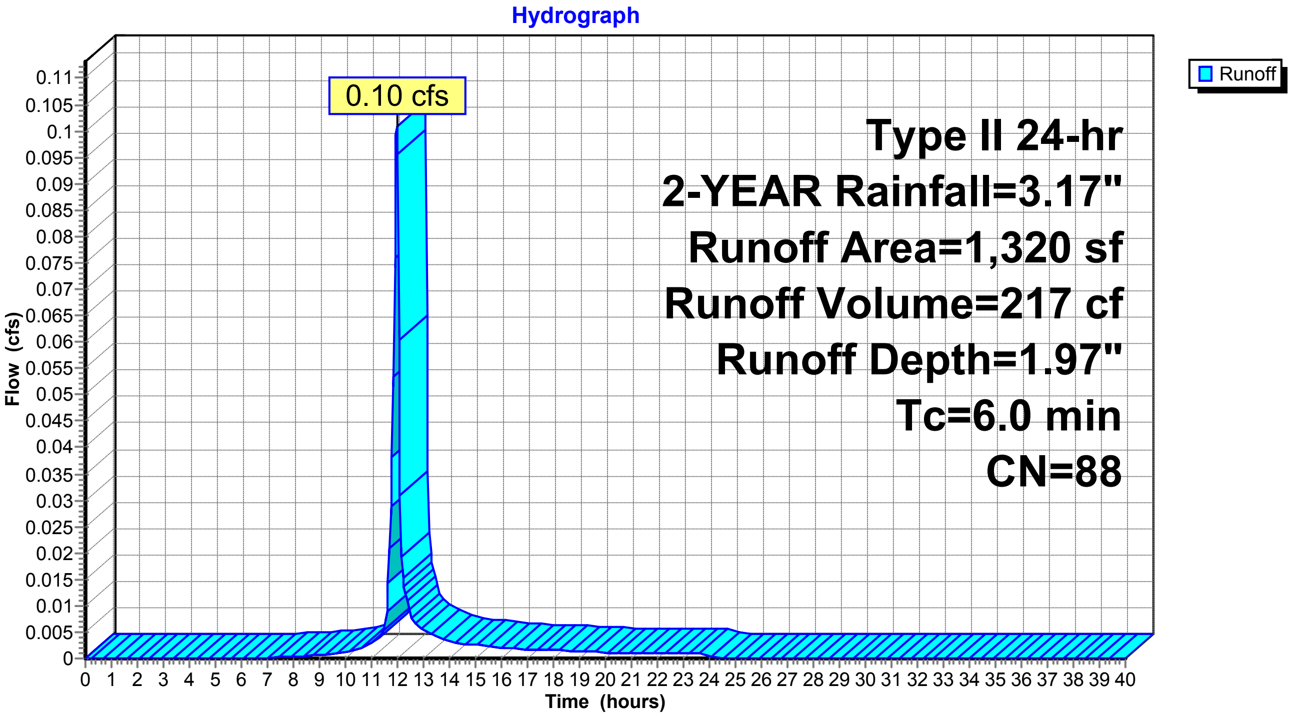
Runoff = 0.10 cfs @ 11.97 hrs, Volume= 217 cf, Depth= 1.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
542	74	>75% Grass cover, Good, HSG C
0	73	Woods, Fair, HSG C
778	98	Paved parking, HSG C
1,320	88	Weighted Average
542		41.06% Pervious Area
778		58.94% Impervious Area

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

Subcatchment DA-3: DA-3



Summary for Subcatchment DA-30: DA-30

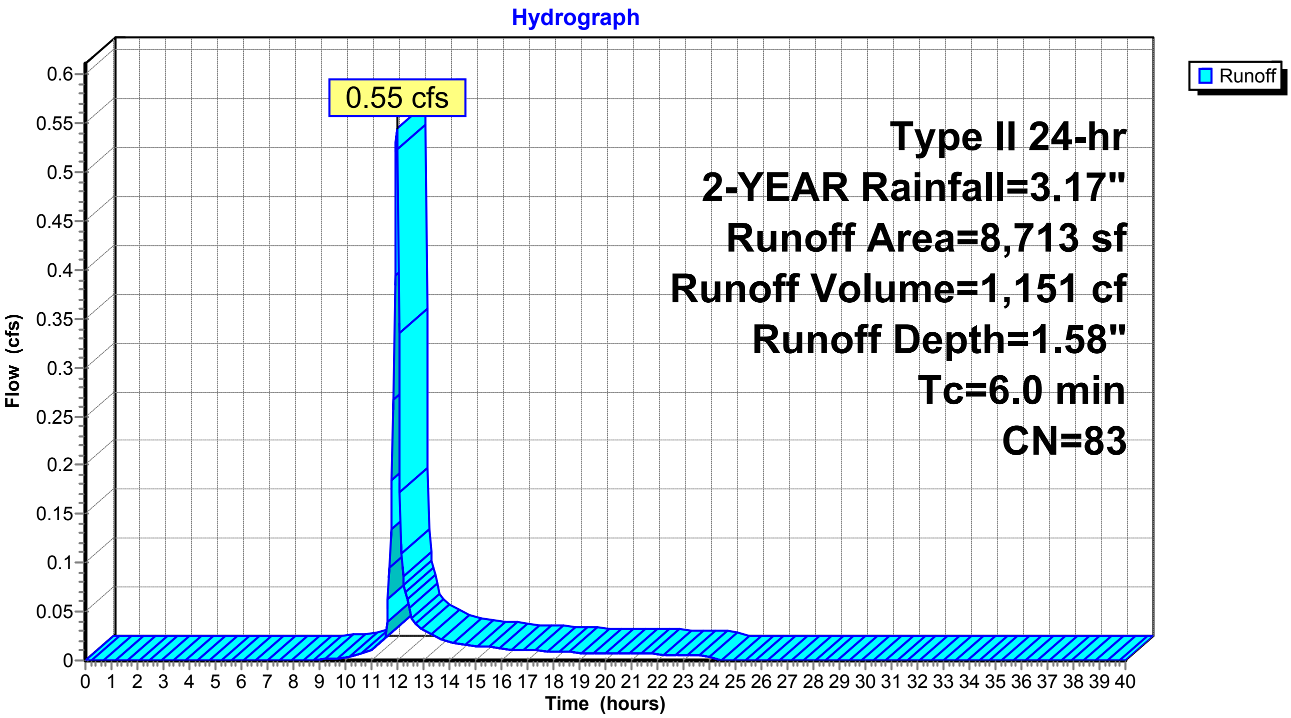
Runoff = 0.55 cfs @ 11.97 hrs, Volume= 1,151 cf, Depth= 1.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
5,560	74	>75% Grass cover, Good, HSG C
3,153	98	Paved parking, HSG C
8,713	83	Weighted Average
5,560		63.81% Pervious Area
3,153		36.19% Impervious Area

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

Subcatchment DA-30: DA-30



Summary for Subcatchment DA-31: DA-31

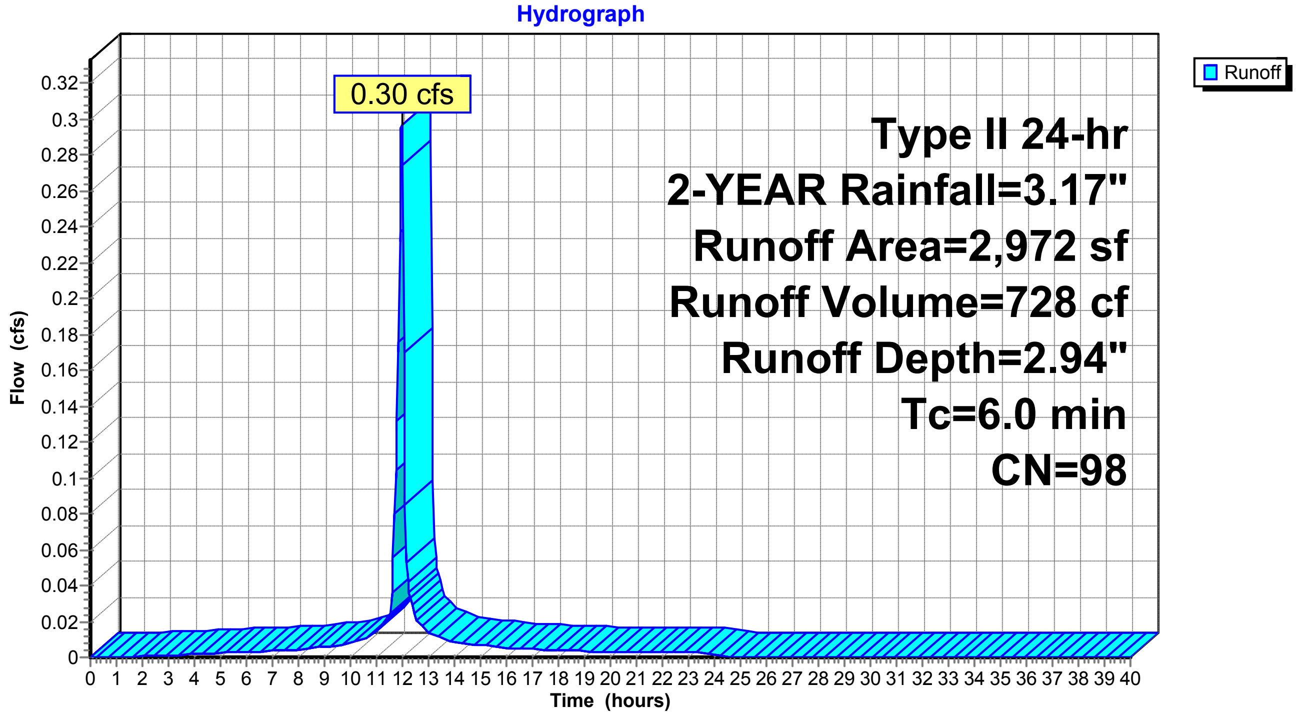
Runoff = 0.30 cfs @ 11.96 hrs, Volume= 728 cf, Depth= 2.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
2,972	98	Paved parking, HSG C
2,972		100.00% Impervious Area

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

Subcatchment DA-31: DA-31



Summary for Subcatchment DA-32: DA-32

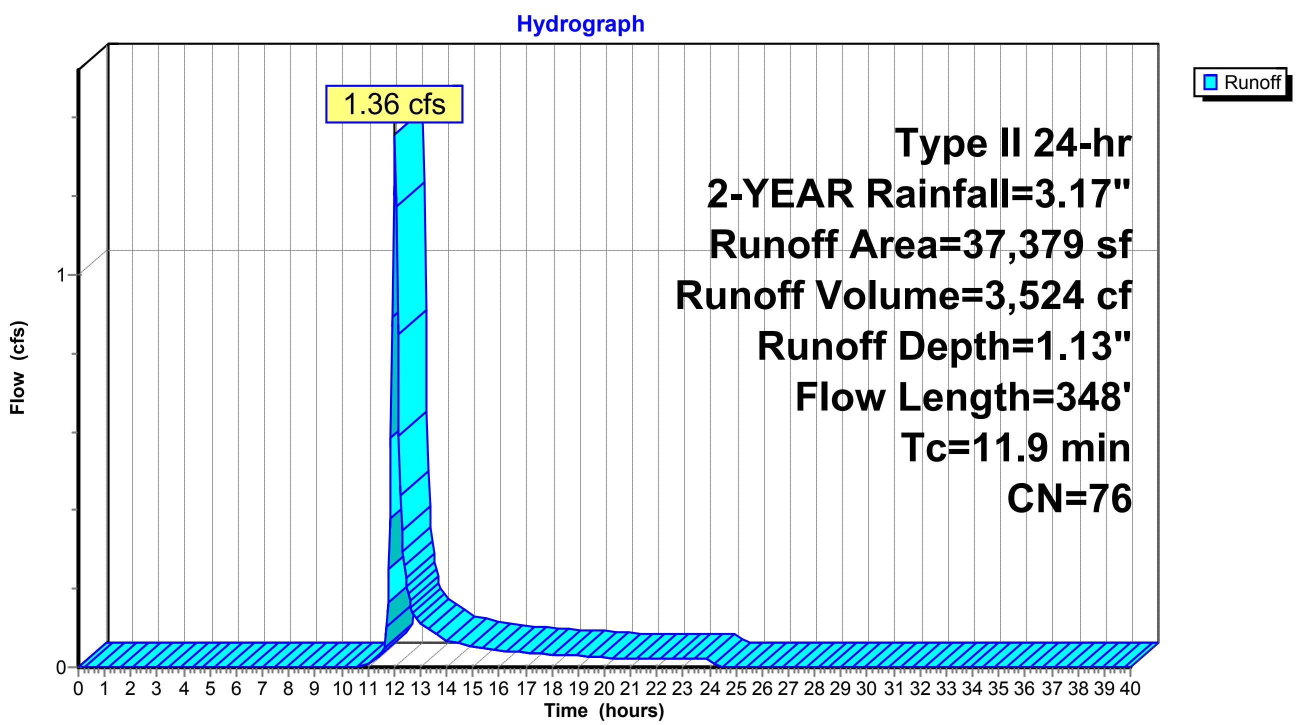
Runoff = 1.36 cfs @ 12.05 hrs, Volume= 3,524 cf, Depth= 1.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
33,898	74	>75% Grass cover, Good, HSG C
3,481	98	Paved parking, HSG C
37,379	76	Weighted Average
33,898		90.69% Pervious Area
3,481		9.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	100	0.1800	0.28		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.17"
5.9	248	0.0100	0.70		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
11.9	348	Total			

Subcatchment DA-32: DA-32



Summary for Subcatchment DA-33: DA-33

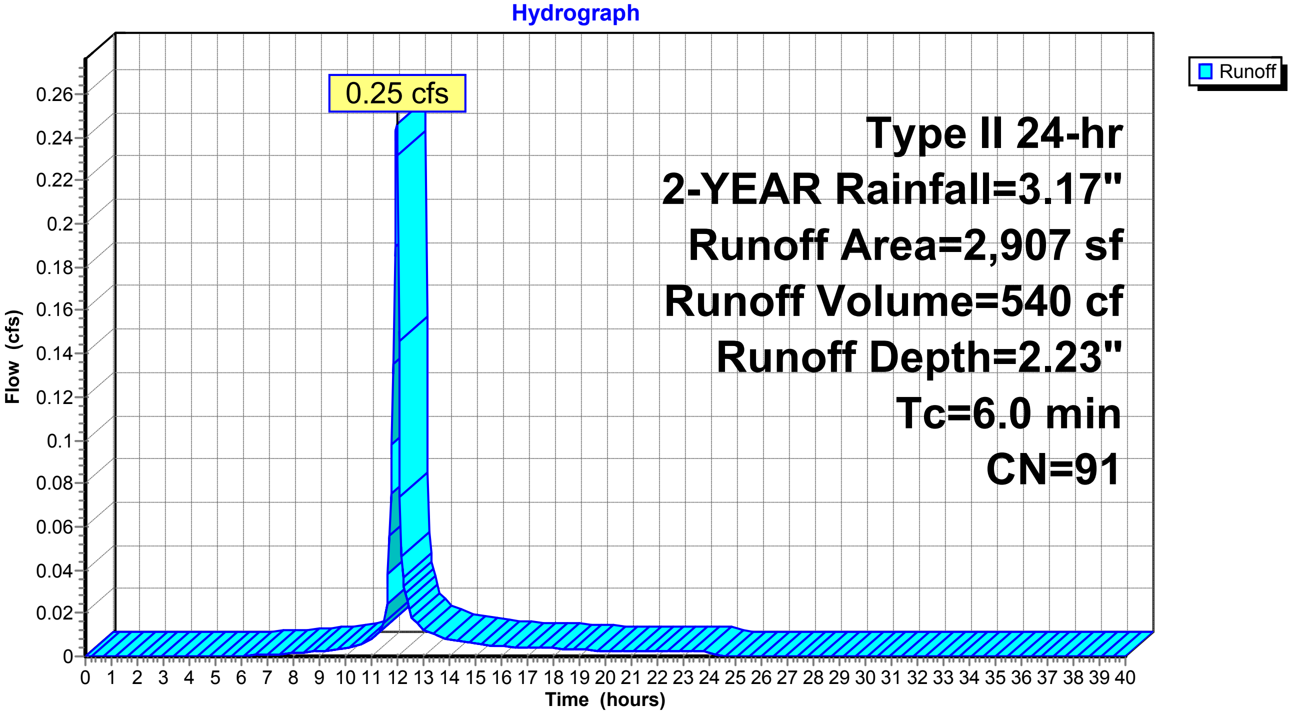
Runoff = 0.25 cfs @ 11.97 hrs, Volume= 540 cf, Depth= 2.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
882	74	>75% Grass cover, Good, HSG C
2,025	98	Paved parking, HSG C
2,907	91	Weighted Average
882		30.34% Pervious Area
2,025		69.66% Impervious Area

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

Subcatchment DA-33: DA-33



Summary for Subcatchment DA-34: DA-34

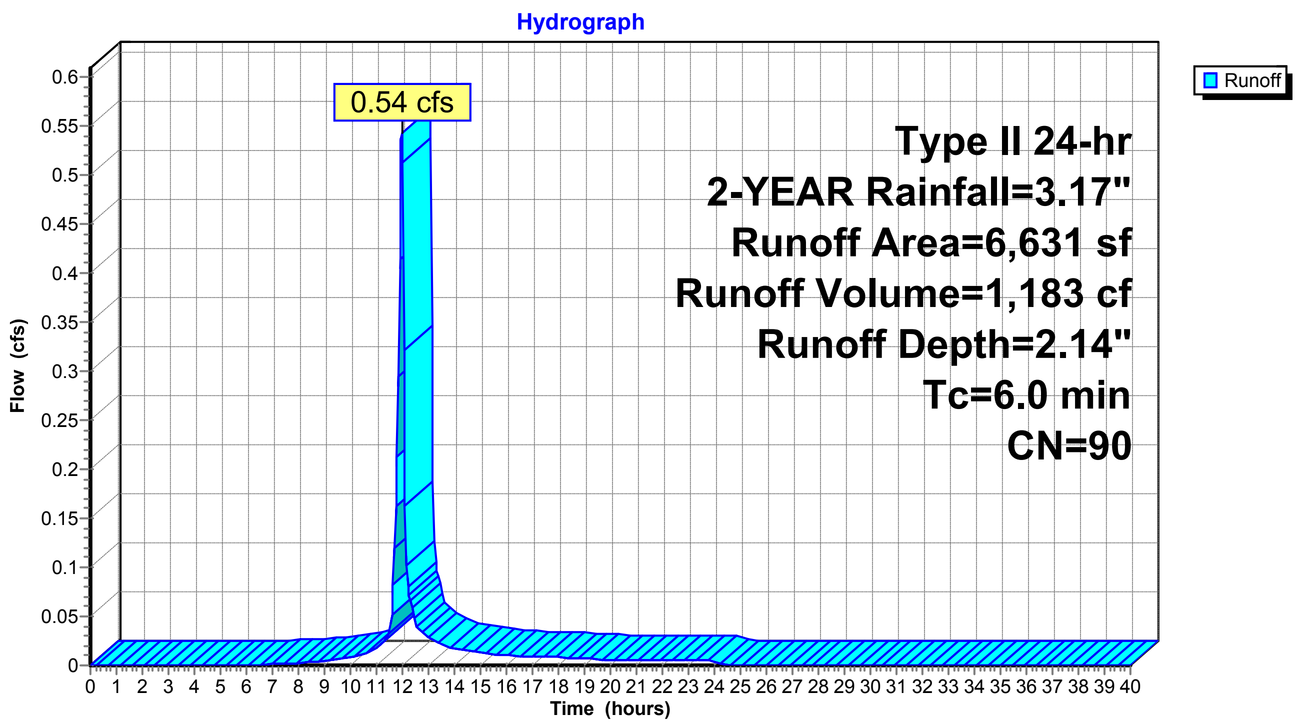
Runoff = 0.54 cfs @ 11.97 hrs, Volume= 1,183 cf, Depth= 2.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
2,314	74	>75% Grass cover, Good, HSG C
4,317	98	Paved parking, HSG C
6,631	90	Weighted Average
2,314		34.90% Pervious Area
4,317		65.10% Impervious Area

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

Subcatchment DA-34: DA-34



Summary for Subcatchment DA-35: DA-35

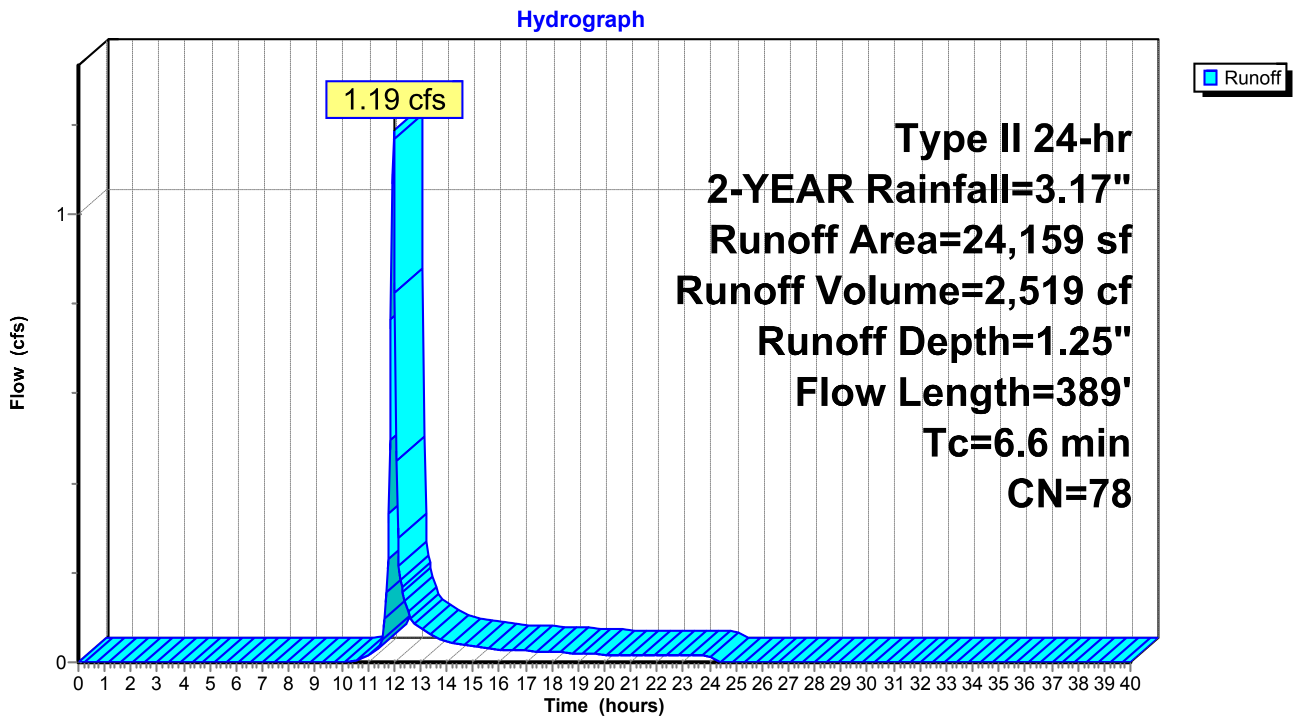
Runoff = 1.19 cfs @ 11.98 hrs, Volume= 2,519 cf, Depth= 1.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
20,497	74	>75% Grass cover, Good, HSG C
3,662	98	Paved parking, HSG C
24,159	78	Weighted Average
20,497		84.84% Pervious Area
3,662		15.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	100	0.2900	0.34		**Sheet Flow, D-E** Grass: Dense n= 0.240 P2= 3.17"
1.7	289	0.1560	2.76		**Shallow Concentrated Flow, E-F** Short Grass Pasture Kv= 7.0 fps
6.6	389	Total			

Subcatchment DA-35: DA-35



Summary for Subcatchment DA-36: DA-36 (Roofs)

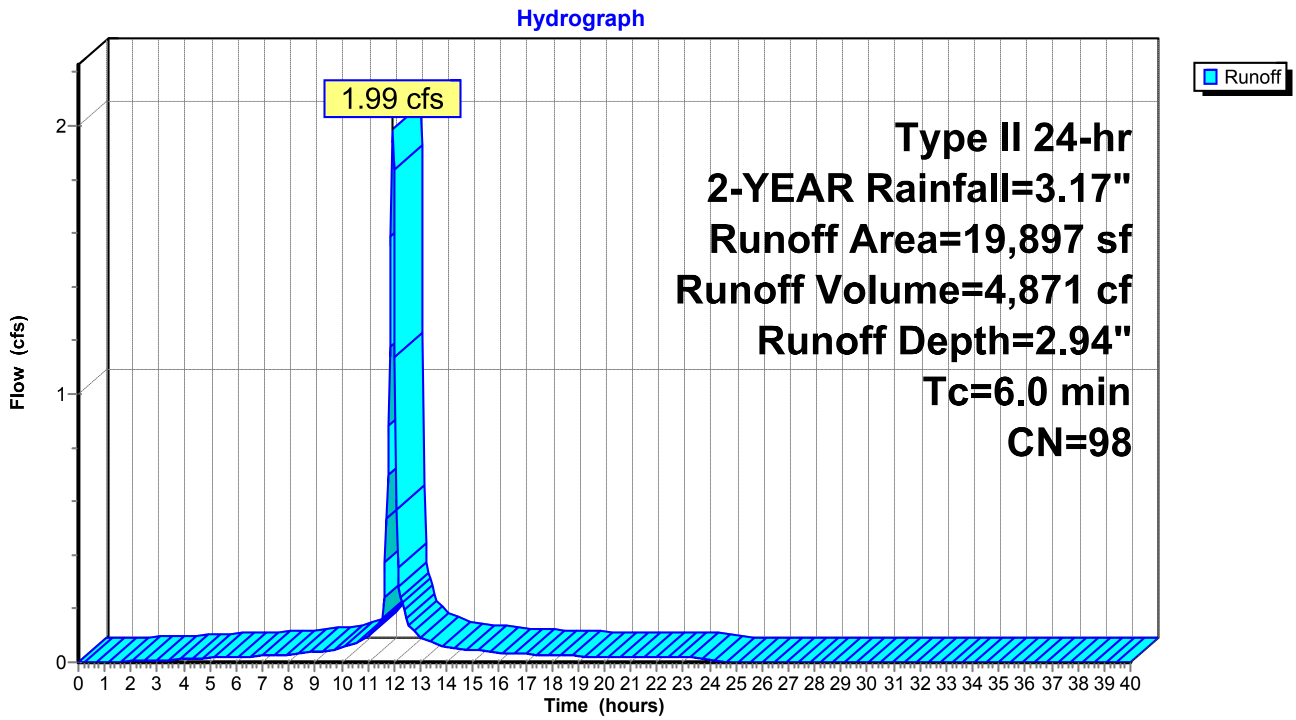
Runoff = 1.99 cfs @ 11.96 hrs, Volume= 4,871 cf, Depth= 2.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
19,897	98	Roofs, HSG C
19,897		100.00% Impervious Area

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

Subcatchment DA-36: DA-36 (Roofs)



Summary for Subcatchment DA-37: DA-37

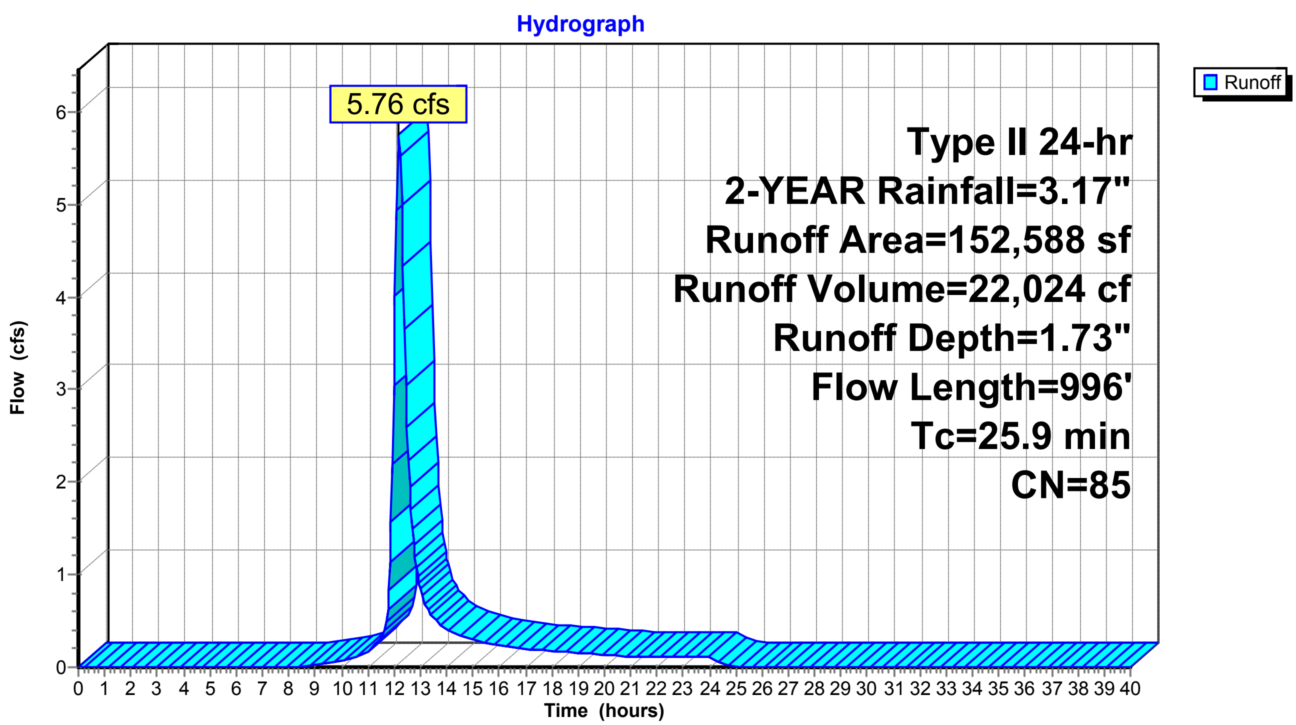
Runoff = 5.76 cfs @ 12.20 hrs, Volume= 22,024 cf, Depth= 1.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
102,918	79	Pasture/grassland/range, Fair, HSG C
49,670	98	Paved parking, HSG C
152,588	85	Weighted Average
102,918		67.45% Pervious Area
49,670		32.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.9	100	0.0100	0.09		**Sheet Flow, P-Q** Grass: Dense n= 0.240 P2= 3.17"
7.0	896	0.0926	2.13		**Shallow Concentrated Flow, Q-R** Short Grass Pasture Kv= 7.0 fps
25.9	996	Total			

Subcatchment DA-37: DA-37



Summary for Subcatchment DA-38: DA-38 (Roofs)

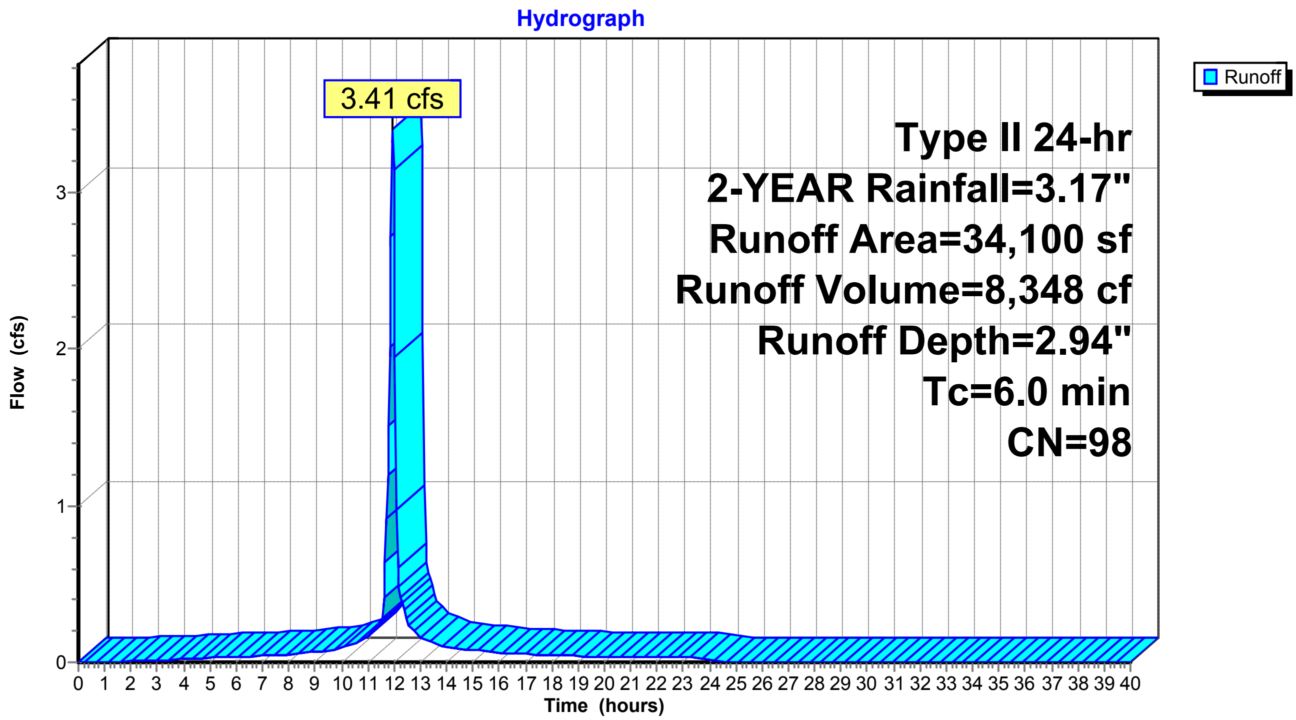
Runoff = 3.41 cfs @ 11.96 hrs, Volume= 8,348 cf, Depth= 2.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
34,100	98	Roofs, HSG C
34,100		100.00% Impervious Area

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

Subcatchment DA-38: DA-38 (Roofs)



Summary for Subcatchment DA-4: DA-4

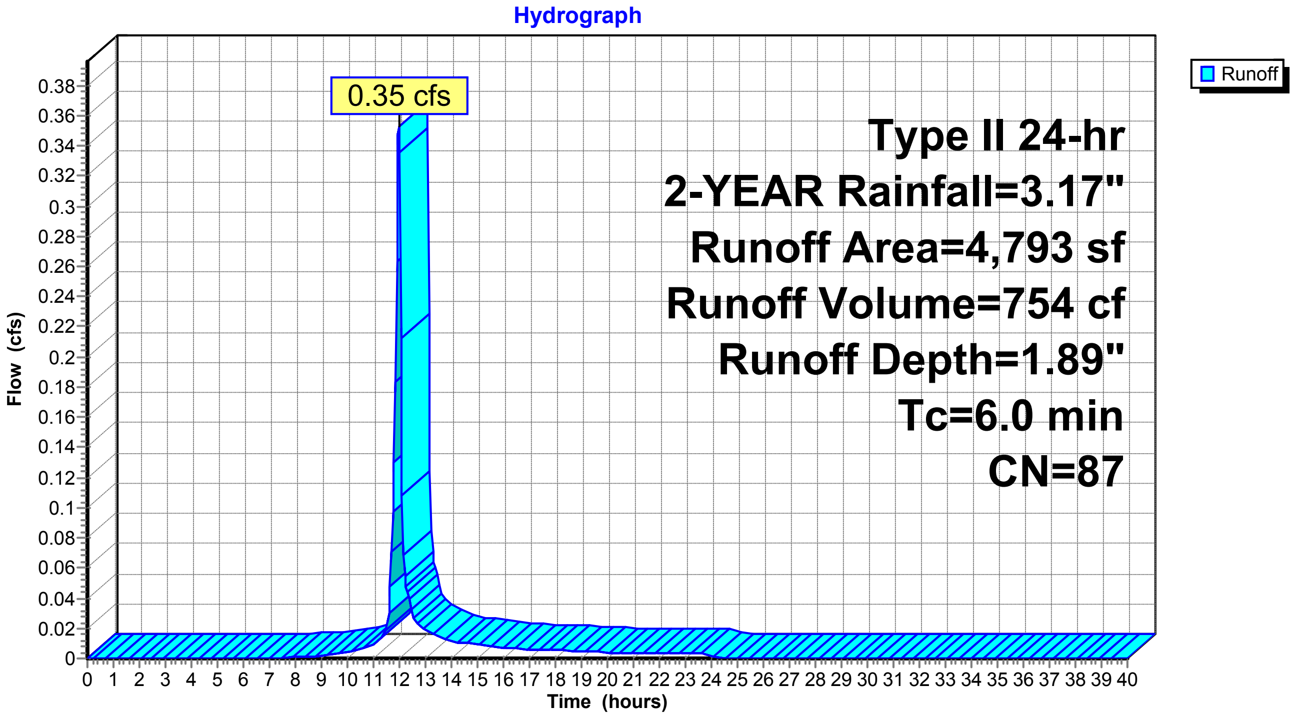
Runoff = 0.35 cfs @ 11.97 hrs, Volume= 754 cf, Depth= 1.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
2,165	74	>75% Grass cover, Good, HSG C
0	73	Woods, Fair, HSG C
2,628	98	Paved parking, HSG C
4,793	87	Weighted Average
2,165		45.17% Pervious Area
2,628		54.83% Impervious Area

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

Subcatchment DA-4: DA-4



Summary for Subcatchment DA-5: DA-5

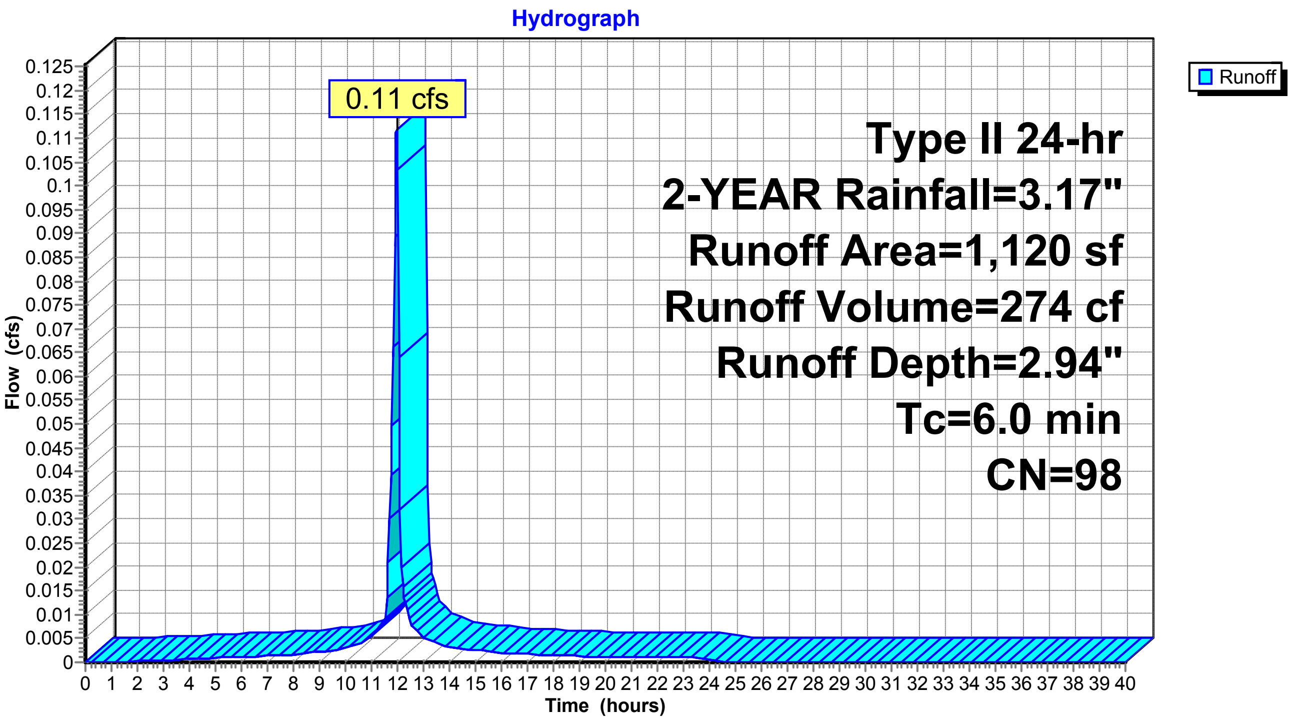
Runoff = 0.11 cfs @ 11.96 hrs, Volume= 274 cf, Depth= 2.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
1,120	98	Paved parking, HSG C
1,120		100.00% Impervious Area

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

Subcatchment DA-5: DA-5



Summary for Subcatchment DA-6: DA-6

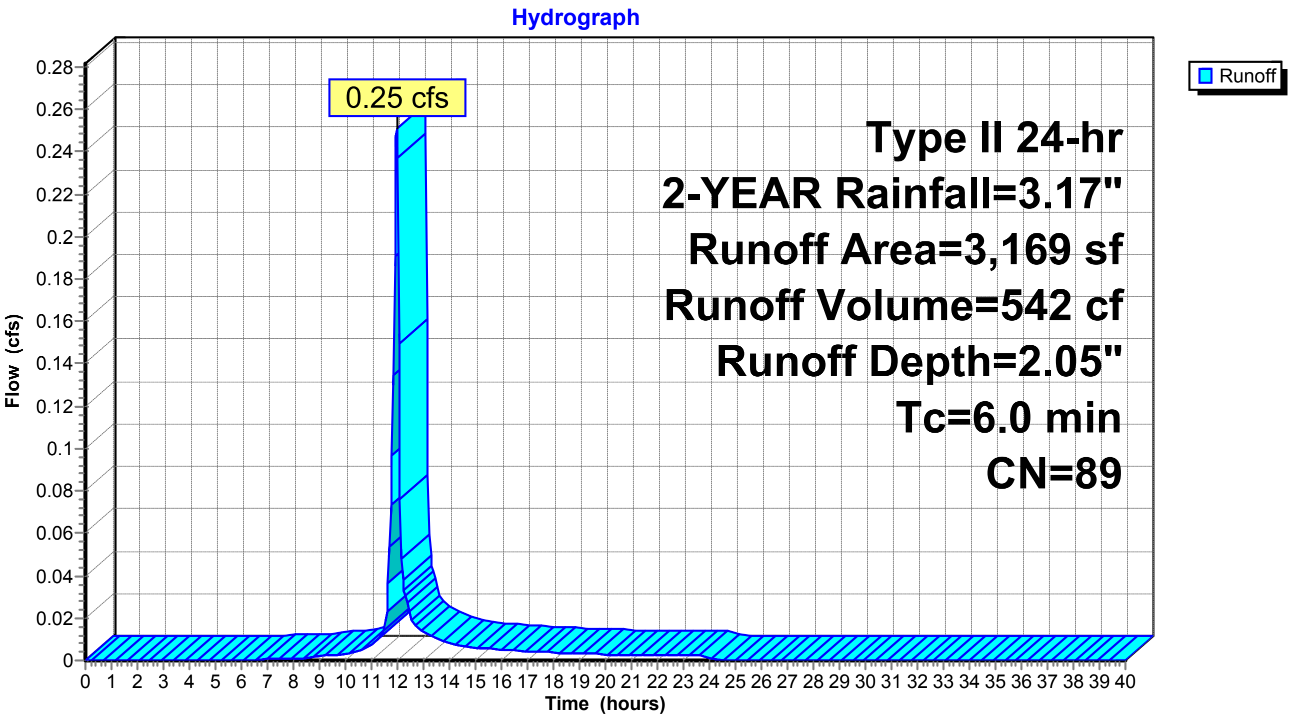
Runoff = 0.25 cfs @ 11.97 hrs, Volume= 542 cf, Depth= 2.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
1,133	74	>75% Grass cover, Good, HSG C
2,036	98	Paved parking, HSG C
3,169	89	Weighted Average
1,133		35.75% Pervious Area
2,036		64.25% Impervious Area

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

Subcatchment DA-6: DA-6



Summary for Subcatchment DA-7: DA-7

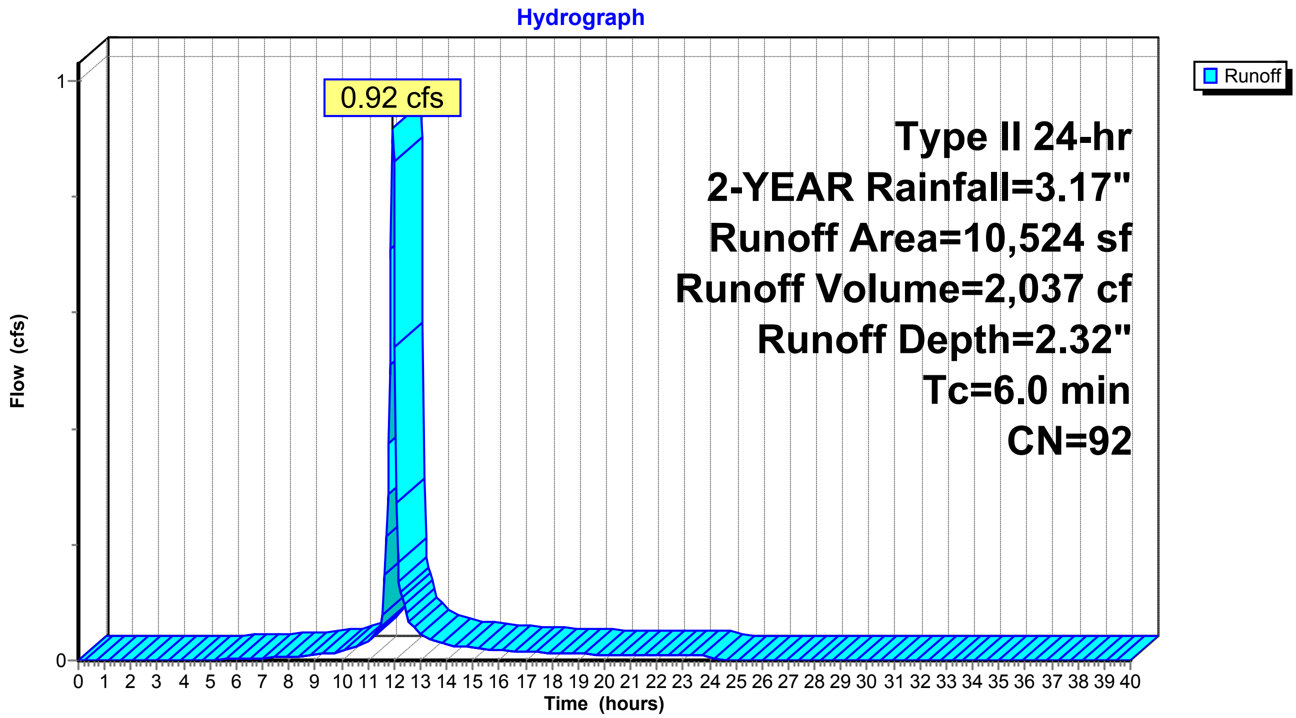
Runoff = 0.92 cfs @ 11.97 hrs, Volume= 2,037 cf, Depth= 2.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
2,543	74	>75% Grass cover, Good, HSG C
7,981	98	Paved parking, HSG C
10,524	92	Weighted Average
2,543		24.16% Pervious Area
7,981		75.84% Impervious Area

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

Subcatchment DA-7: DA-7



Summary for Subcatchment DA-8: DA-8

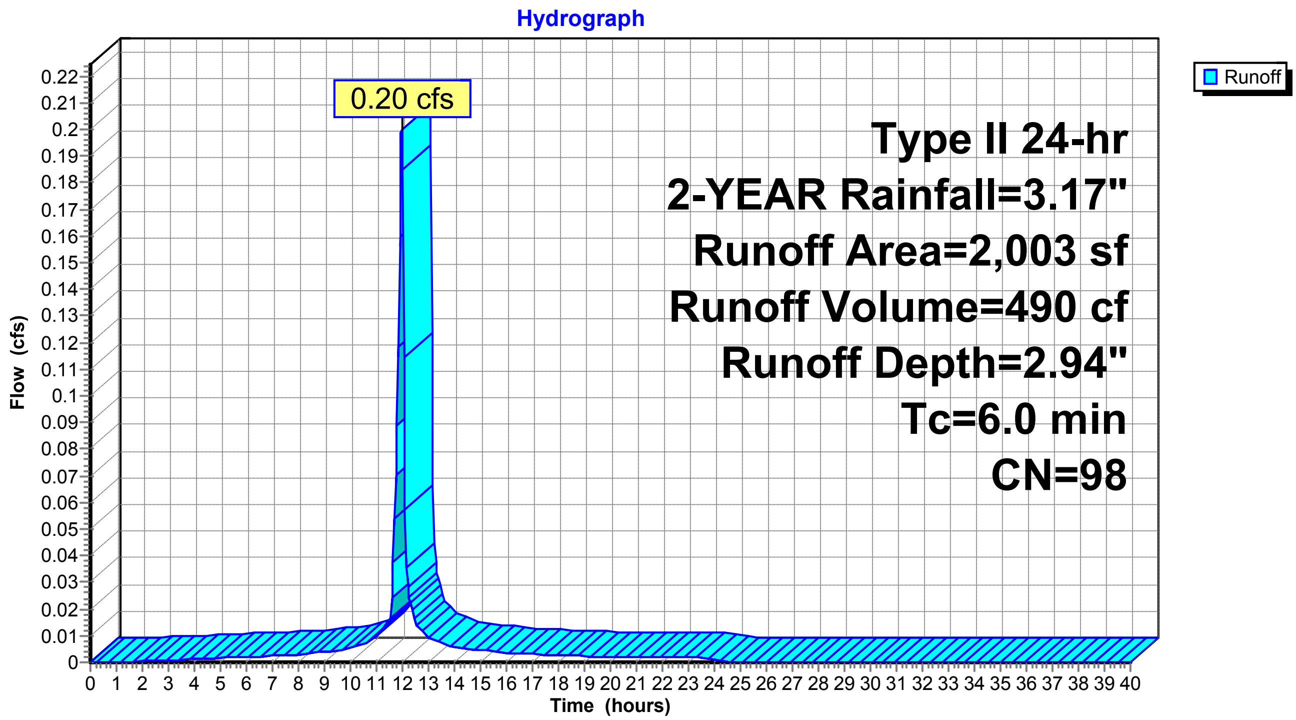
Runoff = 0.20 cfs @ 11.96 hrs, Volume= 490 cf, Depth= 2.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
2,003	98	Paved parking, HSG C
2,003		100.00% Impervious Area

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

Subcatchment DA-8: DA-8



Summary for Subcatchment DA-9: DA-9

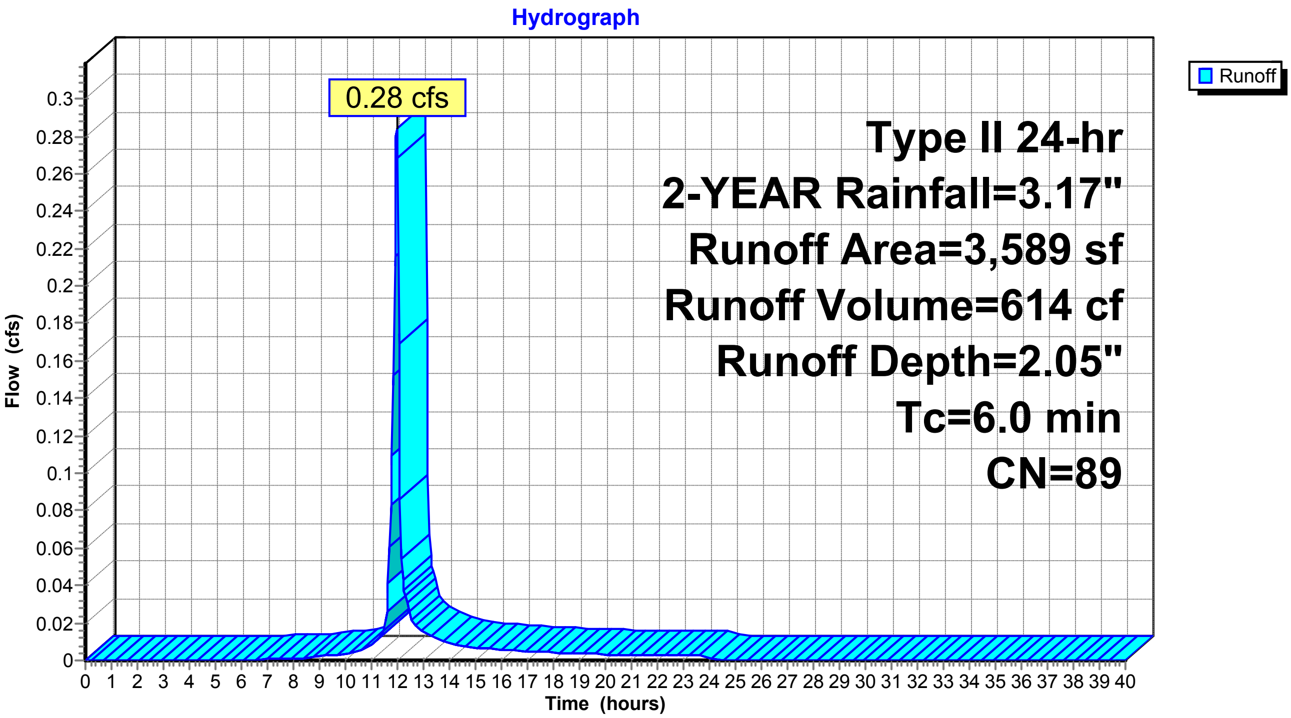
Runoff = 0.28 cfs @ 11.97 hrs, Volume= 614 cf, Depth= 2.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YEAR Rainfall=3.17"

Area (sf)	CN	Description
1,275	74	>75% Grass cover, Good, HSG C
2,314	98	Paved parking, HSG C
3,589	89	Weighted Average
1,275		35.53% Pervious Area
2,314		64.47% Impervious Area

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

Subcatchment DA-9: DA-9



Summary for Reach 2R: FLARED END #3

[79] Warning: Submerged Pond CB30 Primary device # 1 INLET by 0.07'

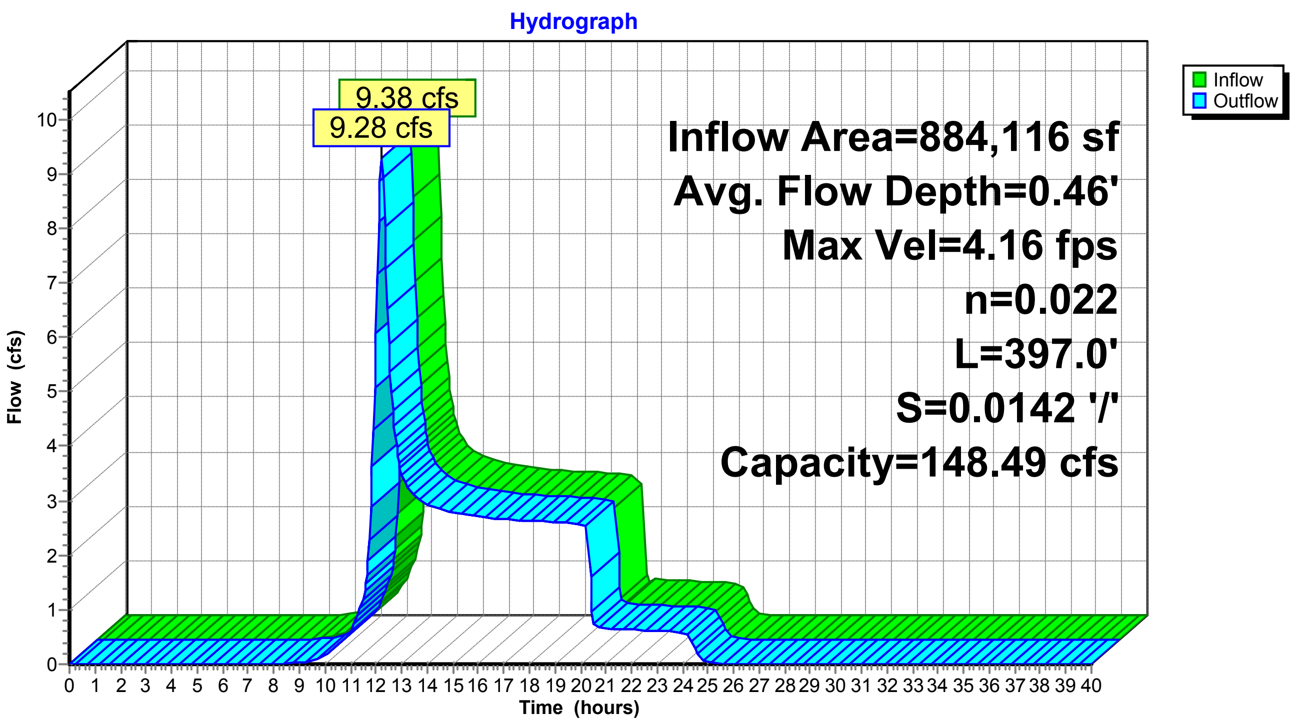
Inflow Area = 884,116 sf, 21.35% Impervious, Inflow Depth = 1.53" for 2-YEAR event
Inflow = 9.38 cfs @ 12.17 hrs, Volume= 112,666 cf
Outflow = 9.28 cfs @ 12.22 hrs, Volume= 112,666 cf, Atten= 1%, Lag= 2.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.16 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 1.81 fps, Avg. Travel Time= 3.6 min

Peak Storage= 890 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.46'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 148.49 cfs

4.00' x 2.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 2.0 '/' Top Width= 12.00'
Length= 397.0' Slope= 0.0142 '/'
Inlet Invert= 335.25', Outlet Invert= 329.60'

Reach 2R: FLARED END #3

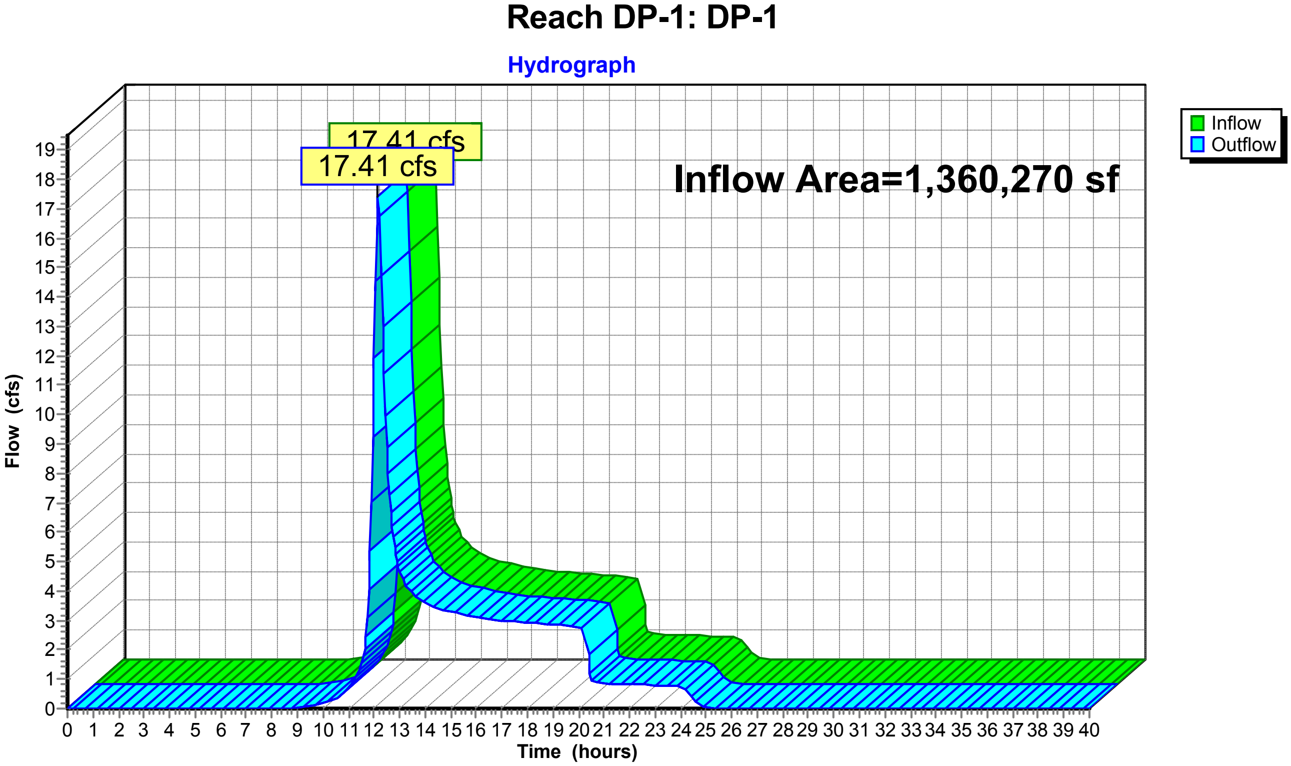


Summary for Reach DP-1: DP-1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1,360,270 sf, 25.67% Impervious, Inflow Depth = 1.28" for 2-YEAR event
Inflow = 17.41 cfs @ 12.17 hrs, Volume= 144,604 cf
Outflow = 17.41 cfs @ 12.17 hrs, Volume= 144,604 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs



Summary for Reach FLARED END #1: FLARED END #1

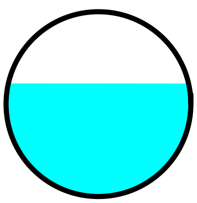
[52] Hint: Inlet/Outlet conditions not evaluated

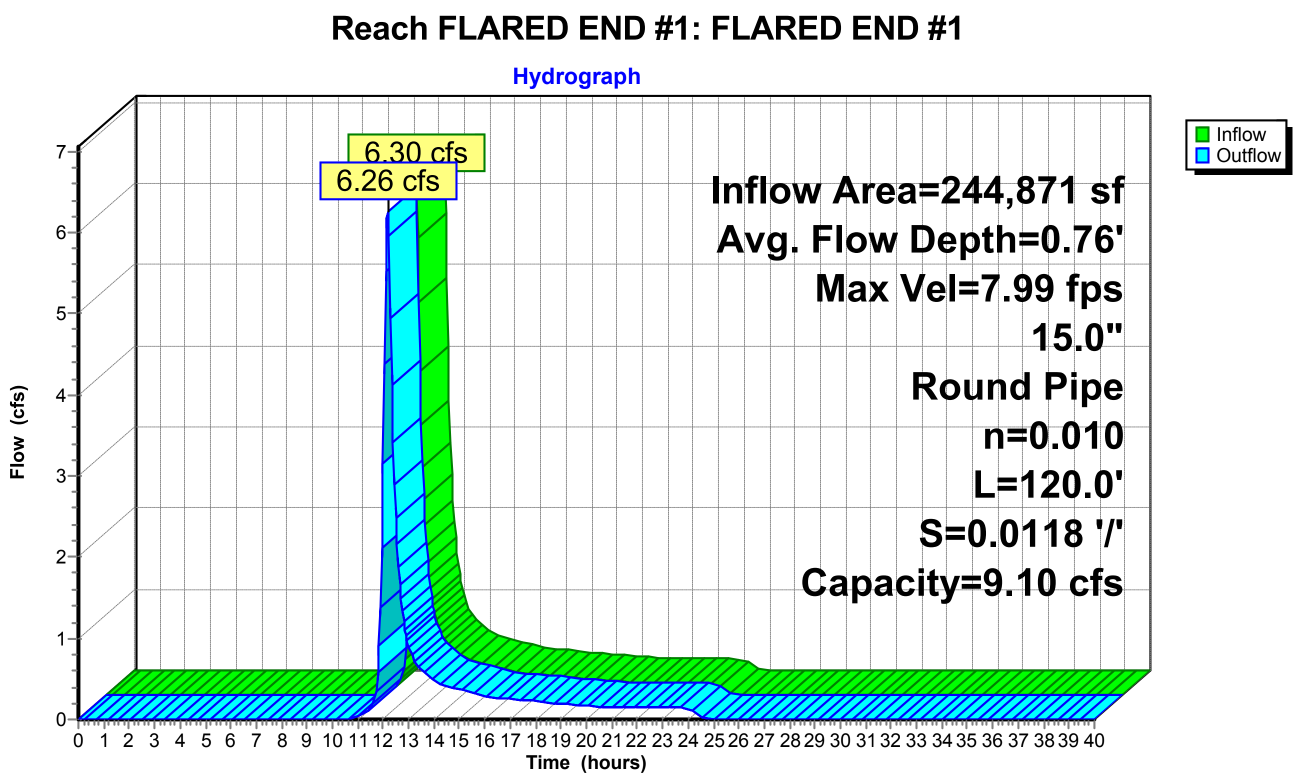
Inflow Area = 244,871 sf, 7.43% Impervious, Inflow Depth = 1.13" for 2-YEAR event
Inflow = 6.30 cfs @ 12.17 hrs, Volume= 23,083 cf
Outflow = 6.26 cfs @ 12.18 hrs, Volume= 23,083 cf, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.99 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 3.19 fps, Avg. Travel Time= 0.6 min

Peak Storage= 94 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.76'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.10 cfs

15.0" Round Pipe
n= 0.010
Length= 120.0' Slope= 0.0118 '/'
Inlet Invert= 355.00', Outlet Invert= 353.59'





Summary for Reach FLARED END #2: FLARED END #2

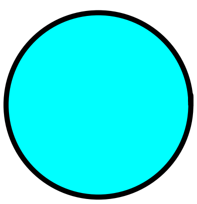
[52] Hint: Inlet/Outlet conditions not evaluated
[55] Hint: Peak inflow is 823% of Manning's capacity
[76] Warning: Detained 35,370 cf (Pond w/culvert advised)
[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=2)

Inflow Area = 677,156 sf, 19.44% Impervious, Inflow Depth = 1.50" for 2-YEAR event
Inflow = 19.81 cfs @ 12.24 hrs, Volume= 84,907 cf
Outflow = 2.45 cfs @ 11.80 hrs, Volume= 84,907 cf, Atten= 88%, Lag= 0.0 min

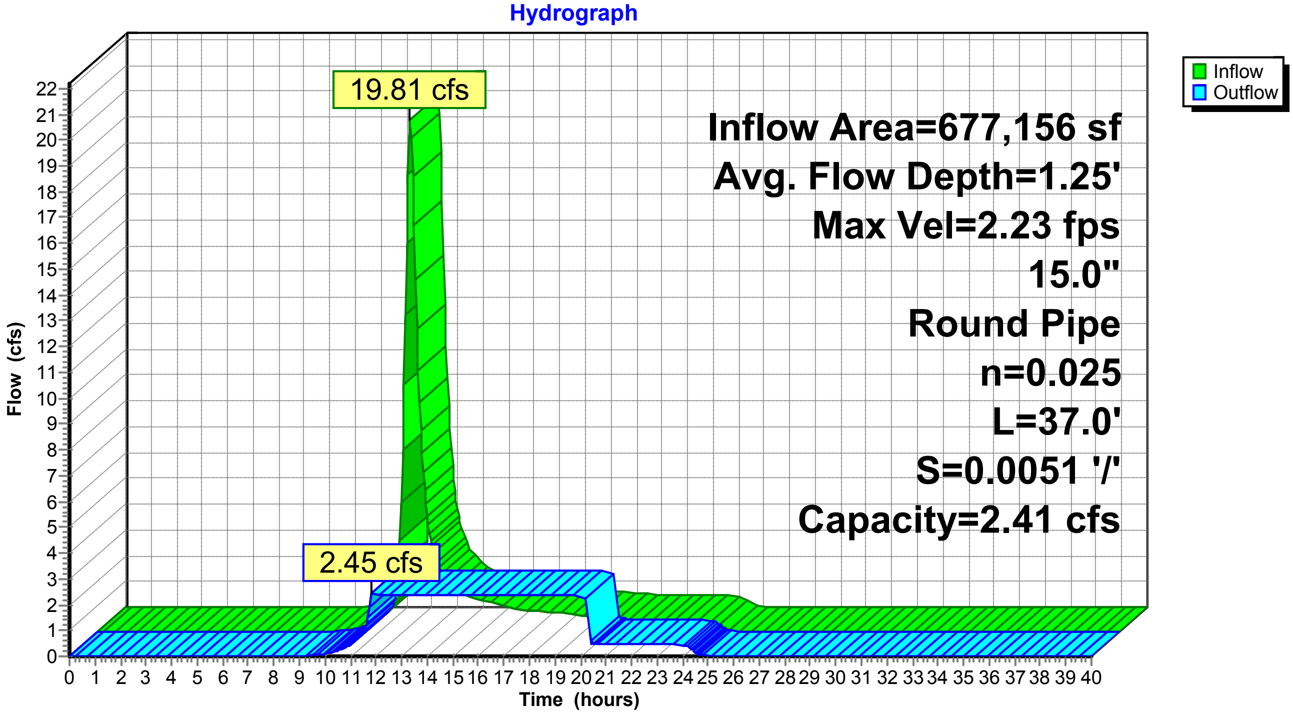
Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.23 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.60 fps, Avg. Travel Time= 0.4 min

Peak Storage= 45 cf @ 11.85 hrs
Average Depth at Peak Storage= 1.25'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 2.41 cfs

15.0" Round Pipe
n= 0.025 Corrugated metal
Length= 37.0' Slope= 0.0051 '/'
Inlet Invert= 336.00', Outlet Invert= 335.81'



Reach FLARED END #2: FLARED END #2



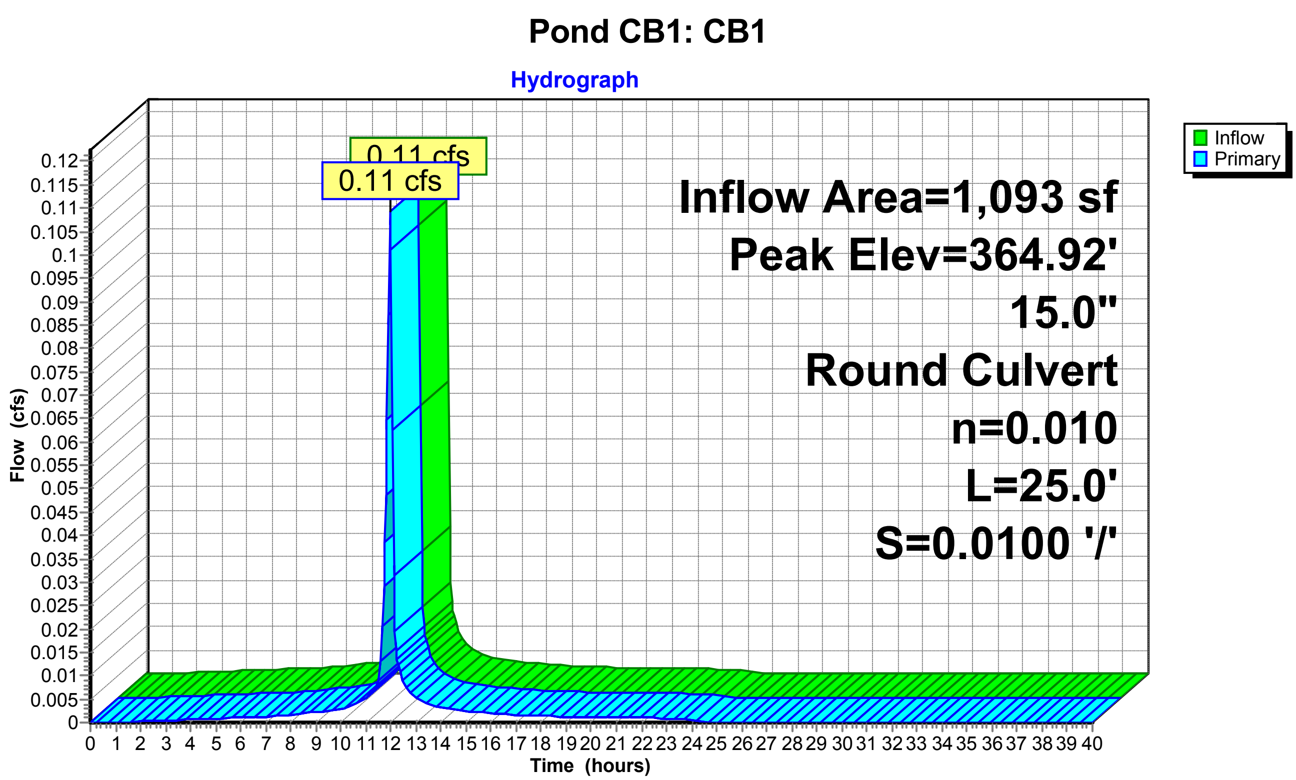
Summary for Pond CB1: CB1

Inflow Area = 1,093 sf,100.00% Impervious, Inflow Depth = 2.94" for 2-YEAR event
Inflow = 0.11 cfs @ 11.96 hrs, Volume= 268 cf
Outflow = 0.11 cfs @ 11.96 hrs, Volume= 268 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.11 cfs @ 11.96 hrs, Volume= 268 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 364.92' @ 11.96 hrs
Flood Elev= 368.04'

Device	Routing	Invert	Outlet Devices
#1	Primary	364.75'	**15.0" Round Culvert** L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 364.75' / 364.50' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=0.11 cfs @ 11.96 hrs HW=364.92' (Free Discharge)
↑**1=Culvert** (Inlet Controls 0.11 cfs @ 1.10 fps)



Summary for Pond CB10: CB10

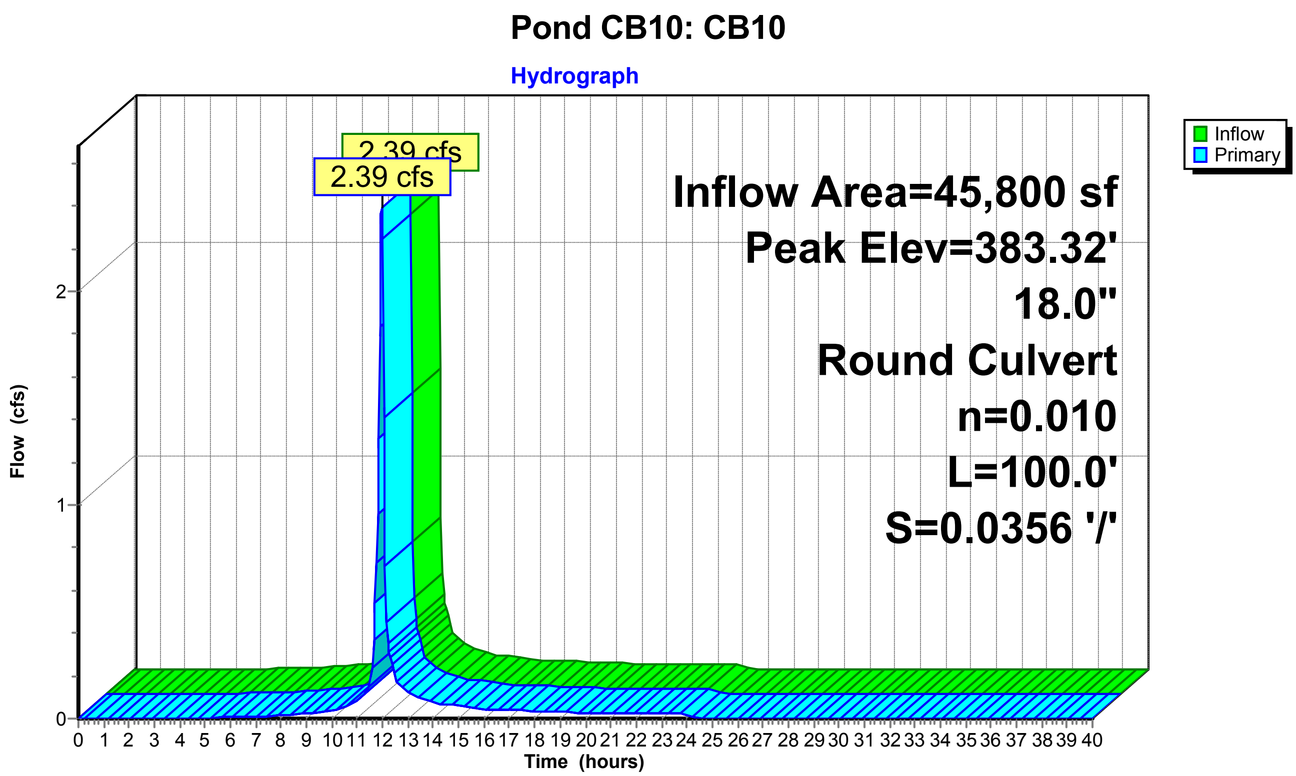
[79] Warning: Submerged Pond CB11 Primary device # 1 OUTLET by 0.13'

Inflow Area =	45,800 sf,	71.00% Impervious,	Inflow Depth = 1.39"	for 2-YEAR event	
Inflow =	2.39 cfs @	11.97 hrs,	Volume=	5,302 cf	
Outflow =	2.39 cfs @	11.97 hrs,	Volume=	5,302 cf,	Atten= 0%, Lag= 0.0 min
Primary =	2.39 cfs @	11.97 hrs,	Volume=	5,302 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 383.32' @ 11.97 hrs
Flood Elev= 388.01'

Device	Routing	Invert	Outlet Devices
#1	Primary	382.50'	**18.0" Round Culvert** L= 100.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 382.50' / 378.94' S= 0.0356 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=2.32 cfs @ 11.97 hrs HW=383.30' (Free Discharge)
└**1=Culvert** (Inlet Controls 2.32 cfs @ 2.41 fps)



Summary for Pond CB11: CB11

[79] Warning: Submerged Pond CB25 Primary device # 1 OUTLET by 0.62'

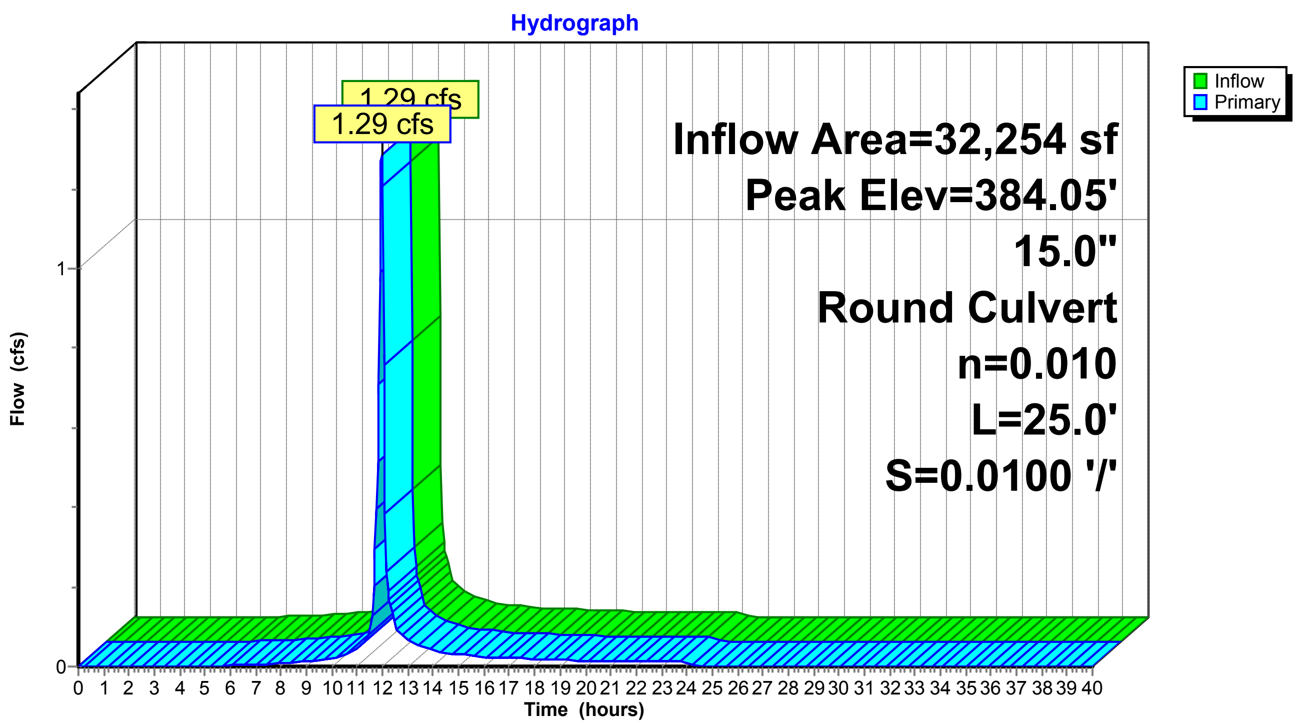
Inflow Area =	32,254 sf,	72.32% Impervious,	Inflow Depth = 1.05"	for 2-YEAR event
Inflow =	1.29 cfs @	11.97 hrs, Volume=	2,829 cf	
Outflow =	1.29 cfs @	11.97 hrs, Volume=	2,829 cf, Atten= 0%, Lag= 0.0 min	
Primary =	1.29 cfs @	11.97 hrs, Volume=	2,829 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 384.05' @ 11.97 hrs
Flood Elev= 388.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	383.43'	**15.0" Round Culvert** L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 383.43' / 383.18' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=1.25 cfs @ 11.97 hrs HW=384.04' (Free Discharge)
↑**1=Culvert** (Inlet Controls 1.25 cfs @ 2.10 fps)

Pond CB11: CB11



Summary for Pond CB12: CB12

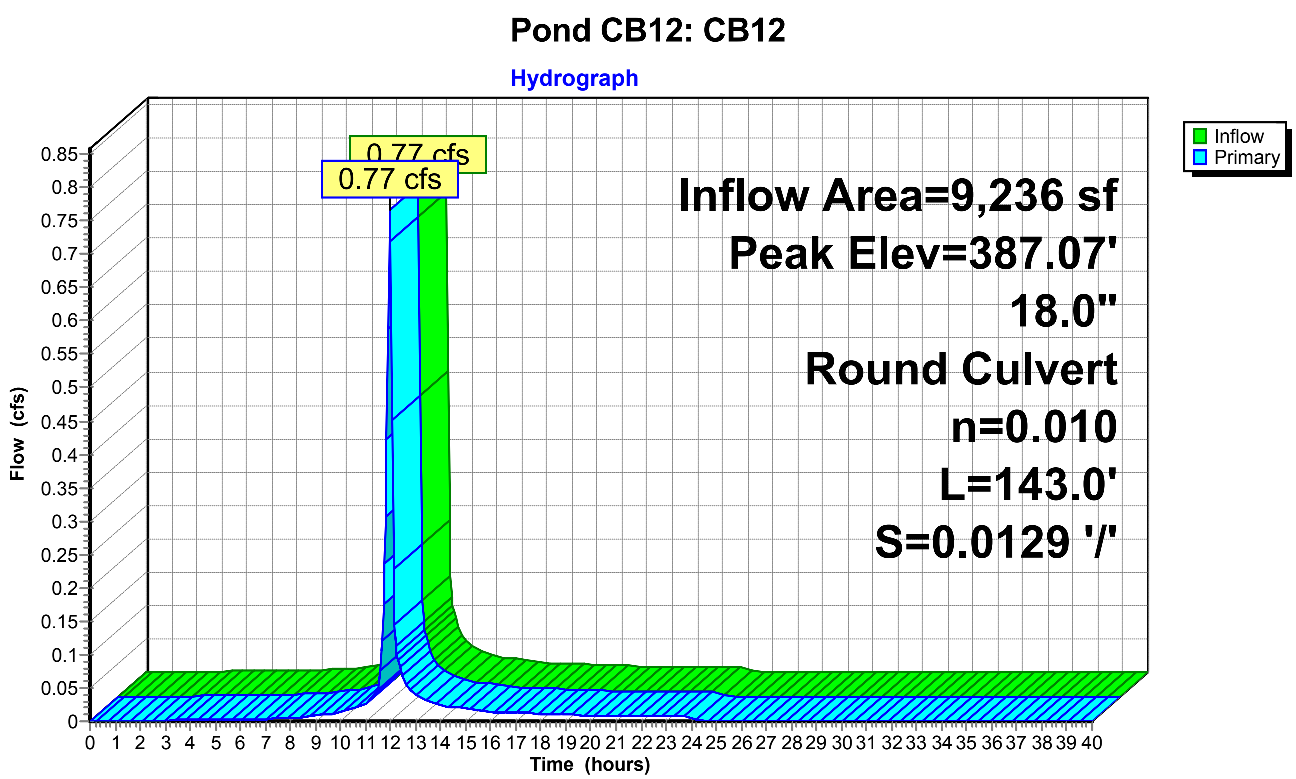
[79] Warning: Submerged Pond CB13 Primary device # 1 INLET by 0.23'
[79] Warning: Submerged Pond CB14 Primary device # 1 OUTLET by 0.23'

Inflow Area =	9,236 sf,	70.69% Impervious,	Inflow Depth = 2.25"	for 2-YEAR event
Inflow =	0.77 cfs @	11.97 hrs, Volume=	1,735 cf	
Outflow =	0.77 cfs @	11.97 hrs, Volume=	1,735 cf, Atten= 0%, Lag= 0.0 min	
Primary =	0.77 cfs @	11.97 hrs, Volume=	1,735 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 387.07' @ 11.97 hrs
Flood Elev= 390.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	386.63'	**18.0" Round Culvert** L= 143.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 386.63' / 384.78' S= 0.0129 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=0.74 cfs @ 11.97 hrs HW=387.06' (Free Discharge)
1=Culvert (Inlet Controls 0.74 cfs @ 1.77 fps)



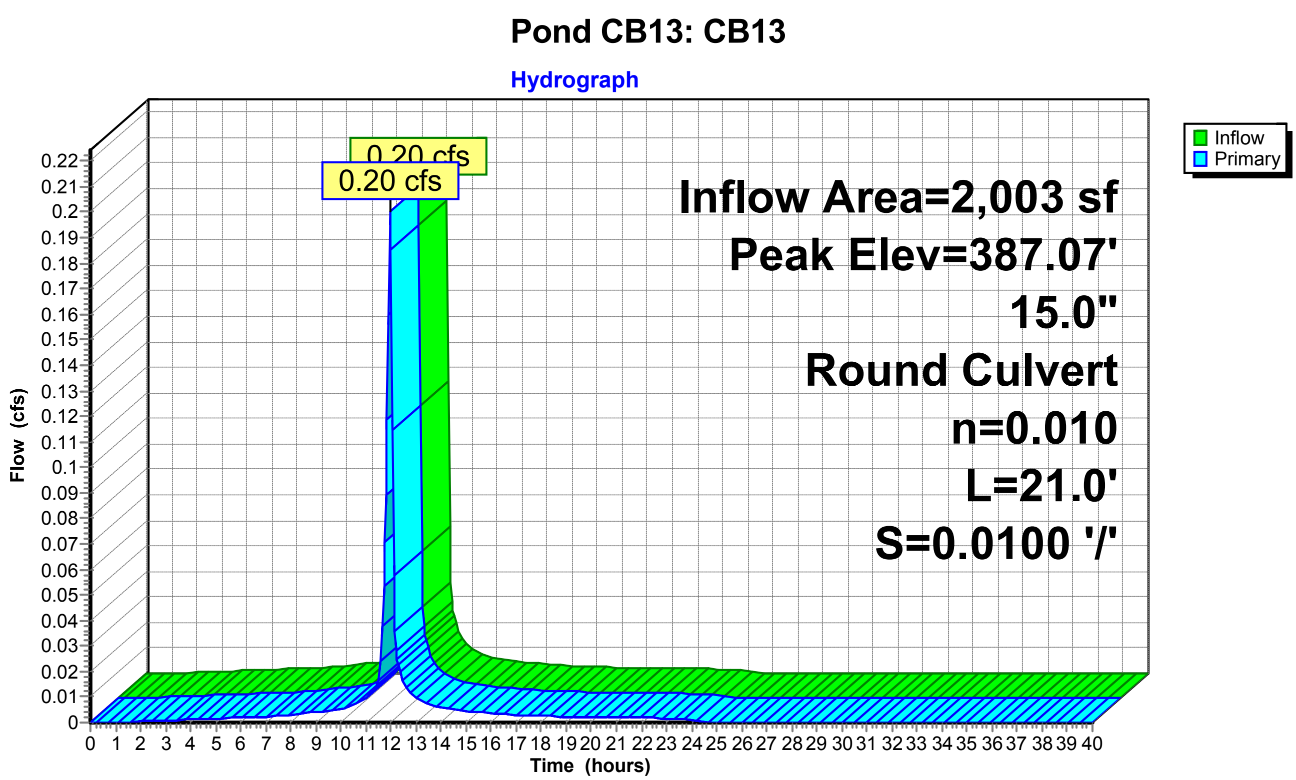
Summary for Pond CB13: CB13

Inflow Area = 2,003 sf,100.00% Impervious, Inflow Depth = 2.94" for 2-YEAR event
Inflow = 0.20 cfs @ 11.96 hrs, Volume= 490 cf
Outflow = 0.20 cfs @ 11.96 hrs, Volume= 490 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.20 cfs @ 11.96 hrs, Volume= 490 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 387.07' @ 11.96 hrs
Flood Elev= 390.11'

Device	Routing	Invert	Outlet Devices
#1	Primary	386.84'	**15.0" Round Culvert** L= 21.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 386.84' / 386.63' S= 0.0100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.20 cfs @ 11.96 hrs HW=387.07' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.20 cfs @ 1.28 fps)



Summary for Pond CB14: CB14

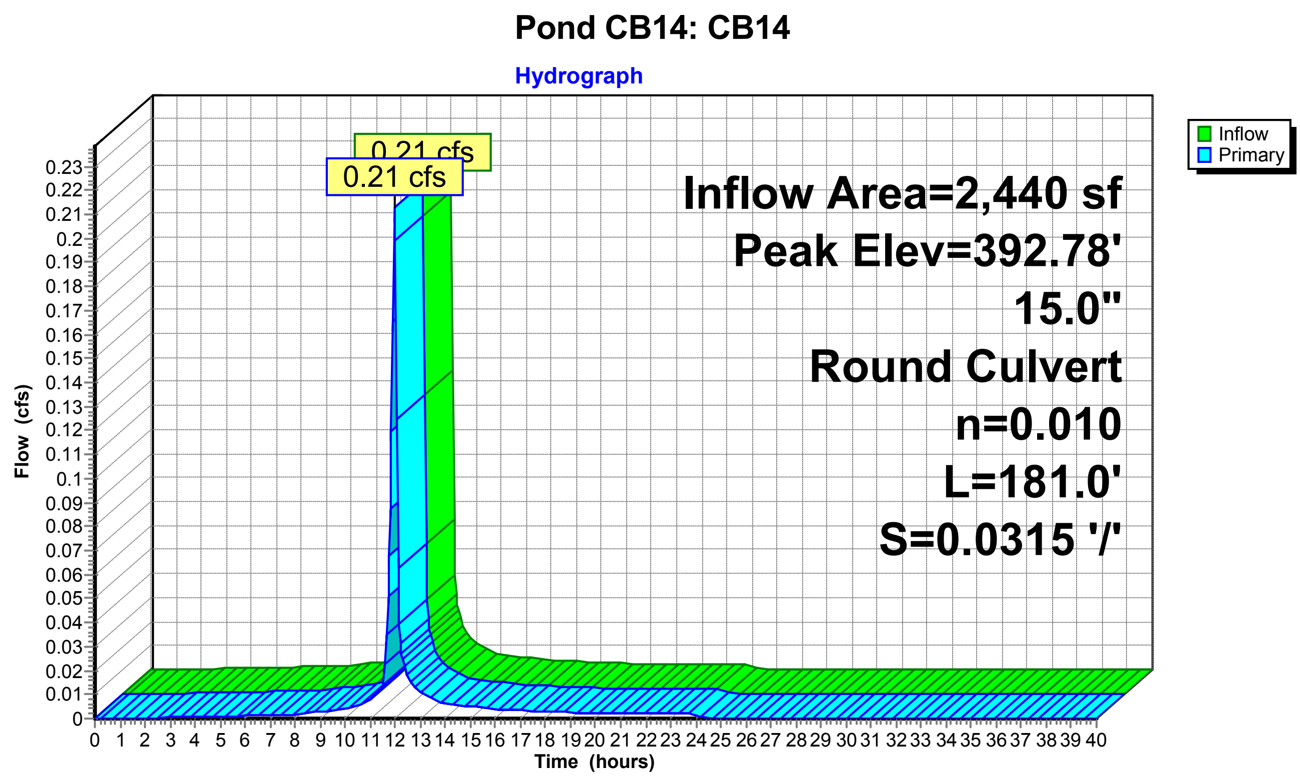
[79] Warning: Submerged Pond CB15 Primary device # 1 INLET by 0.03'

Inflow Area =	2,440 sf,	77.79% Impervious,	Inflow Depth = 2.41"	for 2-YEAR event
Inflow =	0.21 cfs @	11.96 hrs, Volume=	491 cf	
Outflow =	0.21 cfs @	11.96 hrs, Volume=	491 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.21 cfs @	11.96 hrs, Volume=	491 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 392.78' @ 11.97 hrs
Flood Elev= 396.07'

Device	Routing	Invert	Outlet Devices
#1	Primary	392.54'	**15.0" Round Culvert** L= 181.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 392.54' / 386.84' S= 0.0315 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.21 cfs @ 11.96 hrs HW=392.77' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.21 cfs @ 1.30 fps)



Summary for Pond CB15: CB15

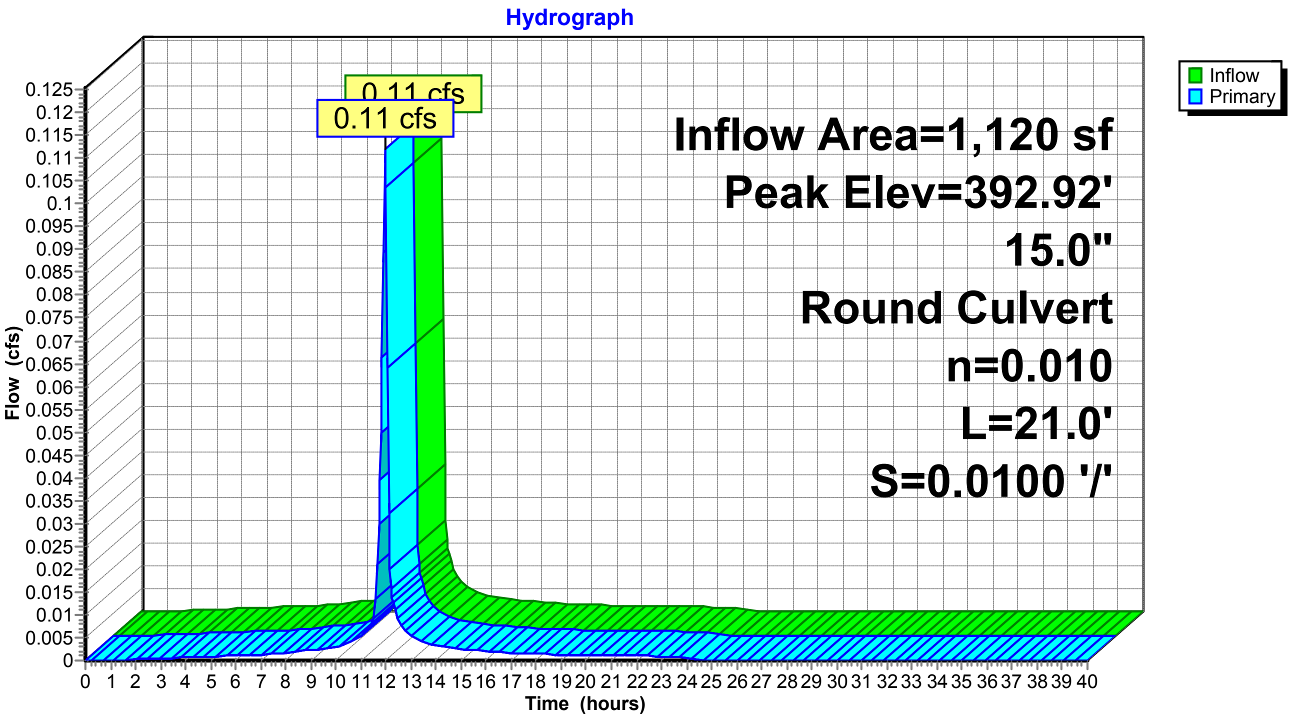
Inflow Area =	1,120 sf,100.00% Impervious,	Inflow Depth = 2.94"	for 2-YEAR event
Inflow =	0.11 cfs @ 11.96 hrs,	Volume=	274 cf
Outflow =	0.11 cfs @ 11.96 hrs,	Volume=	274 cf, Atten= 0%, Lag= 0.0 min
Primary =	0.11 cfs @ 11.96 hrs,	Volume=	274 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 392.92' @ 11.96 hrs
Flood Elev= 396.05'

Device	Routing	Invert	Outlet Devices
#1	Primary	392.75'	**15.0" Round 15" HDPE** L= 21.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 392.75' / 392.54' S= 0.0100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.11 cfs @ 11.96 hrs HW=392.92' (Free Discharge)
└**1=15" HDPE** (Inlet Controls 0.11 cfs @ 1.10 fps)

Pond CB15: CB15



Summary for Pond CB16: CB16

[79] Warning: Submerged Pond DMH5 Primary device # 1 OUTLET by 0.65'

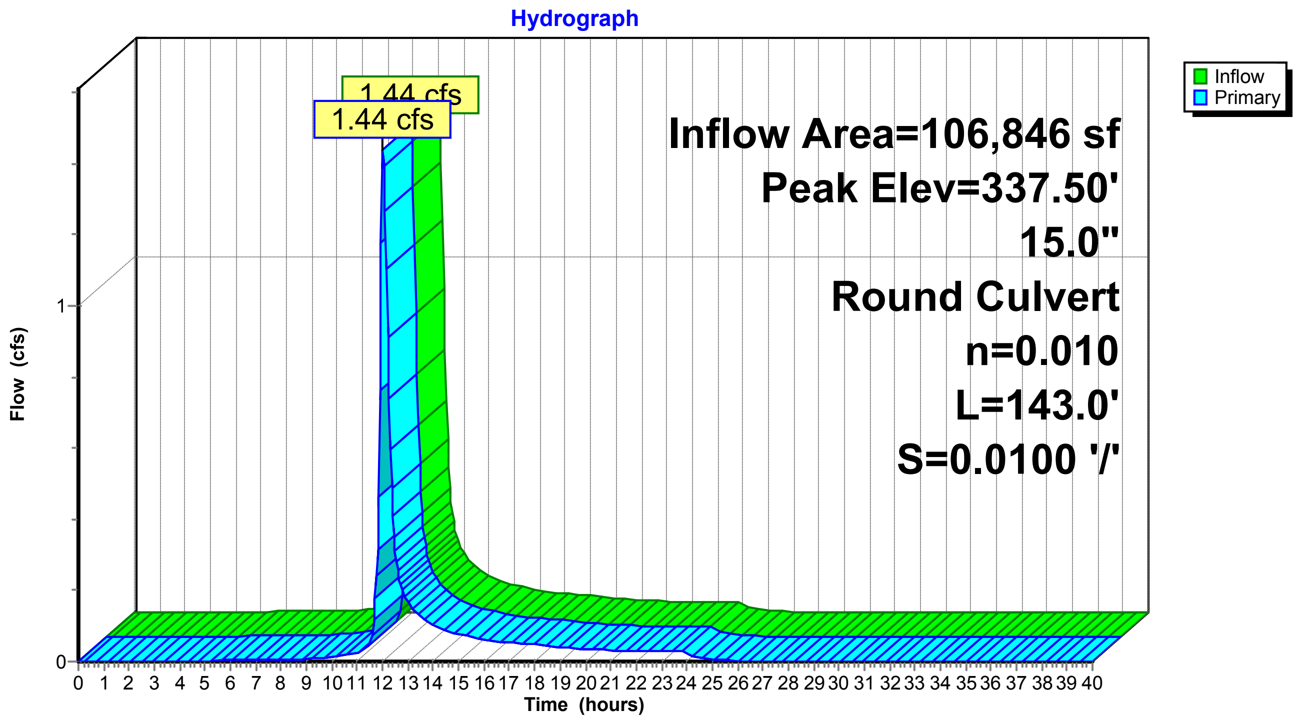
Inflow Area =	106,846 sf, 63.53% Impervious,	Inflow Depth = 0.57"	for 2-YEAR event
Inflow =	1.44 cfs @ 12.02 hrs, Volume=	5,033 cf	
Outflow =	1.44 cfs @ 12.02 hrs, Volume=	5,033 cf, Atten= 0%, Lag= 0.0 min	
Primary =	1.44 cfs @ 12.02 hrs, Volume=	5,033 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 337.50' @ 12.02 hrs
Flood Elev= 352.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	336.84'	**15.0" Round Culvert** L= 143.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 336.84' / 335.41' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=1.40 cfs @ 12.02 hrs HW=337.49' (Free Discharge)
└─**1=Culvert** (Inlet Controls 1.40 cfs @ 2.17 fps)

Pond CB16: CB16



Summary for Pond CB17: CB17

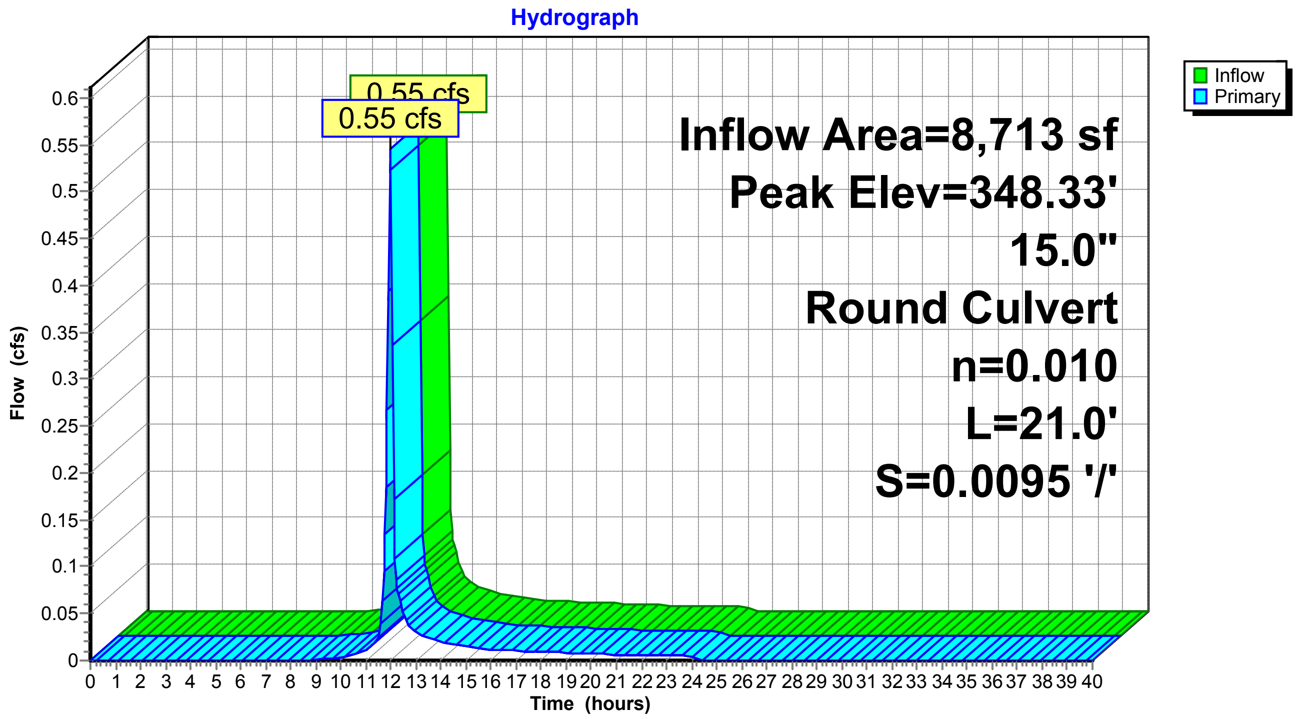
Inflow Area =	8,713 sf,	36.19% Impervious,	Inflow Depth = 1.58"	for 2-YEAR event
Inflow =	0.55 cfs @	11.97 hrs, Volume=	1,151 cf	
Outflow =	0.55 cfs @	11.97 hrs, Volume=	1,151 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.55 cfs @	11.97 hrs, Volume=	1,151 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 348.33' @ 11.97 hrs
Flood Elev= 352.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	347.94'	**15.0" Round Culvert** L= 21.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 347.94' / 347.74' S= 0.0095 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=0.53 cfs @ 11.97 hrs HW=348.32' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.53 cfs @ 1.66 fps)

Pond CB17: CB17



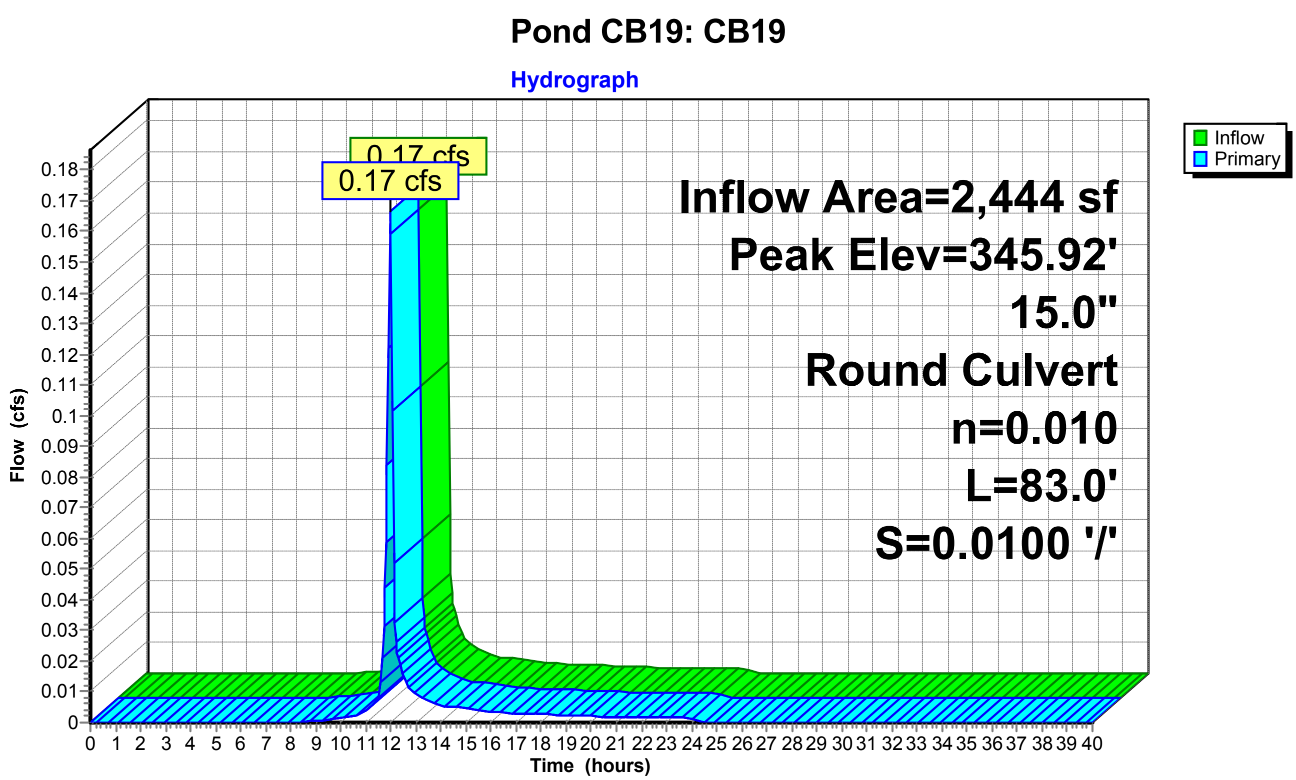
Summary for Pond CB19: CB19

Inflow Area =	2,444 sf,	45.42% Impervious,	Inflow Depth = 1.73"	for 2-YEAR event	
Inflow =	0.17 cfs @	11.97 hrs,	Volume=	353 cf	
Outflow =	0.17 cfs @	11.97 hrs,	Volume=	353 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.17 cfs @	11.97 hrs,	Volume=	353 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 345.92' @ 11.97 hrs
Flood Elev= 349.19'

Device	Routing	Invert	Outlet Devices
#1	Primary	345.71'	**15.0" Round Culvert** L= 83.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 345.71' / 344.88' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=0.16 cfs @ 11.97 hrs HW=345.92' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.16 cfs @ 1.22 fps)



Summary for Pond CB2: CB2

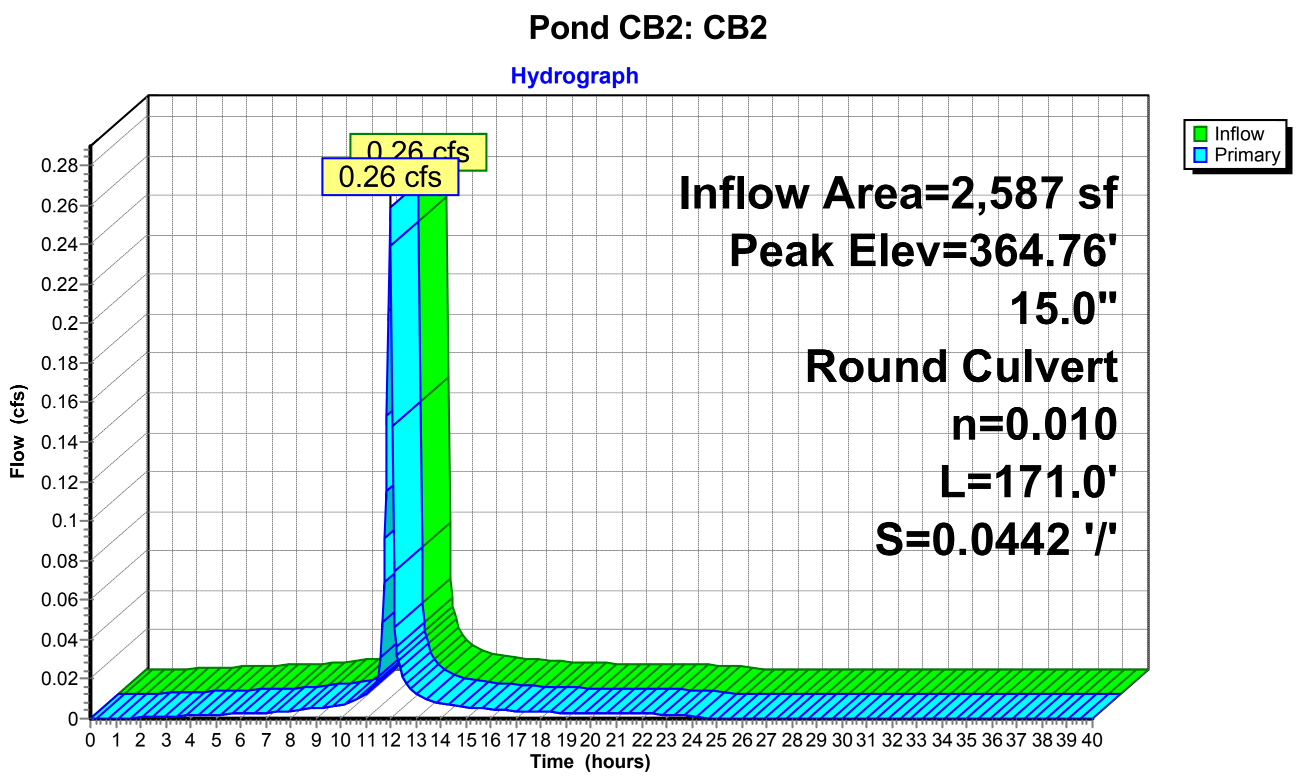
[79] Warning: Submerged Pond CB1 Primary device # 1 INLET by 0.01'

Inflow Area =	2,587 sf,100.00% Impervious,	Inflow Depth = 2.94" for 2-YEAR event		
Inflow =	0.26 cfs @	11.96 hrs, Volume=	633 cf	
Outflow =	0.26 cfs @	11.96 hrs, Volume=	633 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.26 cfs @	11.96 hrs, Volume=	633 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 364.76' @ 11.96 hrs
Flood Elev= 368.03'

Device	Routing	Invert	Outlet Devices
#1	Primary	364.50'	**15.0" Round Culvert** L= 171.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 364.50' / 356.95' S= 0.0442 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=0.25 cfs @ 11.96 hrs HW=364.76' (Free Discharge)
↑**1=Culvert** (Inlet Controls 0.25 cfs @ 1.37 fps)



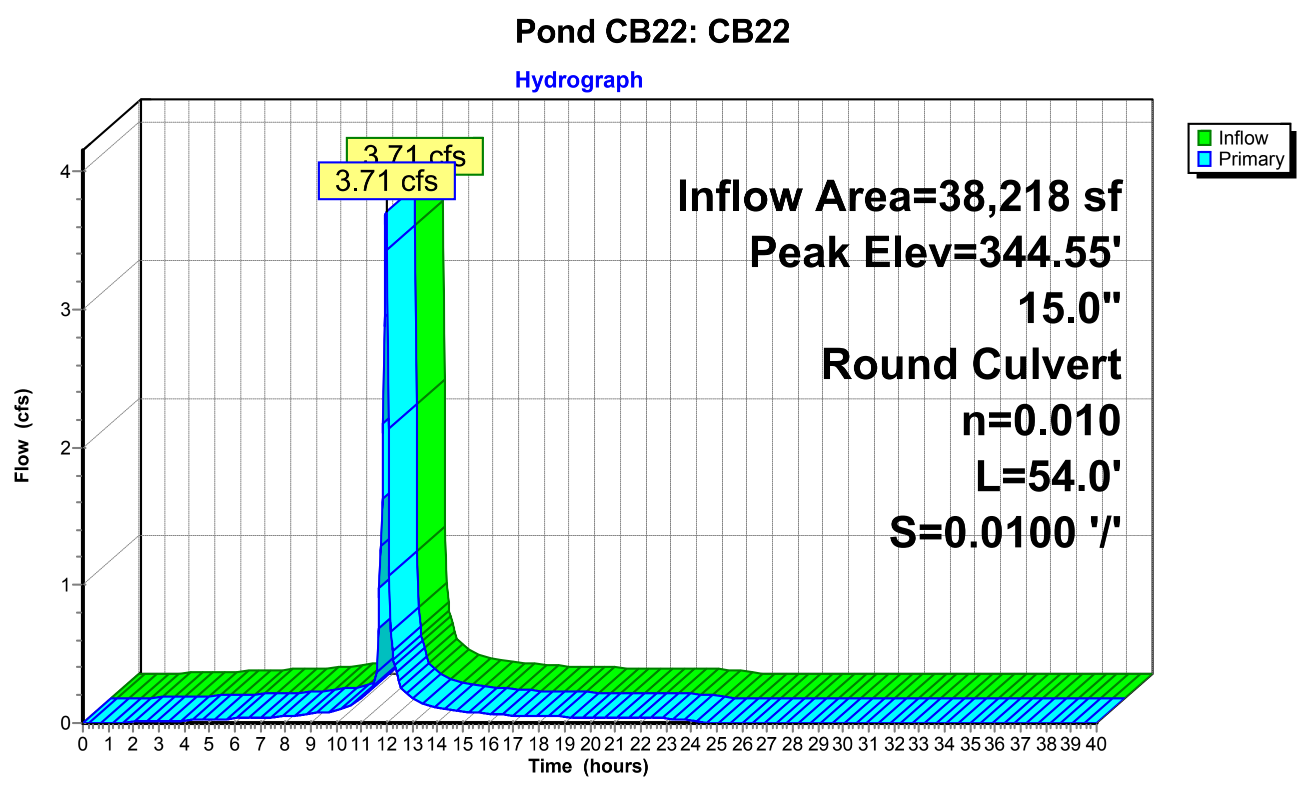
Summary for Pond CB22: CB22

Inflow Area =	38,218 sf, 94.94% Impervious,	Inflow Depth = 2.82"	for 2-YEAR event	
Inflow =	3.71 cfs @	11.96 hrs, Volume=	8,996 cf	
Outflow =	3.71 cfs @	11.96 hrs, Volume=	8,996 cf,	Atten= 0%, Lag= 0.0 min
Primary =	3.71 cfs @	11.96 hrs, Volume=	8,996 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 344.55' @ 11.96 hrs
Flood Elev= 346.73'

Device	Routing	Invert	Outlet Devices
#1	Primary	343.30'	**15.0" Round Culvert** L= 54.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 343.30' / 342.76' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=3.63 cfs @ 11.96 hrs HW=344.52' (Free Discharge)
1=Culvert (Inlet Controls 3.63 cfs @ 2.97 fps)



Summary for Pond CB25: CB25

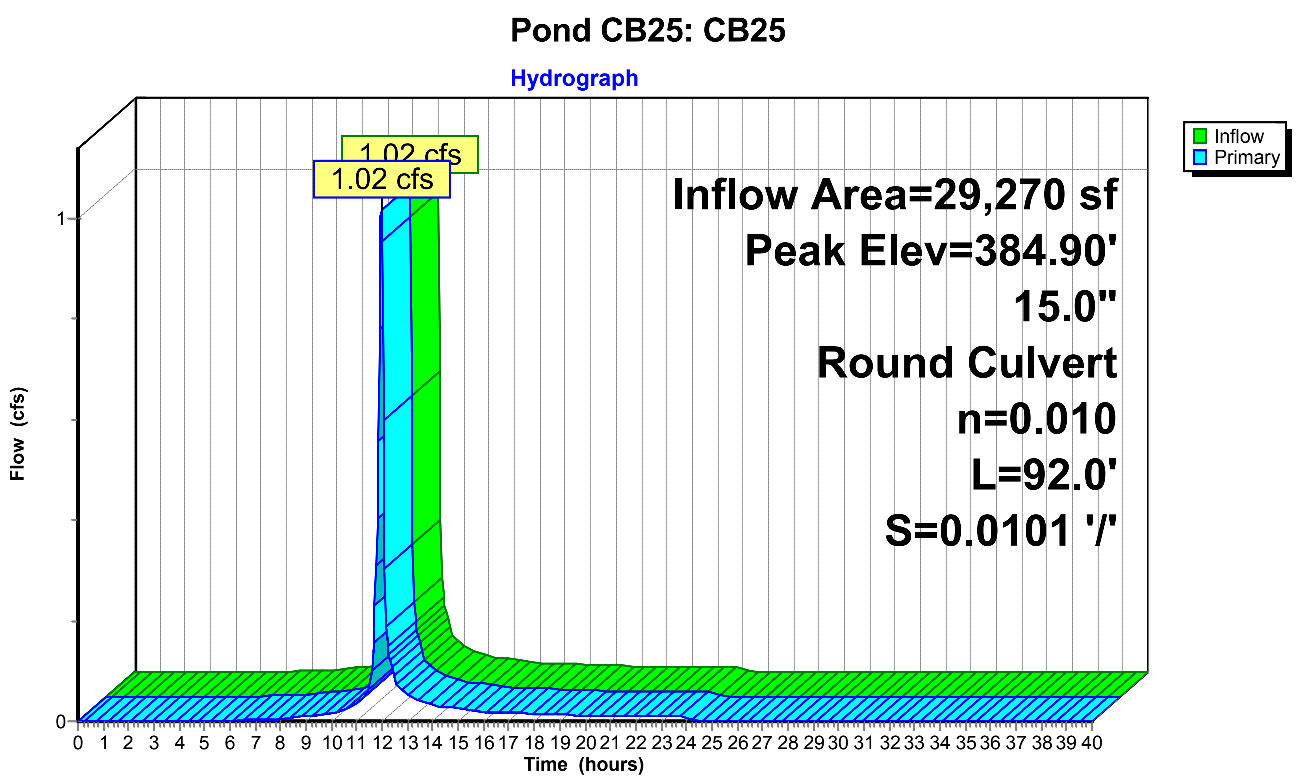
[79] Warning: Submerged Pond CB26 Primary device # 1 OUTLET by 0.54'
[79] Warning: Submerged Pond CB32 Primary device # 1 OUTLET by 0.54'

Inflow Area =	29,270 sf,	71.52% Impervious,	Inflow Depth = 0.91"	for 2-YEAR event	
Inflow =	1.02 cfs @	11.97 hrs,	Volume=	2,228 cf	
Outflow =	1.02 cfs @	11.97 hrs,	Volume=	2,228 cf,	Atten= 0%, Lag= 0.0 min
Primary =	1.02 cfs @	11.97 hrs,	Volume=	2,228 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 384.90' @ 11.97 hrs
Flood Elev= 387.66'

Device	Routing	Invert	Outlet Devices
#1	Primary	384.36'	**15.0" Round Culvert** L= 92.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 384.36' / 383.43' S= 0.0101 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=0.99 cfs @ 11.97 hrs HW=384.90' (Free Discharge)
└─**1=Culvert** (Inlet Controls 0.99 cfs @ 1.97 fps)



Summary for Pond CB26: PP-6

Inflow Area =	3,589 sf, 64.47% Impervious,	Inflow Depth = 2.05" for 2-YEAR event		
Inflow =	0.28 cfs @	11.97 hrs, Volume=	614 cf	
Outflow =	0.25 cfs @	12.00 hrs, Volume=	614 cf,	Atten= 10%, Lag= 2.2 min
Discarded =	0.25 cfs @	12.00 hrs, Volume=	614 cf	
Primary =	0.00 cfs @	0.00 hrs, Volume=	0 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 384.04' @ 12.00 hrs Surf.Area= 2,200 sf Storage= 40 cf
Flood Elev= 388.26' Surf.Area= 2,200 sf Storage= 3,080 cf

Plug-Flow detention time= 2.5 min calculated for 614 cf (100% of inflow)
Center-of-Mass det. time= 2.5 min (810.8 - 808.4)

Volume	Invert	Avail.Storage	Storage Description
#1	384.00'	3,080 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 7,700 cf Overall x 40.0% Voids

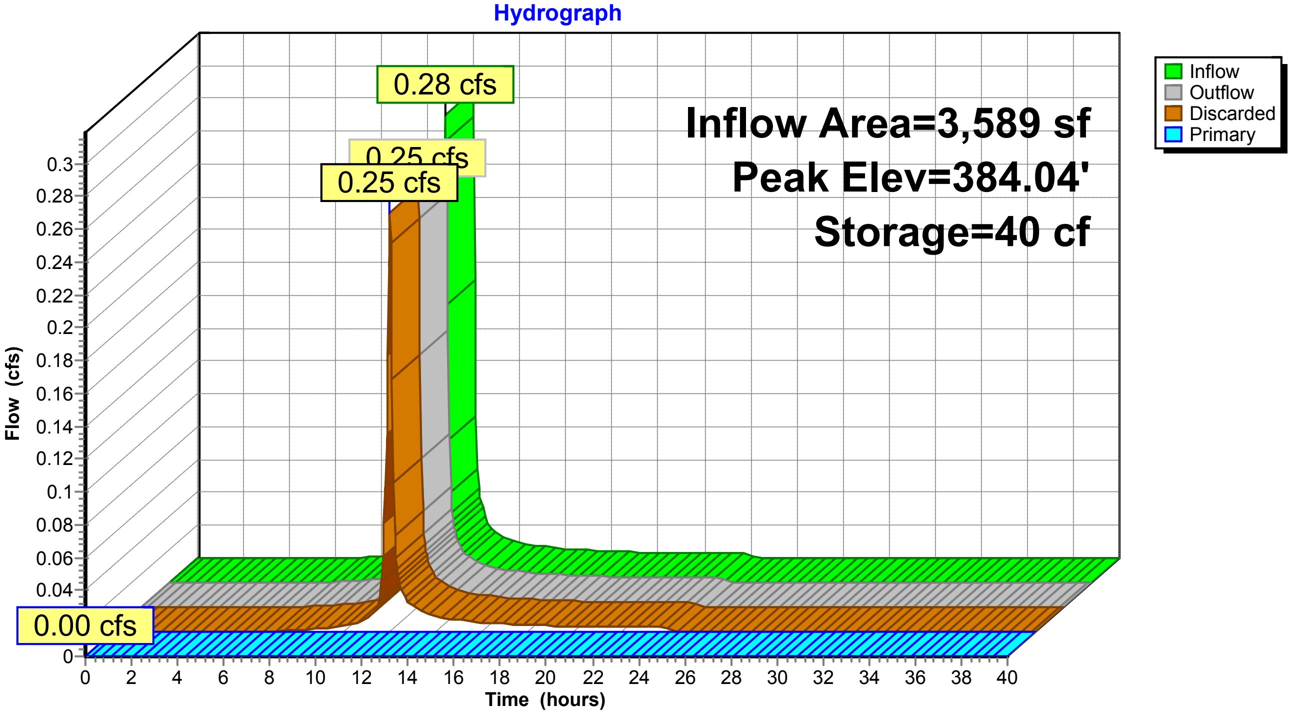
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.00	2,200	0	0
387.50	2,200	7,700	7,700

Device	Routing	Invert	Outlet Devices
#1	Primary	384.96'	**15.0" Round Culvert** L= 41.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 384.96' / 384.36' S= 0.0146 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#2	Discarded	384.00'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.25 cfs @ 12.00 hrs HW=384.04' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 0.25 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=384.00' (Free Discharge)
└─**1=Culvert** (Controls 0.00 cfs)

Pond CB26: PP-6



Summary for Pond CB27: CB27

Inflow Area =	10,524 sf, 75.84% Impervious,	Inflow Depth = 2.32"	for 2-YEAR event
Inflow =	0.92 cfs @ 11.97 hrs, Volume=	2,037 cf	
Outflow =	0.91 cfs @ 11.97 hrs, Volume=	2,037 cf, Atten= 1%, Lag= 0.5 min	
Discarded =	0.16 cfs @ 11.97 hrs, Volume=	363 cf	
Primary =	0.75 cfs @ 11.97 hrs, Volume=	1,673 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 388.02' @ 11.97 hrs Surf.Area= 2,800 sf Storage= 20 cf
Flood Elev= 390.54' Surf.Area= 2,800 sf Storage= 2,845 cf

Plug-Flow detention time= 0.4 min calculated for 2,034 cf (100% of inflow)
Center-of-Mass det. time= 0.4 min (795.3 - 794.9)

Volume	Invert	Avail.Storage	Storage Description
#1	388.00'	3,920 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 9,800 cf Overall x 40.0% Voids

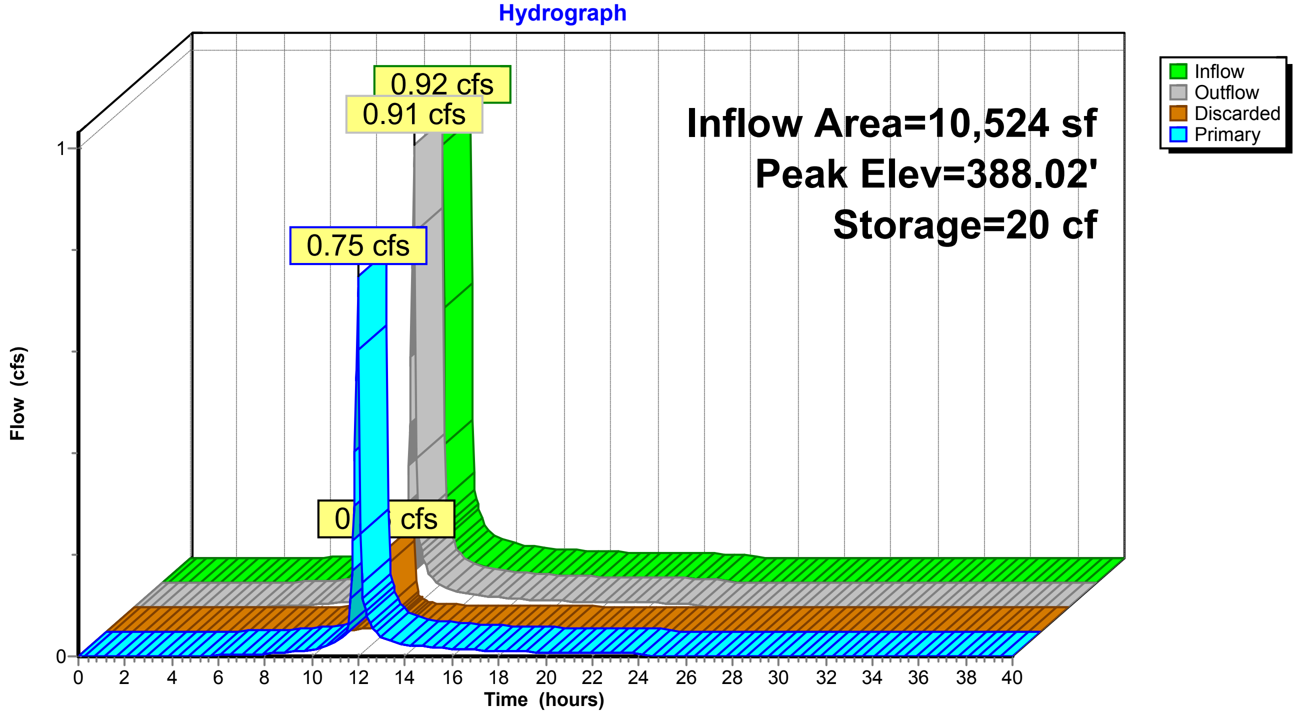
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
388.00	2,800	0	0
391.50	2,800	9,800	9,800

Device	Routing	Invert	Outlet Devices
#1	Primary	387.36'	**15.0" Round Culvert** L= 22.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 387.36' / 387.14' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#2	Discarded	388.00'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.32 cfs @ 11.97 hrs HW=388.02' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 0.32 cfs)

Primary OutFlow Max=1.42 cfs @ 11.97 hrs HW=388.02' (Free Discharge)
└─**1=Culvert** (Inlet Controls 1.42 cfs @ 2.18 fps)

Pond CB27: CB27



Summary for Pond CB28: CB28

Inflow Area = 3,169 sf, 64.25% Impervious, Inflow Depth = 2.05" for 2-YEAR event
Inflow = 0.25 cfs @ 11.97 hrs, Volume= 542 cf
Outflow = 0.24 cfs @ 12.00 hrs, Volume= 542 cf, Atten= 6%, Lag= 1.8 min
Discarded = 0.23 cfs @ 12.00 hrs, Volume= 529 cf
Primary = 0.01 cfs @ 12.00 hrs, Volume= 13 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 388.04' @ 12.00 hrs Surf.Area= 2,000 sf Storage= 30 cf
Flood Elev= 391.82' Surf.Area= 2,000 sf Storage= 2,800 cf

Plug-Flow detention time= 2.1 min calculated for 542 cf (100% of inflow)
Center-of-Mass det. time= 2.1 min (810.5 - 808.4)

Volume	Invert	Avail.Storage	Storage Description
#1	388.00'	2,800 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 7,000 cf Overall x 40.0% Voids

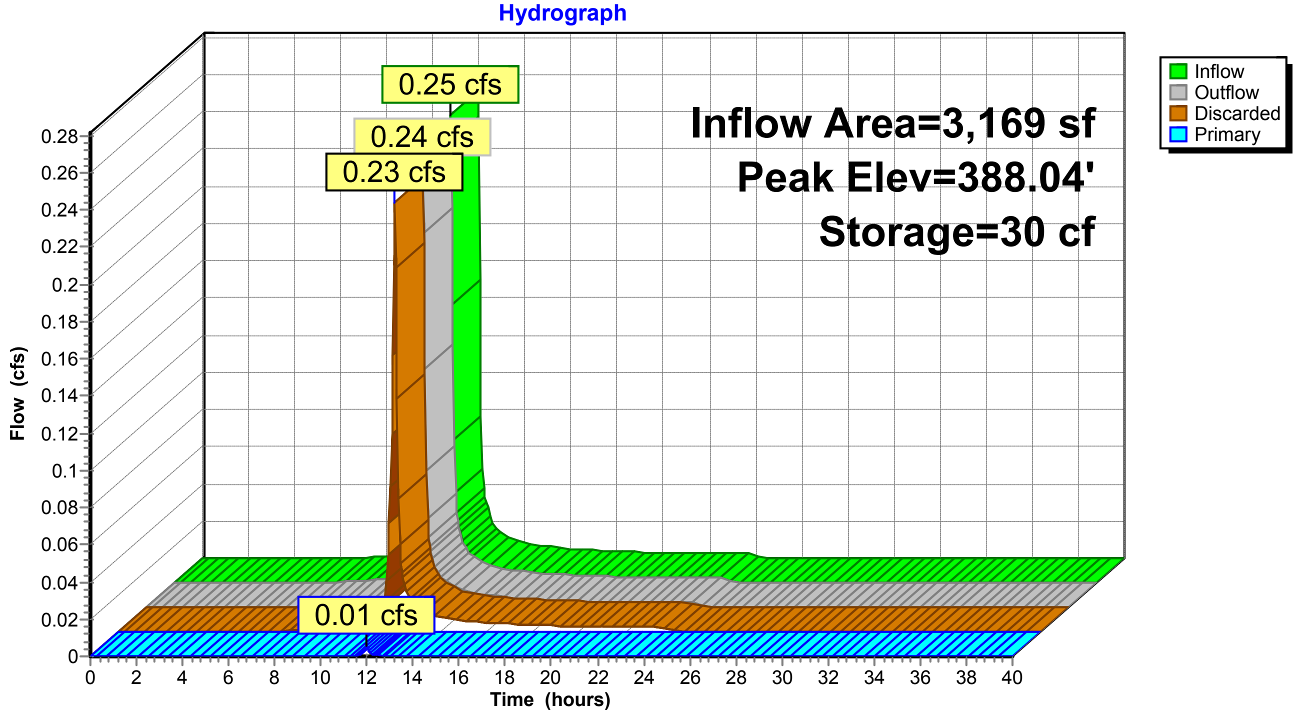
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
388.00	2,000	0	0
391.50	2,000	7,000	7,000

Device	Routing	Invert	Outlet Devices
#1	Primary	388.00'	**15.0" Round Culvert** L= 39.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 388.00' / 387.61' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#2	Discarded	388.00'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.23 cfs @ 12.00 hrs HW=388.04' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=0.01 cfs @ 12.00 hrs HW=388.04' (Free Discharge)
└─**1=Culvert** (Inlet Controls 0.01 cfs @ 0.52 fps)

Pond CB28: CB28



Summary for Pond CB29: CB29

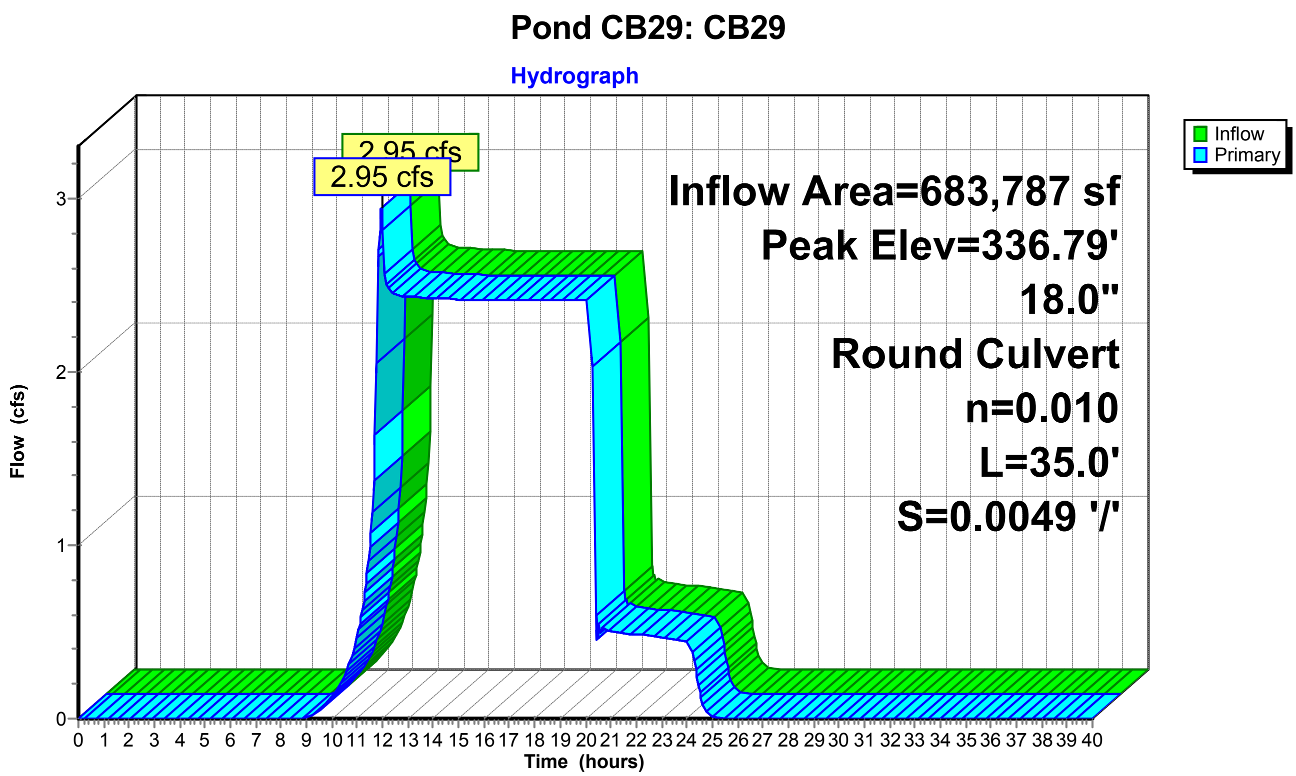
[62] Hint: Exceeded Reach FLARED END #2 OUTLET depth by 0.03' @ 8.80 hrs

Inflow Area =	683,787 sf,	19.88% Impervious,	Inflow Depth = 1.51"	for 2-YEAR event	
Inflow =	2.95 cfs @	11.97 hrs,	Volume=	86,090 cf	
Outflow =	2.95 cfs @	11.97 hrs,	Volume=	86,090 cf,	Atten= 0%, Lag= 0.0 min
Primary =	2.95 cfs @	11.97 hrs,	Volume=	86,090 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 336.79' @ 11.97 hrs
Flood Elev= 338.57'

Device	Routing	Invert	Outlet Devices
#1	Primary	335.81'	**18.0" Round CULVERT** L= 35.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 335.81' / 335.64' S= 0.0049 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.94 cfs @ 11.97 hrs HW=336.79' (Free Discharge)
└**1=CULVERT** (Barrel Controls 2.94 cfs @ 3.42 fps)



Summary for Pond CB3: CB3

[79] Warning: Submerged Pond CB2 Primary device # 1 OUTLET by 0.35'

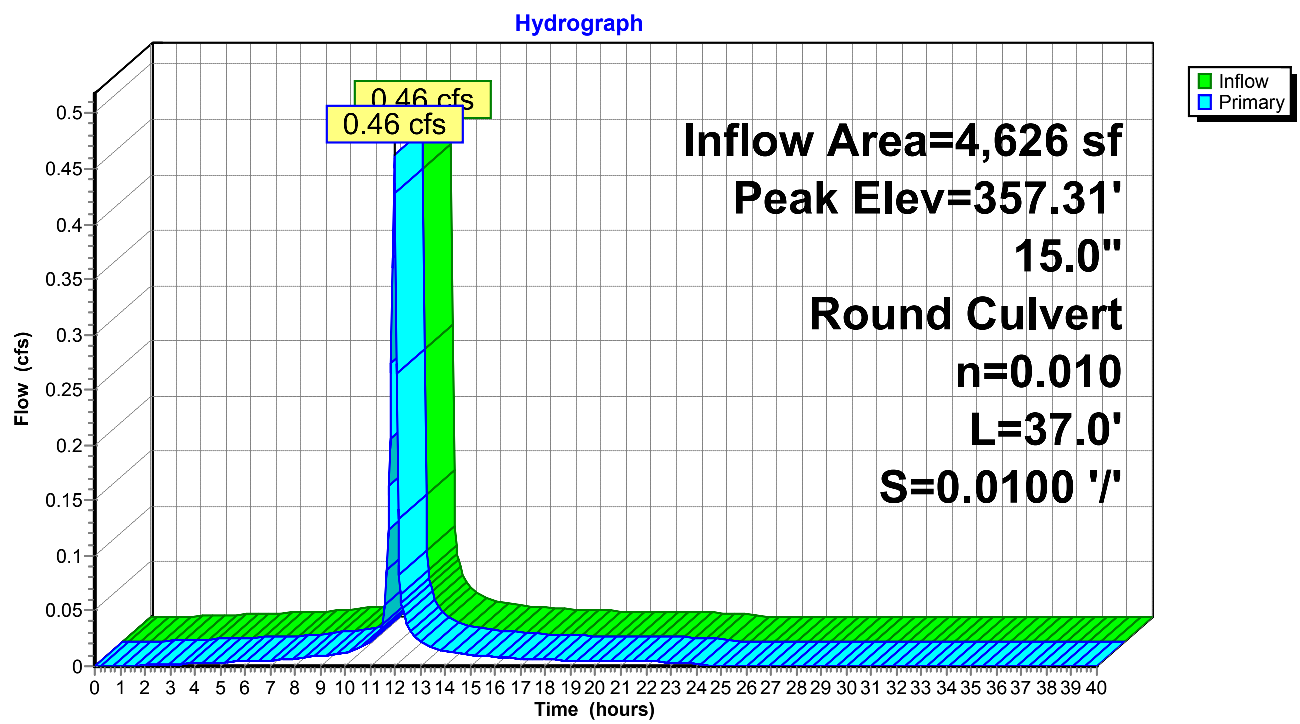
Inflow Area =	4,626 sf,100.00% Impervious,	Inflow Depth = 2.94"	for 2-YEAR event	
Inflow =	0.46 cfs @	11.96 hrs, Volume=	1,132 cf	
Outflow =	0.46 cfs @	11.96 hrs, Volume=	1,132 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.46 cfs @	11.96 hrs, Volume=	1,132 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 357.31' @ 11.96 hrs
Flood Elev= 360.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	356.95'	**15.0" Round Culvert** L= 37.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 356.95' / 356.58' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=0.45 cfs @ 11.96 hrs HW=357.30' (Free Discharge)
1=Culvert (Inlet Controls 0.45 cfs @ 1.59 fps)

Pond CB3: CB3



Summary for Pond CB30: CB30

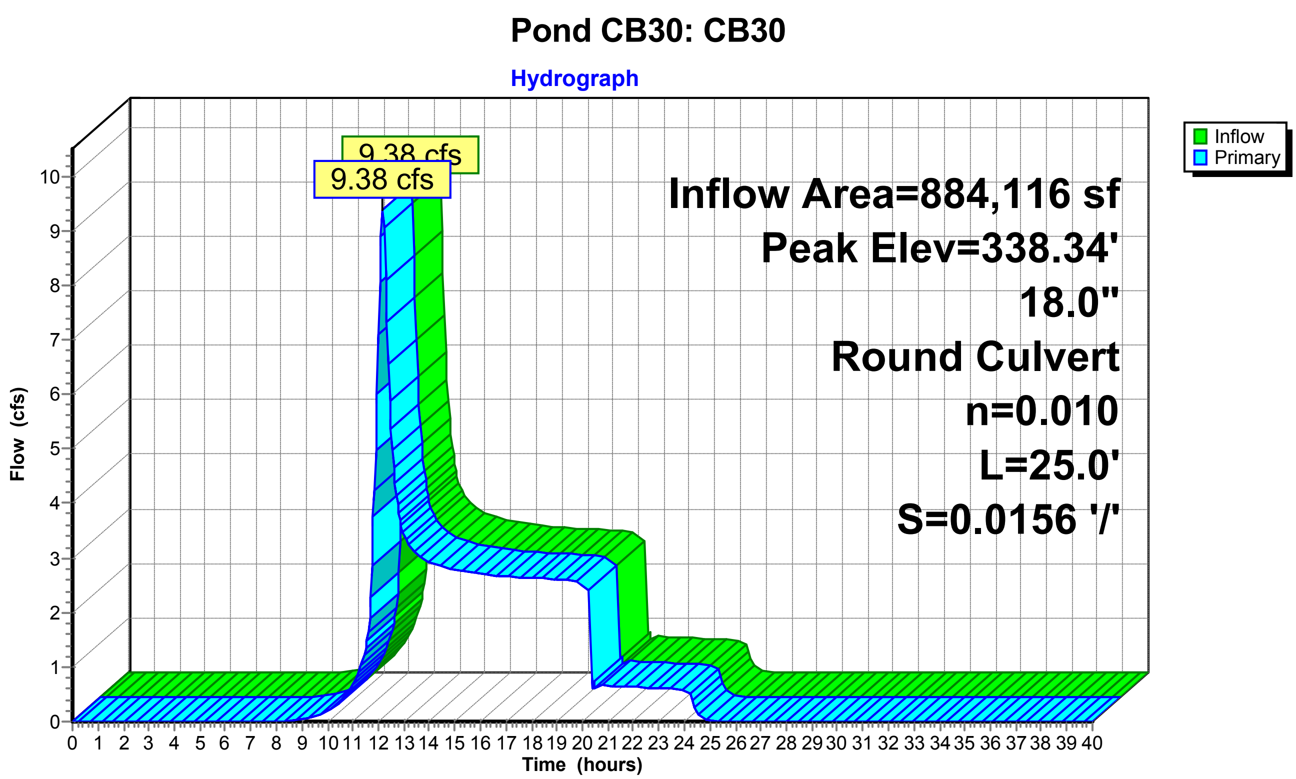
[81] Warning: Exceeded Pond CB29 by 1.62' @ 12.15 hrs
[79] Warning: Submerged Pond DMH#10 Primary device # 1 INLET by 0.62'

Inflow Area =	884,116 sf,	21.35% Impervious,	Inflow Depth = 1.53"	for 2-YEAR event
Inflow =	9.38 cfs @	12.17 hrs, Volume=	112,666 cf	
Outflow =	9.38 cfs @	12.17 hrs, Volume=	112,666 cf, Atten= 0%, Lag= 0.0 min	
Primary =	9.38 cfs @	12.17 hrs, Volume=	112,666 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 338.34' @ 12.17 hrs
Flood Elev= 338.39'

Device	Routing	Invert	Outlet Devices
#1	Primary	335.64'	**18.0" Round Culvert** L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 335.64' / 335.25' S= 0.0156 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=9.32 cfs @ 12.17 hrs HW=338.31' (Free Discharge)
└─**1=Culvert** (Inlet Controls 9.32 cfs @ 5.27 fps)



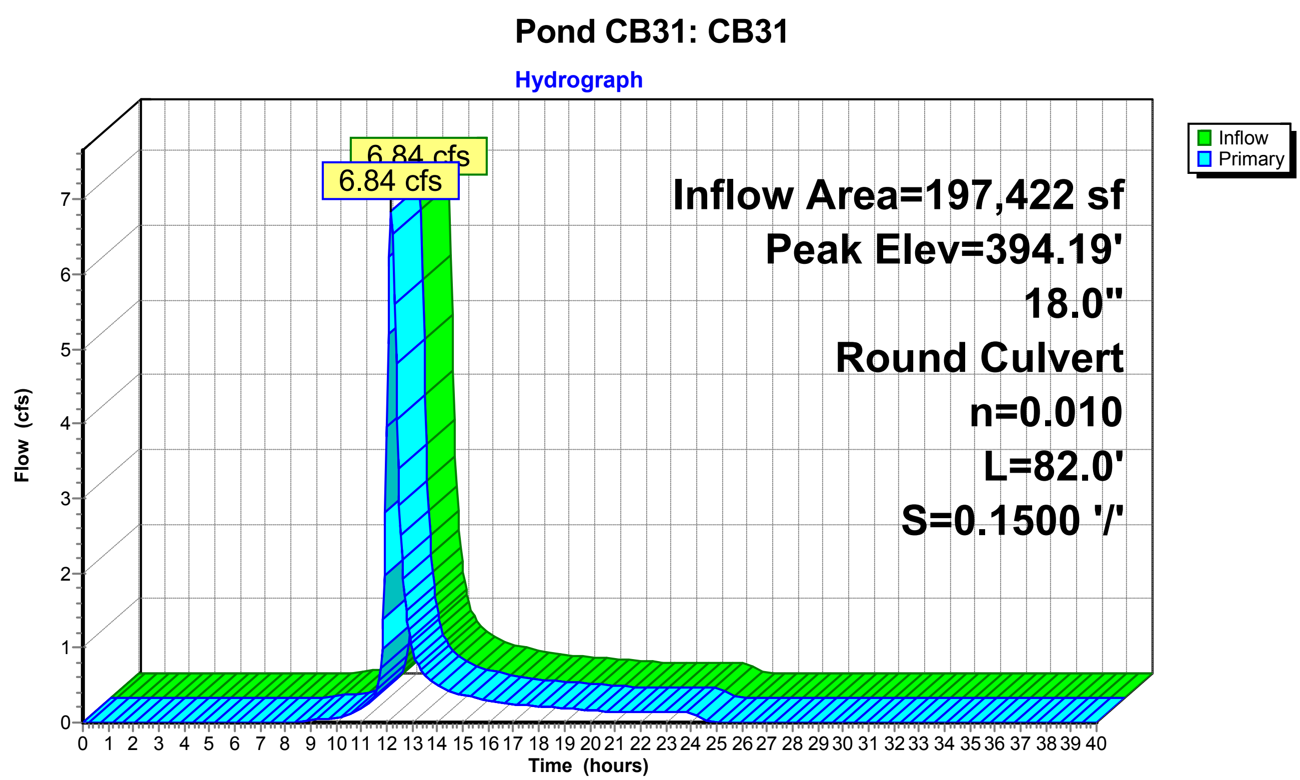
Summary for Pond CB31: CB31

Inflow Area = 197,422 sf, 25.73% Impervious, Inflow Depth = 1.58" for 2-YEAR event
Inflow = 6.84 cfs @ 12.17 hrs, Volume= 26,036 cf
Outflow = 6.84 cfs @ 12.17 hrs, Volume= 26,036 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.84 cfs @ 12.17 hrs, Volume= 26,036 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 394.19' @ 12.17 hrs
Flood Elev= 406.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	392.40'	**18.0" Round Culvert** L= 82.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 392.40' / 380.10' S= 0.1500 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=6.77 cfs @ 12.17 hrs HW=394.17' (Free Discharge)
└─1=Culvert (Inlet Controls 6.77 cfs @ 3.83 fps)



Summary for Pond CB32: PP-7

Inflow Area = 13,693 sf, 73.15% Impervious, Inflow Depth = 1.48" for 2-YEAR event
Inflow = 0.75 cfs @ 11.97 hrs, Volume= 1,687 cf
Outflow = 0.14 cfs @ 11.75 hrs, Volume= 1,687 cf, Atten= 82%, Lag= 0.0 min
Discarded = 0.14 cfs @ 11.75 hrs, Volume= 1,687 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 385.02' @ 12.17 hrs Surf.Area= 1,200 sf Storage= 488 cf

Plug-Flow detention time= 19.8 min calculated for 1,684 cf (100% of inflow)
Center-of-Mass det. time= 19.8 min (815.2 - 795.4)

Volume	Invert	Avail.Storage	Storage Description
#1	384.00'	1,680 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 4,200 cf Overall x 40.0% Voids

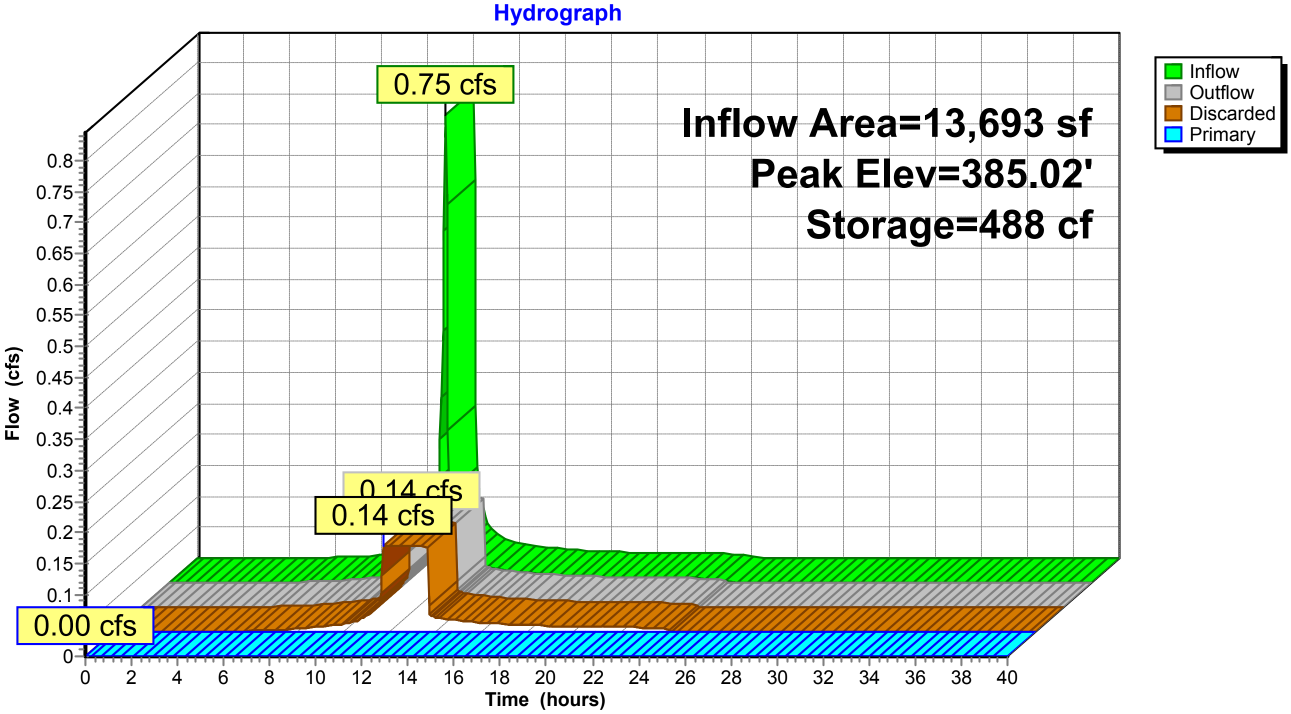
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.00	1,200	0	0
387.50	1,200	4,200	4,200

Device	Routing	Invert	Outlet Devices
#1	Primary	385.45'	**15.0" Round Culvert** L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 385.45' / 384.36' S= 0.0218 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#2	Discarded	384.00'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.14 cfs @ 11.75 hrs HW=384.06' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 0.14 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=384.00' (Free Discharge)
└─**1=Culvert** (Controls 0.00 cfs)

Pond CB32: PP-7



Summary for Pond CB4: CB4

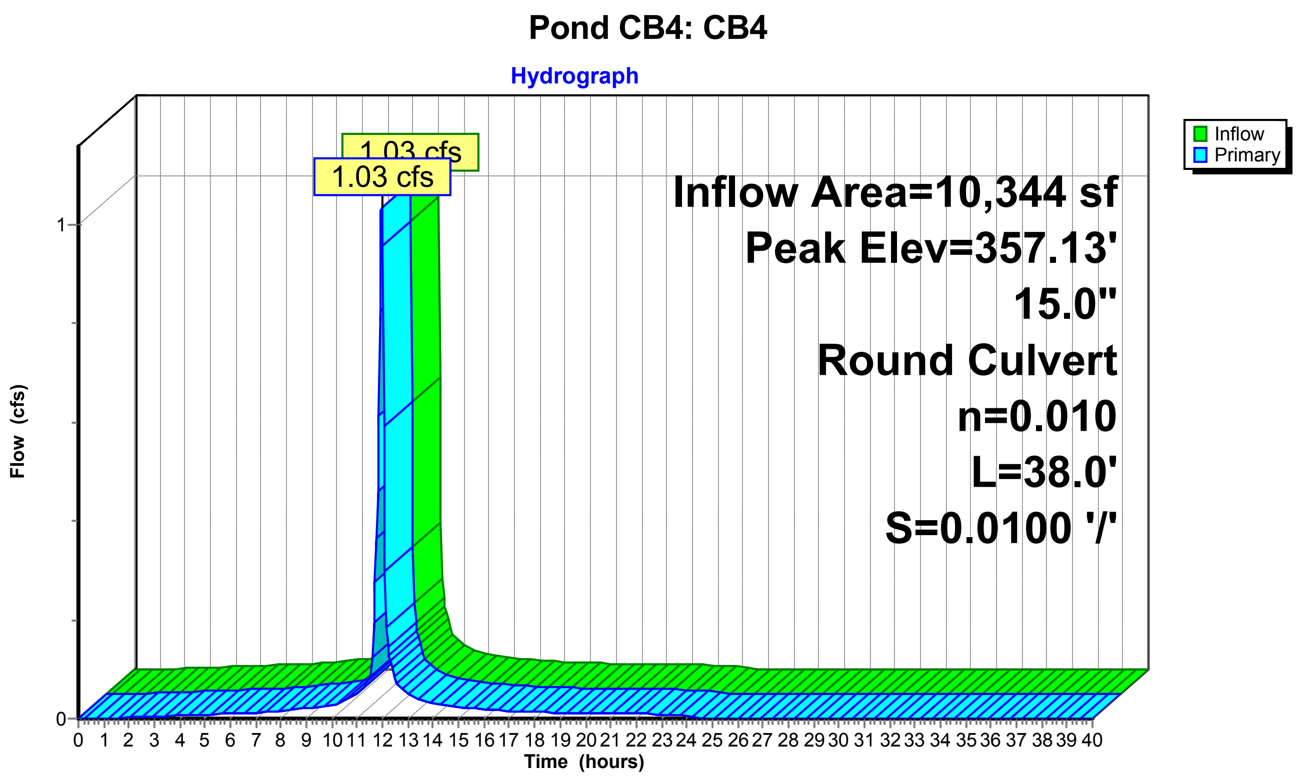
[79] Warning: Submerged Pond CB3 Primary device # 1 INLET by 0.18'

Inflow Area =	10,344 sf,100.00% Impervious,	Inflow Depth = 2.94" for 2-YEAR event		
Inflow =	1.03 cfs @	11.96 hrs, Volume=	2,532 cf	
Outflow =	1.03 cfs @	11.96 hrs, Volume=	2,532 cf,	Atten= 0%, Lag= 0.0 min
Primary =	1.03 cfs @	11.96 hrs, Volume=	2,532 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 357.13' @ 11.96 hrs
Flood Elev= 360.59'

Device	Routing	Invert	Outlet Devices
#1	Primary	356.58'	**15.0" Round Culvert** L= 38.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 356.58' / 356.20' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=1.01 cfs @ 11.96 hrs HW=357.12' (Free Discharge)
↑**1=Culvert** (Inlet Controls 1.01 cfs @ 1.98 fps)



Summary for Pond CB5: CB5

[79] Warning: Submerged Pond CB4 Primary device # 1 INLET by 0.22'

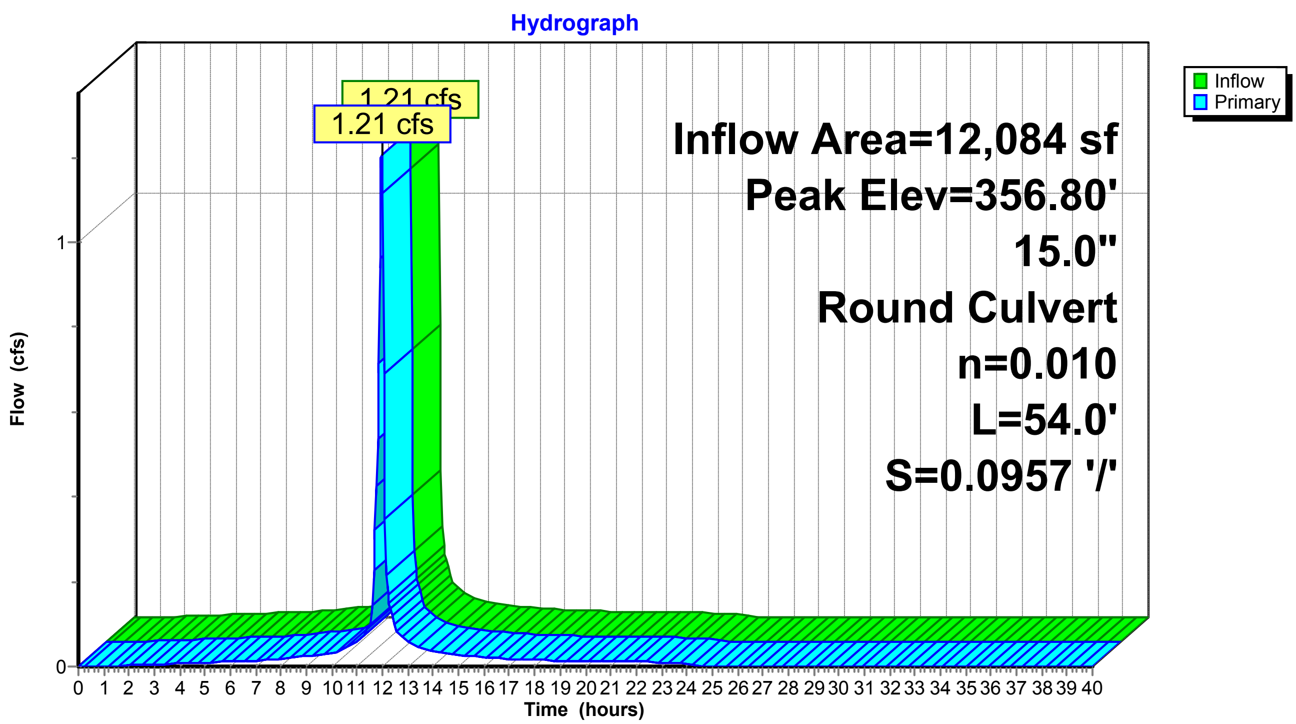
Inflow Area =	12,084 sf,100.00% Impervious,	Inflow Depth = 2.94"	for 2-YEAR event	
Inflow =	1.21 cfs @	11.96 hrs, Volume=	2,958 cf	
Outflow =	1.21 cfs @	11.96 hrs, Volume=	2,958 cf,	Atten= 0%, Lag= 0.0 min
Primary =	1.21 cfs @	11.96 hrs, Volume=	2,958 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 356.80' @ 11.96 hrs
Flood Elev= 360.78'

Device	Routing	Invert	Outlet Devices
#1	Primary	356.20'	**15.0" Round Culvert** L= 54.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 356.20' / 351.03' S= 0.0957 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=1.18 cfs @ 11.96 hrs HW=356.79' (Free Discharge)
↑**1=Culvert** (Inlet Controls 1.18 cfs @ 2.07 fps)

Pond CB5: CB5



Summary for Pond CB6: CB6

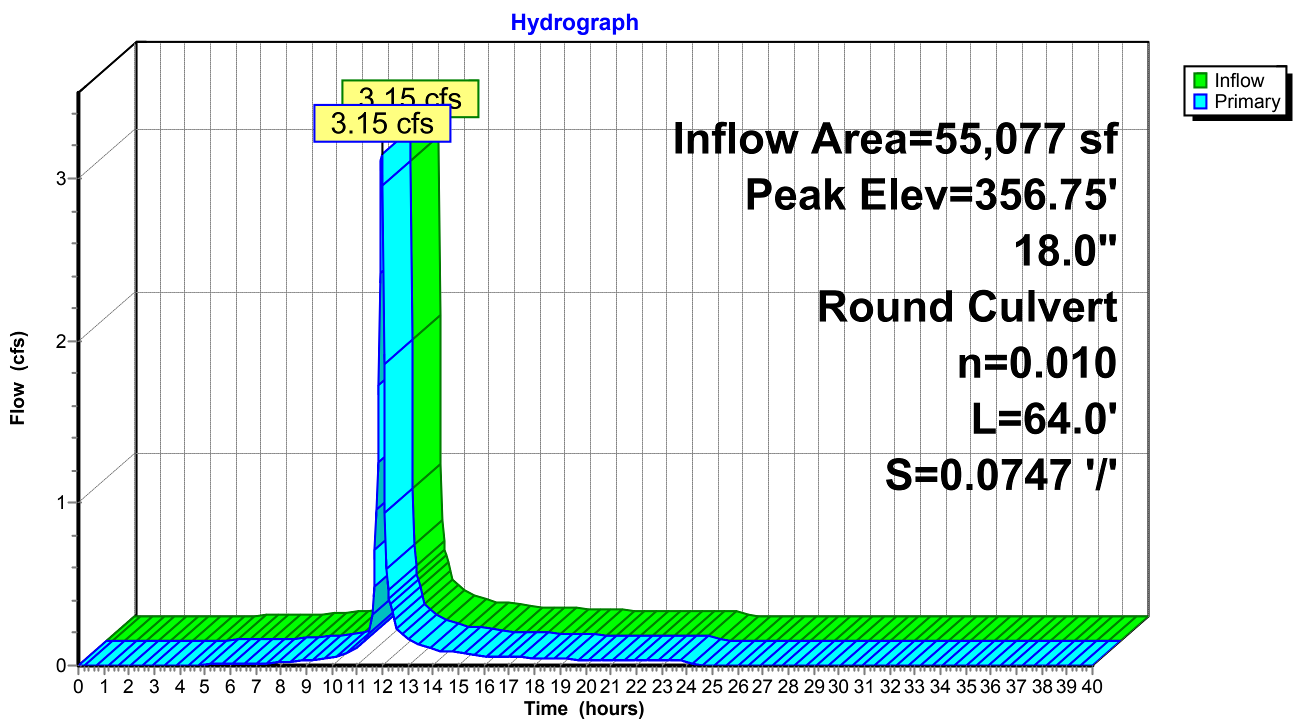
Inflow Area = 55,077 sf, 70.64% Impervious, Inflow Depth = 1.53" for 2-YEAR event
Inflow = 3.15 cfs @ 11.97 hrs, Volume= 7,011 cf
Outflow = 3.15 cfs @ 11.97 hrs, Volume= 7,011 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.15 cfs @ 11.97 hrs, Volume= 7,011 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 356.75' @ 11.97 hrs
Flood Elev= 368.43'

Device	Routing	Invert	Outlet Devices
#1	Primary	355.79'	**18.0" Round Culvert** L= 64.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 355.79' / 351.01' S= 0.0747 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=3.05 cfs @ 11.97 hrs HW=356.73' (Free Discharge)
↑**1=Culvert** (Inlet Controls 3.05 cfs @ 2.61 fps)

Pond CB6: CB6



Summary for Pond CB7: CB7

[79] Warning: Submerged Pond CB8 Primary device # 1 OUTLET by 0.68'

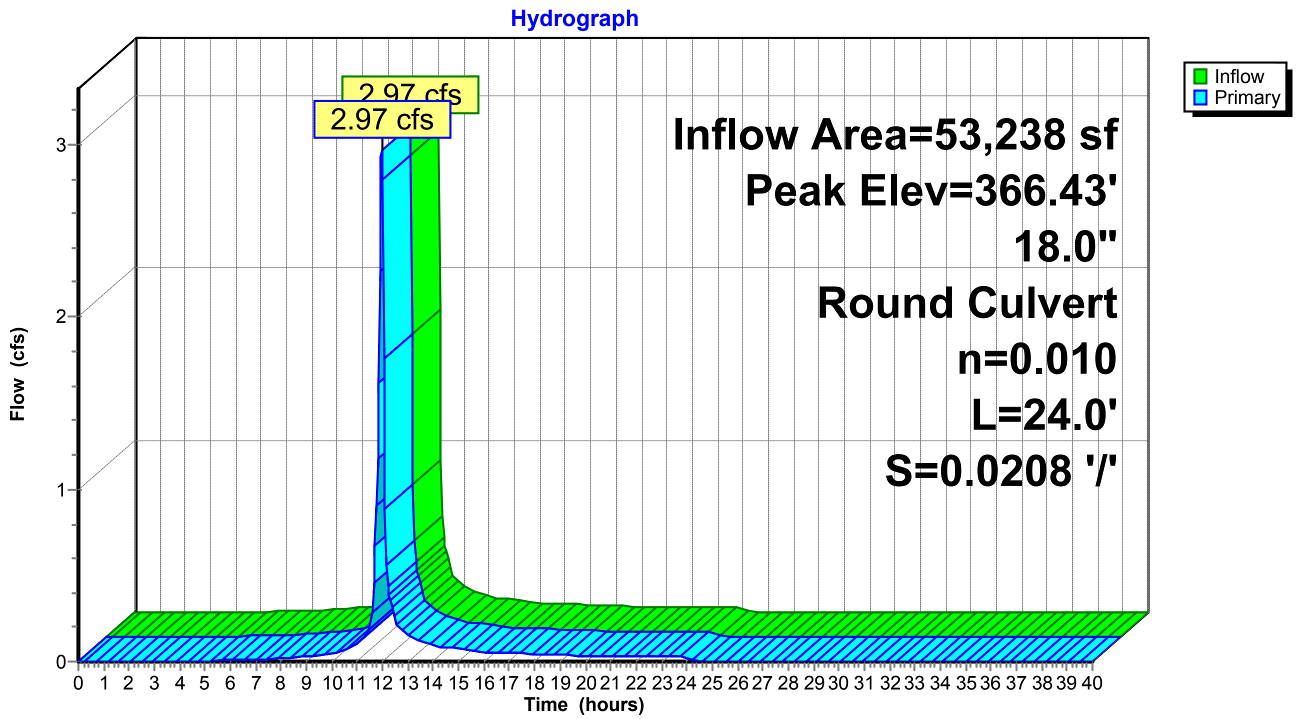
Inflow Area = 53,238 sf, 69.63% Impervious, Inflow Depth = 1.48" for 2-YEAR event
Inflow = 2.97 cfs @ 11.97 hrs, Volume= 6,561 cf
Outflow = 2.97 cfs @ 11.97 hrs, Volume= 6,561 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.97 cfs @ 11.97 hrs, Volume= 6,561 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 366.43' @ 11.97 hrs
Flood Elev= 396.05'

Device	Routing	Invert	Outlet Devices
#1	Primary	365.50'	**18.0" Round Culvert** L= 24.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 365.50' / 365.00' S= 0.0208 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=2.87 cfs @ 11.97 hrs HW=366.41' (Free Discharge)
└─**1=Culvert** (Inlet Controls 2.87 cfs @ 2.56 fps)

Pond CB7: CB7



Summary for Pond CB8: CB8

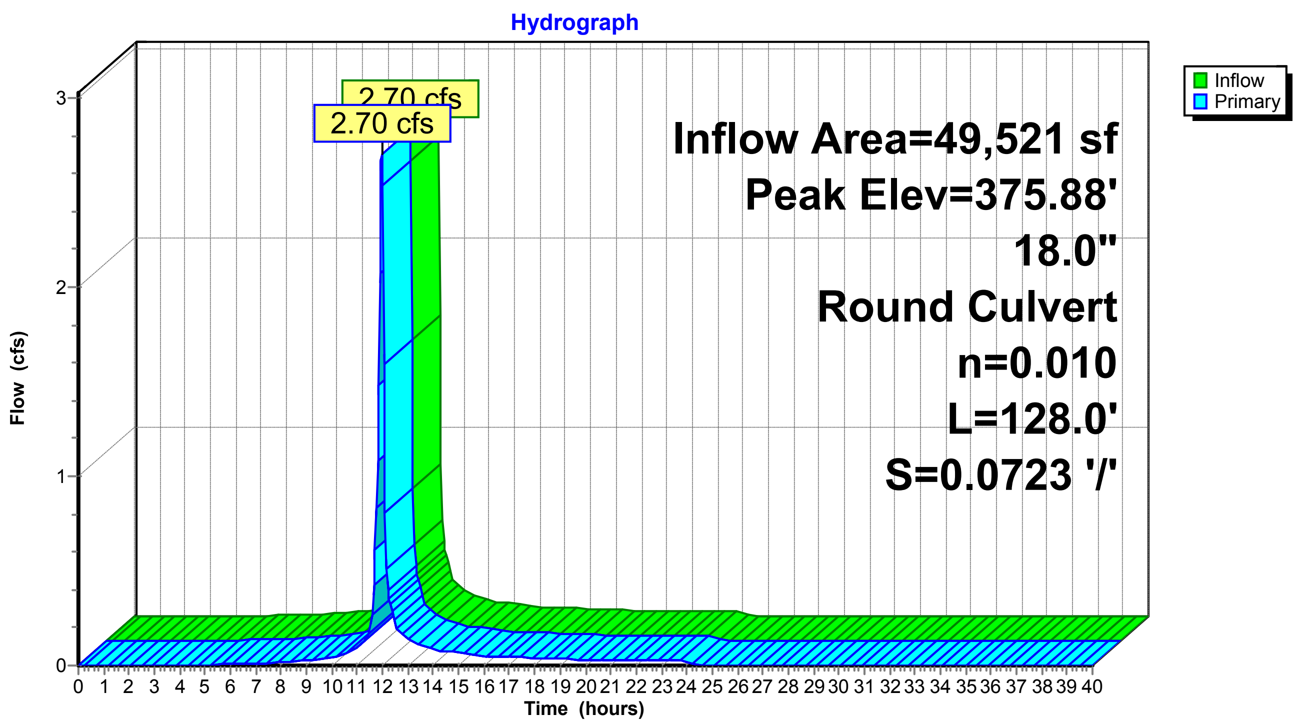
Inflow Area = 49,521 sf, 70.94% Impervious, Inflow Depth = 1.45" for 2-YEAR event
Inflow = 2.70 cfs @ 11.97 hrs, Volume= 6,001 cf
Outflow = 2.70 cfs @ 11.97 hrs, Volume= 6,001 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.70 cfs @ 11.97 hrs, Volume= 6,001 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 375.88' @ 11.97 hrs
Flood Elev= 383.24'

Device	Routing	Invert	Outlet Devices
#1	Primary	375.00'	**18.0" Round Culvert** L= 128.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 375.00' / 365.74' S= 0.0723 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=2.62 cfs @ 11.97 hrs HW=375.86' (Free Discharge)
1=Culvert (Inlet Controls 2.62 cfs @ 2.50 fps)

Pond CB8: CB8



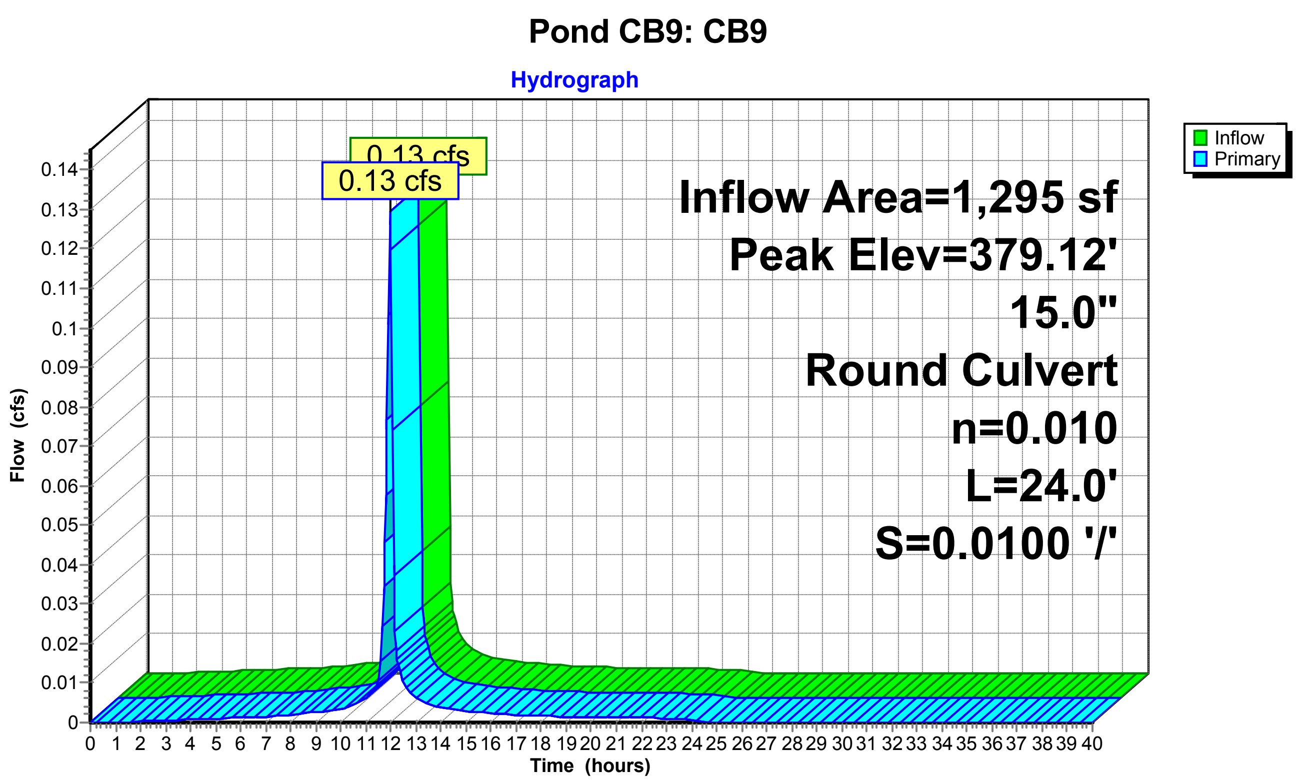
Summary for Pond CB9: CB9

Inflow Area = 1,295 sf,100.00% Impervious, Inflow Depth = 2.94" for 2-YEAR event
Inflow = 0.13 cfs @ 11.96 hrs, Volume= 317 cf
Outflow = 0.13 cfs @ 11.96 hrs, Volume= 317 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.13 cfs @ 11.96 hrs, Volume= 317 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 379.12' @ 11.96 hrs
Flood Elev= 382.42'

Device	Routing	Invert	Outlet Devices
#1	Primary	378.94'	**15.0" Round Culvert** L= 24.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 378.94' / 378.70' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=0.13 cfs @ 11.96 hrs HW=379.12' (Free Discharge)
↑**1=Culvert** (Inlet Controls 0.13 cfs @ 1.14 fps)



Summary for Pond DMH#10: DMH#10

[79] Warning: Submerged Pond DMH9 Primary device # 1 INLET by 0.93'

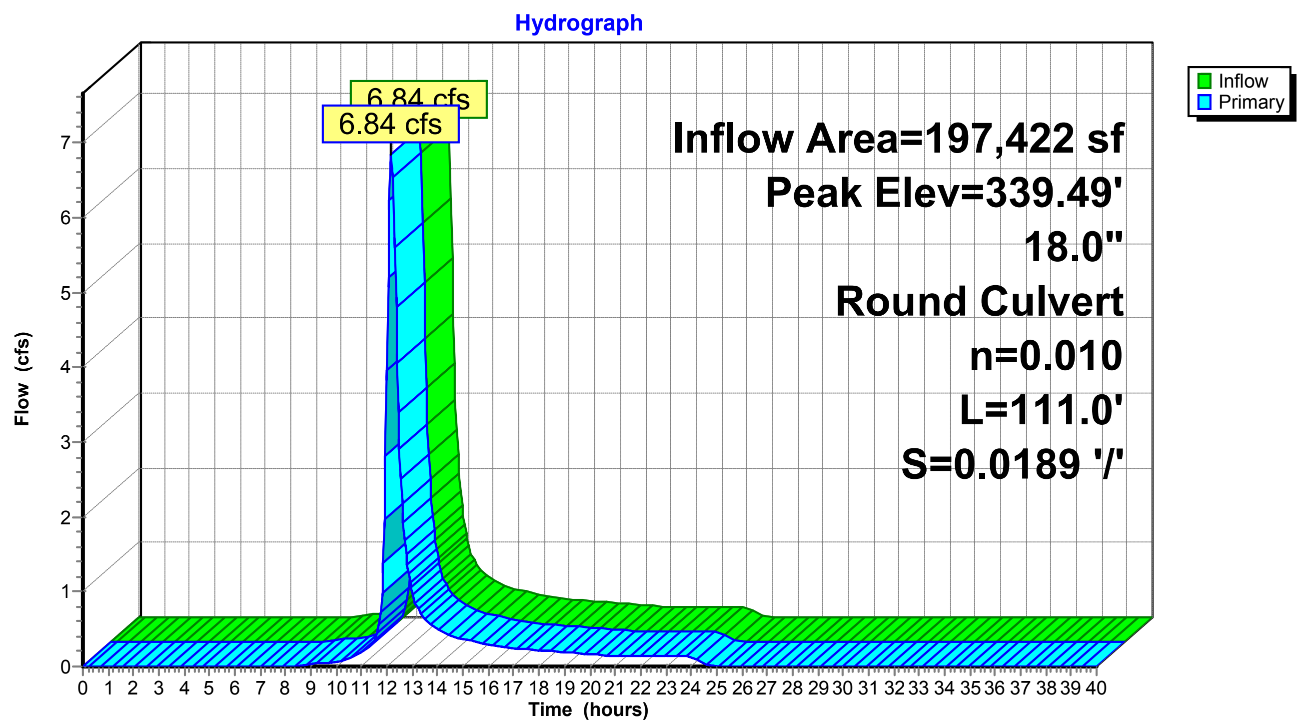
Inflow Area =	197,422 sf,	25.73% Impervious,	Inflow Depth = 1.58"	for 2-YEAR event
Inflow =	6.84 cfs @	12.17 hrs, Volume=	26,036 cf	
Outflow =	6.84 cfs @	12.17 hrs, Volume=	26,036 cf,	Atten= 0%, Lag= 0.0 min
Primary =	6.84 cfs @	12.17 hrs, Volume=	26,036 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 339.49' @ 12.17 hrs
Flood Elev= 345.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	337.70'	**18.0" Round Culvert** L= 111.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 337.70' / 335.60' S= 0.0189 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=6.77 cfs @ 12.17 hrs HW=339.47' (Free Discharge)
└**1=Culvert** (Inlet Controls 6.77 cfs @ 3.83 fps)

Pond DMH#10: DMH#10



Summary for Pond DMH3: DMH3

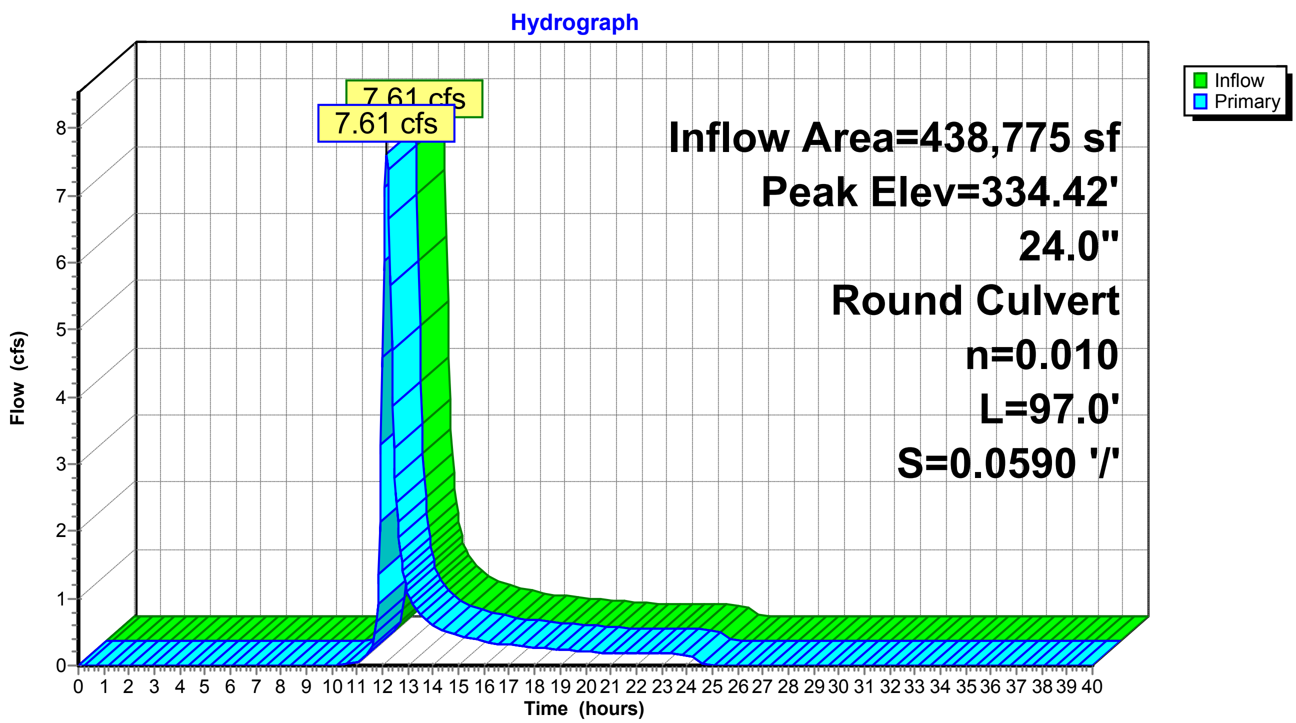
Inflow Area = 438,775 sf, 35.77% Impervious, Inflow Depth = 0.78" for 2-YEAR event
Inflow = 7.61 cfs @ 12.16 hrs, Volume= 28,414 cf
Outflow = 7.61 cfs @ 12.16 hrs, Volume= 28,414 cf, Atten= 0%, Lag= 0.0 min
Primary = 7.61 cfs @ 12.16 hrs, Volume= 28,414 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 334.42' @ 12.16 hrs
Flood Elev= 356.89'

Device	Routing	Invert	Outlet Devices
#1	Primary	333.00'	**24.0" Round Culvert** L= 97.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 333.00' / 327.28' S= 0.0590 '/' Cc= 0.900 n= 0.010, Flow Area= 3.14 sf

Primary OutFlow Max=7.56 cfs @ 12.16 hrs HW=334.41' (Free Discharge)
1=Culvert (Inlet Controls 7.56 cfs @ 3.19 fps)

Pond DMH3: DMH3



Summary for Pond DMH5: DMH5

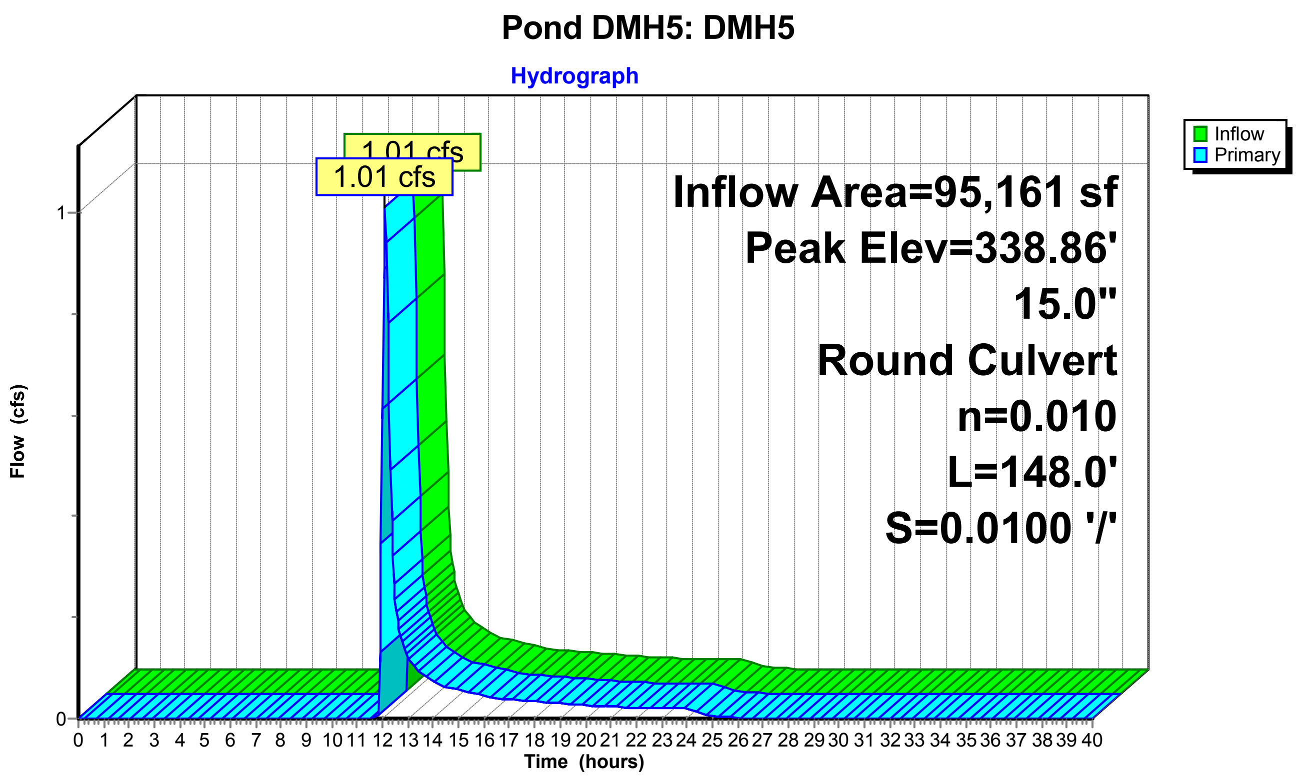
[79] Warning: Submerged Pond DMH6 Primary device # 1 OUTLET by 0.54'

Inflow Area =	95,161 sf,	64.89% Impervious,	Inflow Depth = 0.40"	for 2-YEAR event	
Inflow =	1.01 cfs @	12.11 hrs,	Volume=	3,155 cf	
Outflow =	1.01 cfs @	12.11 hrs,	Volume=	3,155 cf,	Atten= 0%, Lag= 0.0 min
Primary =	1.01 cfs @	12.11 hrs,	Volume=	3,155 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 338.86' @ 12.11 hrs
Flood Elev= 349.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	338.32'	**15.0" Round Culvert** L= 148.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 338.32' / 336.84' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=1.00 cfs @ 12.11 hrs HW=338.86' (Free Discharge)
└─**1=Culvert** (Inlet Controls 1.00 cfs @ 1.97 fps)



Summary for Pond DMH6: DMH6

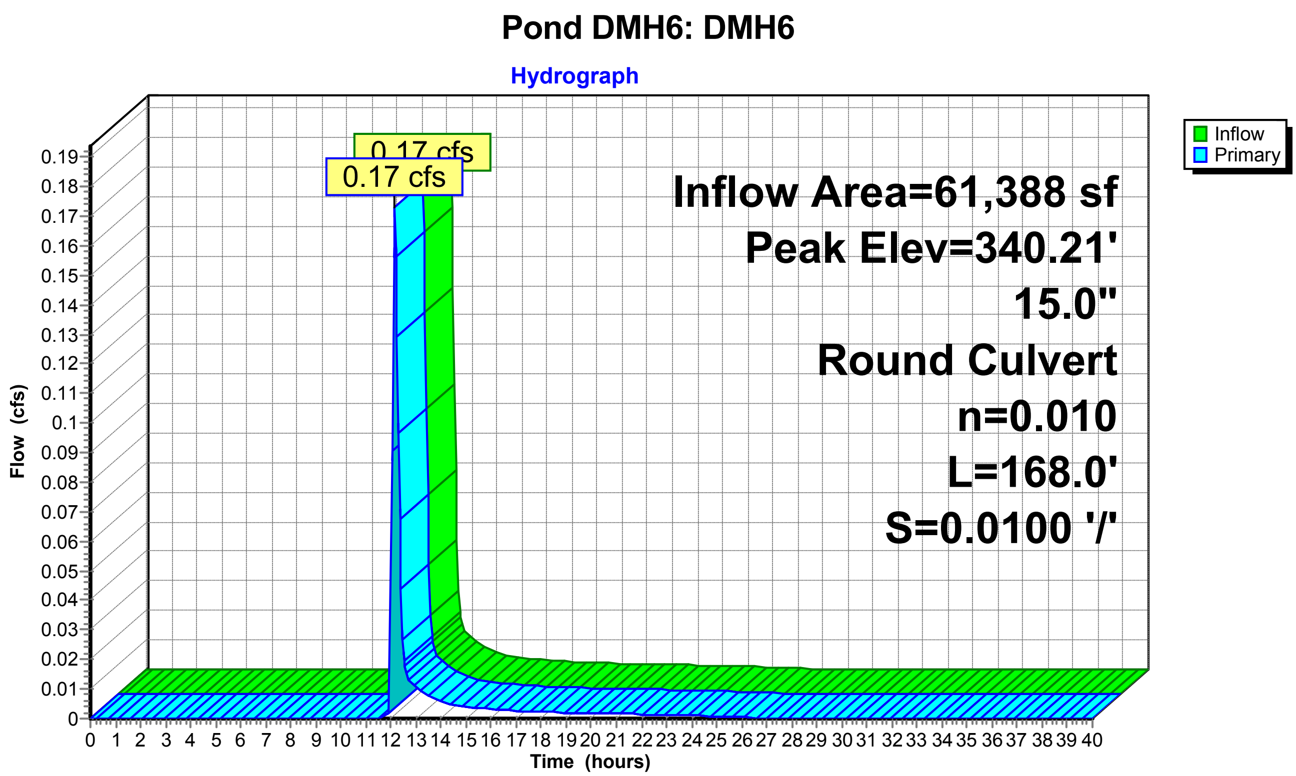
[79] Warning: Submerged Pond PP-2 Primary device # 2 OUTLET by 0.17'

Inflow Area = 61,388 sf, 81.87% Impervious, Inflow Depth = 0.06" for 2-YEAR event
Inflow = 0.17 cfs @ 12.15 hrs, Volume= 316 cf
Outflow = 0.17 cfs @ 12.15 hrs, Volume= 316 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.17 cfs @ 12.15 hrs, Volume= 316 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 340.21' @ 12.15 hrs
Flood Elev= 346.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	340.00'	**15.0" Round Culvert** L= 168.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 340.00' / 338.32' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=0.17 cfs @ 12.15 hrs HW=340.21' (Free Discharge)
└─**1=Culvert** (Inlet Controls 0.17 cfs @ 1.24 fps)



Summary for Pond DMH7: DMH7

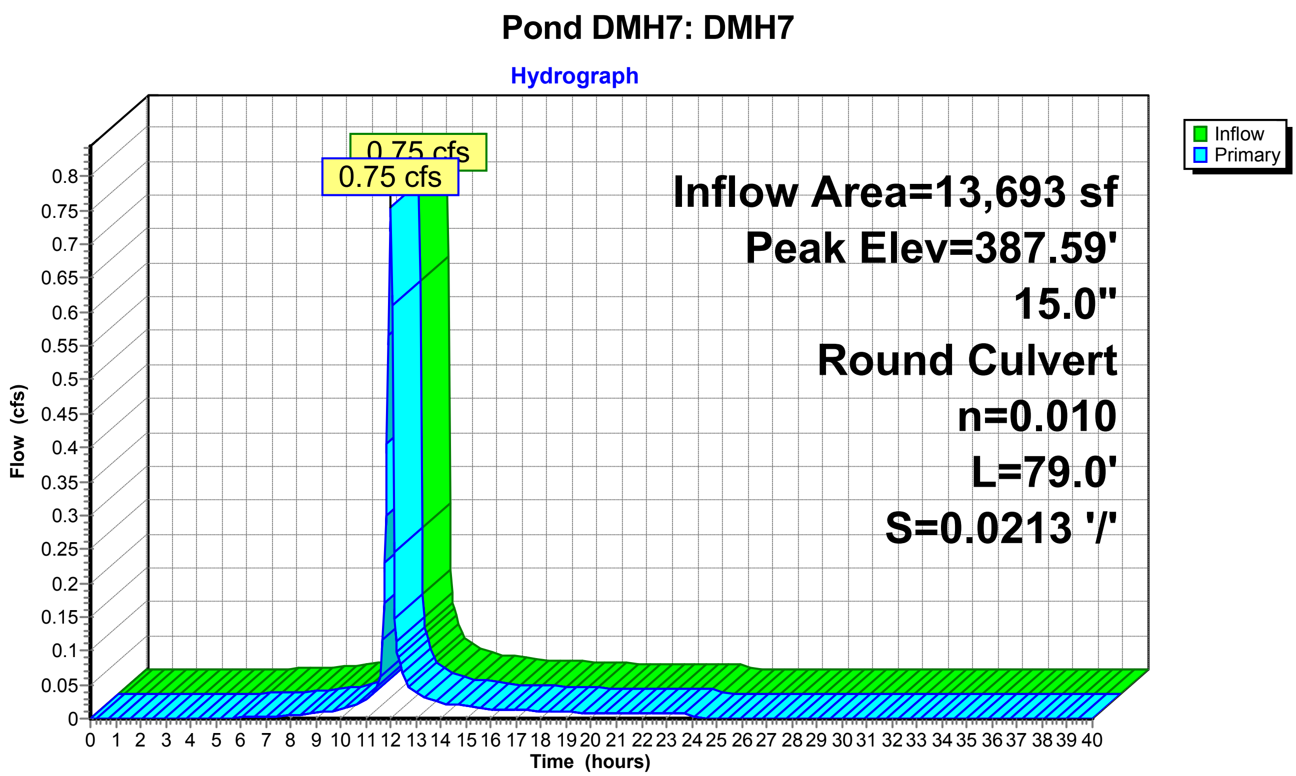
[79] Warning: Submerged Pond CB27 Primary device # 1 INLET by 0.23'

Inflow Area =	13,693 sf, 73.15% Impervious,	Inflow Depth = 1.48"	for 2-YEAR event	
Inflow =	0.75 cfs @	11.97 hrs, Volume=	1,687 cf	
Outflow =	0.75 cfs @	11.97 hrs, Volume=	1,687 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.75 cfs @	11.97 hrs, Volume=	1,687 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 387.59' @ 11.97 hrs
Flood Elev= 391.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	387.13'	**15.0" Round Culvert** L= 79.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 387.13' / 385.45' S= 0.0213 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=0.73 cfs @ 11.97 hrs HW=387.59' (Free Discharge)
└─**1=Culvert** (Inlet Controls 0.73 cfs @ 1.81 fps)



Summary for Pond DMH8: DMH8

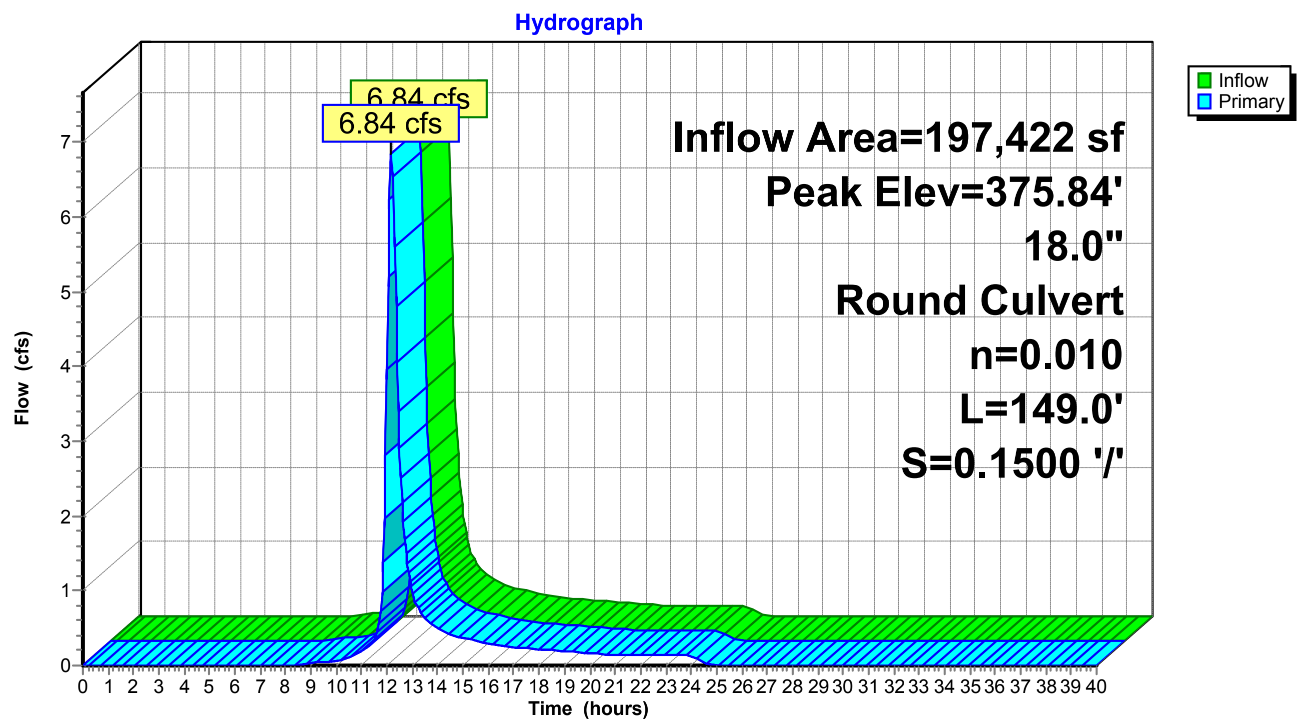
Inflow Area = 197,422 sf, 25.73% Impervious, Inflow Depth = 1.58" for 2-YEAR event
Inflow = 6.84 cfs @ 12.17 hrs, Volume= 26,036 cf
Outflow = 6.84 cfs @ 12.17 hrs, Volume= 26,036 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.84 cfs @ 12.17 hrs, Volume= 26,036 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 375.84' @ 12.17 hrs
Flood Elev= 383.39'

Device	Routing	Invert	Outlet Devices
#1	Primary	374.05'	**18.0" Round Culvert** L= 149.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 374.05' / 351.70' S= 0.1500 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=6.77 cfs @ 12.17 hrs HW=375.82' (Free Discharge)
└**1=Culvert** (Inlet Controls 6.77 cfs @ 3.83 fps)

Pond DMH8: DMH8



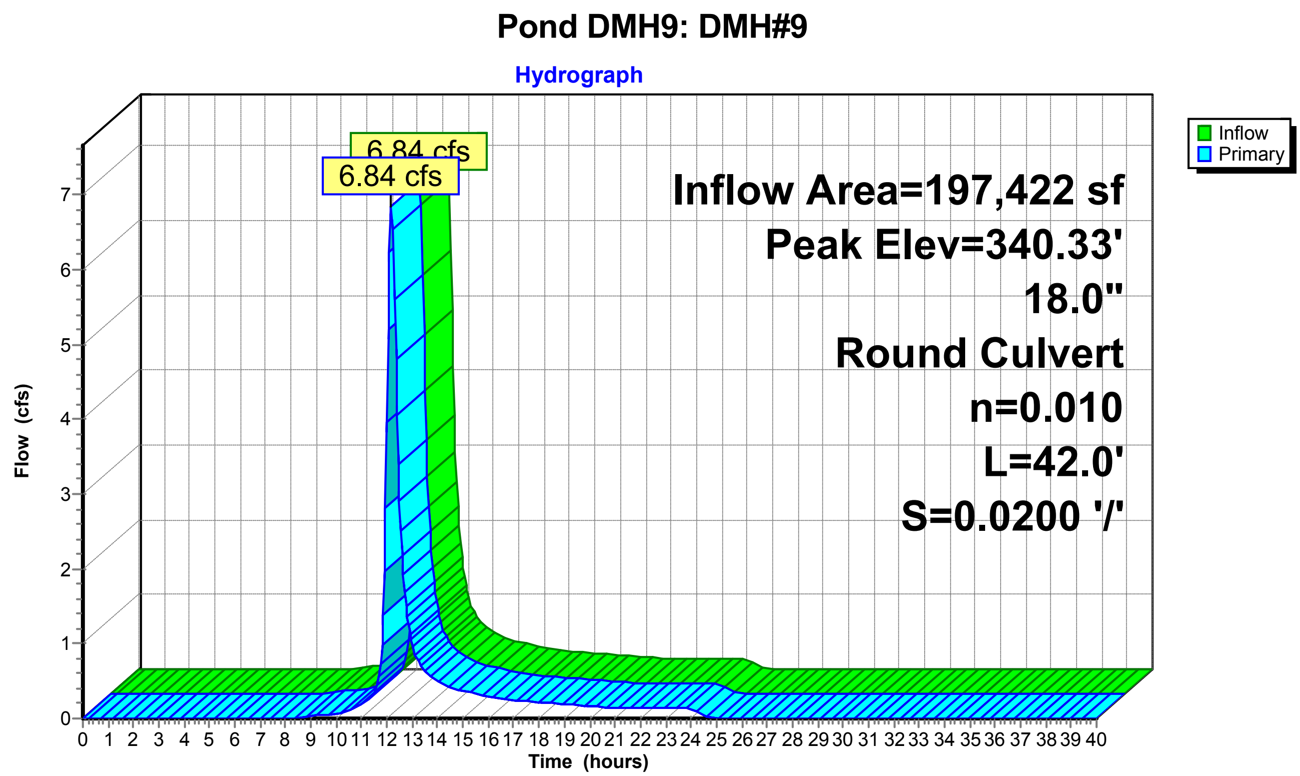
Summary for Pond DMH9: DMH#9

Inflow Area =	197,422 sf,	25.73% Impervious,	Inflow Depth = 1.58"	for 2-YEAR event	
Inflow =	6.84 cfs @	12.17 hrs,	Volume=	26,036 cf	
Outflow =	6.84 cfs @	12.17 hrs,	Volume=	26,036 cf,	Atten= 0%, Lag= 0.0 min
Primary =	6.84 cfs @	12.17 hrs,	Volume=	26,036 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 340.33' @ 12.17 hrs
Flood Elev= 354.58'

Device	Routing	Invert	Outlet Devices
#1	Primary	338.54'	**18.0" Round Culvert** L= 42.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 338.54' / 337.70' S= 0.0200 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=6.77 cfs @ 12.17 hrs HW=340.31' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 6.77 cfs @ 3.83 fps)



Summary for Pond PP-1: PP-1

Inflow Area = 55,636 sf, 80.75% Impervious, Inflow Depth = 2.51" for 2-YEAR event
Inflow = 4.40 cfs @ 11.97 hrs, Volume= 11,622 cf
Outflow = 1.42 cfs @ 12.15 hrs, Volume= 11,622 cf, Atten= 68%, Lag= 10.9 min
Discarded = 1.29 cfs @ 11.80 hrs, Volume= 11,503 cf
Primary = 0.13 cfs @ 12.15 hrs, Volume= 119 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 340.72' @ 12.15 hrs Surf.Area= 8,294 sf Storage= 2,382 cf
Flood Elev= 345.48' Surf.Area= 8,294 sf Storage= 8,294 cf

Plug-Flow detention time= 9.6 min calculated for 11,622 cf (100% of inflow)
Center-of-Mass det. time= 9.6 min (782.7 - 773.1)

Volume	Invert	Avail.Storage	Storage Description
#1	340.00'	8,294 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 20,735 cf Overall x 40.0% Voids

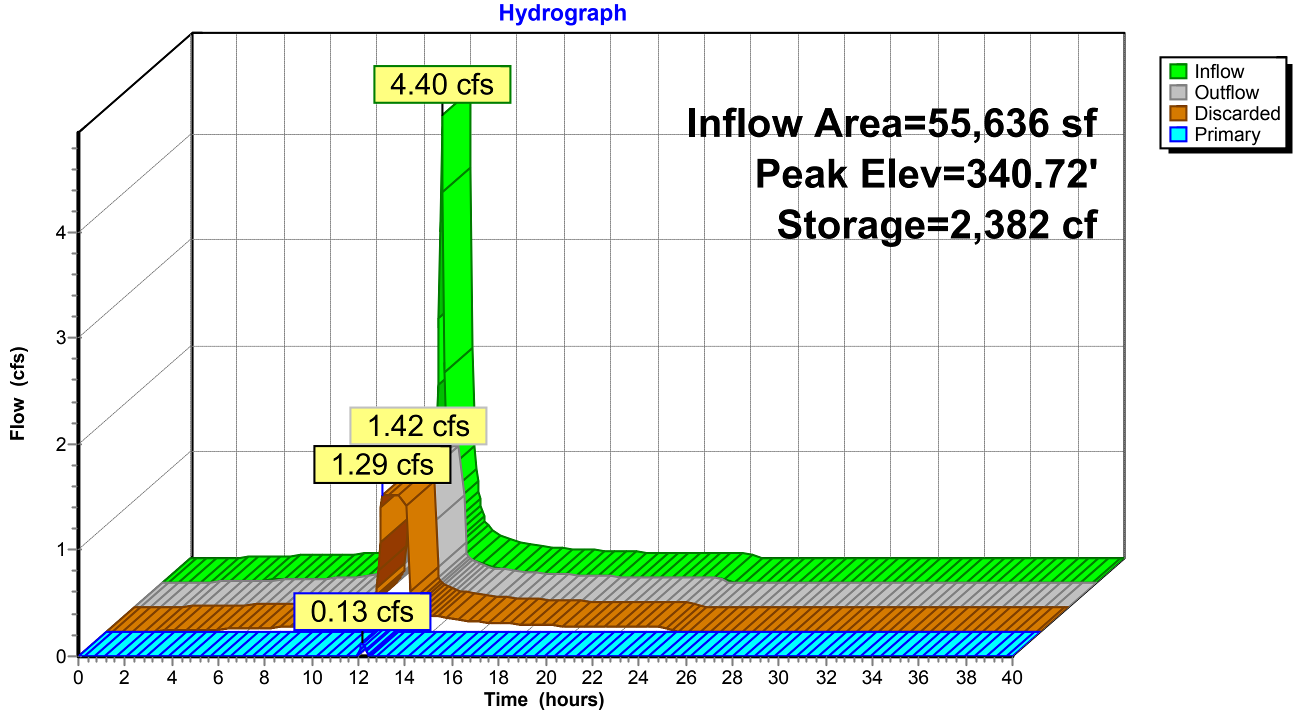
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
340.00	8,294	0	0
342.50	8,294	20,735	20,735

Device	Routing	Invert	Outlet Devices
#1	Discarded	340.00'	**6.700 in/hr Exfiltration over Surface area**
#2	Primary	342.76'	**15.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 342.76' / 342.16' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#3	Primary	340.50'	**6.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=1.29 cfs @ 11.80 hrs HW=340.07' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 1.29 cfs)

Primary OutFlow Max=0.13 cfs @ 12.15 hrs HW=340.72' (Free Discharge)
├─**2=Culvert** (Controls 0.00 cfs)
└─**3=Orifice/Grate** (Orifice Controls 0.13 cfs @ 1.59 fps)

Pond PP-1: PP-1


Hydrograph
4.40 cfs
1.42 cfs
1.29 cfs
0.13 cfs
Inflow Area=55,636 sf
Peak Elev=340.72'
Storage=2,382 cf
Inflow
Outflow
Discarded
Primary
Flow (cfs)
0
1
2
3
4
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40
Time (hours)

Summary for Pond PP-2: PP-2

Inflow Area = 2,778 sf, 92.40% Impervious, Inflow Depth = 2.72" for 2-YEAR event
Inflow = 0.27 cfs @ 11.96 hrs, Volume= 630 cf
Outflow = 0.25 cfs @ 11.99 hrs, Volume= 630 cf, Atten= 7%, Lag= 1.6 min
Discarded = 0.25 cfs @ 11.99 hrs, Volume= 630 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 340.04' @ 11.99 hrs Surf.Area= 1,610 sf Storage= 28 cf
Flood Elev= 344.22' Surf.Area= 1,610 sf Storage= 1,610 cf

Plug-Flow detention time= 1.8 min calculated for 629 cf (100% of inflow)
Center-of-Mass det. time= 1.8 min (772.6 - 770.8)

Volume	Invert	Avail.Storage	Storage Description
#1	340.00'	1,610 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 4,025 cf Overall x 40.0% Voids

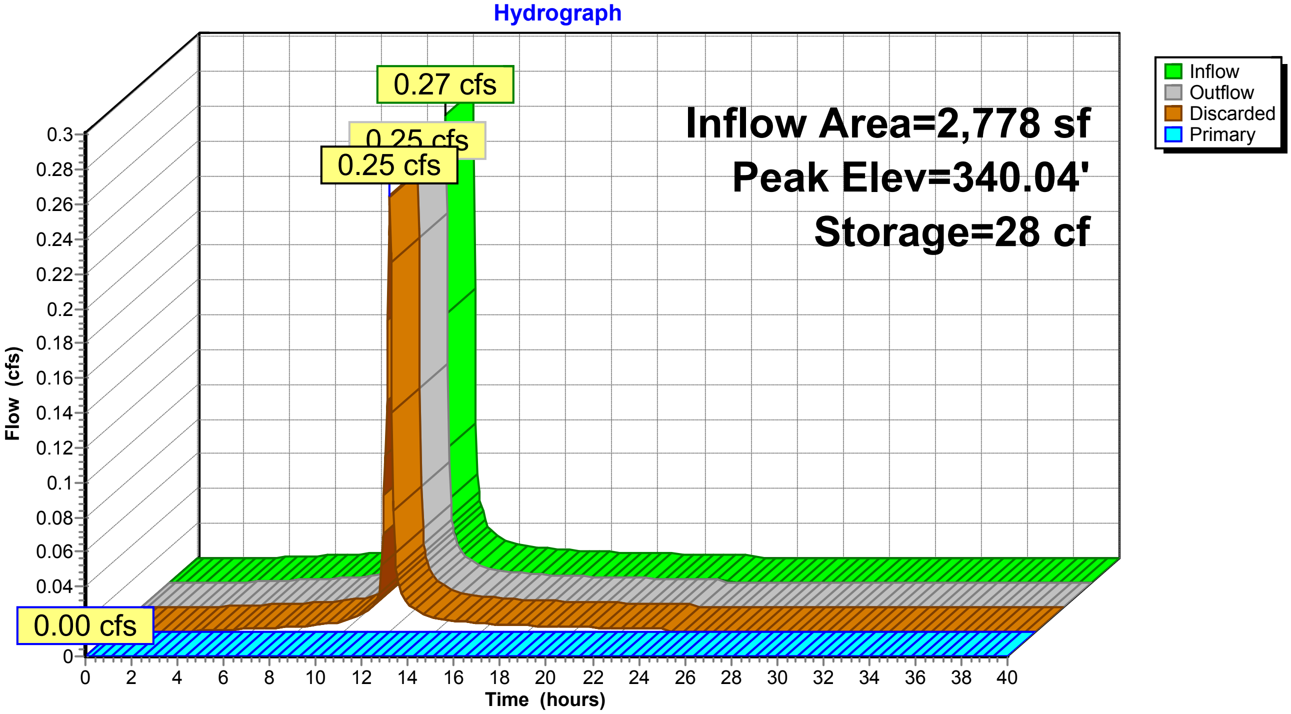
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
340.00	1,610	0	0
342.50	1,610	4,025	4,025

Device	Routing	Invert	Outlet Devices
#1	Discarded	340.00'	**6.700 in/hr Exfiltration over Surface area**
#2	Primary	340.50'	**15.0" Round Culvert** L= 46.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 340.50' / 340.04' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#3	Primary	340.50'	**6.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.25 cfs @ 11.99 hrs HW=340.04' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.25 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=340.00' (Free Discharge)
├─**2=Culvert** (Controls 0.00 cfs)
└─**3=Orifice/Grate** (Controls 0.00 cfs)

Pond PP-2: PP-2


Hydrograph
0.27 cfs
0.25 cfs
0.25 cfs
0.00 cfs
Inflow Area=2,778 sf
Peak Elev=340.04'
Storage=28 cf
Inflow
Outflow
Discarded
Primary
Flow (cfs)
0.3
0.28
0.26
0.24
0.22
0.2
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40
Time (hours)

Summary for Pond PP-3: PP-3

Inflow Area =	2,974 sf,	92.97% Impervious,	Inflow Depth = 2.72"	for 2-YEAR event	
Inflow =	0.29 cfs @	11.96 hrs,	Volume=	674 cf	
Outflow =	0.08 cfs @	12.12 hrs,	Volume=	352 cf,	Atten= 72%, Lag= 9.3 min
Discarded =	0.03 cfs @	12.12 hrs,	Volume=	155 cf	
Primary =	0.04 cfs @	12.12 hrs,	Volume=	197 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 344.61' @ 12.12 hrs Surf.Area= 1,610 sf Storage= 390 cf
Flood Elev= 347.97' Surf.Area= 1,610 sf Storage= 1,610 cf

Plug-Flow detention time= 261.9 min calculated for 352 cf (52% of inflow)
Center-of-Mass det. time= 147.8 min (918.6 - 770.8)

Volume	Invert	Avail.Storage	Storage Description
#1	344.00'	1,610 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 4,025 cf Overall x 40.0% Voids

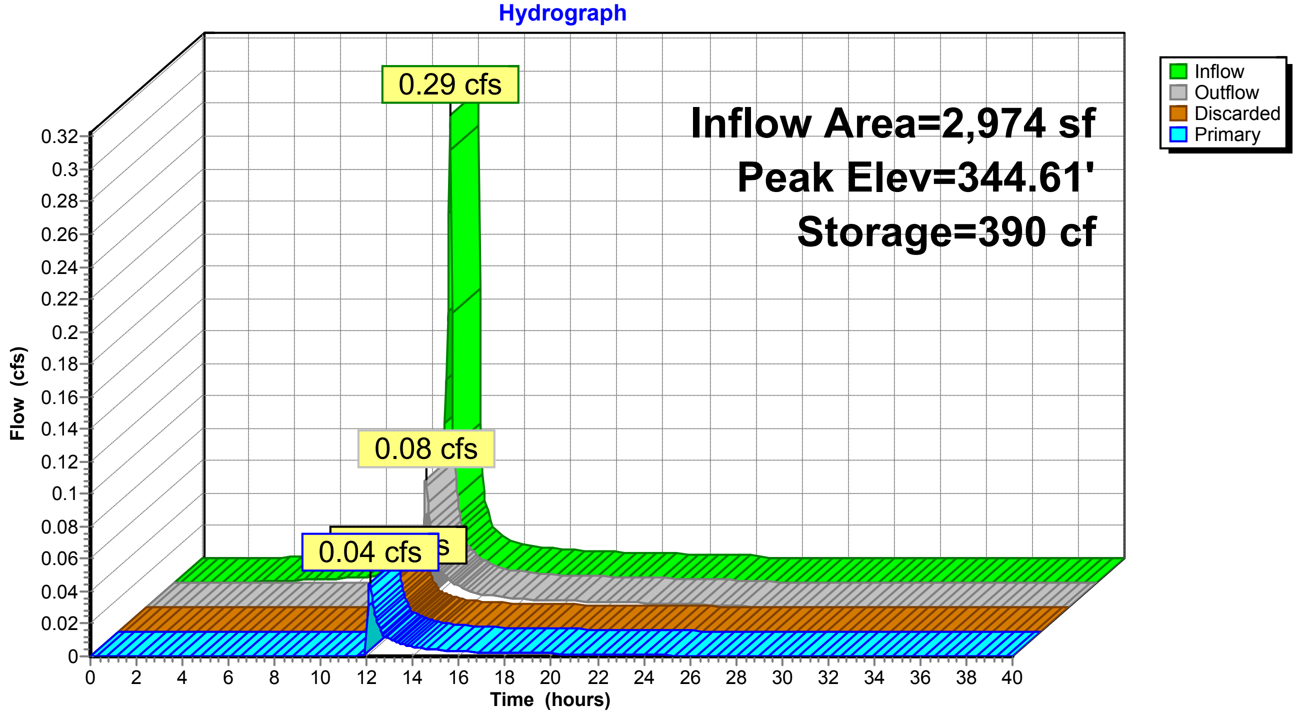
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
344.00	1,610	0	0
346.50	1,610	4,025	4,025

Device	Routing	Invert	Outlet Devices
#1	Discarded	344.00'	**6.700 in/hr Exfiltration over Surface area**
#2	Primary	344.50'	**15.0" Round Culvert** L= 52.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 344.50' / 342.94' S= 0.0300 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#3	Device 1	344.50'	**6.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.03 cfs @ 12.12 hrs HW=344.60' (Free Discharge)
└─**1=Exfiltration** (Passes 0.03 cfs of 0.25 cfs potential flow)
  └─**3=Orifice/Grate** (Orifice Controls 0.03 cfs @ 1.10 fps)

Primary OutFlow Max=0.04 cfs @ 12.12 hrs HW=344.60' (Free Discharge)
└─**2=Culvert** (Inlet Controls 0.04 cfs @ 0.87 fps)

Pond PP-3: PP-3


Hydrograph
0.29 cfs
0.08 cfs
0.04 cfs
Inflow Area=2,974 sf
Peak Elev=344.61'
Storage=390 cf
Inflow
Outflow
Discarded
Primary
Flow (cfs)
0.32
0.3
0.28
0.26
0.24
0.22
0.2
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40
Time (hours)

Summary for Pond PP-4: PP-4

Inflow Area =	3,899 sf,	98.72% Impervious,	Inflow Depth = 2.94"	for 2-YEAR event
Inflow =	0.39 cfs @	11.96 hrs, Volume=	954 cf	
Outflow =	0.15 cfs @	12.09 hrs, Volume=	592 cf,	Atten= 61%, Lag= 7.5 min
Discarded =	0.15 cfs @	12.09 hrs, Volume=	592 cf	
Primary =	0.00 cfs @	0.00 hrs, Volume=	0 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 344.74' @ 12.09 hrs Surf.Area= 1,810 sf Storage= 534 cf
Flood Elev= 349.27' Surf.Area= 1,810 sf Storage= 1,810 cf

Plug-Flow detention time= 249.0 min calculated for 592 cf (62% of inflow)
Center-of-Mass det. time= 144.3 min (897.0 - 752.7)

Volume	Invert	Avail.Storage	Storage Description
#1	344.00'	1,810 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 4,525 cf Overall x 40.0% Voids

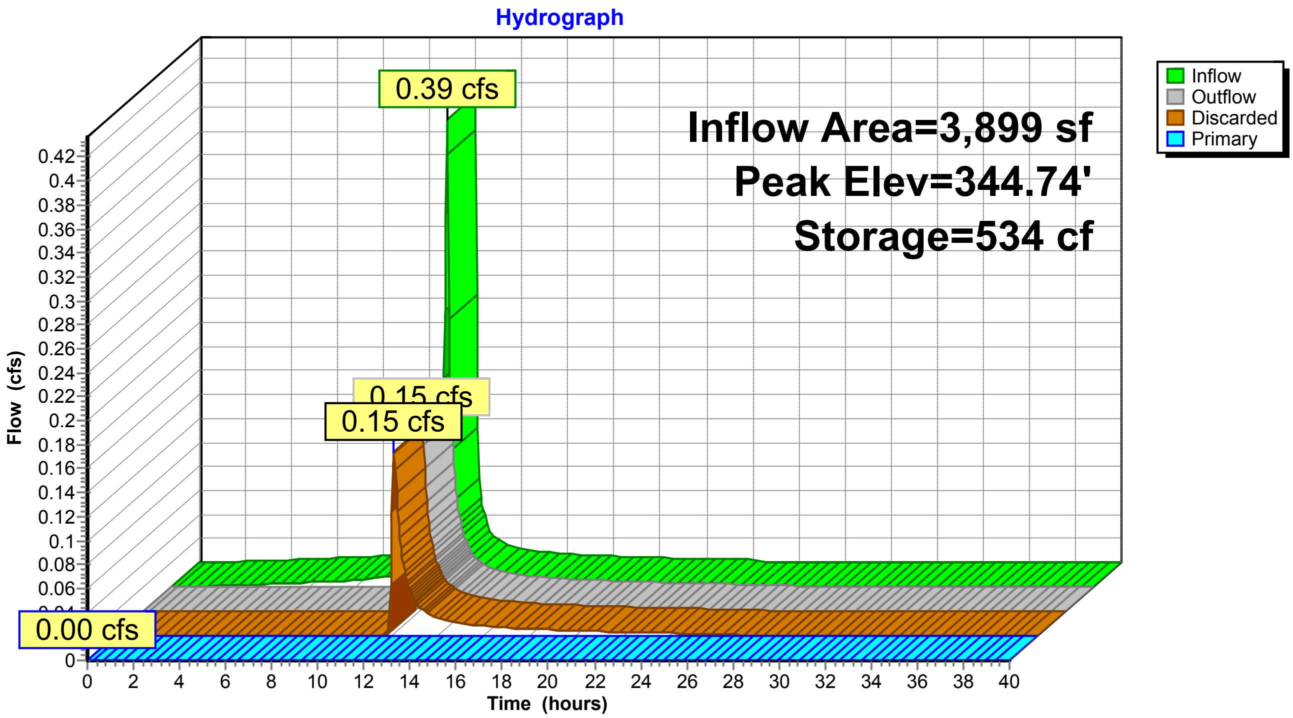
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
344.00	1,810	0	0
346.50	1,810	4,525	4,525

Device	Routing	Invert	Outlet Devices
#1	Discarded	344.00'	**13.300 in/hr Exfiltration over Surface area**
#2	Primary	345.50'	**12.0" Round Culvert** L= 33.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 345.50' / 345.17' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf
#3	Device 1	344.50'	**6.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.15 cfs @ 12.09 hrs HW=344.74' (Free Discharge)
└─**1=Exfiltration** (Passes 0.15 cfs of 0.56 cfs potential flow)
  └─**3=Orifice/Grate** (Orifice Controls 0.15 cfs @ 1.66 fps)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=344.00' (Free Discharge)
└─**2=Culvert** (Controls 0.00 cfs)

Pond PP-4: PP-4


Hydrograph
0.39 cfs
0.15 cfs
0.15 cfs
0.00 cfs
Inflow Area=3,899 sf
Peak Elev=344.74'
Storage=534 cf
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)

Summary for Pond PP-5: PP-5

[79] Warning: Submerged Pond CB19 Primary device # 1 OUTLET by 0.49'

Inflow Area =	29,874 sf,	25.58% Impervious,	Inflow Depth = 1.41"	for 2-YEAR event
Inflow =	1.26 cfs @	12.05 hrs, Volume=	3,505 cf	
Outflow =	1.18 cfs @	12.09 hrs, Volume=	3,246 cf,	Atten= 7%, Lag= 2.8 min
Discarded =	0.33 cfs @	12.09 hrs, Volume=	407 cf	
Primary =	0.85 cfs @	12.09 hrs, Volume=	2,839 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 345.37' @ 12.09 hrs Surf.Area= 1,700 sf Storage= 594 cf
Flood Elev= 349.35' Surf.Area= 1,700 sf Storage= 1,700 cf

Plug-Flow detention time= 70.5 min calculated for 3,246 cf (93% of inflow)
Center-of-Mass det. time= 30.7 min (875.4 - 844.6)

Volume	Invert	Avail.Storage	Storage Description
#1	344.50'	1,700 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 4,250 cf Overall x 40.0% Voids

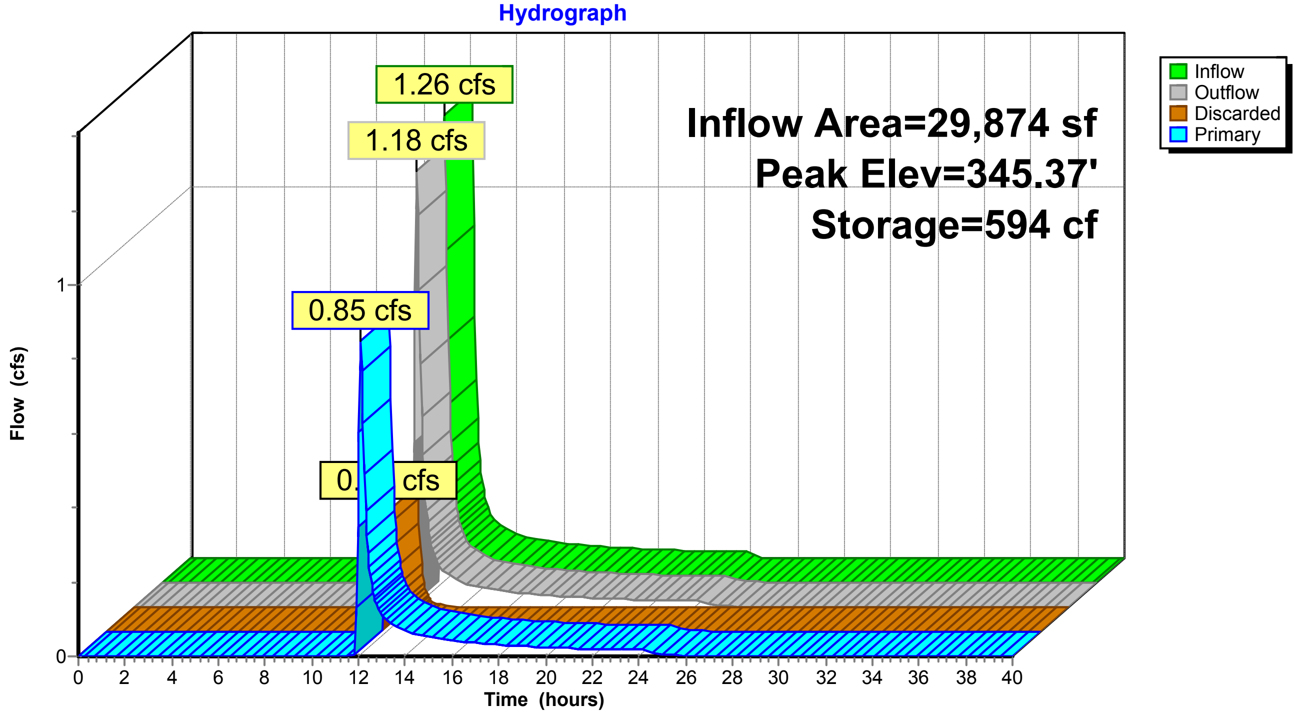
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
344.50	1,700	0	0
347.00	1,700	4,250	4,250

Device	Routing	Invert	Outlet Devices
#1	Discarded	344.50'	**13.300 in/hr Exfiltration over Surface area**
#2	Primary	344.88'	**15.0" Round Culvert** L= 37.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 344.88' / 344.50' S= 0.0103 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#3	Device 1	345.00'	**6.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.32 cfs @ 12.09 hrs HW=345.37' (Free Discharge)
└─**1=Exfiltration** (Passes 0.32 cfs of 0.52 cfs potential flow)
  └─**3=Orifice/Grate** (Orifice Controls 0.32 cfs @ 2.07 fps)

Primary OutFlow Max=0.84 cfs @ 12.09 hrs HW=345.37' (Free Discharge)
└─**2=Culvert** (Inlet Controls 0.84 cfs @ 1.88 fps)

Pond PP-5: PP-5


Hydrograph
1.26 cfs
1.18 cfs
0.85 cfs
0. cfs
Inflow Area=29,874 sf
Peak Elev=345.37'
Storage=594 cf
Inflow
Outflow
Discarded
Primary
Flow (cfs)
1
0
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40
Time (hours)

Summary for Pond UGC-1: UGC-1

Inflow Area =	87,058 sf,	81.43% Impervious,	Inflow Depth = 2.05"	for 2-YEAR event
Inflow =	6.35 cfs @	11.96 hrs, Volume=	14,840 cf	
Outflow =	1.78 cfs @	12.11 hrs, Volume=	14,840 cf,	Atten= 72%, Lag= 9.1 min
Discarded =	1.43 cfs @	11.75 hrs, Volume=	14,542 cf	
Primary =	0.35 cfs @	12.11 hrs, Volume=	298 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 350.81' @ 12.12 hrs Surf.Area= 4,645 sf Storage= 3,520 cf

Plug-Flow detention time= 11.0 min calculated for 14,822 cf (100% of inflow)
Center-of-Mass det. time= 11.0 min (783.3 - 772.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	349.50'	5,581 cf	**44.75'W x 103.80'L x 4.25'H Field A** 19,741 cf Overall - 5,788 cf Embedded = 13,952 cf x 40.0% Voids
#2A	350.25'	5,788 cf	**ADS_StormTech SC-740 +Cap** x 126 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 9 Rows of 14 Chambers
		11,369 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	350.50'	**15.0" Round Culvert** L= 59.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 350.50' / 348.85' S= 0.0280 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#2	Discarded	349.50'	**13.300 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=1.43 cfs @ 11.75 hrs HW=349.58' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 1.43 cfs)

Primary OutFlow Max=0.34 cfs @ 12.11 hrs HW=350.80' (Free Discharge)
└─**1=Culvert** (Inlet Controls 0.34 cfs @ 1.48 fps)

Pond UGC-1: UGC-1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

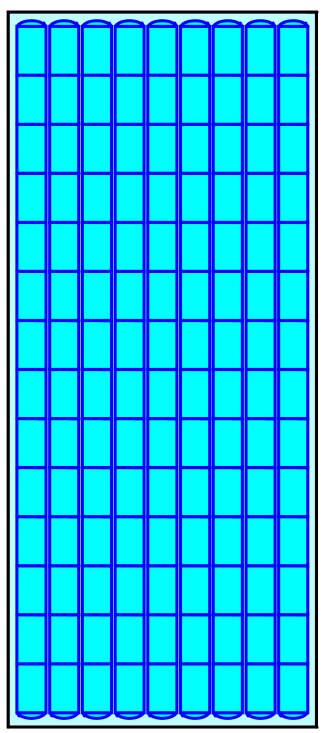
14 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 101.30' Row Length +15.0" End Stone x 2 = 103.80' Base Length
9 Rows x 51.0" Wide + 6.0" Spacing x 8 + 15.0" Side Stone x 2 = 44.75' Base Width
9.0" Base + 30.0" Chamber Height + 12.0" Cover = 4.25' Field Height

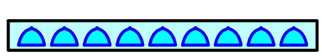
126 Chambers x 45.9 cf = 5,788.4 cf Chamber Storage

19,740.8 cf Field - 5,788.4 cf Chambers = 13,952.4 cf Stone x 40.0% Voids = 5,581.0 cf Stone Storage

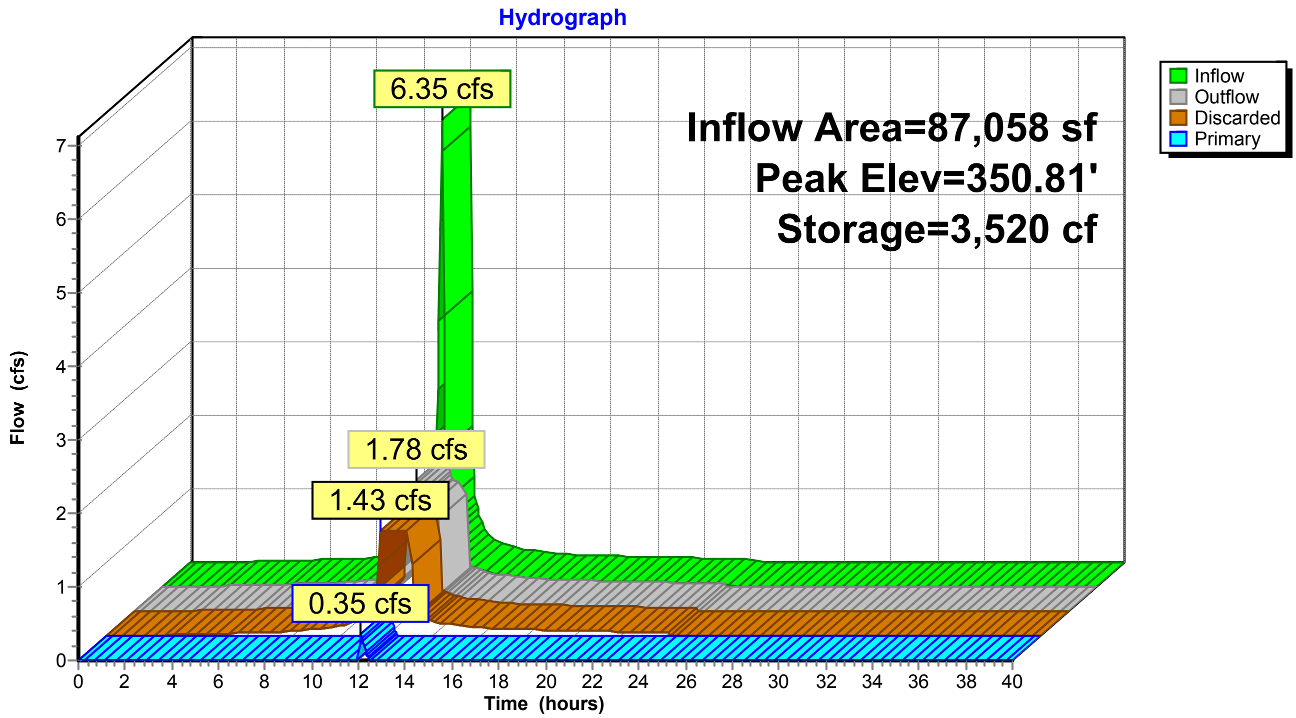
Chamber Storage + Stone Storage = 11,369.4 cf = 0.261 af
Overall Storage Efficiency = 57.6%
Overall System Size = 103.80' x 44.75' x 4.25'

126 Chambers
731.1 cy Field
516.8 cy Stone





Pond UGC-1: UGC-1



Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA-1: DA-1 Runoff Area=652,997 sf 19.60% Impervious Runoff Depth=2.79"
Flow Length=1,558' Tc=29.6 min CN=82 Runoff=36.59 cfs 152,068 cf

Subcatchment DA-10: DA-10 Runoff Area=11,988 sf 71.77% Impervious Runoff Depth=3.67"
Tc=6.0 min CN=91 Runoff=1.63 cfs 3,668 cf

Subcatchment DA-11: DA-11 Runoff Area=2,984 sf 80.09% Impervious Runoff Depth=3.88"
Tc=6.0 min CN=93 Runoff=0.42 cfs 966 cf

Subcatchment DA-12: DA-12 Runoff Area=1,295 sf 100.00% Impervious Runoff Depth=4.44"
Tc=6.0 min CN=98 Runoff=0.19 cfs 480 cf

Subcatchment DA-13: DA-13 Runoff Area=2,426 sf 54.45% Impervious Runoff Depth=3.27"
Tc=6.0 min CN=87 Runoff=0.30 cfs 660 cf

Subcatchment DA-14: DA-14 Runoff Area=1,839 sf 100.00% Impervious Runoff Depth=4.44"
Tc=6.0 min CN=98 Runoff=0.27 cfs 681 cf

Subcatchment DA-15: DA-15 Runoff Area=3,717 sf 52.06% Impervious Runoff Depth=3.17"
Tc=6.0 min CN=86 Runoff=0.45 cfs 982 cf

Subcatchment DA-16: DA-16 Runoff Area=1,740 sf 100.00% Impervious Runoff Depth=4.44"
Tc=6.0 min CN=98 Runoff=0.26 cfs 644 cf

Subcatchment DA-17: DA-17 Runoff Area=27,430 sf 23.81% Impervious Runoff Depth=2.62"
Flow Length=406' Tc=13.6 min CN=80 Runoff=2.22 cfs 5,979 cf

Subcatchment DA-18: DA-18 Runoff Area=5,718 sf 100.00% Impervious Runoff Depth=4.44"
Tc=6.0 min CN=98 Runoff=0.85 cfs 2,117 cf

Subcatchment DA-19: DA-19 Runoff Area=2,039 sf 100.00% Impervious Runoff Depth=4.44"
Tc=6.0 min CN=98 Runoff=0.30 cfs 755 cf

Subcatchment DA-2: DA-2 Runoff Area=44,834 sf 2.52% Impervious Runoff Depth=2.19"
Flow Length=871' Tc=16.8 min CN=75 Runoff=2.74 cfs 8,191 cf

Subcatchment DA-20: DA-20 Runoff Area=1,093 sf 100.00% Impervious Runoff Depth=4.44"
Tc=6.0 min CN=98 Runoff=0.16 cfs 405 cf

Subcatchment DA-21: DA-21 Runoff Area=1,494 sf 100.00% Impervious Runoff Depth=4.44"
Tc=6.0 min CN=98 Runoff=0.22 cfs 553 cf

Subcatchment DA-22: DA-22 Runoff Area=3,899 sf 98.72% Impervious Runoff Depth=4.44"
Tc=6.0 min CN=98 Runoff=0.58 cfs 1,444 cf

Subcatchment DA-23: DA-23 Runoff Area=2,974 sf 92.97% Impervious Runoff Depth=4.21"
Tc=6.0 min CN=96 Runoff=0.43 cfs 1,045 cf

Subcatchment DA-24: DA-24	Runoff Area=2,778 sf 92.40% Impervious Runoff Depth=4.21" Tc=6.0 min CN=96 Runoff=0.41 cfs 976 cf
Subcatchment DA-25: DA-25	Runoff Area=17,418 sf 49.60% Impervious Runoff Depth=3.17" Flow Length=309' Tc=14.2 min CN=86 Runoff=1.65 cfs 4,601 cf
Subcatchment DA-26: DA-26	Runoff Area=2,444 sf 45.42% Impervious Runoff Depth=3.07" Tc=6.0 min CN=85 Runoff=0.29 cfs 626 cf
Subcatchment DA-27: DA-27	Runoff Area=4,118 sf 53.08% Impervious Runoff Depth=3.27" Tc=6.0 min CN=87 Runoff=0.51 cfs 1,121 cf
Subcatchment DA-28: DA-28	Runoff Area=244,871 sf 7.43% Impervious Runoff Depth=2.27" Flow Length=1,550' Tc=22.6 min CN=76 Runoff=13.13 cfs 46,410 cf
Subcatchment DA-29: DA-29	Runoff Area=4,310 sf 61.76% Impervious Runoff Depth=3.47" Tc=6.0 min CN=89 Runoff=0.56 cfs 1,245 cf
Subcatchment DA-3: DA-3	Runoff Area=1,320 sf 58.94% Impervious Runoff Depth=3.37" Tc=6.0 min CN=88 Runoff=0.17 cfs 370 cf
Subcatchment DA-30: DA-30	Runoff Area=8,713 sf 36.19% Impervious Runoff Depth=2.89" Tc=6.0 min CN=83 Runoff=0.98 cfs 2,096 cf
Subcatchment DA-31: DA-31	Runoff Area=2,972 sf 100.00% Impervious Runoff Depth=4.44" Tc=6.0 min CN=98 Runoff=0.44 cfs 1,101 cf
Subcatchment DA-32: DA-32	Runoff Area=37,379 sf 9.31% Impervious Runoff Depth=2.27" Flow Length=348' Tc=11.9 min CN=76 Runoff=2.78 cfs 7,084 cf
Subcatchment DA-33: DA-33	Runoff Area=2,907 sf 69.66% Impervious Runoff Depth=3.67" Tc=6.0 min CN=91 Runoff=0.39 cfs 890 cf
Subcatchment DA-34: DA-34	Runoff Area=6,631 sf 65.10% Impervious Runoff Depth=3.57" Tc=6.0 min CN=90 Runoff=0.88 cfs 1,972 cf
Subcatchment DA-35: DA-35	Runoff Area=24,159 sf 15.16% Impervious Runoff Depth=2.44" Flow Length=389' Tc=6.6 min CN=78 Runoff=2.31 cfs 4,917 cf
Subcatchment DA-36: DA-36 (Roofs)	Runoff Area=19,897 sf 100.00% Impervious Runoff Depth=4.44" Tc=6.0 min CN=98 Runoff=2.96 cfs 7,368 cf
Subcatchment DA-37: DA-37	Runoff Area=152,588 sf 32.55% Impervious Runoff Depth=3.07" Flow Length=996' Tc=25.9 min CN=85 Runoff=10.19 cfs 39,082 cf
Subcatchment DA-38: DA-38 (Roofs)	Runoff Area=34,100 sf 100.00% Impervious Runoff Depth=4.44" Tc=6.0 min CN=98 Runoff=5.07 cfs 12,628 cf
Subcatchment DA-4: DA-4	Runoff Area=4,793 sf 54.83% Impervious Runoff Depth=3.27" Tc=6.0 min CN=87 Runoff=0.60 cfs 1,305 cf
Subcatchment DA-5: DA-5	Runoff Area=1,120 sf 100.00% Impervious Runoff Depth=4.44" Tc=6.0 min CN=98 Runoff=0.17 cfs 415 cf

Subcatchment DA-6: DA-6 Runoff Area=3,169 sf 64.25% Impervious Runoff Depth=3.47"
Tc=6.0 min CN=89 Runoff=0.41 cfs 915 cf

Subcatchment DA-7: DA-7 Runoff Area=10,524 sf 75.84% Impervious Runoff Depth=3.78"
Tc=6.0 min CN=92 Runoff=1.45 cfs 3,313 cf

Subcatchment DA-8: DA-8 Runoff Area=2,003 sf 100.00% Impervious Runoff Depth=4.44"
Tc=6.0 min CN=98 Runoff=0.30 cfs 742 cf

Subcatchment DA-9: DA-9 Runoff Area=3,589 sf 64.47% Impervious Runoff Depth=3.47"
Tc=6.0 min CN=89 Runoff=0.47 cfs 1,037 cf

Reach 2R: FLARED END #3 Avg. Flow Depth=0.60' Max Vel=4.83 fps Inflow=15.11 cfs 207,127 cf
n=0.022 L=397.0' S=0.0142 '/' Capacity=148.49 cfs Outflow=14.94 cfs 207,127 cf

Reach DP-1: DP-1 Inflow=30.48 cfs 274,515 cf
Outflow=30.48 cfs 274,515 cf

Reach FLARED END #1: FLARED END Avg. Flow Depth=1.25' Max Vel=8.29 fps Inflow=13.13 cfs 46,410 cf
15.0" Round Pipe n=0.010 L=120.0' S=0.0118 '/' Capacity=9.10 cfs Outflow=9.10 cfs 46,410 cf

Reach FLARED END #2: FLARED Avg. Flow Depth=1.25' Max Vel=2.23 fps Inflow=36.94 cfs 156,985 cf
15.0" Round Pipe n=0.025 L=37.0' S=0.0051 '/' Capacity=2.41 cfs Outflow=2.47 cfs 156,992 cf

Pond CB1: CB1 Peak Elev=364.96' Inflow=0.16 cfs 405 cf
15.0" Round Culvert n=0.010 L=25.0' S=0.0100 '/' Outflow=0.16 cfs 405 cf

Pond CB10: CB10 Peak Elev=383.59' Inflow=3.83 cfs 8,941 cf
18.0" Round Culvert n=0.010 L=100.0' S=0.0356 '/' Outflow=3.83 cfs 8,941 cf

Pond CB11: CB11 Peak Elev=384.24' Inflow=2.04 cfs 4,864 cf
15.0" Round Culvert n=0.010 L=25.0' S=0.0100 '/' Outflow=2.04 cfs 4,864 cf

Pond CB12: CB12 Peak Elev=387.19' Inflow=1.23 cfs 2,832 cf
18.0" Round Culvert n=0.010 L=143.0' S=0.0129 '/' Outflow=1.23 cfs 2,832 cf

Pond CB13: CB13 Peak Elev=387.12' Inflow=0.30 cfs 742 cf
15.0" Round Culvert n=0.010 L=21.0' S=0.0100 '/' Outflow=0.30 cfs 742 cf

Pond CB14: CB14 Peak Elev=392.84' Inflow=0.33 cfs 785 cf
15.0" Round Culvert n=0.010 L=181.0' S=0.0315 '/' Outflow=0.33 cfs 785 cf

Pond CB15: CB15 Peak Elev=392.96' Inflow=0.17 cfs 415 cf
15.0" Round Culvert n=0.010 L=21.0' S=0.0100 '/' Outflow=0.17 cfs 415 cf

Pond CB16: CB16 Peak Elev=338.00' Inflow=3.42 cfs 10,583 cf
15.0" Round Culvert n=0.010 L=143.0' S=0.0100 '/' Outflow=3.42 cfs 10,583 cf

Pond CB17: CB17 Peak Elev=348.47' Inflow=0.98 cfs 2,096 cf
15.0" Round Culvert n=0.010 L=21.0' S=0.0095 '/' Outflow=0.98 cfs 2,096 cf

Pond CB19: CB19 Peak Elev=345.99' Inflow=0.29 cfs 626 cf
15.0" Round Culvert n=0.010 L=83.0' S=0.0100 '/' Outflow=0.29 cfs 626 cf

Pond CB2: CB2 Peak Elev=364.82' Inflow=0.38 cfs 958 cf
15.0" Round Culvert n=0.010 L=171.0' S=0.0442 '/' Outflow=0.38 cfs 958 cf

Pond CB22: CB22 Peak Elev=345.35' Inflow=5.58 cfs 13,749 cf
15.0" Round Culvert n=0.010 L=54.0' S=0.0100 '/' Outflow=5.58 cfs 13,749 cf

Pond CB25: CB25 Peak Elev=385.07' Inflow=1.63 cfs 3,898 cf
15.0" Round Culvert n=0.010 L=92.0' S=0.0101 '/' Outflow=1.63 cfs 3,898 cf

Pond CB26: PP-6 Peak Elev=384.14' Storage=127 cf Inflow=0.47 cfs 1,037 cf
Discarded=0.25 cfs 1,037 cf Primary=0.00 cfs 0 cf Outflow=0.25 cfs 1,037 cf

Pond CB27: CB27 Peak Elev=388.03' Storage=31 cf Inflow=1.45 cfs 3,313 cf
Discarded=0.26 cfs 591 cf Primary=1.18 cfs 2,722 cf Outflow=1.44 cfs 3,313 cf

Pond CB28: CB28 Peak Elev=388.11' Storage=88 cf Inflow=0.41 cfs 915 cf
Discarded=0.23 cfs 871 cf Primary=0.05 cfs 45 cf Outflow=0.28 cfs 915 cf

Pond CB29: CB29 Peak Elev=336.86' Inflow=3.29 cfs 158,964 cf
18.0" Round Culvert n=0.010 L=35.0' S=0.0049 '/' Outflow=3.29 cfs 158,964 cf

Pond CB3: CB3 Peak Elev=357.39' Inflow=0.69 cfs 1,713 cf
15.0" Round Culvert n=0.010 L=37.0' S=0.0100 '/' Outflow=0.69 cfs 1,713 cf

Pond CB30: CB30 Peak Elev=341.45' Inflow=15.11 cfs 207,127 cf
18.0" Round Culvert n=0.010 L=25.0' S=0.0156 '/' Outflow=15.11 cfs 207,127 cf

Pond CB31: CB31 Peak Elev=396.60' Inflow=12.48 cfs 47,274 cf
18.0" Round Culvert n=0.010 L=82.0' S=0.1500 '/' Outflow=12.48 cfs 47,274 cf

Pond CB32: PP-7 Peak Elev=385.76' Storage=843 cf Inflow=1.23 cfs 2,767 cf
Discarded=0.14 cfs 2,536 cf Primary=0.35 cfs 230 cf Outflow=0.49 cfs 2,767 cf

Pond CB4: CB4 Peak Elev=357.27' Inflow=1.54 cfs 3,830 cf
15.0" Round Culvert n=0.010 L=38.0' S=0.0100 '/' Outflow=1.54 cfs 3,830 cf

Pond CB5: CB5 Peak Elev=356.95' Inflow=1.80 cfs 4,475 cf
15.0" Round Culvert n=0.010 L=54.0' S=0.0957 '/' Outflow=1.80 cfs 4,475 cf

Pond CB6: CB6 Peak Elev=357.10' Inflow=5.05 cfs 11,744 cf
18.0" Round Culvert n=0.010 L=64.0' S=0.0747 '/' Outflow=5.05 cfs 11,744 cf

Pond CB7: CB7 Peak Elev=366.76' Inflow=4.78 cfs 11,063 cf
18.0" Round Culvert n=0.010 L=24.0' S=0.0208 '/' Outflow=4.78 cfs 11,063 cf

Pond CB8: CB8 Peak Elev=376.18' Inflow=4.33 cfs 10,081 cf
18.0" Round Culvert n=0.010 L=128.0' S=0.0723 '/' Outflow=4.33 cfs 10,081 cf

Pond CB9: CB9 Peak Elev=379.17' Inflow=0.19 cfs 480 cf
15.0" Round Culvert n=0.010 L=24.0' S=0.0100 '/' Outflow=0.19 cfs 480 cf

Pond DMH#10: DMH#10 Peak Elev=341.90' Inflow=12.48 cfs 47,274 cf
18.0" Round Culvert n=0.010 L=111.0' S=0.0189 '/' Outflow=12.48 cfs 47,274 cf

Pond DMH3: DMH3 Peak Elev=335.59' Inflow=15.05 cfs 60,304 cf
24.0" Round Culvert n=0.010 L=97.0' S=0.0590 '/' Outflow=15.05 cfs 60,304 cf

Pond DMH5: DMH5 Peak Elev=339.26' Inflow=2.57 cfs 7,387 cf
15.0" Round Culvert n=0.010 L=148.0' S=0.0100 '/' Outflow=2.57 cfs 7,387 cf

Pond DMH6: DMH6 Peak Elev=340.49' Inflow=0.85 cfs 2,027 cf
15.0" Round Culvert n=0.010 L=168.0' S=0.0100 '/' Outflow=0.85 cfs 2,027 cf

Pond DMH7: DMH7 Peak Elev=387.73' Inflow=1.23 cfs 2,767 cf
15.0" Round Culvert n=0.010 L=79.0' S=0.0213 '/' Outflow=1.23 cfs 2,767 cf

Pond DMH8: DMH8 Peak Elev=378.25' Inflow=12.48 cfs 47,274 cf
18.0" Round Culvert n=0.010 L=149.0' S=0.1500 '/' Outflow=12.48 cfs 47,274 cf

Pond DMH9: DMH#9 Peak Elev=342.74' Inflow=12.48 cfs 47,274 cf
18.0" Round Culvert n=0.010 L=42.0' S=0.0200 '/' Outflow=12.48 cfs 47,274 cf

Pond PP-1: PP-1 Peak Elev=341.35' Storage=4,471 cf Inflow=6.81 cfs 18,349 cf
Discarded=1.29 cfs 16,732 cf Primary=0.73 cfs 1,617 cf Outflow=2.02 cfs 18,349 cf

Pond PP-2: PP-2 Peak Elev=340.14' Storage=87 cf Inflow=0.41 cfs 976 cf
Discarded=0.25 cfs 976 cf Primary=0.00 cfs 0 cf Outflow=0.25 cfs 976 cf

Pond PP-3: PP-3 Peak Elev=344.73' Storage=468 cf Inflow=0.43 cfs 1,045 cf
Discarded=0.14 cfs 313 cf Primary=0.19 cfs 410 cf Outflow=0.33 cfs 723 cf

Pond PP-4: PP-4 Peak Elev=344.91' Storage=659 cf Inflow=0.58 cfs 1,444 cf
Discarded=0.38 cfs 1,082 cf Primary=0.00 cfs 0 cf Outflow=0.38 cfs 1,082 cf

Pond PP-5: PP-5 Peak Elev=345.61' Storage=758 cf Inflow=2.39 cfs 6,605 cf
Discarded=0.53 cfs 986 cf Primary=1.73 cfs 5,360 cf Outflow=2.25 cfs 6,346 cf

Pond UGC-1: UGC-1 Peak Elev=351.45' Storage=5,829 cf Inflow=9.80 cfs 23,586 cf
Discarded=1.43 cfs 20,276 cf Primary=2.61 cfs 3,310 cf Outflow=4.04 cfs 23,586 cf

Total Runoff Area = 1,360,270 sf Runoff Volume = 320,850 cf Average Runoff Depth = 2.83"
74.33% Pervious = 1,011,063 sf 25.67% Impervious = 349,207 sf

Summary for Subcatchment DA-1: DA-1

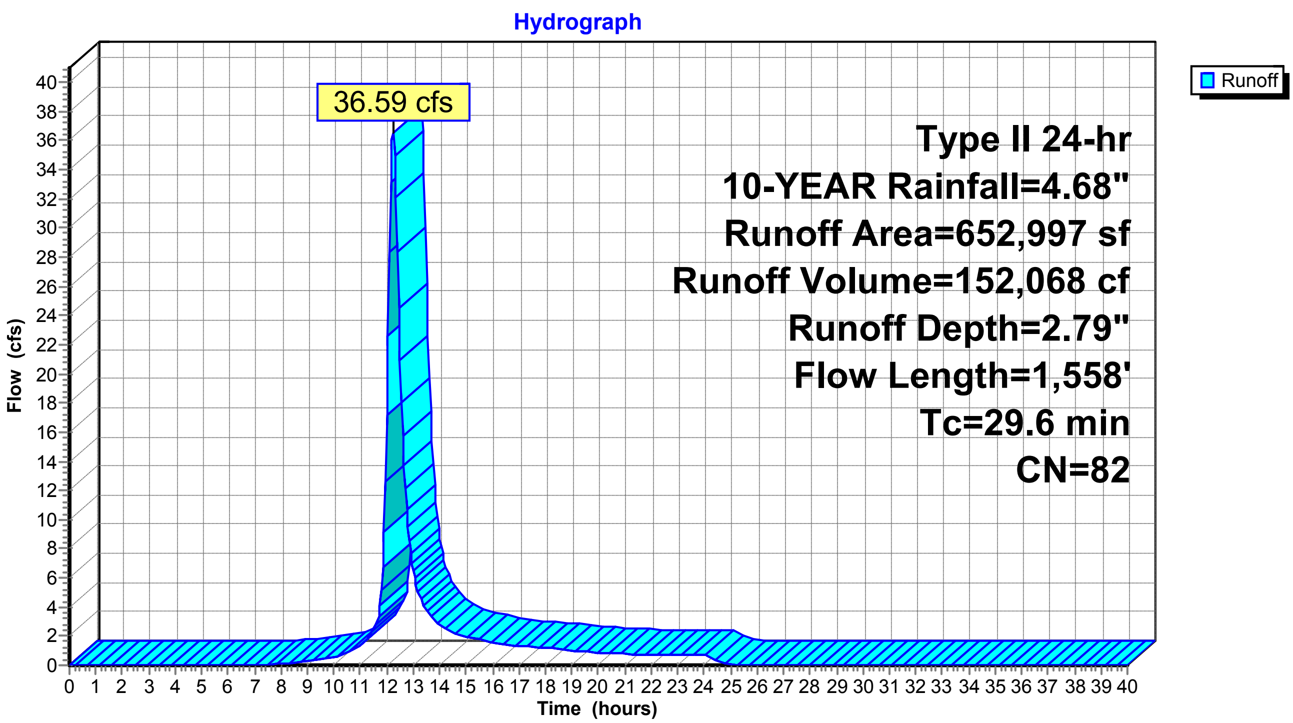
Runoff = 36.59 cfs @ 12.24 hrs, Volume= 152,068 cf, Depth= 2.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
405,559	79	Pasture/grassland/range, Fair, HSG C
119,458	73	Woods, Fair, HSG C
127,980	98	Paved parking, HSG C
652,997	82	Weighted Average
525,017		80.40% Pervious Area
127,980		19.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.9	100	0.0100	0.09		**Sheet Flow, GG-HH** Grass: Dense n= 0.240 P2= 3.17"
10.7	1,458	0.1056	2.27		**Shallow Concentrated Flow, HH-II** Short Grass Pasture Kv= 7.0 fps
29.6	1,558	Total			

Subcatchment DA-1: DA-1



Summary for Subcatchment DA-10: DA-10

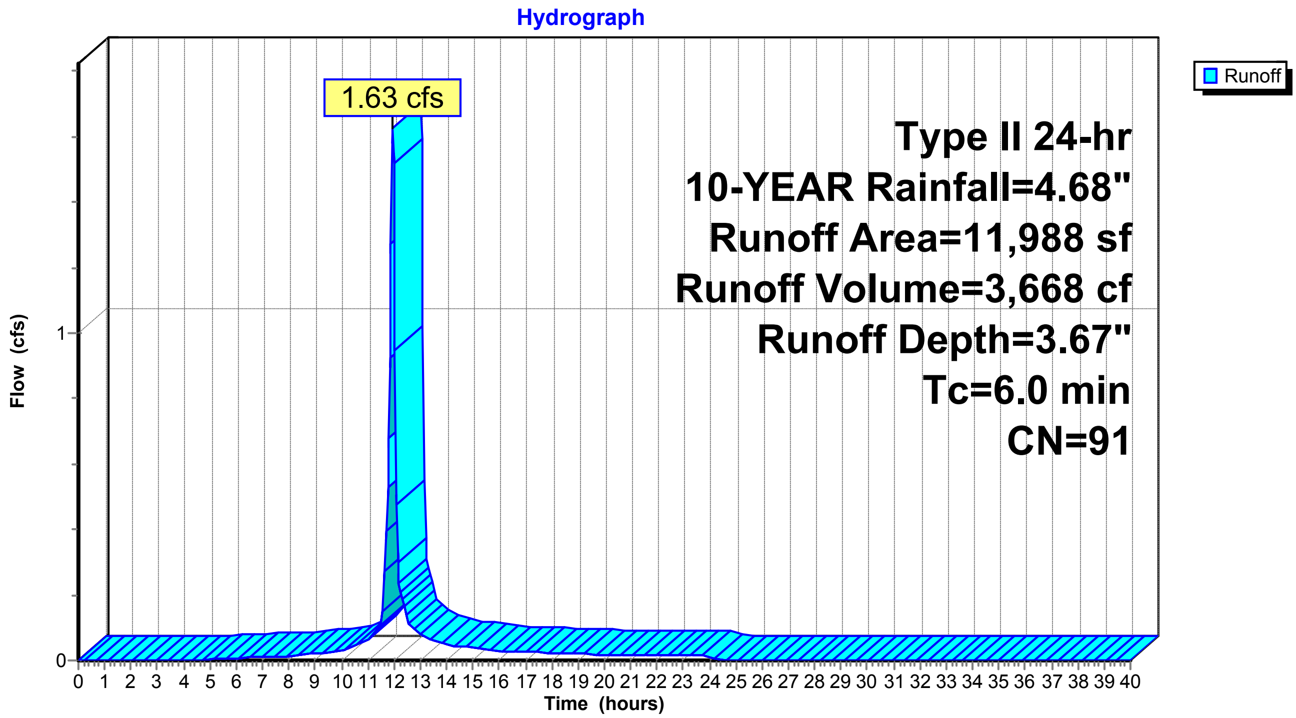
Runoff = 1.63 cfs @ 11.96 hrs, Volume= 3,668 cf, Depth= 3.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
3,384	74	>75% Grass cover, Good, HSG C
8,604	98	Paved parking, HSG C
11,988	91	Weighted Average
3,384		28.23% Pervious Area
8,604		71.77% Impervious Area

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

Subcatchment DA-10: DA-10



Summary for Subcatchment DA-11: DA-11

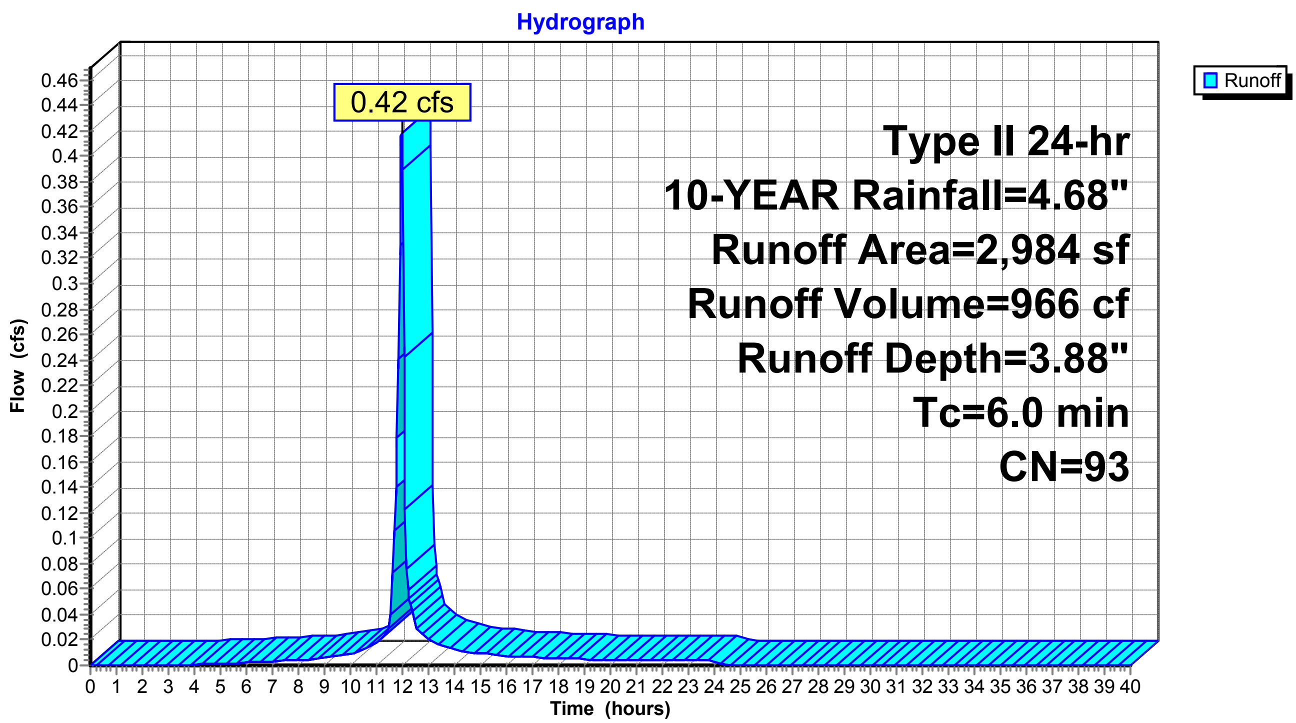
Runoff = 0.42 cfs @ 11.96 hrs, Volume= 966 cf, Depth= 3.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
594	74	>75% Grass cover, Good, HSG C
2,390	98	Paved parking, HSG C
2,984	93	Weighted Average
594		19.91% Pervious Area
2,390		80.09% Impervious Area

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

Subcatchment DA-11: DA-11



Summary for Subcatchment DA-12: DA-12

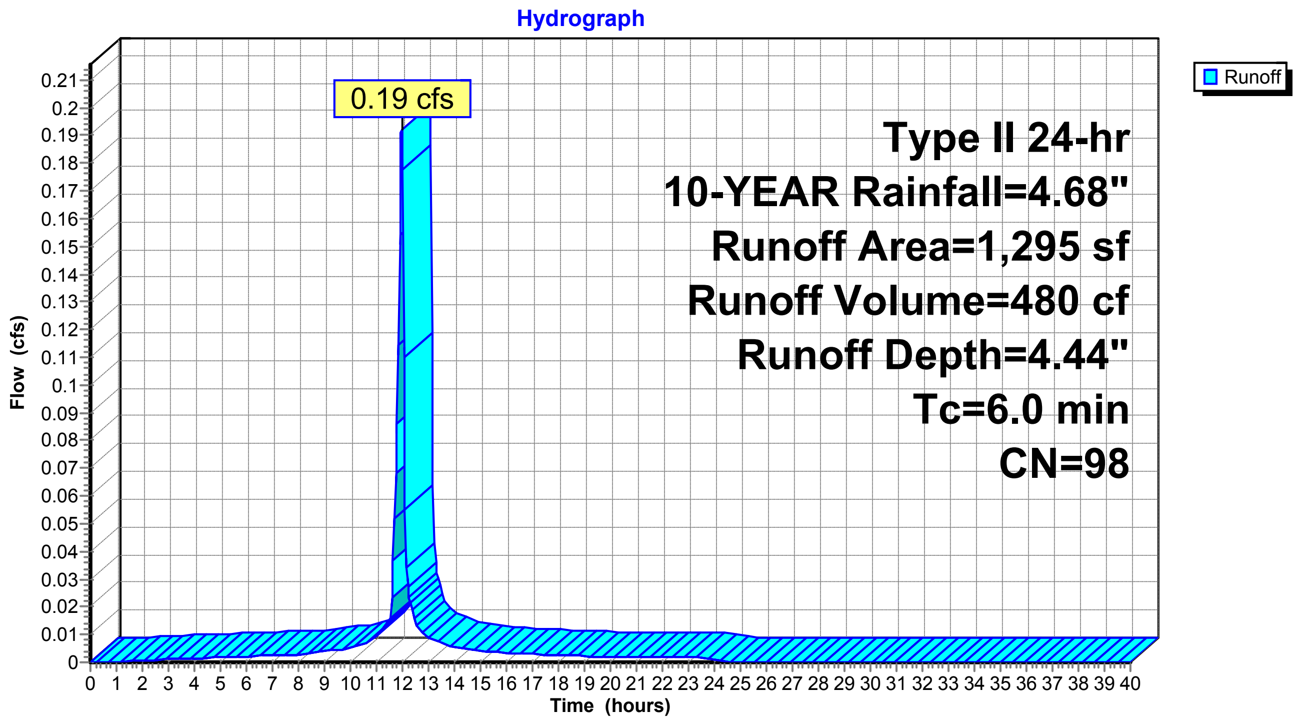
Runoff = 0.19 cfs @ 11.96 hrs, Volume= 480 cf, Depth= 4.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
1,295	98	Paved parking, HSG C
1,295		100.00% Impervious Area

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

Subcatchment DA-12: DA-12



Summary for Subcatchment DA-13: DA-13

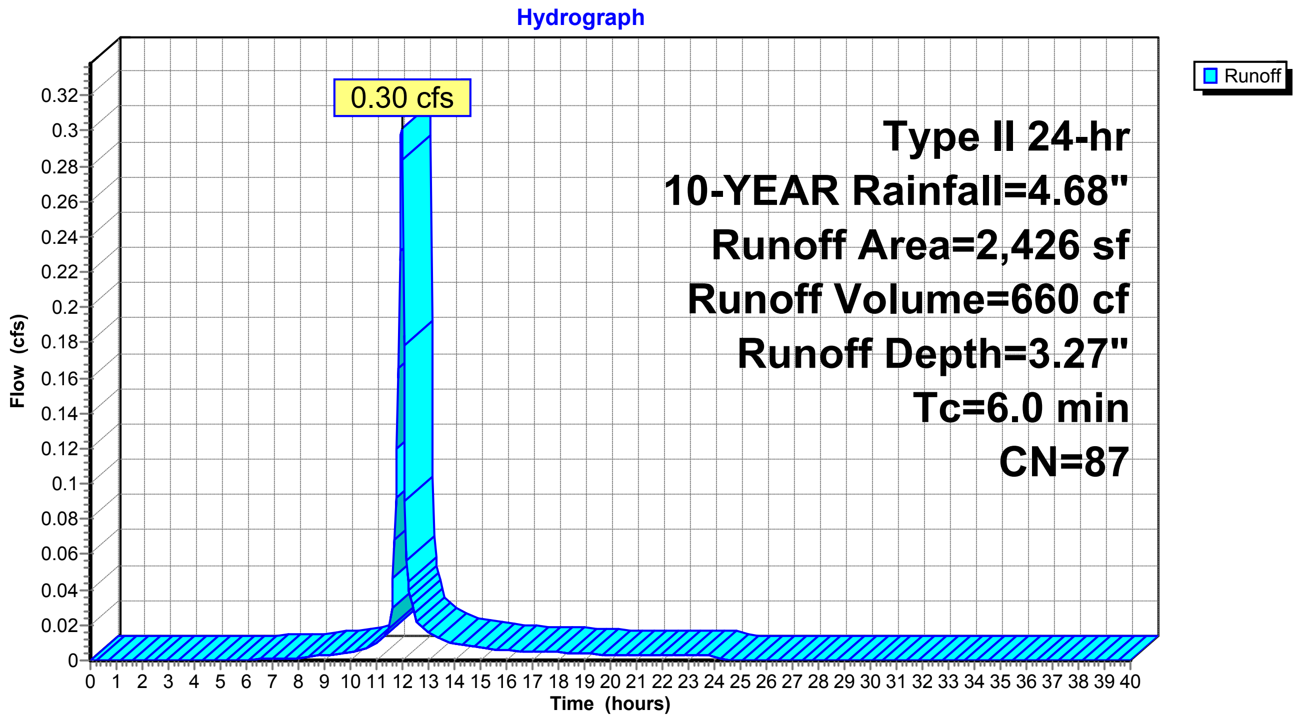
Runoff = 0.30 cfs @ 11.97 hrs, Volume= 660 cf, Depth= 3.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
1,105	74	>75% Grass cover, Good, HSG C
1,321	98	Paved parking, HSG C
2,426	87	Weighted Average
1,105		45.55% Pervious Area
1,321		54.45% Impervious Area

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

Subcatchment DA-13: DA-13



Summary for Subcatchment DA-14: DA-14

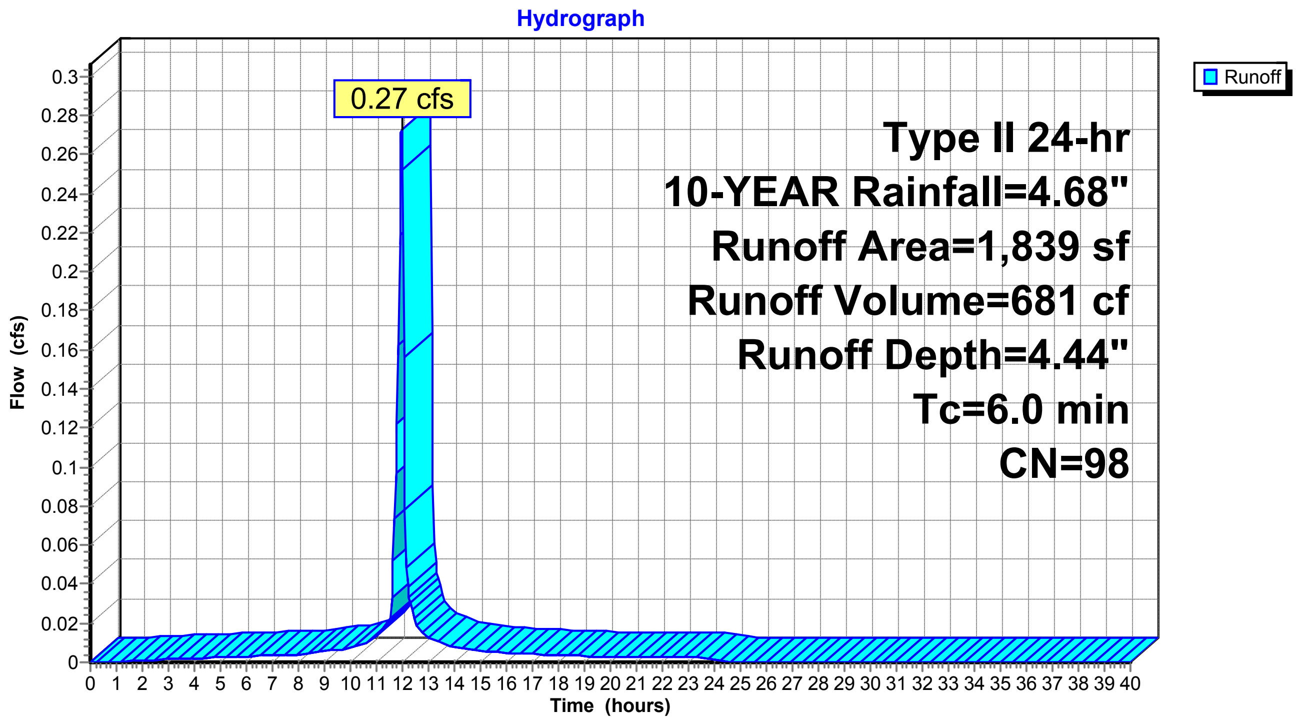
Runoff = 0.27 cfs @ 11.96 hrs, Volume= 681 cf, Depth= 4.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
1,839	98	Paved parking, HSG C
1,839		100.00% Impervious Area

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

Subcatchment DA-14: DA-14



Summary for Subcatchment DA-15: DA-15

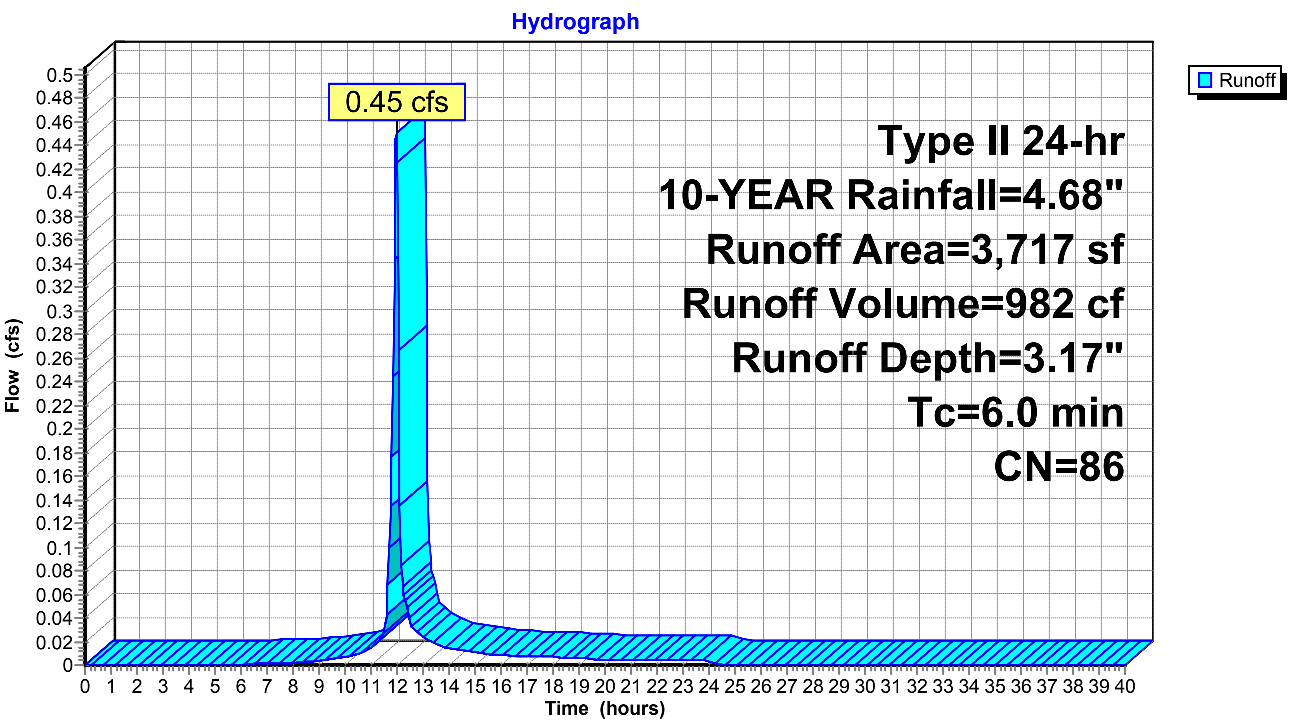
Runoff = 0.45 cfs @ 11.97 hrs, Volume= 982 cf, Depth= 3.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
1,782	74	>75% Grass cover, Good, HSG C
1,935	98	Paved parking, HSG C
3,717	86	Weighted Average
1,782		47.94% Pervious Area
1,935		52.06% Impervious Area

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

Subcatchment DA-15: DA-15



Summary for Subcatchment DA-16: DA-16

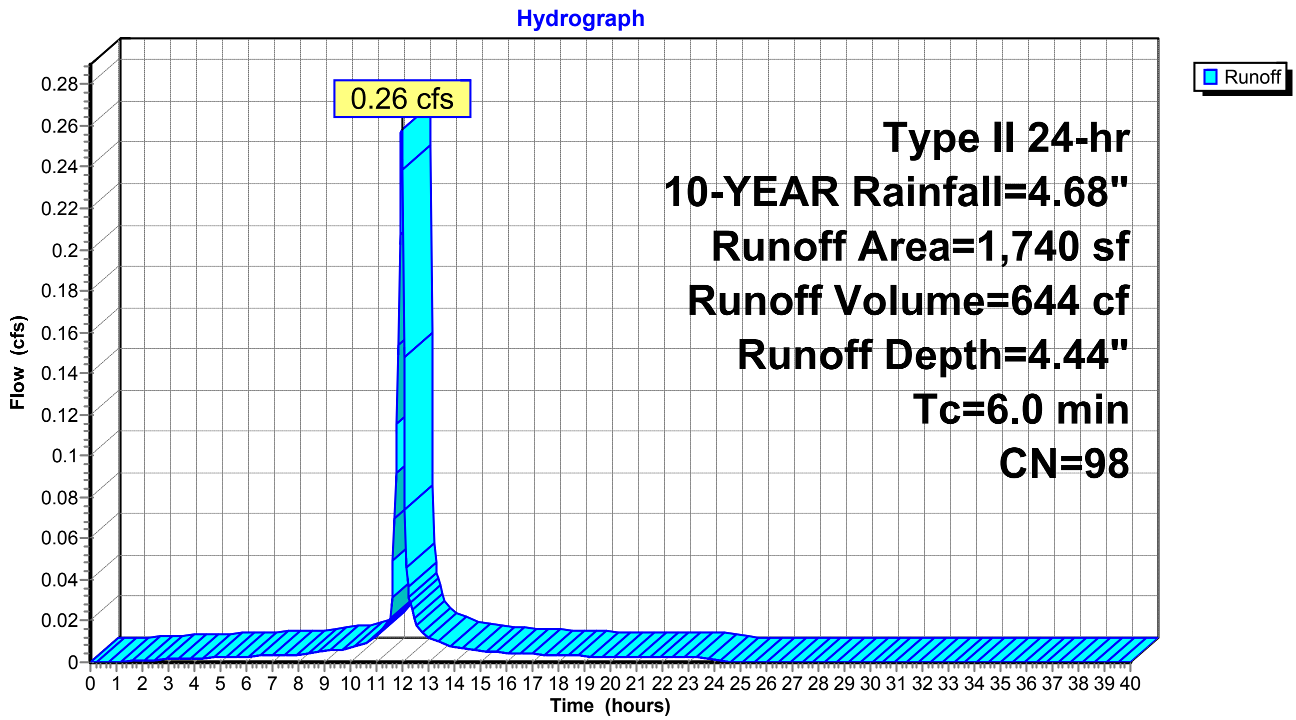
Runoff = 0.26 cfs @ 11.96 hrs, Volume= 644 cf, Depth= 4.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
1,740	98	Paved parking, HSG C
1,740		100.00% Impervious Area

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

Subcatchment DA-16: DA-16



Summary for Subcatchment DA-17: DA-17

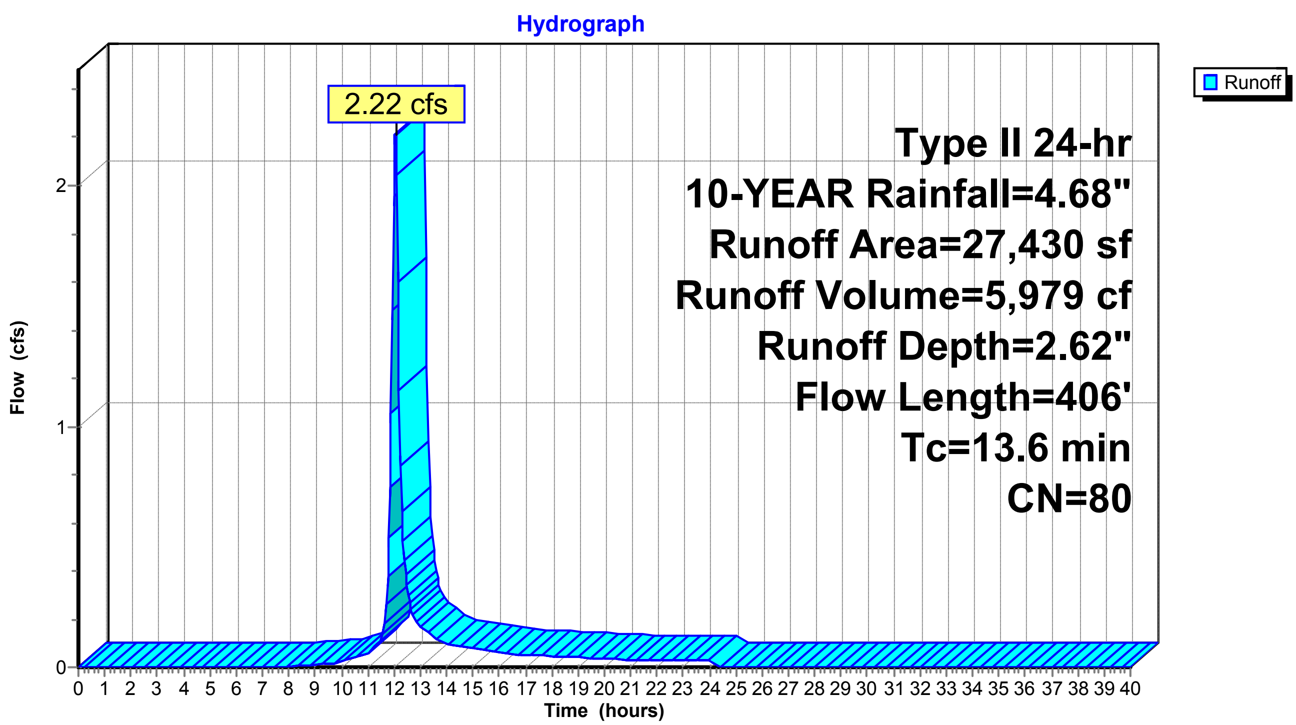
Runoff = 2.22 cfs @ 12.06 hrs, Volume= 5,979 cf, Depth= 2.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
20,898	74	>75% Grass cover, Good, HSG C
6,532	98	Paved parking, HSG C
27,430	80	Weighted Average
20,898		76.19% Pervious Area
6,532		23.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.5	100	0.0350	0.15		**Sheet Flow, G-H** Grass: Dense n= 0.240 P2= 3.17"
2.1	306	0.1160	2.38		**Shallow Concentrated Flow, H-I** Short Grass Pasture Kv= 7.0 fps
13.6	406	Total			

Subcatchment DA-17: DA-17



Summary for Subcatchment DA-18: DA-18

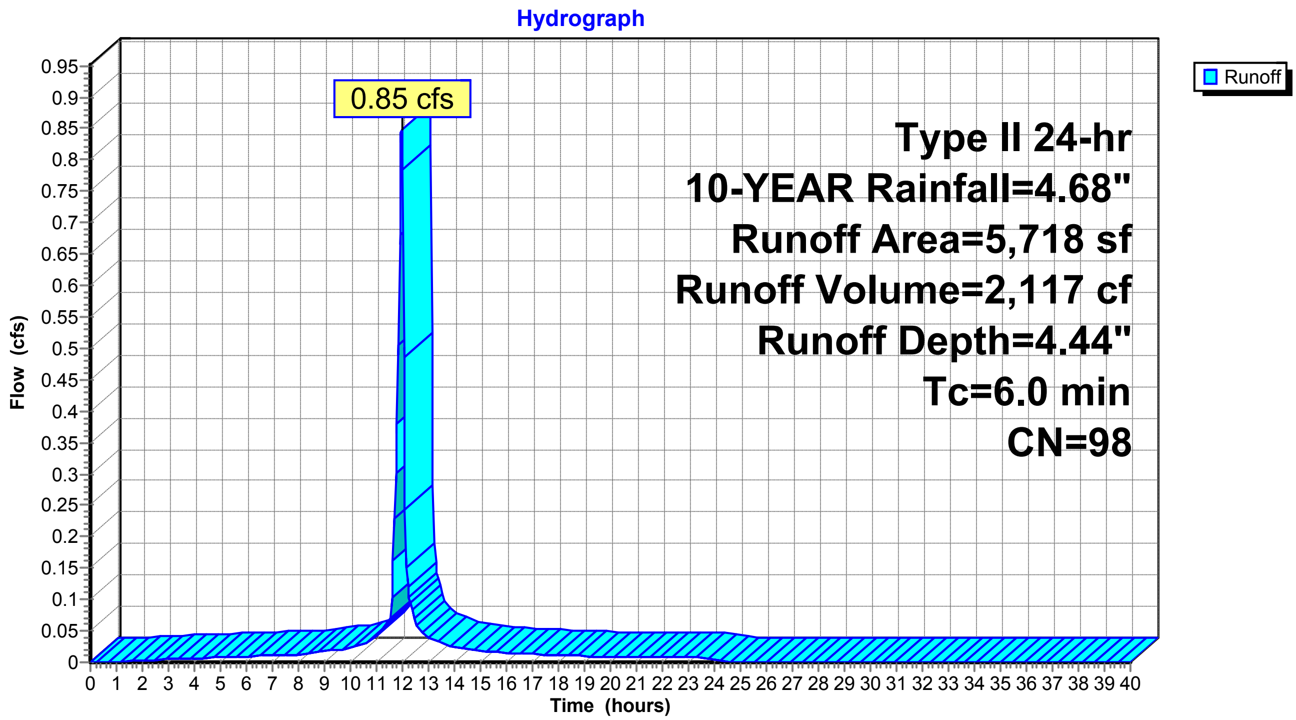
Runoff = 0.85 cfs @ 11.96 hrs, Volume= 2,117 cf, Depth= 4.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
5,718	98	Paved parking, HSG C
5,718		100.00% Impervious Area

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

Subcatchment DA-18: DA-18



Summary for Subcatchment DA-19: DA-19

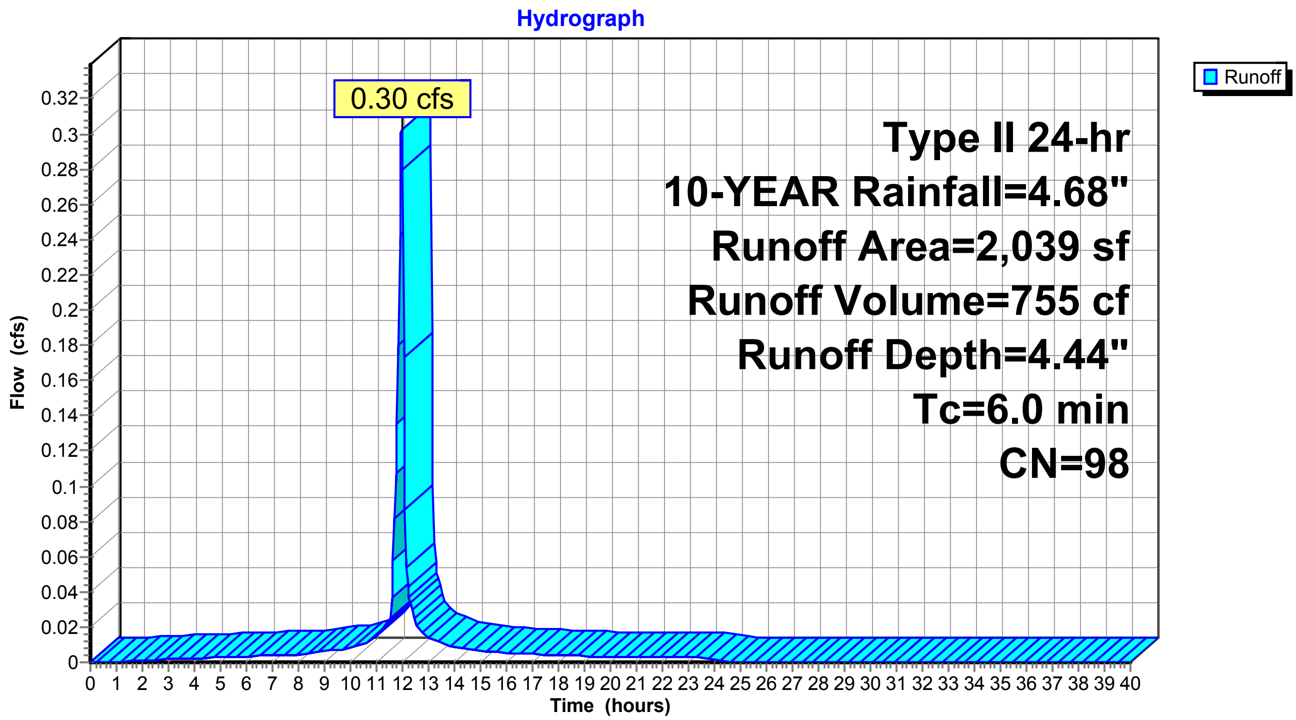
Runoff = 0.30 cfs @ 11.96 hrs, Volume= 755 cf, Depth= 4.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
2,039	98	Paved parking, HSG C
2,039		100.00% Impervious Area

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

Subcatchment DA-19: DA-19



Summary for Subcatchment DA-2: DA-2

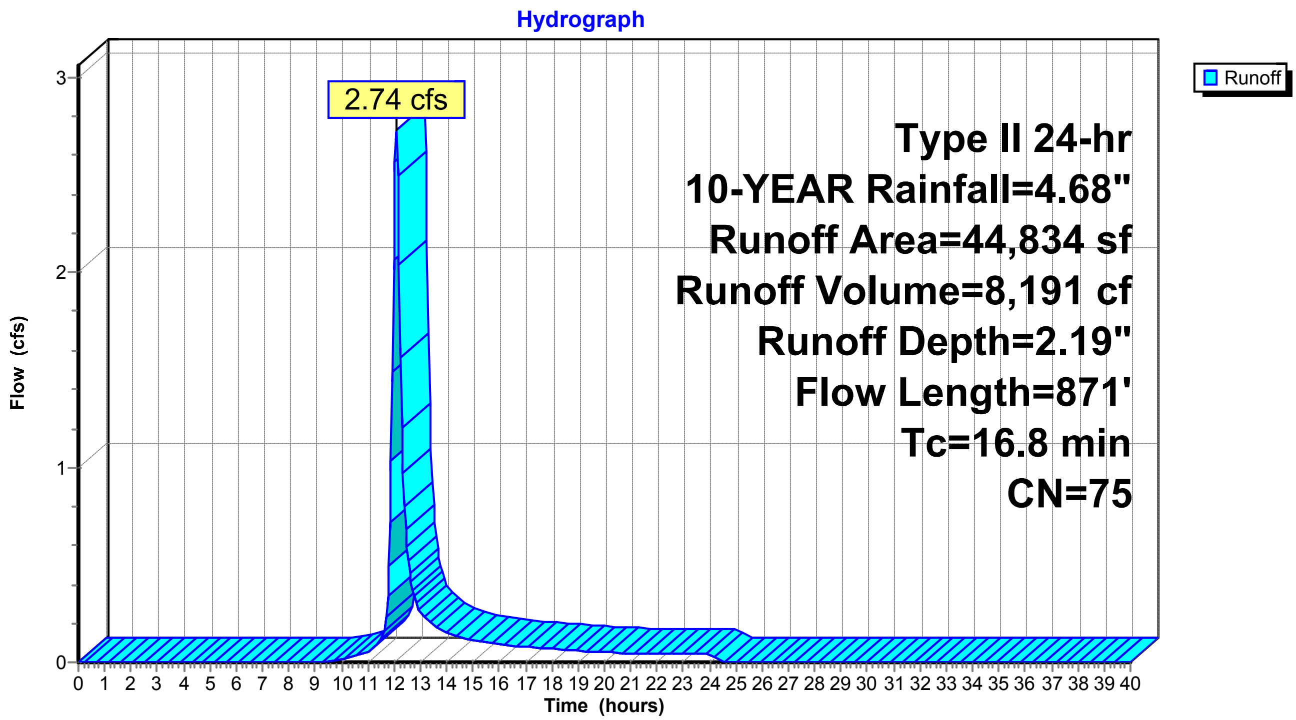
Runoff = 2.74 cfs @ 12.10 hrs, Volume= 8,191 cf, Depth= 2.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
43,705	74	>75% Grass cover, Good, HSG C
1,129	98	Paved parking, HSG C
44,834	75	Weighted Average
43,705		97.48% Pervious Area
1,129		2.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	100	0.0375	0.15		**Sheet Flow, M-N** Grass: Dense n= 0.240 P2= 3.17"
5.6	771	0.1070	2.29		**Shallow Concentrated Flow, N-O** Short Grass Pasture Kv= 7.0 fps
16.8	871	Total			

Subcatchment DA-2: DA-2



Summary for Subcatchment DA-20: DA-20

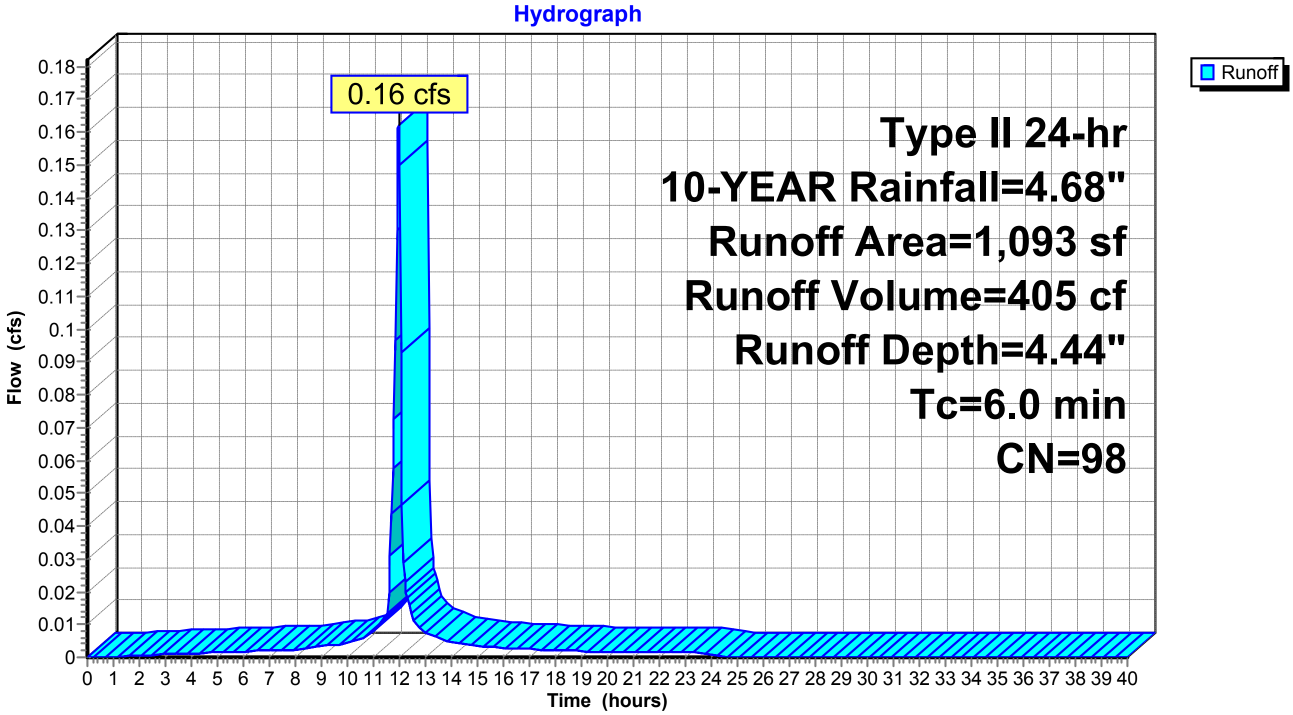
Runoff = 0.16 cfs @ 11.96 hrs, Volume= 405 cf, Depth= 4.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
1,093	98	Paved parking, HSG C
1,093		100.00% Impervious Area

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

Subcatchment DA-20: DA-20



Summary for Subcatchment DA-21: DA-21

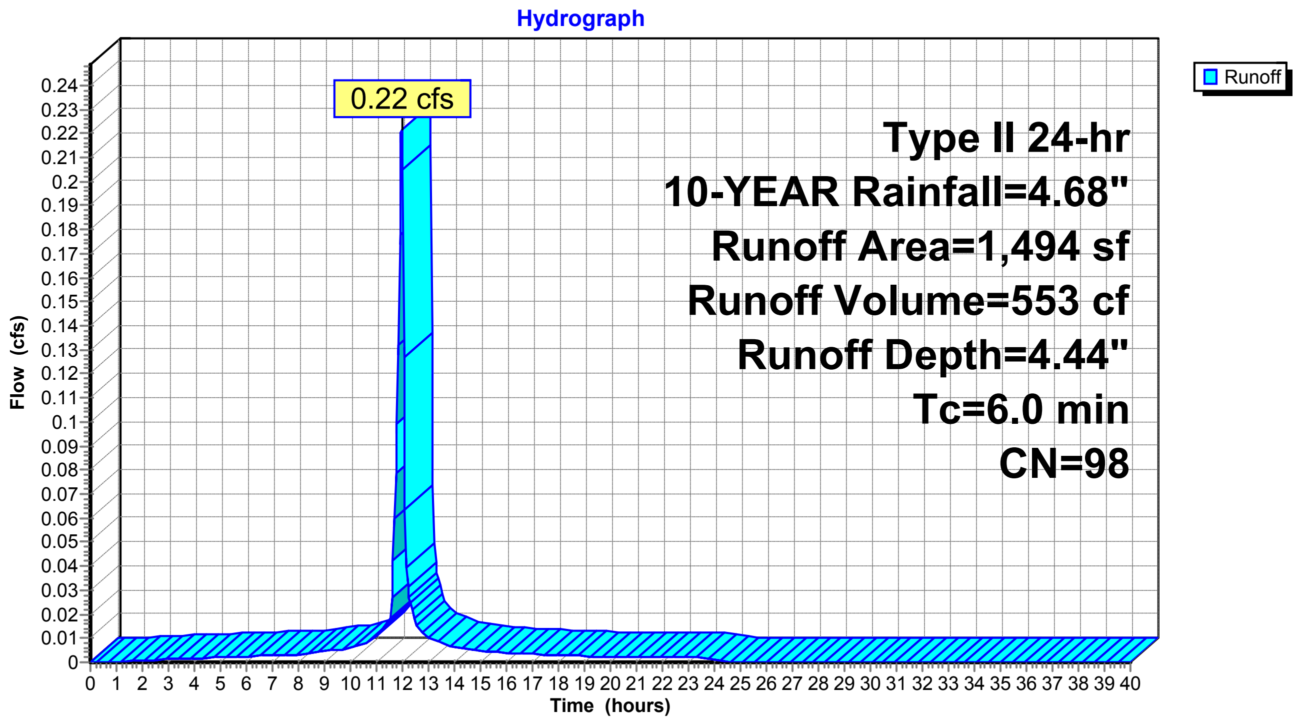
Runoff = 0.22 cfs @ 11.96 hrs, Volume= 553 cf, Depth= 4.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
1,494	98	Paved parking, HSG C
1,494		100.00% Impervious Area

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

Subcatchment DA-21: DA-21



Summary for Subcatchment DA-22: DA-22

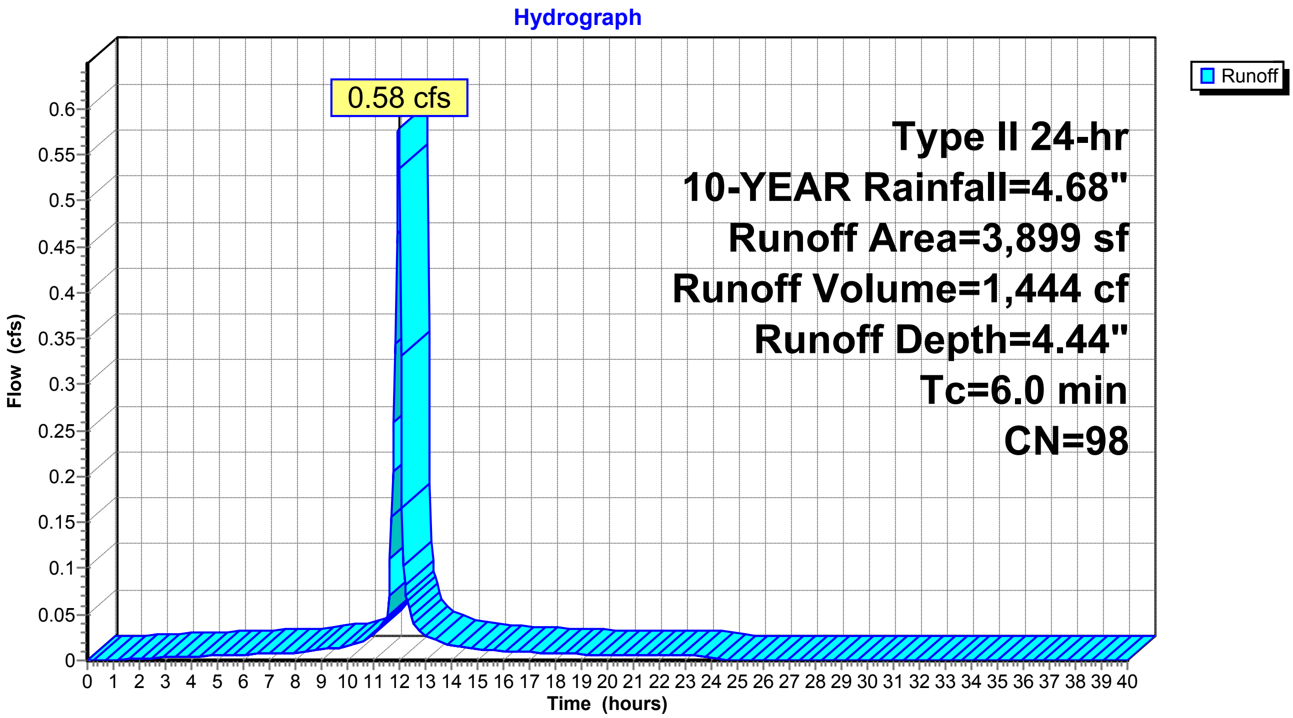
Runoff = 0.58 cfs @ 11.96 hrs, Volume= 1,444 cf, Depth= 4.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
50	74	>75% Grass cover, Good, HSG C
3,849	98	Paved parking, HSG C
3,899	98	Weighted Average
50		1.28% Pervious Area
3,849		98.72% Impervious Area

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

Subcatchment DA-22: DA-22



Summary for Subcatchment DA-23: DA-23

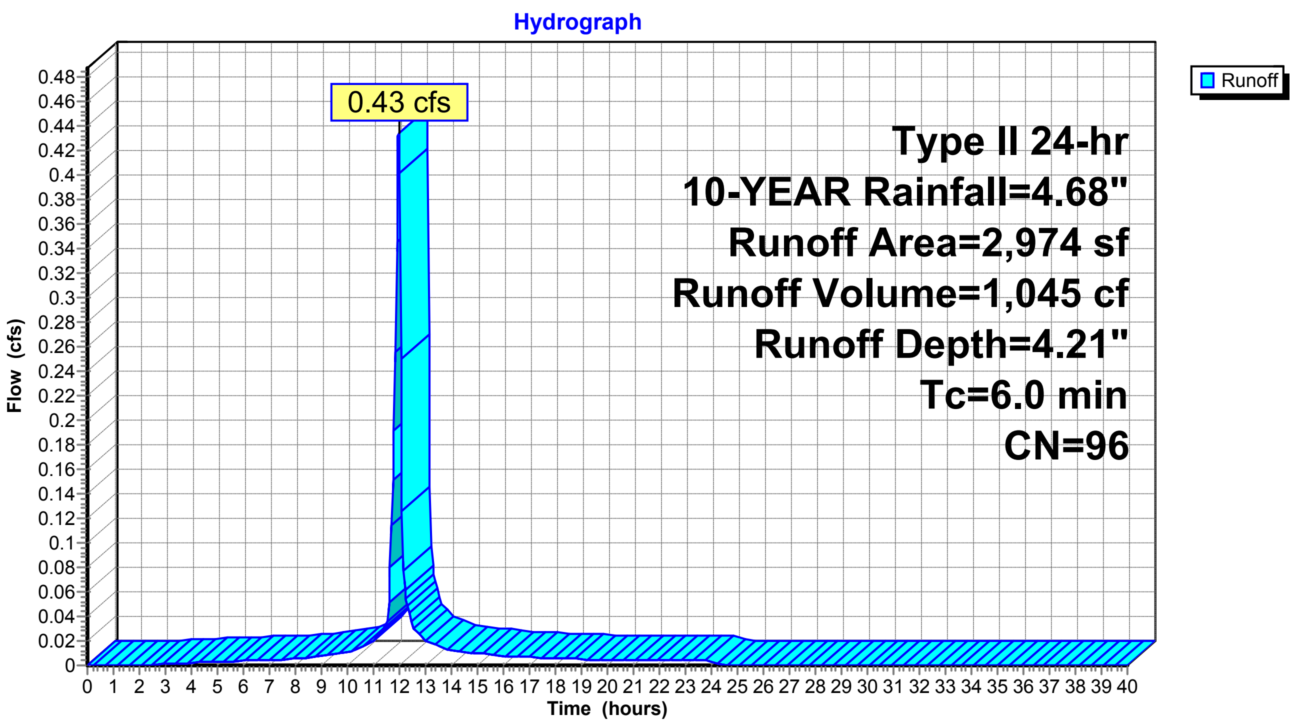
Runoff = 0.43 cfs @ 11.96 hrs, Volume= 1,045 cf, Depth= 4.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
209	74	>75% Grass cover, Good, HSG C
2,765	98	Paved parking, HSG C
2,974	96	Weighted Average
209		7.03% Pervious Area
2,765		92.97% Impervious Area

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

Subcatchment DA-23: DA-23



Summary for Subcatchment DA-24: DA-24

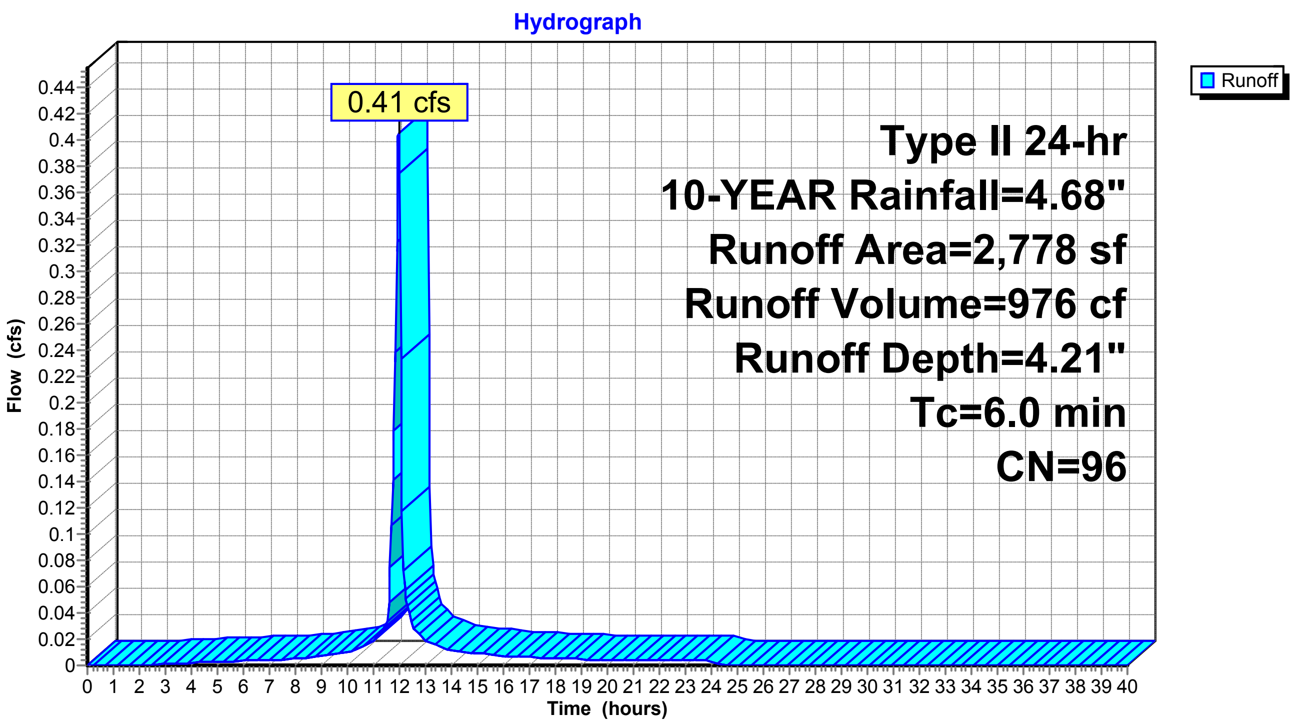
Runoff = 0.41 cfs @ 11.96 hrs, Volume= 976 cf, Depth= 4.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
211	74	>75% Grass cover, Good, HSG C
2,567	98	Paved parking, HSG C
2,778	96	Weighted Average
211		7.60% Pervious Area
2,567		92.40% Impervious Area

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

Subcatchment DA-24: DA-24



Summary for Subcatchment DA-25: DA-25

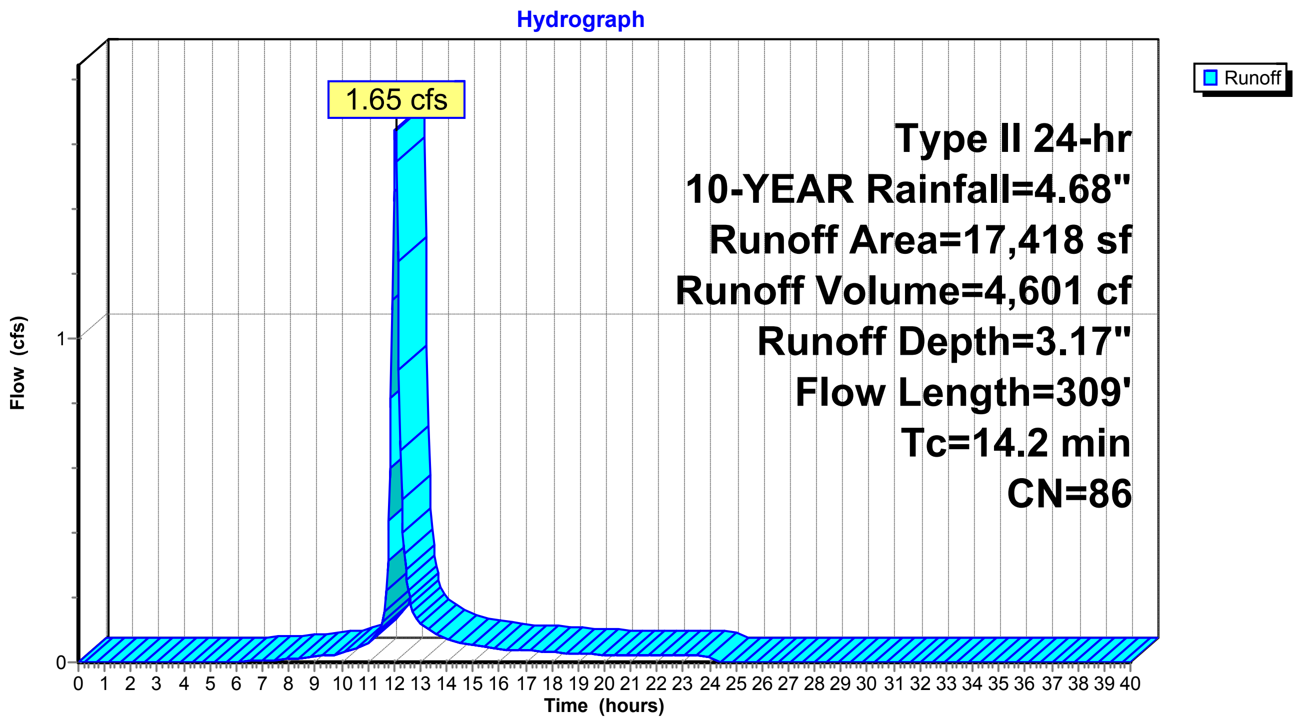
Runoff = 1.65 cfs @ 12.06 hrs, Volume= 4,601 cf, Depth= 3.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
8,778	74	>75% Grass cover, Good, HSG C
8,640	98	Paved parking, HSG C
17,418	86	Weighted Average
8,778		50.40% Pervious Area
8,640		49.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	91	0.0220	0.12		**Sheet Flow, J-K** Grass: Dense n= 0.240 P2= 3.17"
1.4	218	0.0170	2.65		**Shallow Concentrated Flow, J-L** Paved Kv= 20.3 fps
14.2	309	Total			

Subcatchment DA-25: DA-25



Summary for Subcatchment DA-26: DA-26

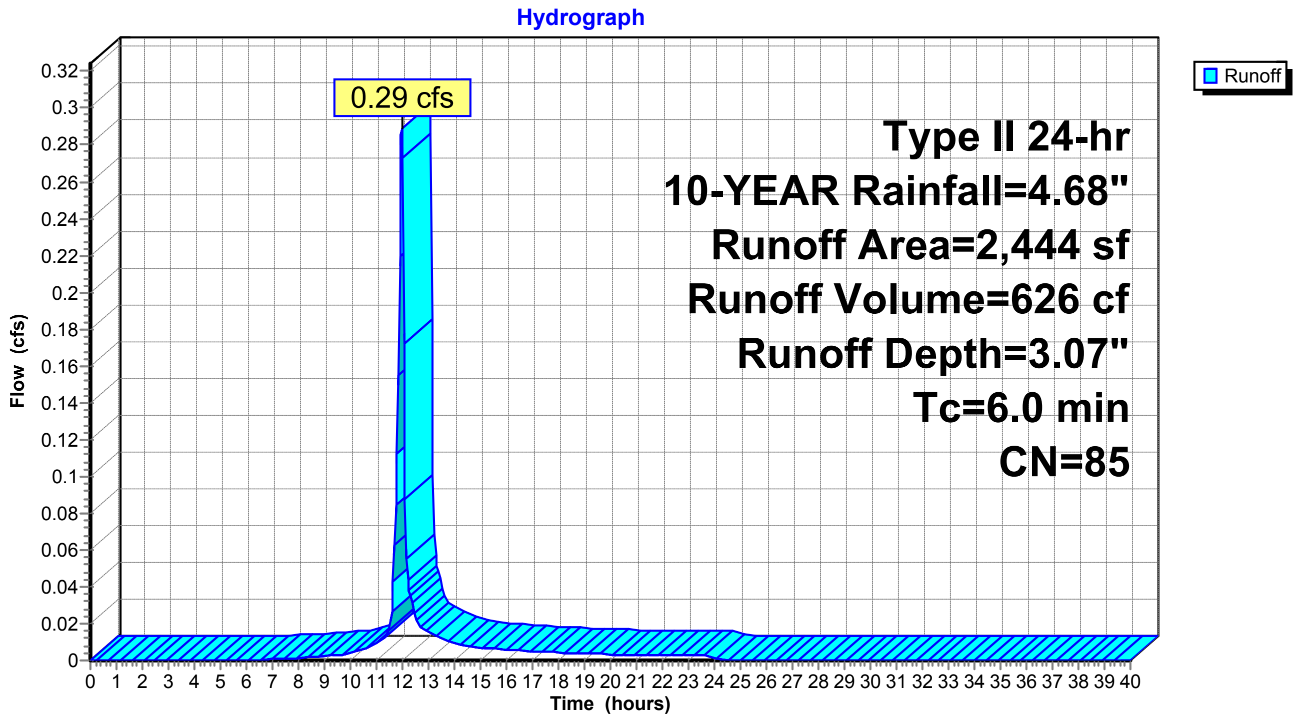
Runoff = 0.29 cfs @ 11.97 hrs, Volume= 626 cf, Depth= 3.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
1,334	74	>75% Grass cover, Good, HSG C
1,110	98	Paved parking, HSG C
2,444	85	Weighted Average
1,334		54.58% Pervious Area
1,110		45.42% Impervious Area

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

Subcatchment DA-26: DA-26



Summary for Subcatchment DA-27: DA-27

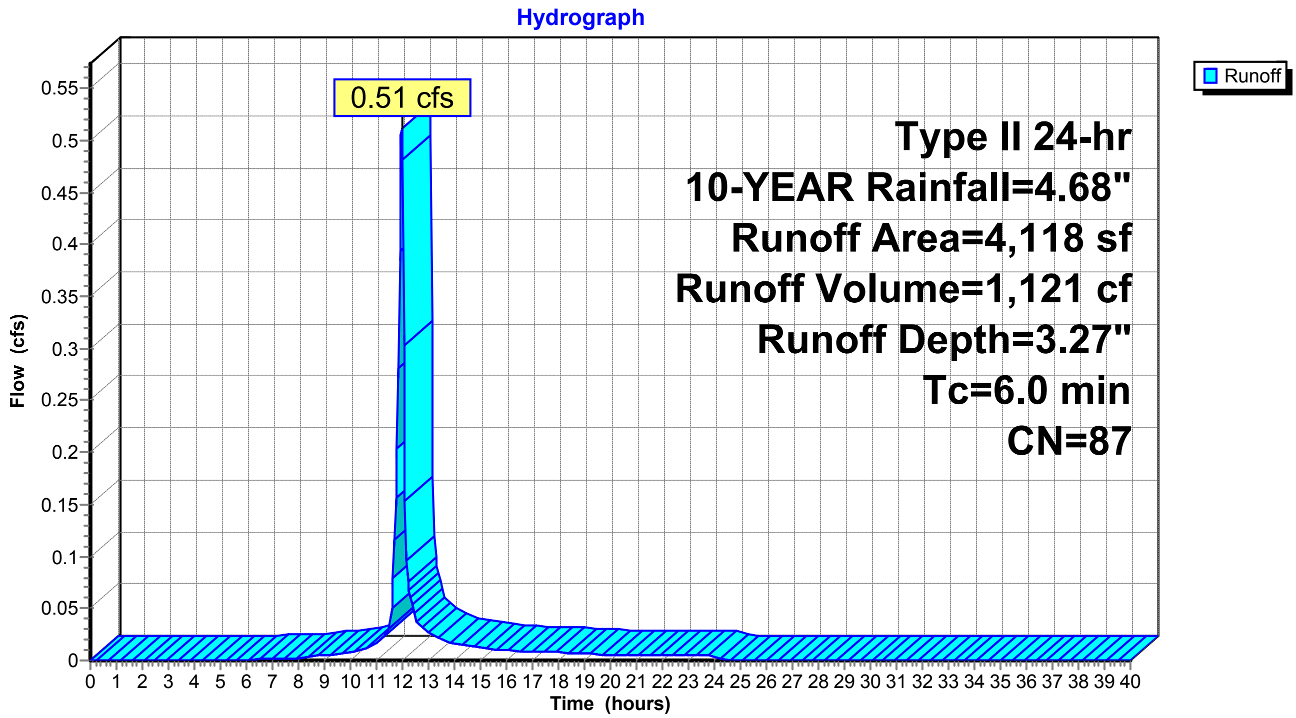
Runoff = 0.51 cfs @ 11.97 hrs, Volume= 1,121 cf, Depth= 3.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
1,932	74	>75% Grass cover, Good, HSG C
2,186	98	Paved parking, HSG C
4,118	87	Weighted Average
1,932		46.92% Pervious Area
2,186		53.08% Impervious Area

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

Subcatchment DA-27: DA-27



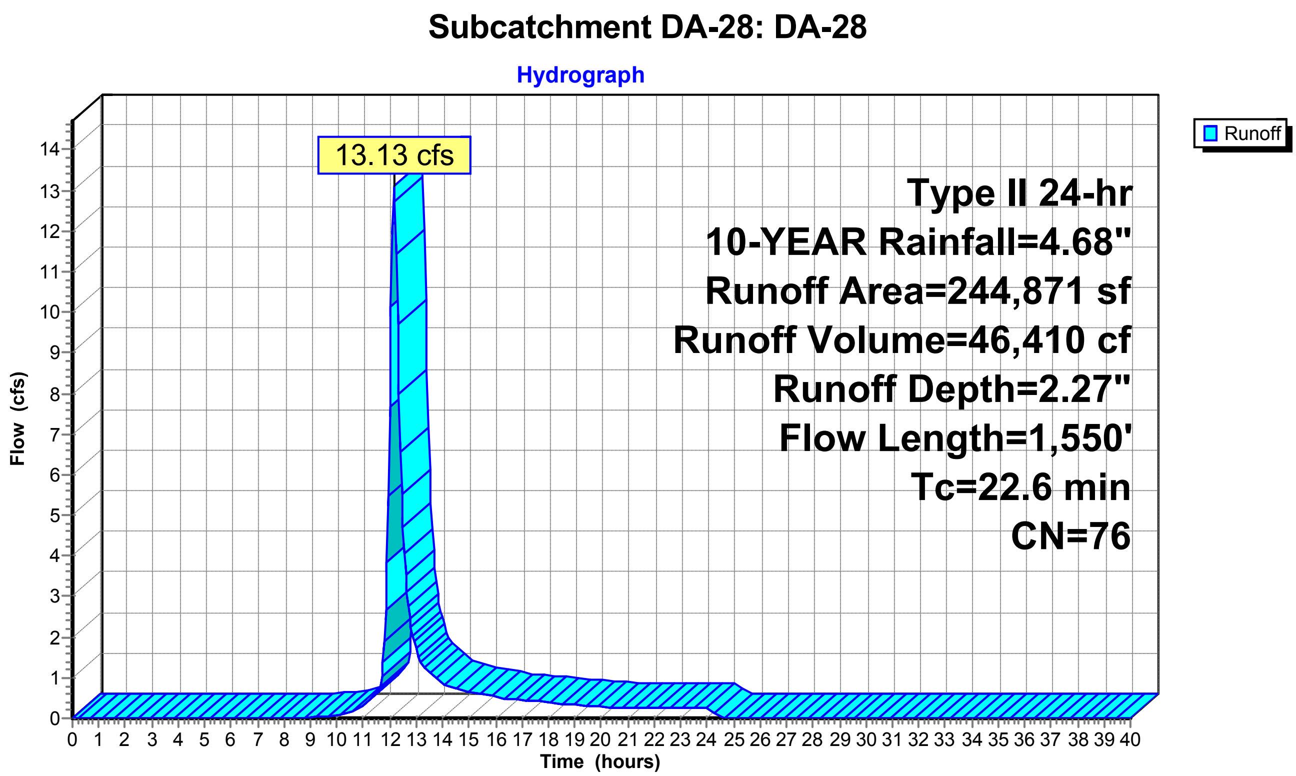
Summary for Subcatchment DA-28: DA-28

Runoff = 13.13 cfs @ 12.16 hrs, Volume= 46,410 cf, Depth= 2.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
167,699	74	>75% Grass cover, Good, HSG C
58,990	73	Woods, Fair, HSG C
18,182	98	Paved parking, HSG C
244,871	76	Weighted Average
226,689		92.57% Pervious Area
18,182		7.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	100	0.0450	0.16		**Sheet Flow, S-T** Grass: Dense n= 0.240 P2= 3.17"
12.2	1,450	0.0795	1.97		**Shallow Concentrated Flow, T-U** Short Grass Pasture Kv= 7.0 fps
22.6	1,550	Total			



Summary for Subcatchment DA-29: DA-29

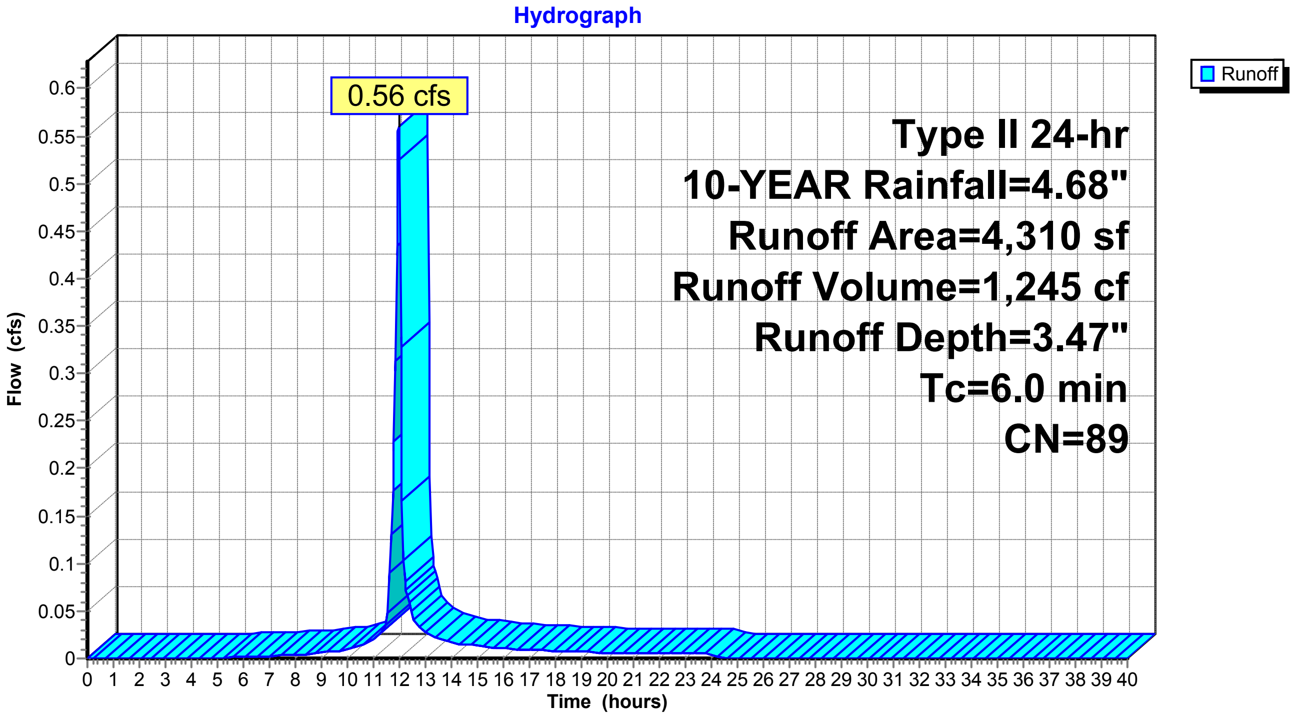
Runoff = 0.56 cfs @ 11.97 hrs, Volume= 1,245 cf, Depth= 3.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
1,648	74	>75% Grass cover, Good, HSG C
0	73	Woods, Fair, HSG C
2,662	98	Paved parking, HSG C
4,310	89	Weighted Average
1,648		38.24% Pervious Area
2,662		61.76% Impervious Area

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

Subcatchment DA-29: DA-29



Summary for Subcatchment DA-3: DA-3

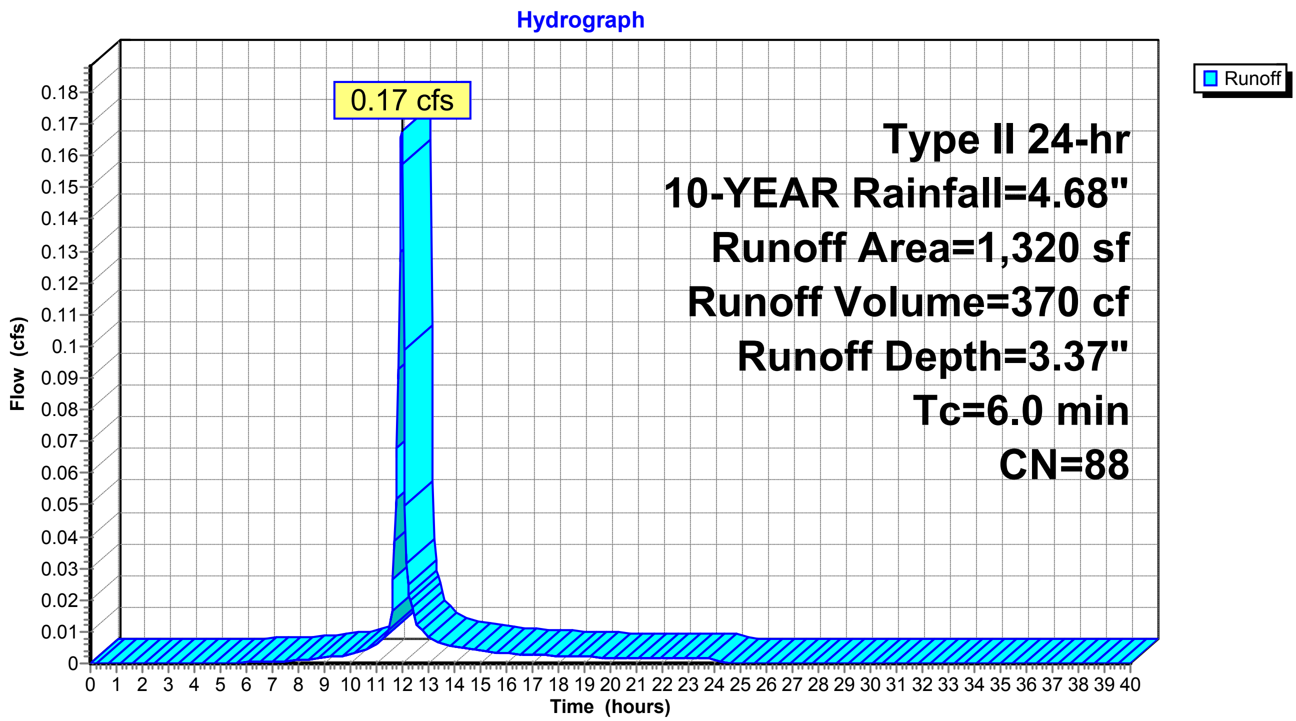
Runoff = 0.17 cfs @ 11.97 hrs, Volume= 370 cf, Depth= 3.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
542	74	>75% Grass cover, Good, HSG C
0	73	Woods, Fair, HSG C
778	98	Paved parking, HSG C
1,320	88	Weighted Average
542		41.06% Pervious Area
778		58.94% Impervious Area

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

Subcatchment DA-3: DA-3



Summary for Subcatchment DA-30: DA-30

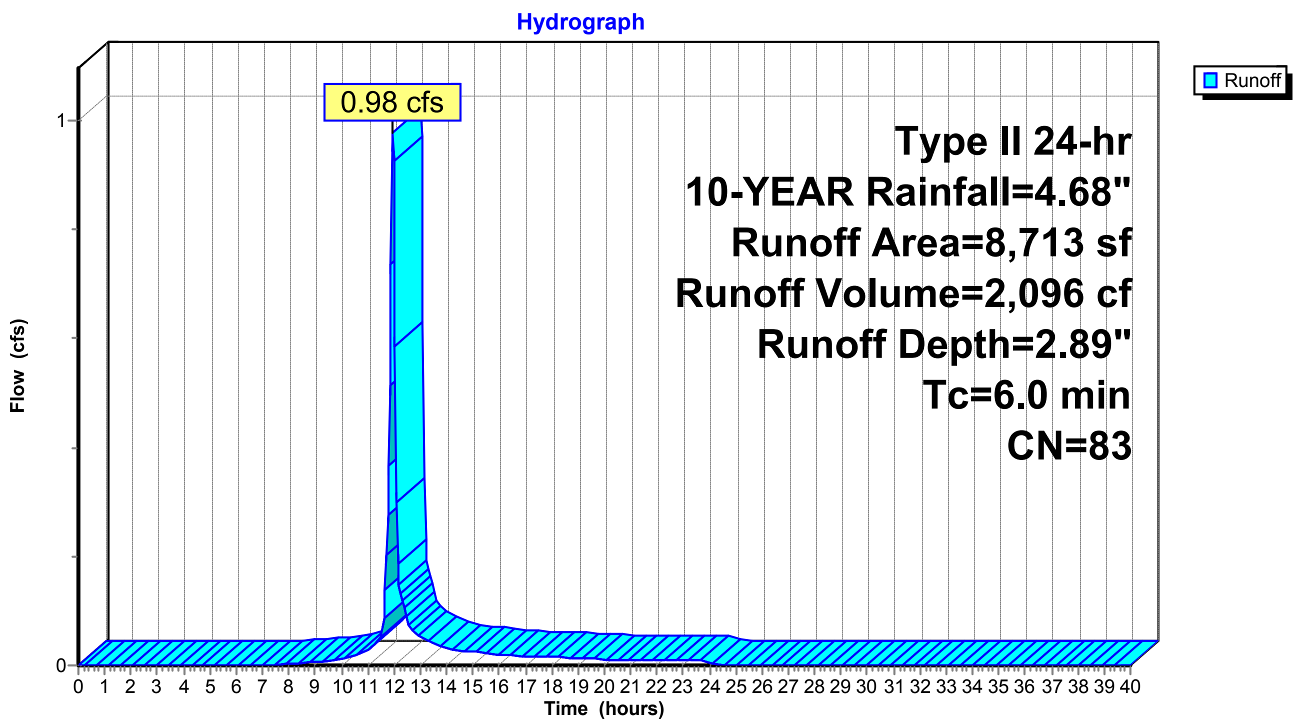
Runoff = 0.98 cfs @ 11.97 hrs, Volume= 2,096 cf, Depth= 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
5,560	74	>75% Grass cover, Good, HSG C
3,153	98	Paved parking, HSG C
8,713	83	Weighted Average
5,560		63.81% Pervious Area
3,153		36.19% Impervious Area

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

Subcatchment DA-30: DA-30



Summary for Subcatchment DA-31: DA-31

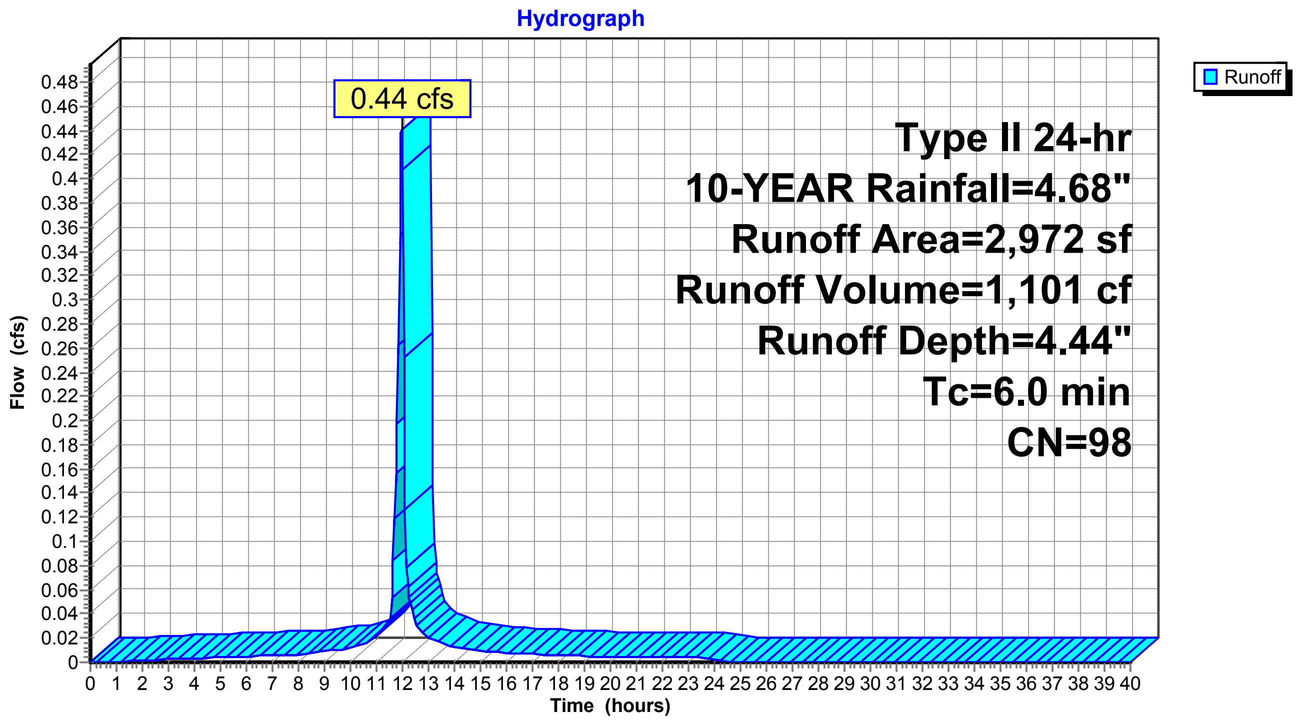
Runoff = 0.44 cfs @ 11.96 hrs, Volume= 1,101 cf, Depth= 4.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
2,972	98	Paved parking, HSG C
2,972		100.00% Impervious Area

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

Subcatchment DA-31: DA-31



Summary for Subcatchment DA-32: DA-32

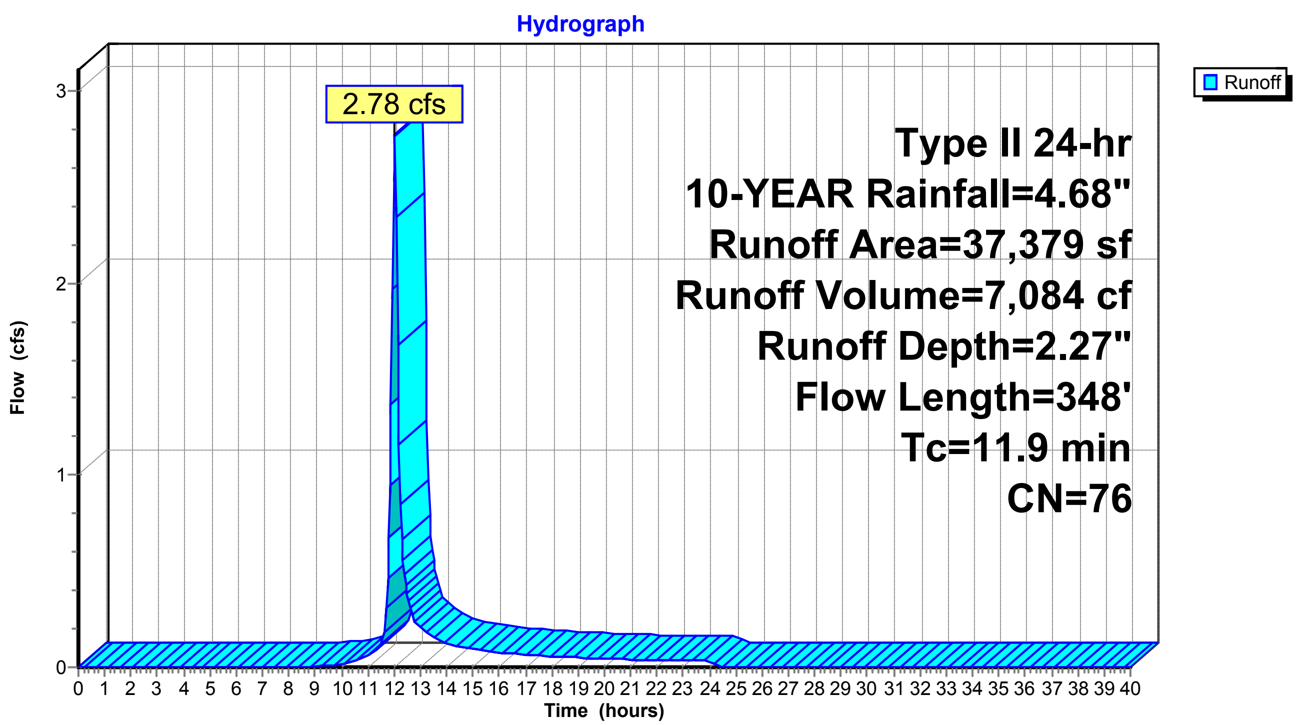
Runoff = 2.78 cfs @ 12.04 hrs, Volume= 7,084 cf, Depth= 2.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
33,898	74	>75% Grass cover, Good, HSG C
3,481	98	Paved parking, HSG C
37,379	76	Weighted Average
33,898		90.69% Pervious Area
3,481		9.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	100	0.1800	0.28		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.17"
5.9	248	0.0100	0.70		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
11.9	348	Total			

Subcatchment DA-32: DA-32



Summary for Subcatchment DA-33: DA-33

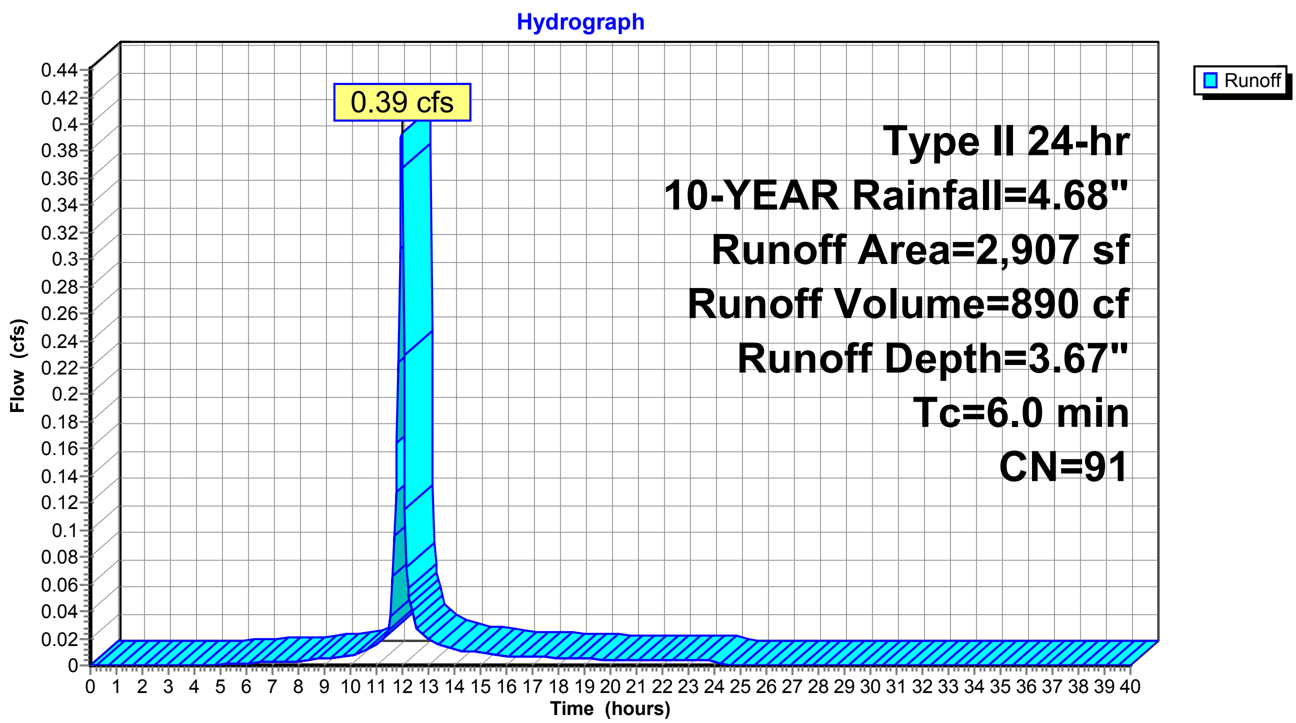
Runoff = 0.39 cfs @ 11.96 hrs, Volume= 890 cf, Depth= 3.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
882	74	>75% Grass cover, Good, HSG C
2,025	98	Paved parking, HSG C
2,907	91	Weighted Average
882		30.34% Pervious Area
2,025		69.66% Impervious Area

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

Subcatchment DA-33: DA-33



Summary for Subcatchment DA-34: DA-34

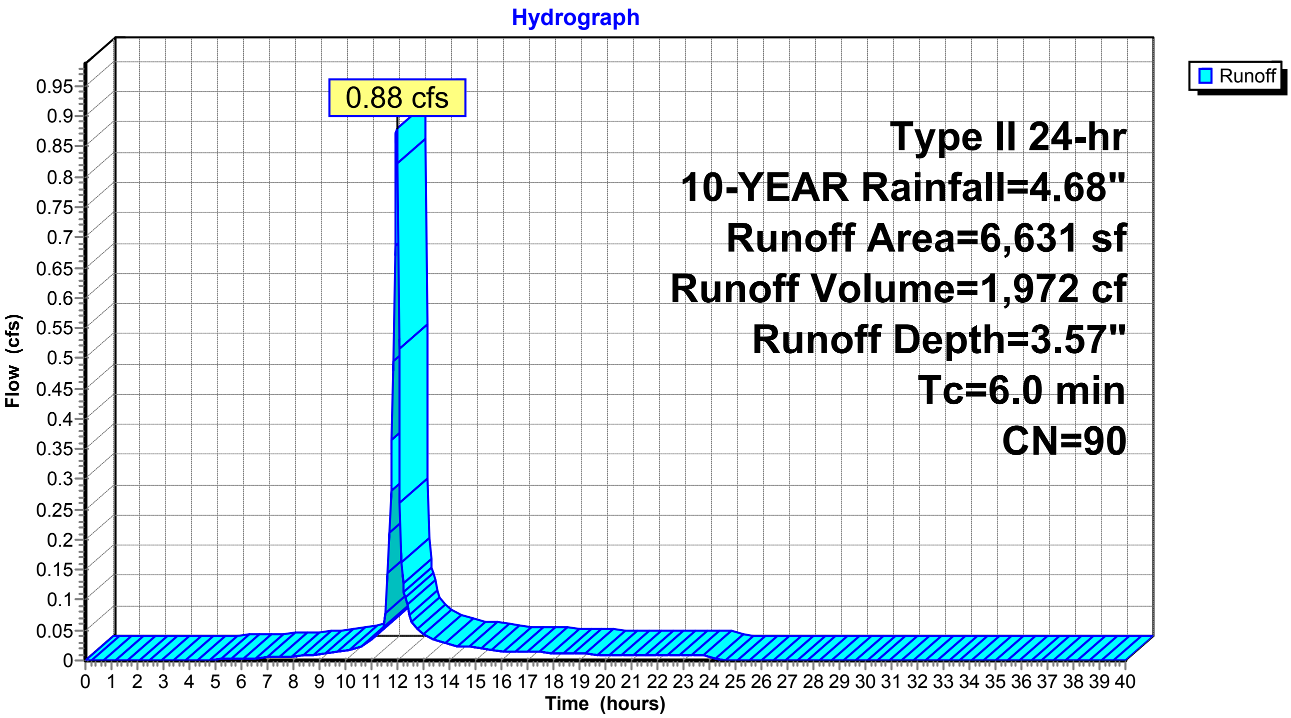
Runoff = 0.88 cfs @ 11.96 hrs, Volume= 1,972 cf, Depth= 3.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
2,314	74	>75% Grass cover, Good, HSG C
4,317	98	Paved parking, HSG C
6,631	90	Weighted Average
2,314		34.90% Pervious Area
4,317		65.10% Impervious Area

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

Subcatchment DA-34: DA-34



Summary for Subcatchment DA-35: DA-35

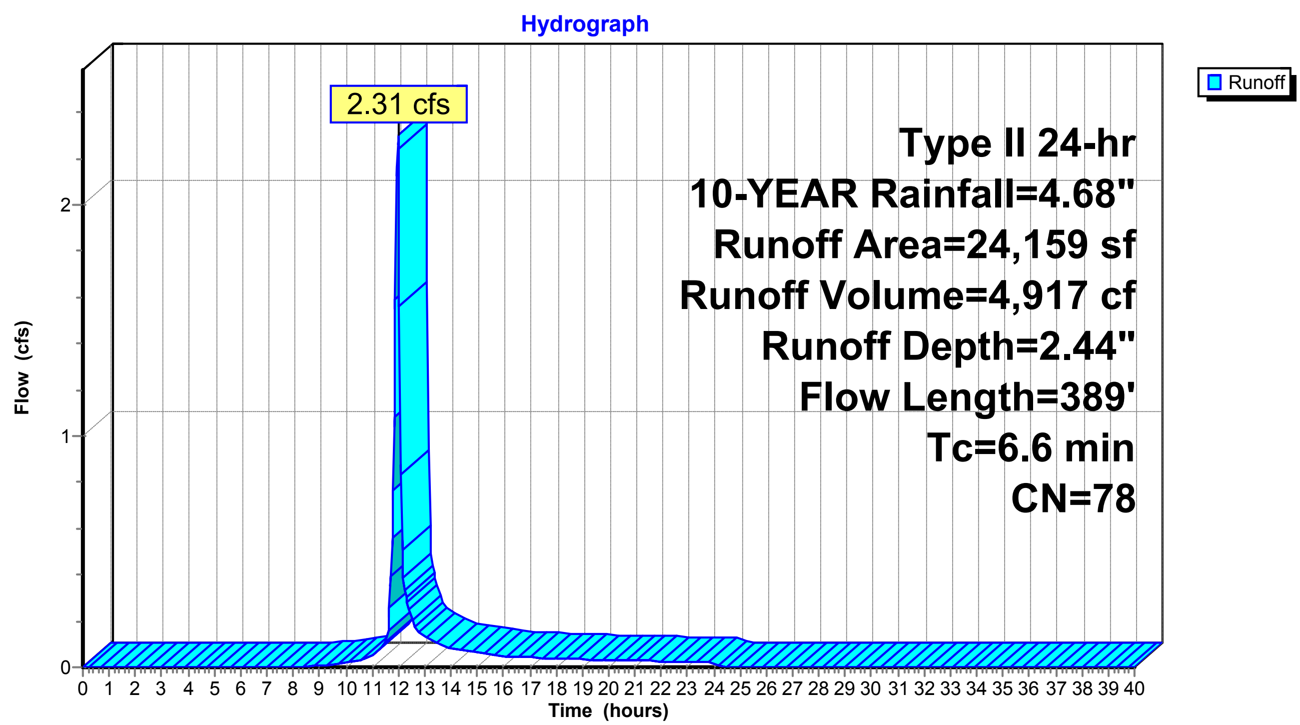
Runoff = 2.31 cfs @ 11.98 hrs, Volume= 4,917 cf, Depth= 2.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
20,497	74	>75% Grass cover, Good, HSG C
3,662	98	Paved parking, HSG C
24,159	78	Weighted Average
20,497		84.84% Pervious Area
3,662		15.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	100	0.2900	0.34		**Sheet Flow, D-E** Grass: Dense n= 0.240 P2= 3.17"
1.7	289	0.1560	2.76		**Shallow Concentrated Flow, E-F** Short Grass Pasture Kv= 7.0 fps
6.6	389	Total			

Subcatchment DA-35: DA-35



Summary for Subcatchment DA-36: DA-36 (Roofs)

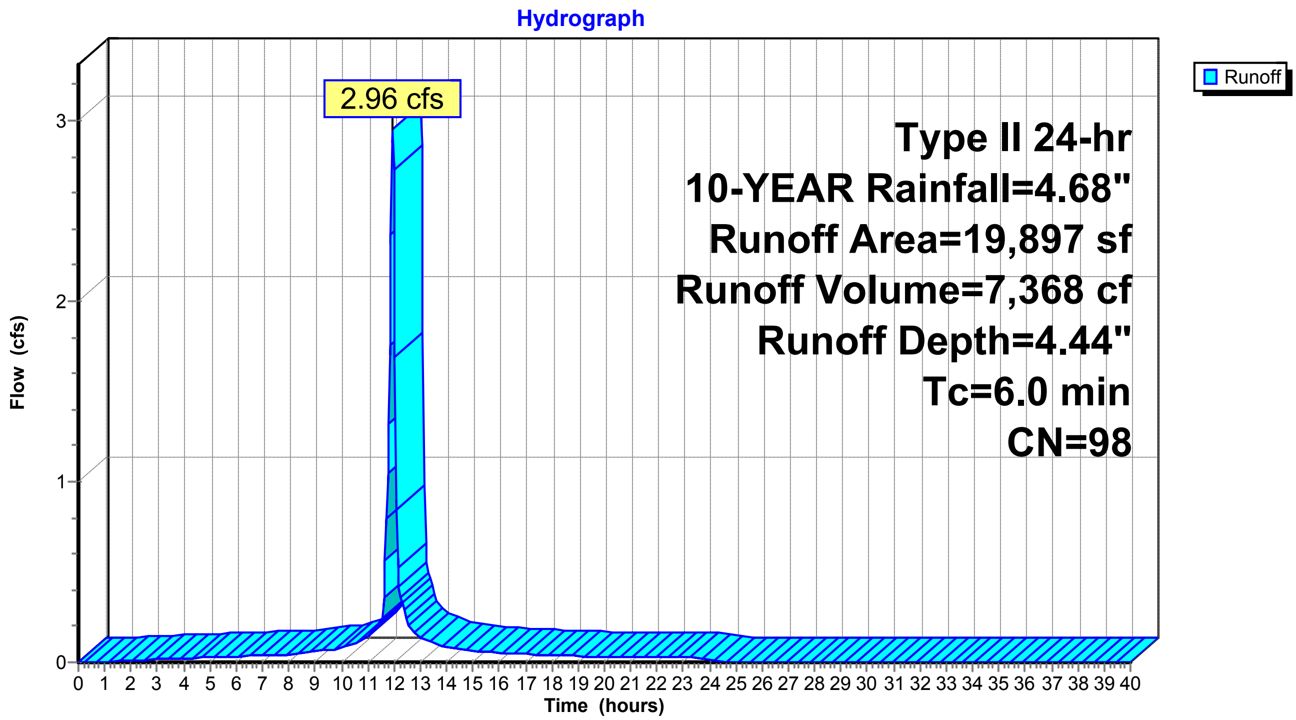
Runoff = 2.96 cfs @ 11.96 hrs, Volume= 7,368 cf, Depth= 4.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
19,897	98	Roofs, HSG C
19,897		100.00% Impervious Area

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

Subcatchment DA-36: DA-36 (Roofs)



Summary for Subcatchment DA-37: DA-37

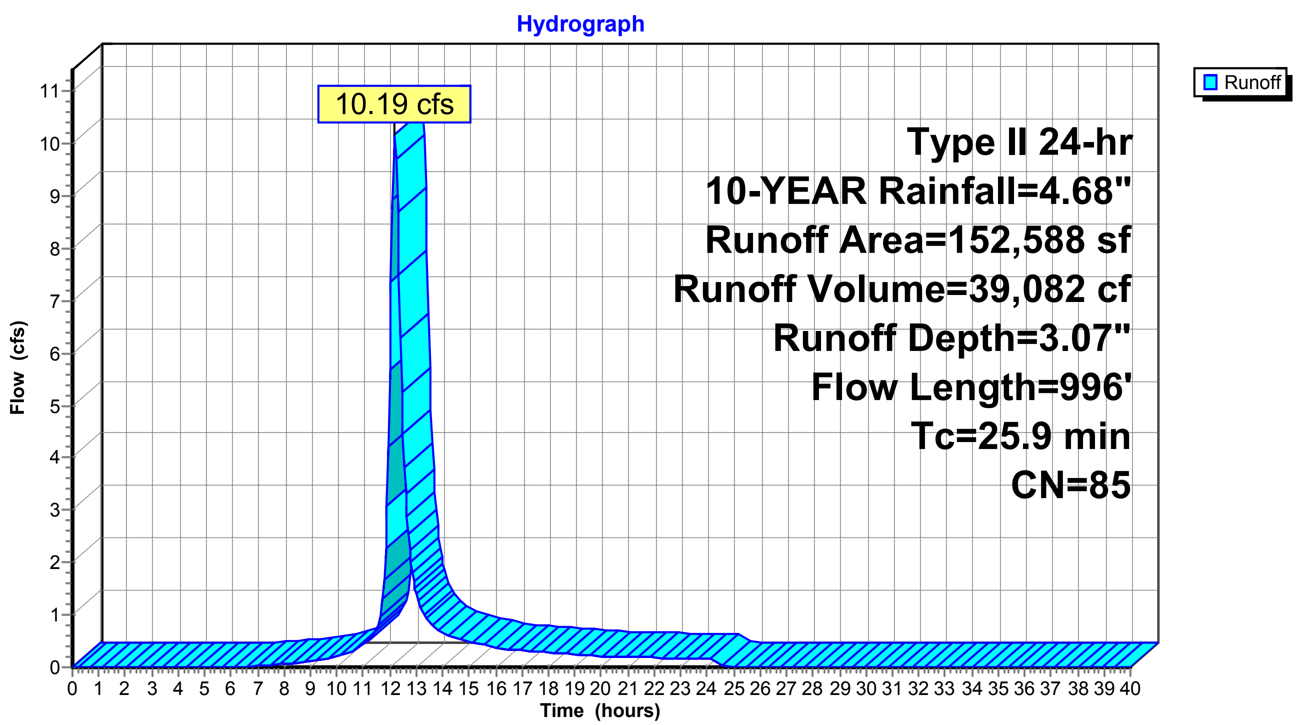
Runoff = 10.19 cfs @ 12.19 hrs, Volume= 39,082 cf, Depth= 3.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
102,918	79	Pasture/grassland/range, Fair, HSG C
49,670	98	Paved parking, HSG C
152,588	85	Weighted Average
102,918		67.45% Pervious Area
49,670		32.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.9	100	0.0100	0.09		**Sheet Flow, P-Q** Grass: Dense n= 0.240 P2= 3.17"
7.0	896	0.0926	2.13		**Shallow Concentrated Flow, Q-R** Short Grass Pasture Kv= 7.0 fps
25.9	996	Total			

Subcatchment DA-37: DA-37



Summary for Subcatchment DA-38: DA-38 (Roofs)

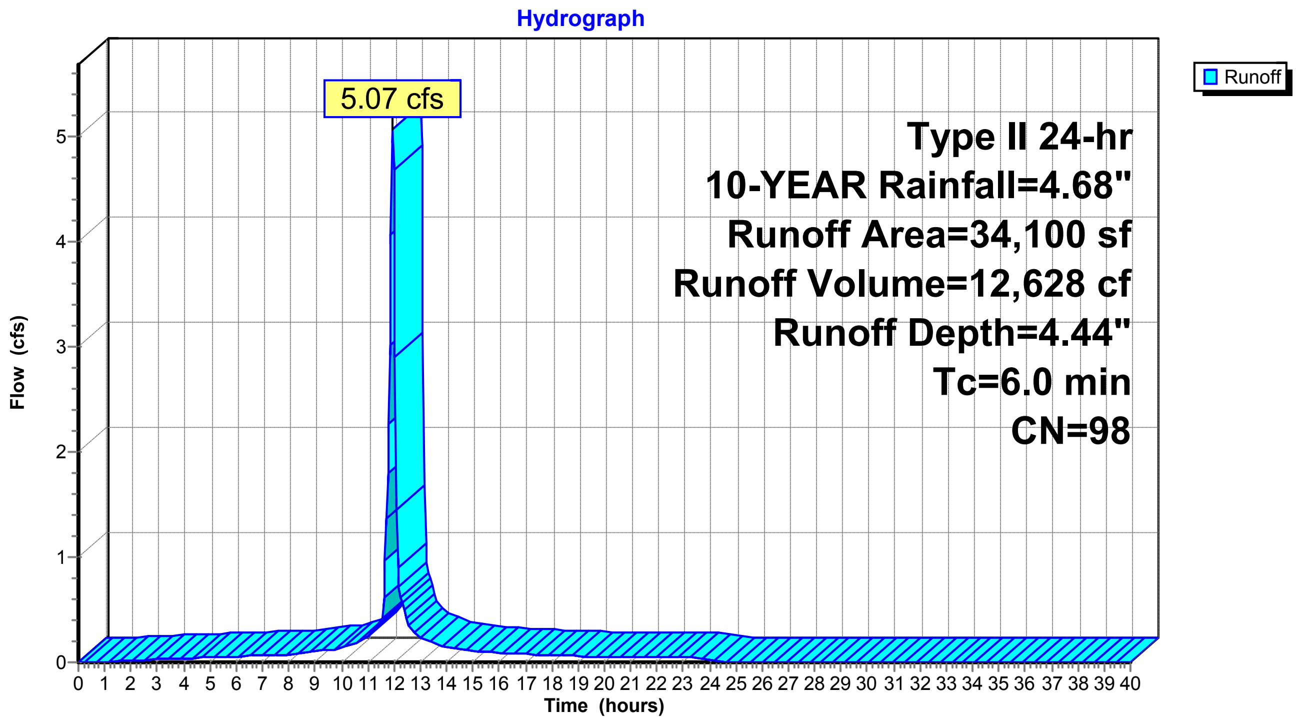
Runoff = 5.07 cfs @ 11.96 hrs, Volume= 12,628 cf, Depth= 4.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
34,100	98	Roofs, HSG C
34,100		100.00% Impervious Area

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

Subcatchment DA-38: DA-38 (Roofs)



Summary for Subcatchment DA-4: DA-4

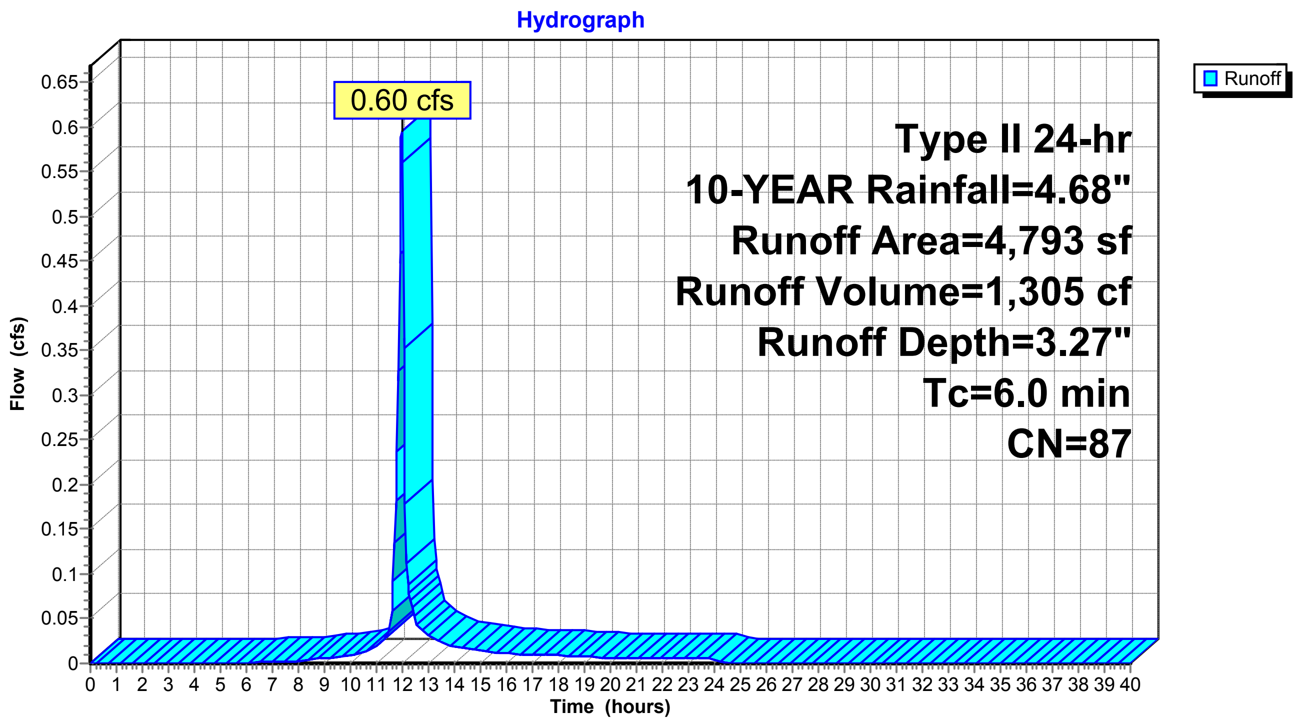
Runoff = 0.60 cfs @ 11.97 hrs, Volume= 1,305 cf, Depth= 3.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
2,165	74	>75% Grass cover, Good, HSG C
0	73	Woods, Fair, HSG C
2,628	98	Paved parking, HSG C
4,793	87	Weighted Average
2,165		45.17% Pervious Area
2,628		54.83% Impervious Area

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

Subcatchment DA-4: DA-4



Summary for Subcatchment DA-5: DA-5

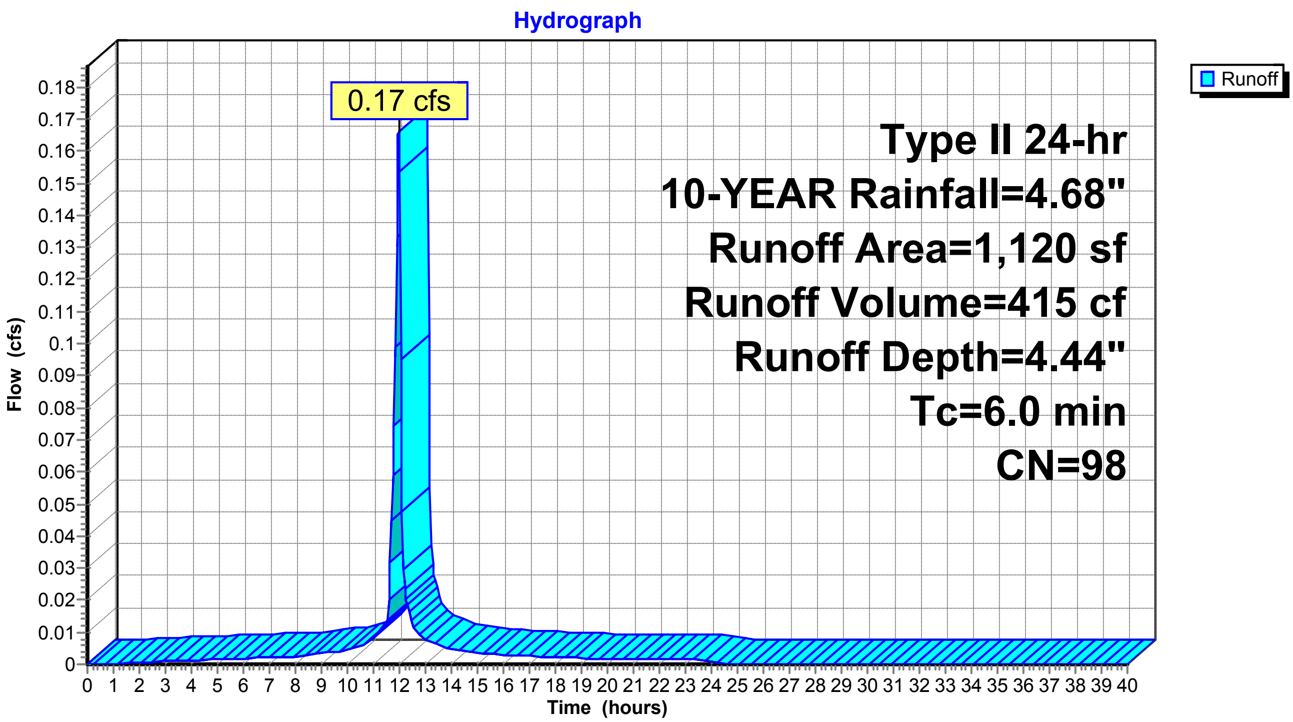
Runoff = 0.17 cfs @ 11.96 hrs, Volume= 415 cf, Depth= 4.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
1,120	98	Paved parking, HSG C
1,120		100.00% Impervious Area

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

Subcatchment DA-5: DA-5



Summary for Subcatchment DA-6: DA-6

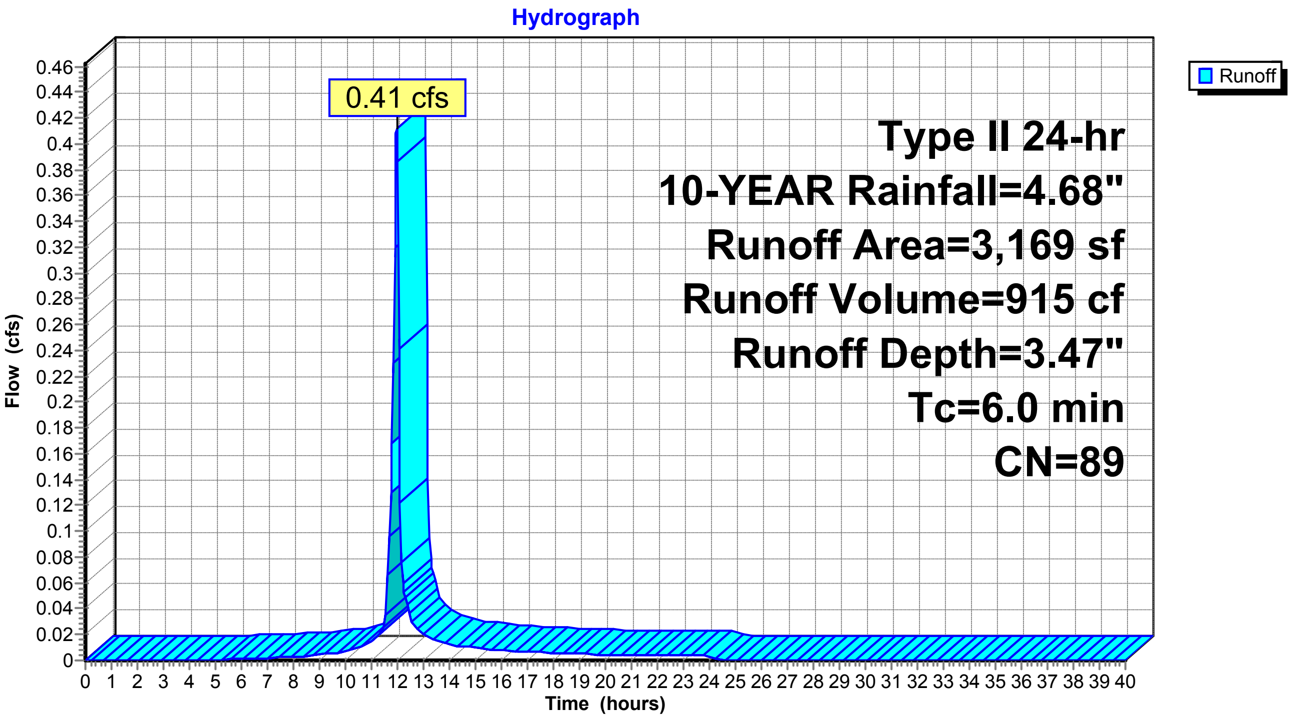
Runoff = 0.41 cfs @ 11.97 hrs, Volume= 915 cf, Depth= 3.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
1,133	74	>75% Grass cover, Good, HSG C
2,036	98	Paved parking, HSG C
3,169	89	Weighted Average
1,133		35.75% Pervious Area
2,036		64.25% Impervious Area

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

Subcatchment DA-6: DA-6



Summary for Subcatchment DA-7: DA-7

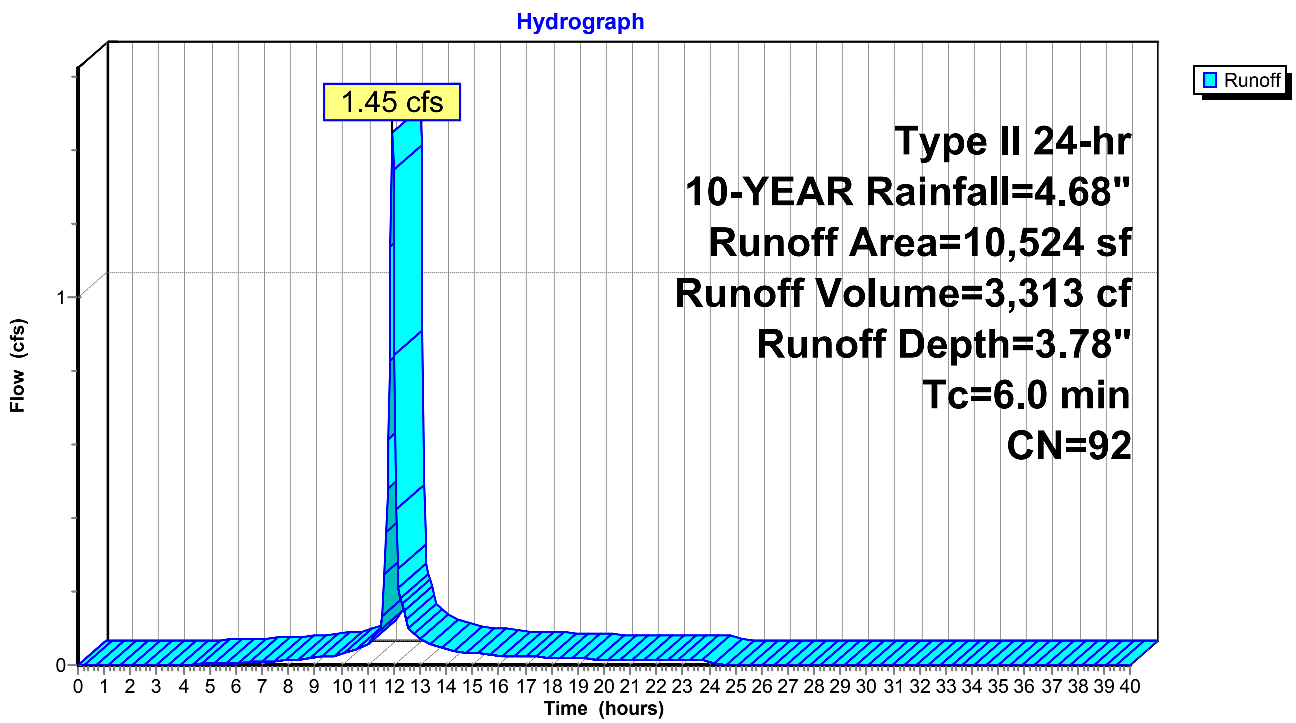
Runoff = 1.45 cfs @ 11.96 hrs, Volume= 3,313 cf, Depth= 3.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
2,543	74	>75% Grass cover, Good, HSG C
7,981	98	Paved parking, HSG C
10,524	92	Weighted Average
2,543		24.16% Pervious Area
7,981		75.84% Impervious Area

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

Subcatchment DA-7: DA-7



Summary for Subcatchment DA-8: DA-8

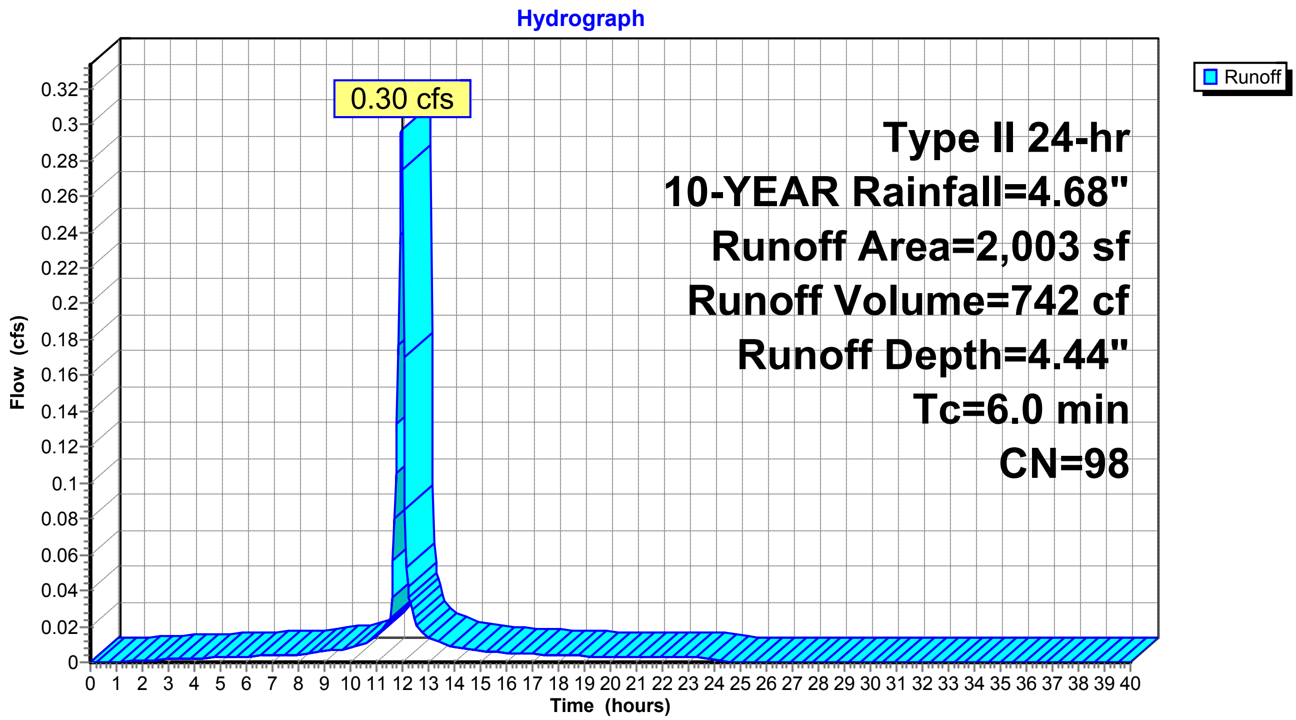
Runoff = 0.30 cfs @ 11.96 hrs, Volume= 742 cf, Depth= 4.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
2,003	98	Paved parking, HSG C
2,003		100.00% Impervious Area

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

Subcatchment DA-8: DA-8



Summary for Subcatchment DA-9: DA-9

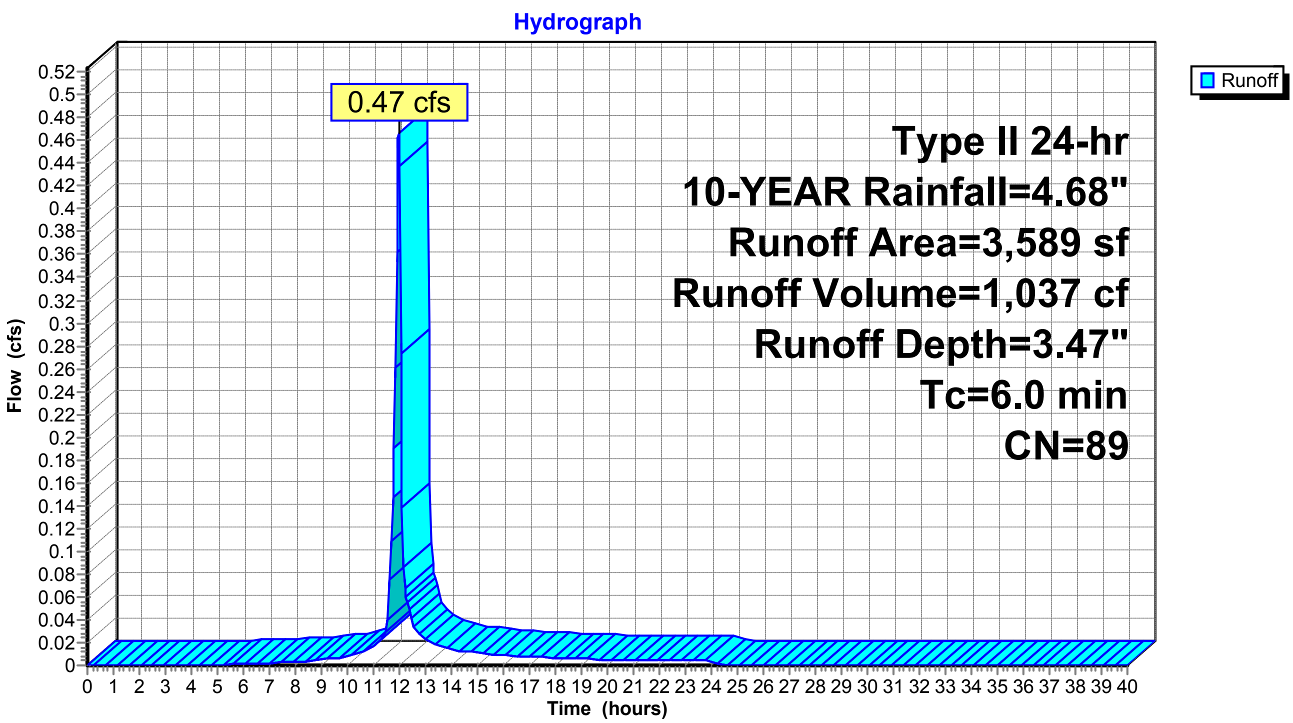
Runoff = 0.47 cfs @ 11.97 hrs, Volume= 1,037 cf, Depth= 3.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YEAR Rainfall=4.68"

Area (sf)	CN	Description
1,275	74	>75% Grass cover, Good, HSG C
2,314	98	Paved parking, HSG C
3,589	89	Weighted Average
1,275		35.53% Pervious Area
2,314		64.47% Impervious Area

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

Subcatchment DA-9: DA-9



Summary for Reach 2R: FLARED END #3

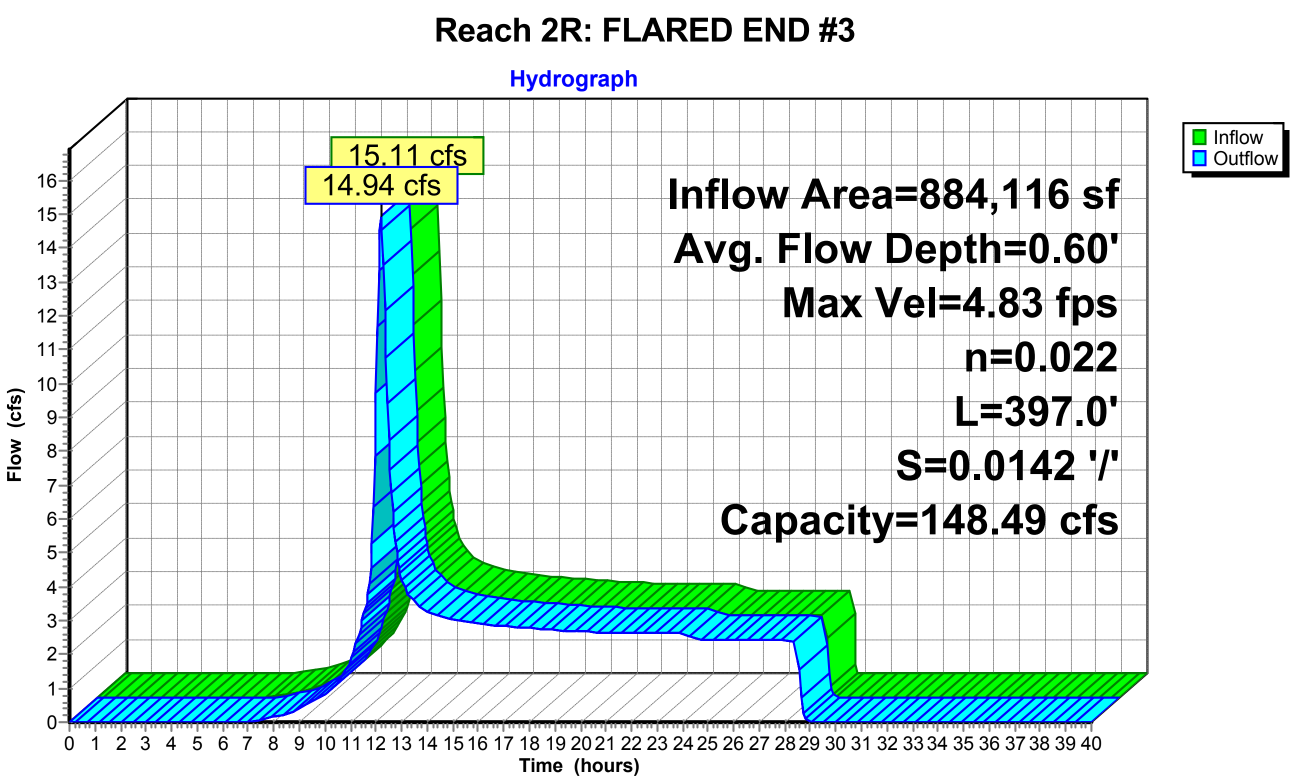
[79] Warning: Submerged Pond CB30 Primary device # 1 INLET by 0.21'

Inflow Area = 884,116 sf, 21.35% Impervious, Inflow Depth = 2.81" for 10-YEAR event
Inflow = 15.11 cfs @ 12.16 hrs, Volume= 207,127 cf
Outflow = 14.94 cfs @ 12.20 hrs, Volume= 207,127 cf, Atten= 1%, Lag= 2.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.83 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 2.22 fps, Avg. Travel Time= 3.0 min

Peak Storage= 1,234 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.60'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 148.49 cfs

4.00' x 2.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 2.0 '/' Top Width= 12.00'
Length= 397.0' Slope= 0.0142 '/'
Inlet Invert= 335.25', Outlet Invert= 329.60'

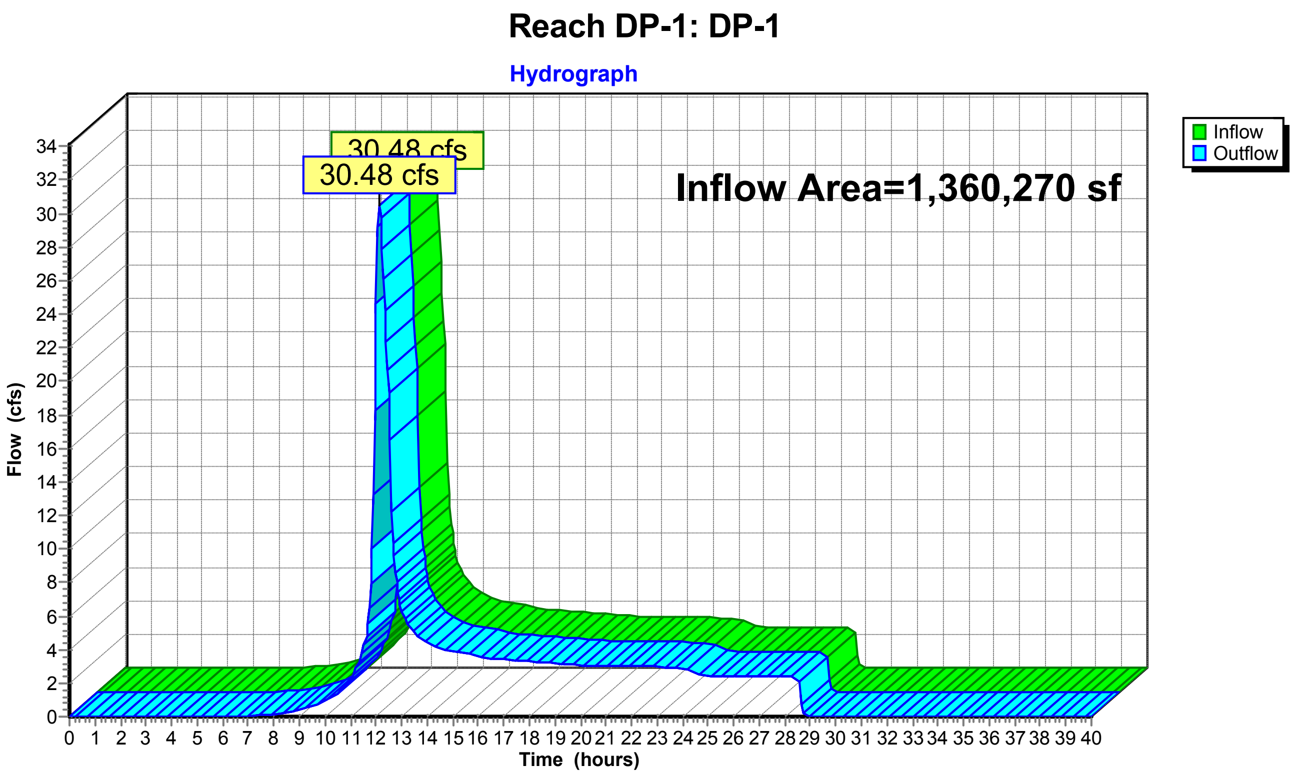


Summary for Reach DP-1: DP-1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1,360,270 sf, 25.67% Impervious, Inflow Depth = 2.42" for 10-YEAR event
Inflow = 30.48 cfs @ 12.12 hrs, Volume= 274,515 cf
Outflow = 30.48 cfs @ 12.12 hrs, Volume= 274,515 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs



Summary for Reach FLARED END #1: FLARED END #1

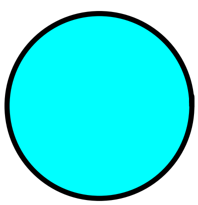
[52] Hint: Inlet/Outlet conditions not evaluated
[55] Hint: Peak inflow is 144% of Manning's capacity
[76] Warning: Detained 2,649 cf (Pond w/culvert advised)

Inflow Area = 244,871 sf, 7.43% Impervious, Inflow Depth = 2.27" for 10-YEAR event
Inflow = 13.13 cfs @ 12.16 hrs, Volume= 46,410 cf
Outflow = 9.10 cfs @ 12.10 hrs, Volume= 46,410 cf, Atten= 31%, Lag= 0.0 min

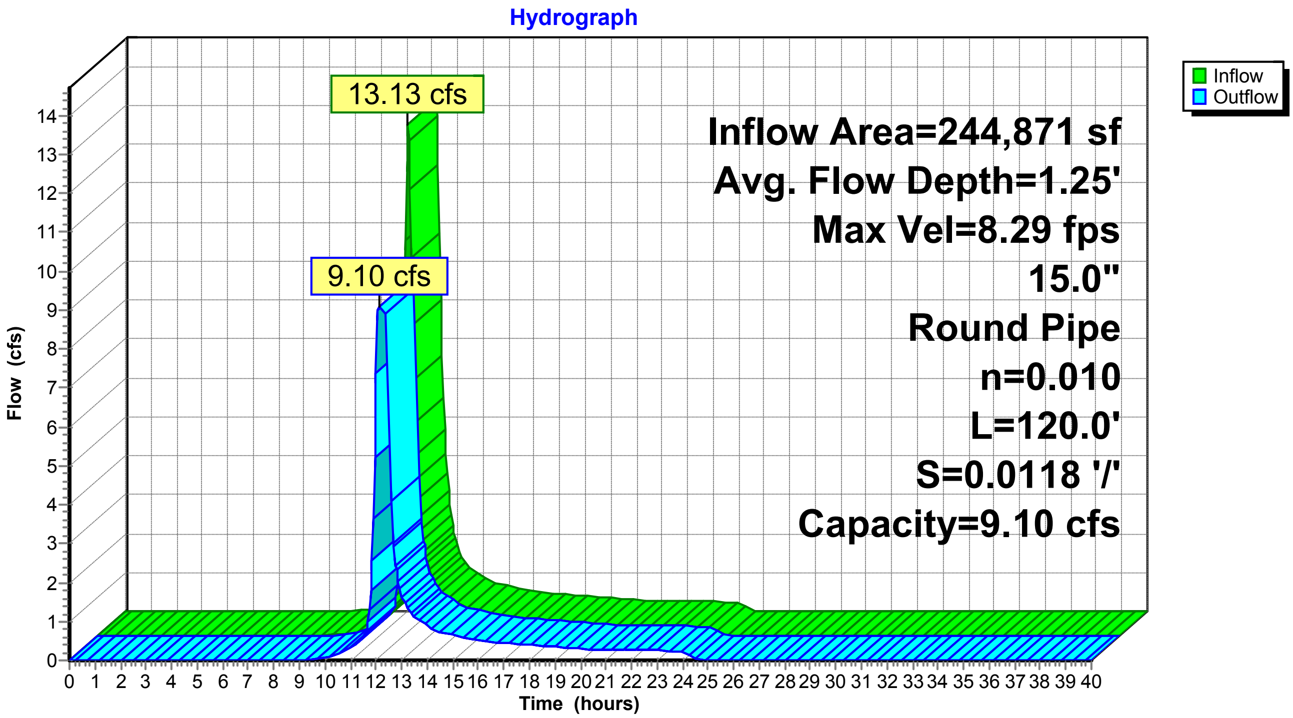
Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.29 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.64 fps, Avg. Travel Time= 0.5 min

Peak Storage= 147 cf @ 12.05 hrs
Average Depth at Peak Storage= 1.25'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.10 cfs

15.0" Round Pipe
n= 0.010
Length= 120.0' Slope= 0.0118 '/'
Inlet Invert= 355.00', Outlet Invert= 353.59'



Reach FLARED END #1: FLARED END #1



Summary for Reach FLARED END #2: FLARED END #2

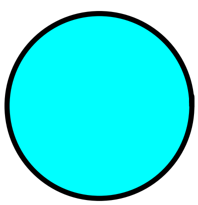
[52] Hint: Inlet/Outlet conditions not evaluated
[55] Hint: Peak inflow is 1535% of Manning's capacity
[76] Warning: Detained 81,119 cf (Pond w/culvert advised)

Inflow Area = 677,156 sf, 19.44% Impervious, Inflow Depth = 2.78" for 10-YEAR event
Inflow = 36.94 cfs @ 12.24 hrs, Volume= 156,985 cf
Outflow = 2.47 cfs @ 11.51 hrs, Volume= 156,992 cf, Atten= 93%, Lag= 0.0 min

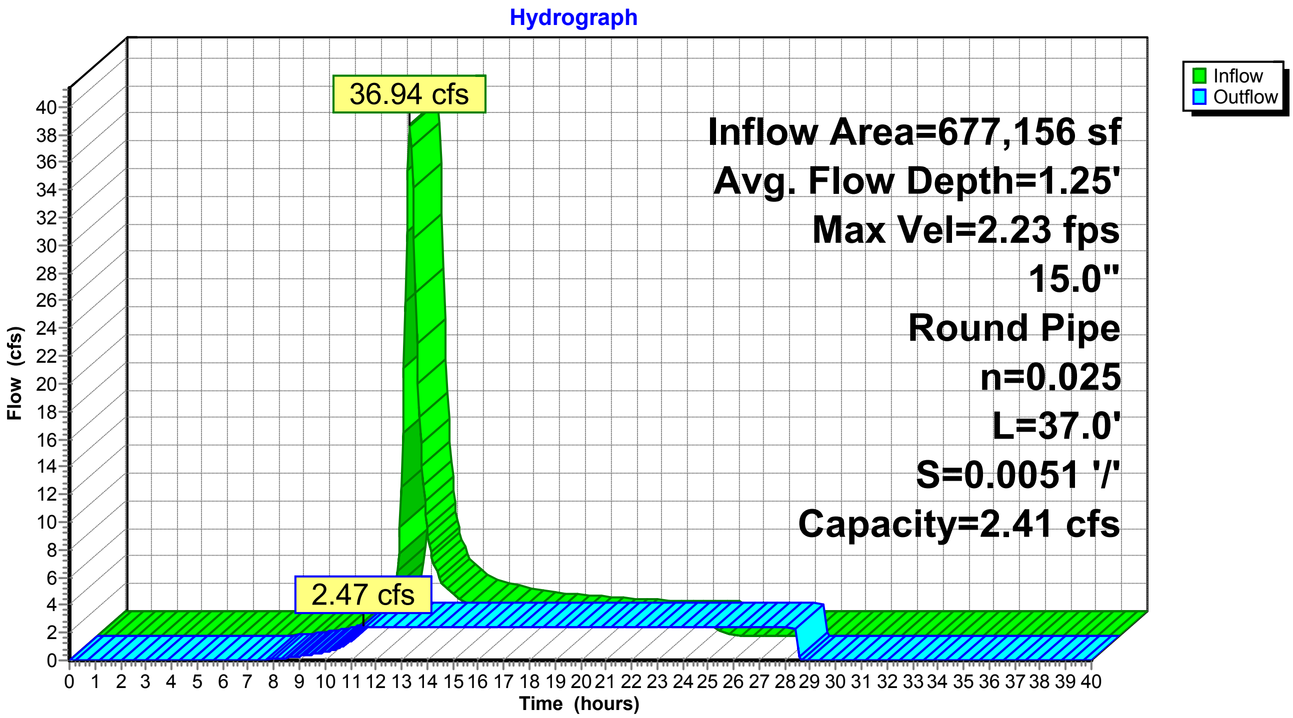
Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.23 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.83 fps, Avg. Travel Time= 0.3 min

Peak Storage= 45 cf @ 11.55 hrs
Average Depth at Peak Storage= 1.25'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 2.41 cfs

15.0" Round Pipe
n= 0.025 Corrugated metal
Length= 37.0' Slope= 0.0051 '/'
Inlet Invert= 336.00', Outlet Invert= 335.81'



Reach FLARED END #2: FLARED END #2



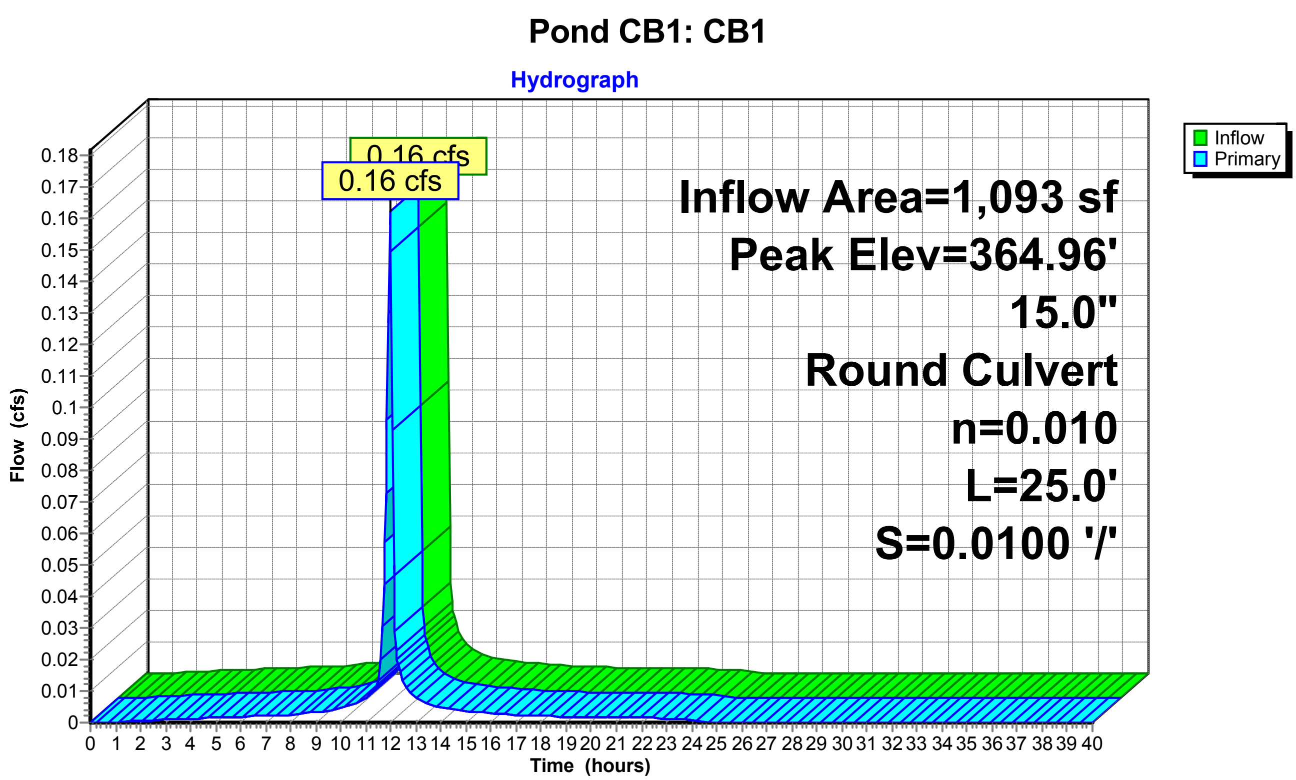
Summary for Pond CB1: CB1

Inflow Area = 1,093 sf,100.00% Impervious, Inflow Depth = 4.44" for 10-YEAR event
Inflow = 0.16 cfs @ 11.96 hrs, Volume= 405 cf
Outflow = 0.16 cfs @ 11.96 hrs, Volume= 405 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.16 cfs @ 11.96 hrs, Volume= 405 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 364.96' @ 11.96 hrs
Flood Elev= 368.04'

Device	Routing	Invert	Outlet Devices
#1	Primary	364.75'	**15.0" Round Culvert** L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 364.75' / 364.50' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=0.16 cfs @ 11.96 hrs HW=364.95' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 0.16 cfs @ 1.21 fps)



Summary for Pond CB10: CB10

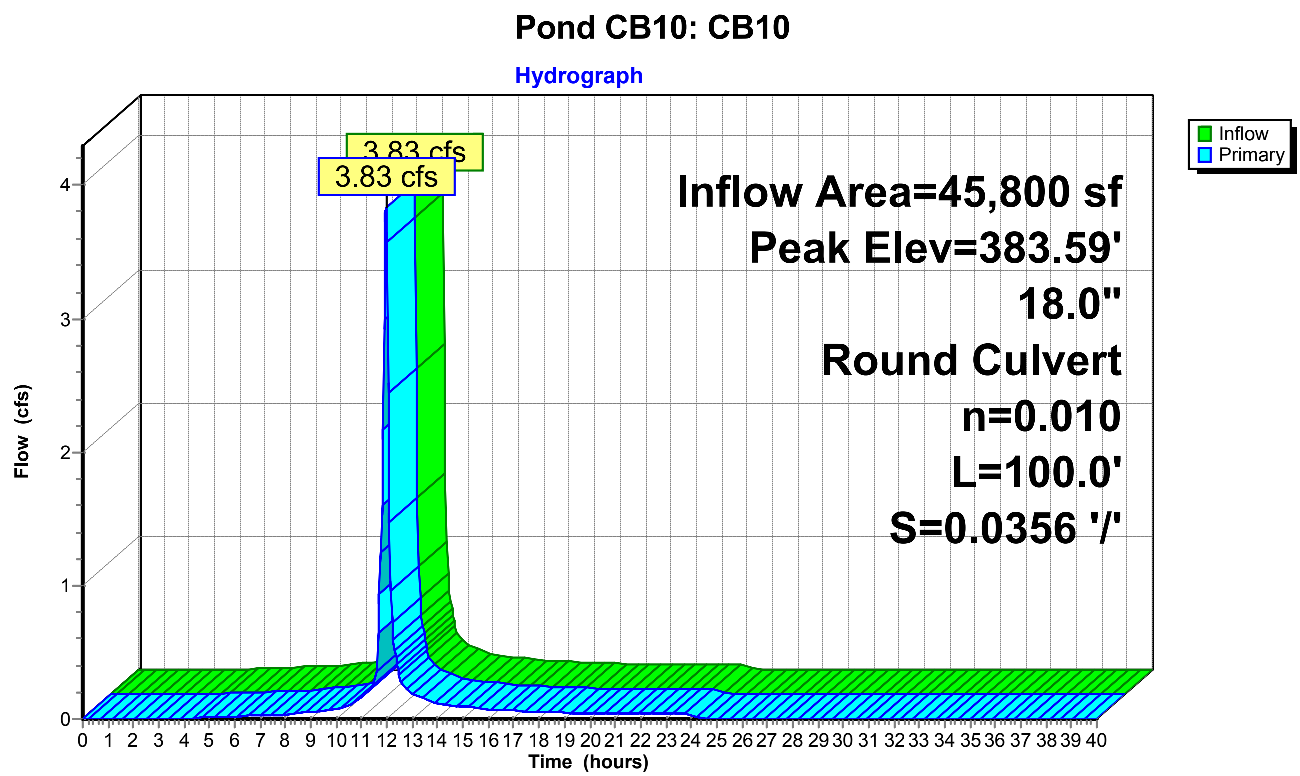
[79] Warning: Submerged Pond CB11 Primary device # 1 INLET by 0.15'

Inflow Area =	45,800 sf,	71.00% Impervious,	Inflow Depth = 2.34"	for 10-YEAR event	
Inflow =	3.83 cfs @	11.96 hrs,	Volume=	8,941 cf	
Outflow =	3.83 cfs @	11.96 hrs,	Volume=	8,941 cf,	Atten= 0%, Lag= 0.0 min
Primary =	3.83 cfs @	11.96 hrs,	Volume=	8,941 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 383.59' @ 11.96 hrs
Flood Elev= 388.01'

Device	Routing	Invert	Outlet Devices
#1	Primary	382.50'	**18.0" Round Culvert** L= 100.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 382.50' / 378.94' S= 0.0356 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=3.73 cfs @ 11.96 hrs HW=383.57' (Free Discharge)
└─**1=Culvert** (Inlet Controls 3.73 cfs @ 2.78 fps)



Summary for Pond CB11: CB11

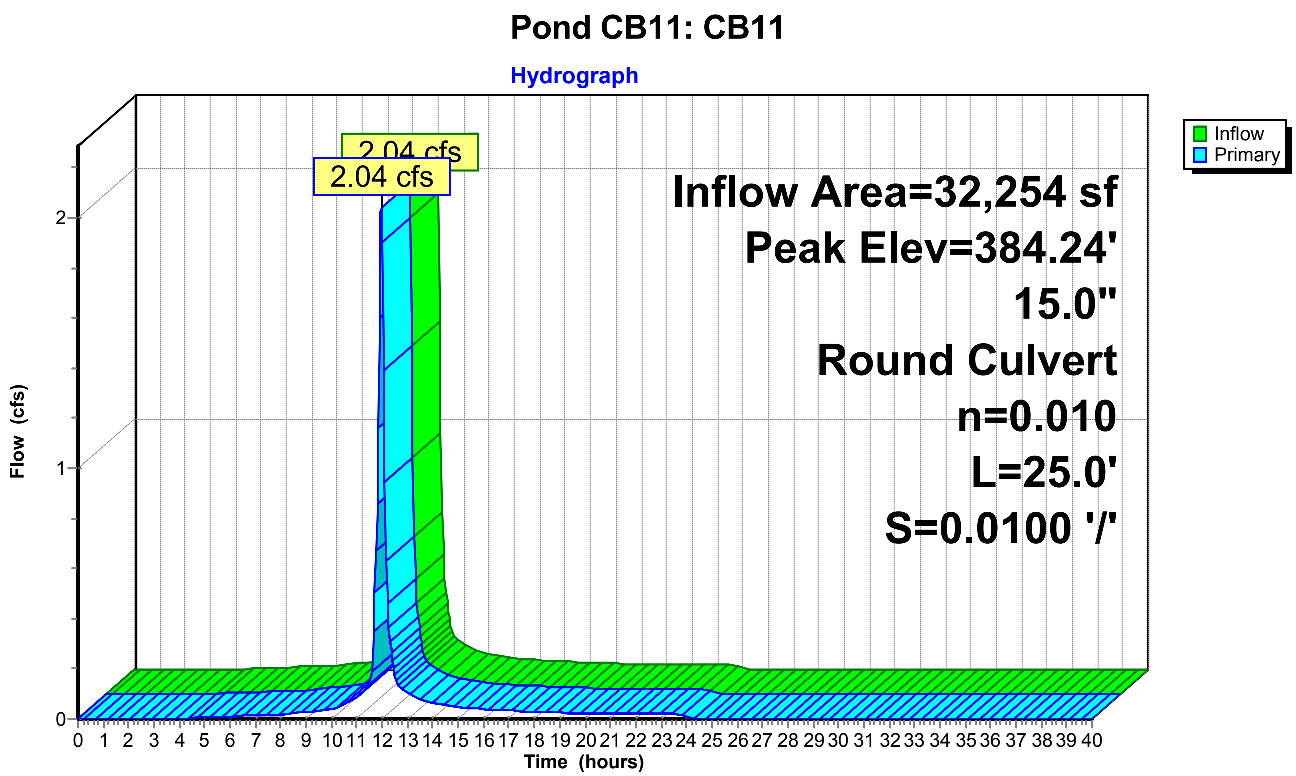
[79] Warning: Submerged Pond CB25 Primary device # 1 OUTLET by 0.81'

Inflow Area = 32,254 sf, 72.32% Impervious, Inflow Depth = 1.81" for 10-YEAR event
Inflow = 2.04 cfs @ 11.96 hrs, Volume= 4,864 cf
Outflow = 2.04 cfs @ 11.96 hrs, Volume= 4,864 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.04 cfs @ 11.96 hrs, Volume= 4,864 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 384.24' @ 11.96 hrs
Flood Elev= 388.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	383.43'	**15.0" Round Culvert** L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 383.43' / 383.18' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=1.99 cfs @ 11.96 hrs HW=384.23' (Free Discharge)
└─**1=Culvert** (Inlet Controls 1.99 cfs @ 2.40 fps)



Summary for Pond CB12: CB12

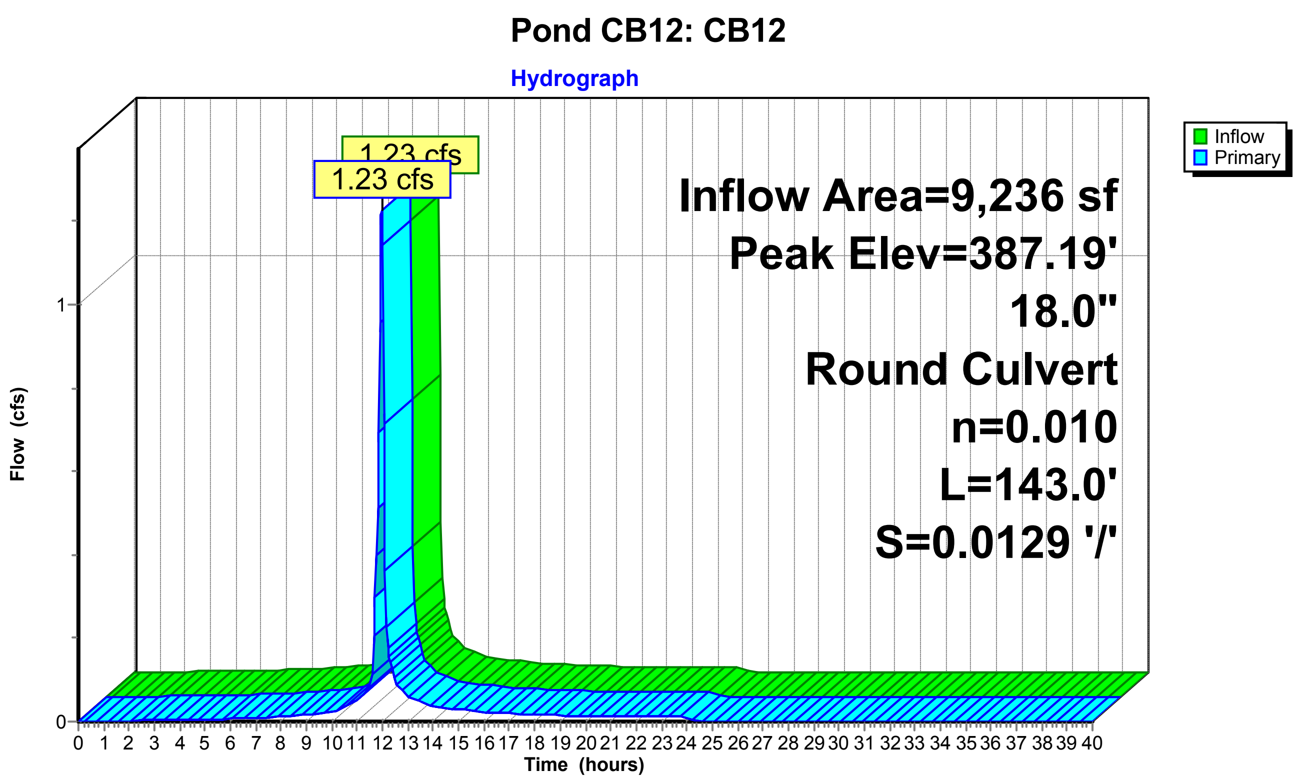
[81] Warning: Exceeded Pond CB13 by 0.07' @ 11.95 hrs
[79] Warning: Submerged Pond CB14 Primary device # 1 OUTLET by 0.35'

Inflow Area =	9,236 sf,	70.69% Impervious,	Inflow Depth = 3.68"	for 10-YEAR event
Inflow =	1.23 cfs @	11.96 hrs, Volume=	2,832 cf	
Outflow =	1.23 cfs @	11.96 hrs, Volume=	2,832 cf, Atten= 0%,	Lag= 0.0 min
Primary =	1.23 cfs @	11.96 hrs, Volume=	2,832 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 387.19' @ 11.96 hrs
Flood Elev= 390.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	386.63'	**18.0" Round Culvert** L= 143.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 386.63' / 384.78' S= 0.0129 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=1.19 cfs @ 11.96 hrs HW=387.19' (Free Discharge)
1=Culvert (Inlet Controls 1.19 cfs @ 2.00 fps)



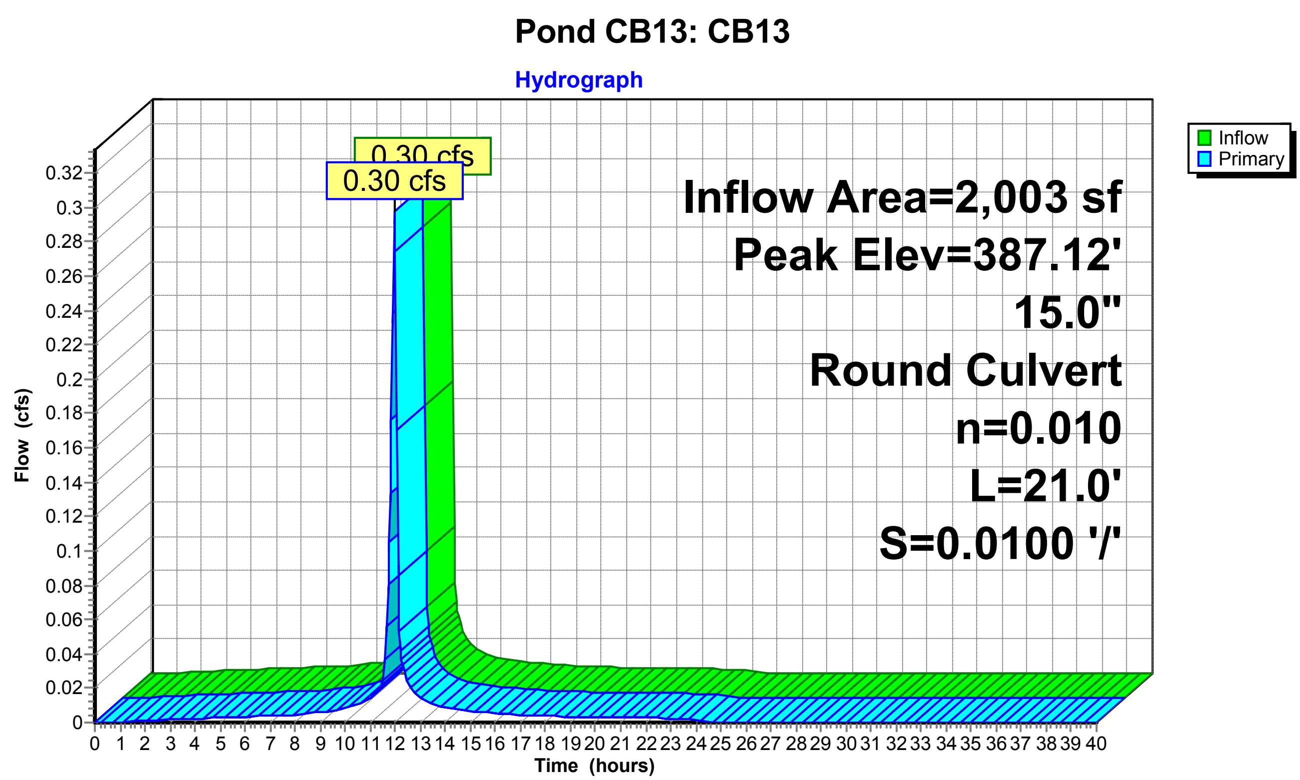
Summary for Pond CB13: CB13

Inflow Area =	2,003 sf,100.00% Impervious,	Inflow Depth = 4.44" for 10-YEAR event			
Inflow =	0.30 cfs @	11.96 hrs,	Volume=	742 cf	
Outflow =	0.30 cfs @	11.96 hrs,	Volume=	742 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.30 cfs @	11.96 hrs,	Volume=	742 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 387.12' @ 11.96 hrs
Flood Elev= 390.11'

Device	Routing	Invert	Outlet Devices
#1	Primary	386.84'	**15.0" Round Culvert** L= 21.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 386.84' / 386.63' S= 0.0100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.29 cfs @ 11.96 hrs HW=387.12' (Free Discharge)
1=Culvert (Inlet Controls 0.29 cfs @ 1.42 fps)



Summary for Pond CB14: CB14

[79] Warning: Submerged Pond CB15 Primary device # 1 INLET by 0.09'

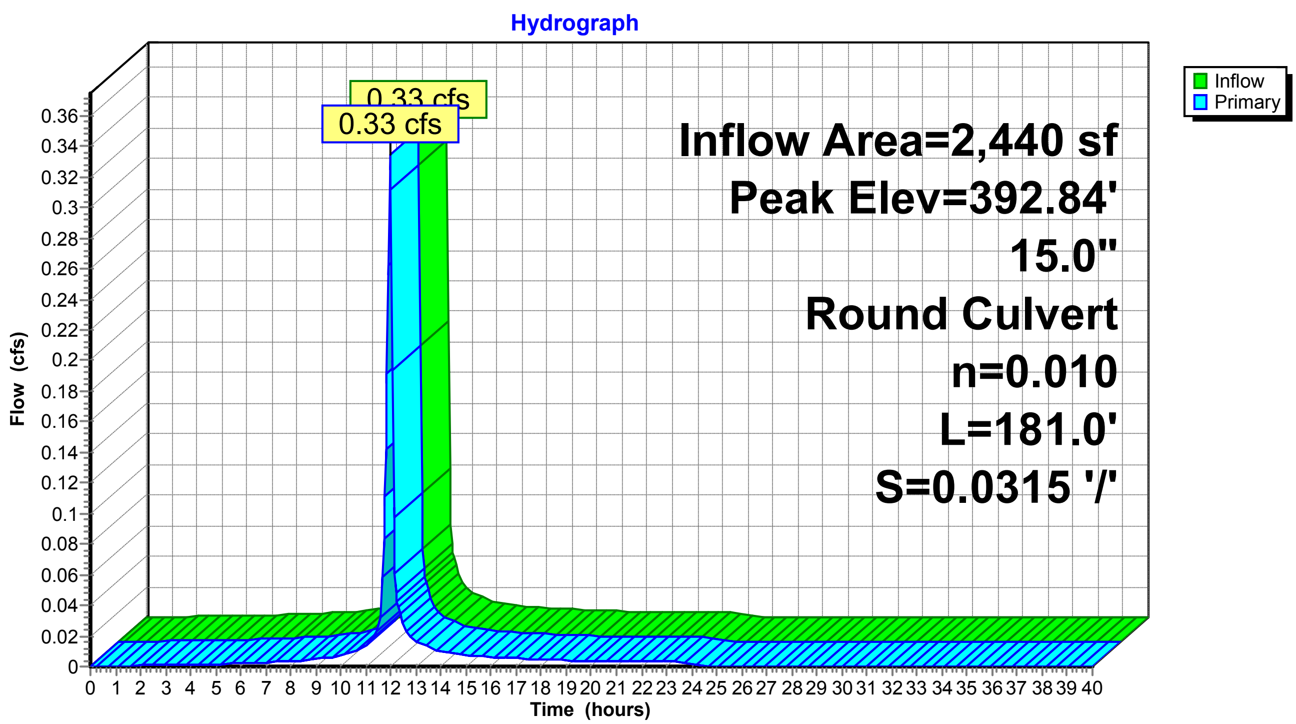
Inflow Area =	2,440 sf,	77.79% Impervious,	Inflow Depth = 3.86"	for 10-YEAR event
Inflow =	0.33 cfs @	11.96 hrs, Volume=	785 cf	
Outflow =	0.33 cfs @	11.96 hrs, Volume=	785 cf, Atten= 0%, Lag= 0.0 min	
Primary =	0.33 cfs @	11.96 hrs, Volume=	785 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 392.84' @ 11.96 hrs
Flood Elev= 396.07'

Device	Routing	Invert	Outlet Devices
#1	Primary	392.54'	**15.0" Round Culvert** L= 181.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 392.54' / 386.84' S= 0.0315 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.32 cfs @ 11.96 hrs HW=392.84' (Free Discharge)
↑**1=Culvert** (Inlet Controls 0.32 cfs @ 1.46 fps)

Pond CB14: CB14



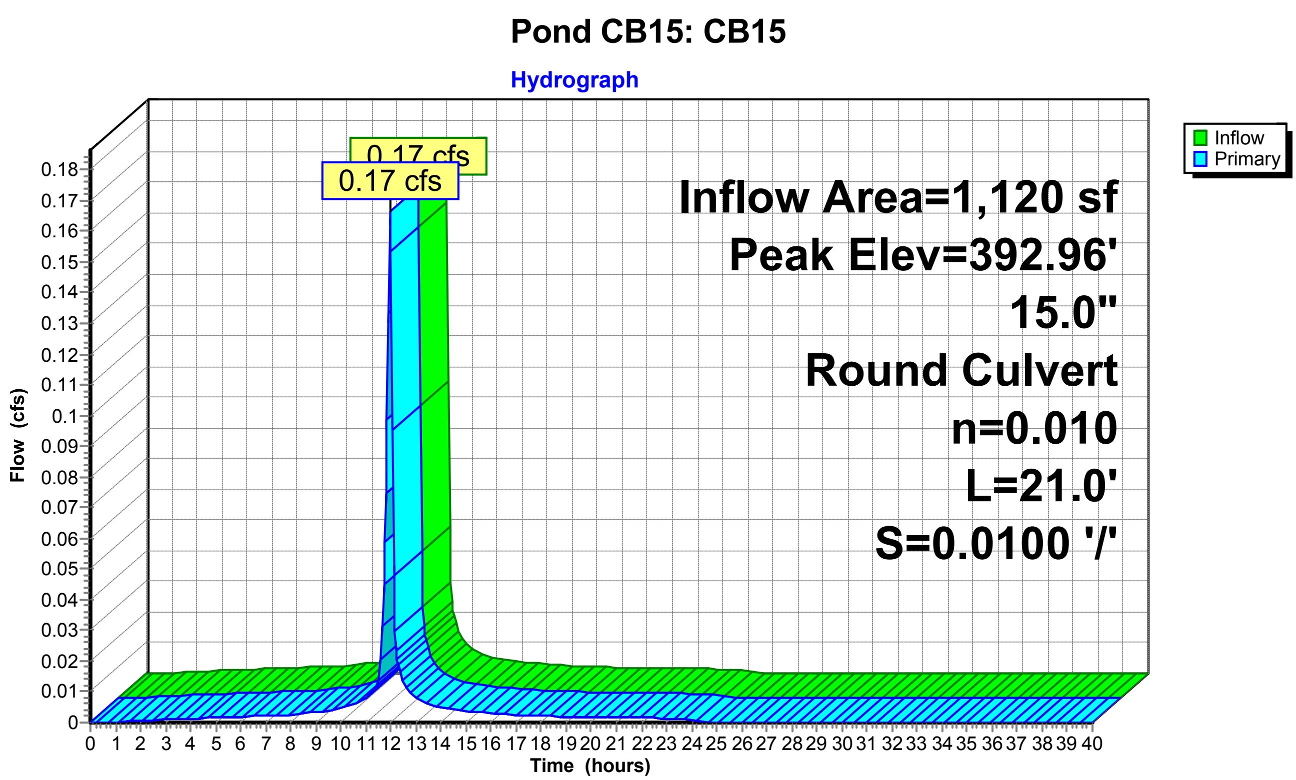
Summary for Pond CB15: CB15

Inflow Area =	1,120 sf,100.00% Impervious,	Inflow Depth = 4.44"	for 10-YEAR event	
Inflow =	0.17 cfs @	11.96 hrs, Volume=	415 cf	
Outflow =	0.17 cfs @	11.96 hrs, Volume=	415 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.17 cfs @	11.96 hrs, Volume=	415 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 392.96' @ 11.96 hrs
Flood Elev= 396.05'

Device	Routing	Invert	Outlet Devices
#1	Primary	392.75'	**15.0" Round 15" HDPE** L= 21.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 392.75' / 392.54' S= 0.0100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.16 cfs @ 11.96 hrs HW=392.96' (Free Discharge)
└─**1=15" HDPE** (Inlet Controls 0.16 cfs @ 1.22 fps)



Summary for Pond CB16: CB16

[79] Warning: Submerged Pond DMH5 Primary device # 1 OUTLET by 1.14'

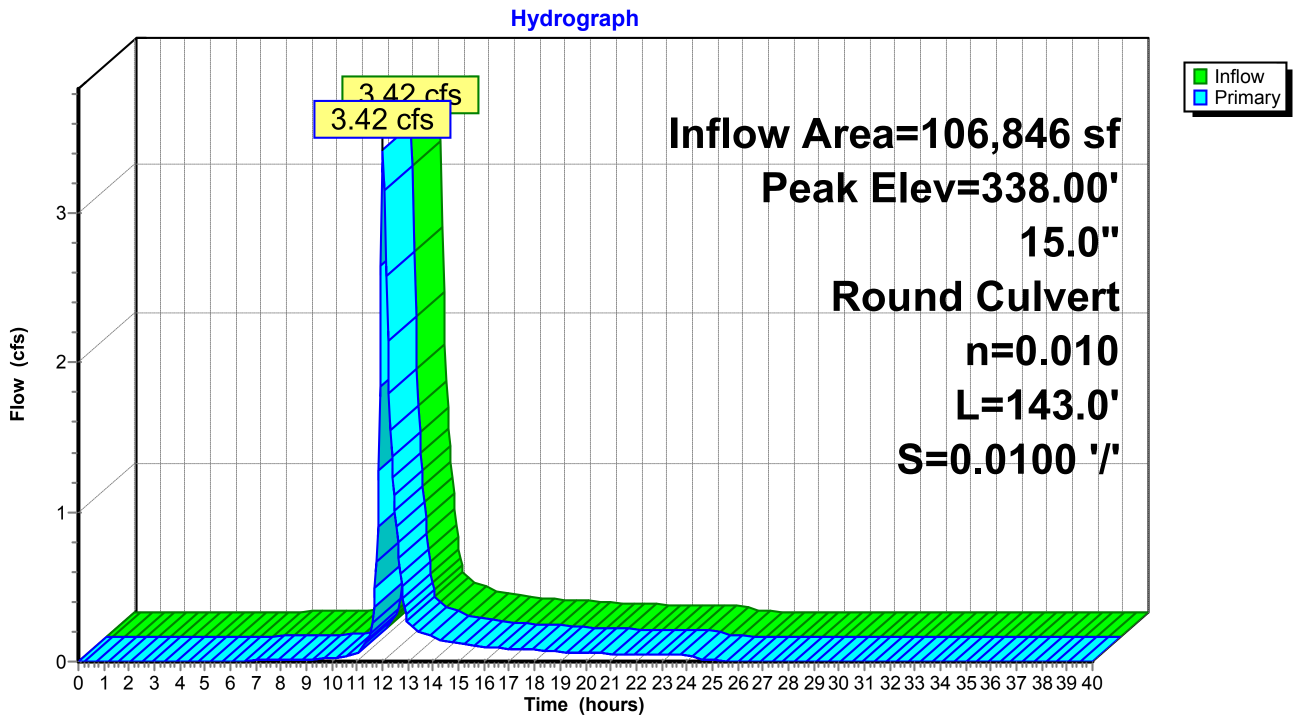
Inflow Area =	106,846 sf, 63.53% Impervious,	Inflow Depth = 1.19"	for 10-YEAR event
Inflow =	3.42 cfs @ 12.02 hrs, Volume=	10,583 cf	
Outflow =	3.42 cfs @ 12.02 hrs, Volume=	10,583 cf, Atten= 0%, Lag= 0.0 min	
Primary =	3.42 cfs @ 12.02 hrs, Volume=	10,583 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 338.00' @ 12.02 hrs
Flood Elev= 352.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	336.84'	**15.0" Round Culvert** L= 143.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 336.84' / 335.41' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=3.35 cfs @ 12.02 hrs HW=337.97' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 3.35 cfs @ 2.86 fps)

Pond CB16: CB16



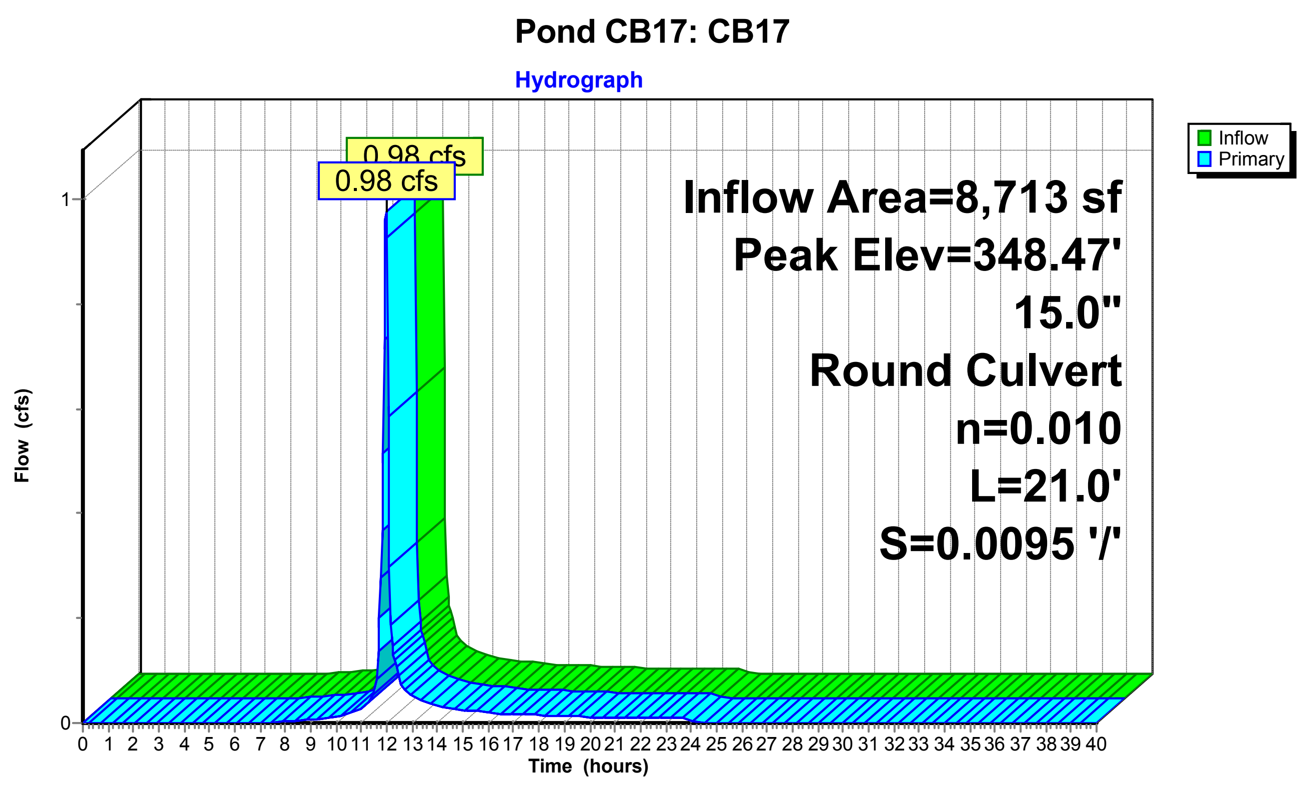
Summary for Pond CB17: CB17

Inflow Area = 8,713 sf, 36.19% Impervious, Inflow Depth = 2.89" for 10-YEAR event
Inflow = 0.98 cfs @ 11.97 hrs, Volume= 2,096 cf
Outflow = 0.98 cfs @ 11.97 hrs, Volume= 2,096 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.98 cfs @ 11.97 hrs, Volume= 2,096 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 348.47' @ 11.97 hrs
Flood Elev= 352.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	347.94'	**15.0" Round Culvert** L= 21.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 347.94' / 347.74' S= 0.0095 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=0.95 cfs @ 11.97 hrs HW=348.46' (Free Discharge)
1=Culvert (Inlet Controls 0.95 cfs @ 1.94 fps)



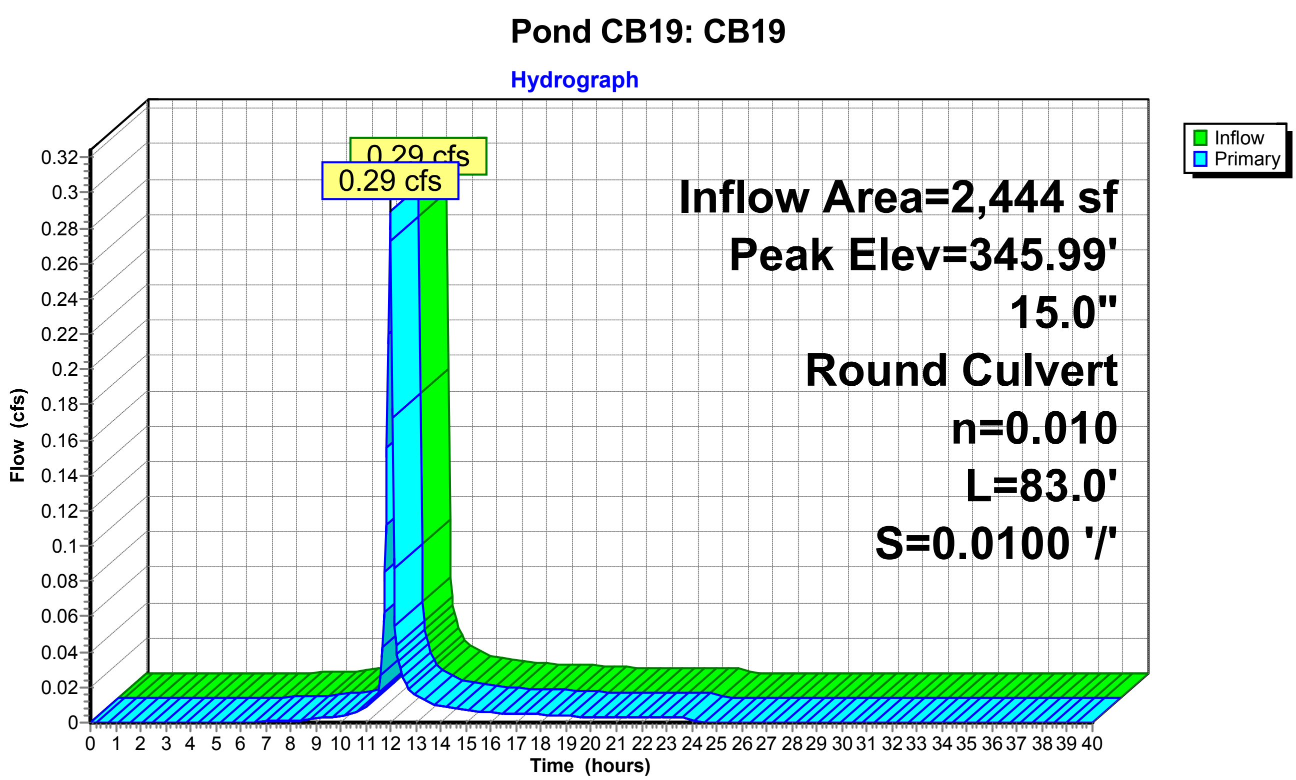
Summary for Pond CB19: CB19

Inflow Area = 2,444 sf, 45.42% Impervious, Inflow Depth = 3.07" for 10-YEAR event
Inflow = 0.29 cfs @ 11.97 hrs, Volume= 626 cf
Outflow = 0.29 cfs @ 11.97 hrs, Volume= 626 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.29 cfs @ 11.97 hrs, Volume= 626 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 345.99' @ 11.97 hrs
Flood Elev= 349.19'

Device	Routing	Invert	Outlet Devices
#1	Primary	345.71'	**15.0" Round Culvert** L= 83.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 345.71' / 344.88' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=0.28 cfs @ 11.97 hrs HW=345.98' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.28 cfs @ 1.41 fps)



Summary for Pond CB2: CB2

[79] Warning: Submerged Pond CB1 Primary device # 1 INLET by 0.07'

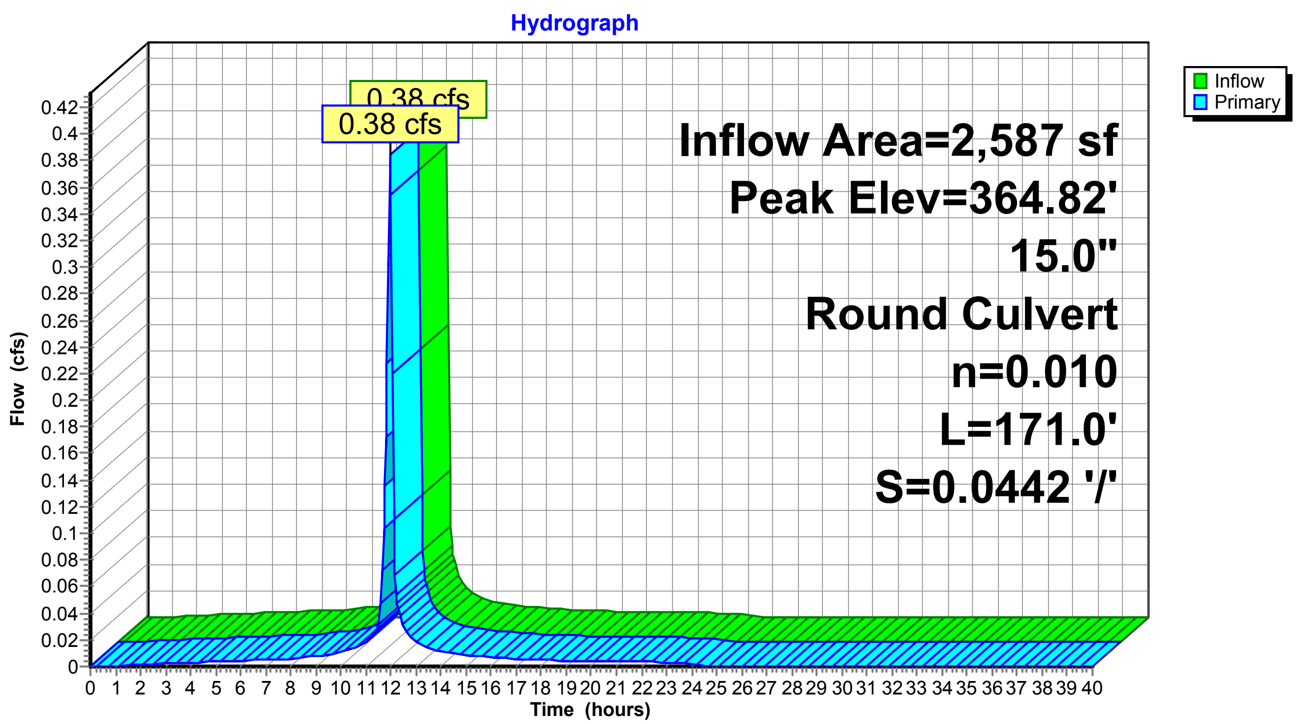
Inflow Area = 2,587 sf,100.00% Impervious, Inflow Depth = 4.44" for 10-YEAR event
Inflow = 0.38 cfs @ 11.96 hrs, Volume= 958 cf
Outflow = 0.38 cfs @ 11.96 hrs, Volume= 958 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.38 cfs @ 11.96 hrs, Volume= 958 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 364.82' @ 11.96 hrs
Flood Elev= 368.03'

Device	Routing	Invert	Outlet Devices
#1	Primary	364.50'	**15.0" Round Culvert** L= 171.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 364.50' / 356.95' S= 0.0442 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=0.37 cfs @ 11.96 hrs HW=364.82' (Free Discharge)
1=Culvert (Inlet Controls 0.37 cfs @ 1.52 fps)

Pond CB2: CB2



Summary for Pond CB22: CB22

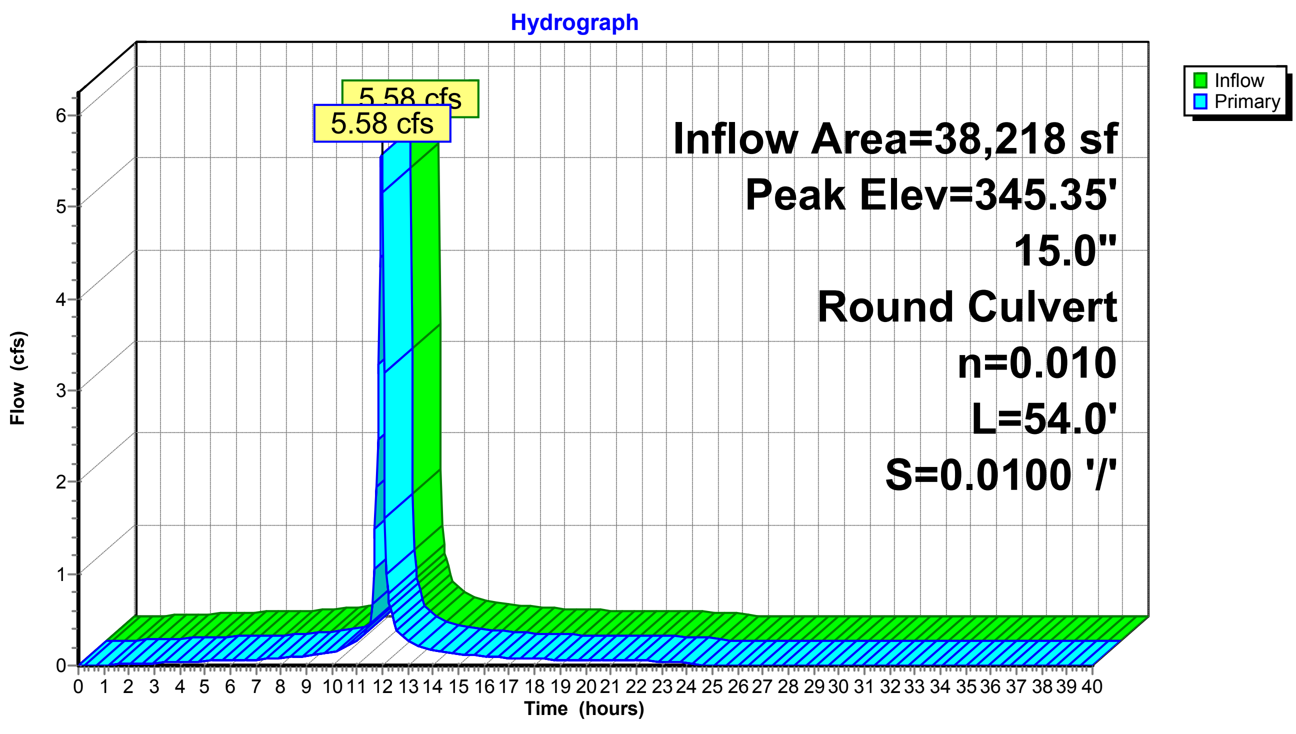
Inflow Area =	38,218 sf,	94.94% Impervious,	Inflow Depth = 4.32"	for 10-YEAR event	
Inflow =	5.58 cfs @	11.96 hrs,	Volume=	13,749 cf	
Outflow =	5.58 cfs @	11.96 hrs,	Volume=	13,749 cf,	Atten= 0%, Lag= 0.0 min
Primary =	5.58 cfs @	11.96 hrs,	Volume=	13,749 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 345.35' @ 11.96 hrs
Flood Elev= 346.73'

Device	Routing	Invert	Outlet Devices
#1	Primary	343.30'	**15.0" Round Culvert** L= 54.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 343.30' / 342.76' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=5.45 cfs @ 11.96 hrs HW=345.29' (Free Discharge)
└─**1=Culvert** (Inlet Controls 5.45 cfs @ 4.44 fps)

Pond CB22: CB22



Summary for Pond CB25: CB25

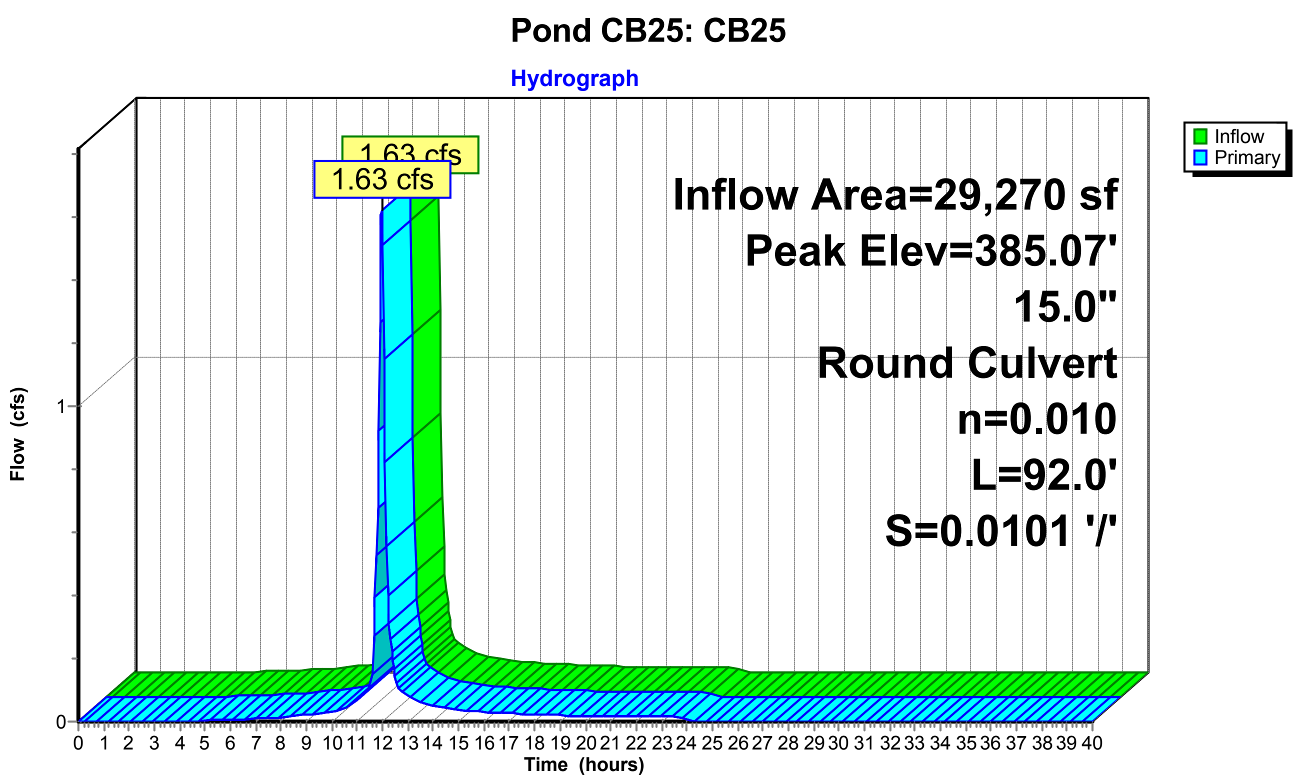
[81] Warning: Exceeded Pond CB26 by 0.98' @ 11.95 hrs
[79] Warning: Submerged Pond CB32 Primary device # 1 OUTLET by 0.70'

Inflow Area = 29,270 sf, 71.52% Impervious, Inflow Depth = 1.60" for 10-YEAR event
Inflow = 1.63 cfs @ 11.96 hrs, Volume= 3,898 cf
Outflow = 1.63 cfs @ 11.96 hrs, Volume= 3,898 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.63 cfs @ 11.96 hrs, Volume= 3,898 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 385.07' @ 11.96 hrs
Flood Elev= 387.66'

Device	Routing	Invert	Outlet Devices
#1	Primary	384.36'	**15.0" Round Culvert** L= 92.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 384.36' / 383.43' S= 0.0101 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=1.58 cfs @ 11.96 hrs HW=385.06' (Free Discharge)
└─**1=Culvert** (Inlet Controls 1.58 cfs @ 2.25 fps)



Summary for Pond CB26: PP-6

Inflow Area = 3,589 sf, 64.47% Impervious, Inflow Depth = 3.47" for 10-YEAR event
Inflow = 0.47 cfs @ 11.97 hrs, Volume= 1,037 cf
Outflow = 0.25 cfs @ 11.90 hrs, Volume= 1,037 cf, Atten= 46%, Lag= 0.0 min
Discarded = 0.25 cfs @ 11.90 hrs, Volume= 1,037 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 384.14' @ 12.06 hrs Surf.Area= 2,200 sf Storage= 127 cf
Flood Elev= 388.26' Surf.Area= 2,200 sf Storage= 3,080 cf

Plug-Flow detention time= 3.5 min calculated for 1,035 cf (100% of inflow)
Center-of-Mass det. time= 3.5 min (797.1 - 793.6)

Volume	Invert	Avail.Storage	Storage Description
#1	384.00'	3,080 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 7,700 cf Overall x 40.0% Voids

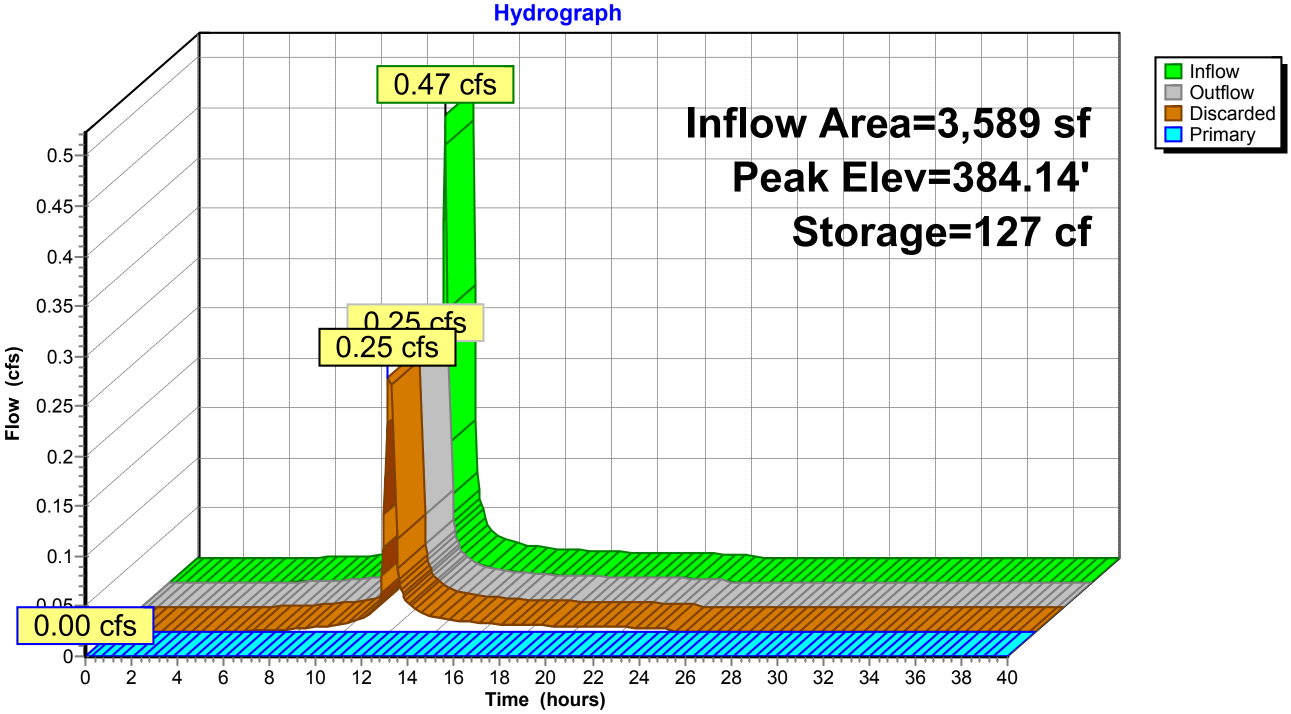
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.00	2,200	0	0
387.50	2,200	7,700	7,700

Device	Routing	Invert	Outlet Devices
#1	Primary	384.96'	**15.0" Round Culvert** L= 41.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 384.96' / 384.36' S= 0.0146 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#2	Discarded	384.00'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.25 cfs @ 11.90 hrs HW=384.05' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 0.25 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=384.00' (Free Discharge)
└─**1=Culvert** (Controls 0.00 cfs)

Pond CB26: PP-6



Summary for Pond CB27: CB27

Inflow Area = 10,524 sf, 75.84% Impervious, Inflow Depth = 3.78" for 10-YEAR event
Inflow = 1.45 cfs @ 11.96 hrs, Volume= 3,313 cf
Outflow = 1.44 cfs @ 11.97 hrs, Volume= 3,313 cf, Atten= 1%, Lag= 0.5 min
Discarded = 0.26 cfs @ 11.97 hrs, Volume= 591 cf
Primary = 1.18 cfs @ 11.97 hrs, Volume= 2,722 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 388.03' @ 11.97 hrs Surf.Area= 2,800 sf Storage= 31 cf
Flood Elev= 390.54' Surf.Area= 2,800 sf Storage= 2,845 cf

Plug-Flow detention time= 0.4 min calculated for 3,308 cf (100% of inflow)
Center-of-Mass det. time= 0.4 min (781.9 - 781.5)

Volume	Invert	Avail.Storage	Storage Description
#1	388.00'	3,920 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 9,800 cf Overall x 40.0% Voids

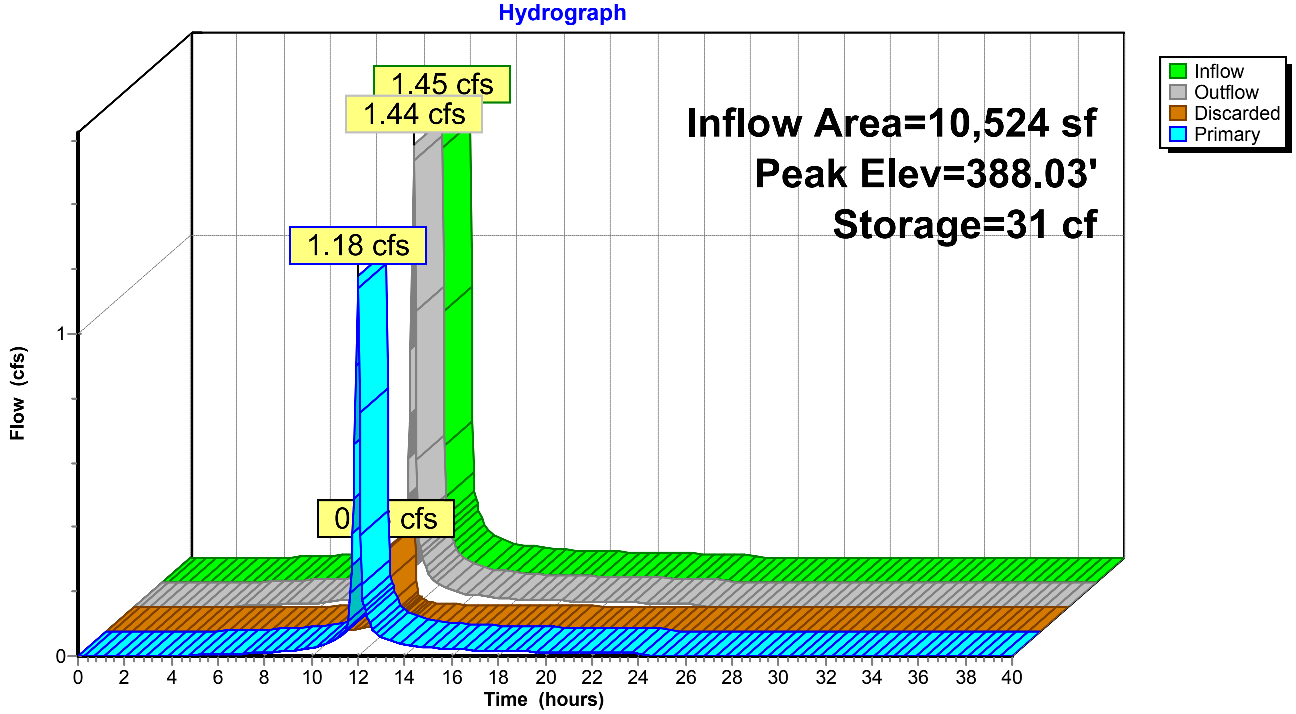
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
388.00	2,800	0	0
391.50	2,800	9,800	9,800

Device	Routing	Invert	Outlet Devices
#1	Primary	387.36'	**15.0" Round Culvert** L= 22.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 387.36' / 387.14' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#2	Discarded	388.00'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.32 cfs @ 11.97 hrs HW=388.03' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 0.32 cfs)

Primary OutFlow Max=1.46 cfs @ 11.97 hrs HW=388.03' (Free Discharge)
└─**1=Culvert** (Inlet Controls 1.46 cfs @ 2.20 fps)

Pond CB27: CB27



Summary for Pond CB28: CB28

Inflow Area = 3,169 sf, 64.25% Impervious, Inflow Depth = 3.47" for 10-YEAR event
Inflow = 0.41 cfs @ 11.97 hrs, Volume= 915 cf
Outflow = 0.28 cfs @ 12.04 hrs, Volume= 915 cf, Atten= 32%, Lag= 4.5 min
Discarded = 0.23 cfs @ 11.90 hrs, Volume= 871 cf
Primary = 0.05 cfs @ 12.04 hrs, Volume= 45 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 388.11' @ 12.04 hrs Surf.Area= 2,000 sf Storage= 88 cf
Flood Elev= 391.82' Surf.Area= 2,000 sf Storage= 2,800 cf

Plug-Flow detention time= 2.7 min calculated for 915 cf (100% of inflow)
Center-of-Mass det. time= 2.7 min (796.3 - 793.6)

Volume	Invert	Avail.Storage	Storage Description
#1	388.00'	2,800 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 7,000 cf Overall x 40.0% Voids

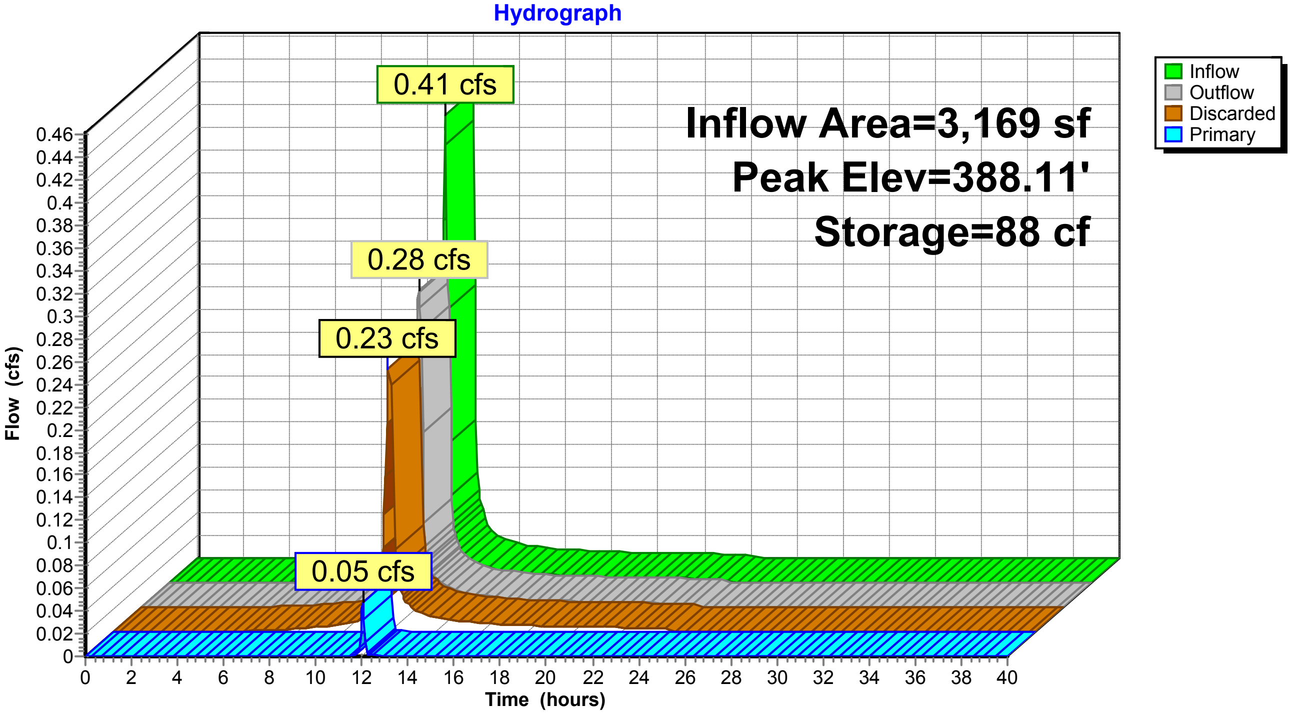
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
388.00	2,000	0	0
391.50	2,000	7,000	7,000

Device	Routing	Invert	Outlet Devices
#1	Primary	388.00'	**15.0" Round Culvert** L= 39.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 388.00' / 387.61' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#2	Discarded	388.00'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.23 cfs @ 11.90 hrs HW=388.04' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=0.05 cfs @ 12.04 hrs HW=388.11' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 0.05 cfs @ 0.88 fps)

Pond CB28: CB28



Summary for Pond CB29: CB29

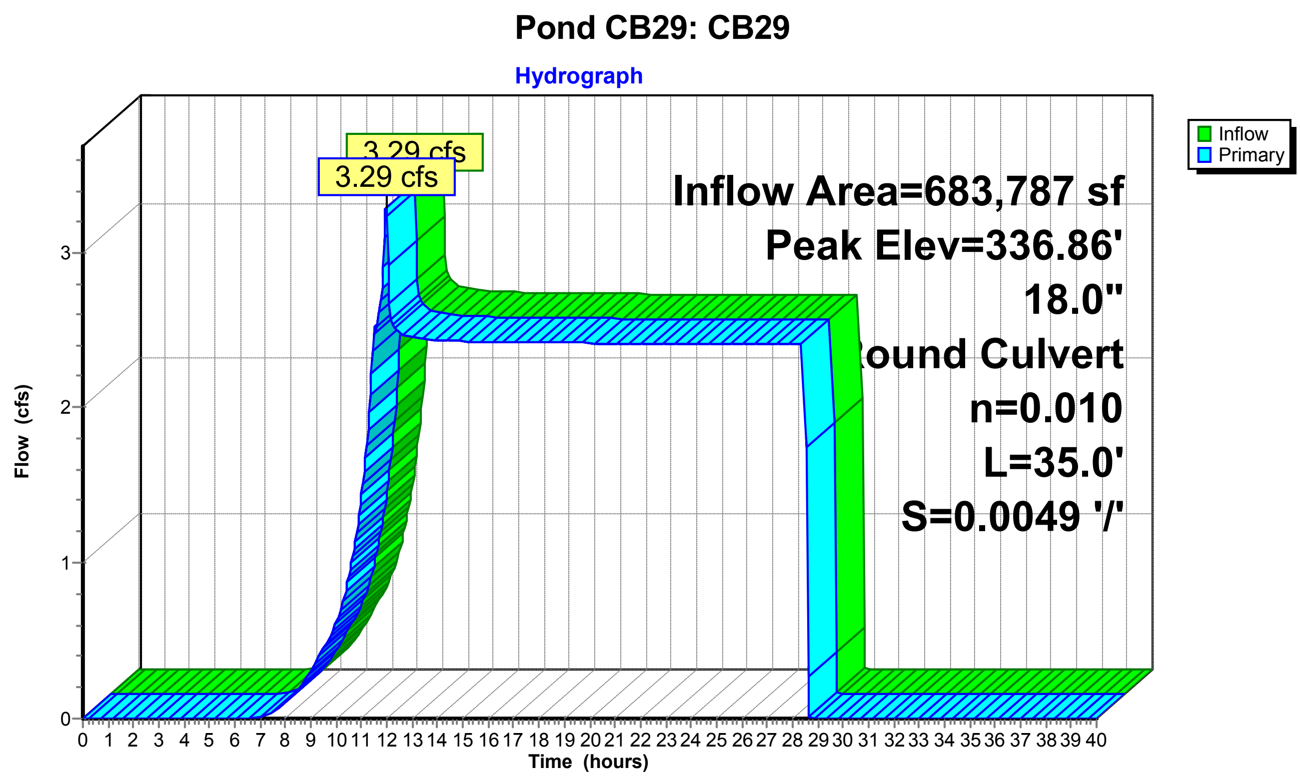
[62] Hint: Exceeded Reach FLARED END #2 OUTLET depth by 0.06' @ 28.60 hrs

Inflow Area = 683,787 sf, 19.88% Impervious, Inflow Depth = 2.79" for 10-YEAR event
Inflow = 3.29 cfs @ 11.96 hrs, Volume= 158,964 cf
Outflow = 3.29 cfs @ 11.96 hrs, Volume= 158,964 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.29 cfs @ 11.96 hrs, Volume= 158,964 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 336.86' @ 11.96 hrs
Flood Elev= 338.57'

Device	Routing	Invert	Outlet Devices
#1	Primary	335.81'	**18.0" Round CULVERT** L= 35.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 335.81' / 335.64' S= 0.0049 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.26 cfs @ 11.96 hrs HW=336.85' (Free Discharge)
└─**1=CULVERT** (Barrel Controls 3.26 cfs @ 3.50 fps)



Summary for Pond CB3: CB3

[79] Warning: Submerged Pond CB2 Primary device # 1 OUTLET by 0.44'

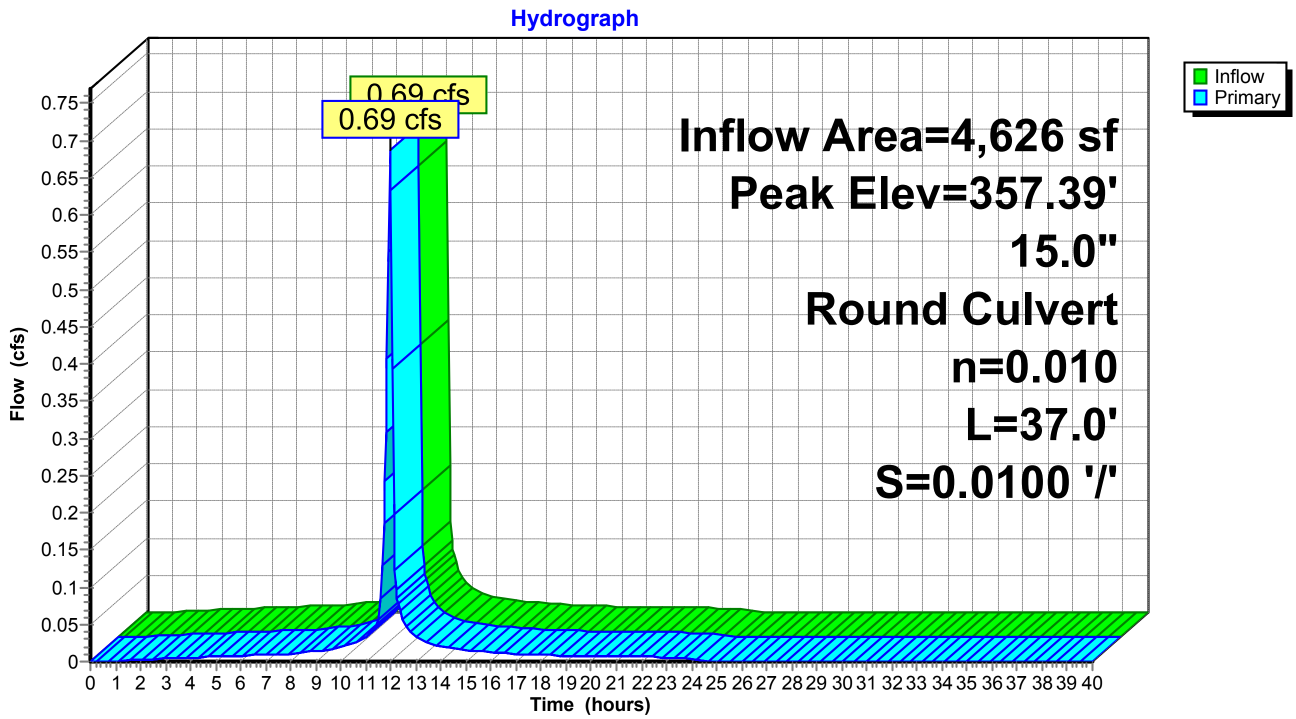
Inflow Area =	4,626 sf,100.00% Impervious,	Inflow Depth = 4.44"	for 10-YEAR event	
Inflow =	0.69 cfs @	11.96 hrs, Volume=	1,713 cf	
Outflow =	0.69 cfs @	11.96 hrs, Volume=	1,713 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.69 cfs @	11.96 hrs, Volume=	1,713 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 357.39' @ 11.96 hrs
Flood Elev= 360.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	356.95'	**15.0" Round Culvert** L= 37.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 356.95' / 356.58' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=0.67 cfs @ 11.96 hrs HW=357.38' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.67 cfs @ 1.77 fps)

Pond CB3: CB3



Summary for Pond CB30: CB30

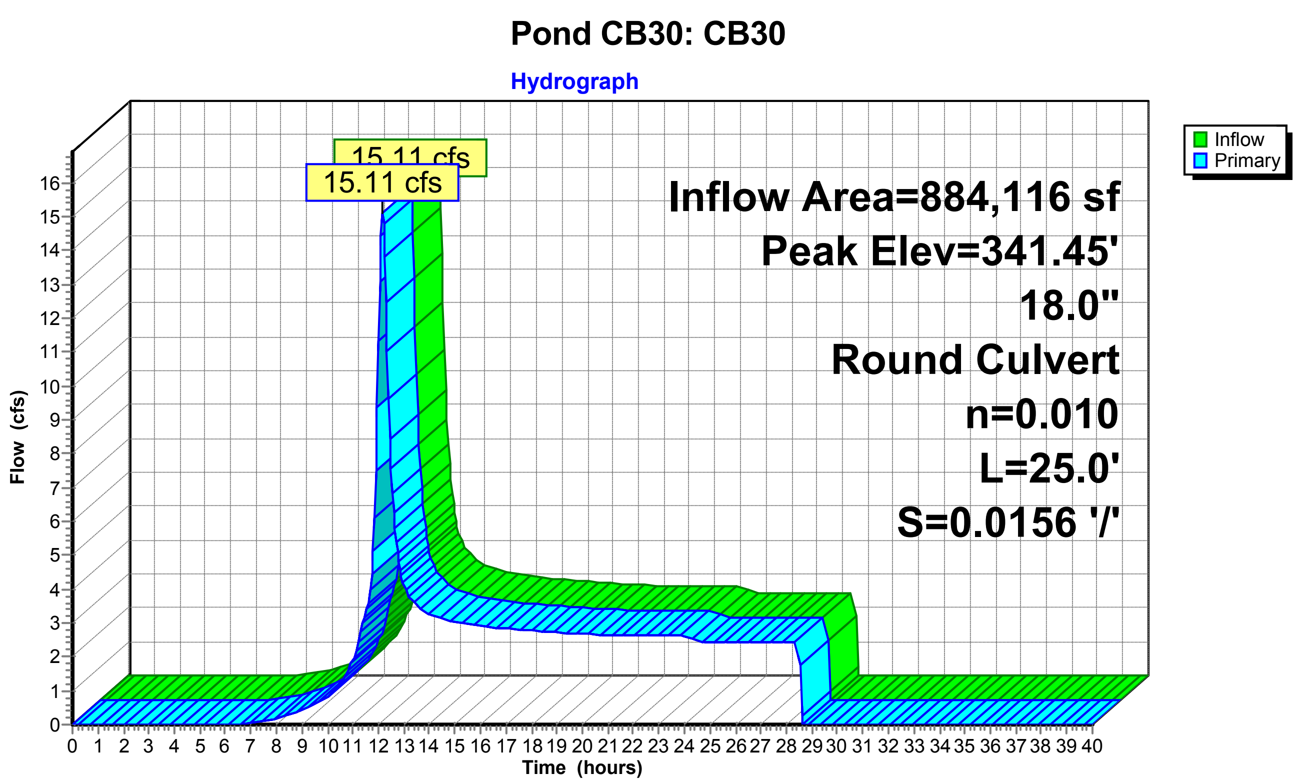
[58] Hint: Peaked 3.06' above defined flood level
[81] Warning: Exceeded Pond CB29 by 4.72' @ 12.15 hrs
[79] Warning: Submerged Pond DMH#10 Primary device # 1 INLET by 3.74'

Inflow Area =	884,116 sf,	21.35% Impervious,	Inflow Depth = 2.81"	for 10-YEAR event
Inflow =	15.11 cfs @	12.16 hrs, Volume=	207,127 cf	
Outflow =	15.11 cfs @	12.16 hrs, Volume=	207,127 cf, Atten= 0%, Lag= 0.0 min	
Primary =	15.11 cfs @	12.16 hrs, Volume=	207,127 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 341.45' @ 12.16 hrs
Flood Elev= 338.39'

Device	Routing	Invert	Outlet Devices
#1	Primary	335.64'	**18.0" Round Culvert** L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 335.64' / 335.25' S= 0.0156 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=15.03 cfs @ 12.16 hrs HW=341.40' (Free Discharge)
└─**1=Culvert** (Inlet Controls 15.03 cfs @ 8.51 fps)



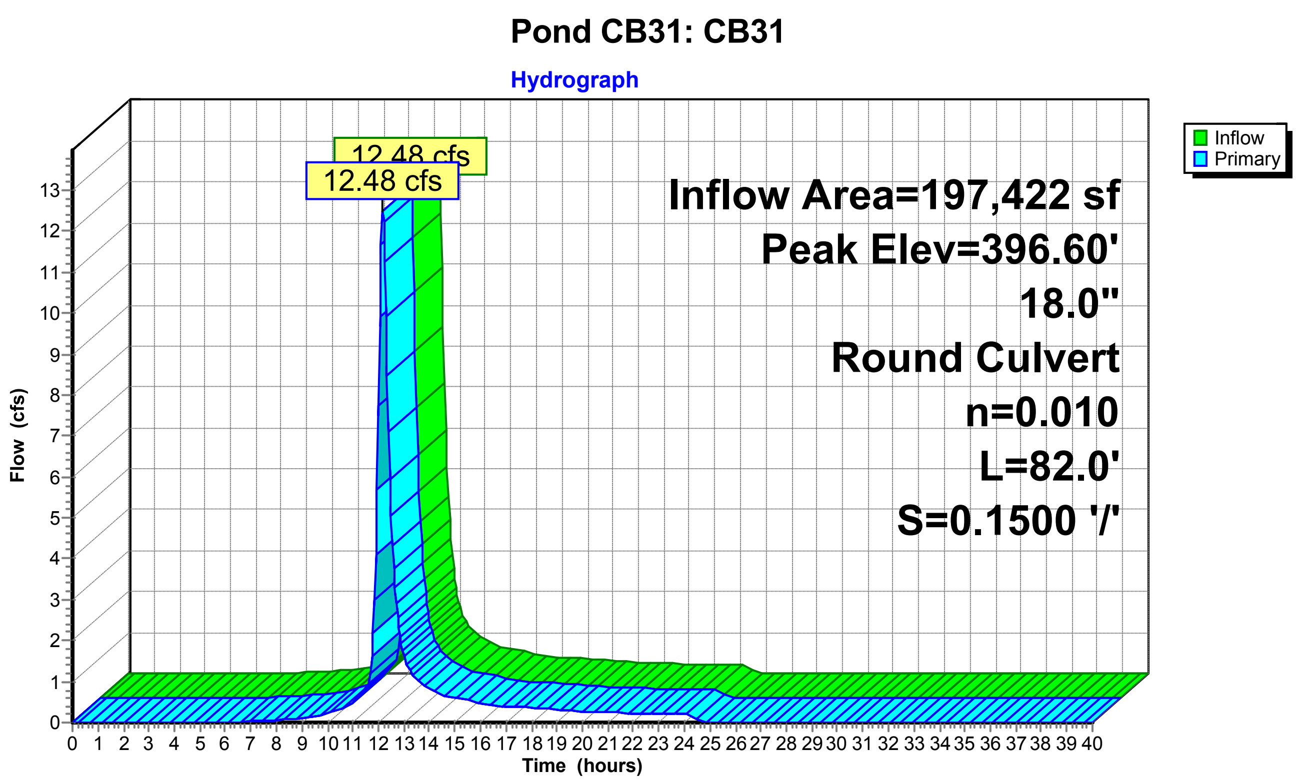
Summary for Pond CB31: CB31

Inflow Area = 197,422 sf, 25.73% Impervious, Inflow Depth = 2.87" for 10-YEAR event
Inflow = 12.48 cfs @ 12.16 hrs, Volume= 47,274 cf
Outflow = 12.48 cfs @ 12.16 hrs, Volume= 47,274 cf, Atten= 0%, Lag= 0.0 min
Primary = 12.48 cfs @ 12.16 hrs, Volume= 47,274 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 396.60' @ 12.16 hrs
Flood Elev= 406.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	392.40'	**18.0" Round Culvert** L= 82.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 392.40' / 380.10' S= 0.1500 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=12.38 cfs @ 12.16 hrs HW=396.55' (Free Discharge)
1=Culvert (Inlet Controls 12.38 cfs @ 7.01 fps)



Summary for Pond CB32: PP-7

[79] Warning: Submerged Pond DMH7 Primary device # 1 OUTLET by 0.31'

Inflow Area = 13,693 sf, 73.15% Impervious, Inflow Depth = 2.42" for 10-YEAR event
Inflow = 1.23 cfs @ 11.98 hrs, Volume= 2,767 cf
Outflow = 0.49 cfs @ 12.11 hrs, Volume= 2,767 cf, Atten= 60%, Lag= 7.8 min
Discarded = 0.14 cfs @ 11.65 hrs, Volume= 2,536 cf
Primary = 0.35 cfs @ 12.11 hrs, Volume= 230 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 385.76' @ 12.11 hrs Surf.Area= 1,200 sf Storage= 843 cf

Plug-Flow detention time= 29.7 min calculated for 2,763 cf (100% of inflow)
Center-of-Mass det. time= 29.7 min (811.2 - 781.5)

Volume	Invert	Avail.Storage	Storage Description
#1	384.00'	1,680 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 4,200 cf Overall x 40.0% Voids

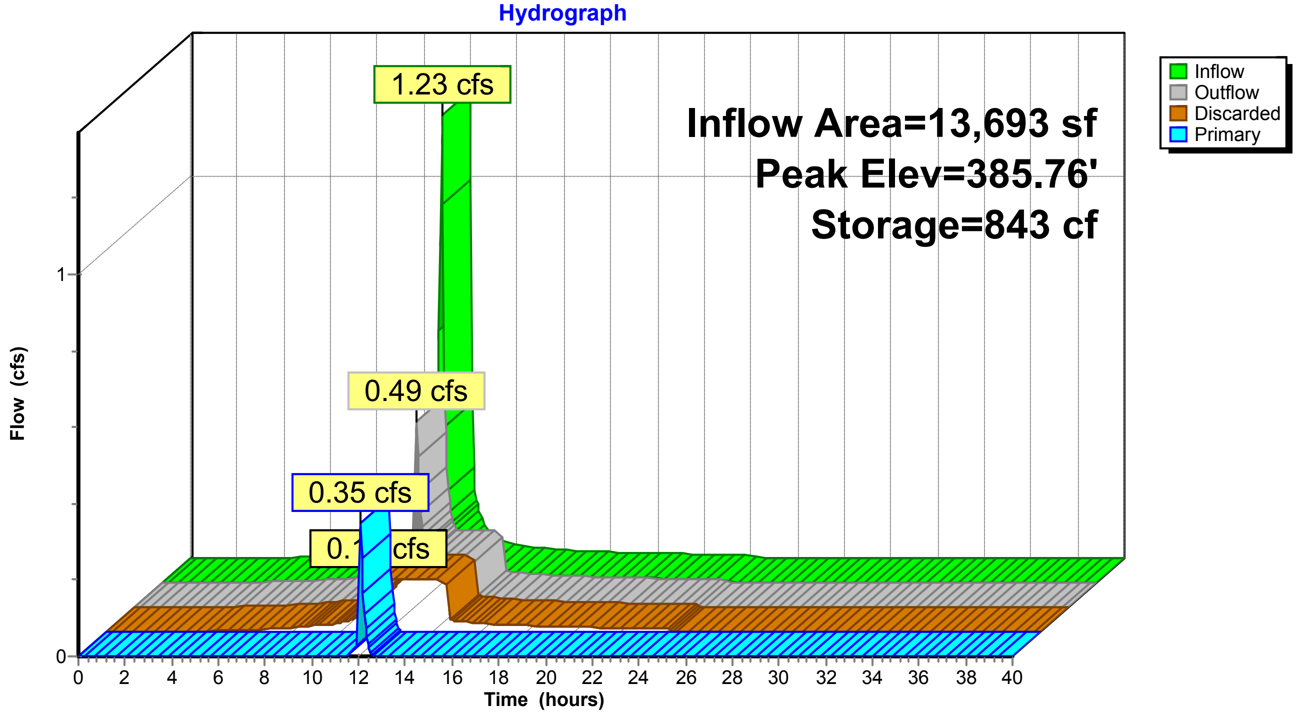
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.00	1,200	0	0
387.50	1,200	4,200	4,200

Device	Routing	Invert	Outlet Devices
#1	Primary	385.45'	**15.0" Round Culvert** L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 385.45' / 384.36' S= 0.0218 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#2	Discarded	384.00'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.14 cfs @ 11.65 hrs HW=384.04' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 0.14 cfs)

Primary OutFlow Max=0.34 cfs @ 12.11 hrs HW=385.75' (Free Discharge)
└─**1=Culvert** (Inlet Controls 0.34 cfs @ 1.47 fps)

Pond CB32: PP-7



Summary for Pond CB4: CB4

[79] Warning: Submerged Pond CB3 Primary device # 1 INLET by 0.31'

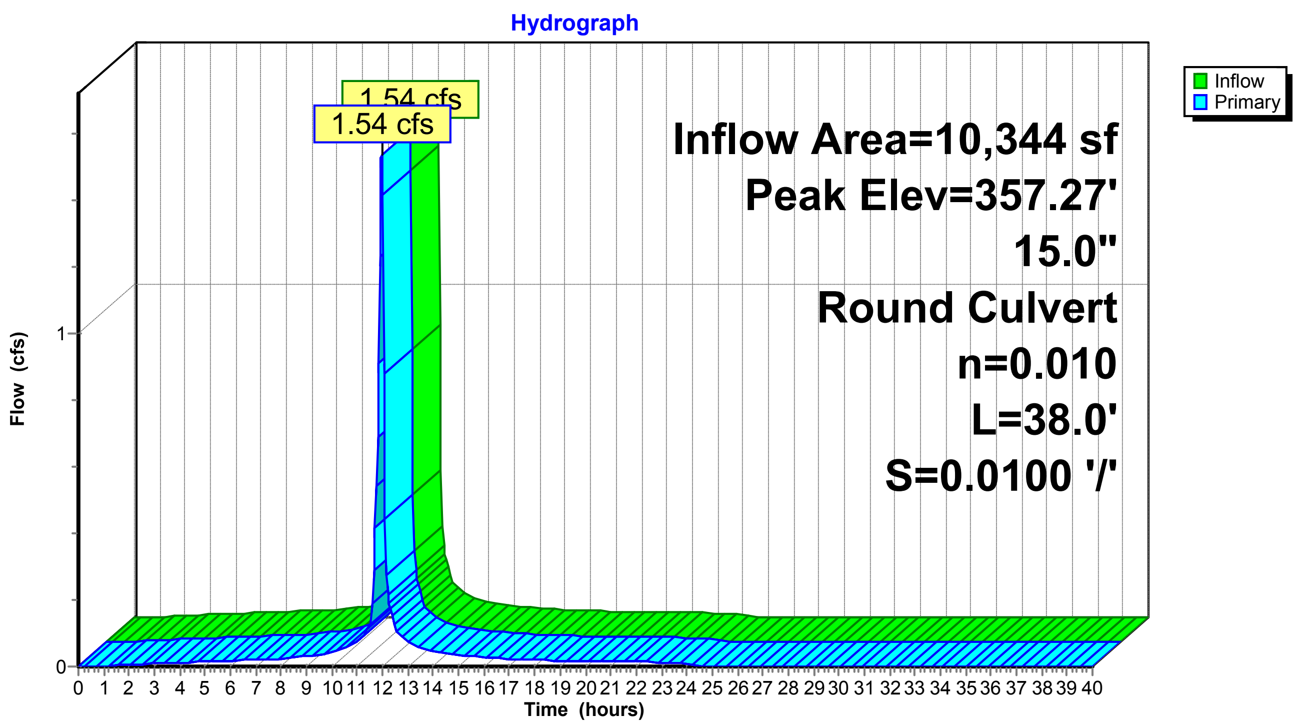
Inflow Area =	10,344 sf,100.00% Impervious,	Inflow Depth = 4.44"	for 10-YEAR event
Inflow =	1.54 cfs @ 11.96 hrs, Volume=	3,830 cf	
Outflow =	1.54 cfs @ 11.96 hrs, Volume=	3,830 cf, Atten= 0%, Lag= 0.0 min	
Primary =	1.54 cfs @ 11.96 hrs, Volume=	3,830 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 357.27' @ 11.96 hrs
Flood Elev= 360.59'

Device	Routing	Invert	Outlet Devices
#1	Primary	356.58'	**15.0" Round Culvert** L= 38.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 356.58' / 356.20' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=1.50 cfs @ 11.96 hrs HW=357.26' (Free Discharge)
↑**1=Culvert** (Inlet Controls 1.50 cfs @ 2.21 fps)

Pond CB4: CB4



Summary for Pond CB5: CB5

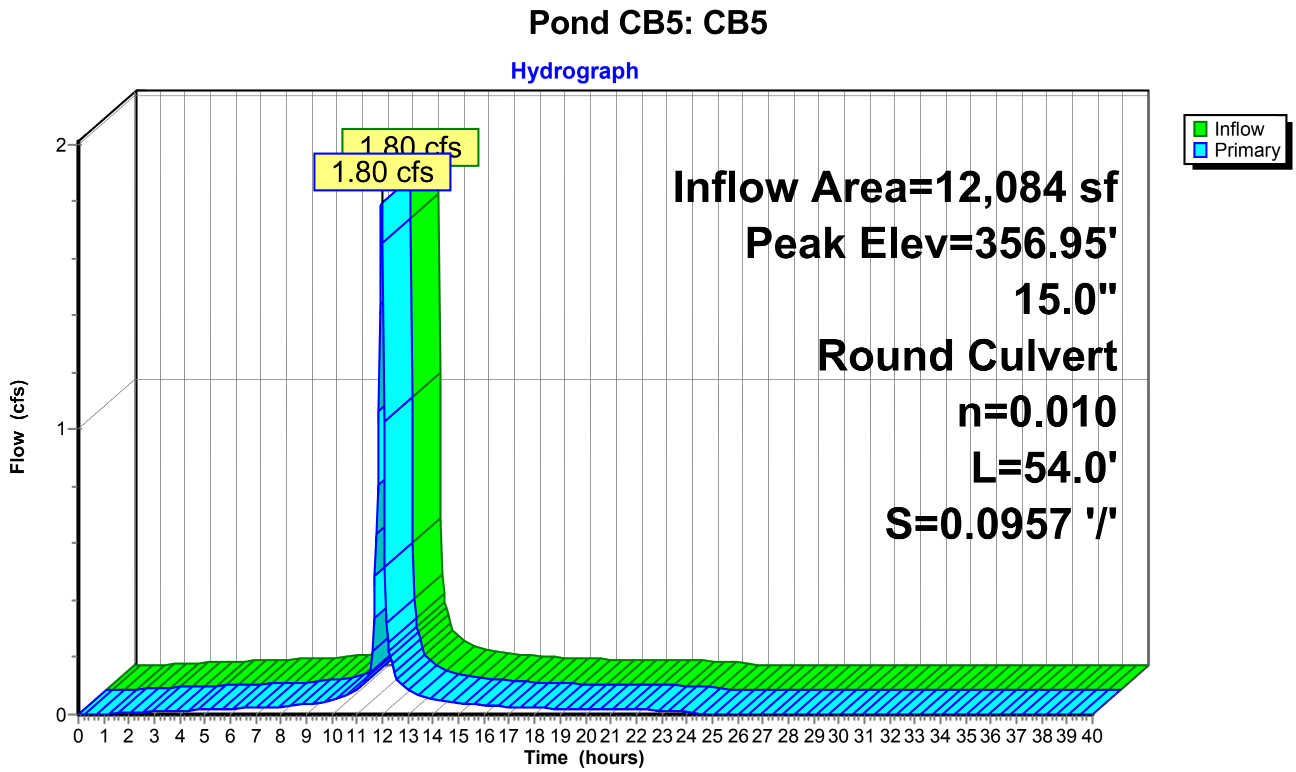
[79] Warning: Submerged Pond CB4 Primary device # 1 INLET by 0.37'

Inflow Area =	12,084 sf,100.00% Impervious,	Inflow Depth = 4.44"	for 10-YEAR event
Inflow =	1.80 cfs @ 11.96 hrs, Volume=	4,475 cf	
Outflow =	1.80 cfs @ 11.96 hrs, Volume=	4,475 cf, Atten= 0%, Lag= 0.0 min	
Primary =	1.80 cfs @ 11.96 hrs, Volume=	4,475 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 356.95' @ 11.96 hrs
Flood Elev= 360.78'

Device	Routing	Invert	Outlet Devices
#1	Primary	356.20'	**15.0" Round Culvert** L= 54.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 356.20' / 351.03' S= 0.0957 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=1.75 cfs @ 11.96 hrs HW=356.94' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 1.75 cfs @ 2.31 fps)



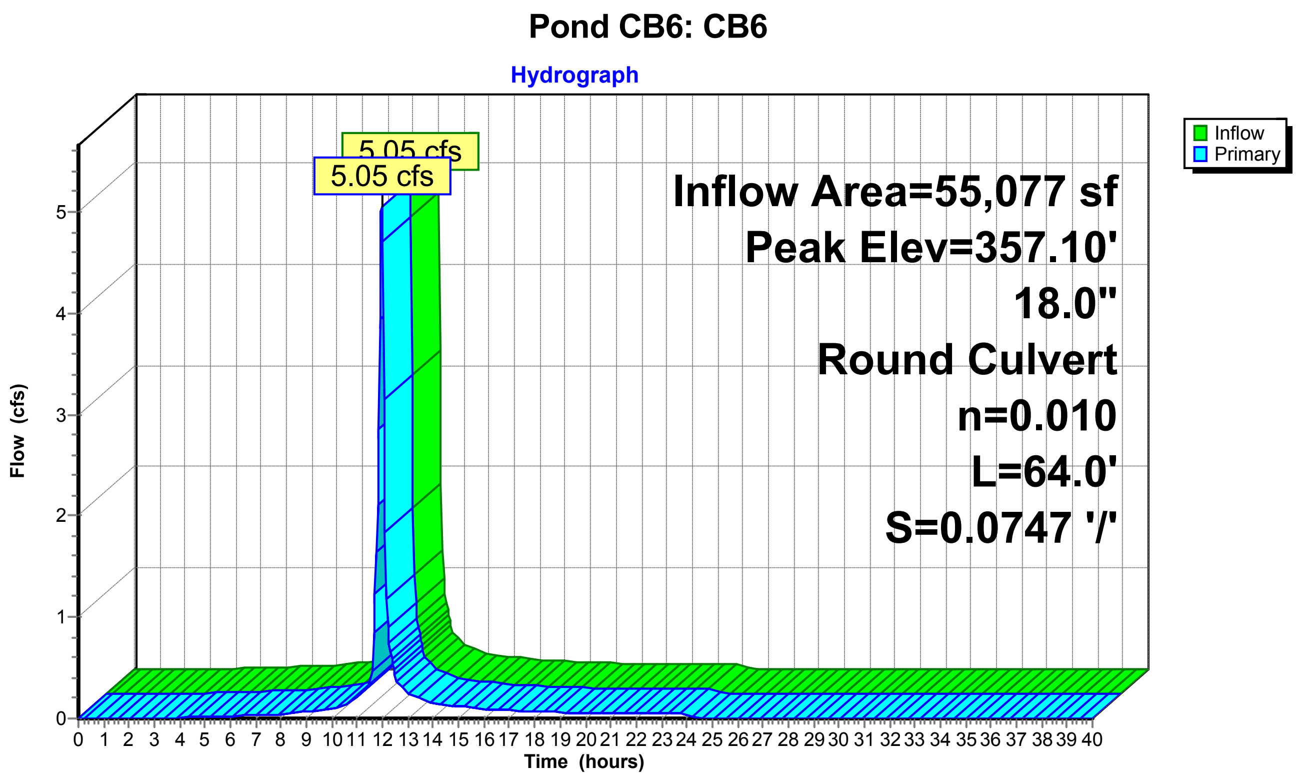
Summary for Pond CB6: CB6

Inflow Area = 55,077 sf, 70.64% Impervious, Inflow Depth = 2.56" for 10-YEAR event
Inflow = 5.05 cfs @ 11.96 hrs, Volume= 11,744 cf
Outflow = 5.05 cfs @ 11.96 hrs, Volume= 11,744 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.05 cfs @ 11.96 hrs, Volume= 11,744 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 357.10' @ 11.96 hrs
Flood Elev= 368.43'

Device	Routing	Invert	Outlet Devices
#1	Primary	355.79'	**18.0" Round Culvert** L= 64.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 355.79' / 351.01' S= 0.0747 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=4.92 cfs @ 11.96 hrs HW=357.08' (Free Discharge)
└─**1=Culvert** (Inlet Controls 4.92 cfs @ 3.05 fps)



Summary for Pond CB7: CB7

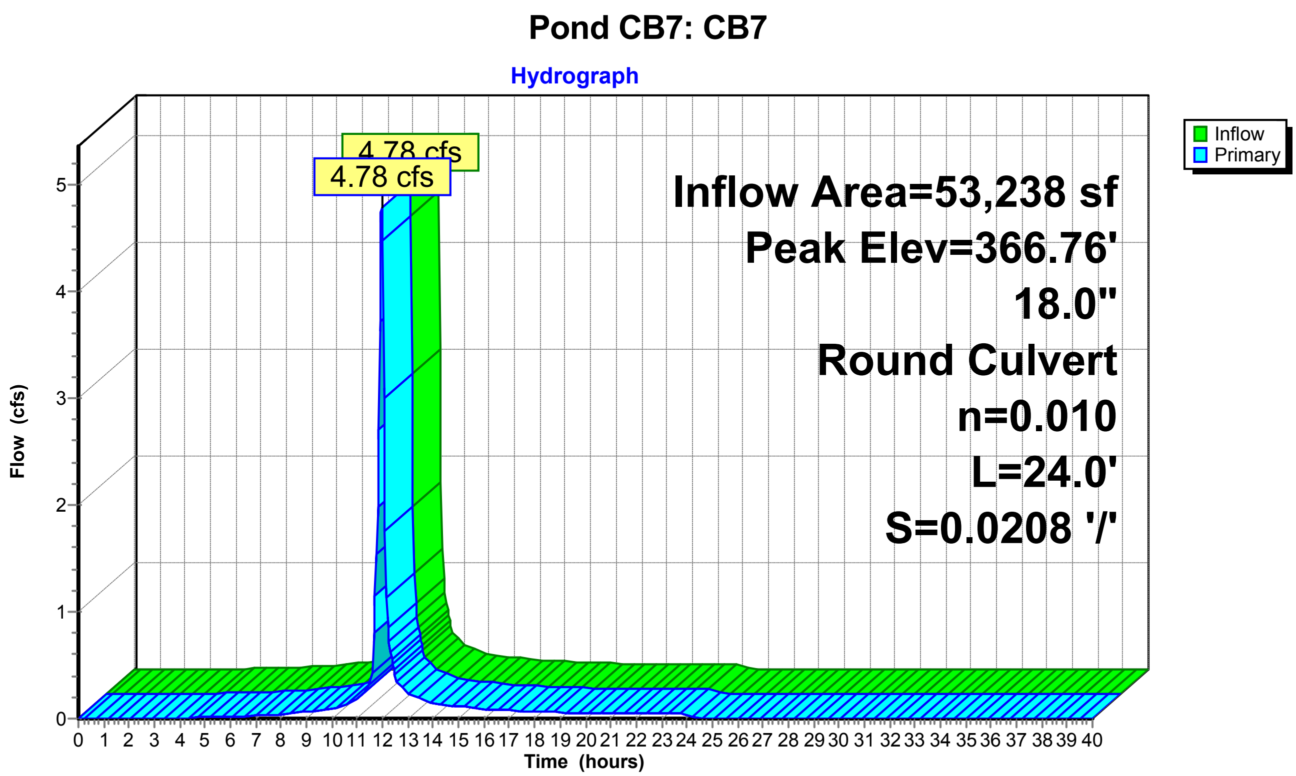
[79] Warning: Submerged Pond CB8 Primary device # 1 OUTLET by 1.02'

Inflow Area = 53,238 sf, 69.63% Impervious, Inflow Depth = 2.49" for 10-YEAR event
Inflow = 4.78 cfs @ 11.96 hrs, Volume= 11,063 cf
Outflow = 4.78 cfs @ 11.96 hrs, Volume= 11,063 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.78 cfs @ 11.96 hrs, Volume= 11,063 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 366.76' @ 11.96 hrs
Flood Elev= 396.05'

Device	Routing	Invert	Outlet Devices
#1	Primary	365.50'	**18.0" Round Culvert** L= 24.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 365.50' / 365.00' S= 0.0208 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=4.67 cfs @ 11.96 hrs HW=366.74' (Free Discharge)
└─**1=Culvert** (Inlet Controls 4.67 cfs @ 2.99 fps)



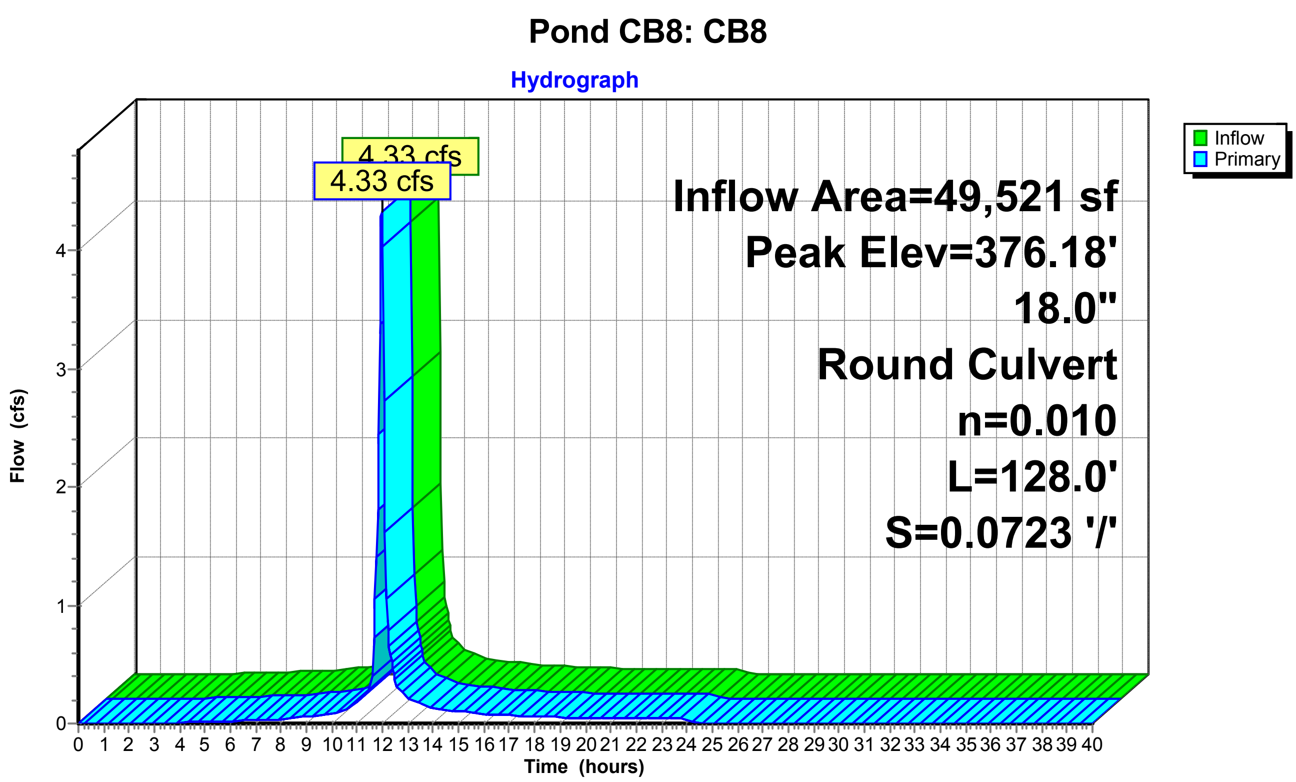
Summary for Pond CB8: CB8

Inflow Area = 49,521 sf, 70.94% Impervious, Inflow Depth = 2.44" for 10-YEAR event
Inflow = 4.33 cfs @ 11.96 hrs, Volume= 10,081 cf
Outflow = 4.33 cfs @ 11.96 hrs, Volume= 10,081 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.33 cfs @ 11.96 hrs, Volume= 10,081 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 376.18' @ 11.96 hrs
Flood Elev= 383.24'

Device	Routing	Invert	Outlet Devices
#1	Primary	375.00'	**18.0" Round Culvert** L= 128.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 375.00' / 365.74' S= 0.0723 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=4.21 cfs @ 11.96 hrs HW=376.15' (Free Discharge)
1=Culvert (Inlet Controls 4.21 cfs @ 2.89 fps)



Summary for Pond CB9: CB9

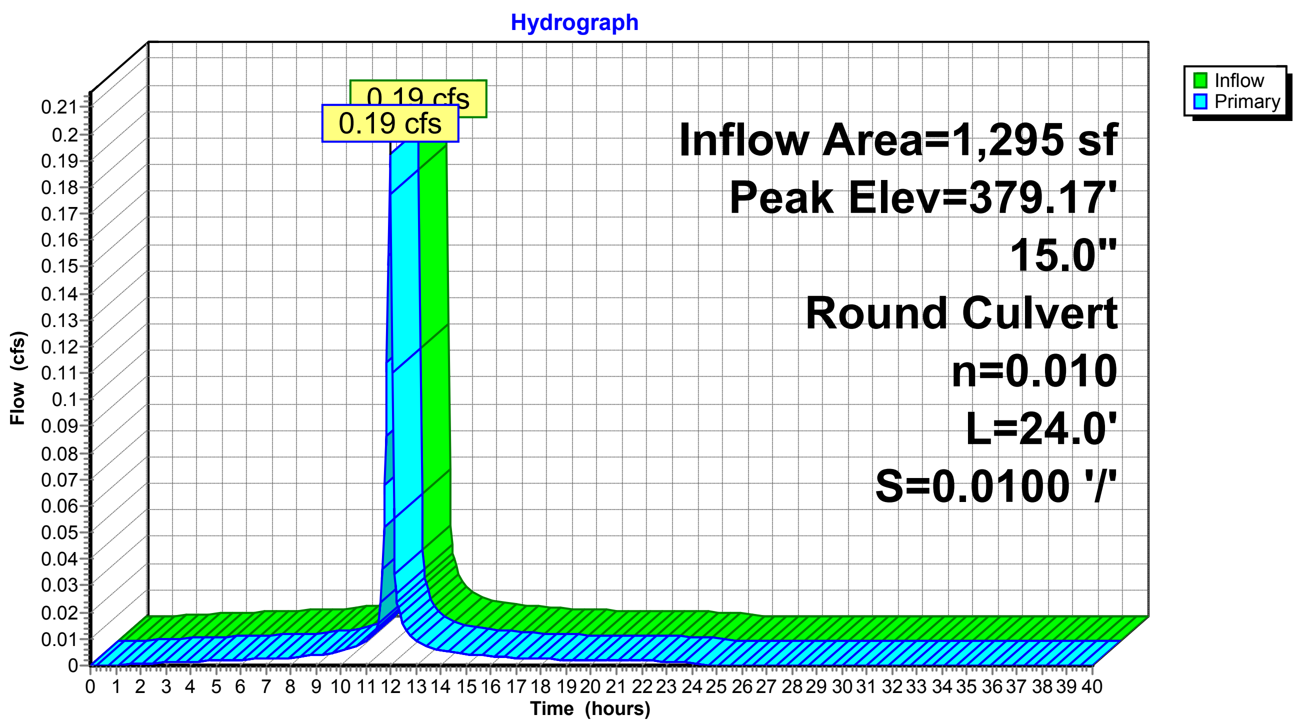
Inflow Area = 1,295 sf,100.00% Impervious, Inflow Depth = 4.44" for 10-YEAR event
Inflow = 0.19 cfs @ 11.96 hrs, Volume= 480 cf
Outflow = 0.19 cfs @ 11.96 hrs, Volume= 480 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.19 cfs @ 11.96 hrs, Volume= 480 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 379.17' @ 11.96 hrs
Flood Elev= 382.42'

Device	Routing	Invert	Outlet Devices
#1	Primary	378.94'	**15.0" Round Culvert** L= 24.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 378.94' / 378.70' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=0.19 cfs @ 11.96 hrs HW=379.16' (Free Discharge)
1=Culvert (Inlet Controls 0.19 cfs @ 1.27 fps)

Pond CB9: CB9



Summary for Pond DMH#10: DMH#10

[79] Warning: Submerged Pond DMH9 Primary device # 1 INLET by 3.34'

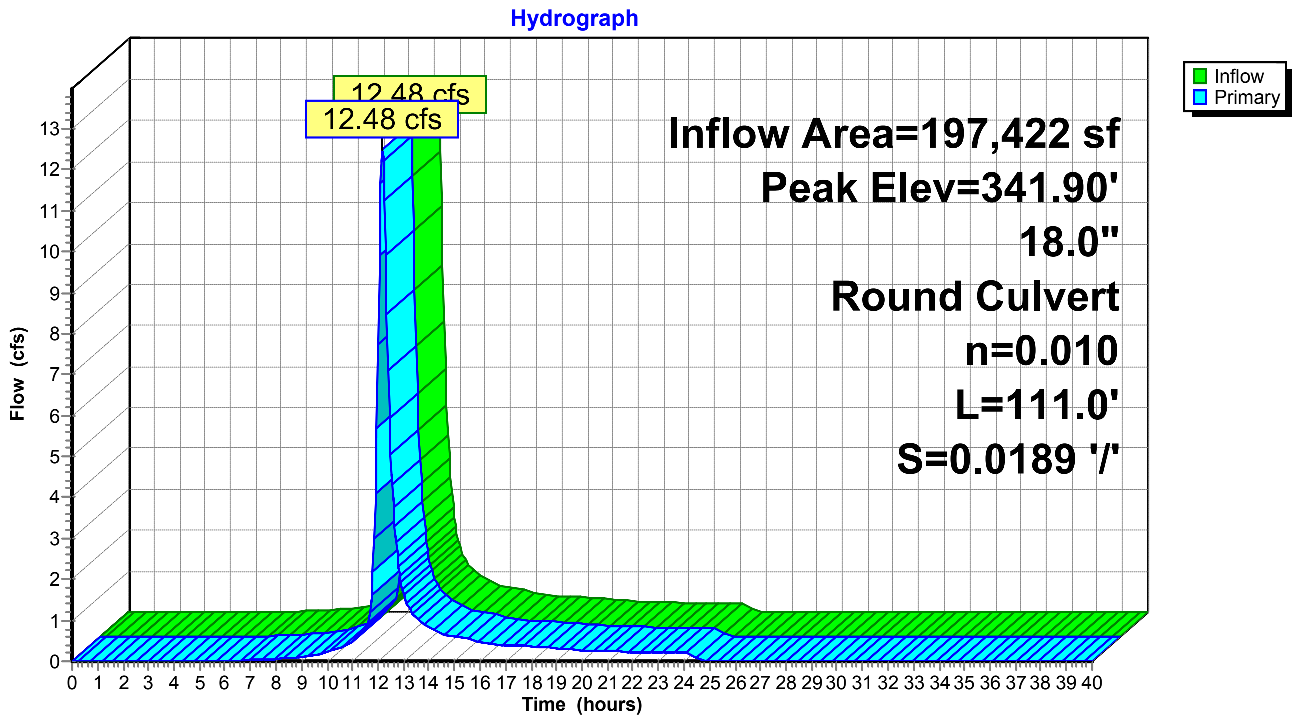
Inflow Area =	197,422 sf,	25.73% Impervious,	Inflow Depth = 2.87"	for 10-YEAR event
Inflow =	12.48 cfs @	12.16 hrs,	Volume=	47,274 cf
Outflow =	12.48 cfs @	12.16 hrs,	Volume=	47,274 cf, Atten= 0%, Lag= 0.0 min
Primary =	12.48 cfs @	12.16 hrs,	Volume=	47,274 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 341.90' @ 12.16 hrs
Flood Elev= 345.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	337.70'	**18.0" Round Culvert** L= 111.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 337.70' / 335.60' S= 0.0189 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=12.38 cfs @ 12.16 hrs HW=341.85' (Free Discharge)
1=Culvert (Inlet Controls 12.38 cfs @ 7.01 fps)

Pond DMH#10: DMH#10



Summary for Pond DMH3: DMH3

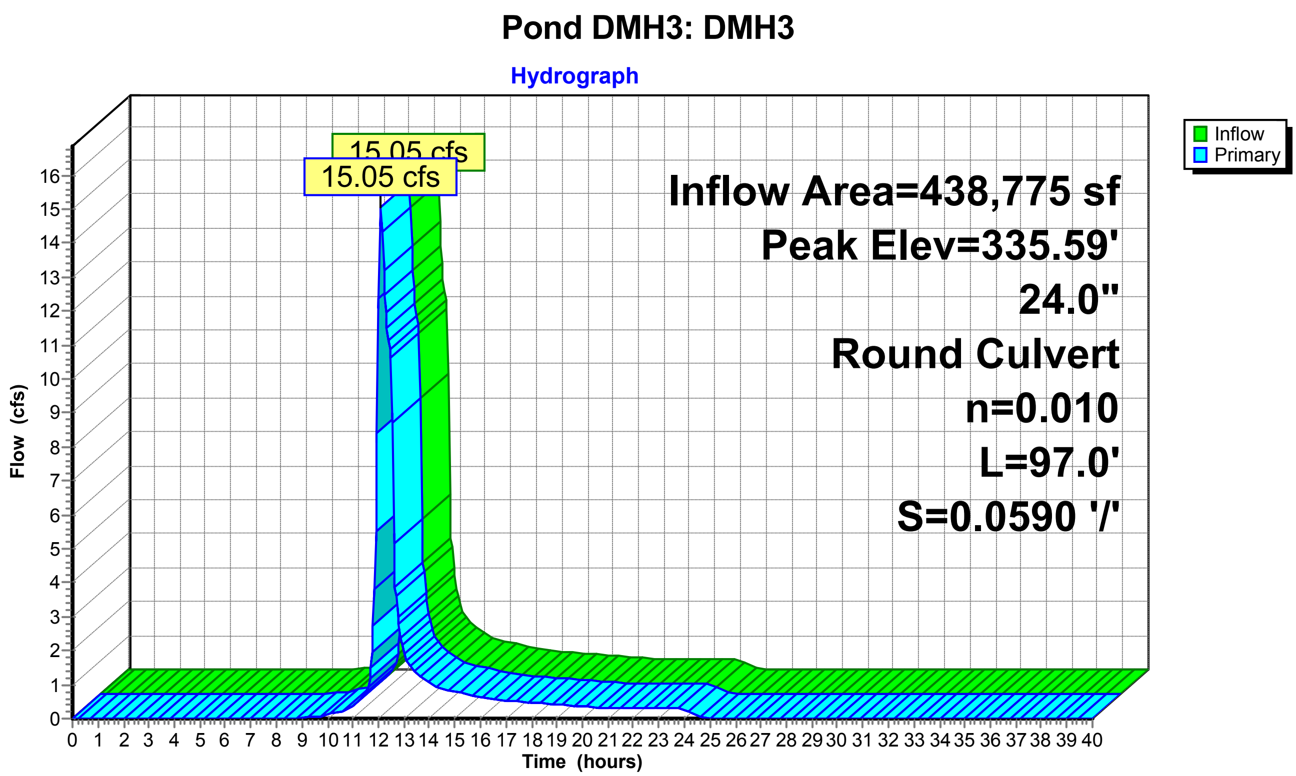
[79] Warning: Submerged Pond CB16 Primary device # 1 OUTLET by 0.12'

Inflow Area = 438,775 sf, 35.77% Impervious, Inflow Depth = 1.65" for 10-YEAR event
Inflow = 15.05 cfs @ 12.07 hrs, Volume= 60,304 cf
Outflow = 15.05 cfs @ 12.07 hrs, Volume= 60,304 cf, Atten= 0%, Lag= 0.0 min
Primary = 15.05 cfs @ 12.07 hrs, Volume= 60,304 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 335.59' @ 12.07 hrs
Flood Elev= 356.89'

Device	Routing	Invert	Outlet Devices
#1	Primary	333.00'	**24.0" Round Culvert** L= 97.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 333.00' / 327.28' S= 0.0590 '/' Cc= 0.900 n= 0.010, Flow Area= 3.14 sf

Primary OutFlow Max=14.75 cfs @ 12.07 hrs HW=335.53' (Free Discharge)
↑**1=Culvert** (Inlet Controls 14.75 cfs @ 4.70 fps)



Summary for Pond DMH5: DMH5

[79] Warning: Submerged Pond DMH6 Primary device # 1 OUTLET by 0.94'

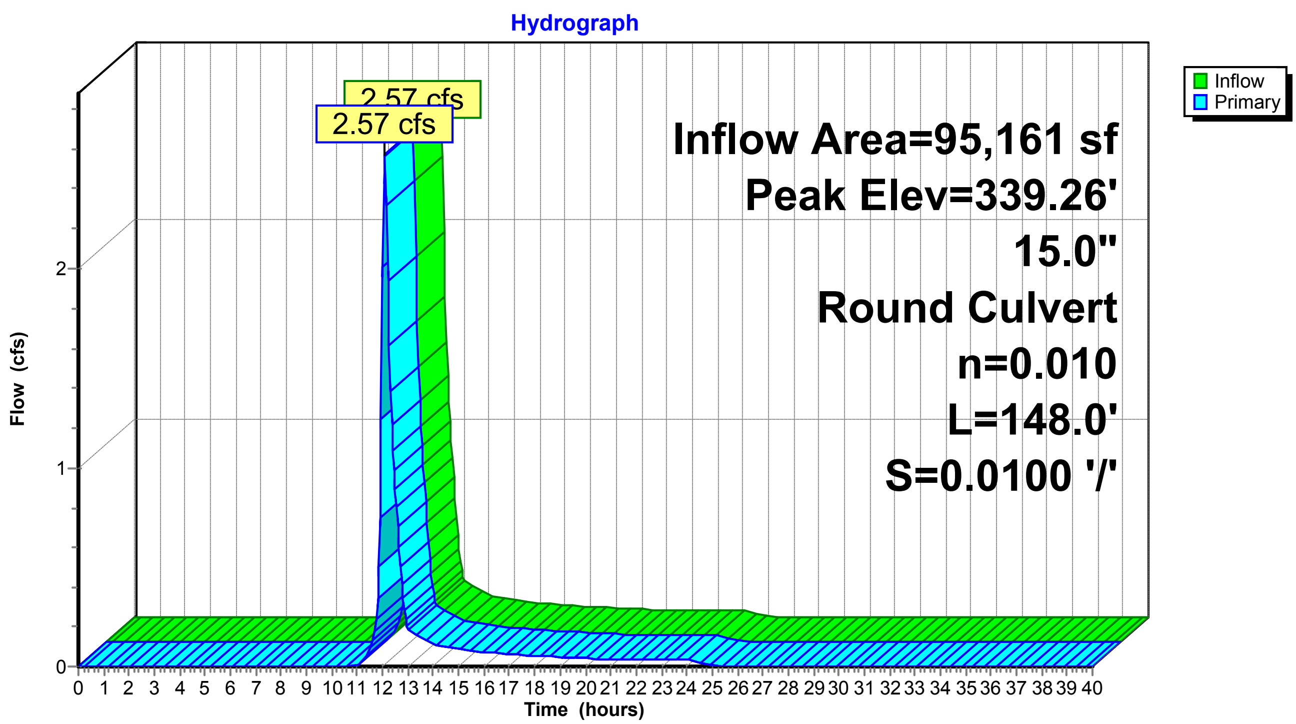
Inflow Area =	95,161 sf, 64.89% Impervious,	Inflow Depth = 0.93"	for 10-YEAR event
Inflow =	2.57 cfs @ 12.09 hrs, Volume=	7,387 cf	
Outflow =	2.57 cfs @ 12.09 hrs, Volume=	7,387 cf, Atten= 0%, Lag= 0.0 min	
Primary =	2.57 cfs @ 12.09 hrs, Volume=	7,387 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 339.26' @ 12.09 hrs
Flood Elev= 349.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	338.32'	**15.0" Round Culvert** L= 148.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 338.32' / 336.84' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=2.54 cfs @ 12.09 hrs HW=339.25' (Free Discharge)
1=Culvert (Inlet Controls 2.54 cfs @ 2.59 fps)

Pond DMH5: DMH5



Summary for Pond DMH6: DMH6

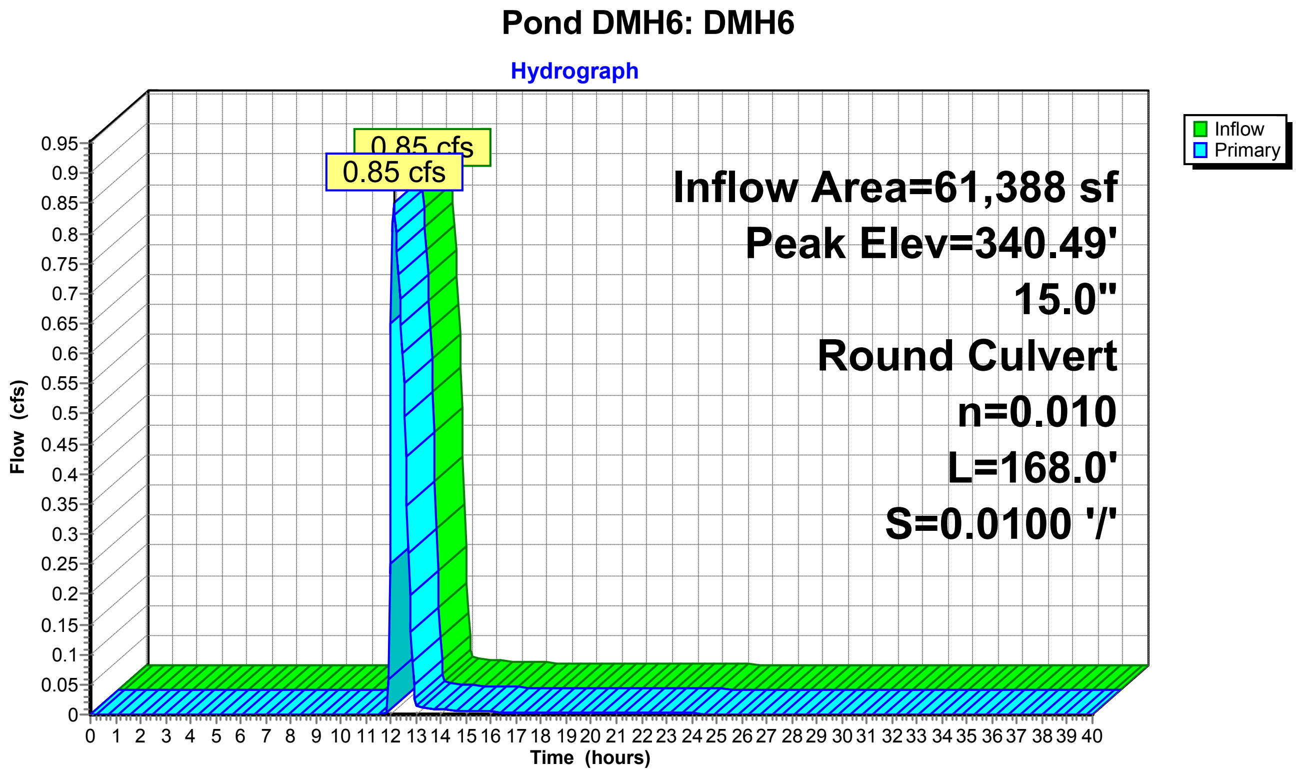
[79] Warning: Submerged Pond PP-2 Primary device # 2 OUTLET by 0.45'

Inflow Area =	61,388 sf, 81.87% Impervious,	Inflow Depth = 0.40"	for 10-YEAR event	
Inflow =	0.85 cfs @ 12.11 hrs,	Volume=	2,027 cf	
Outflow =	0.85 cfs @ 12.11 hrs,	Volume=	2,027 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.85 cfs @ 12.11 hrs,	Volume=	2,027 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 340.49' @ 12.11 hrs
Flood Elev= 346.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	340.00'	**15.0" Round Culvert** L= 168.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 340.00' / 338.32' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=0.85 cfs @ 12.11 hrs HW=340.49' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.85 cfs @ 1.89 fps)



Summary for Pond DMH7: DMH7

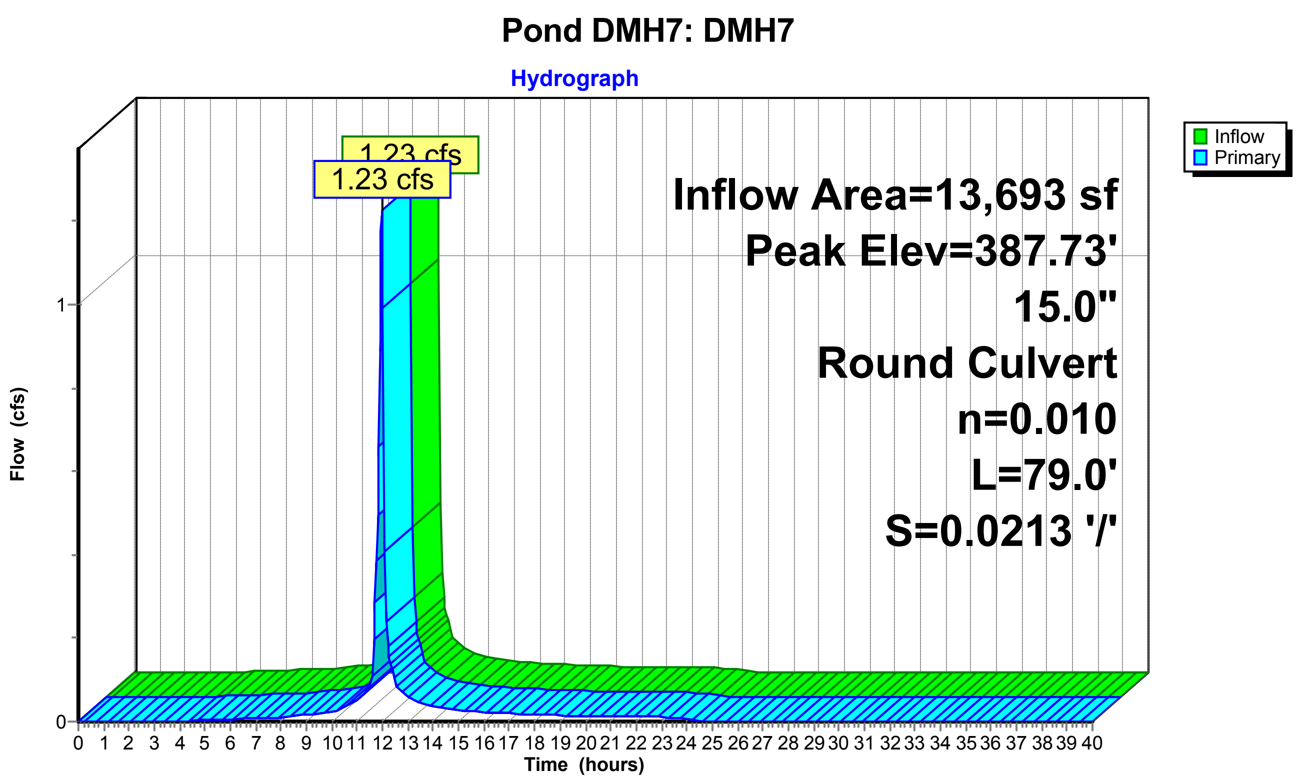
[79] Warning: Submerged Pond CB27 Primary device # 1 INLET by 0.36'
[79] Warning: Submerged Pond CB28 Primary device # 1 OUTLET by 0.11'

Inflow Area = 13,693 sf, 73.15% Impervious, Inflow Depth = 2.42" for 10-YEAR event
Inflow = 1.23 cfs @ 11.98 hrs, Volume= 2,767 cf
Outflow = 1.23 cfs @ 11.98 hrs, Volume= 2,767 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.23 cfs @ 11.98 hrs, Volume= 2,767 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 387.73' @ 11.98 hrs
Flood Elev= 391.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	387.13'	**15.0" Round Culvert** L= 79.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 387.13' / 385.45' S= 0.0213 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=1.18 cfs @ 11.98 hrs HW=387.72' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.18 cfs @ 2.07 fps)



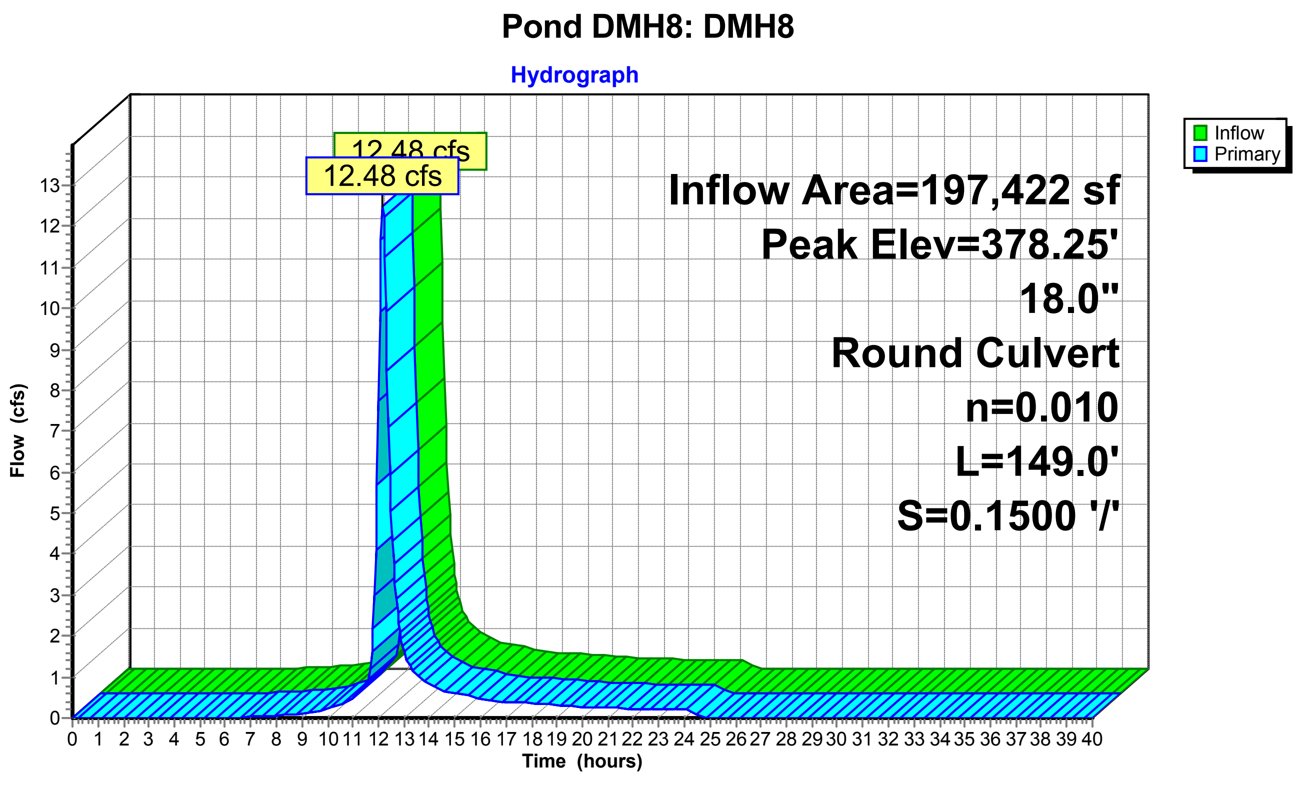
Summary for Pond DMH8: DMH8

Inflow Area =	197,422 sf,	25.73% Impervious,	Inflow Depth = 2.87"	for 10-YEAR event
Inflow =	12.48 cfs @	12.16 hrs, Volume=	47,274 cf	
Outflow =	12.48 cfs @	12.16 hrs, Volume=	47,274 cf,	Atten= 0%, Lag= 0.0 min
Primary =	12.48 cfs @	12.16 hrs, Volume=	47,274 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 378.25' @ 12.16 hrs
Flood Elev= 383.39'

Device	Routing	Invert	Outlet Devices
#1	Primary	374.05'	**18.0" Round Culvert** L= 149.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 374.05' / 351.70' S= 0.1500 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=12.38 cfs @ 12.16 hrs HW=378.20' (Free Discharge)
└─**1=Culvert** (Inlet Controls 12.38 cfs @ 7.01 fps)



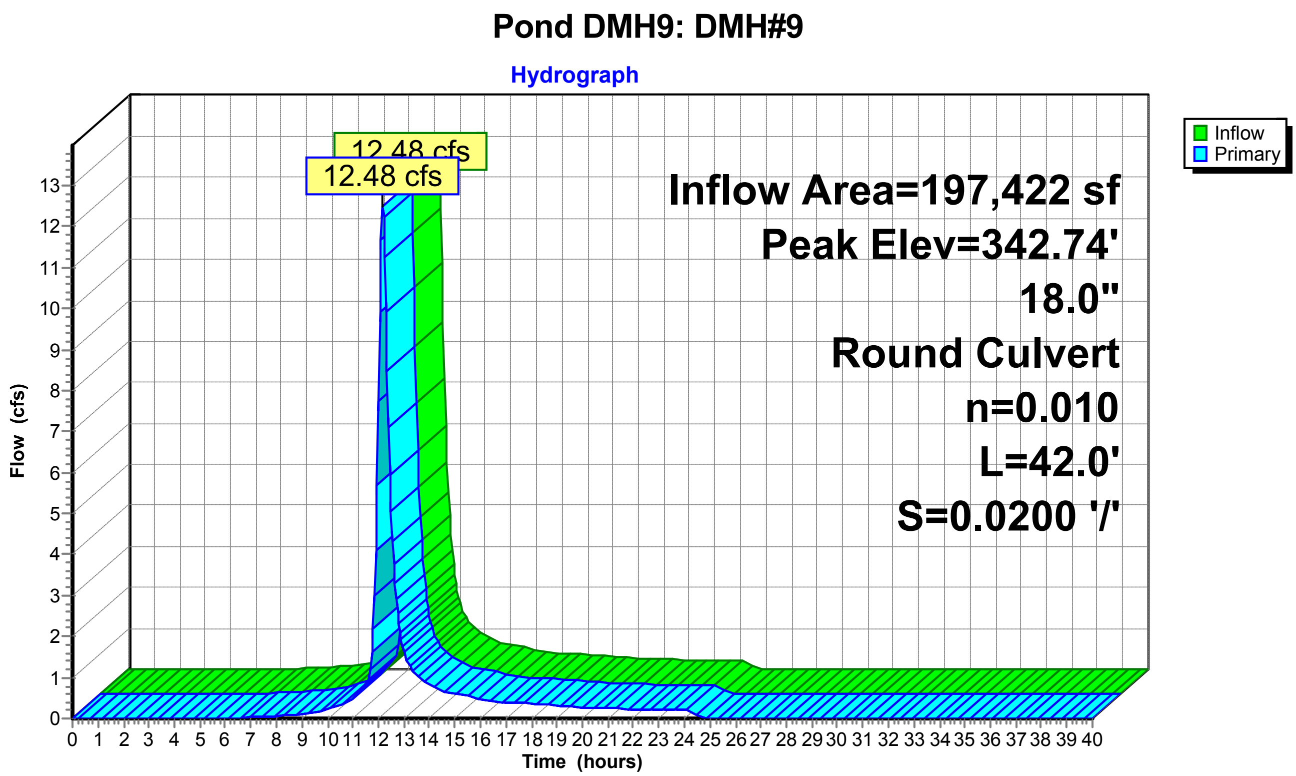
Summary for Pond DMH9: DMH#9

Inflow Area = 197,422 sf, 25.73% Impervious, Inflow Depth = 2.87" for 10-YEAR event
Inflow = 12.48 cfs @ 12.16 hrs, Volume= 47,274 cf
Outflow = 12.48 cfs @ 12.16 hrs, Volume= 47,274 cf, Atten= 0%, Lag= 0.0 min
Primary = 12.48 cfs @ 12.16 hrs, Volume= 47,274 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 342.74' @ 12.16 hrs
Flood Elev= 354.58'

Device	Routing	Invert	Outlet Devices
#1	Primary	338.54'	**18.0" Round Culvert** L= 42.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 338.54' / 337.70' S= 0.0200 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=12.39 cfs @ 12.16 hrs HW=342.69' (Free Discharge)
└1=Culvert (Inlet Controls 12.39 cfs @ 7.01 fps)



Summary for Pond PP-1: PP-1

Inflow Area =	55,636 sf,	80.75% Impervious,	Inflow Depth = 3.96"	for 10-YEAR event
Inflow =	6.81 cfs @	11.97 hrs, Volume=	18,349 cf	
Outflow =	2.02 cfs @	12.17 hrs, Volume=	18,349 cf,	Atten= 70%, Lag= 11.9 min
Discarded =	1.29 cfs @	11.70 hrs, Volume=	16,732 cf	
Primary =	0.73 cfs @	12.17 hrs, Volume=	1,617 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 341.35' @ 12.17 hrs Surf.Area= 8,294 sf Storage= 4,471 cf
Flood Elev= 345.48' Surf.Area= 8,294 sf Storage= 8,294 cf

Plug-Flow detention time= 14.6 min calculated for 18,326 cf (100% of inflow)
Center-of-Mass det. time= 14.5 min (779.6 - 765.1)

Volume	Invert	Avail.Storage	Storage Description
#1	340.00'	8,294 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 20,735 cf Overall x 40.0% Voids

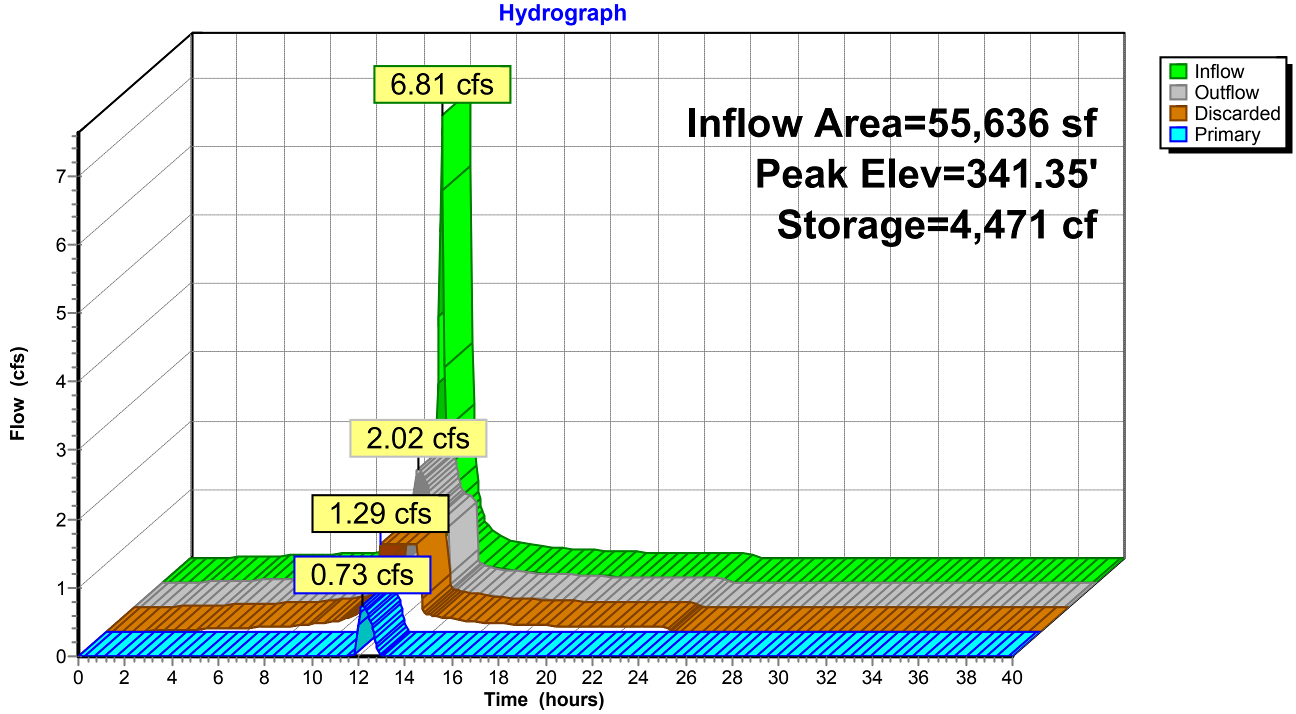
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
340.00	8,294	0	0
342.50	8,294	20,735	20,735

Device	Routing	Invert	Outlet Devices
#1	Discarded	340.00'	**6.700 in/hr Exfiltration over Surface area**
#2	Primary	342.76'	**15.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 342.76' / 342.16' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#3	Primary	340.50'	**6.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=1.29 cfs @ 11.70 hrs HW=340.06' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 1.29 cfs)

Primary OutFlow Max=0.73 cfs @ 12.17 hrs HW=341.34' (Free Discharge)
├─**2=Culvert** (Controls 0.00 cfs)
└─**3=Orifice/Grate** (Orifice Controls 0.73 cfs @ 3.71 fps)

Pond PP-1: PP-1


Hydrograph
6.81 cfs
2.02 cfs
1.29 cfs
0.73 cfs
Inflow Area=55,636 sf
Peak Elev=341.35'
Storage=4,471 cf
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0
1
2
3
4
5
6
7
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40

Summary for Pond PP-2: PP-2

Inflow Area = 2,778 sf, 92.40% Impervious, Inflow Depth = 4.21" for 10-YEAR event
Inflow = 0.41 cfs @ 11.96 hrs, Volume= 976 cf
Outflow = 0.25 cfs @ 11.90 hrs, Volume= 976 cf, Atten= 38%, Lag= 0.0 min
Discarded = 0.25 cfs @ 11.90 hrs, Volume= 976 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 340.14' @ 12.05 hrs Surf.Area= 1,610 sf Storage= 87 cf
Flood Elev= 344.22' Surf.Area= 1,610 sf Storage= 1,610 cf

Plug-Flow detention time= 2.4 min calculated for 974 cf (100% of inflow)
Center-of-Mass det. time= 2.4 min (762.7 - 760.3)

Volume	Invert	Avail.Storage	Storage Description
#1	340.00'	1,610 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 4,025 cf Overall x 40.0% Voids

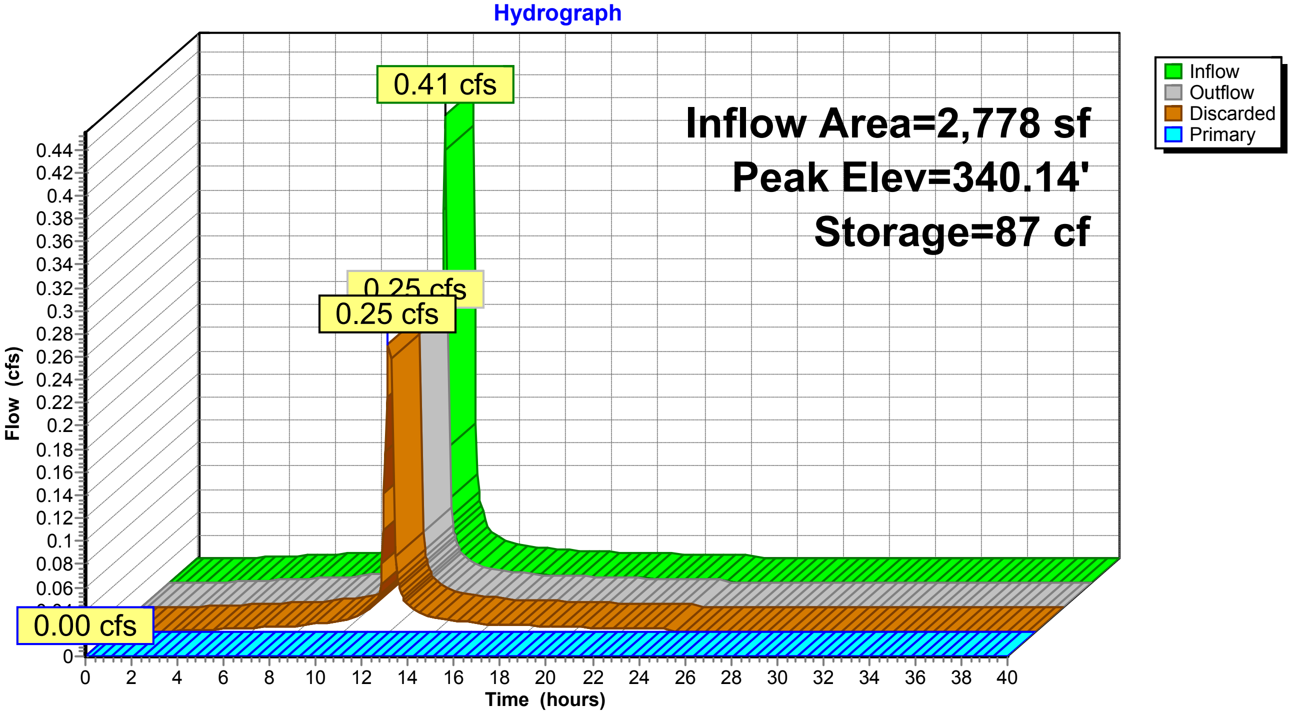
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
340.00	1,610	0	0
342.50	1,610	4,025	4,025

Device	Routing	Invert	Outlet Devices
#1	Discarded	340.00'	**6.700 in/hr Exfiltration over Surface area**
#2	Primary	340.50'	**15.0" Round Culvert** L= 46.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 340.50' / 340.04' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#3	Primary	340.50'	**6.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.25 cfs @ 11.90 hrs HW=340.05' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.25 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=340.00' (Free Discharge)
├─**2=Culvert** (Controls 0.00 cfs)
└─**3=Orifice/Grate** (Controls 0.00 cfs)

Pond PP-2: PP-2


Hydrograph
0.41 cfs
0.25 cfs
0.25 cfs
0.00 cfs
Inflow Area=2,778 sf
Peak Elev=340.14'
Storage=87 cf
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)

Summary for Pond PP-3: PP-3

Inflow Area = 2,974 sf, 92.97% Impervious, Inflow Depth = 4.21" for 10-YEAR event
Inflow = 0.43 cfs @ 11.96 hrs, Volume= 1,045 cf
Outflow = 0.33 cfs @ 12.03 hrs, Volume= 723 cf, Atten= 23%, Lag= 3.8 min
Discarded = 0.14 cfs @ 12.03 hrs, Volume= 313 cf
Primary = 0.19 cfs @ 12.03 hrs, Volume= 410 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 344.73' @ 12.03 hrs Surf.Area= 1,610 sf Storage= 468 cf
Flood Elev= 347.97' Surf.Area= 1,610 sf Storage= 1,610 cf

Plug-Flow detention time= 195.7 min calculated for 723 cf (69% of inflow)
Center-of-Mass det. time= 99.0 min (859.2 - 760.3)

Volume	Invert	Avail.Storage	Storage Description
#1	344.00'	1,610 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 4,025 cf Overall x 40.0% Voids

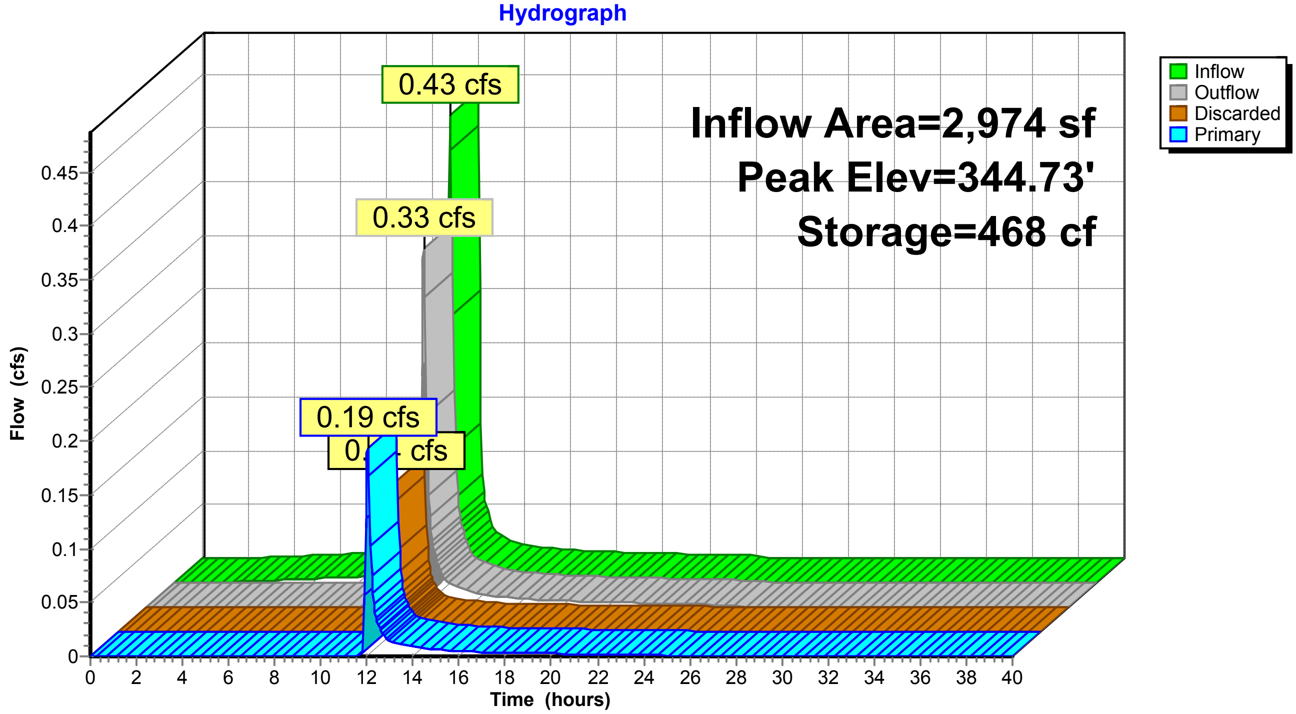
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
344.00	1,610	0	0
346.50	1,610	4,025	4,025

Device	Routing	Invert	Outlet Devices
#1	Discarded	344.00'	**6.700 in/hr Exfiltration over Surface area**
#2	Primary	344.50'	**15.0" Round Culvert** L= 52.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 344.50' / 342.94' S= 0.0300 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#3	Device 1	344.50'	**6.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.14 cfs @ 12.03 hrs HW=344.72' (Free Discharge)
└—**1=Exfiltration** (Passes 0.14 cfs of 0.25 cfs potential flow)
  └—**3=Orifice/Grate** (Orifice Controls 0.14 cfs @ 1.61 fps)

Primary OutFlow Max=0.19 cfs @ 12.03 hrs HW=344.72' (Free Discharge)
└—**2=Culvert** (Inlet Controls 0.19 cfs @ 1.27 fps)

Pond PP-3: PP-3


Hydrograph
0.43 cfs
0.33 cfs
0.19 cfs
cfs
Inflow Area=2,974 sf
Peak Elev=344.73'
Storage=468 cf
Inflow
Outflow
Discarded
Primary
Flow (cfs)
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40
Time (hours)

Summary for Pond PP-4: PP-4

Inflow Area = 3,899 sf, 98.72% Impervious, Inflow Depth = 4.44" for 10-YEAR event
Inflow = 0.58 cfs @ 11.96 hrs, Volume= 1,444 cf
Outflow = 0.38 cfs @ 12.04 hrs, Volume= 1,082 cf, Atten= 35%, Lag= 4.9 min
Discarded = 0.38 cfs @ 12.04 hrs, Volume= 1,082 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 344.91' @ 12.04 hrs Surf.Area= 1,810 sf Storage= 659 cf
Flood Elev= 349.27' Surf.Area= 1,810 sf Storage= 1,810 cf

Plug-Flow detention time= 199.7 min calculated for 1,080 cf (75% of inflow)
Center-of-Mass det. time= 111.0 min (856.1 - 745.1)

Volume	Invert	Avail.Storage	Storage Description
#1	344.00'	1,810 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 4,525 cf Overall x 40.0% Voids

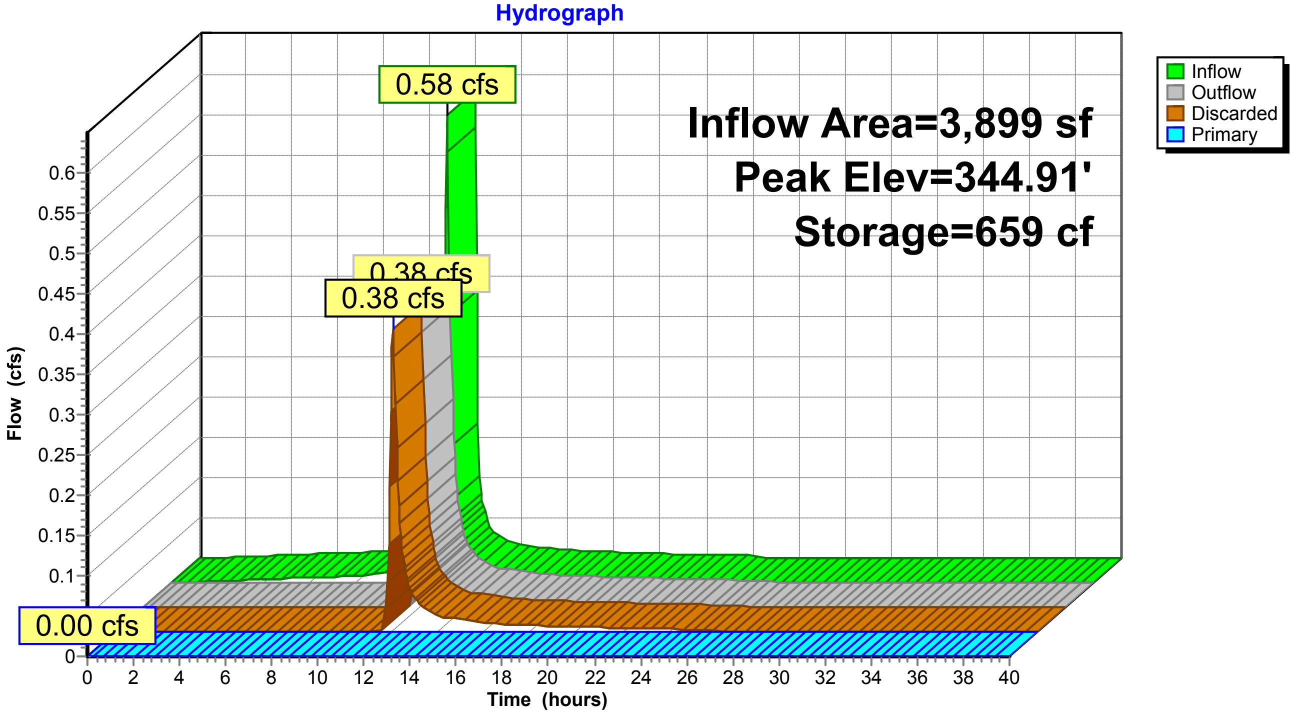
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
344.00	1,810	0	0
346.50	1,810	4,525	4,525

Device	Routing	Invert	Outlet Devices
#1	Discarded	344.00'	**13.300 in/hr Exfiltration over Surface area**
#2	Primary	345.50'	**12.0" Round Culvert** L= 33.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 345.50' / 345.17' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf
#3	Device 1	344.50'	**6.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.37 cfs @ 12.04 hrs HW=344.91' (Free Discharge)
└─**1=Exfiltration** (Passes 0.37 cfs of 0.56 cfs potential flow)
  └─**3=Orifice/Grate** (Orifice Controls 0.37 cfs @ 2.18 fps)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=344.00' (Free Discharge)
└─**2=Culvert** (Controls 0.00 cfs)

Pond PP-4: PP-4


Hydrograph
0.58 cfs
0.38 cfs
0.38 cfs
0.00 cfs
Inflow Area=3,899 sf
Peak Elev=344.91'
Storage=659 cf
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)

Summary for Pond PP-5: PP-5

[79] Warning: Submerged Pond CB19 Primary device # 1 OUTLET by 0.73'

Inflow Area = 29,874 sf, 25.58% Impervious, Inflow Depth = 2.65" for 10-YEAR event
Inflow = 2.39 cfs @ 12.04 hrs, Volume= 6,605 cf
Outflow = 2.25 cfs @ 12.08 hrs, Volume= 6,346 cf, Atten= 6%, Lag= 2.4 min
Discarded = 0.53 cfs @ 12.08 hrs, Volume= 986 cf
Primary = 1.73 cfs @ 12.08 hrs, Volume= 5,360 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 345.61' @ 12.08 hrs Surf.Area= 1,700 sf Storage= 758 cf
Flood Elev= 349.35' Surf.Area= 1,700 sf Storage= 1,700 cf

Plug-Flow detention time= 44.8 min calculated for 6,346 cf (96% of inflow)
Center-of-Mass det. time= 21.9 min (848.5 - 826.6)

Volume	Invert	Avail.Storage	Storage Description
#1	344.50'	1,700 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 4,250 cf Overall x 40.0% Voids

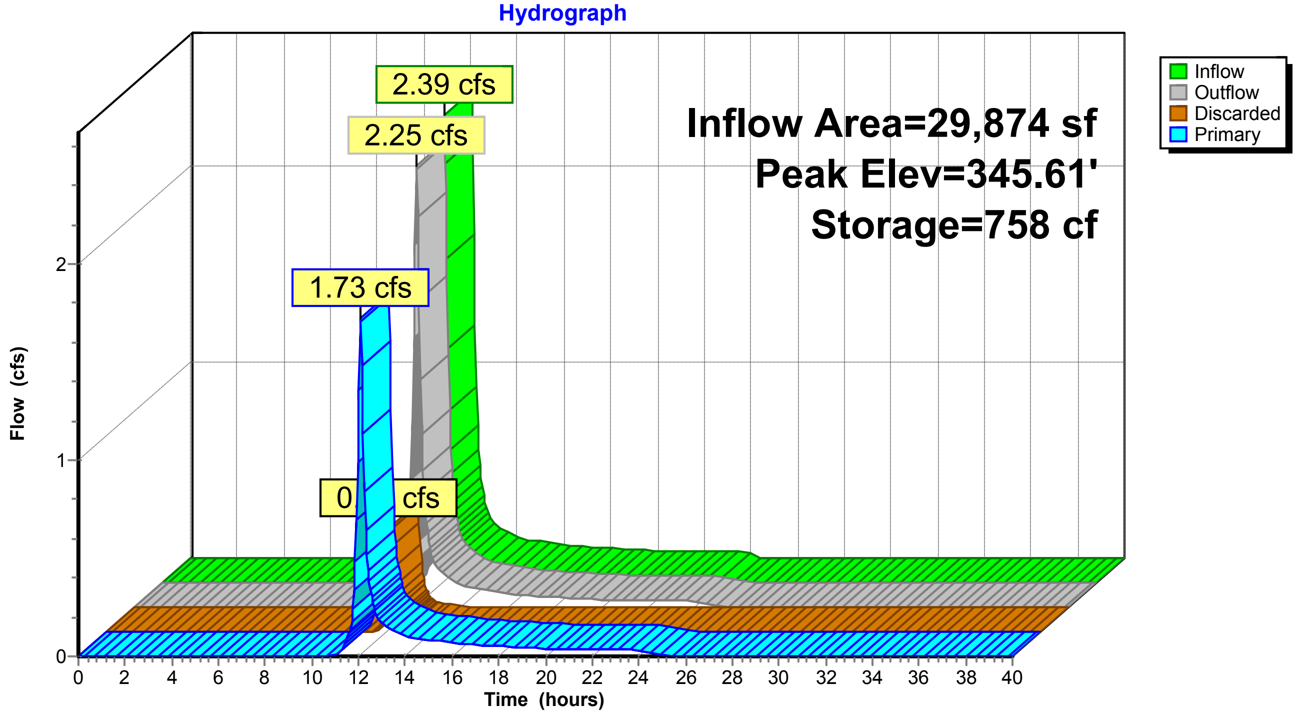
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
344.50	1,700	0	0
347.00	1,700	4,250	4,250

Device	Routing	Invert	Outlet Devices
#1	Discarded	344.50'	**13.300 in/hr Exfiltration over Surface area**
#2	Primary	344.88'	**15.0" Round Culvert** L= 37.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 344.88' / 344.50' S= 0.0103 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#3	Device 1	345.00'	**6.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.52 cfs @ 12.08 hrs HW=345.60' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.52 cfs)
  └─**3=Orifice/Grate** (Passes 0.52 cfs of 0.56 cfs potential flow)

Primary OutFlow Max=1.70 cfs @ 12.08 hrs HW=345.61' (Free Discharge)
└─**2=Culvert** (Inlet Controls 1.70 cfs @ 2.29 fps)

Pond PP-5: PP-5


Hydrograph
2.39 cfs
2.25 cfs
1.73 cfs
0 cfs
Inflow Area=29,874 sf
Peak Elev=345.61'
Storage=758 cf
Inflow
Outflow
Discarded
Primary
Flow (cfs)
0
1
2
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40
Time (hours)

Summary for Pond UGC-1: UGC-1

[79] Warning: Submerged Pond CB5 Primary device # 1 OUTLET by 0.42'
[79] Warning: Submerged Pond CB6 Primary device # 1 OUTLET by 0.44'

Inflow Area = 87,058 sf, 81.43% Impervious, Inflow Depth = 3.25" for 10-YEAR event
Inflow = 9.80 cfs @ 11.96 hrs, Volume= 23,586 cf
Outflow = 4.04 cfs @ 12.09 hrs, Volume= 23,586 cf, Atten= 59%, Lag= 7.6 min
Discarded = 1.43 cfs @ 11.65 hrs, Volume= 20,276 cf
Primary = 2.61 cfs @ 12.09 hrs, Volume= 3,310 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 351.45' @ 12.09 hrs Surf.Area= 4,645 sf Storage= 5,829 cf

Plug-Flow detention time= 13.2 min calculated for 23,557 cf (100% of inflow)
Center-of-Mass det. time= 13.2 min (776.2 - 763.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	349.50'	5,581 cf	**44.75'W x 103.80'L x 4.25'H Field A** 19,741 cf Overall - 5,788 cf Embedded = 13,952 cf x 40.0% Voids
#2A	350.25'	5,788 cf	**ADS_StormTech SC-740 +Cap** x 126 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 9 Rows of 14 Chambers
		11,369 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	350.50'	**15.0" Round Culvert** L= 59.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 350.50' / 348.85' S= 0.0280 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#2	Discarded	349.50'	**13.300 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=1.43 cfs @ 11.65 hrs HW=349.55' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 1.43 cfs)

Primary OutFlow Max=2.58 cfs @ 12.09 hrs HW=351.44' (Free Discharge)
└─**1=Culvert** (Inlet Controls 2.58 cfs @ 2.61 fps)

Pond UGC-1: UGC-1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

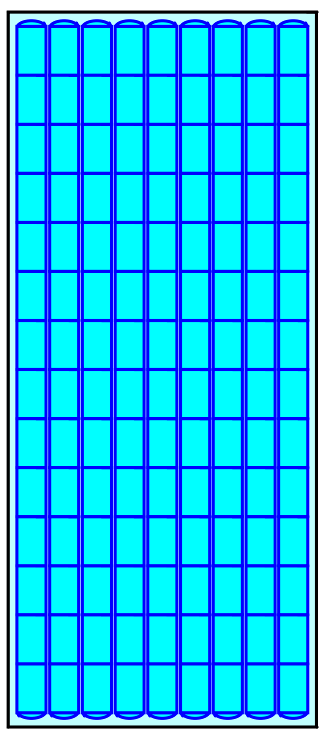
14 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 101.30' Row Length +15.0" End Stone x 2 = 103.80' Base Length
9 Rows x 51.0" Wide + 6.0" Spacing x 8 + 15.0" Side Stone x 2 = 44.75' Base Width
9.0" Base + 30.0" Chamber Height + 12.0" Cover = 4.25' Field Height

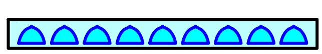
126 Chambers x 45.9 cf = 5,788.4 cf Chamber Storage

19,740.8 cf Field - 5,788.4 cf Chambers = 13,952.4 cf Stone x 40.0% Voids = 5,581.0 cf Stone Storage

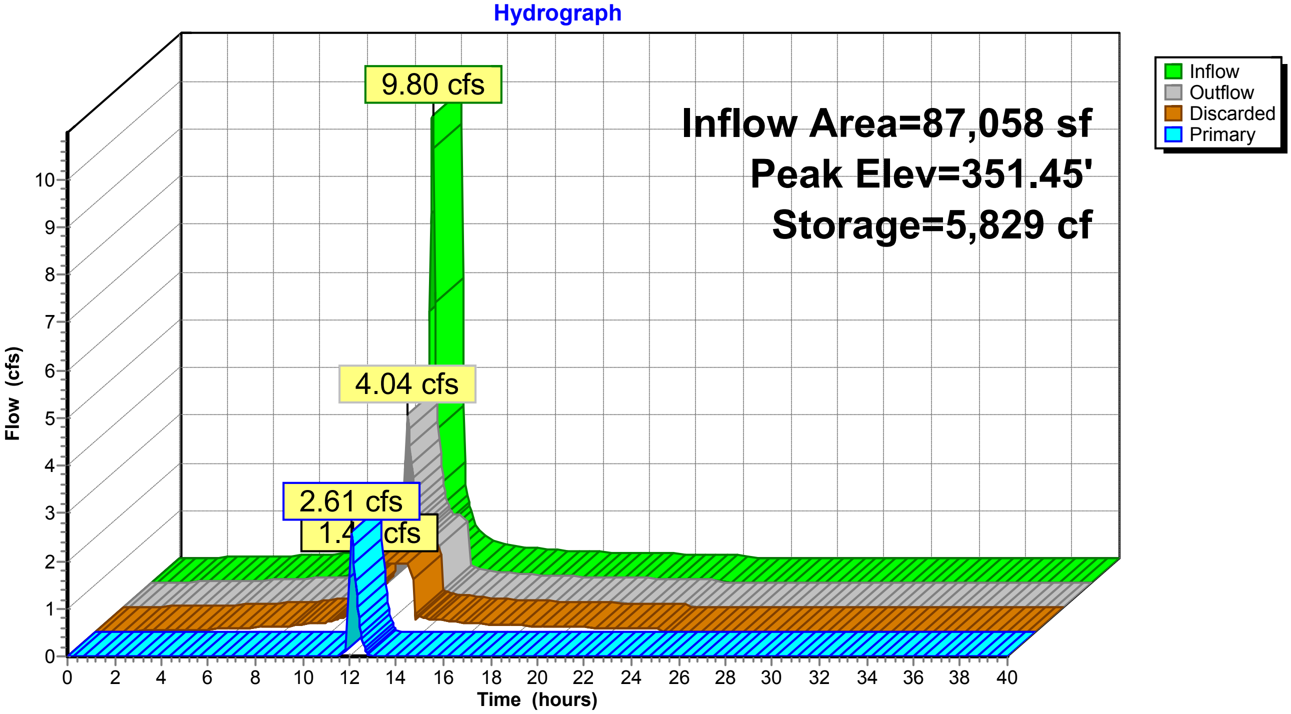
Chamber Storage + Stone Storage = 11,369.4 cf = 0.261 af
Overall Storage Efficiency = 57.6%
Overall System Size = 103.80' x 44.75' x 4.25'

126 Chambers
731.1 cy Field
516.8 cy Stone





Pond UGC-1: UGC-1



Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA-1: DA-1 Runoff Area=652,997 sf 19.60% Impervious Runoff Depth=6.06"
Flow Length=1,558' Tc=29.6 min CN=82 Runoff=78.19 cfs 329,728 cf

Subcatchment DA-10: DA-10 Runoff Area=11,988 sf 71.77% Impervious Runoff Depth=7.13"
Tc=6.0 min CN=91 Runoff=3.03 cfs 7,125 cf

Subcatchment DA-11: DA-11 Runoff Area=2,984 sf 80.09% Impervious Runoff Depth=7.37"
Tc=6.0 min CN=93 Runoff=0.76 cfs 1,833 cf

Subcatchment DA-12: DA-12 Runoff Area=1,295 sf 100.00% Impervious Runoff Depth=7.97"
Tc=6.0 min CN=98 Runoff=0.34 cfs 860 cf

Subcatchment DA-13: DA-13 Runoff Area=2,426 sf 54.45% Impervious Runoff Depth=6.65"
Tc=6.0 min CN=87 Runoff=0.59 cfs 1,345 cf

Subcatchment DA-14: DA-14 Runoff Area=1,839 sf 100.00% Impervious Runoff Depth=7.97"
Tc=6.0 min CN=98 Runoff=0.48 cfs 1,221 cf

Subcatchment DA-15: DA-15 Runoff Area=3,717 sf 52.06% Impervious Runoff Depth=6.54"
Tc=6.0 min CN=86 Runoff=0.89 cfs 2,024 cf

Subcatchment DA-16: DA-16 Runoff Area=1,740 sf 100.00% Impervious Runoff Depth=7.97"
Tc=6.0 min CN=98 Runoff=0.46 cfs 1,156 cf

Subcatchment DA-17: DA-17 Runoff Area=27,430 sf 23.81% Impervious Runoff Depth=5.82"
Flow Length=406' Tc=13.6 min CN=80 Runoff=4.82 cfs 13,308 cf

Subcatchment DA-18: DA-18 Runoff Area=5,718 sf 100.00% Impervious Runoff Depth=7.97"
Tc=6.0 min CN=98 Runoff=1.50 cfs 3,798 cf

Subcatchment DA-19: DA-19 Runoff Area=2,039 sf 100.00% Impervious Runoff Depth=7.97"
Tc=6.0 min CN=98 Runoff=0.53 cfs 1,354 cf

Subcatchment DA-2: DA-2 Runoff Area=44,834 sf 2.52% Impervious Runoff Depth=5.23"
Flow Length=871' Tc=16.8 min CN=75 Runoff=6.51 cfs 19,546 cf

Subcatchment DA-20: DA-20 Runoff Area=1,093 sf 100.00% Impervious Runoff Depth=7.97"
Tc=6.0 min CN=98 Runoff=0.29 cfs 726 cf

Subcatchment DA-21: DA-21 Runoff Area=1,494 sf 100.00% Impervious Runoff Depth=7.97"
Tc=6.0 min CN=98 Runoff=0.39 cfs 992 cf

Subcatchment DA-22: DA-22 Runoff Area=3,899 sf 98.72% Impervious Runoff Depth=7.97"
Tc=6.0 min CN=98 Runoff=1.02 cfs 2,590 cf

Subcatchment DA-23: DA-23 Runoff Area=2,974 sf 92.97% Impervious Runoff Depth=7.73"
Tc=6.0 min CN=96 Runoff=0.77 cfs 1,916 cf

Subcatchment DA-24: DA-24 Runoff Area=2,778 sf 92.40% Impervious Runoff Depth=7.73"
Tc=6.0 min CN=96 Runoff=0.72 cfs 1,790 cf

Subcatchment DA-25: DA-25 Runoff Area=17,418 sf 49.60% Impervious Runoff Depth=6.54"
Flow Length=309' Tc=14.2 min CN=86 Runoff=3.28 cfs 9,486 cf

Subcatchment DA-26: DA-26 Runoff Area=2,444 sf 45.42% Impervious Runoff Depth=6.42"
Tc=6.0 min CN=85 Runoff=0.58 cfs 1,307 cf

Subcatchment DA-27: DA-27 Runoff Area=4,118 sf 53.08% Impervious Runoff Depth=6.65"
Tc=6.0 min CN=87 Runoff=1.00 cfs 2,284 cf

Subcatchment DA-28: DA-28 Runoff Area=244,871 sf 7.43% Impervious Runoff Depth=5.35"
Flow Length=1,550' Tc=22.6 min CN=76 Runoff=30.91 cfs 109,159 cf

Subcatchment DA-29: DA-29 Runoff Area=4,310 sf 61.76% Impervious Runoff Depth=6.89"
Tc=6.0 min CN=89 Runoff=1.07 cfs 2,476 cf

Subcatchment DA-3: DA-3 Runoff Area=1,320 sf 58.94% Impervious Runoff Depth=6.77"
Tc=6.0 min CN=88 Runoff=0.32 cfs 745 cf

Subcatchment DA-30: DA-30 Runoff Area=8,713 sf 36.19% Impervious Runoff Depth=6.18"
Tc=6.0 min CN=83 Runoff=2.01 cfs 4,486 cf

Subcatchment DA-31: DA-31 Runoff Area=2,972 sf 100.00% Impervious Runoff Depth=7.97"
Tc=6.0 min CN=98 Runoff=0.78 cfs 1,974 cf

Subcatchment DA-32: DA-32 Runoff Area=37,379 sf 9.31% Impervious Runoff Depth=5.35"
Flow Length=348' Tc=11.9 min CN=76 Runoff=6.44 cfs 16,663 cf

Subcatchment DA-33: DA-33 Runoff Area=2,907 sf 69.66% Impervious Runoff Depth=7.13"
Tc=6.0 min CN=91 Runoff=0.73 cfs 1,728 cf

Subcatchment DA-34: DA-34 Runoff Area=6,631 sf 65.10% Impervious Runoff Depth=7.01"
Tc=6.0 min CN=90 Runoff=1.66 cfs 3,875 cf

Subcatchment DA-35: DA-35 Runoff Area=24,159 sf 15.16% Impervious Runoff Depth=5.59"
Flow Length=389' Tc=6.6 min CN=78 Runoff=5.12 cfs 11,245 cf

Subcatchment DA-36: DA-36 (Roofs) Runoff Area=19,897 sf 100.00% Impervious Runoff Depth=7.97"
Tc=6.0 min CN=98 Runoff=5.21 cfs 13,215 cf

Subcatchment DA-37: DA-37 Runoff Area=152,588 sf 32.55% Impervious Runoff Depth=6.42"
Flow Length=996' Tc=25.9 min CN=85 Runoff=20.76 cfs 81,584 cf

Subcatchment DA-38: DA-38 (Roofs) Runoff Area=34,100 sf 100.00% Impervious Runoff Depth=7.97"
Tc=6.0 min CN=98 Runoff=8.93 cfs 22,648 cf

Subcatchment DA-4: DA-4 Runoff Area=4,793 sf 54.83% Impervious Runoff Depth=6.65"
Tc=6.0 min CN=87 Runoff=1.16 cfs 2,658 cf

Subcatchment DA-5: DA-5 Runoff Area=1,120 sf 100.00% Impervious Runoff Depth=7.97"
Tc=6.0 min CN=98 Runoff=0.29 cfs 744 cf

Subcatchment DA-6: DA-6 Runoff Area=3,169 sf 64.25% Impervious Runoff Depth=6.89"
Tc=6.0 min CN=89 Runoff=0.79 cfs 1,820 cf

Subcatchment DA-7: DA-7 Runoff Area=10,524 sf 75.84% Impervious Runoff Depth=7.25"
Tc=6.0 min CN=92 Runoff=2.68 cfs 6,360 cf

Subcatchment DA-8: DA-8 Runoff Area=2,003 sf 100.00% Impervious Runoff Depth=7.97"
Tc=6.0 min CN=98 Runoff=0.52 cfs 1,330 cf

Subcatchment DA-9: DA-9 Runoff Area=3,589 sf 64.47% Impervious Runoff Depth=6.89"
Tc=6.0 min CN=89 Runoff=0.89 cfs 2,062 cf

Reach 2R: FLARED END #3 Avg. Flow Depth=0.86' Max Vel=5.90 fps Inflow=29.08 cfs 381,831 cf
n=0.022 L=397.0' S=0.0142 '/' Capacity=148.49 cfs Outflow=28.76 cfs 381,305 cf

Reach DP-1: DP-1 Inflow=61.94 cfs 547,928 cf
Outflow=61.94 cfs 547,928 cf

Reach FLARED END #1: FLARED Avg. Flow Depth=1.25' Max Vel=8.29 fps Inflow=30.91 cfs 109,159 cf
15.0" Round Pipe n=0.010 L=120.0' S=0.0118 '/' Capacity=9.10 cfs Outflow=9.10 cfs 109,159 cf

Reach FLARED END #2: FLARED Avg. Flow Depth=1.25' Max Vel=2.24 fps Inflow=78.93 cfs 340,973 cf
15.0" Round Pipe n=0.025 L=37.0' S=0.0051 '/' Capacity=2.41 cfs Outflow=2.56 cfs 275,098 cf

Pond CB1: CB1 Peak Elev=365.03' Inflow=0.29 cfs 726 cf
15.0" Round Culvert n=0.010 L=25.0' S=0.0100 '/' Outflow=0.29 cfs 726 cf

Pond CB10: CB10 Peak Elev=384.90' Inflow=8.67 cfs 18,606 cf
18.0" Round Culvert n=0.010 L=100.0' S=0.0356 '/' Outflow=8.67 cfs 18,606 cf

Pond CB11: CB11 Peak Elev=385.38' Inflow=5.38 cfs 10,653 cf
15.0" Round Culvert n=0.010 L=25.0' S=0.0100 '/' Outflow=5.38 cfs 10,653 cf

Pond CB12: CB12 Peak Elev=387.43' Inflow=2.31 cfs 5,477 cf
18.0" Round Culvert n=0.010 L=143.0' S=0.0129 '/' Outflow=2.31 cfs 5,477 cf

Pond CB13: CB13 Peak Elev=387.22' Inflow=0.52 cfs 1,330 cf
15.0" Round Culvert n=0.010 L=21.0' S=0.0100 '/' Outflow=0.52 cfs 1,330 cf

Pond CB14: CB14 Peak Elev=392.96' Inflow=0.62 cfs 1,489 cf
15.0" Round Culvert n=0.010 L=181.0' S=0.0315 '/' Outflow=0.62 cfs 1,489 cf

Pond CB15: CB15 Peak Elev=393.03' Inflow=0.29 cfs 744 cf
15.0" Round Culvert n=0.010 L=21.0' S=0.0100 '/' Outflow=0.29 cfs 744 cf

Pond CB16: CB16 Peak Elev=346.09' Inflow=13.81 cfs 27,120 cf
15.0" Round Culvert n=0.010 L=143.0' S=0.0100 '/' Outflow=13.81 cfs 27,120 cf

Pond CB17: CB17 Peak Elev=348.75' Inflow=2.01 cfs 4,486 cf
15.0" Round Culvert n=0.010 L=21.0' S=0.0095 '/' Outflow=2.01 cfs 4,486 cf

Pond CB19: CB19 Peak Elev=346.11' Inflow=0.58 cfs 1,307 cf
15.0" Round Culvert n=0.010 L=83.0' S=0.0100 '/' Outflow=0.58 cfs 1,307 cf

Pond CB2: CB2 Peak Elev=364.94' Inflow=0.68 cfs 1,718 cf
15.0" Round Culvert n=0.010 L=171.0' S=0.0442 '/' Outflow=0.68 cfs 1,718 cf

Pond CB22: CB22 Peak Elev=348.44' Inflow=9.93 cfs 24,932 cf
15.0" Round Culvert n=0.010 L=54.0' S=0.0100 '/' Outflow=9.93 cfs 24,932 cf

Pond CB25: CB25 Peak Elev=385.98' Inflow=4.66 cfs 8,820 cf
15.0" Round Culvert n=0.010 L=92.0' S=0.0101 '/' Outflow=4.66 cfs 8,820 cf

Pond CB26: PP-6 Peak Elev=384.52' Storage=455 cf Inflow=0.89 cfs 2,062 cf
Discarded=0.25 cfs 2,062 cf Primary=0.00 cfs 0 cf Outflow=0.25 cfs 2,062 cf

Pond CB27: CB27 Peak Elev=388.17' Storage=187 cf Inflow=2.68 cfs 6,360 cf
Discarded=0.32 cfs 1,093 cf Primary=2.02 cfs 5,266 cf Outflow=2.35 cfs 6,360 cf

Pond CB28: CB28 Peak Elev=388.29' Storage=236 cf Inflow=0.79 cfs 1,820 cf
Discarded=0.23 cfs 1,531 cf Primary=0.32 cfs 289 cf Outflow=0.55 cfs 1,820 cf

Pond CB29: CB29 Peak Elev=337.01' Inflow=4.07 cfs 278,973 cf
18.0" Round Culvert n=0.010 L=35.0' S=0.0049 '/' Outflow=4.07 cfs 278,973 cf

Pond CB3: CB3 Peak Elev=357.55' Inflow=1.21 cfs 3,072 cf
15.0" Round Culvert n=0.010 L=37.0' S=0.0100 '/' Outflow=1.21 cfs 3,072 cf

Pond CB30: CB30 Peak Elev=355.13' Inflow=29.08 cfs 381,831 cf
18.0" Round Culvert n=0.010 L=25.0' S=0.0156 '/' Outflow=29.08 cfs 381,831 cf

Pond CB31: CB31 Peak Elev=408.42' Inflow=26.25 cfs 101,130 cf
18.0" Round Culvert n=0.010 L=82.0' S=0.1500 '/' Outflow=26.25 cfs 101,130 cf

Pond CB32: PP-7 Peak Elev=386.27' Storage=1,090 cf Inflow=2.33 cfs 5,555 cf
Discarded=0.14 cfs 3,859 cf Primary=2.08 cfs 1,696 cf Outflow=2.22 cfs 5,555 cf

Pond CB4: CB4 Peak Elev=357.55' Inflow=2.71 cfs 6,870 cf
15.0" Round Culvert n=0.010 L=38.0' S=0.0100 '/' Outflow=2.71 cfs 6,870 cf

Pond CB5: CB5 Peak Elev=357.28' Inflow=3.16 cfs 8,026 cf
15.0" Round Culvert n=0.010 L=54.0' S=0.0957 '/' Outflow=3.16 cfs 8,026 cf

Pond CB6: CB6 Peak Elev=359.17' Inflow=10.94 cfs 24,057 cf
18.0" Round Culvert n=0.010 L=64.0' S=0.0747 '/' Outflow=10.94 cfs 24,057 cf

Pond CB7: CB7 Peak Elev=368.65' Inflow=10.47 cfs 22,836 cf
18.0" Round Culvert n=0.010 L=24.0' S=0.0208 '/' Outflow=10.47 cfs 22,836 cf

Pond CB8: CB8 Peak Elev=377.77' Inflow=9.58 cfs 20,812 cf
18.0" Round Culvert n=0.010 L=128.0' S=0.0723 '/' Outflow=9.58 cfs 20,812 cf

Pond CB9: CB9 Peak Elev=379.24' Inflow=0.34 cfs 860 cf
15.0" Round Culvert n=0.010 L=24.0' S=0.0100 '/' Outflow=0.34 cfs 860 cf

Pond DMH#10: DMH#10 Peak Elev=353.72' Inflow=26.25 cfs 101,130 cf
18.0" Round Culvert n=0.010 L=111.0' S=0.0189 '/' Outflow=26.25 cfs 101,130 cf

Pond DMH3: DMH3 Peak Elev=340.46' Inflow=30.40 cfs 149,960 cf
24.0" Round Culvert n=0.010 L=97.0' S=0.0590 '/' Outflow=30.40 cfs 149,960 cf

Pond DMH5: DMH5 Peak Elev=346.52' Inflow=12.90 cfs 20,660 cf
15.0" Round Culvert n=0.010 L=148.0' S=0.0100 '/' Outflow=12.90 cfs 20,660 cf

Pond DMH6: DMH6 Peak Elev=344.05' Inflow=8.70 cfs 8,383 cf
15.0" Round Culvert n=0.010 L=168.0' S=0.0100 '/' Outflow=8.70 cfs 8,383 cf

Pond DMH7: DMH7 Peak Elev=388.01' Inflow=2.33 cfs 5,555 cf
15.0" Round Culvert n=0.010 L=79.0' S=0.0213 '/' Outflow=2.33 cfs 5,555 cf

Pond DMH8: DMH8 Peak Elev=390.07' Inflow=26.25 cfs 101,130 cf
18.0" Round Culvert n=0.010 L=149.0' S=0.1500 '/' Outflow=26.25 cfs 101,130 cf

Pond DMH9: DMH#9 Peak Elev=354.56' Inflow=26.25 cfs 101,130 cf
18.0" Round Culvert n=0.010 L=42.0' S=0.0200 '/' Outflow=26.25 cfs 101,130 cf

Pond PP-1: PP-1 Peak Elev=345.28' Storage=8,294 cf Inflow=12.46 cfs 34,418 cf
Discarded=1.29 cfs 26,957 cf Primary=8.43 cfs 7,461 cf Outflow=9.71 cfs 34,418 cf

Pond PP-2: PP-2 Peak Elev=340.49' Storage=317 cf Inflow=0.72 cfs 1,790 cf
Discarded=0.25 cfs 1,790 cf Primary=0.00 cfs 0 cf Outflow=0.25 cfs 1,790 cf

Pond PP-3: PP-3 Peak Elev=344.84' Storage=542 cf Inflow=0.77 cfs 1,916 cf
Discarded=0.25 cfs 671 cf Primary=0.43 cfs 923 cf Outflow=0.68 cfs 1,594 cf

Pond PP-4: PP-4 Peak Elev=345.22' Storage=884 cf Inflow=1.02 cfs 2,590 cf
Discarded=0.56 cfs 2,228 cf Primary=0.00 cfs 0 cf Outflow=0.56 cfs 2,228 cf

Pond PP-5: PP-5 Peak Elev=346.32' Storage=1,235 cf Inflow=5.17 cfs 14,615 cf
Discarded=0.52 cfs 2,079 cf Primary=4.20 cfs 12,277 cf Outflow=4.73 cfs 14,356 cf

Pond UGC-1: UGC-1 Peak Elev=353.70' Storage=11,282 cf Inflow=19.17 cfs 45,298 cf
Discarded=1.43 cfs 31,616 cf Primary=7.49 cfs 13,682 cf Outflow=8.92 cfs 45,298 cf

Total Runoff Area = 1,360,270 sf Runoff Volume = 689,158 cf Average Runoff Depth = 6.08"
74.33% Pervious = 1,011,063 sf 25.67% Impervious = 349,207 sf

Summary for Subcatchment DA-1: DA-1

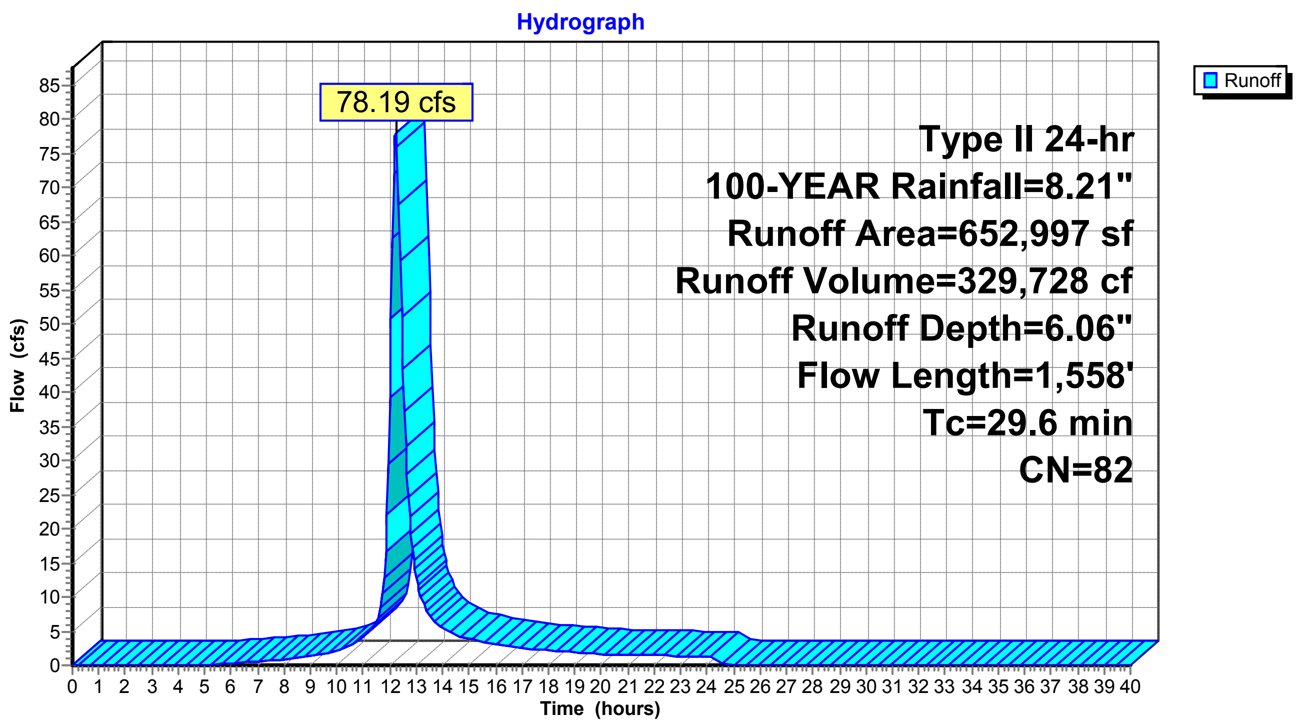
Runoff = 78.19 cfs @ 12.23 hrs, Volume= 329,728 cf, Depth= 6.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
405,559	79	Pasture/grassland/range, Fair, HSG C
119,458	73	Woods, Fair, HSG C
127,980	98	Paved parking, HSG C
652,997	82	Weighted Average
525,017		80.40% Pervious Area
127,980		19.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.9	100	0.0100	0.09		**Sheet Flow, GG-HH** Grass: Dense n= 0.240 P2= 3.17"
10.7	1,458	0.1056	2.27		**Shallow Concentrated Flow, HH-II** Short Grass Pasture Kv= 7.0 fps
29.6	1,558	Total			

Subcatchment DA-1: DA-1



Summary for Subcatchment DA-10: DA-10

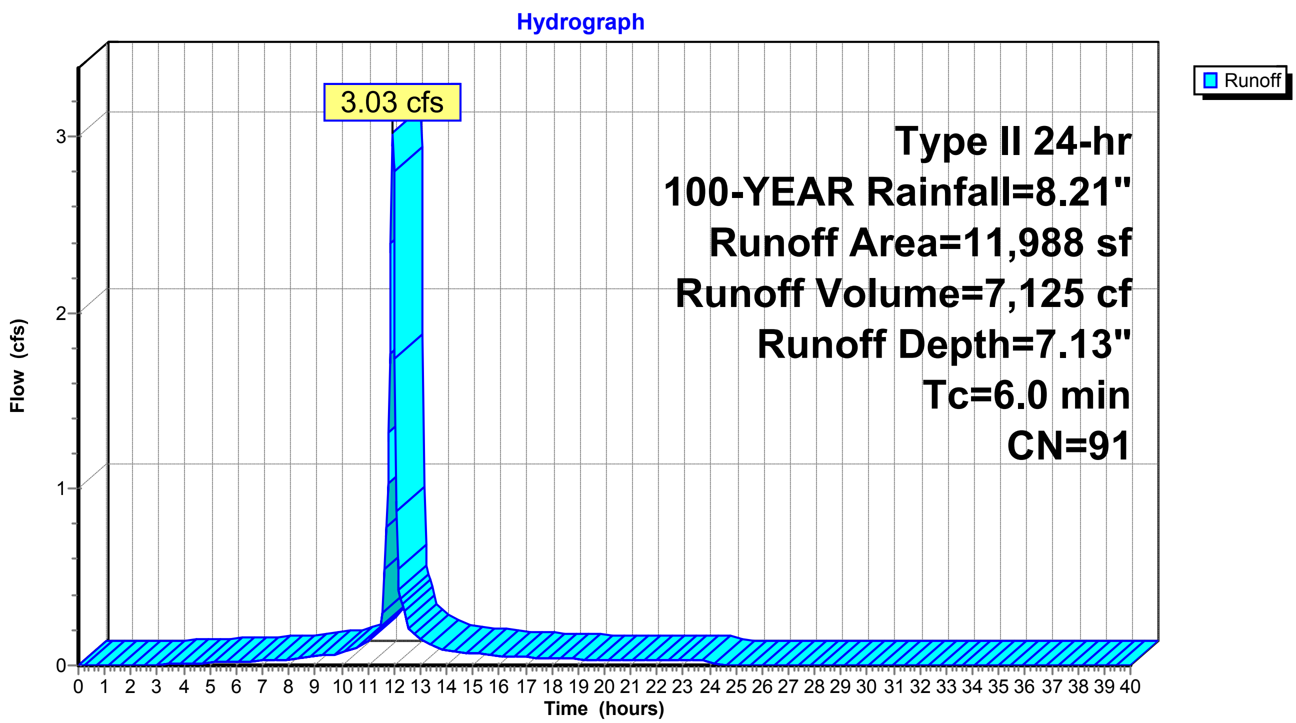
Runoff = 3.03 cfs @ 11.96 hrs, Volume= 7,125 cf, Depth= 7.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
3,384	74	>75% Grass cover, Good, HSG C
8,604	98	Paved parking, HSG C
11,988	91	Weighted Average
3,384		28.23% Pervious Area
8,604		71.77% Impervious Area

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

Subcatchment DA-10: DA-10



Summary for Subcatchment DA-11: DA-11

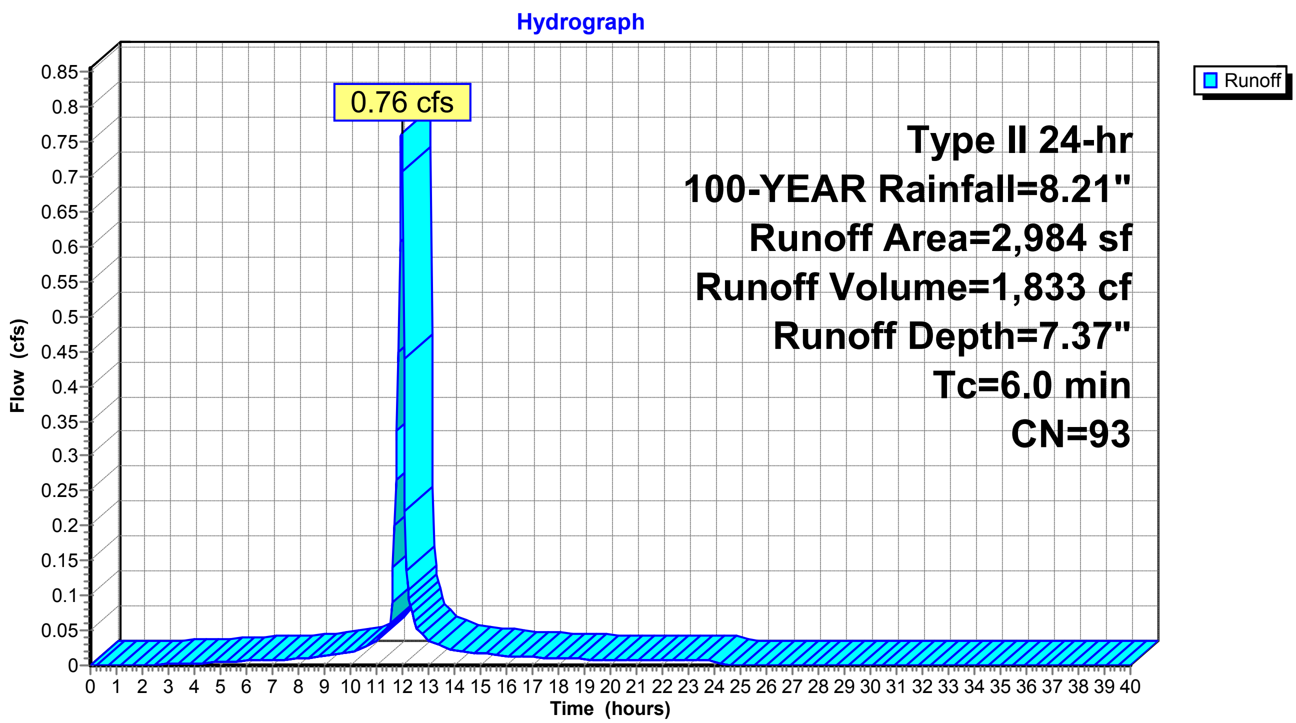
Runoff = 0.76 cfs @ 11.96 hrs, Volume= 1,833 cf, Depth= 7.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
594	74	>75% Grass cover, Good, HSG C
2,390	98	Paved parking, HSG C
2,984	93	Weighted Average
594		19.91% Pervious Area
2,390		80.09% Impervious Area

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

Subcatchment DA-11: DA-11



Summary for Subcatchment DA-12: DA-12

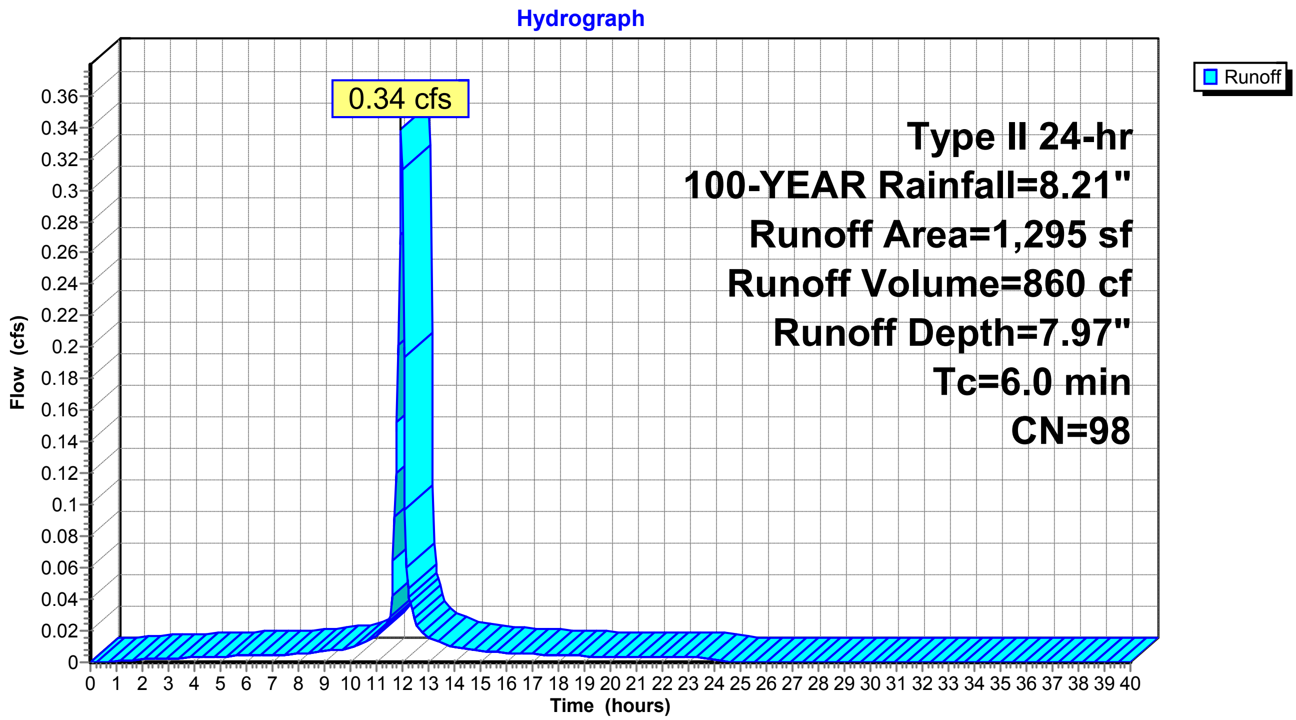
Runoff = 0.34 cfs @ 11.96 hrs, Volume= 860 cf, Depth= 7.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
1,295	98	Paved parking, HSG C
1,295		100.00% Impervious Area

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

Subcatchment DA-12: DA-12



Summary for Subcatchment DA-13: DA-13

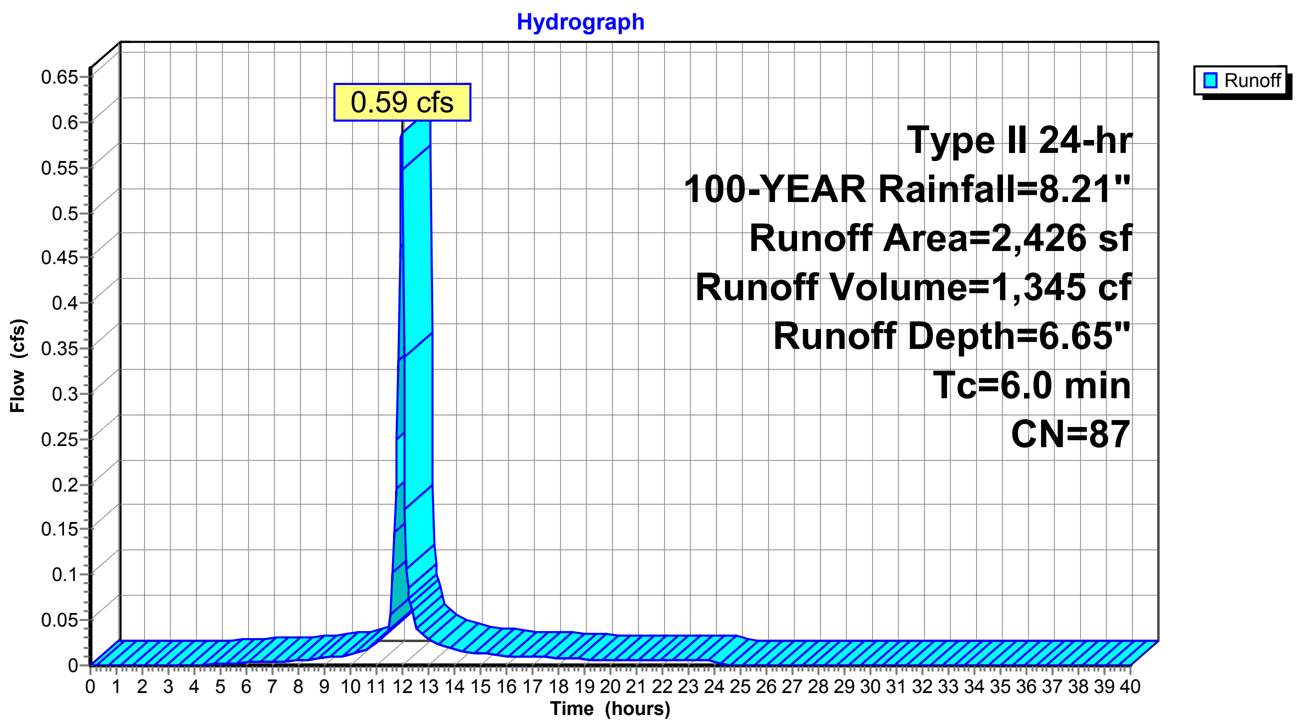
Runoff = 0.59 cfs @ 11.96 hrs, Volume= 1,345 cf, Depth= 6.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
1,105	74	>75% Grass cover, Good, HSG C
1,321	98	Paved parking, HSG C
2,426	87	Weighted Average
1,105		45.55% Pervious Area
1,321		54.45% Impervious Area

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

Subcatchment DA-13: DA-13



Summary for Subcatchment DA-14: DA-14

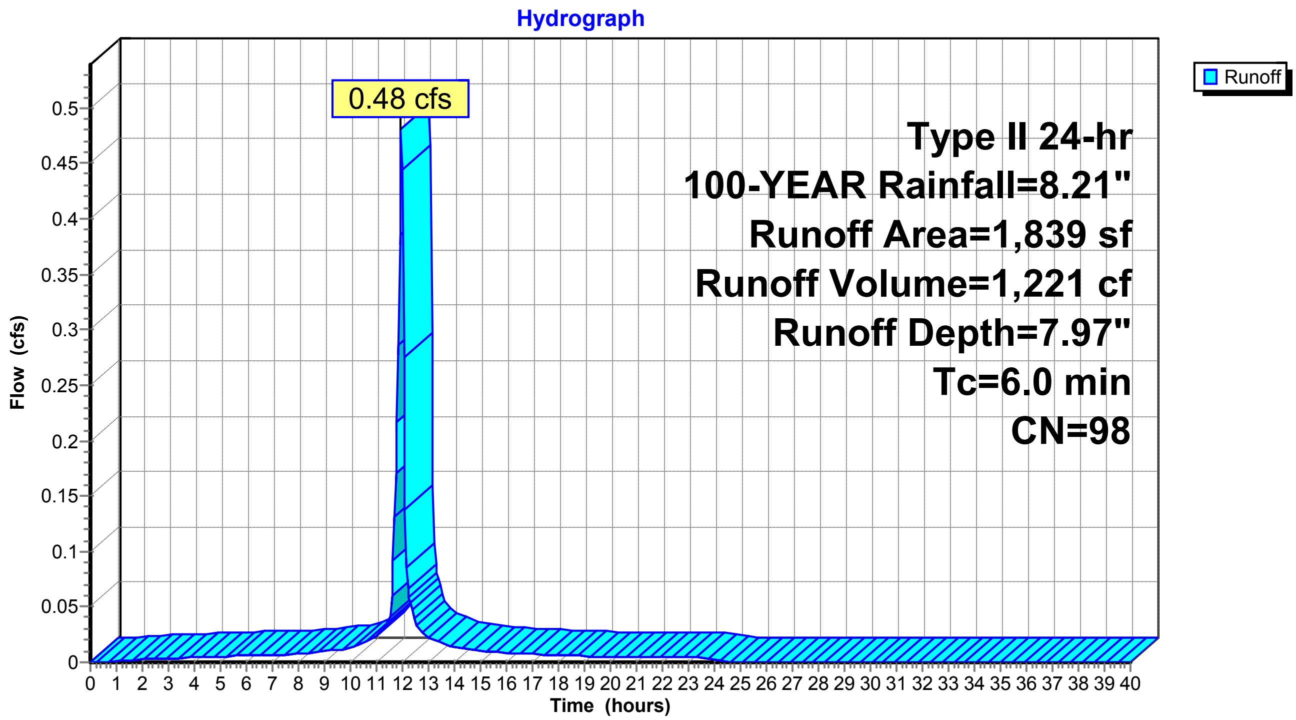
Runoff = 0.48 cfs @ 11.96 hrs, Volume= 1,221 cf, Depth= 7.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
1,839	98	Paved parking, HSG C
1,839		100.00% Impervious Area

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

Subcatchment DA-14: DA-14



Summary for Subcatchment DA-15: DA-15

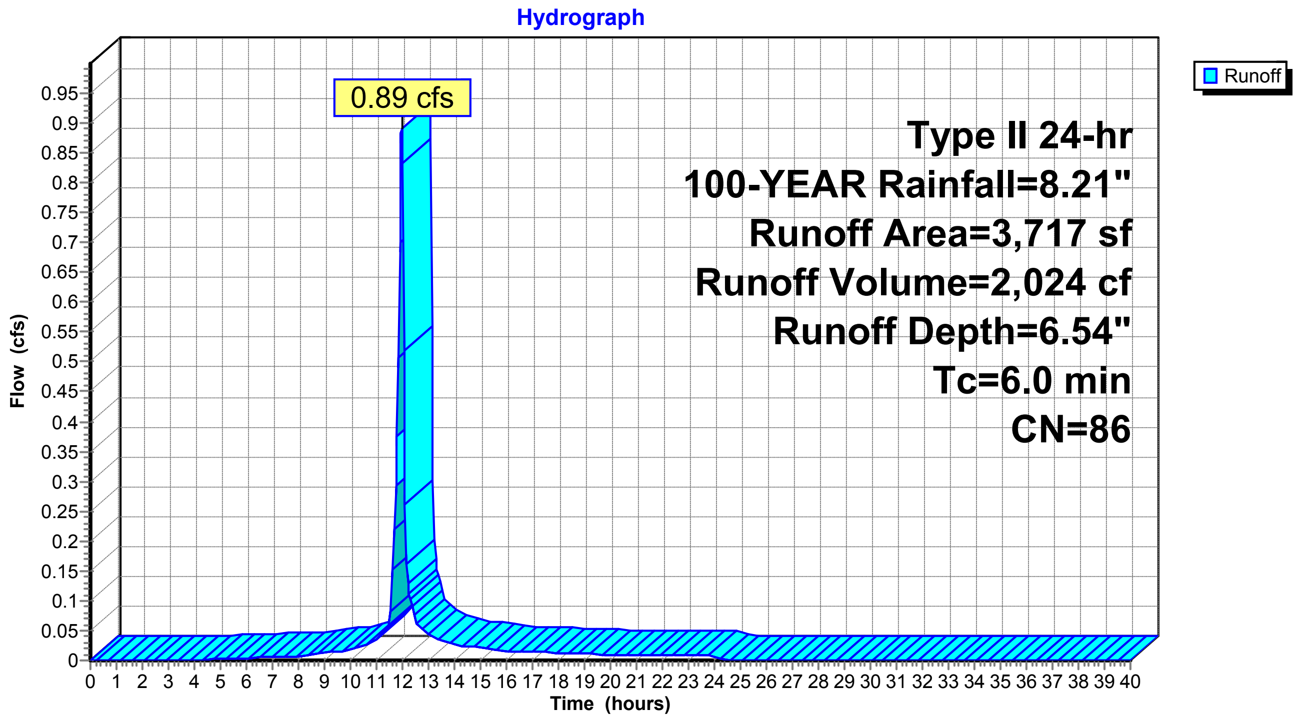
Runoff = 0.89 cfs @ 11.96 hrs, Volume= 2,024 cf, Depth= 6.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
1,782	74	>75% Grass cover, Good, HSG C
1,935	98	Paved parking, HSG C
3,717	86	Weighted Average
1,782		47.94% Pervious Area
1,935		52.06% Impervious Area

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

Subcatchment DA-15: DA-15



Summary for Subcatchment DA-16: DA-16

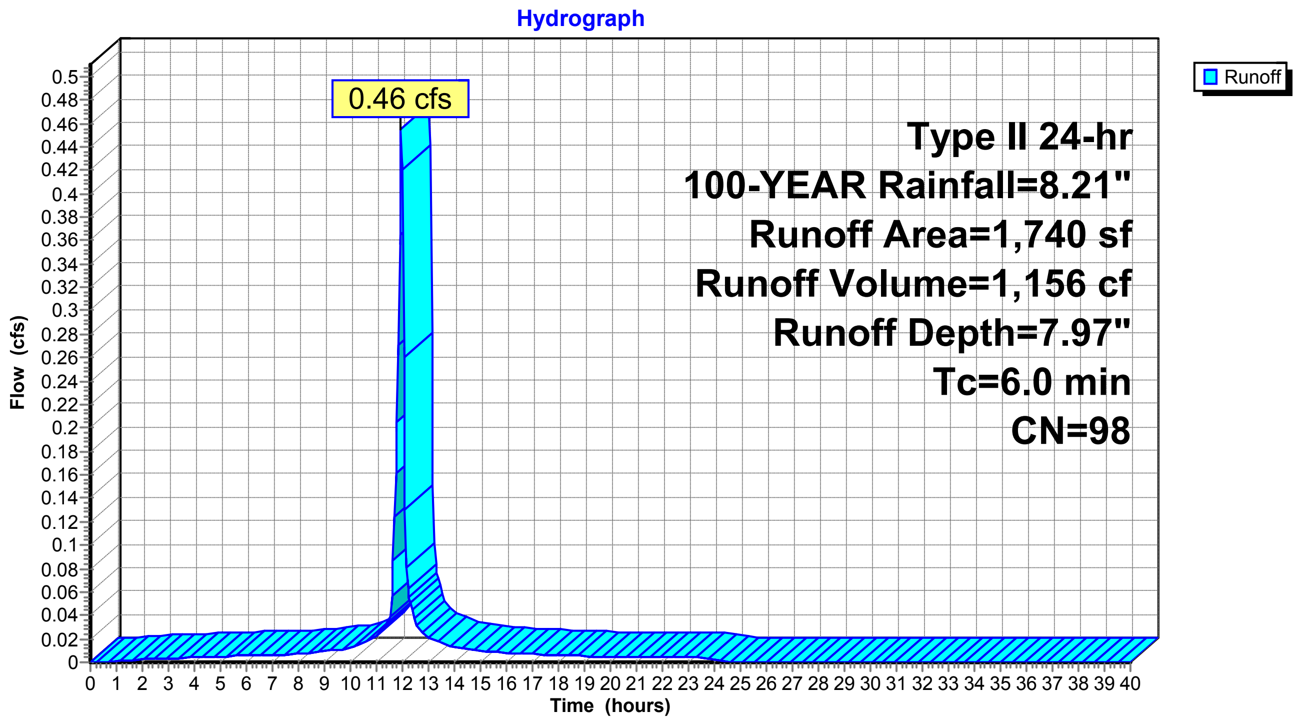
Runoff = 0.46 cfs @ 11.96 hrs, Volume= 1,156 cf, Depth= 7.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
1,740	98	Paved parking, HSG C
1,740		100.00% Impervious Area

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

Subcatchment DA-16: DA-16



Summary for Subcatchment DA-17: DA-17

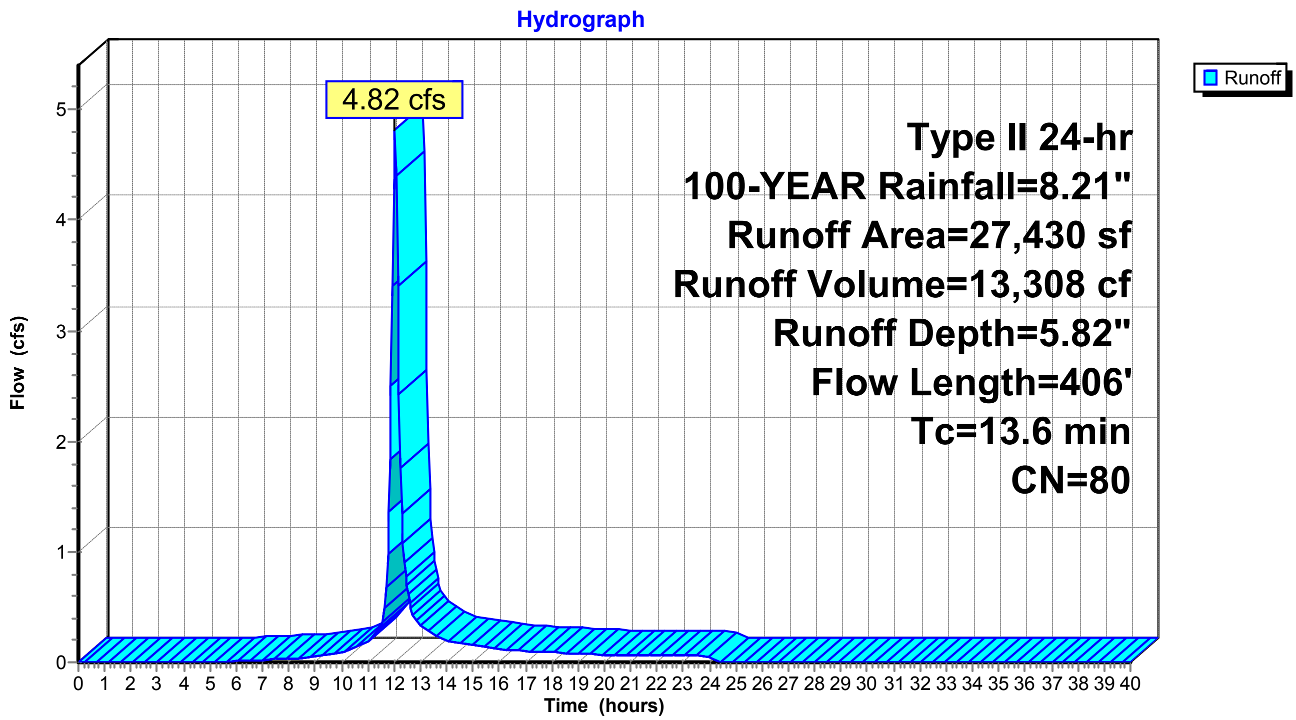
Runoff = 4.82 cfs @ 12.05 hrs, Volume= 13,308 cf, Depth= 5.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
20,898	74	>75% Grass cover, Good, HSG C
6,532	98	Paved parking, HSG C
27,430	80	Weighted Average
20,898		76.19% Pervious Area
6,532		23.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.5	100	0.0350	0.15		**Sheet Flow, G-H** Grass: Dense n= 0.240 P2= 3.17"
2.1	306	0.1160	2.38		**Shallow Concentrated Flow, H-I** Short Grass Pasture Kv= 7.0 fps
13.6	406	Total			

Subcatchment DA-17: DA-17



Summary for Subcatchment DA-18: DA-18

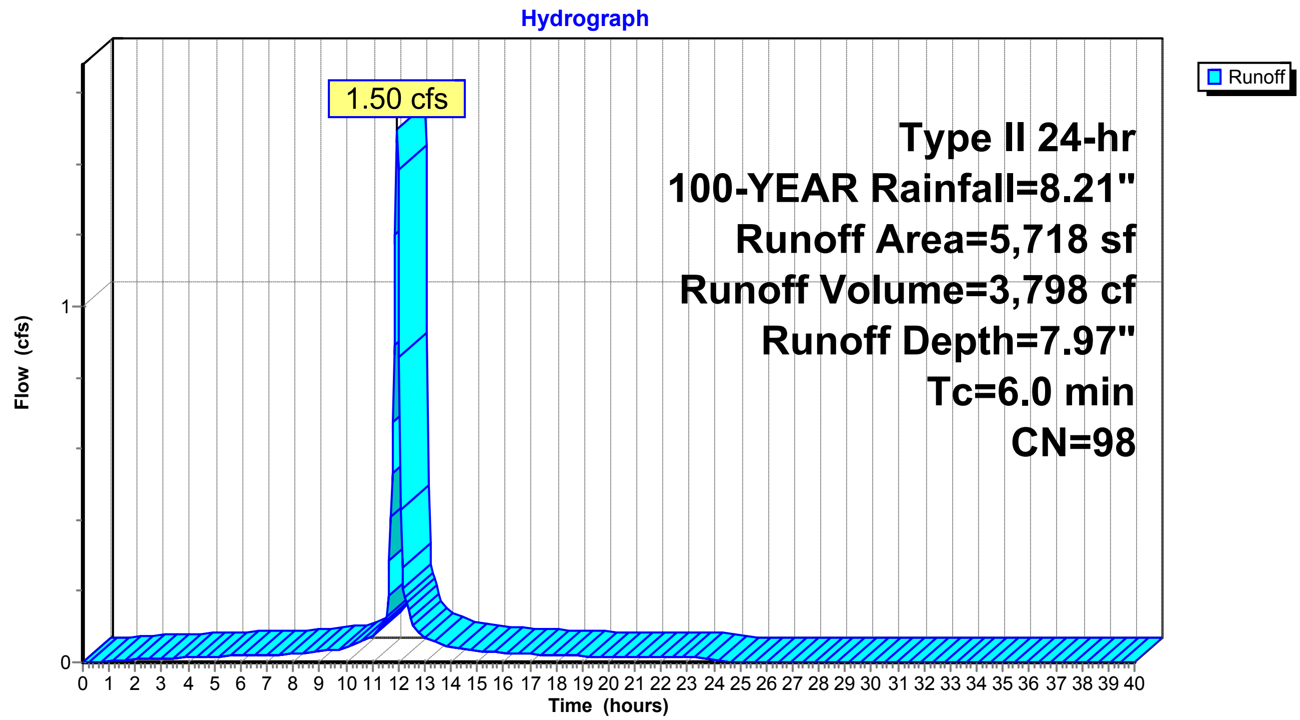
Runoff = 1.50 cfs @ 11.96 hrs, Volume= 3,798 cf, Depth= 7.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
5,718	98	Paved parking, HSG C
5,718		100.00% Impervious Area

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

Subcatchment DA-18: DA-18



Summary for Subcatchment DA-19: DA-19

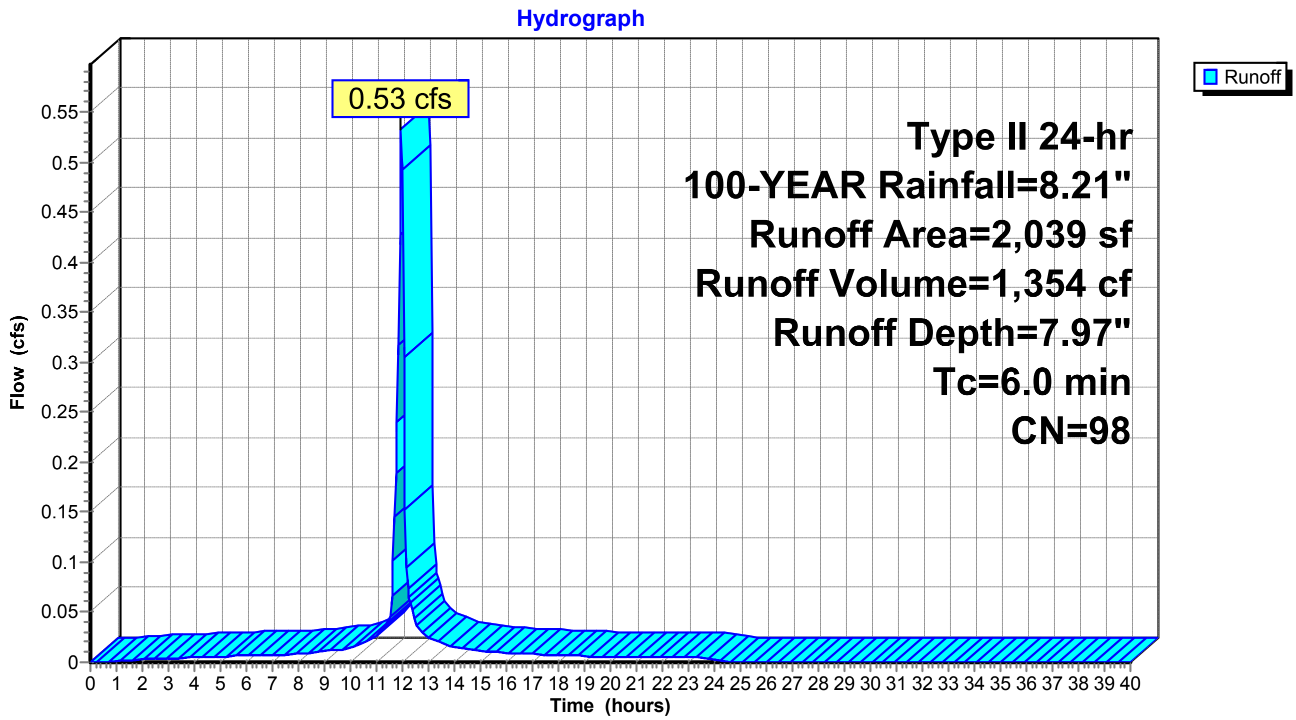
Runoff = 0.53 cfs @ 11.96 hrs, Volume= 1,354 cf, Depth= 7.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
2,039	98	Paved parking, HSG C
2,039		100.00% Impervious Area

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

Subcatchment DA-19: DA-19



Summary for Subcatchment DA-2: DA-2

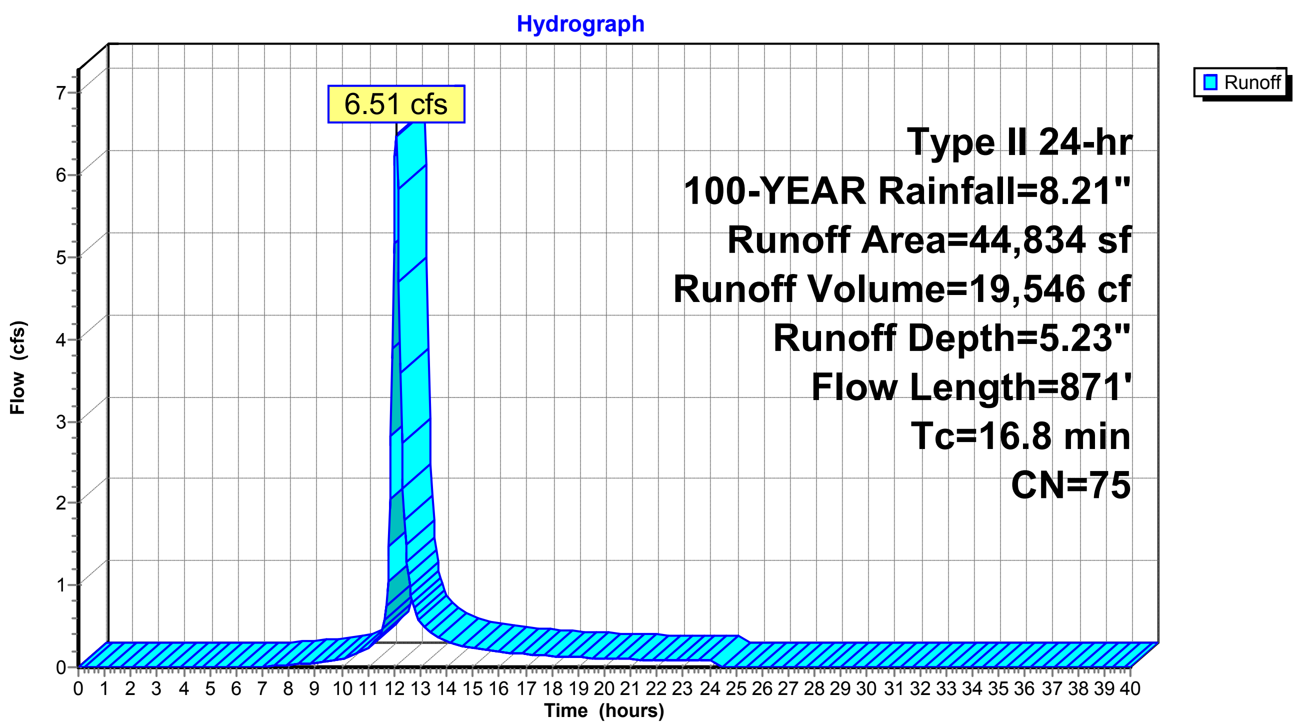
Runoff = 6.51 cfs @ 12.09 hrs, Volume= 19,546 cf, Depth= 5.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
43,705	74	>75% Grass cover, Good, HSG C
1,129	98	Paved parking, HSG C
44,834	75	Weighted Average
43,705		97.48% Pervious Area
1,129		2.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	100	0.0375	0.15		**Sheet Flow, M-N** Grass: Dense n= 0.240 P2= 3.17"
5.6	771	0.1070	2.29		**Shallow Concentrated Flow, N-O** Short Grass Pasture Kv= 7.0 fps
16.8	871	Total			

Subcatchment DA-2: DA-2



Summary for Subcatchment DA-20: DA-20

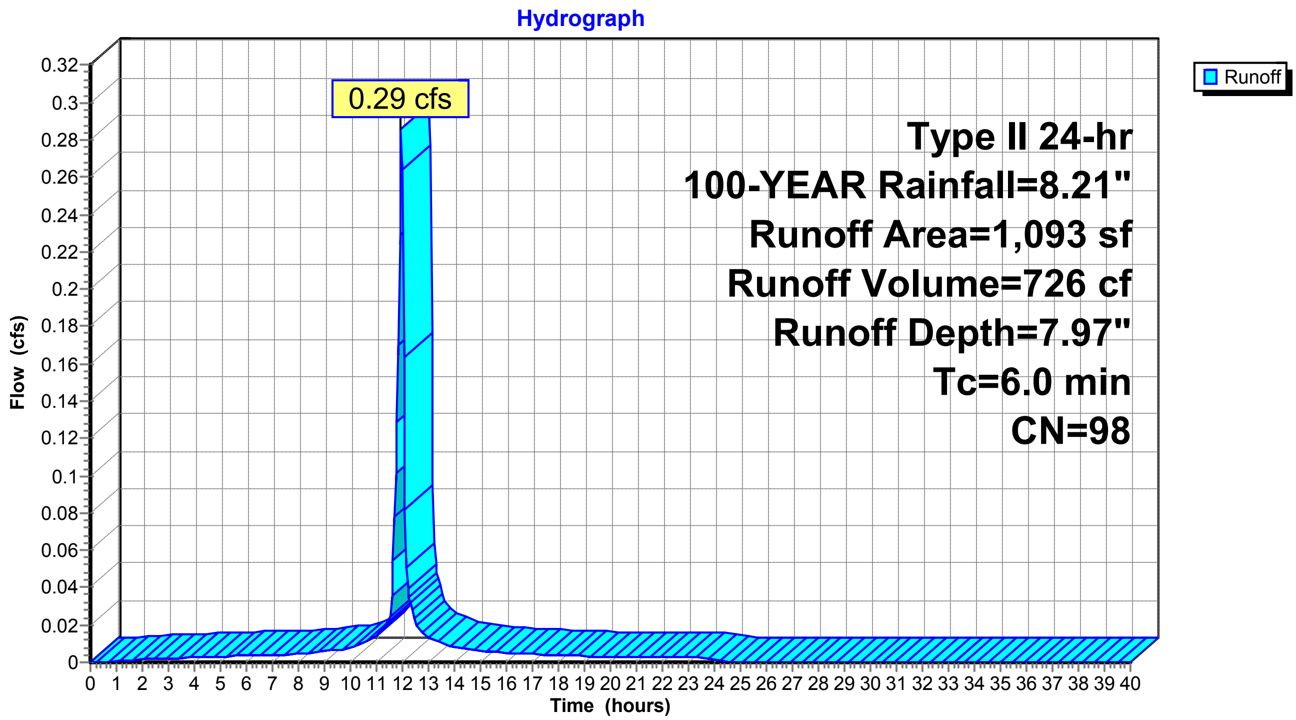
Runoff = 0.29 cfs @ 11.96 hrs, Volume= 726 cf, Depth= 7.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
1,093	98	Paved parking, HSG C
1,093		100.00% Impervious Area

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

Subcatchment DA-20: DA-20



Summary for Subcatchment DA-21: DA-21

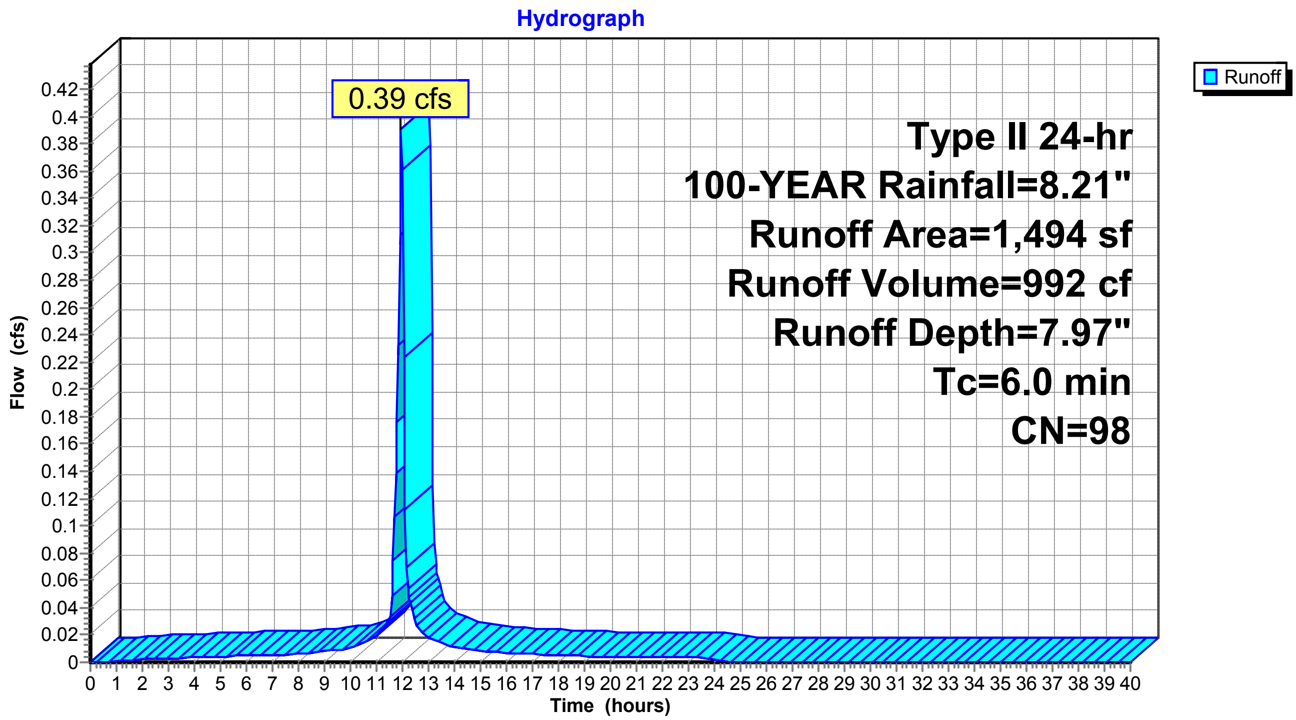
Runoff = 0.39 cfs @ 11.96 hrs, Volume= 992 cf, Depth= 7.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
1,494	98	Paved parking, HSG C
1,494		100.00% Impervious Area

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

Subcatchment DA-21: DA-21



Summary for Subcatchment DA-22: DA-22

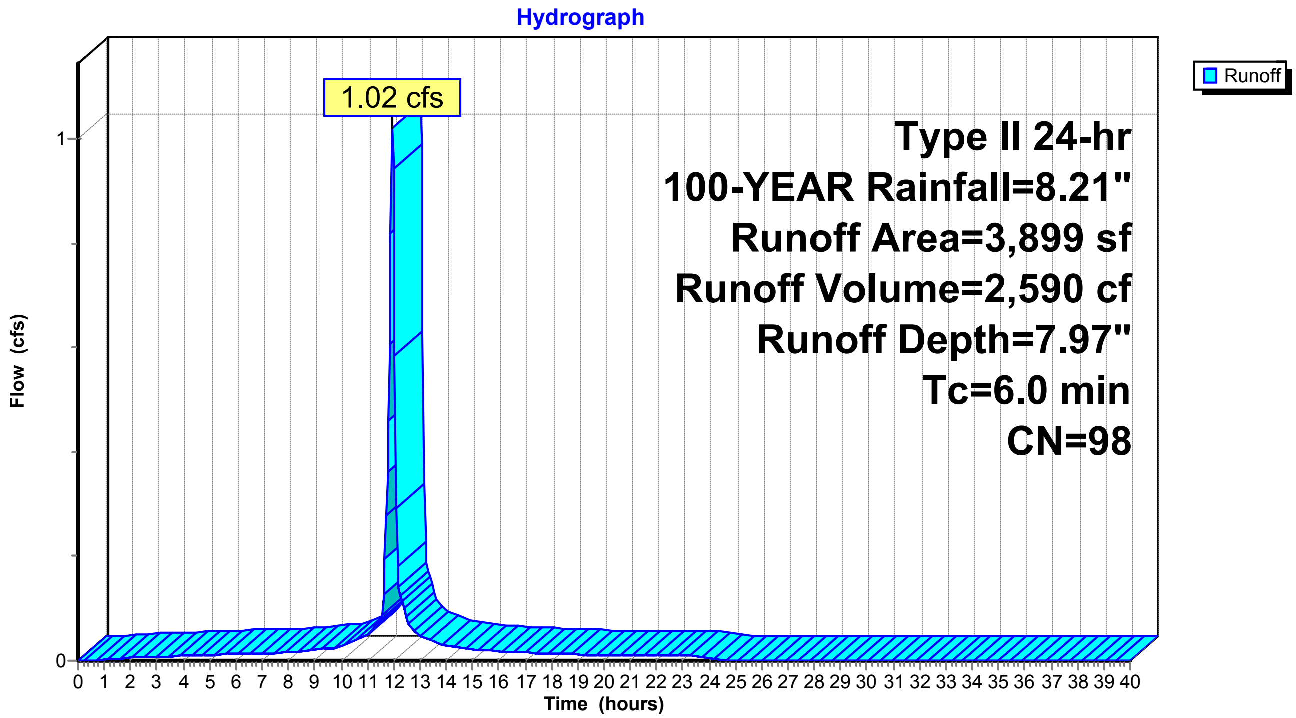
Runoff = 1.02 cfs @ 11.96 hrs, Volume= 2,590 cf, Depth= 7.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
50	74	>75% Grass cover, Good, HSG C
3,849	98	Paved parking, HSG C
3,899	98	Weighted Average
50		1.28% Pervious Area
3,849		98.72% Impervious Area

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

Subcatchment DA-22: DA-22



Summary for Subcatchment DA-23: DA-23

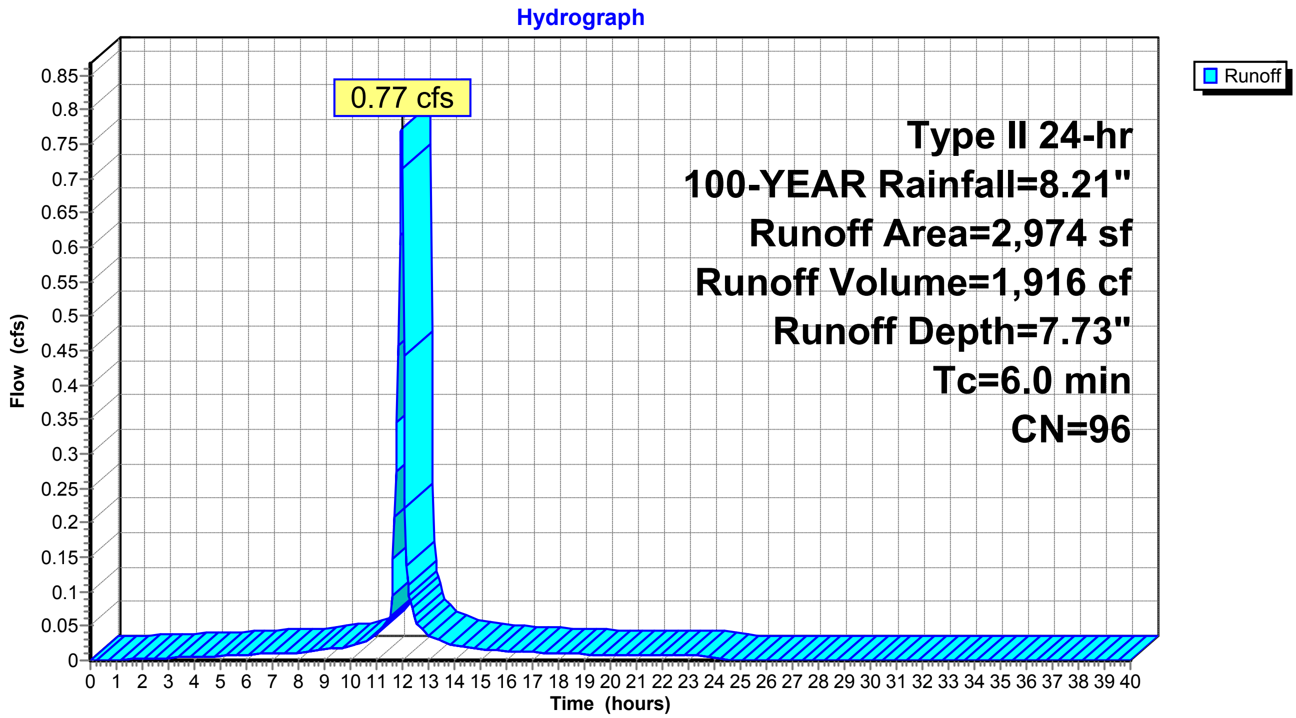
Runoff = 0.77 cfs @ 11.96 hrs, Volume= 1,916 cf, Depth= 7.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
209	74	>75% Grass cover, Good, HSG C
2,765	98	Paved parking, HSG C
2,974	96	Weighted Average
209		7.03% Pervious Area
2,765		92.97% Impervious Area

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

Subcatchment DA-23: DA-23



Summary for Subcatchment DA-24: DA-24

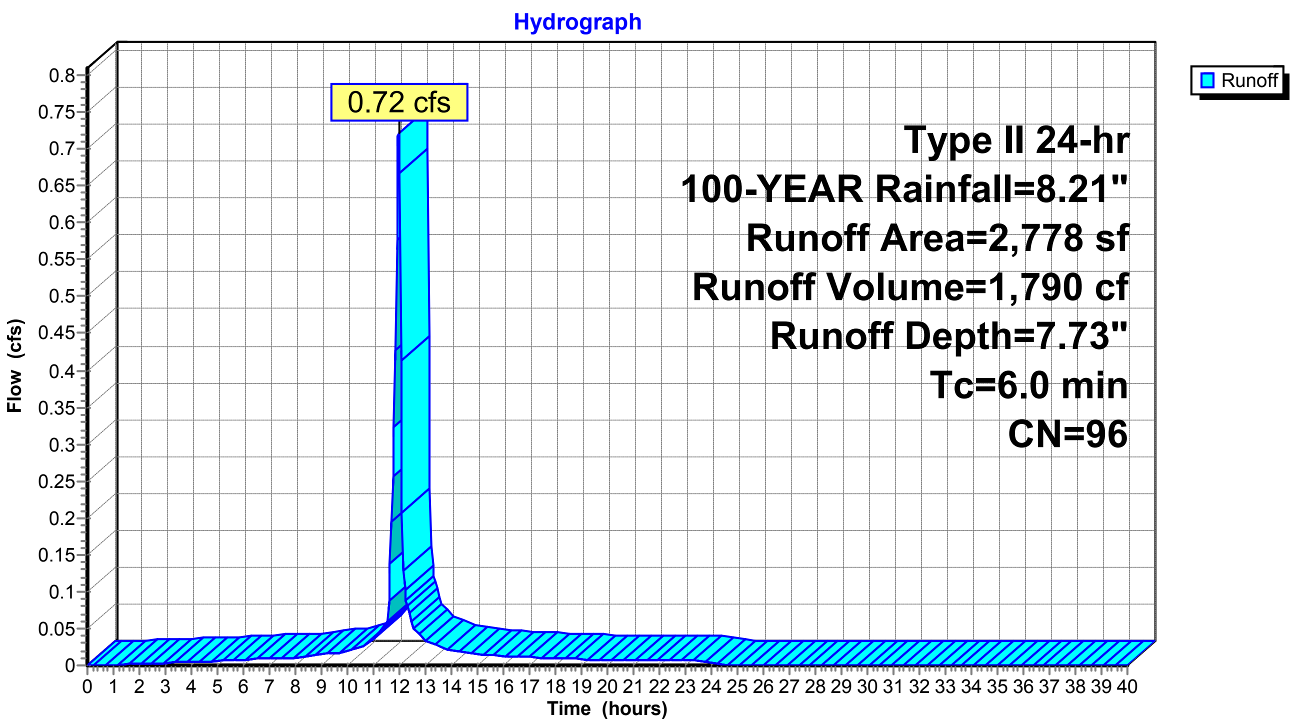
Runoff = 0.72 cfs @ 11.96 hrs, Volume= 1,790 cf, Depth= 7.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
211	74	>75% Grass cover, Good, HSG C
2,567	98	Paved parking, HSG C
2,778	96	Weighted Average
211		7.60% Pervious Area
2,567		92.40% Impervious Area

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

Subcatchment DA-24: DA-24



Summary for Subcatchment DA-25: DA-25

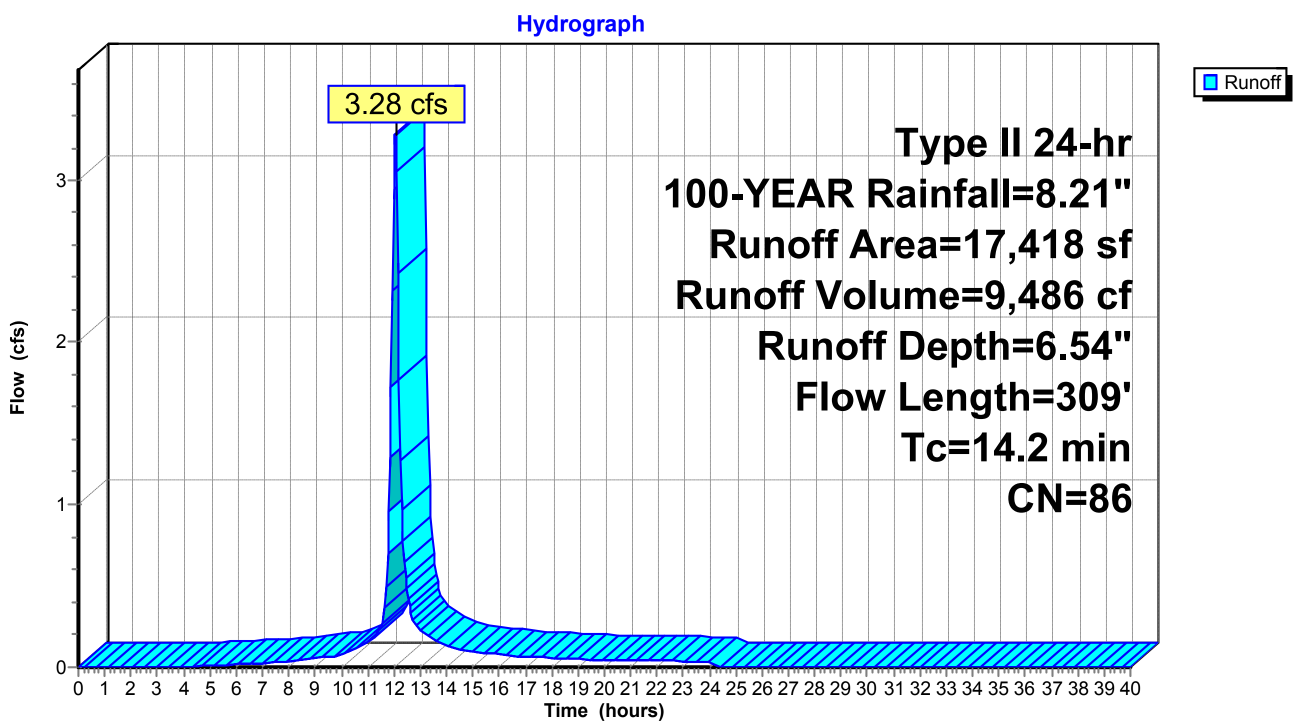
Runoff = 3.28 cfs @ 12.05 hrs, Volume= 9,486 cf, Depth= 6.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
8,778	74	>75% Grass cover, Good, HSG C
8,640	98	Paved parking, HSG C
17,418	86	Weighted Average
8,778		50.40% Pervious Area
8,640		49.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	91	0.0220	0.12		**Sheet Flow, J-K** Grass: Dense n= 0.240 P2= 3.17"
1.4	218	0.0170	2.65		**Shallow Concentrated Flow, J-L** Paved Kv= 20.3 fps
14.2	309	Total			

Subcatchment DA-25: DA-25



Summary for Subcatchment DA-26: DA-26

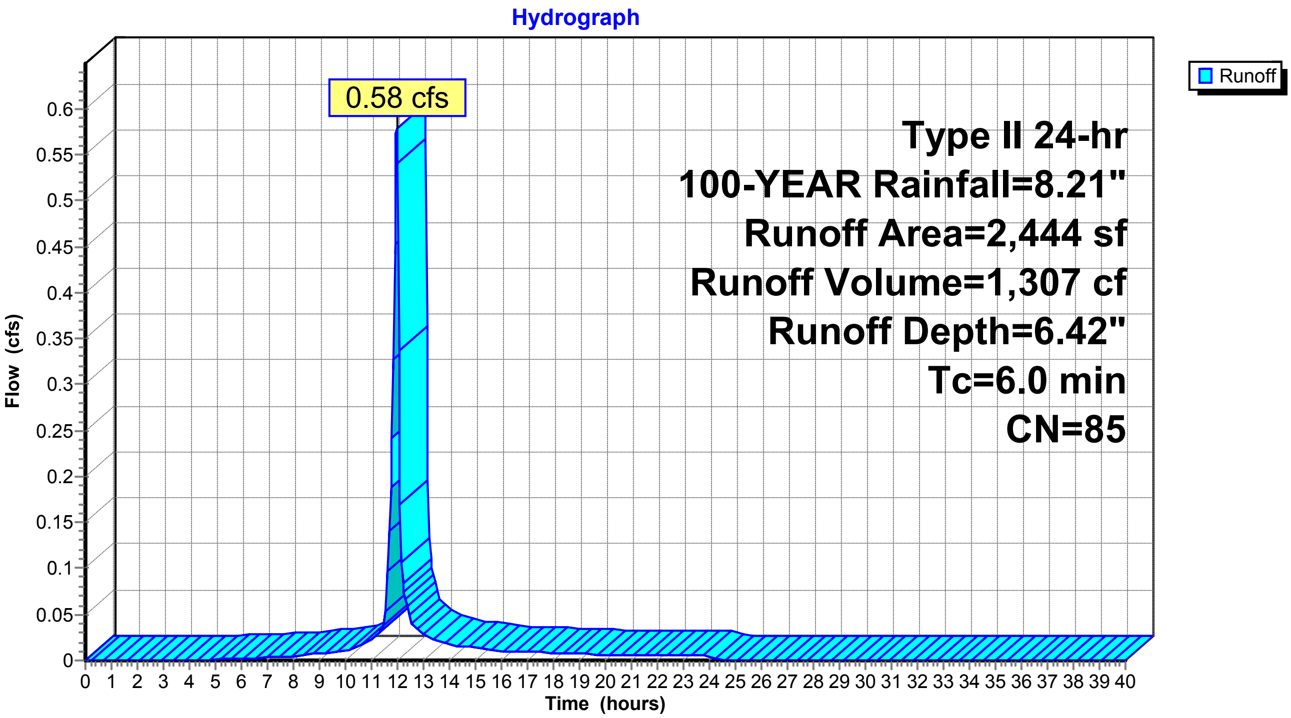
Runoff = 0.58 cfs @ 11.96 hrs, Volume= 1,307 cf, Depth= 6.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
1,334	74	>75% Grass cover, Good, HSG C
1,110	98	Paved parking, HSG C
2,444	85	Weighted Average
1,334		54.58% Pervious Area
1,110		45.42% Impervious Area

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

Subcatchment DA-26: DA-26



Summary for Subcatchment DA-27: DA-27

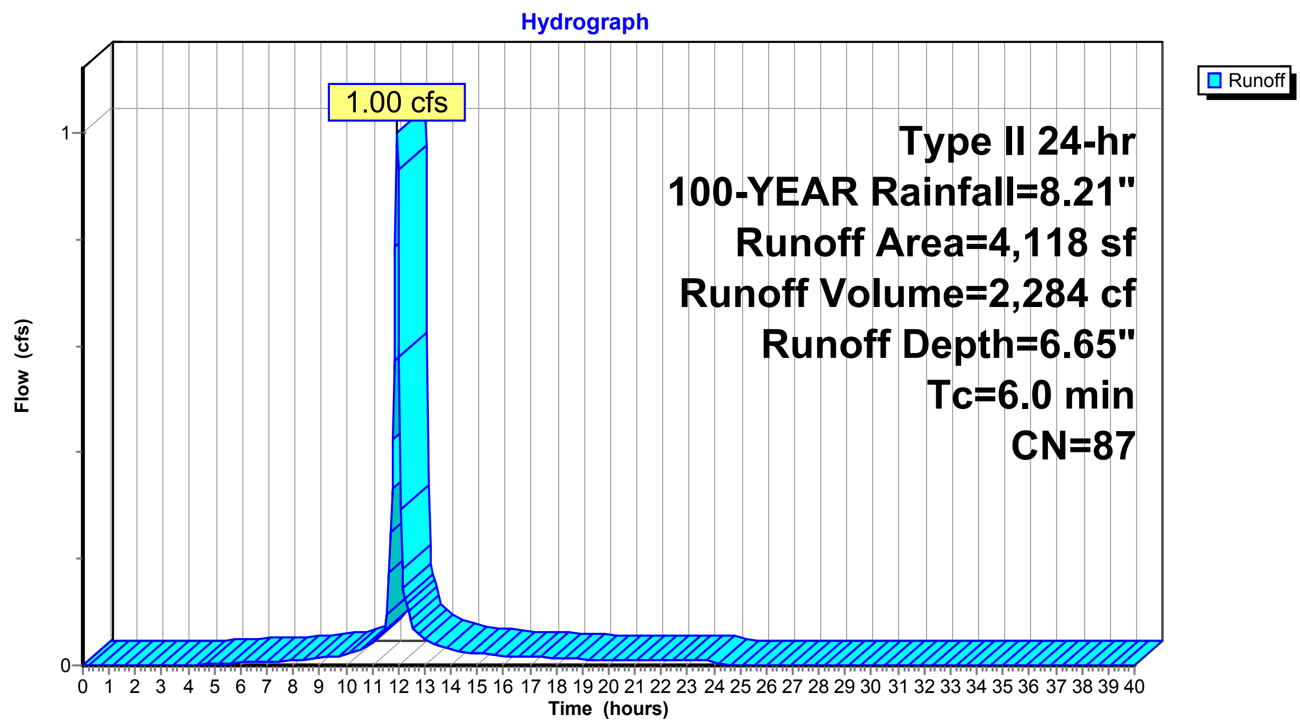
Runoff = 1.00 cfs @ 11.96 hrs, Volume= 2,284 cf, Depth= 6.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
1,932	74	>75% Grass cover, Good, HSG C
2,186	98	Paved parking, HSG C
4,118	87	Weighted Average
1,932		46.92% Pervious Area
2,186		53.08% Impervious Area

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

Subcatchment DA-27: DA-27



Summary for Subcatchment DA-28: DA-28

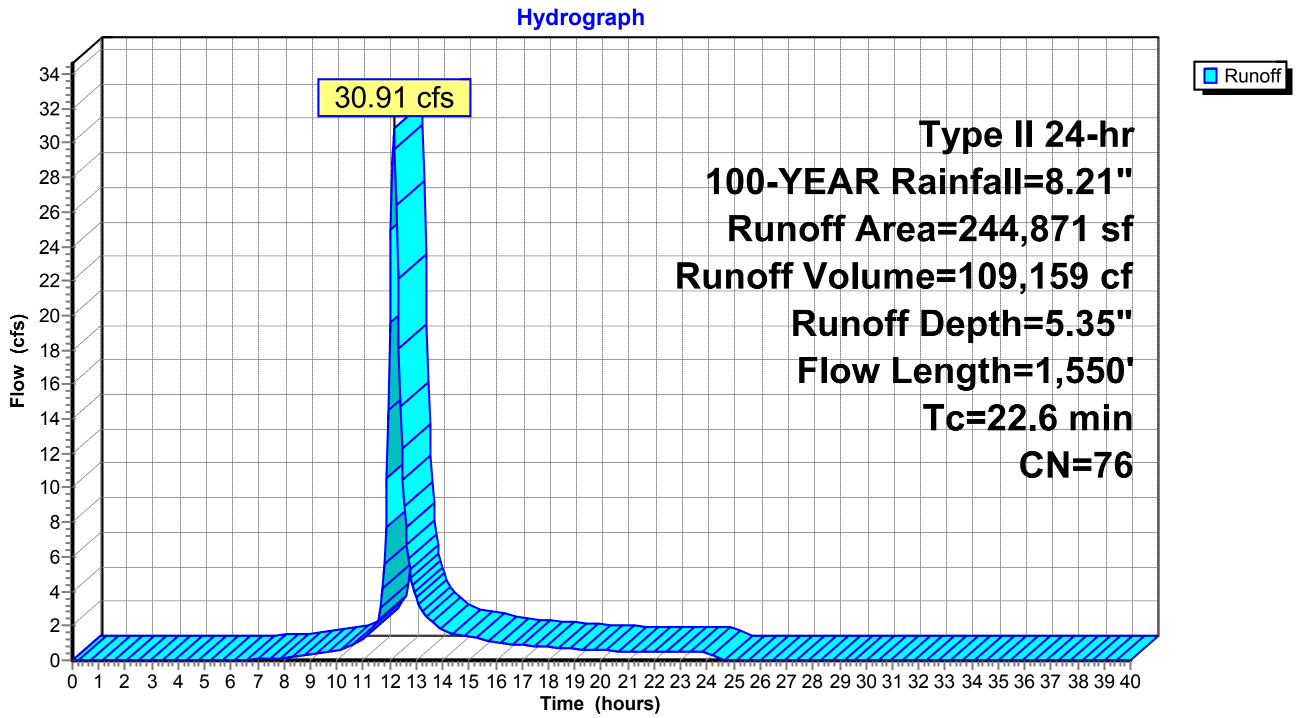
Runoff = 30.91 cfs @ 12.15 hrs, Volume= 109,159 cf, Depth= 5.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
167,699	74	>75% Grass cover, Good, HSG C
58,990	73	Woods, Fair, HSG C
18,182	98	Paved parking, HSG C
244,871	76	Weighted Average
226,689		92.57% Pervious Area
18,182		7.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	100	0.0450	0.16		**Sheet Flow, S-T** Grass: Dense n= 0.240 P2= 3.17"
12.2	1,450	0.0795	1.97		**Shallow Concentrated Flow, T-U** Short Grass Pasture Kv= 7.0 fps
22.6	1,550	Total			

Subcatchment DA-28: DA-28



Summary for Subcatchment DA-29: DA-29

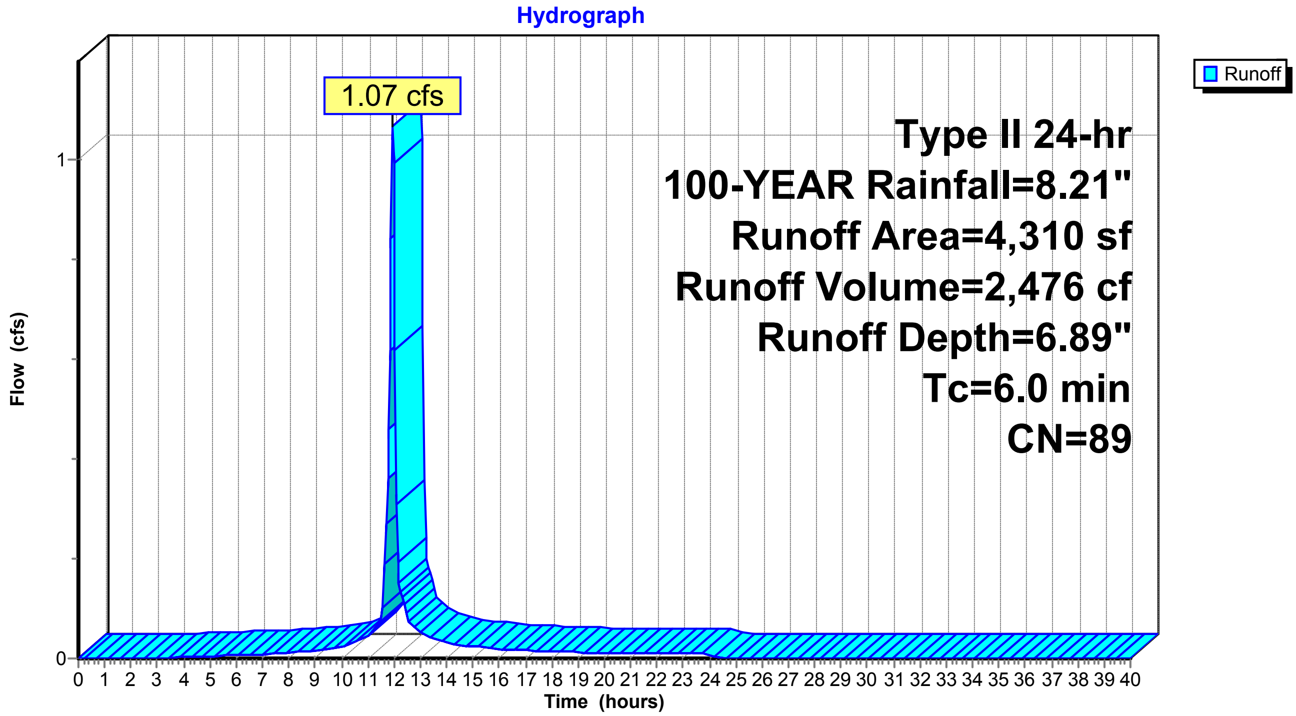
Runoff = 1.07 cfs @ 11.96 hrs, Volume= 2,476 cf, Depth= 6.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
1,648	74	>75% Grass cover, Good, HSG C
0	73	Woods, Fair, HSG C
2,662	98	Paved parking, HSG C
4,310	89	Weighted Average
1,648		38.24% Pervious Area
2,662		61.76% Impervious Area

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

Subcatchment DA-29: DA-29



Summary for Subcatchment DA-3: DA-3

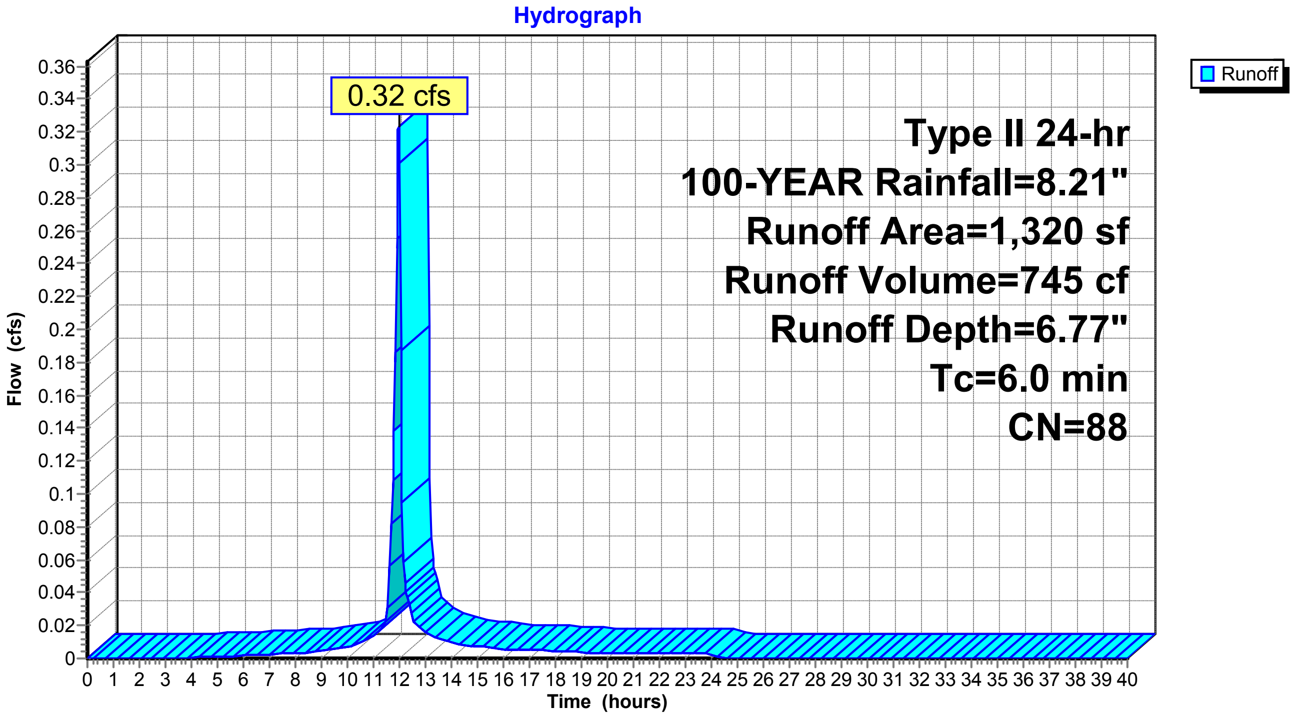
Runoff = 0.32 cfs @ 11.96 hrs, Volume= 745 cf, Depth= 6.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
542	74	>75% Grass cover, Good, HSG C
0	73	Woods, Fair, HSG C
778	98	Paved parking, HSG C
1,320	88	Weighted Average
542		41.06% Pervious Area
778		58.94% Impervious Area

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

Subcatchment DA-3: DA-3



Summary for Subcatchment DA-30: DA-30

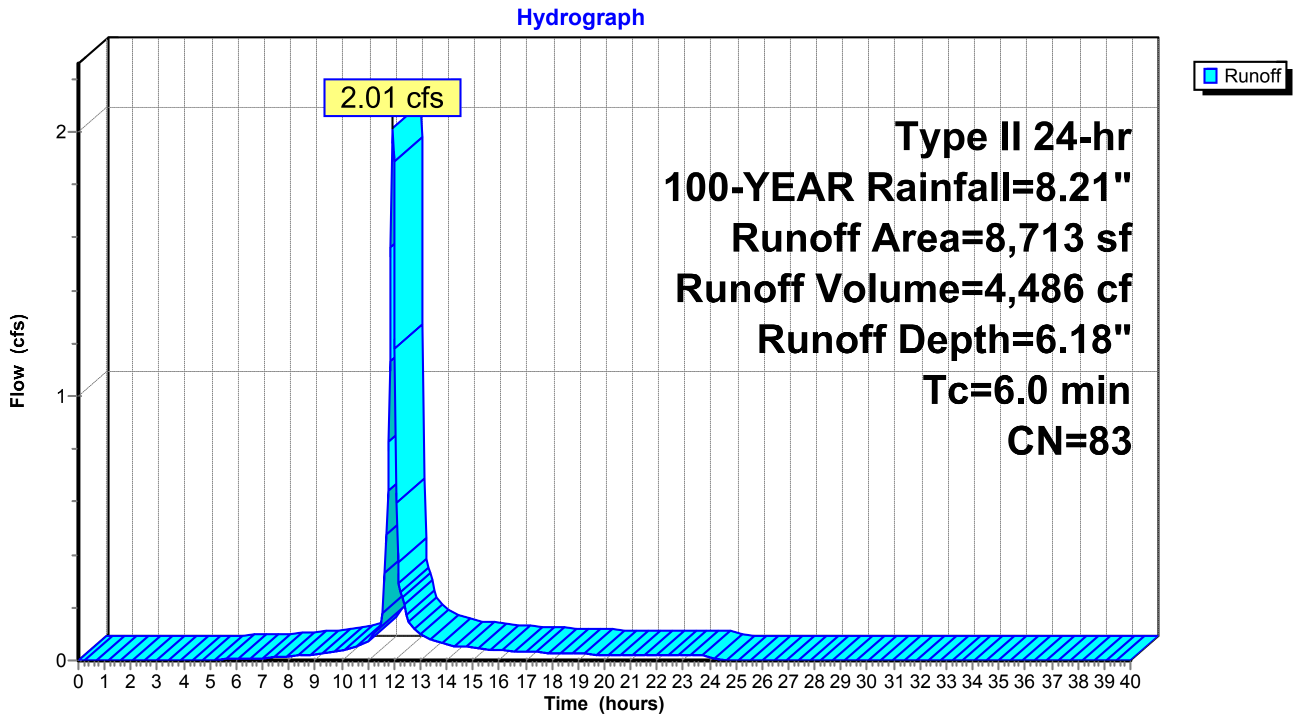
Runoff = 2.01 cfs @ 11.96 hrs, Volume= 4,486 cf, Depth= 6.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
5,560	74	>75% Grass cover, Good, HSG C
3,153	98	Paved parking, HSG C
8,713	83	Weighted Average
5,560		63.81% Pervious Area
3,153		36.19% Impervious Area

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

Subcatchment DA-30: DA-30



Summary for Subcatchment DA-31: DA-31

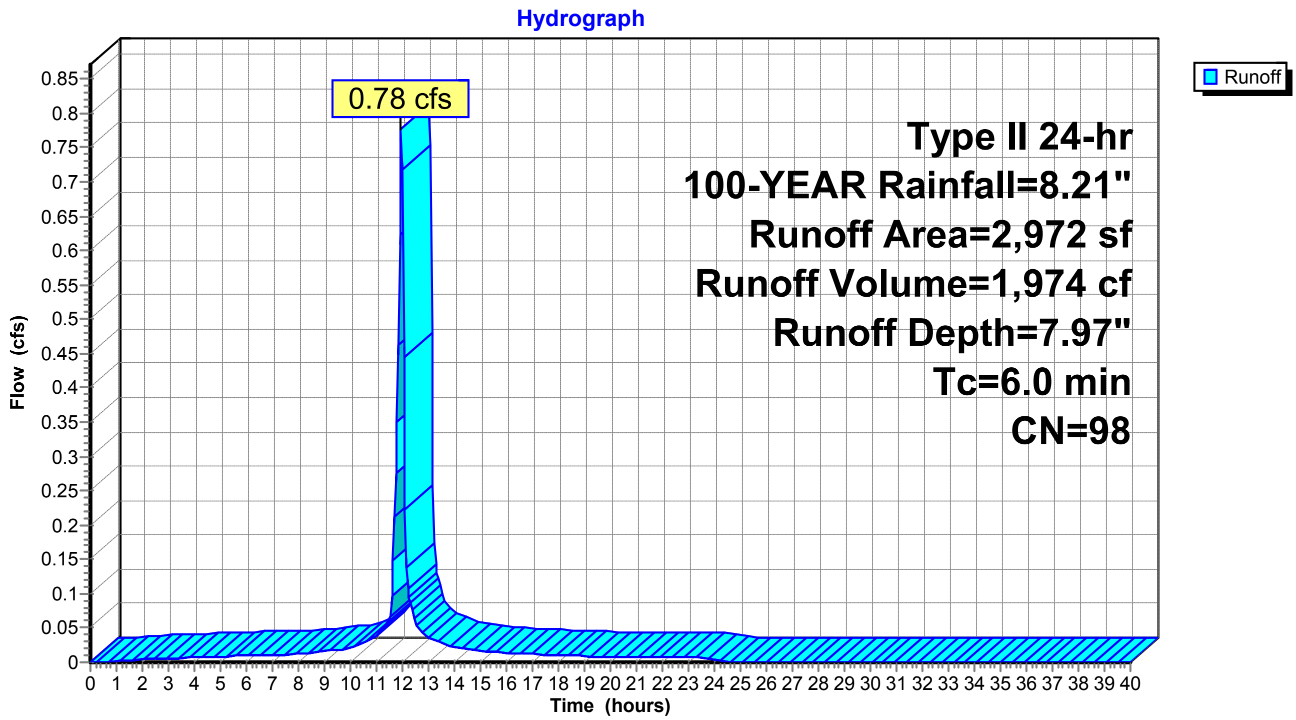
Runoff = 0.78 cfs @ 11.96 hrs, Volume= 1,974 cf, Depth= 7.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
2,972	98	Paved parking, HSG C
2,972		100.00% Impervious Area

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

Subcatchment DA-31: DA-31



Summary for Subcatchment DA-32: DA-32

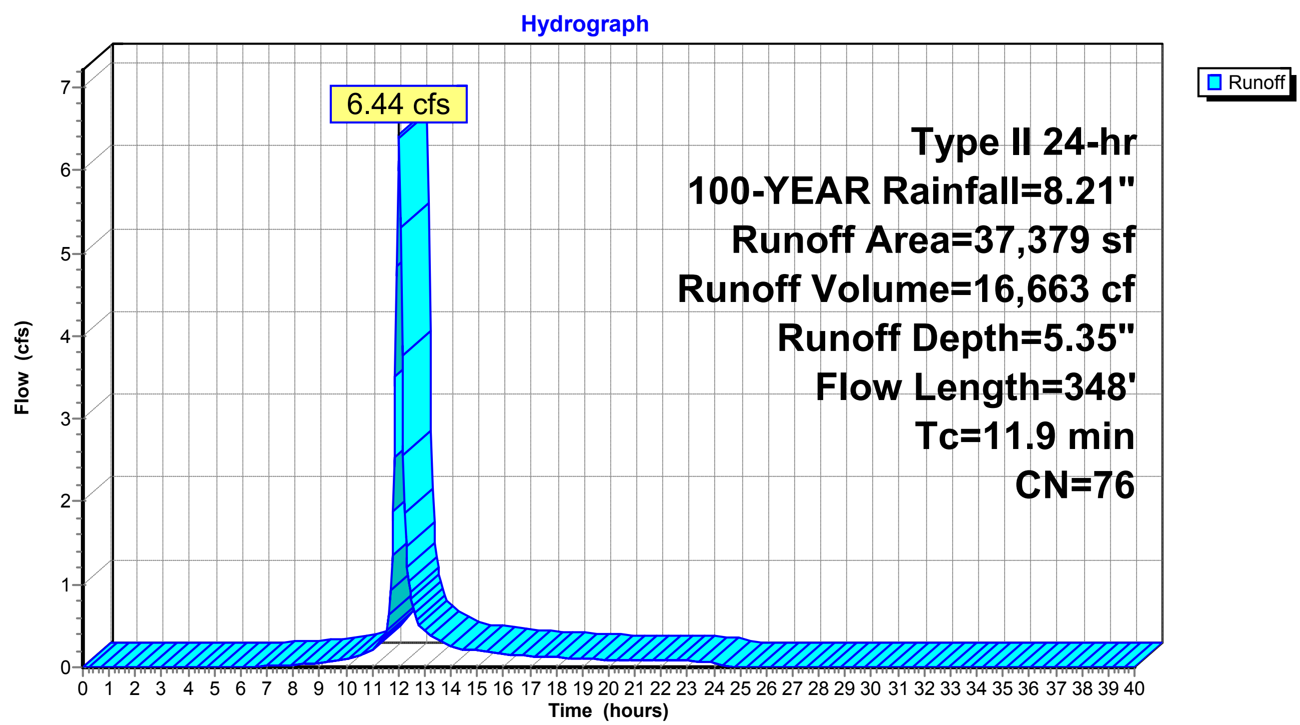
Runoff = 6.44 cfs @ 12.04 hrs, Volume= 16,663 cf, Depth= 5.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
33,898	74	>75% Grass cover, Good, HSG C
3,481	98	Paved parking, HSG C
37,379	76	Weighted Average
33,898		90.69% Pervious Area
3,481		9.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	100	0.1800	0.28		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.17"
5.9	248	0.0100	0.70		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
11.9	348	Total			

Subcatchment DA-32: DA-32



Summary for Subcatchment DA-33: DA-33

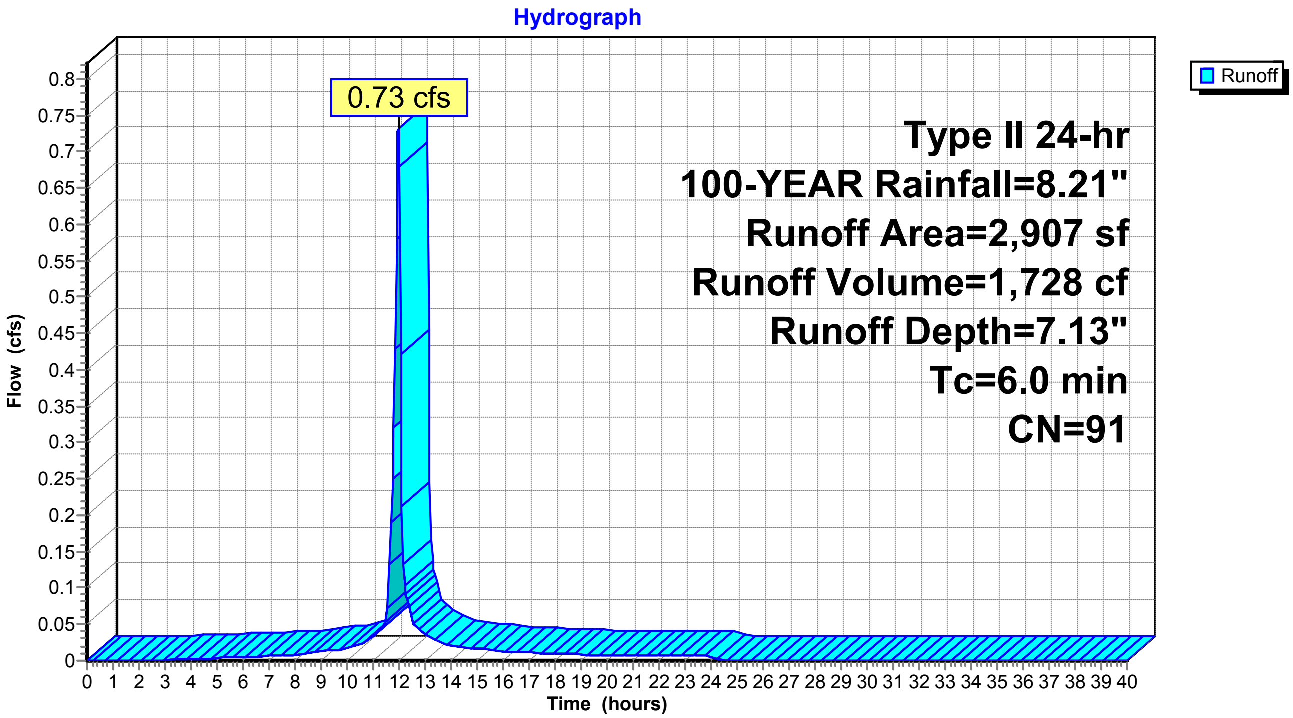
Runoff = 0.73 cfs @ 11.96 hrs, Volume= 1,728 cf, Depth= 7.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
882	74	>75% Grass cover, Good, HSG C
2,025	98	Paved parking, HSG C
2,907	91	Weighted Average
882		30.34% Pervious Area
2,025		69.66% Impervious Area

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

Subcatchment DA-33: DA-33



Summary for Subcatchment DA-34: DA-34

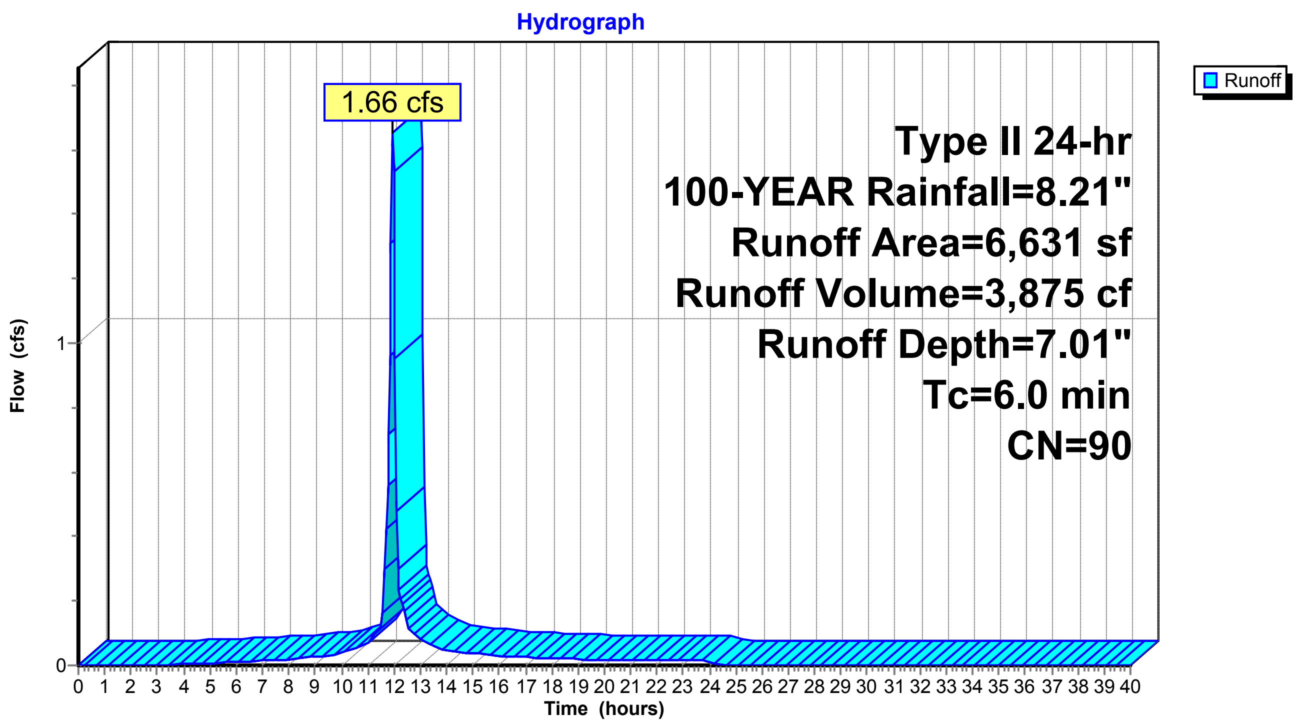
Runoff = 1.66 cfs @ 11.96 hrs, Volume= 3,875 cf, Depth= 7.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
2,314	74	>75% Grass cover, Good, HSG C
4,317	98	Paved parking, HSG C
6,631	90	Weighted Average
2,314		34.90% Pervious Area
4,317		65.10% Impervious Area

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

Subcatchment DA-34: DA-34



Summary for Subcatchment DA-35: DA-35

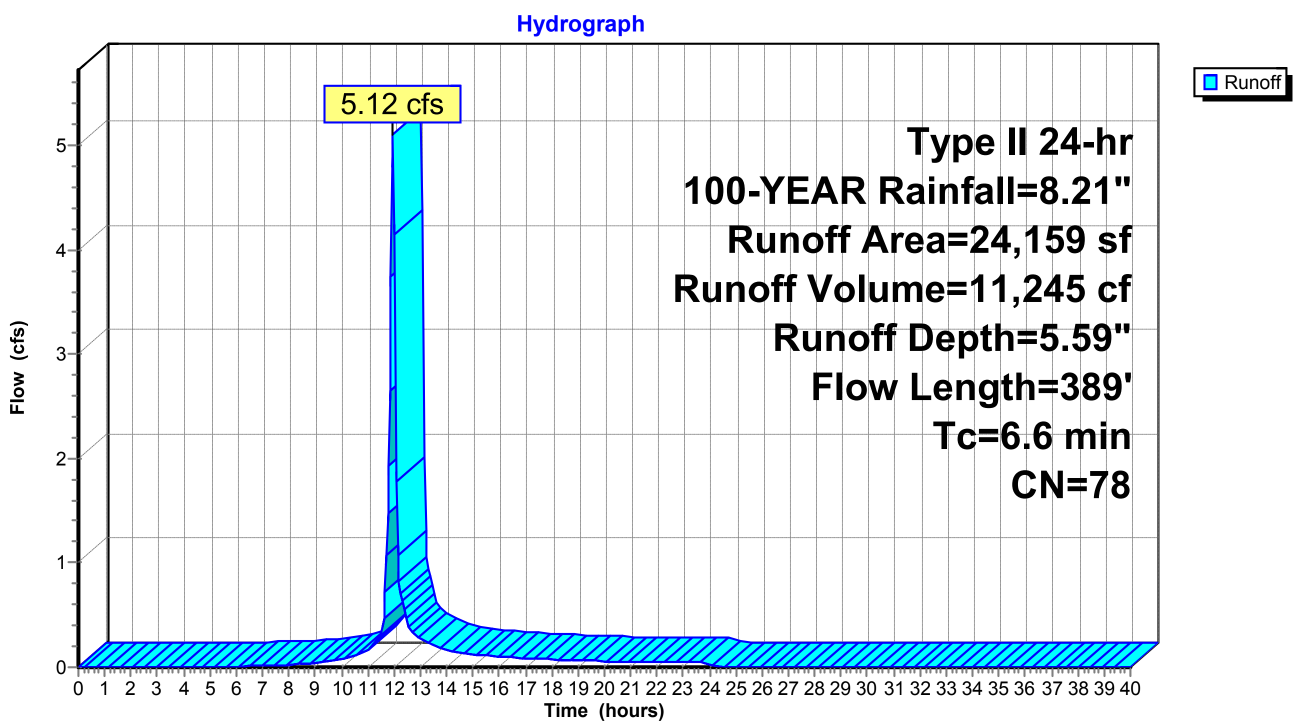
Runoff = 5.12 cfs @ 11.98 hrs, Volume= 11,245 cf, Depth= 5.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
20,497	74	>75% Grass cover, Good, HSG C
3,662	98	Paved parking, HSG C
24,159	78	Weighted Average
20,497		84.84% Pervious Area
3,662		15.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	100	0.2900	0.34		**Sheet Flow, D-E** Grass: Dense n= 0.240 P2= 3.17"
1.7	289	0.1560	2.76		**Shallow Concentrated Flow, E-F** Short Grass Pasture Kv= 7.0 fps
6.6	389	Total			

Subcatchment DA-35: DA-35



Summary for Subcatchment DA-36: DA-36 (Roofs)

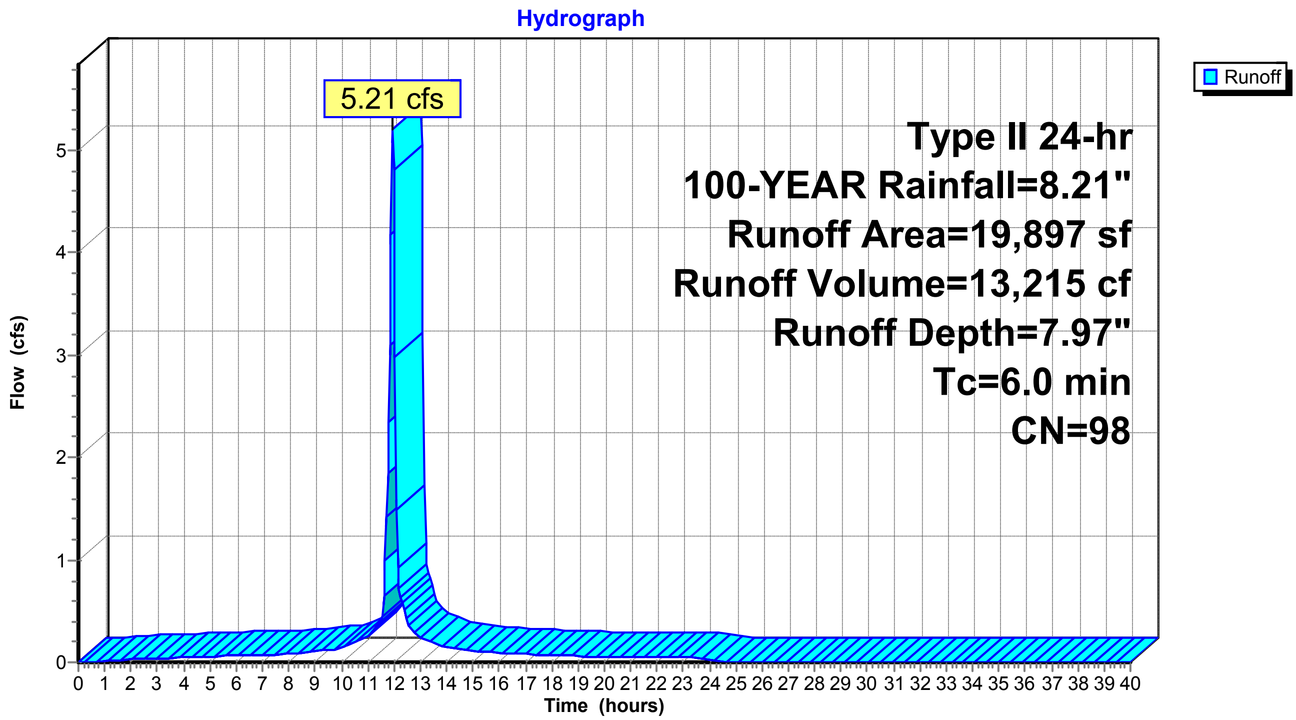
Runoff = 5.21 cfs @ 11.96 hrs, Volume= 13,215 cf, Depth= 7.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
19,897	98	Roofs, HSG C
19,897		100.00% Impervious Area

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

Subcatchment DA-36: DA-36 (Roofs)



Summary for Subcatchment DA-37: DA-37

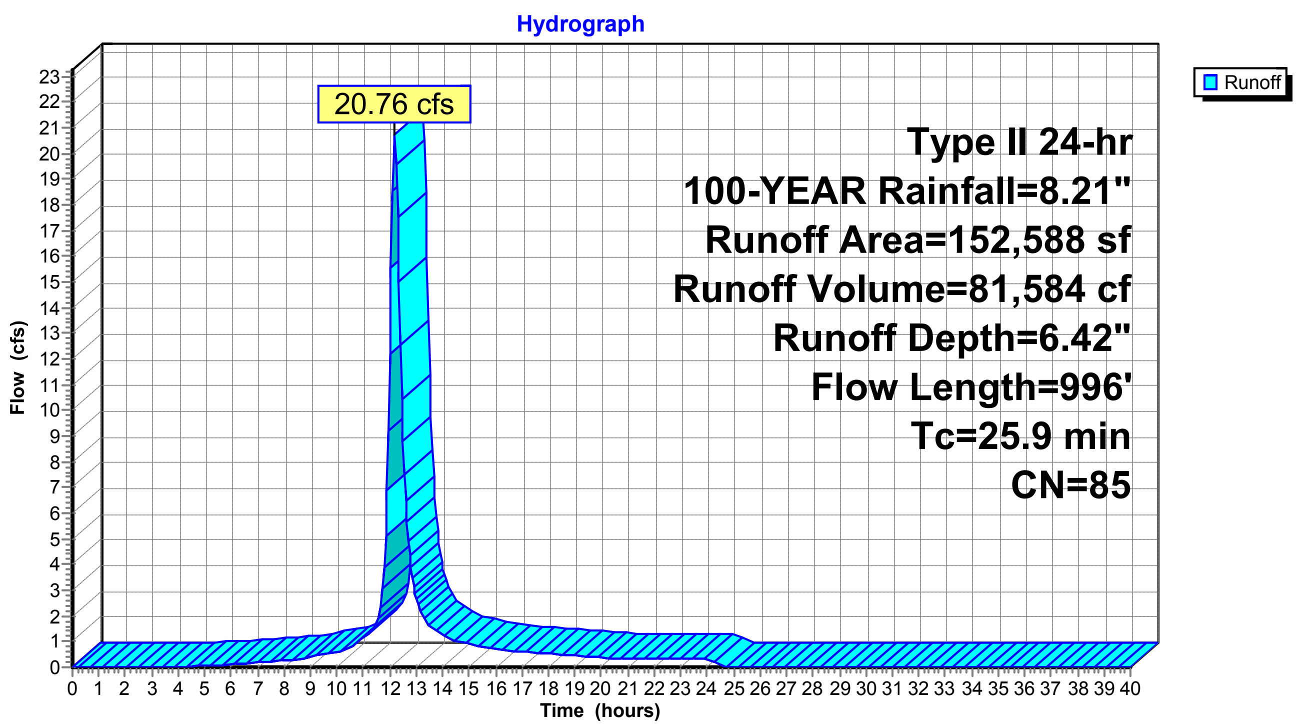
Runoff = 20.76 cfs @ 12.19 hrs, Volume= 81,584 cf, Depth= 6.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
102,918	79	Pasture/grassland/range, Fair, HSG C
49,670	98	Paved parking, HSG C
152,588	85	Weighted Average
102,918		67.45% Pervious Area
49,670		32.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.9	100	0.0100	0.09		**Sheet Flow, P-Q**
					Grass: Dense n= 0.240 P2= 3.17"
7.0	896	0.0926	2.13		**Shallow Concentrated Flow, Q-R**
					Short Grass Pasture Kv= 7.0 fps
25.9	996	Total			

Subcatchment DA-37: DA-37



Summary for Subcatchment DA-38: DA-38 (Roofs)

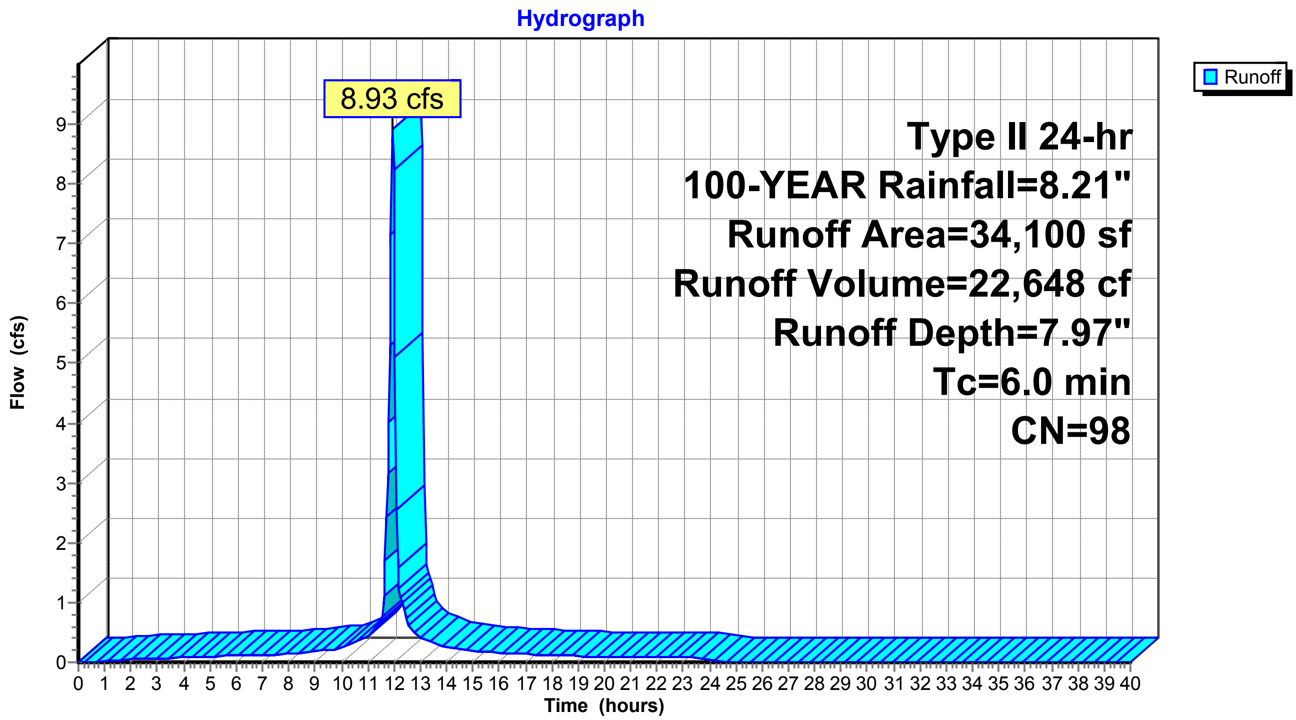
Runoff = 8.93 cfs @ 11.96 hrs, Volume= 22,648 cf, Depth= 7.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
34,100	98	Roofs, HSG C
34,100		100.00% Impervious Area

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

Subcatchment DA-38: DA-38 (Roofs)



Summary for Subcatchment DA-4: DA-4

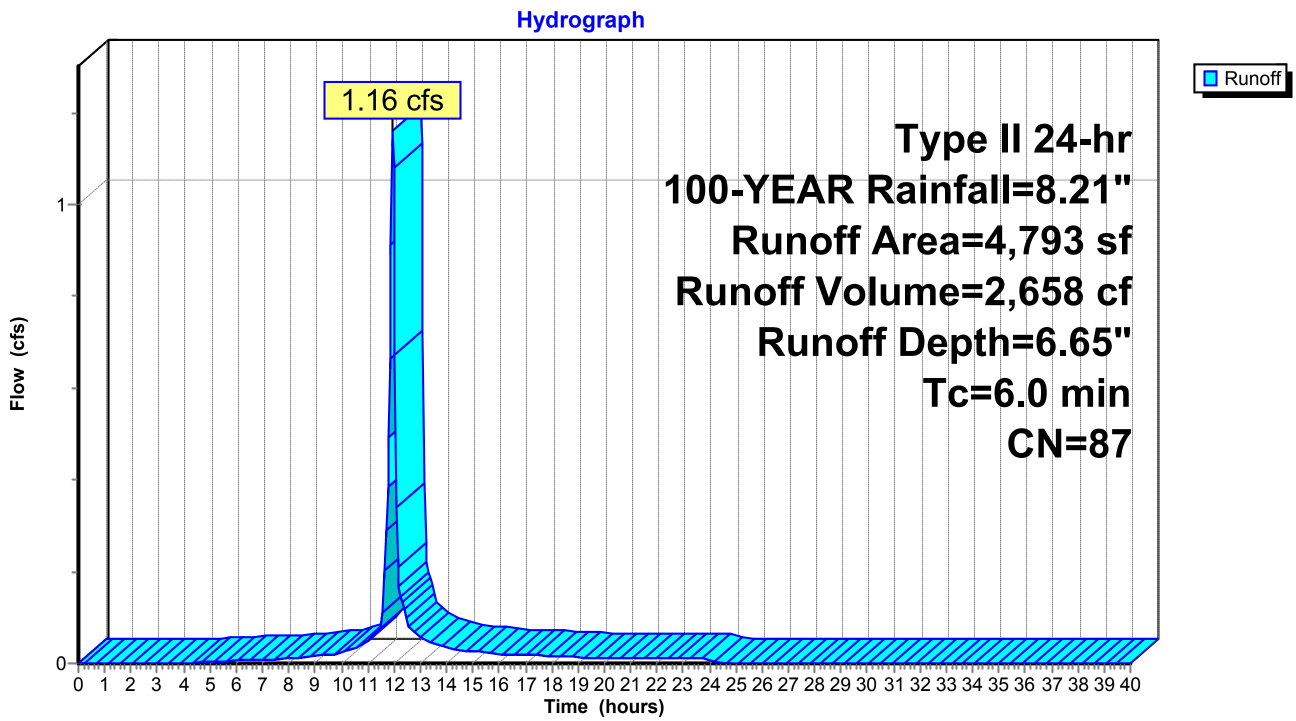
Runoff = 1.16 cfs @ 11.96 hrs, Volume= 2,658 cf, Depth= 6.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
2,165	74	>75% Grass cover, Good, HSG C
0	73	Woods, Fair, HSG C
2,628	98	Paved parking, HSG C
4,793	87	Weighted Average
2,165		45.17% Pervious Area
2,628		54.83% Impervious Area

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

Subcatchment DA-4: DA-4



Summary for Subcatchment DA-5: DA-5

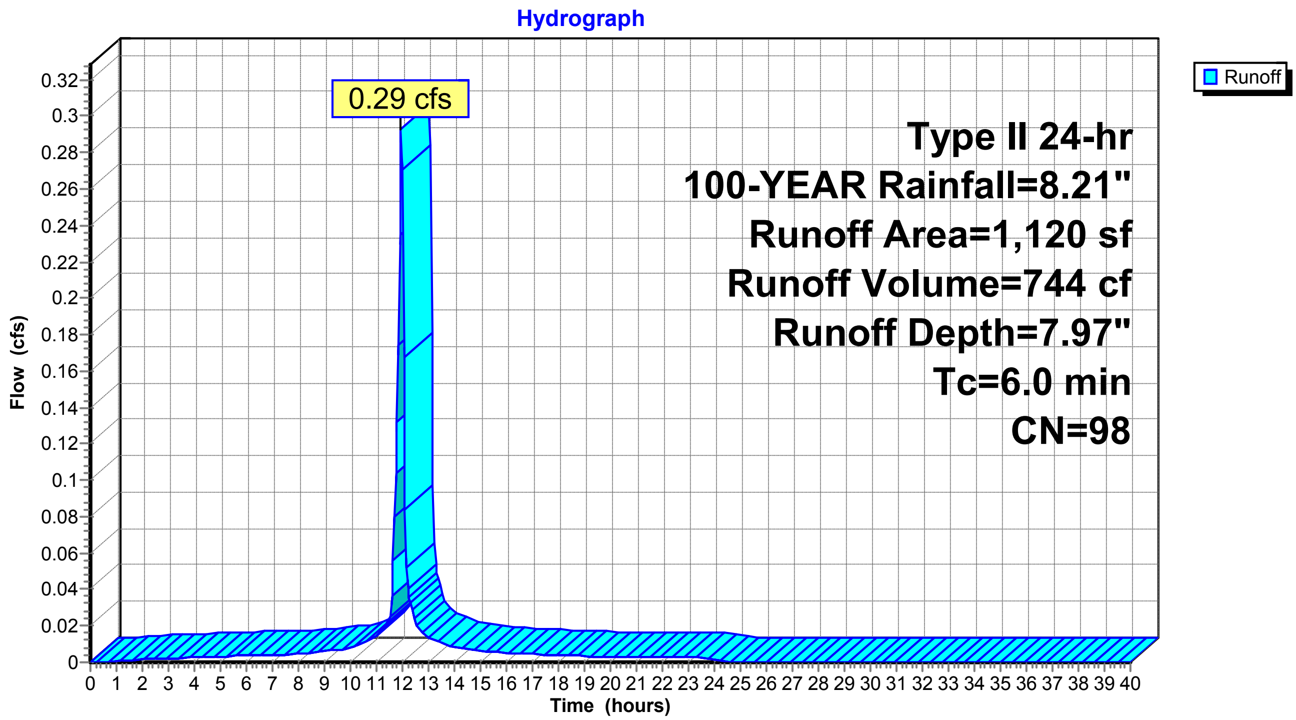
Runoff = 0.29 cfs @ 11.96 hrs, Volume= 744 cf, Depth= 7.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
1,120	98	Paved parking, HSG C
1,120		100.00% Impervious Area

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

Subcatchment DA-5: DA-5



Summary for Subcatchment DA-6: DA-6

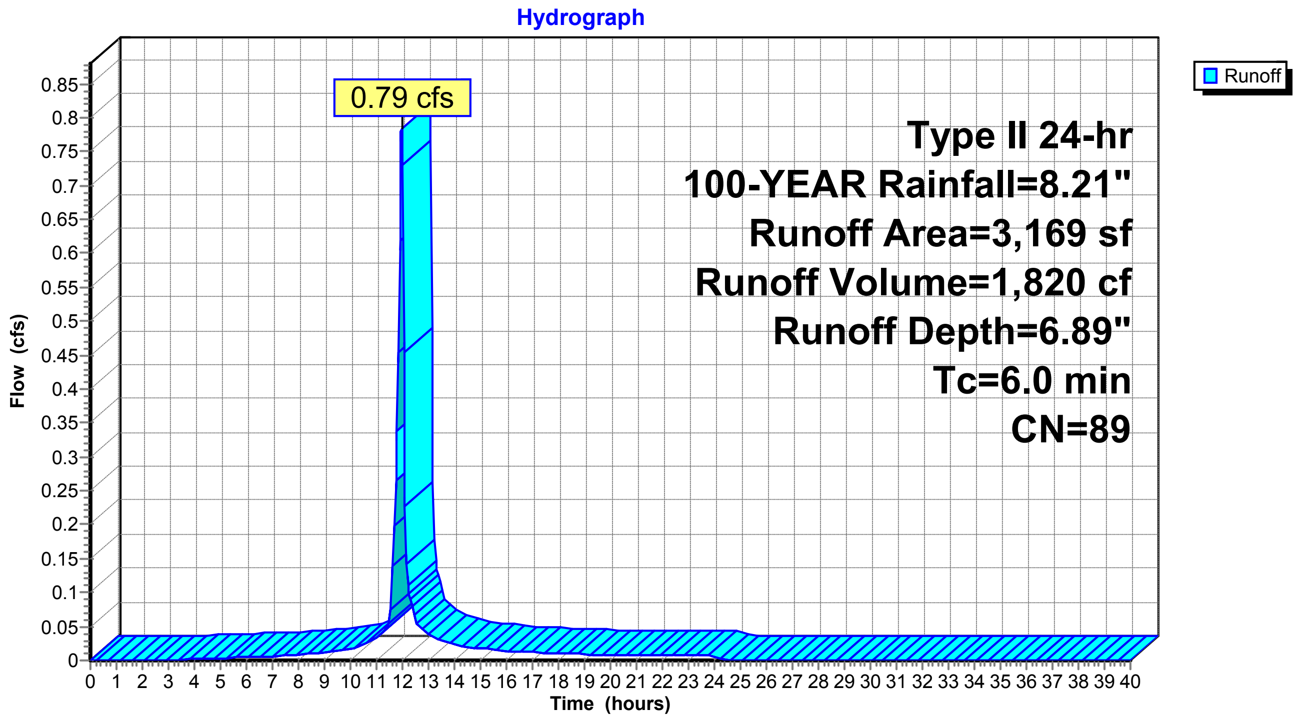
Runoff = 0.79 cfs @ 11.96 hrs, Volume= 1,820 cf, Depth= 6.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
1,133	74	>75% Grass cover, Good, HSG C
2,036	98	Paved parking, HSG C
3,169	89	Weighted Average
1,133		35.75% Pervious Area
2,036		64.25% Impervious Area

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

Subcatchment DA-6: DA-6



Summary for Subcatchment DA-7: DA-7

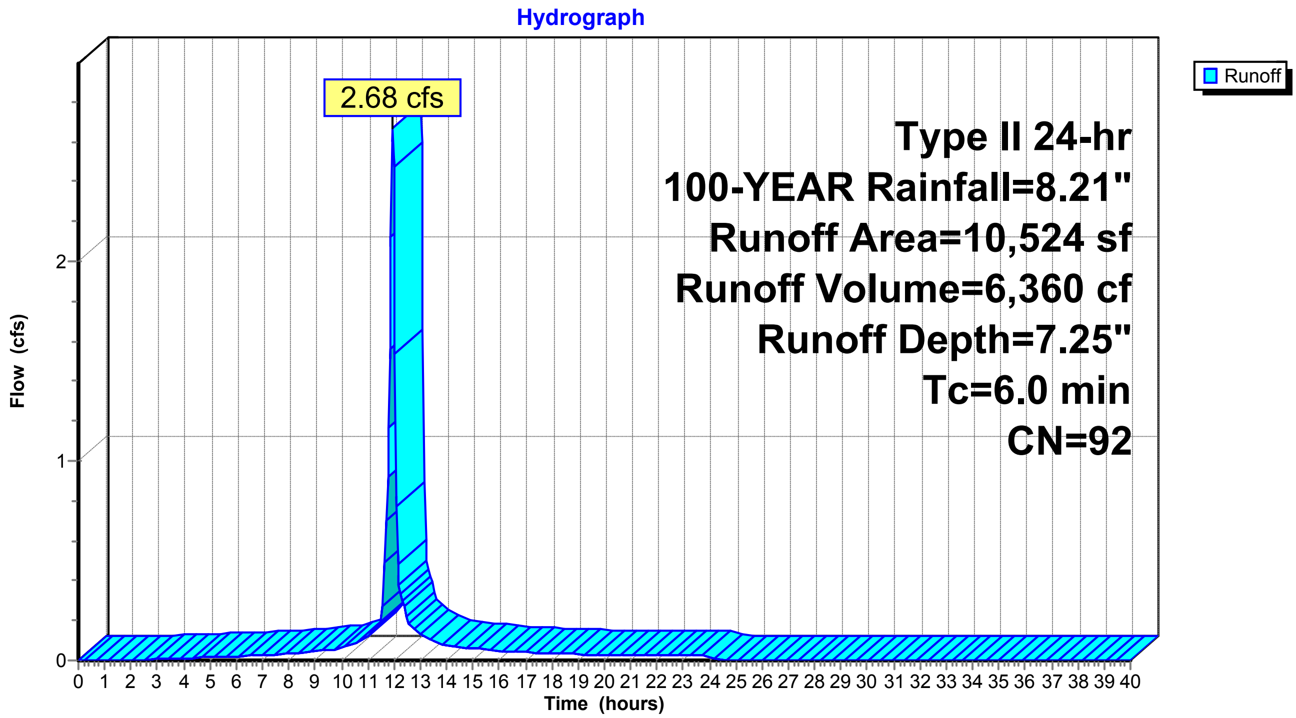
Runoff = 2.68 cfs @ 11.96 hrs, Volume= 6,360 cf, Depth= 7.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
2,543	74	>75% Grass cover, Good, HSG C
7,981	98	Paved parking, HSG C
10,524	92	Weighted Average
2,543		24.16% Pervious Area
7,981		75.84% Impervious Area

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

Subcatchment DA-7: DA-7



Summary for Subcatchment DA-8: DA-8

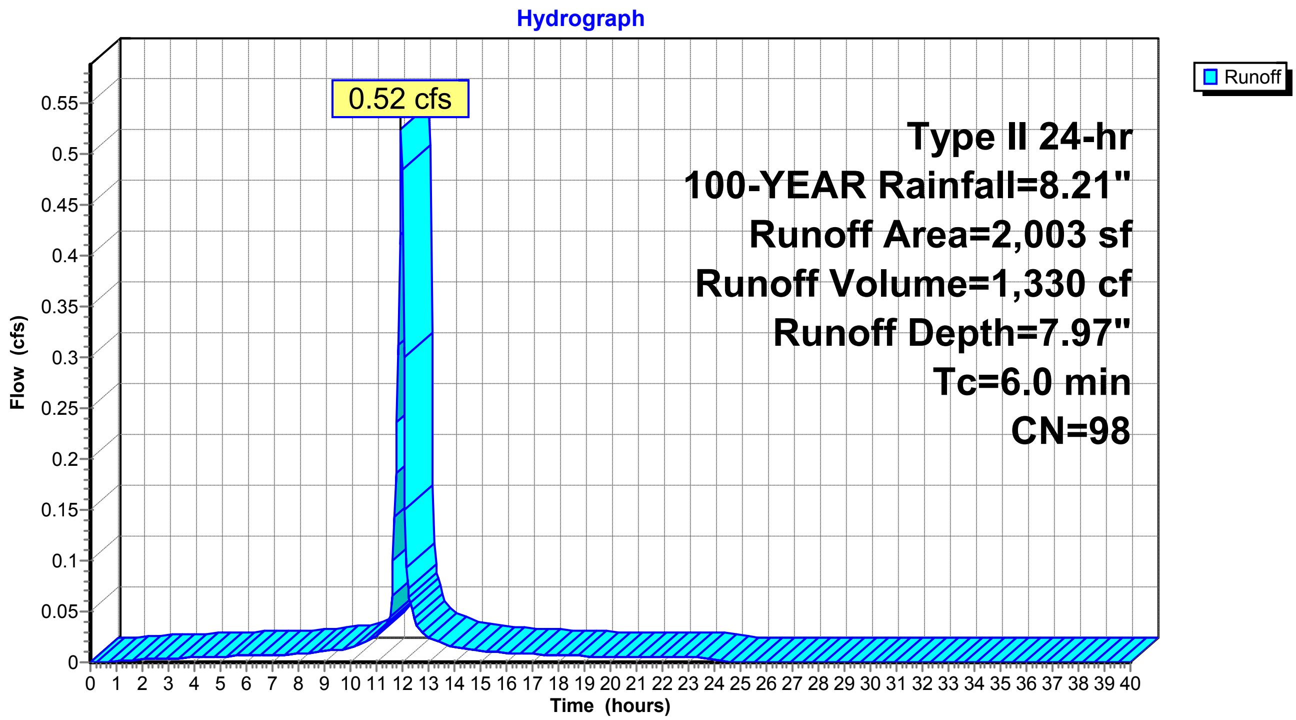
Runoff = 0.52 cfs @ 11.96 hrs, Volume= 1,330 cf, Depth= 7.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
2,003	98	Paved parking, HSG C
2,003		100.00% Impervious Area

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

Subcatchment DA-8: DA-8



Summary for Subcatchment DA-9: DA-9

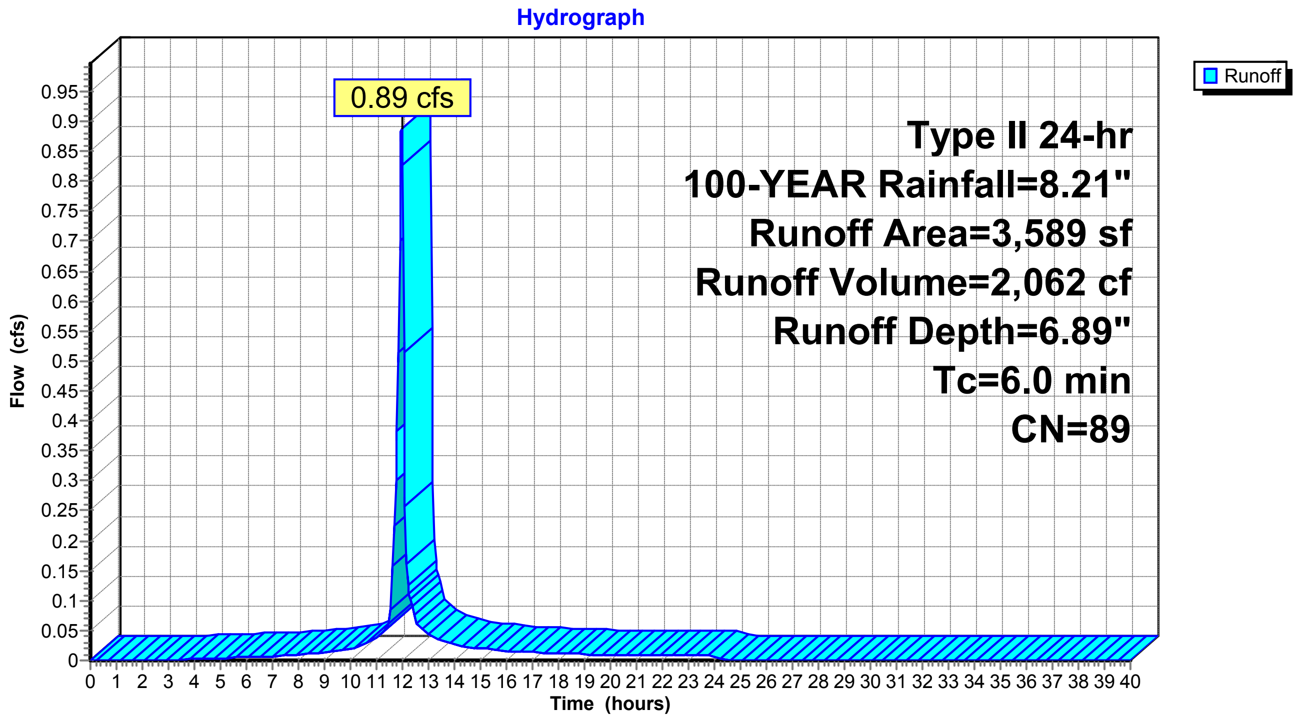
Runoff = 0.89 cfs @ 11.96 hrs, Volume= 2,062 cf, Depth= 6.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YEAR Rainfall=8.21"

Area (sf)	CN	Description
1,275	74	>75% Grass cover, Good, HSG C
2,314	98	Paved parking, HSG C
3,589	89	Weighted Average
1,275		35.53% Pervious Area
2,314		64.47% Impervious Area

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

Subcatchment DA-9: DA-9



Summary for Reach 2R: FLARED END #3

[79] Warning: Submerged Pond CB30 Primary device # 1 INLET by 0.47'

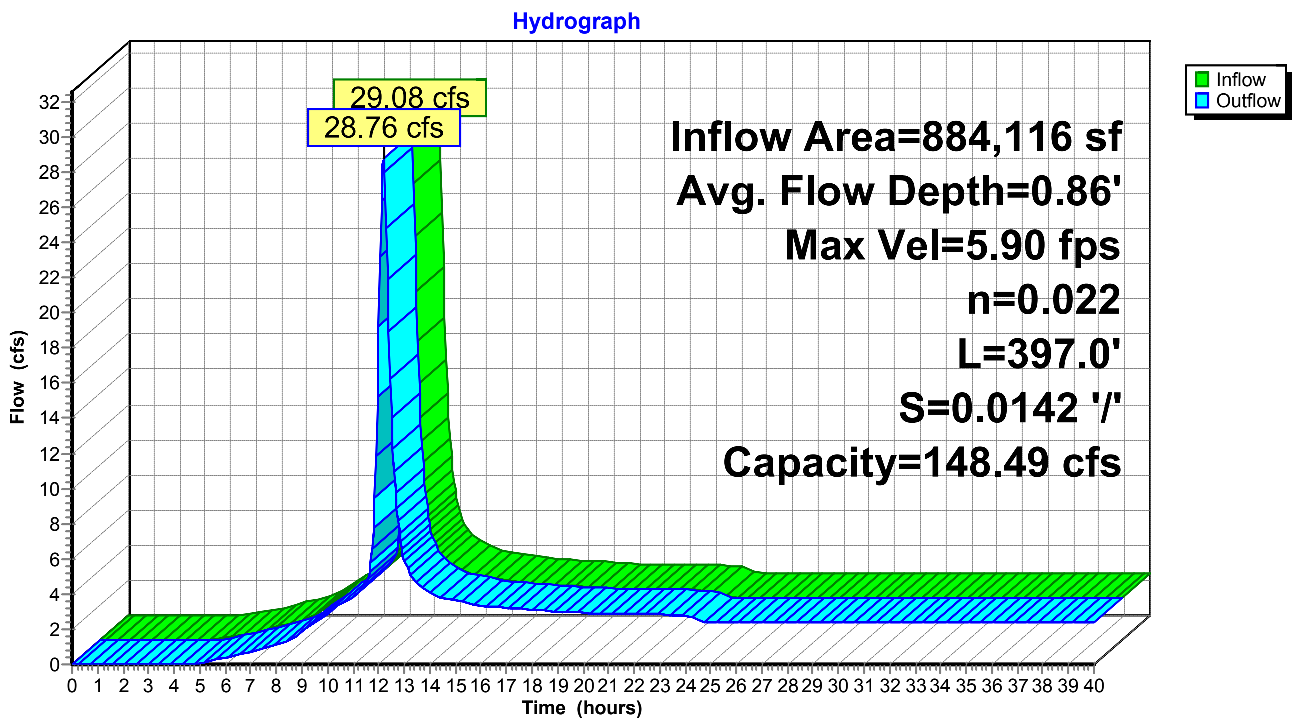
Inflow Area = 884,116 sf, 21.35% Impervious, Inflow Depth > 5.18" for 100-YEAR event
Inflow = 29.08 cfs @ 12.15 hrs, Volume= 381,831 cf
Outflow = 28.76 cfs @ 12.18 hrs, Volume= 381,305 cf, Atten= 1%, Lag= 2.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.90 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 2.56 fps, Avg. Travel Time= 2.6 min

Peak Storage= 1,951 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.86'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 148.49 cfs

4.00' x 2.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 2.0 '/' Top Width= 12.00'
Length= 397.0' Slope= 0.0142 '/'
Inlet Invert= 335.25', Outlet Invert= 329.60'

Reach 2R: FLARED END #3



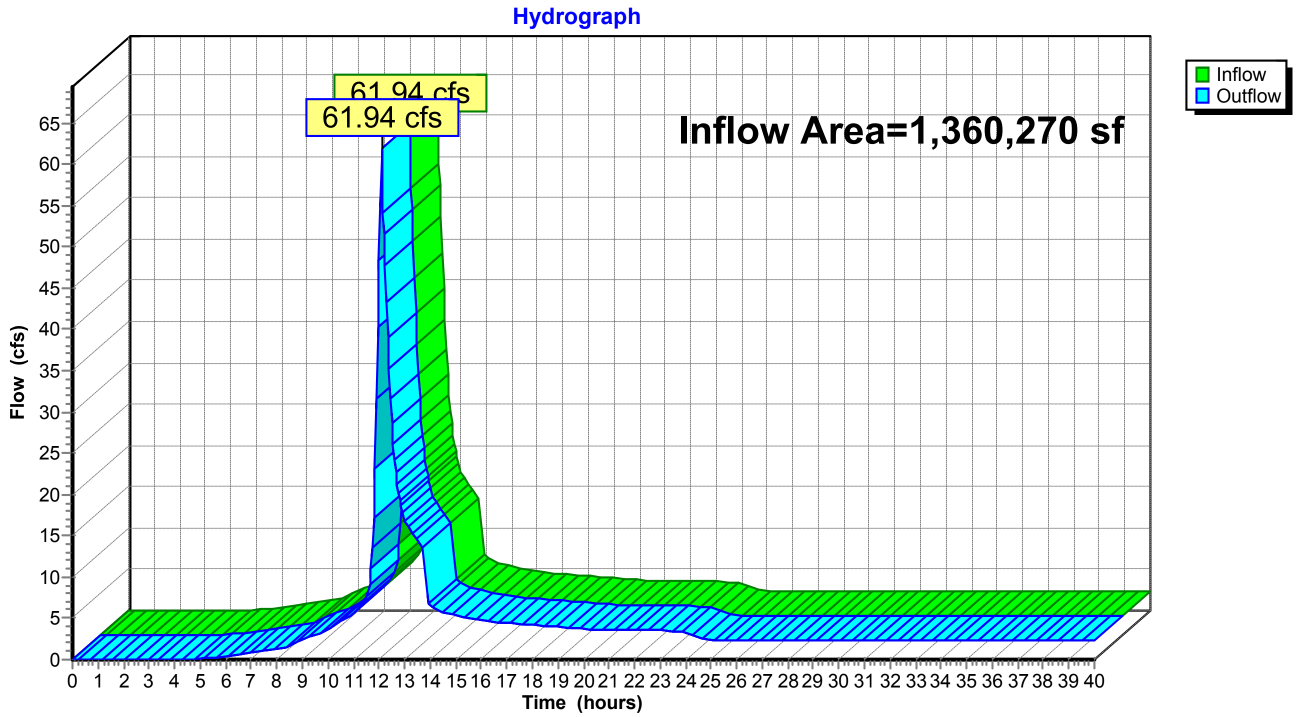
Summary for Reach DP-1: DP-1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1,360,270 sf, 25.67% Impervious, Inflow Depth > 4.83" for 100-YEAR event
Inflow = 61.94 cfs @ 12.10 hrs, Volume= 547,928 cf
Outflow = 61.94 cfs @ 12.10 hrs, Volume= 547,928 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Reach DP-1: DP-1



Summary for Reach FLARED END #1: FLARED END #1

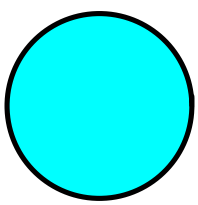
[52] Hint: Inlet/Outlet conditions not evaluated
[55] Hint: Peak inflow is 340% of Manning's capacity
[76] Warning: Detained 26,118 cf (Pond w/culvert advised)

Inflow Area = 244,871 sf, 7.43% Impervious, Inflow Depth = 5.35" for 100-YEAR event
Inflow = 30.91 cfs @ 12.15 hrs, Volume= 109,159 cf
Outflow = 9.10 cfs @ 11.95 hrs, Volume= 109,159 cf, Atten= 71%, Lag= 0.0 min

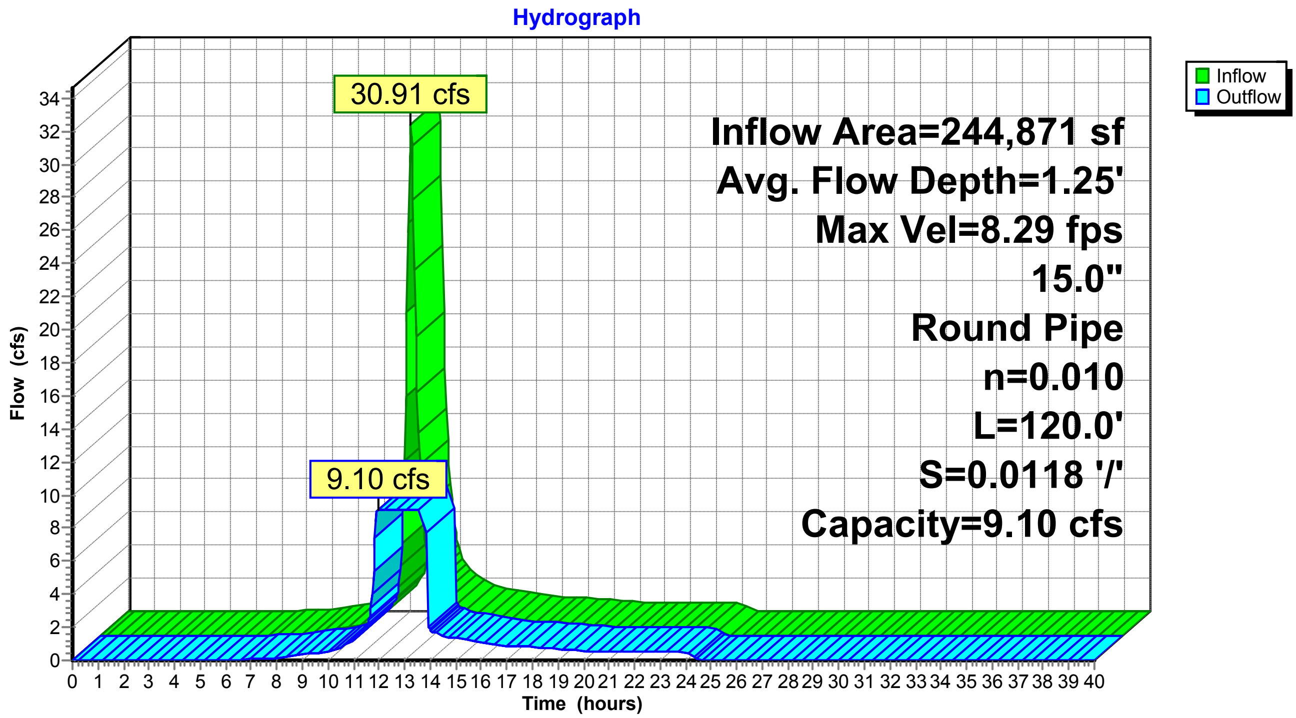
Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.29 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 4.35 fps, Avg. Travel Time= 0.5 min

Peak Storage= 147 cf @ 11.90 hrs
Average Depth at Peak Storage= 1.25'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.10 cfs

15.0" Round Pipe
n= 0.010
Length= 120.0' Slope= 0.0118 '/'
Inlet Invert= 355.00', Outlet Invert= 353.59'



Reach FLARED END #1: FLARED END #1



Summary for Reach FLARED END #2: FLARED END #2

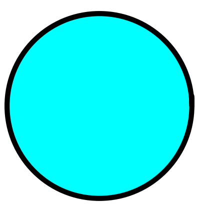
[52] Hint: Inlet/Outlet conditions not evaluated
[55] Hint: Peak inflow is 3279% of Manning's capacity
[76] Warning: Detained 218,395 cf (Pond w/culvert advised)

Inflow Area = 677,156 sf, 19.44% Impervious, Inflow Depth = 6.04" for 100-YEAR event
Inflow = 78.93 cfs @ 12.23 hrs, Volume= 340,973 cf
Outflow = 2.56 cfs @ 10.29 hrs, Volume= 275,098 cf, Atten= 97%, Lag= 0.0 min

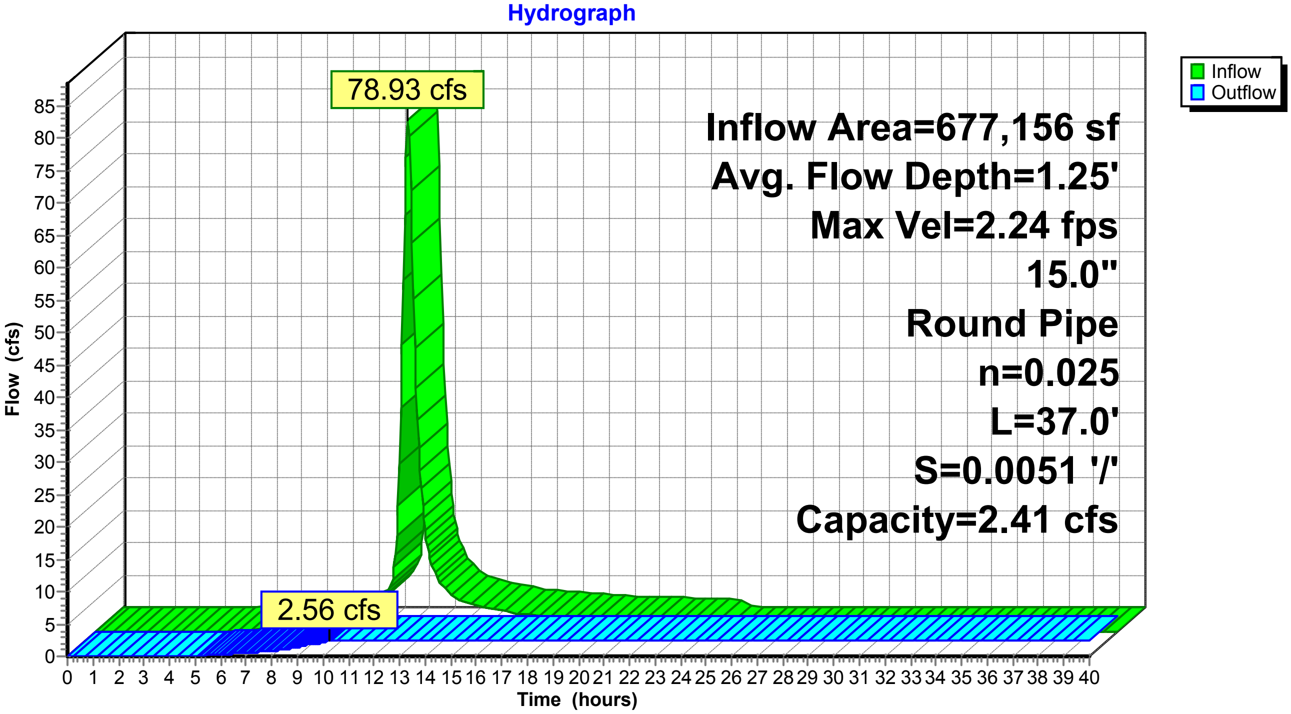
Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.24 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.90 fps, Avg. Travel Time= 0.3 min

Peak Storage= 45 cf @ 10.35 hrs
Average Depth at Peak Storage= 1.25'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 2.41 cfs

15.0" Round Pipe
n= 0.025 Corrugated metal
Length= 37.0' Slope= 0.0051 '/'
Inlet Invert= 336.00', Outlet Invert= 335.81'



Reach FLARED END #2: FLARED END #2



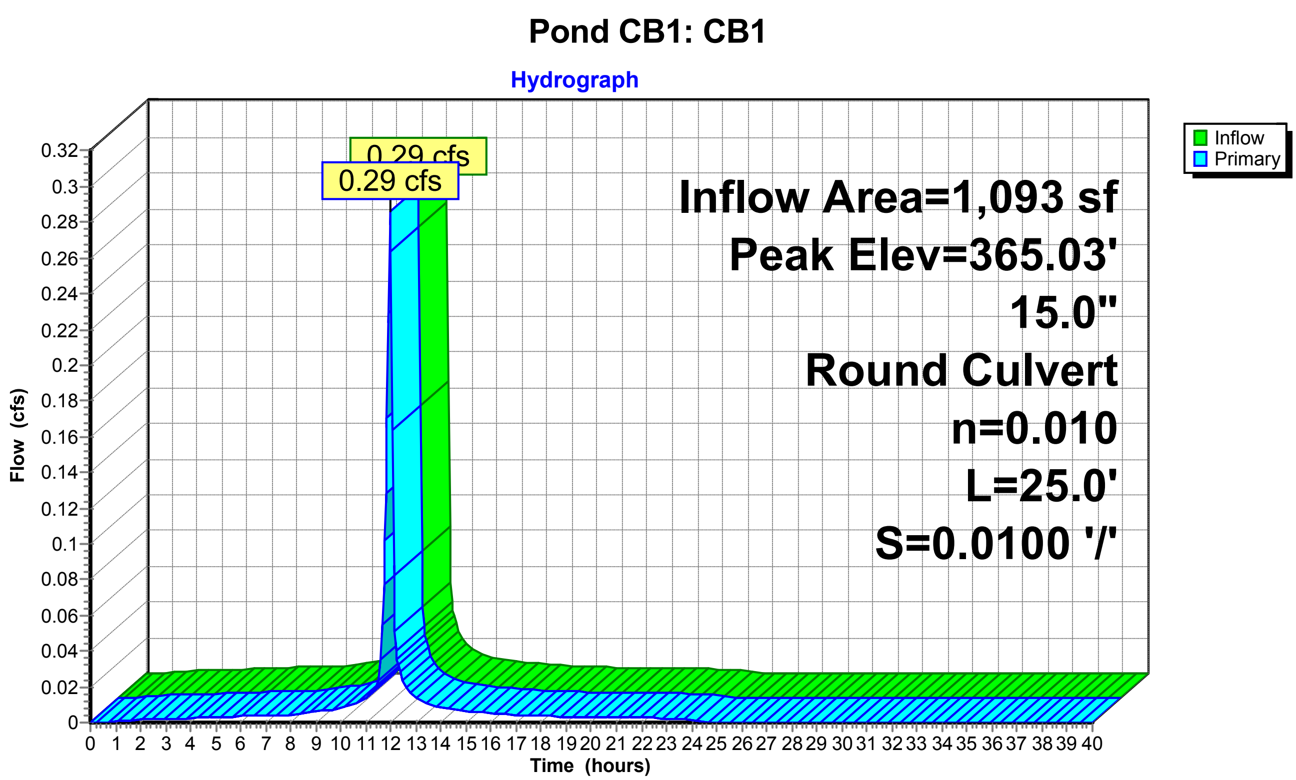
Summary for Pond CB1: CB1

Inflow Area =	1,093 sf,100.00% Impervious,	Inflow Depth = 7.97"	for 100-YEAR event	
Inflow =	0.29 cfs @	11.96 hrs, Volume=	726 cf	
Outflow =	0.29 cfs @	11.96 hrs, Volume=	726 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.29 cfs @	11.96 hrs, Volume=	726 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 365.03' @ 11.96 hrs
Flood Elev= 368.04'

Device	Routing	Invert	Outlet Devices
#1	Primary	364.75'	**15.0" Round Culvert** L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 364.75' / 364.50' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=0.28 cfs @ 11.96 hrs HW=365.02' (Free Discharge)
└─**1=Culvert** (Inlet Controls 0.28 cfs @ 1.41 fps)



Summary for Pond CB10: CB10

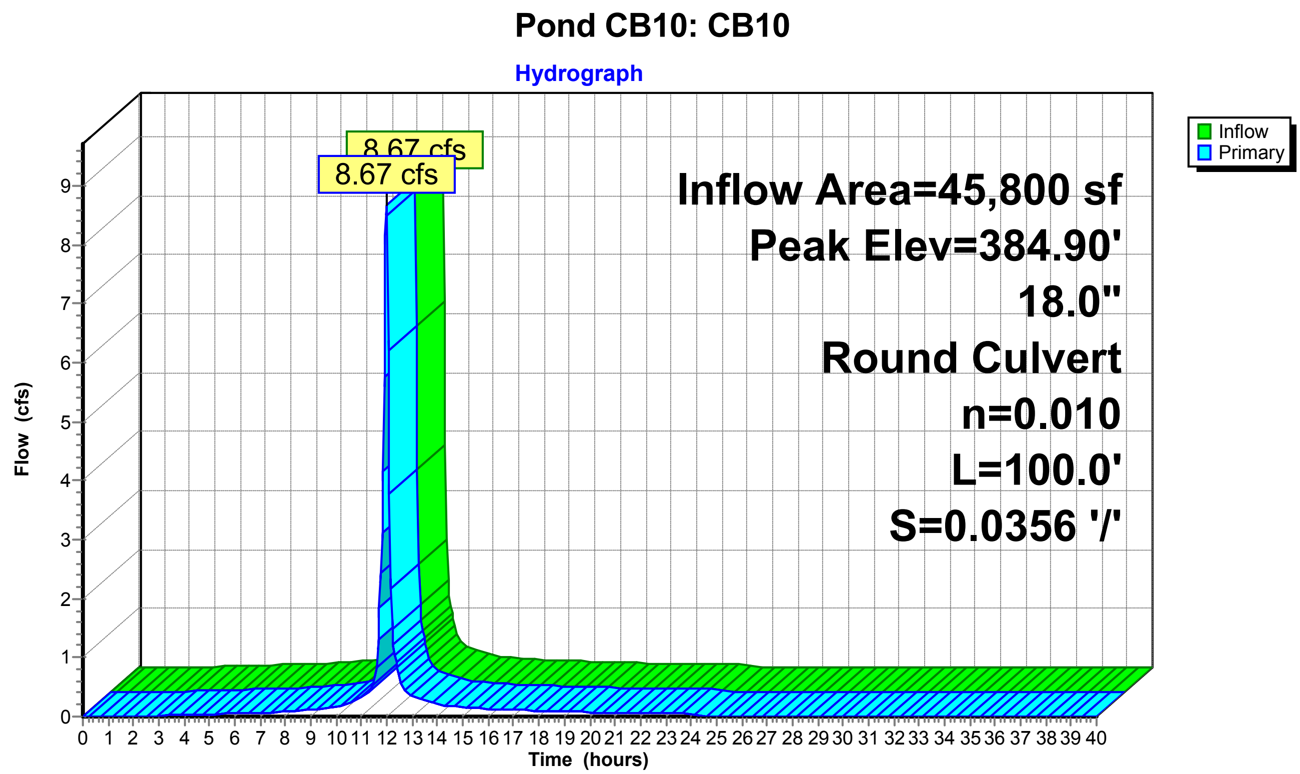
[79] Warning: Submerged Pond CB11 Primary device # 1 INLET by 1.42'
[79] Warning: Submerged Pond CB12 Primary device # 1 OUTLET by 0.07'

Inflow Area = 45,800 sf, 71.00% Impervious, Inflow Depth = 4.87" for 100-YEAR event
Inflow = 8.67 cfs @ 11.98 hrs, Volume= 18,606 cf
Outflow = 8.67 cfs @ 11.98 hrs, Volume= 18,606 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.67 cfs @ 11.98 hrs, Volume= 18,606 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 384.90' @ 11.98 hrs
Flood Elev= 388.01'

Device	Routing	Invert	Outlet Devices
#1	Primary	382.50'	**18.0" Round Culvert** L= 100.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 382.50' / 378.94' S= 0.0356 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=8.36 cfs @ 11.98 hrs HW=384.80' (Free Discharge)
↑**1=Culvert** (Inlet Controls 8.36 cfs @ 4.73 fps)



Summary for Pond CB11: CB11

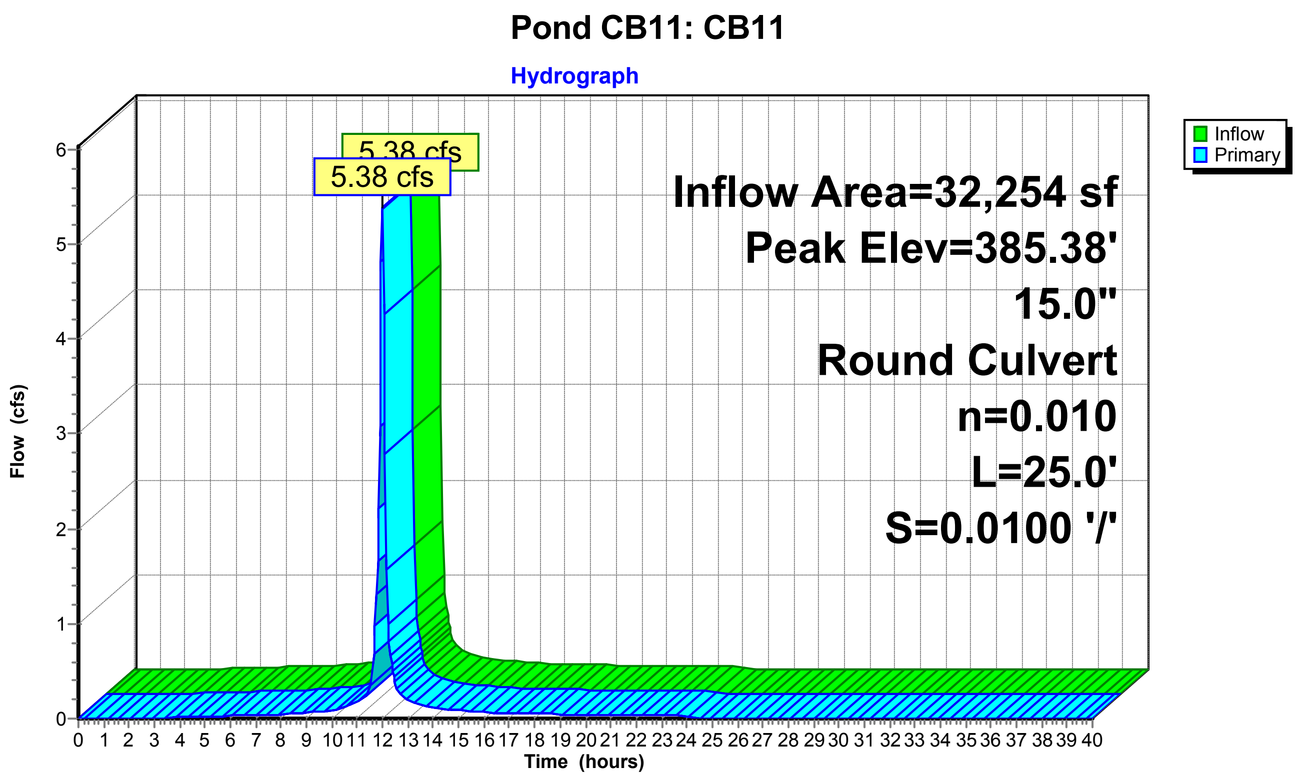
[79] Warning: Submerged Pond CB25 Primary device # 1 INLET by 1.01'

Inflow Area =	32,254 sf,	72.32% Impervious,	Inflow Depth = 3.96"	for 100-YEAR event
Inflow =	5.38 cfs @	11.99 hrs, Volume=	10,653 cf	
Outflow =	5.38 cfs @	11.99 hrs, Volume=	10,653 cf,	Atten= 0%, Lag= 0.0 min
Primary =	5.38 cfs @	11.99 hrs, Volume=	10,653 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 385.38' @ 11.99 hrs
Flood Elev= 388.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	383.43'	**15.0" Round Culvert** L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 383.43' / 383.18' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=5.27 cfs @ 11.99 hrs HW=385.33' (Free Discharge)
└─**1=Culvert** (Inlet Controls 5.27 cfs @ 4.29 fps)



Summary for Pond CB12: CB12

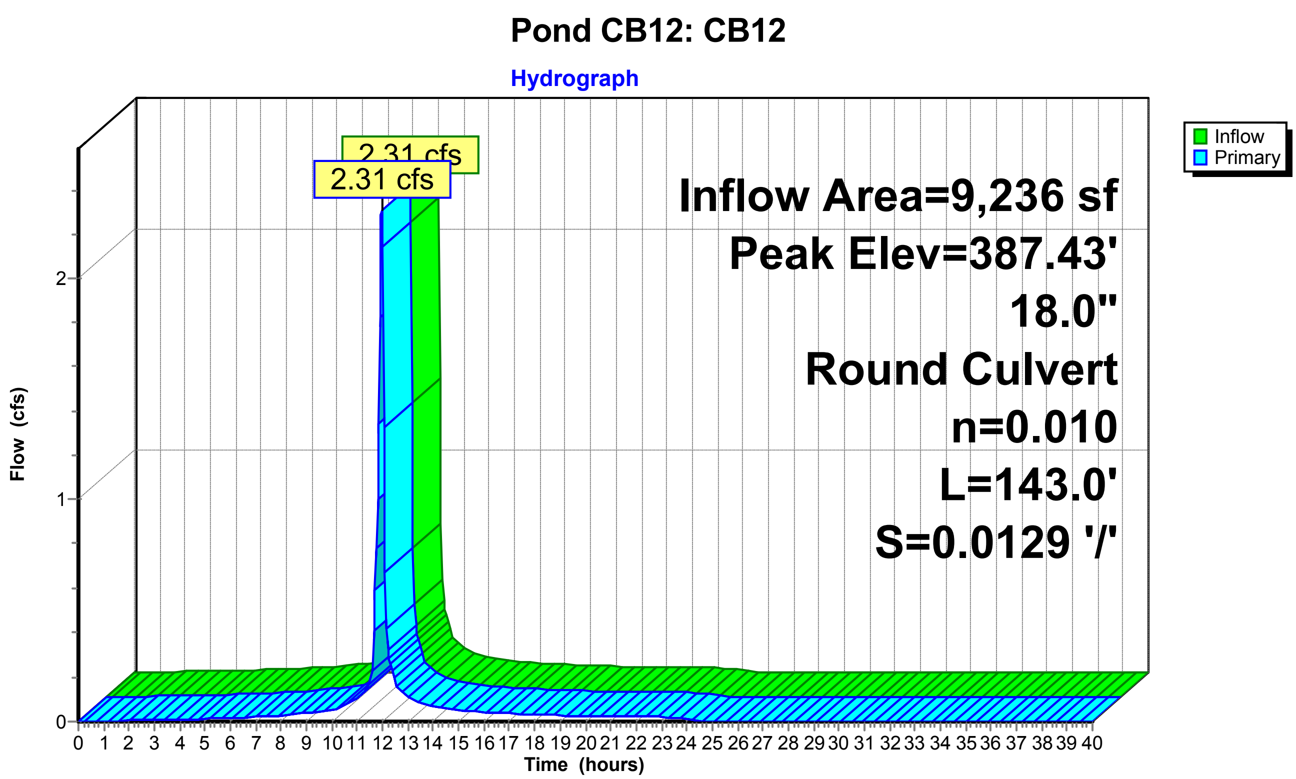
[81] Warning: Exceeded Pond CB13 by 0.21' @ 11.95 hrs
[79] Warning: Submerged Pond CB14 Primary device # 1 OUTLET by 0.59'

Inflow Area = 9,236 sf, 70.69% Impervious, Inflow Depth = 7.12" for 100-YEAR event
Inflow = 2.31 cfs @ 11.96 hrs, Volume= 5,477 cf
Outflow = 2.31 cfs @ 11.96 hrs, Volume= 5,477 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.31 cfs @ 11.96 hrs, Volume= 5,477 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 387.43' @ 11.96 hrs
Flood Elev= 390.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	386.63'	**18.0" Round Culvert** L= 143.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 386.63' / 384.78' S= 0.0129 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=2.25 cfs @ 11.96 hrs HW=387.42' (Free Discharge)
1=Culvert (Inlet Controls 2.25 cfs @ 2.39 fps)



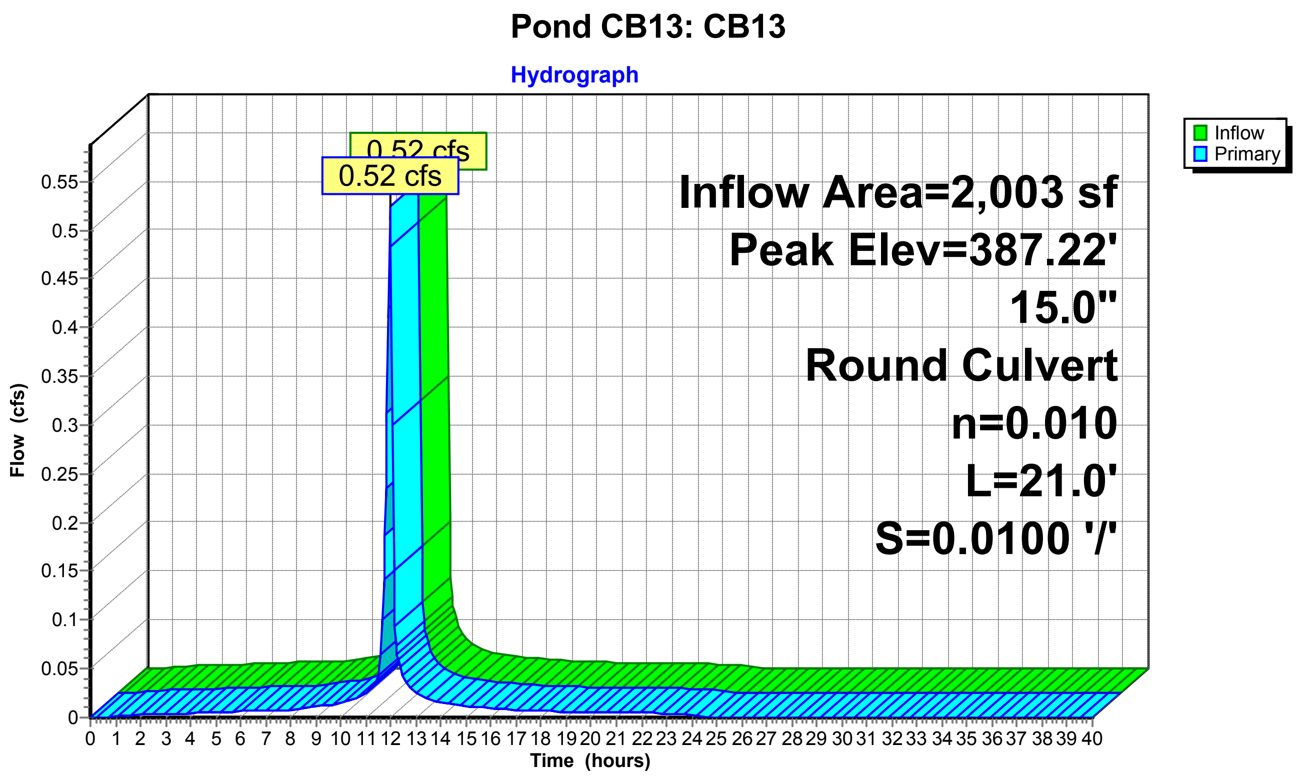
Summary for Pond CB13: CB13

Inflow Area =	2,003 sf,100.00% Impervious,	Inflow Depth = 7.97"	for 100-YEAR event	
Inflow =	0.52 cfs @	11.96 hrs, Volume=	1,330 cf	
Outflow =	0.52 cfs @	11.96 hrs, Volume=	1,330 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.52 cfs @	11.96 hrs, Volume=	1,330 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 387.22' @ 11.96 hrs
Flood Elev= 390.11'

Device	Routing	Invert	Outlet Devices
#1	Primary	386.84'	**15.0" Round Culvert** L= 21.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 386.84' / 386.63' S= 0.0100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.51 cfs @ 11.96 hrs HW=387.22' (Free Discharge)
1=Culvert (Inlet Controls 0.51 cfs @ 1.65 fps)



Summary for Pond CB14: CB14

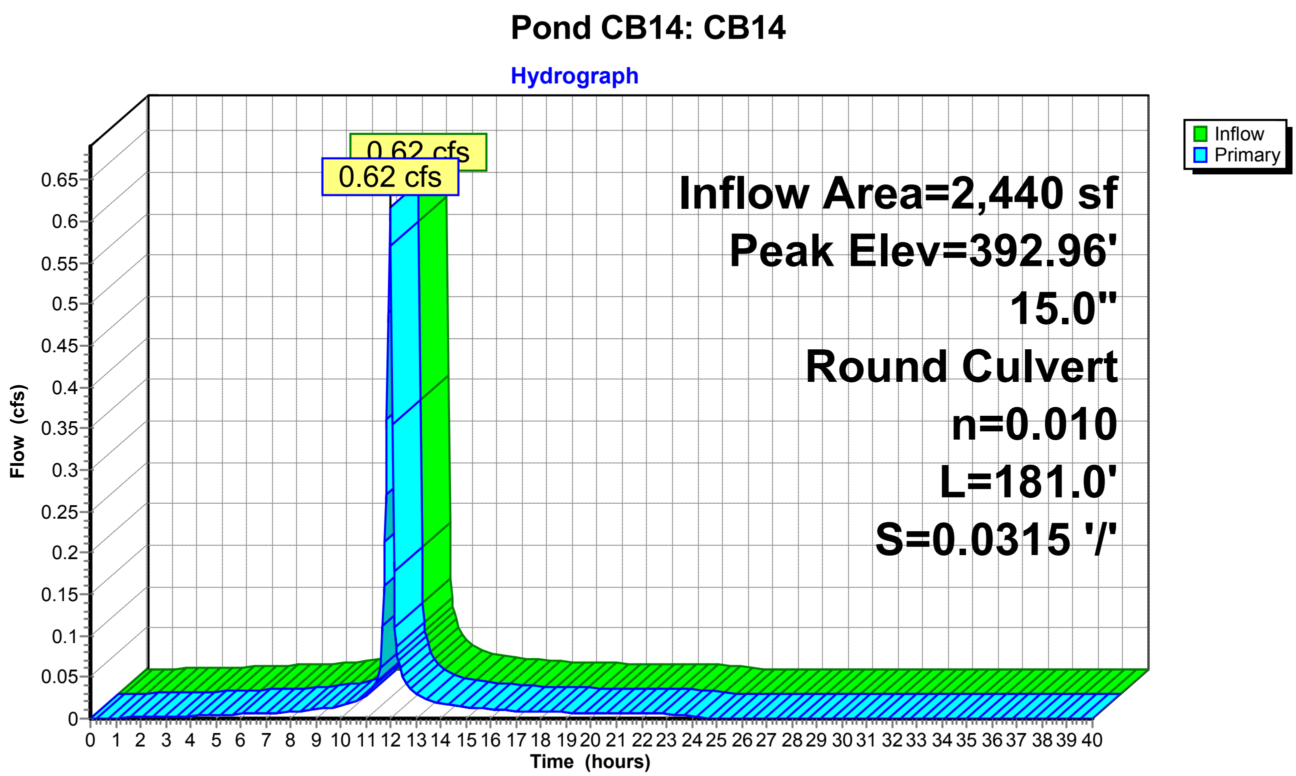
[79] Warning: Submerged Pond CB15 Primary device # 1 INLET by 0.20'

Inflow Area =	2,440 sf,	77.79% Impervious,	Inflow Depth = 7.32"	for 100-YEAR event
Inflow =	0.62 cfs @	11.96 hrs, Volume=	1,489 cf	
Outflow =	0.62 cfs @	11.96 hrs, Volume=	1,489 cf, Atten= 0%, Lag= 0.0 min	
Primary =	0.62 cfs @	11.96 hrs, Volume=	1,489 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 392.96' @ 11.96 hrs
Flood Elev= 396.07'

Device	Routing	Invert	Outlet Devices
#1	Primary	392.54'	**15.0" Round Culvert** L= 181.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 392.54' / 386.84' S= 0.0315 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.60 cfs @ 11.96 hrs HW=392.95' (Free Discharge)
1=Culvert (Inlet Controls 0.60 cfs @ 1.72 fps)



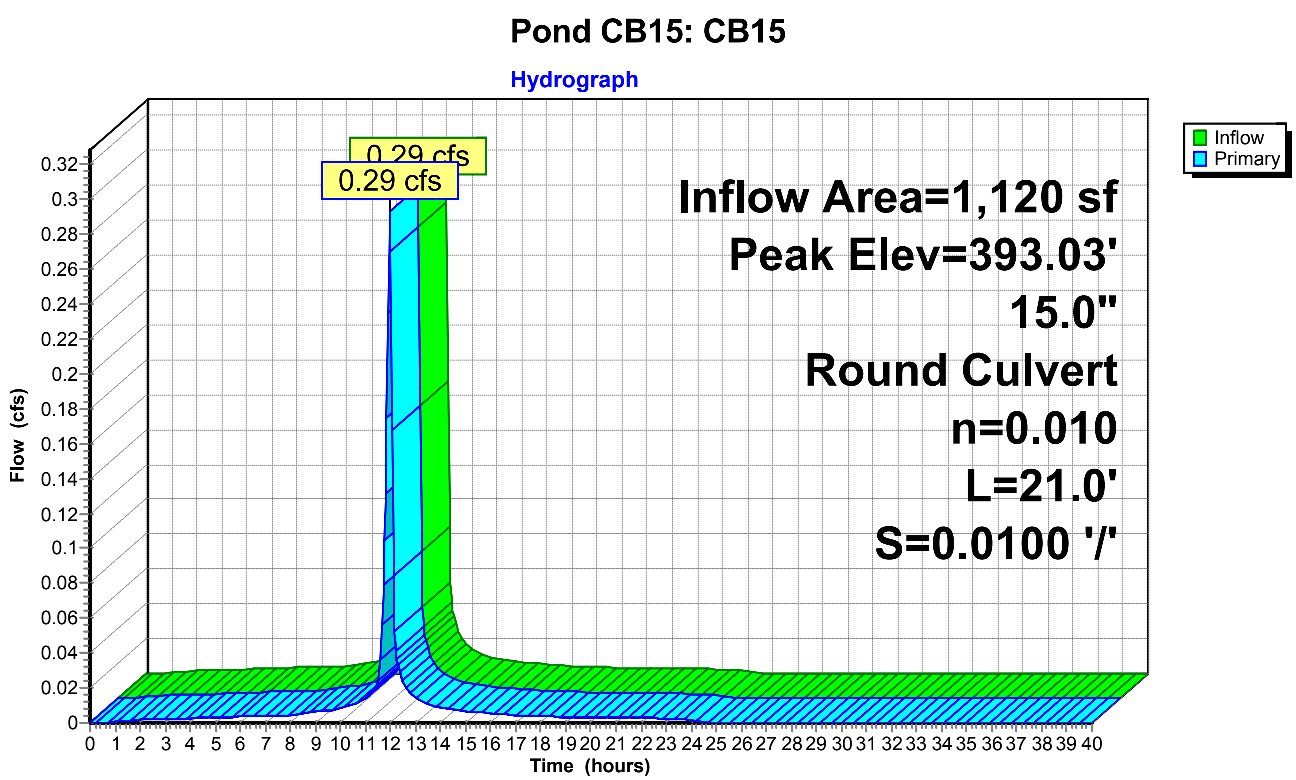
Summary for Pond CB15: CB15

Inflow Area =	1,120 sf,100.00% Impervious,	Inflow Depth = 7.97"	for 100-YEAR event		
Inflow =	0.29 cfs @	11.96 hrs,	Volume=	744 cf	
Outflow =	0.29 cfs @	11.96 hrs,	Volume=	744 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.29 cfs @	11.96 hrs,	Volume=	744 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 393.03' @ 11.96 hrs
Flood Elev= 396.05'

Device	Routing	Invert	Outlet Devices
#1	Primary	392.75'	**15.0" Round 15" HDPE** L= 21.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 392.75' / 392.54' S= 0.0100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.29 cfs @ 11.96 hrs HW=393.03' (Free Discharge)
1=15" HDPE (Inlet Controls 0.29 cfs @ 1.41 fps)



Summary for Pond CB16: CB16

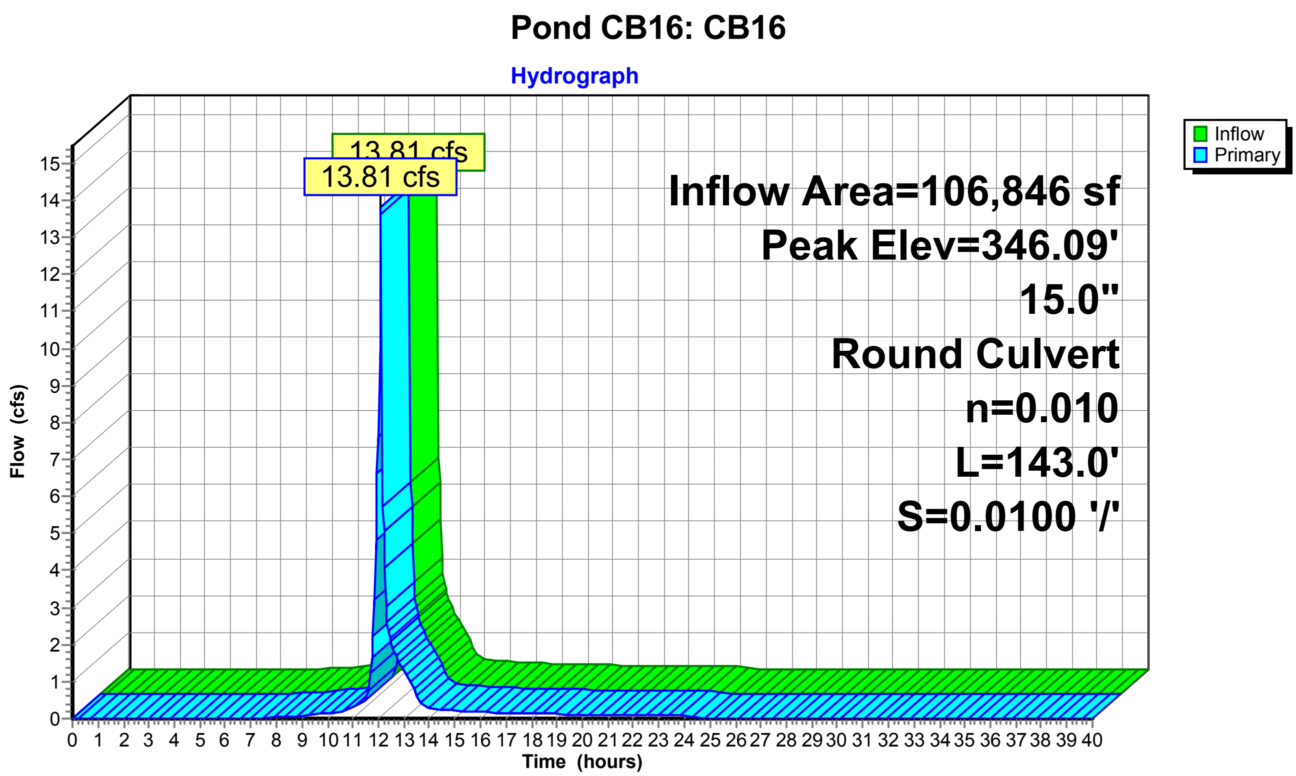
[81] Warning: Exceeded Pond DMH5 by 0.03' @ 12.00 hrs

Inflow Area =	106,846 sf,	63.53% Impervious,	Inflow Depth = 3.05"	for 100-YEAR event
Inflow =	13.81 cfs @	12.09 hrs, Volume=	27,120 cf	
Outflow =	13.81 cfs @	12.09 hrs, Volume=	27,120 cf,	Atten= 0%, Lag= 0.0 min
Primary =	13.81 cfs @	12.09 hrs, Volume=	27,120 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 346.09' @ 12.09 hrs
Flood Elev= 352.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	336.84'	**15.0" Round Culvert** L= 143.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 336.84' / 335.41' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=13.03 cfs @ 12.09 hrs HW=345.26' (Free Discharge)
└**1=Culvert** (Inlet Controls 13.03 cfs @ 10.61 fps)



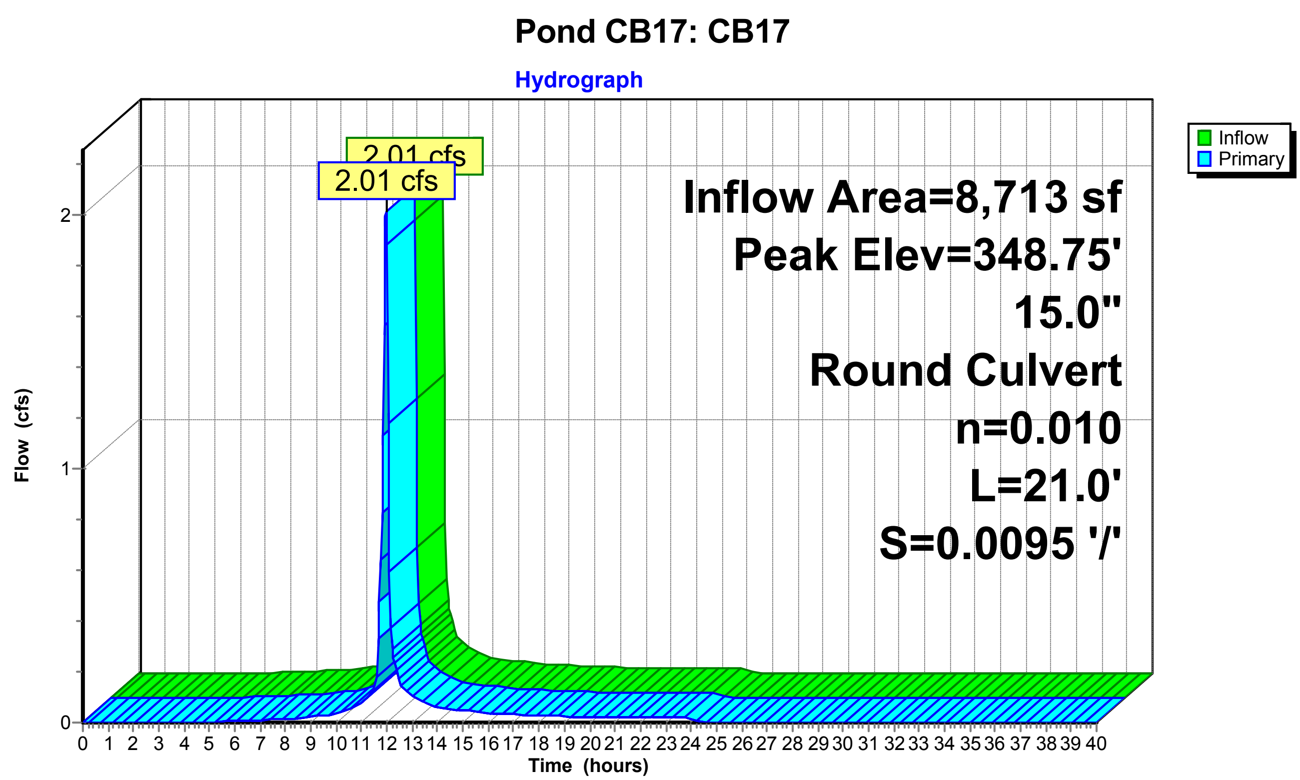
Summary for Pond CB17: CB17

Inflow Area =	8,713 sf,	36.19% Impervious,	Inflow Depth = 6.18"	for 100-YEAR event
Inflow =	2.01 cfs @	11.96 hrs, Volume=	4,486 cf	
Outflow =	2.01 cfs @	11.96 hrs, Volume=	4,486 cf,	Atten= 0%, Lag= 0.0 min
Primary =	2.01 cfs @	11.96 hrs, Volume=	4,486 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 348.75' @ 11.96 hrs
Flood Elev= 352.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	347.94'	**15.0" Round Culvert** L= 21.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 347.94' / 347.74' S= 0.0095 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=1.96 cfs @ 11.96 hrs HW=348.73' (Free Discharge)
1=Culvert (Barrel Controls 1.96 cfs @ 3.41 fps)



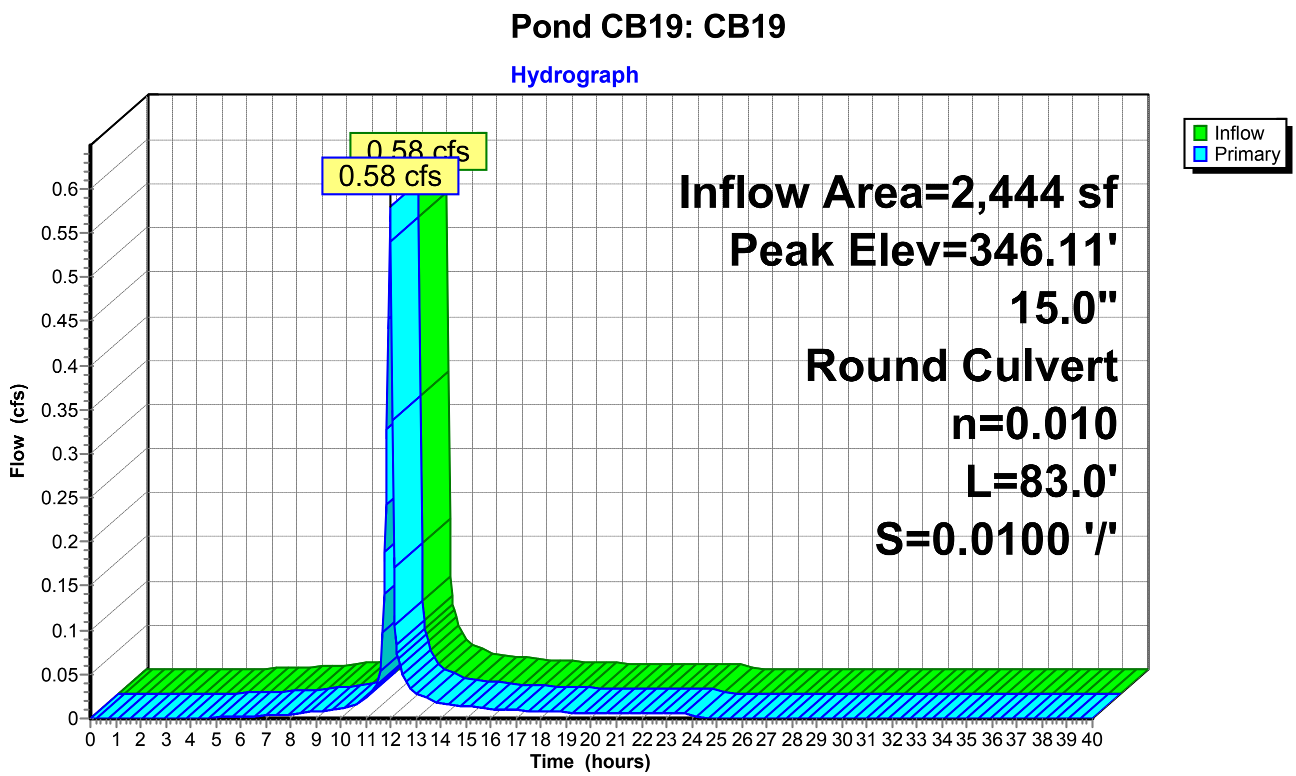
Summary for Pond CB19: CB19

Inflow Area =	2,444 sf,	45.42% Impervious,	Inflow Depth = 6.42"	for 100-YEAR event	
Inflow =	0.58 cfs @	11.96 hrs,	Volume=	1,307 cf	
Outflow =	0.58 cfs @	11.96 hrs,	Volume=	1,307 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.58 cfs @	11.96 hrs,	Volume=	1,307 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 346.11' @ 11.96 hrs
Flood Elev= 349.19'

Device	Routing	Invert	Outlet Devices
#1	Primary	345.71'	**15.0" Round Culvert** L= 83.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 345.71' / 344.88' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=0.56 cfs @ 11.96 hrs HW=346.11' (Free Discharge)
↑**1=Culvert** (Inlet Controls 0.56 cfs @ 1.69 fps)



Summary for Pond CB2: CB2

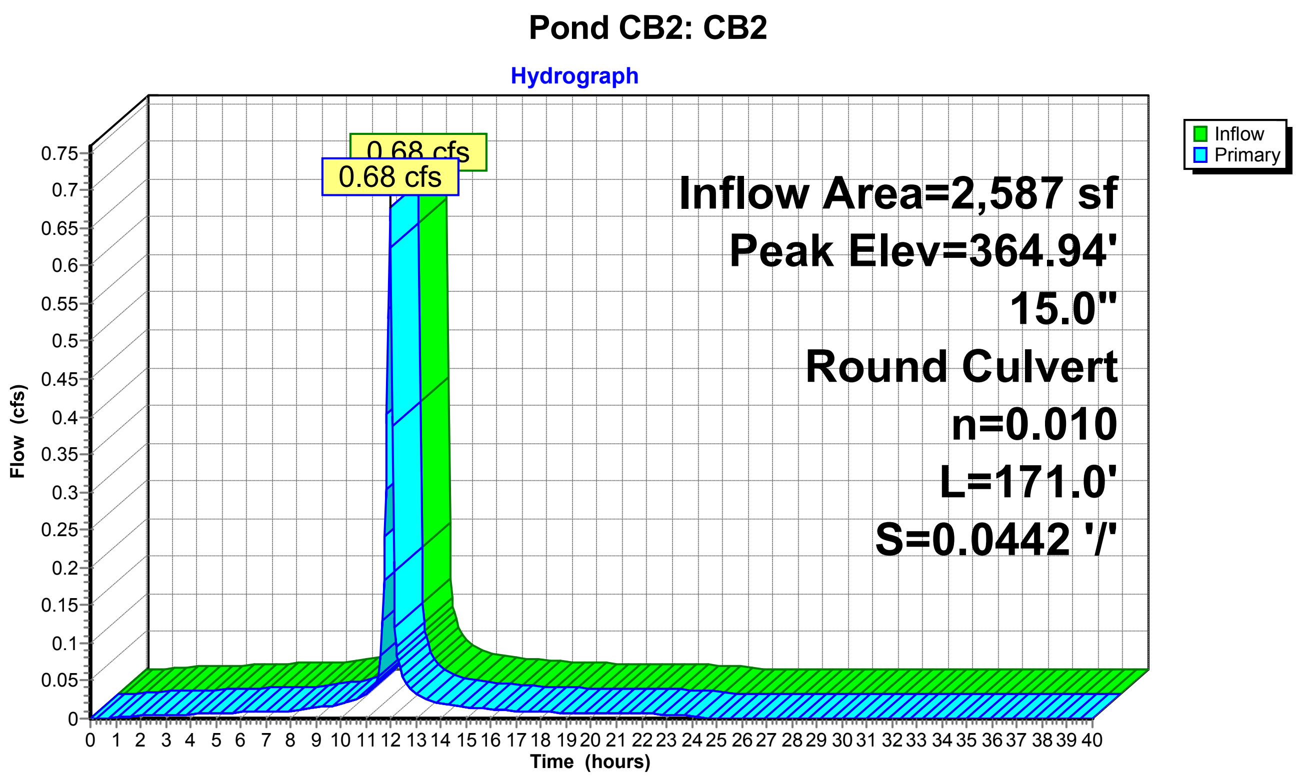
[79] Warning: Submerged Pond CB1 Primary device # 1 INLET by 0.18'

Inflow Area =	2,587 sf,100.00% Impervious,	Inflow Depth = 7.97"	for 100-YEAR event
Inflow =	0.68 cfs @ 11.96 hrs, Volume=	1,718 cf	
Outflow =	0.68 cfs @ 11.96 hrs, Volume=	1,718 cf, Atten= 0%, Lag= 0.0 min	
Primary =	0.68 cfs @ 11.96 hrs, Volume=	1,718 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 364.94' @ 11.96 hrs
Flood Elev= 368.03'

Device	Routing	Invert	Outlet Devices
#1	Primary	364.50'	**15.0" Round Culvert** L= 171.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 364.50' / 356.95' S= 0.0442 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=0.66 cfs @ 11.96 hrs HW=364.93' (Free Discharge)
└─**1=Culvert** (Inlet Controls 0.66 cfs @ 1.76 fps)



Summary for Pond CB22: CB22

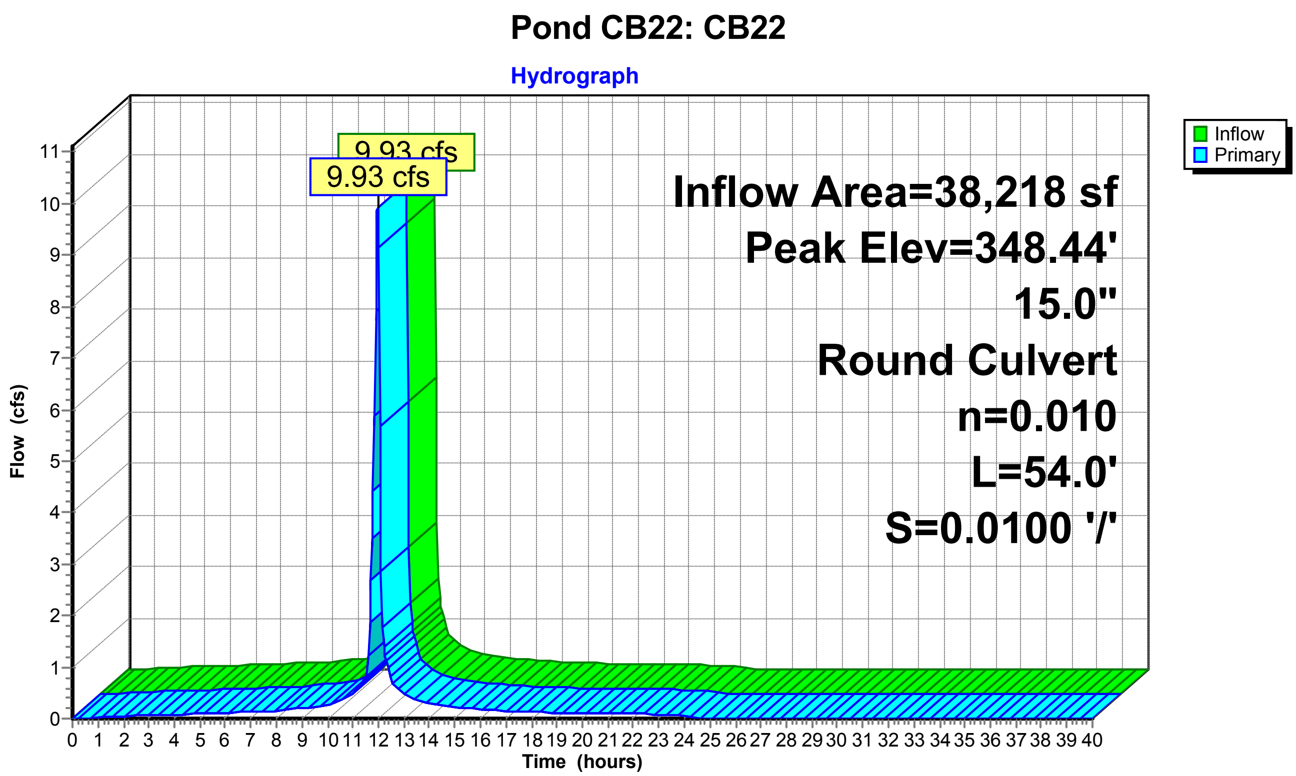
[58] Hint: Peaked 1.71' above defined flood level

Inflow Area =	38,218 sf,	94.94% Impervious,	Inflow Depth = 7.83"	for 100-YEAR event	
Inflow =	9.93 cfs @	11.96 hrs,	Volume=	24,932 cf	
Outflow =	9.93 cfs @	11.96 hrs,	Volume=	24,932 cf,	Atten= 0%, Lag= 0.0 min
Primary =	9.93 cfs @	11.96 hrs,	Volume=	24,932 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 348.44' @ 11.96 hrs
Flood Elev= 346.73'

Device	Routing	Invert	Outlet Devices
#1	Primary	343.30'	**15.0" Round Culvert** L= 54.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 343.30' / 342.76' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=9.70 cfs @ 11.96 hrs HW=348.25' (Free Discharge)
└─**1=Culvert** (Inlet Controls 9.70 cfs @ 7.90 fps)



Summary for Pond CB25: CB25

[81] Warning: Exceeded Pond CB26 by 1.58' @ 12.00 hrs
[79] Warning: Submerged Pond CB32 Primary device # 1 INLET by 0.53'

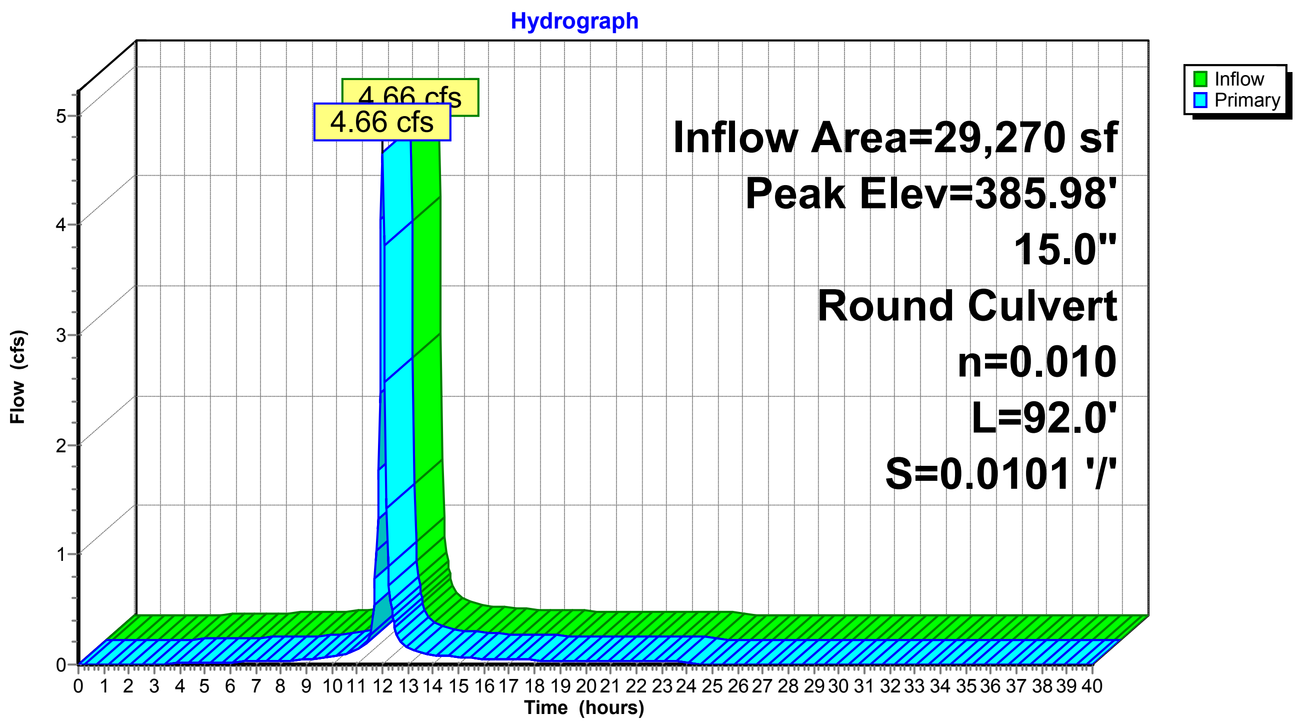
Inflow Area = 29,270 sf, 71.52% Impervious, Inflow Depth = 3.62" for 100-YEAR event
Inflow = 4.66 cfs @ 12.00 hrs, Volume= 8,820 cf
Outflow = 4.66 cfs @ 12.00 hrs, Volume= 8,820 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.66 cfs @ 12.00 hrs, Volume= 8,820 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 385.98' @ 12.00 hrs
Flood Elev= 387.66'

Device	Routing	Invert	Outlet Devices
#1	Primary	384.36'	**15.0" Round Culvert** L= 92.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 384.36' / 383.43' S= 0.0101 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=4.61 cfs @ 12.00 hrs HW=385.96' (Free Discharge)
1=Culvert (Inlet Controls 4.61 cfs @ 3.75 fps)

Pond CB25: CB25



Summary for Pond CB26: PP-6

Inflow Area =	3,589 sf,	64.47% Impervious,	Inflow Depth = 6.89"	for 100-YEAR event	
Inflow =	0.89 cfs @	11.96 hrs,	Volume=	2,062 cf	
Outflow =	0.25 cfs @	11.80 hrs,	Volume=	2,062 cf,	Atten= 71%, Lag= 0.0 min
Discarded =	0.25 cfs @	11.80 hrs,	Volume=	2,062 cf	
Primary =	0.00 cfs @	0.00 hrs,	Volume=	0 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 384.52' @ 12.11 hrs Surf.Area= 2,200 sf Storage= 455 cf
Flood Elev= 388.26' Surf.Area= 2,200 sf Storage= 3,080 cf

Plug-Flow detention time= 9.2 min calculated for 2,059 cf (100% of inflow)
Center-of-Mass det. time= 9.2 min (784.0 - 774.9)

Volume	Invert	Avail.Storage	Storage Description
#1	384.00'	3,080 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 7,700 cf Overall x 40.0% Voids

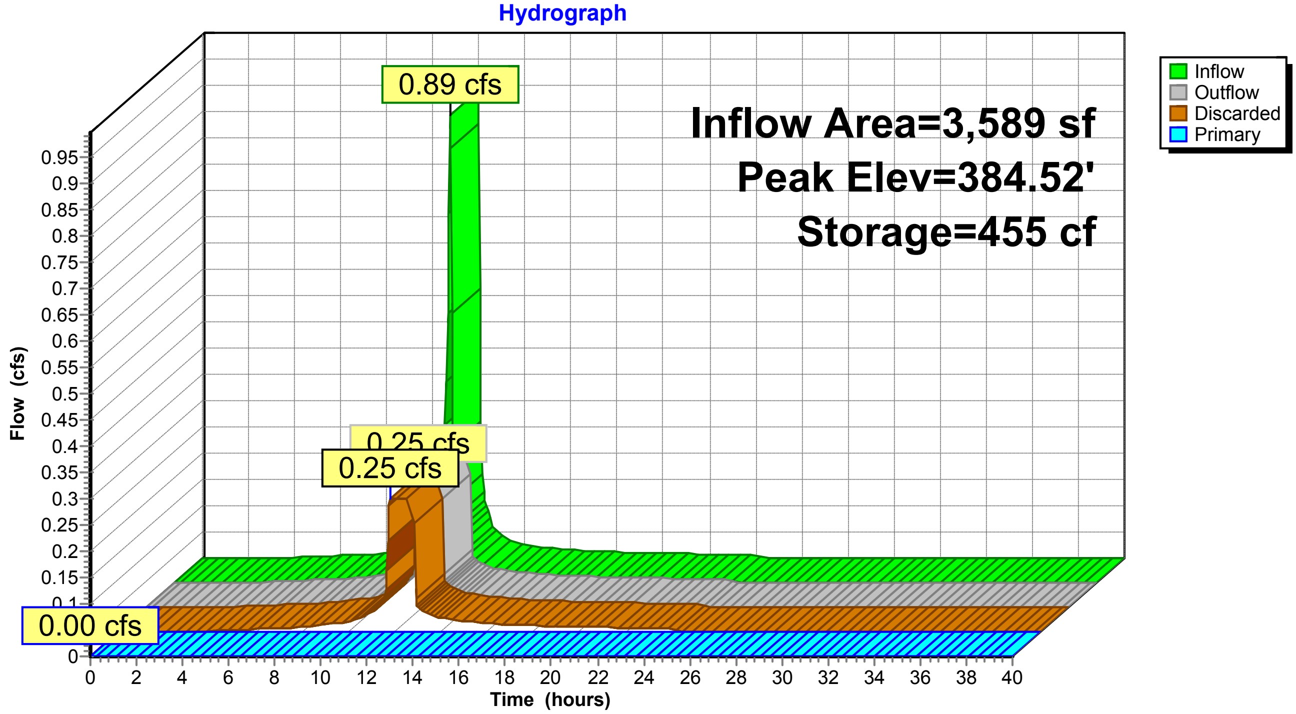
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.00	2,200	0	0
387.50	2,200	7,700	7,700

Device	Routing	Invert	Outlet Devices
#1	Primary	384.96'	**15.0" Round Culvert** L= 41.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 384.96' / 384.36' S= 0.0146 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#2	Discarded	384.00'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.25 cfs @ 11.80 hrs HW=384.06' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 0.25 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=384.00' (Free Discharge)
└─**1=Culvert** (Controls 0.00 cfs)

Pond CB26: PP-6



Summary for Pond CB27: CB27

[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=1)

Inflow Area =	10,524 sf,	75.84% Impervious,	Inflow Depth = 7.25"	for 100-YEAR event	
Inflow =	2.68 cfs @	11.96 hrs,	Volume=	6,360 cf	
Outflow =	2.35 cfs @	12.00 hrs,	Volume=	6,360 cf,	Atten= 12%, Lag= 2.4 min
Discarded =	0.32 cfs @	11.90 hrs,	Volume=	1,093 cf	
Primary =	2.02 cfs @	12.00 hrs,	Volume=	5,266 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 388.17' @ 12.00 hrs Surf.Area= 2,800 sf Storage= 187 cf
Flood Elev= 390.54' Surf.Area= 2,800 sf Storage= 2,845 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.5 min (765.3 - 764.8)

Volume	Invert	Avail.Storage	Storage Description
#1	388.00'	3,920 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 9,800 cf Overall x 40.0% Voids

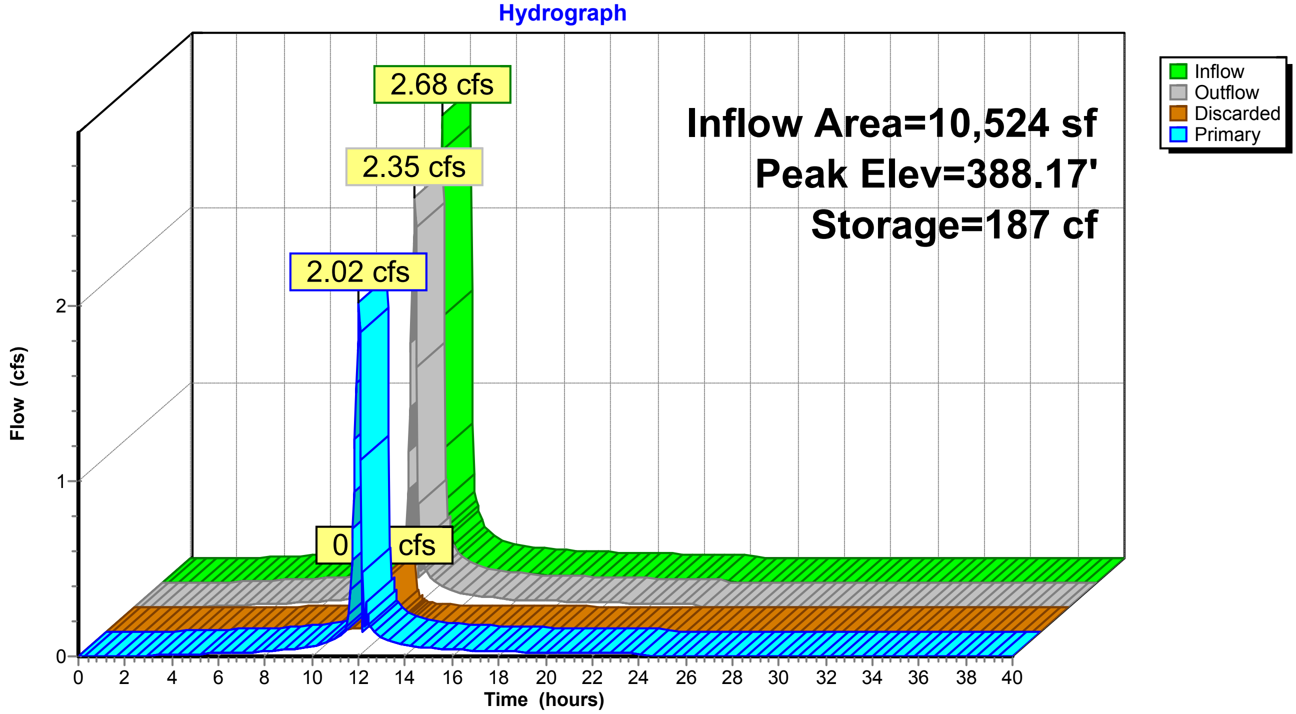
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
388.00	2,800	0	0
391.50	2,800	9,800	9,800

Device	Routing	Invert	Outlet Devices
#1	Primary	387.36'	**15.0" Round Culvert** L= 22.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 387.36' / 387.14' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#2	Discarded	388.00'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.32 cfs @ 11.90 hrs HW=388.05' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 0.32 cfs)

Primary OutFlow Max=2.01 cfs @ 12.00 hrs HW=388.16' (Free Discharge)
└─**1=Culvert** (Inlet Controls 2.01 cfs @ 2.41 fps)

Pond CB27: CB27



Summary for Pond CB28: CB28

Inflow Area =	3,169 sf,	64.25% Impervious,	Inflow Depth = 6.89"	for 100-YEAR event
Inflow =	0.79 cfs @	11.96 hrs, Volume=	1,820 cf	
Outflow =	0.55 cfs @	12.04 hrs, Volume=	1,820 cf,	Atten= 29%, Lag= 4.4 min
Discarded =	0.23 cfs @	11.80 hrs, Volume=	1,531 cf	
Primary =	0.32 cfs @	12.04 hrs, Volume=	289 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 388.29' @ 12.04 hrs Surf.Area= 2,000 sf Storage= 236 cf
Flood Elev= 391.82' Surf.Area= 2,000 sf Storage= 2,800 cf

Plug-Flow detention time= 3.7 min calculated for 1,820 cf (100% of inflow)
Center-of-Mass det. time= 3.7 min (778.6 - 774.9)

Volume	Invert	Avail.Storage	Storage Description
#1	388.00'	2,800 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 7,000 cf Overall x 40.0% Voids

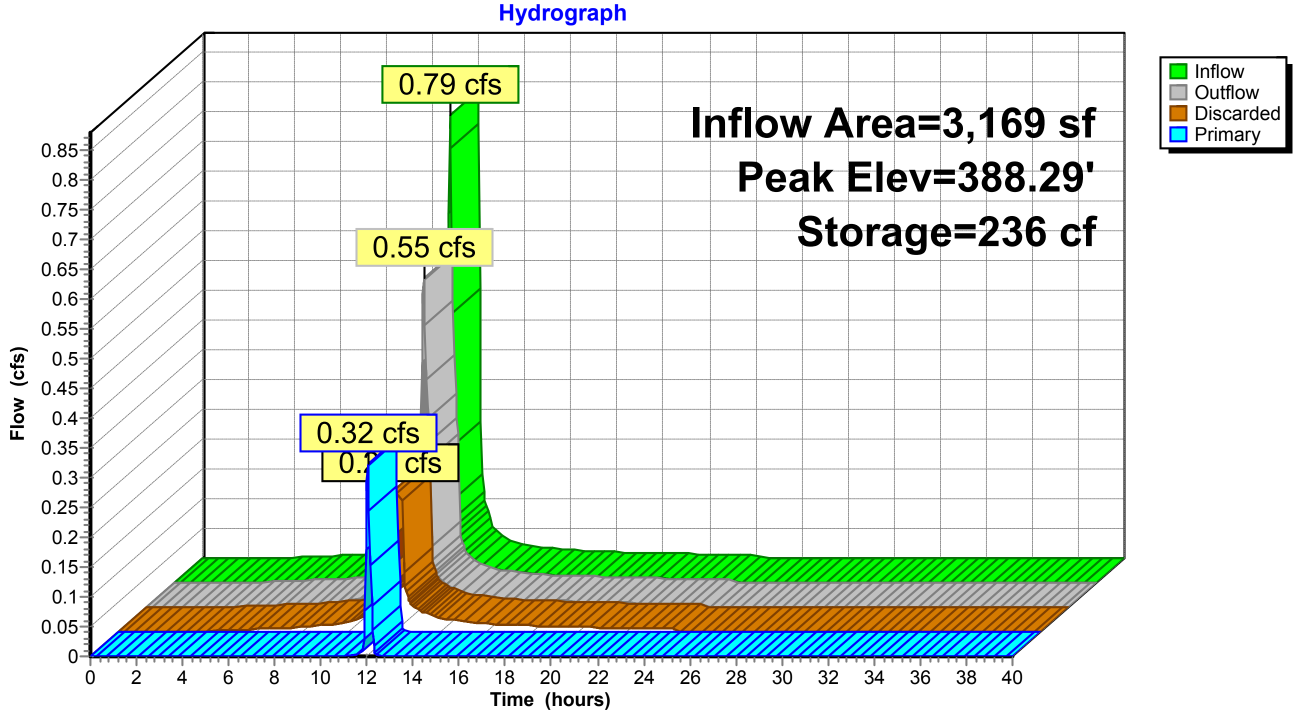
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
388.00	2,000	0	0
391.50	2,000	7,000	7,000

Device	Routing	Invert	Outlet Devices
#1	Primary	388.00'	**15.0" Round Culvert** L= 39.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 388.00' / 387.61' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#2	Discarded	388.00'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.23 cfs @ 11.80 hrs HW=388.05' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=0.31 cfs @ 12.04 hrs HW=388.29' (Free Discharge)
└─**1=Culvert** (Inlet Controls 0.31 cfs @ 1.45 fps)

Pond CB28: CB28



Summary for Pond CB29: CB29

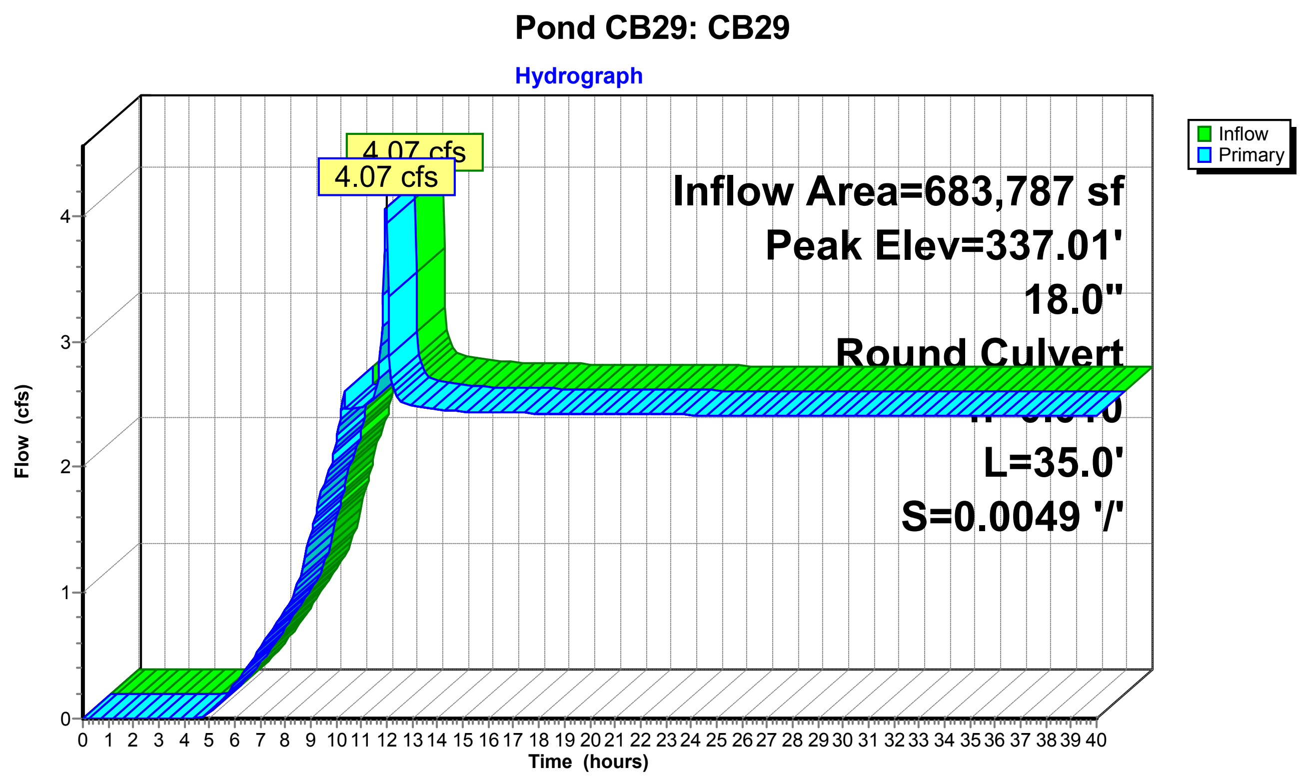
[62] Hint: Exceeded Reach FLARED END #2 OUTLET depth by 0.04' @ 4.45 hrs

Inflow Area =	683,787 sf,	19.88% Impervious,	Inflow Depth > 4.90"	for 100-YEAR event
Inflow =	4.07 cfs @	11.96 hrs, Volume=	278,973 cf	
Outflow =	4.07 cfs @	11.96 hrs, Volume=	278,973 cf,	Atten= 0%, Lag= 0.0 min
Primary =	4.07 cfs @	11.96 hrs, Volume=	278,973 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 337.01' @ 11.96 hrs
Flood Elev= 338.57'

Device	Routing	Invert	Outlet Devices
#1	Primary	335.81'	**18.0" Round CULVERT** L= 35.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 335.81' / 335.64' S= 0.0049 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.02 cfs @ 11.96 hrs HW=337.00' (Free Discharge)
└─**1=CULVERT** (Barrel Controls 4.02 cfs @ 3.67 fps)



Summary for Pond CB3: CB3

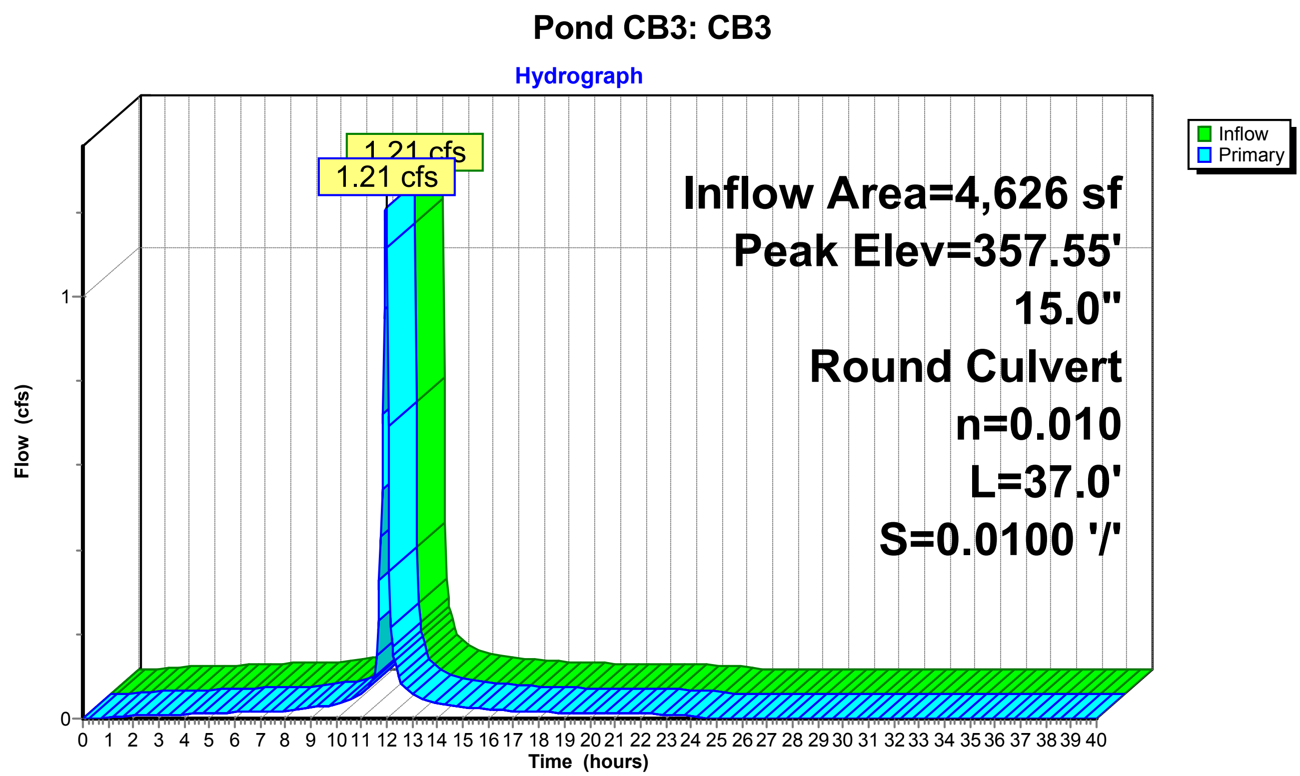
[79] Warning: Submerged Pond CB2 Primary device # 1 OUTLET by 0.60'

Inflow Area =	4,626 sf,100.00% Impervious,	Inflow Depth = 7.97"	for 100-YEAR event	
Inflow =	1.21 cfs @	11.96 hrs, Volume=	3,072 cf	
Outflow =	1.21 cfs @	11.96 hrs, Volume=	3,072 cf,	Atten= 0%, Lag= 0.0 min
Primary =	1.21 cfs @	11.96 hrs, Volume=	3,072 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 357.55' @ 11.96 hrs
Flood Elev= 360.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	356.95'	**15.0" Round Culvert** L= 37.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 356.95' / 356.58' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=1.18 cfs @ 11.96 hrs HW=357.54' (Free Discharge)
└─**1=Culvert** (Inlet Controls 1.18 cfs @ 2.07 fps)



Summary for Pond CB30: CB30

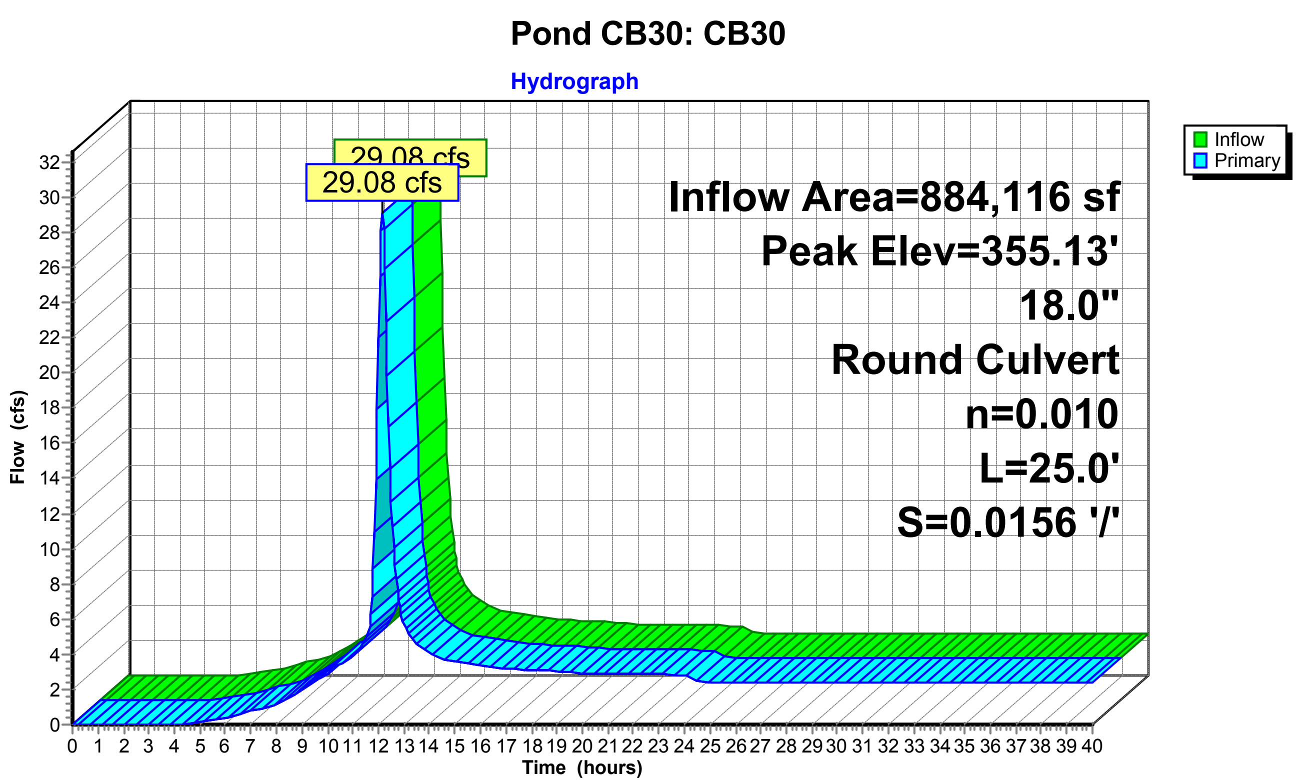
[58] Hint: Peaked 16.74' above defined flood level
[81] Warning: Exceeded Pond CB29 by 18.39' @ 12.15 hrs
[81] Warning: Exceeded Pond DMH#10 by 1.98' @ 12.00 hrs

Inflow Area =	884,116 sf,	21.35% Impervious,	Inflow Depth > 5.18"	for 100-YEAR event
Inflow =	29.08 cfs @	12.15 hrs, Volume=	381,831 cf	
Outflow =	29.08 cfs @	12.15 hrs, Volume=	381,831 cf,	Atten= 0%, Lag= 0.0 min
Primary =	29.08 cfs @	12.15 hrs, Volume=	381,831 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 355.13' @ 12.15 hrs
Flood Elev= 338.39'

Device	Routing	Invert	Outlet Devices
#1	Primary	335.64'	**18.0" Round Culvert** L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 335.64' / 335.25' S= 0.0156 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=29.07 cfs @ 12.15 hrs HW=355.12' (Free Discharge)
└─**1=Culvert** (Inlet Controls 29.07 cfs @ 16.45 fps)



Summary for Pond CB31: CB31

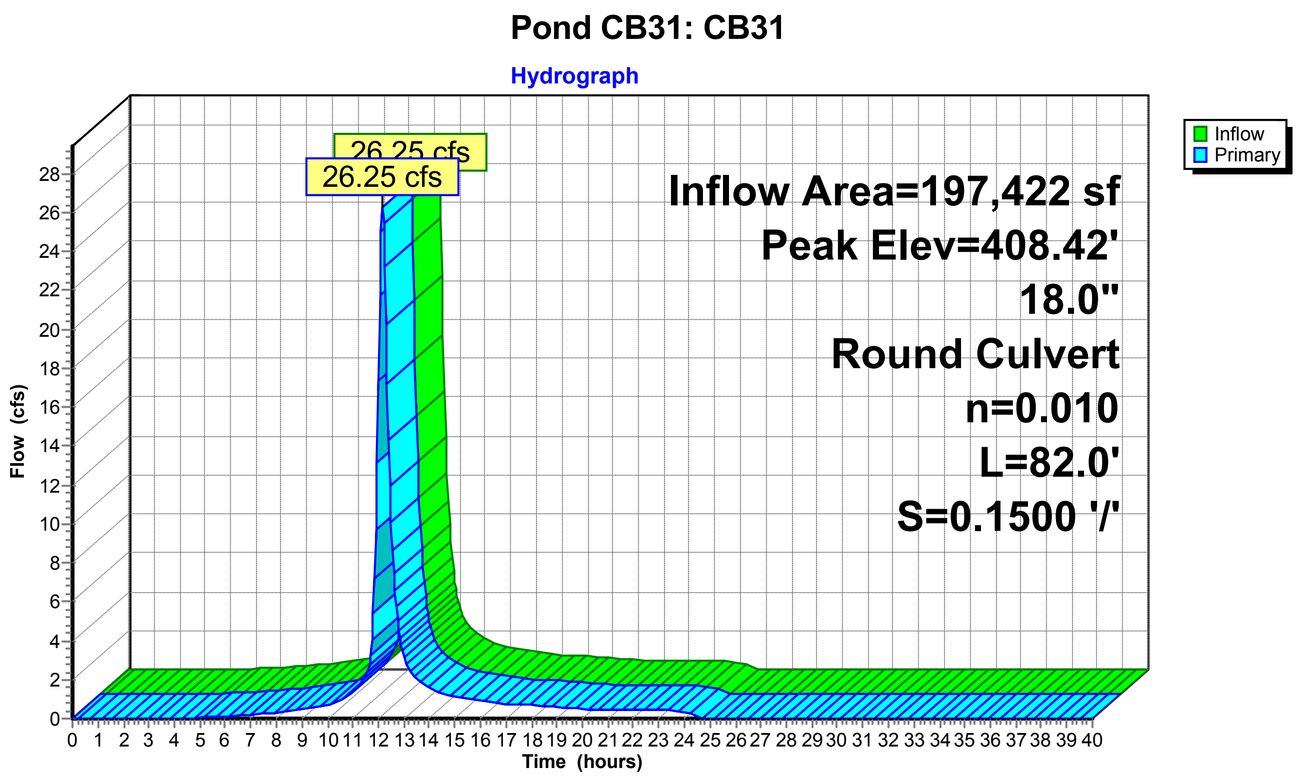
[58] Hint: Peaked 1.57' above defined flood level

Inflow Area =	197,422 sf,	25.73% Impervious,	Inflow Depth = 6.15"	for 100-YEAR event
Inflow =	26.25 cfs @	12.15 hrs, Volume=	101,130 cf	
Outflow =	26.25 cfs @	12.15 hrs, Volume=	101,130 cf,	Atten= 0%, Lag= 0.0 min
Primary =	26.25 cfs @	12.15 hrs, Volume=	101,130 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 408.42' @ 12.15 hrs
Flood Elev= 406.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	392.40'	**18.0" Round Culvert** L= 82.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 392.40' / 380.10' S= 0.1500 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=26.16 cfs @ 12.15 hrs HW=408.32' (Free Discharge)
└─**1=Culvert** (Inlet Controls 26.16 cfs @ 14.80 fps)



Summary for Pond CB32: PP-7

[79] Warning: Submerged Pond DMH7 Primary device # 1 OUTLET by 0.82'

Inflow Area = 13,693 sf, 73.15% Impervious, Inflow Depth = 4.87" for 100-YEAR event
Inflow = 2.33 cfs @ 12.01 hrs, Volume= 5,555 cf
Outflow = 2.22 cfs @ 12.04 hrs, Volume= 5,555 cf, Atten= 5%, Lag= 2.0 min
Discarded = 0.14 cfs @ 11.40 hrs, Volume= 3,859 cf
Primary = 2.08 cfs @ 12.04 hrs, Volume= 1,696 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 386.27' @ 12.04 hrs Surf.Area= 1,200 sf Storage= 1,090 cf

Plug-Flow detention time= 22.6 min calculated for 5,548 cf (100% of inflow)
Center-of-Mass det. time= 22.6 min (785.8 - 763.2)

Volume	Invert	Avail.Storage	Storage Description
#1	384.00'	1,680 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 4,200 cf Overall x 40.0% Voids

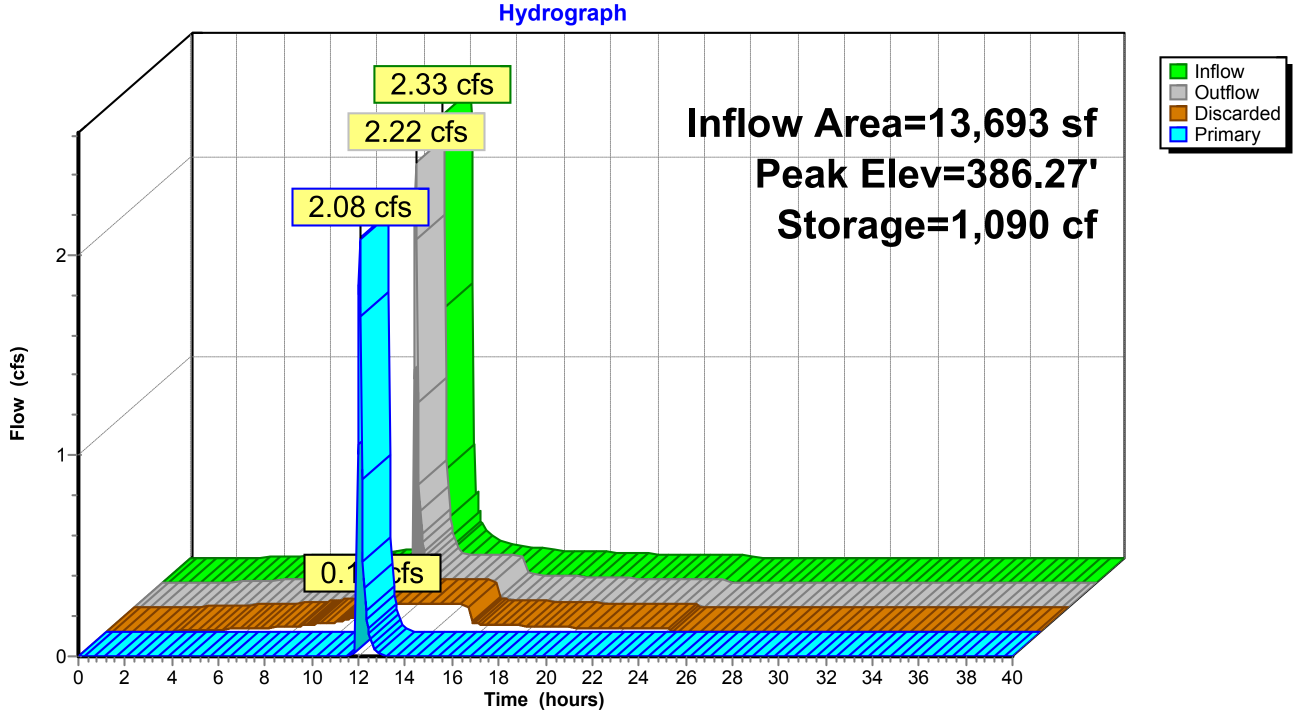
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.00	1,200	0	0
387.50	1,200	4,200	4,200

Device	Routing	Invert	Outlet Devices
#1	Primary	385.45'	**15.0" Round Culvert** L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 385.45' / 384.36' S= 0.0218 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#2	Discarded	384.00'	**5.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.14 cfs @ 11.40 hrs HW=384.04' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 0.14 cfs)

Primary OutFlow Max=2.04 cfs @ 12.04 hrs HW=386.26' (Free Discharge)
└─**1=Culvert** (Inlet Controls 2.04 cfs @ 2.42 fps)

Pond CB32: PP-7



Summary for Pond CB4: CB4

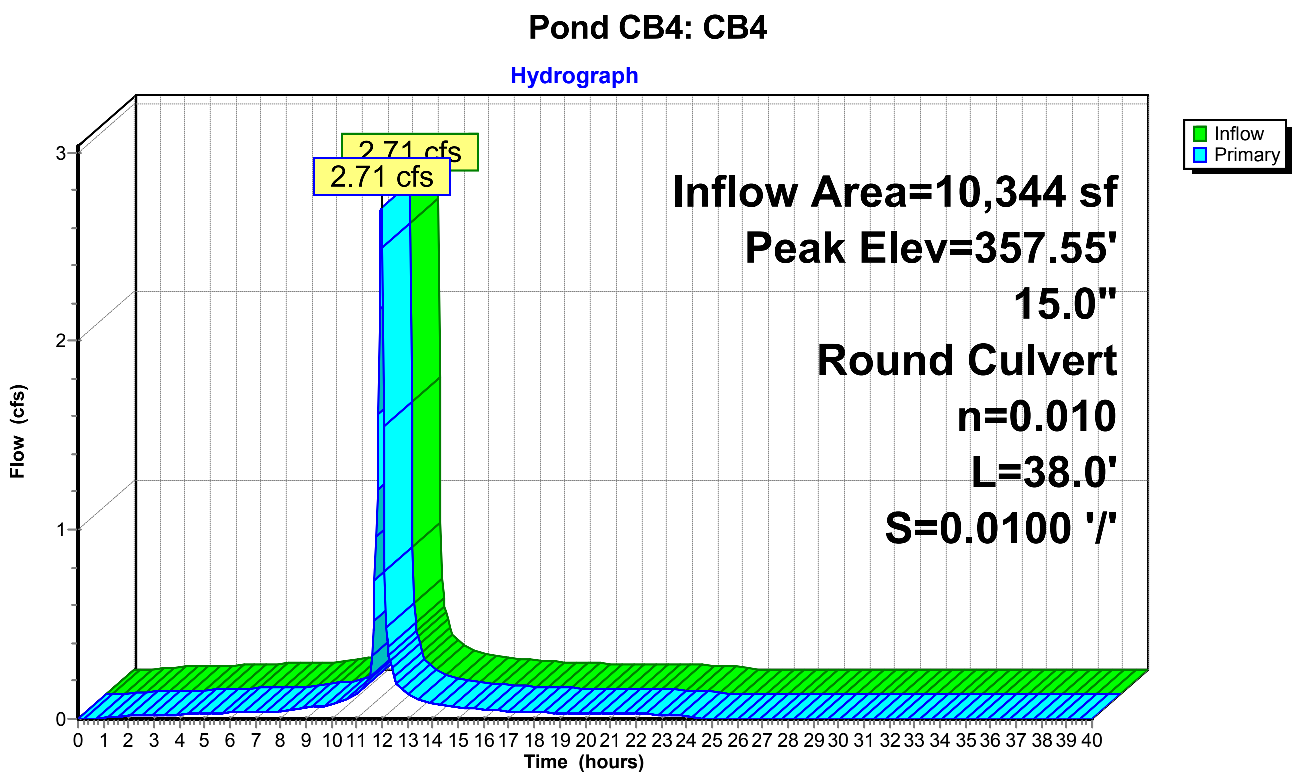
[79] Warning: Submerged Pond CB3 Primary device # 1 INLET by 0.60'

Inflow Area =	10,344 sf,100.00% Impervious,	Inflow Depth = 7.97"	for 100-YEAR event	
Inflow =	2.71 cfs @	11.96 hrs, Volume=	6,870 cf	
Outflow =	2.71 cfs @	11.96 hrs, Volume=	6,870 cf,	Atten= 0%, Lag= 0.0 min
Primary =	2.71 cfs @	11.96 hrs, Volume=	6,870 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 357.55' @ 11.96 hrs
Flood Elev= 360.59'

Device	Routing	Invert	Outlet Devices
#1	Primary	356.58'	**15.0" Round Culvert** L= 38.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 356.58' / 356.20' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=2.65 cfs @ 11.96 hrs HW=357.54' (Free Discharge)
↑**1=Culvert** (Inlet Controls 2.65 cfs @ 2.63 fps)



Summary for Pond CB5: CB5

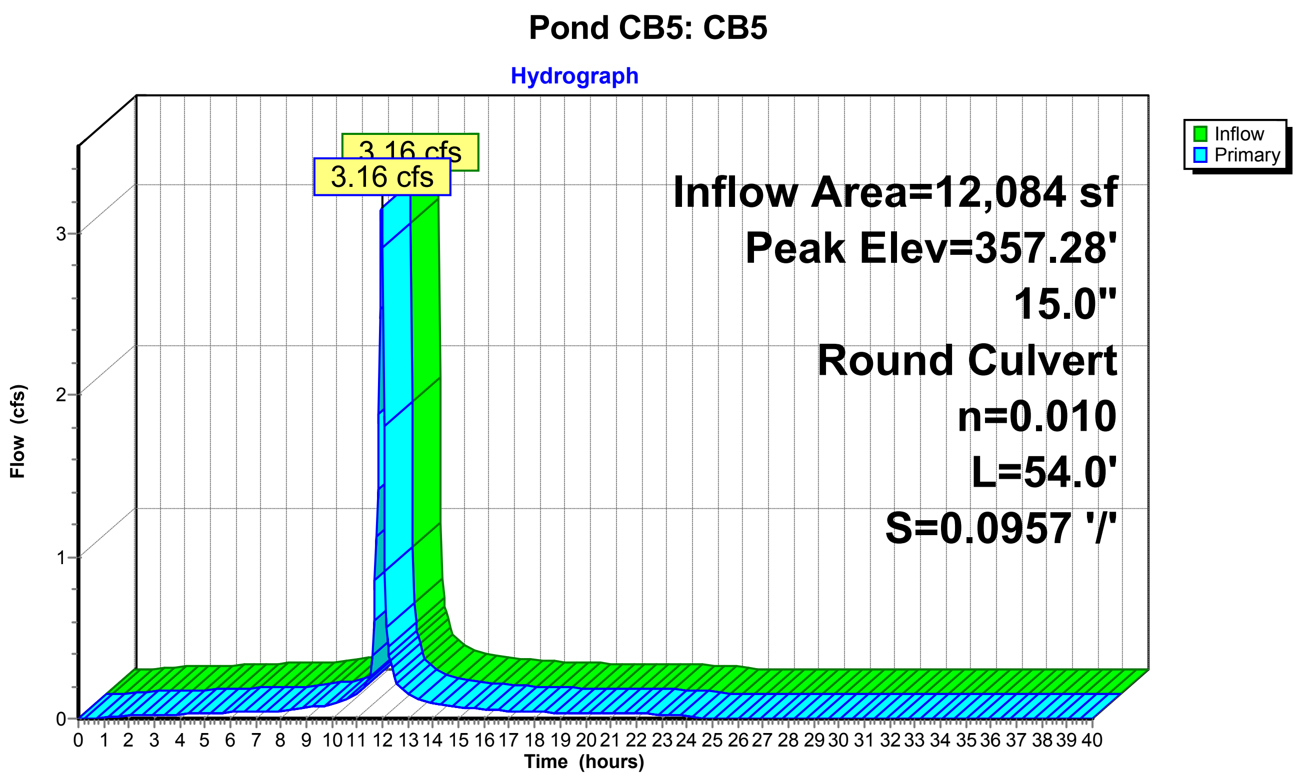
[79] Warning: Submerged Pond CB4 Primary device # 1 INLET by 0.70'

Inflow Area =	12,084 sf,100.00% Impervious,	Inflow Depth = 7.97"	for 100-YEAR event	
Inflow =	3.16 cfs @	11.96 hrs, Volume=	8,026 cf	
Outflow =	3.16 cfs @	11.96 hrs, Volume=	8,026 cf,	Atten= 0%, Lag= 0.0 min
Primary =	3.16 cfs @	11.96 hrs, Volume=	8,026 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 357.28' @ 11.96 hrs
Flood Elev= 360.78'

Device	Routing	Invert	Outlet Devices
#1	Primary	356.20'	**15.0" Round Culvert** L= 54.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 356.20' / 351.03' S= 0.0957 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=3.09 cfs @ 11.96 hrs HW=357.27' (Free Discharge)
└─**1=Culvert** (Inlet Controls 3.09 cfs @ 2.77 fps)



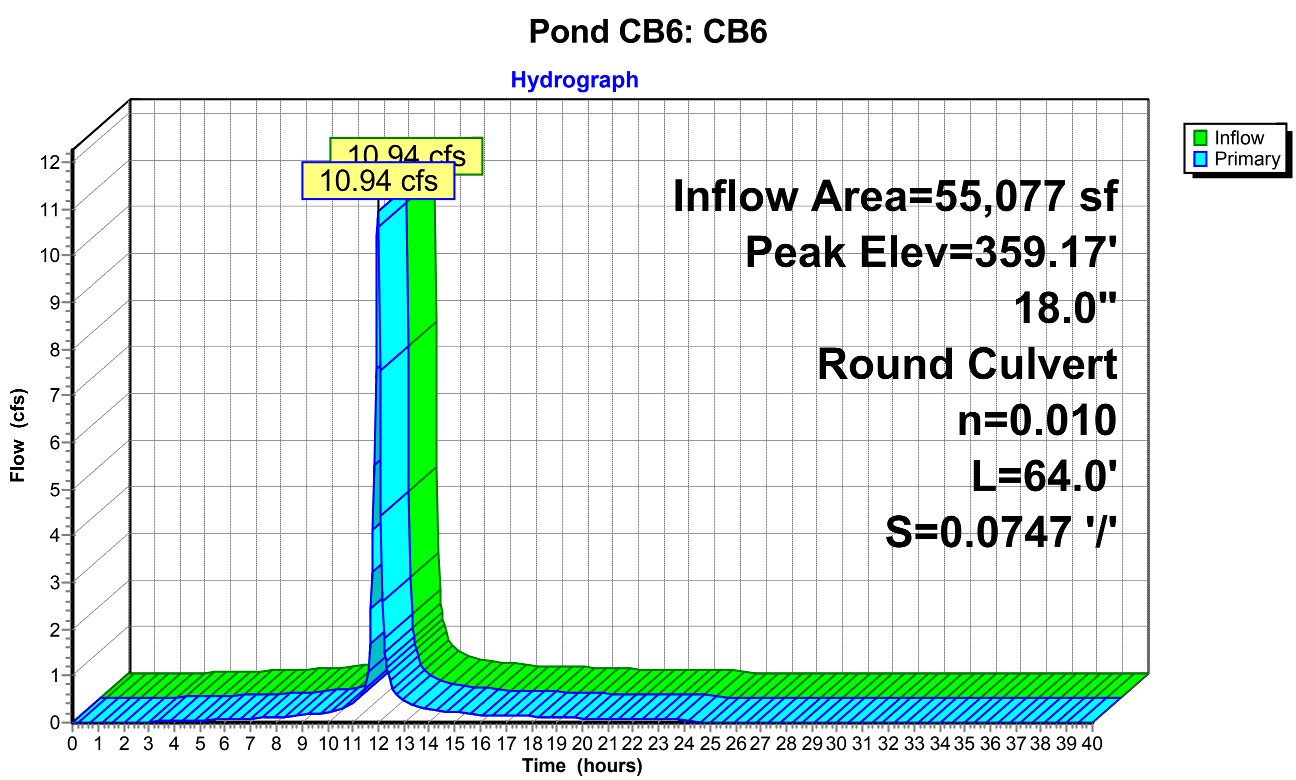
Summary for Pond CB6: CB6

Inflow Area = 55,077 sf, 70.64% Impervious, Inflow Depth = 5.24" for 100-YEAR event
Inflow = 10.94 cfs @ 11.98 hrs, Volume= 24,057 cf
Outflow = 10.94 cfs @ 11.98 hrs, Volume= 24,057 cf, Atten= 0%, Lag= 0.0 min
Primary = 10.94 cfs @ 11.98 hrs, Volume= 24,057 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 359.17' @ 11.98 hrs
Flood Elev= 368.43'

Device	Routing	Invert	Outlet Devices
#1	Primary	355.79'	**18.0" Round Culvert** L= 64.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 355.79' / 351.01' S= 0.0747 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=10.54 cfs @ 11.98 hrs HW=359.00' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 10.54 cfs @ 5.96 fps)



Summary for Pond CB7: CB7

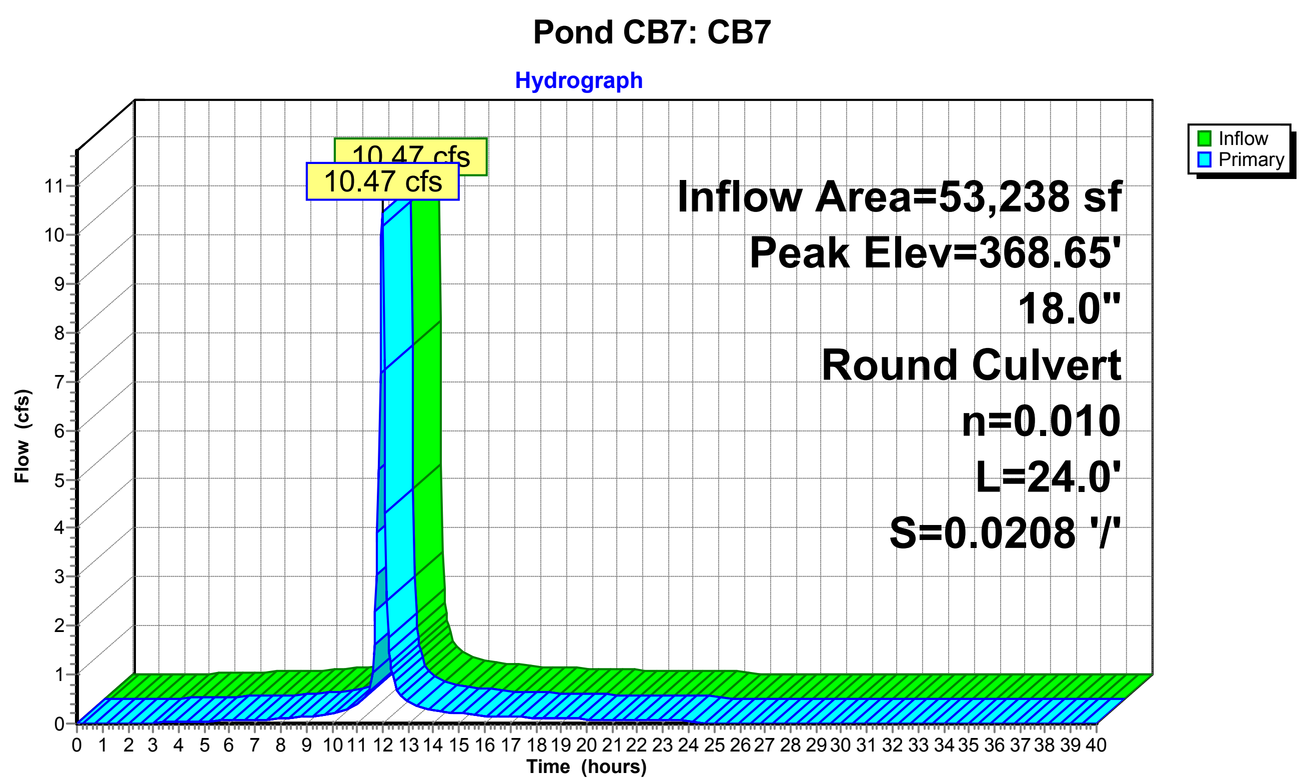
[79] Warning: Submerged Pond CB8 Primary device # 1 OUTLET by 2.81'

Inflow Area =	53,238 sf, 69.63% Impervious,	Inflow Depth = 5.15"	for 100-YEAR event	
Inflow =	10.47 cfs @	11.98 hrs, Volume=	22,836 cf	
Outflow =	10.47 cfs @	11.98 hrs, Volume=	22,836 cf,	Atten= 0%, Lag= 0.0 min
Primary =	10.47 cfs @	11.98 hrs, Volume=	22,836 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 368.65' @ 11.98 hrs
Flood Elev= 396.05'

Device	Routing	Invert	Outlet Devices
#1	Primary	365.50'	**18.0" Round Culvert** L= 24.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 365.50' / 365.00' S= 0.0208 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=10.09 cfs @ 11.98 hrs HW=368.50' (Free Discharge)
↑**1=Culvert** (Inlet Controls 10.09 cfs @ 5.71 fps)



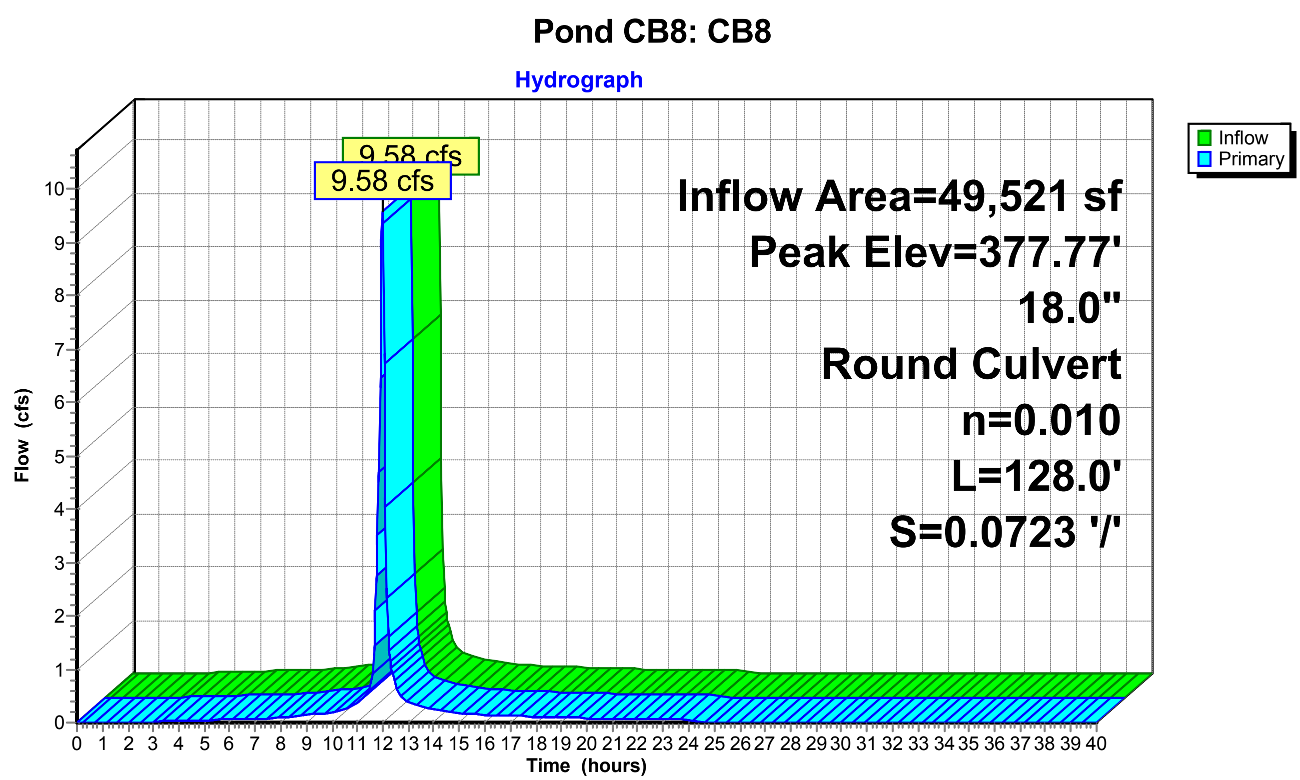
Summary for Pond CB8: CB8

Inflow Area =	49,521 sf,	70.94% Impervious,	Inflow Depth = 5.04"	for 100-YEAR event	
Inflow =	9.58 cfs @	11.98 hrs,	Volume=	20,812 cf	
Outflow =	9.58 cfs @	11.98 hrs,	Volume=	20,812 cf,	Atten= 0%, Lag= 0.0 min
Primary =	9.58 cfs @	11.98 hrs,	Volume=	20,812 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 377.77' @ 11.98 hrs
Flood Elev= 383.24'

Device	Routing	Invert	Outlet Devices
#1	Primary	375.00'	**18.0" Round Culvert** L= 128.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 375.00' / 365.74' S= 0.0723 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=9.24 cfs @ 11.98 hrs HW=377.64' (Free Discharge)
↑**1=Culvert** (Inlet Controls 9.24 cfs @ 5.23 fps)



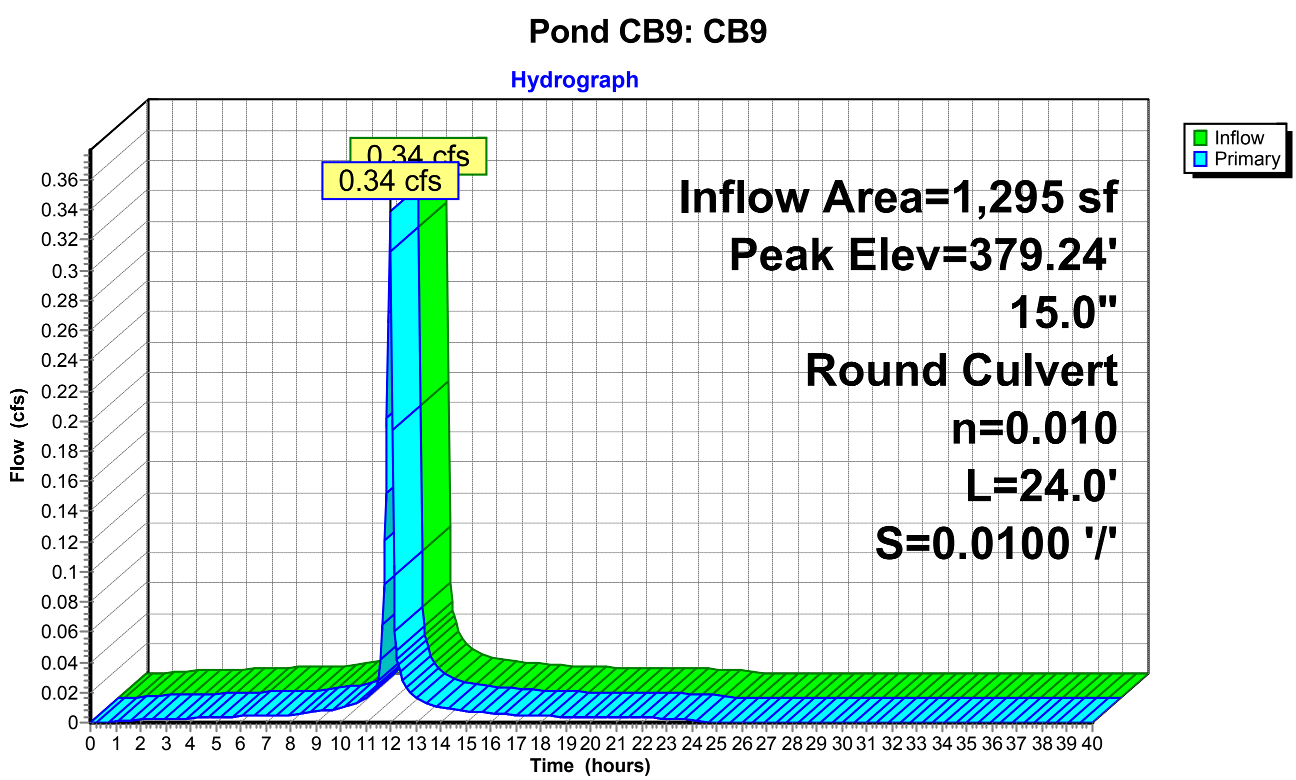
Summary for Pond CB9: CB9

Inflow Area =	1,295 sf,100.00% Impervious,	Inflow Depth = 7.97"	for 100-YEAR event	
Inflow =	0.34 cfs @	11.96 hrs, Volume=	860 cf	
Outflow =	0.34 cfs @	11.96 hrs, Volume=	860 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.34 cfs @	11.96 hrs, Volume=	860 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 379.24' @ 11.96 hrs
Flood Elev= 382.42'

Device	Routing	Invert	Outlet Devices
#1	Primary	378.94'	**15.0" Round Culvert** L= 24.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 378.94' / 378.70' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=0.33 cfs @ 11.96 hrs HW=379.24' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.33 cfs @ 1.47 fps)



Summary for Pond DMH#10: DMH#10

[58] Hint: Peaked 7.87' above defined flood level
[79] Warning: Submerged Pond DMH9 Primary device # 1 INLET by 15.17'

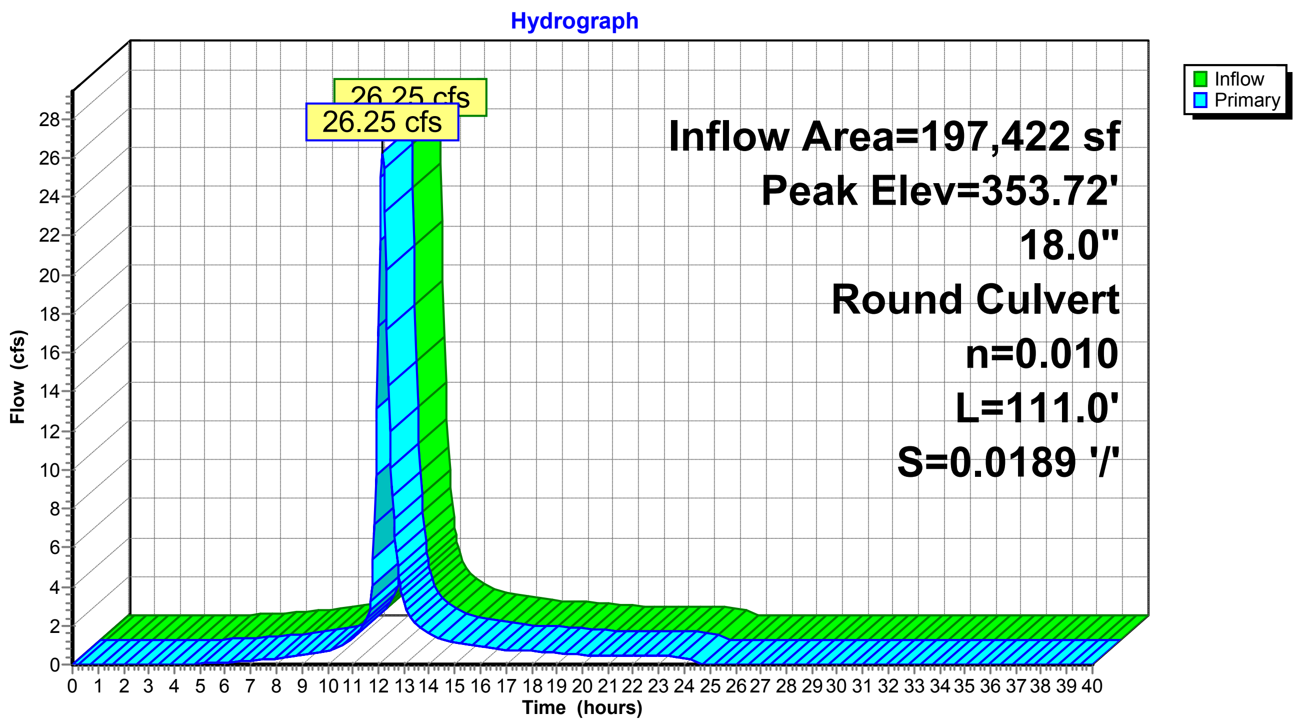
Inflow Area = 197,422 sf, 25.73% Impervious, Inflow Depth = 6.15" for 100-YEAR event
Inflow = 26.25 cfs @ 12.15 hrs, Volume= 101,130 cf
Outflow = 26.25 cfs @ 12.15 hrs, Volume= 101,130 cf, Atten= 0%, Lag= 0.0 min
Primary = 26.25 cfs @ 12.15 hrs, Volume= 101,130 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 353.72' @ 12.15 hrs
Flood Elev= 345.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	337.70'	**18.0" Round Culvert** L= 111.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 337.70' / 335.60' S= 0.0189 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=26.16 cfs @ 12.15 hrs HW=353.62' (Free Discharge)
↑**1=Culvert** (Inlet Controls 26.16 cfs @ 14.80 fps)

Pond DMH#10: DMH#10



Summary for Pond DMH3: DMH3

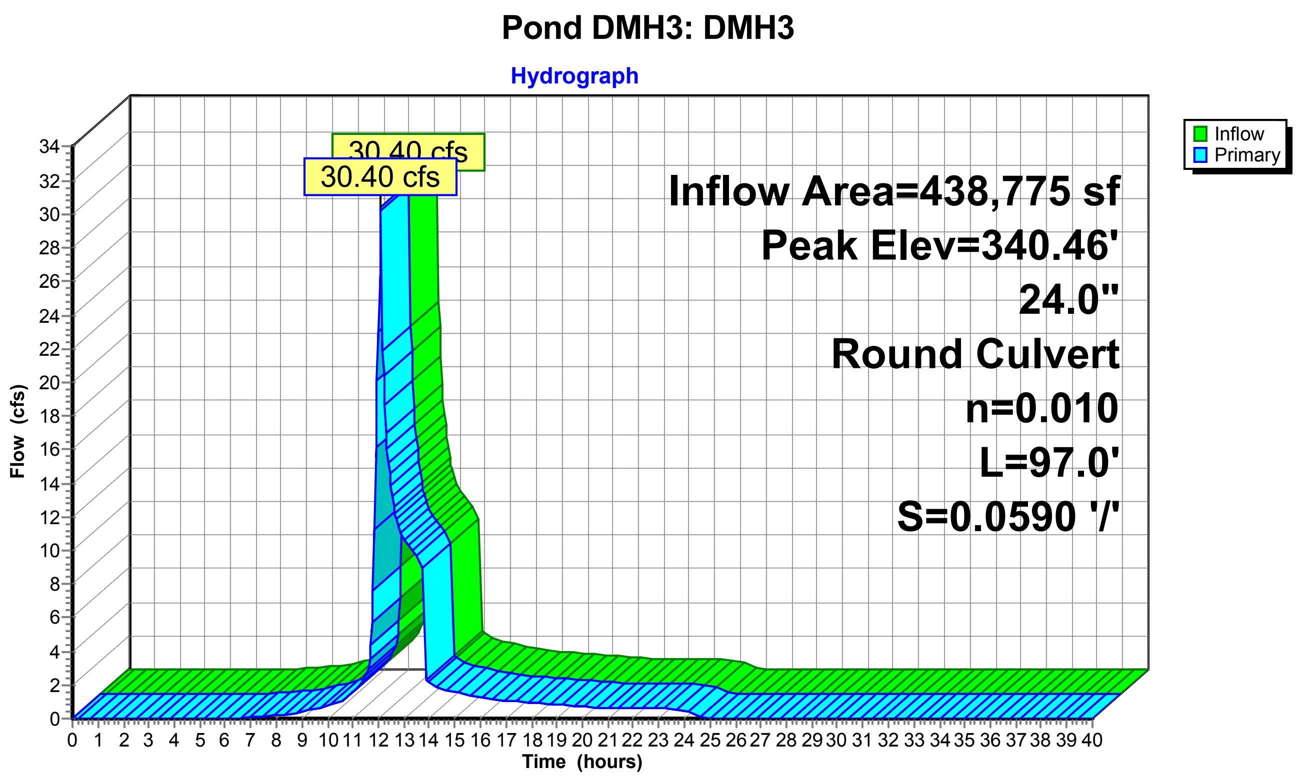
[79] Warning: Submerged Pond CB16 Primary device # 1 INLET by 3.55'

Inflow Area = 438,775 sf, 35.77% Impervious, Inflow Depth = 4.10" for 100-YEAR event
Inflow = 30.40 cfs @ 12.09 hrs, Volume= 149,960 cf
Outflow = 30.40 cfs @ 12.09 hrs, Volume= 149,960 cf, Atten= 0%, Lag= 0.0 min
Primary = 30.40 cfs @ 12.09 hrs, Volume= 149,960 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 340.46' @ 12.09 hrs
Flood Elev= 356.89'

Device	Routing	Invert	Outlet Devices
#1	Primary	333.00'	**24.0" Round Culvert** L= 97.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 333.00' / 327.28' S= 0.0590 '/' Cc= 0.900 n= 0.010, Flow Area= 3.14 sf

Primary OutFlow Max=29.51 cfs @ 12.09 hrs HW=340.11' (Free Discharge)
└**1=Culvert** (Inlet Controls 29.51 cfs @ 9.39 fps)



Summary for Pond DMH5: DMH5

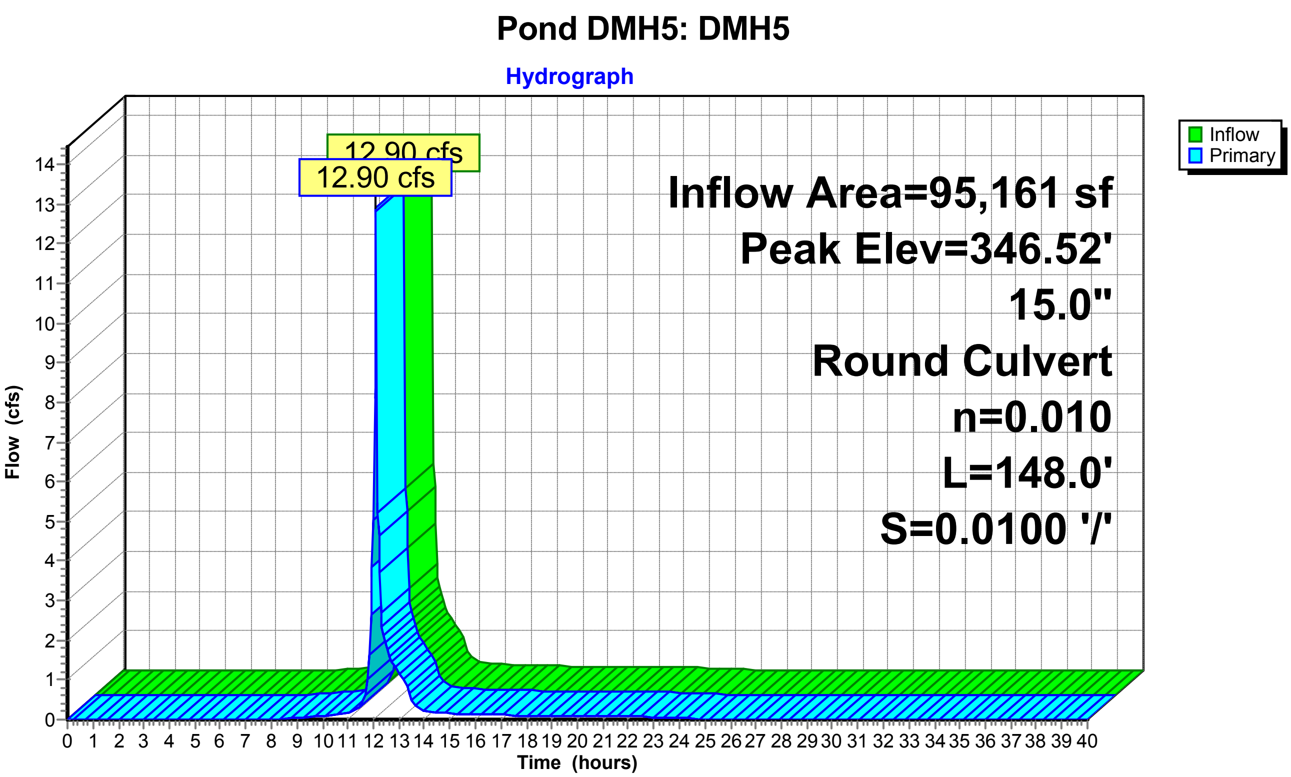
[81] Warning: Exceeded Pond DMH6 by 2.44' @ 12.10 hrs
[81] Warning: Exceeded Pond PP-4 by 1.28' @ 12.10 hrs
[81] Warning: Exceeded Pond PP-5 by 0.16' @ 12.10 hrs

Inflow Area = 95,161 sf, 64.89% Impervious, Inflow Depth = 2.61" for 100-YEAR event
Inflow = 12.90 cfs @ 12.09 hrs, Volume= 20,660 cf
Outflow = 12.90 cfs @ 12.09 hrs, Volume= 20,660 cf, Atten= 0%, Lag= 0.0 min
Primary = 12.90 cfs @ 12.09 hrs, Volume= 20,660 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 346.52' @ 12.10 hrs
Flood Elev= 349.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	338.32'	**15.0" Round Culvert** L= 148.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 338.32' / 336.84' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=12.32 cfs @ 12.09 hrs HW=345.92' (Free Discharge)
└─**1=Culvert** (Inlet Controls 12.32 cfs @ 10.04 fps)



Summary for Pond DMH6: DMH6

[79] Warning: Submerged Pond PP-1 Primary device # 2 INLET by 1.27'
[79] Warning: Submerged Pond PP-1 Primary device # 3 by 3.53'
[81] Warning: Exceeded Pond PP-2 by 3.54' @ 12.10 hrs
[79] Warning: Submerged Pond PP-3 Primary device # 2 OUTLET by 1.09'

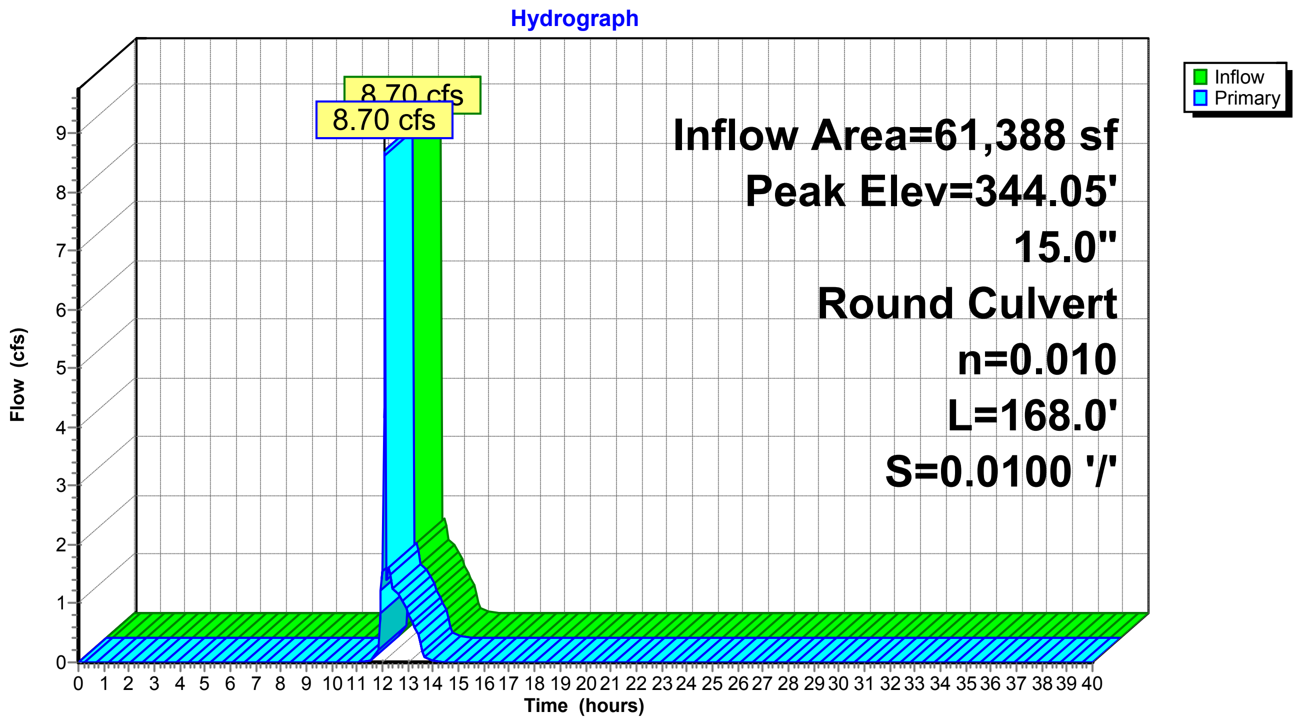
Inflow Area = 61,388 sf, 81.87% Impervious, Inflow Depth = 1.64" for 100-YEAR event
Inflow = 8.70 cfs @ 12.09 hrs, Volume= 8,383 cf
Outflow = 8.70 cfs @ 12.09 hrs, Volume= 8,383 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.70 cfs @ 12.09 hrs, Volume= 8,383 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 344.05' @ 12.10 hrs
Flood Elev= 346.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	340.00'	**15.0" Round Culvert** L= 168.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 340.00' / 338.32' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=8.19 cfs @ 12.09 hrs HW=343.71' (Free Discharge)
↑**1=Culvert** (Inlet Controls 8.19 cfs @ 6.67 fps)

Pond DMH6: DMH6



Summary for Pond DMH7: DMH7

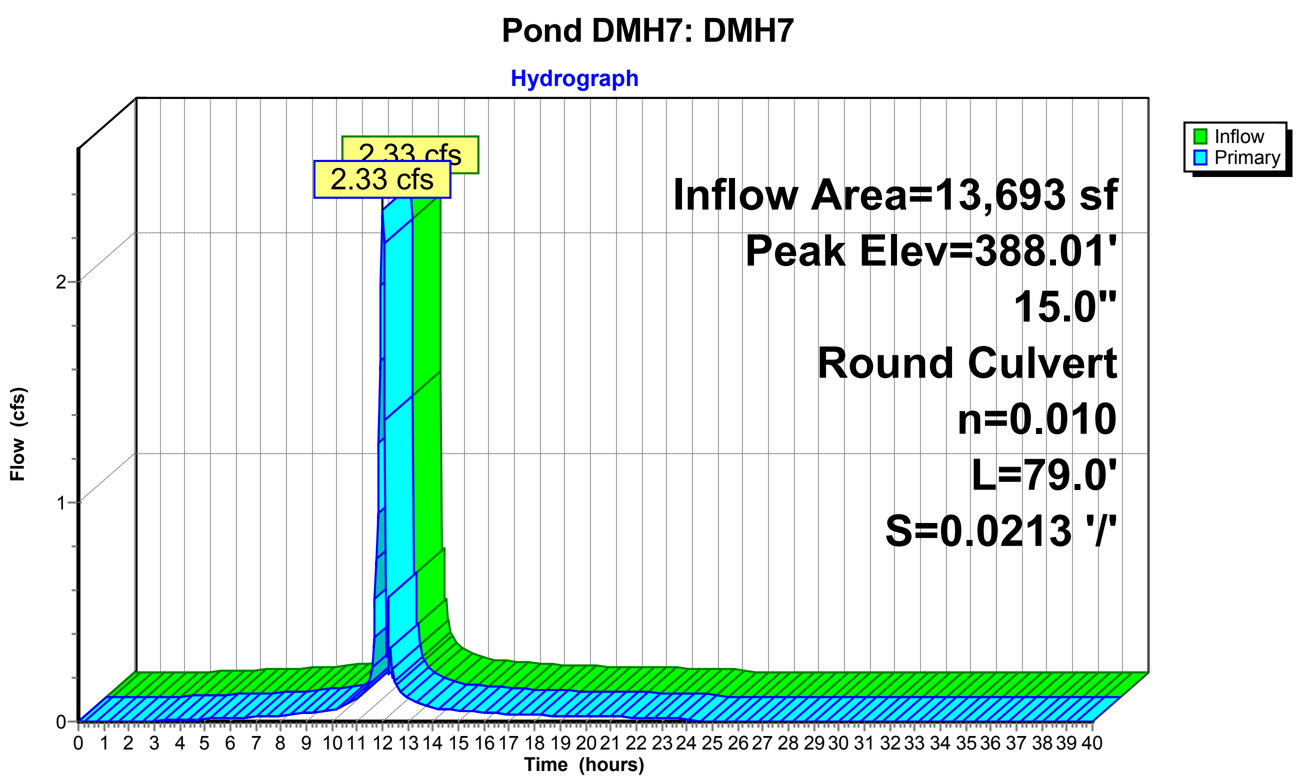
[79] Warning: Submerged Pond CB27 Primary device # 1 INLET by 0.65'
[79] Warning: Submerged Pond CB28 Primary device # 1 INLET by 0.01'

Inflow Area = 13,693 sf, 73.15% Impervious, Inflow Depth = 4.87" for 100-YEAR event
Inflow = 2.33 cfs @ 12.01 hrs, Volume= 5,555 cf
Outflow = 2.33 cfs @ 12.01 hrs, Volume= 5,555 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.33 cfs @ 12.01 hrs, Volume= 5,555 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 388.01' @ 12.01 hrs
Flood Elev= 391.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	387.13'	**15.0" Round Culvert** L= 79.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 387.13' / 385.45' S= 0.0213 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

Primary OutFlow Max=2.29 cfs @ 12.01 hrs HW=388.00' (Free Discharge)
1=Culvert (Inlet Controls 2.29 cfs @ 2.51 fps)



Summary for Pond DMH8: DMH8

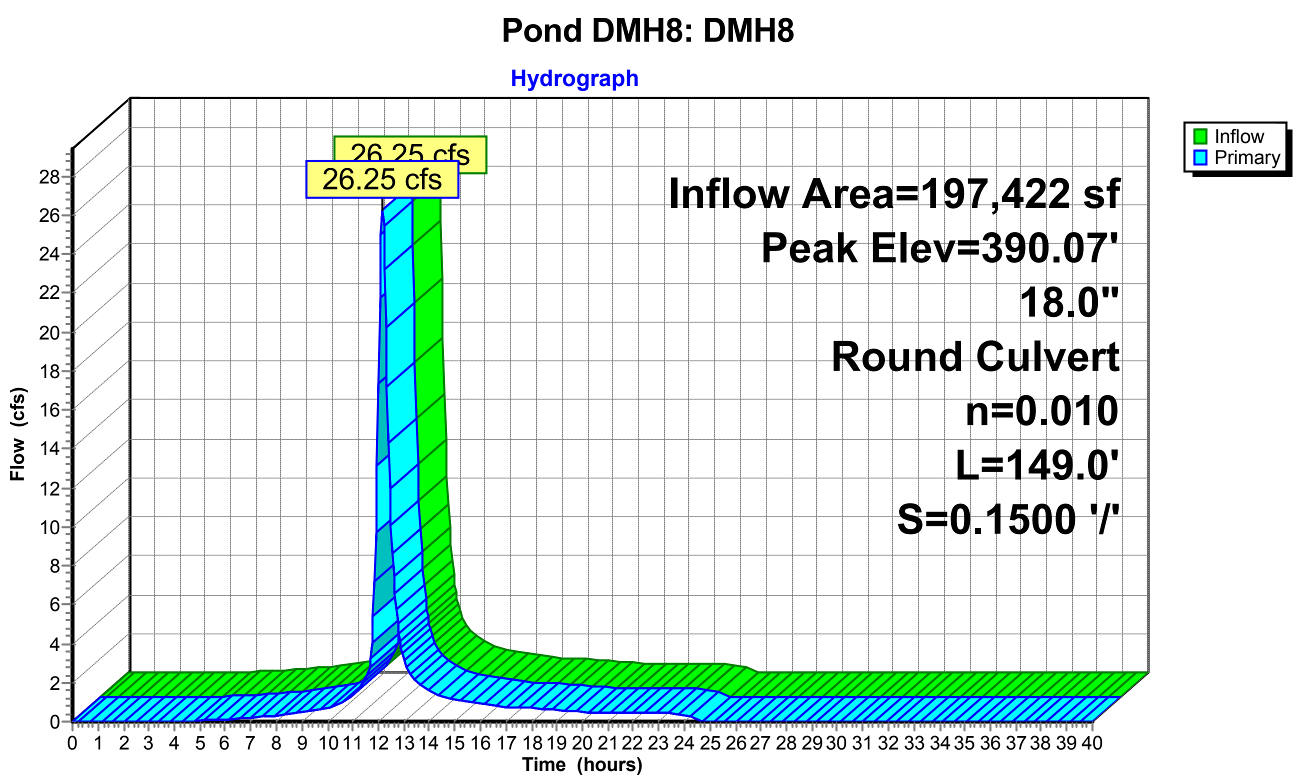
[58] Hint: Peaked 6.68' above defined flood level
[79] Warning: Submerged Pond CB31 Primary device # 1 OUTLET by 9.96'

Inflow Area = 197,422 sf, 25.73% Impervious, Inflow Depth = 6.15" for 100-YEAR event
Inflow = 26.25 cfs @ 12.15 hrs, Volume= 101,130 cf
Outflow = 26.25 cfs @ 12.15 hrs, Volume= 101,130 cf, Atten= 0%, Lag= 0.0 min
Primary = 26.25 cfs @ 12.15 hrs, Volume= 101,130 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 390.07' @ 12.15 hrs
Flood Elev= 383.39'

Device	Routing	Invert	Outlet Devices
#1	Primary	374.05'	**18.0" Round Culvert** L= 149.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 374.05' / 351.70' S= 0.1500 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=26.16 cfs @ 12.15 hrs HW=389.97' (Free Discharge)
↑1=Culvert (Inlet Controls 26.16 cfs @ 14.80 fps)



Summary for Pond DMH9: DMH#9

[79] Warning: Submerged Pond DMH8 Primary device # 1 OUTLET by 2.85'

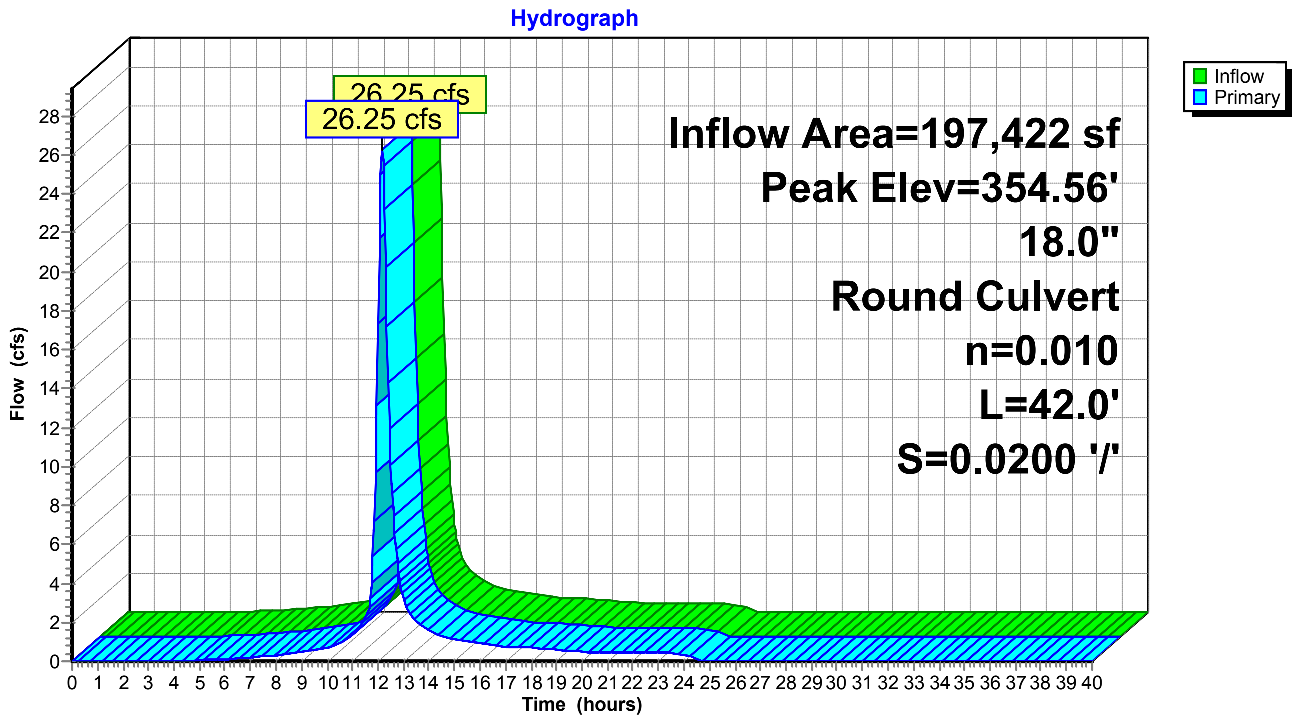
Inflow Area =	197,422 sf,	25.73% Impervious,	Inflow Depth = 6.15"	for 100-YEAR event
Inflow =	26.25 cfs @	12.15 hrs, Volume=	101,130 cf	
Outflow =	26.25 cfs @	12.15 hrs, Volume=	101,130 cf,	Atten= 0%, Lag= 0.0 min
Primary =	26.25 cfs @	12.15 hrs, Volume=	101,130 cf	

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 354.56' @ 12.15 hrs
Flood Elev= 354.58'

Device	Routing	Invert	Outlet Devices
#1	Primary	338.54'	**18.0" Round Culvert** L= 42.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 338.54' / 337.70' S= 0.0200 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

Primary OutFlow Max=26.16 cfs @ 12.15 hrs HW=354.46' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 26.16 cfs @ 14.80 fps)

Pond DMH9: DMH#9



Summary for Pond PP-1: PP-1

[93] Warning: Storage range exceeded by 2.78'
[81] Warning: Exceeded Pond CB22 by 0.93' @ 12.10 hrs

Inflow Area = 55,636 sf, 80.75% Impervious, Inflow Depth = 7.42" for 100-YEAR event
Inflow = 12.46 cfs @ 11.97 hrs, Volume= 34,418 cf
Outflow = 9.71 cfs @ 12.09 hrs, Volume= 34,418 cf, Atten= 22%, Lag= 7.2 min
Discarded = 1.29 cfs @ 11.65 hrs, Volume= 26,957 cf
Primary = 8.43 cfs @ 12.09 hrs, Volume= 7,461 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 345.28' @ 12.09 hrs Surf.Area= 8,294 sf Storage= 8,294 cf
Flood Elev= 345.48' Surf.Area= 8,294 sf Storage= 8,294 cf

Plug-Flow detention time= 20.6 min calculated for 34,375 cf (100% of inflow)
Center-of-Mass det. time= 20.6 min (775.2 - 754.6)

Volume	Invert	Avail.Storage	Storage Description
#1	340.00'	8,294 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 20,735 cf Overall x 40.0% Voids

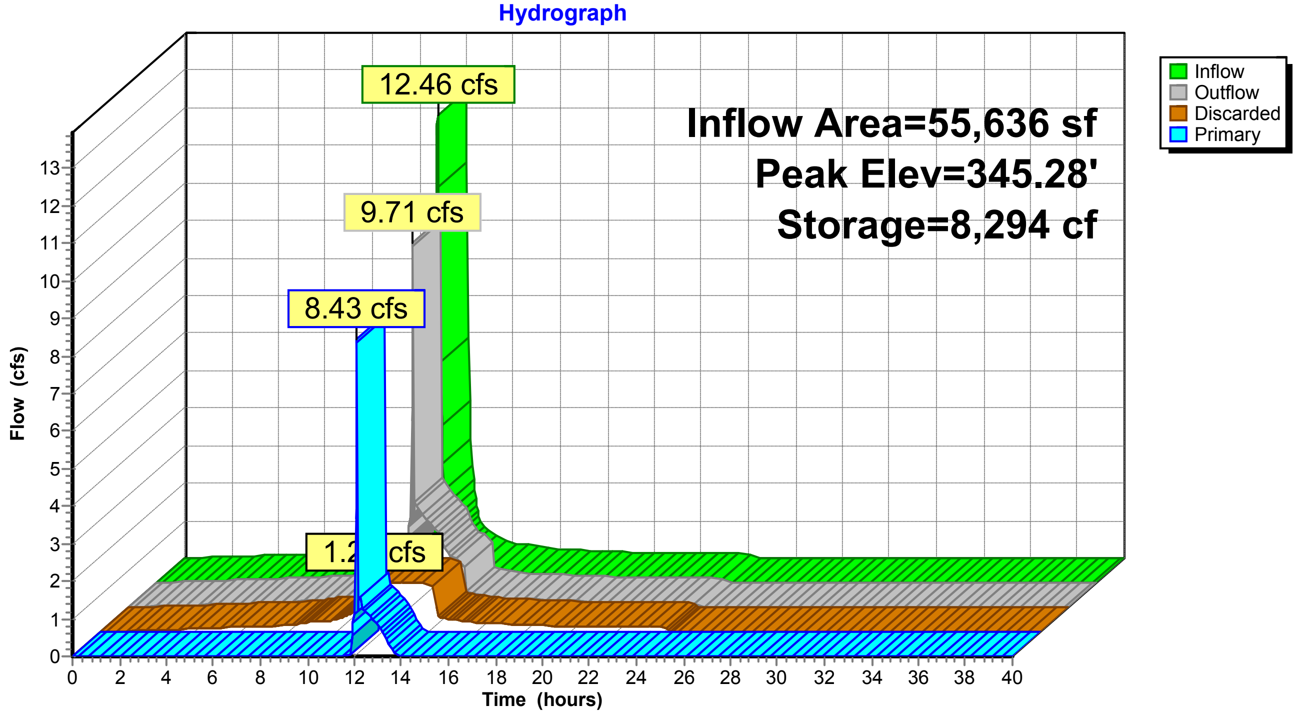
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
340.00	8,294	0	0
342.50	8,294	20,735	20,735

Device	Routing	Invert	Outlet Devices
#1	Discarded	340.00'	**6.700 in/hr Exfiltration over Surface area**
#2	Primary	342.76'	**15.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 342.76' / 342.16' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#3	Primary	340.50'	**6.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=1.29 cfs @ 11.65 hrs HW=340.09' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 1.29 cfs)

Primary OutFlow Max=7.98 cfs @ 12.09 hrs HW=345.05' (Free Discharge)
├─**2=Culvert** (Inlet Controls 6.02 cfs @ 4.90 fps)
└─**3=Orifice/Grate** (Orifice Controls 1.96 cfs @ 9.98 fps)

Pond PP-1: PP-1


Hydrograph
12.46 cfs
9.71 cfs
8.43 cfs
1.2 cfs
Inflow Area=55,636 sf
Peak Elev=345.28'
Storage=8,294 cf
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40

Summary for Pond PP-2: PP-2

Inflow Area = 2,778 sf, 92.40% Impervious, Inflow Depth = 7.73" for 100-YEAR event
Inflow = 0.72 cfs @ 11.96 hrs, Volume= 1,790 cf
Outflow = 0.25 cfs @ 11.80 hrs, Volume= 1,790 cf, Atten= 65%, Lag= 0.0 min
Discarded = 0.25 cfs @ 11.80 hrs, Volume= 1,790 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 340.49' @ 12.10 hrs Surf.Area= 1,610 sf Storage= 317 cf
Flood Elev= 344.22' Surf.Area= 1,610 sf Storage= 1,610 cf

Plug-Flow detention time= 6.0 min calculated for 1,787 cf (100% of inflow)
Center-of-Mass det. time= 6.0 min (753.8 - 747.9)

Volume	Invert	Avail.Storage	Storage Description
#1	340.00'	1,610 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 4,025 cf Overall x 40.0% Voids

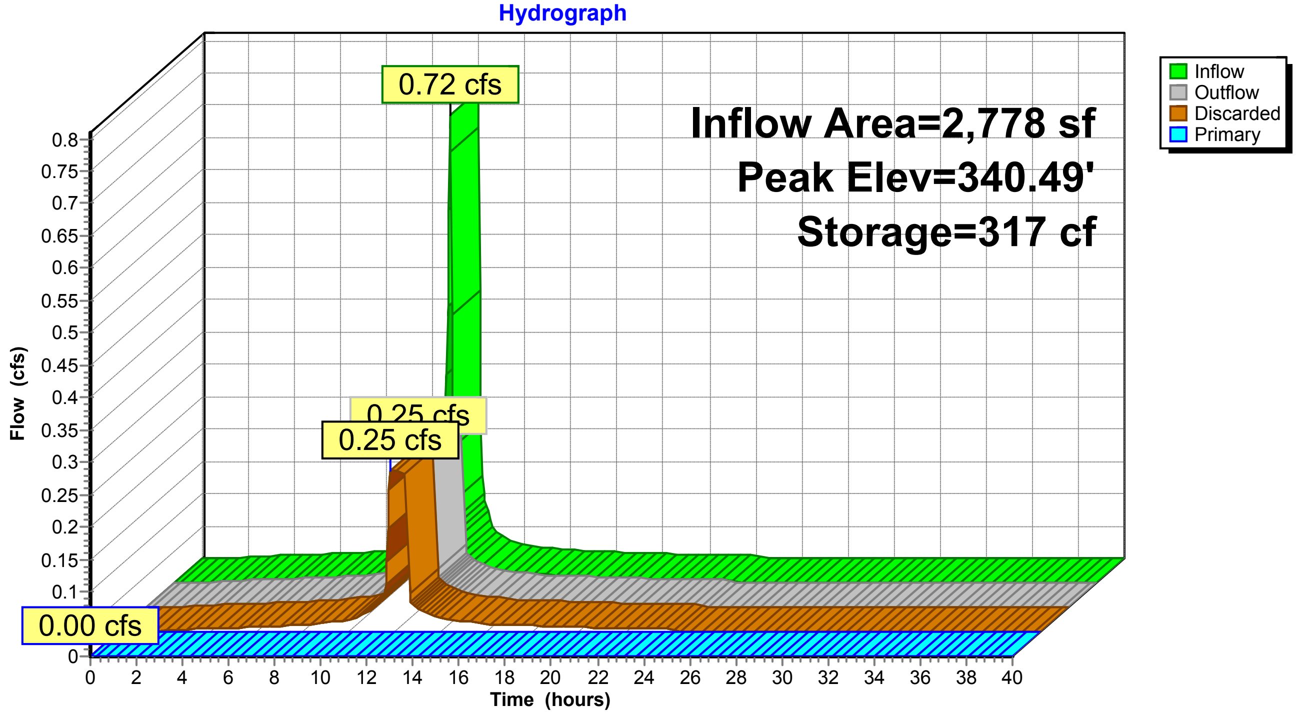
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
340.00	1,610	0	0
342.50	1,610	4,025	4,025

Device	Routing	Invert	Outlet Devices
#1	Discarded	340.00'	**6.700 in/hr Exfiltration over Surface area**
#2	Primary	340.50'	**15.0" Round Culvert** L= 46.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 340.50' / 340.04' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#3	Primary	340.50'	**6.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.25 cfs @ 11.80 hrs HW=340.05' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.25 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=340.00' (Free Discharge)
├─**2=Culvert** (Controls 0.00 cfs)
└─**3=Orifice/Grate** (Controls 0.00 cfs)

Pond PP-2: PP-2


Hydrograph
0.72 cfs
0.25 cfs
0.25 cfs
0.00 cfs
Inflow Area=2,778 sf
Peak Elev=340.49'
Storage=317 cf
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)

Summary for Pond PP-3: PP-3

Inflow Area = 2,974 sf, 92.97% Impervious, Inflow Depth = 7.73" for 100-YEAR event
Inflow = 0.77 cfs @ 11.96 hrs, Volume= 1,916 cf
Outflow = 0.68 cfs @ 12.00 hrs, Volume= 1,594 cf, Atten= 12%, Lag= 2.6 min
Discarded = 0.25 cfs @ 12.01 hrs, Volume= 671 cf
Primary = 0.43 cfs @ 12.00 hrs, Volume= 923 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 344.84' @ 12.00 hrs Surf.Area= 1,610 sf Storage= 542 cf
Flood Elev= 347.97' Surf.Area= 1,610 sf Storage= 1,610 cf

Plug-Flow detention time= 147.4 min calculated for 1,592 cf (83% of inflow)
Center-of-Mass det. time= 75.0 min (822.8 - 747.9)

Volume	Invert	Avail.Storage	Storage Description
#1	344.00'	1,610 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 4,025 cf Overall x 40.0% Voids

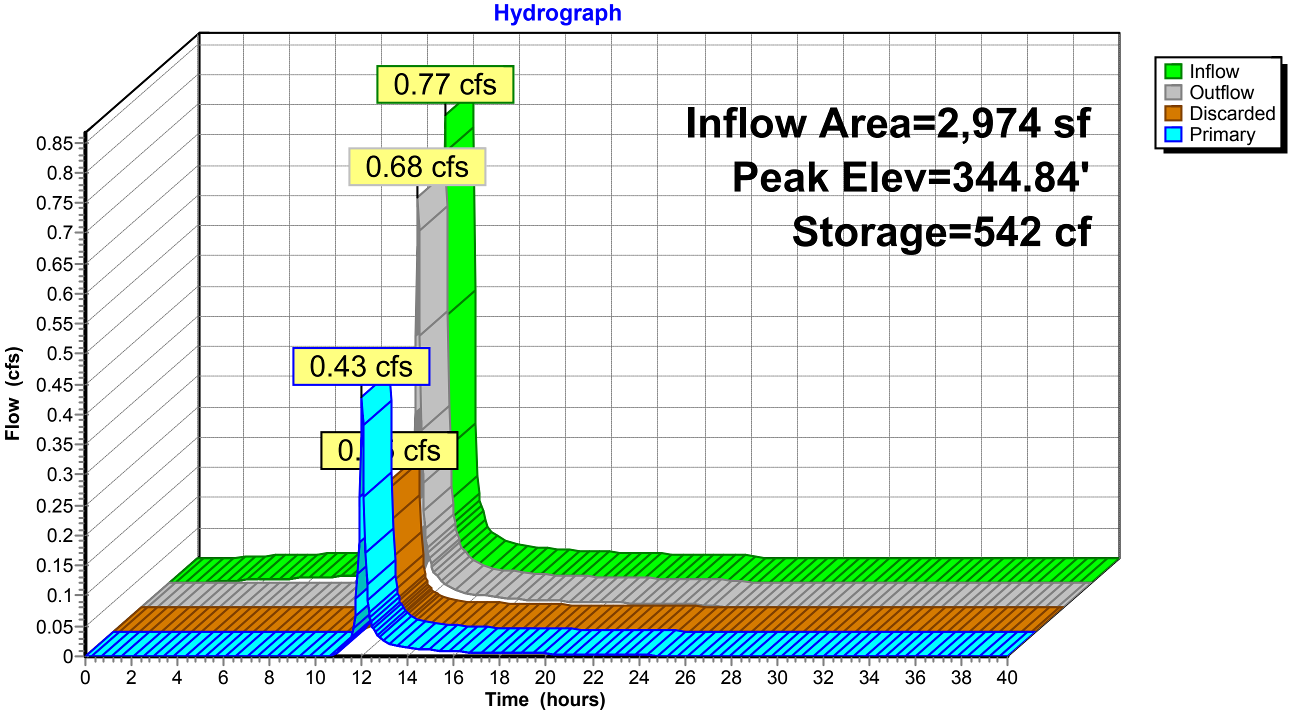
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
344.00	1,610	0	0
346.50	1,610	4,025	4,025

Device	Routing	Invert	Outlet Devices
#1	Discarded	344.00'	**6.700 in/hr Exfiltration over Surface area**
#2	Primary	344.50'	**15.0" Round Culvert** L= 52.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 344.50' / 342.94' S= 0.0300 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#3	Device 1	344.50'	**6.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.25 cfs @ 12.01 hrs HW=344.84' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.25 cfs)
  └─**3=Orifice/Grate** (Passes 0.25 cfs of 0.28 cfs potential flow)

Primary OutFlow Max=0.42 cfs @ 12.00 hrs HW=344.84' (Free Discharge)
└─**2=Culvert** (Inlet Controls 0.42 cfs @ 1.57 fps)

Pond PP-3: PP-3


Hydrograph
0.77 cfs
0.68 cfs
0.43 cfs
Inflow Area=2,974 sf
Peak Elev=344.84'
Storage=542 cf
Inflow
Outflow
Discarded
Primary
Flow (cfs)
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
0.65
0.7
0.75
0.8
0.85
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40
Time (hours)

Summary for Pond PP-4: PP-4

Inflow Area =	3,899 sf,	98.72% Impervious,	Inflow Depth = 7.97"	for 100-YEAR event	
Inflow =	1.02 cfs @	11.96 hrs, Volume=	2,590 cf		
Outflow =	0.56 cfs @	12.00 hrs, Volume=	2,228 cf,	Atten= 45%,	Lag= 2.3 min
Discarded =	0.56 cfs @	12.00 hrs, Volume=	2,228 cf		
Primary =	0.00 cfs @	0.00 hrs, Volume=	0 cf		

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 345.22' @ 12.06 hrs Surf.Area= 1,810 sf Storage= 884 cf
Flood Elev= 349.27' Surf.Area= 1,810 sf Storage= 1,810 cf

Plug-Flow detention time= 153.5 min calculated for 2,228 cf (86% of inflow)
Center-of-Mass det. time= 86.9 min (823.5 - 736.7)

Volume	Invert	Avail.Storage	Storage Description
#1	344.00'	1,810 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 4,525 cf Overall x 40.0% Voids

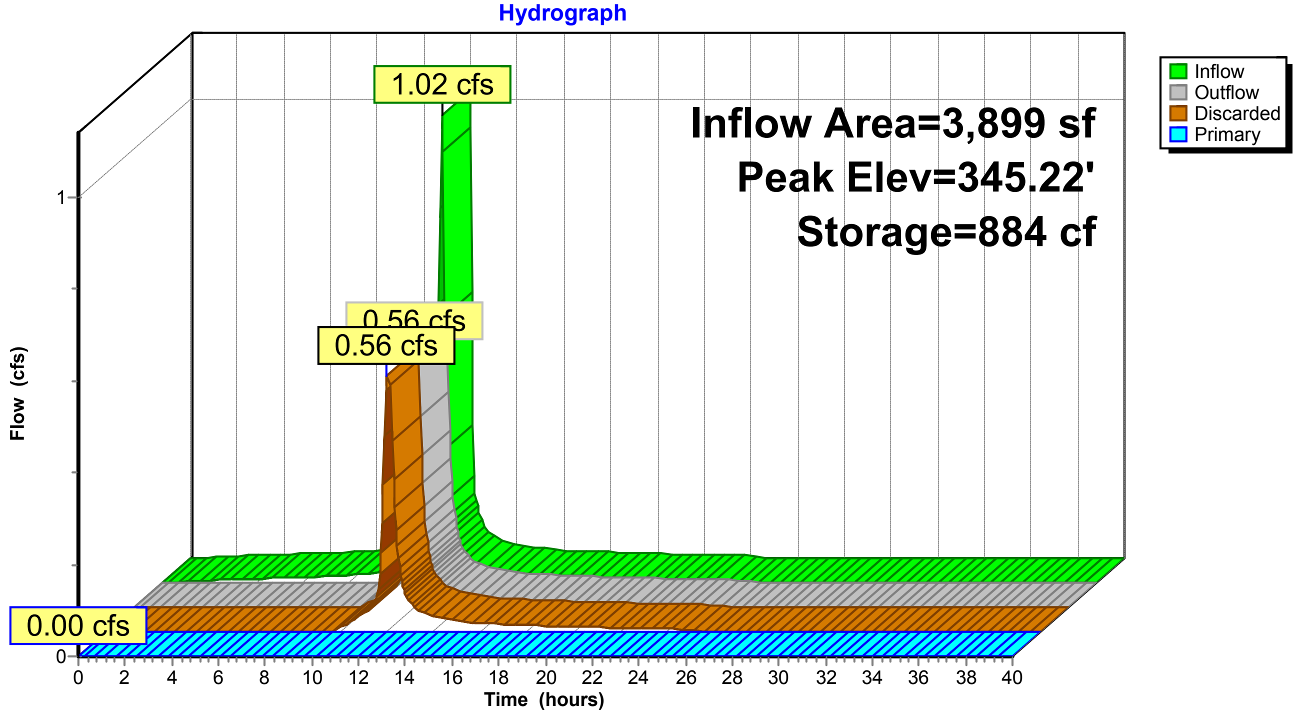
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
344.00	1,810	0	0
346.50	1,810	4,525	4,525

Device	Routing	Invert	Outlet Devices
#1	Discarded	344.00'	**13.300 in/hr Exfiltration over Surface area**
#2	Primary	345.50'	**12.0" Round Culvert** L= 33.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 345.50' / 345.17' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf
#3	Device 1	344.50'	**6.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.56 cfs @ 12.00 hrs HW=345.17' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.56 cfs)
  └─**3=Orifice/Grate** (Passes 0.56 cfs of 0.61 cfs potential flow)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=344.00' (Free Discharge)
└─**2=Culvert** (Controls 0.00 cfs)

Pond PP-4: PP-4


Hydrograph
1.02 cfs
0.56 cfs
0.56 cfs
0.00 cfs
Inflow Area=3,899 sf
Peak Elev=345.22'
Storage=884 cf
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0
1
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40

Summary for Pond PP-5: PP-5

[81] Warning: Exceeded Pond CB19 by 0.39' @ 12.10 hrs

Inflow Area = 29,874 sf, 25.58% Impervious, Inflow Depth = 5.87" for 100-YEAR event
Inflow = 5.17 cfs @ 12.04 hrs, Volume= 14,615 cf
Outflow = 4.73 cfs @ 12.09 hrs, Volume= 14,356 cf, Atten= 9%, Lag= 3.0 min
Discarded = 0.52 cfs @ 11.90 hrs, Volume= 2,079 cf
Primary = 4.20 cfs @ 12.09 hrs, Volume= 12,277 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 346.32' @ 12.09 hrs Surf.Area= 1,700 sf Storage= 1,235 cf
Flood Elev= 349.35' Surf.Area= 1,700 sf Storage= 1,700 cf

Plug-Flow detention time= 26.4 min calculated for 14,338 cf (98% of inflow)
Center-of-Mass det. time= 15.8 min (819.9 - 804.1)

Volume	Invert	Avail.Storage	Storage Description
#1	344.50'	1,700 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 4,250 cf Overall x 40.0% Voids

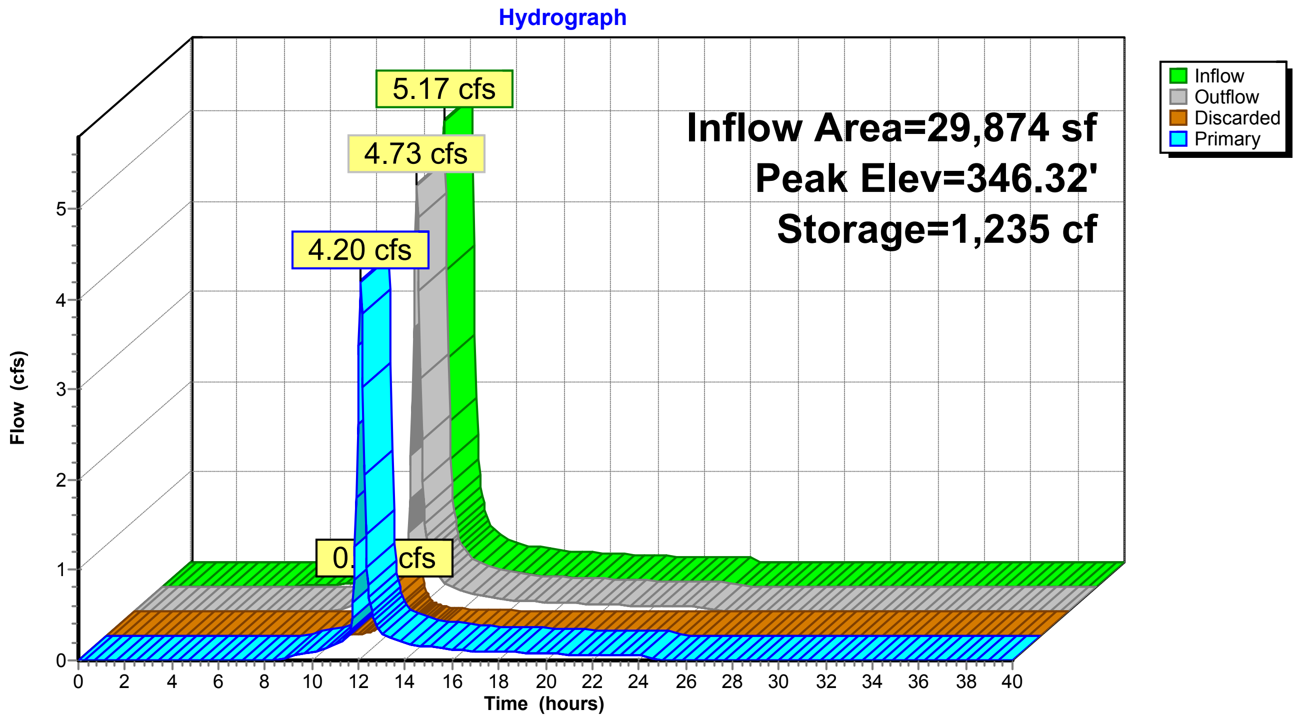
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
344.50	1,700	0	0
347.00	1,700	4,250	4,250

Device	Routing	Invert	Outlet Devices
#1	Discarded	344.50'	**13.300 in/hr Exfiltration over Surface area**
#2	Primary	344.88'	**15.0" Round Culvert** L= 37.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 344.88' / 344.50' S= 0.0103 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#3	Device 1	345.00'	**6.0" Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.52 cfs @ 11.90 hrs HW=345.63' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.52 cfs)
  └─**3=Orifice/Grate** (Passes 0.52 cfs of 0.59 cfs potential flow)

Primary OutFlow Max=4.16 cfs @ 12.09 hrs HW=346.30' (Free Discharge)
└─**2=Culvert** (Inlet Controls 4.16 cfs @ 3.39 fps)

Pond PP-5: PP-5


Hydrograph
5.17 cfs
4.73 cfs
4.20 cfs
0. cfs
Inflow Area=29,874 sf
Peak Elev=346.32'
Storage=1,235 cf
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)

Summary for Pond UGC-1: UGC-1

[79] Warning: Submerged Pond CB5 Primary device # 1 OUTLET by 2.65'
[79] Warning: Submerged Pond CB6 Primary device # 1 OUTLET by 2.67'

Inflow Area = 87,058 sf, 81.43% Impervious, Inflow Depth = 6.24" for 100-YEAR event
Inflow = 19.17 cfs @ 11.97 hrs, Volume= 45,298 cf
Outflow = 8.92 cfs @ 12.08 hrs, Volume= 45,298 cf, Atten= 53%, Lag= 6.8 min
Discarded = 1.43 cfs @ 11.55 hrs, Volume= 31,616 cf
Primary = 7.49 cfs @ 12.08 hrs, Volume= 13,682 cf

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 353.70' @ 12.08 hrs Surf.Area= 4,645 sf Storage= 11,282 cf

Plug-Flow detention time= 13.6 min calculated for 45,242 cf (100% of inflow)
Center-of-Mass det. time= 13.6 min (764.6 - 751.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	349.50'	5,581 cf	**44.75'W x 103.80'L x 4.25'H Field A** 19,741 cf Overall - 5,788 cf Embedded = 13,952 cf x 40.0% Voids
#2A	350.25'	5,788 cf	**ADS_StormTech SC-740 +Cap** x 126 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 9 Rows of 14 Chambers
		11,369 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	350.50'	**15.0" Round Culvert** L= 59.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 350.50' / 348.85' S= 0.0280 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#2	Discarded	349.50'	**13.300 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=1.43 cfs @ 11.55 hrs HW=349.54' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 1.43 cfs)

Primary OutFlow Max=7.43 cfs @ 12.08 hrs HW=353.66' (Free Discharge)
└─**1=Culvert** (Inlet Controls 7.43 cfs @ 6.05 fps)

Pond UGC-1: UGC-1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

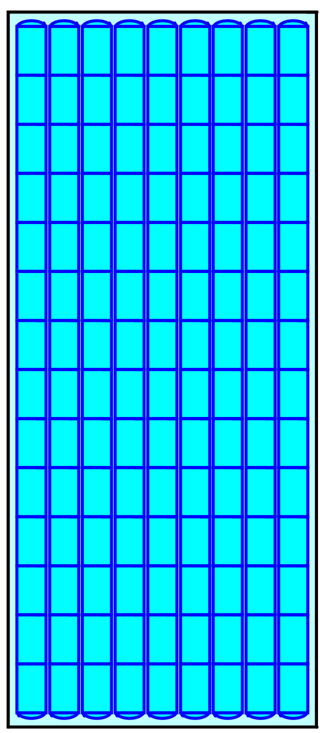
14 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 101.30' Row Length +15.0" End Stone x 2 = 103.80' Base Length
9 Rows x 51.0" Wide + 6.0" Spacing x 8 + 15.0" Side Stone x 2 = 44.75' Base Width
9.0" Base + 30.0" Chamber Height + 12.0" Cover = 4.25' Field Height

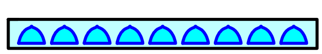
126 Chambers x 45.9 cf = 5,788.4 cf Chamber Storage

19,740.8 cf Field - 5,788.4 cf Chambers = 13,952.4 cf Stone x 40.0% Voids = 5,581.0 cf Stone Storage

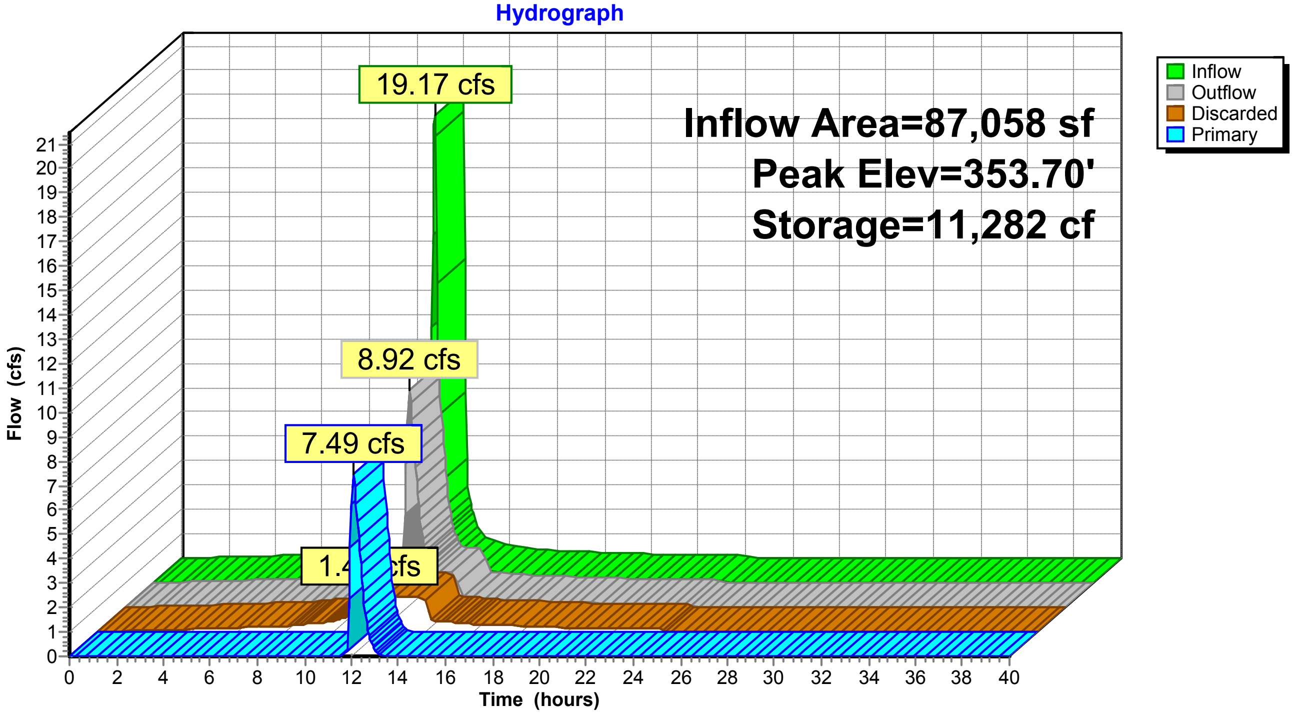
Chamber Storage + Stone Storage = 11,369.4 cf = 0.261 af
Overall Storage Efficiency = 57.6%
Overall System Size = 103.80' x 44.75' x 4.25'

126 Chambers
731.1 cy Field
516.8 cy Stone





Pond UGC-1: UGC-1



APPENDIX D

Supporting Design Information and Calculations
NYSOPRHP Correspondence

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	New York
Location	
Longitude	73.969 degrees West
Latitude	41.705 degrees North
Elevation	0 feet
Date/Time	Wed, 21 Jul 2021 10:53:19 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.32	0.48	0.60	0.79	0.98	1.22	**1yr**	0.85	1.15	1.40	1.73	2.13	2.62	2.97	**1yr**	2.32	2.85	3.33	3.98	4.58	**1yr**
2yr	0.38	0.58	0.72	0.95	1.20	1.50	**2yr**	1.03	1.38	1.72	2.11	2.59	3.17	3.57	**2yr**	2.80	3.43	3.93	4.62	5.25	**2yr**
5yr	0.45	0.70	0.87	1.17	1.50	1.88	**5yr**	1.29	1.71	2.17	2.67	3.25	3.95	4.50	**5yr**	3.50	4.33	4.95	5.71	6.46	**5yr**
10yr	0.50	0.79	1.00	1.36	1.77	2.24	**10yr**	1.53	2.01	2.59	3.18	3.87	4.68	5.37	**10yr**	4.14	5.16	5.90	6.70	7.57	**10yr**
25yr	0.59	0.94	1.20	1.66	2.21	2.83	**25yr**	1.91	2.49	3.28	4.03	4.88	5.85	6.78	**25yr**	5.17	6.52	7.45	8.28	9.32	**25yr**
50yr	0.68	1.09	1.39	1.95	2.62	3.38	**50yr**	2.26	2.93	3.91	4.81	5.80	6.92	8.09	**50yr**	6.13	7.78	8.89	9.73	10.92	**50yr**
100yr	0.77	1.25	1.61	2.29	3.12	4.04	**100yr**	2.69	3.45	4.68	5.75	6.91	8.21	9.66	**100yr**	7.26	9.29	10.62	11.44	12.81	**100yr**
200yr	0.88	1.44	1.87	2.68	3.71	4.82	**200yr**	3.20	4.07	5.60	6.87	8.24	9.73	11.54	**200yr**	8.61	11.10	12.69	13.45	15.02	**200yr**
500yr	1.07	1.76	2.30	3.34	4.67	6.10	**500yr**	4.03	5.06	7.09	8.68	10.37	12.19	14.62	**500yr**	10.79	14.05	16.08	16.67	18.55	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.43	0.53	0.71	0.87	1.03	**1yr**	0.75	1.00	1.21	1.51	1.91	2.38	2.55	**1yr**	2.10	2.45	3.03	3.62	4.09	**1yr**
2yr	0.37	0.56	0.69	0.94	1.16	1.37	**2yr**	1.00	1.34	1.54	1.97	2.50	3.05	3.48	**2yr**	2.70	3.34	3.82	4.55	5.18	**2yr**
5yr	0.41	0.63	0.79	1.08	1.37	1.59	**5yr**	1.18	1.55	1.80	2.31	2.89	3.67	4.15	**5yr**	3.25	3.99	4.69	5.41	6.13	**5yr**
10yr	0.46	0.70	0.87	1.22	1.57	1.78	**10yr**	1.36	1.74	2.01	2.59	3.21	4.18	4.75	**10yr**	3.70	4.57	5.39	6.14	6.96	**10yr**
25yr	0.53	0.80	1.00	1.43	1.88	2.04	**25yr**	1.62	2.00	2.32	2.88	3.69	4.97	5.67	**25yr**	4.40	5.45	6.47	7.26	8.23	**25yr**
50yr	0.59	0.90	1.12	1.61	2.17	2.26	**50yr**	1.87	2.21	2.60	3.19	4.11	5.66	6.48	**50yr**	5.01	6.23	7.40	8.25	9.34	**50yr**
100yr	0.67	1.01	1.26	1.83	2.50	2.52	**100yr**	2.16	2.47	2.91	3.54	4.58	6.47	7.40	**100yr**	5.73	7.12	8.48	9.36	10.61	**100yr**
200yr	0.76	1.14	1.45	2.09	2.92	2.80	**200yr**	2.52	2.74	3.26	3.94	5.10	7.38	8.46	**200yr**	6.53	8.13	9.70	10.66	12.05	**200yr**
500yr	0.91	1.35	1.74	2.53	3.60	3.24	**500yr**	3.10	3.17	3.81	4.54	5.90	8.82	10.11	**500yr**	7.81	9.72	11.60	12.64	14.31	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.35	0.53	0.65	0.88	1.08	1.30	**1yr**	0.93	1.27	1.47	1.87	2.35	2.88	3.23	**1yr**	2.55	3.11	3.65	4.24	4.90	**1yr**
2yr	0.39	0.61	0.75	1.02	1.25	1.50	**2yr**	1.08	1.46	1.69	2.18	2.73	3.28	3.71	**2yr**	2.91	3.57	4.06	4.72	5.35	**2yr**
5yr	0.49	0.75	0.93	1.28	1.62	1.92	**5yr**	1.40	1.87	2.21	2.82	3.56	4.27	4.89	**5yr**	3.78	4.70	5.23	6.05	6.81	**5yr**
10yr	0.58	0.89	1.10	1.54	1.99	2.34	**10yr**	1.71	2.29	2.70	3.47	4.36	5.25	6.05	**10yr**	4.65	5.81	6.40	7.33	8.20	**10yr**
25yr	0.72	1.10	1.37	1.96	2.58	3.05	**25yr**	2.22	2.98	3.56	4.72	5.72	6.92	8.02	**25yr**	6.12	7.71	8.40	9.47	10.48	**25yr**
50yr	0.86	1.31	1.63	2.34	3.15	3.73	**50yr**	2.72	3.64	4.39	5.85	7.01	8.51	9.95	**50yr**	7.53	9.57	10.34	11.51	12.65	**50yr**
100yr	1.02	1.54	1.94	2.80	3.83	4.57	**100yr**	3.31	4.47	5.42	7.28	8.61	10.50	12.36	**100yr**	9.29	11.88	12.74	13.99	15.26	**100yr**
200yr	1.21	1.83	2.31	3.35	4.67	5.59	**200yr**	4.03	5.47	6.69	9.04	10.59	12.94	15.35	**200yr**	11.45	14.76	15.73	17.04	18.40	**200yr**
500yr	1.53	2.28	2.94	4.26	6.07	7.32	**500yr**	5.23	7.15	8.83	12.07	13.92	17.03	20.47	**500yr**	15.07	19.68	20.81	22.11	23.63	**500yr**

Powered by ACIS
Northeast Regional Climate Center

APPENDIX N

NYSOPRHP Letter of No Impact

July 08, 2019

Ms. Kelly Libolt
KARC Planning Consultants
P.O. Box 792
Poughkeepsie, NY 12602

Re: FHA
Village of the Hudson Valley
Town of Lloyd, Ulster County, NY
19PR03826

Dear Ms. Libolt:

Thank you for requesting the comments of the State Historic Preservation Office (SHPO). We have reviewed the project in accordance with Section 106 of the National Historic Preservation Act of 1966. These comments are those of the SHPO and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the National Environmental Policy Act and/or the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8).

Based upon this review, it is the opinion of the New York SHPO that no historic properties, including archaeological and/or historic resources, will be affected by this undertaking.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Roger Daniel Mackay

R. Daniel Mackay

Deputy State Historic Preservation Officer
Division for Historic Preservation

Design Criteria & Performance Summary

SUMMARY OF OVERALL WATERSHEDS

Design Criteria	min req'd		Performance Summary:		
criteria	*amount*	*unit*	*Provided*		*notes/information*
WQv:					
total	15,937	cft	24,463	cft	Underground Infiltration Chambers, Porous Pavement, Stone Recharge Bed
Cpv:					
volume	NA	cft	NA	cft	NA if reduction of CPv achieed through RRv Practices
Qp:					
discharge	61.7	cfs	30.5	cfs	Pre to Post reduced See Hydro CAD
Qf					
discharge	136.5	cfs	61.9	cfs	Pre to Post reduced See Hydro CAD
RRv Min:	4,278	cft	15,885	cft	

Water Quality Volume Calculations STANDARD

Trib Area	12.73	ac
Imperv Cover:	3.94	ac
Imperv. %	30.93	

Stormwater Management Practice Selection:

Underground Infiltration Chambers and Porous Pavement

Uniform Sizing Criteria:

Water Quality (WQv)	P=	1.05	
	I=	*30.9*	
	Rv=	0.3284	
	A=	12.73	
	WQv=	**0.37**	**AC-FT**
		15,936.9	**CF**

Minimum Runoff Reduction Requirements

RRV = 90% rain (P) x Rv* x S x total impervious area (AI from #2) / 12

with S = .55 (A soils); .40 (B soils); .30 (C soils); .20(D soils) OR weighted HSG average in DA

Weighted HSG= 0.3

Min RRV =	**0.098**	**ac-ft**
Min RRV =	**4,278**	**cu-ft**

WQv BY DRAINAGE AREA										
DA	Tributary Area	Impervious Cover	Percent Impervious	P	Rv	WQv (AC-FT)	WQv (CF)	S	Min RRv (AC-FT)	Min RRv (CF)
1	14.99	2.94	19.60	1.05	0.23	0.30	12935.3	0.3	0.073	3191.5
2	1.03	0.03	2.52	1.05	0.07	0.01	285.1	0.3	0.001	28.2
3	0.03	0.02	58.94	1.05	0.58	0.00	67.0	0.3	0.000	19.4
4	0.11	0.06	54.83	1.05	0.54	0.01	227.9	0.3	0.002	65.5
5	0.03	0.03	100.00	1.05	0.95	0.00	93.1	0.3	0.001	27.9
6	0.07	0.05	64.25	1.05	0.63	0.00	174.2	0.3	0.001	50.8
7	0.24	0.18	75.84	1.05	0.73	0.02	674.5	0.3	0.005	199.0
8	0.05	0.05	100.00	1.05	0.95	0.00	166.5	0.3	0.001	49.9
9	0.08	0.05	64.47	1.05	0.63	0.00	197.9	0.3	0.001	57.7
10	0.28	0.20	71.77	1.05	0.70	0.02	730.0	0.3	0.005	214.6
11	0.07	0.05	80.09	1.05	0.77	0.00	201.3	0.3	0.001	59.6
12	0.03	0.03	100.00	1.05	0.95	0.00	107.6	0.3	0.001	32.3
13	0.06	0.03	54.45	1.05	0.54	0.00	114.6	0.3	0.001	32.9
14	0.04	0.04	100.00	1.05	0.95	0.00	152.9	0.3	0.001	45.9
15	0.09	0.04	52.06	1.05	0.52	0.00	168.6	0.3	0.001	48.3
16	0.04	0.04	100.00	1.05	0.95	0.00	144.6	0.3	0.001	43.4
17	0.63	0.15	23.81	1.05	0.26	0.01	634.4	0.3	0.004	162.9
18	0.13	0.13	100.00	1.05	0.95	0.01	475.3	0.3	0.003	142.6
19	0.05	0.05	100.00	1.05	0.95	0.00	169.5	0.3	0.001	50.8
20	0.03	0.03	100.00	1.05	0.95	0.00	90.9	0.3	0.001	27.3
21	0.03	0.03	100.00	1.05	0.95	0.00	124.2	0.3	0.001	37.3
22	0.09	0.09	98.72	1.05	0.94	0.01	320.2	0.3	0.002	96.0
23	0.07	0.06	92.97	1.05	0.89	0.01	230.8	0.3	0.002	69.0
24	0.06	0.06	92.40	1.05	0.88	0.00	214.3	0.3	0.001	64.0
25	0.40	0.20	49.60	1.05	0.50	0.02	756.6	0.3	0.005	215.5
26	0.06	0.03	45.42	1.05	0.46	0.00	98.1	0.3	0.001	27.7
27	0.09	0.05	53.08	1.05	0.53	0.00	190.2	0.3	0.001	54.5
28	5.62	0.42	7.43	1.05	0.12	0.06	2503.1	0.3	0.010	453.4
29	0.10	0.06	61.76	1.05	0.61	0.01	228.5	0.3	0.002	66.4
30	0.20	0.07	36.19	1.05	0.38	0.01	286.4	0.3	0.002	78.6
31	0.07	0.07	100.00	1.05	0.95	0.01	247.0	0.3	0.002	74.1
32	0.86	0.08	9.31	1.05	0.13	0.01	437.7	0.3	0.002	86.8
33	0.07	0.05	69.66	1.05	0.68	0.00	172.2	0.3	0.001	50.5
34	0.15	0.10	65.10	1.05	0.64	0.01	369.0	0.3	0.002	107.7
35	0.55	0.08	15.16	1.05	0.19	0.01	394.1	0.3	0.002	91.3
36	0.46	0.46	100.00	1.05	0.95	0.04	1653.9	0.3	0.011	496.2
37	3.50	1.14	32.55	2.05	0.34	0.21	8940.1	0.3	0.056	2418.3
38	0.78	0.78	100.00	3.05	0.95	0.19	8233.7	0.3	0.057	2470.1
TOTAL	**26.94**	**6.09**					**26,037.6**		**0.152**	**6,619.3**

WQv - RRv Summary

WQv REQUIRED	
UGC-1	6248
PP-1	757
PP-2	214
PP-3	231
PP-4	320
PP-5	634
TOTAL (CU FT)	**8,405**
TOTAL (AC FT)	**0.19**

WQv PROVIDED	
UGC-1	9437
PP-1	567
PP-2	1610
PP-3	1610
PP-4	1810
PP-5	1702
SR-1	7727
TOTAL (CU FT)	**24,463**
TOTAL (AC FT)	**0.56**

RRv REQUIRED	
UGC-1	1796
PP-1	215
PP-2	64
PP-3	69
PP-4	96
PP-5	163
TOTAL (CU FT)	**2,403**
TOTAL (AC FT)	**0.06**

RRv PROVIDED	
UGC-1	6248
PP-1	510
PP-2	214
PP-3	231
PP-4	320
PP-5	634
SR-1	7727
TOTAL (CU FT)	**15,885**
TOTAL (AC FT)	**0.36**

STORMTECH SUBSURFACE STORMWATER CHAMBERS
SIZING PER CHAPTER 6 OF THE NYS STORM WATER DESIGN MANUAL

StormTech
Detention • Retention • Recharge

Design Parameters		
Select Stormtech Chamber	SC-740	
Stone Porosity (Industry Standard 40%)	40	%
Stone Foundation Depth	6	Inches
Avg Cover Over Chambers	24	Inches
Storage Volume Per Chamber	74.9	CF
Storage Volume Per End Cap	0	CF

UGC #	Required WQv	Required RRv	Min Chambers Required	Chambers Provied	End Caps Provided	WQv Provided	RRv Provided
1	6,248.3	749.5	83.4	126	18	9,437.4	6,248.29

Porous Pavement Sizing Sheet	**PP-1**
Design Parameters:	**DA-25**
WQv - actual (cf)	756.6
Ap (proposed porous pavement surface area) - sf	567
n (porosity of gravel bed assume .4)	0.4
Dt (depth gravel bed/reservoir) - ft	2.5
WQv - treatable (cf)	**567**
RRv Provided (cf)	**510.3**

Porous Pavement Sizing Sheet	**PP-2**
Design Parameters:	**DA-24**
WQv - actual (cf)	214.3
Ap (proposed porous pavement surface area) - sf	1610
n (porosity of gravel bed assume .4)	0.4
Dt (depth gravel bed/reservoir) - ft	2.5
WQv - treatable (cf)	**1610**
RRv Provided (cf)	**214.3**

Porous Pavement Sizing Sheet	**PP-3**
Design Parameters:	**DA-23**
WQv - actual (cf)	230.8
Ap (proposed porous pavement surface area) - sf	1610
n (porosity of gravel bed assume .4)	0.4
Dt (depth gravel bed/reservoir) - ft	2.5
WQv - treatable (cf)	**1610**
RRv Provided (cf)	**230.8**

Porous Pavement Sizing Sheet	**PP-4**
Design Parameters:	**DA-22**
WQv - actual (cf)	320.2
Ap (proposed porous pavement surface area) - sf	1810
n (porosity of gravel bed assume .4)	0.4
Dt (depth gravel bed/reservoir) - ft	2.5
WQv - treatable (cf)	**1810**
RRv Provided (cf)	**320.2**

Porous Pavement Sizing Sheet	**PP-5**

Design Parameters:	DA-17
WQv - actual (cf)	634.4
Ap (proposed porous pavement surface area) - sf	1702
n (porosity of gravel bed assume .4)	0.4
Dt (depth gravel bed/reservoir) - ft	2.5
WQv - treatable (cf)	**1702**
RRv Provided (cf)	**634.4**

Stone Recharge Sizing Sheet	SR-1
Design Parameters:	
WQv - actual (cf)	
Ap (proposed porous pavement surface area) - sf	7727
n (porosity of gravel bed assume .4)	0.4
Dt (depth gravel bed/reservoir) - ft	2.5
WQv - treatable (cf)	**7727**
RRv Provided (cf)	**7,727.0**

Pre Post Flow analysis

Peak Flow Discharge Rate DP-1			
Storm Event	Pre (cfs)	Post (cfs)	Net Reduction (cfs)
1	21.8	12.4	**-9.5**
2	31.7	17.4	**-14.3**
10	61.7	30.5	**-31.2**
100	136.5	61.9	**-74.6**

TEST PIT LOG

The Villages in the Hudson Valley

Completed By: SMC
Dated: July 26, 2021

Test Hole	Total Depth	Run One (in/hr)	Run Two (in/hr)	Run Three (in/hr)	Average Run (in/hr)
IT-1	24"	8	6	6	6.7
IT-2	24"	14	13	13	13.3
IT-3	24"	11	9	9	9.7
IT-4	24"	20	16	15	17.0

Location of Infiltration Tests shown on DA-1

183 Main Street
New Paltz, NY 12561
T 845.255.0210 F 845.256.8110
www.willinghamengineering.com

July 30, 2021

LRC Group
C/O Ken Casamento, P.E.
85 Civic Center Plaza
Poughkeepsie, NY 12601

Re: Village of the Hudson Valley
State Route 9W/Mayer Drive
Town of Lloyd, New York
Certification of Stormwater Soil Testing

Dear Mr. Casamento:

The purpose of this correspondence is to certify soil test results for the above project that were conducted for the purpose of stormwater management design. Specifically, our office witnessed deep test holes at the above site on June 16, 2021. The attached Drawing ST-1 dated 6/15/21 identifies the test hole locations and results. I hereby certify the accuracy of the test results as shown on the attached drawing ST-1.

Please don't hesitate to call with any questions.

STATE OF NEW YORK
ANDREW V. WILLINGHAM
083984
LICENSED PROFESSIONAL ENGINEER

Sincerely,
Willingham Engineering, PLLC

Andrew Willingham, PE
NYS Professional Engineer No. 083984

LEGEND

	EXISTING PROPERTY LINE
	ADJACENT PROPERTY LINE
	EXISTING MONUMENT
	PROPERTY BOUNDARY EVIDENCE
	EXISTING REBAR
	EXISTING IRON PIPE
	EXISTING EDGE OF PAVEMENT
	EXISTING BUILDING
	EXISTING STREAM BOUNDARY
	EXISTING UTILITY POLE WITH OVERHEAD LINE
	EXISTING UTILITY POLE WITH GUY WIRE
	EXISTING HYDRANT
	PROPOSED PROPERTY LINE
	PROPOSED EDGE OF PAVEMENT
	PROPOSED BACK OF CURB
	PROPOSED EASEMENT
	PROPOSED BLOCK RETAINING WALL
	PROPOSED CAST-IN-PLACE RETAINING WALL
	PROPOSED 5' WIDE CONCRETE SIDEWALK
	PROPOSED BUILDING
	PROPOSED ASPHALT
	PROPOSED PERVIOUS PAVEMENT
	PROPOSED GUIDE RAIL
180	PROPOSED 10 FT CONTOUR
178	PROPOSED 2 FT CONTOUR
	PROPOSED LIMIT OF DISTURBANCE
	PROPOSED BIORETENTION AREA
	PROPOSED RAIN GARDEN
	PROPOSED SUBSURFACE INFILTRATION CHAMBERS
	PROPOSED DRAINAGE CULVERT
	PROPOSED END SECTION WITH RIP-RAP OUTLET PROTECTION
	PROPOSED DRAINAGE MANHOLE
	PROPOSED CATCH BASIN
	PROPOSED DUMPSTER ENCLOSURE
ST-2	SOIL TEST LOCATION

SOIL TESTING

TEST	PRACTICE	DEPTH TO BOTTOM OF PRACTICE FROM EXISTING GRADE	TEST DEPTH & SOIL PROFILE	BEDROCK	WATER
1	INFILTRATION CHAMBERS	±3.5'	0-8" TOPSOIL, 8"-42" SANDY SILTY LOAM WITH BOULDERS	3.5'	NA
2	INFILTRATION CHAMBERS	±11'	0-8" TOPSOIL, 8"-72" SANDY SILTY LOAM WITH BOULDERS	6'	NA
3	INFILTRATION CHAMBERS	±7.5'	0-8" TOPSOIL, 8"-108" SANDY SILTY LOAM WITH BOULDERS	NA	NA
4	BIORETENTION	±10'	0-8" TOPSOIL, 8"-120" SANDY SILTY LOAM WITH BOULDERS	NA	NA
5	BIORETENTION	±10'	0-8" TOPSOIL, 8"-48" SANDY SILTY LOAM WITH BOULDERS	4'	NA
6	BIORETENTION	±5'	0-8" TOPSOIL, 8"-60" SANDY SILTY LOAM WITH BOULDERS	NA	NA
7	BIORETENTION	±5'	0-8" TOPSOIL, 8"-60" SANDY SILTY LOAM WITH BOULDERS	NA	NA
8	INFILTRATION CHAMBERS	AT GRADE	0-8" TOPSOIL, 8"-24" SANDY SILTY LOAM	NA	NA
9	INFILTRATION CHAMBERS	AT GRADE	0-8" TOPSOIL, 8"-24" SANDY SILTY LOAM	NA	NA
10	INFILTRATION CHAMBERS	±15'	0-8" TOPSOIL, 8"-168" SANDY SILTY LOAM WITH BOULDERS	14'	8'
11	INFILTRATION CHAMBERS	±15'	0-8" TOPSOIL, 8"-180" SANDY SILTY LOAM WITH BOULDERS	NA	8'

NOTE:
DEEP TESTS WERE CONDUCTED ON JUNE 16, 2021 AND WITNESSED BY WILLINGHAM ENGINEERING AND A REPRESENTATIVE OF THE TOWN ENGINEER (TIMOTHY RICHARDS OF CLARK PATTERSON LEE).

0 1 2 3
SIZE IN INCHES (FULL SIZE - 22"x34" SHEET)

0 1
SIZE IN INCHES (HALF SIZE - 11"x17" SHEET)

willingham engineering
183 Main Street
New Paltz, New York 12561
T 845.255.0210 F 845.256.8110
www.willinghamengineering.com

REV	DATE	DESCRIPTION

SOIL TESTING MAP

THE VILLAGE IN THE HUDSON VALLEY
NYS ROUTE 9W
TOWN OF LLOYD, ULSTER COUNTY, NEW YORK

DRAWN BY	CHECKED BY
MLT	AVW
DATE	SCALE
06/15/21	1"=50'
PROJECT NO.	
16024	
SHEET NO.	
ST-1	

Geotechnical Report

The Village in the Hudson Valley
Retirement and Assisted Living Facility

3679 Route 9W
Highland, New York

July 24, 2021

Prepared for:

The Village in the Hudson Valley
c/o Paul Cohen
11 Apple Lane
Highland, NY 12528

Prepared by:

Skylands Engineering, LLC
124 Milton Road
Sparta, NJ 07871

Geotechnical Report

The Village in the Hudson Valley
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SKYLANDS ENGINEERING, LLC
124 Milton Road
Sparta, NJ 07871
Certificate of Authorization No. 0013524

STATE OF NEW YORK
EUGENE J. SCHWARZROCK
077007
LICENSED PROFESSIONAL ENGINEER

7-24-2021

Eugene J. Schwarzrock, Professional Engineer | Date
New York License No. 077007

Note: it is a violation of NY Education Law Section 7209 for any person to alter any item in this report in any way, unless they are acting under the direction of a Professional Engineer registered in New York. The altering engineer shall affix to this page their seal, the notation "altered by" followed by their signature and date of alteration, and a specific description of the alteration(s) made.

TABLE OF CONTENTS

INTRODUCTION

This project consists of the design and construction of a new retirement and assisted living facility at 3679 Route 9W, in the Hamlet of Highland, Town of Lloyd, Ulster County, New York. A 1 sty to 4 sty, multi-wing rectangular building, approximately 240 ft. deep x ±380 ft. wide and encompassing ±58,000 SF in plan area, is proposed to be built ±125 ft. west of Route 9W. A basement(s) will be constructed beneath a portion(s) of the center of the building. A ±25 ft. x ±50 ft. outbuilding will also be constructed ±60 ft. north of the northwest corner of the main building. Additional work includes construction of new parking lots to the east and west of the building; roadways connecting this facility to Mayer Drive immediately south of the property, and Route 9W to the east; and possibly small site retaining walls.

The site currently contains mostly open fields and orchards, with a few commercial buildings situated in the northeast area of the site. The terrain generally slopes down to the east, towards Route 9W, with grades varying from El. ±430 in the west to El. ±330 in the east, adjacent to Route 9W. The proposed first floor will be constructed at or near El. 348.5, based on our review of building sections prepared by Connally Engineering, PLLC of Pleasant Valley, NY.

This report presents the findings of a subsurface investigation prepared and conducted by others specifically for this project, as well as recommendations for foundation design and construction of the proposed new structures.

GEOLOGY

Based on our review of topographic maps and published geologic data for this area of Poughkeepsie, including the *Surficial Geologic Map of New York - Lower Hudson Sheet*, 1989, by Caldwell, Connally, et. al., this site is expected to be underlain by thin deposits of glacial till consisting of a mixture of grain sizes ranging from clay and silt, to sand, cobbles and boulders. Underlying bedrock is expected to be relatively shallow (<30 ft.) and consist of graywacke and/or shale of the Austin Glen Formation based on the *(Bedrock) Geologic Map of New York - Lower Hudson Sheet*, 1970, by Rickard, Isachsen, and Fisher.

SUBSURFACE INVESTIGATION

Soiltesting, Inc. of Oxford, CT performed forty-six (46) borings between June 1 and June 17, 2021 to identify the subsurface conditions present beneath the project site. Borings B-1 through B-33, excluding B-5 which was not performed, plus fourteen (14) second/third/fourth-attempt borings performed adjacent to original-drilled borings, were located uniformly across the building footprint, as well as along possible retaining wall locations.

All borings were drilled using a nominal 4-¼ in. hollow stem auger to advance and maintain the hole. Sampling was performed using a 2 in. O.D. split spoon sampler driven by a 140 lb. safety or automatic hammer with a 30 in. drop and the number of blows for each 6 in. increment was recorded, in accordance with procedures outlined in ASTM D1586, Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils. Bedrock was sampled using an N-size, double tube core barrel in accordance with ASTM D 2113 - Standard Practice for Rock Core Drilling and Sampling. All borings were sampled at the ground surface and at 5 ft. intervals to the completion of each boring, which ranged from 3.5 ft. to 45.2 ft.

Soil samples were classified by an experienced geologist from Soiltesting, Inc., in general accordance with D.M. Burmister's "Suggested Test Methods for Identification of Soils" (ASTM, 1958). Bedrock samples were also classified by an experienced geologist from Soiltesting, Inc. according to their geologic origin and measured rock quality designation (RQD).

The depth to groundwater was determined during drilling since all borings were drilled using a hollow stem auger without the introduction of water. Additionally, four (4) temporary groundwater observation wells were installed after the completion of borings B-3, B-13, B-17 and B-32, along both the lower and upper portions of the site. All wells were installed to depths of 20 ft. to 22 ft., and the depths to groundwater were measured 1 and 9 days after installation.

A Boring Location Plan and boring logs are presented in the Appendix. The boring logs were amended by Skylands Engineering to include estimated ground and groundwater elevations, which we estimated based on boring location plans and survey plans which were provided to us.

LABORATORY TESTING

Following the completion of the field portion of the subsurface investigation, a laboratory testing program was performed to confirm and provide additional soil classifications and properties. In total, nine (9) grain size analyses were performed on soil samples from five (5) borings located within the footprint of the proposed building. Soil samples were tested by our associated laboratory, Skylands Testing, LLC also of Sparta, New Jersey. The results of the test programs are discussed in the following section and presented in the Appendix.

SUBSURFACE CONDITIONS

The subsurface conditions encountered beneath the site are consistent with the published geologic literature with glacial till present over relatively shallow bedrock. In general, topsoil thicknesses were reported to range from 3 in. to 24 in., with all but one (1) thickness being <8 in., and a mean thickness of 5 in. (excluding the one (1) thickness of 24 in.). Beneath the topsoil, loose to dense, brown medium to fine and fine sands with significant amounts of silt and varying, and lesser amounts of coarse to fine gravel are present in the overburden. Cobbles and, to a lesser degree, boulders were encountered frequently and at various depths in the borings. SPT N-values in the overburden till, discounting any values considered influenced by cobbles, ranged from 4 blows per foot (bpf) to ±100 bpf, with a mean N-value of ±30 bpf. No areas of overlying loose or soft soils, and no deposits of fill or organic soils were encountered at the boring locations.

Bedrock or suspected bedrock was encountered at 22 of the 33 boring locations at depths ranging from 3 ft. to 30 ft. The top of rock follows a similar shape as the existing ground, and slopes downward to the east. Beneath the building footprint, the top of bedrock is estimated to be present at elevations ranging from El. ±347 to El. ±361 along the western building limits, and from El. ±323 to El. ±350 along the eastern building limits. Bedrock was sampled by coring at eight (8) boring locations, including boring B-2A at the south entrance roadway wall, and borings B-9, B-11A, B-16A, B-19, B-24A, B-25A, B-28 beneath the proposed building footprint. In other locations, auger refusal was used to estimate the top of presumed bedrock. Based on the recovered core samples, bedrock is described as shale and limestone. Measurements from the sixteen (16) total rock cores indicate percent recoveries ranged from 33% to

100%, with a mean recovery of ±75%. Rock quality designation(RQD)s ranged from 0% to 70% with RQD_{mean}=±37% (see core photos in the Appendix).

Dry soils were encountered during drilling at all except 5 borings. Boring B-3 originally encountered dry conditions, but 6 days after installation of a temporary groundwater observation well, groundwater was measured at a depth of 18.5 ft. (El. ±323.5). Borings B-13 and B-17 encountered water at depths of 16 ft. and 10 ft., respectively, during drilling; 1 and 9 days after well installation, respectively, groundwater was measured again at depths of 12.6 ft. (El. ±324.4) and 7.8 ft. (El. ±376.3), respectively. Boring B-23 encountered water at a depth of 8 ft. during drilling, however lower samples were dry, indicating this is perched water (no well was set at this boring). Boring B-32 encountered water at a depth of 13 ft. during drilling, however a subsequent reading 6 days later from the well installed here showed the water had drained to below the bottom of the well at a depth of 20 ft. (El. ±372).

Of note, two (2) borings near the middle-west area of the building indicate a possible perched water condition. Borings B-17 and B-23 (both mentioned above) both encountered water at an elevation above surrounding and downhill borings, specifically borings B-18 and B-24 which are directly downhill of borings B-17 and B-23, respectively, in which the surrounding and downhill borings were reported to be dry 18 ft. and 10 ft., respectively, below the reported water elevations.

Tabular summaries of key findings of the borings, and bedrock core data, along with the individual boring logs containing specific information at each boring location, are included in the Appendix.

DESIGN RECOMMENDATIONS

BUILDINGS

Based on our review of the findings of this subsurface investigation program, along with estimated depths of foundations for the building, it is recommended that conventional shallow foundations (footings) are suitable for support of the new residence building and associated walls as well as the proposed outbuilding northwest of the main building. The recommended footing/frost depth for Ulster County is 48 in. below final exterior grade therefore bottoms of footings should be located at or below this depth to prevent possible frost heave damage. Based on the building sections provided for the main building, some footings here will be founded on underlying weathered or unweathered bedrock, some will be founded by overburden till soils, and a relatively small percentage will be supported by structural fill. The outbuilding will be constructed atop 15 ft. of fill, therefore will be supported by structural fill.

Following clearing and grubbing of all topsoil, stumps, roots, etc., in areas where footings will be constructed beneath existing grade, the ground should be leveled/stepped as required, the footings excavated to the required elevations and the bottoms of footings thoroughly compacted and until no further settlement is observed. Compaction should be achieved using a minimum of 4 passes with a double-drum, vibratory padfoot trench compactor (ex. Rammax). Following this treatment, spread footings may be constructed as typical. In areas where footings will be constructed atop structural fill, the structural fill may be compacted using a ride-on vibratory roller for efficiency.

Following the above treatments, an allowable bearing capacity of 2 tsf and a coefficient of base sliding of 0.40 is recommended for design off both buildings, regardless of whether the footings are founded on rock, existing soil, or structural fill. Minimum footing widths of 24 in. for wall footings and 30 in. for column footings are recommended to limit settlements. Footings on weathered or unweathered rock may be reduced by 6 in. in width. Since the ground is sloped and uneven, footings will also need to be stepped to accommodate sloping ground.

The following in situ soil properties are recommended for design of retaining wall portions of this building:

Moist unit weight of retained soil,	γ_t	= 120 pcf
Angle of internal friction,	ϕ	= 34°
Lateral earth pressure coefficients:		
Active,	K_a	= 0.28
Passive,	K_p	= 3.54
At-rest,	K_o	= 0.44
Coeff. of friction (sliding),	tan δ	= 0.40 (CIP concrete on compacted subgrade)

Following the above recommendations, it is estimated that maximum post construction foundation settlement of the main building will be ≤1 in., with ≤¾ in. differential settlement between adjacent columns. Settlement of the outbuilding is expected to be <½ in. These values are within generally accepted tolerance limits for this type of structure/use. Settlement will be elastic (instantaneous), with no long-term consolidation settlement occurring. It is estimated that footings beneath, and to the east of, the following borings within the main building will rest on bedrock, therefore building joints should be considered for these areas to mitigate the effects of differential settlements: B-11, B-15, B-19, B-23, and B-28.

New first floor and basement slabs in both buildings may be constructed as slabs-on-grade following removal of the surficial topsoil, proof rolling and compaction of the subgrade, and placement and compaction of any structural fill and/or capillary break material. The subgrade should be compacted using a 10 T vibratory roller away from building walls and a double-drum, vibratory padfoot trench compactor adjacent to walls, footings, etc. in order to provide uniform support beneath the slab. A minimum of four (4) passes should be made with the compactor, and until no further settlement is visible. A modulus of subgrade 200 pci is recommended for design of these slabs.

In accordance with the provisions of Section 1613.3.2 of the New York 2015 Building Code, and ASCE 7 Chapter 20, a seismic site class of D, stiff soil, is recommended for design, based on the average conditions encountered below the anticipated footing depths, and assumed conditions present to a depth of 100 ft. Based on the project location, in conjunction with the above site class, the following seismic parameters follow from the Code:

S_s = 0.193	S_1 = 0.054
F_a = 1.6	F_v = 2.4
S_{MS} = 0.309	S_{M1} = 0.130
S_{DS} = 0.206	S_{D1} = 0.087

Seismic Design Category Based on Short Period Response Accelerations = B*
Seismic Design Category Based on 1-sec Period Response Accelerations = B*
* based on assumed Risk Category III

There is no evidence of past slope instability and none is expected under static or seismic loading.

The soils at this site are non-liquefiable based on their suitably high relative density, silt content, and lack of groundwater.

SITE WORK

Beyond the limits of the proposed structure, proposed site work includes construction of :

- a ±130 LF entrance driveway from Route 9W leading to a ±36-car parking lot east of the building,
- ±150 LF of pavement along the north side of the building,
- a ±1,200 LF south/west roadway from Mayer Drive, meandering and climbing uphill to the west of the building leading to a ±38-car parking lot west of the building and the proposed outbuilding, and ending in a cul-de-sac immediately past the outbuilding,
- a ±400 LF x 3 ft. to 18 ft. tall retaining wall along the downhill side of the south/west roadway,
- a ±275 LF x 6 ft. to 13 ft. tall retaining wall immediately east of the east parking lot,
- a ±120 LF x 8 ft. tall retaining wall along the uphill side of the south/west roadway near the southwest corner of the main building, and
- a ±100 LF x 18 ft. tall retaining wall immediately east of the proposed outbuilding.

As mentioned above, this site is underlain by stable deposits of silty sands with gravel and/or sandy silts with gravel, which are suitable for support of roadway and parking lot traffic and the proposed retaining walls. For roadway construction, all cuts are expected to be above bedrock and within the soils described above. Cobbles and boulders are also expected to be encountered. The soils removed during excavating and those encountered at subbase level are expected to be suitable for reuse in fill areas however they will be moisture sensitive, meaning their moisture content should be controlled during stockpiling, placement and compaction operations. It is recommended they be compacted at, or slightly below, their optimum moisture content to prevent possible pumping during compaction, especially during wet weather.

Prior to pavement construction, all topsoil should be removed down to inorganic soil, the subgrade inspected for any soft or otherwise unsuitable material, and the subgrade proof-rolled and compacted to a uniform and stable condition. A vibratory roller having a minimum static weight of 10 tons is recommended for proof-rolling. While very soft, compressible soils, organic material, and otherwise deleterious materials were not encountered in the borings, should such material be encountered during construction, it should be removed and replaced with structural fill. Where fill will be placed against existing slopes, the existing slope shall be continuously benched as the new fill is brought up and compacted in generally-level lifts. Should fill be placed over any existing pavements, the existing pavement should either be removed or broken up and left in-place to allow for drainage. Following subgrade preparation, the use of full-depth asphalt pavement is recommended for circulation roadways and car parking lots, and reinforced concrete pavement is recommended for loading areas, dumpster pads, or similar areas.

Retaining walls may be designed and constructed as either cast-in-place concrete walls, or modular block/large modular block segmental retaining walls. Similar recommendations as provided above for wall design are recommended for these walls:

Moist unit weight of soil,	γ_t	= 120 pcf (retained + foundation soils)
Angle of internal friction,	ϕ	= 34° (retained + foundation soils)
Lateral earth pressure coefficients:		
Active,	K_a	= 0.28

Passive,	K_p	= 3.54
Coeff. of friction (sliding),	$\tan \delta$	= 0.40 (CIP concrete on compacted subgrade)
		= 0.30 (precast concrete on compacted subgrade)

Post construction walls settlements are expected to be ≤1 in. and complete at the end of construction.

CONSTRUCTION RECOMMENDATIONS

Footings should not be constructed on frozen or wet subgrade materials. All frozen or saturated subgrade soil should be removed and replaced with compacted structural fill, or clean crushed stone, as required.

All loosened soil present at the bottoms of footing excavations should be compacted using a double-drum vibratory trench compactor, or similar vibratory compactor. Such compaction should continue for a minimum of 4 passes and until all visible settlement is complete.

Organic soils were not encountered in the borings other than the surficial topsoil; however, if organic soils are encountered they should be removed completely from beneath the limits of the building and replaced with compacted structural fill. Organic soils should not be used as site or structural backfill, but should be removed offsite.

Cobbles and boulders are expected to be encountered throughout the horizontal and vertical extents of work. Any cobbles or boulders encountered during construction should be removed so that no part protrudes into the bottom or sides of foundation, retaining wall, or utility excavations.

Dewatering is not expected to be required during foundation construction since groundwater was not encountered within most of the borings. However, based on the findings of borings B-17 and B-23, initial foundation excavations, especially in the western and center portion of the building, may be made in the dry, only to have water seep into the excavations within a few hours. Despite this condition, standard construction trash pumps set in sumps should be sufficient to handle the expected inflows.

Structural fill material should consist of predominately well-graded, coarse to fine sand and/or gravel with a maximum 10% non-plastic fines (material passing a No. 200 sieve) and be free of organics and other deleterious materials. Aggregate size should be limited to no bigger than 1 in. in the largest dimension. Based on the findings of this subsurface investigation, it is estimated that ¼ of the in situ materials may be suitable for reuse as structural fill. Representative samples of imported fill materials should be tested for gradation and moisture-density relationship prior to use to confirm its suitability.

Structural fill should be placed in maximum 12 in. loose lifts and compacted to 95% of its maximum dry density at optimum moisture content as determined by the Modified Proctor Density Test (ASTM D 1557). These operations should be performed under full-time geotechnical inspection and testing by either the Sand Cone Method (ASTM D 1556), Nuclear Density Gauge (ASTM D6938) or other moisture/density test methods. These density tests should be performed by an experienced geotechnical inspector at sufficient frequency and spacing to ensure proper compaction, with the following criteria suggested as guidelines:

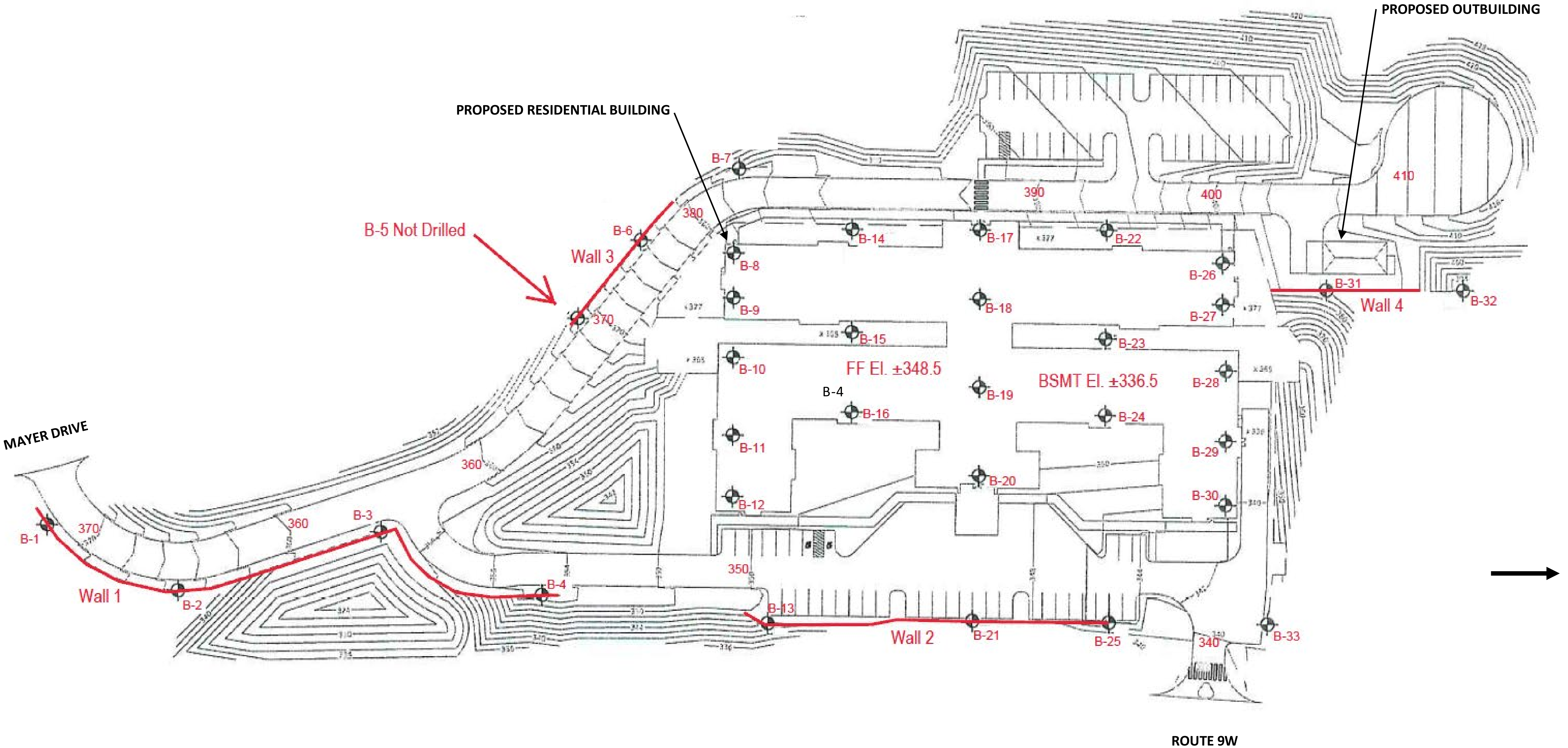
Location	Frequency of Testing
Structural fill beneath foundations, adjacent to structures & beneath slabs-on-grade	1 test every 2,500 SF min. 1 test per lift
Utility trenches	1 test every 50-100 LF per lift min. 3 tests per day
General site fill (beyond building limits)	1 test every 5,000 SF per lift min. 1 test per lift

Drying or wetting of the fill soils should be performed to ensure proper moisture contents during compaction. Overly wet soils may need to be disked and allowed to dry for a day or more, and as weather permits, in order to be usable. These operations should be scheduled to take advantage of dry, windy, and/or hot weather patterns to facilitate rapid moisture loss. These operations should not be scheduled for winter months (November through March).

For excavations that extend deeper than 5 ft., sheeting, shoring, sloping, or benching of the excavation sidewalls is required per OSHA standards. Considering the open space and variable depth to bedrock at this site, all the above-mentioned means may be suitable for use at this project. Based upon the material characteristics and estimated strength of the soils encountered during the subsurface exploration, the soil present on site may be assumed to be Type C and should be sloped at a 1.5H:1V (34°) per OSHA requirements. For the design of temporary sheeting or shoring, the soil properties listed above for retaining wall design are recommended. All sheeting, shoring and bracing shall be designed by a professional engineer licensed in the State of New York.

It is recommended that all foundation construction and subgrade preparation procedures, as well as earthworks for pavements, parking lots, retaining walls, etc. be inspected by a qualified geotechnical engineer experienced with these types of construction. Full time inspection is recommended during stripping and proof-rolling, and fill placement to ensure similar conditions as described in the borings and this report are encountered, adequate testing is performed, and moisture contents are maintained at suitable levels.

APPENDIX



NOTES:

1. BASE PLAN, INCLUDING BORING LOCATIONS, TAKEN FROM "PROPOSED SUBSURFACE EXPLORATION PLAN" 5-21-2021, BY CONNOLLY ENGINEERING, PLLC, PLEASANT VALLEY, NY, SUPPLIED BY SOILTESTING, INC.
2. WALL LOCATIONS AMENDED BY SKYLANDS ENGINEERING, LLC.

LEGEND

B-1 BORING

SCALE

N.T.S.

EUGENE J. SCHWARZROCK
PROFESSIONAL ENGINEER
NEW YORK LICENSE NO. 077007-1

DATE

BORING LOCATION PLAN

THE VILLAGE IN THE HUDSON VALLEY
3679 ROUTE 9W
HIGHLAND, NEW YORK

SKYLANDS ENGINEERING, LLC

124 MILTON ROAD
SPARTA, NJ 07871
CERTIFICATE OF AUTHORIZATION 0013524

DATE: 7-24-2021

Boring Logs

SOILTESTING, INC. 90 DONOVAN RD. OXFORD, CT 06478 CT (203) 262-9328 NY (914) 946-4850	CLIENT: Owen Mark Sanderson PROJECT NO. G120-1822-21 PROJECT NAME Village in the Hudson Valley	SHEET 1 OF 1 HOLE NO. B-1 BORING LOCATIONS Per Plan
FOREMAN - DRILLER MK/ao	LOCATION 3679 Route 9W Highland NY	
INSPECTOR		OFFSET

	CASING	SAMPLER	CORE BAR		
TYPE	HSA	SS*		DATE START	6/16/21
SIZE I.D.	4 ¼"	1 3/8"		DATE FINISH	6/16/21
HAMMER WT.		140#	BIT	SURFACE ELEV.	El. ±368
HAMMER FALL		30"		GROUND WATER ELEV.	

GROUND WATER OBSERVATIONS
AT None FT AFTER 0 HOURS
AT __ FT AFTER __ HOURS

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	Type	PEN	REC.	DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6	6 - 12	12- 18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		1	ss	24"	14"	2'0"	7	7			compact		6" Top soil
							9	11			dry		Brn F sand, trace silt, lit cobbles & F-C gravel
5													
		2	ss	24"	20"	7'0"	10	12			compact		Brn F sand, lit silt, lit F-C gravel
							12	16			dry		
10													
		3	ss	24"	0"	12'0"	14	12					
							9	9			dry-moist		No Recovery
15													
		4	ss	24"	10"	17'0"	6	7			compact		
							6	9			moist		Brn F sand & silt, trace F-C gravel
20													Brn F sand, some silt, lit F-C gravel, trace cobbles
		5	ss	14"	12"	21'2"	18	34			dry-moist	21'	
							50/2"						Bedrock or Boulder fragments
												23'	Auger Refusal
													EOB 23'0"
25													
30													
35													
40													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times. ***CME Auto Hammer**

GROUND SURFACE TO ________FT. USED ______________CASING THEN _______ CASING TO _______FT. **HOLE NO. B-1**

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50% F = FINE

SOILTESTING, INC. 90 DONOVAN RD. OXFORD, CT 06478 CT (203) 262-9328 NY (914) 946-4850	CLIENT: Owen Mark Sanderson PROJECT NO. G120-1822-21 PROJECT NAME Village in the Hudson Valley	SHEET 1 OF 1 HOLE NO. B-2 & B-2A BORING LOCATIONS Per Plan
FOREMAN - DRILLER MK/ao	LOCATION 3679 Route 9W Highland NY	
INSPECTOR		OFFSET

	CASING	SAMPLER	CORE BAR
TYPE	HSA	SS*	NQ2
SIZE I.D.	4 ¼"	1 3/8"	2"
HAMMER WT.		140#	BIT
HAMMER FALL		30"	dia

GROUND WATER OBSERVATIONS
AT None FT AFTER 0 HOURS
AT __ FT AFTER __ HOURS

DATE START 6/15/21
DATE FINISH 6/15/21
SURFACE ELEV. El. ±346
GROUND WATER ELEV.

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	Type	PEN	REC.	DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6	6 - 12	12 - 18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		1	ss	24"	16"	2'0"	7	11			compact		
							10	12			moist		brn F sand, lit silt, lit F gravel
												5'	Auger Refusal
5	B-2A	(5' North of B-2)											EOB 5' Offset to B-2A
		2	ss	24"	18"	7'0"	14	19			dense		
							16	23			moist		Brn F sand, lit silt, some F-C cobble
10												10'	Auger Refusal
		1	c	60"	48"	15'0"	RQD = 45%			3			Fractured Bedrock or Boulders (shale/limestone)
							Rec=80%			4			
										3			
										3			
15										3			
		2	c	18"	6"	16'6"	RQD=0%			3			
							Rec=33%			2		16'6"	
													EOB 16'6"
20													
													NOTE: Elevation lowered by approximatley 2.5' while grading for access.
25													
30													
35													
40													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***CME Auto Hammer**

GROUND SURFACE TO ________FT. USED ____________CASING THEN ______ CASING TO ______FT.

HOLE NO. B-2 & B-2A

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50%

C = COARSE
M = MEDIUM
F = FINE

SOILTESTING, INC.
90 DONOVAN RD.
OXFORD, CT 06478
CT (203) 262-9328
NY (914) 946-4850

CLIENT: Owen Mark Sanderson

SHEET 1 OF 1
HOLE NO. B-3

PROJECT NO. G120-1822-21
PROJECT NAME Village in the Hudson Valley
LOCATION 3679 Route 9W Highland NY

BORING LOCATIONS Per Plan

FOREMAN - DRILLER MK/ao
INSPECTOR

	CASING	SAMPLER	CORE BAR
TYPE	HSA	SS*	
SIZE I.D.	4 ¼"	1 3/8"	
HAMMER WT.		140#	BIT
HAMMER FALL		30"	

OFFSET
DATE START 6/11/21
DATE FINISH 6/11/21
SURFACE ELEV. El. ±342
GROUND WATER ELEV. El. ±323.5

GROUND WATER OBSERVATIONS
AT None FT AFTER 0 HOURS
AT 18'6" FT on 6/17/21

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	Type	PEN	REC	DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6	6 - 12	12- 18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		1	ss	24"	14"	2'0"	3	4			loose		5" Top soil
							3	8			moist		Brn F sand, some silt,some F-M gravel
											dense		
5		2	ss	1"	1"	5'1"	50/1"				dry		Brn F sand, some silt, lit F-C gravel
10													
		3	ss	24"	20"	12'0"	12	16			V dense		
							36	36			moist-dry		Brn F sand & silt, some F-C gravel
15											V dense		
		4	ss	16"	14"	16'4"	36	54			dry		Same, cobbles, boulders
							60/4"						
													Cobbles, boulders
20											dense	20'1"	
		5	ss	1"	1"	20'1"	50/1"				dry		EOB 20'1"
25													
													Installed 1" SCH 40 PVC Observation well, with 10' screen length, to a depth of 20' and 2'6" above grade.
30													
35													
40													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***CME Auto Hammer**

GROUND SURFACE TO ________FT. USED ______________CASING THEN _______ CASING TO _______FT.

HOLE NO. B-3

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50%

C = COARSE
M = MEDIUM
F = FINE

SOILTESTING, INC. 90 DONOVAN RD. OXFORD, CT 06478 CT (203) 262-9328 NY (914) 946-4850	CLIENT: Owen Mark Sanderson PROJECT NO. G120-1822-21 PROJECT NAME Village in the Hudson Valley	SHEET 1 OF 1 HOLE NO. B-4 BORING LOCATIONS Per Plan
FOREMAN - DRILLER AO/eric	LOCATION 3679 Route 9W Highland NY	
INSPECTOR		OFFSET

	CASING	SAMPLER	CORE BAR		
TYPE	HSA	SS*		DATE START	6/8/21
SIZE I.D.	4 ¼"	1 3/8"		DATE FINISH	6/8/21
HAMMER WT.		140#	BIT	SURFACE ELEV.	El. ±340
HAMMER FALL		30"		GROUND WATER ELEV.	

GROUND WATER OBSERVATIONS
AT none FT AFTER 0 HOURS
AT __ FT AFTER __ HOURS

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	Type	PEN	REC	DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6	6 - 12	12 - 18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		1	ss	24"	12"	2'0"	8	7			compact		6" Topsoil
							10	6			dry		Brn F-M sand F-C gravel trace silt
5													
		2	ss	24"	18"	7'0"	25	36			v dense		
							29	27			dry		Brn F-M sand F-C gravel trace silt trace cobble
10											v dense		
		3	ss	21"	20"	11'9"	8	15			dry		SAME, Boulders 7'0"-10'0"
							49	50/3"					
15											dense		
		4	ss	1"	0"	15'0"	50/1"				dry		SAME , Boulders and/or fractured Bedrock from 11'6"
												18'6"	AUGER REFUSAL18'5"
													E.O.B 18'6"
20													
25													
30													
35													
40													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***CME Auto Hammer**

GROUND SURFACE TO ________FT. USED ______________CASING THEN _______ CASING TO _______FT. **HOLE NO. B-4**

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50% F = FINE

SOILTESTING, INC. 90 DONOVAN RD. OXFORD, CT 06478 CT (203) 262-9328 NY (914) 946-4850	CLIENT: Owen Mark Sanderson PROJECT NO. G120-1822-21 PROJECT NAME Village in the Hudson Valley	SHEET 1 OF 1 HOLE NO. B-5 BORING LOCATIONS Per Plan
FOREMAN - DRILLER MK/ao	LOCATION 3679 Route 9W Highland NY	This location was omitted from scope of work
INSPECTOR		OFFSET

	CASING	SAMPLER	CORE BAR	
TYPE	HSA	SS*		DATE START
SIZE I.D.	4 ¼"	1 3/8"		DATE FINISH
HAMMER WT.		140#	BIT	SURFACE ELEV. El. ±366
HAMMER FALL		30"		GROUND WATER ELEV.

GROUND WATER OBSERVATIONS
AT none FT AFTER 0 HOURS
AT __ FT AFTER __ HOURS

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	SAMPLE Type	SAMPLE PEN	SAMPLE REC	SAMPLE DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6	6 - 12	12 - 18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
5													This location was omitted from scope of work
10													
15													
20													
25													
30													
35													
40													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***Cat Head & Rope**

GROUND SURFACE TO ________FT. USED ____________CASING THEN ________ CASING TO ________FT. **HOLE NO.** B-5

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50% F = FINE

SOILTESTING, INC. 90 DONOVAN RD. OXFORD, CT 06478 CT (203) 262-9328 NY (914) 946-4850	CLIENT: Owen Mark Sanderson	SHEET 1 OF 1 HOLE NO. B-6
	PROJECT NO. G120-1822-21	
	PROJECT NAME Village in the Hudson Valley	BORING LOCATIONS Per Plan
FOREMAN - DRILLER MK/ao	LOCATION 3679 Route 9W Highland NY	
INSPECTOR		OFFSET

	CASING	SAMPLER	CORE BAR		
TYPE	HSA	SS*		DATE START	6/10/21
SIZE I.D.	4 ¼"	1 3/8"		DATE FINISH	6/10/21
HAMMER WT.		140#	BIT	SURFACE ELEV.	El. ±384
HAMMER FALL		30"		GROUND WATER ELEV.	

GROUND WATER OBSERVATIONS
AT none FT AFTER 0 HOURS
AT __ FT AFTER __ HOURS

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	SAMPLE Type	SAMPLE PEN	SAMPLE REC	SAMPLE DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6	6 - 12	12 - 18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		1	ss	24"	18"	2'0"	5	5			loose		4" Topsoil
							4	8			moist		Brn F sand F-C gravel trace silt
5											dense		Cobbles & Boulders 3'-6'
		2	ss	0"	0"	5'0"	50/0"				moist		
													Cobbles & Boulders 8'-9'
10													
		3	ss	13"	8"	11'1"	36	29			v loose		Brn F sand some silt cobble
							50/1"				dry		
15													
		4	ss	24"	24"	17'0"	18	26			v dense		Gry F sand and silt lit F-C gravel
							27	28			dry/moist		
20													
		5	ss	24"	22"	22'0"	26	27			v dense		
							27	32			moist	22'0"	Gry F sand & silt some F-C gravel
													E.O.B 22'0"
25													
30													
35													
40													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***CME Auto Hammer**

GROUND SURFACE TO ________FT. USED ____________CASING THEN ______ CASING TO ______FT.

HOLE NO. B-6

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50% F = FINE

SOILTESTING, INC. 90 DONOVAN RD. OXFORD, CT 06478 CT (203) 262-9328 NY (914) 946-4850	CLIENT: Owen Mark Sanderson PROJECT NO. G120-1822-21 PROJECT NAME Village in the Hudson Valley	SHEET 1 OF 1 HOLE NO. B-7 BORING LOCATIONS Per Plan
FOREMAN - DRILLER MK/ao	LOCATION 3679 Route 9W Highland NY	
INSPECTOR		OFFSET

	CASING	SAMPLER	CORE BAR
TYPE	HSA	SS*	
SIZE I.D.	4 ¼"	1 3/8"	
HAMMER WT.		140#	BIT
HAMMER FALL		30"	

GROUND WATER OBSERVATIONS
AT None FT AFTER 0 HOURS
AT __ FT AFTER __ HOURS

DATE START 6/9/21
DATE FINISH 6/9/21
SURFACE ELEV. El. ±391
GROUND WATER ELEV.

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	Type	PEN	REC	DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6	6 - 12	12- 18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		1	ss	24"	18"	2'0"	3	4			loose		6" Top soil
							5	8			moist		Brn F-M sand, F-C gravel, trace silt
5													
		2	ss	24"	0"	7'0"	6	9			compact		
							14	20			moist		No recovery
10													
		3	ss	24"	24"	12'0"	10	29			V dense		
							29	34			dry-moist		Brn/gry F sand, some silt, some F-C gravel, cobbles
													Cobbles, Boulders 12-15'
15													
		4	ss	24"	20"	17'0"	23	22			V dense		Gry F sand, some silt, some F-C gravel, cobbles
							22	26			dry		
20													
		5	ss	24"	20"	22'0"	10	15			compact		
							15	22			moist	22'	Same, trace clay
													EOB 22'
25													
30													
35													
40													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***CME Auto Hammer**

GROUND SURFACE TO ________ FT. USED ____________ CASING THEN ________ CASING TO _______ FT.

HOLE NO. B-7

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50% F = FINE

SOILTESTING, INC. 90 DONOVAN RD. OXFORD, CT 06478 CT (203) 262-9328 NY (914) 946-4850	CLIENT: Owen Mark Sanderson PROJECT NO. G120-1822-21 PROJECT NAME Village in the Hudson Valley	SHEET 1 OF 1 HOLE NO. B-8 BORING LOCATIONS Per Plan
FOREMAN - DRILLER MK/ao	LOCATION 3679 Route 9W Highland NY	
INSPECTOR		OFFSET

	CASING	SAMPLER	CORE BAR		
TYPE	HSA	SS*		DATE START	6/11/21
SIZE I.D.	4 ¼"	1 3/8"		DATE FINISH	6/11/21
HAMMER WT.		140#	BIT	SURFACE ELEV.	El. ±379
HAMMER FALL		30"		GROUND WATER ELEV.	

GROUND WATER OBSERVATIONS
AT None FT AFTER 0 HOURS
AT __FT AFTER__HOURS

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	Type	PEN	REC	DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6	6 - 12	12- 18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		1	ss	24"	10"	2'0"	4	5			loose		6" Top soil
							4	8			moist		Brn F sand, some silt, some F-C gravel, cobbles
													Cobbles to 4'5"
5													
		2	ss	24"	18"	7'0"	8	10			compact		
							14	14			moist		Brn F sand & silt, some F-C gravel
10													
		3	ss	24"	24"	12'0"	16	22			dense		
							21	31			moist		Same
15													
		4	ss	24"	20"	17'0"	17	22			dense		
							23	27			dry		Gry F sand, some silt, lit F-C gravel, cobbles
20													
		5	ss	24"	24"	22'0"	21	27			dense		
							26	32			dry	22'	Gry F sand & silt, some F-C gravel
													EOB 22'
25													
30													
35													
40													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***CME Auto Hammer**

GROUND SURFACE TO ________FT. USED ______________CASING THEN _______ CASING TO _______FT. **HOLE NO. B-8**

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50% F = FINE

SOILTESTING, INC. 90 DONOVAN RD. OXFORD, CT 06478 CT (203) 262-9328 NY (914) 946-4850	CLIENT: Owen Mark Sanderson PROJECT NO. G120-1822-21 PROJECT NAME Village in the Hudson Valley	SHEET 1 OF 1 HOLE NO. B-9	BORING LOCATIONS Per Plan
FOREMAN - DRILLER JK/eq	LOCATION 3679 Route 9W Highland NY		
INSPECTOR			OFFSET

	CASING	SAMPLER	CORE BAR		
TYPE	HSA	SS*	NQ2	DATE START	6/9/21
SIZE I.D.	4 ¼"	1 3/8"	2"	DATE FINISH	6/10/21
HAMMER WT.		140#	BIT	SURFACE ELEV.	El. ±369
HAMMER FALL		30"	dia	GROUND WATER ELEV.	

GROUND WATER OBSERVATIONS
AT none FT AFTER 0 HOURS
AT __FT AFTER__HOURS

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	SAMPLE Type	SAMPLE PEN	SAMPLE REC	SAMPLE DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6	6 - 12	12- 18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		1	ss	24"	6"	2'0"	4	8			V stiff		
							9	12			dry		Brn/ltbrn silt & F gravel, lit F sand
5													
		2	ss	24"	20"	7'0"	8	11			V stiff		
							14	22			dry		Ltbrn silt, some F sand, some F gravel, trace M-C sand
10													
		3	ss	24"	14"	12'0"	28	17			hard		
							14	18			dry-moist		Ltbrn silt, some F gravel, lit F-M sand
											hard		
15		4	ss	28"	6"	15'8"	68	50/2"			dry-moist		Ltbrn silt & F gravel, lit F sand
												18'	Auger Refusal 18'
		1	c	36"	20"	21'0"				2			
20										2			Boulder
										1		20'9"	
												22'	Gry silt, some F-C sand, F-C gravel
		2	c	60"	34"	27'0"	RQD=17%			2			Auger Refusal 22'
							Rec=57%			2:15			
25										2:15			Bedrock (shale/limestone)
										2:30			
		3	c	36"	20"	30'0"	RQD=25%			2			
							Rec=56%			2			
30										2:15			
										2:15			EOB 30'
35													
40													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***Cat Head & Rope**

GROUND SURFACE TO ________FT. USED ______________CASING THEN ________ CASING TO _______FT. **HOLE NO.** B-9

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50% F = FINE

SOILTESTING, INC. 90 DONOVAN RD. OXFORD, CT 06478 CT (203) 262-9328 NY (914) 946-4850	CLIENT: Owen Mark Sanderson PROJECT NO. G120-1822-21 PROJECT NAME Village in the Hudson Valley	SHEET 1 OF 1 HOLE NO. B-10 BORING LOCATIONS Per Plan
FOREMAN - DRILLER MK/ao	LOCATION 3679 Route 9W Highland NY	
INSPECTOR		OFFSET

	CASING	SAMPLER	CORE BAR	
TYPE	HSA	SS*		DATE START 6/7/21
SIZE I.D.	4 ¼"	1 3/8"		DATE FINISH 6/7/21
HAMMER WT.		140#	BIT	SURFACE ELEV. El. ±361
HAMMER FALL		30"		GROUND WATER ELEV.

GROUND WATER OBSERVATIONS
AT none FT AFTER 0 HOURS
AT __FT AFTER __HOURS

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	Type	PEN	REC	DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6	6 - 12	12 - 18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		1	ss	24"	16"	2'0"	3	2			dry-moist		8" Topsoil
							2	2			v loose		Brn F-M sand some F-C Gravel trace Silt
5													
		2	ss	24"	6"	7'0"	27	15			Dry		Gry brn F sand some F-C Gravel, Cobble
							15	16			compact		
												8'6"	AUGER REFUSAL 8'6"
													E.O.B 8'6"
10													
15													
20													
25													
30													
35													
40													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***Cat Head & Rope**

GROUND SURFACE TO ________FT. USED __________CASING THEN _______ CASING TO _______FT. **HOLE NO.** B-10

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50% F = FINE

SOILTESTING, INC. 90 DONOVAN RD. OXFORD, CT 06478 CT (203) 262-9328 NY (914) 946-4850	CLIENT: Owen Mark Sanderson PROJECT NO. G120-1822-21 PROJECT NAME Village in the Hudson Valley	SHEET 1 OF 1 HOLE NO. B-11 BORING LOCATIONS Per Plan
FOREMAN - DRILLER MK/ak	LOCATION 3679 Route 9W Highland NY	
INSPECTOR		OFFSET

	CASING	SAMPLER	CORE BAR
TYPE	HSA	SS*	
SIZE I.D.	4 ¼"	1 3/8"	
HAMMER WT.		140#	BIT
HAMMER FALL		30"	

GROUND WATER OBSERVATIONS
AT None FT AFTER 0 HOURS
AT __ FT AFTER __ HOURS

DATE START 6/8/21
DATE FINISH 6/8/21
SURFACE ELEV. El. ±355
GROUND WATER ELEV.

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	Type	PEN	REC	DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6	6 - 12	12 - 18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		1	ss	15"	9"	1'3"	3	5			dense		7" Top soil
							50/3"				dry		Brn F-M sand, some silt, F-C gravel, trace roots
												4'	Auger Refusal 4'
5													EOB 4'
10													
15													
20													
25													
30													
35													
40													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***CME Auto Hammer**

GROUND SURFACE TO ________FT. USED ______________CASING THEN ________ CASING TO _______FT.

HOLE NO. B-11

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50% F = FINE

SOILTESTING, INC. 90 DONOVAN RD. OXFORD, CT 06478 CT (203) 262-9328 NY (914) 946-4850	CLIENT: Owen Mark Sanderson PROJECT NO. G120-1822-21 PROJECT NAME Village in the Hudson Valley	SHEET 1 OF 1 HOLE NO. B-11A BORING LOCATIONS
FOREMAN - DRILLER MK/ao	LOCATION 3679 Route 9W Highland NY	5' North of B-11
INSPECTOR		OFFSET

	CASING	SAMPLER	CORE BAR
TYPE	HSA	SS*	NQ2
SIZE I.D.	4 ¼"	1 3/8"	2"
HAMMER WT.		140#	BIT
HAMMER FALL		30"	dia

GROUND WATER OBSERVATIONS
AT None FT AFTER 0 HOURS
AT __ FT AFTER __ HOURS

DATE START 6/9/21
DATE FINISH 6/9/21
SURFACE ELEV. El. ±355
GROUND WATER ELEV.

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	Type	PEN	REC	DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0-6 6-12 12-18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
											Brn F-M sand, some silt, F-C gravel
5										5'	Auger Refusal 5'
		1	c	48"	34"	9'0"	Rec=71%	3			
								4			
								3			
								4		9'	Boulders and/or fractured Bedrock
10		2	c	60"	55"	14'0"	RQD=58%	4			Bedrock (shale/limestone)
							Rec=92%	4			
								4			
								5			Weathered seam 14-15'
15		3	c	60"	48"	19'0"	RQD=45%	1			
							Rec=80%	4			
								4			
								4			
								4		19'	
20											EOB 19'
25											
30											
35											
40											

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***CME Auto Hammer**

GROUND SURFACE TO ________FT. USED ____________CASING THEN ______ CASING TO ______FT.

HOLE NO. B-11A

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50% F = FINE

SOILTESTING, INC. 90 DONOVAN RD. OXFORD, CT 06478 CT (203) 262-9328 NY (914) 946-4850	CLIENT: Owen Mark Sanderson PROJECT NO. G120-1822-21 PROJECT NAME Village in the Hudson Valley	SHEET 1 OF 1 HOLE NO. B-12 BORING LOCATIONS Per Plan
FOREMAN - DRILLER AO/ak	LOCATION 3679 Route 9W Highland NY	
INSPECTOR		OFFSET

	CASING	SAMPLER	CORE BAR
TYPE	HSA	SS*	
SIZE I.D.	4 ¼"	1 3/8"	
HAMMER WT.		140#	BIT
HAMMER FALL		30"	

GROUND WATER OBSERVATIONS
AT none FT AFTER 0 HOURS
AT __FT AFTER __HOURS

DATE START 6/7/21
DATE FINISH 6/7/21
SURFACE ELEV. El. ±348
GROUND WATER ELEV.

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	Type	PEN	REC	DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6	6 - 12	12 - 18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		1	ss	24"	12"	2'0"	2	4			dry		3" Topsoil
							4	6			loose		Brn F-M sand some F-C Gravel trace Silt
												3'6"	AUGER REFUSAL
													E.O.B 3'6"
5													Offset 5'0" to B-12A
	B-12A												
0													
5		1	ss	1"	0"	5'1"	50/1"				dry		No Recovery, Boulders
												8'0"	AUGER REFUSAL
													E.O.B 8'0"
10													
15													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***Cat Head & Rope**

GROUND SURFACE TO ________FT. USED ______________CASING THEN _______ CASING TO _______FT. **HOLE NO.** B-12

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50% F = FINE

SOILTESTING, INC. 90 DONOVAN RD. OXFORD, CT 06478 CT (203) 262-9328 NY (914) 946-4850	CLIENT: Owen Mark Sanderson PROJECT NO. G120-1822-21 PROJECT NAME Village in the Hudson Valley	SHEET 1 OF 1 HOLE NO. B-13 BORING LOCATIONS Per Plan
FOREMAN - DRILLER MK/ao	LOCATION 3679 Route 9W Highland NY	

INSPECTOR		CASING	SAMPLER	CORE BAR	OFFSET	
	TYPE	HSA	SS*		DATE START	6/11/21
GROUND WATER OBSERVATIONS	SIZE I.D.	4 ¼"	1 3/8"		DATE FINISH	6/11/21
AT 16_FT AFTER_0_HOURS	HAMMER WT.		140#	BIT	SURFACE ELEV.	El. ±337
AT 12'7"_FT ON 6/12/21	HAMMER FALL		30"		GROUND WATER ELEV.	El. ±324.4

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	Type	PEN	REC	DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6	6 - 12	12 - 18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		1	ss	7"	6"	6"	3	50/1"			dense		6" Top soil
											dry		Cobbles 1-3'
5													
		2	ss	24"	18"	7'0"	9	18			dense		
							14	12			moist		Brn F sand, some silt, lit F-C gravel, cobbles
10													
		3	ss	24"	22"	12'0"	14	15			compact		
							14	17			dry		Same
15													
		4	ss	24"	20"	17'0"	14	17			dense		
							21	22			moist-wet		Brn/gry F sand, some silt, trace F gravel
20													
		5	ss	24"	22"	22'0"	17	21			dense		
							25	27			moist	22'	Brn F sand & silt, some F-C gravel
													EOB 22'
25													Installed 1" SCH 40 PVC Observation well; with 10' screen length, to a depth of 22' & 3' above grade.
30													
35													
40													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times. ***CME Auto Hammer**

GROUND SURFACE TO ________FT. USED ____________________CASING THEN _______ CASING TO _______FT. **HOLE NO. B-13**

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50% F = FINE

SOILTESTING, INC. 90 DONOVAN RD. OXFORD, CT 06478 CT (203) 262-9328 NY (914) 946-4850	CLIENT: Owen Mark Sanderson PROJECT NO. G120-1822-21 PROJECT NAME Village in the Hudson Valley	SHEET 1 OF 1 HOLE NO. B-14 BORING LOCATIONS Per Plan
FOREMAN - DRILLER MK/ao	LOCATION 3679 Route 9W Highland NY	
INSPECTOR		OFFSET

	CASING	SAMPLER	CORE BAR
TYPE	HSA	SS*	
SIZE I.D.	4 ¼"	1 3/8"	
HAMMER WT.		140#	BIT
HAMMER FALL		30"	

GROUND WATER OBSERVATIONS
AT None FT AFTER 0 HOURS
AT __ FT AFTER __ HOURS

DATE START 6/10/21
DATE FINISH 6/10/21
SURFACE ELEV. El. ±387
GROUND WATER ELEV.

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	Type	PEN	REC	DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6	6 - 12	12 - 18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		1	ss	24"	4"	2'0"	3	2			loose		24" Top soil
							3	2			moist		
5													
		2	ss	24"	12"	7'0"	9	31			V dense		
							20	19			moist-dry		Brn F sand, some silt, trace F-C gravel, cobbles
10													
		3	ss	24"	20"	12'0"	10	11			compact		
							11	12			moist		Brn F sand & silt, lit F-C gravel, trace clay
15													
		4	ss	13"	10"	16'1"	36	52			V dense		Brn F sand, some silt, F-C gravel, cobbles
							50/1"				dry		
												18'6"	Auger Refusal 18'5"
													EOB 18'6"
20													
25													
30													
35													
40													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***CME Auto Hammer**

GROUND SURFACE TO ______ FT. USED ______ CASING THEN ______ CASING TO ______ FT. **HOLE NO. B-14**

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50% F = FINE

SOILTESTING, INC.
90 DONOVAN RD.
OXFORD, CT 06478
CT (203) 262-9328
NY (914) 946-4850

CLIENT: Owen Mark Sanderson

PROJECT NO. G120-1822-21

PROJECT NAME Village in the Hudson Valley

LOCATION 3679 Route 9W Highland NY

SHEET 1 OF 1

HOLE NO. B-15

BORING LOCATIONS Per Plan

OFFSET

FOREMAN - DRILLER MK/ao

INSPECTOR

	CASING	SAMPLER	CORE BAR
TYPE	HSA	SS*	
SIZE I.D.	4 ¼"	1 3/8"	
HAMMER WT.		140#	BIT
HAMMER FALL		30"	

DATE START 6/4/21
DATE FINISH 6/4/21
SURFACE ELEV. El. ±366
GROUND WATER ELEV.

GROUND WATER OBSERVATIONS
AT None FT AFTER 0 HOURS
AT __ FT AFTER __ HOURS

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	Type	PEN	REC.	DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6	6 - 12	12 - 18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		1	ss	24"	10"	2'0"	2	2			loose		3" Top soil
							4	11			moist		Brn F sand some silt some F-C gravel
5											dense		Gry/brn F sand some silt, F-C gravel
		2	ss	8"	6"	5'8"	54	50/2"			dry-moist		
												6'	Auger Refusal
													EOB 6'
	B-15A												Offset 5' North to B-15A
0													
5													
10													
		3	ss	24"	22"	12'0"	6	11			dense		
							13	26			dry-moist		Brn F sand some silt some F-C gravel, cobbles
												13'	Auger Refusal 13'
													EOB 13'
25													
30													
35													
40													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***CME Auto Hammer**

GROUND SURFACE TO ______ FT. USED ______ CASING THEN ______ CASING TO ______ FT.

HOLE NO. B-15

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50% F = FINE

SOILTESTING, INC.
90 DONOVAN RD.
OXFORD, CT 06478
CT (203) 262-9328
NY (914) 946-4850

CLIENT: Owen Mark Sanderson
PROJECT NO. G120-1822-21
PROJECT NAME Village in the Hudson Valley
LOCATION 3679 Route 9W Highland NY

SHEET 1 OF 1
HOLE NO. B-16
BORING LOCATIONS Per Plan
OFFSET
DATE START 6/4/21
DATE FINISH 6/4/21
SURFACE ELEV. El. ±360
GROUND WATER ELEV.

FOREMAN - DRILLER MK/ak
INSPECTOR

GROUND WATER OBSERVATIONS
AT None FT AFTER 0 HOURS
AT __ FT AFTER __ HOURS

	CASING	SAMPLER	CORE BAR
TYPE	HSA	SS*	
SIZE I.D.	4 ¼"	1 3/8"	
HAMMER WT.		140#	BIT
HAMMER FALL		30"	

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	Type	PEN	REC	DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6	6 - 12	12- 18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		1	ss	24"	12"	2'0"	4	5			compact		3" Top soil
							7	10			moist		Brn F sand some silt, some F-C gravel
5													
		2	ss	24"	18"	7'0"	6	11			compact		
							11	15			dry		Brn F sand some silt some F-C gravel, trace cobbles
10													
		3	ss	24"	20"	12'0"	10	15			dense		
							27	20			moist		Brn F-M sand, some silt, lit F-C gravel, trace cobble
15											dense		Gry F sand, some silt, lit cobbles
		4	ss	3"	2"	15'3"	50/3"				dry	16'	
													Auger Refusal 16'
20													
25													
30													
35													
40													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***CME Auto Hammer**

GROUND SURFACE TO ________FT. USED ______________CASING THEN ________ CASING TO _______FT.

HOLE NO. B-16

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50%

C = COARSE
M = MEDIUM
F = FINE

SOILTESTING, INC. 90 DONOVAN RD. OXFORD, CT 06478 CT (203) 262-9328 NY (914) 946-4850	CLIENT: Owen Mark Sanderson PROJECT NO. G120-1822-21 PROJECT NAME Village in the Hudson Valley	SHEET 1 OF 1 HOLE NO. B-16A BORING LOCATIONS Per Plan
FOREMAN - DRILLER JK/eq	LOCATION 3679 Route 9W Highland NY	5' South at B-16
INSPECTOR		OFFSET

	CASING	SAMPLER	CORE BAR
TYPE	HSA	SS*	NQ2
SIZE I.D.	4 ¼"	1 3/8"	2"
HAMMER WT.		140#	BIT
HAMMER FALL		30"	dia

GROUND WATER OBSERVATIONS
AT none FT AFTER 0 HOURS
AT __ FT AFTER __ HOURS

DATE START 6/9/21
DATE FINISH 6/9/21
SURFACE ELEV. El. ±360
GROUND WATER ELEV.

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	Type	PEN	REC.	DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6 / 6 - 12 / 12- 18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
											See B-16 log
5											
10											
15											
										17'	Auger Refusal
		1	c	60"	55"	20'0"	RDQ=60%	1:30			
							Rec=92%	2			Bedrock (shale/limestone)
20								2			
								2:30			
								2:15			
								2			
								2:15			
25		2	c	60"	46"	27'0"	RDQ=45%	2:30			
							Rec=77%	2:30			
								2:15			
											EOB 27'
30											
35											
40											

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***Cat Head & Rope**

GROUND SURFACE TO ________FT. USED ____________________CASING THEN _______ CASING TO _______FT. **HOLE NO.** B-16A

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50% F = FINE

SOILTESTING, INC. 90 DONOVAN RD. OXFORD, CT 06478 CT (203) 262-9328 NY (914) 946-4850	CLIENT: Owen Mark Sanderson PROJECT NO. G120-1822-21 PROJECT NAME Village in the Hudson Valley	SHEET 1 OF 1 HOLE NO. B-17 BORING LOCATIONS Per Plan
FOREMAN - DRILLER MK/ao	LOCATION 3679 Route 9W Highland NY	
INSPECTOR		OFFSET

GROUND WATER OBSERVATIONS		CASING	SAMPLER	CORE BAR		
	TYPE	HSA	SS*		DATE START	6/8/21
AT 10 FT AFTER 0 HOURS	SIZE I.D.	4 ¼"	1 3/8"		DATE FINISH	6/8/21
AT 7'9" FT on 6/17/21	HAMMER WT.		140#	BIT	SURFACE ELEV.	El. ±384
	HAMMER FALL		30"		GROUND WATER ELEV.	El. ±376.3

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	Type	PEN	REC.	DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6	6 - 12	12- 18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		1	ss	24"	6"	2'0"	10	50/1"					No Recovery
													Cobbles & boulders to 5-6'
5													
		2	ss	24"	18"	7'0"	52	20			V dense		
							32	56			moist		Brn F sand, some silt, some F-C gravel, trace cobbles
10													
		3	ss	24"	20"	12'0"	10	19			V dense		
							37	41			wet		Same
15													
		4	ss	24"	24"	17'0"	20	19			dense		
							21	32			wet		Gry F sand & silt, trace clay, some F-C gravel, cobbles
20													
		5	ss	24"	24"	22'0"	10	21			V dense		
							33	26			wet	22'	Same
													EOB 22'
25													Installed 1" SCH 40 PVC observation well with 10' screen length to a depth at 22' & 3' above grade.
30													
35													
40													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***CME Auto Hammer**

GROUND SURFACE TO ________FT. USED ______________CASING THEN ________ CASING TO _______FT. **HOLE NO. B-17**

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST

WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE

SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM

PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50% F = FINE

SOILTESTING, INC. 90 DONOVAN RD. OXFORD, CT 06478 CT (203) 262-9328 NY (914) 946-4850	CLIENT: Owen Mark Sanderson PROJECT NO. G120-1822-21 PROJECT NAME Village in the Hudson Valley	SHEET 1 OF 1 HOLE NO. B-18 BORING LOCATIONS Per Plan
FOREMAN - DRILLER AO/ak	LOCATION 3679 Route 9W Highland NY	
INSPECTOR		OFFSET

	CASING	SAMPLER	CORE BAR
TYPE	HSA	SS*	
SIZE I.D.	4 ¼"	1 3/8"	
HAMMER WT.		140#	BIT
HAMMER FALL		30"	

GROUND WATER OBSERVATIONS
AT none FT AFTER 0 HOURS
AT __ FT AFTER __ HOURS

DATE START 6/7/21
DATE FINISH 6/7/21
SURFACE ELEV. El. ±372
GROUND WATER ELEV.

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	SAMPLE Type	SAMPLE PEN	SAMPLE REC.	SAMPLE DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6	6 - 12	12 - 18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		1	ss	24"	14"	2'0"	3	2			dry/moist		Brn FM Sand sm F-C Grvl sm Silt
							2	3			v loose		
5													
		2	ss	24"	15"	7'0"	11	18			dry		SAME tr Cobble
							23	17			dense		
10													
		3	ss	24"	12"	12'0"	12	28			dry		Gry Brn FM Sand lit F-C Grvl lit Silt tr cobble
							26	34			v dense		
												14'0"	AUGER REFUSAL
15													E.O.B 14'0"
20													
25													
30													
35													
40													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***Cat Head & Rope**

GROUND SURFACE TO ________FT. USED ______________CASING THEN ________ CASING TO _______FT. **HOLE NO.** B-18

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50% F = FINE

SOILTESTING, INC. 90 DONOVAN RD. OXFORD, CT 06478 CT (203) 262-9328 NY (914) 946-4850	CLIENT: Owen Mark Sanderson PROJECT NO. G120-1822-21 PROJECT NAME Village in the Hudson Valley	SHEET 1 OF 1 HOLE NO. B-19 BORING LOCATIONS Per Plan
FOREMAN - DRILLER JK/eq	LOCATION 3679 Route 9W Highland NY	
INSPECTOR		OFFSET

GROUND WATER OBSERVATIONS		CASING	SAMPLER	CORE BAR		
AT none FT AFTER 0 HOURS	TYPE	HSA	SS*	NQ2	DATE START	6/4/21
AT __ FT AFTER __ HOURS	SIZE I.D.	4 ¼"	1 3/8"	2"	DATE FINISH	6/4/21
	HAMMER WT.		140#	BIT	SURFACE ELEV.	El. ±362
	HAMMER FALL		30"	dia	GROUND WATER ELEV.	

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	Type	PEN	REC.	DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6	6 - 12	12- 18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		1	ss	24"	12"	2'0"	10	8			compact		
							7	3			dry		Brn F-M sand, some F gravel, lit silt
5												5'	
		2	ss	24"	10"	7'0"	8	17			hard		
							15	13			dry		Lt brn silt, some F-M sand, lit F gravel
10													
		3	ss	24"	16"	12'0"	26	33			hard		
							30	23			dry		Lit silt & F gravel, some F sand
15													
		4	ss	20"	6"	16'8"	38	45					
							58	100/2"			V dense		Gry F-C gravel, lit silt, lit F-M sand
		1	c	60"	54"	22'4"	RQD=62%			1		17'4"	Auger Refusal
							Rec=90%			1			
20										2			Bedrock
										2			
										2		22'4"	
													EOB 22'4"
25													
30													
35													
40													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***Cat Head & Rope**

GROUND SURFACE TO ________FT. USED ______________CASING THEN _______ CASING TO _______FT. **HOLE NO.** B-19

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST

WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE

SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM

PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50% F = FINE

SOILTESTING, INC. 90 DONOVAN RD. OXFORD, CT 06478 CT (203) 262-9328 NY (914) 946-4850	CLIENT: Owen Mark Sanderson PROJECT NO. G120-1822-21 PROJECT NAME Village in the Hudson Valley	SHEET 1 OF 1 HOLE NO. B-20	BORING LOCATIONS Per Plan
FOREMAN - DRILLER AO/ak	LOCATION 3679 Route 9W Highland NY		OFFSET
INSPECTOR			

	CASING	SAMPLER	CORE BAR		
TYPE	HSA	SS*		DATE START	6/7/21
SIZE I.D.	4 ¼"	1 3/8"		DATE FINISH	6/7/21
HAMMER WT.		140#	BIT	SURFACE ELEV.	El. ±354
HAMMER FALL		30"		GROUND WATER ELEV.	

GROUND WATER OBSERVATIONS
AT none_FT AFTER_0_HOURS
AT__FT AFTER__HOURS

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	SAMPLE Type	SAMPLE PEN	SAMPLE REC.	SAMPLE DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6	6 - 12	12 - 18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		1	ss	24"	16"	2'0"	2	5			dry		6" Topsoil
							4	8			loose		Brn FMC Sand some F-C Gravel trace cobble trace silt trace root
												4'0"	AUGER REFUSAL 4" Offsets
5													**E.O.B 4'0"**
													B-20A (5' North of B-20)
													AUGER REFUSAL 4'0"
10													B-20B (5' South of B-20)
													AUGER REFUSAL 4'0"
													B-20C (5' East of B-20)
													AUGER REFUSAL 4'0"
15													B-20D (5' West of B-20)
													AUGER REFUSAL 4'0"
20													
25													
30													
35													
40													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***Cat Head & Rope**

GROUND SURFACE TO ________FT. USED ______________CASING THEN _______ CASING TO _______FT. **HOLE NO.** B-20

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50% F = FINE

SOILTESTING, INC. 90 DONOVAN RD. OXFORD, CT 06478 CT (203) 262-9328 NY (914) 946-4850	CLIENT: Owen Mark Sanderson PROJECT NO. G120-1822-21 PROJECT NAME Village in the Hudson Valley		SHEET 1 OF 1 HOLE NO. B-21-B21A BORING LOCATIONS Per Plan
FOREMAN - DRILLER AO/er	LOCATION 3679 Route 9W Highland NY		
INSPECTOR		CASING / SAMPLER / CORE BAR	OFFSET
	TYPE	HSA / SS* /	DATE START 6/8/21
GROUND WATER OBSERVATIONS	SIZE I.D.	4 ¼" / 1 3/8" /	DATE FINISH 6/8/21
AT None_FT AFTER_0_HOURS	HAMMER WT.	/ 140# / BIT	SURFACE ELEV. El. ±338
AT__FT AFTER__HOURS	HAMMER FALL	/ 30" /	GROUND WATER ELEV.

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	Type	PEN	REC	DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0-6	6-12	12-18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		1	ss	24"	16"	2'0"	5	8					4" Top soil
							10	10					Gry F-M sand, some F-C gravel, trace silt
												3'6"	Auger Refusal
													EOB 3'6"
5													Offset 5' North to B-21A
10													
	B-21A												
0													
												3'	Auger Refusal
													EOB 3'
5													
25													
30													
35													
40													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***CME Auto Hammer**

GROUND SURFACE TO _______FT. USED _____________CASING THEN _______ CASING TO ______FT. **HOLE NO. B-21-B21A**

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST

WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE

SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM

PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50% F = FINE

SOILTESTING, INC. **90 DONOVAN RD.** **OXFORD, CT 06478** **CT (203) 262-9328** **NY (914) 946-4850**	CLIENT: **Owen Mark Sanderson** PROJECT NO. **G120-1822-21** PROJECT NAME **Village in the Hudson Valley**	SHEET 1 OF 1 HOLE NO. B-21B-B21C BORING LOCATIONS Per Plan 5' South of B-21
FOREMAN - DRILLER **MK/ao**	LOCATION **3679 Route 9W** **Highland NY**	
INSPECTOR		OFFSET

	CASING	SAMPLER	CORE BAR		
TYPE	HSA	SS*		DATE START	6/17/21
SIZE I.D.	4 ¼"	1 3/8"		DATE FINISH	6/17/21
HAMMER WT.		140#	BIT	SURFACE ELEV.	El. ±338
HAMMER FALL		30"		GROUND WATER ELEV.	

GROUND WATER OBSERVATIONS
AT None_FT AFTER_0_HOURS
AT__FT AFTER__HOURS

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	SAMPLE Type	SAMPLE PEN	SAMPLE REC	SAMPLE DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6	6 - 12	12- 18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
	B-21B												
											dry-moist	3'6"	Auger Refusal 3'6"
													EOB 3'6"
5													(offset 5' East at B-21)
	B-21C												
0													
											dry-moist	4'6"	Auger Refusal 4'6"
5													EOB 4'6"
20													
25													
30													
35													
40													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***CME Auto Hammer**

GROUND SURFACE TO ________FT. USED ______________CASING THEN _______ CASING TO _______FT.

HOLE NO. B-21B-B21C

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50%

C = COARSE
M = MEDIUM
F = FINE

SOILTESTING, INC. 90 DONOVAN RD. OXFORD, CT 06478 CT (203) 262-9328 NY (914) 946-4850	CLIENT: Owen Mark Sanderson	SHEET 1 OF 1 HOLE NO. B-22
	PROJECT NO. G120-1822-21	
	PROJECT NAME Village in the Hudson Valley	BORING LOCATIONS Per Plan
FOREMAN - DRILLER AO/ak	LOCATION 3679 Route 9W Highland NY	
INSPECTOR		OFFSET

	CASING	SAMPLER	CORE BAR
TYPE	HSA	SS*	
SIZE I.D.	4 ¼"	1 3/8"	
HAMMER WT.		140#	BIT
HAMMER FALL		30"	

GROUND WATER OBSERVATIONS
AT none _FT AFTER_0_HOURS
AT__FT AFTER__HOURS

DATE START 6/7/21
DATE FINISH 6/7/21
SURFACE ELEV. El. ±388
GROUND WATER ELEV.

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	Type	PEN	REC	DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6	6 - 12	12- 18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		1	ss	24"	14"	2'0"	8	11			dry		3" Topsoil
							11	5			compact		Brn F-M sand some F-C Gravel trace Silt
5													
		2	ss	24"	16"	7'0"	36	11			dry		Gry brn F-M sand some F-C gravel trace silt trace cobble
							11	12			compact		
10													
		3	ss	24"	18"	12'0"	14	36			dry		Gry brn F-M sand some F-C gravel lit silt
							39	42			v dense		
												14'0"	AUGER REFUSAL 14'0"
15													E.O.B 14'0"
20													
25													
30													
35													
40													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***Cat Head & Rope**

GROUND SURFACE TO ________FT. USED ____________CASING THEN _______ CASING TO _______FT. **HOLE NO.** B-22

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50% F = FINE

SOILTESTING, INC. 90 DONOVAN RD. OXFORD, CT 06478 CT (203) 262-9328 NY (914) 946-4850	CLIENT: Owen Mark Sanderson PROJECT NO. G120-1822-21 PROJECT NAME Village in the Hudson Valley	SHEET 1 OF 1 HOLE NO. B-23 BORING LOCATIONS Per Plan
FOREMAN - DRILLER JK/eq	LOCATION 3679 Route 9W Highland NY	
INSPECTOR		OFFSET

	CASING	SAMPLER	CORE BAR
TYPE	HSA	SS*	
SIZE I.D.	4 ¼"	1 3/8"	
HAMMER WT.		140#	BIT
HAMMER FALL		30"	

GROUND WATER OBSERVATIONS
AT 8 FT AFTER 0 HOURS
AT __FT AFTER__HOURS

DATE START 6/11/21
DATE FINISH 6/11/21
SURFACE ELEV. El. ±370
GROUND WATER ELEV. El. ±362

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	Type	PEN	REC	DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6	6 - 12	12- 18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		1	ss	24"	10"	2'0"	3	3			loose		
							4	4			moist		Cobble & C gravel, some brn silt
												3'6"	
5													
		2	ss	24"	17"	7'0"	9	9			hard		
							43	36			moist		Lt brn silt F-C sand & F-C gravel, lit cobbles, trace boulders
10													
		3	ss	24"	8"	12'0"	6	12			dense		
							19	18			wet		Lit brn F-M sand & F-C gravel, some silt
15													
		4	ss	24"	18"	17'0"	12	39			hard		
							63	58			wet-vmoist		Lit brn silt & F-M sand, F-C gravel, lit cobbles, Boulders
20													Boulder 18'-21'
		5	ss	5"	5"	20'5"	100/5"				moist-dry	21'	Auger Refusal
													EOB 21'
25													
30													
35													
40													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***Cat Head & Rope**

GROUND SURFACE TO ________FT. USED ______________CASING THEN ________ CASING TO _______FT. **HOLE NO.** B-23

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50% F = FINE

SOILTESTING, INC. 90 DONOVAN RD. OXFORD, CT 06478 CT (203) 262-9328 NY (914) 946-4850	CLIENT: Owen Mark Sanderson	SHEET 1 OF 1 HOLE NO. B-24
	PROJECT NO. G120-1822-21	
	PROJECT NAME Village in the Hudson Valley	BORING LOCATIONS Per Plan
FOREMAN - DRILLER JK/eq	LOCATION 3679 Route 9W Highland NY	
INSPECTOR		OFFSET

	CASING	SAMPLER	CORE BAR		
TYPE	HSA	SS*		DATE START	6/4/21
SIZE I.D.	4 ¼"	1 3/8"		DATE FINISH	6/7/21
HAMMER WT.		140#	BIT	SURFACE ELEV.	El. ±361
HAMMER FALL		30"		GROUND WATER ELEV.	

GROUND WATER OBSERVATIONS
AT none FT AFTER 0 HOURS
AT __ FT AFTER __ HOURS

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	Type	PEN	REC.	DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6	6 - 12	12- 18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		1	ss	24"	6"	2'0"	2	3			stiff		
							2	2			dry-moist		Brn/ltbrn silt, lit F sand
5													
		2	ss	24"	10"	7'0"	6	7			stiff		
							8	9			dry		Lt brn silt, some F sand & C gravel
												9'	Auger Refusal
10													EOB 9'
15													
20													
25													
30													
35													
40													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***Cat Head & Rope**

GROUND SURFACE TO ______ FT. USED ____________ CASING THEN ______ CASING TO ______ FT. **HOLE NO.** B-24

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50% F = FINE

SOILTESTING, INC.
90 DONOVAN RD.
OXFORD, CT 06478
CT (203) 262-9328
NY (914) 946-4850

CLIENT: Owen Mark Sanderson

SHEET 1 OF 1
HOLE NO. B-24A

PROJECT NO. G120-1822-21
PROJECT NAME Village in the Hudson Valley
LOCATION 3679 Route 9W Highland NY

BORING LOCATIONS Per Plan

FOREMAN - DRILLER MK/ao
INSPECTOR

OFFSET

	CASING	SAMPLER	CORE BAR
TYPE	HSA	SS*	NQ2
SIZE I.D.	4 ¼"	1 3/8"	2"
HAMMER WT.		140#	BIT
HAMMER FALL		30"	dia

DATE START 6/1/21
DATE FINISH 6/1/21
SURFACE ELEV. El. ±361
GROUND WATER ELEV.

GROUND WATER OBSERVATIONS
AT None FT AFTER 0 HOURS
AT __FT AFTER __HOURS

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	SAMPLE Type	SAMPLE PEN	SAMPLE REC	SAMPLE DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6	6 - 12	12- 18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
5													
10												10'6"	Brn F sand, trace silt, lit F-C gravel
		1	ss	24"	14"	12'0"	12	6			compact	11'6"	Brn F sand & silt
							6	12			dry-moist-dry		Brn F sand, lit silt, lit F-C gravel
												13'	Auger Refusal 13'
		1	c	60"	46"	18'0"	RQD=23%			3			(set 3" casing at 13 ft)
15							Rec=77%			3			
										2			Fractured Bedrock or Boulders
										3			
										3			
		2	c	60"	57"	23'0"	RQD=57%			3			
20							Rec=95%			3			(Advanced casing through fractured Bedrock or Boulders to 18')
										3			Bedrock (shale/limestone)
										3			
										3		23'	
													EOB 23'
25													
30													
35													
40													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***CME Auto Hammer**

GROUND SURFACE TO ________FT. USED ______________CASING THEN _______ CASING TO _______FT.

HOLE NO. B-24A

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50% F = FINE

SOILTESTING, INC. **90 DONOVAN RD.** **OXFORD, CT 06478** **CT (203) 262-9328** **NY (914) 946-4850**	CLIENT:	Owen Mark Sanderson	SHEET 1 OF 1 HOLE NO. B-25 & B-25A
	PROJECT NO.	G120-1822-21	
	PROJECT NAME	Village in the Hudson Valley	BORING LOCATIONS Per Plan
FOREMAN - DRILLER MK/ao	LOCATION	3679 Route 9W Highland NY	
INSPECTOR			OFFSET

	CASING	SAMPLER	CORE BAR		
TYPE	HSA	SS*	NQ2	DATE START	6/14/21
SIZE I.D.	4 ¼"	1 3/8"	2"	DATE FINISH	6/14/21
HAMMER WT.		140#	BIT	SURFACE ELEV.	El. ±339
HAMMER FALL		30"	dia	GROUND WATER ELEV.	

GROUND WATER OBSERVATIONS
AT _FT AFTER_0_HOURS
AT__FT AFTER__HOURS

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	Type	PEN	REC	DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6	6 - 12	12 - 18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		1	ss	24"	16"	2'0"	22	30			V dense		
							27	22			dry		Brn F sand, some F-C gravel, some silt
												3'6"	Auger Refusal
													Boulder EOB 3'6"
5	B-25A	(5' North of B-25)											
		2	ss	24"	20"	7'0"	8	10			dense		
							23	23			dry		Brn F sand, lit silt, lit F-C gravel
												8'	
													Fractured Bedrock
10												10'	Auger Refusal
		1	c	60"	57"	15'0"	RQD=53%			4			(Bedrock (shale/limestone)
							Rec=95%			3			
										3			
										4			
15										3			(3" casing advanced to 15')
		2	c	60"	60"	20'0"	RQD=70%			3			Bedrock (shale/limestone)
							Rec=100%			4			
										3			
										3			
20										3		20'	
													EOB 20'
25													
30													
35													
40													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***CME Auto Hammer**

GROUND SURFACE TO ________FT. USED ______________CASING THEN _______ CASING TO _______FT.

HOLE NO. B-25 & B-25A

B-25 & B-25A

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50% F = FINE

SOILTESTING, INC. 90 DONOVAN RD. OXFORD, CT 06478 CT (203) 262-9328 NY (914) 946-4850	CLIENT: Owen Mark Sanderson	SHEET 1 OF 1 HOLE NO. B-26
	PROJECT NO. G120-1822-21	
	PROJECT NAME Village in the Hudson Valley	BORING LOCATIONS Per Plan
FOREMAN - DRILLER MK/ed	LOCATION 3679 Route 9W Highland NY	
INSPECTOR		OFFSET

	CASING	SAMPLER	CORE BAR		
TYPE	HSA	SS*		DATE START	6/14/21
SIZE I.D.	4 ¼"	1 3/8"		DATE FINISH	6/14/21
HAMMER WT.		140#	BIT	SURFACE ELEV.	El. ±385
HAMMER FALL		30"		GROUND WATER ELEV.	

GROUND WATER OBSERVATIONS
AT None_FT AFTER_0_HOURS
AT__FT AFTER__HOURS

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	Type	PEN	REC	DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6	6 - 12	12 - 18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		1	ss	24"	12"	2'0"	6	9			compact		6" Top soil
							9	11			moist		Brn F sand, lit silt, lit F-C gravel
5													
		2	ss	24"	20"	7'0"	11	11			compact		
							14	17			moist		Brn F sand, some silt, some F-C gravel
											dense		
10		3	ss	7"	6"	10'7"	37	50/1"			moist		Same
15													
		4	ss	14"	6"	16'2"	34	52			dense		Gry F sand, some silt, lit F-C gravel, cobbles
							50/2"				moist-dry		
												18'	
20													
		5	ss	0"	0"	20'0"	50/0"				dense		No Recovery
													Possible partly weathered Bedrock
												24'	Auger Refusal
25													EOB 24'
30													
35													
40													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***CME Auto Hammer**

GROUND SURFACE TO ________FT. USED ________________CASING THEN _______ CASING TO _______FT. **HOLE NO.** B-26

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50% F = FINE

SOILTESTING, INC. 90 DONOVAN RD. OXFORD, CT 06478 CT (203) 262-9328 NY (914) 946-4850	CLIENT: Owen Mark Sanderson	SHEET 1 OF 2 HOLE NO. B-27
FOREMAN - DRILLER JK/pd	PROJECT NO. G120-1822-21 PROJECT NAME Village in the Hudson Valley LOCATION 3679 Route 9W Highland NY	BORING LOCATIONS Per Plan
INSPECTOR		OFFSET 10' North

	CASING	SAMPLER	CORE BAR
TYPE	HSA	SS*	NQR
SIZE I.D.	4 ¼"	1 3/8"	2"
HAMMER WT.		140#	BIT
HAMMER FALL		30"	dia

GROUND WATER OBSERVATIONS
AT none FT AFTER 0 HOURS
AT __ FT AFTER __ HOURS

DATE START 6/10/21
DATE FINISH 6/11/21
SURFACE ELEV. El. ±376
GROUND WATER ELEV.

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	Type	PEN	REC	DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6	6 - 12	12- 18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		1	ss	24"	8"	2'0"	2	3			stiff		
							5	7			dry		Brn silt, lit F sand, trace F gravel
5													
		2	ss	24"	16"	7'0"	7	8			V stiff		
							11	12			dry		Brn/ltbrn silt, lit F sand
10											hard		
		3	ss	6"	3"	10'6"	100/6"				moist		Ltbrn silt & F-C sand, trace gravel
													Cobbles 10'-14'
15													
		4	ss	19"	19"	16'7"	18	24			V stiff		Same, grey
							65	50/1"			dry		
20													
		5	ss	24"	18"	22'0"	16	8			V stiff		
							13	14			dry		Gry silt, trace sand
25											hard		Ltbrn silt, lit F sand, F gravel, cobbles
		6	ss	8"	6"	25'8"	29	100/2"			dry		
												28'	Auger Refusal
30		1	c	48"	36"	32'0"	RQD=21%			2			
										7			Boulder
										2		32'	
		7	ss	24"	18"	34'0"	28	32		2	hard		Ltbrn silt & F gravel
							65	69			moist		
35		8	ss	5"	5"	35'5"	100/54"				hard		Ltbrn silt & VF sand, lit F gravel
													Ltbrn silt, some F-C sand, F-C gravel, cobbles
												38'	
40		9	ss	4"	4"	40'4"	100/4"				V dense		partly decomposed Bedrock/shale fragments

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***Cat Head & Rope**

GROUND SURFACE TO ________FT. USED ______________CASING THEN _______ CASING TO _______FT. **HOLE NO.** B-27

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50% F = FINE

SOILTESTING, INC. 90 DONOVAN RD. OXFORD, CT 06478 CT (203) 262-9328 NY (914) 946-4850	CLIENT: Owen Mark Sanderson PROJECT NO. G120-1822-21 PROJECT NAME Village in the Hudson Valley	SHEET 2 OF 2 HOLE NO. B-27 BORING LOCATIONS Per Plan
FOREMAN - DRILLER JK/eq	LOCATION 3679 Route 9W Highland NY	
INSPECTOR		OFFSET

	CASING	SAMPLER	CORE BAR
TYPE	HSA	SS*	NQR
SIZE I.D.	4 ¼"	1 3/8"	2"
HAMMER WT.		140#	BIT
HAMMER FALL		30"	dia

GROUND WATER OBSERVATIONS
AT none FT AFTER 0 HOURS
AT __ FT AFTER __ HOURS

DATE START 6/10/21
DATE FINISH 6/11/21
SURFACE ELEV. El. ±376
GROUND WATER ELEV.

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	SAMPLE Type	SAMPLE PEN	SAMPLE REC.	SAMPLE DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6	6 - 12	12 - 18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
													Partly decomposed rock,
45		10	ss	2"	1"	45'1"	100/1"				V dense	45'2"	Bedrock fragments
													EOB 45'2"
50													
55													
60													
65													
70													
75													
80													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***Cat Head & Rope**

GROUND SURFACE TO _______FT. USED _____________CASING THEN _______ CASING TO _______FT. **HOLE NO.** B-27

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50% F = FINE

SOILTESTING, INC. 90 DONOVAN RD. OXFORD, CT 06478 CT (203) 262-9328 NY (914) 946-4850	CLIENT: Owen Mark Sanderson		SHEET 1 OF 1 HOLE NO. B-28
	PROJECT NO. G120-1822-21		
	PROJECT NAME Village in the Hudson Valley		BORING LOCATIONS Per Plan
FOREMAN - DRILLER MK/ao	LOCATION 3679 Route 9W Highland NY		
INSPECTOR			OFFSET

	CASING	SAMPLER	CORE BAR		
TYPE	HSA	SS*	NQ2	DATE START	6/16/21
SIZE I.D.	4 ¼"	1 3/8"	2"	DATE FINISH	6/16/21
HAMMER WT.		140#	BIT	SURFACE ELEV.	El. ±368
HAMMER FALL		30"	dia	GROUND WATER ELEV.	

GROUND WATER OBSERVATIONS
AT None_FT AFTER_0_HOURS
AT__FT AFTER__HOURS

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	Type	PEN	REC	DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0-6	6-12	12-18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		1	ss	24"	10"	2'0"	4	6			loose		4" Top soil
							7	11			moist		Brn F sand & silt, lit F gravel
5													
		2	ss	24"	20"	7'0"	8	11			compact		
							11	14			moist		Brn F sand, some silt, some F-C gravel
10													
		3	ss	24"	18"	12'0"	20	22			dense		Brn F Sand sm Silt lit F-C Grvl
							26	28			moist-dry		
15													
		4	ss	24"	16"	17'0"	27	26			Vdense		SAME, Cobble
							26	30			moist-dry		
20											v dense		
		5	ss	8"	6"	20'8"	26	50/2"			dry		Gry F Sand lit Silt, Cobble
												22'0"	AUGER REFUSAL
		1	c	60"	30"	27'0"	RQD=33%			3			Bedrock (shale/limestone) or Boulders
							Rec=50%			3			3" silt layers @ 23' & 23'6"
25										3			
										3			
										3			
		2	c	60"	30"	32'0"	RQD=0%			3			
							Rec=50%			2			Lit silt seams in recovery from 29-32'
30										3			
										3			
										3		32'0"	
													E.O.B 32'0"
35													
40													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***CME Auto Hammer**

GROUND SURFACE TO ________FT. USED ______________CASING THEN _______ CASING TO _______FT. **HOLE NO.** B-28

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50% F = FINE

SOILTESTING, INC.
90 DONOVAN RD.
OXFORD, CT 06478
CT (203) 262-9328
NY (914) 946-4850

CLIENT: **Owen Mark Sanderson**

SHEET 1 OF 1
HOLE NO. B-29

PROJECT NO. **G120-1822-21**
PROJECT NAME **Village in the Hudson Valley**

BORING LOCATIONS
Per Plan

FOREMAN - DRILLER
JK/eq

LOCATION **3679 Route 9W Highland NY**

INSPECTOR

OFFSET

	CASING	SAMPLER	CORE BAR
TYPE	HSA	SS*	
SIZE I.D.	4 ¼"	1 3/8"	
HAMMER WT.		140#	BIT
HAMMER FALL		30"	

DATE START 6/8/21
DATE FINISH 6/8/21
SURFACE ELEV. El. ±359
GROUND WATER ELEV.

GROUND WATER OBSERVATIONS
AT none FT AFTER 0 HOURS
AT __ FT AFTER __ HOURS

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	SAMPLE Type	SAMPLE PEN	SAMPLE REC	SAMPLE DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6	6 - 12	12 - 18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		1	ss	24"	7"	2'0"	3	4			stiff		
							5	6			dry		Brn silt, some F sand, lit F gravel
5													
		2	ss	24"	16"	7'0"	12	17			dense		
							18	22			dry		Brn/ltbrn F-M sand, lit silt, some F gravel
10													
		3	ss	24"	23"	12'0"	11	14			hard		
							17	20			dry		Ltbrn silt some F sand some F gravel
15													
		4	ss	24"	24"	17'0"	7	12			dense		
							16	23			dry		Top 20" ltbrn to gry F-M sand some silt, some F gravel
20											hard		
		5	ss	24"	24"	12"	22'0"	11	16		dry		Ltbrn silt & F gravel
								22	28			22'	Auger Refusal
		1	c	60"	46"	27'0"				2			
										2:30			
25										2:30			Boulder
										3		26'6"	
										3			
		2	c	12"	0"	28'0"				1			
		6	ss	24"	14"	30'0"	14	22					
30							28	29				30'	Ltbrn silt & F gravel
													EOB 30'
35													
40													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***Cat Head & Rope**

GROUND SURFACE TO ________FT. USED ______________CASING THEN _______ CASING TO _______FT.

HOLE NO. B-29

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50% F = FINE

SOILTESTING, INC.
90 DONOVAN RD.
OXFORD, CT 06478
CT (203) 262-9328
NY (914) 946-4850

CLIENT: Owen Mark Sanderson

SHEET 1 OF 1
HOLE NO. B-30

PROJECT NO. G120-1822-21
PROJECT NAME Village in the Hudson Valley

BORING LOCATIONS Per Plan

FOREMAN - DRILLER MK/ao

LOCATION 3679 Route 9W Highland NY

INSPECTOR

OFFSET

	CASING	SAMPLER	CORE BAR
TYPE	HSA	SS*	
SIZE I.D.	4 ¼"	1 3/8"	
HAMMER WT.		140#	BIT
HAMMER FALL		30"	

DATE START 6/15/21
DATE FINISH 6/15/21
SURFACE ELEV. El. ±353
GROUND WATER ELEV.

GROUND WATER OBSERVATIONS
AT None_FT AFTER_0_HOURS
AT__FT AFTER__HOURS

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	SAMPLE Type	SAMPLE PEN	SAMPLE REC	SAMPLE DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6	6 - 12	12 - 18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		1	ss	24"	14"	2'0"	4	7			compact		4" Top soil
							9	13			moist		Brn F sand, some silt, trace F gravel
5													
		2	ss	24"	20"	7'0"	9	14			compact		
							11	15			moist-dry		Brn F sand, some silt, some F-C gravel, F cobble
10													
		3	ss	24"	18"	12'0"	11	14			compact		
							12	12			moist-dry		Same
15													
		4	ss	24"	20"	17'0"	10	12			compact		
							12	26			dry		Brn F sand, lit silt, some F-C gravel, cobbles
20											dense		
		5	ss	14"	8"	21'2"	17	37			moist-wet	21'	Brn F sand some silt, some F-C gravel, cobbles
							50/2"						Shale fragments, possible partly weathered Bedrock
25													
		6	ss	2"	1"	25'2"	50/2"				dense		Same
													No recovery
30		7	ss	0"	0"	30'0"	50/0"				dense	30'	Auger Refusal
													EOB 30'
35													
40													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***CME Auto Hammer**

GROUND SURFACE TO ________FT. USED ____________CASING THEN _______ CASING TO _______FT.

HOLE NO. B-30

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50%

C = COARSE
M = MEDIUM
F = FINE

SOILTESTING, INC.
90 DONOVAN RD.
OXFORD, CT 06478
CT (203) 262-9328
NY (914) 946-4850

CLIENT: Owen Mark Sanderson

SHEET 1 OF 1
HOLE NO. B-31

PROJECT NO. G120-1822-21
PROJECT NAME Village in the Hudson Valley
LOCATION 3679 Route 9W Highland NY

BORING LOCATIONS Per Plan
OFFSET

FOREMAN - DRILLER PD/ak
INSPECTOR

	CASING	SAMPLER	CORE BAR
TYPE	HSA	SS*	
SIZE I.D.	4 ¼"	1 3/8"	
HAMMER WT.		140#	BIT
HAMMER FALL		30"	

DATE START 6/11/21
DATE FINISH 6/11/21
SURFACE ELEV. El. ±386
GROUND WATER ELEV.

GROUND WATER OBSERVATIONS
AT none FT AFTER 0 HOURS
AT __ FT AFTER __ HOURS

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	SAMPLE Type	SAMPLE PEN	SAMPLE REC.	SAMPLE DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6	6 - 12	12 - 18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		1	ss	24"	6"	2'0"	6	10			stiff	1'6"	Cobbles, C gravel, some dk brn silt
							4	4			dry/moist		Brn-ltbrn silt, F-M sand, F-C gravel, lit M cobbles
5													
		2	ss	24"	15"	7'0"	6	10			V stiff		
							15	16			moist		Ltbrn-brn silt, some F-M sand & F gravel, lit cobbles
10													
		3	ss	24"	18"	12'0"	5	5			stiff		
							6	9			V moist/wet		Ltbrn-brn silt & F-M sand, F-C gravel, lit cobbles
15											hard		Gry silt, F-C sand, F-C gravel, some cobbles, trace boulders
		4	ss	25"	3"	15'5"	100/5"				moist		
20													
		5	ss	24"	18"	22'0"	12	17			hard		Gry silt, some F-C sand, F-C gravel, some cobbles
							20	25			moist	22'	trace boulders
													EOB 22'
25													
30													
35													
40													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***Cat Head & Rope**

GROUND SURFACE TO ______ FT. USED ______ CASING THEN ______ CASING TO ______ FT. **HOLE NO.** B-31

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50%

C = COARSE
M = MEDIUM
F = FINE

SOILTESTING, INC.
90 DONOVAN RD.
OXFORD, CT 06478
CT (203) 262-9328
NY (914) 946-4850

CLIENT: Owen Mark Sanderson

SHEET 1 OF 1
HOLE NO. B-32

PROJECT NO. G120-1822-21
PROJECT NAME Village in the Hudson Valley

BORING LOCATIONS Per Plan

FOREMAN - DRILLER PD/ak

LOCATION 3679 Route 9W Highland NY

INSPECTOR

OFFSET

	CASING	SAMPLER	CORE BAR
TYPE	HSA	SS*	
SIZE I.D.	4 ¼"	1 3/8"	
HAMMER WT.		140#	BIT
HAMMER FALL		30"	

DATE START 6/11/21
DATE FINISH 6/11/21
SURFACE ELEV. El. ±392
GROUND WATER ELEV. El. ±379

GROUND WATER OBSERVATIONS
AT 13 FT AFTER 0 HOURS
AT None FT on 6/17/21

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	Type	PEN	REC	DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6 6 - 12 12- 18			CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		1	ss	24"	20"	2'0"	2	3			stiff		
							3	3			moist	2'	Dkbrn to brn silt, lit F sand, F gravel, cobbles
5													
		2	ss	24"	15"	7'0"	6	8			V stiff		
							13	19			moist		Brn silt & F-M sand, some F-C gravel, lt cobbles
10													
		3	ss	24"	20"	12'0"	5	5			stiff		
							4	8			V moist-wet		Brn/ltbrn silt some F-C sand some F-C gravel lit gravel
15													
		4	ss	24"	20"	17'0"	20	19			hard		
							20	26			moist		Gry ltbrn silt, some F-C sand, F-C gravel, lit cobbles
20													
		5	ss	27"	18"	22'0"	18	49			hard		
							81	62			moist		Gry silt, F-C sand, F-C gravel, lit cobbles
													EOB 22'
25													
30													Installed 1" SCH 40 PVC Observation Well; with 10' screen length to 20' depth & 3' above grade.
35													
40													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***Cat Head & Rope**

GROUND SURFACE TO ______ FT. USED ______ CASING THEN ______ CASING TO ______ FT.

HOLE NO. B-32

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50% F = FINE

SOILTESTING, INC.
90 DONOVAN RD.
OXFORD, CT 06478
CT (203) 262-9328
NY (914) 946-4850

CLIENT: Owen Mark Sanderson

PROJECT NO. G120-1822-21

PROJECT NAME Village in the Hudson Valley

LOCATION 3679 Route 9W Highland NY

SHEET 1 OF 1

HOLE NO. B-33

BORING LOCATIONS Per Plan

OFFSET

FOREMAN - DRILLER AO/er

INSPECTOR

GROUND WATER OBSERVATIONS
AT none FT AFTER 0 HOURS
AT __FT AFTER __HOURS

	CASING	SAMPLER	CORE BAR
TYPE	HSA	SS*	
SIZE I.D.	4 ¼"	1 3/8"	
HAMMER WT.		140#	BIT
HAMMER FALL		30"	

DATE START 6/8/21
DATE FINISH 6/8/21
SURFACE ELEV. El. ±346
GROUND WATER ELEV.

DEPTH	CASING BLOWS PER FOOT	SAMPLE NO	Type	PEN	REC	DEPTH @ BOT	BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6	6 - 12	12 - 18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST / MOIST	STRATA CHANGE DEPTH / ELEV	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		1	ss	24"	14"	2'0"	4	8			v loose		5" Topsoil
							11	12			dry		Brn FMC sand F-C gravel trace silt
5													
		2	ss	24"	22"	7'0"	8	9			loose		Brn F-M sand & F-C gravel trace cobble, silt
							12	12			dry		
10													
		3	ss	24"	5"	12'0"	10	10			loose		Same
							12	14			dry		
15		4	ss	1"	0"	15'1"	50/1"				dry		No Recovery
												16'0"	AUGER REFUSAL 16'0"
													E.O.B 16'0"
20													
25													
30													
35													
40													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

***CME Auto Hammer**

GROUND SURFACE TO ______FT. USED __________CASING THEN _______ CASING TO _______FT. **HOLE NO.** B-33

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND =35 - 50% F = FINE

Data Summary Tables

The Village in the Hudson Valley
Highland, NY

BORING DATA

	Ground	Topsoil	Possible Weathered Rock		Auger Refusal		GWT		
Boring	Elev., ft.	Depth, in.	Depth, ft.	Elev., ft.	Depth, ft.	Elev., ft.	Depth, ft.	Elev., ft.	Notes
B-1	368	6	21	347	23	345	-		Fractured bedrock or boulders below 21 ft.
B-2	346				5	341	-		
B-2A	346				10	336	-		Fractured bedrock or boulders at 10-16.5 ft.
B-3*	342	5					**18.5**	**323.5**	Boulders below 15 ft.; 50/1 at 20 ft.
B-4	340	6			18.4	321.6	-		Boulders at 7-10 ft.; boulders or fract'd bedrock at 11.5 ft.
B-5	(not drilled)								
B-6	384	4					-		Cobbles/boulders at 3-6 ft., 8-9 ft.
B-7	391	6					-		Boulders at 12-15 ft.
B-8	379	6					-		
B-9	369				22	347	-		Boulder at 18-20.8 ft.
B-10	361	8			8.5	352.5	-		
B-11	355	7			4	351	-		
B-11A	355		5	350	9	346	-		Boulders or fractured bedrock at 5-9 ft.
B-12	348	3			3.5	344.5	-		
B-12A	348				8	340	-		Boulders at 5 ft.
B-13*	337	6					**12.6**	**324.4**	
B-14	387	24			18.5	368.5	-		
B-15	366	3			6	360	-		
B-15A	366				13	353	-		
B-16	360	3			16	344	-		
B-16A	360				17	343	-		
B-17*	384						**7.8**	**376.3**	
B-18	372				14	358	-		
B-19	362				17.3	344.7	-		
B-20	354	6			4	350	-		
B-20A	354				4	350	-		
B-20B	354				4	350	-		
B-20C	354				4	350	-		
B-20D	354				4	350	-		

The Village in the Hudson Valley
Highland, NY

BORING DATA

Boring	Ground Elev., ft.	Topsoil Depth, in.	Possible Weathered Rock Depth, ft.	Possible Weathered Rock Elev., ft.	Auger Refusal Depth, ft.	Auger Refusal Elev., ft.	GWT Depth, ft.	GWT Elev., ft.	Notes
B-21	338	4			3.5	334.5	-		
B-21A	338				3	335	-		
B-21B	338				3.5	334.5	-		
B-21C	338				4.5	333.5	-		
B-22	388	3			14	374	-		
B-23	370		18	352	21	349	8	362	Boulders at 15-21 ft.
B-24	361				9	352	-		
B-24A	361		13	348	18	343	-		Possible boulders to 18 ft.
B-25	339						-		Boulder at 3.5 ft.
B-25A	339		8	331	10	329	-		
B-26	385	6	18	367	24	361	-		
B-27	376		38	338			-		Boulder at 28 ft.
B-28	368	4	20.7	347.3	22	346	-		
B-29	359						-		Boulder at 22 ft.
B-30	353	4	21	332	30	323	-		
B-31	386						-		Boulders at 22 ft.
B-32*	392						**Dry**		GW at 8 ft. during drilling, drained away w/in 6 days
B-33	346	5			16	330	-		

Notes:
* - temporary GW observation well installed
\- - not encountered
GWT readings in bold indicate readings from a GW well

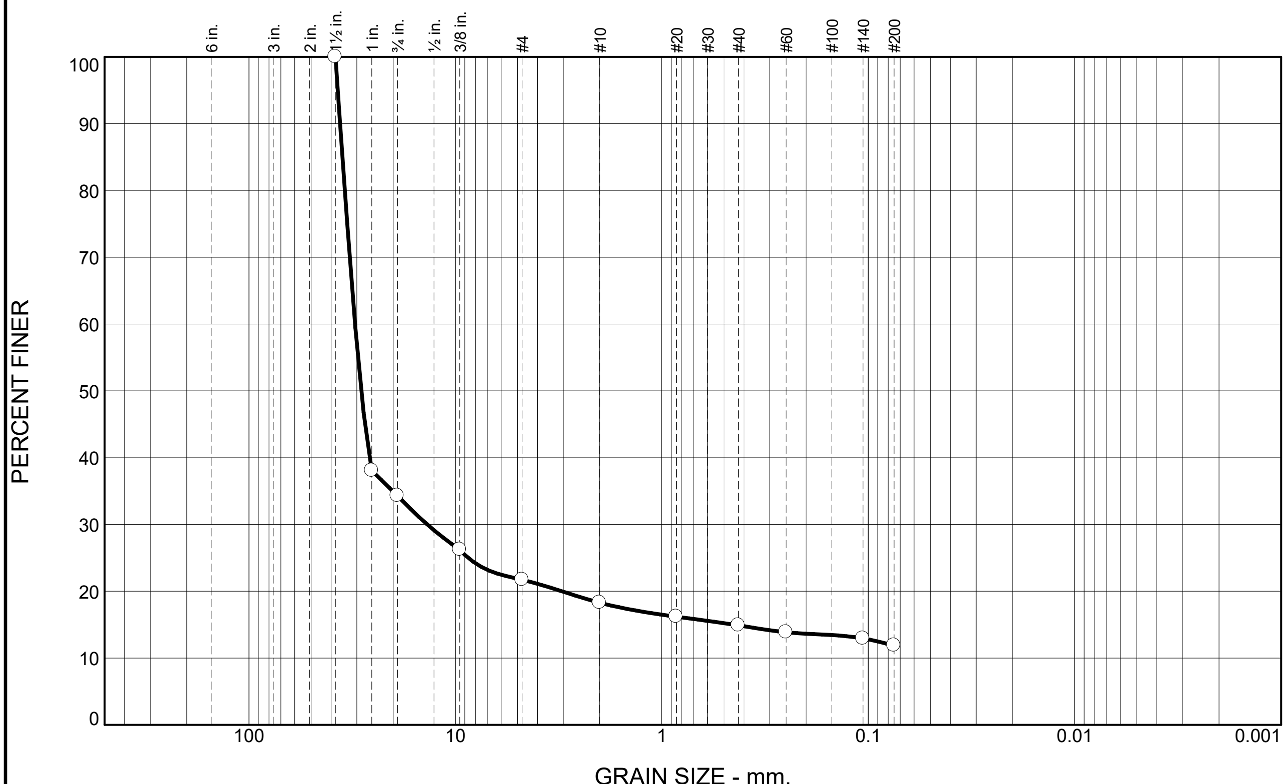
The Village in the Hudson Valley
Highland, NY

ROCK CORE DATA

Boring	Ground Elev., ft.	Core	Depths, ft.	Elevations, ft.	Recovery	RQD	Top of Poss. Bedrock Elev., ft.	Note
B-2A	346	1	10.0 - 15.0	336.0 - 331.0	80%	45%	336.00	Shale/limestone
B-2A	346	2	15.0 - 16.5	331.0 - 329.5	33%	0%		
B-9	369	1	22.0 - 27.0	347.0 - 342.0	57%	17%	347.00	Shale/limestone
B-9	369	2	27.0 - 30.0	342.0 - 339.0	56%	25%		
B-11A	355	1	5.0 - 9.0	350.0 - 346.0	71%	0%		Boulders or highly weathered bedrock; Shale/limestone
B-11A	355	2	9.0 - 14.0	346.0 - 341.0	92%	58%	346.00	
B-11A	355	3	14.0 - 19.0	341.0 - 336.0	80%	45%		
B-16A	360	1	17.0 - 22.0	343.0 - 338.0	92%	60%	343.00	Shale/limestone
B-16A	360	2	22.0 - 27.0	338.0 - 333.0	77%	45%	338.00	
B-19	362	1	17.3 - 22.3	344.7 - 339.7	90%	62%	344.70	
B-24A	361	1	13.0 - 18.0	348.0 - 343.0	77%	23%	348.00	Fracture bedrock or boulders
B-24A	361	2	18.0 - 23.0	343.0 - 338.0	95%	57%	343.00	Shale/limestone
B-25A	339	1	10.0 - 15.0	329.0 - 324.0	95%	53%	329.00	Shale/limestone
B-25A	339	2	15.0 - 20.0	324.0 - 319.0	100%	70%	324.00	Shale/limestone
B-28	368	1	22.0 - 27.0	346.0 - 341.0	50%	33%	346.00	Poss. boulders; silt seams at 23-23.5 ft.; Shale/limestone
B-28	368	2	27.0 - 32.0	341.0 - 336.0	50%	0%	341.00	Silt seams from 29-32 ft.

Laboratory Test Results

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	65.7	12.6	3.4	3.4	3.0	11.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5	100.0		
1	38.1		
.75	34.3		
.375	26.2		
#4	21.7		
#10	18.3		
#20	16.2		
#40	14.9		
#60	13.9		
#140	12.9		
#200	11.9		

* (no specification provided)

Material Description

Gray poorly graded gravel with silt

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 36.1889 D_{85}= 35.2574 D_{60}= 30.6075
D_{50}= 28.5700 D_{30}= 13.6741 D_{15}= 0.4462
D_{10}= C_u= C_c=

Classification

USCS= GP-GM AASHTO=

Remarks

USCS based on dilatancy & plasticity per ASTM D2488

Source of Sample: B-10 **Depth:** 5-7 ft.
Sample Number: S-2

Date: 6-24-2021

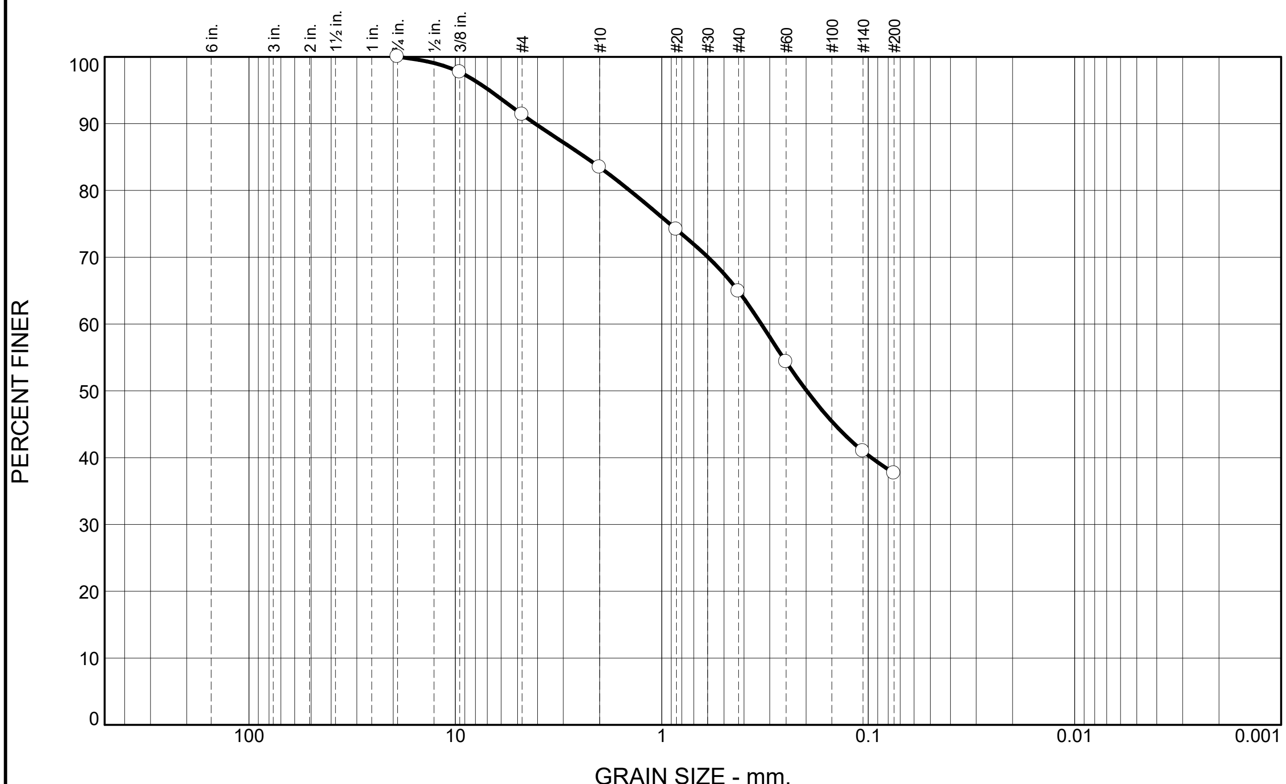
SKYLANDS TESTING, LLC

Sparta, NJ

Client: Soiltesting, Inc.
Project: Village in the Hudson Valley
Highland, NY
Project No: G120-1822-21 **Figure**

Tested By: SV **Checked By:** VRS

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	8.6	7.9	18.6	27.2	37.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
.375	97.7		
#4	91.4		
#10	83.5		
#20	74.2		
#40	64.9		
#60	54.3		
#140	41.0		
#200	37.7		

* (no specification provided)

Material Description

Brown silty sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 4.1062 D_{85}= 2.3504 D_{60}= 0.3295
D_{50}= 0.1987 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

USCS based on dilatancy & plasticity per ASTM D2488

Source of Sample: B-15 **Depth:** 20-22 ft.
Sample Number: S-5 **Date:** 6-24-2021

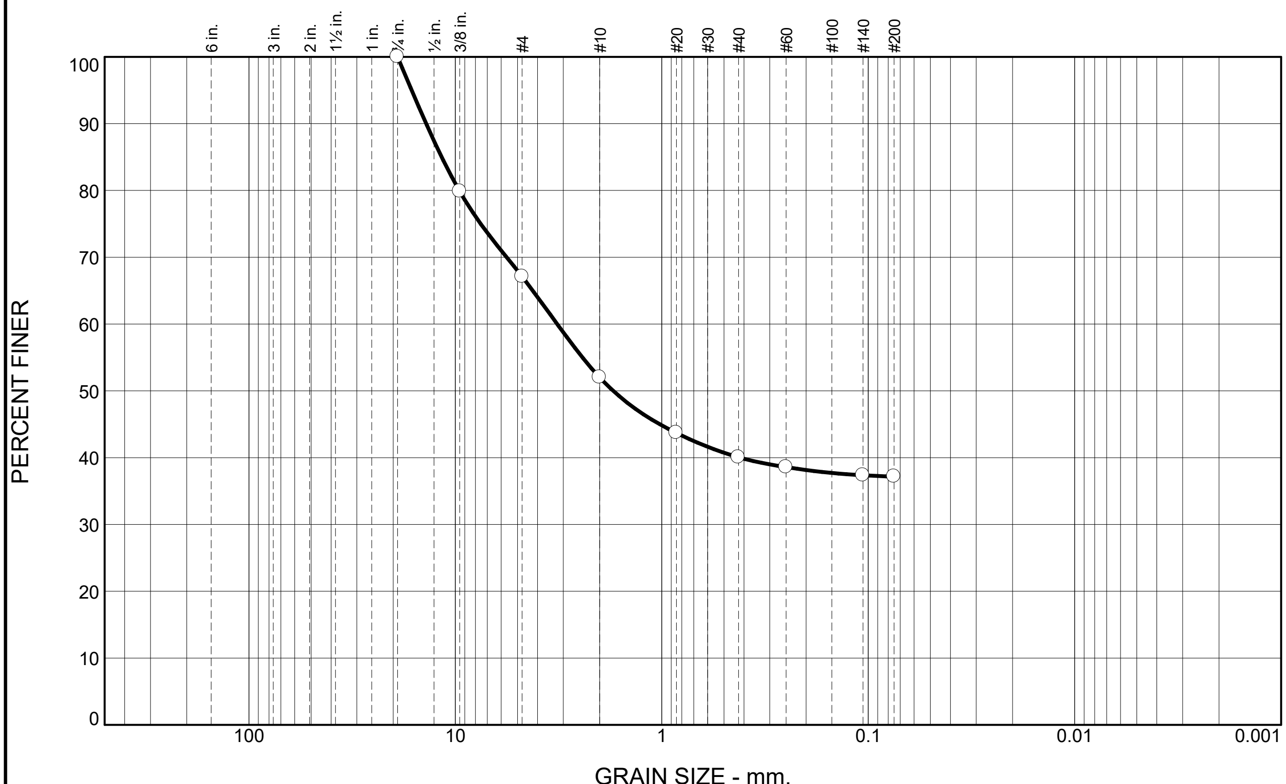
SKYLANDS TESTING, LLC

Sparta, NJ

Client: Soiltesting, Inc.
Project: Village in the Hudson Valley
Highland, NY
Project No: G120-1822-21 **Figure**

Tested By: SV **Checked By:** VRS

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	32.9	15.1	11.9	2.9	37.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
.375	79.9		
#4	67.1		
#10	52.0		
#20	43.7		
#40	40.1		
#60	38.6		
#140	37.4		
#200	37.2		

* (no specification provided)

Material Description

Brown silty gravel with sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 13.8477 D_{85}= 11.6506 D_{60}= 3.2118
D_{50}= 1.7195 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= GM AASHTO=

Remarks

USCS based on dilatancy & plasticity per ASTM D2488

Source of Sample: B-16 **Depth:** 5-7 ft.
Sample Number: S-2

Date: 6-24-2021

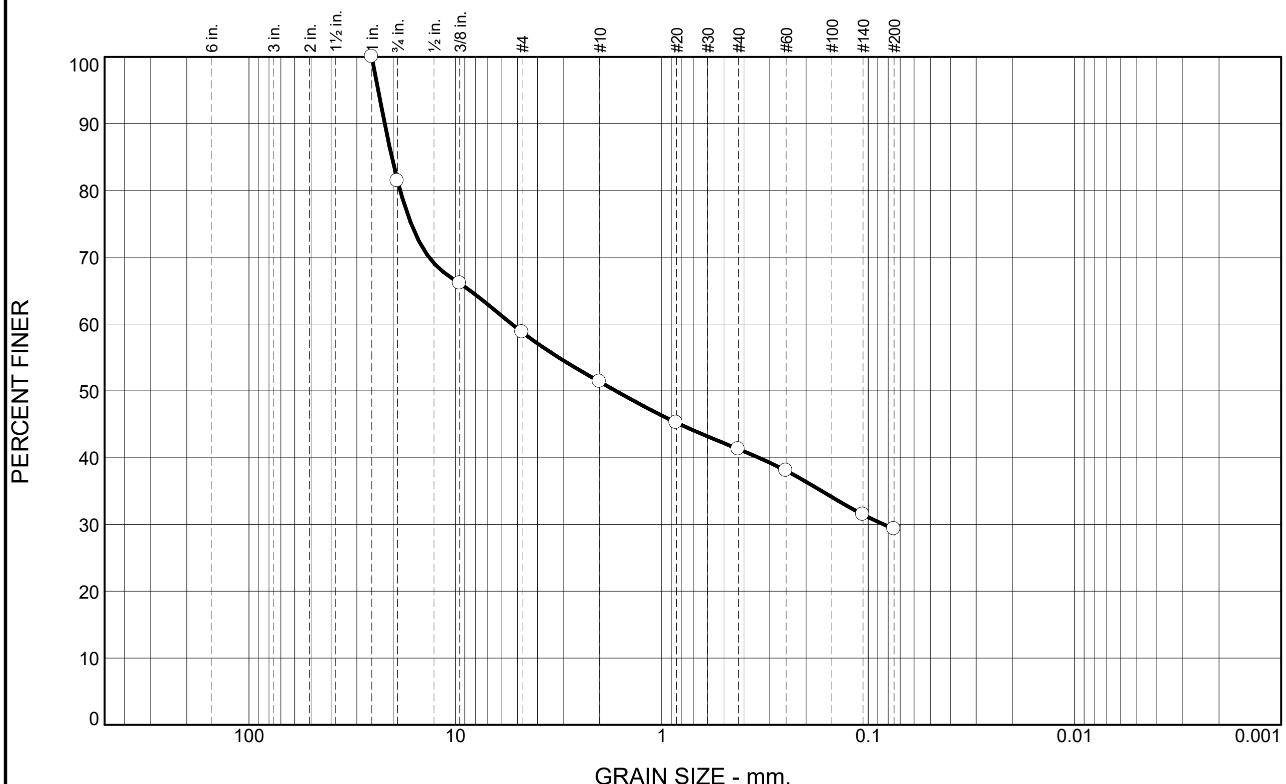
SKYLANDS TESTING, LLC

Sparta, NJ

Client: Soiltesting, Inc.
Project: Village in the Hudson Valley
Highland, NY
Project No: G120-1822-21 **Figure**

Tested By: SV **Checked By:** VRS

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	18.6	22.6	7.4	10.1	12.0	29.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	81.4		
.375	66.1		
#4	58.8		
#10	51.4		
#20	45.2		
#40	41.3		
#60	38.0		
#140	31.5		
#200	29.3		

* (no specification provided)

Material Description

Brown and gray silty gravel with sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 21.9874 D_{85}= 20.3088 D_{60}= 5.3279
D_{50}= 1.6705 D_{30}= 0.0841 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= GM AASHTO=

Remarks

USCS based on dilatancy & plasticity per ASTM D2488

Source of Sample: B-16 **Depth:** 10-12 ft.
Sample Number: S-3

Date: 6-24-2021

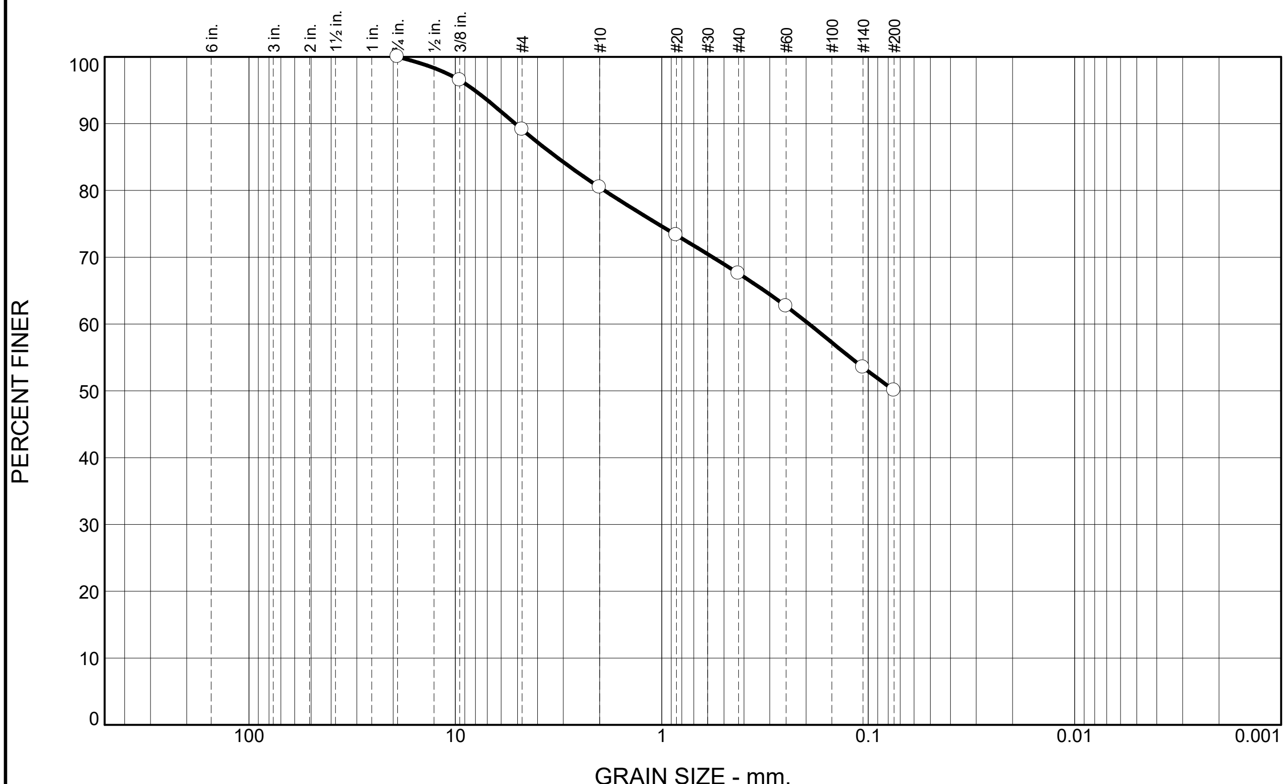
SKYLANDS TESTING, LLC

Sparta, NJ

Client: Soiltesting, Inc.
Project: Village in the Hudson Valley
Highland, NY
Project No: G120-1822-21 **Figure**

Tested By: SV **Checked By:** VRS

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	10.9	8.6	12.9	17.5	50.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
.375	96.5		
#4	89.1		
#10	80.5		
#20	73.3		
#40	67.6		
#60	62.7		
#140	53.5		
#200	50.1		

* (no specification provided)

Material Description

Brown sandy silt

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 5.1360 D_{85}= 3.2316 D_{60}= 0.1935
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= ML AASHTO=

Remarks

USCS based on dilatancy & plasticity per ASTM D2488

Source of Sample: B-18 **Depth:** 5-7 ft.
Sample Number: S-2

Date: 6-24-2021

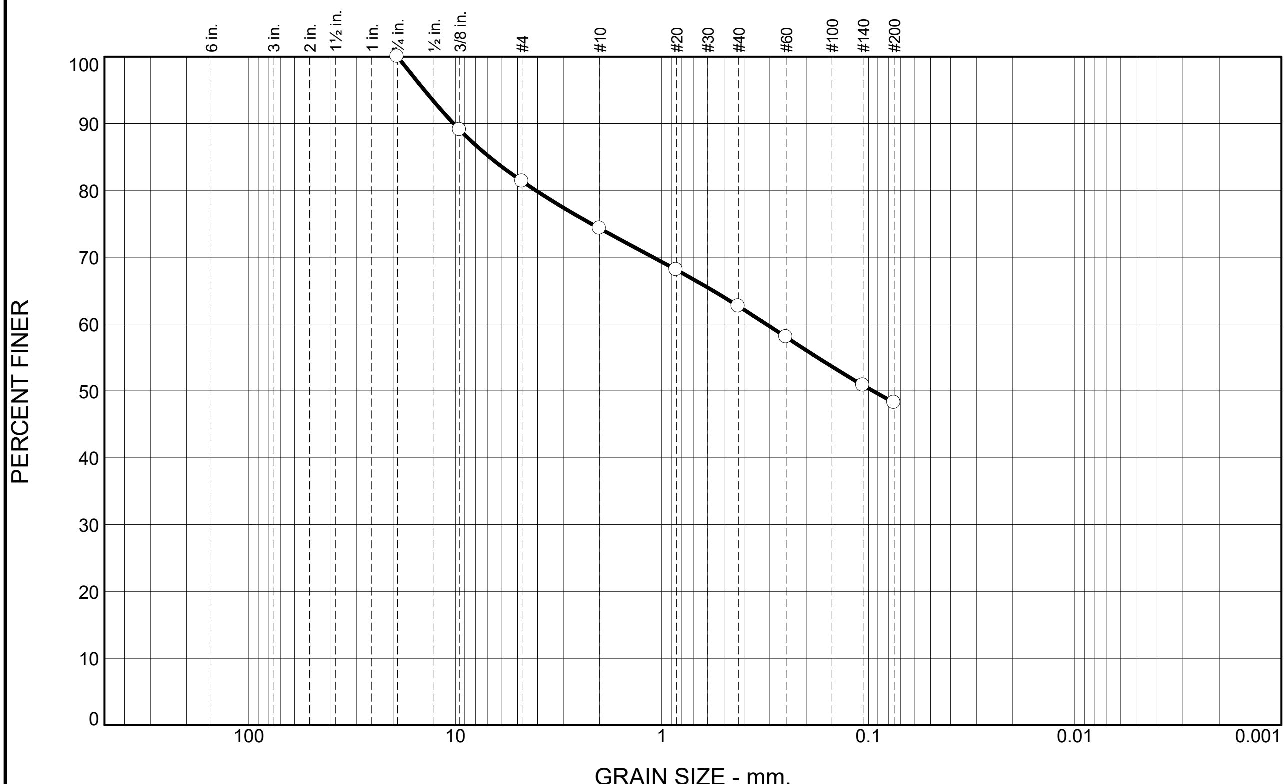
SKYLANDS TESTING, LLC

Sparta, NJ

Client: Soiltesting, Inc.
Project: Village in the Hudson Valley
Highland, NY
Project No: G120-1822-21 **Figure**

Tested By: SV **Checked By:** VRS

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	18.6	7.1	11.6	14.5	48.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
.375	89.0		
#4	81.4		
#10	74.3		
#20	68.1		
#40	62.7		
#60	58.0		
#140	50.8		
#200	48.2		

* (no specification provided)

Material Description

Brown and gray silty sand with gravel

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 10.2006 D_{85}= 6.8378 D_{60}= 0.3126
D_{50}= 0.0951 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

USCS based on dilatancy & plasticity per ASTM D2488

Source of Sample: B-18 **Depth:** 10-12 ft.
Sample Number: S-3 **Date:** 6-24-2021

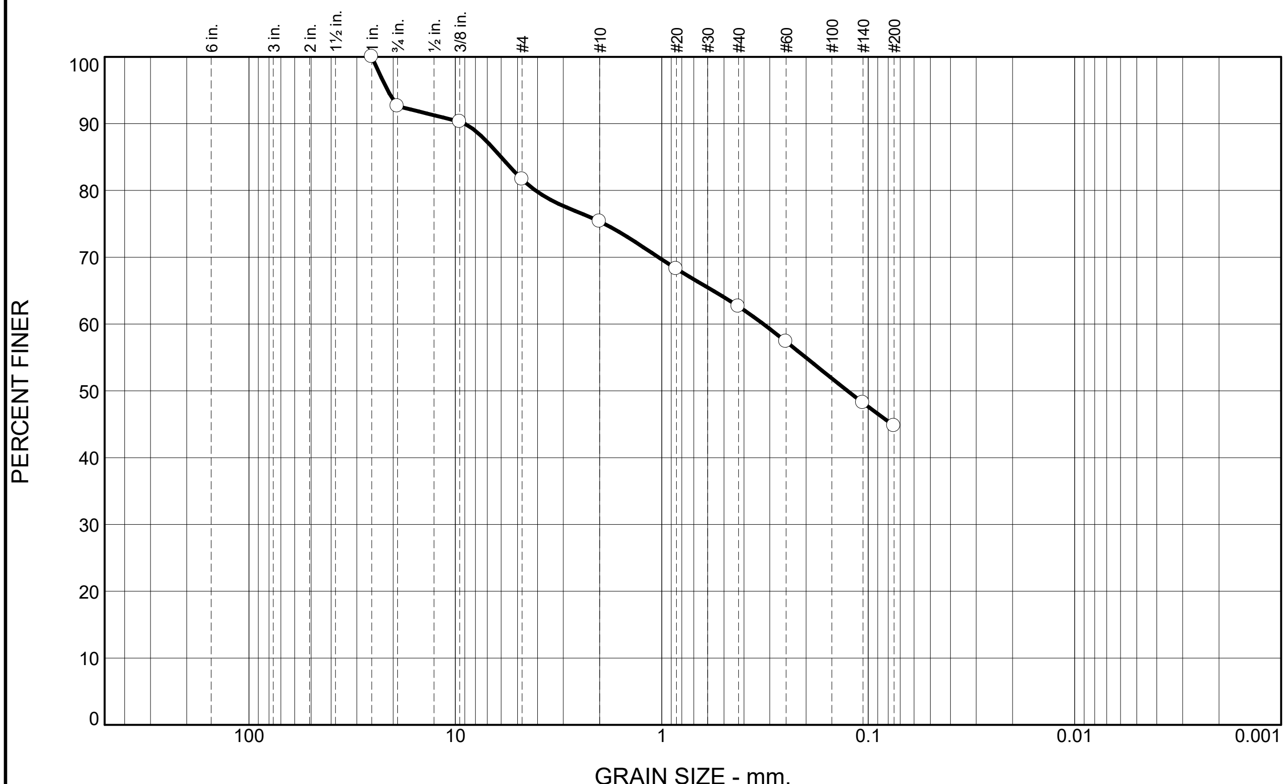
SKYLANDS TESTING, LLC

Sparta, NJ

Client: Soiltesting, Inc.
Project: Village in the Hudson Valley
Highland, NY
Project No: G120-1822-21 **Figure**

Tested By: SV **Checked By:** VRS

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	7.4	10.9	6.3	12.8	17.8	44.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	92.6		
.375	90.3		
#4	81.7		
#10	75.4		
#20	68.3		
#40	62.6		
#60	57.4		
#140	48.2		
#200	44.8		

* (no specification provided)

Material Description

Brown silty sand with gravel

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 9.0197 D_{85}= 6.0010 D_{60}= 0.3221
D_{50}= 0.1260 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

USCS based on dilatancy & plasticity per ASTM D2488

Source of Sample: B-27 **Depth:** 5-7 ft.
Sample Number: S-2 **Date:** 6-24-2021

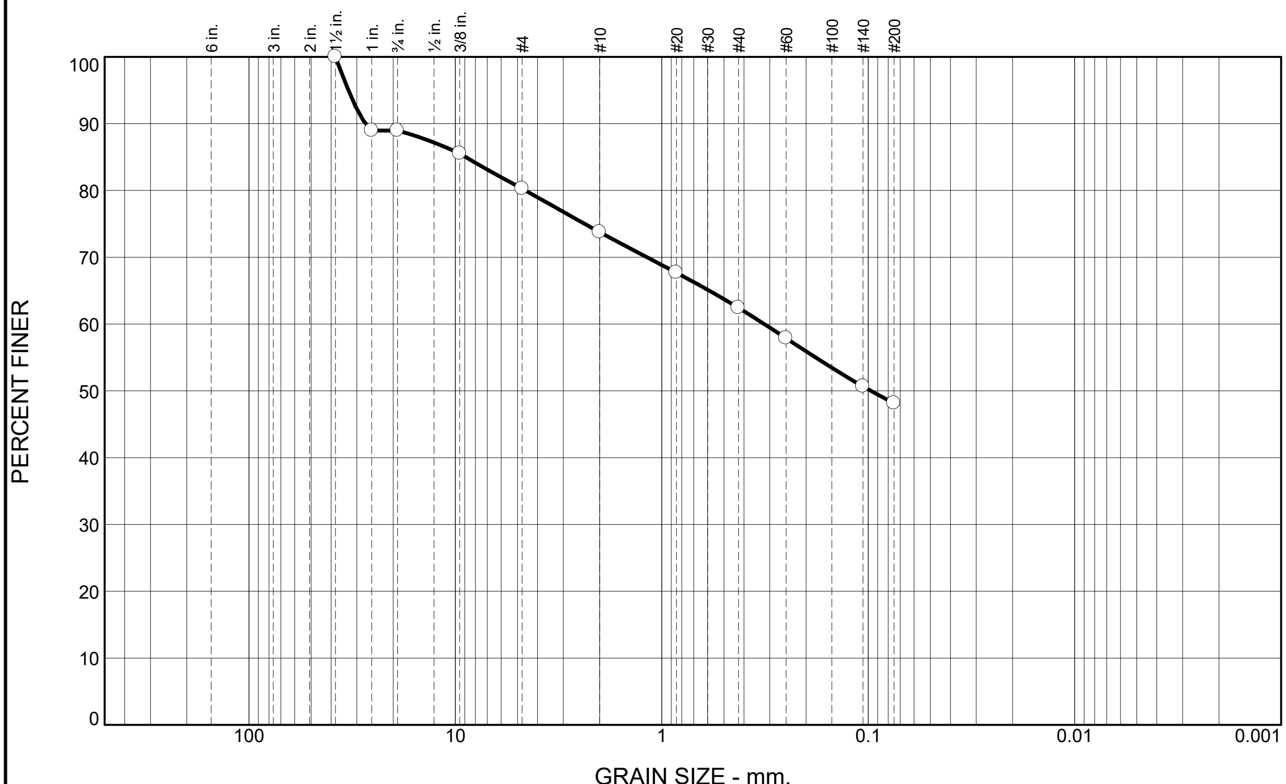
SKYLANDS TESTING, LLC

Sparta, NJ

Client: Soiltesting, Inc.
Project: Village in the Hudson Valley
Highland, NY
Project No: G120-1822-21 **Figure**

Tested By: SV **Checked By:** VRS

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	11.0	8.7	6.5	11.4	14.3	48.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5	100.0		
1	89.0		
.75	89.0		
.375	85.5		
#4	80.3		
#10	73.8		
#20	67.7		
#40	62.4		
#60	57.9		
#140	50.7		
#200	48.1		

* (no specification provided)

Material Description

Gray silty sand with gravel

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 27.2797 D_{85}= 8.9123 D_{60}= 0.3189
D_{50}= 0.0970 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

USCS based on dilatancy & plasticity per ASTM D2488

Source of Sample: B-27 **Depth:** 15-16 ft.
Sample Number: S-4

Date: 6-24-2021

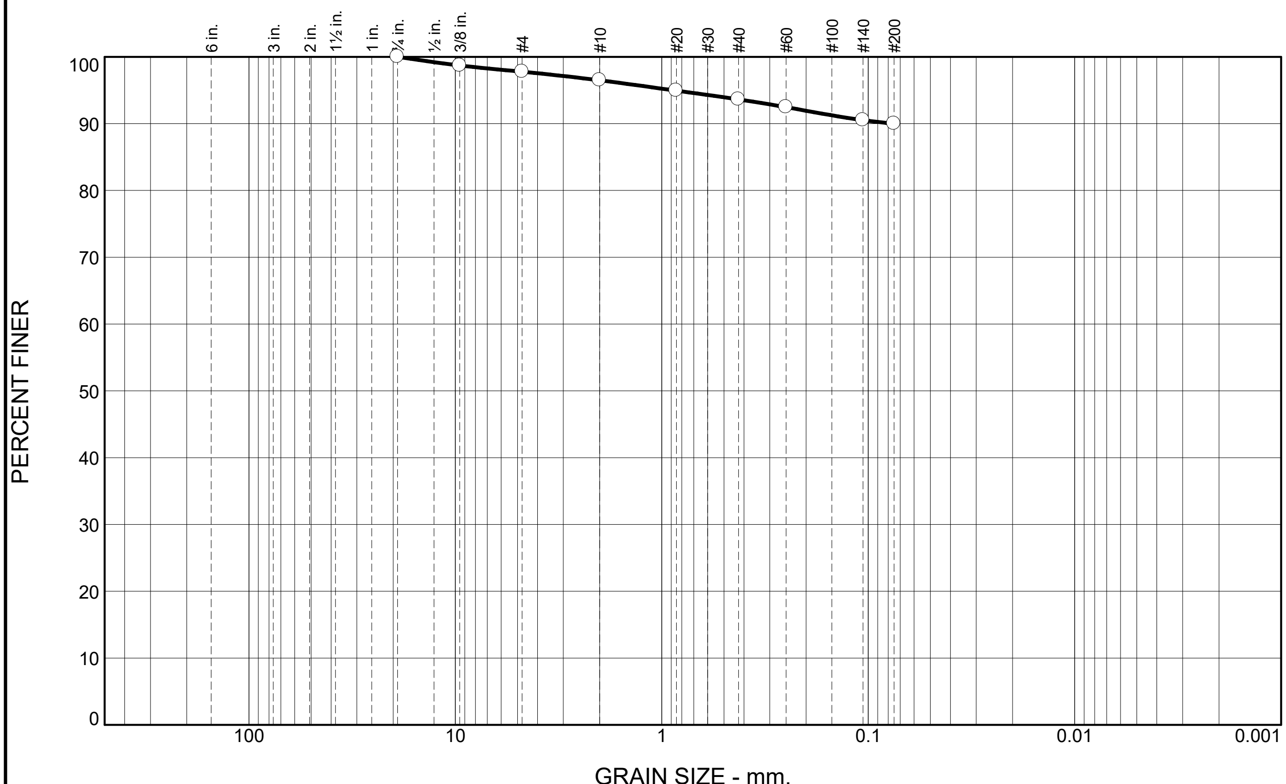
SKYLANDS TESTING, LLC

Sparta, NJ

Client: Soiltesting, Inc.
Project: Village in the Hudson Valley
Highland, NY
Project No: G120-1822-21 **Figure**

Tested By: SV **Checked By:** VRS

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	2.2	1.3	2.9	3.6	90.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
.375	98.7		
#4	97.8		
#10	96.5		
#20	94.9		
#40	93.6		
#60	92.5		
#140	90.5		
#200	90.0		

* (no specification provided)

Material Description

Gray silt

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.0751 D_{85}= D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= ML AASHTO=

Remarks

USCS based on dilatancy & plasticity per ASTM D2488

Source of Sample: B-27 **Depth:** 20-22 ft.
Sample Number: S-5 **Date:** 6-24-2021

SKYLANDS TESTING, LLC

Sparta, NJ

Client: Soiltesting, Inc.
Project: Village in the Hudson Valley
Highland, NY
Project No: G120-1822-21 **Figure**

Tested By: SV **Checked By:** VRS

Rock Core Photos

Photo 1 – B-25A C-1 (top row), B-25A C-2 (2nd row), B-2A C-1 (3rd row), B-28 C-1 (4th row)

Photo 2 – B-16A C-1 (top row), B-16A C-2 (2nd row), B-9 C-1 (3rd row)

Photo 3 – B-9 C-2 (top row), B-9 C-3 (2nd row), B-27 C-1 (3rd row)

Photo 4 – B-11 C-1 (top row), B-11 C-2 (2nd row), B-11 C-3 (3rd row)

Photo 5 – B-19 C-1 (top row), B-29 C-1 (2nd row)

Photo 6 – B-24 C-1 (top row), B-24 C-2 (2nd row)

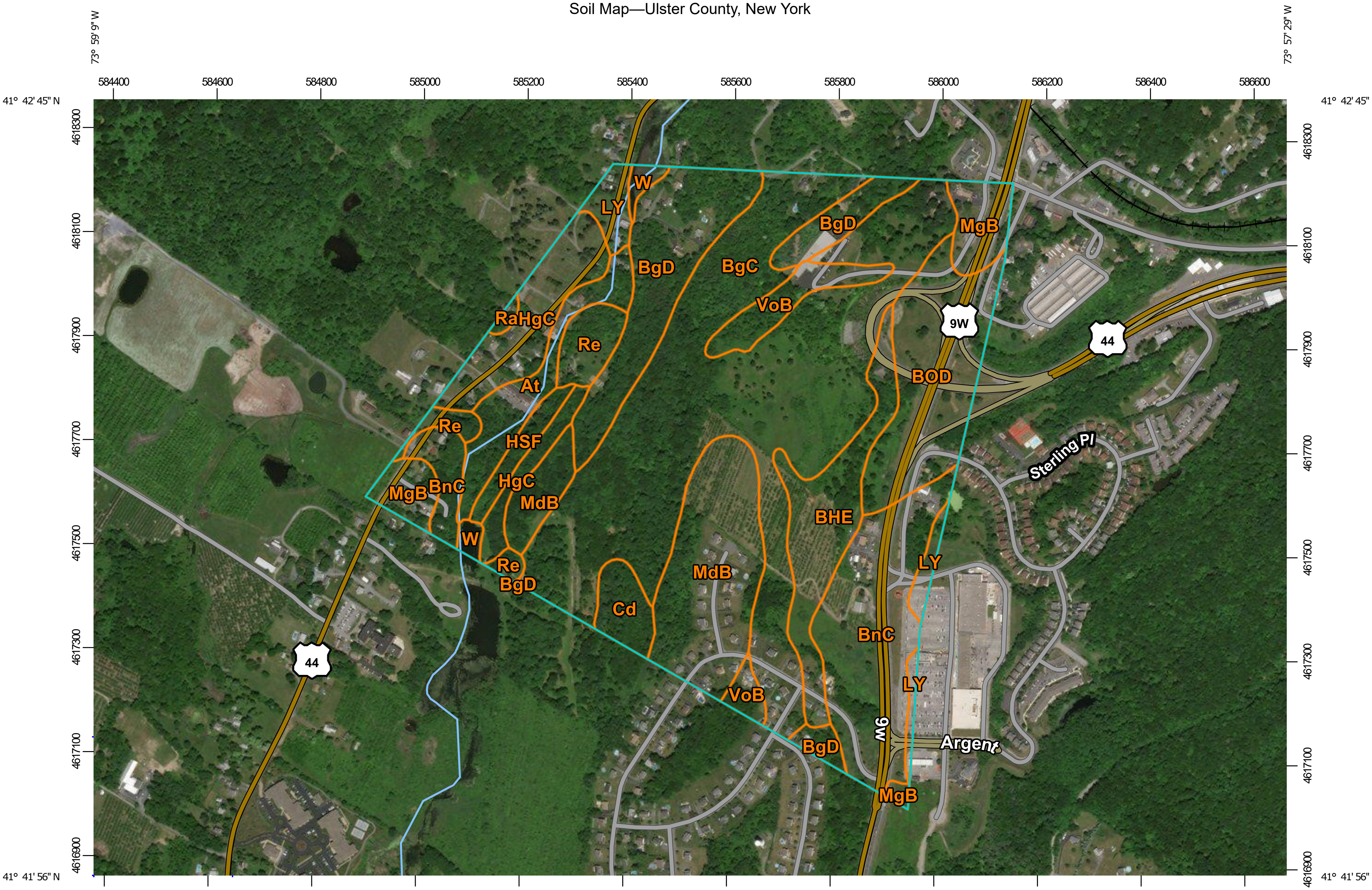
APPENDIX E

Soils Map

Map Pocket: Pre- & Post-Development Drainage Area Maps

Pre & Post Development Routing Diagrams

Soil Map—Ulster County, New York



Map Scale: 1:10,500 if printed on A landscape (11" x 8.5") sheet.

Meters: 0, 150, 300, 600, 900

Feet: 0, 500, 1000, 2000, 3000

N

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

MAP LEGEND

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

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- 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

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

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

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

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

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

Soil Survey Area: Ulster County, New York
Survey Area Data: Version 19, Jun 11, 2020

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

Date(s) aerial images were photographed: Oct 7, 2013—Feb 26, 2017

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

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
At	Atherton silt loam	8.1	3.5%
BgC	Bath gravelly silt loam, 8 to 15 percent slopes	74.5	32.2%
BgD	Bath gravelly silt loam, 15 to 25 percent slopes	21.6	9.3%
BHE	Bath very stony soils, steep	13.3	5.8%
BnC	Bath-Nassau complex, 8 to 25 percent slopes	25.3	11.0%
BOD	Bath-Nassau-Rock outcrop complex, hilly	19.0	8.2%
Cd	Canandaigua silt loam, till substratum	3.7	1.6%
HgC	Hoosic gravelly loam, rolling	13.1	5.7%
HSF	Hoosic soils, very steep	2.6	1.1%
LY	Lyons-Atherton complex, very stony	4.7	2.0%
MdB	Mardin gravelly silt loam, 3 to 8 percent slopes	23.0	10.0%
MgB	Mardin-Nassau complex, 3 to 8 percent slopes	8.0	3.4%
Ra	Raynham silt loam	0.5	0.2%
Re	Red Hook gravelly silt loam	5.8	2.5%
VoB	Volusia gravelly silt loam, 3 to 8 percent slopes	6.3	2.7%
W	Water	1.6	0.7%
Totals for Area of Interest		**231.1**	**100.0%**

GRAPHIC SCALE
60 30 0 60
SCALE IN FEET

LRC GROUP

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160 West Street, Suite E, Cromwell, CT 06416, Tel: 860.635.2877 ● 85 Civic Center Plaza, Suite 103, Poughkeepsie NY 12601, Tel: 845.243.2880 ● 1 International Blvd, Suite 400, Mahwah, NJ 07495, Tel: 908.603.5730

LRC Engineering & Surveying, DPC, LRC Engineering & Surveying, LLC, LRC Environmental Services, Inc.

REV	DATE	DESCRIPTIONS
1.	2021-07-06	REVISED PER PB RESUBMISSION
2.	2021-08-10	REVISED PER COMMENTS

DRAINAGE AREA MAP (PRE-CONDITIONS)

PLANNED RESIDENTIAL RETIREMENT DEVELOPMENT
THE VILLAGES IN THE HUDSON VALLEY

NYS ROUTE 9W
TOWN OF LLOYD, ULSTER COUNTY, NEW YORK

DRAWN BY	CHECKED BY
LRC	KFC
DATE	SCALE
05/26/21	1"=60'
PROJECT NO.	
21-2747	
SHEET NO.	
DA-1	

LEGEND

— 123 —	EXISTING CONTOUR LINE
———	EXISTING DRAINAGE LINE
— · —	SOIL BOUNDARY LINE
A —>— B	EXISTING TIME OF CONCENTRATION LINE
	TEST PIT LOCATION
MgB	SOIL TYPE DESIGNATION
1 XX,XXX SF X.XX AC.	DRAINAGE AREA DESIGNATION

DRAINAGE AREAS

DRAINAGE AREA #	AREA (SF)	AREA (AC)
DA–21	1,494 SF	0.03
DA–20	1,093 SF	0.03
DA–19	2,039 SF	0.05
DA–22	3,899 SF	0.09
DA–23	2,974 SF	0.07
DA–24	2,778 SF	0.06
DA–27	4,118 SF	0.09
DA–26	2,444 SF	0.06
DA–25	17,418 SF	0.40
DA–17	27,430 SF	0.63
DA–1	805,586 SF	18.49
DA–2	44,834 SF	1.03
DA–5	1,120 SF	0.03
DA–3	32,775 SF	0.75
DA–8	2,033 SF	0.05
DA–4	48,339 SF	1.11
DA–11	2,984 SF	0.07
DA–29	36,986 SF	0.85
DA–13	3,699 SF	0.08
DA–12	1,295 SF	0.03
DA–14	1,839 SF	0.04
DA–15	5,668 SF	0.13
DA–16	1,740 SF	0.04
DA–18	5,718 SF	0.13
DA–28	133,993 SF	3.08
DA–10	11,988 SF	0.28
DA–9	3,589 SF	0.08
DA–6	3,169 SF	0.07
DA–7	10,524 SF	0.24

GRAPHIC SCALE
40 20 0 40
SCALE IN FEET

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LRC Engineering & Surveying, DPC, LRC Engineering & Surveying, LLC, LRC Environmental Services, Inc.

REV	DATE	DESCRIPTIONS
1.	2021-07-06	REVISED PER PB RESUBMISSION
2.	2021-08-10	REVISED PER COMMENTS

DRAINAGE AREA MAP (POST CONDITIONS)

PLANNED RESIDENTIAL RETIREMENT DEVELOPMENT
THE VILLAGES IN THE HUDSON VALLEY

NYS ROUTE 9W
TOWN OF LLOYD, ULSTER COUNTY, NEW YORK

DRAWN BY	CHECKED BY
LRC	KFC
DATE	SCALE
05/26/21	1"=40'
PROJECT NO.	
21-2747	
SHEET NO.	
DA-2	