STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

FOR

Hudson Valley Community College
South Drive Improvements

City of Troy, Rensselaer County, New York

Prepared for:
Hudson Valley Community College
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May 14, 2013

HUDSON VALLEY COMMUNITY COLLEGE
SOUTH DRIVE IMPROVEMENTS

CITY OF TROY, NEW YORK

OWNER'S 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 Penal Law."

STEPHEN COWAN

Printed Name: Steve Cowan of HVCC

Signature

HUDSON VALLEY COMMUNITY COLLEGE
SOUTH DRIVE IMPROVEMENTS
CITY OF TROY, NEW YORK

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A. Introduction

This Stormwater Pollution Prevention Plan (SWPPP) addresses stormwater management associated with the South Drive Improvements project at Hudson Valley Community College (HVCC). The South Drive Improvements project is bound to the north by Cross Road and North Drive, to the south by the southern property boundary, to the east by Vandenburgh Avenue (NYS Route 4), and to the west by North Drive on the HVCC campus in the City of Troy, Rensselaer County, New York. This plan has been developed to comply with the New York State Department of Environmental Conservation (NYSDEC), State Pollutant Discharge Elimination System (SPDES) No. GP-0-10-001. A copy of the Notice of Intent (NOI) that was filed to obtain coverage for the subject development under the General Permit for Stormwater Discharges from Construction Activities is included in Appendix A. A copy of the General Permit for Stormwater Discharges from Construction Activities, Permit No. GP-0-10-001 is included in Appendix B.

Consistent with Chapter 9 of the NYSDEC's Stormwater Management Manual this project is being classified and progressed as a redevelopment project with increased impervious area. The existing South Drive and Cross Road areas are previously constructed areas with impervious surfaces (asphalt pavement, granite curbs, concrete sidewalks, etc.), and currently drains to a campus storm sewer system which flows to an unnamed stream located at the southwest corner of the campus. See Stormwater Discharge Map provided in Appendix H. Therefore, 25% of the required water quality volume is to be provided for the existing impervious area, and 100% of the required water quality volume is to be provided for new or increased impervious area.

The proposed stormwater management facilities are designed to mitigate for the water quality of stormwater runoff from the developed Project site. The developed Project site results in no increase to the discharge rate at each discharge point (see Appendix F). In accordance with Chapter 9 of the NYSDEC's Stormwater Management Manual, if redevelopment results in no increases to the discharge rate from the site, the channel protection volume (one-year), ten-year and one hundred- year water quantity controls criteria do not apply.

Additionally, erosion and sediment control measures (during and after construction) have been designed in accordance with the NYSDEC requirements. All calculations are based on the TR-55 methodology and the Hydro-CAD computer program.

Therefore, the objectives of this plan are to:

1. Minimize or eliminate erosion and sediment loading to waterbodies during construction;
2. Control/improve the impact of stormwater runoff on the water quality of the receiving waters;
3. Maintain stormwater controls during and after completion of construction;
4. Capture and treat 25% of the required water quality volume associated with the existing impervious area, and 100% of the required water quality volume for the new or increased impervious area.

5. Channel Protection - provide hydrology and hydraulic reports that show post construction 1-year discharge rates and velocity remain below the pre-construction discharge rate.
6. Overbank Flood Control - provide hydrology and hydraulic reports that show post construction 10-year discharge rates remain below the pre-construction discharge rate.; and
7. Extreme Flood Control - provide hydrology and hydraulic reports that show post construction 100-year discharge rates remain below the pre-construction discharge rate.

A copy of the completed NOI, SWPPP, and NOI Acknowledgement Letter from NYSDEC and complete inspection reports must be maintained at the site in accordance with Part II.C of the General Permit.

The SWPPP must be signed by the Owner, or by the Owner's duly authorized representative, on the page after the cover sheet at the beginning of the SWPPP. Signatory requirements are provided in Part VII.H of the General Permit.

All contractors and subcontractors involved in the Project must sign a certification statement before undertaking any construction activity on the Project site. This certification must include: The authorized representative's name and title; the name, address and telephone number of the contracting firm; the address of the Project site; the date the certification is made; the components of the SWPPP for which the Contractor is responsible; and the name and title of the Trained Individual responsible for implementation of the applicable components of the SWPPP. The Contractor Certification Statement is located in Appendix C.

When the construction site has been finally stabilized, the Owner must submit a signed Notice of Termination (NOT) form to the NYSDEC at the address identified in Part V of the General Permit. This form is used to confirm that the permanent stormwater facilities are in place and have been constructed in accordance with the SWPPP. The Owner must also certify that the appropriate operation and maintenance practices will be instituted for the facilities to function as designed after the site has been stabilized. A sample NOT form is provided in Appendix I.

1. Project Description

The proposed project development consists of the reconstruction and widening of South Drive, from Vandenburgh Avenue to Cross Road, revised parking layout of Parking Lot "C", and the reconstruction of Cross Road from South Drive to McDonough Hall. New work includes removal of asphalt pavement, new asphalt pavement, new concrete walks, stormwater management, site lighting, site furnishings, erosion control, planting and lawn establishment. The project site is approximately 8 acres. Since this is a redevelopment project, the stormwater management requirements will fall under the Chapter 9 Redevelopment regulation of the NYSDEC Stormwater Design Manual dated August 2010.

2. Site Map

The project site is located on South Drive and Cross Road at Hudson Valley Community College in the City of Troy, New York. Refer to Figure 1 for a site map showing the location of the project site.

3. Soil Description

The predominant soil type is HuB, a Hudson silt loam complex. The soil series has an SCS Hydrologic Soil Group C classification. Group C soils have low infiltration rates when thoroughly wetted and consist chiefly of soils with a layer that impedes downward movement of water and have a low rate of water transmission. Refer to Appendix G for soils data.

4. Construction Phasing Plan

Consistent with the New York State Guidelines for Urban Erosion and Sediment Control, there shall not be more than five (5) acres of disturbed soil at any one time without written approval from the Department. The project site is approximately 8 acres with about 4.5 acres of total soil disturbance. Written approval from the Department will not be necessary. The sequence of construction and temporary and permanent soil stabilizations will allow for the total disturbance to remain below the five acre threshold.

The following is a general sequence of construction activities:

1. Install Erosion and Sediment Control practices (E&SC practices) as indicated on the project's E&SC Plans (including stabilized construction entrance, silt fence, and inlet protection).
2. Install construction fencing around the perimeter of the project site, where needed.
3. Install temporary structure (construction trailer) for the project's Construction Manager.
4. Phase 1 – Removals –removal items include asphalt, curbing, sidewalks, storm drainage.

5. Phase 2 – Clearing and Grubbing Operation – Consistent with the direction of the Owner's Representative, storage of waste soils on site for extended periods of time will not be allowed.
6. Phase 3 – Installation of Site Utilities (Stormwater, electrical)
7. Phase 4– Installation of Site Hardscape (asphalt, concrete, etc.)
8. Phase 5 – Final Grading
9. Phase 6 – Installation of Landscape Plantings – Shall include trees, shrubs, planters, etc.
10. Phase 7 – Topsoil and Seeding Operation – temporary and final stabilization will occur throughout construction to maintain no more than 5 acres of soil disturbance.

5. Erosion and Sediment Controls

Erosion and Sediment will be prevented from becoming a pollutant source in the stormwater discharged from this site by utilizing typical stormwater pollution measures. All proposed pollution prevention measures shall be in place prior to commencing any earthwork operations. Disturbed areas shall be as small as possible. Stabilization measures shall be initiated within 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. This requirement does not apply in the following instances:

a. Where the initiation of stabilization measures by the 14th day after construction activity has temporarily or permanently ceased is precluded by snow cover or frozen ground conditions, stabilization measures shall be initiated as soon as practical.

Silt fence will be erected as shown on the Erosion & Sediment Control Plan. The silt fence will consist of filter cloth with a minimum 20" height that is securely attached to woven wire fencing. The fencing will be fastened to steel or wood posts that will be staked into the ground a minimum of 16". Silt Fence shall stay in place for the duration of construction and shall only be removed when all upstream drainage areas have achieved final stabilization.

In addition to the silt fence, inlet protection will be used around all drainage inlets (existing and proposed) on the site. Inlet protection shall stay in place for the duration of construction and shall only be removed when all upstream drainage area have achieved final stabilization.

Standard Specifications and Details for the pollution prevention measures to be utilized are included in the project drawings.

6. Other Pollutant Controls

Dust Control

Construction traffic must enter and exit the site at the stabilized construction exit. The purpose is to trap dust and mud that would otherwise be carried off-site by construction traffic. Large areas of soil that are denuded of vegetation and have no protection from particles being picked up and carried by wind should be protected with a temporary cover or kept under control with water or other soil adhering products to limit wind transported particles exiting the site perimeter. Water trucks or other dust control agents will be used as needed during construction to reduce dust generated on the site. Dust control must be provided by the contractor to a degree that is in compliance with applicable local and state dust control regulations. Generally speaking the acceptable level of dust is that where the dust is minimally visible.

Solid Waste Disposal

No solid materials, including building materials, are allowed to be discharged from the site with stormwater. All solid waste, including disposable materials incidental to the major construction activities, must be collected and placed in containers. The containers will be emptied as necessary by a contract trash disposal service and hauled away from the site. Covers for the containers will be provided as necessary to meet state and local requirements. No construction debris or waste materials will be buried onsite. The location of solid waste receptacles shall be shown on the Site Maps once there location is identified by the Contractor. Site Maps will be displayed on the Contractor's construction trailer wall and updated by the Qualified Inspector.

Substances that have the potential for polluting surface and/or groundwater must be controlled by whatever means necessary in order to ensure that they do not discharge from the site. As an example, special care must be exercised during equipment fueling and servicing operations. If a spill occurs, it must be contained and disposed of so that it will not flow from the site or enter groundwater, even if this requires removal, treatment, and disposal of soil. In this regard, potentially polluting substances should be handled in a manner consistent with the impact they represent.

Sanitary Facilities

All personnel involved with construction activities must comply with state and local sanitary or septic system regulations. Temporary sanitary facilities will be provided at the site throughout the construction phase. They must be utilized by all construction personnel and will be serviced by a commercial operator. The location of sanitary facilities shall be shown on the Site Maps. Site Maps will be displayed on the Contractors construction trailer wall and updated by the Qualified Inspector.

Non-Storm Water Discharges

Non-storm water components of site discharges must be clean water. Water used for construction which discharges from the site must originate from a public water supply or private well approved by the State Health Department. Water used for construction that does not originate from an approved public supply must not discharge from the site. It can be retained in the small pooling areas until it infiltrates and/or evaporates. Other non-storm water discharges would include ground water. Only uncontaminated ground water can be discharged from the site. When non-storm water is discharges from the site, it must be done in a manner such that it does not cause erosion of the soil during discharge.

Concrete Waste from Concrete Trucks

Discharge of excess or waste concrete and/or wash water from concrete trucks will be allowed on the construction site, but only in specifically designated diked areas prepared to prevent contact between the concrete and/or wash water and storm water that will be discharged from the site. Alternatively, waste concrete can be placed into forms to make rip rap or other useful concrete products. The cured residue from the concrete washout diked areas shall be disposed in accordance with applicable state and federal regulations. This jobsite superintendent is responsible for assuring that these procedures are followed. The location of concrete washout areas shall be shown on the Site Maps. Site Maps will be displayed on the Contractors construction trailer wall and updated by the Qualified Inspector.

Mason's Area

Contractor shall identify mason's area on the site and indicate location on the Site Map. To the extent practical, all masonry tools, material, including sand and sacked cement or mortar materials, and equipment shall be located within the area identified. Runoff control, such as berms or diversion ditches, silt fence, straw wattles, or other means of containment shall be provided to prevent the migration of storm water runoff from the mason's area. Receptacles for debris and trash disposal shall also be provided.

Fuel Tanks

Temporary on-site fuel tanks for construction vehicles shall meet all state and federal regulations. Tanks shall have approved spill containment with the capacity required by the applicable regulations. The tanks shall be in sound condition free of rust or other damage which might compromise containment. Fuel storage areas will meet all EPA, OSHA and other regulatory requirements for signage, fire extinguisher, etc. Hoses, valves, fittings, caps, filler nozzles, and associated hardware shall be maintained in proper working condition at all times. The location of fuel tanks shall be shown on the Site Maps. Site Maps will be displayed on the Contractors construction trailer wall and updated by the Qualified Inspector.

Hazardous Material Management and Spill Reporting Plan

Any hazardous or potentially hazardous material that is brought onto the construction site will be handled properly in order to reduce the potential for storm water pollution. All materials used on this construction site will be properly stored, handled, dispensed and disposed of following all applicable label directions. Material Safety Data Sheets (MSDS) information will be kept on site for any and all applicable materials.

In the event of an accidental spill, immediate action will be undertaken by the General Contractor to contain and remove the spilled material. All hazardous materials will be disposed of by the Contractor in the manner specified by federal, state and local regulations and by the manufacturer of such products. As soon as possible, the spill will be reported to the appropriate agencies. As required under the provisions of the Clean Water Act, any spill or discharge entering waters of the United States will be properly reported. The General Contractor will prepare a written record of any such spill and will provide notice to Owner immediately of the spill occurrence.

Any spills of petroleum products or hazardous materials in excess of Reportable Quantities as defined by EPA or the state or local agency regulations, shall be immediately reported to the EPA National Response Center (1-800-424-8802) and NYSDEC and 1-800-457-7362. The reportable quantity for petroleum products is 5 gallons. The reportable quantity for hazardous materials can be found in 40 CFR 302.

In order to minimize the potential for a spill of petroleum product or hazardous materials to come in contact with storm water, the following steps will be implemented:

a) All materials with hazardous properties (such as pesticides, petroleum products, fertilizers, detergents, construction chemicals, acids, paints, paint solvents, additives for soil stabilization, concrete, curing compounds and additives, etc.) will be stored in a secure location, under cover, when not in use.
b) The minimum practical quantity of all such materials will be kept on the job site and scheduled for delivery as close to time of use as practical.
c) A spill control and containment kit (containing for example, absorbent material such as kitty litter or sawdust, acid neutralizing agent, brooms, dust pans, mops, rags, gloves, goggles, plastic and metal trash containers, etc.) will be provided at the storage site.
d) All of the product in a container will be used before the container is disposed of. All such containers will be triple rinsed, with water prior to disposal. The rinse water used in these containers will be disposed of in a manner in compliance with state and federal regulations and will not be allowed to mix with storm water discharges.
e) All products will be stored in and used from the original container with the original product label.
f) All products will be used in strict compliance with instructions on the product label.
g) The disposal of excess or used products will be in strict compliance with instructions on the products label.

7. Owner/Operator and Trained Individuals Responsibilities

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, 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 the construction of all post-construction stormwater management practices included in the SWPPP. The owner or operator shall have each of these contractors and subcontractors identify at least one **trained individual** from their company that will be responsible for implementation of the SWPPP. The owner or operator shall ensure that at least one **trained individual** is on site on a daily basis when soil disturbance activities are being performed.

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

> "I hereby certify 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 New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings."

The **Trained Individual(s)** shall inspect and repair erosion and sediment control practices at the **end of each work day** and shall prepare a short report documenting completion of the inspection and note any repairs performed. The reports shall be placed in the provided "Trained Individual Report" binder.

Trained Individual - means an employee from a contracting (construction) firm that has received four (4) hours of training, which has been endorsed by the Department, from a Soil and Water Conservation District, CPESC, Inc. or other Department endorsed entity, in proper erosion and sediment control principles no later than two (2) years from the date of the general permit was issued. After receiving the initial training, the trained individual shall receive four (4) hours of training every three (3) years. This individual will be responsible for implementation of the SWPPP.

8. Temporary & Permanent Structural and Vegetative Measures for: soil stabilization, runoff control, and sediment control.

During construction activities, every effort will be made to minimize erosion and sedimentation. Temporary structural measures that will be utilized will include silt fence, drainage structure inlet protection, and stabilized construction entrances. Temporary vegetative measures to be used include annual rye grass seeding and mulching of areas which exceed the time limit parameters described in Section 5. Permanent vegetative measures include final turf establishment in accordance with the project specifications. Permanent structural measures to be utilized include dry swales and infiltration trenches.

9. Dimensions, Material Specifications, and Installation Details

The project drawings provide the dimensions and details for the proposed temporary and permanent pollution prevention measures to be used on this site.

10. Schedule for Temporary Erosion and Sediment Control Practices

All temporary practices, including drainage inlet structure protection and silt fence shall be installed prior to proceeding with any construction activities and shall only be removed when all upstream drainage areas have achieved final stabilization.

11. Maintenance Schedule

All erosion and sediment control features will be maintained in good working order until permanent ground cover is established and construction activities are complete. Contractors responsible for site operations shall inspect and repair erosion control practices daily.

A qualified professional will be assigned to conduct an assessment of the project site prior to the commencement of construction activities and will certify in an 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 activities. Following the commencement of construction, site inspections shall be conducted by the qualified professional at least every 7 calendar days.

During each inspection, the qualified professional will complete and document the results of the following activities:

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. Identification of all erosion and sediment control practices that need repair or maintenance;
f. Identification of all erosion and sediment control practices that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;
g. Description and sketch of areas that are disturbed at the time of the inspection and areas that have been stabilized (temporary and/or final) since the last inspection;
h. 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; and
i. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s).

Within one business day of the completion of an inspection, the *qualified inspector* shall notify the *owner or operator* and appropriate contractor (or subcontractor) 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.

All inspection reports shall be signed by the *qualified inspector* and shall be maintained on site with the SWPPP.

A sample Site Inspection report is included in Appendix D to assist in providing the necessary documentation. In addition, the Contractor will be required to complete the Contractor's Certification included in Appendix C, indicating that he/she agrees to comply with the requirements of this SWPPP.

12. Receiving Waters

The receiving waterbody is the unnamed stream that flows to the west to a culvert under NYS Route 4. The new construction and associated disturbed areas and watersheds described in this report will be collected with a combination of open channels, infiltration trenches and a closed drainage system.

13. SWPPP Implementation

The SWPPP will be implemented by the Contractor, who will be responsible for installing and maintaining all temporary and permanent stormwater pollution prevention measures throughout the duration of the project. Subsequent to completion of construction, the owner will designate an appropriate person who will be responsible for monitoring and maintaining the permanent stormwater pollution prevention practices.

14. Structural Practices to Limit Discharge of Pollutants from Exposed Areas

Use of silt fence as indicated on the construction drawings, and use of drainage inlet protection will limit the discharge of pollutants from exposed areas to adjacent properties. In addition, construction of infiltration trenches will further filter potential pollutants and control runoff velocities from stormwater discharged from exposed areas. Specific runoff flow diversions are not planned for the project. However, the contractors shall use basic construction methods where shallow temporary swales are constructed to stop trench excavations from taking on surface runoff.

15. Existing Stormwater Runoff Characteristics

The existing project site is located at the southern limit of the HVCC campus. The site is bounded to the north and east by North Drive, to the east by Vandenburgh Avenue (NYS Route 4), and to the south by LaSalle property. The project site contains roads, parking lots, pedestrian walks, and open space comprised predominantly of lawn areas with sparse deciduous and coniferous tree cover. Upstream drainage areas which flow through the development include portions of North Drive. Stormwater throughout the development sheet flows across the described lawn and impervious surfaces and are either conveyed by shallow swales or along curb lines in concentrated flows to area inlets or field inlets. These inlets are part of several closed drainage systems within the complex which drain north, as well as south and east through the campus.

A series of drainage areas have been identified, across the overall property that are representative of the existing and proposed disturbance areas (See HydroCAD data in Appendix E). Several individual drainage areas have been identified and are used in analysis for pre and post development conditions. Additionally, evaluation points have been used in three separate locations on the site and represent discharge rates and velocities at the particular locations. These evaluation/design points are present for both the existing and proposed development conditions

and are analyzed to determine what increases or decreases, if any, have occurred as a result of the proposed development.

The table below provides a summary of the land coverage, before development of the project site.

Land Coverage, Existing Conditions

Characteristics	South Drive (acres)	Cross Road North (acres)
Impervious	0.57	1.38
Landscape	1.28	1.3
TOTAL	**1.85**	**2.68**

16. Proposed Stormwater Runoff Characteristics

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. In the case of this proposed project, the appropriate methodology to manage stormwater is to treat the minimum required water quality volume from all impervious areas for the redevelopment project. To clearly describe the proposed stormwater runoff condition as it pertains to the HVCC campus it is necessary to define the limits of the watersheds in which the disturbed areas are located. Work associated with the South Drive Improvements project are generally located within three drainage areas that will drain to multiple Best Management Practices (BMP) for water quality control. These drainage areas are South Drive, Cross Road North Northerly, and Cross Road North Southwesterly. Generally speaking the proposed condition does not change the hydrology of the site. Surfaces flows continue to be conveyed in sheet and shallow concentrated flows across existing and new pervious and impervious surfaces. Curb lines, and grass swales direct stormwater to area inlets where it continues to be conveyed by both existing and proposed closed drainage systems.

Each overall drainage area, which includes multiple sub-catchments, was evaluated with a single evaluation point (design point) at a location on the existing storm conveyance system. For the Cross Road North drainage area, two points were selected as the flows in that area go in opposite directions (to the north and to the southwest). The points selected are an 18 inch and 12 inch pipes, and are identified as design point 1 (DP-1) and design point 2 (DP-2), respectively. For the South Road drainage area, the point selected was a 30 inch HDPE pipe that receives storm drainage from the South Road area. The point is identified as design point 3 (DP-3). Peak discharge flows have been evaluated at this convergence point under both the pre-development and post development site conditions.

The table below provides a summary of the land coverage, after development of the project site.

Land Coverage, Proposed Conditions

Characteristics	South Drive (acres)	Cross Road North (acres)
Impervious	0.98	1.39
Landscape	0.87	1.29
TOTAL	**1.85**	**2.68**

17. Comparison of Pre & Post Development Stormwater Runoff (Quantity Control)

The South Drive Improvements project has seven major areas of disturbances with several drainage subcatchments which have four existing points of discharge. Some of these subcatchment areas (such as Parking Lot C and Parking Lot D) bypass the proposed disturbed areas and are not required to be in the calculations for the proposed treatment. For the purpose of this hydraulic analysis and comparison of the pre vs. post condition, peak flows are conservatively calculated at the discharge point of the subcatchment.

Erdman Anthony used HydroCAD 7.10 for the hydraulic analysis for both the existing and proposed condition. HydroCAD data and hydrographs for the 1-year storm event are included in Appendix E. Additional data for other storm events is available upon request.

The Cross Road North drainage area in the existing condition is 2.68 acres and 52% impervious. The proposed condition is 2.68 acres and 52% impervious.

The South Road drainage area in the existing condition is 1.889 acres and 31% impervious. The proposed condition is 1.885 acres and 53% impervious.

The existing (pre) peak flows associated with these drainage areas for the 1-year, 2-year, 10-year, and 100-year storms are summarized in the table below. Also included in the table below are the peak flows associated with these drainage areas for the developed conditions (post) for the 1-year, 2-year, 10-year, and 100-year storms. As the table shows, the proposed redevelopment does not increase the discharge rate for any of the storms listed. Therefore, water quantity controls for Overbank Flood (10-year) and Extreme Flood (100-year) are not required for this project.

Also, as per Section 9.3.2 of the NYSDEC's Stormwater Management Manual, Channel Protection is not required if the 1-year, 24-hour discharge rate and velocity for post-construction are less than or equal to that of the pre-construction rates. As the table shows, the post-construction rate is less than the pre-construction rate.

Peak Flow Summary Table

Storm Frequency	Catchment (Existing)				Catchment (Proposed)			
	Cross Road Northerly DP-1	Cross Road SW DP-2	South Road DP-3	Flow Summary	Cross Road Northerly DP-1	Cross Road SW DP-2	South Road DP-3	Flow Summary
	1.77 ac	0.91 ac	1.889 ac	4.57 ac	1.70 ac	0.98 ac	1.885 ac	4.565 ac
1-year	2.33	0.70	1.13	**4.16**	2.32	0.53	0.72	**3.57**
2-year	2.96	0.96	1.42	**5.34**	2.85	0.64	1.00	**4.49**
10-year	5.22	2.02	2.57	**9.81**	4.75	1.03	2.19	**7.97**
100-year	8.39	3.62	4.57	**16.58**	7.36	2.95	4.40	**14.71**

18. Water Quality Volume Calculations

As indicated in the Introduction of this report, 25% of the required water quality volume is to be provided for the existing impervious area, and 100% of the required water quality volume is to be provided for new or increased impervious area.

The water quality volumes have been calculated for each of the drainage areas. Areas have been measured via AutoCAD, and the impervious percentages calculated. As a result of the analysis, it will be necessary to treat 25% of the existing disturbed impervious areas.

The below table summaries the required water quality volumes associated with areas of disturbance and the drainage areas in which the disturbances occur. See the "Water Quality Volume for Redevelopment Sites Calculation Worksheets" in Appendix F for the details of the calculations.

Required Water Quality Volume Summary Table

Drainage Area Name	Drainage Area (sq-ft)	Existing Impervious Area (sq-ft.)	Proposed Impervious Area (sq-ft.)	Required Water Quality Volume (cu-ft)
Cross Road North & Southwesterly	116,741	60,472	60,907	1,161
South Road	80,586	24,982	42,841	1,770

Total Required WQv = 2,931 cu-ft

Proposed Water Quality Volume Summary Table

BMP	Required WQv	Provided WQv
Infiltration Trench	1,770 cu-ft	1,800 cu-ft
Dry Swales	1,161 cu-ft	1,585 cu-ft

Total Provided WQv = 3,382 cu-ft

Chapter 4 of the NYSDEC's Stormwater Management Manual outlines the criteria for runoff reduction volumes (RRv) with calculations for the minimum required volume to be treated in a green practice. This project will be using dry swales for the Cross Road North drainage area. The table below shows the required RRv and the proposed RRv.

Required Runoff Reduction Volume Summary Table

Sub-Drainage Area Name	Drainage Area (acres)	Percent Impervious Cover	Proposed Impervious Area (acres)	Required Runoff Reduction Volume (cu-ft)
Area AA	0.52	43.4%	0.22	278
Area BB	0.33	27%	0.09	111
Area CC	0.28	33%	0.09	115
Area DD	0.18	11.5%	0.02	25

Total Required RRv = 529 cu-ft

Proposed Runoff Reduction Volume Summary Table

BMP	Required RRv	Provided RRv
Dry Swales	529 cu-ft	633 cu-ft

19. Maintenance of Post-Construction Stormwater Controls

All erosion and sediment control features will be maintained in good working order until permanent ground cover is established, all new pollution prevention measures are constructed, and all new stormwater drainage features are installed and in working order. Prior to filing the Notice of Termination or the end of permit term, the operator shall have the qualified professional perform a final inspection of this site to evaluate the post-construction runoff conditions and verify that the site has undergone final stabilization (see note below) using either vegetative or structural stabilization methods, and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term control have been removed.

Since the infiltration trenches and dry swales are permanent pollution prevention measures, long-term maintenance of this practice will be needed along with maintenance of all other onsite stormwater drainage structures to ensure that the system/practice does not become clogged with debris and remain in good working order. The owner will designate a person who will be responsible for long-term maintenance of the permanent stormwater pollution prevention

practices and drainage structures on the site. Maintenance Inspection Checklists are included in Appendix L.

Note: "Final stabilization" means that soil-disturbing activities at the site 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.

20. Historic and Archaeological Resources

To obtain coverage under the General Permit, the SWPPP must include documentation supporting the Permit eligibility with regard to part 1D.10. (Historic Places). The SWPPP is required to provide a description of measures necessary to avoid or minimize impacts listed, or eligible for listing, on the State or National Register of Historic Places.

The closest area of Archeological Significance according to information obtained from the NYS Historic Preservation Office (SHPO) GIS database is Emma Willard School, which is approximately 1.32 miles from the project site. This data indicates that the project site is outside of the 1 mile radius of sites currently on the State or National Historic Register. Reference Appendix K, SHPO Map, for more detailed information.

1358331598

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-0-10-001

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)
Hudson Valley Community College

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

Owner/Operator Contact Person First Name
Steve

Owner/Operator Mailing Address
80 Vandenburgh Avenue

City
Troy

State
NY

Zip
12180-

Phone (Owner/Operator)
518-629-7445

Fax (Owner/Operator)
518-629-4547

Email (Owner/Operator)
s.cowan@hvcc.edu

FED TAX ID
14-6009464 (not required for individuals)

Project Site Information

Project/Site Name
South Drive Improvements

Street Address (NOT P.O. BOX)
South Drive/Cross Road

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

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

State: NY
Zip: 12180-
County: Rensselaer
DEC Region: 1

Name of Nearest Cross Street
Vandenburgh Avenue

Distance to Nearest Cross Street (Feet): 25

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

Tax Map Numbers
Section-Block-Parcel: 112.00-4

Tax Map Numbers: 45.1

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): 607853

Y Coordinates (Northing): 4727749

2. What is the nature of this construction project?

○ **New Construction**

● **Redevelopment with increase in imperviousness**

○ **Redevelopment with no increase in imperviousness**

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 — Number of Lots
- ○ 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

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

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

5. Is this a project which does not require coverage under the General Permit (e.g. Project done under an Individual SPDES Permit, or department approved remediation)? ○ Yes ● No

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

7. In accordance with the larger common plan of development or sale, enter the total project site acreage, the acreage to be disturbed and the future impervious area (acreage)within the disturbed area. Round to the nearest tenth of an acre.

Total Site Acreage	Acreage To Be Disturbed	Existing Impervious Area Within Disturbed	Future Impervious Area Within Disturbed
8.0	4.5	1.9	2.4

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

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

A	B	C	D
%	%	100 %	%

10. Is this a phased project? ○ Yes ● No

11. Enter the planned start and end dates of the disturbance

Start Date 05/28/2013 - End Date 10/31/2013

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

Name

Unnamed stream that flows west to culvert under Vandenburgh Ave

12a. Type of waterbody identified in Question 12?

- ○ Wetland / State Jurisdiction On Site (Answer 12b)
- ○ Wetland / State Jurisdiction Off Site
- ○ Wetland / Federal Jurisdiction On Site (Answer 12b)
- ○ 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

12b. How was the wetland identified?

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

13. Has the surface waterbody(ies) in question 12 been identified as a 303(d) segment in Appendix E of GP-0-10-001? ○ Yes ● No

14. Is this project located in one of the Watersheds identified in Appendix C of GP-0-10-001? ○ Yes ● No

15. Is the project located in one of the watershed areas associated with AA and AA-S classified waters? **If no, skip question 16.** ○ Yes ● No

16. 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? **If Yes, what is the acreage to be disturbed?**

[ ][ ][ ][ ].[ ]

○ Yes ● No

17. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area?

○ Yes ● No

18. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)?

● Yes ○ No ○ Unknown

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

City of Troy

20. Does any runoff from the site enter a sewer classified as a Combined Sewer?

○ Yes ○ No ● Unknown

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 Water Quality and Quantity Control components (Post-Construction Stormwater Management Practices) **(If No, skip questions 23 and 27-35)**

● Yes ○ No

23. Have the Water Quality and Quantity Control components of the SWPPP been developed in comformance 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
Erdman Anthony

Contact Name (Last, Space, First)
Darling Ray

Mailing Address
11 Century Hill Drive, Suite 105

City
Latham

State
NY

Zip
12110-

Phone
518-783-1205

Fax
518-783-0374

Email
darlingr@erdmananthony.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-0-10-001. 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
Ray

MI
L

Last Name
Darling

Signature

Date
05/15/2013

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

Water Quality and Quantity Control

Important: Completion of Questions 27-35 is not required if response to Question 22 is No.

Post-Construction Stormwater Management Practices

27. Indicate **all** Stormwater Management Practice(s) that will be installed/constructed on this site:

Ponds
- ○ Micropool Extended Detention (P-1)
- ○ Wet Pond (P-2)
- ○ Wet Extended Detention (P-3)
- ○ Multiple Pond System (P-4)
- ○ Pocket Pond (P-5)

Filtering
- ○ Surface Sand Filter (F-1)
- ○ Underground Sand Filter (F-2)
- ○ Perimeter Sand Filter (F-3)
- ○ Organic Filter (F-4)
- ○ Bioretention (F-5)
- ○ Other

Alternative Practice
- ● Rain Garden
- ○ Cistern
- ○ Green Roof
- ○ Stormwater Planters
- ○ Permeable Paving (Modular Block)

Wetlands
- ○ Shallow Wetland (W-1)
- ○ Extended Detention Wetland (W-2)
- ○ Pond/Wetland System (W-3)
- ○ Pocket Wetland (W-4)

Infiltration
- ● Infiltration Trench (I-1)
- ○ Infiltration Basin (I-2)
- ○ Dry Well (I-3)
- ○ Underground Infiltration System

Open Channels
- ● Dry Swale (O-1)
- ● Wet Swale (O-2)

Verified Proprietary Practice
- ● Hydrodynamic
- ○ Wet Vault
- ○ Media Filter

28. Describe other stormwater management practices not listed above or explain any deviations from the technical standards.

N/A

29. 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

Hudson Valley Community College

30. Provide the total water quality volume required and the total provided for the site.

WQv Required 0.067 **acre-feet**

WQv Provided 0.077 **acre-feet**

31. Provide the following Unified Stormwater Sizing Criteria for the site.

Total Channel Protection Storage Volume (CPv) - Extended detention of post-developed 1 year, 24 hour storm event

CPv Required 0.0 **acre-feet**

CPv Provided 0.0 **acre-feet**

31a. The need to provide for channel protection has been waived because:

○ **Site discharges directly to fourth order stream or larger**

POST-CONSTRUCTION DISCHARGE RATES ARE LESS THAN PRE-CONSTRUCTION DISCHARGE RATES

Total Overbank Flood Control Criteria (Qp) - Peak discharge rate for the 10 year storm

Pre-Development 0.0 **CFS**

Post-development 0.0 **CFS**

Total Extreme Flood Control Criteria (Qf) - Peak discharge rate for the 100 year storm

Pre-Development 0.0 **CFS**

Post-development 0.0 **CFS**

31b. The need to provide for flood control has been waived because:

○ **Site discharges directly to fourth order stream or larger**

POST-CONSTRUCTION DISCHARGE RATES ARE LESS THAN PRE-CONSTRUCTION DISCHARGE RATES.

○ **Downstream analysis reveals that flood control is not required**

IMPORTANT: For questions 31 and 32, impervious area should be calculated considering the project site and all offsite areas that drain to the post-construction stormwater management practice(s). (Total Drainage Area = Project Site + Offsite areas)

32. Pre-Construction Impervious Area - As a percent of the Total Drainage Area enter the percentage of the existing impervious areas before construction begins. 43 %

33. Post-Construction Impervious Area - As a percent of the Total Drainage Area, enter the percentage of the future impervious areas that will be created/remain on the site after completion of construction. 52 %

34. Indicate the total number of post-construction stormwater management practices to be installed/constructed. 2

35. Provide the total number of stormwater discharge points from the site. (include discharges to either surface waters or to separate storm sewer systems) 3

36. Identify other DEC permits that are required for this project.

DEC Permits

○ Air Pollution Control	○ Navigable Waters Protection / Article 15
○ Coastal Erosion	○ Water Quality Certificate
○ Hazardous Waste	○ Dam Safety
○ Long Island Wells	○ Water Supply
○ Mined Land Reclamation	○ Freshwater Wetlands/Article 24
○ Other SPDES	○ Tidal Wetlands
○ Solid Waste	○ Wild, Scenic and Recreational Rivers
● None	○ Stream Bed or Bank Protection / Article 15

○ Other

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

38. Is this project subject to the requirements of a regulated, traditional land use control MS4? ● Yes ○ No
(If No, skip question 39)

39. 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

40. If this NOI is being submitted for the purpose of continuing coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned. N Y R

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 S t e v e **MI**

Print Last Name C o w a n

Owner/Operator Signature

Date 0 5 / 1 5 / 2 0 1 3

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

from

CONSTRUCTION ACTIVITY

Permit No. GP-0-10-001

Issued Pursuant to Article 17, Titles 7, 8 and Article 70
of the Environmental Conservation Law

Effective Date: January 29, 2010 Expiration Date: January 28, 2015

William R. Adriance
Chief Permit Administrator

William R. Adriance January 28, 2010
Authorized Signature Date

Address: NYS DEC
Div. 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's *State Pollutant Discharge Elimination System ("SPDES")* is a NPDES-approved program with permits issued in accordance with the *Environmental Conservation Law ("ECL").*

This general permit ("permit") is issued pursuant to Article 17, Titles 7, 8 and Article 70 of the ECL. An *owner or operator* may obtain coverage under this permit by submitting a Notice of Intent ("NOI") to the Department. Copies of this permit and the NOI for New York are available by calling (518) 402-8109 or at any New York State Department of Environmental Conservation ("the Department") regional office (see Appendix G).They are also available on the Department's website at:

http://www.dec.ny.gov/

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 Article 17-0505 of the ECL, the *owner or operator* must have coverage under a SPDES permit prior to *commencing construction activity*. They 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 I. 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 (5000) square feet and one (1) acre of land.

B. Maintaining Water Quality - It shall be a violation of this permit and 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.

C. 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 D. of this Part.

2. Except for non-stormwater *discharges* explicitly listed in the next paragraph, this permit only authorizes stormwater discharges from *construction activities*.

(Part I. C)

3. Notwithstanding paragraphs C.1 and C.2 above, the following non-stormwater *discharges* may be authorized by this permit: discharges from fire fighting activities; fire hydrant flushings; waters to which cleansers or other components have not been added that are used to wash vehicles or control dust in accordance with the SWPPP, routine external building washdown which does not use detergents; pavement washwaters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used; air conditioning condensate; uncontaminated groundwater or spring water; uncontaminated discharges from construction site de-watering operations; and foundation or footing drains where flows are not contaminated with process materials such as solvents. For those entities required to obtain coverage under this permit, and who discharge as noted in this paragraph, and with the exception of flows from fire fighting activities, these discharges must be identified in the SWPPP. Under all circumstances, the *owner or operator* must still comply with water quality standards in Part I.B.

D. <u>Activities Which Are Ineligible for Coverage Under This General Permit</u> - All of the following are **<u>not</u>** authorized by this permit:

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

2. *Discharges* that are mixed with sources of non-stormwater other than those expressly authorized under subsection C.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, subparagraph K of this permit;

4. *Discharges* from *construction activities* that adversely affect a listed, or proposed to be listed, endangered or threatened species, or its critical habitat;

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 that:

    a. are tributary to waters of the state classified as AA or AA-s; and

(Part I. D. 6)

b. disturb one or more acres of land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey for the County in which the disturbance will occur.

7. *Construction activities* for linear transportation projects and linear utility projects that:
   a. are tributary to waters of the state classified as AA or AA-s; and

   b. disturb two or more acres of land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey for the County in which the disturbance will occur.

8. *Construction activities* that adversely affect a property that is listed or is eligible for listing on the State or National Register of Historic Places (Note: includes Archeological sites), unless there are written agreements in place with the NYS Office of Parks, Recreation and Historic Preservation (OPRHP) or other governmental agencies to mitigate the effects, or there are local land use approvals evidencing the same.

Part II. OBTAINING PERMIT COVERAGE

A. Notice of Intent (NOI) Submittal

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 develop a SWPPP in accordance with all applicable requirements of this permit and then submit a completed NOI form to the address below in order to be authorized to *discharge* under this permit. The NOI form shall be one which is associated with this permit, signed in accordance with Part VII.H. of this permit.

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

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 develop a SWPPP in accordance with all applicable requirements of this permit and then have its SWPPP reviewed and accepted by the *MS4* prior to submitting the NOI to the Department. The *owner or operator* shall have the "MS4 SWPPP Acceptance" form 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, and then submit that form along with the NOI to the address referenced under "Notice of Intent (NOI) Submittal".

(Part II. A.2)

This requirement does not apply to an *owner or operator* that is obtaining permit coverage in accordance with the requirements in Part II.E. (Change of Owner or Operator).

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.

B. <u>Permit Authorization</u>

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 <u>all</u> of the following criteria:

    a. project review pursuant to the State Environmental Quality Review Act (SEQRA) have been satisfied, when SEQRA is applicable,

    b. where required, all necessary Department permits subject to the *Uniform Procedures Act (UPA)* (see 6 NYCRR Part 621) 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 Regional Office 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. an 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.B.2 above will be authorized to *discharge* stormwater from their *construction activity* in accordance with the following schedule:

(Part II. B. 3)

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 NOI for *construction activities* with a SWPPP that has been prepared in conformance with the technical standards referenced in Parts III.B.1, 2 and/or 3, or

ii. Sixty (60) business days from the date the Department receives a complete NOI for *construction activities* with a SWPPP that has not been prepared in conformance with the technical standards referenced in Parts III.B.1, 2 or 3.

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 a complete NOI and signed "MS4 SWPPP Acceptance" form,

4. The Department may suspend or deny an *owner's or operator's* coverage under this permit if the Department determines that the SWPPP does not meet the permit requirements.

5. 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.

C. 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.

2. The *owner or operator* shall maintain a copy of the General Permit (GP-0-10-001), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form and inspection reports at the construction site until all disturbed areas have achieved *final stabilization* and the NOT has been submitted to the Department.

(Part II. C. 2)

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 MS4 (provided the 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. 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 been temporarily or permanently ceased, temporary and/or permanent soil stabilization measures shall be installed and/or implemented within seven (7) days from the date the soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the most current version of the technical standard, New York State Standards and Specifications for Erosion and Sediment Control.

    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. 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.

(Part II. C)

5. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4,* the *owner or operator* shall notify the *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 *MS4*, the *owner or operator* shall have the SWPPP amendments or modifications reviewed and accepted by the *MS4* prior to commencing construction of the post-construction stormwater management practice.

D. Permit Coverage for Discharges Authorized Under GP-0-08-001

1. Upon renewal of SPDES General Permit for Stormwater Discharges from Construction Activity (Permit No. GP-0-08-001), a*n owner or operator* of *construction activity* with coverage under GP-0-08-001, as of the effective date of GP-0-10-001, shall be authorized to *discharge* in accordance with GP-0-10-001 unless otherwise notified by the Department.

E. 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. 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.A.1.. 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.

   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. 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*.

(Part III. A)

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:

    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; and

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

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.

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.

(Part III. A. 6)

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 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 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. "

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.

8. The SWPPP must include documentation supporting the determination of permit eligibility with regard to Part I.D.8. (Historic Places or Archeological Resource). At a minimum, the supporting documentation shall include the following:

(Part III. A. 8)

a. Information on whether the stormwater discharge or *construction activities* would have an effect on a property (historic or archeological resource) that is listed or eligible for listing on the State or National Register of Historic Places;

b. Results of historic resources screening determinations conducted. Information regarding the location of historic places listed, or eligible for listing, on the State or National Registers of Historic Places and areas of archeological sensitivity that may indicate the need for a survey can be obtained online by viewing the New York State Office of Parks, Recreation and Historic Places (OPRHP) online resources located on their web site at: http://nysparks.state.ny.us/shpo/online-tools/ (using The Geographic Information System for Archeology and National Register). OPRHP can also be contacted at: NYS OPRHP, State Historic Preservation Office, Peebles Island Resources Center, P.O. Box 189, Waterford, NY 12188-0189, phone: 518-237-8643;

c. A description of measures necessary to avoid or minimize adverse impacts on places listed, or eligible for listing, on the State or National Register of Historic Places. If the *owner or operator* fails to describe and implement such measures, the stormwater *discharge* is ineligible for coverage under this permit; and

d. Where adverse effects may occur, any written agreements in place with OPRHP or other governmental agency to mitigate those effects, or local land use approvals evidencing the same.

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 most current version of the technical standard, New York State Standards and Specifications for Erosion and Sediment Control. Where erosion and sediment control practices are not designed in conformance with this 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;

(Part III. B. 1)

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), wetlands and drainage patterns that could be affected by the construction activity; existing and final slopes; 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 the most current version of the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, 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;

(Part III. B. 1)

i. A maintenance inspection schedule for the contractor(s) identified in Part III.A.6., 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 most current version of the technical standard, New York State Standards and Specifications for Erosion and Sediment Control;

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 requirements in the most current version of the technical standard, New York State Standards and Specifications for Erosion and Sediment Control. 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 standards.

2. Post-construction stormwater management practice component - All construction projects 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 most current version of the technical standard, New York State Stormwater Management Design Manual ("Design Manual"). If the Design Manual is revised during the term of this permit, an *owner or operator* must begin using the revised version of the Design Manual to prepare their SWPPP six (6) months from the final revision date of the Design Manual.

   Where post-construction stormwater management practices are not designed in conformance with this technical standard, the *owner or operator* must demonstrate equivalence to the technical standard.

   At a minimum, 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;

(Part III. B. 2)

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

c. The dimensions, material specifications and installation details for each post-construction stormwater management practice;

d. Identification of any elements of the design that are not in conformance with the Design Manual. 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 standards;

e. A hydrologic and hydraulic analysis for all structural components of the stormwater management control system;

f. A detailed summary (including calculations) of the sizing criteria that was used to design all post-construction stormwater management practices. At a minimum, the summary shall address the required design criteria from the applicable chapter of the Design Manual; including the identification of and justification for any deviations from the Design Manual, and identification of any design criteria that are not required based on the design criteria or waiver criteria included in the Design Manual; and

g. 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 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.g. above.

(Part III. C)

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. *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.

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 and all post-construction stormwater management practices identified in the SWPPP are maintained in effective operating condition at all times.

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. Owner or Operator Maintenance Inspection Requirements

1. The *owner or operator* shall inspect, in accordance with the requirements in the most current version of the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, the erosion and sediment controls identified in the SWPPP to ensure that they are being maintained in effective operating condition at all times.

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 *owner or operator* can stop conducting the maintenance inspections. The *owner or operator* shall begin conducting the maintenance inspections in accordance with Part IV.B.1. as soon as soil disturbance activities resume.

3. For construction sites where soil disturbance activities have been shut down with partial project completion, the *owner or operator* 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.

(Part IV. C)

C. <u>Qualified Inspector Inspection Requirements</u> - 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. **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),
- 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, <u>with the exception of</u>:

    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 <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;

    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 (5000) 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.

(Part IV. C. 2)

b. For construction sites where soil disturbance activities are on-going and the *owner or 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.

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 Regional Office stormwater contact person (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the MS4 (provided the 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* 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. The *owner or operator* shall notify the Regional Office stormwater contact person (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the MS4 (provided the 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,* and 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.A.1..

(Part IV. C. 3)

3. At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices 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 that need repair or maintenance;

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

    h. Description and sketch of areas that are disturbed 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 to correct deficiencies identified with the construction of the post-construction stormwater management practice(s); and

k. 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 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.C.2., 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.A.1. The NOT form shall be one which is associated with this general permit, signed in accordance with Part VII.H.

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

(Part V. A. 2)

a. Total project completion - All construction activity identified in the SWPPP has been completed; and all areas of disturbance have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and 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.E.

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 disturbed areas have achieved *final stabilization;* and 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.

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 also have the MS4 sign the "MS4 Acceptance" statement on the NOT. The *owner or operator* shall have the principal executive officer, ranking elected official, or duly authorized representative from the *regulated, traditional land use control MS4*, sign the "MS4 Acceptance" statement. The 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 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.3.

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:

(Part V. A. 5)

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 modified their deed of record to include a deed covenant that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan,

d. for post-construction stormwater management practices that are owned by a public or private institution (e.g. school, college, university), or government agency or authority, 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 OF 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 site achieves *final stabilization.* This period may be extended by the Department, in its sole discretion, at any time upon written notification.

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.A.1), all written correspondence requested by the Department, including individual permit applications, shall be sent to the address of the appropriate Department 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.

(Part VII. A)

The stop work order shall be in writing, shall describe the non-compliance in detail, and shall be sent to the *owner or operator*.

B. Continuation of the Expired General Permit - This permit expires five (5) years from the effective date. However, coverage may be obtained under the expired general permit, which will continue in force and effect, until a new general permit is issued. Unless otherwise notified by the Department in writing, an *owner or operator* seeking authorization under the new general permit must submit a new NOI in accordance with the terms of such new general permit.

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 make available to the Department for review and copying or furnish to the Department within five (5) business days of receipt of a Department request for such information, any information requested for the purpose of determining compliance with this permit. This can include, but is not limited to, the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form, executed maintenance agreement, and inspection reports. Failure to provide information requested by the Department within the request timeframe shall be a violation 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 the NOI, SWPPP or inspection reports. 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 other report, 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. 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. <u>Signatory Requirements</u>

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

(Part VII. H. 1. c)

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. 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.;

    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. <u>Property Rights</u> - 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. <u>Severability</u> - 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.

(Part VII. K)
K. <u>Denial of Coverage Under This Permit</u>

1. At its sole discretion, 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 Regional Office. The Department may grant additional time upon demonstration, to the satisfaction of the Regional Water Engineer, 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. Any *owner or operator* authorized by this permit may request to be excluded from the coverage under this permit by applying for an individual permit or another general permit. In such cases, the *owner or operator* shall submit an individual application or an alternative general permit application in accordance with the requirements of this general permit, 40 CFR 122.26(c)(1)(ii) and 6 NYCRR Part 621, with reasons supporting the request, to the Department at the address for the appropriate Department Office (see addresses in Appendix F).The request may be granted by issuance of an individual permit or another general permit at the discretion of the Department.

3. 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. <u>Proper Operation and Maintenance</u> - 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. <u>Inspection and Entry</u> - The *owner or operator* shall allow the Department or an authorized representative of EPA, the State, 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:

(Part VII. M)

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).

N. Permit Actions - At the Department's sole discretion, this permit may, at any time, be modified, suspended, revoked, or renewed. 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. 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 – Article 17 of the ECL provides for a civil penalty of $37,500 per day per violation of this permit. Articles 175 and 210 of the New York State Penal Law provide for a criminal penalty of a fine and/or imprisonment for falsifying forms and reports required by this permit.

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

Definitions

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.

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.

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

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 authorizing a category of discharges.

Groundwater - 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.

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.

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) application, 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.

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).

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.

Owner or Operator - means the person, persons or legal entity which owns or leases the property on which the construction activity is occurring; and/or an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications.

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 Parts 700 et seq of this Title.

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, 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 in order to prepare a SWPPP that conforms to the Department's technical standard. 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.

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is required to gain coverage under New York State DEC's SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s).

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,
- Stream bank restoration projects (does not include the placement of spoil material),
- 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 makes 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.

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.

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 or underground 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.

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 sources. 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 sources, 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, 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* will be 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 and 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 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
- Bike paths and trails
- Sidewalk construction projects that are not part of a road/ highway construction or reconstruction project
- Slope stabilization projects
- Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics
- Spoil areas that will be covered with vegetation
- Land clearing and grading for the purposes of creating vegetated open space (i.e. recreational parks, lawns, meadows, fields), 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* and 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 less than five acres and construction activities that include the construction or reconstruction of impervious area

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 (5000) square feet and one (1) acre of land.

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 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 townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- 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, includes hospitals, prisons, schools and colleges
- Industrial facilities, includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW's and water treatment plants
- Office complexes
- Sports complexes
- Racetracks, includes racetracks with earthen (dirt) surface
- Road construction or reconstruction
- Parking lot construction or reconstruction
- 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 or other linear utility project
- All other construction activities that include the construction or reconstruction of *impervious area* and *alter the hydrology from pre to post development* conditions, and are not listed in Table 1

APPENDIX C

Watersheds Where Enhanced Phosphorus Removal Standards Are Required

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

Figure 1 - New York City Watershed East of the Hudson

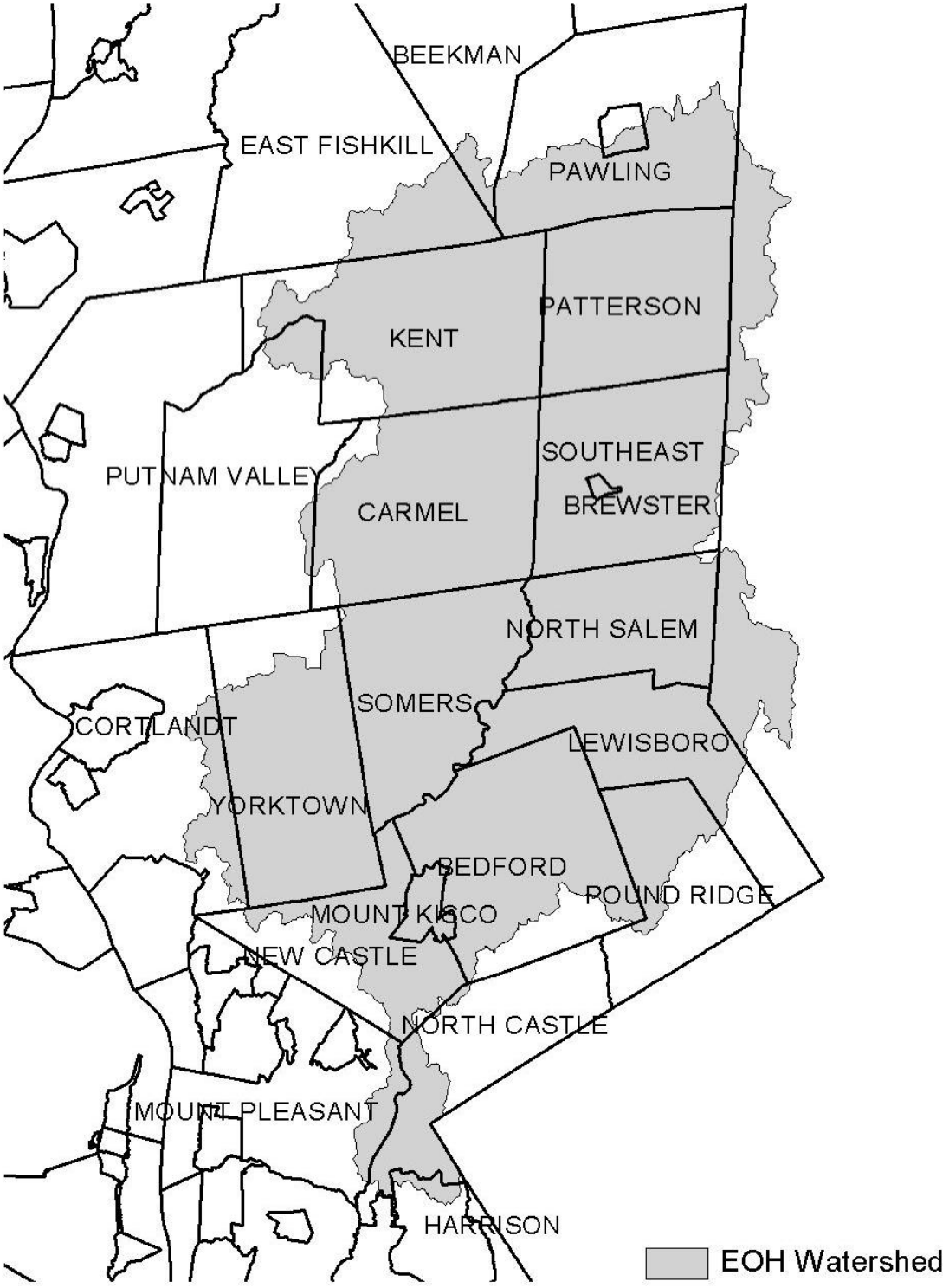
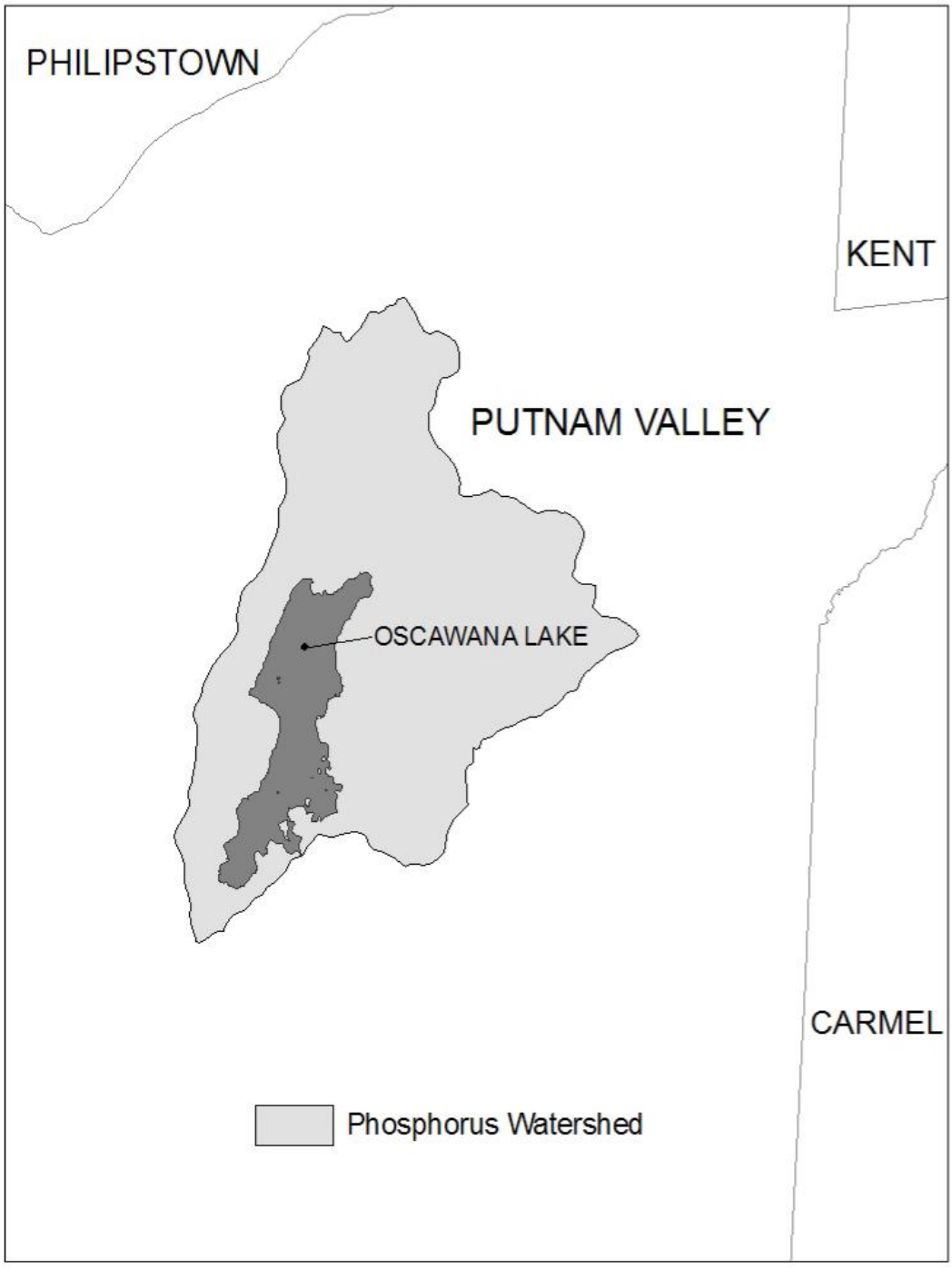


Figure 2 - Onondaga Lake Watershed

Figure 3 - Greenwood Lake Watershed

Figure 4 - Oscawana Lake Watershed



APPENDIX D

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

List of 303(d) segments impaired by pollutants related to construction activity (e.g. silt, sediment or nutrients). *Owners or operators* of single family home and single family residential subdivision construction activities 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 most current version of the technical standard, New York State Stormwater Management Design Manual ("Design Manual").

COUNTY	WATERBODY
Albany	Ann Lee (Shakers) Pond, Stump Pond
Albany	Basic Creek Reservoir
Bronx	Van Cortlandt Lake
Broome	Whitney Point Lake/Reservoir
Broome	Beaver Lake
Broome	White Birch Lake
Chautauqua	Chautauqua Lake, North
Chautauqua	Chautauqua Lake, South
Chautauqua	Bear Lake
Chautauqua	Chadakoin River and tribs
Chautauqua	Lower Cassadaga Lake
Chautauqua	Middle Cassadaga Lake
Chautauqua	Findley Lake
Clinton	Great Chazy River, Lower, Main Stem
Columbia	Kinderhook Lake
Columbia	Robinson Pond
Dutchess	Hillside Lake
Dutchess	Wappinger Lakes
Dutchess	Fall Kill and tribs
Dutchess	Rudd Pond
Erie	Rush Creek and tribs
Erie	Ellicott Creek, Lower, and tribs
Erie	Beeman Creek and tribs
Erie	Murder Creek, Lower, and tribs
Erie	South Branch Smoke Cr, Lower, and tribs
Erie	Little Sister Creek, Lower, and tribs
Essex	Lake George (primary county listed as Warren)
Genesee	Black Creek, Upper, and minor tribs
Genesee	Tonawanda Creek, Middle, Main Stem
Genesee	Tonawanda Creek, Upper, and minor tribs
Genesee	Little Tonawanda Creek, Lower, and tribs
Genesee	Oak Orchard Creek, Upper, and tribs
Genesee	Bowen Brook and tribs
Genesee	Bigelow Creek and tribs
Greene	Schoharie Reservoir
Greene	Sleepy Hollow Lake
Herkimer	Steele Creek tribs
Kings	Hendrix Creek
Lewis	Mill Creek/South Branch and tribs
Livingston	Conesus Lake
Livingston	Jaycox Creek and tribs
Livingston	Mill Creek and minor tribs
Monroe	Genesee River, Lower, Main Stem
Monroe	Genesee River, Middle, Main Stem
Monroe	Black Creek, Lower, and minor tribs
Monroe	Buck Pond
Monroe	Long Pond
Monroe	Cranberry Pond
Monroe	Mill Creek and tribs
Monroe	Shipbuilders Creek and tribs
Monroe	Minor tribs to Irondequoit Bay
Monroe	Thomas Creek/White Brook and tribs
Nassau	Glen Cove Creek, Lower, and tribs
Nassau	LI Tribs (fresh) to East Bay
Nassau	East Meadow Brook, Upper, and tribs
Nassau	Hempstead Bay
Nassau	Hempstead Lake
Nassau	Grant Park Pond
Niagara	Bergholtz Creek and tribs
Oneida	Ballou, Nail Creeks
Onondaga	Ley Creek and tribs
Onondaga	Onondaga Creek, Lower and tribs
Onondaga	Onondaga creek, Middle and tribs
Onondaga	Onondaga Creek, Upper, and minor tribs
Onondaga	Harbor Brook, Lower, and tribs
Onondaga	Ninemile Creek, Lower, and tribs
Onondaga	Minor tribs to Onondaga Lake
Ontario	Honeoye Lake
Ontario	Hemlock Lake Outlet and minor tribs
Ontario	Great Brook and minor tribs
Oswego	Lake Neatahwanta
Putnam	Oscawana Lake
Putnam	Lake Carmel
Queens	Jamaica Bay, Eastern, and tribs (Queens)
Queens	Bergen Basin
Queens	Shellbank Basin
Rensselaer	Snyders Lake
Richmond	Grasmere, Arbutus and Wolfes Lakes
Saratoga	Dwaas Kill and tribs
Saratoga	Tribs to Lake Lonely
Saratoga	Lake Lonely
Saratoga	Schuyler Creek and tribs
Schenectady	Collins Lake

APPENDIX E

List of 303(d) segments impaired by pollutants related to construction activity, cont'd.

COUNTY	WATERBODY	COUNTY	WATERBODY
Schoharie	Engleville Pond		
Schoharie	Summit Lake		
St. Lawrence	Black Lake Outlet/Black Lake		
Steuben	Lake Salubria		
Steuben	Smith Pond		
Suffolk	Millers Pond		
Suffolk	Mattituck (Marratooka) Pond		
Suffolk	Tidal tribs to West Moriches Bay		
Suffolk	Canaan Lake		
Suffolk	Lake Ronkonkoma		
Tompkins	Cayuga Lake, Southern End		
Tompkins	Owasco Inlet, Upper, and tribs		
Ulster	Ashokan Reservoir		
Ulster	Esopus Creek, Upper, and minor tribs		
Warren	Lake George		
Warren	Tribs to L.George, Village of L George		
Warren	Huddle/Finkle Brooks and tribs		
Warren	Indian Brook and tribs		
Warren	Hague Brook and tribs		
Washington	Tribs to L.George, East Shore of Lake George		
Washington	Cossayuna Lake		
Wayne	Port Bay		
Wayne	Marbletown Creek and tribs		
Westchester	Peach Lake		
Westchester	Mamaroneck River, Lower		
Westchester	Mamaroneck River, Upper, and minor tribs		
Westchester	Sheldrake River and tribs		
Westchester	Blind Brook, Lower		
Westchester	Blind Brook, Upper, and tribs		
Westchester	Lake Lincolndale		
Westchester	Lake Meahaugh		
Wyoming	Java Lake		
Wyoming	Silver Lake		

Note: The list above identifies those waters from the final New York State "2008 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy", dated May 26, 2008, that are impaired by silt, sediment or 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, PO BOX 220 WARRENSBURG, NY 12885-0220 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 ROAD AVON, 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 AVE. BUFFALO, NY 14203-2999 TEL. (716) 851-7070

CONTRACTOR'S CERTIFICATION STATEMENT

"I hereby certify 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 New York State Pollutant Discharge Elimination System ("SPDES") general permit for storm water discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings."

Joseph Casale

Name & Title of Duly Authorized Representative

American Evergreen Inc. | 3 Agway Drive

Company 1 | Address

Rensselaer | NY | 518-326-9202

City | State | Phone No.

Address of the Project Site

Joseph T. Casale | 5-15-13

Signature of Authorized Representative | Date

The Contractor identified above is responsible for the following elements of the SWPPP:

Name and Title of Trained Individual Responsible for SWPPP Implementation

Name & Title of Duly Authorized Representative

Company 2 Address

City State Phone No.

Address of the Project Site

Signature of Authorized Representative Date

The Contractor identified above is responsible for the following elements of the SWPPP:

Name and Title of Trained Individual Responsible for SWPPP Implementation

SWMP Inspection Report

Construction Stormwater Inspection Report (for SPDES General Permit GP-0-10-002)

Project Name and Location:	Date:	Report No.
	Weather Conditions: Reason:	
	Soil Conditions:	
Municipality:	Entry Time	Exit Time:

Overall Inspection Rating: ☐ Satisfactory ☐ Marginal ☐ Unsatisfactory			
Name of Qualified Inspector: Name: Title:	Signature of Qualified Inspector:	Reviewed by:	Signature of Reviewer:

Yes	No	N/A		
☐	☐	☐	Routine Inspection?	Date of last inspection: Notes:
☐	☐	☐	Inspection following rain event?	
☐	☐	☐	Is this a final inspection?	
☐	☐	☐	Has the site undergone final stabilization?	
☐	☐	☐	If so, have all temporary erosion and sediment controls been removed?	

REPORT CHECKLIST

Complete the following report checklist and key issue items to attached site plan

1. Site Disturbance (Indicate Locations on Plan)

Yes	No	N/A	
☐	☐	☐	1.1 Areas previously disturbed, but have not undergone active site work in the last 14 days?
☐	☐	☐	1.2 Areas disturbed within last 14 days?
☐	☐	☐	1.3 Areas expected to be disturbed in next 14 days?
☐	☐	☐	1.4 Do areas of steep slopes or complex stabilization issues exist? If "YES," explain:
☐	☐	☐	1.5 Are there currently more than 5 acres of disturbed soil at the site?

Additional comments:

2. Inspection of Erosion and Sediment Control Practices

Yes	No	N/A	
☐	☐	☐	2.1 Do any erosion and sediment control practices require repair or maintenance? If yes, identify required maintenance below.
☐	☐	☐	2.2 Are any erosion and sediment control practices not installed properly or not functioning as designed? If yes, identify required corrective action below.
☐	☐	☐	2.3 Were all practices inspected in accordance with the New York State Standard Specifications for Erosion and Sediment Control?

Additional comments:

3. Inspection of Post-Construction Stormwater Management Practices

Yes	No	N/A	
☐	☐	☐	3.1 Has construction begun on any Post-Construction Practices? If yes, provide status of construction below.
☐	☐	☐	3.2 Has construction been completed on any Post-Construction Practices? If so, identify any deficiencies below.
☐	☐	☐	3.3 Do any completed Post-Construction Practices require maintenance or repair? If so, identify required action below.

Additional Comments: _____

_____

4. Stabilization

Yes	No	N/A	
☐	☐	☐	4.1 Are all existing disturbed areas contained by erosion control and sediment practices?
☐	☐	☐	4.2 Are there areas that require stabilization within the next 14 days?
☐	☐	☐	4.3 Have stabilization measures been initiated in inactive areas?
☐	☐	☐	4.4 Is there current snow cover or frozen ground conditions?
☐	☐	☐	4.5 Rills or gullies?
☐	☐	☐	4.6 Slumping / deposition?
☐	☐	☐	4.7 Loss of vegetation?
☐	☐	☐	4.8 Lack of germination?
☐	☐	☐	4.9 Loss of mulching?

Additional Comments: _____

_____

_____

5. Receiving Structures / Water Bodies (Indicate locations where runoff leaves the project site on the plan)

Yes	No	N/A	
☐	☐	☐	5.1 Surface water swale or stream?
☐	☐	☐	5.2 Municipal or community system?

Inspect locations where runoff from project site enters the receiving waters and indicate if there is evidence of:

☐	☐	☐	5.3 Rills or gullies?
☐	☐	☐	5.4 Slumping / deposition?
☐	☐	☐	5.5 Loss of vegetation?
☐	☐	☐	5.6 Undermining of structures?
☐	☐	☐	5.7 Was there a discharge into the receiving water on the day of inspection?
☐	☐	☐	5.8 Is there evidence of turbidity, sedimentation, or oil in the receiving waters?

Additional Comments: _____

_____

_____

6. General Site Conditions

Yes	No	N/A	
☐	☐	☐	6.1 Have action Items from previous reports been addressed??
☐	☐	☐	6.2 Does routine maintenance of protection components occur on a regular basis?
☐	☐	☐	6.3 Does cleaning and/or sweeping affected roadways occur, at minimum, daily?
☐	☐	☐	6.4 Is debris and litter removed on a monthly basis, or as necessary?
☐	☐	☐	6.5 Is the site maintained in an orderly manner?

Contractor progress over last 7 days: _____

_____

_____

Anticipated work to begin over the next 7 days: _____

_____

_____

7. Visual Observations

Yes	No	N/A	
☐	☐	☐	7.1 All erosion and sediment control measures have been installed/constructed?
☐	☐	☐	7.2 All erosion and sediment control measures are being maintained properly?

Outstanding Item	Photo(s)	Action Item
☐	_____	_____
☐	_____	_____
☐	_____	_____

Any Additional Comments: _____

_____

_____

_____

_____

_____

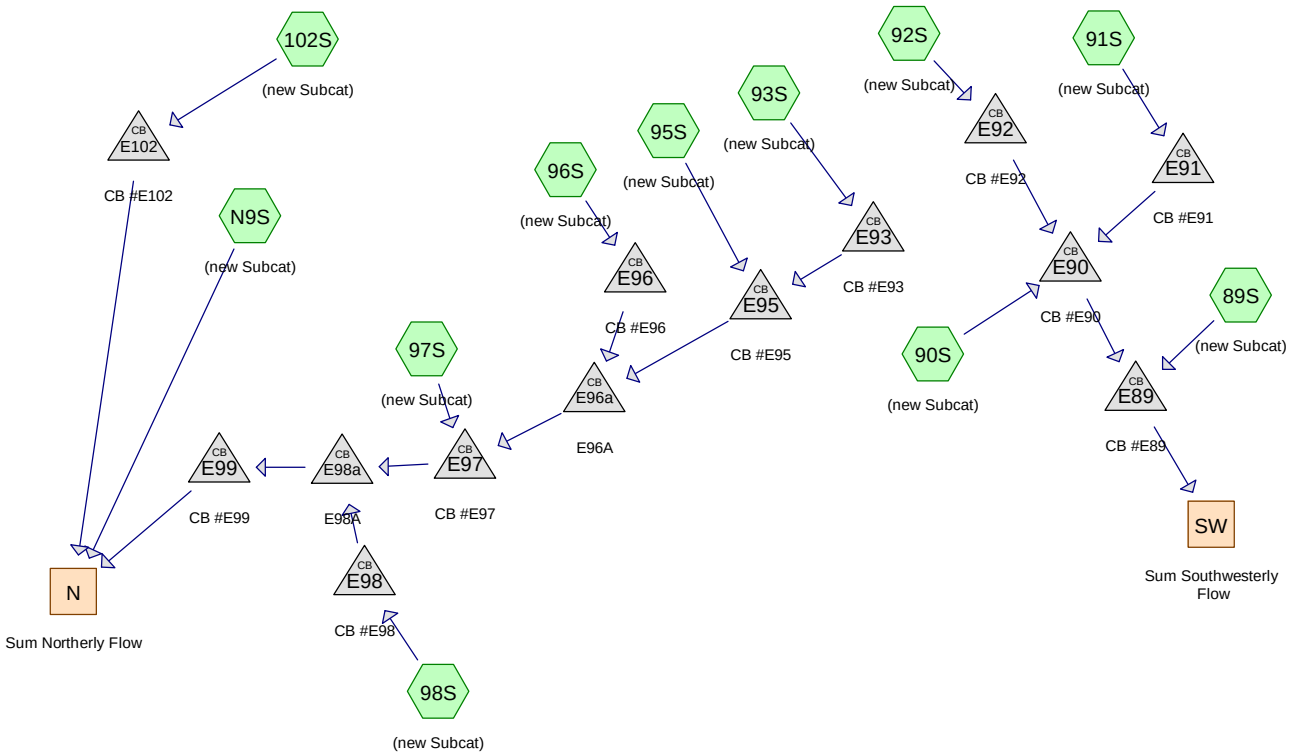
_____

Action Reported to / Company: _____

(Name) (Title) (Company) (Date)

Received By / Company: _____

(Name) (Title) (Company) (Date)



Subcat Reach Pond Link

Drainage Diagram for HVCC Cross Road North Existing
Prepared by {enter your company name here} 5/8/2013

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 89S: (new Subcat) Runoff Area=6,852 sf Runoff Depth=1.47"
Flow Length=280' Tc=10.5 min CN=91 Runoff=0.35 cfs 0.019 af

Subcatchment 90S: (new Subcat) Runoff Area=3,448 sf Runoff Depth=0.17"
Flow Length=80' Tc=11.8 min CN=62 Runoff=0.01 cfs 0.001 af

Subcatchment 91S: (new Subcat) Runoff Area=20,384 sf Runoff Depth=0.32"
Flow Length=250' Tc=8.8 min CN=68 Runoff=0.18 cfs 0.013 af

Subcatchment 92S: (new Subcat) Runoff Area=9,152 sf Runoff Depth=0.79"
Flow Length=180' Tc=2.2 min CN=80 Runoff=0.34 cfs 0.014 af

Subcatchment 93S: (new Subcat) Runoff Area=4,165 sf Runoff Depth=0.30"
Flow Length=80' Tc=8.9 min CN=67 Runoff=0.03 cfs 0.002 af

Subcatchment 95S: (new Subcat) Runoff Area=9,306 sf Runoff Depth=0.94"
Flow Length=200' Tc=9.9 min CN=83 Runoff=0.31 cfs 0.017 af

Subcatchment 96S: (new Subcat) Runoff Area=1,205 sf Runoff Depth=0.61"
Flow Length=70' Tc=8.0 min CN=76 Runoff=0.03 cfs 0.001 af

Subcatchment 97S: (new Subcat) Runoff Area=16,911 sf Runoff Depth=1.47"
Flow Length=280' Tc=11.7 min CN=91 Runoff=0.82 cfs 0.048 af

Subcatchment 98S: (new Subcat) Runoff Area=8,824 sf Runoff Depth=1.12"
Flow Length=165' Tc=6.3 min CN=86 Runoff=0.40 cfs 0.019 af

Subcatchment 102S: (new Subcat) Runoff Area=24,520 sf Runoff Depth=0.61"
Flow Length=350' Tc=15.6 min CN=76 Runoff=0.40 cfs 0.028 af

Subcatchment N9S: (new Subcat) Runoff Area=12,320 sf Runoff Depth=1.47"
Flow Length=330' Tc=15.4 min CN=91 Runoff=0.53 cfs 0.035 af

Reach N: Sum Northerly Flow Inflow=2.33 cfs 0.150 af
Outflow=2.33 cfs 0.150 af

Reach SW: Sum Southwesterly Flow Inflow=0.70 cfs 0.047 af
Outflow=0.70 cfs 0.047 af

Pond E102: CB #E102 Peak Elev=276.99' Inflow=0.40 cfs 0.028 af
15.0" x 100.0' Culvert Outflow=0.40 cfs 0.028 af

Pond E89: CB #E89 Peak Elev=278.77' Inflow=0.70 cfs 0.047 af
12.0" x 80.0' Culvert Outflow=0.70 cfs 0.047 af

Pond E90: CB #E90 Peak Elev=279.11' Inflow=0.42 cfs 0.028 af
12.0" x 52.0' Culvert Outflow=0.42 cfs 0.028 af

Pond E91: CB #E91 Peak Elev=286.92' Inflow=0.18 cfs 0.013 af
10.0" x 40.0' Culvert Outflow=0.18 cfs 0.013 af

Pond E92: CB #E92 Peak Elev=285.24' Inflow=0.34 cfs 0.014 af
12.0" x 64.0' Culvert Outflow=0.34 cfs 0.014 af

Pond E93: CB #E93 Peak Elev=281.94' Inflow=0.03 cfs 0.002 af
12.0" x 67.0' Culvert Outflow=0.03 cfs 0.002 af

Pond E95: CB #E95 Peak Elev=278.04' Inflow=0.34 cfs 0.019 af
12.0" x 62.0' Culvert Outflow=0.34 cfs 0.019 af

Pond E96: CB #E96 Peak Elev=281.08' Inflow=0.03 cfs 0.001 af
10.0" x 25.0' Culvert Outflow=0.03 cfs 0.001 af

Pond E96a: E96A Peak Elev=277.46' Inflow=0.37 cfs 0.021 af
12.0" x 58.0' Culvert Outflow=0.37 cfs 0.021 af

Pond E97: CB #E97 Peak Elev=276.97' Inflow=1.19 cfs 0.068 af
12.0" x 74.0' Culvert Outflow=1.19 cfs 0.068 af

Pond E98: CB #E98 Peak Elev=276.13' Inflow=0.40 cfs 0.019 af
10.0" x 10.0' Culvert Outflow=0.40 cfs 0.019 af

Pond E98a: E98A Peak Elev=274.66' Inflow=1.53 cfs 0.087 af
12.0" x 63.0' Culvert Outflow=1.53 cfs 0.087 af

Pond E99: CB #E99 Peak Elev=272.51' Inflow=1.53 cfs 0.087 af
18.0" x 100.0' Culvert Outflow=1.53 cfs 0.087 af

Total Runoff Area = 2.688 ac Runoff Volume = 0.197 af Average Runoff Depth = 0.88"

Subcatchment 89S: (new Subcat)

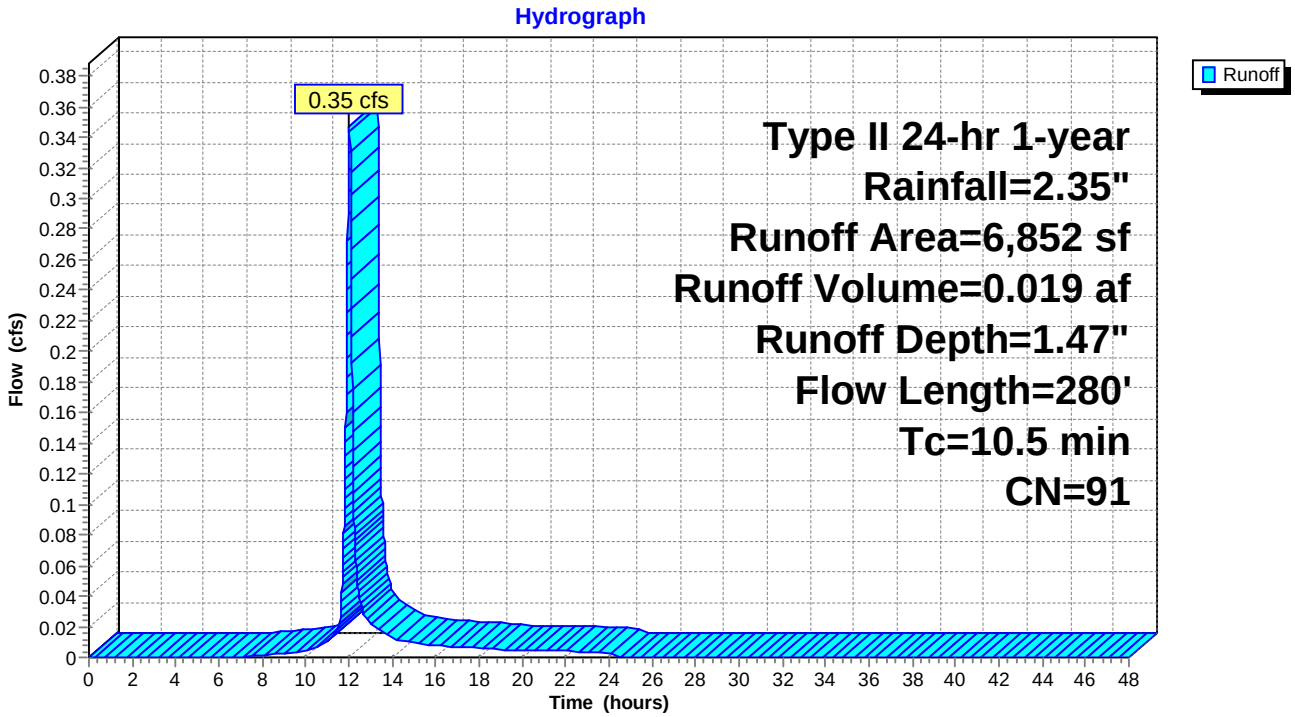
Runoff = 0.35 cfs @ 12.02 hrs, Volume= 0.019 af, Depth= 1.47"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
1,300	61	>75% Grass cover, Good, HSG B
5,552	98	Paved parking & roofs
6,852	91	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	80	0.0200	0.1		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.4	20	0.0150	0.8		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
1.2	180	0.0150	2.5		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
10.5	280	Total			

Subcatchment 89S: (new Subcat)



Subcatchment 90S: (new Subcat)

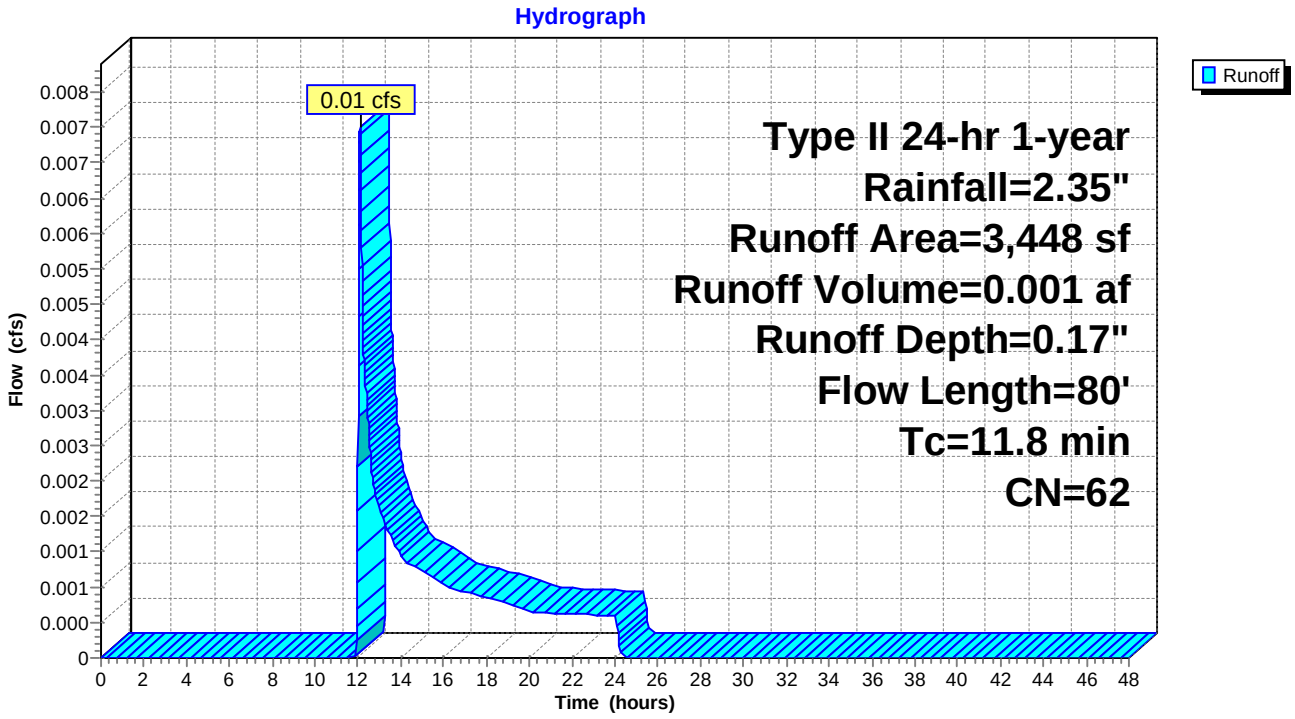
Runoff = 0.01 cfs @ 12.10 hrs, Volume= 0.001 af, Depth= 0.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
120	98	Paved parking & roofs
3,328	61	>75% Grass cover, Good, HSG B
3,448	62	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	80	0.0100	0.1		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"

Subcatchment 90S: (new Subcat)



Subcatchment 91S: (new Subcat)

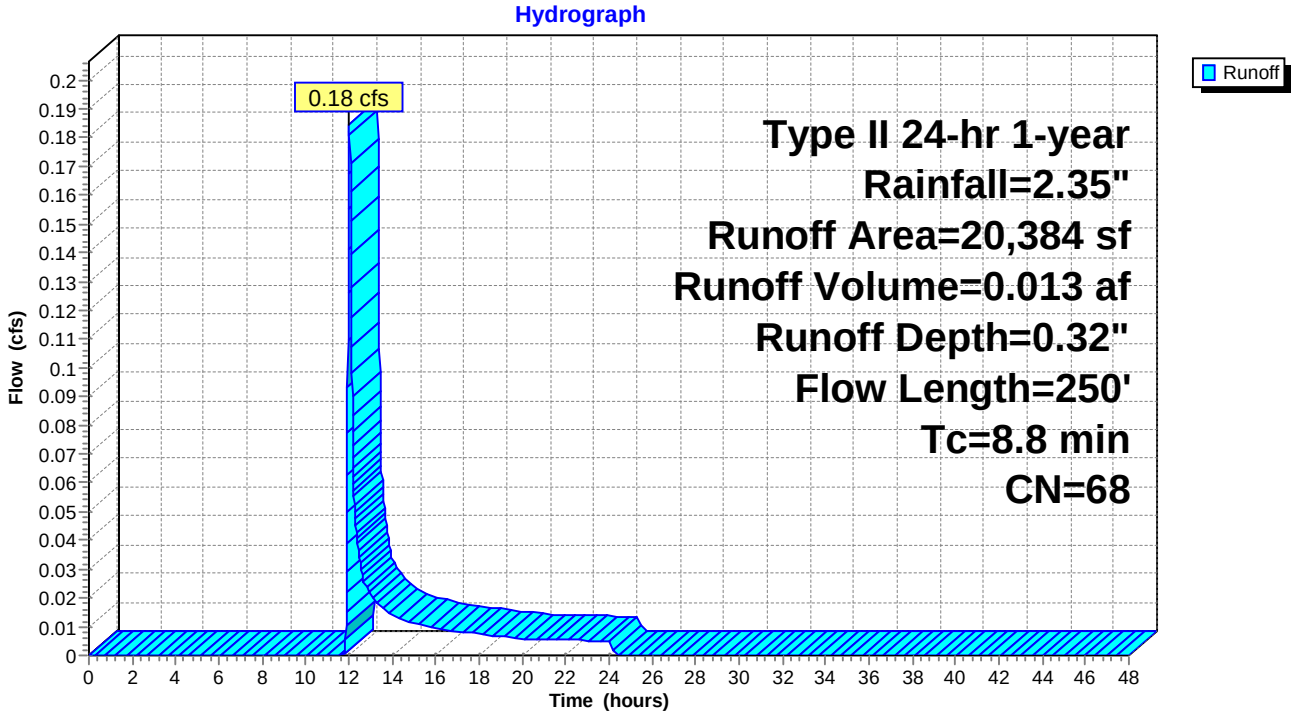
Runoff = 0.18 cfs @ 12.03 hrs, Volume= 0.013 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
4,100	98	Paved parking & roofs
16,284	61	>75% Grass cover, Good, HSG B
20,384	68	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	50	0.0150	0.1		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.8	50	0.0200	1.1		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
1.1	150	0.0200	2.3		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
8.8	250	Total			

Subcatchment 91S: (new Subcat)



Subcatchment 92S: (new Subcat)

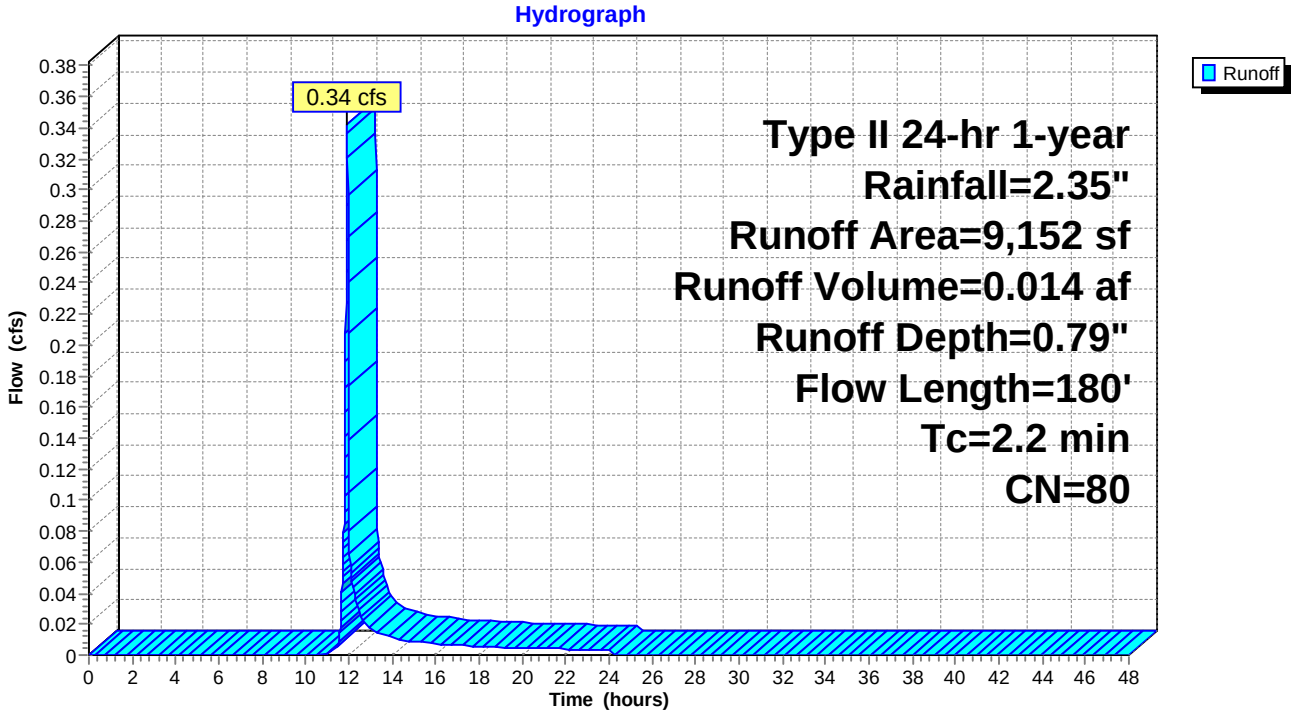
Runoff = 0.34 cfs @ 11.93 hrs, Volume= 0.014 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
4,580	98	Paved parking & roofs
4,572	61	>75% Grass cover, Good, HSG B
9,152	80	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	100	0.0150	1.1		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.7	80	0.0150	2.0		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.2	180	Total			

Subcatchment 92S: (new Subcat)



Subcatchment 93S: (new Subcat)

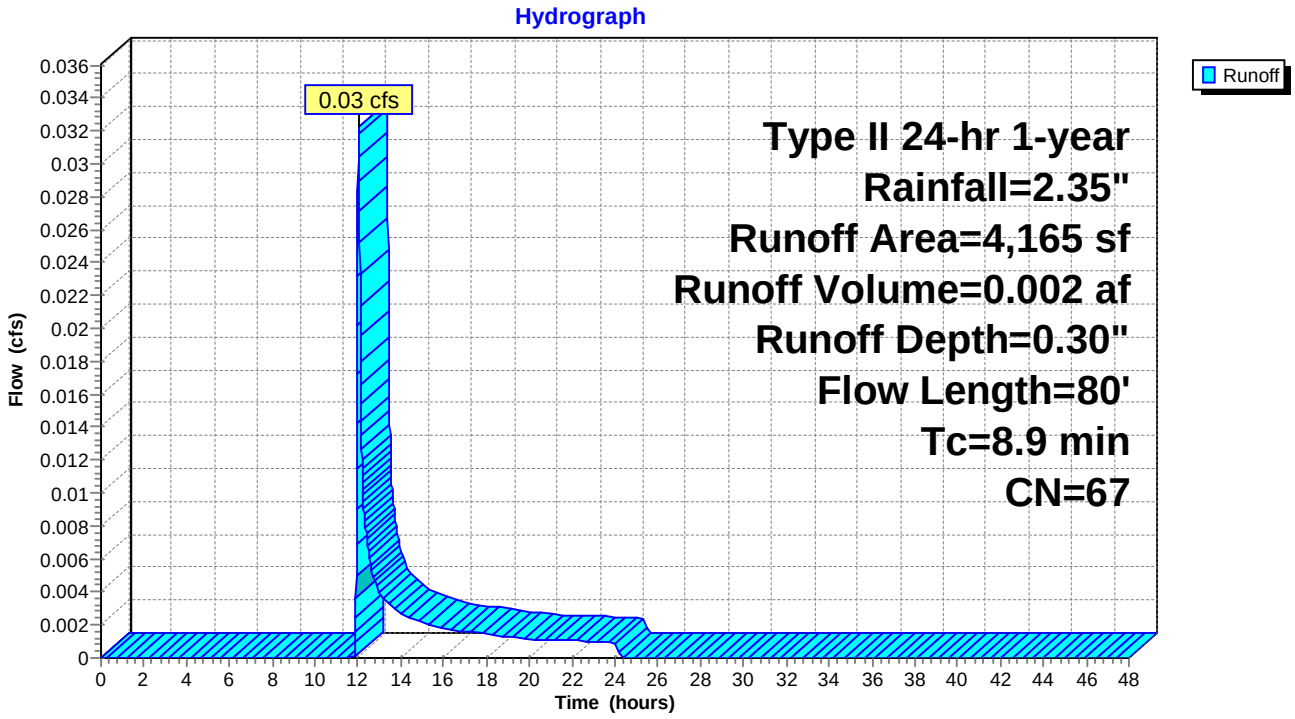
Runoff = 0.03 cfs @ 12.04 hrs, Volume= 0.002 af, Depth= 0.30"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
654	98	Paved parking & roofs
3,511	61	>75% Grass cover, Good, HSG B
4,165	67	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	80	0.0200	0.1		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"

Subcatchment 93S: (new Subcat)



Subcatchment 95S: (new Subcat)

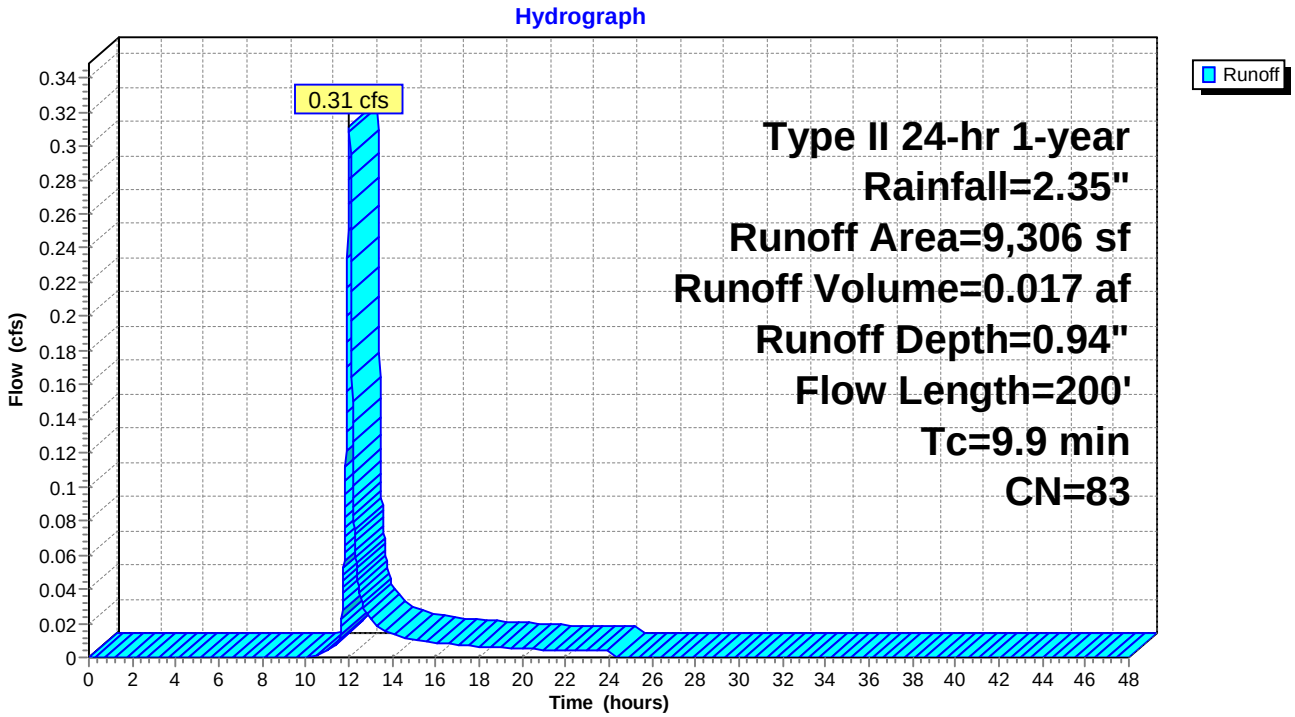
Runoff = 0.31 cfs @ 12.02 hrs, Volume= 0.017 af, Depth= 0.94"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
5,583	98	Paved parking & roofs
3,723	61	>75% Grass cover, Good, HSG B
9,306	83	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	80	0.0200	0.1		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.4	20	0.0200	0.9		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.6	100	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.9	200	Total			

Subcatchment 95S: (new Subcat)



Subcatchment 96S: (new Subcat)

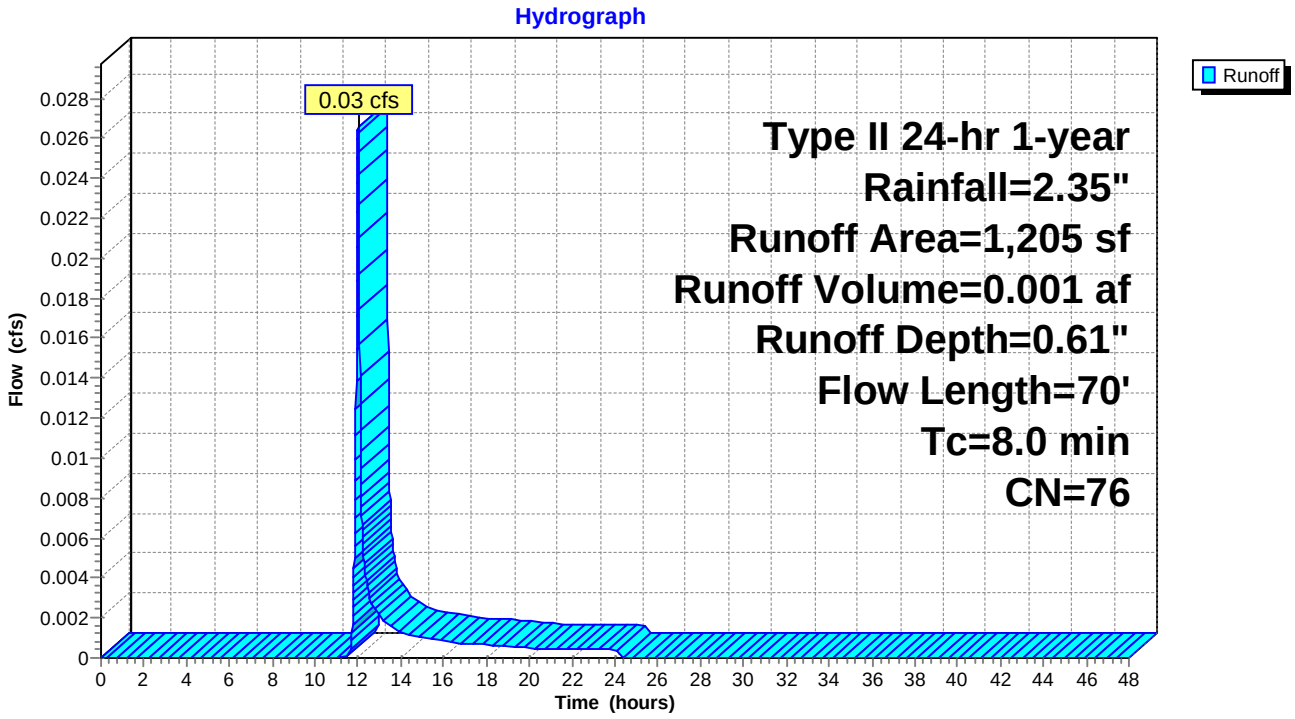
Runoff = 0.03 cfs @ 12.01 hrs, Volume= 0.001 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
705	61	>75% Grass cover, Good, HSG B
500	98	Paved parking & roofs
1,205	76	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	70	0.0200	0.1		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"

Subcatchment 96S: (new Subcat)



Subcatchment 97S: (new Subcat)

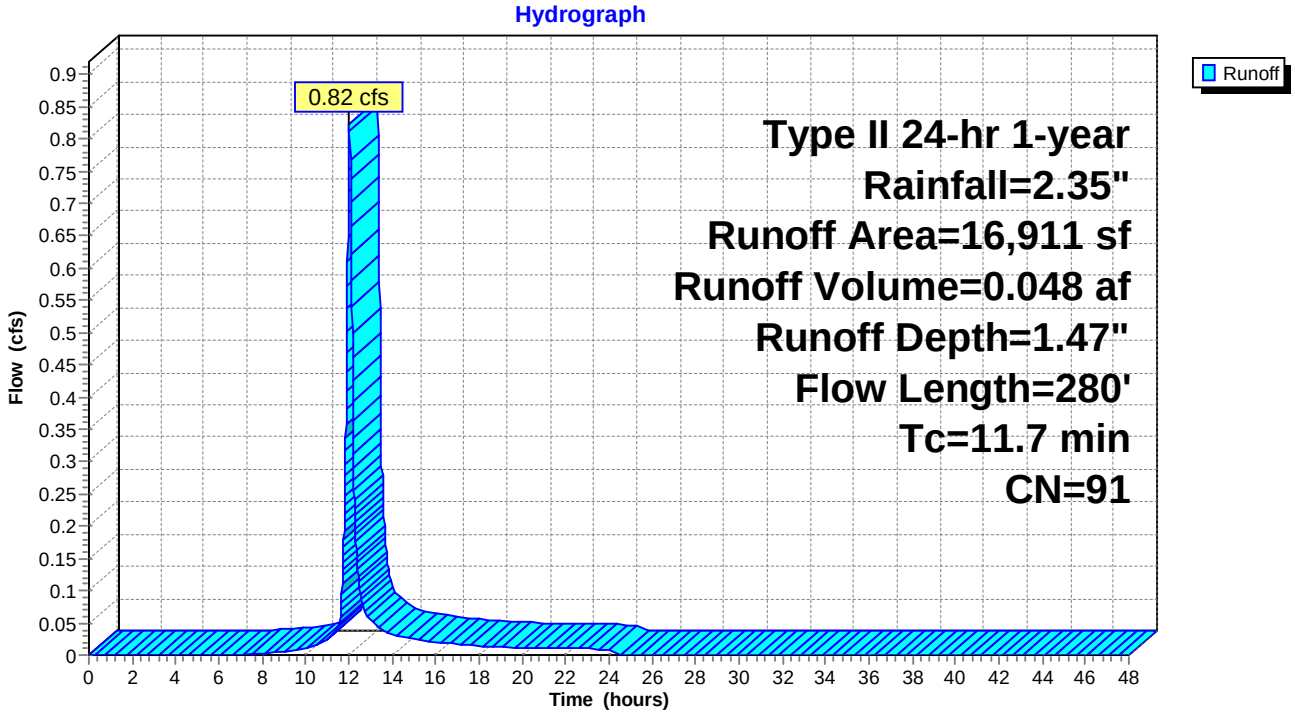
Runoff = 0.82 cfs @ 12.03 hrs, Volume= 0.048 af, Depth= 1.47"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
13,529	98	Paved parking & roofs
3,382	61	>75% Grass cover, Good, HSG B
16,911	91	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7	100	0.0200	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
1.0	180	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
11.7	280	Total			

Subcatchment 97S: (new Subcat)



Subcatchment 98S: (new Subcat)

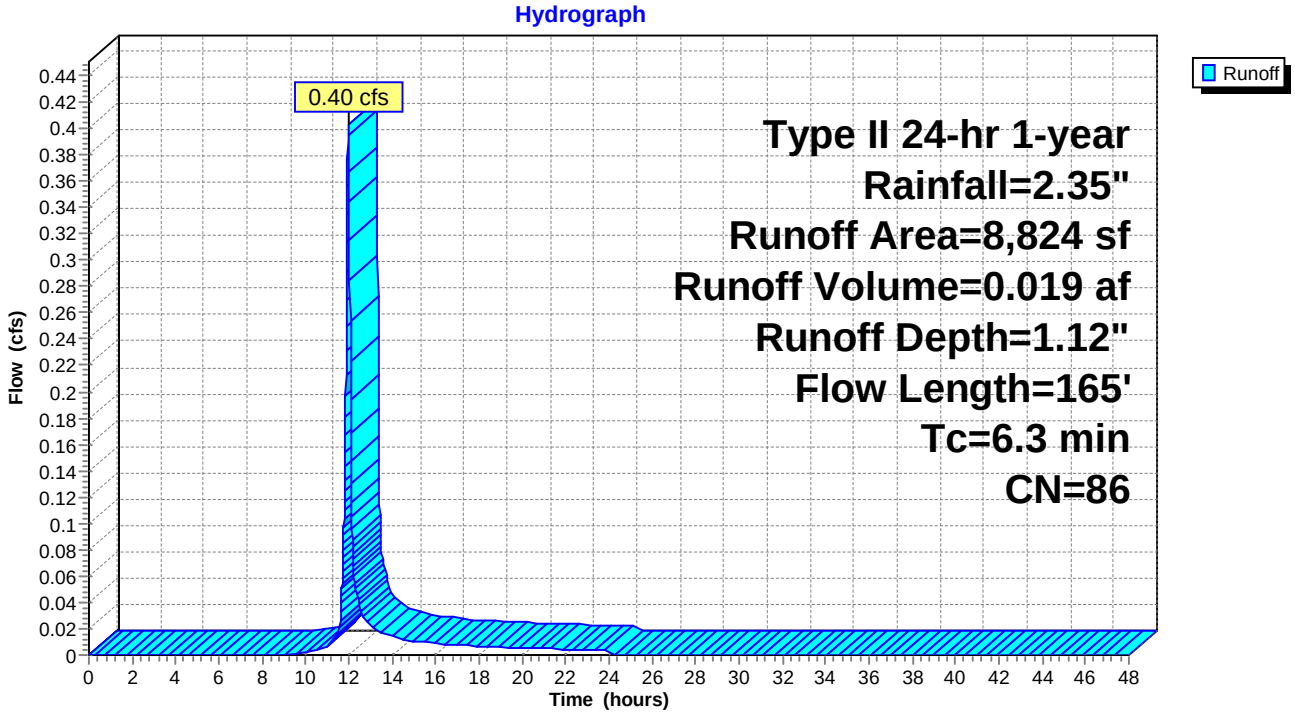
Runoff = 0.40 cfs @ 11.98 hrs, Volume= 0.019 af, Depth= 1.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
5,934	98	Paved parking & roofs
2,890	61	>75% Grass cover, Good, HSG B
8,824	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	65	0.0400	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.6	100	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.3	165	Total			

Subcatchment 98S: (new Subcat)



Subcatchment 102S: (new Subcat)

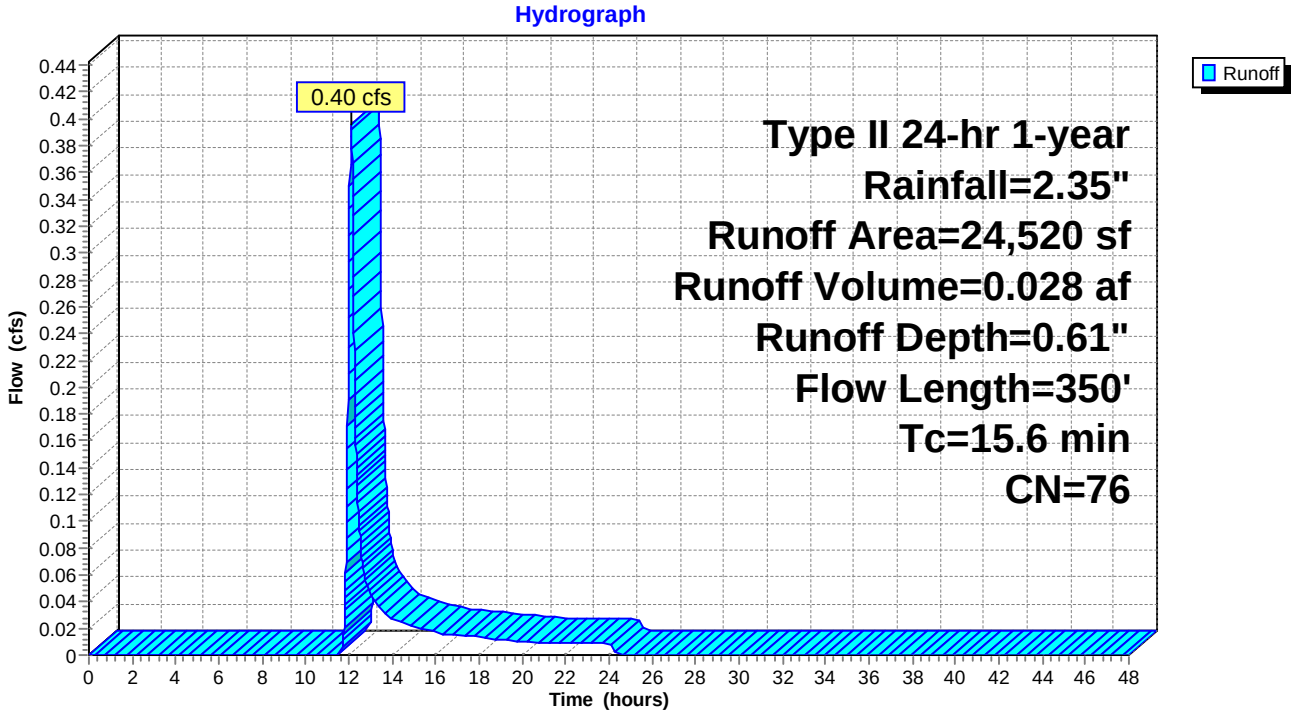
Runoff = 0.40 cfs @ 12.09 hrs, Volume= 0.028 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
10,085	98	Paved parking & roofs
14,435	61	>75% Grass cover, Good, HSG B
24,520	76	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	100	0.0100	0.1		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
1.5	250	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
15.6	350	Total			

Subcatchment 102S: (new Subcat)



Subcatchment N9S: (new Subcat)

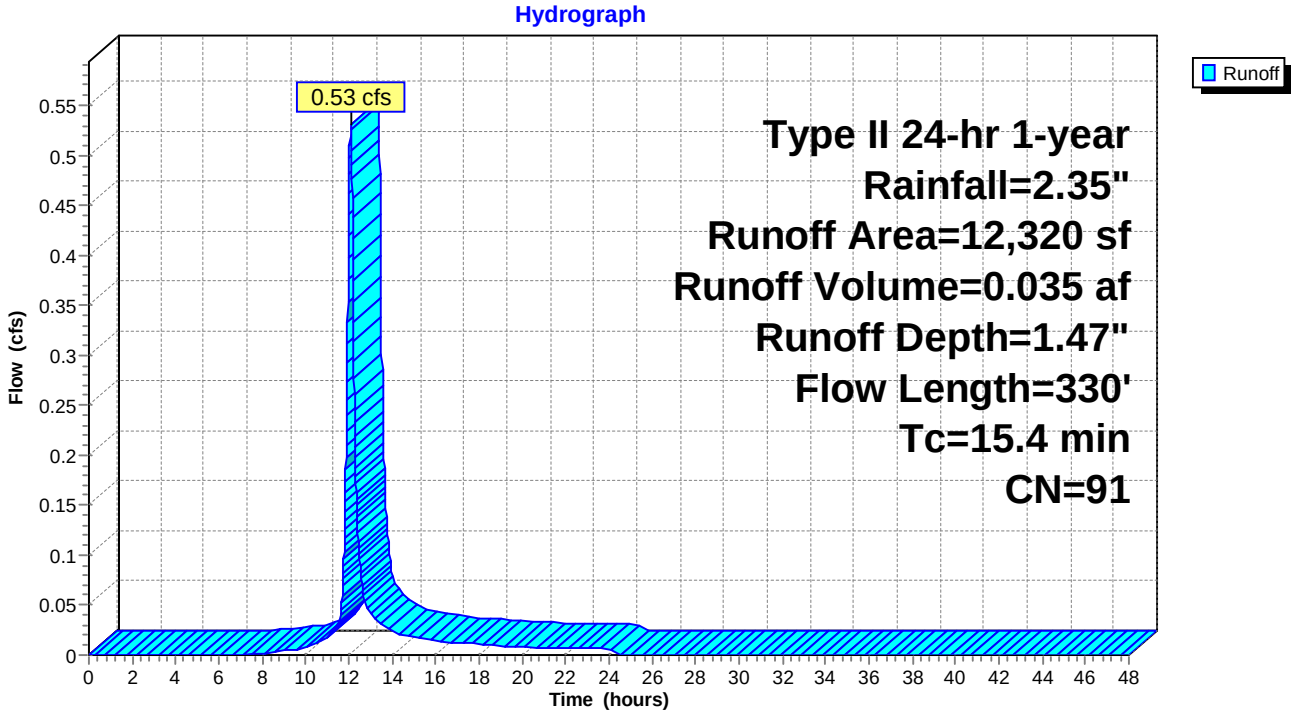
Runoff = 0.53 cfs @ 12.07 hrs, Volume= 0.035 af, Depth= 1.47"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
9,856	98	Paved parking & roofs
2,464	61	>75% Grass cover, Good, HSG B
12,320	91	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	100	0.0100	0.1		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
1.3	230	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
15.4	330	Total			

Subcatchment N9S: (new Subcat)



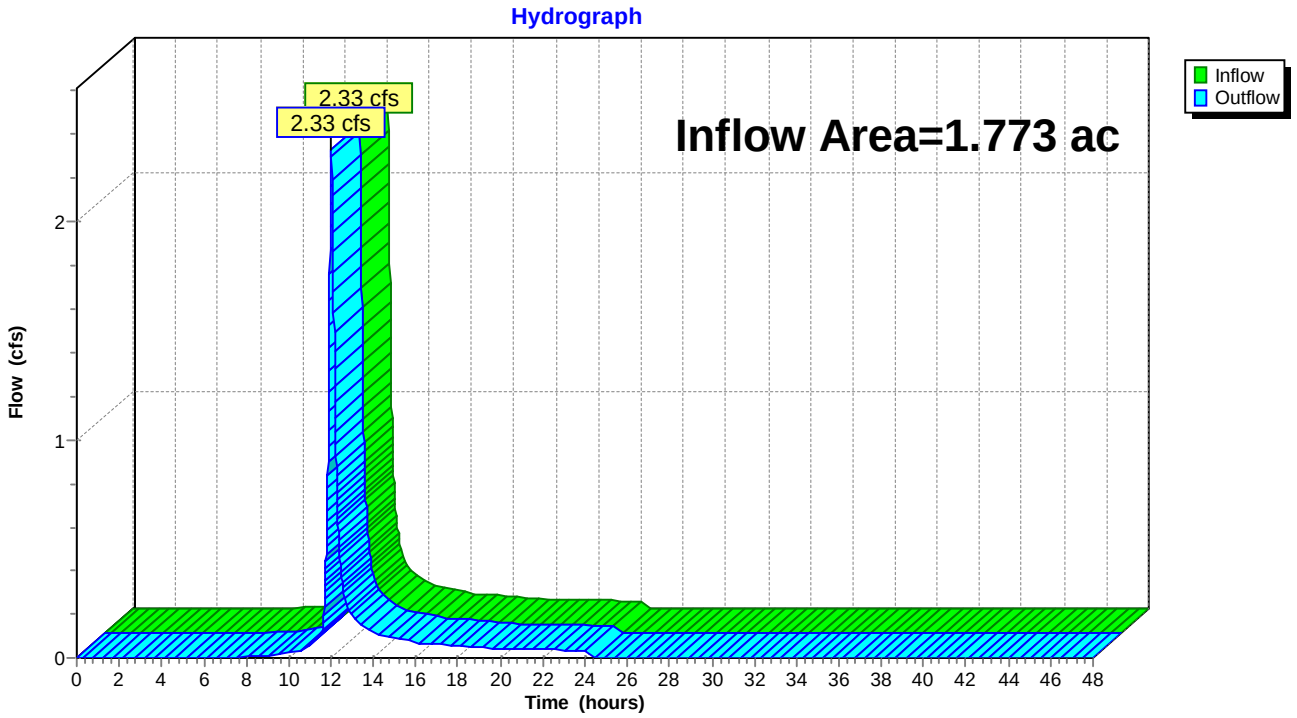
Reach N: Sum Northerly Flow

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

Inflow Area = 1.773 ac, Inflow Depth = 1.02" for 1-year event
Inflow = 2.33 cfs @ 12.03 hrs, Volume= 0.150 af
Outflow = 2.33 cfs @ 12.03 hrs, Volume= 0.150 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach N: Sum Northerly Flow



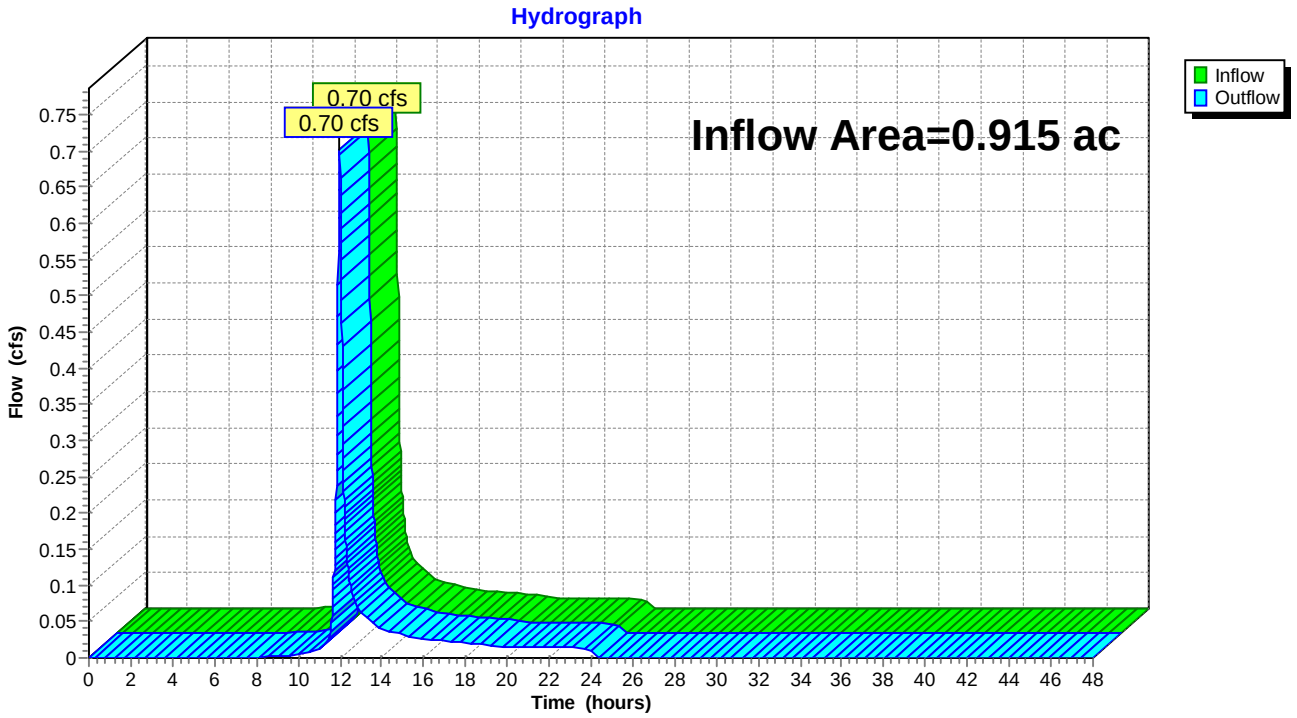
Reach SW: Sum Southwesterly Flow

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

Inflow Area = 0.915 ac, Inflow Depth = 0.62" for 1-year event
Inflow = 0.70 cfs @ 11.98 hrs, Volume= 0.047 af
Outflow = 0.70 cfs @ 11.98 hrs, Volume= 0.047 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach SW: Sum Southwesterly Flow



Pond E102: CB #E102

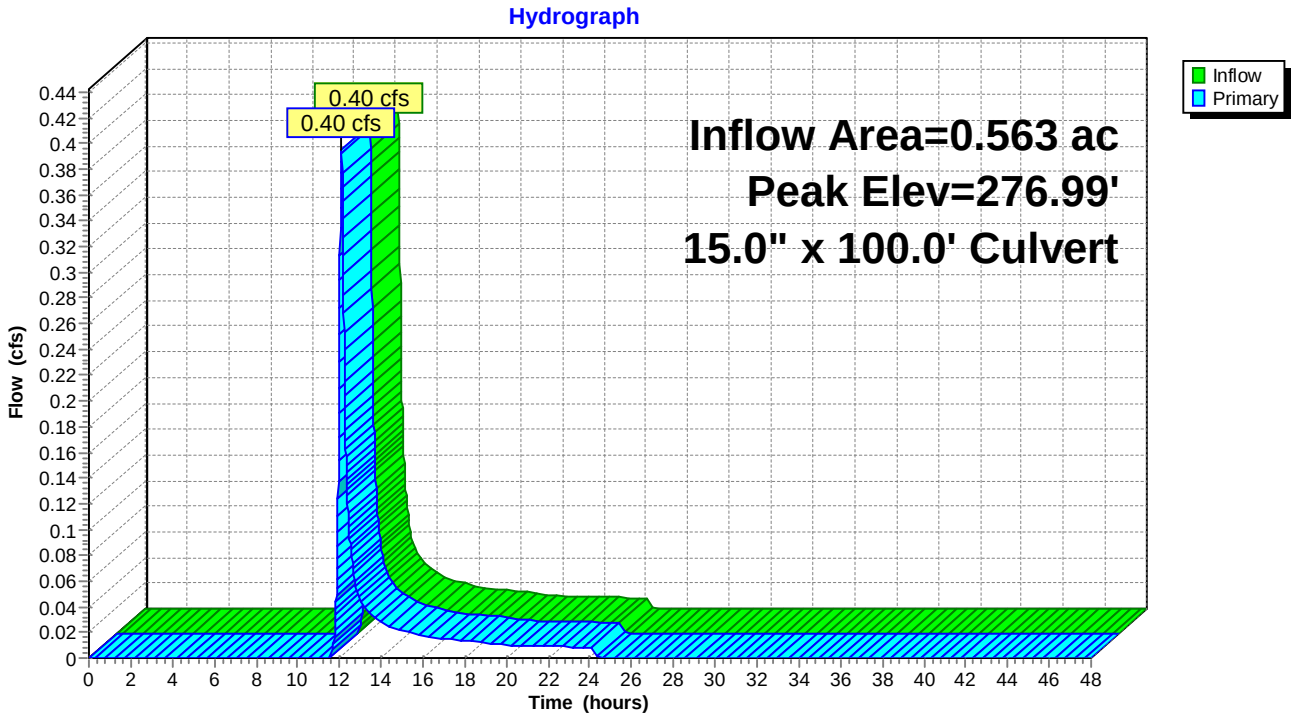
Inflow Area = 0.563 ac, Inflow Depth = 0.61" for 1-year event
Inflow = 0.40 cfs @ 12.09 hrs, Volume= 0.028 af
Outflow = 0.40 cfs @ 12.09 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.0 min
Primary = 0.40 cfs @ 12.09 hrs, Volume= 0.028 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 276.99' @ 12.09 hrs
Flood Elev= 288.36'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (881.8 - 881.8)

Device	Routing	Invert	Outlet Devices
#1	Primary	276.70'	**15.0" x 100.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 274.70' S= 0.0200 '/' Cc= 0.900 n= 0.009 Corrugated PE, smooth interior

Primary OutFlow Max=0.40 cfs @ 12.09 hrs HW=276.99' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.40 cfs @ 1.8 fps)

Pond E102: CB #E102



Pond E89: CB #E89

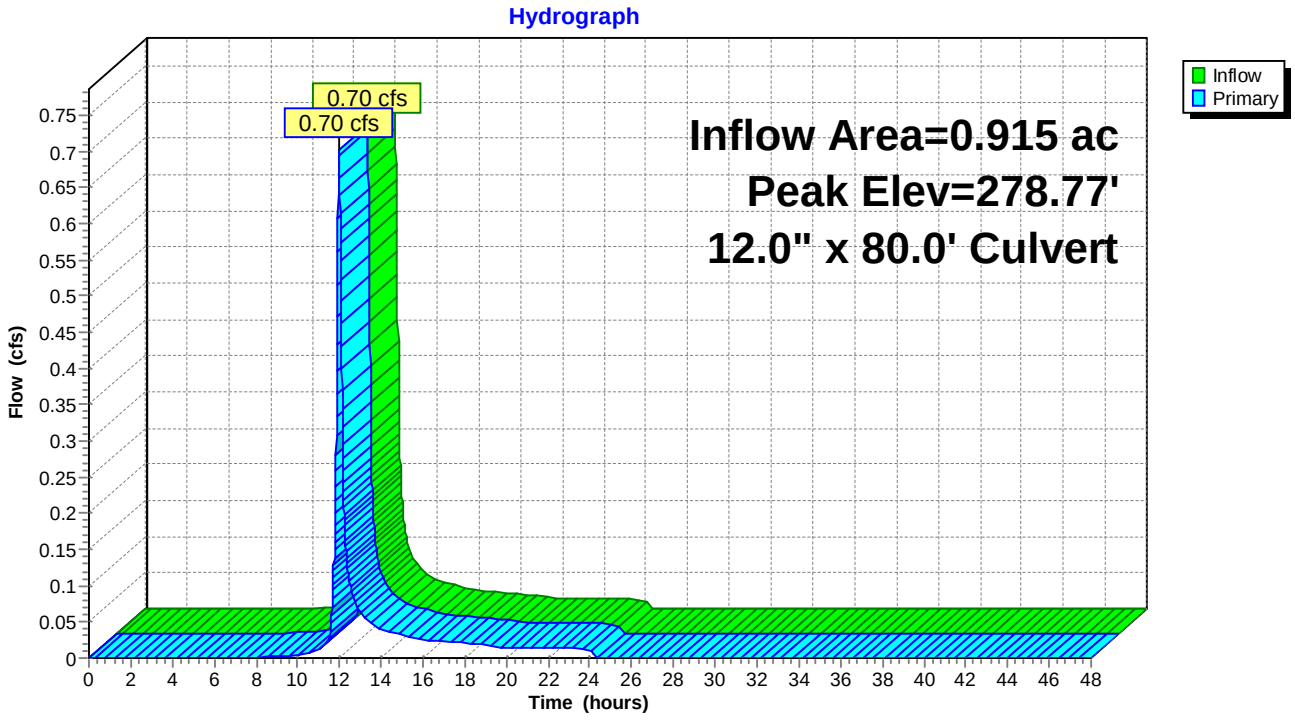
Inflow Area = 0.915 ac, Inflow Depth = 0.62" for 1-year event
Inflow = 0.70 cfs @ 11.98 hrs, Volume= 0.047 af
Outflow = 0.70 cfs @ 11.98 hrs, Volume= 0.047 af, Atten= 0%, Lag= 0.0 min
Primary = 0.70 cfs @ 11.98 hrs, Volume= 0.047 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 278.77' @ 11.98 hrs
Flood Elev= 285.01'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	278.35'	**12.0" x 80.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 277.55' S= 0.0100 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=0.70 cfs @ 11.98 hrs HW=278.77' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.70 cfs @ 2.2 fps)

Pond E89: CB #E89



Pond E90: CB #E90

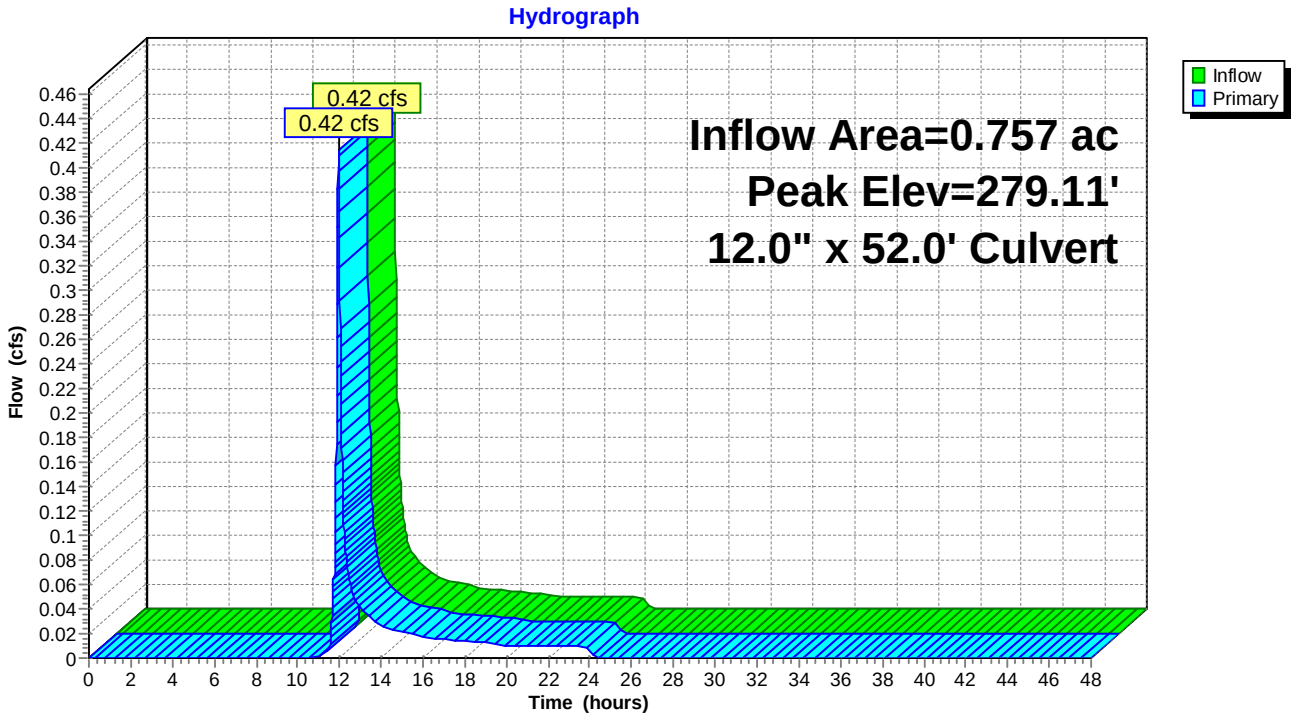
Inflow Area = 0.757 ac, Inflow Depth = 0.44" for 1-year event
Inflow = 0.42 cfs @ 11.94 hrs, Volume= 0.028 af
Outflow = 0.42 cfs @ 11.94 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.0 min
Primary = 0.42 cfs @ 11.94 hrs, Volume= 0.028 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 279.11' @ 11.95 hrs
Flood Elev= 285.98'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (886.9 - 886.9)

Device	Routing	Invert	Outlet Devices
#1	Primary	278.75'	**12.0" x 52.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 278.30' S= 0.0087 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=0.41 cfs @ 11.94 hrs HW=279.11' TW=278.77' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.41 cfs @ 2.4 fps)

Pond E90: CB #E90



Pond E91: CB #E91

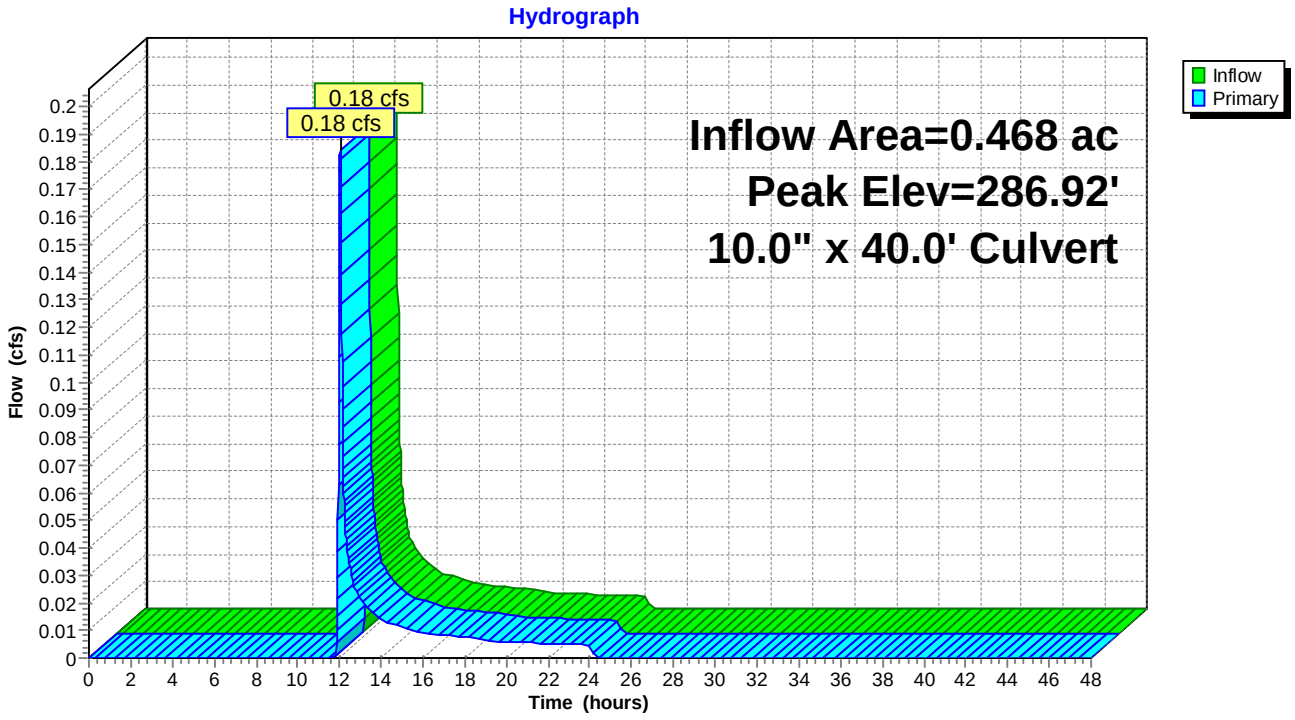
Inflow Area = 0.468 ac, Inflow Depth = 0.32" for 1-year event
Inflow = 0.18 cfs @ 12.03 hrs, Volume= 0.013 af
Outflow = 0.18 cfs @ 12.03 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min
Primary = 0.18 cfs @ 12.03 hrs, Volume= 0.013 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 286.92' @ 12.03 hrs
Flood Elev= 289.39'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (916.2 - 916.2)

Device	Routing	Invert	Outlet Devices
#1	Primary	286.70'	**10.0" x 40.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 283.05' S= 0.0912 '/' Cc= 0.900 n= 0.009 Corrugated PE, smooth interior

Primary OutFlow Max=0.18 cfs @ 12.03 hrs HW=286.92' TW=279.04' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.18 cfs @ 1.6 fps)

Pond E91: CB #E91



Pond E92: CB #E92

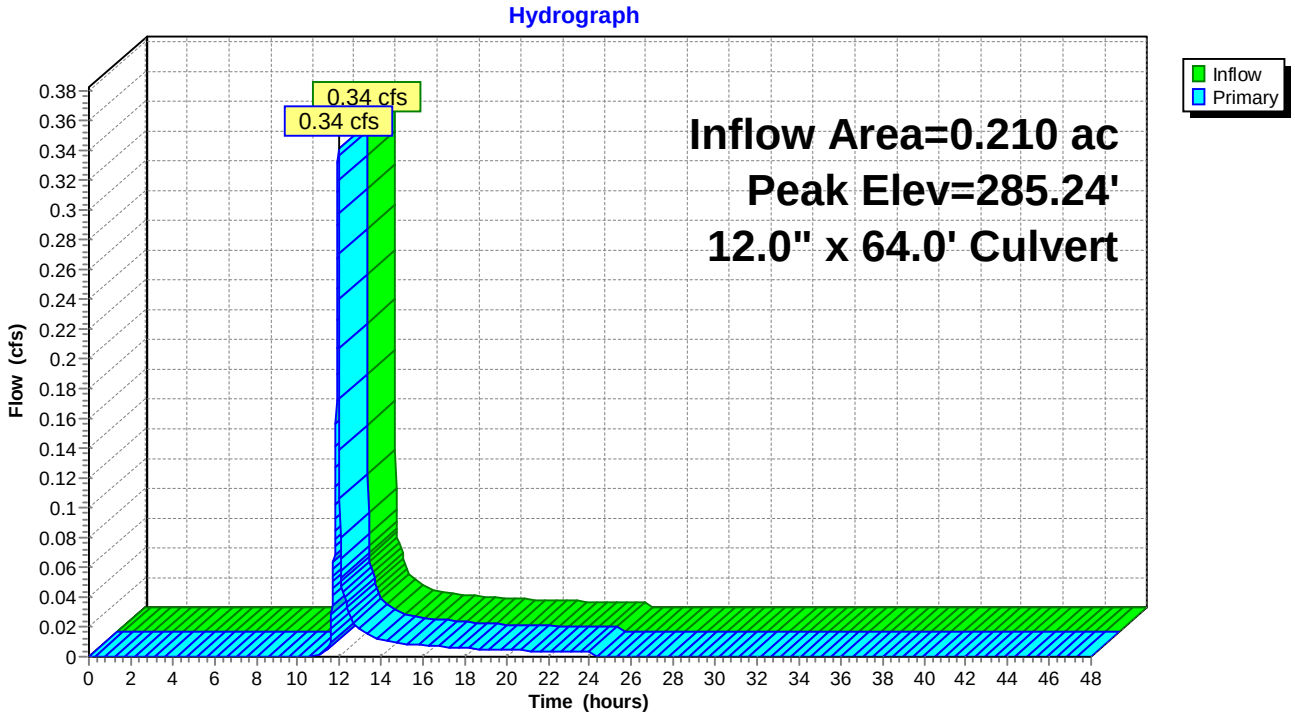
Inflow Area = 0.210 ac, Inflow Depth = 0.79" for 1-year event
Inflow = 0.34 cfs @ 11.93 hrs, Volume= 0.014 af
Outflow = 0.34 cfs @ 11.93 hrs, Volume= 0.014 af, Atten= 0%, Lag= 0.0 min
Primary = 0.34 cfs @ 11.93 hrs, Volume= 0.014 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 285.24' @ 11.93 hrs
Flood Elev= 289.29'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (853.2 - 853.2)

Device	Routing	Invert	Outlet Devices
#1	Primary	284.95'	**12.0" x 64.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 279.00' S= 0.0930 '/' Cc= 0.900 n= 0.011 Clay tile

Primary OutFlow Max=0.34 cfs @ 11.93 hrs HW=285.24' TW=279.10' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.34 cfs @ 1.8 fps)

Pond E92: CB #E92



Pond E93: CB #E93

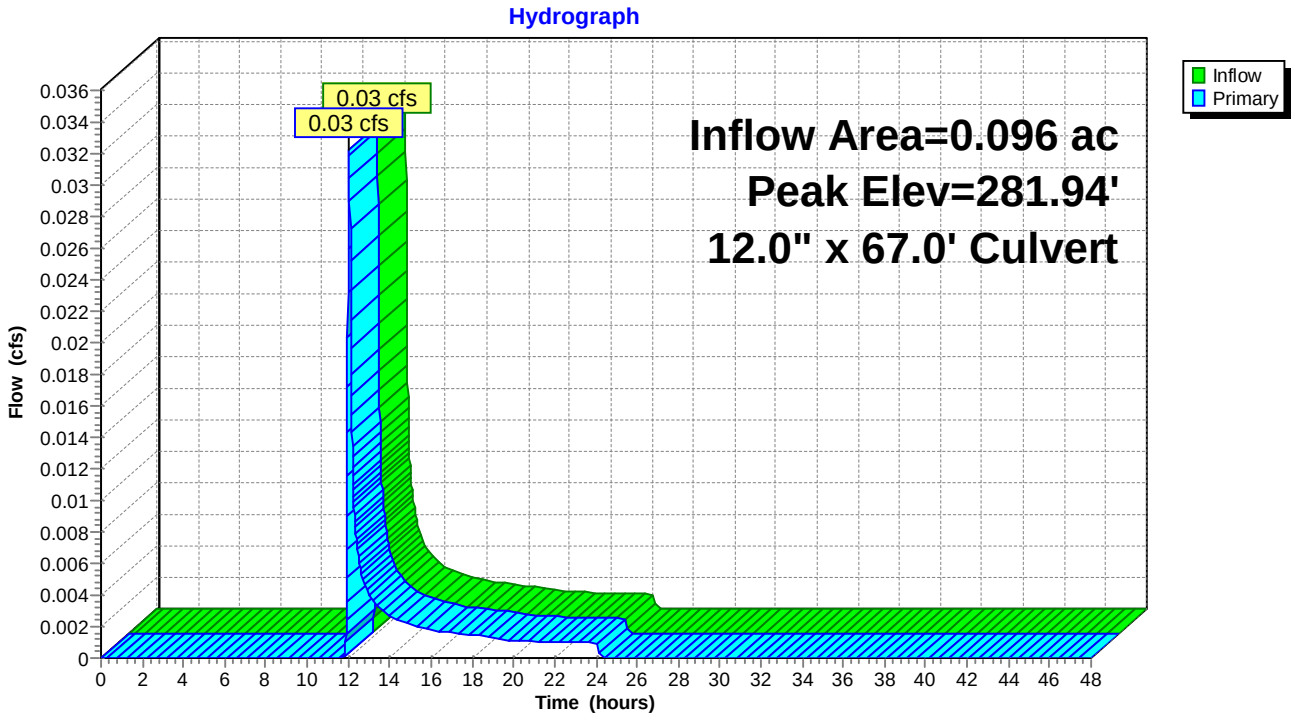
Inflow Area = 0.096 ac, Inflow Depth = 0.30" for 1-year event
Inflow = 0.03 cfs @ 12.04 hrs, Volume= 0.002 af
Outflow = 0.03 cfs @ 12.04 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.0 min
Primary = 0.03 cfs @ 12.04 hrs, Volume= 0.002 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 281.94' @ 12.04 hrs
Flood Elev= 285.97'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (922.8 - 922.8)

Device	Routing	Invert	Outlet Devices
#1	Primary	281.85'	**12.0" x 67.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 277.90' S= 0.0590 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=0.03 cfs @ 12.04 hrs HW=281.94' TW=278.04' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.03 cfs @ 1.0 fps)

Pond E93: CB #E93



Pond E95: CB #E95

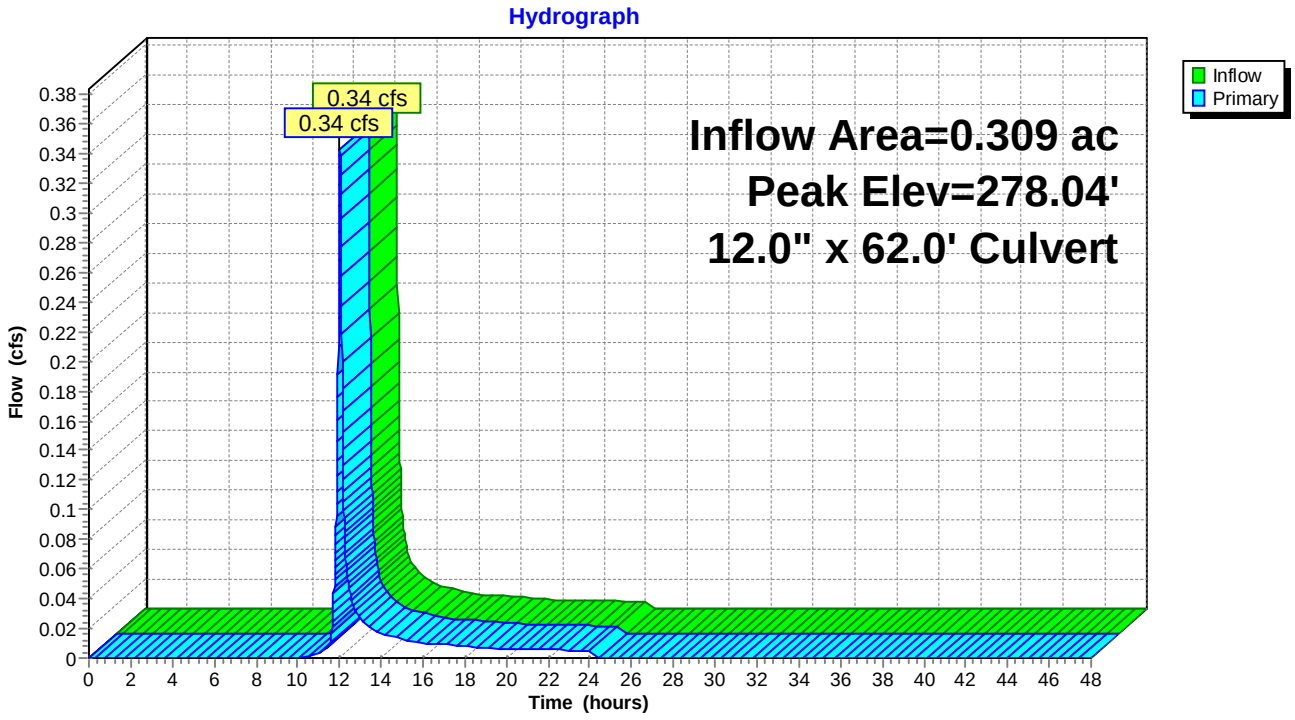
Inflow Area = 0.309 ac, Inflow Depth = 0.74" for 1-year event
Inflow = 0.34 cfs @ 12.02 hrs, Volume= 0.019 af
Outflow = 0.34 cfs @ 12.02 hrs, Volume= 0.019 af, Atten= 0%, Lag= 0.0 min
Primary = 0.34 cfs @ 12.02 hrs, Volume= 0.019 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 278.04' @ 12.02 hrs
Flood Elev= 285.47'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (858.0 - 858.0)

Device	Routing	Invert	Outlet Devices
#1	Primary	277.75'	**12.0" x 62.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 277.15' S= 0.0097 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=0.34 cfs @ 12.02 hrs HW=278.04' TW=277.46' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.34 cfs @ 1.8 fps)

Pond E95: CB #E95



Pond E96: CB #E96

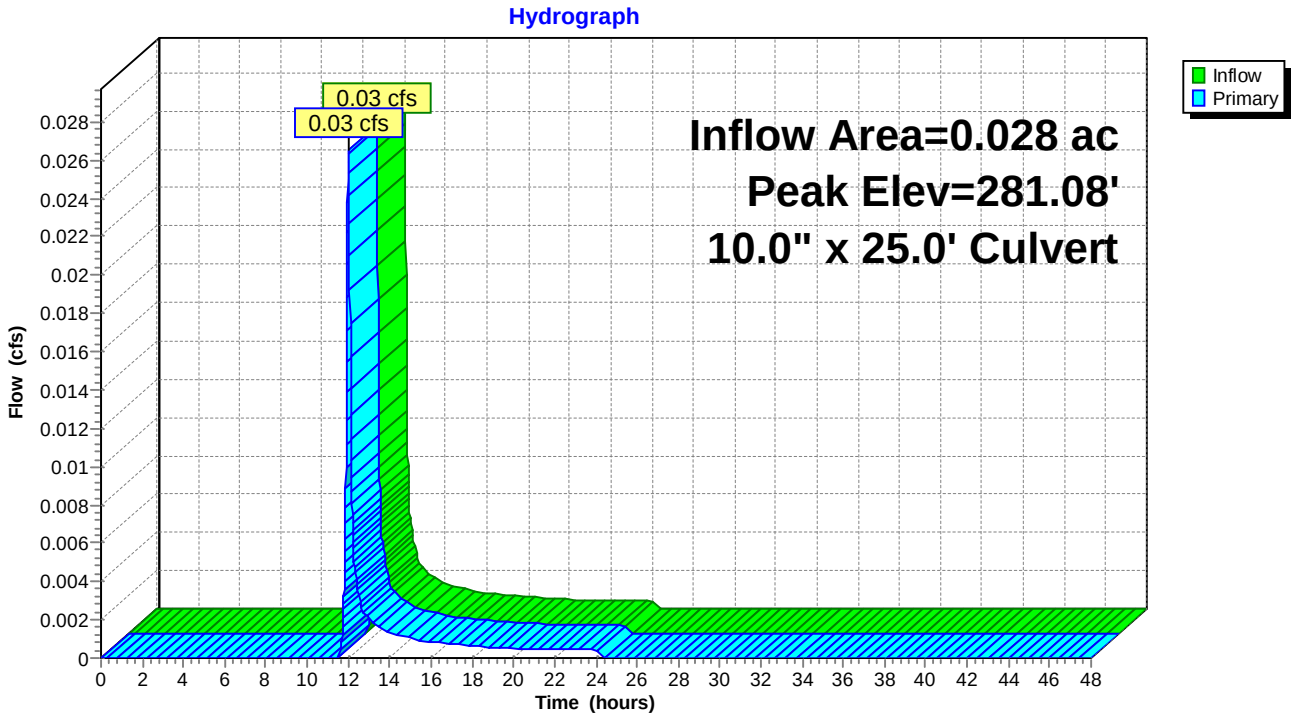
Inflow Area = 0.028 ac, Inflow Depth = 0.61" for 1-year event
Inflow = 0.03 cfs @ 12.01 hrs, Volume= 0.001 af
Outflow = 0.03 cfs @ 12.01 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min
Primary = 0.03 cfs @ 12.01 hrs, Volume= 0.001 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 281.08' @ 12.01 hrs
Flood Elev= 284.69'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (874.7 - 874.7)

Device	Routing	Invert	Outlet Devices
#1	Primary	281.00'	**10.0" x 25.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 277.15' S= 0.1540 '/' Cc= 0.900 n= 0.009 Corrugated PE, smooth interior

Primary OutFlow Max=0.03 cfs @ 12.01 hrs HW=281.08' TW=277.45' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.03 cfs @ 1.0 fps)

Pond E96: CB #E96



Pond E96a: E96A

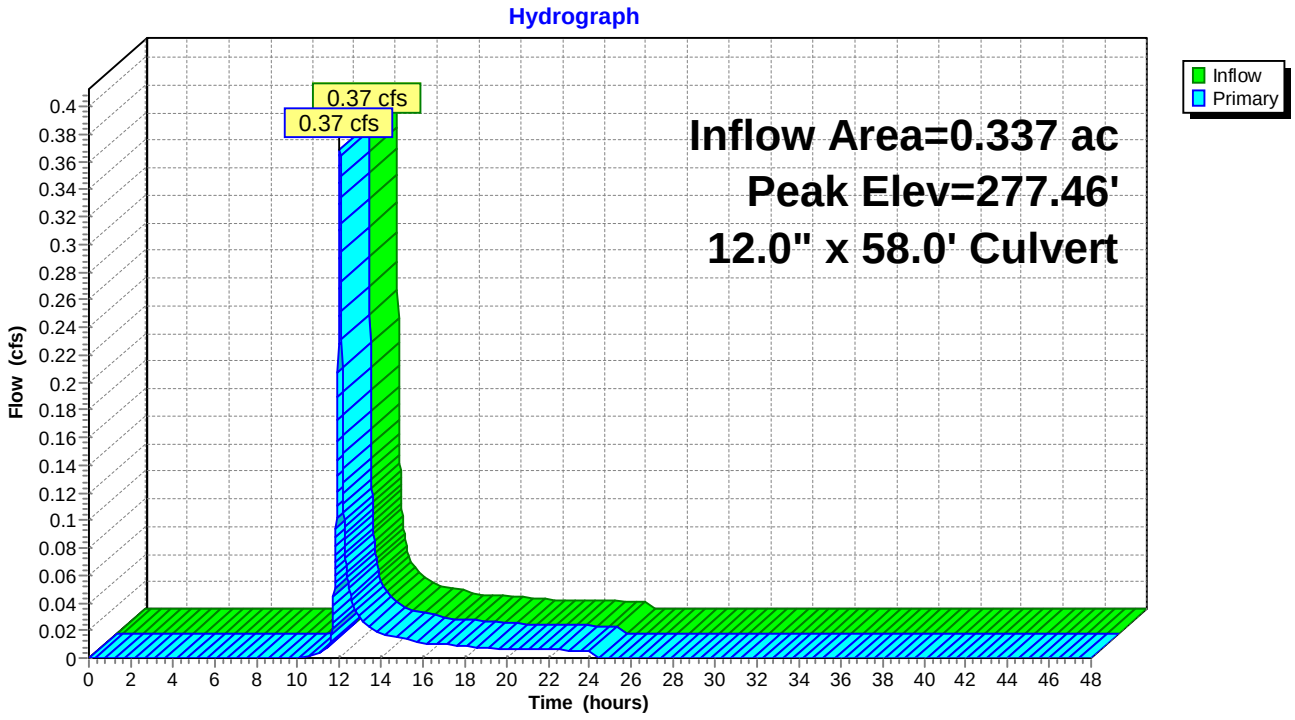
Inflow Area = 0.337 ac, Inflow Depth = 0.73" for 1-year event
Inflow = 0.37 cfs @ 12.02 hrs, Volume= 0.021 af
Outflow = 0.37 cfs @ 12.02 hrs, Volume= 0.021 af, Atten= 0%, Lag= 0.0 min
Primary = 0.37 cfs @ 12.02 hrs, Volume= 0.021 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 277.46' @ 12.02 hrs
Flood Elev= 284.69'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (859.1 - 859.1)

Device	Routing	Invert	Outlet Devices
#1	Primary	277.15'	**12.0" x 58.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 276.60' S= 0.0095 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=0.37 cfs @ 12.02 hrs HW=277.46' TW=276.97' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.37 cfs @ 2.7 fps)

Pond E96a: E96A



Pond E97: CB #E97

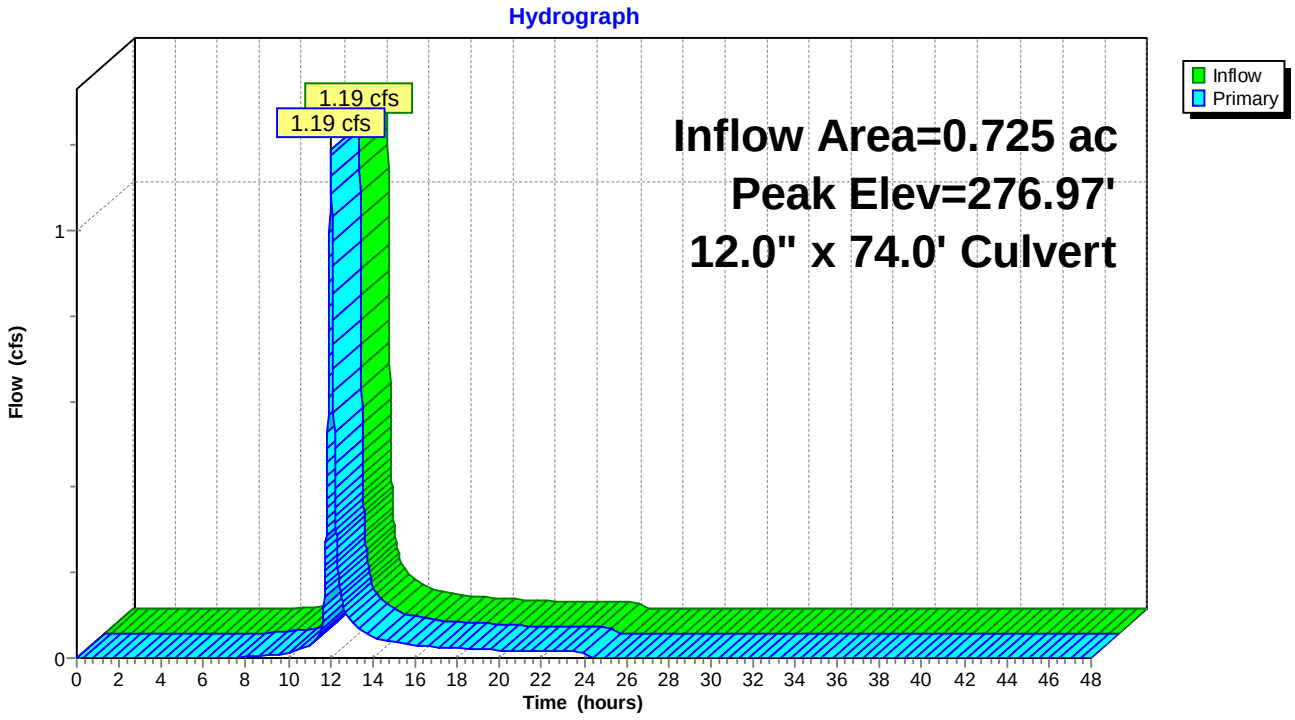
Inflow Area = 0.725 ac, Inflow Depth = 1.13" for 1-year event
Inflow = 1.19 cfs @ 12.03 hrs, Volume= 0.068 af
Outflow = 1.19 cfs @ 12.03 hrs, Volume= 0.068 af, Atten= 0%, Lag= 0.0 min
Primary = 1.19 cfs @ 12.03 hrs, Volume= 0.068 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 276.97' @ 12.03 hrs
Flood Elev= 284.47'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	276.40'	**12.0" x 74.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 274.00' S= 0.0324 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=1.19 cfs @ 12.03 hrs HW=276.97' TW=274.66' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.19 cfs @ 2.6 fps)

Pond E97: CB #E97



Pond E98: CB #E98

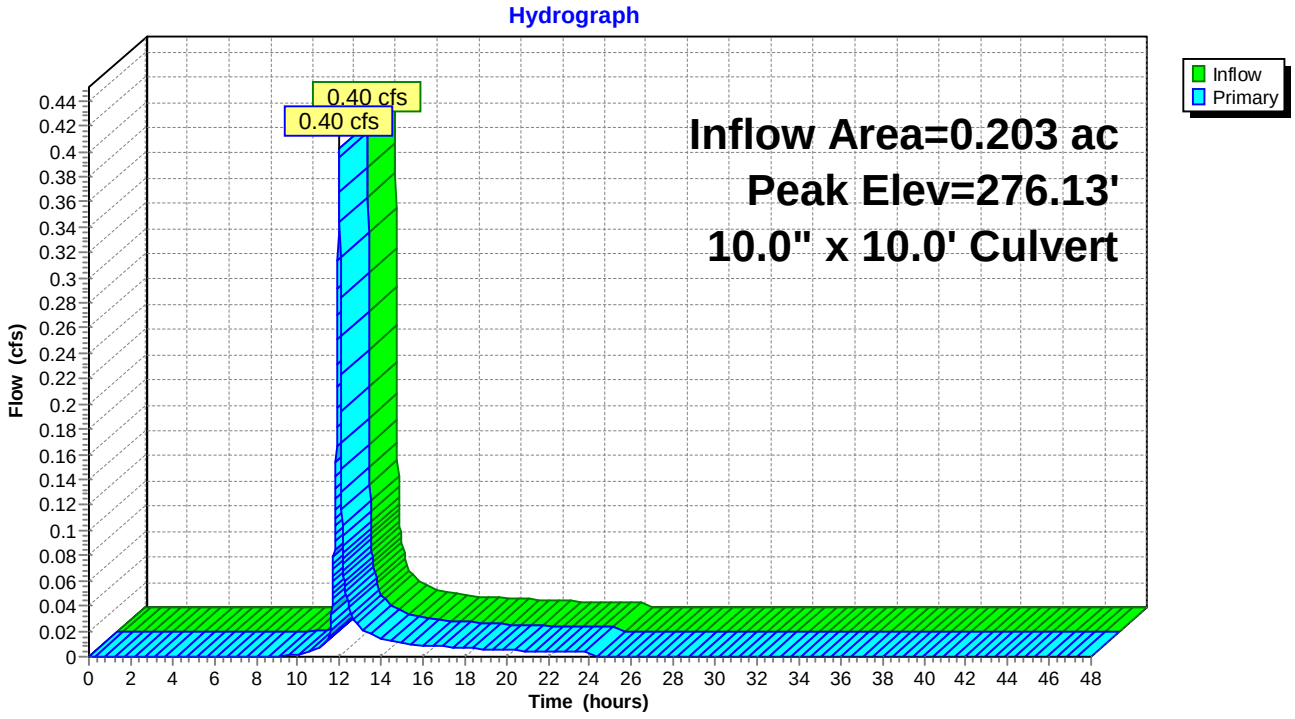
Inflow Area = 0.203 ac, Inflow Depth = 1.12" for 1-year event
Inflow = 0.40 cfs @ 11.98 hrs, Volume= 0.019 af
Outflow = 0.40 cfs @ 11.98 hrs, Volume= 0.019 af, Atten= 0%, Lag= 0.0 min
Primary = 0.40 cfs @ 11.98 hrs, Volume= 0.019 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 276.13' @ 11.98 hrs
Flood Elev= 279.49'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (833.8 - 833.8)

Device	Routing	Invert	Outlet Devices
#1	Primary	275.80'	**10.0" x 10.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 274.00' S= 0.1800 '/' Cc= 0.900 n= 0.011 Clay tile

Primary OutFlow Max=0.40 cfs @ 11.98 hrs HW=276.13' TW=274.64' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.40 cfs @ 2.0 fps)

Pond E98: CB #E98



Pond E98a: E98A

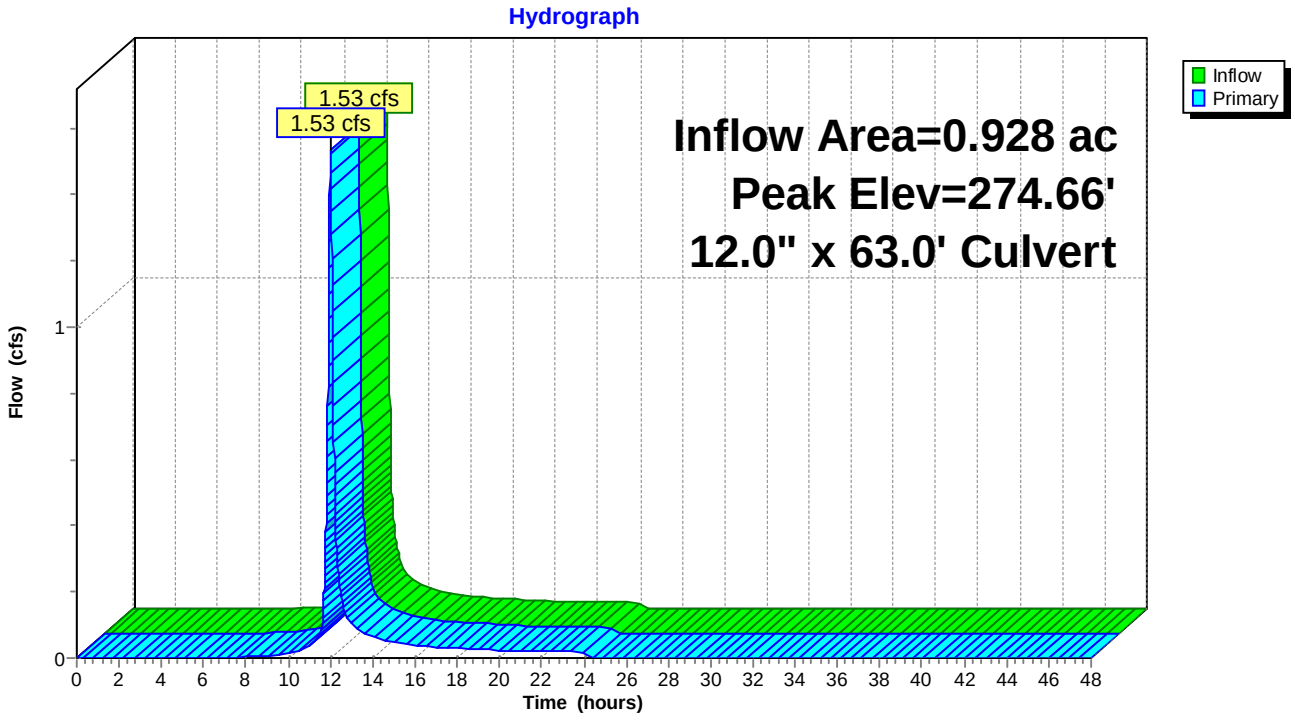
Inflow Area = 0.928 ac, Inflow Depth = 1.13" for 1-year event
Inflow = 1.53 cfs @ 12.01 hrs, Volume= 0.087 af
Outflow = 1.53 cfs @ 12.01 hrs, Volume= 0.087 af, Atten= 0%, Lag= 0.0 min
Primary = 1.53 cfs @ 12.01 hrs, Volume= 0.087 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 274.66' @ 12.01 hrs
Flood Elev= 279.49'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (830.4 - 830.4)

Device	Routing	Invert	Outlet Devices
#1	Primary	274.00'	**12.0" x 63.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 271.95' S= 0.0325 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=1.53 cfs @ 12.01 hrs HW=274.66' TW=272.51' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.53 cfs @ 2.8 fps)

Pond E98a: E98A



Pond E99: CB #E99

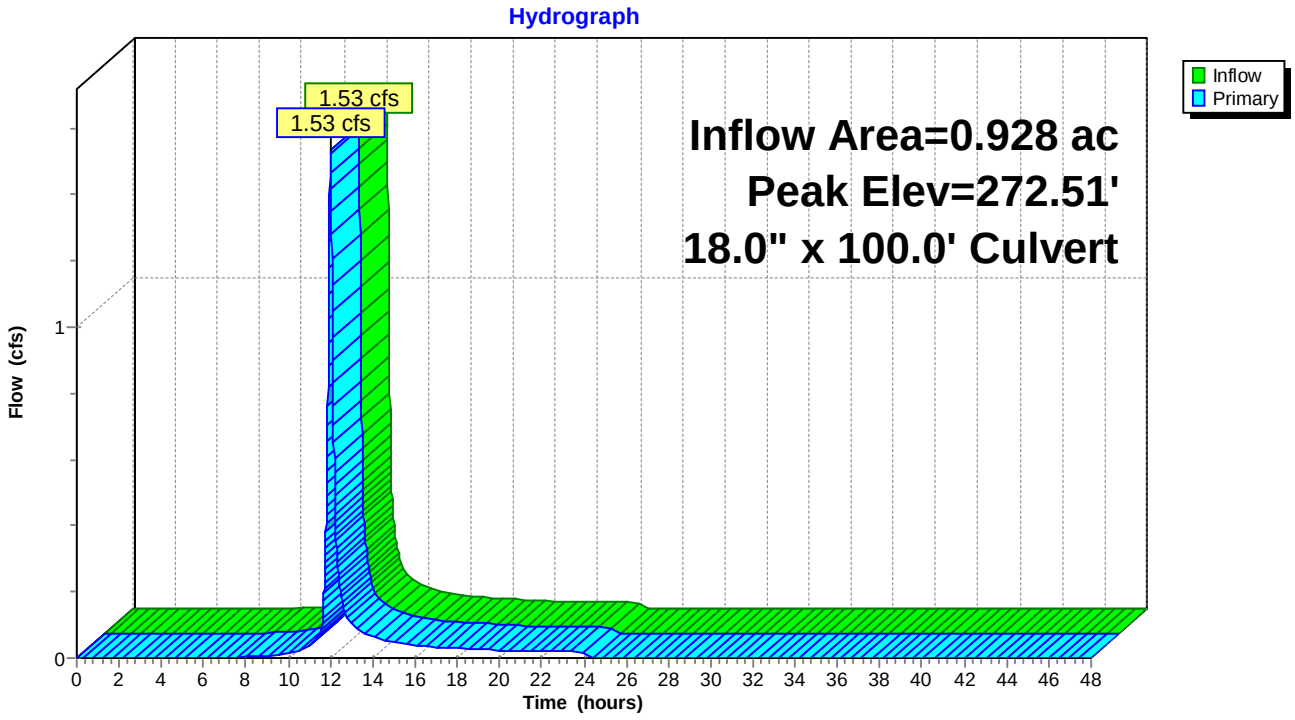
Inflow Area = 0.928 ac, Inflow Depth = 1.13" for 1-year event
Inflow = 1.53 cfs @ 12.01 hrs, Volume= 0.087 af
Outflow = 1.53 cfs @ 12.01 hrs, Volume= 0.087 af, Atten= 0%, Lag= 0.0 min
Primary = 1.53 cfs @ 12.01 hrs, Volume= 0.087 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 272.51' @ 12.01 hrs
Flood Elev= 277.96'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (830.4 - 830.4)

Device	Routing	Invert	Outlet Devices
#1	Primary	271.95'	**18.0" x 100.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 269.95' S= 0.0200 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=1.53 cfs @ 12.01 hrs HW=272.51' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.53 cfs @ 2.5 fps)

Pond E99: CB #E99



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 89S: (new Subcat) Runoff Area=6,852 sf Runoff Depth=1.79"
Flow Length=280' Tc=10.5 min CN=91 Runoff=0.42 cfs 0.024 af

Subcatchment 90S: (new Subcat) Runoff Area=3,448 sf Runoff Depth=0.29"
Flow Length=80' Tc=11.8 min CN=62 Runoff=0.02 cfs 0.002 af

Subcatchment 91S: (new Subcat) Runoff Area=20,384 sf Runoff Depth=0.48"
Flow Length=250' Tc=8.8 min CN=68 Runoff=0.31 cfs 0.019 af

Subcatchment 92S: (new Subcat) Runoff Area=9,152 sf Runoff Depth=1.03"
Flow Length=180' Tc=2.2 min CN=80 Runoff=0.45 cfs 0.018 af

Subcatchment 93S: (new Subcat) Runoff Area=4,165 sf Runoff Depth=0.44"
Flow Length=80' Tc=8.9 min CN=67 Runoff=0.06 cfs 0.004 af

Subcatchment 95S: (new Subcat) Runoff Area=9,306 sf Runoff Depth=1.21"
Flow Length=200' Tc=9.9 min CN=83 Runoff=0.40 cfs 0.022 af

Subcatchment 96S: (new Subcat) Runoff Area=1,205 sf Runoff Depth=0.82"
Flow Length=70' Tc=8.0 min CN=76 Runoff=0.04 cfs 0.002 af

Subcatchment 97S: (new Subcat) Runoff Area=16,911 sf Runoff Depth=1.79"
Flow Length=280' Tc=11.7 min CN=91 Runoff=0.99 cfs 0.058 af

Subcatchment 98S: (new Subcat) Runoff Area=8,824 sf Runoff Depth=1.41"
Flow Length=165' Tc=6.3 min CN=86 Runoff=0.50 cfs 0.024 af

Subcatchment 102S: (new Subcat) Runoff Area=24,520 sf Runoff Depth=0.82"
Flow Length=350' Tc=15.6 min CN=76 Runoff=0.56 cfs 0.038 af

Subcatchment N9S: (new Subcat) Runoff Area=12,320 sf Runoff Depth=1.79"
Flow Length=330' Tc=15.4 min CN=91 Runoff=0.64 cfs 0.042 af

Reach N: Sum Northerly Flow Inflow=2.96 cfs 0.189 af
Outflow=2.96 cfs 0.189 af

Reach SW: Sum Southwesterly Flow Inflow=0.96 cfs 0.062 af
Outflow=0.96 cfs 0.062 af

Pond E102: CB #E102 Peak Elev=277.05' Inflow=0.56 cfs 0.038 af
15.0" x 100.0' Culvert Outflow=0.56 cfs 0.038 af

Pond E89: CB #E89 Peak Elev=278.86' Inflow=0.96 cfs 0.062 af
12.0" x 80.0' Culvert Outflow=0.96 cfs 0.062 af

Pond E90: CB #E90 Peak Elev=279.20' Inflow=0.61 cfs 0.039 af
12.0" x 52.0' Culvert Outflow=0.61 cfs 0.039 af

Pond E91: CB #E91 Peak Elev=286.99' Inflow=0.31 cfs 0.019 af
10.0" x 40.0' Culvert Outflow=0.31 cfs 0.019 af

Pond E92: CB #E92 Peak Elev=285.28' Inflow=0.45 cfs 0.018 af
12.0" x 64.0' Culvert Outflow=0.45 cfs 0.018 af

Pond E93: CB #E93 Peak Elev=281.96' Inflow=0.06 cfs 0.004 af
12.0" x 67.0' Culvert Outflow=0.06 cfs 0.004 af

Pond E95: CB #E95 Peak Elev=278.09' Inflow=0.46 cfs 0.025 af
12.0" x 62.0' Culvert Outflow=0.46 cfs 0.025 af

Pond E96: CB #E96 Peak Elev=281.10' Inflow=0.04 cfs 0.002 af
10.0" x 25.0' Culvert Outflow=0.04 cfs 0.002 af

Pond E96a: E96A Peak Elev=277.52' Inflow=0.49 cfs 0.027 af
12.0" x 58.0' Culvert Outflow=0.49 cfs 0.027 af

Pond E97: CB #E97 Peak Elev=277.05' Inflow=1.48 cfs 0.085 af
12.0" x 74.0' Culvert Outflow=1.48 cfs 0.085 af

Pond E98: CB #E98 Peak Elev=276.18' Inflow=0.50 cfs 0.024 af
10.0" x 10.0' Culvert Outflow=0.50 cfs 0.024 af

Pond E98a: E98A Peak Elev=274.76' Inflow=1.91 cfs 0.109 af
12.0" x 63.0' Culvert Outflow=1.91 cfs 0.109 af

Pond E99: CB #E99 Peak Elev=272.58' Inflow=1.91 cfs 0.109 af
18.0" x 100.0' Culvert Outflow=1.91 cfs 0.109 af

Total Runoff Area = 2.688 ac Runoff Volume = 0.251 af Average Runoff Depth = 1.12"

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 89S: (new Subcat) Runoff Area=6,852 sf Runoff Depth=2.92"
Flow Length=280' Tc=10.5 min CN=91 Runoff=0.67 cfs 0.038 af

Subcatchment 90S: (new Subcat) Runoff Area=3,448 sf Runoff Depth=0.81"
Flow Length=80' Tc=11.8 min CN=62 Runoff=0.08 cfs 0.005 af

Subcatchment 91S: (new Subcat) Runoff Area=20,384 sf Runoff Depth=1.14"
Flow Length=250' Tc=8.8 min CN=68 Runoff=0.84 cfs 0.045 af

Subcatchment 92S: (new Subcat) Runoff Area=9,152 sf Runoff Depth=1.96"
Flow Length=180' Tc=2.2 min CN=80 Runoff=0.84 cfs 0.034 af

Subcatchment 93S: (new Subcat) Runoff Area=4,165 sf Runoff Depth=1.08"
Flow Length=80' Tc=8.9 min CN=67 Runoff=0.16 cfs 0.009 af

Subcatchment 95S: (new Subcat) Runoff Area=9,306 sf Runoff Depth=2.20"
Flow Length=200' Tc=9.9 min CN=83 Runoff=0.72 cfs 0.039 af

Subcatchment 96S: (new Subcat) Runoff Area=1,205 sf Runoff Depth=1.66"
Flow Length=70' Tc=8.0 min CN=76 Runoff=0.08 cfs 0.004 af

Subcatchment 97S: (new Subcat) Runoff Area=16,911 sf Runoff Depth=2.92"
Flow Length=280' Tc=11.7 min CN=91 Runoff=1.58 cfs 0.095 af

Subcatchment 98S: (new Subcat) Runoff Area=8,824 sf Runoff Depth=2.46"
Flow Length=165' Tc=6.3 min CN=86 Runoff=0.86 cfs 0.041 af

Subcatchment 102S: (new Subcat) Runoff Area=24,520 sf Runoff Depth=1.66"
Flow Length=350' Tc=15.6 min CN=76 Runoff=1.18 cfs 0.078 af

Subcatchment N9S: (new Subcat) Runoff Area=12,320 sf Runoff Depth=2.92"
Flow Length=330' Tc=15.4 min CN=91 Runoff=1.02 cfs 0.069 af

Reach N: Sum Northerly Flow Inflow=5.22 cfs 0.334 af
Outflow=5.22 cfs 0.334 af

Reach SW: Sum Southwesterly Flow Inflow=2.02 cfs 0.123 af
Outflow=2.02 cfs 0.123 af

Pond E102: CB #E102 Peak Elev=277.22' Inflow=1.18 cfs 0.078 af
15.0" x 100.0' Culvert Outflow=1.18 cfs 0.078 af

Pond E89: CB #E89 Peak Elev=279.14' Inflow=2.02 cfs 0.123 af
12.0" x 80.0' Culvert Outflow=2.02 cfs 0.123 af

Pond E90: CB #E90 Peak Elev=279.51' Inflow=1.45 cfs 0.084 af
12.0" x 52.0' Culvert Outflow=1.45 cfs 0.084 af

Pond E91: CB #E91 Peak Elev=287.20' Inflow=0.84 cfs 0.045 af
10.0" x 40.0' Culvert Outflow=0.84 cfs 0.045 af

Pond E92: CB #E92 Peak Elev=285.42' Inflow=0.84 cfs 0.034 af
12.0" x 64.0' Culvert Outflow=0.84 cfs 0.034 af

Pond E93: CB #E93 Peak Elev=282.04' Inflow=0.16 cfs 0.009 af
12.0" x 67.0' Culvert Outflow=0.16 cfs 0.009 af

Pond E95: CB #E95 Peak Elev=278.26' Inflow=0.88 cfs 0.048 af
12.0" x 62.0' Culvert Outflow=0.88 cfs 0.048 af

Pond E96: CB #E96 Peak Elev=281.14' Inflow=0.08 cfs 0.004 af
10.0" x 25.0' Culvert Outflow=0.08 cfs 0.004 af

Pond E96a: E96A Peak Elev=277.73' Inflow=0.96 cfs 0.052 af
12.0" x 58.0' Culvert Outflow=0.96 cfs 0.052 af

Pond E97: CB #E97 Peak Elev=277.34' Inflow=2.53 cfs 0.146 af
12.0" x 74.0' Culvert Outflow=2.53 cfs 0.146 af

Pond E98: CB #E98 Peak Elev=276.31' Inflow=0.86 cfs 0.041 af
10.0" x 10.0' Culvert Outflow=0.86 cfs 0.041 af

Pond E98a: E98A Peak Elev=275.25' Inflow=3.28 cfs 0.188 af
12.0" x 63.0' Culvert Outflow=3.28 cfs 0.188 af

Pond E99: CB #E99 Peak Elev=272.81' Inflow=3.28 cfs 0.188 af
18.0" x 100.0' Culvert Outflow=3.28 cfs 0.188 af

Total Runoff Area = 2.688 ac Runoff Volume = 0.457 af Average Runoff Depth = 2.04"

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 89S: (new Subcat) Runoff Area=6,852 sf Runoff Depth=4.47"
Flow Length=280' Tc=10.5 min CN=91 Runoff=0.99 cfs 0.059 af

Subcatchment 90S: (new Subcat) Runoff Area=3,448 sf Runoff Depth=1.76"
Flow Length=80' Tc=11.8 min CN=62 Runoff=0.19 cfs 0.012 af

Subcatchment 91S: (new Subcat) Runoff Area=20,384 sf Runoff Depth=2.24"
Flow Length=250' Tc=8.8 min CN=68 Runoff=1.69 cfs 0.087 af

Subcatchment 92S: (new Subcat) Runoff Area=9,152 sf Runoff Depth=3.33"
Flow Length=180' Tc=2.2 min CN=80 Runoff=1.40 cfs 0.058 af

Subcatchment 93S: (new Subcat) Runoff Area=4,165 sf Runoff Depth=2.16"
Flow Length=80' Tc=8.9 min CN=67 Runoff=0.33 cfs 0.017 af

Subcatchment 95S: (new Subcat) Runoff Area=9,306 sf Runoff Depth=3.63"
Flow Length=200' Tc=9.9 min CN=83 Runoff=1.17 cfs 0.065 af

Subcatchment 96S: (new Subcat) Runoff Area=1,205 sf Runoff Depth=2.95"
Flow Length=70' Tc=8.0 min CN=76 Runoff=0.14 cfs 0.007 af

Subcatchment 97S: (new Subcat) Runoff Area=16,911 sf Runoff Depth=4.47"
Flow Length=280' Tc=11.7 min CN=91 Runoff=2.36 cfs 0.145 af

Subcatchment 98S: (new Subcat) Runoff Area=8,824 sf Runoff Depth=3.94"
Flow Length=165' Tc=6.3 min CN=86 Runoff=1.34 cfs 0.066 af

Subcatchment 102S: (new Subcat) Runoff Area=24,520 sf Runoff Depth=2.95"
Flow Length=350' Tc=15.6 min CN=76 Runoff=2.12 cfs 0.139 af

Subcatchment N9S: (new Subcat) Runoff Area=12,320 sf Runoff Depth=4.47"
Flow Length=330' Tc=15.4 min CN=91 Runoff=1.53 cfs 0.105 af

Reach N: Sum Northerly Flow Inflow=8.39 cfs 0.543 af
Outflow=8.39 cfs 0.543 af

Reach SW: Sum Southwesterly Flow Inflow=3.62 cfs 0.216 af
Outflow=3.62 cfs 0.216 af

Pond E102: CB #E102 Peak Elev=277.42' Inflow=2.12 cfs 0.139 af
15.0" x 100.0' Culvert Outflow=2.12 cfs 0.139 af

Pond E89: CB #E89 Peak Elev=279.76' Inflow=3.62 cfs 0.216 af
12.0" x 80.0' Culvert Outflow=3.62 cfs 0.216 af

Pond E90: CB #E90 Peak Elev=280.28' Inflow=2.76 cfs 0.157 af
12.0" x 52.0' Culvert Outflow=2.76 cfs 0.157 af

Pond E91: CB #E91 Peak Elev=287.53' Inflow=1.69 cfs 0.087 af
10.0" x 40.0' Culvert Outflow=1.69 cfs 0.087 af

Pond E92: CB #E92 Peak Elev=285.58' Inflow=1.40 cfs 0.058 af
12.0" x 64.0' Culvert Outflow=1.40 cfs 0.058 af

Pond E93: CB #E93 Peak Elev=282.13' Inflow=0.33 cfs 0.017 af
12.0" x 67.0' Culvert Outflow=0.33 cfs 0.017 af

Pond E95: CB #E95 Peak Elev=278.57' Inflow=1.51 cfs 0.082 af
12.0" x 62.0' Culvert Outflow=1.51 cfs 0.082 af

Pond E96: CB #E96 Peak Elev=281.19' Inflow=0.14 cfs 0.007 af
10.0" x 25.0' Culvert Outflow=0.14 cfs 0.007 af

Pond E96a: E96A Peak Elev=278.23' Inflow=1.64 cfs 0.089 af
12.0" x 58.0' Culvert Outflow=1.64 cfs 0.089 af

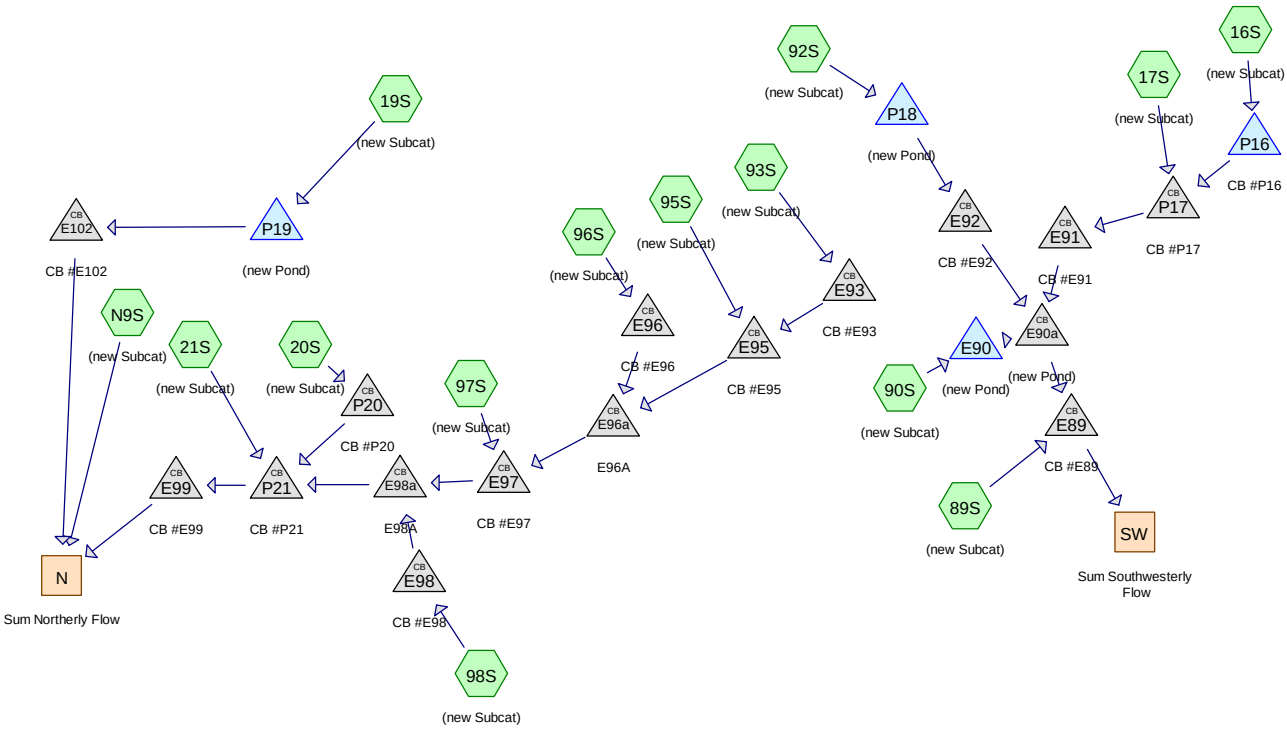
Pond E97: CB #E97 Peak Elev=278.01' Inflow=3.98 cfs 0.233 af
12.0" x 74.0' Culvert Outflow=3.98 cfs 0.233 af

Pond E98: CB #E98 Peak Elev=276.59' Inflow=1.34 cfs 0.066 af
10.0" x 10.0' Culvert Outflow=1.34 cfs 0.066 af

Pond E98a: E98A Peak Elev=276.37' Inflow=5.17 cfs 0.300 af
12.0" x 63.0' Culvert Outflow=5.17 cfs 0.300 af

Pond E99: CB #E99 Peak Elev=273.08' Inflow=5.17 cfs 0.300 af
18.0" x 100.0' Culvert Outflow=5.17 cfs 0.300 af

Total Runoff Area = 2.688 ac Runoff Volume = 0.759 af Average Runoff Depth = 3.39"



Subcat Reach Pond Link

Drainage Diagram for HVCC Cross Road North Proposed
Prepared by {enter your company name here} 5/8/2013

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 16S: (new Subcat) Runoff Area=14,445 sf Runoff Depth=0.42"
Flow Length=220' Tc=11.4 min CN=71 Runoff=0.17 cfs 0.012 af

Subcatchment 17S: (new Subcat) Runoff Area=1,100 sf Runoff Depth=2.12"
Flow Length=80' Tc=1.1 min CN=98 Runoff=0.10 cfs 0.004 af

Subcatchment 19S: (new Subcat) Runoff Area=23,119 sf Runoff Depth=0.65"
Flow Length=250' Tc=15.1 min CN=77 Runoff=0.41 cfs 0.029 af

Subcatchment 20S: (new Subcat) Runoff Area=3,249 sf Runoff Depth=2.12"
Flow Length=80' Tc=0.9 min CN=98 Runoff=0.29 cfs 0.013 af

Subcatchment 21S: (new Subcat) Runoff Area=5,730 sf Runoff Depth=1.12"
Flow Length=180' Tc=8.7 min CN=86 Runoff=0.24 cfs 0.012 af

Subcatchment 89S: (new Subcat) Runoff Area=7,358 sf Runoff Depth=1.32"
Flow Length=220' Tc=2.8 min CN=89 Runoff=0.44 cfs 0.019 af

Subcatchment 90S: (new Subcat) Runoff Area=7,779 sf Runoff Depth=0.24"
Flow Length=130' Tc=9.1 min CN=65 Runoff=0.04 cfs 0.004 af

Subcatchment 92S: (new Subcat) Runoff Area=12,228 sf Runoff Depth=0.49"
Flow Length=230' Tc=2.4 min CN=73 Runoff=0.27 cfs 0.011 af

Subcatchment 93S: (new Subcat) Runoff Area=3,185 sf Runoff Depth=0.24"
Flow Length=50' Tc=4.6 min CN=65 Runoff=0.02 cfs 0.001 af

Subcatchment 95S: (new Subcat) Runoff Area=8,601 sf Runoff Depth=0.89"
Flow Length=100' Tc=3.9 min CN=82 Runoff=0.34 cfs 0.015 af

Subcatchment 96S: (new Subcat) Runoff Area=1,205 sf Runoff Depth=1.47"
Flow Length=30' Tc=0.7 min CN=91 Runoff=0.09 cfs 0.003 af

Subcatchment 97S: (new Subcat) Runoff Area=15,490 sf Runoff Depth=1.25"
Flow Length=210' Tc=7.6 min CN=88 Runoff=0.75 cfs 0.037 af

Subcatchment 98S: (new Subcat) Runoff Area=1,265 sf Runoff Depth=0.15"
Flow Length=40' Tc=3.9 min CN=61 Runoff=0.00 cfs 0.000 af

Subcatchment N9S: (new Subcat) Runoff Area=12,230 sf Runoff Depth=1.64"
Flow Length=230' Tc=2.1 min CN=93 Runoff=0.90 cfs 0.038 af

Reach N: Sum Northerly Flow Inflow=2.32 cfs 0.121 af
Outflow=2.32 cfs 0.121 af

Reach SW: Sum Southwesterly Flow Inflow=0.53 cfs 0.023 af
Outflow=0.53 cfs 0.023 af

Pond E102: CB #E102 Peak Elev=276.70' Inflow=0.00 cfs 0.000 af
15.0" x 100.0' Culvert Outflow=0.00 cfs 0.000 af

Pond E89: CB #E89 Peak Elev=278.71' Inflow=0.53 cfs 0.023 af
12.0" x 80.0' Culvert Outflow=0.53 cfs 0.023 af

Pond E90: (new Pond) Peak Elev=283.96' Storage=38 cf Inflow=0.04 cfs 0.004 af
Discarded=0.00 cfs 0.004 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.004 af

Pond E90a: (new Pond) Peak Elev=278.93' Inflow=0.10 cfs 0.004 af
12.0" x 52.0' Culvert Outflow=0.10 cfs 0.004 af

Pond E91: CB #E91 Peak Elev=282.50' Inflow=0.10 cfs 0.004 af
8.0" x 42.0' Culvert Outflow=0.10 cfs 0.004 af

Pond E92: CB #E92 Peak Elev=284.95' Inflow=0.00 cfs 0.000 af
12.0" x 64.0' Culvert Outflow=0.00 cfs 0.000 af

Pond E93: CB #E93 Peak Elev=281.92' Inflow=0.02 cfs 0.001 af
12.0" x 67.0' Culvert Outflow=0.02 cfs 0.001 af

Pond E95: CB #E95 Peak Elev=278.05' Inflow=0.36 cfs 0.016 af
12.0" x 62.0' Culvert Outflow=0.36 cfs 0.016 af

Pond E96: CB #E96 Peak Elev=281.15' Inflow=0.09 cfs 0.003 af
10.0" x 25.0' Culvert Outflow=0.09 cfs 0.003 af

Pond E96a: E96A Peak Elev=277.47' Inflow=0.42 cfs 0.020 af
12.0" x 58.0' Culvert Outflow=0.42 cfs 0.020 af

Pond E97: CB #E97 Peak Elev=276.95' Inflow=1.12 cfs 0.057 af
12.0" x 74.0' Culvert Outflow=1.12 cfs 0.057 af

Pond E98: CB #E98 Peak Elev=275.83' Inflow=0.00 cfs 0.000 af
10.0" x 10.0' Culvert Outflow=0.00 cfs 0.000 af

Pond E98a: E98A Peak Elev=274.55' Inflow=1.12 cfs 0.057 af
12.0" x 34.0' Culvert Outflow=1.12 cfs 0.057 af

Pond E99: CB #E99 Peak Elev=272.50' Inflow=1.49 cfs 0.083 af
18.0" x 100.0' Culvert Outflow=1.49 cfs 0.083 af

Pond P16: CB #P16 Peak Elev=286.79' Storage=165 cf Inflow=0.17 cfs 0.012 af
Discarded=0.01 cfs 0.012 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.012 af

Pond P17: CB #P17 Peak Elev=282.66' Inflow=0.10 cfs 0.004 af
8.0" x 30.0' Culvert Outflow=0.10 cfs 0.004 af

Pond P18: (new Pond) Peak Elev=287.37' Storage=175 cf Inflow=0.27 cfs 0.011 af
Discarded=0.01 cfs 0.011 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.011 af

Pond P19: (new Pond) Peak Elev=286.73' Storage=497 cf Inflow=0.41 cfs 0.029 af
Discarded=0.03 cfs 0.029 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.029 af

Pond P20: CB #P20 Peak Elev=279.75' Inflow=0.29 cfs 0.013 af
15.0" x 20.0' Culvert Outflow=0.29 cfs 0.013 af

Pond P21: CB #P21 Peak Elev=273.52' Inflow=1.49 cfs 0.083 af
12.0" x 28.0' Culvert Outflow=1.49 cfs 0.083 af

Total Runoff Area = 2.686 ac Runoff Volume = 0.199 af Average Runoff Depth = 0.89"

Subcatchment 16S: (new Subcat)

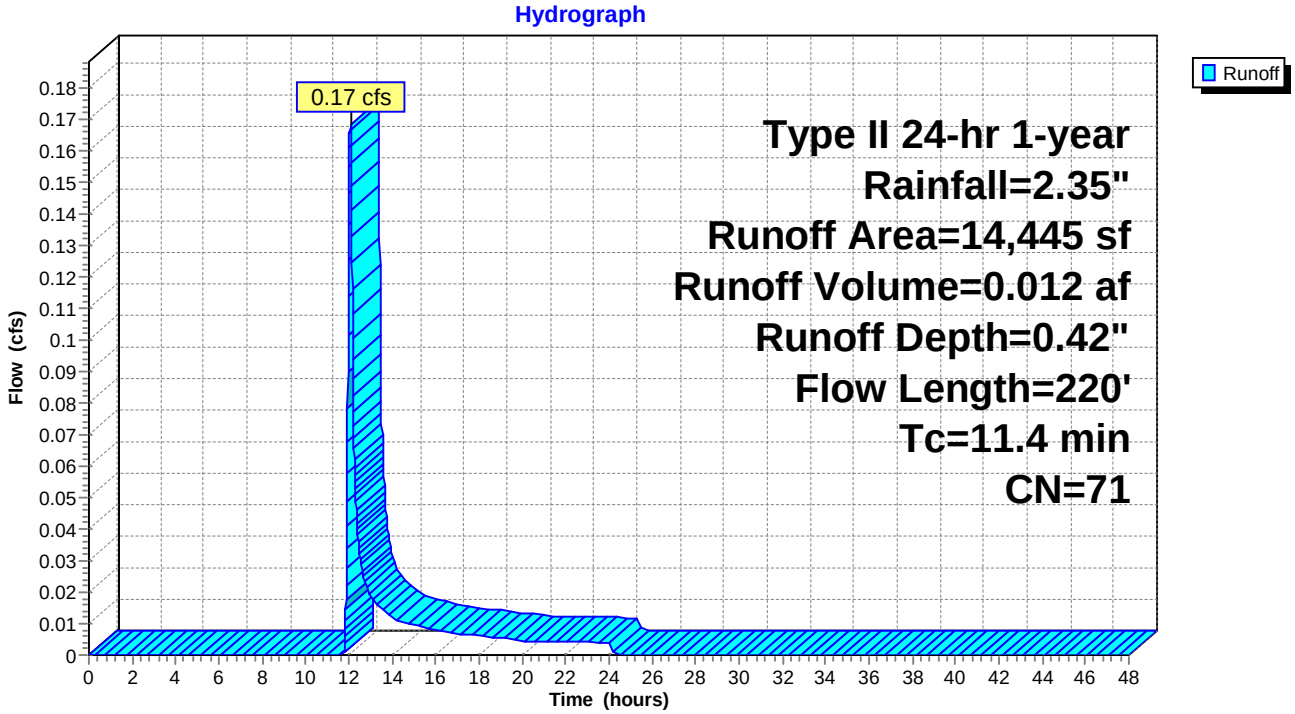
Runoff = 0.17 cfs @ 12.05 hrs, Volume= 0.012 af, Depth= 0.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
3,901	98	Paved parking & roofs
10,544	61	>75% Grass cover, Good, HSG B
14,445	71	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7	100	0.0200	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.7	120	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
11.4	220	Total			

Subcatchment 16S: (new Subcat)



Subcatchment 17S: (new Subcat)

[49] Hint: Tc<2dt may require smaller dt

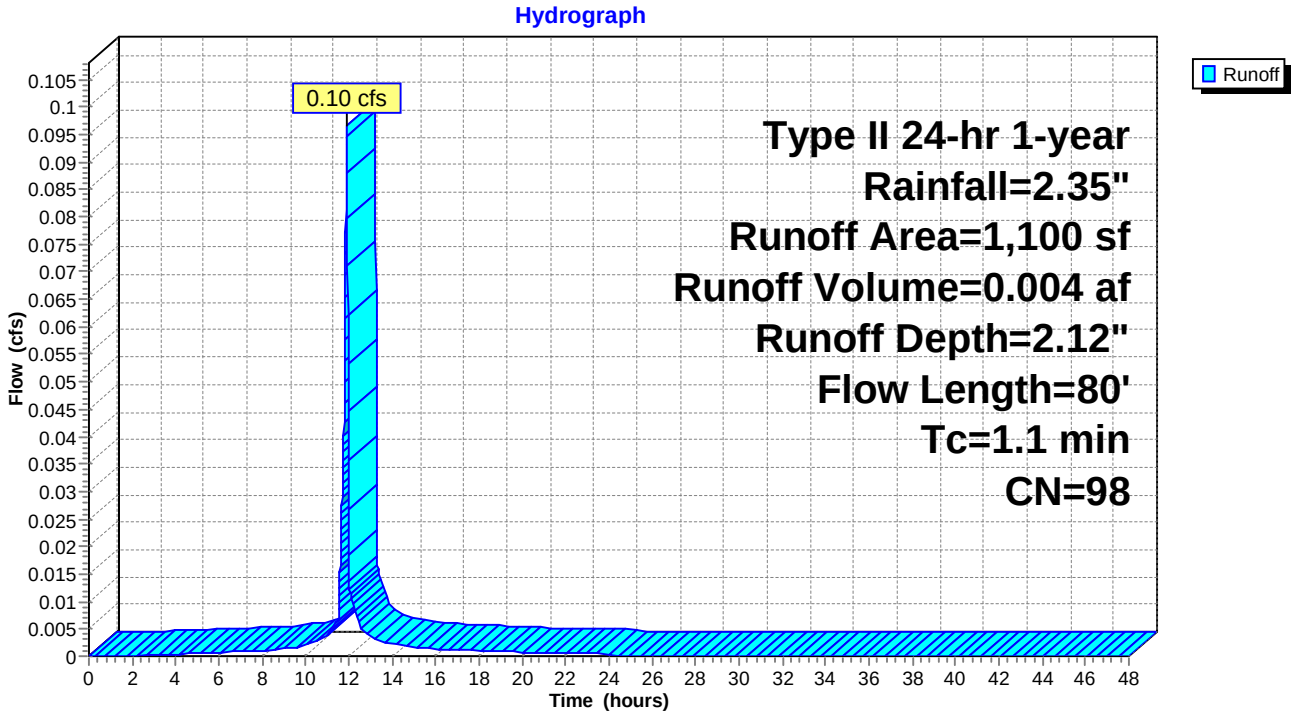
Runoff = 0.10 cfs @ 11.91 hrs, Volume= 0.004 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
1,100	98	Paved parking & roofs

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	80	0.0200	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"

Subcatchment 17S: (new Subcat)



Subcatchment 19S: (new Subcat)

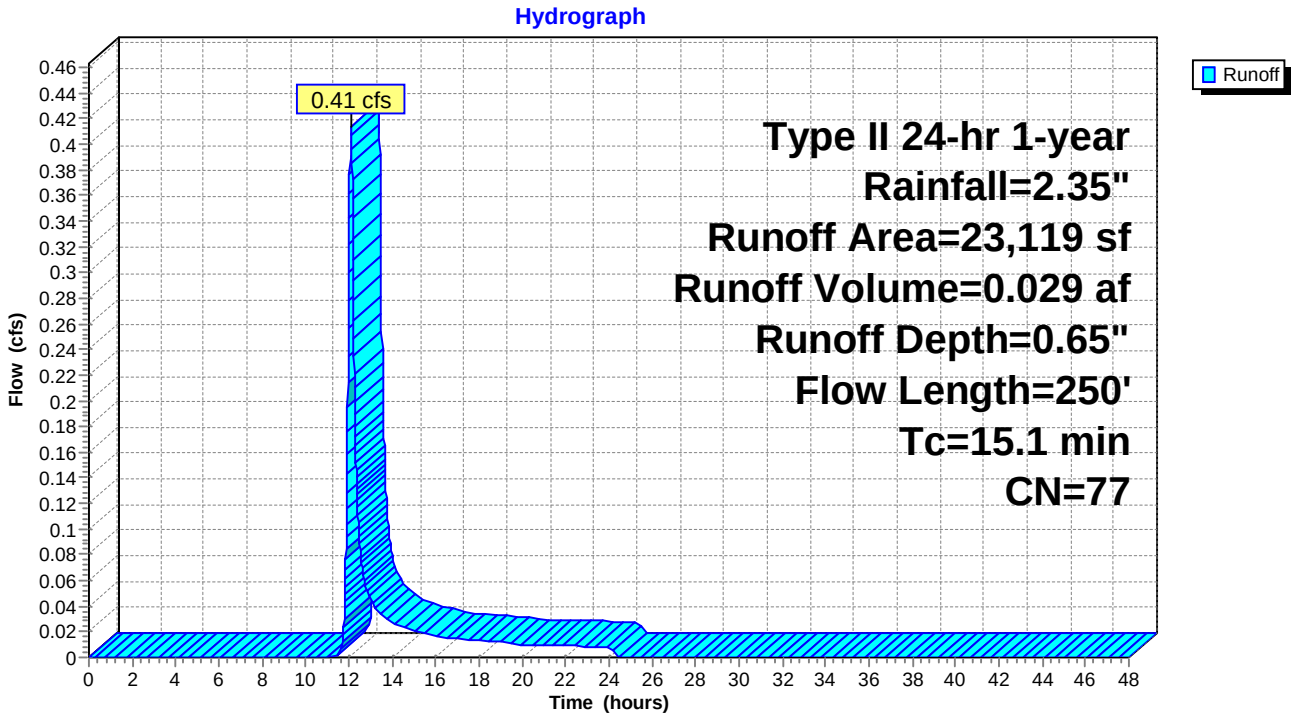
Runoff = 0.41 cfs @ 12.09 hrs, Volume= 0.029 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
10,265	98	Paved parking & roofs
12,854	61	>75% Grass cover, Good, HSG B
23,119	77	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	100	0.0100	0.1		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.3	50	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	100	0.0200	2.3		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
15.1	250	Total			

Subcatchment 19S: (new Subcat)



Subcatchment 20S: (new Subcat)

[49] Hint: Tc<2dt may require smaller dt

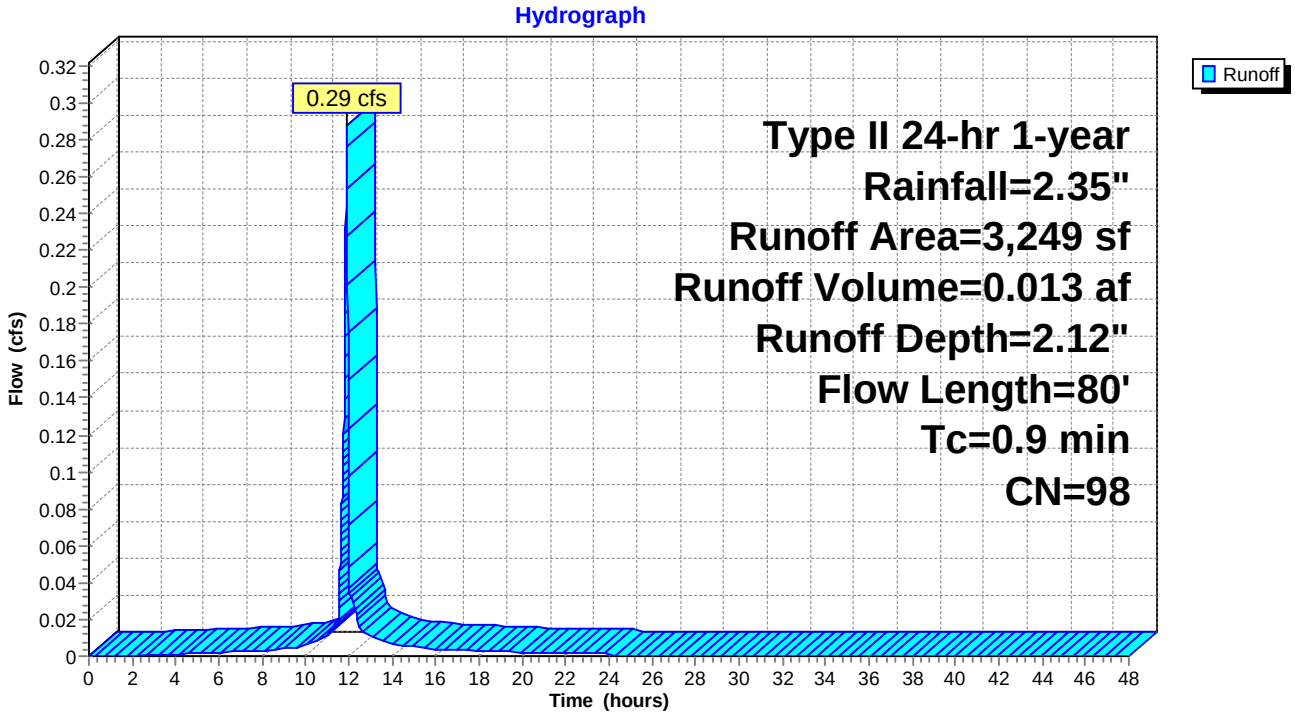
Runoff = 0.29 cfs @ 11.91 hrs, Volume= 0.013 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
3,249	98	Paved parking & roofs

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	80	0.0300	1.4		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"

Subcatchment 20S: (new Subcat)



Subcatchment 21S: (new Subcat)

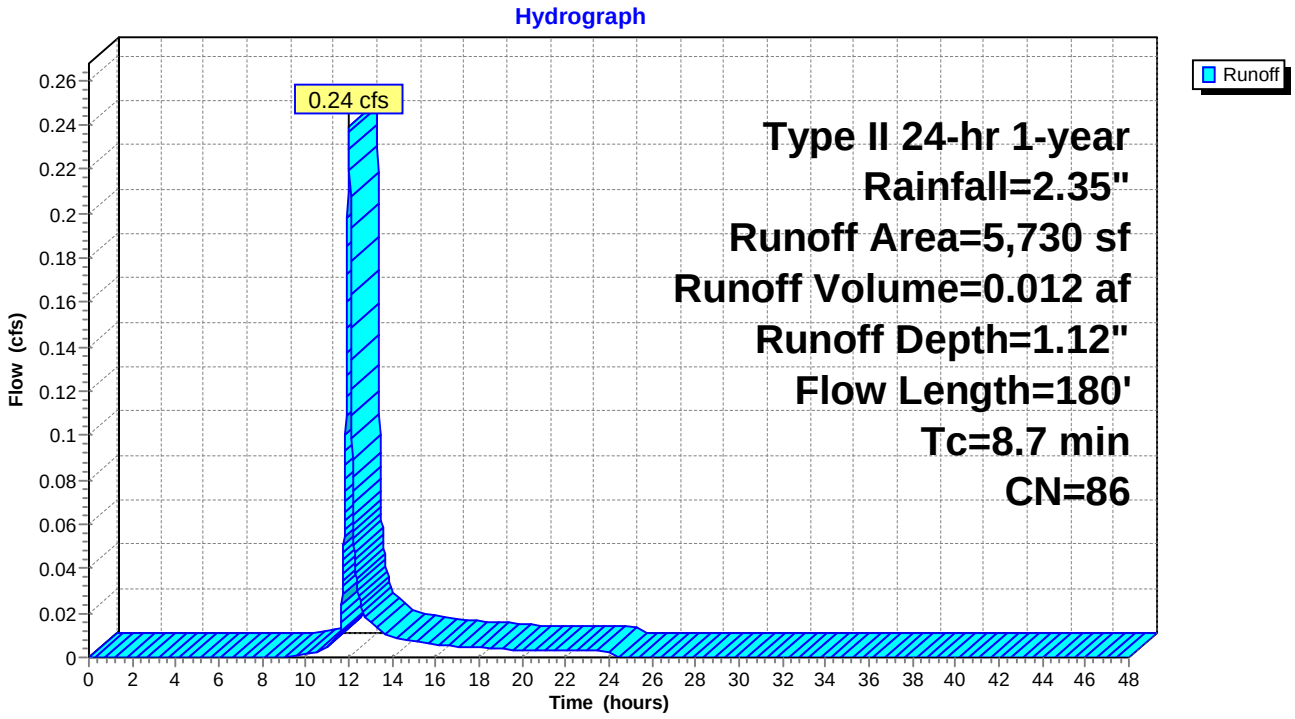
Runoff = 0.24 cfs @ 12.00 hrs, Volume= 0.012 af, Depth= 1.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
3,924	98	Paved parking & roofs
1,806	61	>75% Grass cover, Good, HSG B
5,730	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	70	0.0200	0.1		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.2	30	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	80	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.7	180	Total			

Subcatchment 21S: (new Subcat)



Subcatchment 89S: (new Subcat)

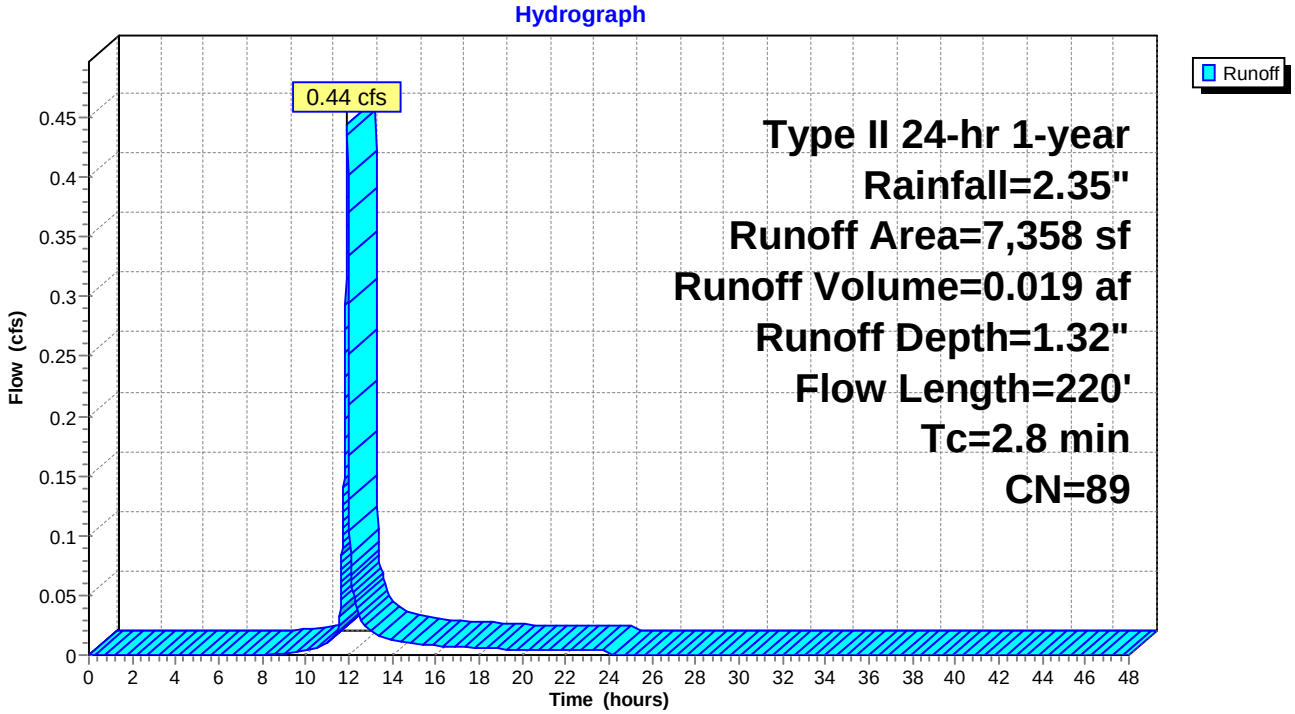
Runoff = 0.44 cfs @ 11.93 hrs, Volume= 0.019 af, Depth= 1.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
5,568	98	Paved parking & roofs
1,790	61	>75% Grass cover, Good, HSG B
7,358	89	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0200	1.3		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
1.5	120	0.0200	1.3		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
2.8	220	Total			

Subcatchment 89S: (new Subcat)



Subcatchment 90S: (new Subcat)

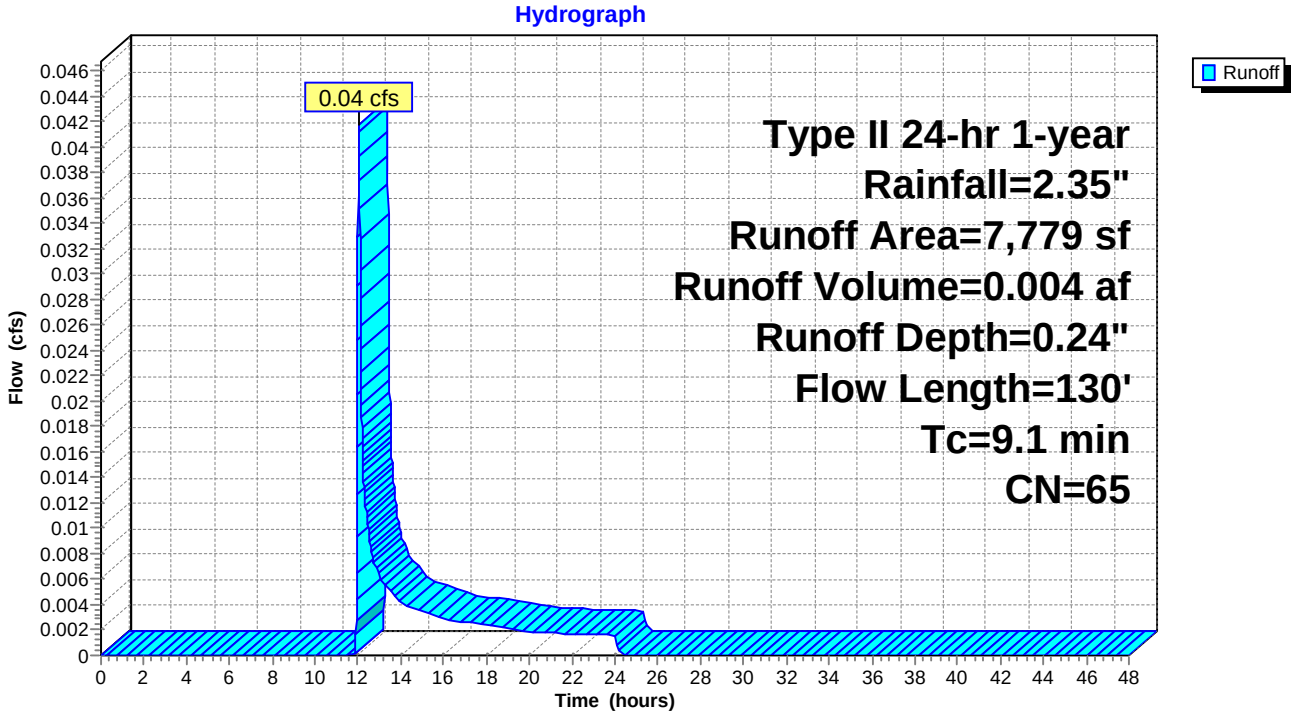
Runoff = 0.04 cfs @ 12.04 hrs, Volume= 0.004 af, Depth= 0.24"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
896	98	Paved parking & roofs
6,883	61	>75% Grass cover, Good, HSG B
7,779	65	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	25	0.0200	1.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
8.5	75	0.0200	0.1		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.2	30	0.0200	2.3		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
9.1	130	Total			

Subcatchment 90S: (new Subcat)



Subcatchment 92S: (new Subcat)

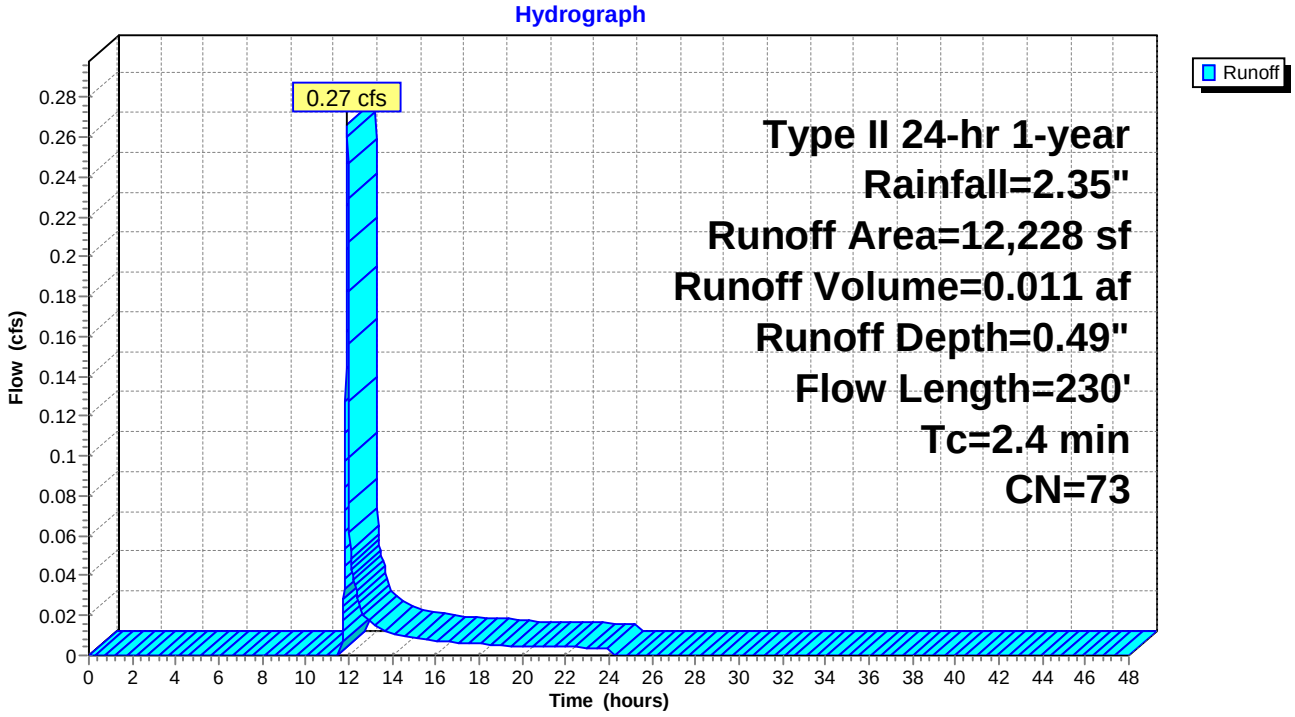
Runoff = 0.27 cfs @ 11.94 hrs, Volume= 0.011 af, Depth= 0.49"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
4,038	98	Paved parking & roofs
8,190	61	>75% Grass cover, Good, HSG B
12,228	73	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0200	1.3		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.3	50	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	80	0.0100	1.6		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.4	230	Total			

Subcatchment 92S: (new Subcat)



Subcatchment 93S: (new Subcat)

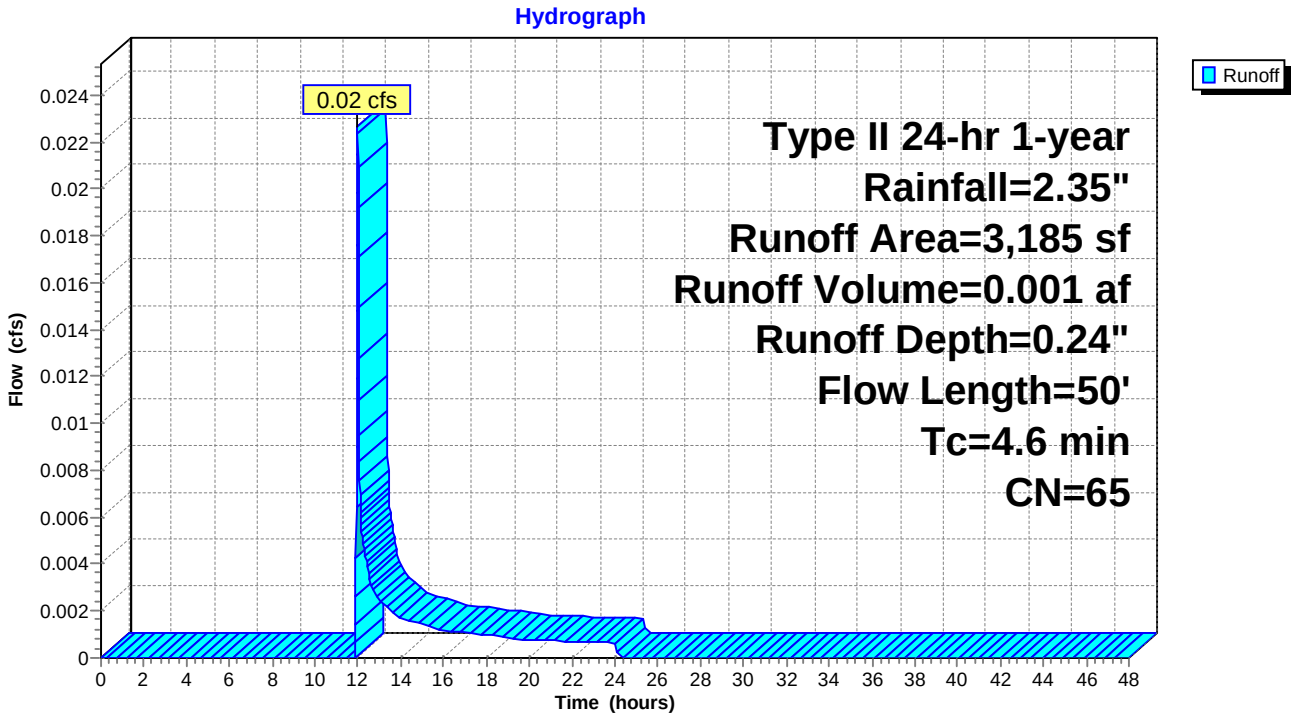
Runoff = 0.02 cfs @ 11.99 hrs, Volume= 0.001 af, Depth= 0.24"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
2,831	61	>75% Grass cover, Good, HSG B
354	98	Paved parking & roofs
3,185	65	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	50	0.0400	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"

Subcatchment 93S: (new Subcat)



Subcatchment 95S: (new Subcat)

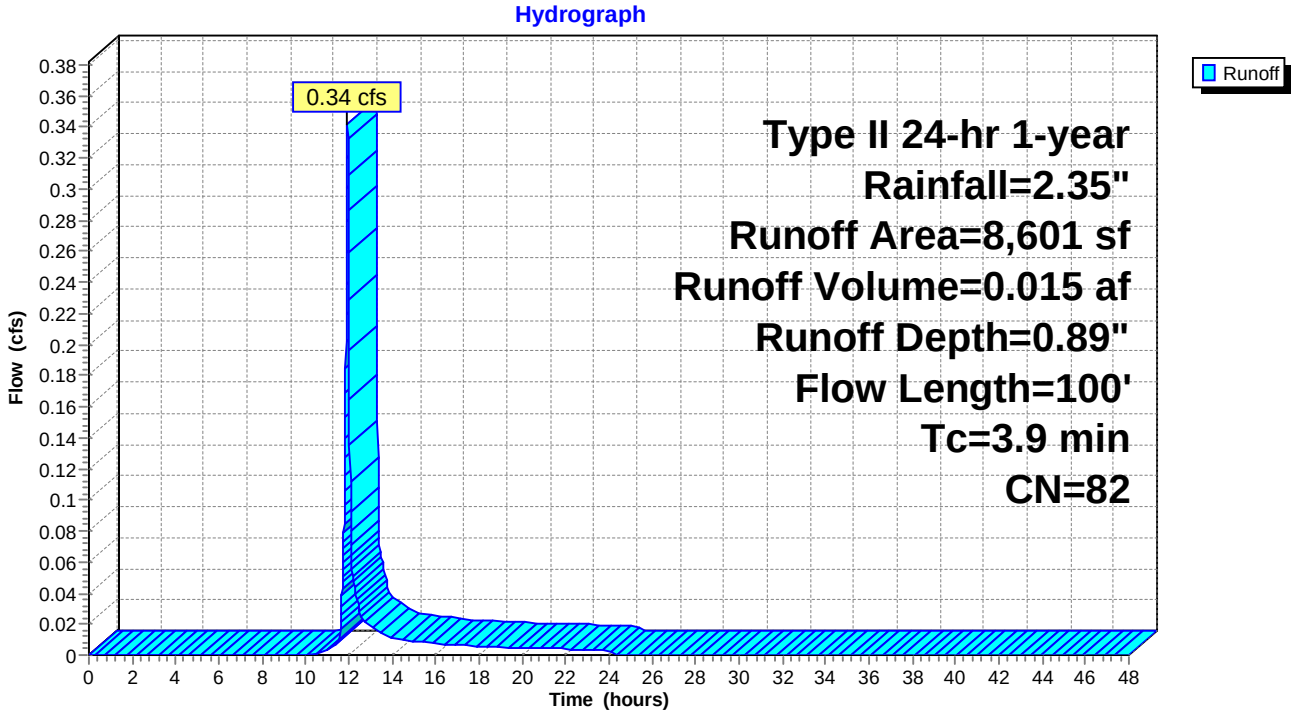
Runoff = 0.34 cfs @ 11.95 hrs, Volume= 0.015 af, Depth= 0.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
4,957	98	Paved parking & roofs
3,644	61	>75% Grass cover, Good, HSG B
8,601	82	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	50	0.1000	0.3		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.7	50	0.0250	1.2		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
3.9	100	Total			

Subcatchment 95S: (new Subcat)



Subcatchment 96S: (new Subcat)

[49] Hint: Tc<2dt may require smaller dt

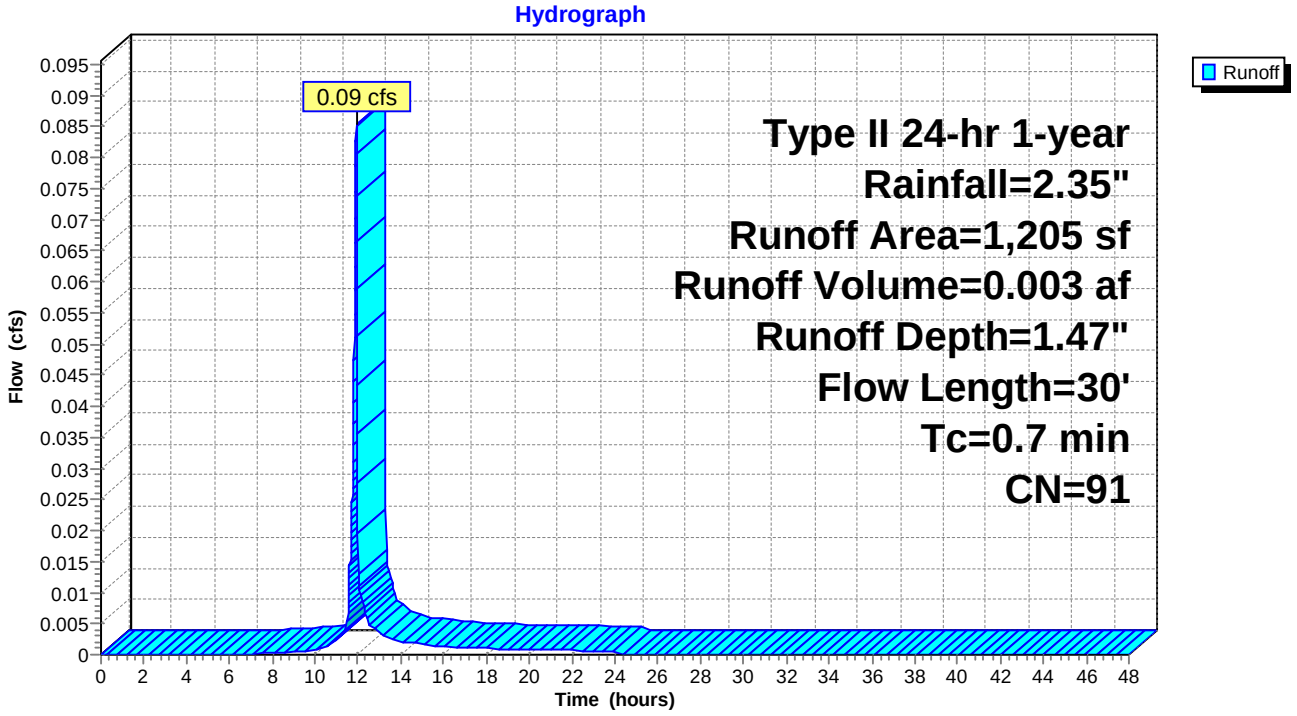
Runoff = 0.09 cfs @ 11.91 hrs, Volume= 0.003 af, Depth= 1.47"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
982	98	Paved parking & roofs
223	61	>75% Grass cover, Good, HSG B
1,205	91	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	30	0.0100	0.8		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"

Subcatchment 96S: (new Subcat)



Subcatchment 97S: (new Subcat)

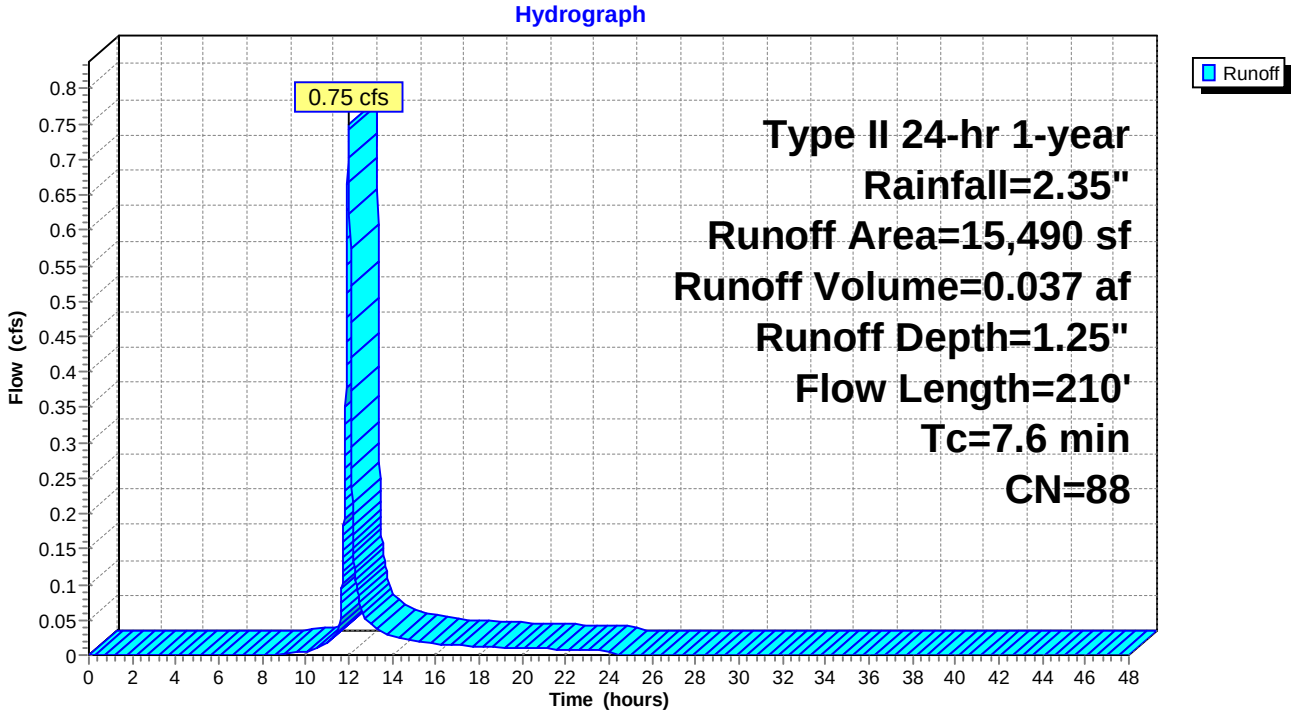
Runoff = 0.75 cfs @ 11.99 hrs, Volume= 0.037 af, Depth= 1.25"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
11,200	98	Paved parking & roofs
4,290	61	>75% Grass cover, Good, HSG B
15,490	88	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	80	0.0400	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.8	130	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.6	210	Total			

Subcatchment 97S: (new Subcat)



Subcatchment 98S: (new Subcat)

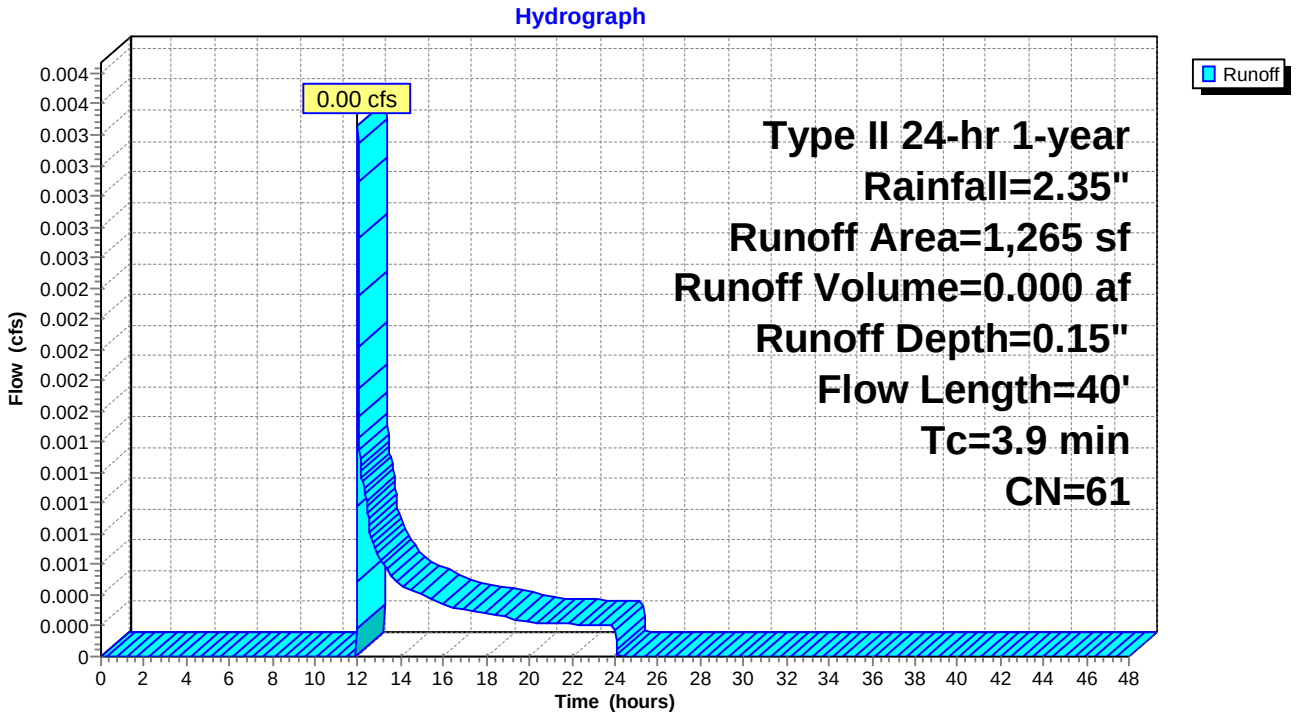
Runoff = 0.00 cfs @ 12.00 hrs, Volume= 0.000 af, Depth= 0.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
1,265	61	>75% Grass cover, Good, HSG B

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	40	0.0400	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"

Subcatchment 98S: (new Subcat)



Subcatchment N9S: (new Subcat)

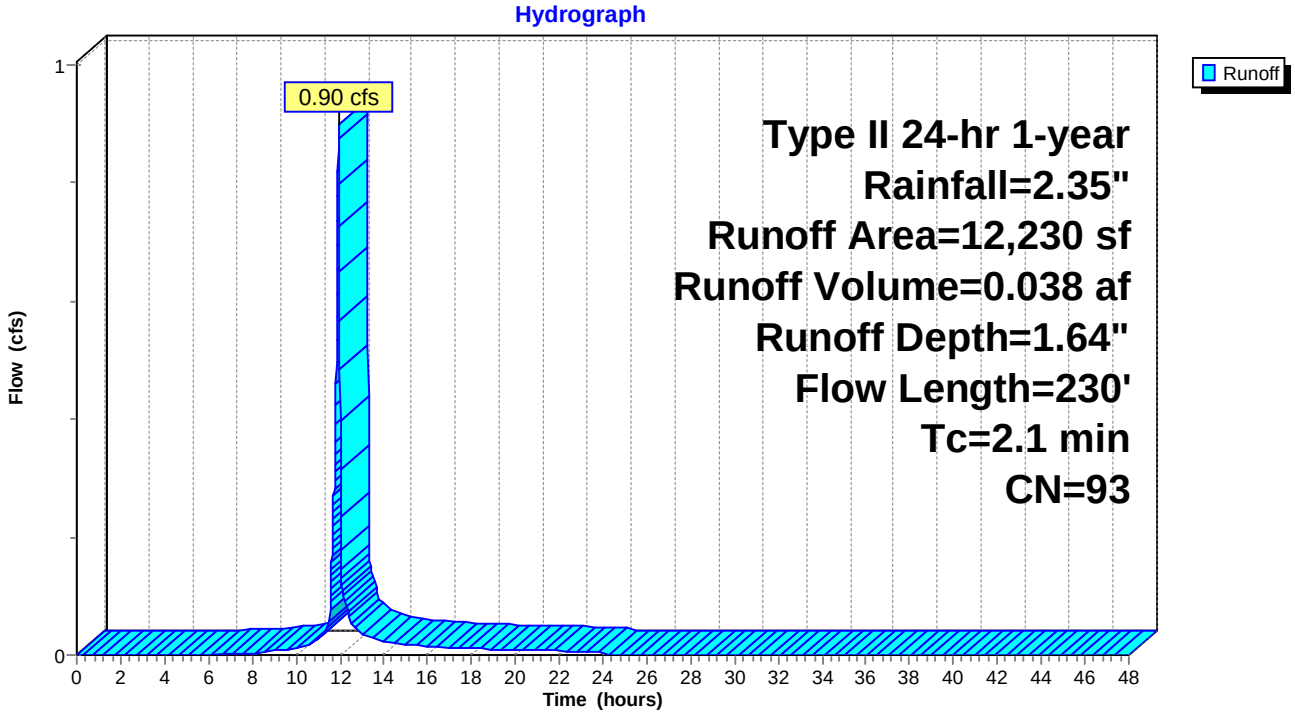
Runoff = 0.90 cfs @ 11.93 hrs, Volume= 0.038 af, Depth= 1.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
10,461	98	Paved parking & roofs
1,769	61	>75% Grass cover, Good, HSG B
12,230	93	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0200	1.3		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.8	130	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.1	230	Total			

Subcatchment N9S: (new Subcat)



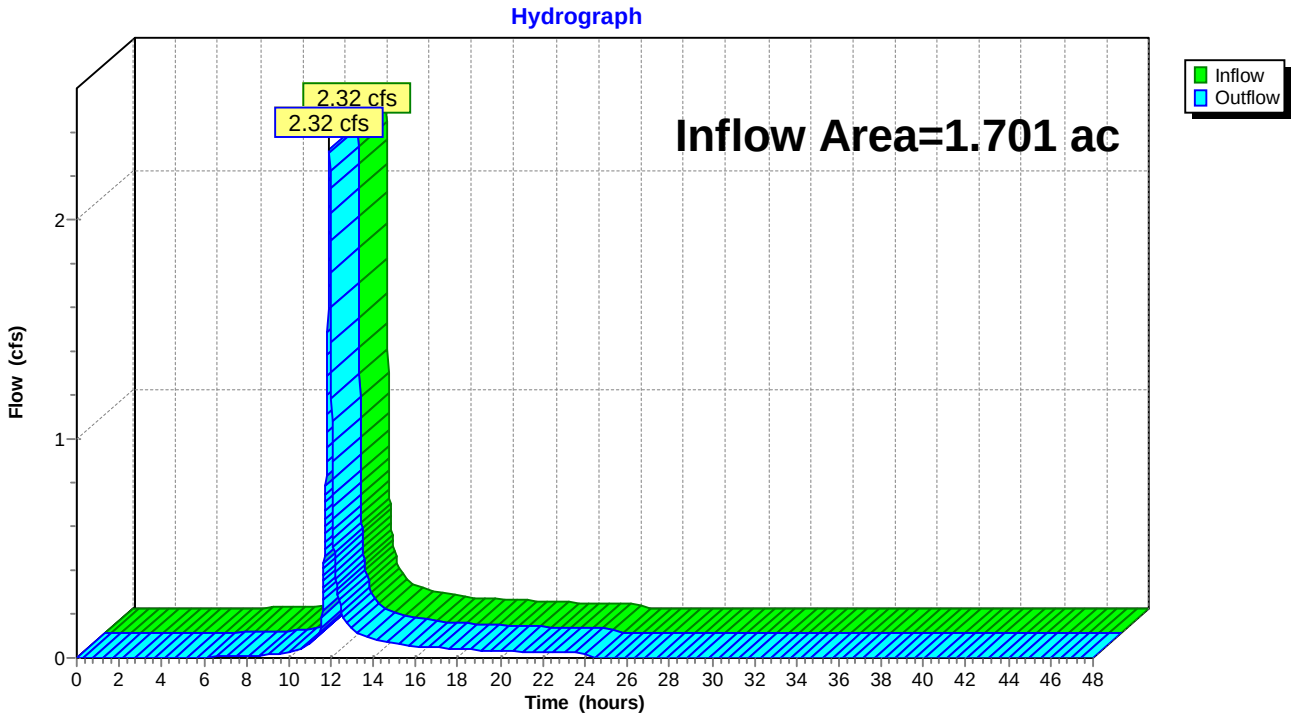
Reach N: Sum Northerly Flow

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

Inflow Area = 1.701 ac, Inflow Depth = 0.85" for 1-year event
Inflow = 2.32 cfs @ 11.94 hrs, Volume= 0.121 af
Outflow = 2.32 cfs @ 11.94 hrs, Volume= 0.121 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach N: Sum Northerly Flow



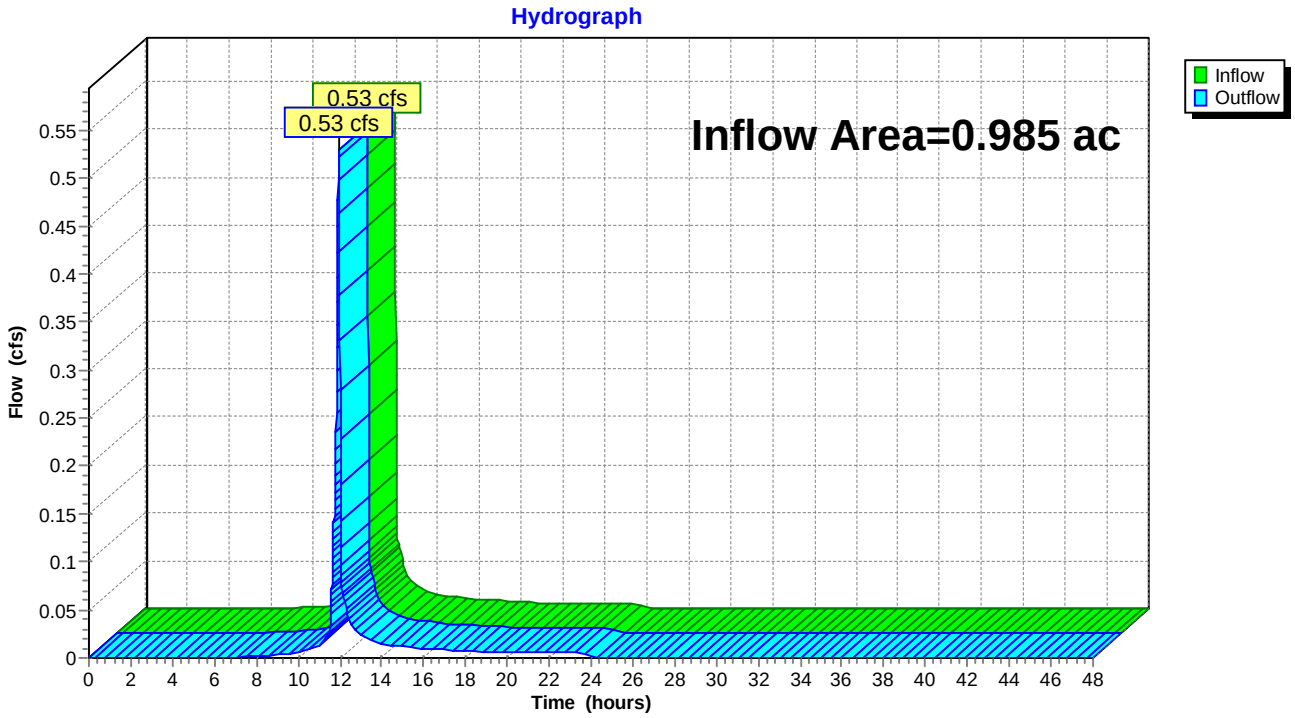
Reach SW: Sum Southwesterly Flow

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

Inflow Area = 0.985 ac, Inflow Depth = 0.28" for 1-year event
Inflow = 0.53 cfs @ 11.93 hrs, Volume= 0.023 af
Outflow = 0.53 cfs @ 11.93 hrs, Volume= 0.023 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach SW: Sum Southwesterly Flow



Pond E102: CB #E102

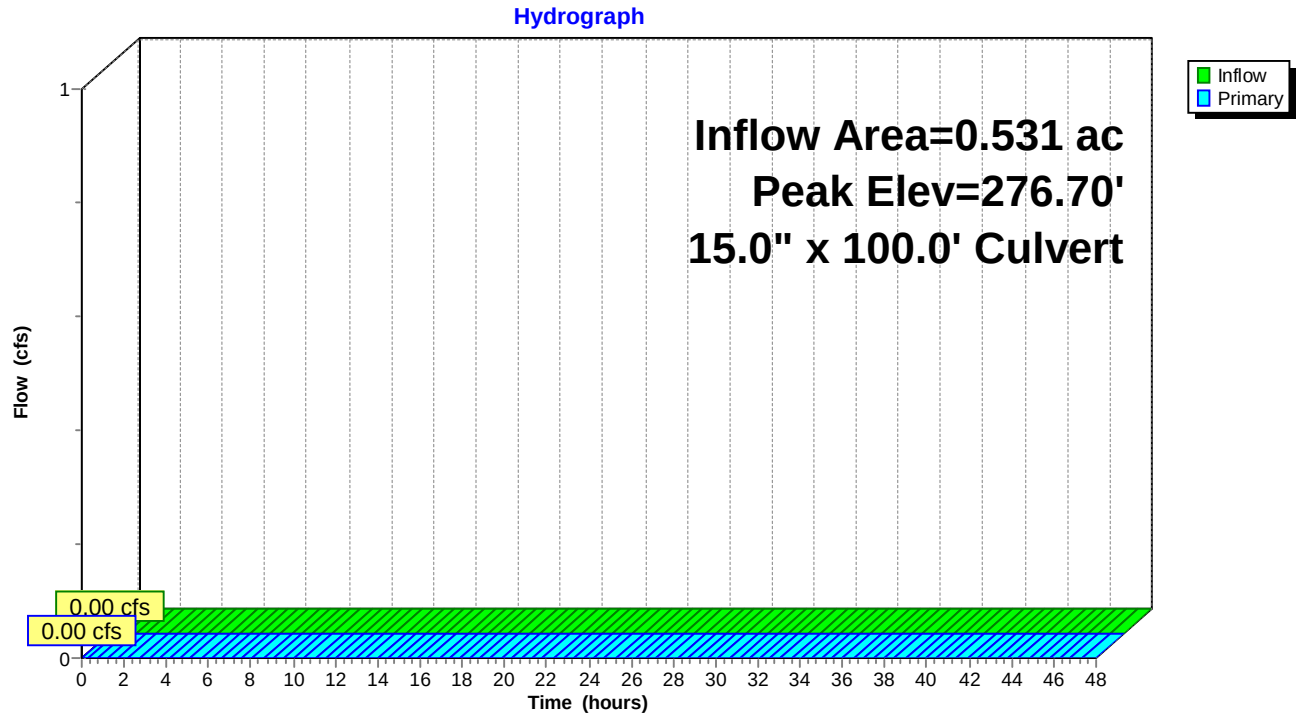
Inflow Area = 0.531 ac, Inflow Depth = 0.00" for 1-year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 276.70' @ 0.00 hrs
Flood Elev= 288.36'
Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	276.70'	**15.0" x 100.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 274.70' S= 0.0200 '/' Cc= 0.900 n= 0.009 Corrugated PE, smooth interior

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=276.70' TW=0.00' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Pond E102: CB #E102



Pond E89: CB #E89

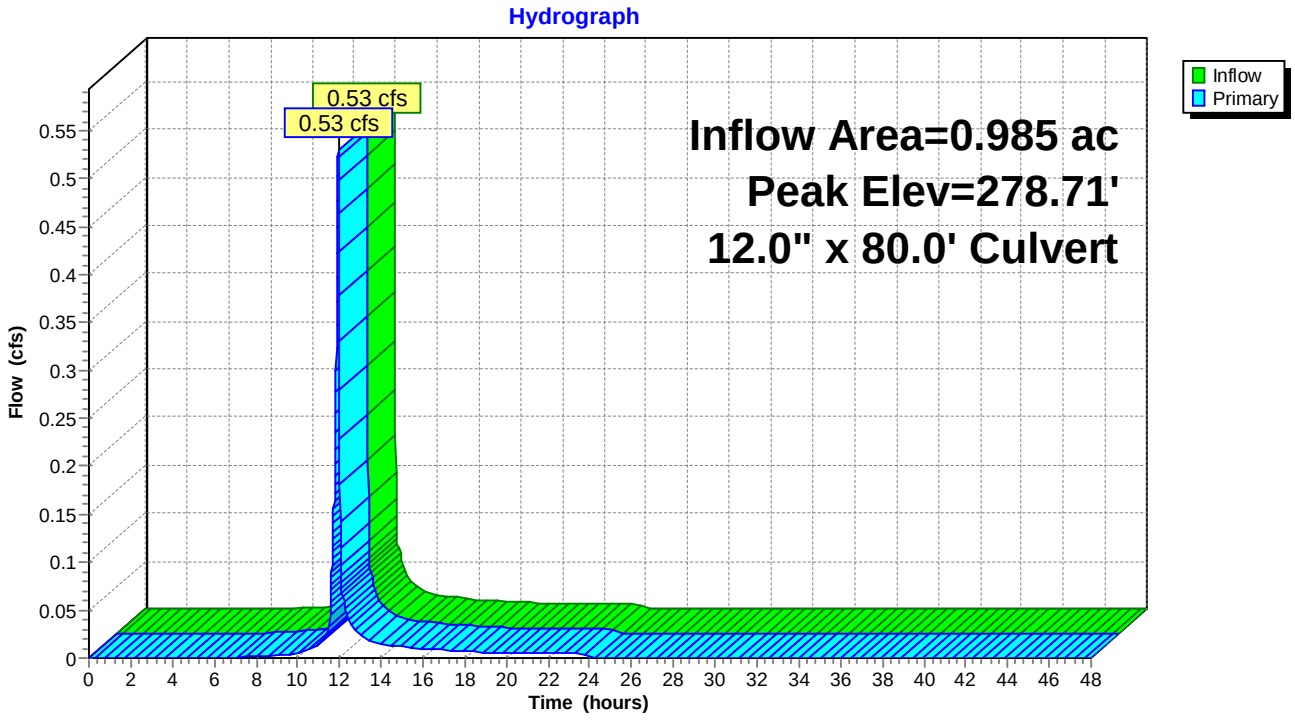
Inflow Area = 0.985 ac, Inflow Depth = 0.28" for 1-year event
Inflow = 0.53 cfs @ 11.93 hrs, Volume= 0.023 af
Outflow = 0.53 cfs @ 11.93 hrs, Volume= 0.023 af, Atten= 0%, Lag= 0.0 min
Primary = 0.53 cfs @ 11.93 hrs, Volume= 0.023 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 278.71' @ 11.93 hrs
Flood Elev= 285.01'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	278.35'	**12.0" x 80.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 277.55' S= 0.0100 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=0.53 cfs @ 11.93 hrs HW=278.71' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.53 cfs @ 2.1 fps)

Pond E89: CB #E89



Pond E90: (new Pond)

[87] Warning: Oscillations may require Finer Routing or smaller dt

Inflow Area = 0.179 ac, Inflow Depth = 0.24" for 1-year event
Inflow = 0.04 cfs @ 12.04 hrs, Volume= 0.004 af
Outflow = 0.00 cfs @ 11.98 hrs, Volume= 0.004 af, Atten= 89%, Lag= 0.0 min
Discarded = 0.00 cfs @ 11.98 hrs, Volume= 0.004 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 283.96' @ 13.76 hrs Surf.Area= 100 sf Storage= 38 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 74.6 min (1,012.1 - 937.5)

Volume	Invert	Avail.Storage	Storage Description
#1	283.00'	274 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

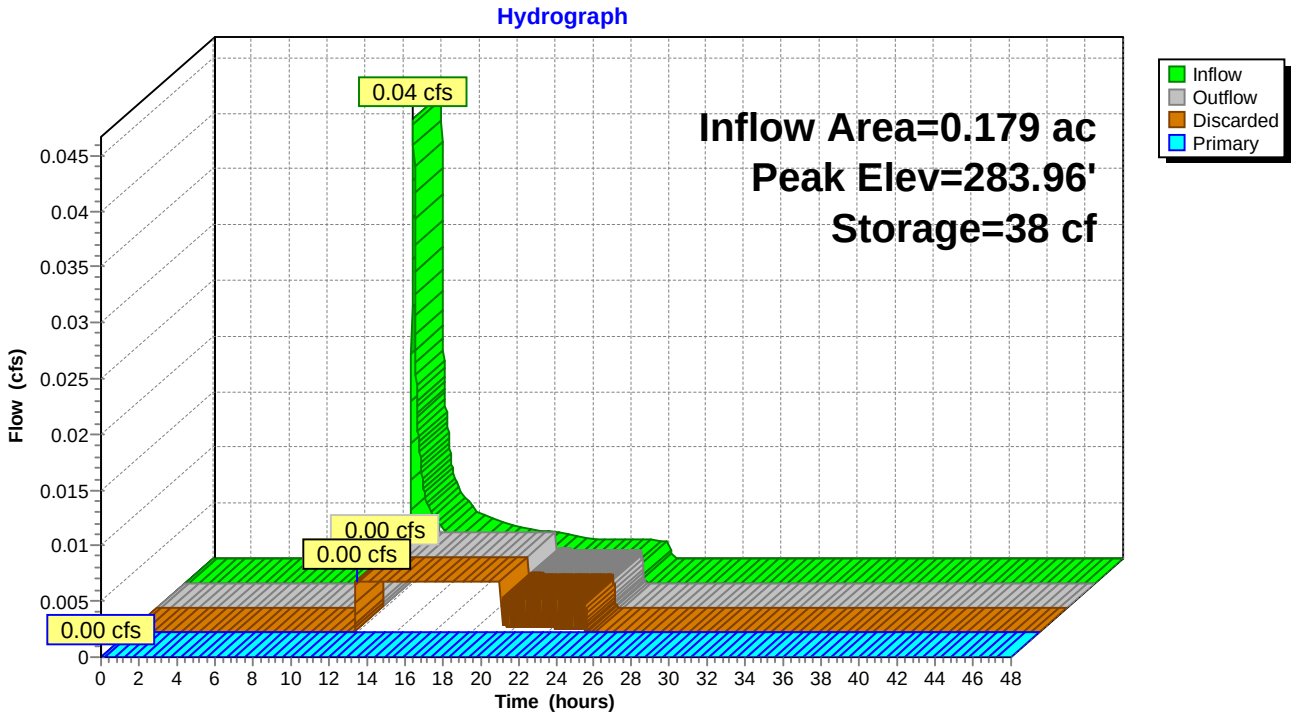
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
283.00	100	40.0	0	0
285.90	100	40.0	116	116
286.00	100	100.0	10	126
287.00	196	100.0	148	274

Device	Routing	Invert	Outlet Devices
#1	Primary	278.75'	**24.0" x 4.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 278.75' S= 0.0000 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean
#2	Device 1	286.50'	**18.0" Horiz. Orifice/Grate** Limited to weir flow C= 0.600
#3	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 11.98 hrs HW=283.05' (Free Discharge)
↑—**3=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=283.00' TW=278.75' (Dynamic Tailwater)
↑—**1=Culvert** (Passes 0.00 cfs of 27.27 cfs potential flow)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond E90: (new Pond)



Pond E90a: (new Pond)

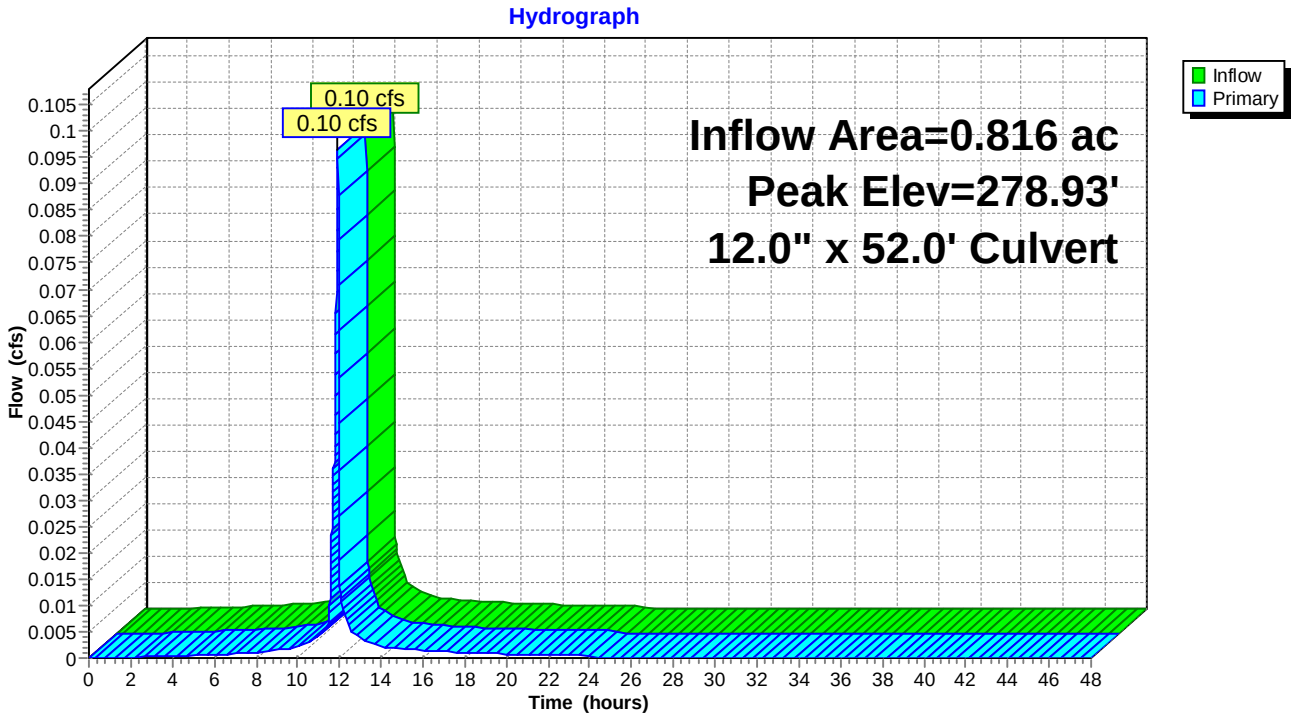
Inflow Area = 0.816 ac, Inflow Depth = 0.07" for 1-year event
Inflow = 0.10 cfs @ 11.91 hrs, Volume= 0.004 af
Outflow = 0.10 cfs @ 11.91 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min
Primary = 0.10 cfs @ 11.91 hrs, Volume= 0.004 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 278.93' @ 11.92 hrs
Flood Elev= 286.50'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	278.75'	**12.0" x 52.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 278.30' S= 0.0087 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=0.09 cfs @ 11.91 hrs HW=278.93' TW=278.70' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.09 cfs @ 1.5 fps)

Pond E90a: (new Pond)



Pond E91: CB #E91

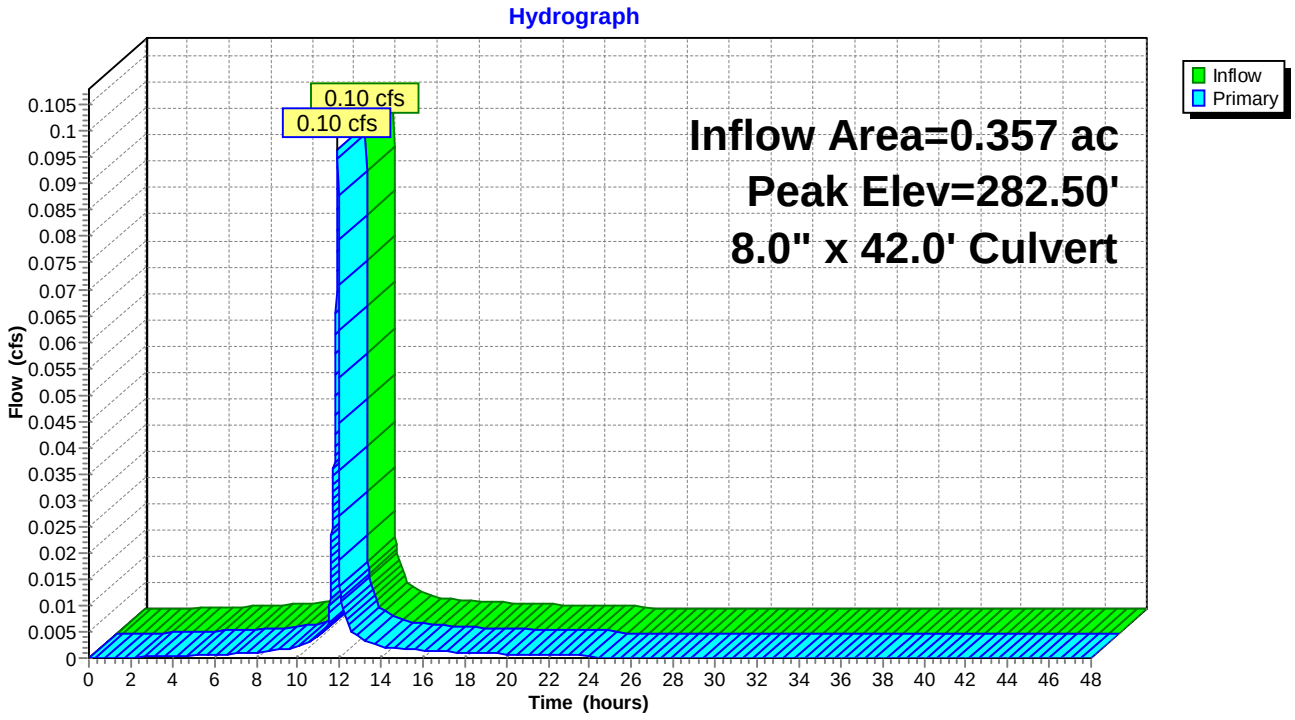
Inflow Area = 0.357 ac, Inflow Depth = 0.15" for 1-year event
Inflow = 0.10 cfs @ 11.91 hrs, Volume= 0.004 af
Outflow = 0.10 cfs @ 11.91 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min
Primary = 0.10 cfs @ 11.91 hrs, Volume= 0.004 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 282.50' @ 11.91 hrs
Flood Elev= 289.39'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	282.32'	**8.0" x 42.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 282.11' S= 0.0050 '/' Cc= 0.900 n= 0.009 Corrugated PE, smooth interior

Primary OutFlow Max=0.10 cfs @ 11.91 hrs HW=282.50' TW=278.93' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.10 cfs @ 1.9 fps)

Pond E91: CB #E91



Pond E92: CB #E92

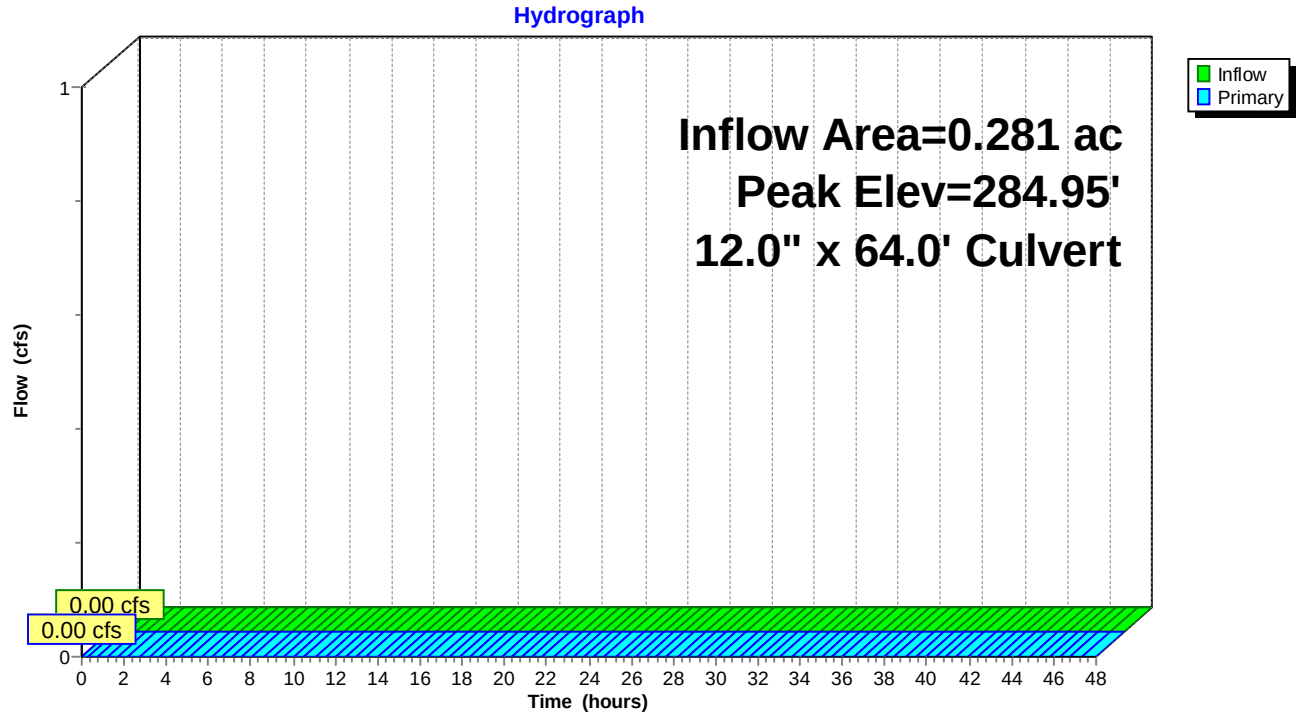
Inflow Area = 0.281 ac, Inflow Depth = 0.00" for 1-year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 284.95' @ 0.00 hrs
Flood Elev= 290.40'
Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	284.95'	**12.0" x 64.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 279.00' S= 0.0930 '/' Cc= 0.900 n= 0.011 Clay tile

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=284.95' TW=278.75' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Pond E92: CB #E92



Pond E93: CB #E93

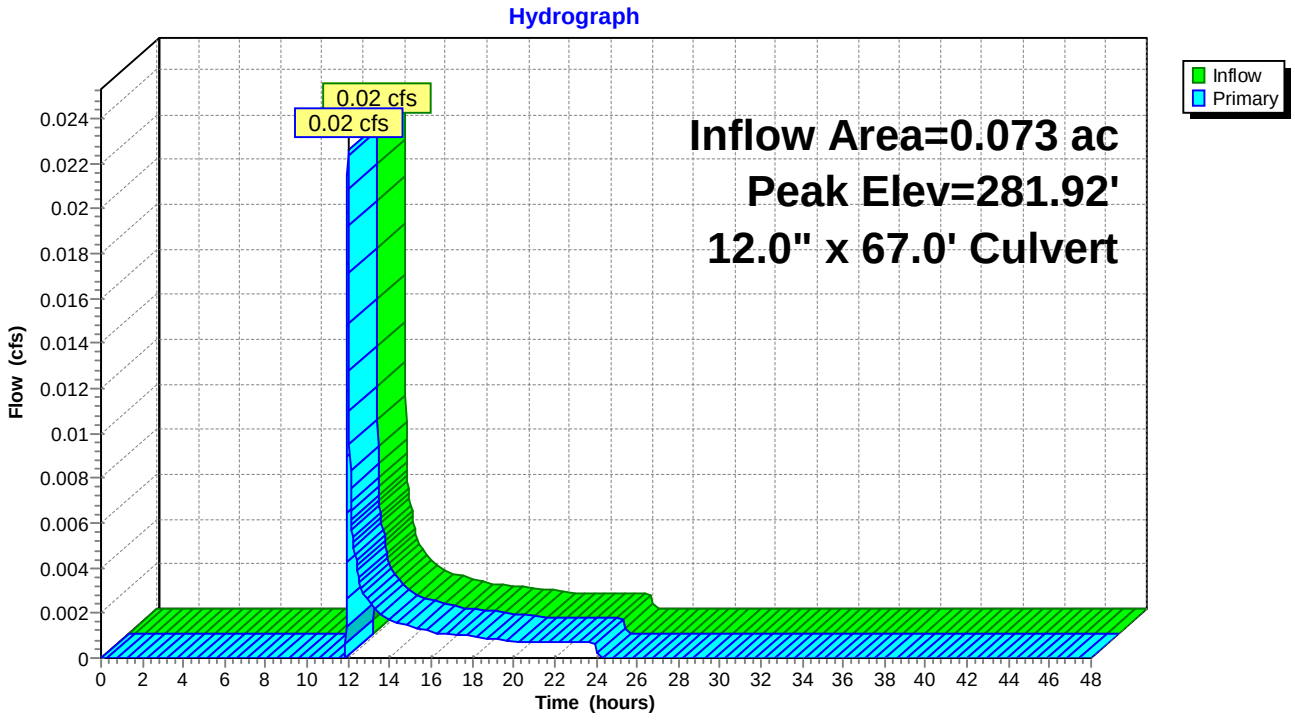
Inflow Area = 0.073 ac, Inflow Depth = 0.24" for 1-year event
Inflow = 0.02 cfs @ 11.99 hrs, Volume= 0.001 af
Outflow = 0.02 cfs @ 11.99 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min
Primary = 0.02 cfs @ 11.99 hrs, Volume= 0.001 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 281.92' @ 11.99 hrs
Flood Elev= 285.97'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (933.3 - 933.3)

Device	Routing	Invert	Outlet Devices
#1	Primary	281.85'	**12.0" x 67.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 277.90' S= 0.0590 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=0.02 cfs @ 11.99 hrs HW=281.92' TW=278.03' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.02 cfs @ 0.9 fps)

Pond E93: CB #E93



Pond E95: CB #E95

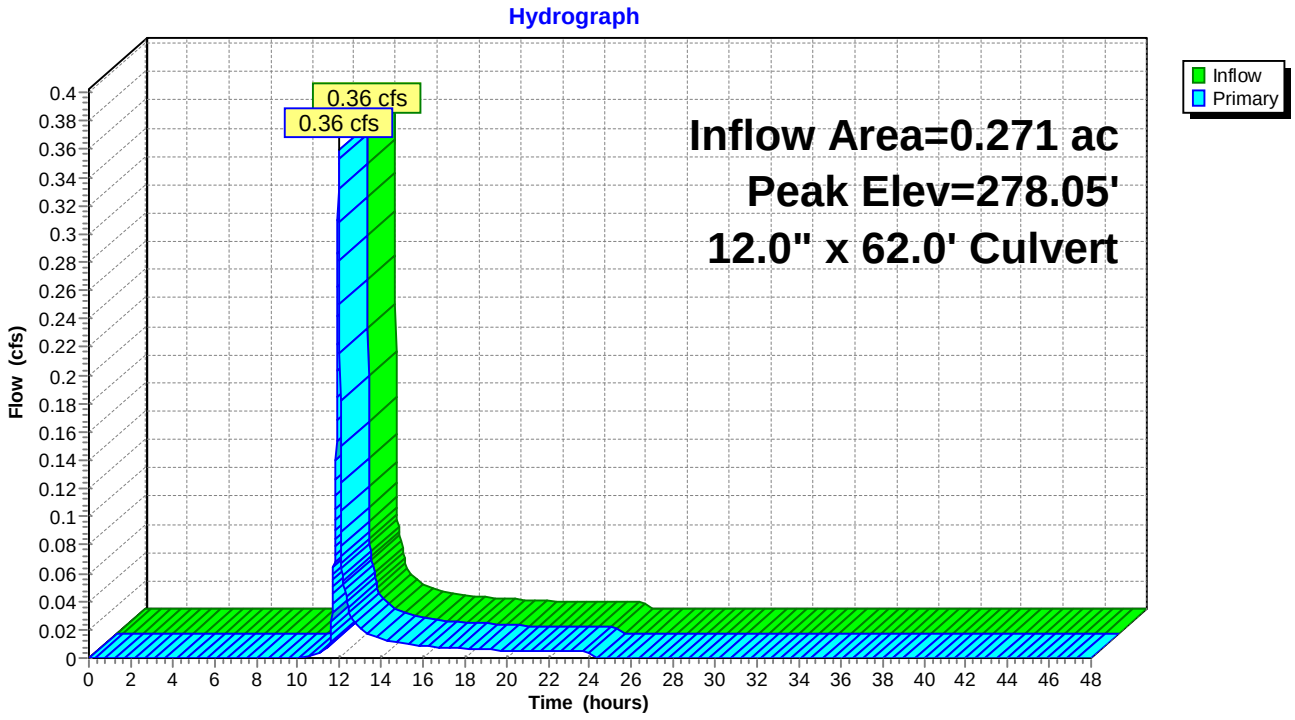
Inflow Area = 0.271 ac, Inflow Depth = 0.71" for 1-year event
Inflow = 0.36 cfs @ 11.95 hrs, Volume= 0.016 af
Outflow = 0.36 cfs @ 11.95 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.0 min
Primary = 0.36 cfs @ 11.95 hrs, Volume= 0.016 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 278.05' @ 11.95 hrs
Flood Elev= 285.47'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (855.0 - 855.0)

Device	Routing	Invert	Outlet Devices
#1	Primary	277.75'	**12.0" x 62.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 277.15' S= 0.0097 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=0.36 cfs @ 11.95 hrs HW=278.05' TW=277.47' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.36 cfs @ 1.8 fps)

Pond E95: CB #E95



Pond E96: CB #E96

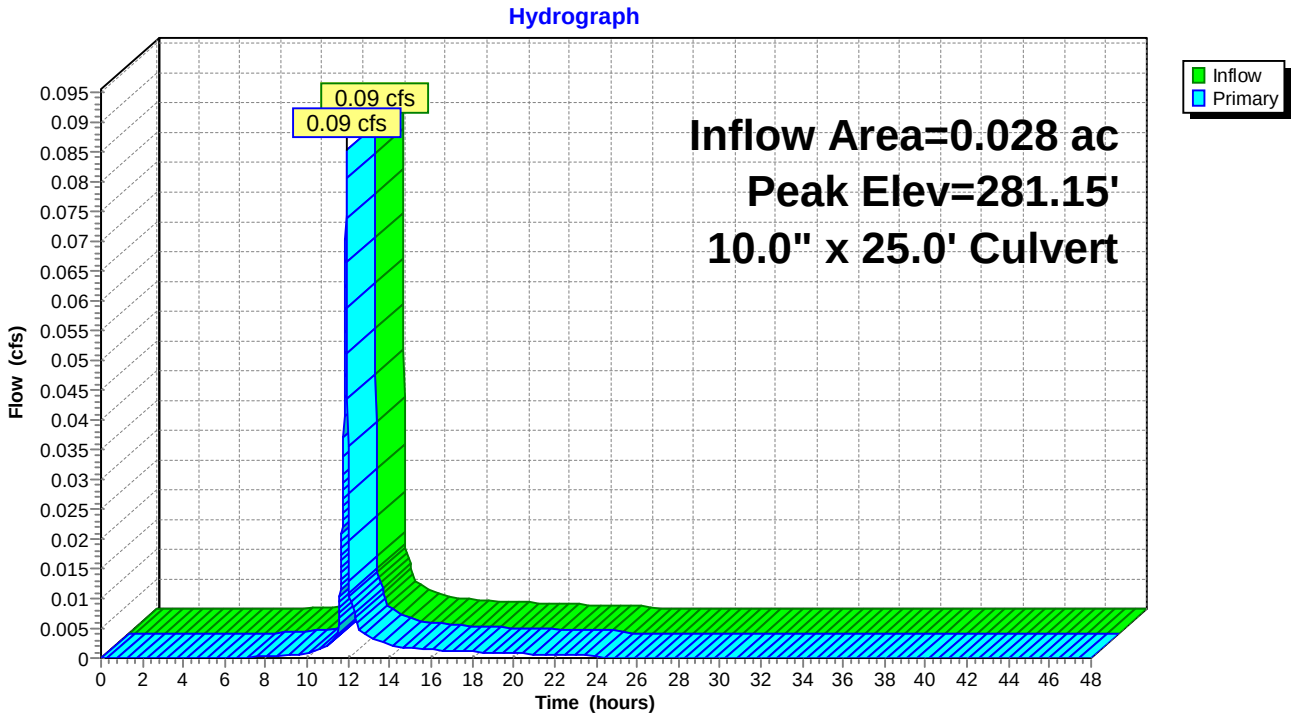
Inflow Area = 0.028 ac, Inflow Depth = 1.47" for 1-year event
Inflow = 0.09 cfs @ 11.91 hrs, Volume= 0.003 af
Outflow = 0.09 cfs @ 11.91 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min
Primary = 0.09 cfs @ 11.91 hrs, Volume= 0.003 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 281.15' @ 11.91 hrs
Flood Elev= 284.69'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	281.00'	**10.0" x 25.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 277.15' S= 0.1540 '/' Cc= 0.900 n= 0.009 Corrugated PE, smooth interior

Primary OutFlow Max=0.08 cfs @ 11.91 hrs HW=281.15' TW=277.45' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.08 cfs @ 1.3 fps)

Pond E96: CB #E96



Pond E96a: E96A

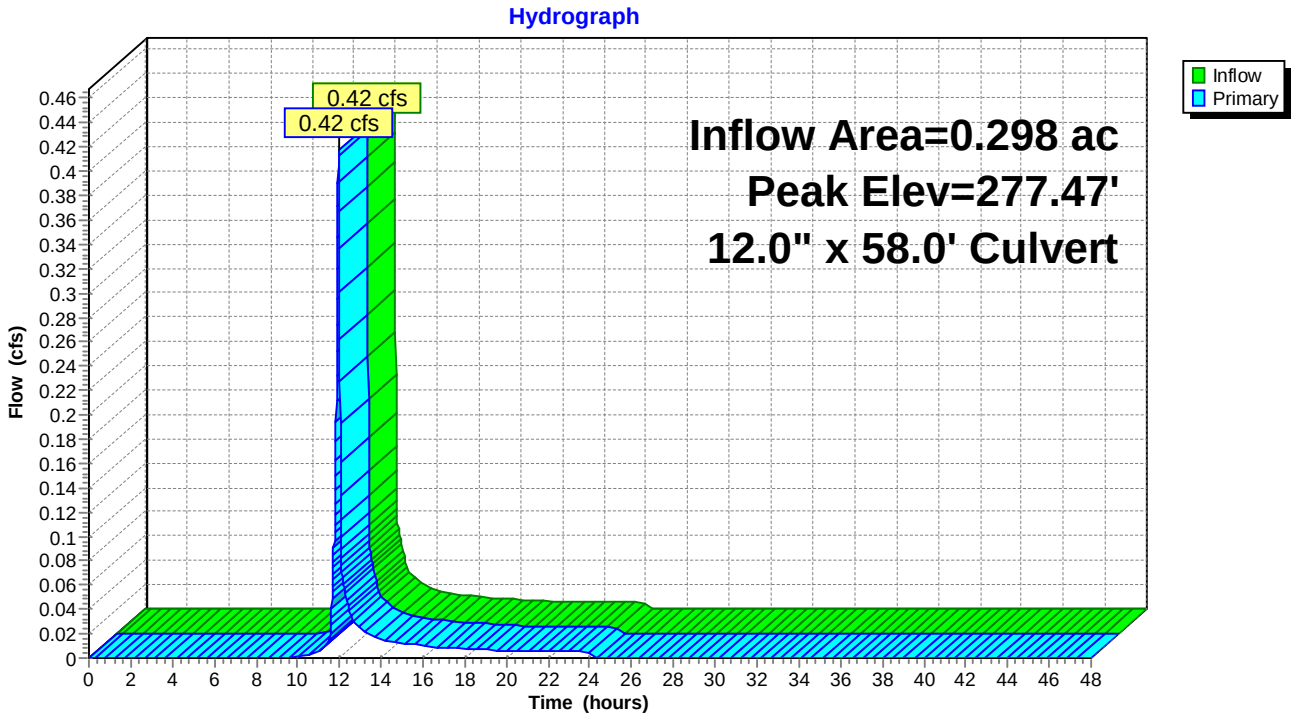
Inflow Area = 0.298 ac, Inflow Depth = 0.79" for 1-year event
Inflow = 0.42 cfs @ 11.95 hrs, Volume= 0.020 af
Outflow = 0.42 cfs @ 11.95 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.0 min
Primary = 0.42 cfs @ 11.95 hrs, Volume= 0.020 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 277.47' @ 11.95 hrs
Flood Elev= 284.69'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	277.15'	**12.0" x 58.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 276.60' S= 0.0095 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=0.41 cfs @ 11.95 hrs HW=277.47' TW=276.94' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.41 cfs @ 2.8 fps)

Pond E96a: E96A



Pond E97: CB #E97

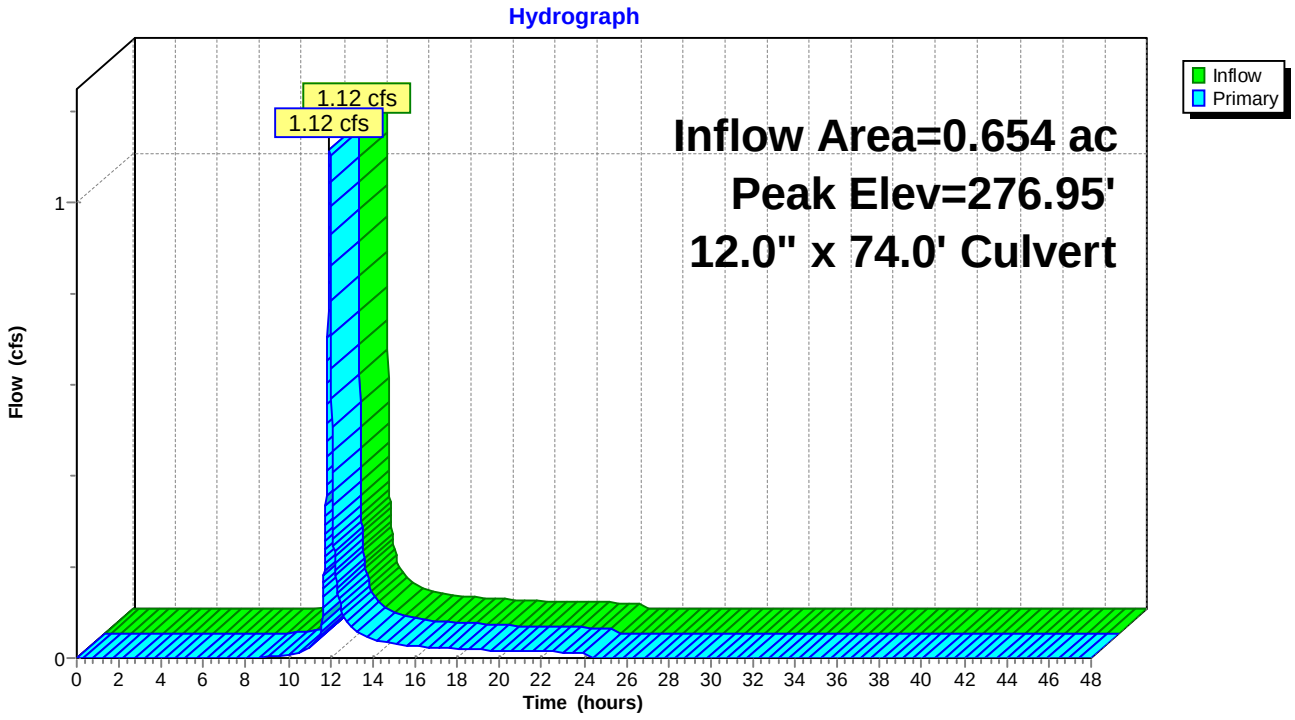
Inflow Area = 0.654 ac, Inflow Depth = 1.04" for 1-year event
Inflow = 1.12 cfs @ 11.97 hrs, Volume= 0.057 af
Outflow = 1.12 cfs @ 11.97 hrs, Volume= 0.057 af, Atten= 0%, Lag= 0.0 min
Primary = 1.12 cfs @ 11.97 hrs, Volume= 0.057 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 276.95' @ 11.97 hrs
Flood Elev= 284.47'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	276.40'	**12.0" x 74.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 274.00' S= 0.0324 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=1.12 cfs @ 11.97 hrs HW=276.95' TW=274.55' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.12 cfs @ 2.5 fps)

Pond E97: CB #E97



Pond E98: CB #E98

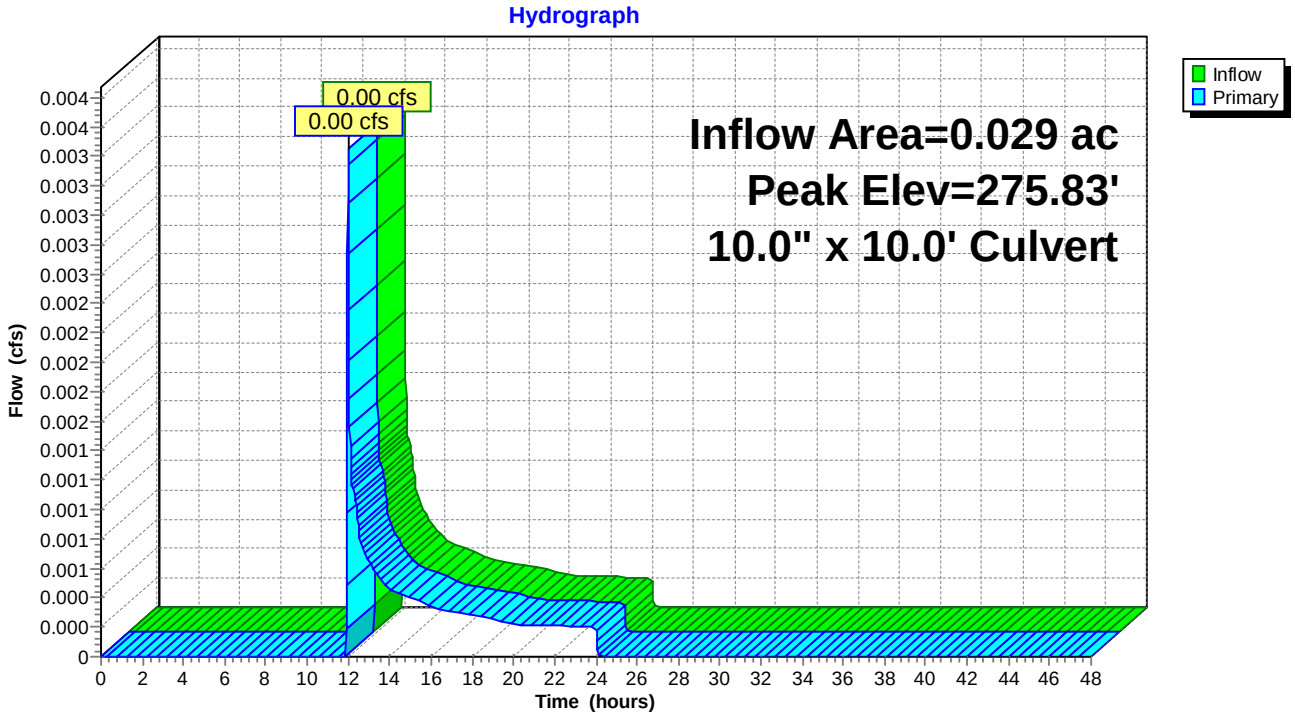
Inflow Area = 0.029 ac, Inflow Depth = 0.15" for 1-year event
Inflow = 0.00 cfs @ 12.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 12.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 12.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 275.83' @ 12.00 hrs
Flood Elev= 279.49'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (969.7 - 969.7)

Device	Routing	Invert	Outlet Devices
#1	Primary	275.80'	**10.0" x 10.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 274.00' S= 0.1800 '/' Cc= 0.900 n= 0.011 Clay tile

Primary OutFlow Max=0.00 cfs @ 12.00 hrs HW=275.83' TW=274.53' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.00 cfs @ 0.6 fps)

Pond E98: CB #E98



Pond E98a: E98A

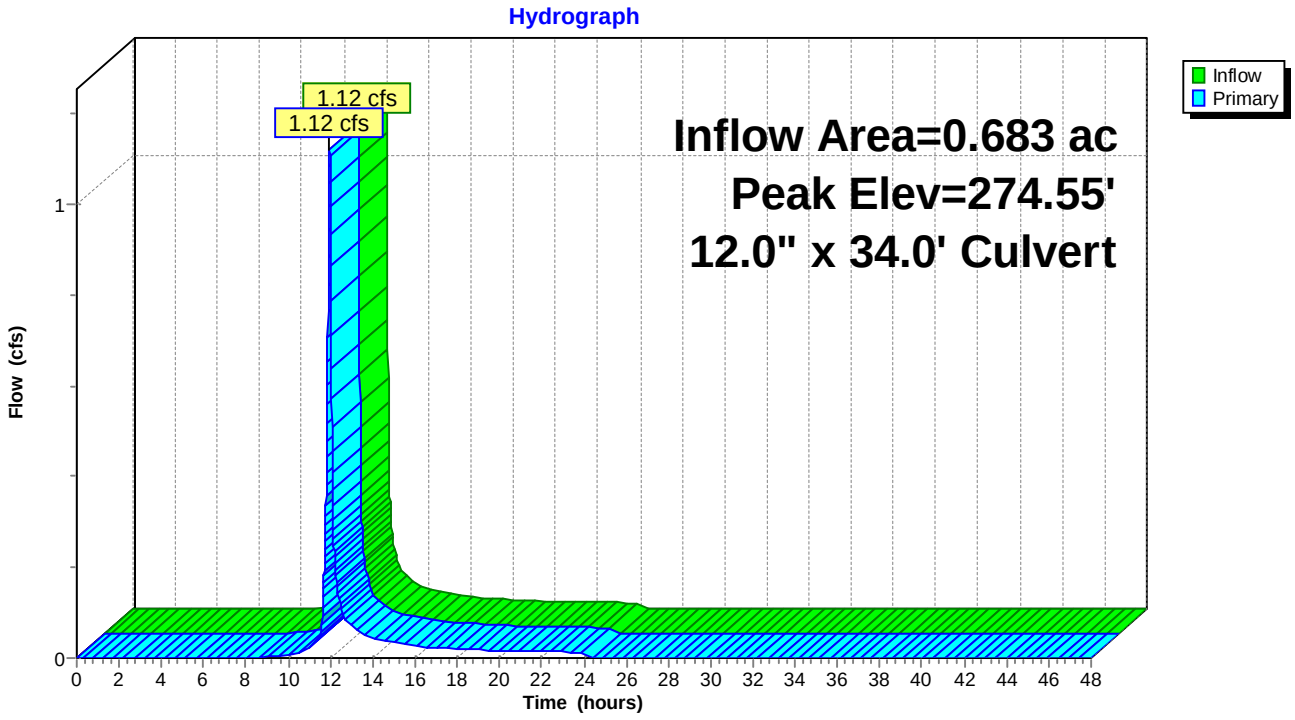
Inflow Area = 0.683 ac, Inflow Depth = 1.00" for 1-year event
Inflow = 1.12 cfs @ 11.97 hrs, Volume= 0.057 af
Outflow = 1.12 cfs @ 11.97 hrs, Volume= 0.057 af, Atten= 0%, Lag= 0.0 min
Primary = 1.12 cfs @ 11.97 hrs, Volume= 0.057 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 274.55' @ 11.97 hrs
Flood Elev= 279.49'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	274.00'	**12.0" x 34.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 272.87' S= 0.0332 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=1.12 cfs @ 11.97 hrs HW=274.55' TW=273.52' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.12 cfs @ 2.5 fps)

Pond E98a: E98A



Pond E99: CB #E99

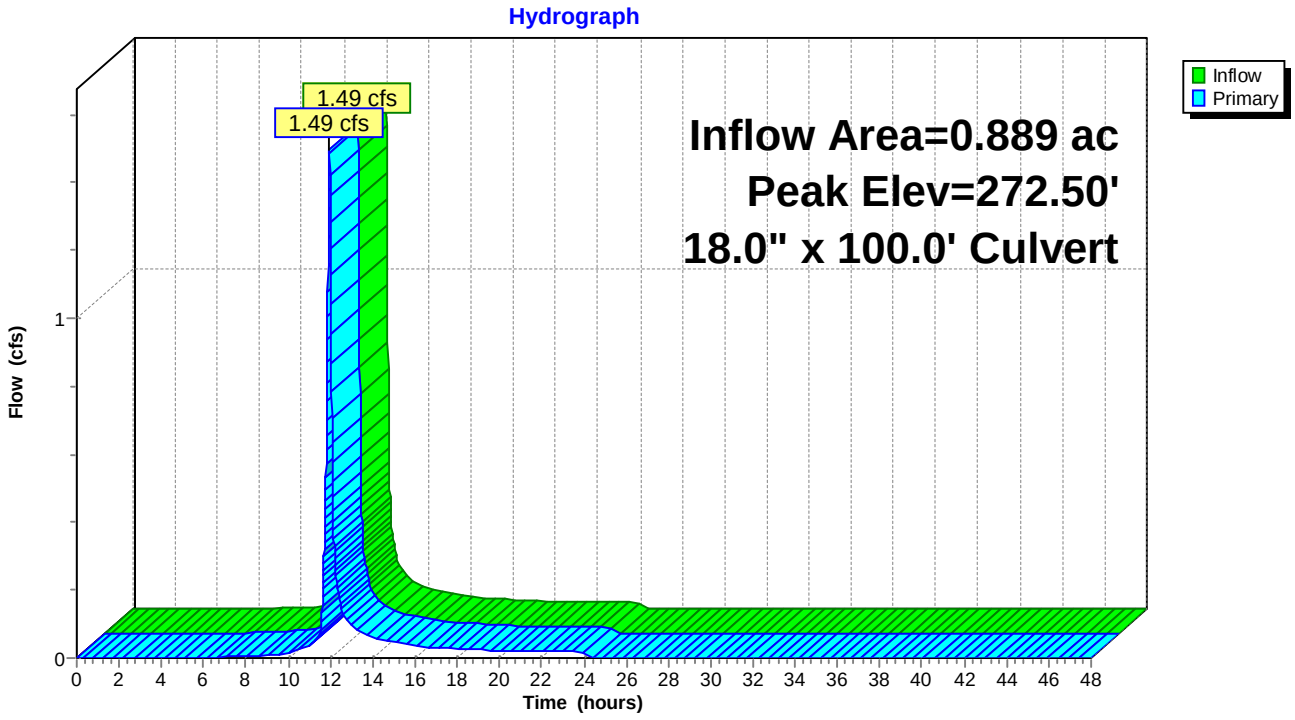
Inflow Area = 0.889 ac, Inflow Depth = 1.11" for 1-year event
Inflow = 1.49 cfs @ 11.96 hrs, Volume= 0.083 af
Outflow = 1.49 cfs @ 11.96 hrs, Volume= 0.083 af, Atten= 0%, Lag= 0.0 min
Primary = 1.49 cfs @ 11.96 hrs, Volume= 0.083 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 272.50' @ 11.96 hrs
Flood Elev= 277.96'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	271.95'	**18.0" x 100.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 269.95' S= 0.0200 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=1.49 cfs @ 11.96 hrs HW=272.50' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.49 cfs @ 2.5 fps)

Pond E99: CB #E99



Pond P16: CB #P16

[87] Warning: Oscillations may require Finer Routing or smaller dt

Inflow Area = 0.332 ac, Inflow Depth = 0.42" for 1-year event
Inflow = 0.17 cfs @ 12.05 hrs, Volume= 0.012 af
Outflow = 0.01 cfs @ 11.94 hrs, Volume= 0.012 af, Atten= 91%, Lag= 0.0 min
Discarded = 0.01 cfs @ 11.94 hrs, Volume= 0.012 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 286.79' @ 13.51 hrs Surf.Area= 320 sf Storage= 165 cf
Flood Elev= 289.00' Surf.Area= 544 sf Storage= 602 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 102.5 min (1,003.9 - 901.4)

Volume	Invert	Avail.Storage	Storage Description
#1	285.50'	930 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

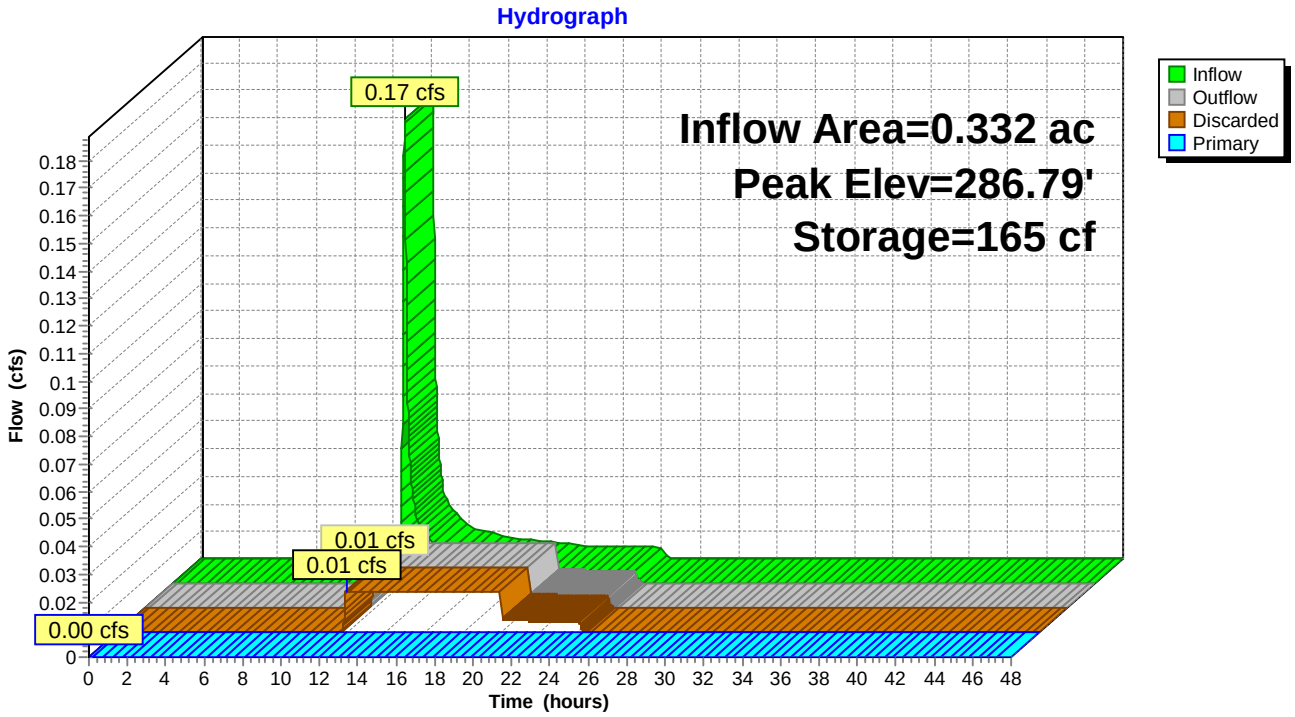
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
285.50	320	40.0	0	0
288.49	320	40.0	383	383
288.50	320	100.0	3	386
289.50	768	100.0	544	930

Device	Routing	Invert	Outlet Devices
#1	Primary	284.80'	**8.0" x 28.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 284.66' S= 0.0050 '/' Cc= 0.900 n= 0.009 Corrugated PE, smooth interior
#2	Device 1	289.00'	**18.0" Horiz. Orifice/Grate** Limited to weir flow C= 0.600
#3	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.01 cfs @ 11.94 hrs HW=285.55' (Free Discharge)
↑—**3=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=285.50' TW=282.47' (Dynamic Tailwater)
↑—**1=Culvert** (Passes 0.00 cfs of 0.93 cfs potential flow)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond P16: CB #P16



Pond P17: CB #P17

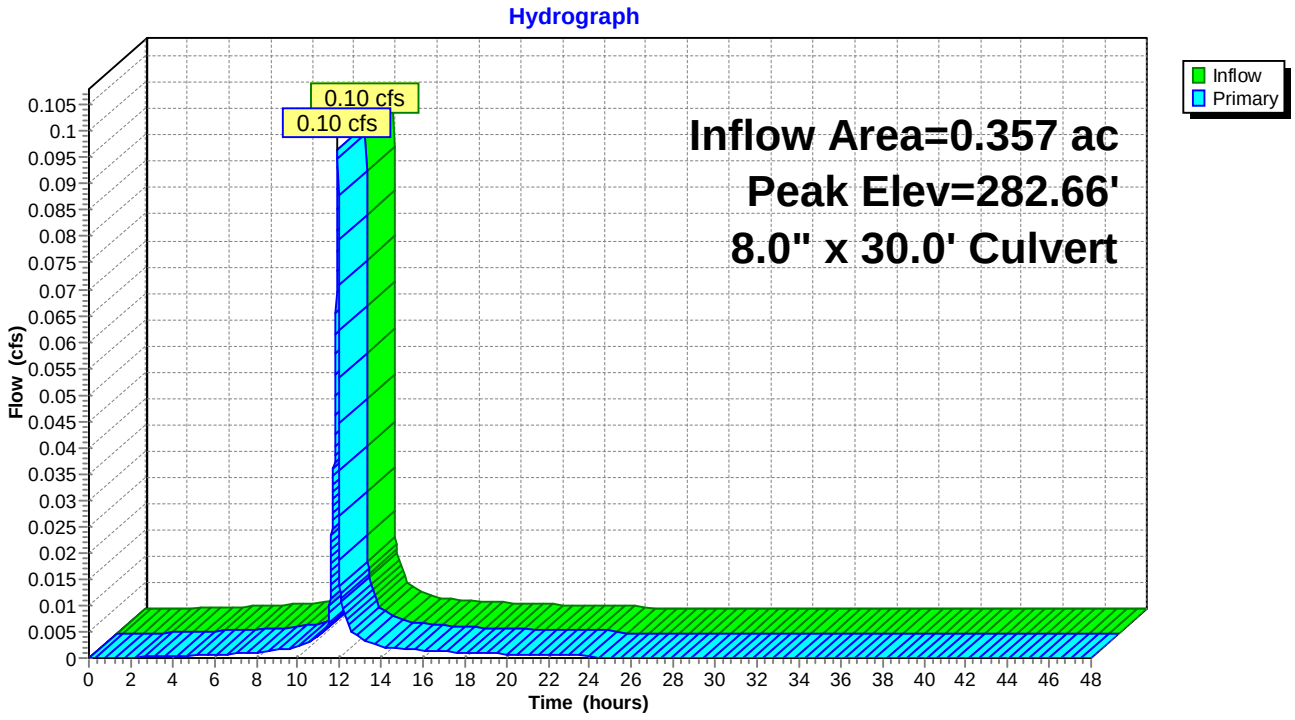
Inflow Area = 0.357 ac, Inflow Depth = 0.15" for 1-year event
Inflow = 0.10 cfs @ 11.91 hrs, Volume= 0.004 af
Outflow = 0.10 cfs @ 11.91 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min
Primary = 0.10 cfs @ 11.91 hrs, Volume= 0.004 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 282.66' @ 11.91 hrs
Flood Elev= 288.65'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	282.47'	**8.0" x 30.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 282.32' S= 0.0050 '/' Cc= 0.900 n= 0.009 Corrugated PE, smooth interior

Primary OutFlow Max=0.10 cfs @ 11.91 hrs HW=282.66' TW=282.50' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.10 cfs @ 1.8 fps)

Pond P17: CB #P17



Pond P18: (new Pond)

[87] Warning: Oscillations may require Finer Routing or smaller dt

Inflow Area = 0.281 ac, Inflow Depth = 0.49" for 1-year event
Inflow = 0.27 cfs @ 11.94 hrs, Volume= 0.011 af
Outflow = 0.01 cfs @ 11.81 hrs, Volume= 0.011 af, Atten= 94%, Lag= 0.0 min
Discarded = 0.01 cfs @ 11.81 hrs, Volume= 0.011 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 287.37' @ 13.26 hrs Surf.Area= 320 sf Storage= 175 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 109.1 min (992.2 - 883.0)

Volume	Invert	Avail.Storage	Storage Description
#1	286.00'	827 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

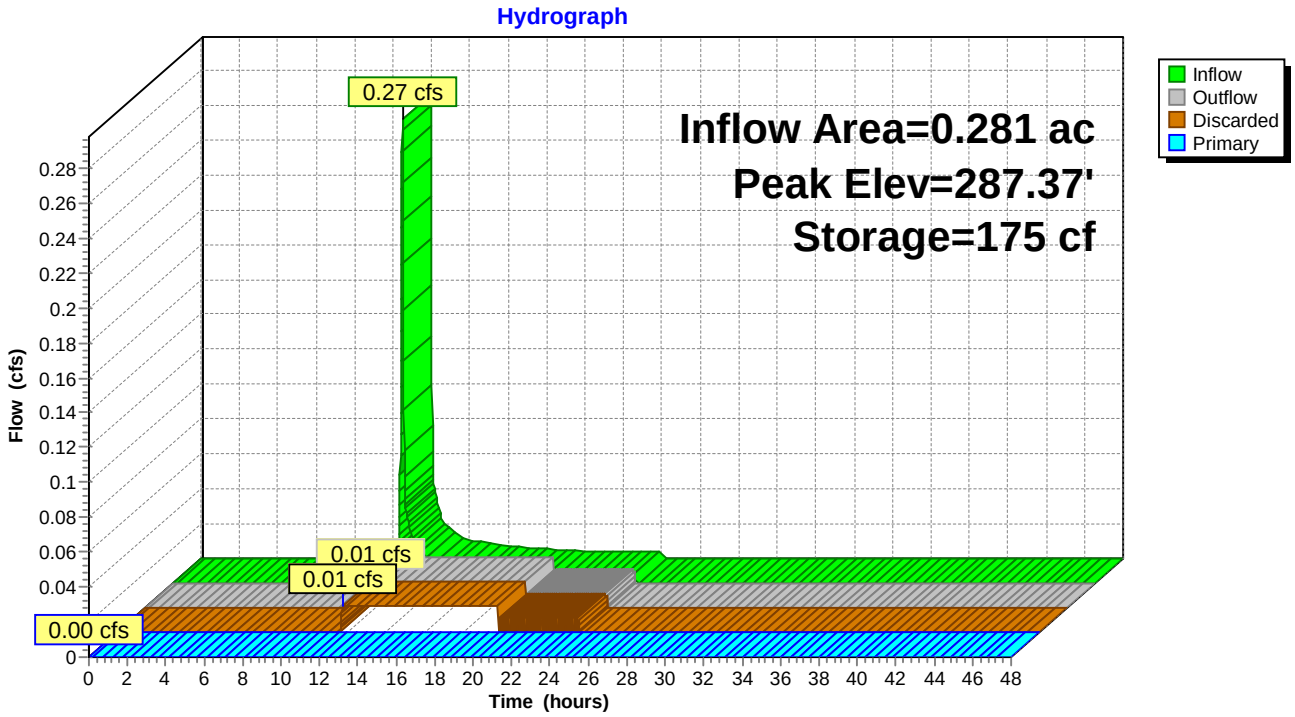
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
286.00	320	40.0	0	0
288.90	320	40.0	371	371
289.00	320	100.0	32	403
290.00	528	100.0	424	827

Device	Routing	Invert	Outlet Devices
#1	Primary	285.25'	**8.0" x 34.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 285.08' S= 0.0050 '/' Cc= 0.900 n= 0.009 Corrugated PE, smooth interior
#2	Device 1	289.50'	**18.0" Horiz. Orifice/Grate** Limited to weir flow C= 0.600
#3	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.01 cfs @ 11.81 hrs HW=286.05' (Free Discharge)
↑—**3=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=286.00' TW=284.95' (Dynamic Tailwater)
↑—**1=Culvert** (Passes 0.00 cfs of 1.02 cfs potential flow)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond P18: (new Pond)



Pond P19: (new Pond)

[87] Warning: Oscillations may require Finer Routing or smaller dt

Inflow Area = 0.531 ac, Inflow Depth = 0.65" for 1-year event
Inflow = 0.41 cfs @ 12.09 hrs, Volume= 0.029 af
Outflow = 0.03 cfs @ 11.90 hrs, Volume= 0.029 af, Atten= 92%, Lag= 0.0 min
Discarded = 0.03 cfs @ 11.90 hrs, Volume= 0.029 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 286.73' @ 13.54 hrs Surf.Area= 720 sf Storage= 497 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 141.7 min (1,018.9 - 877.1)

Volume	Invert	Avail.Storage	Storage Description
#1	285.00'	1,757 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

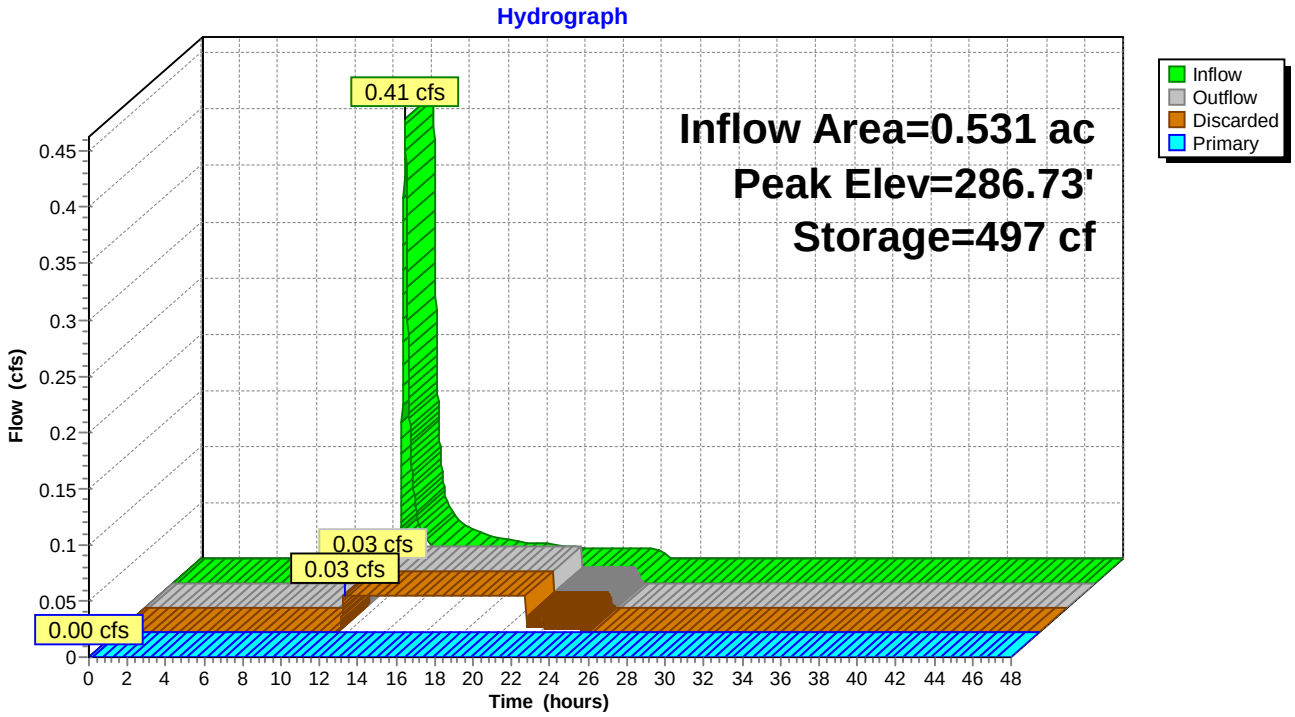
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
285.00	720	40.0	0	0
287.90	720	40.0	835	835
288.00	720	100.0	72	907
289.00	980	100.0	850	1,757

Device	Routing	Invert	Outlet Devices
#1	Primary	284.36'	**8.0" x 36.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 284.00' S= 0.0100 '/' Cc= 0.900 n= 0.009 Corrugated PE, smooth interior
#2	Device 1	288.50'	**18.0" Horiz. Orifice/Grate** Limited to weir flow C= 0.600
#3	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.03 cfs @ 11.90 hrs HW=285.05' (Free Discharge)
↑—**3=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=285.00' TW=276.70' (Dynamic Tailwater)
↑—**1=Culvert** (Passes 0.00 cfs of 0.94 cfs potential flow)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond P19: (new Pond)



Pond P20: CB #P20

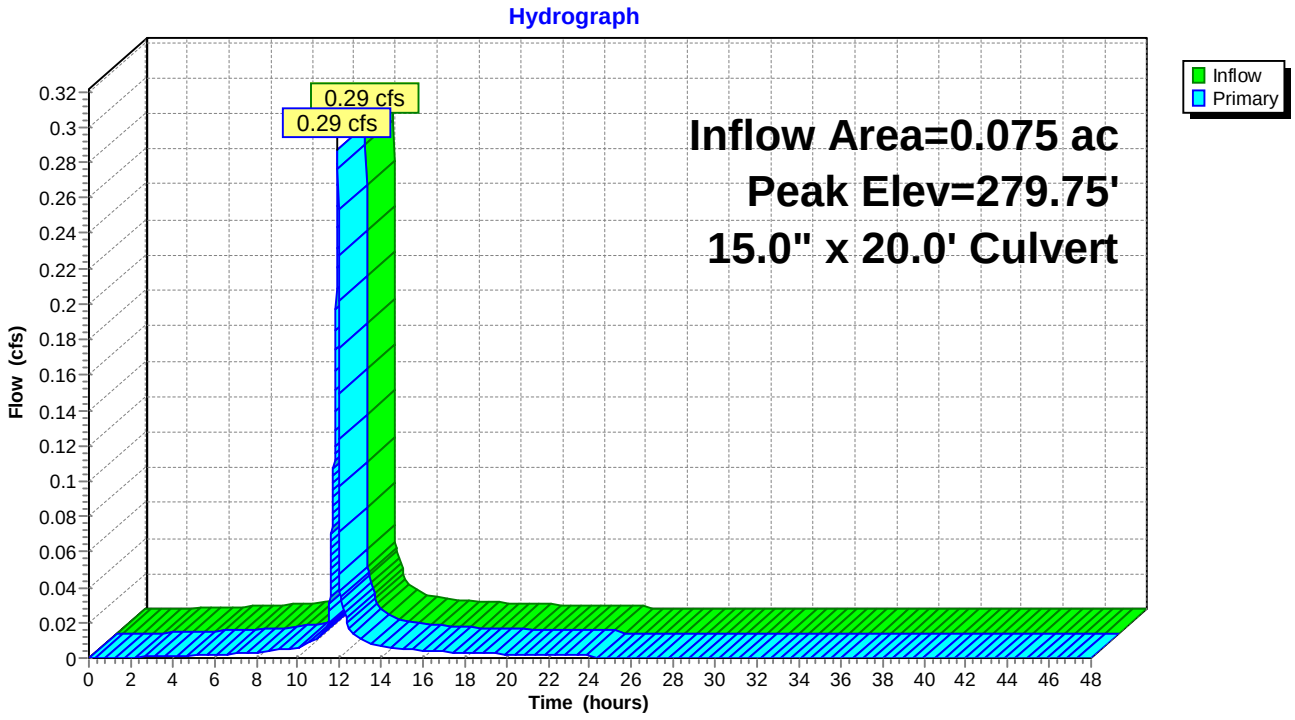
Inflow Area = 0.075 ac, Inflow Depth = 2.12" for 1-year event
Inflow = 0.29 cfs @ 11.91 hrs, Volume= 0.013 af
Outflow = 0.29 cfs @ 11.91 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min
Primary = 0.29 cfs @ 11.91 hrs, Volume= 0.013 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 279.75' @ 11.91 hrs
Flood Elev= 283.50'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	279.50'	**15.0" x 20.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 275.50' S= 0.2000 '/' Cc= 0.900 n= 0.009 Corrugated PE, smooth interior

Primary OutFlow Max=0.29 cfs @ 11.91 hrs HW=279.75' TW=273.47' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.29 cfs @ 1.7 fps)

Pond P20: CB #P20



Pond P21: CB #P21

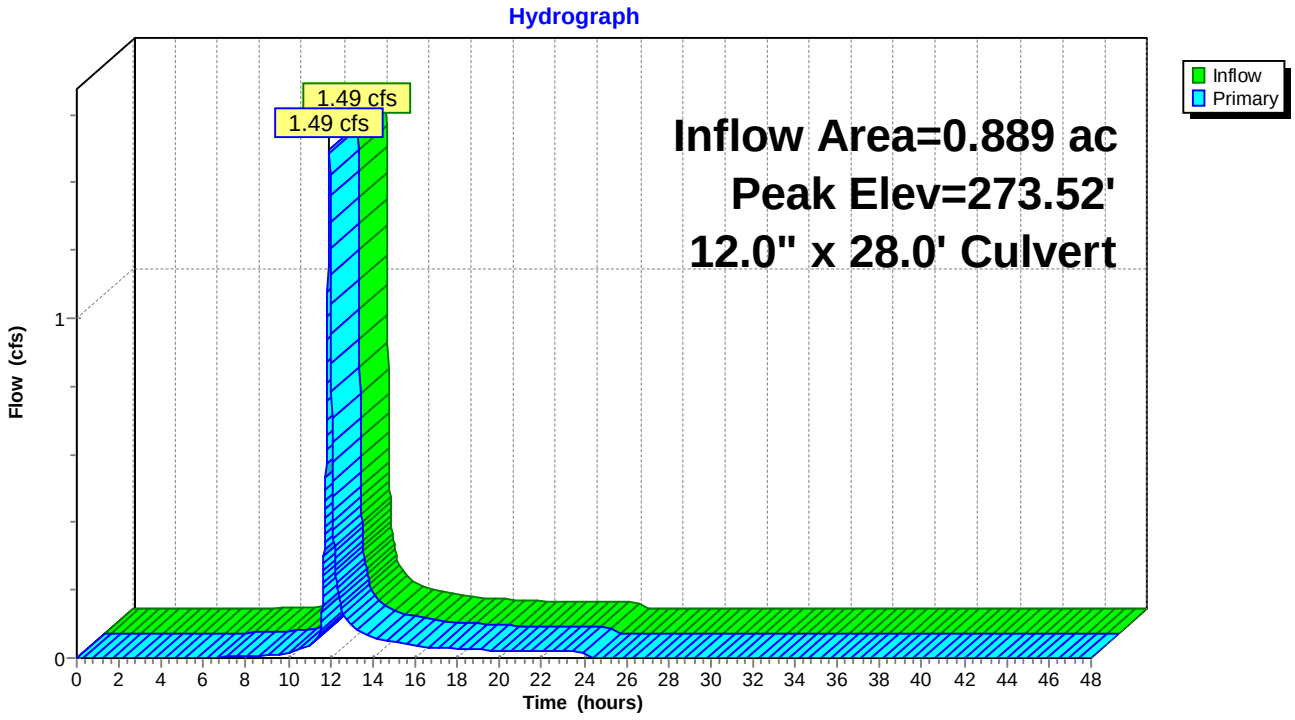
Inflow Area = 0.889 ac, Inflow Depth = 1.11" for 1-year event
Inflow = 1.49 cfs @ 11.96 hrs, Volume= 0.083 af
Outflow = 1.49 cfs @ 11.96 hrs, Volume= 0.083 af, Atten= 0%, Lag= 0.0 min
Primary = 1.49 cfs @ 11.96 hrs, Volume= 0.083 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 273.52' @ 11.96 hrs
Flood Elev= 283.05'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	272.87'	**12.0" x 28.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 271.95' S= 0.0329 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=1.49 cfs @ 11.96 hrs HW=273.52' TW=272.50' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.49 cfs @ 2.8 fps)

Pond P21: CB #P21



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 16S: (new Subcat) Runoff Area=14,445 sf Runoff Depth=0.59"
Flow Length=220' Tc=11.4 min CN=71 Runoff=0.26 cfs 0.016 af

Subcatchment 17S: (new Subcat) Runoff Area=1,100 sf Runoff Depth=2.47"
Flow Length=80' Tc=1.1 min CN=98 Runoff=0.11 cfs 0.005 af

Subcatchment 19S: (new Subcat) Runoff Area=23,119 sf Runoff Depth=0.87"
Flow Length=250' Tc=15.1 min CN=77 Runoff=0.57 cfs 0.038 af

Subcatchment 20S: (new Subcat) Runoff Area=3,249 sf Runoff Depth=2.47"
Flow Length=80' Tc=0.9 min CN=98 Runoff=0.33 cfs 0.015 af

Subcatchment 21S: (new Subcat) Runoff Area=5,730 sf Runoff Depth=1.41"
Flow Length=180' Tc=8.7 min CN=86 Runoff=0.30 cfs 0.015 af

Subcatchment 89S: (new Subcat) Runoff Area=7,358 sf Runoff Depth=1.63"
Flow Length=220' Tc=2.8 min CN=89 Runoff=0.54 cfs 0.023 af

Subcatchment 90S: (new Subcat) Runoff Area=7,779 sf Runoff Depth=0.38"
Flow Length=130' Tc=9.1 min CN=65 Runoff=0.08 cfs 0.006 af

Subcatchment 92S: (new Subcat) Runoff Area=12,228 sf Runoff Depth=0.68"
Flow Length=230' Tc=2.4 min CN=73 Runoff=0.38 cfs 0.016 af

Subcatchment 93S: (new Subcat) Runoff Area=3,185 sf Runoff Depth=0.38"
Flow Length=50' Tc=4.6 min CN=65 Runoff=0.04 cfs 0.002 af

Subcatchment 95S: (new Subcat) Runoff Area=8,601 sf Runoff Depth=1.15"
Flow Length=100' Tc=3.9 min CN=82 Runoff=0.44 cfs 0.019 af

Subcatchment 96S: (new Subcat) Runoff Area=1,205 sf Runoff Depth=1.79"
Flow Length=30' Tc=0.7 min CN=91 Runoff=0.10 cfs 0.004 af

Subcatchment 97S: (new Subcat) Runoff Area=15,490 sf Runoff Depth=1.55"
Flow Length=210' Tc=7.6 min CN=88 Runoff=0.92 cfs 0.046 af

Subcatchment 98S: (new Subcat) Runoff Area=1,265 sf Runoff Depth=0.26"
Flow Length=40' Tc=3.9 min CN=61 Runoff=0.01 cfs 0.001 af

Subcatchment N9S: (new Subcat) Runoff Area=12,230 sf Runoff Depth=1.97"
Flow Length=230' Tc=2.1 min CN=93 Runoff=1.06 cfs 0.046 af

Reach N: Sum Northerly Flow Inflow=2.85 cfs 0.149 af
Outflow=2.85 cfs 0.149 af

Reach SW: Sum Southwesterly Flow Inflow=0.64 cfs 0.028 af
Outflow=0.64 cfs 0.028 af

Pond E102: CB #E102 Peak Elev=276.70' Inflow=0.00 cfs 0.000 af
15.0" x 100.0' Culvert Outflow=0.00 cfs 0.000 af

Pond E89: CB #E89 Peak Elev=278.75' Inflow=0.64 cfs 0.028 af
12.0" x 80.0' Culvert Outflow=0.64 cfs 0.028 af

Pond E90: (new Pond) Peak Elev=285.33' Storage=93 cf Inflow=0.08 cfs 0.006 af
Discarded=0.00 cfs 0.006 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.006 af

Pond E90a: (new Pond) Peak Elev=278.95' Inflow=0.11 cfs 0.005 af
12.0" x 52.0' Culvert Outflow=0.11 cfs 0.005 af

Pond E91: CB #E91 Peak Elev=282.51' Inflow=0.11 cfs 0.005 af
8.0" x 42.0' Culvert Outflow=0.11 cfs 0.005 af

Pond E92: CB #E92 Peak Elev=284.95' Inflow=0.00 cfs 0.000 af
12.0" x 64.0' Culvert Outflow=0.00 cfs 0.000 af

Pond E93: CB #E93 Peak Elev=281.95' Inflow=0.04 cfs 0.002 af
12.0" x 67.0' Culvert Outflow=0.04 cfs 0.002 af

Pond E95: CB #E95 Peak Elev=278.10' Inflow=0.48 cfs 0.021 af
12.0" x 62.0' Culvert Outflow=0.48 cfs 0.021 af

Pond E96: CB #E96 Peak Elev=281.16' Inflow=0.10 cfs 0.004 af
10.0" x 25.0' Culvert Outflow=0.10 cfs 0.004 af

Pond E96a: E96A Peak Elev=277.53' Inflow=0.55 cfs 0.025 af
12.0" x 58.0' Culvert Outflow=0.55 cfs 0.025 af

Pond E97: CB #E97 Peak Elev=277.03' Inflow=1.41 cfs 0.071 af
12.0" x 74.0' Culvert Outflow=1.41 cfs 0.071 af

Pond E98: CB #E98 Peak Elev=275.85' Inflow=0.01 cfs 0.001 af
10.0" x 10.0' Culvert Outflow=0.01 cfs 0.001 af

Pond E98a: E98A Peak Elev=274.63' Inflow=1.42 cfs 0.072 af
12.0" x 34.0' Culvert Outflow=1.42 cfs 0.072 af

Pond E99: CB #E99 Peak Elev=272.58' Inflow=1.88 cfs 0.103 af
18.0" x 100.0' Culvert Outflow=1.88 cfs 0.103 af

Pond P16: CB #P16 Peak Elev=287.84' Storage=299 cf Inflow=0.26 cfs 0.016 af
Discarded=0.01 cfs 0.016 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.016 af

Pond P17: CB #P17 Peak Elev=282.68' Inflow=0.11 cfs 0.005 af
8.0" x 30.0' Culvert Outflow=0.11 cfs 0.005 af

Pond P18: (new Pond) Peak Elev=288.33' Storage=298 cf Inflow=0.38 cfs 0.016 af
Discarded=0.01 cfs 0.016 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.016 af

Pond P19: (new Pond) Peak Elev=287.68' Storage=773 cf Inflow=0.57 cfs 0.038 af
Discarded=0.03 cfs 0.038 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.038 af

Pond P20: CB #P20 Peak Elev=279.76' Inflow=0.33 cfs 0.015 af
15.0" x 20.0' Culvert Outflow=0.33 cfs 0.015 af

Pond P21: CB #P21 Peak Elev=273.62' Inflow=1.88 cfs 0.103 af
12.0" x 28.0' Culvert Outflow=1.88 cfs 0.103 af

Total Runoff Area = 2.686 ac Runoff Volume = 0.253 af Average Runoff Depth = 1.13"

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 16S: (new Subcat) Runoff Area=14,445 sf Runoff Depth=1.33"
Flow Length=220' Tc=11.4 min CN=71 Runoff=0.63 cfs 0.037 af

Subcatchment 17S: (new Subcat) Runoff Area=1,100 sf Runoff Depth=3.67"
Flow Length=80' Tc=1.1 min CN=98 Runoff=0.16 cfs 0.008 af

Subcatchment 19S: (new Subcat) Runoff Area=23,119 sf Runoff Depth=1.73"
Flow Length=250' Tc=15.1 min CN=77 Runoff=1.18 cfs 0.077 af

Subcatchment 20S: (new Subcat) Runoff Area=3,249 sf Runoff Depth=3.67"
Flow Length=80' Tc=0.9 min CN=98 Runoff=0.48 cfs 0.023 af

Subcatchment 21S: (new Subcat) Runoff Area=5,730 sf Runoff Depth=2.46"
Flow Length=180' Tc=8.7 min CN=86 Runoff=0.51 cfs 0.027 af

Subcatchment 89S: (new Subcat) Runoff Area=7,358 sf Runoff Depth=2.73"
Flow Length=220' Tc=2.8 min CN=89 Runoff=0.88 cfs 0.038 af

Subcatchment 90S: (new Subcat) Runoff Area=7,779 sf Runoff Depth=0.97"
Flow Length=130' Tc=9.1 min CN=65 Runoff=0.26 cfs 0.014 af

Subcatchment 92S: (new Subcat) Runoff Area=12,228 sf Runoff Depth=1.46"
Flow Length=230' Tc=2.4 min CN=73 Runoff=0.84 cfs 0.034 af

Subcatchment 93S: (new Subcat) Runoff Area=3,185 sf Runoff Depth=0.97"
Flow Length=50' Tc=4.6 min CN=65 Runoff=0.13 cfs 0.006 af

Subcatchment 95S: (new Subcat) Runoff Area=8,601 sf Runoff Depth=2.12"
Flow Length=100' Tc=3.9 min CN=82 Runoff=0.80 cfs 0.035 af

Subcatchment 96S: (new Subcat) Runoff Area=1,205 sf Runoff Depth=2.92"
Flow Length=30' Tc=0.7 min CN=91 Runoff=0.16 cfs 0.007 af

Subcatchment 97S: (new Subcat) Runoff Area=15,490 sf Runoff Depth=2.64"
Flow Length=210' Tc=7.6 min CN=88 Runoff=1.53 cfs 0.078 af

Subcatchment 98S: (new Subcat) Runoff Area=1,265 sf Runoff Depth=0.76"
Flow Length=40' Tc=3.9 min CN=61 Runoff=0.04 cfs 0.002 af

Subcatchment N9S: (new Subcat) Runoff Area=12,230 sf Runoff Depth=3.12"
Flow Length=230' Tc=2.1 min CN=93 Runoff=1.63 cfs 0.073 af

Reach N: Sum Northerly Flow Inflow=4.75 cfs 0.264 af
Outflow=4.75 cfs 0.264 af

Reach SW: Sum Southwesterly Flow Inflow=1.03 cfs 0.060 af
Outflow=1.03 cfs 0.060 af

Pond E102: CB #E102 Peak Elev=276.94' Inflow=0.27 cfs 0.014 af
15.0" x 100.0' Culvert Outflow=0.27 cfs 0.014 af

Pond E89: CB #E89 Peak Elev=278.87' Inflow=1.03 cfs 0.060 af
12.0" x 80.0' Culvert Outflow=1.03 cfs 0.060 af

Pond E90: (new Pond) Peak Elev=286.53' Storage=193 cf Inflow=0.26 cfs 0.014 af
Discarded=0.01 cfs 0.010 af Primary=0.09 cfs 0.004 af Outflow=0.10 cfs 0.014 af

Pond E90a: (new Pond) Peak Elev=279.01' Inflow=0.23 cfs 0.022 af
12.0" x 52.0' Culvert Outflow=0.23 cfs 0.022 af

Pond E91: CB #E91 Peak Elev=282.55' Inflow=0.16 cfs 0.013 af
8.0" x 42.0' Culvert Outflow=0.16 cfs 0.013 af

Pond E92: CB #E92 Peak Elev=285.09' Inflow=0.08 cfs 0.005 af
12.0" x 64.0' Culvert Outflow=0.08 cfs 0.005 af

Pond E93: CB #E93 Peak Elev=282.02' Inflow=0.13 cfs 0.006 af
12.0" x 67.0' Culvert Outflow=0.13 cfs 0.006 af

Pond E95: CB #E95 Peak Elev=278.27' Inflow=0.93 cfs 0.041 af
12.0" x 62.0' Culvert Outflow=0.93 cfs 0.041 af

Pond E96: CB #E96 Peak Elev=281.21' Inflow=0.16 cfs 0.007 af
10.0" x 25.0' Culvert Outflow=0.16 cfs 0.007 af

Pond E96a: E96A Peak Elev=277.74' Inflow=1.04 cfs 0.047 af
12.0" x 58.0' Culvert Outflow=1.04 cfs 0.047 af

Pond E97: CB #E97 Peak Elev=277.32' Inflow=2.47 cfs 0.126 af
12.0" x 74.0' Culvert Outflow=2.47 cfs 0.126 af

Pond E98: CB #E98 Peak Elev=275.90' Inflow=0.04 cfs 0.002 af
10.0" x 10.0' Culvert Outflow=0.04 cfs 0.002 af

Pond E98a: E98A Peak Elev=274.93' Inflow=2.51 cfs 0.127 af
12.0" x 34.0' Culvert Outflow=2.51 cfs 0.127 af

Pond E99: CB #E99 Peak Elev=272.80' Inflow=3.26 cfs 0.177 af
18.0" x 100.0' Culvert Outflow=3.26 cfs 0.177 af

Pond P16: CB #P16 Peak Elev=289.04' Storage=622 cf Inflow=0.63 cfs 0.037 af
Discarded=0.03 cfs 0.031 af Primary=0.11 cfs 0.005 af Outflow=0.13 cfs 0.037 af

Pond P17: CB #P17 Peak Elev=282.72' Inflow=0.16 cfs 0.013 af
8.0" x 30.0' Culvert Outflow=0.16 cfs 0.013 af

Pond P18: (new Pond) Peak Elev=289.53' Storage=602 cf Inflow=0.84 cfs 0.034 af
Discarded=0.02 cfs 0.029 af Primary=0.08 cfs 0.005 af Outflow=0.10 cfs 0.034 af

Pond P19: (new Pond) Peak Elev=288.57' Storage=1,358 cf Inflow=1.18 cfs 0.077 af
Discarded=0.04 cfs 0.063 af Primary=0.27 cfs 0.014 af Outflow=0.31 cfs 0.077 af

Pond P20: CB #P20 Peak Elev=279.82' Inflow=0.48 cfs 0.023 af
15.0" x 20.0' Culvert Outflow=0.48 cfs 0.023 af

Pond P21: CB #P21 Peak Elev=274.11' Inflow=3.26 cfs 0.177 af
12.0" x 28.0' Culvert Outflow=3.26 cfs 0.177 af

Total Runoff Area = 2.686 ac Runoff Volume = 0.458 af Average Runoff Depth = 2.05"

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 16S: (new Subcat) Runoff Area=14,445 sf Runoff Depth=2.50"
Flow Length=220' Tc=11.4 min CN=71 Runoff=1.21 cfs 0.069 af

Subcatchment 17S: (new Subcat) Runoff Area=1,100 sf Runoff Depth=5.26"
Flow Length=80' Tc=1.1 min CN=98 Runoff=0.23 cfs 0.011 af

Subcatchment 19S: (new Subcat) Runoff Area=23,119 sf Runoff Depth=3.05"
Flow Length=250' Tc=15.1 min CN=77 Runoff=2.09 cfs 0.135 af

Subcatchment 20S: (new Subcat) Runoff Area=3,249 sf Runoff Depth=5.26"
Flow Length=80' Tc=0.9 min CN=98 Runoff=0.68 cfs 0.033 af

Subcatchment 21S: (new Subcat) Runoff Area=5,730 sf Runoff Depth=3.94"
Flow Length=180' Tc=8.7 min CN=86 Runoff=0.81 cfs 0.043 af

Subcatchment 89S: (new Subcat) Runoff Area=7,358 sf Runoff Depth=4.25"
Flow Length=220' Tc=2.8 min CN=89 Runoff=1.33 cfs 0.060 af

Subcatchment 90S: (new Subcat) Runoff Area=7,779 sf Runoff Depth=1.99"
Flow Length=130' Tc=9.1 min CN=65 Runoff=0.56 cfs 0.030 af

Subcatchment 92S: (new Subcat) Runoff Area=12,228 sf Runoff Depth=2.68"
Flow Length=230' Tc=2.4 min CN=73 Runoff=1.53 cfs 0.063 af

Subcatchment 93S: (new Subcat) Runoff Area=3,185 sf Runoff Depth=1.99"
Flow Length=50' Tc=4.6 min CN=65 Runoff=0.28 cfs 0.012 af

Subcatchment 95S: (new Subcat) Runoff Area=8,601 sf Runoff Depth=3.53"
Flow Length=100' Tc=3.9 min CN=82 Runoff=1.31 cfs 0.058 af

Subcatchment 96S: (new Subcat) Runoff Area=1,205 sf Runoff Depth=4.47"
Flow Length=30' Tc=0.7 min CN=91 Runoff=0.24 cfs 0.010 af

Subcatchment 97S: (new Subcat) Runoff Area=15,490 sf Runoff Depth=4.15"
Flow Length=210' Tc=7.6 min CN=88 Runoff=2.35 cfs 0.123 af

Subcatchment 98S: (new Subcat) Runoff Area=1,265 sf Runoff Depth=1.68"
Flow Length=40' Tc=3.9 min CN=61 Runoff=0.09 cfs 0.004 af

Subcatchment N9S: (new Subcat) Runoff Area=12,230 sf Runoff Depth=4.69"
Flow Length=230' Tc=2.1 min CN=93 Runoff=2.38 cfs 0.110 af

Reach N: Sum Northerly Flow Inflow=7.36 cfs 0.454 af
Outflow=7.36 cfs 0.454 af

Reach SW: Sum Southwesterly Flow Inflow=2.95 cfs 0.148 af
Outflow=2.95 cfs 0.148 af

Pond E102: CB #E102 Peak Elev=277.36' Inflow=1.84 cfs 0.061 af
15.0" x 100.0' Culvert Outflow=1.84 cfs 0.061 af

Pond E89: CB #E89 Peak Elev=279.46' Inflow=2.95 cfs 0.148 af
12.0" x 80.0' Culvert Outflow=2.95 cfs 0.148 af

Pond E90: (new Pond) Peak Elev=286.61' Storage=205 cf Inflow=0.56 cfs 0.030 af
Discarded=0.01 cfs 0.012 af Primary=0.55 cfs 0.018 af Outflow=0.56 cfs 0.030 af

Pond E90a: (new Pond) Peak Elev=279.76' Inflow=1.94 cfs 0.088 af
12.0" x 52.0' Culvert Outflow=1.94 cfs 0.088 af

Pond E91: CB #E91 Peak Elev=283.14' Inflow=1.13 cfs 0.042 af
8.0" x 42.0' Culvert Outflow=1.13 cfs 0.042 af

Pond E92: CB #E92 Peak Elev=285.59' Inflow=1.46 cfs 0.029 af
12.0" x 64.0' Culvert Outflow=1.46 cfs 0.029 af

Pond E93: CB #E93 Peak Elev=282.11' Inflow=0.28 cfs 0.012 af
12.0" x 67.0' Culvert Outflow=0.28 cfs 0.012 af

Pond E95: CB #E95 Peak Elev=278.57' Inflow=1.58 cfs 0.070 af
12.0" x 62.0' Culvert Outflow=1.58 cfs 0.070 af

Pond E96: CB #E96 Peak Elev=281.25' Inflow=0.24 cfs 0.010 af
10.0" x 25.0' Culvert Outflow=0.24 cfs 0.010 af

Pond E96a: E96A Peak Elev=278.21' Inflow=1.74 cfs 0.081 af
12.0" x 58.0' Culvert Outflow=1.74 cfs 0.081 af

Pond E97: CB #E97 Peak Elev=277.98' Inflow=3.93 cfs 0.203 af
12.0" x 74.0' Culvert Outflow=3.93 cfs 0.203 af

Pond E98: CB #E98 Peak Elev=276.38' Inflow=0.09 cfs 0.004 af
10.0" x 10.0' Culvert Outflow=0.09 cfs 0.004 af

Pond E98a: E98A Peak Elev=276.37' Inflow=4.03 cfs 0.207 af
12.0" x 34.0' Culvert Outflow=4.03 cfs 0.207 af

Pond E99: CB #E99 Peak Elev=273.08' Inflow=5.18 cfs 0.283 af
18.0" x 100.0' Culvert Outflow=5.18 cfs 0.283 af

Pond P16: CB #P16 Peak Elev=289.17' Storage=703 cf Inflow=1.21 cfs 0.069 af
Discarded=0.03 cfs 0.038 af Primary=1.11 cfs 0.031 af Outflow=1.13 cfs 0.069 af

Pond P17: CB #P17 Peak Elev=283.59' Inflow=1.13 cfs 0.042 af
8.0" x 30.0' Culvert Outflow=1.13 cfs 0.042 af

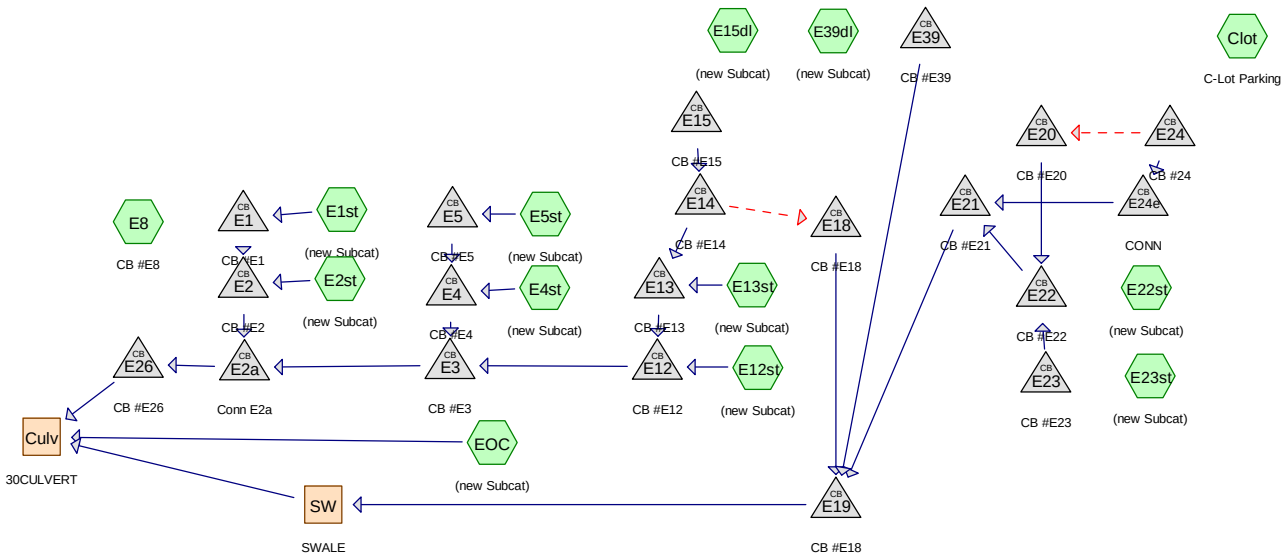
Pond P18: (new Pond) Peak Elev=289.71' Storage=682 cf Inflow=1.53 cfs 0.063 af
Discarded=0.02 cfs 0.034 af Primary=1.46 cfs 0.029 af Outflow=1.48 cfs 0.063 af

Pond P19: (new Pond) Peak Elev=288.74' Storage=1,513 cf Inflow=2.09 cfs 0.135 af
Discarded=0.04 cfs 0.073 af Primary=1.84 cfs 0.061 af Outflow=1.88 cfs 0.135 af

Pond P20: CB #P20 Peak Elev=279.89' Inflow=0.68 cfs 0.033 af
15.0" x 20.0' Culvert Outflow=0.68 cfs 0.033 af

Pond P21: CB #P21 Peak Elev=275.24' Inflow=5.18 cfs 0.283 af
12.0" x 28.0' Culvert Outflow=5.18 cfs 0.283 af

Total Runoff Area = 2.686 ac Runoff Volume = 0.760 af Average Runoff Depth = 3.40"



Subcat Reach Pond Link

Drainage Diagram for HVCC South Road Existing

Prepared by {enter your company name here} 5/8/2013

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment Clot: C-Lot Parking Runoff Area=108,241 sf Runoff Depth=1.91"
Flow Length=600' Tc=18.2 min CN=96 Runoff=5.31 cfs 0.396 af

Subcatchment E12st: (new Subcat) Runoff Area=3,900 sf Runoff Depth=2.12"
Flow Length=355' Tc=2.8 min CN=98 Runoff=0.33 cfs 0.016 af

Subcatchment E13st: (new Subcat) Runoff Area=17,206 sf Runoff Depth=0.56"
Flow Length=700' Tc=14.2 min CN=75 Runoff=0.27 cfs 0.019 af

Subcatchment E15dl: (new Subcat) Runoff Area=41,974 sf Runoff Depth=1.55"
Tc=0.0 min CN=92 Runoff=3.14 cfs 0.125 af

Subcatchment E1st: (new Subcat) Runoff Area=8,700 sf Runoff Depth=0.61"
Flow Length=300' Tc=15.3 min CN=76 Runoff=0.14 cfs 0.010 af

Subcatchment E22st: (new Subcat)
Runoff=0.00 cfs 0.000 af

Subcatchment E23st: (new Subcat) Runoff Area=3,900 sf Runoff Depth=2.12"
Flow Length=355' Tc=2.8 min CN=98 Runoff=0.33 cfs 0.016 af

Subcatchment E2st: (new Subcat) Runoff Area=3,300 sf Runoff Depth=2.12"
Flow Length=300' Tc=2.9 min CN=98 Runoff=0.27 cfs 0.013 af

Subcatchment E39dl: (new Subcat) Runoff Area=18,000 sf Runoff Depth=1.55"
Flow Length=300' Tc=15.7 min CN=92 Runoff=0.80 cfs 0.054 af

Subcatchment E4st: (new Subcat) Runoff Area=3,850 sf Runoff Depth=2.12"
Flow Length=350' Tc=2.8 min CN=98 Runoff=0.32 cfs 0.016 af

Subcatchment E5st: (new Subcat) Runoff Area=11,900 sf Runoff Depth=0.53"
Flow Length=350' Tc=15.6 min CN=74 Runoff=0.16 cfs 0.012 af

Subcatchment E8: CB #E8 Runoff Area=102,154 sf Runoff Depth=1.55"
Flow Length=600' Tc=18.2 min CN=92 Runoff=4.24 cfs 0.304 af

Subcatchment EOC: (new Subcat) Runoff Area=33,443 sf Runoff Depth=0.15"
Flow Length=1,150' Tc=21.8 min CN=61 Runoff=0.04 cfs 0.010 af

Reach Culv: 30CULVERT Peak Depth=0.20' Max Vel=6.3 fps Inflow=1.13 cfs 0.095 af
D=30.0" n=0.009 L=30.0' S=0.0233 '/' Capacity=90.50 cfs Outflow=1.13 cfs 0.095 af

Reach SW: SWALE Peak Depth=0.00' Max Vel=0.0 fps Inflow=0.00 cfs 0.000 af
n=0.025 L=460.0' S=0.0565 '/' Capacity=954.87 cfs Outflow=0.00 cfs 0.000 af

Pond E1: CB #E1 Peak Elev=253.11' Inflow=0.14 cfs 0.010 af
12.0" x 22.0' Culvert Outflow=0.14 cfs 0.010 af

Pond E12: CB #E12 Peak Elev=270.10' Inflow=0.43 cfs 0.034 af
15.0" x 348.0' Culvert Outflow=0.43 cfs 0.034 af

Pond E13: CB #E13 Peak Elev=270.60' Inflow=0.27 cfs 0.019 af
12.0" x 27.0' Culvert Outflow=0.27 cfs 0.019 af

Pond E14: CB #E14 Peak Elev=270.90' Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond E15: CB #E15 Peak Elev=0.00'
18.0" x 11.0' Culvert Primary=0.00 cfs 0.000 af

Pond E18: CB #E18 Peak Elev=270.20' Inflow=0.00 cfs 0.000 af
12.0" x 70.0' Culvert Outflow=0.00 cfs 0.000 af

Pond E19: CB #E18 Peak Elev=265.90' Inflow=0.00 cfs 0.000 af
18.0" x 397.0' Culvert Outflow=0.00 cfs 0.000 af

Pond E2: CB #E2 Peak Elev=251.98' Inflow=0.33 cfs 0.023 af
12.0" x 13.0' Culvert Outflow=0.33 cfs 0.023 af

Pond E20: CB #E20 Peak Elev=281.40' Inflow=0.00 cfs 0.000 af
24.0" x 20.0' Culvert Outflow=0.00 cfs 0.000 af

Pond E21: CB #E21 Peak Elev=270.15' Inflow=0.00 cfs 0.000 af
12.0" x 330.0' Culvert Outflow=0.00 cfs 0.000 af

Pond E22: CB #E22 Peak Elev=272.75' Inflow=0.00 cfs 0.000 af
12.0" x 9.0' Culvert Outflow=0.00 cfs 0.000 af

Pond E23: CB #E23 Peak Elev=0.00'
12.0" x 23.0' Culvert Primary=0.00 cfs 0.000 af

Pond E24: CB #24 Peak Elev=0.00'
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af

Pond E24e: CONN Peak Elev=270.45' Inflow=0.00 cfs 0.000 af
12.0" x 30.0' Culvert Outflow=0.00 cfs 0.000 af

Pond E26: CB #E26 Peak Elev=241.65' Inflow=1.13 cfs 0.085 af
21.0" x 61.0' Culvert Outflow=1.13 cfs 0.085 af

Pond E2a: Conn E2a Peak Elev=247.96' Inflow=1.13 cfs 0.085 af
15.0" x 68.0' Culvert Outflow=1.13 cfs 0.085 af

Pond E3: CB #E3 Peak Elev=263.22' Inflow=0.80 cfs 0.062 af
15.0" x 370.0' Culvert Outflow=0.80 cfs 0.062 af

Pond E39: CB #E39 Peak Elev=0.00'
12.0" x 286.0' Culvert Primary=0.00 cfs 0.000 af

Pond E4: CB #E4 Peak Elev=266.90' Inflow=0.37 cfs 0.028 af
12.0" x 8.0' Culvert Outflow=0.37 cfs 0.028 af

Pond E5: CB #E5 Peak Elev=267.39' Inflow=0.16 cfs 0.012 af
12.0" x 22.0' Culvert Outflow=0.16 cfs 0.012 af

Total Runoff Area = 8.186 ac Runoff Volume = 0.990 af Average Runoff Depth = 1.45"

Subcatchment Clot: C-Lot Parking

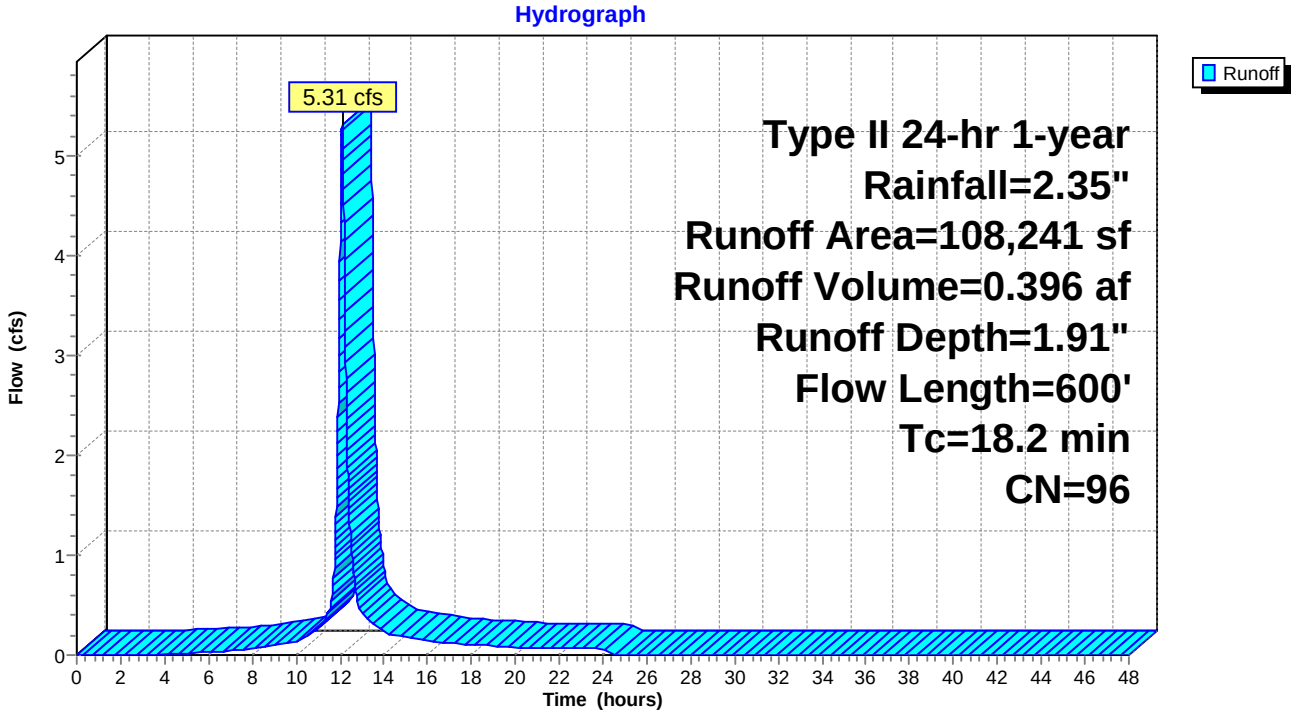
Runoff = 5.31 cfs @ 12.10 hrs, Volume= 0.396 af, Depth= 1.91"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
100,943	98	Paved parking & roofs
7,298	61	>75% Grass cover, Good, HSG B
108,241	96	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	100	0.0100	0.1		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
4.1	500	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
18.2	600	Total			

Subcatchment Clot: C-Lot Parking



Subcatchment E12st: (new Subcat)

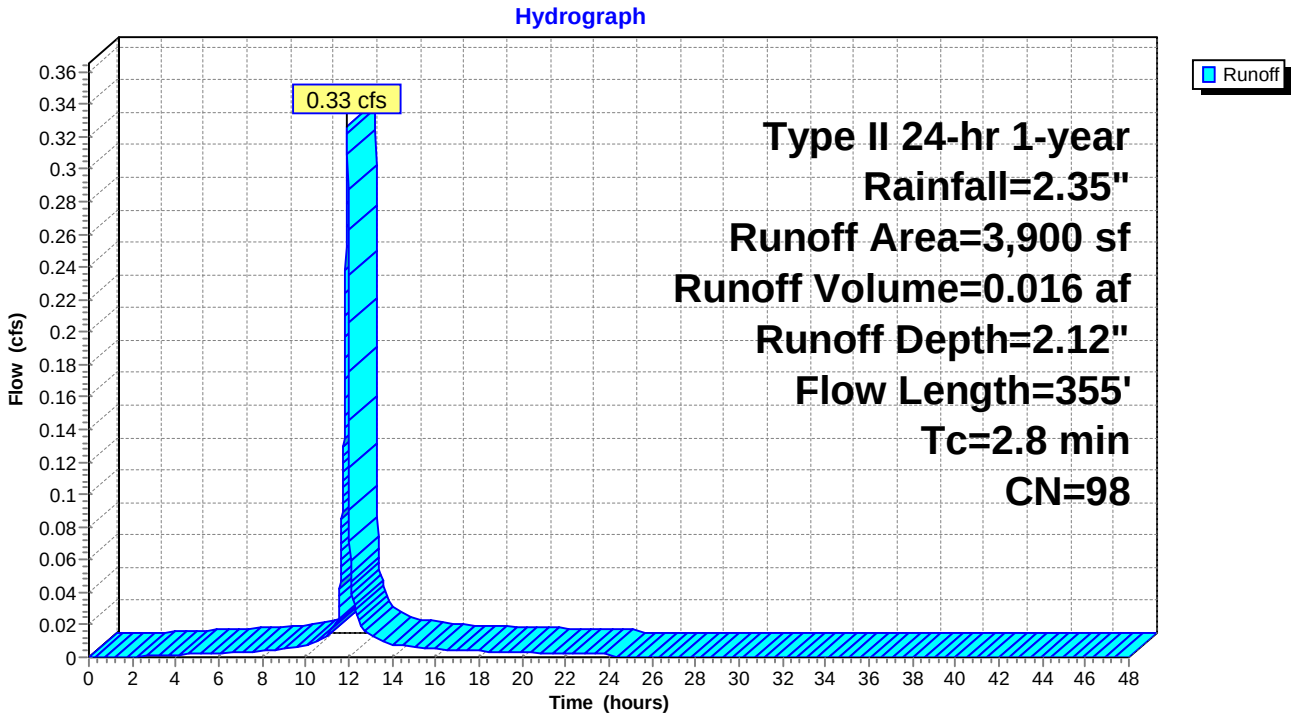
Runoff = 0.33 cfs @ 11.93 hrs, Volume= 0.016 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
3,900	98	Paved parking & roofs

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0200	1.3		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
1.5	255	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.8	355	Total			

Subcatchment E12st: (new Subcat)



Subcatchment E13st: (new Subcat)

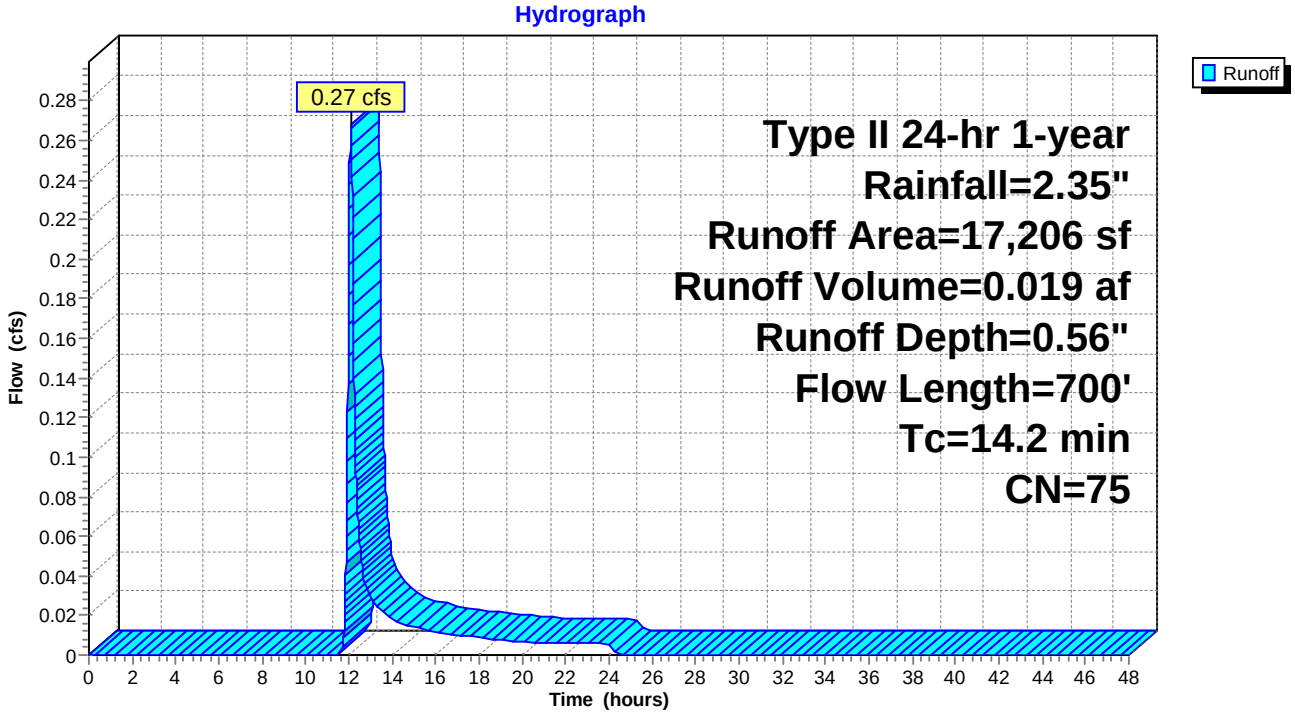
Runoff = 0.27 cfs @ 12.08 hrs, Volume= 0.019 af, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
10,618	61	>75% Grass cover, Good, HSG B
6,588	98	Paved parking & roofs
17,206	75	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7	100	0.0200	0.2		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
3.5	600	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
14.2	700	Total			

Subcatchment E13st: (new Subcat)



Subcatchment E15dl: (new Subcat)

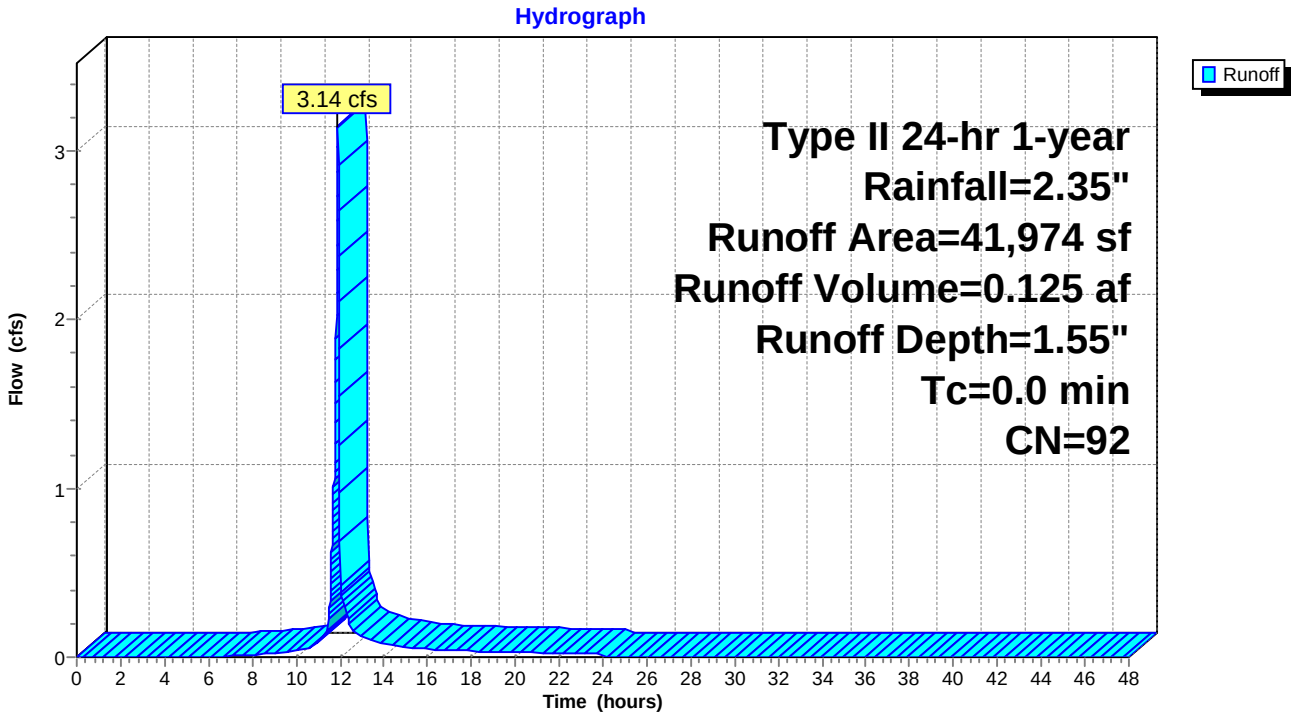
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 3.14 cfs @ 11.90 hrs, Volume= 0.125 af, Depth= 1.55"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
35,500	98	Paved parking & roofs
6,474	61	>75% Grass cover, Good, HSG B
41,974	92	Weighted Average

Subcatchment E15dl: (new Subcat)



Subcatchment E1st: (new Subcat)

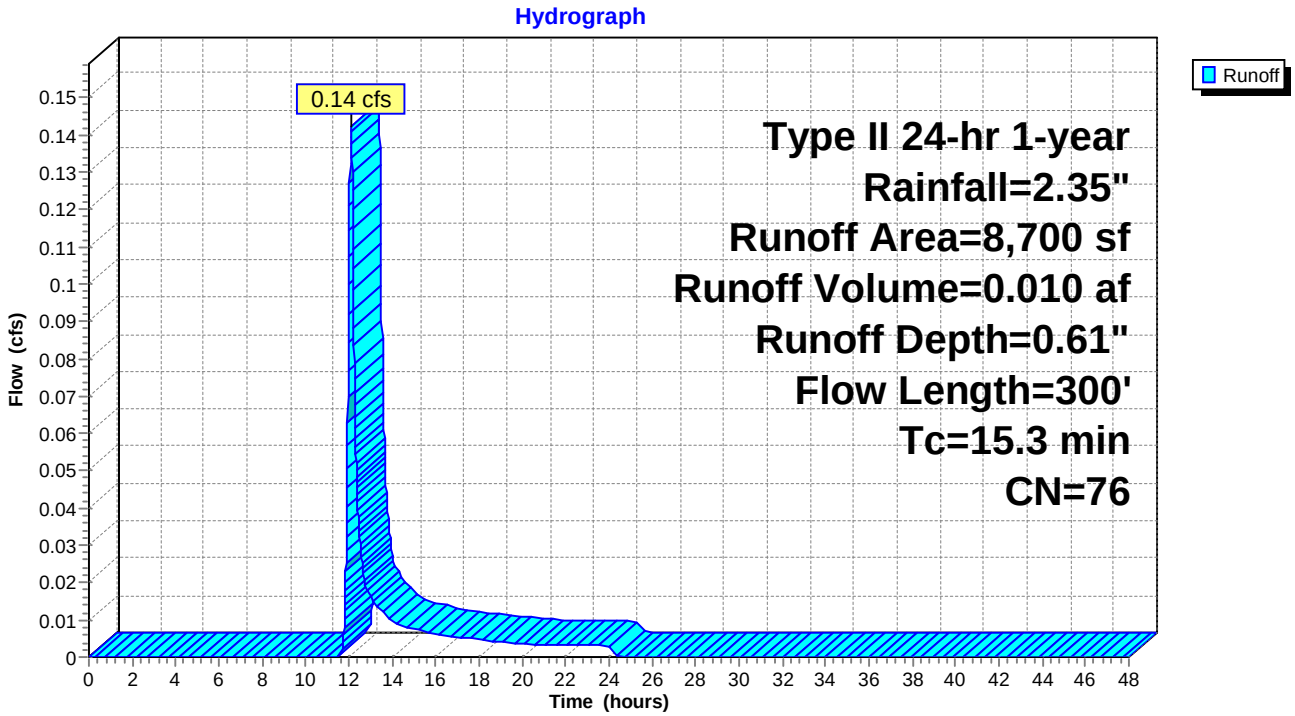
Runoff = 0.14 cfs @ 12.09 hrs, Volume= 0.010 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
3,500	98	Paved parking & roofs
5,200	61	>75% Grass cover, Good, HSG B
8,700	76	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	100	0.0100	0.1		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
1.2	200	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
15.3	300	Total			

Subcatchment E1st: (new Subcat)



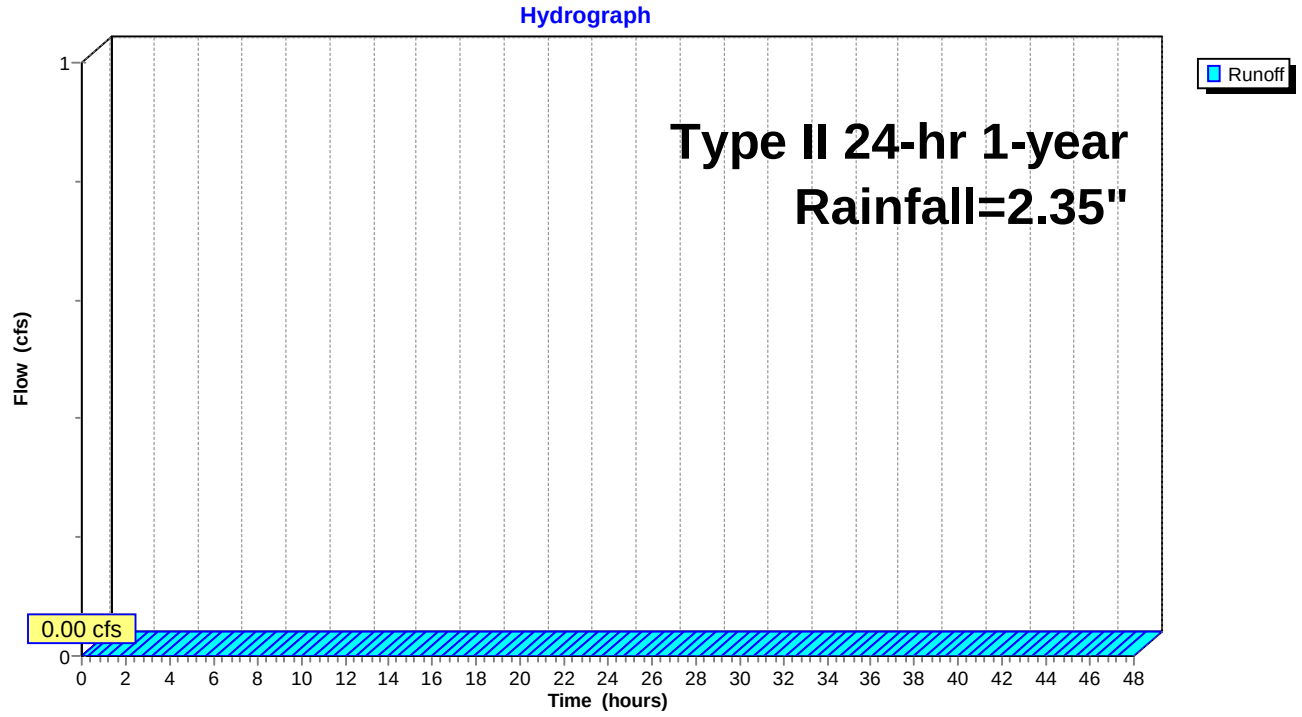
Subcatchment E22st: (new Subcat)

[40] Hint: Not Described (Area=0)

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Subcatchment E22st: (new Subcat)



Subcatchment E23st: (new Subcat)

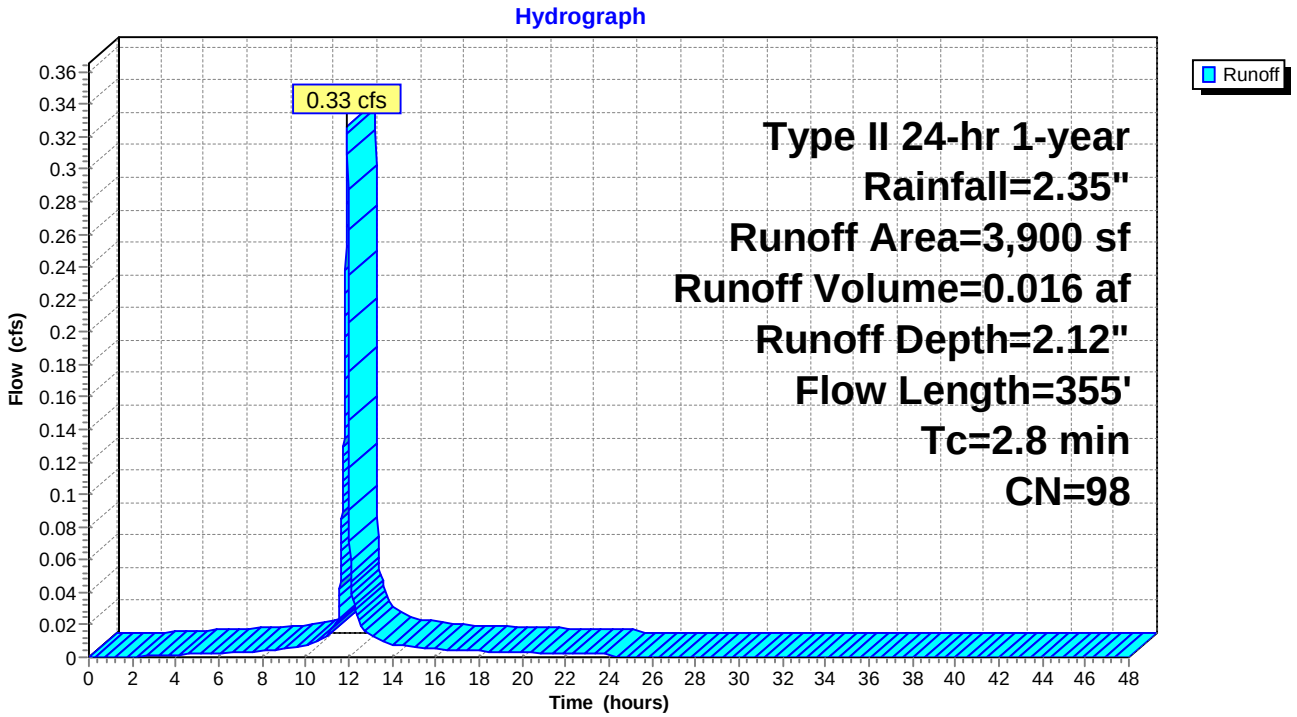
Runoff = 0.33 cfs @ 11.93 hrs, Volume= 0.016 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
3,900	98	Paved parking & roofs

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0200	1.3		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
1.5	255	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.8	355	Total			

Subcatchment E23st: (new Subcat)



Subcatchment E2st: (new Subcat)

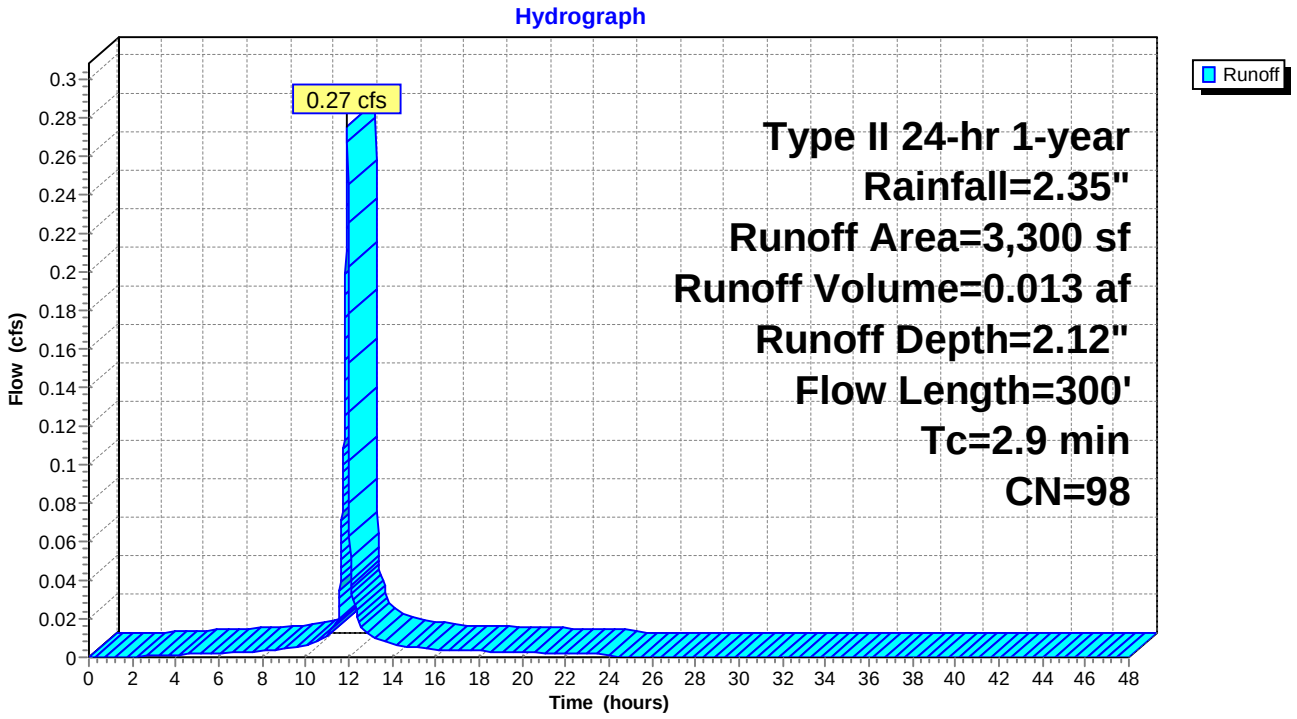
Runoff = 0.27 cfs @ 11.93 hrs, Volume= 0.013 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
3,300	98	Paved parking & roofs

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0100	1.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
1.2	200	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.9	300	Total			

Subcatchment E2st: (new Subcat)



Subcatchment E39dl: (new Subcat)

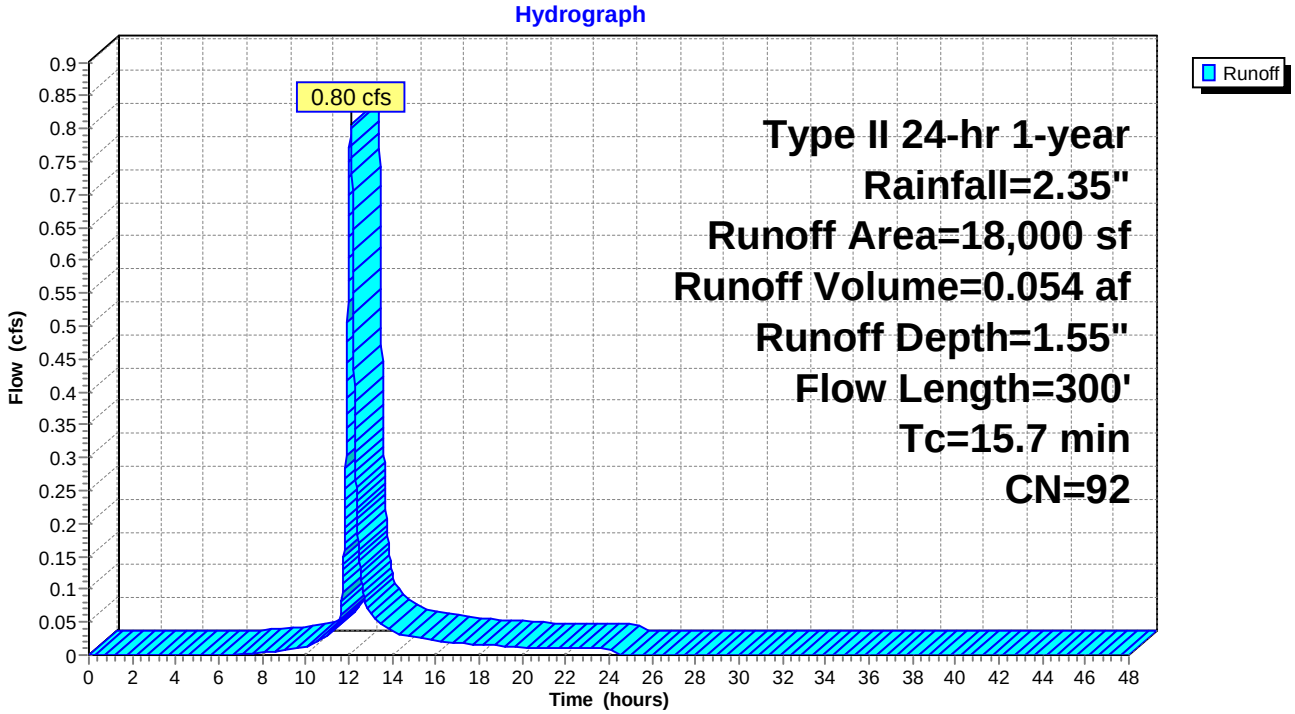
Runoff = 0.80 cfs @ 12.07 hrs, Volume= 0.054 af, Depth= 1.55"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
2,900	61	>75% Grass cover, Good, HSG B
15,100	98	Paved parking & roofs
18,000	92	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	100	0.0100	0.1		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
1.6	200	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
15.7	300	Total			

Subcatchment E39dl: (new Subcat)



Subcatchment E4st: (new Subcat)

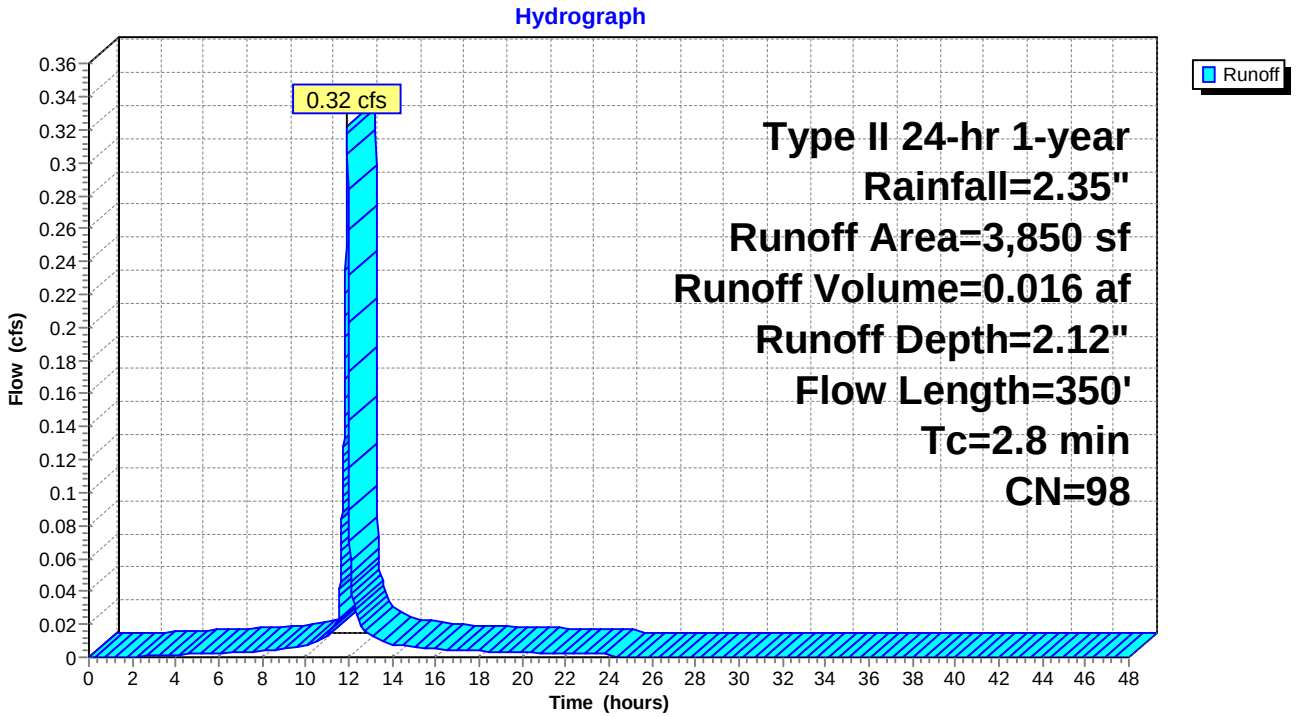
Runoff = 0.32 cfs @ 11.93 hrs, Volume= 0.016 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
3,850	98	Paved parking & roofs

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0200	1.3		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
1.5	250	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.8	350	Total			

Subcatchment E4st: (new Subcat)



Subcatchment E5st: (new Subcat)

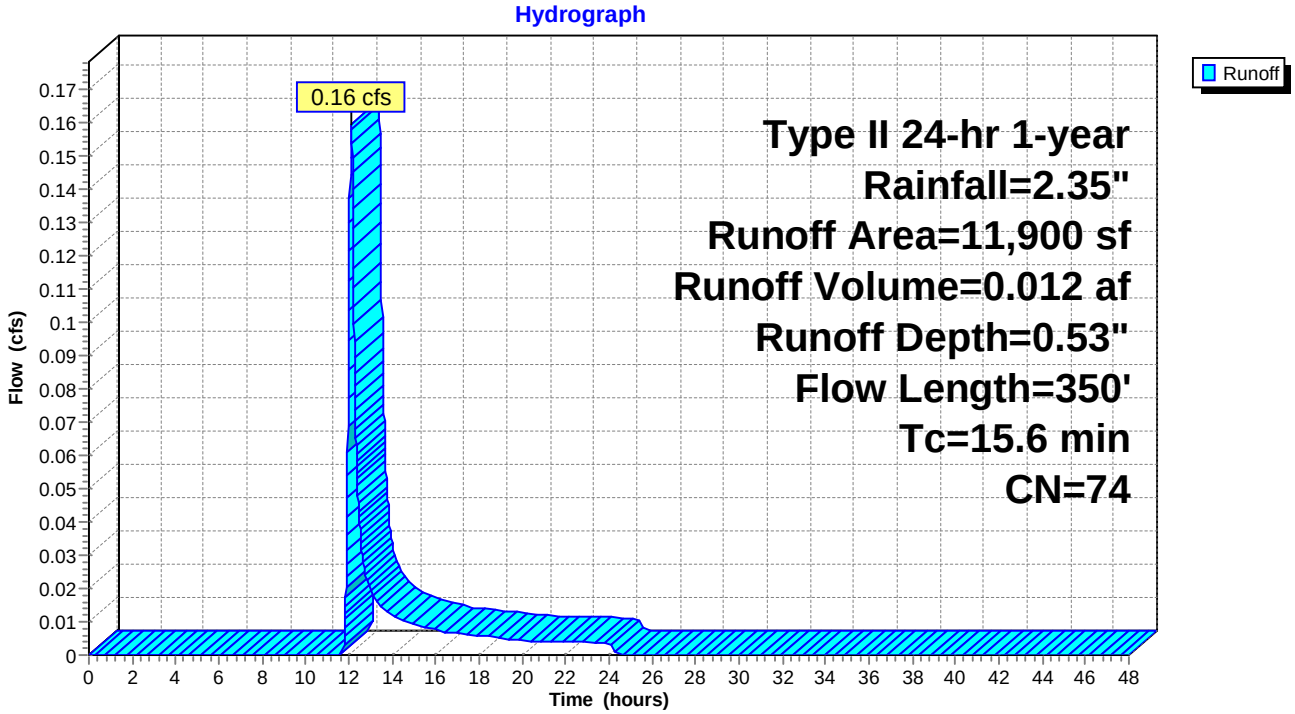
Runoff = 0.16 cfs @ 12.10 hrs, Volume= 0.012 af, Depth= 0.53"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
4,200	98	Paved parking & roofs
7,700	61	>75% Grass cover, Good, HSG B
11,900	74	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	100	0.0100	0.1		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
1.5	250	0.0200	2.9		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
15.6	350	Total			

Subcatchment E5st: (new Subcat)



Subcatchment E8: CB #E8

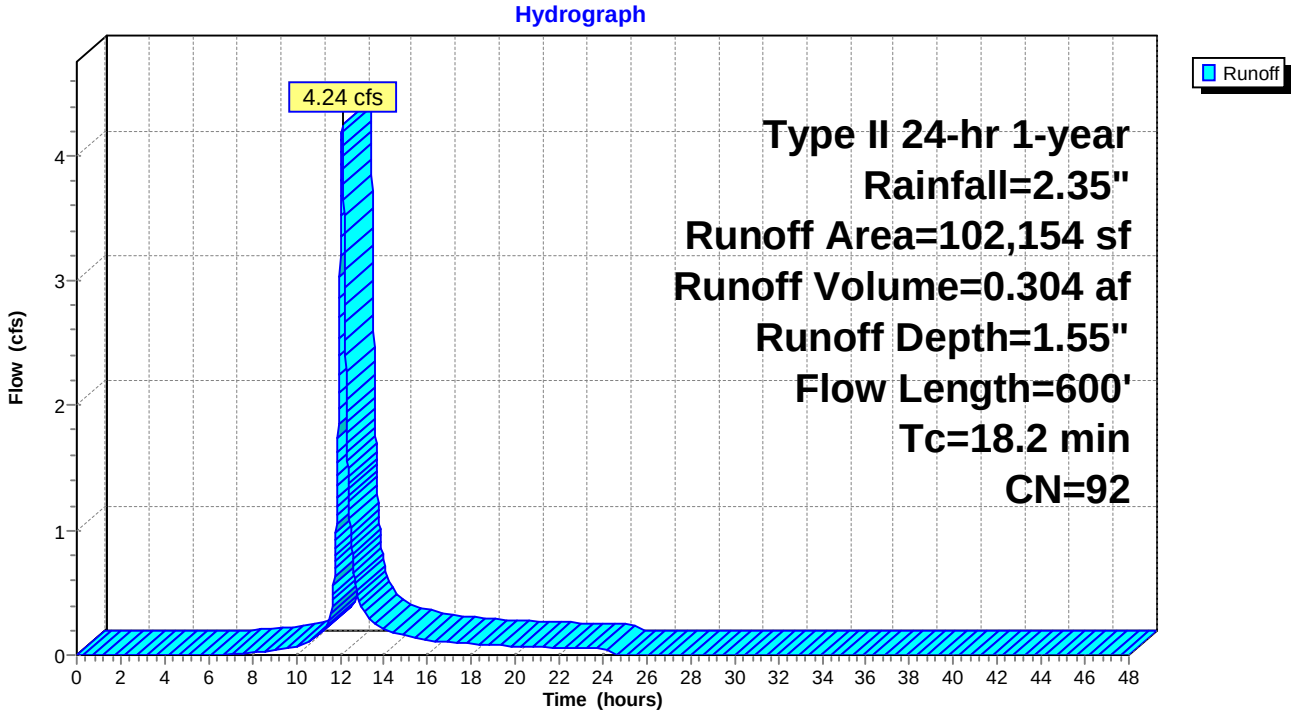
Runoff = 4.24 cfs @ 12.11 hrs, Volume= 0.304 af, Depth= 1.55"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
84,609	98	Paved parking & roofs
17,545	61	>75% Grass cover, Good, HSG B
102,154	92	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	100	0.0100	0.1		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
4.1	500	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
18.2	600	Total			

Subcatchment E8: CB #E8



Subcatchment EOC: (new Subcat)

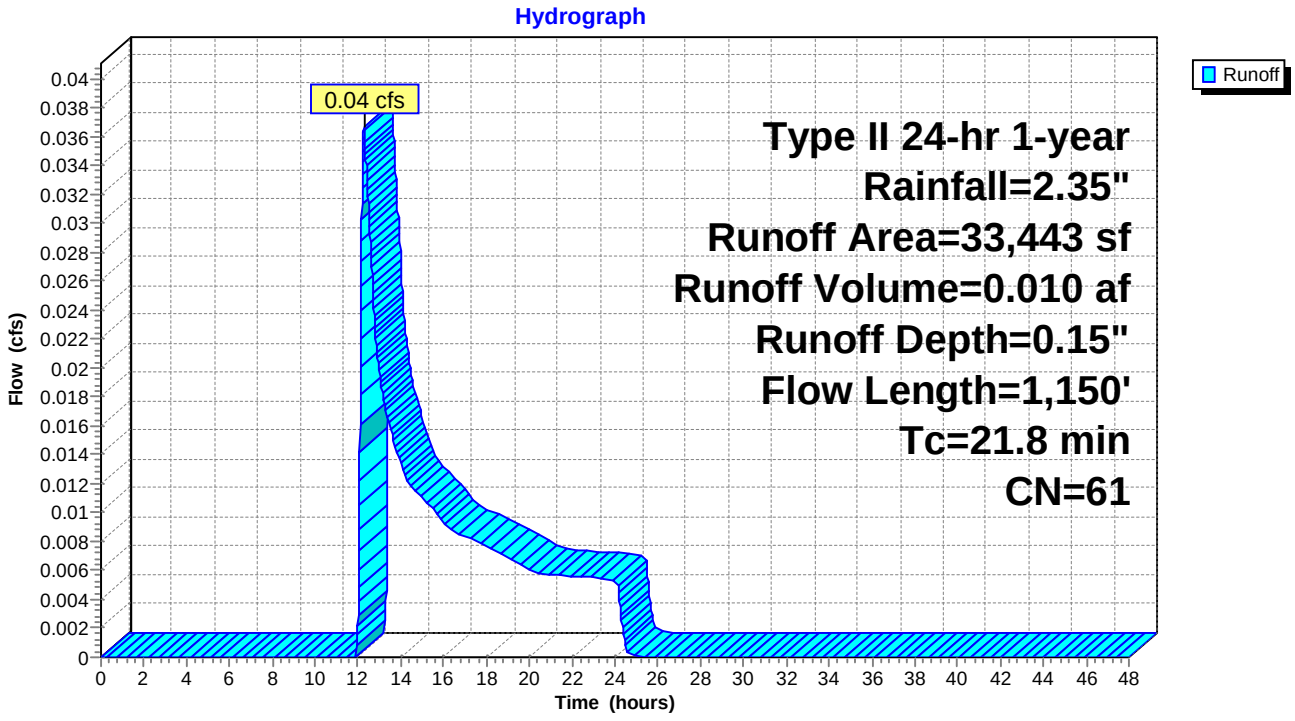
Runoff = 0.04 cfs @ 12.28 hrs, Volume= 0.010 af, Depth= 0.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
33,443	61	>75% Grass cover, Good, HSG B

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	100	0.0100	0.1		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
7.7	1,050	0.0200	2.3		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
21.8	1,150	Total			

Subcatchment EOC: (new Subcat)



Reach Culv: 30CULVERT

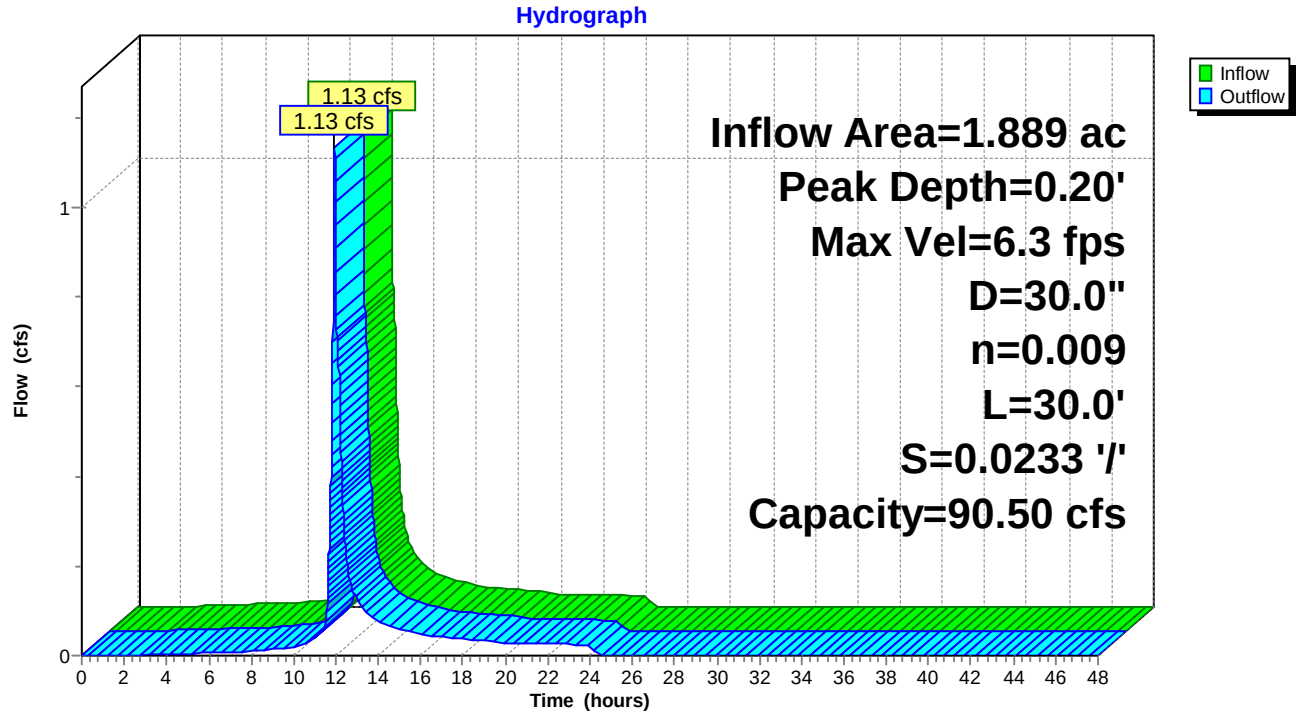
[52] Hint: Inlet conditions not evaluated
[61] Hint: Submerged 1% of Reach SW bottom

Inflow Area = 1.889 ac, Inflow Depth = 0.61" for 1-year event
Inflow = 1.13 cfs @ 11.94 hrs, Volume= 0.095 af
Outflow = 1.13 cfs @ 11.94 hrs, Volume= 0.095 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.3 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.2 fps, Avg. Travel Time= 0.2 min

Peak Depth= 0.20' @ 11.94 hrs
Capacity at bank full= 90.50 cfs
Inlet Invert= 237.80', Outlet Invert= 237.10'
30.0" Diameter Pipe, n= 0.009 Corrugated PE, smooth interior
Length= 30.0' Slope= 0.0233 '/'

Reach Culv: 30CULVERT



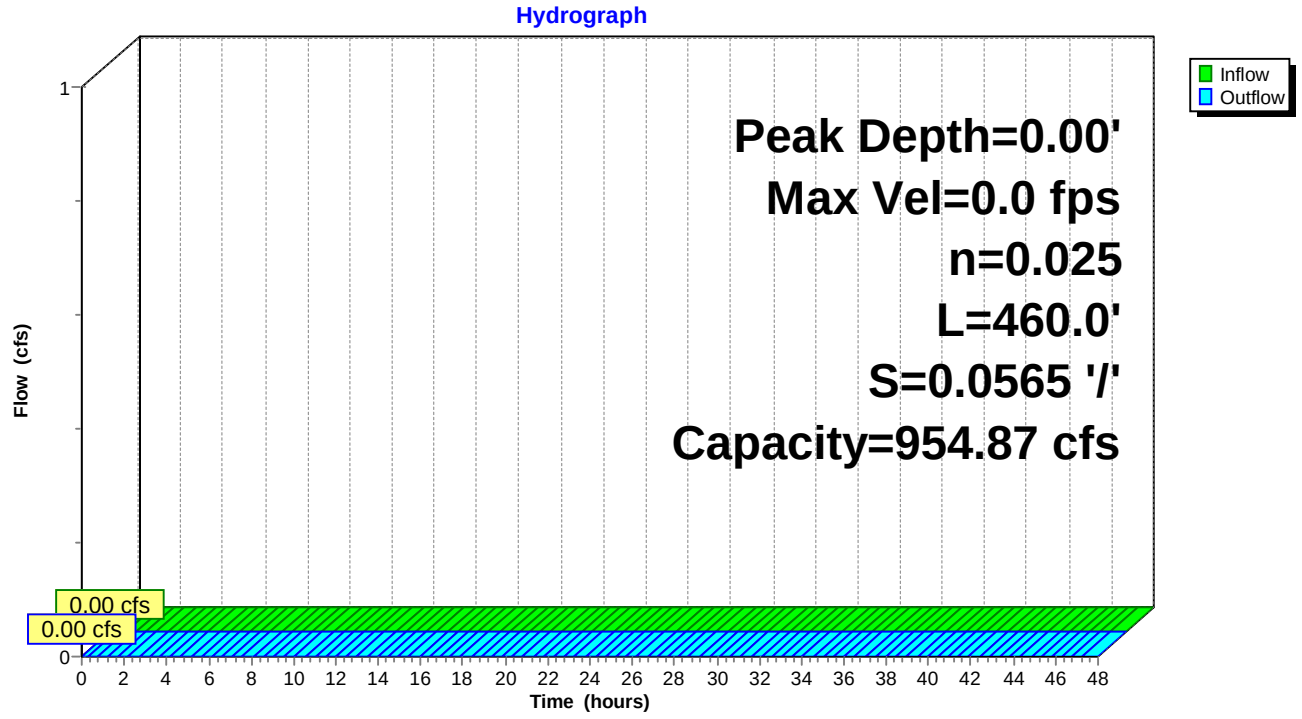
Reach SW: SWALE

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Depth= 0.00' @ 0.00 hrs
Capacity at bank full= 954.87 cfs
Inlet Invert= 263.80', Outlet Invert= 237.80'
4.00' x 3.00' deep channel, n= 0.025 Earth, grassed & winding
Side Slope Z-value= 4.0 '/' Top Width= 28.00'
Length= 460.0' Slope= 0.0565 '/'

Reach SW: SWALE



Pond E1: CB #E1

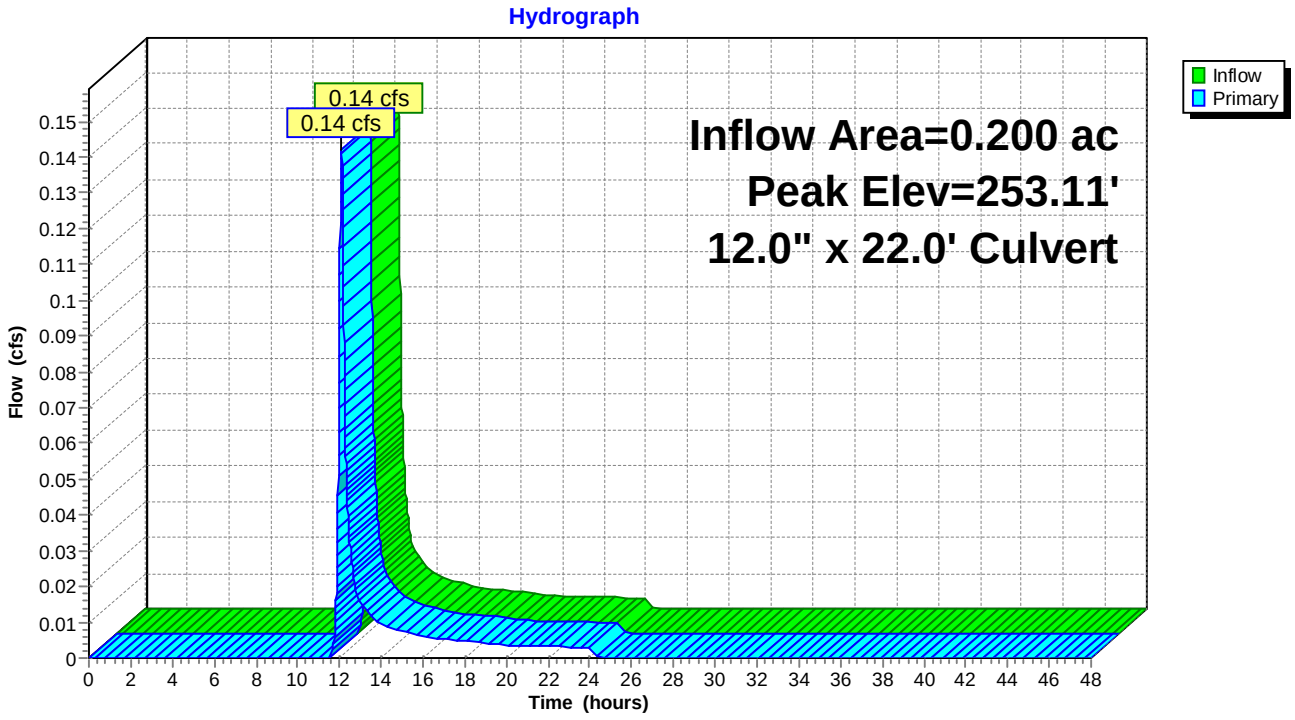
Inflow Area = 0.200 ac, Inflow Depth = 0.61" for 1-year event
Inflow = 0.14 cfs @ 12.09 hrs, Volume= 0.010 af
Outflow = 0.14 cfs @ 12.09 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.0 min
Primary = 0.14 cfs @ 12.09 hrs, Volume= 0.010 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 253.11' @ 12.09 hrs
Flood Elev= 258.90'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (881.5 - 881.5)

Device	Routing	Invert	Outlet Devices
#1	Primary	252.90'	**12.0" x 22.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 252.80' S= 0.0045 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=0.14 cfs @ 12.09 hrs HW=253.11' TW=251.90' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.14 cfs @ 1.8 fps)

Pond E1: CB #E1



Pond E12: CB #E12

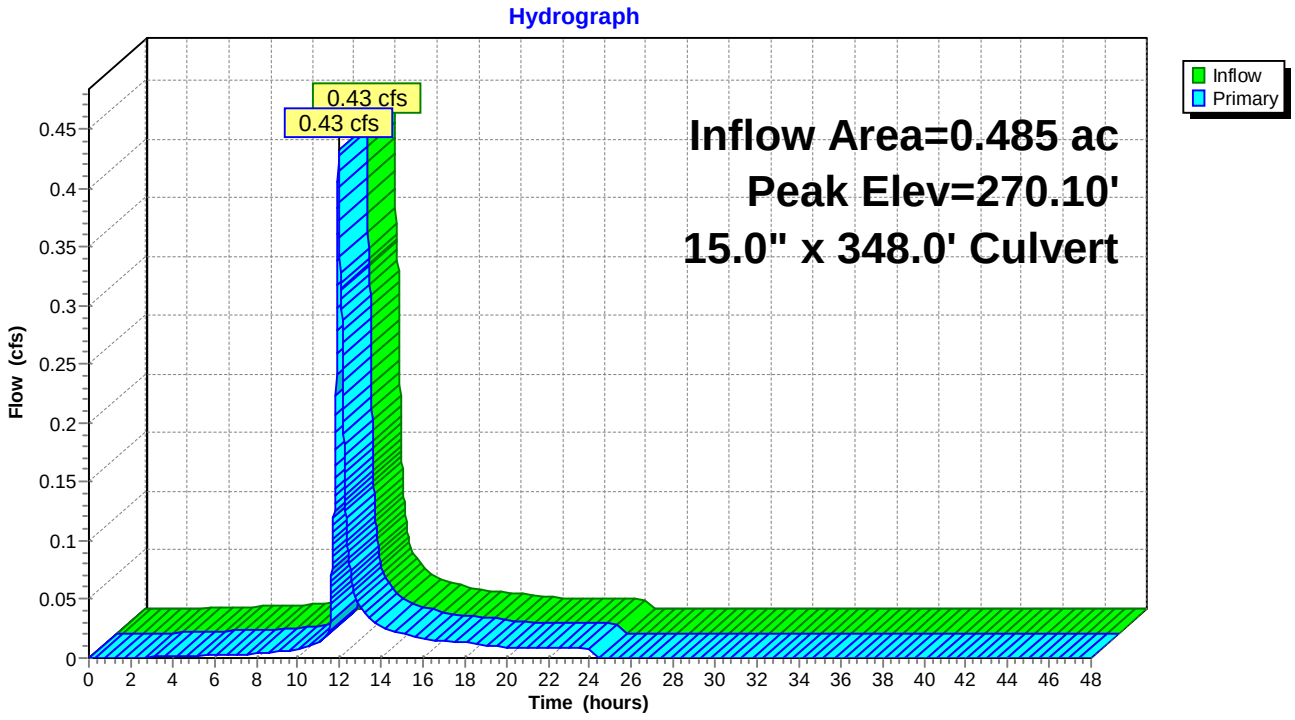
Inflow Area = 0.485 ac, Inflow Depth = 0.85" for 1-year event
Inflow = 0.43 cfs @ 11.94 hrs, Volume= 0.034 af
Outflow = 0.43 cfs @ 11.94 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.0 min
Primary = 0.43 cfs @ 11.94 hrs, Volume= 0.034 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 270.10' @ 11.94 hrs
Flood Elev= 274.30'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (825.9 - 825.9)

Device	Routing	Invert	Outlet Devices
#1	Primary	269.80'	**15.0" x 348.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 262.90' S= 0.0198 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=0.43 cfs @ 11.94 hrs HW=270.10' TW=263.22' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.43 cfs @ 1.9 fps)

Pond E12: CB #E12



Pond E13: CB #E13

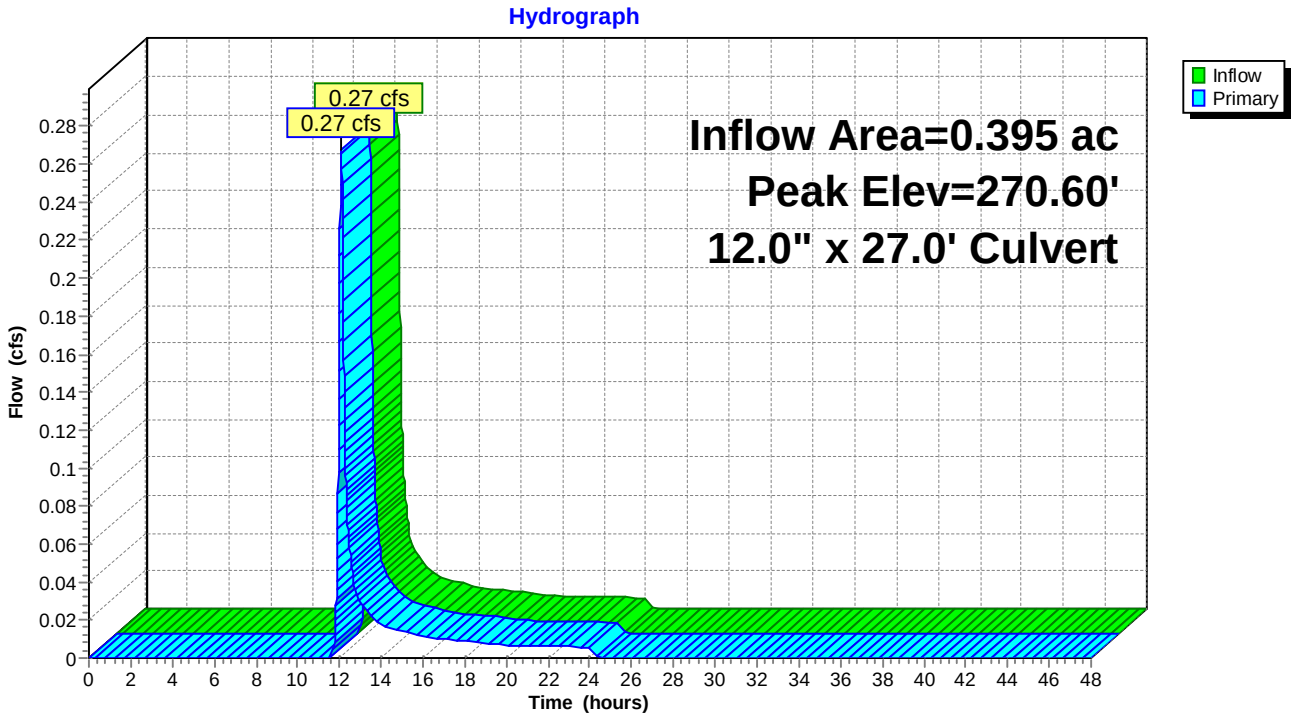
Inflow Area = 0.395 ac, Inflow Depth = 0.56" for 1-year event
Inflow = 0.27 cfs @ 12.08 hrs, Volume= 0.019 af
Outflow = 0.27 cfs @ 12.08 hrs, Volume= 0.019 af, Atten= 0%, Lag= 0.0 min
Primary = 0.27 cfs @ 12.08 hrs, Volume= 0.019 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 270.60' @ 12.08 hrs
Flood Elev= 274.48'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (884.8 - 884.8)

Device	Routing	Invert	Outlet Devices
#1	Primary	270.35'	**12.0" x 27.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 269.90' S= 0.0167 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=0.27 cfs @ 12.08 hrs HW=270.60' TW=270.06' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.27 cfs @ 1.7 fps)

Pond E13: CB #E13



Pond E14: CB #E14

Inflow	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af
Outflow	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af, Atten= 0%, Lag= 0.0 min
Primary	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af
Secondary	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af

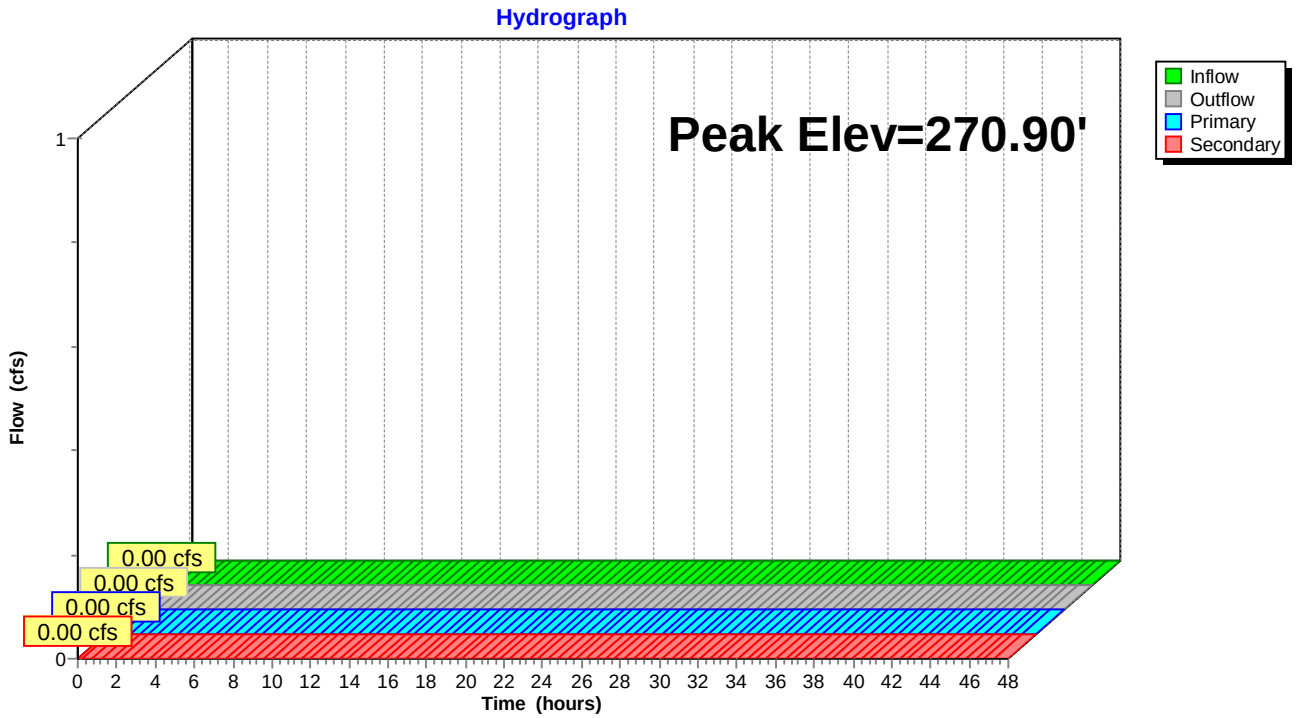
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 270.90' @ 0.00 hrs
Flood Elev= 275.85'
Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	270.90'	**12.0" x 22.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 270.40' S= 0.0227 '/' Cc= 0.900 n= 0.009 Corrugated PE, smooth interior
#2	Secondary	271.70'	**12.0" x 70.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 271.45' S= 0.0036 '/' Cc= 0.900 n= 0.009 Corrugated PE, smooth interior

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=270.90' TW=270.35' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=270.90' TW=270.20' (Dynamic Tailwater)
└─**2=Culvert** (Controls 0.00 cfs)

Pond E14: CB #E14



Pond E15: CB #E15

[43] Hint: Has no inflow (Outflow=Zero)

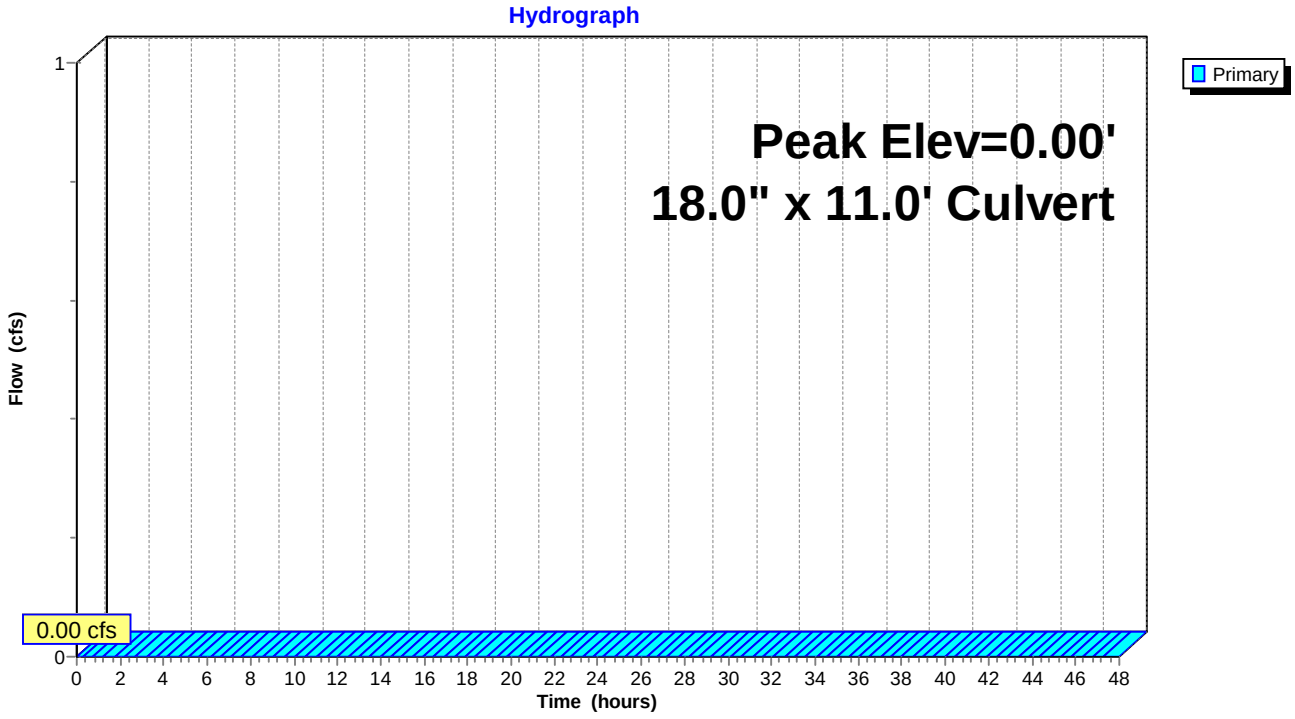
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 0.00' @ 0.00 hrs
Flood Elev= 276.60'
Plug-Flow detention time= (not calculated)
Center-of-Mass det. time= (not calculated)

Device	Routing	Invert	Outlet Devices
#1	Primary	272.30'	**18.0" x 11.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 271.70' S= 0.0545 '/' Cc= 0.900 n= 0.009 Corrugated PE, smooth interior

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' TW=270.90' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Pond E15: CB #E15



Pond E18: CB #E18

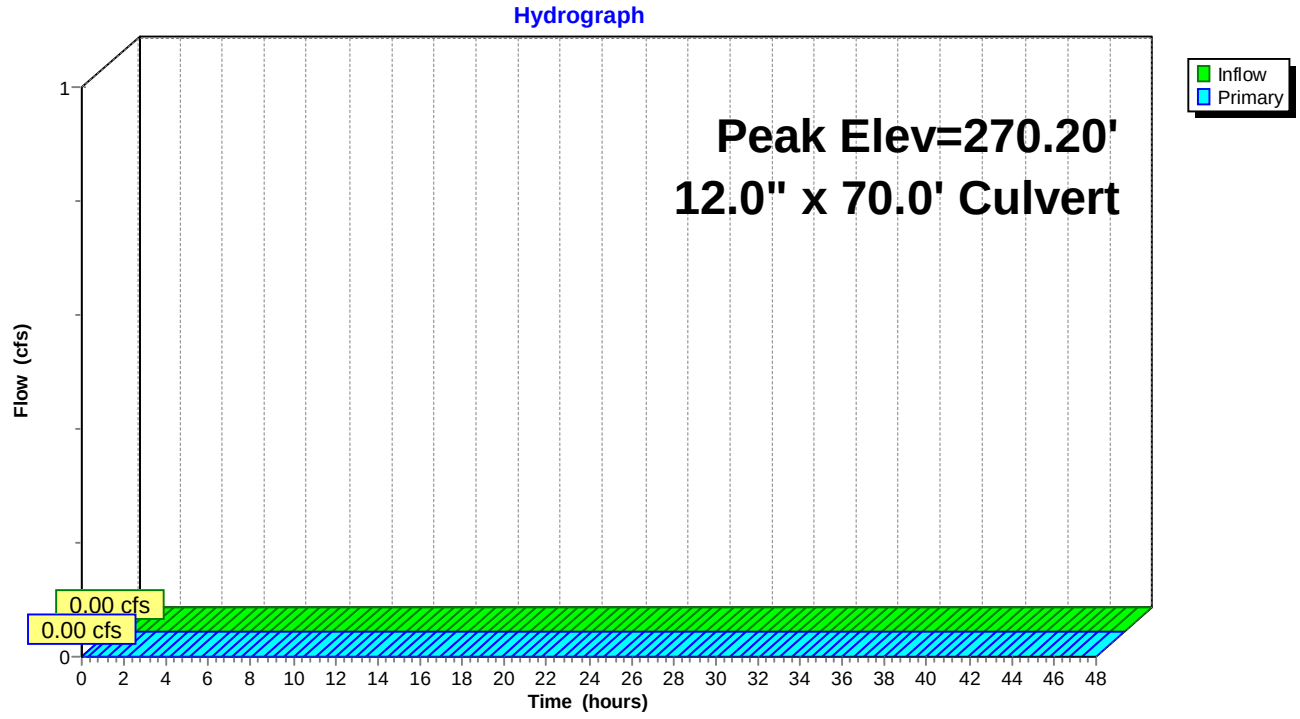
Inflow	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af
Outflow	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af, Atten= 0%, Lag= 0.0 min
Primary	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 270.20' @ 0.00 hrs
Flood Elev= 276.95'
Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	270.20'	**12.0" x 70.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 265.90' S= 0.0614 '/' Cc= 0.900 n= 0.009 Corrugated PE, smooth interior

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=270.20' TW=265.90' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Pond E18: CB #E18



Pond E19: CB #E18

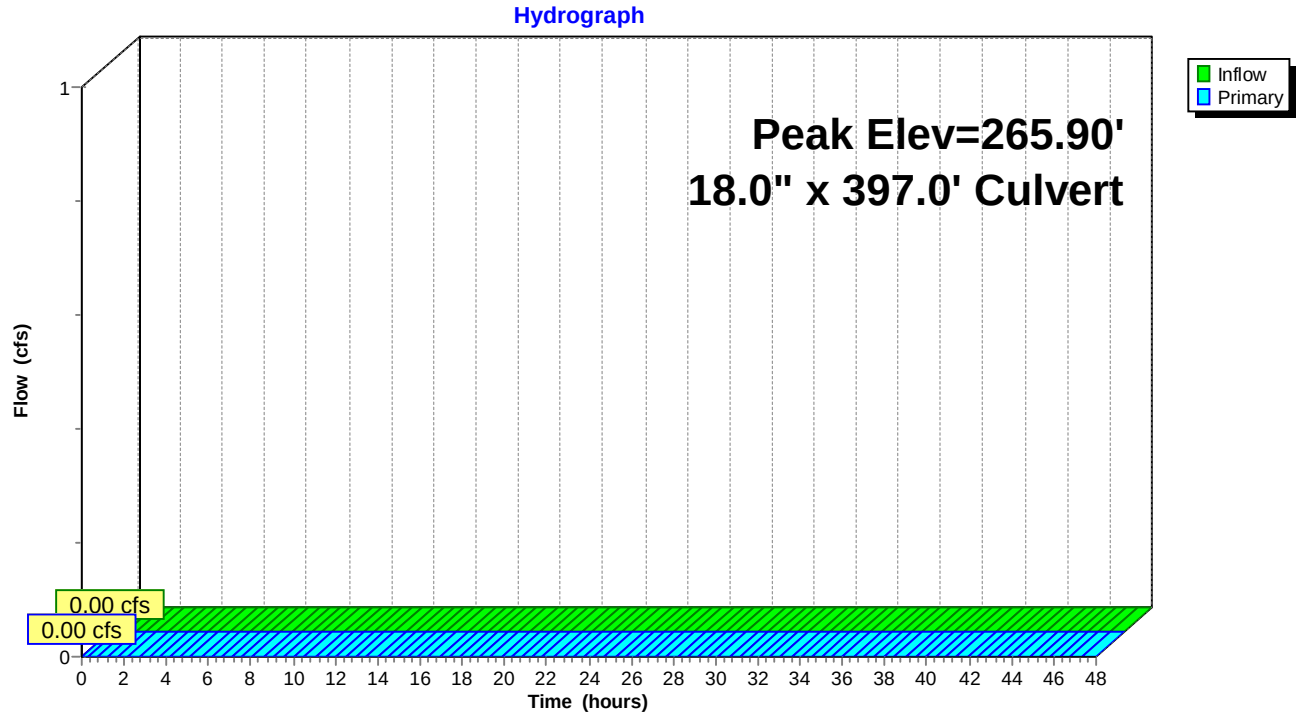
Inflow	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af
Outflow	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af, Atten= 0%, Lag= 0.0 min
Primary	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 265.90' @ 0.00 hrs
Flood Elev= 269.48'
Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	265.90'	**18.0" x 397.0' long Culvert** CMP, square edge headwall, Ke= 0.500 Outlet Invert= 263.80' S= 0.0053 '/' Cc= 0.900 n= 0.021 Corrugated metal

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=265.90' TW=263.80' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Pond E19: CB #E18



Pond E2: CB #E2

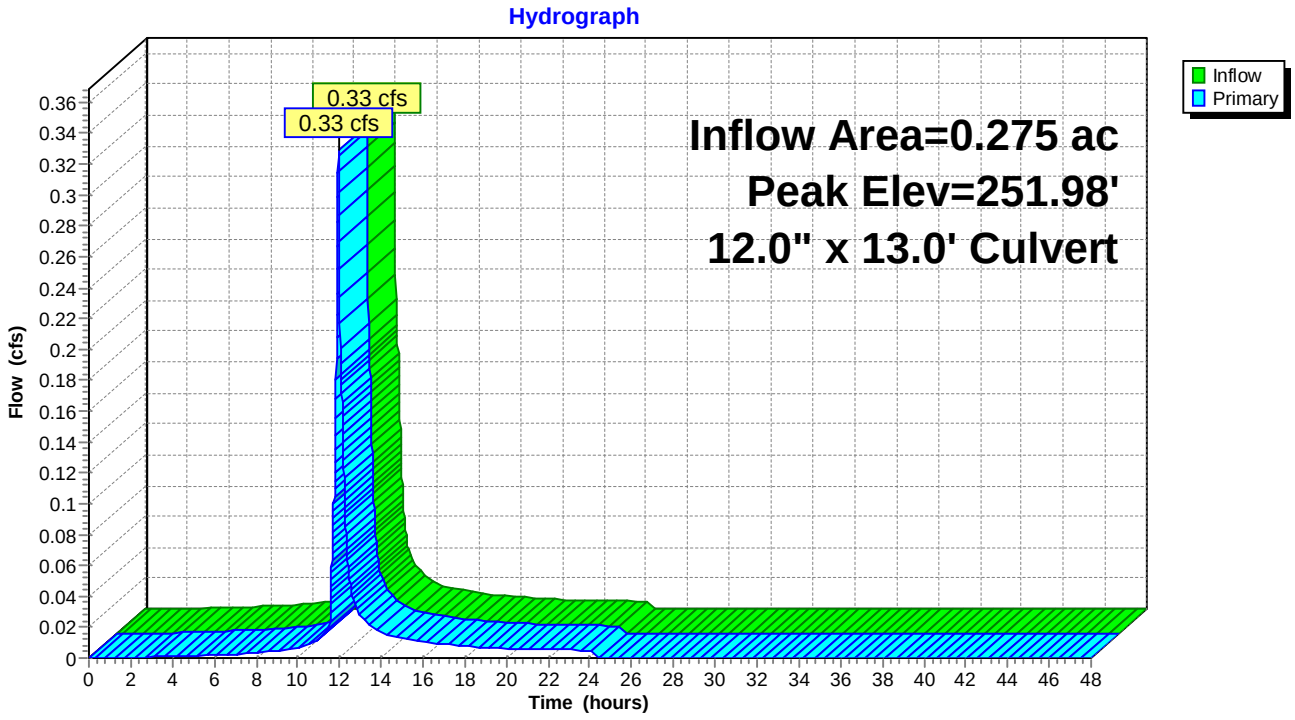
Inflow Area = 0.275 ac, Inflow Depth = 1.02" for 1-year event
Inflow = 0.33 cfs @ 11.94 hrs, Volume= 0.023 af
Outflow = 0.33 cfs @ 11.94 hrs, Volume= 0.023 af, Atten= 0%, Lag= 0.0 min
Primary = 0.33 cfs @ 11.94 hrs, Volume= 0.023 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 251.98' @ 11.94 hrs
Flood Elev= 258.80'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	251.70'	**12.0" x 13.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 247.70' S= 0.3077 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=0.33 cfs @ 11.94 hrs HW=251.98' TW=247.96' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.33 cfs @ 1.8 fps)

Pond E2: CB #E2



Pond E20: CB #E20

[57] Hint: Peaked at 281.40' (Flood elevation advised)

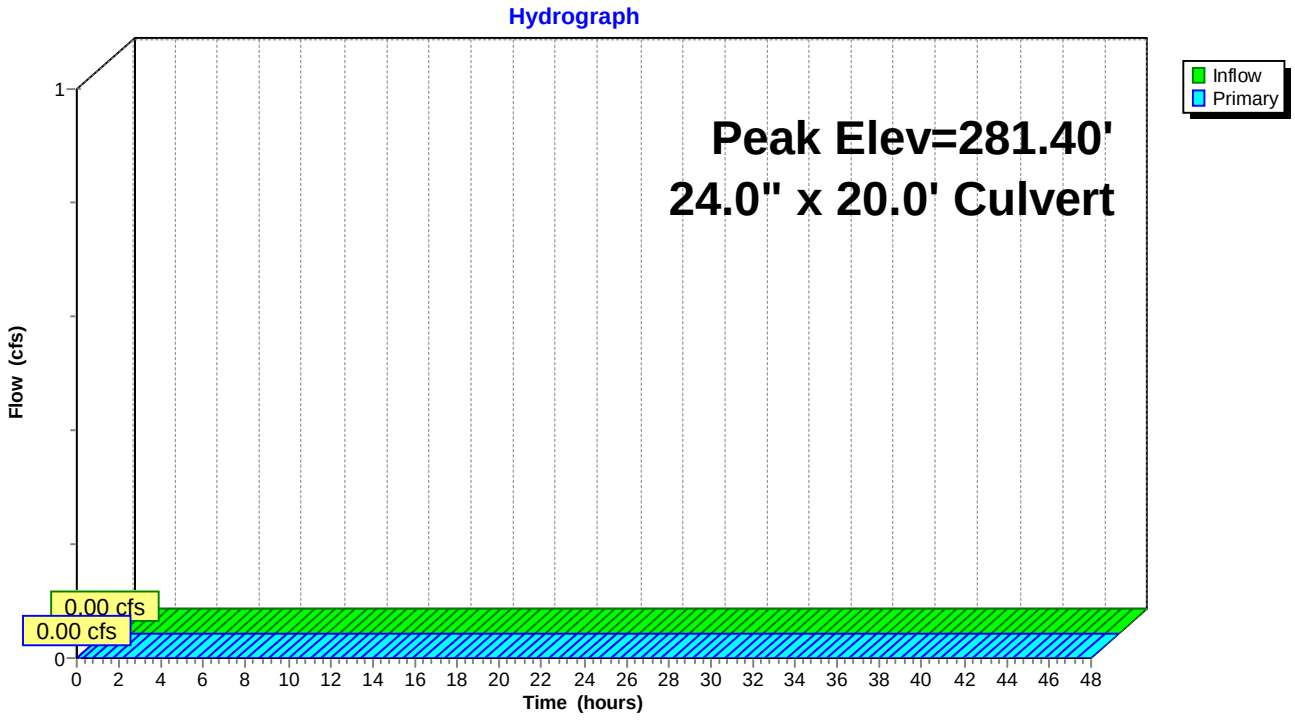
Inflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Outflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af, Atten= 0%, Lag= 0.0 min
Primary	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 281.40' @ 0.00 hrs
Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	281.40'	**24.0" x 20.0' long Culvert** CMP, square edge headwall, Ke= 0.500 Outlet Invert= 278.90' S= 0.1250 '/' Cc= 0.900 n= 0.018 Corrugated PE, corrugated interior

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=281.40' TW=272.75' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Pond E20: CB #E20



Pond E21: CB #E21

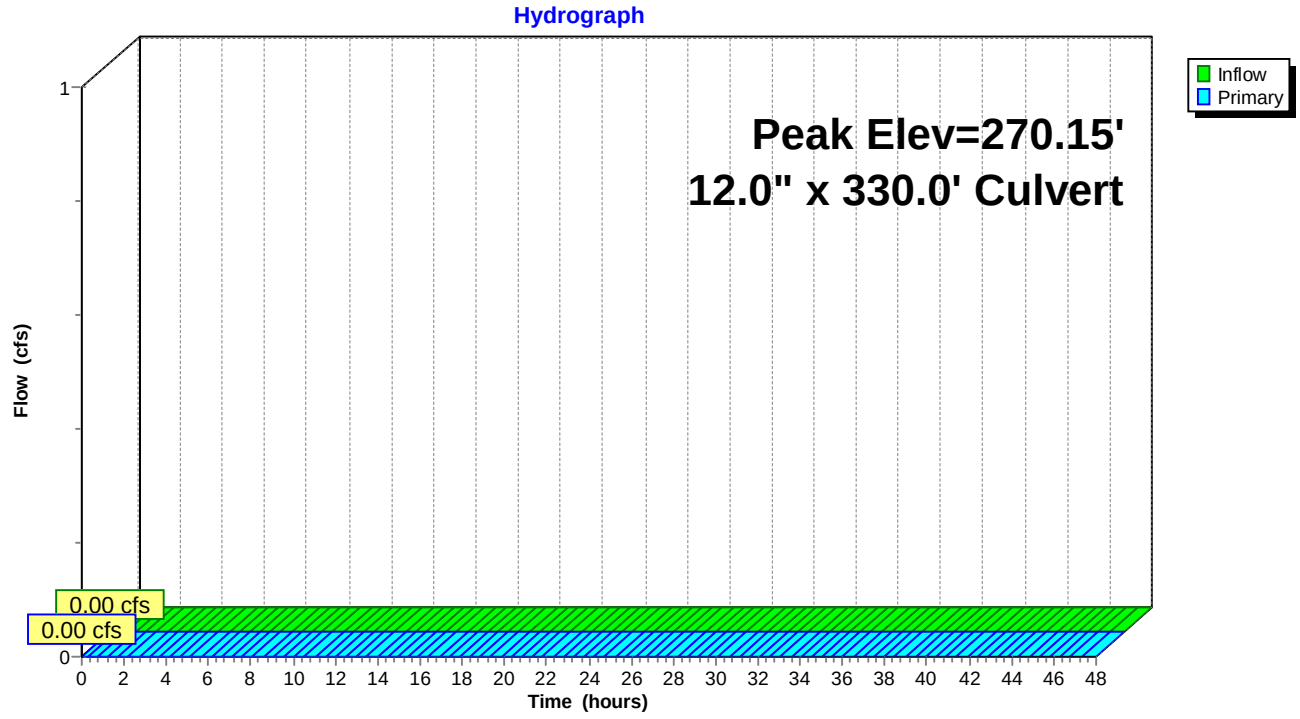
Inflow	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af
Outflow	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af, Atten= 0%, Lag= 0.0 min
Primary	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 270.15' @ 0.00 hrs
Flood Elev= 283.85'
Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	270.15'	**12.0" x 330.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 265.90' S= 0.0129 '/' Cc= 0.900 n= 0.009 Corrugated PE, smooth interior

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=270.15' TW=265.90' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Pond E21: CB #E21



Pond E22: CB #E22

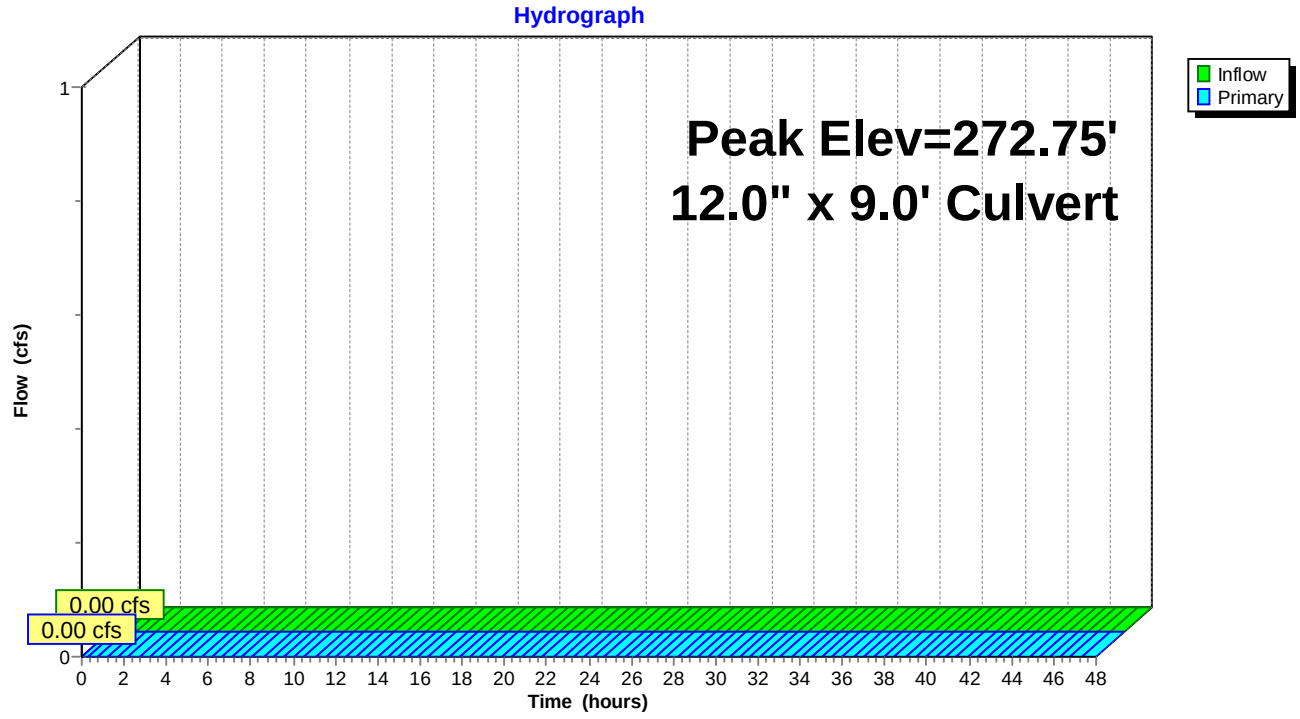
Inflow	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af
Outflow	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af, Atten= 0%, Lag= 0.0 min
Primary	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 272.75' @ 0.00 hrs
Flood Elev= 278.14'
Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	272.75'	**12.0" x 9.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 270.15' S= 0.2889 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=272.75' TW=270.15' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Pond E22: CB #E22



Pond E23: CB #E23

[43] Hint: Has no inflow (Outflow=Zero)

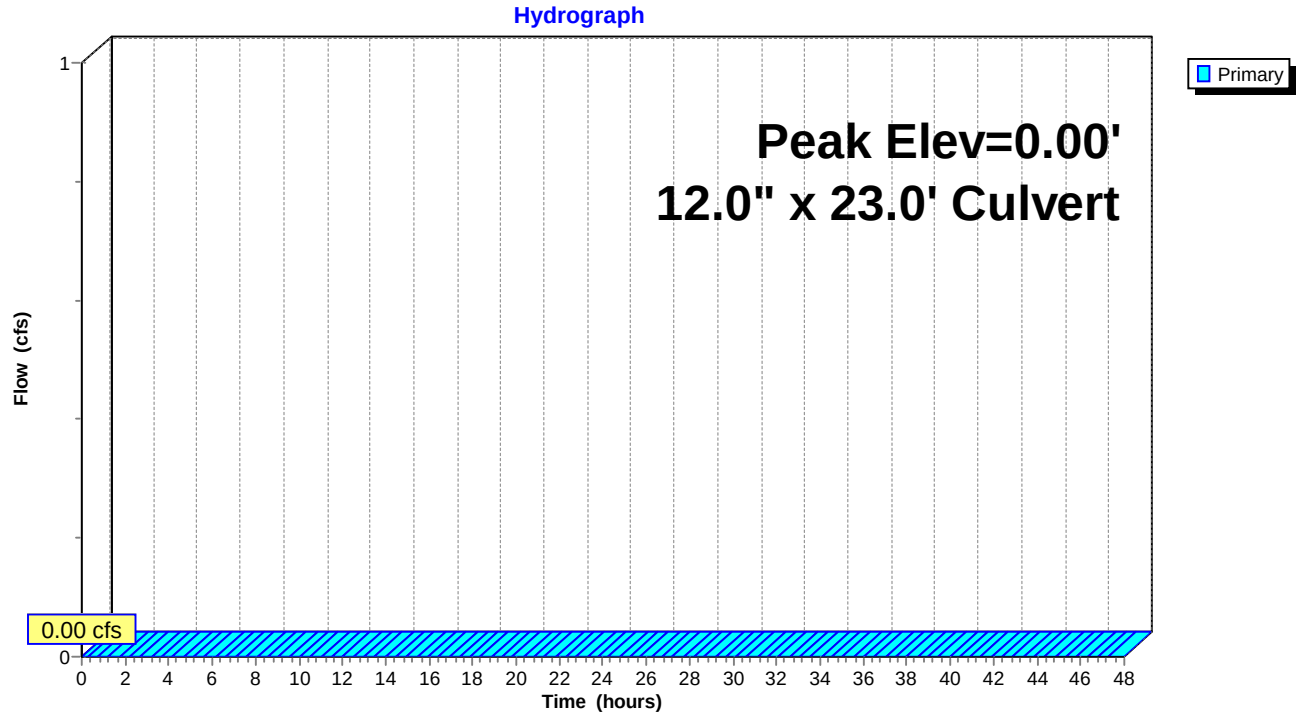
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 0.00' @ 0.00 hrs
Flood Elev= 278.38'
Plug-Flow detention time= (not calculated)
Center-of-Mass det. time= (not calculated)

Device	Routing	Invert	Outlet Devices
#1	Primary	273.55'	**12.0" x 23.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 273.05' S= 0.0217 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' TW=272.75' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Pond E23: CB #E23



Pond E24: CB #24

[43] Hint: Has no inflow (Outflow=Zero)

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

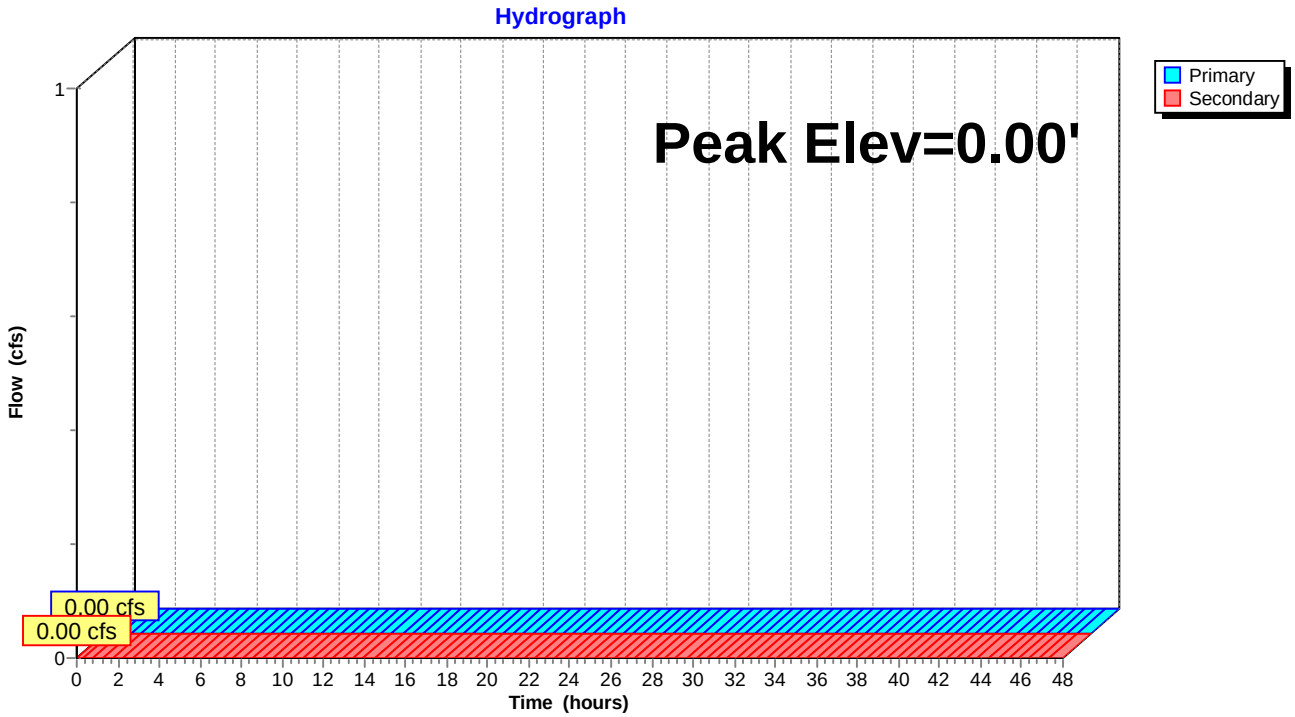
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 0.00' @ 0.00 hrs
Flood Elev= 284.53'
Plug-Flow detention time= (not calculated)
Center-of-Mass det. time= (not calculated)

Device	Routing	Invert	Outlet Devices
#1	Primary	279.45'	**12.0" x 12.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 270.45' S= 0.7500 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean
#2	Secondary	284.53'	**18.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' TW=270.45' (Dynamic Tailwater)
└**1=Culvert** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' TW=281.40' (Dynamic Tailwater)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond E24: CB #24



Pond E24e: CONN

[57] Hint: Peaked at 270.45' (Flood elevation advised)

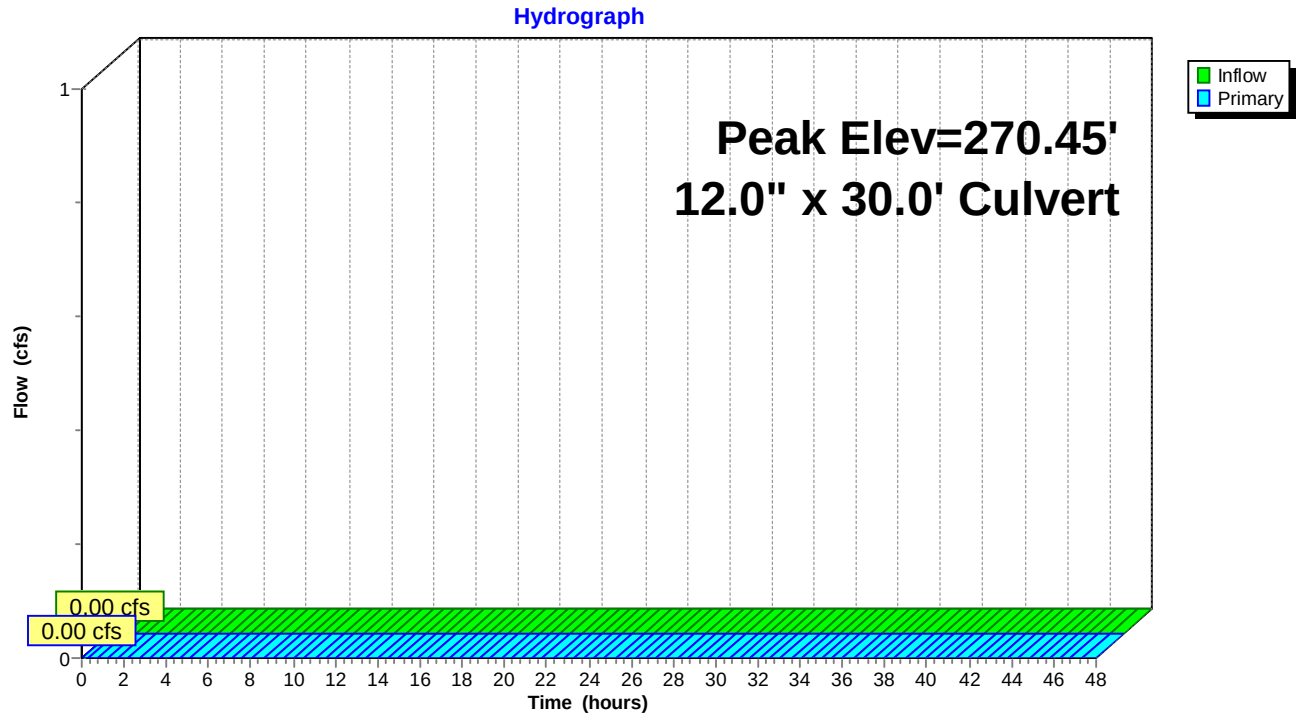
Inflow	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af
Outflow	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af, Atten= 0%, Lag= 0.0 min
Primary	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 270.45' @ 0.00 hrs
Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	270.45'	**12.0" x 30.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 270.15' S= 0.0100 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=270.45' TW=270.15' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Pond E24e: CONN



Pond E26: CB #E26

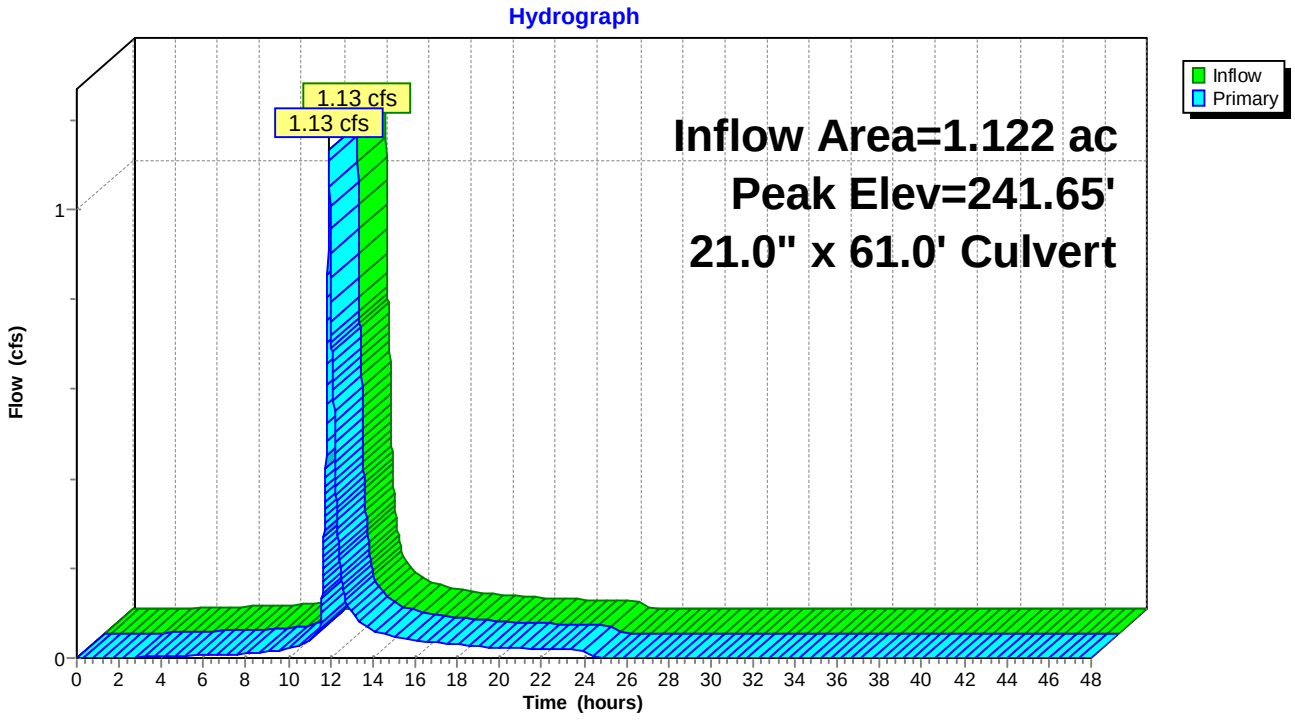
Inflow Area = 1.122 ac, Inflow Depth = 0.91" for 1-year event
Inflow = 1.13 cfs @ 11.94 hrs, Volume= 0.085 af
Outflow = 1.13 cfs @ 11.94 hrs, Volume= 0.085 af, Atten= 0%, Lag= 0.0 min
Primary = 1.13 cfs @ 11.94 hrs, Volume= 0.085 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 241.65' @ 11.94 hrs
Flood Elev= 253.01'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	241.20'	**21.0" x 61.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 238.10' S= 0.0508 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=1.13 cfs @ 11.94 hrs HW=241.65' TW=238.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.13 cfs @ 2.3 fps)

Pond E26: CB #E26



Pond E2a: Conn E2a

[57] Hint: Peaked at 247.96' (Flood elevation advised)

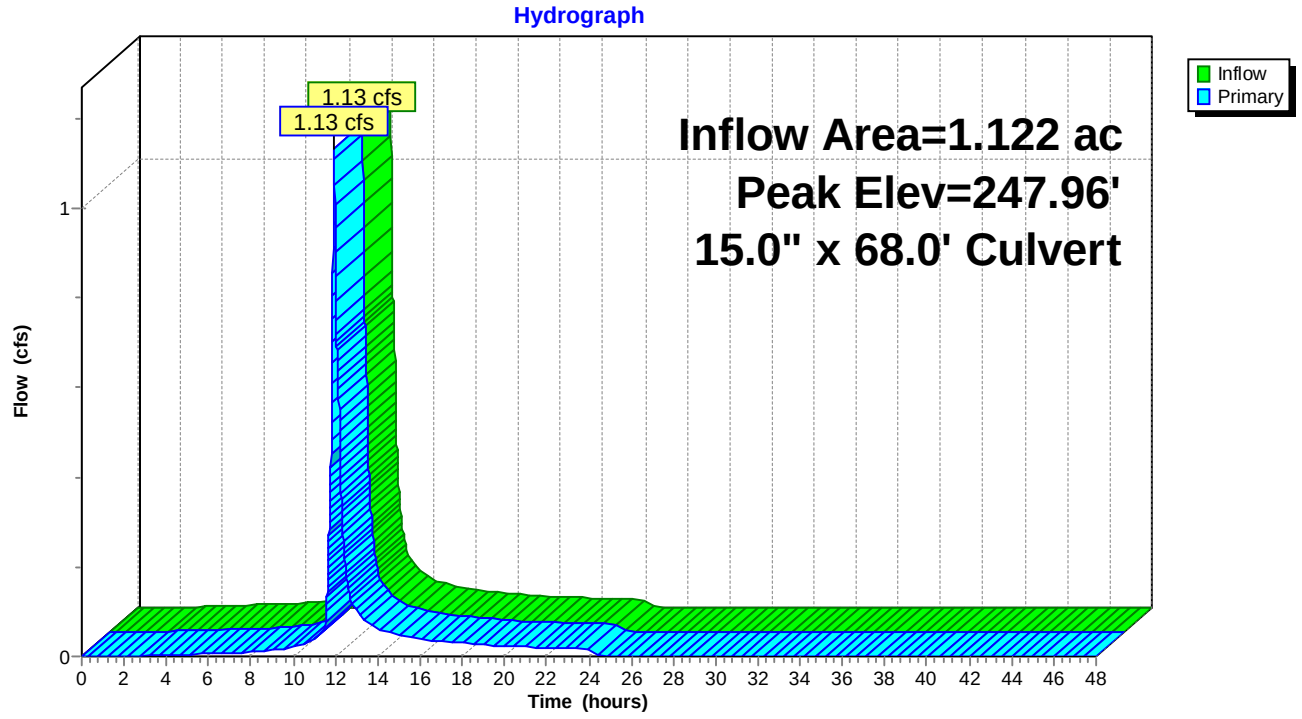
Inflow Area = 1.122 ac, Inflow Depth = 0.91" for 1-year event
Inflow = 1.13 cfs @ 11.94 hrs, Volume= 0.085 af
Outflow = 1.13 cfs @ 11.94 hrs, Volume= 0.085 af, Atten= 0%, Lag= 0.0 min
Primary = 1.13 cfs @ 11.94 hrs, Volume= 0.085 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 247.96' @ 11.94 hrs
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (818.0 - 818.0)

Device	Routing	Invert	Outlet Devices
#1	Primary	247.45'	**15.0" x 68.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 244.00' S= 0.0507 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=1.13 cfs @ 11.94 hrs HW=247.96' TW=241.65' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 1.13 cfs @ 2.4 fps)

Pond E2a: Conn E2a



Pond E3: CB #E3

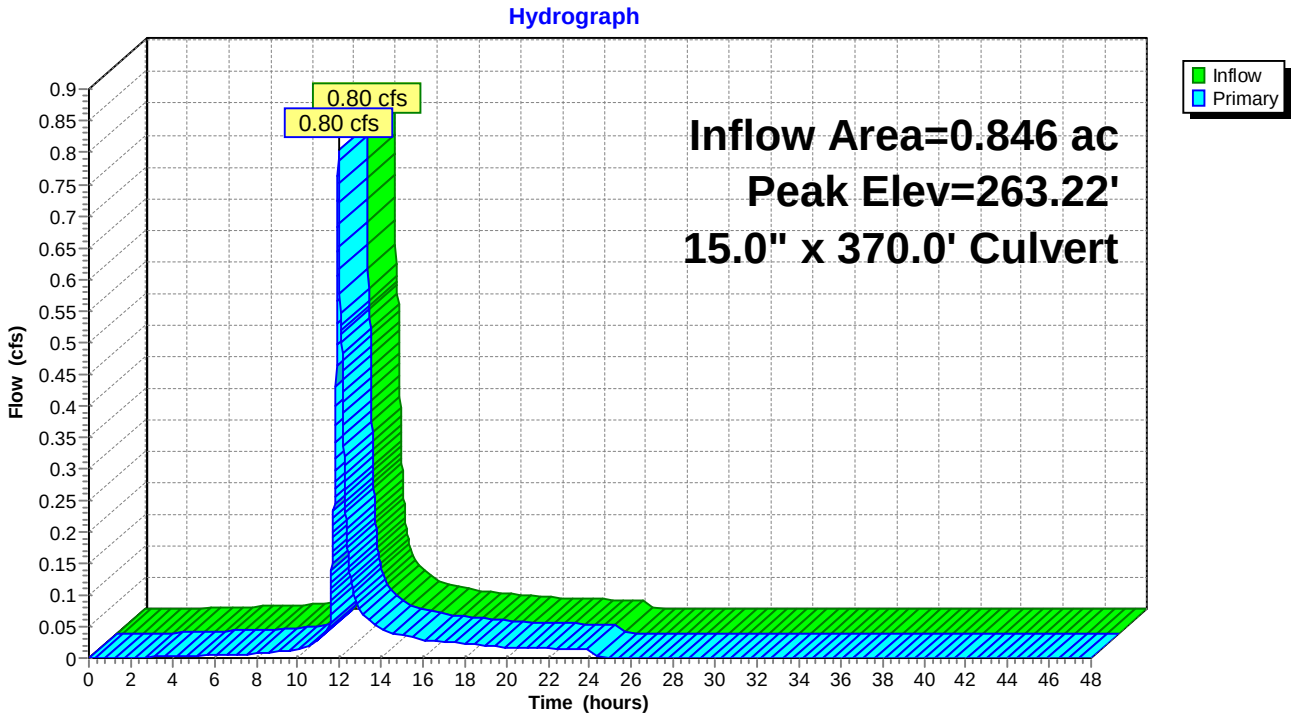
Inflow Area = 0.846 ac, Inflow Depth = 0.88" for 1-year event
Inflow = 0.80 cfs @ 11.94 hrs, Volume= 0.062 af
Outflow = 0.80 cfs @ 11.94 hrs, Volume= 0.062 af, Atten= 0%, Lag= 0.0 min
Primary = 0.80 cfs @ 11.94 hrs, Volume= 0.062 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 263.22' @ 11.94 hrs
Flood Elev= 271.40'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	262.80'	**15.0" x 370.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 244.00' S= 0.0508 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=0.80 cfs @ 11.94 hrs HW=263.22' TW=247.96' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.80 cfs @ 2.2 fps)

Pond E3: CB #E3



Pond E39: CB #E39

[43] Hint: Has no inflow (Outflow=Zero)

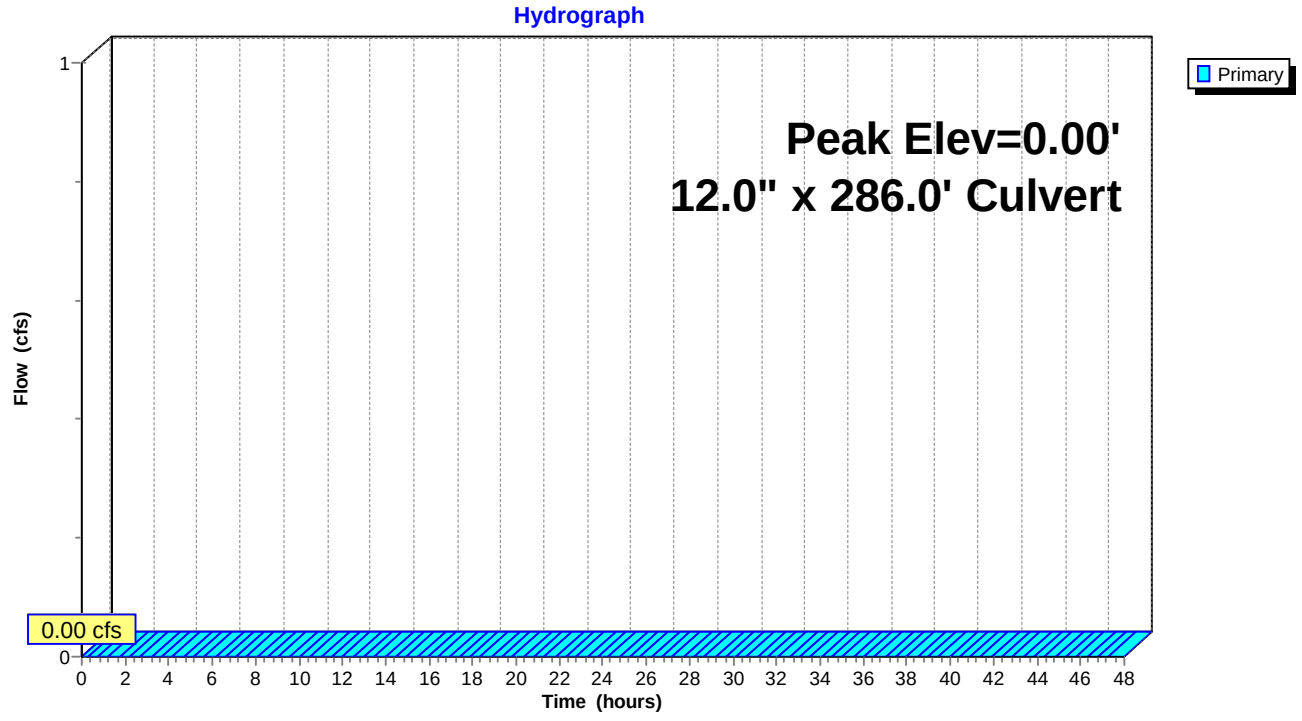
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 0.00' @ 0.00 hrs
Flood Elev= 279.71'
Plug-Flow detention time= (not calculated)
Center-of-Mass det. time= (not calculated)

Device	Routing	Invert	Outlet Devices
#1	Primary	275.75'	**12.0" x 286.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 267.80' S= 0.0278 '/' Cc= 0.900 n= 0.009 PVC, smooth interior

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' TW=265.90' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Pond E39: CB #E39



Pond E4: CB #E4

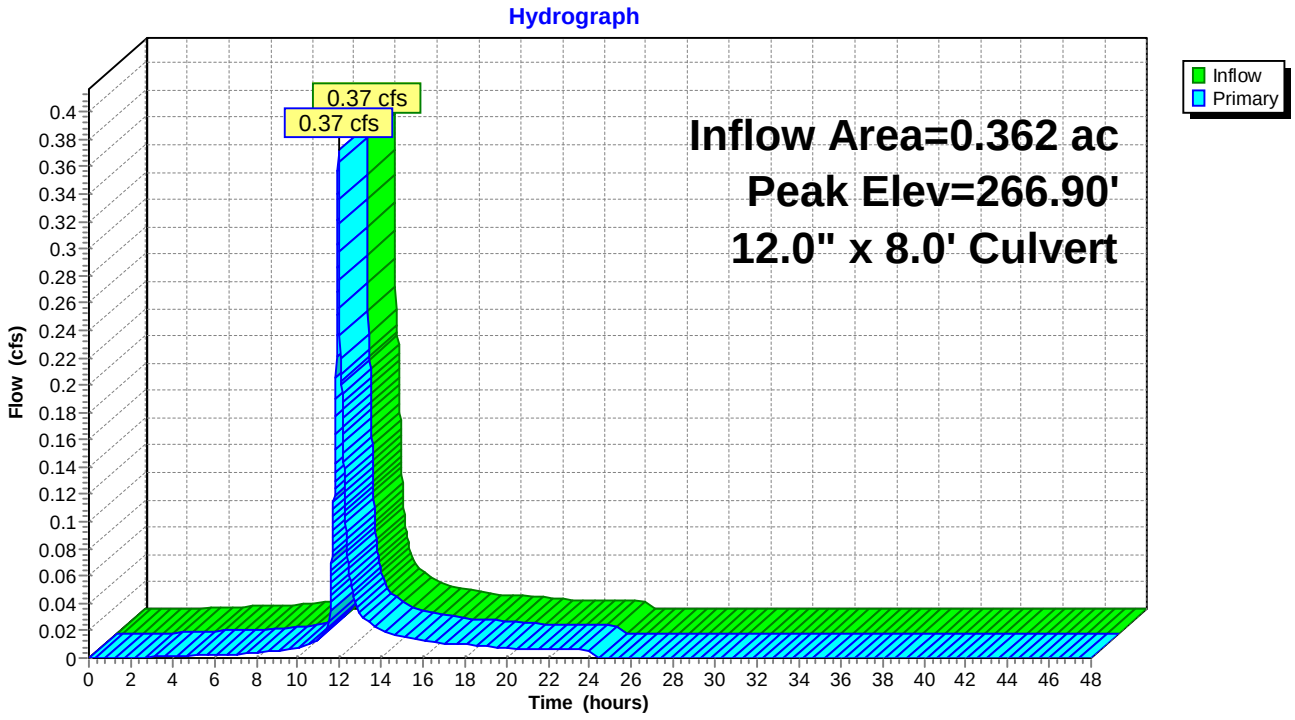
Inflow Area = 0.362 ac, Inflow Depth = 0.92" for 1-year event
Inflow = 0.37 cfs @ 11.94 hrs, Volume= 0.028 af
Outflow = 0.37 cfs @ 11.94 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.0 min
Primary = 0.37 cfs @ 11.94 hrs, Volume= 0.028 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 266.90' @ 11.94 hrs
Flood Elev= 271.00'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (814.8 - 814.8)

Device	Routing	Invert	Outlet Devices
#1	Primary	266.50'	**12.0" x 8.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 266.50' S= 0.0000 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=0.37 cfs @ 11.94 hrs HW=266.90' TW=263.22' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.37 cfs @ 1.9 fps)

Pond E4: CB #E4



Pond E5: CB #E5

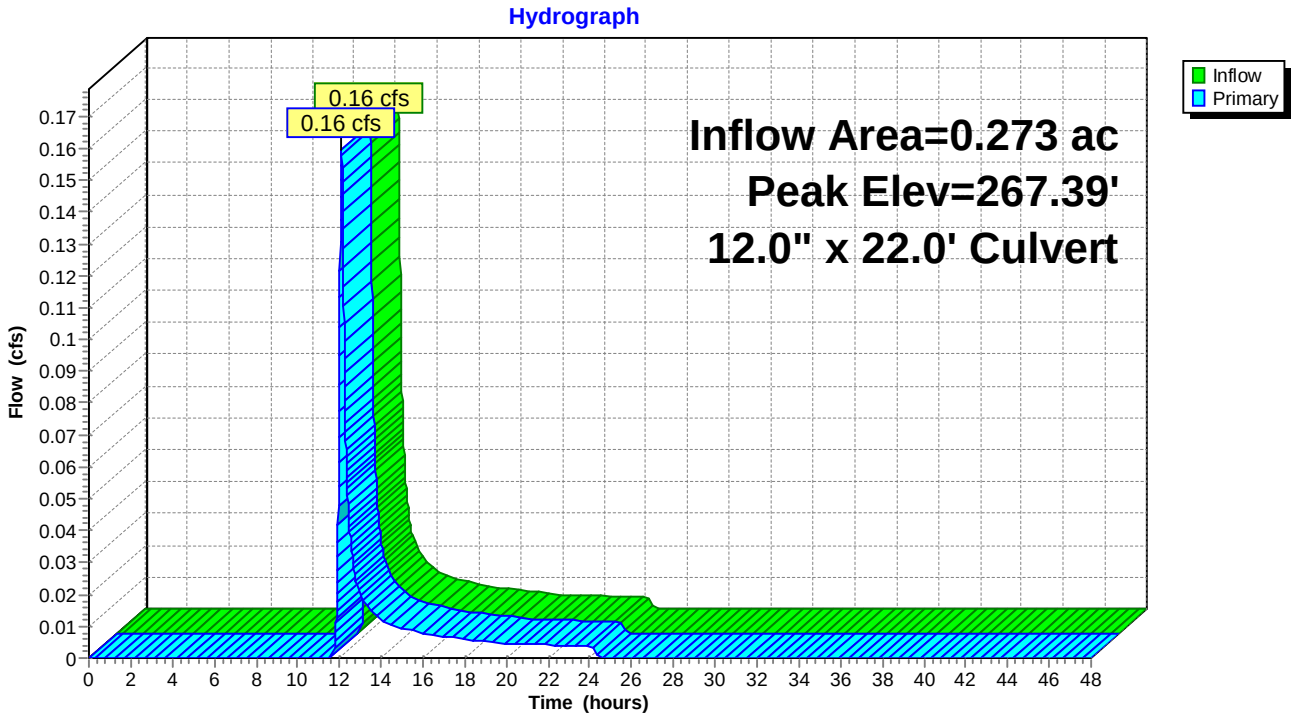
Inflow Area = 0.273 ac, Inflow Depth = 0.53" for 1-year event
Inflow = 0.16 cfs @ 12.10 hrs, Volume= 0.012 af
Outflow = 0.16 cfs @ 12.10 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.0 min
Primary = 0.16 cfs @ 12.10 hrs, Volume= 0.012 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 267.39' @ 12.10 hrs
Flood Elev= 270.80'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (890.6 - 890.6)

Device	Routing	Invert	Outlet Devices
#1	Primary	267.20'	**12.0" x 22.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 266.60' S= 0.0273 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=0.16 cfs @ 12.10 hrs HW=267.39' TW=266.79' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.16 cfs @ 1.5 fps)

Pond E5: CB #E5



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment Clot: C-Lot Parking Runoff Area=108,241 sf Runoff Depth=2.26"
Flow Length=600' Tc=18.2 min CN=96 Runoff=6.20 cfs 0.467 af

Subcatchment E12st: (new Subcat) Runoff Area=3,900 sf Runoff Depth=2.47"
Flow Length=355' Tc=2.8 min CN=98 Runoff=0.38 cfs 0.018 af

Subcatchment E13st: (new Subcat) Runoff Area=17,206 sf Runoff Depth=0.77"
Flow Length=700' Tc=14.2 min CN=75 Runoff=0.38 cfs 0.025 af

Subcatchment E15dl: (new Subcat) Runoff Area=41,974 sf Runoff Depth=1.88"
Tc=0.0 min CN=92 Runoff=3.75 cfs 0.151 af

Subcatchment E1st: (new Subcat) Runoff Area=8,700 sf Runoff Depth=0.82"
Flow Length=300' Tc=15.3 min CN=76 Runoff=0.20 cfs 0.014 af

Subcatchment E22st: (new Subcat)
Runoff=0.00 cfs 0.000 af

Subcatchment E23st: (new Subcat) Runoff Area=3,900 sf Runoff Depth=2.47"
Flow Length=355' Tc=2.8 min CN=98 Runoff=0.38 cfs 0.018 af

Subcatchment E2st: (new Subcat) Runoff Area=3,300 sf Runoff Depth=2.47"
Flow Length=300' Tc=2.9 min CN=98 Runoff=0.32 cfs 0.016 af

Subcatchment E39dl: (new Subcat) Runoff Area=18,000 sf Runoff Depth=1.88"
Flow Length=300' Tc=15.7 min CN=92 Runoff=0.97 cfs 0.065 af

Subcatchment E4st: (new Subcat) Runoff Area=3,850 sf Runoff Depth=2.47"
Flow Length=350' Tc=2.8 min CN=98 Runoff=0.37 cfs 0.018 af

Subcatchment E5st: (new Subcat) Runoff Area=11,900 sf Runoff Depth=0.72"
Flow Length=350' Tc=15.6 min CN=74 Runoff=0.23 cfs 0.016 af

Subcatchment E8: CB #E8 Runoff Area=102,154 sf Runoff Depth=1.88"
Flow Length=600' Tc=18.2 min CN=92 Runoff=5.10 cfs 0.367 af

Subcatchment EOC: (new Subcat) Runoff Area=33,443 sf Runoff Depth=0.26"
Flow Length=1,150' Tc=21.8 min CN=61 Runoff=0.10 cfs 0.017 af

Reach Culv: 30CULVERT Peak Depth=0.22' Max Vel=6.8 fps Inflow=1.42 cfs 0.124 af
D=30.0" n=0.009 L=30.0' S=0.0233 '/' Capacity=90.50 cfs Outflow=1.42 cfs 0.124 af

Reach SW: SWALE Peak Depth=0.00' Max Vel=0.0 fps Inflow=0.00 cfs 0.000 af
n=0.025 L=460.0' S=0.0565 '/' Capacity=954.87 cfs Outflow=0.00 cfs 0.000 af

Pond E1: CB #E1 Peak Elev=253.15' Inflow=0.20 cfs 0.014 af
12.0" x 22.0' Culvert Outflow=0.20 cfs 0.014 af

Pond E12: CB #E12 Peak Elev=270.14' Inflow=0.55 cfs 0.044 af
15.0" x 348.0' Culvert Outflow=0.55 cfs 0.044 af

Pond E13: CB #E13 Peak Elev=270.66' Inflow=0.38 cfs 0.025 af
12.0" x 27.0' Culvert Outflow=0.38 cfs 0.025 af

Pond E14: CB #E14 Peak Elev=270.90' Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond E15: CB #E15 Peak Elev=0.00'
18.0" x 11.0' Culvert Primary=0.00 cfs 0.000 af

Pond E18: CB #E18 Peak Elev=270.20' Inflow=0.00 cfs 0.000 af
12.0" x 70.0' Culvert Outflow=0.00 cfs 0.000 af

Pond E19: CB #E18 Peak Elev=265.90' Inflow=0.00 cfs 0.000 af
18.0" x 397.0' Culvert Outflow=0.00 cfs 0.000 af

Pond E2: CB #E2 Peak Elev=252.01' Inflow=0.40 cfs 0.029 af
12.0" x 13.0' Culvert Outflow=0.40 cfs 0.029 af

Pond E20: CB #E20 Peak Elev=281.40' Inflow=0.00 cfs 0.000 af
24.0" x 20.0' Culvert Outflow=0.00 cfs 0.000 af

Pond E21: CB #E21 Peak Elev=270.15' Inflow=0.00 cfs 0.000 af
12.0" x 330.0' Culvert Outflow=0.00 cfs 0.000 af

Pond E22: CB #E22 Peak Elev=272.75' Inflow=0.00 cfs 0.000 af
12.0" x 9.0' Culvert Outflow=0.00 cfs 0.000 af

Pond E23: CB #E23 Peak Elev=0.00'
12.0" x 23.0' Culvert Primary=0.00 cfs 0.000 af

Pond E24: CB #24 Peak Elev=0.00'
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af

Pond E24e: CONN Peak Elev=270.45' Inflow=0.00 cfs 0.000 af
12.0" x 30.0' Culvert Outflow=0.00 cfs 0.000 af

Pond E26: CB #E26 Peak Elev=241.71' Inflow=1.41 cfs 0.108 af
21.0" x 61.0' Culvert Outflow=1.41 cfs 0.108 af

Pond E2a: Conn E2a Peak Elev=248.02' Inflow=1.41 cfs 0.108 af
15.0" x 68.0' Culvert Outflow=1.41 cfs 0.108 af

Pond E3: CB #E3 Peak Elev=263.28' Inflow=1.01 cfs 0.078 af
15.0" x 370.0' Culvert Outflow=1.01 cfs 0.078 af

Pond E39: CB #E39 Peak Elev=0.00'
12.0" x 286.0' Culvert Primary=0.00 cfs 0.000 af

Pond E4: CB #E4 Peak Elev=266.94' Inflow=0.46 cfs 0.035 af
12.0" x 8.0' Culvert Outflow=0.46 cfs 0.035 af

Pond E5: CB #E5 Peak Elev=267.43' Inflow=0.23 cfs 0.016 af
12.0" x 22.0' Culvert Outflow=0.23 cfs 0.016 af

Total Runoff Area = 8.186 ac Runoff Volume = 1.193 af Average Runoff Depth = 1.75"

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment Clot: C-Lot Parking Runoff Area=108,241 sf Runoff Depth=3.44"
Flow Length=600' Tc=18.2 min CN=96 Runoff=9.24 cfs 0.713 af

Subcatchment E12st: (new Subcat) Runoff Area=3,900 sf Runoff Depth=3.67"
Flow Length=355' Tc=2.8 min CN=98 Runoff=0.55 cfs 0.027 af

Subcatchment E13st: (new Subcat) Runoff Area=17,206 sf Runoff Depth=1.59"
Flow Length=700' Tc=14.2 min CN=75 Runoff=0.83 cfs 0.052 af

Subcatchment E15dl: (new Subcat) Runoff Area=41,974 sf Runoff Depth=3.02"
Tc=0.0 min CN=92 Runoff=5.82 cfs 0.243 af

Subcatchment E1st: (new Subcat) Runoff Area=8,700 sf Runoff Depth=1.66"
Flow Length=300' Tc=15.3 min CN=76 Runoff=0.42 cfs 0.028 af

Subcatchment E22st: (new Subcat)
Runoff=0.00 cfs 0.000 af

Subcatchment E23st: (new Subcat) Runoff Area=3,900 sf Runoff Depth=3.67"
Flow Length=355' Tc=2.8 min CN=98 Runoff=0.55 cfs 0.027 af

Subcatchment E2st: (new Subcat) Runoff Area=3,300 sf Runoff Depth=3.67"
Flow Length=300' Tc=2.9 min CN=98 Runoff=0.46 cfs 0.023 af

Subcatchment E39dl: (new Subcat) Runoff Area=18,000 sf Runoff Depth=3.02"
Flow Length=300' Tc=15.7 min CN=92 Runoff=1.52 cfs 0.104 af

Subcatchment E4st: (new Subcat) Runoff Area=3,850 sf Runoff Depth=3.67"
Flow Length=350' Tc=2.8 min CN=98 Runoff=0.54 cfs 0.027 af

Subcatchment E5st: (new Subcat) Runoff Area=11,900 sf Runoff Depth=1.52"
Flow Length=350' Tc=15.6 min CN=74 Runoff=0.52 cfs 0.035 af

Subcatchment E8: CB #E8 Runoff Area=102,154 sf Runoff Depth=3.02"
Flow Length=600' Tc=18.2 min CN=92 Runoff=8.02 cfs 0.590 af

Subcatchment EOC: (new Subcat) Runoff Area=33,443 sf Runoff Depth=0.76"
Flow Length=1,150' Tc=21.8 min CN=61 Runoff=0.50 cfs 0.049 af

Reach Culv: 30CULVERT Peak Depth=0.29' Max Vel=8.1 fps Inflow=2.57 cfs 0.241 af
D=30.0" n=0.009 L=30.0' S=0.0233 '/' Capacity=90.50 cfs Outflow=2.57 cfs 0.241 af

Reach SW: SWALE Peak Depth=0.00' Max Vel=0.0 fps Inflow=0.00 cfs 0.000 af
n=0.025 L=460.0' S=0.0565 '/' Capacity=954.87 cfs Outflow=0.00 cfs 0.000 af

Pond E1: CB #E1 Peak Elev=253.28' Inflow=0.42 cfs 0.028 af
12.0" x 22.0' Culvert Outflow=0.42 cfs 0.028 af

Pond E12: CB #E12 Peak Elev=270.28' Inflow=1.01 cfs 0.080 af
15.0" x 348.0' Culvert Outflow=1.01 cfs 0.080 af

Pond E13: CB #E13 Peak Elev=270.81' Inflow=0.83 cfs 0.052 af
12.0" x 27.0' Culvert Outflow=0.83 cfs 0.052 af

Pond E14: CB #E14 Peak Elev=270.90' Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond E15: CB #E15 Peak Elev=0.00'
18.0" x 11.0' Culvert Primary=0.00 cfs 0.000 af

Pond E18: CB #E18 Peak Elev=270.20' Inflow=0.00 cfs 0.000 af
12.0" x 70.0' Culvert Outflow=0.00 cfs 0.000 af

Pond E19: CB #E18 Peak Elev=265.90' Inflow=0.00 cfs 0.000 af
18.0" x 397.0' Culvert Outflow=0.00 cfs 0.000 af

Pond E2: CB #E2 Peak Elev=252.12' Inflow=0.68 cfs 0.051 af
12.0" x 13.0' Culvert Outflow=0.68 cfs 0.051 af

Pond E20: CB #E20 Peak Elev=281.40' Inflow=0.00 cfs 0.000 af
24.0" x 20.0' Culvert Outflow=0.00 cfs 0.000 af

Pond E21: CB #E21 Peak Elev=270.15' Inflow=0.00 cfs 0.000 af
12.0" x 330.0' Culvert Outflow=0.00 cfs 0.000 af

Pond E22: CB #E22 Peak Elev=272.75' Inflow=0.00 cfs 0.000 af
12.0" x 9.0' Culvert Outflow=0.00 cfs 0.000 af

Pond E23: CB #E23 Peak Elev=0.00'
12.0" x 23.0' Culvert Primary=0.00 cfs 0.000 af

Pond E24: CB #24 Peak Elev=0.00'
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af

Pond E24e: CONN Peak Elev=270.45' Inflow=0.00 cfs 0.000 af
12.0" x 30.0' Culvert Outflow=0.00 cfs 0.000 af

Pond E26: CB #E26 Peak Elev=241.89' Inflow=2.48 cfs 0.192 af
21.0" x 61.0' Culvert Outflow=2.48 cfs 0.192 af

Pond E2a: Conn E2a Peak Elev=248.24' Inflow=2.48 cfs 0.192 af
15.0" x 68.0' Culvert Outflow=2.48 cfs 0.192 af

Pond E3: CB #E3 Peak Elev=263.46' Inflow=1.80 cfs 0.141 af
15.0" x 370.0' Culvert Outflow=1.80 cfs 0.141 af

Pond E39: CB #E39 Peak Elev=0.00'
12.0" x 286.0' Culvert Primary=0.00 cfs 0.000 af

Pond E4: CB #E4 Peak Elev=267.09' Inflow=0.79 cfs 0.062 af
12.0" x 8.0' Culvert Outflow=0.79 cfs 0.062 af

Pond E5: CB #E5 Peak Elev=267.56' Inflow=0.52 cfs 0.035 af
12.0" x 22.0' Culvert Outflow=0.52 cfs 0.035 af

Total Runoff Area = 8.186 ac Runoff Volume = 1.918 af Average Runoff Depth = 2.81"

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment Clot: C-Lot Parking Runoff Area=108,241 sf Runoff Depth=5.03"
Flow Length=600' Tc=18.2 min CN=96 Runoff=13.24 cfs 1.042 af

Subcatchment E12st: (new Subcat) Runoff Area=3,900 sf Runoff Depth=5.26"
Flow Length=355' Tc=2.8 min CN=98 Runoff=0.78 cfs 0.039 af

Subcatchment E13st: (new Subcat) Runoff Area=17,206 sf Runoff Depth=2.86"
Flow Length=700' Tc=14.2 min CN=75 Runoff=1.51 cfs 0.094 af

Subcatchment E15dl: (new Subcat) Runoff Area=41,974 sf Runoff Depth=4.58"
Tc=0.0 min CN=92 Runoff=8.54 cfs 0.368 af

Subcatchment E1st: (new Subcat) Runoff Area=8,700 sf Runoff Depth=2.95"
Flow Length=300' Tc=15.3 min CN=76 Runoff=0.76 cfs 0.049 af

Subcatchment E22st: (new Subcat)
Runoff=0.00 cfs 0.000 af

Subcatchment E23st: (new Subcat) Runoff Area=3,900 sf Runoff Depth=5.26"
Flow Length=355' Tc=2.8 min CN=98 Runoff=0.78 cfs 0.039 af

Subcatchment E2st: (new Subcat) Runoff Area=3,300 sf Runoff Depth=5.26"
Flow Length=300' Tc=2.9 min CN=98 Runoff=0.65 cfs 0.033 af

Subcatchment E39dl: (new Subcat) Runoff Area=18,000 sf Runoff Depth=4.58"
Flow Length=300' Tc=15.7 min CN=92 Runoff=2.25 cfs 0.158 af

Subcatchment E4st: (new Subcat) Runoff Area=3,850 sf Runoff Depth=5.26"
Flow Length=350' Tc=2.8 min CN=98 Runoff=0.77 cfs 0.039 af

Subcatchment E5st: (new Subcat) Runoff Area=11,900 sf Runoff Depth=2.77"
Flow Length=350' Tc=15.6 min CN=74 Runoff=0.96 cfs 0.063 af

Subcatchment E8: CB #E8 Runoff Area=102,154 sf Runoff Depth=4.58"
Flow Length=600' Tc=18.2 min CN=92 Runoff=11.89 cfs 0.895 af

Subcatchment EOC: (new Subcat) Runoff Area=33,443 sf Runoff Depth=1.68"
Flow Length=1,150' Tc=21.8 min CN=61 Runoff=1.27 cfs 0.107 af

Reach Culv: 30CULVERT Peak Depth=0.38' Max Vel=9.6 fps Inflow=4.57 cfs 0.425 af
D=30.0" n=0.009 L=30.0' S=0.0233 '/' Capacity=90.50 cfs Outflow=4.57 cfs 0.425 af

Reach SW: SWALE Peak Depth=0.00' Max Vel=0.0 fps Inflow=0.00 cfs 0.000 af
n=0.025 L=460.0' S=0.0565 '/' Capacity=954.87 cfs Outflow=0.00 cfs 0.000 af

Pond E1: CB #E1 Peak Elev=253.42' Inflow=0.76 cfs 0.049 af
12.0" x 22.0' Culvert Outflow=0.76 cfs 0.049 af

Pond E12: CB #E12 Peak Elev=270.44' Inflow=1.71 cfs 0.133 af
15.0" x 348.0' Culvert Outflow=1.71 cfs 0.133 af

Pond E13: CB #E13 Peak Elev=271.01' Inflow=1.51 cfs 0.094 af
12.0" x 27.0' Culvert Outflow=1.51 cfs 0.094 af

Pond E14: CB #E14 Peak Elev=271.00' Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond E15: CB #E15 Peak Elev=0.00'
18.0" x 11.0' Culvert Primary=0.00 cfs 0.000 af

Pond E18: CB #E18 Peak Elev=270.20' Inflow=0.00 cfs 0.000 af
12.0" x 70.0' Culvert Outflow=0.00 cfs 0.000 af

Pond E19: CB #E18 Peak Elev=265.90' Inflow=0.00 cfs 0.000 af
18.0" x 397.0' Culvert Outflow=0.00 cfs 0.000 af

Pond E2: CB #E2 Peak Elev=252.24' Inflow=1.08 cfs 0.082 af
12.0" x 13.0' Culvert Outflow=1.08 cfs 0.082 af

Pond E20: CB #E20 Peak Elev=281.40' Inflow=0.00 cfs 0.000 af
24.0" x 20.0' Culvert Outflow=0.00 cfs 0.000 af

Pond E21: CB #E21 Peak Elev=270.15' Inflow=0.00 cfs 0.000 af
12.0" x 330.0' Culvert Outflow=0.00 cfs 0.000 af

Pond E22: CB #E22 Peak Elev=272.75' Inflow=0.00 cfs 0.000 af
12.0" x 9.0' Culvert Outflow=0.00 cfs 0.000 af

Pond E23: CB #E23 Peak Elev=0.00'
12.0" x 23.0' Culvert Primary=0.00 cfs 0.000 af

Pond E24: CB #24 Peak Elev=0.00'
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af

Pond E24e: CONN Peak Elev=270.45' Inflow=0.00 cfs 0.000 af
12.0" x 30.0' Culvert Outflow=0.00 cfs 0.000 af

Pond E26: CB #E26 Peak Elev=242.10' Inflow=4.05 cfs 0.318 af
21.0" x 61.0' Culvert Outflow=4.05 cfs 0.318 af

Pond E2a: Conn E2a Peak Elev=248.54' Inflow=4.05 cfs 0.318 af
15.0" x 68.0' Culvert Outflow=4.05 cfs 0.318 af

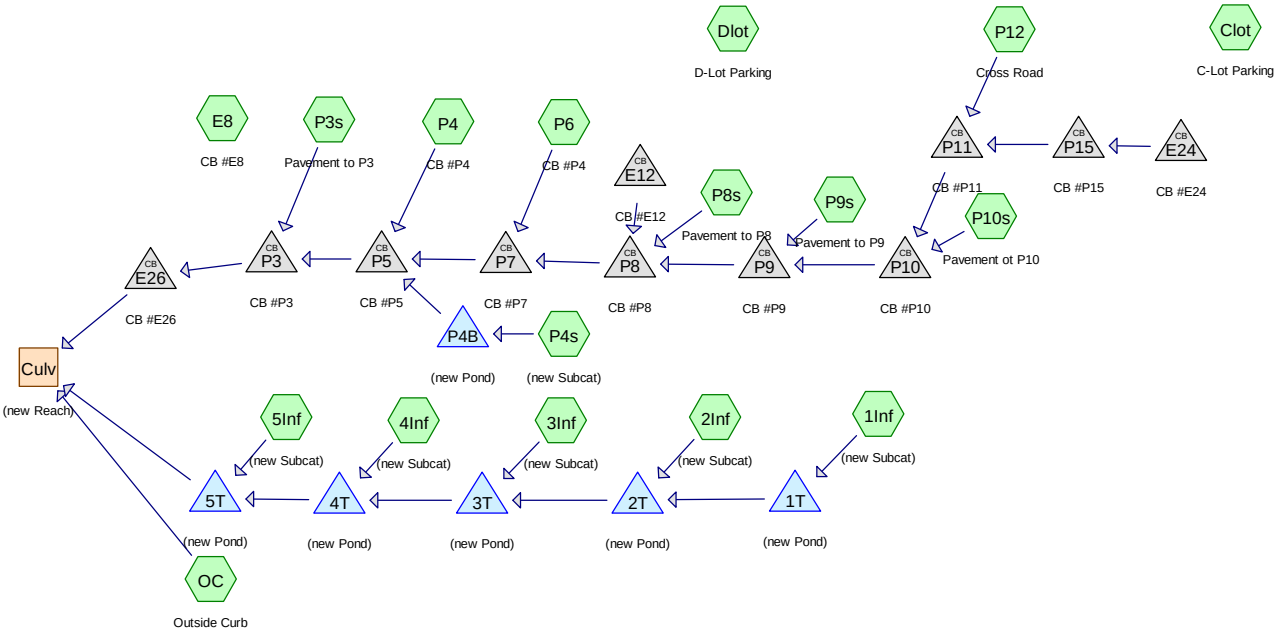
Pond E3: CB #E3 Peak Elev=263.69' Inflow=2.98 cfs 0.235 af
15.0" x 370.0' Culvert Outflow=2.98 cfs 0.235 af

Pond E39: CB #E39 Peak Elev=0.00'
12.0" x 286.0' Culvert Primary=0.00 cfs 0.000 af

Pond E4: CB #E4 Peak Elev=267.27' Inflow=1.29 cfs 0.102 af
12.0" x 8.0' Culvert Outflow=1.29 cfs 0.102 af

Pond E5: CB #E5 Peak Elev=267.71' Inflow=0.96 cfs 0.063 af
12.0" x 22.0' Culvert Outflow=0.96 cfs 0.063 af

Total Runoff Area = 8.186 ac Runoff Volume = 2.926 af Average Runoff Depth = 4.29"



Subcat Reach Pond Link

Drainage Diagram for HVCC South Road Proposed

Prepared by {enter your company name here} 5/8/2013

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1Inf: (new Subcat) Runoff Area=1,612 sf Runoff Depth=2.12"
Tc=5.0 min CN=98 Runoff=0.13 cfs 0.007 af

Subcatchment 2Inf: (new Subcat) Runoff Area=7,076 sf Runoff Depth=2.12"
Tc=10.0 min CN=98 Runoff=0.47 cfs 0.029 af

Subcatchment 3Inf: (new Subcat) Runoff Area=2,207 sf Runoff Depth=2.12"
Tc=5.0 min CN=98 Runoff=0.17 cfs 0.009 af

Subcatchment 4Inf: (new Subcat) Runoff Area=2,275 sf Runoff Depth=2.12"
Tc=5.0 min CN=98 Runoff=0.18 cfs 0.009 af

Subcatchment 5Inf: (new Subcat) Runoff Area=2,838 sf Runoff Depth=2.12"
Tc=5.0 min CN=98 Runoff=0.22 cfs 0.012 af

Subcatchment Clot: C-Lot Parking Runoff Area=108,241 sf Runoff Depth=1.91"
Flow Length=600' Tc=5.8 min CN=96 Runoff=7.83 cfs 0.396 af

Subcatchment Dlot: D-Lot Parking Runoff Area=59,675 sf Runoff Depth=1.47"
Flow Length=300' Tc=15.7 min CN=91 Runoff=2.54 cfs 0.168 af

Subcatchment E8: CB #E8 Runoff Area=102,154 sf Runoff Depth=1.55"
Flow Length=600' Tc=18.2 min CN=92 Runoff=4.24 cfs 0.304 af

Subcatchment OC: Outside Curb Runoff Area=22,100 sf Runoff Depth=0.15"
Flow Length=1,200' Tc=22.2 min CN=61 Runoff=0.02 cfs 0.007 af

Subcatchment P10s: Pavement ot P10 Runoff Area=1,040 sf Runoff Depth=2.12"
Tc=5.0 min CN=98 Runoff=0.08 cfs 0.004 af

Subcatchment P12: Cross Road Runoff Area=23,935 sf Runoff Depth=0.74"
Flow Length=400' Tc=16.6 min CN=79 Runoff=0.48 cfs 0.034 af

Subcatchment P3s: Pavement to P3 Runoff Area=1,540 sf Runoff Depth=2.12"
Flow Length=300' Tc=5.0 min CN=98 Runoff=0.12 cfs 0.006 af

Subcatchment P4: CB #P4 Runoff Area=7,285 sf Runoff Depth=0.20"
Flow Length=300' Tc=15.7 min CN=63 Runoff=0.02 cfs 0.003 af

Subcatchment P4s: (new Subcat) Runoff Area=1,548 sf Runoff Depth=2.12"
Flow Length=185' Tc=5.0 min CN=98 Runoff=0.12 cfs 0.006 af

Subcatchment P6: CB #P4 Runoff Area=6,520 sf Runoff Depth=0.84"
Flow Length=300' Tc=15.7 min CN=81 Runoff=0.15 cfs 0.010 af

Subcatchment P8s: Pavement to P8 Runoff Area=1,500 sf Runoff Depth=2.12"
Tc=0.0 min CN=98 Runoff=0.14 cfs 0.006 af

Subcatchment P9s: Pavement to P9 Runoff Area=650 sf Runoff Depth=2.12"
Tc=5.0 min CN=98 Runoff=0.05 cfs 0.003 af

Reach Culv: (new Reach) Peak Depth=0.16' Max Vel=5.5 fps Inflow=0.73 cfs 0.073 af
D=30.0" n=0.009 L=30.0' S=0.0233 '/' Capacity=90.50 cfs Outflow=0.72 cfs 0.073 af

Pond 1T: (new Pond) Peak Elev=273.24' Storage=104 cf Inflow=0.13 cfs 0.007 af
Discarded=0.01 cfs 0.007 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.007 af

Pond 2T: (new Pond) Peak Elev=269.45' Storage=592 cf Inflow=0.47 cfs 0.029 af
Discarded=0.02 cfs 0.029 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.029 af

Pond 3T: (new Pond) Peak Elev=262.53' Storage=137 cf Inflow=0.17 cfs 0.009 af
Discarded=0.02 cfs 0.009 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.009 af

Pond 4T: (new Pond) Peak Elev=258.40' Storage=151 cf Inflow=0.18 cfs 0.009 af
Discarded=0.01 cfs 0.009 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.009 af

Pond 5T: (new Pond) Peak Elev=252.88' Storage=203 cf Inflow=0.22 cfs 0.012 af
Discarded=0.01 cfs 0.012 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.012 af

Pond E12: CB #E12 Peak Elev=0.00'
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af

Pond E24: CB #E24 Peak Elev=0.00'
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af

Pond E26: CB #E26 Peak Elev=241.56' Inflow=0.72 cfs 0.066 af
21.0" x 61.0' Culvert Outflow=0.72 cfs 0.066 af

Pond P10: CB #P10 Peak Elev=273.31' Inflow=0.49 cfs 0.038 af
18.0" x 157.0' Culvert Outflow=0.49 cfs 0.038 af

Pond P11: CB #P11 Peak Elev=274.81' Inflow=0.48 cfs 0.034 af
18.0" x 55.0' Culvert Outflow=0.48 cfs 0.034 af

Pond P15: CB #P15 Peak Elev=279.00' Inflow=0.00 cfs 0.000 af
18.0" x 69.0' Culvert Outflow=0.00 cfs 0.000 af

Pond P3: CB #P3 Peak Elev=247.67' Inflow=0.72 cfs 0.066 af
18.0" x 46.0' Culvert Outflow=0.72 cfs 0.066 af

Pond P4B: (new Pond) Peak Elev=262.94' Storage=123 cf Inflow=0.12 cfs 0.006 af
Discarded=0.00 cfs 0.006 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.006 af

Pond P5: CB #P5 Peak Elev=257.37' Inflow=0.69 cfs 0.060 af
18.0" x 135.0' Culvert Outflow=0.69 cfs 0.060 af

Pond P7: CB #P7 Peak Elev=265.86' Inflow=0.67 cfs 0.057 af
18.0" x 219.0' Culvert Outflow=0.67 cfs 0.057 af

Pond P8: CB #P8 Peak Elev=269.91' Inflow=0.52 cfs 0.047 af
18.0" x 330.0' Culvert Outflow=0.52 cfs 0.047 af

Pond P9: CB #P9 Peak Elev=271.27' Inflow=0.50 cfs 0.041 af
18.0" x 105.0' Culvert Outflow=0.50 cfs 0.041 af

Total Runoff Area = 8.085 ac Runoff Volume = 1.013 af Average Runoff Depth = 1.50"

Subcatchment 1Inf: (new Subcat)

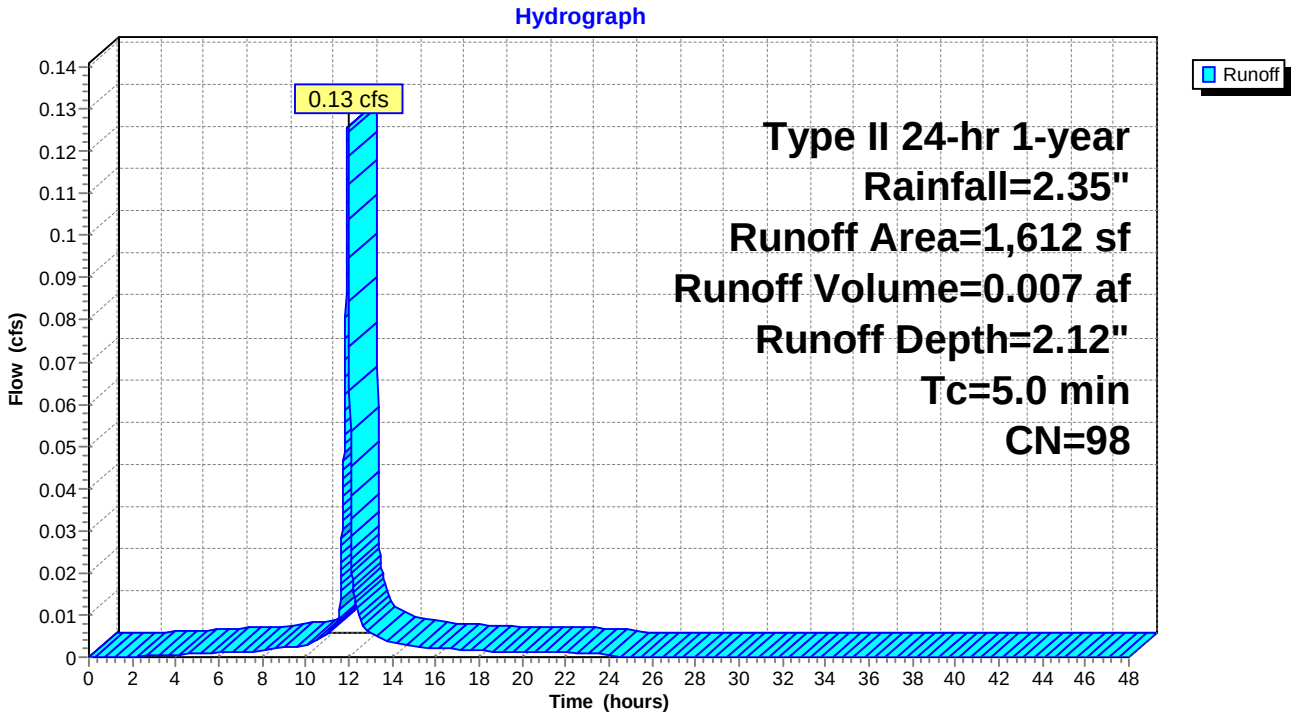
Runoff = 0.13 cfs @ 11.96 hrs, Volume= 0.007 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
1,612	98	Paved parking & roofs

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

Subcatchment 1Inf: (new Subcat)



Subcatchment 2Inf: (new Subcat)

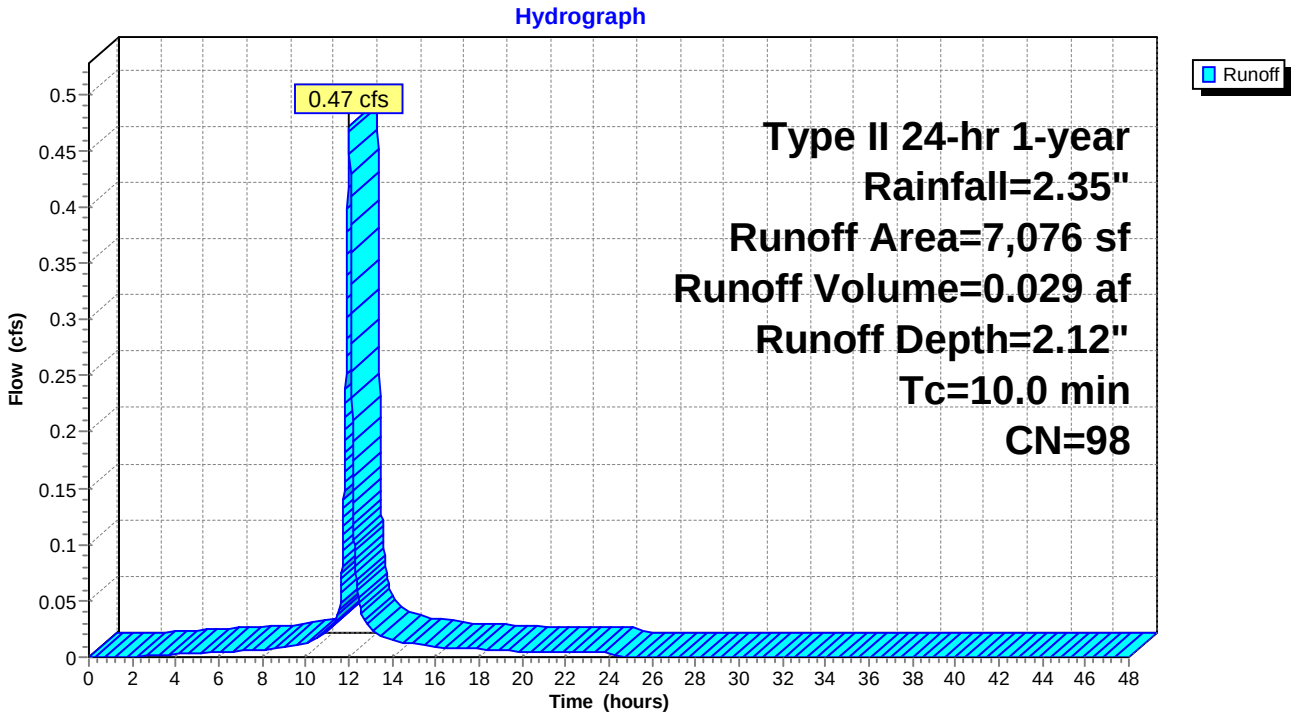
Runoff = 0.47 cfs @ 12.01 hrs, Volume= 0.029 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
7,076	98	Paved parking & roofs

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

Subcatchment 2Inf: (new Subcat)



Subcatchment 3Inf: (new Subcat)

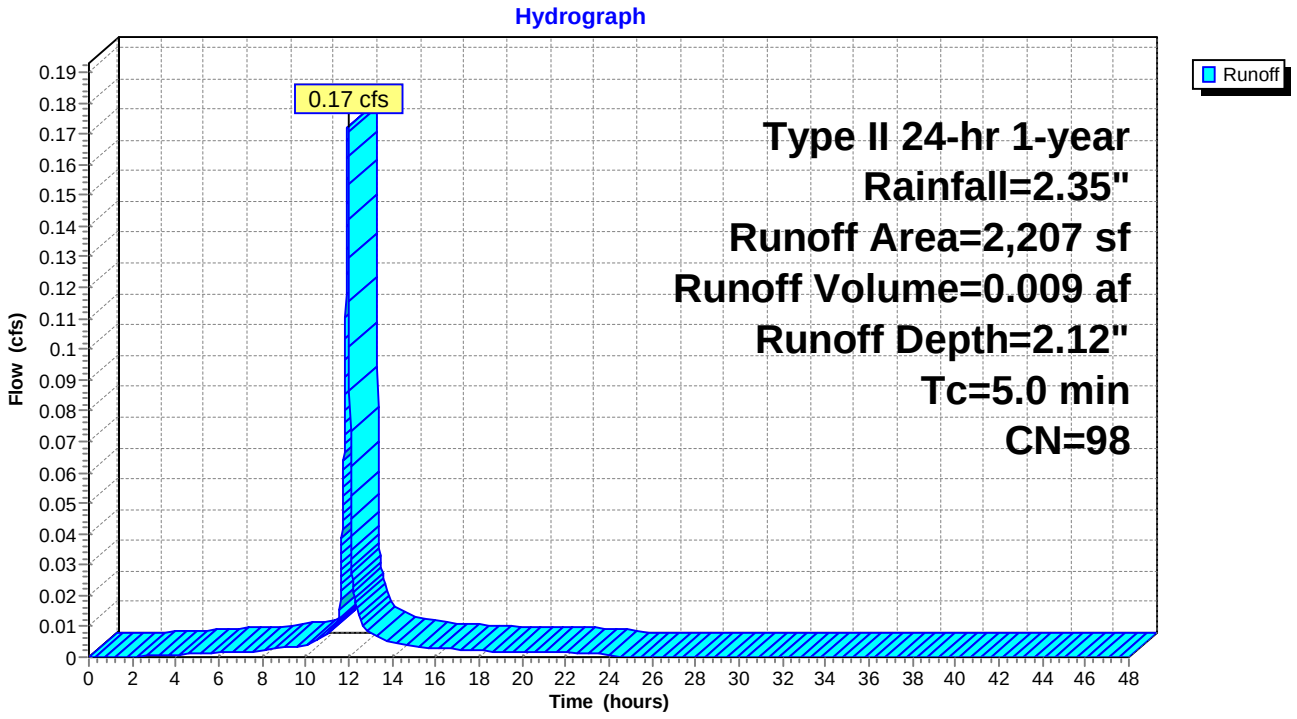
Runoff = 0.17 cfs @ 11.96 hrs, Volume= 0.009 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
2,207	98	Paved parking & roofs

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

Subcatchment 3Inf: (new Subcat)



Subcatchment 4Inf: (new Subcat)

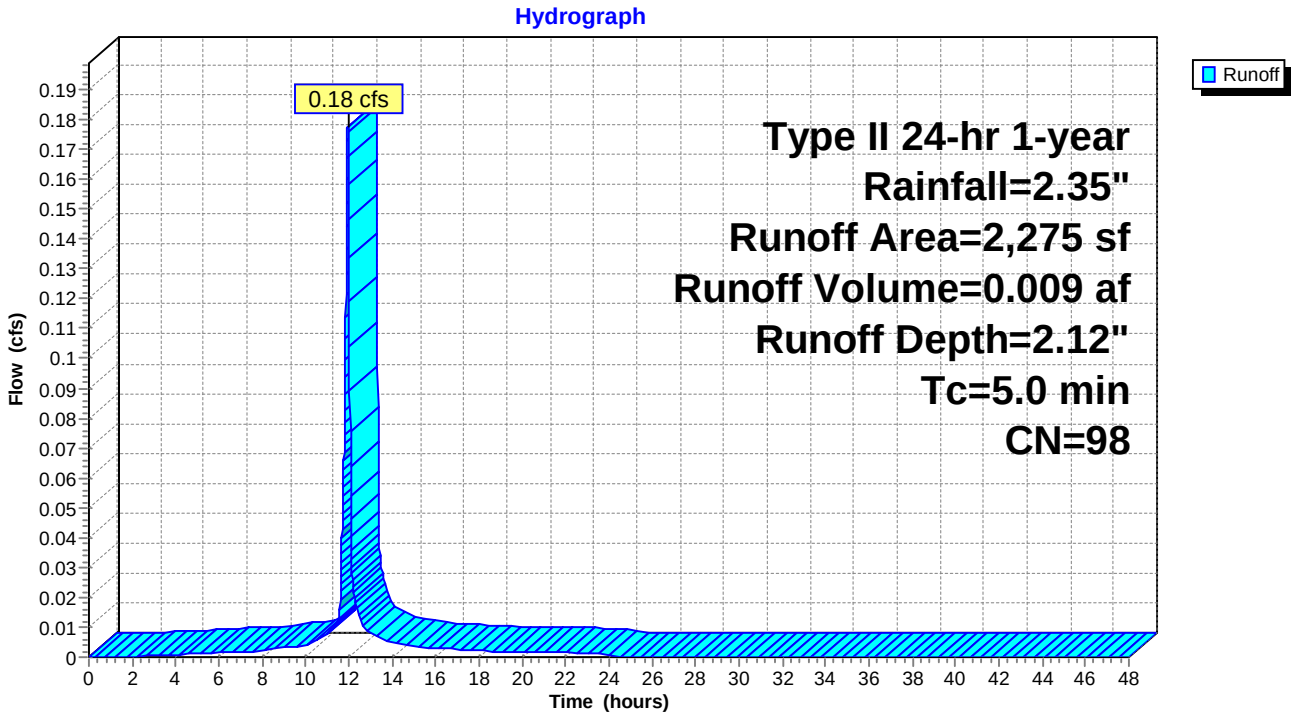
Runoff = 0.18 cfs @ 11.96 hrs, Volume= 0.009 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
2,275	98	Paved parking & roofs

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

Subcatchment 4Inf: (new Subcat)



Subcatchment 5Inf: (new Subcat)

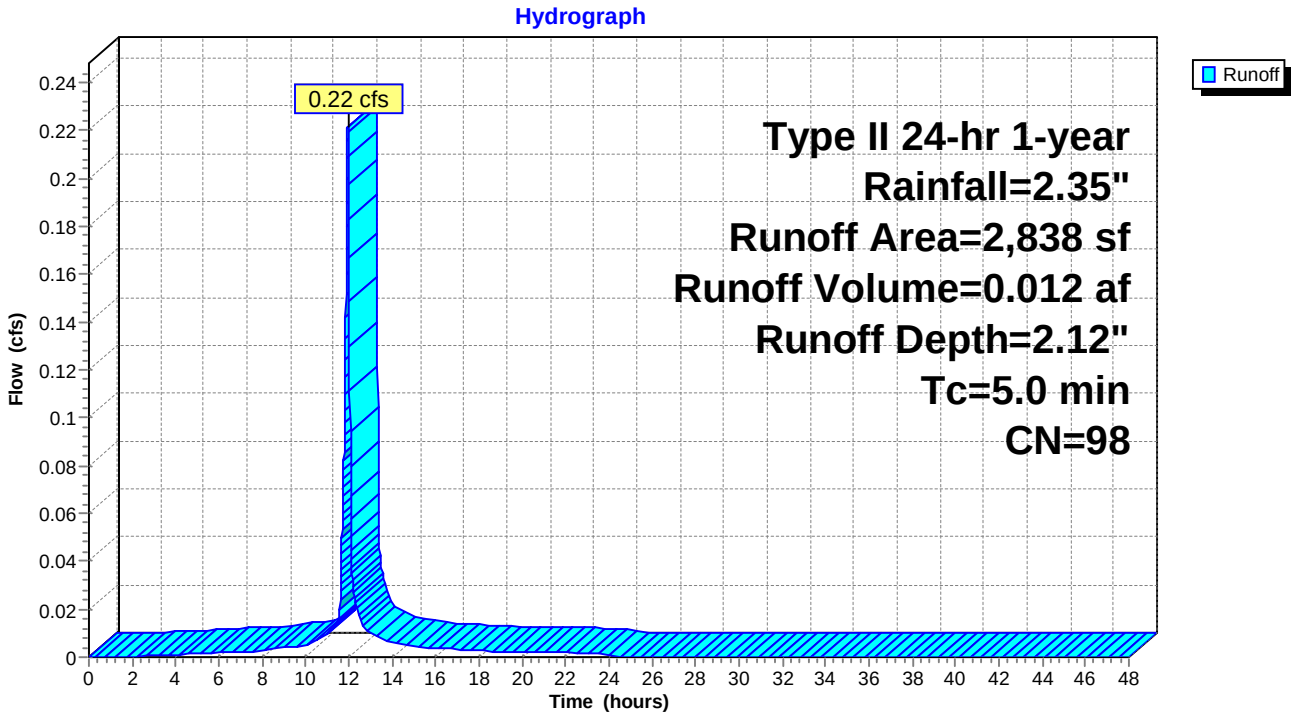
Runoff = 0.22 cfs @ 11.96 hrs, Volume= 0.012 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
2,838	98	Paved parking & roofs

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

Subcatchment 5Inf: (new Subcat)



Subcatchment Clot: C-Lot Parking

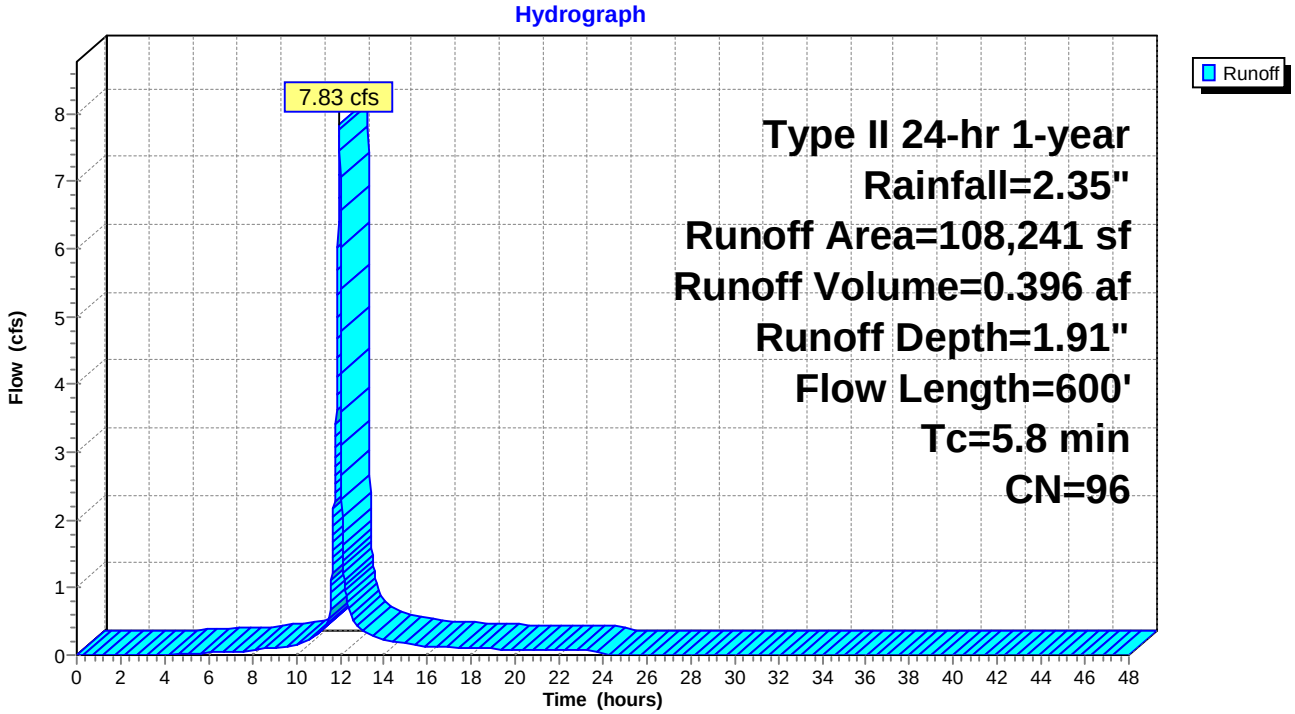
Runoff = 7.83 cfs @ 11.97 hrs, Volume= 0.396 af, Depth= 1.91"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
100,943	98	Paved parking & roofs
7,298	61	>75% Grass cover, Good, HSG B
108,241	96	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0100	1.0		**Sheet Flow, Parking** Smooth surfaces n= 0.011 P2= 2.70"
4.1	500	0.0100	2.0		**Shallow Concentrated Flow, Parking** Paved Kv= 20.3 fps
5.8	600	Total			

Subcatchment Clot: C-Lot Parking



Subcatchment Dlot: D-Lot Parking

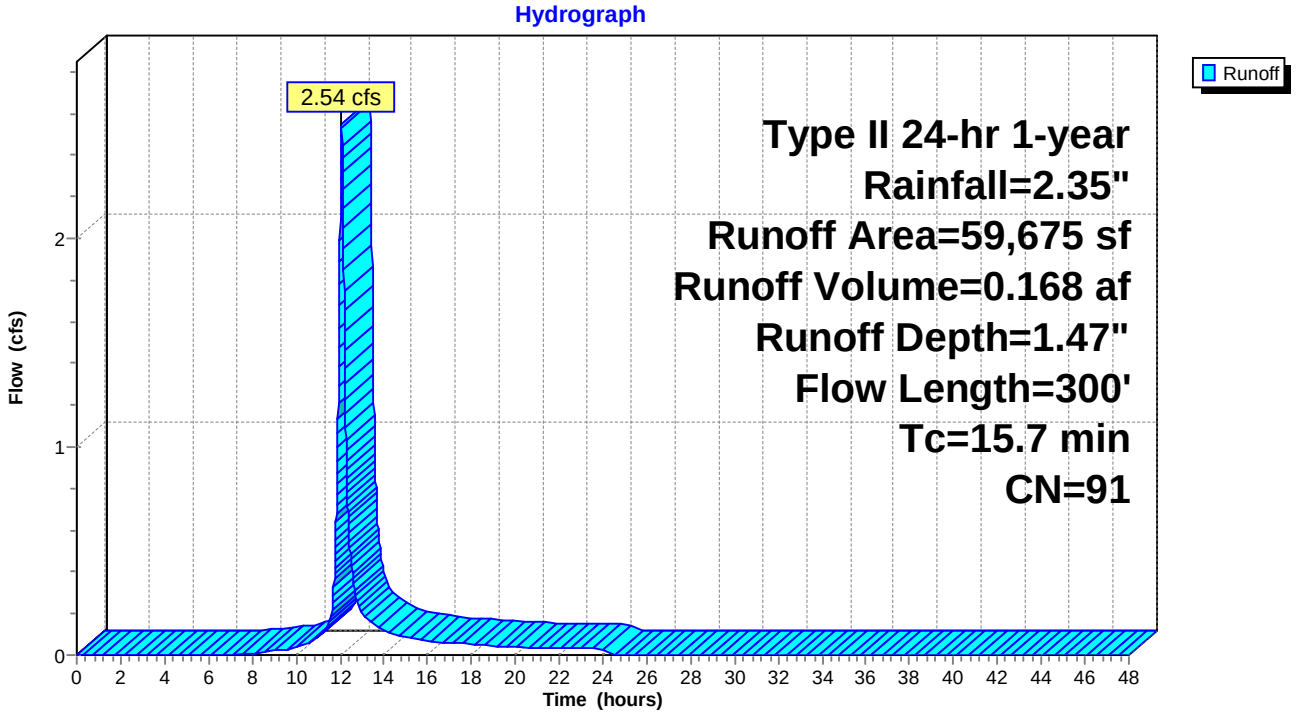
Runoff = 2.54 cfs @ 12.08 hrs, Volume= 0.168 af, Depth= 1.47"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
11,042	61	>75% Grass cover, Good, HSG B
48,633	98	Paved parking & roofs
59,675	91	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	100	0.0100	0.1		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
1.6	200	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
15.7	300	Total			

Subcatchment Dlot: D-Lot Parking



Subcatchment E8: CB #E8

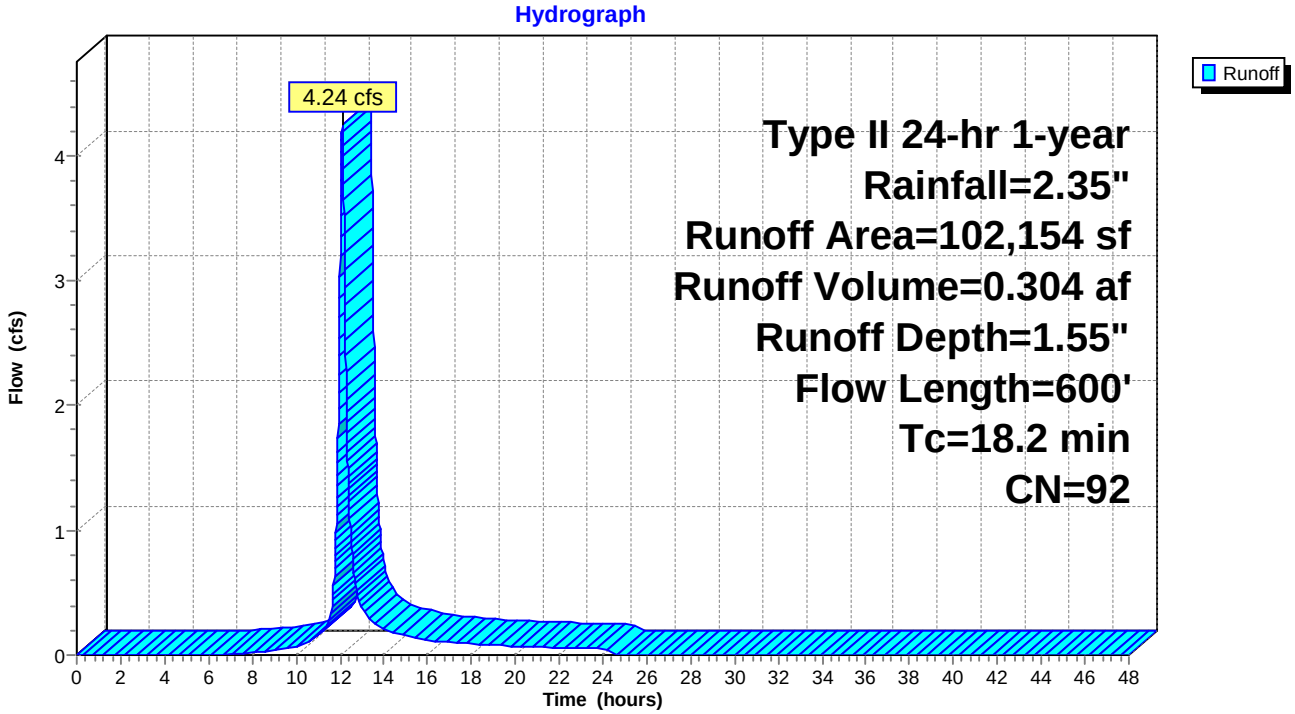
Runoff = 4.24 cfs @ 12.11 hrs, Volume= 0.304 af, Depth= 1.55"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
84,609	98	Paved parking & roofs
17,545	61	>75% Grass cover, Good, HSG B
102,154	92	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	100	0.0100	0.1		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
4.1	500	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
18.2	600	Total			

Subcatchment E8: CB #E8



Subcatchment OC: Outside Curb

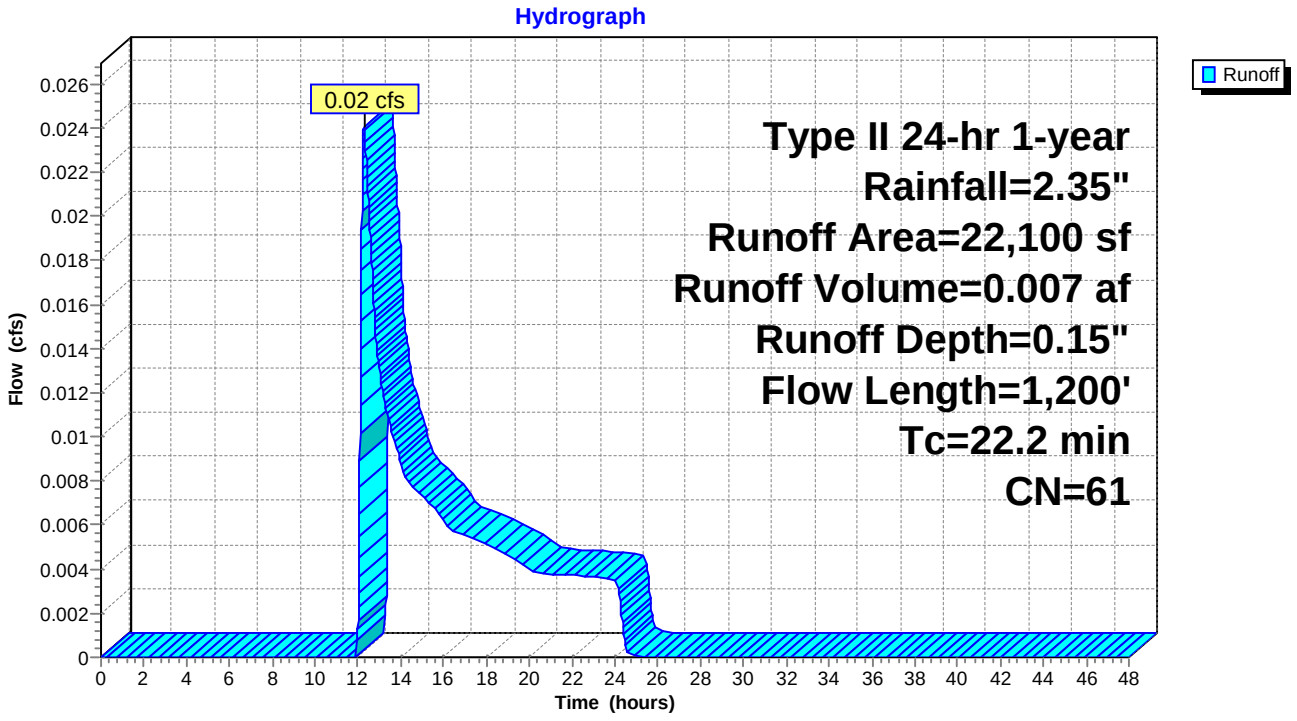
Runoff = 0.02 cfs @ 12.30 hrs, Volume= 0.007 af, Depth= 0.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
22,100	61	>75% Grass cover, Good, HSG B

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	100	0.0100	0.1		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
8.1	1,100	0.0200	2.3		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
22.2	1,200	Total			

Subcatchment OC: Outside Curb



Subcatchment P10s: Pavement ot P10

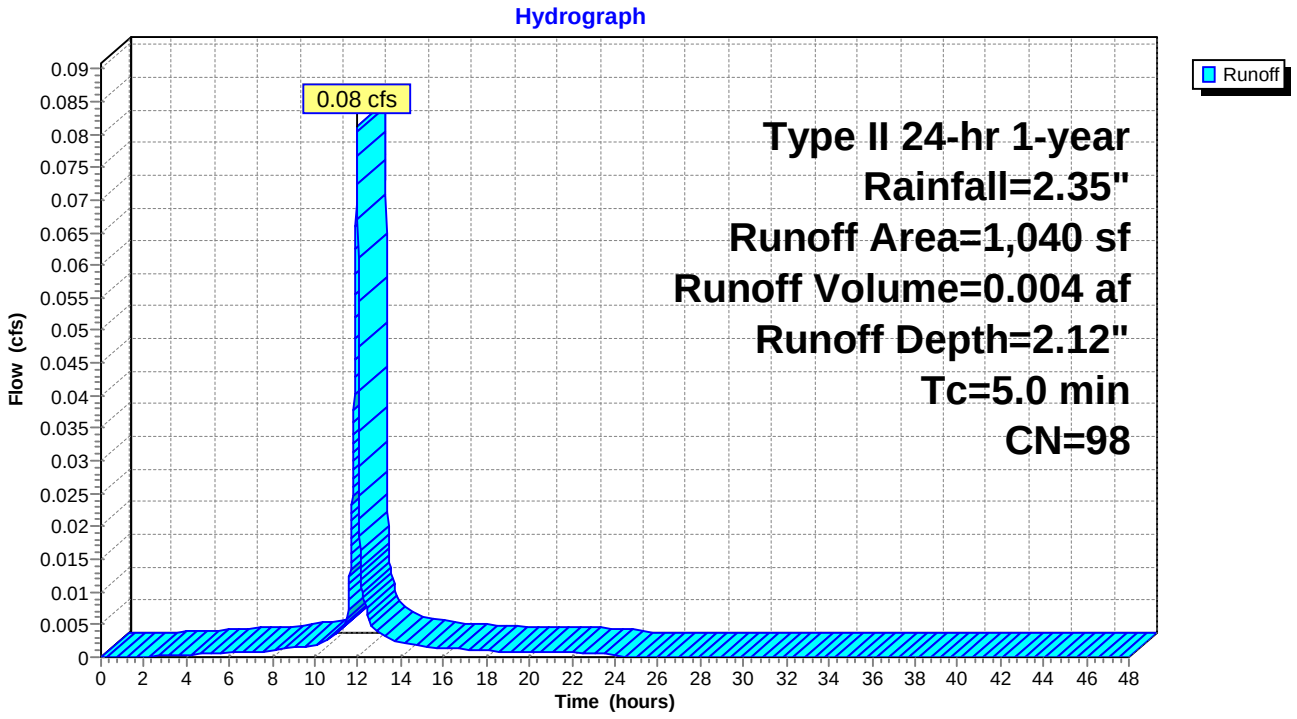
Runoff = 0.08 cfs @ 11.96 hrs, Volume= 0.004 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
1,040	98	Paved parking & roofs

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

Subcatchment P10s: Pavement ot P10



Subcatchment P12: Cross Road

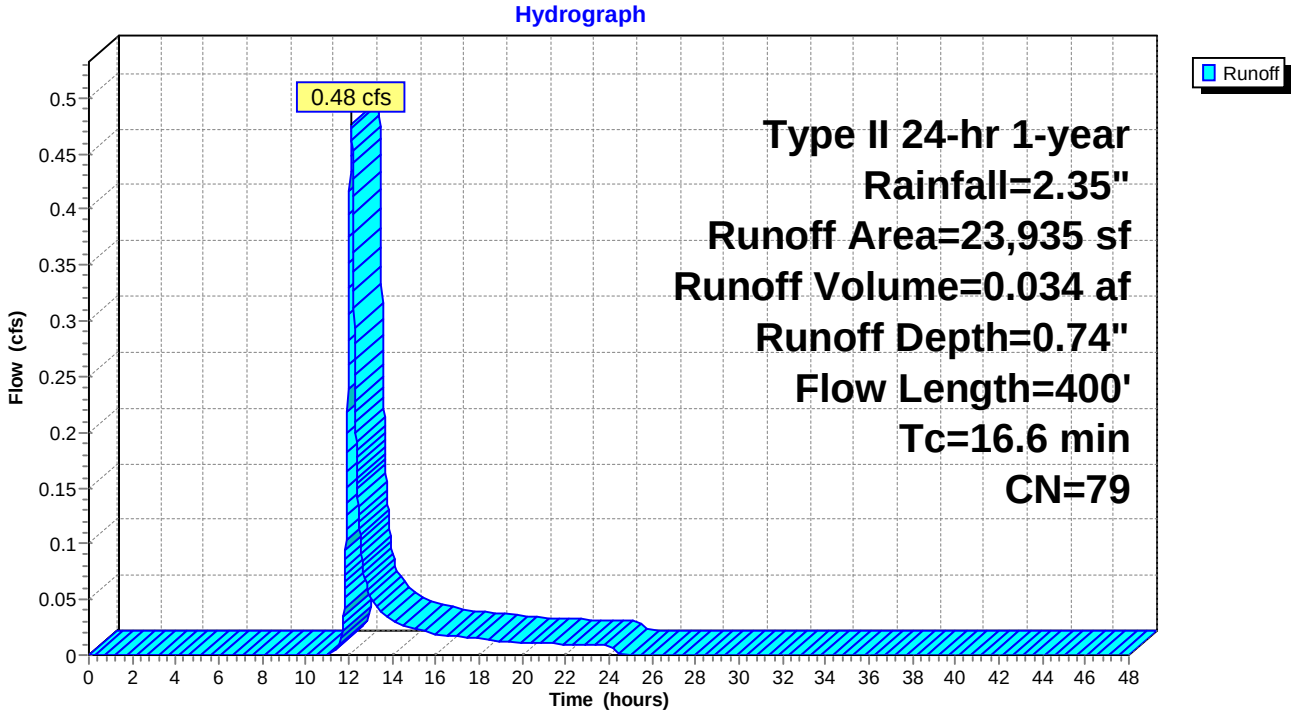
Runoff = 0.48 cfs @ 12.10 hrs, Volume= 0.034 af, Depth= 0.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
12,558	61	>75% Grass cover, Good, HSG B
11,377	98	Paved parking & roofs
23,935	79	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	100	0.0100	0.1		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
2.5	300	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
16.6	400	Total			

Subcatchment P12: Cross Road



Subcatchment P3s: Pavement to P3

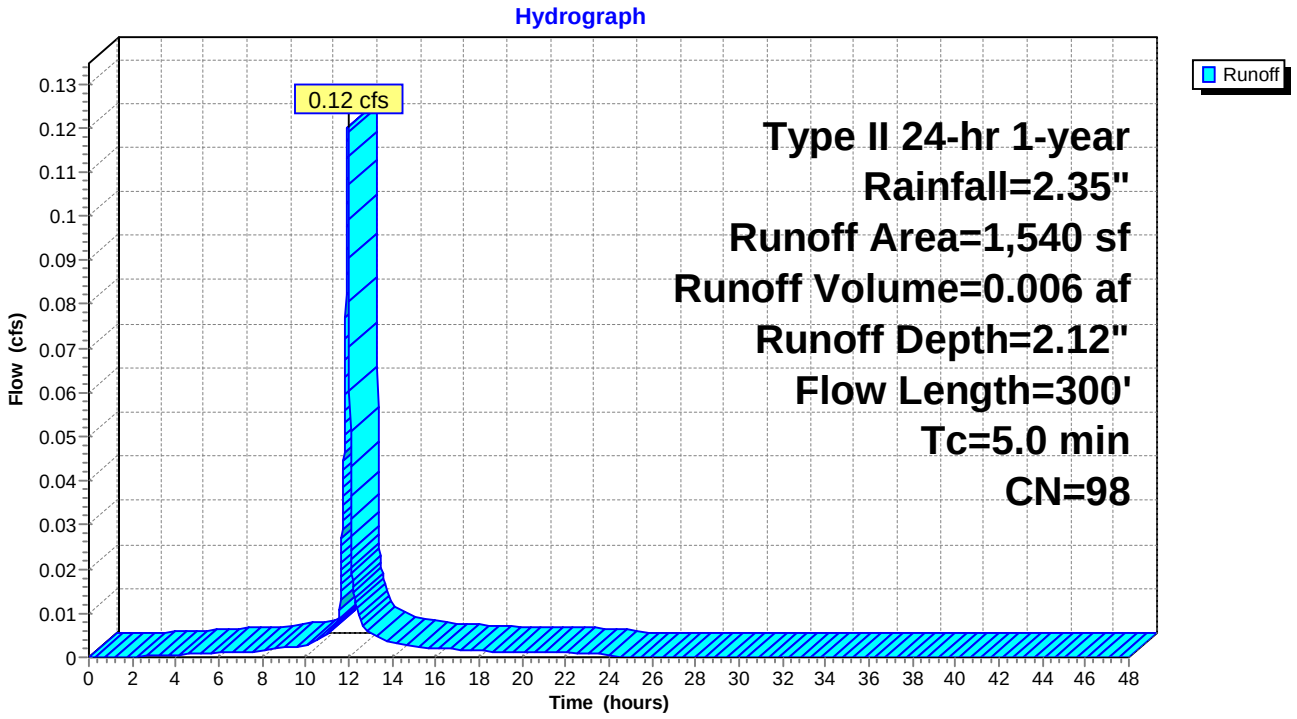
Runoff = 0.12 cfs @ 11.96 hrs, Volume= 0.006 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
1,540	98	Paved parking & roofs

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0100	1.0		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
1.6	200	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.3	300	Total, Increased to minimum Tc = 5.0 min			

Subcatchment P3s: Pavement to P3



Subcatchment P4: CB #P4

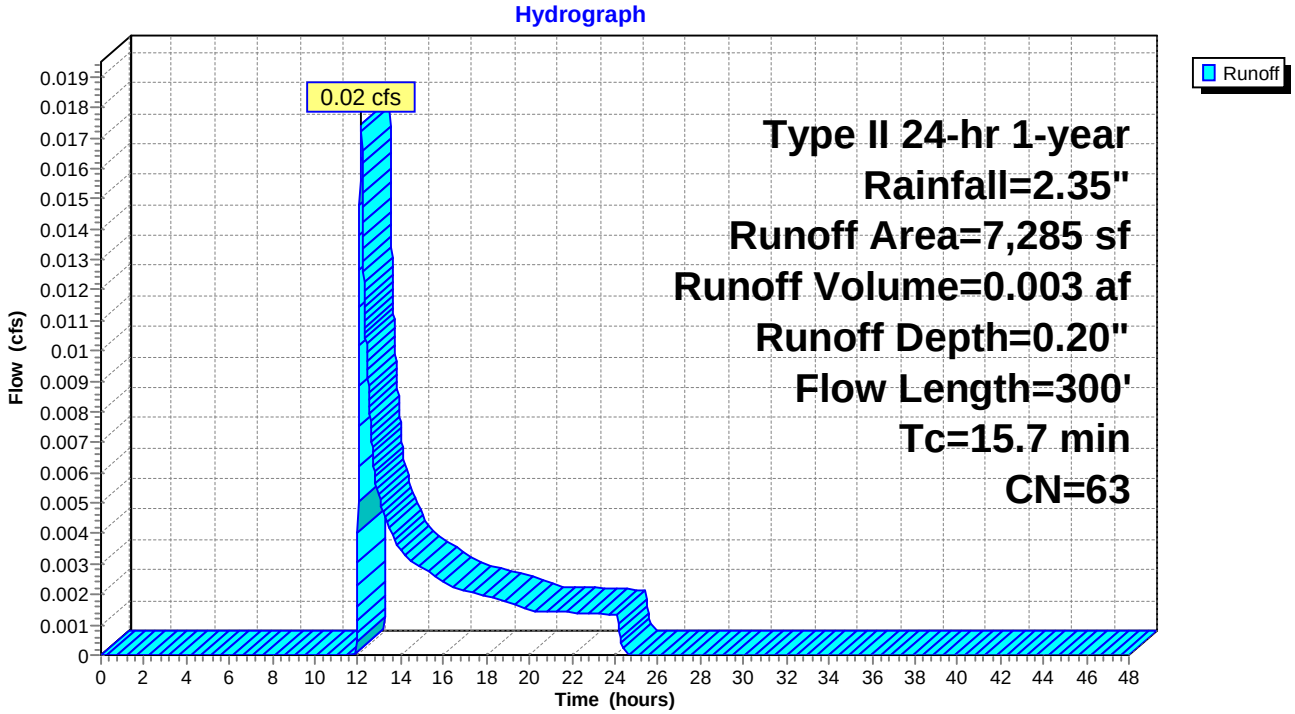
Runoff = 0.02 cfs @ 12.15 hrs, Volume= 0.003 af, Depth= 0.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
6,900	61	>75% Grass cover, Good, HSG B
385	98	Paved parking & roofs
7,285	63	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	100	0.0100	0.1		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
1.6	200	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
15.7	300	Total			

Subcatchment P4: CB #P4



Subcatchment P4s: (new Subcat)

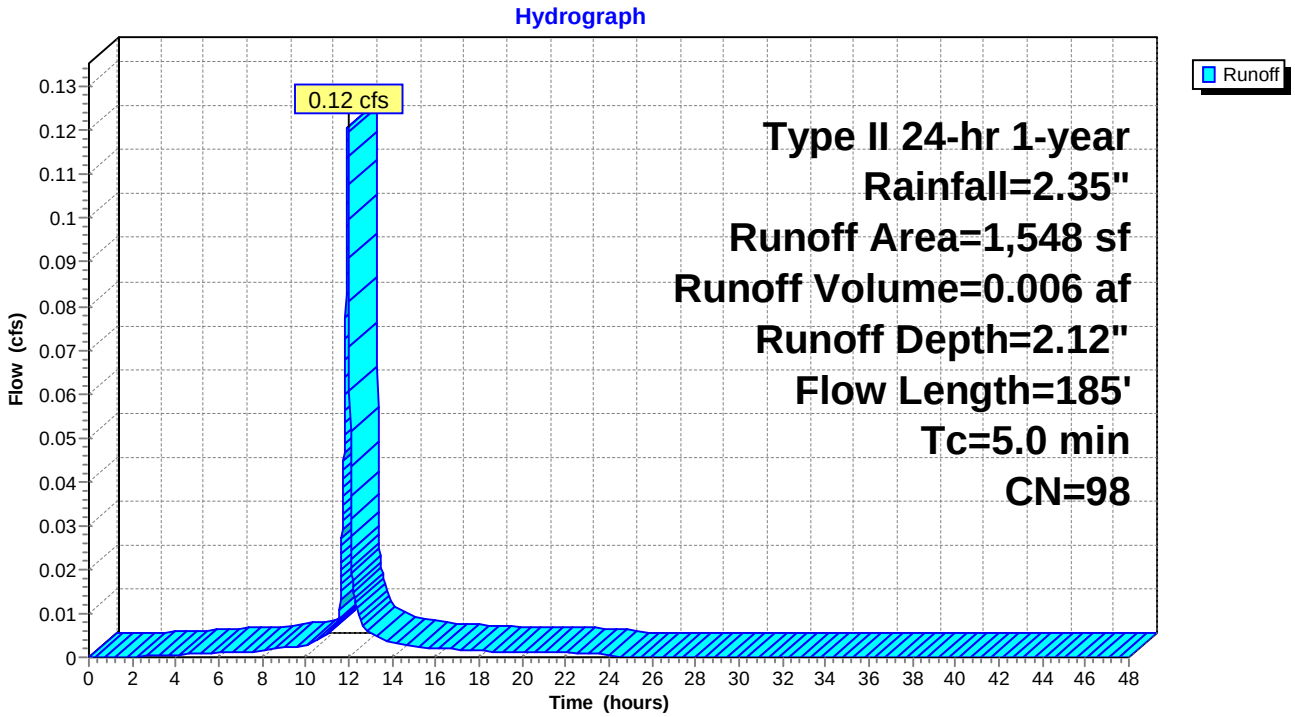
Runoff = 0.12 cfs @ 11.96 hrs, Volume= 0.006 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
1,548	98	Paved parking & roofs

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0400	1.7		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
0.3	85	0.0400	4.1		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.3	185	Total, Increased to minimum Tc = 5.0 min			

Subcatchment P4s: (new Subcat)



Subcatchment P6: CB #P4

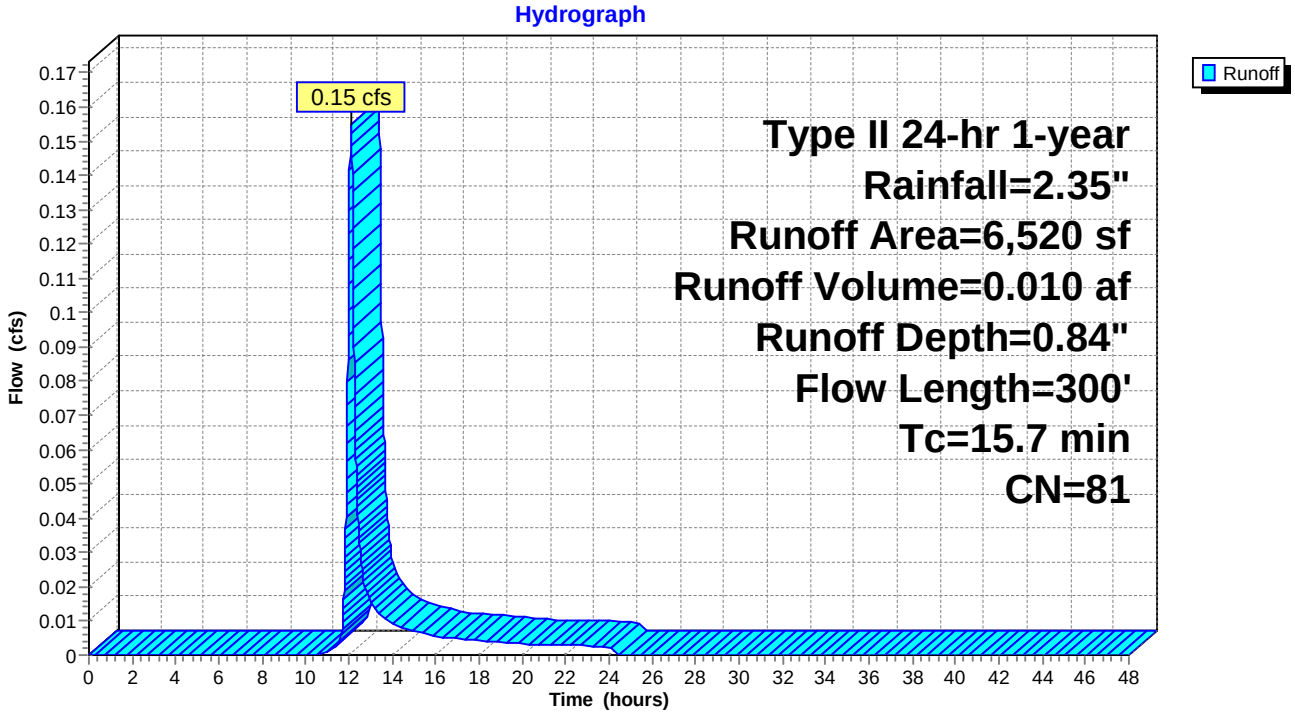
Runoff = 0.15 cfs @ 12.09 hrs, Volume= 0.010 af, Depth= 0.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
3,000	61	>75% Grass cover, Good, HSG B
3,520	98	Paved parking & roofs
6,520	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	100	0.0100	0.1		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
1.6	200	0.0100	2.0		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
15.7	300	Total			

Subcatchment P6: CB #P4



Subcatchment P8s: Pavement to P8

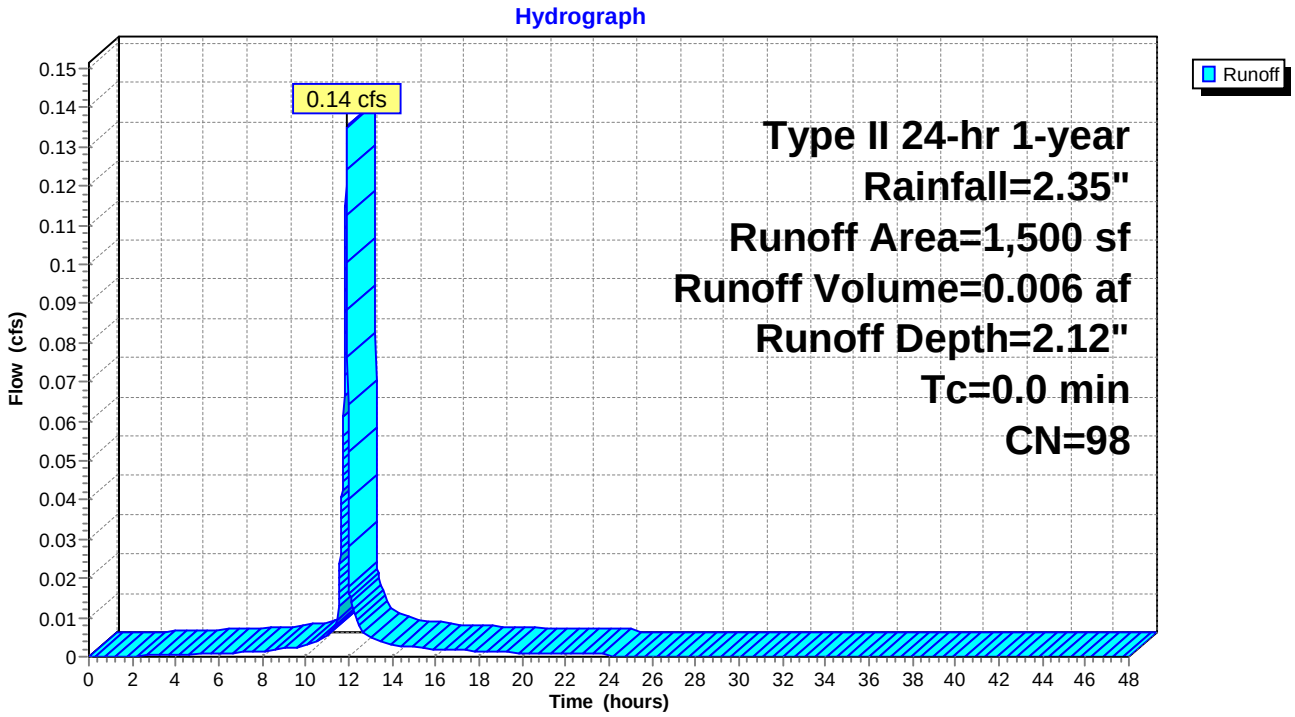
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.14 cfs @ 11.90 hrs, Volume= 0.006 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
1,500	98	Paved parking & roofs

Subcatchment P8s: Pavement to P8



Subcatchment P9s: Pavement to P9

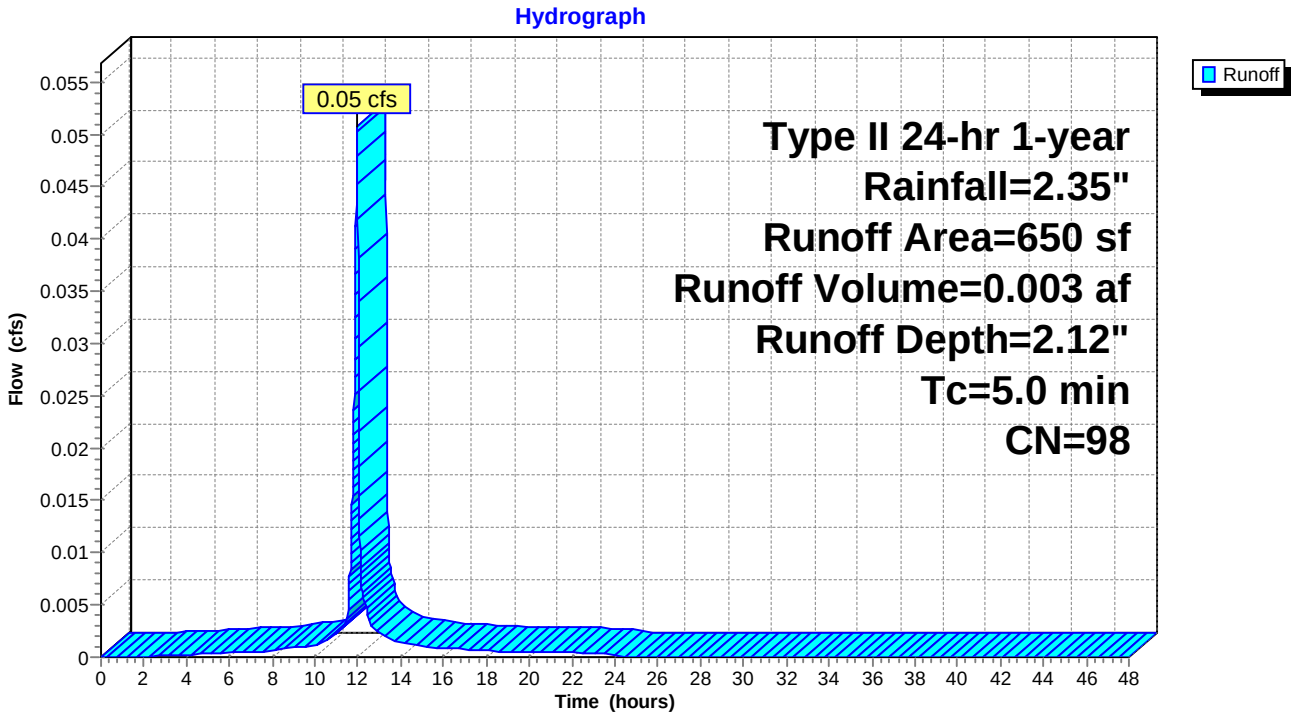
Runoff = 0.05 cfs @ 11.96 hrs, Volume= 0.003 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=2.35"

Area (sf)	CN	Description
650	98	Paved parking & roofs

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

Subcatchment P9s: Pavement to P9



Reach Culv: (new Reach)

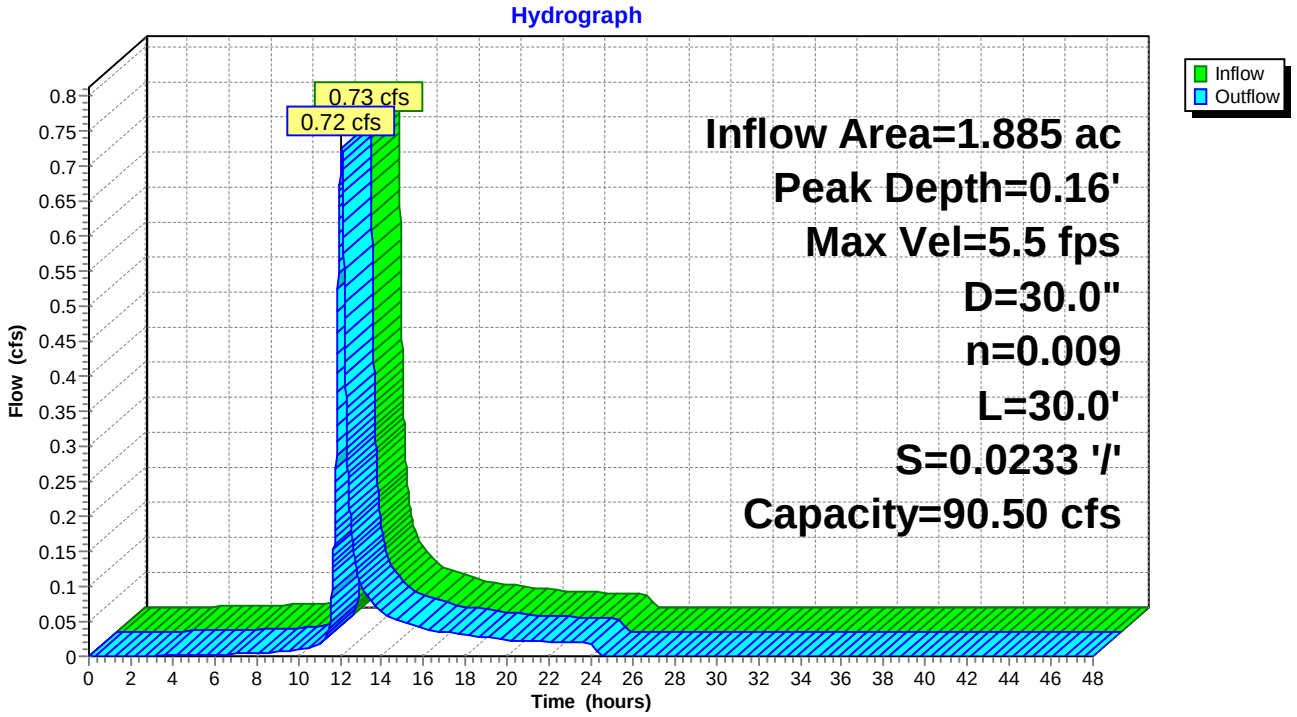
[52] Hint: Inlet conditions not evaluated

Inflow Area = 1.885 ac, Inflow Depth = 0.46" for 1-year event
Inflow = 0.73 cfs @ 12.08 hrs, Volume= 0.073 af
Outflow = 0.72 cfs @ 12.08 hrs, Volume= 0.073 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.5 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.1 fps, Avg. Travel Time= 0.2 min

Peak Depth= 0.16' @ 12.08 hrs
Capacity at bank full= 90.50 cfs
Inlet Invert= 237.80', Outlet Invert= 237.10'
30.0" Diameter Pipe, n= 0.009 PVC, smooth interior
Length= 30.0' Slope= 0.0233 '/'

Reach Culv: (new Reach)



Pond 1T: (new Pond)

[87] Warning: Oscillations may require Finer Routing or smaller dt

Inflow Area = 0.037 ac, Inflow Depth = 2.12" for 1-year event
Inflow = 0.13 cfs @ 11.96 hrs, Volume= 0.007 af
Outflow = 0.01 cfs @ 11.67 hrs, Volume= 0.007 af, Atten= 92%, Lag= 0.0 min
Discarded = 0.01 cfs @ 11.67 hrs, Volume= 0.007 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 273.24' @ 12.47 hrs Surf.Area= 210 sf Storage= 104 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 68.8 min (827.5 - 758.7)

Volume	Invert	Avail.Storage	Storage Description
#1	272.00'	625 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

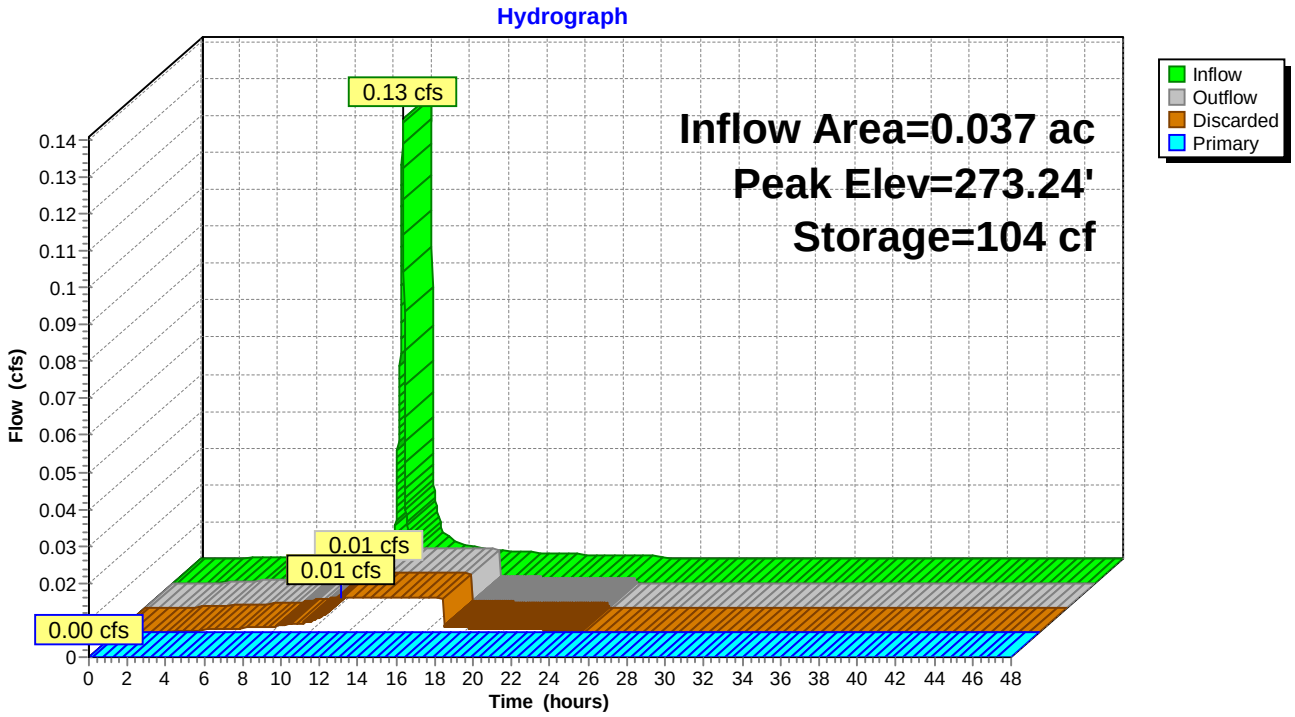
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
272.00	210	40.0	0	0
275.00	210	40.0	252	252
275.01	210	100.0	2	254
276.00	539	100.0	371	625

Device	Routing	Invert	Outlet Devices
#1	Primary	275.50'	**3.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.01 cfs @ 11.67 hrs HW=272.04' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=272.00' TW=266.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1T: (new Pond)



Pond 2T: (new Pond)

Inflow Area = 0.199 ac, Inflow Depth = 1.73" for 1-year event
Inflow = 0.47 cfs @ 12.01 hrs, Volume= 0.029 af
Outflow = 0.02 cfs @ 13.07 hrs, Volume= 0.029 af, Atten= 95%, Lag= 63.5 min
Discarded = 0.02 cfs @ 13.07 hrs, Volume= 0.029 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 269.45' @ 13.07 hrs Surf.Area= 539 sf Storage= 592 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 260.6 min (1,024.0 - 763.4)

Volume	Invert	Avail.Storage	Storage Description
#1	266.00'	958 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

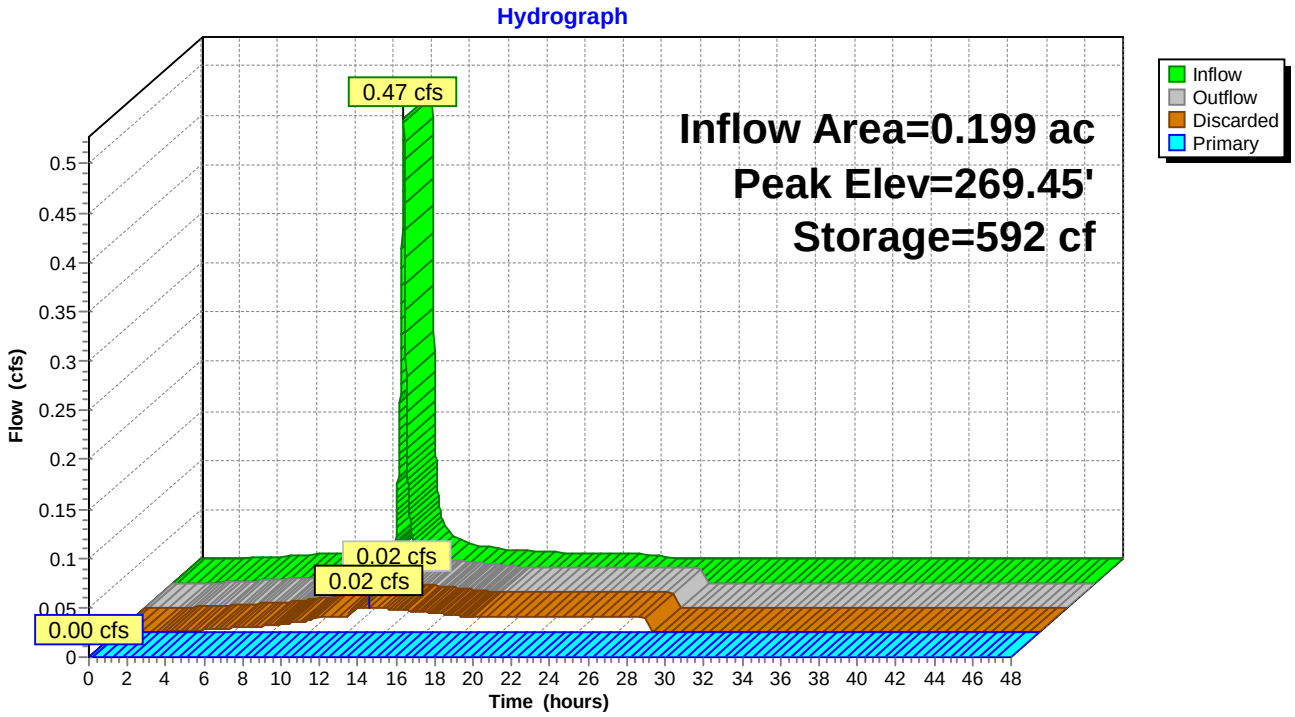
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
266.00	330	40.0	0	0
269.00	330	40.0	396	396
269.01	330	100.0	3	399
270.00	798	100.0	558	958

Device	Routing	Invert	Outlet Devices
#1	Primary	269.50'	**3.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.02 cfs @ 13.07 hrs HW=269.45' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=266.00' TW=261.50' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2T: (new Pond)



Pond 3T: (new Pond)

[87] Warning: Oscillations may require Finer Routing or smaller dt

Inflow Area = 0.250 ac, Inflow Depth = 0.43" for 1-year event
Inflow = 0.17 cfs @ 11.96 hrs, Volume= 0.009 af
Outflow = 0.02 cfs @ 11.69 hrs, Volume= 0.009 af, Atten= 91%, Lag= 0.0 min
Discarded = 0.02 cfs @ 11.69 hrs, Volume= 0.009 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 262.53' @ 12.39 hrs Surf.Area= 330 sf Storage= 137 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 55.1 min (813.8 - 758.7)

Volume	Invert	Avail.Storage	Storage Description
#1	261.50'	958 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

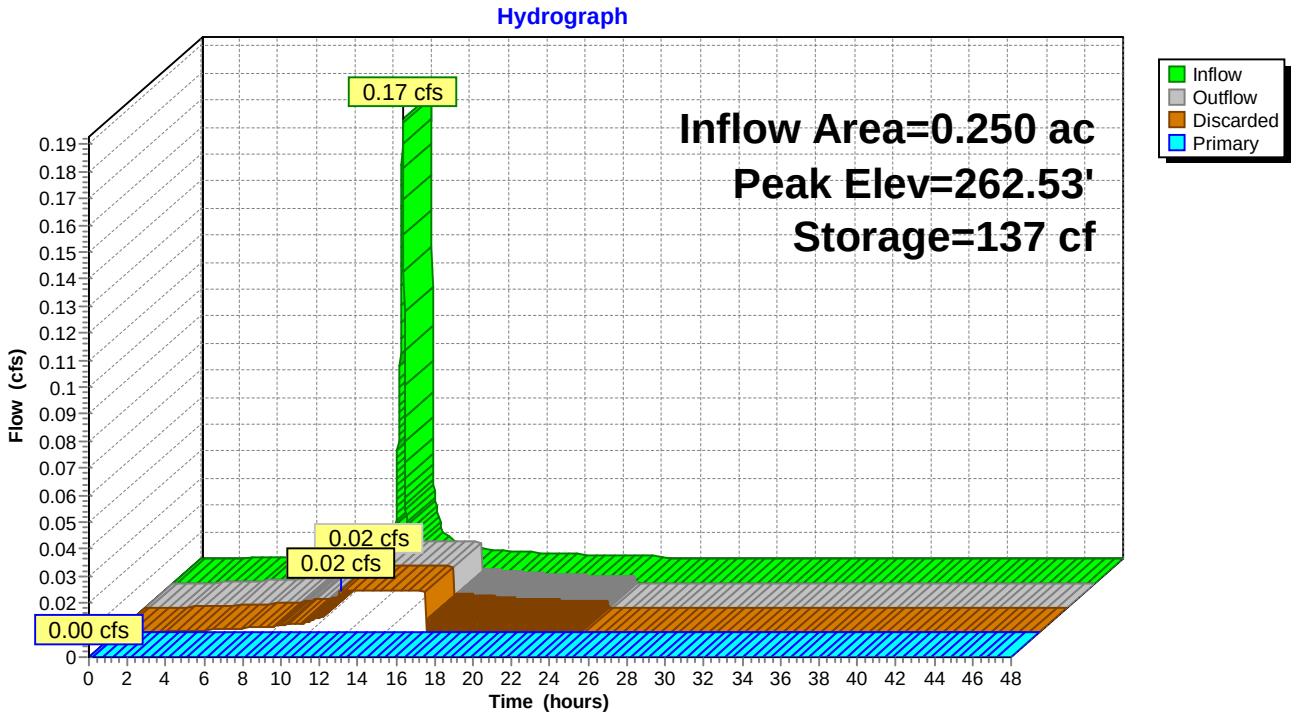
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
261.50	330	40.0	0	0
264.50	330	40.0	396	396
264.51	330	100.0	3	399
265.50	798	100.0	558	958

Device	Routing	Invert	Outlet Devices
#1	Primary	265.00'	**3.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.02 cfs @ 11.69 hrs HW=261.55' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=261.50' TW=257.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3T: (new Pond)



Pond 4T: (new Pond)

[87] Warning: Oscillations may require Finer Routing or smaller dt

Inflow Area = 0.302 ac, Inflow Depth = 0.37" for 1-year event
Inflow = 0.18 cfs @ 11.96 hrs, Volume= 0.009 af
Outflow = 0.01 cfs @ 11.66 hrs, Volume= 0.009 af, Atten= 93%, Lag= 0.0 min
Discarded = 0.01 cfs @ 11.66 hrs, Volume= 0.009 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 258.40' @ 12.51 hrs Surf.Area= 270 sf Storage= 151 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 80.0 min (838.7 - 758.7)

Volume	Invert	Avail.Storage	Storage Description
#1	257.00'	786 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

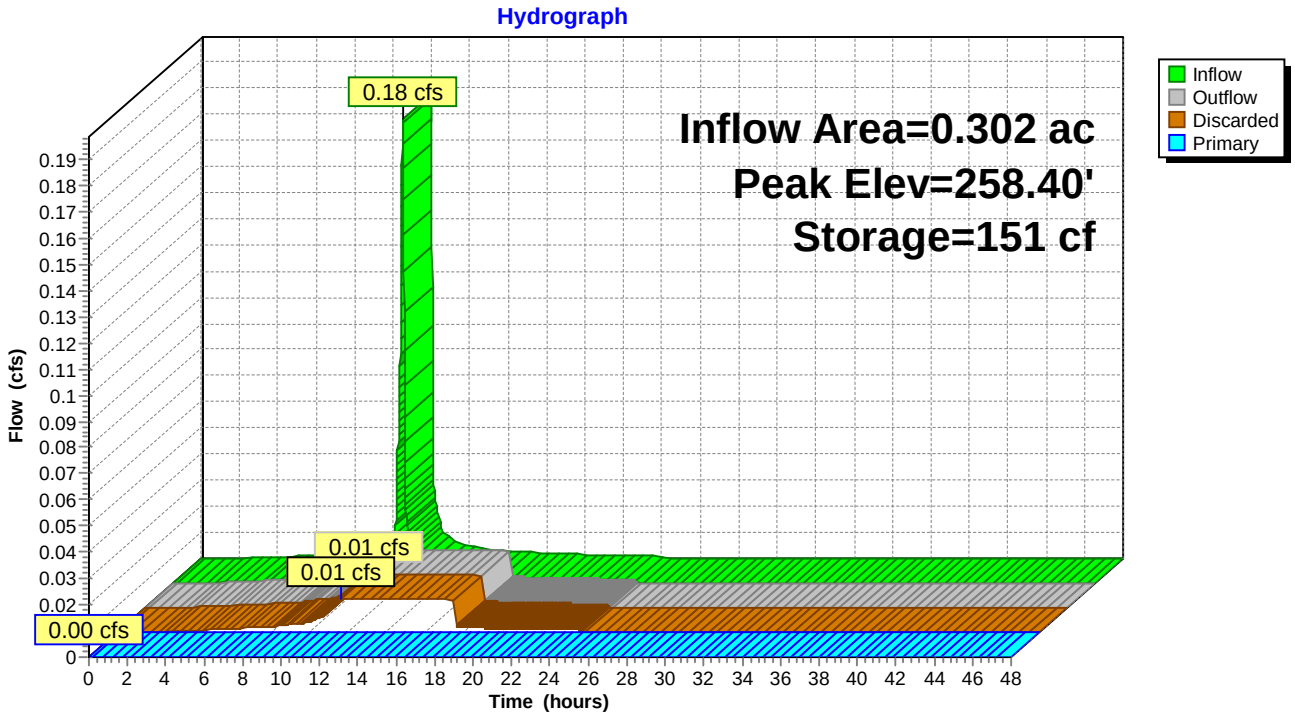
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
257.00	270	40.0	0	0
260.00	270	40.0	324	324
260.01	270	100.0	3	327
261.00	658	100.0	459	786

Device	Routing	Invert	Outlet Devices
#1	Primary	260.50'	**3.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.01 cfs @ 11.66 hrs HW=257.04' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=257.00' TW=251.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 4T: (new Pond)



Pond 5T: (new Pond)

[87] Warning: Oscillations may require Finer Routing or smaller dt

Inflow Area = 0.367 ac, Inflow Depth = 0.38" for 1-year event
Inflow = 0.22 cfs @ 11.96 hrs, Volume= 0.012 af
Outflow = 0.01 cfs @ 11.61 hrs, Volume= 0.012 af, Atten= 94%, Lag= 0.0 min
Discarded = 0.01 cfs @ 11.61 hrs, Volume= 0.012 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 252.88' @ 12.68 hrs Surf.Area= 270 sf Storage= 203 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 115.3 min (874.0 - 758.7)

Volume	Invert	Avail.Storage	Storage Description
#1	251.00'	786 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

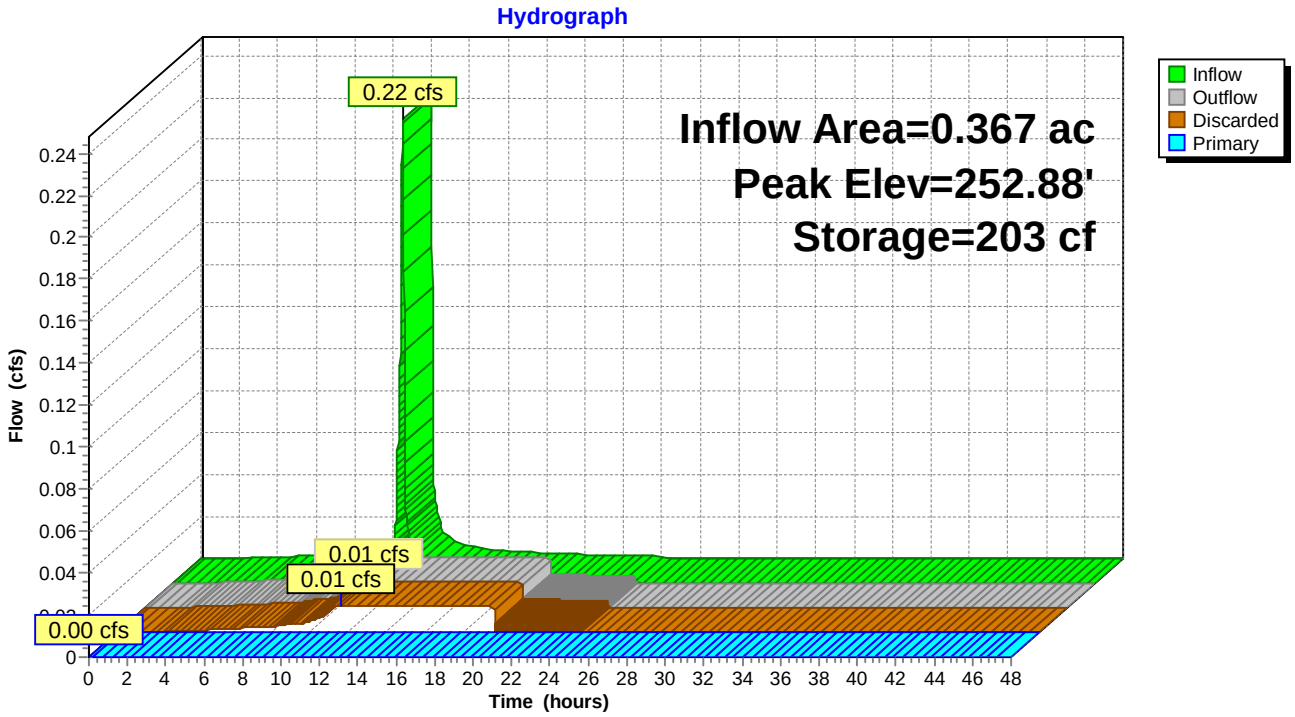
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
251.00	270	40.0	0	0
254.00	270	40.0	324	324
254.01	270	100.0	3	327
255.00	658	100.0	459	786

Device	Routing	Invert	Outlet Devices
#1	Primary	254.50'	**3.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.01 cfs @ 11.61 hrs HW=251.05' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=251.00' TW=237.80' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 5T: (new Pond)



Pond E12: CB #E12

[43] Hint: Has no inflow (Outflow=Zero)

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

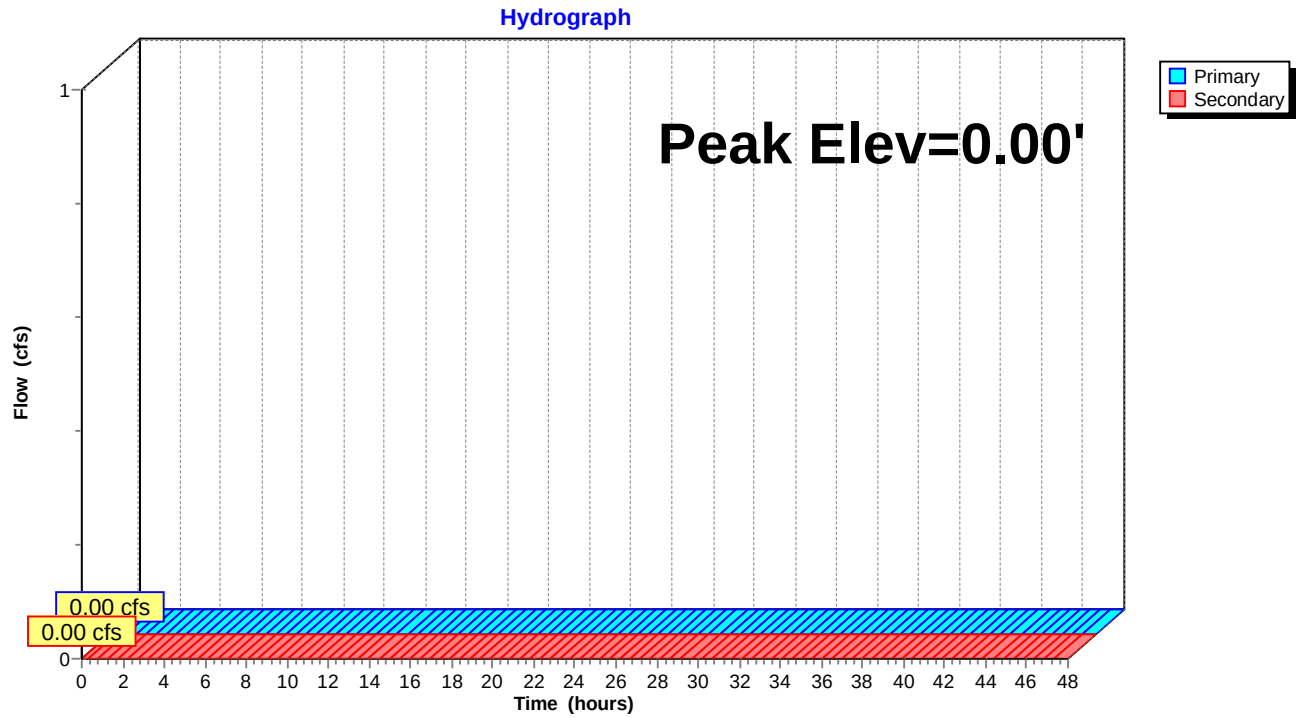
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 0.00' @ 0.00 hrs
Flood Elev= 274.30'
Plug-Flow detention time= (not calculated)
Center-of-Mass det. time= (not calculated)

Device	Routing	Invert	Outlet Devices
#1	Secondary	269.80'	**12.0" x 100.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 269.30' S= 0.0050 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean
#2	Primary	270.80'	**12.0" x 10.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 269.90' S= 0.0900 '/' Cc= 0.900 n= 0.009 PVC, smooth interior

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' TW=269.59' (Dynamic Tailwater)
└**2=Culvert** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' (Free Discharge)
└**1=Culvert** (Controls 0.00 cfs)

Pond E12: CB #E12



Pond E24: CB #E24

[43] Hint: Has no inflow (Outflow=Zero)

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

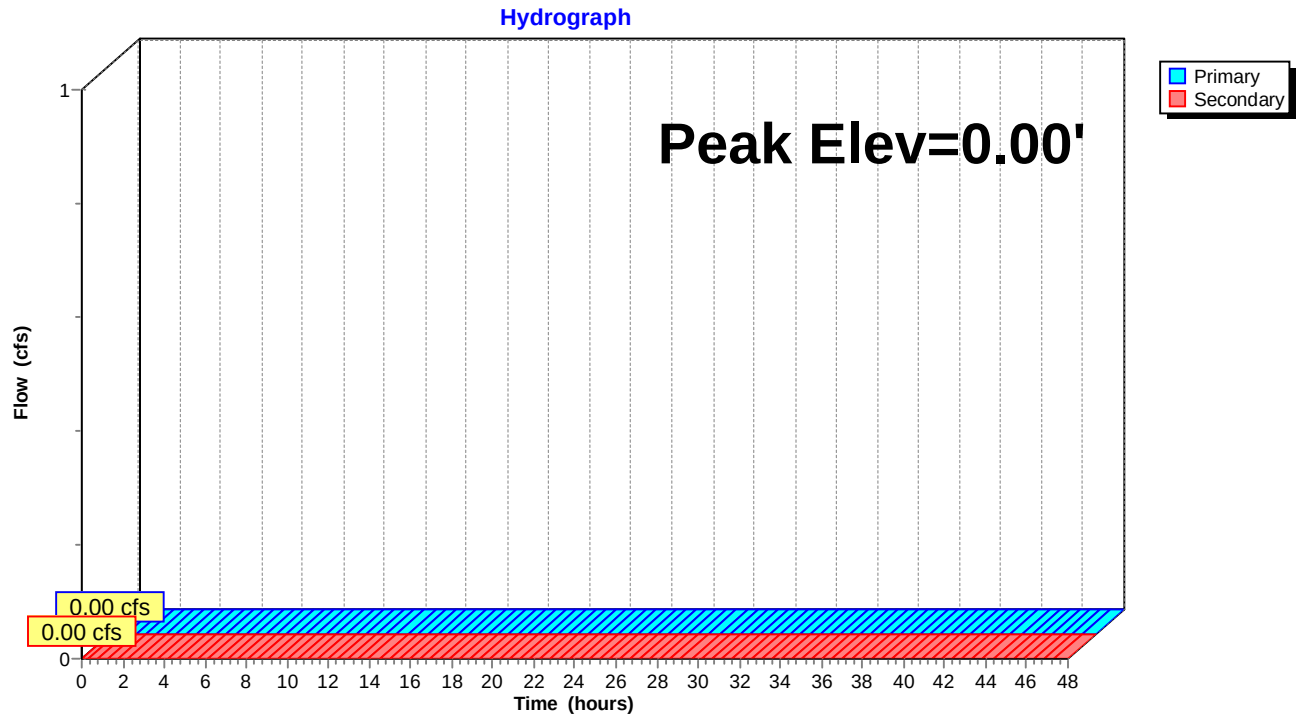
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 0.00' @ 0.00 hrs
Flood Elev= 284.53'
Plug-Flow detention time= (not calculated)
Center-of-Mass det. time= (not calculated)

Device	Routing	Invert	Outlet Devices
#1	Secondary	279.45'	**12.0" x 12.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 279.33' S= 0.0100 '/' Cc= 0.900 n= 0.009 PVC, smooth interior
#2	Primary	280.45'	**18.0" x 22.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 279.00' S= 0.0659 '/' Cc= 0.900 n= 0.009 PVC, smooth interior

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' TW=279.00' (Dynamic Tailwater)
└**2=Culvert** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' (Free Discharge)
└**1=Culvert** (Controls 0.00 cfs)

Pond E24: CB #E24



Pond E26: CB #E26

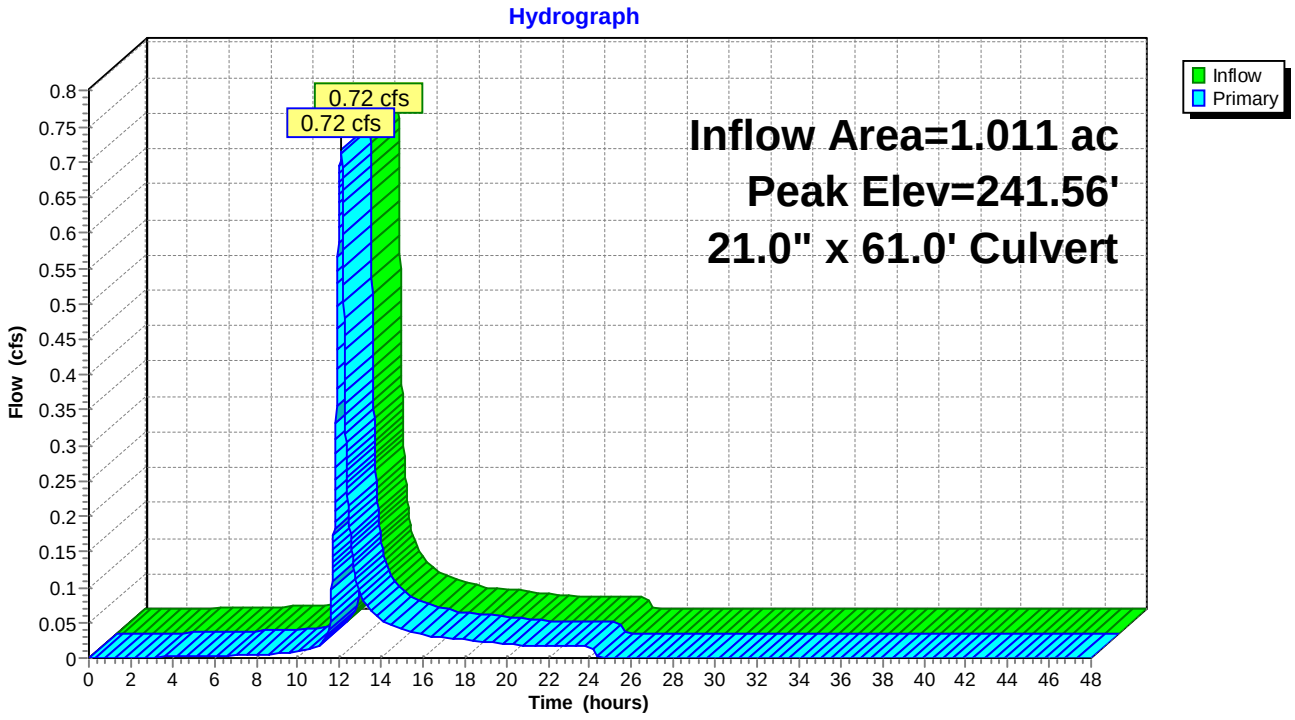
Inflow Area = 1.011 ac, Inflow Depth = 0.79" for 1-year event
Inflow = 0.72 cfs @ 12.08 hrs, Volume= 0.066 af
Outflow = 0.72 cfs @ 12.08 hrs, Volume= 0.066 af, Atten= 0%, Lag= 0.0 min
Primary = 0.72 cfs @ 12.08 hrs, Volume= 0.066 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 241.56' @ 12.08 hrs
Flood Elev= 253.01'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	241.20'	**21.0" x 61.0' long Culvert** RCP, square edge headwall, Ke= 0.500 Outlet Invert= 238.10' S= 0.0508 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean

Primary OutFlow Max=0.72 cfs @ 12.08 hrs HW=241.56' TW=237.96' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.72 cfs @ 2.0 fps)

Pond E26: CB #E26



Pond P10: CB #P10

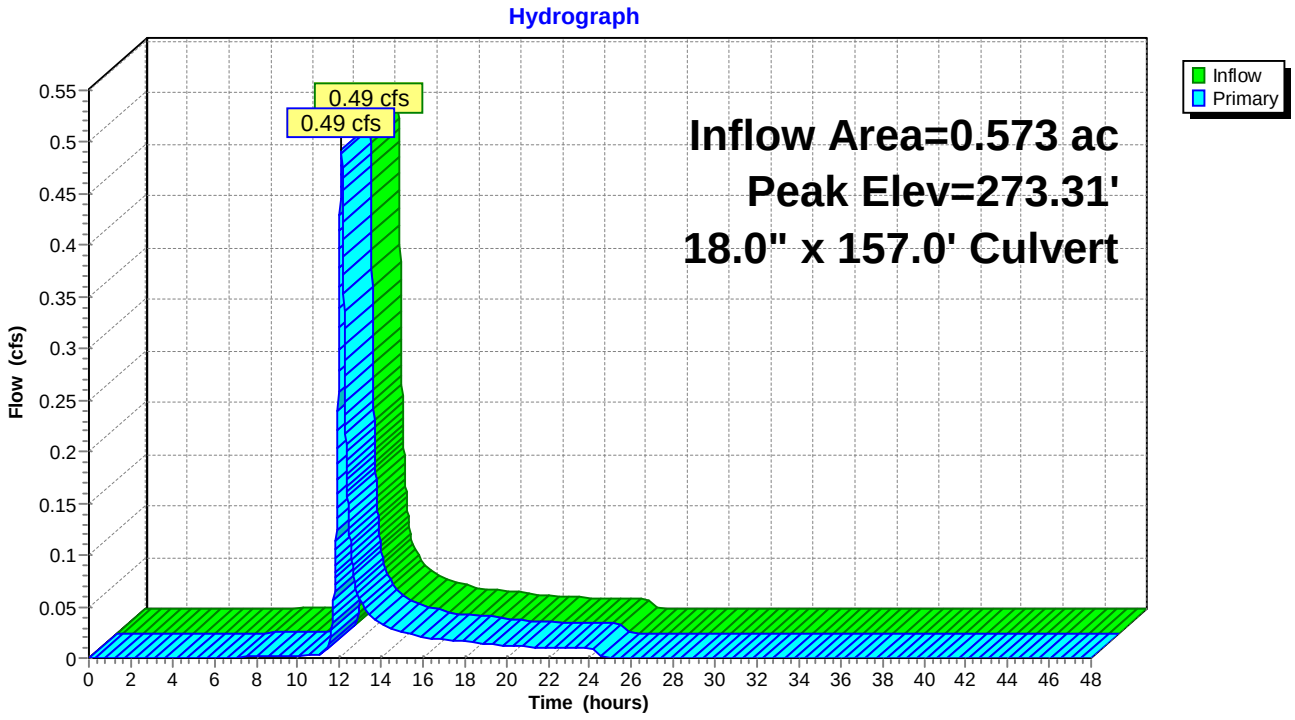
Inflow Area = 0.573 ac, Inflow Depth = 0.80" for 1-year event
Inflow = 0.49 cfs @ 12.10 hrs, Volume= 0.038 af
Outflow = 0.49 cfs @ 12.10 hrs, Volume= 0.038 af, Atten= 0%, Lag= 0.0 min
Primary = 0.49 cfs @ 12.10 hrs, Volume= 0.038 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 273.31' @ 12.10 hrs
Flood Elev= 278.36'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	273.00'	**18.0" x 157.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 270.96' S= 0.0130 '/' Cc= 0.900 n= 0.009 PVC, smooth interior

Primary OutFlow Max=0.49 cfs @ 12.10 hrs HW=273.31' TW=271.27' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.49 cfs @ 1.9 fps)

Pond P10: CB #P10



Pond P11: CB #P11

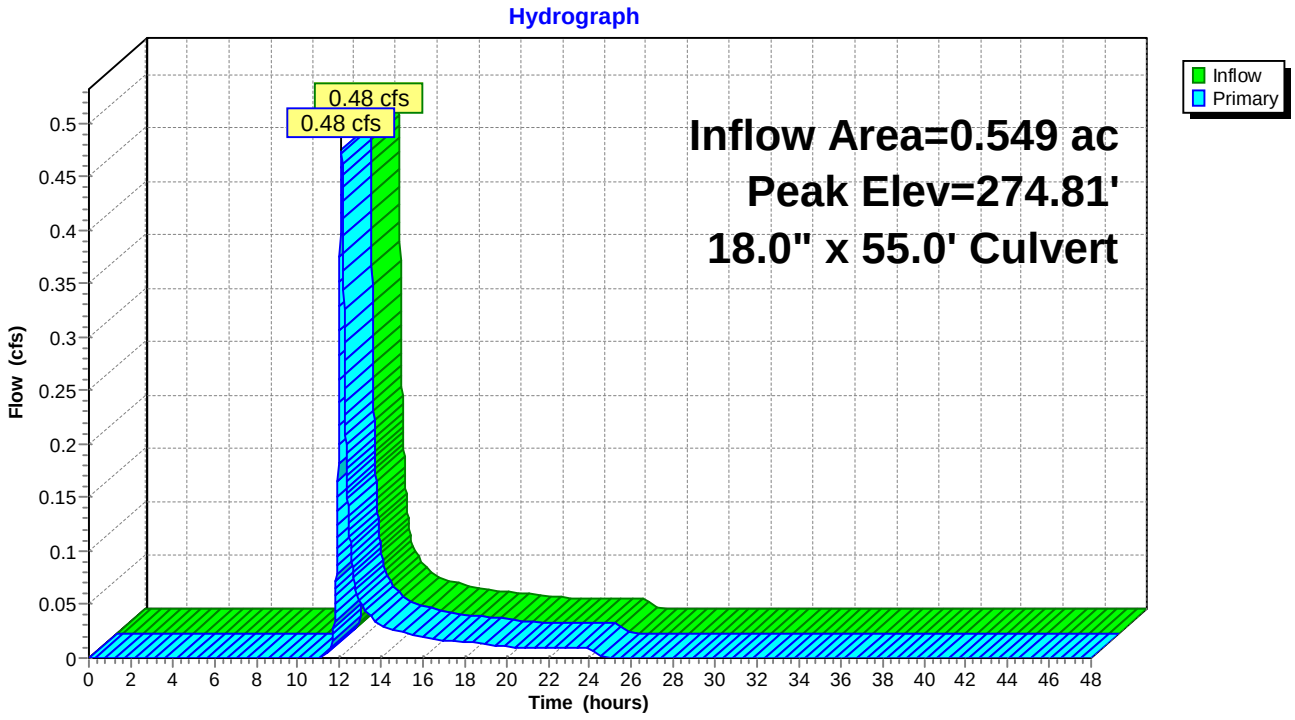
Inflow Area = 0.549 ac, Inflow Depth = 0.74" for 1-year event
Inflow = 0.48 cfs @ 12.10 hrs, Volume= 0.034 af
Outflow = 0.48 cfs @ 12.10 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.0 min
Primary = 0.48 cfs @ 12.10 hrs, Volume= 0.034 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 274.81' @ 12.10 hrs
Flood Elev= 279.51'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (870.5 - 870.5)

Device	Routing	Invert	Outlet Devices
#1	Primary	274.51'	**18.0" x 55.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 268.85' S= 0.1029 '/' Cc= 0.900 n= 0.009 PVC, smooth interior

Primary OutFlow Max=0.48 cfs @ 12.10 hrs HW=274.81' TW=273.31' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.48 cfs @ 1.9 fps)

Pond P11: CB #P11



Pond P15: CB #P15

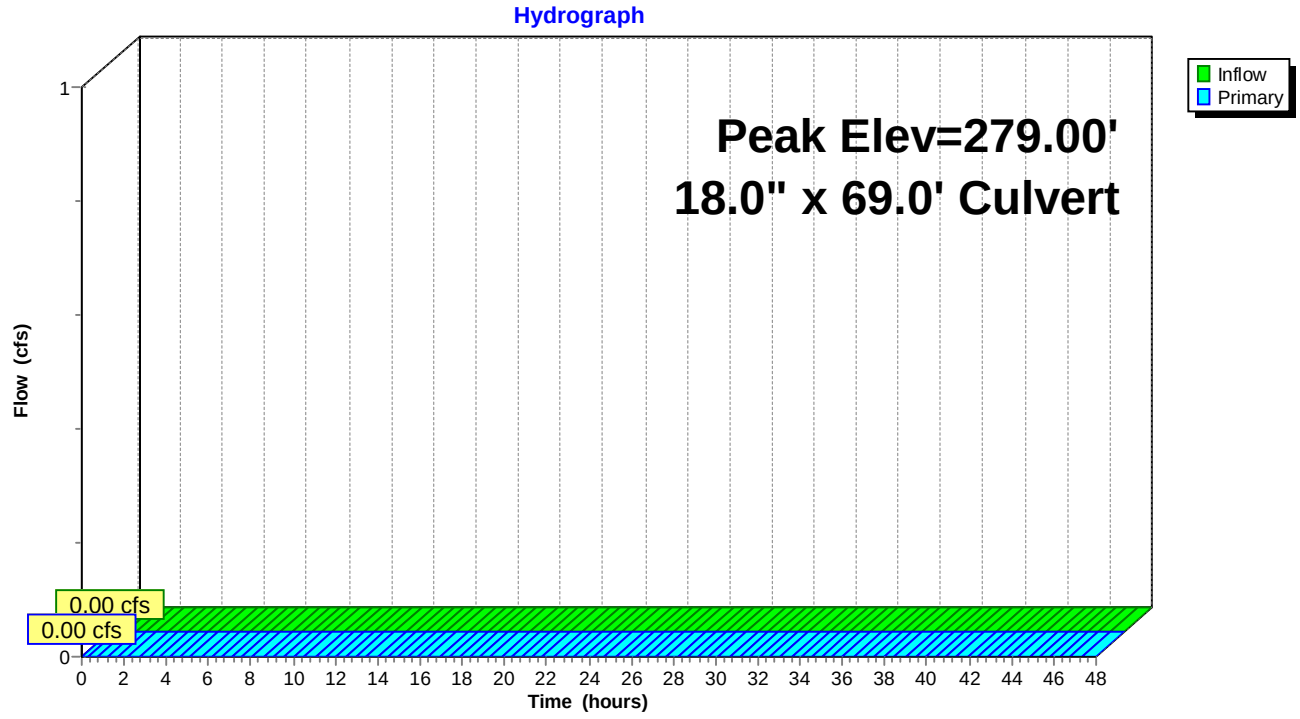
Inflow	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af
Outflow	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af, Atten= 0%, Lag= 0.0 min
Primary	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 279.00' @ 0.00 hrs
Flood Elev= 284.46'
Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	279.00'	**18.0" x 69.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 274.51' S= 0.0651 '/' Cc= 0.900 n= 0.009 PVC, smooth interior

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=279.00' TW=274.51' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Pond P15: CB #P15



Pond P3: CB #P3

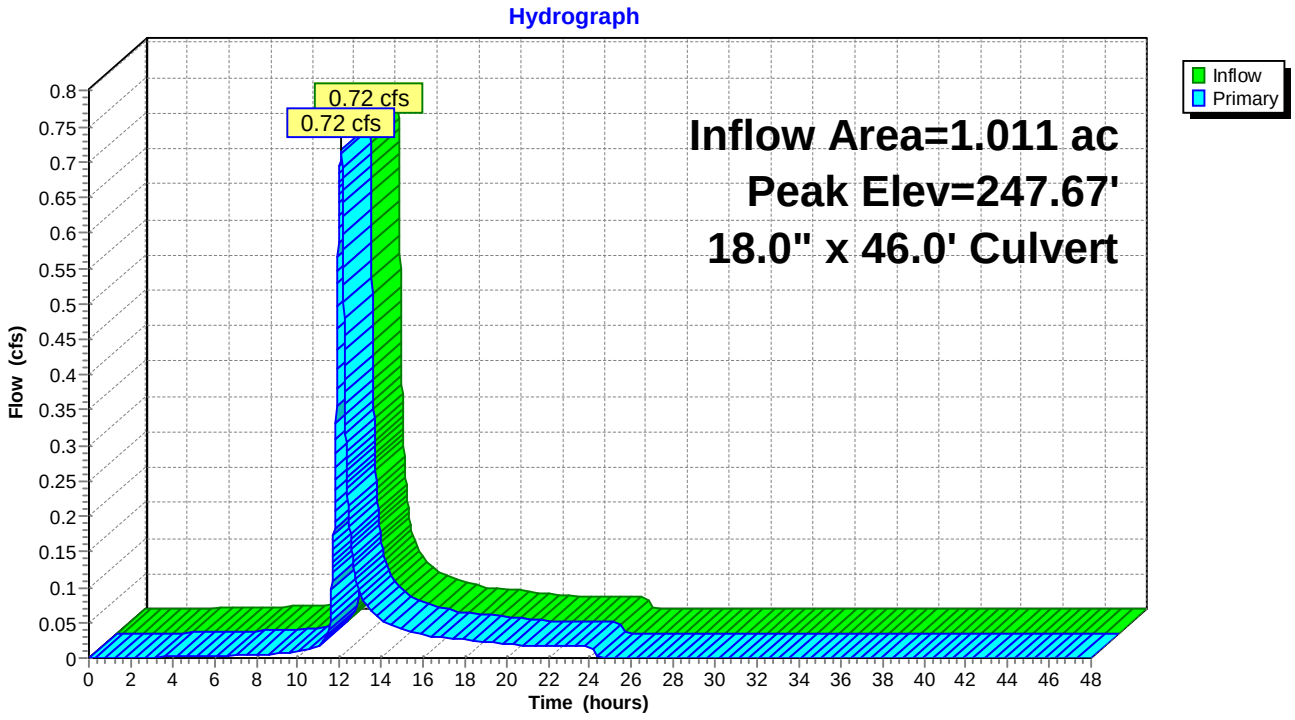
Inflow Area = 1.011 ac, Inflow Depth = 0.79" for 1-year event
Inflow = 0.72 cfs @ 12.08 hrs, Volume= 0.066 af
Outflow = 0.72 cfs @ 12.08 hrs, Volume= 0.066 af, Atten= 0%, Lag= 0.0 min
Primary = 0.72 cfs @ 12.08 hrs, Volume= 0.066 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 247.67' @ 12.08 hrs
Flood Elev= 254.84'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	247.30'	**18.0" x 46.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 244.00' S= 0.0717 '/' Cc= 0.900 n= 0.009 PVC, smooth interior

Primary OutFlow Max=0.72 cfs @ 12.08 hrs HW=247.67' TW=241.56' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.72 cfs @ 2.1 fps)

Pond P3: CB #P3



Pond P4B: (new Pond)

[87] Warning: Oscillations may require Finer Routing or smaller dt

Inflow Area = 0.036 ac, Inflow Depth = 2.12" for 1-year event
Inflow = 0.12 cfs @ 11.96 hrs, Volume= 0.006 af
Outflow = 0.00 cfs @ 11.32 hrs, Volume= 0.006 af, Atten= 96%, Lag= 0.0 min
Discarded = 0.00 cfs @ 11.32 hrs, Volume= 0.006 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 262.94' @ 13.17 hrs Surf.Area= 105 sf Storage= 123 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 201.3 min (960.0 - 758.7)

Volume	Invert	Avail.Storage	Storage Description
#1	260.00'	325 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

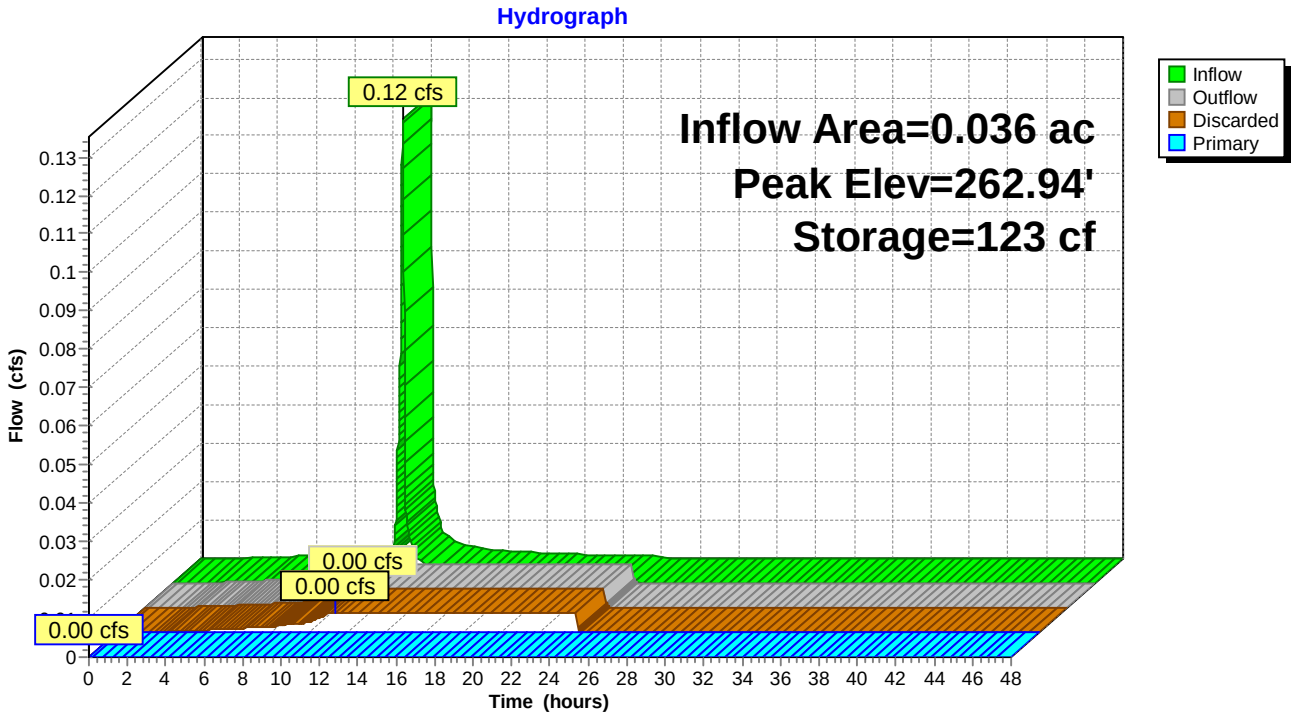
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
260.00	105	40.0	0	0
263.00	105	40.0	126	126
263.01	105	100.0	1	127
264.00	294	100.0	198	325

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	263.50'	**3.0' long x 3.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50
			Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Discarded OutFlow Max=0.00 cfs @ 11.32 hrs HW=260.04' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=260.00' TW=257.00' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond P4B: (new Pond)



Pond P5: CB #P5

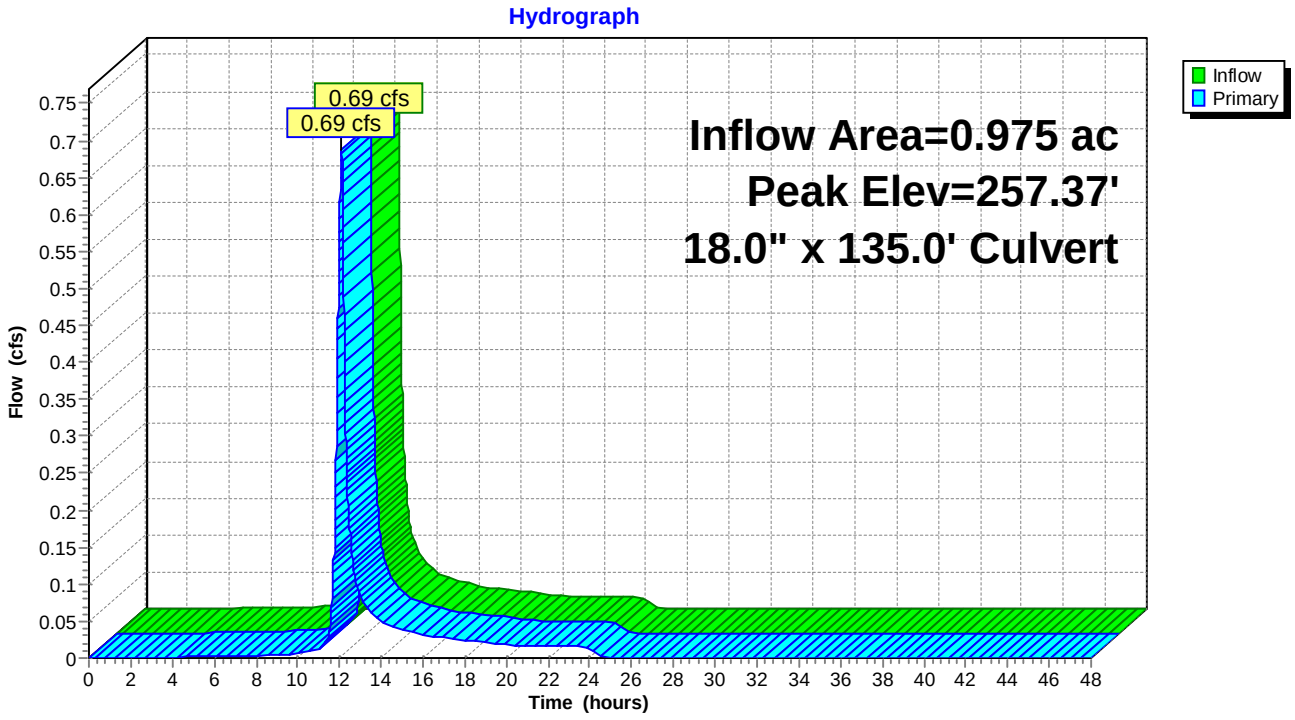
Inflow Area = 0.975 ac, Inflow Depth = 0.74" for 1-year event
Inflow = 0.69 cfs @ 12.09 hrs, Volume= 0.060 af
Outflow = 0.69 cfs @ 12.09 hrs, Volume= 0.060 af, Atten= 0%, Lag= 0.0 min
Primary = 0.69 cfs @ 12.09 hrs, Volume= 0.060 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 257.37' @ 12.09 hrs
Flood Elev= 262.78'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	257.00'	**18.0" x 135.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 247.30' S= 0.0719 '/' Cc= 0.900 n= 0.009 PVC, smooth interior

Primary OutFlow Max=0.69 cfs @ 12.09 hrs HW=257.37' TW=247.67' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.69 cfs @ 2.1 fps)

Pond P5: CB #P5



Pond P7: CB #P7

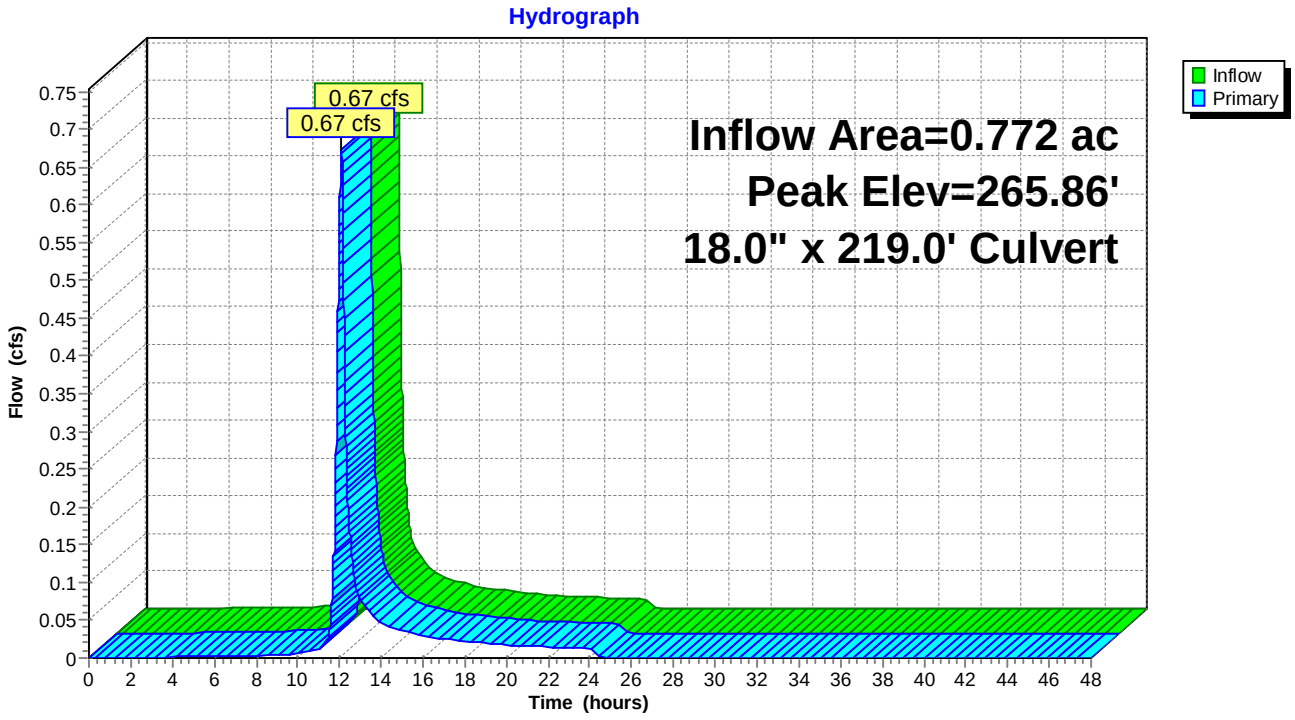
Inflow Area = 0.772 ac, Inflow Depth = 0.89" for 1-year event
Inflow = 0.67 cfs @ 12.09 hrs, Volume= 0.057 af
Outflow = 0.67 cfs @ 12.09 hrs, Volume= 0.057 af, Atten= 0%, Lag= 0.0 min
Primary = 0.67 cfs @ 12.09 hrs, Volume= 0.057 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 265.86' @ 12.09 hrs
Flood Elev= 271.05'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	265.50'	**18.0" x 219.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 257.00' S= 0.0388 '/' Cc= 0.900 n= 0.009 PVC, smooth interior

Primary OutFlow Max=0.67 cfs @ 12.09 hrs HW=265.86' TW=257.37' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.67 cfs @ 2.0 fps)

Pond P7: CB #P7



Pond P8: CB #P8

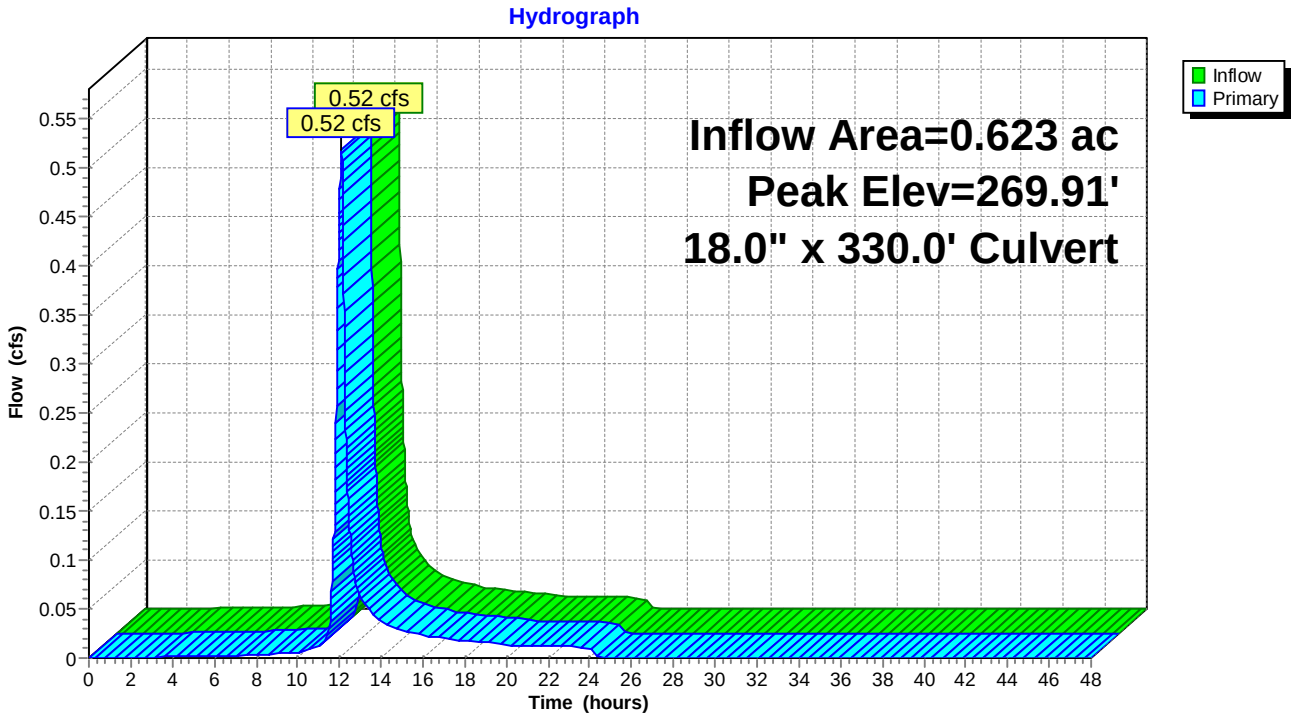
Inflow Area = 0.623 ac, Inflow Depth = 0.90" for 1-year event
Inflow = 0.52 cfs @ 12.08 hrs, Volume= 0.047 af
Outflow = 0.52 cfs @ 12.08 hrs, Volume= 0.047 af, Atten= 0%, Lag= 0.0 min
Primary = 0.52 cfs @ 12.08 hrs, Volume= 0.047 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 269.91' @ 12.08 hrs
Flood Elev= 274.26'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	269.59'	**18.0" x 330.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 265.50' S= 0.0124 '/' Cc= 0.900 n= 0.009 PVC, smooth interior

Primary OutFlow Max=0.52 cfs @ 12.08 hrs HW=269.91' TW=265.86' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.52 cfs @ 1.9 fps)

Pond P8: CB #P8



Pond P9: CB #P9

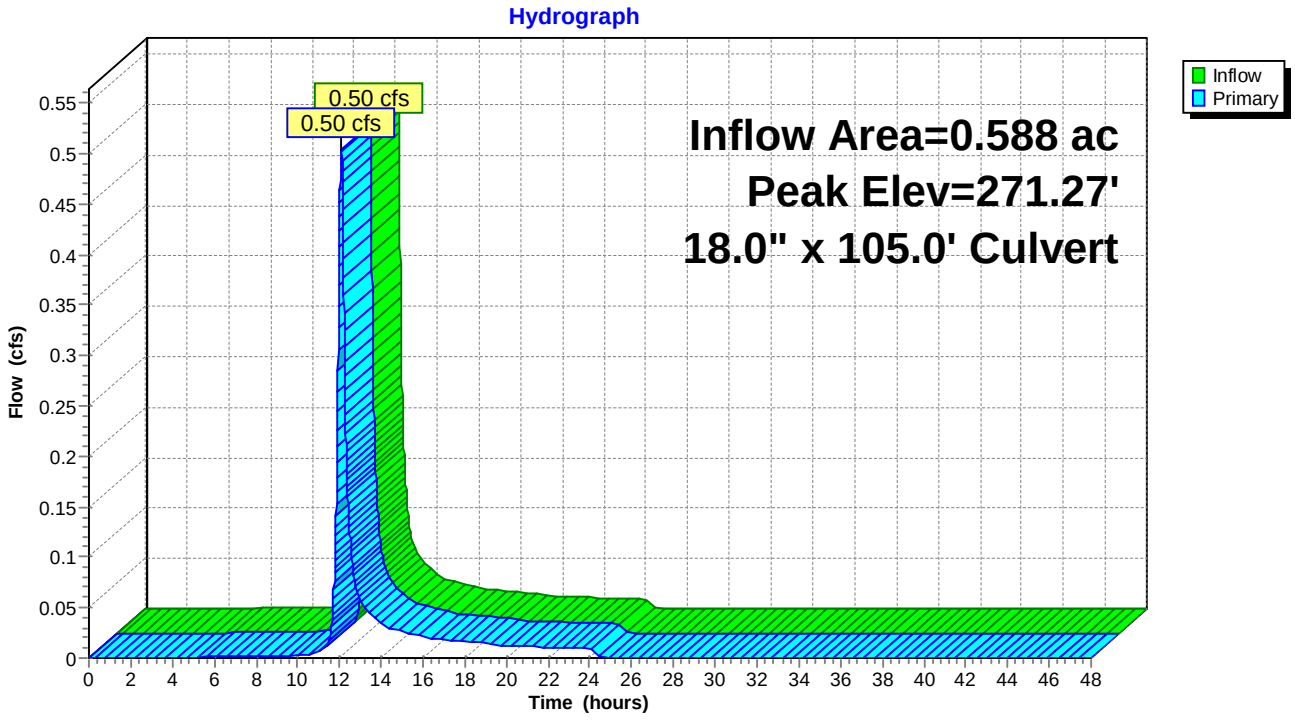
Inflow Area = 0.588 ac, Inflow Depth = 0.83" for 1-year event
Inflow = 0.50 cfs @ 12.08 hrs, Volume= 0.041 af
Outflow = 0.50 cfs @ 12.08 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.0 min
Primary = 0.50 cfs @ 12.08 hrs, Volume= 0.041 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 271.27' @ 12.08 hrs
Flood Elev= 275.89'
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Device	Routing	Invert	Outlet Devices
#1	Primary	270.96'	**18.0" x 105.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 269.59' S= 0.0130 '/' Cc= 0.900 n= 0.009 PVC, smooth interior

Primary OutFlow Max=0.50 cfs @ 12.08 hrs HW=271.27' TW=269.91' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.50 cfs @ 1.9 fps)

Pond P9: CB #P9



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1Inf: (new Subcat) Runoff Area=1,612 sf Runoff Depth=2.47"
Tc=5.0 min CN=98 Runoff=0.15 cfs 0.008 af

Subcatchment 2Inf: (new Subcat) Runoff Area=7,076 sf Runoff Depth=2.47"
Tc=10.0 min CN=98 Runoff=0.54 cfs 0.033 af

Subcatchment 3Inf: (new Subcat) Runoff Area=2,207 sf Runoff Depth=2.47"
Tc=5.0 min CN=98 Runoff=0.20 cfs 0.010 af

Subcatchment 4Inf: (new Subcat) Runoff Area=2,275 sf Runoff Depth=2.47"
Tc=5.0 min CN=98 Runoff=0.20 cfs 0.011 af

Subcatchment 5Inf: (new Subcat) Runoff Area=2,838 sf Runoff Depth=2.47"
Tc=5.0 min CN=98 Runoff=0.26 cfs 0.013 af

Subcatchment Clot: C-Lot Parking Runoff Area=108,241 sf Runoff Depth=2.26"
Flow Length=600' Tc=5.8 min CN=96 Runoff=9.12 cfs 0.467 af

Subcatchment Dlot: D-Lot Parking Runoff Area=59,675 sf Runoff Depth=1.79"
Flow Length=300' Tc=15.7 min CN=91 Runoff=3.08 cfs 0.205 af

Subcatchment E8: CB #E8 Runoff Area=102,154 sf Runoff Depth=1.88"
Flow Length=600' Tc=18.2 min CN=92 Runoff=5.10 cfs 0.367 af

Subcatchment OC: Outside Curb Runoff Area=22,100 sf Runoff Depth=0.26"
Flow Length=1,200' Tc=22.2 min CN=61 Runoff=0.06 cfs 0.011 af

Subcatchment P10s: Pavement ot P10 Runoff Area=1,040 sf Runoff Depth=2.47"
Tc=5.0 min CN=98 Runoff=0.09 cfs 0.005 af

Subcatchment P12: Cross Road Runoff Area=23,935 sf Runoff Depth=0.97"
Flow Length=400' Tc=16.6 min CN=79 Runoff=0.64 cfs 0.045 af

Subcatchment P3s: Pavement to P3 Runoff Area=1,540 sf Runoff Depth=2.47"
Flow Length=300' Tc=5.0 min CN=98 Runoff=0.14 cfs 0.007 af

Subcatchment P4: CB #P4 Runoff Area=7,285 sf Runoff Depth=0.31"
Flow Length=300' Tc=15.7 min CN=63 Runoff=0.04 cfs 0.004 af

Subcatchment P4s: (new Subcat) Runoff Area=1,548 sf Runoff Depth=2.47"
Flow Length=185' Tc=5.0 min CN=98 Runoff=0.14 cfs 0.007 af

Subcatchment P6: CB #P4 Runoff Area=6,520 sf Runoff Depth=1.09"
Flow Length=300' Tc=15.7 min CN=81 Runoff=0.20 cfs 0.014 af

Subcatchment P8s: Pavement to P8 Runoff Area=1,500 sf Runoff Depth=2.47"
Tc=0.0 min CN=98 Runoff=0.16 cfs 0.007 af

Subcatchment P9s: Pavement to P9 Runoff Area=650 sf Runoff Depth=2.47"
Tc=5.0 min CN=98 Runoff=0.06 cfs 0.003 af

Reach Culv: (new Reach) Peak Depth=0.18' Max Vel=6.1 fps Inflow=1.00 cfs 0.096 af
D=30.0" n=0.009 L=30.0' S=0.0233 '/' Capacity=90.50 cfs Outflow=1.00 cfs 0.096 af

Pond 1T: (new Pond) Peak Elev=273.50' Storage=126 cf Inflow=0.15 cfs 0.008 af
Discarded=0.01 cfs 0.008 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.008 af

Pond 2T: (new Pond) Peak Elev=269.54' Storage=640 cf Inflow=0.54 cfs 0.033 af
Discarded=0.03 cfs 0.031 af Primary=0.06 cfs 0.002 af Outflow=0.08 cfs 0.033 af

Pond 3T: (new Pond) Peak Elev=263.31' Storage=238 cf Inflow=0.20 cfs 0.012 af
Discarded=0.02 cfs 0.012 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.012 af

Pond 4T: (new Pond) Peak Elev=258.70' Storage=183 cf Inflow=0.20 cfs 0.011 af
Discarded=0.01 cfs 0.011 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.011 af

Pond 5T: (new Pond) Peak Elev=253.27' Storage=246 cf Inflow=0.26 cfs 0.013 af
Discarded=0.01 cfs 0.013 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.013 af

Pond E12: CB #E12 Peak Elev=0.00'
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af

Pond E24: CB #E24 Peak Elev=0.00'
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af

Pond E26: CB #E26 Peak Elev=241.62' Inflow=0.97 cfs 0.085 af
21.0" x 61.0' Culvert Outflow=0.97 cfs 0.085 af

Pond P10: CB #P10 Peak Elev=273.36' Inflow=0.66 cfs 0.050 af
18.0" x 157.0' Culvert Outflow=0.66 cfs 0.050 af

Pond P11: CB #P11 Peak Elev=274.86' Inflow=0.64 cfs 0.045 af
18.0" x 55.0' Culvert Outflow=0.64 cfs 0.045 af

Pond P15: CB #P15 Peak Elev=279.00' Inflow=0.00 cfs 0.000 af
18.0" x 69.0' Culvert Outflow=0.00 cfs 0.000 af

Pond P3: CB #P3 Peak Elev=247.74' Inflow=0.97 cfs 0.085 af
18.0" x 46.0' Culvert Outflow=0.97 cfs 0.085 af

Pond P4B: (new Pond) Peak Elev=263.16' Storage=145 cf Inflow=0.14 cfs 0.007 af
Discarded=0.01 cfs 0.007 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.007 af

Pond P5: CB #P5 Peak Elev=257.43' Inflow=0.93 cfs 0.078 af
18.0" x 135.0' Culvert Outflow=0.93 cfs 0.078 af

Pond P7: CB #P7 Peak Elev=265.92' Inflow=0.90 cfs 0.073 af
18.0" x 219.0' Culvert Outflow=0.90 cfs 0.073 af

Pond P8: CB #P8 Peak Elev=269.96' Inflow=0.69 cfs 0.060 af
18.0" x 330.0' Culvert Outflow=0.69 cfs 0.060 af

Pond P9: CB #P9 Peak Elev=271.32' Inflow=0.68 cfs 0.053 af
18.0" x 105.0' Culvert Outflow=0.68 cfs 0.053 af

Total Runoff Area = 8.085 ac Runoff Volume = 1.218 af Average Runoff Depth = 1.81"

Subcatchment P8s: Pavement to P8 Runoff Area=1,500 sf Runoff Depth=3.67"
Tc=0.0 min CN=98 Runoff=0.23 cfs 0.011 af

Subcatchment P9s: Pavement to P9 Runoff Area=650 sf Runoff Depth=3.67"
Tc=5.0 min CN=98 Runoff=0.09 cfs 0.005 af

Reach Culv: (new Reach) Peak Depth=0.27' Max Vel=7.7 fps Inflow=2.19 cfs 0.190 af
D=30.0" n=0.009 L=30.0' S=0.0233 '/' Capacity=90.50 cfs Outflow=2.19 cfs 0.190 af

Pond 1T: (new Pond) Peak Elev=274.48' Storage=208 cf Inflow=0.21 cfs 0.011 af
Discarded=0.01 cfs 0.011 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.011 af

Pond 2T: (new Pond) Peak Elev=269.68' Storage=727 cf Inflow=0.79 cfs 0.050 af
Discarded=0.03 cfs 0.037 af Primary=0.56 cfs 0.012 af Outflow=0.59 cfs 0.050 af

Pond 3T: (new Pond) Peak Elev=265.05' Storage=647 cf Inflow=0.64 cfs 0.028 af
Discarded=0.03 cfs 0.025 af Primary=0.09 cfs 0.003 af Outflow=0.11 cfs 0.028 af

Pond 4T: (new Pond) Peak Elev=260.28' Storage=416 cf Inflow=0.30 cfs 0.019 af
Discarded=0.02 cfs 0.019 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.019 af

Pond 5T: (new Pond) Peak Elev=254.22' Storage=392 cf Inflow=0.37 cfs 0.020 af
Discarded=0.02 cfs 0.020 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.020 af

Pond E12: CB #E12 Peak Elev=0.00'
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af

Pond E24: CB #E24 Peak Elev=0.00'
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af

Pond E26: CB #E26 Peak Elev=241.80' Inflow=1.95 cfs 0.157 af
21.0" x 61.0' Culvert Outflow=1.95 cfs 0.157 af

Pond P10: CB #P10 Peak Elev=273.51' Inflow=1.30 cfs 0.093 af
18.0" x 157.0' Culvert Outflow=1.30 cfs 0.093 af

Pond P11: CB #P11 Peak Elev=275.02' Inflow=1.27 cfs 0.086 af
18.0" x 55.0' Culvert Outflow=1.27 cfs 0.086 af

Pond P15: CB #P15 Peak Elev=279.00' Inflow=0.00 cfs 0.000 af
18.0" x 69.0' Culvert Outflow=0.00 cfs 0.000 af

Pond P3: CB #P3 Peak Elev=247.94' Inflow=1.95 cfs 0.157 af
18.0" x 46.0' Culvert Outflow=1.95 cfs 0.157 af

Pond P4B: (new Pond) Peak Elev=263.52' Storage=205 cf Inflow=0.20 cfs 0.011 af
Discarded=0.01 cfs 0.010 af Primary=0.02 cfs 0.000 af Outflow=0.03 cfs 0.011 af

Pond P5: CB #P5 Peak Elev=257.63' Inflow=1.89 cfs 0.147 af
18.0" x 135.0' Culvert Outflow=1.89 cfs 0.147 af

Pond P7: CB #P7 Peak Elev=266.10' Inflow=1.74 cfs 0.134 af
18.0" x 219.0' Culvert Outflow=1.74 cfs 0.134 af

Pond P8: CB #P8 Peak Elev=270.11' Inflow=1.35 cfs 0.109 af
18.0" x 330.0' Culvert Outflow=1.35 cfs 0.109 af

Pond P9: CB #P9 Peak Elev=271.48' Inflow=1.33 cfs 0.098 af
18.0" x 105.0' Culvert Outflow=1.33 cfs 0.098 af

Total Runoff Area = 8.085 ac Runoff Volume = 1.949 af Average Runoff Depth = 2.89"

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1Inf: (new Subcat) Runoff Area=1,612 sf Runoff Depth=5.26"
Tc=5.0 min CN=98 Runoff=0.30 cfs 0.016 af

Subcatchment 2Inf: (new Subcat) Runoff Area=7,076 sf Runoff Depth=5.26"
Tc=10.0 min CN=98 Runoff=1.12 cfs 0.071 af

Subcatchment 3Inf: (new Subcat) Runoff Area=2,207 sf Runoff Depth=5.26"
Tc=5.0 min CN=98 Runoff=0.41 cfs 0.022 af

Subcatchment 4Inf: (new Subcat) Runoff Area=2,275 sf Runoff Depth=5.26"
Tc=5.0 min CN=98 Runoff=0.42 cfs 0.023 af

Subcatchment 5Inf: (new Subcat) Runoff Area=2,838 sf Runoff Depth=5.26"
Tc=5.0 min CN=98 Runoff=0.53 cfs 0.029 af

Subcatchment Clot: C-Lot Parking Runoff Area=108,241 sf Runoff Depth=5.03"
Flow Length=600' Tc=5.8 min CN=96 Runoff=19.36 cfs 1.042 af

Subcatchment Dlot: D-Lot Parking Runoff Area=59,675 sf Runoff Depth=4.47"
Flow Length=300' Tc=15.7 min CN=91 Runoff=7.35 cfs 0.510 af

Subcatchment E8: CB #E8 Runoff Area=102,154 sf Runoff Depth=4.58"
Flow Length=600' Tc=18.2 min CN=92 Runoff=11.89 cfs 0.895 af

Subcatchment OC: Outside Curb Runoff Area=22,100 sf Runoff Depth=1.68"
Flow Length=1,200' Tc=22.2 min CN=61 Runoff=0.83 cfs 0.071 af

Subcatchment P10s: Pavement ot P10 Runoff Area=1,040 sf Runoff Depth=5.26"
Tc=5.0 min CN=98 Runoff=0.19 cfs 0.010 af

Subcatchment P12: Cross Road Runoff Area=23,935 sf Runoff Depth=3.24"
Flow Length=400' Tc=16.6 min CN=79 Runoff=2.19 cfs 0.148 af

Subcatchment P3s: Pavement to P3 Runoff Area=1,540 sf Runoff Depth=5.26"
Flow Length=300' Tc=5.0 min CN=98 Runoff=0.29 cfs 0.016 af

Subcatchment P4: CB #P4 Runoff Area=7,285 sf Runoff Depth=1.83"
Flow Length=300' Tc=15.7 min CN=63 Runoff=0.38 cfs 0.026 af

Subcatchment P4s: (new Subcat) Runoff Area=1,548 sf Runoff Depth=5.26"
Flow Length=185' Tc=5.0 min CN=98 Runoff=0.29 cfs 0.016 af

Subcatchment P6: CB #P4 Runoff Area=6,520 sf Runoff Depth=3.43"
Flow Length=300' Tc=15.7 min CN=81 Runoff=0.65 cfs 0.043 af

Subcatchment P8s: Pavement to P8 Runoff Area=1,500 sf Runoff Depth=5.26"
Tc=0.0 min CN=98 Runoff=0.32 cfs 0.015 af

Subcatchment P9s: Pavement to P9 Runoff Area=650 sf Runoff Depth=5.26"
Tc=5.0 min CN=98 Runoff=0.12 cfs 0.007 af

Reach Culv: (new Reach) Peak Depth=0.38' Max Vel=9.5 fps Inflow=4.40 cfs 0.359 af
D=30.0" n=0.009 L=30.0' S=0.0233 '/' Capacity=90.50 cfs Outflow=4.40 cfs 0.359 af

Pond 1T: (new Pond) Peak Elev=275.26' Storage=317 cf Inflow=0.30 cfs 0.016 af
Discarded=0.01 cfs 0.016 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.016 af

Pond 2T: (new Pond) Peak Elev=269.77' Storage=785 cf Inflow=1.12 cfs 0.071 af
Discarded=0.03 cfs 0.043 af Primary=1.03 cfs 0.028 af Outflow=1.07 cfs 0.071 af

Pond 3T: (new Pond) Peak Elev=265.25' Storage=771 cf Inflow=1.29 cfs 0.050 af
Discarded=0.03 cfs 0.029 af Primary=0.91 cfs 0.021 af Outflow=0.95 cfs 0.050 af

Pond 4T: (new Pond) Peak Elev=260.72' Storage=619 cf Inflow=1.00 cfs 0.044 af
Discarded=0.03 cfs 0.025 af Primary=0.78 cfs 0.019 af Outflow=0.81 cfs 0.044 af

Pond 5T: (new Pond) Peak Elev=254.72' Storage=616 cf Inflow=0.86 cfs 0.048 af
Discarded=0.03 cfs 0.027 af Primary=0.74 cfs 0.021 af Outflow=0.77 cfs 0.048 af

Pond E12: CB #E12 Peak Elev=0.00'
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af

Pond E24: CB #E24 Peak Elev=0.00'
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af

Pond E26: CB #E26 Peak Elev=242.03' Inflow=3.52 cfs 0.268 af
21.0" x 61.0' Culvert Outflow=3.52 cfs 0.268 af

Pond P10: CB #P10 Peak Elev=273.69' Inflow=2.24 cfs 0.159 af
18.0" x 157.0' Culvert Outflow=2.24 cfs 0.159 af

Pond P11: CB #P11 Peak Elev=275.19' Inflow=2.19 cfs 0.148 af
18.0" x 55.0' Culvert Outflow=2.19 cfs 0.148 af

Pond P15: CB #P15 Peak Elev=279.00' Inflow=0.00 cfs 0.000 af
18.0" x 69.0' Culvert Outflow=0.00 cfs 0.000 af

Pond P3: CB #P3 Peak Elev=248.19' Inflow=3.52 cfs 0.268 af
18.0" x 46.0' Culvert Outflow=3.52 cfs 0.268 af

Pond P4B: (new Pond) Peak Elev=263.60' Storage=223 cf Inflow=0.29 cfs 0.016 af
Discarded=0.01 cfs 0.012 af Primary=0.25 cfs 0.003 af Outflow=0.26 cfs 0.016 af

Pond P5: CB #P5 Peak Elev=257.88' Inflow=3.43 cfs 0.252 af
18.0" x 135.0' Culvert Outflow=3.43 cfs 0.252 af

Pond P7: CB #P7 Peak Elev=266.30' Inflow=2.95 cfs 0.223 af
18.0" x 219.0' Culvert Outflow=2.95 cfs 0.223 af

Pond P8: CB #P8 Peak Elev=270.29' Inflow=2.30 cfs 0.180 af
18.0" x 330.0' Culvert Outflow=2.30 cfs 0.180 af

Pond P9: CB #P9 Peak Elev=271.65' Inflow=2.27 cfs 0.165 af
18.0" x 105.0' Culvert Outflow=2.27 cfs 0.165 af

Total Runoff Area = 8.085 ac Runoff Volume = 2.958 af Average Runoff Depth = 4.39"

Hudson Valley Community College
Existing and Proposed Peak Runoff
South Road and Cross Road South Improvements

Storm Frequency	Rain Intensity	Existing Flows (1.889 a)	Proposed Flows (1.885 a)
1-year	2.35"	1.13 cfs	0.72 cfs
2-year	2.70"	1.42 cfs	1.00 cfs
10-year	3.90"	2.57 cfs	2.19 cfs
100-year	5.50"	4.57 cfs	4.40 cfs

Hudson Valley Community College
Existing and Proposed Peak Runoff
Cross Road North Improvements

		Northerly Flow		Southwesterly Flow	
Storm Frequency	Rain Intensity	Existing Flows (1.77 a)	Proposed Flows (1.70 a)	Existing Flows (0.91 a)	Proposed Flows (0.98 a)
1-year	2.35"	2.33 cfs	2.32 cfs	0.70 cfs	0.53 cfs
2-year	2.70"	2.96 cfs	2.85 cfs	0.96 cfs	0.64 cfs
10-year	3.90"	5.22 cfs	4.75 cfs	2.02 cfs	1.03 cfs
100-year	5.50"	8.39 cfs	7.36 cfs	3.62 cfs	2.95 cfs

Project: HVCC
Date: 7-May-13
By: MDW

Cross Road South & South Road Area

Water Quality Volume for Redevelopment Sites
Calculation Worksheet

Input Data		Added Imp Area	Ex. Area	
Total Drainage Area (A) in Acres		0.41	1.85	acres
90% Rainfall Event (P) in inches		0.9	0.9	inches
Percent Impervious Cover (I) in Percent		100.0	31	%
Calculations				
Runoff Coefficient Rv = 0.05 + 0.009(I)		0.95	0.33	
Note: Minumum Rv = 0.2				
	WQv = P Rv A /12	**0.03**	**0.05**	**ac-ft**
	WQv = P Rv A /12	**1,272**	**1,988**	**cu-ft**
Percentage to treat		100	25	%
Volume to treat		**0.03**	**0.01**	**ac-ft**
Volume to treat		**1,272**	**497**	**cu-ft**
Total volume to treat			**0.04**	**ac-ft**
			1,770	**cu-ft**

INPUT DATA

Total drainage Area =	80,586	sf
	1.85	ac
Total Existing Impervious =	24,982	sf
Existing Impervious Percentage =	31%	
Total Proposed Impervious =	42,841	sf
Proposed Impervious Percentage =	53%	
Total Additional Impervious =	17,860	sf
	0.41	ac

Water Qualtiy Provided Calculation (Infiltration Trench)

Trench Width	3	Feet	
Trench Depth	3	Feet	
Total Trench Length	500	Feet	
% Voids	40%		
WQv Provided	=	1,800	**cu-ft.**

Project: HVCC
Date: 7-May-13
By: MDW

Cross Road North Area

Water Quality Volume for Redevelopment Sites
Calculation Worksheet

Input Data		Added Imp Area	Ex. Area	
Total Drainage Area (A) in Acres		0.01	2.68	acres
90% Rainfall Event (P) in inches		0.9	0.9	inches
Percent Impervious Cover (I) in Percent		100.0	51.8	%
Calculations				
Runoff Coefficient Rv = 0.05 + 0.009(I)		0.95	0.52	
Note: Minumum Rv = 0.2				
	WQv = P Rv A /12	**0.00**	**0.10**	**ac-ft**
	WQv = P Rv A /12	**31**	**4,520**	**cu-ft**
Percentage to treat		100	25	%
Volume to treat		**0.00**	**0.03**	**ac-ft**
Volume to treat		**31**	**1,130**	**cu-ft**
Total volume to treat			**0.03**	**ac-ft**
			1,161	**cu-ft**

INPUT DATA

Total drainage Area =	116,741	sf
	2.68	ac
Total Existing Impervious =	60,472	sf
Existing Impervious Percentage =	52%	
Total Proposed Impervious =	60,907	sf
Proposed Impervious Percentage =	52%	
Total Additional Impervious =	436	sf
	0.01	ac

Project:	**HVCC**
Date:	**5/7/2013**
By:	**MDW**
Checked	**RLW**
Rev.	

Required Water Quality / Runoff Reduction Volume Calculation Worksheet

Input Data **Area AA**

A = Total Drainage Area in Acres	0.52	acres
P = (see 90% Rainfall Event sheet)	0.9	inches
I = Percent Impervious Cover in Percent	43.40	%
S = (see HSG sheet)	0.40	
Aic = Total area of new impervious cover	0.22	acres

Water Quality Volume Calculations

$$WQ_v = \frac{(P)\,(R_v)(A)}{12}$$

Runoff Coefficient Rv = 0.05 + 0.009(I) 0.44

Note: Minumum Rv = 0.2

WQv / RRv Required **0.017 ac-ft**

743 cu-ft

Minimum Runoff Reduction Volume Calculations

Rv* = Runoff Coefficient = 0.05 + 0.009(100) 0.95

Ai = Impervious cover targeted for runoff reduction $Ai = (S)(Aic)$ 0.09 acres

$$RRv\ (\text{in acre-feet of storage}) = [(P)(Rv^*)(Ai)]\ /12$$

0.006 ac-ft

278 cu-ft

Provided Water Quality / Runoff Reduction Volume Calculation Worksheet (Bioretention / Dry Swale)

Per Table 3.5 of the New York State Stormwater Management Design Manual, Bioretention is a Standard SMP with RRv capacity. Bioretention SMP's within HSG C and D (with underdrain) provide RRv equivalent to 40% of the WQv provided by the practice.

WQv Provided = Af [(k) (hf + df) (tf)] / (df)

Where:

WQv= Water Quality Volume (cf) =	**780**	cu. ft.
Af = Surface area of filter bed (ft2) =	720	(ft2)
df = Filter bed depth (ft) =	3	(ft)
k = Coefficient of permeability of filter media (ft/day) =	0.5	(ft/day)
hf = Average height of water above filter bed (ft) =	0.25	(ft)
tf = Design filter bed drain time (days) =	2	(days)

Total WQv Provided **780 cu-ft**

0.018 ac-ft

Total RRv Provided **312 cu-ft**

0.007 ac-ft

Project:	HVCC
Date:	5/7/2013
By:	MDW
Checked	RLW
Rev.	

Required Water Quality / Runoff Reduction Volume Calculation Worksheet

Input Data **Area BB**

A = Total Drainage Area in Acres	0.33	acres
P = (see 90% Rainfall Event sheet)	0.9	inches
I = Percent Impervious Cover in Percent	27.00	%
S = (see HSG sheet)	0.40	
Aic = Total area of new impervious cover	0.09	acres

Water Quality Volume Calculations

$$WQ_v = \frac{(P)(R_v)(A)}{12}$$

Runoff Coefficient Rv = 0.05 + 0.009(I) 0.29

Note: Minumum Rv = 0.2

WQv / RRv Required **0.007 ac-ft**

318 cu-ft

Minimum Runoff Reduction Volume Calculations

Rv* = Runoff Coefficient = 0.05 + 0.009(100) 0.95

Ai = Impervious cover targeted for runoff reduction $Ai = (S)(Aic)$ 0.04 acres

$$RRv \text{ (in acre-feet of storage)} = [(P)(Rv^*)(Ai)] / 12$$

0.003 ac-ft

111 cu-ft

Provided Water Quality / Runoff Reduction Volume Calculation Worksheet (Bioretention / Dry Swale)

Per Table 3.5 of the New York State Stormwater Management Design Manual, Bioretention is a Standard SMP with RRv capacity. Bioretention SMP's within HSG C and D (with underdrain) provide RRv equivalent to 40% of the WQv provided by the practice.

WQv Provided = Af [(k) (hf + df) (tf)] / (df)

Where:

WQv= Water Quality Volume (cf) =	**347**	cu. ft.
Af = Surface area of filter bed (ft2) =	320	(ft2)
df = Filter bed depth (ft) =	3	(ft)
k = Coefficient of permeability of filter media (ft/day) =	0.5	(ft/day)
hf = Average height of water above filter bed (ft) =	0.25	(ft)
tf = Design filter bed drain time (days) =	2	(days)

Total WQv Provided **347 cu-ft**

0.008 ac-ft

Total RRv Provided **139 cu-ft**

0.003 ac-ft

Project:	HVCC
Date:	5/7/2013
By:	MDW
Checked	RLW
Rev.	

Required Water Quality / Runoff Reduction Volume Calculation Worksheet

Input Data **Area CC**

A = Total Drainage Area in Acres	0.28	acres
P = (see 90% Rainfall Event sheet)	0.9	inches
I = Percent Impervious Cover in Percent	33.00	%
S = (see HSG sheet)	0.40	
Aic = Total area of new impervious cover	0.09	acres

Water Quality Volume Calculations

$$WQ_v = \frac{(P)\,(R_v)(A)}{12}$$

Runoff Coefficient Rv = 0.05 + 0.009(I) — 0.35

Note: Minumum Rv = 0.2

WQv / RRv Required **0.007 ac-ft**

317 cu-ft

Minimum Runoff Reduction Volume Calculations

Rv* = Runoff Coefficient = 0.05 + 0.009(100) — 0.95

Ai = Impervious cover targeted for runoff reduction $Ai = (S)(Aic)$ — 0.04 acres

$$RRv\ (\text{in acre-feet of storage}) = [(P)(Rv^*)(Ai)]\ /12$$

0.003 ac-ft

115 cu-ft

Provided Water Quality / Runoff Reduction Volume Calculation Worksheet (Bioretention / Dry Swale)

Per Table 3.5 of the New York State Stormwater Management Design Manual, Bioretention is a Standard SMP with RRv capacity. Bioretention SMP's within HSG C and D (with underdrain) provide RRv equivalent to 40% of the WQv provided by the practice.

WQv Provided = Af [(k) (hf + df) (tf)] / (df)

Where:

WQv= Water Quality Volume (cf) =	**347**	cu. ft.
Af = Surface area of filter bed (ft2) =	320	(ft2)
df = Filter bed depth (ft) =	3	(ft)
k = Coefficient of permeability of filter media (ft/day) =	0.5	(ft/day)
hf = Average height of water above filter bed (ft) =	0.25	(ft)
tf = Design filter bed drain time (days) =	2	(days)

Total WQv Provided **347 cu-ft**

0.008 ac-ft

Total RRv Provided **139 cu-ft**

0.003 ac-ft

Project:	HVCC
Date:	5/7/2013
By:	MDW
Checked	RLW
Rev.	

Required Water Quality / Runoff Reduction Volume Calculation Worksheet

Input Data **Area DD**

A = Total Drainage Area in Acres	0.18	acres
P = (see 90% Rainfall Event sheet)	0.9	inches
I = Percent Impervious Cover in Percent	11.50	%
S = (see HSG sheet)	0.40	
Aic = Total area of new impervious cover	0.02	acres

Water Quality Volume Calculations

$$WQ_v = \frac{(P)\,(R_v)(A)}{12}$$

Runoff Coefficient Rv = 0.05 + 0.009(I) — 0.15

Note: Minumum Rv = 0.2

WQv / RRv Required	**0.002**	**ac-ft**
	90	**cu-ft**

Minimum Runoff Reduction Volume Calculations

Rv* = Runoff Coefficient = 0.05 + 0.009(100) — 0.95

Ai = Impervious cover targeted for runoff reduction $Ai = (S)(Aic)$ — 0.01 acres

$$RRv \text{ (in acre-feet of storage)} = [(P)(Rv^*)(Ai)]\ /12$$

	0.001	**ac-ft**
	25	**cu-ft**

Provided Water Quality / Runoff Reduction Volume Calculation Worksheet (Bioretention / Dry Swale)

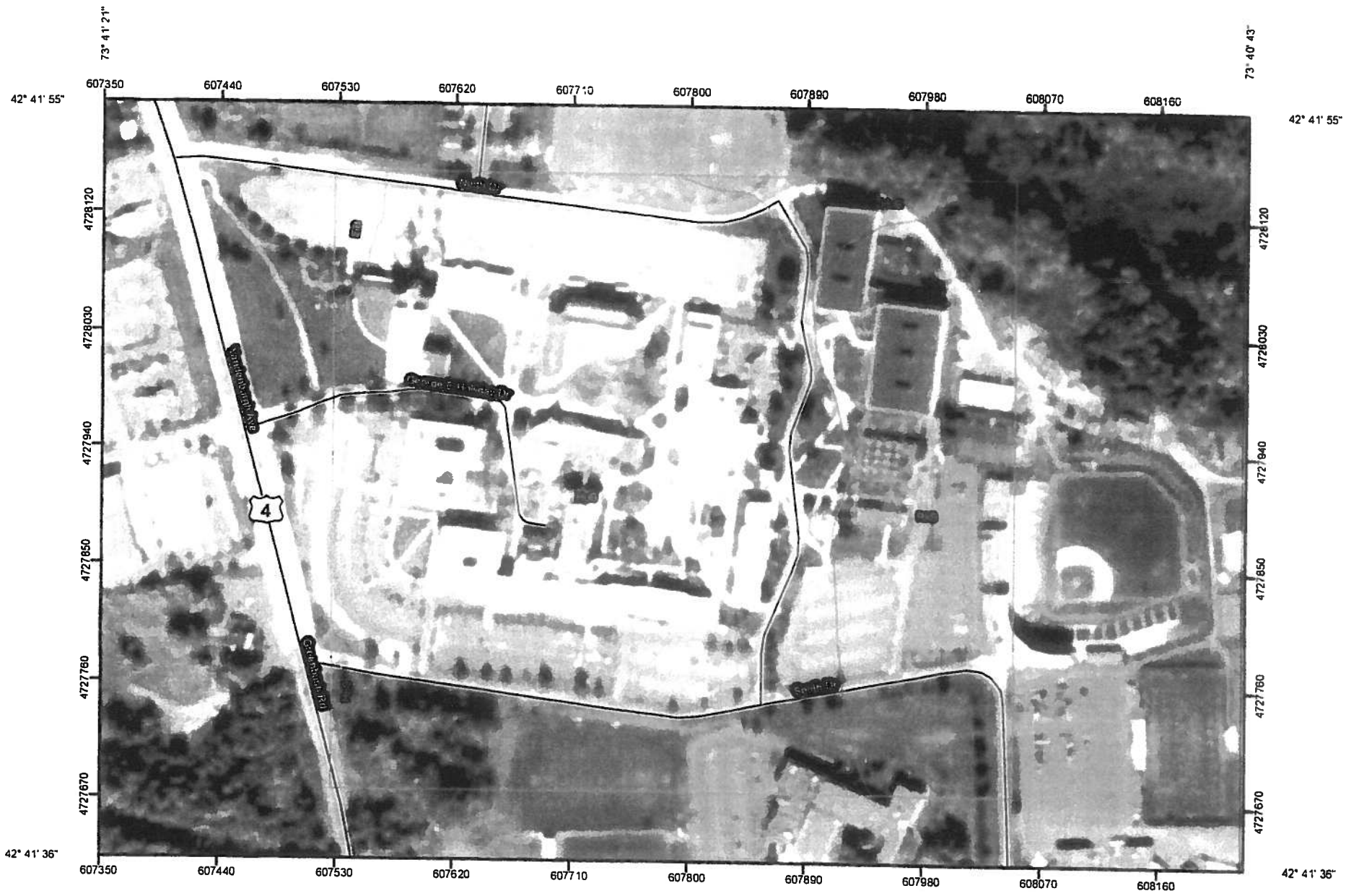
Per Table 3.5 of the New York State Stormwater Management Design Manual, Bioretention is a Standard SMP with RRv capacity. Bioretention SMP's within HSG C and D (with underdrain) provide RRv equivalent to 40% of the WQv provided by the practice.

WQv Provided = Af [(k) (hf + df) (tf)] / (df)

Where:

WQv= Water Quality Volume (cf) =	**108**	cu. ft.
Af = Surface area of filter bed (ft2) =	100	(ft2)
df = Filter bed depth (ft) =	3	(ft)
k = Coefficient of permeability of filter media (ft/day) =	0.5	(ft/day)
hf = Average height of water above filter bed (ft) =	0.25	(ft)
tf = Design filter bed drain time (days) =	2	(days)

Total WQv Provided	**108**	**cu-ft**
	0.002	**ac-ft**
Total RRv Provided	**43**	**cu-ft**
	0.001	**ac-ft**



USDA Natural Resources Conservation Service

Web Soil Survey
National Cooperative Soil Survey

MAP LEGEND

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

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh 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
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:4,160 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:15,840.

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 18N NAD83

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

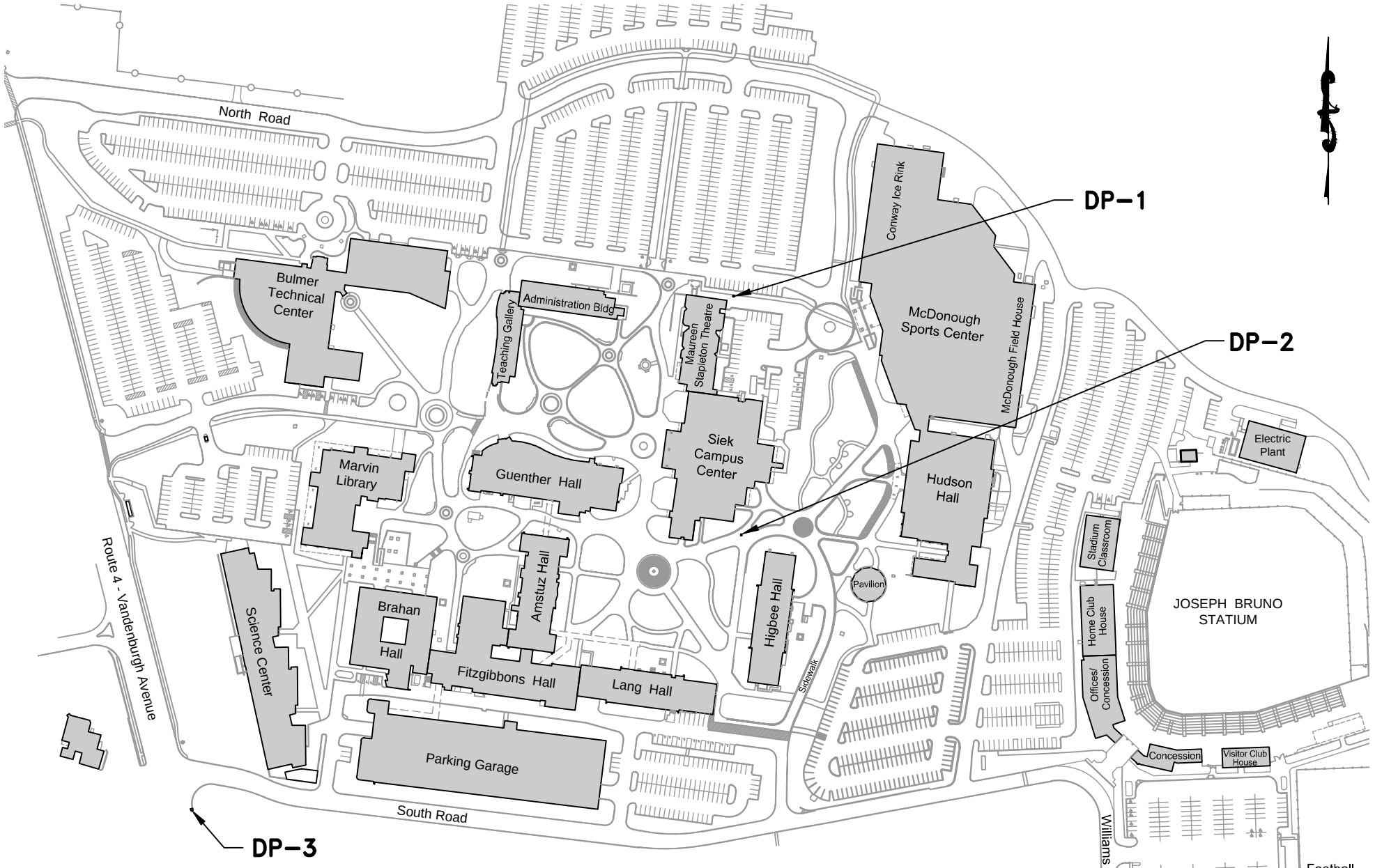
Soil Survey Area: Rensselaer County, New York
Survey Area Data: Version 7, Feb 5, 2010

Date(s) aerial images were photographed: 9/10/2006

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

Rensselaer County, New York (NY083)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
ElB	Elmridge very fine sandy loam, 3 to 8 percent slopes	0.8	1.2%
HuB	Hudson silt loam, 3 to 8 percent slopes	43.6	71.0%
HuE	Hudson silt loam, steep	3.0	4.9%
RkB	Riverhead fine sandy loam, 3 to 8 percent slopes	14.0	22.9%
Totals for Area of Interest		**61.3**	**100.0%**



STORM WATER DISCHARGE MAP

ERDMAN ANTHONY
11 Century Hill Drive, Suite 105
Latham, NY 12110
Telephone (518) 783-1205
Facsimile (518) 783-0374
www.erdmananthony.com

HUDSON VALLEY COMMUNITY COLLEGE

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:

5. 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, the deed of record has been modified to include a deed covenant that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

☐ For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, college, university), or government agency or authority, 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 2010)

Infiltration Trench Operation, Maintenance, and Management Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

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

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

Comments:

Actions to be Taken:

Open Channel Operation, Maintenance, and Management Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

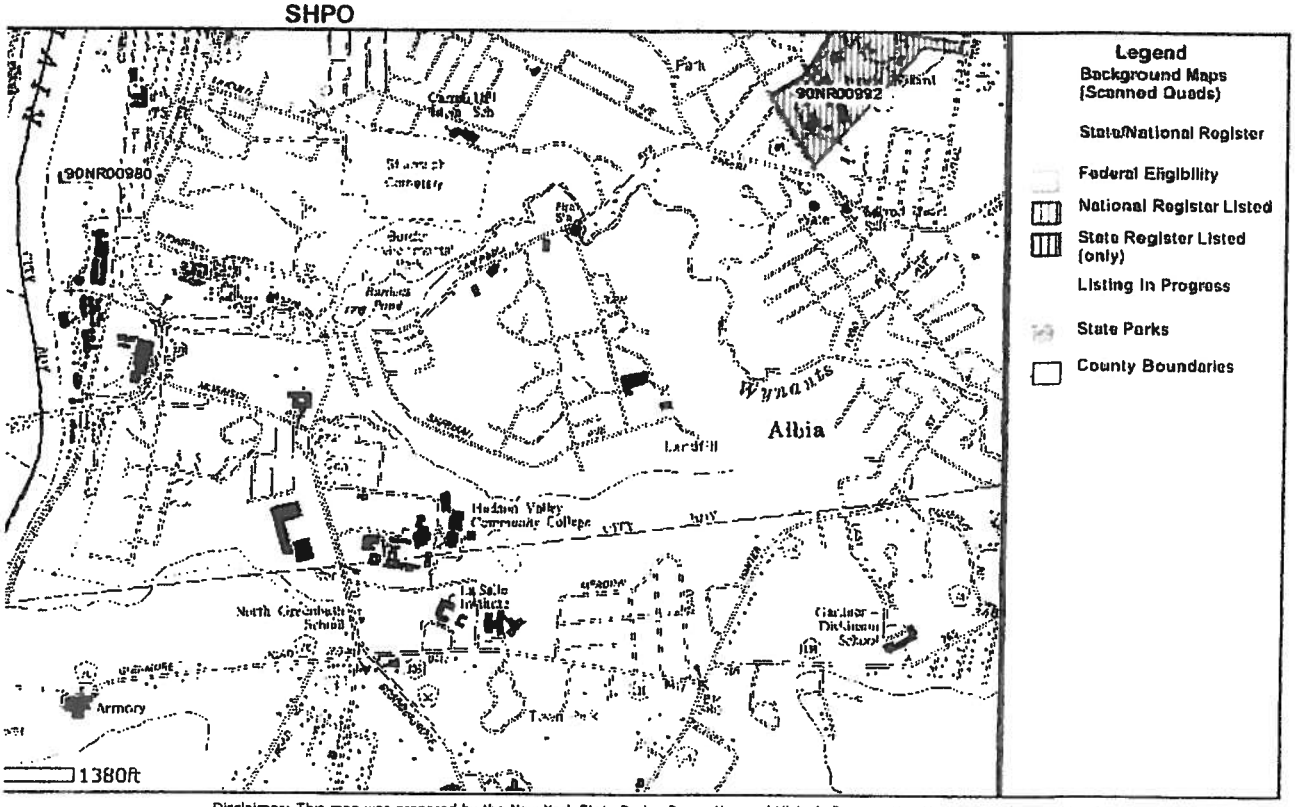
MAINTENANCE ITEM	SATISFACTORY/ UNSATISFACTORY	COMMENTS
1. Debris Cleanout (Monthly)		
Contributing areas clean of debris		
2. Check Dams or Energy Dissipators (Annual, After Major Storms)		
No evidence of flow going around structures		
No evidence of erosion at downstream toe		
Soil permeability		
Groundwater / bedrock		
3. Vegetation (Monthly)		
Mowing done when needed		
Minimum mowing depth not exceeded		
No evidence of erosion		
Fertilized per specification		
4. Dewatering (Monthly)		
Dewaters between storms		

MAINTENANCE ITEM	SATISFACTORY/ UNSATISFACTORY	COMMENTS
5. Sediment deposition (Annual)		
Clean of sediment		
6. Outlet/Overflow Spillway (Annual)		
Good condition, no need for repairs		
No evidence of erosion		

Comments:

Actions to be Taken:

SHPO



January 18, 2011

Disclaimer: This map was prepared by the New York State Parks, Recreation and Historic Preservation National Register Listing Internet Application. The information was compiled using the most current data available. It is deemed accurate, but is not guaranteed.