Stormwater Management Plan

Hingham Center for Active Living

EDM Studio, Inc.

45 South Main Street, 2nd Floor
Unionville, Connecticut 06085

Prepared by:

SLR International Corporation

67 Hunt Street, Suite 203-C, Agawam, Massachusetts, 01001

SLR Project No.: 141.21840.00004

February 3, 2026

Stormwater Management Plan

Hingham Center for Active Living

Prepared for:

EDM Studio, Inc.

45 South Main Street, 2nd Floor

Unionville, Connecticut 06085

This document has been prepared by SLR International Corporation (SLR). The material and data in this report were prepared under the supervision and direction of the undersigned.

Michael R. Gagnon, PE

Principal Civil Engineer

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Acronyms and Abbreviations

AP	Analysis Point
BVW	Bordering Vegetated Wetlands
E&S	Erosion and Sedimentation
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
GP	Construction Stormwater General Permit
HSG	Hydrologic Soil Group
MassDEP	Massachusetts Department of Environmental Protection
NHESP	Natural Heritage and Endangered Species Program
NRCS	Natural Resources Conservation Service
O&M	Operation and Maintenance
OO	Official & Open Space Zoning District
SLR	SLR International Corporation
SWPPP	Stormwater Pollution Prevention Plan
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USGS	United States Geological Survey

1.0 Project Overview

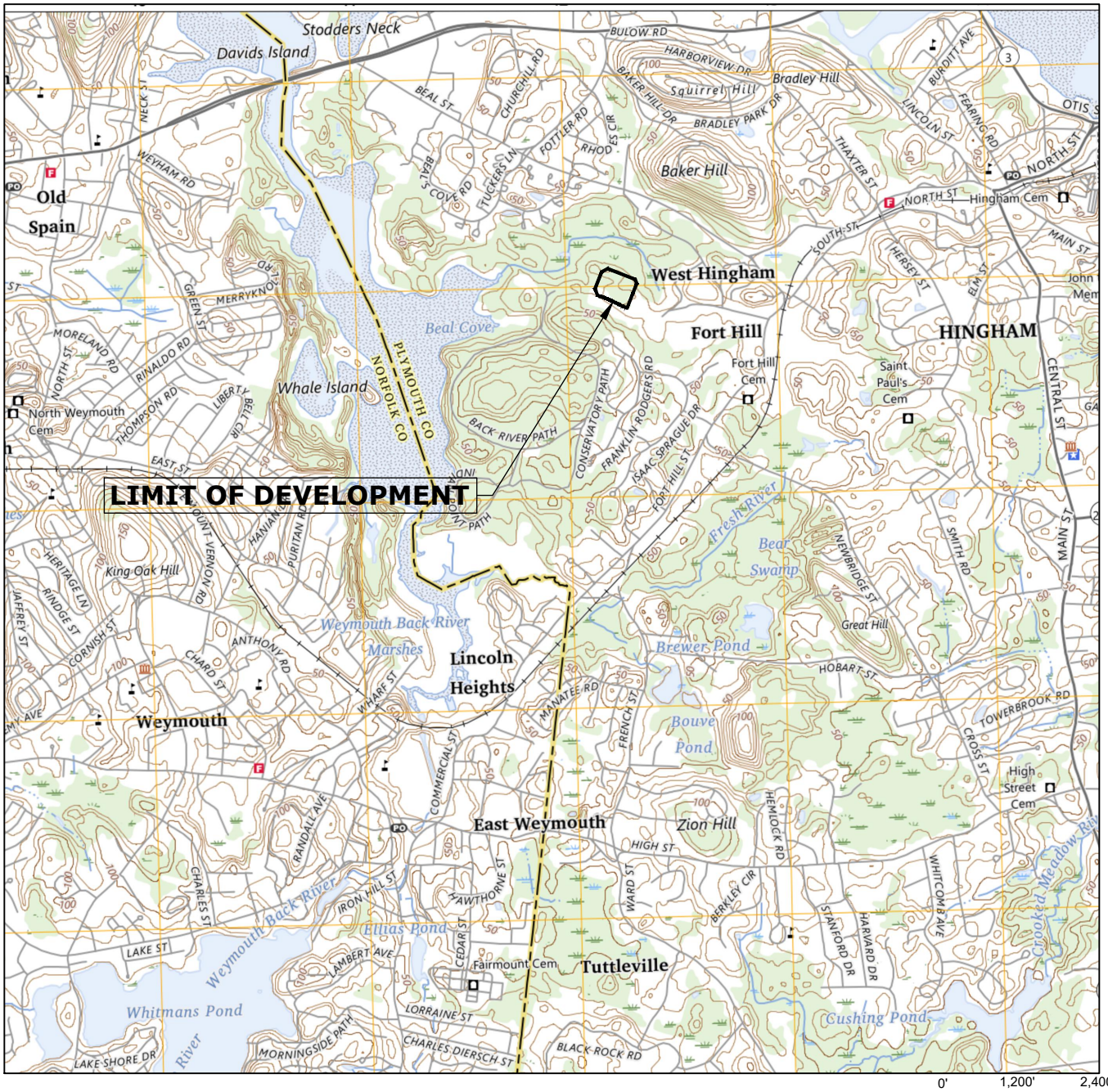
EDM Studio, Inc. (EDM) has retained SLR International Corporation (SLR) for the preparation of this Stormwater Management Plan for the Center for Active Living for the community of Hingham, Massachusetts. The project is located within a portion of Bare Cove Park, located north of Bare Cove Park Drive, owned by the town of Hingham. The parcel in which the proposed improvements are located is within the Official & Open Space (OO) Zoning District.

The project involves the construction of a 26,000 square foot (SF) one-story building and site improvements to accommodate a new home for the Center for Active Living. Site work will include construction of the new building, parking lot, sidewalks, drainage, utility tie-ins and general landscape improvements connecting the Center with the park it resides in. Stormwater improvements include the installation of stormwater infiltration basins, gravel trenches, a rain garden and a subsurface infiltration system to provide water quality treatment and peak-flow attenuation.

This project is considered a new development pursuant to the definitions in the *Massachusetts Stormwater Handbook.* As a new development, the proposed drainage improvements as listed above were designed to provide the following:

- Peak-flow attenuation through the construction of the subsurface infiltration system, rain garden, gravel trenches and infiltration basins to ensure that post-development off-site runoff does not exceed the pre-development runoff rates. The stormwater measures were designed to completely infiltrate the peak flows for the site for the 2, 10, 25, 50 and 100-year storm events as a result of drainage improvements.
- Enhance water quality measures and provide 80% total suspended solids (TSS) removal through the use of a rain garden, infiltration basins, the subsurface infiltration system and elevated outlet structures. Site drainage improvements will provide the required water quality volume due to the construction of approximately 3.07 acres of new impervious area.
- Enhance annual recharge to groundwater through the installation of a subsurface infiltration system, rain garden and infiltration basins.

The project site is shown on the United States Geological Survey (USGS) Location Map, Figure 1.



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67 HUNT STREET, SUITE 203-C
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SLRCONSULTING.COM

USGS QUADRANGLE MAP, QUAD NO. 139

HINGHAM CENTER FOR ACTIVE LIVING

BARE COVE PARK DRIVE
HINGHAM, MASSACHUSETTS

PROJECT PHASE:

REV: ---

DATE	December 9, 2025
SCALE	1"=2,400'
PROJ. NO.	21840.00004

DESIGNED	DRAWN	CHECKED
---	JLS	---

DRAWING NAME:

FIG. 1

2.0 Site Description

2.1 Existing Conditions

The existing 5.26-acre site can be accessed from Bare Cove Park Drive, south of the property. The project site is proposed in the northeast portion of the 484-acre Bare Cove Park, in parcel 77-0-1 which consists of an existing abandoned building, gravel area, mulch, dirt, wooded area, and pavement. An approximately 9,100 SF warehouse building resides in the northeast portion of the site. Freshwater forested bordering vegetated wetlands (BVW) were found east and north of the site limits. The area east of the site consists of the Bare Cove Fire Museum (45 Bare Cove Park Drive). The Bare Cove Park parcel and parcels within the vicinity of the site were historically developed for use as the Hingham Naval Ammunition Depot. Several old cart paths and roads and ground disturbances were observed west of the site limits. The site is surrounded by land included in the Bare Cove Park parcel on all sides.

Slopes are generally mild and consist of topographic high points to the north and south with a saddle centrally located on the project site. Existing drainage patterns show that runoff from the site drains overland from the central area and discharges in all directions along the project limit of development. The discharge off site drains to the wetland areas that lead to Nashoba Brook and ultimately discharges to the Weymouth Back River.

On July 7 to 11, 2025, a total of fifteen test borings were dug on the site. Test borings were dug to a depth ranging from 4 feet to 17 feet below the surface. The test borings indicated that the soils encountered in the explorations primarily consist of forest mat over dense sand and gravel deposits. No evidence of groundwater was found in any of the test borings.

On January 23, 2026, a total of six test pits were dug on the site. Test pits were dug to a depth ranging from 7 feet to 11.5 feet below the surface. The test pits indicated that the subsurface soils included light gray-brown fine to coarse sand or loamy sand and gravel. Test pits indicated that there was no evidence of groundwater onsite, and bedrock was found in TP-2, TP-3,and TP-4.

The test boring logs, test pit infiltration tests, and a map of their locations are included in the Appendix.

2.2 Environmental Resources

2.2.1 Wetland Resource Areas

On July 29,2025, SLR soil scientists completed a wetland delineation at the project site. Inland wetlands and watercourses within the project area were delineated in accordance with the Massachusetts Wetland Protection Act (310 CMR 10.00), Section 404 of the Clean Water Act, and the Town of Hingham Wetlands Protection Bylaw. Wetlands and watercourses in the study area were delineated using the methodology provided in the United States Army Corps of Engineers (USACE) Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region as well as wetland resource area definitions set forth in 310 CMR 10.00.

The following Massachusetts Department of Environmental Protection (MassDEP) Wetland Resource Areas were identified in the vicinity of the project:

- Bordering Vegetated Wetland (BVW) – The areas where groundwater discharges to the surface, or where surface water discharges to groundwater. BVWs were delineated along

the perennial watercourse and occupy land outside of the limit of development. The project will not impact any BVW.

2.2.2 Natural Heritage and Endangered Species (NHESP)

Based on Massachusetts Geographic Information System (*MassGIS)* data layer information and the Natural Heritage Atlas (15th Edition), no part of the project parcel is located within the mapped area of the Natural Heritage and Endangered Species Program (NHESP) Priority Habitats of Rare Species or Estimated Habitats of Rare Wildlife. No review by NHESP will be required since the project is outside of any mapped NHESP regulated areas (see Figure 2, Environmental Resources Map).

2.2.3 Federal Emergency Management Agency (FEMA)

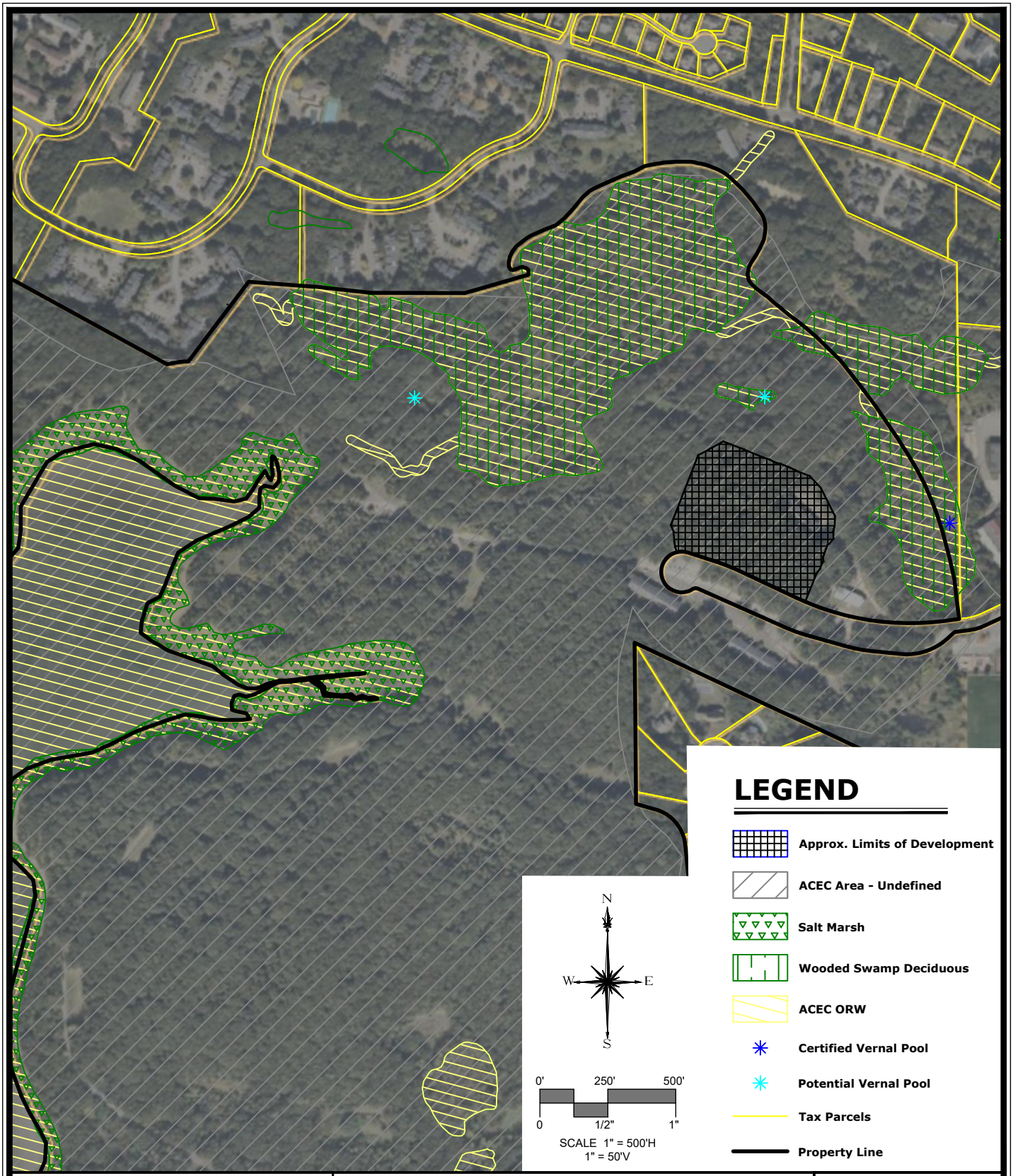
According to the most recent FEMA mapping, effective February 9, 2023, no special flood hazard areas occur onsite (see Figure 3, FEMA FIRMette).

2.2.4 Soil Survey

As part of the geotechnical engineering study, an examination of the soils was observed by a SLR geotechnical engineer. Geospatial data were accessed via the United States Department of Agriculture – Natural Resources Conservation Service (USDA-NRCS) web soil survey mapping. The soil survey mapping is included in the attached Geotechnical Engineering Report. The survey identifies the following soil mapping units with associated NRCS map number in the project area:

- Udorthents, 0 to 8 percent slopes (659B) – Moderately well to well drained
- Quonset sandy loam, 15 to 35 percent slopes (262C) – well to excessively drained

The test borings were drilled using a standard hollow stem auger technique and Standard Penetration Tests (SPTs) were performed in each test boring. Test pits were dug using a medium sized excavator and samples were taken using soil core cylinders. Falling Head Permeability tests were performed for the samples taken from each test pit. Field investigations generally confirmed the NRCS mapping of moderately well to well drained and well to excessively drained soils within the area mapped as soil unit 659B and 262C, respectively. Please note that SLR did not delineate the wetland boundaries beyond the influence of proposed work, nor were upland soil types fully delineated within the project parcels.



LEGEND

- Approx. Limits of Development
- ACEC Area - Undefined
- Salt Marsh
- Wooded Swamp Deciduous
- ACEC ORW
- Certified Vernal Pool
- Potential Vernal Pool
- Tax Parcels
- Property Line

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AGAWAM, MA
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SLRCONSULTING.COM

Environmental Resources Map

Hingham Center for Active Living

Bare Cove Park Drive
Hingham, Massachusetts

PROJECT PHASE: ---

REV: ---

DATE	December 9, 2025
SCALE	1"=400'
PROJ. NO.	21840.00004
DESIGNED	JLS
DRAWN	JLS
CHECKED	MRG

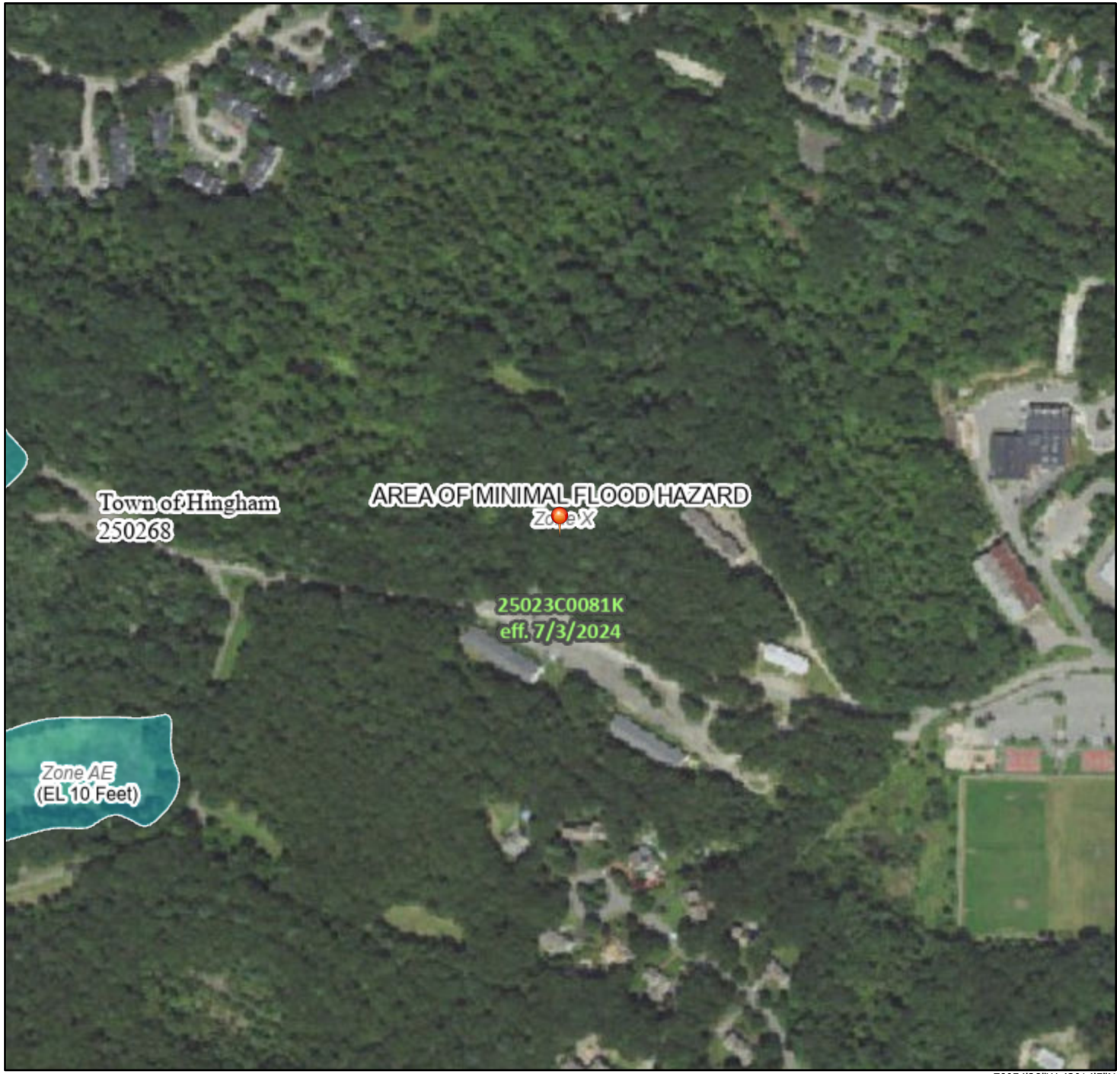
DRAWING NAME:

FIG. 2

National Flood Hazard Layer FIRMette

FEMA

70°55'5"W 42°14'31"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

70°54'28"W 42°14'5"N

Basemap Imagery Source: USGS National Map 2023

Legend

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

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

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

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 10/6/2025 at 7:07 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

3.0 Project Description

3.1 Proposed Conditions

3.1.1 General Project Improvements

Site Improvements include:

- Demolishing the existing building and replacing it with the proposed Center for Active Living facility with recreation areas.
- Construction of a new paved parking lot with paved access/egress drives.
- Installation of accessible sidewalks around the Center, and additional ADA measures throughout the site.
- Installation of site service utilities (water, sanitary, and storm)
- Installation of stormwater infiltration basins, a rain garden, gravel trenches, and a subsurface infiltration system to provide water quality improvements and peak-flow attenuation.
- Addition of landscaping elements

There will be an increase of approximately 3.07 acres of impervious area as a result of the new Center building and site development.

3.1.2 Stormwater Controls and Best Management Practices

Stormwater management Best Management Practices (BMPs) will consist of a rain garden, infiltration basins, a subsurface infiltration system, and gravel trenches to promote infiltration throughout the site. The deep sump catch basins, an isolator row and the hydrodynamic separators will provide water quality treatment. Runoff from the new impervious area will drain to the water quality treatment measures and discharge to a rain garden, infiltration basins or the subsurface infiltration system to provide peak-flow attenuation. The infiltration basins and the rain garden include outlet structures elevated to provide water quality volume and groundwater infiltration. All disturbed slopes will be stabilized with topsoil, seed, native plantings.

3.2 Erosion and Sedimentation Control

Erosion and sedimentation (E&S) controls will be installed and maintained throughout construction in accordance with local, state, and federal requirements, including implementation of a construction-phase Stormwater Pollution and Prevention Plan (SWPPP) (done by others) under the Environmental Protection Agency (EPA) Construction Stormwater General Permit (CGP). E&S controls will be installed and maintained as shown on the drawings to protect resource areas from the adjacent work. All disturbed slopes will be stabilized with topsoil and seed.

3.3 Construction Sequence and Schedule

Construction is anticipated to commence in summer 2026 and be completed by winter 2026. The general sequence of construction is as follows:

1. Stake out the limit of work. No disturbance is to take place beyond the limits of work shown on the drawings.

2. Install E&S controls as shown in the drawings.
3. Construct stormwater management features and controls.
4. Construct new Center for Active Living, parking lot, and additional site improvements.
5. Loam and seed all disturbed areas.
6. Remove E&S controls once all disturbed areas have been stabilized.

4.0 Stormwater Management

4.1 Existing Conditions

The site is currently comprised of wooded area with an abandoned building and a gravel entry in the northeastern corner of the site within Bare Cove Park. East of the project area includes the Bare Cove Firehouse Museum and a gravel drive that connects to the one onsite. No existing stormwater management is currently onsite. The existing drainage patterns consist of overland flow to drain outside of the limit of development and discharge to the wetlands to the north and east of the site.

4.2 Proposed Conditions

Existing site drainage patterns will generally be maintained under proposed conditions. Discharge from the new impervious area in the central and southern portion of the site will be directed to one of the deep sump catch basins that discharge to a hydrodynamic separator to receive adequate pre-treatment before discharging to the rain garden RG-1 or infiltration basin IB-1 to provide peak-flow attenuation. Runoff from the northwestern parking area will be directed to deep sump catch basins and discharge to the stormwater management basin SWB-4 catchment area with an elevated outlet that discharges to the subsurface infiltration system UG-1. Runoff from the lawn area and impervious amenities at the back of the proposed center building will be directed to stormwater management basins SWB-1, SWB-2 and SWB-3 with elevated outlets that also discharge to the subsurface infiltration system. The subsurface infiltration system includes an isolator row for pre-treatment, taking care of peak-flow attenuation and water quality measures for that portion of the site. Grassed areas along the north, west, and east of the site drain to the perimeter of the project limit of development and infiltrate entirely through the implementation of gravel trenches to provide peak-flow attenuation and prevent runoff offsite. The stormwater management for the site will heavily rely on infiltration and storage to achieve peak flow reduction for all storm intensities. Refer to the following information within the Report for a more detailed precondition and postcondition hydrologic analysis of the site.

4.3 Hydrologic Analysis

A hydrologic analysis was conducted to analyze predevelopment versus post-development peak-flow rates from the project site and to demonstrate peak-flow attenuation in accordance with Massachusetts Department of Environmental Protection (MassDEP) Stormwater Management Standards. In order to analyze the peak rates of runoff from the site, analysis points were chosen based on drainage patterns that drain toward similar points for existing and proposed conditions.

Watershed areas encompassing the project site were used to determine the peak-flow rates based on the topography and drainage patterns to develop the existing conditions hydrology model. Similar drainage areas were used for the proposed conditions model and were modified to reflect the proposed land cover, grading, and the stormwater management system. The total drainage area is similar under both existing and proposed conditions. A drainage area map for both existing and proposed conditions is included in the Appendix.

Peak flows were determined using the NRCS hydrologic method. The *HydroCAD* computer program was used to conduct watershed modeling. Schematic watershed diagrams are provided for the hydrologic model as shown in the Appendix of this report. The *HydroCAD* computer program forecasts the rate of surface water runoff and runoff volume based upon several factors.

The input data includes information on land use, hydrologic soil group, vegetative cover, contributing watershed area, time of concentration, rainfall data, storage volumes, and the hydraulic capacity of structures. The computer model predicts the amount of runoff as a function of time with the ability to include the attenuation effect due to natural storage effects. The input data for rainfall events with statistical recurrence frequencies of 2, 10, 25, 50, and 100 years was obtained from the Hydrometeorological Design Studies Center of the National Oceanic and Atmospheric Administration (NOAA) National Weather Service (NWS). It released updated precipitation frequency estimates for the northeastern states, including Massachusetts, on September 30, 2015. The precipitation frequency estimates are published in NOAA Atlas 14, Volume 10: *Precipitation-Frequency Atlas of the United States, Northeastern States*. The NOAA Atlas 14 precipitation frequency estimates supersede the estimates published in *NWS HYDRO-35* (1977), *Technical Paper No. 40* (1961), *Technical Paper No. 49* (1964), and *General Memorandum No. 14-04* "*Interim 24-hour Precipitation Rates*." For analysis in Plymouth County, Massachusetts, the Type III rainfall pattern with a 24-hour duration is appropriate.

Land use and coverage for the analysis under existing and proposed conditions were determined from project base mapping and review of orthophotos of the project area. Land use types used in the analysis included wooded area, pavement, building, gravel, mulch, dirt, brush, and open space. Soil types in the watershed were obtained from the NRCS Web Soil Survey for Plymouth County, Massachusetts. For this analysis, the study area was determined to contain Quonset sandy loam, 8 to 15 percent slopes with an HSG rating of “A”; and Udorthents, 0 to 8 percent slopes, gravelly with an HSG rating of “B”.

A sample from each of the six test pits were taken and a Falling Head Permeability test was performed for each sample to determine infiltration rates for the site. Infiltration rates used in the stormwater design for the site are the results of half the infiltration result rates for TP-1, TP-3, and TP-6. TP-2, TP-4 and TP-5 resulted in abnormally high rates; therefore, Rawls Rates were utilized in the design for these areas in order to remain conservative.

Peak rates of runoff were obtained from the hydrologic model results at the site analysis points (AP) as follows:

Table 4-1: Peak-Flow Rates at Analysis Point (cfs)

Storm Frequency (Years)	2-Year	10-Year	25-Year	50-Year	100-Year
Predevelopment	0.01	0.55	1.72	3.05	4.88
Post development	0.0	0.0	0.0	0.0	0.0
Change in Peak-Flow Rate	**100%**	**100%**	**100%**	**100%**	**100%**

4.4 Peak-Flow Attenuation

The results of the hydrologic analysis show a reduction in peak flows from the project site that can be anticipated at the Analysis Point for all storm events modeled, which meets the requirements of the Massachusetts Stormwater Management Standards for a new development project. The hydrologic design for the site was intended to have complete retention and infiltration of stormwater for the storm intensities modelled (2-, 10-, 25-, 50-, and 100-year storms) to prevent runoff discharge to the surrounding critical areas. Peak-flow attenuation is mainly attributed to the installation of a rain garden, infiltration basins and a subsurface infiltration system to attenuate runoff from the newly impervious area.

4.5 MassDEP Stormwater Management Guidelines

In accordance with the *Massachusetts Stormwater Handbook*, the project will meet the following standards to the maximum extent possible for a new development project:

Standard #1: Untreated Stormwater

No new untreated stormwater will discharge directly to adjacent wetland resource areas.

Standard #2: Post development Peak Discharge Rates

Existing site drainage patterns will be similar under proposed conditions. Proposed peak discharge rates offsite will be reduced as a result of the installation of a subsurface infiltration system, rain garden, infiltration basins, and gravel trenches. Refer to the attached Stormwater Report for a more detailed precondition and postcondition hydrologic analysis of the site.

Standard #3: Recharge to Groundwater

Use of infiltration basins, a rain garden and a subsurface infiltration system will promote recharge to groundwater. Refer to Appendix E for groundwater recharge computations.

Standard #4: 80 Percent Total Suspended Solids (TSS) Removal

Infiltration basins, a rain garden, a hydrodynamic separator, deep sump catch basins and an isolator row will be utilized to provide TSS removal on the site. The new impervious area associated with the parking lot will not be sanded or treated with de-icing agents during the winter months. Refer to Appendix F for TSS removal computations.

Standard #5: Higher Potential Pollutant Loads

There is no high potential pollutant loads within the project area.

Standard #6: Protection of Critical Areas

Bare Cove Park is located in an Area of Environmental Concern (ACEC), but no ACEC delineated area is shown within the limits of development or within delineated buffers of these areas for this project.

Standard #7: Redevelopment Projects

This project is not a redevelopment project according to the *Massachusetts Stormwater Handbook.*

Standard #8: Erosion and Sedimentation Controls

E&S controls will be installed and maintained for the duration of construction and/or until all disturbed areas have been stabilized. Controls will be installed and maintained in accordance with local, state, and federal requirements. The attached permitting drawings show the location and construction details of all S&E control measures including a narrative description of inspection and maintenance procedures.

Standard #9: Operation and Maintenance Plan

Refer to the attached Postconstruction Stormwater Management Operation and Maintenance Plan (under separate cover) for a description of postconstruction maintenance.

Standard #10: Illicit Discharges to Stormwater Management Systems

There are no known illicit discharges within the project site.

5.0 Water Quality Management

Water quality measures are included in the stormwater management design to maintain water quality both during construction and after completion of the project. Water quality Best Management Practices (BMPs) include two infiltration basins and a rain garden with elevated outlets, and a subsurface infiltration system to provide water quality volume. A combination of deep sump catch basins, elevated outlets, hydrodynamic separators and an isolator row prior to the infiltration basins, rain garden and subsurface infiltration system will promote removal of total suspended solids before infiltrating on the site. Fertilizer nutrient composition shall comply with the requirements of the 2012 Massachusetts *An Act Relative to the Regulation of Plant Nutrients.*

An Operation and Maintenance (O&M) Plan (under separate cover) for postconstruction maintenance of BMPs that describes the required frequency of inspections and maintenance procedures to sustain long-term functionality. Implementation of these measures will enhance protection of areas downgradient of the site. An E&S Control Plan is included in this report that details the measures to mitigate the short-term impacts of the development during construction.

6.0 Erosion and Sediment Control Plan

6.1 Erosion and Sediment Controls

An E&S Control Plan has been developed to mitigate the short-term impacts of the site improvements during construction. The E&S Control Plan includes descriptive specifications concerning land grading, topsoiling, temporary vegetative cover, permanent vegetative cover, vegetative cover selection and mulching, and erosion checks. Details have been provided for all erosion controls with corresponding labels on the E&S control site plan. In all cases, the E&S Control Plan shall be implemented in accordance with the *Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas* and the *Massachusetts Stormwater Handbook*.

6.2 Temporary Stabilization

Sediment controls shall be installed on the site as shown on the drawings. Compost filter tubes shall be tamped in place to ensure good contact with soil surface and shall be staked or leaned against supports as required. Where necessary, stakes shall be located as required to secure tubes in place up to 5 feet apart. Inlet protection shall be added at each catch basin to prevent sediment from entering the stormwater system. Prior to commencing any earthwork, a stabilized construction entrance shall be installed at the existing entrance into the site. This entrance shall be utilized as the exclusive construction entrance.

6.3 Permanent Stabilization

Disturbed areas of the project site where construction activities permanently cease shall be stabilized with permanent seed no later than 7 days after the last construction activity. The permanent seed mix shall be in accordance with the project specifications and plans. Construction and maintenance of erosion and siltation control measures are in accordance with the *Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas*.

6.4 Sediment Tracking

A stabilized construction entrance shall be installed and maintained as necessary to help reduce vehicular tracking of sediment onto adjacent streets. The entrance shall be cleaned of sediment and redressed when voids in the crushed stone become filled and vehicular tracking of sediment is occurring. Dump trucks hauling materials to and from the construction project area shall be covered with a tarpaulin to reduce dust. Any sediment and debris tracked from the work area along roadways adjacent to the project shall be immediately removed with a street sweeper or equivalent sweeping method. The project engineer and contracting officer will establish inspection and removal protocols at the beginning of construction to ensure all materials tracked onto the roadway are removed daily for the duration of the project.

6.5 Maintenance of Controls

E&S controls will be installed and maintained throughout the construction in accordance with local, state, and federal requirements.

The E&S control measures shall be constructed prior to clearing or grading of any portion of the project. Once construction activity ceases permanently in an area, that area shall be stabilized with permanent measures. Any accumulated sediment shall be disposed of on site in a location away from any wetlands and watercourses, in a stable vegetated area, and permanently

stabilized. Erosion control devices shall remain in place until disturbed areas are permanently stabilized.

If site inspections identify BMPs that are not operating effectively, maintenance must be performed as soon as possible and before the next storm event, whenever practicable, to maintain the continued effectiveness of stormwater controls. If existing BMPs need to be modified or if additional BMPs are necessary, implementation must be completed before the next storm event, whenever practicable. If implementation before the next storm event is impracticable, the situation must be documented, and alternative BMPs must be implemented as soon as possible.

7.0 Stormwater Construction Waste Management Plan

7.1 Contact Information/Responsible Parties

Operator(s):

The Town of Hingham Public Works
25 Bare Cove Park Drive
Hingham MA, 02043

Project Manager(s) or Site Supervisor(s):

To be determined.

7.2 Waste Management

Waste Materials – Foreign waste materials shall be collected and stored in a secured area until removal and disposal by a licensed solid waste management company. All trash and construction debris from the project area shall be disposed of in a portable container unit. No foreign waste materials shall be buried within the project area. All personnel shall be instructed regarding the correct procedure for waste disposal. Notices stating these practices shall be posted in the project trailer, and the operator will be responsible for seeing that these procedures are followed.

Hazardous Waste – All hazardous waste materials shall be disposed of in a manner specified by local or state regulations or by the manufacturer. Project personnel shall be instructed in these practices, and the operator shall be responsible for seeing that these practices are followed.

Sanitary Waste – Any sanitary waste from portable units shall be collected from the portable units by a licensed sanitary waste management contractor as required by MassDEP regulations.

7.3 Staff Training Program

7.3.1 Personnel should meet the minimum training requirements to conduct the respective operation and maintenance tasks.

7.3.2 Personnel should have the required training to effectively carry out the responsibilities of their positions.

7.4 Spill Prevention and Control Plan

The following are the material management practices that shall be used to reduce the risk of spills or other accidental exposure of materials and substances to stormwater runoff.

7.4.1 Good Housekeeping

The following good housekeeping practices shall be followed within project areas during construction:

- An effort shall be made to store only enough products required to do the job.
- All materials stored within project areas shall be stored in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure.
- Products shall be kept in their original containers with the original manufacturer's label.

- Substances shall not be mixed with one another unless recommended by the manufacturer.
- Whenever possible, all of a product shall be used up before disposing of the container.
- Manufacturers' recommendations for proper use and disposal shall be followed.
- The project superintendent shall inspect daily to ensure proper use and disposal of materials.

7.4.2 Hazardous Products

The following practices are used to reduce the risks associated with hazardous materials:

- Products shall be kept in original containers unless they are not resealable.
- Original labels and Material Safety Data Sheets shall be retained.
- If surplus product must be disposed of, manufacturers' or local-/state-recommended methods of proper disposal shall be followed.
- Material Safety Data Sheets for all hazardous products shall be available within the project area for the duration of construction.

7.4.3 Product-Specific Practices

The following product-specific practices shall be followed within the project areas:

Petroleum products – All project-related vehicles shall be monitored for leaks and receive regular preventative maintenance to reduce the chance of leakage. Petroleum products shall be stored in tightly sealed containers that are clearly labeled. Fuel tanks should not be stored within 100 feet of any watercourse or wetland.

Fertilizers – Fertilizers used shall be applied only in the minimum amounts recommended by the manufacturer. Once applied, fertilizers shall be worked into the soil to limit exposure to stormwater runoff and shall be stored in a covered or other contained area.

7.4.4 Spill Control Practices

The contractor will be responsible for preparing a project-area-specific spill control plan in accordance with local and MassDEP regulations. The plan should describe procedures and practices for controlling fuel and hydraulic fluid spills. A spill kit consisting of absorbent materials should be available on site in a predesignated location during all phases of construction. At a minimum, this plan should do the following:

- Reduce stormwater contact if there is a spill.
- Contain the spill.
- Stop the source of the spill.
- Dispose of contaminated material in accordance with manufacturer’s procedures and MassDEP regulations.
- Identify responsible and trained personnel.
- Ensure that the spill area is well ventilated.

7.5 Non-Stormwater Discharges

Allowable non-stormwater discharges that could occur during construction on this project include the following:

1. Discharges from firefighting activities

2. Water used to control, to the extent practicable, off-site vehicle tracking of sediments onto paved surfaces and the generation of dust
3. Uncontaminated air conditioning or compressor condensate
4. Uncontaminated groundwater or spring water
5. Foundation or footing drains where flows are not contaminated with process materials such as solvents
6. Uncontaminated excavation dewatering
7. Landscape irrigation

No other stormwater discharges are expected to exit the project area during construction.

Appendix A Watershed Maps

Stormwater Management Plan

Hingham Center for Active Living

EDM Studio, Inc.

SLR Project No.: 141.21840.00004

February 3, 2026

LEGEND

- WATERSHED BOUNDARY
- EX-1 — WATERSHED LABEL
- HYDROLOGIC SOIL–TYPE BOUNDARY
- A — HYDROLOGIC SOIL–TYPE LABEL
- Tc — TIME OF CONCENTRATION

NOTE: ANALYSIS POINT FOR SITE IS NORTH, WEST AND EAST OF LIMIT OF DEVELOPMENT TO SURROUNDING WETLANDS.

EX-1

100' WETLAND BUFFER ZONE

100' WETLAND REVIEW AREA

Open Space Recreation Area
Assessor Map 77 Lot 1
Area = 462.6± Acres

BARE COVE PARK DRIVE
(PUBLIC - VARIABLE WIDTH)

SLR
67 HUNT STREET, SUITE 203-C
AGAWAM, MA
413.241.6520
SLRCONSULTING.COM

DESCRIPTION	DATE	BY

WATERSHED MAP - EXISTING CONDITIONS

HINGHAM CENTER FOR ACTIVE LIVING

BARE COVE PARK DRIVE
HINGHAM, MASSACHUSETTS

JLS	JLS	MRG
DESIGNED	DRAWN	CHECKED

SCALE: 1" = 30'

DATE: JANUARY 30, 2026

PROJECT NO.: 21840.00004

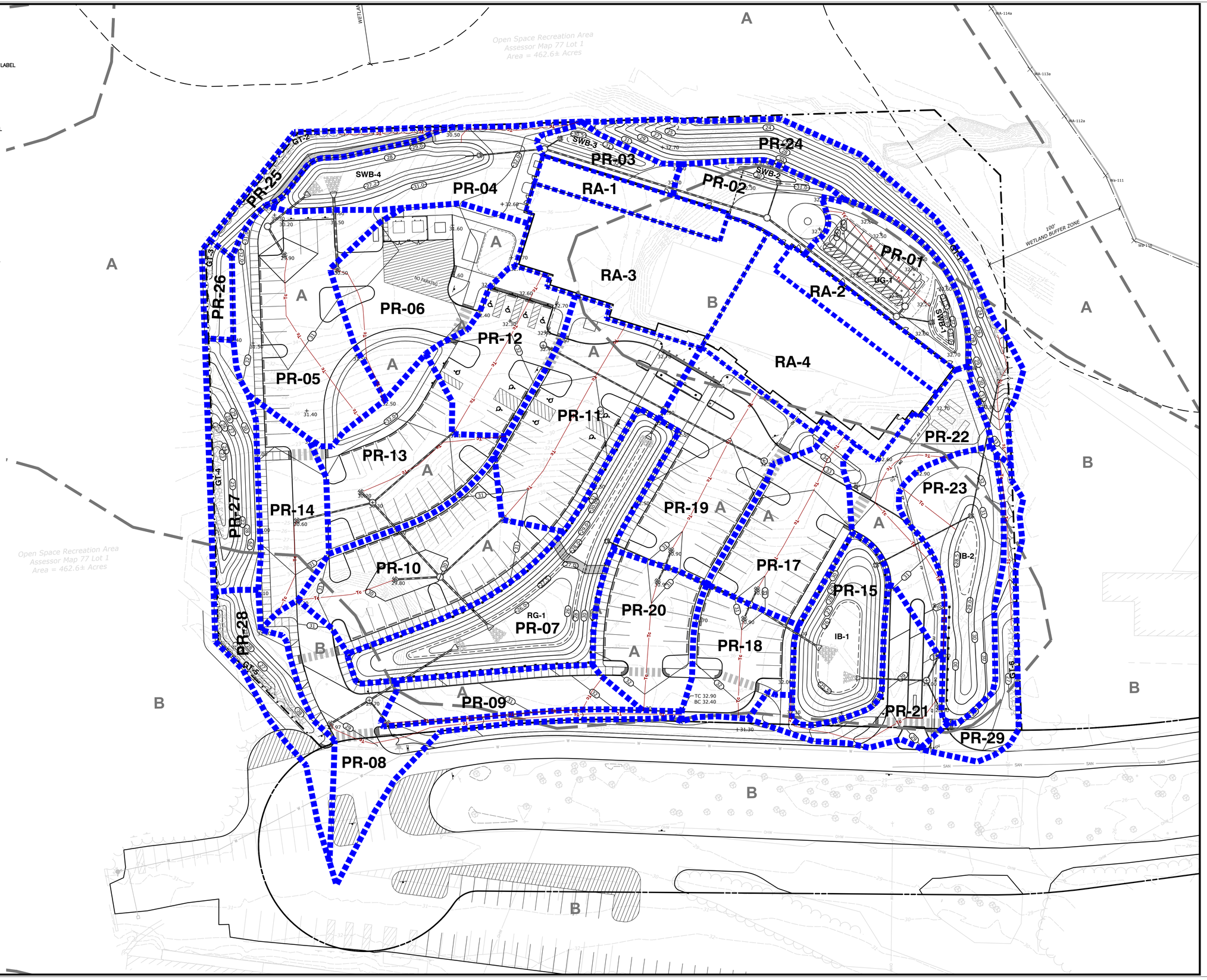
PAGE NO.: 01 OF 01

SHEET NAME: EX-WS

LEGEND

- WATERSHED BOUNDARY
- PR-01 — WATERSHED LABEL
- UG-1 — SUBSURFACE INFILTRATION STRUCTURE LABEL
- IB-1 — INFILTRATION BASIN LABEL
- RG-1 — RAIN GARDEN LABEL
- GT-1 — GRAVEL TRENCH LABEL
- SWB-1 — STORMWATER MANAGEMENT BASIN LABEL
- HYDROLOGIC SOIL–TYPE BOUNDARY
- A — HYDROLOGIC SOIL–TYPE LABEL
- Tc — TIME OF CONCENTRATION

NOTE: ANALYSIS POINT FOR SITE IS NORTH, WEST AND EAST OF LIMIT OF DEVELOPMENT TO SURROUNDING WETLANDS.



SLR
67 HUNT STREET, SUITE 203-C
AGAWAM, MA
413.241.6520
SLRCONSULTING.COM

DESCRIPTION	DATE	BY

WATERSHED MAP - PROPOSED CONDITIONS

HINGHAM CENTER FOR ACTIVE LIVING

BARE COVE PARK DRIVE
HINGHAM, MASSACHUSETTS

JLS	JLS	MRG
DESIGNED	DRAWN	CHECKED

SCALE	1"=30'
DATE	FEBRUARY 3, 2026
PROJECT NO.	21840.00004
SHEET NO.	01 OF 01
SHEET NAME	PR-WS

Appendix B NRCS Web Soil Survey

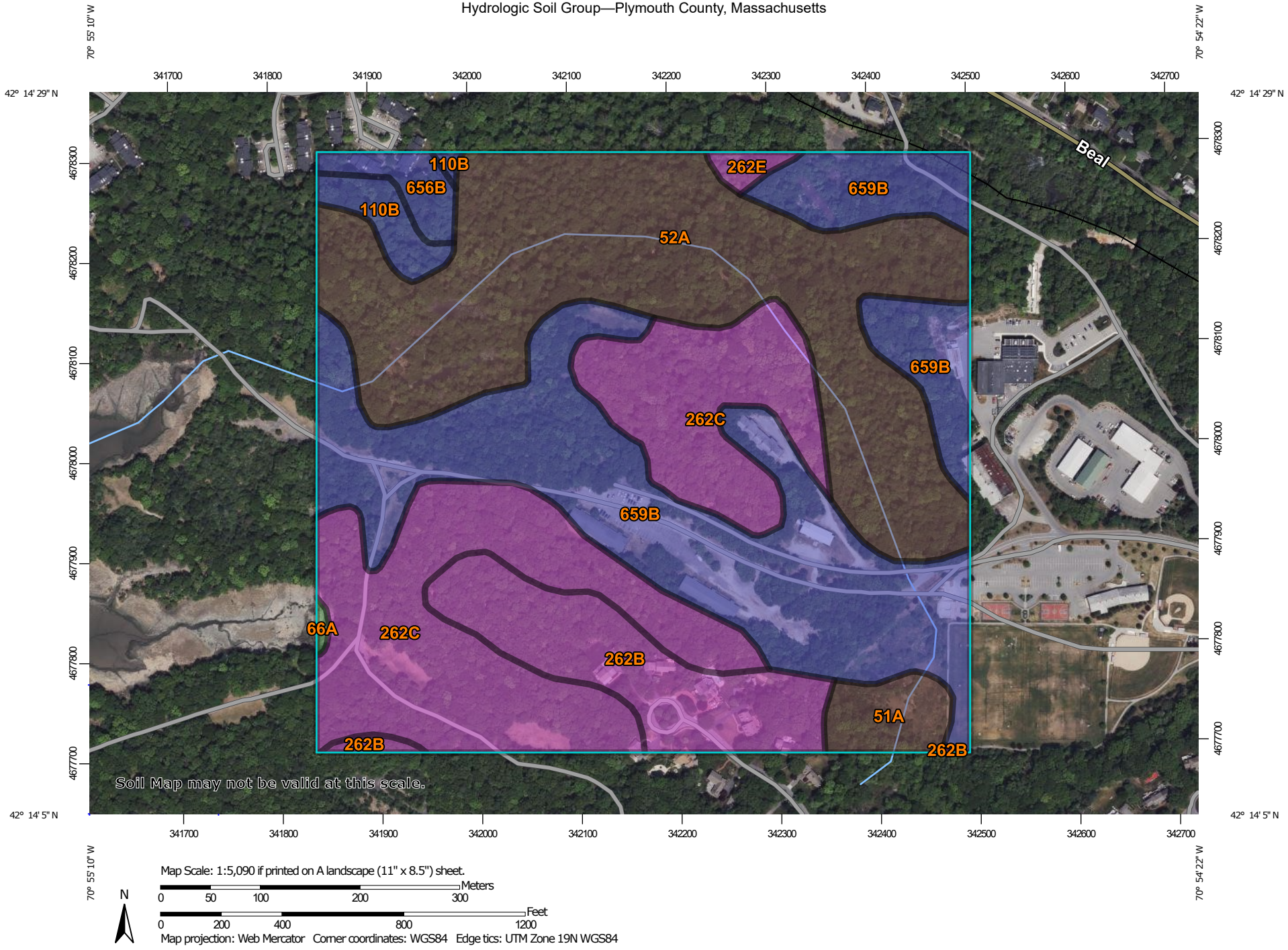
Stormwater Management Plan

Hingham Center for Active Living

EDM Studio, Inc.

SLR Project No.: 141.21840.00004

February 3, 2026



Map Scale: 1:5,090 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

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

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

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

Soil Survey Area: Plymouth County, Massachusetts
Survey Area Data: Version 18, Sep 5, 2025

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

Date(s) aerial images were photographed: May 22, 2022—Jun 5, 2022

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
51A	Swansea muck, 0 to 1 percent slopes	B/D	2.2	2.3%
52A	Freetown muck, 0 to 1 percent slopes	B/D	29.0	29.7%
66A	Ipswich - Pawcatuck - Matunuck complex, 0 to 2 percent slopes, very frequently flooded	A/D	0.1	0.1%
110B	Canton-Chatfield-Rock outcrop complex, 0 to 8 percent slopes, very stony	B	1.7	1.7%
262B	Quonset sandy loam, 3 to 8 percent slopes	A	8.7	8.9%
262C	Quonset sandy loam, 8 to 15 percent slopes	A	24.5	25.1%
262E	Quonset sandy loam, 15 to 35 percent slopes	A	0.5	0.6%
656B	Udorthents - Urban land complex, 0 to 8 percent slopes	B	1.5	1.5%
659B	Udorthents, 0 to 8 percent slopes, gravelly	B	29.3	30.0%
Totals for Area of Interest			**97.6**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

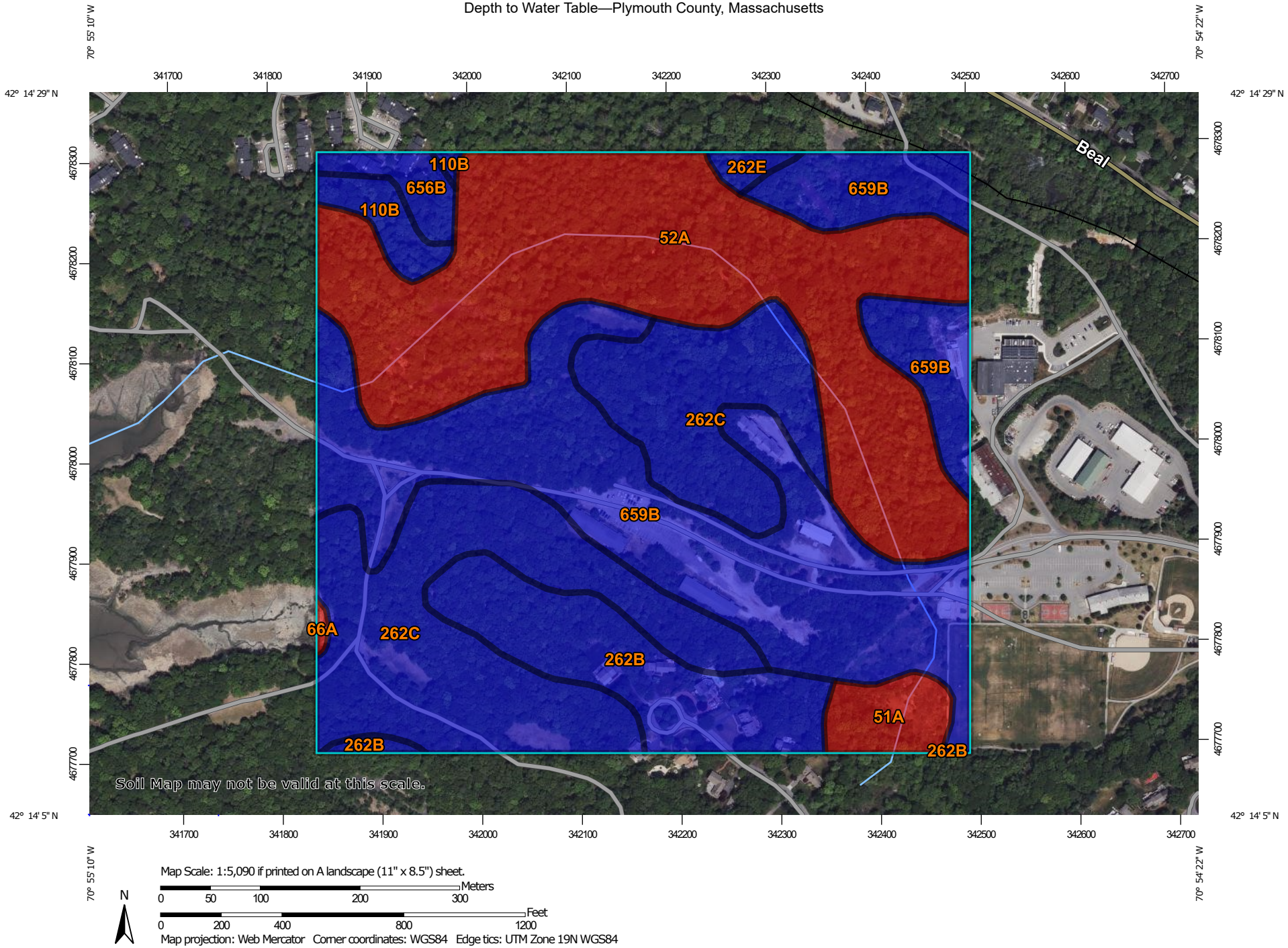
If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher



Map Scale: 1:5,090 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Soil Rating Lines

- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Soil Rating Points

- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

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

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

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

Soil Survey Area: Plymouth County, Massachusetts
Survey Area Data: Version 18, Sep 5, 2025

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

Date(s) aerial images were photographed: May 22, 2022—Jun 5, 2022

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.

Depth to Water Table

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
51A	Swansea muck, 0 to 1 percent slopes	0	2.2	2.3%
52A	Freetown muck, 0 to 1 percent slopes	0	29.0	29.7%
66A	Ipswich - Pawcatuck - Matunuck complex, 0 to 2 percent slopes, very frequently flooded	0	0.1	0.1%
110B	Canton-Chatfield-Rock outcrop complex, 0 to 8 percent slopes, very stony	>200	1.7	1.7%
262B	Quonset sandy loam, 3 to 8 percent slopes	>200	8.7	8.9%
262C	Quonset sandy loam, 8 to 15 percent slopes	>200	24.5	25.1%
262E	Quonset sandy loam, 15 to 35 percent slopes	>200	0.5	0.6%
656B	Udorthents - Urban land complex, 0 to 8 percent slopes	>200	1.5	1.5%
659B	Udorthents, 0 to 8 percent slopes, gravelly	>200	29.3	30.0%
Totals for Area of Interest			**97.6**	**100.0%**

Description

"Water table" refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Rating Options

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as Zero: No

Beginning Month: January

Ending Month: December

Appendix C Test Pits & Boring Logs

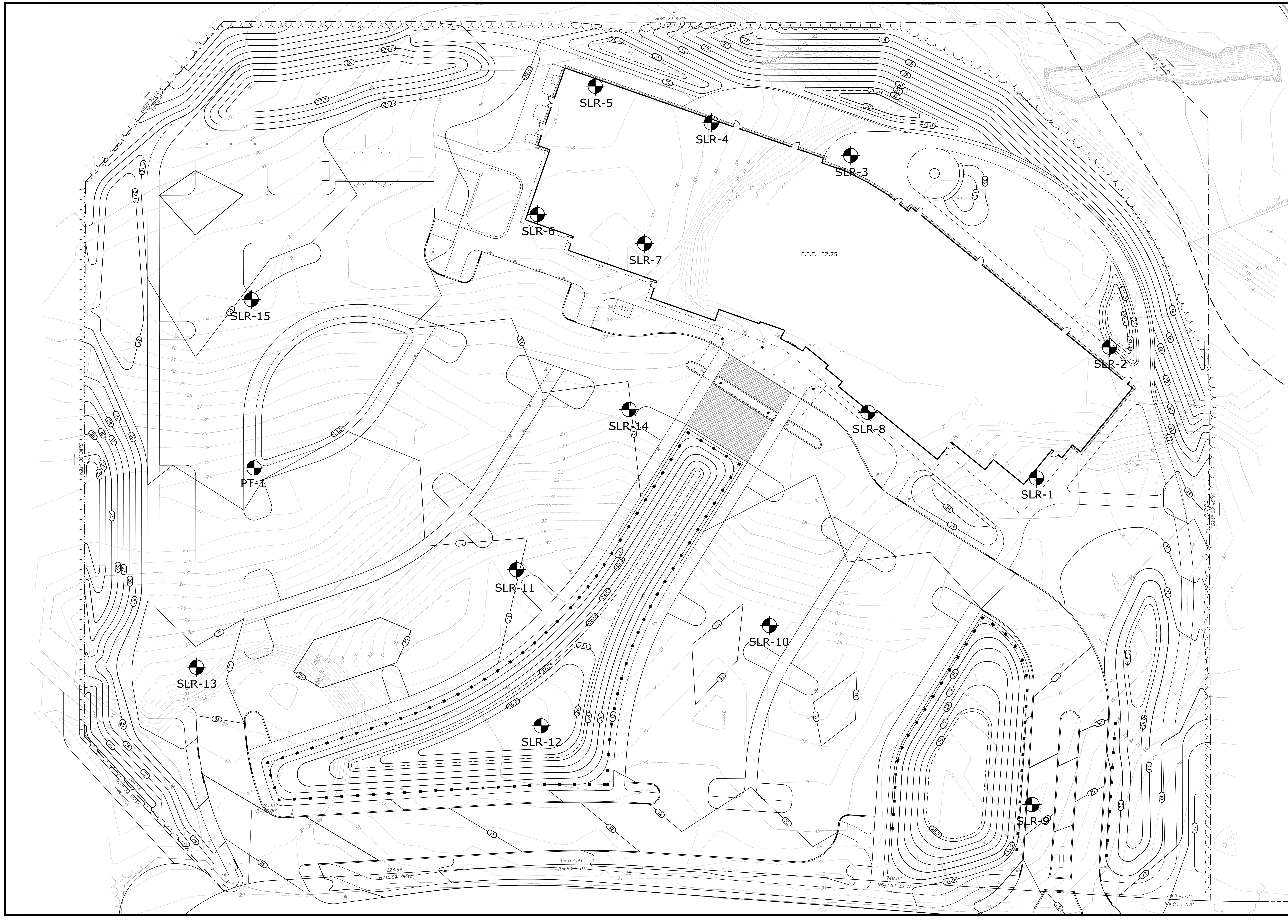
Stormwater Management Plan

Hingham Center for Active Living

EDM Studio, Inc.

SLR Project No.: 141.21840.00004

February 3, 2026



SLR
2 COMMERCE DRIVE, SUITE 110
BEDFORD, NH 03110
603.668.1654
SLRCONSULTING.COM

DESCRIPTION	DATE	BY

SUBSURFACE EXPLORATION PLAN

HINGHAM CENTER FOR ACTIVE LIVING

BARE COVE PARK DRIVE
HINGHAM, MA

DESIGNED	DRAWN	CHECKED

SCALE: 1"=30'

DATE: JULY 2025

PROJECT NO.: 21840.00004

SHEET NO.: 1 OF 1

SHEET NAME: BO-1

TEST BORING LOG

SLR
2 Commerce Drive; Suite 110
Bedford, New Hampshire 03110
603-668-1654

PROJECT:	**Hingham Senior Center**	**BORING NO.:** **SLR-1**	**SHEET:** 1 of 1
LOCATION:	45 Bare Cove Park Drive	**CONTRACTOR:**	Drilex Environmental
PROJ. NO:	141.051021.00001	**FOREMAN:**	J. Hastings
CLIENT:	EDM Studio, Inc.	**INSPECTOR:**	J. Carrier
DATE:	July 9, 2025	**GROUND SURFACE ELEVATION:**	34'±

EQUIPMENT:	AUGER	CASING	SAMPLER	COREBRL.	GROUNDWATER OBSERVATIONS			
TYPE	HSA	--	S	--	ELAPSED TIME (HR)			
SIZE ID (IN)	4 1/4	--	1 3/8	--	CASING AT (FT)			
HAMMER WT (LB)	--	--	140	--	DEPTH (FT)			
HAMMER FALL (IN)	--	--	30	--	[X] NO GROUNDWATER ENCOUNTERED			

- [ ] FIELD TESTING
- [ ] LABORATORY TESTING
- [ ] MONITORING WELL INSTALLED
- [ ] PID SCREENING
- [ ]

Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"	SOIL AND ROCK CLASSIFICATION-DESCRIPTION BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK)	STRATUM CHANGE DESCRIPTION	PID (PPM)
	S1	7	2	4" brown, rooted Forest Mat	**FOREST MAT**	
1			2	Loose medium brown fine to medium SAND, little Silt, some Gravel,	**SUBSOIL**	
			2	trace organics, dry.	1.5	
2			8		**SAND & GRAVEL**	
	S2	12	12	Very dense gray fine to coarse SAND and Gravel, little Silt, no odor,		
3			24	dry. Rock Fragments		
			39			
4			44			
5						
	S3	7	8	Very dense gray fine to coarse SAND and Gravel, little Silt, no odor,		
			39	dry. Rock Fragments		
6			54/2"			
				Auger action indicates dense material, cobbles ±6' to ±8'		
7						
8						
9				Auger refusal at ±9.5', probable bedrock	9.5	
				Bottom of Exploration at ±9.5'	**BEDROCK**	
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

Notes:
1) TYPE OF RIG: CME-55 Track Mounted
2) HAMMER/HOIST TYPE: Auto

FILE: ...a\WAFS-JOBS\Geotech\21840.00004-GT\Explorations\[Boring Logs.xls]

COHESIONLESS SOILS	COHESIVE SOILS	SAMPLE TYPE	PROPORTIONS
N = 0 - 4 = VERY LOOSE	N = 0 -2 = VERY SOFT	C = ROCK CORE	trace = 0% - 10%
4-10 = LOOSE	2 - 4 = SOFT	S = SPLIT SPOON	little = 10% - 20%
10-30 = MEDIUM	4 - 8 = MEDIUM	UP = UNDISTURBED PISTON	some = 20% - 35%
30-50 = DENSE	8 -15 = STIFF	UT = UNDISTURBED THINWALL	and = 35% - 50%
50 + = VERY DENSE	30 + = HARD		

TEST BORING LOG

SLR

2 Commerce Drive; Suite 110
Bedford, New Hampshire 03110
603-668-1654

PROJECT:	**Hingham Senior Center**	**BORING NO.:**	**SLR-2**
LOCATION:	45 Bare Cove Park Drive	**CONTRACTOR:**	Drilex Environmental
PROJ. NO:	141.051021.00001	**FOREMAN:**	J. Hastings
CLIENT:	EDM Studio, Inc.	**INSPECTOR:**	J. Carrier
DATE:	July 11, 2025	**GROUND SURFACE ELEVATION:**	24.5'±

SHEET: 1 of 1

EQUIPMENT:	AUGER	CASING	SAMPLER	COREBRL.	GROUNDWATER OBSERVATIONS			
TYPE	HSA	--	S	--	ELAPSED TIME (HR)			
SIZE ID (IN)	4 1/4	--	1 3/8	--	CASING AT (FT)			
HAMMER WT (LB)	--	--	140	--	DEPTH (FT)			
HAMMER FALL (IN)	--	--	30	--	[X] NO GROUNDWATER ENCOUNTERED			

- [ ] FIELD TESTING
- [ ] LABORATORY TESTING
- [ ] MONITORING WELL INSTALLED
- [ ] PID SCREENING
- [ ]

Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"	SOIL AND ROCK CLASSIFICATION-DESCRIPTION BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK)	STRATUM CHANGE DESCRIPTION	PID (PPM)
1	S1	17	21 24 18 29	Dense gray-brown fine to coarse GRAVEL, some Sand, trace Silt, no odor, moist. Rock Fragments. Auger action indicates dense material, gravel ±1.5' to ±2.5'	**SAND & GRAVEL**	
2 3	S2	13	38 41 74	Very dense gray-brown fine to coarse GRAVEL, some Sand, little Silt, no odor, dry. Rock Fragments.		
4			50/3"	Auger grinding ±3.5'+. Auger refusal at ±4', probable bedrock Bottom of Exploration at ±4'	**BEDROCK**	12
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

Notes:
1) TYPE OF RIG: CME-55 Track Mounted
2) HAMMER/HOIST TYPE: Auto

FILE: ...a\WAFS-JOBS\Geotech\21840.00004-GT\Explorations\[Boring Logs.xls...

COHESIONLESS SOILS	COHESIVE SOILS	SAMPLE TYPE	PROPORTIONS
N = 0 - 4 = VERY LOOSE	N = 0 -2 = VERY SOFT	C = ROCK CORE	trace = 0% - 10%
4-10 = LOOSE	2 - 4 = SOFT	S = SPLIT SPOON	little = 10% - 20%
10-30 = MEDIUM	4 - 8 = MEDIUM	UP = UNDISTURBED PISTON	some = 20% - 35%
30-50 = DENSE	8 -15 = STIFF	UT = UNDISTURBED THINWALL	and = 35% - 50%
50 + = VERY DENSE	30 + = HARD		

TEST BORING LOG

SLR

2 Commerce Drive; Suite 110
Bedford, New Hampshire 03110
603-668-1654

PROJECT:	**Hingham Senior Center**	**BORING NO.:** **SLR-3**	**SHEET:** 1 of 1
LOCATION:	45 Bare Cove Park Drive	**CONTRACTOR:**	Drilex Environmental
PROJ. NO:	141.051021.00001	**FOREMAN:**	J. Hastings
CLIENT:	EDM Studio, Inc.	**INSPECTOR:**	J. Carrier
DATE:	July 11, 2025	**GROUND SURFACE ELEVATION:**	24'±

EQUIPMENT:	AUGER	CASING	SAMPLER	COREBRL.	GROUNDWATER OBSERVATIONS			
TYPE	HSA	--	S	--	ELAPSED TIME (HR)			
SIZE ID (IN)	4 1/4	--	1 3/8	--	CASING AT (FT)			
HAMMER WT (LB)	--	--	140	--	DEPTH (FT)			
HAMMER FALL (IN)	--	--	30	--	[X] NO GROUNDWATER ENCOUNTERED			

☐ FIELD TESTING
☐ LABORATORY TESTING
☐ MONITORING WELL INSTALLED
☐ PID SCREENING
☐

Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"	SOIL AND ROCK CLASSIFICATION-DESCRIPTION BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK)	STRATUM CHANGE DESCRIPTION	PID (PPM)
	S1	7	10 26	Loose brown fine to coarse Sand, trace Silt, no odor, moist.	FILL	
1			12 12	Dense gray-brown fine to coarse GRAVEL and Sand, trace Silt, no odor, moist.	SAND & GRAVEL	
2	S2	15	31 46	Very dense gray-brown fine to coarse GRAVEL and Sand, little Silt, no odor, moist.		
3			46 43	Auger action indicates dense material, gravel ±2.5' to ±4'		
4				Auger action indicates dense material, gravel ±4.5' to ±5'		
5	S3	13	21 30	Very dense gray-brown fine to coarse GRAVEL and Sand, little Silt, no odor, moist. Rock Fragments.		
6			44 46			
7	S4	24	52 39	Very dense gray-brown fine to coarse GRAVEL and Sand, trace Silt, no odor, dry. Rock Fragments.		
8			33 41	Layers of olive-gray fine SAND and Gravel, little Silt, no odor, moist.		
9				Auger action indicates dense material, gravel ±5' to ±10'		
10	S5	6	37 44/3"	Very dense gray-brown fine to coarse GRAVEL, some Sand, trace Silt, moist. Rock Fragments. Layers of little Silt.		
11						
12				Auger grinding ±10.5'+. Auger refusal at ±12', probable bedrock	12	
13				Bottom of Exploration at ±12'	BEDROCK	
14						
15						
16						
17						
18						
19						
20						
21						
22						

Notes:
1) TYPE OF RIG: CME-55 Track Mounted
2) HAMMER/HOIST TYPE: Auto

FILE: ...a\WAFS-JOBS\Geotech\21840.00004-GT\Explorations\[Boring Logs.xls]

COHESIONLESS SOILS	COHESIVE SOILS	SAMPLE TYPE	PROPORTIONS
N = 0 - 4 = VERY LOOSE	N = 0 -2 = VERY SOFT	C = ROCK CORE	trace = 0% - 10%
4-10 = LOOSE	2 - 4 = SOFT	S = SPLIT SPOON	little = 10% - 20%
10-30 = MEDIUM	4 - 8 = MEDIUM	UP = UNDISTURBED PISTON	some = 20% - 35%
30-50 = DENSE	8 -15 = STIFF	UT = UNDISTURBED THINWALL	and = 35% - 50%
50 + = VERY DENSE	30 + = HARD		

TEST BORING LOG

SLR
2 Commerce Drive; Suite 110
Bedford, New Hampshire 03110
603-668-1654

PROJECT:	**Hingham Senior Center**	**BORING NO.:** **SLR-4**	**SHEET:** 1 of 1
LOCATION:	45 Bare Cove Park Drive	**CONTRACTOR:**	Drilex Environmental
PROJ. NO:	141.051021.00001	**FOREMAN:**	J. Hastings
CLIENT:	EDM Studio, Inc.	**INSPECTOR:**	J. Carrier
DATE:	July 10, 2025	**GROUND SURFACE ELEVATION:**	34.5'±

EQUIPMENT:	AUGER	CASING	SAMPLER	COREBRL.	GROUNDWATER OBSERVATIONS			
TYPE	HSA	--	S	--	ELAPSED TIME (HR)			
SIZE ID (IN)	4 1/4	--	1 3/8	--	CASING AT (FT)			
HAMMER WT (LB)	--	--	140	--	DEPTH (FT)			
HAMMER FALL (IN)	--	--	30	--	[X] NO GROUNDWATER ENCOUNTERED			

☐ FIELD TESTING
☐ LABORATORY TESTING
☐ MONITORING WELL INSTALLED
☐ PID SCREENING
☐

Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"	SOIL AND ROCK CLASSIFICATION-DESCRIPTION BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK)	STRATUM CHANGE DESCRIPTION	PID (PPM)
	S1	5	1 1 2	4" brown, rooted Forest Mat Loose medium brown fine SAND, trace Silt, trace organics, no odor, moist.	**FOREST MAT** **SUBSOIL** 1.5	
2	S2	12	2 5 8	Medium dense brown fine to medium SAND, some Gravel, trace Silt, no odor, moist. Medium dense gray-brown fine to coarse SAND and Gravel, trace Silt,	**SAND & GRAVEL**	
3			9	no odor, moist. Rock Fragments in sample.		
4			9			
5				Auger action indicates dense material, cobbles ±4' to ±5'		
6	S3	5	3 7	Medium dense gray-brown fine to coarse SAND and Gravel, trace Silt, no odor, slightly moist. Rock Fragments in sample.		
7			13 22			
8	S4	6	28 40	Very dense gray-brown fine to coarse SAND and Gravel, trace Silt, no odor, slightly moist. Rock Fragments in sample.		
9			55 50			
10				Auger action indicates cobbles ±8' to ±9.5'		
11	S5	7	43 52/4"	Very dense gray-brown fine to coarse SAND and Gravel, trace Silt, no odor, dry. Light brown fine SAND, some Silt, no odor, dry, in tip.	11	
12				Auger refusal at ±11', probable bedrock. Bottom of Exploration at ±11'	**BEDROCK**	
13						
14						
15						
16						
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18						
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20						
21						
22						

Notes:
1) TYPE OF RIG: CME-55 Track Mounted
2) HAMMER/HOIST TYPE: Auto

FILE: ...a\WAFS-JOBS\Geotech\21840.00004-GT\Explorations\[Boring Logs.xls]

COHESIONLESS SOILS	COHESIVE SOILS	SAMPLE TYPE	PROPORTIONS
N = 0 - 4 = VERY LOOSE	N = 0 -2 = VERY SOFT	C = ROCK CORE	trace = 0% - 10%
4-10 = LOOSE	2 - 4 = SOFT	S = SPLIT SPOON	little = 10% - 20%
10-30 = MEDIUM	4 - 8 = MEDIUM	UP = UNDISTURBED PISTON	some = 20% - 35%
30-50 = DENSE	8 -15 = STIFF	UT = UNDISTURBED THINWALL	and = 35% - 50%
50 + = VERY DENSE	30 + = HARD		

TEST BORING LOG

SLR
2 Commerce Drive; Suite 110
Bedford, New Hampshire 03110
603-668-1654

PROJECT:	**Hingham Senior Center**	**BORING NO.:**	**SLR-5**
LOCATION:	45 Bare Cove Park Drive	**CONTRACTOR:**	Drilex Environmental
PROJ. NO:	141.051021.00001	**FOREMAN:**	J. Hastings
CLIENT:	EDM Studio, Inc.	**INSPECTOR:**	J. Carrier
DATE:	July 10, 2025	**GROUND SURFACE ELEVATION:**	35.5'±

SHEET: 1 of 1

EQUIPMENT:	AUGER	CASING	SAMPLER	COREBRL.	GROUNDWATER OBSERVATIONS			
TYPE	HSA	--	S	--	ELAPSED TIME (HR)			
SIZE ID (IN)	4 1/4	--	1 3/8	--	CASING AT (FT)			
HAMMER WT (LB)	--	--	140	--	DEPTH (FT)			
HAMMER FALL (IN)	--	--	30	--	[X] NO GROUNDWATER ENCOUNTERED			

- [ ] FIELD TESTING
- [ ] LABORATORY TESTING
- [ ] MONITORING WELL INSTALLED
- [ ] PID SCREENING
- [ ]

Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"	SOIL AND ROCK CLASSIFICATION-DESCRIPTION BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK)	STRATUM CHANGE DESCRIPTION	PID (PPM)
	S1	5	1	3" brown Forest Mat	FOREST MAT	
			1	Loose medium brown fine SAND, little Silt, trace organics, no odor, moist.	SUBSOIL	
1			3	Medium dense gray-brown fine to coarse SAND and Gravel, trace Silt,		
			7	no odor, moist.	SAND & GRAVEL	
2	S2	11	14			
			13	Medium dense gray- brown fine to coarse SAND and Gravel, trace Silt,		
3			14	no odor, moist. Layers of little Silt.		
			60/4"			
4				Auger refusal at ±4', offset ±5' south.		
5	S3	10	18	Very dense gray- brown fine to coarse SAND and Gravel, trace Silt,		
			31	no odor, moist.		
6			69/5"			
				Auger refusal at ±7', probable bedrock		7
7				Bottom of Exploration at ±7'	BEDROCK	
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

Notes:
1) TYPE OF RIG: CME-55 Track Mounted
2) HAMMER/HOIST TYPE: Auto

FILE: ...a\WAFS-JOBS\Geotech\21840.00004-GT\Explorations\[Boring Logs.xls]

COHESIONLESS SOILS	COHESIVE SOILS	SAMPLE TYPE	PROPORTIONS
N = 0 - 4 = VERY LOOSE	N = 0 -2 = VERY SOFT	C = ROCK CORE	trace = 0% - 10%
4-10 = LOOSE	2 - 4 = SOFT	S = SPLIT SPOON	little = 10% - 20%
10-30 = MEDIUM	4 - 8 = MEDIUM	UP = UNDISTURBED PISTON	some = 20% - 35%
30-50 = DENSE	8 -15 = STIFF	UT = UNDISTURBED THINWALL	and = 35% - 50%
50 + = VERY DENSE	30 + = HARD		

TEST BORING LOG

SLR
2 Commerce Drive; Suite 110
Bedford, New Hampshire 03110
603-668-1654

PROJECT:	**Hingham Senior Center**	**BORING NO.:** **SLR-6**	**SHEET:** 1 of 1
LOCATION:	45 Bare Cove Park Drive	**CONTRACTOR:**	Drilex Environmental
PROJ. NO:	141.051021.00001	**FOREMAN:**	J. Hastings
CLIENT:	EDM Studio, Inc.	**INSPECTOR:**	J. Carrier
DATE:	July 10, 2025	**GROUND SURFACE ELEVATION:**	37'±

EQUIPMENT:	AUGER	CASING	SAMPLER	COREBRL.	GROUNDWATER OBSERVATIONS			
TYPE	HSA	--	S	--	ELAPSED TIME (HR)			
SIZE ID (IN)	4 1/4	--	1 3/8	--	CASING AT (FT)			
HAMMER WT (LB)	--	--	140	--	DEPTH (FT)			
HAMMER FALL (IN)	--	--	30	--	[X] NO GROUNDWATER ENCOUNTERED			

- [ ] FIELD TESTING
- [ ] LABORATORY TESTING
- [ ] MONITORING WELL INSTALLED
- [ ] PID SCREENING
- [ ]

Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"	SOIL AND ROCK CLASSIFICATION-DESCRIPTION BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK)	STRATUM CHANGE DESCRIPTION	PID (PPM)
	S1	5	WOH	5" brown Forest Mat	FOREST MAT	
1			1	Loose medium brown fine SAND, little Silt, trace Gravel, trace organics, moist.	SUBSOIL	
			2	Medium dense gray-brown fine to coarse SAND and Gravel, trace Silt,	SAND & GRAVEL	
2			5	no odor, moist.		
	S2	12	7			
3			17	Dense gray- brown fine to coarse SAND and Gravel, trace Silt, no odor,		
			21	moist. Layers of Rock Fragments.		
4			28			
5						
	S3	10	8	Very dense gray- brown fine to coarse SAND and Gravel, trace Silt,		
			43	no odor, moist.		
6			50/3"	Rock fragments and stone dust in tip.		
				Auger refusal at ±7', probable bedrock		7
7				Bottom of Exploration at ±7'	BEDROCK	
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

Notes:
1) TYPE OF RIG: CME-55 Track Mounted
2) HAMMER/HOIST TYPE: Auto

FILE: ...a\WAFS-JOBS\Geotech\21840.00004-GT\Explorations\[Boring Logs.xls]

COHESIONLESS SOILS	COHESIVE SOILS	SAMPLE TYPE	PROPORTIONS
N = 0 - 4 = VERY LOOSE	N = 0 -2 = VERY SOFT	C = ROCK CORE	trace = 0% - 10%
4-10 = LOOSE	2 - 4 = SOFT	S = SPLIT SPOON	little = 10% - 20%
10-30 = MEDIUM	4 - 8 = MEDIUM	UP = UNDISTURBED PISTON	some = 20% - 35%
30-50 = DENSE	8 -15 = STIFF	UT = UNDISTURBED THINWALL	and = 35% - 50%
50 + = VERY DENSE	30 + = HARD		

TEST BORING LOG

SLR
2 Commerce Drive; Suite 110
Bedford, New Hampshire 03110
603-668-1654

PROJECT:	**Hingham Senior Center**	**BORING NO.:**	**SLR-7**
LOCATION:	45 Bare Cove Park Drive	**CONTRACTOR:**	Drilex Environmental
PROJ. NO:	141.051021.00001	**FOREMAN:**	J. Hastings
CLIENT:	EDM Studio, Inc.	**INSPECTOR:**	J. Carrier
DATE:	July 10, 2025	**GROUND SURFACE ELEVATION:**	36.5'±

SHEET: 1 of 1

EQUIPMENT:	AUGER	CASING	SAMPLER	COREBRL.	GROUNDWATER OBSERVATIONS			
TYPE	HSA	--	S	--	ELAPSED TIME (HR)			
SIZE ID (IN)	4 1/4	--	1 3/8	--	CASING AT (FT)			
HAMMER WT (LB)	--	--	140	--	DEPTH (FT)			
HAMMER FALL (IN)	--	--	30	--	[X] NO GROUNDWATER ENCOUNTERED			

- [ ] FIELD TESTING
- [ ] LABORATORY TESTING
- [ ] MONITORING WELL INSTALLED
- [ ] PID SCREENING
- [ ]

Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"	SOIL AND ROCK CLASSIFICATION-DESCRIPTION BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK)	STRATUM CHANGE DESCRIPTION	PID (PPM)
	S1	15	1	4" brown, rooted Forest Mat	FOREST MAT	
			2	Loose brown fine to coarse SAND and Gravel, trace Silt, trace organics, moist.	SUBSOIL	
1			3		SAND & GRAVEL	
			3			
2	S2	6	5	Medium dense gray-brown fine to coarse SAND and Gravel, trace Silt, dry.		
			11	Rock Fragments.		
3			50/5"	Auger grinding at ±3'.		
				Auger refusal at ±4'.		
4				Offset ±20' West		
5	S3	8	10	Very dense gray-brown fine to coarse SAND and Gravel, trace Silt,		
			50/4"	no odor, dry. Stone dust in tip		
6				Auger refusal at ±6.25', probable bedrock	6.25	
				Bottom of Exploration at ±6.25'	BEDROCK	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

Notes:
1) TYPE OF RIG: CME-55 Track Mounted
2) HAMMER/HOIST TYPE: Auto

FILE: ...a\WAFS-JOBS\Geotech\21840.00004-GT\Explorations\[Boring Logs.xls]

COHESIONLESS SOILS	COHESIVE SOILS	SAMPLE TYPE	PROPORTIONS
N = 0 - 4 = VERY LOOSE	N = 0 -2 = VERY SOFT	C = ROCK CORE	trace = 0% - 10%
4-10 = LOOSE	2 - 4 = SOFT	S = SPLIT SPOON	little = 10% - 20%
10-30 = MEDIUM	4 - 8 = MEDIUM	UP = UNDISTURBED PISTON	some = 20% - 35%
30-50 = DENSE	8 -15 = STIFF	UT = UNDISTURBED THINWALL	and = 35% - 50%
50 + = VERY DENSE	30 + = HARD		

TEST BORING LOG

SLR

2 Commerce Drive; Suite 110
Bedford, New Hampshire 03110
603-668-1654

PROJECT:	Hingham Senior Center	BORING NO.:	SLR-8
LOCATION:	45 Bare Cove Park Drive	CONTRACTOR:	Drilex Environmental
PROJ. NO:	141.051021.00001	FOREMAN:	J. Hastings
CLIENT:	EDM Studio, Inc.	INSPECTOR:	J. Carrier
DATE:	July 9, 2025	GROUND SURFACE ELEVATION:	26'±

SHEET: 1 of 1

EQUIPMENT:	AUGER	CASING	SAMPLER	COREBRL.	GROUNDWATER OBSERVATIONS			
TYPE	HSA	--	S	--	ELAPSED TIME (HR)			
SIZE ID (IN)	4 1/4	--	1 3/8	--	CASING AT (FT)			
HAMMER WT (LB)	--	--	140	--	DEPTH (FT)			
HAMMER FALL (IN)	--	--	30	--	[X] NO GROUNDWATER ENCOUNTERED			

☐ FIELD TESTING
☐ LABORATORY TESTING
☐ MONITORING WELL INSTALLED
☐ PID SCREENING
☐

Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"	SOIL AND ROCK CLASSIFICATION-DESCRIPTION BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK)	STRATUM CHANGE DESCRIPTION	PID (PPM)
	S1	8	3	3" brown, rooted Forest Mat	FOREST MAT	
			8	Loose medium brown fine SAND, some Silt, trace organics, dry.	SUBSOIL	
1			11	Medium dense light gray-brown fine to coarse SAND and Gravel, trace Silt,	SAND & GRAVEL	
			4	no odor, dry.		
2	--	0	5	No Recovery.		
			12			
3			18			
			30			
4				Auger action indicates dense material, gravel ±2.5' to ±4'		
5	S2	9	6	Very dense light gray fine to coarse GRAVEL and Sand, trace Silt, no odor,		
			28	dry. Rock Fragments.		
6			65			
			49			
7	S3	18	64	Very dense light gray-brown fine to coarse GRAVEL and Sand, trace Silt,		
			56	no odor, dry. Rock Fragments.		
8			51			
			67			
9				Auger action indicates dense material, cobbles ±5.5' to ±9.5'		
10	S4	9	13	Dense gray-brown fine to coarse GRAVEL and Sand, trace Silt,		
			15	no odor, dry. Rock Fragments		
11			35			
			38			
12						
				Auger action indicates cobbles ±12.5' to ±14'		
13						
14						
15	S5	1	8	Rock Fragments.		
			40/1"	Auger refusal at ±15.75', probable bedrock	15.75'	
16				Bottom of Exploration at ±15.75'	BEDROCK	
17						
18						
19						
20						
21						
22						

Notes:
1) TYPE OF RIG: CME-55 Track Mounted
2) HAMMER/HOIST TYPE: Auto

FILE: ...a\WAFS-JOBS\Geotech\21840.00004-GT\Explorations\[Boring Logs.xlsx

COHESIONLESS SOILS	COHESIVE SOILS	SAMPLE TYPE	PROPORTIONS
N = 0 - 4 = VERY LOOSE	N = 0 -2 = VERY SOFT	C = ROCK CORE	trace = 0% - 10%
4-10 = LOOSE	2 - 4 = SOFT	S = SPLIT SPOON	little = 10% - 20%
10-30 = MEDIUM	4 - 8 = MEDIUM	UP = UNDISTURBED PISTON	some = 20% - 35%
30-50 = DENSE	8 -15 = STIFF	UT = UNDISTURBED THINWALL	and = 35% - 50%
50 + = VERY DENSE	30 + = HARD		

TEST BORING LOG

SLR
2 Commerce Drive; Suite 110
Bedford, New Hampshire 03110
603-668-1654

PROJECT:	**Hingham Senior Center**	**BORING NO.:** **SLR-9**	**SHEET:** 1 of 1
LOCATION:	45 Bare Cove Park Drive	**CONTRACTOR:**	Drilex Environmental
PROJ. NO:	141.051021.00001	**FOREMAN:**	J. Hastings
CLIENT:	EDM Studio, Inc.	**INSPECTOR:**	J. Carrier
DATE:	July 9, 2025	**GROUND SURFACE ELEVATION:**	37'±

EQUIPMENT:	AUGER	CASING	SAMPLER	COREBRL.	GROUNDWATER OBSERVATIONS			
TYPE	HSA	--	S	--	ELAPSED TIME (HR)			
SIZE ID (IN)	4 1/4	--	1 3/8	--	CASING AT (FT)			
HAMMER WT (LB)	--	--	140	--	DEPTH (FT)			
HAMMER FALL (IN)	--	--	30	--	[X] NO GROUNDWATER ENCOUNTERED			

☐ FIELD TESTING
☐ LABORATORY TESTING
☐ MONITORING WELL INSTALLED
☐ PID SCREENING
☐

Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"	SOIL AND ROCK CLASSIFICATION-DESCRIPTION BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK)	STRATUM CHANGE DESCRIPTION	PID (PPM)
	S1	14	2 3 4 5	5" brown, rooted Forest Mat Loose medium brown fine SAND, trace Silt, trace organics, no odor, moist.	**FOREST MAT** **SUBSOIL** 1.5	
2 3	S2	13	23 28 35 41	Very dense light gray-brown fine to coarse SAND and Gravel, trace Silt, no odor, dry.	**SAND & GRAVEL**	
4 5				Auger action indicates dense material, cobbles ±2.5' to ±5'		
6	S3	8	5 4 24 48	Medium dense gray-brown fine to coarse SAND and Gravel, trace Silt, no odor, dry.		
7 8	S4	8	67 55/4"	Very dense light gray-brown fine to coarse SAND and Gravel, trace Silt, no odor, dry.		
9				Auger action indicates cobbles ±7.5' to ±9'		
10				Auger grinding at ±9'+. Auger refusal at ±10', probable bedrock Bottom of Exploration at ±10'	10 **BEDROCK**	
11 12 13 14 15 16 17 18 19 20 21 22						

Notes:
1) TYPE OF RIG: CME-55 Track Mounted
2) HAMMER/HOIST TYPE: Auto

FILE: ...a\WAFS-JOBS\Geotech\21840.00004-GT\Explorations\[Boring Logs.xls]

COHESIONLESS SOILS	COHESIVE SOILS	SAMPLE TYPE	PROPORTIONS
N = 0 - 4 = VERY LOOSE	N = 0 -2 = VERY SOFT	C = ROCK CORE	trace = 0% - 10%
4-10 = LOOSE	2 - 4 = SOFT	S = SPLIT SPOON	little = 10% - 20%
10-30 = MEDIUM	4 - 8 = MEDIUM	UP = UNDISTURBED PISTON	some = 20% - 35%
30-50 = DENSE	8 -15 = STIFF	UT = UNDISTURBED THINWALL	and = 35% - 50%
50 + = VERY DENSE	30 + = HARD		

TEST BORING LOG

SLR
2 Commerce Drive; Suite 110
Bedford, New Hampshire 03110
603-668-1654

PROJECT:	Hingham Senior Center	BORING NO.:	SLR-10
LOCATION:	45 Bare Cove Park Drive	CONTRACTOR:	Drilex Environmental
PROJ. NO:	141.051021.00001	FOREMAN:	J. Hastings
CLIENT:	EDM Studio, Inc.	INSPECTOR:	J. Carrier
DATE:	July 9, 2025	GROUND SURFACE ELEVATION:	36.5'±

SHEET: 1 of 1

EQUIPMENT:	AUGER	CASING	SAMPLER	COREBRL.	GROUNDWATER OBSERVATIONS			
TYPE	HSA	--	S	--	ELAPSED TIME (HR)			
SIZE ID (IN)	4 1/4	--	1 3/8	--	CASING AT (FT)			
HAMMER WT (LB)	--	--	140	--	DEPTH (FT)			
HAMMER FALL (IN)	--	--	30	--	[X] NO GROUNDWATER ENCOUNTERED			

- [ ] FIELD TESTING
- [ ] LABORATORY TESTING
- [ ] MONITORING WELL INSTALLED
- [ ] PID SCREENING
- [ ]

Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"	SOIL AND ROCK CLASSIFICATION-DESCRIPTION BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK)	STRATUM CHANGE DESCRIPTION	PID (PPM)
	S1	6	1 2	4" brown, rooted Forest Mat Loose medium brown fine SAND, little Silt, trace Gravel, trace organics, moist.	FOREST MAT SUBSOIL	
1 2			5 6	Medium dense light gray-brown fine to coarse SAND and Gravel, trace Silt, no odor, dry.	SAND & GRAVEL	
3	S2	7	8 16	Dense light gray-brown fine to medium SAND and Gravel, trace Silt, no odo dry .		
4			16 23			
5				Auger action indicates dense material, gravel ±2' to ±5'		
6	S3	8	7 13	Dense light gray-brown fine to medium SAND and Gravel, trace Silt, no odo dry .		
7			22 25			
8	S4	13	48 39	Very dense light gray-brown fine to coarse SAND and Gravel, trace Silt, no o dry.		
9			53 40	Auger grinding ±6.5' to ±9.5'		
10				Auger action indicates dense material, gravel ±9' to ±10'		
11	S5	10	10 11	Medium dense gray-brown fine to coarse GRAVEL and Sand, little Silt, no odor, dry. Rock Fragments		
12			13 20			
13						
14				Auger action indicates cobbles ±13.5' to ±14.5'		
15	S6	11	18 39	Very dense light gray-brown fine to coarse GRAVEL, some fine to coarse Sand, trace Silt, no odor, dry.		
16			34 48		17	
17				Bottom of Exploration at ±17'		
18						
19						
20						
21						
22						

Notes:
1) TYPE OF RIG: CME-55 Track Mounted
2) HAMMER/HOIST TYPE: Auto

FILE: ...a\WAFS-JOBS\Geotech\21840.00004-GT\Explorations\[Boring Logs.xls...

COHESIONLESS SOILS	COHESIVE SOILS	SAMPLE TYPE	PROPORTIONS
N = 0 - 4 = VERY LOOSE	N = 0 -2 = VERY SOFT	C = ROCK CORE	trace = 0% - 10%
4-10 = LOOSE	2 - 4 = SOFT	S = SPLIT SPOON	little = 10% - 20%
10-30 = MEDIUM	4 - 8 = MEDIUM	UP = UNDISTURBED PISTON	some = 20% - 35%
30-50 = DENSE	8 -15 = STIFF	UT = UNDISTURBED THINWALL	and = 35% - 50%
50 + = VERY DENSE	30 + = HARD		

TEST BORING LOG

SLR
2 Commerce Drive; Suite 110
Bedford, New Hampshire 03110
603-668-1654

PROJECT:	**Hingham Senior Center**	**BORING NO.:** **SLR-11**	**SHEET:** 1 of 1
LOCATION:	45 Bare Cove Park Drive	**CONTRACTOR:**	Drilex Environmental
PROJ. NO:	141.051021.00001	**FOREMAN:**	J. Hastings
CLIENT:	EDM Studio, Inc.	**INSPECTOR:**	J. Carrier
DATE:	July 11, 2025	**GROUND SURFACE ELEVATION:**	39.5'±

EQUIPMENT:	AUGER	CASING	SAMPLER	COREBRL.	GROUNDWATER OBSERVATIONS			
TYPE	HSA	--	S	--	ELAPSED TIME (HR)			
SIZE ID (IN)	4 1/4	--	1 3/8	--	CASING AT (FT)			
HAMMER WT (LB)	--	--	140	--	DEPTH (FT)			
HAMMER FALL (IN)	--	--	30	--	[X] NO GROUNDWATER ENCOUNTERED			

☐ FIELD TESTING
☐ LABORATORY TESTING
☐ MONITORING WELL INSTALLED
☐ PID SCREENING
☐

Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"	SOIL AND ROCK CLASSIFICATION-DESCRIPTION BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK)	STRATUM CHANGE DESCRIPTION	PID (PPM)
	S1	5	3 3	4" brown, rooted Forest Mat Loose medium brown fine SAND, some Silt, some Gravel, trace organics, moist.	**FOREST MAT** **SUBSOIL**	
1			4 5		**SAND & GRAVEL**	
2	S2	16	13 18	Dense gray-brown fine to coarse GRAVEL and Sand, little Silt, no odor, moist. Rock Fragments		
3			22 24			
4						
5	S3	13	32 27	Very dense gray-brown fine to coarse GRAVEL and Sand, little Silt, no odor, dry to moist. Rock Fragments.		
6			24 30			
7	S4	19	28 30	Very dense gray-brown fine to coarse GRAVEL and Sand, little Silt, no odor, dry to moist. Rock Fragments.		
8			30 39			
9				Auger action indicates dense material, gravel ±5' to ±10'		
10	S5	14	14 33	Very dense gray-brown fine to medium SAND and Gravel, little Silt, no odor, dry to moist. Rock Fragments.		
11			24 39			
12				Auger grinding ±10.5'+. Auger refusal at ±12.25', probable bedrock	12.25	
13				Bottom of Exploration at ±12.25'	**BEDROCK**	
14						
15						
16						
17						
18						
19						
20						
21						
22						

Notes:
1) TYPE OF RIG: CME-55 Track Mounted
2) HAMMER/HOIST TYPE: Auto

Note: Surface elevation estimated from MassMapper.

FILE: ...a\WAFS-JOBS\Geotech\21840.00004-GT\Explorations\[Boring Logs.xls]

COHESIONLESS SOILS	COHESIVE SOILS	SAMPLE TYPE	PROPORTIONS
N = 0 - 4 = VERY LOOSE	N = 0 -2 = VERY SOFT	C = ROCK CORE	trace = 0% - 10%
4-10 = LOOSE	2 - 4 = SOFT	S = SPLIT SPOON	little = 10% - 20%
10-30 = MEDIUM	4 - 8 = MEDIUM	UP = UNDISTURBED PISTON	some = 20% - 35%
30-50 = DENSE	8 -15 = STIFF	UT = UNDISTURBED THINWALL	and = 35% - 50%
50 + = VERY DENSE	30 + = HARD		

TEST BORING LOG

SLR
2 Commerce Drive; Suite 110
Bedford, New Hampshire 03110
603-668-1654

PROJECT:	Hingham Senior Center	BORING NO.:	SLR-12
LOCATION:	45 Bare Cove Park Drive	CONTRACTOR:	Drilex Environmental
PROJ. NO:	141.051021.00001	FOREMAN:	J. Hastings
CLIENT:	EDM Studio, Inc.	INSPECTOR:	J. Carrier
DATE:	July 9, 2025	GROUND SURFACE ELEVATION:	36.0'±

SHEET: 1 of 1

EQUIPMENT:	AUGER	CASING	SAMPLER	COREBRL.	GROUNDWATER OBSERVATIONS			
TYPE	HSA	--	S	--	ELAPSED TIME (HR)			
SIZE ID (IN)	4 1/4	--	1 3/8	--	CASING AT (FT)			
HAMMER WT (LB)	--	--	140	--	DEPTH (FT)			
HAMMER FALL (IN)	--	--	30	--	[X] NO GROUNDWATER ENCOUNTERED			

☐ FIELD TESTING
☐ LABORATORY TESTING
☐ MONITORING WELL INSTALLED
☐ PID SCREENING
☐

Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"	SOIL AND ROCK CLASSIFICATION-DESCRIPTION BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK)	STRATUM CHANGE DESCRIPTION	PID (PPM)
	S1	7	1	5" brown, rooted Forest Mat	FOREST MAT	
1			1	Very loose medium brown fine SAND, some Silt, trace organics, dry.	SUBSOIL	
			2			
2			4		2	
	S2	6	9	Dense light gray fine to coarse GRAVEL and Sand, trace Silt, no odor dry.	SAND & GRAVEL	
3			12			
			23			
4			33			
				Auger action indicates dense material, gravel ±3.5' to ±5'		
5						
	S3	10	7	Medium dense light gray-brown fine to coarse GRAVEL and Sand, trace Silt, no odor, dry.		
6			6			
			17			
7			29			
8						
9						
10						
	S4	12	17	Very light gray-brown fine to coarse GRAVEL and Sand, trace Silt, no odor,		
11			31	dry. Rock Fragments.		
			46	Auger action indicates dense material, gravel ±10.5' to ±12'		
12			31	Auger refusal at ±12', probable bedrock	12	
				Bottom of Exploration at ±12'	BEDROCK	
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

Notes:
1) TYPE OF RIG: CME-55 Track Mounted
2) HAMMER/HOIST TYPE: Auto

COHESIONLESS SOILS	COHESIVE SOILS	SAMPLE TYPE	PROPORTIONS
N = 0 - 4 = VERY LOOSE	N = 0 -2 = VERY SOFT	C = ROCK CORE	trace = 0% - 10%
4-10 = LOOSE	2 - 4 = SOFT	S = SPLIT SPOON	little = 10% - 20%
10-30 = MEDIUM	4 - 8 = MEDIUM	UP = UNDISTURBED PISTON	some = 20% - 35%
30-50 = DENSE	8 -15 = STIFF	UT = UNDISTURBED THINWALL	and = 35% - 50%
50 + = VERY DENSE	30 + = HARD		

FILE: ...a\WAFS-JOBS\Geotech\21840.00004-GT\Explorations\[Boring Logs.xls]

TEST BORING LOG

SLR
2 Commerce Drive; Suite 110
Bedford, New Hampshire 03110
603-668-1654

PROJECT:	**Hingham Senior Center**	**BORING NO.:** **SLR-13**	**SHEET:** 1 of 1
LOCATION:	45 Bare Cove Park Drive	**CONTRACTOR:**	Drilex Environmental
PROJ. NO:	141.051021.00001	**FOREMAN:**	J. Hastings
CLIENT:	EDM Studio, Inc.	**INSPECTOR:**	J. Carrier
DATE:	July 11, 2025	**GROUND SURFACE ELEVATION:**	33.5'±

EQUIPMENT:	AUGER	CASING	SAMPLER	COREBRL.	GROUNDWATER OBSERVATIONS			
TYPE	HSA	--	S	--	ELAPSED TIME (HR)			
SIZE ID (IN)	4 1/4	--	1 3/8	--	CASING AT (FT)			
HAMMER WT (LB)	--	--	140	--	DEPTH (FT)			
HAMMER FALL (IN)	--	--	30	--	[X] NO GROUNDWATER ENCOUNTERED			

- [ ] FIELD TESTING
- [ ] LABORATORY TESTING
- [ ] MONITORING WELL INSTALLED
- [ ] PID SCREENING

Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"	SOIL AND ROCK CLASSIFICATION-DESCRIPTION BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK)	STRATUM CHANGE DESCRIPTION	PID (PPM)
	S1	7	3 3	5" brown, rooted Forest Mat Loose medium brown fine SAND, some Silt, trace organics, moist.	**FOREST MAT** **SUBSOIL**	
1			4	Medium dense brown fine to coarse SAND and Gravel, little Silt,	**SAND & GRAVEL**	
2			11	no odor, moist.		
	S2	16	13			
3			21	Very dense gray-brown fine to coarse GRAVEL, some fine to coarse		
			30	Sand, little Silt, no odor, moist. Rock Fragments		
4			35			
				Auger action indicates dense material, gravel ±2' to ±5'		
5						
	S3	5	25	Very dense dark gray and light gray rock fragments and stone dust.		
6			65/4"			
7				Auger grinding ±5.5' to ±7'		
8						
9				Auger action indicates dense material, cobbles ±9' to ±10'		
10	S4	10	19	Very dense white Rock Fragments and stone dust.		
			40			
11			34	Very dense brown Rock Fragments, some fine to coarse Sand, trace Silt,		
			26	dry.		
12				Auger grinding ±10.5'+. Auger refusal at ±12.5', probable bedrock	12.5	
				Bottom of Exploration at ±12.5'	**BEDROCK**	
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

Notes:
1) TYPE OF RIG: CME-55 Track Mounted
2) HAMMER/HOIST TYPE: Auto

FILE: ...a\WAFS-JOBS\Geotech\21840.00004-GT\Explorations\[Boring Logs.xls]

COHESIONLESS SOILS	COHESIVE SOILS	SAMPLE TYPE	PROPORTIONS
N = 0 - 4 = VERY LOOSE	N = 0 -2 = VERY SOFT	C = ROCK CORE	trace = 0% - 10%
4-10 = LOOSE	2 - 4 = SOFT	S = SPLIT SPOON	little = 10% - 20%
10-30 = MEDIUM	4 - 8 = MEDIUM	UP = UNDISTURBED PISTON	some = 20% - 35%
30-50 = DENSE	8 -15 = STIFF	UT = UNDISTURBED THINWALL	and = 35% - 50%
50 + = VERY DENSE	30 + = HARD		

TEST BORING LOG

SLR

2 Commerce Drive; Suite 110
Bedford, New Hampshire 03110
603-668-1654

PROJECT:	**Hingham Senior Center**	**BORING NO.:** **SLR-14**	**SHEET:** 1 of 1
LOCATION:	45 Bare Cove Park Drive	**CONTRACTOR:**	Drilex Environmental
PROJ. NO:	141.051021.00001	**FOREMAN:**	J. Hastings
CLIENT:	EDM Studio, Inc.	**INSPECTOR:**	J. Carrier
DATE:	July 10, 2025	**GROUND SURFACE ELEVATION:**	28.5'±

EQUIPMENT:	**AUGER**	**CASING**	**SAMPLER**	**COREBRL.**	**GROUNDWATER OBSERVATIONS**			
TYPE	HSA	--	S	--	ELAPSED TIME (HR)			
SIZE ID (IN)	4 1/4	--	1 3/8	--	CASING AT (FT)			
HAMMER WT (LB)	--	--	140	--	DEPTH (FT)			
HAMMER FALL (IN)	--	--	30	--	[X] **NO GROUNDWATER ENCOUNTERED**			

☐ FIELD TESTING
☐ LABORATORY TESTING
☐ MONITORING WELL INSTALLED
☐ PID SCREENING
☐

Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"	SOIL AND ROCK CLASSIFICATION-DESCRIPTION BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK)	STRATUM CHANGE DESCRIPTION	PID (PPM)
	S1	12	WOH	4" brown, rooted Forest Mat	**FOREST MAT**	
1			1	Loose medium brown fine SAND, little Silt, trace Gravel, trace organics, moist.	**SUBSOIL**	
			4	Medium dense gray-brown fine to coarse SAND and Gravel, trace Silt,	**SAND & GRAVEL**	
2			11	no odor, moist.		
	S2	14	12			
3			20	Dense gray-brown fine to coarse SAND and Gravel, trace Silt, no odor,		
			16	moist.		
4			19			
				Auger action indicates dense material, gravel ±2' to ±5'		
5						
	S3	13	9	Very dense gray-brown fine to coarse SAND and Gravel, trace Silt, no odor,		
6			29	moist.		
			45	Very dense gray rock fragments, some fine to medium Sand, trace Silt,		
7			44	no odor, dry.		
	S4	11	55	Very dense gray rock fragments, some fine to medium Sand, trace Silt,		
8			66	no odor, dry. Layers of gray-brown fine to coarse SAND and Gravel.		
			60/4"			
9				Auger grinding ±6.5' to ±9.5'		
10						
	S5	13	17	Very dense gray-brown fine to coarse GRAVEL and Sand, little Silt,		
11			24	no odor,moist. Layers of some Silt.		
			28			
12			26			
13						
14						
15	S6	12	30	Very dense light gray fine to coarse GRAVEL, little fine to coarse SAND,		
16			20	little Silt.		
			37			
17			22		17	
				Bottom of Exploration at ±17'		
18						
19						
20						
21						
22						

Notes:
1) TYPE OF RIG: CME-55 Track Mounted
2) HAMMER/HOIST TYPE: Auto

FILE: ...a\WAFS-JOBS\Geotech\21840.00004-GT\Explorations\[Boring Logs.xls]

COHESIONLESS SOILS	COHESIVE SOILS	SAMPLE TYPE	PROPORTIONS
N = 0 - 4 = VERY LOOSE	N = 0 -2 = VERY SOFT	C = ROCK CORE	trace = 0% - 10%
4-10 = LOOSE	2 - 4 = SOFT	S = SPLIT SPOON	little = 10% - 20%
10-30 = MEDIUM	4 - 8 = MEDIUM	UP = UNDISTURBED PISTON	some = 20% - 35%
30-50 = DENSE	8 -15 = STIFF	UT = UNDISTURBED THINWALL	and = 35% - 50%
50 + = VERY DENSE	30 + = HARD		

TEST BORING LOG

SLR
2 Commerce Drive; Suite 110
Bedford, New Hampshire 03110
603-668-1654

PROJECT:	Hingham Senior Center	BORING NO.:	SLR-15
LOCATION:	45 Bare Cove Park Drive	CONTRACTOR:	Drilex Environmental
PROJ. NO:	141.051021.00001	FOREMAN:	J. Hastings
CLIENT:	EDM Studio, Inc.	INSPECTOR:	J. Carrier
DATE:	July 11, 2025	GROUND SURFACE ELEVATION:	34.0'±

SHEET: 1 of 1

EQUIPMENT:	AUGER	CASING	SAMPLER	COREBRL.	GROUNDWATER OBSERVATIONS			
TYPE	HSA	--	S	--	ELAPSED TIME (HR)			
SIZE ID (IN)	4 1/4	--	1 3/8	--	CASING AT (FT)			
HAMMER WT (LB)	--	--	140	--	DEPTH (FT)			
HAMMER FALL (IN)	--	--	30	--	[X] NO GROUNDWATER ENCOUNTERED			

- [ ] FIELD TESTING
- [ ] LABORATORY TESTING
- [ ] MONITORING WELL INSTALLED
- [ ] PID SCREENING
- [ ]

Depth (FT)	SAMPLE NUMBER	RECOVERY (IN)	BLOWS PER 6"	SOIL AND ROCK CLASSIFICATION-DESCRIPTION BURMISTER SYSTEM (SOIL) U.S. CORPS OF ENGINEERS SYSTEM (ROCK)	STRATUM CHANGE DESCRIPTION	PID (PPM)
	S1	8	1	4" brown, rooted Forest Mat	FOREST MAT	
1			1	Loose medium brown fine SAND, some Silt, some Gravel, trace organics, moist.	SUBSOIL	
			2		1.5	
			4		SAND & GRAVEL	
2	S2	12	9	Very dense gray-brown fine to coarse SAND and Gravel, little Silt,		
			28	no odor, moist. Rock Fragments		
3			42			
			60/4"	Auger grinding ±3' to ±4.25'		
4						
5	S3	6	59	Very dense dark gray-brown fine to coarse GRAVEL, little fine to coarse		
			40/1"	Sand, trace Silt, no odor, moist. Rock Fragments		
6						
7				Auger grinding ±5' to ±8'		
				Auger refusal at ±8', probable bedrock	8	
8				Bottom of Exploration at ±8'	BEDROCK	
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

Notes:
1) TYPE OF RIG: CME-55 Track Mounted
2) HAMMER/HOIST TYPE: Auto

FILE: ...a\WAFS-JOBS\Geotech\21840.00004-GT\Explorations\[Boring Logs.xls]

COHESIONLESS SOILS	COHESIVE SOILS	SAMPLE TYPE	PROPORTIONS
N = 0 - 4 = VERY LOOSE	N = 0 -2 = VERY SOFT	C = ROCK CORE	trace = 0% - 10%
4-10 = LOOSE	2 - 4 = SOFT	S = SPLIT SPOON	little = 10% - 20%
10-30 = MEDIUM	4 - 8 = MEDIUM	UP = UNDISTURBED PISTON	some = 20% - 35%
30-50 = DENSE	8 -15 = STIFF	UT = UNDISTURBED THINWALL	and = 35% - 50%
50 + = VERY DENSE	30 + = HARD		

FALLING HEAD TEST LOG

SLR
2 Commerce Drive; Suite 110
Bedford, New Hampshire 03110
603-668-1654

PROJECT:	Hingham Senior Center	BORING NO.: SLR-11 FHT	SHEET: 1 of 1
LOCATION:	Hingham, MA	CONTRACTOR:	Drilex Environmental
PROJ. NO:	141.051021.00001	FOREMAN:	J. Hastings
CLIENT:	EDM Studio, Inc	INSPECTOR:	J. Carrier
DATE:	July 11, 2025	GROUND SURFACE ELEVATION:	

GEOMETRY:	HOLE	CASING
DEPTH BGS (IN)	60	60
DIAMETER (IN):	4	4
CASING ELV AGS (IN)	--	6
MATERIAL	SOIL	PVC

GROUNDWATER OBSERVATIONS			
ELAPSED TIME (HR)			
CASING AT (FT)			
DEPTH (FT)	20		
[X] NO GROUNDWATER ENCOUNTERED			

[ ] CASE A
[X] CASE B
[ ] CASE C
[ ] CASE D
CASE B

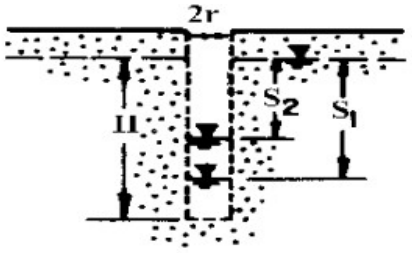
Fs: --

Time Passed (sec)	Depth to Water (ft)	PERMEABILITY (CM/SEC)	AVERAGE OF 2 POINTS (CM/SEC)
0	3.1	--	--
60	3.45	4.3E-02	3.6E-02
120	3.71	2.9E-02	
180	3.93	2.3E-02	2.1E-02
240	4.13	2.0E-02	
300	4.32	1.8E-02	1.5E-02
360	4.46	1.3E-02	
420	4.56	8.8E-03	9.2E-03
480	4.67	9.5E-03	
503	4.73	1.3E-02	1.3E-02

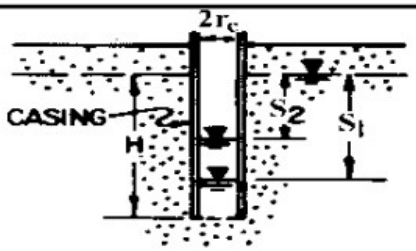
AVERAGE K (CM/S)	1.7E-02

FALLING HEAD TEST PARAMETER CASE
TAKEN FROM USBR GEOLOGY FIELD MANUAL CHAPTER 17, PAGE 169

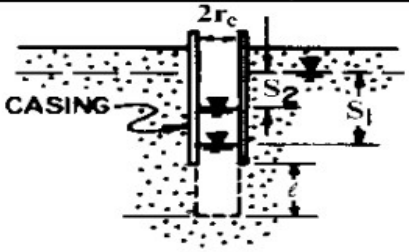
(A) UNCASED HOLE



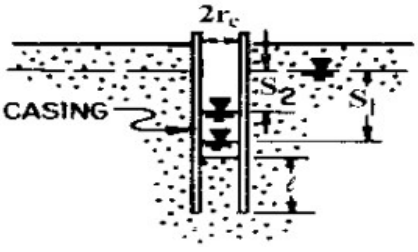
(B) CASED HOLE, SOIL FLUSH WITH BOTTOM.



(C) CASED HOLE, UNCASED OR PERFORATED EXTENSION OF LENGTH "ℓ".



(D) CASED HOLE, COLUMN OF SOIL INSIDE CASING TO HEIGHT "ℓ"



Notes:
1) Depth to water is measured from top of PVC pipe

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FALLING HEAD TEST LOG

SLR
2 Commerce Drive; Suite 110
Bedford, New Hampshire 03110
603-668-1654

PROJECT:	**Hingham Senior Center**	**BORING NO.:** **SLR-15 FHT**	**SHEET:** 1 of 1
LOCATION:	Hingham, MA	**CONTRACTOR:**	Drilex Environmental
PROJ. NO:	141.051021.00001	**FOREMAN:**	J. Hastings
CLIENT:	EDM Studio, Inc	**INSPECTOR:**	J. Carrier
DATE:	July 11, 2025	**GROUND SURFACE ELEVATION:**	

GEOMETRY:	**HOLE**	**CASING**			**GROUNDWATER OBSERVATIONS**			
DEPTH BGS (IN)	60	60			ELAPSED TIME (HR)			
DIAMETER (IN):	4	4			CASING AT (FT)			
CASING ELV AGS (IN)	--	6			DEPTH (FT)	20		
MATERIAL	SOIL	PVC			[X] **NO GROUNDWATER ENCOUNTERED**			

[ ] CASE A
[X] CASE B
[ ] CASE C
[ ] CASE D

Fs: --

CASE B

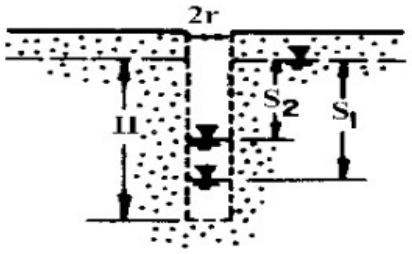
Time Passed (sec)	Depth to Water (ft)	PERMEABILITY (CM/SEC)	AVERAGE OF 2 POINTS (CM/SEC)
0	3.76	--	--
300	3.79	6.7E-04	4.2E-04
600	3.80	1.8E-04	
2400	3.82	5.8E-05	5.0E-04
3600	4	9.4E-04	
7200	4.06	9.9E-05	1.2E-04
10800	4.15	1.5E-04	
14400	4.23	1.3E-04	1.3E-04
18000	4.32	1.4E-04	
21600	4.43	1.7E-04	1.7E-04

AVERAGE K (CM/S)	2.8E-04

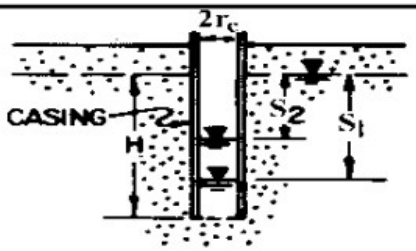
FALLING HEAD TEST PARAMETER CASE

TAKEN FROM USBR GEOLOGY FIELD MANUAL CHAPTER 17, PAGE 169

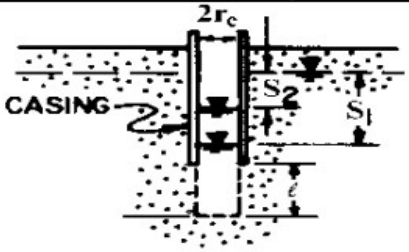
(A) UNCASED HOLE



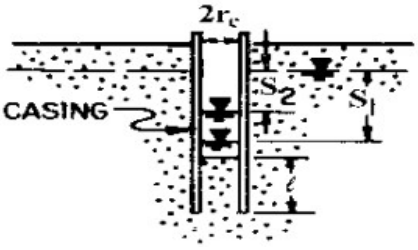
(B) CASED HOLE, SOIL FLUSH WITH BOTTOM.



(C) CASED HOLE, UNCASED OR PERFORATED EXTENSION OF LENGTH "ℓ".



(D) CASED HOLE, COLUMN OF SOIL INSIDE CASING TO HEIGHT "ℓ"



Notes:

1) Depth to water is measured from top of PVC pipe

FILE: \\ctalpha\WAFS-JOBS\Geotech\21840.00004-GT\Explorations\[FH Test Lo

FALLING HEAD TEST LOG

SLR
2 Commerce Drive; Suite 110
Bedford, New Hampshire 03110
603-668-1654

PROJECT:	**Hingham Senior Center**	**BORING NO.:** **SLR-PT1**	**SHEET:** 1 of 1
LOCATION:	Hingham, MA	**CONTRACTOR:**	Drilex Environmental
PROJ. NO:	141.051021.00001	**FOREMAN:**	J. Hastings
CLIENT:	EDM Studio, Inc	**INSPECTOR:**	J. Carrier
DATE:	July 11, 2025	**GROUND SURFACE ELEVATION:**	

GEOMETRY:	**HOLE**	**CASING**			**GROUNDWATER OBSERVATIONS**			
DEPTH BGS (IN)	60	60			ELAPSED TIME (HR)			
DIAMETER (IN):	4	4			CASING AT (FT)			
CASING ELV AGS (IN)	--	6			DEPTH (FT)	20		
MATERIAL	SOIL	PVC			[X] **NO GROUNDWATER ENCOUNTERED**			

[ ] CASE A
[X] CASE B
[ ] CASE C
[ ] CASE D

Fs: --

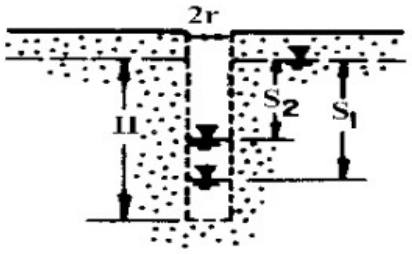
CASE B

Time Passed (sec)	Depth to Water (ft)	PERMEABILITY (CM/SEC)	AVERAGE OF 2 POINTS (CM/SEC)
0	1.75	--	--
300	1.8	2.2E-03	9.3E-03
600	2.21	1.6E-02	
1800	2.6	3.2E-03	2.3E-03
3600	2.87	1.3E-03	
9000	3.51	8.9E-04	6.9E-04
12600	3.78	4.9E-04	
14400	4	7.5E-04	4.7E-04
18000	4.11	1.8E-04	
AVERAGE K (CM/S)		3.2E-03	

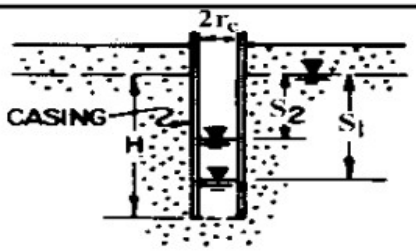
FALLING HEAD TEST PARAMETER CASE

TAKEN FROM USBR GEOLOGY FIELD MANUAL CHAPTER 17, PAGE 169

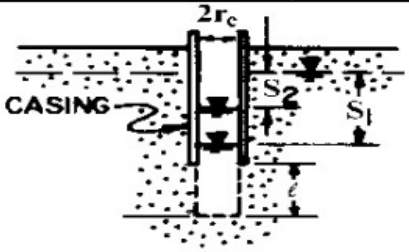
(A) UNCASED HOLE



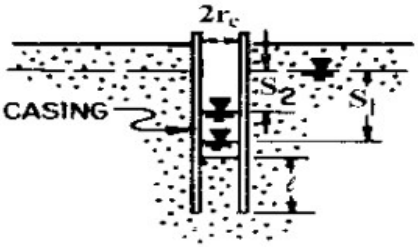
(B) CASED HOLE, SOIL FLUSH WITH BOTTOM.



(C) CASED HOLE, UNCASED OR PERFORATED EXTENSION OF LENGTH "ℓ".



(D) CASED HOLE, COLUMN OF SOIL INSIDE CASING TO HEIGHT "ℓ"



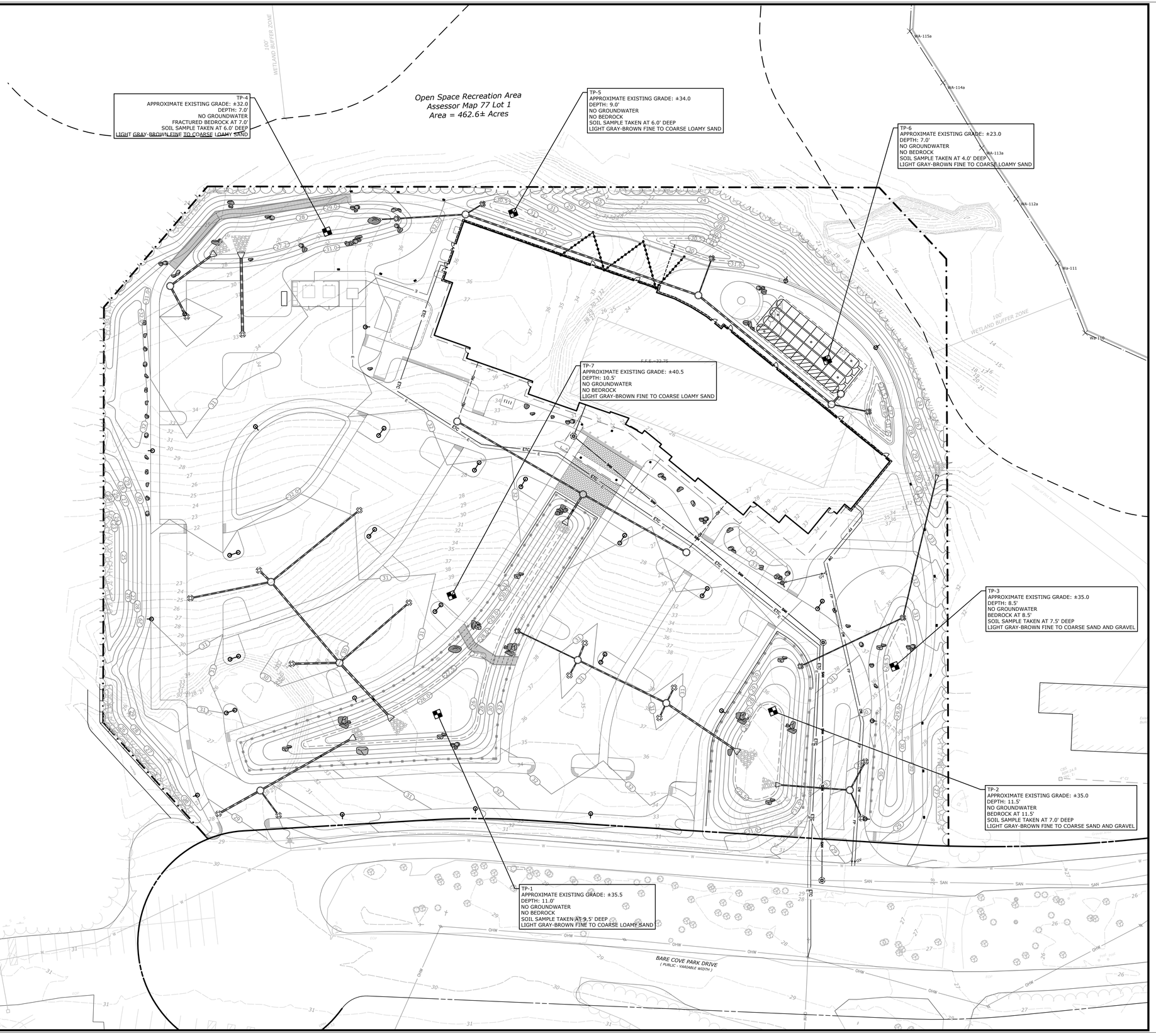
Notes:

1) Depth to water is measured from top of PVC pipe

FILE: \\ctalpha\WAFS-JOBS\Geotech\21840.00004-GT\Explorations\[FH Test Lo

NOTES:

TEST PITS WERE CONDUCTED ON 1/23/2026
AND WITNESSED BY SLR.



SLR
67 HUNT STREET, SUITE 203-C
AGAWAM, MA
413.241.6520
SLRCONSULTING.COM

DESCRIPTION	DATE	BY

TEST PIT SUMMARY PLAN

HINGHAM CENTER FOR ACTIVE LIVING

BARE COVE PARK DRIVE
HINGHAM, MA

DESIGNED	DRAWN	CHECKED
AWG	AWG	TD

SCALE	1"=30'
DATE	JANUARY 30, 2026
PROJECT NO.	21840.00004
SHEET NO.	1 OF 1
SHEET NAME	TP

Hingam Falling Head Permeability Test Results
Test Pits Done on 1/23/2025

Sample	K (in/hr)	K (ft/day)	Sample Depth
TP-1	24.07	48.13	114"
TP-2	287.50	575.00	84"
TP-3	15.43	30.86	90"
TP-4	136.75	273.50	72"
TP-5	343.64	687.27	72"
TP-6	27.30	54.61	48"

*TP-2, TP-4 & TP-5 infiltration rates are abnormally high, Rawls Rates will be used in design to remain conservative.

Falling Head Test Summary

Sample	Round	L (inches)	H1(Inches)	H2(Inches)	t (min)	t (hours)	K (in/hr)	K (ft/day)
	1	5.75	8	7.25	1	0.017	33.934	67.869
TP-1	2	5.75	7.25	6.75	2	0.033	12.321	24.643
depth taken: 9.5'	3	5.75	6.75	6.25	3	0.050	8.846	17.692
	4	5.75	6.25	5.00	5	0.083	15.333	30.667
	5	5.75	5.00	2.00	10	0.167	29.571	59.143
	6	5.75	2.00	1.00	12	0.200	19.167	38.333
	7	5.75	1.00	0.00	14	0.233	49.286	98.571
				Sample Average			**24.07**	**48.13**

Sample	Round	L (inches)	H1(Inches)	H2(Inches)	t (min)	t (hours)	K (in/hr)	K (ft/day)
	1	5.75	8	4.00	1	0.017	230.000	460.000
TP-2	2	5.75	4.00	0.00	2	0.033	345.000	690.000
depth taken: 7'								
				Sample Average			**287.50**	**575.00**

Sample	Round	L (inches)	H1(Inches)	H2(Inches)	t (min)	t (hours)	K (in/hr)	K (ft/day)
	1	6	8	6.75	1	0.017	61.017	122.034
TP-3	2	6	6.75	6.50	2	0.033	6.792	13.585
depth taken: 7.5'	3	6	6.50	6.00	3	0.050	9.600	19.200
	4	6	6.00	5.25	5	0.083	9.600	19.200
	5	6	5.25	4.00	10	0.167	9.730	19.459
	6	6	4.00	2.50	15	0.250	11.077	22.154
	7	6	2.50	1.25	20	0.333	12.000	24.000
	8	6	1.25	1.00	22	0.367	3.636	7.273
				Sample Average			**15.43**	**30.86**

Sample	Round	L (inches)	H1(Inches)	H2(Inches)	t (min)	t (hours)	K (in/hr)	K (ft/day)
	1	5.75	8	5.25	1	0.017	143.208	286.415
TP-4	2	5.75	5.25	2.75	2	0.033	107.813	215.625
depth taken 6'	3	5.75	2.75	0.50	3	0.050	159.231	318.462
				Sample Average			**136.75**	**273.50**

Sample	Round	L (inches)	H1(Inches)	H2(Inches)	t (min)	t (hours)	K (in/hr)	K (ft/day)
	1	6	8	3.00	1	0.017	327.273	654.545
TP-5	2	6	3.00	0.00	2	0.033	360.000	720.000
depth taken 6'								
				Sample Average			**343.64**	**687.27**

Sample	Round	L (inches)	H1(Inches)	H2(Inches)	t (min)	t (hours)	K (in/hr)	K (ft/day)
	1	6	8	7.25	1	0.017	35.410	70.820
TP-6	2	6	7.25	6.50	2	0.033	19.636	39.273
depth taken 6'	3	6	6.50	5.50	3	0.050	20.000	40.000
	4	6	5.50	4.50	4	0.067	18.000	36.000
	5	6	4.50	3.50	5	0.083	18.000	36.000
	6	6	3.50	2.50	6	0.100	20.000	40.000
	7	6	2.50	1.75	7	0.117	18.151	36.303
	8	6	1.75	1.00	8	0.133	24.545	49.091
	9	6	1.00	0.00	10	0.167	72.000	144.000
				Sample Average			**27.30**	**54.61**

Falling Head Test Results

Appendix D Storm Drainage Computations

Stormwater Management Plan

Hingham Center for Active Living

EDM Studio, Inc.

SLR Project No.: 141.21840.00004

February 3, 2026

Rational Method Individual Basin Calculations

Project: Hingham Center for Active Living By: JLS Date: 1/29/26
Location: Bare Cove Park Drive, Hingham, MA

Basin Name	Impervious Area C=0.9 (sf)	Grassed Area C=0.3 (sf)	Wooded Area C=0.2 (sf)	Total Area (sf)	Total Area (ac)	Weighted C	Tc (min)
System 1							
YD 3	2395	4292	0	6687	0.15	0.51	6.0
YD 5	3158	50	1218	4426	0.10	0.70	6.0
YD 7	1017	0	1281	2298	0.05	0.51	6.0
System 2							
CB 11	8203	3599	983	12785	0.29	0.68	6.0
CB 13	6513	3702	761	10976	0.25	0.65	6.0
System 3							
CB 19	4377	2664	0	7041	0.16	0.67	6.0
CB 20	3340	2429	0	5769	0.13	0.65	6.0
CB 23	6818	1196	0	8014	0.18	0.81	6.0
CB 24	4641	759	0	5400	0.12	0.82	6.0
CB 26	9419	1966	0	11385	0.26	0.80	6.0
CB 27	6119	563	0	6682	0.15	0.85	6.0
System 4							
CB 35	7042	2100	4	9146	0.21	0.76	6.0
CB 36	4815	146	0	4961	0.11	0.88	6.0
CB 39	10027	1026	0	11053	0.25	0.84	6.0
CB 40	10338	1582	0	11920	0.27	0.82	6.0
CB 42	6319	811	2	7132	0.16	0.83	6.0
CB 43	7471	1875	0	9346	0.21	0.78	6.0
CB 44	3699	2072	0	5771	0.13	0.68	6.0

Rational Method Roof Drain System Calculations

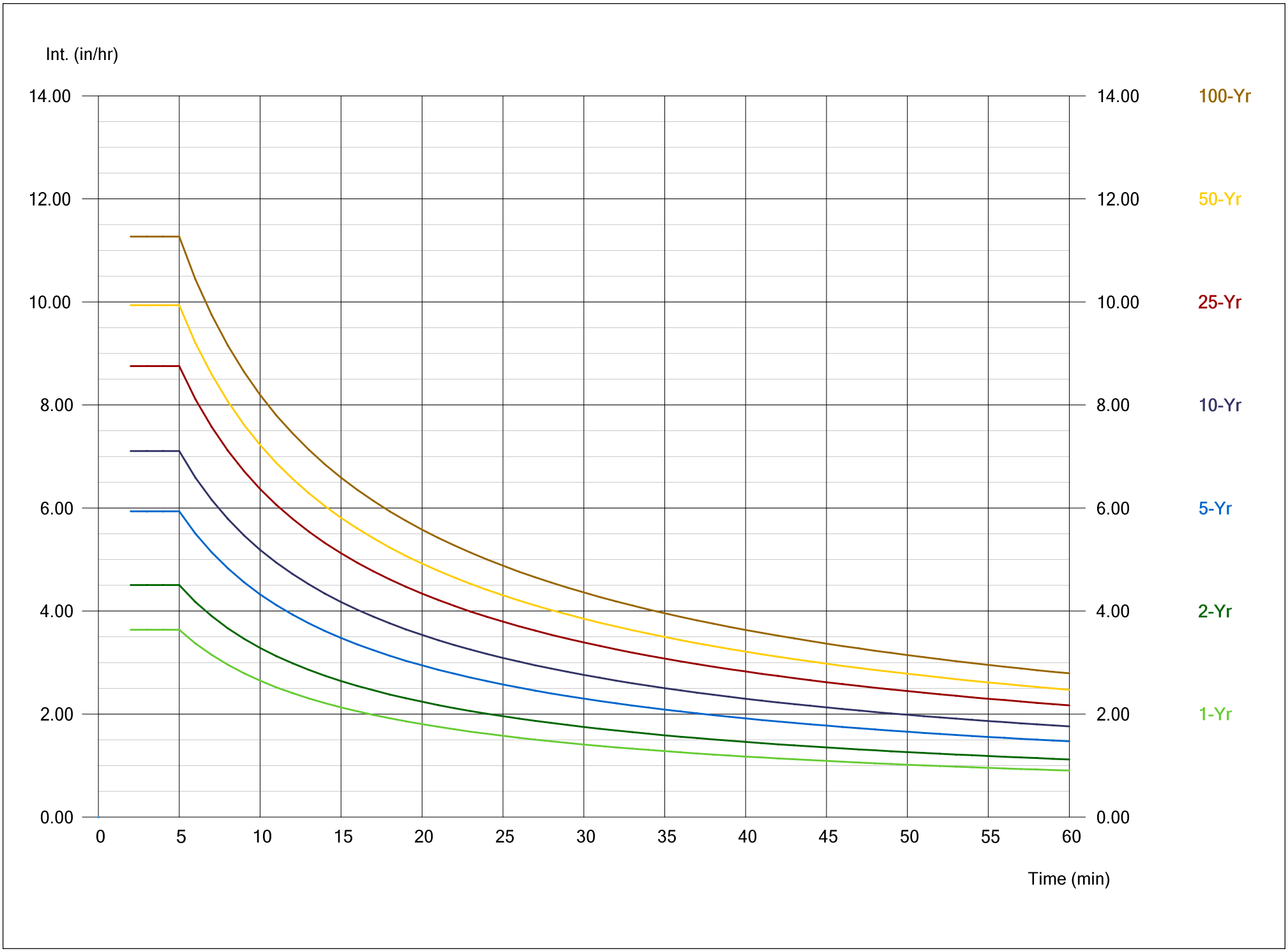
Project: Hingham Center for Active Living
Location: Bare Cove Park Drive, Hingham, Massachusetts

Total Roof Runoff to Proposed Storm Drainage System

	Roof Area RA-1	Roof Area RA-2	Roof Area RA-3	Roof Area RA-4
C	0.90	0.90	0.90	0.90
I	7.13	7.13	7.13	7.13
A	0.06	0.07	0.26	0.26
Q	0.41	0.45	1.65	1.65

Storm Sewer IDF Curves

IDF file: Hingham IDF.IDF



NOAA Atlas 14, Volume 10, Version 3
Location name: Hingham, Massachusetts, USA*
Latitude: 42.2382°, Longitude: -70.9068°
Elevation: 45 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**3.65** (2.87-4.57)	**4.52** (3.55-5.68)	**5.95** (4.66-7.49)	**7.13** (5.56-9.05)	**8.76** (6.61-11.8)	**9.97** (7.37-13.7)	**11.3** (8.11-16.3)	**12.8** (8.64-18.9)	**15.2** (9.83-23.3)	**17.1** (10.8-26.9)
10-min	**2.59** (2.03-3.24)	**3.20** (2.51-4.02)	**4.21** (3.30-5.30)	**5.05** (3.93-6.40)	**6.20** (4.68-8.33)	**7.06** (5.22-9.74)	**7.99** (5.75-11.5)	**9.08** (6.13-13.4)	**10.7** (6.97-16.5)	**12.1** (7.69-19.0)
15-min	**2.03** (1.60-2.54)	**2.51** (1.97-3.15)	**3.30** (2.59-4.16)	**3.96** (3.09-5.03)	**4.87** (3.67-6.53)	**5.54** (4.10-7.64)	**6.26** (4.51-9.05)	**7.12** (4.80-10.5)	**8.42** (5.46-12.9)	**9.52** (6.03-14.9)
30-min	**1.41** (1.11-1.77)	**1.75** (1.37-2.19)	**2.30** (1.80-2.90)	**2.76** (2.15-3.50)	**3.39** (2.55-4.55)	**3.85** (2.85-5.31)	**4.36** (3.14-6.30)	**4.96** (3.35-7.31)	**5.88** (3.81-9.01)	**6.66** (4.21-10.4)
60-min	**0.903** (0.710-1.13)	**1.12** (0.879-1.40)	**1.47** (1.15-1.85)	**1.76** (1.37-2.24)	**2.17** (1.64-2.91)	**2.47** (1.83-3.41)	**2.79** (2.01-4.04)	**3.18** (2.14-4.68)	**3.77** (2.44-5.79)	**4.28** (2.71-6.71)
2-hr	**0.572** (0.453-0.712)	**0.721** (0.570-0.898)	**0.964** (0.759-1.21)	**1.17** (0.913-1.47)	**1.44** (1.10-1.93)	**1.65** (1.23-2.26)	**1.87** (1.36-2.69)	**2.14** (1.45-3.13)	**2.56** (1.67-3.89)	**2.92** (1.86-4.54)
3-hr	**0.441** (0.351-0.547)	**0.557** (0.442-0.692)	**0.747** (0.590-0.931)	**0.904** (0.710-1.13)	**1.12** (0.853-1.49)	**1.28** (0.956-1.75)	**1.45** (1.06-2.08)	**1.67** (1.13-2.42)	**1.99** (1.30-3.01)	**2.28** (1.45-3.50)
6-hr	**0.290** (0.232-0.358)	**0.362** (0.289-0.447)	**0.479** (0.382-0.594)	**0.577** (0.456-0.718)	**0.710** (0.544-0.935)	**0.809** (0.607-1.09)	**0.917** (0.670-1.30)	**1.05** (0.713-1.50)	**1.24** (0.814-1.86)	**1.42** (0.903-2.16)
12-hr	**0.189** (0.152-0.231)	**0.231** (0.186-0.283)	**0.300** (0.240-0.368)	**0.356** (0.284-0.441)	**0.435** (0.334-0.566)	**0.493** (0.371-0.658)	**0.555** (0.406-0.774)	**0.629** (0.431-0.893)	**0.740** (0.486-1.09)	**0.834** (0.534-1.26)
24-hr	**0.115** (0.093-0.140)	**0.141** (0.114-0.172)	**0.183** (0.147-0.223)	**0.218** (0.174-0.268)	**0.266** (0.206-0.343)	**0.301** (0.228-0.399)	**0.339** (0.250-0.470)	**0.385** (0.265-0.541)	**0.455** (0.299-0.663)	**0.514** (0.330-0.764)
2-day	**0.065** (0.053-0.078)	**0.081** (0.066-0.098)	**0.107** (0.087-0.130)	**0.129** (0.104-0.158)	**0.159** (0.124-0.205)	**0.181** (0.138-0.239)	**0.205** (0.153-0.284)	**0.235** (0.162-0.328)	**0.282** (0.186-0.407)	**0.323** (0.208-0.474)
3-day	**0.047** (0.039-0.057)	**0.059** (0.048-0.071)	**0.078** (0.063-0.094)	**0.093** (0.076-0.114)	**0.115** (0.090-0.148)	**0.131** (0.100-0.172)	**0.148** (0.111-0.204)	**0.170** (0.118-0.235)	**0.204** (0.135-0.293)	**0.234** (0.151-0.342)
4-day	**0.038** (0.031-0.046)	**0.047** (0.039-0.057)	**0.062** (0.051-0.075)	**0.074** (0.060-0.090)	**0.091** (0.071-0.116)	**0.103** (0.079-0.135)	**0.117** (0.087-0.160)	**0.134** (0.092-0.184)	**0.160** (0.106-0.228)	**0.183** (0.118-0.266)
7-day	**0.026** (0.022-0.032)	**0.032** (0.026-0.038)	**0.041** (0.033-0.049)	**0.048** (0.039-0.058)	**0.058** (0.045-0.073)	**0.065** (0.050-0.084)	**0.073** (0.055-0.099)	**0.083** (0.058-0.113)	**0.098** (0.065-0.139)	**0.111** (0.072-0.160)
10-day	**0.021** (0.018-0.026)	**0.025** (0.021-0.030)	**0.032** (0.026-0.038)	**0.037** (0.030-0.044)	**0.044** (0.035-0.055)	**0.049** (0.038-0.064)	**0.055** (0.041-0.074)	**0.062** (0.043-0.084)	**0.072** (0.048-0.102)	**0.081** (0.053-0.116)
20-day	**0.015** (0.012-0.018)	**0.017** (0.014-0.020)	**0.020** (0.017-0.024)	**0.023** (0.019-0.028)	**0.027** (0.021-0.034)	**0.030** (0.023-0.038)	**0.033** (0.025-0.043)	**0.037** (0.026-0.049)	**0.041** (0.028-0.057)	**0.045** (0.029-0.064)
30-day	**0.012** (0.010-0.014)	**0.014** (0.011-0.016)	**0.016** (0.013-0.019)	**0.018** (0.015-0.022)	**0.021** (0.016-0.026)	**0.023** (0.018-0.029)	**0.025** (0.019-0.033)	**0.027** (0.019-0.036)	**0.030** (0.020-0.042)	**0.033** (0.021-0.046)
45-day	**0.010** (0.008-0.012)	**0.011** (0.009-0.013)	**0.013** (0.011-0.015)	**0.014** (0.012-0.017)	**0.016** (0.013-0.020)	**0.018** (0.014-0.022)	**0.019** (0.014-0.025)	**0.021** (0.014-0.027)	**0.023** (0.015-0.031)	**0.024** (0.015-0.033)
60-day	**0.009** (0.007-0.010)	**0.009** (0.008-0.011)	**0.011** (0.009-0.013)	**0.012** (0.010-0.014)	**0.013** (0.011-0.016)	**0.015** (0.011-0.018)	**0.016** (0.012-0.020)	**0.017** (0.012-0.022)	**0.018** (0.012-0.025)	**0.019** (0.012-0.027)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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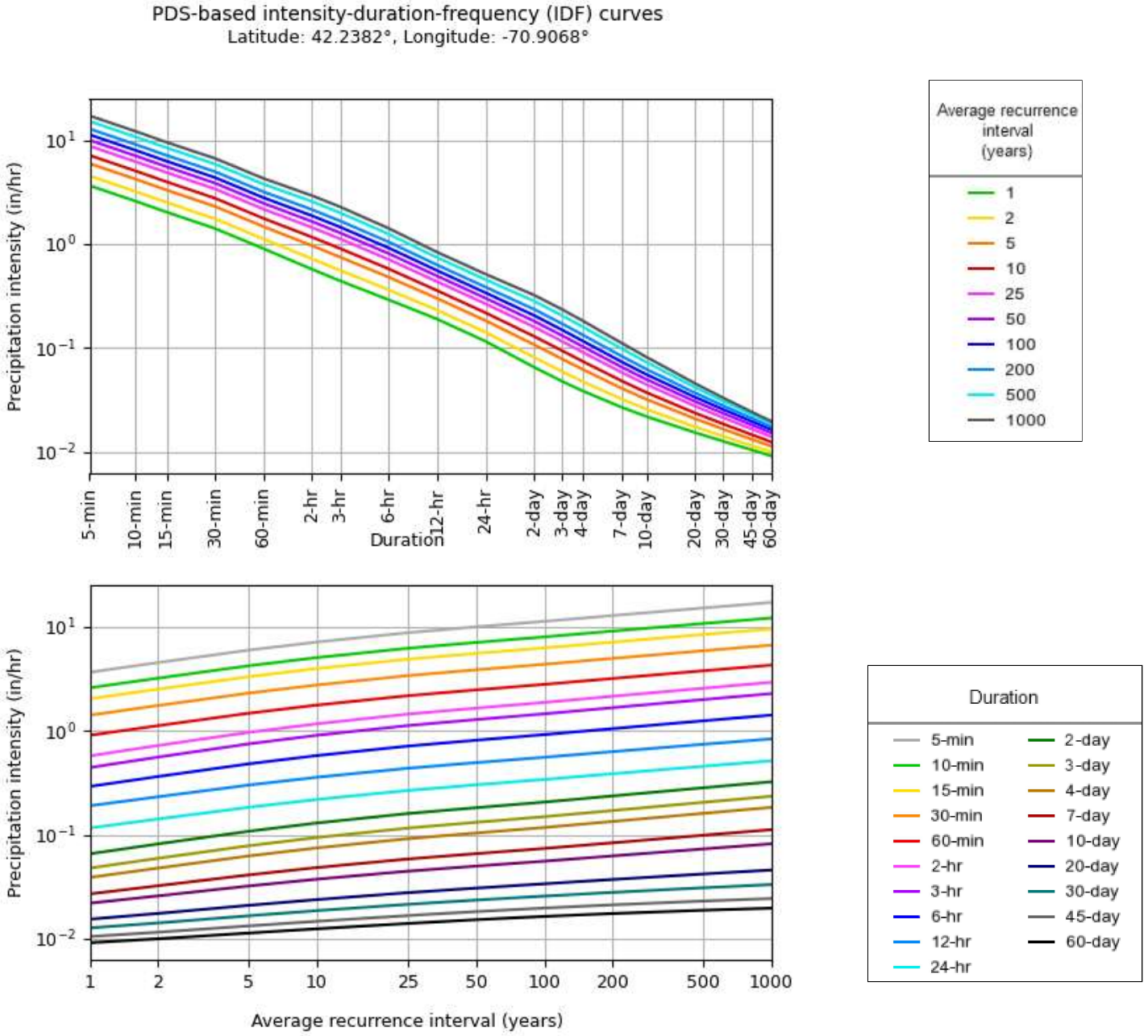
PF graphical



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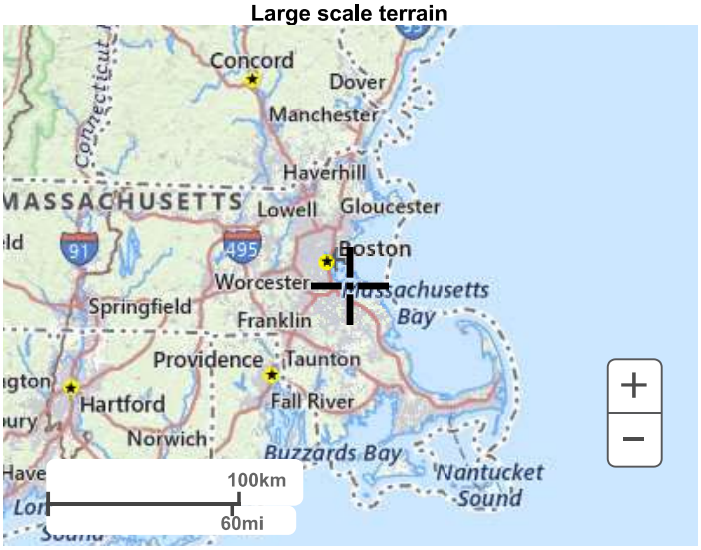
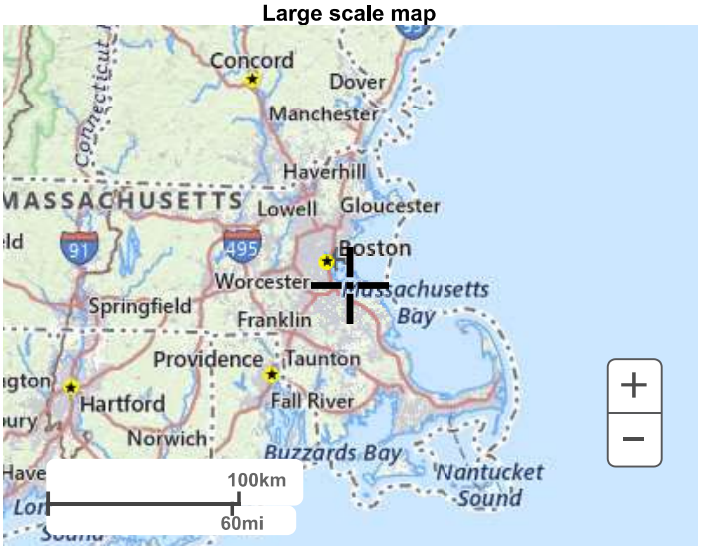
Maps & aerials

Small scale terrain

Large scale terrain



Large scale map



Large scale aerial

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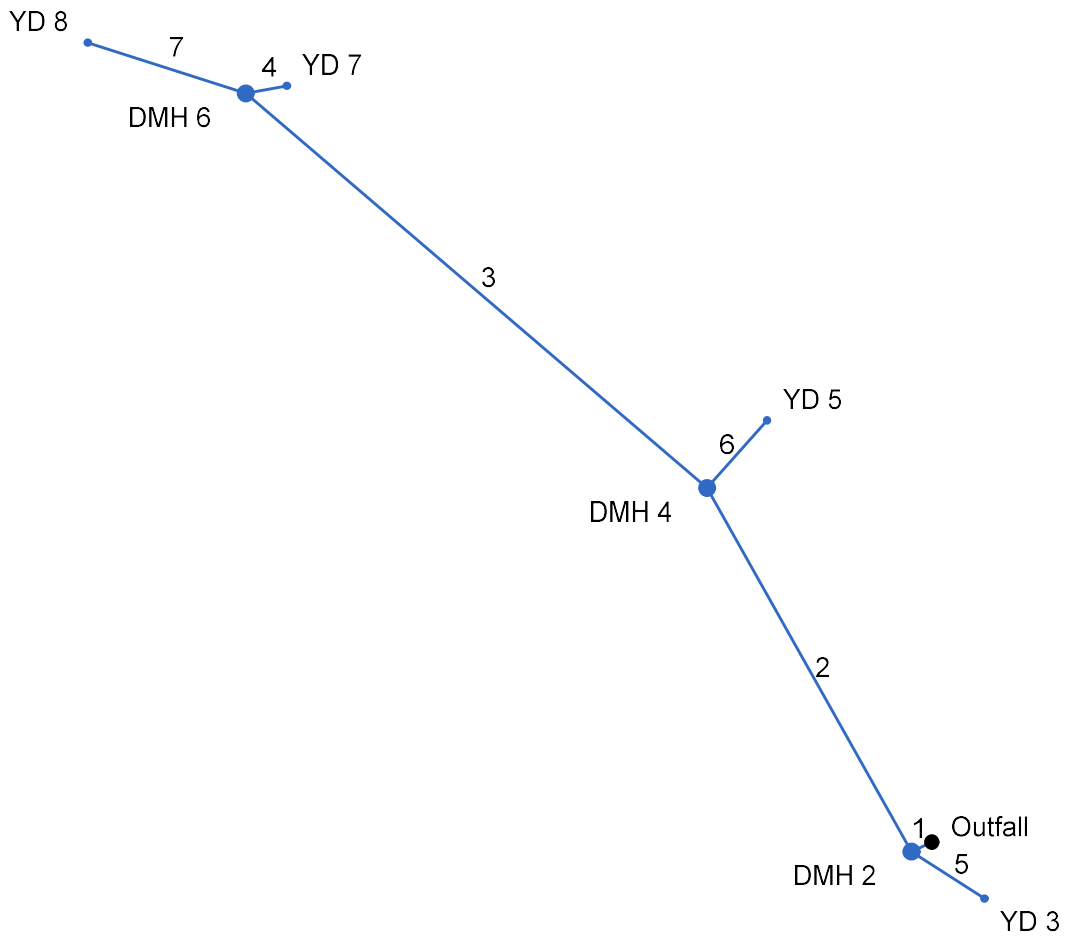
US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: System 1.stm	Number of lines: 7	Date: 2/3/2026

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	6.000	153.201	MH	0.45	0.00	0.00	6.0	22.30	1.00	22.36	12	Cir	0.012	1.00	32.70	DMH 1 - DMH 2
2	1	111.000	87.612	MH	0.00	0.00	0.00	6.0	25.37	0.50	25.93	12	Cir	0.012	0.95	32.70	DMH 2 - DMH 4
3	2	161.000	-20.137	MH	0.41	0.00	0.00	6.0	25.93	0.50	26.73	12	Cir	0.012	1.00	32.70	DMH 4 - DMH 6
4	3	11.000	129.474	DrGrt	0.00	0.05	0.51	6.0	27.84	1.00	27.95	6	Cir	0.012	1.00	30.95	DMH 6 - YD 7
5	1	23.000	-120.239	DrGrt	0.00	0.15	0.51	6.0	28.15	1.00	28.38	6	Cir	0.012	1.00	30.88	DMH 2 - YD 3
6	2	24.000	70.661	DrGrt	0.00	0.10	0.70	6.0	27.63	1.00	27.87	6	Cir	0.012	1.00	30.37	DMH 4 - YD 5
7	3	44.000	-22.722	DrGrt	0.62	0.00	0.00	6.0	26.73	0.50	26.95	8	Cir	0.012	1.00	28.95	DMH 6 - YD 8

Project File: System 1.stm

Number of lines: 7

Date: 2/3/2026

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	6.000	0.00	0.30	0.00	0.00	0.17	6.0	7.8	5.9	2.49	3.86	3.90	12	1.00	22.30	22.36	23.18	23.04	32.35	32.70	DMH 1 - DMH 2
2	1	111.000	0.00	0.15	0.00	0.00	0.10	6.0	7.3	6.0	1.61	2.74	3.63	12	0.50	25.37	25.93	25.92	26.48	32.70	32.70	DMH 2 - DMH 4
3	2	161.000	0.00	0.05	0.00	0.00	0.03	6.0	6.3	6.5	1.19	2.72	2.64	12	0.50	25.93	26.73	26.67	27.19	32.70	32.70	DMH 4 - DMH 6
4	3	11.000	0.05	0.05	0.51	0.03	0.03	6.0	6.0	6.6	0.17	0.61	2.43	6	1.00	27.84	27.95	28.02	28.15	32.70	30.95	DMH 6 - YD 7
5	1	23.000	0.15	0.15	0.51	0.08	0.08	6.0	6.0	6.6	0.50	0.61	3.39	6	1.00	28.15	28.38	28.50	28.74	32.70	30.88	DMH 2 - YD 3
6	2	24.000	0.10	0.10	0.70	0.07	0.07	6.0	6.0	6.6	0.46	0.61	3.29	6	1.00	27.63	27.87	27.96	28.22	32.70	30.37	DMH 4 - YD 5
7	3	44.000	0.00	0.00	0.00	0.00	0.00	6.0	6.0	0.0	0.62	0.93	2.67	8	0.50	26.73	26.95	27.19	27.34	32.70	28.95	DMH 6 - YD 8

Project File: System 1.stm

Number of lines: 7

Run Date: 2/3/2026

NOTES:Intensity = 33.90 / (Inlet time + 4.00) ^ 0.71; Return period =Yrs. 10 ; c = cir e = ellip b = box

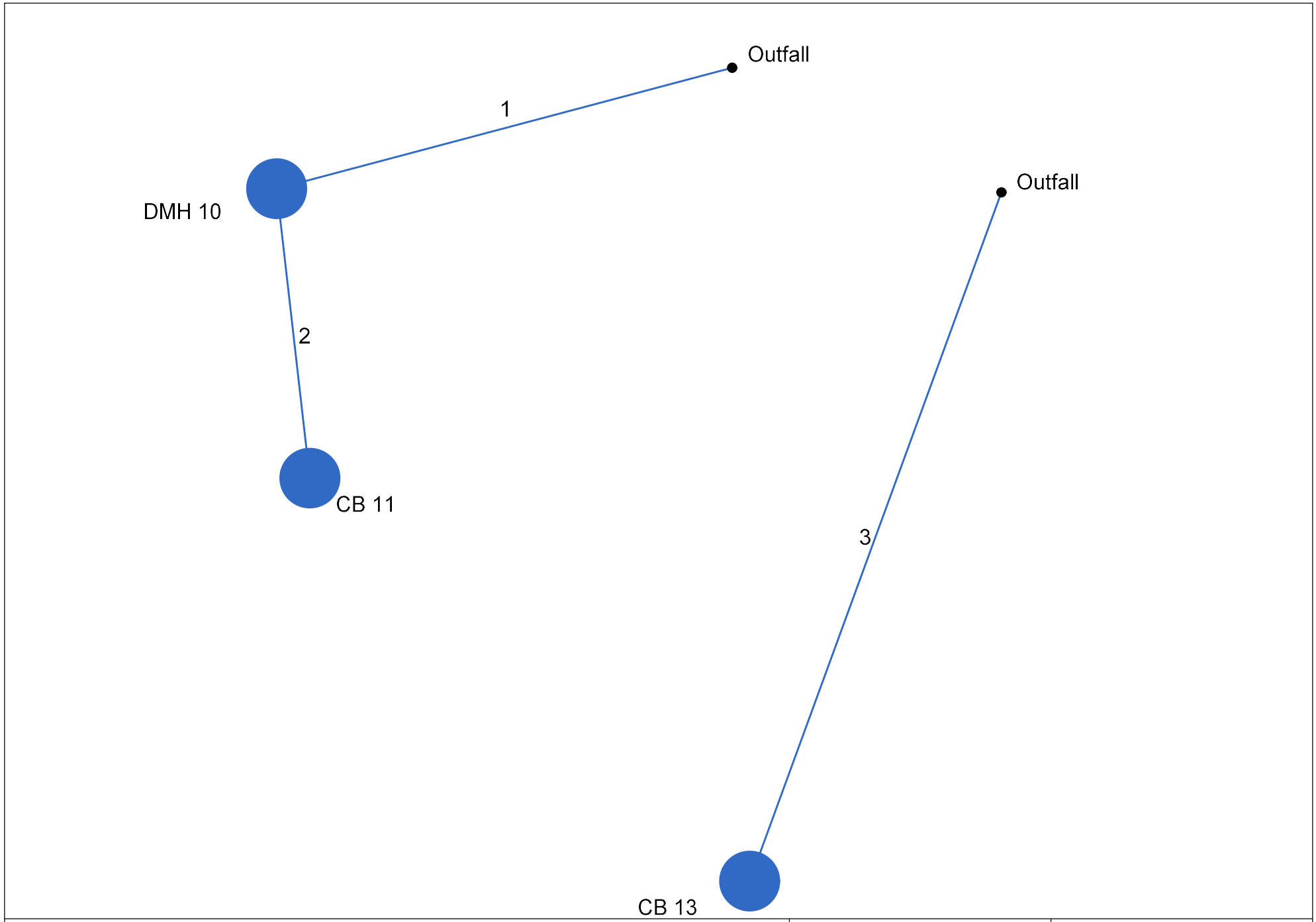
Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	12	2.49	22.30	23.18	0.88	0.56	3.40	0.30	23.48	0.000	6.000	22.36	23.04	0.68**	0.56	4.41	0.30	23.34	0.000	0.000	n/a	1.00	0.30
2	12	1.61	25.37	25.92	0.55*	0.44	3.63	0.20	26.13	0.504	111.000	25.93	26.48	0.55	0.44	3.63	0.20	26.69	0.505	0.505	0.560	0.95	0.19
3	12	1.19	25.93	26.67	0.74	0.35	1.90	0.06	26.73	0.117	161.000	26.73	27.19 j	0.46**	0.35	3.38	0.18	27.37	0.510	0.314	n/a	1.00	n/a
4	6	0.17	27.84	28.02	0.18*	0.06	2.64	0.08	28.10	0.000	11.000	27.95	28.15	0.20**	0.08	2.23	0.08	28.23	0.000	0.000	n/a	1.00	n/a
5	6	0.50	28.15	28.50	0.35*	0.15	3.46	0.17	28.67	0.000	23.000	28.38	28.74	0.36**	0.15	3.31	0.17	28.91	0.000	0.000	n/a	1.00	0.17
6	6	0.46	27.63	27.96	0.33*	0.14	3.40	0.16	28.11	0.000	24.000	27.87	28.22	0.35**	0.14	3.18	0.16	28.37	0.000	0.000	n/a	1.00	n/a
7	8	0.62	26.73	27.19	0.46	0.26	2.41	0.09	27.28	0.332	44.000	26.95	27.34	0.39	0.21	2.92	0.13	27.47	0.538	0.435	0.191	1.00	0.13

Project File: System 1.stm | Number of lines: 7 | Run Date: 2/3/2026

Notes: * depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: System 2.stm	Number of lines: 3	Date: 1/30/2026

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	32.000	165.006	MH	0.00	0.00	0.00	6.0	27.00	0.50	27.16	12	Cir	0.012	0.99	30.25	FES 9 - DMH 10
2	1	20.000	-81.593	Grate	0.00	0.29	0.68	6.0	27.16	0.50	27.26	12	Cir	0.013	1.00	29.90	DMH 10 - CB 11
3	End	50.000	109.951	Grate	0.00	0.25	0.65	6.0	27.00	0.50	27.25	18	Cir	0.013	1.00	30.50	FES 12 - CB 13

Project File: System 2.stm | Number of lines: 3 | Date: 1/30/2026

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	32.000	0.00	0.29	0.00	0.00	0.20	6.0	6.1	6.5	1.29	2.73	3.32	12	0.50	27.00	27.16	27.51	27.64	28.00	30.25	FES 9 - DMH 10
2	1	20.000	0.29	0.29	0.68	0.20	0.20	6.0	6.0	6.6	1.30	2.52	2.53	12	0.50	27.16	27.26	27.82	27.85	30.25	29.90	DMH 10 - CB 11
3	End	50.000	0.25	0.25	0.65	0.16	0.16	6.0	6.0	6.6	1.07	7.43	1.82	18	0.50	27.00	27.25	28.29	27.64	28.50	30.50	FES 12 - CB 13

Project File: System 2.stm | Number of lines: 3 | Run Date: 1/30/2026

NOTES:Intensity = 33.90 / (Inlet time + 4.00) ^ 0.71; Return period =Yrs. 10 ; c = cir e = ellip b = box

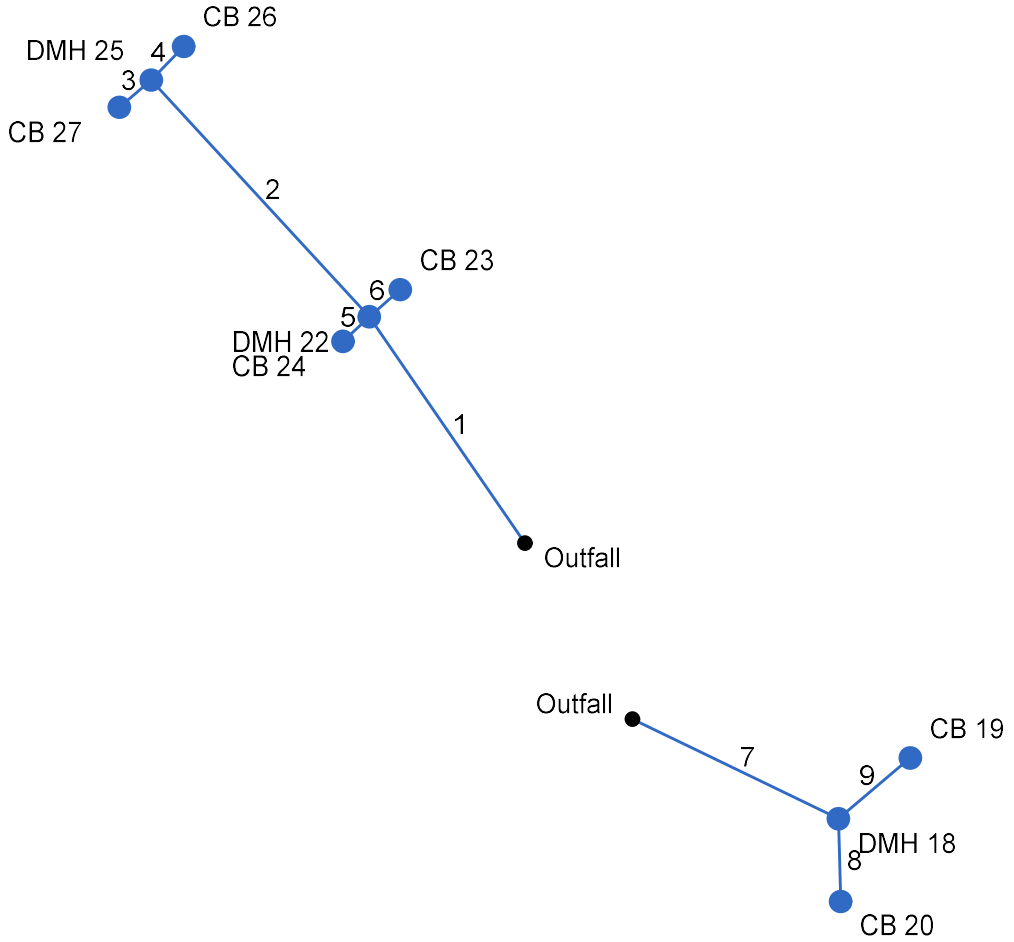
Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	12	1.29	27.00	27.51	0.51	0.37	3.20	0.16	27.67	0.417	32.000	27.16	27.64 j	0.48**	0.37	3.44	0.18	27.83	0.508	0.462	0.148	0.99	0.18
2	12	1.30	27.16	27.82	0.66	0.55	2.35	0.09	27.91	0.219	20.000	27.26	27.85	0.59	0.48	2.70	0.11	27.96	0.313	0.266	0.053	1.00	0.11
3	18	1.07	27.00	28.29	1.29	0.36	0.66	0.14	28.43	0.000	50.000	27.25	27.64	0.39**	0.36	2.98	0.14	27.77	0.000	0.000	n/a	1.00	n/a

Project File: System 2.stm | Number of lines: 3 | Run Date: 1/30/2026

Notes: ; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: System 3.stm	Number of lines: 9	Date: 1/30/2026

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	53.000	-124.383	MH	0.00	0.00	0.00	6.0	25.50	1.00	26.03	12	Cir	0.012	1.00	31.00	FES 21 - DMH 22
2	1	62.000	-8.135	MH	0.00	0.00	0.00	6.0	26.03	1.00	26.65	10	Cir	0.012	1.00	31.00	DMH 22 - DMH 25
3	2	8.000	-87.373	Grate	0.00	0.15	0.85	6.0	27.91	1.00	27.99	8	Cir	0.012	1.00	30.90	DMH 25 - CB 27
4	2	9.000	86.487	Grate	0.00	0.26	0.80	6.0	27.91	1.00	28.00	10	Cir	0.012	1.00	30.90	DMH 25 - CB 26
5	1	7.000	-99.036	Grate	0.00	0.12	0.82	6.0	28.12	1.00	28.19	8	Cir	0.012	1.00	30.90	DMH 22 - CB 24
6	1	8.000	82.588	Grate	0.00	0.18	0.81	6.0	28.12	1.00	28.20	8	Cir	0.012	1.00	30.90	DMH 22 - CB 23
7	End	44.000	25.733	MH	0.00	0.00	0.00	6.0	25.50	1.00	25.94	8	Cir	0.012	0.93	29.00	FES 17 - DMH 18
8	7	16.000	62.752	Grate	0.00	0.13	0.65	6.0	25.94	1.00	26.10	6	Cir	0.012	1.00	28.90	DMH 18 - CB 20
9	7	18.000	-65.803	Grate	0.00	0.16	0.67	6.0	25.94	1.00	26.12	8	Cir	0.012	1.00	29.00	DMH 18 - CB 19

Project File: System 3.stm | Number of lines: 9 | Date: 1/30/2026

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	53.000	0.00	0.71	0.00	0.00	0.58	6.0	6.3	6.5	3.75	3.86	5.49	12	1.00	25.50	26.03	26.30	26.85	26.50	31.00	FES 21 - DMH 22
2	1	62.000	0.00	0.41	0.00	0.00	0.34	6.0	6.0	6.6	2.21	2.37	4.39	10	1.00	26.03	26.65	26.85	27.31	31.00	31.00	DMH 22 - DMH 25
3	2	8.000	0.15	0.15	0.85	0.13	0.13	6.0	6.0	6.6	0.84	1.31	3.74	8	1.00	27.91	27.99	28.30	28.42	31.00	30.90	DMH 25 - CB 27
4	2	9.000	0.26	0.26	0.80	0.21	0.21	6.0	6.0	6.6	1.37	2.37	4.15	10	1.00	27.91	28.00	28.36	28.52	31.00	30.90	DMH 25 - CB 26
5	1	7.000	0.12	0.12	0.82	0.10	0.10	6.0	6.0	6.6	0.65	1.31	3.45	8	1.00	28.12	28.19	28.45	28.57	31.00	30.90	DMH 22 - CB 24
6	1	8.000	0.18	0.18	0.81	0.15	0.15	6.0	6.0	6.6	0.96	1.31	3.90	8	1.00	28.12	28.20	28.54	28.66	31.00	30.90	DMH 22 - CB 23
7	End	44.000	0.00	0.29	0.00	0.00	0.19	6.0	6.1	6.5	1.25	1.31	4.24	8	1.00	25.50	25.94	26.02	26.47	26.17	29.00	FES 17 - DMH 18
8	7	16.000	0.13	0.13	0.65	0.08	0.08	6.0	6.0	6.6	0.56	0.61	2.84	6	1.00	25.94	26.10	26.47	26.60	29.00	28.90	DMH 18 - CB 20
9	7	18.000	0.16	0.16	0.67	0.11	0.11	6.0	6.0	6.6	0.71	1.31	2.82	8	1.00	25.94	26.12	26.47	26.52	29.00	29.00	DMH 18 - CB 19

Project File: System 3.stm

Number of lines: 9

Run Date: 1/30/2026

NOTES:Intensity = 33.90 / (Inlet time + 4.00) ^ 0.71; Return period =Yrs. 10 ; c = cir e = ellip b = box

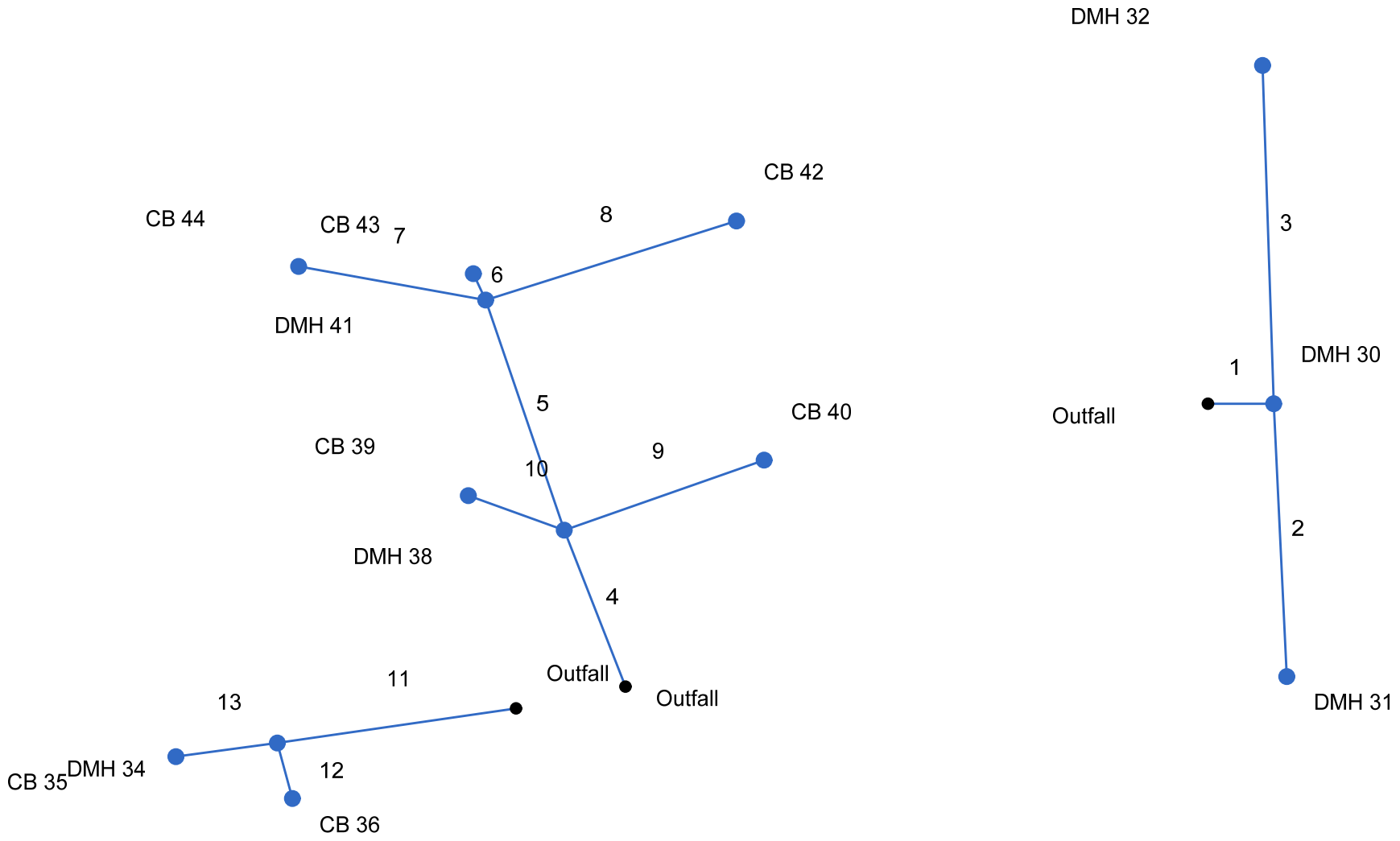
Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	12	3.75	25.50	26.30	0.80	0.67	5.57	0.46	26.76	0.000	53.000	26.03	26.85	0.82**	0.69	5.42	0.46	27.31	0.000	0.000	n/a	1.00	n/a
2	10	2.21	26.03	26.85	0.82	0.47	4.05	0.35	27.20	0.000	62.000	26.65	27.31 j	0.66**	0.47	4.74	0.35	27.66	0.000	0.000	n/a	1.00	0.35
3	8	0.84	27.91	28.30	0.39*	0.21	3.98	0.19	28.49	0.000	8.000	27.99	28.42	0.43**	0.24	3.49	0.19	28.61	0.000	0.000	n/a	1.00	0.19
4	10	1.37	27.91	28.36	0.45*	0.30	4.51	0.22	28.59	0.000	9.000	28.00	28.52	0.52**	0.36	3.80	0.22	28.75	0.000	0.000	n/a	1.00	0.22
5	8	0.65	28.12	28.45	0.33*	0.17	3.74	0.16	28.61	0.000	7.000	28.19	28.57	0.38**	0.20	3.16	0.16	28.72	0.000	0.000	n/a	1.00	n/a
6	8	0.96	28.12	28.54	0.42*	0.23	4.09	0.21	28.76	0.000	8.000	28.20	28.66	0.46**	0.26	3.70	0.21	28.88	0.000	0.000	n/a	1.00	n/a
7	8	1.25	25.50	26.02	0.52*	0.29	4.27	0.28	26.30	0.000	44.000	25.94	26.47	0.53**	0.30	4.22	0.28	26.75	0.000	0.000	n/a	0.93	n/a
8	6	0.56	25.94	26.47	0.50	0.20	2.84	0.13	26.59	0.841	16.000	26.10	26.60	0.50	0.20	2.84	0.13	26.72	0.799	0.820	0.131	1.00	0.13
9	8	0.71	25.94	26.47	0.53	0.22	2.38	0.17	26.64	0.000	18.000	26.12	26.52 j	0.40**	0.22	3.27	0.17	26.68	0.000	0.000	n/a	1.00	0.17

Project File: System 3.stm | Number of lines: 9 | Run Date: 1/30/2026

Notes: * depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: System 4.stm	Number of lines: 13	Date: 1/30/2026

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	18.000	0.000	MH	0.00	0.00	0.00	6.0	27.89	1.00	28.07	12	Cir	0.012	1.00	32.30	FES 29 - DMH 30
2	1	75.000	87.321	MH	1.65	0.00	0.00	6.0	28.52	1.00	29.27	10	Cir	0.012	1.00	32.50	DMH 30 - DMH 31
3	1	93.000	-91.898	MH	1.65	0.00	0.00	6.0	28.07	1.00	29.00	10	Cir	0.012	1.00	32.40	DMH 30 - DMH 32
4	End	46.000	-111.364	MH	0.00	0.00	0.00	6.0	26.00	1.00	26.46	15	Cir	0.012	1.00	30.00	FES 37 - DMH 38
5	4	67.000	2.656	MH	0.00	0.00	0.00	6.0	26.46	1.00	27.13	12	Cir	0.012	1.00	30.30	DMH 38 - DMH 41
6	5	8.000	-6.134	Grate	0.00	0.21	0.78	6.0	27.13	0.50	27.17	12	Cir	0.012	1.00	30.20	DMH 41 - CB 43
7	5	52.000	-61.221	Grate	0.00	0.13	0.68	6.0	27.13	0.50	27.39	10	Cir	0.012	1.00	30.60	DMH 41 - CB 44
8	5	72.000	91.150	Grate	0.00	0.16	0.83	6.0	27.13	0.50	27.49	10	Cir	0.012	1.00	31.10	DMH 41 - CB 42
9	4	58.000	91.936	Grate	0.00	0.27	0.82	6.0	27.12	1.00	27.70	10	Cir	0.012	1.00	30.70	DMH 38 - CB 40
10	4	28.000	-48.347	Grate	0.00	0.25	0.84	6.0	26.46	0.50	26.60	12	Cir	0.012	1.00	29.80	DMH 38 - CB 39
11	End	66.000	171.830	MH	0.00	0.00	0.00	6.0	26.00	0.50	26.33	12	Cir	0.012	1.00	29.70	FES 33 - DMH 34
12	11	16.000	-96.731	Grate	0.00	0.11	0.88	6.0	26.33	1.00	26.49	8	Cir	0.012	1.00	29.60	DMH 34 - CB 36
13	11	28.000	0.504	Grate	0.00	0.21	0.76	6.0	26.33	0.50	26.47	12	Cir	0.012	1.00	28.97	DMH 34 - CB 35

Project File: System 4.stm

Number of lines: 13

Date: 1/30/2026

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	18.000	0.00	0.00	0.00	0.00	0.00	6.0	6.4	0.0	3.30	3.86	4.82	12	1.00	27.89	28.07	28.75	28.85	28.89	32.30	FES 29 -
2	1	75.000	0.00	0.00	0.00	0.00	0.00	6.0	6.0	0.0	1.65	2.37	4.40	10	1.00	28.52	29.27	29.03	29.85	32.30	32.50	DMH 30
3	1	93.000	0.00	0.00	0.00	0.00	0.00	6.0	6.0	0.0	1.65	2.37	3.61	10	1.00	28.07	29.00	28.85	29.58	32.30	32.40	DMH 30
4	End	46.000	0.00	1.02	0.00	0.00	0.82	6.0	6.8	6.2	5.08	7.00	5.27	15	1.00	26.00	26.46	26.92	27.37	27.25	30.00	FES 37 -
5	4	67.000	0.00	0.50	0.00	0.00	0.39	6.0	6.5	6.4	2.45	3.86	3.81	12	1.00	26.46	27.13	27.37	27.80	30.00	30.30	DMH 38
6	5	8.000	0.21	0.21	0.78	0.16	0.16	6.0	6.0	6.6	1.08	2.73	2.00	12	0.50	27.13	27.17	27.80	27.80	30.30	30.20	DMH 41
7	5	52.000	0.13	0.13	0.68	0.09	0.09	6.0	6.0	6.6	0.58	1.68	1.62	10	0.50	27.13	27.39	27.80	27.83	30.30	30.60	DMH 41
8	5	72.000	0.16	0.16	0.83	0.13	0.13	6.0	6.0	6.6	0.88	1.68	2.44	10	0.50	27.13	27.49	27.80	27.93	30.30	31.10	DMH 41
9	4	58.000	0.27	0.27	0.82	0.22	0.22	6.0	6.0	6.6	1.46	2.37	4.24	10	1.00	27.12	27.70	27.59	28.24	30.00	30.70	DMH 38
10	4	28.000	0.25	0.25	0.84	0.21	0.21	6.0	6.0	6.6	1.38	2.73	1.95	12	0.50	26.46	26.60	27.37	27.39	30.00	29.80	DMH 38
11	End	66.000	0.00	0.32	0.00	0.00	0.26	6.0	6.3	6.5	1.66	2.73	3.56	12	0.50	26.00	26.33	26.60	26.88	27.00	29.70	FES 33 -
12	11	16.000	0.11	0.11	0.88	0.10	0.10	6.0	6.0	6.6	0.64	1.31	1.84	8	1.00	26.33	26.49	27.10	27.13	29.70	29.60	DMH 34
13	11	28.000	0.21	0.21	0.76	0.16	0.16	6.0	6.0	6.6	1.05	2.73	1.81	12	0.50	26.33	26.47	27.10	27.11	29.70	28.97	DMH 34

Project File: System 4.stm

Number of lines: 13

Run Date: 1/30/2026

NOTES:Intensity = 33.90 / (Inlet time + 4.00) ^ 0.71; Return period =Yrs. 10 ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	12	3.30	27.89	28.75	0.86	0.65	4.59	0.39	29.14	0.000	18.000	28.07	28.85 j	0.78**	0.65	5.04	0.39	29.24	0.000	0.000	n/a	1.00	0.39
2	10	1.65	28.52	29.03	0.51*	0.35	4.70	0.26	29.29	0.000	75.000	29.27	29.85	0.58**	0.40	4.10	0.26	30.11	0.000	0.000	n/a	1.00	n/a
3	10	1.65	28.07	28.85	0.78	0.40	3.12	0.26	29.11	0.000	93.000	29.00	29.58 j	0.58**	0.40	4.10	0.26	29.84	0.000	0.000	n/a	1.00	n/a
4	15	5.08	26.00	26.92	0.92	0.96	5.25	0.44	27.36	0.000	46.000	26.46	27.37 j	0.91**	0.96	5.29	0.44	27.81	0.000	0.000	n/a	1.00	0.44
5	12	2.45	26.46	27.37	0.91	0.56	3.25	0.30	27.67	0.000	67.000	27.13	27.80 j	0.67**	0.56	4.38	0.30	28.10	0.000	0.000	n/a	1.00	0.30
6	12	1.08	27.13	27.80	0.67	0.56	1.93	0.06	27.86	0.126	8.000	27.17	27.80	0.63	0.52	2.06	0.07	27.87	0.148	0.137	0.011	1.00	0.07
7	10	0.58	27.13	27.80	0.67	0.47	1.24	0.02	27.82	0.063	52.000	27.39	27.83	0.44	0.29	1.99	0.06	27.89	0.201	0.132	0.068	1.00	0.06
8	10	0.88	27.13	27.80	0.67	0.47	1.86	0.05	27.85	0.141	72.000	27.49	27.93	0.44	0.29	3.01	0.14	28.07	0.458	0.300	0.216	1.00	0.14
9	10	1.46	27.12	27.59	0.47*	0.32	4.57	0.24	27.83	0.000	58.000	27.70	28.24	0.54**	0.37	3.90	0.24	28.48	0.000	0.000	n/a	1.00	0.24
10	12	1.38	26.46	27.37	0.91	0.75	1.84	0.05	27.43	0.112	28.000	26.60	27.39	0.79	0.67	2.07	0.07	27.46	0.137	0.124	0.035	1.00	0.07
11	12	1.66	26.00	26.60	0.60	0.44	3.37	0.18	26.78	0.410	66.000	26.33	26.88 j	0.55**	0.44	3.75	0.22	27.10	0.541	0.475	0.314	1.00	0.22
12	8	0.64	26.33	27.10	0.67	0.35	1.83	0.05	27.15	0.238	16.000	26.49	27.13	0.64	0.35	1.85	0.05	27.19	0.208	0.223	0.036	1.00	0.05
13	12	1.05	26.33	27.10	0.77	0.65	1.62	0.04	27.14	0.085	28.000	26.47	27.11	0.64	0.53	1.99	0.06	27.17	0.137	0.111	0.031	1.00	0.06

Project File: System 4.stm | Number of lines: 13 | Run Date: 1/30/2026

Notes: * depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Outlet Protection Calculations

Project: Hingham Center for Active Living By: JLS Date: 01/30/26
Location: Bare Cove Park Drive, Hingham, Massachusetts
Outlet I.D. **FES 9**

*Based on Connecticut DOT Drainage Manual, Section 11.13

Description:

Riprap Outlet Protection for FES 9

Design Criteria (10-yr Storm Event):

Q (cfs) =	1.29	R_p (ft)=	1
D (in) =	12	S_p (ft) =	1
V (fps) =	3.32	Tw (ft)=	0.49

Q= Flow rate at discharge point in cubic feet per second (cfs)
D= Outlet pipe diameter (in)
V= Flow velocity at discharge point (ft/s)
R_p= Maximum inside pipe rise (ft)
S_p= inside diameter for circular sections of maximum inside pipe span for non-circular sections (ft)
T_w= Tailwater depth (ft)

Based on **Table 11-12.1** use Type 'A' ---> TW< 0.5 Rp

Rip Rap Stone Size:

Velocity	Rip Rap Specification	D_{50} Stone Size
0-8 fps	Modified	5 inches

Preformed Scour Hole Dimensions:

F(ft)=0.5(R_p)	=	n/a
C(ft)=3.0(S_p)+6.0(F)	=	n/a
B(ft)=2.0(S_p)+6.0(F)	=	n/a

Rip Rap Splash Pad Dimensions:

L_a	=	10	ft
W1 = 3.0(S_p) min.	=	3	ft
W2 = 3.0(Sp)+0.7(La) min.	=	10	ft
d (Depth of Stone)	=	12	inches

SLR

Outlet Protection Calculations

Project: Hingham Center for Active Living By: JLS Date: 01/30/26
Location: Bare Cove Park Drive, Hingham, Massachusetts
Outlet I.D. **FES 12**

*Based on Connecticut DOT Drainage Manual, Section 11.13

Description:

Riprap Outlet Protection for FES 12

Design Criteria (10-yr Storm Event):

Q (cfs) =	1.07	R_p (ft)=	1.5
D (in) =	18	S_p (ft) =	1.5
V (fps) =	1.82	Tw (ft)=	0.21

Q= Flow rate at discharge point in cubic feet per second (cfs)
D= Outlet pipe diameter (in)
V= Flow velocity at discharge point (ft/s)
R_p= Maximum inside pipe rise (ft)
S_p= inside diametere for circular sections of maximum inside pipe span for non-circular sections (ft)
T_w= Tailwater depth (ft)

Based on **Table 11-12.1** use Type 'A' ---> TW< 0.5 Rp

Rip Rap Stone Size:

Velocity	Rip Rap Specification	D_{50} Stone Size
0-8 fps	Modified	5 inches

Preformed Scour Hole Dimensions:

F(ft)=0.5(R_p)	=	n/a
C(ft)=3.0(S_p)+6.0(F)	=	n/a
B(ft)=2.0(S_p)+6.0(F)	=	n/a

Rip Rap Splash Pad Dimensions:

L_a	=	12	ft
W1 = 3.0(S_p) min.	=	5	ft
W2 = 3.0(Sp)+0.7(La) min.	=	13	ft
d (Depth of Stone)	=	12	inches

Outlet Protection Calculations

Project: Hingham Center for Active Living By: JLS Date: 01/30/26
Location: Bare Cove Park Drive, Hingham, Massachusetts
Outlet I.D. **FES 14**

*Based on Connecticut DOT Drainage Manual, Section 11.13

Description:

Riprap Outlet Protection for FES 14

Design Criteria (10-yr Storm Event):

Q (cfs) =	0	R_p (ft)=	0.5
D (in) =	6	S_p (ft) =	0.5
V (fps) =	0	Tw (ft)=	0

Q= Flow rate at discharge point in cubic feet per second (cfs)
D= Outlet pipe diameter (in)
V= Flow velocity at discharge point (ft/s)
R_p= Maximum inside pipe rise (ft)
S_p= inside diametere for circular sections of maximum inside pipe span for non-circular sections (ft)
T_w= Tailwater depth (ft)

Based on **Table 11-12.1** use Type 'A' ---> TW< 0.5 Rp

Rip Rap Stone Size:

Velocity	Rip Rap Specification	D_{50} Stone Size
0-8 fps	Modified	5 inches

Preformed Scour Hole Dimensions:

F(ft)=0.5(R_p)	=	n/a
C(ft)=3.0(S_p)+6.0(F)	=	n/a
B(ft)=2.0(S_p)+6.0(F)	=	n/a

Rip Rap Splash Pad Dimensions:

L_a	=	10	ft
W1 = 3.0(S_p) min.	=	2	ft
W2 = 3.0(Sp)+0.7(La) min.	=	9	ft
d (Depth of Stone)	=	12	inches

Outlet Protection Calculations

Project: Hingham Center for Active Living By: JLS Date: 01/30/26
Location: Bare Cove Park Drive, Hingham, Massachusetts
Outlet I.D. **FES 17**

*Based on Connecticut DOT Drainage Manual, Section 11.13

Description:

Riprap Outlet Protection for FES 17

Design Criteria (10-yr Storm Event):

Q (cfs) =	1.25	R_p (ft)=	0.666666667
D (in) =	8	S_p (ft) =	0.666666667
V (fps) =	4.24	Tw (ft)=	0.15

Q= Flow rate at discharge point in cubic feet per second (cfs)
D= Outlet pipe diameter (in)
V= Flow velocity at discharge point (ft/s)
R_p= Maximum inside pipe rise (ft)
S_p= inside diametere for circular sections of maximum inside pipe span for non-circular sections (ft)
T_w= Tailwater depth (ft)

Based on **Table 11-12.1** use Type 'A' ---> TW< 0.5 Rp

Rip Rap Stone Size:

Velocity	Rip Rap Specification	D_{50} Stone Size
0-8 fps	Modified	5 inches

Preformed Scour Hole Dimensions:

F(ft)=0.5(R_p)	=	n/a
C(ft)=3.0(S_p)+6.0(F)	=	n/a
B(ft)=2.0(S_p)+6.0(F)	=	n/a

Rip Rap Splash Pad Dimensions:

L_a	=	10	ft
W1 = 3.0(S_p) min.	=	2	ft
W2 = 3.0(Sp)+0.7(La) min.	=	9	ft
d (Depth of Stone)	=	12	inches

Outlet Protection Calculations

Project: Hingham Center for Active Living By: JLS Date: 01/30/26
Location: Bare Cove Park Drive, Hingham, Massachusetts
Outlet I.D. **FES 21**

*Based on Connecticut DOT Drainage Manual, Section 11.13

Description:

Riprap Outlet Protection for FES 21

Design Criteria (10-yr Storm Event):

Q (cfs) =	3.75	R_p (ft)=	1
D (in) =	12	S_p (ft) =	1
V (fps) =	5.49	Tw (ft)=	0.2

Q= Flow rate at discharge point in cubic feet per second (cfs)
D= Outlet pipe diameter (in)
V= Flow velocity at discharge point (ft/s)
R_p= Maximum inside pipe rise (ft)
S_p= inside diametere for circular sections of maximum inside pipe span for non-circular sections (ft)
T_w= Tailwater depth (ft)

Based on **Table 11-12.1** use Type 'A' ---> TW< 0.5 Rp

Rip Rap Stone Size:

Velocity	Rip Rap Specification	D_{50} Stone Size
0-8 fps	Modified	5 inches

Preformed Scour Hole Dimensions:

$F(ft)=0.5(R_p)$	=	n/a
$C(ft)=3.0(S_p)+6.0(F)$	=	n/a
$B(ft)=2.0(S_p)+6.0(F)$	=	n/a

Rip Rap Splash Pad Dimensions:

L_a	=	12	ft
$W1 = 3.0(S_p)$ min.	=	3	ft
W2 = 3.0(Sp)+0.7(La) min.	=	11	ft
d (Depth of Stone)	=	12	inches

SLR

Outlet Protection Calculations

Project: Hingham Center for Active Living By: JLS Date: 01/30/26
Location: Bare Cove Park Drive, Hingham, Massachusetts
Outlet I.D. **FES 29**

*Based on Connecticut DOT Drainage Manual, Section 11.13

Description:

Riprap Outlet Protection for FES 29

Design Criteria (10-yr Storm Event):

Q (cfs) = 3.3	R_p (ft)=	1
D (in) = 12	S_p (ft) =	1
V (fps) = 4.82	Tw (ft)=	0.14

Q= Flow rate at discharge point in cubic feet per second (cfs)
D= Outlet pipe diameter (in)
V= Flow velocity at discharge point (ft/s)
R_p= Maximum inside pipe rise (ft)
S_p= inside diametere for circular sections of maximum inside pipe span for non-circular sections (ft)
T_w= Tailwater depth (ft)

Based on **Table 11.13.1,** A *Preformed Scour Hole* is used *One Half Pipe Rise Depression (Type I)*

Rip Rap Stone Size:

D_{50} Computed (ft)	Rip Rap Specification	D_{50} Stone Size Required
0.437	Intermediate	8 inches

Preformed Scour Hole Dimensions:

F = 0.5(R_p)	=	0.5 ft
C = 3.0(S_p)+6.0(F)	=	6ft
B = 2.0(S_p)+6.0(F)	=	10ft
d (Depth of Stone)	=	18 inches

Outlet Protection Calculations

Project: Hingham Center for Active Living By: JLS Date: 01/30/26
Location: Bare Cove Park Drive, Hingham, Massachusetts
Outlet I.D. **FES 33**

*Based on Connecticut DOT Drainage Manual, Section 11.13

Description:

Riprap Outlet Protection for FES 33

Design Criteria (10-yr Storm Event):

Q (cfs) = 1.66	R_p (ft)=	1
D (in) = 12	S_p (ft) =	1
V (fps) = 3.56	Tw (ft)=	0.4

Q= Flow rate at discharge point in cubic feet per second (cfs)
D= Outlet pipe diameter (in)
V= Flow velocity at discharge point (ft/s)
R_p= Maximum inside pipe rise (ft)
S_p= inside diametere for circular sections of maximum inside pipe span for non-circular sections (ft)
T_w= Tailwater depth (ft)

Based on **Table 11.13.1,** A *Preformed Scour Hole* is used *One Half Pipe Rise Depression (Type I)*

Rip Rap Stone Size:

D_{50} Computed (ft)	Rip Rap Specification	D_{50} Stone Size Required
0.061	Modified	5 inches

Preformed Scour Hole Dimensions:

F = 0.5(R_p)	=	0.5 ft
C = 3.0(S_p)+6.0(F)	=	6ft
B = 2.0(S_p)+6.0(F)	=	10ft
d (Depth of Stone)	=	12 inches

Outlet Protection Calculations

Project: Hingham Center for Active Living By: JLS Date: 01/30/26
Location: Bare Cove Park Drive, Hingham, Massachusetts
Outlet I.D. **FES 37**

*Based on Connecticut DOT Drainage Manual, Section 11.13

Description:

Riprap Outlet Protection for FES 37

Design Criteria (10-yr Storm Event):

Q (cfs) =	5.08	R_p (ft)=	1.25
D (in) =	15	S_p (ft) =	1.25
V (fps) =	5.27	Tw (ft)=	0.33

Q= Flow rate at discharge point in cubic feet per second (cfs)
D= Outlet pipe diameter (in)
V= Flow velocity at discharge point (ft/s)
R_p= Maximum inside pipe rise (ft)
S_p= inside diametere for circular sections of maximum inside pipe span for non-circular sections (ft)
T_w= Tailwater depth (ft)

Based on **Table 11-12.1** use Type 'A' ---> TW< 0.5 Rp

Rip Rap Stone Size:

Velocity	Rip Rap Specification	D_{50} Stone Size
0-8 fps	Modified	5 inches

Preformed Scour Hole Dimensions:

$F(ft)=0.5(R_p)$	=	n/a
$C(ft)=3.0(S_p)+6.0(F)$	=	n/a
$B(ft)=2.0(S_p)+6.0(F)$	=	n/a

Rip Rap Splash Pad Dimensions:

L_a	=	11	ft
W1 = $3.0(S_p)$ min.	=	4	ft
W2 = 3.0(Sp)+0.7(La) min.	=	11	ft
d (Depth of Stone)	=	12	inches

Appendix E Water Quality Computations

Stormwater Management Plan

Hingham Center for Active Living

EDM Studio, Inc.

SLR Project No.: 141.21840.00004

February 3, 2026

Hingham Center for Active Living
Bare Cove Park Drive
Hingham, Massachusetts
SLR #21840.00004
January 30, 2026

Existing Conditions

Total Area	=	228533	sf
Impervious Area	=	18378	sf
	=	0.42	ac
Percent Impervious	=	8%	

Proposed Conditions

Total Area	=	228533	sf
Impervious Area	=	133630	sf
	=	3.07	ac
Percent Impervious	=	58%	

Hingham Center for Active Living
Bare Cove Park Drive, Hingham, MA

SLR

Compliance with MA Stormwater Management Standard-3
Groundwater Recharge Volume

1. Required Recharge Volume

Rv=FI

TO SUBSURFACE INFILTRATION SYSTEM UG-1:

	HSG A			HSG B	
F	0.6	In	*F*	0.35	In
I	0.44	Ac	*I*	0.20	Ac
Rv	**0.022**	Ac-Ft	*Rv*	**0.006**	Ac-Ft

Rv	**0.028**	Ac-Ft

TO RAIN GARDEN RG-1:

	HSG A			HSG B	
F	0.6	In	*F*	0.35	In
I	0.98	Ac	*I*	0.60	Ac
Rv	**0.049**	Ac-Ft	*Rv*	**0.018**	Ac-Ft

Rv	**0.067**	Ac-Ft

TO INFILTRATION BASIN IB-1:

	HSG A			HSG B	
F	0.6	In	*F*	0.35	In
I	0.77	Ac	*I*	0.02	Ac
Rv	**0.039**	Ac-Ft	*Rv*	**0.001**	Ac-Ft

Rv	**0.039**	Ac-Ft

TO INFILTRATION BASIN IB-2:

	HSG A			HSG B	
F	0.6	In	*F*	0.35	In
I	0.02	Ac	*I*	0.01	Ac
Rv	**0.001**	Ac-Ft	*Rv*	**0.000**	Ac-Ft

Rv	**0.001**	Ac-Ft

TO GRAVEL INFILTRATION TRENCH GT-5:

	HSG B	
F	0.35	In
I	0.009	Ac
Rv	**0.000**	Ac-Ft

Rv	**0.000**	Ac-Ft

Hingham Center for Active Living
Bare Cove Park Drive, Hingham, MA

TO GRAVEL INFILTRATION TRENCH GT-6:

	HSG A			HSG B	
F	0.6	In	*F*	0.35	In
I	0.005	Ac	*I*	0.001	Ac
Rv	**0.000**	Ac-Ft	*Rv*	**0.000**	Ac-Ft

Rv	**0.000**	Ac-Ft

**Note: Gt-1, GT-2, GT-3 & GT-4 do not receive runoff from impervious area, therefore no recharge is necessary.*

2. Static Method

UG-1:

Available Storage (cf)	7,057	
Storage (Ac-Ft)	**0.162**	**OK**

RG-1:

Available Storage (cf)	36,814	
Storage (Ac-Ft)	**0.845**	**OK**

IB-1:

Available Storage (cf)	14,406	
Storage (Ac-Ft)	**0.331**	**OK**

IB-2:

Available Storage (cf)	2,225	
Storage (Ac-Ft)	**0.051**	**OK**

GT-5:

Available Storage (cf)	1,024	
Storage (Ac-Ft)	**0.024**	**OK**

GT-6:

Available Storage (cf)	252	
Storage (Ac-Ft)	**0.006**	**OK**

3. Simple Dynamic Method - Formula

UG-1:

A=Rv/(D+KT)

D	3.75	Ft
K	13.652	Saturated hydraulic conductivity (In/Hr)
T	2	Hrs
A	**203**	SF
Required Storage (Ac-Ft)	**0.017**	

RG-1:

A=Rv/(D+KT)

D	6	Ft
K	12.033	Saturated hydraulic conductivity (In/Hr)
T	2	Hrs
A	**362**	SF
Required Storage (Ac-Ft)	**0.050**	

IB-1:

A=Rv/(D+KT)

D	4.5	Ft
K	8.27	Saturated hydraulic conductivity (In/Hr)
T	2	Hrs
A	**292**	SF
Required Storage (Ac-Ft)	**0.030**	

IB-2:

A=Rv/(D+KT)

D	1.5	Ft
K	7.716	Saturated hydraulic conductivity (In/Hr)
T	2	Hrs
A	**17**	SF
Required Storage (Ac-Ft)	**0.001**	

GT-5:

A=Rv/(D+KT)

D	4	Ft
K	2.27	Saturated hydraulic conductivity (In/Hr)
T	2	Hrs
A	**3**	SF
Required Storage (Ac-Ft)	**0.000**	

GT-6:

A=Rv/(D+KT)

D	3	Ft
K	7.716	Saturated hydraulic conductivity (In/Hr)
T	2	Hrs
A	**3**	SF
Required Storage (Ac-Ft)	**0.000**	

4. Simple Dynamic Method - NRCS TR20 Model

Refer to analysis in appendix

UG-1:

Required Storage from TR20 Model (Ac-Ft)	**0.028**

Hingham Center for Active Living
Bare Cove Park Drive, Hingham, MA

SLR

RG-1:
Required Storage from TR20 Model (Ac-Ft) **0.067**

IB-1:
Required Storage from TR20 Model (Ac-Ft) **0.041**

IB-2:
Required Storage from TR20 Model (Ac-Ft) **0.001**

GT-5:
Required Storage from TR20 Model (Ac-Ft) **0.000**

GT-6:
Required Storage from TR20 Model (Ac-Ft) **0.000**

Summary for Pond UG-1:

Inflow Area = 0.647 ac,100.00% Impervious, Inflow Depth > 2.20" for _UG-1-RECHARGE event
Inflow = 1.43 cfs @ 12.11 hrs, Volume= 0.119 af
Outflow = 0.53 cfs @ 11.95 hrs, Volume= 0.118 af, Atten= 63%, Lag= 0.0 min
Discarded = 0.53 cfs @ 11.95 hrs, Volume= 0.118 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 22.70' @ 12.72 hrs Surf.Area= 0.038 ac Storage= 0.028 af

Plug-Flow detention time= 17.6 min calculated for 0.118 af (100% of inflow)
Center-of-Mass det. time= 17.5 min (764.4 - 747.0)

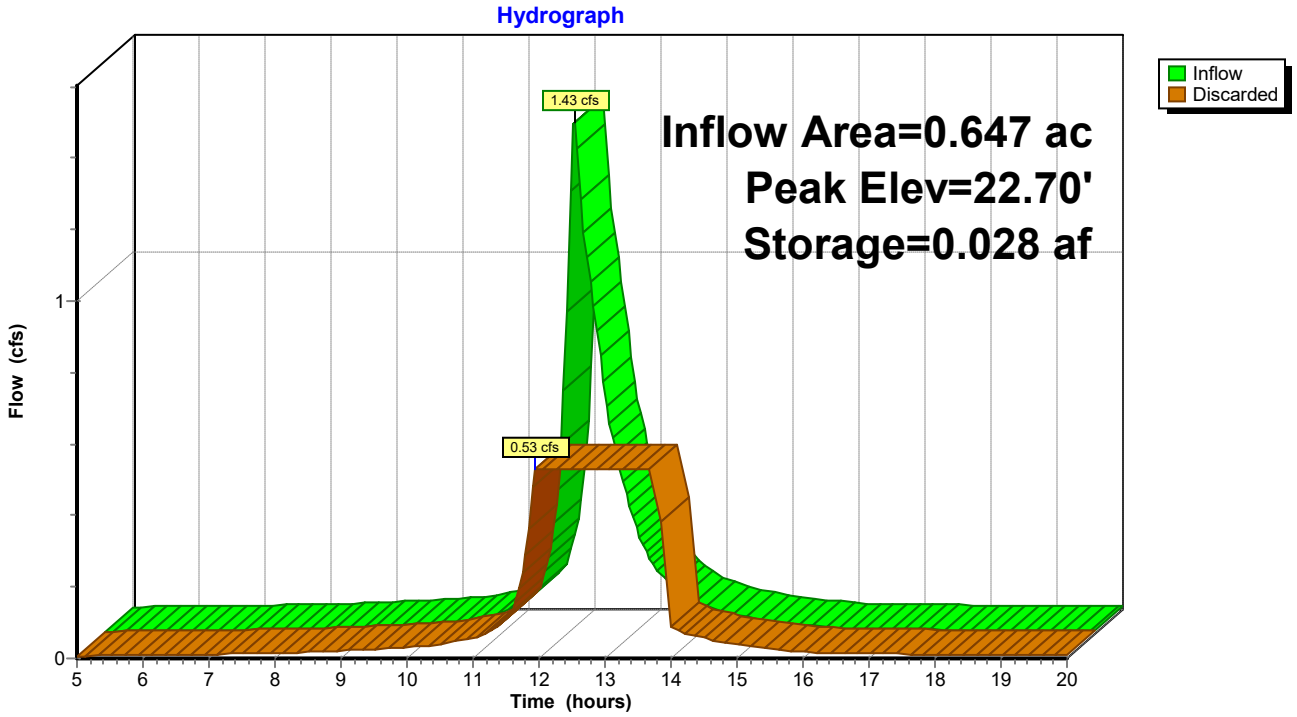
Volume	Invert	Avail.Storage	Storage Description
#1A	21.44'	0.055 af	**29.92'W x 55.89'L x 5.50'H Field A** 0.211 af Overall - 0.073 af Embedded = 0.138 af x 40.0% Voids
#2A	22.19'	0.073 af	**ADS_StormTech MC-3500 d +Cap** x 28 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 28 Chambers in 4 Rows Cap Storage= 14.9 cf x 2 x 4 rows = 119.2 cf
		0.128 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	21.44'	**13.652 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.53 cfs @ 11.95 hrs HW=21.52' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.53 cfs)

Pond UG-1:


Hydrograph
Inflow
Discarded
1.43 cfs
0.53 cfs
Inflow Area=0.647 ac
Peak Elev=22.70'
Storage=0.028 af
Flow (cfs)
0
1
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Time (hours)

Summary for Pond RG-1:

Inflow Area = 1.657 ac,100.00% Impervious, Inflow Depth > 1.85" for _RG-1-RECHARGE event
Inflow = 3.23 cfs @ 12.09 hrs, Volume= 0.256 af
Outflow = 0.86 cfs @ 12.48 hrs, Volume= 0.256 af, Atten= 73%, Lag= 23.2 min
Discarded = 0.86 cfs @ 12.48 hrs, Volume= 0.256 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond FB-1 :
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond IB-1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 27.30' @ 12.48 hrs Surf.Area= 3,094 sf Storage= 2,917 cf

Plug-Flow detention time= 24.9 min calculated for 0.255 af (100% of inflow)
Center-of-Mass det. time= 24.3 min (768.2 - 743.9)

Volume	Invert	Avail.Storage	Storage Description
#1	26.00'	36,814 cf	**Rain Garden Stage Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.00	1,626	0	0
27.00	2,502	2,064	2,064
27.50	3,473	1,494	3,558
28.00	4,237	1,928	5,485
29.00	5,896	5,067	10,552
30.00	7,760	6,828	17,380
31.00	9,713	8,737	26,116
32.00	11,682	10,698	36,814

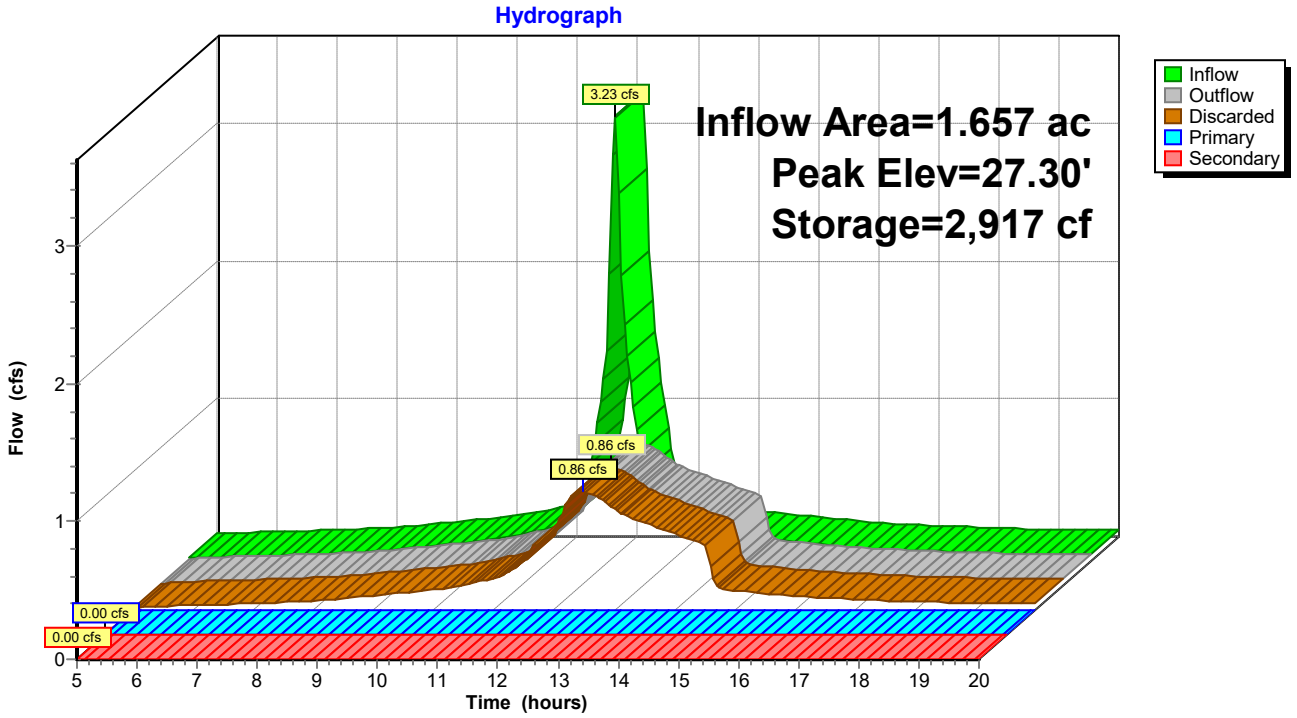
Device	Routing	Invert	Outlet Devices
#1	Secondary	32.00'	**655.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	26.00'	**12.033 in/hr Exfiltration over Surface area**
#3	Primary	27.07'	**6.0" Round 6" HDPE Pipe** L= 42.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 27.07' / 26.65' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#4	Device 3	30.50'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Grate X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads

Discarded OutFlow Max=0.86 cfs @ 12.48 hrs HW=27.30' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.86 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=26.00' (Free Discharge)
└**3=6" HDPE Pipe** (Controls 0.00 cfs)
└**4=18" Nyloplast Drain Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=26.00' (Free Discharge)
└**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond RG-1:



Summary for Pond IB-1:

Inflow Area = 0.797 ac,100.00% Impervious, Inflow Depth > 2.22" for _IB-1-RECHARGE event
Inflow = 1.91 cfs @ 12.09 hrs, Volume= 0.148 af
Outflow = 0.41 cfs @ 12.51 hrs, Volume= 0.147 af, Atten= 79%, Lag= 25.3 min
Discarded = 0.41 cfs @ 12.51 hrs, Volume= 0.147 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond IB-2 :
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond IB-2 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 26.51' @ 12.51 hrs Surf.Area= 2,133 sf Storage= 1,794 cf

Plug-Flow detention time= 30.3 min calculated for 0.147 af (100% of inflow)
Center-of-Mass det. time= 29.5 min (770.7 - 741.2)

Volume	Invert	Avail.Storage	Storage Description
#1	25.50'	20,062 cf	**Infiltration Basin Stage Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.50	1,503	0	0
26.00	1,745	812	812
27.00	2,510	2,128	2,940
28.00	3,387	2,949	5,888
29.00	4,245	3,816	9,704
30.00	5,159	4,702	14,406
31.00	6,152	5,656	20,062

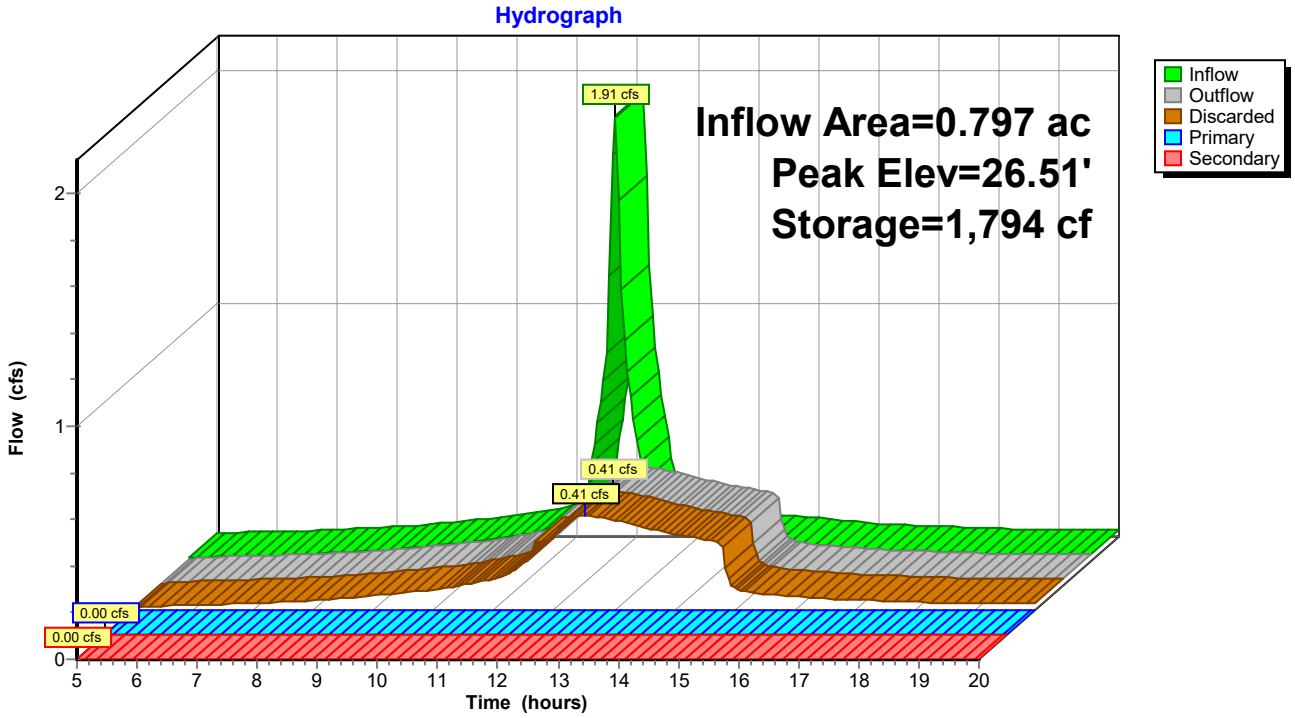
Device	Routing	Invert	Outlet Devices
#1	Secondary	31.00'	**320.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	25.50'	**8.270 in/hr Exfiltration over Surface area**
#3	Primary	27.00'	**6.0" Round 6" HDPE Pipe** L= 74.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 27.00' / 26.63' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#4	Device 3	30.00'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Grate X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads

Discarded OutFlow Max=0.41 cfs @ 12.51 hrs HW=26.51' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.41 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=25.50' (Free Discharge)
└**3=6" HDPE Pipe** (Controls 0.00 cfs)
└**4=18" Nyloplast Drain Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=25.50' (Free Discharge)
└**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond IB-1:



Summary for Pond IB-2:

Inflow Area = 2.652 ac, 93.48% Impervious, Inflow Depth > 0.07" for _IB-2-RECHARGE event
Inflow = 0.18 cfs @ 12.12 hrs, Volume= 0.016 af
Outflow = 0.11 cfs @ 12.35 hrs, Volume= 0.016 af, Atten= 39%, Lag= 14.1 min
Discarded = 0.11 cfs @ 12.35 hrs, Volume= 0.016 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 28.59' @ 12.35 hrs Surf.Area= 626 sf Storage= 49 cf

Plug-Flow detention time= 2.8 min calculated for 0.016 af (100% of inflow)
Center-of-Mass det. time= 2.5 min (852.0 - 849.6)

Volume	Invert	Avail.Storage	Storage Description
#1	28.50'	2,225 cf	**Infiltration Basin Stage Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.50	503	0	0
29.00	1,212	429	429
30.00	2,380	1,796	2,225

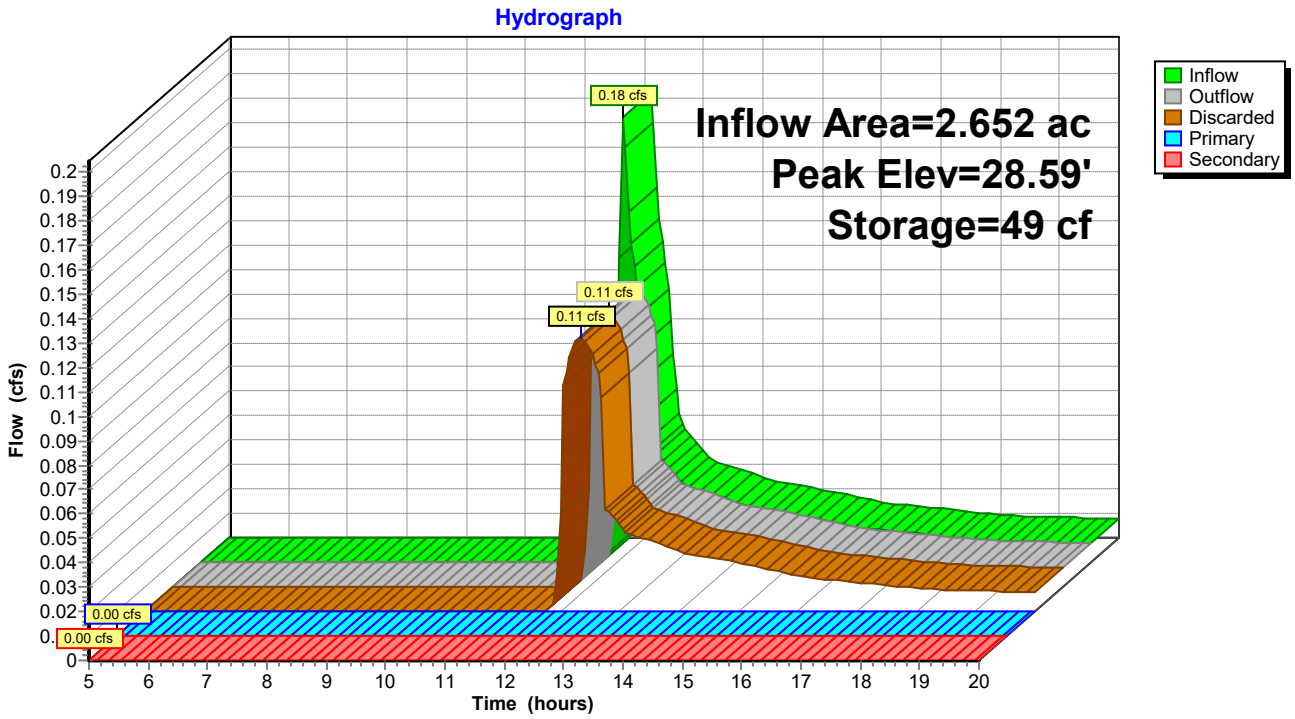
Device	Routing	Invert	Outlet Devices
#1	Secondary	30.00'	**335.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	28.50'	**7.716 in/hr Exfiltration over Surface area**
#3	Device 4	29.00'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Basin X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads
#4	Primary	26.63'	**6.0" Round 6" HDPE** L= 96.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 26.63' / 26.15' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

Discarded OutFlow Max=0.11 cfs @ 12.35 hrs HW=28.59' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=28.50' (Free Discharge)
↑**4=6" HDPE** (Passes 0.00 cfs of 0.74 cfs potential flow)
↑**3=18" Nyloplast Drain Basin** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=28.50' (Free Discharge)
↑**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond IB-2:


Hydrograph
Inflow Area=2.652 ac
Peak Elev=28.59'
Storage=49 cf
0.18 cfs
0.11 cfs
0.11 cfs
0.00 cfs
0.00 cfs
Inflow
Outflow
Discarded
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Pond GT-5:

Inflow Area = 0.113 ac, 34.51% Impervious, Inflow Depth > 0.41" for _GT-5-RECHARGE event
Inflow = 0.05 cfs @ 12.11 hrs, Volume= 0.004 af
Outflow = 0.04 cfs @ 12.15 hrs, Volume= 0.004 af, Atten= 27%, Lag= 2.4 min
Discarded = 0.04 cfs @ 12.15 hrs, Volume= 0.004 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-4 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 21.05' @ 12.21 hrs Surf.Area= 640 sf Storage= 12 cf

Plug-Flow detention time= 4.9 min calculated for 0.004 af (99% of inflow)
Center-of-Mass det. time= 3.8 min (843.4 - 839.5)

Volume	Invert	Avail.Storage	Storage Description
#1	21.00'	1,024 cf	**Gravel Trench Stage Storage (Prismatic)** Listed below (Recalc) 2,560 cf Overall x 40.0% Voids

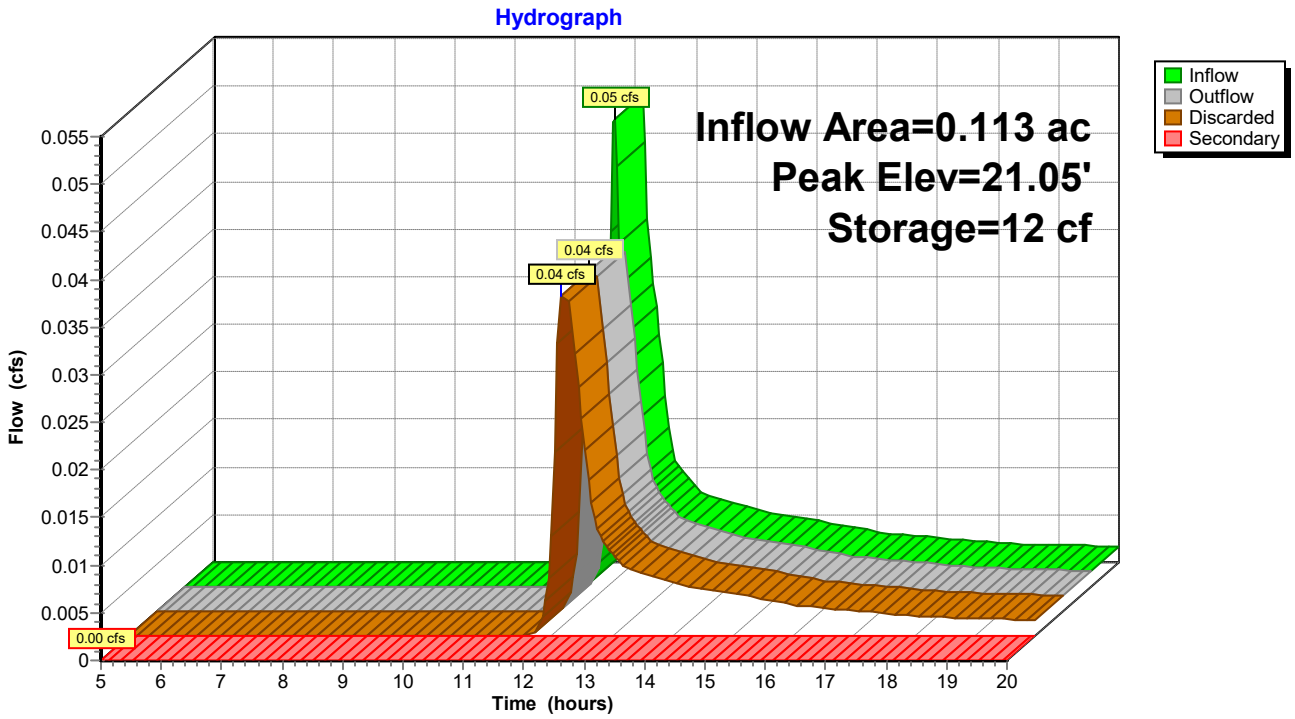
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
21.00	640	0	0
22.00	640	640	640
23.00	640	640	1,280
24.00	640	640	1,920
25.00	640	640	2,560

Device	Routing	Invert	Outlet Devices
#1	Secondary	25.00'	**136.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Trench (Overflow)** 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	21.00'	**2.410 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.04 cfs @ 12.15 hrs HW=21.04' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.04 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=21.00' (Free Discharge)
↑—**1=Top of Trench (Overflow)** (Controls 0.00 cfs)

Pond GT-5:


Hydrograph
Inflow Area=0.113 ac
Peak Elev=21.05'
Storage=12 cf
0.05 cfs
0.04 cfs
0.04 cfs
0.00 cfs
Inflow
Outflow
Discarded
Secondary
Flow (cfs)
Time (hours)
0
0.005
0.01
0.015
0.02
0.025
0.03
0.035
0.04
0.045
0.05
0.055
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

Summary for Pond GT-6:

Inflow Area = 0.093 ac, 17.20% Impervious, Inflow Depth > 0.78" for _GT-6-RECHARGE event
Inflow = 0.06 cfs @ 12.19 hrs, Volume= 0.006 af
Outflow = 0.05 cfs @ 12.15 hrs, Volume= 0.006 af, Atten= 27%, Lag= 0.0 min
Discarded = 0.05 cfs @ 12.15 hrs, Volume= 0.006 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 24.12' @ 12.39 hrs Surf.Area= 252 sf Storage= 12 cf

Plug-Flow detention time= 1.8 min calculated for 0.006 af (100% of inflow)
Center-of-Mass det. time= 1.6 min (848.8 - 847.2)

Volume	Invert	Avail.Storage	Storage Description
#1	24.00'	302 cf	**Gravel Trench Stage Storage (Prismatic)** Listed below (Recalc) 756 cf Overall x 40.0% Voids

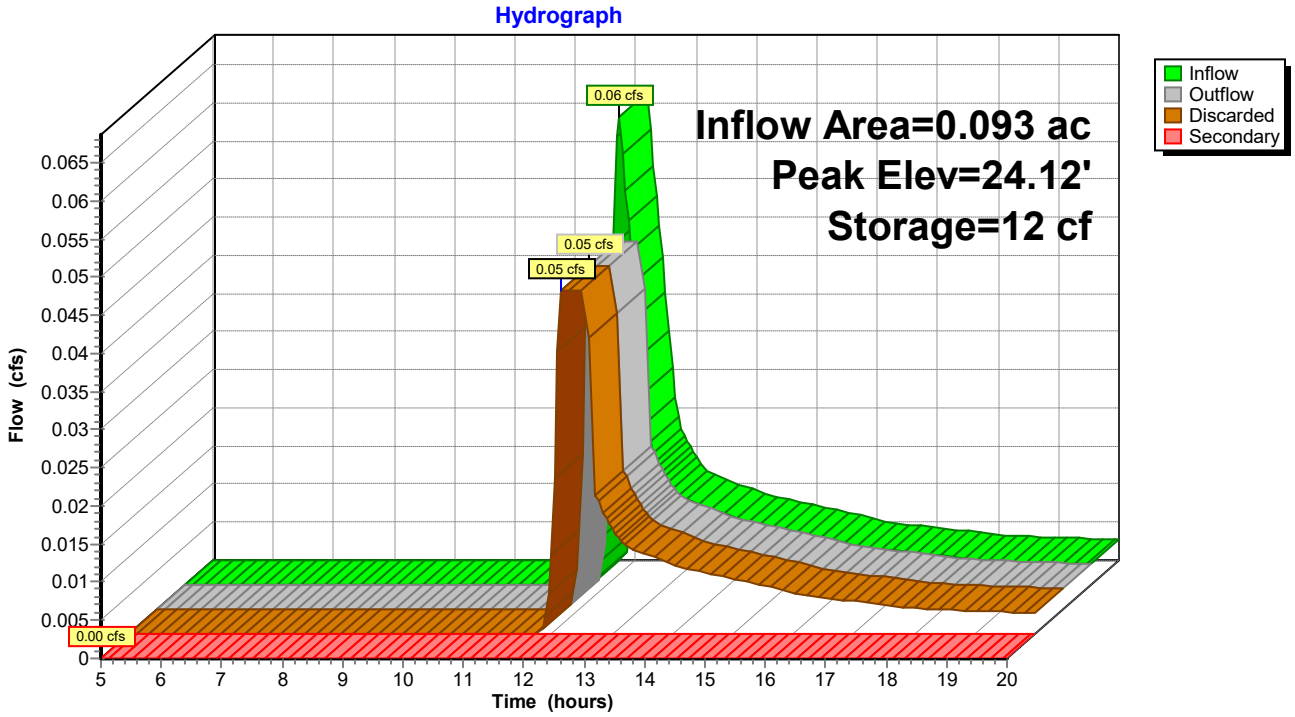
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
24.00	252	0	0
25.00	252	252	252
26.00	252	252	504
27.00	252	252	756

Device	Routing	Invert	Outlet Devices
#1	Secondary	27.00'	**78.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Trench (Overflow)** 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	24.00'	**7.716 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.05 cfs @ 12.15 hrs HW=24.04' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.05 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=24.00' (Free Discharge)
↑—**1=Top of Trench (Overflow)** (Controls 0.00 cfs)

Pond GT-6:


Hydrograph
Inflow Area=0.093 ac
Peak Elev=24.12'
Storage=12 cf
0.06 cfs
0.05 cfs
0.05 cfs
0.00 cfs
Inflow
Outflow
Discarded
Secondary
Flow (cfs)
Time (hours)
0
0.005
0.01
0.015
0.02
0.025
0.03
0.035
0.04
0.045
0.05
0.055
0.06
0.065
5
6
7
8
9
10
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12
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20

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Compliance with MA Stormwater Management Standard-3
72-Hour Drawdown Analysis

$$^{1}Time_{drawdown} = \frac{Rv}{(K)(Bottom\ Area)}$$

Stormwater Management Basin SWB-1

Rv=	80	CF
^{2}K=	2.41	in/hr
Bottom Area=	182	SF
Time $_{drawdown}$=	2.19	OK-Drawdown time is less than 72 hours

Stormwater Management Basin SWB-2

Rv=	100	CF
^{2}K=	2.41	in/hr
Bottom Area=	210	SF
Time $_{drawdown}$=	2.38	OK-Drawdown time is less than 72 hours

Stormwater Management Basin SWB-3

Rv=	51	CF
^{2}K=	2.41	in/hr
Bottom Area=	211	SF
Time $_{drawdown}$=	1.20	OK-Drawdown time is less than 72 hours

Stormwater Management Basin SWB-4

Rv=	787	CF
^{2}K=	2.41	in/hr
Bottom Area=	1,153	SF
Time $_{drawdown}$=	3.40	OK-Drawdown time is less than 72 hours

Subsurface Infiltration System UG-1

Rv=	1224	CF
^{2}K=	13.652	in/hr
Bottom Area=	2,101	SF
Time $_{drawdown}$=	0.51	OK-Drawdown time is less than 72 hours

Rain Garden RG-1

Rv=	2902	CF
^{2}K=	12.033	in/hr
Bottom Area=	1,626	SF
Time $_{drawdown}$=	1.78	OK-Drawdown time is less than 72 hours

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Infiltration Basin IB-1

Rv=	1714	CF	
^{2}K=	8.27	in/hr	
Bottom Area=	1,503	SF	
Time $_{drawdown}$=	1.65	OK-Drawdown time is less than 72 hours	

Infiltration Basin IB-2

Rv=	49	CF	
^{2}K=	7.716	in/hr	
Bottom Area=	503	SF	
Time $_{drawdown}$=	0.15	OK-Drawdown time is less than 72 hours	

Gravel Trench GT-1

Rv=	0	CF	
^{2}K=	2.41	in/hr	
Bottom Area=	862	SF	
Time $_{drawdown}$=	0.00	OK-Drawdown time is less than 72 hours	

Gravel Trench GT-2

Rv=	0	CF	
^{2}K=	2.41	in/hr	
Bottom Area=	251	SF	
Time $_{drawdown}$=	0.00	OK-Drawdown time is less than 72 hours	

Gravel Trench GT-3

Rv=	0	CF	
^{2}K=	2.41	in/hr	
Bottom Area=	94	SF	
Time $_{drawdown}$=	0.00	OK-Drawdown time is less than 72 hours	

Gravel Trench GT-4

Rv=	0	CF	
^{2}K=	2.41	in/hr	
Bottom Area=	405	SF	
Time $_{drawdown}$=	0.00	OK-Drawdown time is less than 72 hours	

Gravel Trench GT-5

Rv=	12	CF	
^{2}K=	2.41	in/hr	
Bottom Area=	640	SF	
Time $_{drawdown}$=	0.09	OK-Drawdown time is less than 72 hours	

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Gravel Trench GT-6

Rv=	12	CF	
[2]K=	7.716	in/hr	
Bottom Area=	252	SF	
Time $_{drawdown}$=	0.07	OK-Drawdown time is less than 72 hours	

Notes:

1 MA Stormwater Handbook, Volume 3 Chap 1
2 MA Stormwater Handbook, Table 2.3.3 Rawls Rates

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MA Stormwater Management Standards
Standard 4 - Water Quality Volume (WQV) Computations

$V_{WQ} = (D_{WQ}/12) A_{IMP}$

$Q_{avg} = V_{WQ}/24$

D_{WQ} =	1	IN

Contributing Water Quality Volume (WQV)

A_{IMP} =	3.07	Ac
V_{WQ} =	**11,144**	CF
Q_{avg} =	**0.129**	CFS

Orifice Area

$$a = \frac{Q_{ave}}{C\sqrt{2gh}}$$

	0.0189	SF

Orifice Dia

$$d = \sqrt{\frac{4a}{\pi}}$$

	1.86	IN

Subsurface Infiltration System UG-1 - WQV Provided

Basin Stage Elev at V_{WQ} =	**25.9**	FT
V_{WQ} *Provided*=	**4,095**	CF
Q_{avg} =	**0.047**	CFS

Rain Garden RG-1 - WQV Provided

Basin Stage Elev at V_{WQ} =	**31.0**	FT
V_{WQ} *Provided*=	**26,116**	CF
Q_{avg} =	**0.302**	CFS

Infiltration Basin IB-1- WQV Provided

Basin Stage Elev at V_{WQ} =	**30.0**	FT
V_{WQ} *Provided*=	**14,406**	CF
Q_{avg} =	**0.167**	CFS

Infiltration Basin IB-2 - WQV Provided

Basin Stage Elev at V_{WQ} =	**29.0**	FT
V_{WQ} *Provided*=	**429**	CF
Q_{avg} =	**0.005**	CFS

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Total V_{WQ} *Provided=* **45,046** CF OK-Min WQV Provided

DMH 18

Development of composite flood hydrograph

This section describes the procedure for developing the peak discharge and selected discharge values of a composite flood hydrograph.

Selecting T_c and T_t

First, use worksheet 5a to develop a summary of basic watershed data by subarea. Then use worksheet 5b to develop a tabular hydrograph discharge summary; this summary displays the effect of individual subarea hydrographs as routed to the watershed point of interest. Use $\sum T_t$ for each subarea as the total reach travel time from that subarea through the watershed to the point of interest. Compute the hydrograph coordinates for selected $\sum T_t$'s using the appropriate sheets in exhibit 5. The flow at any time is:

$$q = q_t A_m Q \qquad \text{[eq. 5-1]}$$

where:

- q = hydrograph coordinate (cfs) at hydrograph time t
- q_t = tabular hydrograph unit discharge from exhibit 5 (csm/in)
- A_m = drainage area of individual subarea (mi^2)
- Q = runoff (in)

Since the timing of peak discharge changes with T_c and T_t, interpolation of peak discharge for T_c and T_t values for use in exhibit 5 is not recommended. Interpolation may result in an estimate of peak discharge that would be invalid because it would be lower than either of the hydrographs. Therefore, round the actual values of T_c and T_t to values presented in exhibit 5. Perform this rounding so that the sum of the selected table values is close to the sum of actual T_c and T_t. An acceptable procedure is to select the results of one of three rounding operations:

1. Round T_c and T_t separately to the nearest table value and sum,
2. Round T_c down and T_t up to nearest table value and sum,
3. Round T_c up and T_t down to nearest table value and sum.

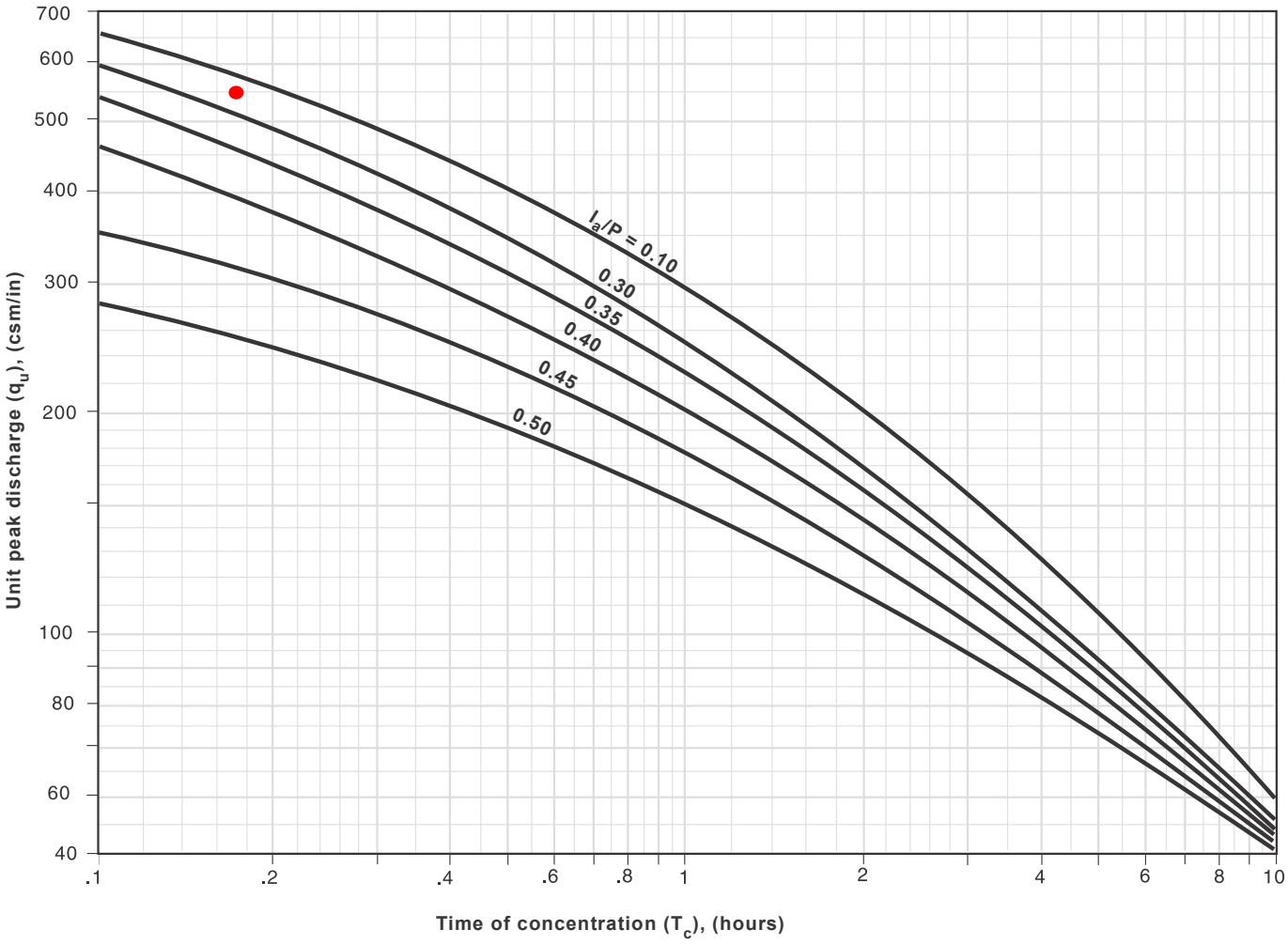
From these three alternatives, choose the pair of rounded T_c and T_t values whose sum is closest to the sum of the actual T_c and T_t. If two rounding methods produce sums equally close to the actual sum, use the combination in which rounded T_c is closest to actual T_c. An illustration of the rounding procedure is as follows:

Table 5-1 I_a values for runoff curve numbers

Curve number	I_a (in)	Curve number	I_a (in)
40	3.000	70	0.857
41	2.878	71	0.817
42	2.762	72	0.778
43	2.651	73	0.740
44	2.545	74	0.703
45	2.444	75	0.667
46	2.348	76	0.632
47	2.255	77	0.597
48	2.167	78	0.564
49	2.082	79	0.532
50	2.000	80	0.500
51	1.922	81	0.469
52	1.846	82	0.439
53	1.774	83	0.410
54	1.704	84	0.381
55	1.636	85	0.353
56	1.571	86	0.326
57	1.509	87	0.299
58	1.448	88	0.273
59	1.390	89	0.247
60	1.333	90	0.222
61	1.279	91	0.198
62	1.226	92	0.174
63	1.175	93	0.151
64	1.125	94	0.128
65	1.077	95	0.105
66	1.030	96	0.083
67	0.985	97	0.062
68	0.941	98	0.041
69	0.899		

DMH 18

Exhibit 4-III Unit peal discharge (q_u) for NRCS (SCS) type III rainfall distribution



DMH 18

Product Flow Rates

CASCADE

Model	Treatment Rate (cfs)	Sediment Capacity[1] (CF)
CS-4	2.00	19
CS-5	3.50	29
CS-6	5.60	42
CS-8	12.00	75
CS-10	18.00	118

CDS

Model	Treatment Rate[2] (cfs)	Sediment Capacity[1] (CF)
1515-3	1.00	14
2015-4	1.40	25
2015-5	1.40	39
2015-6	1.40	57
2020-5	2.20	39
2020-6	2.20	57
2025-5	3.20	39
2025-6	3.20	57
3020-6	3.90	57
3025-6	5.00	57
3030-6	5.70	57
3035-6	6.50	57
4030-8	7.50	151
4040-8	9.50	151

VORTECHS

Model	Treatment Rate (cfs)	Sediment Capacity[3] (CF)
1000	1.60	16
2000	2.80	32
3000	4.50	49
4000	6.00	65
5000	8.50	86
7000	11.00	108
9000	14.00	130
11000	17.5	151
16000	25	192

STORMCEPTOR STC

Model	Treatment Rate (cfs)	Sediment Capacity[1] (CF)
STC 450i	0.40	46
STC 900	0.89	89
STC 2400	1.58	205
STC 4800	2.47	543
STC 7200	3.56	839
STC 11000	4.94	1086
STC 16000	7.12	1677

1 Additional sediment storage capacity available – Check with your local representative for information.

2 Treatment Capacity is based on laboratory testing using OK-110 (average D50 particle size of approximately 100 microns) and a 2400 micron screen.

3 Maintenance recommended when sediment depth has accumulated to within 12-18 inches of the dry weather water surface elevation.

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	SLR Consulting	Project	**21840.00004**
	COMPUTATION SHEET - WATER QUALITY FLOW (WQF)	Made By:	JLS
Subject:	**Hingham Center for Active Living**	Date:	2/3/2026

CDS Unit - DMH 18

Contributing Basins	Imperv. Area (acres)	Total Area (acres)
Total	0.18	0.29

V_{WQ}= [D_{WQ}/12(inches/foot)]*[A_{IMP}]

Where:

V_{WQ}=	Required water quality volume (cubic feet)	321.54	cubic feet =	0.007382	acre-feet
D_{WQ}=	Water Quality Depth (inches)	0.500	inches		
A_{IMP}=	Impervius Area (acres)	0.18	acres =	0.0003	miles^2

Q = runoff depth (in watershed inches) = [WQV(acrefeet)]*[12(inches/foot)]/drainage area (acres)

Q = 0.301

CN = 1000 / [10+ 5D_{WQ} + 10Q -10(Q^2 + 1.25QD_{WQ})$^{0.5}$] = 98

Where:

Q = runoff depth (in watershed inches)

t_c = 0.167 hours

Type III Rainfall Distribution:

From Table 4-1, Ia =	0.041	Ia/P =	0.2314
(TR-55)			
From Exhibit 4-III, q_u =	550 csm/in.		
(TR-55)			

WQF = (qu)(A)(Q) = 0.05 cfs **Stormceptor STC 450i Flow= 0.40 cfs OK**

Development of composite flood hydrograph

This section describes the procedure for developing the peak discharge and selected discharge values of a composite flood hydrograph.

Selecting T_c and T_t

First, use worksheet 5a to develop a summary of basic watershed data by subarea. Then use worksheet 5b to develop a tabular hydrograph discharge summary; this summary displays the effect of individual subarea hydrographs as routed to the watershed point of interest. Use $\sum T_t$ for each subarea as the total reach travel time from that subarea through the watershed to the point of interest. Compute the hydrograph coordinates for selected $\sum T_t$'s using the appropriate sheets in exhibit 5. The flow at any time is:

$$q = q_t A_m Q \qquad \text{[eq. 5-1]}$$

where:

- q = hydrograph coordinate (cfs) at hydrograph time t
- q_t = tabular hydrograph unit discharge from exhibit 5 (csm/in)
- A_m = drainage area of individual subarea (mi^2)
- Q = runoff (in)

Since the timing of peak discharge changes with T_c and T_t, interpolation of peak discharge for T_c and T_t values for use in exhibit 5 is not recommended. Interpolation may result in an estimate of peak discharge that would be invalid because it would be lower than either of the hydrographs. Therefore, round the actual values of T_c and T_t to values presented in exhibit 5. Perform this rounding so that the sum of the selected table values is close to the sum of actual T_c and T_t. An acceptable procedure is to select the results of one of three rounding operations:

1. Round T_c and T_t separately to the nearest table value and sum,
2. Round T_c down and T_t up to nearest table value and sum,
3. Round T_c up and T_t down to nearest table value and sum.

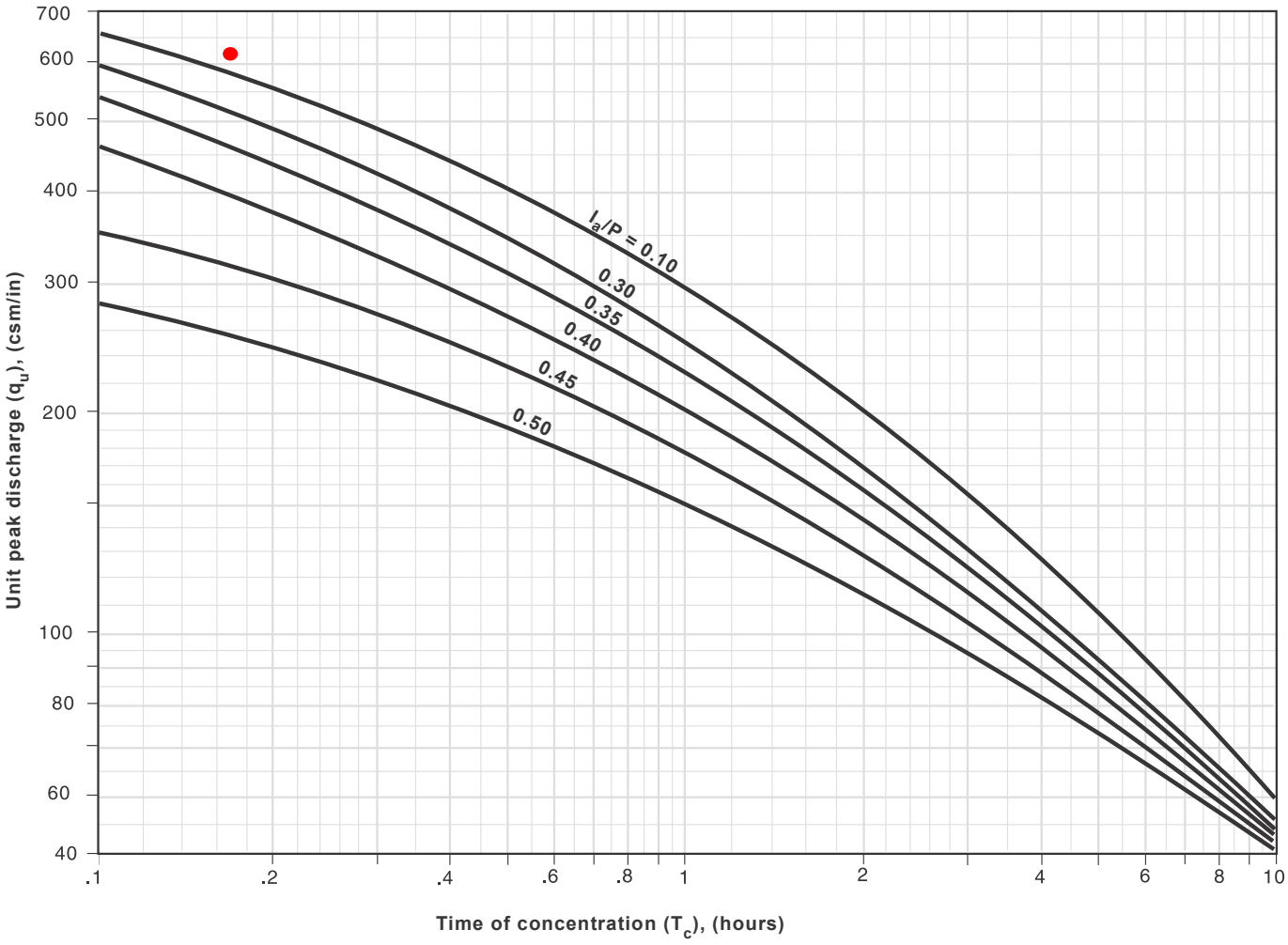
From these three alternatives, choose the pair of rounded T_c and T_t values whose sum is closest to the sum of the actual T_c and T_t. If two rounding methods produce sums equally close to the actual sum, use the combination in which rounded T_c is closest to actual T_c. An illustration of the rounding procedure is as follows:

Table 5-1 I_a values for runoff curve numbers

Curve number	I_a (in)	Curve number	I_a (in)
40	3.000	70	0.857
41	2.878	71	0.817
42	2.762	72	0.778
43	2.651	73	0.740
44	2.545	74	0.703
45	2.444	75	0.667
46	2.348	76	0.632
47	2.255	77	0.597
48	2.167	78	0.564
49	2.082	79	0.532
50	2.000	80	0.500
51	1.922	81	0.469
52	1.846	82	0.439
53	1.774	83	0.410
54	1.704	84	0.381
55	1.636	85	0.353
56	1.571	86	0.326
57	1.509	87	0.299
58	1.448	88	0.273
59	1.390	89	0.247
60	1.333	90	0.222
61	1.279	91	0.198
62	1.226	92	0.174
63	1.175	93	0.151
64	1.125	94	0.128
65	1.077	95	0.105
66	1.030	96	0.083
67	0.985	97	0.062
68	0.941	98	0.041
69	0.899		

DMH 22

Exhibit 4-III Unit peal discharge (q_u) for NRCS (SCS) type III rainfall distribution



DMH 22

Product Flow Rates

CASCADE

Model	Treatment Rate (cfs)	Sediment Capacity[1] (CF)
CS-4	2.00	19
CS-5	3.50	29
CS-6	5.60	42
CS-8	12.00	75
CS-10	18.00	118

CDS

Model	Treatment Rate[2] (cfs)	Sediment Capacity[1] (CF)
1515-3	1.00	14
2015-4	1.40	25
2015-5	1.40	39
2015-6	1.40	57
2020-5	2.20	39
2020-6	2.20	57
2025-5	3.20	39
2025-6	3.20	57
3020-6	3.90	57
3025-6	5.00	57
3030-6	5.70	57
3035-6	6.50	57
4030-8	7.50	151
4040-8	9.50	151

VORTECHS

Model	Treatment Rate (cfs)	Sediment Capacity[3] (CF)
1000	1.60	16
2000	2.80	32
3000	4.50	49
4000	6.00	65
5000	8.50	86
7000	11.00	108
9000	14.00	130
11000	17.5	151
16000	25	192

STORMCEPTOR STC

Model	Treatment Rate (cfs)	Sediment Capacity[1] (CF)
STC 450i	0.40	46
STC 900	0.89	89
STC 2400	1.58	205
STC 4800	2.47	543
STC 7200	3.56	839
STC 11000	4.94	1086
STC 16000	7.12	1677

1 Additional sediment storage capacity available – Check with your local representative for information.

2 Treatment Capacity is based on laboratory testing using OK-110 (average D50 particle size of approximately 100 microns) and a 2400 micron screen.

3 Maintenance recommended when sediment depth has accumulated to within 12-18 inches of the dry weather water surface elevation.

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	SLR Consulting	Project	**21840.00004**
	COMPUTATION SHEET - WATER QUALITY FLOW (WQF)	Made By:	JLS
Subject:	**Hingham Center for Active Living**	Date:	2/3/2026

CDS Unit - DMH 22

Contributing Basins	Imperv. Area (acres)	Total Area (acres)
Total	0.62	0.72

V_{WQ}= [D_{WQ}/12(inches/foot)]*[A_{IMP}]

Where:

V_{WQ}=	Required water quality volume (cubic feet)	1124.9	cubic feet =	0.025824	acre-feet
D_{WQ}=	Water Quality Depth (inches)	0.500	inches		
A_{IMP}=	Impervius Area (acres)	0.62	acres =	0.0010	miles^2

Q = runoff depth (in watershed inches) = [WQV(acrefeet)]*[12(inches/foot)]/drainage area (acres)

Q = 0.429

CN = 1000 / [10+ 5D_{WQ} + 10Q -10(Q^2 + 1.25QD_{WQ})$^{0.5}$] = 99

Where:

Q = runoff depth (in watershed inches)

t_c = 0.167 hours

Type III Rainfall Distribution:

From Table 4-1, Ia =	0.041	Ia/P =	0.0662
(TR-55)			
From Exhibit 4-III, q_u =	630 csm/in.		
(TR-55)			

WQF = (qu)(A)(Q) = 0.26 cfs **Stormceptor STC 450i Flow= 0.40 cfs** **OK**

Development of composite flood hydrograph

This section describes the procedure for developing the peak discharge and selected discharge values of a composite flood hydrograph.

Selecting T_c and T_t

First, use worksheet 5a to develop a summary of basic watershed data by subarea. Then use worksheet 5b to develop a tabular hydrograph discharge summary; this summary displays the effect of individual subarea hydrographs as routed to the watershed point of interest. Use $\sum T_t$ for each subarea as the total reach travel time from that subarea through the watershed to the point of interest. Compute the hydrograph coordinates for selected $\sum T_t$'s using the appropriate sheets in exhibit 5. The flow at any time is:

$$q = q_t A_m Q \qquad \text{[eq. 5-1]}$$

where:

- q = hydrograph coordinate (cfs) at hydrograph time t
- q_t = tabular hydrograph unit discharge from exhibit 5 (csm/in)
- A_m = drainage area of individual subarea (mi^2)
- Q = runoff (in)

Since the timing of peak discharge changes with T_c and T_t, interpolation of peak discharge for T_c and T_t values for use in exhibit 5 is not recommended. Interpolation may result in an estimate of peak discharge that would be invalid because it would be lower than either of the hydrographs. Therefore, round the actual values of T_c and T_t to values presented in exhibit 5. Perform this rounding so that the sum of the selected table values is close to the sum of actual T_c and T_t. An acceptable procedure is to select the results of one of three rounding operations:

1. Round T_c and T_t separately to the nearest table value and sum,
2. Round T_c down and T_t up to nearest table value and sum,
3. Round T_c up and T_t down to nearest table value and sum.

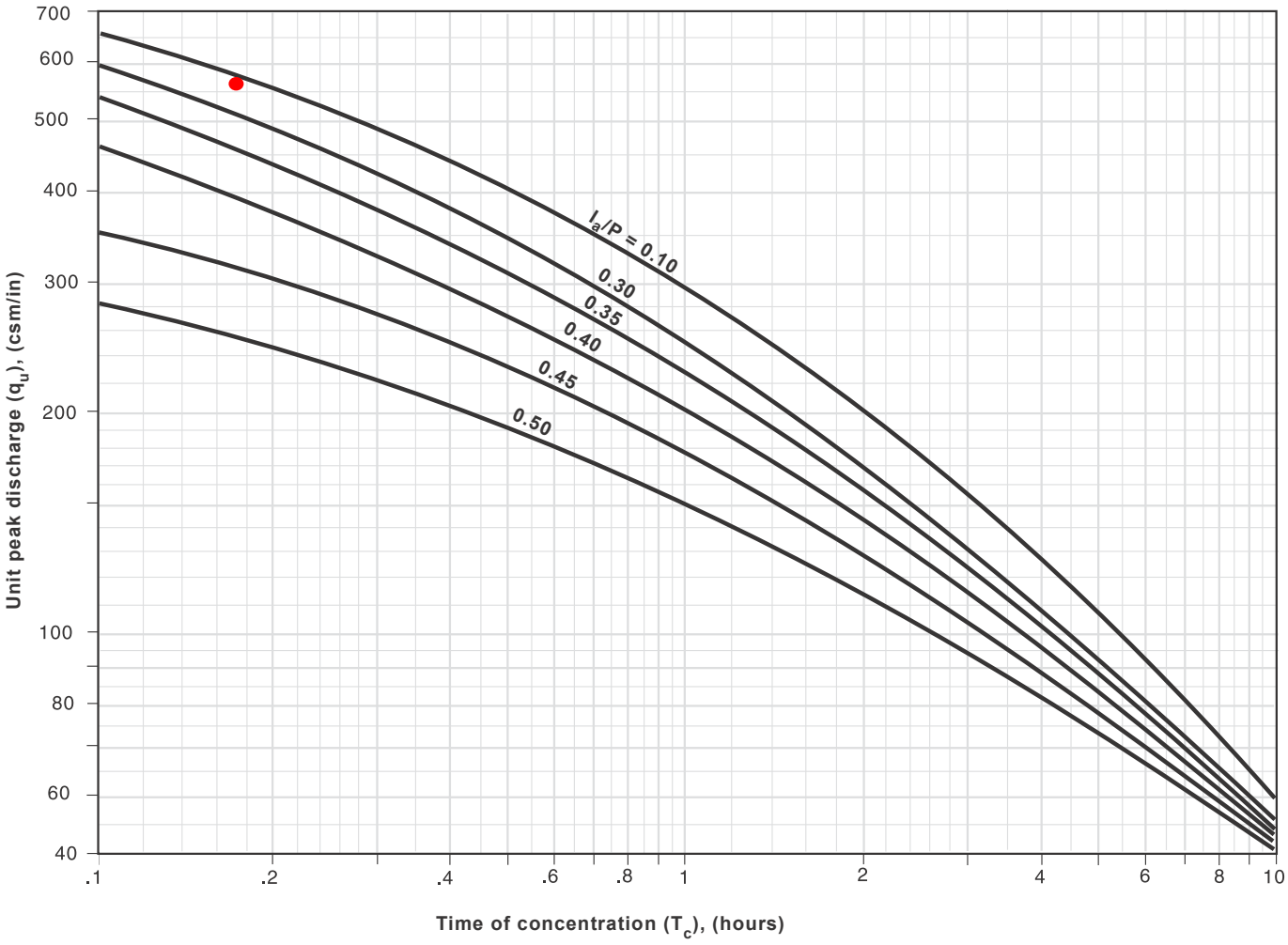
From these three alternatives, choose the pair of rounded T_c and T_t values whose sum is closest to the sum of the actual T_c and T_t. If two rounding methods produce sums equally close to the actual sum, use the combination in which rounded T_c is closest to actual T_c. An illustration of the rounding procedure is as follows:

Table 5-1 I_a values for runoff curve numbers

Curve number	I_a (in)	Curve number	I_a (in)
40	3.000	70	0.857
41	2.878	71	0.817
42	2.762	72	0.778
43	2.651	73	0.740
44	2.545	74	0.703
45	2.444	75	0.667
46	2.348	76	0.632
47	2.255	77	0.597
48	2.167	78	0.564
49	2.082	79	0.532
50	2.000	80	0.500
51	1.922	81	0.469
52	1.846	82	0.439
53	1.774	83	0.410
54	1.704	84	0.381
55	1.636	85	0.353
56	1.571	86	0.326
57	1.509	87	0.299
58	1.448	88	0.273
59	1.390	89	0.247
60	1.333	90	0.222
61	1.279	91	0.198
62	1.226	92	0.174
63	1.175	93	0.151
64	1.125	94	0.128
65	1.077	95	0.105
66	1.030	96	0.083
67	0.985	97	0.062
68	0.941	98	0.041
69	0.899		

DMH 34

Exhibit 4-III Unit peal discharge (q_u) for NRCS (SCS) type III rainfall distribution



DMH 34

Product Flow Rates

CASCADE

Model	Treatment Rate (cfs)	Sediment Capacity[1] (CF)
CS-4	2.00	19
CS-5	3.50	29
CS-6	5.60	42
CS-8	12.00	75
CS-10	18.00	118

CDS

Model	Treatment Rate[2] (cfs)	Sediment Capacity[1] (CF)
1515-3	1.00	14
2015-4	1.40	25
2015-5	1.40	39
2015-6	1.40	57
2020-5	2.20	39
2020-6	2.20	57
2025-5	3.20	39
2025-6	3.20	57
3020-6	3.90	57
3025-6	5.00	57
3030-6	5.70	57
3035-6	6.50	57
4030-8	7.50	151
4040-8	9.50	151

VORTECHS

Model	Treatment Rate (cfs)	Sediment Capacity[3] (CF)
1000	1.60	16
2000	2.80	32
3000	4.50	49
4000	6.00	65
5000	8.50	86
7000	11.00	108
9000	14.00	130
11000	17.5	151
16000	25	192

STORMCEPTOR STC

Model	Treatment Rate (cfs)	Sediment Capacity[1] (CF)
STC 450i	0.40	46
STC 900	0.89	89
STC 2400	1.58	205
STC 4800	2.47	543
STC 7200	3.56	839
STC 11000	4.94	1086
STC 16000	7.12	1677

1 Additional sediment storage capacity available – Check with your local representative for information.

2 Treatment Capacity is based on laboratory testing using OK-110 (average D50 particle size of approximately 100 microns) and a 2400 micron screen.

3 Maintenance recommended when sediment depth has accumulated to within 12-18 inches of the dry weather water surface elevation.

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	SLR Consulting	Project	**21840.00004**
	COMPUTATION SHEET - WATER QUALITY FLOW (WQF)	Made By:	JLS
Subject:	**Hingham Center for Active Living**	Date:	1/30/2026

CDS Unit - DMH 34

Contributing Basins	Imperv. Area (acres)	Total Area (acres)
Total	0.27	0.32

V_{WQ}= [D_{WQ}/12(inches/foot)]*[A_{IMP}]

Where:

V_{WQ}=	Required water quality volume (cubic feet)	494.04	cubic feet =	0.011342	acre-feet
D_{WQ}=	Water Quality Depth (inches)	0.500	inches		
A_{IMP}=	Impervius Area (acres)	0.27	acres =	0.0004	miles^2

Q = runoff depth (in watershed inches) = [WQV(acrefeet)]*[12(inches/foot)]/drainage area (acres)

Q = 0.420

CN = 1000 / [10+ 5D_{WQ} + 10Q -10(Q^2 + 1.25QD_{WQ})$^{0.5}$] = 99

Where:

Q = runoff depth (in watershed inches)

t_c = 0.167 hours

Type III Rainfall Distribution:

From Table 4-1, Ia =	0.041	Ia/P =	0.1506
(TR-55)			
From Exhibit 4-III, q_u =	560 csm/in.		
(TR-55)			

WQF = (qu)(A)(Q) = 0.10 cfs **Stormceptor STC 450i Flow= 0.40 cfs OK**

Development of composite flood hydrograph

This section describes the procedure for developing the peak discharge and selected discharge values of a composite flood hydrograph.

Selecting T_c and T_t

First, use worksheet 5a to develop a summary of basic watershed data by subarea. Then use worksheet 5b to develop a tabular hydrograph discharge summary; this summary displays the effect of individual subarea hydrographs as routed to the watershed point of interest. Use $\sum T_t$ for each subarea as the total reach travel time from that subarea through the watershed to the point of interest. Compute the hydrograph coordinates for selected $\sum T_t$'s using the appropriate sheets in exhibit 5. The flow at any time is:

$$q = q_t A_m Q \qquad \text{[eq. 5-1]}$$

where:

- q = hydrograph coordinate (cfs) at hydrograph time t
- q_t = tabular hydrograph unit discharge from exhibit 5 (csm/in)
- A_m = drainage area of individual subarea (mi^2)
- Q = runoff (in)

Since the timing of peak discharge changes with T_c and T_t, interpolation of peak discharge for T_c and T_t values for use in exhibit 5 is not recommended. Interpolation may result in an estimate of peak discharge that would be invalid because it would be lower than either of the hydrographs. Therefore, round the actual values of T_c and T_t to values presented in exhibit 5. Perform this rounding so that the sum of the selected table values is close to the sum of actual T_c and T_t. An acceptable procedure is to select the results of one of three rounding operations:

1. Round T_c and T_t separately to the nearest table value and sum,
2. Round T_c down and T_t up to nearest table value and sum,
3. Round T_c up and T_t down to nearest table value and sum.

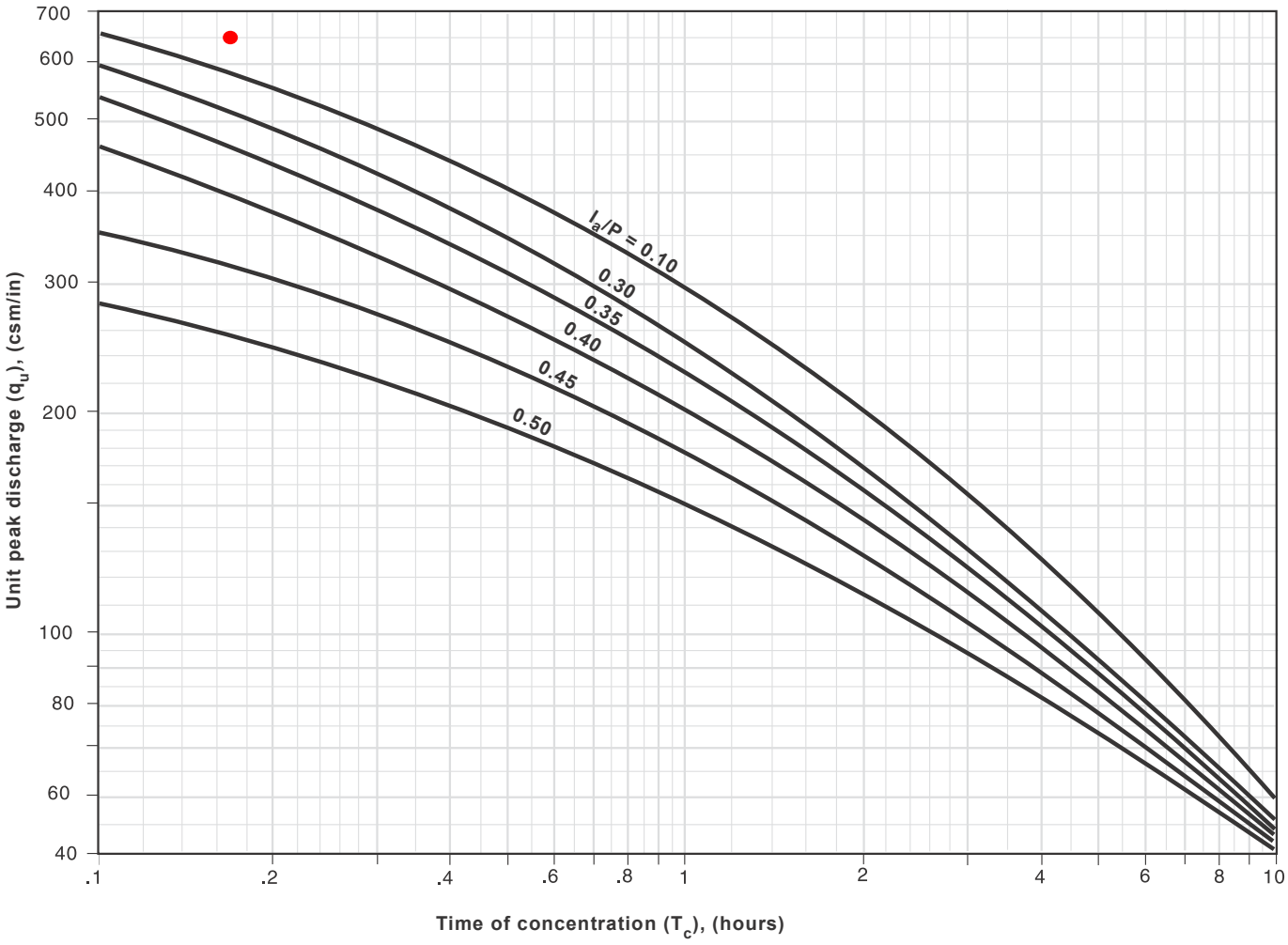
From these three alternatives, choose the pair of rounded T_c and T_t values whose sum is closest to the sum of the actual T_c and T_t. If two rounding methods produce sums equally close to the actual sum, use the combination in which rounded T_c is closest to actual T_c. An illustration of the rounding procedure is as follows:

Table 5-1 I_a values for runoff curve numbers

Curve number	I_a (in)	Curve number	I_a (in)
40	3.000	70	0.857
41	2.878	71	0.817
42	2.762	72	0.778
43	2.651	73	0.740
44	2.545	74	0.703
45	2.444	75	0.667
46	2.348	76	0.632
47	2.255	77	0.597
48	2.167	78	0.564
49	2.082	79	0.532
50	2.000	80	0.500
51	1.922	81	0.469
52	1.846	82	0.439
53	1.774	83	0.410
54	1.704	84	0.381
55	1.636	85	0.353
56	1.571	86	0.326
57	1.509	87	0.299
58	1.448	88	0.273
59	1.390	89	0.247
60	1.333	90	0.222
61	1.279	91	0.198
62	1.226	92	0.174
63	1.175	93	0.151
64	1.125	94	0.128
65	1.077	95	0.105
66	1.030	96	0.083
67	0.985	97	0.062
68	0.941	98	0.041
69	0.899		

DMH 38

Exhibit 4-III Unit peal discharge (q_u) for NRCS (SCS) type III rainfall distribution



DMH 38

Product Flow Rates

CASCADE

Model	Treatment Rate (cfs)	Sediment Capacity[1] (CF)
CS-4	2.00	19
CS-5	3.50	29
CS-6	5.60	42
CS-8	12.00	75
CS-10	18.00	118

CDS

Model	Treatment Rate[2] (cfs)	Sediment Capacity[1] (CF)
1515-3	1.00	14
2015-4	1.40	25
2015-5	1.40	39
2015-6	1.40	57
2020-5	2.20	39
2020-6	2.20	57
2025-5	3.20	39
2025-6	3.20	57
3020-6	3.90	57
3025-6	5.00	57
3030-6	5.70	57
3035-6	6.50	57
4030-8	7.50	151
4040-8	9.50	151

VORTECHS

Model	Treatment Rate (cfs)	Sediment Capacity[3] (CF)
1000	1.60	16
2000	2.80	32
3000	4.50	49
4000	6.00	65
5000	8.50	86
7000	11.00	108
9000	14.00	130
11000	17.5	151
16000	25	192

STORMCEPTOR STC

Model	Treatment Rate (cfs)	Sediment Capacity[1] (CF)
STC 450i	0.40	46
STC 900	0.89	89
STC 2400	1.58	205
STC 4800	2.47	543
STC 7200	3.56	839
STC 11000	4.94	1086
STC 16000	7.12	1677

1 Additional sediment storage capacity available – Check with your local representative for information.

2 Treatment Capacity is based on laboratory testing using OK-110 (average D50 particle size of approximately 100 microns) and a 2400 micron screen.

3 Maintenance recommended when sediment depth has accumulated to within 12-18 inches of the dry weather water surface elevation.

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	SLR Consulting	Project	**21840.00004**
	COMPUTATION SHEET - WATER QUALITY FLOW (WQF)	Made By:	JLS
Subject:	**Hingham Center for Active Living**	Date:	1/30/2026

CDS Unit - DMH 38

Contributing Basins	Imperv. Area (acres)	Total Area (acres)
Total	0.87	1.04

V_{WQ}= [D_{WQ}/12(inches/foot)]*[A_{IMP}]

Where:

V_{WQ}=	Required water quality volume (cubic feet)	1577.3	cubic feet =	0.036209	acre-feet
D_{WQ}=	Water Quality Depth (inches)	0.500	inches		
A_{IMP}=	Impervius Area (acres)	0.87	acres =	0.0014	miles^2

Q = runoff depth (in watershed inches) = [WQV(acrefeet)]*[12(inches/foot)]/drainage area (acres)

Q = 0.419

CN = 1000 / [10+ 5D_{WQ} + 10Q -10(Q^2 + 1.25QD_{WQ})$^{0.5}$] = 99

Where:

Q = runoff depth (in watershed inches)

t_c = 0.167 hours

Type III Rainfall Distribution:

From Table 4-1, Ia =	0.041	Ia/P =	0.0472
(TR-55)			
From Exhibit 4-III, q_u =	650 csm/in.		
(TR-55)			

WQF = (qu)(A)(Q) = 0.37 cfs **Stormceptor STC 450i Flow= 0.40 cfs OK**

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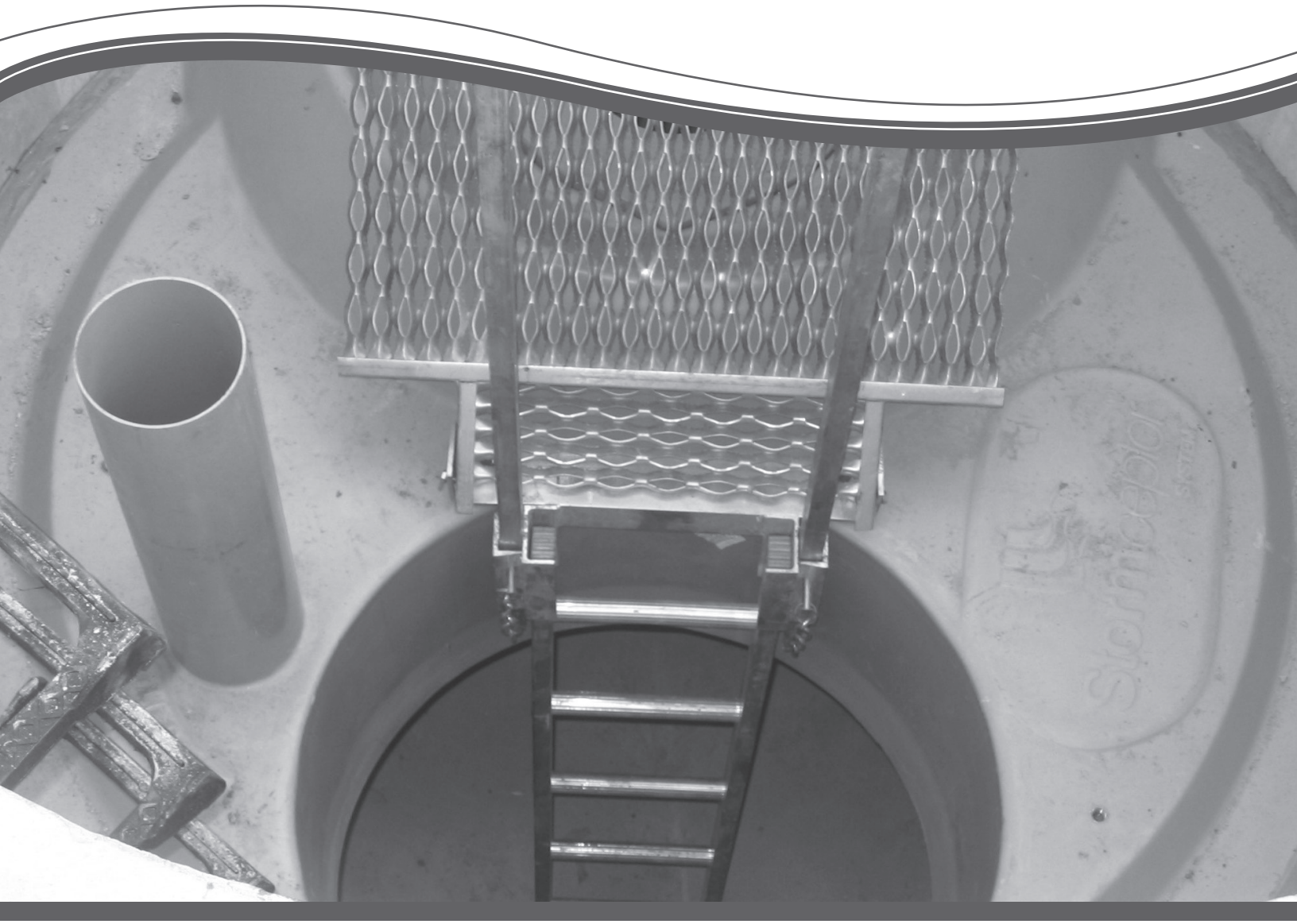
Stormceptor® STC
Operation and Maintenance Guide



Stormceptor® STC

Stormceptor Design Notes

- Only the STC 450i is adaptable to function with a catch basin inlet and/or inline pipes.
- Only the Stormceptor models STC 450i to STC 7200 may accommodate multiple inlet pipes.

Inlet and outlet invert elevation differences are as follows:

Inlet and Outlet Pipe Invert Elevations Differences			
Inlet Pipe Configuration	STC 450i	STC 900 to STC 7200	STC 11000 to STC 16000
Single inlet pipe	3 in. (75 mm)	1 in. (25 mm)	3 in. (75 mm)
Multiple inlet pipes	3 in. (75 mm)	3 in. (75 mm)	Only one inlet pipe.

Maximum inlet and outlet pipe diameters:

Inlet/Outlet Configuration	Inlet Unit STC 450i	In-Line Unit STC 900 to STC 7200	Series* STC 11000 to STC 16000
Straight Through	24 inch (600 mm)	42 inch (1050 mm)	60 inch (1500 mm)
Bend (90 degrees)	18 inch (450 mm)	33 inch (825 mm)	33 inch (825 mm)

- The inlet and in-line Stormceptor units can accommodate turns to a maximum of 90 degrees.
- Minimum distance from top of grade to crown is 2 feet (0.6 m)
- Submerged conditions. A unit is submerged when the standing water elevation at the proposed location of the Stormceptor unit is greater than the outlet invert elevation during zero flow conditions. In these cases, please contact your local Stormceptor representative and provide the following information:
- Top of grade elevation
- Stormceptor inlet and outlet pipe diameters and invert elevations
- Standing water elevation
- Stormceptor head loss, K = 1.3 (for submerged condition, K = 4)

Stormceptor® STC

OPERATION AND MAINTENANCE GUIDE
Table of Content

1. About Stormceptor

The Stormceptor® STC (Standard Treatment Cell) was developed by Imbrium™ Systems to address the growing need to remove and isolate pollution from the storm drain system before it enters the environment. The Stormceptor STC targets hydrocarbons and total suspended solids (TSS) in stormwater runoff. It improves water quality by removing contaminants through the gravitational settling of fine sediments and floatation of hydrocarbons while preventing the re-suspension or scour of previously captured pollutants.

The development of the Stormceptor STC revolutionized stormwater treatment, and created an entirely new category of environmental technology. Protecting thousands of waterways around the world, the Stormceptor System has set the standard for effective stormwater treatment.

1.1. Patent Information

The Stormceptor technology is protected by the following patents:

- Australia Patent No. 693,164 • 693,164 • 707,133 • 729,096 • 779401
- Austrian Patent No. 289647
- Canadian Patent No 2,009,208 •2,137,942 • 2,175,277 • 2,180,305 • 2,180,383 • 2,206,338 • 2,327,768 (Pending)
- China Patent No 1168439
- Denmark DK 711879
- German DE 69534021
- Indonesian Patent No 16688
- Japan Patent No 9-11476 (Pending)
- Korea 10-2000-0026101 (Pending)
- Malaysia Patent No PI9701737 (Pending)
- New Zealand Patent No 314646
- United States Patent No 4,985,148 • 5,498,331 • 5,725,760 • 5,753,115 • 5,849,181 • 6,068,765 • 6,371,690
- Stormceptor OSR Patent Pending • Stormceptor LCS Patent Pending

2. Stormceptor Design Overview

2.1. Design Philosophy

The patented Stormceptor System has been designed to focus on the environmental objective of providing long-term pollution control. The unique and innovative Stormceptor design allows for continuous positive treatment of runoff during all rainfall events, while ensuring that all captured pollutants are retained within the system, even during intense storm events.

An integral part of the Stormceptor design is PCSWMM for Stormceptor - sizing software developed in conjunction with Computational Hydraulics Inc. (CHI) and internationally acclaimed expert, Dr. Bill James. Using local historical rainfall data and continuous simulation modeling, this software allows a Stormceptor unit to be designed for each individual site and the corresponding water quality objectives.

By using PCSWMM for Stormceptor, the Stormceptor System can be designed to remove a wide range of particles (typically from 20 to 2,000 microns), and can also be customized to remove a specific particle size distribution (PSD). The specified PSD should accurately reflect what is in the stormwater runoff to ensure the device is achieving the desired water quality objective. Since stormwater runoff contains small particles (less than 75 microns), it is important to design a treatment system to remove smaller particles in addition to coarse particles.

2.2. Benefits

The Stormceptor System removes free oil and suspended solids from stormwater, preventing spills and non-point source pollution from entering downstream lakes and rivers. The key benefits, capabilities and applications of the Stormceptor System are as follows:

- Provides continuous positive treatment during all rainfall events
- Can be designed to remove over 80% of the annual sediment load
- Removes a wide range of particles
- Can be designed to remove a specific particle size distribution (PSD)
- Captures free oil from stormwater
- Prevents scouring or re-suspension of trapped pollutants
- Pre-treatment to reduce maintenance costs for downstream treatment measures (ponds, swales, detention basins, filters)
- Groundwater recharge protection
- Spills capture and mitigation
- Simple to design and specify
- Designed to your local watershed conditions
- Small footprint to allow for easy retrofit installations
- Easy to maintain (vacuum truck)
- Multiple inlets can connect to a single unit
- Suitable as a bend structure
- Pre-engineered for traffic loading (minimum AASHTO HS-20)
- Minimal elevation drop between inlet and outlet pipes
- Small head loss
- Additional protection provided by an 18" (457 mm) fiberglass skirt below the top of the insert, for the containment of hydrocarbons in the event of a spill.

2.3. Environmental Benefit

Freshwater resources are vital to the health and welfare of their surrounding communities. There is increasing public awareness, government regulations and corporate commitment to reducing the pollution entering our waterways. A major source of this pollution originates from stormwater runoff from urban areas. Rainfall runoff carries oils, sediment and other contaminants from roads and parking lots discharging directly into our streams, lakes and coastal waterways.

The Stormceptor System is designed to isolate contaminants from getting into the natural environment. The Stormceptor technology provides protection for the environment from spills that occur at service stations and vehicle accident sites, while also removing contaminated sediment in runoff that washes from roads and parking lots.

3. Key Operation Features

3.1. Scour Prevention

A key feature of the Stormceptor System is its patented scour prevention technology. This innovation ensures pollutants are captured and retained during all rainfall events, even extreme storms. The Stormceptor System provides continuous positive treatment for all rainfall events, including intense storms. Stormceptor slows incoming runoff, controlling and reducing velocities in the lower chamber to create a non-turbulent environment that promotes free oils and floatable debris to rise and sediment to settle.

The patented scour prevention technology, the fiberglass insert, regulates flows into the lower chamber through a combination of a weir and orifice while diverting high energy flows away through the upper chamber to prevent scouring. Laboratory testing demonstrated no scouring when tested up to 125% of the unit's operating rate, with the unit loaded to 100% sediment capacity (NJDEP, 2005). Second, the depth of the lower chamber ensures the sediment storage zone is adequately separated from the path of flow in the lower chamber to prevent scouring.

3.2. Operational Hydraulic Loading Rate

Designers and regulators need to evaluate the treatment capacity and performance of manufactured stormwater treatment systems. A commonly used parameter is the "operational hydraulic loading rate" which originated as a design methodology for wastewater treatment devices.

Operational hydraulic loading rate may be calculated by dividing the flow rate into a device by its settling area. This represents the critical settling velocity that is the prime determinant to quantify the influent particle size and density captured by the device. PCSWMM for Stormceptor uses a similar parameter that is calculated by dividing the hydraulic detention time in the device by the fall distance of the sediment.

$$v_{SC} = \frac{H}{6_H} = \frac{Q}{A_S}$$

Where:

v_{SC} = critical settling velocity, ft/s (m/s)

H = tank depth, ft (m)

$Ø_H$ = hydraulic detention time, ft/s (m/s)

Q = volumetric flow rate, ft3/s (m3/s)

A_S = surface area, ft^2 (m^2)

(Tchobanoglous, G. and Schroeder, E.D. 1987. Water Quality. Addison Wesley.)

Unlike designing typical wastewater devices, stormwater systems are designed for highly variable flow rates including intense peak flows. PCSWMM for Stormceptor incorporates all of the flows into its calculations, ensuring that the operational hydraulic loading rate is considered not only for one flow rate, but for all flows including extreme events.

3.3. Double Wall Containment

The Stormceptor System was conceived as a pollution identifier to assist with identifying illicit discharges. The fiberglass insert has a continuous skirt that lines the concrete barrel wall for a depth of 18 inches (457 mm) that provides double wall containment for hydrocarbons storage. This protective barrier ensures that toxic floatables do not migrate through the concrete wall into the surrounding soils.

4. Stormceptor Product Line

4.1. Stormceptor Models

A summary of Stormceptor models and capacities are listed in Table 1.

Table 1. Stormceptor Models

Stormceptor Model	Total Storage Volume U.S. Gal (L)	Hydrocarbon Storage Capacity U.S. Gal (L)	Maximum Sediment Capacity ft^3 (L)
STC 450i	470 (1,780)	86 (330)	46 (1,302)
STC 900	952 (3,600)	251 (950)	89 (2,520)
STC 1200	1,234 (4,670)	251 (950)	127 (3,596)
STC 1800	1,833 (6,940)	251 (950)	207 (5,861)
STC 2400	2,462 (9,320)	840 (3,180)	205 (5,805)
STC 3600	3,715 (1,406)	840 (3,180)	373 (10,562)
STC 4800	5,059 (1,950)	909 (3,440)	543 (15,376)
STC 6000	6,136 (23,230)	909 (3,440)	687 (19,453)
STC 7200	7,420 (28,090)	1,059 (4,010)	839 (23,757)
STC 11000	11,194 (42,370)	2,797 (10, 590)	1,086 (30,752)
STC 13000	13,348 (50,530)	2,797 (10, 590)	1,374 (38,907)
STC 16000	15,918 (60,260)	3,055 (11, 560)	1,677 (47,487)

NOTE: Storage volumes may vary slightly from region to region. For detailed information, contact your local Stormceptor representative.

4.2. Inline Stormceptor

The Inline Stormceptor, Figure 1, is the standard design for most stormwater treatment applications. The patented Stormceptor design allows the Inline unit to maintain continuous positive treatment of total suspended solids (TSS) year-round, regardless of flow rate. The Inline Stormceptor is composed of a precast concrete tank with a fiberglass insert situated at the invert of the storm sewer pipe, creating an upper chamber above the insert and a lower chamber below the insert.

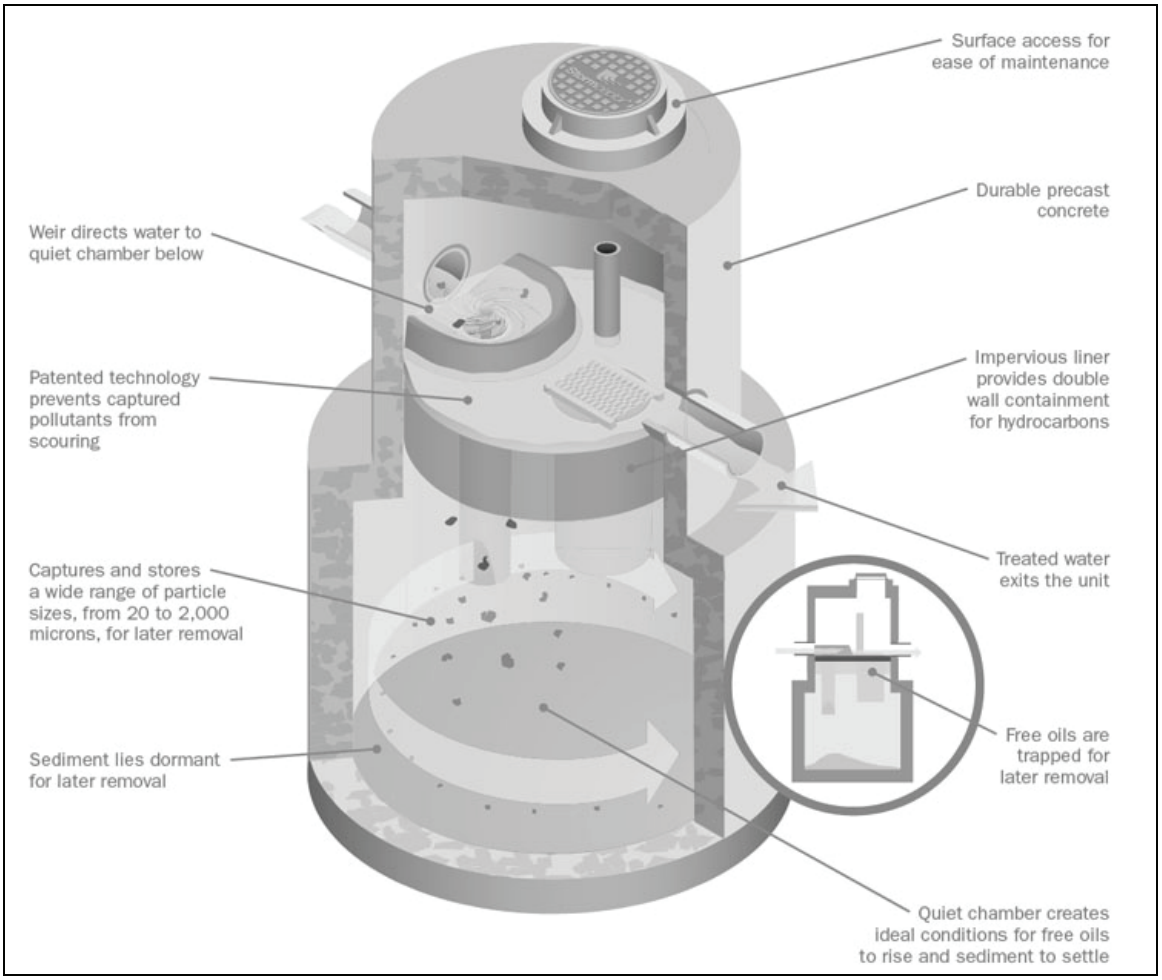


Figure 1. Inline Stormceptor

Operation

As water flows into the Stormceptor unit, it is slowed and directed to the lower chamber by a weir and drop tee. The stormwater enters the lower chamber, a non-turbulent environment, allowing free oils to rise and sediment to settle. The oil is captured underneath the fiberglass insert and shielded from exposure to the concrete walls by a fiberglass skirt. After the pollutants separate, treated water continues up a riser pipe, and exits the lower chamber on the downstream side of the weir before leaving the unit. During high flow events, the Stormceptor System's patented scour prevention technology ensures continuous pollutant removal and prevents re-suspension of previously captured pollutants.

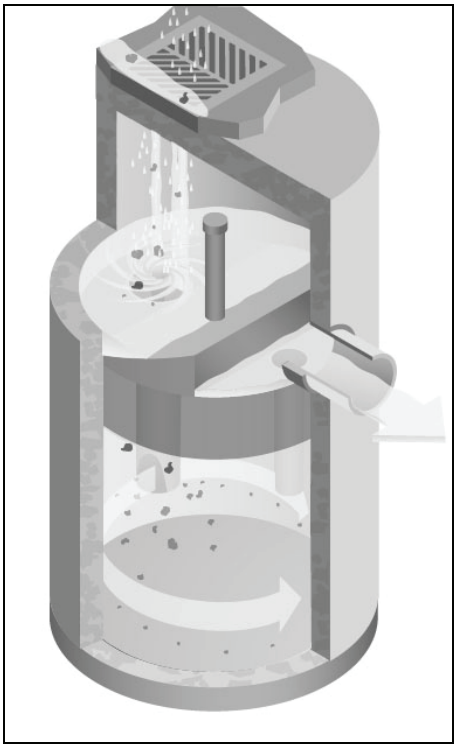


Figure 2. Inlet Stormceptor

4.3. Inlet Stormceptor

The Inlet Stormceptor System, Figure 2, was designed to provide protection for parking lots, loading bays, gas stations and other spill-prone areas. The Inlet Stormceptor is designed to remove sediment from stormwater introduced through a grated inlet, a storm sewer pipe, or both.

The Inlet Stormceptor design operates in the same manner as the Inline unit, providing continuous positive treatment, and ensuring that captured material is not re-suspended.

4.4. Series Stormceptor

Designed to treat larger drainage areas, the Series Stormceptor System, Figure 3, consists of two adjacent Stormceptor models that function in parallel. This design eliminates the need for additional structures and piping to reduce installation costs.

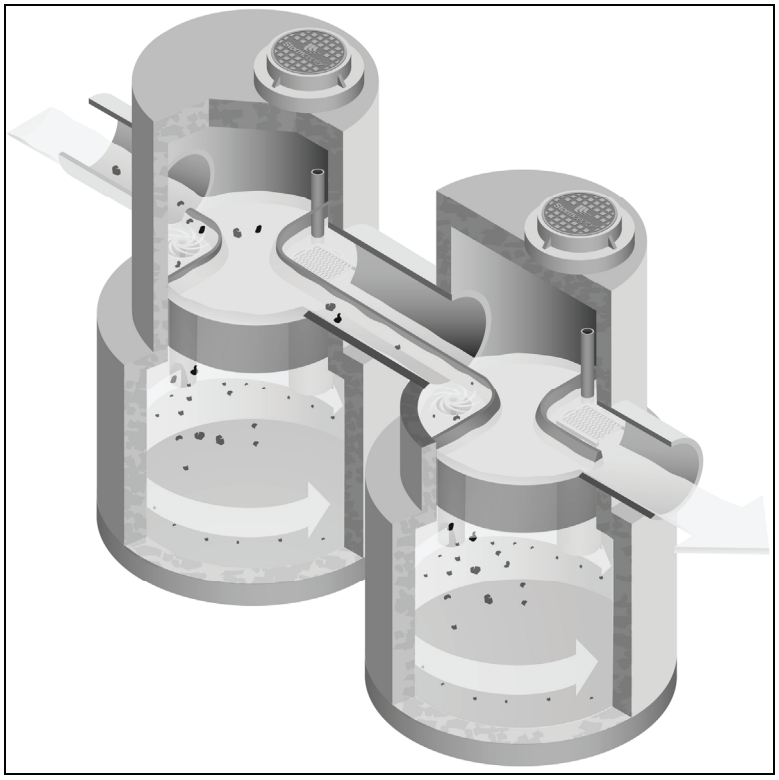


Figure 3. Series System

The Series Stormceptor design operates in the same manner as the Inline unit, providing continuous positive treatment, and ensuring that captured material is not re-suspended.

5. Sizing the Stormceptor System

The Stormceptor System is a versatile product that can be used for many different aspects of water quality improvement. While addressing these needs, there are conditions that the designer needs to be aware of in order to size the Stormceptor model to meet the demands of each individual site in an efficient and cost-effective manner.

PCSWMM for Stormceptor is the support tool used for identifying the appropriate Stormceptor model. In order to size a unit, it is recommended the user follow the seven design steps in the program. The steps are as follows:

STEP 1 – Project Details

The first step prior to sizing the Stormceptor System is to clearly identify the water quality objective for the development. It is recommended that a level of annual sediment (TSS) removal be identified and defined by a particle size distribution.

STEP 2 – Site Details

Identify the site development by the drainage area and the level of imperviousness. It is recommended that imperviousness be calculated based on the actual area of imperviousness based on paved surfaces, sidewalks and rooftops.

STEP 3 – Upstream Attenuation

The Stormceptor System is designed as a water quality device and is sometimes used in conjunction with onsite water quantity control devices such as ponds or underground detention systems. When possible, a greater benefit is typically achieved when installing a Stormceptor unit upstream of a detention facility. By placing the Stormceptor unit upstream of a detention structure, a benefit of less maintenance of the detention facility is realized.

STEP 4 – Particle Size Distribution

It is critical that the PSD be defined as part of the water quality objective. PSD is critical for the design of treatment system for a unit process of gravity settling and governs the size of a treatment system. A range of particle sizes has been provided and it is recommended that clays and silt-sized particles be considered in addition to sand and gravel-sized particles. Options and sample PSDs are provided in PCSWMM for Stormceptor. The default particle size distribution is the Fine Distribution, Table 2, option.

Table 2. Fine Distribution

Particle Size	Distribution	Specific Gravity
20	20%	1.3
60	20%	1.8
150	20%	2.2
400	20%	2.65
2000	20%	2.65

If the objective is the long-term removal of 80% of the total suspended solids on a given site, the PSD should be representative of the expected sediment on the site. For example, a system designed to remove 80% of coarse particles (greater than 75 microns) would provide relatively poor removal efficiency of finer particles that may be naturally prevalent in runoff from the site.

Since the small particle fraction contributes a disproportionately large amount of the total available particle surface area for pollutant adsorption, a system designed primarily for coarse particle capture will compromise water quality objectives.

STEP 5 – Rainfall Records

Local historical rainfall has been acquired from the U.S. National Oceanic and Atmospheric Administration, Environment Canada and regulatory agencies across North America. The rainfall data provided with PCSMM for Stormceptor provides an accurate estimation of small storm hydrology by modeling actual historical storm events including duration, intensities and peaks.

STEP 6 – Summary

At this point, the program may be executed to predict the level of TSS removal from the site. Once the simulation has completed, a table shall be generated identifying the TSS removal of each Stormceptor unit.

STEP 7 – Sizing Summary

Performance estimates of all Stormceptor units for the given site parameters will be displayed in a tabular format. The unit that meets the water quality objective, identified in Step 1, will be highlighted.

5.1. PCSWMM for Stormceptor

The Stormceptor System has been developed in conjunction with PCSWMM for Stormceptor as a technological solution to achieve water quality goals. Together, these two innovations model, simulate, predict and calculate the water quality objectives desired by a design engineer for TSS removal.

PCSWMM for Stormceptor is a proprietary sizing program which uses site specific inputs to a computer model to simulate sediment accumulation, hydrology and long-term total suspended solids removal. The model has been calibrated to field monitoring results from Stormceptor units that have been monitored in North America. The sizing methodology can be described by three processes:

1. Determination of real time hydrology
2. Buildup and wash off of TSS from impervious land areas
3. TSS transport through the Stormceptor (settling and discharge). The use of a calibrated model is the preferred method for sizing stormwater quality structures for the following reasons:
    - » The hydrology of the local area is properly and accurately incorporated in the sizing (distribution of flows, flow rate ranges and peaks, back-to-back storms, inter-event times)
    - » The distribution of TSS with the hydrology is properly and accurately considered in the sizing
    - » Particle size distribution is properly considered in the sizing
    - » The sizing can be optimized for TSS removal
    - » The cost benefit of alternate TSS removal criteria can be easily assessed
    - » The program assesses the performance of all Stormceptor models. Sizing may be selected based on a specific water quality outcome or based on the Maximum Extent Practicable

For more information regarding PCSWMM for Stormceptor, contact your local Stormceptor representative, or visit www.imbriumsystems.com to download a free copy of the program.

5.2. Sediment Loading Characteristics

The way in which sediment is transferred to stormwater can have a considerable effect on which type of system is implemented. On typical impervious surfaces (e.g. parking lots) sediment will build over time and wash off with the next rainfall. When rainfall patterns are examined, a short intense storm will have a higher concentration of sediment than a long slow drizzle. Together with rainfall data representing the site's typical rainfall patterns, sediment loading characteristics play a part in the correct sizing of a stormwater quality device.

Typical Sites

For standard site design of the Stormceptor System, PCSWMM for Stormceptor is utilized to accurately assess the unit's performance. As an integral part of the product's design, the program can be used to meet local requirements for total suspended solid removal. Typical installations of manufactured stormwater treatment devices would occur on areas such as paved parking lots or paved roads. These are considered "stable" surfaces which have non – erodible surfaces.

Unstable Sites

While standard sites consist of stable concrete or asphalt surfaces, sites such as gravel parking lots, or maintenance yards with stockpiles of sediment would be classified as "unstable". These types of sites do not exhibit first flush characteristics, are highly erodible and exhibit atypical sediment loading characteristics and must therefore be sized more carefully. Contact your local Stormceptor representative for assistance in selecting a proper unit sized for such unstable sites.

6. Spill Controls

When considering the removal of total petroleum hydrocarbons (TPH) from a storm sewer system there are two functions of the system: oil removal, and spill capture.

'Oil Removal' describes the capture of the minute volumes of free oil mobilized from impervious surfaces. In this instance relatively low concentrations, volumes and flow rates are considered. While the Stormceptor unit will still provide an appreciable oil removal function during higher flow events and/or with higher TPH concentrations, desired effluent limits may be exceeded under these conditions.

'Spill Capture' describes a manner of TPH removal more appropriate to recovery of a relatively high volume of a single phase deleterious liquid that is introduced to the storm sewer system over a relatively short duration. The two design criteria involved when considering this manner of introduction are overall volume and the specific gravity of the material. A standard Stormceptor unit will be able to capture and retain a maximum spill volume and a minimum specific gravity.

For spill characteristics that fall outside these limits, unit modifications are required. Contact your local Stormceptor Representative for more information.

One of the key features of the Stormceptor technology is its ability to capture and retain spills. While the standard Stormceptor System provides excellent protection for spill control, there are additional options to enhance spill protection if desired.

6.1. Oil Level Alarm

The oil level alarm is an electronic monitoring system designed to trigger a visual and audible alarm when a pre-set level of oil is reached within the lower chamber. As a standard, the oil

level alarm is designed to trigger at approximately 85% of the unit's available depth level for oil capture. The feature acts as a safeguard against spills caused by exceeding the oil storage capacity of the separator and eliminates the need for manual oil level inspection.

The oil level alarm installed on the Stormceptor insert is illustrated in Figure 4.

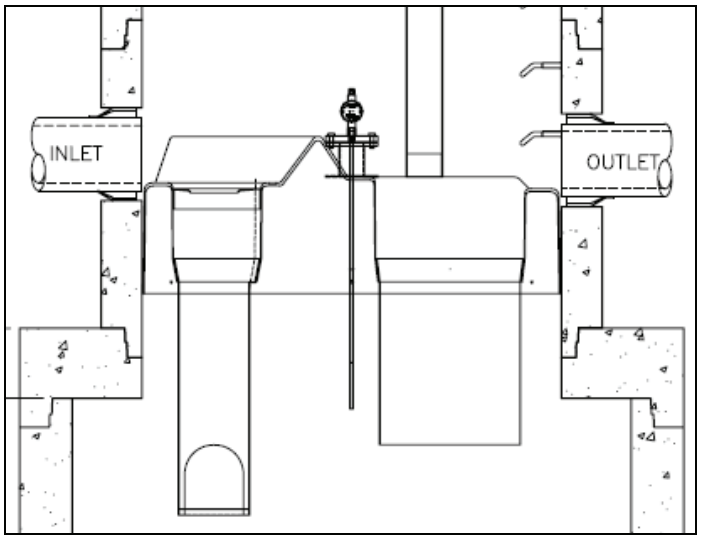


Figure 4. Oil level alarm

6.2. Increased Volume Storage Capacity

The Stormceptor unit may be modified to store a greater spill volume than is typically available. Under such a scenario, instead of installing a larger than required unit, modifications can be made to the recommended Stormceptor model to accommodate larger volumes. Contact your local Stormceptor representative for additional information and assistance for modifications.

7. Stormceptor Options

The Stormceptor System allows flexibility to incorporate to existing and new storm drainage infrastructure. The following section identifies considerations that should be reviewed when installing the system into a drainage network. For conditions that fall outside of the recommendations in this section, please contact your local Stormceptor representative for further guidance.

7.1. Installation Depth Minimum Cover

The minimum distance from the top of grade to the crown of the inlet pipe is 24 inches (600 mm). For situations that have a lower minimum distance, contact your local Stormceptor representative.

7.2. Maximum Inlet and Outlet Pipe Diameters

Maximum inlet and outlet pipe diameters are illustrated in Figure 5. Contact your local Stormceptor representative for larger pipe diameters

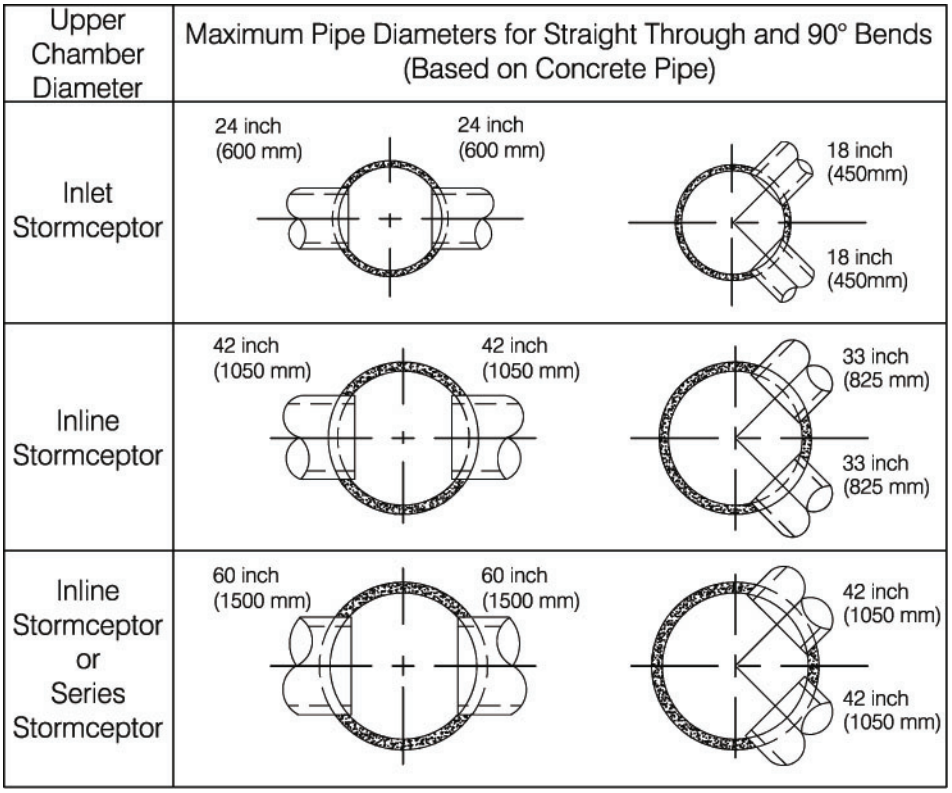


Figure 5. Maximum pipe diameters for straight through and bend applications

*The bend should only be incorporated into the second structure (downstream structure) of the Series Stormceptor System

7.3. Bends

The Stormceptor System can be used to change horizontal alignment in the storm drain network up to a maximum of 90 degrees. Figure 6 illustrates the typical bend situations of the Stormceptor System. Bends should only be applied to the second structure (downstream structure) of the Series Stormceptor System.

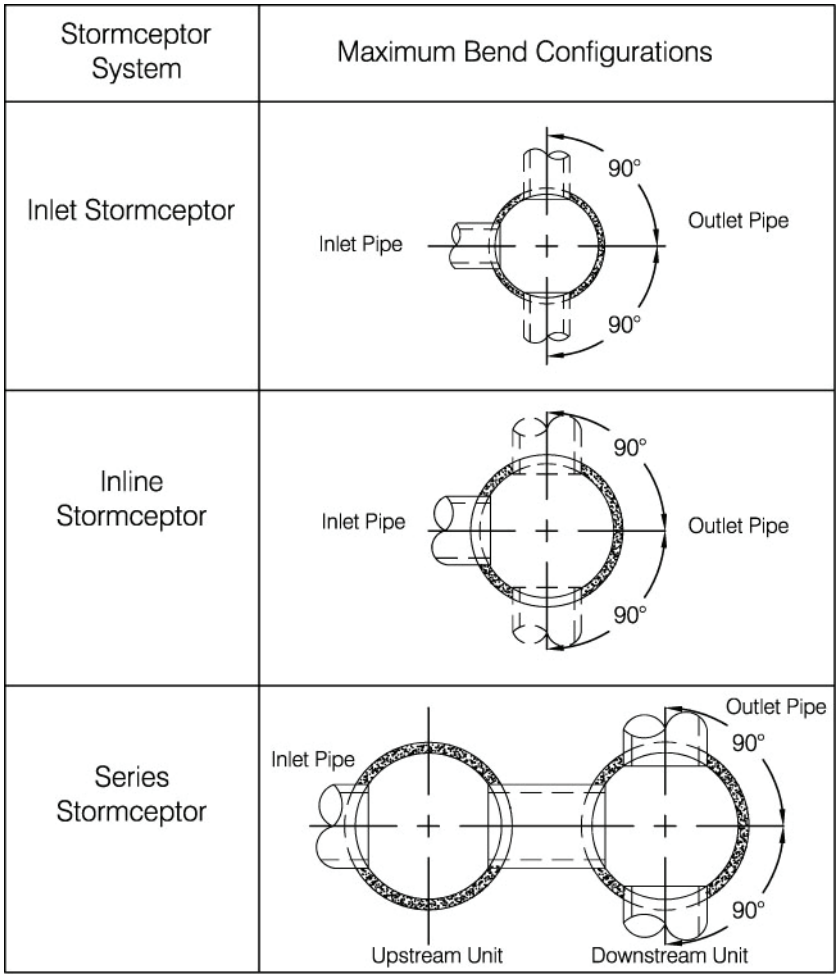


Figure 6. Maximum bend angles

7.4. Multiple Inlet Pipes

The Inlet and Inline Stormceptor System can accommodate two or more inlet pipes. The maximum number of inlet pipes that can be accommodated into a Stormceptor unit is a function of the number, alignment and diameter of the pipes and its effects on the structural integrity of the precast concrete. When multiple inlet pipes are used for new developments, each inlet pipe shall have an invert elevation 3 inches (75 mm) higher than the outlet pipe invert elevation.

7.5. Inlet/Outlet Pipe Invert Elevations

Recommended inlet and outlet pipe invert differences are listed in Table 3.

Table 3. Recommended Drops Between Inlet and Outlet Pipe Inverts

Number of Inlet Pipes	Inlet System	In-Line System	Series System
1	3 inches (75 mm)	1 inch (25 mm)	3 inches (75 mm)
>1	3 inches (75 mm)	3 inches (75 mm)	Not Applicable

7.6. Shallow Stormceptor

In cases where there may be restrictions to the depth of burial of storm sewer systems. In this situation, for selected Stormceptor models, the lower chamber components may be increased in diameter to reduce the overall depth of excavation required.

7.7. Customized Live Load

The Stormceptor system is typically designed for local highway truck loading (AASHTO HS- 20). When the project requires live loads greater than HS-20, the Stormceptor System may be customized structurally for a pre-specified live load. Contact your local Stormceptor representative for customized loading conditions.

7.8. Pre-treatment

The Stormceptor System may be sized to remove sediment and for spills control in conjunction with other stormwater BMPs to meet the water quality objective. For pretreatment applications, the Stormceptor System should be the first unit in a treatment train. The benefits of pre-treatment include the extension of the operational life (extension of maintenance frequency) of large stormwater management facilities, prevention of spills and lower total life- cycle maintenance cost.

7.9. Head loss

The head loss through the Stormceptor System is similar to a 60 degree bend at a manhole. The K value for calculating minor losses is approximately 1.3 (minor loss = k*1.3v2/2g).

However, when a Submerged modification is applied to a Stormceptor unit, the corresponding K value is 4.

7.10. Submerged

The Submerged modification, Figure 7, allows the Stormceptor System to operate in submerged or partially submerged storm sewers. This configuration can be installed on all models of the Stormceptor System by modifying the fiberglass insert. A customized weir height and a secondary drop tee are added.

Submerged instances are defined as standing water in the storm drain system during zero flow conditions. In these instances, the following information is necessary for the proper design and application of submerged modifications:

- Stormceptor top of grade elevation
- Stormceptor outlet pipe invert elevation
- Standing water elevation

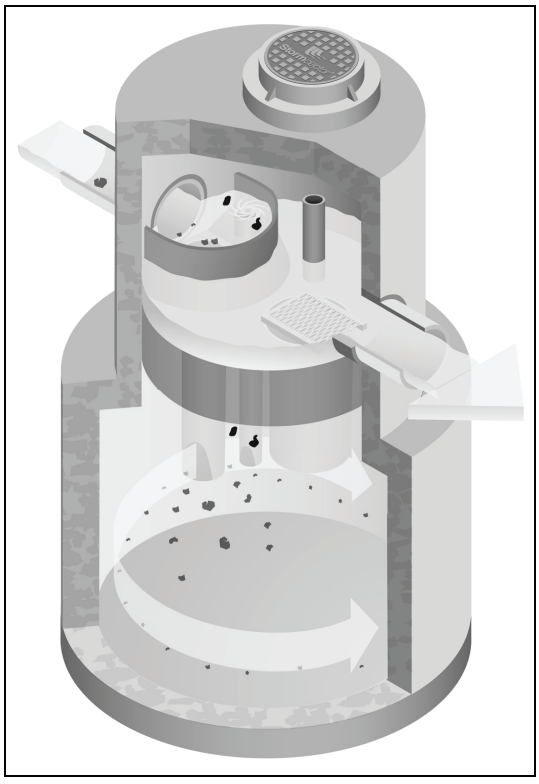


Figure 7. Submerged Stormceptor

8. Comparing Technologies

Designers have many choices available to achieve water quality goals in the treatment of stormwater runoff. Since many alternatives are available for use in stormwater quality treatment it is important to consider how to make an appropriate comparison between "approved alternatives". The following is a guide to assist with the accurate comparison of differing technologies and performance claims.

8.1. Particle Size Distribution (PSD)

The most sensitive parameter to the design of a stormwater quality device is the selection of the design particle size. While it is recommended that the actual particle size distribution (PSD) for sites be measured prior to sizing, alternative values for particle size should be selected to represent what is likely to occur naturally on the site. A reasonable estimate of a particle size distribution likely to be found on parking lots or other impervious surfaces should consist of a wide range of particles such as 20 microns to 2,000 microns (Ontario MOE, 1994).

There is no absolute right particle size distribution or specific gravity and the user is cautioned to review the site location, characteristics, material handling practices and regulatory requirements when selecting a particle size distribution. When comparing technologies, designs using different PSDs will result in incomparable TSS removal efficiencies. The PSD of the TSS removed needs to be standard between two products to allow for an accurate comparison.

8.2. Scour Prevention

In order to accurately predict the performance of a manufactured treatment device, there must be confidence that it will perform under all conditions. Since rainfall patterns cannot be predicted, stormwater quality devices placed in storm sewer systems must be able to withstand extreme events, and ensure that all pollutants previously captured are retained in the system.

In order to have confidence in a system's performance under extreme conditions, independent validation of scour prevention is essential when examining different technologies. Lack of independent verification of scour prevention should make a designer wary of accepting any product's performance claims.

8.3. Hydraulics

Full scale laboratory testing has been used to confirm the hydraulics of the Stormceptor System. Results of lab testing have been used to physically design the Stormceptor System and the sewer pipes entering and leaving the unit. Key benefits of Stormceptor are:

- Low head loss (typical k value of 1.3)
- Minimal inlet/outlet invert elevation drop across the structure
- Use as a bend structure
- Accommodates multiple inlets

The adaptability of the treatment device to the storm sewer design infrastructure can affect the overall performance and cost of the site.

8.4. Hydrology

Stormwater quality treatment technologies need to perform under varying climatic conditions. These can vary from long low intensity rainfall to short duration, high intensity storms. Since a treatment device is expected to perform under all these conditions, it makes sense that any system's design should accommodate those conditions as well.

Long-term continuous simulation evaluates the performance of a technology under the varying conditions expected in the climate of the subject site. Single, peak event design does not provide this information and is not equivalent to long-term simulation. Designers should request long-term simulation performance to ensure the technology can meet the long-term water quality objective.

9. Testing

The Stormceptor System has been the most widely monitored stormwater treatment technology in the world. Performance verification and monitoring programs are completed to the strictest standards and integrity. Since its introduction in 1990, numerous independent field tests and studies detailing the effectiveness of the Stormceptor System have been completed.

- Coventry University, UK – 97% removal of oil, 83% removal of sand and 73% removal of peat
- National Water Research Institute, Canada, - scaled testing for the development of the Stormceptor System identifying both TSS removal and scour prevention.
- New Jersey TARP Program – full scale testing of an STC 900 demonstrating 75% TSS removal of particles from 1 to 1000 microns. Scour testing completed demonstrated that the system does not scour. The New Jersey Department of Environmental Protection was followed.
- City of Indianapolis – full scale testing of an STC 900 demonstrating over 80% TSS removal of particles from 50 microns to 300 microns at 130% of the unit's operating rate. Scour testing completed demonstrated that the system does not scour.
- Westwood Massachusetts (1997), demonstrated >80% TSS removal
- Como Park (1997), demonstrated 76% TSS removal
- Ontario MOE SWAMP Program – 57% removal of 1 to 25 micron particles
- Laval Quebec – 50% removal of 1 to 25 micron particles

10. Installation

The installation of the concrete Stormceptor should conform in general to state highway, or local specifications for the installation of manholes. Selected sections of a general specification that are applicable are summarized in the following sections.

10.1. Excavation

Excavation for the installation of the Stormceptor should conform to state highway, or local specifications. Topsoil removed during the excavation for the Stormceptor should be stockpiled in designated areas and should not be mixed with subsoil or other materials.

Topsoil stockpiles and the general site preparation for the installation of the Stormceptor should conform to state highway or local specifications.

The Stormceptor should not be installed on frozen ground. Excavation should extend a minimum of 12 inches (300 mm) from the precast concrete surfaces plus an allowance for shoring and bracing where required. If the bottom of the excavation provides an unsuitable foundation additional excavation may be required.

In areas with a high water table, continuous dewatering may be required to ensure that the excavation is stable and free of water.

10.2. Backfilling

Backfill material should conform to state highway or local specifications. Backfill material should be placed in uniform layers not exceeding 12 inches (300mm) in depth and compacted to state highway or local specifications.

11. Stormceptor Construction Sequence

The concrete Stormceptor is installed in sections in the following sequence:

1. Aggregate base
2. Base slab
3. Lower chamber sections
4. Upper chamber section with fiberglass insert
5. Connect inlet and outlet pipes
6. Assembly of fiberglass insert components (drop tee, riser pipe, oil cleanout port and orifice plate
7. Remainder of upper chamber
8. Frame and access cover

The precast base should be placed level at the specified grade. The entire base should be in contact with the underlying compacted granular material. Subsequent sections, complete with joint seals, should be installed in accordance with the precast concrete manufacturer's recommendations.

Adjustment of the Stormceptor can be performed by lifting the upper sections free of the excavated area, re-leveling the base and re-installing the sections. Damaged sections and gaskets should be repaired or replaced as necessary. Once the Stormceptor has been constructed, any lift holes must be plugged with mortar.

12. Maintenance

12.1. Health and Safety

The Stormceptor System has been designed considering safety first. It is recommended that confined space entry protocols be followed if entry to the unit is required. In addition, the fiberglass insert has the following health and safety features:

- Designed to withstand the weight of personnel
- A safety grate is located over the 24 inch (600 mm) riser pipe opening
- Ladder rungs can be provided for entry into the unit, if required

12.2. Maintenance Procedures

Maintenance of the Stormceptor system is performed using vacuum trucks. No entry into the unit is required for maintenance (in most cases). The vacuum service industry is a well- established sector of the service industry that cleans underground tanks, sewers and catch basins. Costs to clean a Stormceptor will vary based on the size of unit and transportation distances.

The need for maintenance can be determined easily by inspecting the unit from the surface. The depth of oil in the unit can be determined by inserting a dipstick in the oil inspection/cleanout port.

Similarly, the depth of sediment can be measured from the surface without entry into the Stormceptor via a dipstick tube equipped with a ball valve. This tube would be inserted through the riser pipe. Maintenance should be performed once the sediment depth exceeds the guideline values provided in the Table 4.

Table 4. Sediment Depths Indicating Required Servicing*

Particle Size	Specific Gravity
Model	Sediment Depth inches (mm)
450i	8 (200)
900	8 (200)
1200	10 (250)
1800	15 (381)
2400	12 (300)
3600	17 (430)
4800	15 (380)
6000	18 (460)
7200	15 (381)
11000	17 (380)
13000	20 (500)
16000	17 (380)
* based on 15% of the Stormceptor unit's total storage	

Although annual servicing is recommended, the frequency of maintenance may need to be increased or reduced based on local conditions (i.e. if the unit is filling up with sediment more quickly than projected, maintenance may be required semi-annually; conversely once the site has stabilized maintenance may only be required every two or three years).

Oil is removed through the oil inspection/cleanout port and sediment is removed through the riser pipe. Alternatively oil could be removed from the 24 inches (600 mm) opening if water is removed from the lower chamber to lower the oil level below the drop pipes.

The following procedures should be taken when cleaning out Stormceptor:

1. Check for oil through the oil cleanout port
2. Remove any oil separately using a small portable pump
3. Decant the water from the unit to the sanitary sewer, if permitted by the local regulating authority, or into a separate containment tank
4. Remove the sludge from the bottom of the unit using the vacuum truck
5. Re-fill Stormceptor with water where required by the local jurisdiction

12.3. Submerged Stormceptor

Careful attention should be paid to maintenance of the Submerged Stormceptor System. In cases where the storm drain system is submerged, there is a requirement to plug both the inlet and outlet pipes to economically clean out the unit.

12.4. Hydrocarbon Spills

The Stormceptor is often installed in areas where the potential for spills is great. The Stormceptor System should be cleaned immediately after a spill occurs by a licensed liquid waste hauler.

12.5. Disposal

Requirements for the disposal of material from the Stormceptor System are similar to that of any other stormwater Best Management Practice (BMP) where permitted. Disposal options for the sediment may range from disposal in a sanitary trunk sewer upstream of a sewage treatment plant, to disposal in a sanitary landfill site. Petroleum waste products collected in the Stormceptor (free oil/chemical/fuel spills) should be removed by a licensed waste management company.

12.6. Oil Sheens

With a steady influx of water with high concentrations of oil, a sheen may be noticeable at the Stormceptor outlet. This may occur because a rainbow or sheen can be seen at very small oil concentrations (<10 mg/L). Stormceptor will remove over 98% of all free oil spills from storm sewer systems for dry weather or frequently occurring runoff events.

The appearance of a sheen at the outlet with high influent oil concentrations does not mean the unit is not working to this level of removal. In addition, if the influent oil is emulsified the Stormceptor will not be able to remove it. The Stormceptor is designed for free oil removal and not emulsified conditions.

SUPPORT

Drawings and specifications are available at www.ContechES.com.

Site-specific design support is available from our engineers.

Contech Engineered Solutions LLC provides site solutions for the civil engineering industry. Contech's portfolio includes bridges, drainage, sanitary sewer, stormwater, and earth stabilization products. For information, visit www.ContechES.com or call 800.338.1122

CONTECH ENGINEERED SOLUTIONS
800-925-5240
www.ContechES.com

Appendix F TSS Removal

Stormwater Management Plan

Hingham Center for Active Living

EDM Studio, Inc.

SLR Project No.: 141.21840.00004

February 3, 2026

INSTRUCTIONS:

Version 1, Automated: Mar. 4, 2008

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: Subsurface Infiltration System (UG-1)

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Proprietary Treatment Practice	**0.80**	**1.00**	**0.80**	**0.20**
Subsurface Infiltration Structure	**0.80**	**0.20**	**0.16**	**0.04**
	0.00	**0.04**	**0.00**	**0.04**
	0.00	**0.04**	**0.00**	**0.04**
	0.00	**0.04**	**0.00**	**0.04**

Total TSS Removal = **96%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: 21840.00004

Prepared By: JLS

Date: 12/1/2025

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed

1. From MassDEP Stormwater Handbook Vol. 1

INSTRUCTIONS:

Version 1, Automated: Mar. 4, 2008

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: Rain Garden (RG-1)

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
Proprietary Treatment Practice	**0.80**	**0.75**	**0.60**	**0.15**
Rain Garden	**0.90**	**0.15**	**0.135**	**0.015**
	0.00	**0.015**	**0.00**	**0.015**
	0.00	**0.015**	**0.00**	**0.015**

Total TSS Removal = **98.5%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: 21840.00004

Prepared By: JLS

Date: 12/1/2025

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed

1. From MassDEP Stormwater Handbook Vol. 1

INSTRUCTIONS:
1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Version 1, Automated: Mar. 4, 2008

Location: Infiltration Basin (IB-1)

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
Proprietary Treatment Practice	**0.80**	**0.75**	**0.60**	**0.15**
Infiltration Basin	**0.80**	**0.15**	**0.12**	**0.03**
	0.00	**0.03**	**0.00**	**0.03**
	0.00	**0.03**	**0.00**	**0.03**

Total TSS Removal = **97%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: 21840.00004
Prepared By: JLS
Date: 2/3/2026

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed

1. From MassDEP Stormwater Handbook Vol. 1

INSTRUCTIONS:
1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Version 1, Automated: Mar. 4, 2008

Location: Infiltration Basin (IB-2)

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Infiltration Basin	**0.80**	**1.00**	**0.80**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**

Total TSS Removal = **80%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: 21840.00004
Prepared By: JLS
Date: 2/2/2026

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed
1. From MassDEP Stormwater Handbook Vol. 1

INSTRUCTIONS:

Version 1, Automated: Mar. 4, 2008

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: Gravel Infiltration Trench (GT-1)

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Infiltration Trench	**0.80**	**1.00**	**0.80**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**

Total TSS Removal = **80%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: 21840.00004

Prepared By: JLS

Date: 12/2/2025

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed

1. From MassDEP Stormwater Handbook Vol. 1

INSTRUCTIONS:

Version 1, Automated: Mar. 4, 2008

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: Gravel Infiltration Trench (GT-2)

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Infiltration Trench	**0.80**	**1.00**	**0.80**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**

Total TSS Removal = **80%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: 21840.00004

Prepared By: JLS

Date: 12/2/2025

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed

1. From MassDEP Stormwater Handbook Vol. 1

INSTRUCTIONS:

Version 1, Automated: Mar. 4, 2008

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: Gravel Infiltration Trench (GT-3)

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Infiltration Trench	**0.80**	**1.00**	**0.80**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**

Total TSS Removal = **80%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: 21840.00004

Prepared By: JLS

Date: 12/2/2025

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed

1. From MassDEP Stormwater Handbook Vol. 1

INSTRUCTIONS:

Version 1, Automated: Mar. 4, 2008

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: Gravel Infiltration Trench (GT-4)

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Infiltration Trench	**0.80**	**1.00**	**0.80**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**

Total TSS Removal = **80%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: 21840.00004

Prepared By: JLS

Date: 12/2/2025

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed

1. From MassDEP Stormwater Handbook Vol. 1

INSTRUCTIONS:

Version 1, Automated: Mar. 4, 2008

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: Gravel Infiltration Trench (GT-5)

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Infiltration Trench	**0.80**	**1.00**	**0.80**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**

Total TSS Removal = **80%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: 21840.00004

Prepared By: JLS

Date: 12/2/2025

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed

1. From MassDEP Stormwater Handbook Vol. 1

INSTRUCTIONS:

Version 1, Automated: Mar. 4, 2008

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: Gravel Infiltration Trench (GT-6)

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Infiltration Trench	**0.80**	**1.00**	**0.80**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**

Total TSS Removal = **80%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: 21840.00004

Prepared By: JLS

Date: 12/2/2025

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed

1. From MassDEP Stormwater Handbook Vol. 1

Appendix G Hydrology Model Output

Stormwater Management Plan

Hingham Center for Active Living

EDM Studio, Inc.

SLR Project No.: 141.21840.00004

February 3, 2026

Storm Event	2yr		10yr		25yr		50yr		100yr	
	Exist	Prop	Exist	Prop	Exist	Prop	Exist	Prop	Exist	Prop
Analysis Point AP-1	0.01	0.00	0.55	0.00	1.72	0.00	3.05	0.00	4.88	0.00
SWB-1 Peak Elev. (ft.) Top of Berm Elev. = 32.0	---	30.92	---	30.96	---	30.98	---	30.99	---	31.00
SWB-2 Peak Elev. (ft.) Top of Berm Elev. = 31.0	---	30.43	---	30.46	---	30.47	---	30.48	---	30.50
SWB-3 Peak Elev. (ft.) Top of Berm Elev. = 32.0	---	30.80	---	30.95	---	30.97	---	30.99	---	31.00
SWB-4 Peak Elev. (ft.) Top of Berm Elev. = 30.0	---	27.47	---	27.94	---	28.28	---	28.53	---	28.80
UG-1 Peak Elev. (ft.) Top of Chamber Elev. = 25.94	---	21.66	---	22.79	---	23.64	---	24.44	---	25.62
RG-1 Peak Elev. (ft.) Top of Berm Elev. = 32.0	---	27.89	---	28.85	---	29.37	---	29.72	---	30.08
IB-1 Peak Elev. (ft.) Top of Berm Elev. = 31.0	---	26.74	---	27.70	---	28.23	---	28.61	---	29.01
IB-2 Peak Elev. (ft.) Top of Berm Elev. = 30.0	---	28.50	---	28.51	---	28.53	---	28.62	---	28.73
GT-1 Peak Elev. (ft.) Top of Trench Elev. = 22.0	---	20.00	---	20.00	---	20.02	---	20.12	---	20.41
GT-2 Peak Elev. (ft.) Top of Trench Elev. = 25.0	---	23.50	---	23.50	---	23.50	---	23.51	---	23.65
GT-3 Peak Elev. (ft.) Top of Trench Elev. = 29.0	---	27.50	---	27.50	---	27.50	---	27.51	---	27.52
GT-4 Peak Elev. (ft.) Top of Trench Elev. = 23.0	---	21.50	---	21.50	---	21.51	---	21.66	---	22.02
GT-5 Peak Elev. (ft.) Top of Trench Elev. = 25.0	---	21.39	---	22.41	---	23.25	---	23.95	---	24.78
GT-6 Peak Elev. (ft.) Top of Trench Elev. = 27.0	---	24.01	---	24.33	---	25.12	---	25.88	---	26.84

Study Area	Description
AP	Surrounding Wetlands

Summary of Peak Flow Rates (cfs)

	2-Year	10-Year	25-Year	50-Year	100-Year
Existing	0.01	0.55	1.72	3.05	4.88
Proposed	0.00	0.00	0.00	0.00	0.00
Change	-0.01	-0.55	-1.72	-3.05	-4.88
Percent Change	-100%	-100%	-100%	-100%	-100%

NOAA Atlas 14, Volume 10, Version 3
Location name: Hingham, Massachusetts, USA*
Latitude: 42.2382°, Longitude: -70.9068°
Elevation: 45 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.304** (0.239-0.381)	**0.377** (0.296-0.473)	**0.496** (0.388-0.624)	**0.594** (0.463-0.754)	**0.730** (0.551-0.980)	**0.831** (0.614-1.14)	**0.939** (0.676-1.36)	**1.07** (0.720-1.57)	**1.26** (0.819-1.94)	**1.43** (0.904-2.24)
10-min	**0.431** (0.339-0.540)	**0.534** (0.419-0.670)	**0.702** (0.550-0.884)	**0.842** (0.655-1.07)	**1.03** (0.780-1.39)	**1.18** (0.870-1.62)	**1.33** (0.958-1.92)	**1.51** (1.02-2.23)	**1.79** (1.16-2.75)	**2.02** (1.28-3.18)
15-min	**0.507** (0.399-0.635)	**0.628** (0.493-0.788)	**0.826** (0.647-1.04)	**0.991** (0.772-1.26)	**1.22** (0.918-1.63)	**1.38** (1.02-1.91)	**1.56** (1.13-2.26)	**1.78** (1.20-2.62)	**2.10** (1.36-3.23)	**2.38** (1.51-3.74)
30-min	**0.705** (0.555-0.883)	**0.874** (0.686-1.10)	**1.15** (0.901-1.45)	**1.38** (1.07-1.75)	**1.69** (1.28-2.27)	**1.93** (1.42-2.66)	**2.18** (1.57-3.15)	**2.48** (1.67-3.65)	**2.94** (1.90-4.51)	**3.33** (2.11-5.22)
60-min	**0.903** (0.710-1.13)	**1.12** (0.879-1.40)	**1.47** (1.15-1.85)	**1.76** (1.37-2.24)	**2.17** (1.64-2.91)	**2.47** (1.83-3.41)	**2.79** (2.01-4.04)	**3.18** (2.14-4.68)	**3.77** (2.44-5.79)	**4.28** (2.71-6.71)
2-hr	**1.14** (0.907-1.42)	**1.44** (1.14-1.80)	**1.93** (1.52-2.41)	**2.33** (1.83-2.94)	**2.89** (2.19-3.85)	**3.30** (2.46-4.52)	**3.74** (2.72-5.39)	**4.29** (2.90-6.26)	**5.13** (3.33-7.78)	**5.85** (3.71-9.07)
3-hr	**1.33** (1.06-1.64)	**1.68** (1.33-2.08)	**2.24** (1.77-2.80)	**2.72** (2.13-3.40)	**3.36** (2.56-4.47)	**3.84** (2.87-5.25)	**4.36** (3.18-6.25)	**5.00** (3.40-7.26)	**5.99** (3.90-9.03)	**6.84** (4.35-10.5)
6-hr	**1.74** (1.39-2.14)	**2.17** (1.74-2.68)	**2.87** (2.29-3.56)	**3.46** (2.73-4.30)	**4.26** (3.26-5.60)	**4.85** (3.64-6.55)	**5.49** (4.01-7.77)	**6.27** (4.27-9.00)	**7.46** (4.88-11.1)	**8.48** (5.41-12.9)
12-hr	**2.29** (1.84-2.80)	**2.79** (2.24-3.42)	**3.62** (2.90-4.44)	**4.30** (3.42-5.32)	**5.24** (4.03-6.83)	**5.94** (4.48-7.93)	**6.69** (4.90-9.33)	**7.59** (5.19-10.8)	**8.92** (5.86-13.1)	**10.1** (6.44-15.1)
24-hr	**2.78** (2.26-3.38)	**3.40** (2.75-4.13)	**4.40** (3.55-5.37)	**5.24** (4.20-6.43)	**6.39** (4.94-8.25)	**7.24** (5.49-9.59)	**8.16** (6.00-11.3)	**9.26** (6.36-13.0)	**10.9** (7.19-15.9)	**12.3** (7.92-18.4)
2-day	**3.14** (2.56-3.79)	**3.91** (3.19-4.73)	**5.18** (4.20-6.27)	**6.22** (5.02-7.59)	**7.66** (5.98-9.86)	**8.72** (6.67-11.5)	**9.89** (7.35-13.6)	**11.3** (7.81-15.8)	**13.6** (8.96-19.6)	**15.5** (9.99-22.8)
3-day	**3.44** (2.81-4.13)	**4.27** (3.49-5.14)	**5.63** (4.59-6.80)	**6.77** (5.48-8.22)	**8.32** (6.52-10.7)	**9.47** (7.26-12.4)	**10.7** (8.01-14.7)	**12.3** (8.50-17.0)	**14.7** (9.76-21.1)	**16.9** (10.9-24.6)
4-day	**3.72** (3.06-4.46)	**4.58** (3.76-5.50)	**6.00** (4.90-7.22)	**7.16** (5.82-8.67)	**8.78** (6.89-11.2)	**9.96** (7.66-13.0)	**11.3** (8.42-15.4)	**12.9** (8.92-17.7)	**15.4** (10.2-21.9)	**17.6** (11.4-25.5)
7-day	**4.52** (3.73-5.39)	**5.42** (4.47-6.47)	**6.90** (5.66-8.25)	**8.12** (6.62-9.77)	**9.80** (7.72-12.4)	**11.0** (8.51-14.3)	**12.4** (9.27-16.7)	**14.0** (9.76-19.1)	**16.6** (11.0-23.4)	**18.8** (12.2-27.0)
10-day	**5.26** (4.36-6.25)	**6.19** (5.12-7.36)	**7.70** (6.35-9.18)	**8.96** (7.33-10.7)	**10.7** (8.44-13.4)	**12.0** (9.24-15.4)	**13.4** (9.98-17.8)	**15.0** (10.5-20.3)	**17.5** (11.7-24.5)	**19.6** (12.7-28.0)
20-day	**7.39** (6.16-8.71)	**8.39** (6.99-9.91)	**10.0** (8.33-11.9)	**11.4** (9.40-13.6)	**13.3** (10.5-16.4)	**14.7** (11.4-18.6)	**16.2** (12.0-21.1)	**17.8** (12.5-23.8)	**20.1** (13.5-27.8)	**22.0** (14.3-31.0)
30-day	**9.13** (7.65-10.7)	**10.2** (8.53-12.0)	**12.0** (9.96-14.1)	**13.4** (11.1-15.9)	**15.4** (12.2-18.9)	**16.9** (13.1-21.2)	**18.5** (13.7-23.8)	**20.1** (14.1-26.7)	**22.2** (15.0-30.5)	**23.9** (15.6-33.4)
45-day	**11.3** (9.52-13.2)	**12.5** (10.5-14.6)	**14.3** (12.0-16.8)	**15.9** (13.2-18.7)	**18.0** (14.3-21.9)	**19.7** (15.2-24.3)	**21.3** (15.8-27.1)	**22.9** (16.2-30.1)	**24.8** (16.8-33.8)	**26.3** (17.2-36.5)
60-day	**13.2** (11.1-15.3)	**14.4** (12.1-16.8)	**16.3** (13.7-19.1)	**17.9** (14.9-21.1)	**20.2** (16.1-24.4)	**21.9** (17.0-27.0)	**23.6** (17.5-29.7)	**25.1** (17.8-32.9)	**27.0** (18.3-36.6)	**28.3** (18.5-39.1)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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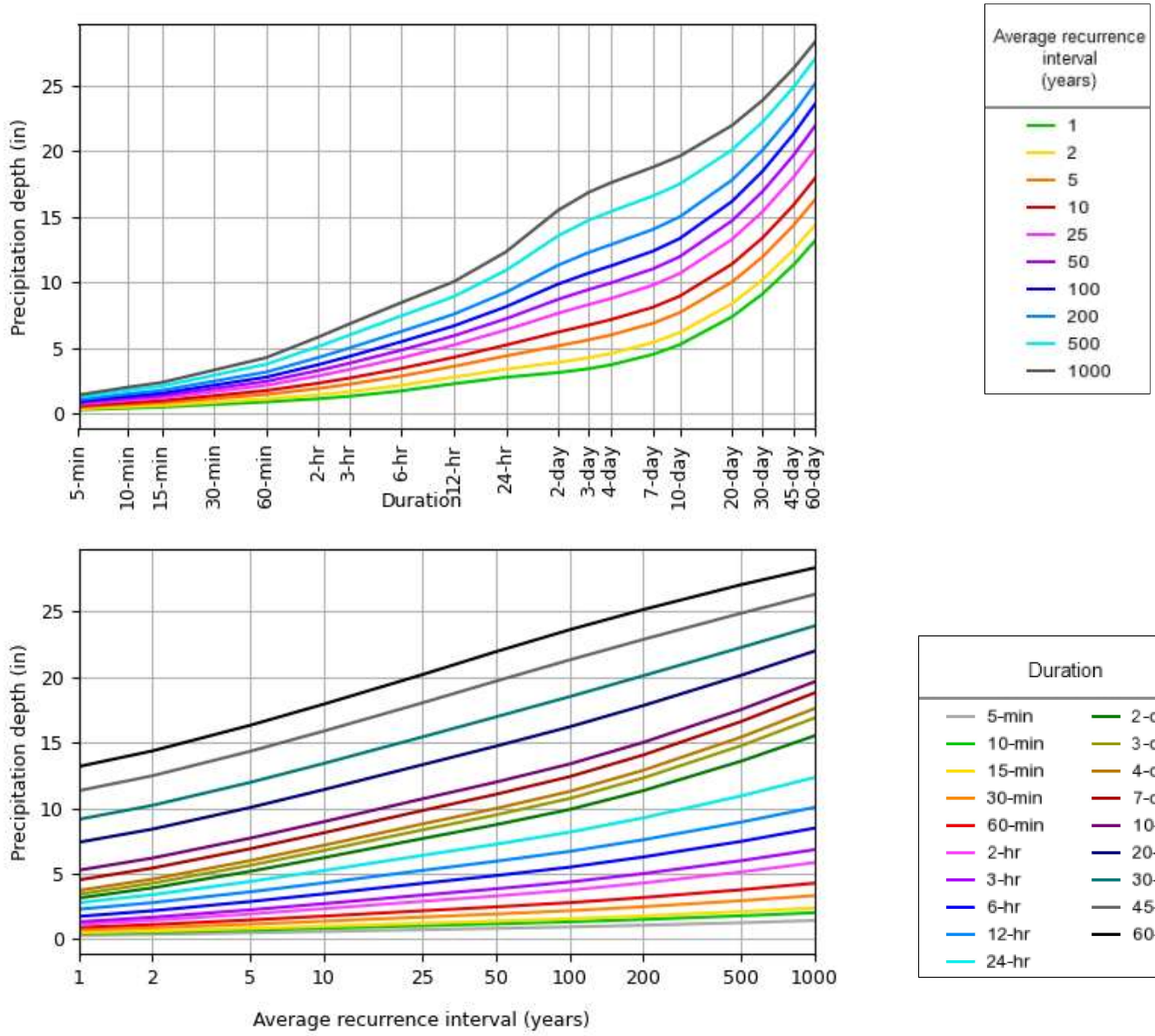
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 42.2382°, Longitude: -70.9068°



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Created (GMT): Tue Jul 1 17:34:19 2025

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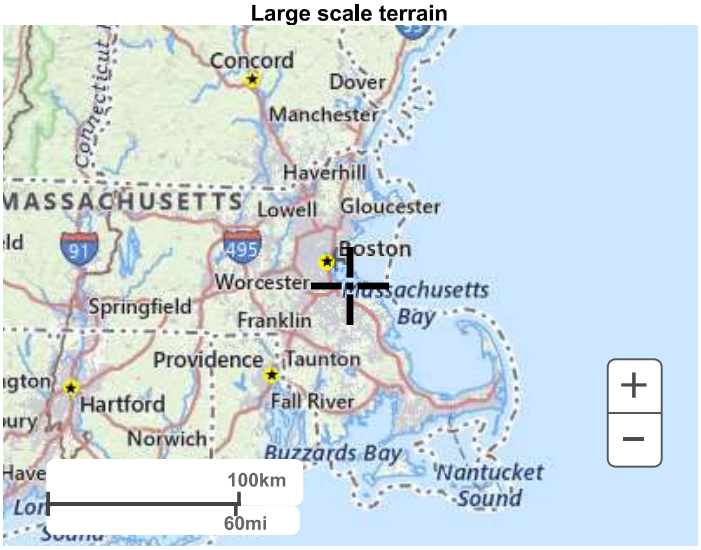
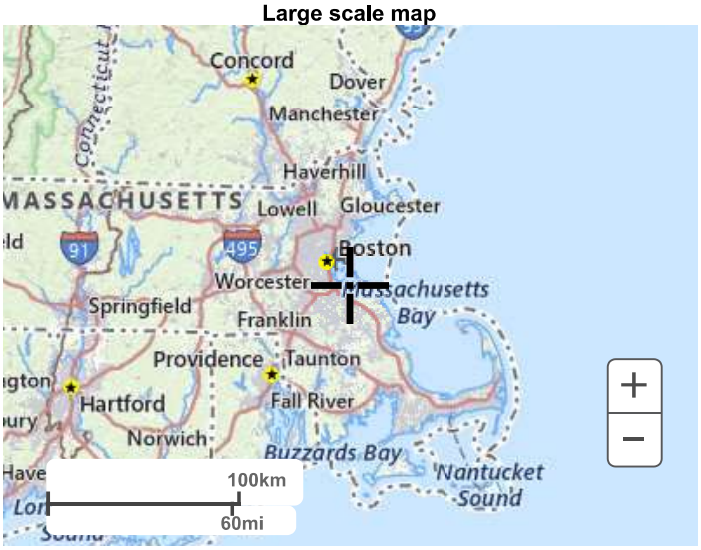
Maps & aerials

Small scale terrain

Large scale terrain



Large scale map



Large scale aerial

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National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Surrounding Wetlands

Site Drainage Area - Flow Discharge to Surrounding Wetlands

Subcat Reach Pond Link

Routing Diagram for HSC-Existing_Hydrology_Model
Prepared by SLR International Corporation, Printed 2/2/2026

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
3.961	HSG A	EX-1
0.942	HSG B	EX-1
0.000	HSG C	
0.000	HSG D	
0.511	Other	EX-1

Summary for Subcatchment EX-1: Site Drainage Area - Flow Discharge to Surrounding Wetlands

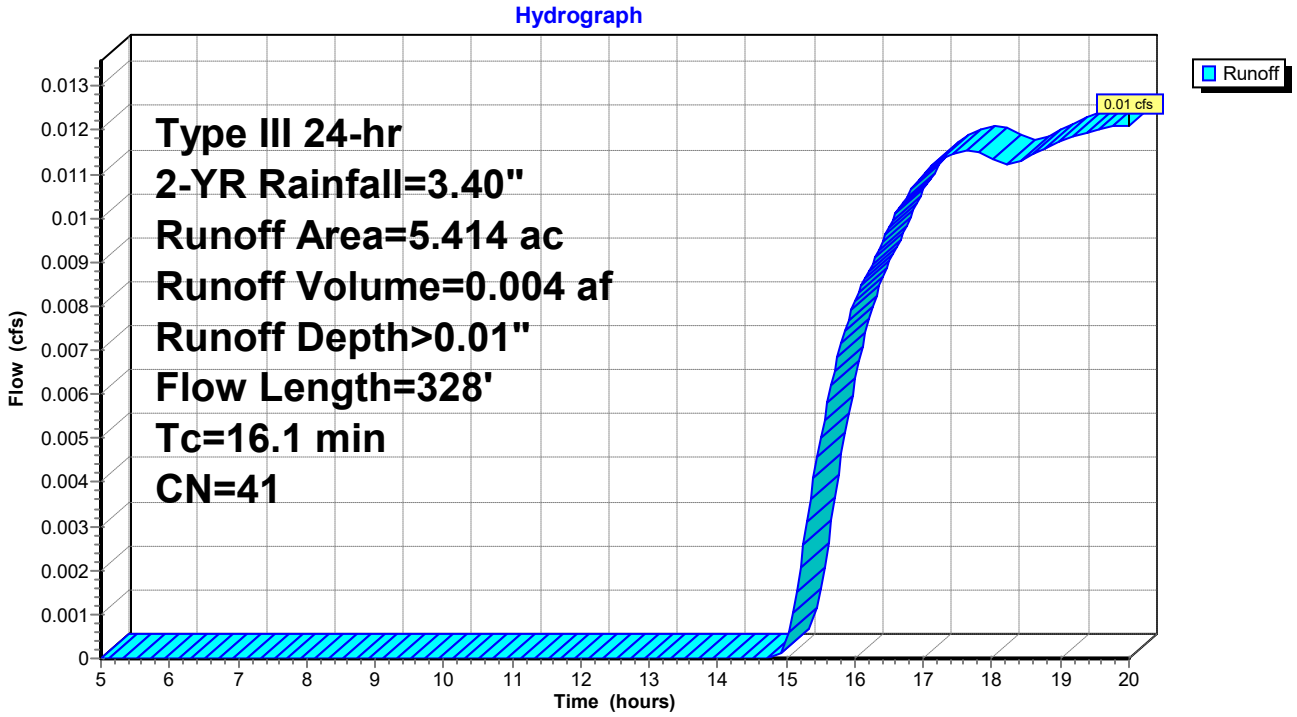
Runoff = 0.01 cfs @ 20.00 hrs, Volume= 0.004 af, Depth> 0.01"
Routed to Pond AP : Surrounding Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.40"

	Area (ac)	CN	Description
	3.958	30	Woods, Good, HSG A
	0.758	55	Woods, Good, HSG B
	0.003	39	>75% Grass cover, Good, HSG A
	0.164	61	>75% Grass cover, Good, HSG B
*	0.000	66	Mulch, HSG A
*	0.006	77	Mulch, HSG B
	0.014	82	Dirt roads, HSG B
*	0.287	98	Paved
*	0.224	98	Roofs
	5.414	41	Weighted Average
	4.903		90.56% Pervious Area
	0.511		9.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0910	0.15		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.40"
4.7	228	0.0260	0.81		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
16.1	328	Total			

Subcatchment EX-1: Site Drainage Area - Flow Discharge to Surrounding Wetlands

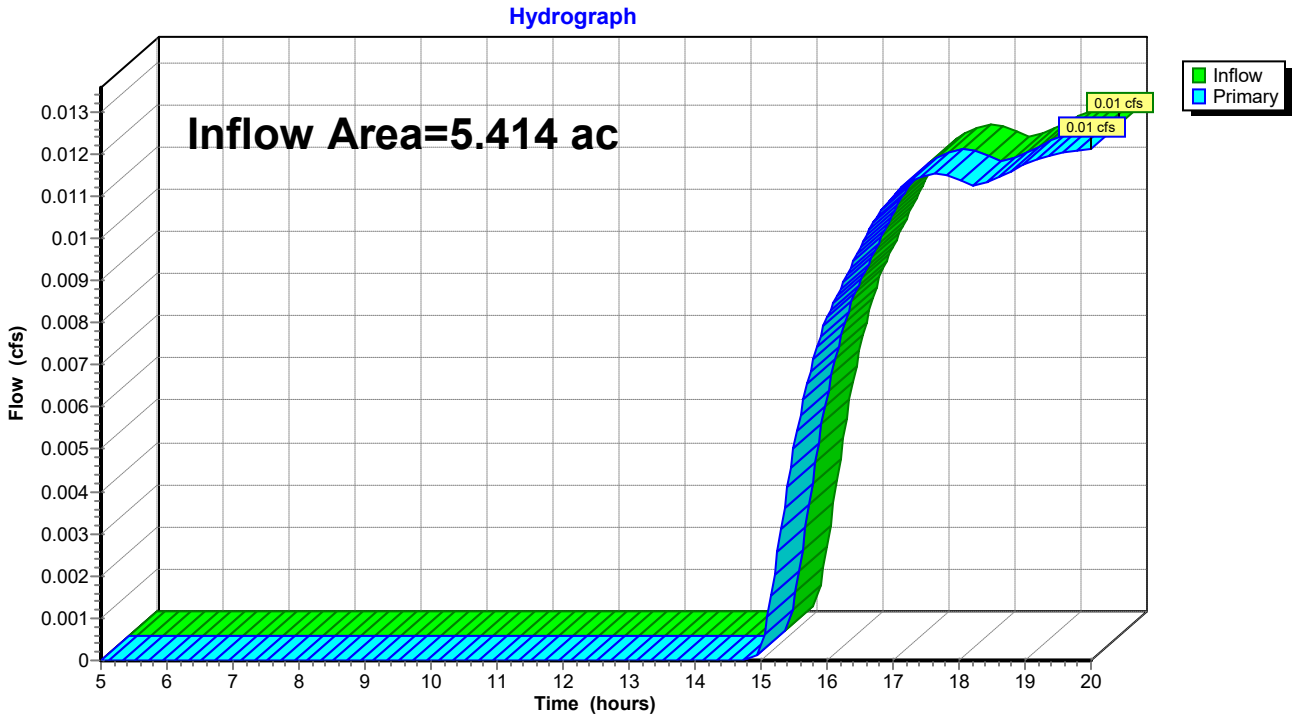


Summary for Pond AP: Surrounding Wetlands

Inflow Area = 5.414 ac, 9.44% Impervious, Inflow Depth > 0.01" for 2-YR event
Inflow = 0.01 cfs @ 20.00 hrs, Volume= 0.004 af
Primary = 0.01 cfs @ 20.00 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond AP: Surrounding Wetlands



Summary for Subcatchment EX-1: Site Drainage Area - Flow Discharge to Surrounding Wetlands

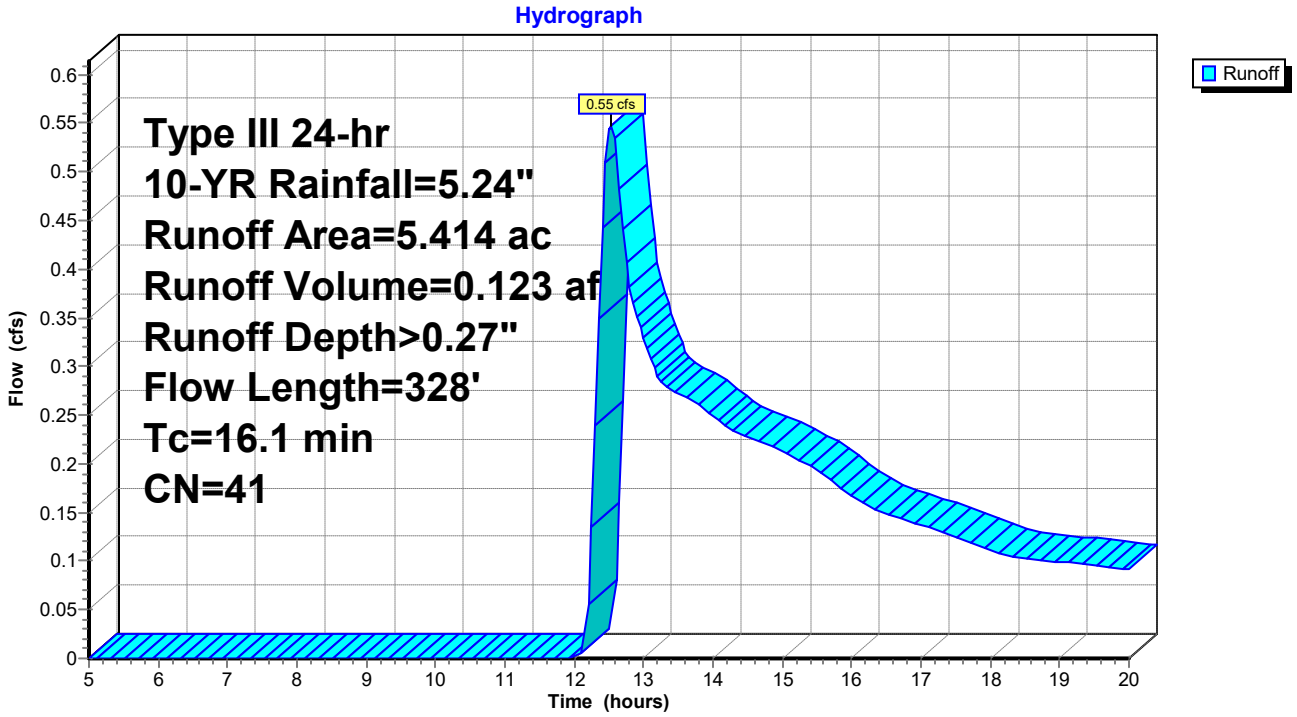
Runoff = 0.55 cfs @ 12.53 hrs, Volume= 0.123 af, Depth> 0.27"
Routed to Pond AP : Surrounding Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

	Area (ac)	CN	Description
	3.958	30	Woods, Good, HSG A
	0.758	55	Woods, Good, HSG B
	0.003	39	>75% Grass cover, Good, HSG A
	0.164	61	>75% Grass cover, Good, HSG B
*	0.000	66	Mulch, HSG A
*	0.006	77	Mulch, HSG B
	0.014	82	Dirt roads, HSG B
*	0.287	98	Paved
*	0.224	98	Roofs
	5.414	41	Weighted Average
	4.903		90.56% Pervious Area
	0.511		9.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0910	0.15		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.40"
4.7	228	0.0260	0.81		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
16.1	328	Total			

Subcatchment EX-1: Site Drainage Area - Flow Discharge to Surrounding Wetlands

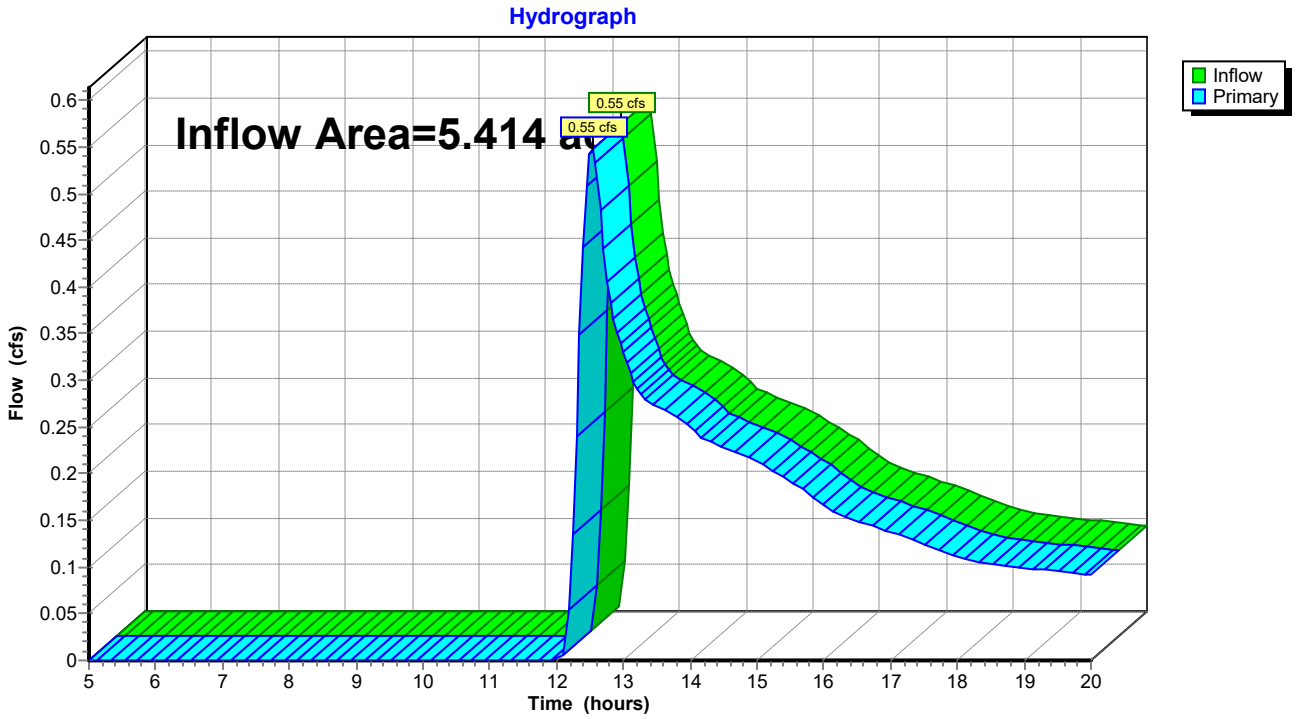


Summary for Pond AP: Surrounding Wetlands

Inflow Area = 5.414 ac, 9.44% Impervious, Inflow Depth > 0.27" for 10-YR event
Inflow = 0.55 cfs @ 12.53 hrs, Volume= 0.123 af
Primary = 0.55 cfs @ 12.53 hrs, Volume= 0.123 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond AP: Surrounding Wetlands



Summary for Subcatchment EX-1: Site Drainage Area - Flow Discharge to Surrounding Wetlands

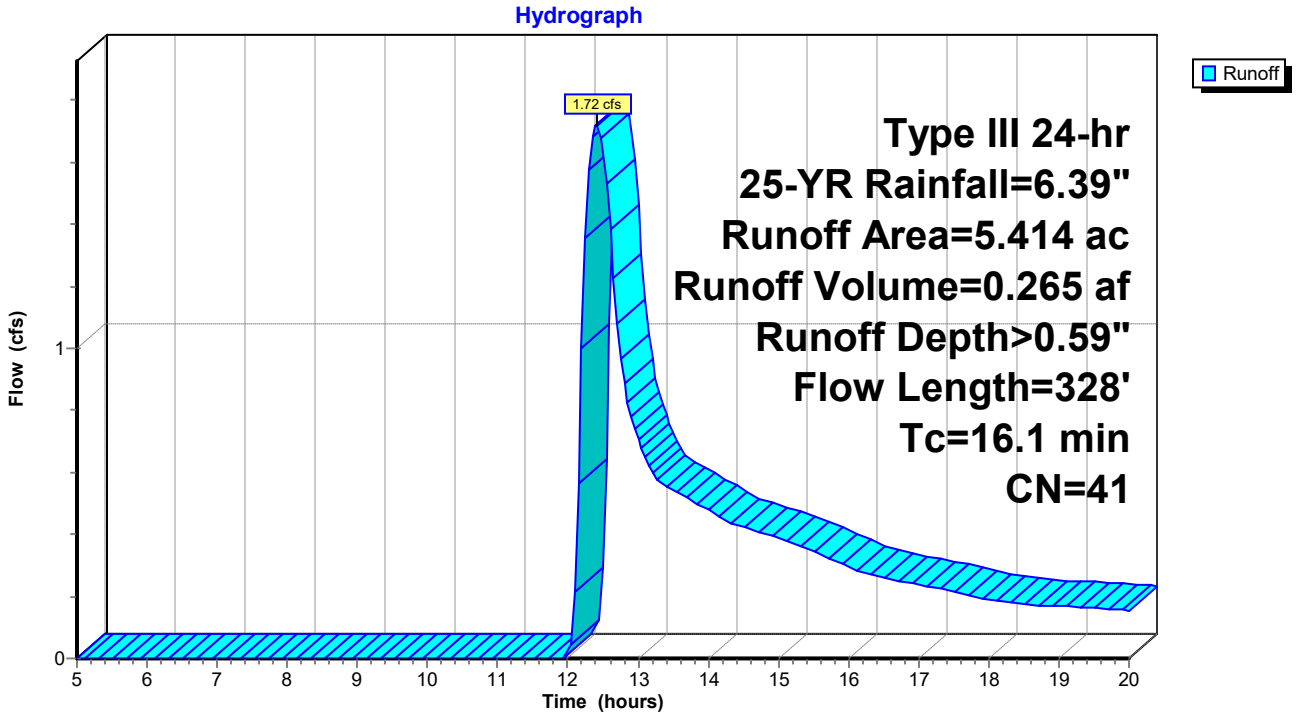
Runoff = 1.72 cfs @ 12.41 hrs, Volume= 0.265 af, Depth> 0.59"
Routed to Pond AP : Surrounding Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.39"

	Area (ac)	CN	Description
	3.958	30	Woods, Good, HSG A
	0.758	55	Woods, Good, HSG B
	0.003	39	>75% Grass cover, Good, HSG A
	0.164	61	>75% Grass cover, Good, HSG B
*	0.000	66	Mulch, HSG A
*	0.006	77	Mulch, HSG B
	0.014	82	Dirt roads, HSG B
*	0.287	98	Paved
*	0.224	98	Roofs
	5.414	41	Weighted Average
	4.903		90.56% Pervious Area
	0.511		9.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0910	0.15		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.40"
4.7	228	0.0260	0.81		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
16.1	328	Total			

Subcatchment EX-1: Site Drainage Area - Flow Discharge to Surrounding Wetlands

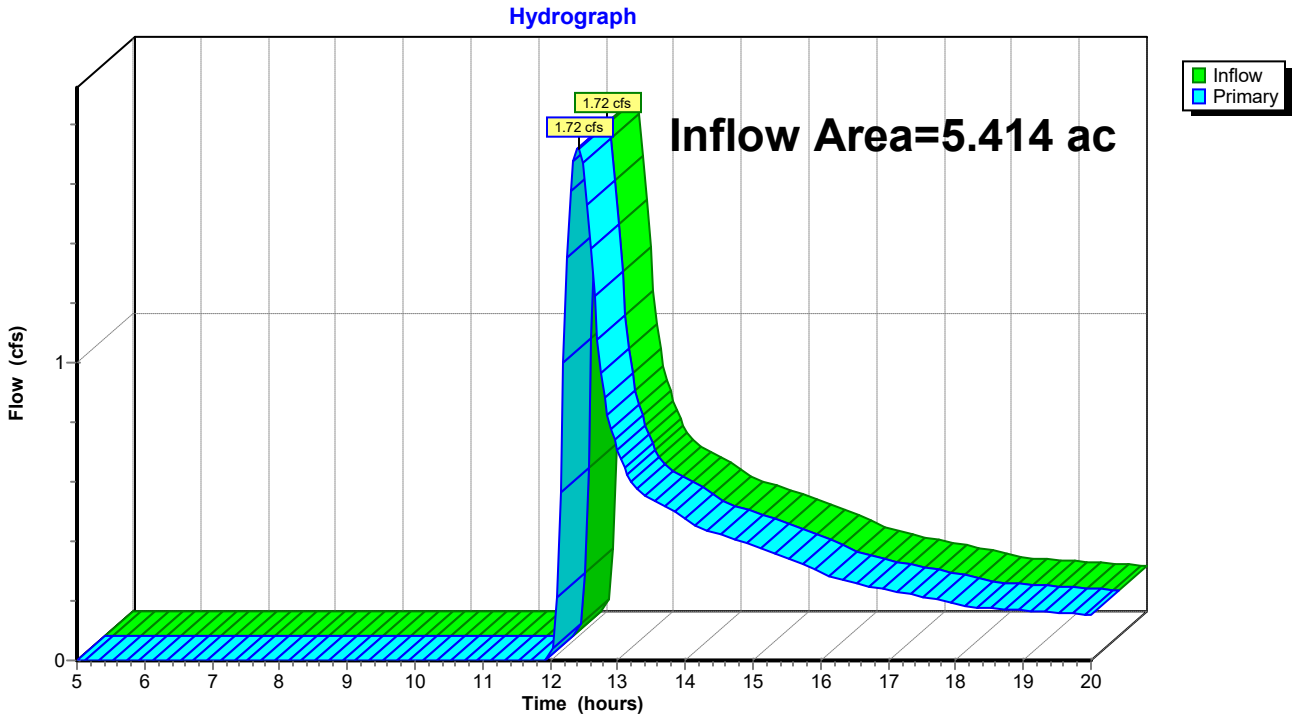


Summary for Pond AP: Surrounding Wetlands

Inflow Area = 5.414 ac, 9.44% Impervious, Inflow Depth > 0.59" for 25-YR event
Inflow = 1.72 cfs @ 12.41 hrs, Volume= 0.265 af
Primary = 1.72 cfs @ 12.41 hrs, Volume= 0.265 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond AP: Surrounding Wetlands



Summary for Subcatchment EX-1: Site Drainage Area - Flow Discharge to Surrounding Wetlands

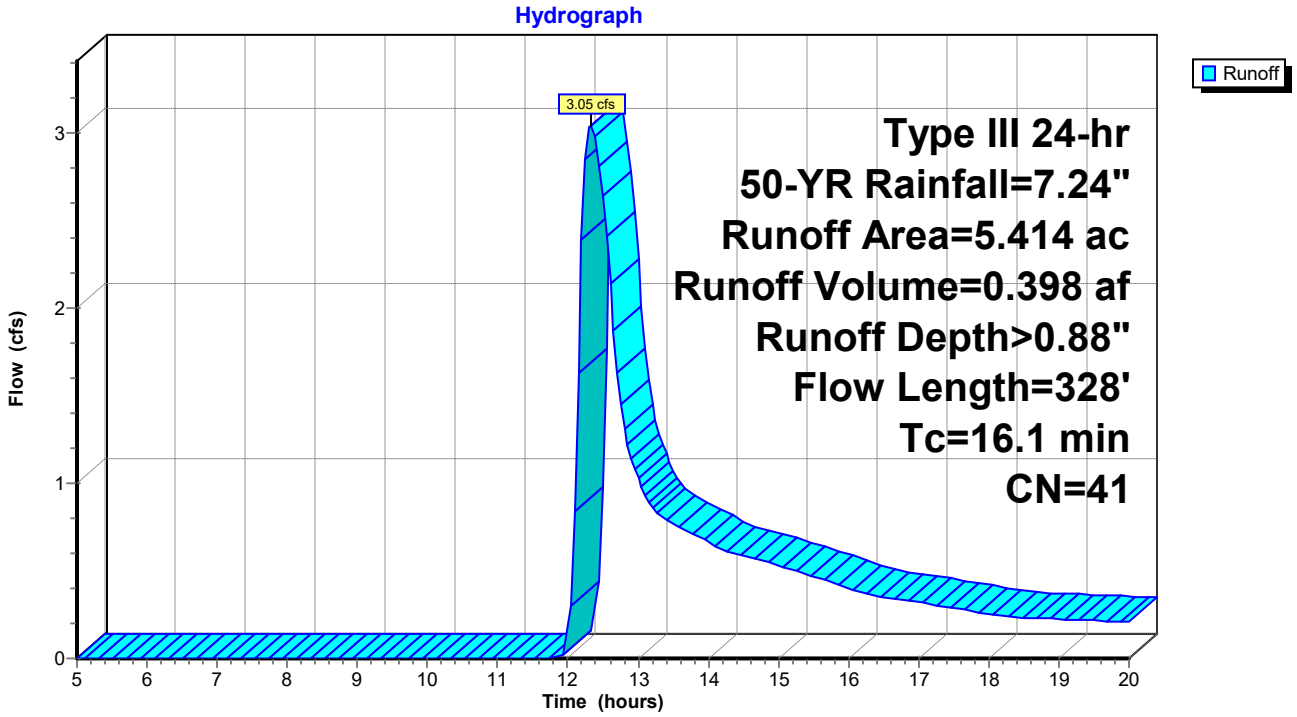
Runoff = 3.05 cfs @ 12.32 hrs, Volume= 0.398 af, Depth> 0.88"
Routed to Pond AP : Surrounding Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR Rainfall=7.24"

	Area (ac)	CN	Description
	3.958	30	Woods, Good, HSG A
	0.758	55	Woods, Good, HSG B
	0.003	39	>75% Grass cover, Good, HSG A
	0.164	61	>75% Grass cover, Good, HSG B
*	0.000	66	Mulch, HSG A
*	0.006	77	Mulch, HSG B
	0.014	82	Dirt roads, HSG B
*	0.287	98	Paved
*	0.224	98	Roofs
	5.414	41	Weighted Average
	4.903		90.56% Pervious Area
	0.511		9.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0910	0.15		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.40"
4.7	228	0.0260	0.81		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
16.1	328	Total			

Subcatchment EX-1: Site Drainage Area - Flow Discharge to Surrounding Wetlands

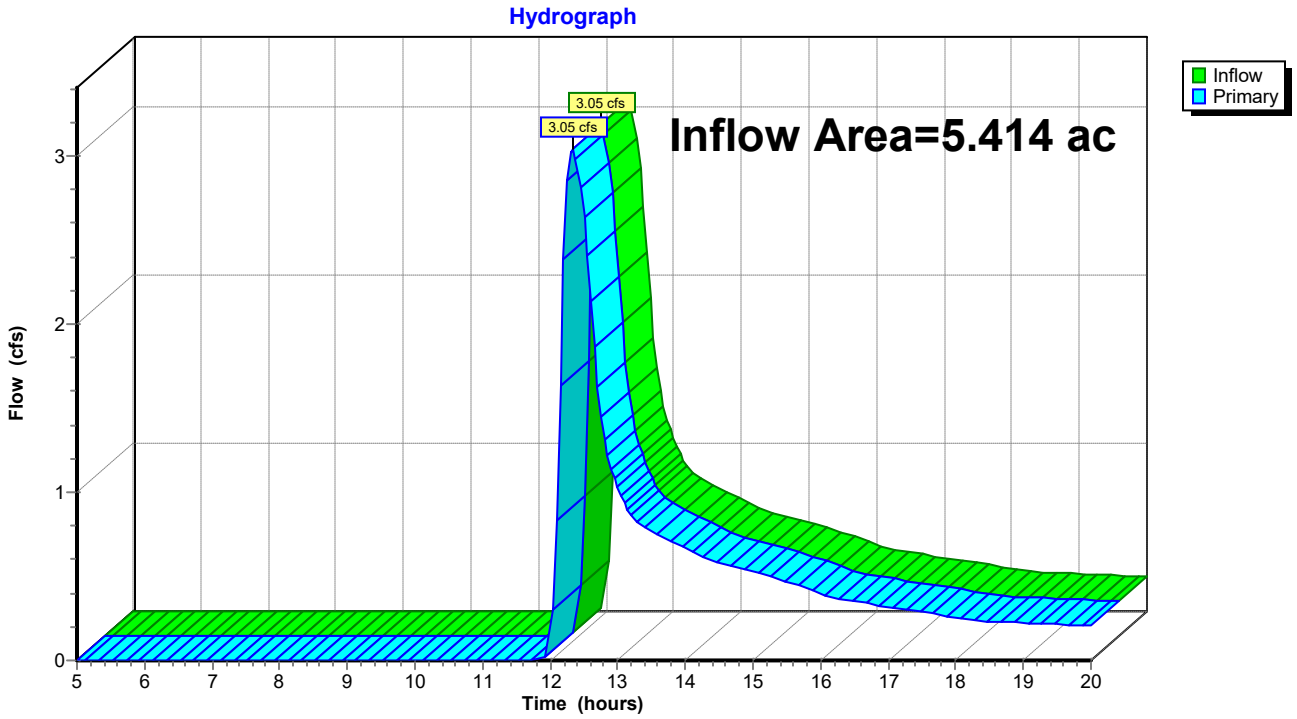


Summary for Pond AP: Surrounding Wetlands

Inflow Area = 5.414 ac, 9.44% Impervious, Inflow Depth > 0.88" for 50-YR event
Inflow = 3.05 cfs @ 12.32 hrs, Volume= 0.398 af
Primary = 3.05 cfs @ 12.32 hrs, Volume= 0.398 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond AP: Surrounding Wetlands



Summary for Subcatchment EX-1: Site Drainage Area - Flow Discharge to Surrounding Wetlands

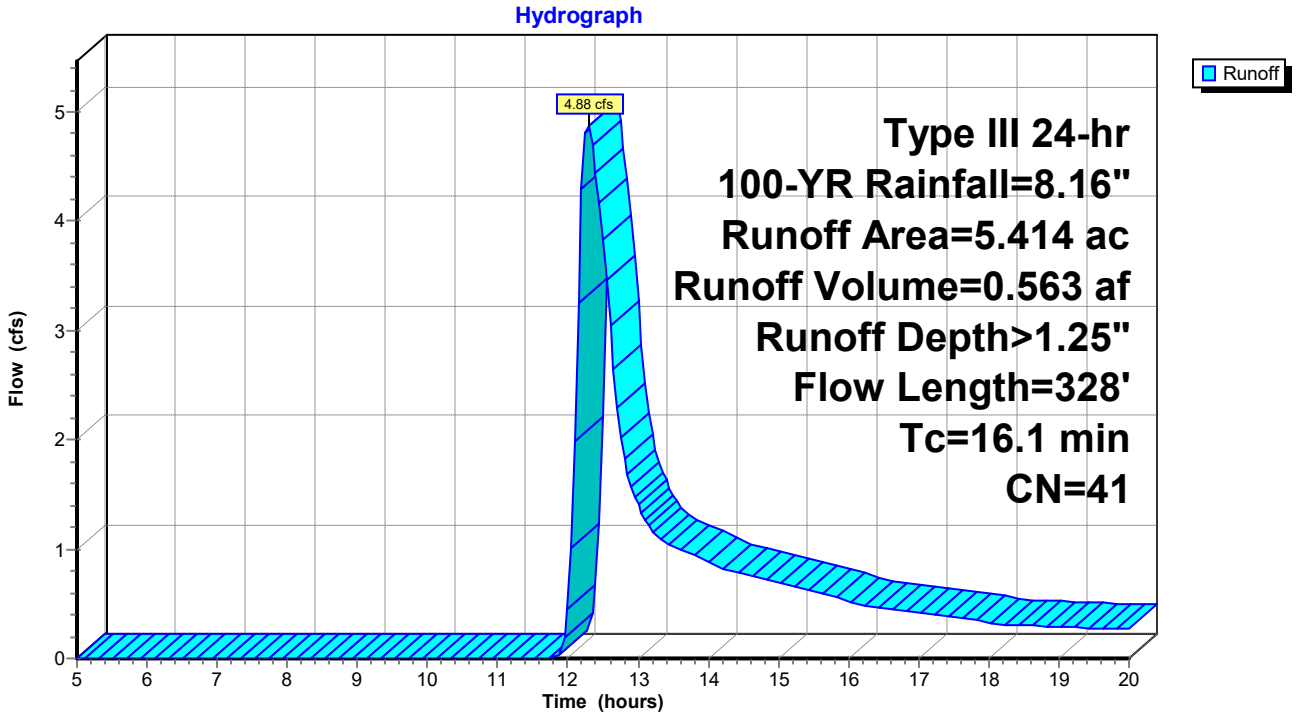
Runoff = 4.88 cfs @ 12.29 hrs, Volume= 0.563 af, Depth> 1.25"
Routed to Pond AP : Surrounding Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.16"

	Area (ac)	CN	Description
	3.958	30	Woods, Good, HSG A
	0.758	55	Woods, Good, HSG B
	0.003	39	>75% Grass cover, Good, HSG A
	0.164	61	>75% Grass cover, Good, HSG B
*	0.000	66	Mulch, HSG A
*	0.006	77	Mulch, HSG B
	0.014	82	Dirt roads, HSG B
*	0.287	98	Paved
*	0.224	98	Roofs
	5.414	41	Weighted Average
	4.903		90.56% Pervious Area
	0.511		9.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0910	0.15		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.40"
4.7	228	0.0260	0.81		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
16.1	328	Total			

Subcatchment EX-1: Site Drainage Area - Flow Discharge to Surrounding Wetlands

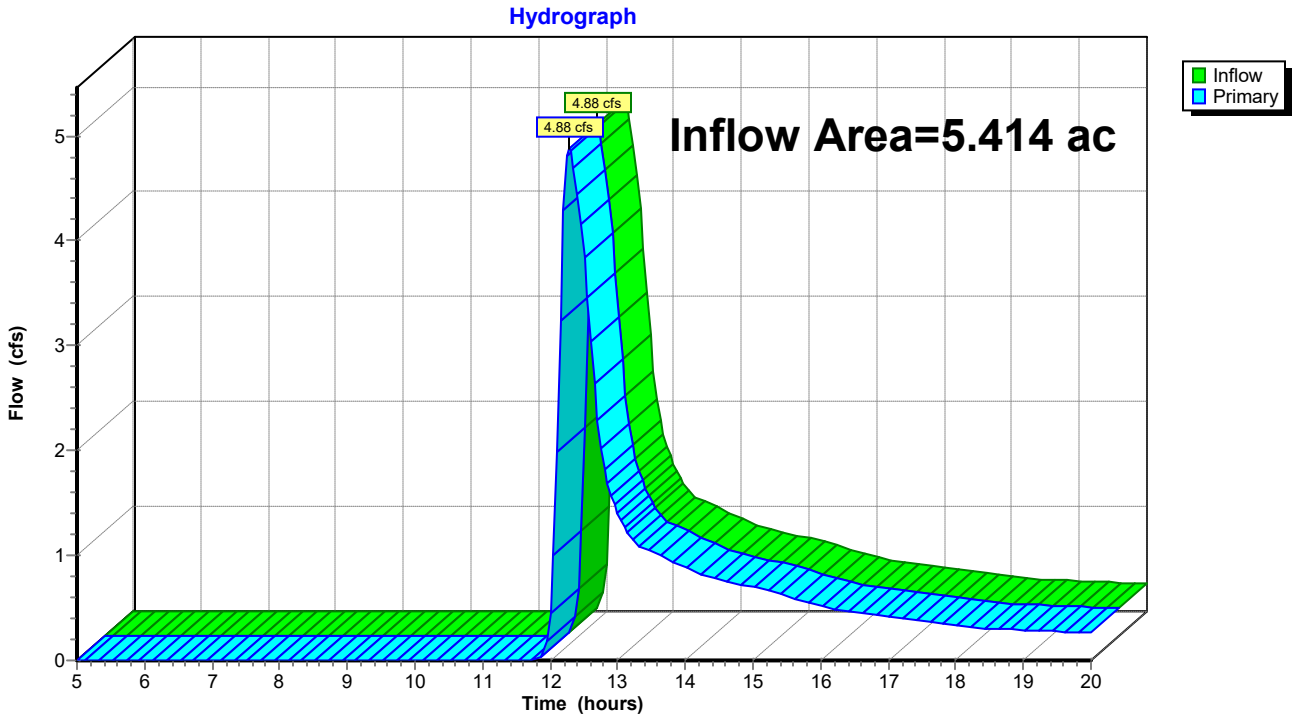


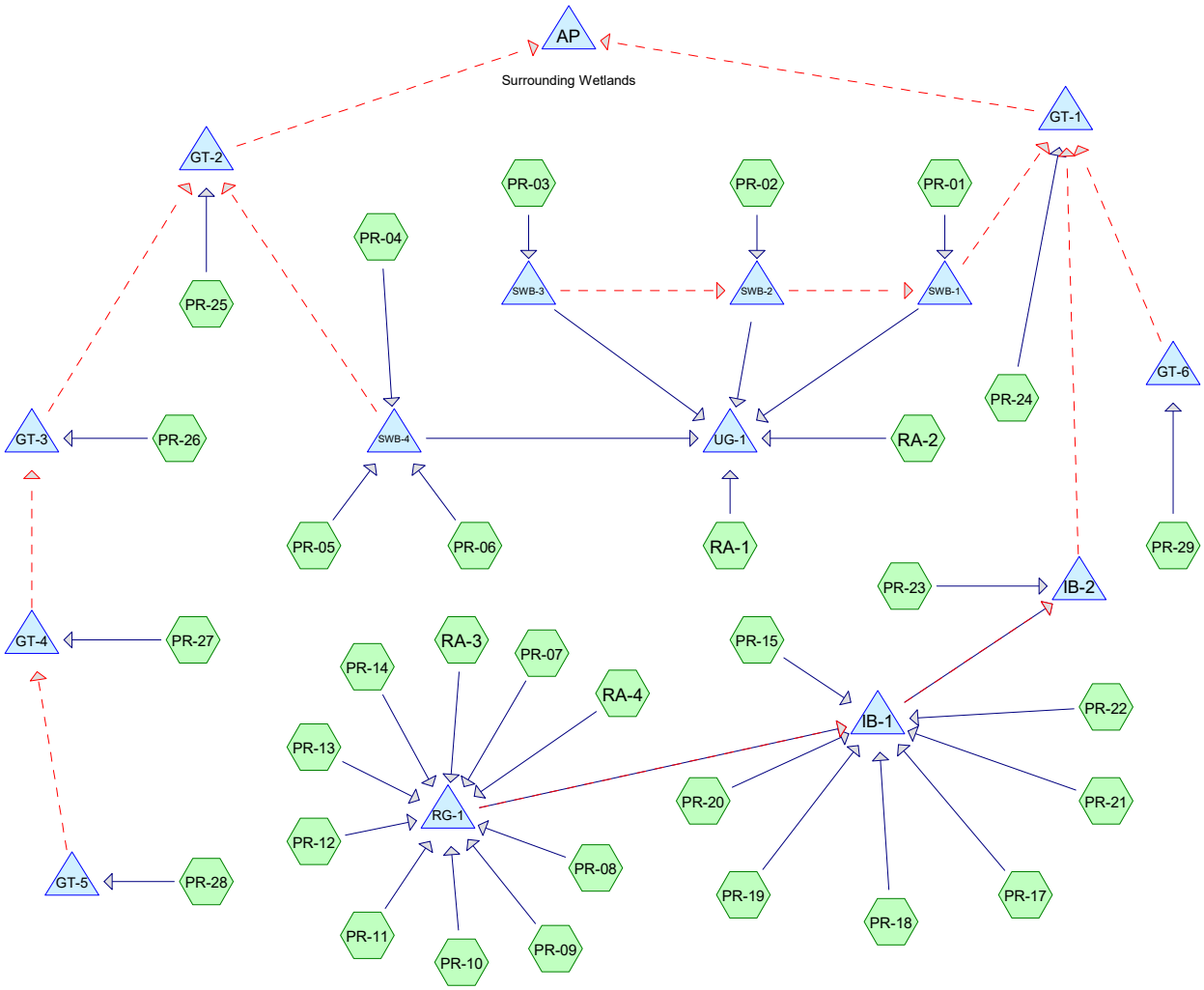
Summary for Pond AP: Surrounding Wetlands

Inflow Area = 5.414 ac, 9.44% Impervious, Inflow Depth > 1.25" for 100-YR event
Inflow = 4.88 cfs @ 12.29 hrs, Volume= 0.563 af
Primary = 4.88 cfs @ 12.29 hrs, Volume= 0.563 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond AP: Surrounding Wetlands





Subcat Reach Pond Link

Routing Diagram for HSC-Proposed_Hydrology_Model
Prepared by SLR International Corporation, Printed 2/3/2026

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-YR	Type III 24-hr		Default	24.00	1	3.40	2
2	10-YR	Type III 24-hr		Default	24.00	1	5.24	2
3	25-YR	Type III 24-hr		Default	24.00	1	6.39	2
4	50-YR	Type III 24-hr		Default	24.00	1	7.24	2
5	100-YR	Type III 24-hr		Default	24.00	1	8.16	2

Summary for Subcatchment PR-01:

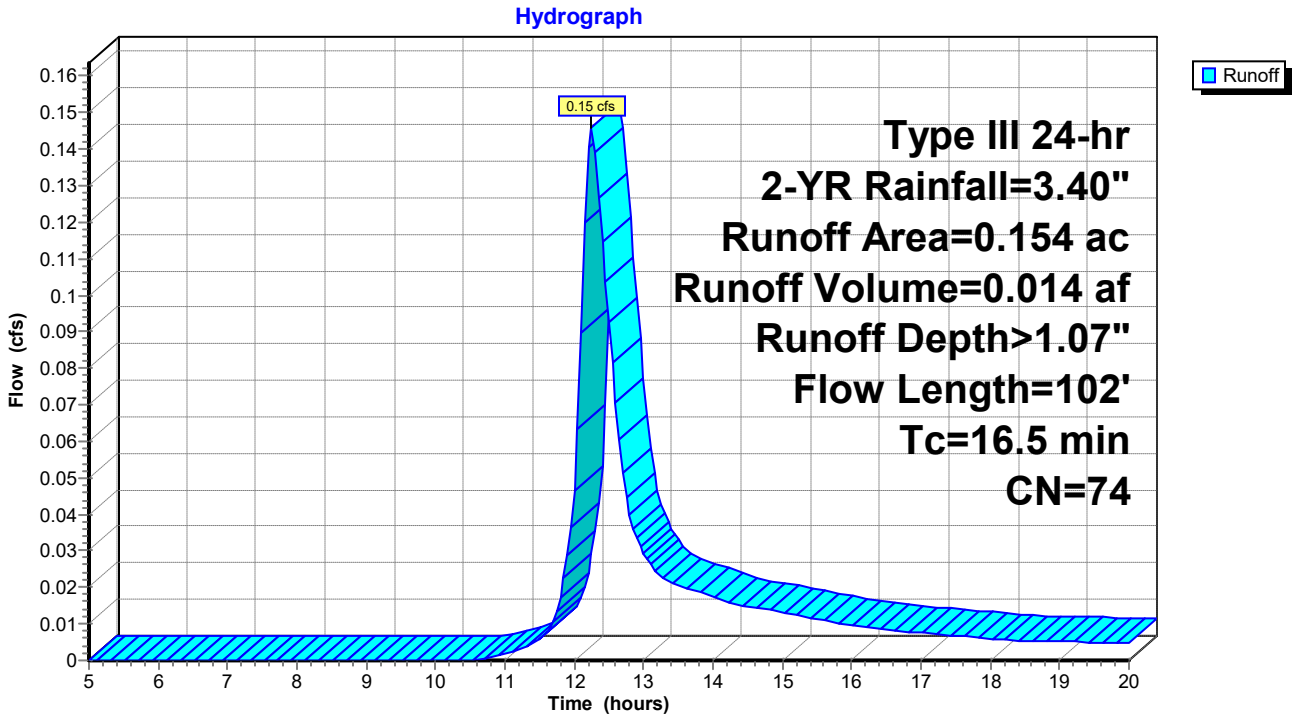
Runoff = 0.15 cfs @ 12.25 hrs, Volume= 0.014 af, Depth> 1.07"
Routed to Pond SWB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.40"

	Area (ac)	CN	Description
	0.099	61	>75% Grass cover, Good, HSG B
*	0.055	98	Paved
	0.154	74	Weighted Average
	0.099		64.29% Pervious Area
	0.055		35.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	100	0.0050	0.10		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.0	2	0.0500	1.57		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
16.5	102	Total			

Subcatchment PR-01:



Summary for Subcatchment PR-02:

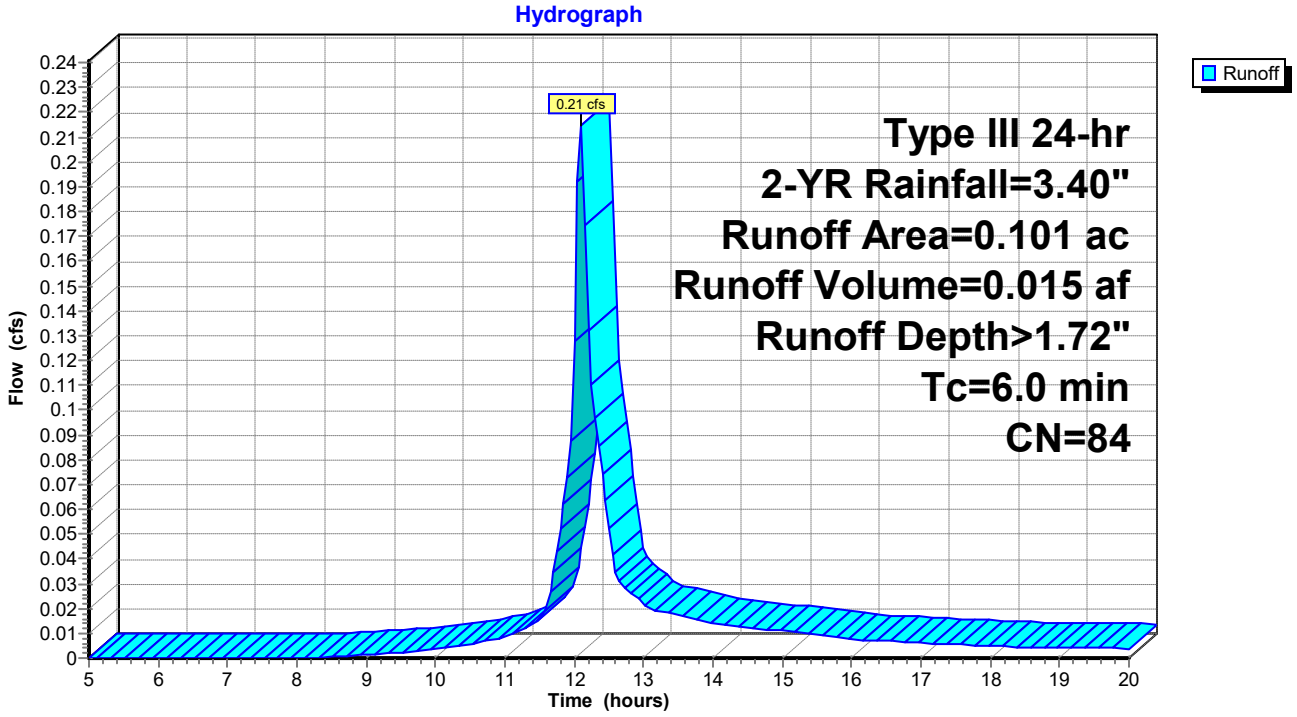
Runoff = 0.21 cfs @ 12.09 hrs, Volume= 0.015 af, Depth> 1.72"
Routed to Pond SWB-2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.40"

	Area (ac)	CN	Description
	0.009	30	Meadow, non-grazed, HSG A
	0.019	58	Meadow, non-grazed, HSG B
	0.001	61	>75% Grass cover, Good, HSG B
*	0.072	98	Paved
	0.101	84	Weighted Average
	0.029		28.71% Pervious Area
	0.072		71.29% Impervious Area

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

Subcatchment PR-02:



Summary for Subcatchment PR-03:

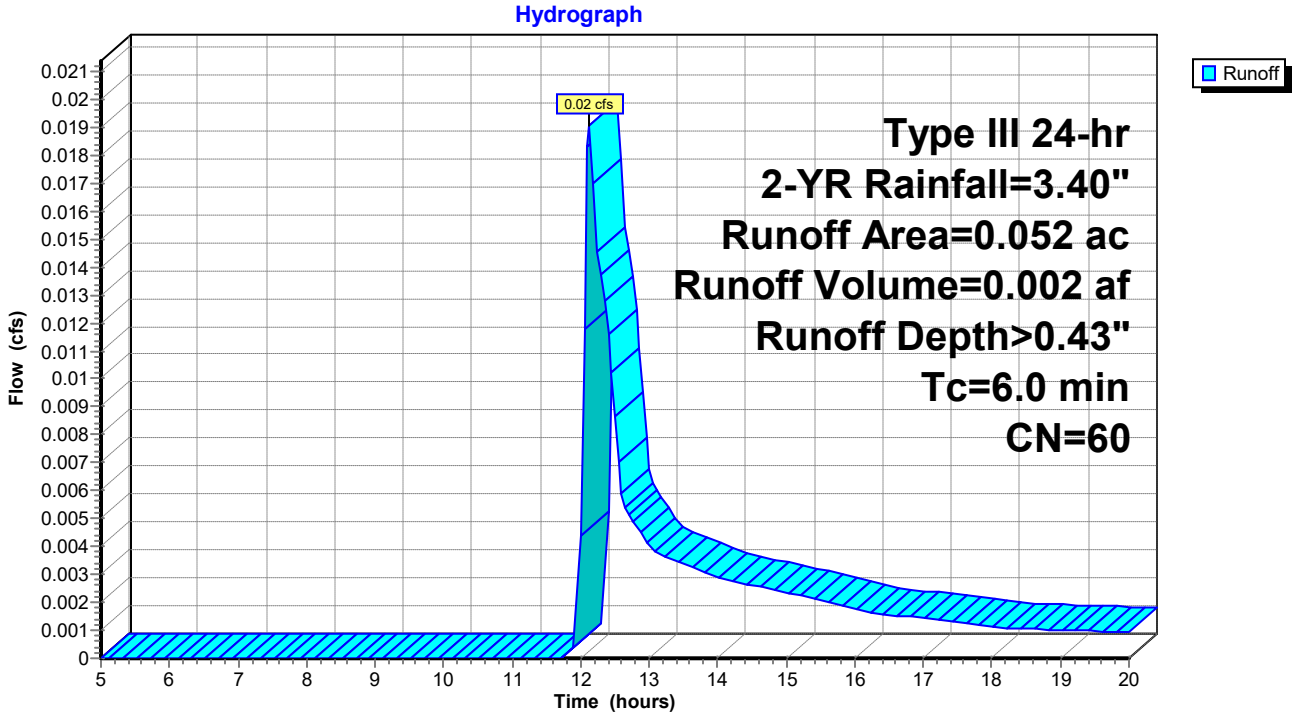
Runoff = 0.02 cfs @ 12.12 hrs, Volume= 0.002 af, Depth> 0.43"
Routed to Pond SWB-3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.40"

	Area (ac)	CN	Description
	0.029	30	Meadow, non-grazed, HSG A
*	0.023	98	Paved
	0.052	60	Weighted Average
	0.029		55.77% Pervious Area
	0.023		44.23% Impervious Area

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

Subcatchment PR-03:



Summary for Subcatchment PR-04:

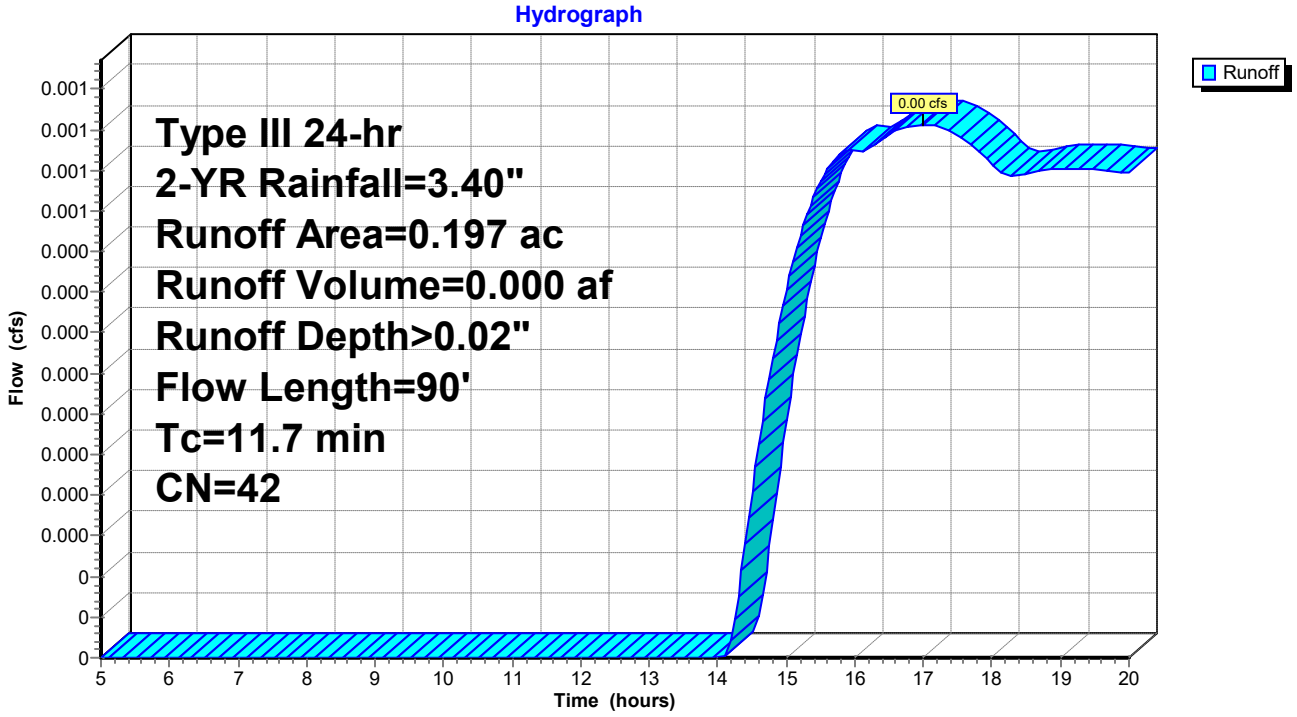
Runoff = 0.00 cfs @ 16.99 hrs, Volume= 0.000 af, Depth> 0.02"
Routed to Pond SWB-4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.40"

	Area (ac)	CN	Description
	0.097	30	Meadow, non-grazed, HSG A
	0.076	39	>75% Grass cover, Good, HSG A
*	0.024	98	Paved
	0.197	42	Weighted Average
	0.173		87.82% Pervious Area
	0.024		12.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	81	0.0200	0.12		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.40"
0.0	7	0.0290	3.46		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.0	2	0.3500	4.14		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
11.7	90	Total			

Subcatchment PR-04:



Summary for Subcatchment PR-05:

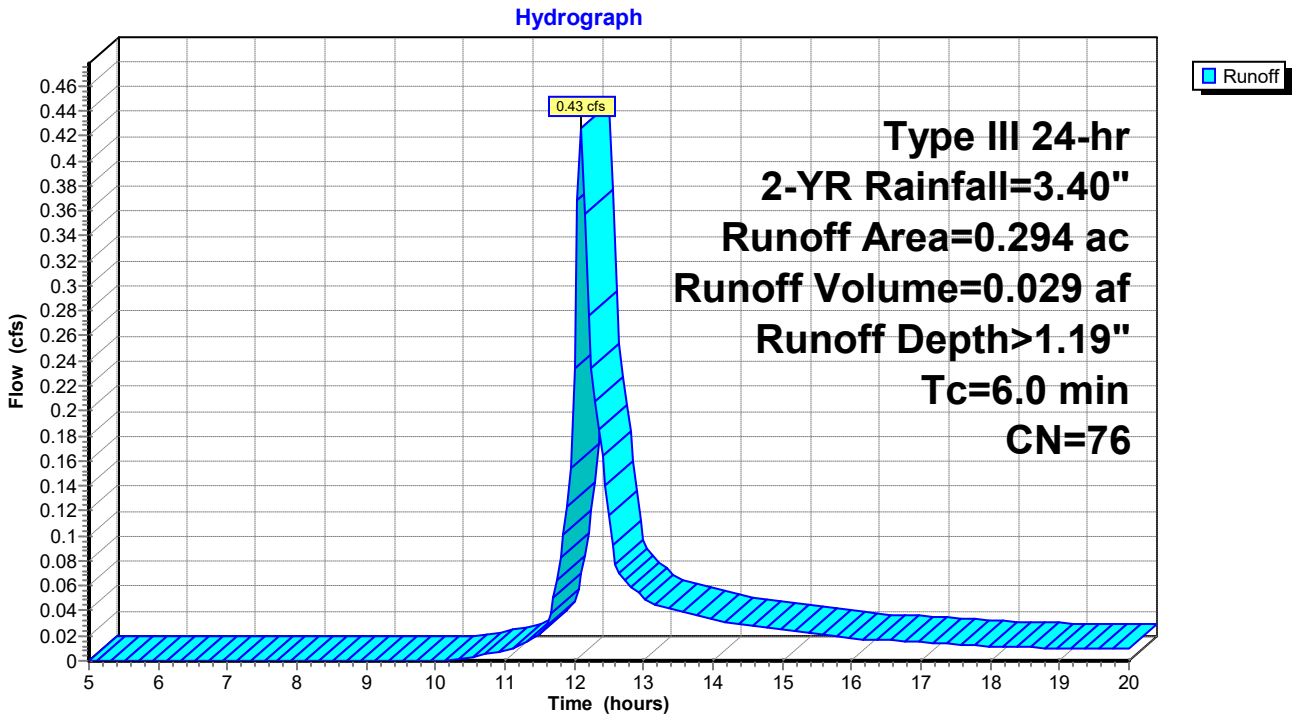
Runoff = 0.43 cfs @ 12.10 hrs, Volume= 0.029 af, Depth> 1.19"
Routed to Pond SWB-4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.40"

	Area (ac)	CN	Description
	0.083	39	>75% Grass cover, Good, HSG A
	0.023	30	Meadow, non-grazed, HSG A
*	0.188	98	Paved
	0.294	76	Weighted Average
	0.106		36.05% Pervious Area
	0.188		63.95% Impervious Area

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

Subcatchment PR-05:



Summary for Subcatchment PR-06:

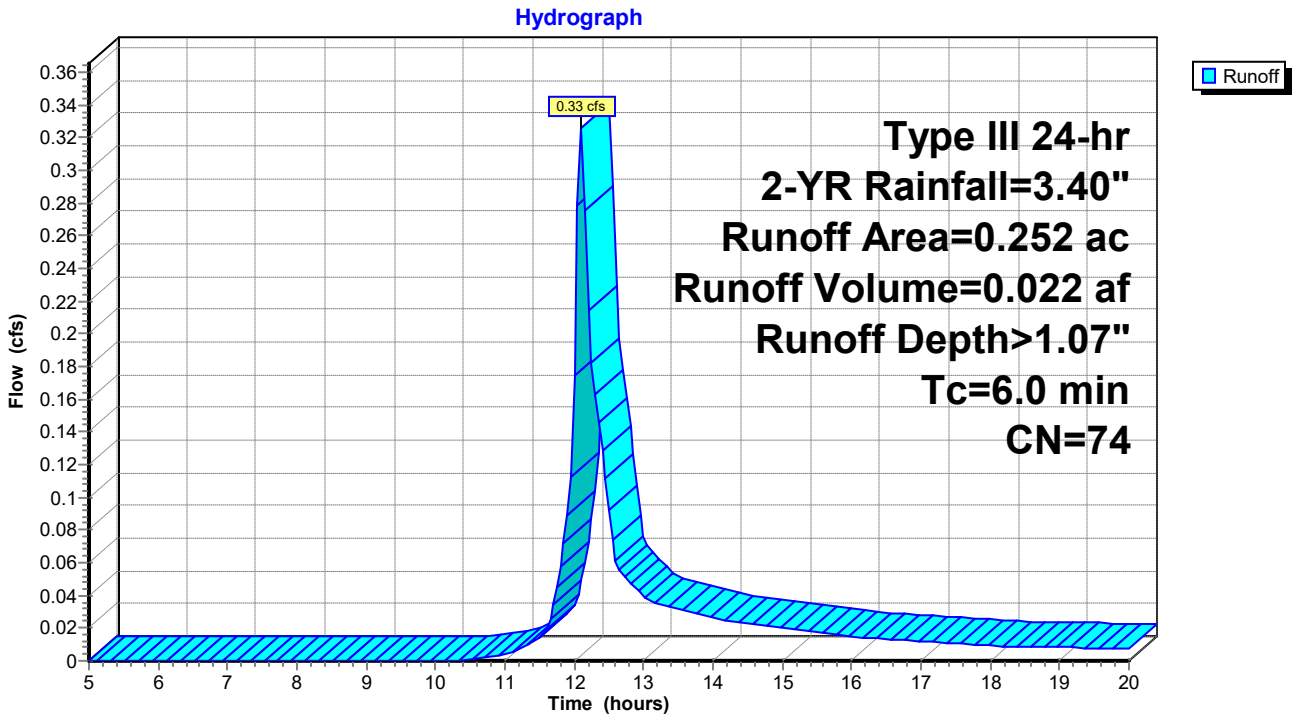
Runoff = 0.33 cfs @ 12.10 hrs, Volume= 0.022 af, Depth> 1.07"
Routed to Pond SWB-4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.40"

	Area (ac)	CN	Description
	0.017	30	Meadow, non-grazed, HSG A
	0.085	39	>75% Grass cover, Good, HSG A
*	0.150	98	Paved
	0.252	74	Weighted Average
	0.102		40.48% Pervious Area
	0.150		59.52% Impervious Area

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

Subcatchment PR-06:



Summary for Subcatchment PR-07:

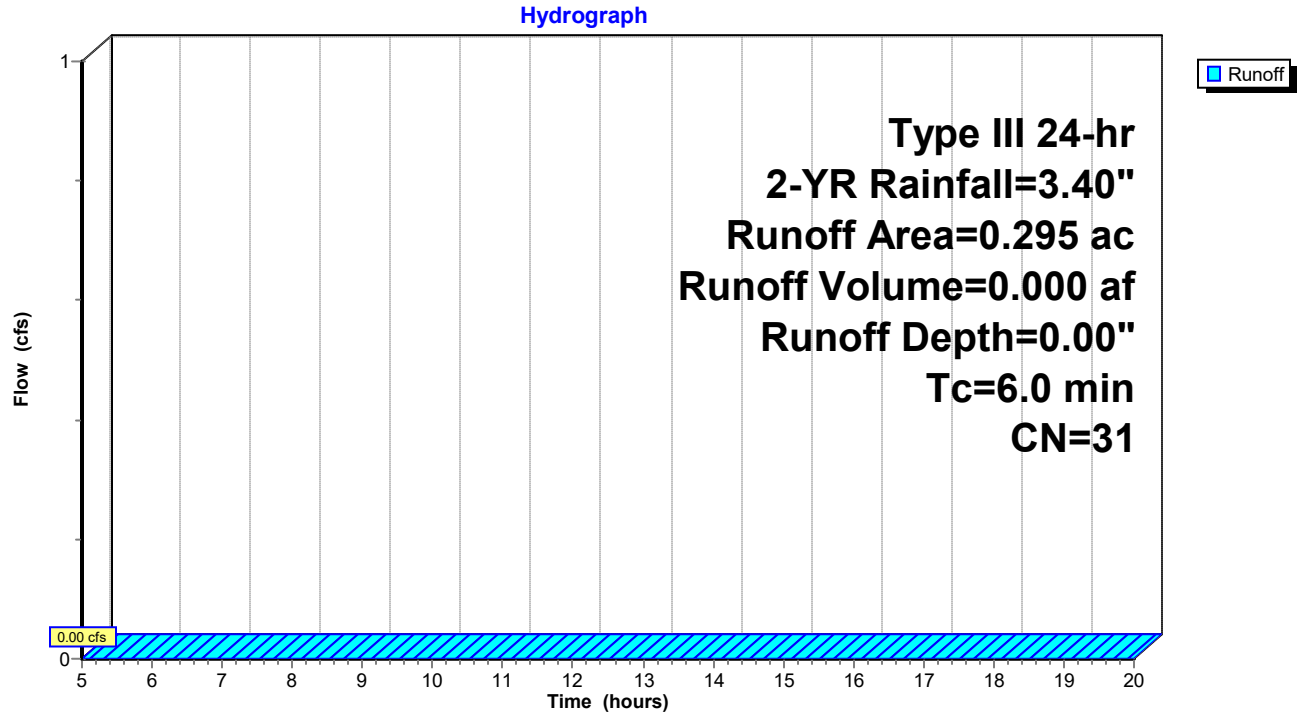
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.40"

Area (ac)	CN	Description
0.283	30	Brush, Good, HSG A
0.012	48	Brush, Good, HSG B
0.295	31	Weighted Average
0.295		100.00% Pervious Area

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

Subcatchment PR-07:



Summary for Subcatchment PR-08:

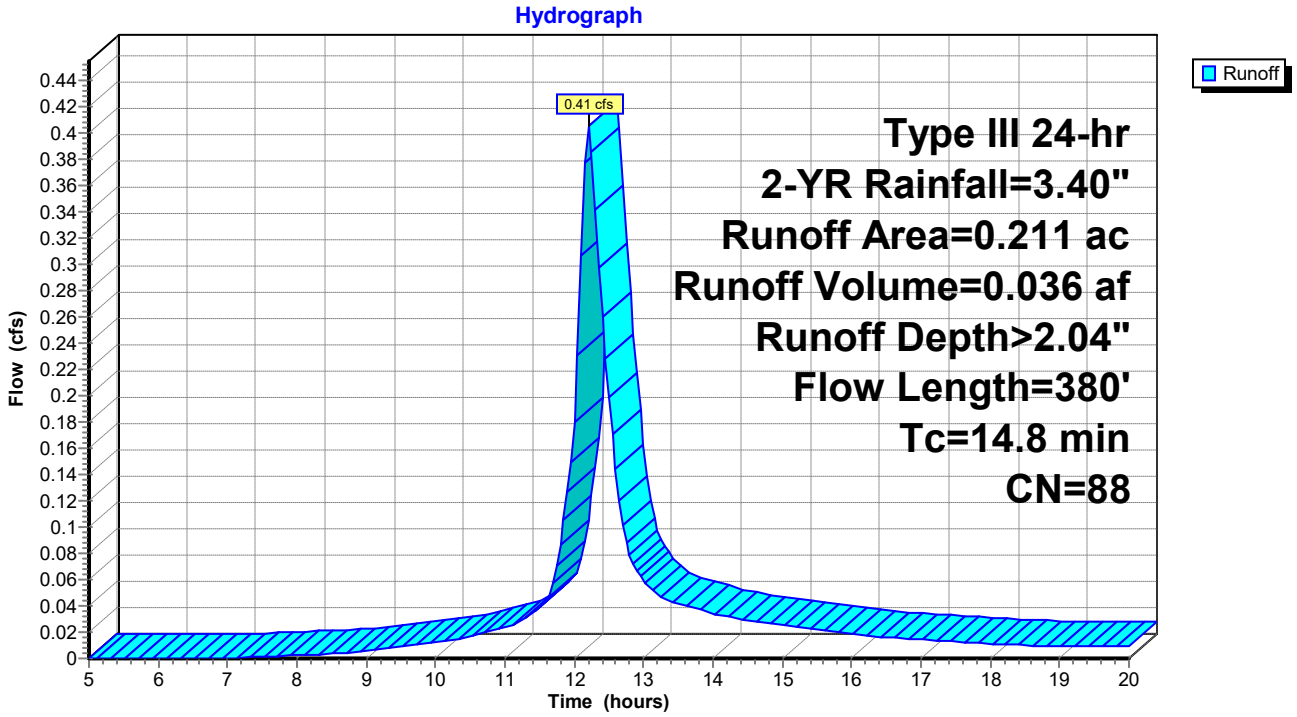
Runoff = 0.41 cfs @ 12.20 hrs, Volume= 0.036 af, Depth> 2.04"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.40"

	Area (ac)	CN	Description
	0.018	39	>75% Grass cover, Good, HSG A
	0.031	61	>75% Grass cover, Good, HSG B
	0.000	58	Meadow, non-grazed, HSG B
*	0.162	98	Paved
	0.211	88	Weighted Average
	0.049		23.22% Pervious Area
	0.162		76.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	100	0.0140	0.15		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
3.0	126	0.0100	0.70		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.0	9	0.0220	3.01		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
0.2	18	0.0500	1.57		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
0.2	39	0.0290	3.46		**Shallow Concentrated Flow, E-F** Paved Kv= 20.3 fps
0.1	28	0.0050	3.21	2.52	**Pipe Channel, F-G** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
0.3	60	0.0050	3.47	2.73	**Pipe Channel, G-H** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
14.8	380	Total			

Subcatchment PR-08:



Summary for Subcatchment PR-09:

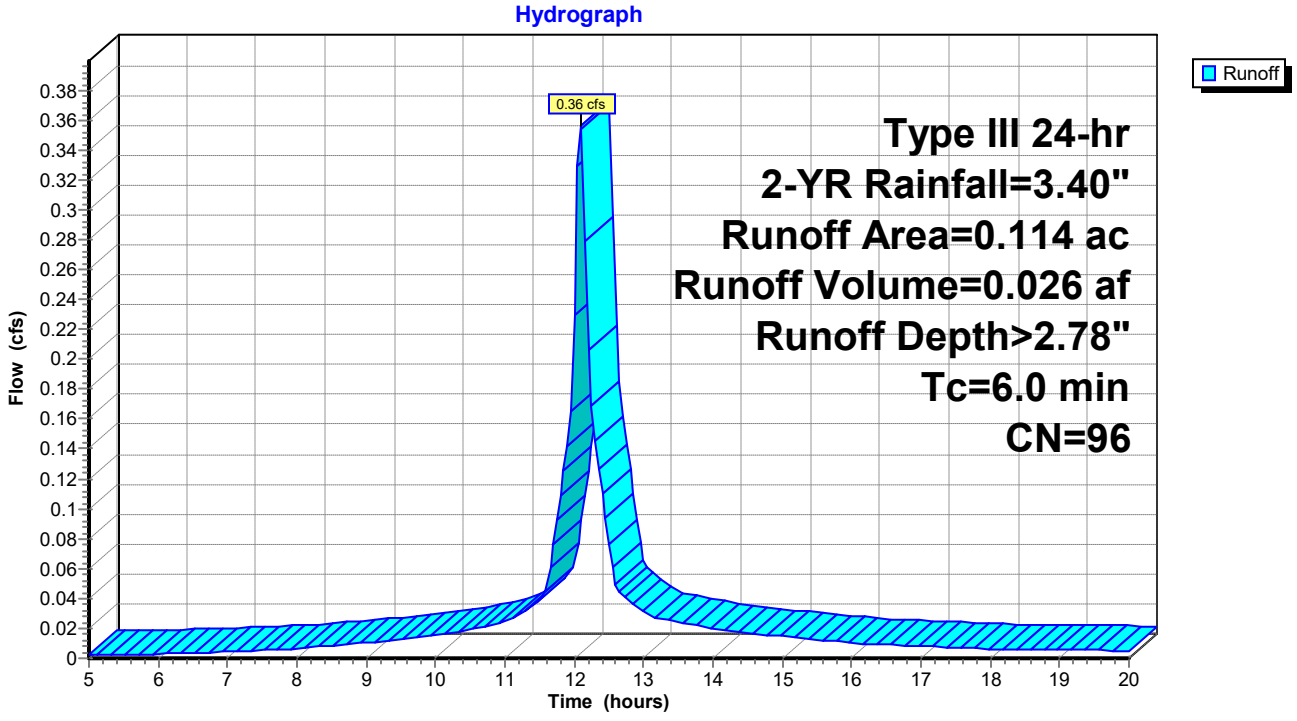
Runoff = 0.36 cfs @ 12.09 hrs, Volume= 0.026 af, Depth> 2.78"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.40"

	Area (ac)	CN	Description
	0.003	39	>75% Grass cover, Good, HSG A
*	0.111	98	Paved
	0.114	96	Weighted Average
	0.003		2.63% Pervious Area
	0.111		97.37% Impervious Area

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

Subcatchment PR-09:



Summary for Subcatchment PR-10:

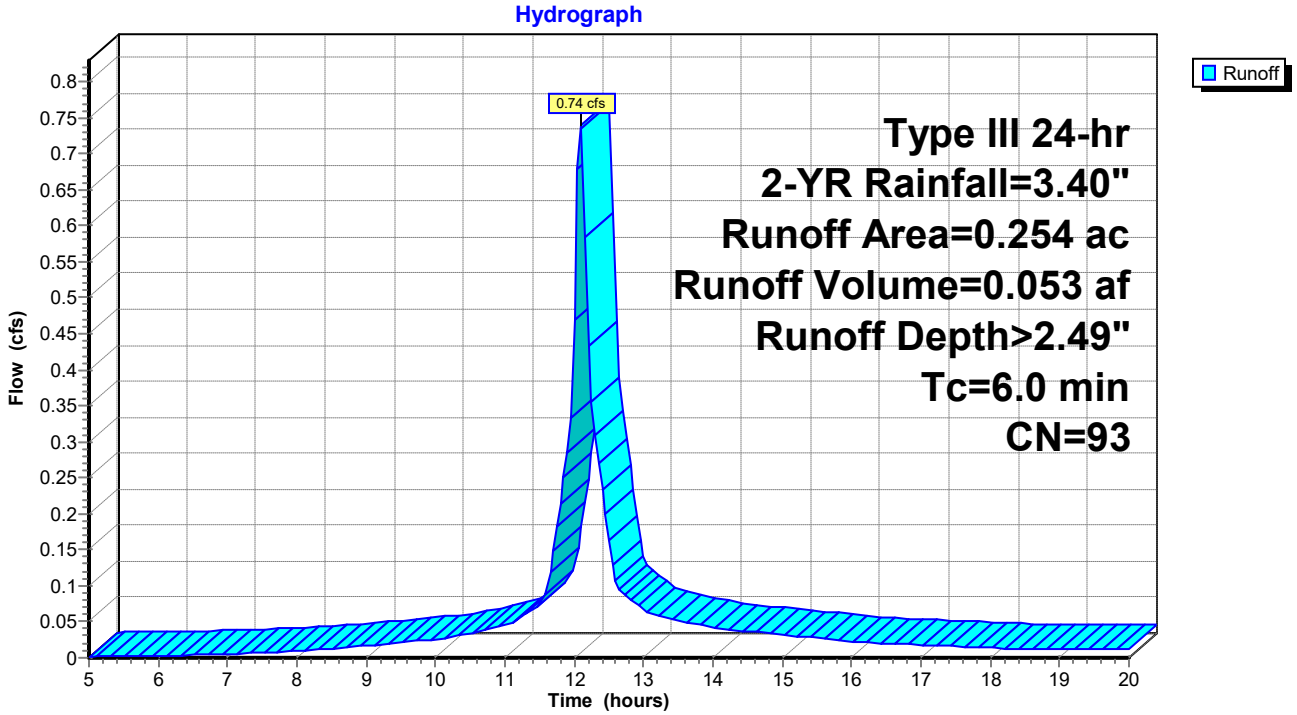
Runoff = 0.74 cfs @ 12.09 hrs, Volume= 0.053 af, Depth> 2.49"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.40"

	Area (ac)	CN	Description
	0.020	39	>75% Grass cover, Good, HSG A
	0.004	61	>75% Grass cover, Good, HSG B
*	0.230	98	Paved
	0.254	93	Weighted Average
	0.024		9.45% Pervious Area
	0.230		90.55% Impervious Area

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

Subcatchment PR-10:



Summary for Subcatchment PR-11:

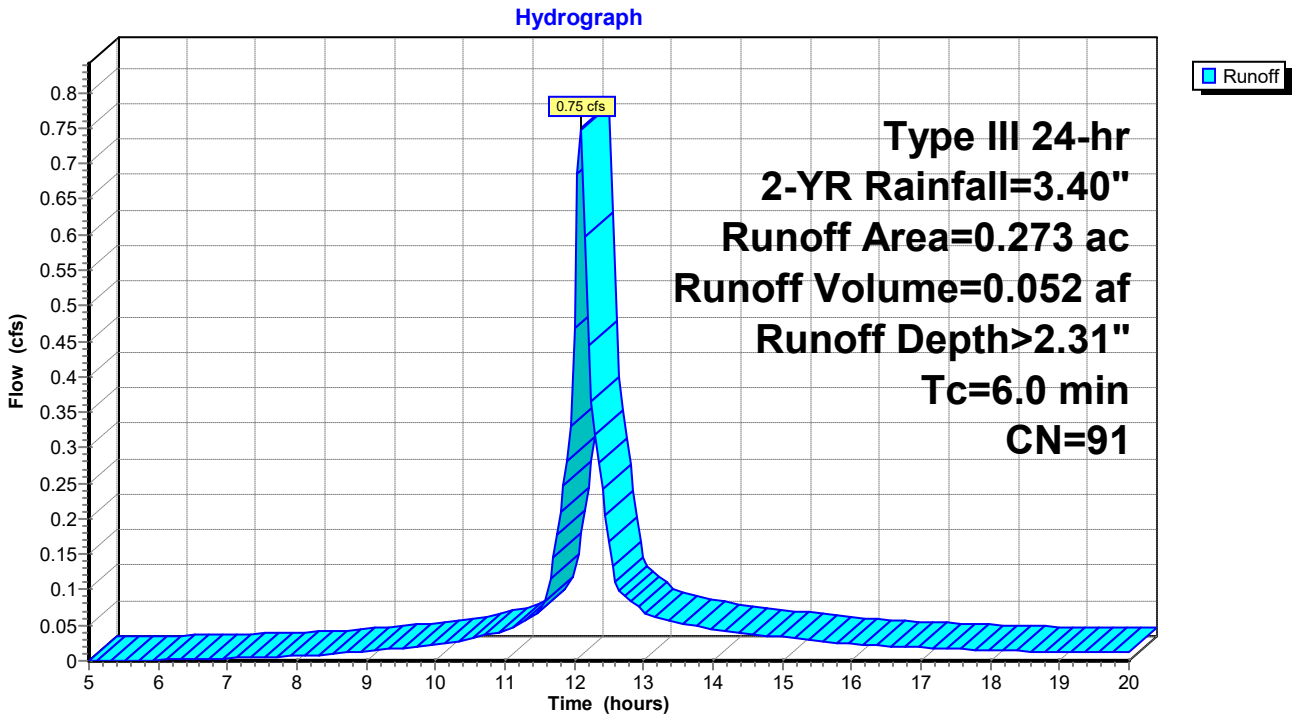
Runoff = 0.75 cfs @ 12.09 hrs, Volume= 0.052 af, Depth> 2.31"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.40"

	Area (ac)	CN	Description
	0.028	39	>75% Grass cover, Good, HSG A
	0.008	61	>75% Grass cover, Good, HSG B
*	0.237	98	Paved
	0.273	91	Weighted Average
	0.036		13.19% Pervious Area
	0.237		86.81% Impervious Area

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

Subcatchment PR-11:



Summary for Subcatchment PR-12:

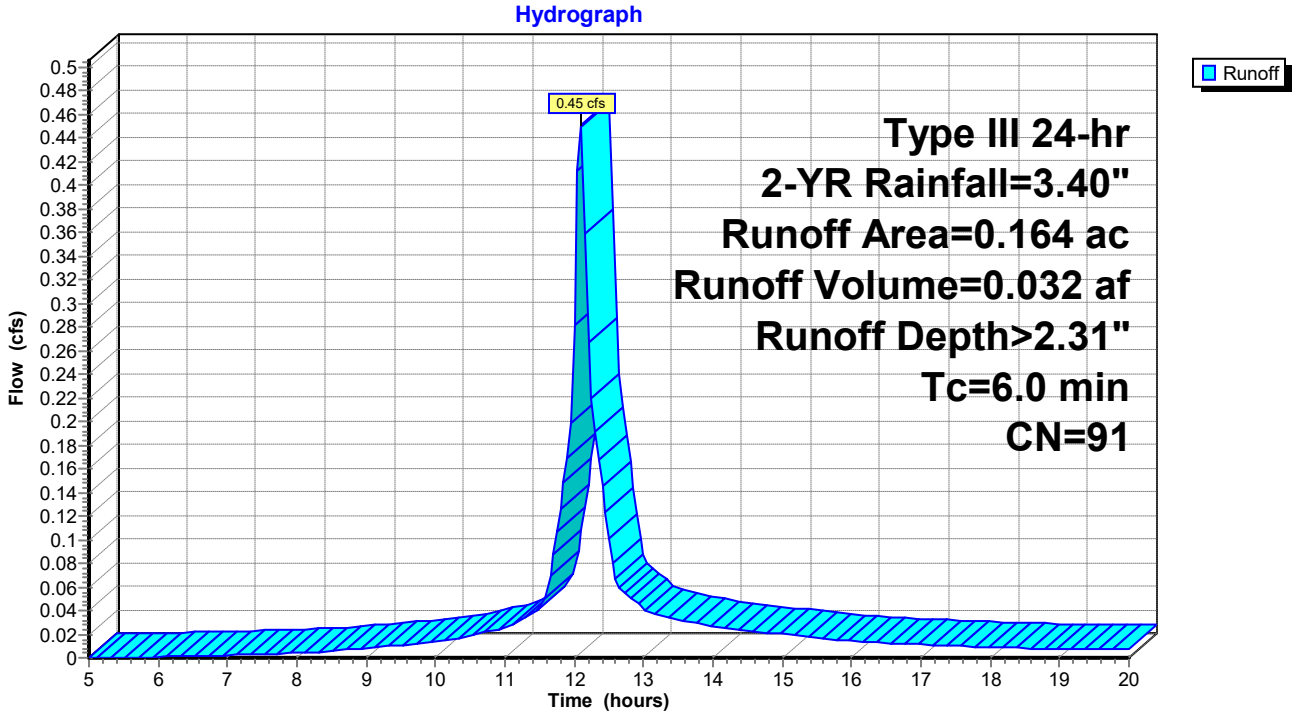
Runoff = 0.45 cfs @ 12.09 hrs, Volume= 0.032 af, Depth> 2.31"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.40"

	Area (ac)	CN	Description
	0.019	39	>75% Grass cover, Good, HSG A
	0.000	30	Meadow, non-grazed, HSG A
*	0.145	98	Paved
	0.164	91	Weighted Average
	0.019		11.59% Pervious Area
	0.145		88.41% Impervious Area

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

Subcatchment PR-12:



Summary for Subcatchment PR-13:

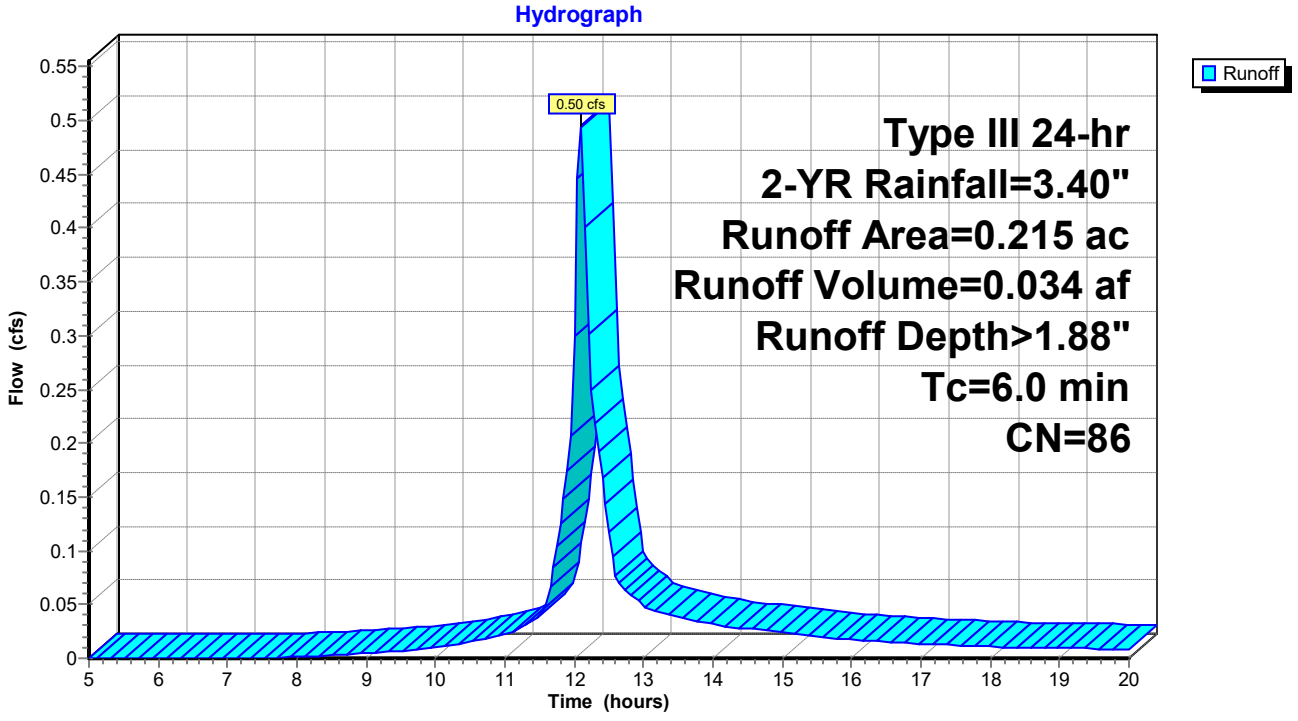
Runoff = 0.50 cfs @ 12.09 hrs, Volume= 0.034 af, Depth> 1.88"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.40"

	Area (ac)	CN	Description
	0.043	39	>75% Grass cover, Good, HSG A
*	0.172	98	Paved
	0.215	86	Weighted Average
	0.043		20.00% Pervious Area
	0.172		80.00% Impervious Area

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

Subcatchment PR-13:



Summary for Subcatchment PR-14:

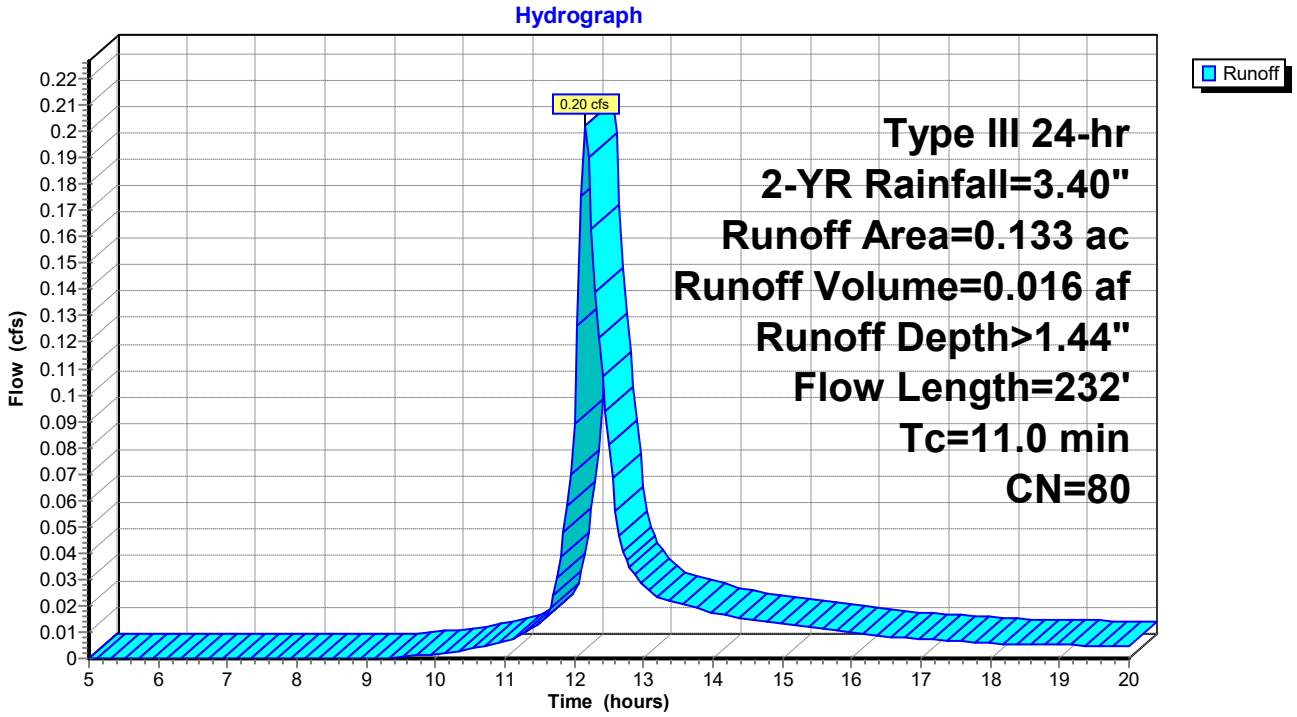
Runoff = 0.20 cfs @ 12.16 hrs, Volume= 0.016 af, Depth> 1.44"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.40"

	Area (ac)	CN	Description
	0.030	39	>75% Grass cover, Good, HSG A
	0.018	61	>75% Grass cover, Good, HSG B
*	0.085	98	Paved
	0.133	80	Weighted Average
	0.048		36.09% Pervious Area
	0.085		63.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	62	0.0060	0.10		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.0	5	0.0200	2.87		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.2	52	0.0050	3.47	2.73	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.2	67	0.0100	4.91	3.86	**Pipe Channel, D-E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.1	46	0.0100	5.70	7.00	**Pipe Channel, E-F** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
11.0	232	Total			

Subcatchment PR-14:



Summary for Subcatchment PR-15:

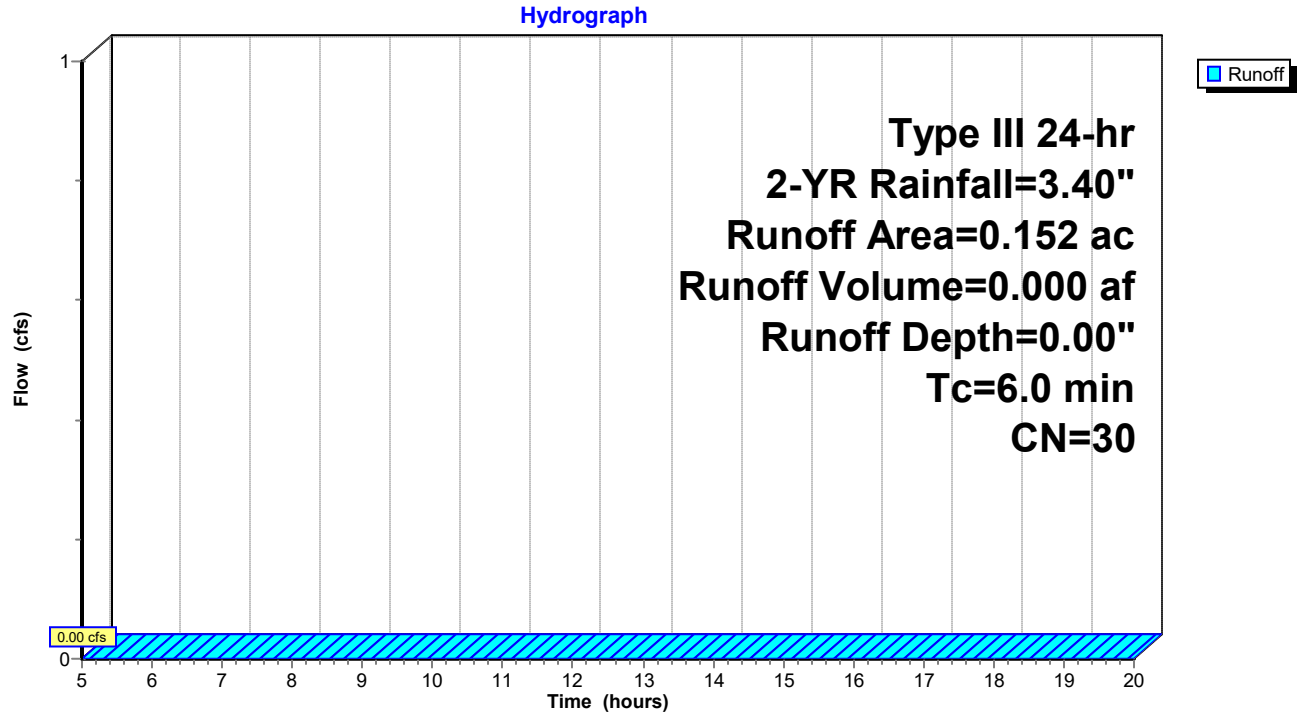
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.40"

Area (ac)	CN	Description
0.150	30	Brush, Good, HSG A
0.002	48	Brush, Good, HSG B
0.152	30	Weighted Average
0.152		100.00% Pervious Area

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

Subcatchment PR-15:



Summary for Subcatchment PR-17:

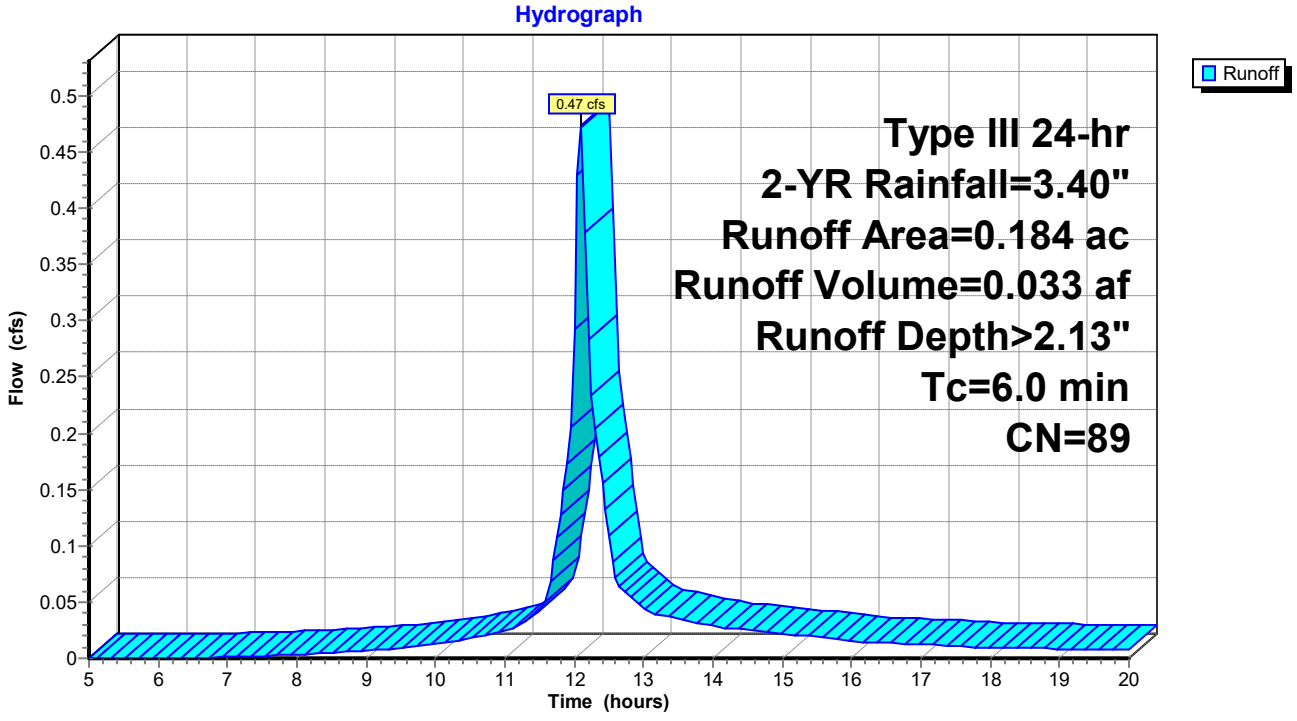
Runoff = 0.47 cfs @ 12.09 hrs, Volume= 0.033 af, Depth> 2.13"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.40"

	Area (ac)	CN	Description
	0.027	39	>75% Grass cover, Good, HSG A
*	0.157	98	Paved
	0.184	89	Weighted Average
	0.027		14.67% Pervious Area
	0.157		85.33% Impervious Area

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

Subcatchment PR-17:



Summary for Subcatchment PR-18:

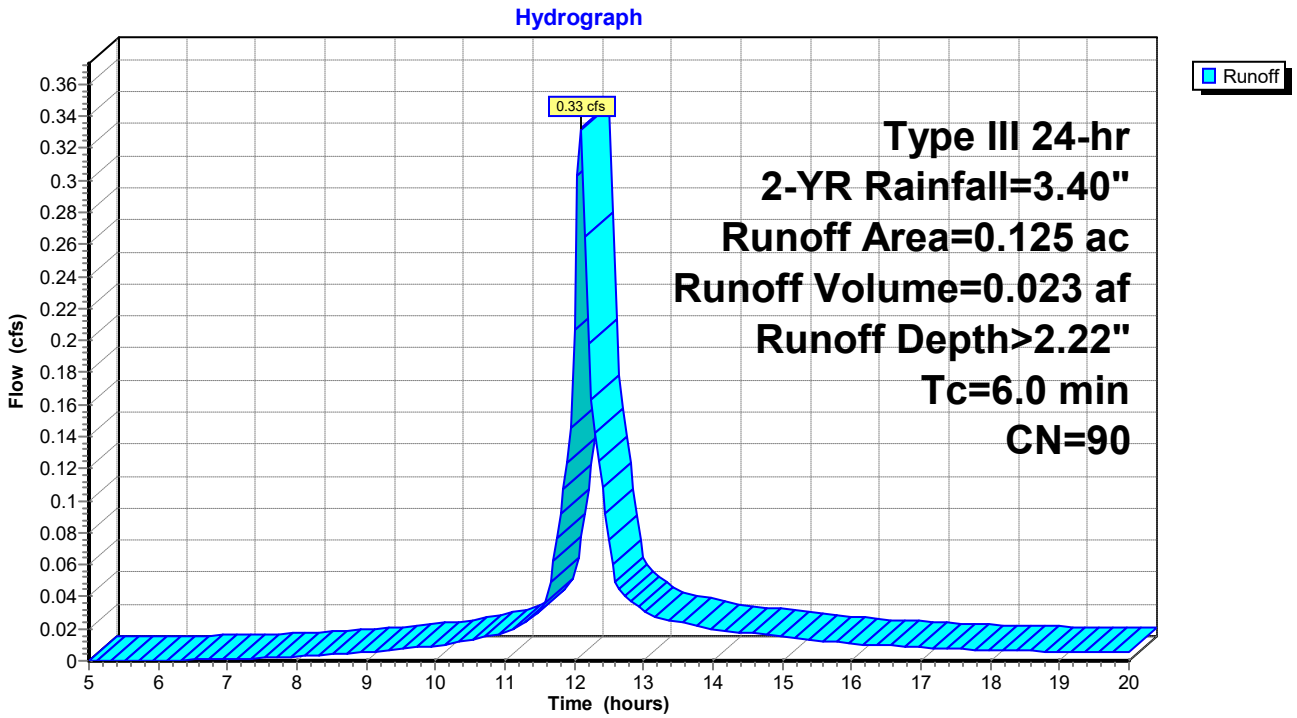
Runoff = 0.33 cfs @ 12.09 hrs, Volume= 0.023 af, Depth> 2.22"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.40"

	Area (ac)	CN	Description
	0.016	39	>75% Grass cover, Good, HSG A
	0.002	61	>75% Grass cover, Good, HSG B
*	0.107	98	Paved
	0.125	90	Weighted Average
	0.018		14.40% Pervious Area
	0.107		85.60% Impervious Area

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

Subcatchment PR-18:



Summary for Subcatchment PR-19:

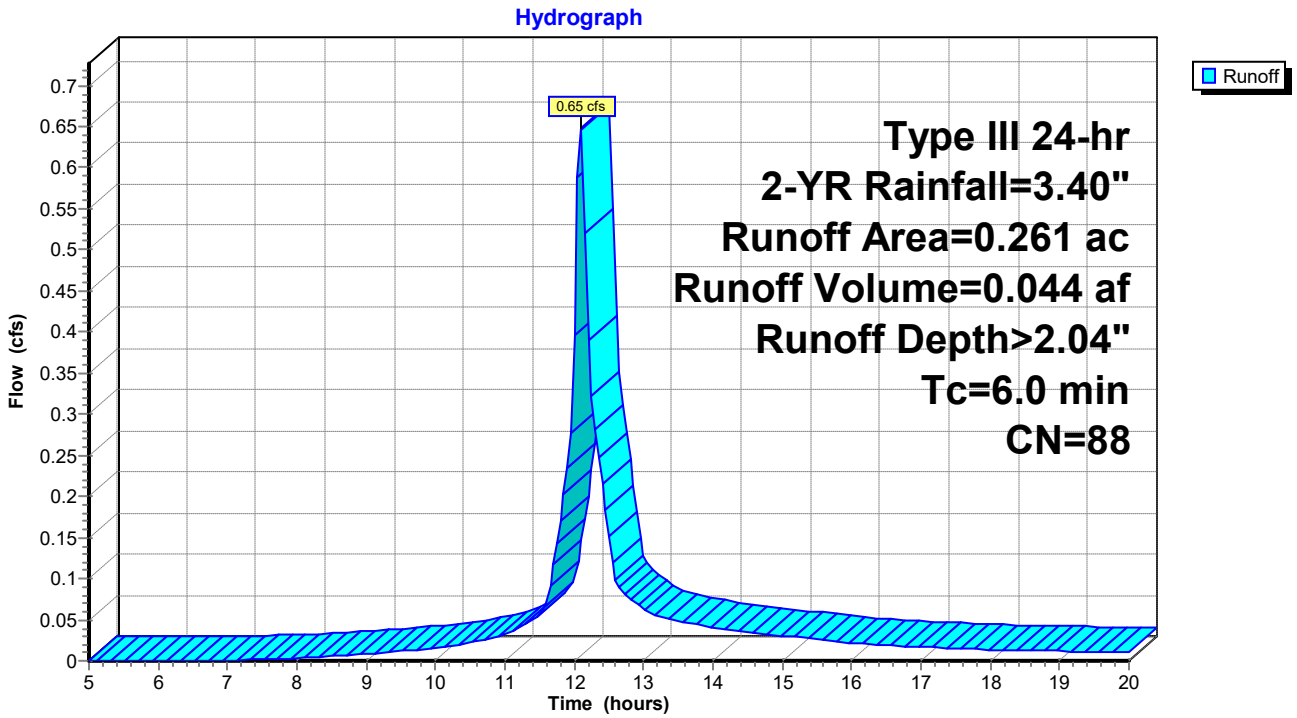
Runoff = 0.65 cfs @ 12.09 hrs, Volume= 0.044 af, Depth> 2.04"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.40"

	Area (ac)	CN	Description
	0.041	39	>75% Grass cover, Good, HSG A
	0.004	61	>75% Grass cover, Good, HSG B
*	0.216	98	Paved
	0.261	88	Weighted Average
	0.045		17.24% Pervious Area
	0.216		82.76% Impervious Area

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

Subcatchment PR-19:



Summary for Subcatchment PR-20:

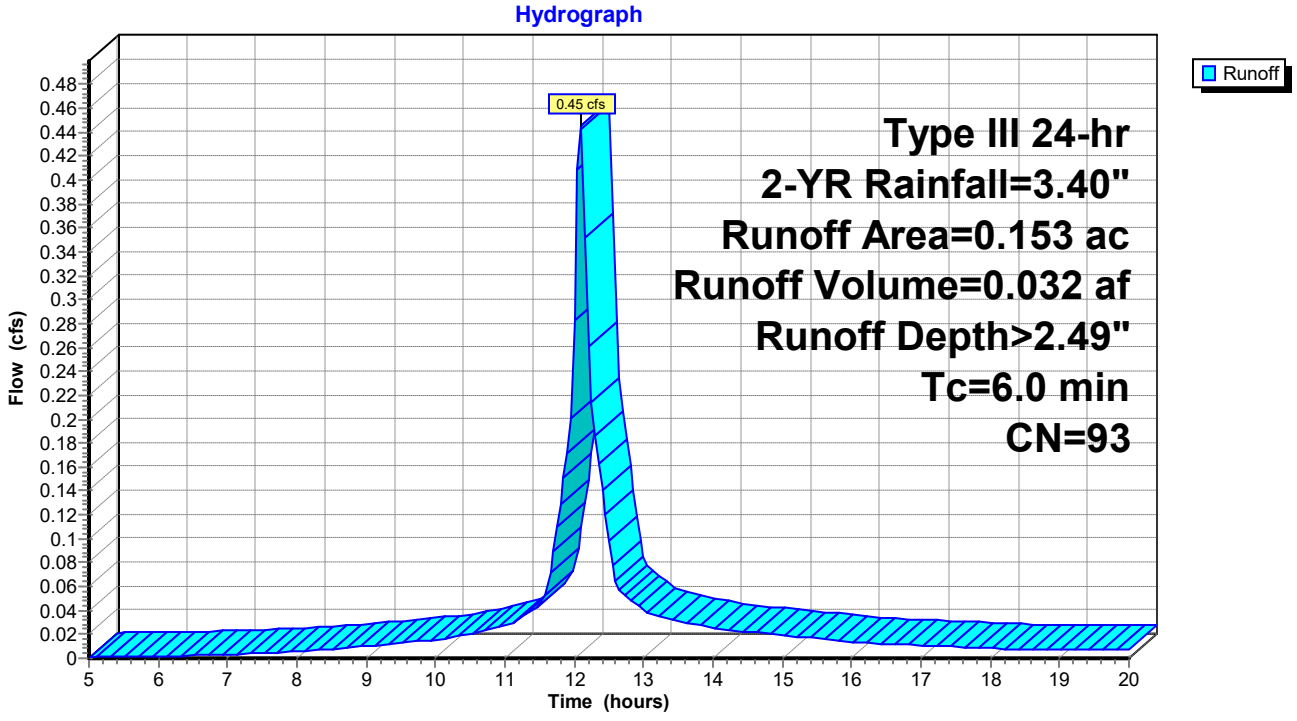
Runoff = 0.45 cfs @ 12.09 hrs, Volume= 0.032 af, Depth> 2.49"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.40"

	Area (ac)	CN	Description
	0.013	39	>75% Grass cover, Good, HSG A
*	0.140	98	Paved
	0.153	93	Weighted Average
	0.013		8.50% Pervious Area
	0.140		91.50% Impervious Area

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

Subcatchment PR-20:



Summary for Subcatchment PR-21:

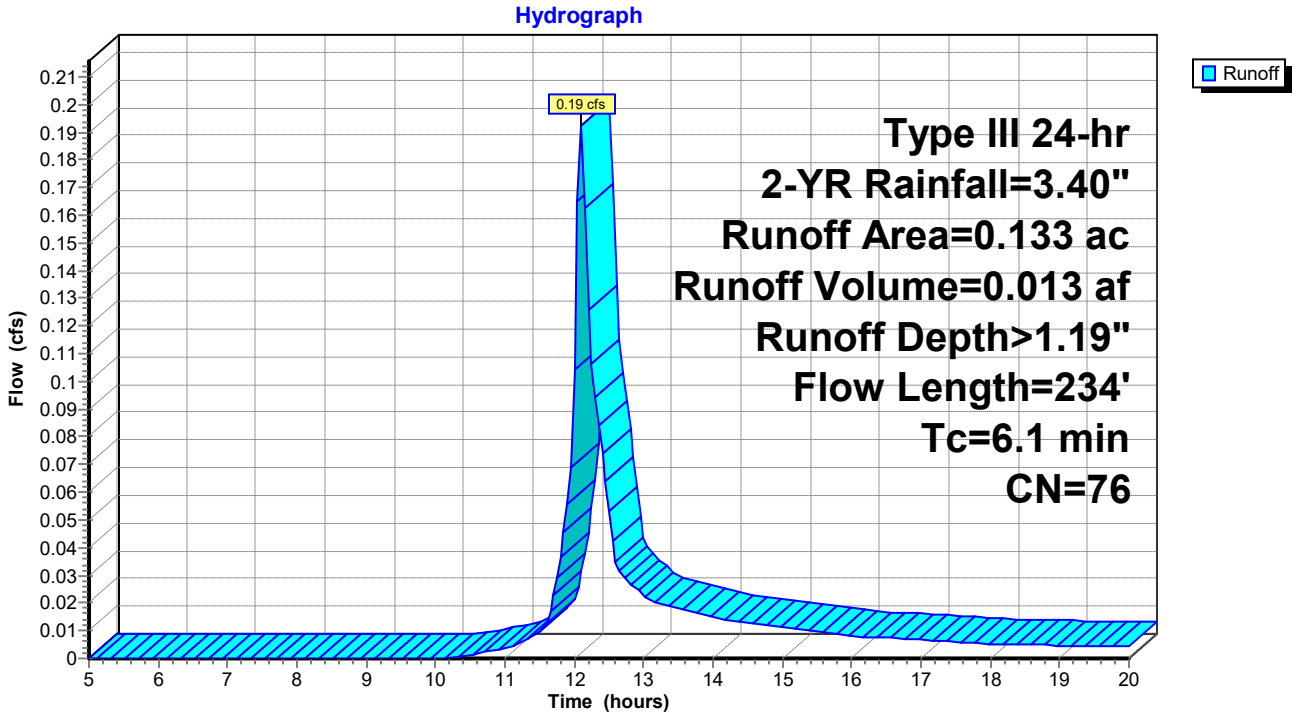
Runoff = 0.19 cfs @ 12.10 hrs, Volume= 0.013 af, Depth> 1.19"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.40"

	Area (ac)	CN	Description
	0.036	39	>75% Grass cover, Good, HSG A
	0.020	61	>75% Grass cover, Good, HSG B
*	0.077	98	Paved
	0.133	76	Weighted Average
	0.056		42.11% Pervious Area
	0.077		57.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	48	0.0290	0.18		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.0	10	0.0300	3.52		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.3	21	0.0380	1.36		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
0.9	95	0.0080	1.82		**Shallow Concentrated Flow, D-E** Paved Kv= 20.3 fps
0.1	16	0.0100	3.10	0.61	**Pipe Channel, E-F** 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.012
0.2	44	0.0100	3.75	1.31	**Pipe Channel, F-G** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
6.1	234	Total			

Subcatchment PR-21:



Summary for Subcatchment PR-22:

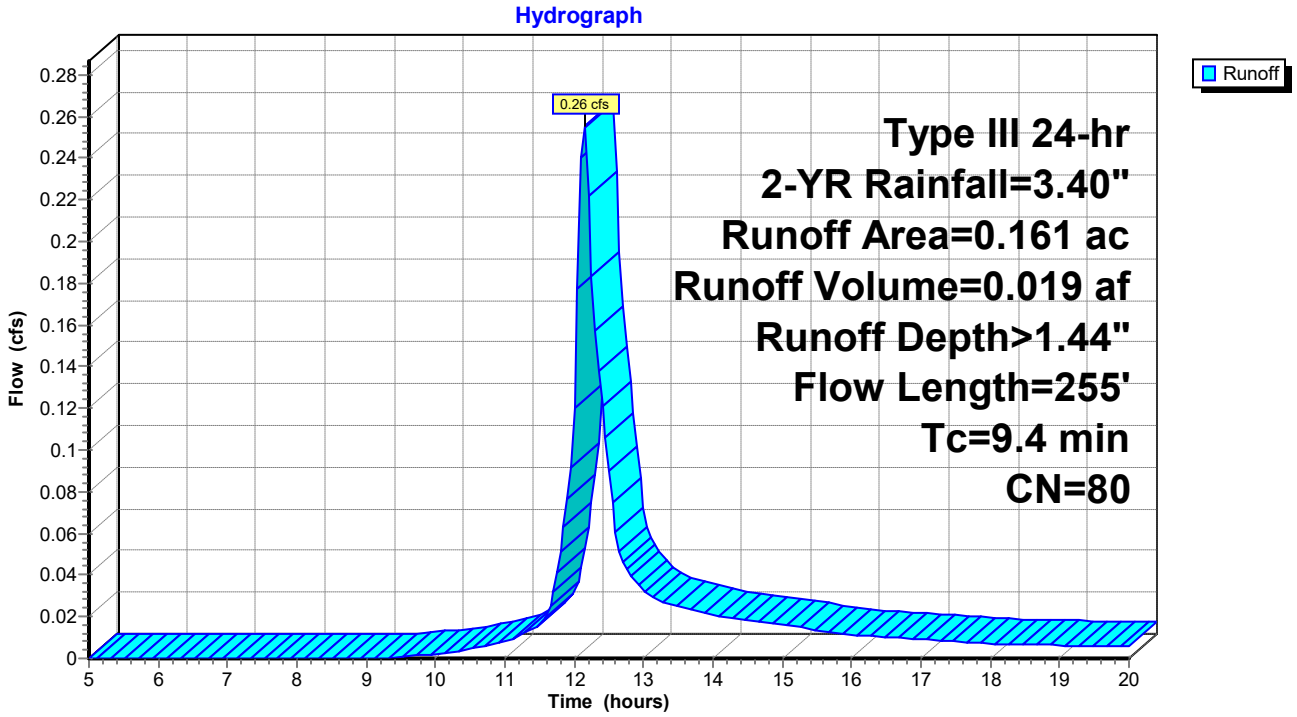
Runoff = 0.26 cfs @ 12.14 hrs, Volume= 0.019 af, Depth> 1.44"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.40"

	Area (ac)	CN	Description
	0.031	39	>75% Grass cover, Good, HSG A
	0.030	61	>75% Grass cover, Good, HSG B
*	0.100	98	Paved
	0.161	80	Weighted Average
	0.061		37.89% Pervious Area
	0.100		62.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	71	0.0130	0.14		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.6	122	0.0250	3.21		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.0	18	0.1000	11.86	4.14	**Pipe Channel, C-D** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
0.2	44	0.0100	3.75	1.31	**Pipe Channel, D-E** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
9.4	255	Total			

Subcatchment PR-22:



Summary for Subcatchment PR-23:

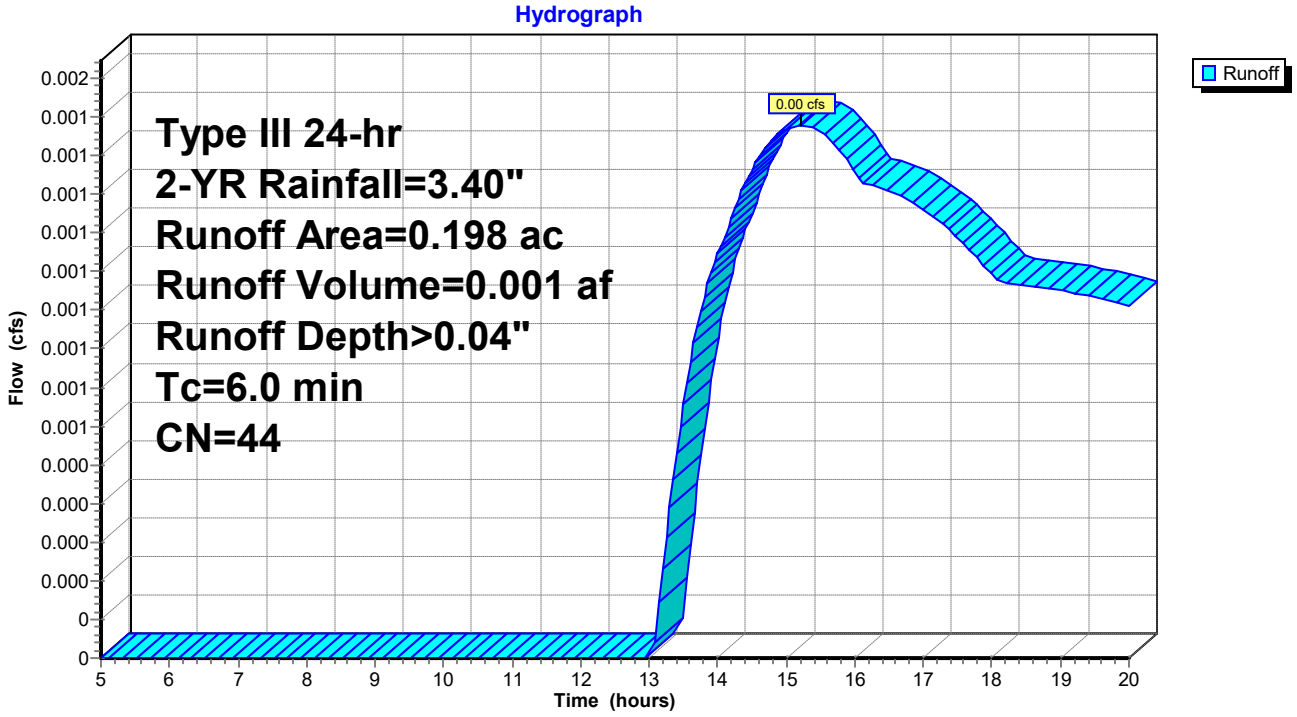
Runoff = 0.00 cfs @ 15.20 hrs, Volume= 0.001 af, Depth> 0.04"
Routed to Pond IB-2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.40"

	Area (ac)	CN	Description
	0.069	39	>75% Grass cover, Good, HSG A
	0.013	61	>75% Grass cover, Good, HSG B
	0.091	30	Meadow, non-grazed, HSG A
*	0.025	98	Paved
	0.198	44	Weighted Average
	0.173		87.37% Pervious Area
	0.025		12.63% Impervious Area

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

Subcatchment PR-23:



Summary for Subcatchment PR-24:

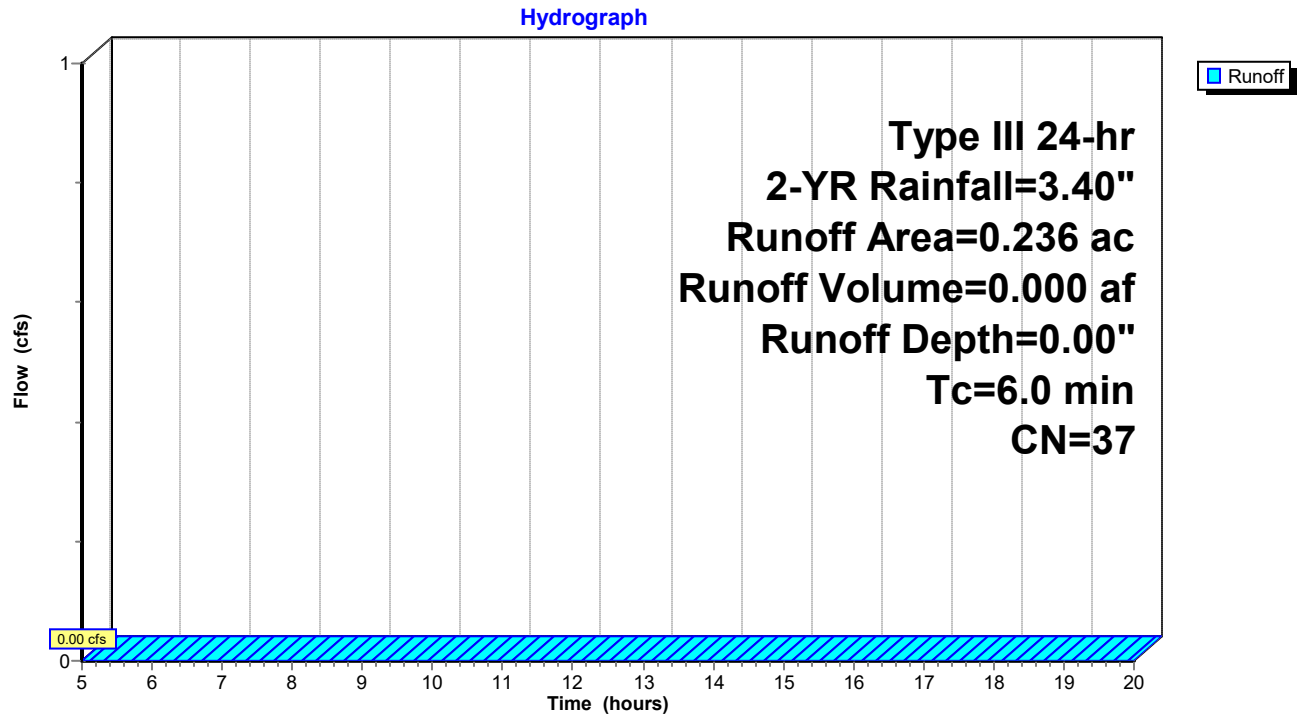
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond GT-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.40"

Area (ac)	CN	Description
0.028	39	>75% Grass cover, Good, HSG A
0.016	61	>75% Grass cover, Good, HSG B
0.157	30	Meadow, non-grazed, HSG A
0.035	58	Meadow, non-grazed, HSG B
0.236	37	Weighted Average
0.236		100.00% Pervious Area

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

Subcatchment PR-24:



Summary for Subcatchment PR-25:

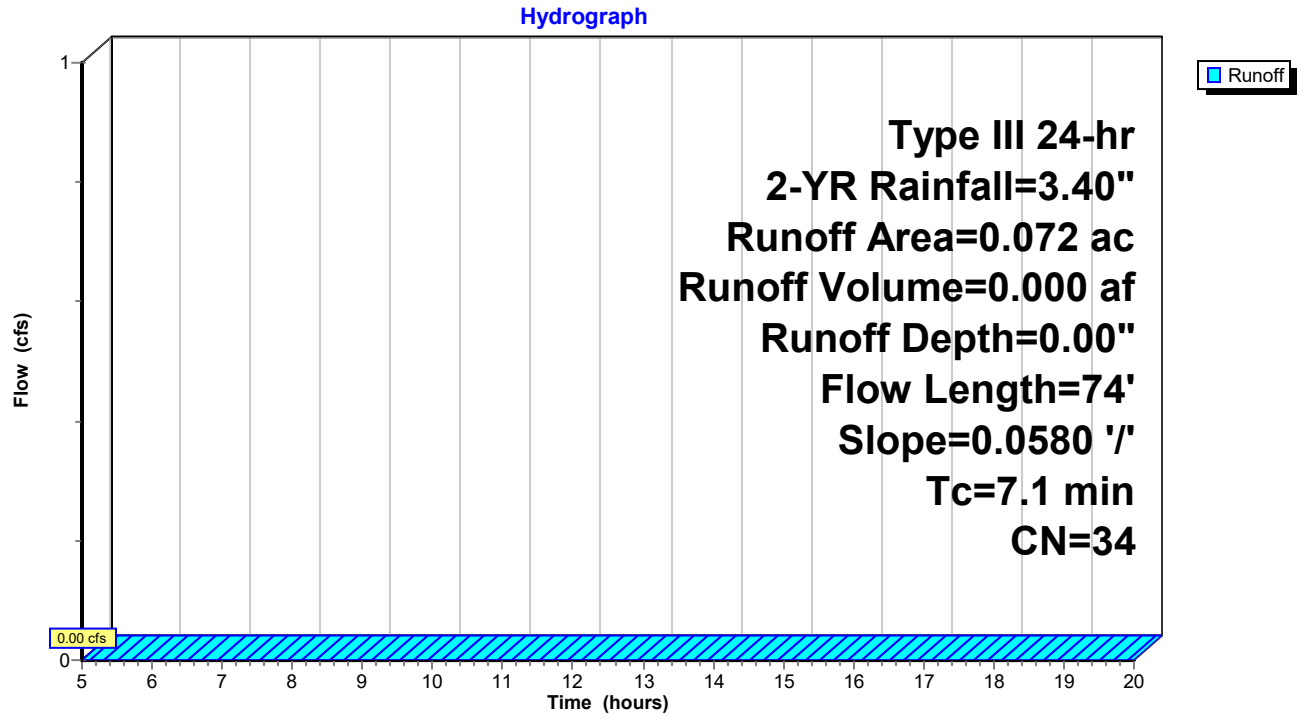
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond GT-2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.40"

	Area (ac)	CN	Description
	0.024	39	>75% Grass cover, Good, HSG A
	0.047	30	Meadow, non-grazed, HSG A
*	0.001	98	Paved
	0.072	34	Weighted Average
	0.071		98.61% Pervious Area
	0.001		1.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	74	0.0580	0.17		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.40"

Subcatchment PR-25:



Summary for Subcatchment PR-26:

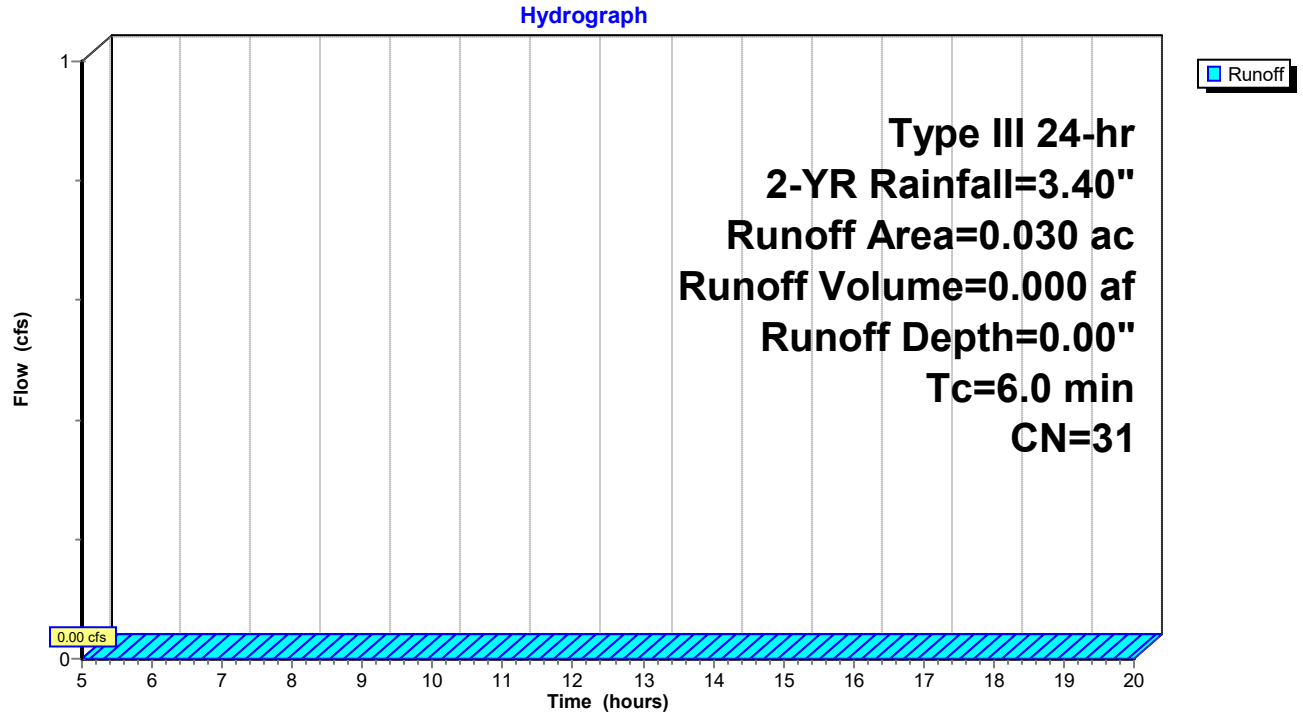
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond GT-3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.40"

Area (ac)	CN	Description
0.004	39	>75% Grass cover, Good, HSG A
0.026	30	Meadow, non-grazed, HSG A
0.030	31	Weighted Average
0.030		100.00% Pervious Area

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

Subcatchment PR-26:



Summary for Subcatchment PR-27:

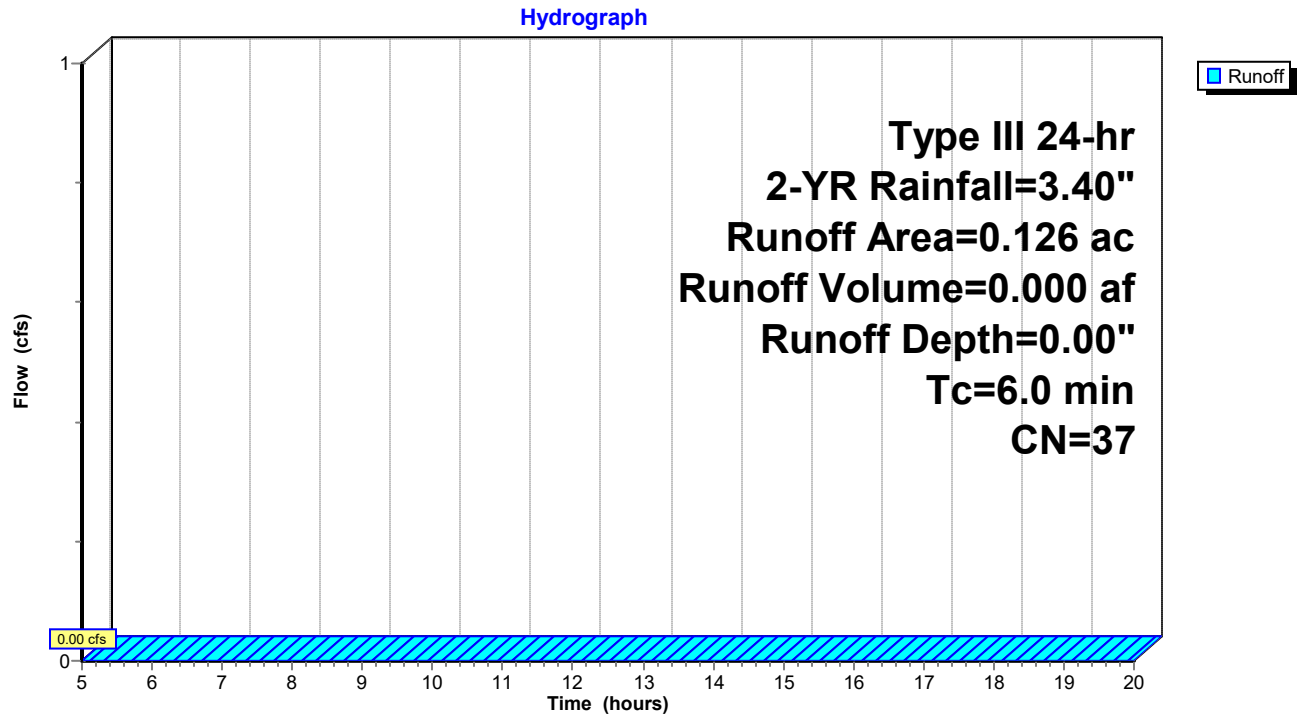
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond GT-4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.40"

Area (ac)	CN	Description
0.031	39	>75% Grass cover, Good, HSG A
0.004	61	>75% Grass cover, Good, HSG B
0.074	30	Meadow, non-grazed, HSG A
0.017	58	Meadow, non-grazed, HSG B
0.126	37	Weighted Average
0.126		100.00% Pervious Area

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

Subcatchment PR-27:



Summary for Subcatchment PR-28:

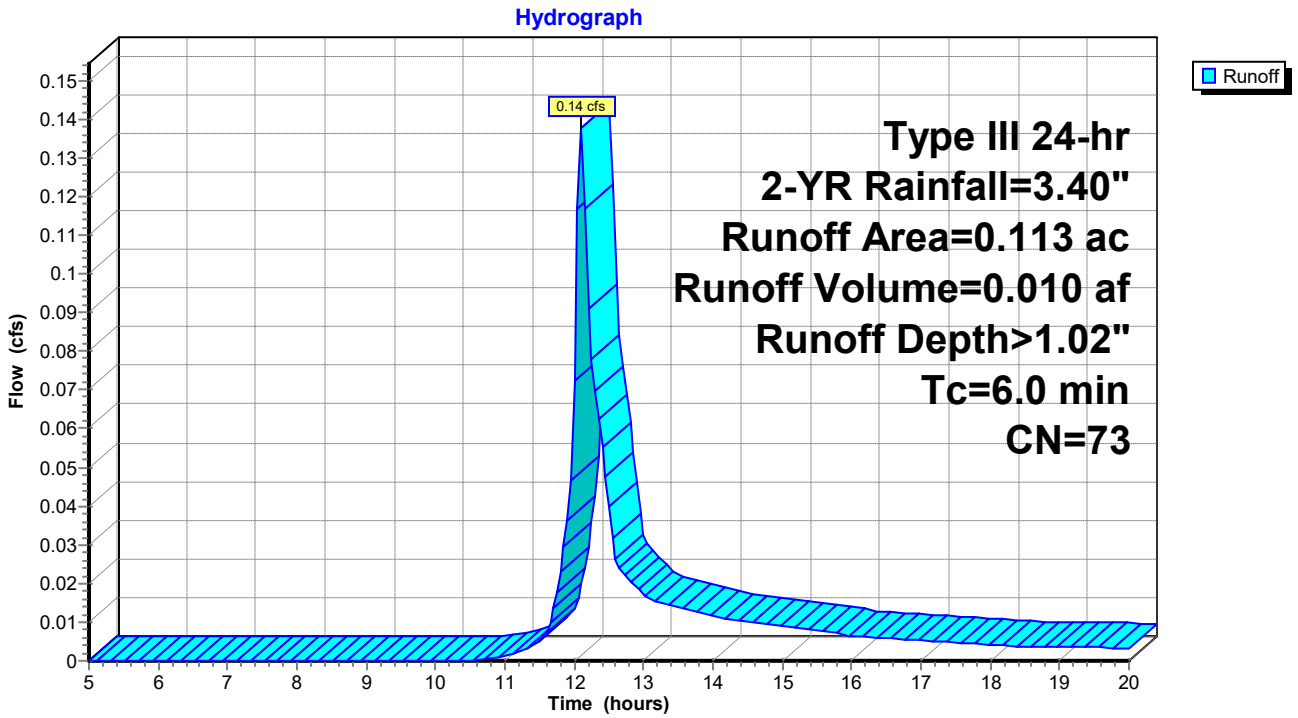
Runoff = 0.14 cfs @ 12.10 hrs, Volume= 0.010 af, Depth> 1.02"
Routed to Pond GT-5 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.40"

	Area (ac)	CN	Description
	0.031	61	>75% Grass cover, Good, HSG B
	0.043	58	Meadow, non-grazed, HSG B
*	0.039	98	Paved
	0.113	73	Weighted Average
	0.074		65.49% Pervious Area
	0.039		34.51% Impervious Area

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

Subcatchment PR-28:



Summary for Subcatchment PR-29:

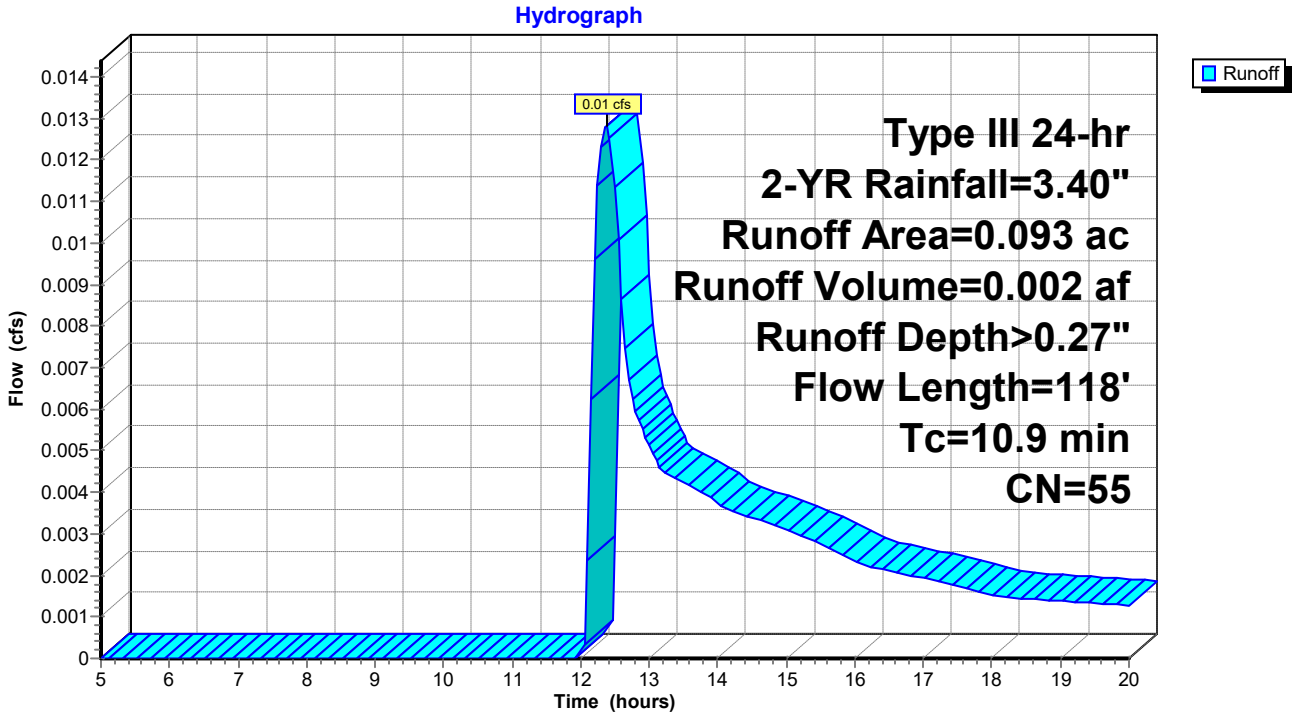
Runoff = 0.01 cfs @ 12.37 hrs, Volume= 0.002 af, Depth> 0.27"
Routed to Pond GT-6 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.40"

	Area (ac)	CN	Description
	0.001	30	Woods, Good, HSG A
	0.008	55	Woods, Good, HSG B
	0.011	39	>75% Grass cover, Good, HSG A
	0.021	61	>75% Grass cover, Good, HSG B
	0.026	30	Meadow, non-grazed, HSG A
	0.010	58	Meadow, non-grazed, HSG B
*	0.016	98	Paved
	0.093	55	Weighted Average
	0.077		82.80% Pervious Area
	0.016		17.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7	100	0.0380	0.16		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.40"
0.2	18	0.0780	1.95		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
10.9	118	Total			

Subcatchment PR-29:



Summary for Subcatchment RA-1:

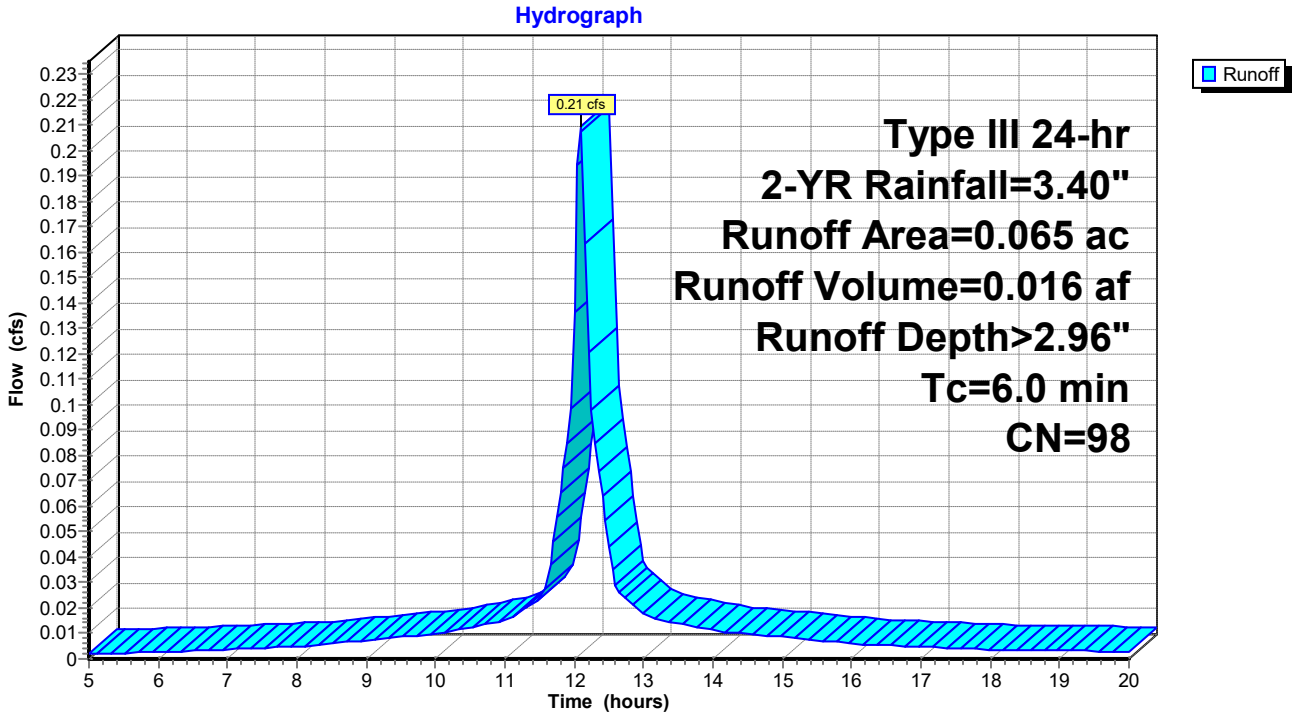
Runoff = 0.21 cfs @ 12.09 hrs, Volume= 0.016 af, Depth> 2.96"
Routed to Pond UG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.40"

	Area (ac)	CN	Description
*	0.065	98	Roof
	0.065		100.00% Impervious Area

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

Subcatchment RA-1:



Summary for Subcatchment RA-2:

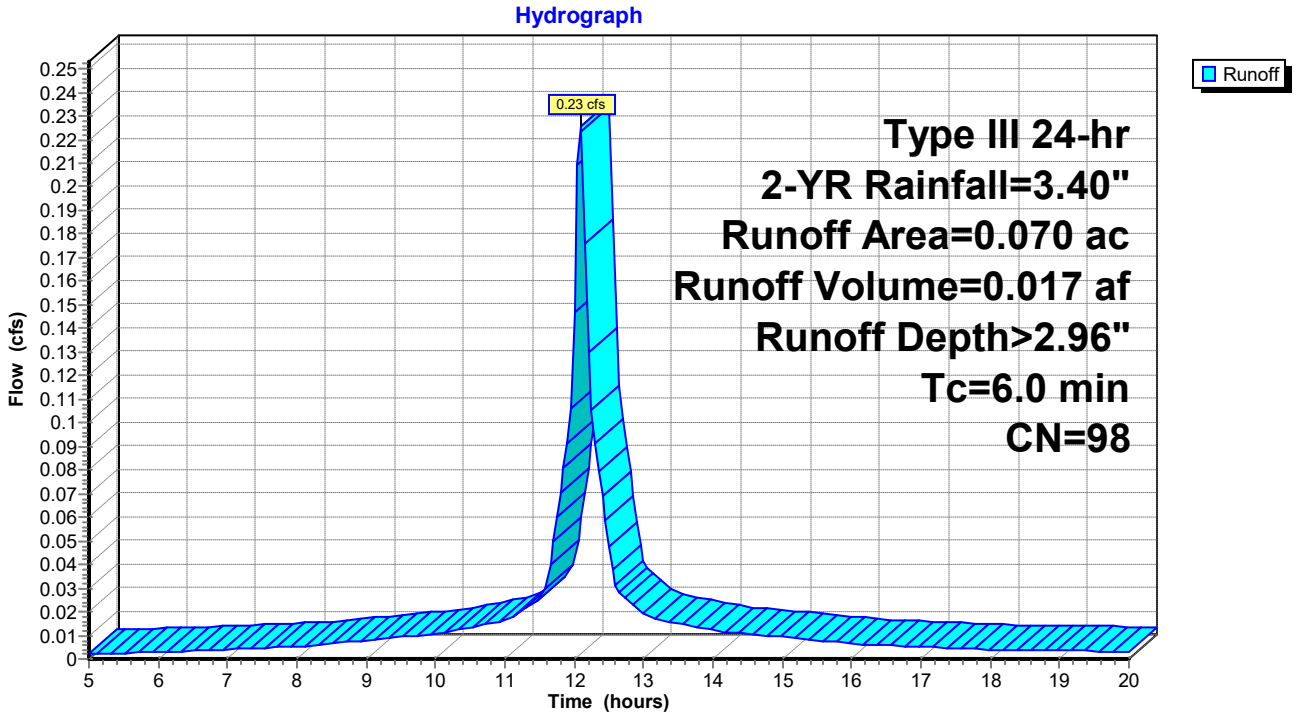
Runoff = 0.23 cfs @ 12.09 hrs, Volume= 0.017 af, Depth> 2.96"
Routed to Pond UG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.40"

	Area (ac)	CN	Description
*	0.070	98	Roof
	0.070		100.00% Impervious Area

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

Subcatchment RA-2:



Summary for Subcatchment RA-3:

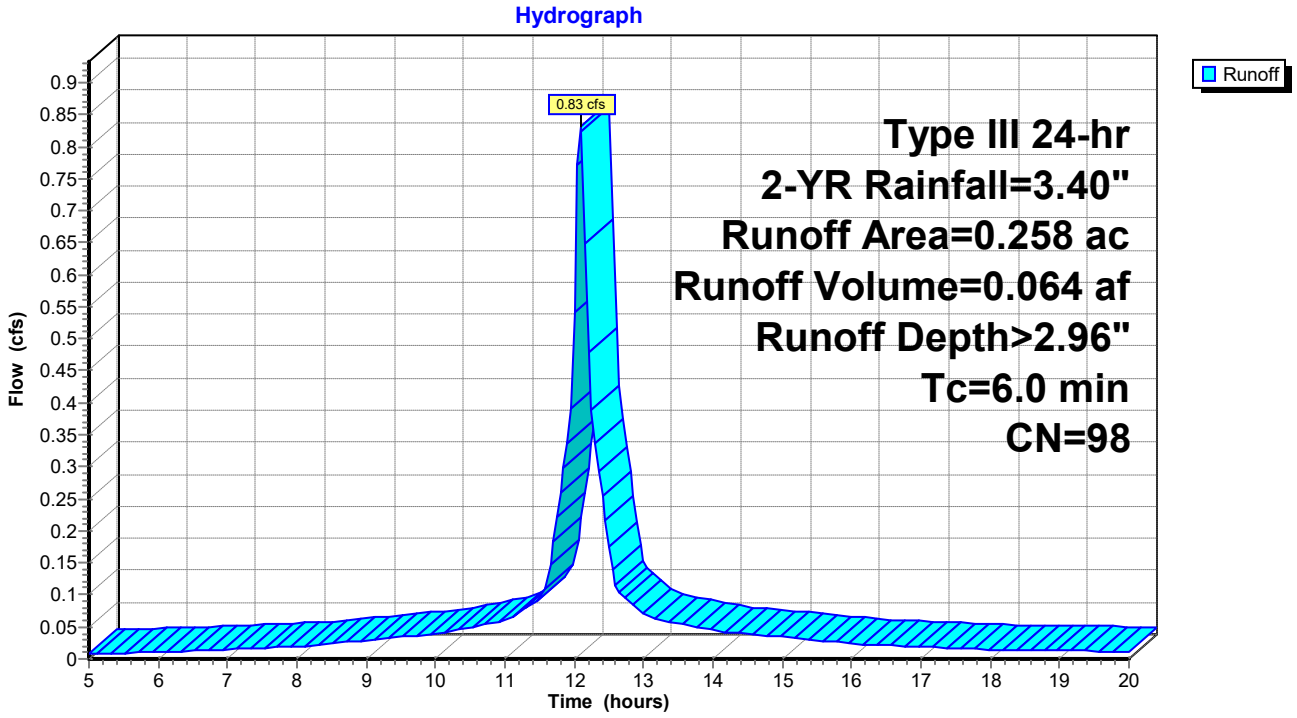
Runoff = 0.83 cfs @ 12.09 hrs, Volume= 0.064 af, Depth> 2.96"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.40"

	Area (ac)	CN	Description
*	0.258	98	Roof
	0.258		100.00% Impervious Area

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

Subcatchment RA-3:



Summary for Subcatchment RA-4:

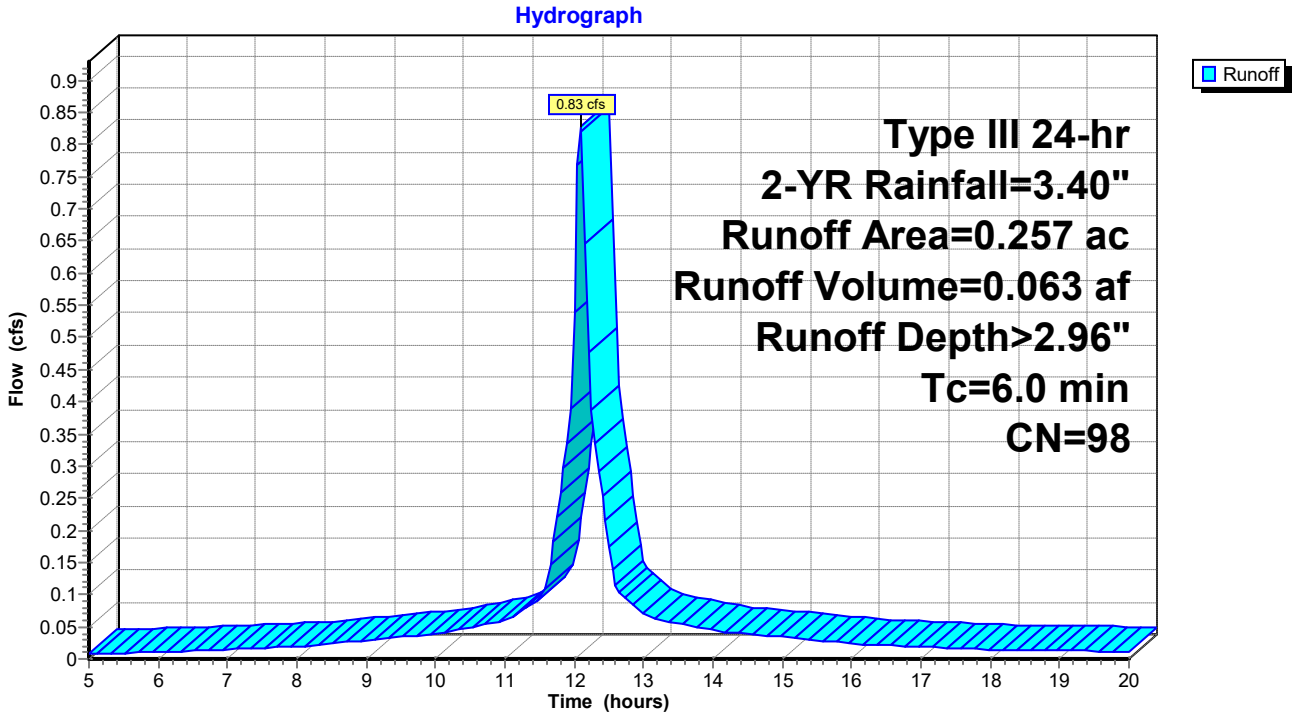
Runoff = 0.83 cfs @ 12.09 hrs, Volume= 0.063 af, Depth> 2.96"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.40"

	Area (ac)	CN	Description
*	0.257	98	Roof
	0.257		100.00% Impervious Area

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

Subcatchment RA-4:

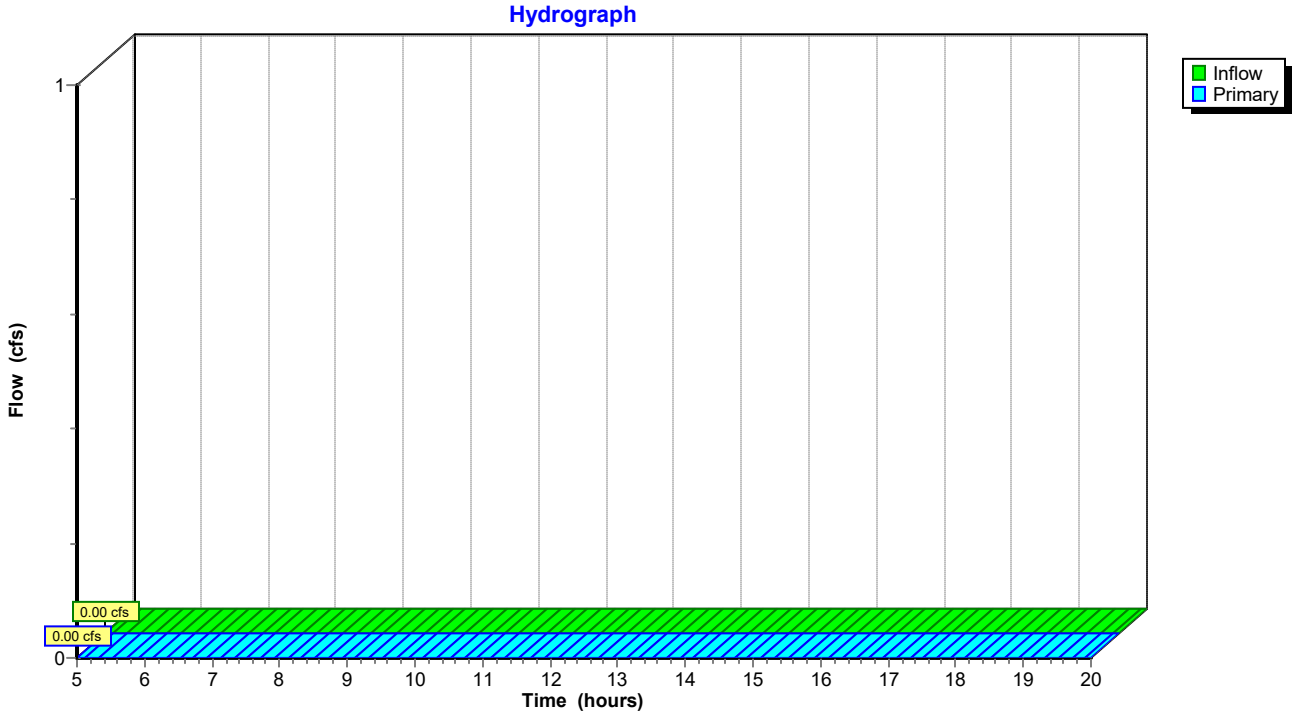


Summary for Pond AP: Surrounding Wetlands

Inflow	=	0.00 cfs @	5.00 hrs, Volume=	0.000 af
Primary	=	0.00 cfs @	5.00 hrs, Volume=	0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond AP: Surrounding Wetlands



Summary for Pond GT-1:

Inflow Area = 0.236 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-YR event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond AP : Surrounding Wetlands

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 20.00' @ 5.00 hrs Surf.Area= 862 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	20.00'	690 cf	**Gravel Trench Stage Storage (Prismatic)** Listed below (Recalc) 1,724 cf Overall x 40.0% Voids

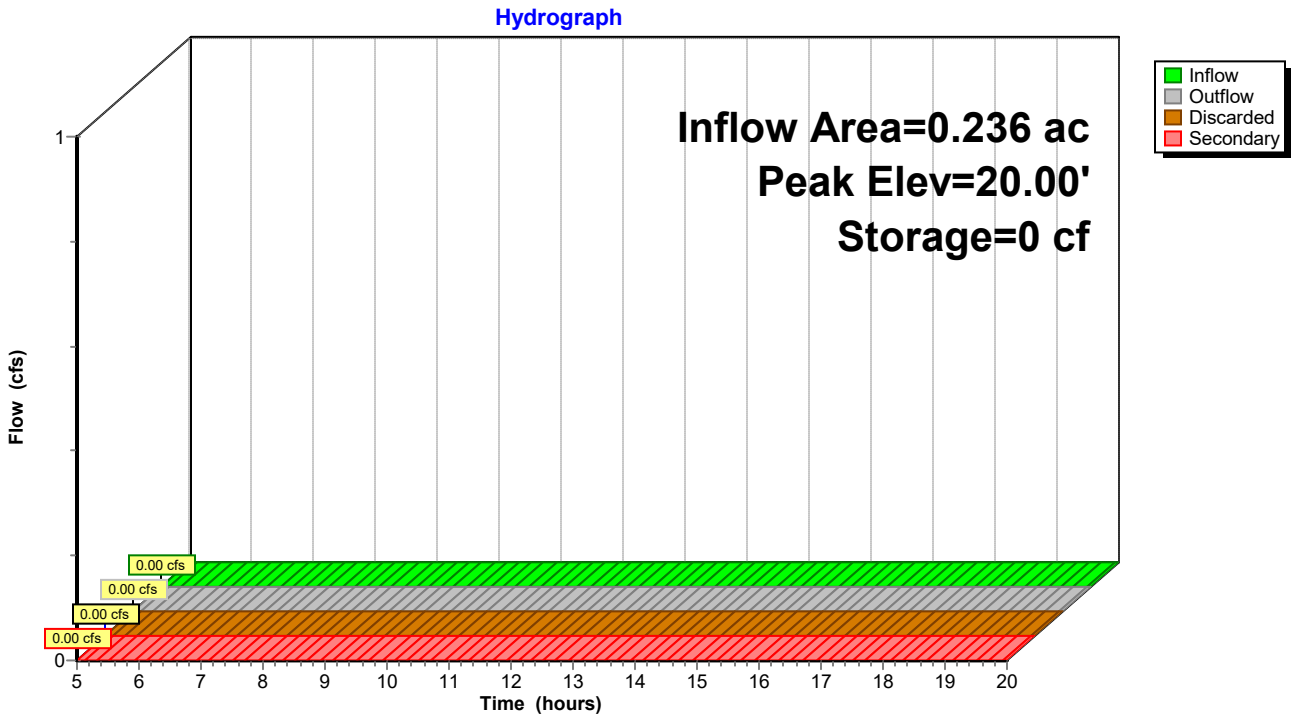
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
20.00	862	0	0
21.00	862	862	862
22.00	862	862	1,724

Device	Routing	Invert	Outlet Devices
#1	Secondary	22.00'	**590.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Trench (Overflow)** 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	20.00'	**2.410 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=20.00' (Free Discharge)
2=Exfiltration (Passes 0.00 cfs of 0.05 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=20.00' (Free Discharge)
1=Top of Trench (Overflow) (Controls 0.00 cfs)

Pond GT-1:


Hydrograph
Inflow Area=0.236 ac
Peak Elev=20.00'
Storage=0 cf
Inflow
Outflow
Discarded
Secondary
Flow (cfs)
Time (hours)
0.00 cfs
0.00 cfs
0.00 cfs
0.00 cfs
0
1
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

Summary for Pond GT-2:

Inflow Area = 0.072 ac, 1.39% Impervious, Inflow Depth = 0.00" for 2-YR event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond AP : Surrounding Wetlands

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 23.50' @ 5.00 hrs Surf.Area= 251 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	23.50'	151 cf	**Gravel Trench Stage Storage (Prismatic)** Listed below (Recalc) 377 cf Overall x 40.0% Voids

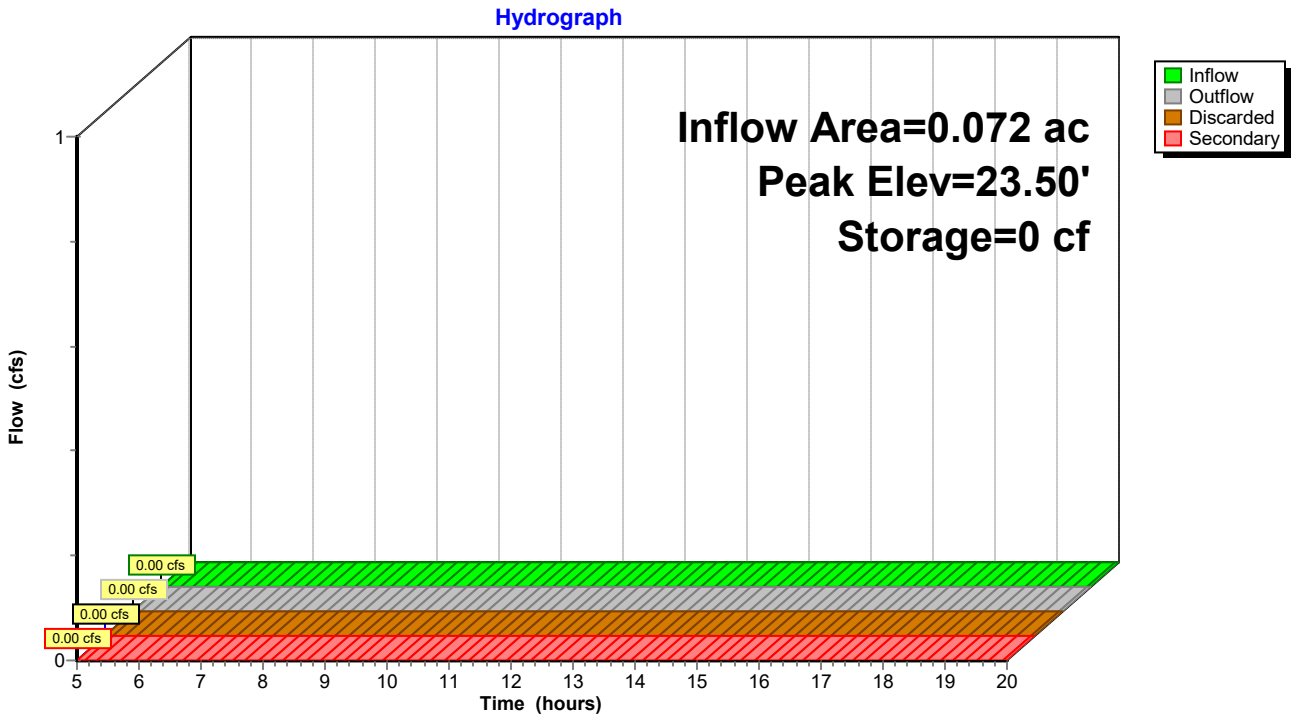
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
23.50	251	0	0
24.00	251	126	126
25.00	251	251	377

Device	Routing	Invert	Outlet Devices
#1	Secondary	25.00'	**65.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Trench (Overflow)** 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	23.50'	**2.410 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=23.50' (Free Discharge)
2=Exfiltration (Passes 0.00 cfs of 0.01 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=23.50' (Free Discharge)
1=Top of Trench (Overflow) (Controls 0.00 cfs)

Pond GT-2:


Hydrograph
Inflow Area=0.072 ac
Peak Elev=23.50'
Storage=0 cf
Inflow
Outflow
Discarded
Secondary
Flow (cfs)
Time (hours)
0.00 cfs
0.00 cfs
0.00 cfs
0.00 cfs

Summary for Pond GT-3:

Inflow Area = 0.030 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-YR event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-2 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 27.50' @ 5.00 hrs Surf.Area= 94 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	27.50'	56 cf	**Gravel Trench Stage Storage (Prismatic)** Listed below (Recalc) 141 cf Overall x 40.0% Voids

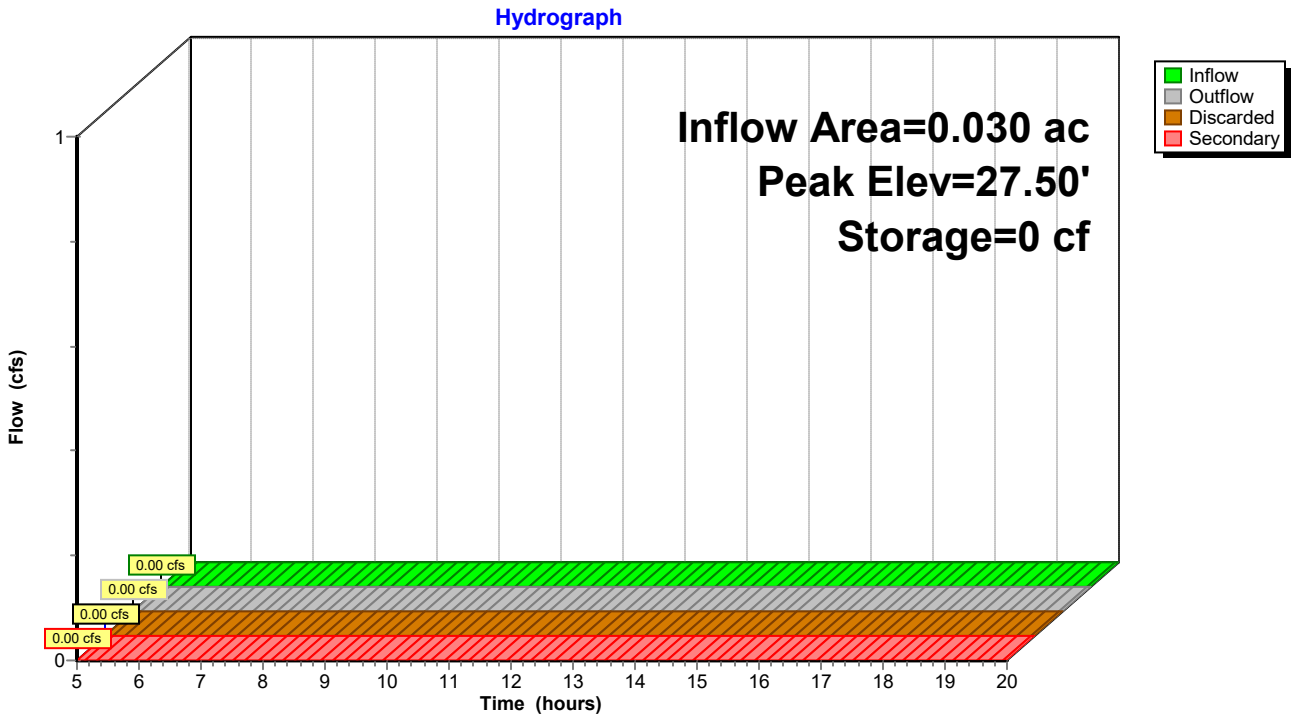
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.50	94	0	0
28.00	94	47	47
29.00	94	94	141

Device	Routing	Invert	Outlet Devices
#1	Secondary	29.00'	**30.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Trench (Overflow)** 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	27.50'	**2.410 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=27.50' (Free Discharge)
2=Exfiltration (Passes 0.00 cfs of 0.01 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=27.50' (Free Discharge)
1=Top of Trench (Overflow) (Controls 0.00 cfs)

Pond GT-3:


Hydrograph
Inflow Area=0.030 ac
Peak Elev=27.50'
Storage=0 cf
Inflow
Outflow
Discarded
Secondary
Flow (cfs)
Time (hours)
0.00 cfs
0.00 cfs
0.00 cfs
0.00 cfs
0
1
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

Summary for Pond GT-4:

Inflow Area = 0.126 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-YR event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-3 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 21.50' @ 5.00 hrs Surf.Area= 405 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	21.50'	243 cf	**Gravel Trench Stage Storage (Prismatic)** Listed below (Recalc) 608 cf Overall x 40.0% Voids

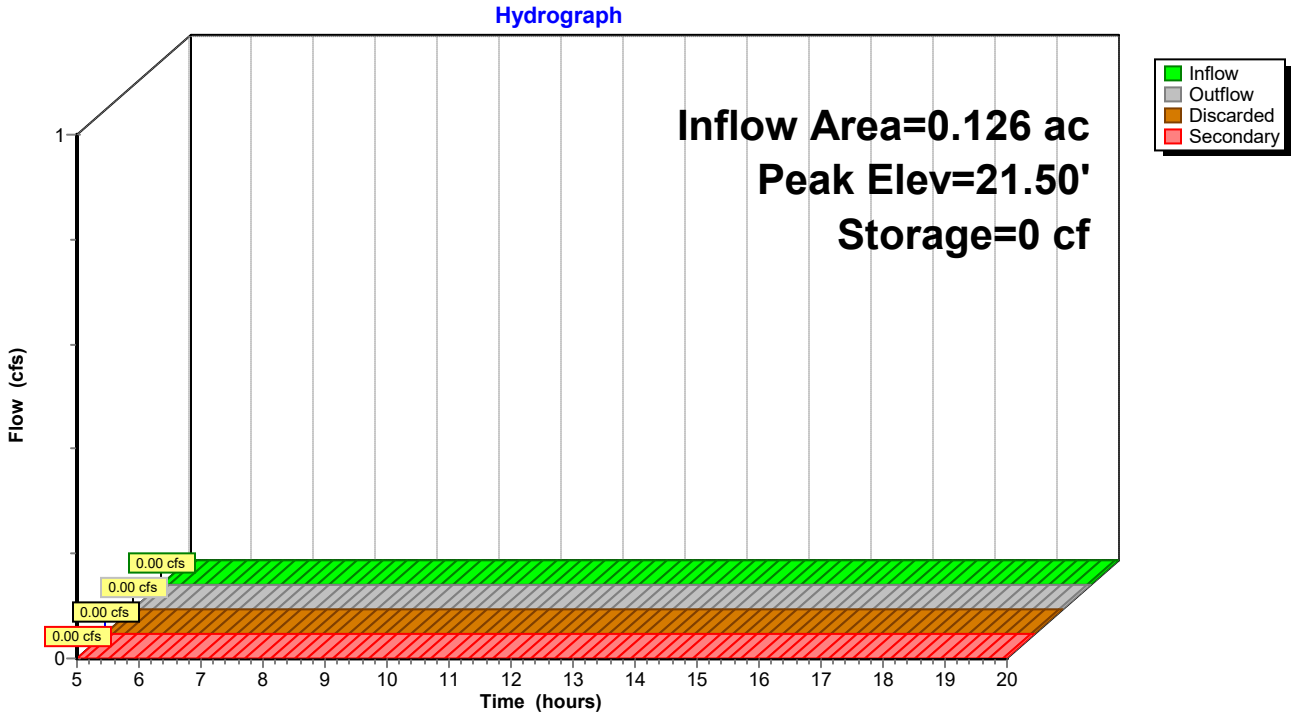
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
21.50	405	0	0
22.00	405	203	203
23.00	405	405	608

Device	Routing	Invert	Outlet Devices
#1	Secondary	23.00'	**74.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Trench (Overflow)** 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	21.50'	**2.410 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=21.50' (Free Discharge)
2=Exfiltration (Passes 0.00 cfs of 0.02 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=21.50' (Free Discharge)
1=Top of Trench (Overflow) (Controls 0.00 cfs)

Pond GT-4:


Hydrograph
Inflow Area=0.126 ac
Peak Elev=21.50'
Storage=0 cf
Inflow
Outflow
Discarded
Secondary
Flow (cfs)
Time (hours)
0.00 cfs
0.00 cfs
0.00 cfs
0.00 cfs
0
1
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

Summary for Pond GT-5:

Inflow Area = 0.113 ac, 34.51% Impervious, Inflow Depth > 1.02" for 2-YR event
Inflow = 0.14 cfs @ 12.10 hrs, Volume= 0.010 af
Outflow = 0.04 cfs @ 12.00 hrs, Volume= 0.010 af, Atten= 74%, Lag= 0.0 min
Discarded = 0.04 cfs @ 12.00 hrs, Volume= 0.010 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-4 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 21.39' @ 12.52 hrs Surf.Area= 640 sf Storage= 100 cf

Plug-Flow detention time= 19.3 min calculated for 0.010 af (99% of inflow)
Center-of-Mass det. time= 18.3 min (836.2 - 817.9)

Volume	Invert	Avail.Storage	Storage Description
#1	21.00'	1,024 cf	**Gravel Trench Stage Storage (Prismatic)** Listed below (Recalc) 2,560 cf Overall x 40.0% Voids

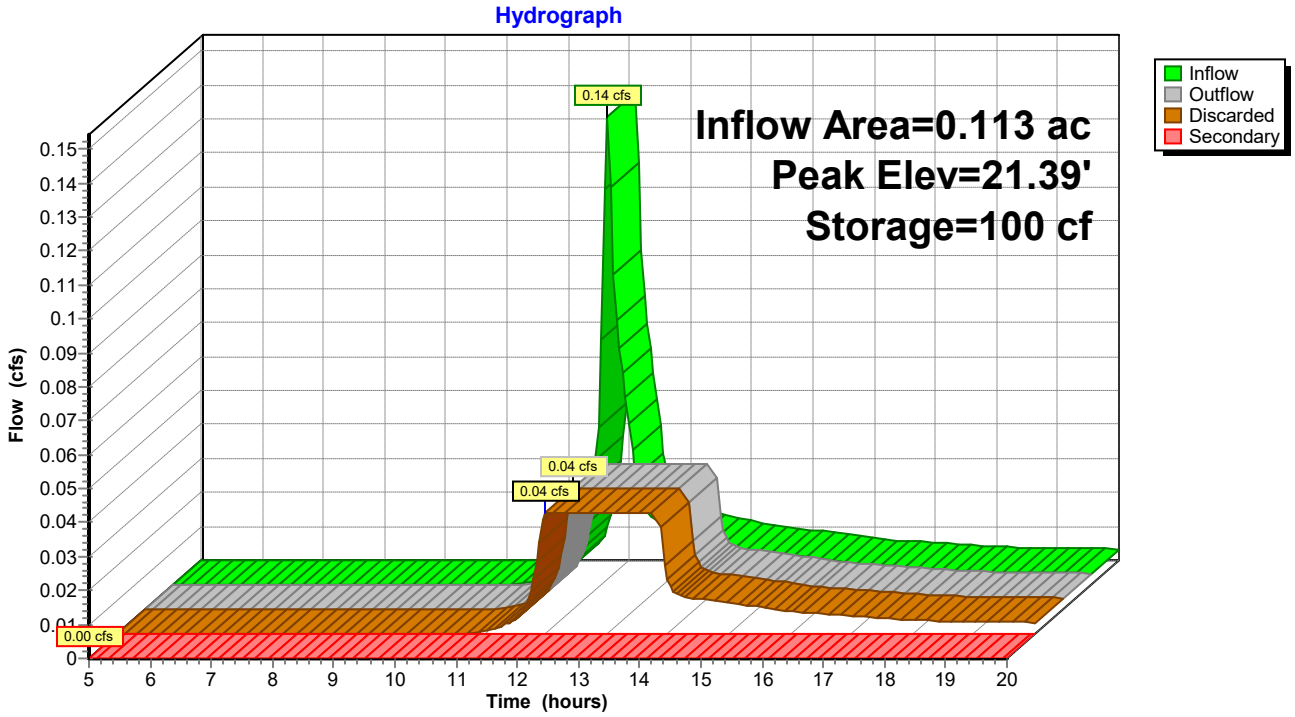
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
21.00	640	0	0
22.00	640	640	640
23.00	640	640	1,280
24.00	640	640	1,920
25.00	640	640	2,560

Device	Routing	Invert	Outlet Devices
#1	Secondary	25.00'	**136.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Trench (Overflow)** 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	21.00'	**2.410 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.04 cfs @ 12.00 hrs HW=21.06' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.04 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=21.00' (Free Discharge)
↑—**1=Top of Trench (Overflow)** (Controls 0.00 cfs)

Pond GT-5:


Hydrograph
Inflow Area=0.113 ac
Peak Elev=21.39'
Storage=100 cf
0.14 cfs
0.04 cfs
0.04 cfs
0.00 cfs
Inflow
Outflow
Discarded
Secondary
Flow (cfs)
Time (hours)
0.15
0.14
0.13
0.12
0.11
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

Summary for Pond GT-6:

Inflow Area = 0.093 ac, 17.20% Impervious, Inflow Depth > 0.27" for 2-YR event
Inflow = 0.01 cfs @ 12.37 hrs, Volume= 0.002 af
Outflow = 0.01 cfs @ 12.39 hrs, Volume= 0.002 af, Atten= 0%, Lag= 1.2 min
Discarded = 0.01 cfs @ 12.39 hrs, Volume= 0.002 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 24.01' @ 12.39 hrs Surf.Area= 252 sf Storage= 1 cf

Plug-Flow detention time= 1.1 min calculated for 0.002 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (882.1 - 881.3)

Volume	Invert	Avail.Storage	Storage Description
#1	24.00'	302 cf	**Gravel Trench Stage Storage (Prismatic)** Listed below (Recalc) 756 cf Overall x 40.0% Voids

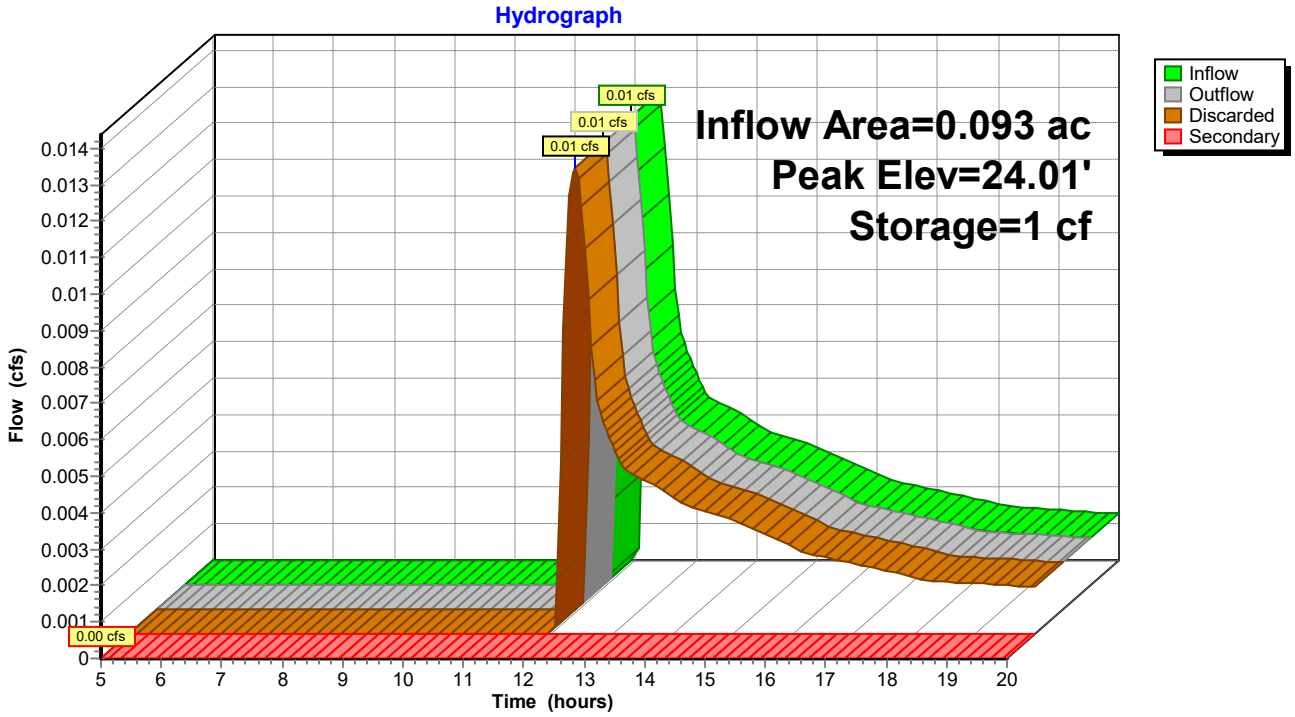
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
24.00	252	0	0
25.00	252	252	252
26.00	252	252	504
27.00	252	252	756

Device	Routing	Invert	Outlet Devices
#1	Secondary	27.00'	**78.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Trench (Overflow)** 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	24.00'	**7.716 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.05 cfs @ 12.39 hrs HW=24.01' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.05 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=24.00' (Free Discharge)
↑—**1=Top of Trench (Overflow)** (Controls 0.00 cfs)

Pond GT-6:


Hydrograph
Inflow Area=0.093 ac
Peak Elev=24.01'
Storage=1 cf
Inflow
Outflow
Discarded
Secondary
0.01 cfs
0.01 cfs
0.01 cfs
0.00 cfs
Flow (cfs)
0.014
0.013
0.012
0.011
0.01
0.009
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Time (hours)

Summary for Pond IB-1:

Inflow Area = 3.343 ac, 73.41% Impervious, Inflow Depth > 0.59" for 2-YR event
Inflow = 2.33 cfs @ 12.09 hrs, Volume= 0.164 af
Outflow = 0.44 cfs @ 12.56 hrs, Volume= 0.164 af, Atten= 81%, Lag= 28.1 min
Discarded = 0.44 cfs @ 12.56 hrs, Volume= 0.164 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond IB-2 :
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond IB-2 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 26.74' @ 12.56 hrs Surf.Area= 2,310 sf Storage= 2,310 cf

Plug-Flow detention time= 42.4 min calculated for 0.164 af (100% of inflow)
Center-of-Mass det. time= 41.6 min (821.2 - 779.6)

Volume	Invert	Avail.Storage	Storage Description
#1	25.50'	20,062 cf	**Infiltration Basin Stage Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.50	1,503	0	0
26.00	1,745	812	812
27.00	2,510	2,128	2,940
28.00	3,387	2,949	5,888
29.00	4,245	3,816	9,704
30.00	5,159	4,702	14,406
31.00	6,152	5,656	20,062

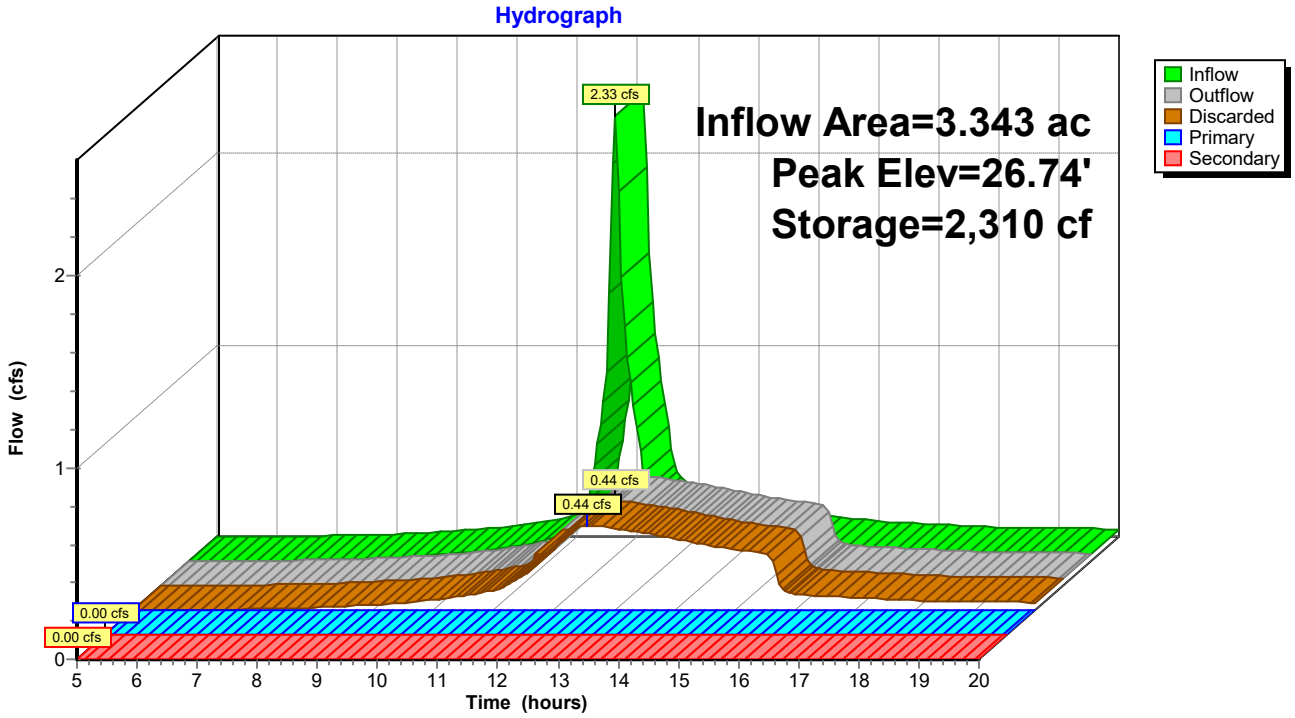
Device	Routing	Invert	Outlet Devices
#1	Secondary	31.00'	**320.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	25.50'	**8.270 in/hr Exfiltration over Surface area**
#3	Primary	27.00'	**6.0" Round 6" HDPE Pipe** L= 74.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 27.00' / 26.63' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#4	Device 3	30.00'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Grate X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads

Discarded OutFlow Max=0.44 cfs @ 12.56 hrs HW=26.74' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.44 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=25.50' (Free Discharge)
└**3=6" HDPE Pipe** (Controls 0.00 cfs)
└**4=18" Nyloplast Drain Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=25.50' (Free Discharge)
└**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond IB-1:



Summary for Pond IB-2:

Inflow Area = 3.541 ac, 70.01% Impervious, Inflow Depth > 0.00" for 2-YR event
Inflow = 0.00 cfs @ 15.20 hrs, Volume= 0.001 af
Outflow = 0.00 cfs @ 15.22 hrs, Volume= 0.001 af, Atten= 0%, Lag= 1.4 min
Discarded = 0.00 cfs @ 15.22 hrs, Volume= 0.001 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 28.50' @ 15.22 hrs Surf.Area= 503 sf Storage= 0 cf

Plug-Flow detention time= 1.4 min calculated for 0.001 af (99% of inflow)
Center-of-Mass det. time= 0.8 min (993.7 - 992.9)

Volume	Invert	Avail.Storage	Storage Description
#1	28.50'	2,225 cf	**Infiltration Basin Stage Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.50	503	0	0
29.00	1,212	429	429
30.00	2,380	1,796	2,225

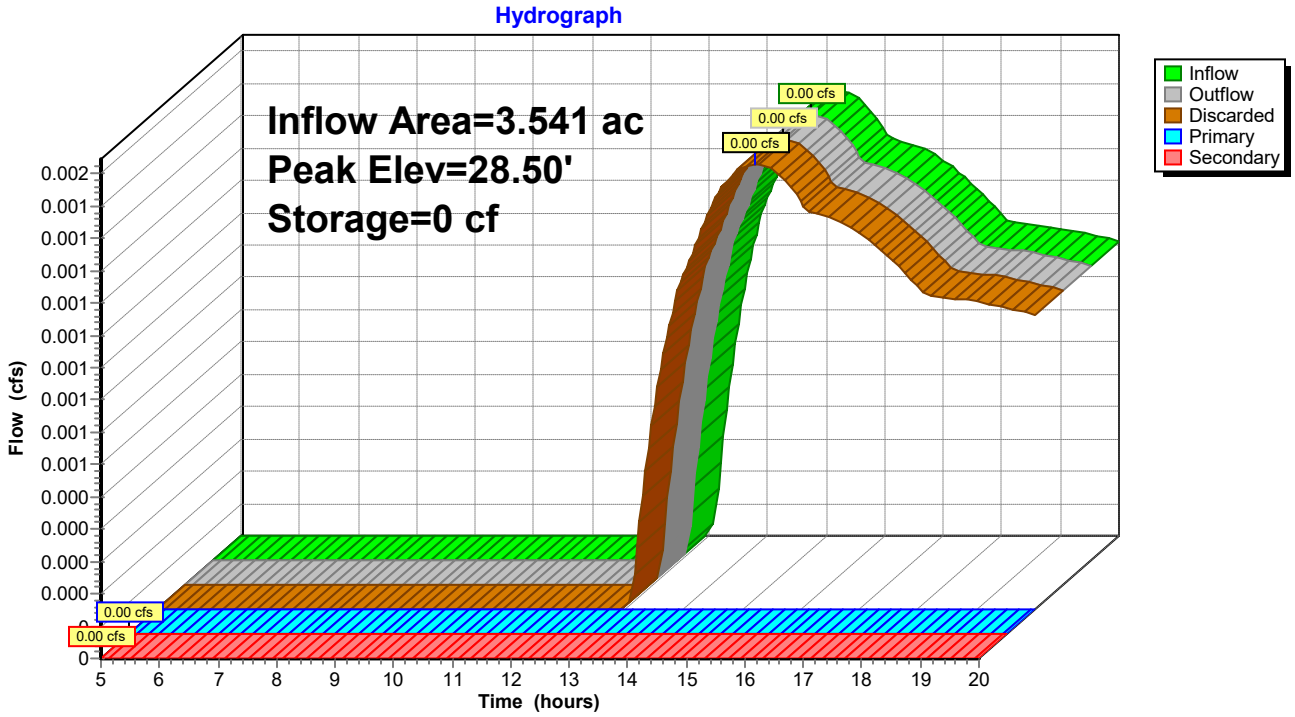
Device	Routing	Invert	Outlet Devices
#1	Secondary	30.00'	**335.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	28.50'	**7.716 in/hr Exfiltration over Surface area**
#3	Device 4	29.00'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Basin X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads
#4	Primary	26.63'	**6.0" Round 6" HDPE** L= 96.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 26.63' / 26.15' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

Discarded OutFlow Max=0.09 cfs @ 15.22 hrs HW=28.50' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 0.09 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=28.50' (Free Discharge)
↑**4=6" HDPE** (Passes 0.00 cfs of 0.74 cfs potential flow)
↑**3=18" Nyloplast Drain Basin** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=28.50' (Free Discharge)
↑**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond IB-2:


Hydrograph
Inflow Area=3.541 ac
Peak Elev=28.50'
Storage=0 cf
Inflow
Outflow
Discarded
Primary
Secondary
0.00 cfs
0.00 cfs
0.00 cfs
0.00 cfs
0.00 cfs
Flow (cfs)
0.002
0.001
0.001
0.001
0.001
0.001
0.001
0.001
0.001
0.000
0.000
0.000
0.000
0
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Time (hours)

Summary for Pond RG-1:

Inflow Area = 2.174 ac, 76.22% Impervious, Inflow Depth > 2.07" for 2-YR event
Inflow = 4.92 cfs @ 12.09 hrs, Volume= 0.375 af
Outflow = 1.13 cfs @ 12.53 hrs, Volume= 0.375 af, Atten= 77%, Lag= 26.0 min
Discarded = 1.13 cfs @ 12.53 hrs, Volume= 0.375 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond IB-1 :
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond IB-1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 27.89' @ 12.53 hrs Surf.Area= 4,066 sf Storage= 5,020 cf

Plug-Flow detention time= 37.3 min calculated for 0.375 af (100% of inflow)
Center-of-Mass det. time= 36.8 min (797.3 - 760.5)

Volume	Invert	Avail.Storage	Storage Description
#1	26.00'	36,814 cf	**Rain Garden Stage Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.00	1,626	0	0
27.00	2,502	2,064	2,064
27.50	3,473	1,494	3,558
28.00	4,237	1,928	5,485
29.00	5,896	5,067	10,552
30.00	7,760	6,828	17,380
31.00	9,713	8,737	26,116
32.00	11,682	10,698	36,814

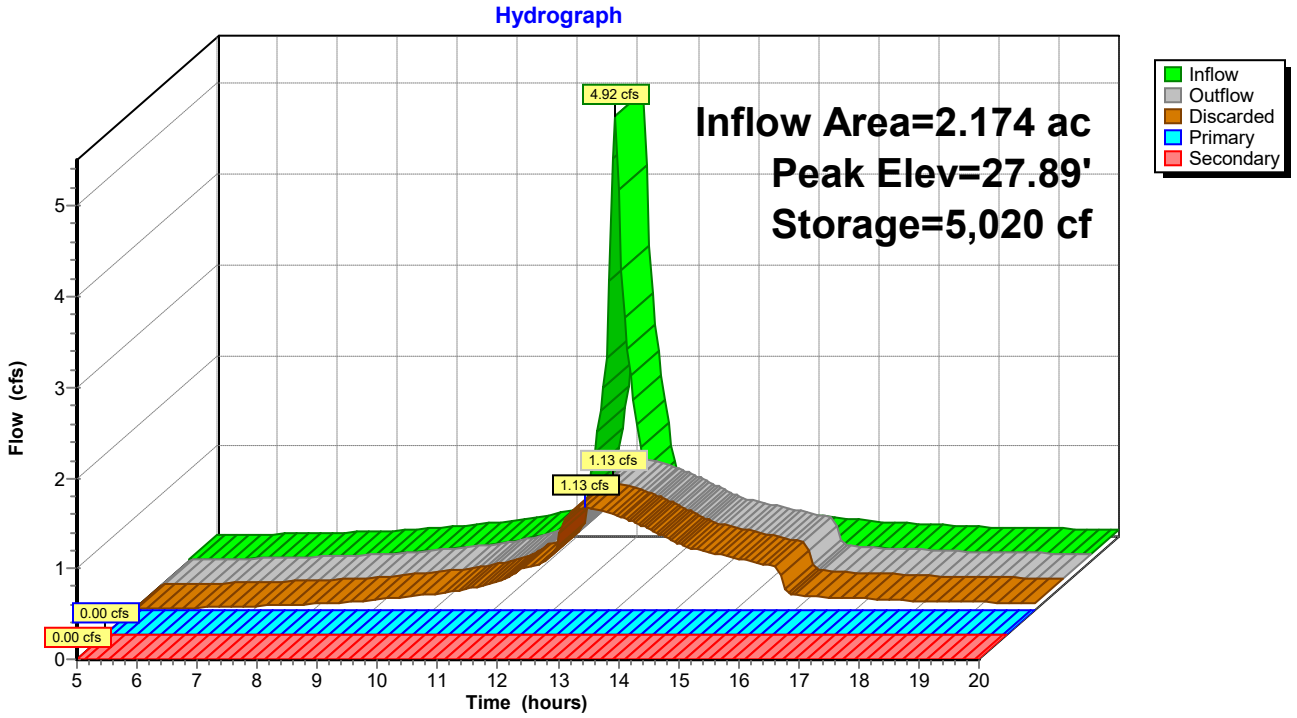
Device	Routing	Invert	Outlet Devices
#1	Secondary	32.00'	**655.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	26.00'	**12.033 in/hr Exfiltration over Surface area**
#3	Primary	27.07'	**6.0" Round 6" HDPE Pipe** L= 42.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 27.07' / 26.65' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#4	Device 3	30.50'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Grate X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads

Discarded OutFlow Max=1.13 cfs @ 12.53 hrs HW=27.89' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 1.13 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=26.00' (Free Discharge)
└**3=6" HDPE Pipe** (Controls 0.00 cfs)
└**4=18" Nyloplast Drain Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=26.00' (Free Discharge)
└**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond RG-1:



Summary for Pond SWB-1:

Inflow Area = 0.154 ac, 35.71% Impervious, Inflow Depth > 1.07" for 2-YR event
Inflow = 0.15 cfs @ 12.25 hrs, Volume= 0.014 af
Outflow = 0.15 cfs @ 12.26 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.9 min
Primary = 0.15 cfs @ 12.26 hrs, Volume= 0.012 af
Routed to Pond UG-1 :
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 30.92' @ 12.26 hrs Surf.Area= 257 sf Storage= 71 cf

Plug-Flow detention time= 45.9 min calculated for 0.012 af (90% of inflow)
Center-of-Mass det. time= 14.1 min (837.7 - 823.5)

Volume	Invert	Avail.Storage	Storage Description
#1	30.60'	510 cf	**Basin Stage Storage (Prismatic)** Listed below (Recalc)

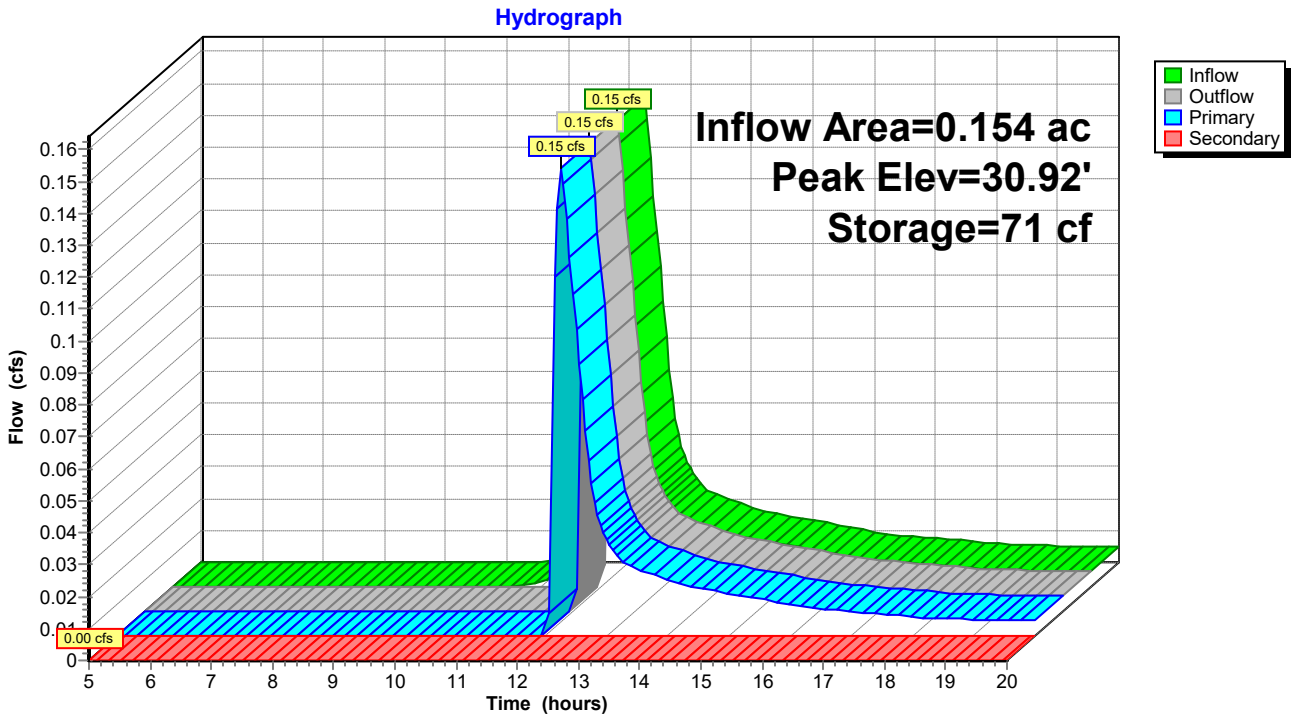
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
30.60	182	0	0
31.00	274	91	91
31.50	412	172	263
32.00	576	247	510

Device	Routing	Invert	Outlet Devices
#1	Secondary	32.00'	**114.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** 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	Primary	28.38'	**6.0" Round 6" HDPE Pipe** L= 23.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 28.38' / 28.15' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#3	Device 2	30.88'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Grate X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.14 cfs @ 12.26 hrs HW=30.92' (Free Discharge)
↑—**2=6" HDPE Pipe** (Passes 0.14 cfs of 1.13 cfs potential flow)
↑—**3=18" Nyloplast Drain Grate** (Weir Controls 0.14 cfs @ 0.69 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=30.60' (Free Discharge)
↑—**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond SWB-1:


Hydrograph
Inflow Area=0.154 ac
Peak Elev=30.92'
Storage=71 cf
0.15 cfs
0.15 cfs
0.15 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0.09
0.1
0.11
0.12
0.13
0.14
0.15
0.16
5
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Summary for Pond SWB-2:

Inflow Area = 0.101 ac, 71.29% Impervious, Inflow Depth > 1.72" for 2-YR event
Inflow = 0.21 cfs @ 12.09 hrs, Volume= 0.015 af
Outflow = 0.21 cfs @ 12.11 hrs, Volume= 0.012 af, Atten= 2%, Lag= 1.1 min
Primary = 0.21 cfs @ 12.11 hrs, Volume= 0.012 af
Routed to Pond UG-1 :
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond SWB-1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 30.43' @ 12.11 hrs Surf.Area= 367 sf Storage= 123 cf

Plug-Flow detention time= 71.2 min calculated for 0.012 af (83% of inflow)
Center-of-Mass det. time= 25.5 min (816.6 - 791.1)

Volume	Invert	Avail.Storage	Storage Description
#1	30.00'	410 cf	**Basin Stage Storage (Prismatic)** Listed below (Recalc)

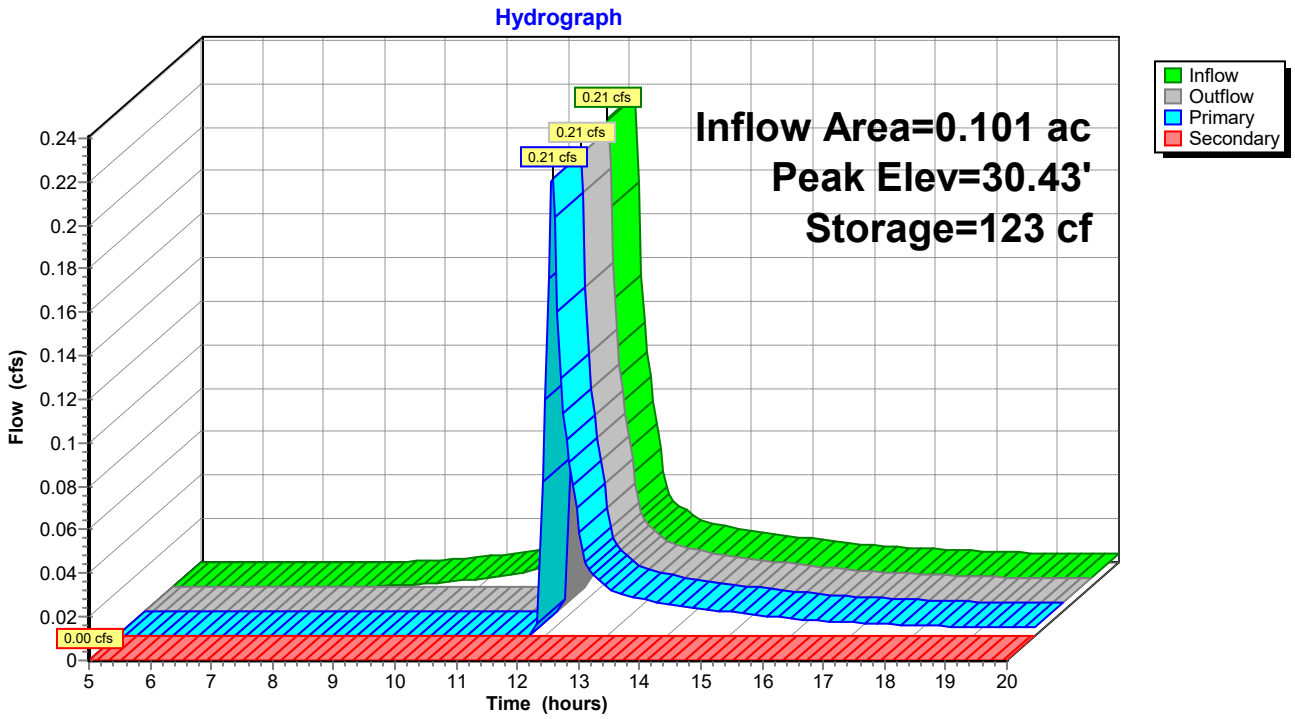
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
30.00	210	0	0
30.50	394	151	151
31.00	640	259	410

Device	Routing	Invert	Outlet Devices
#1	Secondary	31.00'	**164.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** 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	Primary	27.87'	**6.0" Round 6" HDPE Pipe** L= 24.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 27.87' / 27.63' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#3	Device 2	30.37'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Grate X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.20 cfs @ 12.11 hrs HW=30.43' (Free Discharge)
└**2=6" HDPE Pipe** (Passes 0.20 cfs of 1.13 cfs potential flow)
└**3=18" Nyloplast Drain Grate** (Weir Controls 0.20 cfs @ 0.77 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=30.00' (Free Discharge)
└**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond SWB-2:


Hydrograph
Inflow Area=0.101 ac
Peak Elev=30.43'
Storage=123 cf
Inflow
Outflow
Primary
Secondary
0.21 cfs
0.21 cfs
0.21 cfs
0.00 cfs
Flow (cfs)
0.24
0.22
0.2
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Time (hours)

Summary for Pond SWB-3:

Inflow Area = 0.052 ac, 44.23% Impervious, Inflow Depth > 0.43" for 2-YR event
Inflow = 0.02 cfs @ 12.12 hrs, Volume= 0.002 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond UG-1 :
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond SWB-2 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 30.80' @ 20.00 hrs Surf.Area= 336 sf Storage= 81 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	30.50'	824 cf	**Basin Stage Storage (Prismatic)** Listed below (Recalc)

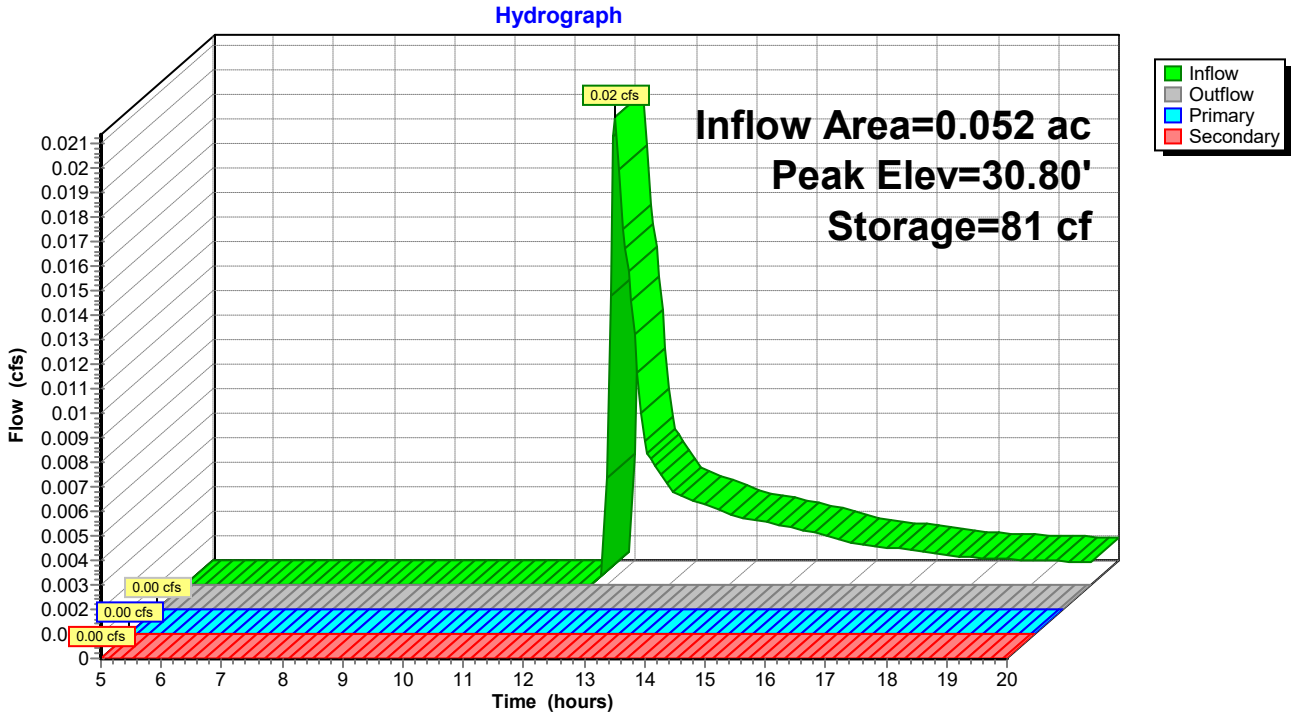
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
30.50	211	0	0
31.00	423	159	159
32.00	908	666	824

Device	Routing	Invert	Outlet Devices
#1	Secondary	32.00'	**168.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** 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	Primary	28.95'	**6.0" Round 6" HDPE Pipe** L= 11.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 28.95' / 27.84' S= 0.1009 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#3	Device 2	30.95'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Grate X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=30.50' (Free Discharge)
↑└**2=6" HDPE Pipe** (Passes 0.00 cfs of 0.85 cfs potential flow)
↑└**3=18" Nyloplast Drain Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=30.50' (Free Discharge)
↑└**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond SWB-3:


Hydrograph
Inflow Area=0.052 ac
Peak Elev=30.80'
Storage=81 cf
0.02 cfs
0.00 cfs
0.00 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0.021
0.02
0.019
0.018
0.017
0.016
0.015
0.014
0.013
0.012
0.011
0.01
0.009
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.0
0
5
6
7
8
9
10
11
12
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14
15
16
17
18
19
20

Summary for Pond SWB-4:

Inflow Area = 0.743 ac, 48.72% Impervious, Inflow Depth > 0.84" for 2-YR event
Inflow = 0.75 cfs @ 12.10 hrs, Volume= 0.052 af
Outflow = 0.31 cfs @ 12.37 hrs, Volume= 0.049 af, Atten= 58%, Lag= 16.5 min
Primary = 0.31 cfs @ 12.37 hrs, Volume= 0.049 af
Routed to Pond UG-1 :
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-2 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 27.47' @ 12.37 hrs Surf.Area= 0.035 ac Storage= 0.014 af

Plug-Flow detention time= 50.1 min calculated for 0.049 af (95% of inflow)
Center-of-Mass det. time= 32.1 min (846.2 - 814.1)

Volume	Invert	Avail.Storage	Storage Description
#1	27.00'	0.164 af	**Stormwater Management Basin Storage (Prismatic)** Listed below (Recalc)

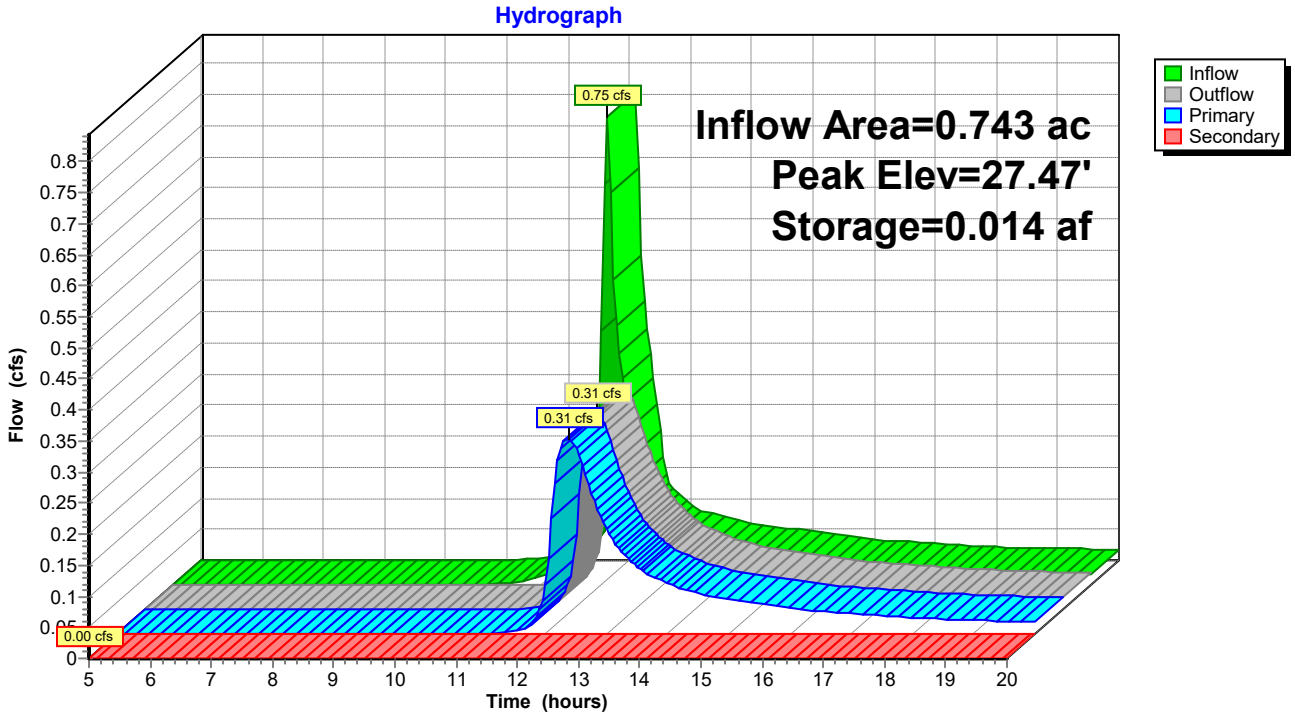
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
27.00	0.026	0.000	0.000
28.00	0.044	0.035	0.035
29.00	0.064	0.054	0.089
30.00	0.086	0.075	0.164

Device	Routing	Invert	Outlet Devices
#1	Secondary	30.00'	**318.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** 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	Primary	26.95'	**8.0" Round 8" HDPE** L= 44.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 26.95' / 26.73' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#3	Device 2	28.95'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Grate X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads
#4	Device 2	27.00'	**6.0" Round 6" HDPE Inlet Pipe** L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 27.00' / 26.95' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

Primary OutFlow Max=0.31 cfs @ 12.37 hrs HW=27.47' (Free Discharge)
└**2=8" HDPE** (Passes 0.31 cfs of 0.53 cfs potential flow)
└**3=18" Nyloplast Drain Grate** (Controls 0.00 cfs)
└**4=6" HDPE Inlet Pipe** (Barrel Controls 0.31 cfs @ 2.11 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=27.00' (Free Discharge)
└**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond SWB-4:


Hydrograph
Inflow Area=0.743 ac
Peak Elev=27.47'
Storage=0.014 af
0.75 cfs
0.31 cfs
0.31 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
0.55
0.6
0.65
0.7
0.75
0.8
5
6
7
8
9
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20

Summary for Pond UG-1:

Inflow Area = 1.185 ac, 54.60% Impervious, Inflow Depth > 1.08" for 2-YR event
Inflow = 0.89 cfs @ 12.14 hrs, Volume= 0.107 af
Outflow = 0.66 cfs @ 12.10 hrs, Volume= 0.107 af, Atten= 25%, Lag= 0.0 min
Discarded = 0.66 cfs @ 12.10 hrs, Volume= 0.107 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 21.66' @ 12.38 hrs Surf.Area= 0.048 ac Storage= 0.004 af

Plug-Flow detention time= 1.9 min calculated for 0.107 af (100% of inflow)
Center-of-Mass det. time= 1.6 min (809.8 - 808.2)

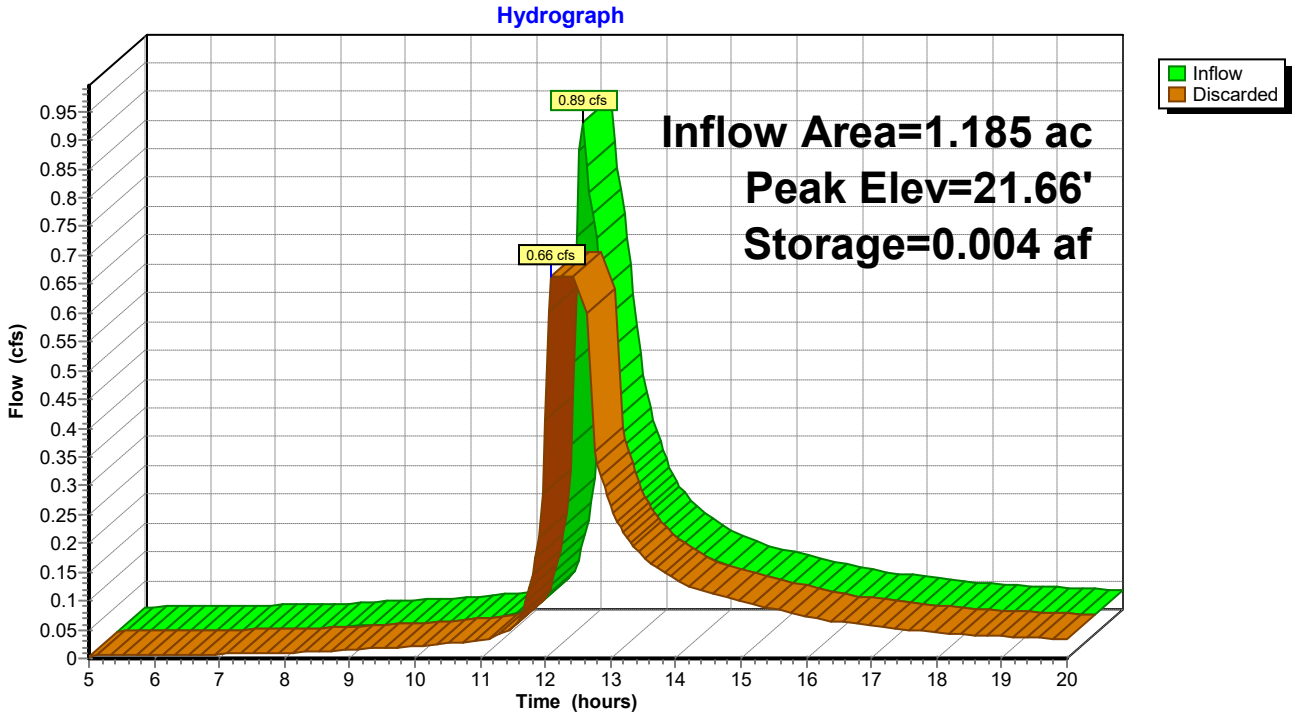
Volume	Invert	Avail.Storage	Storage Description
#1A	21.44'	0.069 af	**29.92'W x 70.23'L x 5.50'H Field A** 0.265 af Overall - 0.094 af Embedded = 0.172 af x 40.0% Voids
#2A	22.19'	0.094 af	**ADS_StormTech MC-3500 d +Cap** x 36 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 36 Chambers in 4 Rows Cap Storage= 14.9 cf x 2 x 4 rows = 119.2 cf
		0.162 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	21.44'	**13.652 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.66 cfs @ 12.10 hrs HW=21.52' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.66 cfs)

Pond UG-1:


Hydrograph
Inflow
Discarded
0.89 cfs
0.66 cfs
Inflow Area=1.185 ac
Peak Elev=21.66'
Storage=0.004 af
Flow (cfs)
Time (hours)
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
0.55
0.6
0.65
0.7
0.75
0.8
0.85
0.9
0.95
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

Summary for Subcatchment PR-01:

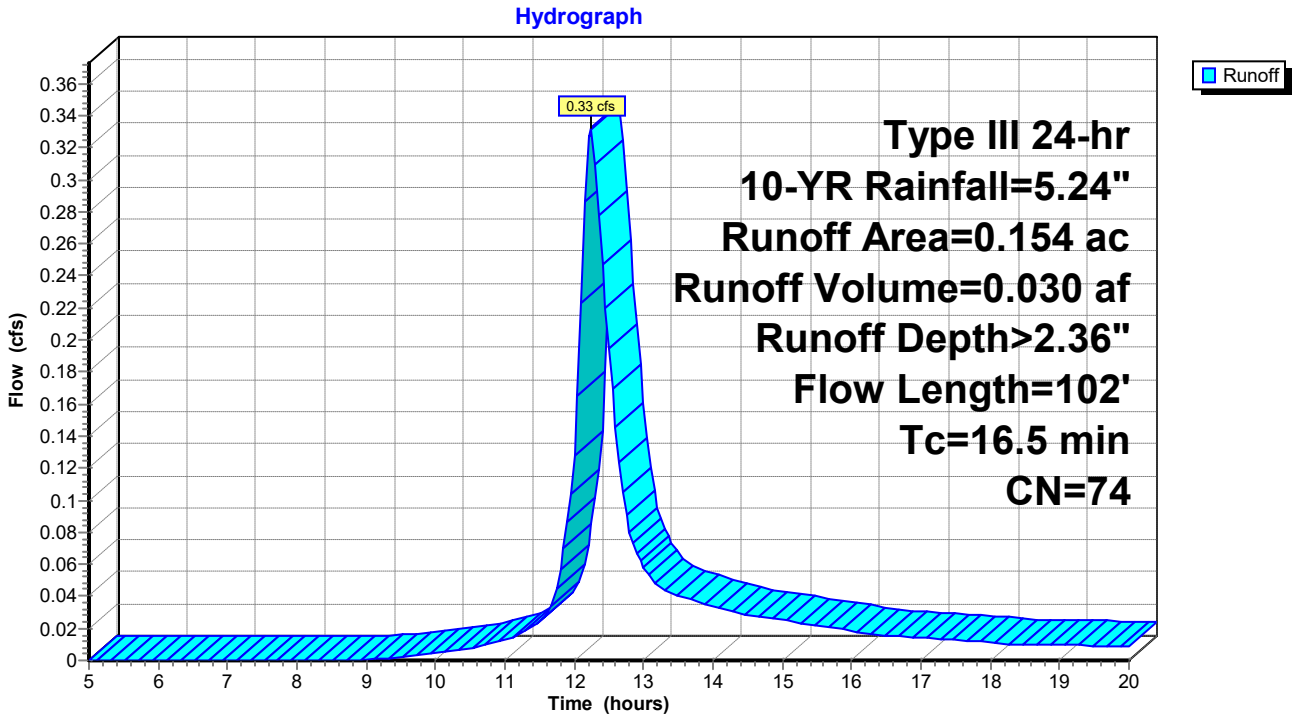
Runoff = 0.33 cfs @ 12.23 hrs, Volume= 0.030 af, Depth> 2.36"
Routed to Pond SWB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

	Area (ac)	CN	Description
	0.099	61	>75% Grass cover, Good, HSG B
*	0.055	98	Paved
	0.154	74	Weighted Average
	0.099		64.29% Pervious Area
	0.055		35.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	100	0.0050	0.10		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.0	2	0.0500	1.57		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
16.5	102	Total			

Subcatchment PR-01:



Summary for Subcatchment PR-02:

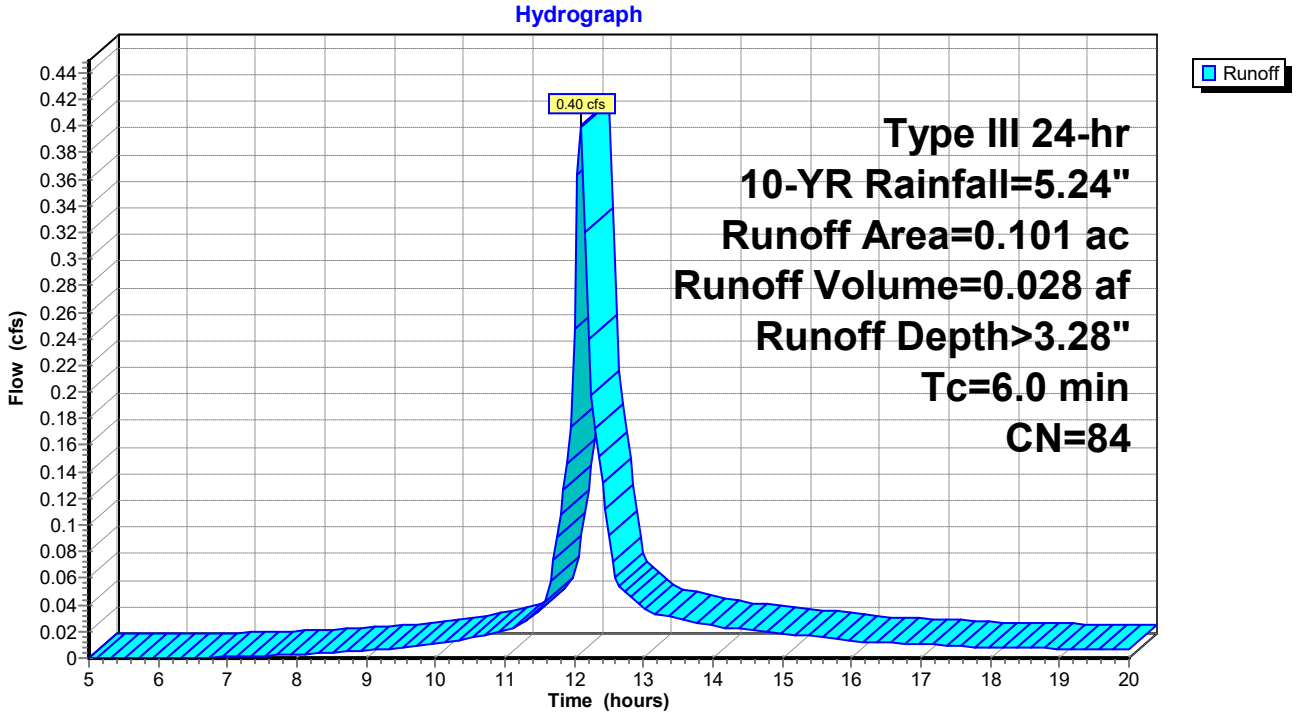
Runoff = 0.40 cfs @ 12.09 hrs, Volume= 0.028 af, Depth> 3.28"
Routed to Pond SWB-2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

	Area (ac)	CN	Description
	0.009	30	Meadow, non-grazed, HSG A
	0.019	58	Meadow, non-grazed, HSG B
	0.001	61	>75% Grass cover, Good, HSG B
*	0.072	98	Paved
	0.101	84	Weighted Average
	0.029		28.71% Pervious Area
	0.072		71.29% Impervious Area

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

Subcatchment PR-02:



Summary for Subcatchment PR-03:

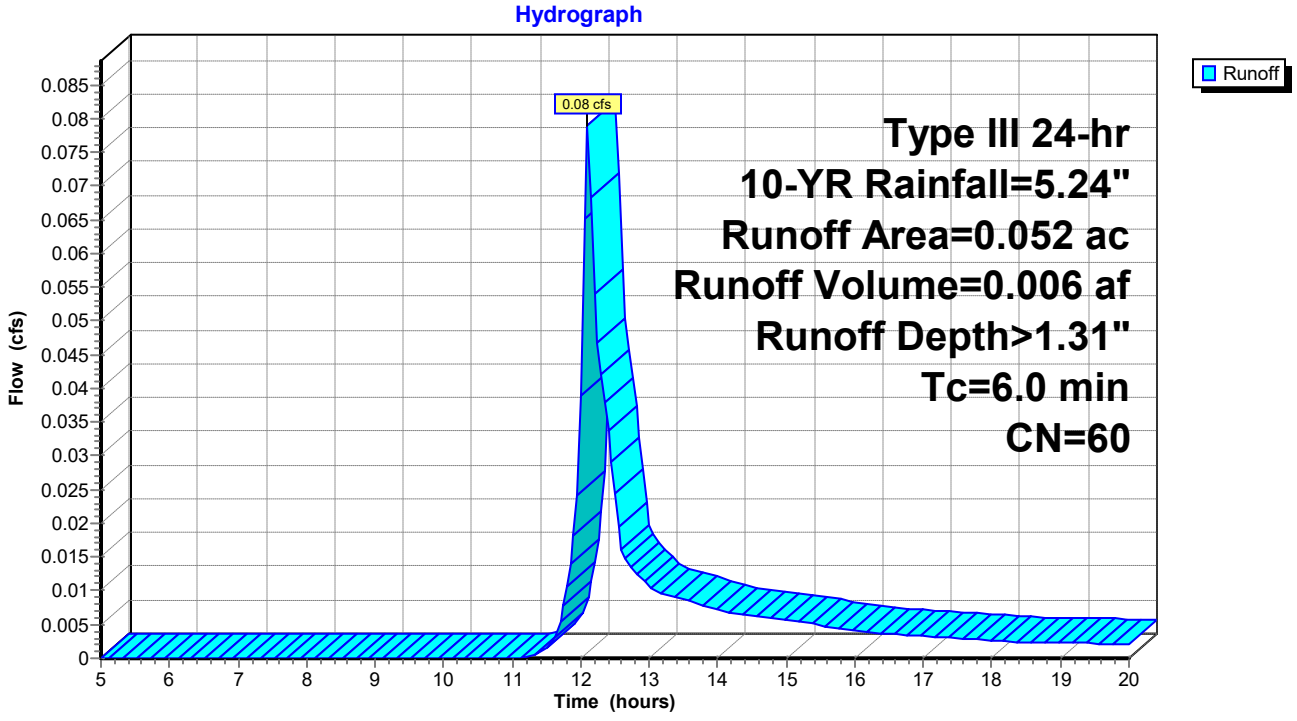
Runoff = 0.08 cfs @ 12.10 hrs, Volume= 0.006 af, Depth> 1.31"
Routed to Pond SWB-3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

	Area (ac)	CN	Description
	0.029	30	Meadow, non-grazed, HSG A
*	0.023	98	Paved
	0.052	60	Weighted Average
	0.029		55.77% Pervious Area
	0.023		44.23% Impervious Area

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

Subcatchment PR-03:



Summary for Subcatchment PR-04:

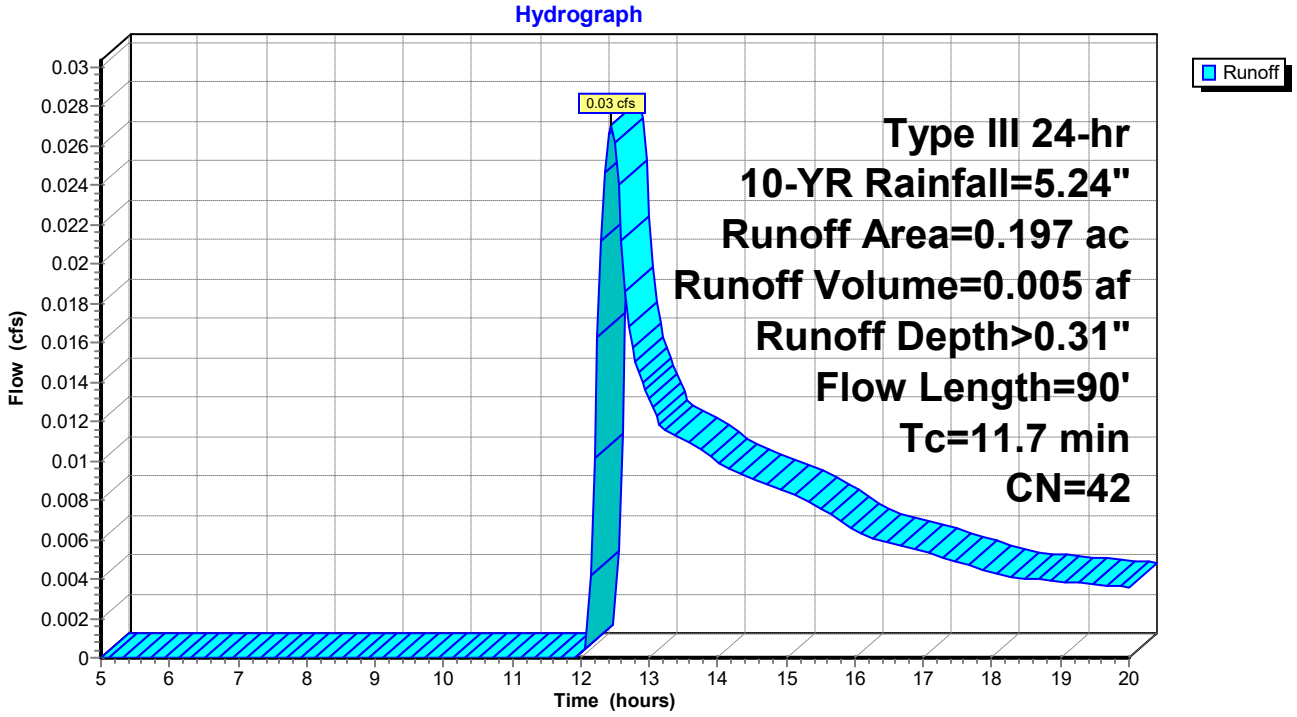
Runoff = 0.03 cfs @ 12.44 hrs, Volume= 0.005 af, Depth> 0.31"
Routed to Pond SWB-4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

	Area (ac)	CN	Description
	0.097	30	Meadow, non-grazed, HSG A
	0.076	39	>75% Grass cover, Good, HSG A
*	0.024	98	Paved
	0.197	42	Weighted Average
	0.173		87.82% Pervious Area
	0.024		12.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	81	0.0200	0.12		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.40"
0.0	7	0.0290	3.46		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.0	2	0.3500	4.14		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
11.7	90	Total			

Subcatchment PR-04:



Summary for Subcatchment PR-05:

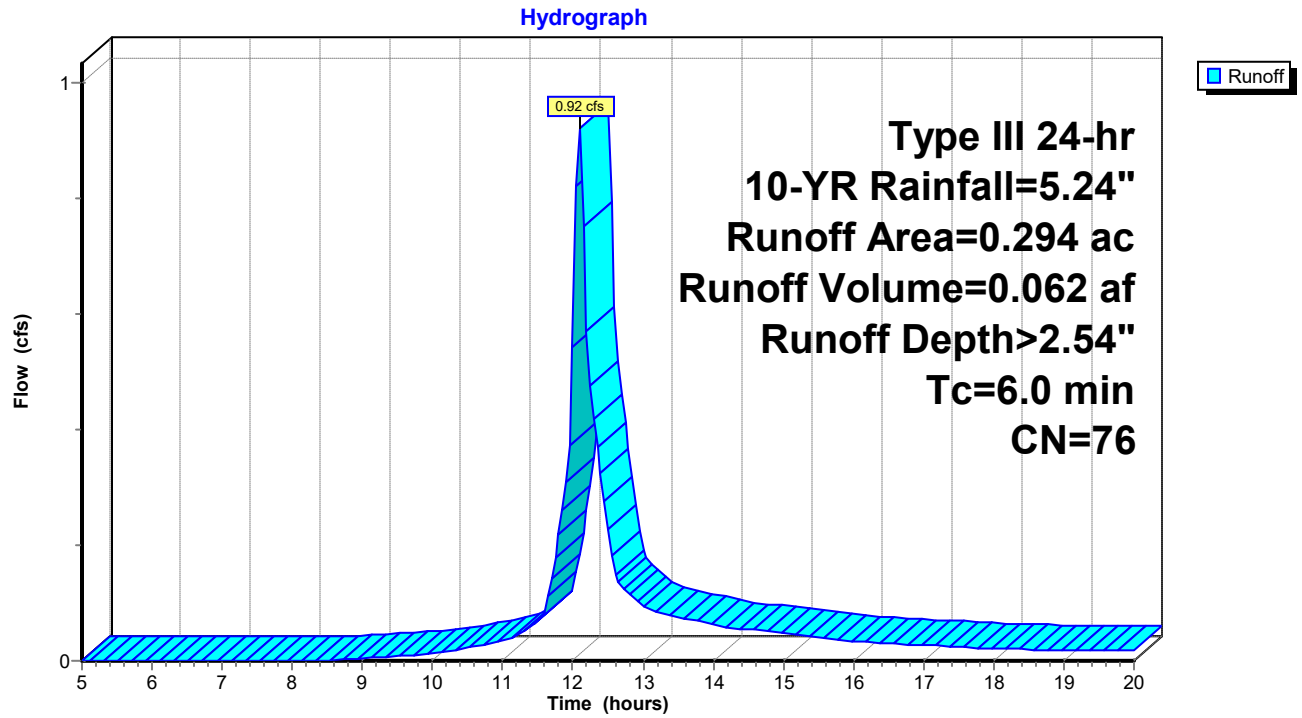
Runoff = 0.92 cfs @ 12.09 hrs, Volume= 0.062 af, Depth> 2.54"
Routed to Pond SWB-4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

	Area (ac)	CN	Description
	0.083	39	>75% Grass cover, Good, HSG A
	0.023	30	Meadow, non-grazed, HSG A
*	0.188	98	Paved
	0.294	76	Weighted Average
	0.106		36.05% Pervious Area
	0.188		63.95% Impervious Area

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

Subcatchment PR-05:



Summary for Subcatchment PR-06:

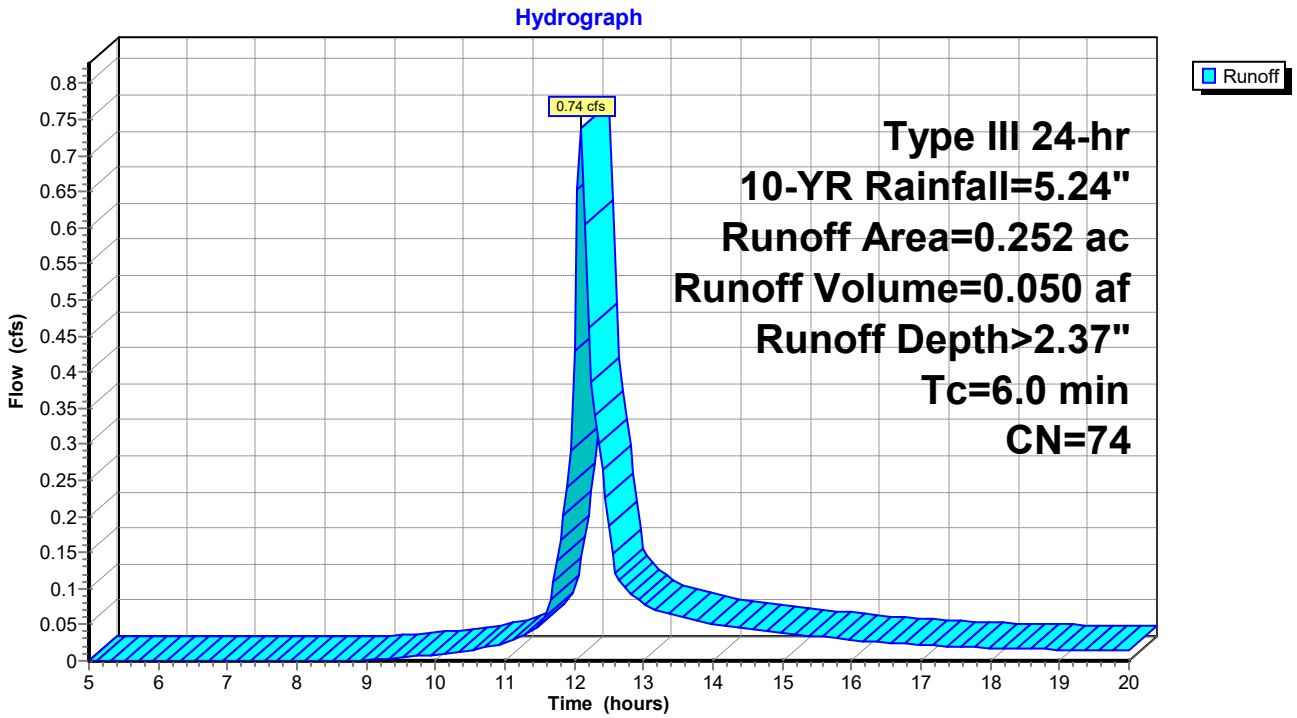
Runoff = 0.74 cfs @ 12.09 hrs, Volume= 0.050 af, Depth> 2.37"
Routed to Pond SWB-4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

	Area (ac)	CN	Description
	0.017	30	Meadow, non-grazed, HSG A
	0.085	39	>75% Grass cover, Good, HSG A
*	0.150	98	Paved
	0.252	74	Weighted Average
	0.102		40.48% Pervious Area
	0.150		59.52% Impervious Area

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

Subcatchment PR-06:



Summary for Subcatchment PR-07:

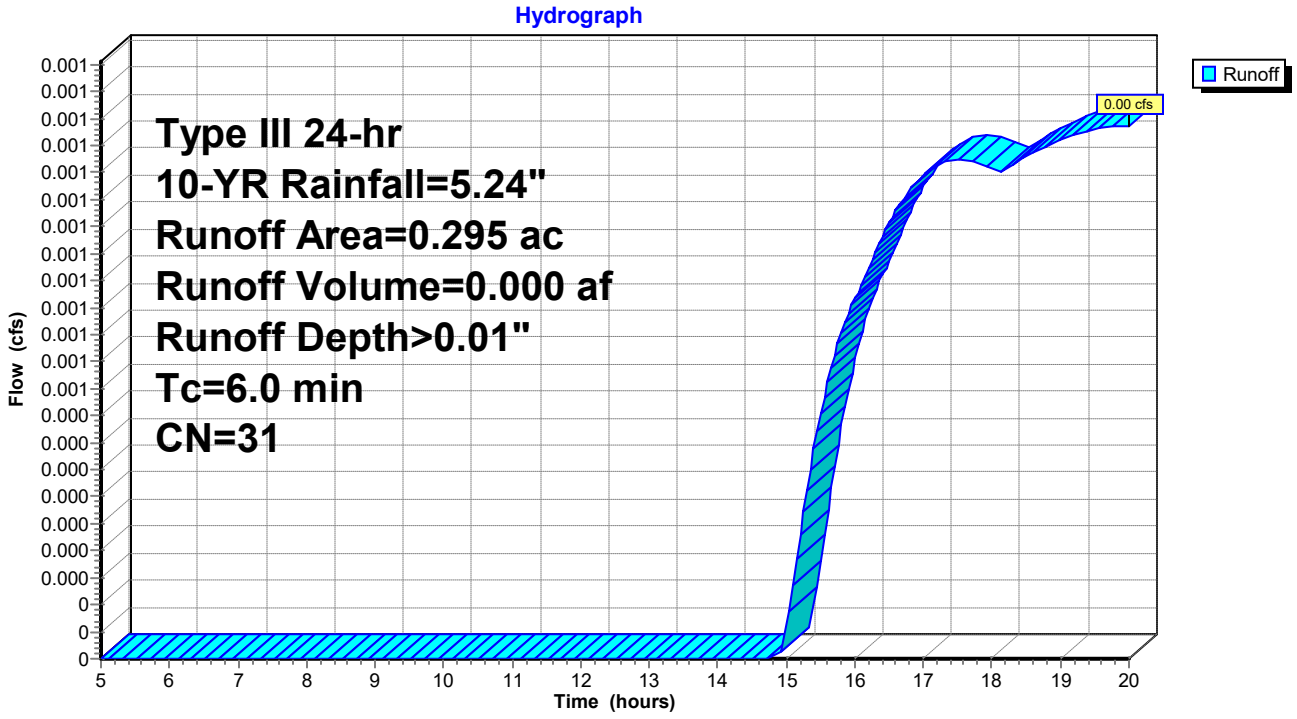
Runoff = 0.00 cfs @ 20.00 hrs, Volume= 0.000 af, Depth> 0.01"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

Area (ac)	CN	Description
0.283	30	Brush, Good, HSG A
0.012	48	Brush, Good, HSG B
0.295	31	Weighted Average
0.295		100.00% Pervious Area

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

Subcatchment PR-07:



Summary for Subcatchment PR-08:

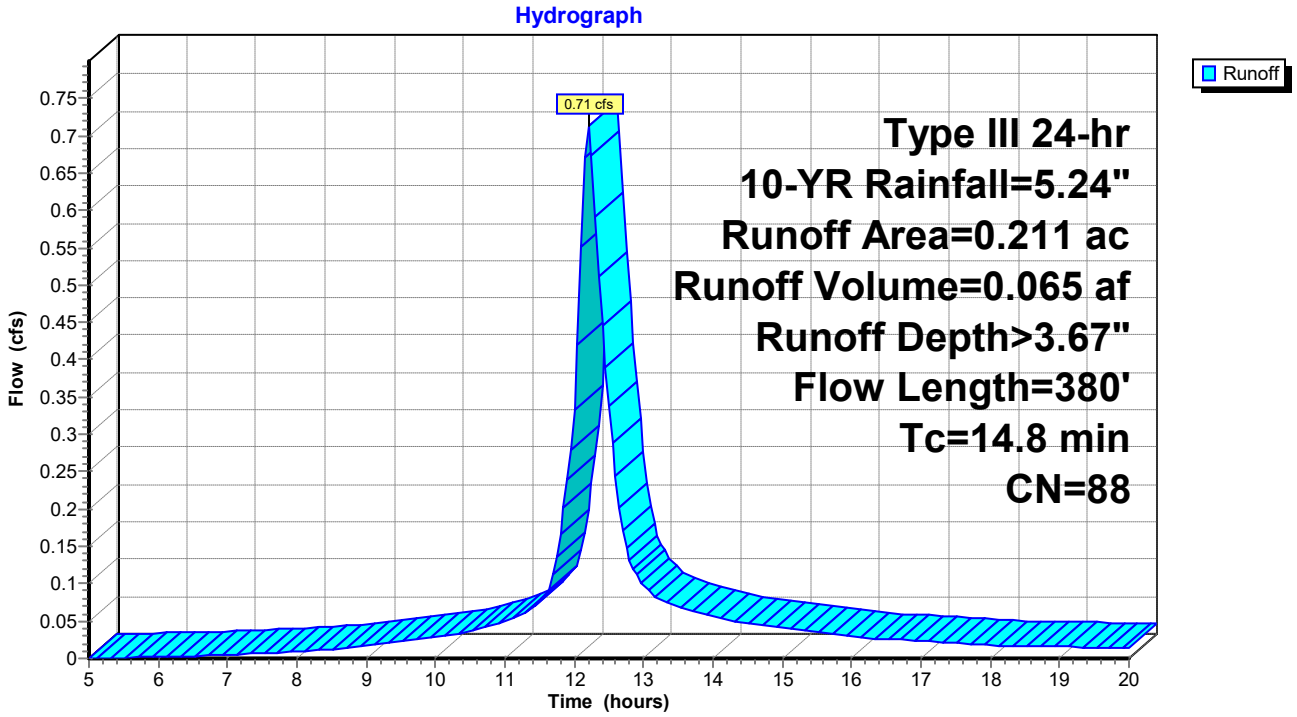
Runoff = 0.71 cfs @ 12.20 hrs, Volume= 0.065 af, Depth> 3.67"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

	Area (ac)	CN	Description
	0.018	39	>75% Grass cover, Good, HSG A
	0.031	61	>75% Grass cover, Good, HSG B
	0.000	58	Meadow, non-grazed, HSG B
*	0.162	98	Paved
	0.211	88	Weighted Average
	0.049		23.22% Pervious Area
	0.162		76.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	100	0.0140	0.15		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
3.0	126	0.0100	0.70		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.0	9	0.0220	3.01		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
0.2	18	0.0500	1.57		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
0.2	39	0.0290	3.46		**Shallow Concentrated Flow, E-F** Paved Kv= 20.3 fps
0.1	28	0.0050	3.21	2.52	**Pipe Channel, F-G** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
0.3	60	0.0050	3.47	2.73	**Pipe Channel, G-H** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
14.8	380	Total			

Subcatchment PR-08:



Summary for Subcatchment PR-09:

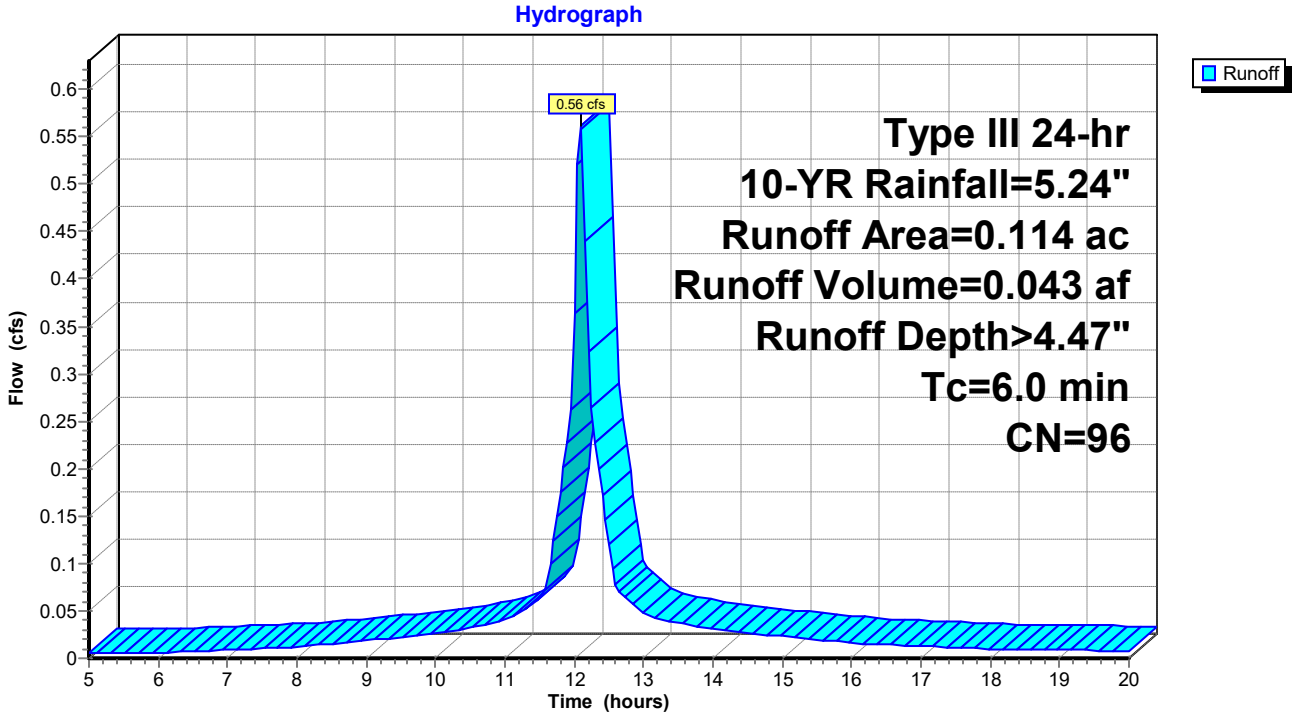
Runoff = 0.56 cfs @ 12.09 hrs, Volume= 0.043 af, Depth> 4.47"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

	Area (ac)	CN	Description
	0.003	39	>75% Grass cover, Good, HSG A
*	0.111	98	Paved
	0.114	96	Weighted Average
	0.003		2.63% Pervious Area
	0.111		97.37% Impervious Area

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

Subcatchment PR-09:



Summary for Subcatchment PR-10:

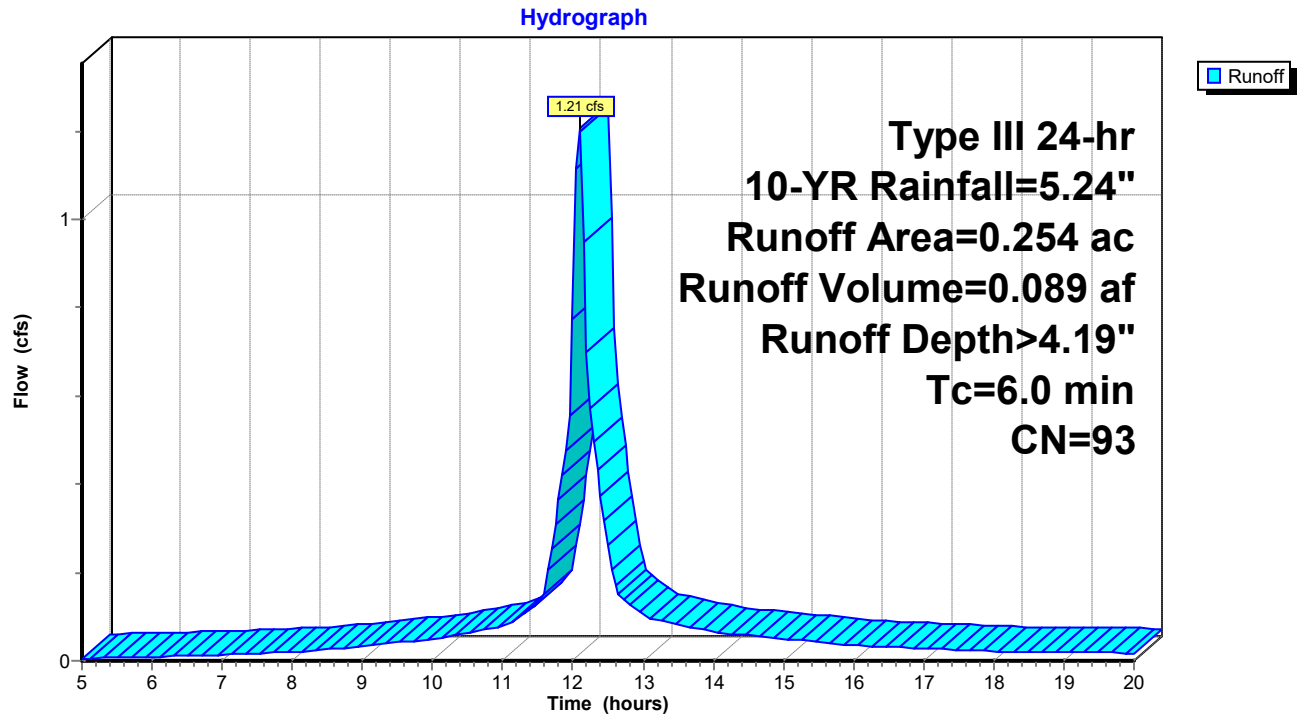
Runoff = 1.21 cfs @ 12.09 hrs, Volume= 0.089 af, Depth> 4.19"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

	Area (ac)	CN	Description
	0.020	39	>75% Grass cover, Good, HSG A
	0.004	61	>75% Grass cover, Good, HSG B
*	0.230	98	Paved
	0.254	93	Weighted Average
	0.024		9.45% Pervious Area
	0.230		90.55% Impervious Area

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

Subcatchment PR-10:



Summary for Subcatchment PR-11:

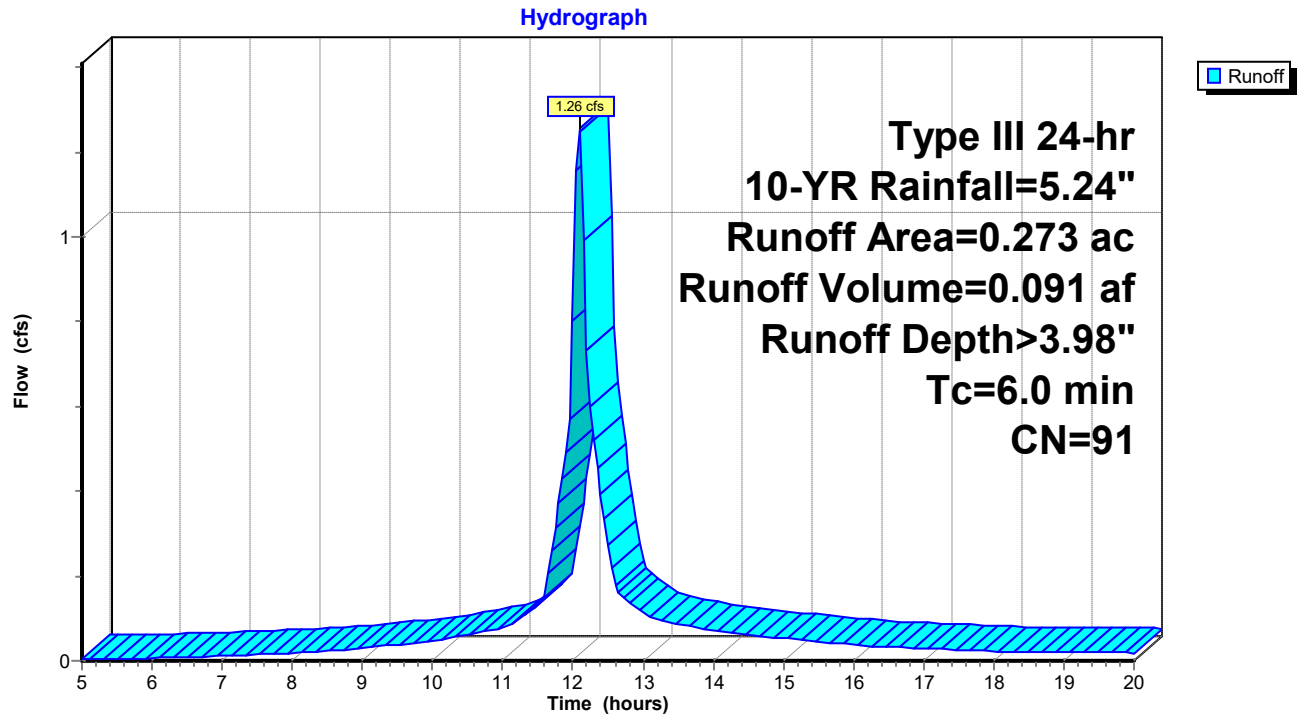
Runoff = 1.26 cfs @ 12.09 hrs, Volume= 0.091 af, Depth> 3.98"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

	Area (ac)	CN	Description
	0.028	39	>75% Grass cover, Good, HSG A
	0.008	61	>75% Grass cover, Good, HSG B
*	0.237	98	Paved
	0.273	91	Weighted Average
	0.036		13.19% Pervious Area
	0.237		86.81% Impervious Area

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

Subcatchment PR-11:



Summary for Subcatchment PR-12:

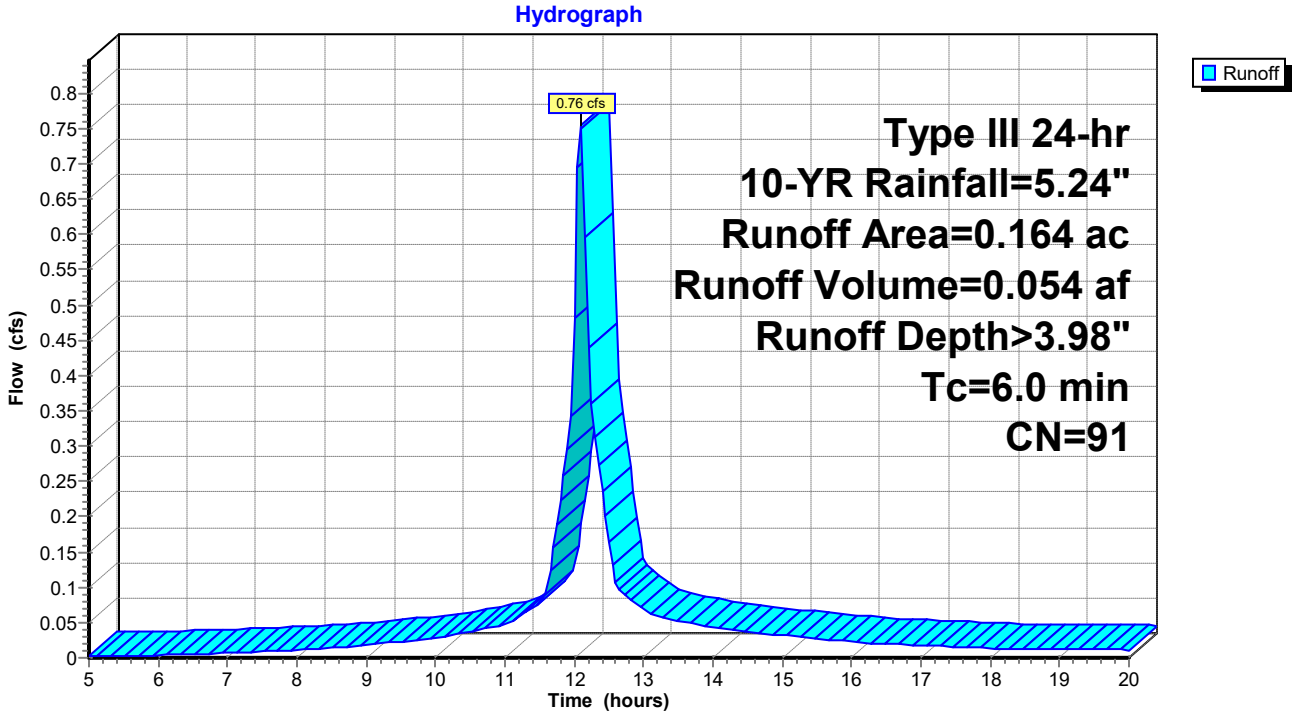
Runoff = 0.76 cfs @ 12.09 hrs, Volume= 0.054 af, Depth> 3.98"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

	Area (ac)	CN	Description
	0.019	39	>75% Grass cover, Good, HSG A
	0.000	30	Meadow, non-grazed, HSG A
*	0.145	98	Paved
	0.164	91	Weighted Average
	0.019		11.59% Pervious Area
	0.145		88.41% Impervious Area

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

Subcatchment PR-12:



Summary for Subcatchment PR-13:

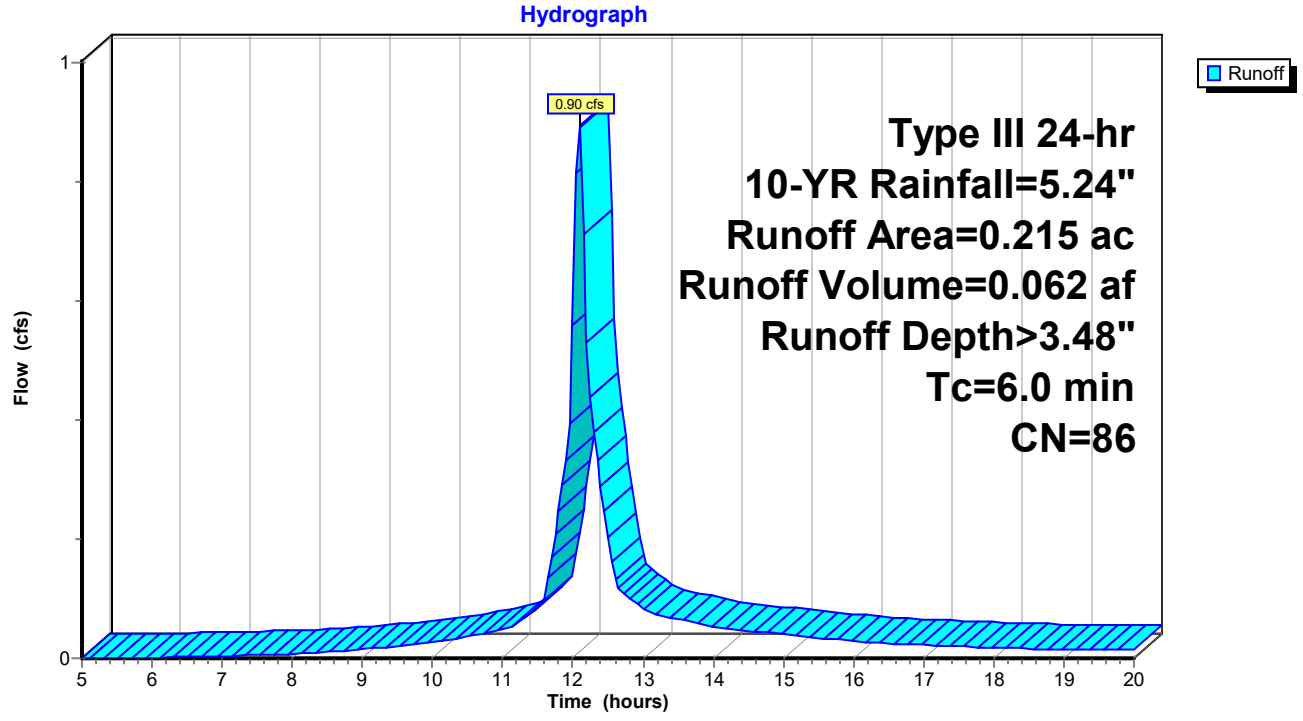
Runoff = 0.90 cfs @ 12.09 hrs, Volume= 0.062 af, Depth> 3.48"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

	Area (ac)	CN	Description
	0.043	39	>75% Grass cover, Good, HSG A
*	0.172	98	Paved
	0.215	86	Weighted Average
	0.043		20.00% Pervious Area
	0.172		80.00% Impervious Area

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

Subcatchment PR-13:



Summary for Subcatchment PR-14:

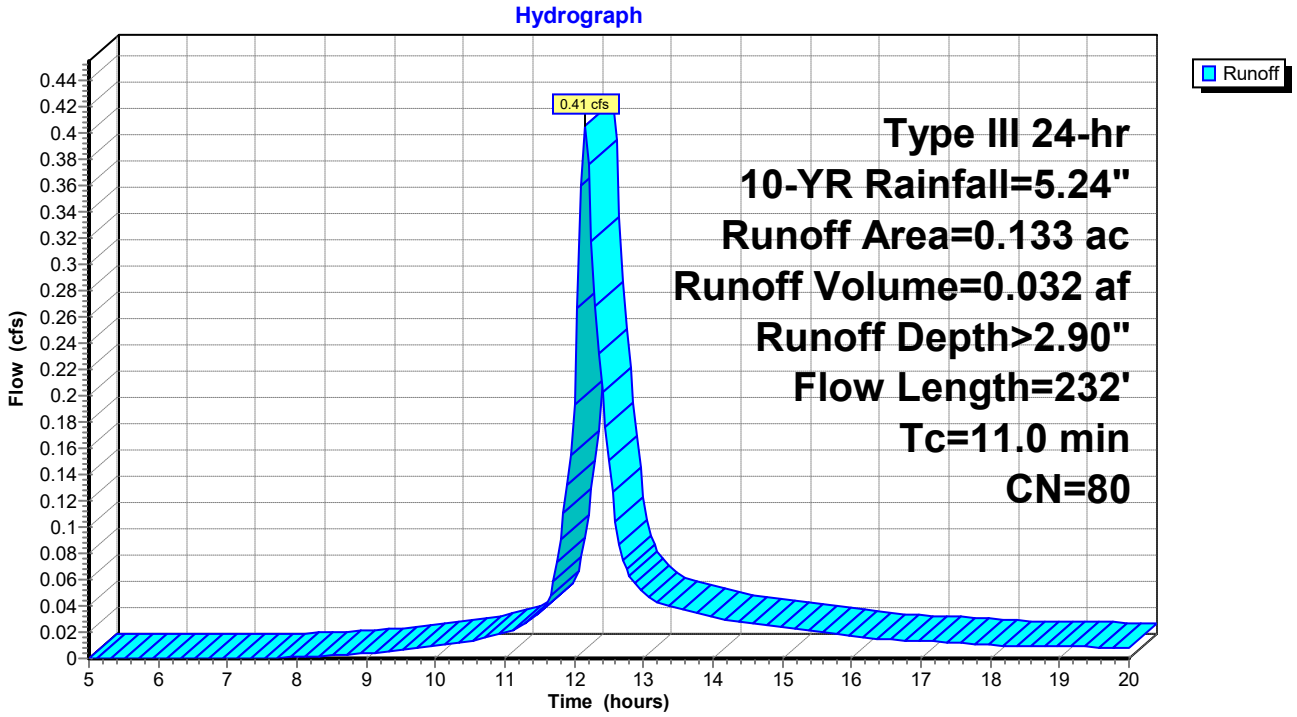
Runoff = 0.41 cfs @ 12.16 hrs, Volume= 0.032 af, Depth> 2.90"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

	Area (ac)	CN	Description
	0.030	39	>75% Grass cover, Good, HSG A
	0.018	61	>75% Grass cover, Good, HSG B
*	0.085	98	Paved
	0.133	80	Weighted Average
	0.048		36.09% Pervious Area
	0.085		63.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	62	0.0060	0.10		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.0	5	0.0200	2.87		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.2	52	0.0050	3.47	2.73	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.2	67	0.0100	4.91	3.86	**Pipe Channel, D-E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.1	46	0.0100	5.70	7.00	**Pipe Channel, E-F** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
11.0	232	Total			

Subcatchment PR-14:



Summary for Subcatchment PR-15:

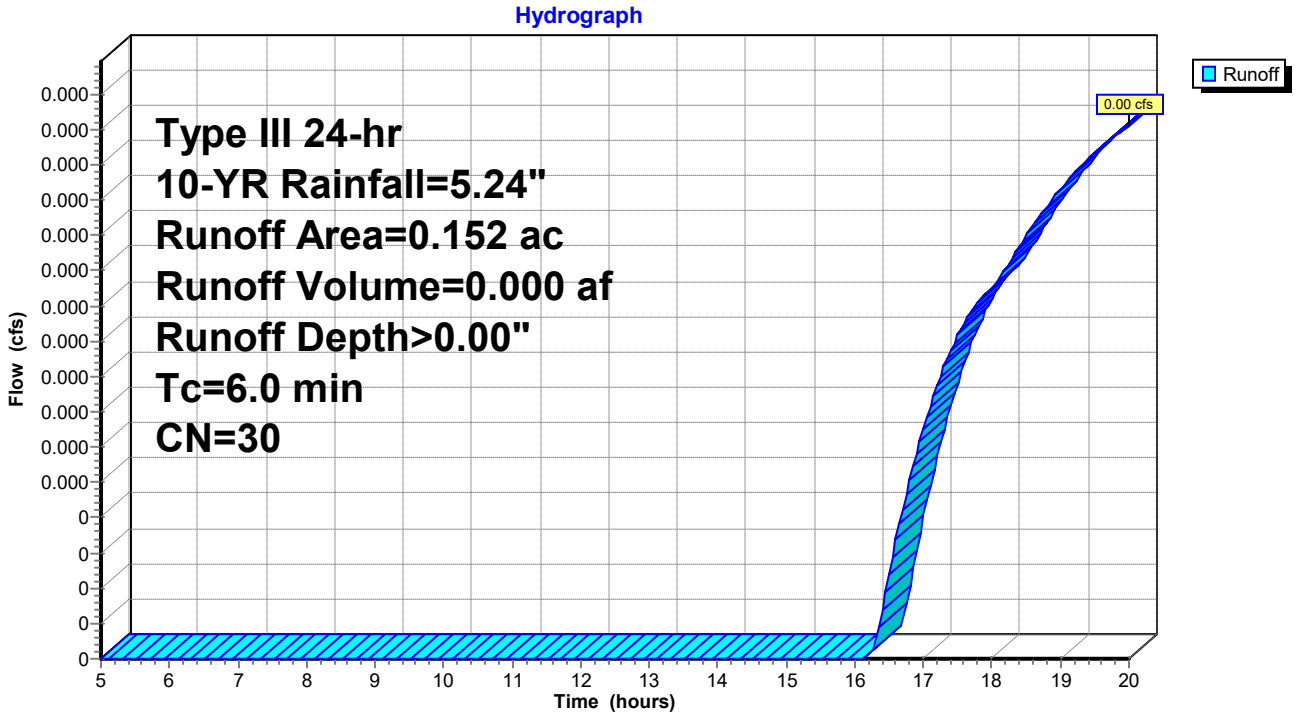
Runoff = 0.00 cfs @ 20.00 hrs, Volume= 0.000 af, Depth> 0.00"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

Area (ac)	CN	Description
0.150	30	Brush, Good, HSG A
0.002	48	Brush, Good, HSG B
0.152	30	Weighted Average
0.152		100.00% Pervious Area

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

Subcatchment PR-15:



Summary for Subcatchment PR-17:

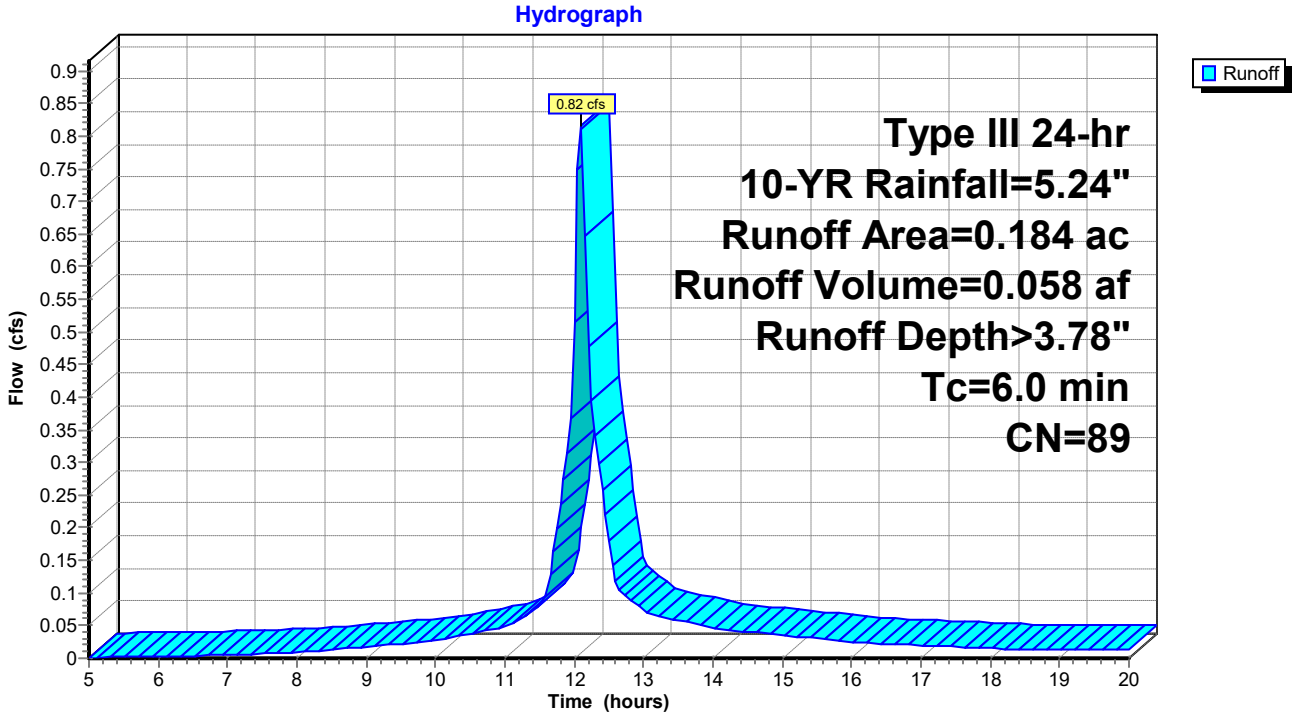
Runoff = 0.82 cfs @ 12.09 hrs, Volume= 0.058 af, Depth> 3.78"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

	Area (ac)	CN	Description
	0.027	39	>75% Grass cover, Good, HSG A
*	0.157	98	Paved
	0.184	89	Weighted Average
	0.027		14.67% Pervious Area
	0.157		85.33% Impervious Area

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

Subcatchment PR-17:



Summary for Subcatchment PR-18:

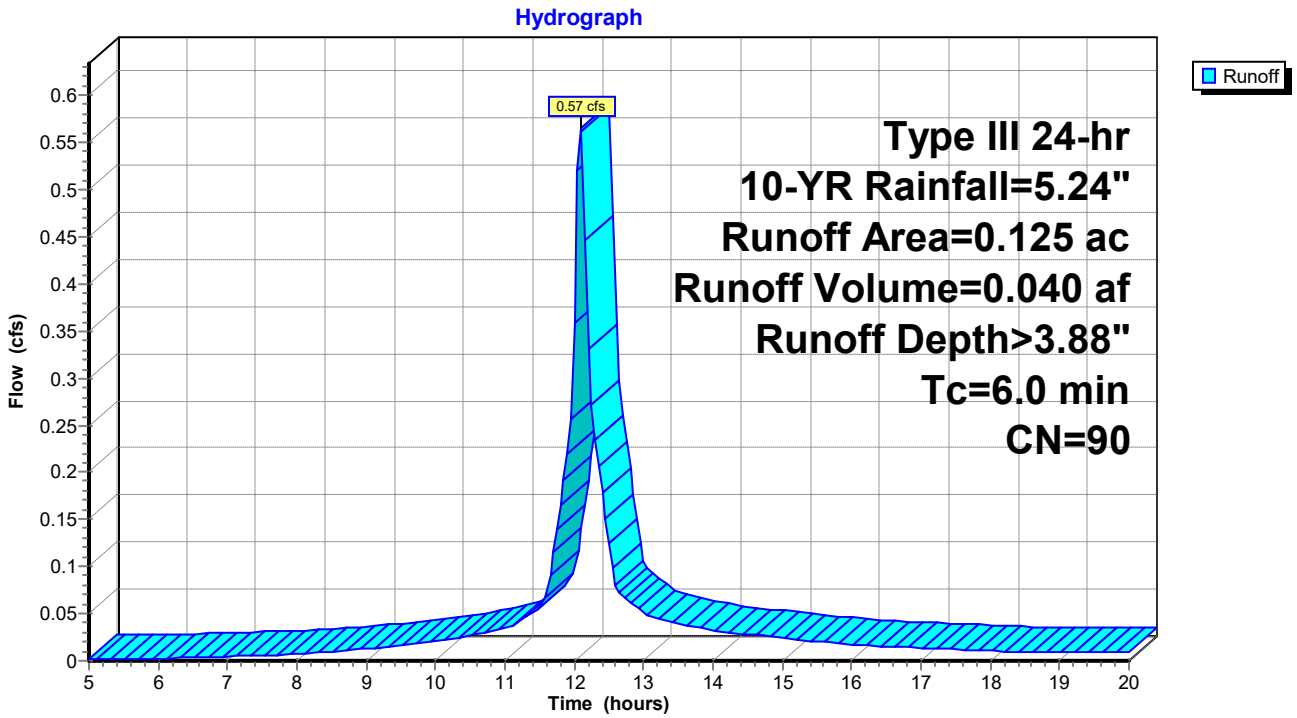
Runoff = 0.57 cfs @ 12.09 hrs, Volume= 0.040 af, Depth> 3.88"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

	Area (ac)	CN	Description
	0.016	39	>75% Grass cover, Good, HSG A
	0.002	61	>75% Grass cover, Good, HSG B
*	0.107	98	Paved
	0.125	90	Weighted Average
	0.018		14.40% Pervious Area
	0.107		85.60% Impervious Area

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

Subcatchment PR-18:



Summary for Subcatchment PR-19:

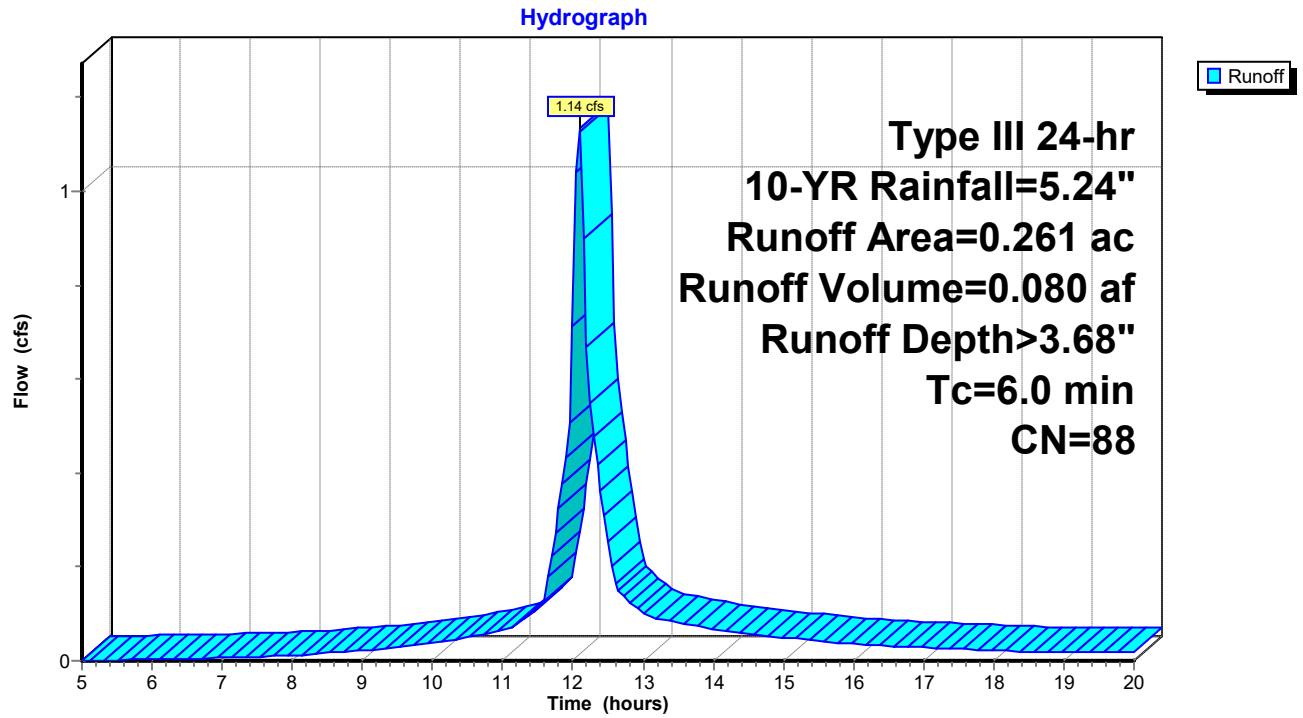
Runoff = 1.14 cfs @ 12.09 hrs, Volume= 0.080 af, Depth> 3.68"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

	Area (ac)	CN	Description
	0.041	39	>75% Grass cover, Good, HSG A
	0.004	61	>75% Grass cover, Good, HSG B
*	0.216	98	Paved
	0.261	88	Weighted Average
	0.045		17.24% Pervious Area
	0.216		82.76% Impervious Area

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

Subcatchment PR-19:



Summary for Subcatchment PR-20:

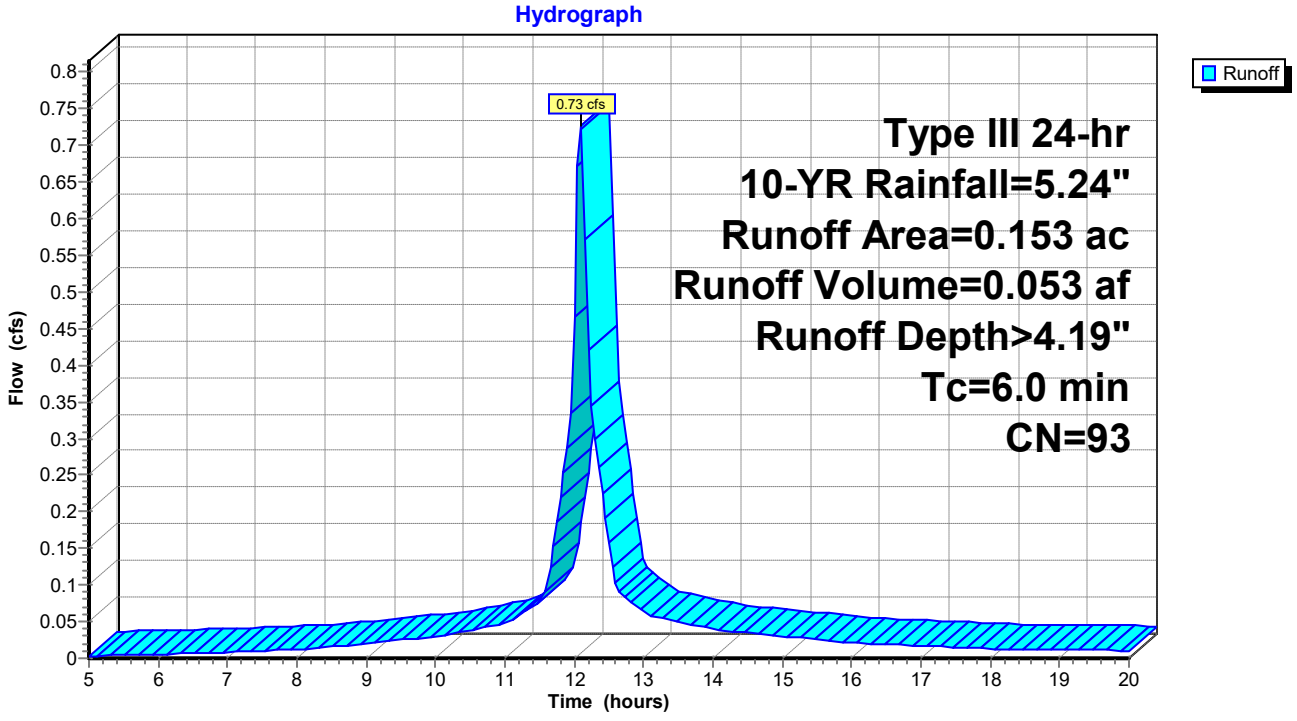
Runoff = 0.73 cfs @ 12.09 hrs, Volume= 0.053 af, Depth> 4.19"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

	Area (ac)	CN	Description
	0.013	39	>75% Grass cover, Good, HSG A
*	0.140	98	Paved
	0.153	93	Weighted Average
	0.013		8.50% Pervious Area
	0.140		91.50% Impervious Area

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

Subcatchment PR-20:



Summary for Subcatchment PR-21:

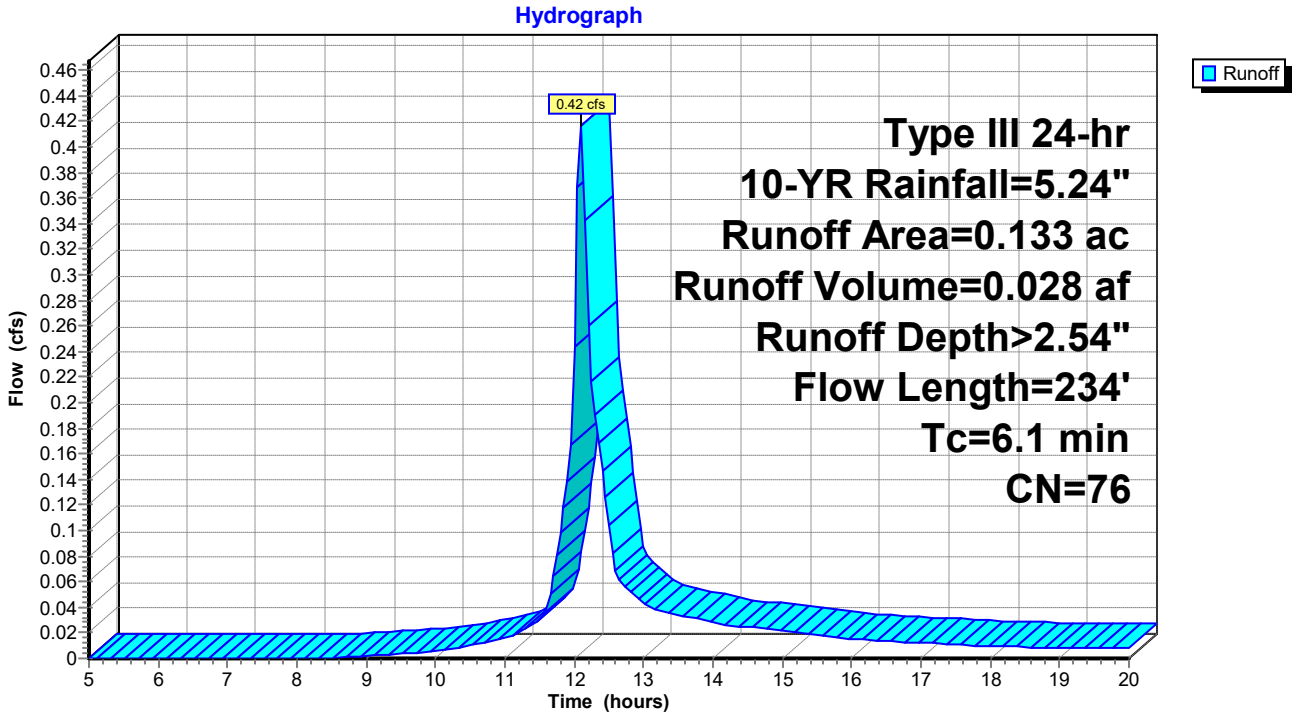
Runoff = 0.42 cfs @ 12.09 hrs, Volume= 0.028 af, Depth> 2.54"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

	Area (ac)	CN	Description
	0.036	39	>75% Grass cover, Good, HSG A
	0.020	61	>75% Grass cover, Good, HSG B
*	0.077	98	Paved
	0.133	76	Weighted Average
	0.056		42.11% Pervious Area
	0.077		57.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	48	0.0290	0.18		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.0	10	0.0300	3.52		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.3	21	0.0380	1.36		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
0.9	95	0.0080	1.82		**Shallow Concentrated Flow, D-E** Paved Kv= 20.3 fps
0.1	16	0.0100	3.10	0.61	**Pipe Channel, E-F** 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.012
0.2	44	0.0100	3.75	1.31	**Pipe Channel, F-G** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
6.1	234	Total			

Subcatchment PR-21:



Summary for Subcatchment PR-22:

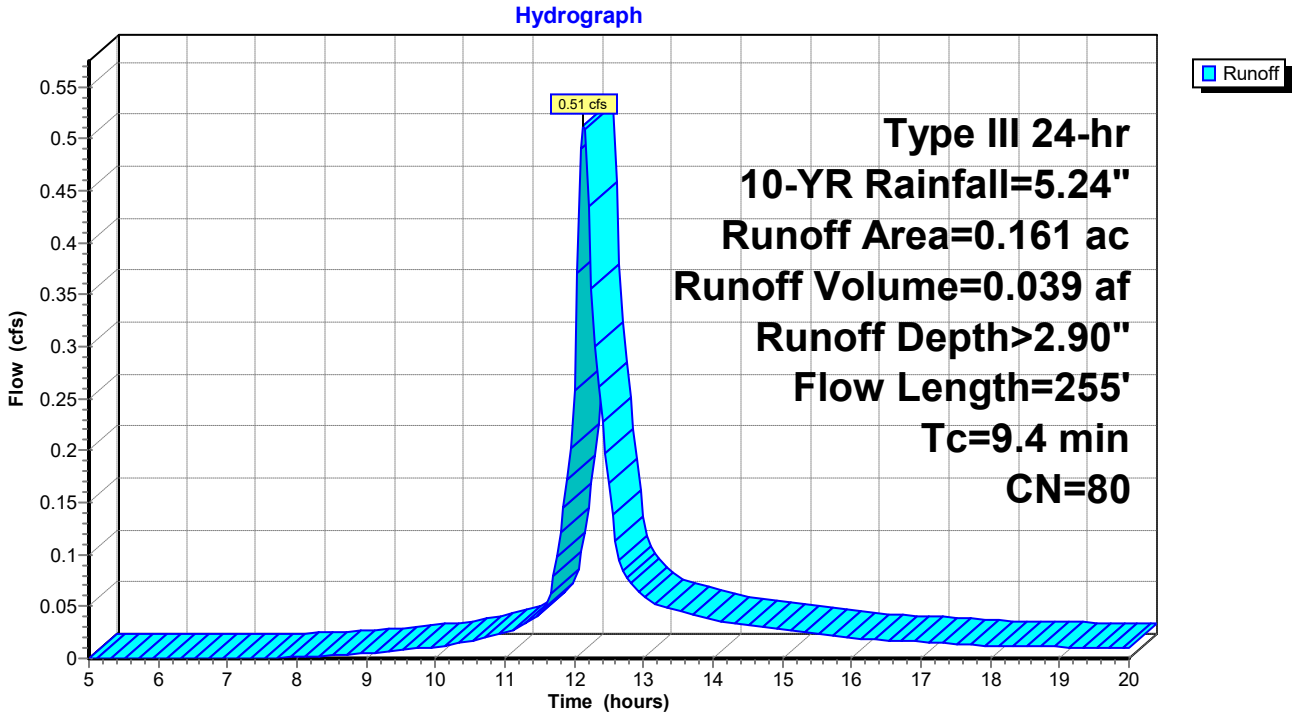
Runoff = 0.51 cfs @ 12.14 hrs, Volume= 0.039 af, Depth> 2.90"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

	Area (ac)	CN	Description
	0.031	39	>75% Grass cover, Good, HSG A
	0.030	61	>75% Grass cover, Good, HSG B
*	0.100	98	Paved
	0.161	80	Weighted Average
	0.061		37.89% Pervious Area
	0.100		62.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	71	0.0130	0.14		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.6	122	0.0250	3.21		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.0	18	0.1000	11.86	4.14	**Pipe Channel, C-D** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
0.2	44	0.0100	3.75	1.31	**Pipe Channel, D-E** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
9.4	255	Total			

Subcatchment PR-22:



Summary for Subcatchment PR-23:

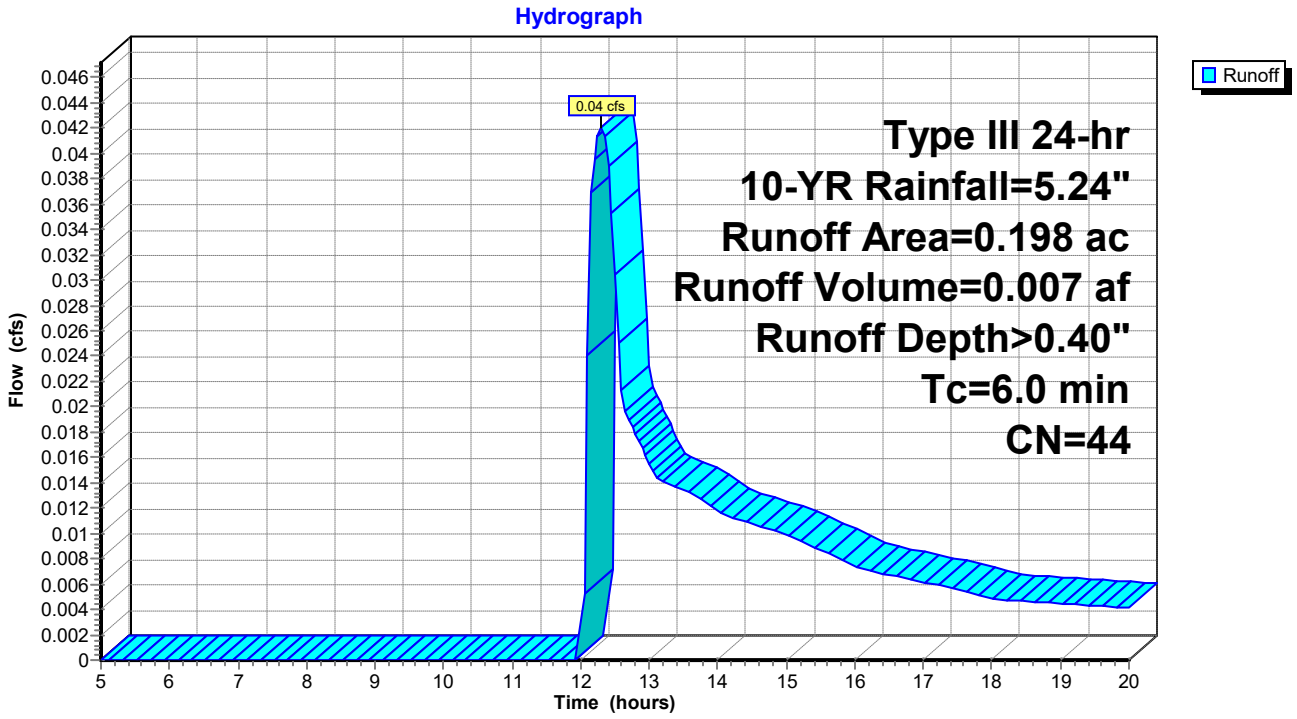
Runoff = 0.04 cfs @ 12.30 hrs, Volume= 0.007 af, Depth> 0.40"
Routed to Pond IB-2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

	Area (ac)	CN	Description
	0.069	39	>75% Grass cover, Good, HSG A
	0.013	61	>75% Grass cover, Good, HSG B
	0.091	30	Meadow, non-grazed, HSG A
*	0.025	98	Paved
	0.198	44	Weighted Average
	0.173		87.37% Pervious Area
	0.025		12.63% Impervious Area

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

Subcatchment PR-23:



Summary for Subcatchment PR-24:

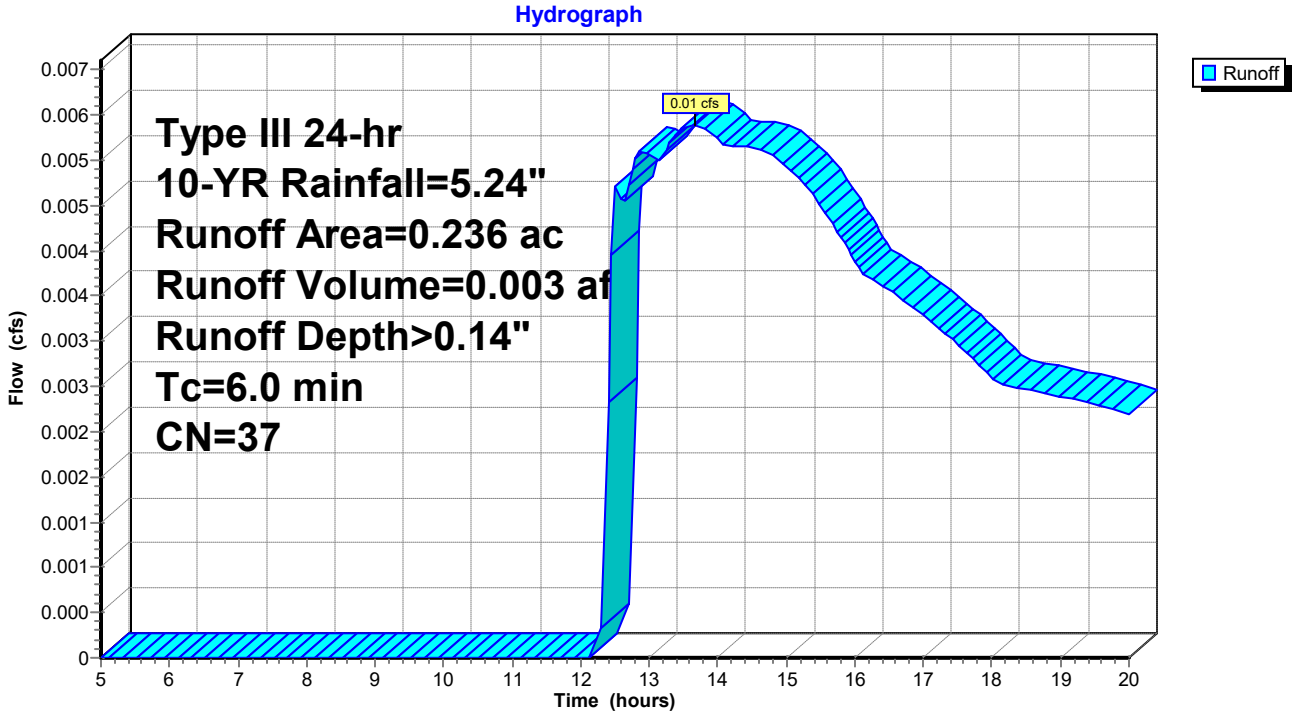
Runoff = 0.01 cfs @ 13.66 hrs, Volume= 0.003 af, Depth> 0.14"
Routed to Pond GT-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

Area (ac)	CN	Description
0.028	39	>75% Grass cover, Good, HSG A
0.016	61	>75% Grass cover, Good, HSG B
0.157	30	Meadow, non-grazed, HSG A
0.035	58	Meadow, non-grazed, HSG B
0.236	37	Weighted Average
0.236		100.00% Pervious Area

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

Subcatchment PR-24:



Summary for Subcatchment PR-25:

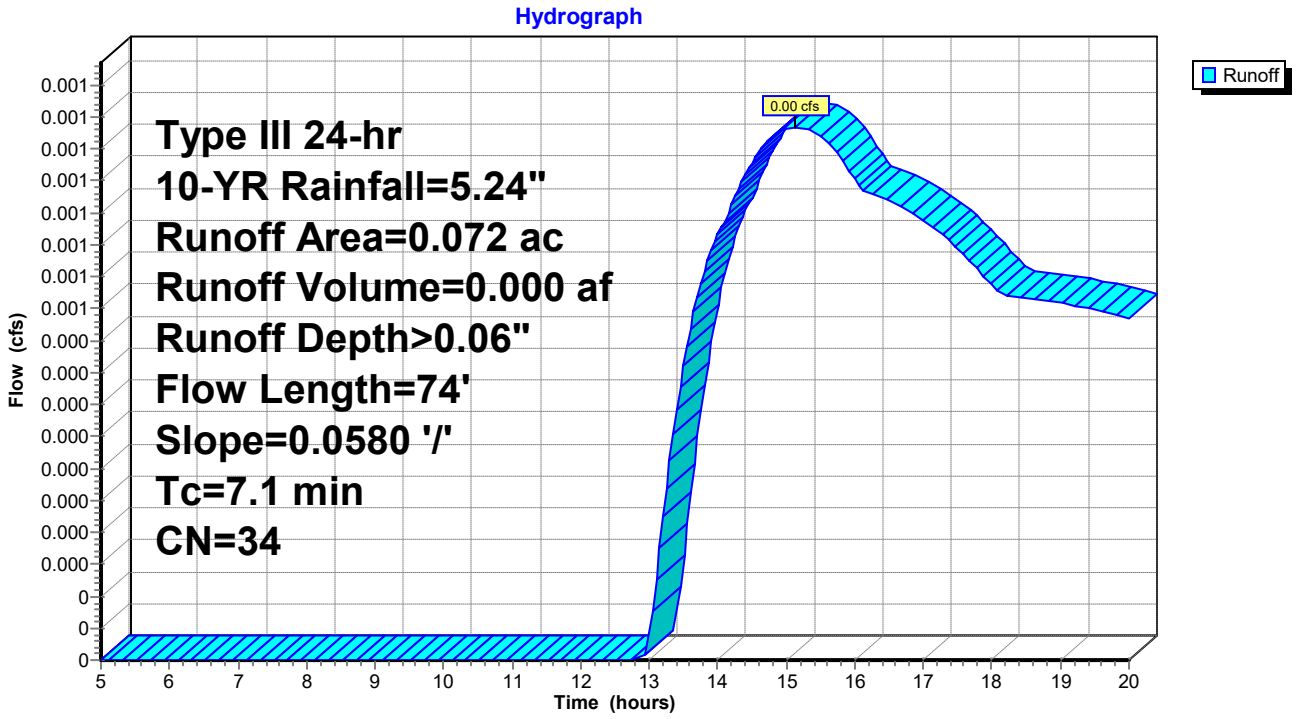
Runoff = 0.00 cfs @ 15.14 hrs, Volume= 0.000 af, Depth> 0.06"
Routed to Pond GT-2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

	Area (ac)	CN	Description
	0.024	39	>75% Grass cover, Good, HSG A
	0.047	30	Meadow, non-grazed, HSG A
*	0.001	98	Paved
	0.072	34	Weighted Average
	0.071		98.61% Pervious Area
	0.001		1.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	74	0.0580	0.17		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.40"

Subcatchment PR-25:



Summary for Subcatchment PR-26:

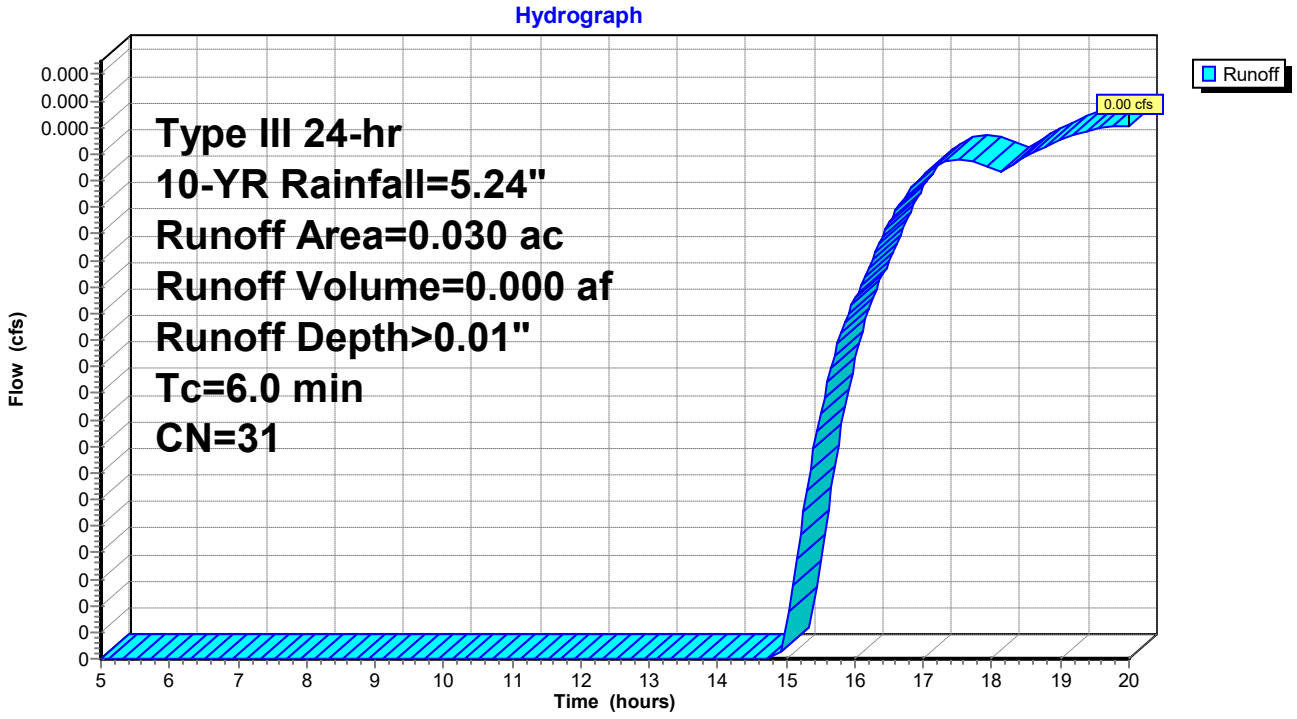
Runoff = 0.00 cfs @ 20.00 hrs, Volume= 0.000 af, Depth> 0.01"
Routed to Pond GT-3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

Area (ac)	CN	Description
0.004	39	>75% Grass cover, Good, HSG A
0.026	30	Meadow, non-grazed, HSG A
0.030	31	Weighted Average
0.030		100.00% Pervious Area

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

Subcatchment PR-26:



Summary for Subcatchment PR-27:

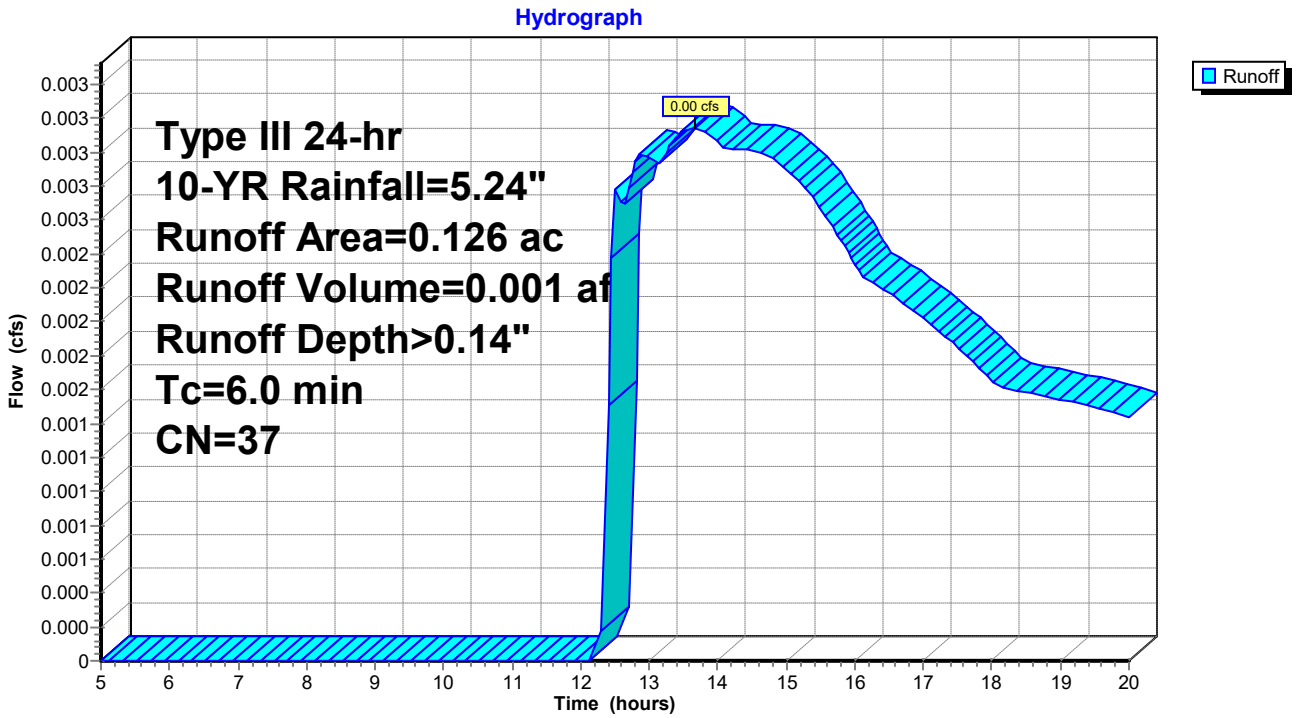
Runoff = 0.00 cfs @ 13.66 hrs, Volume= 0.001 af, Depth> 0.14"
Routed to Pond GT-4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

Area (ac)	CN	Description
0.031	39	>75% Grass cover, Good, HSG A
0.004	61	>75% Grass cover, Good, HSG B
0.074	30	Meadow, non-grazed, HSG A
0.017	58	Meadow, non-grazed, HSG B
0.126	37	Weighted Average
0.126		100.00% Pervious Area

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

Subcatchment PR-27:



Summary for Subcatchment PR-28:

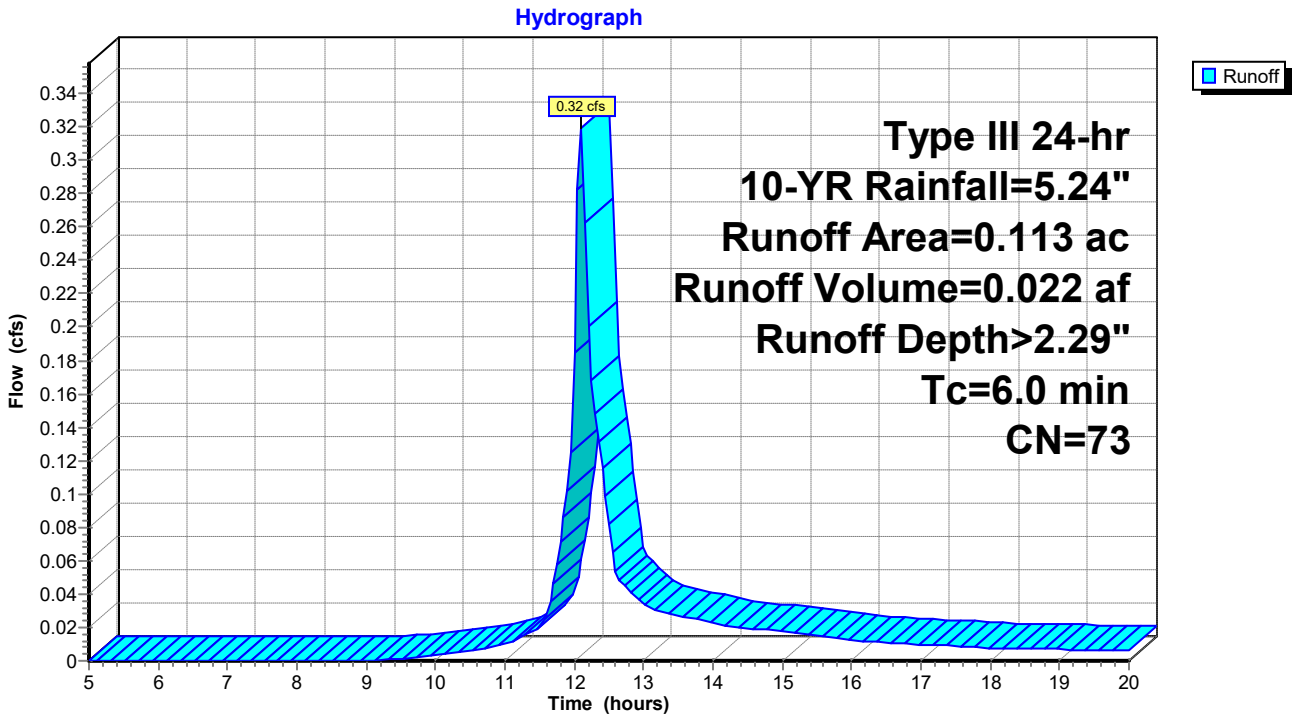
Runoff = 0.32 cfs @ 12.09 hrs, Volume= 0.022 af, Depth> 2.29"
Routed to Pond GT-5 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

	Area (ac)	CN	Description
	0.031	61	>75% Grass cover, Good, HSG B
	0.043	58	Meadow, non-grazed, HSG B
*	0.039	98	Paved
	0.113	73	Weighted Average
	0.074		65.49% Pervious Area
	0.039		34.51% Impervious Area

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

Subcatchment PR-28:



Summary for Subcatchment PR-29:

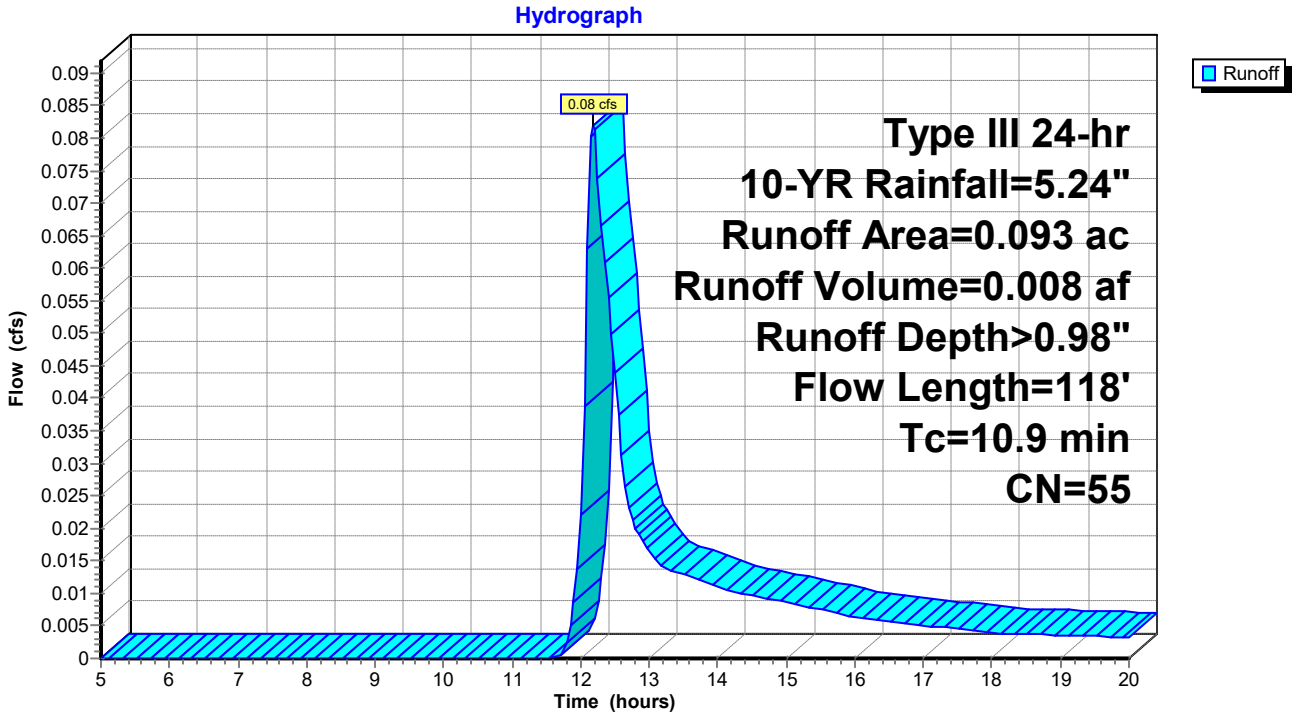
Runoff = 0.08 cfs @ 12.18 hrs, Volume= 0.008 af, Depth> 0.98"
Routed to Pond GT-6 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

	Area (ac)	CN	Description
	0.001	30	Woods, Good, HSG A
	0.008	55	Woods, Good, HSG B
	0.011	39	>75% Grass cover, Good, HSG A
	0.021	61	>75% Grass cover, Good, HSG B
	0.026	30	Meadow, non-grazed, HSG A
	0.010	58	Meadow, non-grazed, HSG B
*	0.016	98	Paved
	0.093	55	Weighted Average
	0.077		82.80% Pervious Area
	0.016		17.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7	100	0.0380	0.16		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.40"
0.2	18	0.0780	1.95		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
10.9	118	Total			

Subcatchment PR-29:



Summary for Subcatchment RA-1:

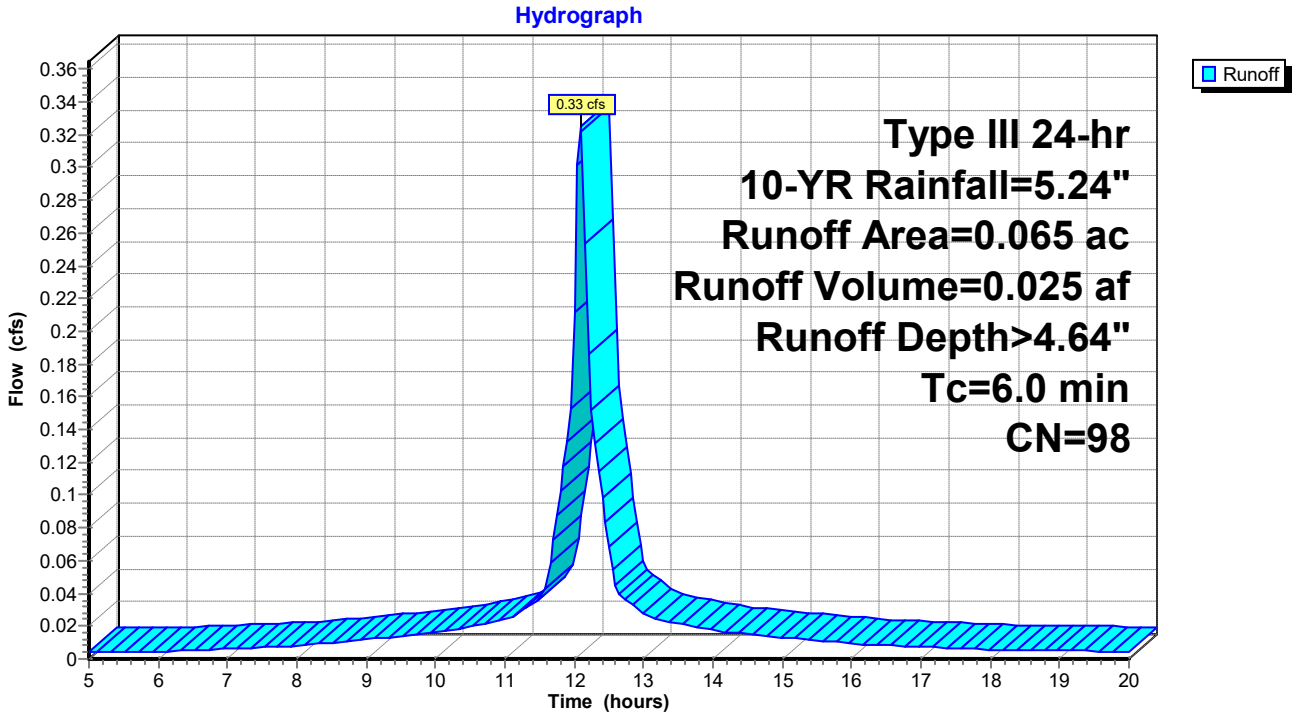
Runoff = 0.33 cfs @ 12.09 hrs, Volume= 0.025 af, Depth> 4.64"
Routed to Pond UG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

	Area (ac)	CN	Description
*	0.065	98	Roof
	0.065		100.00% Impervious Area

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

Subcatchment RA-1:



Summary for Subcatchment RA-2:

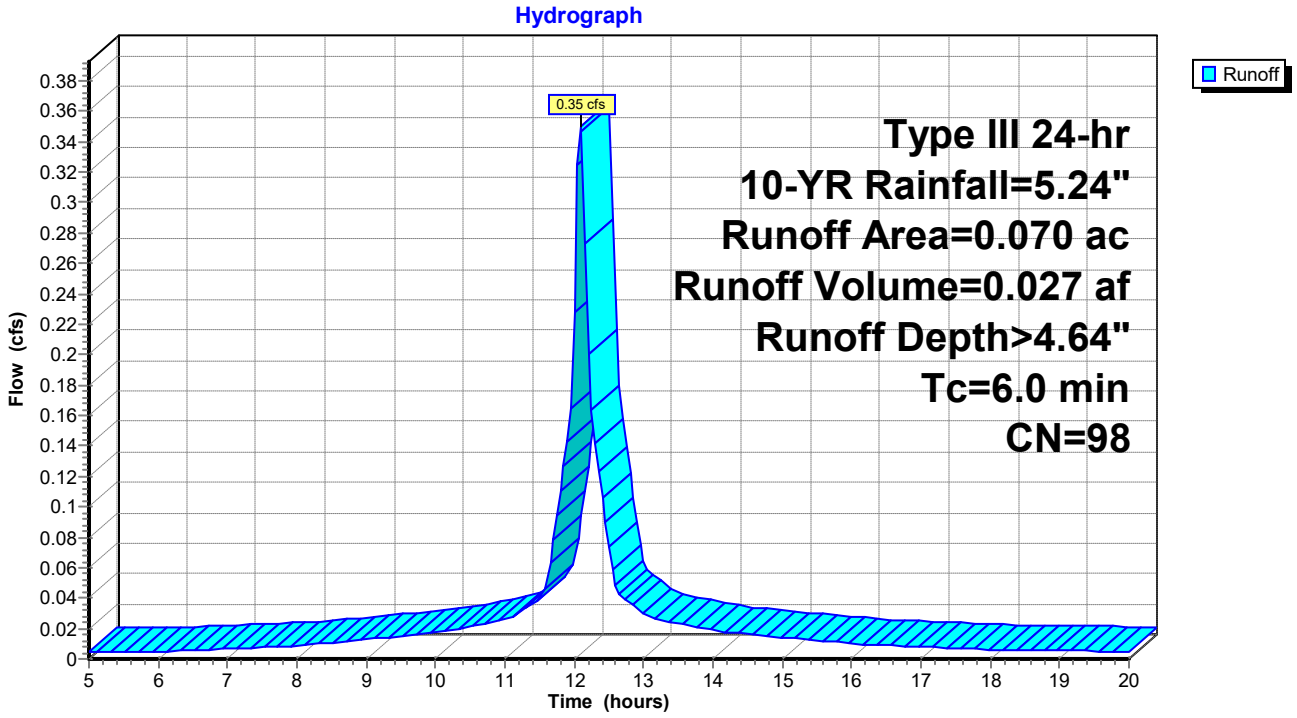
Runoff = 0.35 cfs @ 12.09 hrs, Volume= 0.027 af, Depth> 4.64"
Routed to Pond UG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

	Area (ac)	CN	Description
*	0.070	98	Roof
	0.070		100.00% Impervious Area

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

Subcatchment RA-2:



Summary for Subcatchment RA-3:

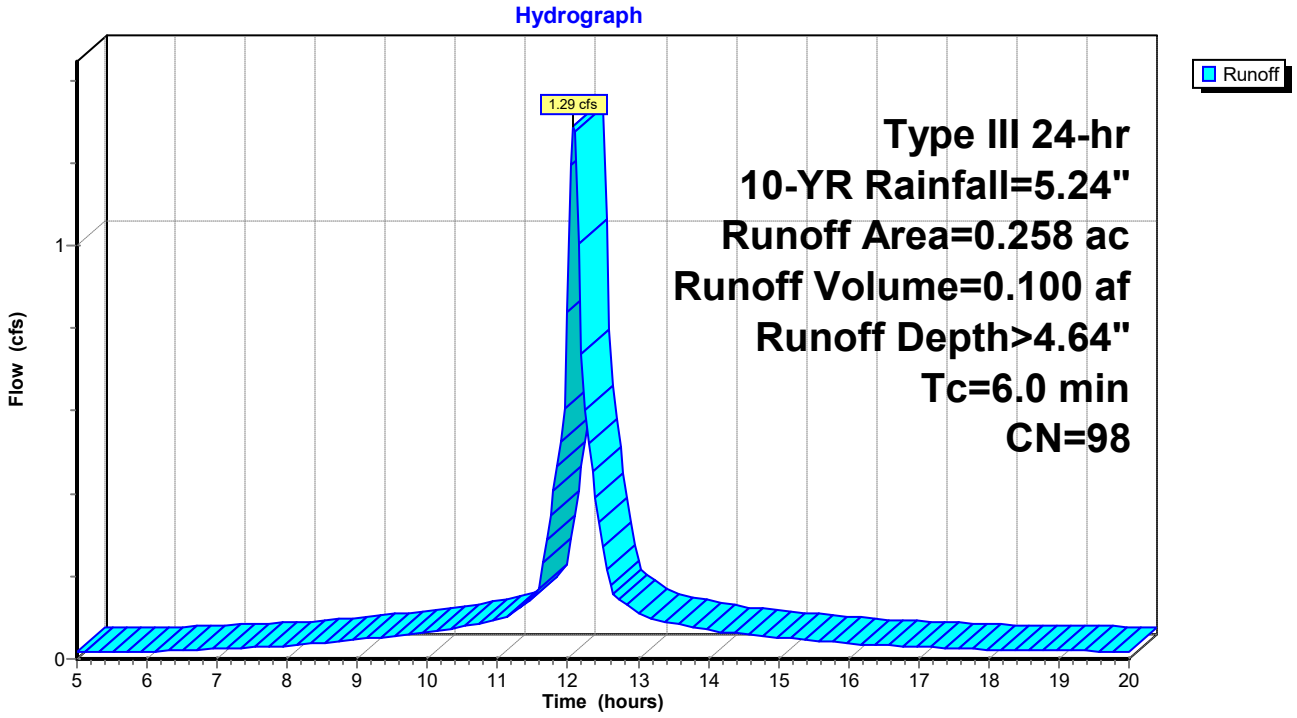
Runoff = 1.29 cfs @ 12.09 hrs, Volume= 0.100 af, Depth> 4.64"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

	Area (ac)	CN	Description
*	0.258	98	Roof
	0.258		100.00% Impervious Area

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

Subcatchment RA-3:



Summary for Subcatchment RA-4:

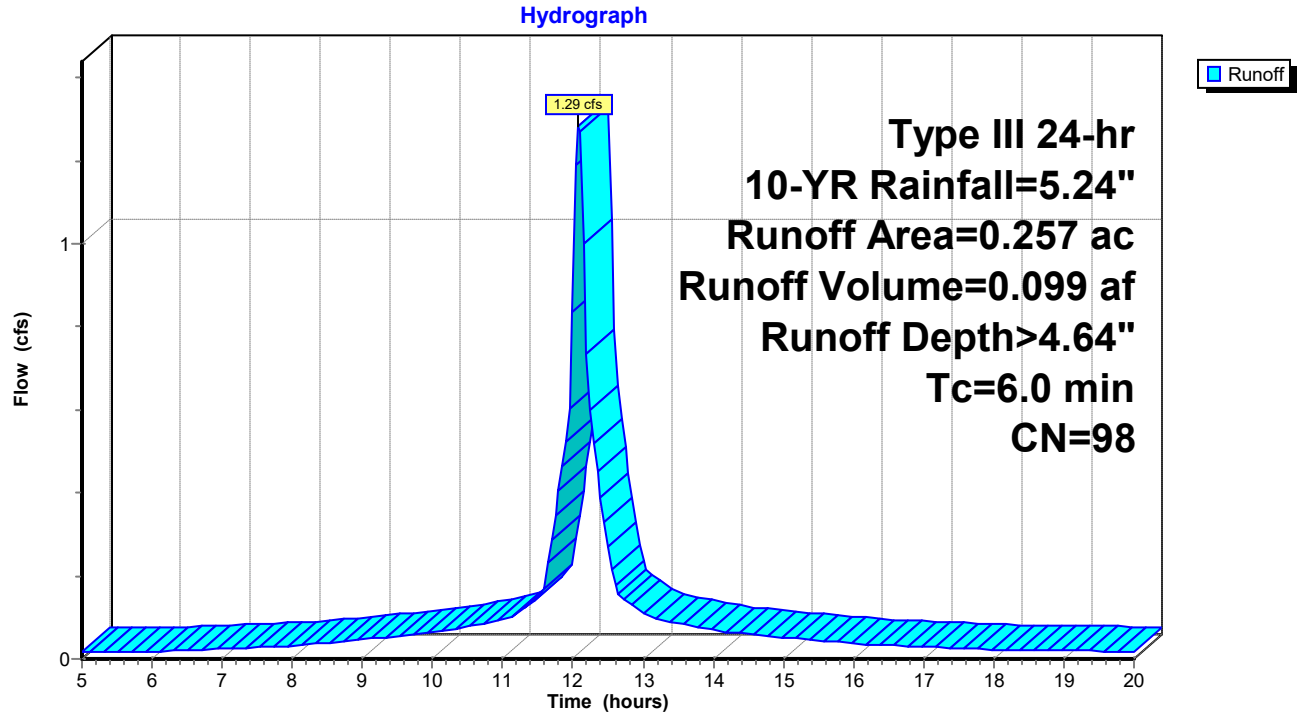
Runoff = 1.29 cfs @ 12.09 hrs, Volume= 0.099 af, Depth> 4.64"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

	Area (ac)	CN	Description
*	0.257	98	Roof
	0.257		100.00% Impervious Area

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

Subcatchment RA-4:

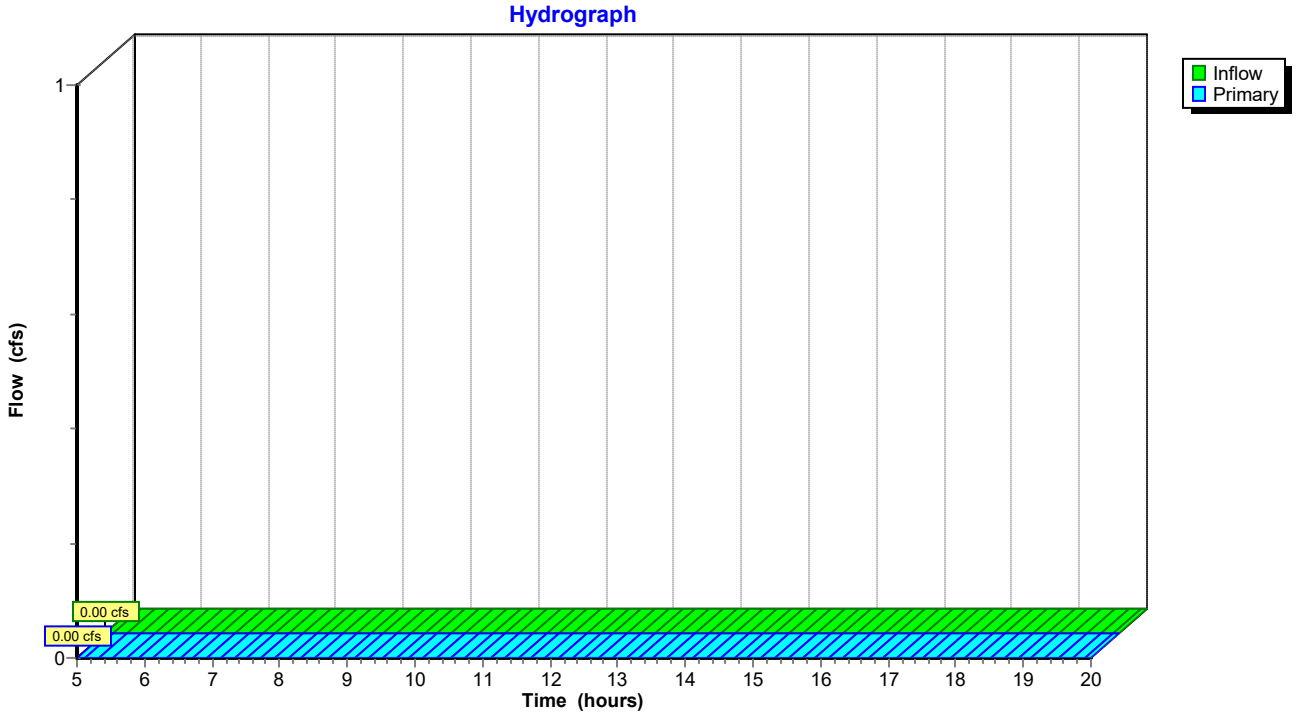


Summary for Pond AP: Surrounding Wetlands

Inflow	=	0.00 cfs @	5.00 hrs, Volume=	0.000 af
Primary	=	0.00 cfs @	5.00 hrs, Volume=	0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond AP: Surrounding Wetlands



Summary for Pond GT-1:

Inflow Area = 0.236 ac, 0.00% Impervious, Inflow Depth > 0.14" for 10-YR event
Inflow = 0.01 cfs @ 13.66 hrs, Volume= 0.003 af
Outflow = 0.01 cfs @ 13.70 hrs, Volume= 0.003 af, Atten= 0%, Lag= 2.5 min
Discarded = 0.01 cfs @ 13.70 hrs, Volume= 0.003 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond AP : Surrounding Wetlands

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 20.00' @ 13.70 hrs Surf.Area= 862 sf Storage= 1 cf

Plug-Flow detention time= 2.4 min calculated for 0.003 af (99% of inflow)
Center-of-Mass det. time= 1.5 min (940.7 - 939.2)

Volume	Invert	Avail.Storage	Storage Description
#1	20.00'	690 cf	**Gravel Trench Stage Storage (Prismatic)** Listed below (Recalc) 1,724 cf Overall x 40.0% Voids

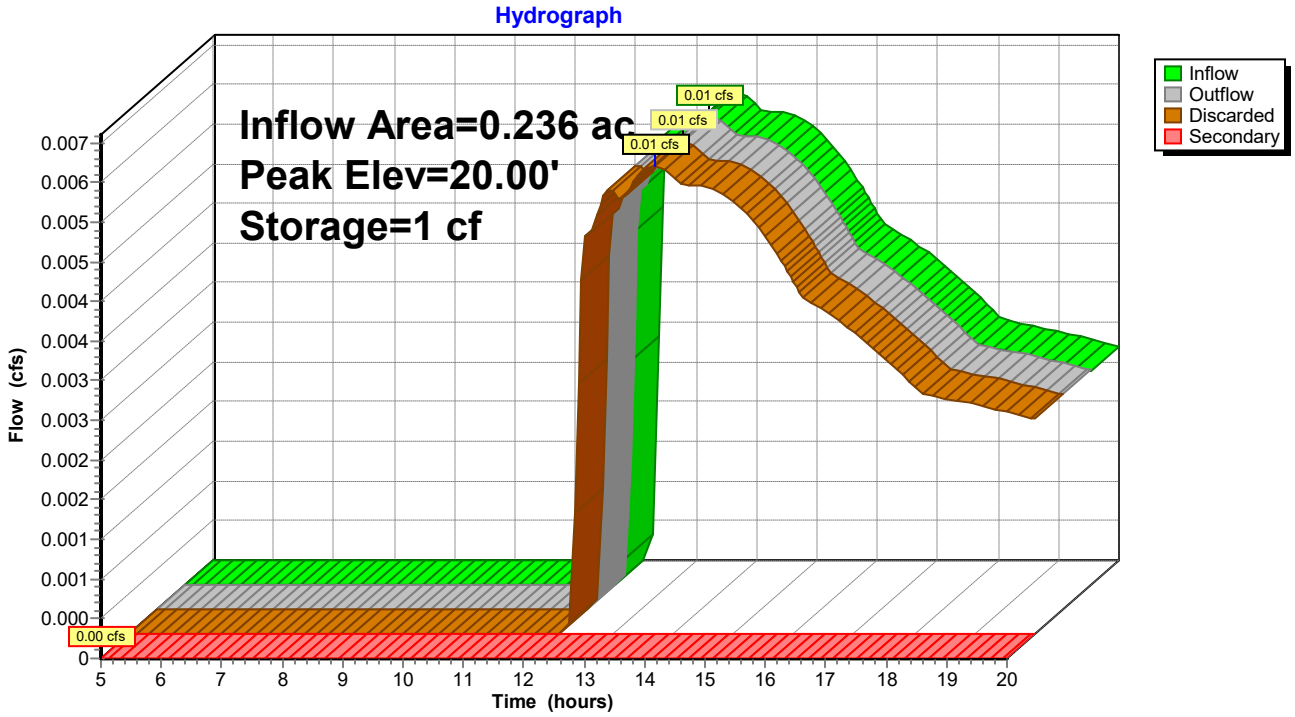
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
20.00	862	0	0
21.00	862	862	862
22.00	862	862	1,724

Device	Routing	Invert	Outlet Devices
#1	Secondary	22.00'	**590.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Trench (Overflow)** 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	20.00'	**2.410 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.05 cfs @ 13.70 hrs HW=20.00' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 0.05 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=20.00' (Free Discharge)
↑**1=Top of Trench (Overflow)** (Controls 0.00 cfs)

Pond GT-1:


Hydrograph
Inflow Area=0.236 ac
Peak Elev=20.00'
Storage=1 cf
0.01 cfs
0.01 cfs
0.01 cfs
0.00 cfs
Inflow
Outflow
Discarded
Secondary
Flow (cfs)
0.007
0.006
0.005
0.005
0.004
0.004
0.003
0.003
0.002
0.002
0.001
0.001
0.000
0
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Time (hours)

Summary for Pond GT-2:

Inflow Area = 0.072 ac, 1.39% Impervious, Inflow Depth > 0.06" for 10-YR event
Inflow = 0.00 cfs @ 15.14 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 15.17 hrs, Volume= 0.000 af, Atten= 0%, Lag= 1.8 min
Discarded = 0.00 cfs @ 15.17 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond AP : Surrounding Wetlands

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 23.50' @ 15.17 hrs Surf.Area= 251 sf Storage= 0 cf

Plug-Flow detention time= 1.8 min calculated for 0.000 af (99% of inflow)
Center-of-Mass det. time= 1.0 min (989.7 - 988.7)

Volume	Invert	Avail.Storage	Storage Description
#1	23.50'	151 cf	**Gravel Trench Stage Storage (Prismatic)** Listed below (Recalc) 377 cf Overall x 40.0% Voids

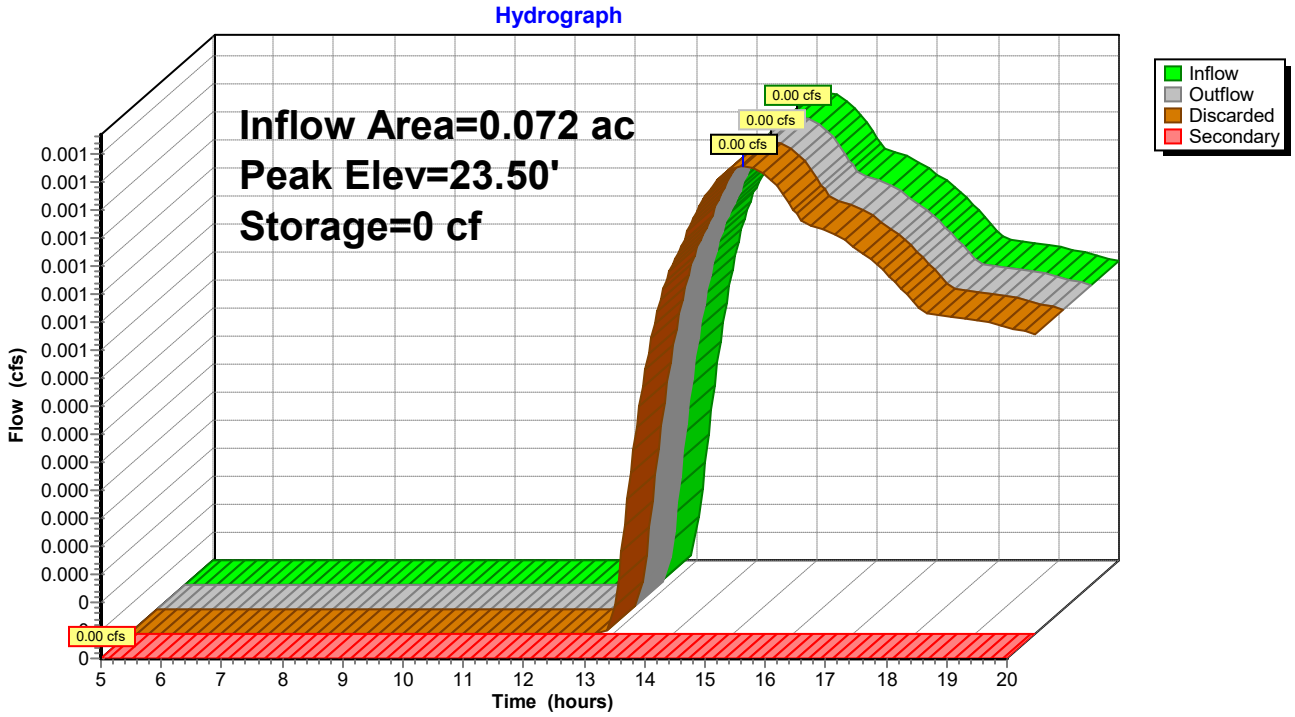
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
23.50	251	0	0
24.00	251	126	126
25.00	251	251	377

Device	Routing	Invert	Outlet Devices
#1	Secondary	25.00'	**65.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Trench (Overflow)** 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	23.50'	**2.410 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.01 cfs @ 15.17 hrs HW=23.50' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 0.01 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=23.50' (Free Discharge)
↑**1=Top of Trench (Overflow)** (Controls 0.00 cfs)

Pond GT-2:


Hydrograph
Inflow Area=0.072 ac
Peak Elev=23.50'
Storage=0 cf
Inflow
Outflow
Discarded
Secondary
0.00 cfs
0.00 cfs
0.00 cfs
0.00 cfs
Flow (cfs)
Time (hours)
0.001
0.000
0
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

Summary for Pond GT-3:

Inflow Area = 0.030 ac, 0.00% Impervious, Inflow Depth > 0.01" for 10-YR event
Inflow = 0.00 cfs @ 20.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 20.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 20.00 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-2 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 27.50' @ 20.00 hrs Surf.Area= 94 sf Storage= 0 cf

Plug-Flow detention time= 1.8 min calculated for 0.000 af (99% of inflow)
Center-of-Mass det. time= 0.8 min (1,071.3 - 1,070.5)

Volume	Invert	Avail.Storage	Storage Description
#1	27.50'	56 cf	**Gravel Trench Stage Storage (Prismatic)** Listed below (Recalc) 141 cf Overall x 40.0% Voids

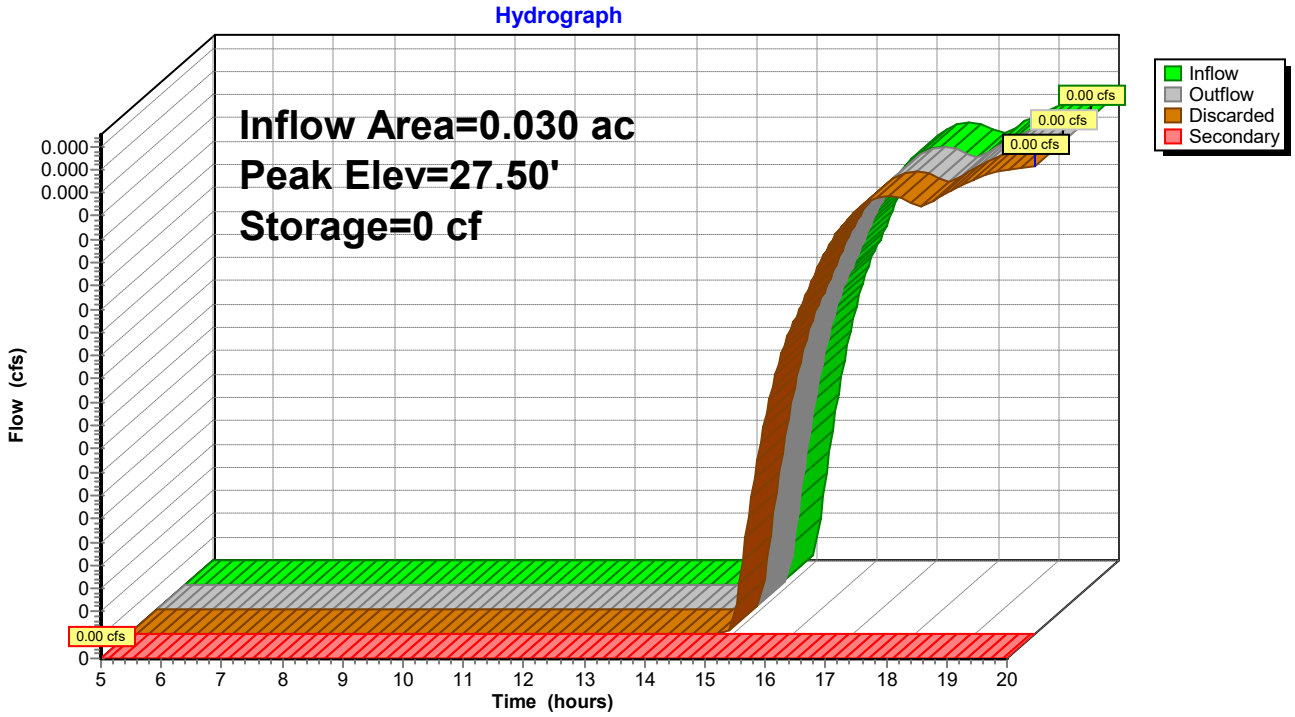
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.50	94	0	0
28.00	94	47	47
29.00	94	94	141

Device	Routing	Invert	Outlet Devices
#1	Secondary	29.00'	**30.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Trench (Overflow)** 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	27.50'	**2.410 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.01 cfs @ 20.00 hrs HW=27.50' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 0.01 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=27.50' (Free Discharge)
↑**1=Top of Trench (Overflow)** (Controls 0.00 cfs)

Pond GT-3:


Hydrograph
Inflow Area=0.030 ac
Peak Elev=27.50'
Storage=0 cf
Inflow
Outflow
Discarded
Secondary
0.00 cfs
0.00 cfs
0.00 cfs
0.00 cfs
Flow (cfs)
0.000
0.000
0.000
Time (hours)
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

Summary for Pond GT-4:

Inflow Area = 0.126 ac, 0.00% Impervious, Inflow Depth > 0.14" for 10-YR event
Inflow = 0.00 cfs @ 13.66 hrs, Volume= 0.001 af
Outflow = 0.00 cfs @ 13.69 hrs, Volume= 0.001 af, Atten= 0%, Lag= 1.8 min
Discarded = 0.00 cfs @ 13.69 hrs, Volume= 0.001 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-3 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 21.50' @ 13.69 hrs Surf.Area= 405 sf Storage= 0 cf

Plug-Flow detention time= 1.8 min calculated for 0.001 af (100% of inflow)
Center-of-Mass det. time= 1.1 min (940.3 - 939.2)

Volume	Invert	Avail.Storage	Storage Description
#1	21.50'	243 cf	**Gravel Trench Stage Storage (Prismatic)** Listed below (Recalc) 608 cf Overall x 40.0% Voids

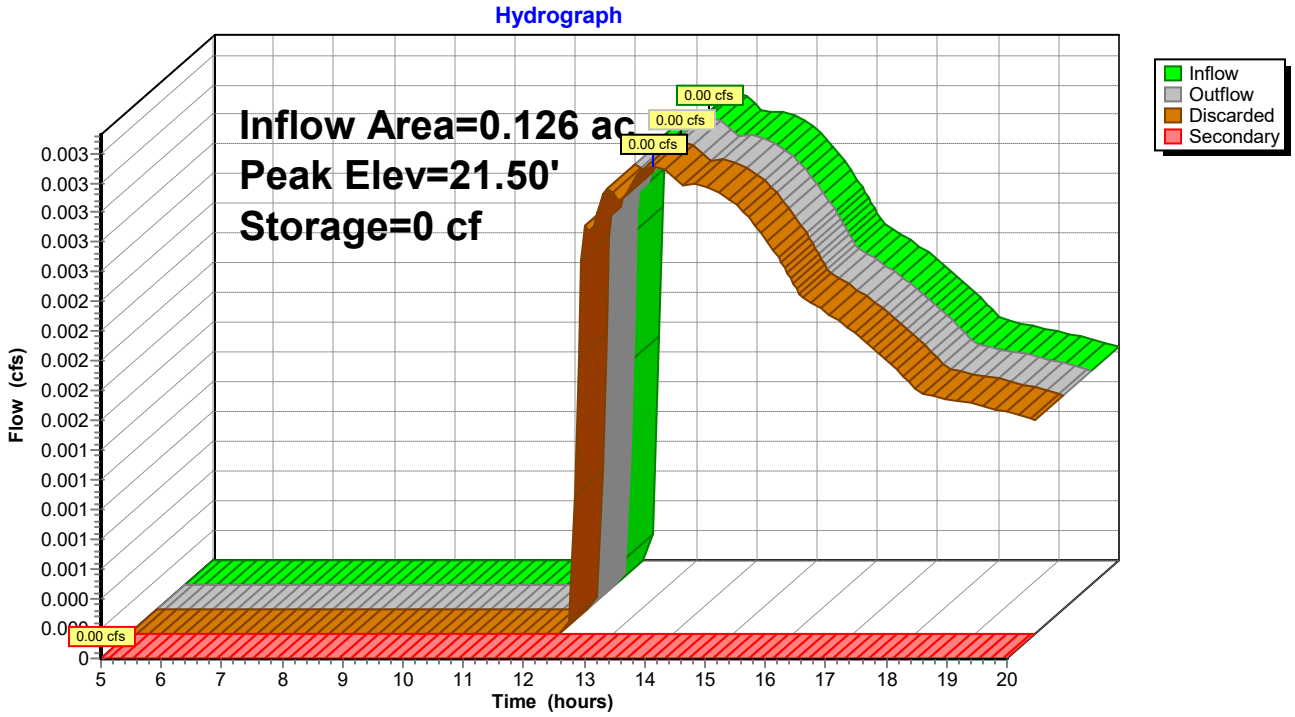
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
21.50	405	0	0
22.00	405	203	203
23.00	405	405	608

Device	Routing	Invert	Outlet Devices
#1	Secondary	23.00'	**74.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Trench (Overflow)** 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	21.50'	**2.410 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.02 cfs @ 13.69 hrs HW=21.50' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.02 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=21.50' (Free Discharge)
1=Top of Trench (Overflow) (Controls 0.00 cfs)

Pond GT-4:


Hydrograph
Inflow Area=0.126 ac
Peak Elev=21.50'
Storage=0 cf
0.00 cfs
0.00 cfs
0.00 cfs
0.00 cfs
Inflow
Outflow
Discarded
Secondary
Flow (cfs)
0.003
0.003
0.003
0.003
0.003
0.002
0.002
0.002
0.002
0.002
0.001
0.001
0.001
0.001
0.001
0.000
0
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Time (hours)

Summary for Pond GT-5:

Inflow Area = 0.113 ac, 34.51% Impervious, Inflow Depth > 2.29" for 10-YR event
Inflow = 0.32 cfs @ 12.09 hrs, Volume= 0.022 af
Outflow = 0.04 cfs @ 11.75 hrs, Volume= 0.022 af, Atten= 89%, Lag= 0.0 min
Discarded = 0.04 cfs @ 11.75 hrs, Volume= 0.022 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-4 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 22.41' @ 12.97 hrs Surf.Area= 640 sf Storage= 362 cf

Plug-Flow detention time= 91.9 min calculated for 0.021 af (99% of inflow)
Center-of-Mass det. time= 90.9 min (890.6 - 799.7)

Volume	Invert	Avail.Storage	Storage Description
#1	21.00'	1,024 cf	**Gravel Trench Stage Storage (Prismatic)** Listed below (Recalc) 2,560 cf Overall x 40.0% Voids

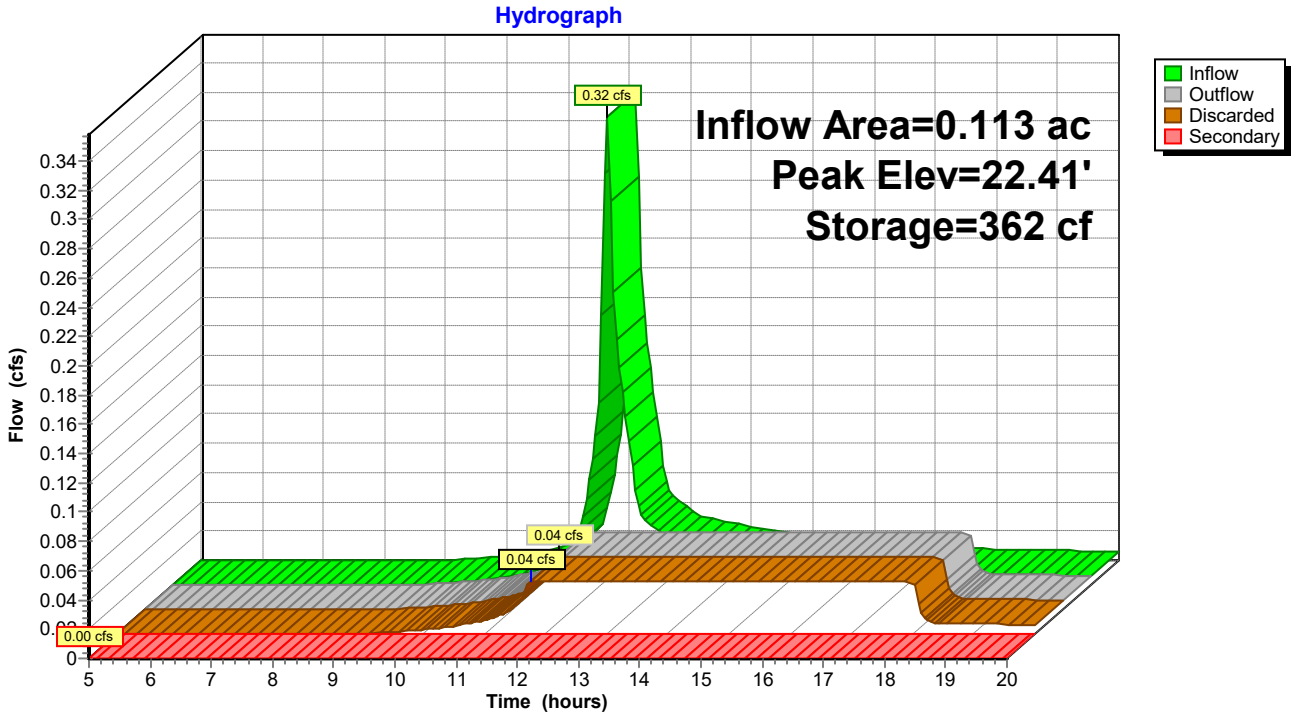
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
21.00	640	0	0
22.00	640	640	640
23.00	640	640	1,280
24.00	640	640	1,920
25.00	640	640	2,560

Device	Routing	Invert	Outlet Devices
#1	Secondary	25.00'	**136.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Trench (Overflow)** 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	21.00'	**2.410 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.04 cfs @ 11.75 hrs HW=21.05' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.04 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=21.00' (Free Discharge)
↑—**1=Top of Trench (Overflow)** (Controls 0.00 cfs)

Pond GT-5:


Hydrograph
Inflow Area=0.113 ac
Peak Elev=22.41'
Storage=362 cf
Inflow
Outflow
Discarded
Secondary
0.32 cfs
0.04 cfs
0.04 cfs
0.00 cfs
Flow (cfs)
Time (hours)

Summary for Pond GT-6:

Inflow Area = 0.093 ac, 17.20% Impervious, Inflow Depth > 0.98" for 10-YR event
Inflow = 0.08 cfs @ 12.18 hrs, Volume= 0.008 af
Outflow = 0.05 cfs @ 12.10 hrs, Volume= 0.008 af, Atten= 45%, Lag= 0.0 min
Discarded = 0.05 cfs @ 12.10 hrs, Volume= 0.008 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 24.33' @ 12.49 hrs Surf.Area= 252 sf Storage= 33 cf

Plug-Flow detention time= 4.0 min calculated for 0.008 af (100% of inflow)
Center-of-Mass det. time= 3.8 min (845.0 - 841.2)

Volume	Invert	Avail.Storage	Storage Description
#1	24.00'	302 cf	**Gravel Trench Stage Storage (Prismatic)** Listed below (Recalc) 756 cf Overall x 40.0% Voids

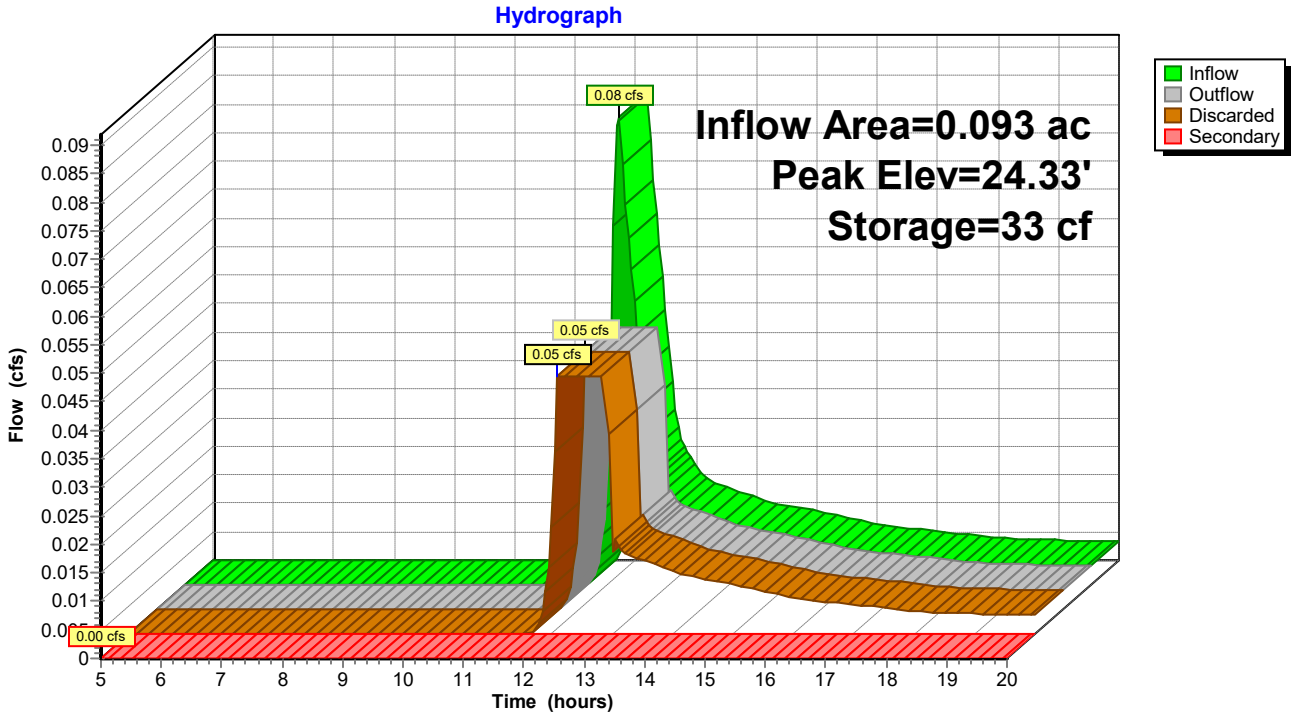
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
24.00	252	0	0
25.00	252	252	252
26.00	252	252	504
27.00	252	252	756

Device	Routing	Invert	Outlet Devices
#1	Secondary	27.00'	**78.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Trench (Overflow)** 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	24.00'	**7.716 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.05 cfs @ 12.10 hrs HW=24.04' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.05 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=24.00' (Free Discharge)
↑—**1=Top of Trench (Overflow)** (Controls 0.00 cfs)

Pond GT-6:


Hydrograph
Inflow
Outflow
Discarded
Secondary
Inflow Area=0.093 ac
Peak Elev=24.33'
Storage=33 cf
0.08 cfs
0.05 cfs
0.05 cfs
0.00 cfs
Flow (cfs)
Time (hours)
0.09
0.085
0.08
0.075
0.07
0.065
0.06
0.055
0.05
0.045
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

Summary for Pond IB-1:

Inflow Area = 3.343 ac, 73.41% Impervious, Inflow Depth > 1.07" for 10-YR event
Inflow = 4.14 cfs @ 12.09 hrs, Volume= 0.299 af
Outflow = 0.60 cfs @ 12.64 hrs, Volume= 0.298 af, Atten= 86%, Lag= 32.6 min
Discarded = 0.60 cfs @ 12.64 hrs, Volume= 0.298 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond IB-2 :
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond IB-2 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 27.70' @ 12.64 hrs Surf.Area= 3,122 sf Storage= 4,904 cf

Plug-Flow detention time= 76.1 min calculated for 0.298 af (100% of inflow)
Center-of-Mass det. time= 75.4 min (842.5 - 767.1)

Volume	Invert	Avail.Storage	Storage Description
#1	25.50'	20,062 cf	**Infiltration Basin Stage Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.50	1,503	0	0
26.00	1,745	812	812
27.00	2,510	2,128	2,940
28.00	3,387	2,949	5,888
29.00	4,245	3,816	9,704
30.00	5,159	4,702	14,406
31.00	6,152	5,656	20,062

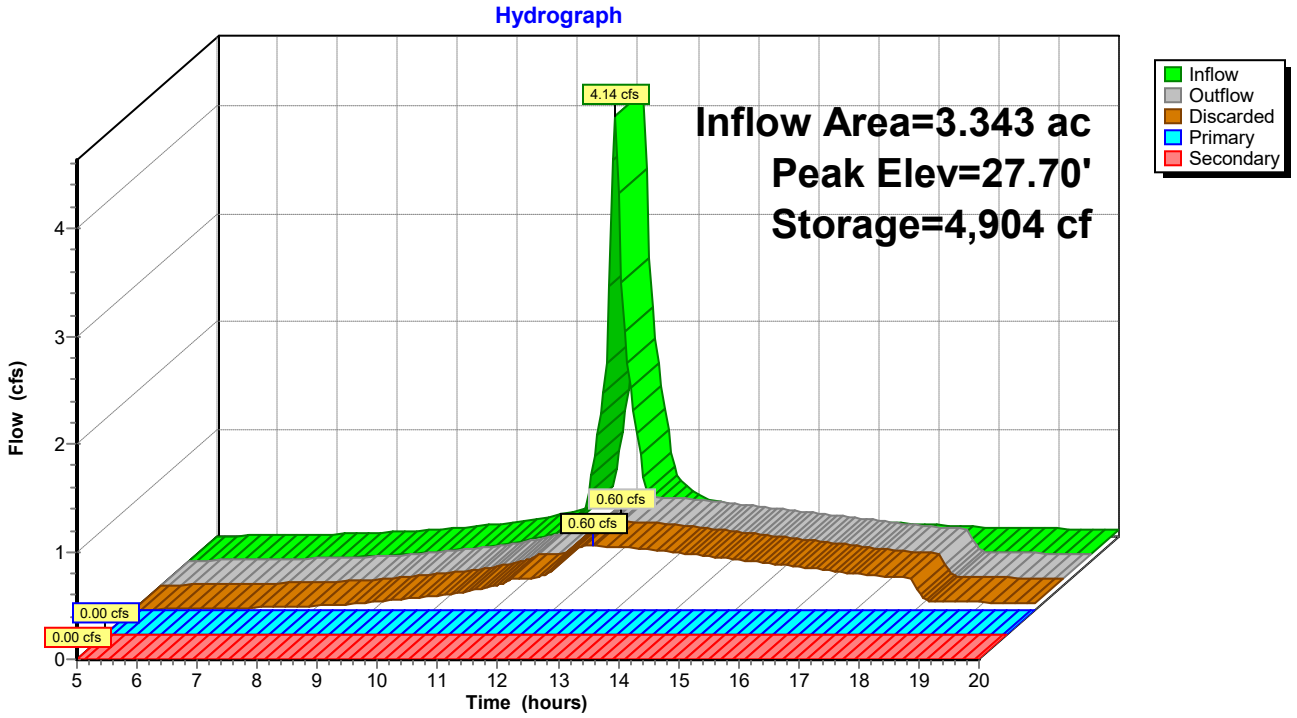
Device	Routing	Invert	Outlet Devices
#1	Secondary	31.00'	**320.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	25.50'	**8.270 in/hr Exfiltration over Surface area**
#3	Primary	27.00'	**6.0" Round 6" HDPE Pipe** L= 74.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 27.00' / 26.63' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#4	Device 3	30.00'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Grate X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads

Discarded OutFlow Max=0.60 cfs @ 12.64 hrs HW=27.70' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.60 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=25.50' (Free Discharge)
└**3=6" HDPE Pipe** (Controls 0.00 cfs)
└**4=18" Nyloplast Drain Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=25.50' (Free Discharge)
└**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond IB-1:



Summary for Pond IB-2:

Inflow Area = 3.541 ac, 70.01% Impervious, Inflow Depth > 0.02" for 10-YR event
Inflow = 0.04 cfs @ 12.30 hrs, Volume= 0.007 af
Outflow = 0.04 cfs @ 12.32 hrs, Volume= 0.007 af, Atten= 0%, Lag= 1.4 min
Discarded = 0.04 cfs @ 12.32 hrs, Volume= 0.007 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 28.51' @ 12.32 hrs Surf.Area= 513 sf Storage= 3 cf

Plug-Flow detention time= 1.4 min calculated for 0.007 af (100% of inflow)
Center-of-Mass det. time= 1.0 min (880.3 - 879.3)

Volume	Invert	Avail.Storage	Storage Description
#1	28.50'	2,225 cf	**Infiltration Basin Stage Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.50	503	0	0
29.00	1,212	429	429
30.00	2,380	1,796	2,225

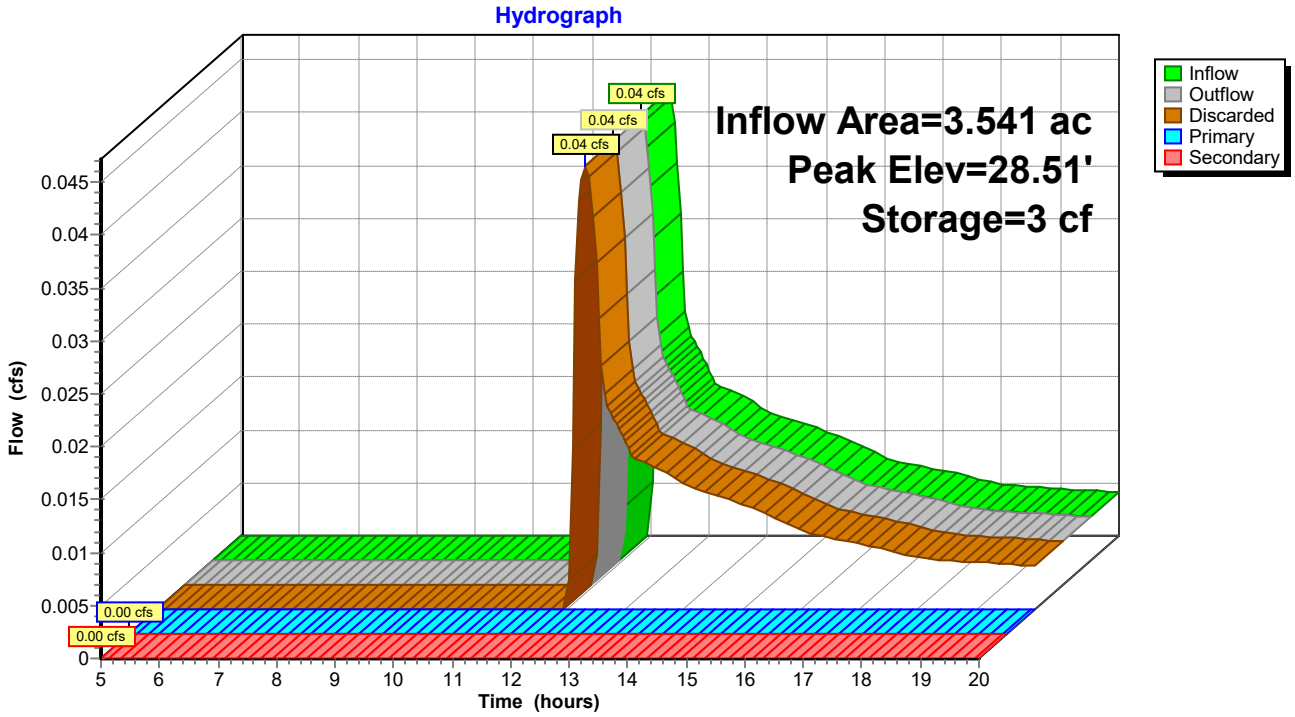
Device	Routing	Invert	Outlet Devices
#1	Secondary	30.00'	**335.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	28.50'	**7.716 in/hr Exfiltration over Surface area**
#3	Device 4	29.00'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Basin X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads
#4	Primary	26.63'	**6.0" Round 6" HDPE** L= 96.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 26.63' / 26.15' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

Discarded OutFlow Max=0.09 cfs @ 12.32 hrs HW=28.51' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 0.09 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=28.50' (Free Discharge)
↑**4=6" HDPE** (Passes 0.00 cfs of 0.74 cfs potential flow)
↑**3=18" Nyloplast Drain Basin** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=28.50' (Free Discharge)
↑**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond IB-2:


Hydrograph
Inflow Area=3.541 ac
Peak Elev=28.51'
Storage=3 cf
Inflow
Outflow
Discarded
Primary
Secondary
0.04 cfs
0.04 cfs
0.04 cfs
0.00 cfs
0.00 cfs
Flow (cfs)
0
0.005
0.01
0.015
0.02
0.025
0.03
0.035
0.04
0.045
5
6
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18
19
20
Time (hours)

Summary for Pond RG-1:

Inflow Area = 2.174 ac, 76.22% Impervious, Inflow Depth > 3.50" for 10-YR event
Inflow = 8.13 cfs @ 12.09 hrs, Volume= 0.634 af
Outflow = 1.57 cfs @ 12.57 hrs, Volume= 0.634 af, Atten= 81%, Lag= 28.4 min
Discarded = 1.57 cfs @ 12.57 hrs, Volume= 0.634 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond IB-1 :
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond IB-1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 28.85' @ 12.57 hrs Surf.Area= 5,642 sf Storage= 9,670 cf

Plug-Flow detention time= 56.5 min calculated for 0.634 af (100% of inflow)
Center-of-Mass det. time= 55.9 min (808.6 - 752.7)

Volume	Invert	Avail.Storage	Storage Description
#1	26.00'	36,814 cf	**Rain Garden Stage Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.00	1,626	0	0
27.00	2,502	2,064	2,064
27.50	3,473	1,494	3,558
28.00	4,237	1,928	5,485
29.00	5,896	5,067	10,552
30.00	7,760	6,828	17,380
31.00	9,713	8,737	26,116
32.00	11,682	10,698	36,814

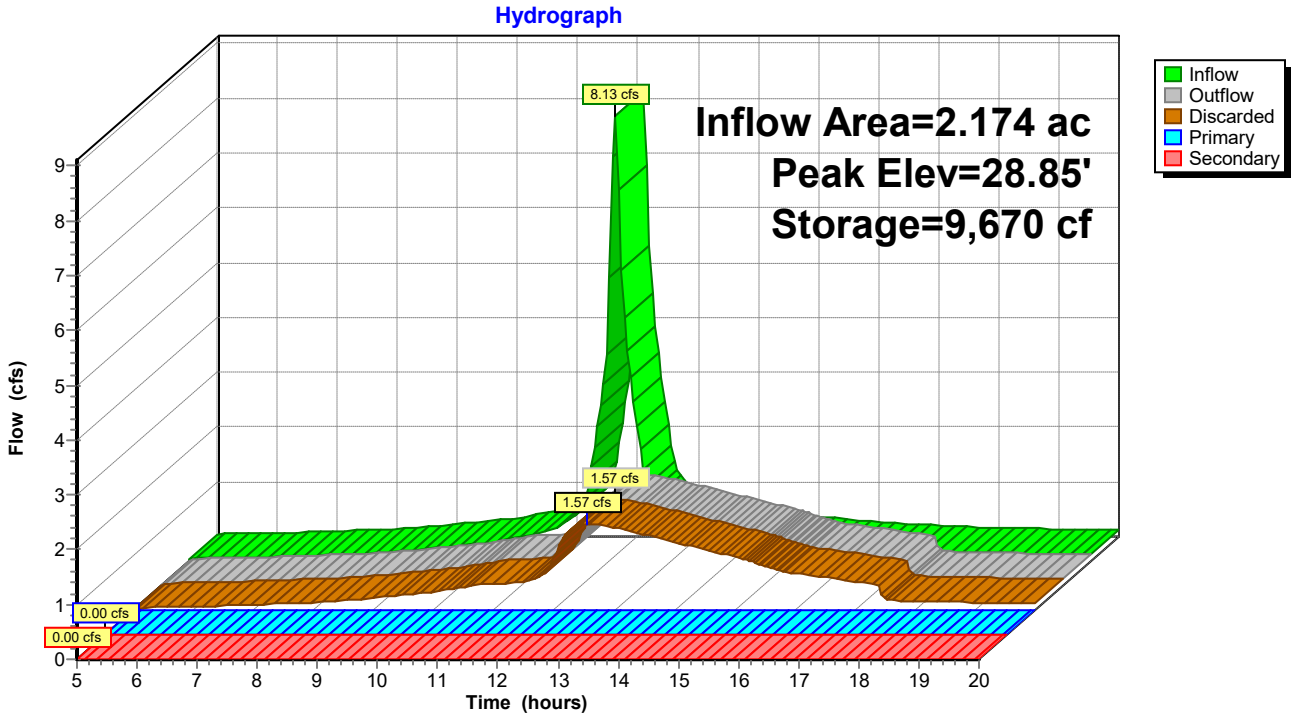
Device	Routing	Invert	Outlet Devices
#1	Secondary	32.00'	**655.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	26.00'	**12.033 in/hr Exfiltration over Surface area**
#3	Primary	27.07'	**6.0" Round 6" HDPE Pipe** L= 42.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 27.07' / 26.65' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#4	Device 3	30.50'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Grate X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads

Discarded OutFlow Max=1.57 cfs @ 12.57 hrs HW=28.85' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 1.57 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=26.00' (Free Discharge)
└**3=6" HDPE Pipe** (Controls 0.00 cfs)
└**4=18" Nyloplast Drain Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=26.00' (Free Discharge)
└**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond RG-1:



Summary for Pond SWB-1:

Inflow Area = 0.154 ac, 35.71% Impervious, Inflow Depth > 2.36" for 10-YR event
Inflow = 0.33 cfs @ 12.23 hrs, Volume= 0.030 af
Outflow = 0.33 cfs @ 12.25 hrs, Volume= 0.029 af, Atten= 0%, Lag= 0.8 min
Primary = 0.33 cfs @ 12.25 hrs, Volume= 0.029 af
Routed to Pond UG-1 :
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 30.96' @ 12.25 hrs Surf.Area= 264 sf Storage= 80 cf

Plug-Flow detention time= 25.0 min calculated for 0.029 af (95% of inflow)
Center-of-Mass det. time= 9.0 min (815.0 - 806.0)

Volume	Invert	Avail.Storage	Storage Description
#1	30.60'	510 cf	**Basin Stage Storage (Prismatic)** Listed below (Recalc)

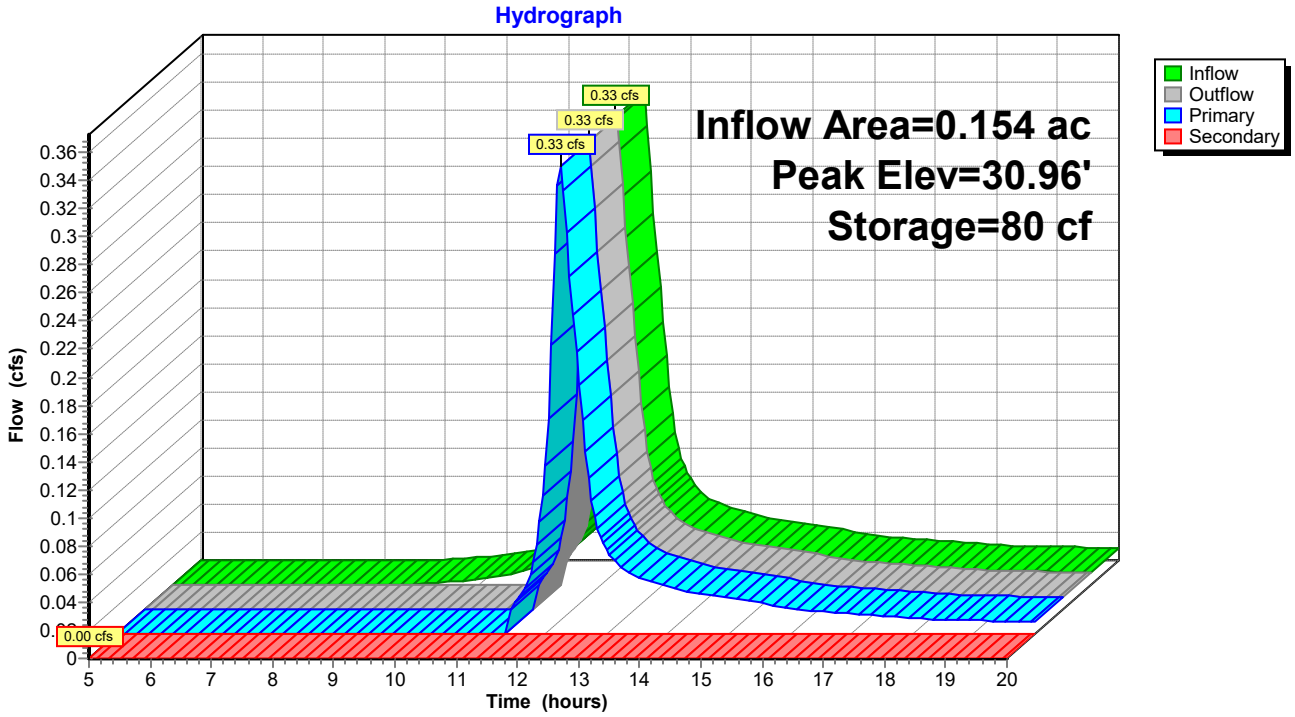
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
30.60	182	0	0
31.00	274	91	91
31.50	412	172	263
32.00	576	247	510

Device	Routing	Invert	Outlet Devices
#1	Secondary	32.00'	**114.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** 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	Primary	28.38'	**6.0" Round 6" HDPE Pipe** L= 23.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 28.38' / 28.15' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#3	Device 2	30.88'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Grate X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.33 cfs @ 12.25 hrs HW=30.96' (Free Discharge)
↑—**2=6" HDPE Pipe** (Passes 0.33 cfs of 1.14 cfs potential flow)
↑—**3=18" Nyloplast Drain Grate** (Weir Controls 0.33 cfs @ 0.91 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=30.60' (Free Discharge)
↑—**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond SWB-1:


Hydrograph
Inflow Area=0.154 ac
Peak Elev=30.96'
Storage=80 cf
Inflow
Outflow
Primary
Secondary
0.33 cfs
0.33 cfs
0.33 cfs
0.00 cfs
Flow (cfs)
Time (hours)
0.36
0.34
0.32
0.3
0.28
0.26
0.24
0.22
0.2
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
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Summary for Pond SWB-2:

Inflow Area = 0.101 ac, 71.29% Impervious, Inflow Depth > 3.28" for 10-YR event
Inflow = 0.40 cfs @ 12.09 hrs, Volume= 0.028 af
Outflow = 0.40 cfs @ 12.11 hrs, Volume= 0.025 af, Atten= 1%, Lag= 1.0 min
Primary = 0.40 cfs @ 12.11 hrs, Volume= 0.025 af
Routed to Pond UG-1 :
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond SWB-1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 30.46' @ 12.11 hrs Surf.Area= 378 sf Storage= 134 cf

Plug-Flow detention time= 48.1 min calculated for 0.025 af (91% of inflow)
Center-of-Mass det. time= 19.6 min (795.7 - 776.1)

Volume	Invert	Avail.Storage	Storage Description
#1	30.00'	410 cf	**Basin Stage Storage (Prismatic)** Listed below (Recalc)

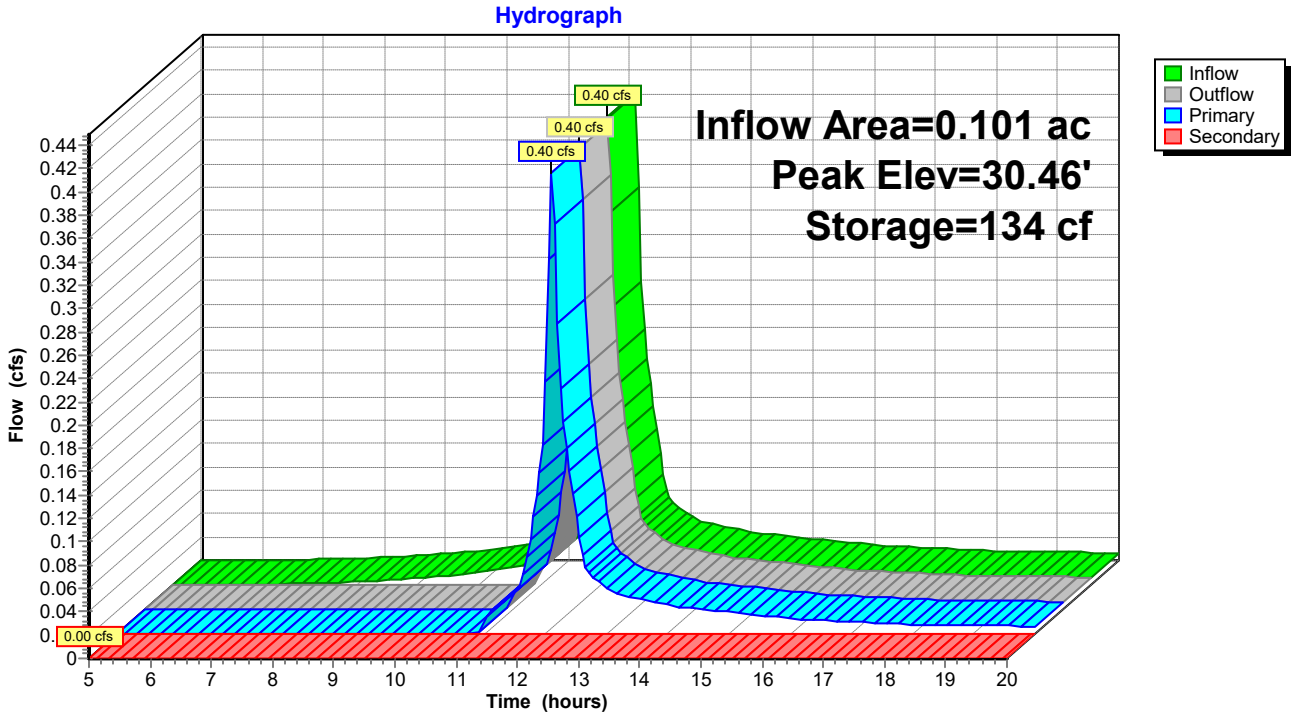
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
30.00	210	0	0
30.50	394	151	151
31.00	640	259	410

Device	Routing	Invert	Outlet Devices
#1	Secondary	31.00'	**164.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** 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	Primary	27.87'	**6.0" Round 6" HDPE Pipe** L= 24.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 27.87' / 27.63' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#3	Device 2	30.37'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Grate X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.39 cfs @ 12.11 hrs HW=30.46' (Free Discharge)
└**2=6" HDPE Pipe** (Passes 0.39 cfs of 1.14 cfs potential flow)
└**3=18" Nyloplast Drain Grate** (Weir Controls 0.39 cfs @ 0.96 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=30.00' (Free Discharge)
└**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond SWB-2:


Hydrograph
Inflow Area=0.101 ac
Peak Elev=30.46'
Storage=134 cf
Inflow
Outflow
Primary
Secondary
0.40 cfs
0.40 cfs
0.40 cfs
0.00 cfs
Flow (cfs)
Time (hours)

Summary for Pond SWB-3:

Inflow Area = 0.052 ac, 44.23% Impervious, Inflow Depth > 1.31" for 10-YR event
Inflow = 0.08 cfs @ 12.10 hrs, Volume= 0.006 af
Outflow = 0.01 cfs @ 13.35 hrs, Volume= 0.002 af, Atten= 89%, Lag= 75.1 min
Primary = 0.01 cfs @ 13.35 hrs, Volume= 0.002 af
Routed to Pond UG-1 :
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond SWB-2 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 30.95' @ 13.35 hrs Surf.Area= 404 sf Storage= 140 cf

Plug-Flow detention time= 211.5 min calculated for 0.002 af (44% of inflow)
Center-of-Mass det. time= 115.4 min (941.0 - 825.6)

Volume	Invert	Avail.Storage	Storage Description
#1	30.50'	824 cf	**Basin Stage Storage (Prismatic)** Listed below (Recalc)

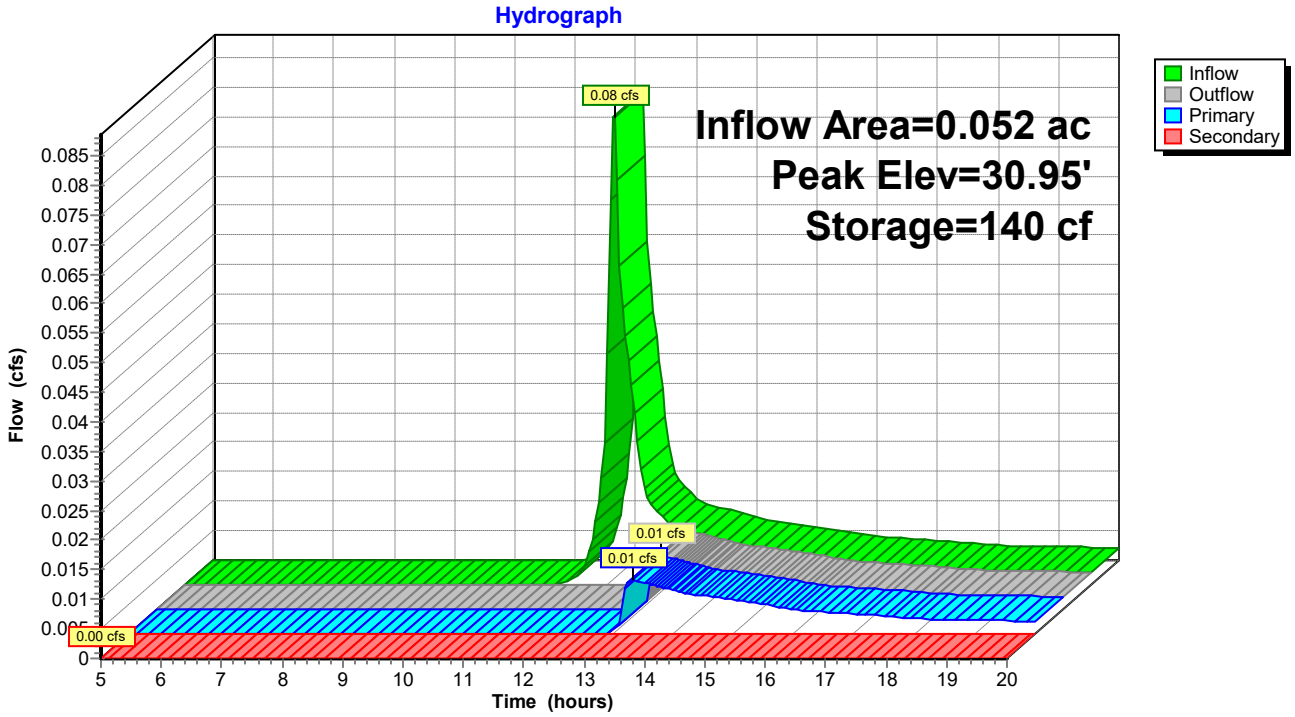
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
30.50	211	0	0
31.00	423	159	159
32.00	908	666	824

Device	Routing	Invert	Outlet Devices
#1	Secondary	32.00'	**168.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** 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	Primary	28.95'	**6.0" Round 6" HDPE Pipe** L= 11.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 28.95' / 27.84' S= 0.1009 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#3	Device 2	30.95'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Grate X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.01 cfs @ 13.35 hrs HW=30.95' (Free Discharge)
└**2=6" HDPE Pipe** (Passes 0.01 cfs of 0.99 cfs potential flow)
└**3=18" Nyloplast Drain Grate** (Weir Controls 0.01 cfs @ 0.23 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=30.50' (Free Discharge)
└**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond SWB-3:


Hydrograph
Inflow Area=0.052 ac
Peak Elev=30.95'
Storage=140 cf
0.08 cfs
0.01 cfs
0.01 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0.085
0.08
0.075
0.07
0.065
0.06
0.055
0.05
0.045
0.04
0.035
0.03
0.025
0.02
0.015
0.01
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Summary for Pond SWB-4:

Inflow Area = 0.743 ac, 48.72% Impervious, Inflow Depth > 1.89" for 10-YR event
Inflow = 1.66 cfs @ 12.09 hrs, Volume= 0.117 af
Outflow = 0.62 cfs @ 12.40 hrs, Volume= 0.113 af, Atten= 63%, Lag= 18.2 min
Primary = 0.62 cfs @ 12.40 hrs, Volume= 0.113 af
Routed to Pond UG-1 :
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-2 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 27.94' @ 12.40 hrs Surf.Area= 0.043 ac Storage= 0.032 af

Plug-Flow detention time= 41.8 min calculated for 0.113 af (96% of inflow)
Center-of-Mass det. time= 29.8 min (829.7 - 799.9)

Volume	Invert	Avail.Storage	Storage Description
#1	27.00'	0.164 af	**Stormwater Management Basin Storage (Prismatic)** Listed below (Recalc)

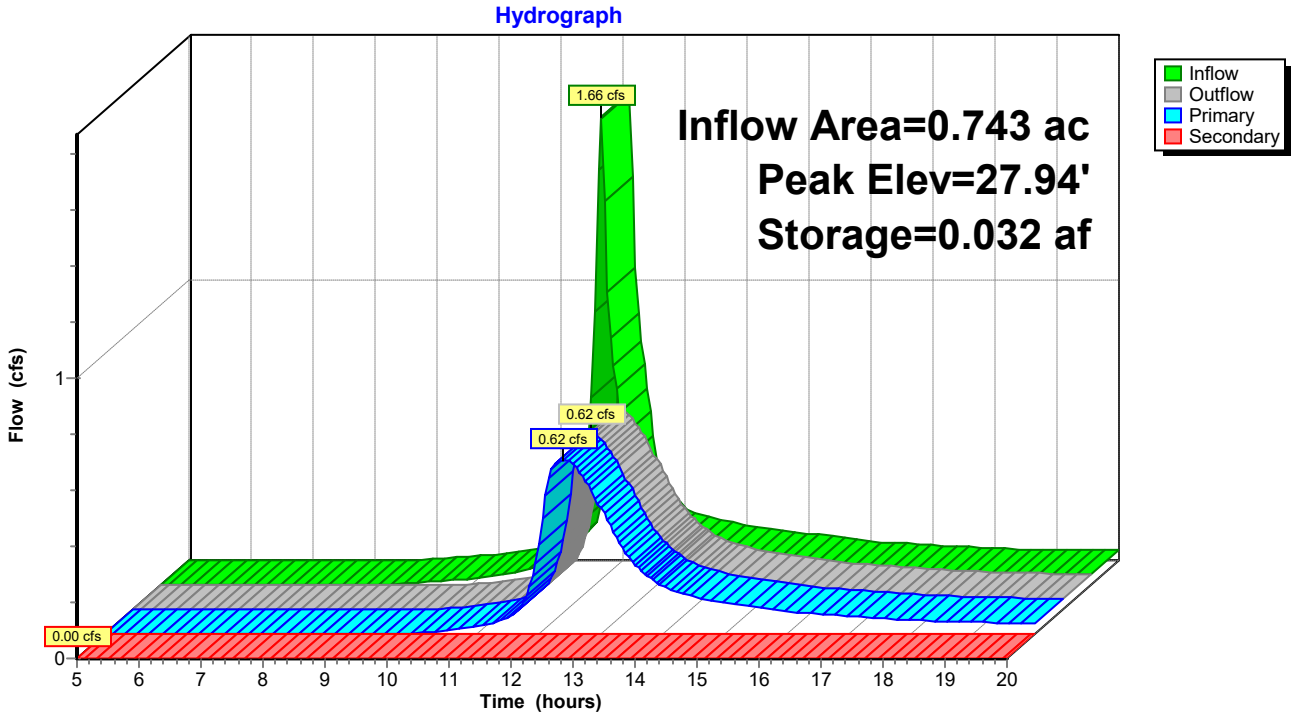
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
27.00	0.026	0.000	0.000
28.00	0.044	0.035	0.035
29.00	0.064	0.054	0.089
30.00	0.086	0.075	0.164

Device	Routing	Invert	Outlet Devices
#1	Secondary	30.00'	**318.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** 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	Primary	26.95'	**8.0" Round 8" HDPE** L= 44.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 26.95' / 26.73' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#3	Device 2	28.95'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Grate X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads
#4	Device 2	27.00'	**6.0" Round 6" HDPE Inlet Pipe** L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 27.00' / 26.95' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

Primary OutFlow Max=0.62 cfs @ 12.40 hrs HW=27.94' (Free Discharge)
└**2=8" HDPE** (Passes 0.62 cfs of 1.04 cfs potential flow)
└**3=18" Nyloplast Drain Grate** (Controls 0.00 cfs)
└**4=6" HDPE Inlet Pipe** (Inlet Controls 0.62 cfs @ 3.15 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=27.00' (Free Discharge)
└**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond SWB-4:


Hydrograph
Inflow Area=0.743 ac
Peak Elev=27.94'
Storage=0.032 af
Inflow
Outflow
Primary
Secondary
1.66 cfs
0.62 cfs
0.62 cfs
0.00 cfs
Flow (cfs)
0
1
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Time (hours)

Summary for Pond UG-1:

Inflow Area = 1.185 ac, 54.60% Impervious, Inflow Depth > 2.25" for 10-YR event
Inflow = 1.77 cfs @ 12.12 hrs, Volume= 0.222 af
Outflow = 0.66 cfs @ 11.95 hrs, Volume= 0.222 af, Atten= 63%, Lag= 0.0 min
Discarded = 0.66 cfs @ 11.95 hrs, Volume= 0.222 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 22.79' @ 12.89 hrs Surf.Area= 0.048 ac Storage= 0.039 af

Plug-Flow detention time= 17.5 min calculated for 0.222 af (100% of inflow)
Center-of-Mass det. time= 17.3 min (820.2 - 802.9)

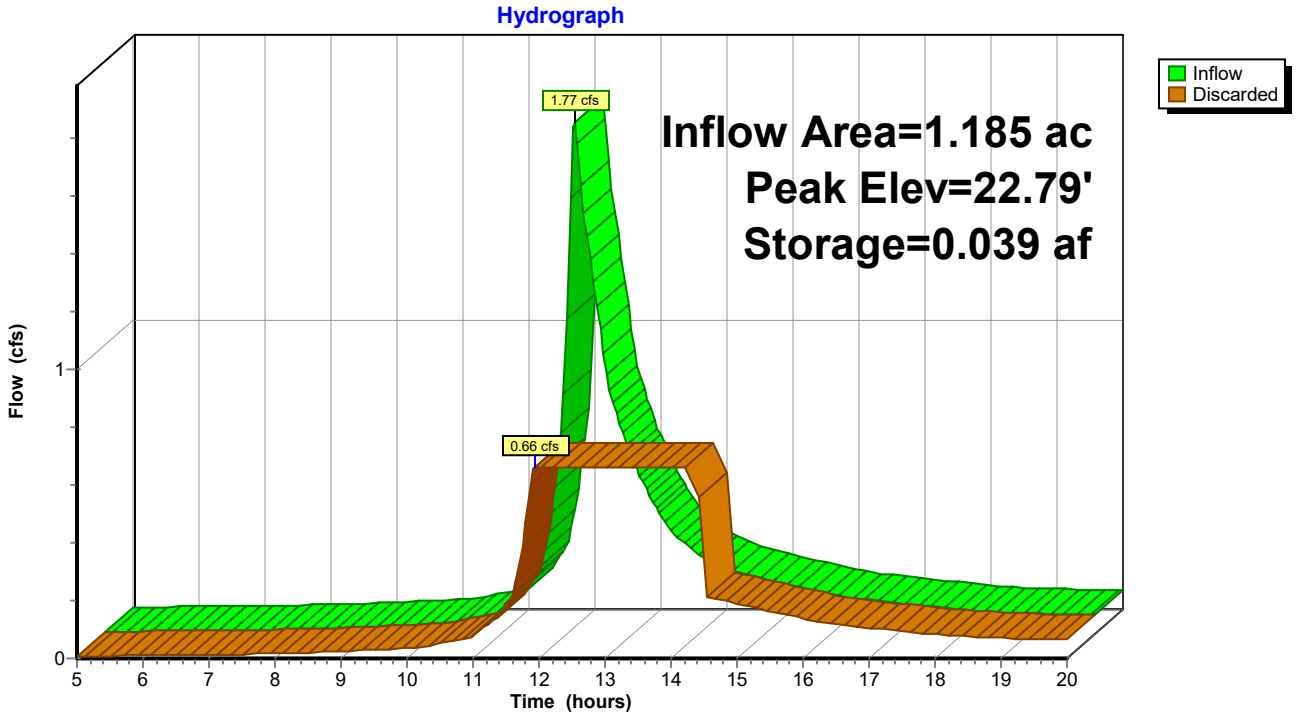
Volume	Invert	Avail.Storage	Storage Description
#1A	21.44'	0.069 af	**29.92'W x 70.23'L x 5.50'H Field A** 0.265 af Overall - 0.094 af Embedded = 0.172 af x 40.0% Voids
#2A	22.19'	0.094 af	**ADS_StormTech MC-3500 d +Cap** x 36 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 36 Chambers in 4 Rows Cap Storage= 14.9 cf x 2 x 4 rows = 119.2 cf
		0.162 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	21.44'	**13.652 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.66 cfs @ 11.95 hrs HW=21.52' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.66 cfs)

Pond UG-1:


Hydrograph
Inflow
Discarded
1.77 cfs
0.66 cfs
Inflow Area=1.185 ac
Peak Elev=22.79'
Storage=0.039 af
Flow (cfs)
0
1
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Time (hours)

Summary for Subcatchment PR-01:

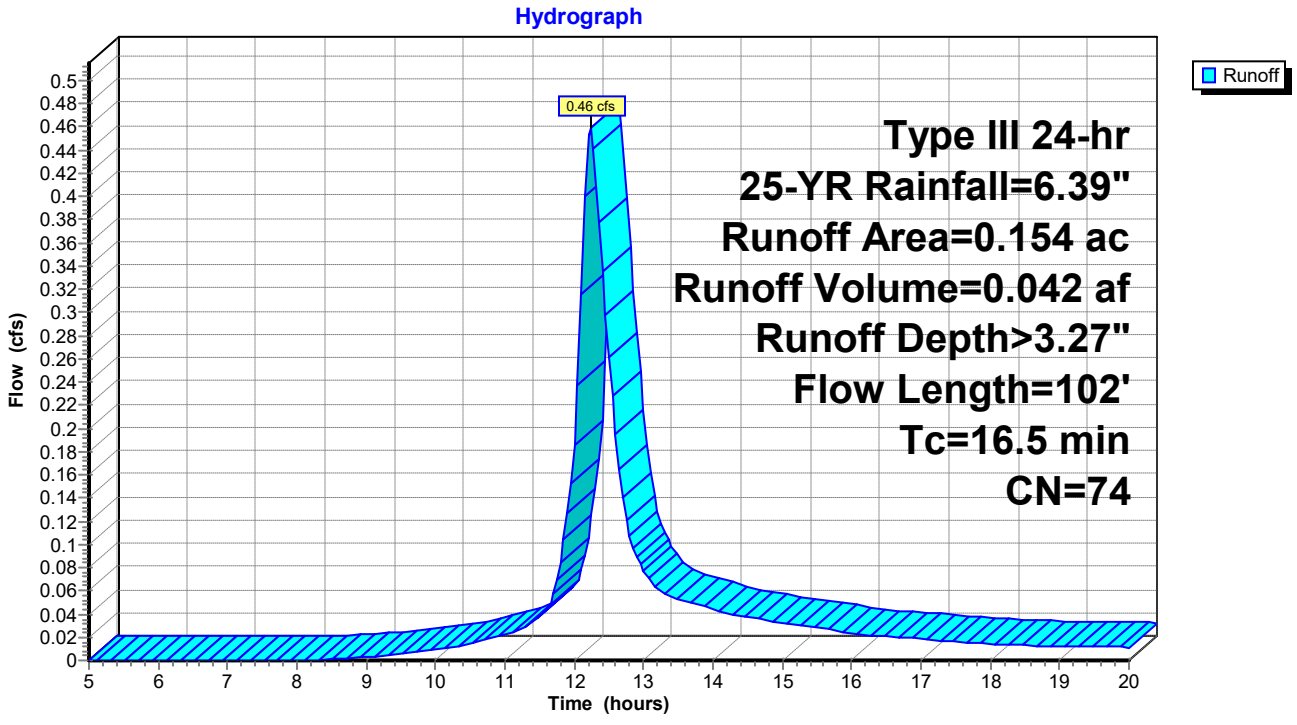
Runoff = 0.46 cfs @ 12.23 hrs, Volume= 0.042 af, Depth> 3.27"
Routed to Pond SWB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.39"

	Area (ac)	CN	Description
	0.099	61	>75% Grass cover, Good, HSG B
*	0.055	98	Paved
	0.154	74	Weighted Average
	0.099		64.29% Pervious Area
	0.055		35.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	100	0.0050	0.10		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.0	2	0.0500	1.57		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
16.5	102	Total			

Subcatchment PR-01:



Summary for Subcatchment PR-02:

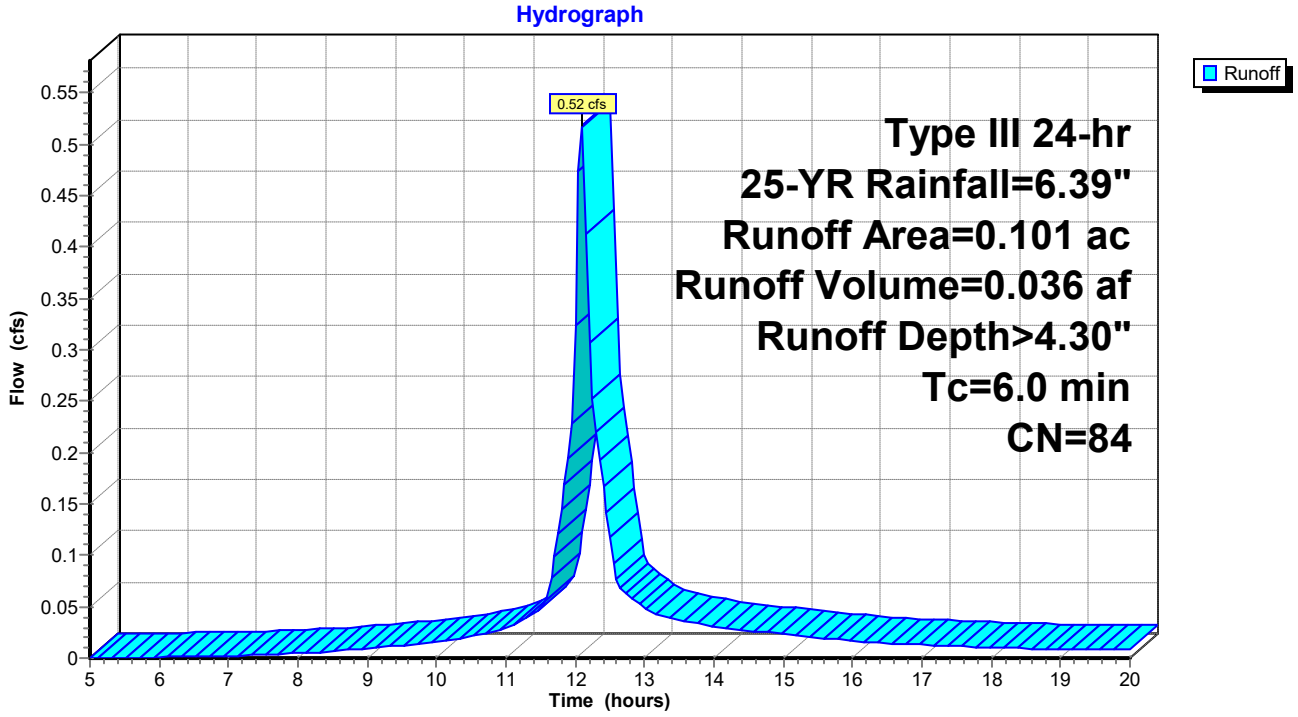
Runoff = 0.52 cfs @ 12.09 hrs, Volume= 0.036 af, Depth> 4.30"
Routed to Pond SWB-2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.39"

	Area (ac)	CN	Description
	0.009	30	Meadow, non-grazed, HSG A
	0.019	58	Meadow, non-grazed, HSG B
	0.001	61	>75% Grass cover, Good, HSG B
*	0.072	98	Paved
	0.101	84	Weighted Average
	0.029		28.71% Pervious Area
	0.072		71.29% Impervious Area

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

Subcatchment PR-02:



Summary for Subcatchment PR-03:

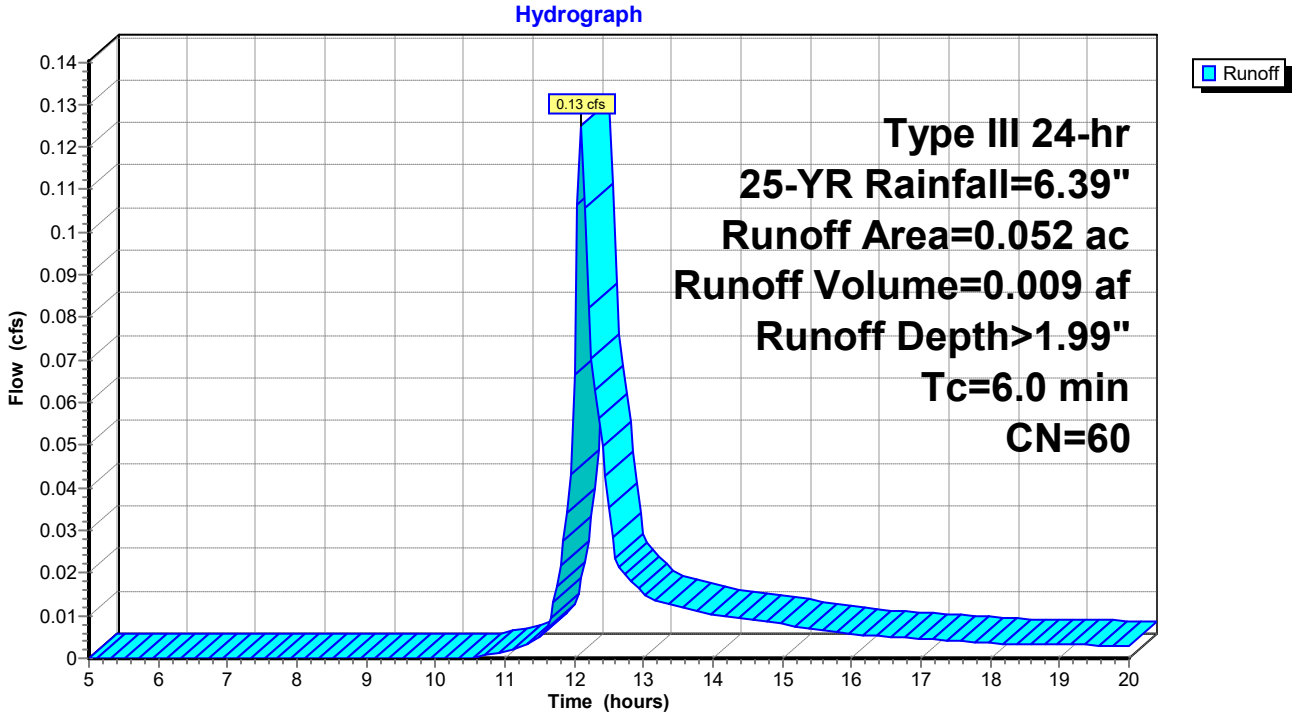
Runoff = 0.13 cfs @ 12.10 hrs, Volume= 0.009 af, Depth> 1.99"
Routed to Pond SWB-3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.39"

	Area (ac)	CN	Description
	0.029	30	Meadow, non-grazed, HSG A
*	0.023	98	Paved
	0.052	60	Weighted Average
	0.029		55.77% Pervious Area
	0.023		44.23% Impervious Area

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

Subcatchment PR-03:



Summary for Subcatchment PR-04:

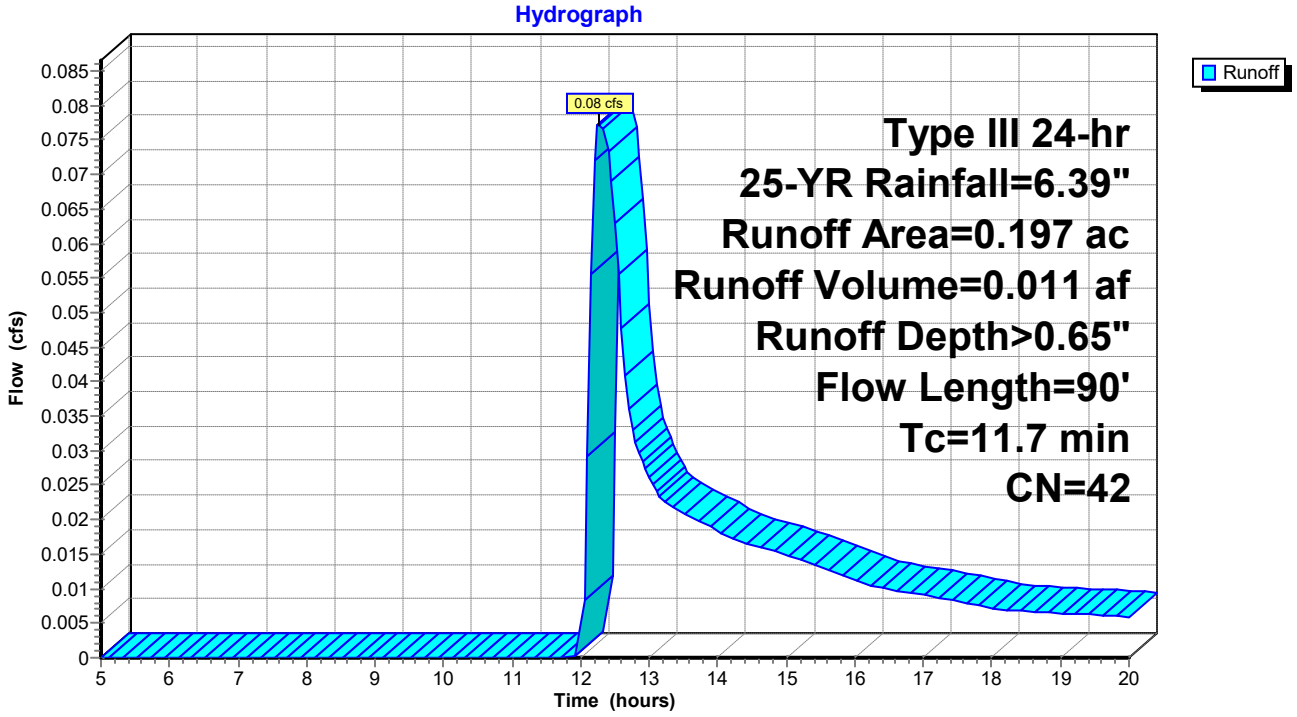
Runoff = 0.08 cfs @ 12.28 hrs, Volume= 0.011 af, Depth> 0.65"
Routed to Pond SWB-4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.39"

	Area (ac)	CN	Description
	0.097	30	Meadow, non-grazed, HSG A
	0.076	39	>75% Grass cover, Good, HSG A
*	0.024	98	Paved
	0.197	42	Weighted Average
	0.173		87.82% Pervious Area
	0.024		12.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	81	0.0200	0.12		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.40"
0.0	7	0.0290	3.46		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.0	2	0.3500	4.14		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
11.7	90	Total			

Subcatchment PR-04:



Summary for Subcatchment PR-05:

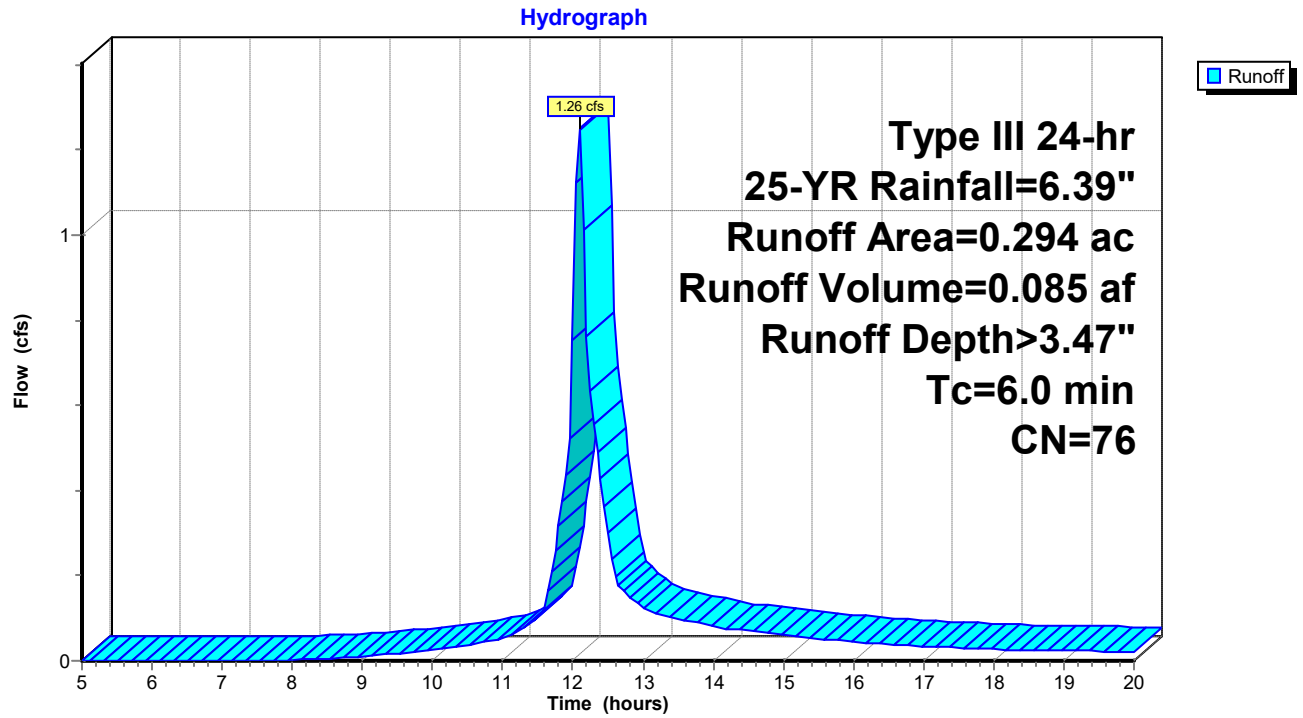
Runoff = 1.26 cfs @ 12.09 hrs, Volume= 0.085 af, Depth> 3.47"
Routed to Pond SWB-4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.39"

	Area (ac)	CN	Description
	0.083	39	>75% Grass cover, Good, HSG A
	0.023	30	Meadow, non-grazed, HSG A
*	0.188	98	Paved
	0.294	76	Weighted Average
	0.106		36.05% Pervious Area
	0.188		63.95% Impervious Area

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

Subcatchment PR-05:



Summary for Subcatchment PR-06:

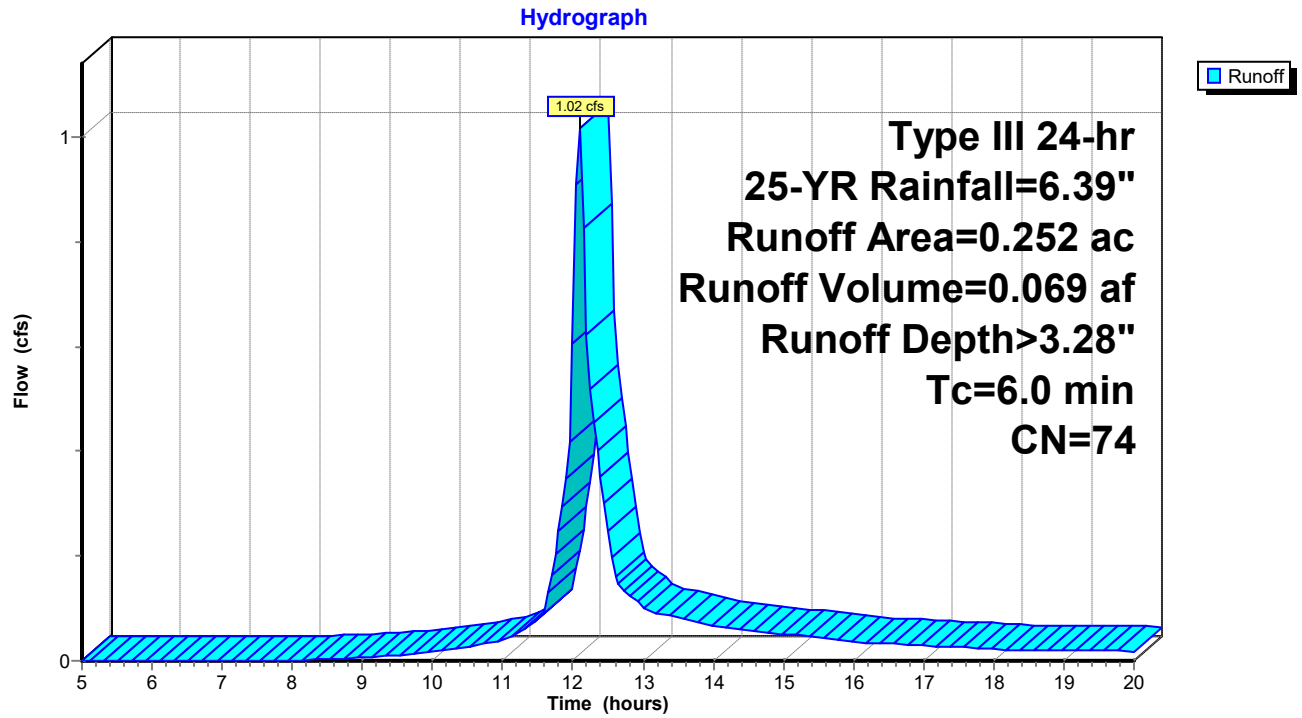
Runoff = 1.02 cfs @ 12.09 hrs, Volume= 0.069 af, Depth> 3.28"
Routed to Pond SWB-4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.39"

	Area (ac)	CN	Description
	0.017	30	Meadow, non-grazed, HSG A
	0.085	39	>75% Grass cover, Good, HSG A
*	0.150	98	Paved
	0.252	74	Weighted Average
	0.102		40.48% Pervious Area
	0.150		59.52% Impervious Area

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

Subcatchment PR-06:



Summary for Subcatchment PR-07:

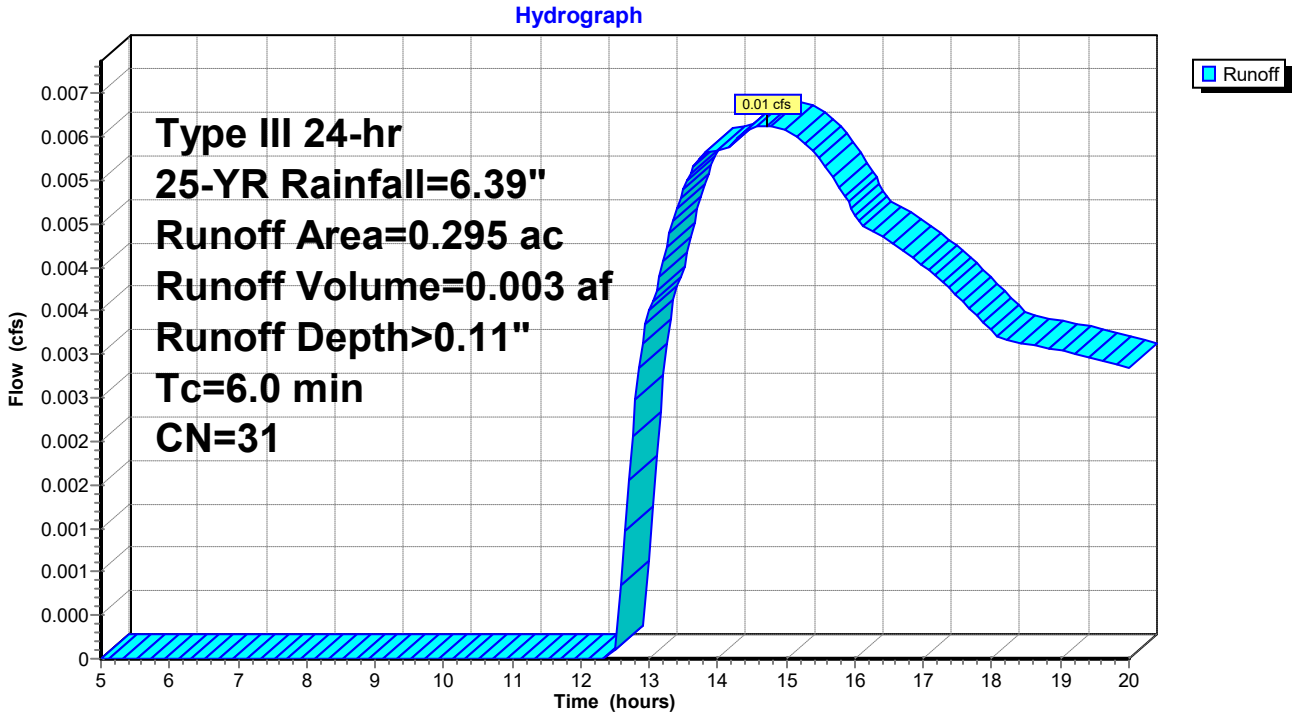
Runoff = 0.01 cfs @ 14.72 hrs, Volume= 0.003 af, Depth> 0.11"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.39"

Area (ac)	CN	Description
0.283	30	Brush, Good, HSG A
0.012	48	Brush, Good, HSG B
0.295	31	Weighted Average
0.295		100.00% Pervious Area

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

Subcatchment PR-07:



Summary for Subcatchment PR-08:

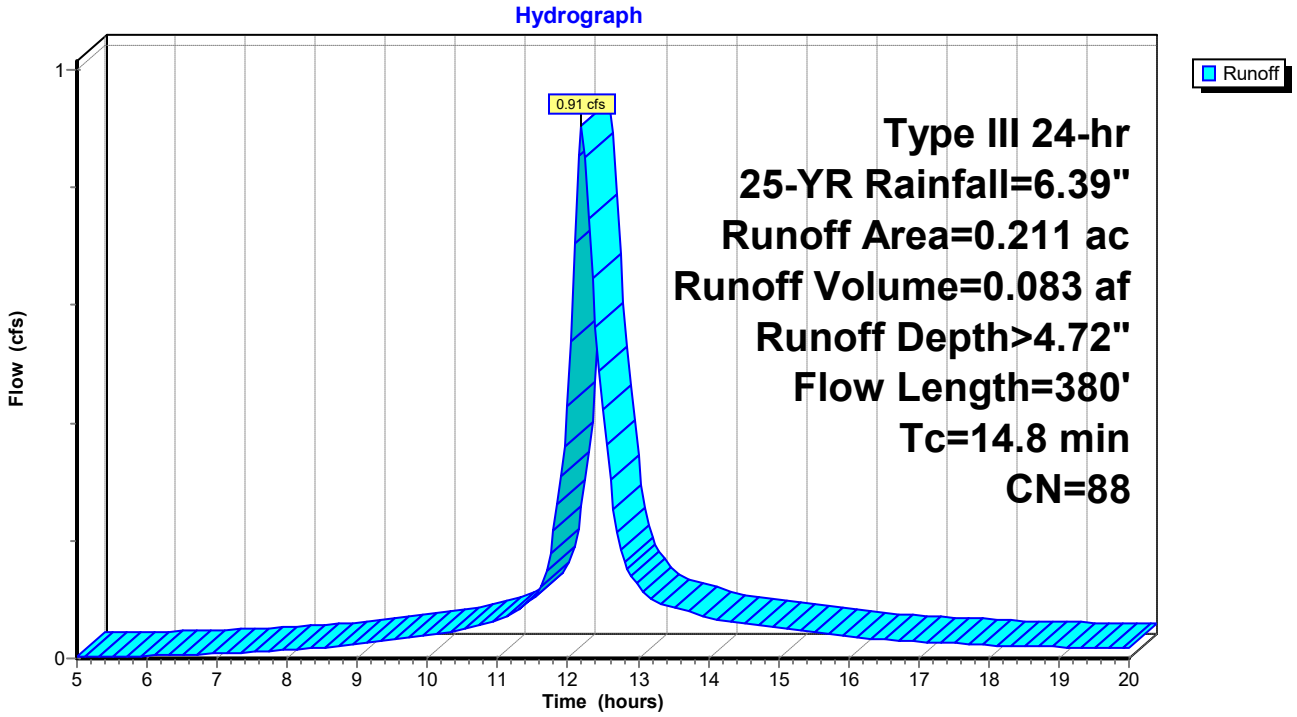
Runoff = 0.91 cfs @ 12.20 hrs, Volume= 0.083 af, Depth> 4.72"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.39"

	Area (ac)	CN	Description
	0.018	39	>75% Grass cover, Good, HSG A
	0.031	61	>75% Grass cover, Good, HSG B
	0.000	58	Meadow, non-grazed, HSG B
*	0.162	98	Paved
	0.211	88	Weighted Average
	0.049		23.22% Pervious Area
	0.162		76.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	100	0.0140	0.15		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
3.0	126	0.0100	0.70		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.0	9	0.0220	3.01		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
0.2	18	0.0500	1.57		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
0.2	39	0.0290	3.46		**Shallow Concentrated Flow, E-F** Paved Kv= 20.3 fps
0.1	28	0.0050	3.21	2.52	**Pipe Channel, F-G** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
0.3	60	0.0050	3.47	2.73	**Pipe Channel, G-H** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
14.8	380	Total			

Subcatchment PR-08:



Summary for Subcatchment PR-09:

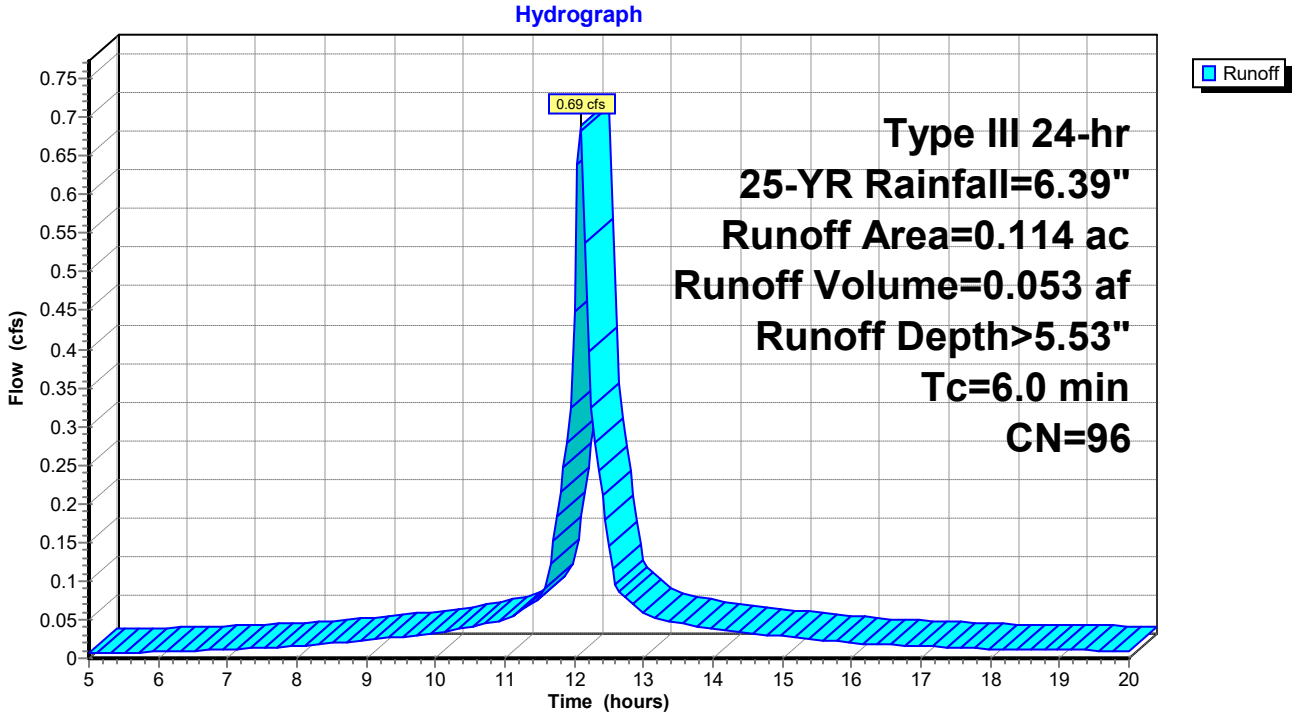
Runoff = 0.69 cfs @ 12.09 hrs, Volume= 0.053 af, Depth> 5.53"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.39"

	Area (ac)	CN	Description
	0.003	39	>75% Grass cover, Good, HSG A
*	0.111	98	Paved
	0.114	96	Weighted Average
	0.003		2.63% Pervious Area
	0.111		97.37% Impervious Area

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

Subcatchment PR-09:



Summary for Subcatchment PR-10:

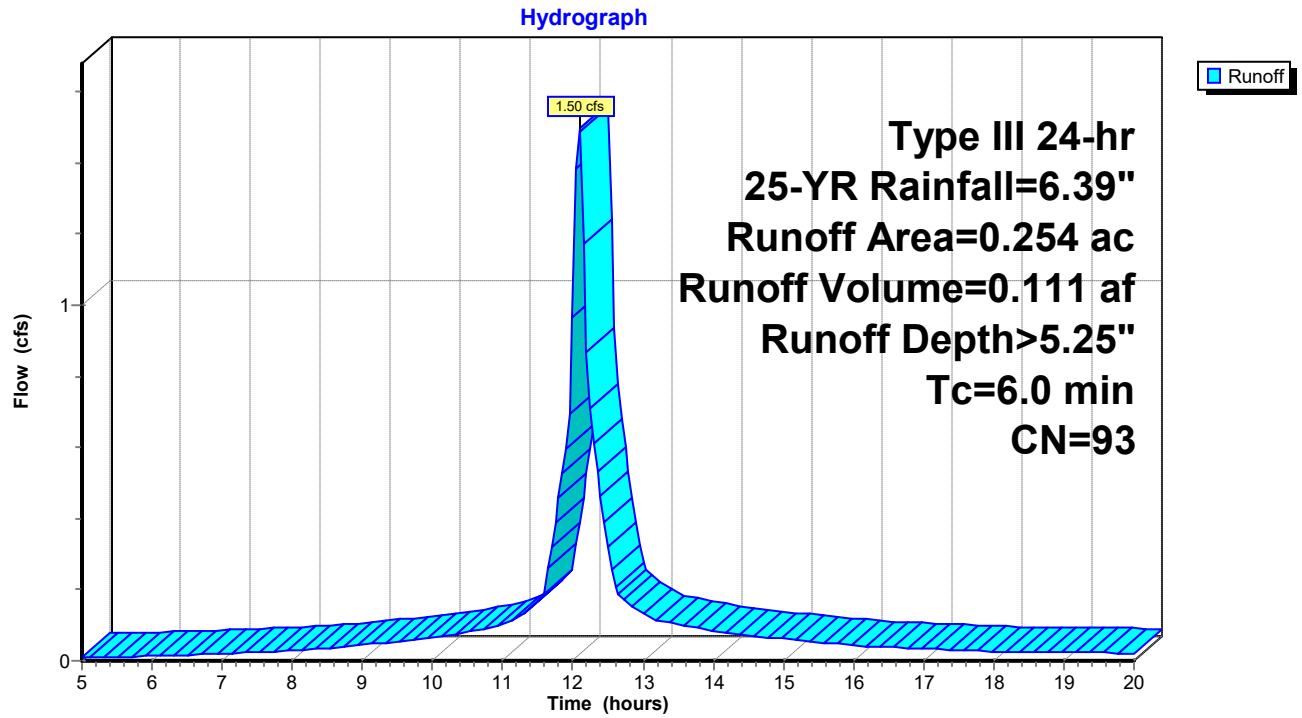
Runoff = 1.50 cfs @ 12.09 hrs, Volume= 0.111 af, Depth> 5.25"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.39"

	Area (ac)	CN	Description
	0.020	39	>75% Grass cover, Good, HSG A
	0.004	61	>75% Grass cover, Good, HSG B
*	0.230	98	Paved
	0.254	93	Weighted Average
	0.024		9.45% Pervious Area
	0.230		90.55% Impervious Area

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

Subcatchment PR-10:



Summary for Subcatchment PR-11:

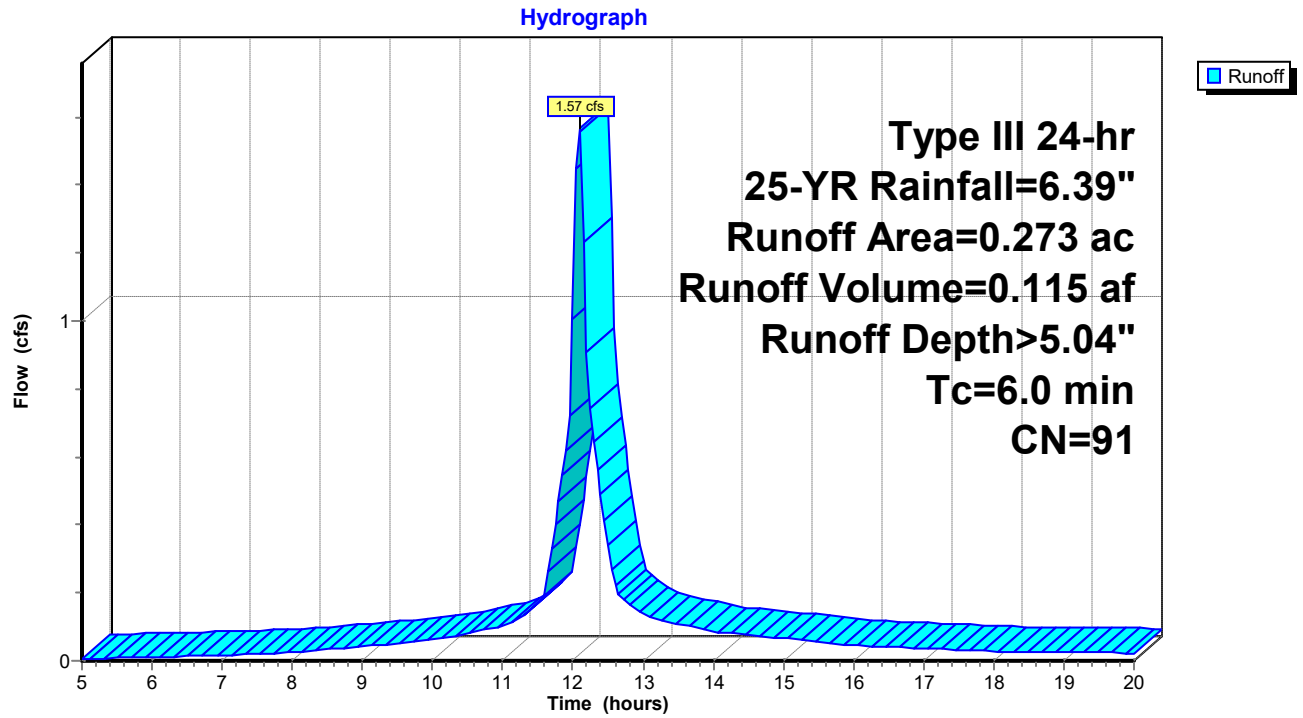
Runoff = 1.57 cfs @ 12.09 hrs, Volume= 0.115 af, Depth> 5.04"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.39"

	Area (ac)	CN	Description
	0.028	39	>75% Grass cover, Good, HSG A
	0.008	61	>75% Grass cover, Good, HSG B
*	0.237	98	Paved
	0.273	91	Weighted Average
	0.036		13.19% Pervious Area
	0.237		86.81% Impervious Area

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

Subcatchment PR-11:



Summary for Subcatchment PR-12:

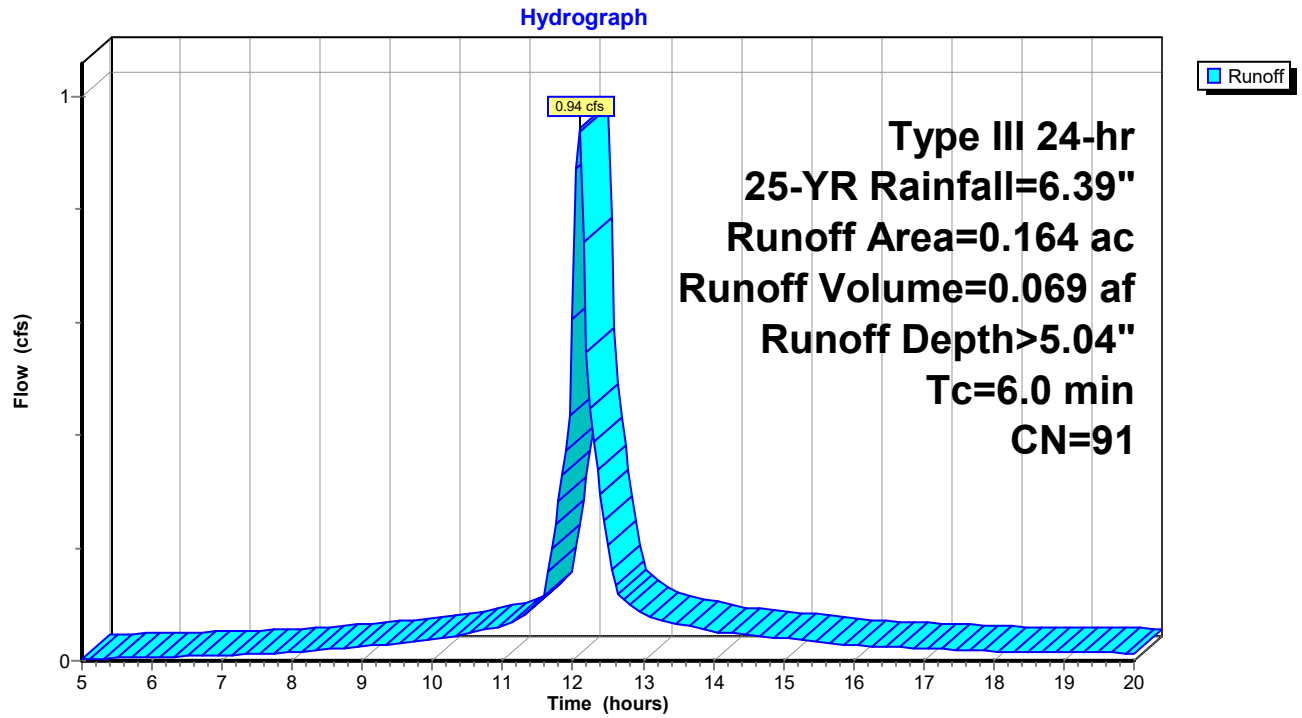
Runoff = 0.94 cfs @ 12.09 hrs, Volume= 0.069 af, Depth> 5.04"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.39"

	Area (ac)	CN	Description
	0.019	39	>75% Grass cover, Good, HSG A
	0.000	30	Meadow, non-grazed, HSG A
*	0.145	98	Paved
	0.164	91	Weighted Average
	0.019		11.59% Pervious Area
	0.145		88.41% Impervious Area

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

Subcatchment PR-12:



Summary for Subcatchment PR-13:

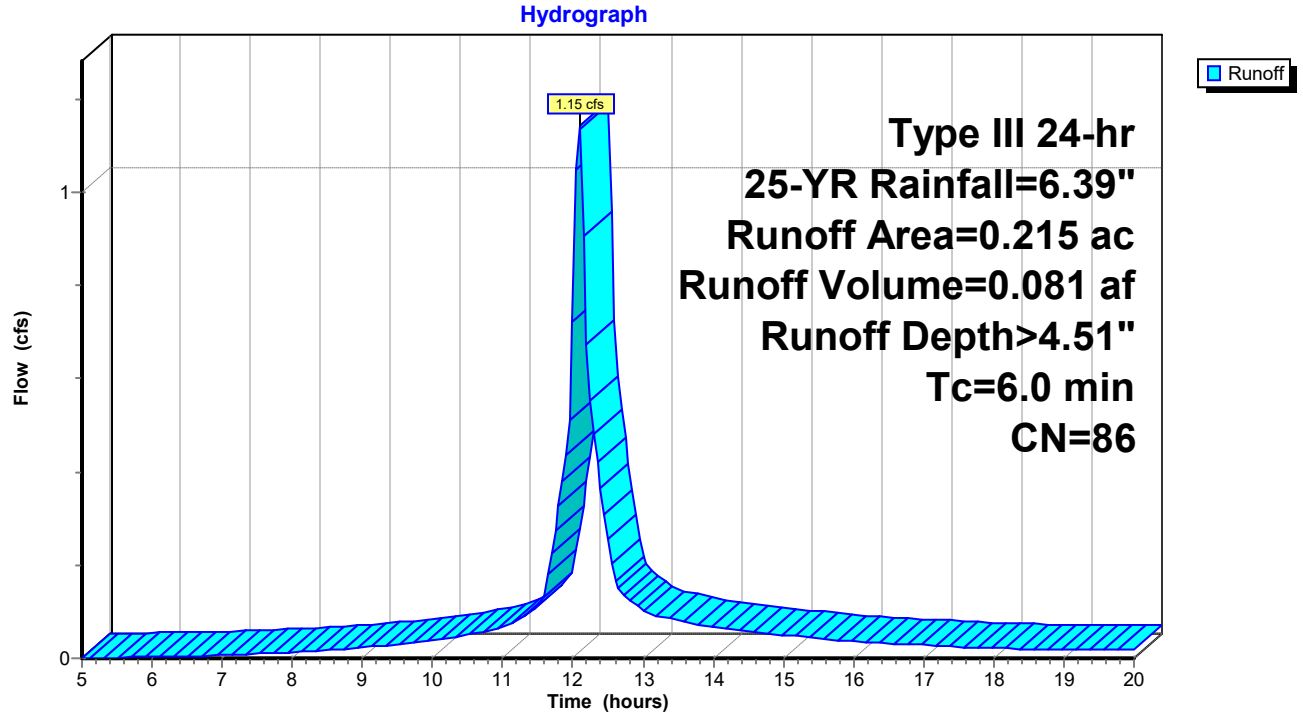
Runoff = 1.15 cfs @ 12.09 hrs, Volume= 0.081 af, Depth> 4.51"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.39"

	Area (ac)	CN	Description
	0.043	39	>75% Grass cover, Good, HSG A
*	0.172	98	Paved
	0.215	86	Weighted Average
	0.043		20.00% Pervious Area
	0.172		80.00% Impervious Area

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

Subcatchment PR-13:



Summary for Subcatchment PR-14:

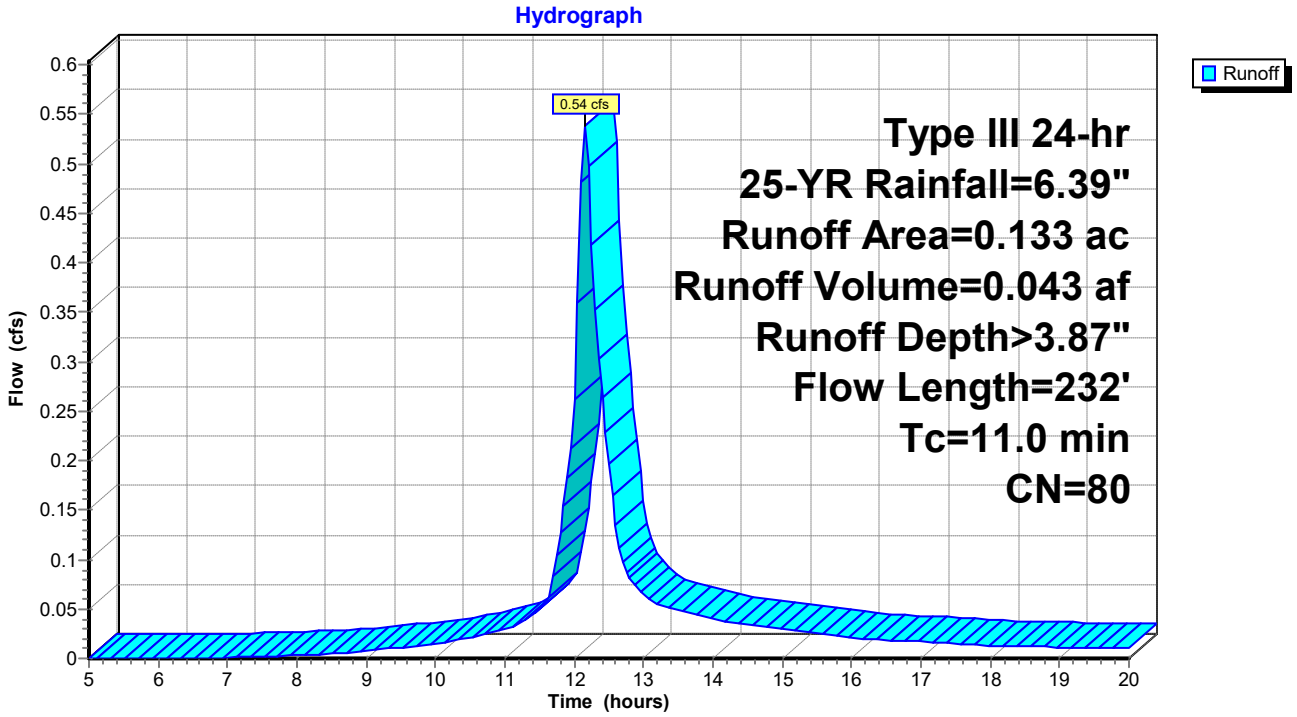
Runoff = 0.54 cfs @ 12.15 hrs, Volume= 0.043 af, Depth> 3.87"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.39"

	Area (ac)	CN	Description
	0.030	39	>75% Grass cover, Good, HSG A
	0.018	61	>75% Grass cover, Good, HSG B
*	0.085	98	Paved
	0.133	80	Weighted Average
	0.048		36.09% Pervious Area
	0.085		63.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	62	0.0060	0.10		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.0	5	0.0200	2.87		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.2	52	0.0050	3.47	2.73	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.2	67	0.0100	4.91	3.86	**Pipe Channel, D-E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.1	46	0.0100	5.70	7.00	**Pipe Channel, E-F** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
11.0	232	Total			

Subcatchment PR-14:



Summary for Subcatchment PR-15:

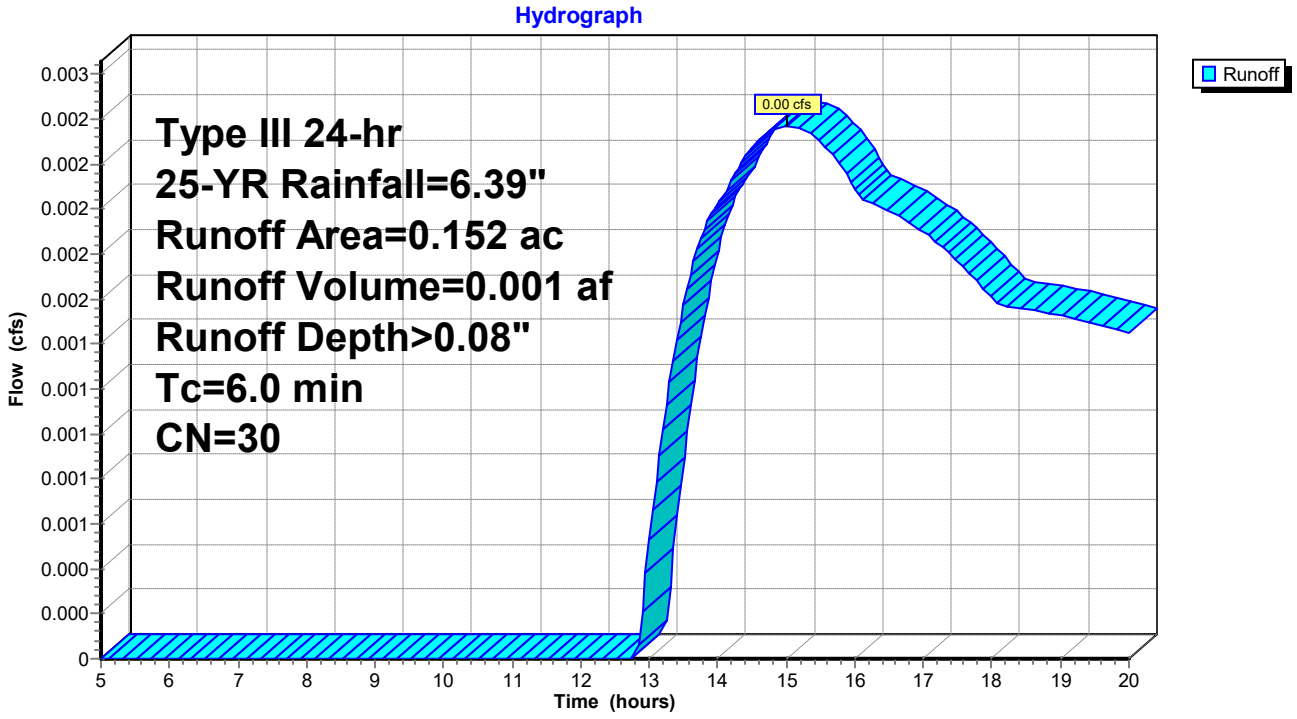
Runoff = 0.00 cfs @ 15.02 hrs, Volume= 0.001 af, Depth> 0.08"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.39"

Area (ac)	CN	Description
0.150	30	Brush, Good, HSG A
0.002	48	Brush, Good, HSG B
0.152	30	Weighted Average
0.152		100.00% Pervious Area

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

Subcatchment PR-15:



Summary for Subcatchment PR-17:

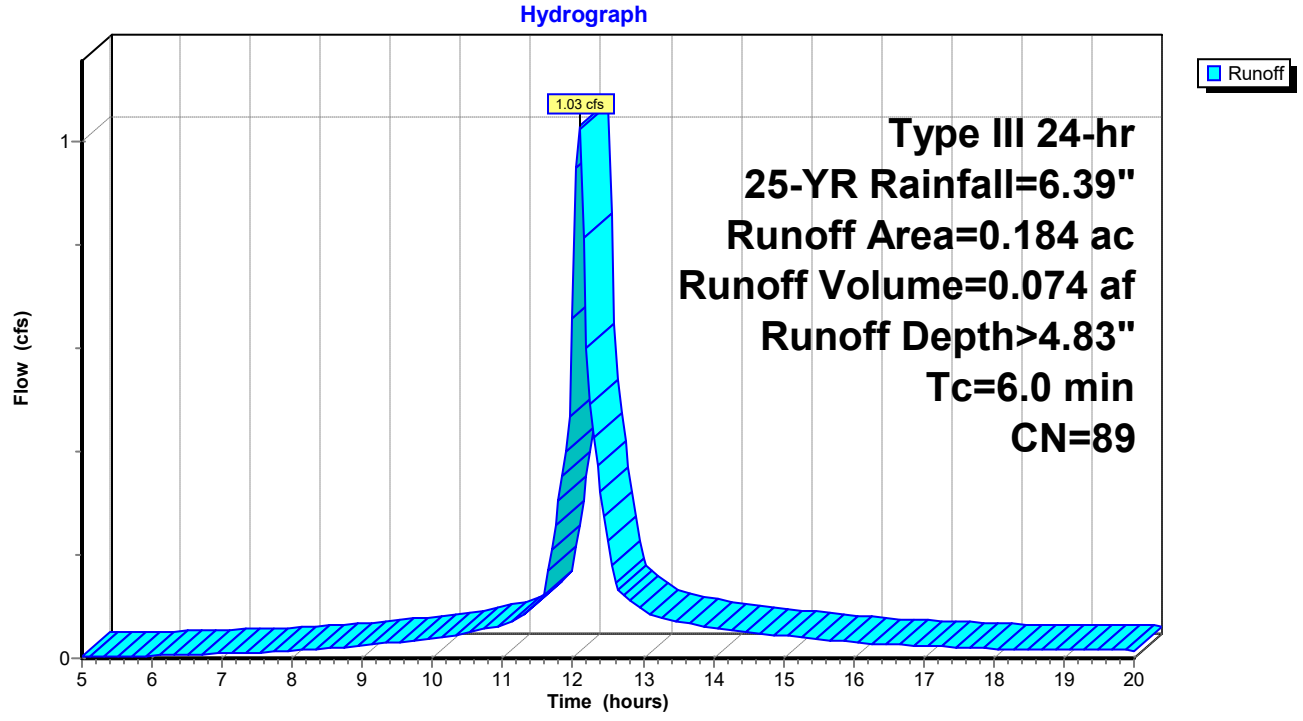
Runoff = 1.03 cfs @ 12.09 hrs, Volume= 0.074 af, Depth> 4.83"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.39"

	Area (ac)	CN	Description
	0.027	39	>75% Grass cover, Good, HSG A
*	0.157	98	Paved
	0.184	89	Weighted Average
	0.027		14.67% Pervious Area
	0.157		85.33% Impervious Area

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

Subcatchment PR-17:



Summary for Subcatchment PR-18:

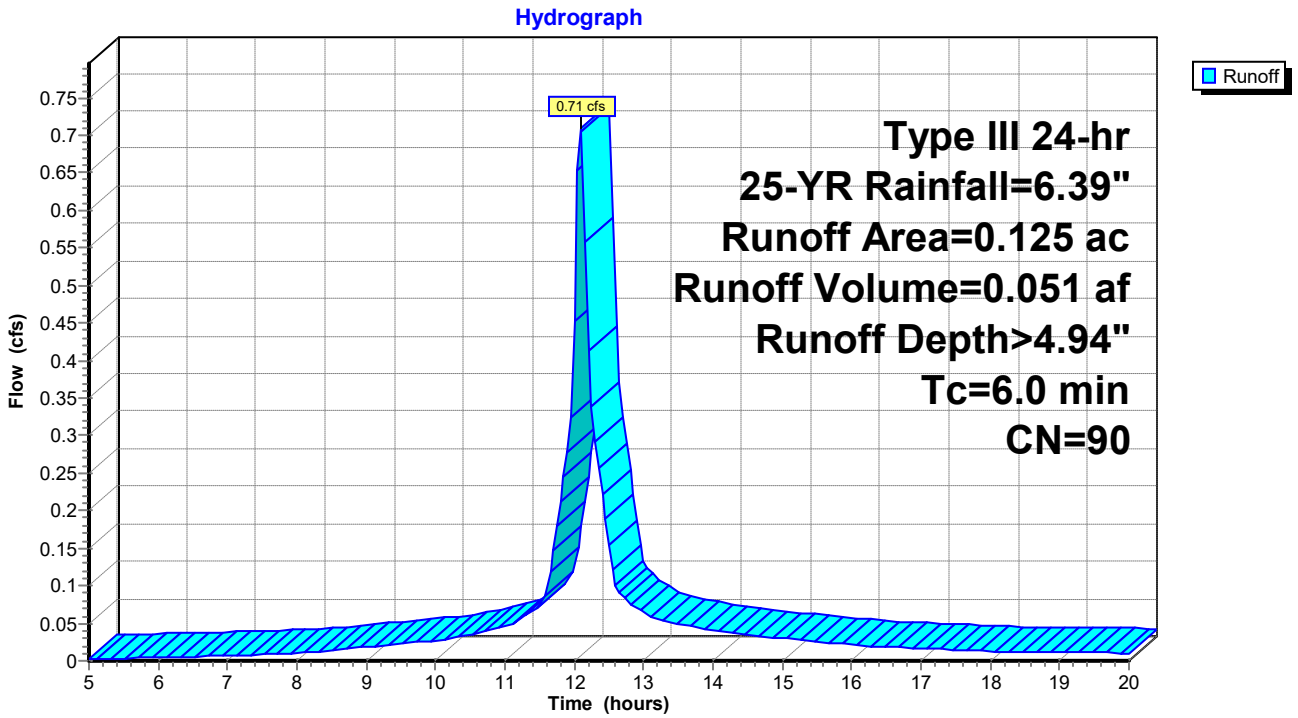
Runoff = 0.71 cfs @ 12.09 hrs, Volume= 0.051 af, Depth> 4.94"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.39"

	Area (ac)	CN	Description
	0.016	39	>75% Grass cover, Good, HSG A
	0.002	61	>75% Grass cover, Good, HSG B
*	0.107	98	Paved
	0.125	90	Weighted Average
	0.018		14.40% Pervious Area
	0.107		85.60% Impervious Area

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

Subcatchment PR-18:



Summary for Subcatchment PR-19:

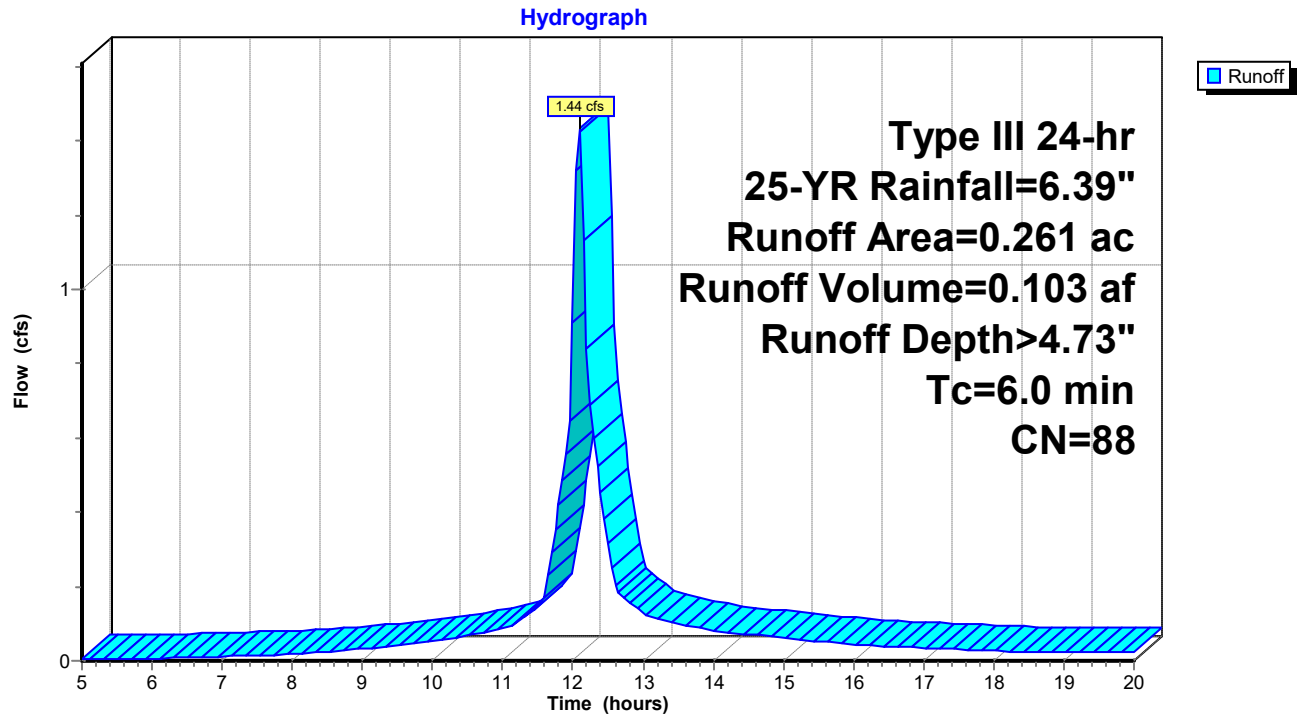
Runoff = 1.44 cfs @ 12.09 hrs, Volume= 0.103 af, Depth> 4.73"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.39"

	Area (ac)	CN	Description
	0.041	39	>75% Grass cover, Good, HSG A
	0.004	61	>75% Grass cover, Good, HSG B
*	0.216	98	Paved
	0.261	88	Weighted Average
	0.045		17.24% Pervious Area
	0.216		82.76% Impervious Area

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

Subcatchment PR-19:



Summary for Subcatchment PR-20:

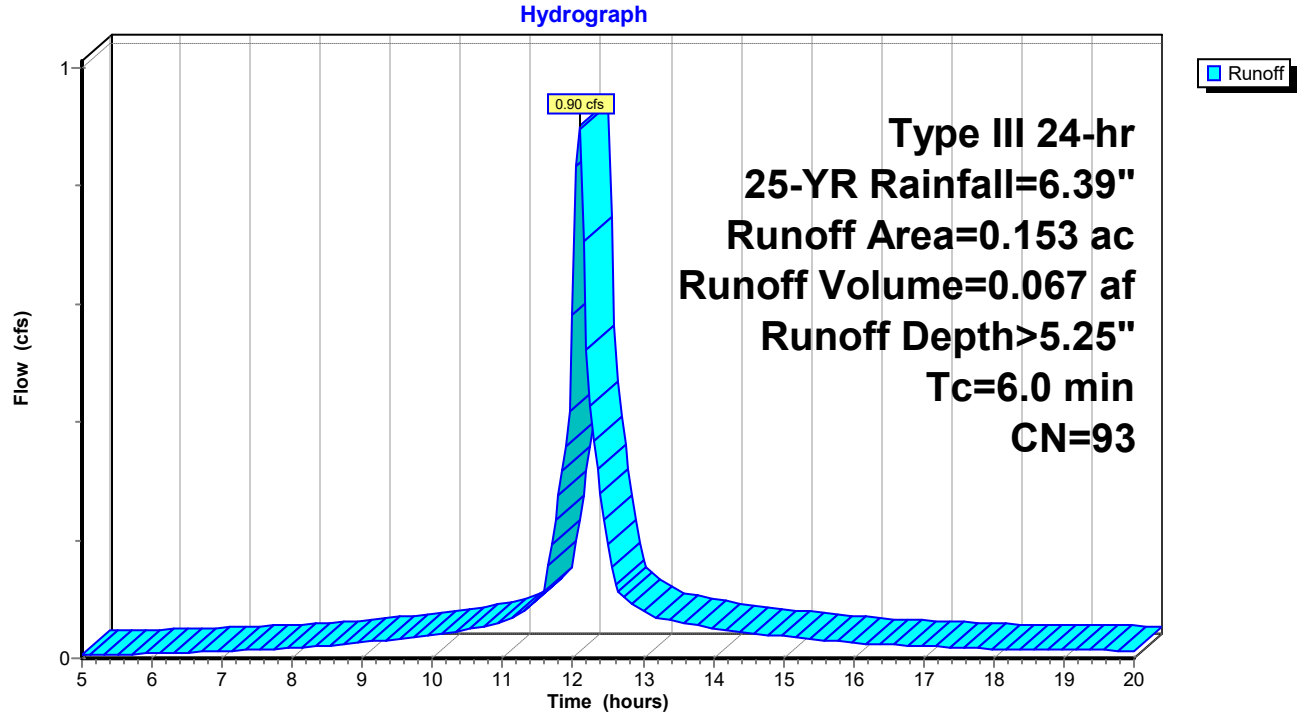
Runoff = 0.90 cfs @ 12.09 hrs, Volume= 0.067 af, Depth> 5.25"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.39"

	Area (ac)	CN	Description
	0.013	39	>75% Grass cover, Good, HSG A
*	0.140	98	Paved
	0.153	93	Weighted Average
	0.013		8.50% Pervious Area
	0.140		91.50% Impervious Area

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

Subcatchment PR-20:



Summary for Subcatchment PR-21:

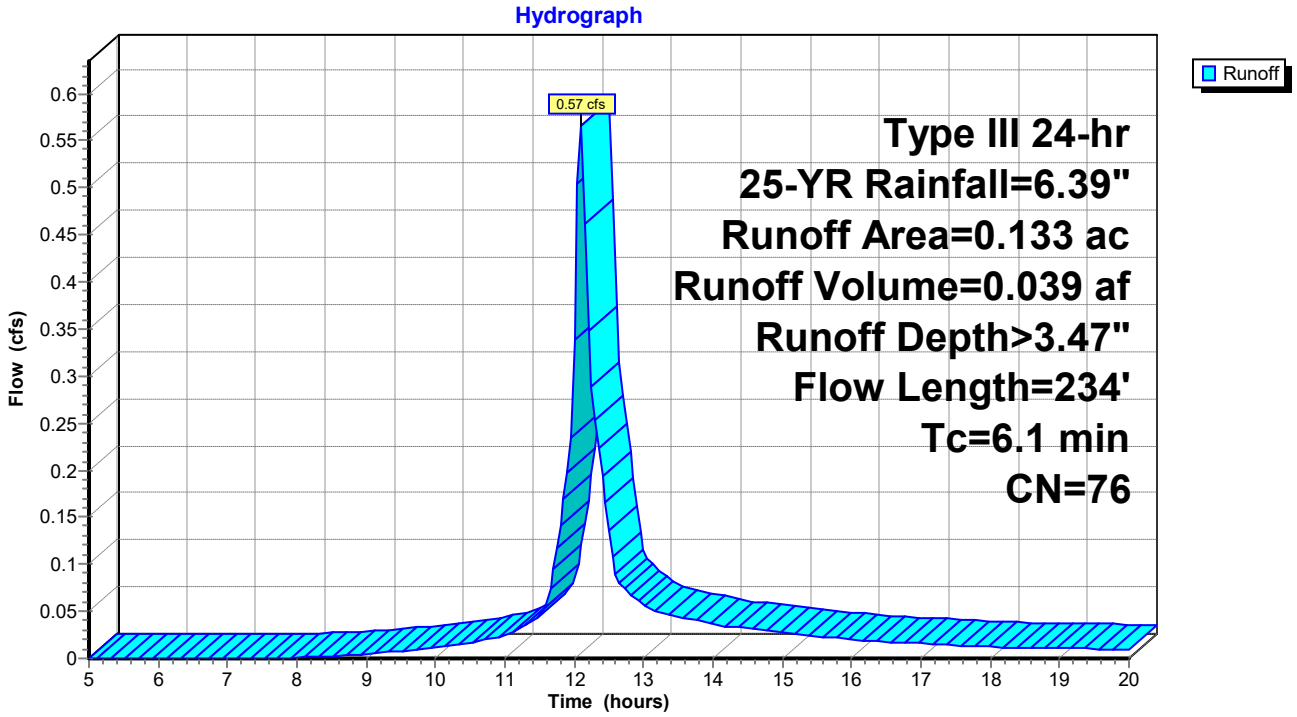
Runoff = 0.57 cfs @ 12.09 hrs, Volume= 0.039 af, Depth> 3.47"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.39"

	Area (ac)	CN	Description
	0.036	39	>75% Grass cover, Good, HSG A
	0.020	61	>75% Grass cover, Good, HSG B
*	0.077	98	Paved
	0.133	76	Weighted Average
	0.056		42.11% Pervious Area
	0.077		57.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	48	0.0290	0.18		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.0	10	0.0300	3.52		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.3	21	0.0380	1.36		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
0.9	95	0.0080	1.82		**Shallow Concentrated Flow, D-E** Paved Kv= 20.3 fps
0.1	16	0.0100	3.10	0.61	**Pipe Channel, E-F** 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.012
0.2	44	0.0100	3.75	1.31	**Pipe Channel, F-G** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
6.1	234	Total			

Subcatchment PR-21:



Summary for Subcatchment PR-22:

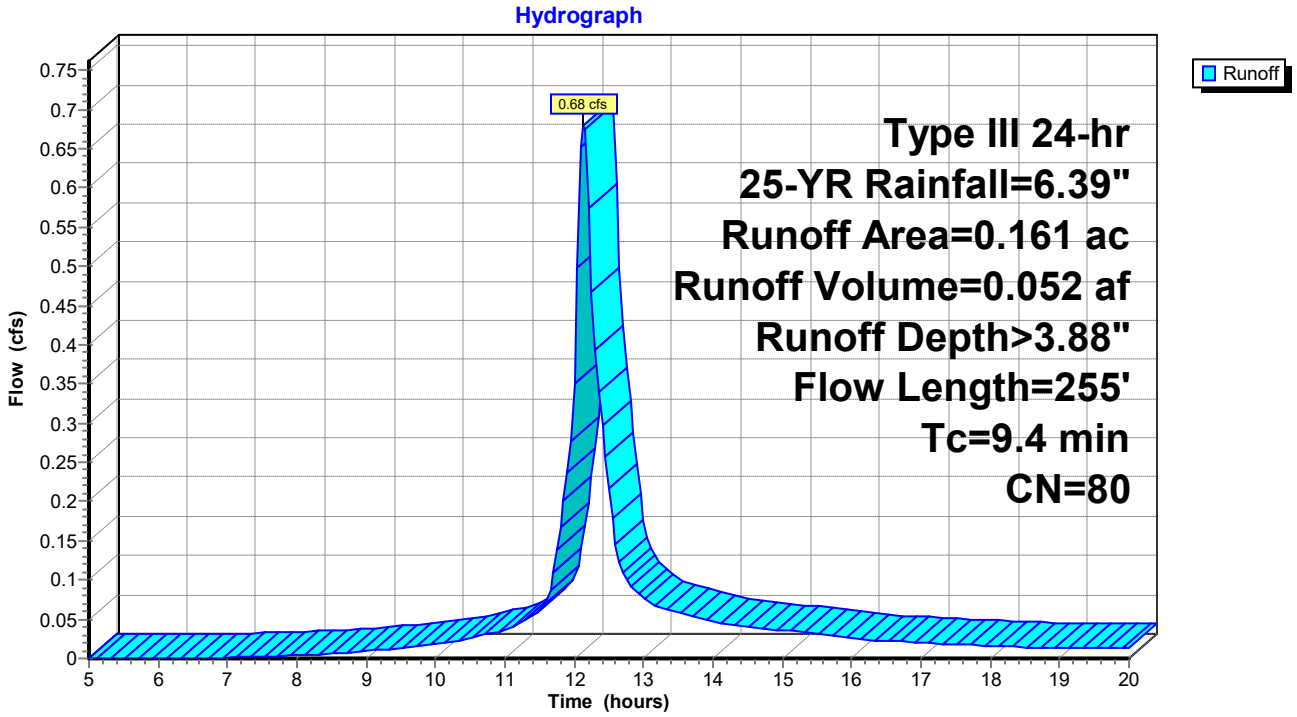
Runoff = 0.68 cfs @ 12.13 hrs, Volume= 0.052 af, Depth> 3.88"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.39"

	Area (ac)	CN	Description
	0.031	39	>75% Grass cover, Good, HSG A
	0.030	61	>75% Grass cover, Good, HSG B
*	0.100	98	Paved
	0.161	80	Weighted Average
	0.061		37.89% Pervious Area
	0.100		62.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	71	0.0130	0.14		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.6	122	0.0250	3.21		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.0	18	0.1000	11.86	4.14	**Pipe Channel, C-D** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
0.2	44	0.0100	3.75	1.31	**Pipe Channel, D-E** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
9.4	255	Total			

Subcatchment PR-22:



Summary for Subcatchment PR-23:

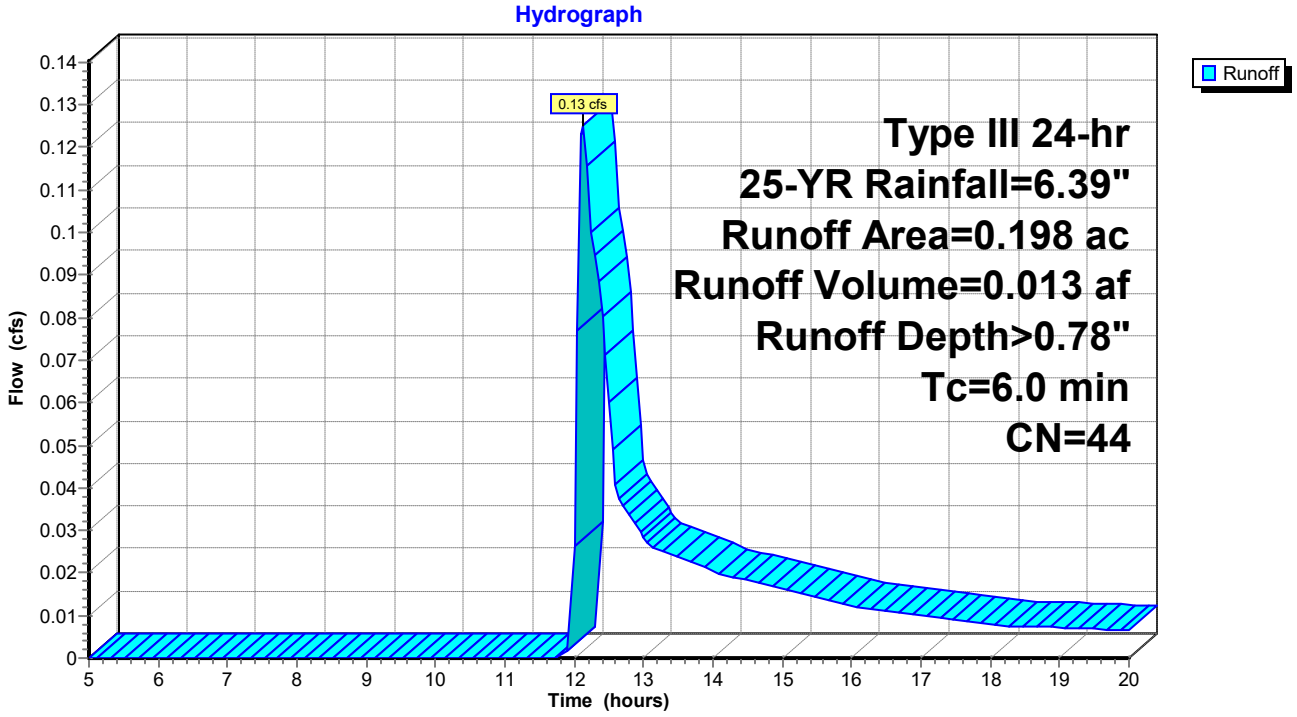
Runoff = 0.13 cfs @ 12.13 hrs, Volume= 0.013 af, Depth> 0.78"
Routed to Pond IB-2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.39"

	Area (ac)	CN	Description
	0.069	39	>75% Grass cover, Good, HSG A
	0.013	61	>75% Grass cover, Good, HSG B
	0.091	30	Meadow, non-grazed, HSG A
*	0.025	98	Paved
	0.198	44	Weighted Average
	0.173		87.37% Pervious Area
	0.025		12.63% Impervious Area

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

Subcatchment PR-23:



Summary for Subcatchment PR-24:

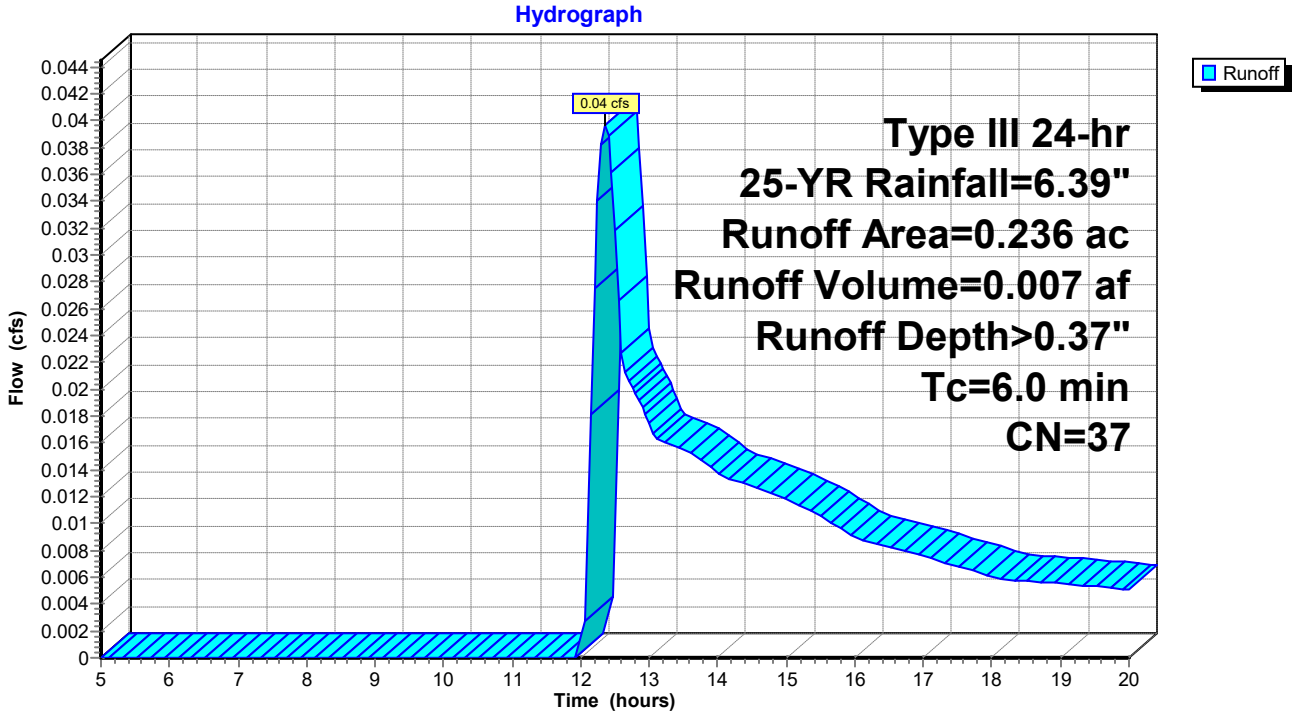
Runoff = 0.04 cfs @ 12.36 hrs, Volume= 0.007 af, Depth> 0.37"
Routed to Pond GT-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.39"

Area (ac)	CN	Description
0.028	39	>75% Grass cover, Good, HSG A
0.016	61	>75% Grass cover, Good, HSG B
0.157	30	Meadow, non-grazed, HSG A
0.035	58	Meadow, non-grazed, HSG B
0.236	37	Weighted Average
0.236		100.00% Pervious Area

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

Subcatchment PR-24:



Summary for Subcatchment PR-25:

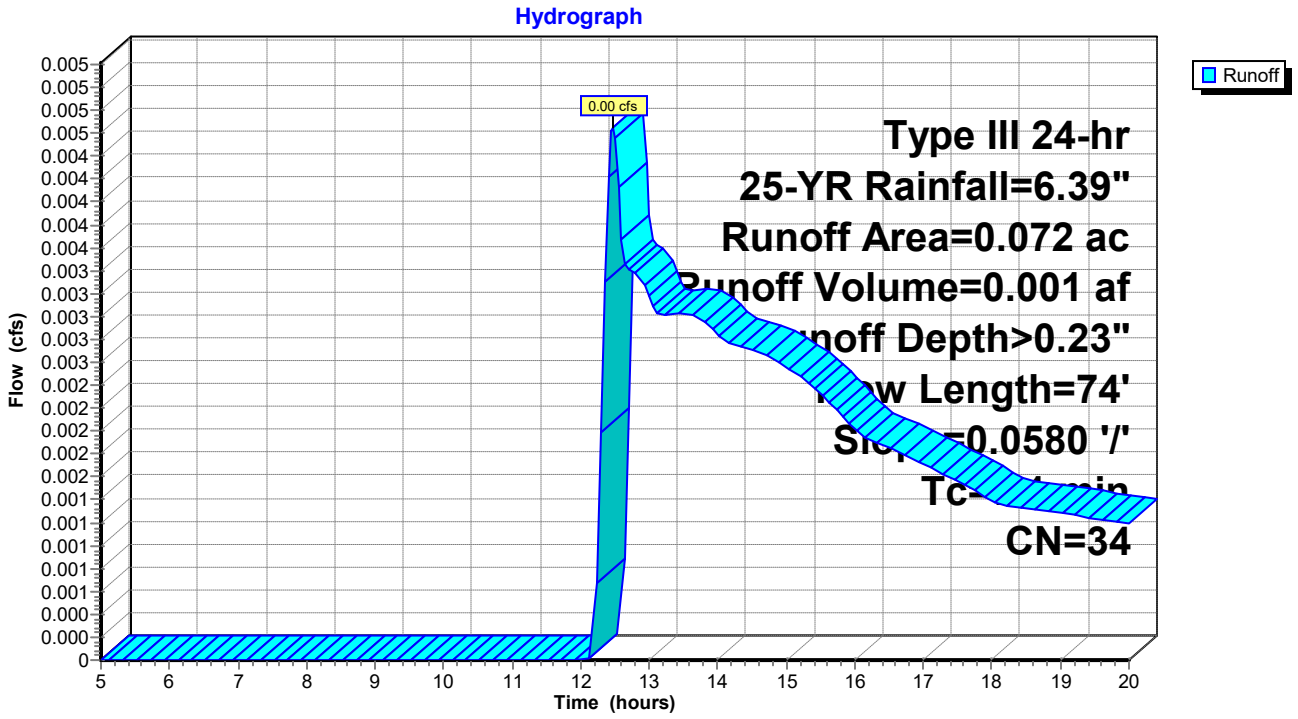
Runoff = 0.00 cfs @ 12.47 hrs, Volume= 0.001 af, Depth> 0.23"
Routed to Pond GT-2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.39"

	Area (ac)	CN	Description
	0.024	39	>75% Grass cover, Good, HSG A
	0.047	30	Meadow, non-grazed, HSG A
*	0.001	98	Paved
	0.072	34	Weighted Average
	0.071		98.61% Pervious Area
	0.001		1.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	74	0.0580	0.17		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.40"

Subcatchment PR-25:



Summary for Subcatchment PR-26:

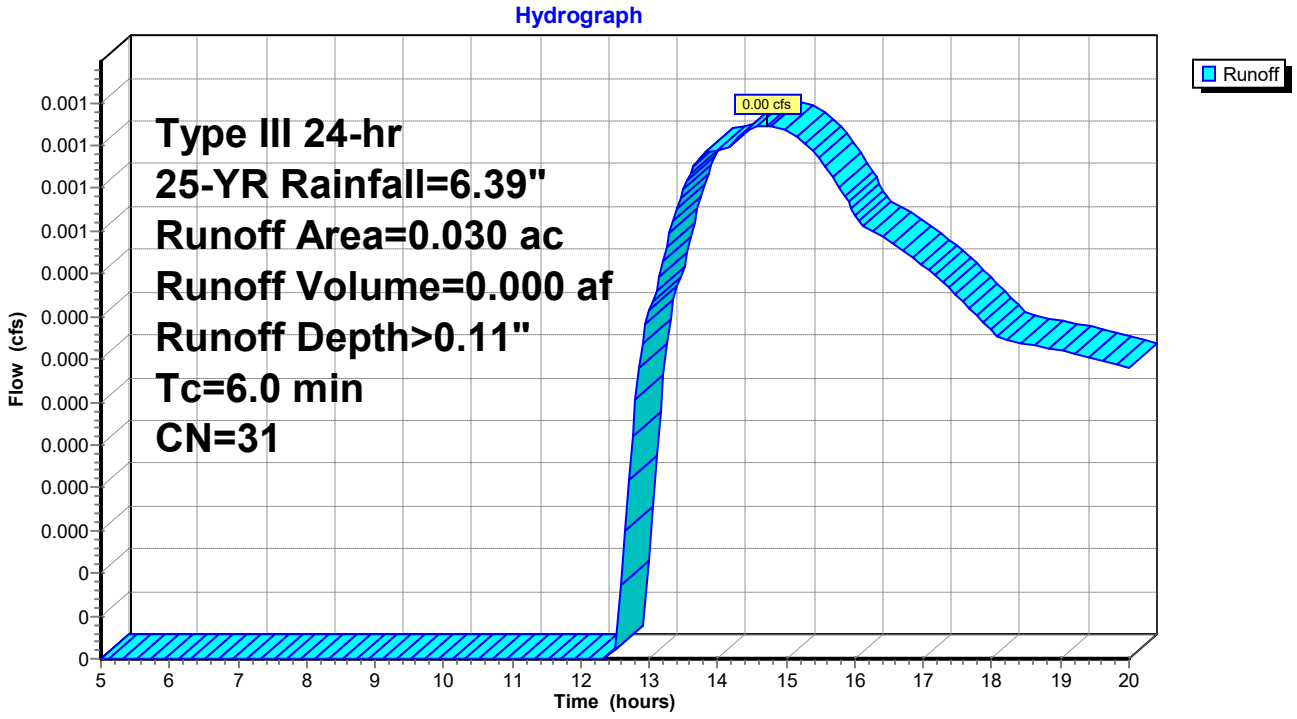
Runoff = 0.00 cfs @ 14.72 hrs, Volume= 0.000 af, Depth> 0.11"
Routed to Pond GT-3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.39"

Area (ac)	CN	Description
0.004	39	>75% Grass cover, Good, HSG A
0.026	30	Meadow, non-grazed, HSG A
0.030	31	Weighted Average
0.030		100.00% Pervious Area

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

Subcatchment PR-26:



Summary for Subcatchment PR-27:

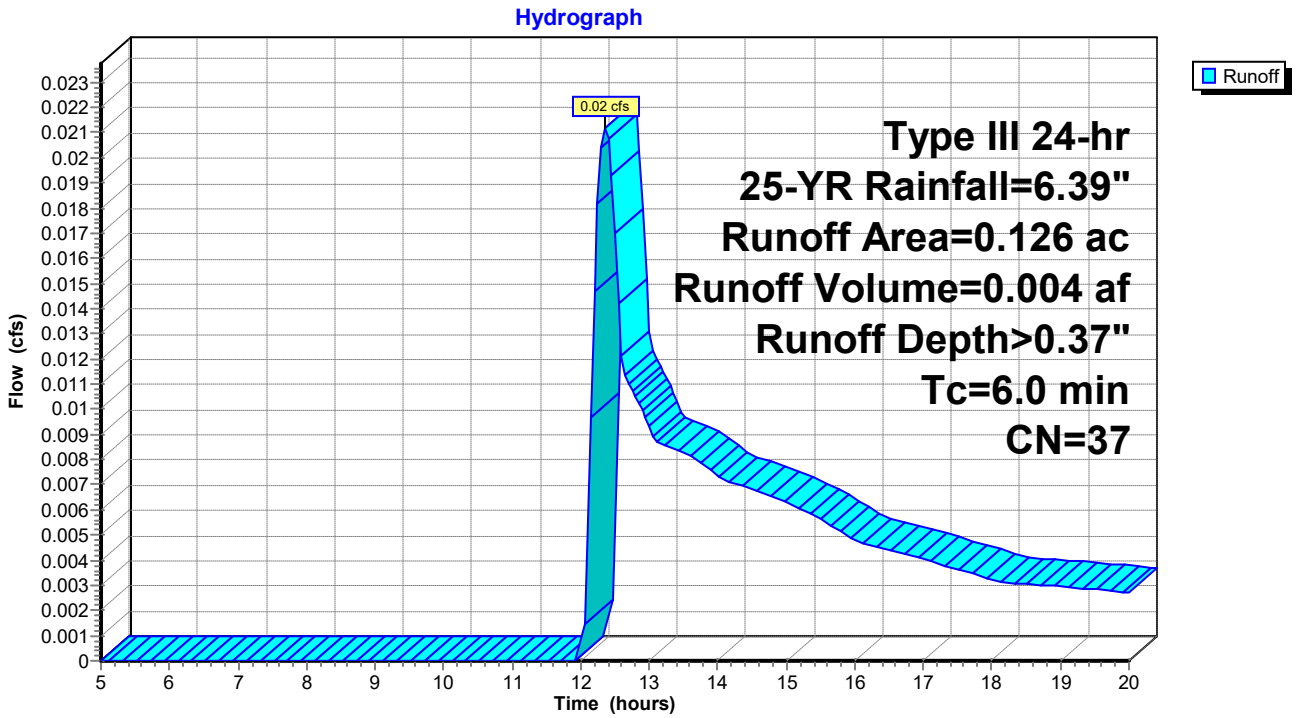
Runoff = 0.02 cfs @ 12.36 hrs, Volume= 0.004 af, Depth> 0.37"
Routed to Pond GT-4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.39"

Area (ac)	CN	Description
0.031	39	>75% Grass cover, Good, HSG A
0.004	61	>75% Grass cover, Good, HSG B
0.074	30	Meadow, non-grazed, HSG A
0.017	58	Meadow, non-grazed, HSG B
0.126	37	Weighted Average
0.126		100.00% Pervious Area

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

Subcatchment PR-27:



Summary for Subcatchment PR-28:

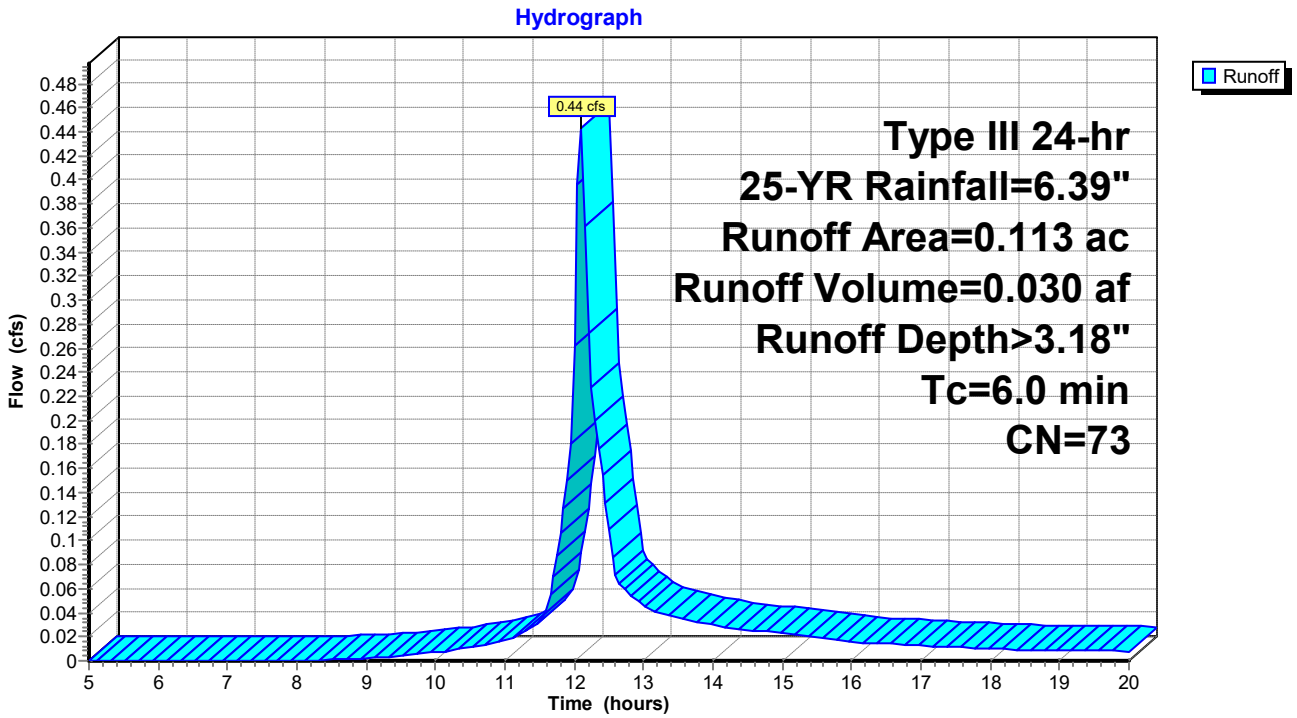
Runoff = 0.44 cfs @ 12.09 hrs, Volume= 0.030 af, Depth> 3.18"
Routed to Pond GT-5 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.39"

	Area (ac)	CN	Description
	0.031	61	>75% Grass cover, Good, HSG B
	0.043	58	Meadow, non-grazed, HSG B
*	0.039	98	Paved
	0.113	73	Weighted Average
	0.074		65.49% Pervious Area
	0.039		34.51% Impervious Area

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

Subcatchment PR-28:



Summary for Subcatchment PR-29:

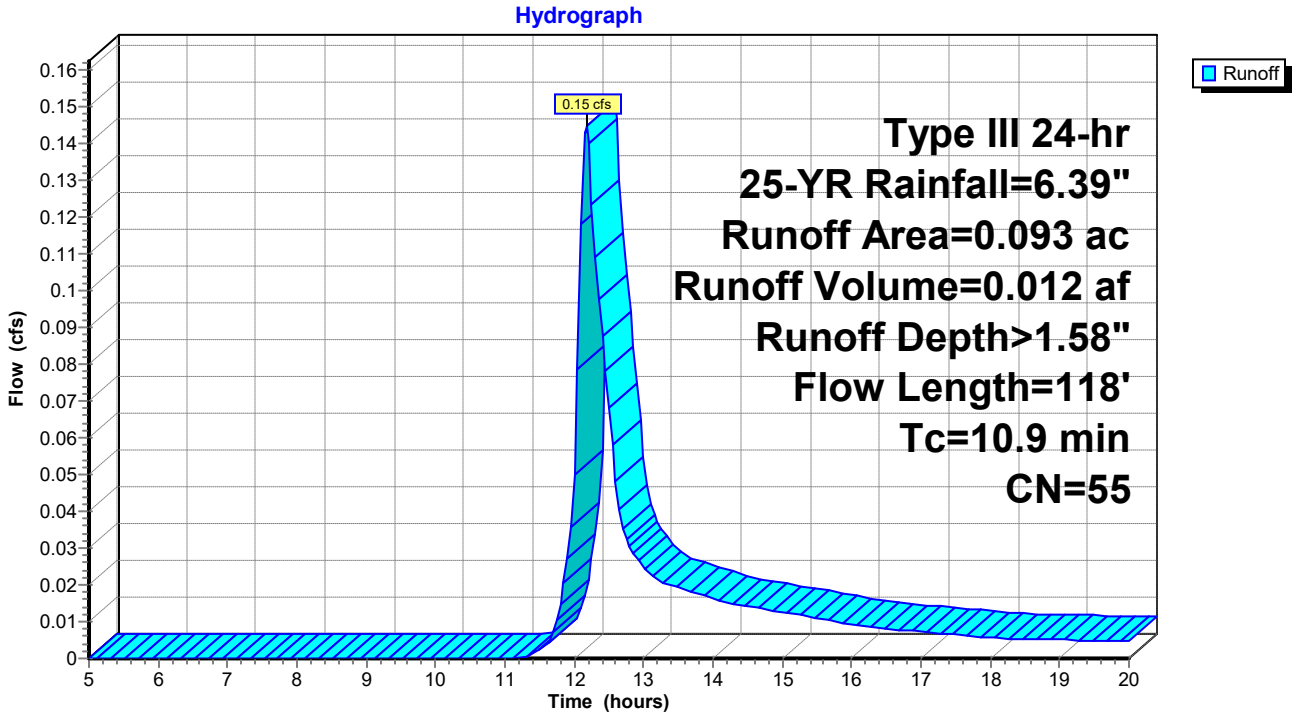
Runoff = 0.15 cfs @ 12.17 hrs, Volume= 0.012 af, Depth> 1.58"
Routed to Pond GT-6 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.39"

	Area (ac)	CN	Description
	0.001	30	Woods, Good, HSG A
	0.008	55	Woods, Good, HSG B
	0.011	39	>75% Grass cover, Good, HSG A
	0.021	61	>75% Grass cover, Good, HSG B
	0.026	30	Meadow, non-grazed, HSG A
	0.010	58	Meadow, non-grazed, HSG B
*	0.016	98	Paved
	0.093	55	Weighted Average
	0.077		82.80% Pervious Area
	0.016		17.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7	100	0.0380	0.16		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.40"
0.2	18	0.0780	1.95		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
10.9	118	Total			

Subcatchment PR-29:



Summary for Subcatchment RA-1:

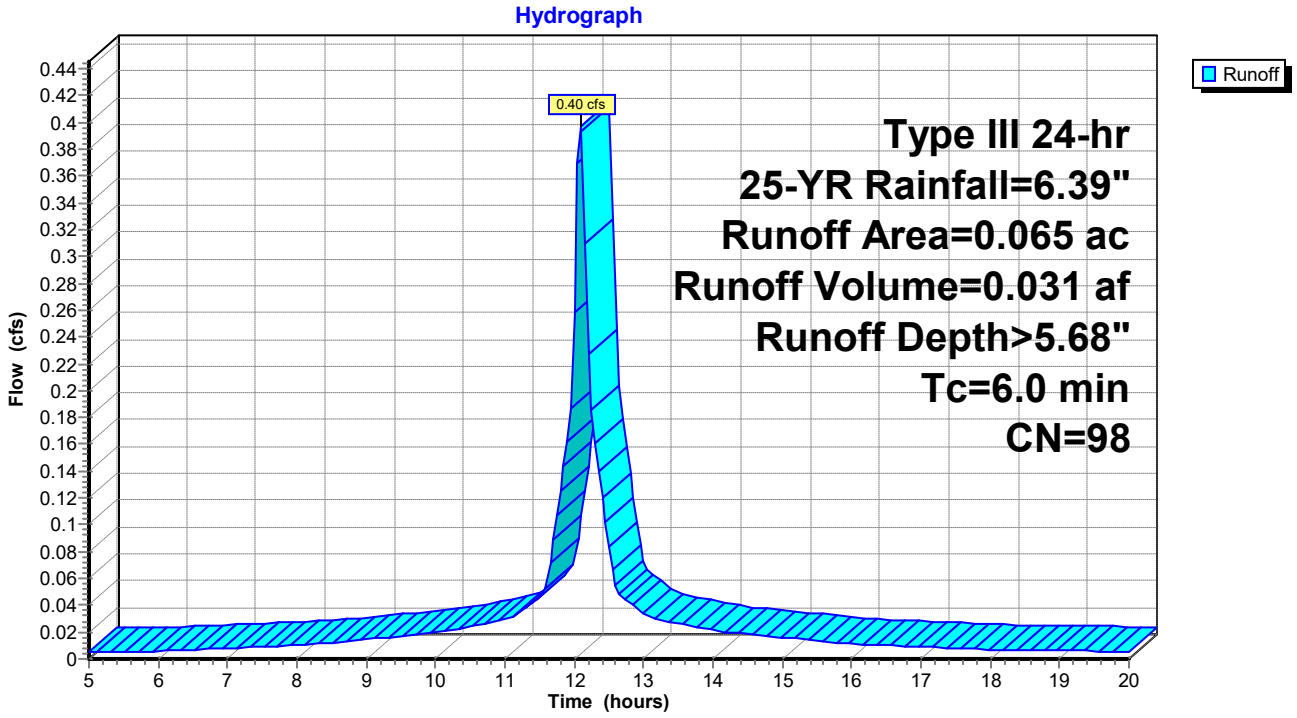
Runoff = 0.40 cfs @ 12.09 hrs, Volume= 0.031 af, Depth> 5.68"
Routed to Pond UG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.39"

	Area (ac)	CN	Description
*	0.065	98	Roof
	0.065		100.00% Impervious Area

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

Subcatchment RA-1:



Summary for Subcatchment RA-2:

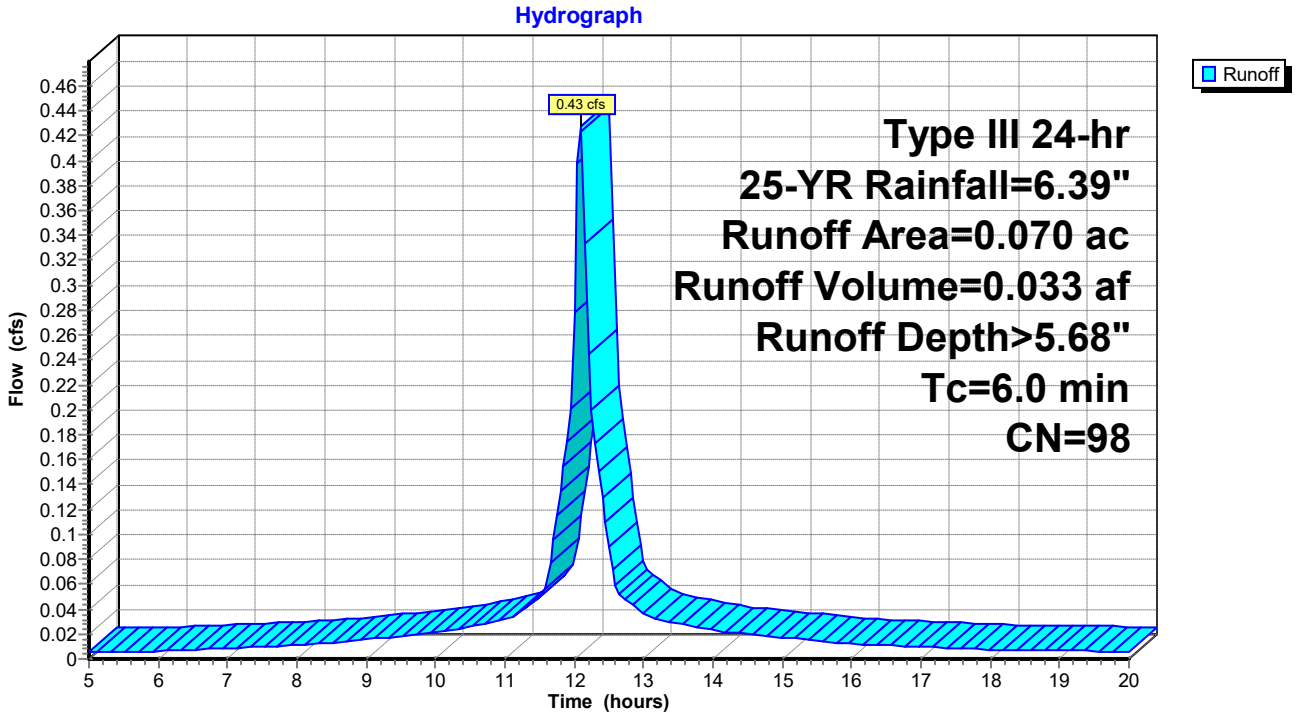
Runoff = 0.43 cfs @ 12.09 hrs, Volume= 0.033 af, Depth> 5.68"
Routed to Pond UG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.39"

	Area (ac)	CN	Description
*	0.070	98	Roof
	0.070		100.00% Impervious Area

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

Subcatchment RA-2:



Summary for Subcatchment RA-3:

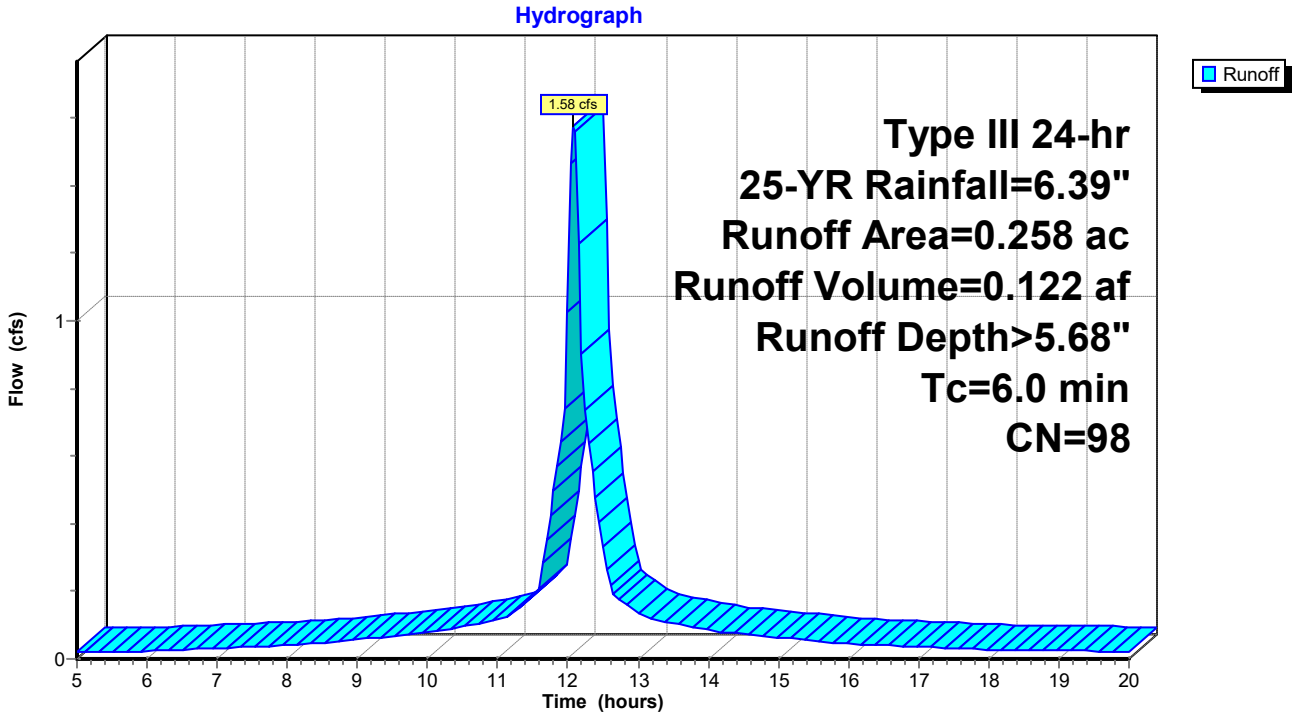
Runoff = 1.58 cfs @ 12.09 hrs, Volume= 0.122 af, Depth> 5.68"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.39"

	Area (ac)	CN	Description
*	0.258	98	Roof
	0.258		100.00% Impervious Area

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

Subcatchment RA-3:



Summary for Subcatchment RA-4:

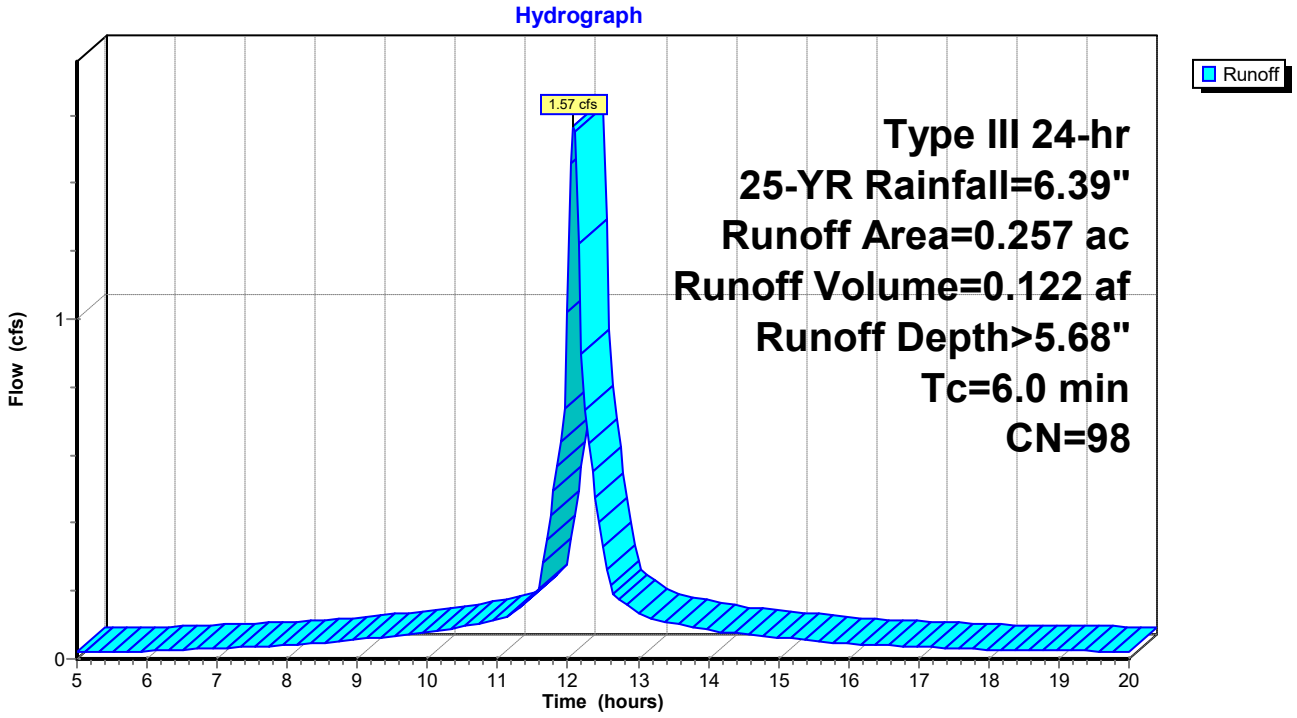
Runoff = 1.57 cfs @ 12.09 hrs, Volume= 0.122 af, Depth> 5.68"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.39"

	Area (ac)	CN	Description
*	0.257	98	Roof
	0.257		100.00% Impervious Area

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

Subcatchment RA-4:

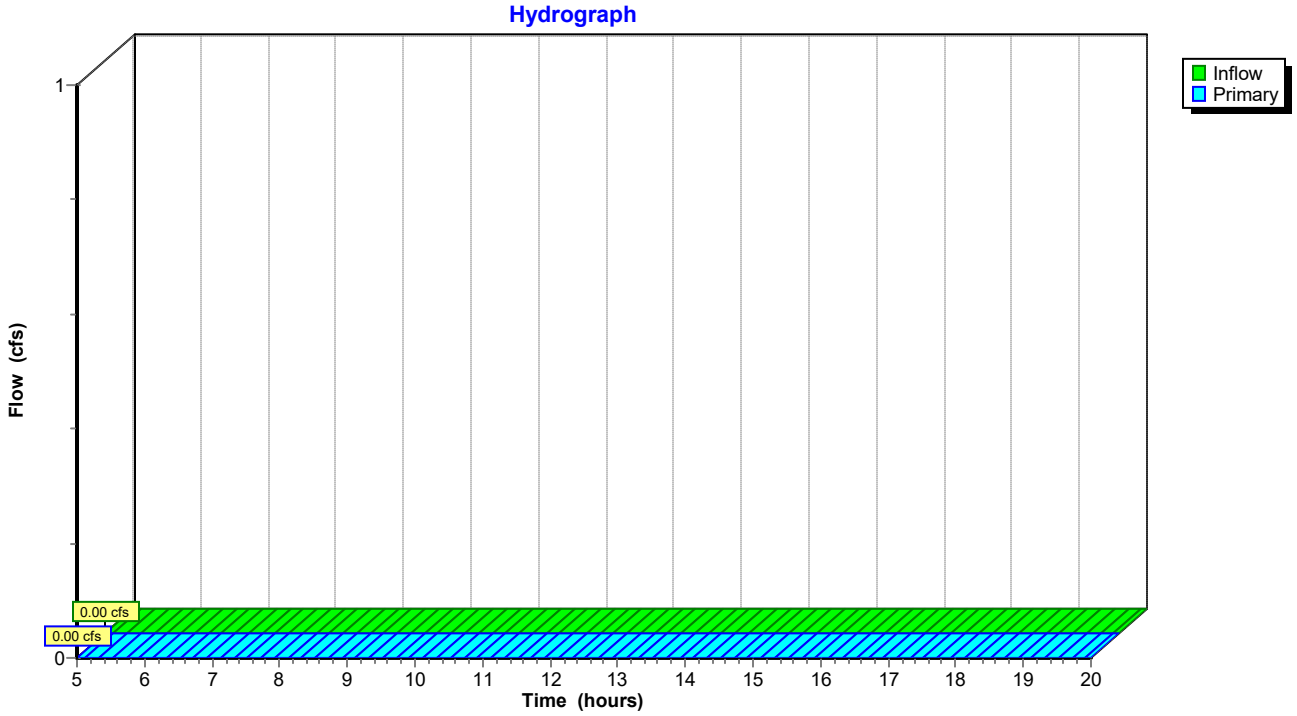


Summary for Pond AP: Surrounding Wetlands

Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond AP: Surrounding Wetlands



Summary for Pond GT-1:

Inflow Area = 0.236 ac, 0.00% Impervious, Inflow Depth > 0.37" for 25-YR event
Inflow = 0.04 cfs @ 12.36 hrs, Volume= 0.007 af
Outflow = 0.04 cfs @ 12.40 hrs, Volume= 0.007 af, Atten= 2%, Lag= 2.5 min
Discarded = 0.04 cfs @ 12.40 hrs, Volume= 0.007 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond AP : Surrounding Wetlands

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 20.02' @ 12.40 hrs Surf.Area= 862 sf Storage= 6 cf

Plug-Flow detention time= 2.4 min calculated for 0.007 af (99% of inflow)
Center-of-Mass det. time= 1.7 min (895.4 - 893.7)

Volume	Invert	Avail.Storage	Storage Description
#1	20.00'	690 cf	**Gravel Trench Stage Storage (Prismatic)** Listed below (Recalc) 1,724 cf Overall x 40.0% Voids

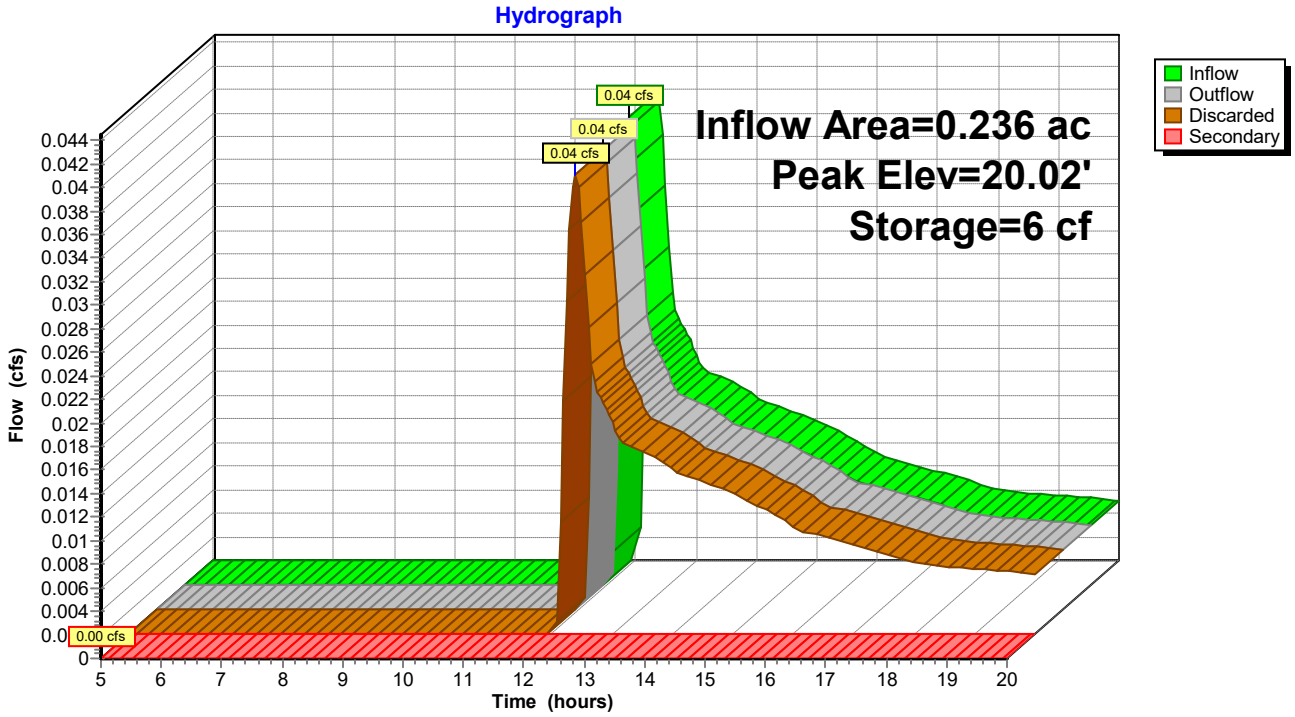
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
20.00	862	0	0
21.00	862	862	862
22.00	862	862	1,724

Device	Routing	Invert	Outlet Devices
#1	Secondary	22.00'	**590.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Trench (Overflow)** 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	20.00'	**2.410 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.05 cfs @ 12.40 hrs HW=20.02' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.05 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=20.00' (Free Discharge)
1=Top of Trench (Overflow) (Controls 0.00 cfs)

Pond GT-1:


Hydrograph
Inflow Area=0.236 ac
Peak Elev=20.02'
Storage=6 cf
Inflow
Outflow
Discarded
Secondary
0.04 cfs
0.04 cfs
0.04 cfs
0.00 cfs
Flow (cfs)
Time (hours)
0.044
0.042
0.04
0.038
0.036
0.034
0.032
0.03
0.028
0.026
0.024
0.022
0.02
0.018
0.016
0.014
0.012
0.01
0.008
0.006
0.004
0.0
0
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

Summary for Pond GT-2:

Inflow Area = 0.072 ac, 1.39% Impervious, Inflow Depth > 0.23" for 25-YR event
Inflow = 0.00 cfs @ 12.47 hrs, Volume= 0.001 af
Outflow = 0.00 cfs @ 12.50 hrs, Volume= 0.001 af, Atten= 2%, Lag= 1.9 min
Discarded = 0.00 cfs @ 12.50 hrs, Volume= 0.001 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond AP : Surrounding Wetlands

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 23.50' @ 12.50 hrs Surf.Area= 251 sf Storage= 0 cf

Plug-Flow detention time= 1.8 min calculated for 0.001 af (99% of inflow)
Center-of-Mass det. time= 1.2 min (922.7 - 921.5)

Volume	Invert	Avail.Storage	Storage Description
#1	23.50'	151 cf	**Gravel Trench Stage Storage (Prismatic)** Listed below (Recalc) 377 cf Overall x 40.0% Voids

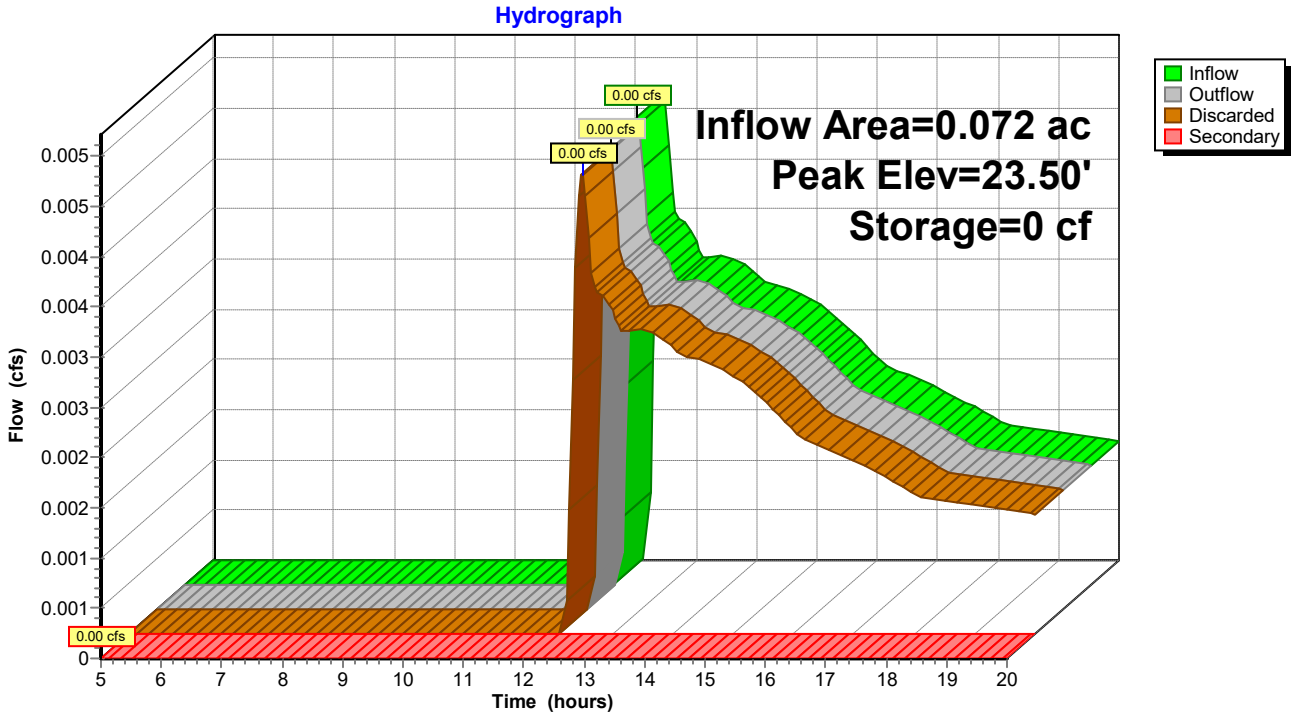
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
23.50	251	0	0
24.00	251	126	126
25.00	251	251	377

Device	Routing	Invert	Outlet Devices
#1	Secondary	25.00'	**65.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Trench (Overflow)** 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	23.50'	**2.410 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.01 cfs @ 12.50 hrs HW=23.50' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.01 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=23.50' (Free Discharge)
1=Top of Trench (Overflow) (Controls 0.00 cfs)

Pond GT-2:


Hydrograph
Inflow Area=0.072 ac
Peak Elev=23.50'
Storage=0 cf
0.00 cfs
0.00 cfs
0.00 cfs
0.00 cfs
Inflow
Outflow
Discarded
Secondary
Flow (cfs)
0.005
0.005
0.004
0.004
0.003
0.003
0.002
0.002
0.001
0.001
0
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Time (hours)

Summary for Pond GT-3:

Inflow Area = 0.030 ac, 0.00% Impervious, Inflow Depth > 0.11" for 25-YR event
Inflow = 0.00 cfs @ 14.72 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 14.75 hrs, Volume= 0.000 af, Atten= 0%, Lag= 1.7 min
Discarded = 0.00 cfs @ 14.75 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-2 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 27.50' @ 14.75 hrs Surf.Area= 94 sf Storage= 0 cf

Plug-Flow detention time= 1.8 min calculated for 0.000 af (99% of inflow)
Center-of-Mass det. time= 1.1 min (963.7 - 962.6)

Volume	Invert	Avail.Storage	Storage Description
#1	27.50'	56 cf	**Gravel Trench Stage Storage (Prismatic)** Listed below (Recalc) 141 cf Overall x 40.0% Voids

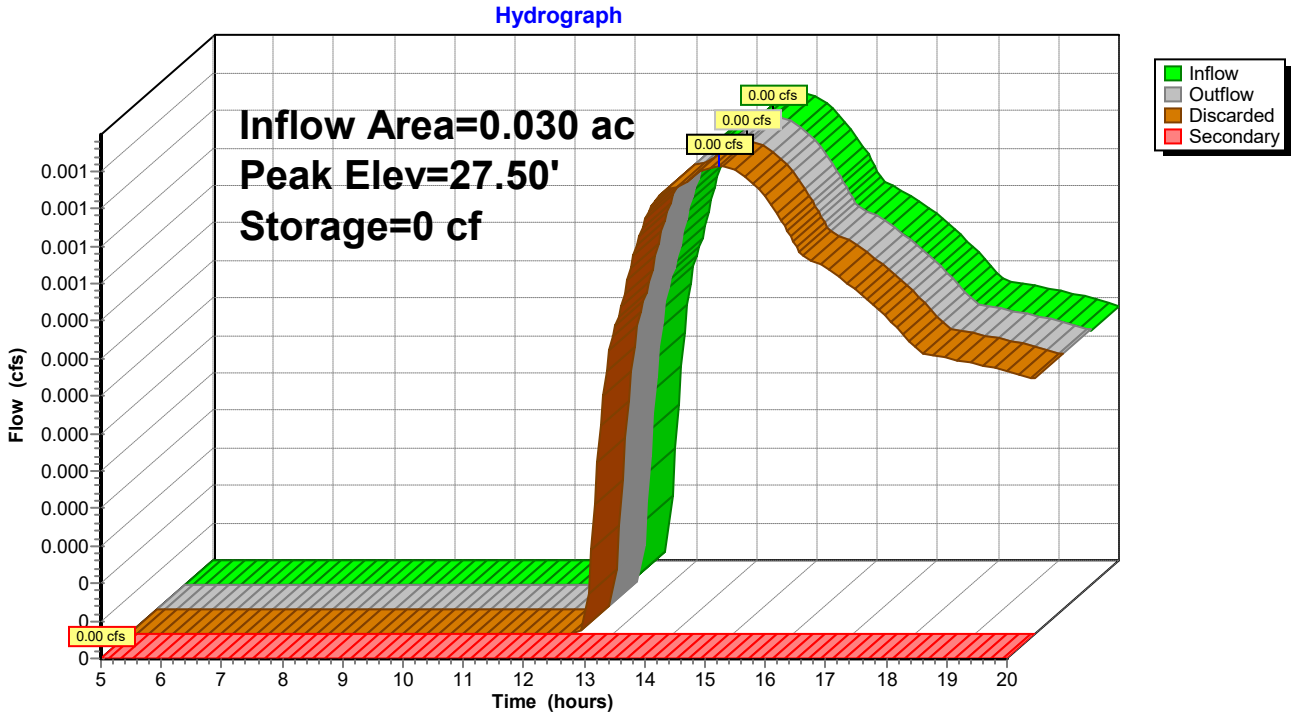
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.50	94	0	0
28.00	94	47	47
29.00	94	94	141

Device	Routing	Invert	Outlet Devices
#1	Secondary	29.00'	**30.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Trench (Overflow)** 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	27.50'	**2.410 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.01 cfs @ 14.75 hrs HW=27.50' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 0.01 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=27.50' (Free Discharge)
↑**1=Top of Trench (Overflow)** (Controls 0.00 cfs)

Pond GT-3:


Hydrograph
Inflow Area=0.030 ac
Peak Elev=27.50'
Storage=0 cf
Inflow
Outflow
Discarded
Secondary
0.00 cfs
0.00 cfs
0.00 cfs
0.00 cfs
Flow (cfs)
0.001
0.001
0.001
0.001
0.000
0.000
0.000
0.000
0.000
0.000
0.000
0
0
0
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Time (hours)

Summary for Pond GT-4:

Inflow Area = 0.126 ac, 0.00% Impervious, Inflow Depth > 0.37" for 25-YR event
Inflow = 0.02 cfs @ 12.36 hrs, Volume= 0.004 af
Outflow = 0.02 cfs @ 12.39 hrs, Volume= 0.004 af, Atten= 1%, Lag= 1.9 min
Discarded = 0.02 cfs @ 12.39 hrs, Volume= 0.004 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-3 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 21.51' @ 12.39 hrs Surf.Area= 405 sf Storage= 2 cf

Plug-Flow detention time= 1.8 min calculated for 0.004 af (100% of inflow)
Center-of-Mass det. time= 1.3 min (895.0 - 893.7)

Volume	Invert	Avail.Storage	Storage Description
#1	21.50'	243 cf	**Gravel Trench Stage Storage (Prismatic)** Listed below (Recalc) 608 cf Overall x 40.0% Voids

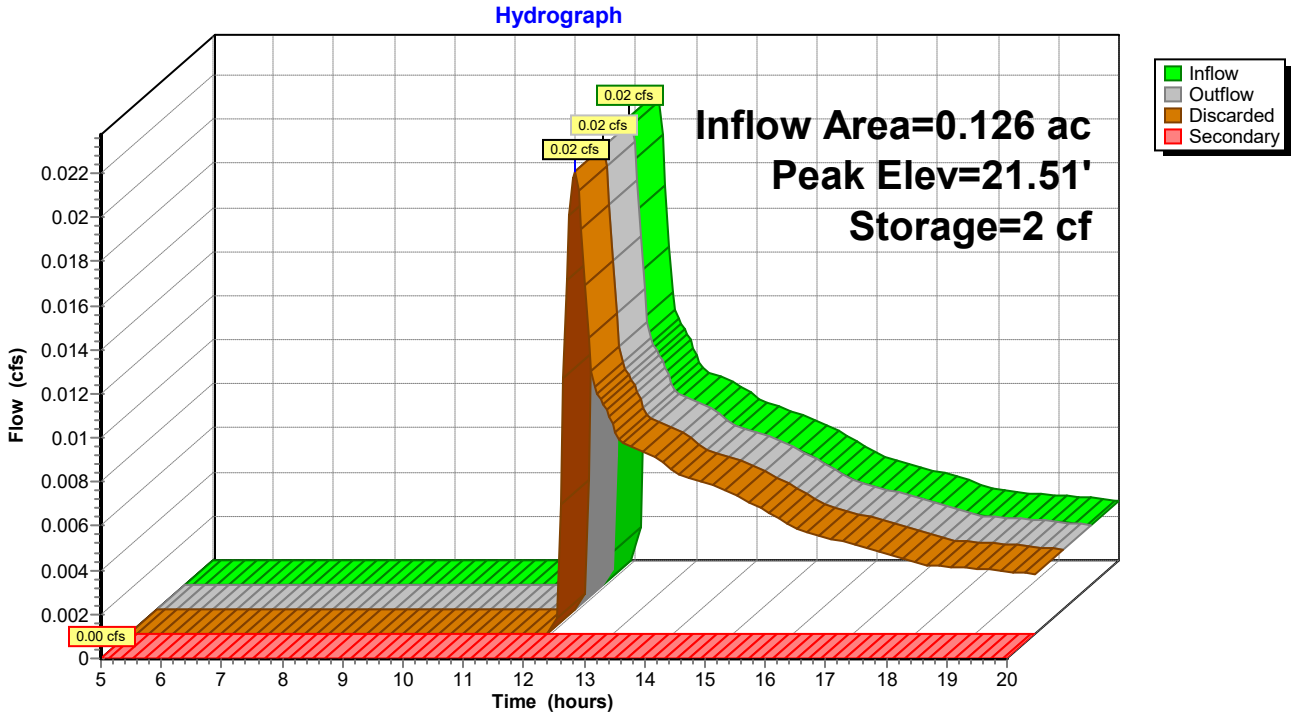
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
21.50	405	0	0
22.00	405	203	203
23.00	405	405	608

Device	Routing	Invert	Outlet Devices
#1	Secondary	23.00'	**74.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Trench (Overflow)** 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	21.50'	**2.410 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.02 cfs @ 12.39 hrs HW=21.51' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.02 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=21.50' (Free Discharge)
1=Top of Trench (Overflow) (Controls 0.00 cfs)

Pond GT-4:


Hydrograph
Inflow Area=0.126 ac
Peak Elev=21.51'
Storage=2 cf
Inflow
Outflow
Discarded
Secondary
0.02 cfs
0.02 cfs
0.02 cfs
0.00 cfs
Flow (cfs)
0
0.002
0.004
0.006
0.008
0.01
0.012
0.014
0.016
0.018
0.02
0.022
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Time (hours)

Summary for Pond GT-5:

Inflow Area = 0.113 ac, 34.51% Impervious, Inflow Depth > 3.18" for 25-YR event
Inflow = 0.44 cfs @ 12.09 hrs, Volume= 0.030 af
Outflow = 0.04 cfs @ 11.65 hrs, Volume= 0.027 af, Atten= 92%, Lag= 0.0 min
Discarded = 0.04 cfs @ 11.65 hrs, Volume= 0.027 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-4 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 23.25' @ 13.52 hrs Surf.Area= 640 sf Storage= 575 cf

Plug-Flow detention time= 158.9 min calculated for 0.027 af (91% of inflow)
Center-of-Mass det. time= 129.4 min (921.7 - 792.3)

Volume	Invert	Avail.Storage	Storage Description
#1	21.00'	1,024 cf	**Gravel Trench Stage Storage (Prismatic)** Listed below (Recalc) 2,560 cf Overall x 40.0% Voids

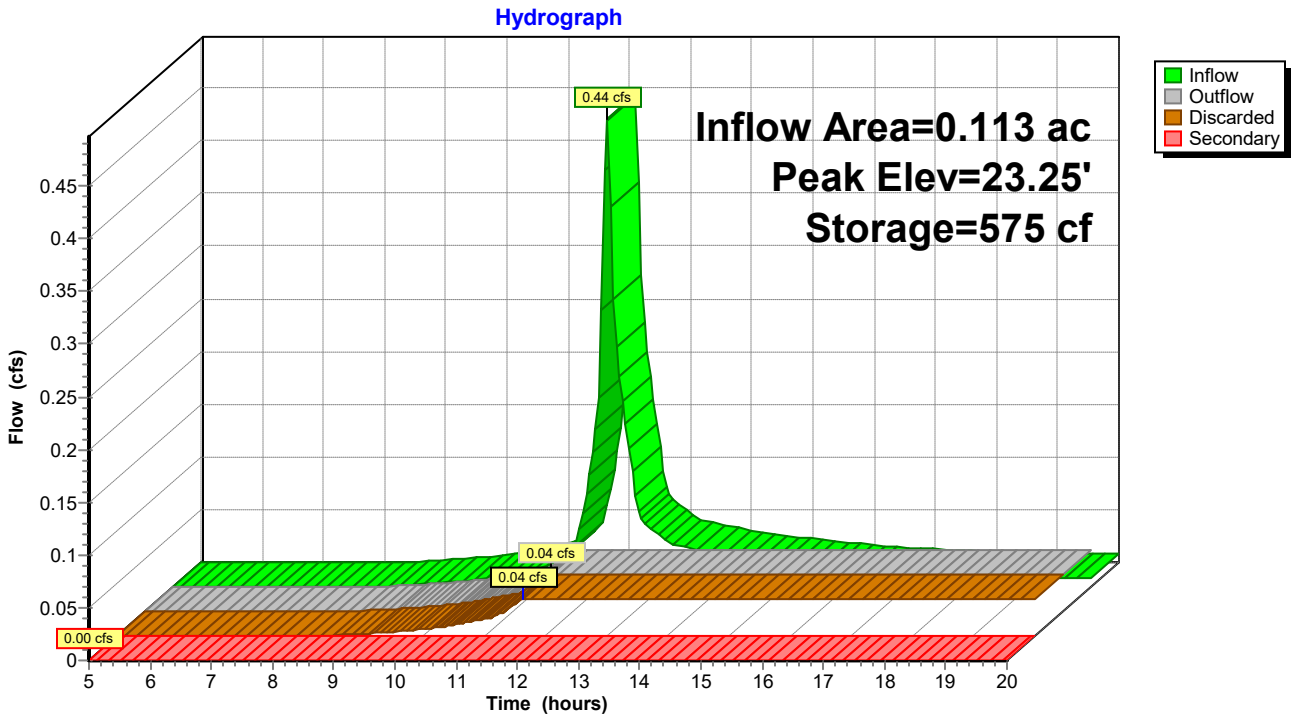
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
21.00	640	0	0
22.00	640	640	640
23.00	640	640	1,280
24.00	640	640	1,920
25.00	640	640	2,560

Device	Routing	Invert	Outlet Devices
#1	Secondary	25.00'	**136.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Trench (Overflow)** 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	21.00'	**2.410 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.04 cfs @ 11.65 hrs HW=21.05' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.04 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=21.00' (Free Discharge)
↑—**1=Top of Trench (Overflow)** (Controls 0.00 cfs)

Pond GT-5:


Hydrograph
Inflow Area=0.113 ac
Peak Elev=23.25'
Storage=575 cf
0.44 cfs
0.04 cfs
0.04 cfs
0.00 cfs
Inflow
Outflow
Discarded
Secondary
Flow (cfs)
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Time (hours)

Summary for Pond GT-6:

Inflow Area = 0.093 ac, 17.20% Impervious, Inflow Depth > 1.58" for 25-YR event
Inflow = 0.15 cfs @ 12.17 hrs, Volume= 0.012 af
Outflow = 0.05 cfs @ 12.05 hrs, Volume= 0.012 af, Atten= 69%, Lag= 0.0 min
Discarded = 0.05 cfs @ 12.05 hrs, Volume= 0.012 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 25.12' @ 12.62 hrs Surf.Area= 252 sf Storage= 113 cf

Plug-Flow detention time= 15.5 min calculated for 0.012 af (100% of inflow)
Center-of-Mass det. time= 15.3 min (844.9 - 829.6)

Volume	Invert	Avail.Storage	Storage Description
#1	24.00'	302 cf	**Gravel Trench Stage Storage (Prismatic)** Listed below (Recalc) 756 cf Overall x 40.0% Voids

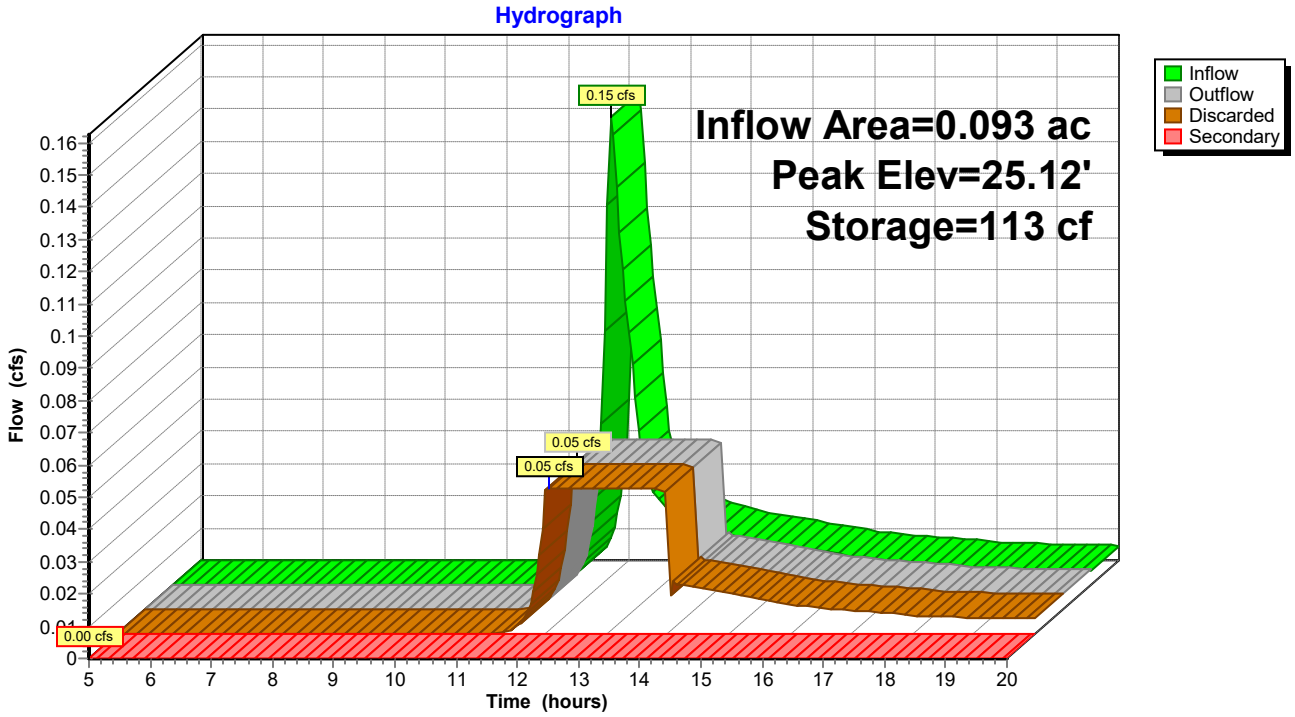
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
24.00	252	0	0
25.00	252	252	252
26.00	252	252	504
27.00	252	252	756

Device	Routing	Invert	Outlet Devices
#1	Secondary	27.00'	**78.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Trench (Overflow)** 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	24.00'	**7.716 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.05 cfs @ 12.05 hrs HW=24.06' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.05 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=24.00' (Free Discharge)
↑—**1=Top of Trench (Overflow)** (Controls 0.00 cfs)

Pond GT-6:


Hydrograph
Inflow Area=0.093 ac
Peak Elev=25.12'
Storage=113 cf
Inflow
Outflow
Discarded
Secondary
0.15 cfs
0.05 cfs
0.05 cfs
0.00 cfs
Flow (cfs)
Time (hours)
0.16
0.15
0.14
0.13
0.12
0.11
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

Summary for Pond IB-1:

Inflow Area = 3.343 ac, 73.41% Impervious, Inflow Depth > 1.39" for 25-YR event
Inflow = 5.28 cfs @ 12.09 hrs, Volume= 0.387 af
Outflow = 0.69 cfs @ 12.69 hrs, Volume= 0.386 af, Atten= 87%, Lag= 35.8 min
Discarded = 0.69 cfs @ 12.69 hrs, Volume= 0.386 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond IB-2 :
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond IB-2 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 28.23' @ 12.69 hrs Surf.Area= 3,586 sf Storage= 6,697 cf

Plug-Flow detention time= 95.0 min calculated for 0.385 af (100% of inflow)
Center-of-Mass det. time= 94.0 min (856.5 - 762.5)

Volume	Invert	Avail.Storage	Storage Description
#1	25.50'	20,062 cf	**Infiltration Basin Stage Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.50	1,503	0	0
26.00	1,745	812	812
27.00	2,510	2,128	2,940
28.00	3,387	2,949	5,888
29.00	4,245	3,816	9,704
30.00	5,159	4,702	14,406
31.00	6,152	5,656	20,062

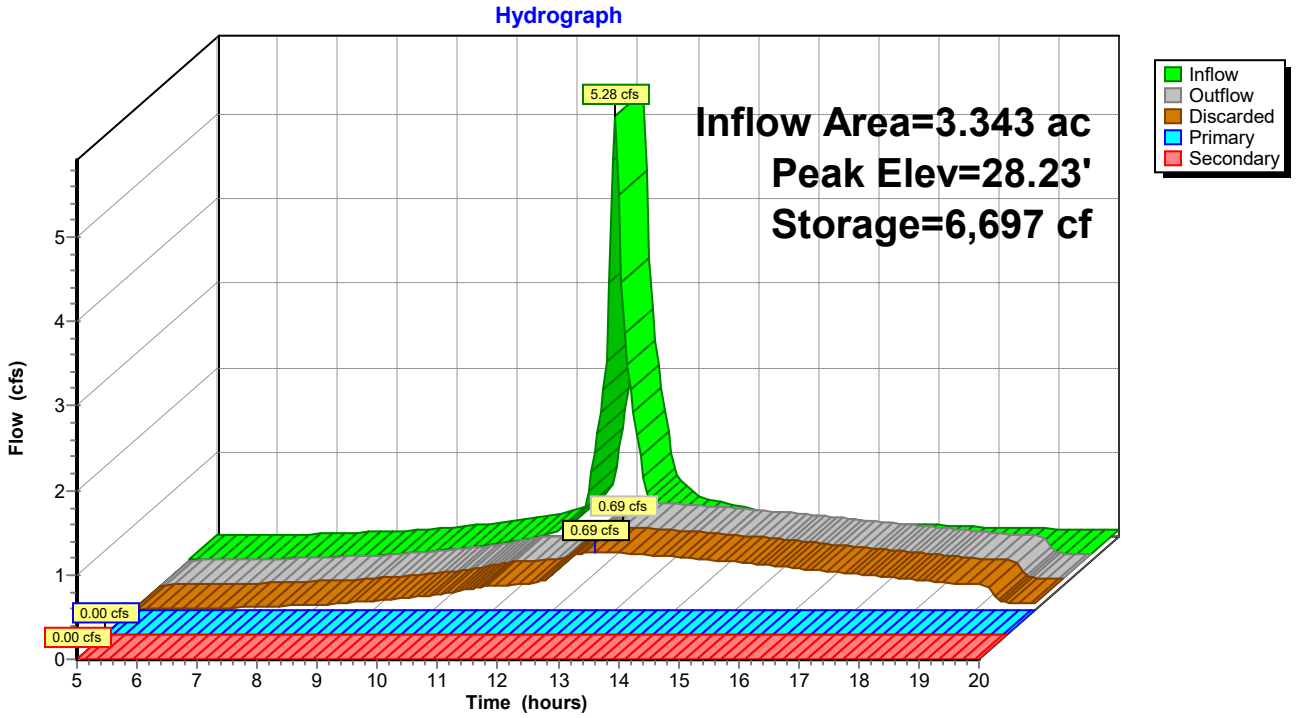
Device	Routing	Invert	Outlet Devices
#1	Secondary	31.00'	**320.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	25.50'	**8.270 in/hr Exfiltration over Surface area**
#3	Primary	27.00'	**6.0" Round 6" HDPE Pipe** L= 74.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 27.00' / 26.63' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#4	Device 3	30.00'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Grate X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads

Discarded OutFlow Max=0.69 cfs @ 12.69 hrs HW=28.23' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.69 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=25.50' (Free Discharge)
└**3=6" HDPE Pipe** (Controls 0.00 cfs)
└**4=18" Nyloplast Drain Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=25.50' (Free Discharge)
└**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond IB-1:



Summary for Pond IB-2:

Inflow Area = 3.541 ac, 70.01% Impervious, Inflow Depth > 0.04" for 25-YR event
Inflow = 0.13 cfs @ 12.13 hrs, Volume= 0.013 af
Outflow = 0.10 cfs @ 12.27 hrs, Volume= 0.013 af, Atten= 21%, Lag= 8.3 min
Discarded = 0.10 cfs @ 12.27 hrs, Volume= 0.013 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 28.53' @ 12.27 hrs Surf.Area= 552 sf Storage= 18 cf

Plug-Flow detention time= 1.7 min calculated for 0.013 af (100% of inflow)
Center-of-Mass det. time= 1.3 min (857.9 - 856.6)

Volume	Invert	Avail.Storage	Storage Description
#1	28.50'	2,225 cf	**Infiltration Basin Stage Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.50	503	0	0
29.00	1,212	429	429
30.00	2,380	1,796	2,225

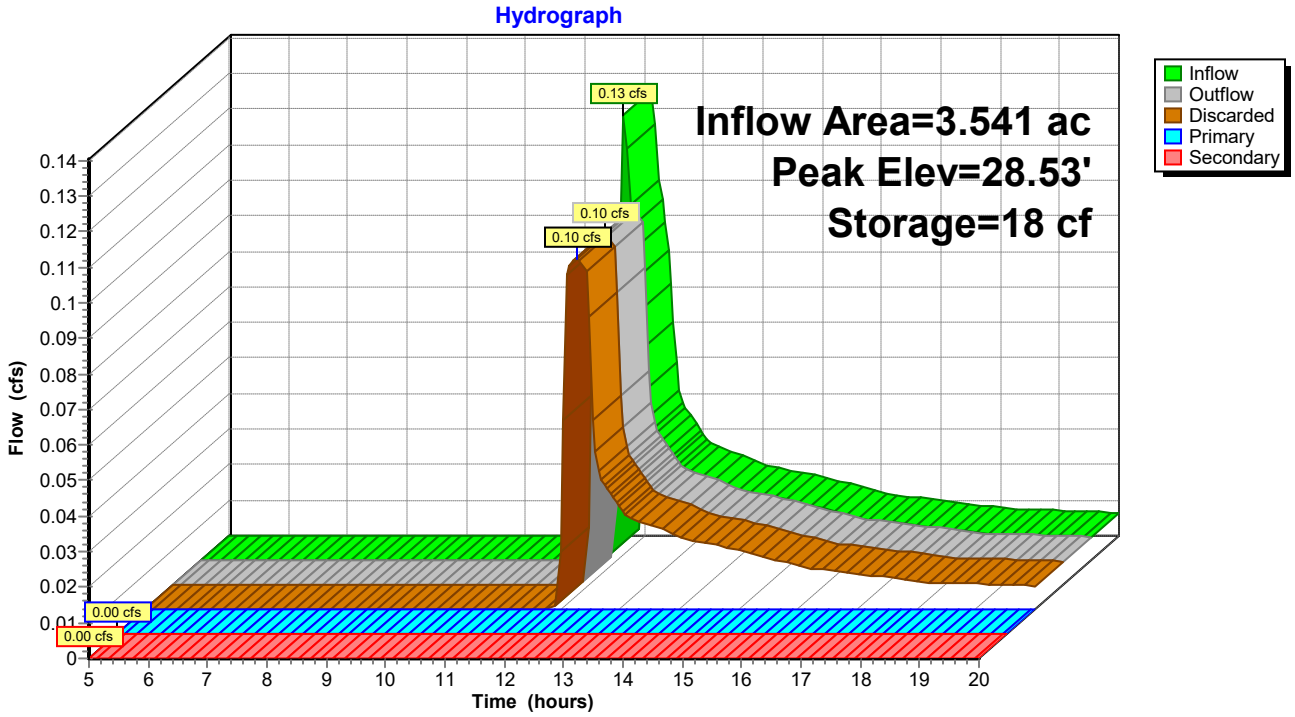
Device	Routing	Invert	Outlet Devices
#1	Secondary	30.00'	**335.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	28.50'	**7.716 in/hr Exfiltration over Surface area**
#3	Device 4	29.00'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Basin X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads
#4	Primary	26.63'	**6.0" Round 6" HDPE** L= 96.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 26.63' / 26.15' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

Discarded OutFlow Max=0.10 cfs @ 12.27 hrs HW=28.53' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.10 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=28.50' (Free Discharge)
└**4=6" HDPE** (Passes 0.00 cfs of 0.74 cfs potential flow)
└**3=18" Nyloplast Drain Basin** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=28.50' (Free Discharge)
└**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond IB-2:


Hydrograph
Inflow Area=3.541 ac
Peak Elev=28.53'
Storage=18 cf
Inflow
Outflow
Discarded
Primary
Secondary
0.13 cfs
0.10 cfs
0.10 cfs
0.00 cfs
0.00 cfs
Flow (cfs)
Time (hours)
0
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0.09
0.1
0.11
0.12
0.13
0.14
5
6
7
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11
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20

Summary for Pond RG-1:

Inflow Area = 2.174 ac, 76.22% Impervious, Inflow Depth > 4.42" for 25-YR event
Inflow = 10.14 cfs @ 12.09 hrs, Volume= 0.801 af
Outflow = 1.83 cfs @ 12.58 hrs, Volume= 0.800 af, Atten= 82%, Lag= 29.4 min
Discarded = 1.83 cfs @ 12.58 hrs, Volume= 0.800 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond IB-1 :
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond IB-1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 29.37' @ 12.58 hrs Surf.Area= 6,576 sf Storage= 12,828 cf

Plug-Flow detention time= 67.6 min calculated for 0.797 af (100% of inflow)
Center-of-Mass det. time= 66.8 min (816.9 - 750.1)

Volume	Invert	Avail.Storage	Storage Description
#1	26.00'	36,814 cf	**Rain Garden Stage Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.00	1,626	0	0
27.00	2,502	2,064	2,064
27.50	3,473	1,494	3,558
28.00	4,237	1,928	5,485
29.00	5,896	5,067	10,552
30.00	7,760	6,828	17,380
31.00	9,713	8,737	26,116
32.00	11,682	10,698	36,814

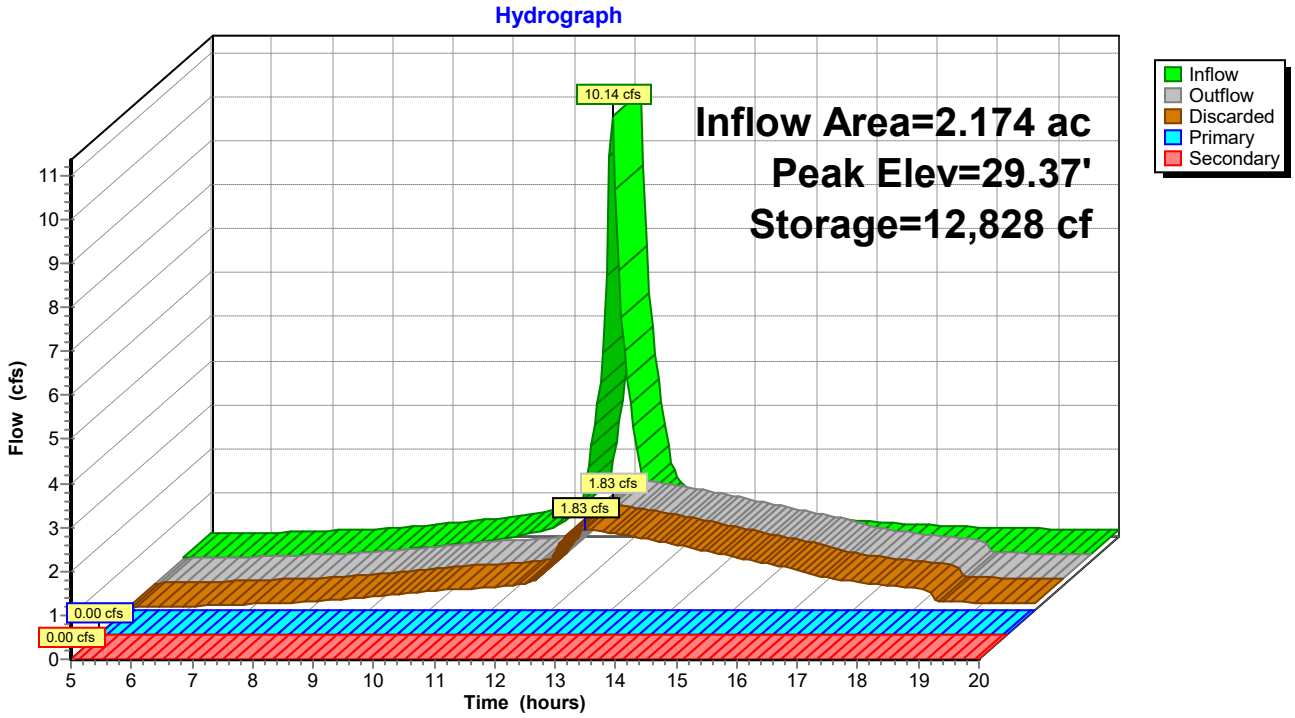
Device	Routing	Invert	Outlet Devices
#1	Secondary	32.00'	**655.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	26.00'	**12.033 in/hr Exfiltration over Surface area**
#3	Primary	27.07'	**6.0" Round 6" HDPE Pipe** L= 42.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 27.07' / 26.65' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#4	Device 3	30.50'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Grate X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads

Discarded OutFlow Max=1.83 cfs @ 12.58 hrs HW=29.36' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 1.83 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=26.00' (Free Discharge)
└**3=6" HDPE Pipe** (Controls 0.00 cfs)
└**4=18" Nyloplast Drain Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=26.00' (Free Discharge)
└**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond RG-1:



Summary for Pond SWB-1:

Inflow Area = 0.154 ac, 35.71% Impervious, Inflow Depth > 3.27" for 25-YR event
Inflow = 0.46 cfs @ 12.23 hrs, Volume= 0.042 af
Outflow = 0.46 cfs @ 12.24 hrs, Volume= 0.040 af, Atten= 0%, Lag= 0.8 min
Primary = 0.46 cfs @ 12.24 hrs, Volume= 0.040 af
Routed to Pond UG-1 :
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 30.98' @ 12.24 hrs Surf.Area= 268 sf Storage= 85 cf

Plug-Flow detention time= 20.3 min calculated for 0.040 af (97% of inflow)
Center-of-Mass det. time= 7.9 min (806.6 - 798.7)

Volume	Invert	Avail.Storage	Storage Description
#1	30.60'	510 cf	**Basin Stage Storage (Prismatic)** Listed below (Recalc)

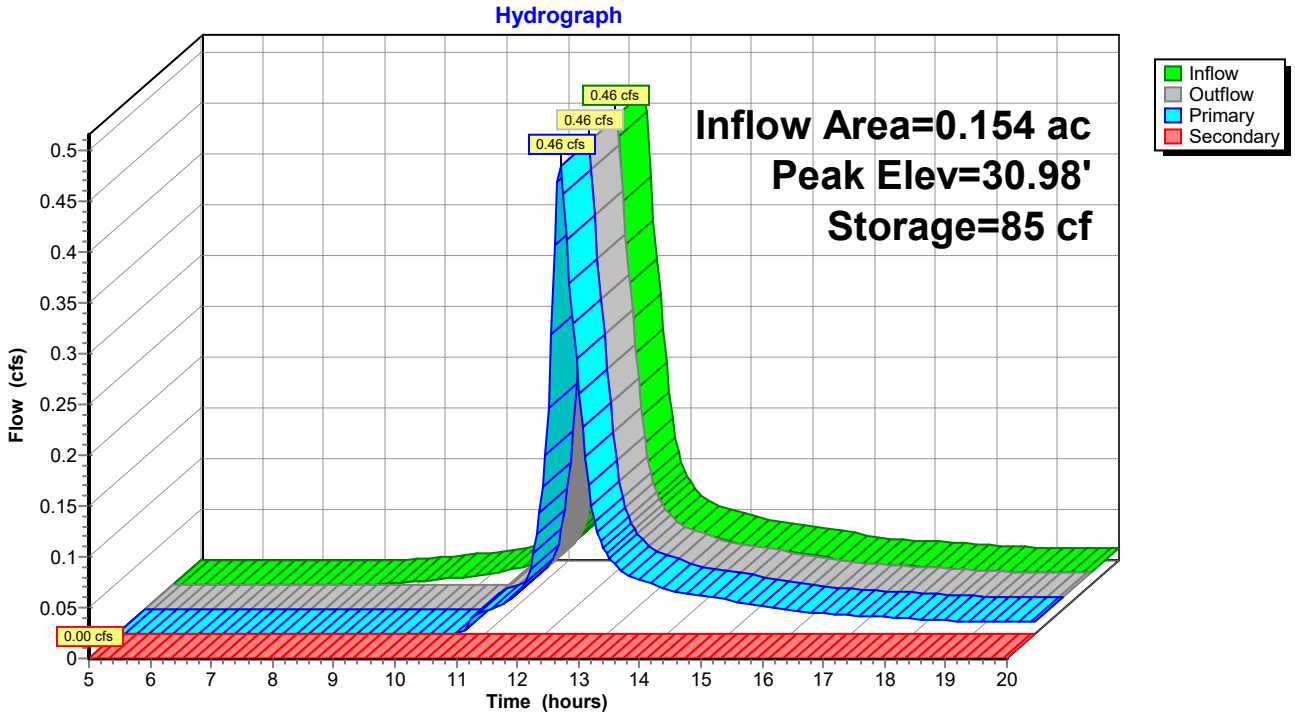
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
30.60	182	0	0
31.00	274	91	91
31.50	412	172	263
32.00	576	247	510

Device	Routing	Invert	Outlet Devices
#1	Secondary	32.00'	**114.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** 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	Primary	28.38'	**6.0" Round 6" HDPE Pipe** L= 23.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 28.38' / 28.15' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#3	Device 2	30.88'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Grate X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.46 cfs @ 12.24 hrs HW=30.98' (Free Discharge)
↑—**2=6" HDPE Pipe** (Passes 0.46 cfs of 1.14 cfs potential flow)
↑—**3=18" Nyloplast Drain Grate** (Weir Controls 0.46 cfs @ 1.01 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=30.60' (Free Discharge)
↑—**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond SWB-1:


Hydrograph
Inflow Area=0.154 ac
Peak Elev=30.98'
Storage=85 cf
0.46 cfs
0.46 cfs
0.46 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

Summary for Pond SWB-2:

Inflow Area = 0.101 ac, 71.29% Impervious, Inflow Depth > 4.30" for 25-YR event
Inflow = 0.52 cfs @ 12.09 hrs, Volume= 0.036 af
Outflow = 0.51 cfs @ 12.10 hrs, Volume= 0.034 af, Atten= 1%, Lag= 0.9 min
Primary = 0.51 cfs @ 12.10 hrs, Volume= 0.034 af
Routed to Pond UG-1 :
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond SWB-1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 30.47' @ 12.10 hrs Surf.Area= 384 sf Storage= 141 cf

Plug-Flow detention time= 41.2 min calculated for 0.034 af (93% of inflow)
Center-of-Mass det. time= 17.8 min (787.4 - 769.6)

Volume	Invert	Avail.Storage	Storage Description
#1	30.00'	410 cf	**Basin Stage Storage (Prismatic)** Listed below (Recalc)

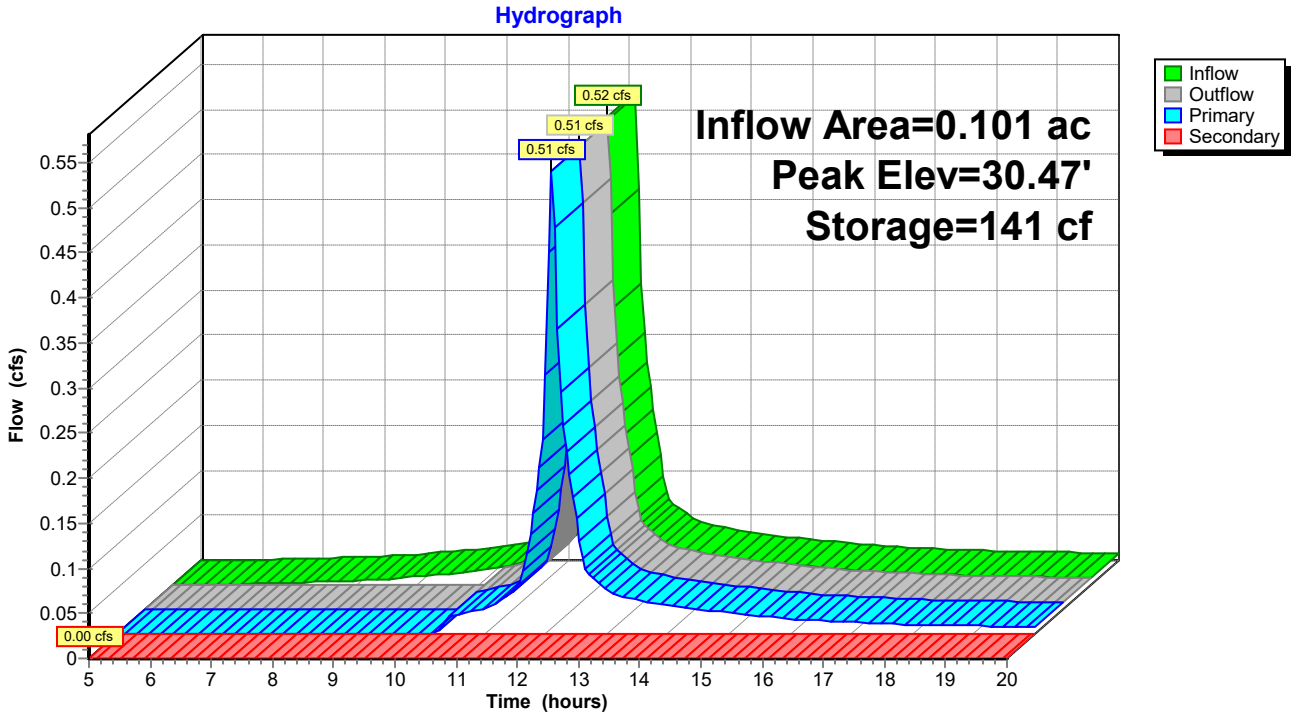
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
30.00	210	0	0
30.50	394	151	151
31.00	640	259	410

Device	Routing	Invert	Outlet Devices
#1	Secondary	31.00'	**164.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** 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	Primary	27.87'	**6.0" Round 6" HDPE Pipe** L= 24.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 27.87' / 27.63' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#3	Device 2	30.37'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Grate X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.51 cfs @ 12.10 hrs HW=30.47' (Free Discharge)
└**2=6" HDPE Pipe** (Passes 0.51 cfs of 1.14 cfs potential flow)
└**3=18" Nyloplast Drain Grate** (Weir Controls 0.51 cfs @ 1.05 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=30.00' (Free Discharge)
└**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond SWB-2:


Hydrograph
Inflow Area=0.101 ac
Peak Elev=30.47'
Storage=141 cf
0.52 cfs
0.51 cfs
0.51 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
0.55
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Time (hours)

Summary for Pond SWB-3:

Inflow Area = 0.052 ac, 44.23% Impervious, Inflow Depth > 1.99" for 25-YR event
Inflow = 0.13 cfs @ 12.10 hrs, Volume= 0.009 af
Outflow = 0.05 cfs @ 12.38 hrs, Volume= 0.005 af, Atten= 57%, Lag= 16.6 min
Primary = 0.05 cfs @ 12.38 hrs, Volume= 0.005 af
Routed to Pond UG-1 :
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond SWB-2 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 30.97' @ 12.38 hrs Surf.Area= 411 sf Storage= 147 cf

Plug-Flow detention time= 136.9 min calculated for 0.005 af (63% of inflow)
Center-of-Mass det. time= 58.0 min (873.9 - 816.0)

Volume	Invert	Avail.Storage	Storage Description
#1	30.50'	824 cf	**Basin Stage Storage (Prismatic)** Listed below (Recalc)

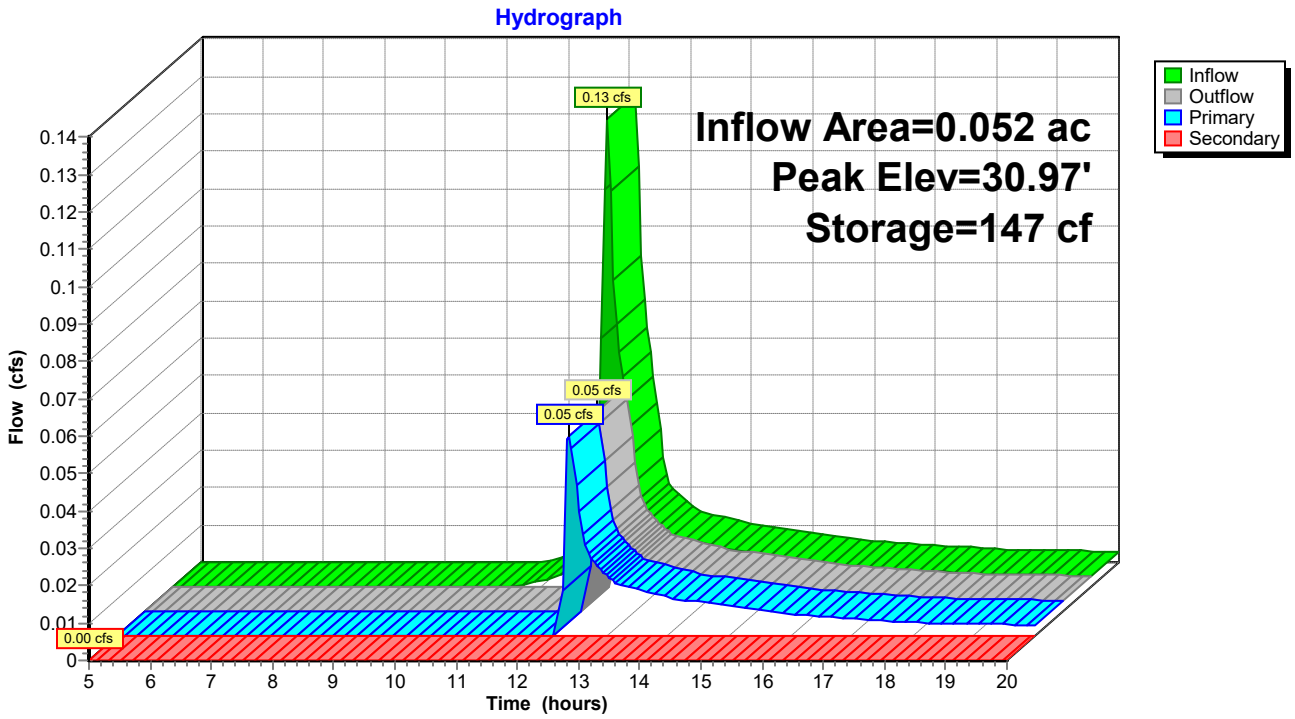
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
30.50	211	0	0
31.00	423	159	159
32.00	908	666	824

Device	Routing	Invert	Outlet Devices
#1	Secondary	32.00'	**168.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** 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	Primary	28.95'	**6.0" Round 6" HDPE Pipe** L= 11.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 28.95' / 27.84' S= 0.1009 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#3	Device 2	30.95'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Grate X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.05 cfs @ 12.38 hrs HW=30.97' (Free Discharge)
└**2=6" HDPE Pipe** (Passes 0.05 cfs of 0.99 cfs potential flow)
└**3=18" Nyloplast Drain Grate** (Weir Controls 0.05 cfs @ 0.49 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=30.50' (Free Discharge)
└**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond SWB-3:


Hydrograph
Inflow Area=0.052 ac
Peak Elev=30.97'
Storage=147 cf
0.13 cfs
0.05 cfs
0.05 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0.09
0.1
0.11
0.12
0.13
0.14
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

Summary for Pond SWB-4:

Inflow Area = 0.743 ac, 48.72% Impervious, Inflow Depth > 2.66" for 25-YR event
Inflow = 2.30 cfs @ 12.09 hrs, Volume= 0.165 af
Outflow = 0.76 cfs @ 12.44 hrs, Volume= 0.160 af, Atten= 67%, Lag= 20.8 min
Primary = 0.76 cfs @ 12.44 hrs, Volume= 0.160 af
Routed to Pond UG-1 :
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-2 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 28.28' @ 12.44 hrs Surf.Area= 0.050 ac Storage= 0.048 af

Plug-Flow detention time= 42.2 min calculated for 0.160 af (97% of inflow)
Center-of-Mass det. time= 31.9 min (825.5 - 793.5)

Volume	Invert	Avail.Storage	Storage Description
#1	27.00'	0.164 af	**Stormwater Management Basin Storage (Prismatic)** Listed below (Recalc)

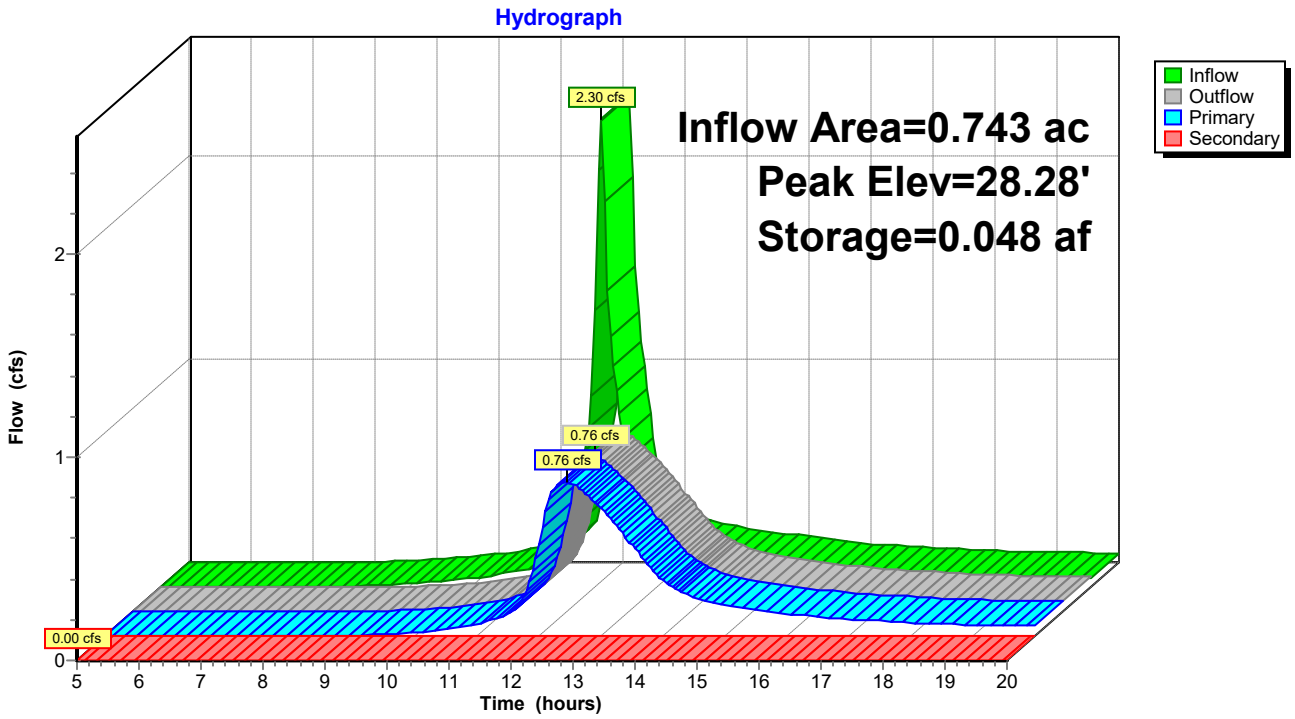
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
27.00	0.026	0.000	0.000
28.00	0.044	0.035	0.035
29.00	0.064	0.054	0.089
30.00	0.086	0.075	0.164

Device	Routing	Invert	Outlet Devices
#1	Secondary	30.00'	**318.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** 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	Primary	26.95'	**8.0" Round 8" HDPE** L= 44.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 26.95' / 26.73' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#3	Device 2	28.95'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Grate X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads
#4	Device 2	27.00'	**6.0" Round 6" HDPE Inlet Pipe** L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 27.00' / 26.95' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

Primary OutFlow Max=0.76 cfs @ 12.44 hrs HW=28.27' (Free Discharge)
└**2=8" HDPE** (Passes 0.76 cfs of 1.32 cfs potential flow)
└**3=18" Nyloplast Drain Grate** (Controls 0.00 cfs)
└**4=6" HDPE Inlet Pipe** (Inlet Controls 0.76 cfs @ 3.85 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=27.00' (Free Discharge)
└**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond SWB-4:


Hydrograph
Inflow Area=0.743 ac
Peak Elev=28.28'
Storage=0.048 af
Inflow
Outflow
Primary
Secondary
2.30 cfs
0.76 cfs
0.76 cfs
0.00 cfs
Flow (cfs)
Time (hours)
0
1
2
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

Summary for Pond UG-1:

Inflow Area = 1.185 ac, 54.60% Impervious, Inflow Depth > 3.08" for 25-YR event
Inflow = 2.25 cfs @ 12.11 hrs, Volume= 0.304 af
Outflow = 0.66 cfs @ 11.85 hrs, Volume= 0.304 af, Atten= 70%, Lag= 0.0 min
Discarded = 0.66 cfs @ 11.85 hrs, Volume= 0.304 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 23.64' @ 13.37 hrs Surf.Area= 0.048 ac Storage= 0.072 af

Plug-Flow detention time= 37.1 min calculated for 0.303 af (100% of inflow)
Center-of-Mass det. time= 36.8 min (837.1 - 800.3)

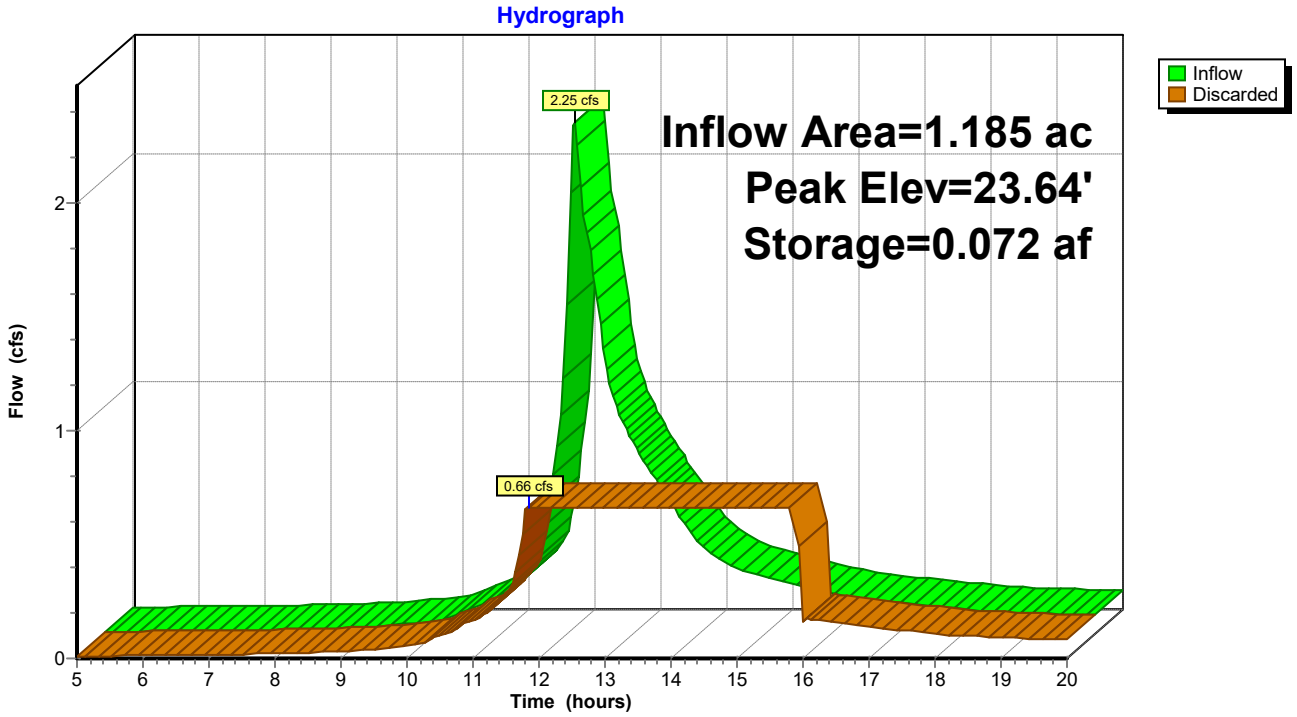
Volume	Invert	Avail.Storage	Storage Description
#1A	21.44'	0.069 af	**29.92'W x 70.23'L x 5.50'H Field A** 0.265 af Overall - 0.094 af Embedded = 0.172 af x 40.0% Voids
#2A	22.19'	0.094 af	**ADS_StormTech MC-3500 d +Cap** x 36 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 36 Chambers in 4 Rows Cap Storage= 14.9 cf x 2 x 4 rows = 119.2 cf
		0.162 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	21.44'	**13.652 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.66 cfs @ 11.85 hrs HW=21.52' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.66 cfs)

Pond UG-1:


Hydrograph
Inflow
Discarded
2.25 cfs
0.66 cfs
Inflow Area=1.185 ac
Peak Elev=23.64'
Storage=0.072 af
Flow (cfs)
0
1
2
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Time (hours)

Summary for Subcatchment PR-01:

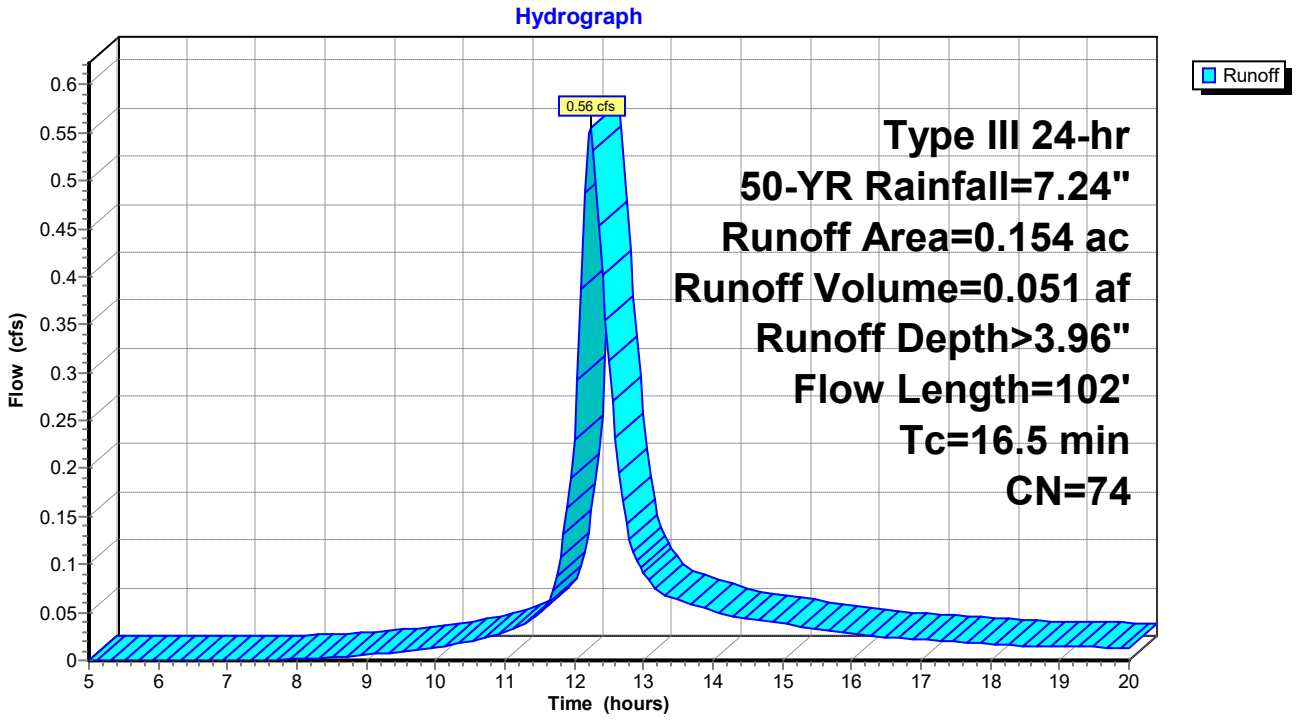
Runoff = 0.56 cfs @ 12.23 hrs, Volume= 0.051 af, Depth> 3.96"
Routed to Pond SWB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR Rainfall=7.24"

	Area (ac)	CN	Description
	0.099	61	>75% Grass cover, Good, HSG B
*	0.055	98	Paved
	0.154	74	Weighted Average
	0.099		64.29% Pervious Area
	0.055		35.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	100	0.0050	0.10		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.0	2	0.0500	1.57		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
16.5	102	Total			

Subcatchment PR-01:



Summary for Subcatchment PR-02:

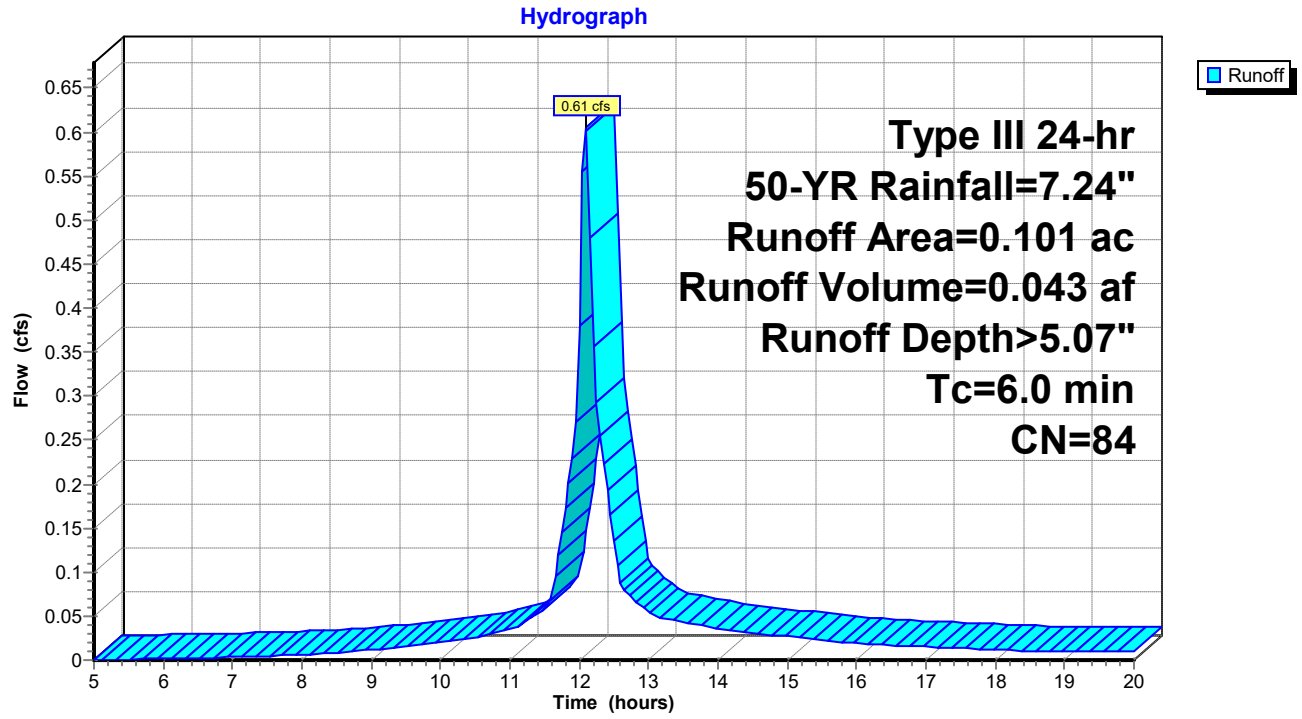
Runoff = 0.61 cfs @ 12.09 hrs, Volume= 0.043 af, Depth> 5.07"
Routed to Pond SWB-2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR Rainfall=7.24"

	Area (ac)	CN	Description
	0.009	30	Meadow, non-grazed, HSG A
	0.019	58	Meadow, non-grazed, HSG B
	0.001	61	>75% Grass cover, Good, HSG B
*	0.072	98	Paved
	0.101	84	Weighted Average
	0.029		28.71% Pervious Area
	0.072		71.29% Impervious Area

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

Subcatchment PR-02:



Summary for Subcatchment PR-03:

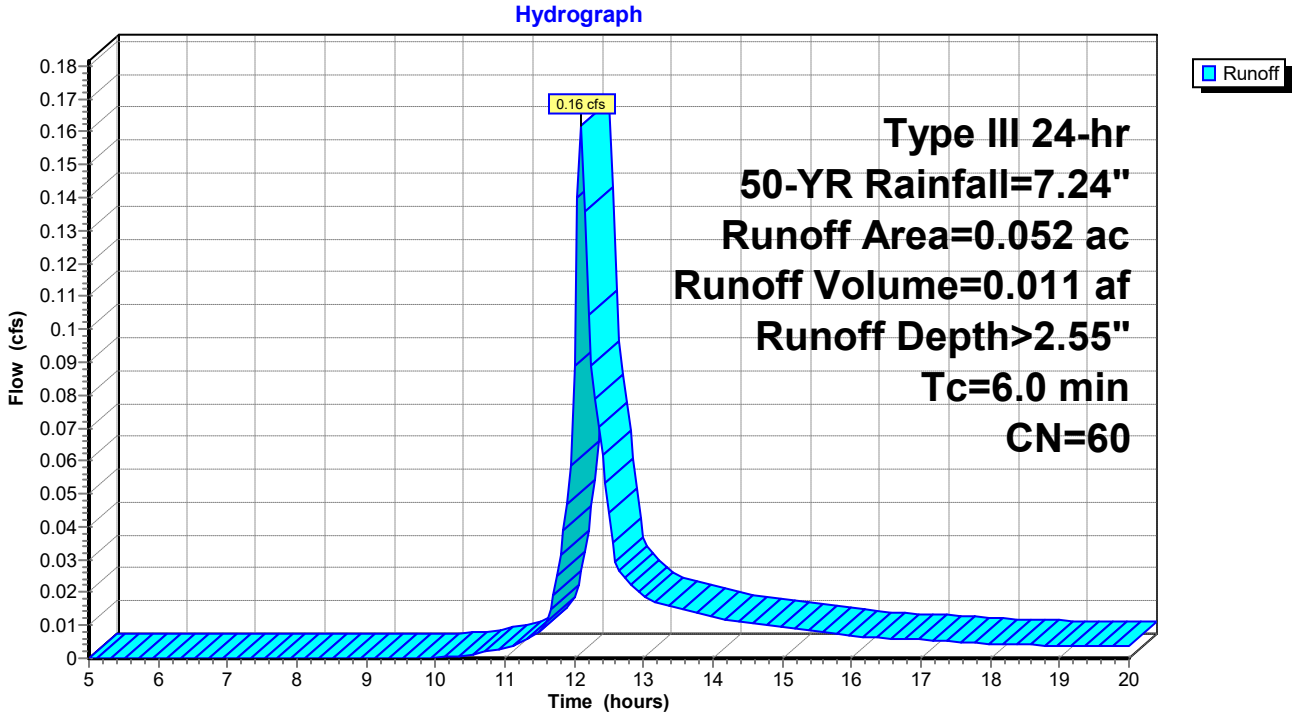
Runoff = 0.16 cfs @ 12.10 hrs, Volume= 0.011 af, Depth> 2.55"
Routed to Pond SWB-3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR Rainfall=7.24"

	Area (ac)	CN	Description
	0.029	30	Meadow, non-grazed, HSG A
*	0.023	98	Paved
	0.052	60	Weighted Average
	0.029		55.77% Pervious Area
	0.023		44.23% Impervious Area

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

Subcatchment PR-03:



Summary for Subcatchment PR-04:

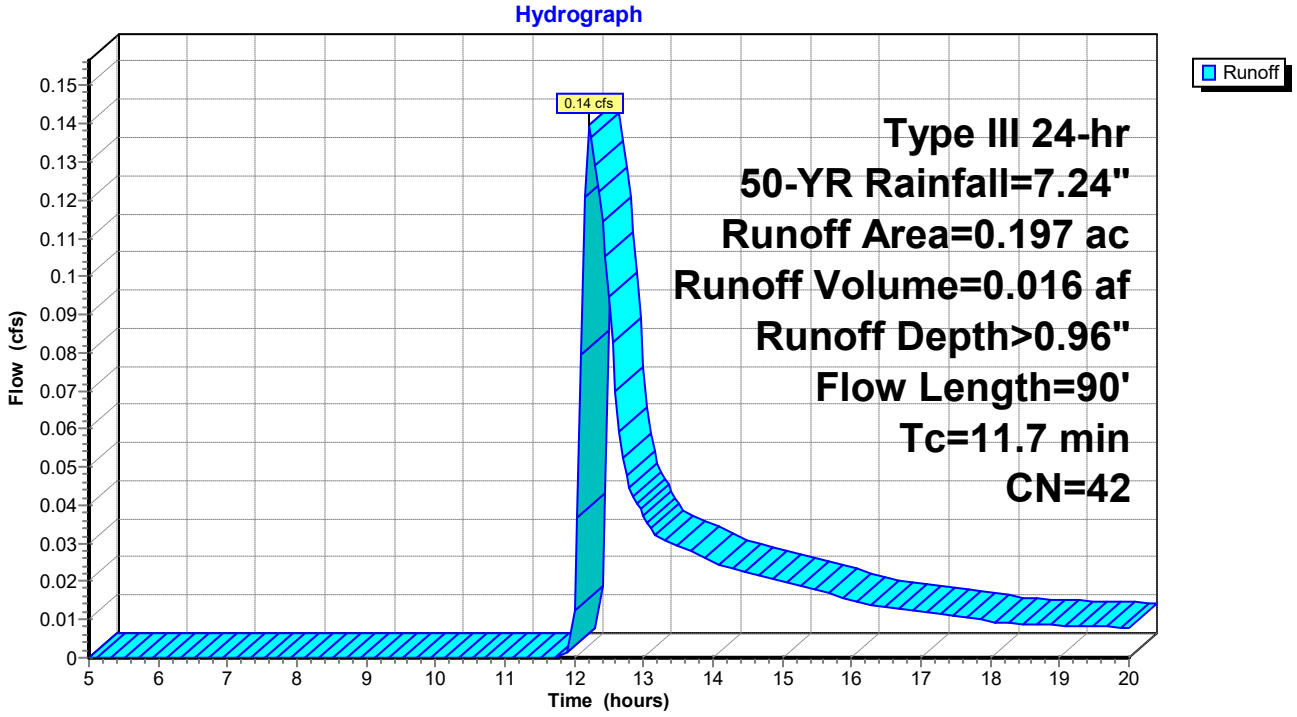
Runoff = 0.14 cfs @ 12.22 hrs, Volume= 0.016 af, Depth> 0.96"
Routed to Pond SWB-4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR Rainfall=7.24"

	Area (ac)	CN	Description
	0.097	30	Meadow, non-grazed, HSG A
	0.076	39	>75% Grass cover, Good, HSG A
*	0.024	98	Paved
	0.197	42	Weighted Average
	0.173		87.82% Pervious Area
	0.024		12.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	81	0.0200	0.12		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.40"
0.0	7	0.0290	3.46		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.0	2	0.3500	4.14		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
11.7	90	Total			

Subcatchment PR-04:



Summary for Subcatchment PR-05:

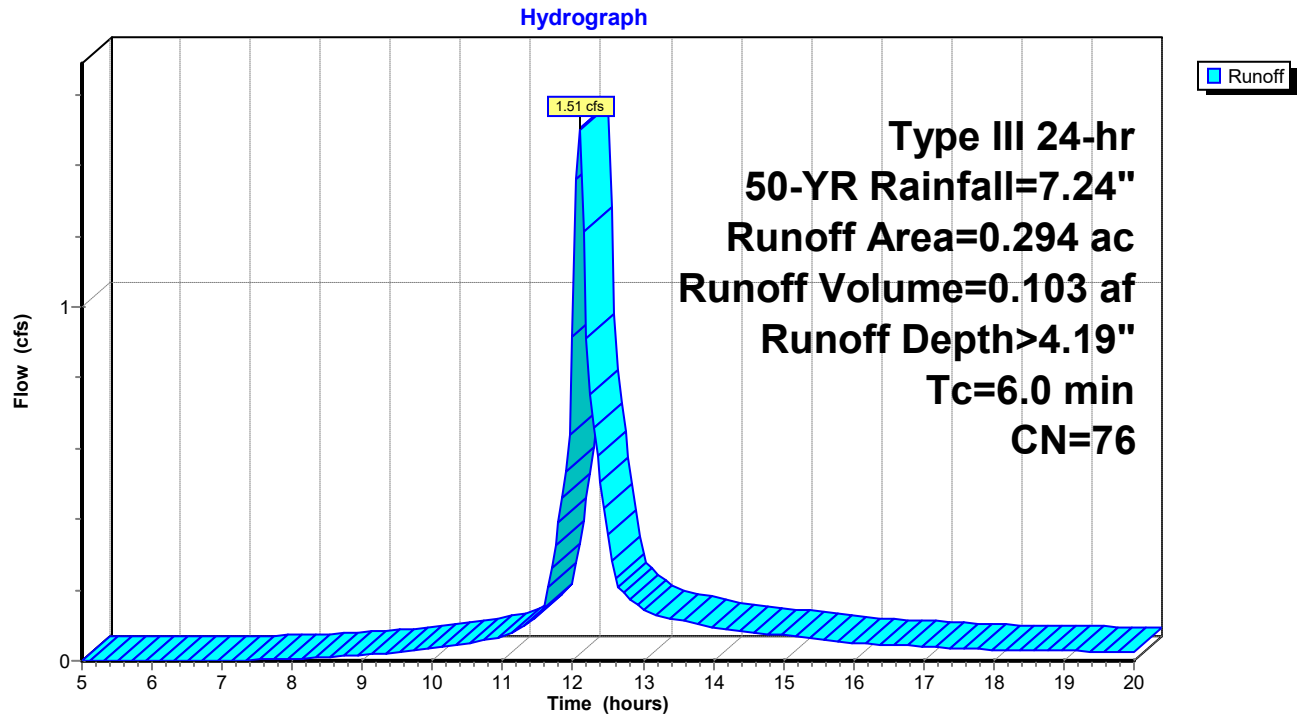
Runoff = 1.51 cfs @ 12.09 hrs, Volume= 0.103 af, Depth> 4.19"
Routed to Pond SWB-4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR Rainfall=7.24"

	Area (ac)	CN	Description
	0.083	39	>75% Grass cover, Good, HSG A
	0.023	30	Meadow, non-grazed, HSG A
*	0.188	98	Paved
	0.294	76	Weighted Average
	0.106		36.05% Pervious Area
	0.188		63.95% Impervious Area

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

Subcatchment PR-05:



Summary for Subcatchment PR-06:

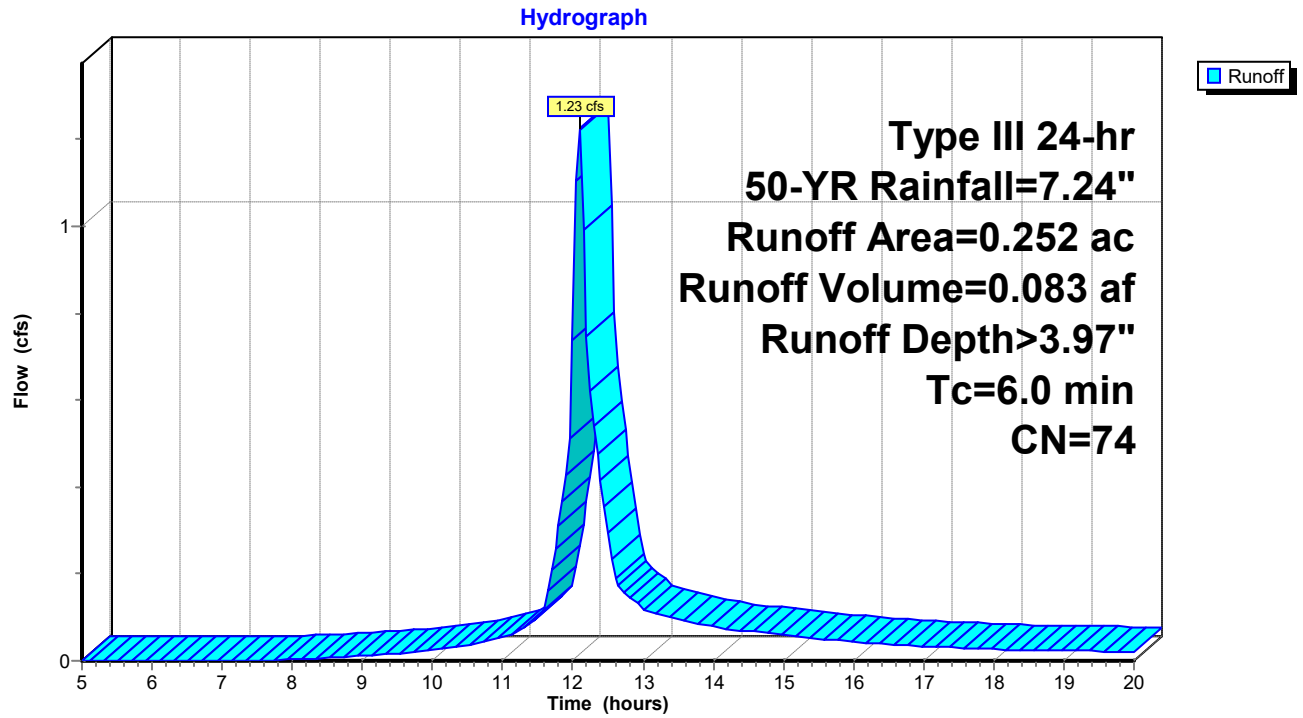
Runoff = 1.23 cfs @ 12.09 hrs, Volume= 0.083 af, Depth> 3.97"
Routed to Pond SWB-4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR Rainfall=7.24"

	Area (ac)	CN	Description
	0.017	30	Meadow, non-grazed, HSG A
	0.085	39	>75% Grass cover, Good, HSG A
*	0.150	98	Paved
	0.252	74	Weighted Average
	0.102		40.48% Pervious Area
	0.150		59.52% Impervious Area

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

Subcatchment PR-06:



Summary for Subcatchment PR-07:

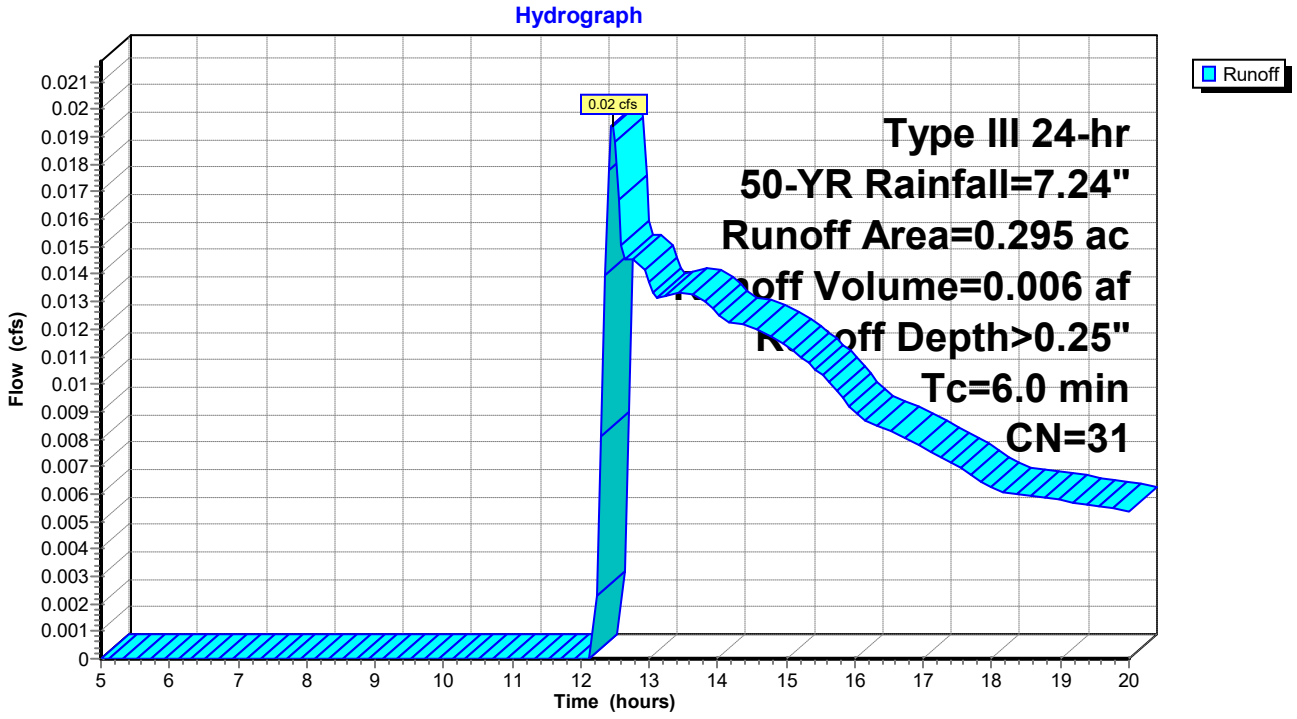
Runoff = 0.02 cfs @ 12.46 hrs, Volume= 0.006 af, Depth> 0.25"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR Rainfall=7.24"

Area (ac)	CN	Description
0.283	30	Brush, Good, HSG A
0.012	48	Brush, Good, HSG B
0.295	31	Weighted Average
0.295		100.00% Pervious Area

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

Subcatchment PR-07:



Summary for Subcatchment PR-08:

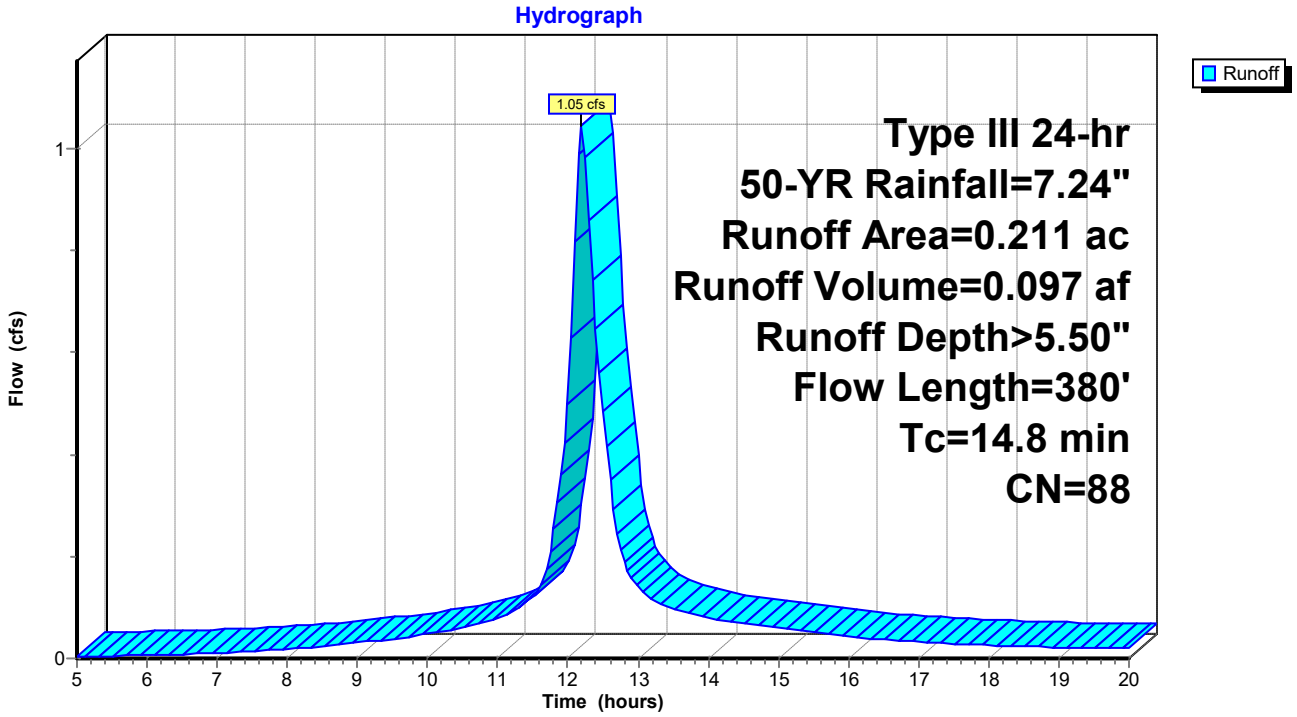
Runoff = 1.05 cfs @ 12.20 hrs, Volume= 0.097 af, Depth> 5.50"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR Rainfall=7.24"

	Area (ac)	CN	Description
	0.018	39	>75% Grass cover, Good, HSG A
	0.031	61	>75% Grass cover, Good, HSG B
	0.000	58	Meadow, non-grazed, HSG B
*	0.162	98	Paved
	0.211	88	Weighted Average
	0.049		23.22% Pervious Area
	0.162		76.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	100	0.0140	0.15		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
3.0	126	0.0100	0.70		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.0	9	0.0220	3.01		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
0.2	18	0.0500	1.57		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
0.2	39	0.0290	3.46		**Shallow Concentrated Flow, E-F** Paved Kv= 20.3 fps
0.1	28	0.0050	3.21	2.52	**Pipe Channel, F-G** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
0.3	60	0.0050	3.47	2.73	**Pipe Channel, G-H** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
14.8	380	Total			

Subcatchment PR-08:



Summary for Subcatchment PR-09:

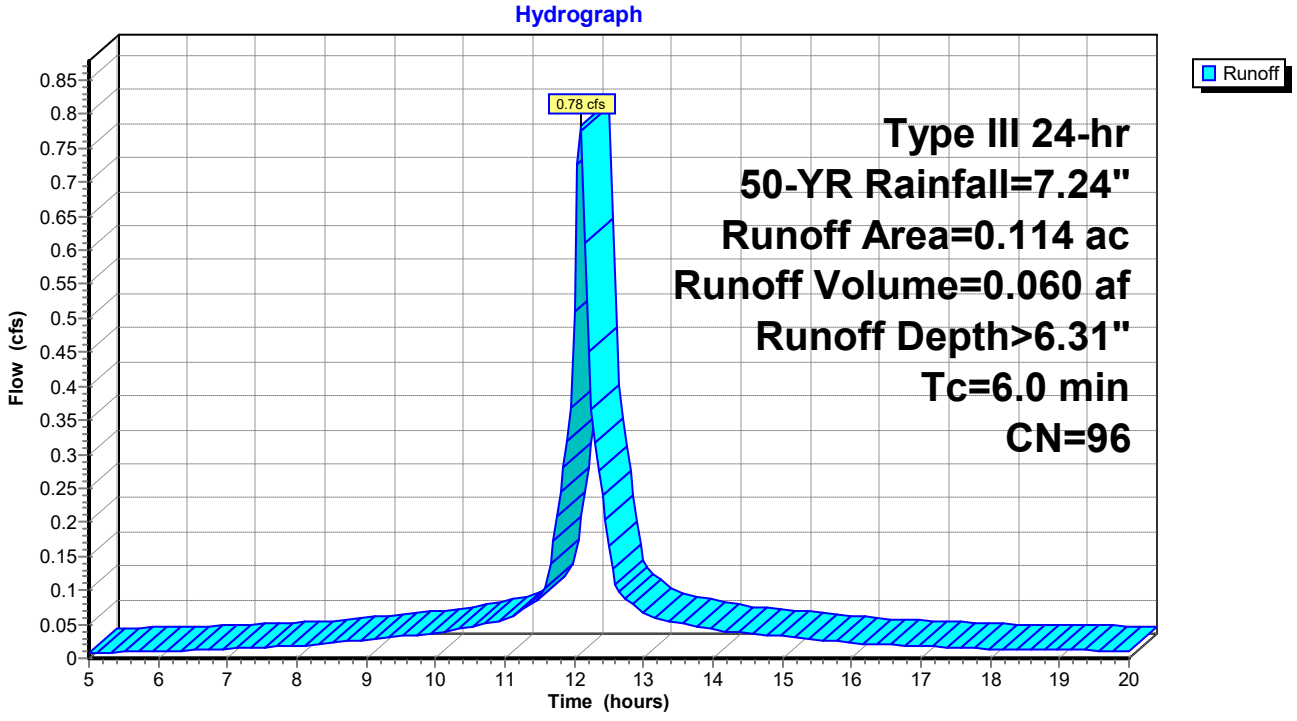
Runoff = 0.78 cfs @ 12.09 hrs, Volume= 0.060 af, Depth> 6.31"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR Rainfall=7.24"

	Area (ac)	CN	Description
	0.003	39	>75% Grass cover, Good, HSG A
*	0.111	98	Paved
	0.114	96	Weighted Average
	0.003		2.63% Pervious Area
	0.111		97.37% Impervious Area

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

Subcatchment PR-09:



Summary for Subcatchment PR-10:

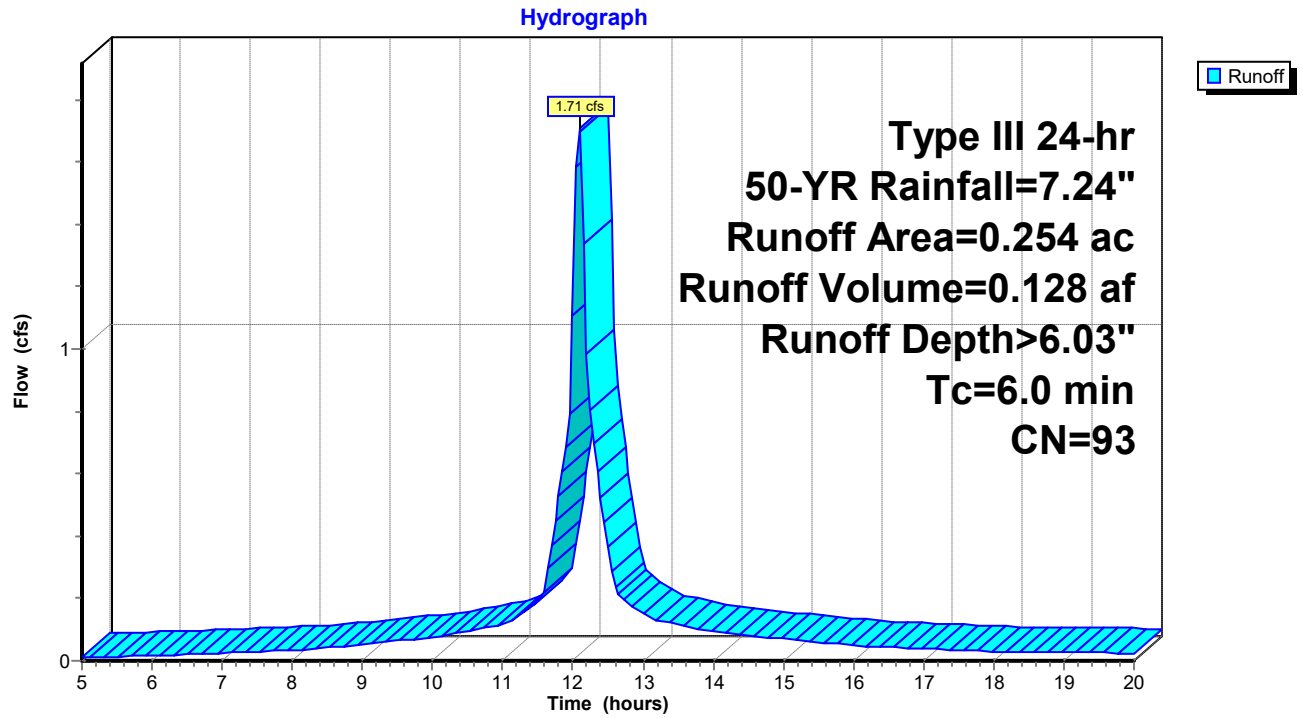
Runoff = 1.71 cfs @ 12.09 hrs, Volume= 0.128 af, Depth> 6.03"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR Rainfall=7.24"

	Area (ac)	CN	Description
	0.020	39	>75% Grass cover, Good, HSG A
	0.004	61	>75% Grass cover, Good, HSG B
*	0.230	98	Paved
	0.254	93	Weighted Average
	0.024		9.45% Pervious Area
	0.230		90.55% Impervious Area

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

Subcatchment PR-10:



Summary for Subcatchment PR-11:

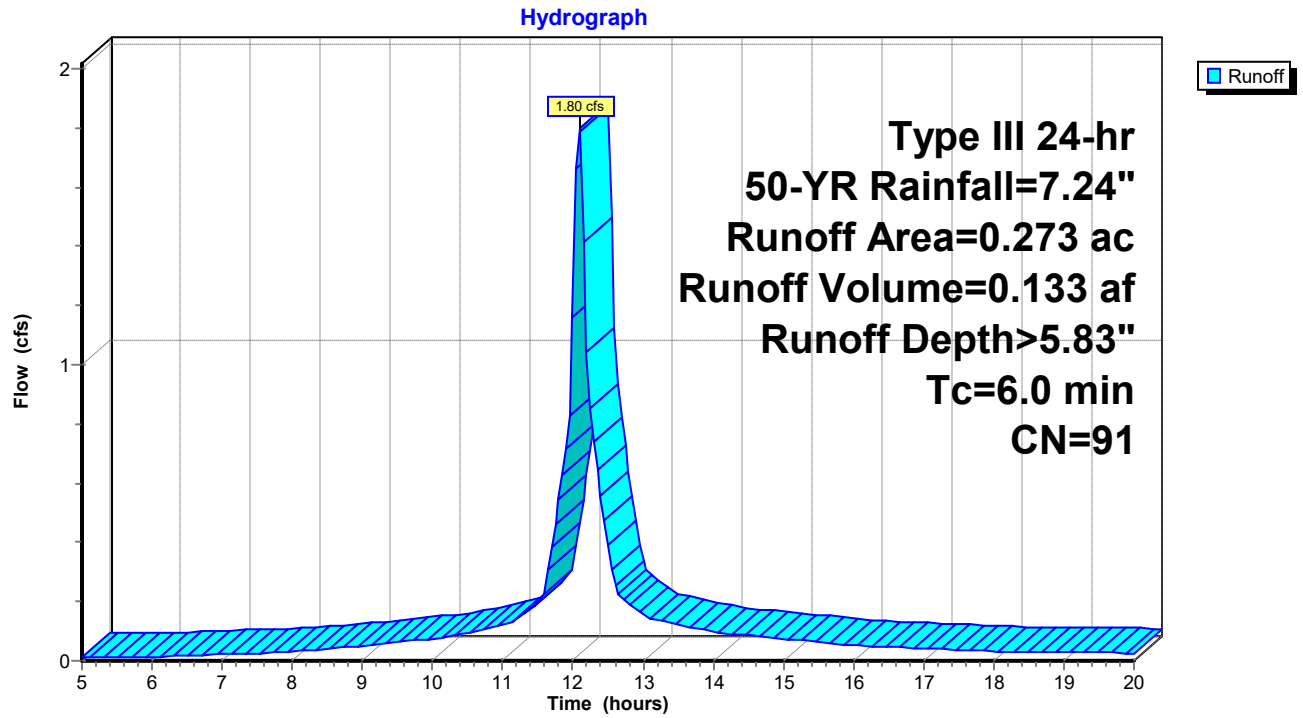
Runoff = 1.80 cfs @ 12.09 hrs, Volume= 0.133 af, Depth> 5.83"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR Rainfall=7.24"

	Area (ac)	CN	Description
	0.028	39	>75% Grass cover, Good, HSG A
	0.008	61	>75% Grass cover, Good, HSG B
*	0.237	98	Paved
	0.273	91	Weighted Average
	0.036		13.19% Pervious Area
	0.237		86.81% Impervious Area

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

Subcatchment PR-11:



Summary for Subcatchment PR-12:

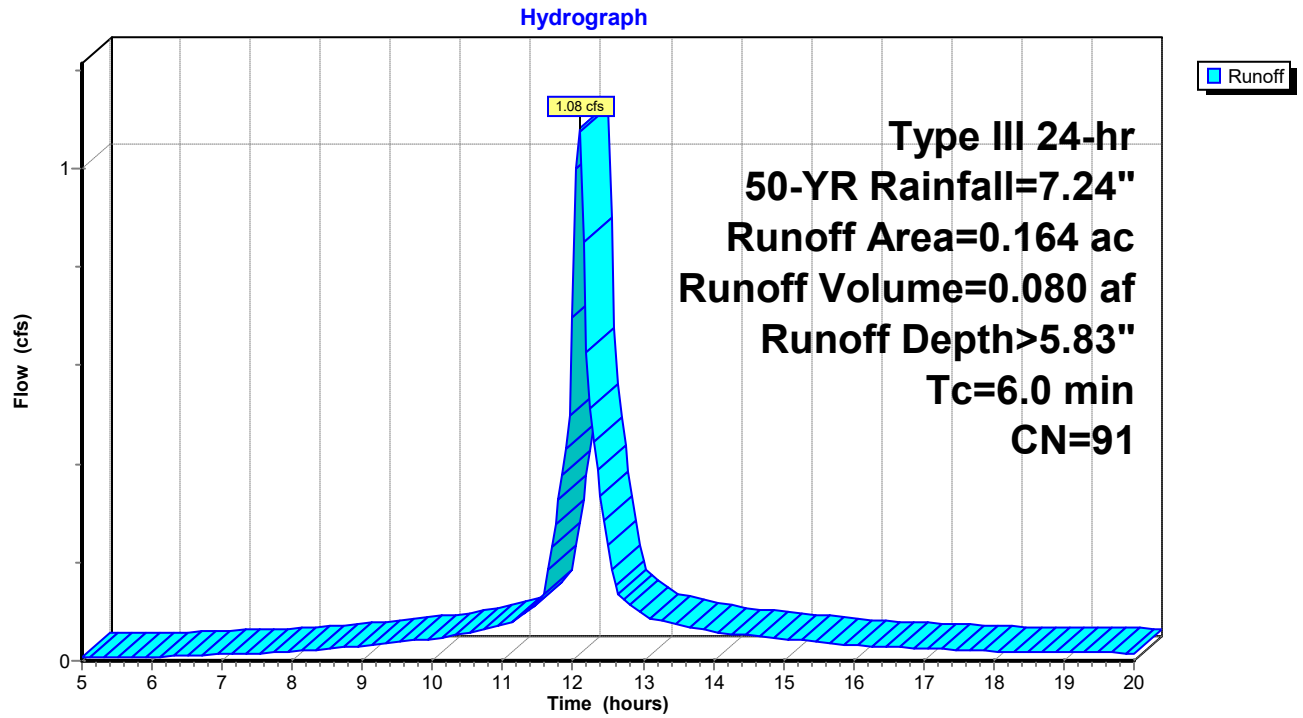
Runoff = 1.08 cfs @ 12.09 hrs, Volume= 0.080 af, Depth> 5.83"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR Rainfall=7.24"

	Area (ac)	CN	Description
	0.019	39	>75% Grass cover, Good, HSG A
	0.000	30	Meadow, non-grazed, HSG A
*	0.145	98	Paved
	0.164	91	Weighted Average
	0.019		11.59% Pervious Area
	0.145		88.41% Impervious Area

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

Subcatchment PR-12:



Summary for Subcatchment PR-13:

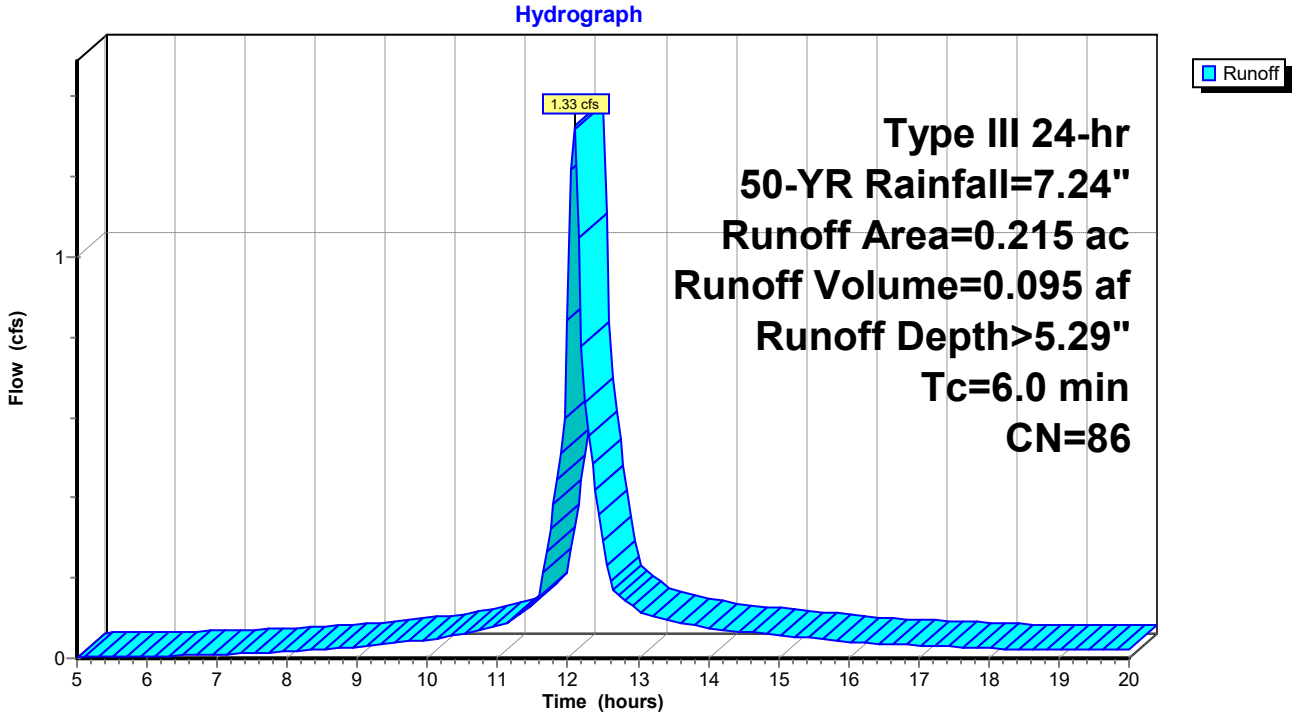
Runoff = 1.33 cfs @ 12.09 hrs, Volume= 0.095 af, Depth> 5.29"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR Rainfall=7.24"

	Area (ac)	CN	Description
	0.043	39	>75% Grass cover, Good, HSG A
*	0.172	98	Paved
	0.215	86	Weighted Average
	0.043		20.00% Pervious Area
	0.172		80.00% Impervious Area

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

Subcatchment PR-13:



Summary for Subcatchment PR-14:

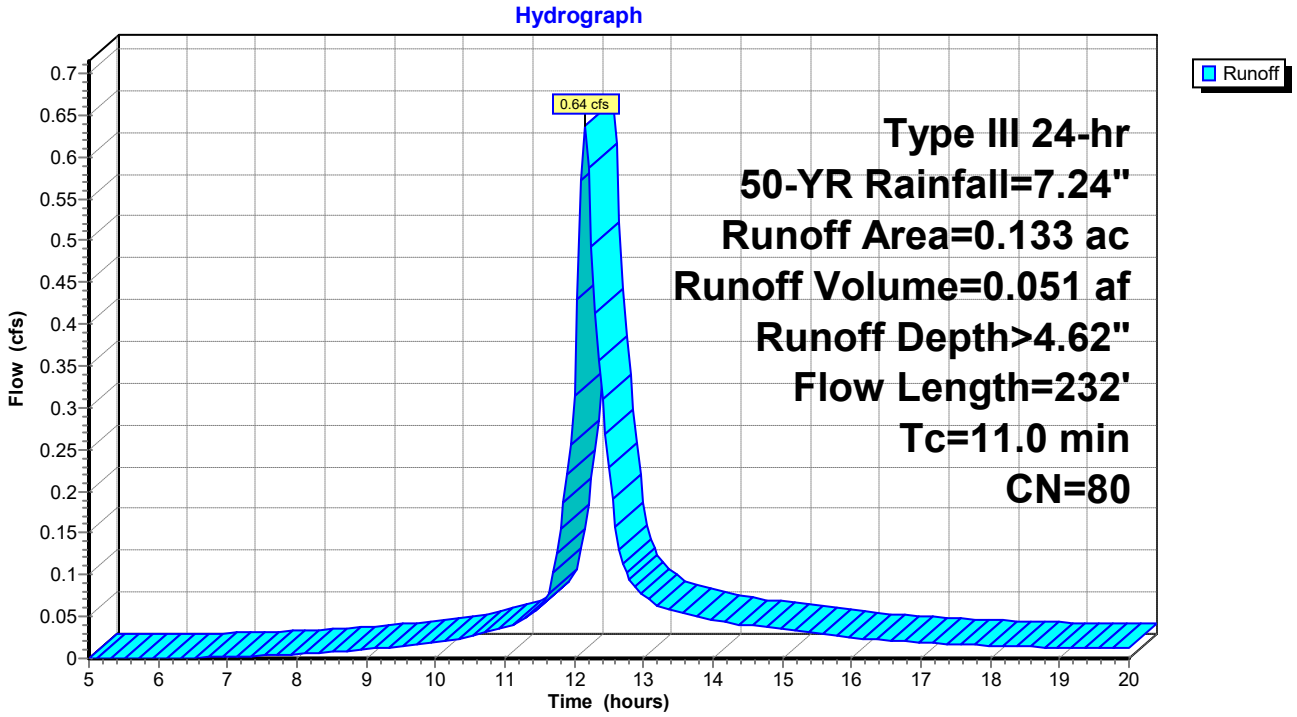
Runoff = 0.64 cfs @ 12.15 hrs, Volume= 0.051 af, Depth> 4.62"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR Rainfall=7.24"

	Area (ac)	CN	Description
	0.030	39	>75% Grass cover, Good, HSG A
	0.018	61	>75% Grass cover, Good, HSG B
*	0.085	98	Paved
	0.133	80	Weighted Average
	0.048		36.09% Pervious Area
	0.085		63.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	62	0.0060	0.10		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.0	5	0.0200	2.87		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.2	52	0.0050	3.47	2.73	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.2	67	0.0100	4.91	3.86	**Pipe Channel, D-E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.1	46	0.0100	5.70	7.00	**Pipe Channel, E-F** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
11.0	232	Total			

Subcatchment PR-14:



Summary for Subcatchment PR-15:

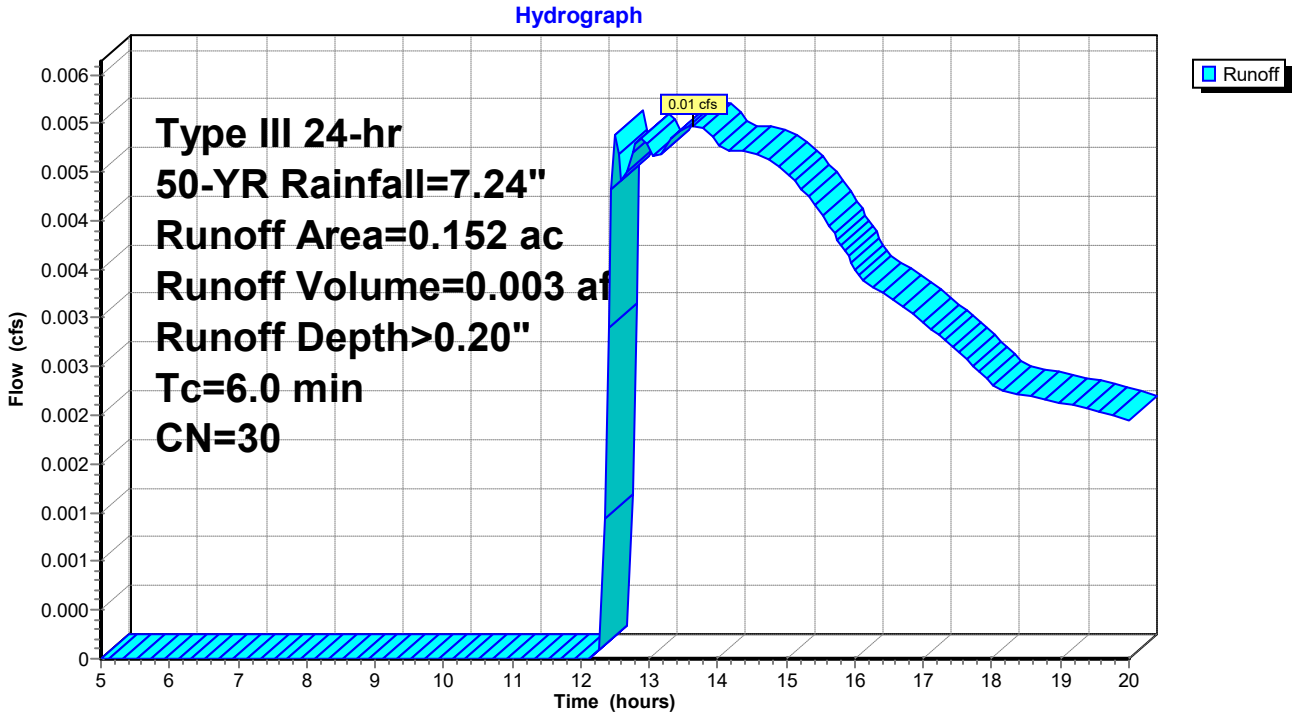
Runoff = 0.01 cfs @ 13.63 hrs, Volume= 0.003 af, Depth> 0.20"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR Rainfall=7.24"

Area (ac)	CN	Description
0.150	30	Brush, Good, HSG A
0.002	48	Brush, Good, HSG B
0.152	30	Weighted Average
0.152		100.00% Pervious Area

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

Subcatchment PR-15:



Summary for Subcatchment PR-17:

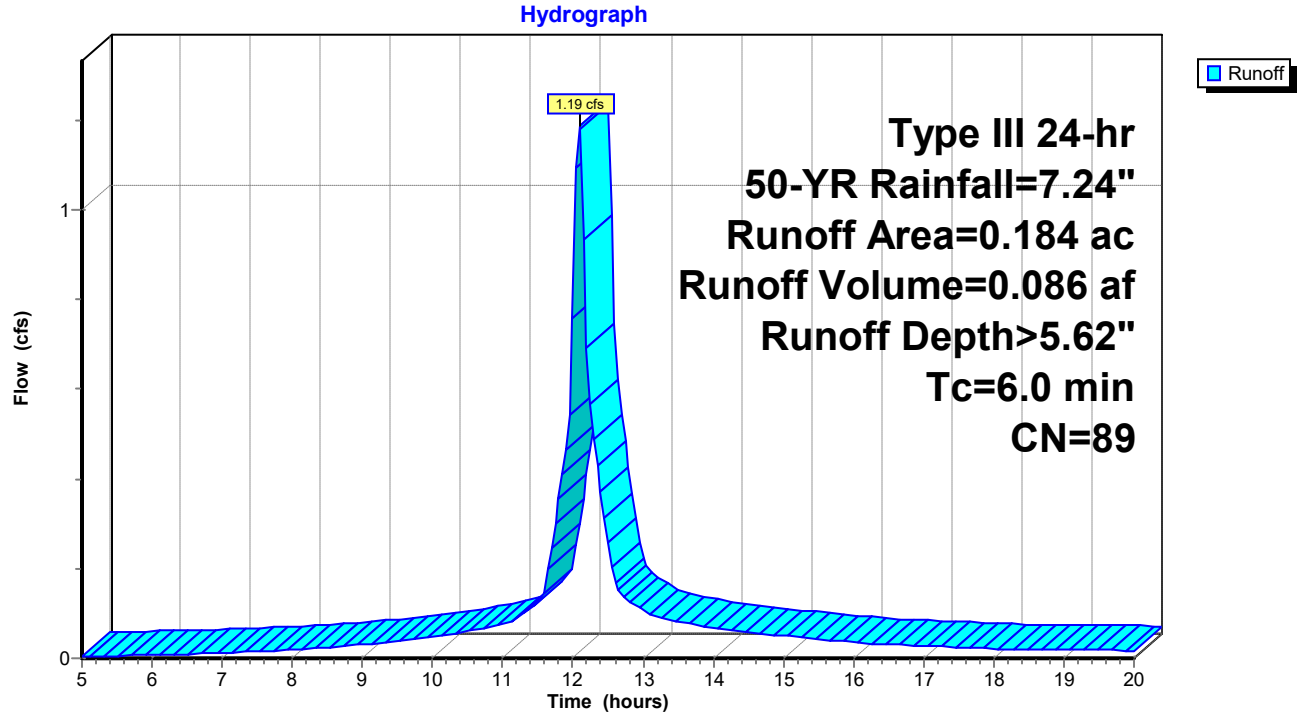
Runoff = 1.19 cfs @ 12.09 hrs, Volume= 0.086 af, Depth> 5.62"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR Rainfall=7.24"

	Area (ac)	CN	Description
	0.027	39	>75% Grass cover, Good, HSG A
*	0.157	98	Paved
	0.184	89	Weighted Average
	0.027		14.67% Pervious Area
	0.157		85.33% Impervious Area

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

Subcatchment PR-17:



Summary for Subcatchment PR-18:

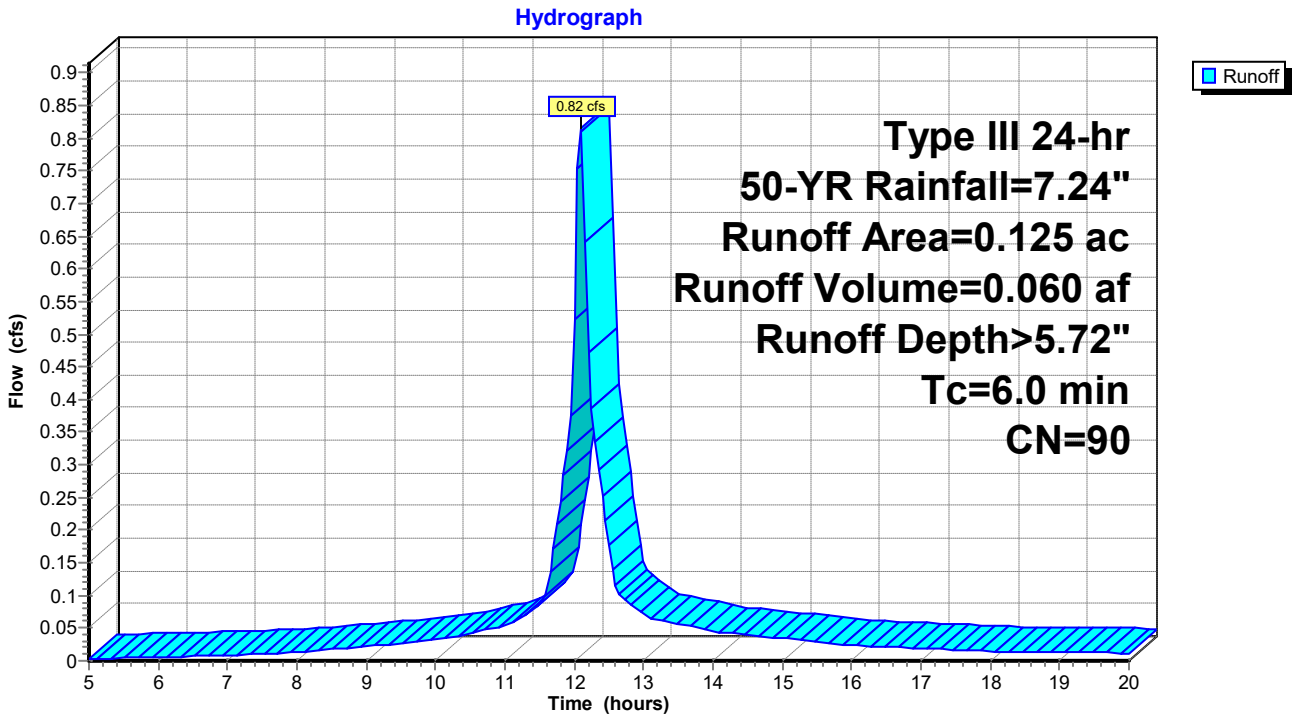
Runoff = 0.82 cfs @ 12.09 hrs, Volume= 0.060 af, Depth> 5.72"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR Rainfall=7.24"

	Area (ac)	CN	Description
	0.016	39	>75% Grass cover, Good, HSG A
	0.002	61	>75% Grass cover, Good, HSG B
*	0.107	98	Paved
	0.125	90	Weighted Average
	0.018		14.40% Pervious Area
	0.107		85.60% Impervious Area

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

Subcatchment PR-18:



Summary for Subcatchment PR-19:

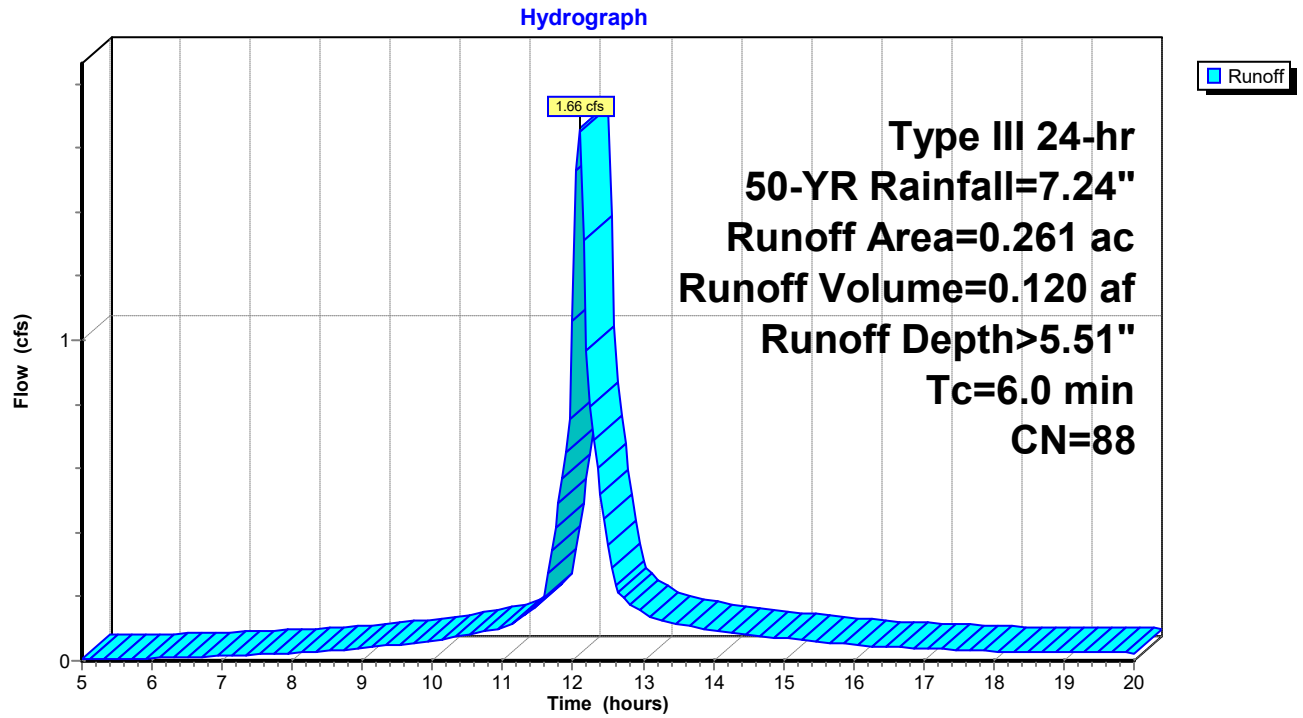
Runoff = 1.66 cfs @ 12.09 hrs, Volume= 0.120 af, Depth> 5.51"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR Rainfall=7.24"

	Area (ac)	CN	Description
	0.041	39	>75% Grass cover, Good, HSG A
	0.004	61	>75% Grass cover, Good, HSG B
*	0.216	98	Paved
	0.261	88	Weighted Average
	0.045		17.24% Pervious Area
	0.216		82.76% Impervious Area

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

Subcatchment PR-19:



Summary for Subcatchment PR-20:

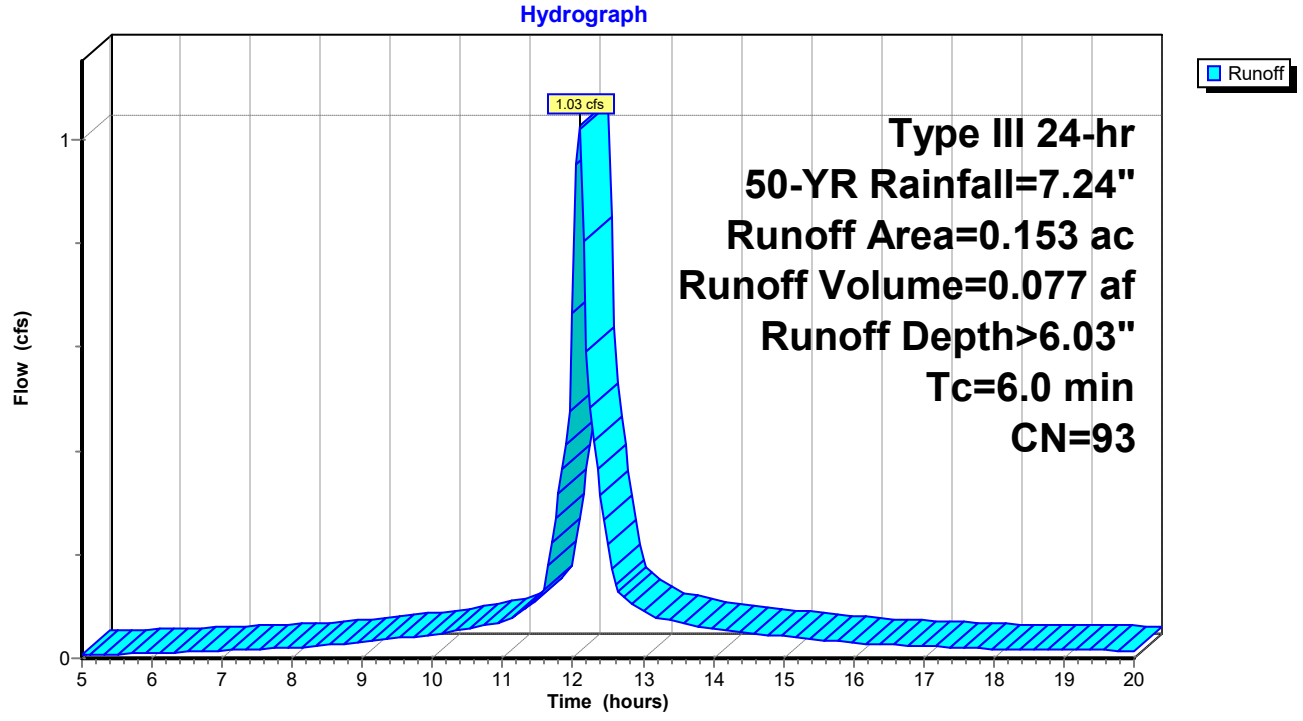
Runoff = 1.03 cfs @ 12.09 hrs, Volume= 0.077 af, Depth> 6.03"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR Rainfall=7.24"

	Area (ac)	CN	Description
	0.013	39	>75% Grass cover, Good, HSG A
*	0.140	98	Paved
	0.153	93	Weighted Average
	0.013		8.50% Pervious Area
	0.140		91.50% Impervious Area

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

Subcatchment PR-20:



Summary for Subcatchment PR-21:

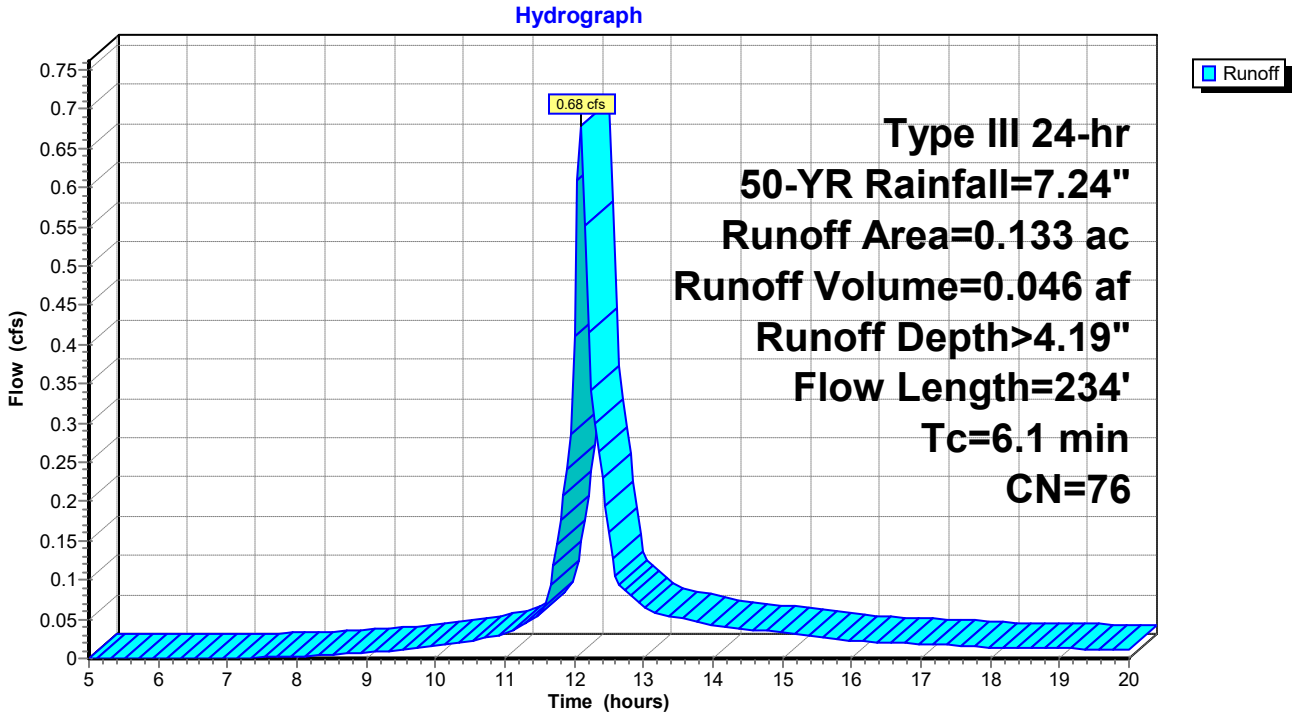
Runoff = 0.68 cfs @ 12.09 hrs, Volume= 0.046 af, Depth> 4.19"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR Rainfall=7.24"

	Area (ac)	CN	Description
	0.036	39	>75% Grass cover, Good, HSG A
	0.020	61	>75% Grass cover, Good, HSG B
*	0.077	98	Paved
	0.133	76	Weighted Average
	0.056		42.11% Pervious Area
	0.077		57.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	48	0.0290	0.18		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.0	10	0.0300	3.52		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.3	21	0.0380	1.36		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
0.9	95	0.0080	1.82		**Shallow Concentrated Flow, D-E** Paved Kv= 20.3 fps
0.1	16	0.0100	3.10	0.61	**Pipe Channel, E-F** 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.012
0.2	44	0.0100	3.75	1.31	**Pipe Channel, F-G** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
6.1	234	Total			

Subcatchment PR-21:



Summary for Subcatchment PR-22:

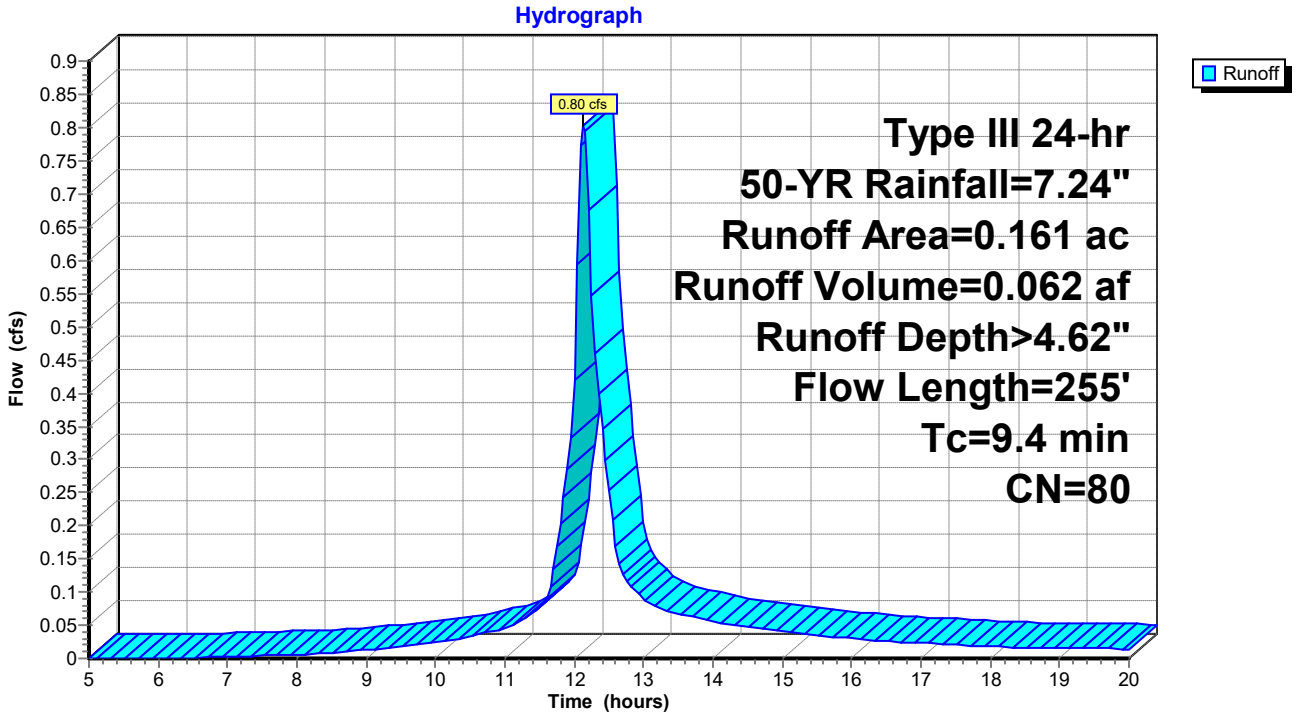
Runoff = 0.80 cfs @ 12.13 hrs, Volume= 0.062 af, Depth> 4.62"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR Rainfall=7.24"

	Area (ac)	CN	Description
	0.031	39	>75% Grass cover, Good, HSG A
	0.030	61	>75% Grass cover, Good, HSG B
*	0.100	98	Paved
	0.161	80	Weighted Average
	0.061		37.89% Pervious Area
	0.100		62.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	71	0.0130	0.14		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.6	122	0.0250	3.21		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.0	18	0.1000	11.86	4.14	**Pipe Channel, C-D** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
0.2	44	0.0100	3.75	1.31	**Pipe Channel, D-E** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
9.4	255	Total			

Subcatchment PR-22:



Summary for Subcatchment PR-23:

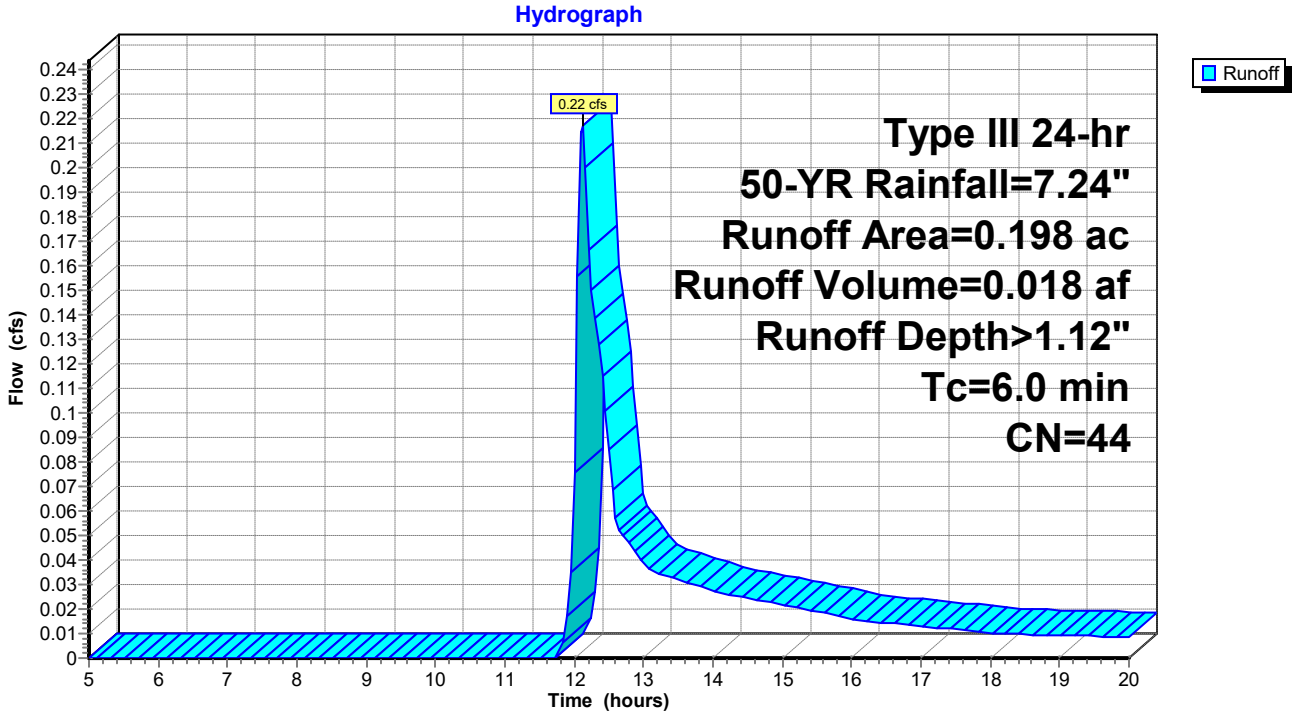
Runoff = 0.22 cfs @ 12.12 hrs, Volume= 0.018 af, Depth> 1.12"
Routed to Pond IB-2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR Rainfall=7.24"

	Area (ac)	CN	Description
	0.069	39	>75% Grass cover, Good, HSG A
	0.013	61	>75% Grass cover, Good, HSG B
	0.091	30	Meadow, non-grazed, HSG A
*	0.025	98	Paved
	0.198	44	Weighted Average
	0.173		87.37% Pervious Area
	0.025		12.63% Impervious Area

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

Subcatchment PR-23:



Summary for Subcatchment PR-24:

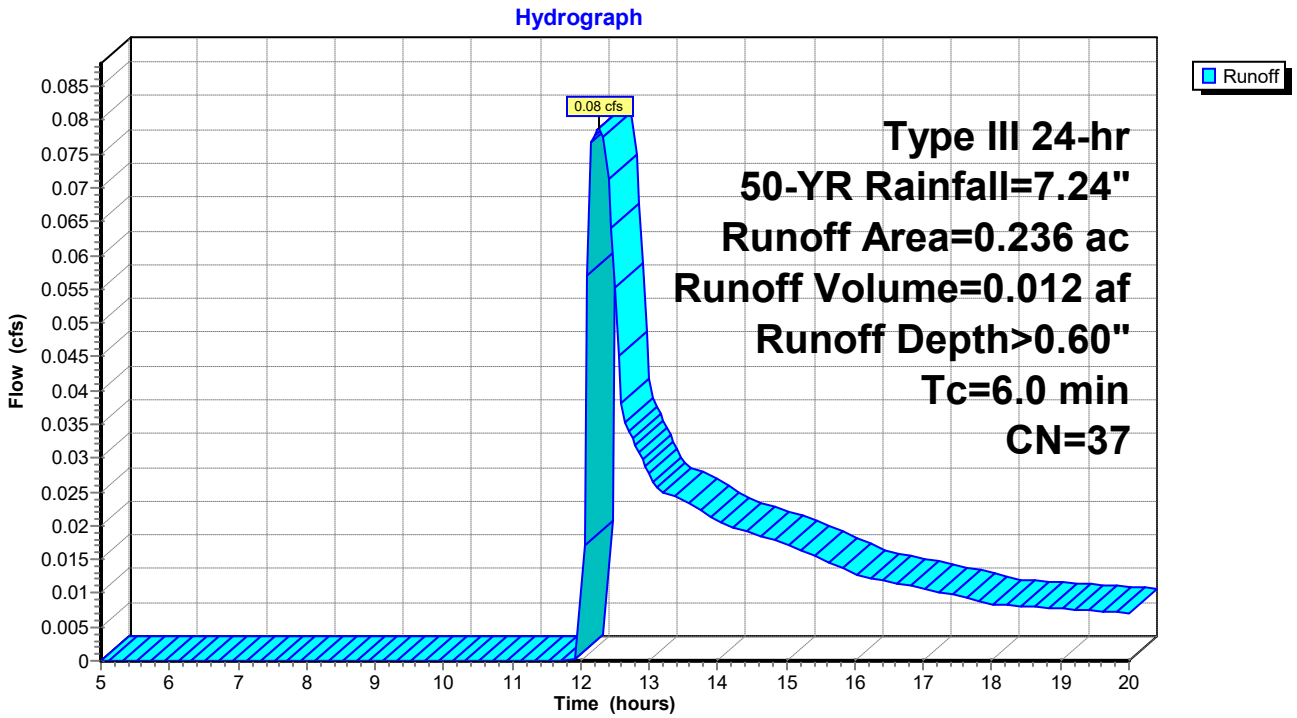
Runoff = 0.08 cfs @ 12.28 hrs, Volume= 0.012 af, Depth> 0.60"
Routed to Pond GT-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR Rainfall=7.24"

Area (ac)	CN	Description
0.028	39	>75% Grass cover, Good, HSG A
0.016	61	>75% Grass cover, Good, HSG B
0.157	30	Meadow, non-grazed, HSG A
0.035	58	Meadow, non-grazed, HSG B
0.236	37	Weighted Average
0.236		100.00% Pervious Area

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

Subcatchment PR-24:



Summary for Subcatchment PR-25:

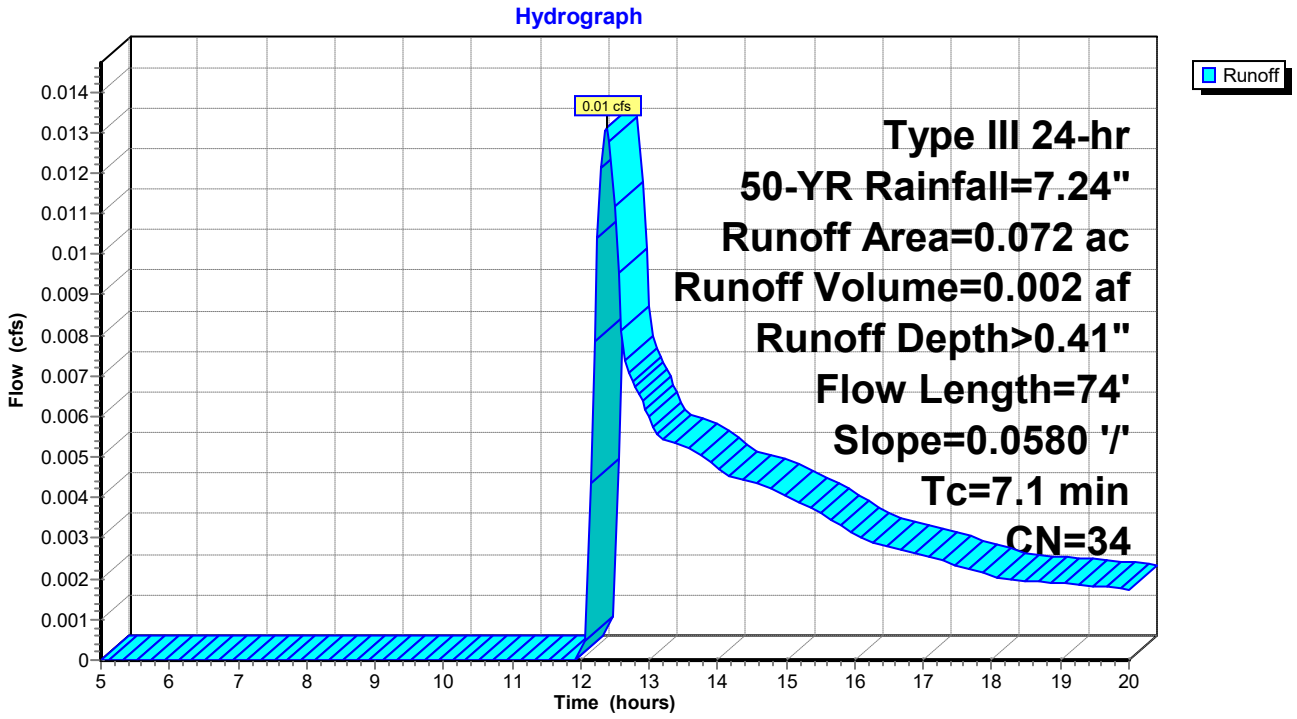
Runoff = 0.01 cfs @ 12.38 hrs, Volume= 0.002 af, Depth> 0.41"
Routed to Pond GT-2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR Rainfall=7.24"

	Area (ac)	CN	Description
	0.024	39	>75% Grass cover, Good, HSG A
	0.047	30	Meadow, non-grazed, HSG A
*	0.001	98	Paved
	0.072	34	Weighted Average
	0.071		98.61% Pervious Area
	0.001		1.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	74	0.0580	0.17		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.40"

Subcatchment PR-25:



Summary for Subcatchment PR-26:

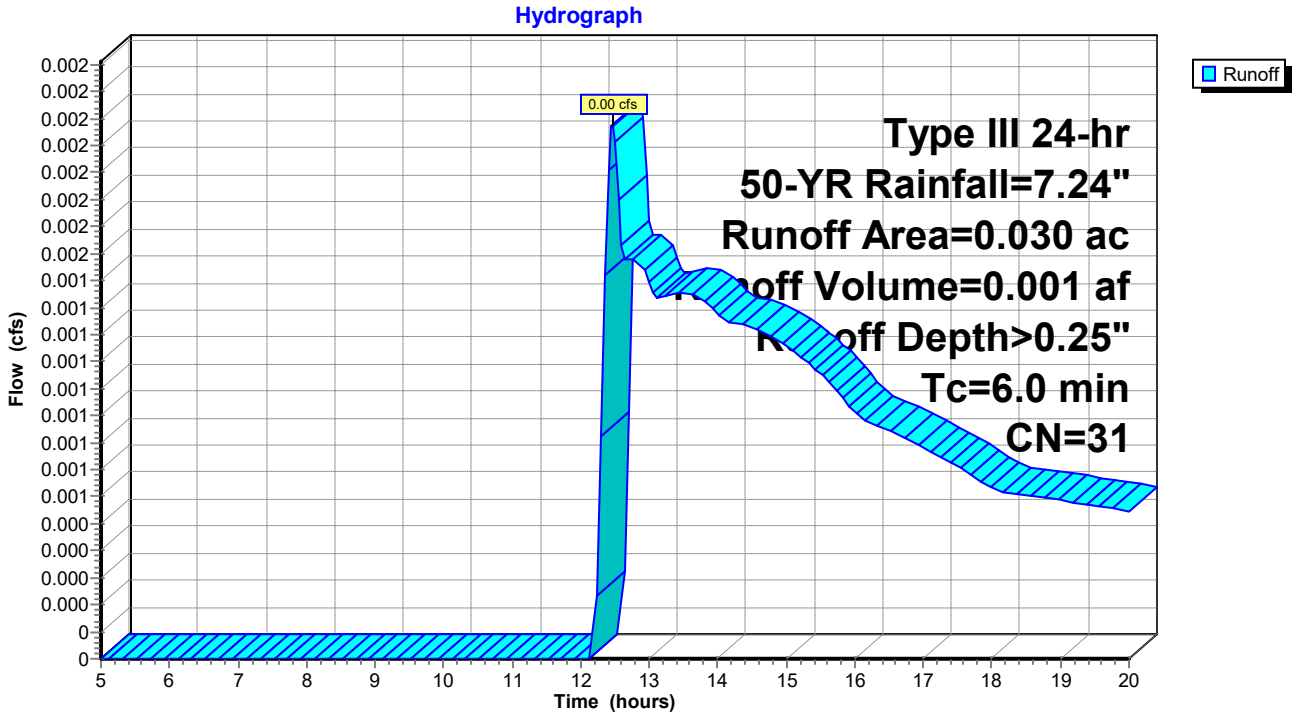
Runoff = 0.00 cfs @ 12.46 hrs, Volume= 0.001 af, Depth> 0.25"
Routed to Pond GT-3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR Rainfall=7.24"

Area (ac)	CN	Description
0.004	39	>75% Grass cover, Good, HSG A
0.026	30	Meadow, non-grazed, HSG A
0.030	31	Weighted Average
0.030		100.00% Pervious Area

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

Subcatchment PR-26:



Summary for Subcatchment PR-27:

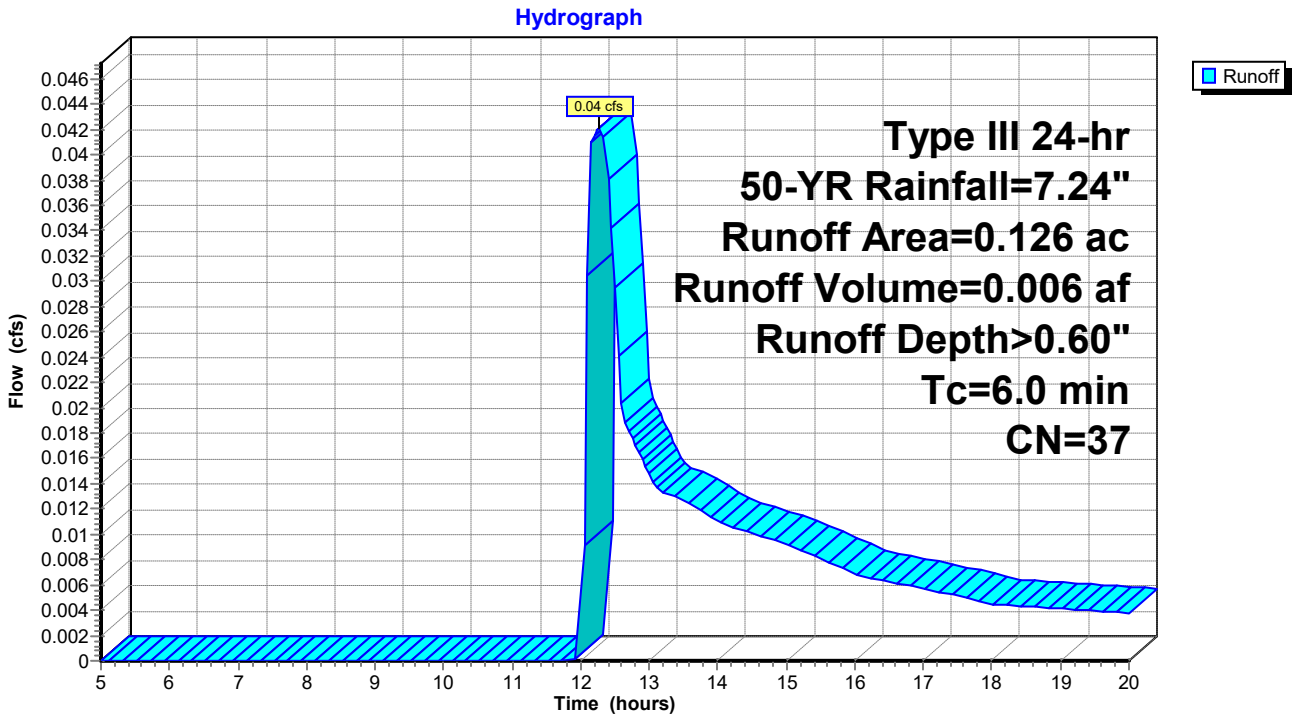
Runoff = 0.04 cfs @ 12.28 hrs, Volume= 0.006 af, Depth> 0.60"
Routed to Pond GT-4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR Rainfall=7.24"

Area (ac)	CN	Description
0.031	39	>75% Grass cover, Good, HSG A
0.004	61	>75% Grass cover, Good, HSG B
0.074	30	Meadow, non-grazed, HSG A
0.017	58	Meadow, non-grazed, HSG B
0.126	37	Weighted Average
0.126		100.00% Pervious Area

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

Subcatchment PR-27:



Summary for Subcatchment PR-28:

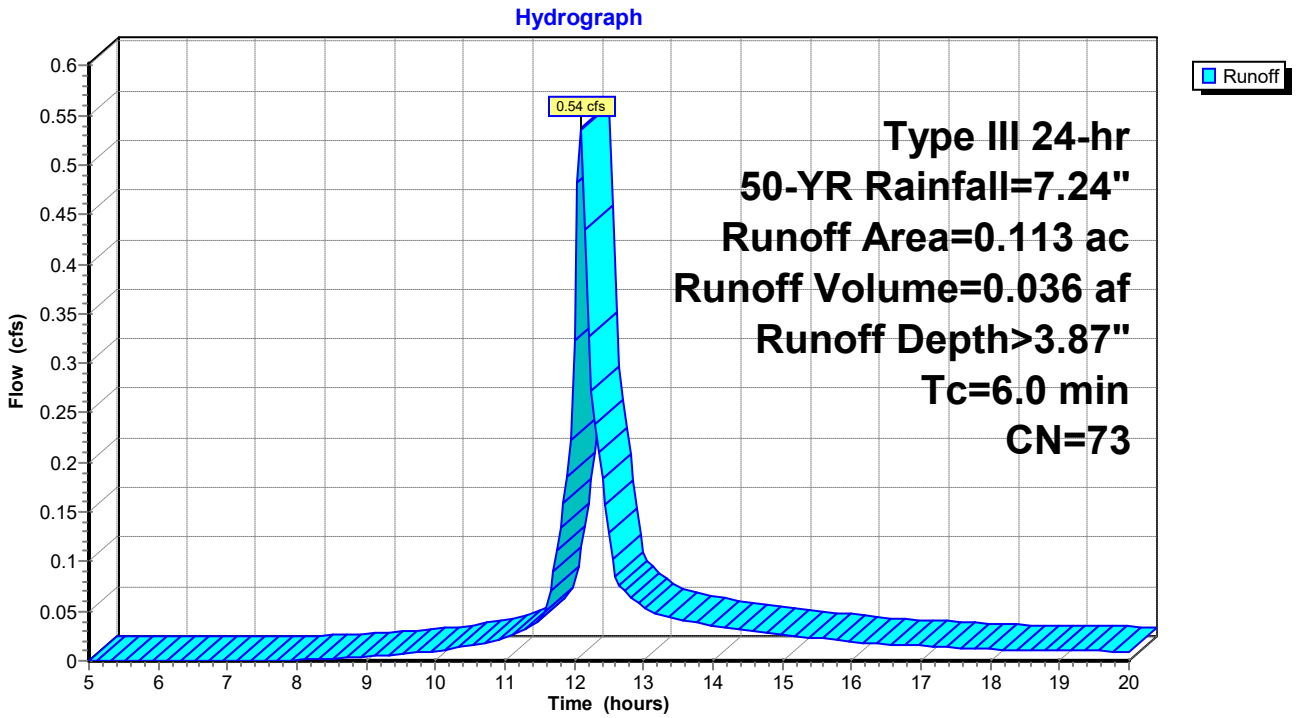
Runoff = 0.54 cfs @ 12.09 hrs, Volume= 0.036 af, Depth> 3.87"
Routed to Pond GT-5 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR Rainfall=7.24"

	Area (ac)	CN	Description
	0.031	61	>75% Grass cover, Good, HSG B
	0.043	58	Meadow, non-grazed, HSG B
*	0.039	98	Paved
	0.113	73	Weighted Average
	0.074		65.49% Pervious Area
	0.039		34.51% Impervious Area

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

Subcatchment PR-28:



Summary for Subcatchment PR-29:

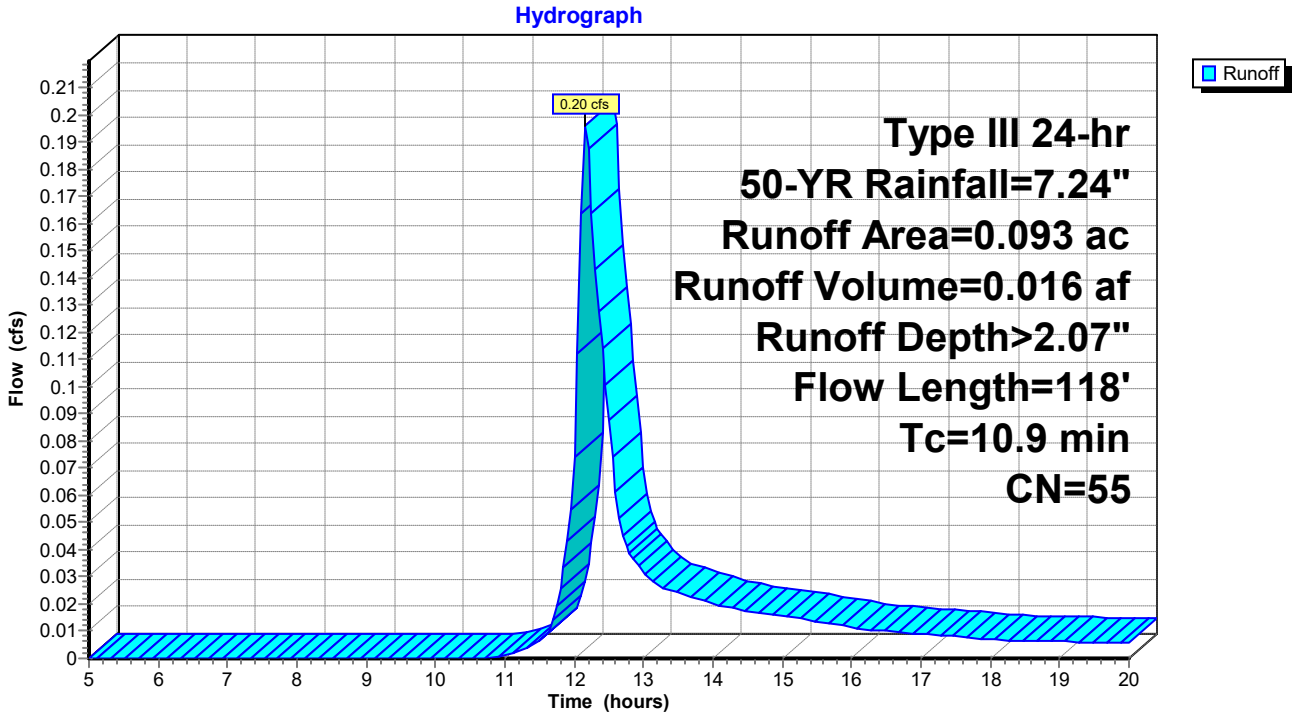
Runoff = 0.20 cfs @ 12.17 hrs, Volume= 0.016 af, Depth> 2.07"
Routed to Pond GT-6 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR Rainfall=7.24"

	Area (ac)	CN	Description
	0.001	30	Woods, Good, HSG A
	0.008	55	Woods, Good, HSG B
	0.011	39	>75% Grass cover, Good, HSG A
	0.021	61	>75% Grass cover, Good, HSG B
	0.026	30	Meadow, non-grazed, HSG A
	0.010	58	Meadow, non-grazed, HSG B
*	0.016	98	Paved
	0.093	55	Weighted Average
	0.077		82.80% Pervious Area
	0.016		17.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7	100	0.0380	0.16		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.40"
0.2	18	0.0780	1.95		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
10.9	118	Total			

Subcatchment PR-29:



Summary for Subcatchment RA-1:

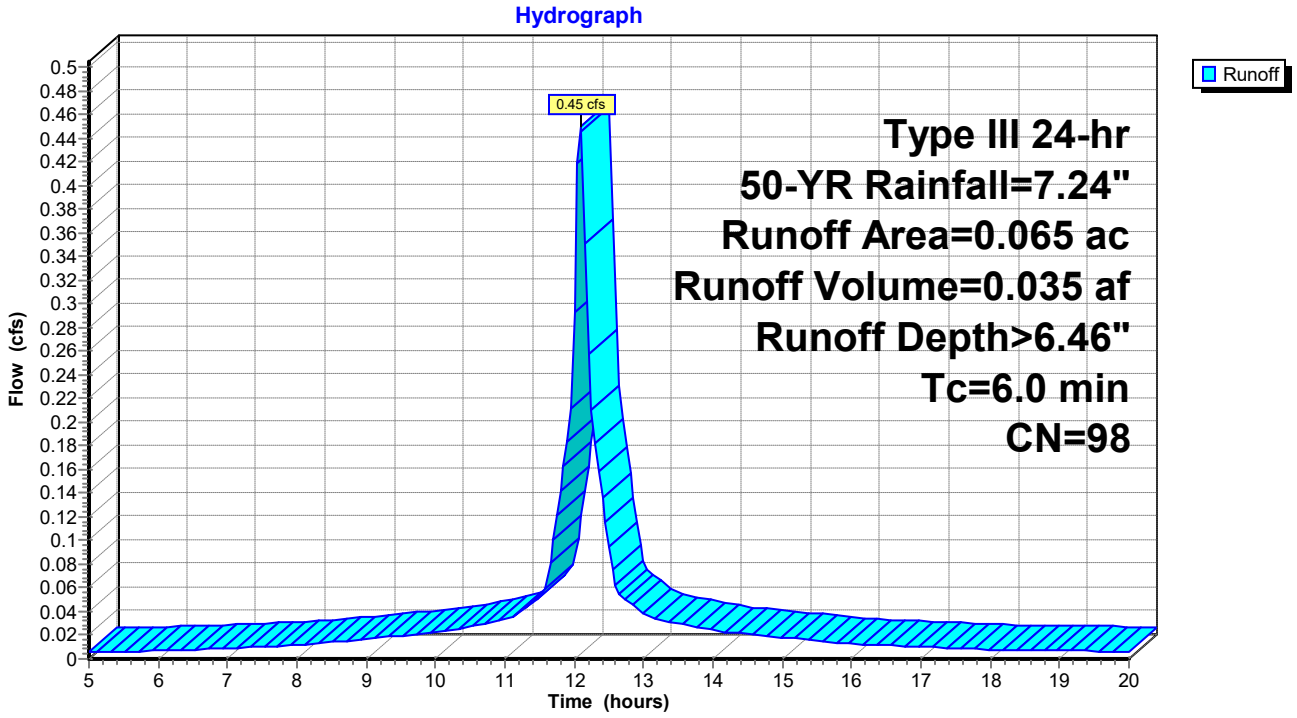
Runoff = 0.45 cfs @ 12.09 hrs, Volume= 0.035 af, Depth> 6.46"
Routed to Pond UG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR Rainfall=7.24"

	Area (ac)	CN	Description
*	0.065	98	Roof
	0.065		100.00% Impervious Area

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

Subcatchment RA-1:



Summary for Subcatchment RA-2:

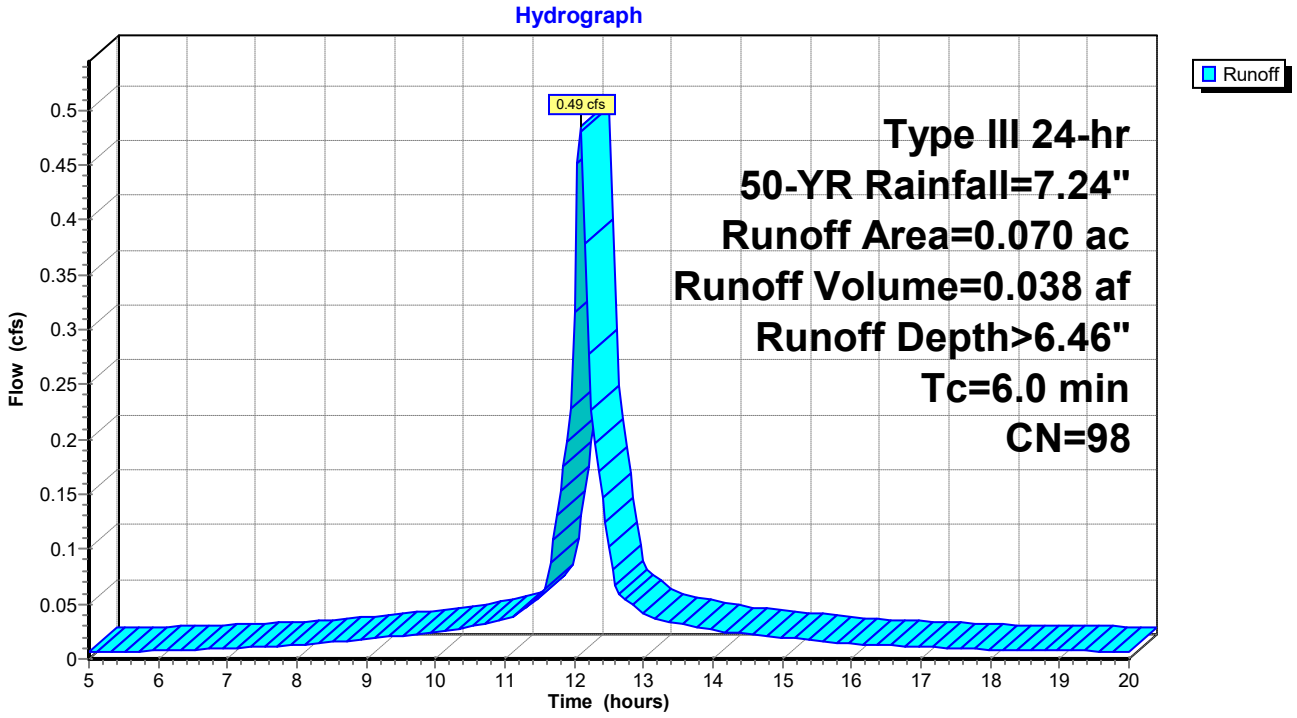
Runoff = 0.49 cfs @ 12.09 hrs, Volume= 0.038 af, Depth> 6.46"
Routed to Pond UG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR Rainfall=7.24"

	Area (ac)	CN	Description
*	0.070	98	Roof
	0.070		100.00% Impervious Area

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

Subcatchment RA-2:



Summary for Subcatchment RA-3:

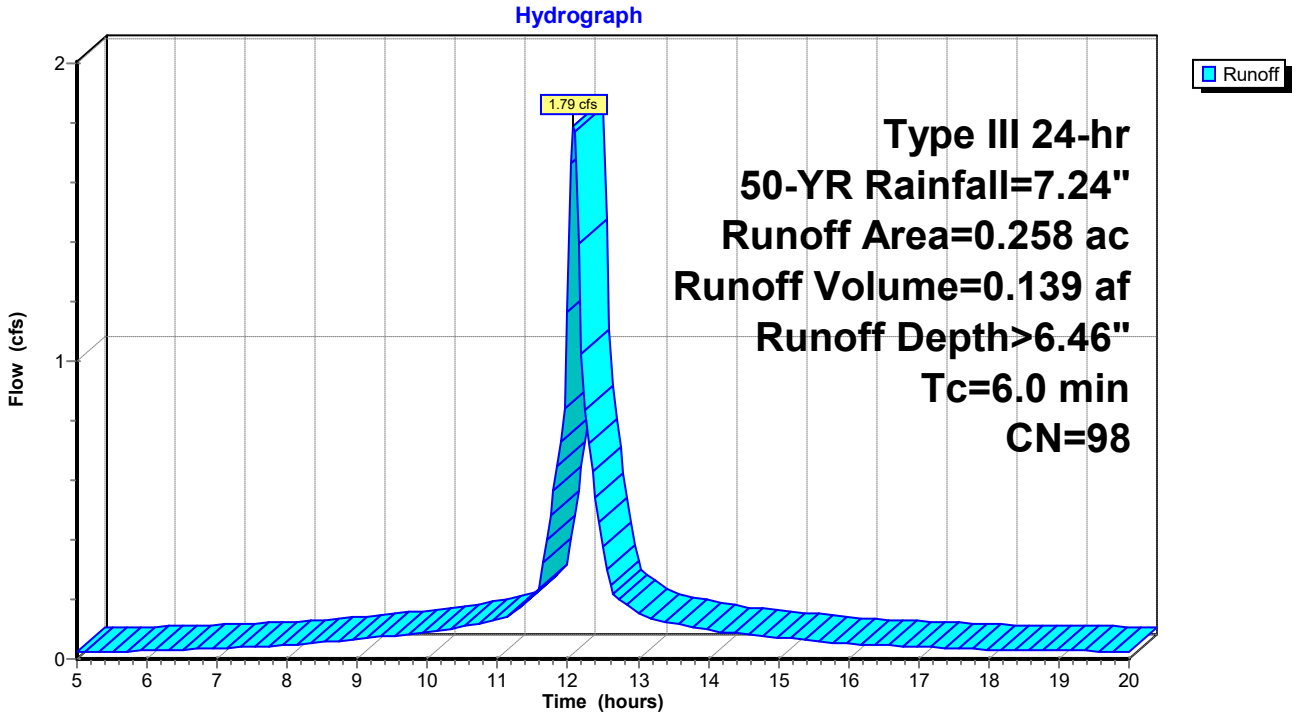
Runoff = 1.79 cfs @ 12.09 hrs, Volume= 0.139 af, Depth> 6.46"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR Rainfall=7.24"

	Area (ac)	CN	Description
*	0.258	98	Roof
	0.258		100.00% Impervious Area

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

Subcatchment RA-3:



Summary for Subcatchment RA-4:

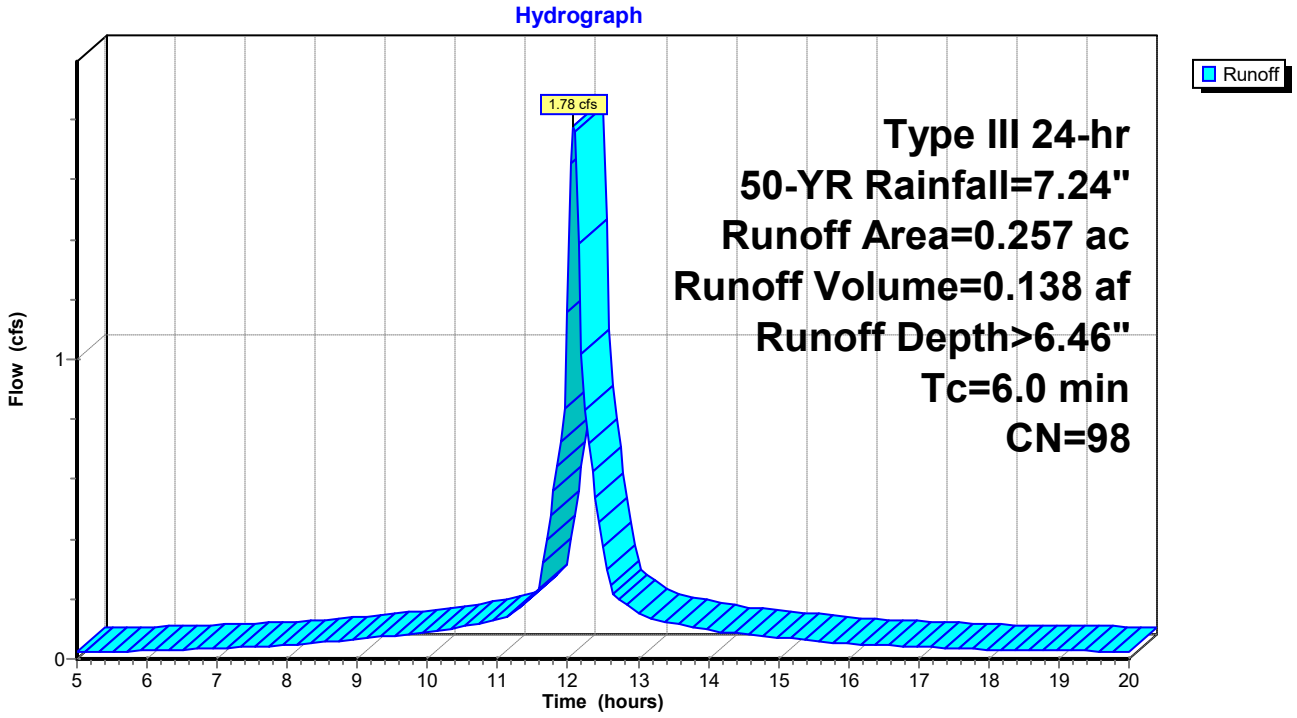
Runoff = 1.78 cfs @ 12.09 hrs, Volume= 0.138 af, Depth> 6.46"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR Rainfall=7.24"

	Area (ac)	CN	Description
*	0.257	98	Roof
	0.257		100.00% Impervious Area

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

Subcatchment RA-4:

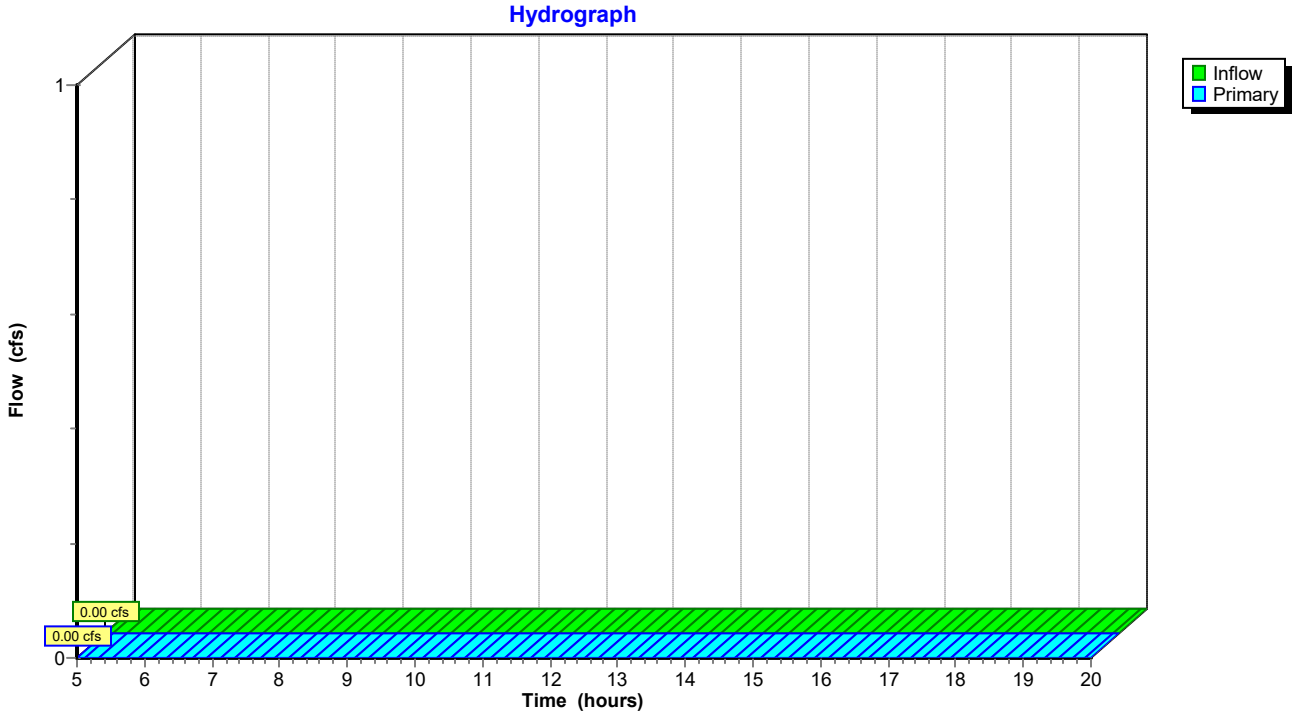


Summary for Pond AP: Surrounding Wetlands

Inflow	=	0.00 cfs @	5.00 hrs, Volume=	0.000 af
Primary	=	0.00 cfs @	5.00 hrs, Volume=	0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond AP: Surrounding Wetlands



Summary for Pond GT-1:

Inflow Area = 0.236 ac, 0.00% Impervious, Inflow Depth > 0.60" for 50-YR event
Inflow = 0.08 cfs @ 12.28 hrs, Volume= 0.012 af
Outflow = 0.05 cfs @ 12.15 hrs, Volume= 0.012 af, Atten= 39%, Lag= 0.0 min
Discarded = 0.05 cfs @ 12.15 hrs, Volume= 0.012 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond AP : Surrounding Wetlands

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 20.12' @ 12.54 hrs Surf.Area= 862 sf Storage= 41 cf

Plug-Flow detention time= 4.8 min calculated for 0.012 af (99% of inflow)
Center-of-Mass det. time= 4.1 min (879.1 - 875.0)

Volume	Invert	Avail.Storage	Storage Description
#1	20.00'	690 cf	**Gravel Trench Stage Storage (Prismatic)** Listed below (Recalc) 1,724 cf Overall x 40.0% Voids

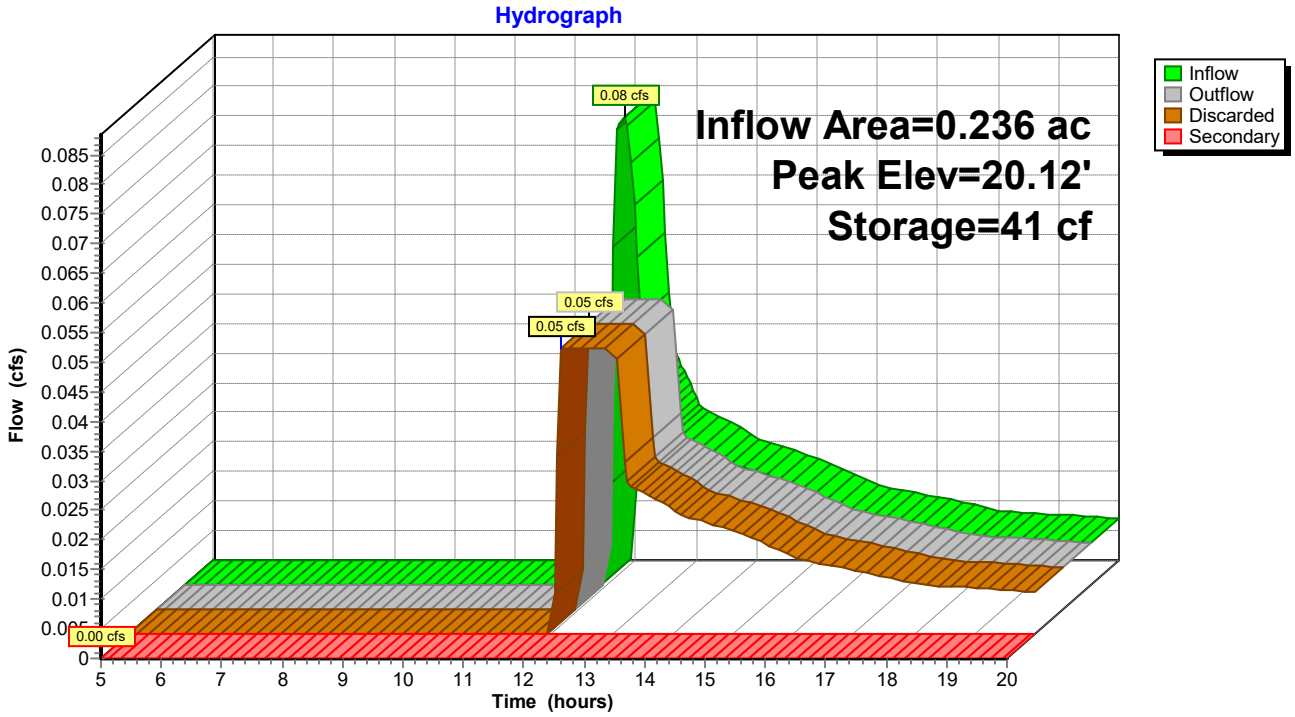
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
20.00	862	0	0
21.00	862	862	862
22.00	862	862	1,724

Device	Routing	Invert	Outlet Devices
#1	Secondary	22.00'	**590.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Trench (Overflow)** 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	20.00'	**2.410 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.05 cfs @ 12.15 hrs HW=20.03' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 0.05 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=20.00' (Free Discharge)
↑**1=Top of Trench (Overflow)** (Controls 0.00 cfs)

Pond GT-1:


Hydrograph
Inflow Area=0.236 ac
Peak Elev=20.12'
Storage=41 cf
Inflow
Outflow
Discarded
Secondary
0.08 cfs
0.05 cfs
0.05 cfs
0.00 cfs
Flow (cfs)
Time (hours)
0.085
0.08
0.075
0.07
0.065
0.06
0.055
0.05
0.045
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

Summary for Pond GT-2:

Inflow Area = 0.072 ac, 1.39% Impervious, Inflow Depth > 0.41" for 50-YR event
Inflow = 0.01 cfs @ 12.38 hrs, Volume= 0.002 af
Outflow = 0.01 cfs @ 12.41 hrs, Volume= 0.002 af, Atten= 1%, Lag= 1.9 min
Discarded = 0.01 cfs @ 12.41 hrs, Volume= 0.002 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond AP : Surrounding Wetlands

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 23.51' @ 12.41 hrs Surf.Area= 251 sf Storage= 1 cf

Plug-Flow detention time= 1.8 min calculated for 0.002 af (100% of inflow)
Center-of-Mass det. time= 1.3 min (896.8 - 895.5)

Volume	Invert	Avail.Storage	Storage Description
#1	23.50'	151 cf	**Gravel Trench Stage Storage (Prismatic)** Listed below (Recalc) 377 cf Overall x 40.0% Voids

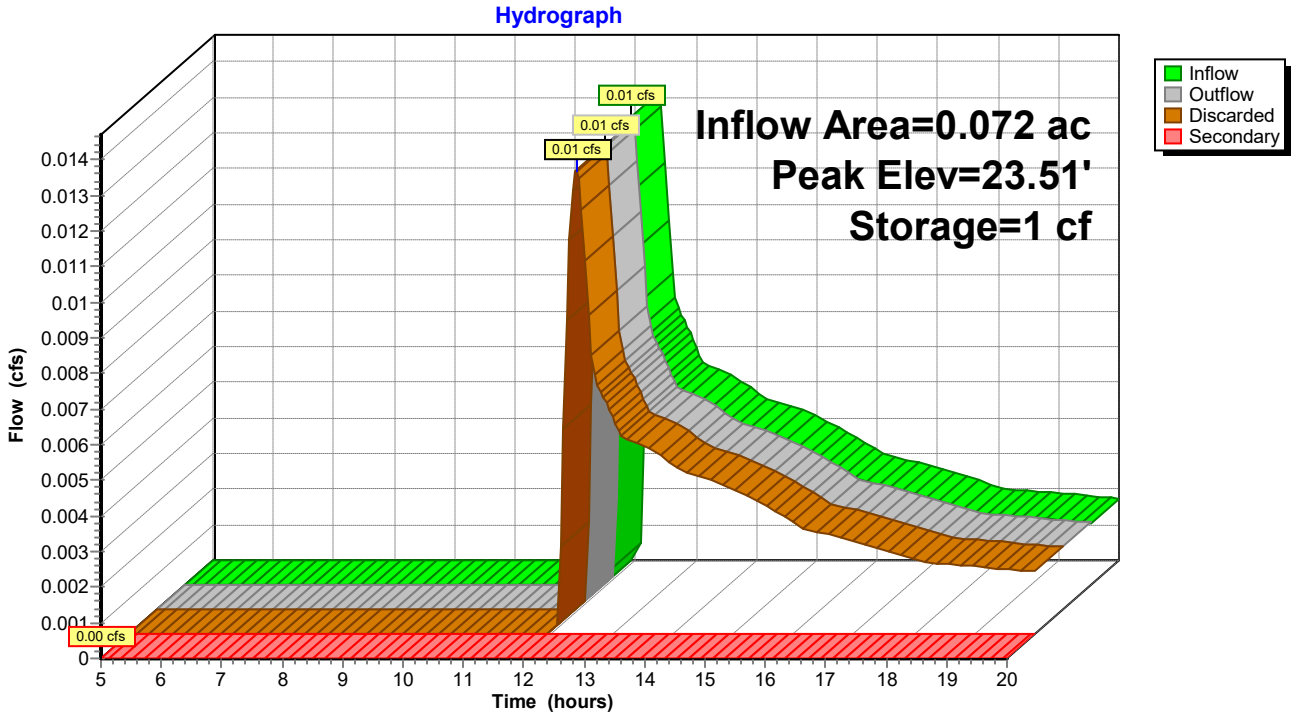
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
23.50	251	0	0
24.00	251	126	126
25.00	251	251	377

Device	Routing	Invert	Outlet Devices
#1	Secondary	25.00'	**65.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Trench (Overflow)** 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	23.50'	**2.410 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.01 cfs @ 12.41 hrs HW=23.51' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.01 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=23.50' (Free Discharge)
1=Top of Trench (Overflow) (Controls 0.00 cfs)

Pond GT-2:


Hydrograph
Inflow Area=0.072 ac
Peak Elev=23.51'
Storage=1 cf
Inflow
Outflow
Discarded
Secondary
0.01 cfs
0.01 cfs
0.01 cfs
0.00 cfs
Flow (cfs)
0.014
0.013
0.012
0.011
0.01
0.009
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Time (hours)

Summary for Pond GT-3:

Inflow Area = 0.030 ac, 0.00% Impervious, Inflow Depth > 0.25" for 50-YR event
Inflow = 0.00 cfs @ 12.46 hrs, Volume= 0.001 af
Outflow = 0.00 cfs @ 12.49 hrs, Volume= 0.001 af, Atten= 2%, Lag= 1.9 min
Discarded = 0.00 cfs @ 12.49 hrs, Volume= 0.001 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-2 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 27.51' @ 12.49 hrs Surf.Area= 94 sf Storage= 0 cf

Plug-Flow detention time= 1.8 min calculated for 0.001 af (100% of inflow)
Center-of-Mass det. time= 1.2 min (925.0 - 923.8)

Volume	Invert	Avail.Storage	Storage Description
#1	27.50'	56 cf	**Gravel Trench Stage Storage (Prismatic)** Listed below (Recalc) 141 cf Overall x 40.0% Voids

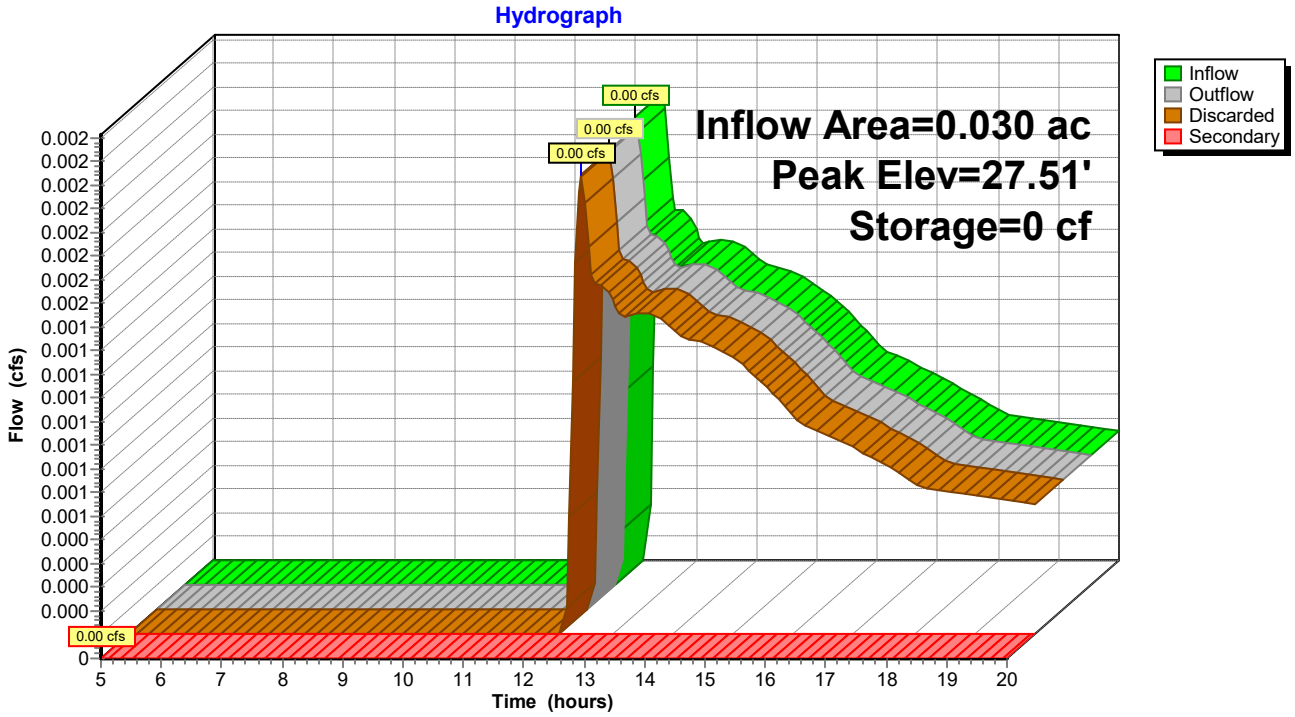
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.50	94	0	0
28.00	94	47	47
29.00	94	94	141

Device	Routing	Invert	Outlet Devices
#1	Secondary	29.00'	**30.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Trench (Overflow)** 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	27.50'	**2.410 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.01 cfs @ 12.49 hrs HW=27.51' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.01 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=27.50' (Free Discharge)
1=Top of Trench (Overflow) (Controls 0.00 cfs)

Pond GT-3:


Hydrograph
Inflow Area=0.030 ac
Peak Elev=27.51'
Storage=0 cf
Inflow
Outflow
Discarded
Secondary
0.00 cfs
0.00 cfs
0.00 cfs
0.00 cfs
Flow (cfs)
0.002
0.002
0.002
0.002
0.002
0.002
0.002
0.002
0.001
0.001
0.001
0.001
0.001
0.001
0.001
0.001
0.001
0.000
0.000
0.000
0.000
0
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Time (hours)

Summary for Pond GT-4:

Inflow Area = 0.126 ac, 0.00% Impervious, Inflow Depth > 0.60" for 50-YR event
Inflow = 0.04 cfs @ 12.28 hrs, Volume= 0.006 af
Outflow = 0.02 cfs @ 12.15 hrs, Volume= 0.006 af, Atten= 46%, Lag= 0.0 min
Discarded = 0.02 cfs @ 12.15 hrs, Volume= 0.006 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-3 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 21.66' @ 12.57 hrs Surf.Area= 405 sf Storage= 26 cf

Plug-Flow detention time= 6.0 min calculated for 0.006 af (100% of inflow)
Center-of-Mass det. time= 5.5 min (880.5 - 875.0)

Volume	Invert	Avail.Storage	Storage Description
#1	21.50'	243 cf	**Gravel Trench Stage Storage (Prismatic)** Listed below (Recalc) 608 cf Overall x 40.0% Voids

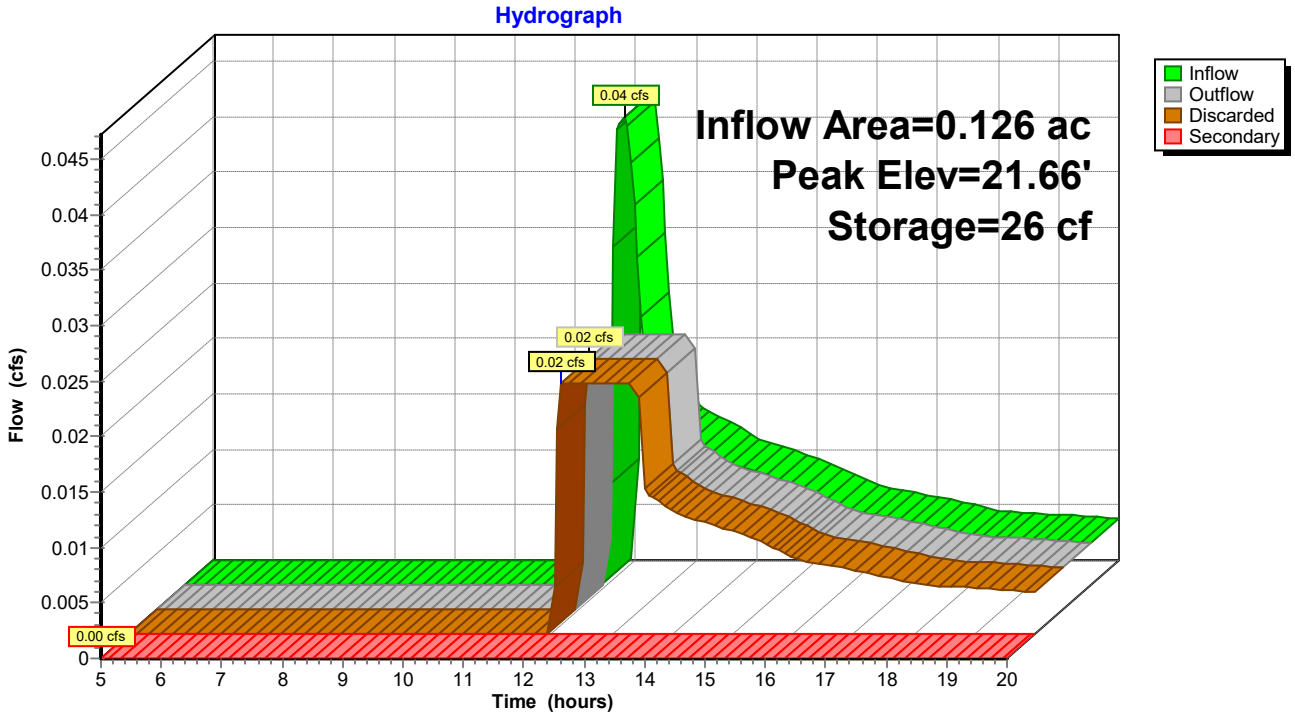
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
21.50	405	0	0
22.00	405	203	203
23.00	405	405	608

Device	Routing	Invert	Outlet Devices
#1	Secondary	23.00'	**74.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Trench (Overflow)** 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	21.50'	**2.410 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.02 cfs @ 12.15 hrs HW=21.53' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.02 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=21.50' (Free Discharge)
1=Top of Trench (Overflow) (Controls 0.00 cfs)

Pond GT-4:


Hydrograph
Inflow Area=0.126 ac
Peak Elev=21.66'
Storage=26 cf
0.04 cfs
0.02 cfs
0.02 cfs
0.00 cfs
Inflow
Outflow
Discarded
Secondary
Flow (cfs)
0
0.005
0.01
0.015
0.02
0.025
0.03
0.035
0.04
0.045
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Time (hours)

Summary for Pond GT-5:

Inflow Area = 0.113 ac, 34.51% Impervious, Inflow Depth > 3.87" for 50-YR event
Inflow = 0.54 cfs @ 12.09 hrs, Volume= 0.036 af
Outflow = 0.04 cfs @ 11.45 hrs, Volume= 0.028 af, Atten= 93%, Lag= 0.0 min
Discarded = 0.04 cfs @ 11.45 hrs, Volume= 0.028 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-4 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 23.95' @ 13.94 hrs Surf.Area= 640 sf Storage= 755 cf

Plug-Flow detention time= 180.7 min calculated for 0.028 af (78% of inflow)
Center-of-Mass det. time= 123.6 min (911.4 - 787.8)

Volume	Invert	Avail.Storage	Storage Description
#1	21.00'	1,024 cf	**Gravel Trench Stage Storage (Prismatic)** Listed below (Recalc) 2,560 cf Overall x 40.0% Voids

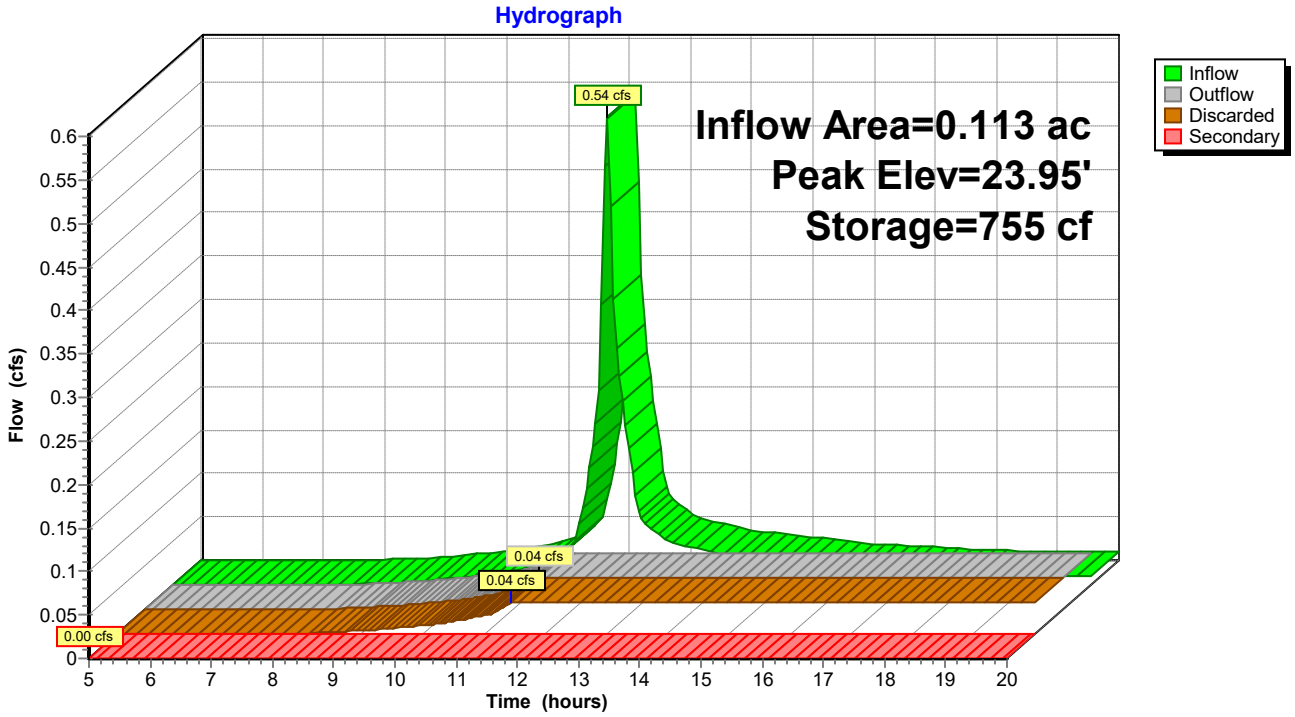
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
21.00	640	0	0
22.00	640	640	640
23.00	640	640	1,280
24.00	640	640	1,920
25.00	640	640	2,560

Device	Routing	Invert	Outlet Devices
#1	Secondary	25.00'	**136.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Trench (Overflow)** 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	21.00'	**2.410 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.04 cfs @ 11.45 hrs HW=21.04' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.04 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=21.00' (Free Discharge)
↑—**1=Top of Trench (Overflow)** (Controls 0.00 cfs)

Pond GT-5:


Hydrograph
Inflow Area=0.113 ac
Peak Elev=23.95'
Storage=755 cf
Inflow
Outflow
Discarded
Secondary
0.54 cfs
0.04 cfs
0.04 cfs
0.00 cfs
Flow (cfs)
Time (hours)
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
0.55
0.6
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

Summary for Pond GT-6:

Inflow Area = 0.093 ac, 17.20% Impervious, Inflow Depth > 2.07" for 50-YR event
Inflow = 0.20 cfs @ 12.17 hrs, Volume= 0.016 af
Outflow = 0.05 cfs @ 11.95 hrs, Volume= 0.016 af, Atten= 77%, Lag= 0.0 min
Discarded = 0.05 cfs @ 11.95 hrs, Volume= 0.016 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 25.88' @ 12.71 hrs Surf.Area= 252 sf Storage= 189 cf

Plug-Flow detention time= 30.2 min calculated for 0.016 af (100% of inflow)
Center-of-Mass det. time= 30.0 min (853.4 - 823.4)

Volume	Invert	Avail.Storage	Storage Description
#1	24.00'	302 cf	**Gravel Trench Stage Storage (Prismatic)** Listed below (Recalc) 756 cf Overall x 40.0% Voids

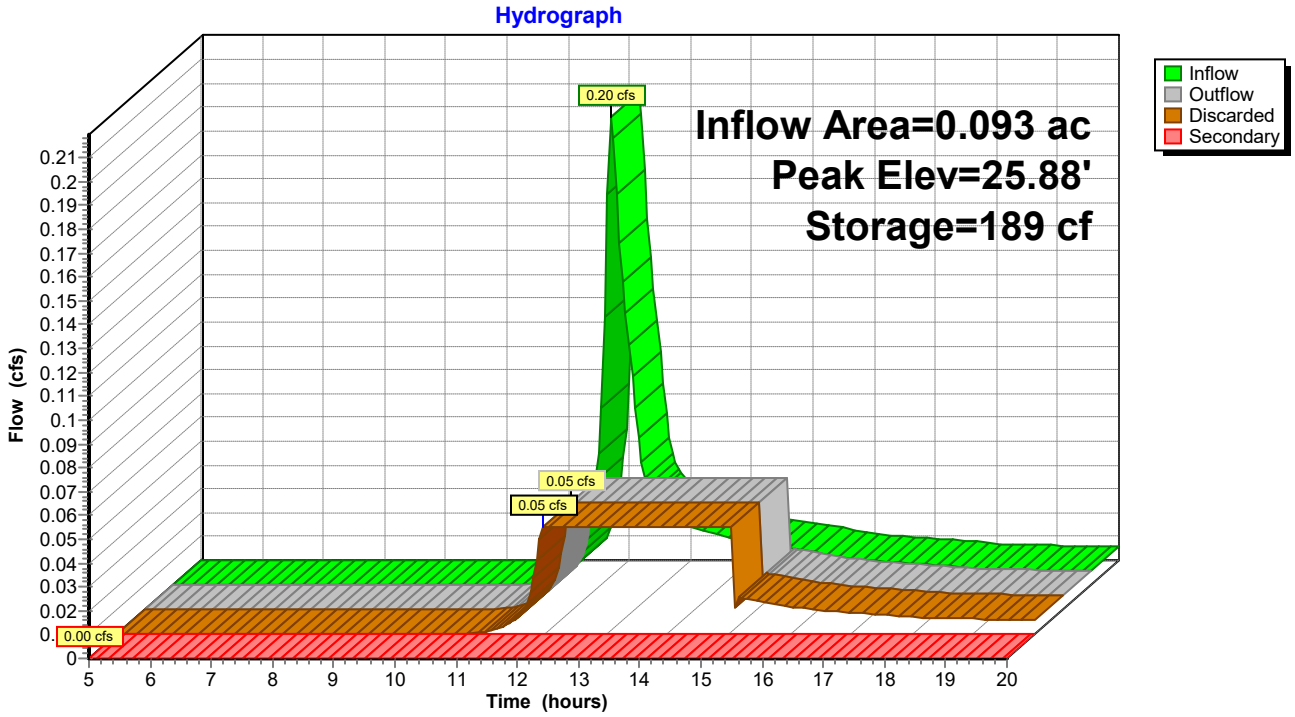
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
24.00	252	0	0
25.00	252	252	252
26.00	252	252	504
27.00	252	252	756

Device	Routing	Invert	Outlet Devices
#1	Secondary	27.00'	**78.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Trench (Overflow)** 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	24.00'	**7.716 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.05 cfs @ 11.95 hrs HW=24.04' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.05 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=24.00' (Free Discharge)
↑—**1=Top of Trench (Overflow)** (Controls 0.00 cfs)

Pond GT-6:


Hydrograph
Inflow Area=0.093 ac
Peak Elev=25.88'
Storage=189 cf
Inflow
Outflow
Discarded
Secondary
0.20 cfs
0.05 cfs
0.05 cfs
0.00 cfs
Flow (cfs)
Time (hours)

Summary for Pond IB-1:

Inflow Area = 3.343 ac, 73.41% Impervious, Inflow Depth > 1.63" for 50-YR event
Inflow = 6.13 cfs @ 12.09 hrs, Volume= 0.453 af
Outflow = 0.75 cfs @ 12.74 hrs, Volume= 0.449 af, Atten= 88%, Lag= 38.8 min
Discarded = 0.75 cfs @ 12.74 hrs, Volume= 0.449 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond IB-2 :
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond IB-2 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 28.61' @ 12.74 hrs Surf.Area= 3,910 sf Storage= 8,112 cf

Plug-Flow detention time= 109.2 min calculated for 0.447 af (99% of inflow)
Center-of-Mass det. time= 104.8 min (864.7 - 759.9)

Volume	Invert	Avail.Storage	Storage Description
#1	25.50'	20,062 cf	**Infiltration Basin Stage Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.50	1,503	0	0
26.00	1,745	812	812
27.00	2,510	2,128	2,940
28.00	3,387	2,949	5,888
29.00	4,245	3,816	9,704
30.00	5,159	4,702	14,406
31.00	6,152	5,656	20,062

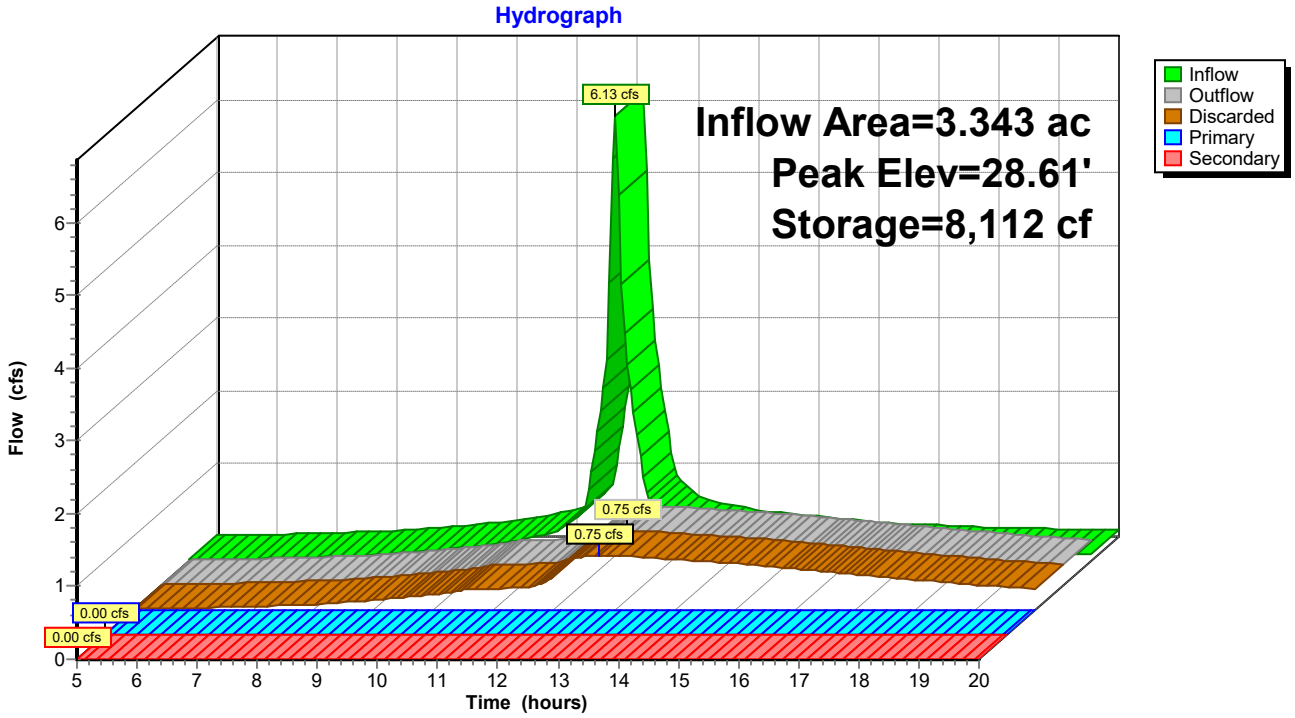
Device	Routing	Invert	Outlet Devices
#1	Secondary	31.00'	**320.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	25.50'	**8.270 in/hr Exfiltration over Surface area**
#3	Primary	27.00'	**6.0" Round 6" HDPE Pipe** L= 74.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 27.00' / 26.63' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#4	Device 3	30.00'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Grate X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads

Discarded OutFlow Max=0.75 cfs @ 12.74 hrs HW=28.61' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.75 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=25.50' (Free Discharge)
└**3=6" HDPE Pipe** (Controls 0.00 cfs)
└**4=18" Nyloplast Drain Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=25.50' (Free Discharge)
└**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond IB-1:



Summary for Pond IB-2:

Inflow Area = 3.541 ac, 70.01% Impervious, Inflow Depth > 0.06" for 50-YR event
Inflow = 0.22 cfs @ 12.12 hrs, Volume= 0.018 af
Outflow = 0.12 cfs @ 12.38 hrs, Volume= 0.018 af, Atten= 44%, Lag= 15.7 min
Discarded = 0.12 cfs @ 12.38 hrs, Volume= 0.018 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 28.62' @ 12.38 hrs Surf.Area= 678 sf Storage= 73 cf

Plug-Flow detention time= 3.7 min calculated for 0.018 af (100% of inflow)
Center-of-Mass det. time= 3.4 min (849.4 - 846.0)

Volume	Invert	Avail.Storage	Storage Description
#1	28.50'	2,225 cf	**Infiltration Basin Stage Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.50	503	0	0
29.00	1,212	429	429
30.00	2,380	1,796	2,225

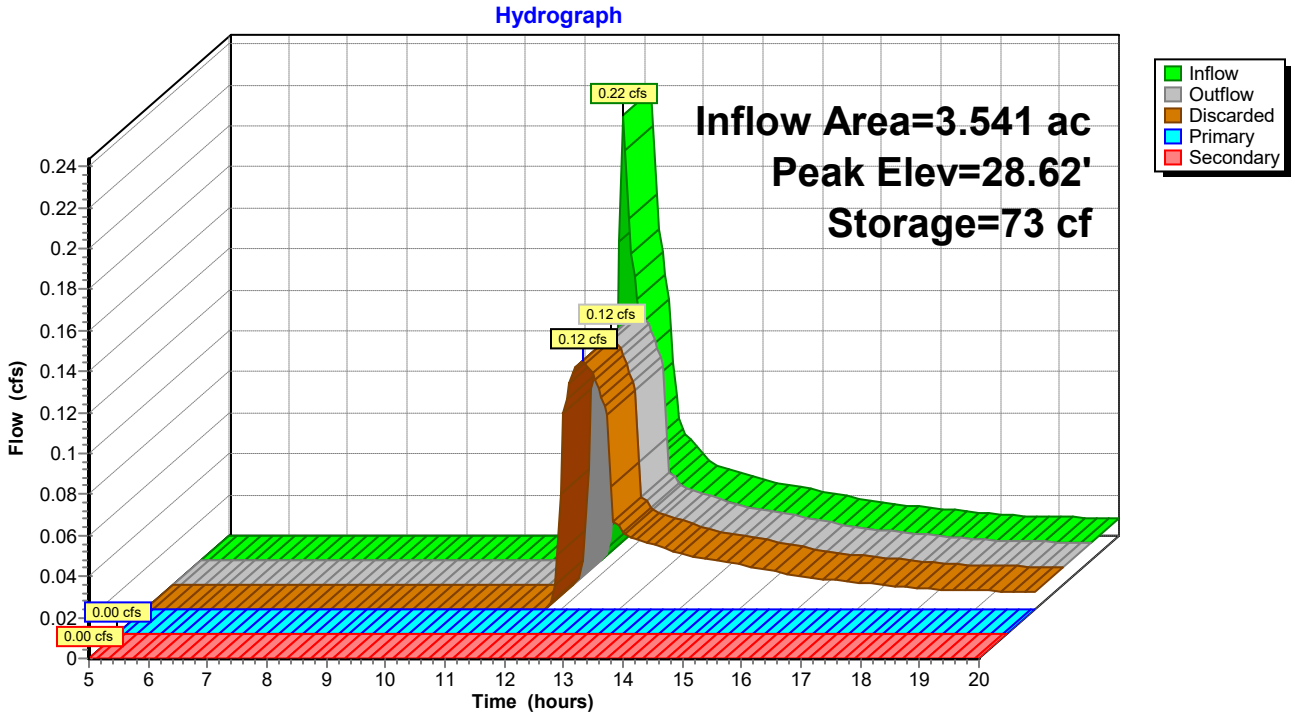
Device	Routing	Invert	Outlet Devices
#1	Secondary	30.00'	**335.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	28.50'	**7.716 in/hr Exfiltration over Surface area**
#3	Device 4	29.00'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Basin X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads
#4	Primary	26.63'	**6.0" Round 6" HDPE** L= 96.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 26.63' / 26.15' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

Discarded OutFlow Max=0.12 cfs @ 12.38 hrs HW=28.62' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 0.12 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=28.50' (Free Discharge)
↑**4=6" HDPE** (Passes 0.00 cfs of 0.74 cfs potential flow)
↑**3=18" Nyloplast Drain Basin** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=28.50' (Free Discharge)
↑**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond IB-2:


Hydrograph
Inflow Area=3.541 ac
Peak Elev=28.62'
Storage=73 cf
0.22 cfs
0.12 cfs
0.12 cfs
0.00 cfs
0.00 cfs
Inflow
Outflow
Discarded
Primary
Secondary
Flow (cfs)
Time (hours)
0
0.02
0.04
0.06
0.08
0.1
0.12
0.14
0.16
0.18
0.2
0.22
0.24
5
6
7
8
9
10
11
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14
15
16
17
18
19
20

Summary for Pond RG-1:

Inflow Area = 2.174 ac, 76.22% Impervious, Inflow Depth > 5.11" for 50-YR event
Inflow = 11.61 cfs @ 12.09 hrs, Volume= 0.926 af
Outflow = 2.01 cfs @ 12.60 hrs, Volume= 0.925 af, Atten= 83%, Lag= 30.3 min
Discarded = 2.01 cfs @ 12.60 hrs, Volume= 0.925 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond IB-1 :
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond IB-1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 29.72' @ 12.60 hrs Surf.Area= 7,234 sf Storage= 15,263 cf

Plug-Flow detention time= 75.0 min calculated for 0.925 af (100% of inflow)
Center-of-Mass det. time= 74.4 min (823.1 - 748.6)

Volume	Invert	Avail.Storage	Storage Description
#1	26.00'	36,814 cf	**Rain Garden Stage Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.00	1,626	0	0
27.00	2,502	2,064	2,064
27.50	3,473	1,494	3,558
28.00	4,237	1,928	5,485
29.00	5,896	5,067	10,552
30.00	7,760	6,828	17,380
31.00	9,713	8,737	26,116
32.00	11,682	10,698	36,814

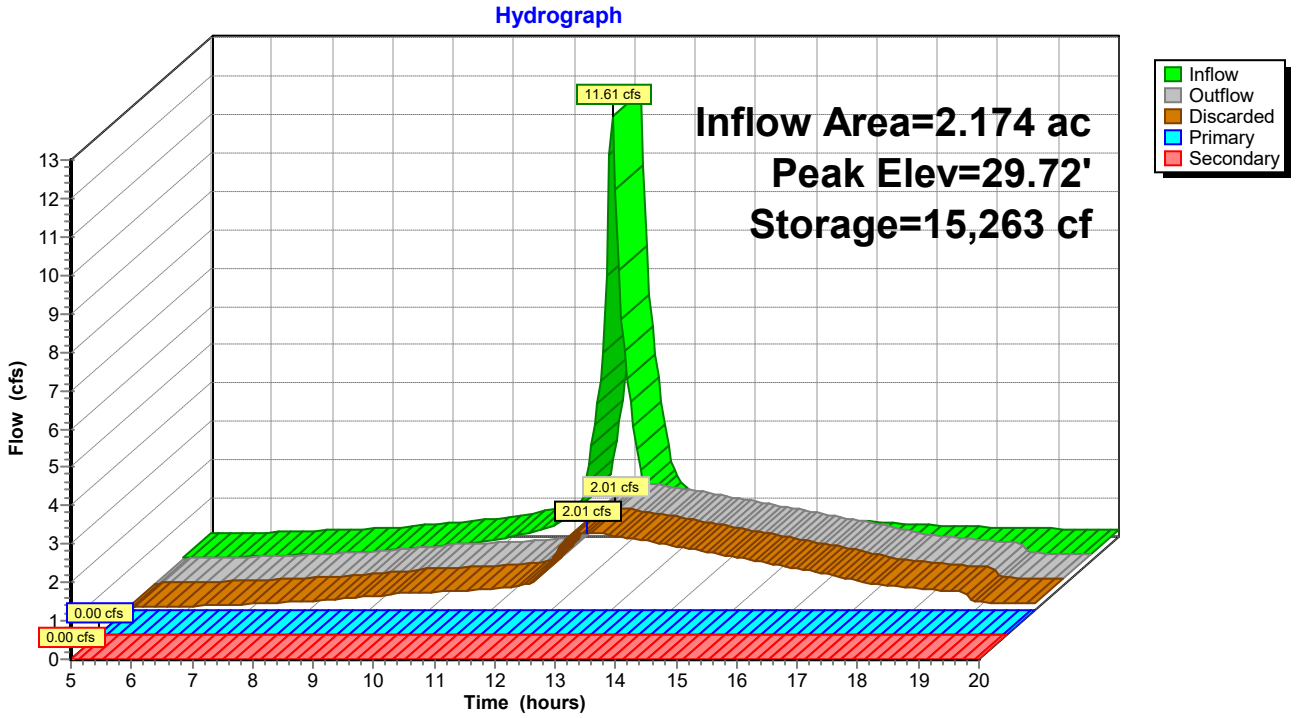
Device	Routing	Invert	Outlet Devices
#1	Secondary	32.00'	**655.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	26.00'	**12.033 in/hr Exfiltration over Surface area**
#3	Primary	27.07'	**6.0" Round 6" HDPE Pipe** L= 42.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 27.07' / 26.65' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#4	Device 3	30.50'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Grate X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads

Discarded OutFlow Max=2.01 cfs @ 12.60 hrs HW=29.72' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 2.01 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=26.00' (Free Discharge)
└**3=6" HDPE Pipe** (Controls 0.00 cfs)
└**4=18" Nyloplast Drain Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=26.00' (Free Discharge)
└**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond RG-1:



Summary for Pond SWB-1:

Inflow Area = 0.154 ac, 35.71% Impervious, Inflow Depth > 3.96" for 50-YR event
Inflow = 0.56 cfs @ 12.23 hrs, Volume= 0.051 af
Outflow = 0.56 cfs @ 12.24 hrs, Volume= 0.049 af, Atten= 0%, Lag= 0.7 min
Primary = 0.56 cfs @ 12.24 hrs, Volume= 0.049 af
Routed to Pond UG-1 :
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 30.99' @ 12.24 hrs Surf.Area= 271 sf Storage= 88 cf

Plug-Flow detention time= 17.5 min calculated for 0.049 af (97% of inflow)
Center-of-Mass det. time= 7.4 min (801.6 - 794.3)

Volume	Invert	Avail.Storage	Storage Description
#1	30.60'	510 cf	**Basin Stage Storage (Prismatic)** Listed below (Recalc)

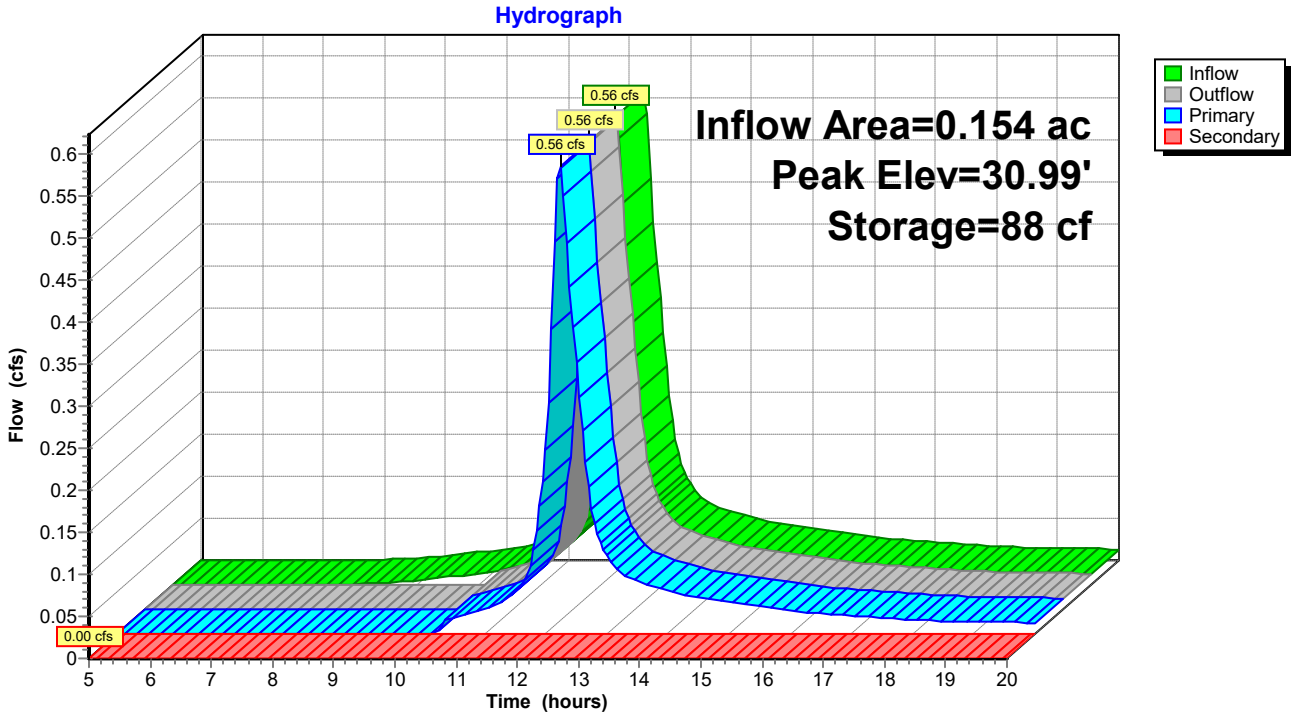
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
30.60	182	0	0
31.00	274	91	91
31.50	412	172	263
32.00	576	247	510

Device	Routing	Invert	Outlet Devices
#1	Secondary	32.00'	**114.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** 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	Primary	28.38'	**6.0" Round 6" HDPE Pipe** L= 23.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 28.38' / 28.15' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#3	Device 2	30.88'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Grate X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.55 cfs @ 12.24 hrs HW=30.99' (Free Discharge)
↑—**2=6" HDPE Pipe** (Passes 0.55 cfs of 1.15 cfs potential flow)
↑—**3=18" Nyloplast Drain Grate** (Weir Controls 0.55 cfs @ 1.08 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=30.60' (Free Discharge)
↑—**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond SWB-1:


Hydrograph
Inflow Area=0.154 ac
Peak Elev=30.99'
Storage=88 cf
0.56 cfs
0.56 cfs
0.56 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
0.55
0.6
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Summary for Pond SWB-2:

Inflow Area = 0.101 ac, 71.29% Impervious, Inflow Depth > 5.07" for 50-YR event
Inflow = 0.61 cfs @ 12.09 hrs, Volume= 0.043 af
Outflow = 0.60 cfs @ 12.10 hrs, Volume= 0.040 af, Atten= 1%, Lag= 0.9 min
Primary = 0.60 cfs @ 12.10 hrs, Volume= 0.040 af
Routed to Pond UG-1 :
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond SWB-1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 30.48' @ 12.10 hrs Surf.Area= 388 sf Storage= 145 cf

Plug-Flow detention time= 37.3 min calculated for 0.040 af (94% of inflow)
Center-of-Mass det. time= 16.7 min (782.4 - 765.7)

Volume	Invert	Avail.Storage	Storage Description
#1	30.00'	410 cf	**Basin Stage Storage (Prismatic)** Listed below (Recalc)

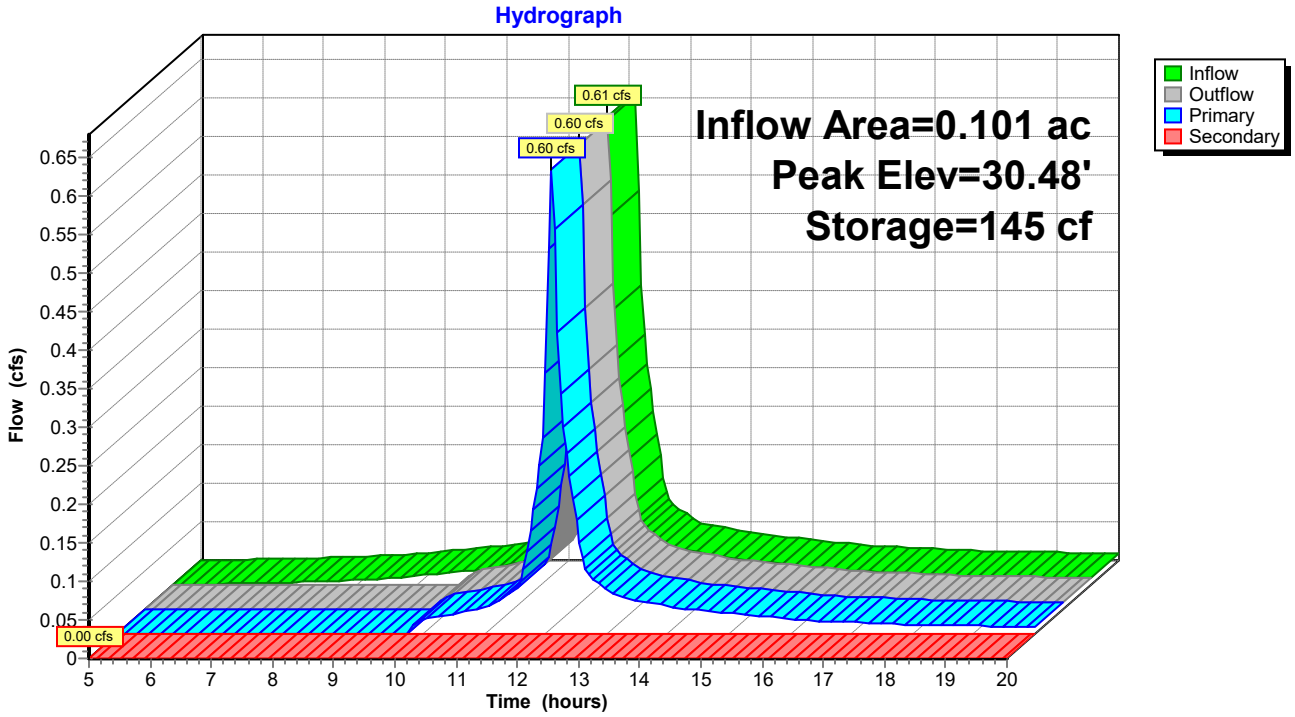
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
30.00	210	0	0
30.50	394	151	151
31.00	640	259	410

Device	Routing	Invert	Outlet Devices
#1	Secondary	31.00'	**164.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** 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	Primary	27.87'	**6.0" Round 6" HDPE Pipe** L= 24.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 27.87' / 27.63' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#3	Device 2	30.37'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Grate X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.59 cfs @ 12.10 hrs HW=30.48' (Free Discharge)
└**2=6" HDPE Pipe** (Passes 0.59 cfs of 1.15 cfs potential flow)
└**3=18" Nyloplast Drain Grate** (Weir Controls 0.59 cfs @ 1.10 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=30.00' (Free Discharge)
└**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond SWB-2:


Hydrograph
Inflow Area=0.101 ac
Peak Elev=30.48'
Storage=145 cf
0.61 cfs
0.60 cfs
0.60 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
0.55
0.6
0.65
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

Summary for Pond SWB-3:

Inflow Area = 0.052 ac, 44.23% Impervious, Inflow Depth > 2.55" for 50-YR event
Inflow = 0.16 cfs @ 12.10 hrs, Volume= 0.011 af
Outflow = 0.11 cfs @ 12.22 hrs, Volume= 0.008 af, Atten= 31%, Lag= 7.4 min
Primary = 0.11 cfs @ 12.22 hrs, Volume= 0.008 af
Routed to Pond UG-1 :
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond SWB-2 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 30.99' @ 12.22 hrs Surf.Area= 418 sf Storage= 153 cf

Plug-Flow detention time= 109.9 min calculated for 0.008 af (71% of inflow)
Center-of-Mass det. time= 41.7 min (852.2 - 810.5)

Volume	Invert	Avail.Storage	Storage Description
#1	30.50'	824 cf	**Basin Stage Storage (Prismatic)** Listed below (Recalc)

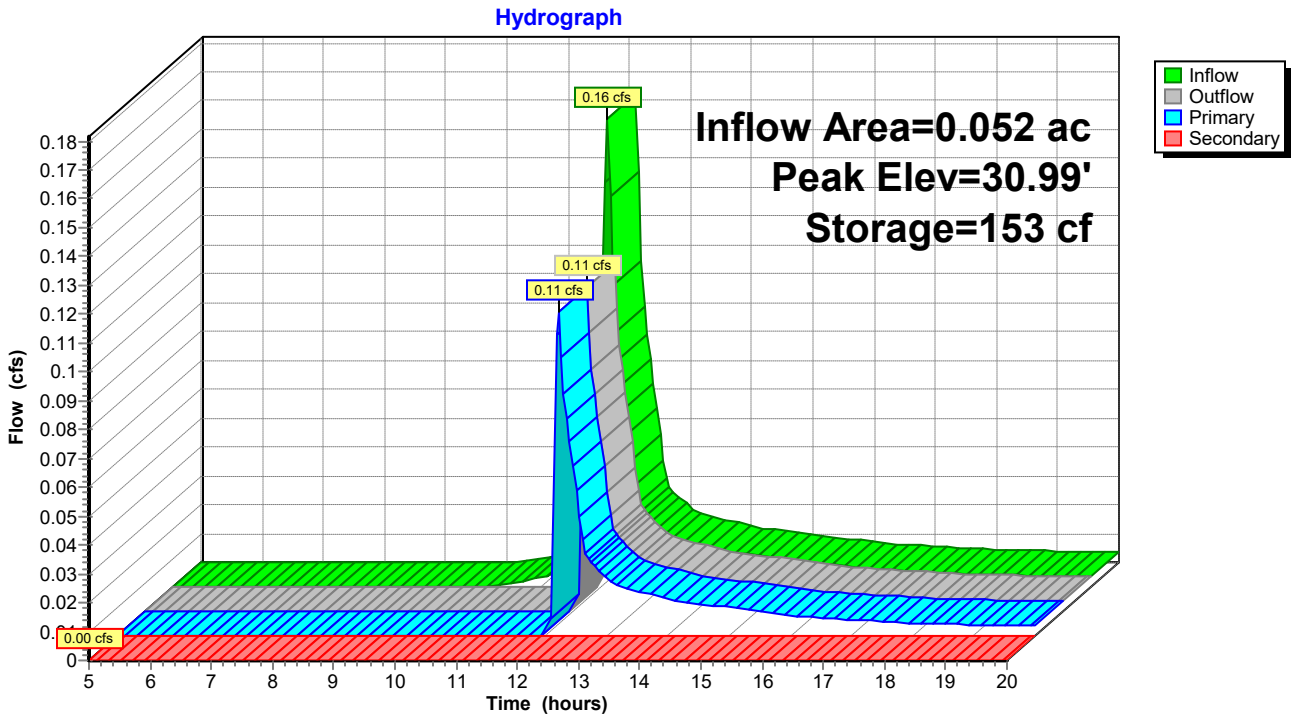
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
30.50	211	0	0
31.00	423	159	159
32.00	908	666	824

Device	Routing	Invert	Outlet Devices
#1	Secondary	32.00'	**168.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** 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	Primary	28.95'	**6.0" Round 6" HDPE Pipe** L= 11.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 28.95' / 27.84' S= 0.1009 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#3	Device 2	30.95'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Grate X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.10 cfs @ 12.22 hrs HW=30.98' (Free Discharge)
└**2=6" HDPE Pipe** (Passes 0.10 cfs of 1.00 cfs potential flow)
└**3=18" Nyloplast Drain Grate** (Weir Controls 0.10 cfs @ 0.61 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=30.50' (Free Discharge)
└**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond SWB-3:


Hydrograph
Inflow Area=0.052 ac
Peak Elev=30.99'
Storage=153 cf
0.16 cfs
0.11 cfs
0.11 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0.18
0.17
0.16
0.15
0.14
0.13
0.12
0.11
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

Summary for Pond SWB-4:

Inflow Area = 0.743 ac, 48.72% Impervious, Inflow Depth > 3.26" for 50-YR event
Inflow = 2.81 cfs @ 12.09 hrs, Volume= 0.202 af
Outflow = 0.84 cfs @ 12.47 hrs, Volume= 0.197 af, Atten= 70%, Lag= 22.3 min
Primary = 0.84 cfs @ 12.47 hrs, Volume= 0.197 af
Routed to Pond UG-1 :
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-2 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 28.53' @ 12.47 hrs Surf.Area= 0.055 ac Storage= 0.061 af

Plug-Flow detention time= 43.6 min calculated for 0.197 af (98% of inflow)
Center-of-Mass det. time= 34.3 min (823.9 - 789.6)

Volume	Invert	Avail.Storage	Storage Description
#1	27.00'	0.164 af	**Stormwater Management Basin Storage (Prismatic)** Listed below (Recalc)

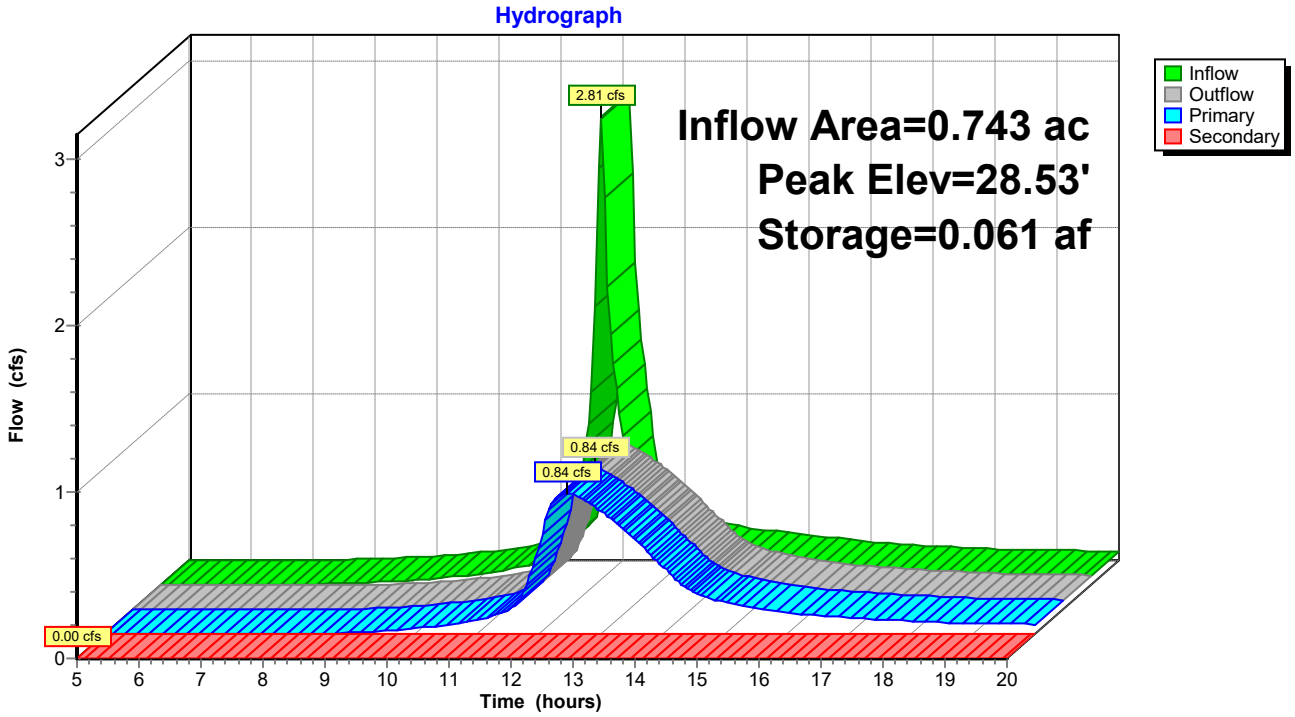
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
27.00	0.026	0.000	0.000
28.00	0.044	0.035	0.035
29.00	0.064	0.054	0.089
30.00	0.086	0.075	0.164

Device	Routing	Invert	Outlet Devices
#1	Secondary	30.00'	**318.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** 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	Primary	26.95'	**8.0" Round 8" HDPE** L= 44.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 26.95' / 26.73' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#3	Device 2	28.95'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Grate X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads
#4	Device 2	27.00'	**6.0" Round 6" HDPE Inlet Pipe** L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 27.00' / 26.95' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

Primary OutFlow Max=0.84 cfs @ 12.47 hrs HW=28.53' (Free Discharge)
└**2=8" HDPE** (Passes 0.84 cfs of 1.48 cfs potential flow)
└**3=18" Nyloplast Drain Grate** (Controls 0.00 cfs)
└**4=6" HDPE Inlet Pipe** (Inlet Controls 0.84 cfs @ 4.30 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=27.00' (Free Discharge)
└**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond SWB-4:


Hydrograph
Inflow
Outflow
Primary
Secondary
Inflow Area=0.743 ac
Peak Elev=28.53'
Storage=0.061 af
2.81 cfs
0.84 cfs
0.84 cfs
0.00 cfs
Flow (cfs)
Time (hours)
0
1
2
3
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

Summary for Pond UG-1:

Inflow Area = 1.185 ac, 54.60% Impervious, Inflow Depth > 3.72" for 50-YR event
Inflow = 2.59 cfs @ 12.11 hrs, Volume= 0.367 af
Outflow = 0.66 cfs @ 11.75 hrs, Volume= 0.367 af, Atten= 74%, Lag= 0.0 min
Discarded = 0.66 cfs @ 11.75 hrs, Volume= 0.367 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 24.44' @ 13.74 hrs Surf.Area= 0.048 ac Storage= 0.101 af

Plug-Flow detention time= 55.4 min calculated for 0.367 af (100% of inflow)
Center-of-Mass det. time= 55.2 min (854.3 - 799.0)

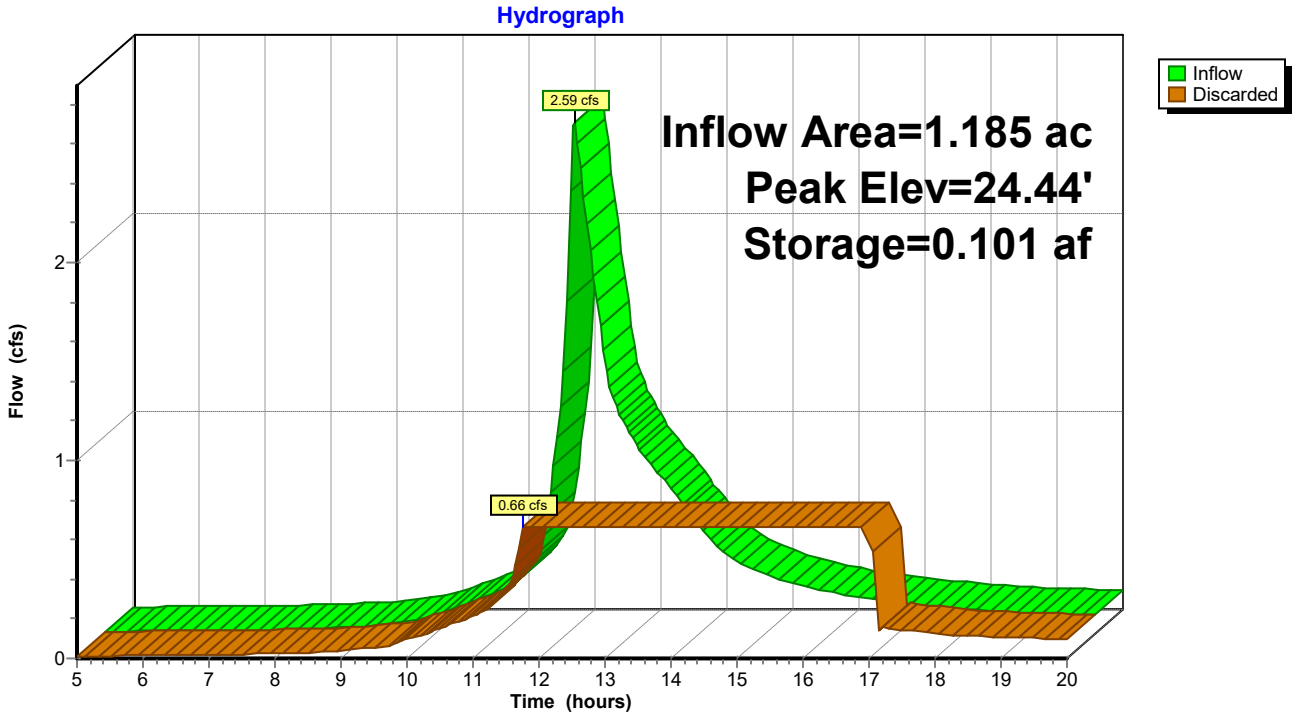
Volume	Invert	Avail.Storage	Storage Description
#1A	21.44'	0.069 af	**29.92'W x 70.23'L x 5.50'H Field A** 0.265 af Overall - 0.094 af Embedded = 0.172 af x 40.0% Voids
#2A	22.19'	0.094 af	**ADS_StormTech MC-3500 d +Cap** x 36 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 36 Chambers in 4 Rows Cap Storage= 14.9 cf x 2 x 4 rows = 119.2 cf
		0.162 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	21.44'	**13.652 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.66 cfs @ 11.75 hrs HW=21.50' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.66 cfs)

Pond UG-1:


Hydrograph
Inflow
Discarded
2.59 cfs
0.66 cfs
Inflow Area=1.185 ac
Peak Elev=24.44'
Storage=0.101 af
Flow (cfs)
0
1
2
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Time (hours)

Summary for Subcatchment PR-01:

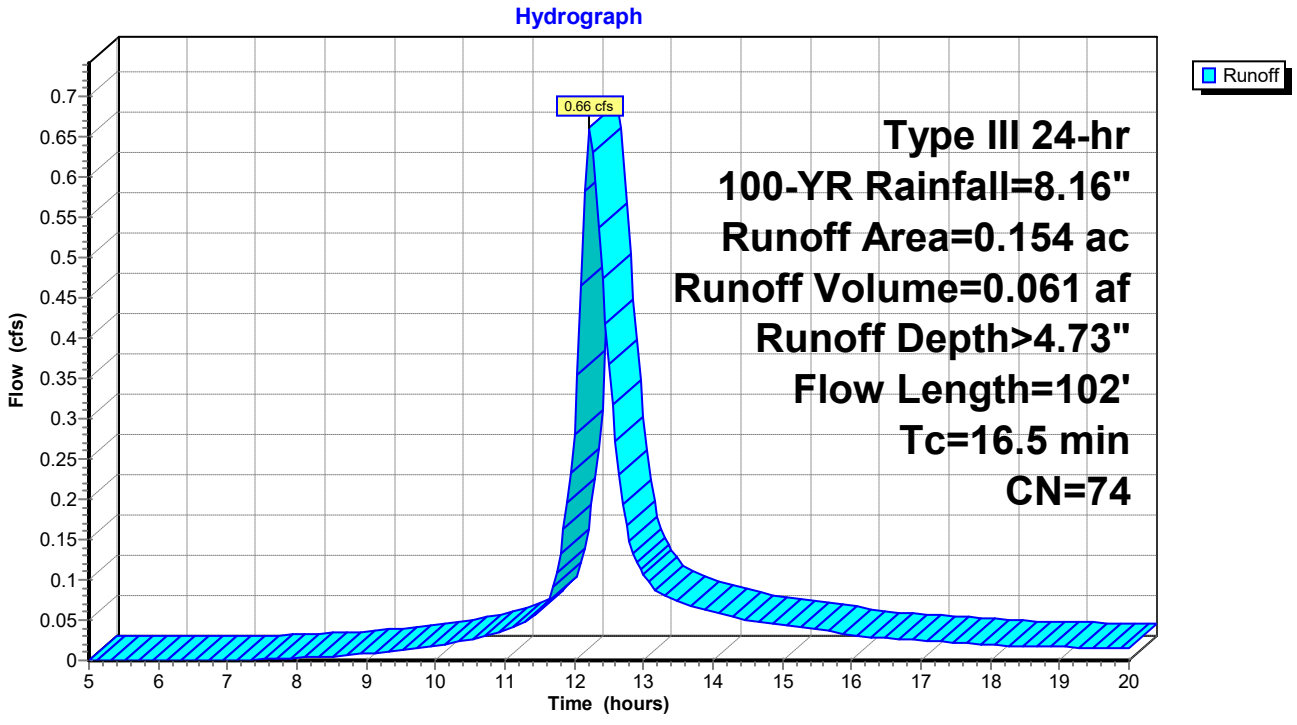
Runoff = 0.66 cfs @ 12.23 hrs, Volume= 0.061 af, Depth> 4.73"
Routed to Pond SWB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.16"

	Area (ac)	CN	Description
	0.099	61	>75% Grass cover, Good, HSG B
*	0.055	98	Paved
	0.154	74	Weighted Average
	0.099		64.29% Pervious Area
	0.055		35.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	100	0.0050	0.10		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.0	2	0.0500	1.57		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
16.5	102	Total			

Subcatchment PR-01:



Summary for Subcatchment PR-02:

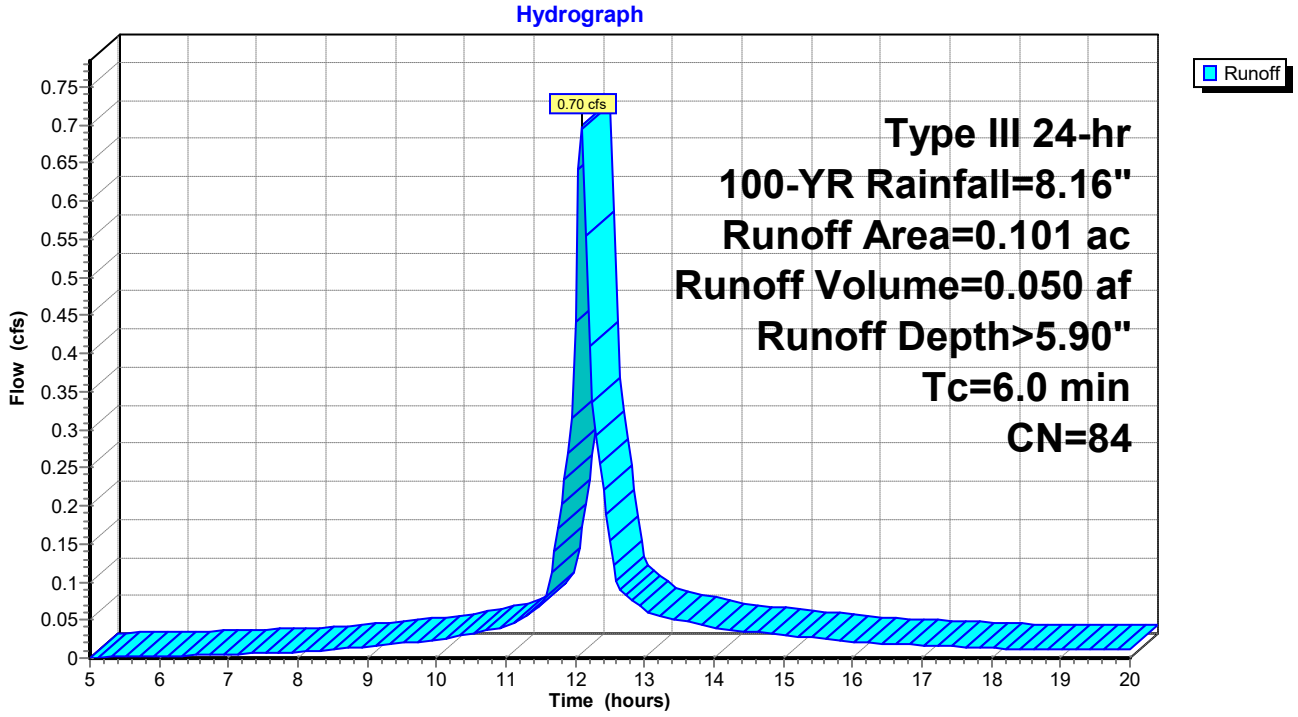
Runoff = 0.70 cfs @ 12.09 hrs, Volume= 0.050 af, Depth> 5.90"
Routed to Pond SWB-2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.16"

	Area (ac)	CN	Description
	0.009	30	Meadow, non-grazed, HSG A
	0.019	58	Meadow, non-grazed, HSG B
	0.001	61	>75% Grass cover, Good, HSG B
*	0.072	98	Paved
	0.101	84	Weighted Average
	0.029		28.71% Pervious Area
	0.072		71.29% Impervious Area

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

Subcatchment PR-02:



Summary for Subcatchment PR-03:

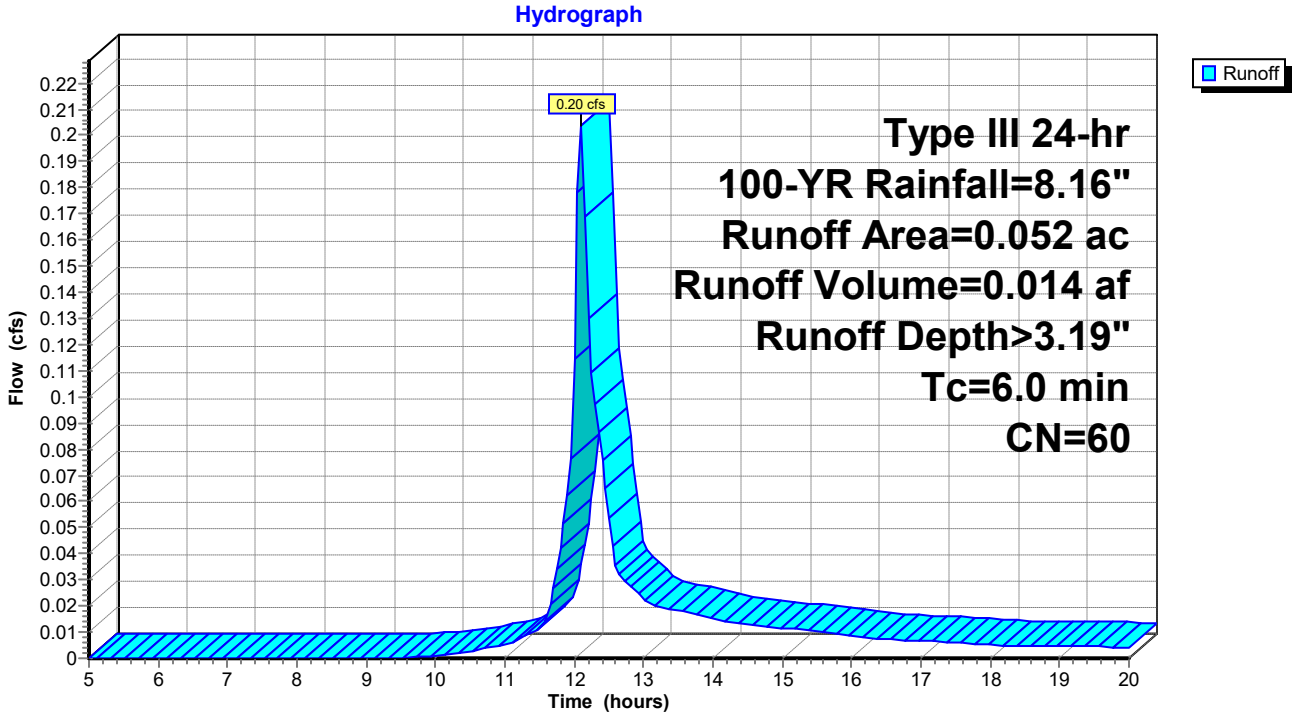
Runoff = 0.20 cfs @ 12.10 hrs, Volume= 0.014 af, Depth> 3.19"
Routed to Pond SWB-3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.16"

	Area (ac)	CN	Description
	0.029	30	Meadow, non-grazed, HSG A
*	0.023	98	Paved
	0.052	60	Weighted Average
	0.029		55.77% Pervious Area
	0.023		44.23% Impervious Area

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

Subcatchment PR-03:



Summary for Subcatchment PR-04:

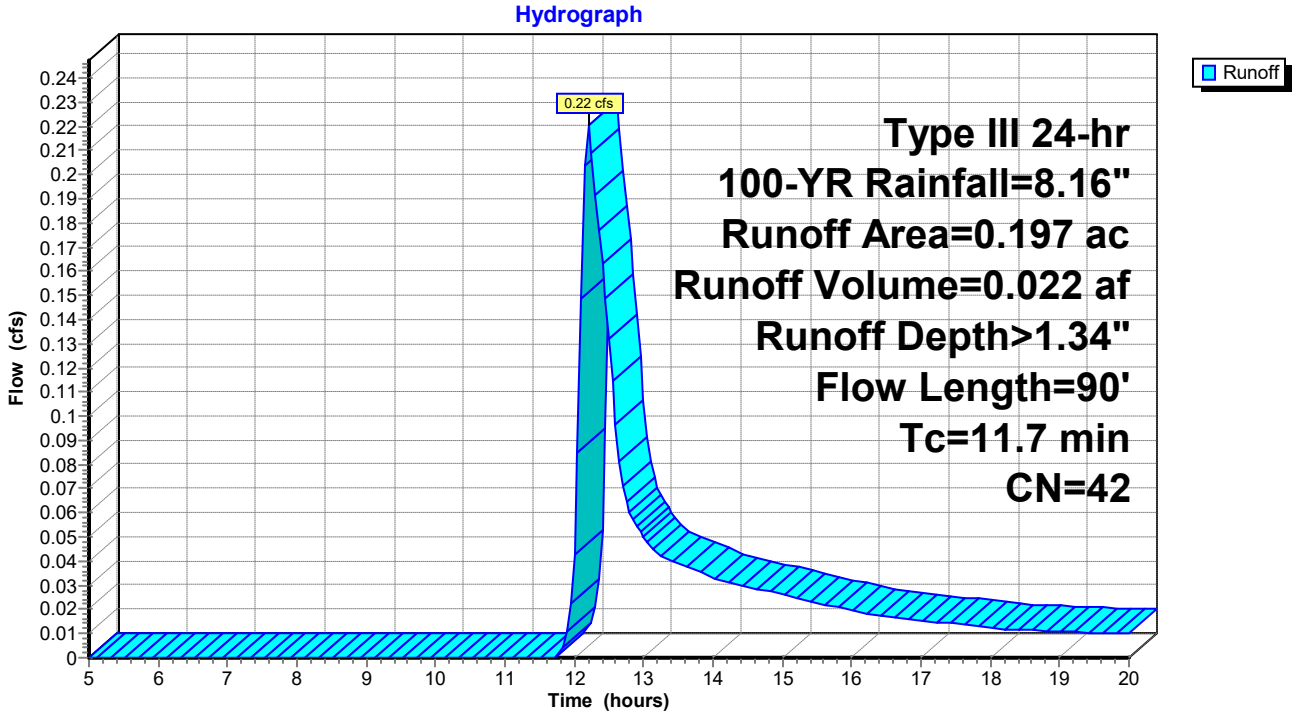
Runoff = 0.22 cfs @ 12.20 hrs, Volume= 0.022 af, Depth> 1.34"
Routed to Pond SWB-4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.16"

	Area (ac)	CN	Description
	0.097	30	Meadow, non-grazed, HSG A
	0.076	39	>75% Grass cover, Good, HSG A
*	0.024	98	Paved
	0.197	42	Weighted Average
	0.173		87.82% Pervious Area
	0.024		12.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	81	0.0200	0.12		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.40"
0.0	7	0.0290	3.46		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.0	2	0.3500	4.14		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
11.7	90	Total			

Subcatchment PR-04:



Summary for Subcatchment PR-05:

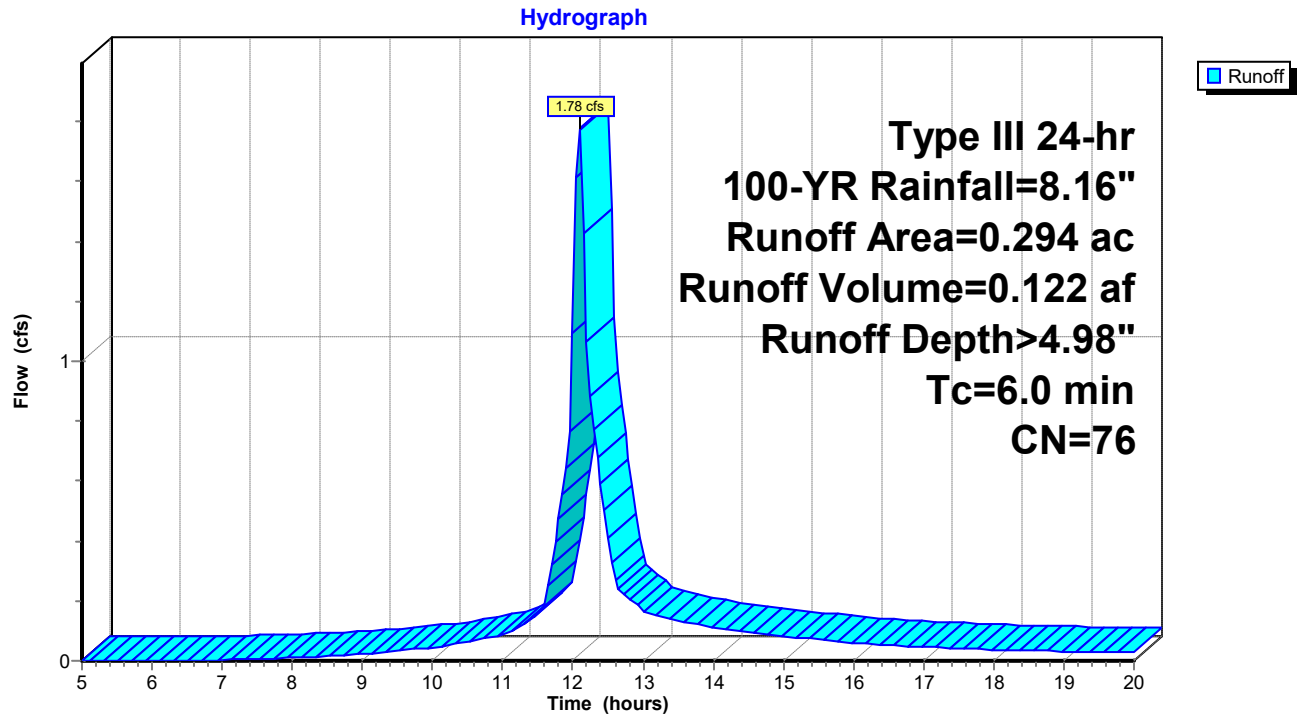
Runoff = 1.78 cfs @ 12.09 hrs, Volume= 0.122 af, Depth> 4.98"
Routed to Pond SWB-4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.16"

	Area (ac)	CN	Description
	0.083	39	>75% Grass cover, Good, HSG A
	0.023	30	Meadow, non-grazed, HSG A
*	0.188	98	Paved
	0.294	76	Weighted Average
	0.106		36.05% Pervious Area
	0.188		63.95% Impervious Area

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

Subcatchment PR-05:



Summary for Subcatchment PR-06:

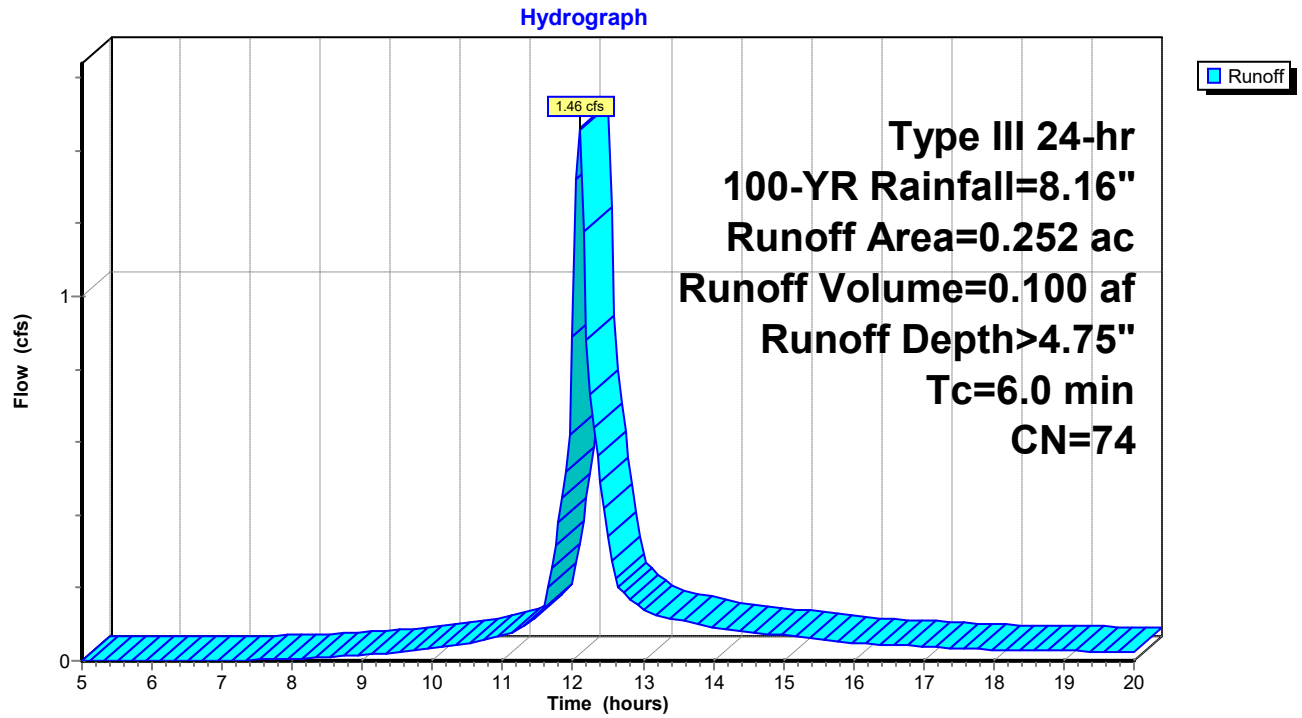
Runoff = 1.46 cfs @ 12.09 hrs, Volume= 0.100 af, Depth> 4.75"
Routed to Pond SWB-4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.16"

	Area (ac)	CN	Description
	0.017	30	Meadow, non-grazed, HSG A
	0.085	39	>75% Grass cover, Good, HSG A
*	0.150	98	Paved
	0.252	74	Weighted Average
	0.102		40.48% Pervious Area
	0.150		59.52% Impervious Area

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

Subcatchment PR-06:



Summary for Subcatchment PR-07:

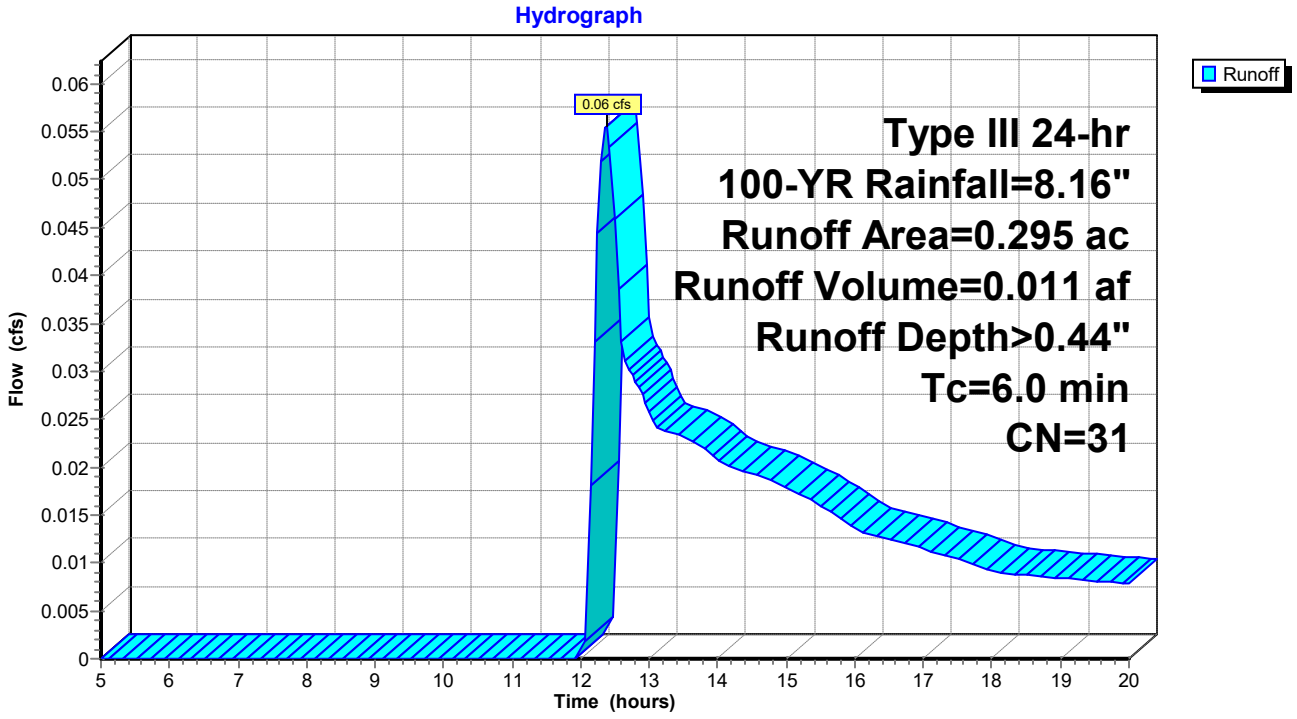
Runoff = 0.06 cfs @ 12.37 hrs, Volume= 0.011 af, Depth> 0.44"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.16"

Area (ac)	CN	Description
0.283	30	Brush, Good, HSG A
0.012	48	Brush, Good, HSG B
0.295	31	Weighted Average
0.295		100.00% Pervious Area

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

Subcatchment PR-07:



Summary for Subcatchment PR-08:

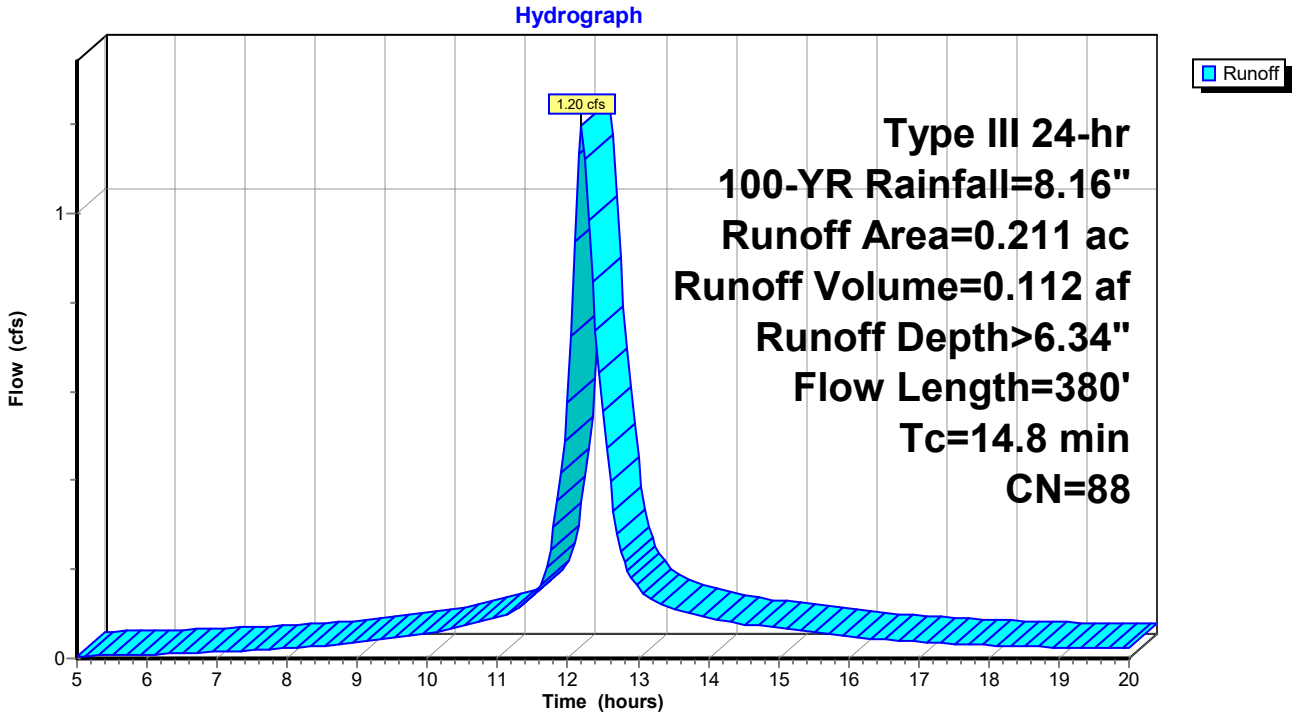
Runoff = 1.20 cfs @ 12.20 hrs, Volume= 0.112 af, Depth> 6.34"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.16"

	Area (ac)	CN	Description
	0.018	39	>75% Grass cover, Good, HSG A
	0.031	61	>75% Grass cover, Good, HSG B
	0.000	58	Meadow, non-grazed, HSG B
*	0.162	98	Paved
	0.211	88	Weighted Average
	0.049		23.22% Pervious Area
	0.162		76.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	100	0.0140	0.15		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
3.0	126	0.0100	0.70		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.0	9	0.0220	3.01		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
0.2	18	0.0500	1.57		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
0.2	39	0.0290	3.46		**Shallow Concentrated Flow, E-F** Paved Kv= 20.3 fps
0.1	28	0.0050	3.21	2.52	**Pipe Channel, F-G** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
0.3	60	0.0050	3.47	2.73	**Pipe Channel, G-H** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
14.8	380	Total			

Subcatchment PR-08:



Summary for Subcatchment PR-09:

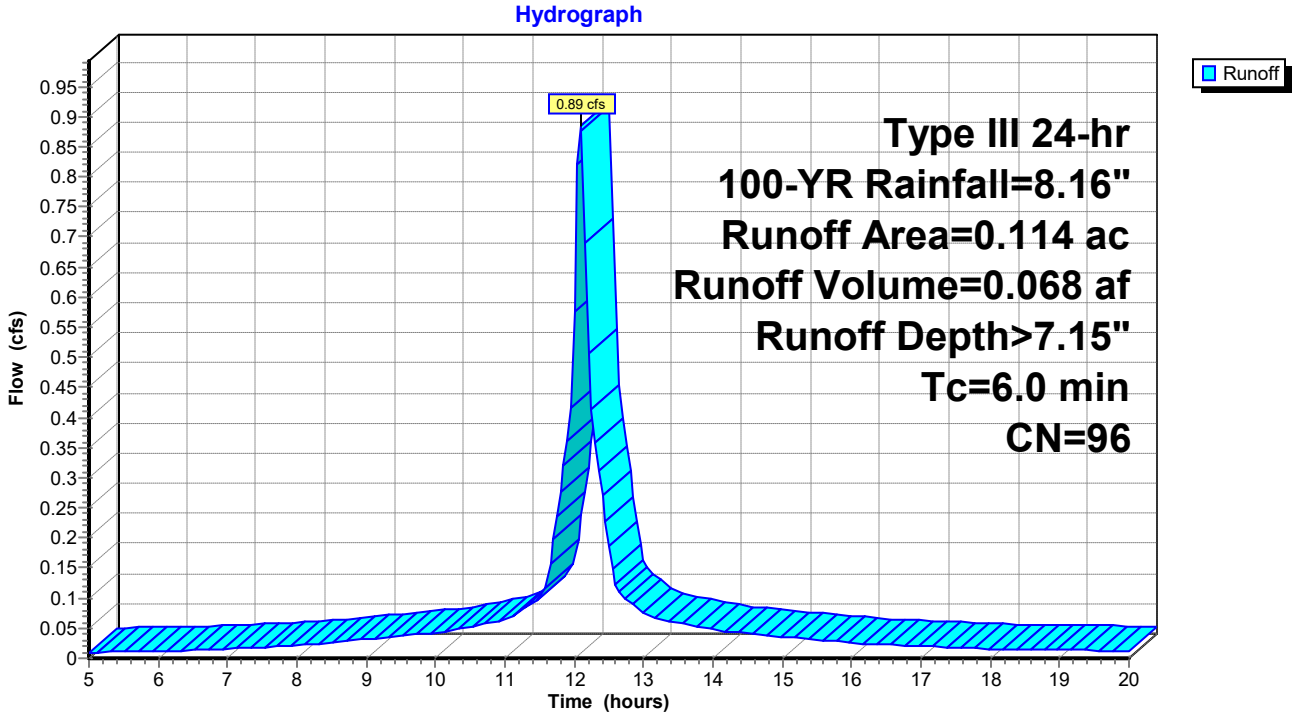
Runoff = 0.89 cfs @ 12.09 hrs, Volume= 0.068 af, Depth> 7.15"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.16"

	Area (ac)	CN	Description
	0.003	39	>75% Grass cover, Good, HSG A
*	0.111	98	Paved
	0.114	96	Weighted Average
	0.003		2.63% Pervious Area
	0.111		97.37% Impervious Area

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

Subcatchment PR-09:



Summary for Subcatchment PR-10:

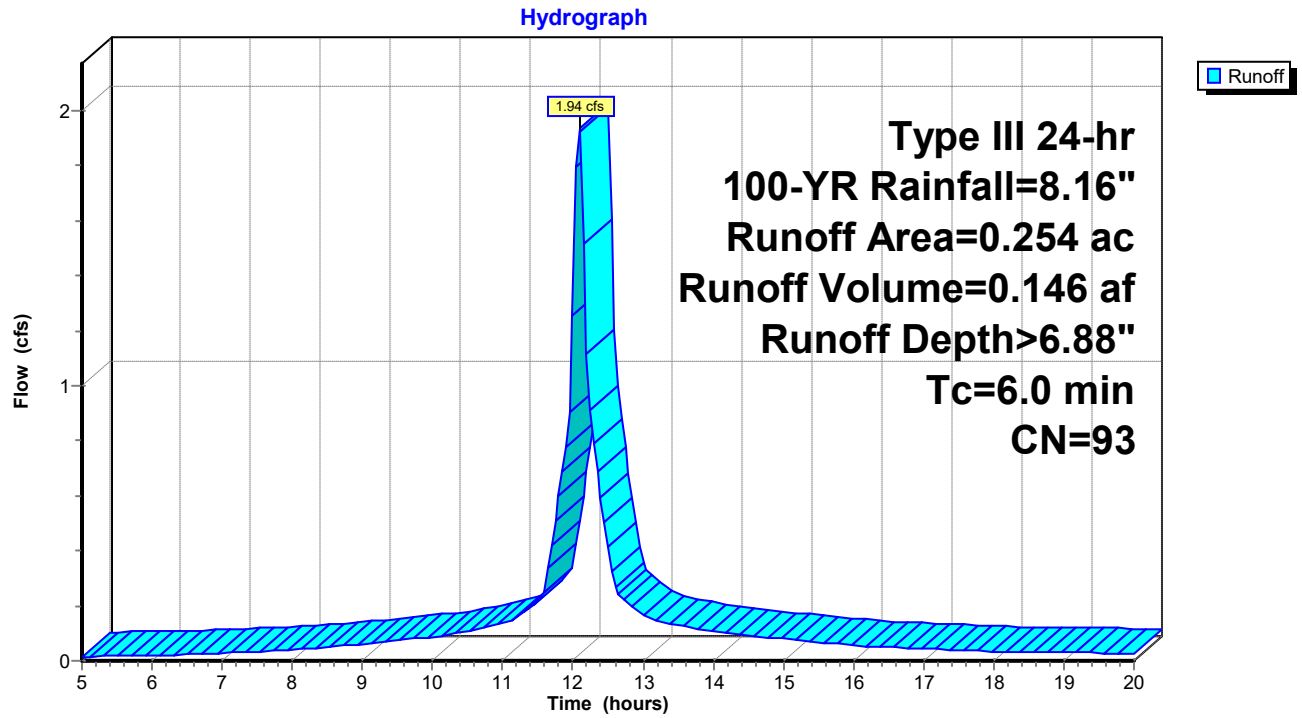
Runoff = 1.94 cfs @ 12.09 hrs, Volume= 0.146 af, Depth> 6.88"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.16"

	Area (ac)	CN	Description
	0.020	39	>75% Grass cover, Good, HSG A
	0.004	61	>75% Grass cover, Good, HSG B
*	0.230	98	Paved
	0.254	93	Weighted Average
	0.024		9.45% Pervious Area
	0.230		90.55% Impervious Area

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

Subcatchment PR-10:



Summary for Subcatchment PR-11:

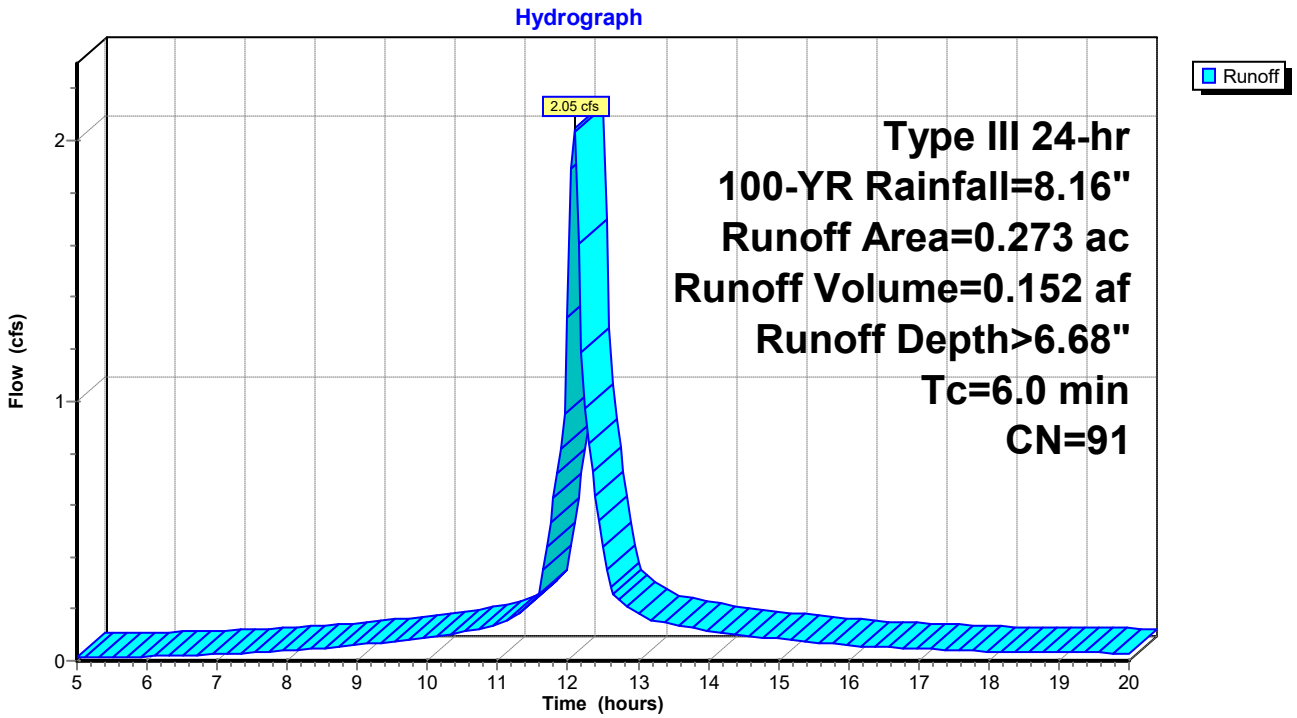
Runoff = 2.05 cfs @ 12.09 hrs, Volume= 0.152 af, Depth> 6.68"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.16"

	Area (ac)	CN	Description
	0.028	39	>75% Grass cover, Good, HSG A
	0.008	61	>75% Grass cover, Good, HSG B
*	0.237	98	Paved
	0.273	91	Weighted Average
	0.036		13.19% Pervious Area
	0.237		86.81% Impervious Area

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

Subcatchment PR-11:



Summary for Subcatchment PR-12:

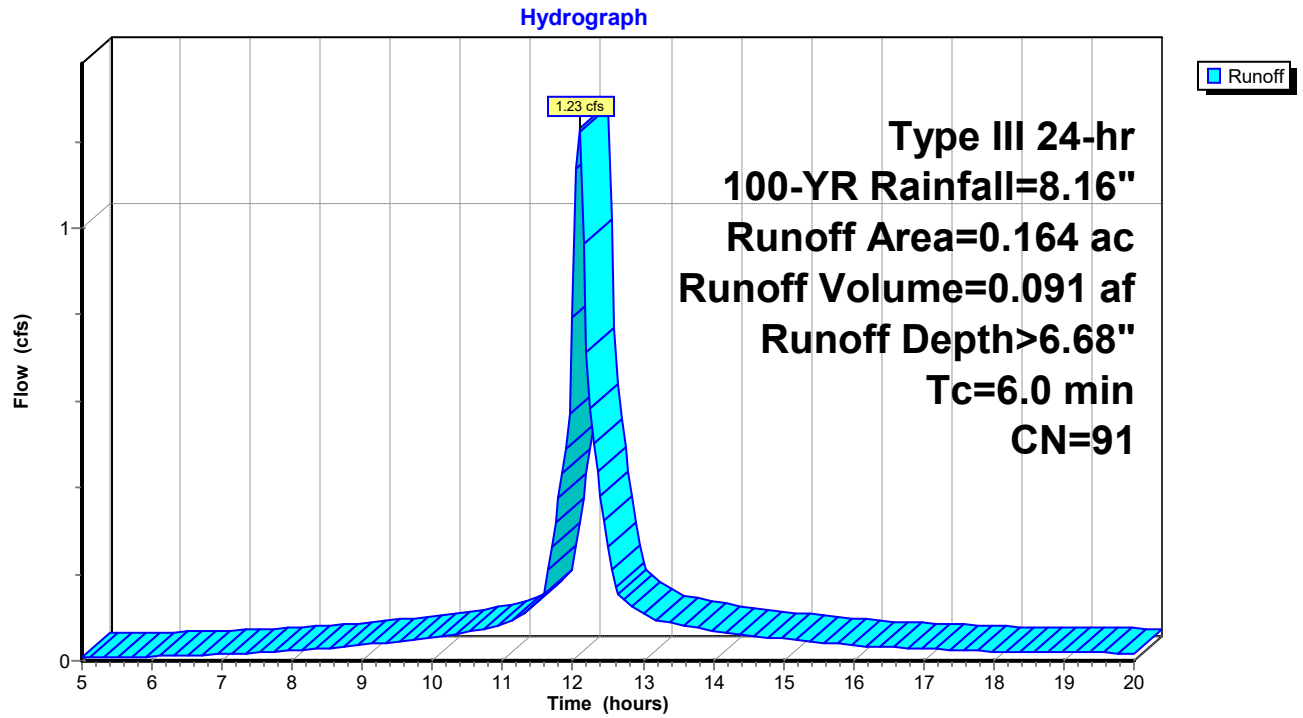
Runoff = 1.23 cfs @ 12.09 hrs, Volume= 0.091 af, Depth> 6.68"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.16"

	Area (ac)	CN	Description
	0.019	39	>75% Grass cover, Good, HSG A
	0.000	30	Meadow, non-grazed, HSG A
*	0.145	98	Paved
	0.164	91	Weighted Average
	0.019		11.59% Pervious Area
	0.145		88.41% Impervious Area

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

Subcatchment PR-12:



Summary for Subcatchment PR-13:

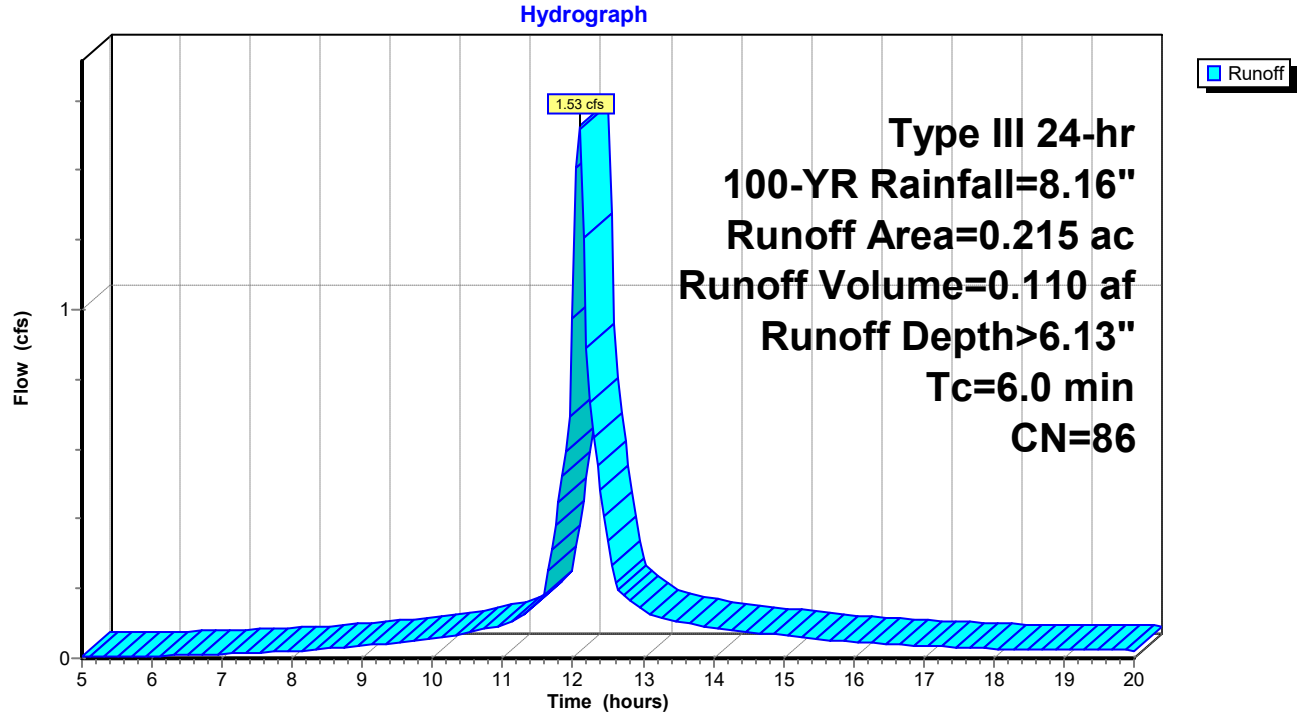
Runoff = 1.53 cfs @ 12.09 hrs, Volume= 0.110 af, Depth> 6.13"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.16"

	Area (ac)	CN	Description
	0.043	39	>75% Grass cover, Good, HSG A
*	0.172	98	Paved
	0.215	86	Weighted Average
	0.043		20.00% Pervious Area
	0.172		80.00% Impervious Area

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

Subcatchment PR-13:



Summary for Subcatchment PR-14:

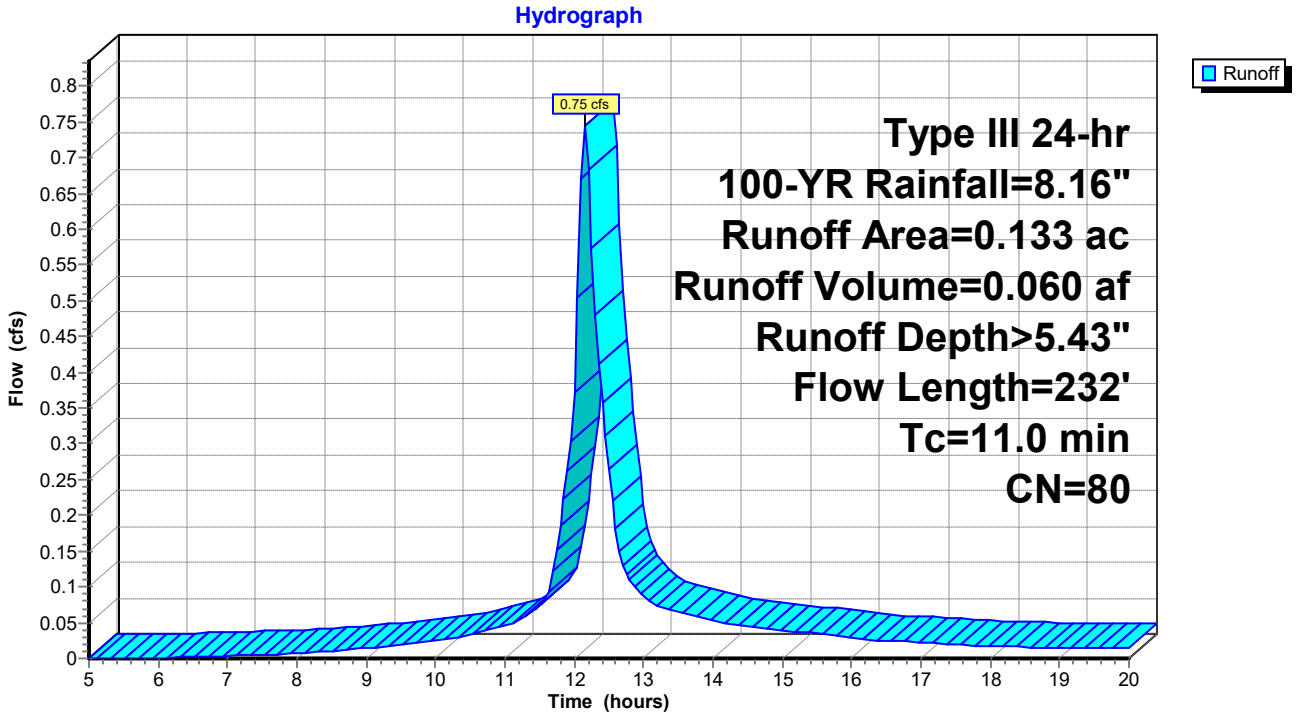
Runoff = 0.75 cfs @ 12.15 hrs, Volume= 0.060 af, Depth> 5.43"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.16"

	Area (ac)	CN	Description
	0.030	39	>75% Grass cover, Good, HSG A
	0.018	61	>75% Grass cover, Good, HSG B
*	0.085	98	Paved
	0.133	80	Weighted Average
	0.048		36.09% Pervious Area
	0.085		63.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	62	0.0060	0.10		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.0	5	0.0200	2.87		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.2	52	0.0050	3.47	2.73	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.2	67	0.0100	4.91	3.86	**Pipe Channel, D-E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.1	46	0.0100	5.70	7.00	**Pipe Channel, E-F** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
11.0	232	Total			

Subcatchment PR-14:



Summary for Subcatchment PR-15:

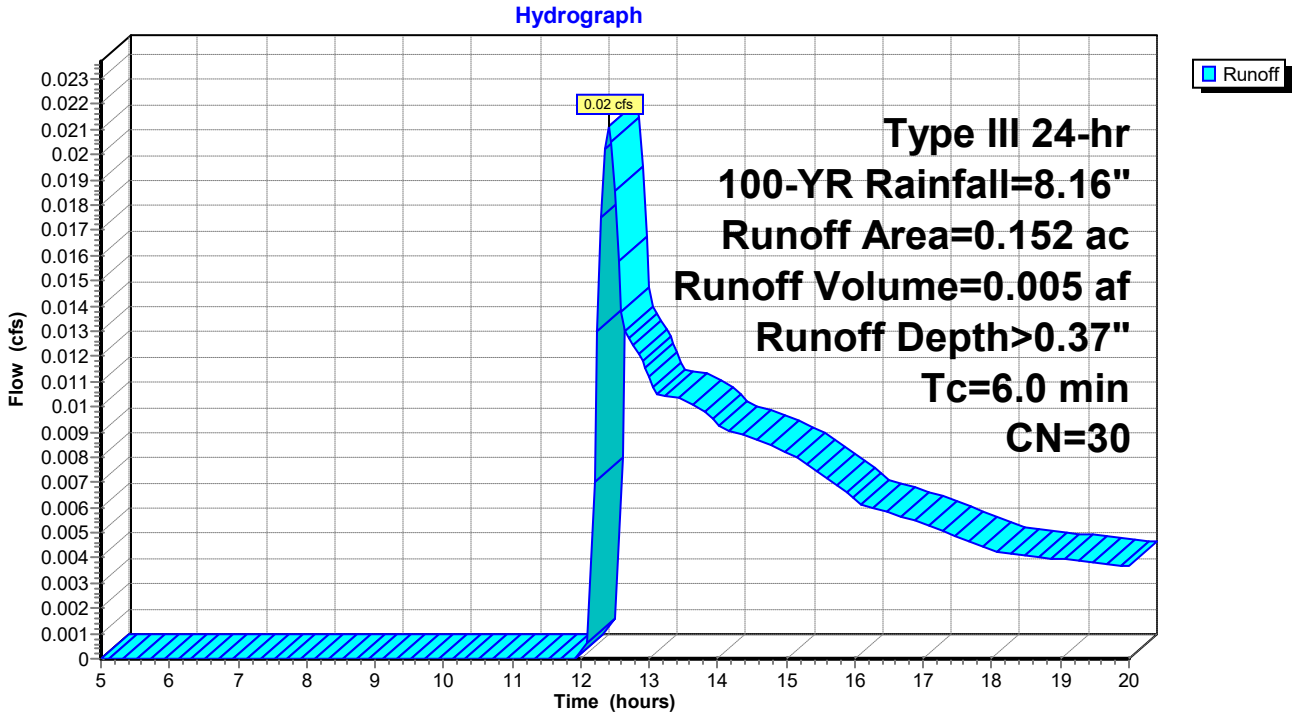
Runoff = 0.02 cfs @ 12.40 hrs, Volume= 0.005 af, Depth> 0.37"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.16"

Area (ac)	CN	Description
0.150	30	Brush, Good, HSG A
0.002	48	Brush, Good, HSG B
0.152	30	Weighted Average
0.152		100.00% Pervious Area

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

Subcatchment PR-15:



Summary for Subcatchment PR-17:

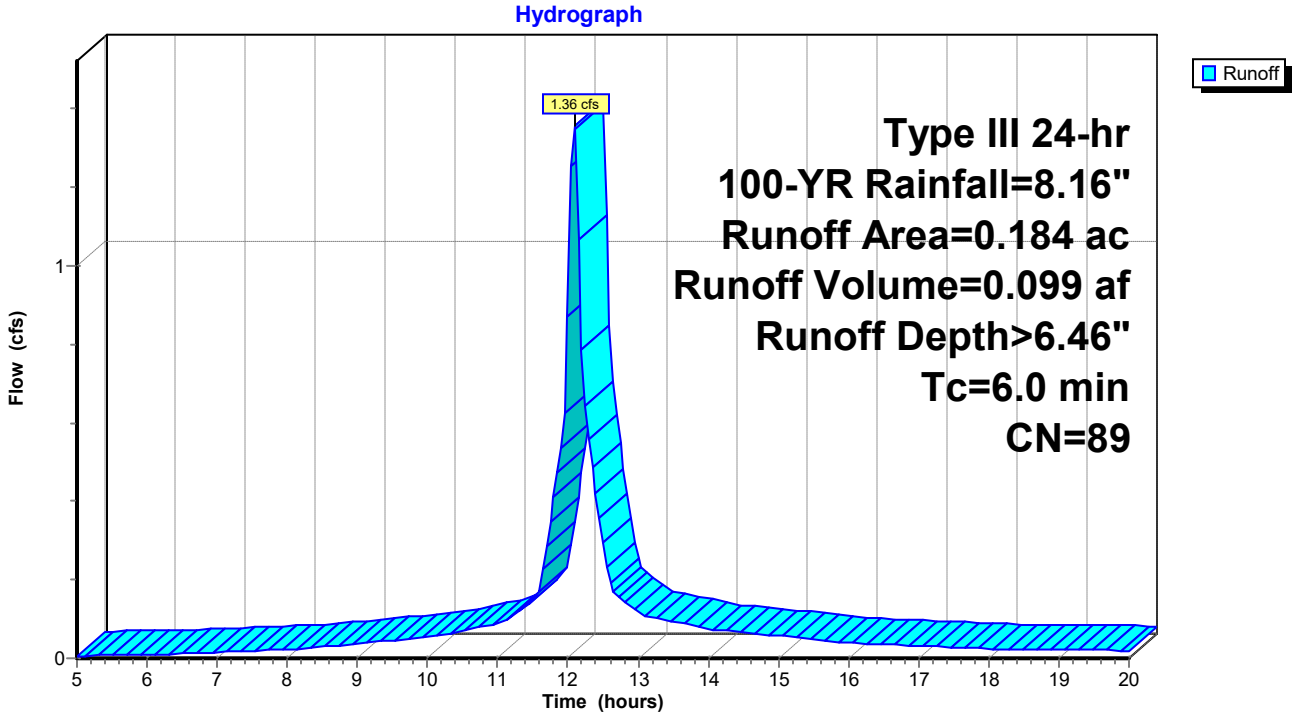
Runoff = 1.36 cfs @ 12.09 hrs, Volume= 0.099 af, Depth> 6.46"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.16"

	Area (ac)	CN	Description
	0.027	39	>75% Grass cover, Good, HSG A
*	0.157	98	Paved
	0.184	89	Weighted Average
	0.027		14.67% Pervious Area
	0.157		85.33% Impervious Area

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

Subcatchment PR-17:



Summary for Subcatchment PR-18:

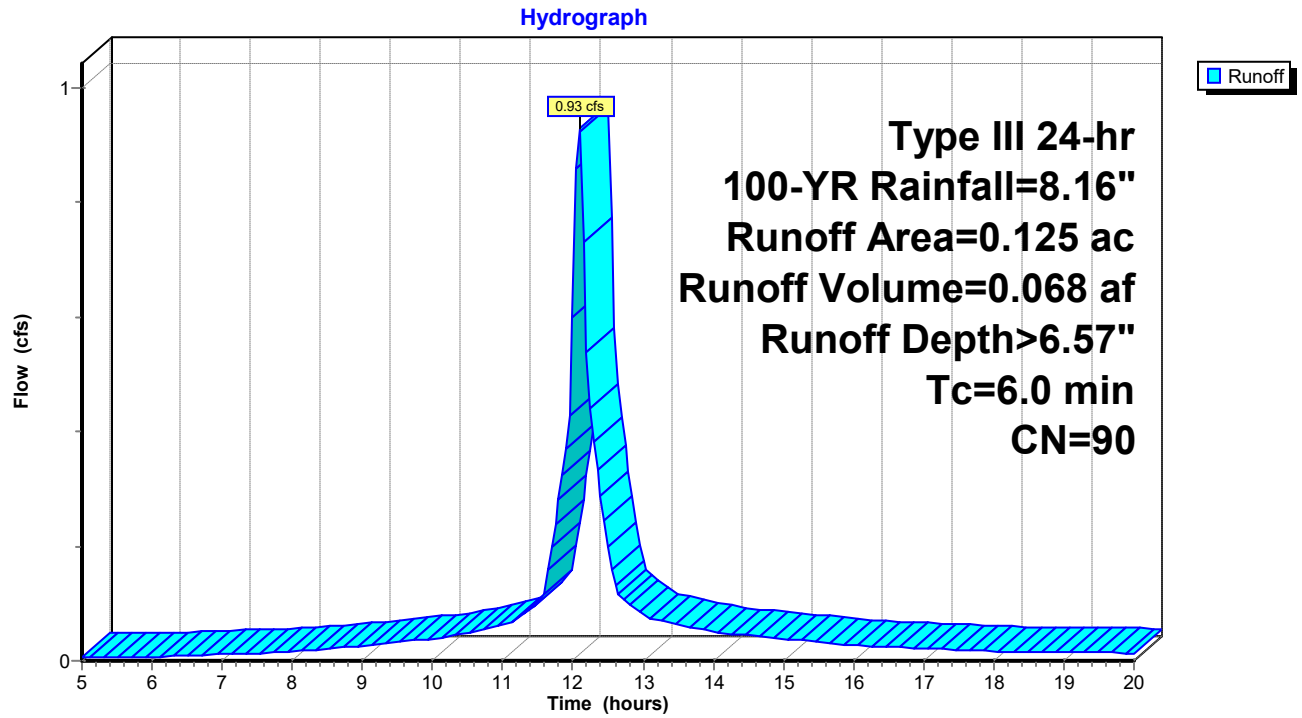
Runoff = 0.93 cfs @ 12.09 hrs, Volume= 0.068 af, Depth> 6.57"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.16"

	Area (ac)	CN	Description
	0.016	39	>75% Grass cover, Good, HSG A
	0.002	61	>75% Grass cover, Good, HSG B
*	0.107	98	Paved
	0.125	90	Weighted Average
	0.018		14.40% Pervious Area
	0.107		85.60% Impervious Area

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

Subcatchment PR-18:



Summary for Subcatchment PR-19:

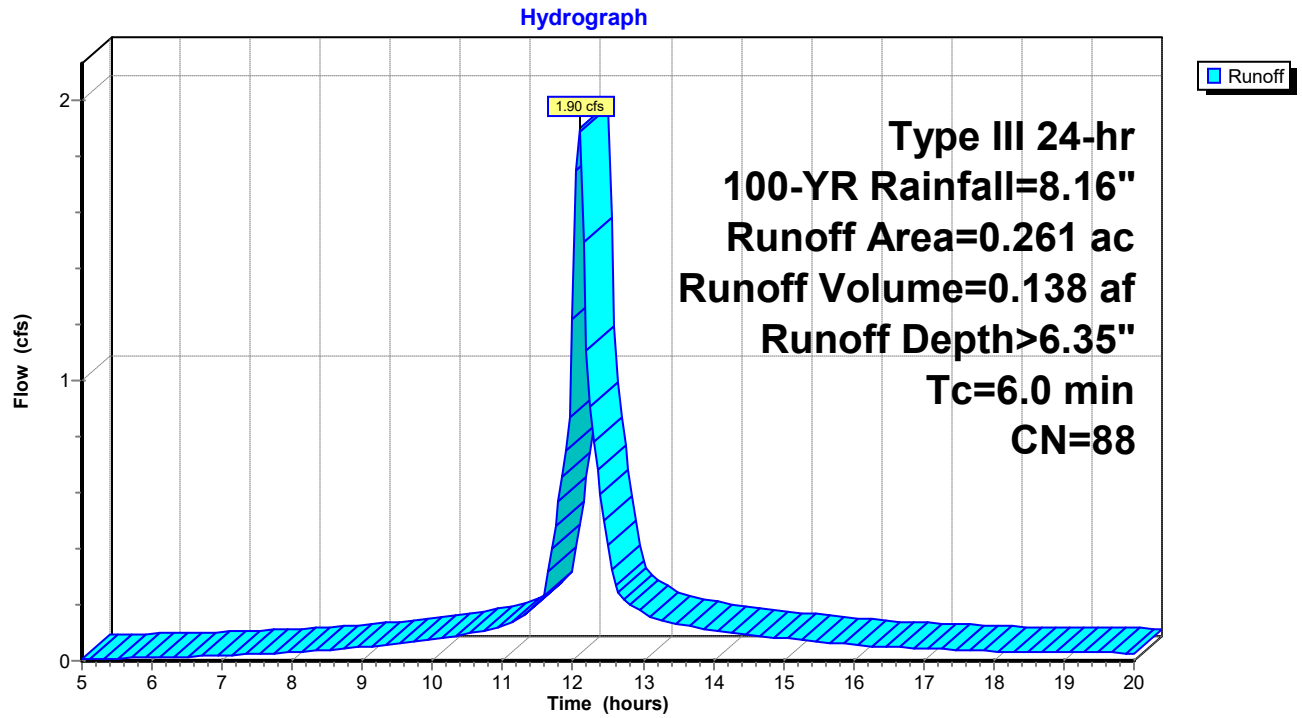
Runoff = 1.90 cfs @ 12.09 hrs, Volume= 0.138 af, Depth> 6.35"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.16"

	Area (ac)	CN	Description
	0.041	39	>75% Grass cover, Good, HSG A
	0.004	61	>75% Grass cover, Good, HSG B
*	0.216	98	Paved
	0.261	88	Weighted Average
	0.045		17.24% Pervious Area
	0.216		82.76% Impervious Area

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

Subcatchment PR-19:



Summary for Subcatchment PR-20:

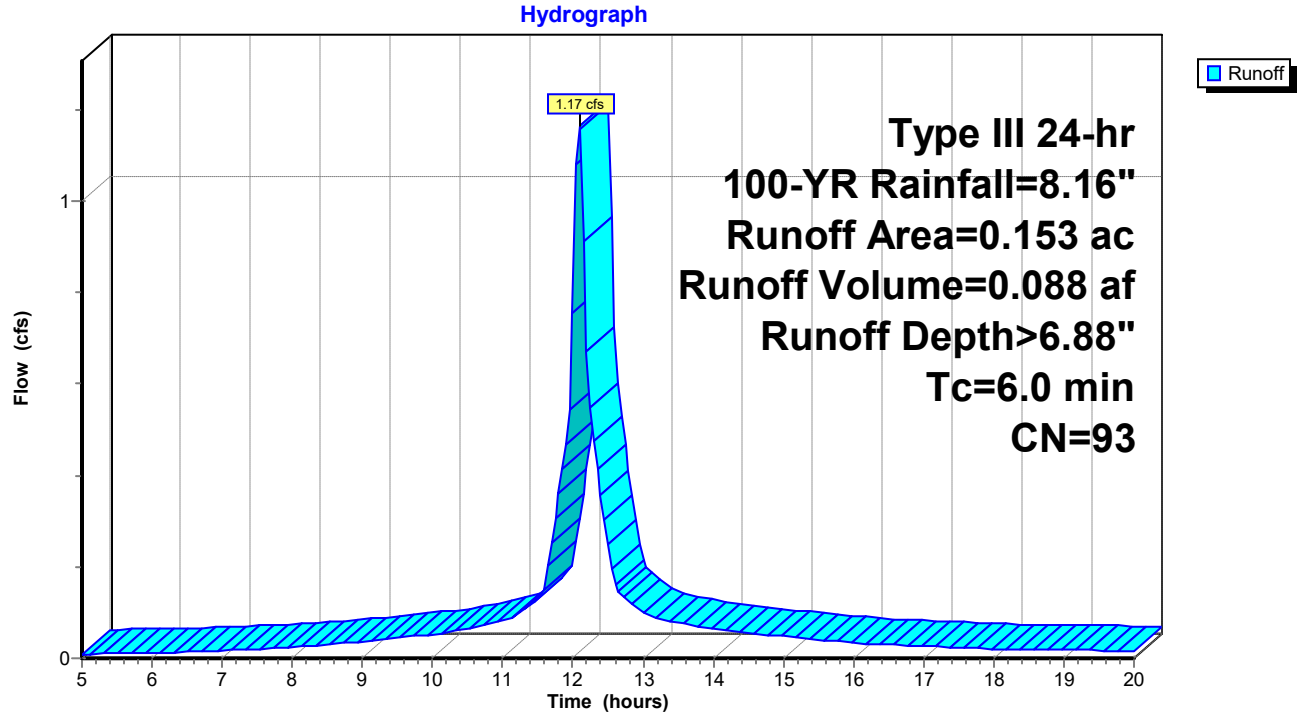
Runoff = 1.17 cfs @ 12.09 hrs, Volume= 0.088 af, Depth> 6.88"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.16"

	Area (ac)	CN	Description
	0.013	39	>75% Grass cover, Good, HSG A
*	0.140	98	Paved
	0.153	93	Weighted Average
	0.013		8.50% Pervious Area
	0.140		91.50% Impervious Area

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

Subcatchment PR-20:



Summary for Subcatchment PR-21:

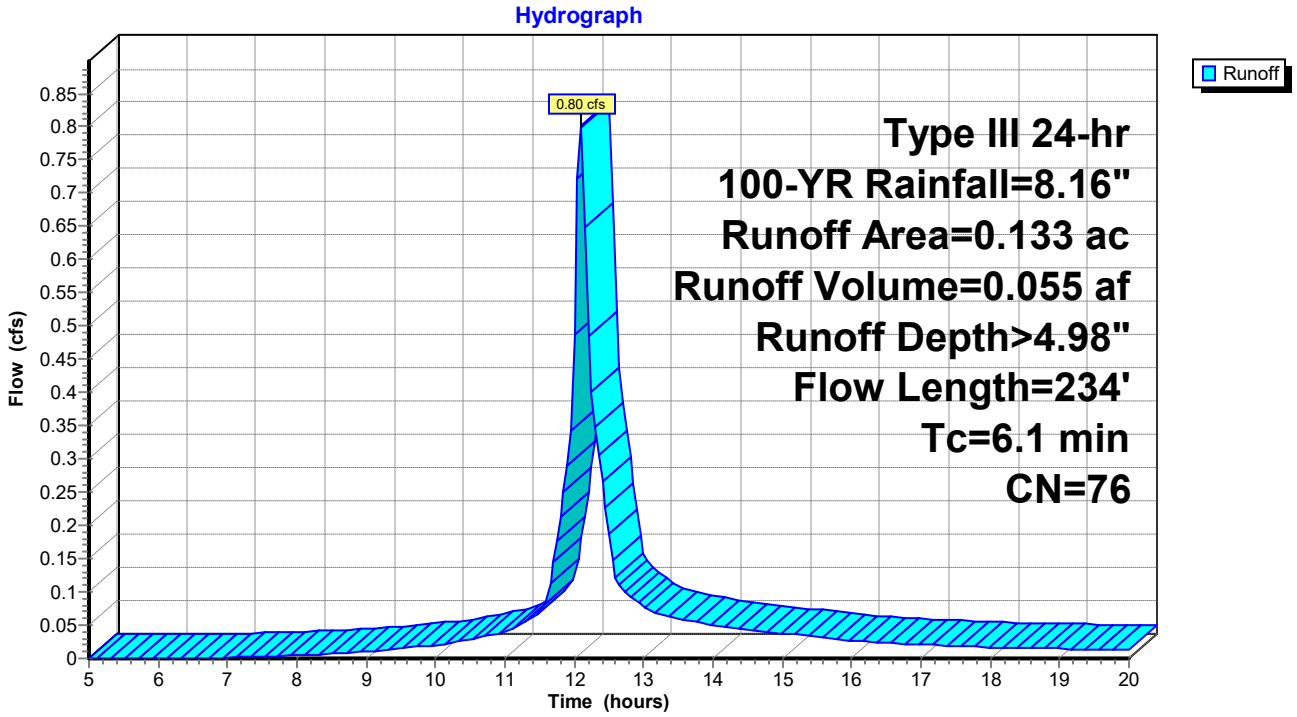
Runoff = 0.80 cfs @ 12.09 hrs, Volume= 0.055 af, Depth> 4.98"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.16"

	Area (ac)	CN	Description
	0.036	39	>75% Grass cover, Good, HSG A
	0.020	61	>75% Grass cover, Good, HSG B
*	0.077	98	Paved
	0.133	76	Weighted Average
	0.056		42.11% Pervious Area
	0.077		57.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	48	0.0290	0.18		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.0	10	0.0300	3.52		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.3	21	0.0380	1.36		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
0.9	95	0.0080	1.82		**Shallow Concentrated Flow, D-E** Paved Kv= 20.3 fps
0.1	16	0.0100	3.10	0.61	**Pipe Channel, E-F** 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.012
0.2	44	0.0100	3.75	1.31	**Pipe Channel, F-G** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
6.1	234	Total			

Subcatchment PR-21:



Summary for Subcatchment PR-22:

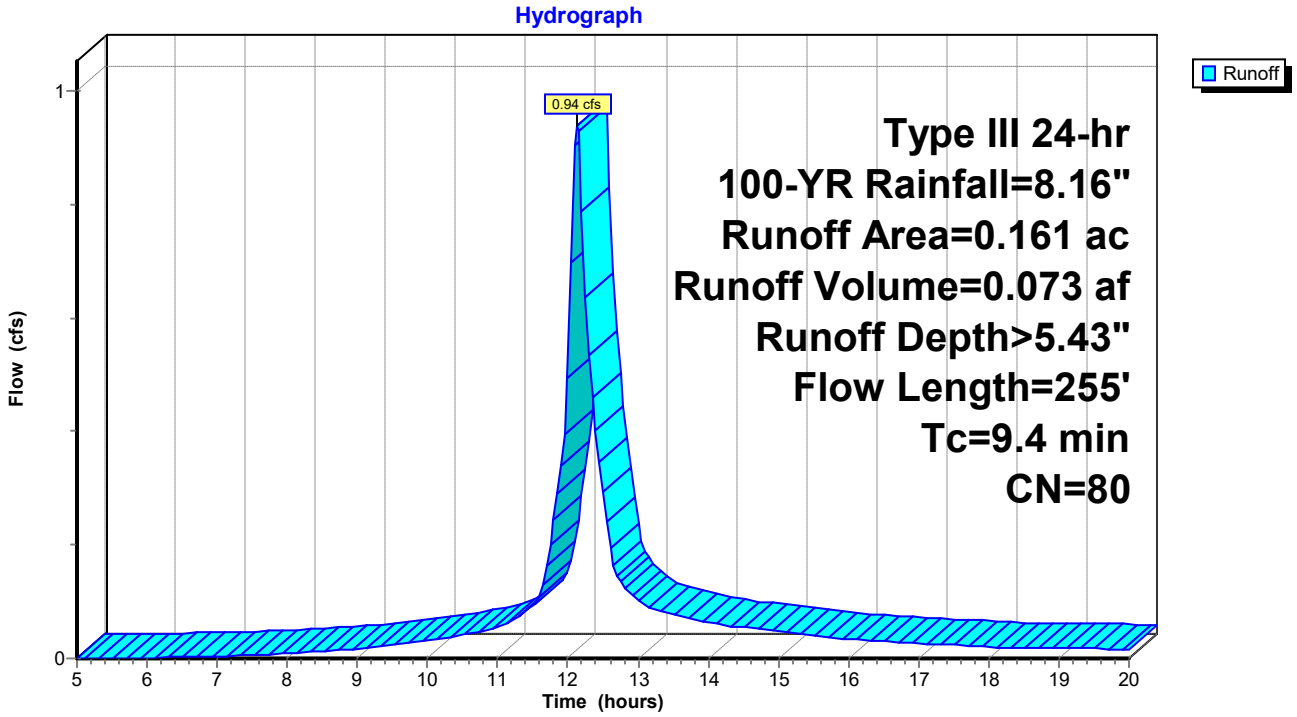
Runoff = 0.94 cfs @ 12.13 hrs, Volume= 0.073 af, Depth> 5.43"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.16"

	Area (ac)	CN	Description
	0.031	39	>75% Grass cover, Good, HSG A
	0.030	61	>75% Grass cover, Good, HSG B
*	0.100	98	Paved
	0.161	80	Weighted Average
	0.061		37.89% Pervious Area
	0.100		62.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	71	0.0130	0.14		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.6	122	0.0250	3.21		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
0.0	18	0.1000	11.86	4.14	**Pipe Channel, C-D** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
0.2	44	0.0100	3.75	1.31	**Pipe Channel, D-E** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
9.4	255	Total			

Subcatchment PR-22:



Summary for Subcatchment PR-23:

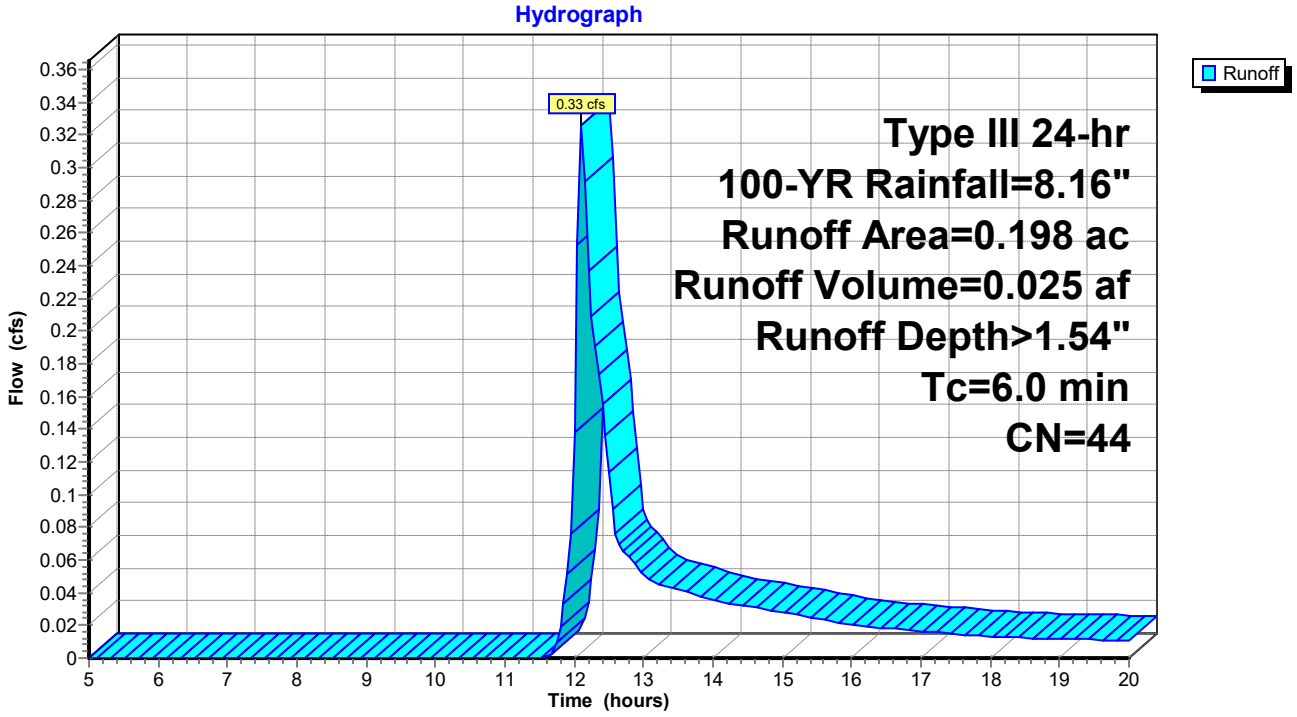
Runoff = 0.33 cfs @ 12.11 hrs, Volume= 0.025 af, Depth> 1.54"
Routed to Pond IB-2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.16"

	Area (ac)	CN	Description
	0.069	39	>75% Grass cover, Good, HSG A
	0.013	61	>75% Grass cover, Good, HSG B
	0.091	30	Meadow, non-grazed, HSG A
*	0.025	98	Paved
	0.198	44	Weighted Average
	0.173		87.37% Pervious Area
	0.025		12.63% Impervious Area

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

Subcatchment PR-23:



Summary for Subcatchment PR-24:

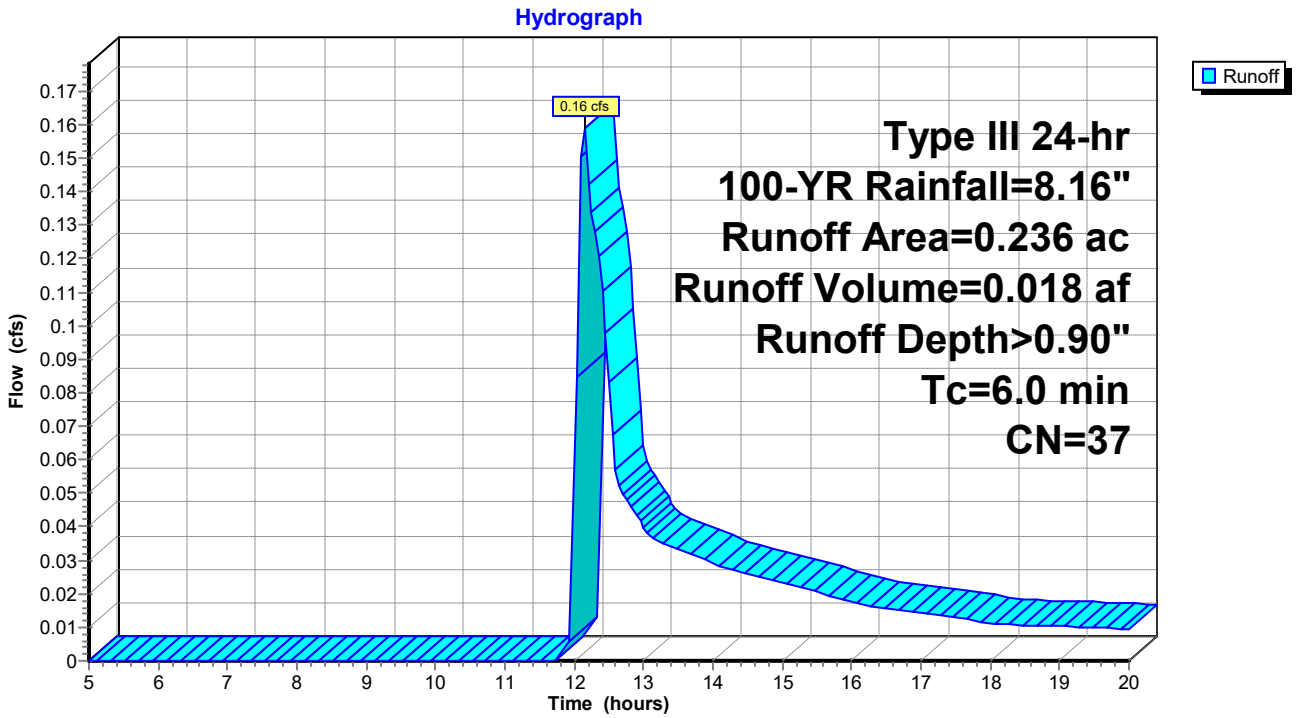
Runoff = 0.16 cfs @ 12.14 hrs, Volume= 0.018 af, Depth> 0.90"
Routed to Pond GT-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.16"

Area (ac)	CN	Description
0.028	39	>75% Grass cover, Good, HSG A
0.016	61	>75% Grass cover, Good, HSG B
0.157	30	Meadow, non-grazed, HSG A
0.035	58	Meadow, non-grazed, HSG B
0.236	37	Weighted Average
0.236		100.00% Pervious Area

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

Subcatchment PR-24:



Summary for Subcatchment PR-25:

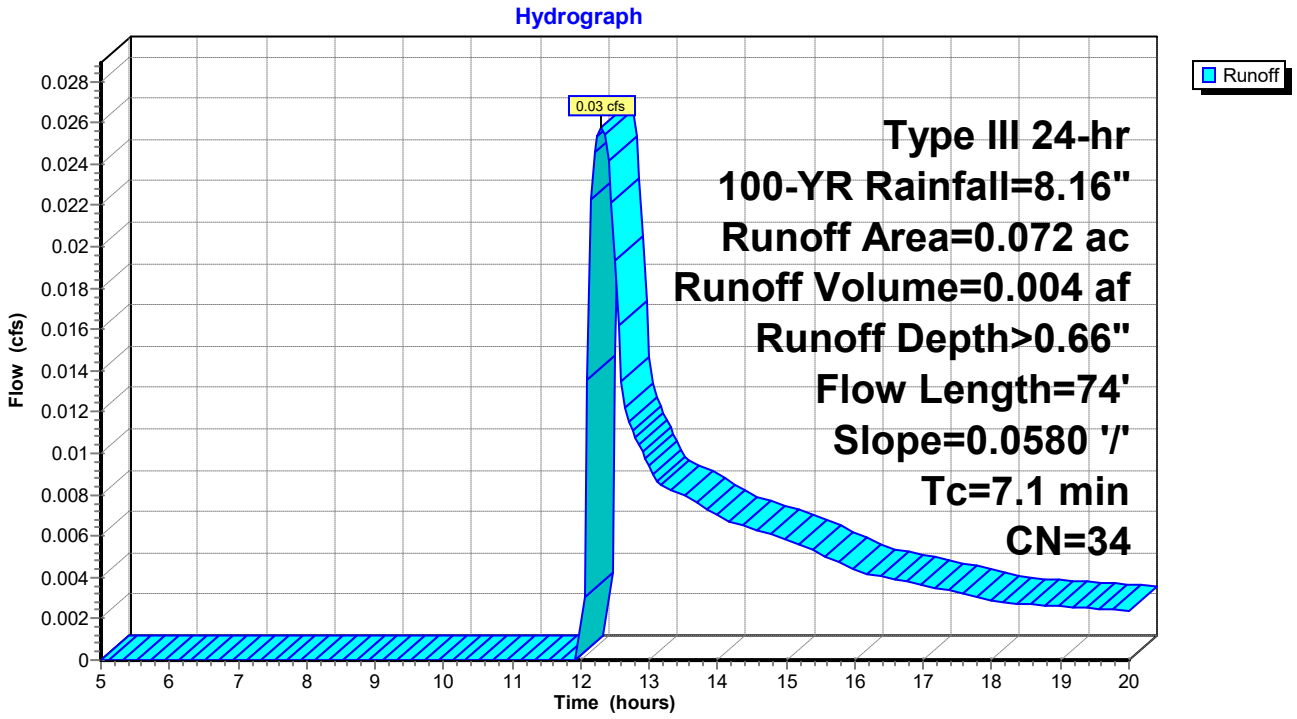
Runoff = 0.03 cfs @ 12.30 hrs, Volume= 0.004 af, Depth> 0.66"
Routed to Pond GT-2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.16"

	Area (ac)	CN	Description
	0.024	39	>75% Grass cover, Good, HSG A
	0.047	30	Meadow, non-grazed, HSG A
*	0.001	98	Paved
	0.072	34	Weighted Average
	0.071		98.61% Pervious Area
	0.001		1.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	74	0.0580	0.17		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.40"

Subcatchment PR-25:



Summary for Subcatchment PR-26:

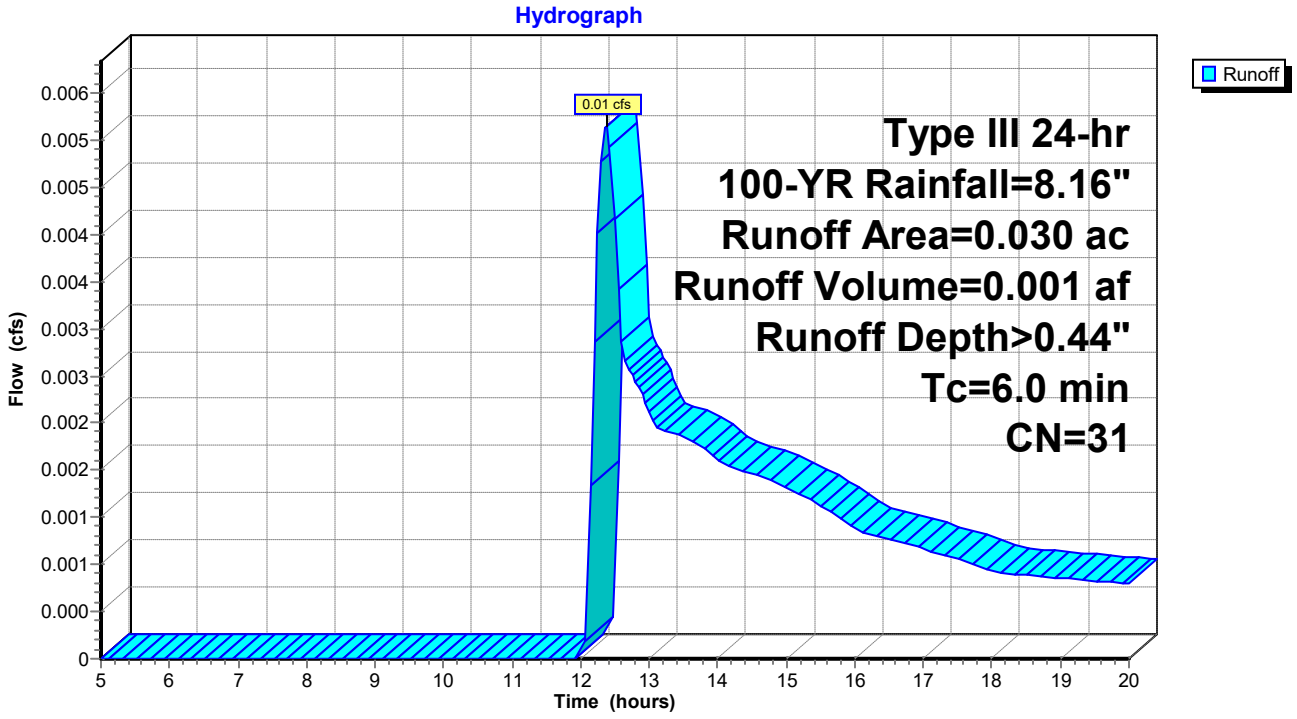
Runoff = 0.01 cfs @ 12.37 hrs, Volume= 0.001 af, Depth> 0.44"
Routed to Pond GT-3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.16"

Area (ac)	CN	Description
0.004	39	>75% Grass cover, Good, HSG A
0.026	30	Meadow, non-grazed, HSG A
0.030	31	Weighted Average
0.030		100.00% Pervious Area

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

Subcatchment PR-26:



Summary for Subcatchment PR-27:

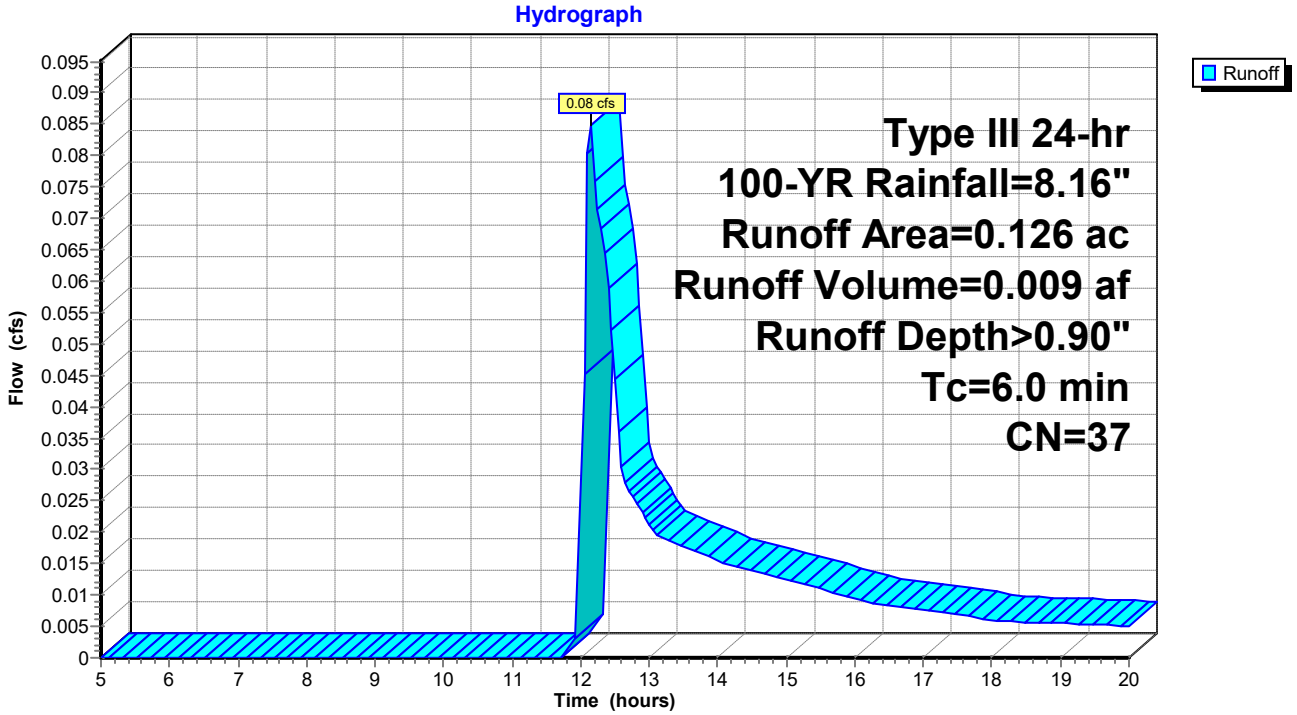
Runoff = 0.08 cfs @ 12.14 hrs, Volume= 0.009 af, Depth> 0.90"
Routed to Pond GT-4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.16"

Area (ac)	CN	Description
0.031	39	>75% Grass cover, Good, HSG A
0.004	61	>75% Grass cover, Good, HSG B
0.074	30	Meadow, non-grazed, HSG A
0.017	58	Meadow, non-grazed, HSG B
0.126	37	Weighted Average
0.126		100.00% Pervious Area

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

Subcatchment PR-27:



Summary for Subcatchment PR-28:

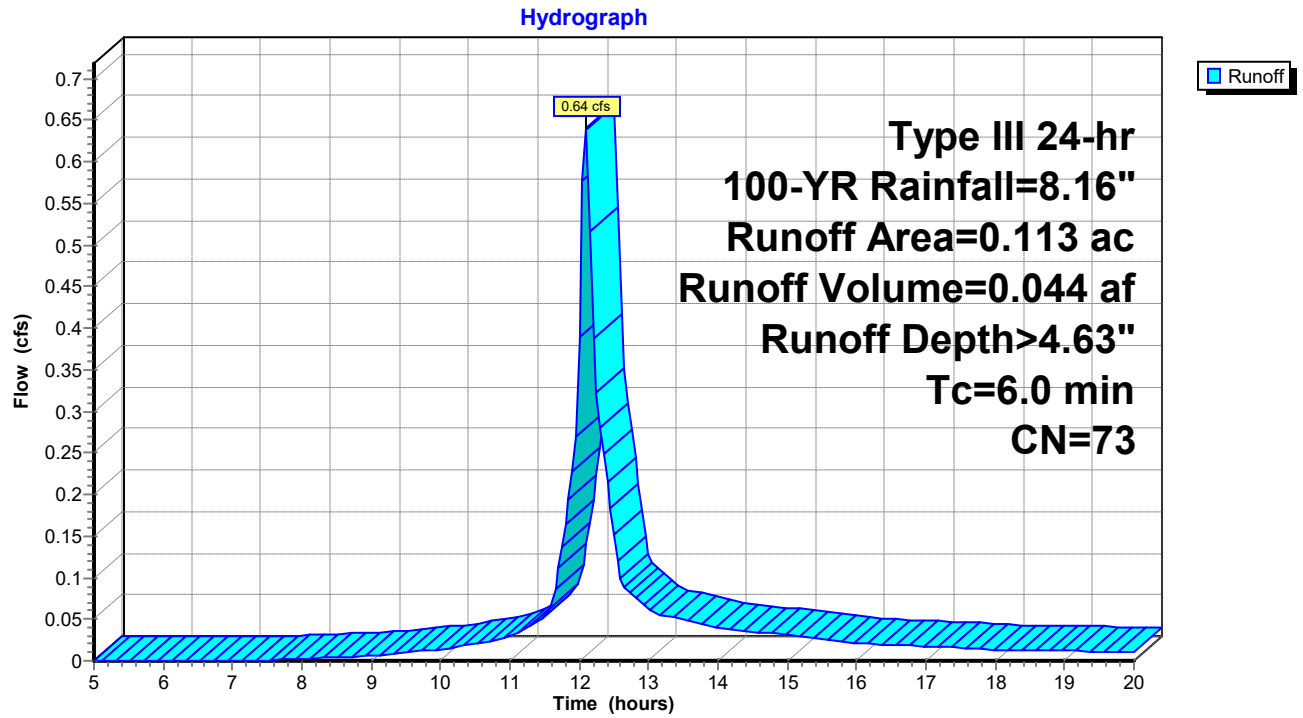
Runoff = 0.64 cfs @ 12.09 hrs, Volume= 0.044 af, Depth> 4.63"
Routed to Pond GT-5 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.16"

	Area (ac)	CN	Description
	0.031	61	>75% Grass cover, Good, HSG B
	0.043	58	Meadow, non-grazed, HSG B
*	0.039	98	Paved
	0.113	73	Weighted Average
	0.074		65.49% Pervious Area
	0.039		34.51% Impervious Area

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

Subcatchment PR-28:



Summary for Subcatchment PR-29:

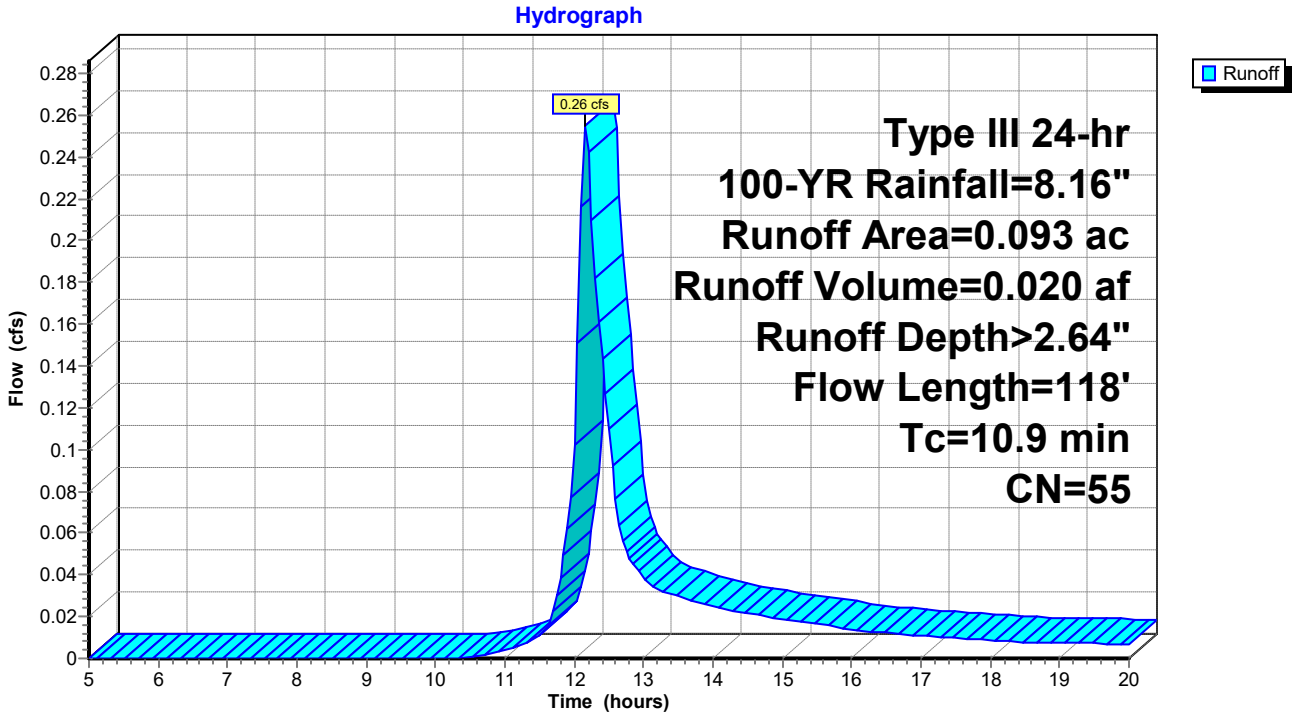
Runoff = 0.26 cfs @ 12.16 hrs, Volume= 0.020 af, Depth> 2.64"
Routed to Pond GT-6 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.16"

	Area (ac)	CN	Description
	0.001	30	Woods, Good, HSG A
	0.008	55	Woods, Good, HSG B
	0.011	39	>75% Grass cover, Good, HSG A
	0.021	61	>75% Grass cover, Good, HSG B
	0.026	30	Meadow, non-grazed, HSG A
	0.010	58	Meadow, non-grazed, HSG B
*	0.016	98	Paved
	0.093	55	Weighted Average
	0.077		82.80% Pervious Area
	0.016		17.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7	100	0.0380	0.16		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.40"
0.2	18	0.0780	1.95		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
10.9	118	Total			

Subcatchment PR-29:



Summary for Subcatchment RA-1:

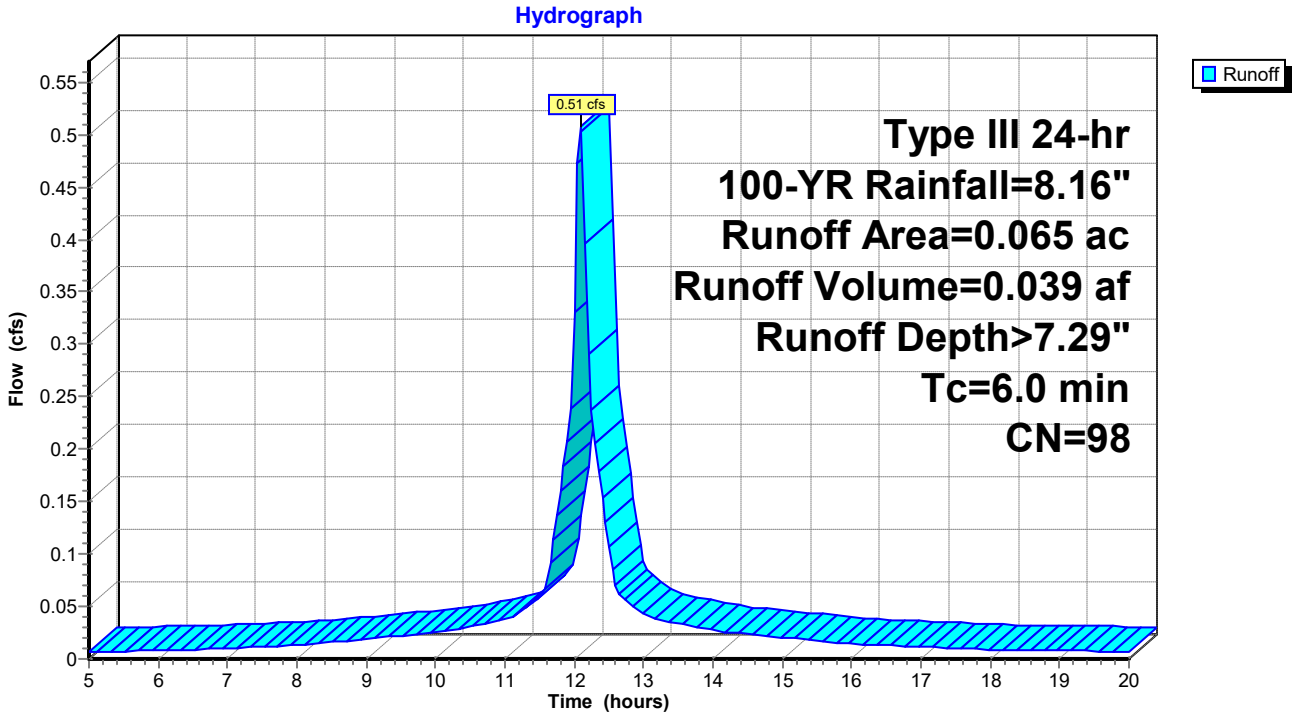
Runoff = 0.51 cfs @ 12.09 hrs, Volume= 0.039 af, Depth> 7.29"
Routed to Pond UG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.16"

	Area (ac)	CN	Description
*	0.065	98	Roof
	0.065		100.00% Impervious Area

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

Subcatchment RA-1:



Summary for Subcatchment RA-2:

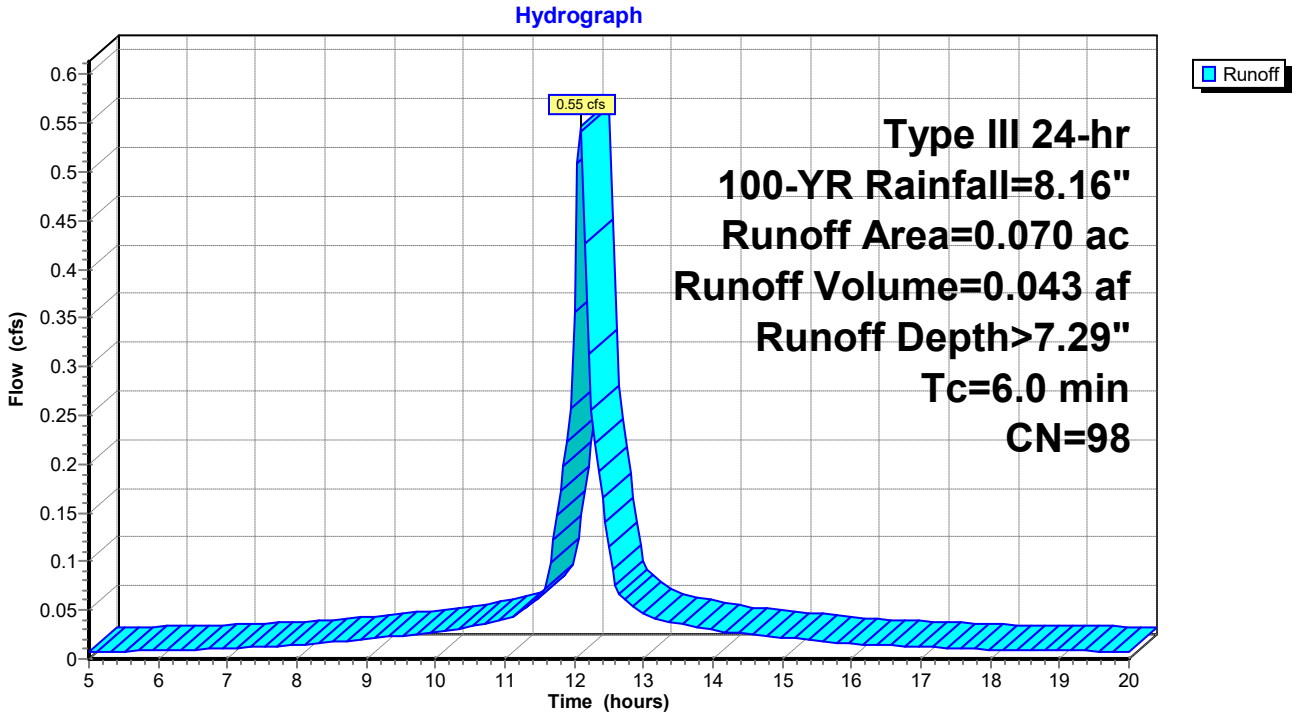
Runoff = 0.55 cfs @ 12.09 hrs, Volume= 0.043 af, Depth> 7.29"
Routed to Pond UG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.16"

	Area (ac)	CN	Description
*	0.070	98	Roof
	0.070		100.00% Impervious Area

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

Subcatchment RA-2:



Summary for Subcatchment RA-3:

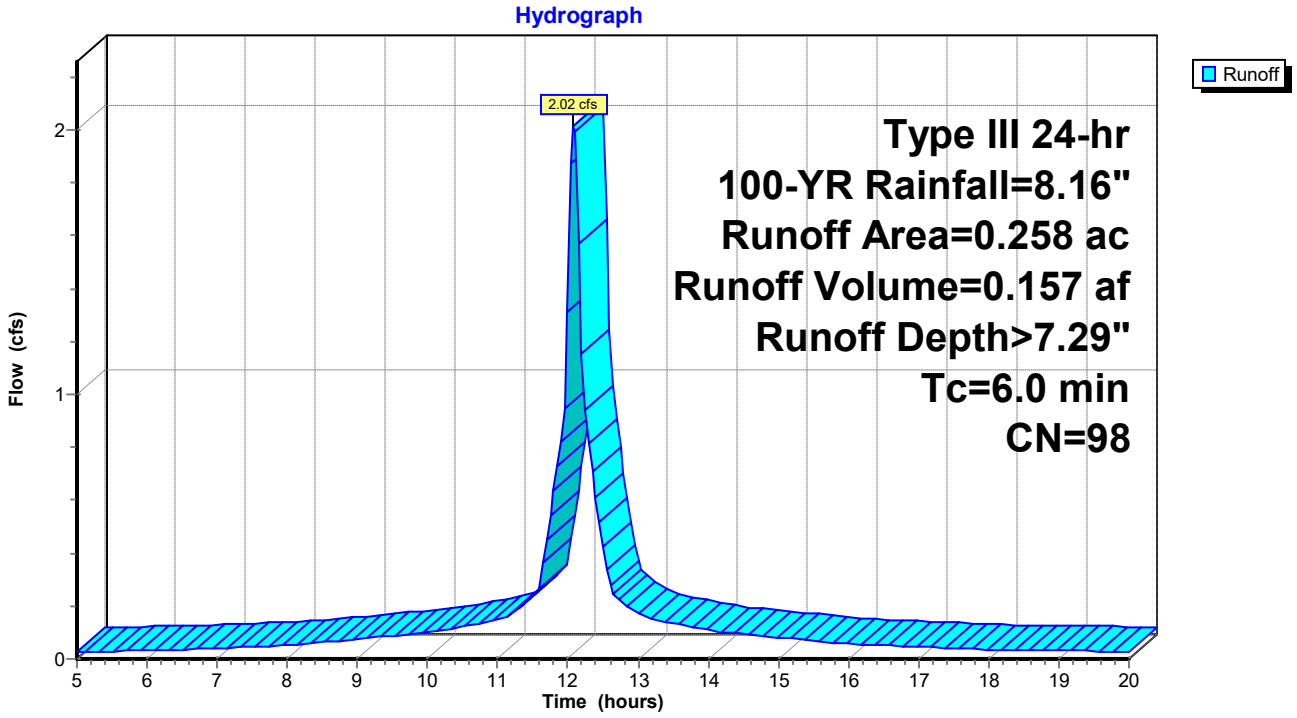
Runoff = 2.02 cfs @ 12.09 hrs, Volume= 0.157 af, Depth> 7.29"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.16"

	Area (ac)	CN	Description
*	0.258	98	Roof
	0.258		100.00% Impervious Area

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

Subcatchment RA-3:



Summary for Subcatchment RA-4:

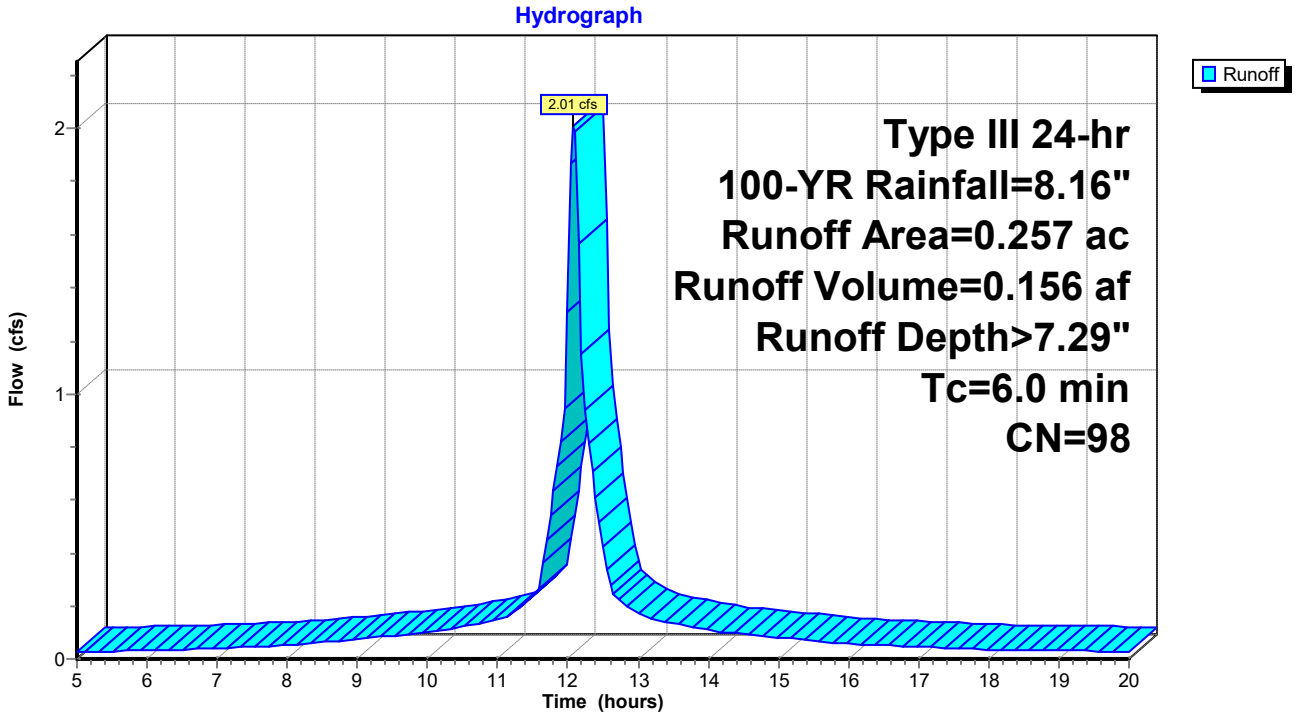
Runoff = 2.01 cfs @ 12.09 hrs, Volume= 0.156 af, Depth> 7.29"
Routed to Pond RG-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.16"

	Area (ac)	CN	Description
*	0.257	98	Roof
	0.257		100.00% Impervious Area

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

Subcatchment RA-4:

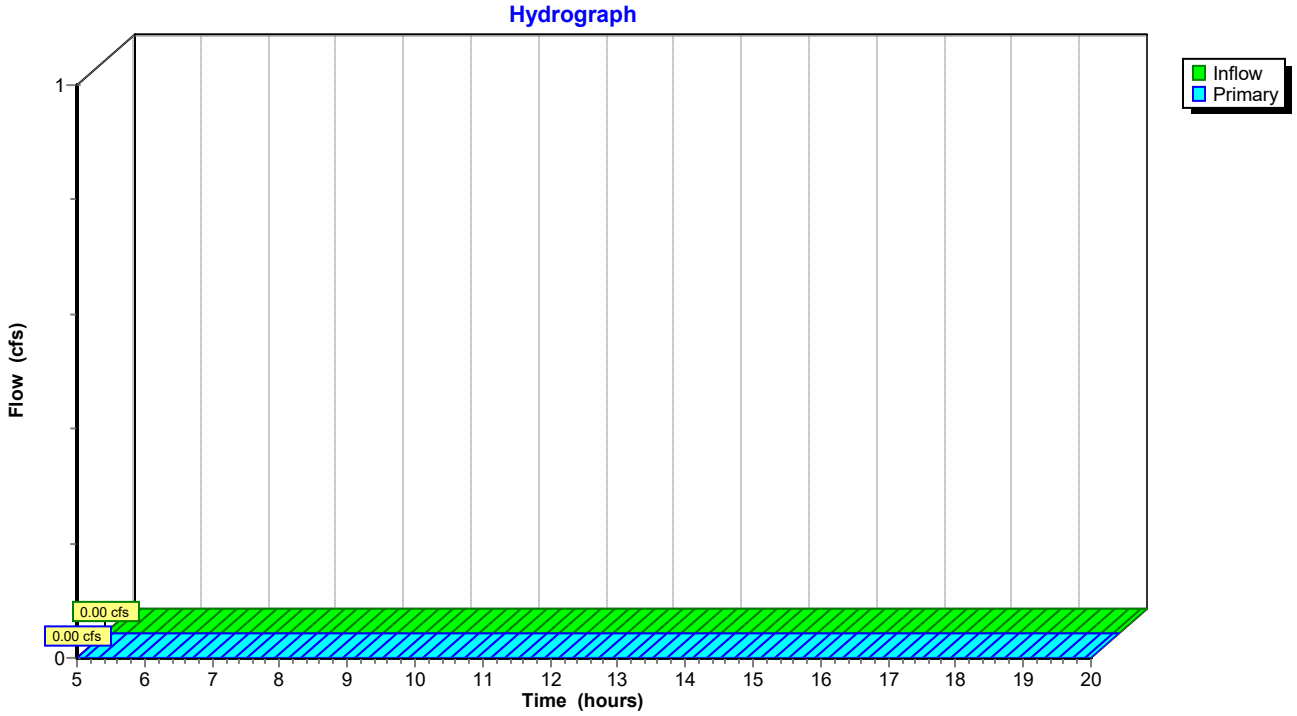


Summary for Pond AP: Surrounding Wetlands

Inflow	=	0.00 cfs @	5.00 hrs, Volume=	0.000 af
Primary	=	0.00 cfs @	5.00 hrs, Volume=	0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond AP: Surrounding Wetlands



Summary for Pond GT-1:

Inflow Area = 0.236 ac, 0.00% Impervious, Inflow Depth > 0.90" for 100-YR event
Inflow = 0.16 cfs @ 12.14 hrs, Volume= 0.018 af
Outflow = 0.05 cfs @ 12.10 hrs, Volume= 0.018 af, Atten= 70%, Lag= 0.0 min
Discarded = 0.05 cfs @ 12.10 hrs, Volume= 0.018 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond AP : Surrounding Wetlands

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 20.41' @ 12.75 hrs Surf.Area= 862 sf Storage= 141 cf

Plug-Flow detention time= 21.4 min calculated for 0.018 af (99% of inflow)
Center-of-Mass det. time= 20.7 min (881.9 - 861.2)

Volume	Invert	Avail.Storage	Storage Description
#1	20.00'	690 cf	**Gravel Trench Stage Storage (Prismatic)** Listed below (Recalc) 1,724 cf Overall x 40.0% Voids

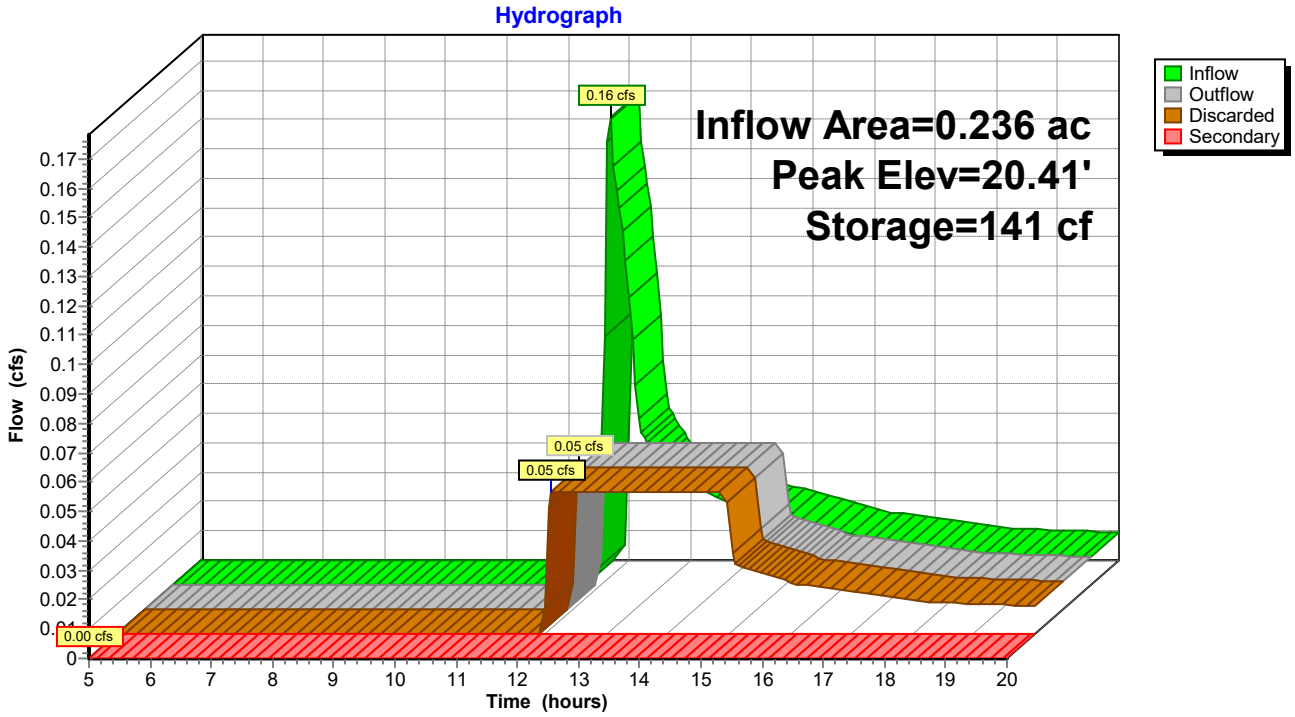
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
20.00	862	0	0
21.00	862	862	862
22.00	862	862	1,724

Device	Routing	Invert	Outlet Devices
#1	Secondary	22.00'	**590.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Trench (Overflow)** 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	20.00'	**2.410 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.05 cfs @ 12.10 hrs HW=20.06' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.05 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=20.00' (Free Discharge)
1=Top of Trench (Overflow) (Controls 0.00 cfs)

Pond GT-1:


Hydrograph
Inflow Area=0.236 ac
Peak Elev=20.41'
Storage=141 cf
0.16 cfs
0.05 cfs
0.05 cfs
0.00 cfs
Inflow
Outflow
Discarded
Secondary
Flow (cfs)
Time (hours)
0.17
0.16
0.15
0.14
0.13
0.12
0.11
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

Summary for Pond GT-2:

Inflow Area = 0.072 ac, 1.39% Impervious, Inflow Depth > 0.66" for 100-YR event
Inflow = 0.03 cfs @ 12.30 hrs, Volume= 0.004 af
Outflow = 0.01 cfs @ 12.15 hrs, Volume= 0.004 af, Atten= 46%, Lag= 0.0 min
Discarded = 0.01 cfs @ 12.15 hrs, Volume= 0.004 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond AP : Surrounding Wetlands

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 23.65' @ 12.60 hrs Surf.Area= 251 sf Storage= 16 cf

Plug-Flow detention time= 5.7 min calculated for 0.004 af (100% of inflow)
Center-of-Mass det. time= 5.2 min (882.4 - 877.2)

Volume	Invert	Avail.Storage	Storage Description
#1	23.50'	151 cf	**Gravel Trench Stage Storage (Prismatic)** Listed below (Recalc) 377 cf Overall x 40.0% Voids

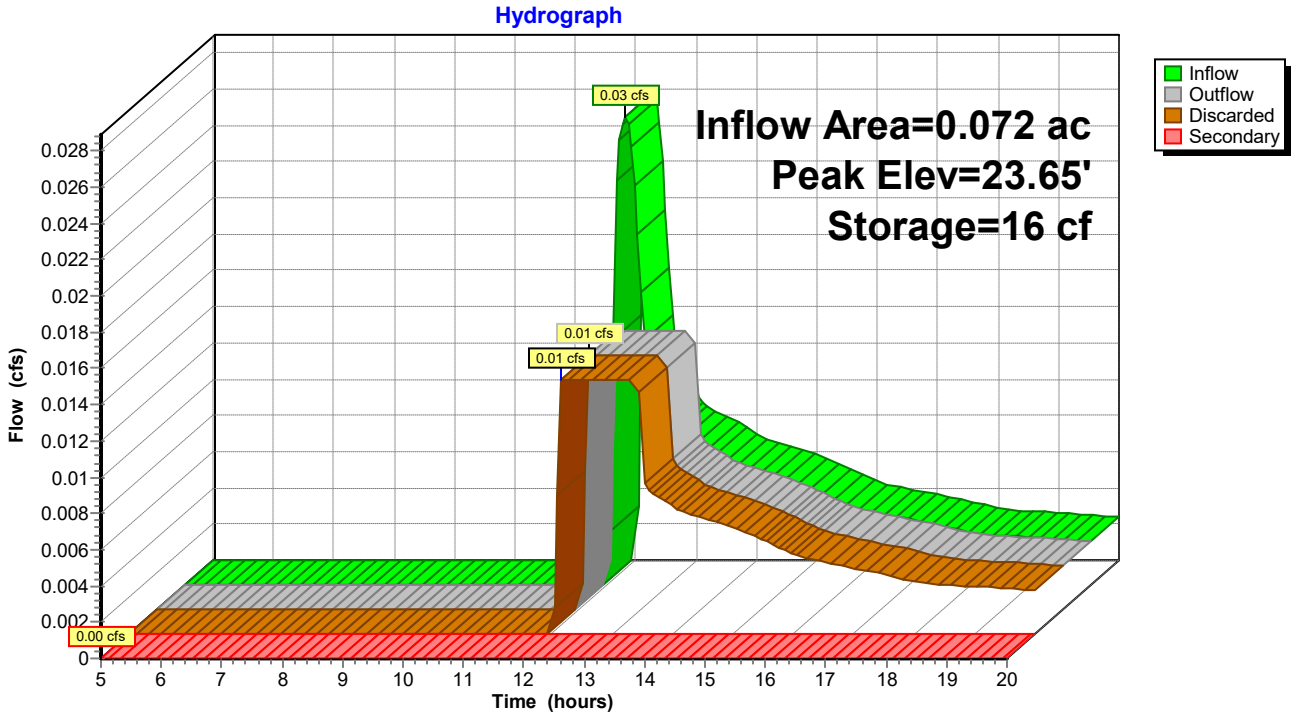
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
23.50	251	0	0
24.00	251	126	126
25.00	251	251	377

Device	Routing	Invert	Outlet Devices
#1	Secondary	25.00'	**65.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Trench (Overflow)** 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	23.50'	**2.410 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.01 cfs @ 12.15 hrs HW=23.52' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 0.01 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=23.50' (Free Discharge)
↑**1=Top of Trench (Overflow)** (Controls 0.00 cfs)

Pond GT-2:


Hydrograph
Inflow Area=0.072 ac
Peak Elev=23.65'
Storage=16 cf
0.03 cfs
0.01 cfs
0.01 cfs
0.00 cfs
Inflow
Outflow
Discarded
Secondary
Flow (cfs)
0.028
0.026
0.024
0.022
0.02
0.018
0.016
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Time (hours)

Summary for Pond GT-3:

Inflow Area = 0.030 ac, 0.00% Impervious, Inflow Depth > 0.44" for 100-YR event
Inflow = 0.01 cfs @ 12.37 hrs, Volume= 0.001 af
Outflow = 0.01 cfs @ 12.35 hrs, Volume= 0.001 af, Atten= 7%, Lag= 0.0 min
Discarded = 0.01 cfs @ 12.35 hrs, Volume= 0.001 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-2 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 27.52' @ 12.45 hrs Surf.Area= 94 sf Storage= 1 cf

Plug-Flow detention time= 1.8 min calculated for 0.001 af (100% of inflow)
Center-of-Mass det. time= 1.3 min (899.2 - 897.9)

Volume	Invert	Avail.Storage	Storage Description
#1	27.50'	56 cf	**Gravel Trench Stage Storage (Prismatic)** Listed below (Recalc) 141 cf Overall x 40.0% Voids

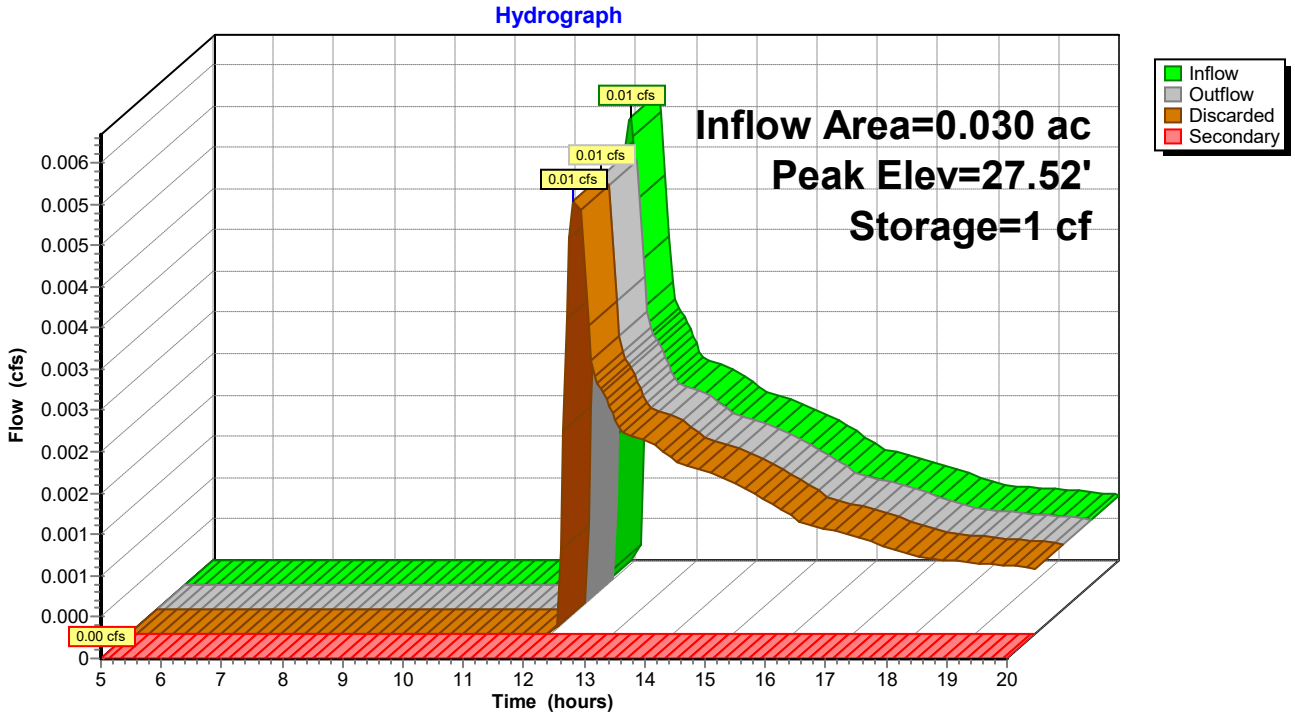
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
27.50	94	0	0
28.00	94	47	47
29.00	94	94	141

Device	Routing	Invert	Outlet Devices
#1	Secondary	29.00'	**30.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Trench (Overflow)** 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	27.50'	**2.410 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.01 cfs @ 12.35 hrs HW=27.52' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.01 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=27.50' (Free Discharge)
1=Top of Trench (Overflow) (Controls 0.00 cfs)

Pond GT-3:


Hydrograph
Inflow Area=0.030 ac
Peak Elev=27.52'
Storage=1 cf
Inflow
Outflow
Discarded
Secondary
0.01 cfs
0.01 cfs
0.01 cfs
0.00 cfs
Flow (cfs)
0.006
0.005
0.005
0.004
0.004
0.003
0.003
0.002
0.002
0.001
0.001
0.000
0
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Time (hours)

Summary for Pond GT-4:

Inflow Area = 0.126 ac, 0.00% Impervious, Inflow Depth > 0.90" for 100-YR event
Inflow = 0.08 cfs @ 12.14 hrs, Volume= 0.009 af
Outflow = 0.02 cfs @ 12.05 hrs, Volume= 0.009 af, Atten= 73%, Lag= 0.0 min
Discarded = 0.02 cfs @ 12.05 hrs, Volume= 0.009 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-3 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 22.02' @ 12.93 hrs Surf.Area= 405 sf Storage= 84 cf

Plug-Flow detention time= 30.1 min calculated for 0.009 af (100% of inflow)
Center-of-Mass det. time= 29.7 min (890.8 - 861.2)

Volume	Invert	Avail.Storage	Storage Description
#1	21.50'	243 cf	**Gravel Trench Stage Storage (Prismatic)** Listed below (Recalc) 608 cf Overall x 40.0% Voids

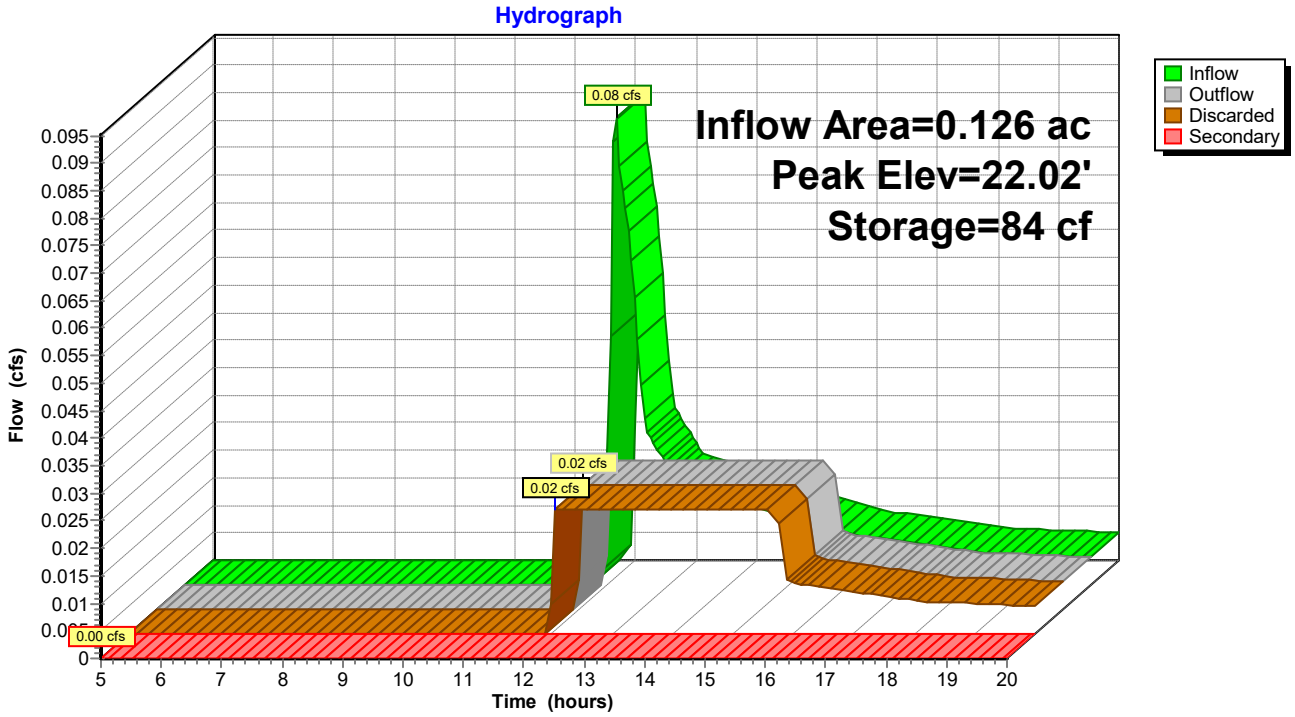
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
21.50	405	0	0
22.00	405	203	203
23.00	405	405	608

Device	Routing	Invert	Outlet Devices
#1	Secondary	23.00'	**74.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Trench (Overflow)** 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	21.50'	**2.410 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.02 cfs @ 12.05 hrs HW=21.52' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.02 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=21.50' (Free Discharge)
1=Top of Trench (Overflow) (Controls 0.00 cfs)

Pond GT-4:


Hydrograph
Inflow Area=0.126 ac
Peak Elev=22.02'
Storage=84 cf
0.08 cfs
0.02 cfs
0.02 cfs
0.00 cfs
Inflow
Outflow
Discarded
Secondary
Flow (cfs)
Time (hours)
0.095
0.09
0.085
0.08
0.075
0.07
0.065
0.06
0.055
0.05
0.045
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0
5
6
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Summary for Pond GT-5:

Inflow Area = 0.113 ac, 34.51% Impervious, Inflow Depth > 4.63" for 100-YR event
Inflow = 0.64 cfs @ 12.09 hrs, Volume= 0.044 af
Outflow = 0.04 cfs @ 11.30 hrs, Volume= 0.029 af, Atten= 94%, Lag= 0.0 min
Discarded = 0.04 cfs @ 11.30 hrs, Volume= 0.029 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-4 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 24.78' @ 14.45 hrs Surf.Area= 640 sf Storage= 968 cf

Plug-Flow detention time= 185.7 min calculated for 0.029 af (67% of inflow)
Center-of-Mass det. time= 116.8 min (900.4 - 783.6)

Volume	Invert	Avail.Storage	Storage Description
#1	21.00'	1,024 cf	**Gravel Trench Stage Storage (Prismatic)** Listed below (Recalc) 2,560 cf Overall x 40.0% Voids

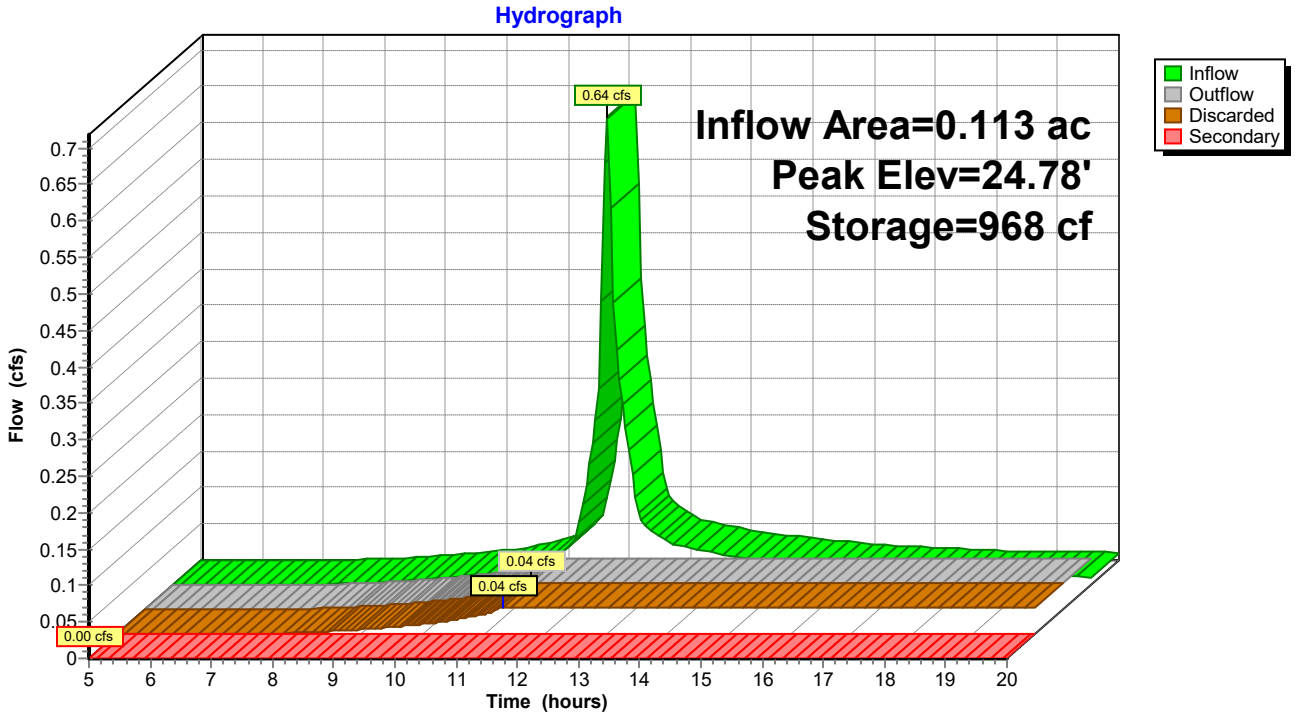
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
21.00	640	0	0
22.00	640	640	640
23.00	640	640	1,280
24.00	640	640	1,920
25.00	640	640	2,560

Device	Routing	Invert	Outlet Devices
#1	Secondary	25.00'	**136.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Trench (Overflow)** 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	21.00'	**2.410 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.04 cfs @ 11.30 hrs HW=21.04' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.04 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=21.00' (Free Discharge)
1=Top of Trench (Overflow) (Controls 0.00 cfs)

Pond GT-5:


Hydrograph
Inflow Area=0.113 ac
Peak Elev=24.78'
Storage=968 cf
0.64 cfs
0.04 cfs
0.04 cfs
0.00 cfs
Inflow
Outflow
Discarded
Secondary
Flow (cfs)
Time (hours)
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
0.55
0.6
0.65
0.7
5
6
7
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Summary for Pond GT-6:

Inflow Area = 0.093 ac, 17.20% Impervious, Inflow Depth > 2.64" for 100-YR event
Inflow = 0.26 cfs @ 12.16 hrs, Volume= 0.020 af
Outflow = 0.05 cfs @ 11.85 hrs, Volume= 0.020 af, Atten= 82%, Lag= 0.0 min
Discarded = 0.05 cfs @ 11.85 hrs, Volume= 0.020 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 26.84' @ 12.85 hrs Surf.Area= 252 sf Storage= 286 cf

Plug-Flow detention time= 52.1 min calculated for 0.020 af (100% of inflow)
Center-of-Mass det. time= 51.9 min (869.8 - 817.9)

Volume	Invert	Avail.Storage	Storage Description
#1	24.00'	302 cf	**Gravel Trench Stage Storage (Prismatic)** Listed below (Recalc) 756 cf Overall x 40.0% Voids

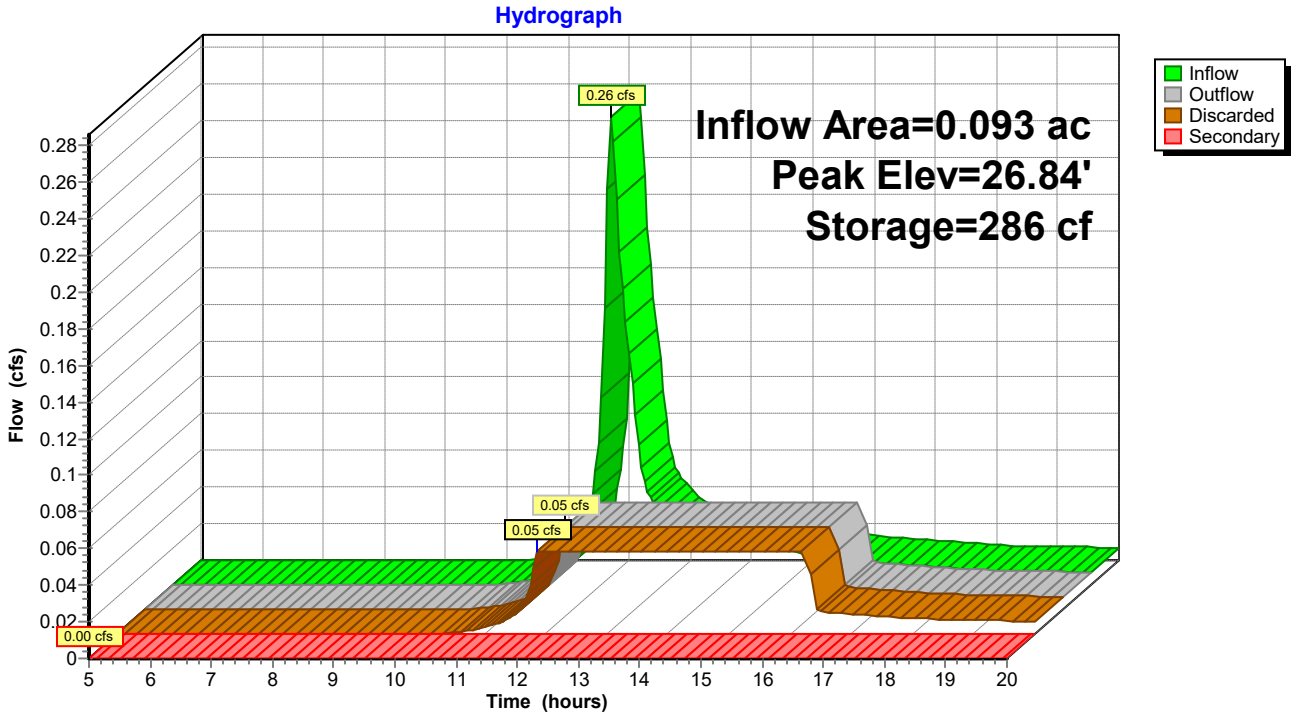
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
24.00	252	0	0
25.00	252	252	252
26.00	252	252	504
27.00	252	252	756

Device	Routing	Invert	Outlet Devices
#1	Secondary	27.00'	**78.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Trench (Overflow)** 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	24.00'	**7.716 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.05 cfs @ 11.85 hrs HW=24.03' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.05 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=24.00' (Free Discharge)
↑—**1=Top of Trench (Overflow)** (Controls 0.00 cfs)

Pond GT-6:


Hydrograph
Inflow Area=0.093 ac
Peak Elev=26.84'
Storage=286 cf
Inflow
Outflow
Discarded
Secondary
0.26 cfs
0.05 cfs
0.05 cfs
0.00 cfs
Flow (cfs)
Time (hours)
0
0.02
0.04
0.06
0.08
0.1
0.12
0.14
0.16
0.18
0.2
0.22
0.24
0.26
0.28
5
6
7
8
9
10
11
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16
17
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19
20

Summary for Pond IB-1:

Inflow Area = 3.343 ac, 73.41% Impervious, Inflow Depth > 1.89" for 100-YR event
Inflow = 7.04 cfs @ 12.09 hrs, Volume= 0.526 af
Outflow = 0.81 cfs @ 12.80 hrs, Volume= 0.505 af, Atten= 88%, Lag= 42.3 min
Discarded = 0.81 cfs @ 12.80 hrs, Volume= 0.505 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond IB-2 :
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond IB-2 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 29.01' @ 12.80 hrs Surf.Area= 4,250 sf Storage= 9,727 cf

Plug-Flow detention time= 123.7 min calculated for 0.505 af (96% of inflow)
Center-of-Mass det. time= 107.9 min (865.5 - 757.6)

Volume	Invert	Avail.Storage	Storage Description
#1	25.50'	20,062 cf	**Infiltration Basin Stage Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.50	1,503	0	0
26.00	1,745	812	812
27.00	2,510	2,128	2,940
28.00	3,387	2,949	5,888
29.00	4,245	3,816	9,704
30.00	5,159	4,702	14,406
31.00	6,152	5,656	20,062

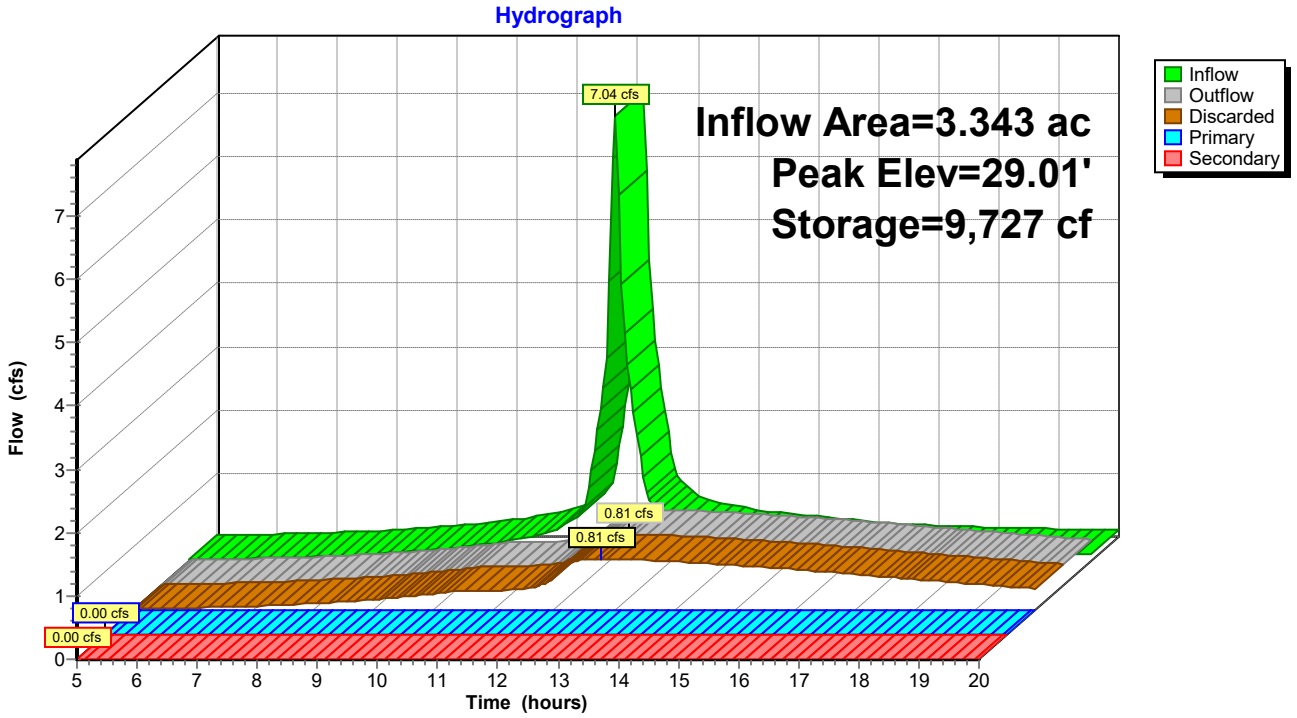
Device	Routing	Invert	Outlet Devices
#1	Secondary	31.00'	**320.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	25.50'	**8.270 in/hr Exfiltration over Surface area**
#3	Primary	27.00'	**6.0" Round 6" HDPE Pipe** L= 74.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 27.00' / 26.63' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#4	Device 3	30.00'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Grate X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads

Discarded OutFlow Max=0.81 cfs @ 12.80 hrs HW=29.01' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.81 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=25.50' (Free Discharge)
└**3=6" HDPE Pipe** (Controls 0.00 cfs)
└**4=18" Nyloplast Drain Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=25.50' (Free Discharge)
└**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond IB-1:



Summary for Pond IB-2:

Inflow Area = 3.541 ac, 70.01% Impervious, Inflow Depth > 0.09" for 100-YR event
Inflow = 0.33 cfs @ 12.11 hrs, Volume= 0.025 af
Outflow = 0.15 cfs @ 12.42 hrs, Volume= 0.025 af, Atten= 55%, Lag= 18.7 min
Discarded = 0.15 cfs @ 12.42 hrs, Volume= 0.025 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 28.73' @ 12.42 hrs Surf.Area= 828 sf Storage= 152 cf

Plug-Flow detention time= 6.5 min calculated for 0.025 af (100% of inflow)
Center-of-Mass det. time= 6.2 min (843.7 - 837.5)

Volume	Invert	Avail.Storage	Storage Description
#1	28.50'	2,225 cf	**Infiltration Basin Stage Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
28.50	503	0	0
29.00	1,212	429	429
30.00	2,380	1,796	2,225

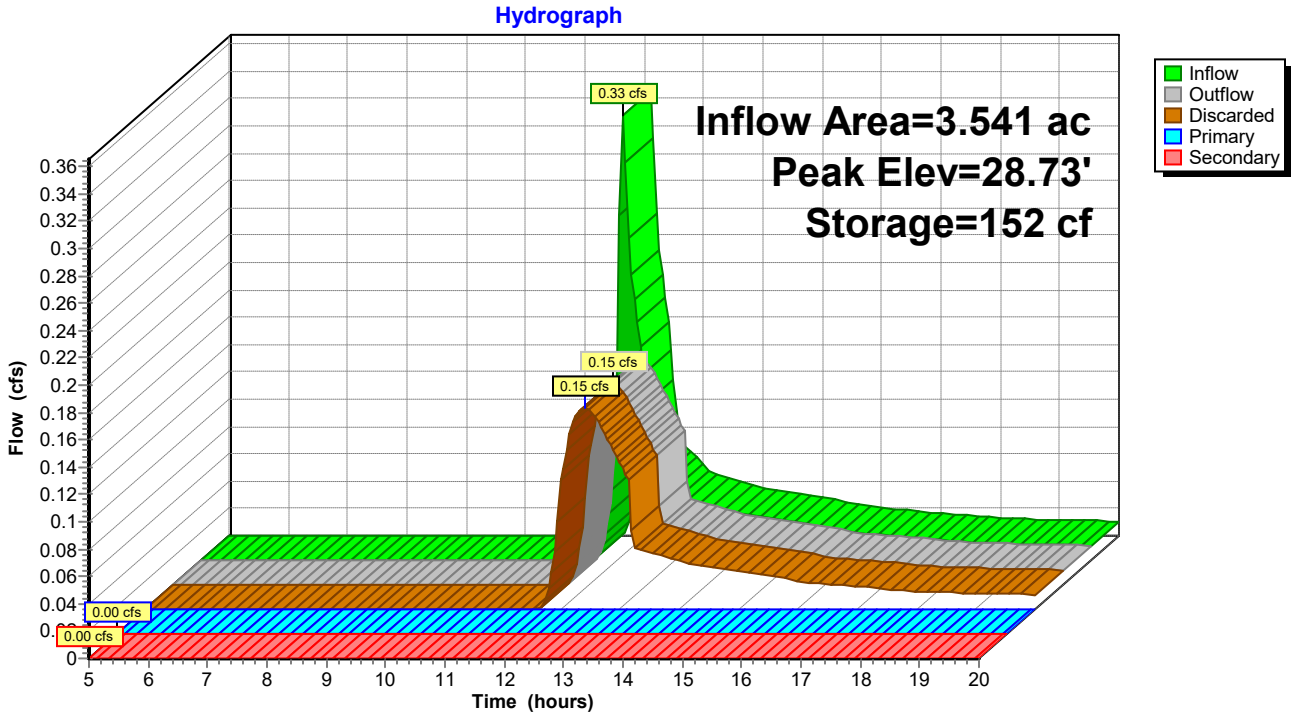
Device	Routing	Invert	Outlet Devices
#1	Secondary	30.00'	**335.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	28.50'	**7.716 in/hr Exfiltration over Surface area**
#3	Device 4	29.00'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Basin X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads
#4	Primary	26.63'	**6.0" Round 6" HDPE** L= 96.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 26.63' / 26.15' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

Discarded OutFlow Max=0.15 cfs @ 12.42 hrs HW=28.73' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 0.15 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=28.50' (Free Discharge)
↑**4=6" HDPE** (Passes 0.00 cfs of 0.74 cfs potential flow)
↑**3=18" Nyloplast Drain Basin** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=28.50' (Free Discharge)
↑**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond IB-2:


Hydrograph
Inflow Area=3.541 ac
Peak Elev=28.73'
Storage=152 cf
Inflow
Outflow
Discarded
Primary
Secondary
0.33 cfs
0.15 cfs
0.15 cfs
0.00 cfs
0.00 cfs
Flow (cfs)
Time (hours)

Summary for Pond RG-1:

Inflow Area = 2.174 ac, 76.22% Impervious, Inflow Depth > 5.86" for 100-YR event
Inflow = 13.21 cfs @ 12.09 hrs, Volume= 1.062 af
Outflow = 2.20 cfs @ 12.61 hrs, Volume= 1.061 af, Atten= 83%, Lag= 31.1 min
Discarded = 2.20 cfs @ 12.61 hrs, Volume= 1.061 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond IB-1 :
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond IB-1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 30.08' @ 12.61 hrs Surf.Area= 7,914 sf Storage= 17,999 cf

Plug-Flow detention time= 83.0 min calculated for 1.061 af (100% of inflow)
Center-of-Mass det. time= 82.4 min (829.8 - 747.4)

Volume	Invert	Avail.Storage	Storage Description
#1	26.00'	36,814 cf	**Rain Garden Stage Storage (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.00	1,626	0	0
27.00	2,502	2,064	2,064
27.50	3,473	1,494	3,558
28.00	4,237	1,928	5,485
29.00	5,896	5,067	10,552
30.00	7,760	6,828	17,380
31.00	9,713	8,737	26,116
32.00	11,682	10,698	36,814

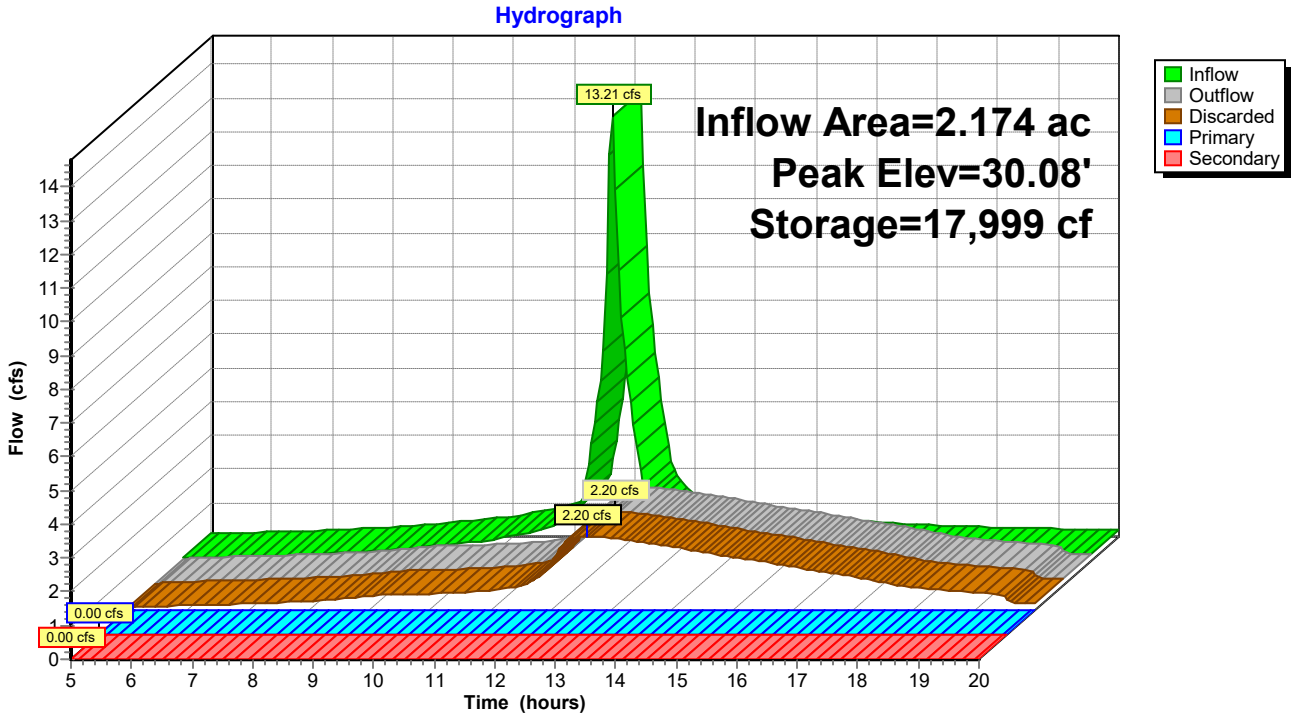
Device	Routing	Invert	Outlet Devices
#1	Secondary	32.00'	**655.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Discarded	26.00'	**12.033 in/hr Exfiltration over Surface area**
#3	Primary	27.07'	**6.0" Round 6" HDPE Pipe** L= 42.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 27.07' / 26.65' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#4	Device 3	30.50'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Grate X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads

Discarded OutFlow Max=2.20 cfs @ 12.61 hrs HW=30.08' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 2.20 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=26.00' (Free Discharge)
└**3=6" HDPE Pipe** (Controls 0.00 cfs)
└**4=18" Nyloplast Drain Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=26.00' (Free Discharge)
└**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond RG-1:



Summary for Pond SWB-1:

Inflow Area = 0.154 ac, 35.71% Impervious, Inflow Depth > 4.73" for 100-YR event
Inflow = 0.66 cfs @ 12.23 hrs, Volume= 0.061 af
Outflow = 0.66 cfs @ 12.24 hrs, Volume= 0.059 af, Atten= 0%, Lag= 0.7 min
Primary = 0.66 cfs @ 12.24 hrs, Volume= 0.059 af
Routed to Pond UG-1 :
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 31.00' @ 12.24 hrs Surf.Area= 275 sf Storage= 92 cf

Plug-Flow detention time= 15.7 min calculated for 0.059 af (98% of inflow)
Center-of-Mass det. time= 6.8 min (797.0 - 790.2)

Volume	Invert	Avail.Storage	Storage Description
#1	30.60'	510 cf	**Basin Stage Storage (Prismatic)** Listed below (Recalc)

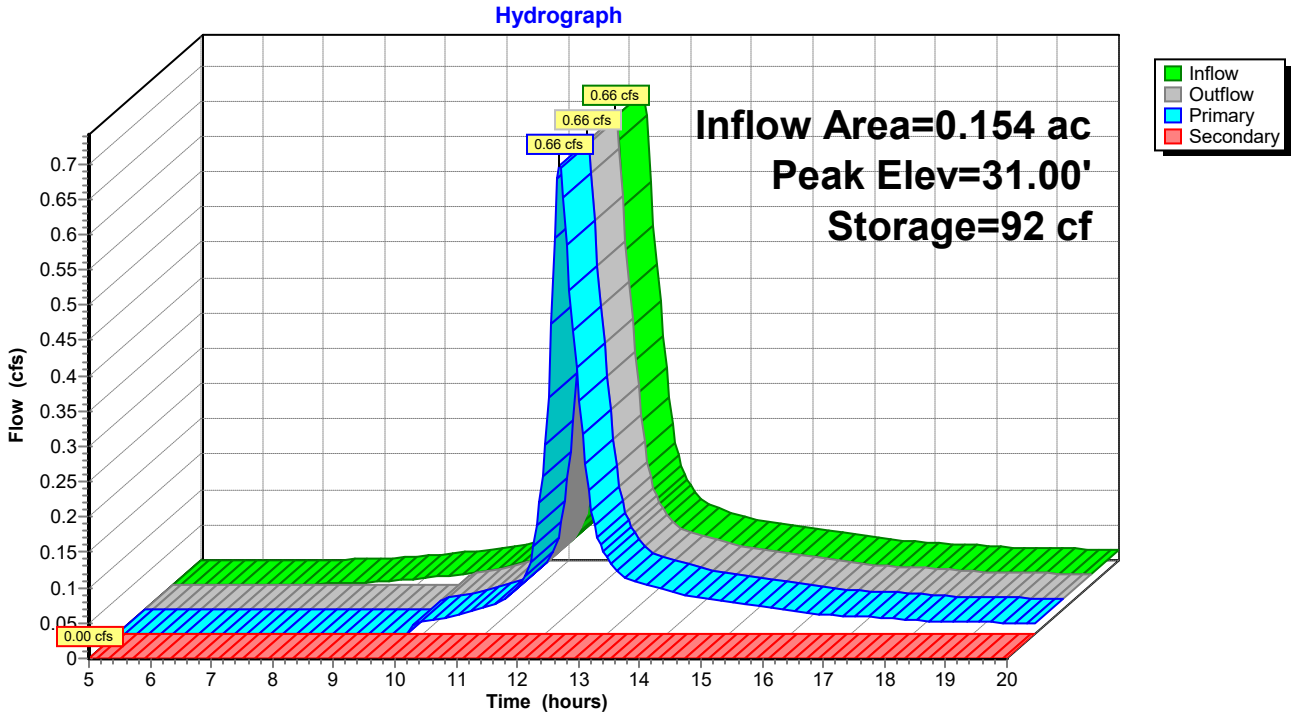
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
30.60	182	0	0
31.00	274	91	91
31.50	412	172	263
32.00	576	247	510

Device	Routing	Invert	Outlet Devices
#1	Secondary	32.00'	**114.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** 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	Primary	28.38'	**6.0" Round 6" HDPE Pipe** L= 23.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 28.38' / 28.15' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#3	Device 2	30.88'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Grate X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.66 cfs @ 12.24 hrs HW=31.00' (Free Discharge)
↑—**2=6" HDPE Pipe** (Passes 0.66 cfs of 1.15 cfs potential flow)
↑—**3=18" Nyloplast Drain Grate** (Weir Controls 0.66 cfs @ 1.14 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=30.60' (Free Discharge)
↑—**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond SWB-1:


Hydrograph
Inflow Area=0.154 ac
Peak Elev=31.00'
Storage=92 cf
Inflow
Outflow
Primary
Secondary
0.66 cfs
0.66 cfs
0.66 cfs
0.00 cfs
Flow (cfs)
Time (hours)
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
0.55
0.6
0.65
0.7
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

Summary for Pond SWB-2:

Inflow Area = 0.101 ac, 71.29% Impervious, Inflow Depth > 5.90" for 100-YR event
Inflow = 0.70 cfs @ 12.09 hrs, Volume= 0.050 af
Outflow = 0.69 cfs @ 12.10 hrs, Volume= 0.047 af, Atten= 1%, Lag= 0.8 min
Primary = 0.69 cfs @ 12.10 hrs, Volume= 0.047 af
Routed to Pond UG-1 :
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond SWB-1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 30.50' @ 12.10 hrs Surf.Area= 393 sf Storage= 150 cf

Plug-Flow detention time= 34.2 min calculated for 0.047 af (95% of inflow)
Center-of-Mass det. time= 15.6 min (777.8 - 762.2)

Volume	Invert	Avail.Storage	Storage Description
#1	30.00'	410 cf	**Basin Stage Storage (Prismatic)** Listed below (Recalc)

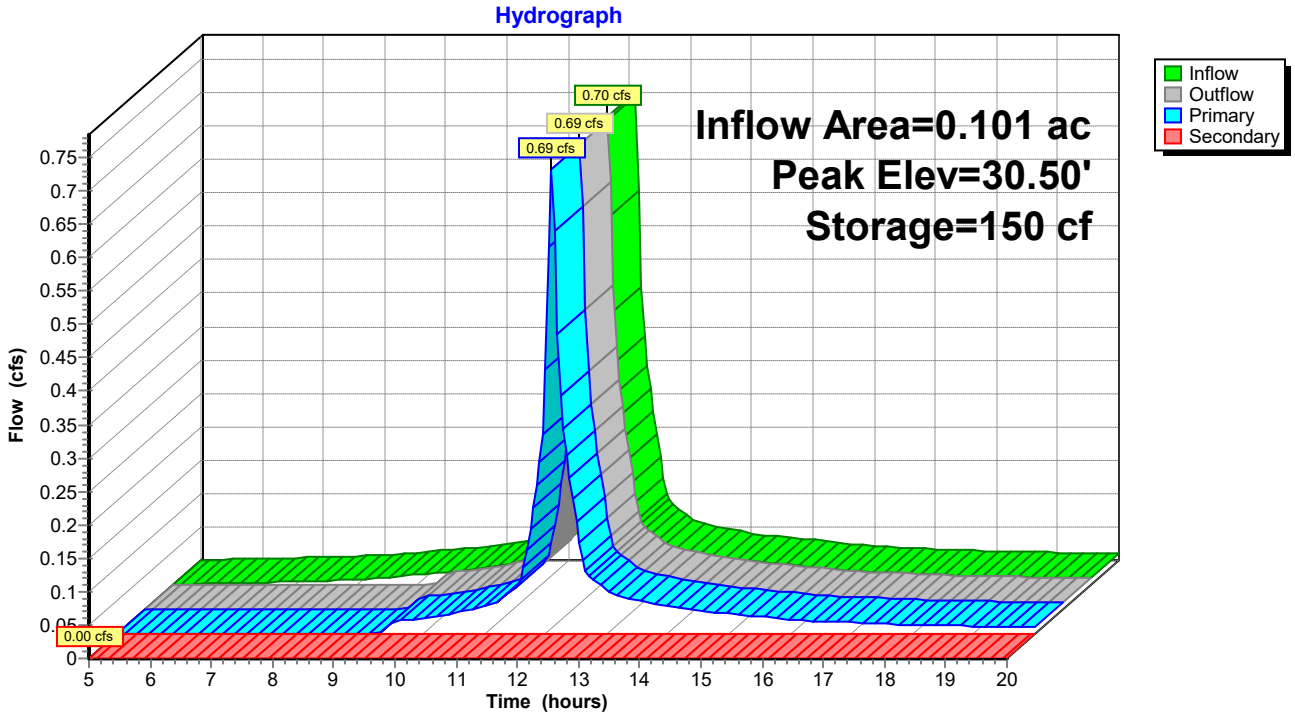
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
30.00	210	0	0
30.50	394	151	151
31.00	640	259	410

Device	Routing	Invert	Outlet Devices
#1	Secondary	31.00'	**164.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** 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	Primary	27.87'	**6.0" Round 6" HDPE Pipe** L= 24.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 27.87' / 27.63' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#3	Device 2	30.37'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Grate X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.69 cfs @ 12.10 hrs HW=30.50' (Free Discharge)
└**2=6" HDPE Pipe** (Passes 0.69 cfs of 1.15 cfs potential flow)
└**3=18" Nyloplast Drain Grate** (Weir Controls 0.69 cfs @ 1.16 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=30.00' (Free Discharge)
└**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond SWB-2:


Hydrograph
Inflow Area=0.101 ac
Peak Elev=30.50'
Storage=150 cf
0.70 cfs
0.69 cfs
0.69 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
0.55
0.6
0.65
0.7
0.75
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

Summary for Pond SWB-3:

Inflow Area = 0.052 ac, 44.23% Impervious, Inflow Depth > 3.19" for 100-YR event
Inflow = 0.20 cfs @ 12.10 hrs, Volume= 0.014 af
Outflow = 0.19 cfs @ 12.16 hrs, Volume= 0.011 af, Atten= 7%, Lag= 3.9 min
Primary = 0.19 cfs @ 12.16 hrs, Volume= 0.011 af
Routed to Pond UG-1 :
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond SWB-2 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 31.00' @ 12.16 hrs Surf.Area= 425 sf Storage= 160 cf

Plug-Flow detention time= 91.5 min calculated for 0.011 af (77% of inflow)
Center-of-Mass det. time= 32.5 min (838.0 - 805.5)

Volume	Invert	Avail.Storage	Storage Description
#1	30.50'	824 cf	**Basin Stage Storage (Prismatic)** Listed below (Recalc)

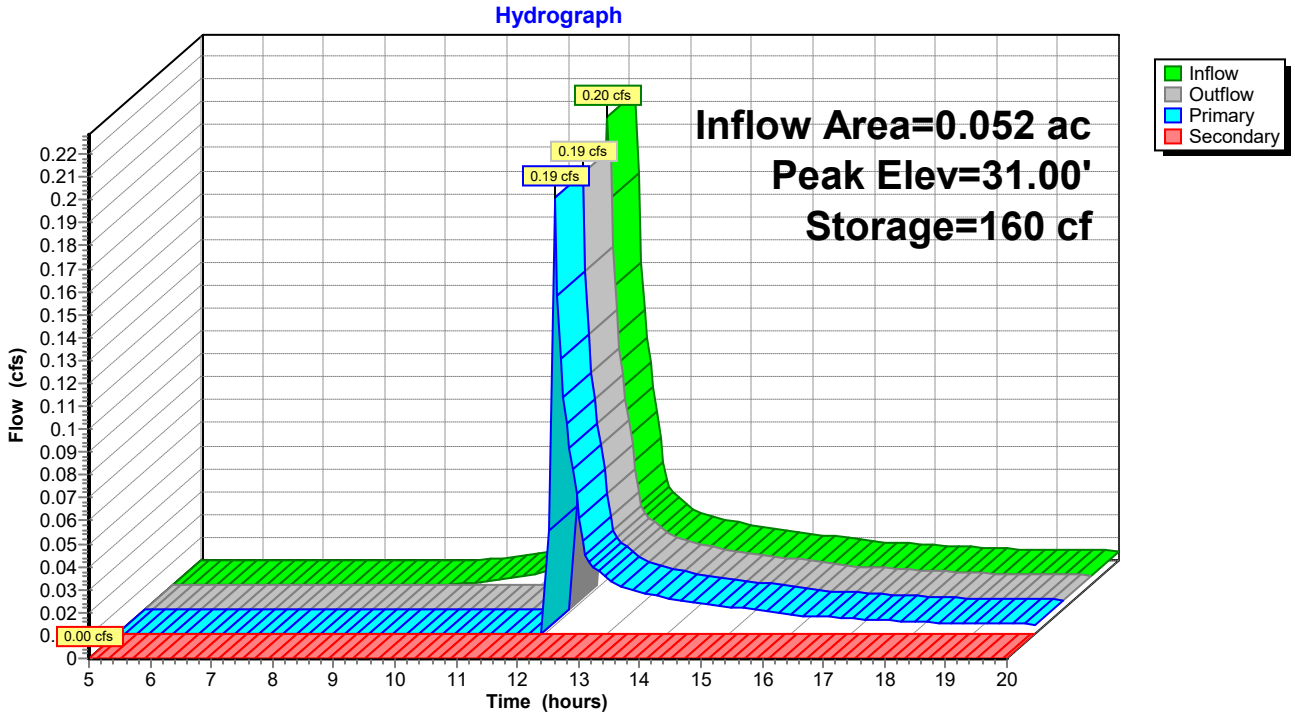
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
30.50	211	0	0
31.00	423	159	159
32.00	908	666	824

Device	Routing	Invert	Outlet Devices
#1	Secondary	32.00'	**168.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** 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	Primary	28.95'	**6.0" Round 6" HDPE Pipe** L= 11.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 28.95' / 27.84' S= 0.1009 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#3	Device 2	30.95'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Grate X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.18 cfs @ 12.16 hrs HW=31.00' (Free Discharge)
└**2=6" HDPE Pipe** (Passes 0.18 cfs of 1.00 cfs potential flow)
└**3=18" Nyloplast Drain Grate** (Weir Controls 0.18 cfs @ 0.74 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=30.50' (Free Discharge)
└**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond SWB-3:


Hydrograph
Inflow Area=0.052 ac
Peak Elev=31.00'
Storage=160 cf
0.20 cfs
0.19 cfs
0.19 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Pond SWB-4:

Inflow Area = 0.743 ac, 48.72% Impervious, Inflow Depth > 3.94" for 100-YR event
Inflow = 3.38 cfs @ 12.09 hrs, Volume= 0.244 af
Outflow = 0.93 cfs @ 12.49 hrs, Volume= 0.238 af, Atten= 72%, Lag= 23.6 min
Primary = 0.93 cfs @ 12.49 hrs, Volume= 0.238 af
Routed to Pond UG-1 :
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond GT-2 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 28.80' @ 12.49 hrs Surf.Area= 0.060 ac Storage= 0.077 af

Plug-Flow detention time= 45.8 min calculated for 0.238 af (98% of inflow)
Center-of-Mass det. time= 37.4 min (823.3 - 785.9)

Volume	Invert	Avail.Storage	Storage Description
#1	27.00'	0.164 af	**Stormwater Management Basin Storage (Prismatic)** Listed below (Recalc)

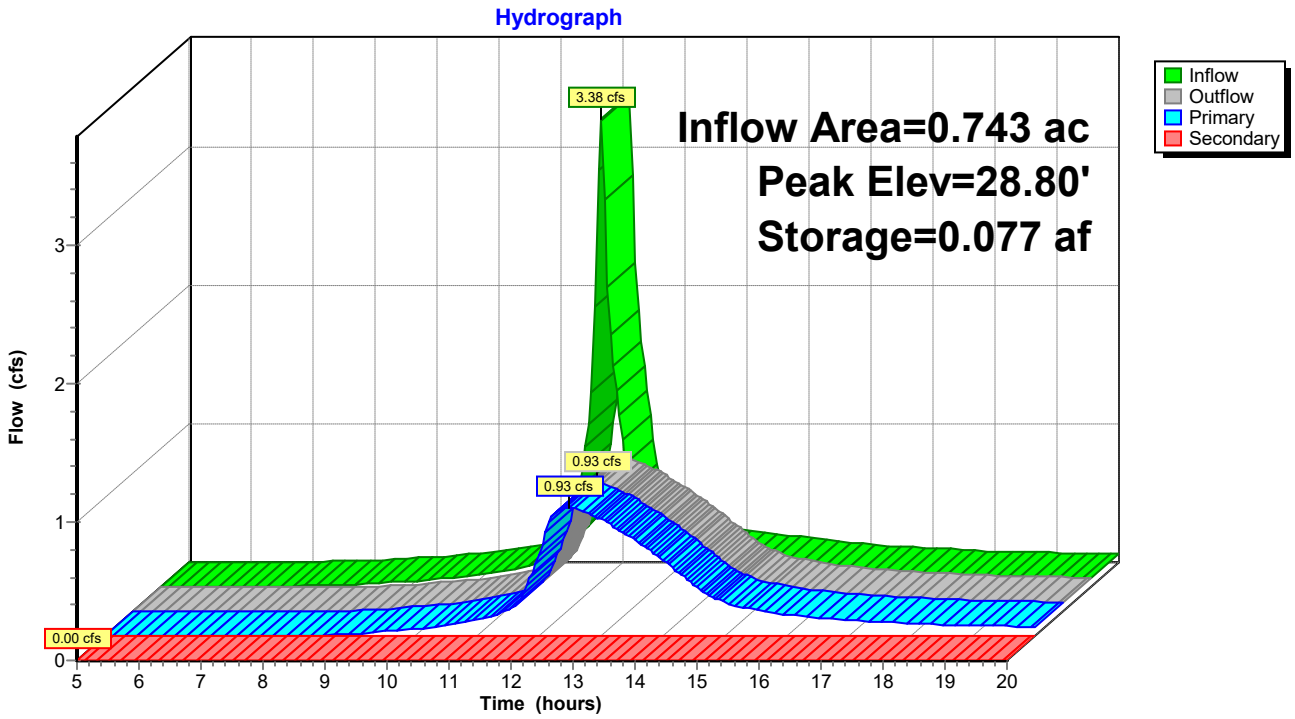
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
27.00	0.026	0.000	0.000
28.00	0.044	0.035	0.035
29.00	0.064	0.054	0.089
30.00	0.086	0.075	0.164

Device	Routing	Invert	Outlet Devices
#1	Secondary	30.00'	**318.0' long + 3.0 '/' SideZ x 3.0' breadth Top of Berm (Overflow)** 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	Primary	26.95'	**8.0" Round 8" HDPE** L= 44.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 26.95' / 26.73' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#3	Device 2	28.95'	**3.6" x 0.9" Horiz. 18" Nyloplast Drain Grate X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads
#4	Device 2	27.00'	**6.0" Round 6" HDPE Inlet Pipe** L= 10.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 27.00' / 26.95' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

Primary OutFlow Max=0.93 cfs @ 12.49 hrs HW=28.80' (Free Discharge)
└**2=8" HDPE** (Passes 0.93 cfs of 1.64 cfs potential flow)
  ├**3=18" Nyloplast Drain Grate** (Controls 0.00 cfs)
  └**4=6" HDPE Inlet Pipe** (Inlet Controls 0.93 cfs @ 4.74 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=27.00' (Free Discharge)
└**1=Top of Berm (Overflow)** (Controls 0.00 cfs)

Pond SWB-4:


Hydrograph
Inflow Area=0.743 ac
Peak Elev=28.80'
Storage=0.077 af
Inflow
Outflow
Primary
Secondary
3.38 cfs
0.93 cfs
0.93 cfs
0.00 cfs
Flow (cfs)
Time (hours)
0
1
2
3
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

Summary for Pond UG-1:

Inflow Area = 1.185 ac, 54.60% Impervious, Inflow Depth > 4.43" for 100-YR event
Inflow = 3.07 cfs @ 12.12 hrs, Volume= 0.438 af
Outflow = 0.66 cfs @ 11.70 hrs, Volume= 0.437 af, Atten= 78%, Lag= 0.0 min
Discarded = 0.66 cfs @ 11.70 hrs, Volume= 0.437 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 25.62' @ 14.13 hrs Surf.Area= 0.048 ac Storage= 0.136 af

Plug-Flow detention time= 78.2 min calculated for 0.437 af (100% of inflow)
Center-of-Mass det. time= 78.0 min (876.3 - 798.2)

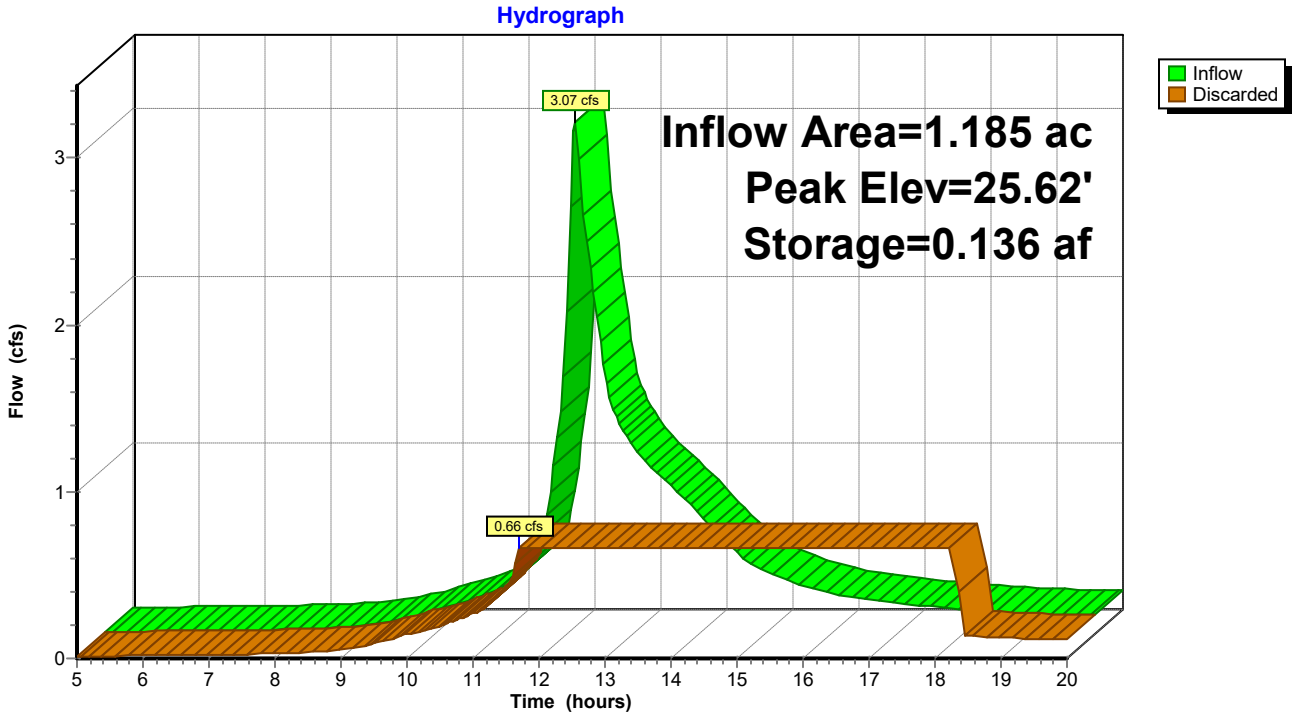
Volume	Invert	Avail.Storage	Storage Description
#1A	21.44'	0.069 af	**29.92'W x 70.23'L x 5.50'H Field A** 0.265 af Overall - 0.094 af Embedded = 0.172 af x 40.0% Voids
#2A	22.19'	0.094 af	**ADS_StormTech MC-3500 d +Cap** x 36 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 36 Chambers in 4 Rows Cap Storage= 14.9 cf x 2 x 4 rows = 119.2 cf
		0.162 af	Total Available Storage

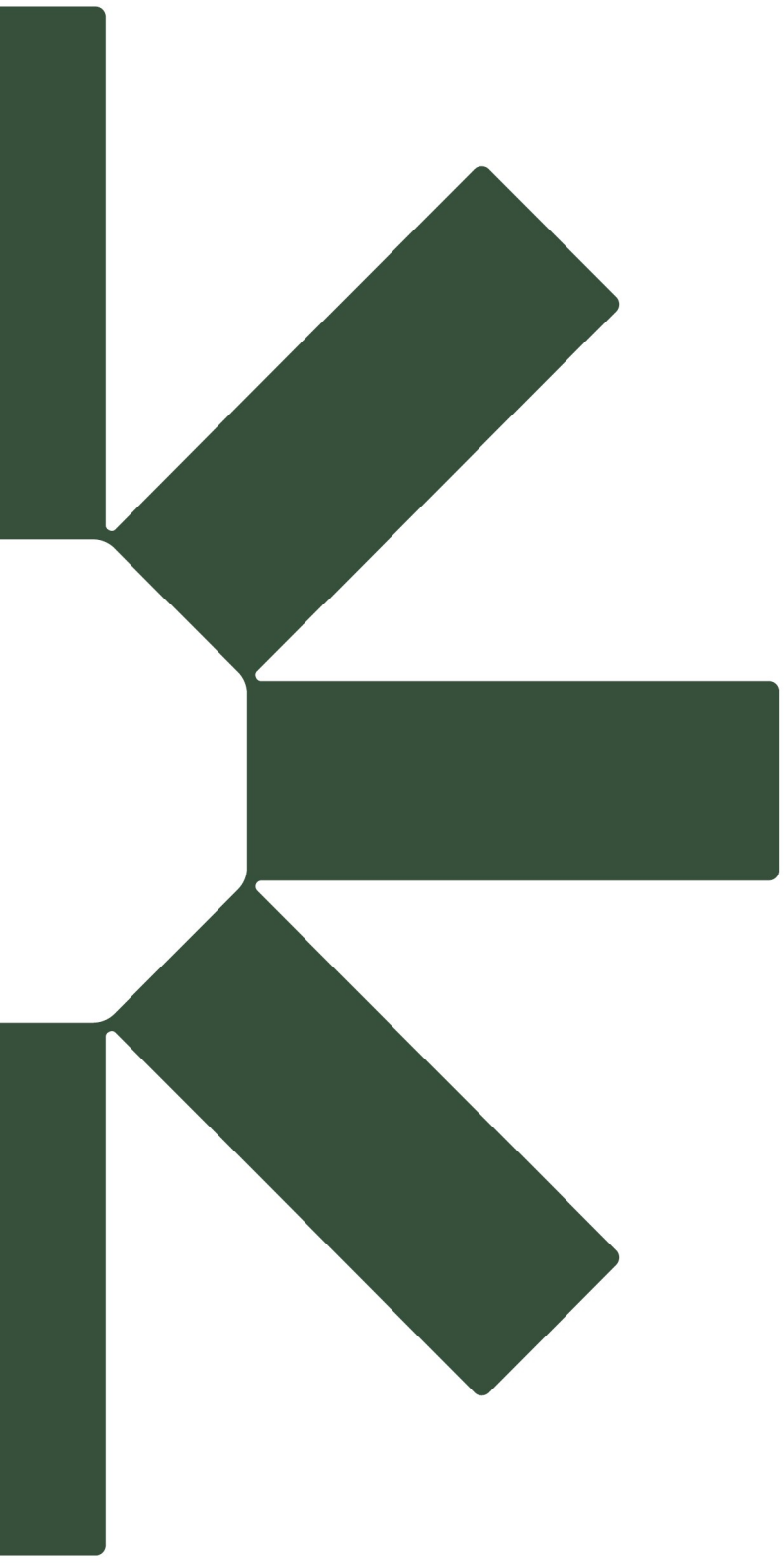
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	21.44'	**13.652 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.66 cfs @ 11.70 hrs HW=21.50' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.66 cfs)

Pond UG-1:


Hydrograph
Inflow
Discarded
3.07 cfs
0.66 cfs
Inflow Area=1.185 ac
Peak Elev=25.62'
Storage=0.136 af
Flow (cfs)
0
1
2
3
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Time (hours)



Making Sustainability Happen