STORMWATER DESIGN NARRATIVE

FEBRUARY 25, 2025
REVISED MAY 30, 2025

APPLICANT:

MEDWAY DEVELOPMENT LLC

383 MAIN STREET, MEDFIELD, MA 02052

PROJECT:

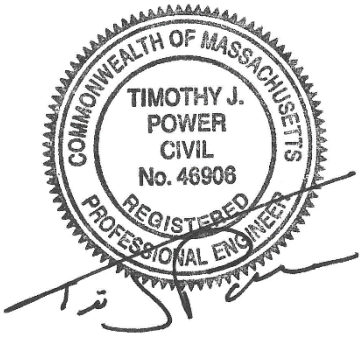
HIGH STREET MEADOWS

21 HIGH STREET, MEDWAY, MA 02053

PREPARED BY:

PVI SITE DESIGN, LLC

18 GLENDALE ROAD, NORWOOD, MA 02062



PVI SITE DESIGN

TABLE OF CONTENTS

STORMWATER MANAGEMENT CHECKLIST

SECTION 1 – PROJECT OVERVIEW

1.1 INTRODUCTION

The applicant, Medway Development LLC, proposes to construct three new buildings and renovate an existing building, totaling nine proposed residential units, located at 21 High Street, Medway. The lot is identified as 57-062 in the Town's Assessors database and is comprised of 3.77 acres. Currently a two-family home occupies the east corner of the property, and a paved driveway leads to a detached garage. There are several mature deciduous trees on the property.

The proposed project will disturb more than 20,000 square feet and therefore requires a Land Disturbance Permit, in accordance with Section 26.5 of Medway's General Bylaws. The proposed development will occur on a mostly undeveloped portion of land totaling 35,100+/- square feet (Development Area).

The project will meet or exceed the ten Stormwater Management Standards as outlined in the Massachusetts Stormwater Management Handbook Vol. 1-3 (Handbook), as well as Medway's Stormwater Management and Land Disturbance bylaw (Medway General Bylaws – Article XXVI). The system will employ Best Management Practices (BMP's) in order to meet the standards. Descriptions of each BMP and sizing calculations are included in this report.

1.2 LOCATION, TOPOGRAPHY, AND SOILS

LOCATION:

The project site is located at 21 High Street, Medway, MA, parcel ID 57-062. It is accessed by two curb cuts along its 290-foot frontage on High Street. A wetland has been identified in the western portion of the site, but no work is proposed within its buffer areas. The site is in the Charles River Watershed. See Figure 1, USGS Map of the area.

TOPOGRAPHY

The topography of the development area slopes generally from north to south, typically between 3%-5%. Elevations range from 218 to 214 at the southern end of the development area.

SOILS

The underlying soils have been mapped by the Natural Resources Conservation Service as made available by the Web Soil Survey website and are generally consistent across the site. The soil types are as follows:

TABLE 1.1 – NRCS SOIL TYPES

NRCS MAP UNIT	MAP UNIT NAME	HYDROLOGIC SOIL GROUP
420	Canton Fine Sandy Loam	B

The site is mapped by the NRCS Web Soil Survey as Canton Fine Sandy Loam. Soil tests were performed in 2018 and 2020 to confirm soil materials within the proposed stormwater areas. Parent soil material across the site is a mix of loam and sand with shallow groundwater in most locations. The test pit within the area of proposed infiltration (Test Pit 11, dated 11/30/2018) shows fine sandy loam over silt loam. Using the most restrictive layer, an infiltration rate of 0.52 inches per hour has been used for calculations. Soil logs have been provided as an attachment to this report.

1.3 WATERSHED DESCRIPTIONS

The Development Area has been divided into two watershed areas for the purpose of this stormwater analysis. Additionally, there is a third watershed that discharges to the wetland on the western side of the site. This watershed is unchanged by the proposed development but is included in the calculations. Below is a discussion of the watersheds. Refer to Figure 2 and Figure 3 for Existing and Proposed Watershed Plans respectively. Watershed plans provide information on total area, Curve Numbers, and Time of Concentration for each watershed.

1.3.1 EXISTING CONDITIONS

WATERSHED EX-1

This area represents the northern portion of the site. It is 26,997 sf in area and includes a portion of the paved driveway, a portion of the existing house, and vegetated area. This area drains to High Street where it enters the municipal storm drain. For the purposes of the analysis, the High Street Right of Way line will be considered the Design Point, DP-1.

WATERSHED EX-2

This represents most of the existing developed area and includes roof area, asphalt pavement, and landscaped area. It is comprised of 60,405 sf. Stormwater in this area runs overland to the south where it flows into the abutting property to the south. For the purposes of the analysis, the southerly property line will be considered the Design Point, DP-2.

WATERSHED EX-3

This area represents the western portion of the site that drains to the wetland and is unaffected by the proposed development. The 76,771 sf area is roughly half natural vegetation and half wetland. For the purposes of the analysis, the wetland line will be considered the Design Point, DP-3.

1.3.2 PROPOSED CONDITIONS

The proposed project includes three new residential buildings and the renovation of an existing building. Two paved driveways will provide access to the buildings and parking areas. Below is a description of the proposed watersheds and BMPs employed in each.

WATERSHED PR-1

This area represents small areas to the north and south of the Development Area that are not practical to route to the proposed stormwater system. It includes small areas of pavement and roof, as well as landscape area, and totals 8,893 sf. This area drains to High Street where it enters the municipal storm drain. For the purposes of the analysis, the High Street Right of Way will be considered the Design Point, DP-1.

WATERSHED PR-2

This area represents the majority of the development area. It is comprised of 77,731 sf and includes nearly all roof and pavement areas within the site. Much of this area, 70,389 sf (PR-2A & PR-2B), drains to the proposed infiltration basin. The proposed infiltration basin will be shaped from a natural low-lying area behind the development. A portion of the boundary of the low-lying area will be built up to allow for a greater depth of storage within the basin prior to overflow. The overflow is proposed as a wide and broad crested weir to better spread any water discharging during larger storm events. The basin design is Pond P1 in HydroCAD. The remaining 7,342 sf is landscape area downstream of the proposed infiltration basin and is identified in the Hydrology

calculations as PR-2C. Stormwater from both PR-2A and PR-2B flows overland to the south where it flows into the abutting property to the south. For the purposes of the analysis, the overflow from the infiltration basin will be considered the Design Point, DP-2.

WATERSHED PR-3

This area represents the western portion of the site that drains to the wetland and is unaffected by the proposed development. The 76,771 sf area is roughly half natural vegetation and half wetland. For the purposes of the analysis, the property line will be considered the Design Point, DP-3.

1.4 METHODOLOGY

The peak rate of runoff and sizing of retention BMPs was determined using techniques and data found in the following:

1. Urban Hydrology for Small Watersheds – Technical Release 55 by the United States Department of Agriculture Soils Conservation Service, June 1986. Runoff curve numbers and 24-hour precipitation values were obtained from this reference.
2. HydroCAD© Stormwater Modeling System by HydroCAD Software Solutions LLC, version 10.0. The HydroCAD program was used to generate the runoff hydrographs for the watershed areas, to determine discharge/stage/storage characteristics for the infiltration systems, to perform drainage routing and to combine the results of the runoff hydrographs. This software is based on the Soil Conservation Service (SCS) TR-20 program.
3. Precipitation Frequency Data is from the NOAA Atlas 14 precipitation tables for 21 High Street, Medway, MA.

SECTION 2 – STORMWATER MANAGEMENT STANDARDS

The following is a review of the project and how each of the 10 MassDEP SWM Standards are met. Additionally, the Town of Medway has 7 stormwater design requirements listed in section 26.5.8.3 in Article XXVI of the Medway General bylaws. Design Requirements 1-6 coincide with DEP standards. An explanation of how Design Requirement 7 is met is provided at the end of this section. Various supporting calculations are provided in the appendix when necessary.

2.1 STANDARD 1 – NO NEW UNTREATED DISCHARGES CAUSING EROSION (MEDWAY STORMWATER DESIGN REQUIRMENT 1)

The proposed project does not create a new discharge to any "waters of the commonwealth". As shown on the site plans, the system will utilize bio-retention areas to mitigate stormwater impacts from the proposed development. In storm events exceeding design storage volumes, overflow will run overland to the wetland to the southwest of the site. As there are no new open discharges proposed, no computations for outlet protection are necessary. The new drainage system on the property will provide treatment to stormwater before it runs off the property. Therefore, the standard is met.

2.2 STANDARD 2 - PEAK RATE ATTENUATION (MEDWAY STORMWATER DESIGN REQUIRMENT 2)

Calculations are provided in the appendix to show that the proposed development will not cause an increase in peak discharge rates. Refer to the HydroCAD calculations provided within this report for detailed breakdowns of each watershed. As summary of peak flows and volumes for each watershed area is provided below:

TABLE 2.1 – RUNOFF FLOW (CFS) COMPARISON

Design Point		2-YEAR	10-YEAR	100-YEAR
DP-1	*Existing*	0.36	1.17	2.75
	Proposed	**0.18**	**0.50**	**1.09**
DP-2	*Existing*	0.99	2.99	6.84
	Proposed	**0.10**	**0.34**	**4.13**
DP-3	*Existing*	*3.33*	*6.71*	*12.27*
	Proposed	**3.33**	**6.71**	**12.27**

As the table above illustrates, peak runoff rates are reduced for each storm event. Therefore, the standard is met.

Groundwater Separation

Due to site constraints, the proposed infiltration basin is proposed with only 2-feet of separation from Estimated Seasonal High Groundwater (ESHGW), therefore a mounding analysis is required. A copy of the mounding analysis using the Hantush Method can be found in the appendix.

The results of the calculation demonstrate a mound of up to 3-feet, one foot above the bottom of the basin. This result implies that during the 100-year storm infiltration will stop when the mound intercepts the bottom of the basin. As a conservative analysis to demonstrate compliance with

Standard 2 without the benefit of infiltration, additional calculations were performed removing infiltration as an outlet from the pond. These calculations demonstrate that the basin will still function to reduce peak flows without infiltration, therefore the requirement is met.

TABLE 2.2 – RUNOFF FLOW (CFS) COMPARISON WITH NO INFILTRATION

DP-2	*Existing*	0.99	2.99	6.84
	Proposed	**0.10**	**0.34**	**5.38**

2.3 STANDARD 3 - ANNUAL RECHARGE TO GROUNDWATER (MEDWAY STORMWATER DESIGN REQUIRMENT 3)

Medway Stormwater Design Requirements calls for 1-inch of runoff from all impervious areas to be retained onsite. The calculation must be performed for each sub-catchment area with impervious areas.

Table 2.3 below provides a summary of impervious area, required recharge volume, and recharge provided for the project:

TABLE 2.3 – RECHARGE VOLUME

SUB-WATERSHED	IMPERVIOUS AREA (SF)	RECHARGE REQUIRED R_V (CF)	RECHARGE PROVIDED (CF)
PR-1	1,477	123	0
PR-2A+2B	16,670	1,389	7,472
PR-3	0	0	0
TOTAL	*18,147*	*1,512 (1,645)*	*7,472*

Due to the topography of the site and shallow seasonal high groundwater, collecting runoff from all impervious areas is not practical. Volume 3 Chapter 1 of the DEP Stormwater Handbook states, "In no case shall runoff from less than 65% of the site's impervious cover be directed to the BMPs intended to infiltrate the Required Recharge Volume. The proposed design directs 92% of impervious areas to stormwater BMPs. The HydroCAD calculations in the appendix include tables form of the hydrograph for the proposed basin. The infiltration basin will drain within 72 hours after the storm event.

Because not all impervious surfaces drain to an infiltration devise, the DEP Handbook requires that an adjustment to be made to the Required Recharge Volume. The adjustment is calculated here:

Required Recharge Volume: 1,512 cf

Ratio of impervious areas draining to the infiltration basin: 16,670 sf / 18,147 sf = 0.92 (92%)

Adjustment to Required Recharge Volume: 1,512 cf / 0.92 = 1,645 cf

As the table above illustrates, the required recharge volume is far surpassed by the recharge volume provided. Therefore, the standard is met.

2.4 STANDARD 4 - WATER QUALITY

<u>TSS Removal</u>

Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS). A summary of TSS removal rates for each treatment train is noted in Table 2.4 below. Pretreatment is provided by two sediment forebay upgradient of an infiltration basin. Supporting calculations on the DEP approved calculation sheet are included in the appendix.

TABLE 2.4 – TSS REMOVAL RATES

SUBCATCHMENT	TOTALL TSS REMOVED
1P	85%

Forebay Sizing:

Forebays shall be designed to retain 0.1" of runoff from contributing impervious areas.

Forebay 1:

Impervious area contributing to Forebay 1: 7,736 sf.

Water Quality Volume required for pre-treatment for Forebay 1: 7,736 sf x 0.1"/12" = 65 cf.

Volume of forebay below overflow elevation (217.5'): 432 cf (432 > 65)

Forebay 2:

Impervious area contributing to Forebay 1: 7,736 sf.

Water Quality Volume required for pre-treatment for Forebay 2: 2,214 sf x 0.1"/12" = 19 cf.

Volume of forebay below overflow elevation (216.3'): 105 cf (105 > 19)

As the table above illustrates, the required TSS Removal rate is met by the proposed treatment train. Therefore, the standard is met.

2.5 STANDARD 5 - LAND USES WITH HIGHER POTENTIAL POLLUTANT LOADS (LUHPPL) (MEDWAY STORMWATER DESIGN REQUIRMENT 4)

The proposed uses on the project are not considered LUHPPL's, and therefore the standard does not apply.

2.6 STANDARD 6 - CRITICAL AREAS (MEDWAY STORMWATER DESIGN REQUIRMENT 5)

The project does not discharge water to an area listed on the State list of Areas of Critical Environmental Concern. Therefore, the standard does not apply.

2.7 STANDARD 7 – REDEVELOPMENT

The proposed project is a mix of development and redevelopment; however, the DEP standards are met in full.

2.8 STANDARD 8 - CONSTRUCTION PERIOD CONTROLS

The Erosion & Sedimentation Control Plan, sheet C001, includes details for Construction Period Controls. The plans call for perimeter sediment controls, and other best practices to prevent erosion and sedimentation. Additional information can be found in Section 3 of this report.

2.9 STANDARD 9 – LONG TERM OPERATION AND MAINTENANCE PLAN (MEDWAY STORMWATER DESIGN REQUIRMENT 6)

An Operation and Maintenance Plan is included as an appendix to this report.

2.10 STANDARD 10 – ILLICIT DISCHARGES

The following text appears on the Utility and Grading Plan:

"The storm water management system proposed shall not be connected to the wastewater management system and shall not be contaminated by contact with process wastes, raw materials, toxic pollutants, hazardous substances, oil, or grease per Massachusetts DEP Storm Water Standard 10."

2.11 MEDWAY DESIGN STANDARD 7 – Require that all stormwater management systems be designed to:

a) Retain the volume of runoff equivalent to, or greater than, one inch multiplied by the total post-construction impervious surface area on the site

AND/OR

b) Remove 90% of the average annual load of Total Suspended Solids (TSS) generated from the total post-construction impervious area on the site AND 60% of the average annual load of Total Phosphorus (TP) generated from the total post-construction impervious area on the site.

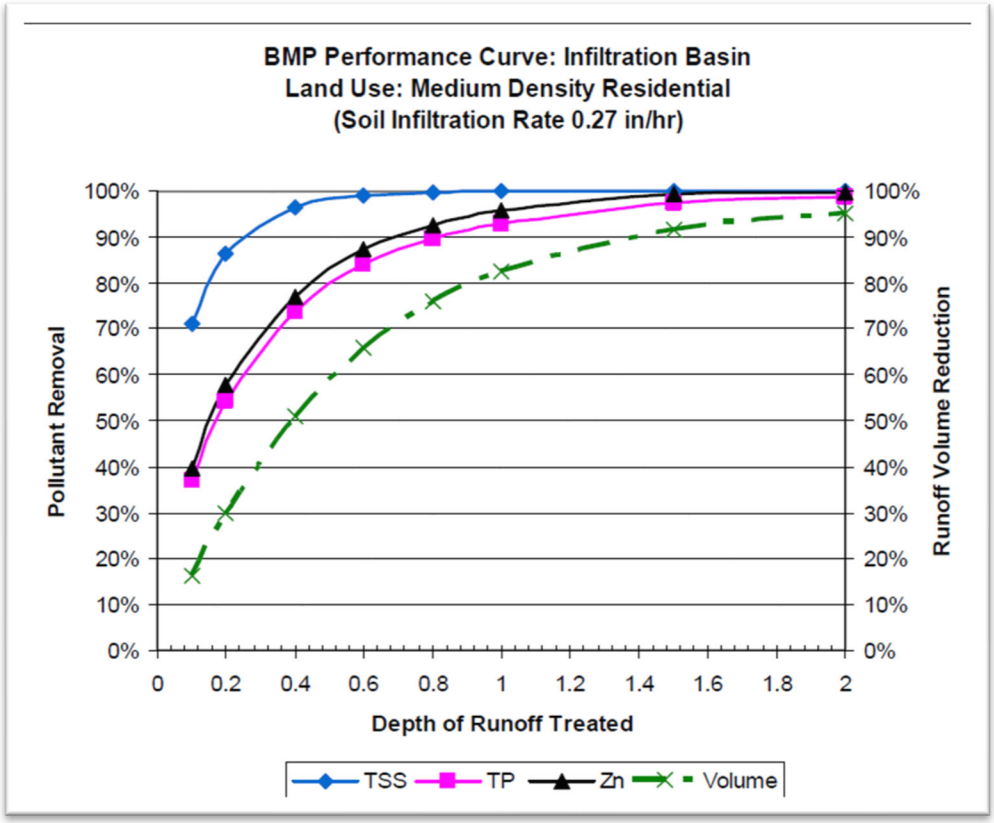
The proposed stormwater management system is designed to retain and infiltrate more than the 1-inch requirement. Table 2.5, below, summarizes the required volume to be retained and the actual volume retained and infiltrated prior to overflow of the infiltration basin occurring.

TABLE 2.5 – Water Quality Volume (WQV)

SUBCATCHMENT	IMPERVIOUS AREA	WQV (1")	VOLUME PROVIDED
PR-1*	1,278 SF	123 CF	0 CF
PR-2A&2B**	9,950 SF	829 CF	10,756 CF

*Runoff from Subcatchment PR-1 is not practicable to collect and treat due to site constraints.
**Additional infiltration for Subcatchment PR-2A is provided by Forebay 1 but is excluded from this calculation to simplify the data.

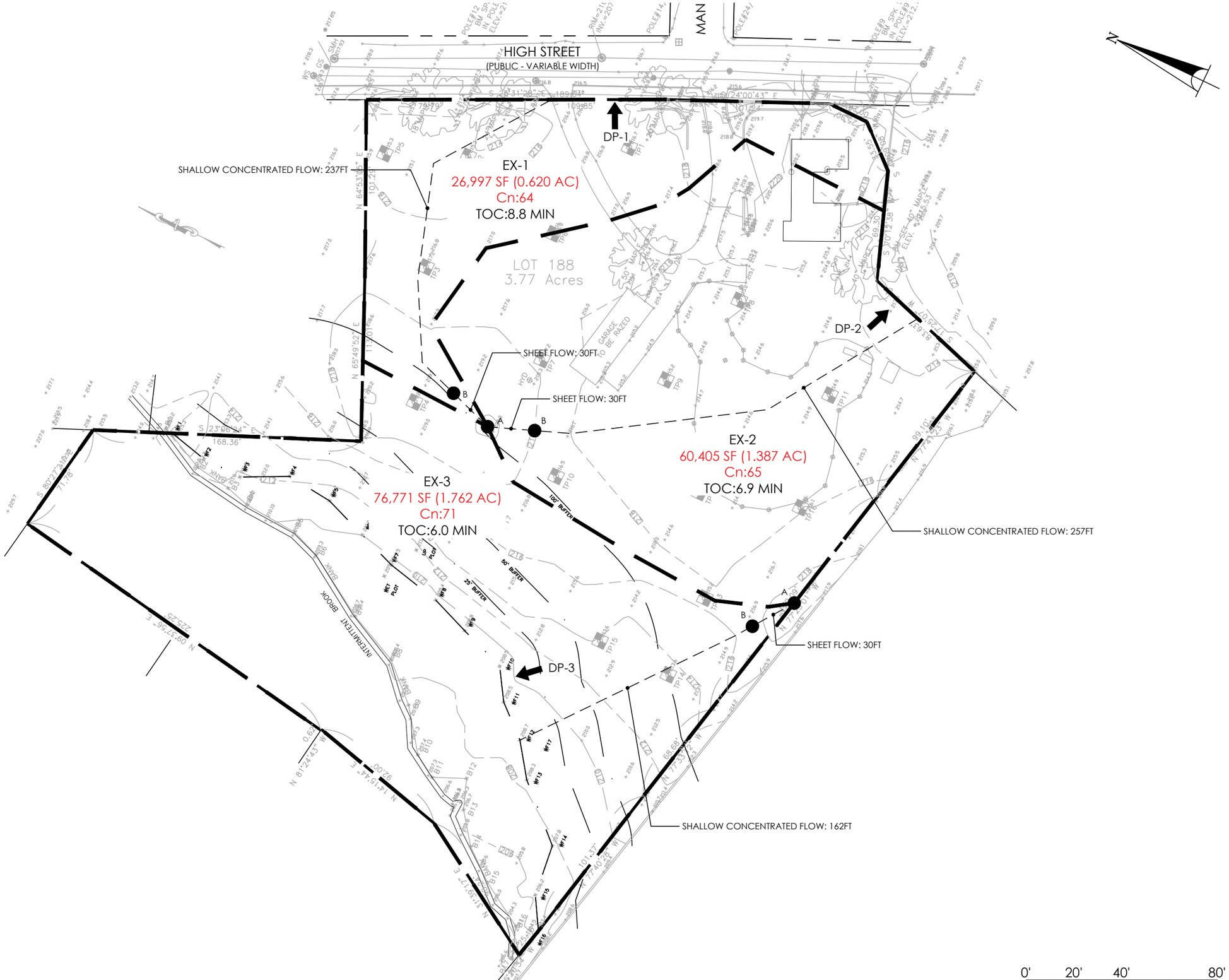
The BMP Performance Curve for an infiltration basin as provided by EMA Region 1 demonstrates that when 1" of runoff is captured, removal rates for TSS exceed 90%, and removal rates of phosphorus reach almost 100%.



Source: Stormwater Best Management Practices (BMP) Performance Analysis, Prepared for EPA - Region 1 by Tetra Tech, Revised March 2010

For all subcatchment areas that can be routed to a water quality BMP, the volume of stormwater infiltrated exceeds the required water quality volume. Therefore, the standard is met

APPENDIX A
Watershed Plans



CIVIL ENGINEER:

PVI SITE DESIGN
PVI Site Design, LLC
Civil Engineering - Land Entitlements
Master Planning - Project Management
339-206-1030

PROJECT:
PROPOSED MULTI-FAMILY
21 HIGH ST, MEDWAY, MA

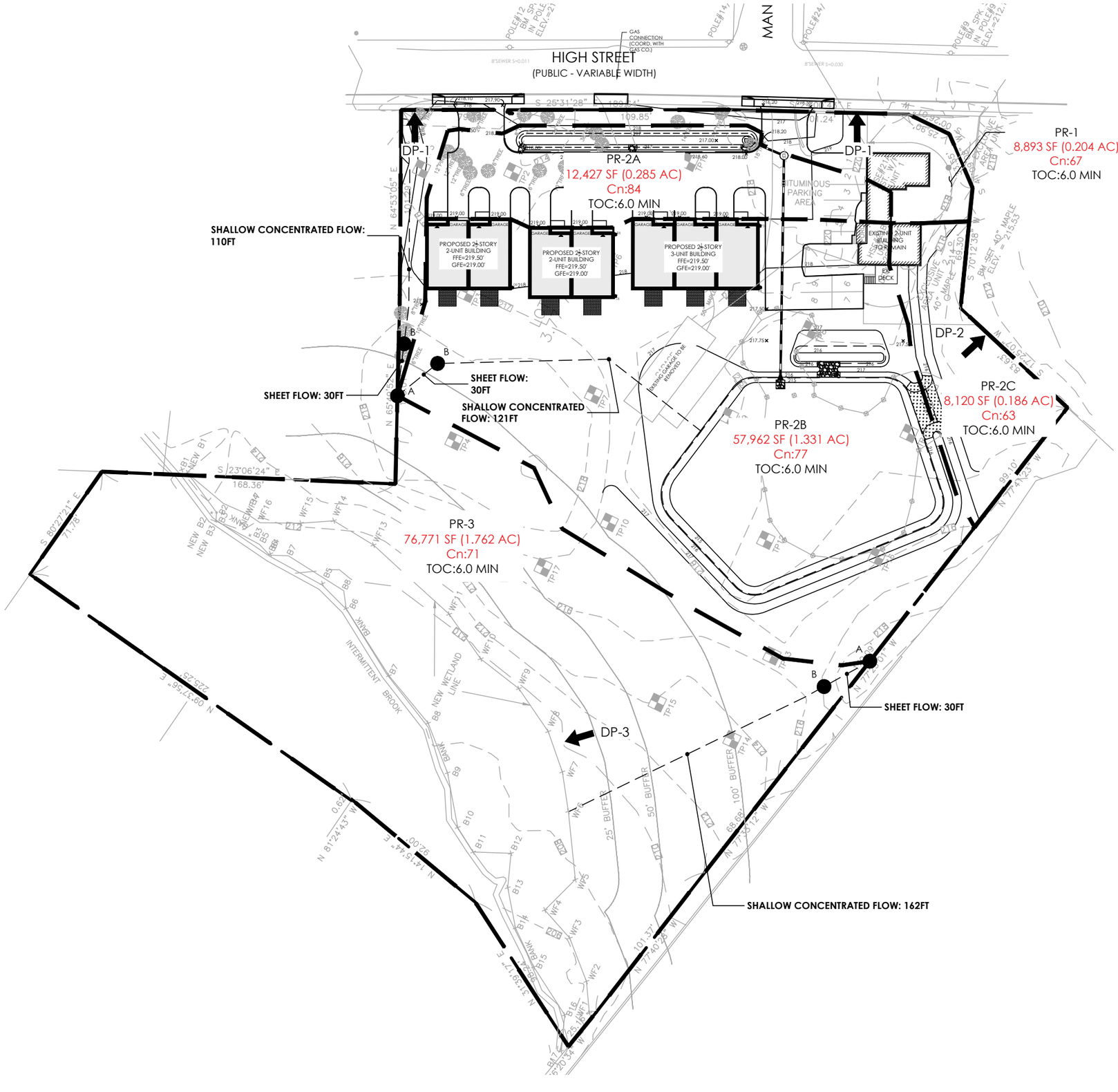
OWNER:
MEDWAY DEVELOPMENT, LLC
383 MAIN ST, MEDFIELD, MA

TITLE:
EXISTING
WATERSHED PLAN

ISSUED:	12-20-2023
REV:	
REV:	
REV:	
REV:	
REV:	
SCALE:	AS NOTED
PROJECT:	23-023
FILE:	23-023 WATERSHED-EC.dwg
DRAWN:	RLB
CHECKED:	TJP

SHEET NO:

WS-1



CIVIL ENGINEER:

PVI SITE DESIGN

PVI Site Design, LLC
Civil Engineering - Land Entitlements
Master Planning - Project Management
339-206-1030

PROJECT:
PROPOSED MULTI-FAMILY
21 HIGH ST, MEDWAY, MA

OWNER:
MEDWAY DEVELOPMENT, LLC
383 MAIN ST, MEDFIELD, MA

TITLE:
PROPOSED WATERSHED PLAN

ISSUED:	02-25-2025
REV:	05-22-2025
REV.:	
REV.:	
REV.:	
REV.:	

SCALE:	AS NOTED
PROJECT:	23-023
FILE:	23-023 WATERSHED-PR.dwg
DRAWN:	RLB
CHECKED:	TJP

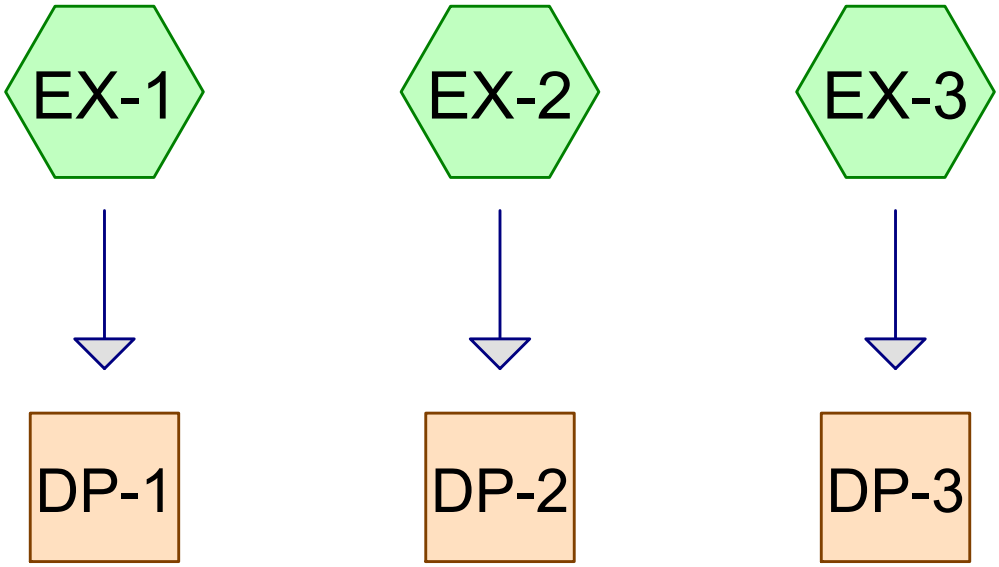
SHEET NO:

WS-2

APPENDIX B

HydroCAD Calculations

- ***Existing Conditions***
- ***Proposed Conditions***
- ***Infiltration Basin Stage-Storage Table***
- ***Infiltration Basin Drain Down Table***



Subcat Reach Pond Link

Routing Diagram for 23-023 HC EC
Prepared by PVI Site Design, LLC, Printed 12/18/2023

Summary for Subcatchment EX-1:

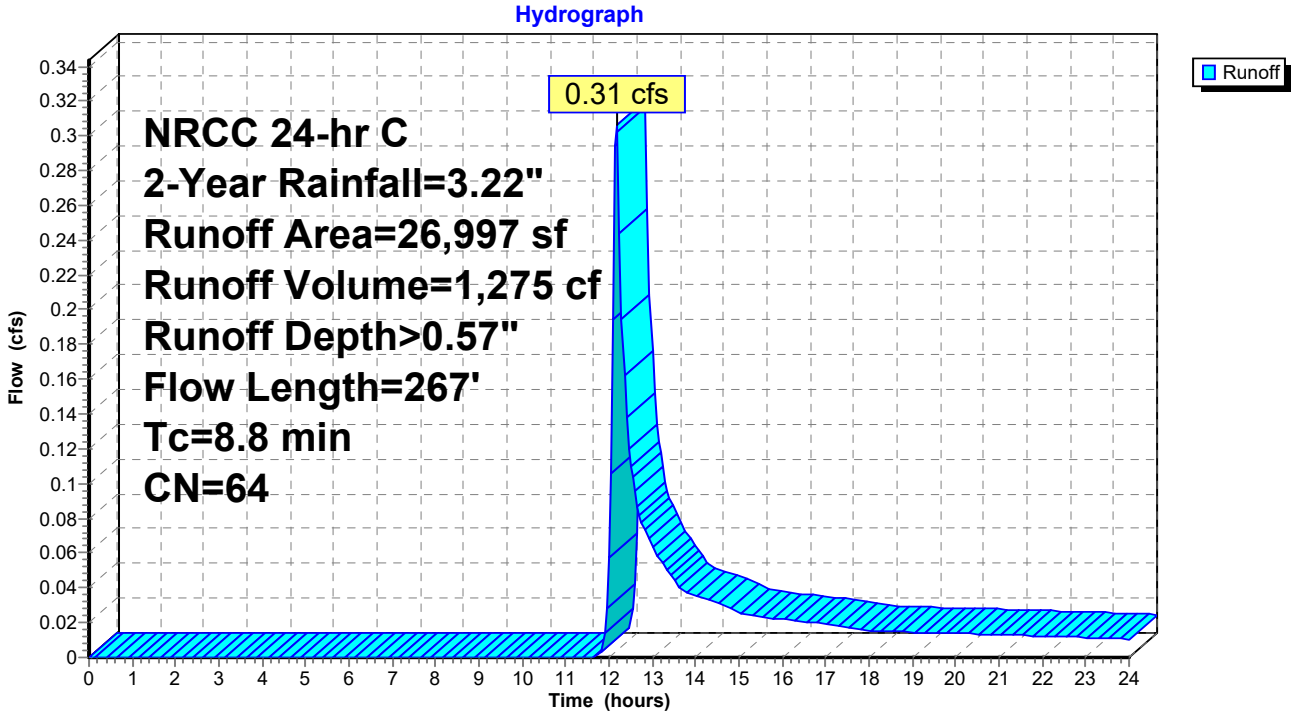
Runoff = 0.31 cfs @ 12.18 hrs, Volume= 1,275 cf, Depth> 0.57"
Routed to Reach DP-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 2-Year Rainfall=3.22"

Area (sf)	CN	Description
682	98	Roofs, HSG B
1,385	98	Paved parking, HSG B
24,930	61	>75% Grass cover, Good, HSG B
26,997	64	Weighted Average
24,930		92.34% Pervious Area
2,067		7.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	30	0.0370	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.22"
5.9	237	0.0093	0.68		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.8	267	Total			

Subcatchment EX-1:



Summary for Subcatchment EX-2:

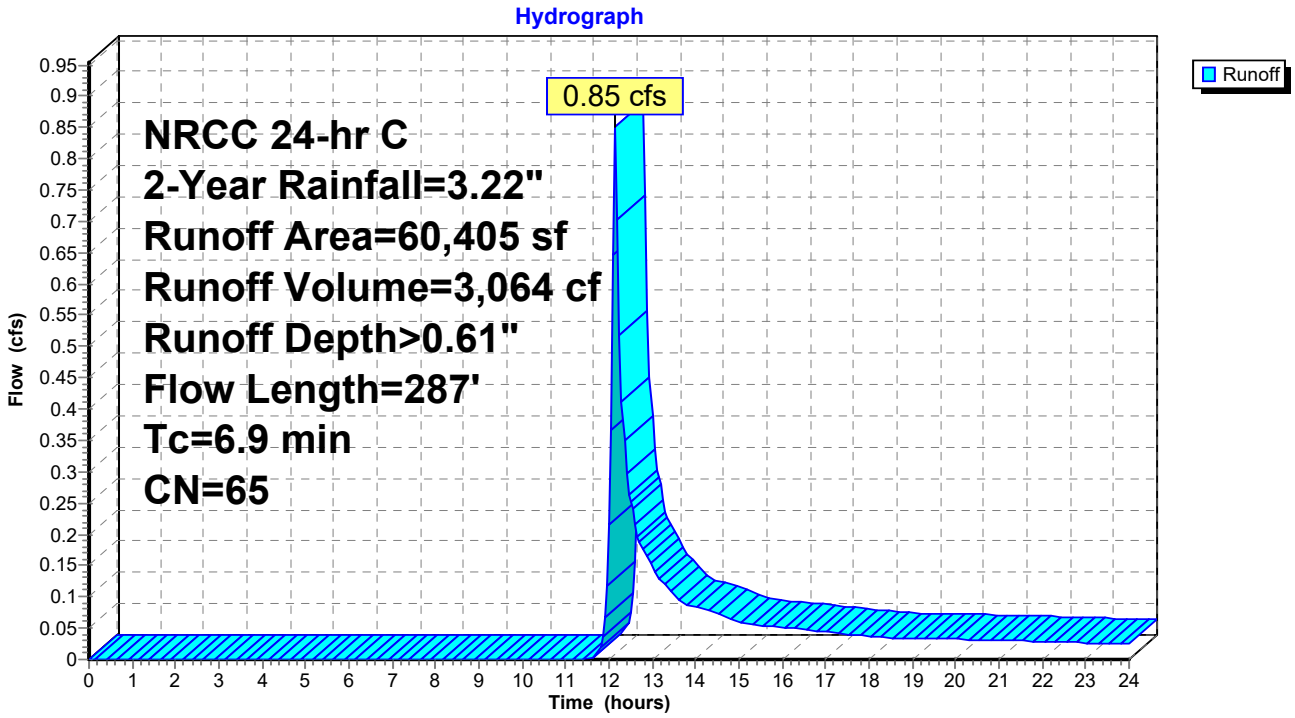
Runoff = 0.85 cfs @ 12.15 hrs, Volume= 3,064 cf, Depth> 0.61"
Routed to Reach DP-2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 2-Year Rainfall=3.22"

Area (sf)	CN	Description
2,493	98	Roofs, HSG B
3,679	98	Paved parking, HSG B
54,233	61	>75% Grass cover, Good, HSG B
60,405	65	Weighted Average
54,233		89.78% Pervious Area
6,172		10.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	30	0.0670	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.22"
4.6	257	0.0180	0.94		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.9	287	Total			

Subcatchment EX-2:



Summary for Subcatchment EX-3:

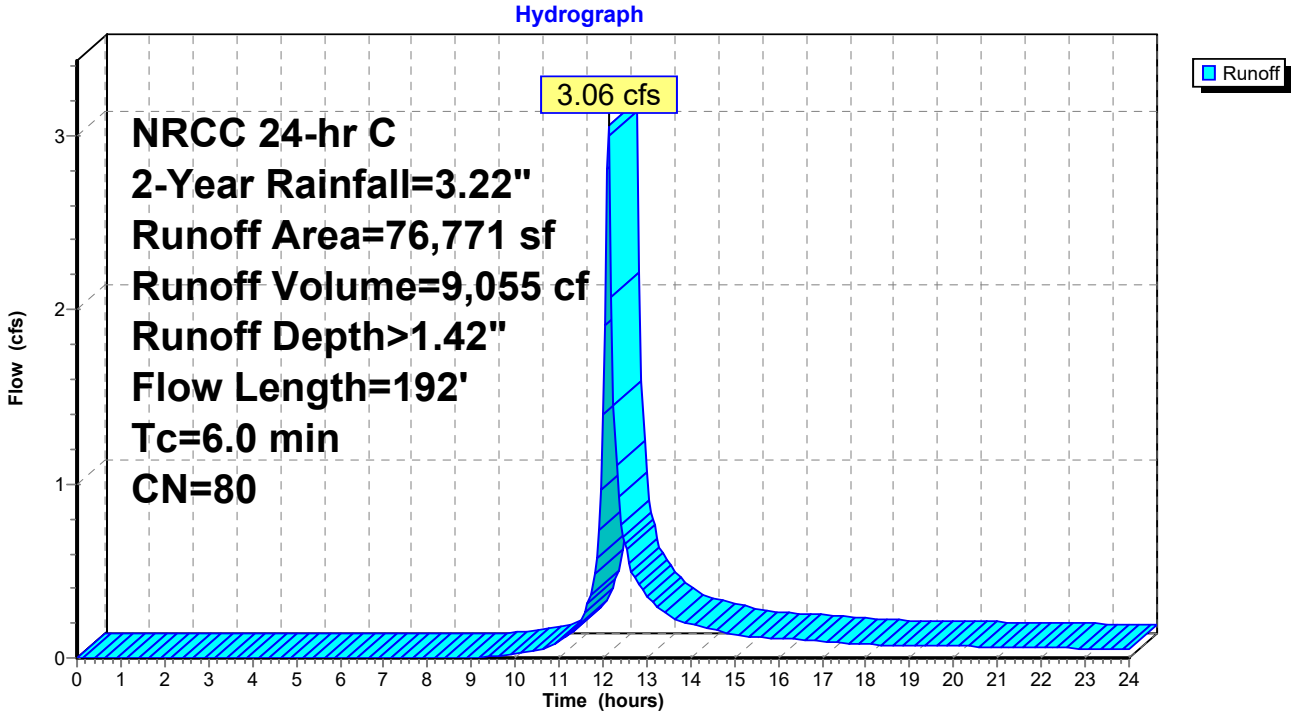
Runoff = 3.06 cfs @ 12.13 hrs, Volume= 9,055 cf, Depth> 1.42"
Routed to Reach DP-3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 2-Year Rainfall=3.22"

	Area (sf)	CN	Description
*	38,690	98	Wetland, HSG B
	38,081	61	>75% Grass cover, Good, HSG B
	76,771	80	Weighted Average
	38,081		49.60% Pervious Area
	38,690		50.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	30	0.0800	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.22"
1.7	162	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.8	192	Total, Increased to minimum Tc = 6.0 min			

Subcatchment EX-3:



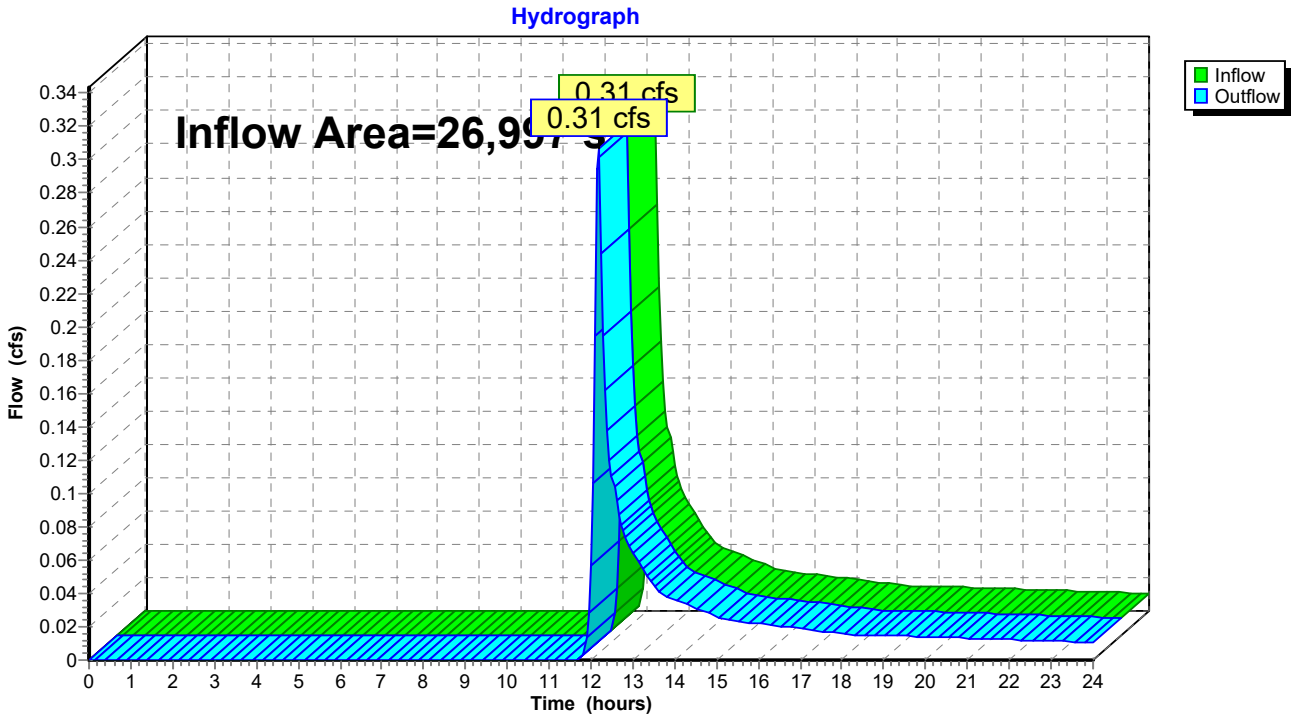
Summary for Reach DP-1:

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

Inflow Area = 26,997 sf, 7.66% Impervious, Inflow Depth > 0.57" for 2-Year event
Inflow = 0.31 cfs @ 12.18 hrs, Volume= 1,275 cf
Outflow = 0.31 cfs @ 12.18 hrs, Volume= 1,275 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach DP-1:



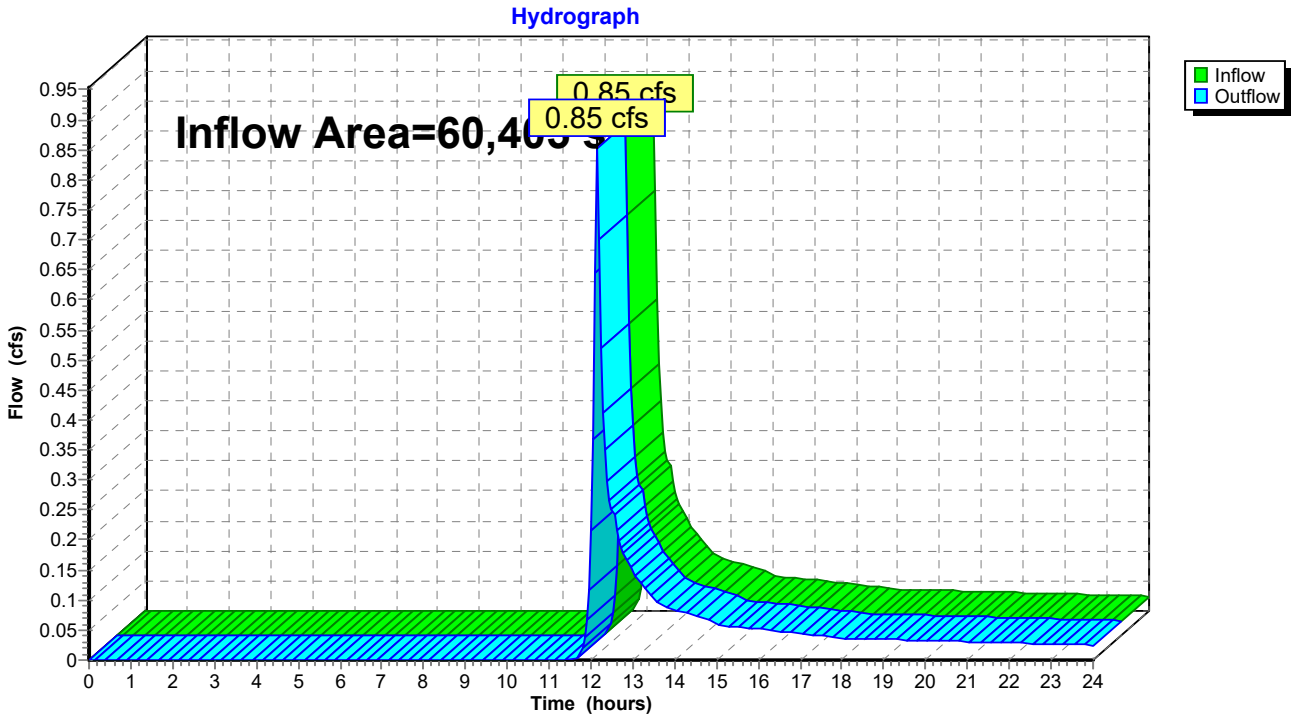
Summary for Reach DP-2:

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

Inflow Area = 60,405 sf, 10.22% Impervious, Inflow Depth > 0.61" for 2-Year event
Inflow = 0.85 cfs @ 12.15 hrs, Volume= 3,064 cf
Outflow = 0.85 cfs @ 12.15 hrs, Volume= 3,064 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach DP-2:



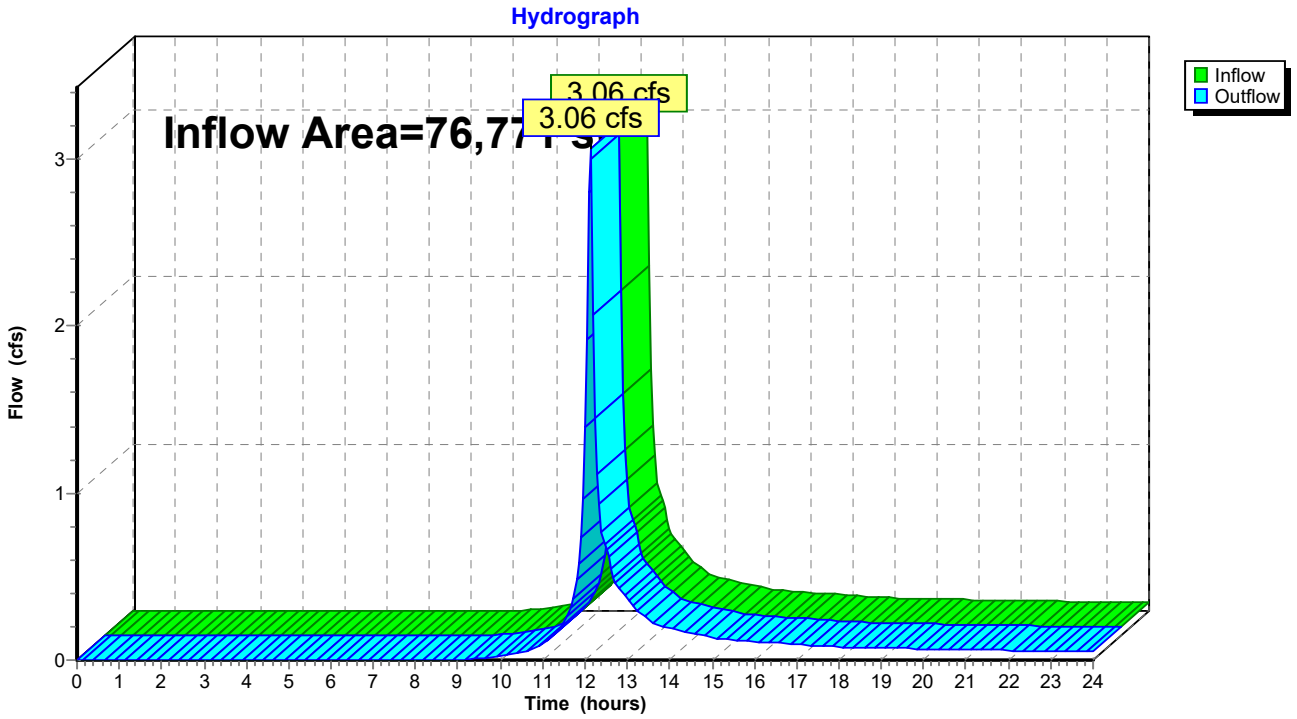
Summary for Reach DP-3:

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

Inflow Area = 76,771 sf, 50.40% Impervious, Inflow Depth > 1.42" for 2-Year event
Inflow = 3.06 cfs @ 12.13 hrs, Volume= 9,055 cf
Outflow = 3.06 cfs @ 12.13 hrs, Volume= 9,055 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach DP-3:



Summary for Subcatchment EX-1:

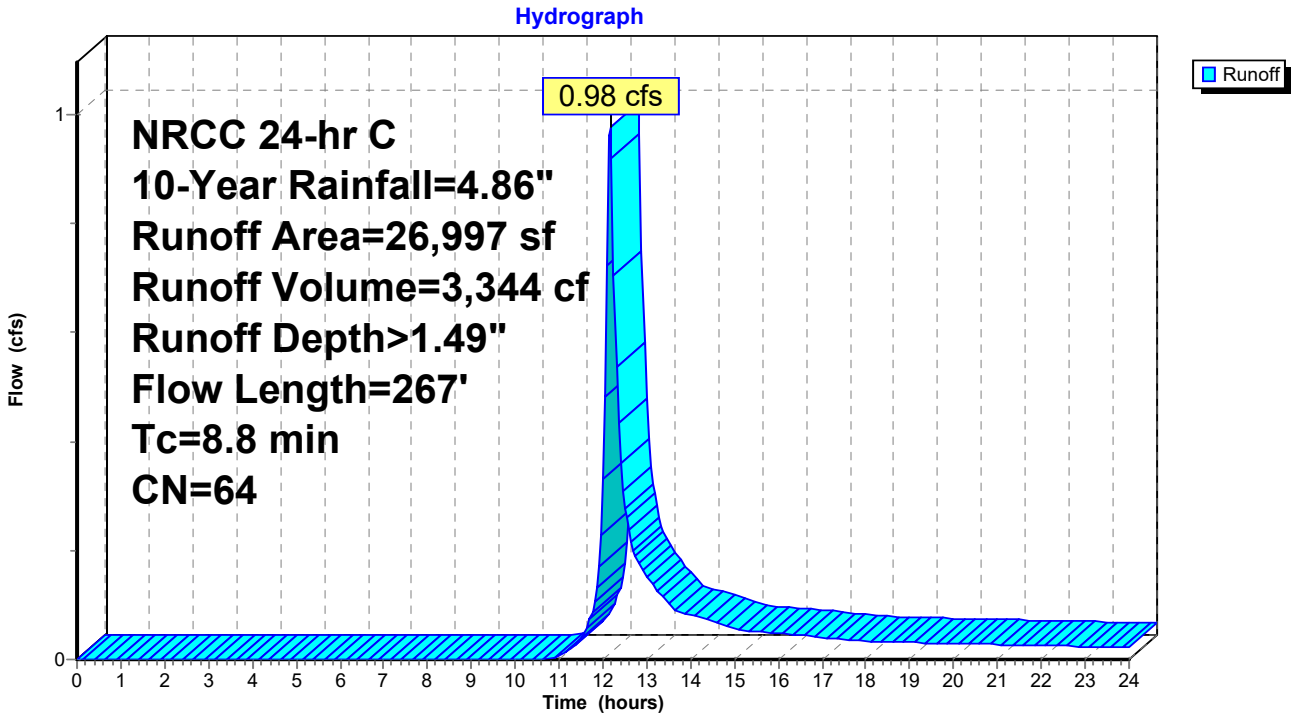
Runoff = 0.98 cfs @ 12.17 hrs, Volume= 3,344 cf, Depth> 1.49"
Routed to Reach DP-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 10-Year Rainfall=4.86"

Area (sf)	CN	Description
682	98	Roofs, HSG B
1,385	98	Paved parking, HSG B
24,930	61	>75% Grass cover, Good, HSG B
26,997	64	Weighted Average
24,930		92.34% Pervious Area
2,067		7.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	30	0.0370	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.22"
5.9	237	0.0093	0.68		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.8	267	Total			

Subcatchment EX-1:



Summary for Subcatchment EX-2:

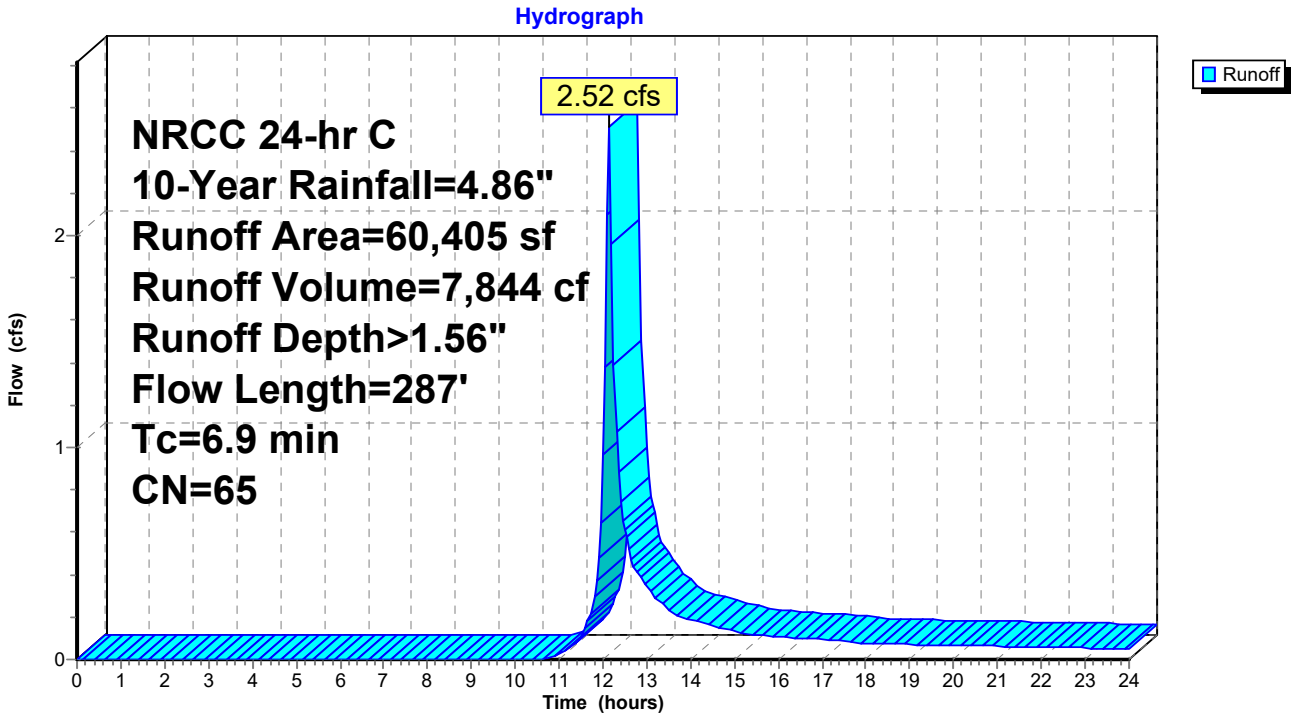
Runoff = 2.52 cfs @ 12.15 hrs, Volume= 7,844 cf, Depth> 1.56"
Routed to Reach DP-2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 10-Year Rainfall=4.86"

Area (sf)	CN	Description
2,493	98	Roofs, HSG B
3,679	98	Paved parking, HSG B
54,233	61	>75% Grass cover, Good, HSG B
60,405	65	Weighted Average
54,233		89.78% Pervious Area
6,172		10.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	30	0.0670	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.22"
4.6	257	0.0180	0.94		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.9	287	Total			

Subcatchment EX-2:



Summary for Subcatchment EX-3:

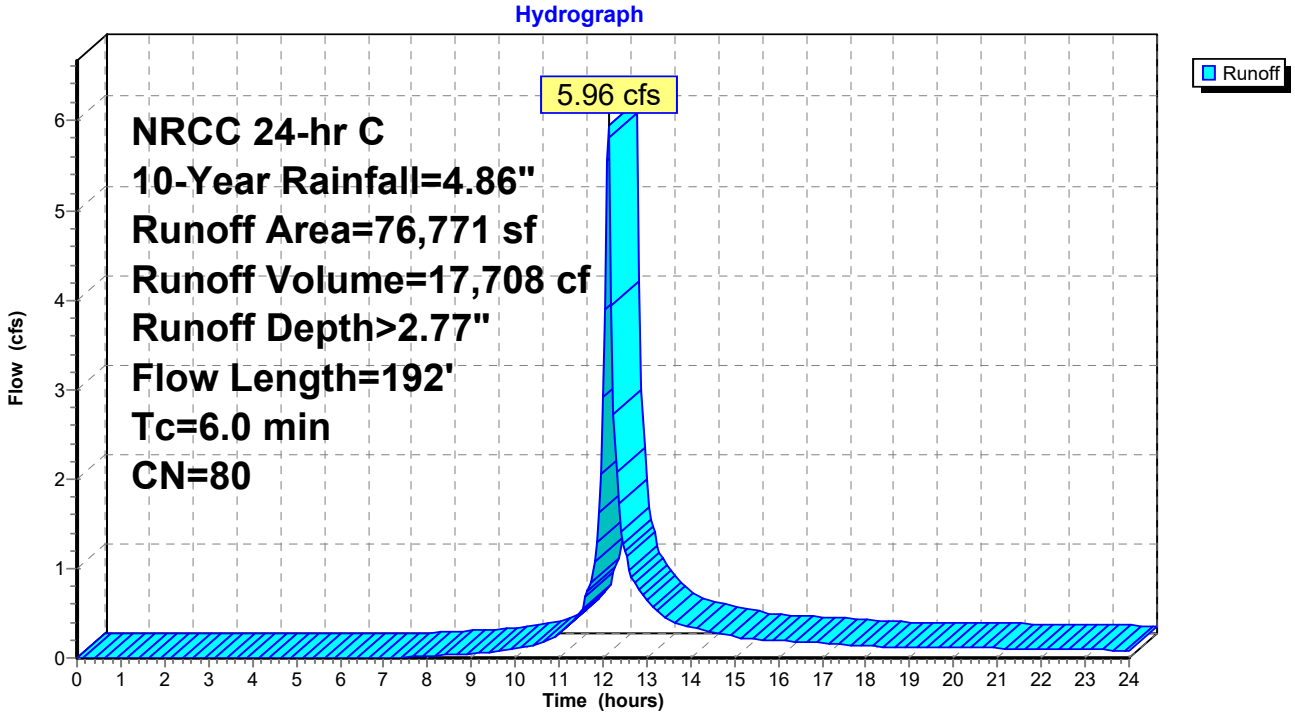
Runoff = 5.96 cfs @ 12.13 hrs, Volume= 17,708 cf, Depth> 2.77"
Routed to Reach DP-3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 10-Year Rainfall=4.86"

	Area (sf)	CN	Description
*	38,690	98	Wetland, HSG B
	38,081	61	>75% Grass cover, Good, HSG B
	76,771	80	Weighted Average
	38,081		49.60% Pervious Area
	38,690		50.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	30	0.0800	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.22"
1.7	162	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.8	192	Total, Increased to minimum Tc = 6.0 min			

Subcatchment EX-3:



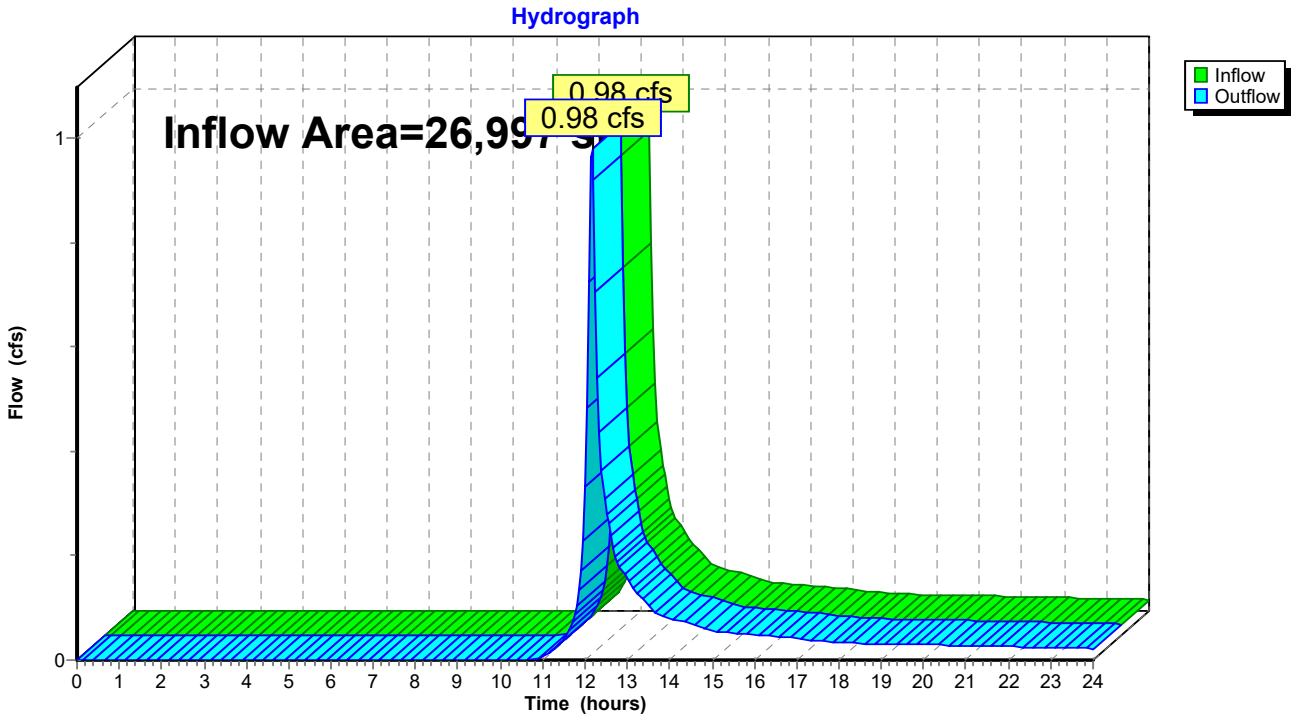
Summary for Reach DP-1:

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

Inflow Area = 26,997 sf, 7.66% Impervious, Inflow Depth > 1.49" for 10-Year event
Inflow = 0.98 cfs @ 12.17 hrs, Volume= 3,344 cf
Outflow = 0.98 cfs @ 12.17 hrs, Volume= 3,344 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach DP-1:



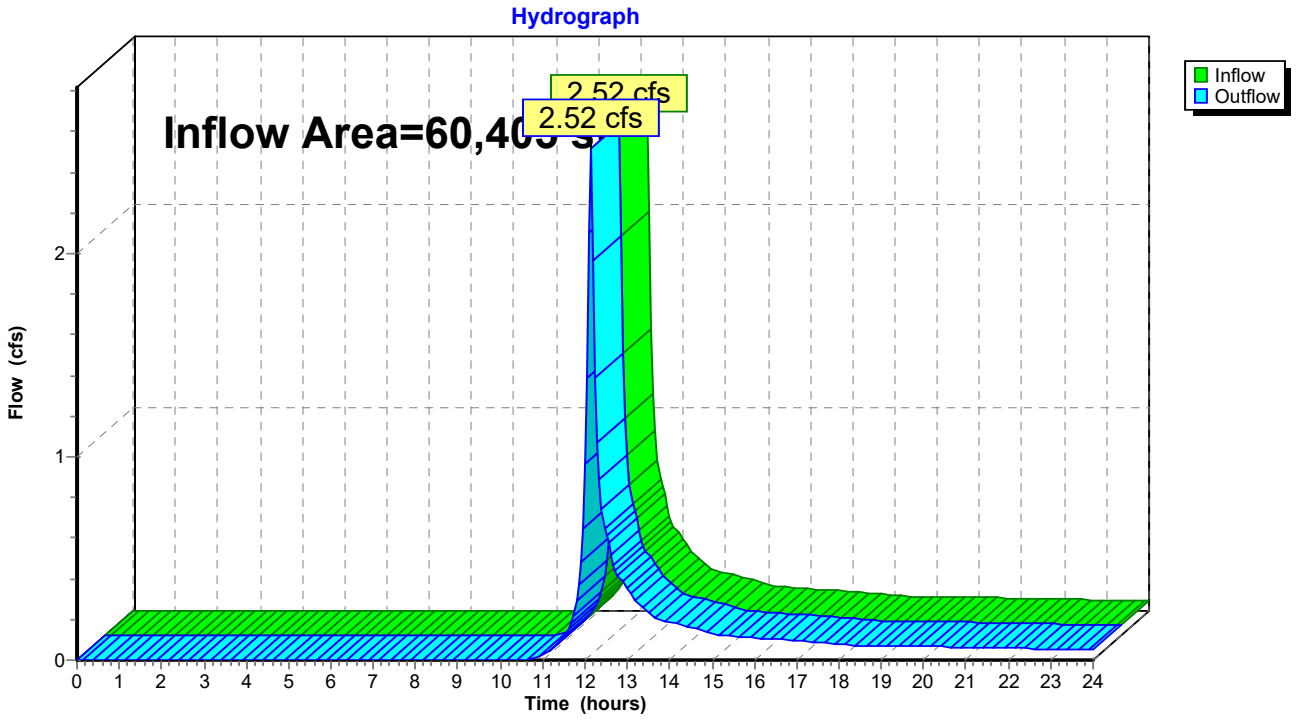
Summary for Reach DP-2:

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

Inflow Area = 60,405 sf, 10.22% Impervious, Inflow Depth > 1.56" for 10-Year event
Inflow = 2.52 cfs @ 12.15 hrs, Volume= 7,844 cf
Outflow = 2.52 cfs @ 12.15 hrs, Volume= 7,844 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach DP-2:



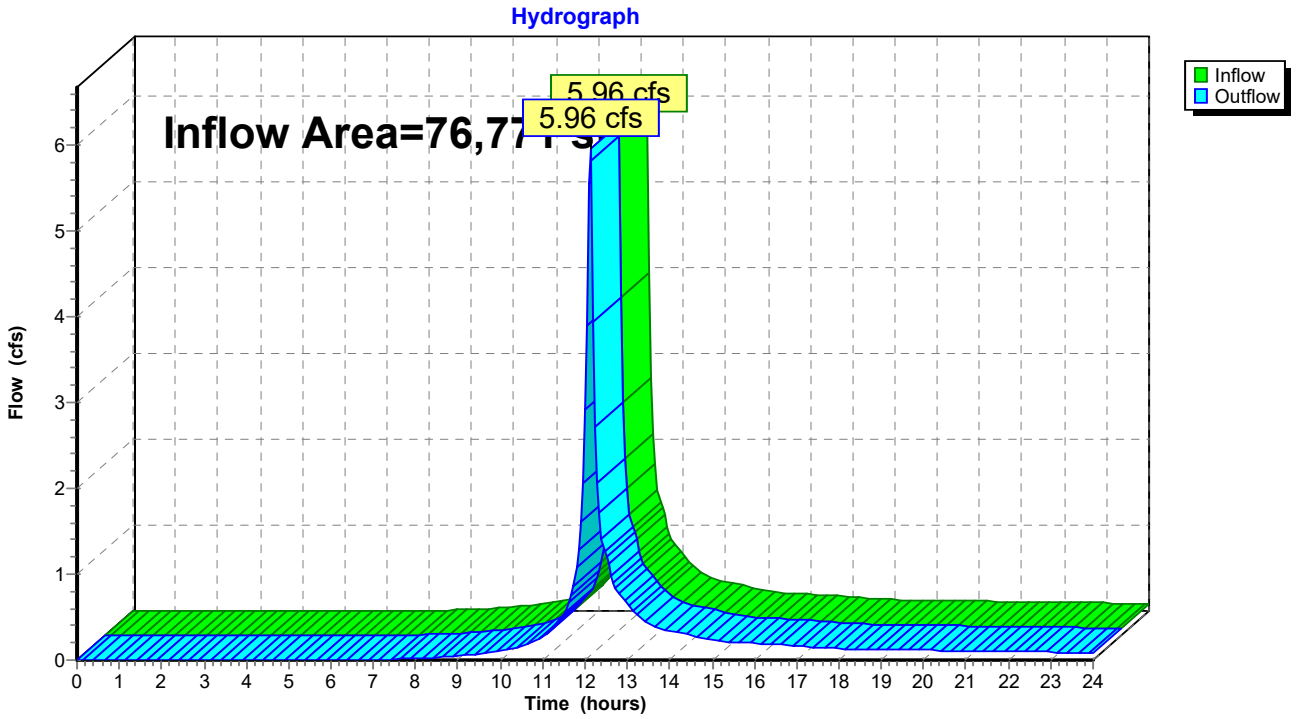
Summary for Reach DP-3:

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

Inflow Area = 76,771 sf, 50.40% Impervious, Inflow Depth > 2.77" for 10-Year event
Inflow = 5.96 cfs @ 12.13 hrs, Volume= 17,708 cf
Outflow = 5.96 cfs @ 12.13 hrs, Volume= 17,708 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach DP-3:



Summary for Subcatchment EX-1:

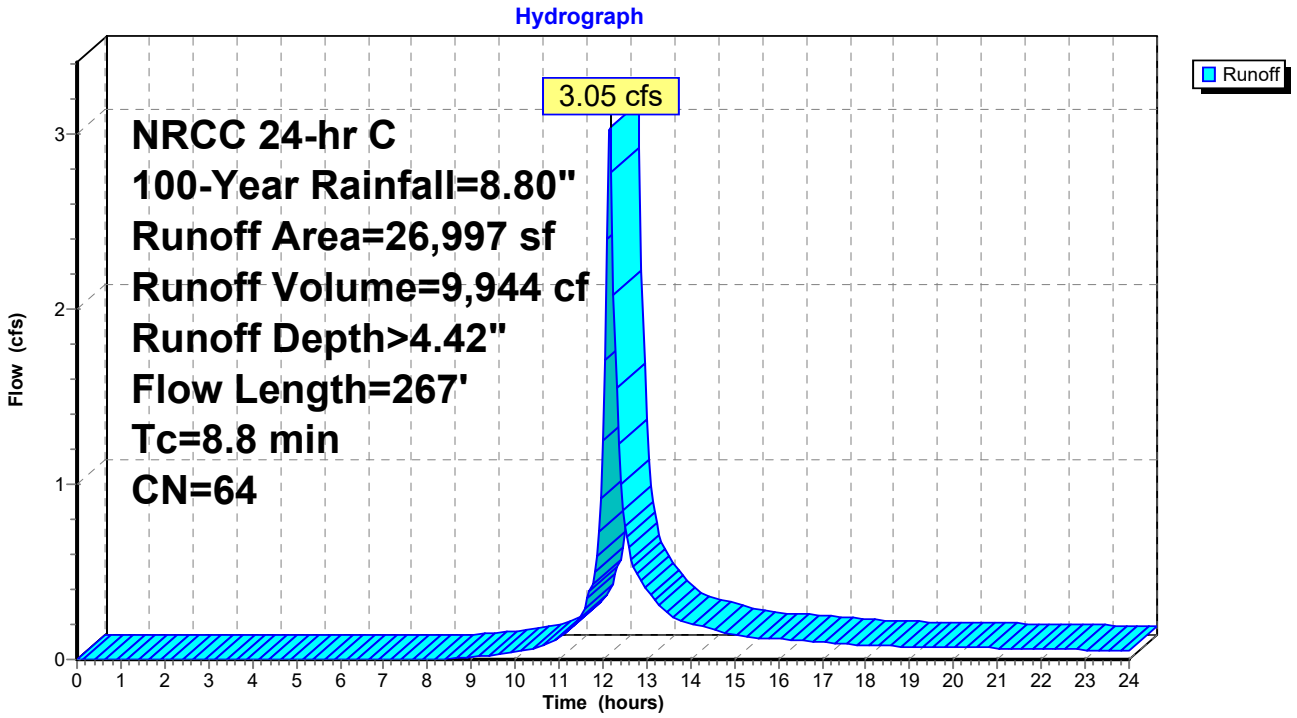
Runoff = 3.05 cfs @ 12.16 hrs, Volume= 9,944 cf, Depth> 4.42"
Routed to Reach DP-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 100-Year Rainfall=8.80"

Area (sf)	CN	Description
682	98	Roofs, HSG B
1,385	98	Paved parking, HSG B
24,930	61	>75% Grass cover, Good, HSG B
26,997	64	Weighted Average
24,930		92.34% Pervious Area
2,067		7.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	30	0.0370	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.22"
5.9	237	0.0093	0.68		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.8	267	Total			

Subcatchment EX-1:



Summary for Subcatchment EX-2:

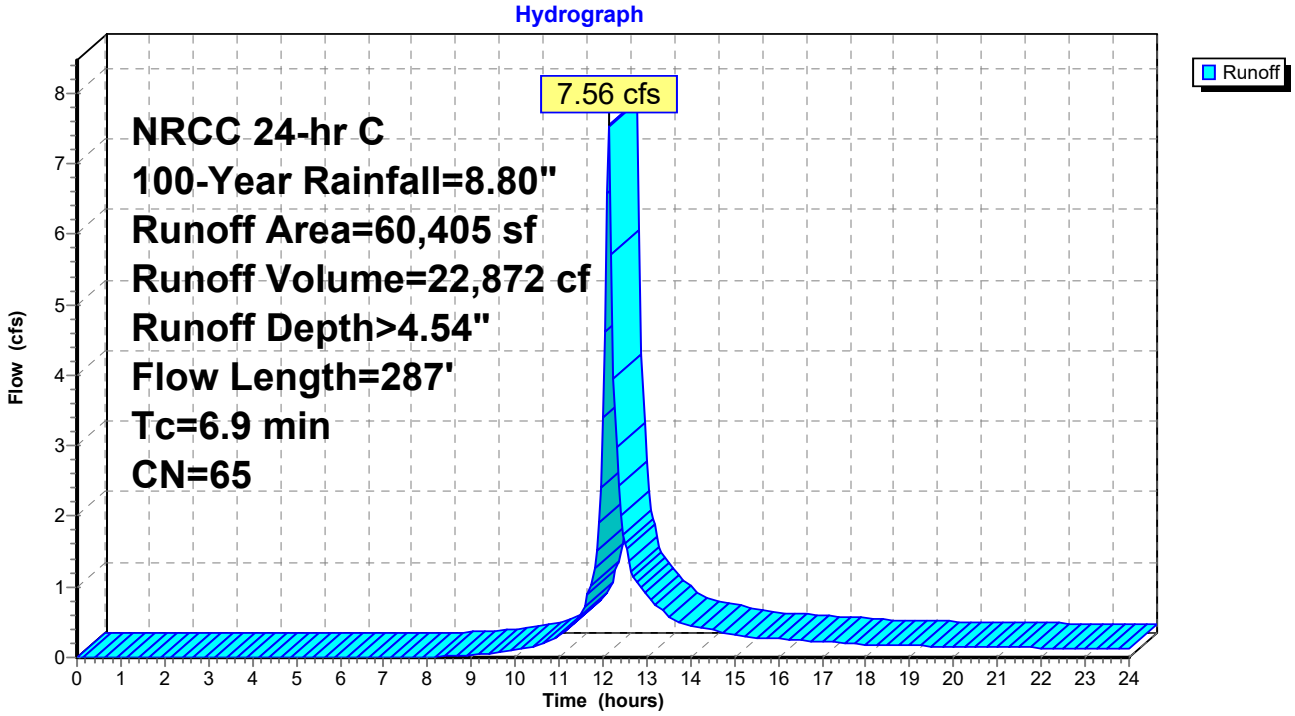
Runoff = 7.56 cfs @ 12.14 hrs, Volume= 22,872 cf, Depth> 4.54"
Routed to Reach DP-2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 100-Year Rainfall=8.80"

Area (sf)	CN	Description
2,493	98	Roofs, HSG B
3,679	98	Paved parking, HSG B
54,233	61	>75% Grass cover, Good, HSG B
60,405	65	Weighted Average
54,233		89.78% Pervious Area
6,172		10.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	30	0.0670	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.22"
4.6	257	0.0180	0.94		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.9	287	Total			

Subcatchment EX-2:



Summary for Subcatchment EX-3:

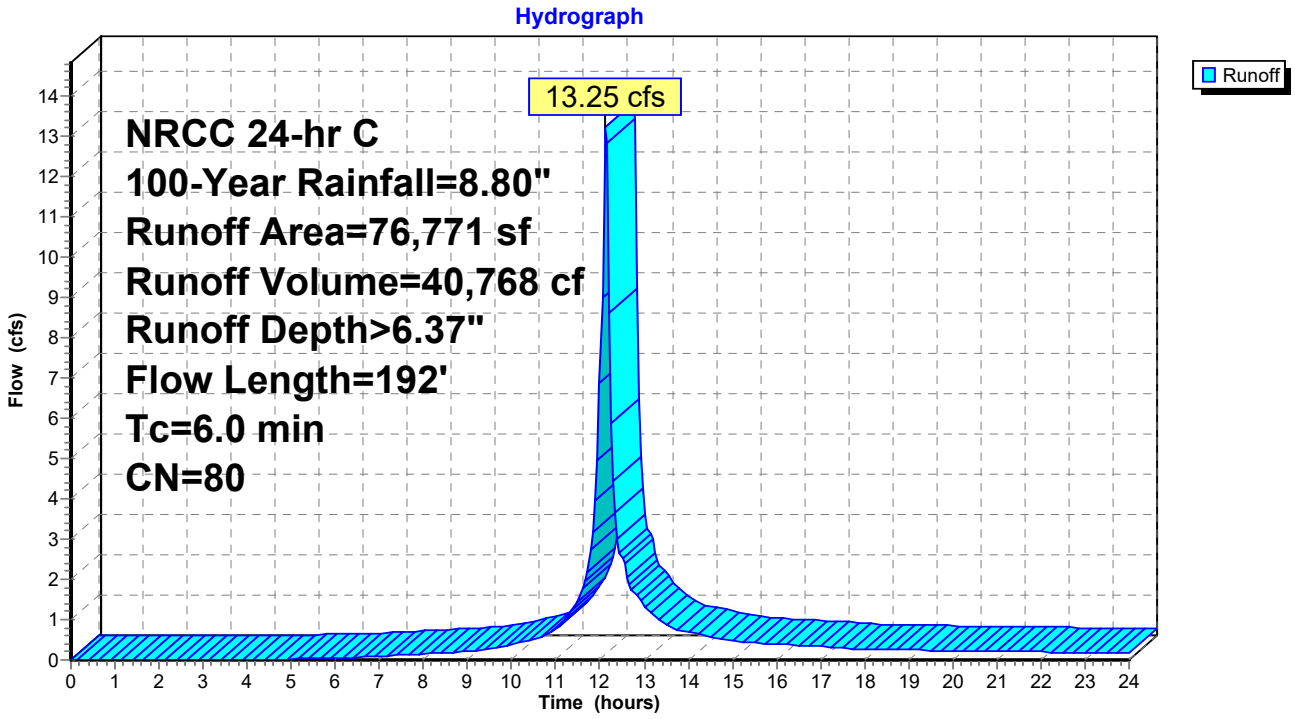
Runoff = 13.25 cfs @ 12.13 hrs, Volume= 40,768 cf, Depth> 6.37"
Routed to Reach DP-3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 100-Year Rainfall=8.80"

	Area (sf)	CN	Description
*	38,690	98	Wetland, HSG B
	38,081	61	>75% Grass cover, Good, HSG B
	76,771	80	Weighted Average
	38,081		49.60% Pervious Area
	38,690		50.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	30	0.0800	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.22"
1.7	162	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.8	192	Total, Increased to minimum Tc = 6.0 min			

Subcatchment EX-3:



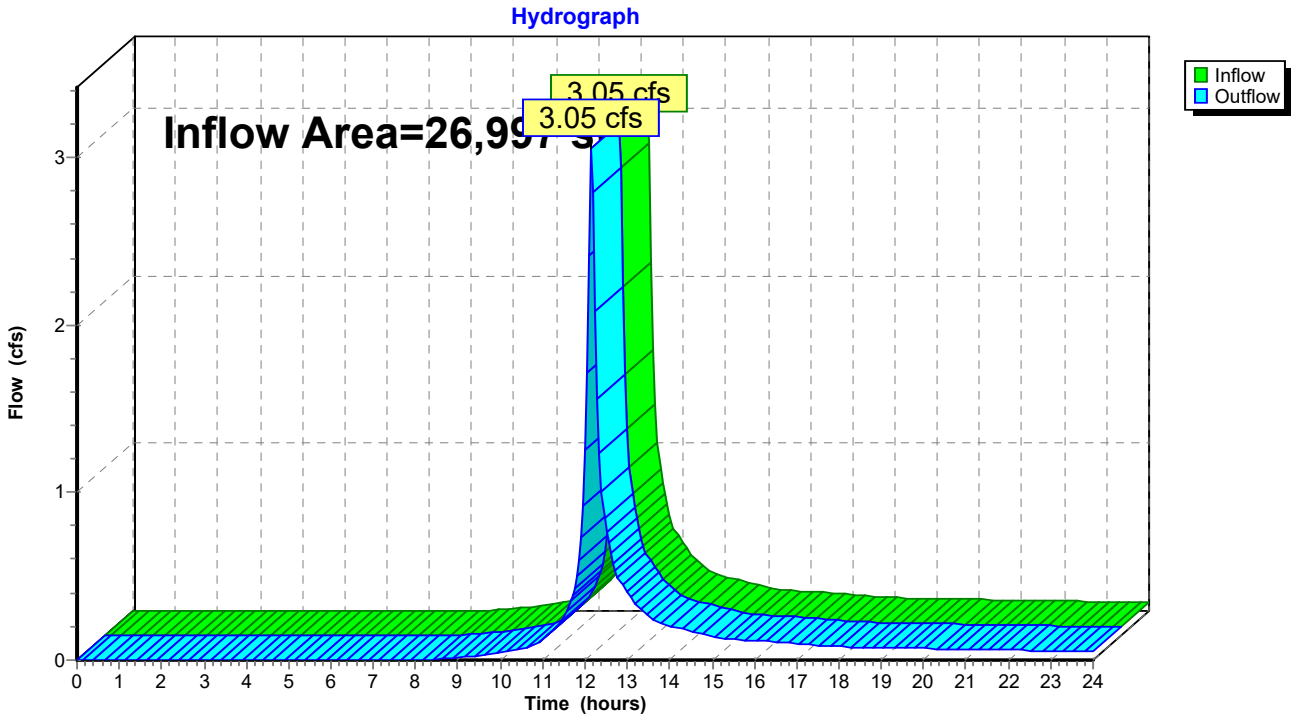
Summary for Reach DP-1:

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

Inflow Area = 26,997 sf, 7.66% Impervious, Inflow Depth > 4.42" for 100-Year event
Inflow = 3.05 cfs @ 12.16 hrs, Volume= 9,944 cf
Outflow = 3.05 cfs @ 12.16 hrs, Volume= 9,944 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach DP-1:



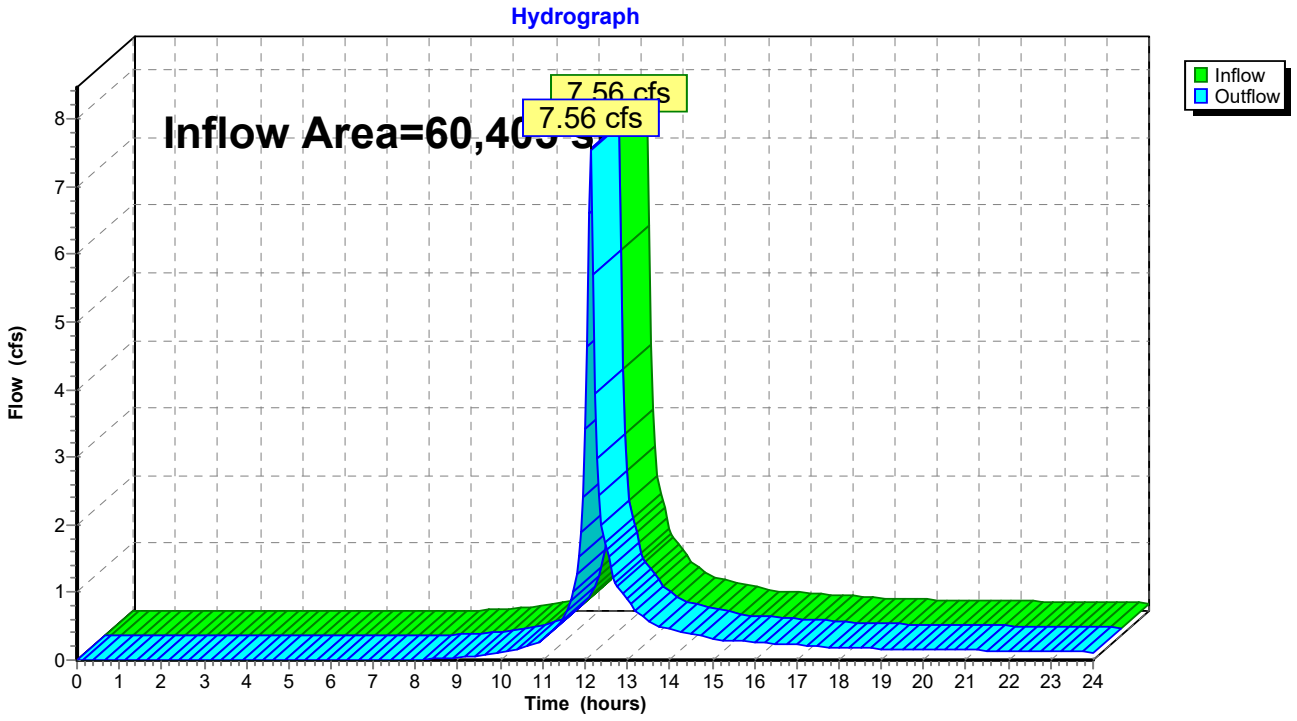
Summary for Reach DP-2:

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

Inflow Area = 60,405 sf, 10.22% Impervious, Inflow Depth > 4.54" for 100-Year event
Inflow = 7.56 cfs @ 12.14 hrs, Volume= 22,872 cf
Outflow = 7.56 cfs @ 12.14 hrs, Volume= 22,872 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach DP-2:



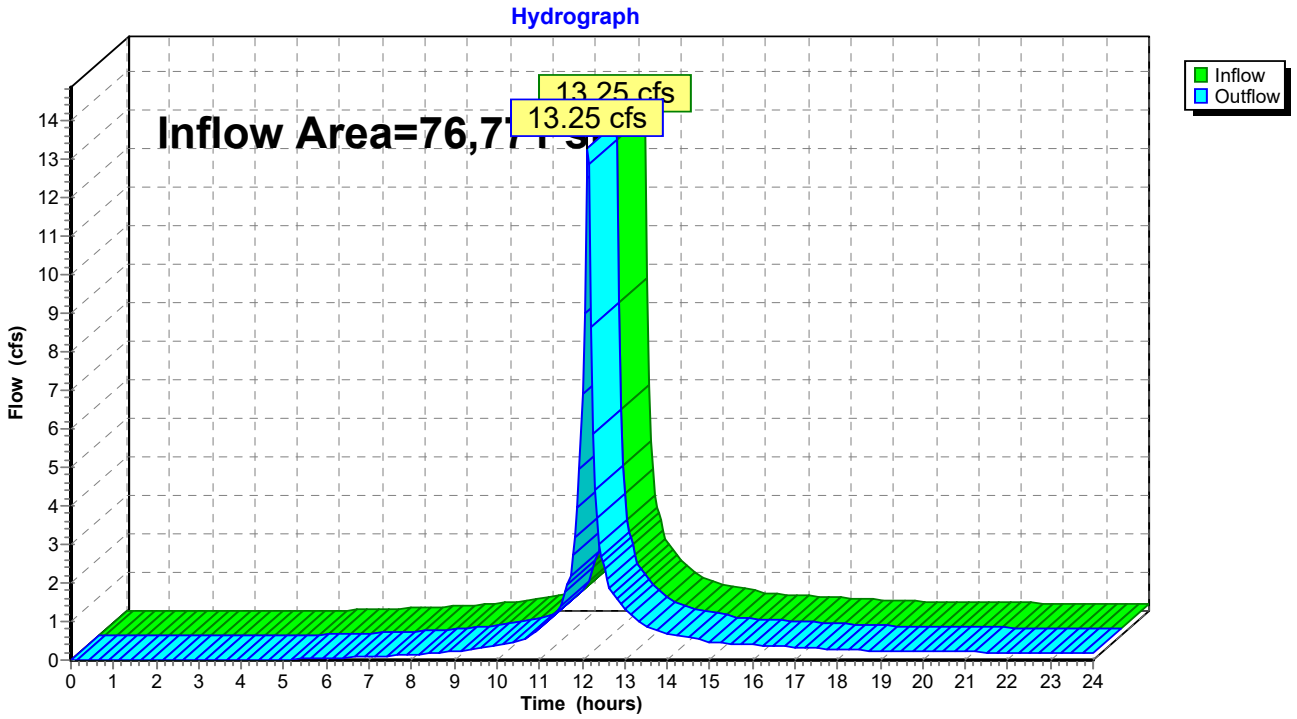
Summary for Reach DP-3:

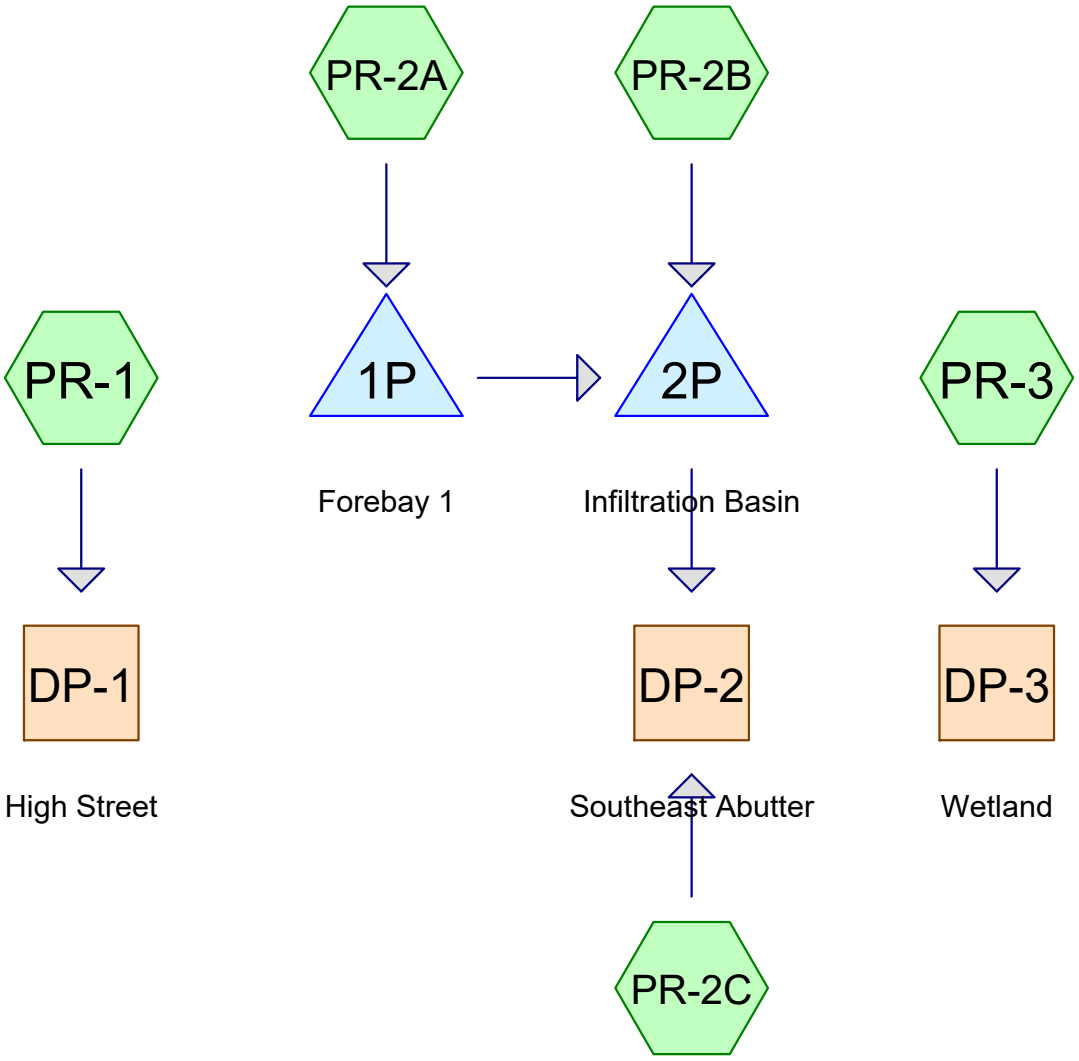
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 76,771 sf, 50.40% Impervious, Inflow Depth > 6.37" for 100-Year event
Inflow = 13.25 cfs @ 12.13 hrs, Volume= 40,768 cf
Outflow = 13.25 cfs @ 12.13 hrs, Volume= 40,768 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach DP-3:





Subcat Reach Pond Link

Routing Diagram for 23-023 HC PR - NOAA
Prepared by PVI Site Design, LLC, Printed 5/28/2025

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	NRCC 24-hr	C	Default	24.00	1	3.38	2
2	10-Year	NRCC 24-hr	C	Default	24.00	1	5.27	2
3	100-Year	NRCC 24-hr	C	Default	24.00	1	8.27	2

Summary for Subcatchment PR-1:

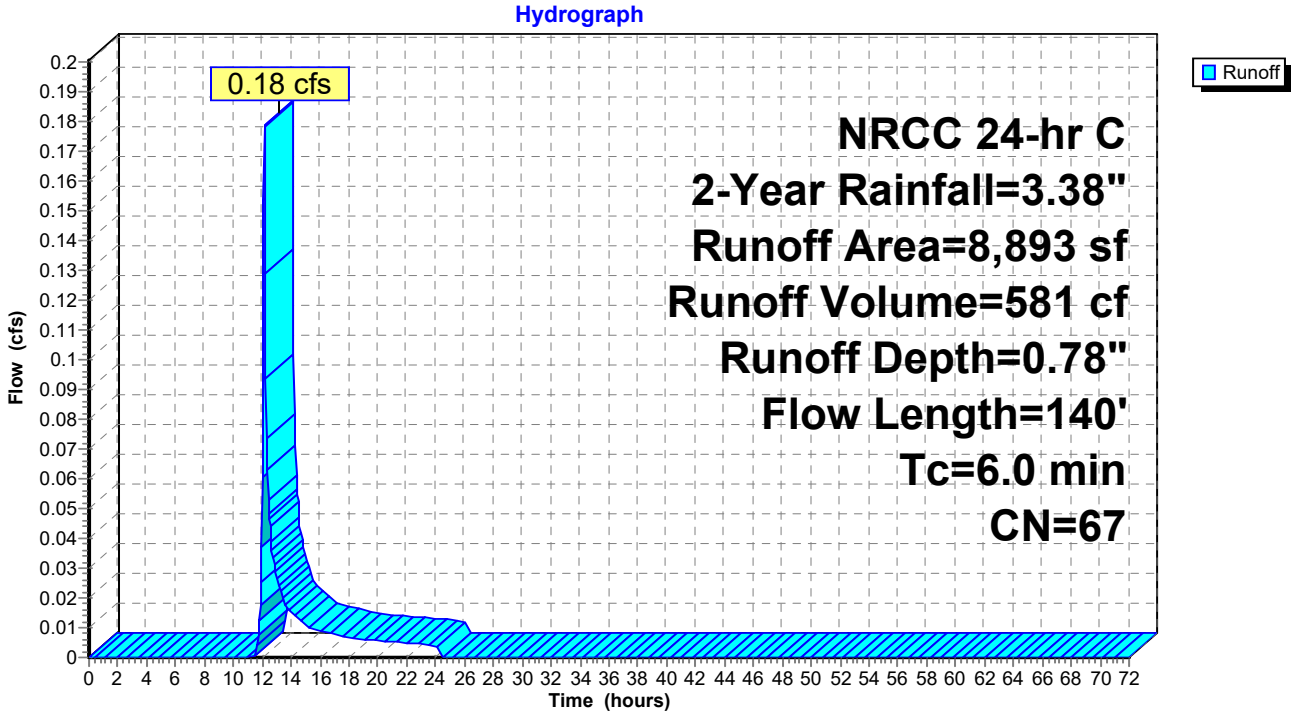
Runoff = 0.18 cfs @ 12.14 hrs, Volume= 581 cf, Depth= 0.78"
Routed to Reach DP-1 : High Street

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 2-Year Rainfall=3.38"

Area (sf)	CN	Description
680	98	Roofs, HSG B
797	98	Paved parking, HSG B
7,416	61	>75% Grass cover, Good, HSG B
8,893	67	Weighted Average
7,416		83.39% Pervious Area
1,477		16.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	30	0.0250	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.22"
1.8	110	0.0210	1.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.2	140	Total, Increased to minimum Tc = 6.0 min			

Subcatchment PR-1:



Summary for Subcatchment PR-2A:

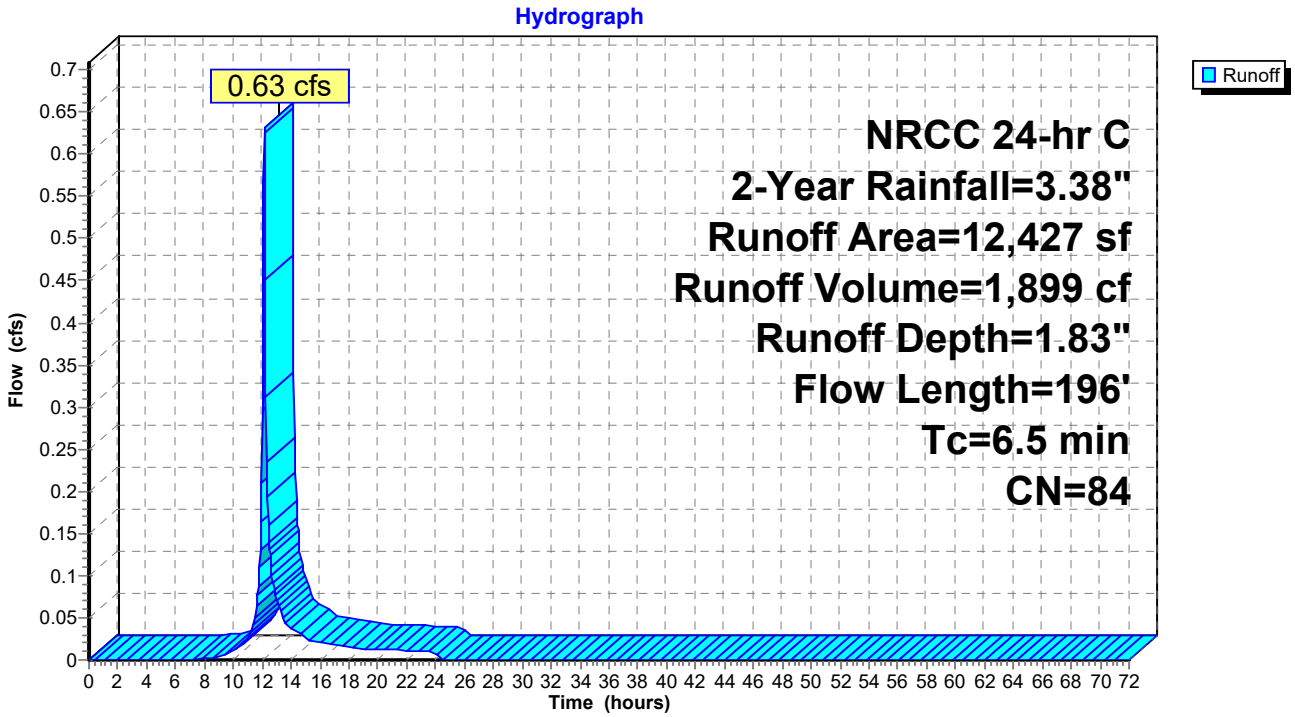
Runoff = 0.63 cfs @ 12.14 hrs, Volume= 1,899 cf, Depth= 1.83"
Routed to Pond 1P : Forebay 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 2-Year Rainfall=3.38"

Area (sf)	CN	Description
7,736	98	Paved parking, HSG B
4,691	61	>75% Grass cover, Good, HSG B
12,427	84	Weighted Average
4,691		37.75% Pervious Area
7,736		62.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	30	0.0250	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.22"
3.1	166	0.0166	0.90		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.5	196	Total			

Subcatchment PR-2A:



Summary for Subcatchment PR-2B:

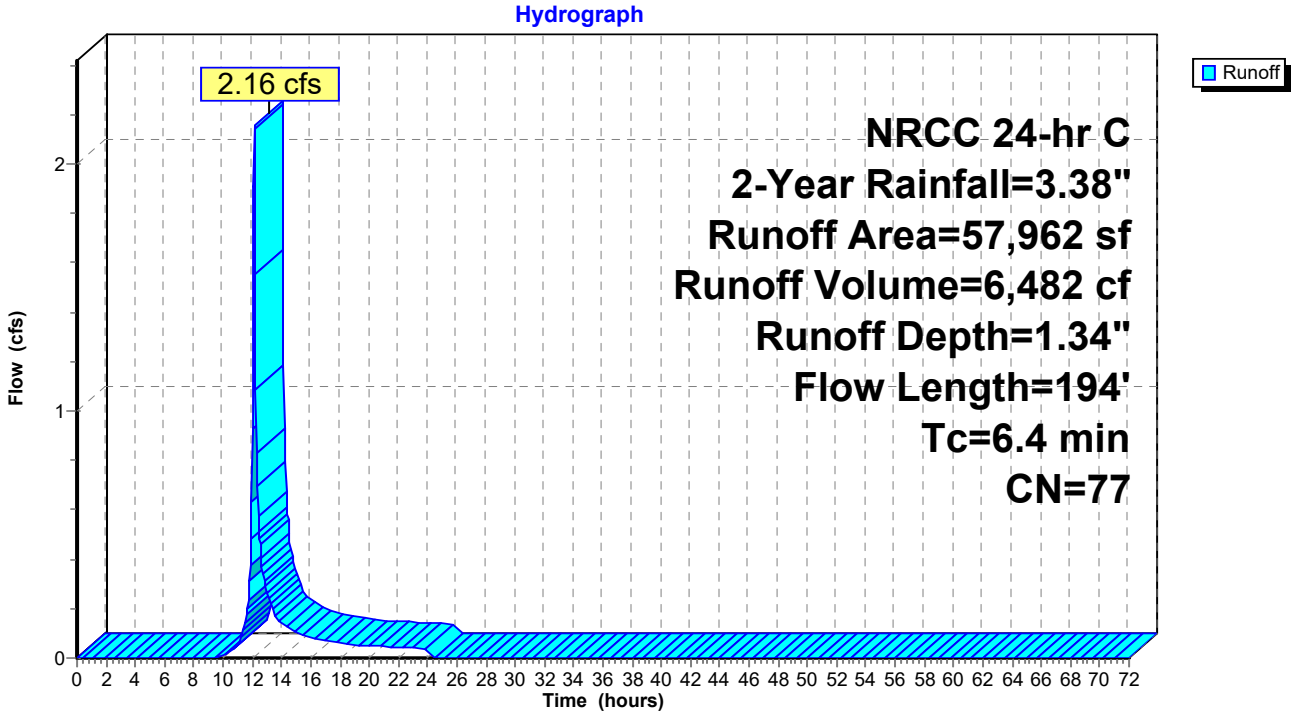
Runoff = 2.16 cfs @ 12.14 hrs, Volume= 6,482 cf, Depth= 1.34"
Routed to Pond 2P : Infiltration Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 2-Year Rainfall=3.38"

	Area (sf)	CN	Description
	6,720	98	Roofs, HSG B
	2,214	98	Unconnected pavement, HSG B
	16,448	98	Water Surface, 0% imp, HSG B
*	700	75	Permeable Pavers, HSG B
	31,880	61	>75% Grass cover, Good, HSG B
	57,962	77	Weighted Average
	49,028		84.59% Pervious Area
	8,934		15.41% Impervious Area
	2,214		24.78% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	30	0.0250	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.22"
3.0	164	0.0166	0.90		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.4	194	Total			

Subcatchment PR-2B:



Summary for Subcatchment PR-2C:

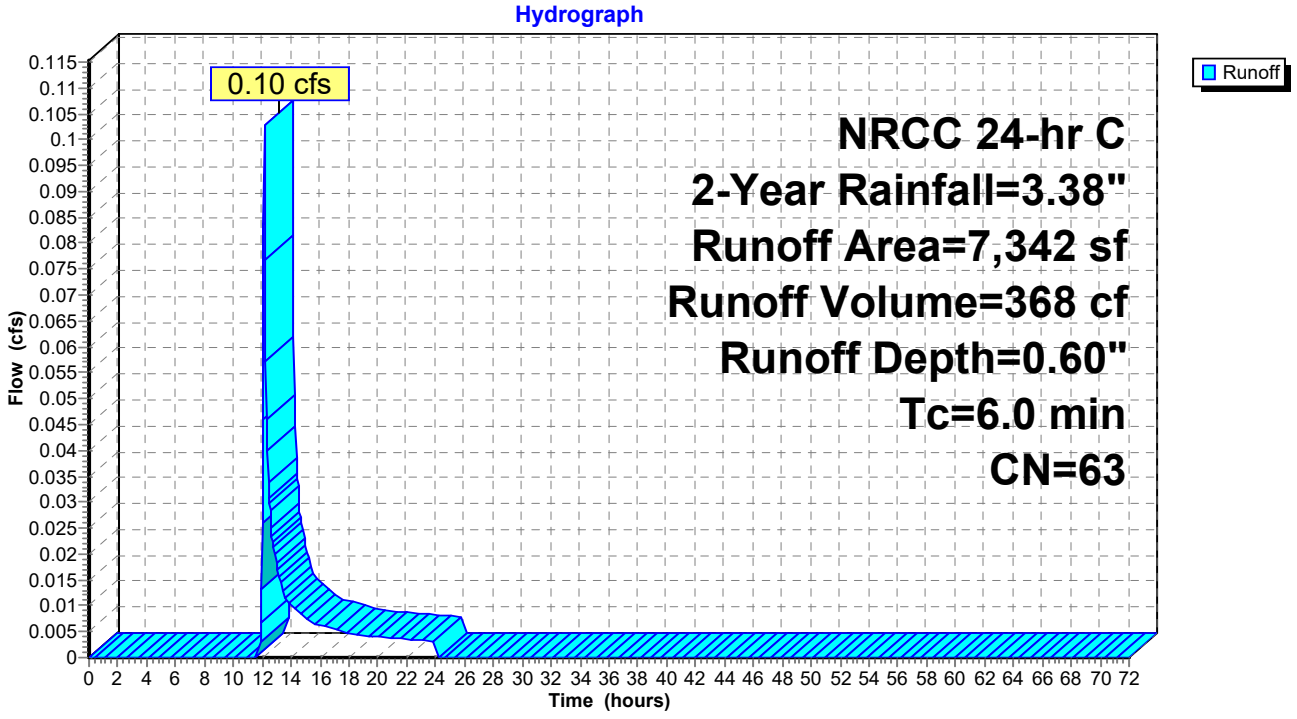
Runoff = 0.10 cfs @ 12.15 hrs, Volume= 368 cf, Depth= 0.60"
Routed to Reach DP-2 : Southeast Abutter

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 2-Year Rainfall=3.38"

Area (sf)	CN	Description
422	98	Roofs, HSG B
6,920	61	>75% Grass cover, Good, HSG B
7,342	63	Weighted Average
6,920		94.25% Pervious Area
422		5.75% Impervious Area

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

Subcatchment PR-2C:



Summary for Subcatchment PR-3:

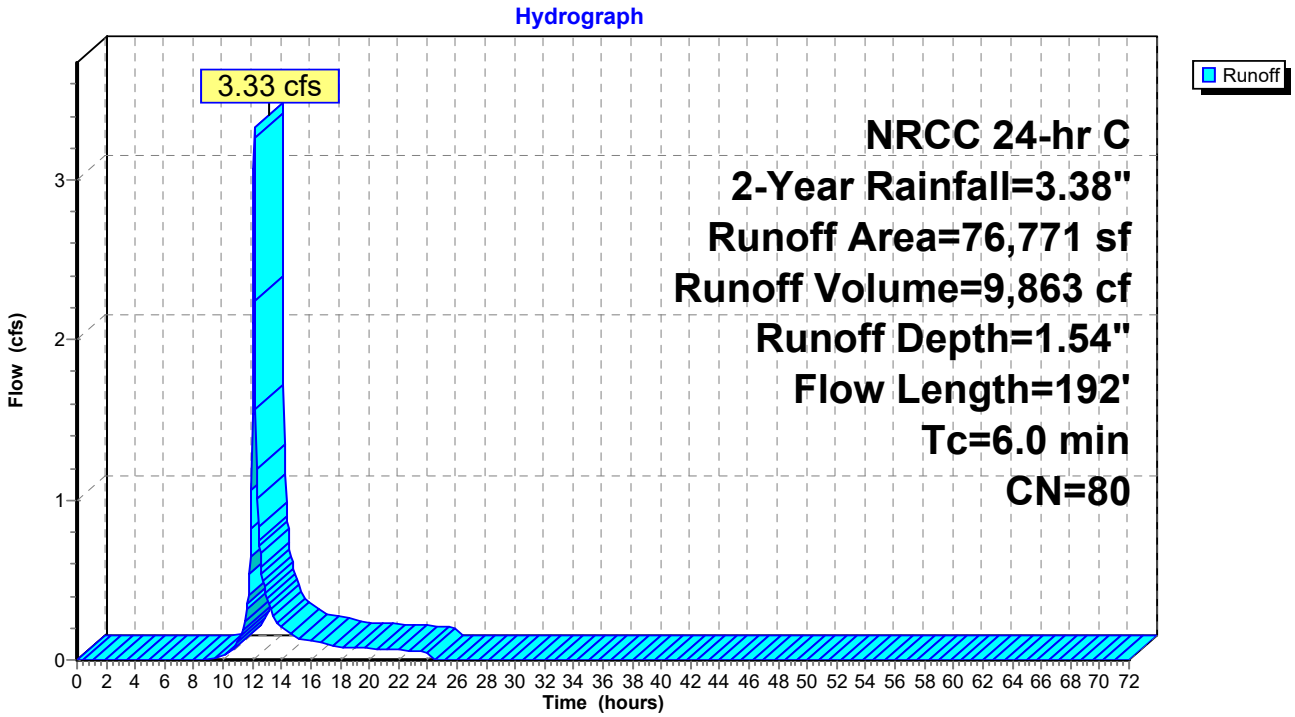
Runoff = 3.33 cfs @ 12.13 hrs, Volume= 9,863 cf, Depth= 1.54"
Routed to Reach DP-3 : Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 2-Year Rainfall=3.38"

	Area (sf)	CN	Description
*	38,690	98	Wetland, HSG B
	38,081	61	>75% Grass cover, Good, HSG B
	76,771	80	Weighted Average
	38,081		49.60% Pervious Area
	38,690		50.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	30	0.0800	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.22"
1.7	162	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.8	192	Total, Increased to minimum Tc = 6.0 min			

Subcatchment PR-3:



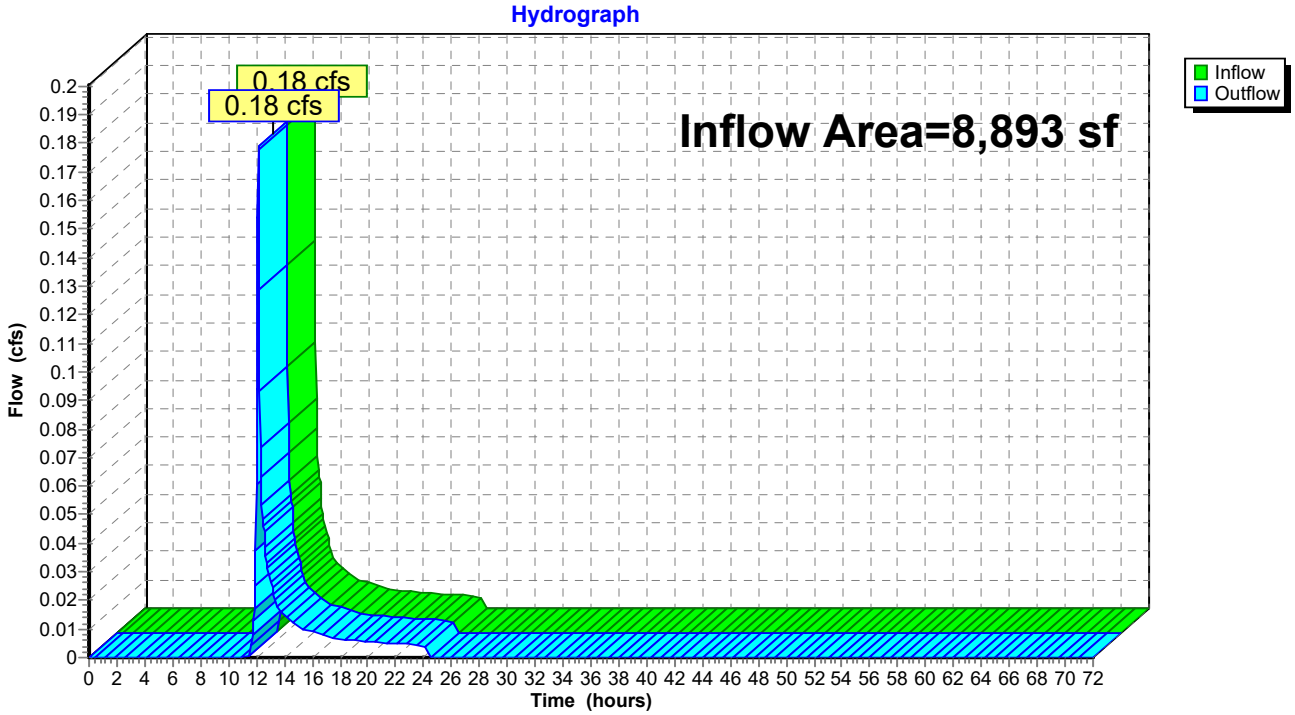
Summary for Reach DP-1: High Street

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

Inflow Area = 8,893 sf, 16.61% Impervious, Inflow Depth = 0.78" for 2-Year event
Inflow = 0.18 cfs @ 12.14 hrs, Volume= 581 cf
Outflow = 0.18 cfs @ 12.14 hrs, Volume= 581 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 2R

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach DP-1: High Street



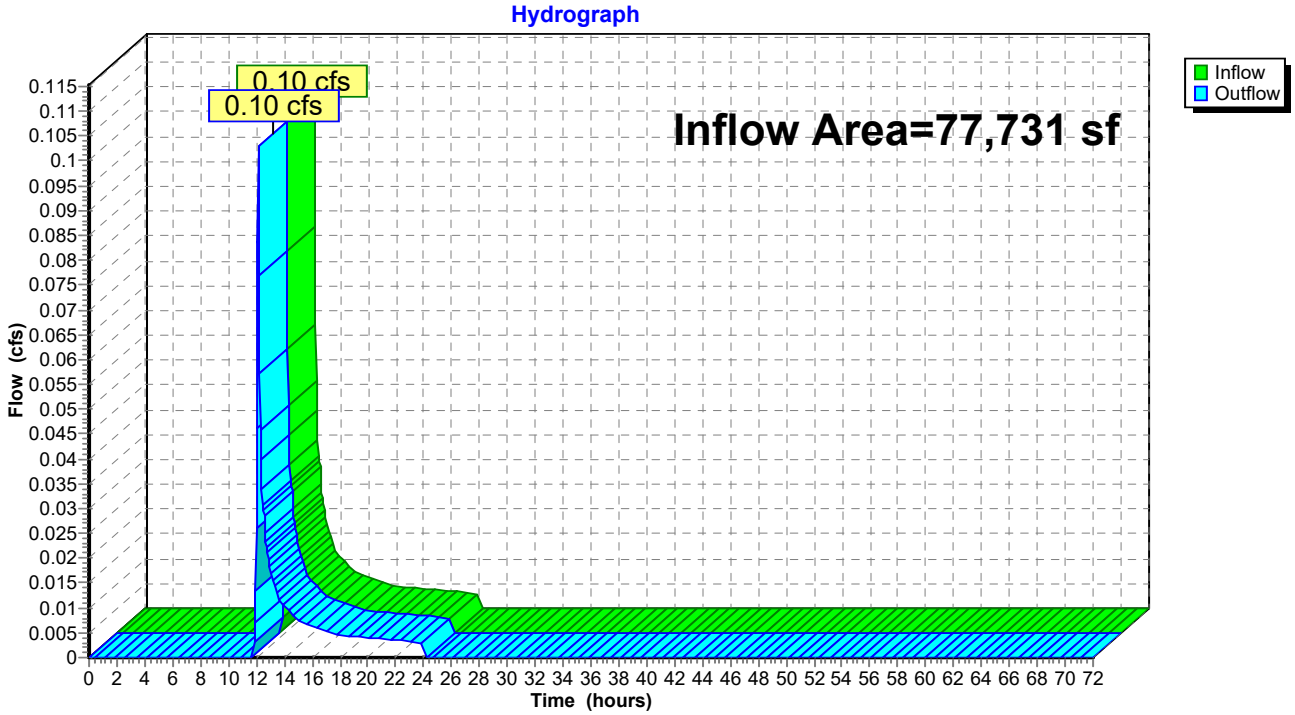
Summary for Reach DP-2: Southeast Abutter

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

Inflow Area = 77,731 sf, 21.99% Impervious, Inflow Depth = 0.06" for 2-Year event
Inflow = 0.10 cfs @ 12.15 hrs, Volume= 368 cf
Outflow = 0.10 cfs @ 12.15 hrs, Volume= 368 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 2R

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach DP-2: Southeast Abutter



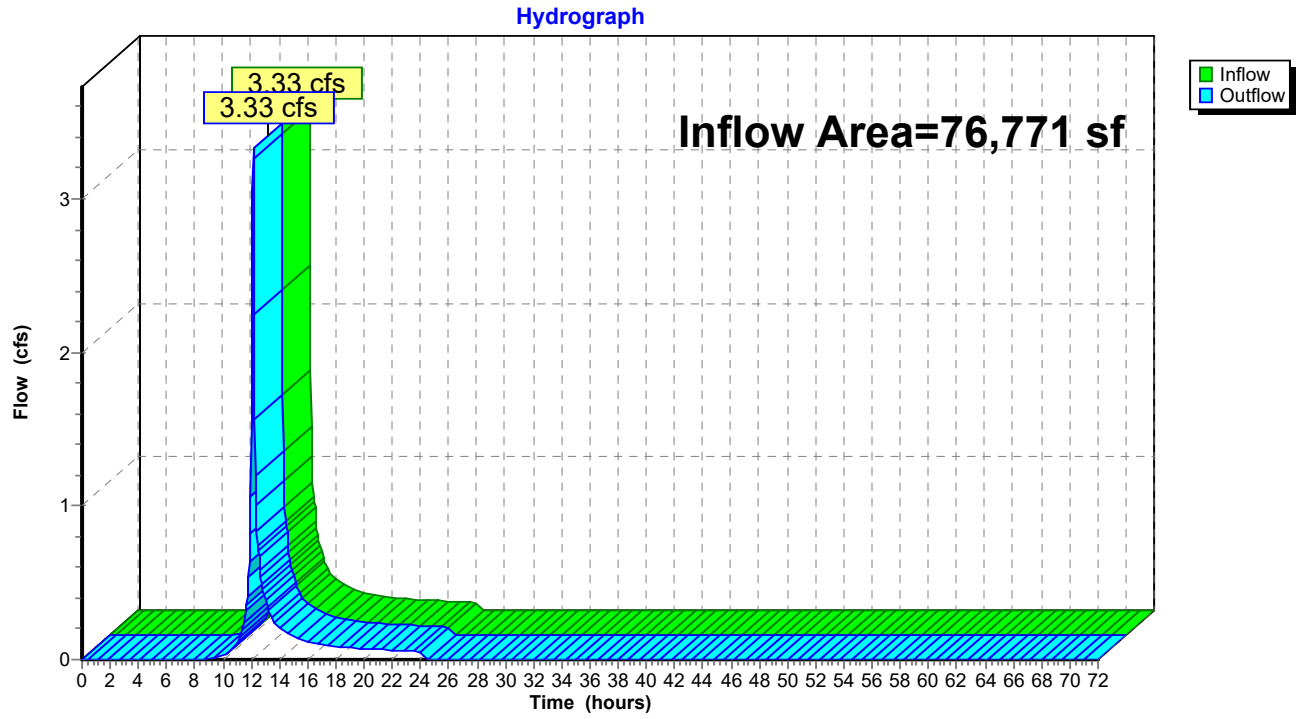
Summary for Reach DP-3: Wetland

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

Inflow Area = 76,771 sf, 50.40% Impervious, Inflow Depth = 1.54" for 2-Year event
Inflow = 3.33 cfs @ 12.13 hrs, Volume= 9,863 cf
Outflow = 3.33 cfs @ 12.13 hrs, Volume= 9,863 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 2R

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach DP-3: Wetland



Summary for Pond 1P: Forebay 1

Inflow Area = 12,427 sf, 62.25% Impervious, Inflow Depth = 1.83" for 2-Year event
Inflow = 0.63 cfs @ 12.14 hrs, Volume= 1,899 cf
Outflow = 0.44 cfs @ 12.22 hrs, Volume= 1,899 cf, Atten= 30%, Lag= 4.7 min
Discarded = 0.01 cfs @ 12.22 hrs, Volume= 784 cf
Primary = 0.44 cfs @ 12.22 hrs, Volume= 1,115 cf
Routed to Pond 2P : Infiltration Basin

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 217.62' @ 12.22 hrs Surf.Area= 1,177 sf Storage= 570 cf

Plug-Flow detention time= 316.9 min calculated for 1,898 cf (100% of inflow)
Center-of-Mass det. time= 317.7 min (1,154.8 - 837.2)

Volume	Invert	Avail.Storage	Storage Description
#1	217.00'	1,075 cf	**Bio-retention (Prismatic)**Listed below (Recalc)

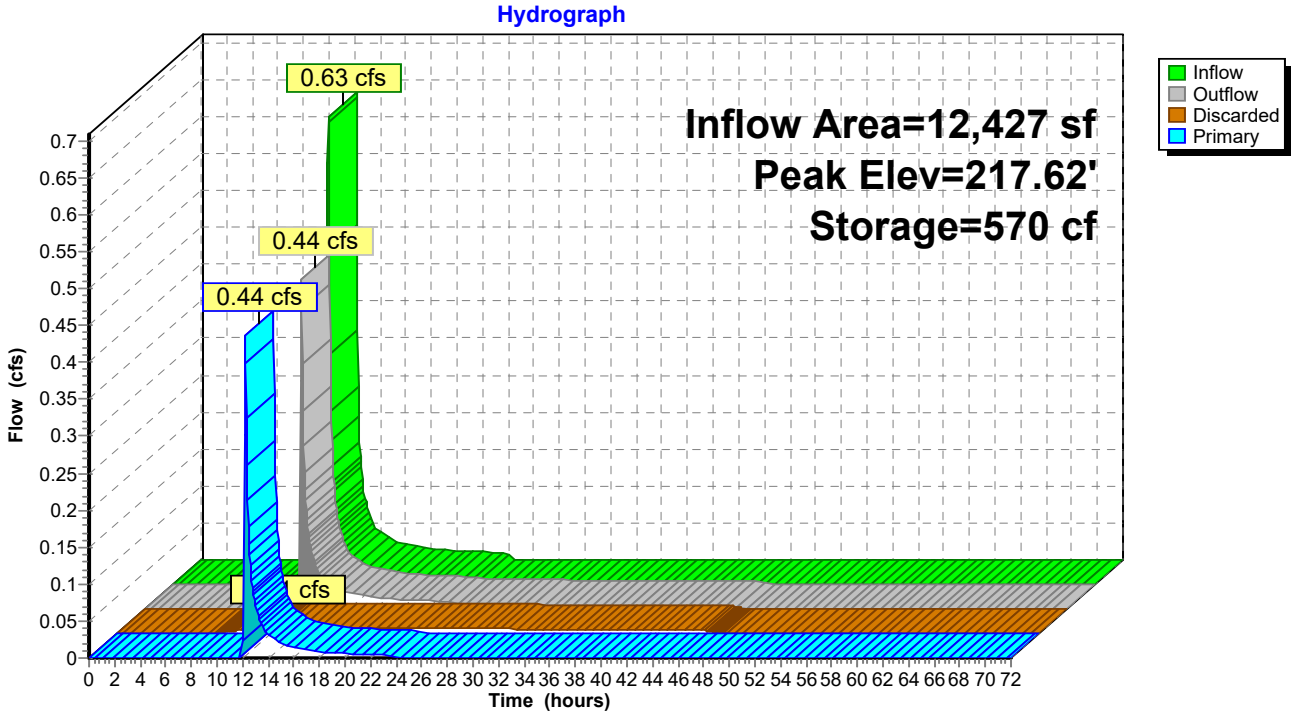
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
217.00	655	0	0
218.00	1,494	1,075	1,075

Device	Routing	Invert	Outlet Devices
#0	Primary	218.00'	**Automatic Storage Overflow** (Discharged without head)
#1	Discarded	217.00'	**0.270 in/hr Exfiltration over Surface area**
#2	Device 3	217.50'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	216.10'	**12.0" Round Culvert** L= 150.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 216.10' / 215.50' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.01 cfs @ 12.22 hrs HW=217.62' (Free Discharge)
↑└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.42 cfs @ 12.22 hrs HW=217.62' TW=216.00' (Fixed TW Elev= 216.00')
↑└**3=Culvert** (Passes 0.42 cfs of 2.63 cfs potential flow)
↑└**2=Orifice/Grate** (Weir Controls 0.42 cfs @ 1.13 fps)

Pond 1P: Forebay 1



Summary for Pond 2P: Infiltration Basin

Inflow Area = 70,389 sf, 23.68% Impervious, Inflow Depth = 1.30" for 2-Year event
Inflow = 2.44 cfs @ 12.15 hrs, Volume= 7,597 cf
Outflow = 0.08 cfs @ 16.96 hrs, Volume= 7,597 cf, Atten= 97%, Lag= 288.6 min
Discarded = 0.08 cfs @ 16.96 hrs, Volume= 7,597 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach DP-2 : Southeast Abutter

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 215.35' @ 16.96 hrs Surf.Area= 13,325 sf Storage= 4,480 cf

Plug-Flow detention time= 585.4 min calculated for 7,592 cf (100% of inflow)
Center-of-Mass det. time= 585.7 min (1,445.0 - 859.3)

Volume	Invert	Avail.Storage	Storage Description
#1	215.00'	31,163 cf	**Infiltration Basin (Prismatic)**Listed below (Recalc)

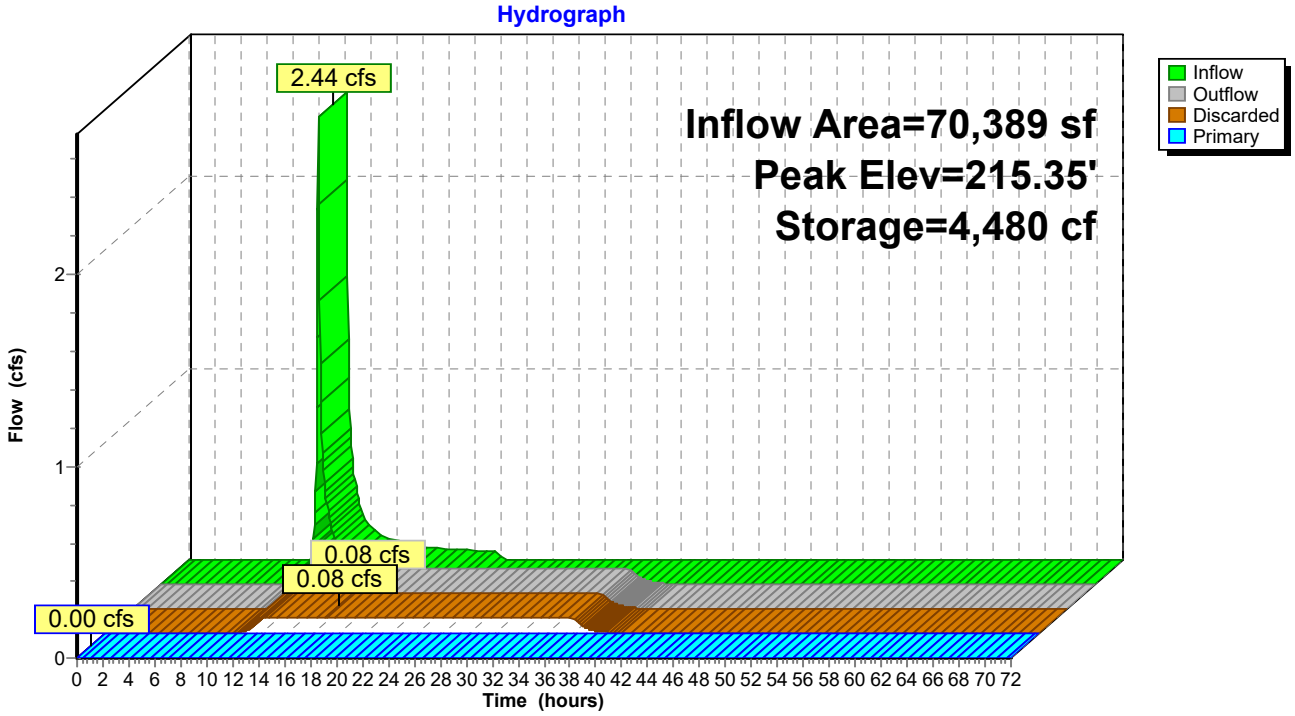
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
215.00	12,550	0	0
216.00	14,788	13,669	13,669
217.00	20,200	17,494	31,163

Device	Routing	Invert	Outlet Devices
#1	Discarded	215.00'	**0.270 in/hr Exfiltration over Surface area**
#2	Primary	215.80'	**20.0' long x 14.0' breadth Overflow**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.64 2.67 2.70 2.65 2.64 2.65 2.65 2.63

Discarded OutFlow Max=0.08 cfs @ 16.96 hrs HW=215.35' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.08 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=215.00' (Free Discharge)
↑—**2=Overflow** (Controls 0.00 cfs)

Pond 2P: Infiltration Basin



Summary for Subcatchment PR-1:

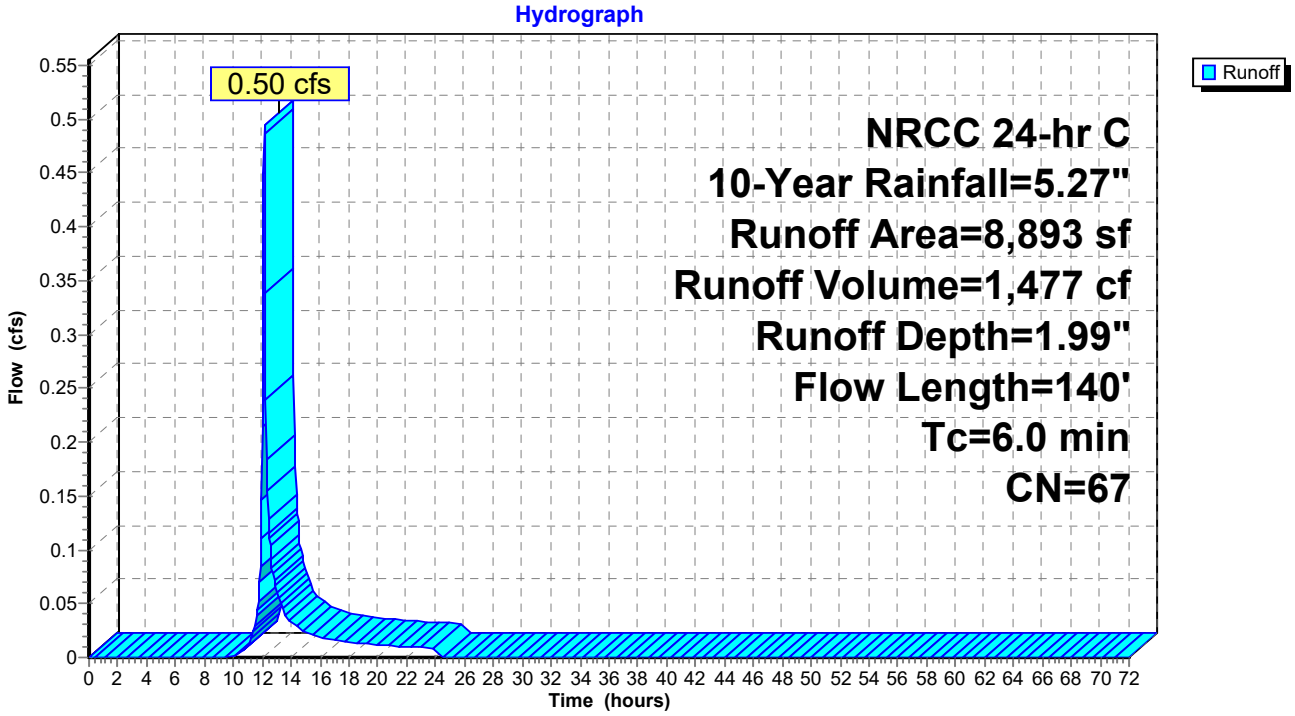
Runoff = 0.50 cfs @ 12.14 hrs, Volume= 1,477 cf, Depth= 1.99"
Routed to Reach DP-1 : High Street

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 10-Year Rainfall=5.27"

Area (sf)	CN	Description
680	98	Roofs, HSG B
797	98	Paved parking, HSG B
7,416	61	>75% Grass cover, Good, HSG B
8,893	67	Weighted Average
7,416		83.39% Pervious Area
1,477		16.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	30	0.0250	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.22"
1.8	110	0.0210	1.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.2	140	Total, Increased to minimum Tc = 6.0 min			

Subcatchment PR-1:



Summary for Subcatchment PR-2A:

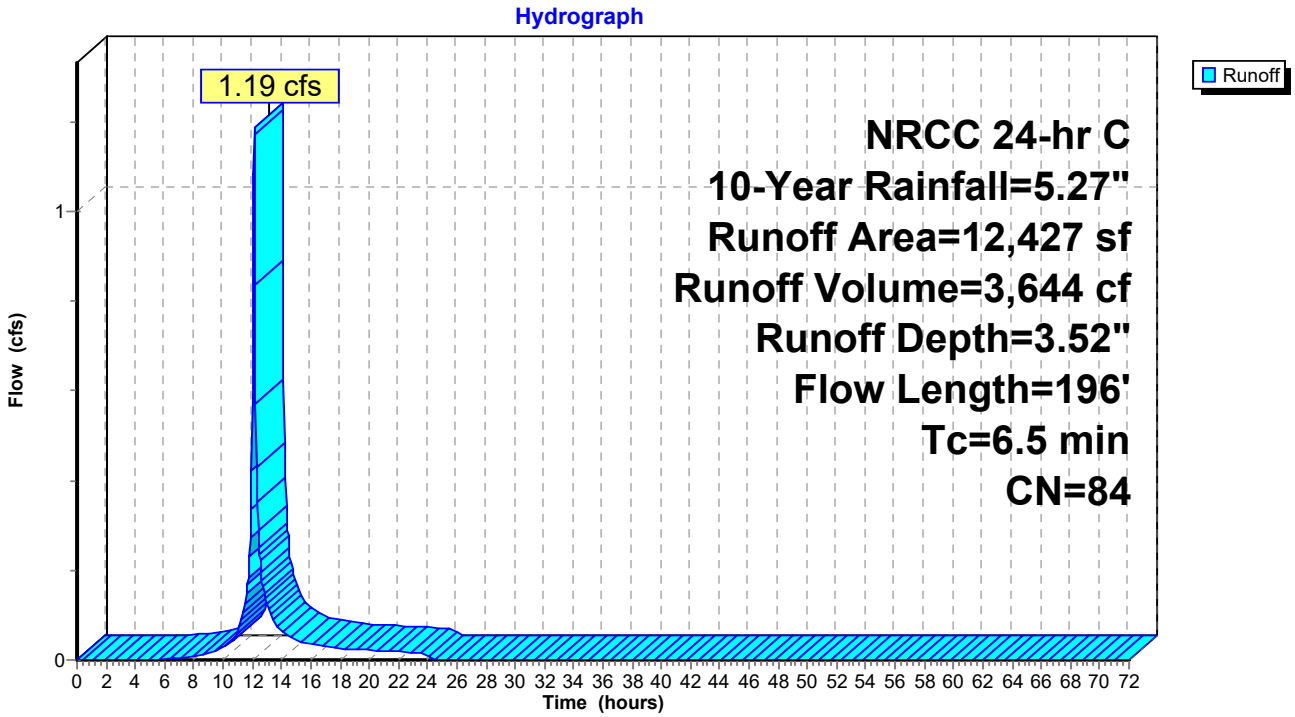
Runoff = 1.19 cfs @ 12.14 hrs, Volume= 3,644 cf, Depth= 3.52"
Routed to Pond 1P : Forebay 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 10-Year Rainfall=5.27"

Area (sf)	CN	Description
7,736	98	Paved parking, HSG B
4,691	61	>75% Grass cover, Good, HSG B
12,427	84	Weighted Average
4,691		37.75% Pervious Area
7,736		62.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	30	0.0250	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.22"
3.1	166	0.0166	0.90		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.5	196	Total			

Subcatchment PR-2A:



Summary for Subcatchment PR-2B:

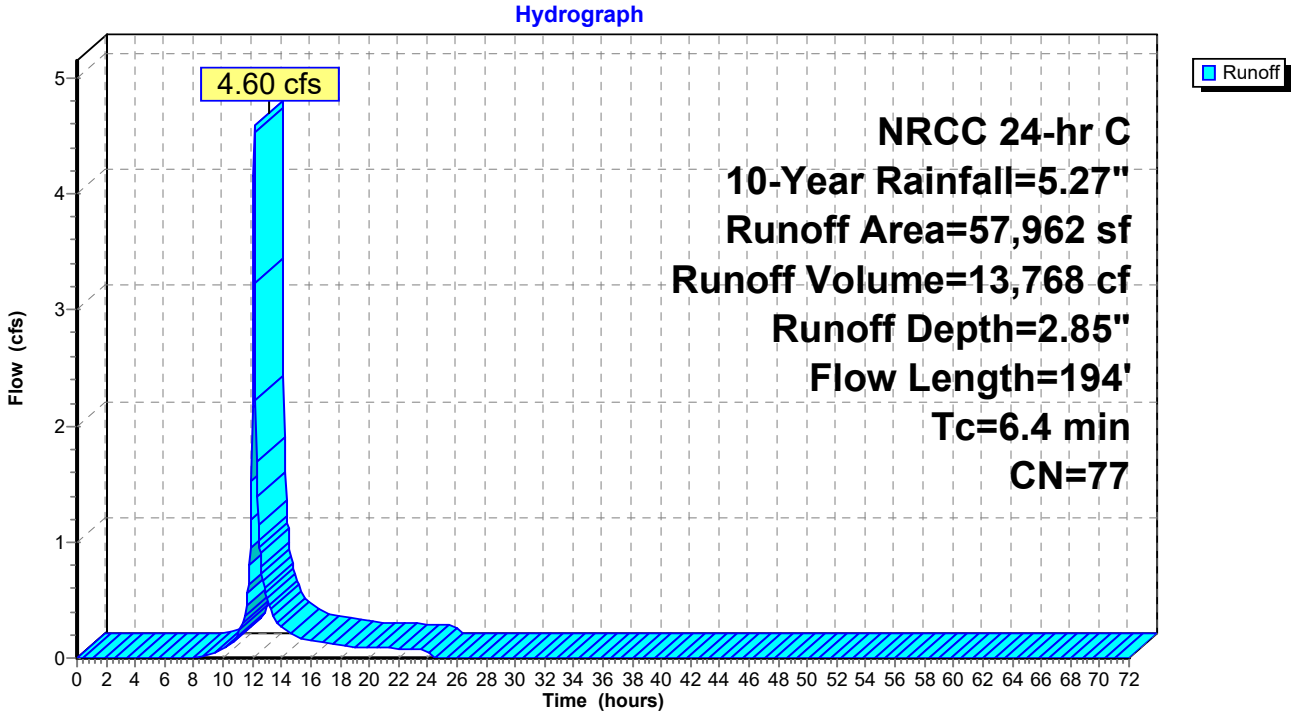
Runoff = 4.60 cfs @ 12.14 hrs, Volume= 13,768 cf, Depth= 2.85"
Routed to Pond 2P : Infiltration Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 10-Year Rainfall=5.27"

	Area (sf)	CN	Description
	6,720	98	Roofs, HSG B
	2,214	98	Unconnected pavement, HSG B
	16,448	98	Water Surface, 0% imp, HSG B
*	700	75	Permeable Pavers, HSG B
	31,880	61	>75% Grass cover, Good, HSG B
	57,962	77	Weighted Average
	49,028		84.59% Pervious Area
	8,934		15.41% Impervious Area
	2,214		24.78% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	30	0.0250	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.22"
3.0	164	0.0166	0.90		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.4	194	Total			

Subcatchment PR-2B:



Summary for Subcatchment PR-2C:

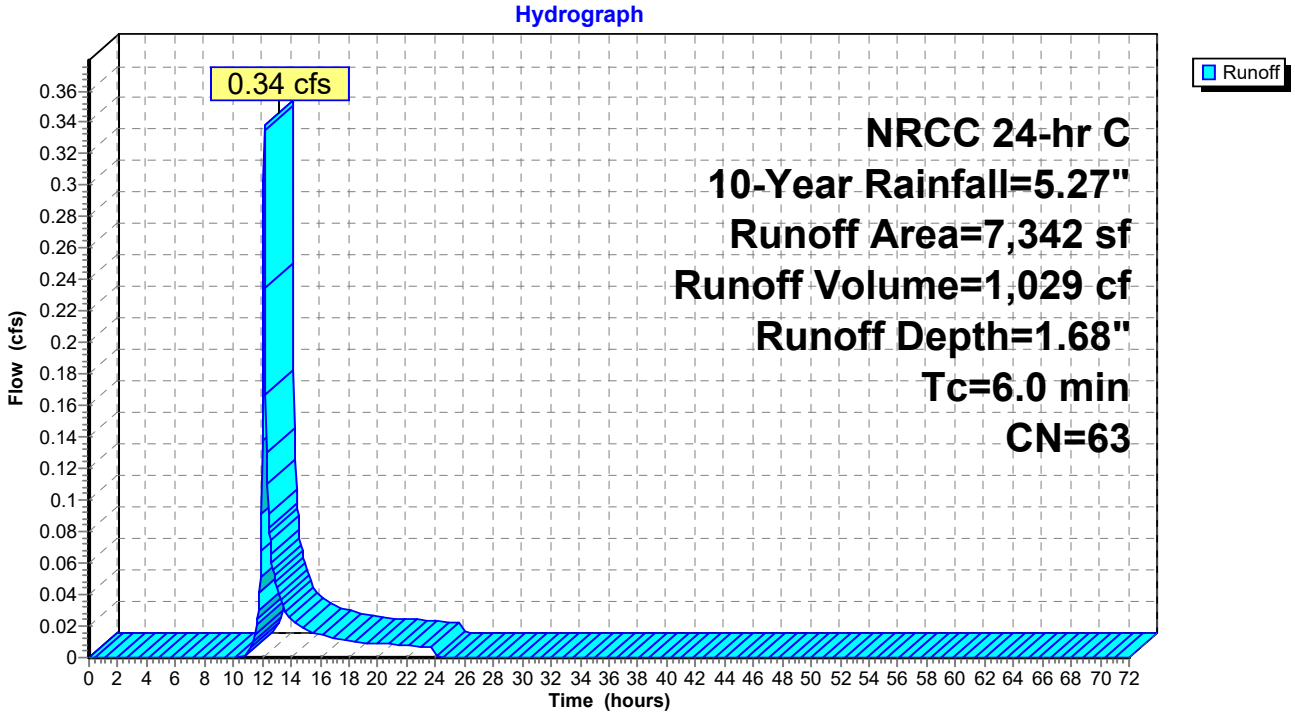
Runoff = 0.34 cfs @ 12.14 hrs, Volume= 1,029 cf, Depth= 1.68"
Routed to Reach DP-2 : Southeast Abutter

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 10-Year Rainfall=5.27"

Area (sf)	CN	Description
422	98	Roofs, HSG B
6,920	61	>75% Grass cover, Good, HSG B
7,342	63	Weighted Average
6,920		94.25% Pervious Area
422		5.75% Impervious Area

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

Subcatchment PR-2C:



Summary for Subcatchment PR-3:

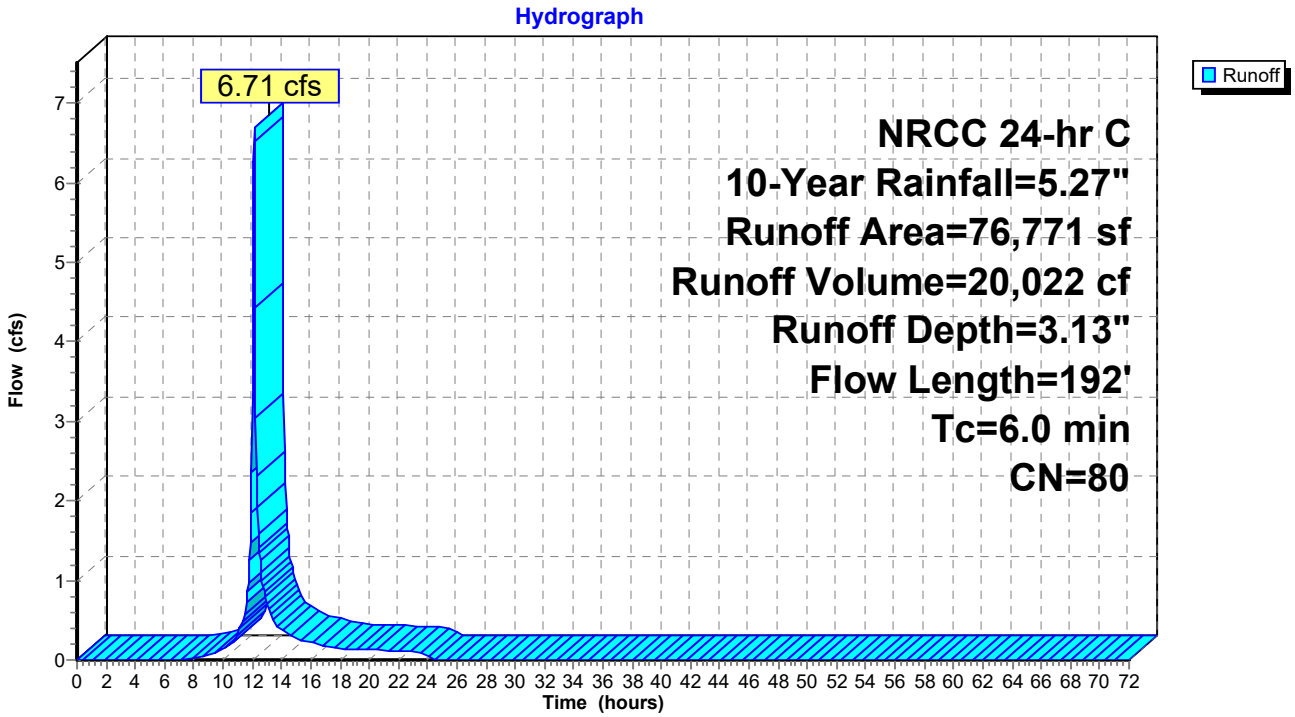
Runoff = 6.71 cfs @ 12.13 hrs, Volume= 20,022 cf, Depth= 3.13"
Routed to Reach DP-3 : Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 10-Year Rainfall=5.27"

	Area (sf)	CN	Description
*	38,690	98	Wetland, HSG B
	38,081	61	>75% Grass cover, Good, HSG B
	76,771	80	Weighted Average
	38,081		49.60% Pervious Area
	38,690		50.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	30	0.0800	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.22"
1.7	162	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.8	192	Total, Increased to minimum Tc = 6.0 min			

Subcatchment PR-3:



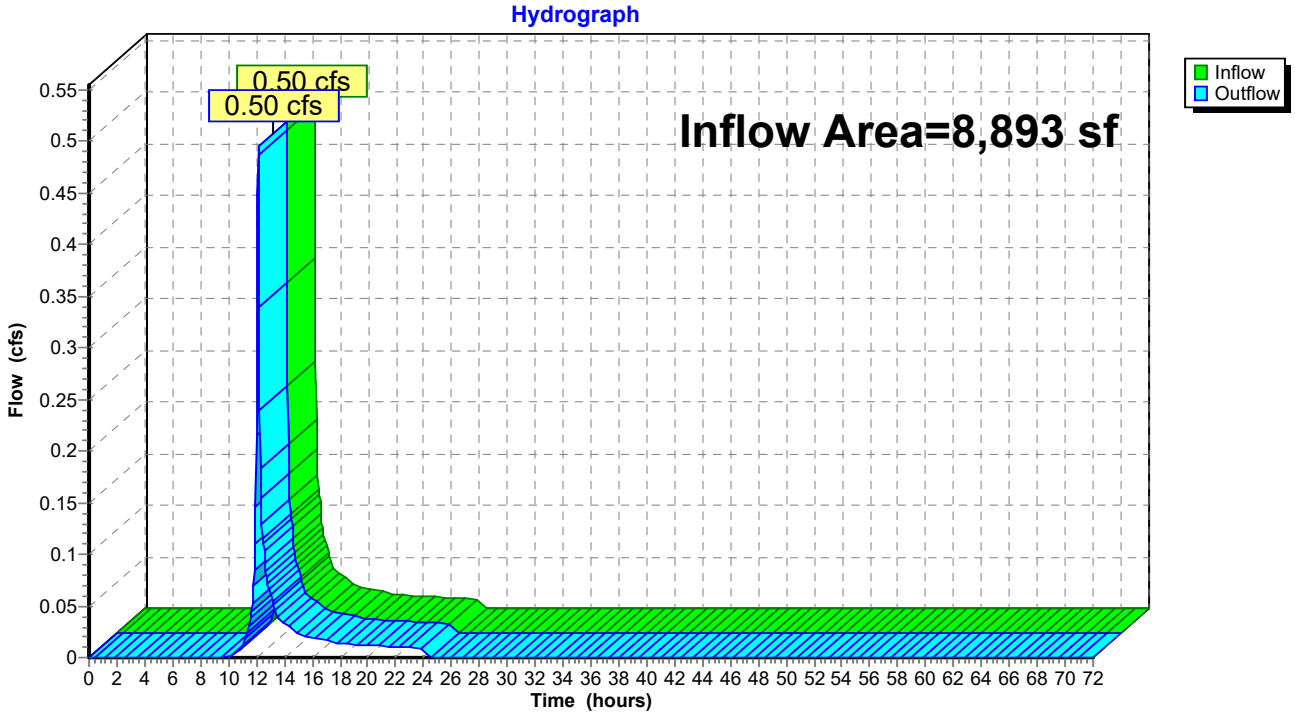
Summary for Reach DP-1: High Street

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

Inflow Area = 8,893 sf, 16.61% Impervious, Inflow Depth = 1.99" for 10-Year event
Inflow = 0.50 cfs @ 12.14 hrs, Volume= 1,477 cf
Outflow = 0.50 cfs @ 12.14 hrs, Volume= 1,477 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 2R

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach DP-1: High Street



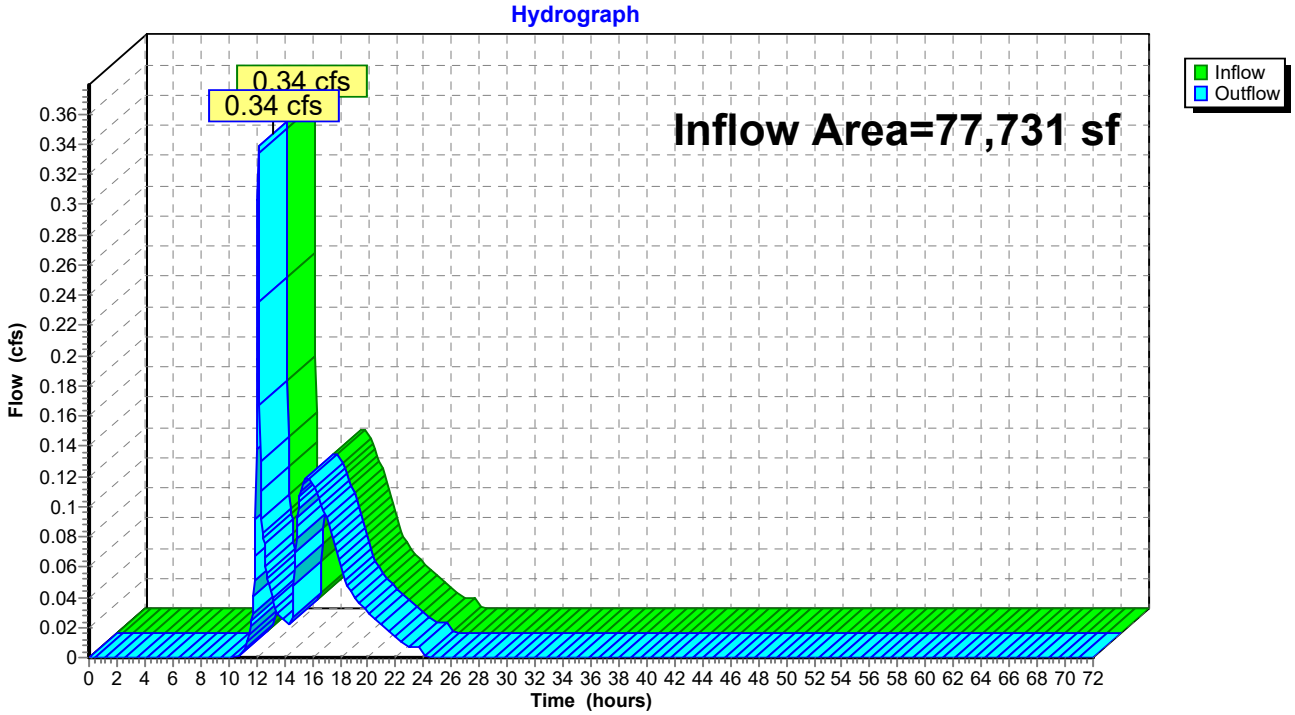
Summary for Reach DP-2: Southeast Abutter

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

Inflow Area = 77,731 sf, 21.99% Impervious, Inflow Depth = 0.37" for 10-Year event
Inflow = 0.34 cfs @ 12.14 hrs, Volume= 2,371 cf
Outflow = 0.34 cfs @ 12.14 hrs, Volume= 2,371 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 2R

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach DP-2: Southeast Abutter



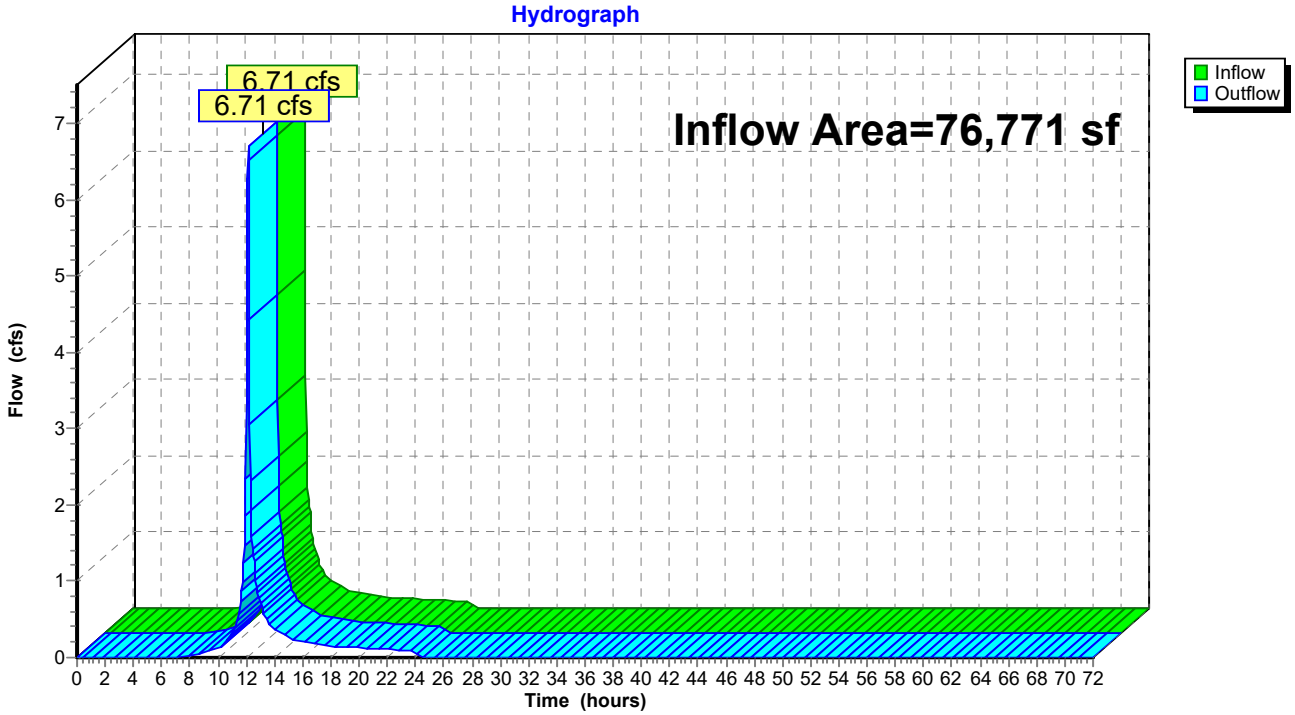
Summary for Reach DP-3: Wetland

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

Inflow Area = 76,771 sf, 50.40% Impervious, Inflow Depth = 3.13" for 10-Year event
Inflow = 6.71 cfs @ 12.13 hrs, Volume= 20,022 cf
Outflow = 6.71 cfs @ 12.13 hrs, Volume= 20,022 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 2R

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach DP-3: Wetland



Summary for Pond 1P: Forebay 1

Inflow Area = 12,427 sf, 62.25% Impervious, Inflow Depth = 3.52" for 10-Year event
Inflow = 1.19 cfs @ 12.14 hrs, Volume= 3,644 cf
Outflow = 1.04 cfs @ 12.17 hrs, Volume= 3,644 cf, Atten= 12%, Lag= 2.3 min
Discarded = 0.01 cfs @ 12.17 hrs, Volume= 834 cf
Primary = 1.03 cfs @ 12.17 hrs, Volume= 2,809 cf
Routed to Pond 2P : Infiltration Basin

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 217.72' @ 12.17 hrs Surf.Area= 1,256 sf Storage= 685 cf

Plug-Flow detention time= 176.8 min calculated for 3,641 cf (100% of inflow)
Center-of-Mass det. time= 177.6 min (994.2 - 816.6)

Volume	Invert	Avail.Storage	Storage Description
#1	217.00'	1,075 cf	**Bio-retention (Prismatic)**Listed below (Recalc)

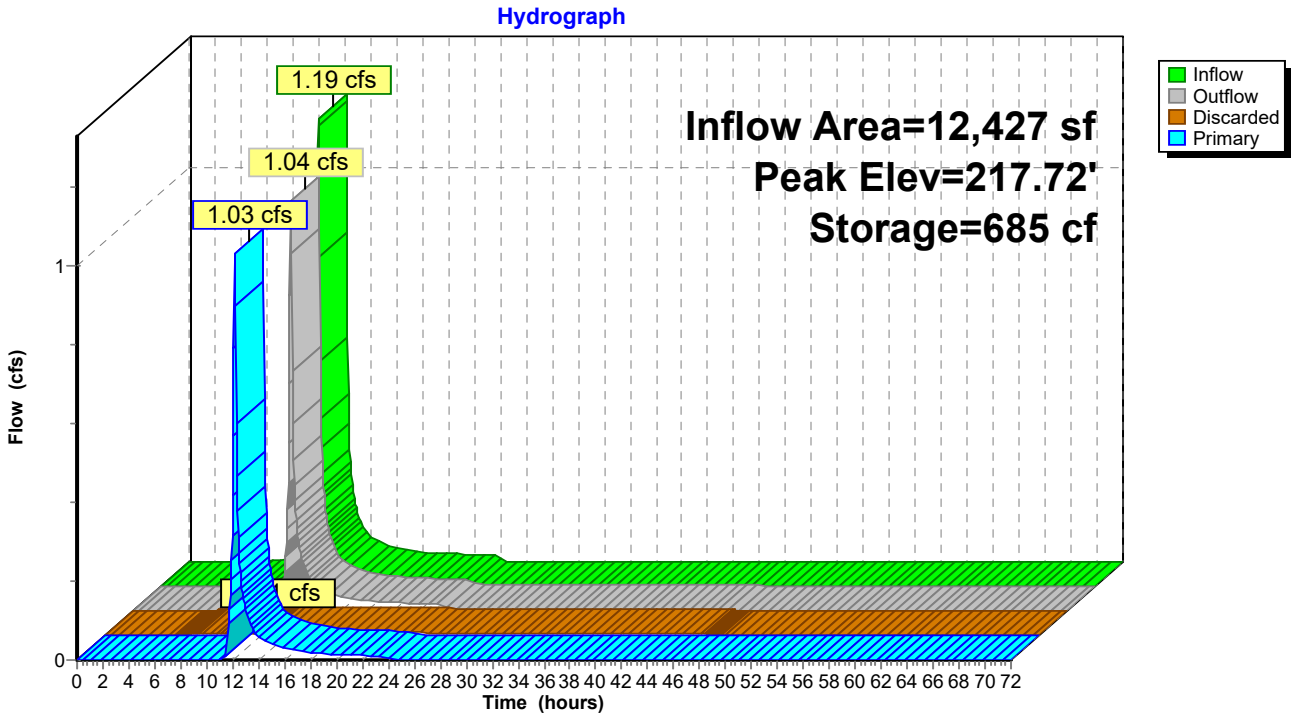
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
217.00	655	0	0
218.00	1,494	1,075	1,075

Device	Routing	Invert	Outlet Devices
#0	Primary	218.00'	**Automatic Storage Overflow** (Discharged without head)
#1	Discarded	217.00'	**0.270 in/hr Exfiltration over Surface area**
#2	Device 3	217.50'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	216.10'	**12.0" Round Culvert** L= 150.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 216.10' / 215.50' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.01 cfs @ 12.17 hrs HW=217.71' (Free Discharge)
↑└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=1.01 cfs @ 12.17 hrs HW=217.71' TW=216.00' (Fixed TW Elev= 216.00')
↑└**3=Culvert** (Passes 1.01 cfs of 2.74 cfs potential flow)
↑└**2=Orifice/Grate** (Weir Controls 1.01 cfs @ 1.51 fps)

Pond 1P: Forebay 1



Summary for Pond 2P: Infiltration Basin

Inflow Area = 70,389 sf, 23.68% Impervious, Inflow Depth = 2.83" for 10-Year event
Inflow = 5.58 cfs @ 12.14 hrs, Volume= 16,577 cf
Outflow = 0.19 cfs @ 15.68 hrs, Volume= 16,577 cf, Atten= 97%, Lag= 212.5 min
Discarded = 0.09 cfs @ 15.68 hrs, Volume= 15,235 cf
Primary = 0.11 cfs @ 15.68 hrs, Volume= 1,342 cf
Routed to Reach DP-2 : Southeast Abutter

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 215.81' @ 15.68 hrs Surf.Area= 14,372 sf Storage= 10,958 cf

Plug-Flow detention time= 1,132.4 min calculated for 16,577 cf (100% of inflow)
Center-of-Mass det. time= 1,132.2 min (1,968.8 - 836.5)

Volume	Invert	Avail.Storage	Storage Description
#1	215.00'	31,163 cf	**Infiltration Basin (Prismatic)**Listed below (Recalc)

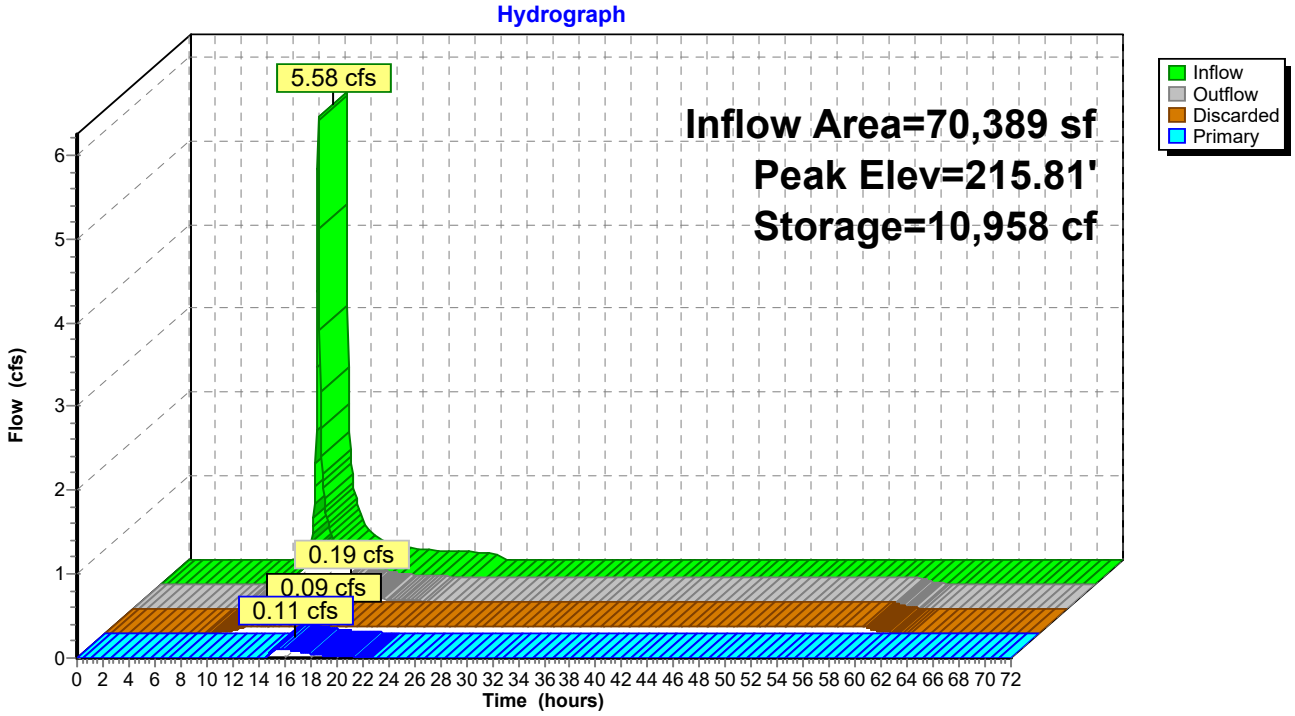
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
215.00	12,550	0	0
216.00	14,788	13,669	13,669
217.00	20,200	17,494	31,163

Device	Routing	Invert	Outlet Devices
#1	Discarded	215.00'	**0.270 in/hr Exfiltration over Surface area**
#2	Primary	215.80'	**20.0' long x 14.0' breadth Overflow**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.64 2.67 2.70 2.65 2.64 2.65 2.65 2.63

Discarded OutFlow Max=0.09 cfs @ 15.68 hrs HW=215.81' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

Primary OutFlow Max=0.09 cfs @ 15.68 hrs HW=215.81' (Free Discharge)
↑—**2=Overflow** (Weir Controls 0.09 cfs @ 0.31 fps)

Pond 2P: Infiltration Basin



Summary for Subcatchment PR-1:

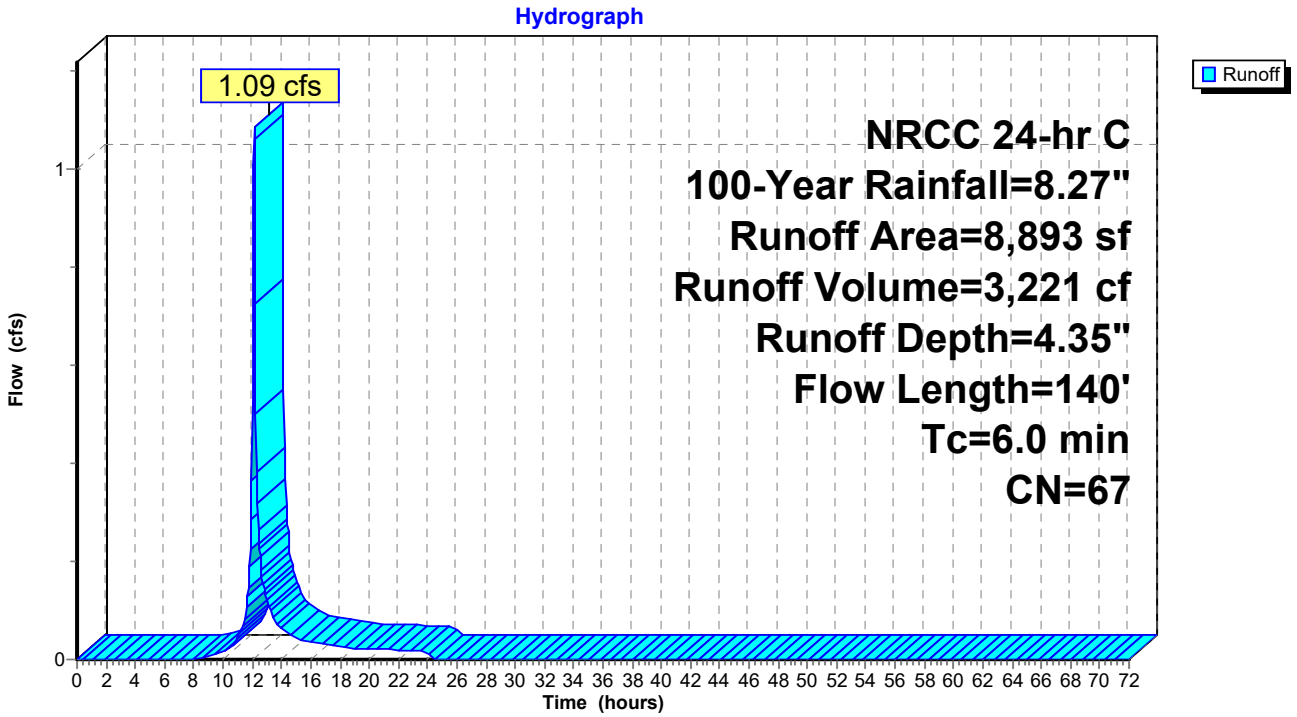
Runoff = 1.09 cfs @ 12.13 hrs, Volume= 3,221 cf, Depth= 4.35"
Routed to Reach DP-1 : High Street

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 100-Year Rainfall=8.27"

Area (sf)	CN	Description
680	98	Roofs, HSG B
797	98	Paved parking, HSG B
7,416	61	>75% Grass cover, Good, HSG B
8,893	67	Weighted Average
7,416		83.39% Pervious Area
1,477		16.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	30	0.0250	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.22"
1.8	110	0.0210	1.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.2	140	Total, Increased to minimum Tc = 6.0 min			

Subcatchment PR-1:



Summary for Subcatchment PR-2A:

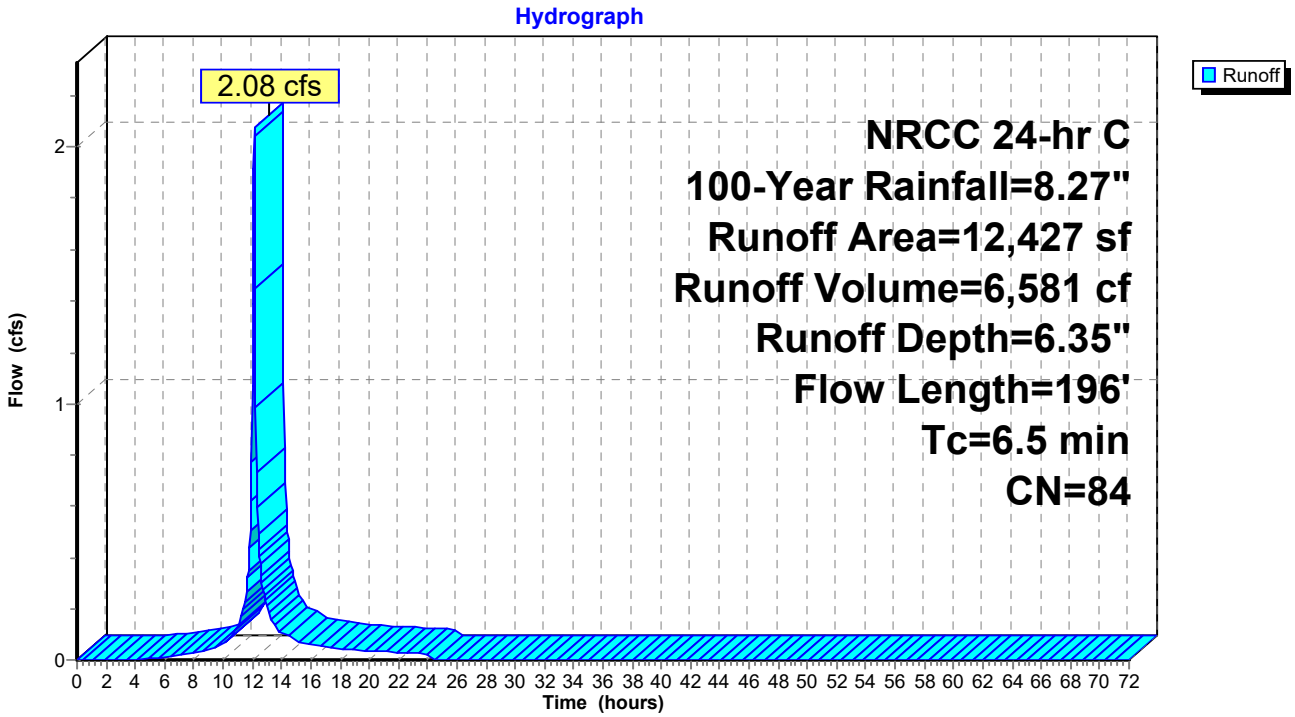
Runoff = 2.08 cfs @ 12.13 hrs, Volume= 6,581 cf, Depth= 6.35"
Routed to Pond 1P : Forebay 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 100-Year Rainfall=8.27"

Area (sf)	CN	Description
7,736	98	Paved parking, HSG B
4,691	61	>75% Grass cover, Good, HSG B
12,427	84	Weighted Average
4,691		37.75% Pervious Area
7,736		62.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	30	0.0250	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.22"
3.1	166	0.0166	0.90		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.5	196	Total			

Subcatchment PR-2A:



Summary for Subcatchment PR-2B:

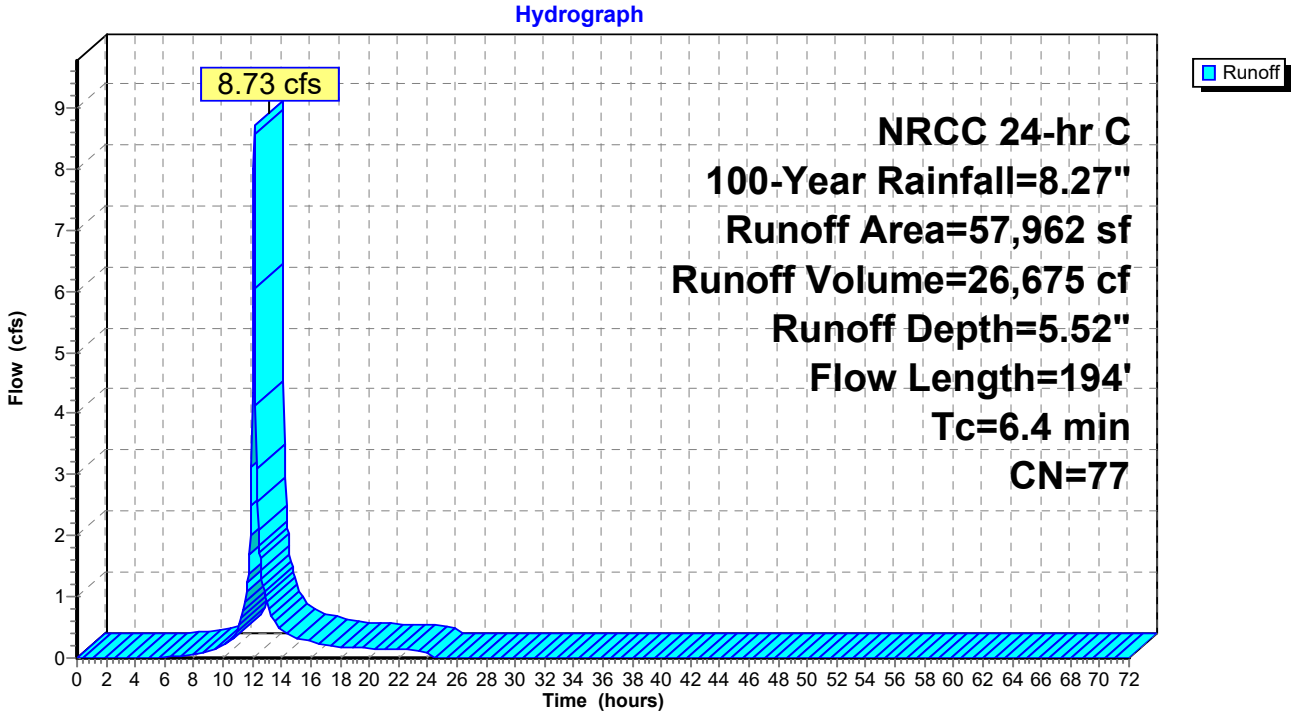
Runoff = 8.73 cfs @ 12.13 hrs, Volume= 26,675 cf, Depth= 5.52"
Routed to Pond 2P : Infiltration Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 100-Year Rainfall=8.27"

	Area (sf)	CN	Description
	6,720	98	Roofs, HSG B
	2,214	98	Unconnected pavement, HSG B
	16,448	98	Water Surface, 0% imp, HSG B
*	700	75	Permeable Pavers, HSG B
	31,880	61	>75% Grass cover, Good, HSG B
	57,962	77	Weighted Average
	49,028		84.59% Pervious Area
	8,934		15.41% Impervious Area
	2,214		24.78% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	30	0.0250	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.22"
3.0	164	0.0166	0.90		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.4	194	Total			

Subcatchment PR-2B:



Summary for Subcatchment PR-2C:

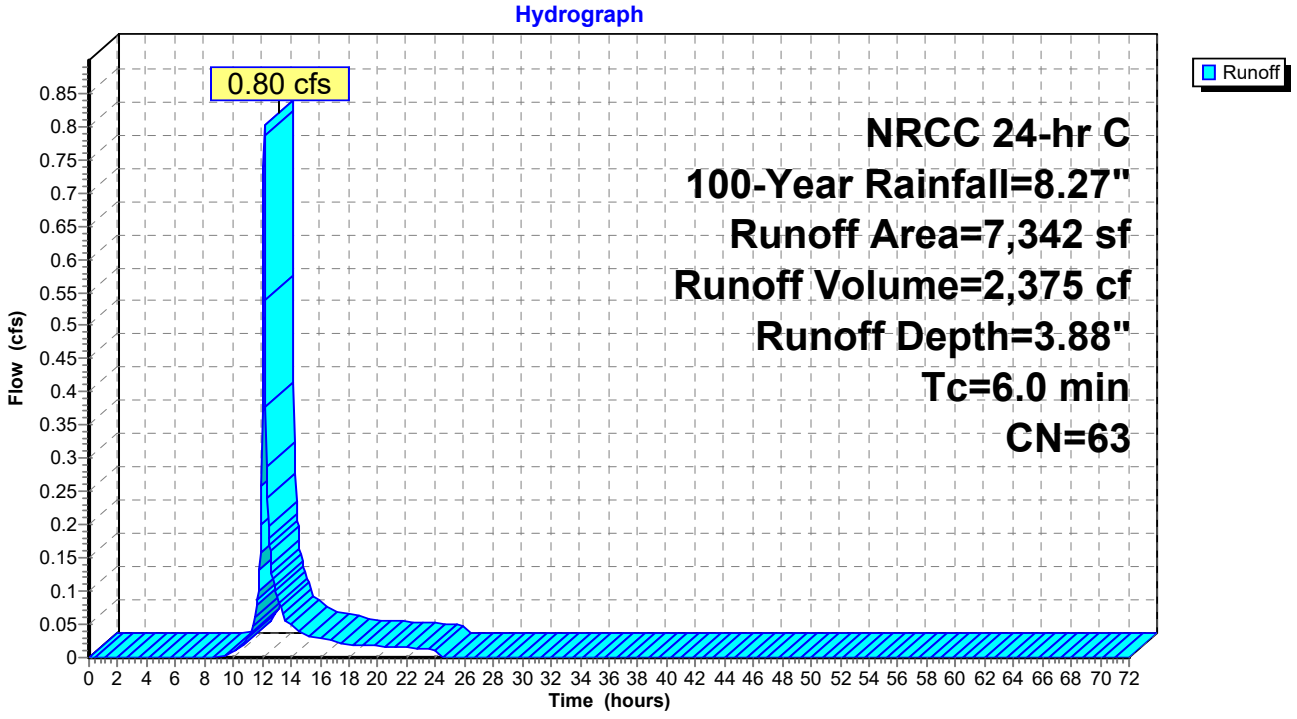
Runoff = 0.80 cfs @ 12.13 hrs, Volume= 2,375 cf, Depth= 3.88"
Routed to Reach DP-2 : Southeast Abutter

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 100-Year Rainfall=8.27"

Area (sf)	CN	Description
422	98	Roofs, HSG B
6,920	61	>75% Grass cover, Good, HSG B
7,342	63	Weighted Average
6,920		94.25% Pervious Area
422		5.75% Impervious Area

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

Subcatchment PR-2C:



Summary for Subcatchment PR-3:

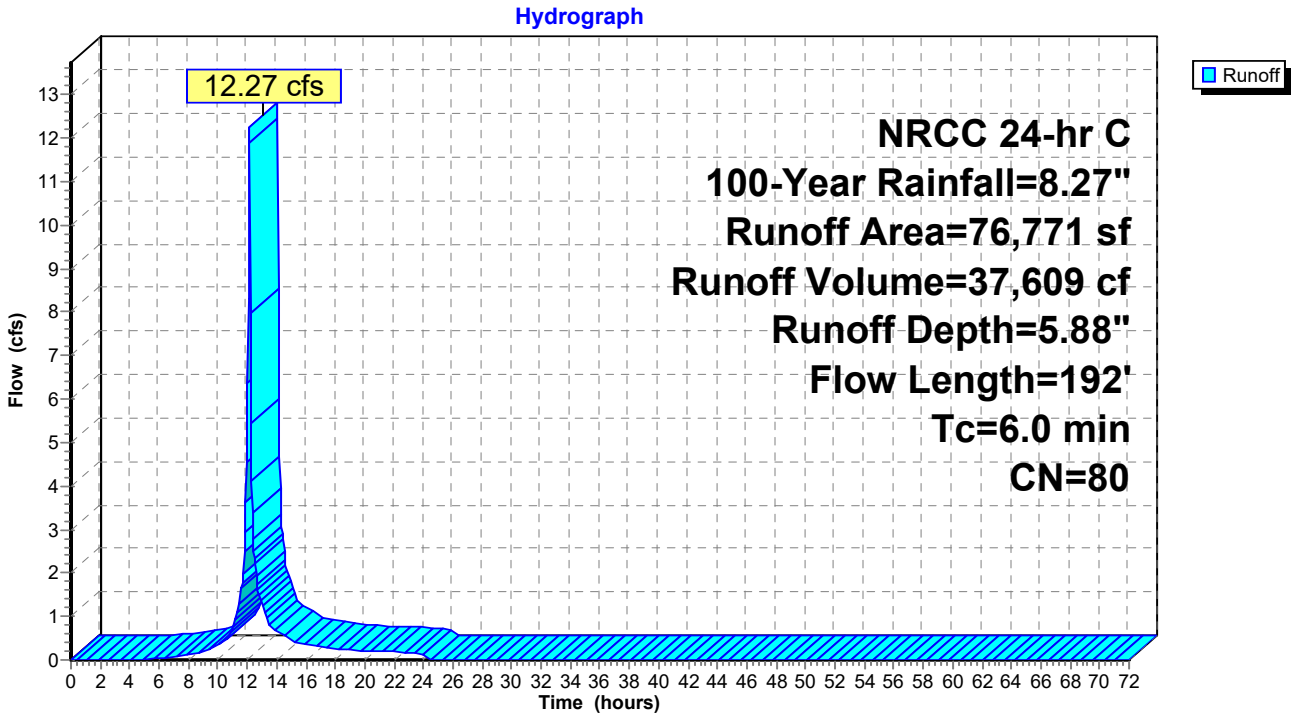
Runoff = 12.27 cfs @ 12.13 hrs, Volume= 37,609 cf, Depth= 5.88"
Routed to Reach DP-3 : Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 100-Year Rainfall=8.27"

	Area (sf)	CN	Description
*	38,690	98	Wetland, HSG B
	38,081	61	>75% Grass cover, Good, HSG B
	76,771	80	Weighted Average
	38,081		49.60% Pervious Area
	38,690		50.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	30	0.0800	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.22"
1.7	162	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.8	192	Total, Increased to minimum Tc = 6.0 min			

Subcatchment PR-3:



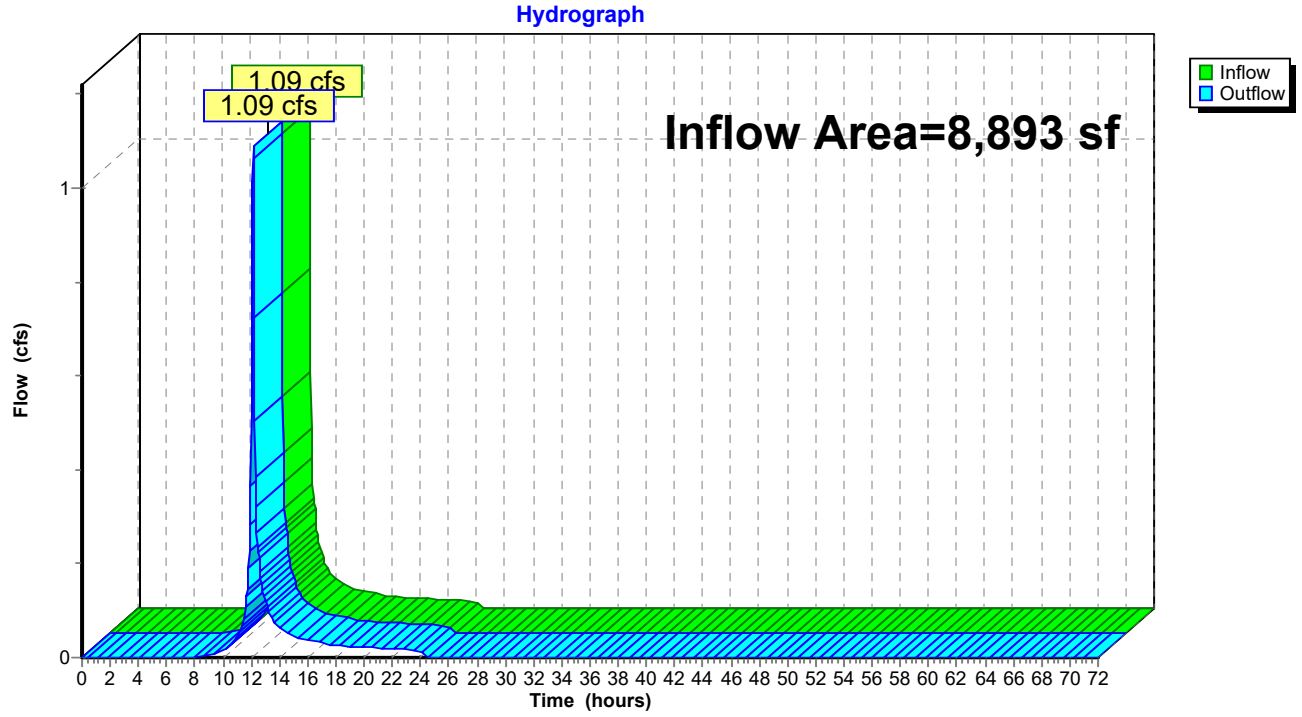
Summary for Reach DP-1: High Street

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

Inflow Area = 8,893 sf, 16.61% Impervious, Inflow Depth = 4.35" for 100-Year event
Inflow = 1.09 cfs @ 12.13 hrs, Volume= 3,221 cf
Outflow = 1.09 cfs @ 12.13 hrs, Volume= 3,221 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 2R

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach DP-1: High Street



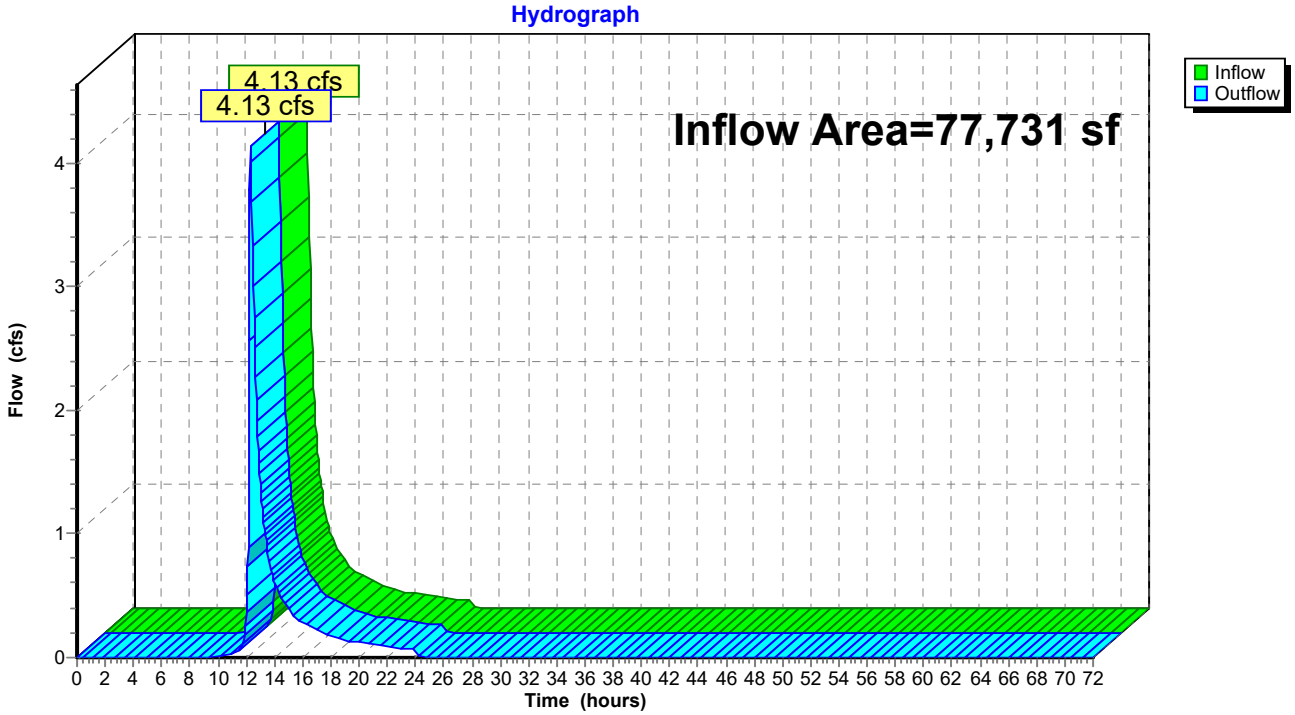
Summary for Reach DP-2: Southeast Abutter

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

Inflow Area = 77,731 sf, 21.99% Impervious, Inflow Depth = 2.89" for 100-Year event
Inflow = 4.13 cfs @ 12.31 hrs, Volume= 18,747 cf
Outflow = 4.13 cfs @ 12.31 hrs, Volume= 18,747 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 2R

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach DP-2: Southeast Abutter



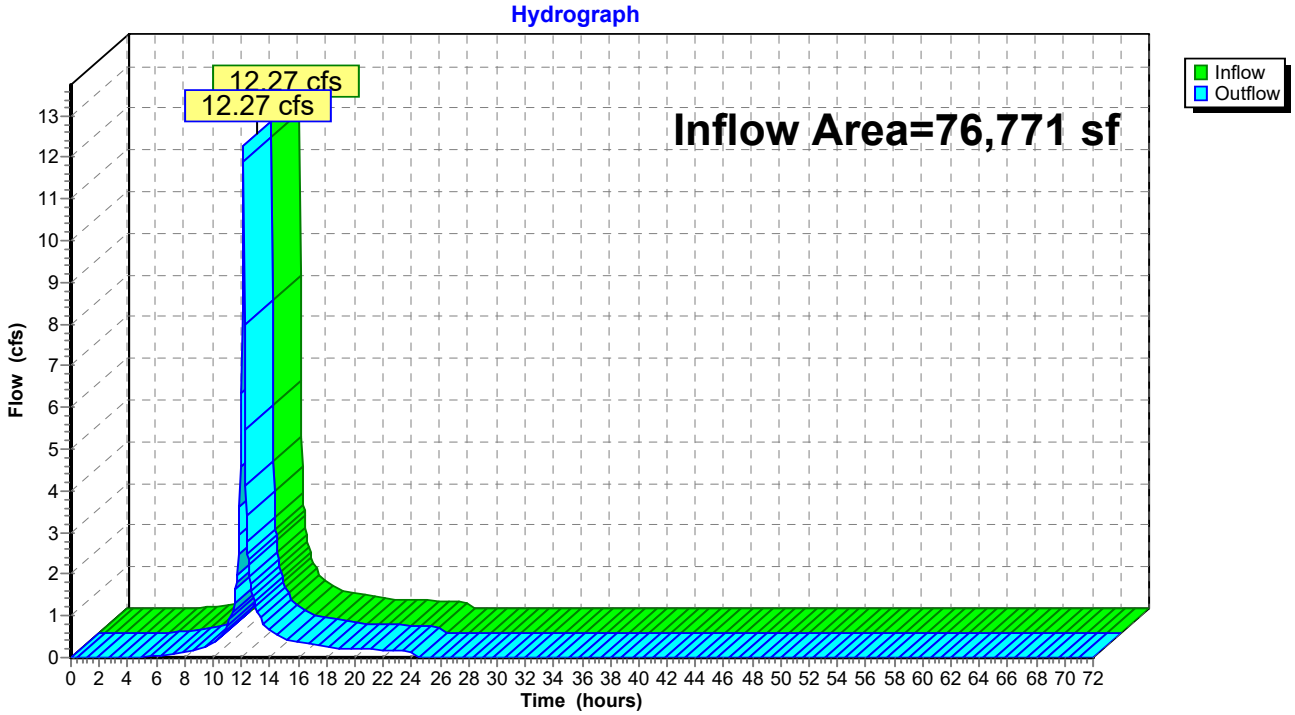
Summary for Reach DP-3: Wetland

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

Inflow Area = 76,771 sf, 50.40% Impervious, Inflow Depth = 5.88" for 100-Year event
Inflow = 12.27 cfs @ 12.13 hrs, Volume= 37,609 cf
Outflow = 12.27 cfs @ 12.13 hrs, Volume= 37,609 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 2R

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach DP-3: Wetland



Summary for Pond 1P: Forebay 1

Inflow Area = 12,427 sf, 62.25% Impervious, Inflow Depth = 6.35" for 100-Year event
Inflow = 2.08 cfs @ 12.13 hrs, Volume= 6,581 cf
Outflow = 1.87 cfs @ 12.17 hrs, Volume= 6,581 cf, Atten= 10%, Lag= 2.0 min
Discarded = 0.01 cfs @ 12.17 hrs, Volume= 890 cf
Primary = 1.86 cfs @ 12.17 hrs, Volume= 5,691 cf
Routed to Pond 2P : Infiltration Basin

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 217.82' @ 12.17 hrs Surf.Area= 1,343 sf Storage= 819 cf

Plug-Flow detention time= 108.8 min calculated for 6,581 cf (100% of inflow)
Center-of-Mass det. time= 108.6 min (906.8 - 798.2)

Volume	Invert	Avail.Storage	Storage Description
#1	217.00'	1,075 cf	**Bio-retention (Prismatic)**Listed below (Recalc)

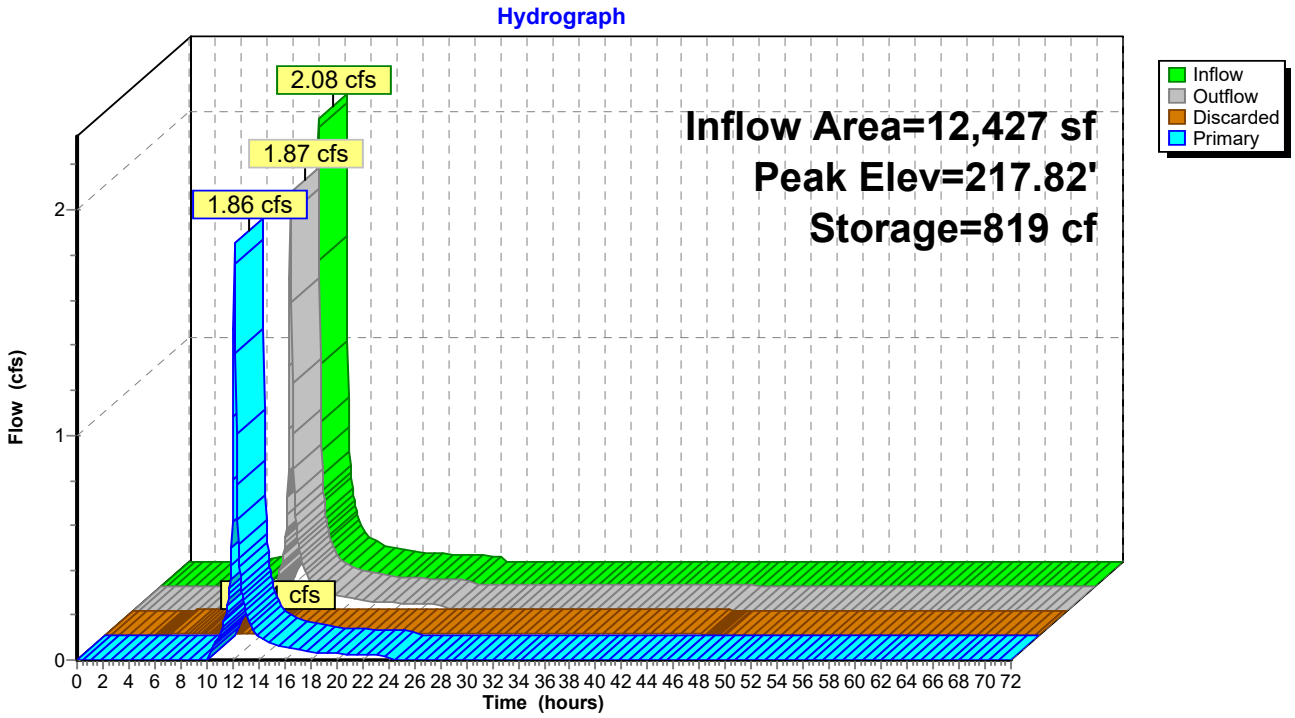
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
217.00	655	0	0
218.00	1,494	1,075	1,075

Device	Routing	Invert	Outlet Devices
#0	Primary	218.00'	**Automatic Storage Overflow** (Discharged without head)
#1	Discarded	217.00'	**0.270 in/hr Exfiltration over Surface area**
#2	Device 3	217.50'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	216.10'	**12.0" Round Culvert** L= 150.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 216.10' / 215.50' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.01 cfs @ 12.17 hrs HW=217.81' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=1.81 cfs @ 12.17 hrs HW=217.81' TW=216.00' (Fixed TW Elev= 216.00')
↑**3=Culvert** (Passes 1.81 cfs of 2.85 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 1.81 cfs @ 1.83 fps)

Pond 1P: Forebay 1



Summary for Pond 2P: Infiltration Basin

Inflow Area = 70,389 sf, 23.68% Impervious, Inflow Depth = 5.52" for 100-Year event
Inflow = 10.51 cfs @ 12.14 hrs, Volume= 32,366 cf
Outflow = 3.96 cfs @ 12.32 hrs, Volume= 32,366 cf, Atten= 62%, Lag= 10.8 min
Discarded = 0.09 cfs @ 12.32 hrs, Volume= 15,995 cf
Primary = 3.87 cfs @ 12.32 hrs, Volume= 16,372 cf
Routed to Reach DP-2 : Southeast Abutter

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 215.97' @ 12.32 hrs Surf.Area= 14,732 sf Storage= 13,299 cf

Plug-Flow detention time= 610.2 min calculated for 32,344 cf (100% of inflow)
Center-of-Mass det. time= 611.3 min (1,428.0 - 816.7)

Volume	Invert	Avail.Storage	Storage Description
#1	215.00'	31,163 cf	**Infiltration Basin (Prismatic)**Listed below (Recalc)

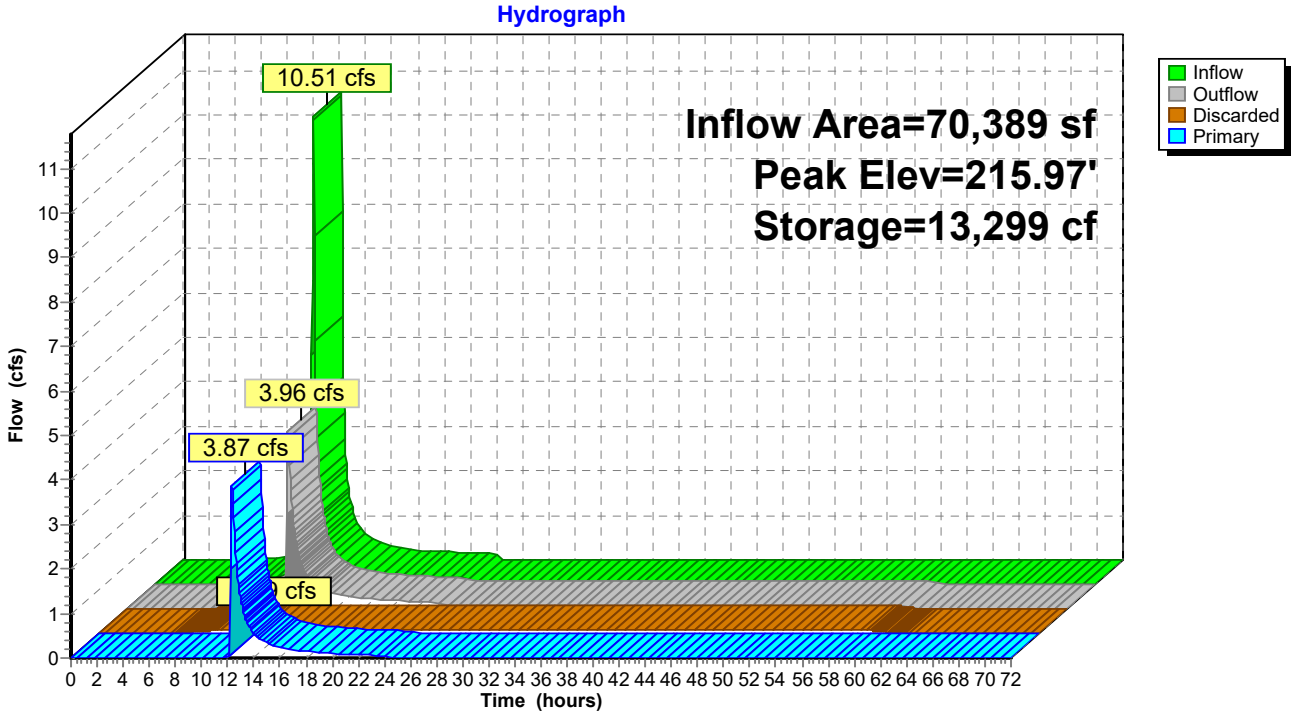
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
215.00	12,550	0	0
216.00	14,788	13,669	13,669
217.00	20,200	17,494	31,163

Device	Routing	Invert	Outlet Devices
#1	Discarded	215.00'	**0.270 in/hr Exfiltration over Surface area**
#2	Primary	215.80'	**20.0' long x 14.0' breadth Overflow**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.64 2.67 2.70 2.65 2.64 2.65 2.65 2.63

Discarded OutFlow Max=0.09 cfs @ 12.32 hrs HW=215.97' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.09 cfs)

Primary OutFlow Max=3.80 cfs @ 12.32 hrs HW=215.97' (Free Discharge)
2=Overflow (Weir Controls 3.80 cfs @ 1.10 fps)

Pond 2P: Infiltration Basin



INFILTRATION SYSTEM STAGE-STORAGE TABLE

Stage-Area-Storage for Pond 1P: Forebay 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
217.00	655	0
217.01	663	7
217.02	672	13
217.03	680	20
217.04	689	27
217.05	697	34
217.06	705	41
217.07	714	48
217.08	722	55
217.09	731	62
217.10	739	70
217.11	747	77
217.12	756	85
217.13	764	92
217.14	772	100
217.15	781	108
217.16	789	116
217.17	798	123
217.18	806	131
217.19	814	140
217.20	823	148
217.21	831	156
217.22	840	164
217.23	848	173
217.24	856	181
217.25	865	190
217.26	873	199
217.27	882	207
217.28	890	216
217.29	898	225
217.30	907	234
217.31	915	243
217.32	923	253
217.33	932	262
217.34	940	271
217.35	949	281
217.36	957	290
217.37	965	300
217.38	974	309
217.39	982	319
217.40	991	329
217.41	999	339
217.42	1,007	349
217.43	1,016	359
217.44	1,024	369
217.45	1,033	380
217.46	1,041	390
217.47	1,049	401
217.48	1,058	411
217.49	1,066	422
217.50	1,075	432
217.51	1,083	443
217.52	1,091	454
217.53	1,100	465
217.54	1,108	476
217.55	1,116	487
217.56	1,125	498
217.57	1,133	510
217.58	1,142	521
217.59	1,150	532
217.60	1,158	544
217.61	1,167	556
217.62	1,175	567
217.63	1,184	579
217.64	1,192	591
217.65	1,200	603
217.66	1,209	615
217.67	1,217	627
217.68	1,226	639
217.69	1,234	652
217.70	1,242	664
217.71	1,251	677
217.72	1,259	689
217.73	1,267	702
217.74	1,276	714
217.75	1,284	727
217.76	1,293	740
217.77	1,301	753
217.78	1,309	766
217.79	1,318	779
217.80	1,326	792
217.81	1,335	806
217.82	1,343	819
217.83	1,351	833
217.84	1,360	846
217.85	1,368	860
217.86	1,377	874
217.87	1,385	887
217.88	1,393	901
217.89	1,402	915
217.90	1,410	929
217.91	1,418	943
217.92	1,427	958
217.93	1,435	972
217.94	1,444	986
217.95	1,452	1,001
217.96	1,460	1,015
217.97	1,469	1,030
217.98	1,477	1,045
217.99	1,486	1,060
218.00	**1,494**	**1,075**

Stage-Area-Storage for Pond 2P: Infiltration Basin

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
215.00	12,550	0
215.02	12,595	251
215.04	12,640	504
215.06	12,684	757
215.08	12,729	1,011
215.10	12,774	1,266
215.12	12,819	1,522
215.14	12,863	1,779
215.16	12,908	2,037
215.18	12,953	2,295
215.20	12,998	2,555
215.22	13,042	2,815
215.24	13,087	3,076
215.26	13,132	3,339
215.28	13,177	3,602
215.30	13,221	3,866
215.32	13,266	4,131
215.34	13,311	4,396
215.36	13,356	4,663
215.38	13,400	4,931
215.40	13,445	5,199
215.42	13,490	5,468
215.44	13,535	5,739
215.46	13,579	6,010
215.48	13,624	6,282
215.50	13,669	6,555
215.52	13,714	6,829
215.54	13,759	7,103
215.56	13,803	7,379
215.58	13,848	7,655
215.60	13,893	7,933
215.62	13,938	8,211
215.64	13,982	8,490
215.66	14,027	8,770
215.68	14,072	9,051
215.70	14,117	9,333
215.72	14,161	9,616
215.74	14,206	9,900
215.76	14,251	10,184
215.78	14,296	10,470
215.80	14,340	10,756
215.82	14,385	11,043
215.84	14,430	11,332
215.86	14,475	11,621
215.88	14,519	11,911
215.90	14,564	12,201
215.92	14,609	12,493
215.94	14,654	12,786
215.96	14,698	13,079
215.98	14,743	13,374
216.00	14,788	13,669
216.02	14,896	13,966
216.04	15,004	14,265
216.06	15,113	14,566
216.08	15,221	14,869
216.10	15,329	15,175
216.12	15,437	15,483
216.14	15,546	15,792
216.16	15,654	16,104
216.18	15,762	16,419
216.20	15,870	16,735
216.22	15,979	17,053
216.24	16,087	17,374
216.26	16,195	17,697
216.28	16,303	18,022
216.30	16,412	18,349
216.32	16,520	18,678
216.34	16,628	19,010
216.36	16,736	19,343
216.38	16,845	19,679
216.40	16,953	20,017
216.42	17,061	20,357
216.44	17,169	20,700
216.46	17,278	21,044
216.48	17,386	21,391
216.50	17,494	21,740
216.52	17,602	22,090
216.54	17,710	22,444
216.56	17,819	22,799
216.58	17,927	23,156
216.60	18,035	23,516
216.62	18,143	23,878
216.64	18,252	24,242
216.66	18,360	24,608
216.68	18,468	24,976
216.70	18,576	25,347
216.72	18,685	25,719
216.74	18,793	26,094
216.76	18,901	26,471
216.78	19,009	26,850
216.80	19,118	27,231
216.82	19,226	27,615
216.84	19,334	28,000
216.86	19,442	28,388
216.88	19,551	28,778
216.90	19,659	29,170
216.92	19,767	29,564
216.94	19,875	29,961
216.96	19,984	30,359
216.98	20,092	30,760
217.00	**20,200**	**31,163**

INFILTRATION SYSTEM DRAIN DOWN TABLE

Hydrograph for Pond 1P: Forebay 1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	217.00	0.00	0.00	0.00
2.50	0.00	0	217.00	0.00	0.00	0.00
5.00	0.01	7	217.01	0.00	0.00	0.00
7.50	0.02	88	217.12	0.00	0.00	0.00
10.00	**0.07**	**393**	**217.46**	**0.01**	**0.01**	**0.00**
12.50	**0.40**	**573**	**217.62**	**0.46**	**0.01**	**0.45**
15.00	0.07	472	217.54	0.08	0.01	0.07
17.50	0.05	459	217.52	0.05	0.01	0.04
20.00	0.04	454	217.52	0.04	0.01	0.03
22.50	0.03	450	217.52	0.03	0.01	0.02
25.00	0.00	419	217.49	0.01	0.01	0.00
27.50	0.00	361	217.43	0.01	0.01	0.00
30.00	0.00	305	217.38	0.01	0.01	0.00
32.50	0.00	251	217.32	0.01	0.01	0.00
35.00	0.00	201	217.26	0.01	0.01	0.00
37.50	0.00	153	217.21	0.01	0.01	0.00
40.00	0.00	108	217.15	0.00	0.00	0.00
42.50	0.00	65	217.09	0.00	0.00	0.00
45.00	0.00	25	217.04	0.00	0.00	0.00
47.50	0.00	0	217.00	0.00	0.00	0.00
50.00	0.00	0	217.00	0.00	0.00	0.00
52.50	0.00	0	217.00	0.00	0.00	0.00
55.00	0.00	0	217.00	0.00	0.00	0.00
57.50	0.00	0	217.00	0.00	0.00	0.00
60.00	0.00	0	217.00	0.00	0.00	0.00
62.50	0.00	0	217.00	0.00	0.00	0.00
65.00	0.00	0	217.00	0.00	0.00	0.00
67.50	0.00	0	217.00	0.00	0.00	0.00
70.00	0.00	0	217.00	0.00	0.00	0.00

Hydrograph for Pond 2P: Infiltration Basin

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	215.00	0.00	0.00	0.00
2.50	0.00	0	215.00	0.00	0.00	0.00
5.00	0.00	0	215.00	0.00	0.00	0.00
7.50	0.05	96	215.01	0.03	0.03	0.00
10.00	**0.22**	**555**	**215.04**	**0.08**	**0.08**	**0.00**
12.50	**2.18**	**12,820**	**215.94**	**2.93**	**0.09**	**2.84**
15.00	0.40	11,264	215.84	0.45	0.09	0.36
17.50	0.25	11,066	215.82	0.26	0.09	0.17
20.00	0.19	10,955	215.81	0.19	0.09	0.10
22.50	0.15	10,892	215.81	0.16	0.09	0.07
25.00	0.00	10,548	215.79	0.09	0.09	0.00
27.50	0.00	9,747	215.73	0.09	0.09	0.00
30.00	0.00	8,952	215.67	0.09	0.09	0.00
32.50	0.00	8,165	215.62	0.09	0.09	0.00
35.00	0.00	7,385	215.56	0.09	0.09	0.00
37.50	0.00	6,612	215.50	0.09	0.09	0.00
40.00	0.00	5,846	215.45	0.08	0.08	0.00
42.50	0.00	5,088	215.39	0.08	0.08	0.00
45.00	0.00	4,336	215.34	0.08	0.08	0.00
47.50	0.00	3,591	215.28	0.08	0.08	0.00
50.00	0.00	2,854	215.22	0.08	0.08	0.00
52.50	0.00	2,123	215.17	0.08	0.08	0.00
55.00	0.00	1,400	215.11	0.08	0.08	0.00
57.50	0.00	684	215.05	0.08	0.08	0.00
60.00	0.00	83	215.01	0.03	0.03	0.00
62.50	0.00	5	215.00	0.00	0.00	0.00
65.00	0.00	0	215.00	0.00	0.00	0.00
67.50	0.00	0	215.00	0.00	0.00	0.00
70.00	0.00	0	215.00	0.00	0.00	0.00

APPENDIX C

NRCS Soils Report

Map Scale: 1:1,270 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 15 30 60 90

Feet
0 50 100 200 300

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
71B	Ridgebury fine sandy loam, 3 to 8 percent slopes, extremely stony	0.2	2.5%
254B	Merrimac fine sandy loam, 3 to 8 percent slopes	0.6	8.2%
420B	Canton fine sandy loam, 3 to 8 percent slopes	6.7	89.3%
Totals for Area of Interest		**7.5**	**100.0%**

Norfolk and Suffolk Counties, Massachusetts

420B—Canton fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2w81b
Elevation: 0 to 1,180 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Canton and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton

Setting

Landform: Hills, moraines, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crest, nose slope, side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bw1 - 7 to 15 inches: fine sandy loam
Bw2 - 15 to 26 inches: gravelly fine sandy loam
2C - 26 to 65 inches: gravelly loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s

Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Scituate
Percent of map unit: 10 percent
Landform: Hills, drumlins, ground moraines
Landform position (two-dimensional): Summit, backslope, footslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Montauk
Percent of map unit: 5 percent
Landform: Moraines, ground moraines, hills, drumlins
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Charlton
Percent of map unit: 4 percent
Landform: Ridges, ground moraines, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Swansea
Percent of map unit: 1 percent
Landform: Marshes, depressions, bogs, swamps, kettles
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Norfolk and Suffolk Counties, Massachusetts
Survey Area Data: Version 19, Sep 10, 2023

Commonwealth of Massachusetts
City/Town of
Form 11 - Soil Suitability Assessment ~~for On-Site Sewage Disposal~~

21 High St. Medway 11/30/18

C. On-Site Review (continued)

Deep Observation Hole Number: Tp 11

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
0-11	A	10YR3/2	-	—	-	FSl	-	-	Somewhat Granular	Friable	—
11-23	B	10YR6/6	-	—	-	FSl	-	-	Somewhat blocky	friable	—
23-72	C	10YR7/1	25	7.5YR6/6	10%	Silt loam *	5%	7%	Massive	friable	—

Additional Notes:

* some sand/loam mixed in with silt loam
mottles at 25

APPENDIX D

TSS Removal Calculations

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: HIGH STREET, MEDWAY 1P

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)
Street Sweeping - 5%	0.05	1.00	0.05	0.95
Sediment Forebay	0.25	0.95	0.24	0.71
Infiltration Basin	0.80	0.71	0.57	0.14
	0.00	0.14	0.00	0.14
	0.00	0.14	0.00	0.14

Total TSS Removal = 86%

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

Project: 2023-023
Prepared By: RLB
Date: 22-May-25

*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 E

Long-Term Pollution Prevention Plan &

Stormwater Management System

Operation & Maintenance Plan

LONG TERM

STORMWATER OPERATION & MAINTENANCE PLAN

In accordance with the standards set forth by the Stormwater Management Regulations issued by the Department of Environmental Protection (DEP), PVI Site Design, LLC (PVI) has prepared the following Operation and Maintenance (O&M) plan for the proposed stormwater management system at the residential development in Medway, MA. This O&M plan addresses post construction pollution prevention and maintenance of stormwater systems.

This plan is broken into two sections. The first section describes pollution prevention techniques to encourage source controls that prevent pollution. The second section is devoted to a post-development operation and maintenance plan of the stormwater management system.

BASIC INFORMATION

Proponent: Medway Development, LLC
Address: 383 Main Street
City: Medfield, MA 02052
Phone: 978-658-0333

Preparer: PVI Site Design, LLC
Address: 18 Glendale Road
City: Norwood, MA 02062
Phone: 399-206-1030

1.1 LONG TERM POLLUTION PREVENTION PLAN

As a residential development, it is unlikely to be a significant source of pollution related to building uses, however the following pollution prevention techniques are provided in the event that there is a spill outside the homes that may enter the stormwater management system.

Good House Keeping

The following measures will be employed to control potential sources of contamination and prevent pollution at The Project property:

Deicing

To prevent increased pollutant concentrations in stormwater discharges, the amount of road salt applied will be controlled. Calibration of manual or truck mounted spreaders will be encouraged to contractors employed to plow the driveways. The amount of deicing materials used will be monitored with the goal of using only enough to make the driveway and parking areas safe.

Snow Storage/Disposal

Snow storage/disposal will be allowed in landscaped areas within the property but will be avoided in any areas between the edge of the proposed paved areas and the wetland resource areas on the site.

Pavement Sweeping

The project will implement a pavement sweeping program to remove contaminants directly from paved surfaces to prevent their release into the drainage system. Pavement sweeping can be an effective initial treatment for reducing pollutant loadings in stormwater. Once removed from

paved surfaces, the sweeping will be handled and disposed of in accordance with the MassDEP's Bureau of Waste Prevention's written policy regarding the reuse and disposal of street sweepings.

Fertilizer/Pesticide/Herbicide Application

No pesticides or herbicides are to be used unless a single spot treatment is required for a specific control application. Fertilizer usage will be avoided. If deemed necessary, slow-release fertilizer will be used, and applied only in the minimum amounts recommended by the manufacturer. Once applied, the fertilizer will be worked into the soil to limit exposure to stormwater. Storage will be in a covered area; and the contents of any partially used bags will be transferred to a sealable plastic bin to avoid spills. Fertilizer will be used to begin the establishment of vegetation in bare or damaged areas but will not be applied on a regular basis unless necessary.

Materials Management/Housekeeping Practices

The following product-specific practices will be followed on-site. Recommendations are provided for petroleum products, fertilizers, solvents, paints, and other hazardous substances, and concrete. Petroleum Products - No vehicle maintenance or handling of petroleum products will occur on site outside of a building. Petroleum products will be stored in tightly sealed containers that are clearly labeled. Any asphalt substances used on-site will be applied according to the manufacturer's recommendations. No petroleum-based or asphalt substances will be stored within 100 feet of a waterway.

Solvents, Paints, and other Hazardous Substances - All containers will be tightly sealed and stored indoors when not required for use. Excess materials will not be discharged to the storm sewer system but will be properly disposed of according to manufacturer's instructions or state and local regulations. Outside storage on the property will be prohibited.

Spill Prevention and Control

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

1. All materials with hazardous properties (such as pesticides, petroleum products, fertilizers, detergents, construction chemicals, acids, paints, paint solvents, cleaning solvents, additives for soil stabilization, concrete curing compounds and additives, etc.) will be stored in a secure location, with their lids on, preferably under cover, when not in use.
2. The minimum practical quantity of all such materials will be kept on the site.
3. A spill control and containment kit (containing, for example, absorbent materials, acid neutralizing powder, brooms, dust pans, mops, rags, gloves, goggles, plastic and metal trash containers, etc. will be provided at the maintenance area of the site.
4. Manufacturers recommended methods for spill cleanup will be clearly posted and site personnel will be trained regarding these procedures and the location of the information and cleanup supplies.

In the event of a spill, the following procedures should be followed:

1. All spills will be cleaned up immediately after discovery.
2. The spill area will be kept well-ventilated, and personnel will wear appropriate protective clothing to prevent injury from contact with the hazardous substances.
3. Spills of toxic or hazardous materials will be reported to the appropriate federal, state, and/or local government agency, regardless of the size of the spill.
4. If the spilt material enters the drainage system, it shall be cleaned as soon as possible and before the next rainfall event to the extent practicable.

1.2 STORMWATER MANAGEMENT SYSTEM – OPERATION AND MAINTENANCE

1. Deicing - Salt for de-icing on the paved areas during the winter months shall be limited to the minimum amount practicable. Sand containing the minimum amount of calcium chloride (or approved equivalent) needed for handling may be applied as part of the routine winter maintenance activities.

2. Sediment Forebay - The forebay catches the "first flush" of stormwater from paved areas. The forebay should be **inspected monthly**. Banks should be mowed **twice a year**. When sediment and debris is **more than 2"** it should be removed and disposed of and the bottom of the forebay restored.

3. Infiltration Basin– The infiltration basin should be inspected **twice annually**. Important items to check during the inspection include:
    - Signs of differential settlement,
    - Cracking,
    - Erosion,
    - Leakage in the embankments
    - Tree growth on the embankments
    - Condition of grass overflow weir,
    - Sediment accumulation and
    - The health of the turf.

    At least **twice a year**, mow the buffer area, side slopes, and basin bottom. Remove grass clippings and accumulated organic matter to prevent an impervious organic mat from forming. Remove trash and debris at the same time. Use deep tilling to break up clogged surfaces and revegetate immediately.

    Remove sediment from the infiltration basin **as necessary but** wait until the floor of the basin is thoroughly dry. Use light equipment to remove the top layer so as to not compact the underlying soil and revegetate as soon as possible. Sediment shall be disposed of properly and in accordance with applicable local and state regulations.

    All vegetated areas on the site shall be stabilized and maintained to control erosion. Any disturbed areas shall be re-seeded as soon as practicable. Trash and debris should be removed on a regular basis.

    BMP Information:

	Sediment Forebay 1	**Sediment Forebay 2**	**Infiltration Basin**
Catchment Area	12,427 SF	6,574 SF	70,389 SF*
Land Use Type	Residential	Residential	Residential
Soil Group	Sandy Loam (HSG B)	Sandy Loam (HSG B)	Sandy Loam (HSG B)
Impervious/ Pervious Area	7,736 SF (IMP) 4,691 SF (PERV)	2,773 SF (IMP) 3,801 SF (PERV)	33,118 SF (IMP) 37,271 SF (PERV)
BMP Treatment Type	Pre-treatment	Pre-treatment	WQ Treatment, Infiltration
Storage Capacity	432 CF	105 CF	10,756 CF
Infiltration Rate	0.27 min/in	0.27 min/in	0.27 min/in

*Includes Subcatchment PR-2A

Estimated Inspection and O&M budget: $5,000/annually.

Permittee Inspections and Reporting

During Construction:

The permittee or his/her agent shall conduct and document inspections of all control measures no less than weekly during construction or as specified in the permit, and prior to and following anticipated storm events. The purpose of such inspections will be to determine the overall effectiveness of the control plan, and the need for maintenance or additional control measures. The permittee or his/her agent shall submit reports to the applicable permitting authority or designated agent as outlined in section 26.5.7 of the Medway Stormwater By-law.

Post Construction:

The permittee or his/her agent shall conduct and document inspections and provide copies of all inspections to the Town of Medway DPW on an annual basis.

Stormwater System Inspection Report

General Information			
Location: 21 High Street, Medway			
Date of Inspection		Start/End Time	
Inspector's Name(s)			
Inspector's Title(s)			
Inspector's Contact Information			
Purpose of Inspection			
Weather Information			
Has it rained since the last inspection? ❑Yes ❑No			
Weather at time of this inspection?			

Site-Specific Stormwater Devices

	Description	Installed and Operating Properly?	Corrective Action Needed	Date for Corrective Action/Responsible Person
1	Forebay 1	❑Yes ❑No		
2	Forebay 2	❑Yes ❑No		
3	Infiltration Basin 1P	❑Yes ❑No		
4		❑Yes ❑No		
5		❑Yes ❑No		
6		❑Yes ❑No		
7		❑Yes ❑No		

Overall Site Issues

	Description		Corrective Action	Date for Corrective Action/Responsible Person
1	Are all slopes properly stabilized?	❑Yes ❑No		
2	Are natural resource areas (e.g., streams, wetlands, etc.) being subjected to erosion?	❑Yes ❑No		
3	Are discharge points free of sediment deposits?	❑Yes ❑No		

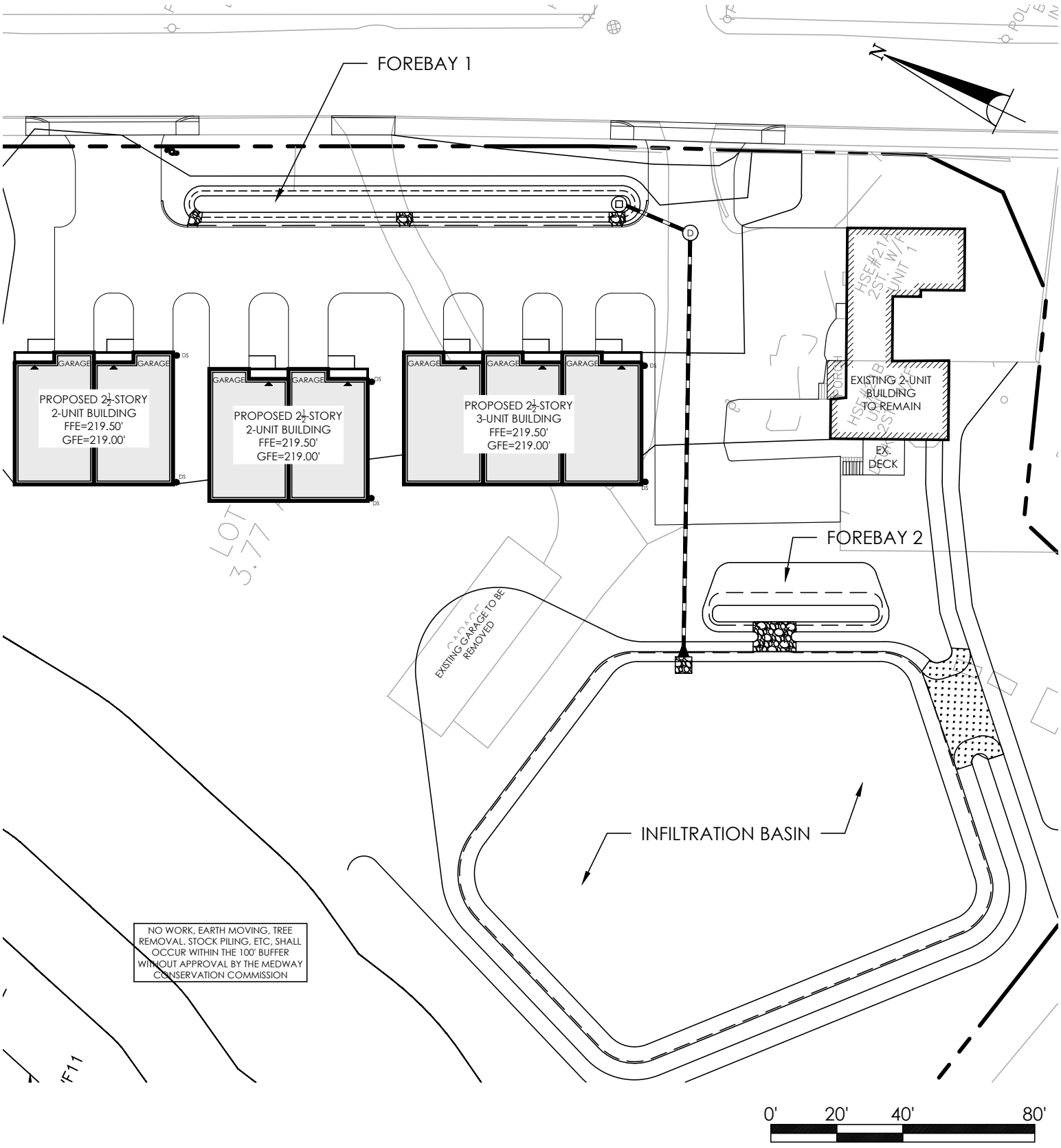
Certification Statement:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Print name:

Signature:

Date:



CIVIL ENGINEER:

PVI SITE DESIGN

PVI SITE DESIGN, LLC
18 GLENDALE ROAD
NORWOOD, MA 02062
339.206.1030

TITLE:

BMP LOCATION PLAN

DATE:	MAY 28, 2024
SCALE:	1"=40'
PROJECT:	23-023
FILE:	23-023-UT.DWG
DRAWN:	RLB

PROJECT:

21 HIGH ST
MEDWAY, MA

SHEET NUMBER:

CONSTRUCTION PERIOD

STORMWATER OPERATION & MAINTENANCE PLAN

Construction Period Stormwater Management Narrative

In accordance with the requirements of the Medway Stormwater Bylaw section 26.5.7, PVI Site Design, LLC (PVI) has prepared the following Construction Period Stormwater Operation and Maintenance (O&M) plan for the proposed construction project for the residential development at 21 High Street, Medway, MA. This O&M plan addresses construction period pollution prevention and maintenance of temporary stormwater systems.

A. Good Housekeeping Practices

Good housekeeping is the foundation of stormwater pollution prevention. Construction activities will be managed to prevent the tracking, spilling, or blowing of materials off-site.

- **Street Sweeping:** Paved portions of the site and streets adjacent to the construction site will be swept as needed to remove accumulated sediment and debris. Additional sweeping will be conducted after major material deliveries or visible tracking.
- **Erosion Control Repairs:** All installed erosion and sediment control measures (silt fence, wattles, check dams, etc.) will be inspected at least weekly and within 24 hours of any storm event producing 0.5 inches or more of precipitation. Any damage or failure will be repaired immediately.
- **Stormwater System Inspections:** If any existing stormwater infrastructure (e.g., inlets, culverts, detention basins) is present on or adjacent to the site, it will be inspected regularly to ensure it is not impacted by construction sediment or debris. Inlet protection will be installed as needed. Temporary stormwater controls will be inspected weekly and after rainfall exceeding 0.5" in accordance with the attached inspection forms.

B. Storage of Materials and Waste Products

To prevent pollutants from entering stormwater runoff, all construction materials and waste products will be stored in designated areas with appropriate containment and cover.

- **Material Storage:** Construction materials (cement, concrete washout, asphalt products, etc.) will be stored under cover or in containers to prevent contact with rainwater.
- **Waste Management:** Waste containers will be kept closed when not in use. Disposal of construction waste will occur regularly, and the site will be kept free of litter and debris.
- **Hazardous Materials:** Any hazardous substances will be stored in secondary containment and away from storm drain inlets or watercourses.

C. BMP Inspections and Maintenance

Stormwater BMPs will be routinely inspected and maintained to ensure they function as designed.

- BMPs will be inspected at least weekly and within 24 hours after storm events.
- Sediment will be removed from traps, basins, and inlet protections when accumulation exceeds one-third of the total capacity.
- Silt fences and erosion blankets will be checked for undermining, tears, and dislodgement and will be promptly repaired or replaced as needed.

D. Spill Prevention and Response

An on-site spill prevention and response plan will be in effect during all construction operations.

- All equipment fueling and maintenance will occur in designated areas with spill kits readily available.
- Site personnel will be trained in spill response procedures.
- Any spill will be immediately contained, cleaned up, and reported in accordance with local and state regulations.

E. Deicing Chemical and Snow Management

Snow and ice management will be conducted with consideration for minimizing pollutant load to stormwater.

- Deicing chemicals will be stored under cover to prevent leaching or runoff.
- Salt and other chemicals will be applied only as necessary and in accordance with manufacturer recommendations.
- Snow will be stockpiled in designated areas away from stormwater inlets or water bodies and allowed to melt into stabilized areas.

F. Soil Protection and Stabilization

Exposed soils are the largest contributor to sediment runoff during construction. Erosion and stabilization controls are critical.

- Temporary stabilization (e.g., straw mulch, tackifier, erosion blankets) will be applied to any disturbed area left inactive for more than 14 days.
- Final stabilization (seeding, mulching, or sod) will occur as soon as practical after final grading.
- Slopes and channels will receive additional protection as needed, such as wattles, turf reinforcement mats, or slope drains.

G. Fertilizer, Herbicide, and Pesticide Use

To avoid contamination of stormwater runoff, these chemicals will be used minimally and responsibly.

- Fertilizers and pesticides will be applied only after final stabilization and only in accordance with manufacturer specifications.
- All storage will be in covered, sealed containers within secure storage areas.
- Mixing and loading of chemicals will occur away from water bodies or drainage channels.

Construction Period Stormwater Controls Inspections

General Information			
Location: 21 High Street, Medway			
Date of Inspection		Start/End Time	
Inspector's Name(s)			
Inspector's Title(s)			
Inspector's Contact Information			
Purpose of Inspection			
Weather Information			
Has it rained since the last inspection? ❑Yes ❑No			
Weather at time of this inspection?			

Site-Specific Stormwater Devices

	Description	Installed and Operating Properly?	Corrective Action Needed	Date for Corrective Action/Responsible Person
1	Perimeter Controls (Silt sock and fence)	❑Yes ❑No		
2	Temporary Sediment Pond	❑Yes ❑No		
3	Construction Entrance	❑Yes ❑No		
4	Silt Sacks	❑Yes ❑No		
5		❑Yes ❑No		
6		❑Yes ❑No		

Overall Site Issues

	Description		Corrective Action	Date for Corrective Action/Responsible Person
1	Are all slopes properly stabilized?	❑Yes ❑No		
2	Are natural resource areas (e.g., streams, wetlands, etc.) being subjected to erosion?	❑Yes ❑No		
3	Are discharge points free of sediment deposits?	❑Yes ❑No		

Certification Statement:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Print name:

Signature:

Date:

APPENDIX G

Mounding Analysis

HydroCAD without Infiltration (DP-2 Only)

This spreadsheet will calculate the height of a groundwater mound beneath a stormwater infiltration basin. More information can be found in the U.S. Geological Survey Scientific Investigations Report 2010-5102 "Simulation of groundwater mounding beneath hypothetical stormwater infiltration basins".

The user must specify infiltration rate (R), specific yield (Sy), horizontal hydraulic conductivity (Kh), basin dimensions (x, y), duration of infiltration period (t), and the initial thickness of the saturated zone (hi(0), height of the water table if the bottom of the aquifer is the datum). For a square basin the half width equals the half length (x = y). For a rectangular basin, if the user wants the water-table changes perpendicular to the long side, specify x as the short dimension and y as the long dimension. Conversely, if the user wants the values perpendicular to the short side, specify y as the short dimension, x as the long dimension. All distances are from the center of the basin. Users can change the distances from the center of the basin at which water-table aquifer thickness are calculated.
Cells highlighted in yellow are values that can be changed by the user. Cells highlighted in red are output values based on user-specified inputs. The user MUST click the blue "Re-Calculate Now" button each time ANY of the user-specified inputs are changed otherwise necessary iterations to converge on the correct solution will not be done and values shown will be incorrect. Use consistent units for all input values (for example, feet and days)

use consistent units (e.g. feet & days **or** inches & hours)

Input Values		
0.5900	*R*	**Recharge (infiltration) rate (feet/day)**
0.200	Sy	**Specific yield, Sy (dimensionless, between 0 and 1)**
2.80	K	**Horizontal hydraulic conductivity, Kh (feet/day)***
56.000	x	**1/2 length of basin (x direction, in feet)**
56.000	y	**1/2 width of basin (y direction, in feet)**
1.000	t	**duration of infiltration period (days)**
5.000	hi(0)	**initial thickness of saturated zone (feet)**

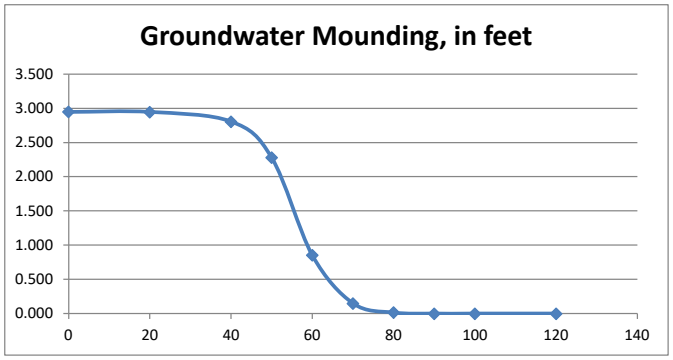
Conversion Table		
inch/hour	**feet/day**	
0.67	1.33	
2.00	4.00	
hours	**days**	
36	1.50	

In the report accompanying this spreadsheet (USGS SIR 2010-5102), vertical soil permeability (ft/d) is assumed to be one-tenth horizontal hydraulic conductivity (ft/d).

7.950	h(max)	**maximum thickness of saturated zone (beneath center of basin at end of infiltration period)**
2.950	Δh(max)	**maximum groundwater mounding (beneath center of basin at end of infiltration period)**

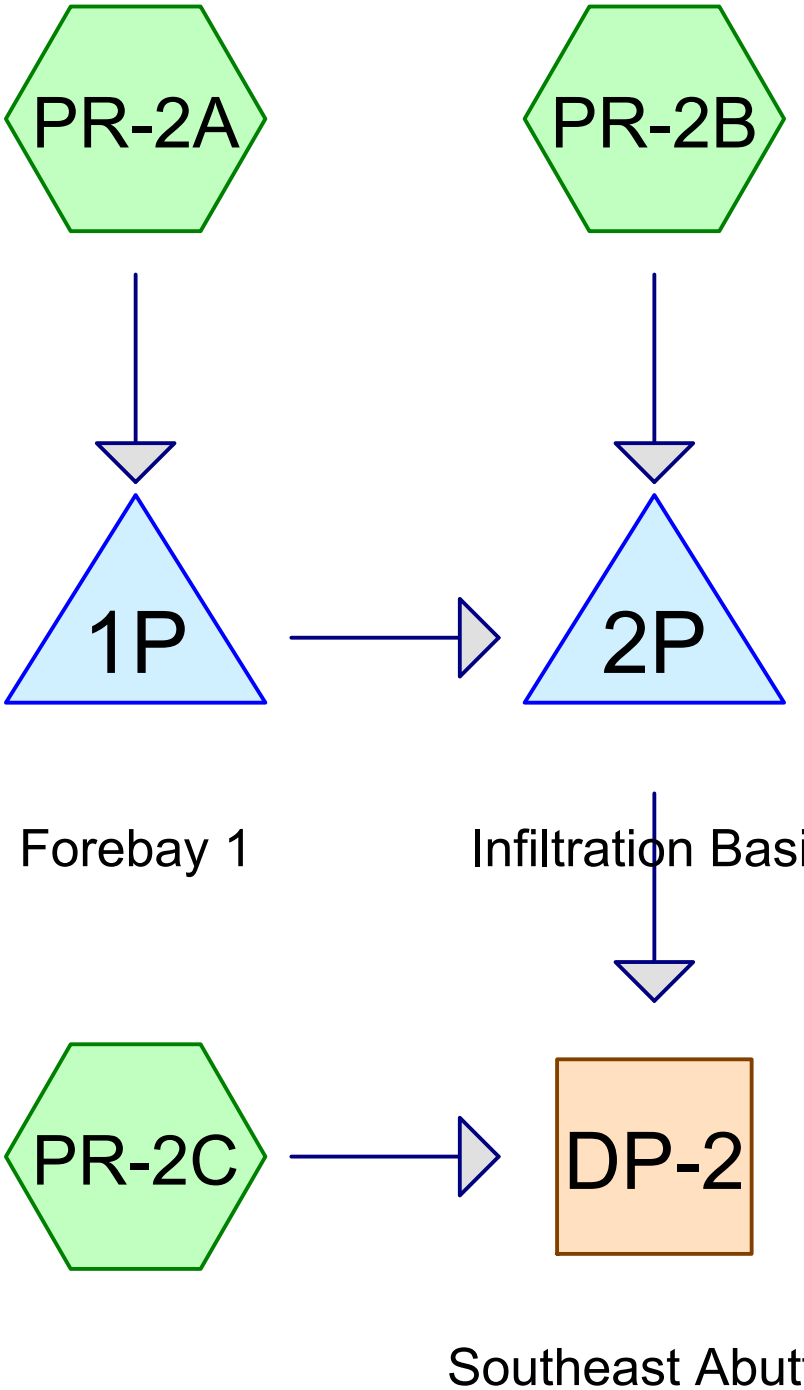
Ground-water Mounding, in feet	**Distance from center of basin in x direction, in feet**
2.950	**0**
2.948	**20**
2.807	**40**
2.281	**50**
0.854	**60**
0.151	**70**
0.017	**80**
0.002	**90**
0.001	**100**
0.001	**120**

Re-Calculate Now



Disclaimer

This spreadsheet solving the Hantush (1967) equation for ground-water mounding beneath an infiltration basin is made available to the general public as a convenience for those wishing to replicate values documented in the USGS Scientific Investigations Report 2010-5102 "Groundwater mounding beneath hypothetical stormwater infiltration basins" or to calculate values based on user-specified site conditions. Any changes made to the spreadsheet (other than values identified as user-specified) after transmission from the USGS could have unintended, undesirable consequences. These consequences could include, but may not be limited to: erroneous output, numerical instabilities, and violations of underlying assumptions that are inherent in results presented in the accompanying USGS published report. The USGS assumes no responsibility for the consequences of any changes made to the spreadsheet. If changes are made to the spreadsheet, the user is responsible for documenting the changes and justifying the results and conclusions.



Subcat Reach Pond Link

Routing Diagram for 23-023 HC PR - NOAA - no infiltration
Prepared by PVI Site Design, LLC, Printed 6/4/2025

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	NRCC 24-hr	C	Default	24.00	1	3.38	2
2	10-Year	NRCC 24-hr	C	Default	24.00	1	5.27	2
3	100-Year	NRCC 24-hr	C	Default	24.00	1	8.27	2

Summary for Subcatchment PR-2A:

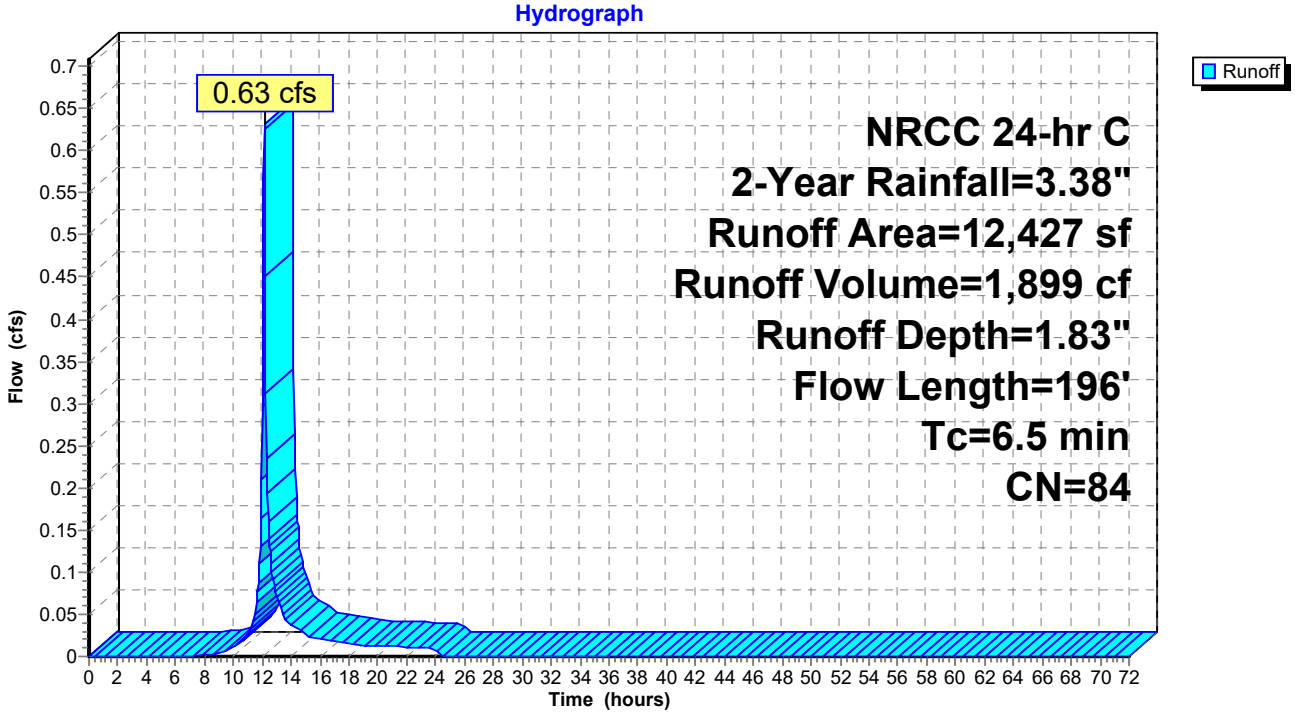
Runoff = 0.63 cfs @ 12.14 hrs, Volume= 1,899 cf, Depth= 1.83"
Routed to Pond 1P : Forebay 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 2-Year Rainfall=3.38"

Area (sf)	CN	Description
7,736	98	Paved parking, HSG B
4,691	61	>75% Grass cover, Good, HSG B
12,427	84	Weighted Average
4,691		37.75% Pervious Area
7,736		62.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	30	0.0250	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.22"
3.1	166	0.0166	0.90		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.5	196	Total			

Subcatchment PR-2A:



Summary for Subcatchment PR-2B:

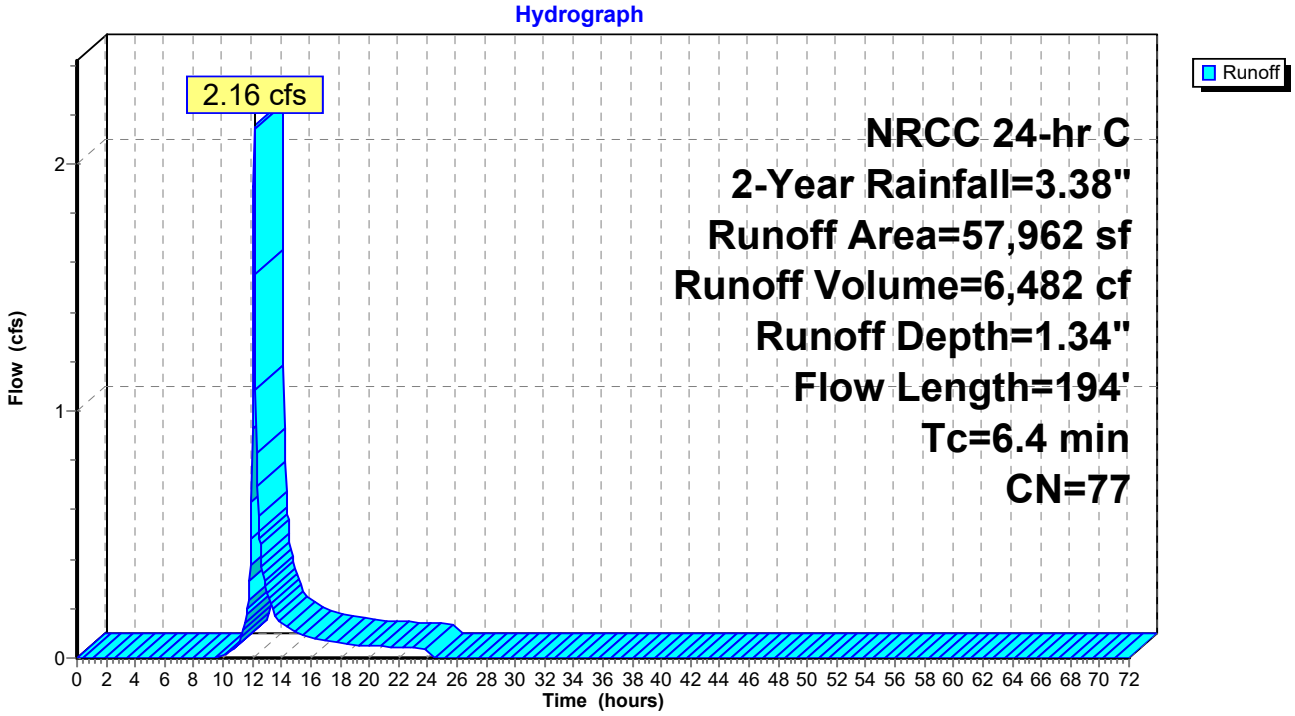
Runoff = 2.16 cfs @ 12.14 hrs, Volume= 6,482 cf, Depth= 1.34"
Routed to Pond 2P : Infiltration Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 2-Year Rainfall=3.38"

	Area (sf)	CN	Description
	6,720	98	Roofs, HSG B
	2,214	98	Unconnected pavement, HSG B
	16,448	98	Water Surface, 0% imp, HSG B
*	700	75	Permeable Pavers, HSG B
	31,880	61	>75% Grass cover, Good, HSG B
	57,962	77	Weighted Average
	49,028		84.59% Pervious Area
	8,934		15.41% Impervious Area
	2,214		24.78% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	30	0.0250	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.22"
3.0	164	0.0166	0.90		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.4	194	Total			

Subcatchment PR-2B:



Summary for Subcatchment PR-2C:

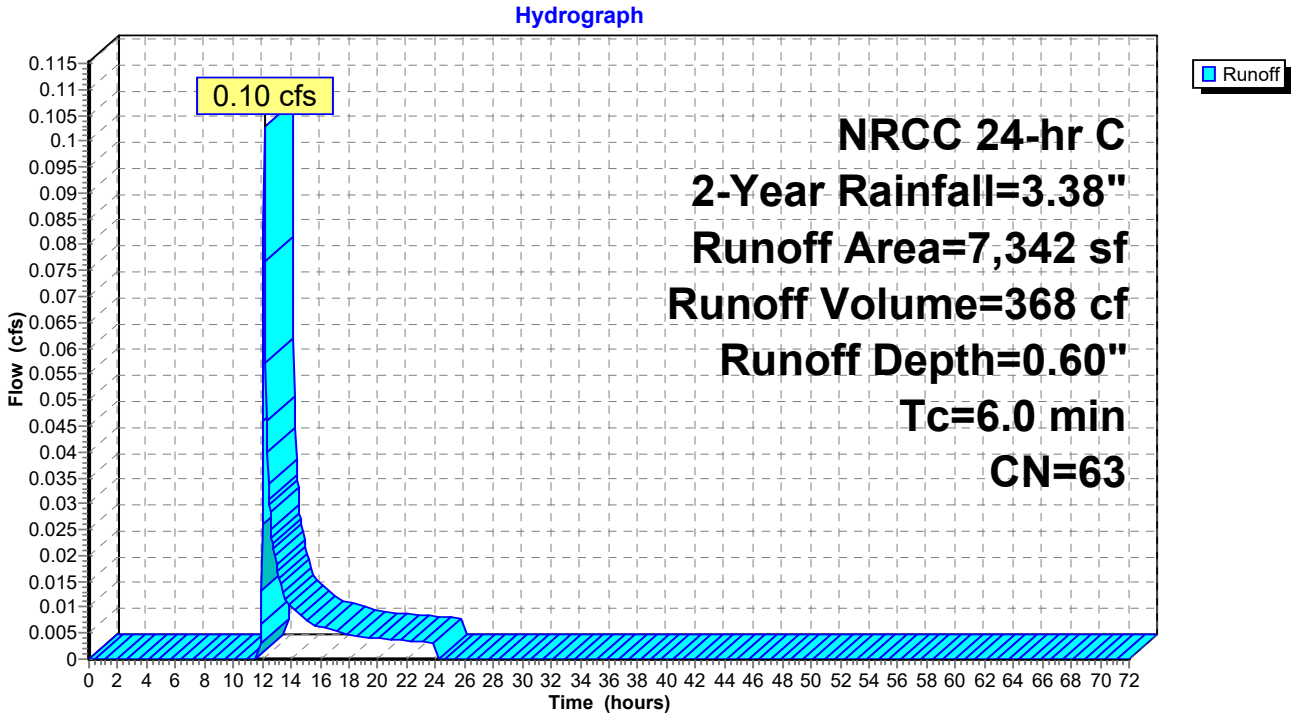
Runoff = 0.10 cfs @ 12.15 hrs, Volume= 368 cf, Depth= 0.60"
Routed to Reach DP-2 : Southeast Abutter

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 2-Year Rainfall=3.38"

Area (sf)	CN	Description
422	98	Roofs, HSG B
6,920	61	>75% Grass cover, Good, HSG B
7,342	63	Weighted Average
6,920		94.25% Pervious Area
422		5.75% Impervious Area

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

Subcatchment PR-2C:



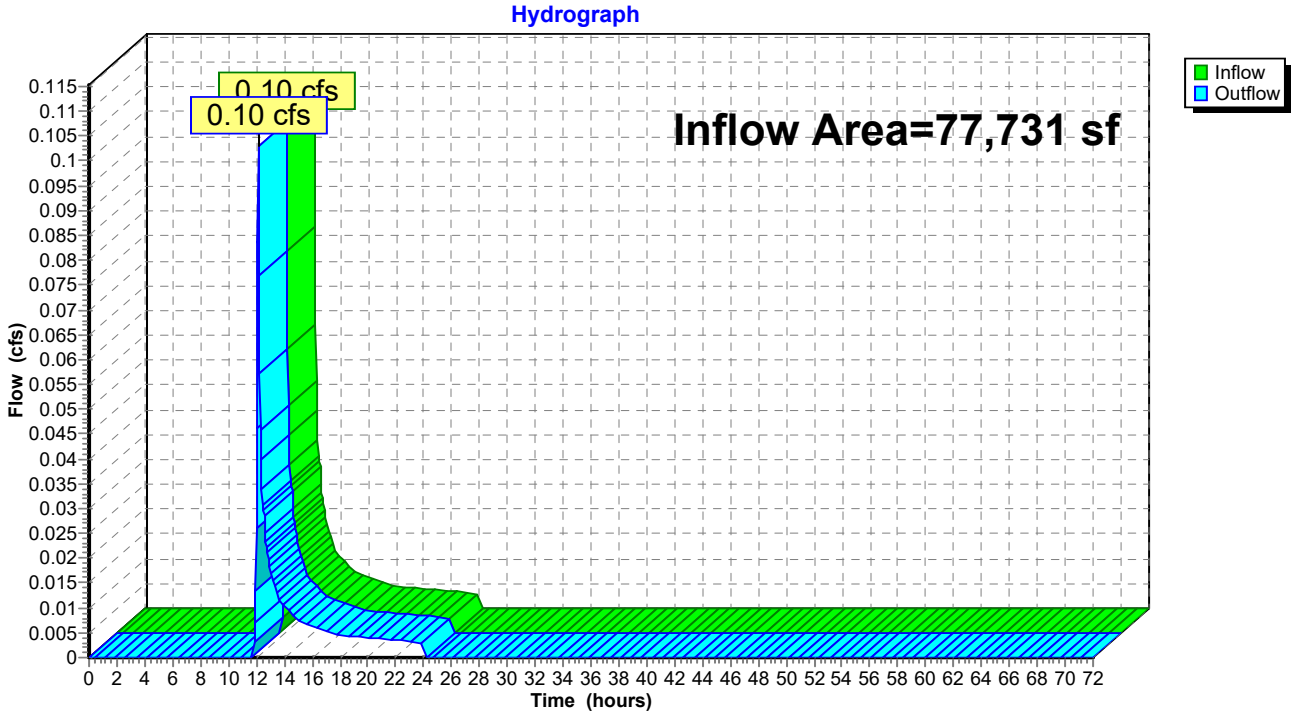
Summary for Reach DP-2: Southeast Abutter

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

Inflow Area = 77,731 sf, 21.99% Impervious, Inflow Depth = 0.06" for 2-Year event
Inflow = 0.10 cfs @ 12.15 hrs, Volume= 368 cf
Outflow = 0.10 cfs @ 12.15 hrs, Volume= 368 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 2R

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach DP-2: Southeast Abutter



Summary for Pond 1P: Forebay 1

Inflow Area = 12,427 sf, 62.25% Impervious, Inflow Depth = 1.83" for 2-Year event
Inflow = 0.63 cfs @ 12.14 hrs, Volume= 1,899 cf
Outflow = 0.48 cfs @ 12.20 hrs, Volume= 1,467 cf, Atten= 24%, Lag= 4.0 min
Primary = 0.48 cfs @ 12.20 hrs, Volume= 1,467 cf
Routed to Pond 2P : Infiltration Basin

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 217.63' @ 12.20 hrs Surf.Area= 1,184 sf Storage= 579 cf

Plug-Flow detention time= 147.2 min calculated for 1,467 cf (77% of inflow)
Center-of-Mass det. time= 55.7 min (892.9 - 837.2)

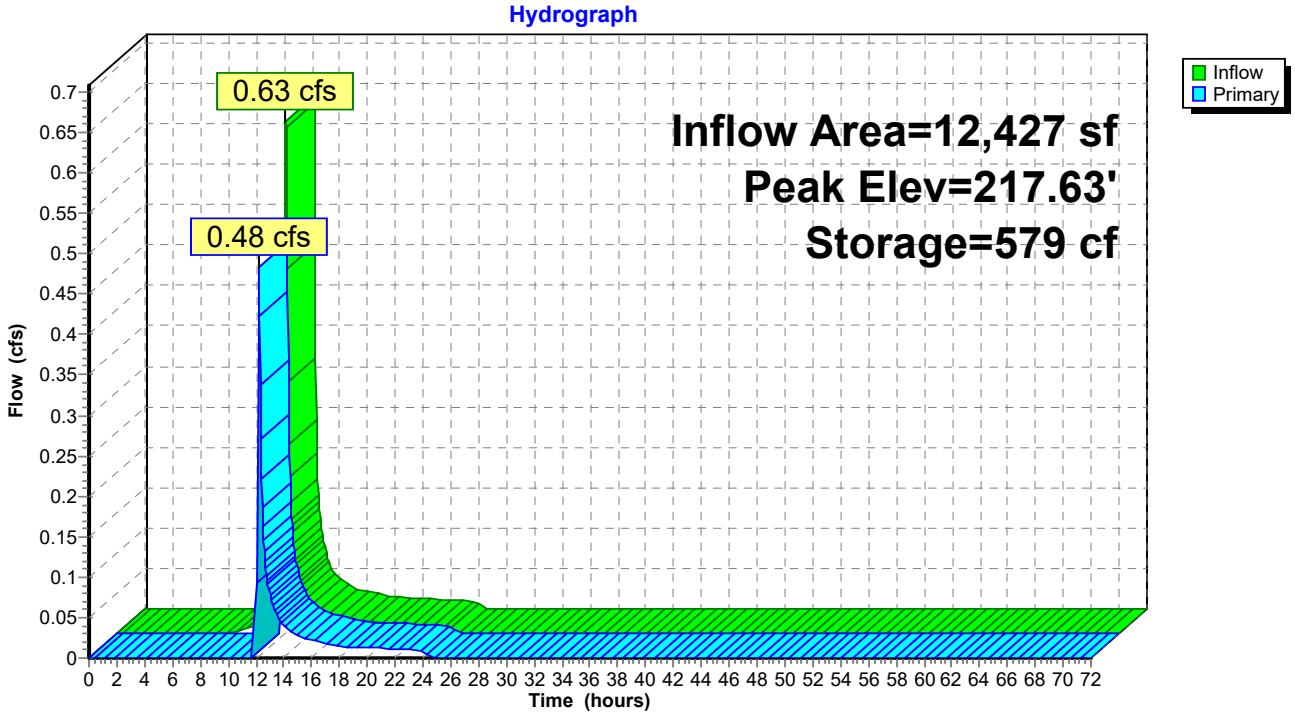
Volume	Invert	Avail.Storage	Storage Description
#1	217.00'	1,075 cf	**Bio-retention (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
217.00	655	0	0
218.00	1,494	1,075	1,075

Device	Routing	Invert	Outlet Devices
#0	Primary	218.00'	**Automatic Storage Overflow** (Discharged without head)
#1	Device 2	217.50'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	216.10'	**12.0" Round Culvert** L= 150.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 216.10' / 215.50' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.48 cfs @ 12.20 hrs HW=217.63' TW=216.00' (Fixed TW Elev= 216.00')
↑**2=Culvert** (Passes 0.48 cfs of 2.65 cfs potential flow)
↑**1=Orifice/Grate** (Weir Controls 0.48 cfs @ 1.18 fps)

Pond 1P: Forebay 1



Summary for Pond 2P: Infiltration Basin

Inflow Area = 70,389 sf, 23.68% Impervious, Inflow Depth = 1.36" for 2-Year event
Inflow = 2.54 cfs @ 12.15 hrs, Volume= 7,949 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach DP-2 : Southeast Abutter

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 215.60' @ 32.25 hrs Surf.Area= 13,895 sf Storage= 7,949 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

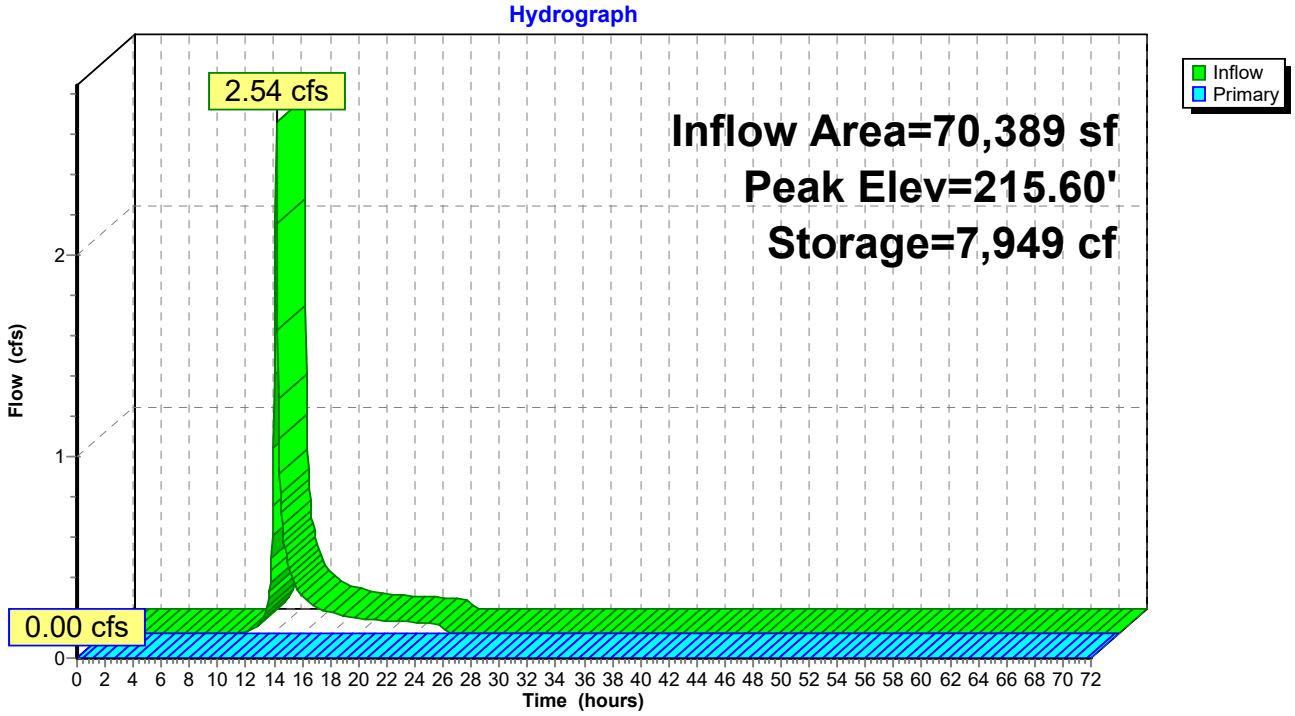
Volume	Invert	Avail.Storage	Storage Description
#1	215.00'	31,163 cf	**Infiltration Basin (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
215.00	12,550	0	0
216.00	14,788	13,669	13,669
217.00	20,200	17,494	31,163

Device	Routing	Invert	Outlet Devices
#1	Primary	215.80'	**20.0' long x 14.0' breadth Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.64 2.67 2.70 2.65 2.64 2.65 2.65 2.63

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=215.00' (Free Discharge)
1=Overflow (Controls 0.00 cfs)

Pond 2P: Infiltration Basin



Summary for Subcatchment PR-2A:

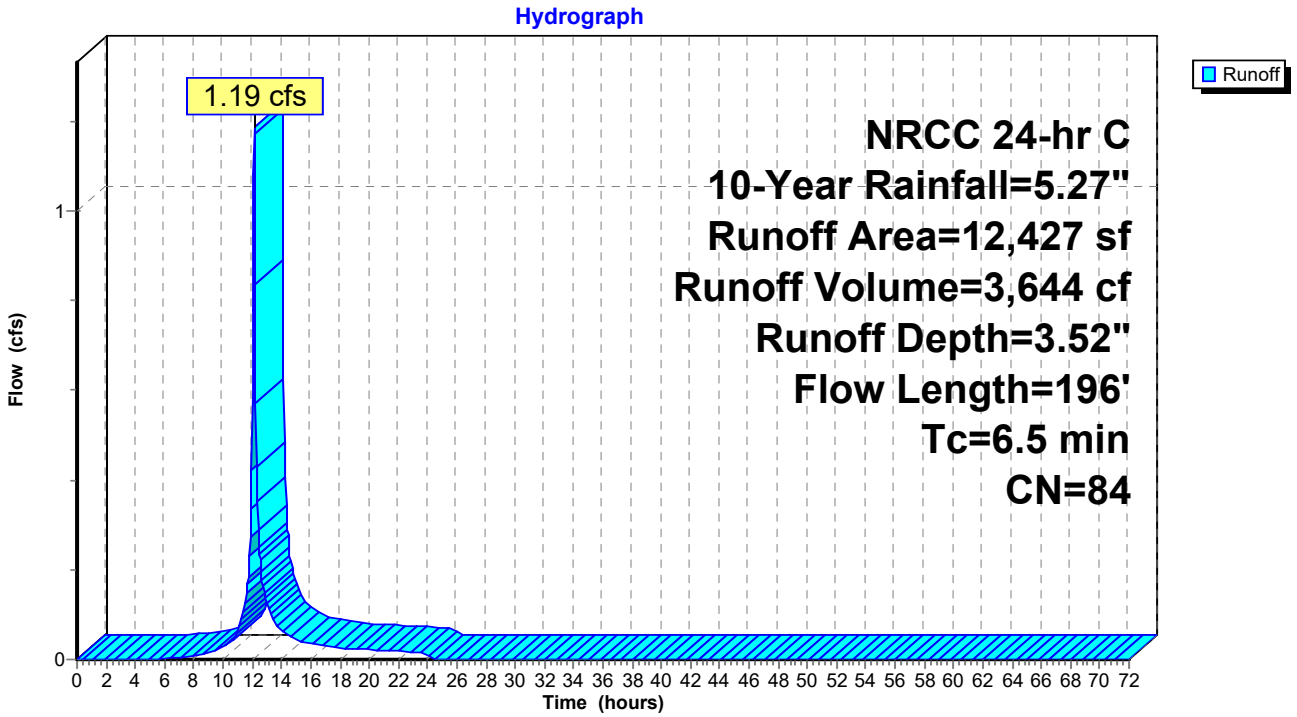
Runoff = 1.19 cfs @ 12.14 hrs, Volume= 3,644 cf, Depth= 3.52"
Routed to Pond 1P : Forebay 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 10-Year Rainfall=5.27"

Area (sf)	CN	Description
7,736	98	Paved parking, HSG B
4,691	61	>75% Grass cover, Good, HSG B
12,427	84	Weighted Average
4,691		37.75% Pervious Area
7,736		62.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	30	0.0250	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.22"
3.1	166	0.0166	0.90		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.5	196	Total			

Subcatchment PR-2A:



Summary for Subcatchment PR-2B:

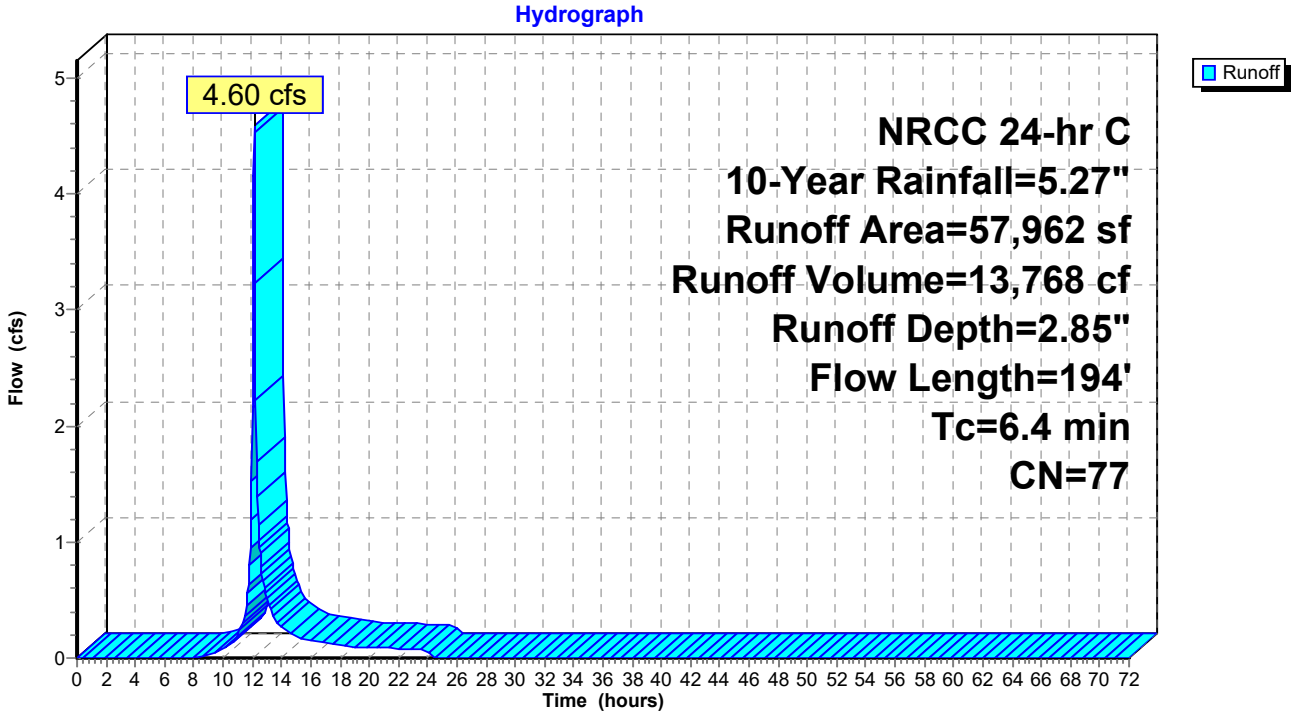
Runoff = 4.60 cfs @ 12.14 hrs, Volume= 13,768 cf, Depth= 2.85"
Routed to Pond 2P : Infiltration Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 10-Year Rainfall=5.27"

	Area (sf)	CN	Description
	6,720	98	Roofs, HSG B
	2,214	98	Unconnected pavement, HSG B
	16,448	98	Water Surface, 0% imp, HSG B
*	700	75	Permeable Pavers, HSG B
	31,880	61	>75% Grass cover, Good, HSG B
	57,962	77	Weighted Average
	49,028		84.59% Pervious Area
	8,934		15.41% Impervious Area
	2,214		24.78% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	30	0.0250	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.22"
3.0	164	0.0166	0.90		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.4	194	Total			

Subcatchment PR-2B:



Summary for Subcatchment PR-2C:

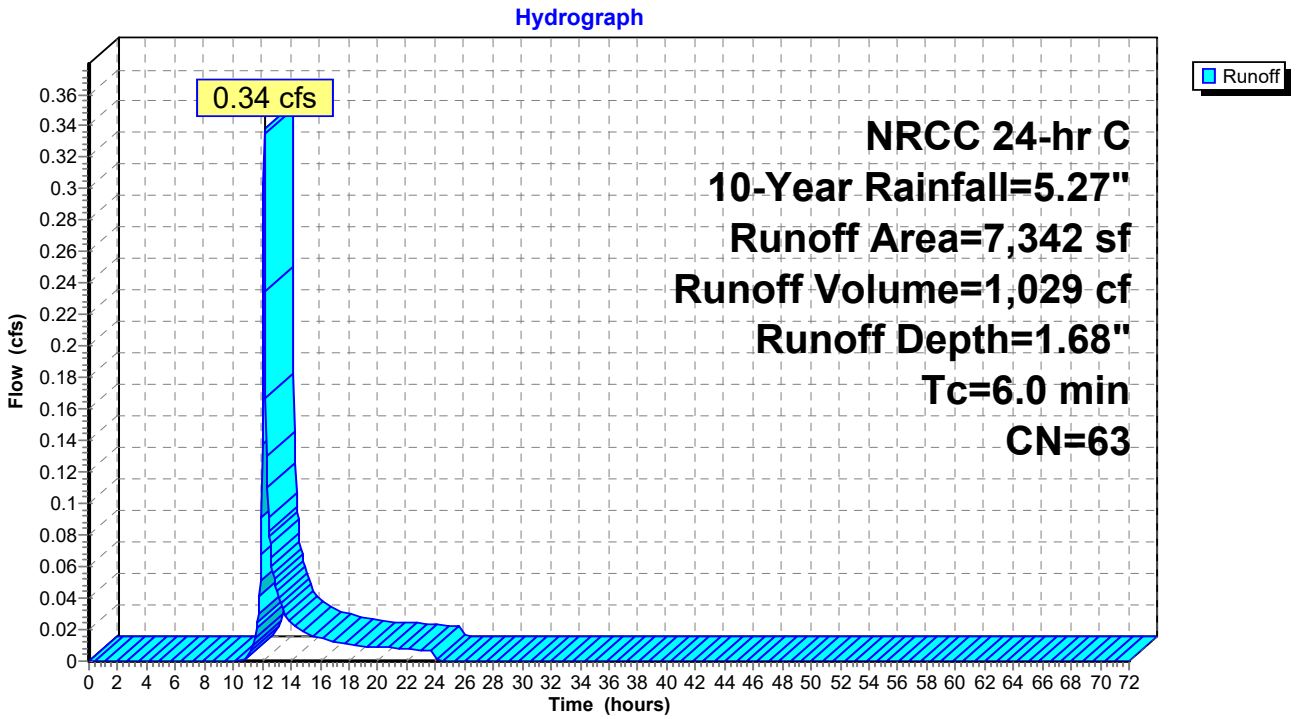
Runoff = 0.34 cfs @ 12.14 hrs, Volume= 1,029 cf, Depth= 1.68"
Routed to Reach DP-2 : Southeast Abutter

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 10-Year Rainfall=5.27"

Area (sf)	CN	Description
422	98	Roofs, HSG B
6,920	61	>75% Grass cover, Good, HSG B
7,342	63	Weighted Average
6,920		94.25% Pervious Area
422		5.75% Impervious Area

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

Subcatchment PR-2C:



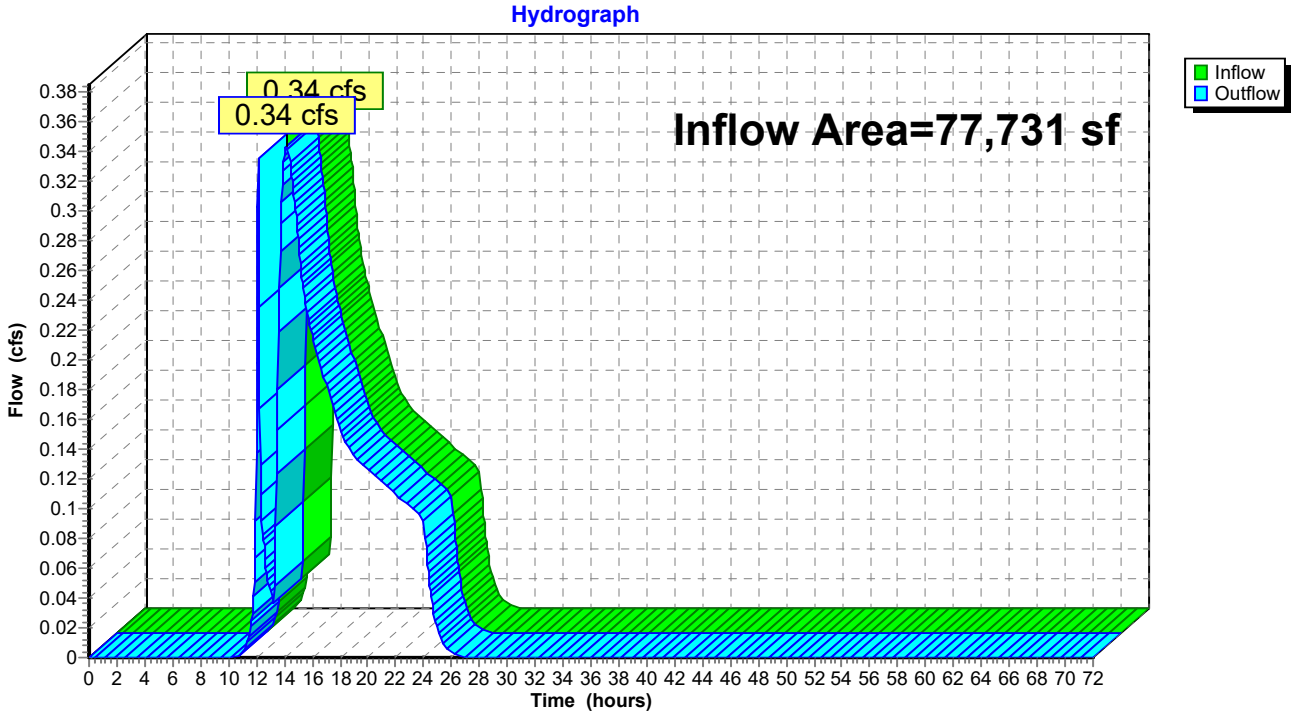
Summary for Reach DP-2: Southeast Abutter

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

Inflow Area = 77,731 sf, 21.99% Impervious, Inflow Depth = 1.12" for 10-Year event
Inflow = 0.34 cfs @ 14.16 hrs, Volume= 7,252 cf
Outflow = 0.34 cfs @ 14.16 hrs, Volume= 7,252 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 2R

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach DP-2: Southeast Abutter



Summary for Pond 1P: Forebay 1

Inflow Area = 12,427 sf, 62.25% Impervious, Inflow Depth = 3.52" for 10-Year event
Inflow = 1.19 cfs @ 12.14 hrs, Volume= 3,644 cf
Outflow = 1.04 cfs @ 12.17 hrs, Volume= 3,211 cf, Atten= 12%, Lag= 2.2 min
Primary = 1.04 cfs @ 12.17 hrs, Volume= 3,211 cf
Routed to Pond 2P : Infiltration Basin

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 217.72' @ 12.17 hrs Surf.Area= 1,257 sf Storage= 686 cf

Plug-Flow detention time= 95.5 min calculated for 3,211 cf (88% of inflow)
Center-of-Mass det. time= 36.9 min (853.5 - 816.6)

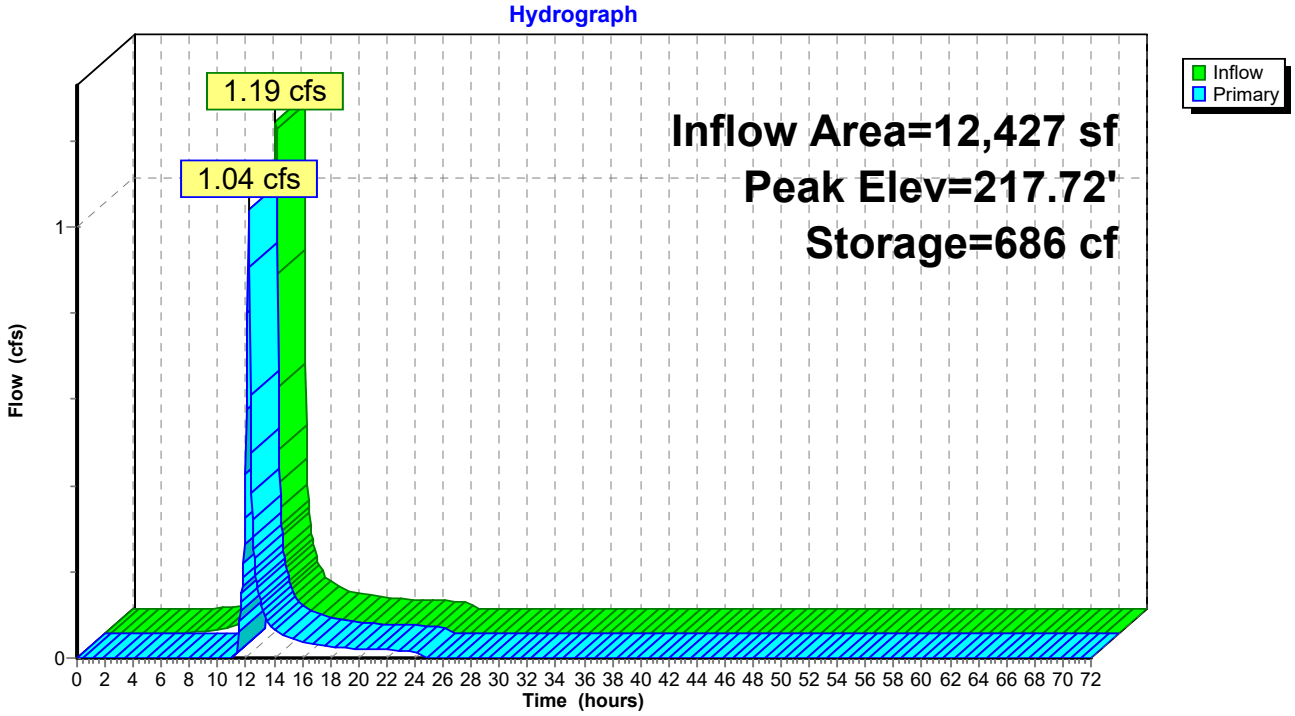
Volume	Invert	Avail.Storage	Storage Description
#1	217.00'	1,075 cf	**Bio-retention (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
217.00	655	0	0
218.00	1,494	1,075	1,075

Device	Routing	Invert	Outlet Devices
#0	Primary	218.00'	**Automatic Storage Overflow** (Discharged without head)
#1	Device 2	217.50'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	216.10'	**12.0" Round Culvert** L= 150.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 216.10' / 215.50' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.01 cfs @ 12.17 hrs HW=217.71' TW=216.00' (Fixed TW Elev= 216.00')
↑**2=Culvert** (Passes 1.01 cfs of 2.74 cfs potential flow)
↑**1=Orifice/Grate** (Weir Controls 1.01 cfs @ 1.51 fps)

Pond 1P: Forebay 1



Summary for Pond 2P: Infiltration Basin

Inflow Area = 70,389 sf, 23.68% Impervious, Inflow Depth = 2.89" for 10-Year event
Inflow = 5.59 cfs @ 12.14 hrs, Volume= 16,979 cf
Outflow = 0.32 cfs @ 14.17 hrs, Volume= 6,223 cf, Atten= 94%, Lag= 122.0 min
Primary = 0.32 cfs @ 14.17 hrs, Volume= 6,223 cf
Routed to Reach DP-2 : Southeast Abutter

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 215.83' @ 14.17 hrs Surf.Area= 14,413 sf Storage= 11,223 cf

Plug-Flow detention time= 364.7 min calculated for 6,223 cf (37% of inflow)
Center-of-Mass det. time= 227.8 min (1,068.2 - 840.4)

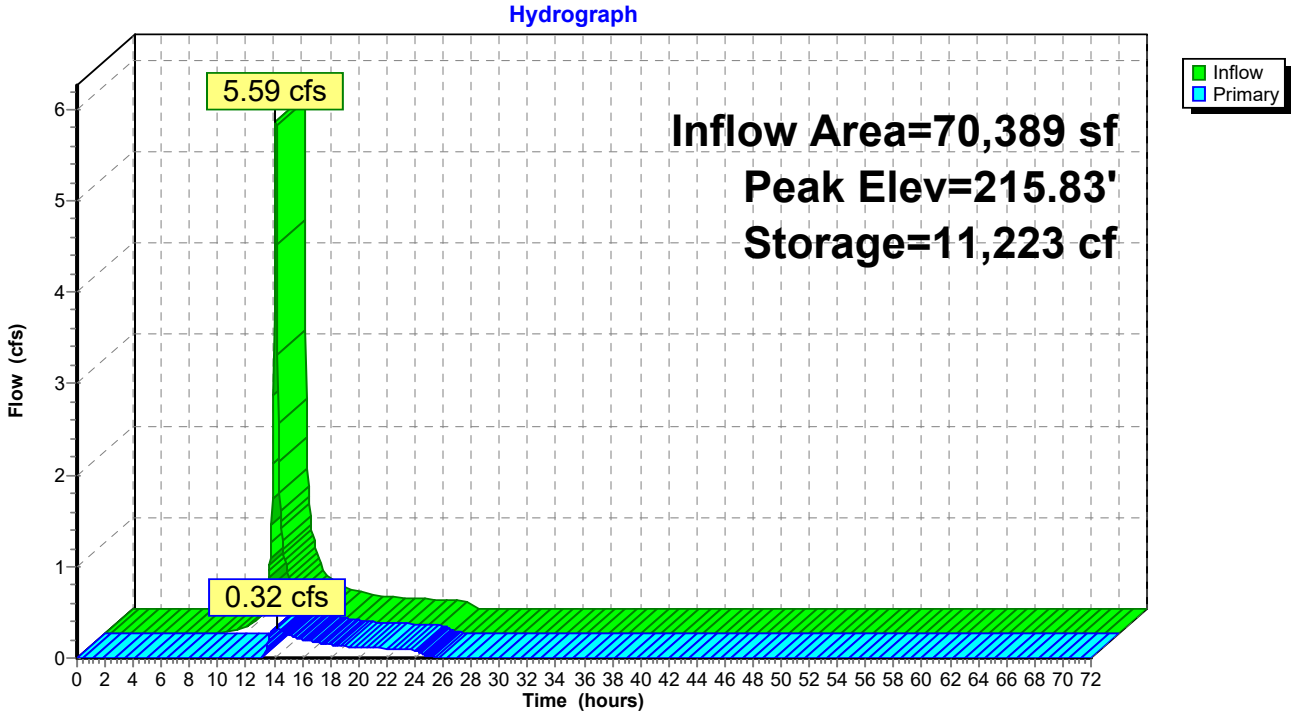
Volume	Invert	Avail.Storage	Storage Description
#1	215.00'	31,163 cf	**Infiltration Basin (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
215.00	12,550	0	0
216.00	14,788	13,669	13,669
217.00	20,200	17,494	31,163

Device	Routing	Invert	Outlet Devices
#1	Primary	215.80'	**20.0' long x 14.0' breadth Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.64 2.67 2.70 2.65 2.64 2.65 2.65 2.63

Primary OutFlow Max=0.31 cfs @ 14.17 hrs HW=215.83' (Free Discharge)
1=Overflow (Weir Controls 0.31 cfs @ 0.48 fps)

Pond 2P: Infiltration Basin



Summary for Subcatchment PR-2A:

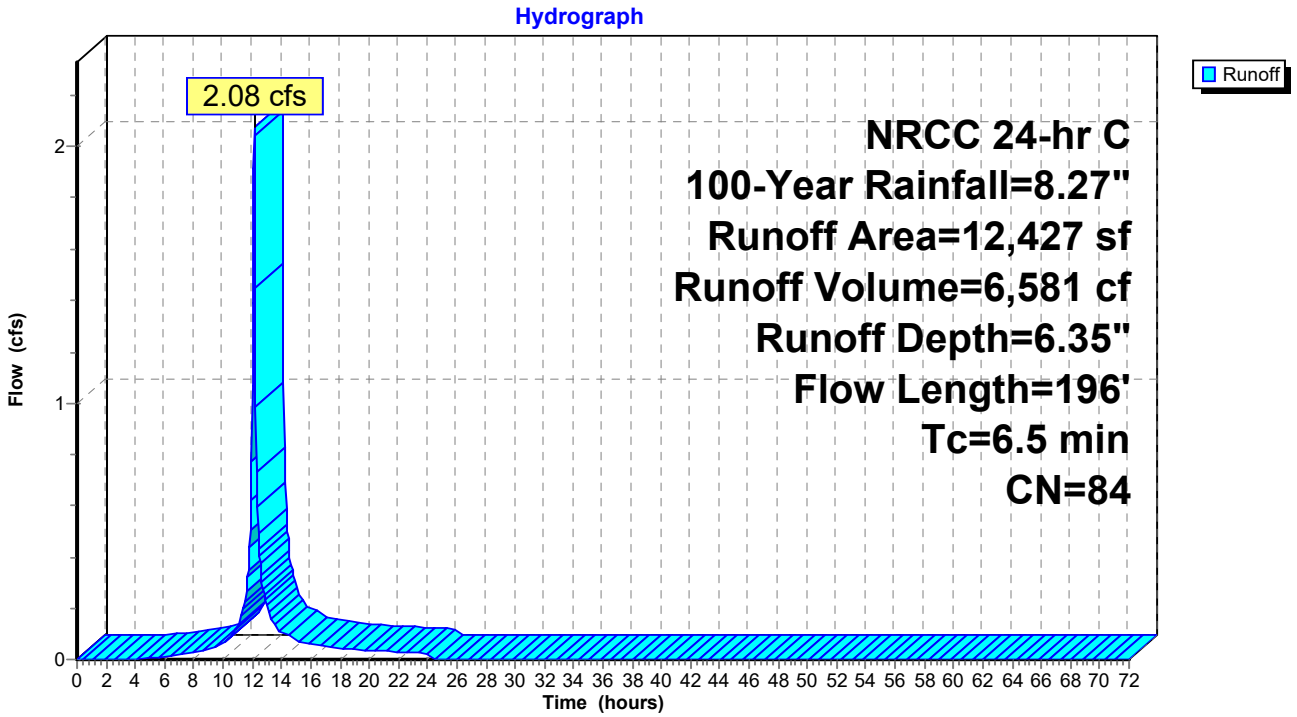
Runoff = 2.08 cfs @ 12.13 hrs, Volume= 6,581 cf, Depth= 6.35"
Routed to Pond 1P : Forebay 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 100-Year Rainfall=8.27"

Area (sf)	CN	Description
7,736	98	Paved parking, HSG B
4,691	61	>75% Grass cover, Good, HSG B
12,427	84	Weighted Average
4,691		37.75% Pervious Area
7,736		62.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	30	0.0250	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.22"
3.1	166	0.0166	0.90		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.5	196	Total			

Subcatchment PR-2A:



Summary for Subcatchment PR-2B:

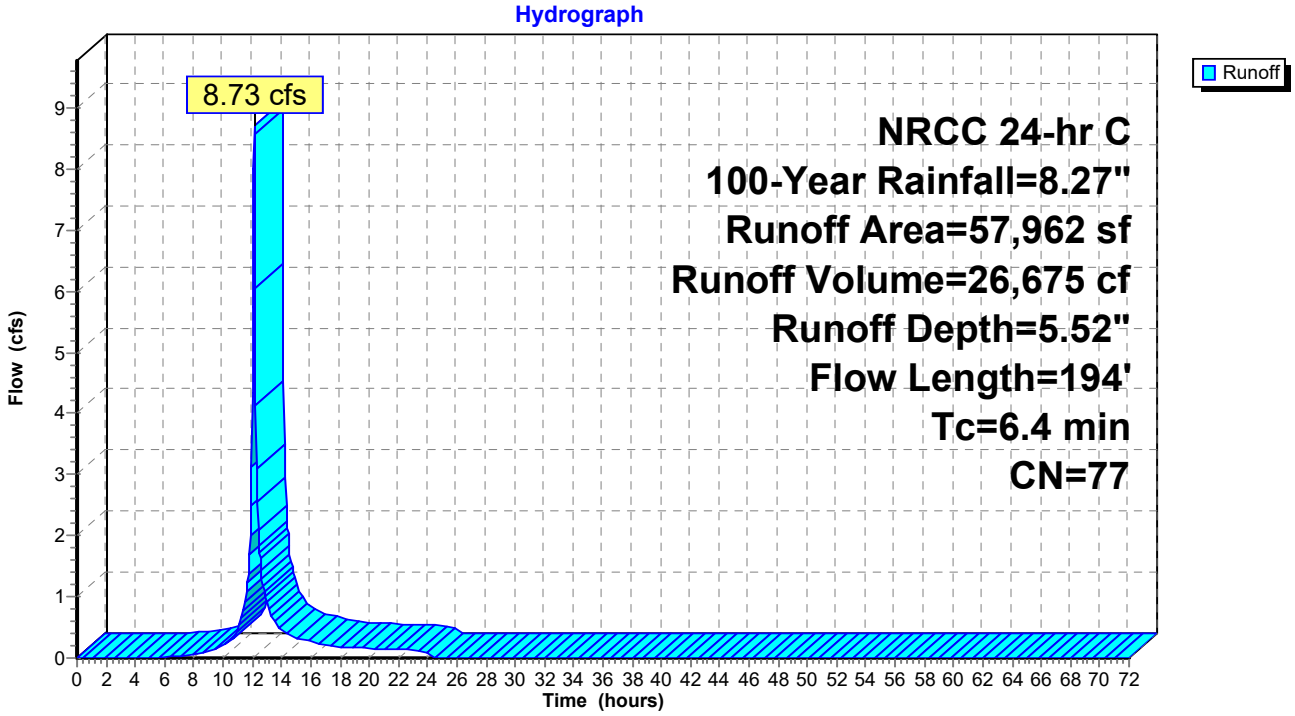
Runoff = 8.73 cfs @ 12.13 hrs, Volume= 26,675 cf, Depth= 5.52"
Routed to Pond 2P : Infiltration Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 100-Year Rainfall=8.27"

	Area (sf)	CN	Description
	6,720	98	Roofs, HSG B
	2,214	98	Unconnected pavement, HSG B
	16,448	98	Water Surface, 0% imp, HSG B
*	700	75	Permeable Pavers, HSG B
	31,880	61	>75% Grass cover, Good, HSG B
	57,962	77	Weighted Average
	49,028		84.59% Pervious Area
	8,934		15.41% Impervious Area
	2,214		24.78% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	30	0.0250	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.22"
3.0	164	0.0166	0.90		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.4	194	Total			

Subcatchment PR-2B:



Summary for Subcatchment PR-2C:

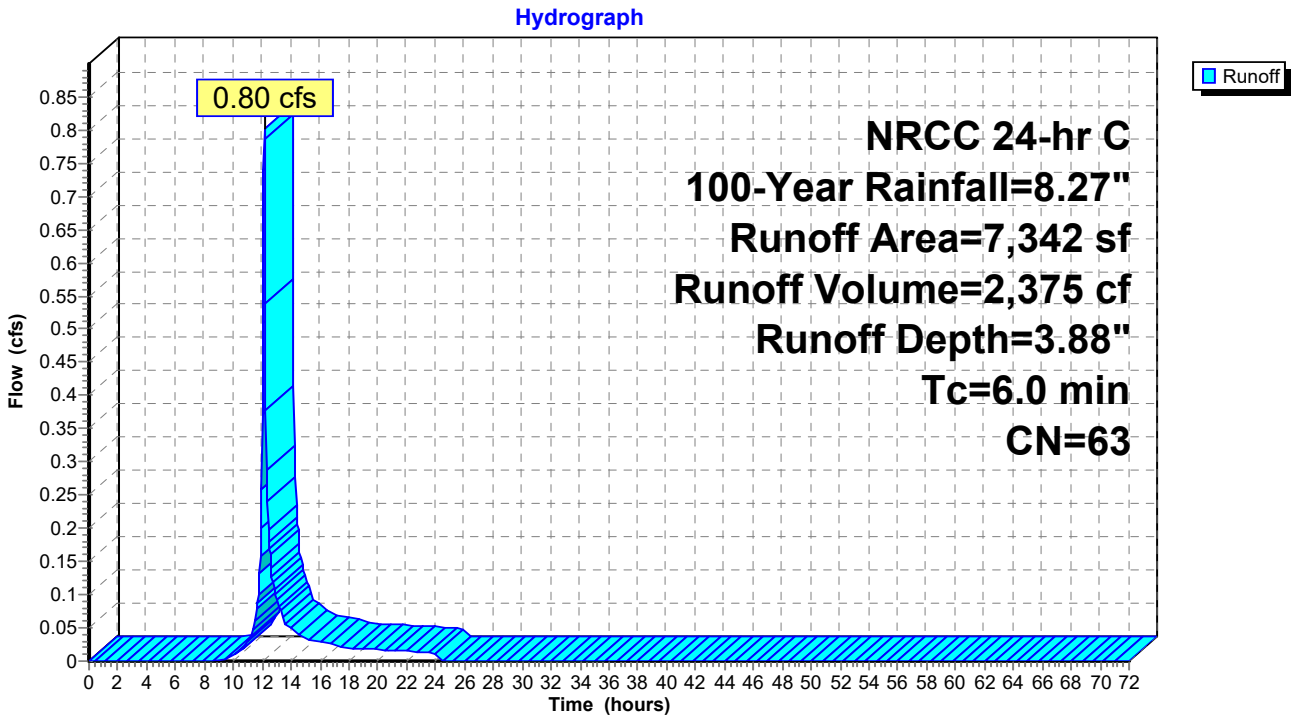
Runoff = 0.80 cfs @ 12.13 hrs, Volume= 2,375 cf, Depth= 3.88"
Routed to Reach DP-2 : Southeast Abutter

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr C 100-Year Rainfall=8.27"

Area (sf)	CN	Description
422	98	Roofs, HSG B
6,920	61	>75% Grass cover, Good, HSG B
7,342	63	Weighted Average
6,920		94.25% Pervious Area
422		5.75% Impervious Area

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

Subcatchment PR-2C:



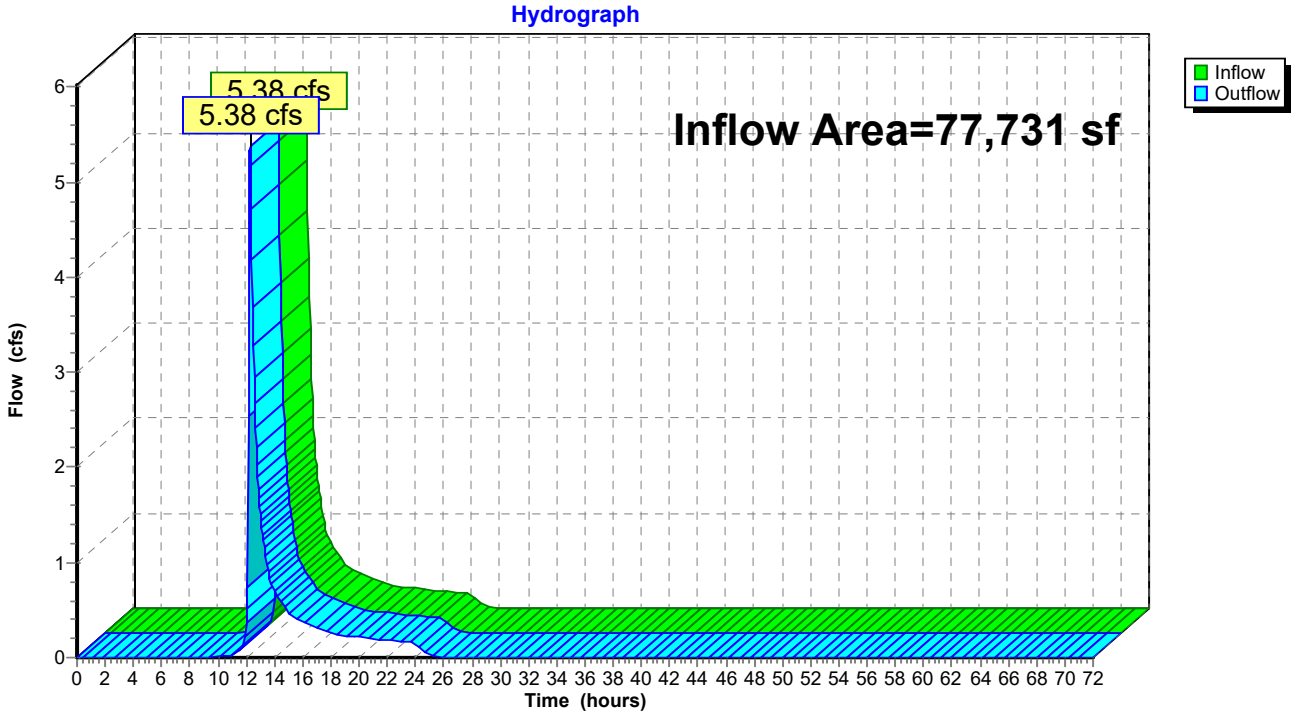
Summary for Reach DP-2: Southeast Abutter

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

Inflow Area = 77,731 sf, 21.99% Impervious, Inflow Depth = 3.77" for 100-Year event
Inflow = 5.38 cfs @ 12.27 hrs, Volume= 24,443 cf
Outflow = 5.38 cfs @ 12.27 hrs, Volume= 24,443 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 2R

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach DP-2: Southeast Abutter



Summary for Pond 1P: Forebay 1

Inflow Area = 12,427 sf, 62.25% Impervious, Inflow Depth = 6.35" for 100-Year event
Inflow = 2.08 cfs @ 12.13 hrs, Volume= 6,581 cf
Outflow = 1.87 cfs @ 12.17 hrs, Volume= 6,148 cf, Atten= 10%, Lag= 2.0 min
Primary = 1.87 cfs @ 12.17 hrs, Volume= 6,148 cf
Routed to Pond 2P : Infiltration Basin

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 217.82' @ 12.17 hrs Surf.Area= 1,344 sf Storage= 820 cf

Plug-Flow detention time= 65.8 min calculated for 6,148 cf (93% of inflow)
Center-of-Mass det. time= 29.1 min (827.3 - 798.2)

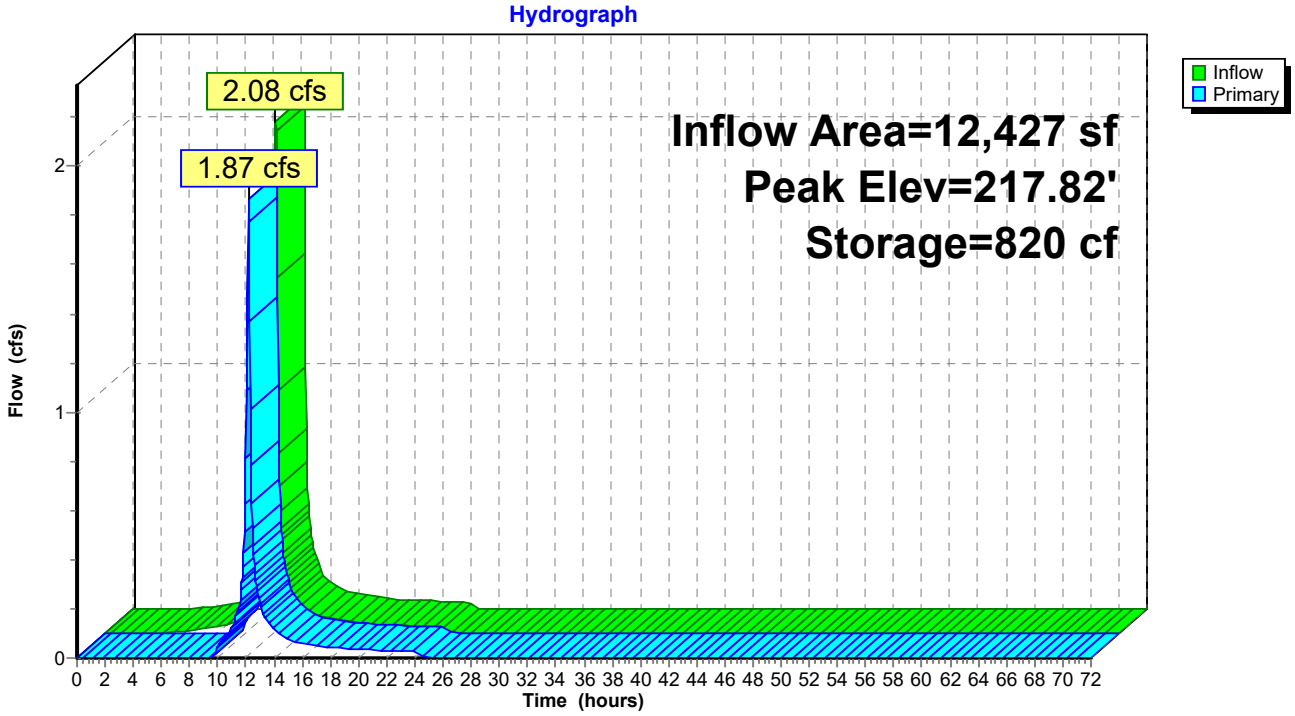
Volume	Invert	Avail.Storage	Storage Description
#1	217.00'	1,075 cf	**Bio-retention (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
217.00	655	0	0
218.00	1,494	1,075	1,075

Device	Routing	Invert	Outlet Devices
#0	Primary	218.00'	**Automatic Storage Overflow** (Discharged without head)
#1	Device 2	217.50'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	216.10'	**12.0" Round Culvert** L= 150.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 216.10' / 215.50' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.82 cfs @ 12.17 hrs HW=217.82' TW=216.00' (Fixed TW Elev= 216.00')
↑**2=Culvert** (Passes 1.82 cfs of 2.86 cfs potential flow)
↑**1=Orifice/Grate** (Weir Controls 1.82 cfs @ 1.84 fps)

Pond 1P: Forebay 1



Summary for Pond 2P: Infiltration Basin

[79] Warning: Submerged Pond 1P Primary device # 2 OUTLET by 0.51'

Inflow Area = 70,389 sf, 23.68% Impervious, Inflow Depth = 5.60" for 100-Year event
Inflow = 10.52 cfs @ 12.14 hrs, Volume= 32,824 cf
Outflow = 5.05 cfs @ 12.27 hrs, Volume= 22,067 cf, Atten= 52%, Lag= 8.0 min
Primary = 5.05 cfs @ 12.27 hrs, Volume= 22,067 cf
Routed to Reach DP-2 : Southeast Abutter

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 216.01' @ 12.27 hrs Surf.Area= 14,837 sf Storage= 13,802 cf

Plug-Flow detention time= 193.2 min calculated for 22,052 cf (67% of inflow)
Center-of-Mass det. time= 88.0 min (906.5 - 818.5)

Volume	Invert	Avail.Storage	Storage Description
#1	215.00'	31,163 cf	**Infiltration Basin (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
215.00	12,550	0	0
216.00	14,788	13,669	13,669
217.00	20,200	17,494	31,163

Device	Routing	Invert	Outlet Devices
#1	Primary	215.80'	**20.0' long x 14.0' breadth Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.64 2.67 2.70 2.65 2.64 2.65 2.65 2.63

Primary OutFlow Max=4.92 cfs @ 12.27 hrs HW=216.01' (Free Discharge)
↑**1=Overflow** (Weir Controls 4.92 cfs @ 1.20 fps)

Pond 2P: Infiltration Basin