

DRAINAGE CALCULATIONS AND STORMWATER MANAGEMENT PLAN

For the 10 Unit Multi-Family Development Located at

50-54 Murdock Street

(Tax Map 33 Block A Lots 16, 17 & 18)
Somerville, Massachusetts

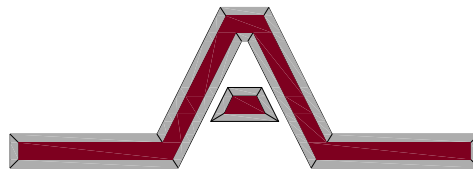
Submitted to:

**City of Somerville
93 Highland Avenue
Somerville, MA**

Prepared for:

**Roberto Grieco
16 Kenwood Avenue
Wilmington, MA 01887**

Prepared by



Engineering Alliance, Inc.

Civil Engineering & Land Planning Consultants	
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December 19, 2017

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**Proposed 10 Unit Multifamily Dwelling
50-54 Murdock Street
Somerville, MA**

Project Description

The project consists of the re-development of a property comprised of approximately 15,340± s.f. located at 50-54 Murdock Street, Somerville, MA. The property is shown on the City of Somerville Tax Maps as Map 33 Block A Lots 16, 17 & 18. The property is currently occupied by a wooden storage building and a large exposed earth pathway from former vehicle access to the storage building.

The proposed project consists of the construction of a ten unit multifamily dwelling with a pervious paver driveway and parking area. The work will also include the installation of a six inch (6") PVC SDR-35 sewer service, a 4" CLDI fire service, a 2" type "k" copper water service, proposed landscaping and incidental site grading. The stone bed beneath the pervious pavers will serve as an infiltration facility for both the driveway and the roof of the new building.

The site abuts Murdock Street to the west, developed residential land to the north and south, and MBTA property to the west. Access to the property will be provided via Murdock Street.

Site Description

The subject property is currently occupied by the wooden storage building, two small concrete pads, exposed earth, and a wooded area buffer. The topography of the site ranges from 1% to 10%. The site has a well defined drainage pattern consisting of one distinct watershed area that drains via surface flow offsite to the rear of the property. The majority of the site is comprised of exposed earth and/or building. Currently, there are no storm water controls and the site produces a high rate of storm water runoff due to the pavement and exposed earth surfaces. Based on this lack of storm water controls there is little to no water quality treatment or groundwater recharge.

In the proposed condition, the groundcover of the site will have a significant change. The property will consist of the ten unit multifamily building, pervious paver driveway and parking area, and proposed landscaped areas. The landscaped areas will serve to immediately reduce the rate of storm water runoff as well as promote groundwater recharge. The drainage patterns in the proposed condition will mimic those of the existing condition, including one watershed area draining offsite to the rear.

Soils information was obtained from the USDA soil Conservation Service (SCS) Maps and available data for Middlesex County. The onsite soils are classified as Scio-Urban Land complex (621B). The Flood Insurance Rate Map for the City of Somerville (Community Panel 25017C0438E, June 4, 2010) describes the project site as Zone X. Zone X is classified as areas determined to be outside the 0.2% annual chance floodplain. All lot lines, topography, utilities, and other existing site information was compiled from a field survey performed by Medford Engineering & Survey and other readily available record documents.

Pre-Development Condition

Technical Release 20 (TR-20) Program for Project Formulation Hydrology developed by the Soil Conservation Service (SCS) was employed to develop pre and post-development peak flows. Drainage calculations were performed for the pre-development condition for the 2, 10, 25, and 100-year type III 24-hour storm events. Refer to Appendix A for computer results, soil characteristics, cover descriptions and times of concentrations calculations.

In both the pre-development and post-development stormwater analysis a single watershed area was analyzed (EWS-1). The entirety of the subject property drains via surface flow toward

the rear of the site and ultimately to an offsite low point. Refer to Existing Watershed Plan (EWP) in Appendix A for a delineation of the watershed areas as well as the location of the design points. The same design points were analyzed in both the pre and post development condition.

A summary of the peak rates of the runoff during the Pre-Development Conditions is as follows:

Pre-Development Condition Peak Discharge Summary (in CFS):

	2-Year Storm (3.1 IN)	10-Year Storm (4.5 IN)	25-Year Storm (5.4 IN)	100-Year Storm (6.9 IN)
Design Point #1	0.66	1.16	1.50	2.05

Proposed Development

The proposed project includes the demolition of the existing building and the construction of the ten unit multifamily building, pervious paver parking area, utility installation and landscaped areas. In the Post Development Condition approximately 3,920 s.f. of landscaping has been added. The proposed landscaping will serve to reduce the rate of storm water runoff as well as promote ground water recharge.

Storm water runoff generated by all impervious area (proposed roof, driveway, and parking areas) will be infiltrated via the stone bed beneath the pervious paver driveway and parking area. The twelve inch (12") stone bed has been designed to accommodate all storms up to and including the 100-year storm event. The system was sized based on the contributing areas while also incorporating an infiltration rate of 2.41 in/hr corresponding to the Rawls Rate established for a loamy sand type soil. The system will serve to reduce storm water runoff as well as promoting ground water recharge.

Again, drainage calculations were performed for the post-development condition for the 2, 10, 25, and 100-year type III 24-hour storm events. Refer to Appendix B for computer results, soil characteristics, cover descriptions, times of concentration calculations, and the Proposed Watershed Plans (PWP). A summary of the peak rates of runoff during the Post-Development Condition is as follows:

Post-Development Condition Peak Discharge Summary (in CFS):

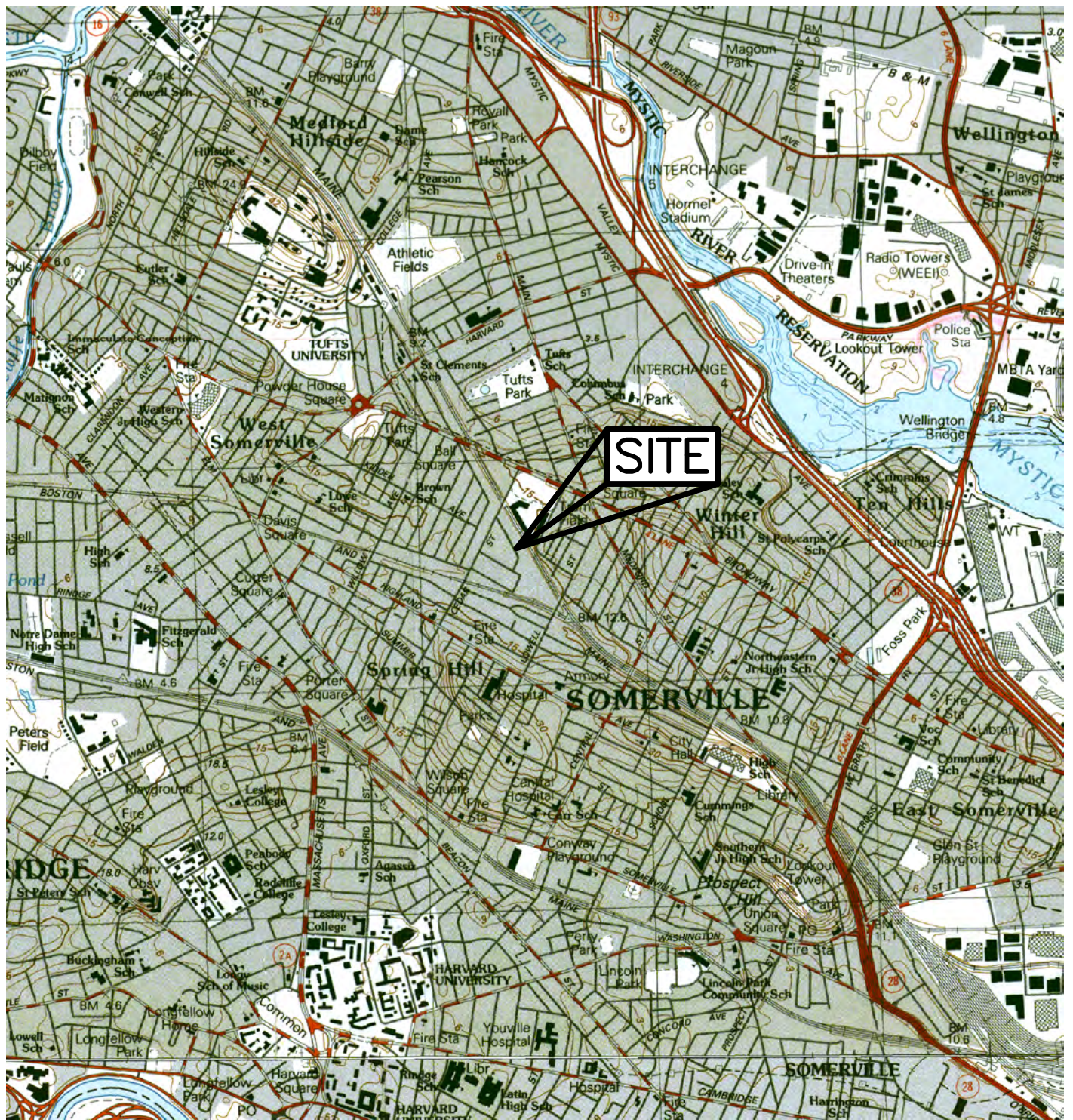
	2-Year Storm (3.1 IN)	10-Year Storm (4.5 IN)	25-Year Storm (5.4 IN)	100-Year Storm (6.9 IN)
Design Point #1	0.10	0.20	0.28	0.41

Stormwater Management Facilities

The stormwater facilities were design to attenuate peak flows generated by all storm events up to and including the 100-year storm event. An infiltration rate of 2.41 in/hr was used based on the Rawls Rate of saturated hydraulic conductivity for a loamy sand soil type. Refer to Section II for the Stage Storage Curves and TR-20 computer results for the storage characteristics of the subsurface infiltration facilities. Refer to the Site Plans (attached) for design details.

Erosion and Siltation Control

Straw wattles and silt fence will be placed at the downhill limit of work prior to the commencement of any construction activity. The integrity of the erosion control devices will be maintained by periodic inspection and replacement as necessary. The straw wattles and silt fence will remain in place until the first course of pavement has been placed and all side slopes have been loamed and seeded and vegetation has been established.



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Notice of Intent

50-54 Murdock Street
 (Tax Map 33 Block A Lots 16, 17, & 18)
 Somerville, Massachusetts

PROJECT: 04-10601

SCALE: 1:25,000

DESIGNED BY: Calvin Reach

DATE: December 19, 2017

DWG FILE NAME: Figures.dwg

CHECKED BY: Richard A. Salvo, P.E.

DRAWING TITLE:
FIGURE 1 - USGS LOCUS MAP

DRAWING #:
1 of 5



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Notice of Intent

50-54 Murdock Street
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 Somerville, Massachusetts

PROJECT: 04-10601

SCALE: 1"=200'

DESIGNED BY: Calvin Reach

DATE: December 19, 2017

DWG FILE NAME: Figures.dwg

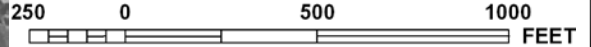
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FIGURE 2 - ORTHO PHOTO

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2of5



MAP SCALE 1" = 500'



LEGEND



SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A No Base Flood Elevations determined.
- ZONE AE Base Flood Elevations determined.
- ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.



FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.



OTHER FLOOD AREAS

Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.



OTHER AREAS

- ZONE X Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D Areas in which flood hazards are undetermined, but possible.



COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS



OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary

NATIONAL FLOOD INSURANCE PROGRAM
ESSEX COUNTY

COMMUNITY PANEL NO: 25017C0438E
EFFECTIVE DATE: JUNE 4, 2010

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PROJECT: 04-10601

SCALE: 1"=200'

DESIGNED BY: Calvin Reach

DATE: December 19, 2017

DWG FILE NAME: Figures.dwg

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FIGURE 3 - FEMA FLOOD MAP

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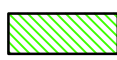
3of5



LEGEND:



NHEP CERTIFIED
VERNAL POOLS



NHEP PRIORITY HABITATS
OF RARE SPECIES (2011)



NHEP ESTIMATED HABITATS
OF RARE WILDLIFE (2011)

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SCALE: 1:25,000

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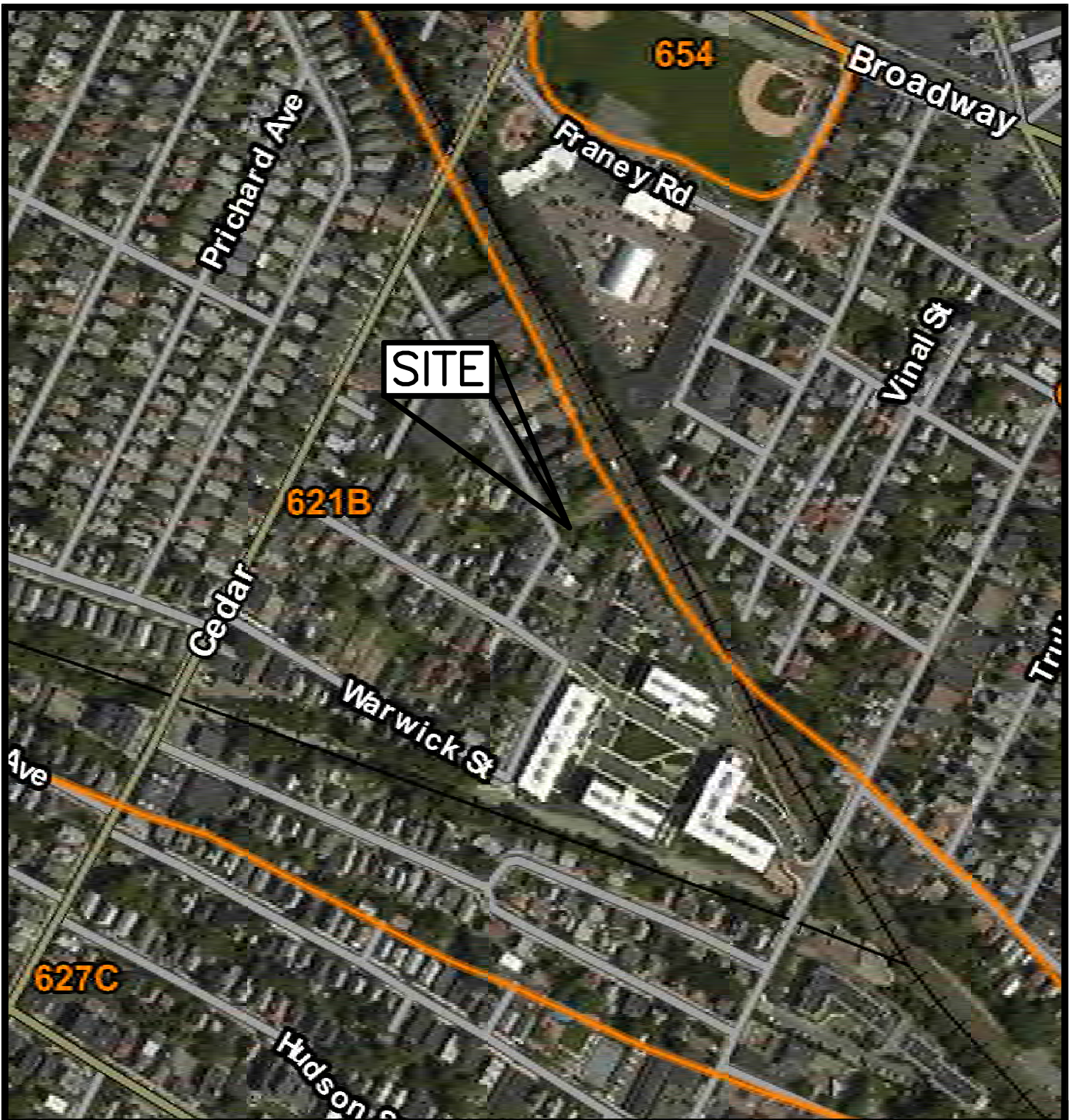
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FIGURE 4 - NATURAL HERITAGE MAP

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Notice of Intent

50-54 Murdock Street
 (Tax Map 33 Block A Lots 16, 17, & 18)
 Somerville, Massachusetts

PROJECT: 04-10601

SCALE: 1"=300'

DESIGNED BY: Calvin Reach

DATE: December 19, 2017

DWG FILE NAME: Figures.dwg

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FIGURE 5 - SOILS MAP

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5 of 5

Mean annual precipitation: 32 to 50 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 110 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Excavated and filled land

Minor Components

Rock outcrop

Percent of map unit: 5 percent
Landform: Ledges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Head slope
Down-slope shape: Concave
Across-slope shape: Concave

Udorthents, wet substratum

Percent of map unit: 5 percent
Hydric soil rating: No

Udorthents, loamy

Percent of map unit: 5 percent
Hydric soil rating: No

621B—Scio-Urban land complex, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9953
Elevation: 0 to 2,100 feet
Mean annual precipitation: 45 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Scio and similar soils: 40 percent
Urban land: 40 percent
Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Scio

Setting

Landform: Depressions, terraces

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Side slope, tread

Down-slope shape: Linear

Across-slope shape: Concave

Parent material: Loamy and/or silty glaciofluvial deposits

Typical profile

H1 - 0 to 8 inches: very fine sandy loam

H2 - 8 to 35 inches: very fine sandy loam

H3 - 35 to 65 inches: silt loam

Properties and qualities

Slope: 0 to 8 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat):

Moderately high to high (0.60 to 2.00 in/hr)

Depth to water table: About 18 to 24 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 1 percent

Available water storage in profile: High (about 11.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: B/D

Hydric soil rating: No

Description of Urban Land

Setting

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Excavated and filled land

Minor Components

Haven

Percent of map unit: 10 percent

Landform: Terraces, plains

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Tread, rise

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

Tisbury

Percent of map unit: 5 percent

Landform: Terraces, plains

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Tread, dip

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: No

Sudbury

Percent of map unit: 4 percent

Landform: Terraces, plains

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Tread, dip

Down-slope shape: Linear

Across-slope shape: Concave

Hydric soil rating: No

Unnamed

Percent of map unit: 1 percent

627C—Newport-Urban land complex, 3 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9958

Mean annual precipitation: 45 to 54 inches

Mean annual air temperature: 43 to 54 degrees F

Frost-free period: 145 to 240 days

Farmland classification: Not prime farmland

Map Unit Composition

Newport and similar soils: 45 percent

Urban land: 40 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Newport

Setting

Landform: Drumlins, ridges, moraines

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Convex

Parent material: Friable loamy basal till over dense loamy lodgment till derived from phyllite

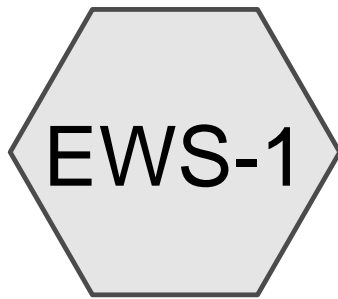
Typical profile

H1 - 0 to 8 inches: channery fine sandy loam

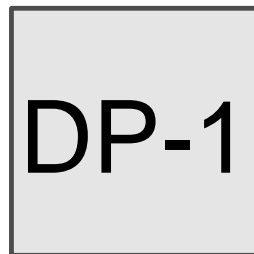
H2 - 8 to 18 inches: channery silt loam

APPENDIX A

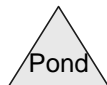
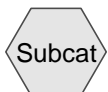
**Existing Conditions Drainage Calculations
Existing Watershed Plan**



Existing Watershed #1



Offsite Low Point (Rear)



Drainage Diagram for Existing Conditions

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Existing Conditions

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Type III 24-hr 2 year Rainfall=3.10"

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Page 2

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EWS-1: Existing Watershed Runoff Area=15,341 sf 5.61% Impervious Runoff Depth>1.49"
Tc=5.0 min CN=84 Runoff=0.66 cfs 0.044 af

Reach DP-1: Offsite Low Point (Rear)

Inflow=0.66 cfs 0.044 af

Outflow=0.66 cfs 0.044 af

Total Runoff Area = 0.352 ac Runoff Volume = 0.044 af Average Runoff Depth = 1.49"
94.39% Pervious = 0.332 ac 5.61% Impervious = 0.020 ac

Existing Conditions

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Type III 24-hr 2 year Rainfall=3.10"

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Page 3

Summary for Subcatchment EWS-1: Existing Watershed #1

Runoff = 0.66 cfs @ 12.08 hrs, Volume= 0.044 af, Depth> 1.49"

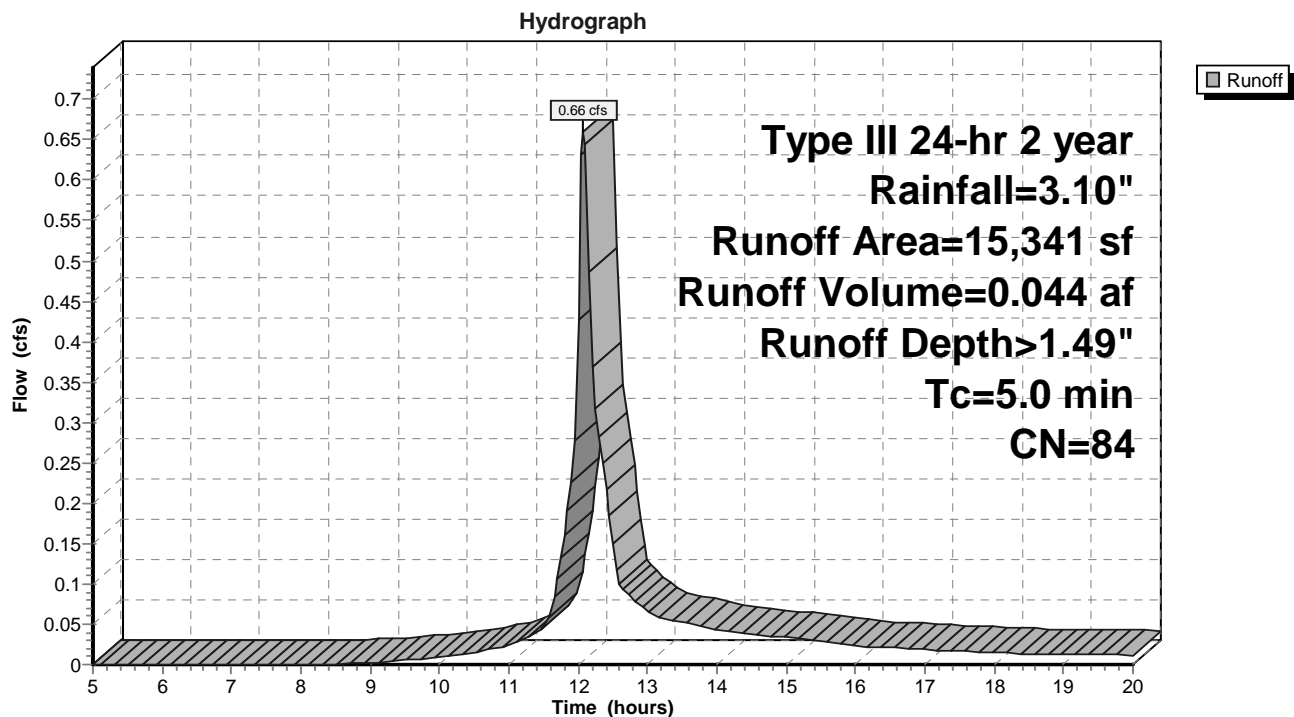
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr 2 year Rainfall=3.10"

	Area (sf)	CN	Description
	735	98	Roofs, HSG C
*	125	98	Concrete Slab, HSG C
	2,500	76	Woods/grass comb., Fair, HSG C
*	11,981	85	Exposed Earth, HSG C
	15,341	84	Weighted Average
	14,481		94.39% Pervious Area
	860		5.61% Impervious Area

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

Subcatchment EWS-1: Existing Watershed #1



Existing Conditions

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Type III 24-hr 2 year Rainfall=3.10"

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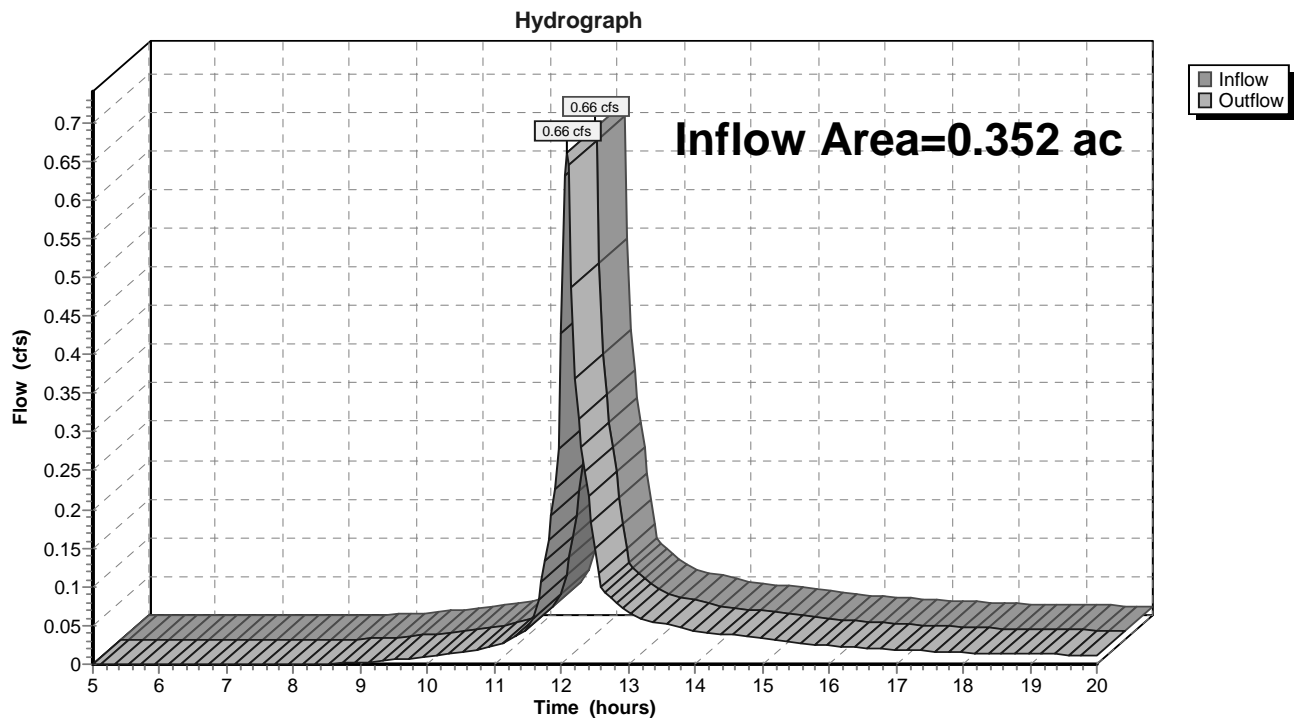
Page 4

Summary for Reach DP-1: Offsite Low Point (Rear)

Inflow Area = 0.352 ac, 5.61% Impervious, Inflow Depth > 1.49" for 2 year event
Inflow = 0.66 cfs @ 12.08 hrs, Volume= 0.044 af
Outflow = 0.66 cfs @ 12.08 hrs, Volume= 0.044 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP-1: Offsite Low Point (Rear)



Existing Conditions

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Type III 24-hr 10 year Rainfall=4.50"

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Page 5

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EWS-1: Existing Watershed Runoff Area=15,341 sf 5.61% Impervious Runoff Depth>2.64"
Tc=5.0 min CN=84 Runoff=1.16 cfs 0.077 af

Reach DP-1: Offsite Low Point (Rear)

Inflow=1.16 cfs 0.077 af

Outflow=1.16 cfs 0.077 af

Total Runoff Area = 0.352 ac Runoff Volume = 0.077 af Average Runoff Depth = 2.64"
94.39% Pervious = 0.332 ac 5.61% Impervious = 0.020 ac

Existing Conditions

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Type III 24-hr 10 year Rainfall=4.50"

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Page 6

Summary for Subcatchment EWS-1: Existing Watershed #1

Runoff = 1.16 cfs @ 12.08 hrs, Volume= 0.077 af, Depth> 2.64"

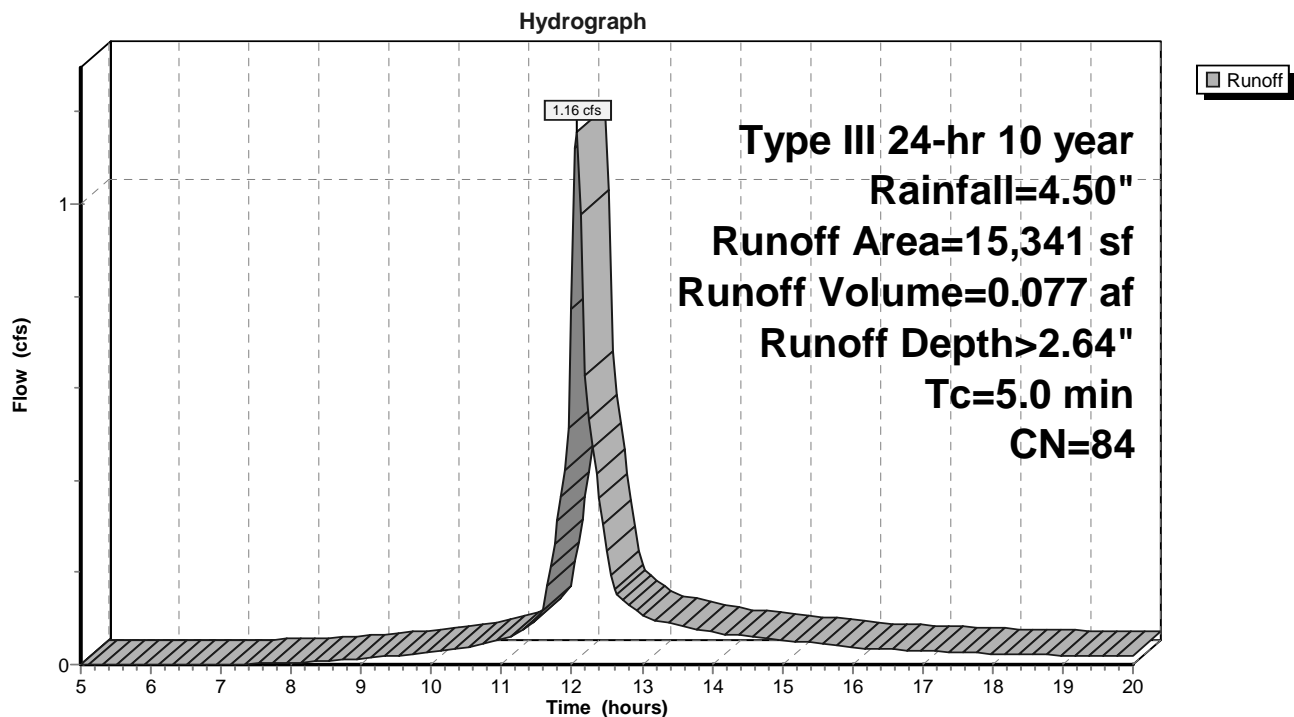
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr 10 year Rainfall=4.50"

Area (sf)	CN	Description
735	98	Roofs, HSG C
* 125	98	Concrete Slab, HSG C
2,500	76	Woods/grass comb., Fair, HSG C
* 11,981	85	Exposed Earth, HSG C
15,341	84	Weighted Average
14,481		94.39% Pervious Area
860		5.61% Impervious Area

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

Subcatchment EWS-1: Existing Watershed #1



Existing Conditions

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Type III 24-hr 10 year Rainfall=4.50"

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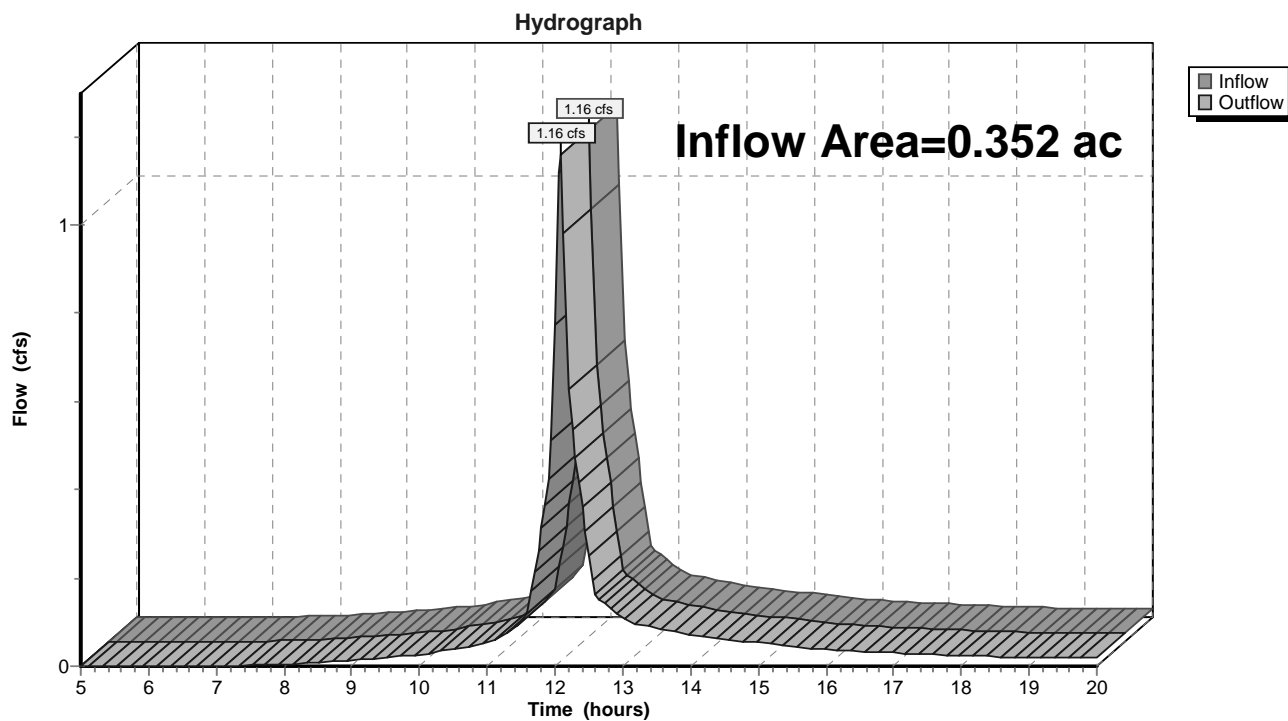
Page 7

Summary for Reach DP-1: Offsite Low Point (Rear)

Inflow Area = 0.352 ac, 5.61% Impervious, Inflow Depth > 2.64" for 10 year event
Inflow = 1.16 cfs @ 12.08 hrs, Volume= 0.077 af
Outflow = 1.16 cfs @ 12.08 hrs, Volume= 0.077 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP-1: Offsite Low Point (Rear)



Existing Conditions

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Type III 24-hr 25 year Rainfall=5.40"

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Page 8

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EWS-1: Existing Watershed Runoff Area=15,341 sf 5.61% Impervious Runoff Depth>3.42"
Tc=5.0 min CN=84 Runoff=1.50 cfs 0.100 af

Reach DP-1: Offsite Low Point (Rear)

Inflow=1.50 cfs 0.100 af

Outflow=1.50 cfs 0.100 af

Total Runoff Area = 0.352 ac Runoff Volume = 0.100 af Average Runoff Depth = 3.42"
94.39% Pervious = 0.332 ac 5.61% Impervious = 0.020 ac

Existing Conditions

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Type III 24-hr 25 year Rainfall=5.40"

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Summary for Subcatchment EWS-1: Existing Watershed #1

Runoff = 1.50 cfs @ 12.07 hrs, Volume= 0.100 af, Depth> 3.42"

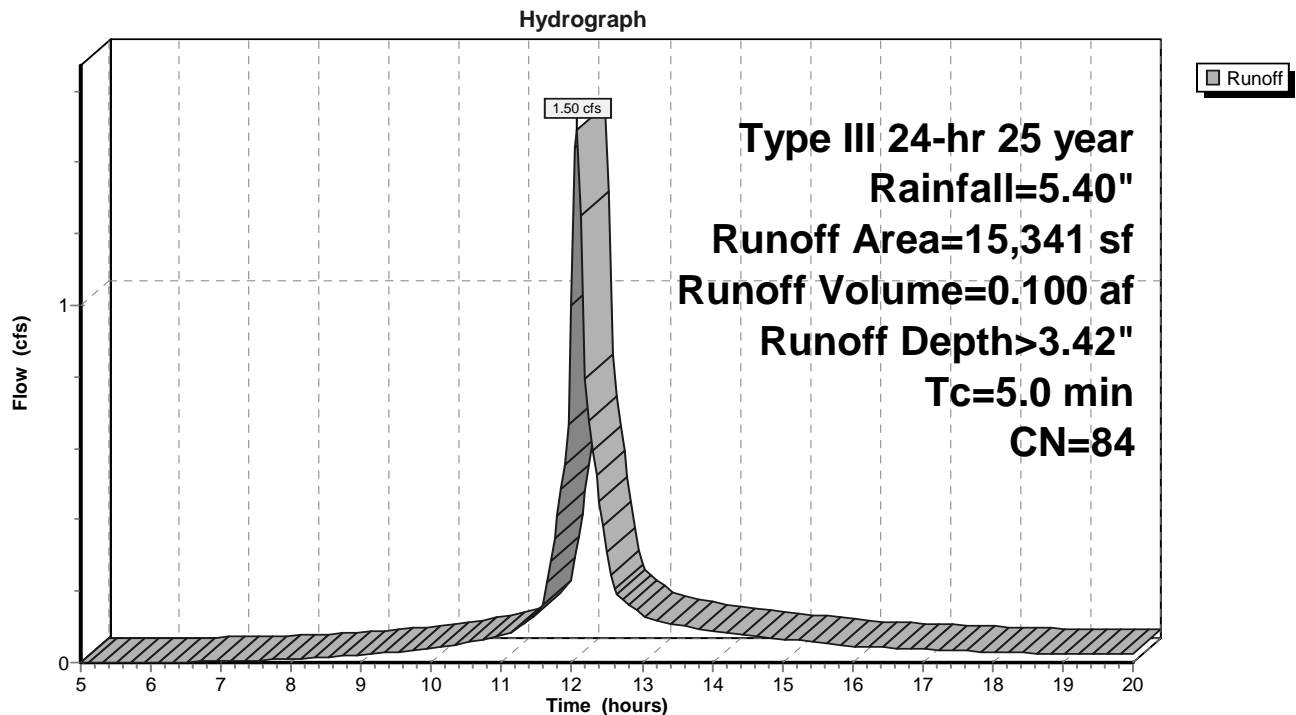
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr 25 year Rainfall=5.40"

Area (sf)	CN	Description
735	98	Roofs, HSG C
* 125	98	Concrete Slab, HSG C
2,500	76	Woods/grass comb., Fair, HSG C
* 11,981	85	Exposed Earth, HSG C
15,341	84	Weighted Average
14,481		94.39% Pervious Area
860		5.61% Impervious Area

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

Subcatchment EWS-1: Existing Watershed #1



Existing Conditions

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Type III 24-hr 25 year Rainfall=5.40"

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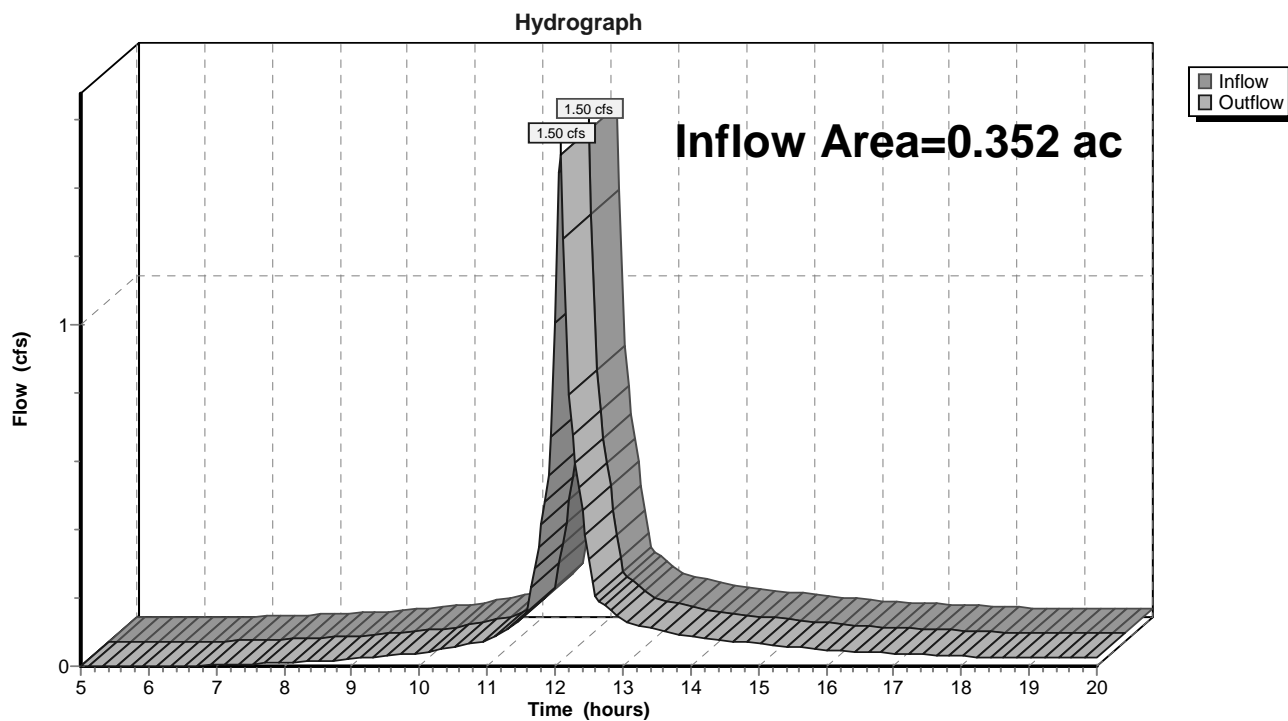
Page 10

Summary for Reach DP-1: Offsite Low Point (Rear)

Inflow Area = 0.352 ac, 5.61% Impervious, Inflow Depth > 3.42" for 25 year event
Inflow = 1.50 cfs @ 12.07 hrs, Volume= 0.100 af
Outflow = 1.50 cfs @ 12.07 hrs, Volume= 0.100 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP-1: Offsite Low Point (Rear)



Existing Conditions

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Type III 24-hr 100 year Rainfall=6.90"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EWS-1: Existing Watershed Runoff Area=15,341 sf 5.61% Impervious Runoff Depth>4.76"
Tc=5.0 min CN=84 Runoff=2.05 cfs 0.140 af

Reach DP-1: Offsite Low Point (Rear)

Inflow=2.05 cfs 0.140 af

Outflow=2.05 cfs 0.140 af

Total Runoff Area = 0.352 ac Runoff Volume = 0.140 af Average Runoff Depth = 4.76"
94.39% Pervious = 0.332 ac 5.61% Impervious = 0.020 ac

Existing Conditions

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Type III 24-hr 100 year Rainfall=6.90"

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Summary for Subcatchment EWS-1: Existing Watershed #1

Runoff = 2.05 cfs @ 12.07 hrs, Volume= 0.140 af, Depth> 4.76"

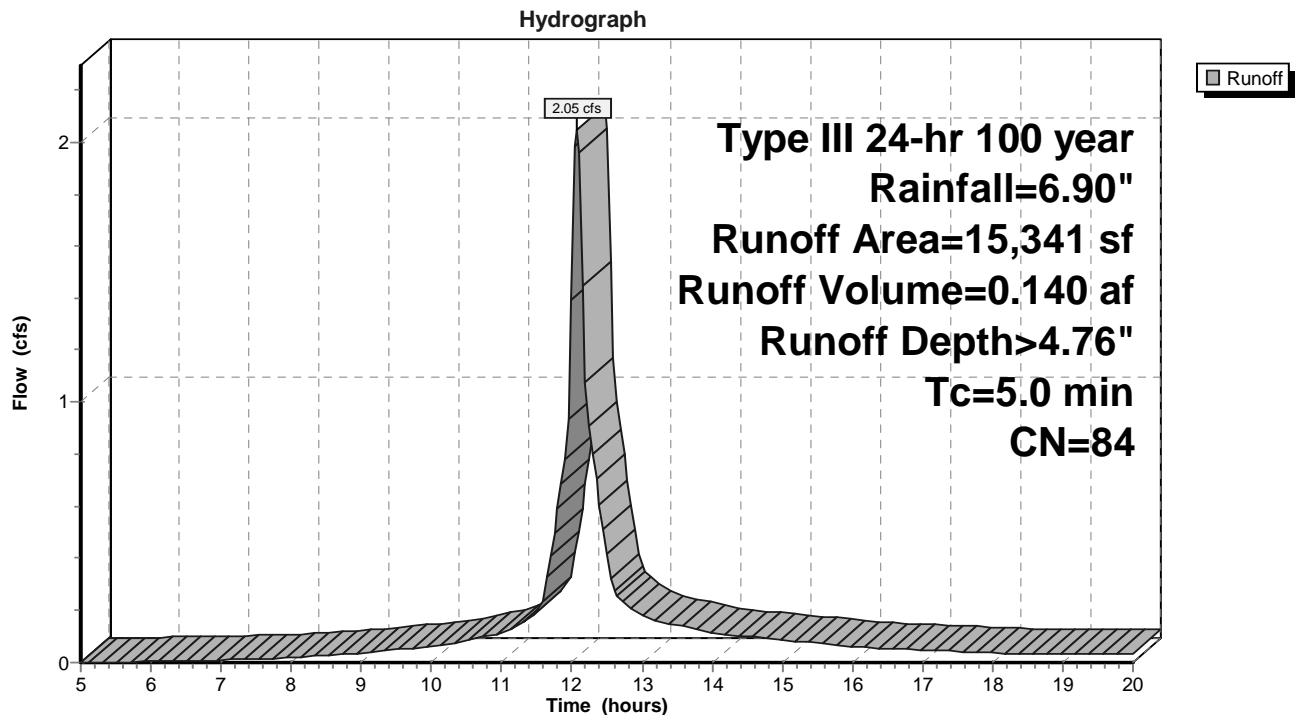
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr 100 year Rainfall=6.90"

Area (sf)	CN	Description
735	98	Roofs, HSG C
* 125	98	Concrete Slab, HSG C
2,500	76	Woods/grass comb., Fair, HSG C
* 11,981	85	Exposed Earth, HSG C
15,341	84	Weighted Average
14,481		94.39% Pervious Area
860		5.61% Impervious Area

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

Subcatchment EWS-1: Existing Watershed #1



Existing Conditions

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Type III 24-hr 100 year Rainfall=6.90"

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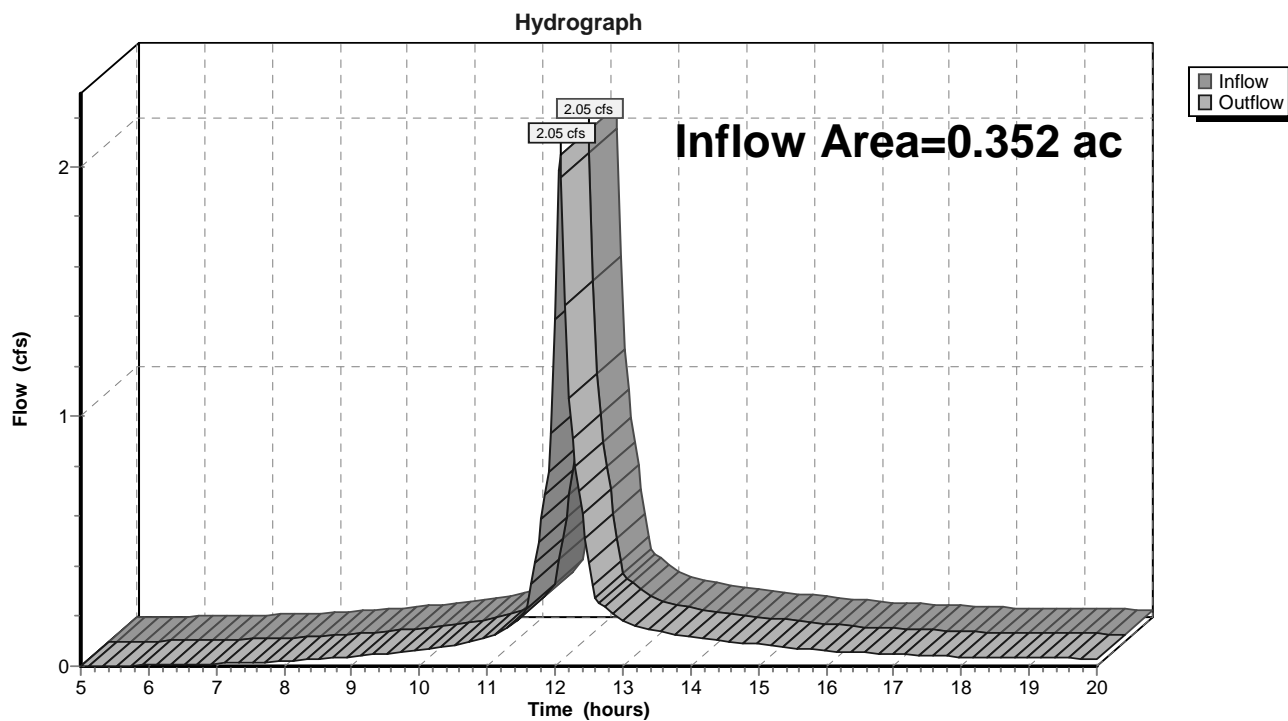
Page 13

Summary for Reach DP-1: Offsite Low Point (Rear)

Inflow Area = 0.352 ac, 5.61% Impervious, Inflow Depth > 4.76" for 100 year event
Inflow = 2.05 cfs @ 12.07 hrs, Volume= 0.140 af
Outflow = 2.05 cfs @ 12.07 hrs, Volume= 0.140 af, Atten= 0%, Lag= 0.0 min

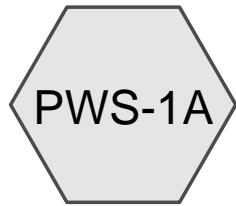
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP-1: Offsite Low Point (Rear)

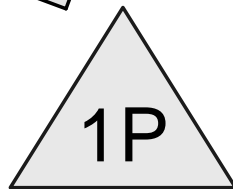


APPENDIX B

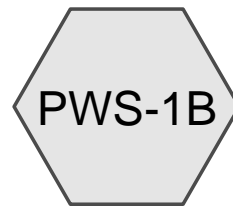
**Proposed Conditions Drainage Calculations
Proposed Watershed Plan**



Proposed Watershed
#1A



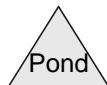
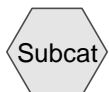
Pervious Paver
Drive/Parking Area



Proposed Watershed
#1B



Murdock Street



Drainage Diagram for Proposed Conditions

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Proposed Conditions

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Type III 24-hr 2 year Rainfall=3.10"

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Time span=1.00-24.00 hrs, dt=0.05 hrs, 461 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PWS-1A: Proposed

Runoff Area=11,468 sf 98.13% Impervious Runoff Depth>2.87"

Tc=5.0 min CN=98 Runoff=0.80 cfs 0.063 af

Subcatchment PWS-1B: Proposed

Runoff Area=3,873 sf 0.00% Impervious Runoff Depth>0.97"

Tc=5.0 min CN=74 Runoff=0.10 cfs 0.007 af

Reach DP-1: Murdock Street

Inflow=0.10 cfs 0.007 af

Outflow=0.10 cfs 0.007 af

Pond 1P: Pervious Paver Drive/Parking Area

Peak Elev=43.66' Storage=243 cf Inflow=0.80 cfs 0.063 af

Outflow=0.37 cfs 0.063 af

Total Runoff Area = 0.352 ac Runoff Volume = 0.070 af Average Runoff Depth = 2.39"

26.64% Pervious = 0.094 ac 73.36% Impervious = 0.258 ac

Proposed Conditions

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Type III 24-hr 2 year Rainfall=3.10"

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Summary for Subcatchment PWS-1A: Proposed Watershed #1A

Runoff = 0.80 cfs @ 12.07 hrs, Volume= 0.063 af, Depth> 2.87"

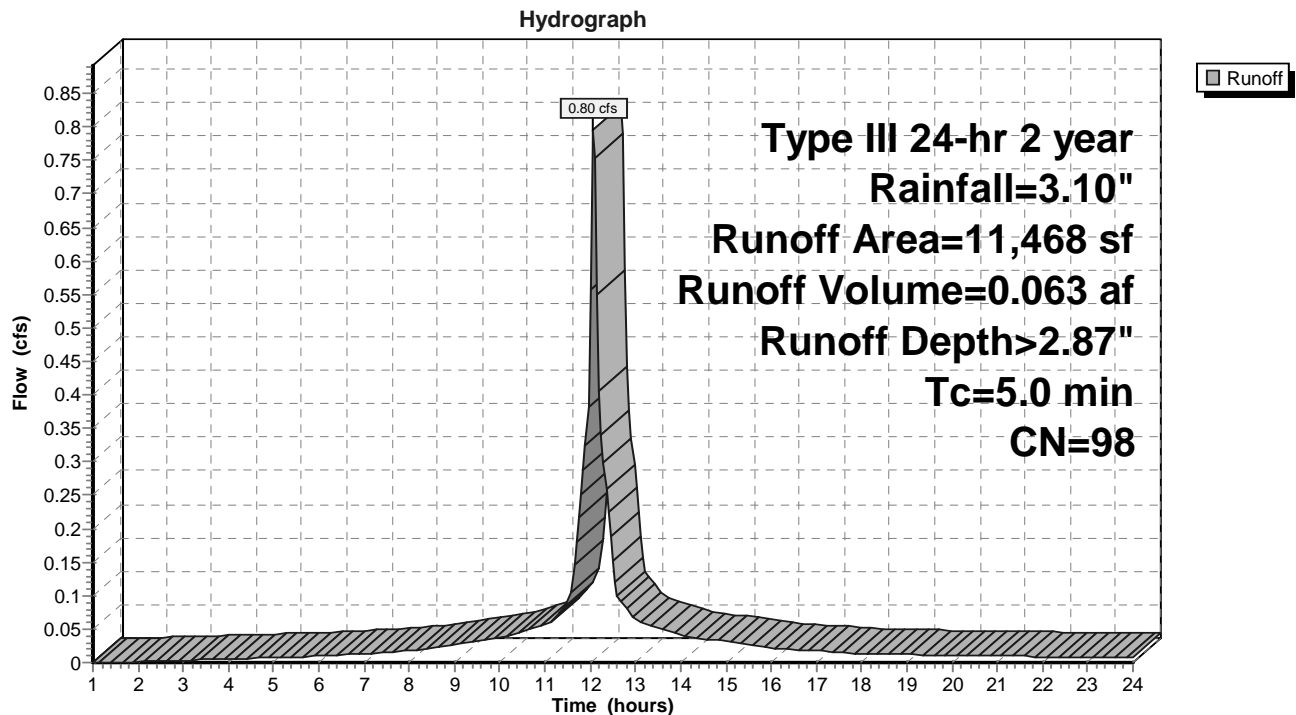
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs

Type III 24-hr 2 year Rainfall=3.10"

	Area (sf)	CN	Description
*	6,573	98	Pervious Paver, HSG C
	4,160	98	Roofs, HSG C
	214	74	>75% Grass cover, Good, HSG C
*	521	98	Concrete Ramp, HSG C
	11,468	98	Weighted Average
	214		1.87% Pervious Area
	11,254		98.13% Impervious Area

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

Subcatchment PWS-1A: Proposed Watershed #1A



Proposed Conditions

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Type III 24-hr 2 year Rainfall=3.10"

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Summary for Subcatchment PWS-1B: Proposed Watershed #1B

Runoff = 0.10 cfs @ 12.09 hrs, Volume= 0.007 af, Depth> 0.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs

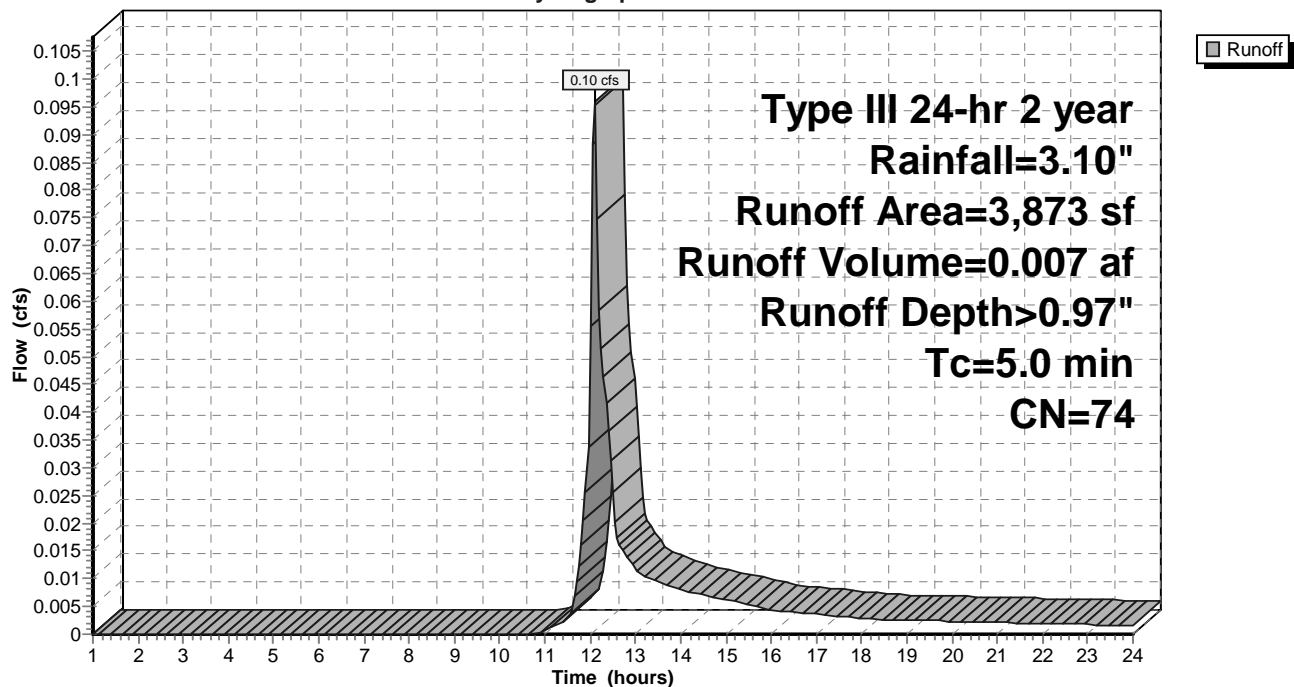
Type III 24-hr 2 year Rainfall=3.10"

Area (sf)	CN	Description
3,873	74	>75% Grass cover, Good, HSG C
3,873		100.00% Pervious Area

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

Subcatchment PWS-1B: Proposed Watershed #1B

Hydrograph



Proposed Conditions

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Type III 24-hr 2 year Rainfall=3.10"

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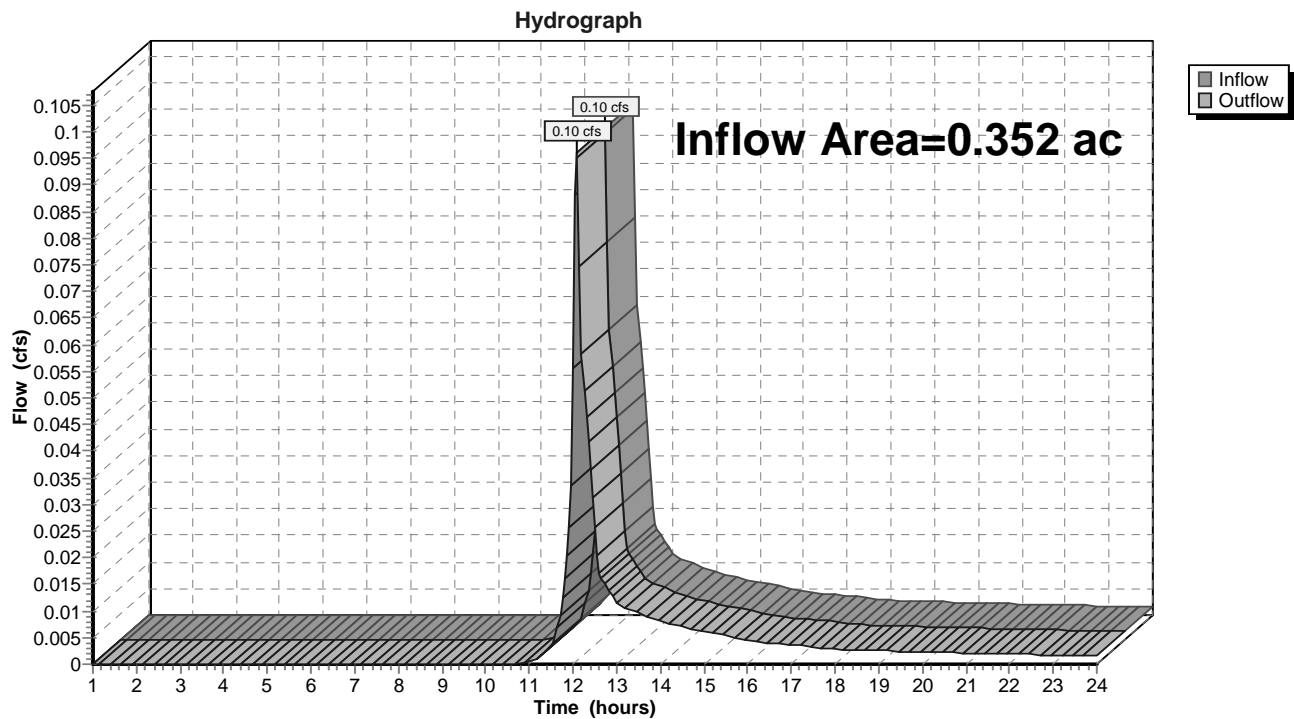
Page 5

Summary for Reach DP-1: Murdock Street

Inflow Area = 0.352 ac, 73.36% Impervious, Inflow Depth > 0.25" for 2 year event
Inflow = 0.10 cfs @ 12.09 hrs, Volume= 0.007 af
Outflow = 0.10 cfs @ 12.09 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs

Reach DP-1: Murdock Street



Proposed Conditions

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Type III 24-hr 2 year Rainfall=3.10"

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Summary for Pond 1P: Pervious Paver Drive/Parking Area

Inflow Area = 0.263 ac, 98.13% Impervious, Inflow Depth > 2.87" for 2 year event
 Inflow = 0.80 cfs @ 12.07 hrs, Volume= 0.063 af
 Outflow = 0.37 cfs @ 12.00 hrs, Volume= 0.063 af, Atten= 54%, Lag= 0.0 min
 Discarded = 0.37 cfs @ 12.00 hrs, Volume= 0.063 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 43.66' @ 12.23 hrs Surf.Area= 6,573 sf Storage= 243 cf

Plug-Flow detention time= 3.1 min calculated for 0.063 af (100% of inflow)
 Center-of-Mass det. time= 3.0 min (758.8 - 755.8)

Volume	Invert	Avail.Storage	Storage Description
#1	43.57'	2,629 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 6,573 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
43.57	6,573	0	0
44.57	6,573	6,573	6,573

Device	Routing	Invert	Outlet Devices
#1	Discarded	43.57'	2.410 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.37 cfs @ 12.00 hrs HW=43.59' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.37 cfs)

Proposed Conditions

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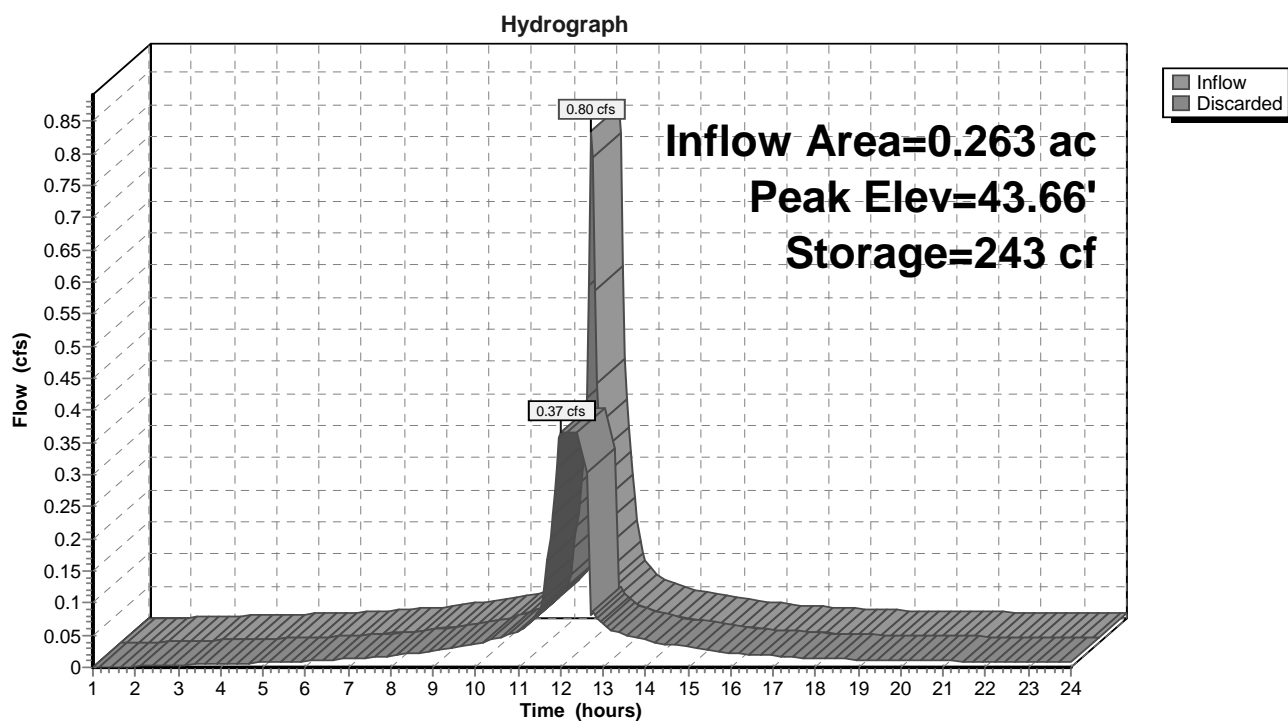
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Type III 24-hr 2 year Rainfall=3.10"

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Pond 1P: Pervious Paver Drive/Parking Area



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Type III 24-hr 10 year Rainfall=4.50"

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Time span=1.00-24.00 hrs, dt=0.05 hrs, 461 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PWS-1A: Proposed

Runoff Area=11,468 sf 98.13% Impervious Runoff Depth>4.26"

Tc=5.0 min CN=98 Runoff=1.16 cfs 0.094 af

Subcatchment PWS-1B: Proposed

Runoff Area=3,873 sf 0.00% Impervious Runoff Depth>1.97"

Tc=5.0 min CN=74 Runoff=0.20 cfs 0.015 af

Reach DP-1: Murdock Street

Inflow=0.20 cfs 0.015 af

Outflow=0.20 cfs 0.015 af

Pond 1P: Pervious Paver Drive/Parking Area

Peak Elev=43.80' Storage=599 cf Inflow=1.16 cfs 0.094 af

Outflow=0.37 cfs 0.093 af

Total Runoff Area = 0.352 ac Runoff Volume = 0.108 af Average Runoff Depth = 3.68"

26.64% Pervious = 0.094 ac 73.36% Impervious = 0.258 ac

Proposed Conditions

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Type III 24-hr 10 year Rainfall=4.50"

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Summary for Subcatchment PWS-1A: Proposed Watershed #1A

Runoff = 1.16 cfs @ 12.07 hrs, Volume= 0.094 af, Depth> 4.26"

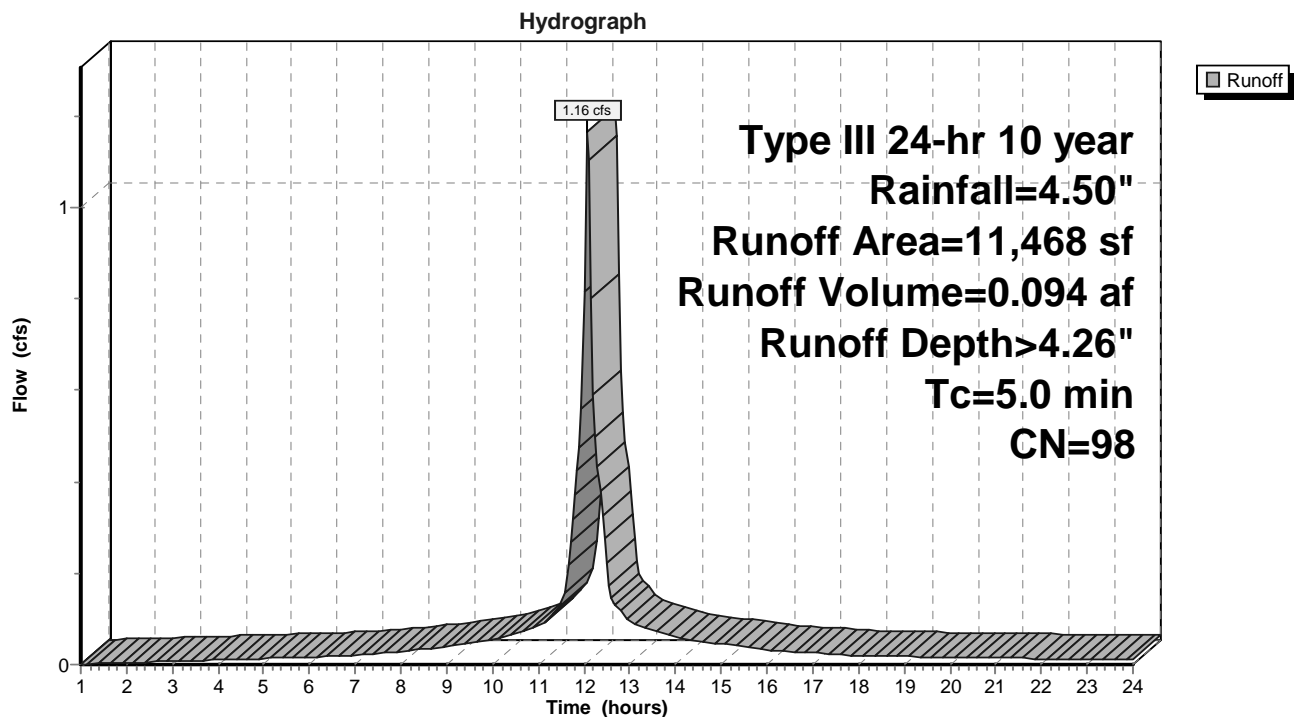
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs

Type III 24-hr 10 year Rainfall=4.50"

	Area (sf)	CN	Description
*	6,573	98	Pervious Paver, HSG C
	4,160	98	Roofs, HSG C
	214	74	>75% Grass cover, Good, HSG C
*	521	98	Concrete Ramp, HSG C
	11,468	98	Weighted Average
	214		1.87% Pervious Area
	11,254		98.13% Impervious Area

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

Subcatchment PWS-1A: Proposed Watershed #1A



Proposed Conditions

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Type III 24-hr 10 year Rainfall=4.50"

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Summary for Subcatchment PWS-1B: Proposed Watershed #1B

Runoff = 0.20 cfs @ 12.08 hrs, Volume= 0.015 af, Depth> 1.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs

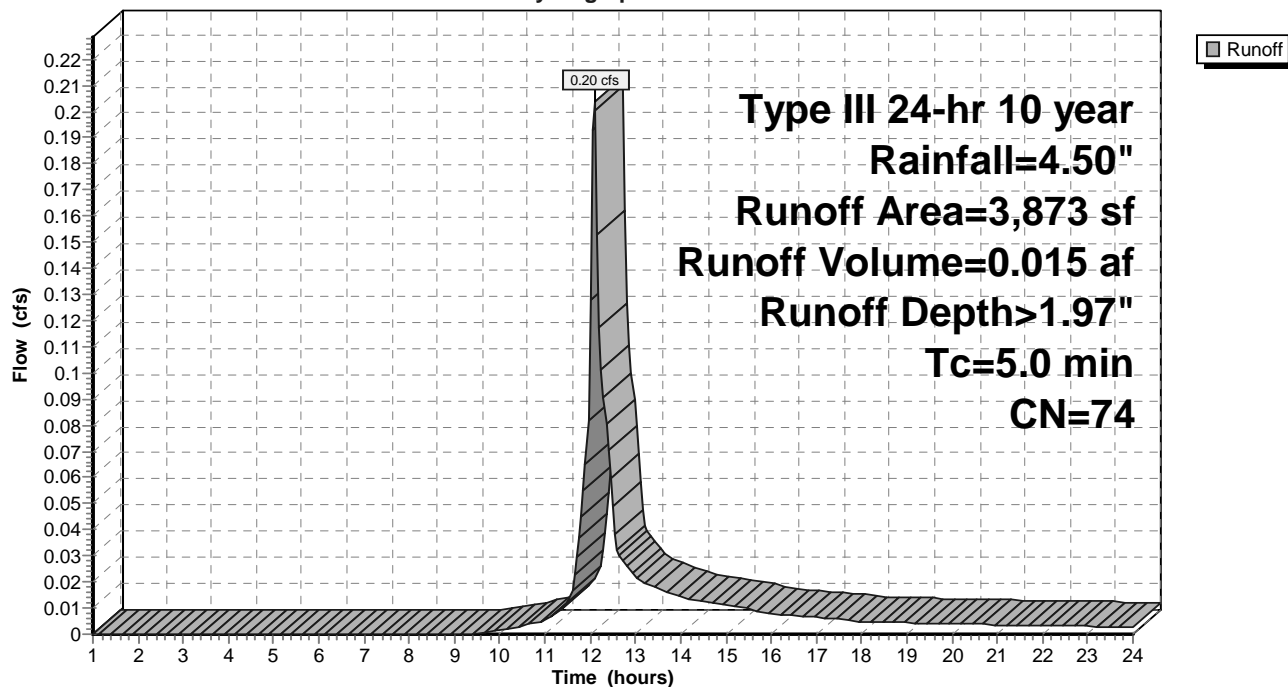
Type III 24-hr 10 year Rainfall=4.50"

Area (sf)	CN	Description
3,873	74	>75% Grass cover, Good, HSG C
3,873		100.00% Pervious Area

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

Subcatchment PWS-1B: Proposed Watershed #1B

Hydrograph



Proposed Conditions

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Type III 24-hr 10 year Rainfall=4.50"

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Summary for Reach DP-1: Murdock Street

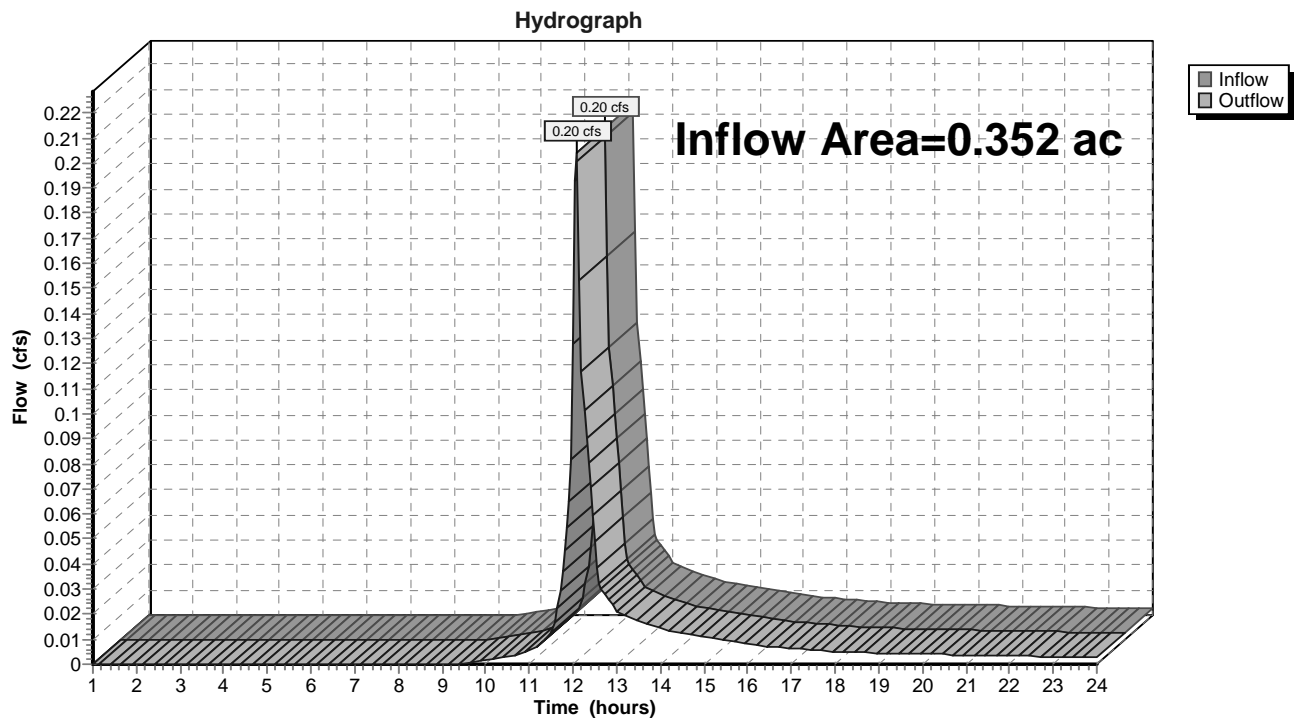
Inflow Area = 0.352 ac, 73.36% Impervious, Inflow Depth > 0.50" for 10 year event

Inflow = 0.20 cfs @ 12.08 hrs, Volume= 0.015 af

Outflow = 0.20 cfs @ 12.08 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs

Reach DP-1: Murdock Street



Proposed Conditions

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Type III 24-hr 10 year Rainfall=4.50"

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Summary for Pond 1P: Pervious Paver Drive/Parking Area

Inflow Area = 0.263 ac, 98.13% Impervious, Inflow Depth > 4.26" for 10 year event
 Inflow = 1.16 cfs @ 12.07 hrs, Volume= 0.094 af
 Outflow = 0.37 cfs @ 11.85 hrs, Volume= 0.093 af, Atten= 69%, Lag= 0.0 min
 Discarded = 0.37 cfs @ 11.85 hrs, Volume= 0.093 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 43.80' @ 12.36 hrs Surf.Area= 6,573 sf Storage= 599 cf

Plug-Flow detention time= 7.3 min calculated for 0.093 af (100% of inflow)
 Center-of-Mass det. time= 7.2 min (755.7 - 748.6)

Volume	Invert	Avail.Storage	Storage Description
#1	43.57'	2,629 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 6,573 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
43.57	6,573	0	0
44.57	6,573	6,573	6,573

Device	Routing	Invert	Outlet Devices
#1	Discarded	43.57'	2.410 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.37 cfs @ 11.85 hrs HW=43.58' (Free Discharge)
 ↑**1=Exfiltration** (Exfiltration Controls 0.37 cfs)

Proposed Conditions

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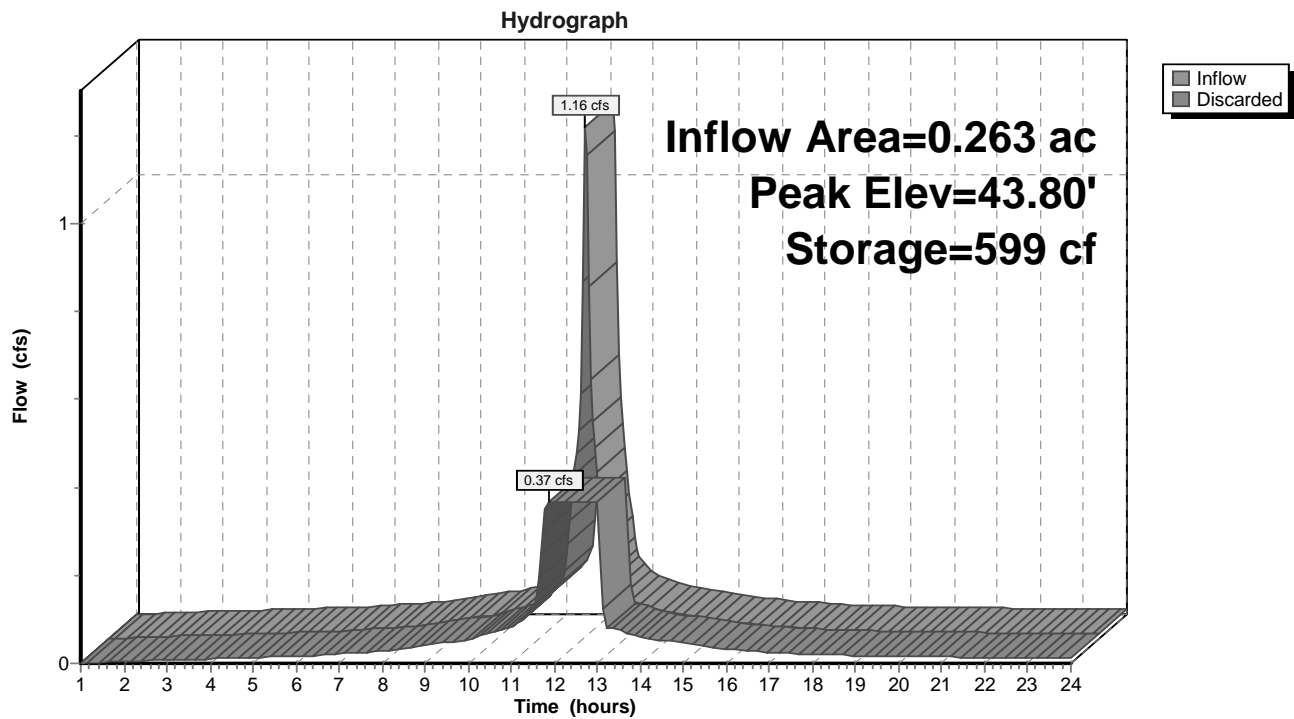
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Type III 24-hr 10 year Rainfall=4.50"

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Pond 1P: Pervious Paver Drive/Parking Area



Proposed Conditions

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Type III 24-hr 25 year Rainfall=5.40"

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Time span=1.00-24.00 hrs, dt=0.05 hrs, 461 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PWS-1A: Proposed

Runoff Area=11,468 sf 98.13% Impervious Runoff Depth>5.16"
Tc=5.0 min CN=98 Runoff=1.40 cfs 0.113 af

Subcatchment PWS-1B: Proposed

Runoff Area=3,873 sf 0.00% Impervious Runoff Depth>2.69"
Tc=5.0 min CN=74 Runoff=0.28 cfs 0.020 af

Reach DP-1: Murdock Street

Inflow=0.28 cfs 0.020 af
Outflow=0.28 cfs 0.020 af

Pond 1P: Pervious Paver Drive/Parking Area

Peak Elev=43.91' Storage=881 cf Inflow=1.40 cfs 0.113 af
Outflow=0.37 cfs 0.113 af

Total Runoff Area = 0.352 ac Runoff Volume = 0.133 af Average Runoff Depth = 4.54"
26.64% Pervious = 0.094 ac 73.36% Impervious = 0.258 ac

Proposed Conditions

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Type III 24-hr 25 year Rainfall=5.40"

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Summary for Subcatchment PWS-1A: Proposed Watershed #1A

Runoff = 1.40 cfs @ 12.07 hrs, Volume= 0.113 af, Depth> 5.16"

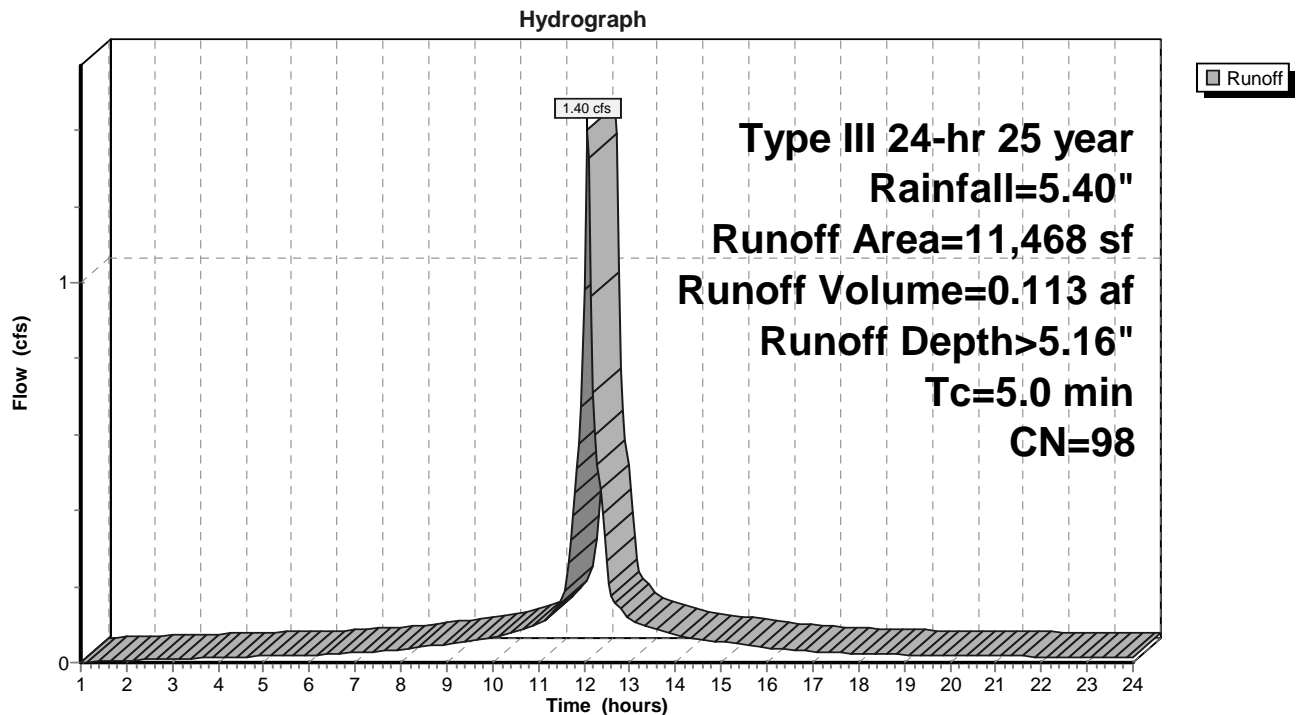
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs

Type III 24-hr 25 year Rainfall=5.40"

	Area (sf)	CN	Description
*	6,573	98	Pervious Paver, HSG C
	4,160	98	Roofs, HSG C
	214	74	>75% Grass cover, Good, HSG C
*	521	98	Concrete Ramp, HSG C
	11,468	98	Weighted Average
	214		1.87% Pervious Area
	11,254		98.13% Impervious Area

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

Subcatchment PWS-1A: Proposed Watershed #1A



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Type III 24-hr 25 year Rainfall=5.40"

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Summary for Subcatchment PWS-1B: Proposed Watershed #1B

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.020 af, Depth> 2.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs

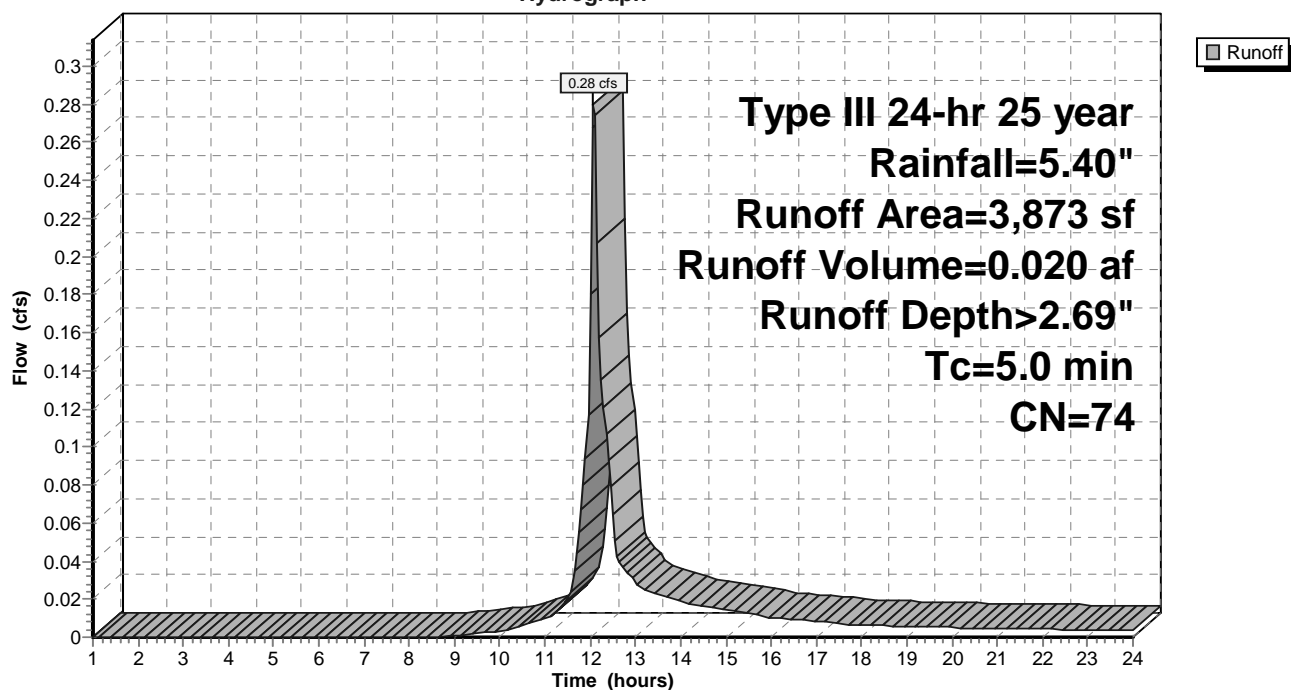
Type III 24-hr 25 year Rainfall=5.40"

Area (sf)	CN	Description
3,873	74	>75% Grass cover, Good, HSG C
3,873		100.00% Pervious Area

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

Subcatchment PWS-1B: Proposed Watershed #1B

Hydrograph



Proposed Conditions

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Type III 24-hr 25 year Rainfall=5.40"

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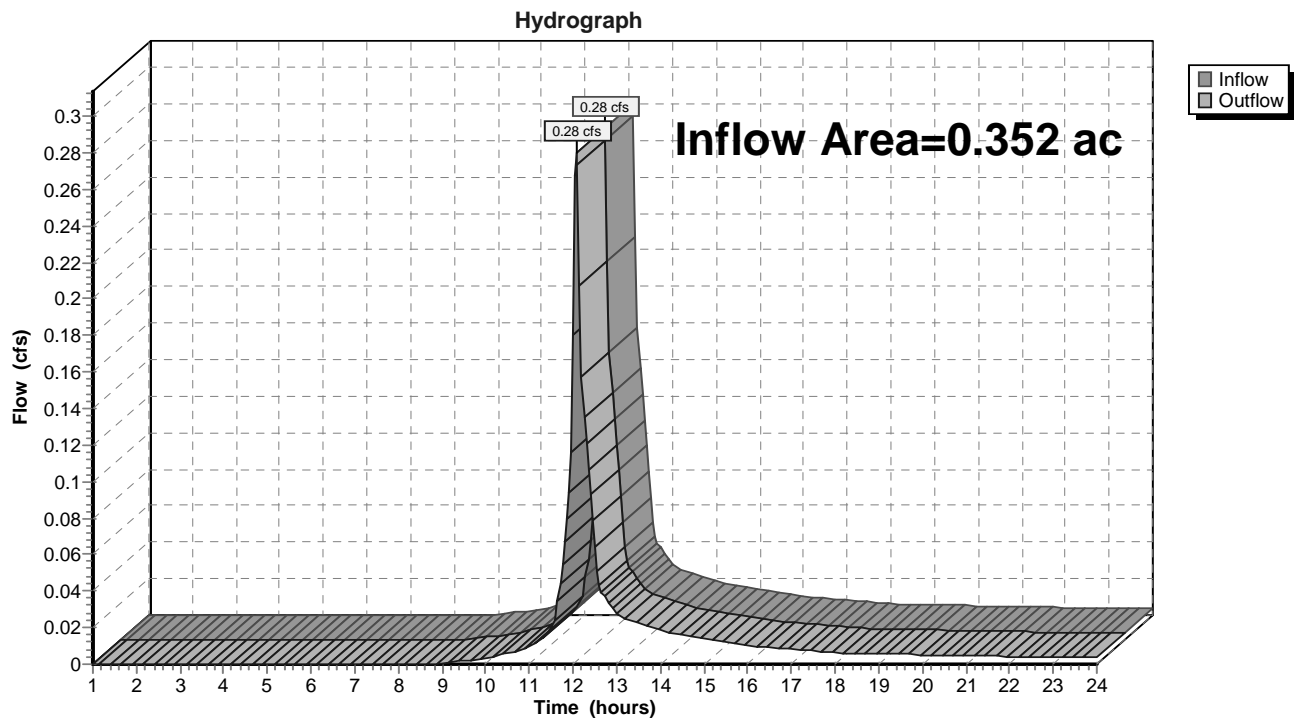
Page 17

Summary for Reach DP-1: Murdock Street

Inflow Area = 0.352 ac, 73.36% Impervious, Inflow Depth > 0.68" for 25 year event
Inflow = 0.28 cfs @ 12.08 hrs, Volume= 0.020 af
Outflow = 0.28 cfs @ 12.08 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs

Reach DP-1: Murdock Street



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Type III 24-hr 25 year Rainfall=5.40"

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Summary for Pond 1P: Pervious Paver Drive/Parking Area

Inflow Area = 0.263 ac, 98.13% Impervious, Inflow Depth > 5.16" for 25 year event
Inflow = 1.40 cfs @ 12.07 hrs, Volume= 0.113 af
Outflow = 0.37 cfs @ 11.80 hrs, Volume= 0.113 af, Atten= 74%, Lag= 0.0 min
Discarded = 0.37 cfs @ 11.80 hrs, Volume= 0.113 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 43.91' @ 12.42 hrs Surf.Area= 6,573 sf Storage= 881 cf

Plug-Flow detention time= 11.1 min calculated for 0.113 af (100% of inflow)
Center-of-Mass det. time= 10.9 min (756.4 - 745.6)

Volume	Invert	Avail.Storage	Storage Description
#1	43.57'	2,629 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 6,573 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
43.57	6,573	0	0
44.57	6,573	6,573	6,573

Device	Routing	Invert	Outlet Devices
#1	Discarded	43.57'	2.410 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.37 cfs @ 11.80 hrs HW=43.58' (Free Discharge)
↑1=Exfiltration (Exfiltration Controls 0.37 cfs)

Proposed Conditions

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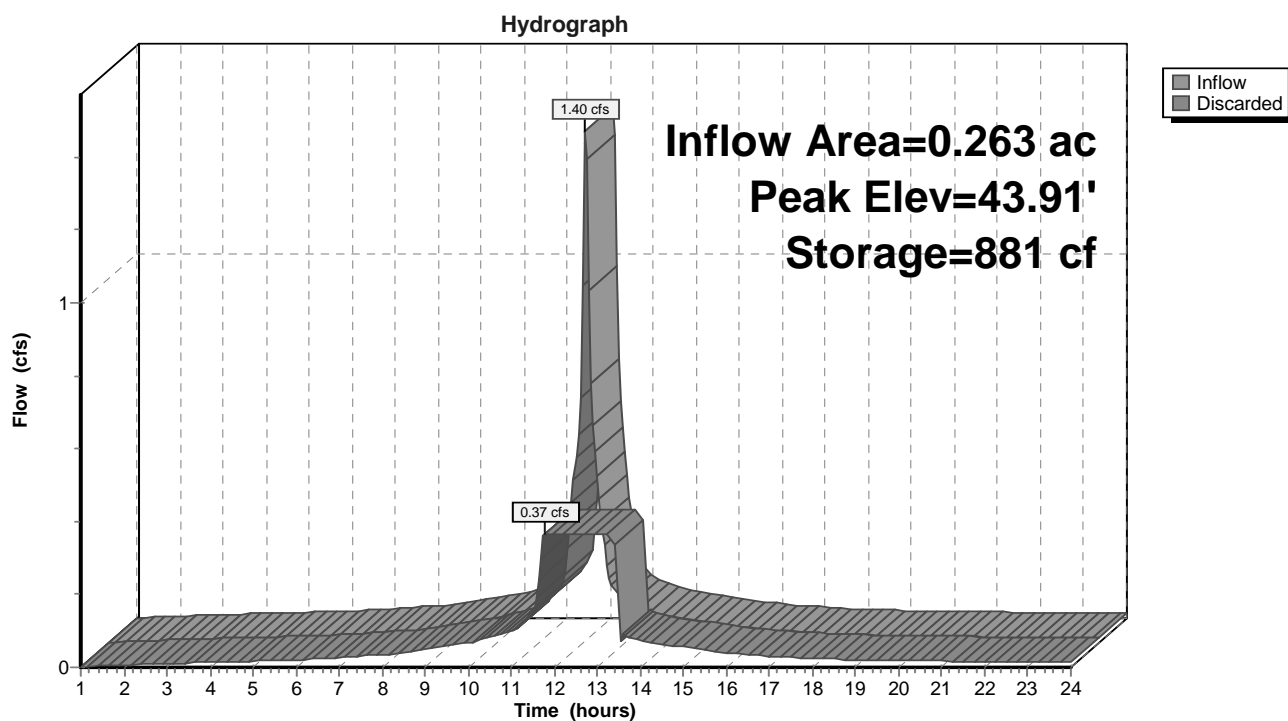
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Pond 1P: Pervious Paver Drive/Parking Area



Proposed Conditions

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Type III 24-hr 100 year Rainfall=6.90"

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Time span=1.00-24.00 hrs, dt=0.05 hrs, 461 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PWS-1A: Proposed

Runoff Area=11,468 sf 98.13% Impervious Runoff Depth>6.66"

Tc=5.0 min CN=98 Runoff=1.79 cfs 0.146 af

Subcatchment PWS-1B: Proposed

Runoff Area=3,873 sf 0.00% Impervious Runoff Depth>3.95"

Tc=5.0 min CN=74 Runoff=0.41 cfs 0.029 af

Reach DP-1: Murdock Street

Inflow=0.41 cfs 0.029 af

Outflow=0.41 cfs 0.029 af

Pond 1P: Pervious Paver Drive/Parking Area

Peak Elev=44.10' Storage=1,399 cf Inflow=1.79 cfs 0.146 af

Outflow=0.37 cfs 0.146 af

Total Runoff Area = 0.352 ac Runoff Volume = 0.175 af Average Runoff Depth = 5.97"

26.64% Pervious = 0.094 ac 73.36% Impervious = 0.258 ac

Proposed Conditions

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Type III 24-hr 100 year Rainfall=6.90"

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Summary for Subcatchment PWS-1A: Proposed Watershed #1A

Runoff = 1.79 cfs @ 12.07 hrs, Volume= 0.146 af, Depth> 6.66"

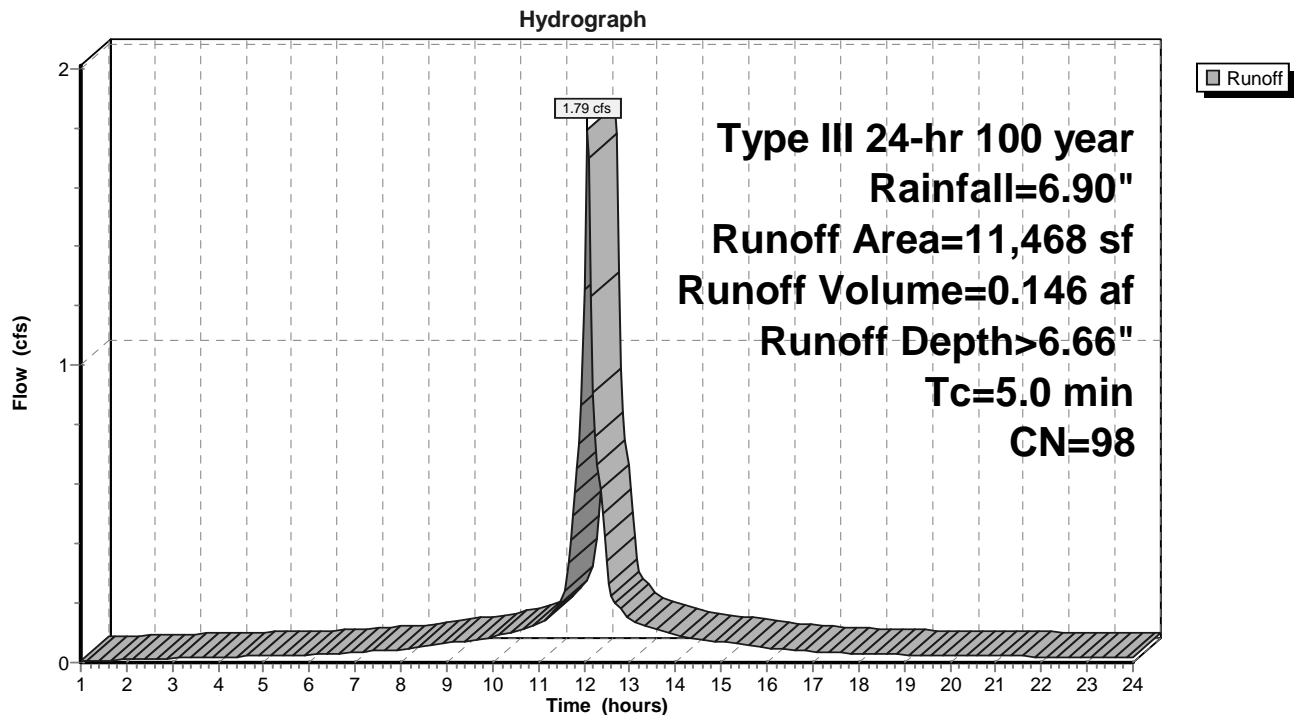
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs

Type III 24-hr 100 year Rainfall=6.90"

	Area (sf)	CN	Description
*	6,573	98	Pervious Paver, HSG C
	4,160	98	Roofs, HSG C
	214	74	>75% Grass cover, Good, HSG C
*	521	98	Concrete Ramp, HSG C
	11,468	98	Weighted Average
	214		1.87% Pervious Area
	11,254		98.13% Impervious Area

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

Subcatchment PWS-1A: Proposed Watershed #1A



Proposed Conditions

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Type III 24-hr 100 year Rainfall=6.90"

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Summary for Subcatchment PWS-1B: Proposed Watershed #1B

Runoff = 0.41 cfs @ 12.08 hrs, Volume= 0.029 af, Depth> 3.95"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs

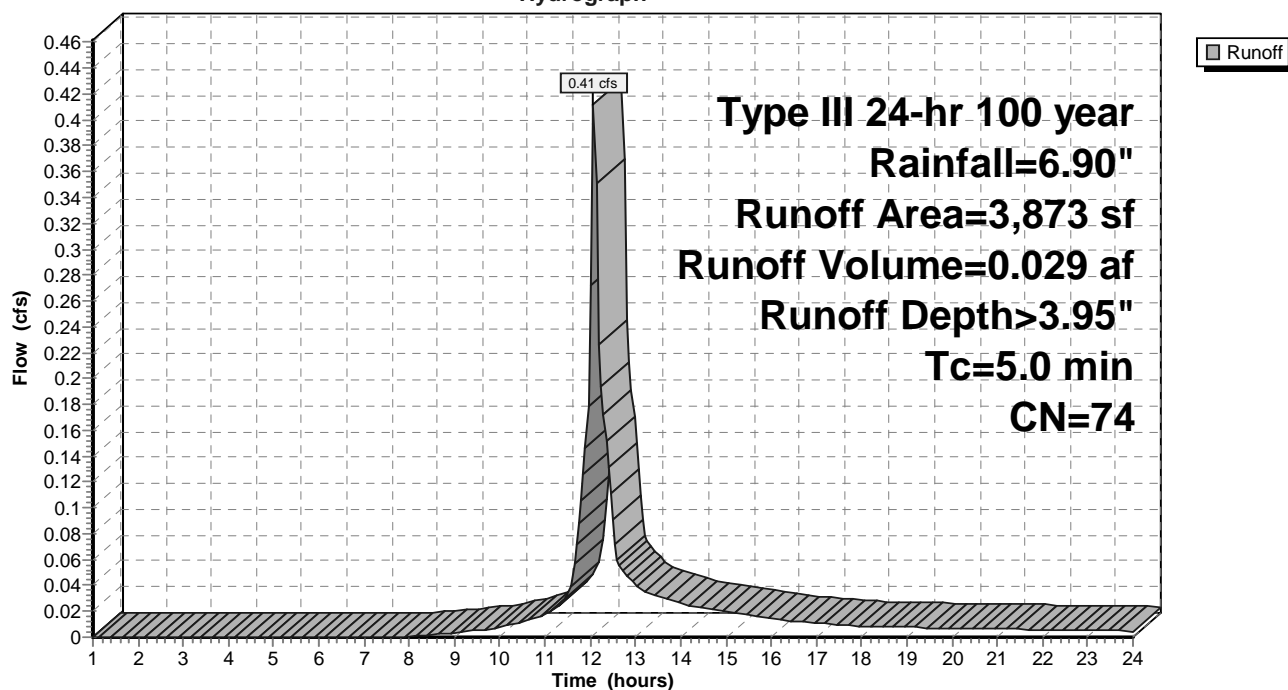
Type III 24-hr 100 year Rainfall=6.90"

Area (sf)	CN	Description
3,873	74	>75% Grass cover, Good, HSG C
3,873		100.00% Pervious Area

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

Subcatchment PWS-1B: Proposed Watershed #1B

Hydrograph



Proposed Conditions

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Type III 24-hr 100 year Rainfall=6.90"

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Summary for Reach DP-1: Murdock Street

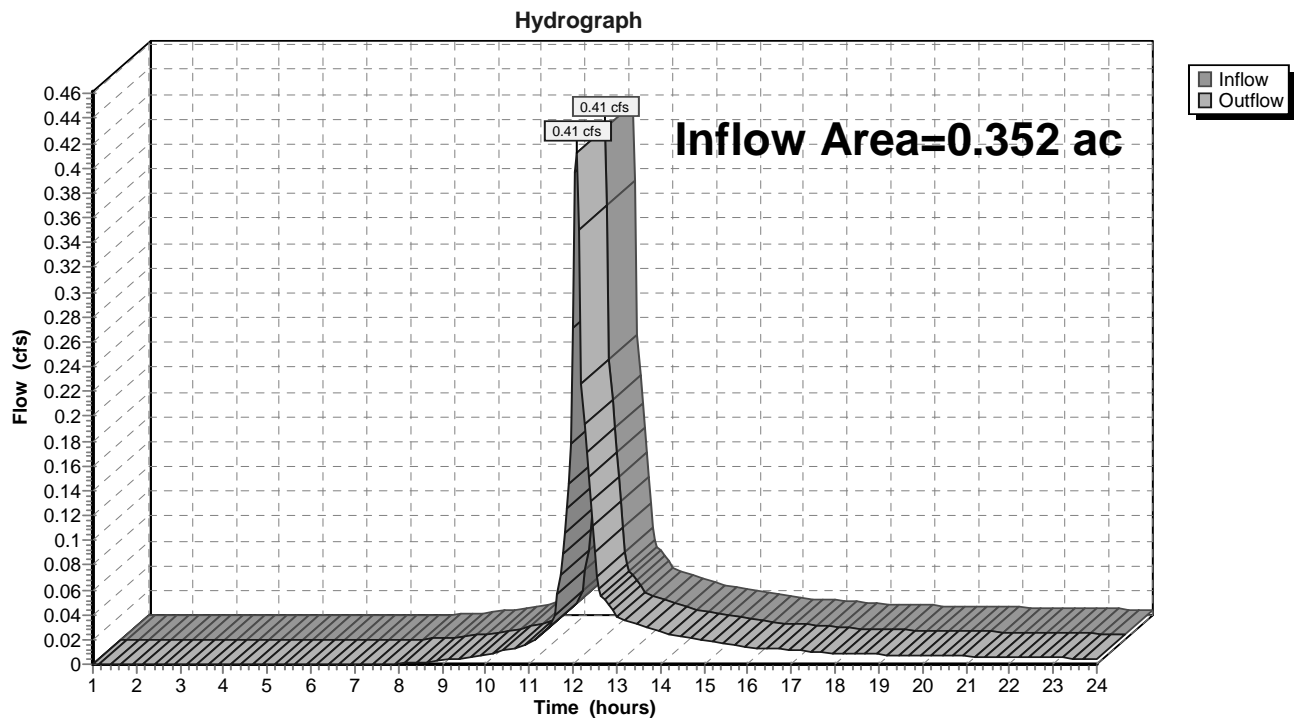
Inflow Area = 0.352 ac, 73.36% Impervious, Inflow Depth > 1.00" for 100 year event

Inflow = 0.41 cfs @ 12.08 hrs, Volume= 0.029 af

Outflow = 0.41 cfs @ 12.08 hrs, Volume= 0.029 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs

Reach DP-1: Murdock Street



Proposed Conditions

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Type III 24-hr 100 year Rainfall=6.90"

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Summary for Pond 1P: Pervious Paver Drive/Parking Area

Inflow Area = 0.263 ac, 98.13% Impervious, Inflow Depth > 6.66" for 100 year event
 Inflow = 1.79 cfs @ 12.07 hrs, Volume= 0.146 af
 Outflow = 0.37 cfs @ 11.70 hrs, Volume= 0.146 af, Atten= 80%, Lag= 0.0 min
 Discarded = 0.37 cfs @ 11.70 hrs, Volume= 0.146 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 44.10' @ 12.48 hrs Surf.Area= 6,573 sf Storage= 1,399 cf

Plug-Flow detention time= 18.7 min calculated for 0.146 af (100% of inflow)
 Center-of-Mass det. time= 18.5 min (760.6 - 742.1)

Volume	Invert	Avail.Storage	Storage Description
#1	43.57'	2,629 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 6,573 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
43.57	6,573	0	0
44.57	6,573	6,573	6,573

Device	Routing	Invert	Outlet Devices
#1	Discarded	43.57'	2.410 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.37 cfs @ 11.70 hrs HW=43.58' (Free Discharge)
 ↑ **1=Exfiltration** (Exfiltration Controls 0.37 cfs)

Proposed Conditions

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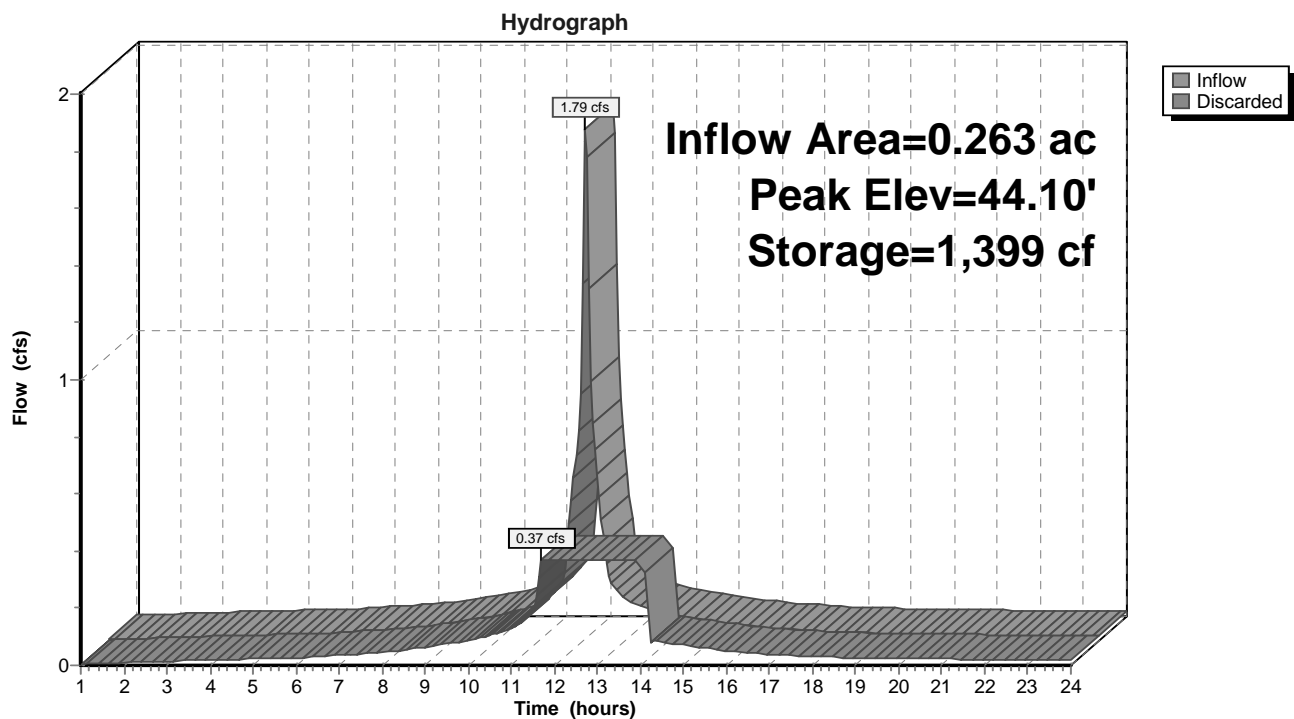
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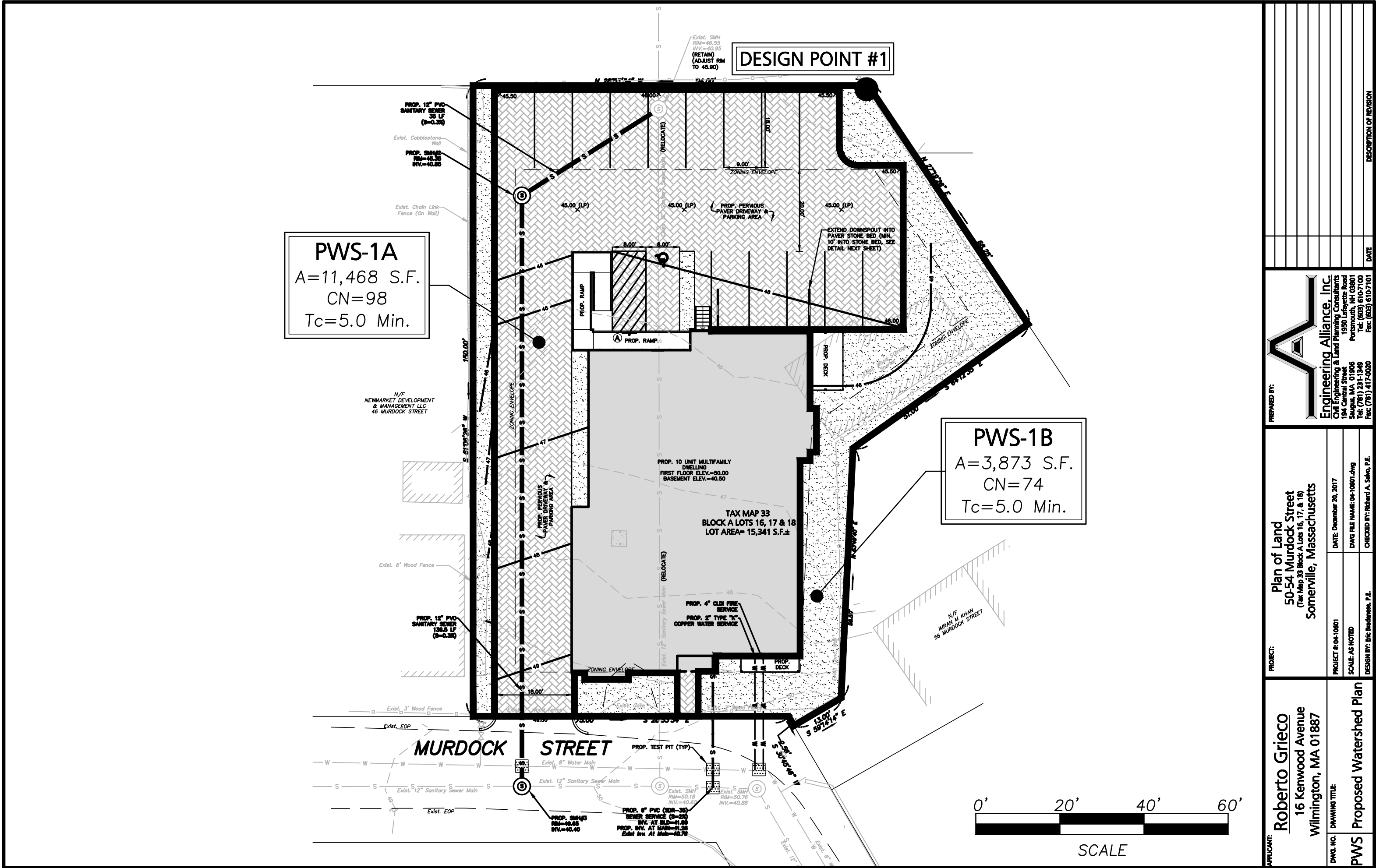
Type III 24-hr 100 year Rainfall=6.90"


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Pond 1P: Pervious Paver Drive/Parking Area





APPLICANT:		Roberto Grieco 16 Kenwood Avenue Wilmington, MA 01887		PROJECT:		Plan of Land 50-54 Murdock Street (Tax Map 33 Block A Lots 16, 17, & 18) Somerville, Massachusetts		PREPARED BY:		<div><div>Engineering Alliance, Inc. Civil Engineering & Land Planning Consultants 194 Central Street 1950 Lafayette Road Saugus, MA 01906 Tel: (781) 231-1349 Fax: (781) 417-0020</div></div>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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BEST MANAGEMENT PRACTICES MAINTENANCE PLAN

For the 10 Unit Multi-Family Development Located at

50-54 Murdock Street

(Tax Map 33 Block A Lots 16, 17 & 18)

Somerville, Massachusetts

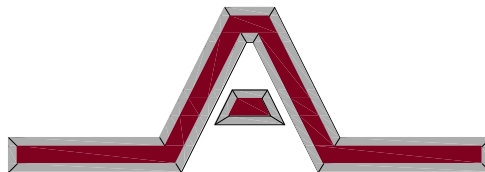
Submitted to:

**City of Somerville
93 Highland Avenue
Somerville, MA**

Prepared for:

**Roberto Grieco
16 Kenwood Avenue
Wilmington, MA 01887**

Prepared by



Engineering Alliance, Inc.

Civil Engineering & Land Planning Consultants	
194 Central Street	1950 Lafayette Road
Saugus, MA 01906	Portsmouth, NH 03801
Tel: (781) 231-1349	Tel: (603) 610-7100
Fax: (781) 417-0020	Fax: (603) 610-7101

December 19, 2017

BEST MANAGEMENT PRACTICES MAINTENANCE PLAN

A Best Management Practices Operations and Maintenance Plan is summarized below and will be incorporated into the construction documents for this project.

In accordance with the Storm Water Management Regulations issued by the Department of Environmental Protection (DEP), Engineering Alliance, Inc. has prepared the following best management practices maintenance plan for the proposed development of the property located at 50-54 Murdock Street (Tax Map 33 Block A Lots 16, 17 & 18) in Somerville, Massachusetts. This plan is broken into two major sections. The first section is construction-related erosion and sedimentation controls. The second section is devoted to a post-development operation and maintenance plan.

Basic Information

Owner: Roberto Grieco
16 Kenwood Avenue
Wilmington, MA 01887

Section 1 - Construction Activities

1. Contact the City of Somerville at least three (3) days prior to start of construction.
2. Install straw wattles and silt fence to prevent sediment from leaving the subject property.
3. Install silt sacks in existing catch basins prior to any construction.
4. The contractor shall only disturb the minimum area necessary.
5. Proper erosion and sediment control must be employed around all material stockpile areas and efficient. Regular provisions for dust control must be used, via a water truck or other acceptable method.
6. The entire project area shall be swept upon completion of construction and prior to removal of the erosion control devices.

Section 2 – Post Development Operation & Maintenance

1. Eco-Stone Permeable Pavement – Eco-Stone areas should be maintained periodically to maintain infiltration. Care should be taken to keep sediment off the pavement during and after construction. Yearly cleaning by a vacuum-type street cleaner should be performed when the pavement is dry. Vacuum settings should be adjusted to prevent the uptake of aggregate in the pavement openings and joints. It is important to keep the drainage voids and joints filled with aggregate. Replenishment can be done, if needed, at the time of cleaning.
2. Pesticides, Herbicides, and Fertilizers - Pesticides and herbicides shall not be used within the limits of the 100-foot buffer zone to any wetland resource areas as defined under 310 CMR 10.00. In addition, fertilizers that are used within this zone should be restricted to organic fertilizers only.
3. Snow removal and storage - Plowed snow shall be placed in the pervious areas where it can slowly infiltrate. Sediments shall be removed from this area every spring. When the amount of snow exceeds the capacity of the snow storage area, it shall be removed from the site by a privately contracted company.
4. Maintenance Responsibilities - All post construction maintenance activities should be documented and kept on file and made available to the City of Somerville upon request. All post construction maintenance activities shall run with the title of the property in perpetuity. The maintenance responsibilities shall be borne by the developer until the time that a condominium association is established at which time the maintenance responsibilities will be transferred to the condominium association.

