

STORMWATER MANAGEMENT REPORT

Project Address: 11 Seal Cove Rd
Hingham, MA 02043

Date Prepared: August 12, 2026

Project Number: 26047

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PREPARED BY

STORMWATER MANAGEMENT REPORT

11 SEAL COVE ROAD, HINGHAM MA

PRE-DEVELOPMENT CONDITIONS

The project is located at 11 Seal Cove Road, Hingham, Massachusetts, identified by the Town of Hingham Assessors as PID 41/0/8. The existing site consists of a single family dwelling, detached shed, paved driveway, impervious hardscape features including pool, patio, walkways, and landscaped lawn areas.

The total lot area is approximately 46,072 square feet. Existing impervious surfaces consist of approximately 3,191 square feet of roof area and 3,985 square feet of paved driveway and 2,781 square feet of hardscape areas, for a total existing impervious area of 9,957 square feet. The remaining 36,115 square feet consists of landscaped open space.

Under existing conditions, runoff from the watershed #1 (see attached watershed plans) flows overland towards the northeastern corner of the property on Seal Cove Lane, identified as Point of Analysis 1 (POA-1), and runoff from watershed #2 flows overland towards the southwestern corner of the property on Seal Cove Road identified as Point of Analysis 2 (POA-2).

POST-DEVELOPMENT CONDITIONS

The project proposes the demolition of the existing dwelling, demolition of the existing shed, removal of the existing paved parking area, pool and concrete patios/walkways, construction of new single family dwelling along with associated improvements such as paved driveways, pervious paver patio area and walkway and landscape improvements.

Under proposed conditions, the site will consist of approximately 4,917 square feet of roof area, 5,208 square feet of driveway, 1,301 square feet of hardscape area, and 34,646 square feet of landscaped open space. The proposed project will result in an increase in impervious area; however, the project includes stormwater management improvements designed to provide groundwater recharge and reduce peak runoff rates when compared to existing conditions.

The proposed stormwater management system includes two (2) underground infiltration/detention systems, identified as System P1 and P2, consisting of eight (8) CULTEC 150XLHD chambers for system P1 and twelve (12) CULTEC 150 XLHD chambers for system P2. Both systems been designed to provide peak runoff attenuation for the 2-year, 10-year, 25-year, and 100-year storm events, while also providing groundwater recharge that is not currently provided under existing site conditions.

Roof runoff will be collected by roof leaders and downspouts, conveyed through proposed 6-inch storm drain pipes, and routed directly to the infiltration/detention system.

Based on the stormwater analysis, the proposed project will decrease peak runoff rates for the 2-year, 10-year, 25-year, and 100-year storm events when compared to existing conditions. The tables below summarize the pre-development and post-development drainage areas, peak runoff rates, and design parameters used for the analysis, including soil data and rainfall information.

The proposed underground infiltration/detention system has been designed to provide the required groundwater recharge and to fully drain within 72 hours. Refer to the post-development HydroCAD report for supporting calculations.

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Table 1. – Summary of Pre and Post Dev Conditions

Areas	Ground Cover Changes		
	Pre-Dev	Post-Dev	Change
Open Space	36,115 SF	34,646 SF	-1,469 SF
Roof Area	3,191 SF	4,917 SF	+1,726 SF
Imp Area	6,766 SF	6,509 SF	-257 SF
Design Storm	POA 1: Seal Cove Lane		
	Pre-Dev	Post-Dev	Change
2 Year	0.46 cfs (0.034 af)	0.45 cfs (0.033 af)	-0.01 cfs (-0.001 af)
10 Year	0.97 cfs (0.070 af)	0.91 cfs (0.066 af)	-0.06 cfs (-0.004 af)
25 Year	1.31 cfs (0.095 af)	1.21 cfs (0.091 af)	-0.10 cfs (-0.004 af)
100 Year	1.83 cfs (0.134 af)	1.68 cfs (0.132 af)	-0.15 cfs (-0.002 af)
Design Storm	POA 2: Seal Cove Road		
	Pre-Dev	Post-Dev	Change
2 Year	1.21 cfs (0.089 af)	1.03 cfs (0.076 af)	-0.18 cfs (-0.013 af)
10 Year	2.49 cfs (0.184 af)	2.17 cfs (0.167 af)	-0.32 cfs (-0.017 af)
25 Year	3.33 cfs (0.242 af)	2.94 cfs (0.229 af)	-0.39 cfs (-0.013 af)
100 Year	4.65 cfs (0.341 af)	4.61 cfs (0.328 af)	-0.04 cfs (-0.013 af)

RAINFALL DATA

Peak stormwater discharges have been determined for total rainfall estimated for the 2, 10, 25 and 100-year storm event recurrence intervals are outlined in Table 1 – Summary of Rainfall Data.

Table 2. – Summary of Rainfall Data

Reference	Rainfall Recurrence Interval	24 Hour Rainfall Depth
NOAA Atlas 14	2-Year Storm	3.39 inches
	10-Year Storm	5.19 inches
	25-Year Storm	6.31 inches
	100-Year Storm	8.04 inches

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SOILS DATA

Based upon the USDA – NRCS Soil Conservation Service (SCS) Web Soil Survey for Norfolk, soils underlying the Project (excluding surface water bodies) are classified as follows:

Table 3. – Summary of USDA Soil Classification

Soil Classification	Hydrologic Soil Group (HSG)
345 B Pittstown Loam	[HSG (D)]

Subsurface investigations comprised of two (2) test pits were conducted at site on July 10, 2026.

In all test pits the parent material of silty loa, was encountered. Based on this the Rawls Rate (exfiltration rate) has been established at 0.27 in/hr.

DRAWDOWN ANALYSIS

Drawdown Time:	T	= $V / (K * A)$
	where T	= drawdown time (hours)
	V	= volume below outlet (ft ³)
	K	= hydraulic conductivity (ft/hr)
		= (0.27 in/hr) * (1 ft/12 in)
		= 0.0225 ft/hr
	A	= bottom area of infiltration system (ft ²)
Infiltration System P1	V	= 478 ft ³
	K	= 0.0225 ft/hr
	A	= 337 ft ²
	T	= (478 ft ³) / (0.0225 ft/hr)(337 ft ²)
		= 63 hours < 72 hours
Infiltration System P2	V	= 745 ft ³
	K	= 0.0225 ft/hr
	A	= 539 ft ²
	T	= (745 ft ³) / (0.0225 ft/hr)(539 ft ²)
		= 62 hours < 72 hours



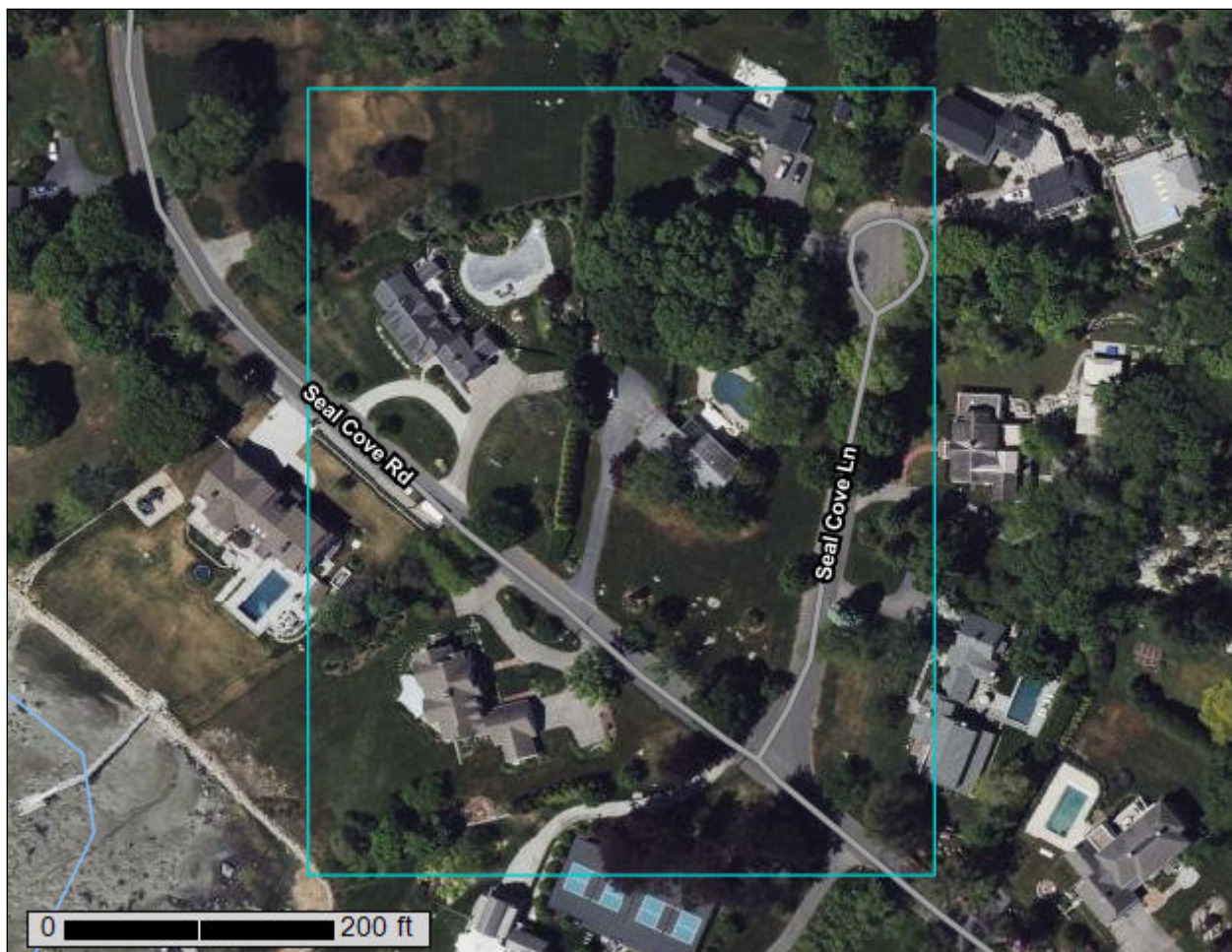
United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for **Plymouth County, Massachusetts**



August 10, 2026

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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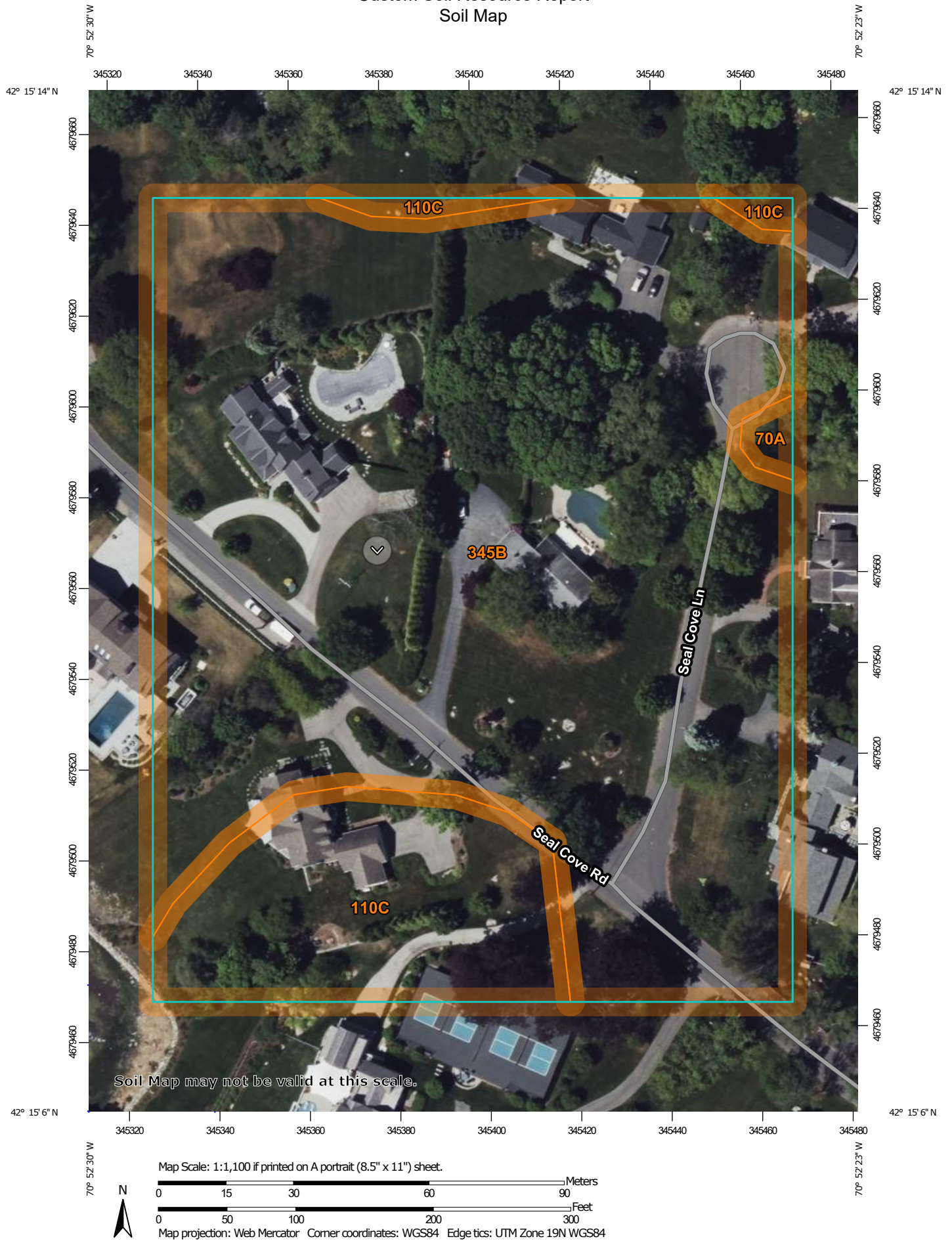
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Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

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

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

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

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
70A	Ridgebury fine sandy loam, 0 to 3 percent slopes	0.0	0.6%
110C	Canton-Chatfield-Rock outcrop complex, 8 to 15 percent slopes, very stony	1.0	15.4%
345B	Pittstown loam, 3 to 8 percent slopes	5.2	84.0%
Totals for Area of Interest		6.2	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or

landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Plymouth County, Massachusetts

70A—Ridgebury fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2w69f
Landscape: Glaciated uplands
Elevation: 0 to 1,480 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: Not prime farmland

Map Unit Composition

Ridgebury and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ridgebury

Setting

Landscape: Glaciated uplands
Landform: Ground moraines, Depressions, Drumlins, Drainageways, Hills
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 6 inches: fine sandy loam
Bw - 6 to 10 inches: sandy loam
Bg - 10 to 19 inches: gravelly sandy loam
Cd - 19 to 66 inches: gravelly sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 15 to 35 inches to densic material
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D
Ecological site: F144AY009CT - Wet Till Depressions

Hydric soil rating: Yes

Minor Components

Woodbridge

Percent of map unit: 9 percent
Landscape: Glaciated uplands
Landform: Ground moraines, Drumlins, Hills
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Base slope, crest
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Whitman

Percent of map unit: 5 percent
Landscape: Glaciated uplands
Landform: Ground moraines, Depressions, Drumlins, Drainageways, Hills
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Leicester

Percent of map unit: 1 percent
Landscape: Glaciated uplands
Landform: Ground moraines, Depressions, Drainageways, Hills
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, linear
Across-slope shape: Concave
Hydric soil rating: Yes

110C—Canton-Chatfield-Rock outcrop complex, 8 to 15 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2w82g
Landscape: Glaciated uplands
Elevation: 0 to 260 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: Not prime farmland

Map Unit Composition

Canton, very stony, and similar soils: 40 percent
Chatfield, very stony, and similar soils: 25 percent
Rock outcrop: 20 percent

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Minor components: 15 percent

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

Description of Canton, Very Stony

Setting

Landscape: Glaciated uplands

Landform: Ridges, Moraines, Hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): 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

Oi - 0 to 2 inches: slightly decomposed plant material

A - 2 to 5 inches: fine sandy loam

Bw1 - 5 to 16 inches: fine sandy loam

Bw2 - 16 to 22 inches: gravelly fine sandy loam

2C - 22 to 67 inches: gravelly loamy sand

Properties and qualities

Slope: 8 to 15 percent

Surface area covered with cobbles, stones or boulders: 1.6 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

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: B

Ecological site: F144AY034CT - Well Drained Till Uplands

Hydric soil rating: No

Description of Chatfield, Very Stony

Setting

Landscape: Glaciated uplands

Landform: Bedrock-controlled ridges, Bedrock-controlled hills

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Nose slope, side slope, crest

Down-slope shape: Convex

Across-slope shape: Linear, convex

Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

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Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 2 inches: fine sandy loam
Bw - 2 to 30 inches: gravelly fine sandy loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 41 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Rock Outcrop

Setting

Landscape: Glaciated uplands
Landform: Bedrock-controlled ridges, Bedrock-controlled hills
Parent material: Igneous and metamorphic rock

Typical profile

R - 0 to 79 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 0 inches to lithic bedrock
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Available water supply, 0 to 60 inches: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

Minor Components

Newfields, very stony

Percent of map unit: 10 percent
Landscape: Glaciated uplands
Landform: Ground moraines, Moraines, Hills
Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Hollis, very stony

Percent of map unit: 5 percent
Landscape: Glaciated uplands
Landform: Bedrock-controlled ridges, Bedrock-controlled hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

345B—Pittstown loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: bcyh
Landscape: Uplands
Elevation: 30 to 400 feet
Mean annual precipitation: 41 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 145 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Pittstown

Setting

Landscape: Uplands
Landform: Till plains, Ridges, Drumlins
Landform position (two-dimensional): Shoulder, footslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Coarse-loamy eolian deposits over coarse-loamy lodgment till

Typical profile

Ap - 0 to 9 inches: loam
Bw1 - 9 to 14 inches: loam
Bw2 - 14 to 19 inches: loam
BC - 19 to 21 inches: gravelly loam
Cd1 - 21 to 33 inches: gravelly loam

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Cd2 - 33 to 68 inches: gravelly loam

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: 20 to 39 inches to densic material

Drainage class: Moderately well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: About 14 to 21 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: D

Ecological site: F144AY037MA - Moist Dense Till Uplands

Hydric soil rating: No

Minor Components

Ridgebury

Percent of map unit: 5 percent

Landscape: Till plains

Landform: Depressions, Drainageways

Landform position (two-dimensional): Footslope, toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Scituate

Percent of map unit: 5 percent

Landscape: Uplands

Landform: Ridges, Drumlins

Landform position (two-dimensional): Shoulder, footslope

Landform position (three-dimensional): Interfluvium

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: No

Woodbridge

Percent of map unit: 5 percent

Landscape: Uplands

Landform: Till plains, Drumlins, Hills

Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Interfluvium

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: No

Newport

Percent of map unit: 5 percent

Landscape: Uplands

Landform: Hills, Till plains, Drumlins

Custom Soil Resource Report

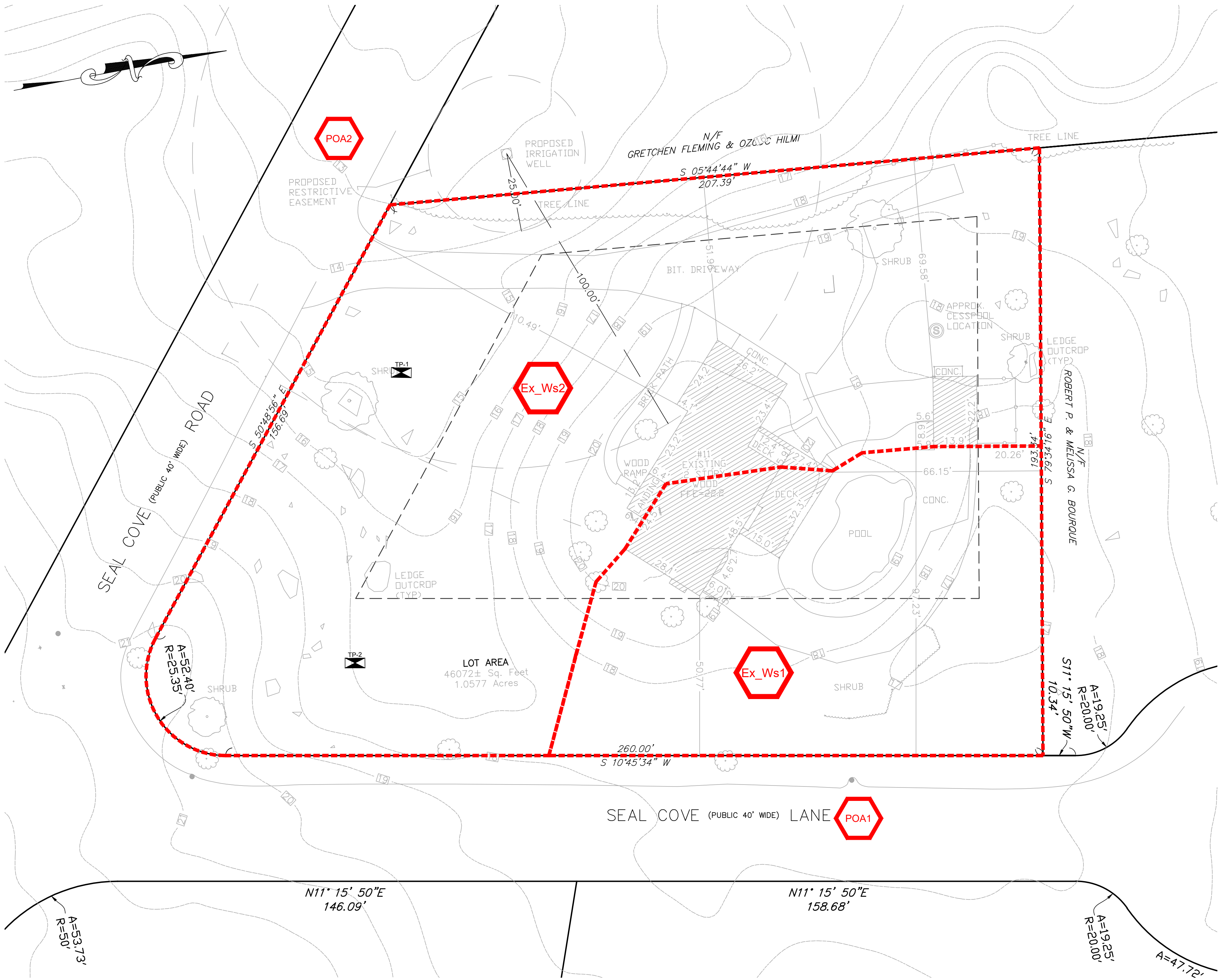
Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Interfluve

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No



PRE-DEVELOPMENT WATERSHED			
EXISTING WATERSHED 1 (Ex_Ws1):			
- TOTAL AREA	=	13,214 SF	
- HARDSCAPE	=	2,184 SF	
- ROOF COVERAGE	=	1,498 SF	
- GRASS/LAWN COVER "GOOD"	=	9,532 SF	
EXISTING WATERSHED 2 (Ex_Ws2):			
- TOTAL AREA	=	32,862 SF	
- DRIVEWAY	=	3,365 SF	
- HARDSCAPE	=	597 SF	
- ROOF COVERAGE	=	1,693 SF	
- GRASS/LAWN COVER "GOOD"	=	26,587 SF	

DEEP OBSERVATION HOLE LOG										
DEEP OBSERVATION HOLE NUMBER:					TP-1	GROUND ELEVATION:				
Depth (in)	Horizon/ Layer	Matrix: Color-Moist	Redoximorphic Features			Texture (USDA)	Coarse Fragments (Percent by Volume)		Structure	Consistence (Moist)
			Depth (in)	Color	Percent		Gravel	Cobbles & Stones		
0-9 (113.75)	A	--	--	--	--	SANDY LOAM	--	--	--	--
9-29 (112.10)	Bw	--	--	--	--	SANDY LOAM	--	--	--	--
29-60 (109.50)	C1	10YR 5/2	56	--	--	SILT LOAM	--	--	Abk	Fr
60-96 (106.50)	C2	10YR 5/2	--	--	--	SILT LOAM	--	--	Abk	Fr
NOTES:										
1. NO WEEPING OR STANDING WATER OBSERVED										
2. REDOX AT 56" (109.85)										
3. LOGGED BY ALFONS KOKA, SE14000 ON 07/13/2026.										

DEEP OBSERVATION HOLE LOG										
DEEP OBSERVATION HOLE NUMBER:					TP-2	GROUND ELEVATION:				
Depth (in)	Horizon/ Layer	Matrix: Color-Moist	Redoximorphic Features			Texture (USDA)	Coarse Fragments (Percent by Volume)		Structure	Consistence (Moist)
			Depth (in)	Color	Percent		Gravel	Cobbles & Stones		
0-12 (116.00)	A	--	--	--	--	SANDY LOAM	--	--	--	--
12-36 (114.00)	Bw	--	--	--	--	SANDY LOAM	--	--	--	--
36-50 (112.85)	C1	10YR 5/2	--	--	--	SILT LOAM	--	--	Abk	Fr
50-96 (109.00)	C2	10YR 5/2	--	--	--	SILT LOAM	--	--	Abk	Fr
NOTES:										
1. NO STANDING WATER OBSERVED										
2. REDOX AT 66" (111.50)										
3. WEEPING AT 76"										
4. LOGGED BY ALFONS KOKA, SE14000 ON 07/13/2026.										



77 N Water Street
New Bedford, MA 02740
Tel: (508)-730-9515

BRIAN ROBERTS
6 HOWE STREET
HINGHAM, MA 02043

Owner/Applicant

Consultant:

FOR PERMIT

Issue Type

11 SEAL COVE ROAD
HINGHAM MA
(PARCEL ID: 41/0/8)

Date	Description	By	REV

PROPOSED
SINGLE FAMILY
RESIDENCE AT 11 SEAL
COVE RD

PRE DEVELOPMENT
WATERSHED PLAN

Drawing Title

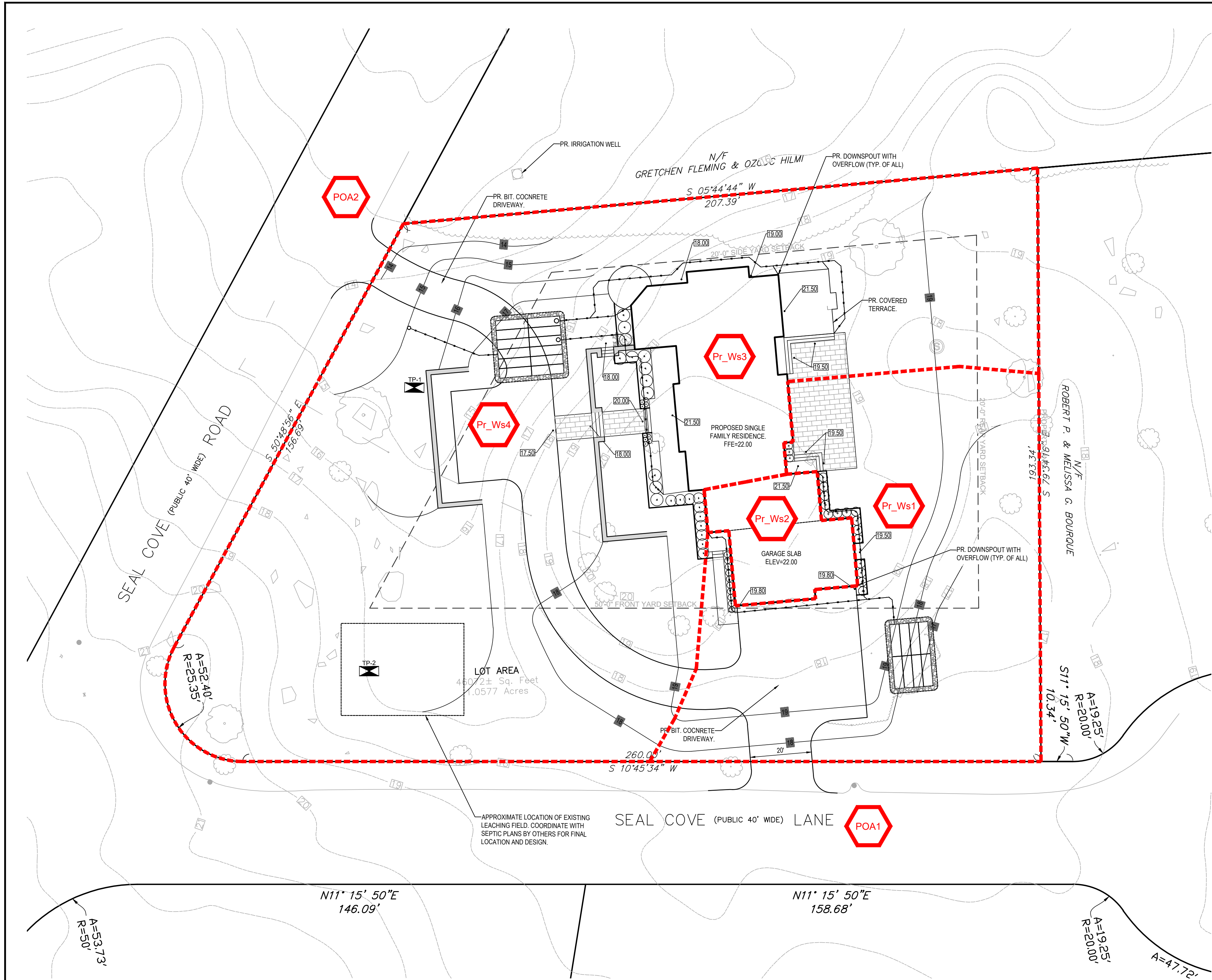
Project No. 26046	Checked AK	Date 08.12.2026
Designed BB	Approved AK	Scale AS SHOWN

Drawing No.

PRE

Seal





POST-DEVELOPMENT WATERSHED			
PROPOSED WATERSHED 1 (Pr_Ws1):			
- TOTAL AREA	=	11,649 SF	
- HARDSCAPE	=	150 SF	
- PERVIOUS PAVERS	=	546 SF	
- DRIVEWAY	=	2,112 SF	
- GRASS/LAWN COVER "GOOD"	=	8,841 SF	
PROPOSED WATERSHED 2 (Pr_Ws2):			
- TOTAL AREA	=	1,538 SF	
- ROOF COVERAGE	=	1,538 SF	
PROPOSED WATERSHED 3 (Pr_Ws3):			
- TOTAL AREA	=	3,379 SF	
- ROOF COVERAGE	=	3,379 SF	
PROPOSED WATERSHED 4 (Pr_Ws4):			
- TOTAL AREA	=	29,506 SF	
- PERVIOUS PAVERS	=	453 SF	
- DRIVEWAY	=	3,096 SF	
- GRASS/LAWN COVER "GOOD"	=	26,056 SF	

DEEP OBSERVATION HOLE LOG										
DEEP OBSERVATION HOLE NUMBER:					TP-1	GROUND ELEVATION:				
Depth (in)	Horizon/ Layer	Matrix: Color-Moist	Redoximorphic Features			Texture (USDA)	Coarse Fragments (Percent by Volume)		Structure	Consistence (Moist)
			Depth (in)	Color	Percent		Gravel	Cobbles & Stones		
0-9 (113.75)	A	--	--	--	--	SANDY LOAM	--	--	--	--
9-29 (112.10)	Bw	--	--	--	--	SANDY LOAM	--	--	--	--
29-60 (109.50)	C1	10YR 5/2	56	--	--	SILT LOAM	--	--	Abk	Fr
60-96 (106.50)	C2	10YR 5/2	--	--	--	SILT LOAM	--	--	Abk	Fr
NOTES:										
1. NO WEEPING OR STANDING WATER OBSERVED										
2. REDOX AT 56" (109.85)										
3. LOGGED BY ALFONS KOKA, SE14000 ON 07/13/2026.										

DEEP OBSERVATION HOLE LOG										
DEEP OBSERVATION HOLE NUMBER:					TP-2	GROUND ELEVATION:				
Depth (in)	Horizon/ Layer	Matrix: Color-Moist	Redoximorphic Features			Texture (USDA)	Coarse Fragments (Percent by Volume)		Structure	Consistence (Moist)
			Depth (in)	Color	Percent		Gravel	Cobbles & Stones		
0-12 (116.00)	A	--	--	--	--	SANDY LOAM	--	--	--	--
12-36 (114.00)	Bw	--	--	--	--	SANDY LOAM	--	--	--	--
36-50 (112.85)	C1	10YR 5/2	--	--	--	SILT LOAM	--	--	Abk	Fr
50-96 (109.00)	C2	10YR 5/2	--	--	--	SILT LOAM	--	--	Abk	Fr
NOTES:										
1. NO STANDING WATER OBSERVED										
2. REDOX AT 66" (111.50)										
3. WEEPING AT 76"										
4. LOGGED BY ALFONS KOKA, SE14000 ON 07/13/2026.										

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Issue Type

11 SEAL COVE ROAD
HINGHAM MA
(PARCEL ID: 41/0/8)

Date	Description	By	REV

PROPOSED
SINGLE FAMILY
RESIDENCE AT 11 SEAL
COVE RD

POST DEVELOPMENT
WATERSHED PLAN

Drawing Title

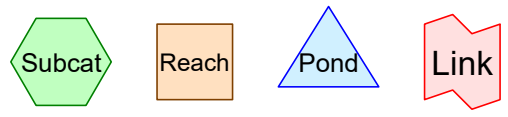
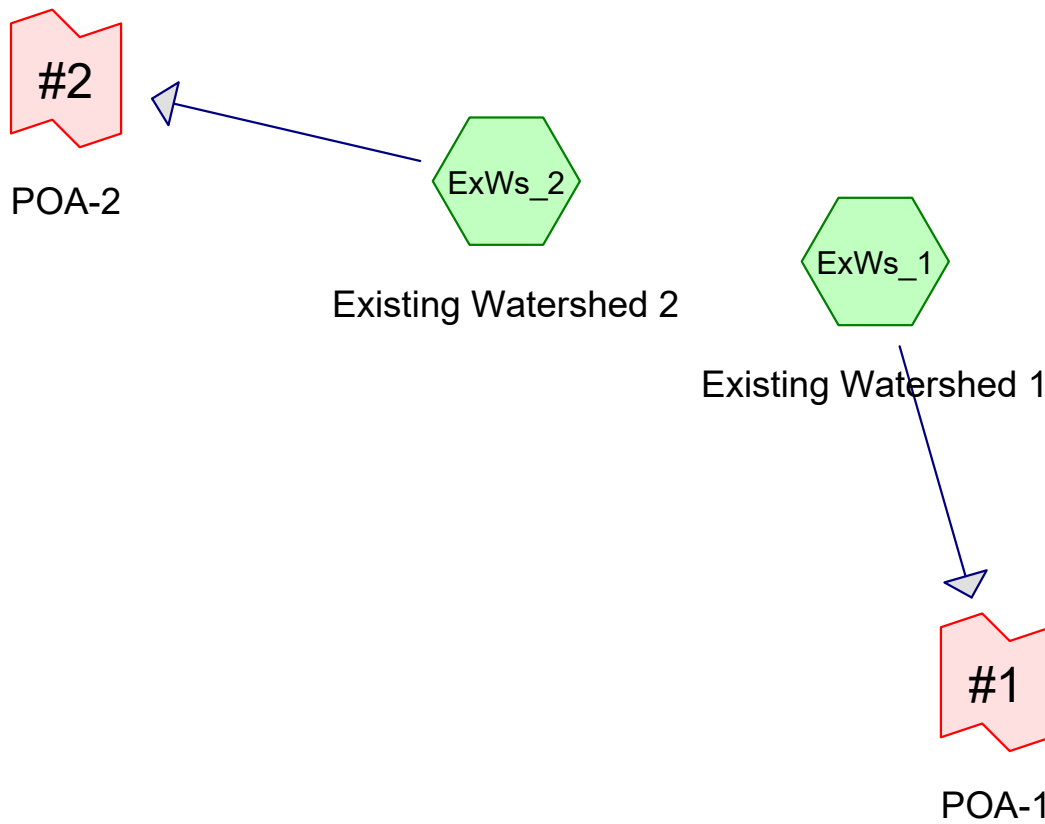
Project No. 26046	Checked AK	Date 08.12.2026
Designed BB	Approved AK	Scale AS SHOWN

Drawing No.

PRE

Seal





11_Seal_Cove_Pre-dev

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Page 2

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-YR	Type III 24-hr		Default	24.00	1	3.39	2
2	10-YR	Type III 24-hr		Default	24.00	1	5.19	2
3	25-YR	Type III 24-hr		Default	24.00	1	6.31	2
4	100-YR	Type III 24-hr		Default	24.00	1	8.04	2

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Page 3

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.829	74	>75% Grass cover, Good, HSG C (ExWs_1, ExWs_2)
0.091	98	Paved parking, HSG C (ExWs_2)
0.064	98	Unconnected pavement, HSG C (ExWs_1, ExWs_2)
0.073	98	Unconnected roofs, HSG C (ExWs_1, ExWs_2)
1.058	79	TOTAL AREA

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Type III 24-hr 2-YR Rainfall=3.39"

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Summary for Subcatchment ExWs_1: Existing Watershed 1

Runoff = 0.46 cfs @ 12.10 hrs, Volume= 0.034 af, Depth> 1.35"
Routed to Link #1 : POA-1

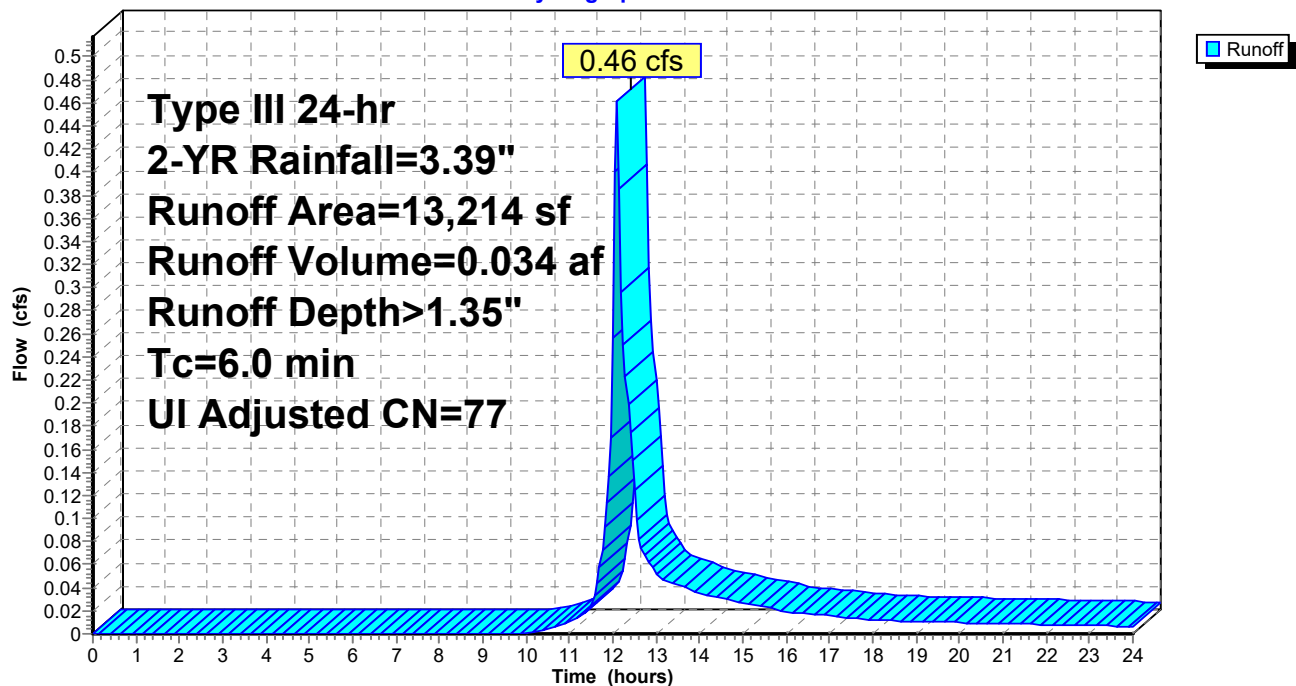
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.39"

Area (sf)	CN	Adj	Description
9,532	74		>75% Grass cover, Good, HSG C
1,498	98		Unconnected roofs, HSG C
2,184	98		Unconnected pavement, HSG C
13,214	81	77	Weighted Average, UI Adjusted
9,532			72.14% Pervious Area
3,682			27.86% Impervious Area
3,682			100.00% Unconnected

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

Subcatchment ExWs_1: Existing Watershed 1

Hydrograph



11_Seal_Cove_Pre-dev

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Type III 24-hr 2-YR Rainfall=3.39"

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Summary for Subcatchment ExWs_2: Existing Watershed 2

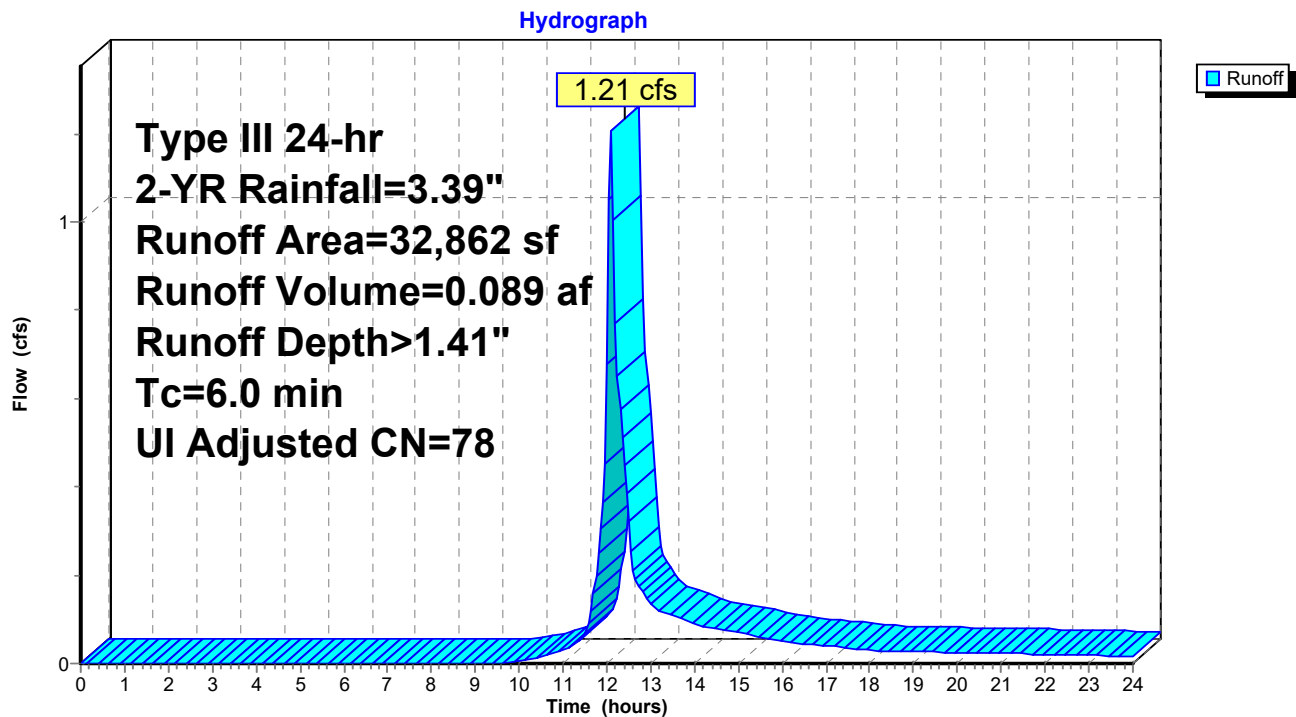
Runoff = 1.21 cfs @ 12.10 hrs, Volume= 0.089 af, Depth> 1.41"
Routed to Link #2 : POA-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.39"

Area (sf)	CN	Adj	Description
26,587	74		>75% Grass cover, Good, HSG C
1,693	98		Unconnected roofs, HSG C
597	98		Unconnected pavement, HSG C
3,985	98		Paved parking, HSG C
32,862	79	78	Weighted Average, UI Adjusted
26,587			80.90% Pervious Area
6,275			19.10% Impervious Area
2,290			36.49% Unconnected

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

Subcatchment ExWs_2: Existing Watershed 2



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Type III 24-hr 2-YR Rainfall=3.39"

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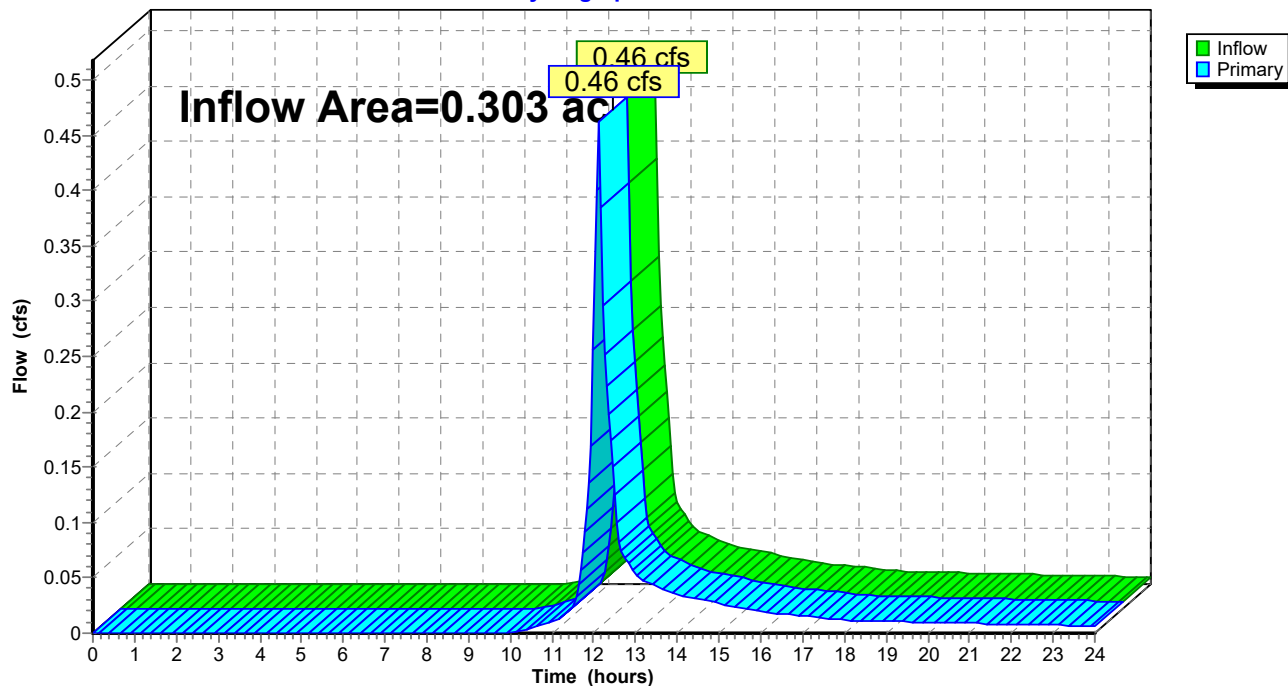
Summary for Link #1: POA-1

Inflow Area = 0.303 ac, 27.86% Impervious, Inflow Depth > 1.35" for 2-YR event
Inflow = 0.46 cfs @ 12.10 hrs, Volume= 0.034 af
Primary = 0.46 cfs @ 12.10 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link #1: POA-1

Hydrograph



11_Seal_Cove_Pre-dev

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Type III 24-hr 2-YR Rainfall=3.39"

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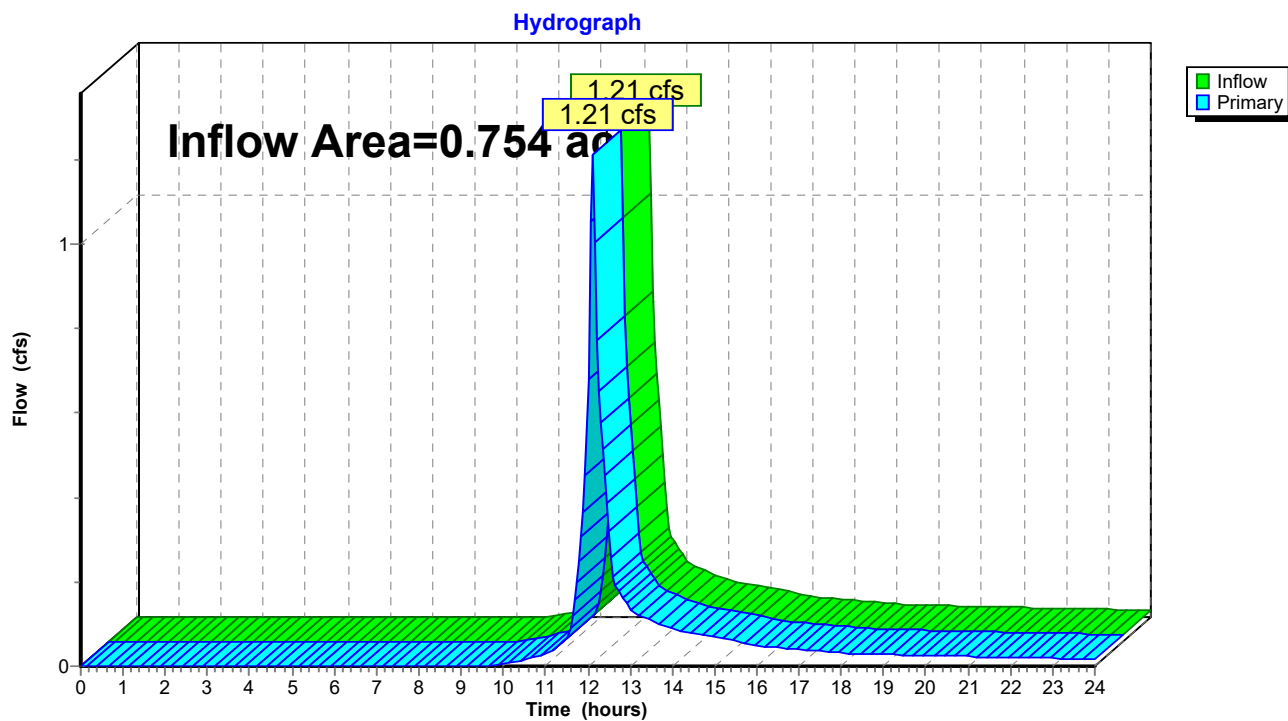
Page 7

Summary for Link #2: POA-2

Inflow Area = 0.754 ac, 19.10% Impervious, Inflow Depth > 1.41" for 2-YR event
Inflow = 1.21 cfs @ 12.10 hrs, Volume= 0.089 af
Primary = 1.21 cfs @ 12.10 hrs, Volume= 0.089 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link #2: POA-2



11_Seal_Cove_Pre-dev

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Type III 24-hr 10-YR Rainfall=5.19"

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Summary for Subcatchment ExWs_1: Existing Watershed 1

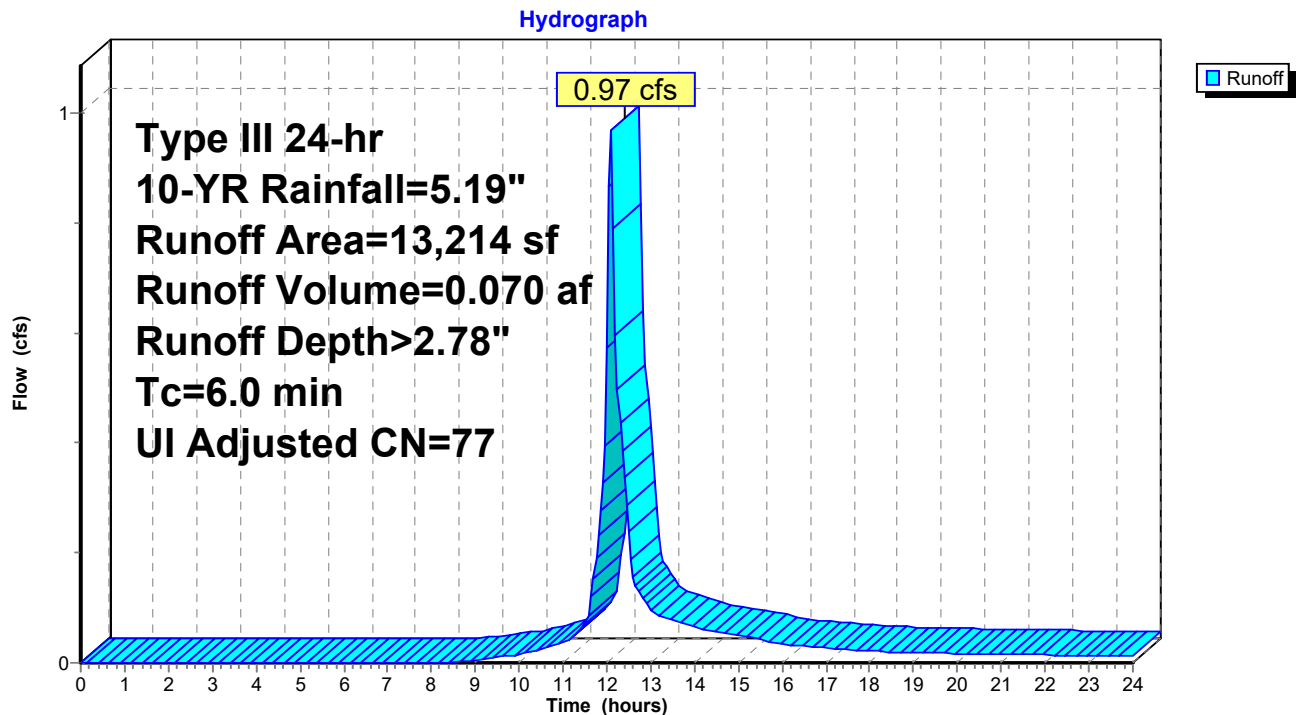
Runoff = 0.97 cfs @ 12.09 hrs, Volume= 0.070 af, Depth> 2.78"
Routed to Link #1 : POA-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.19"

Area (sf)	CN	Adj	Description
9,532	74		>75% Grass cover, Good, HSG C
1,498	98		Unconnected roofs, HSG C
2,184	98		Unconnected pavement, HSG C
13,214	81	77	Weighted Average, UI Adjusted
9,532			72.14% Pervious Area
3,682			27.86% Impervious Area
3,682			100.00% Unconnected

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

Subcatchment ExWs_1: Existing Watershed 1



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Type III 24-hr 10-YR Rainfall=5.19"

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Summary for Subcatchment ExWs_2: Existing Watershed 2

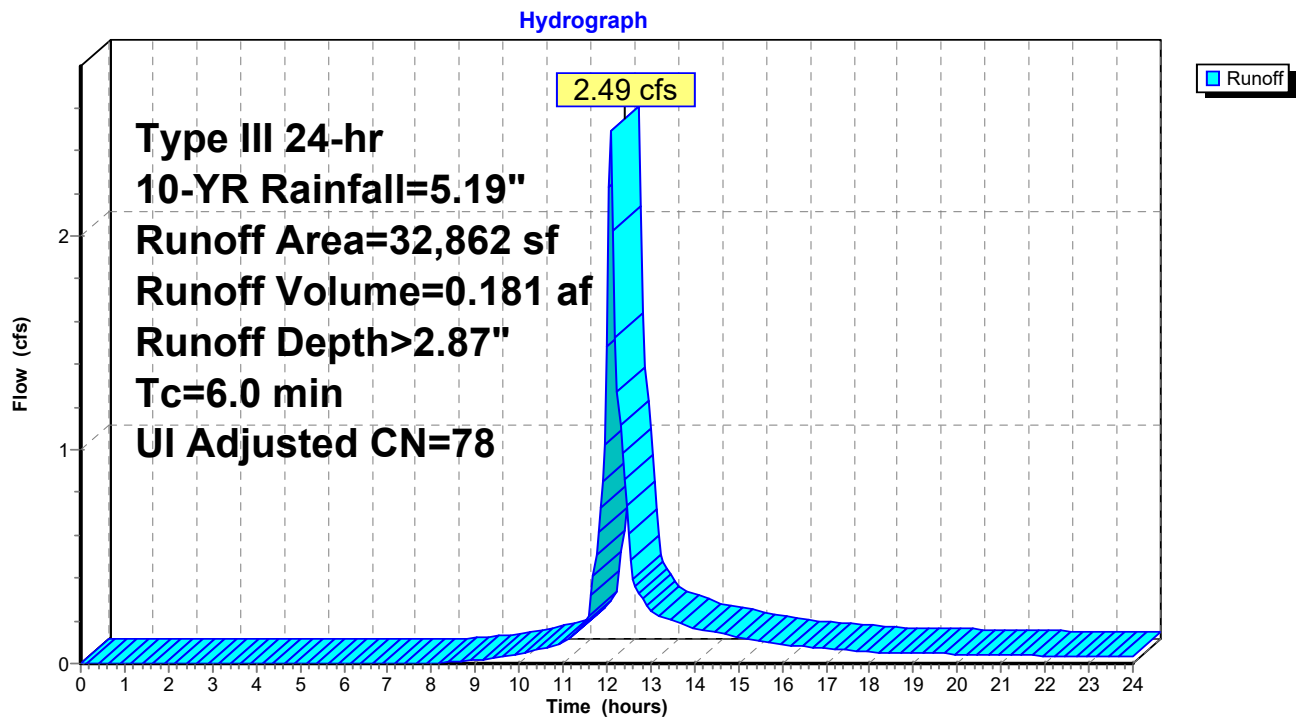
Runoff = 2.49 cfs @ 12.09 hrs, Volume= 0.181 af, Depth> 2.87"
Routed to Link #2 : POA-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.19"

Area (sf)	CN	Adj	Description
26,587	74		>75% Grass cover, Good, HSG C
1,693	98		Unconnected roofs, HSG C
597	98		Unconnected pavement, HSG C
3,985	98		Paved parking, HSG C
32,862	79	78	Weighted Average, UI Adjusted
26,587			80.90% Pervious Area
6,275			19.10% Impervious Area
2,290			36.49% Unconnected

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

Subcatchment ExWs_2: Existing Watershed 2



11_Seal_Cove_Pre-dev

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Type III 24-hr 10-YR Rainfall=5.19"

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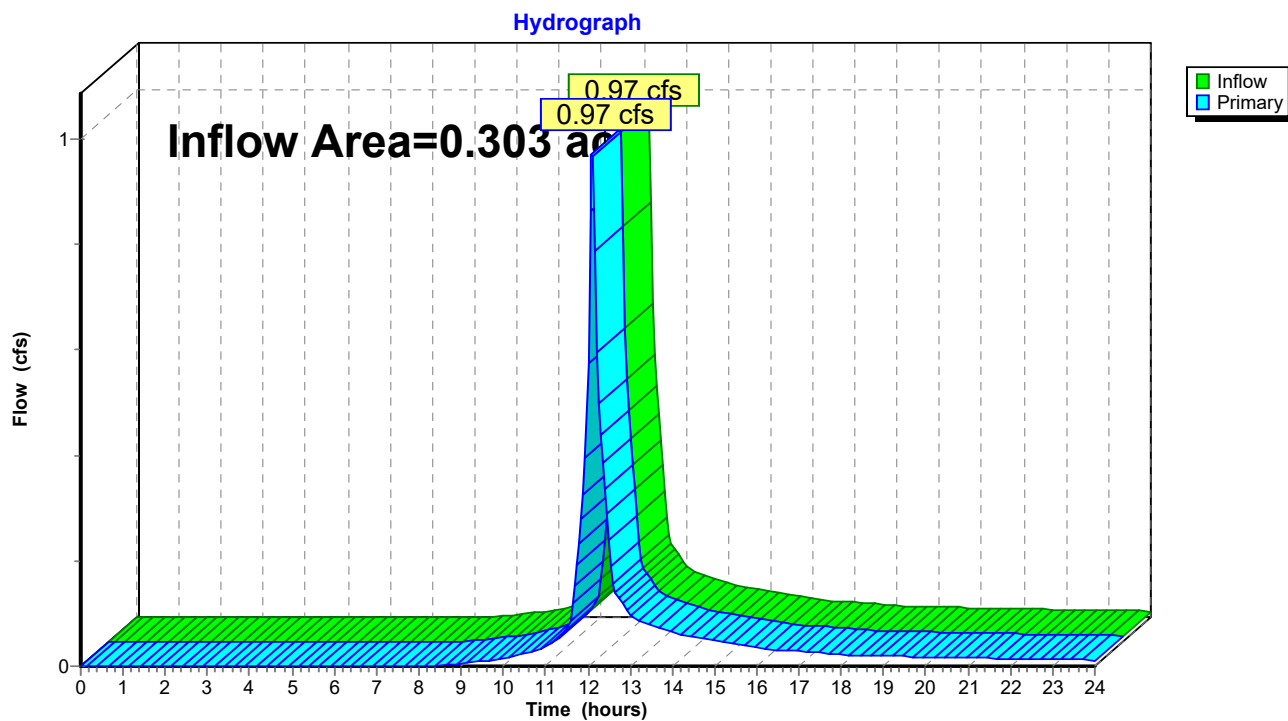
Page 10

Summary for Link #1: POA-1

Inflow Area = 0.303 ac, 27.86% Impervious, Inflow Depth > 2.78" for 10-YR event
Inflow = 0.97 cfs @ 12.09 hrs, Volume= 0.070 af
Primary = 0.97 cfs @ 12.09 hrs, Volume= 0.070 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link #1: POA-1



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Type III 24-hr 10-YR Rainfall=5.19"

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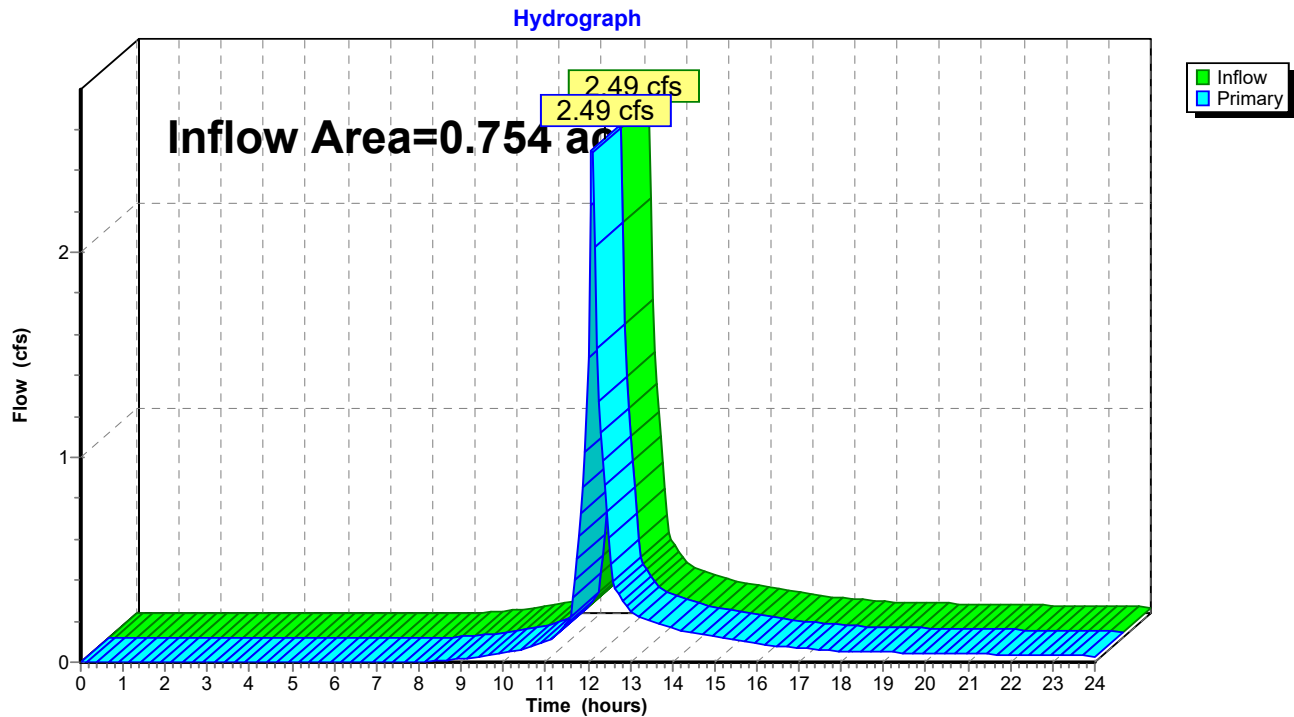
Page 11

Summary for Link #2: POA-2

Inflow Area = 0.754 ac, 19.10% Impervious, Inflow Depth > 2.87" for 10-YR event
Inflow = 2.49 cfs @ 12.09 hrs, Volume= 0.181 af
Primary = 2.49 cfs @ 12.09 hrs, Volume= 0.181 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link #2: POA-2



11_Seal_Cove_Pre-dev

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Type III 24-hr 25-YR Rainfall=6.31"

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Summary for Subcatchment ExWs_1: Existing Watershed 1

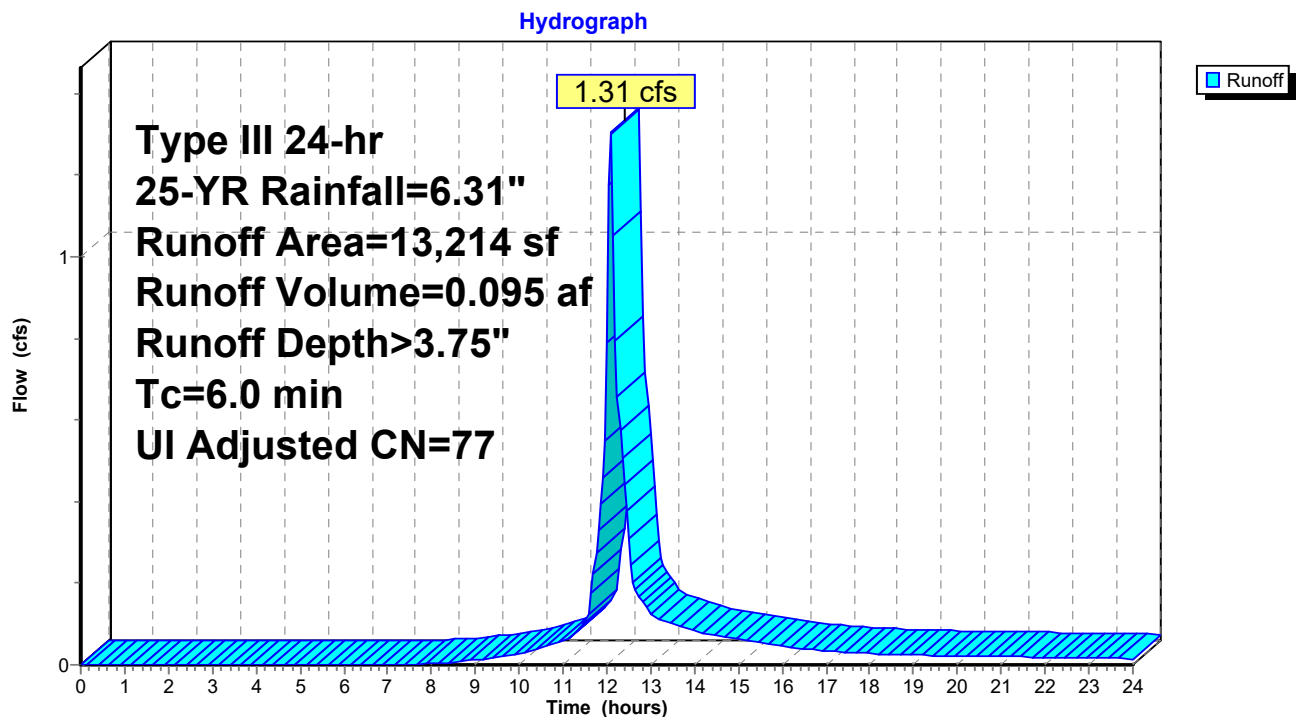
Runoff = 1.31 cfs @ 12.09 hrs, Volume= 0.095 af, Depth> 3.75"
Routed to Link #1 : POA-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.31"

Area (sf)	CN	Adj	Description
9,532	74		>75% Grass cover, Good, HSG C
1,498	98		Unconnected roofs, HSG C
2,184	98		Unconnected pavement, HSG C
13,214	81	77	Weighted Average, UI Adjusted
9,532			72.14% Pervious Area
3,682			27.86% Impervious Area
3,682			100.00% Unconnected

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

Subcatchment ExWs_1: Existing Watershed 1



11_Seal_Cove_Pre-dev

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Type III 24-hr 25-YR Rainfall=6.31"

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Summary for Subcatchment ExWs_2: Existing Watershed 2

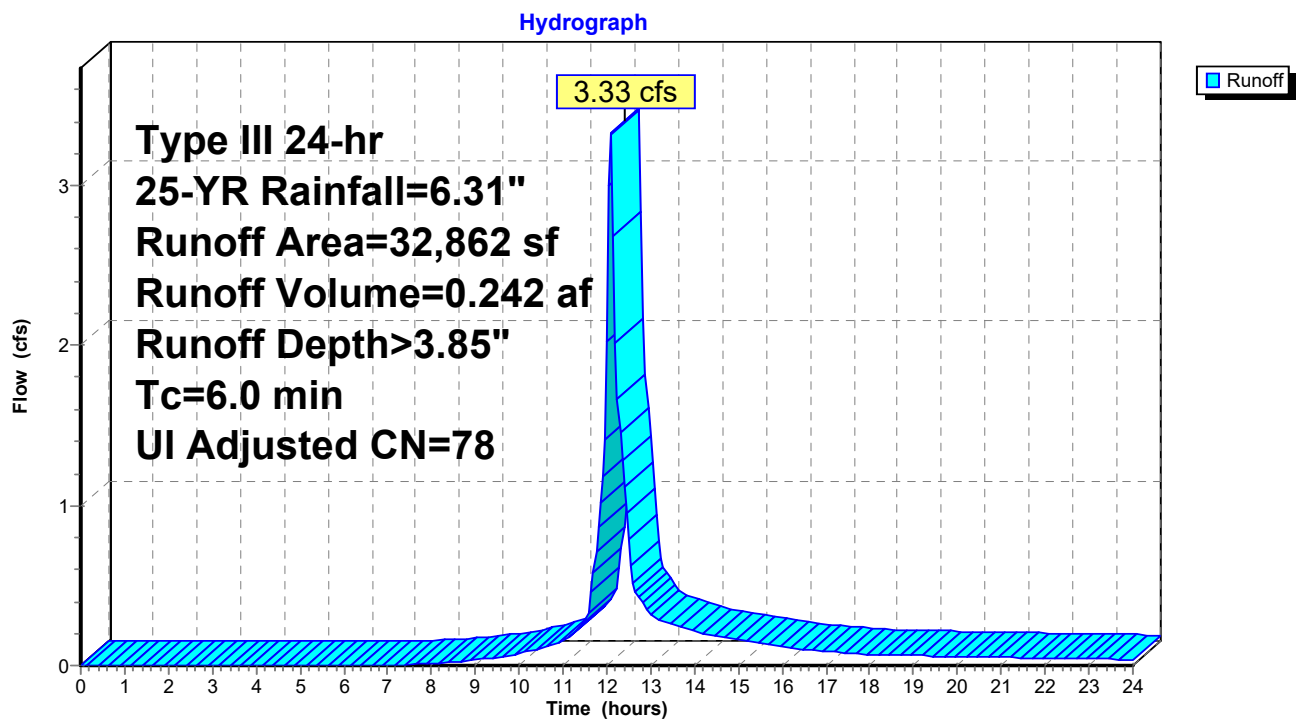
Runoff = 3.33 cfs @ 12.09 hrs, Volume= 0.242 af, Depth> 3.85"
Routed to Link #2 : POA-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.31"

Area (sf)	CN	Adj	Description
26,587	74		>75% Grass cover, Good, HSG C
1,693	98		Unconnected roofs, HSG C
597	98		Unconnected pavement, HSG C
3,985	98		Paved parking, HSG C
32,862	79	78	Weighted Average, UI Adjusted
26,587			80.90% Pervious Area
6,275			19.10% Impervious Area
2,290			36.49% Unconnected

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

Subcatchment ExWs_2: Existing Watershed 2



11_Seal_Cove_Pre-dev

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Type III 24-hr 25-YR Rainfall=6.31"

Printed 8/11/2026

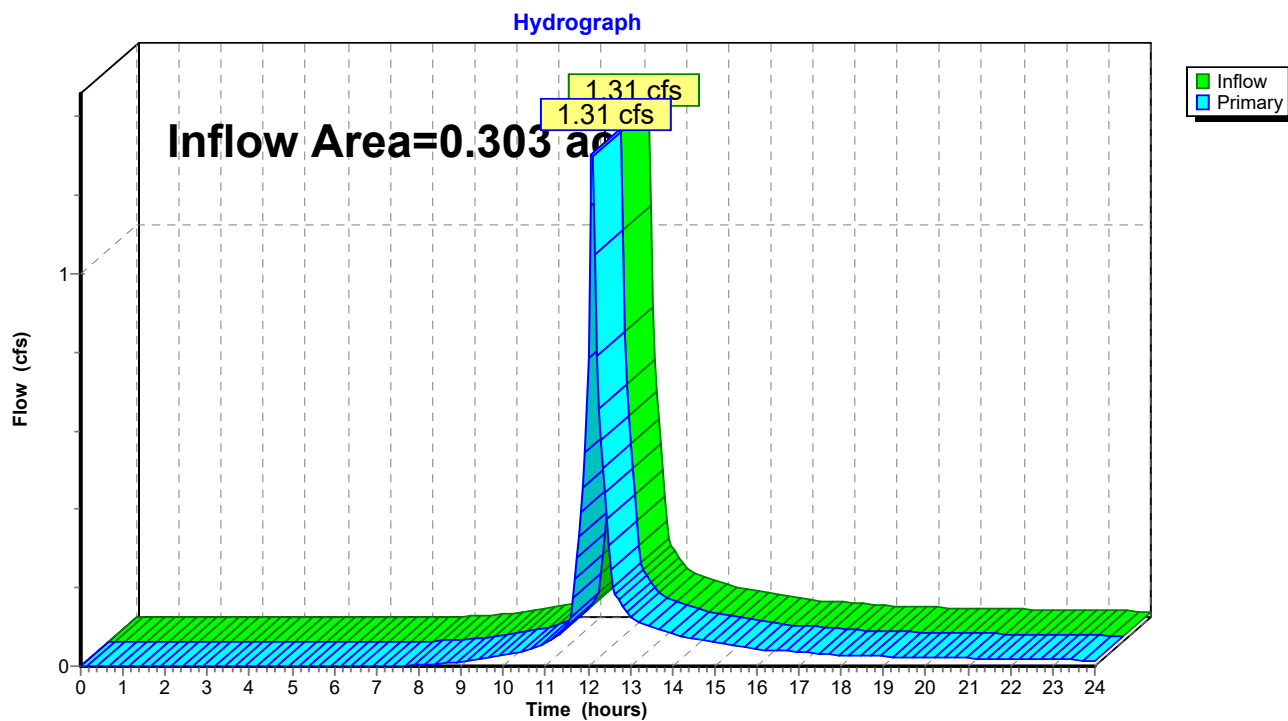
Page 14

Summary for Link #1: POA-1

Inflow Area = 0.303 ac, 27.86% Impervious, Inflow Depth > 3.75" for 25-YR event
Inflow = 1.31 cfs @ 12.09 hrs, Volume= 0.095 af
Primary = 1.31 cfs @ 12.09 hrs, Volume= 0.095 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link #1: POA-1



11_Seal_Cove_Pre-dev

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Type III 24-hr 25-YR Rainfall=6.31"

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Summary for Link #2: POA-2

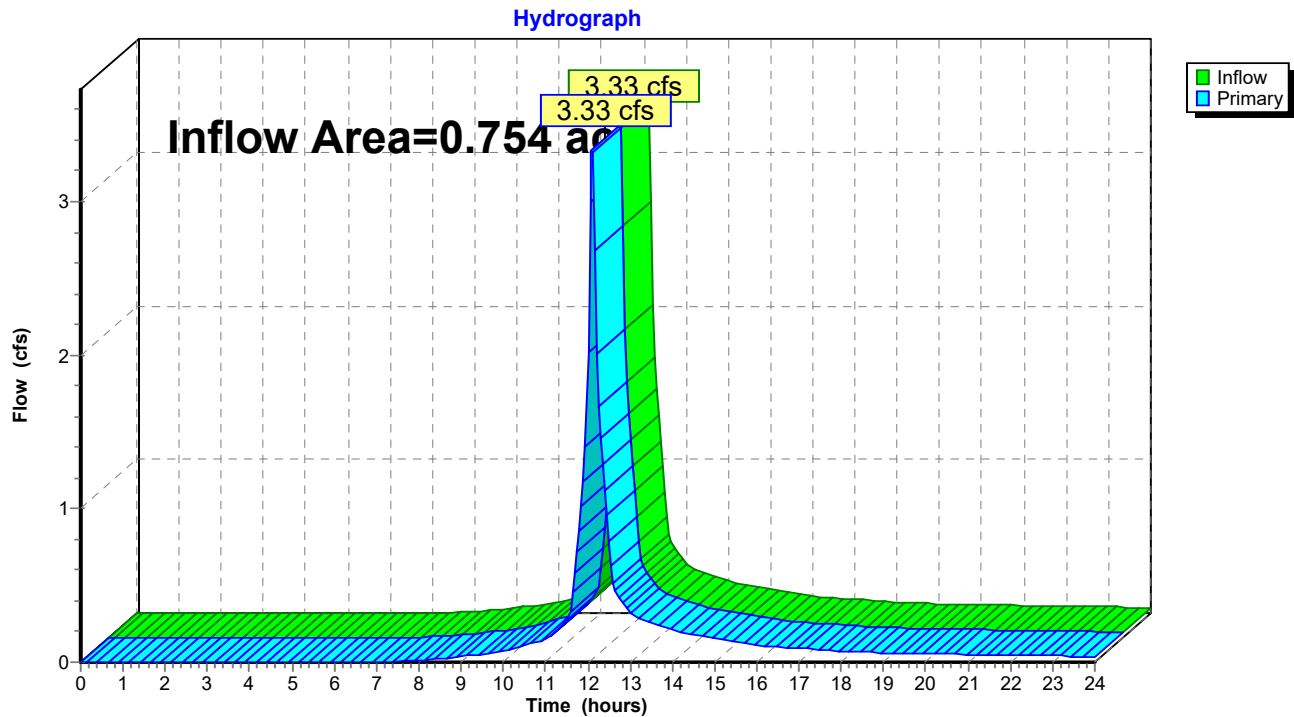
Inflow Area = 0.754 ac, 19.10% Impervious, Inflow Depth > 3.85" for 25-YR event

Inflow = 3.33 cfs @ 12.09 hrs, Volume= 0.242 af

Primary = 3.33 cfs @ 12.09 hrs, Volume= 0.242 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link #2: POA-2



11_Seal_Cove_Pre-dev

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Type III 24-hr 100-YR Rainfall=8.04"

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Summary for Subcatchment ExWs_1: Existing Watershed 1

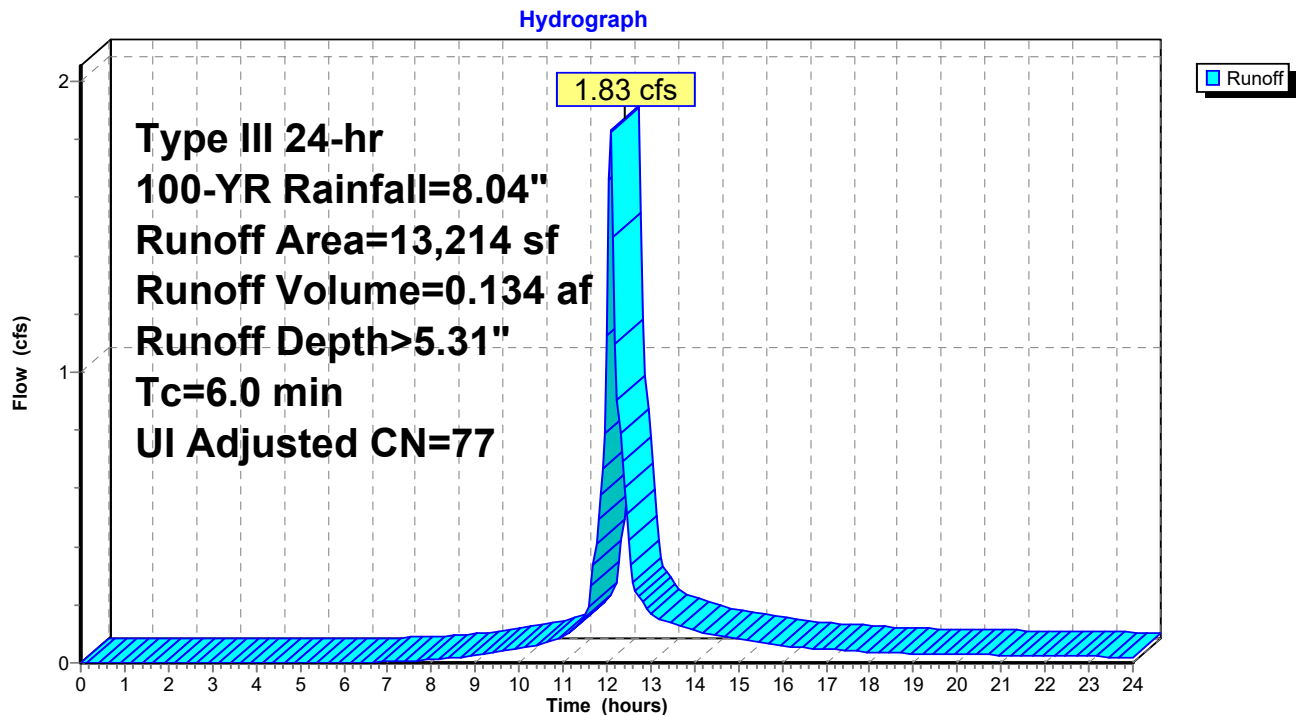
Runoff = 1.83 cfs @ 12.09 hrs, Volume= 0.134 af, Depth> 5.31"
Routed to Link #1 : POA-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.04"

Area (sf)	CN	Adj	Description
9,532	74		>75% Grass cover, Good, HSG C
1,498	98		Unconnected roofs, HSG C
2,184	98		Unconnected pavement, HSG C
13,214	81	77	Weighted Average, UI Adjusted
9,532			72.14% Pervious Area
3,682			27.86% Impervious Area
3,682			100.00% Unconnected

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

Subcatchment ExWs_1: Existing Watershed 1



11_Seal_Cove_Pre-dev

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Type III 24-hr 100-YR Rainfall=8.04"

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Summary for Subcatchment ExWs_2: Existing Watershed 2

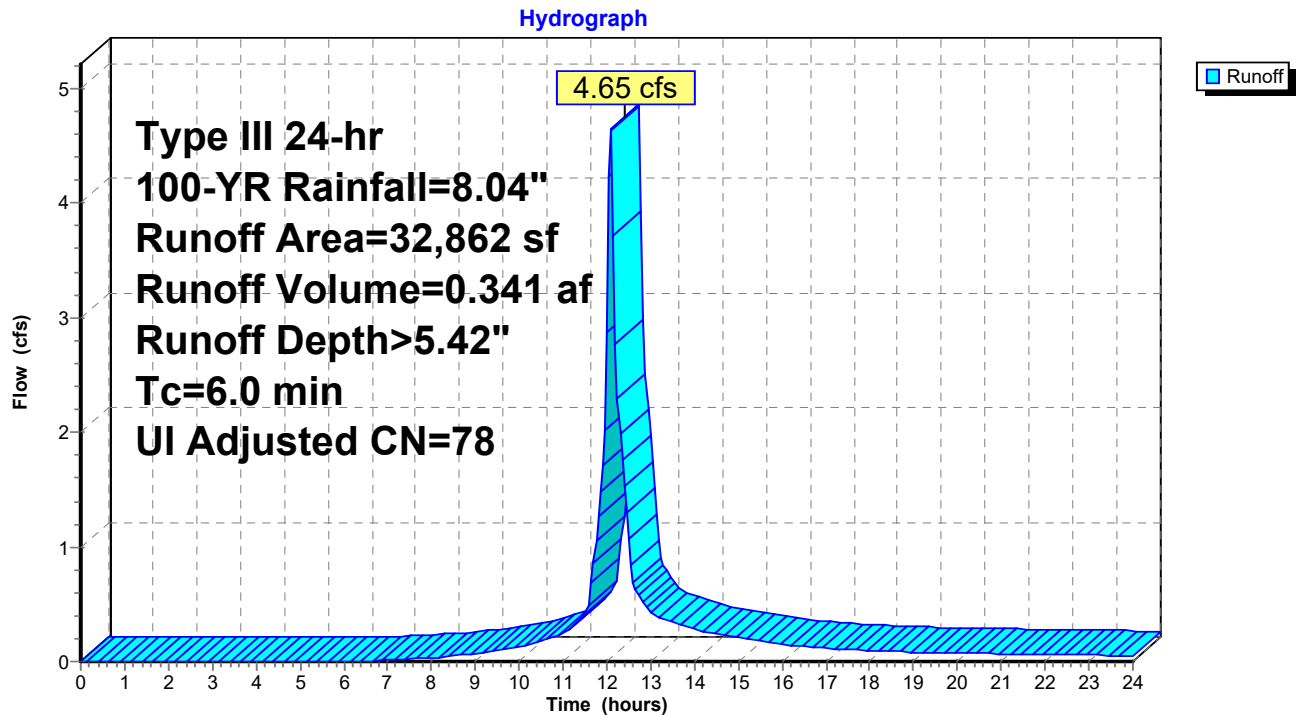
Runoff = 4.65 cfs @ 12.09 hrs, Volume= 0.341 af, Depth> 5.42"
Routed to Link #2 : POA-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.04"

Area (sf)	CN	Adj	Description
26,587	74		>75% Grass cover, Good, HSG C
1,693	98		Unconnected roofs, HSG C
597	98		Unconnected pavement, HSG C
3,985	98		Paved parking, HSG C
32,862	79	78	Weighted Average, UI Adjusted
26,587			80.90% Pervious Area
6,275			19.10% Impervious Area
2,290			36.49% Unconnected

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

Subcatchment ExWs_2: Existing Watershed 2



11_Seal_Cove_Pre-dev

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Type III 24-hr 100-YR Rainfall=8.04"

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Summary for Link #1: POA-1

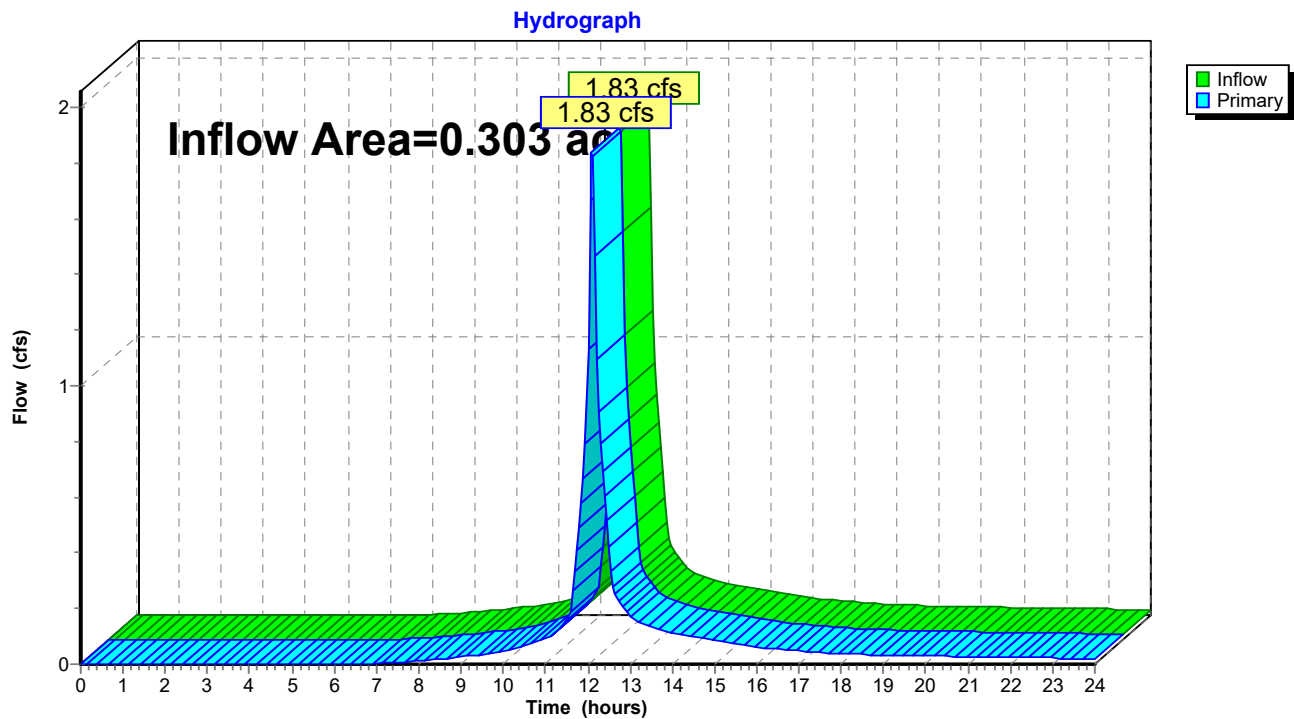
Inflow Area = 0.303 ac, 27.86% Impervious, Inflow Depth > 5.31" for 100-YR event

Inflow = 1.83 cfs @ 12.09 hrs, Volume= 0.134 af

Primary = 1.83 cfs @ 12.09 hrs, Volume= 0.134 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link #1: POA-1



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Type III 24-hr 100-YR Rainfall=8.04"

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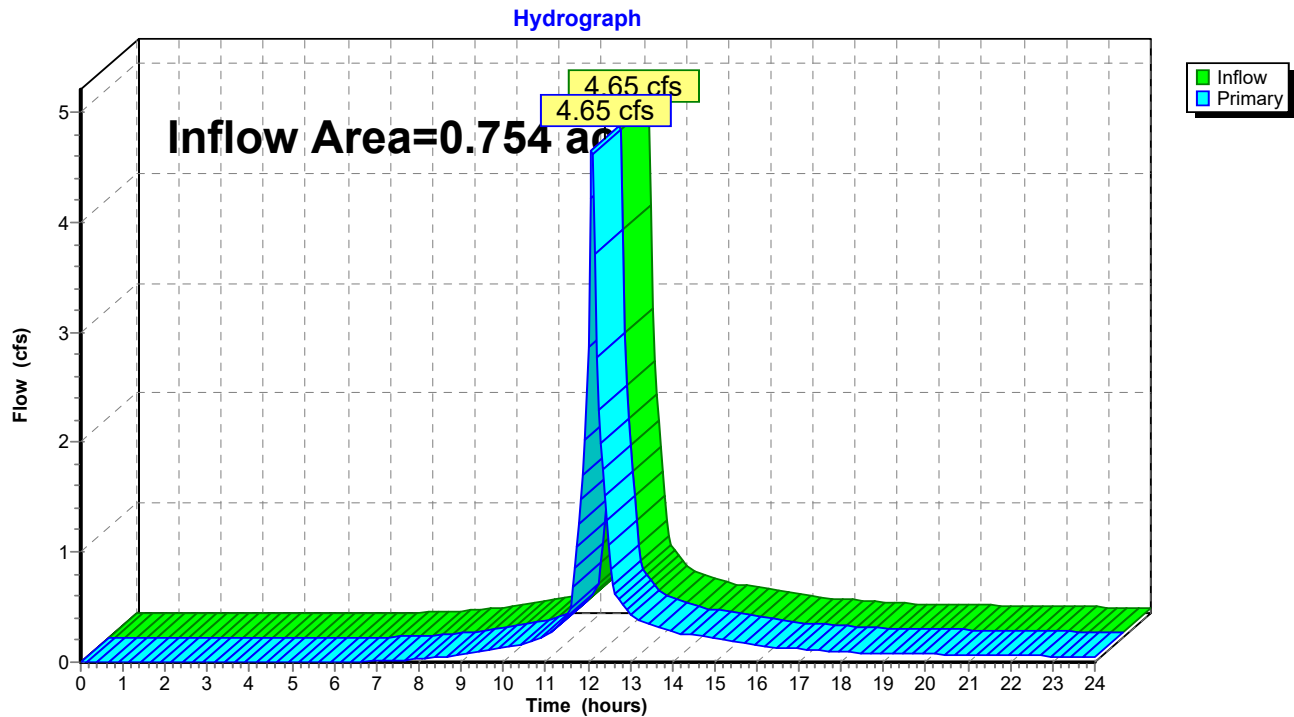
Page 19

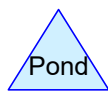
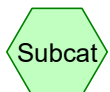
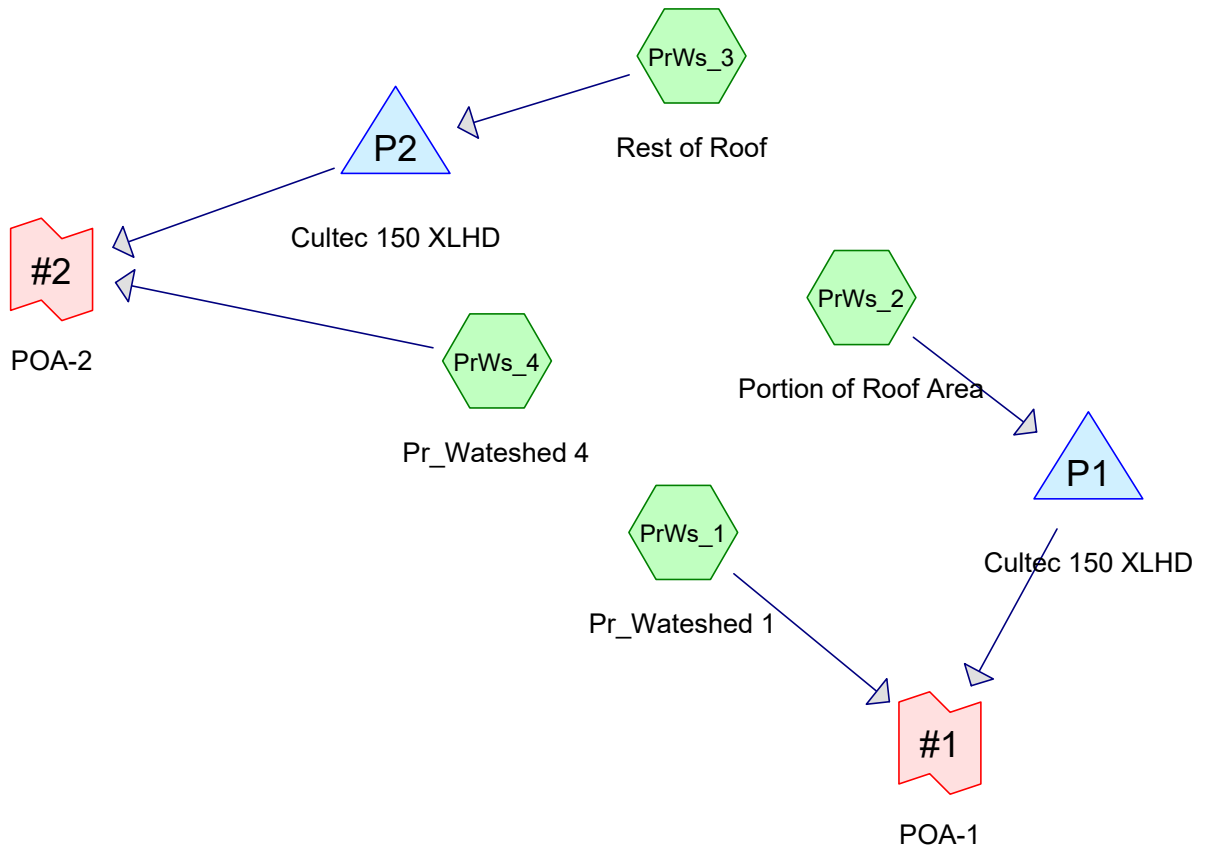
Summary for Link #2: POA-2

Inflow Area = 0.754 ac, 19.10% Impervious, Inflow Depth > 5.42" for 100-YR event
Inflow = 4.65 cfs @ 12.09 hrs, Volume= 0.341 af
Primary = 4.65 cfs @ 12.09 hrs, Volume= 0.341 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link #2: POA-2





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Page 2

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-YR	Type III 24-hr		Default	24.00	1	3.39	2
2	10-YR	Type III 24-hr		Default	24.00	1	5.19	2
3	25-YR	Type III 24-hr		Default	24.00	1	6.31	2
4	100-YR	Type III 24-hr		Default	24.00	1	8.04	2

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.801	74	>75% Grass cover, Good, HSG C (PrWs_1, PrWs_4)
0.120	98	Paved parking, HSG A (PrWs_1, PrWs_4)
0.023	90	Pervious Pavers (PrWs_1, PrWs_4)
0.003	98	Unconnected pavement, HSG C (PrWs_1)
0.113	98	Unconnected roofs, HSG C (PrWs_2, PrWs_3)
1.060	80	TOTAL AREA

11_Seal_Cove_Post-dev

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Type III 24-hr 2-YR Rainfall=3.39"

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Summary for Subcatchment PrWs_1: Pr_Watashed 1

Runoff = 0.45 cfs @ 12.10 hrs, Volume= 0.033 af, Depth= 1.48"
Routed to Link #1 : POA-1

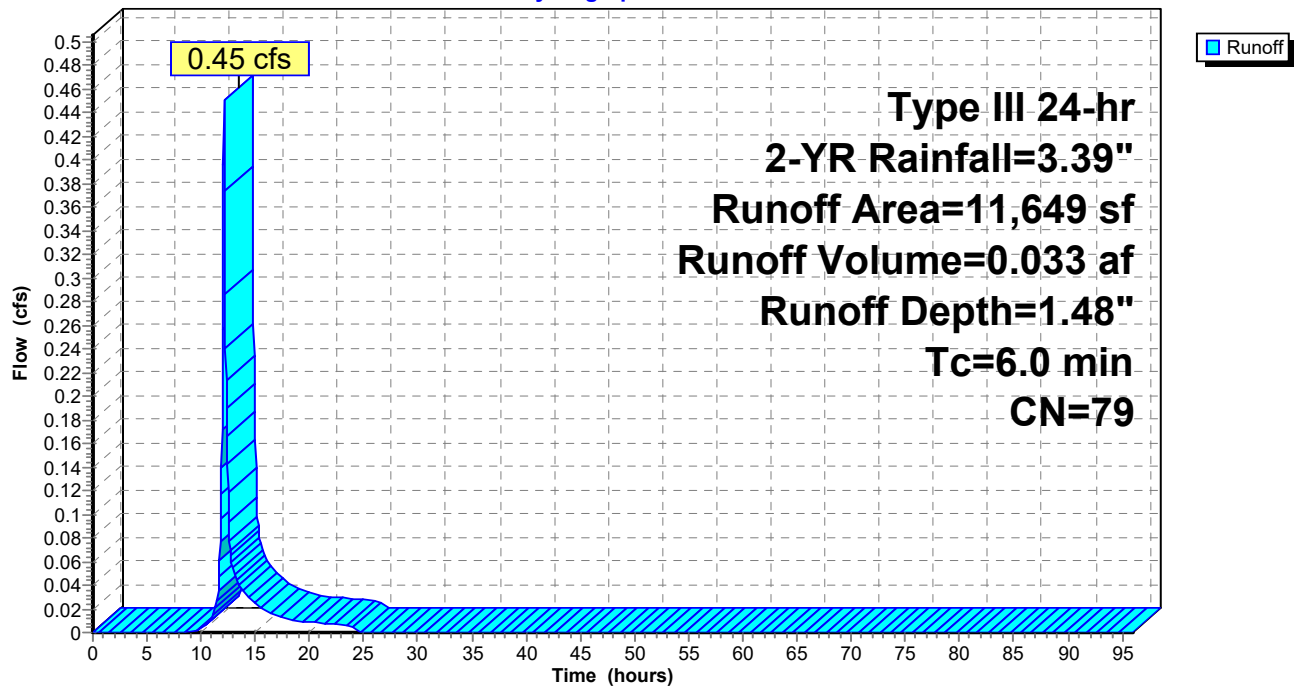
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.39"

Area (sf)	CN	Description
8,841	74	>75% Grass cover, Good, HSG C
2,112	98	Paved parking, HSG A
150	98	Unconnected pavement, HSG C
* 546	90	Pervious Pavers
11,649	79	Weighted Average
9,387		80.58% Pervious Area
2,262		19.42% Impervious Area
150		6.63% Unconnected

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

Subcatchment PrWs_1: Pr_Watashed 1

Hydrograph



11_Seal_Cove_Post-dev

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Type III 24-hr 2-YR Rainfall=3.39"

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Summary for Subcatchment PrWs_2: Portion of Roof Area

Runoff = 0.11 cfs @ 12.09 hrs, Volume= 0.009 af, Depth= 3.16"
Routed to Pond P1 : Cultec 150 XLHD

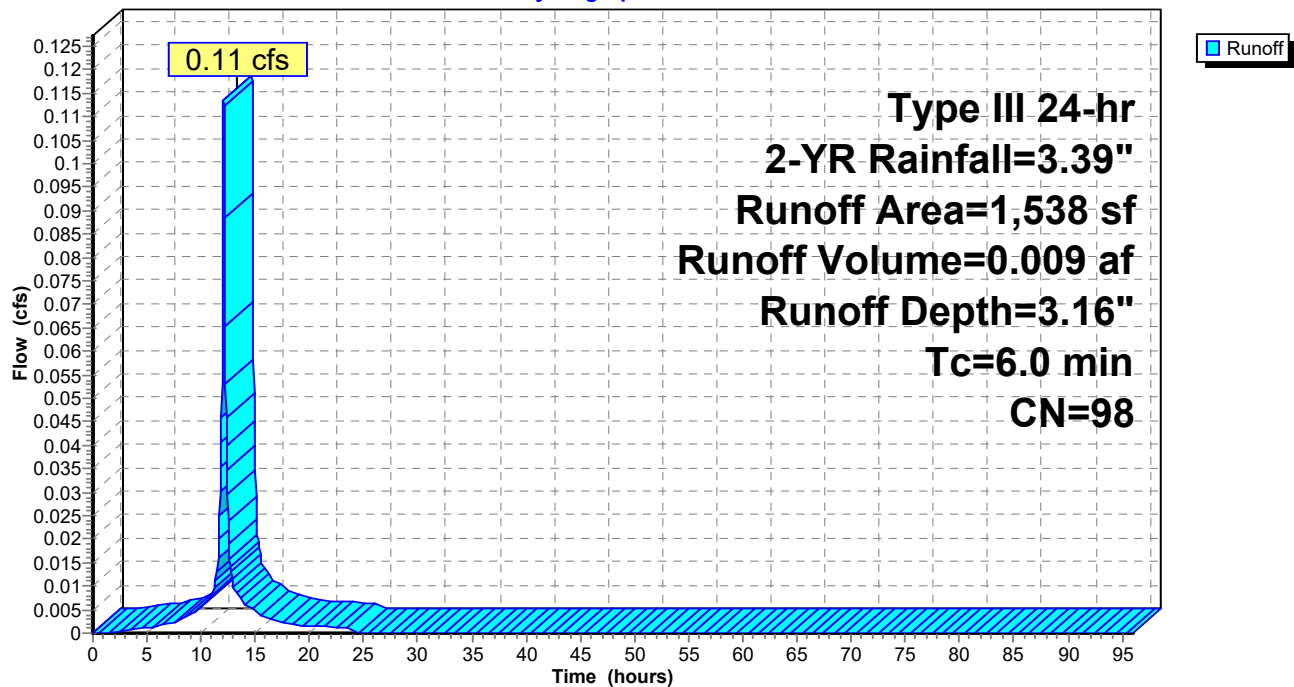
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.39"

Area (sf)	CN	Description
1,538	98	Unconnected roofs, HSG C
1,538		100.00% Impervious Area
1,538		100.00% Unconnected

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

Subcatchment PrWs_2: Portion of Roof Area

Hydrograph



11_Seal_Cove_Post-dev

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Type III 24-hr 2-YR Rainfall=3.39"

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Summary for Subcatchment PrWs_3: Rest of Roof

Runoff = 0.25 cfs @ 12.09 hrs, Volume= 0.020 af, Depth= 3.16"
Routed to Pond P2 : Cultec 150 XLHD

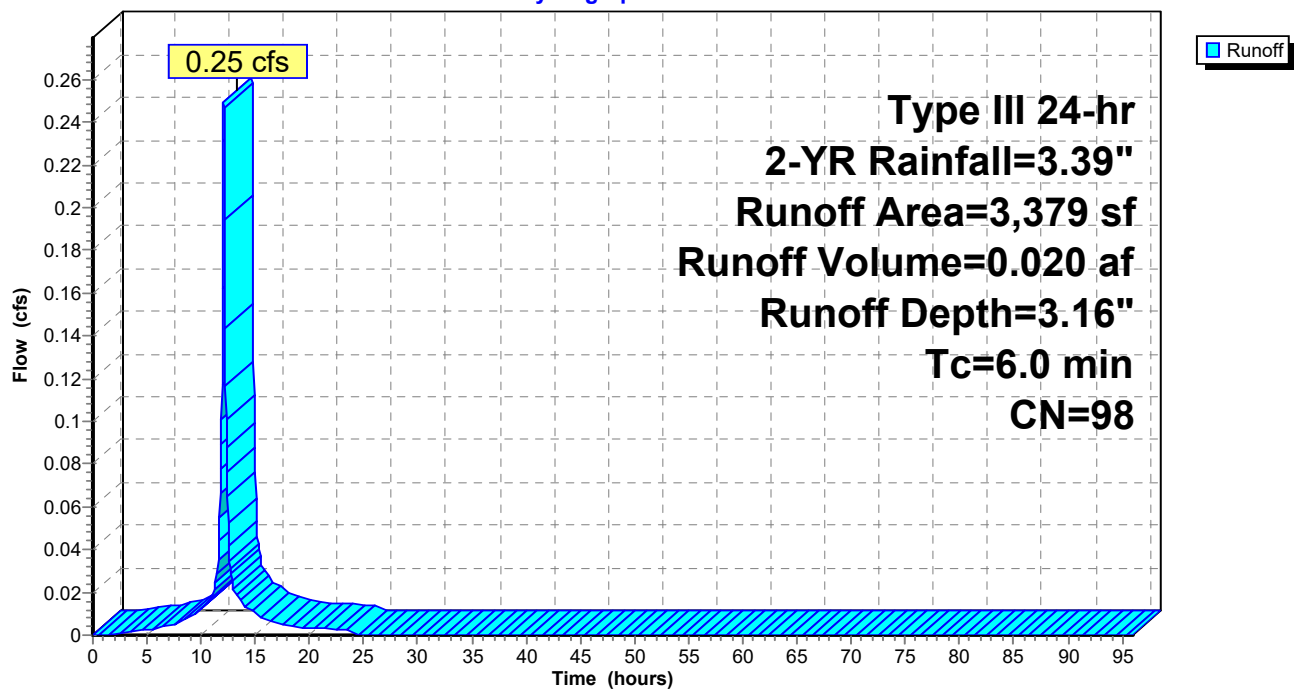
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.39"

Area (sf)	CN	Description
3,379	98	Unconnected roofs, HSG C
3,379		100.00% Impervious Area
3,379		100.00% Unconnected

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

Subcatchment PrWs_3: Rest of Roof

Hydrograph



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Type III 24-hr 2-YR Rainfall=3.39"

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Summary for Subcatchment PrWs_4: Pr_Watashed 4

Runoff = 1.03 cfs @ 12.10 hrs, Volume= 0.076 af, Depth= 1.35"
Routed to Link #2 : POA-2

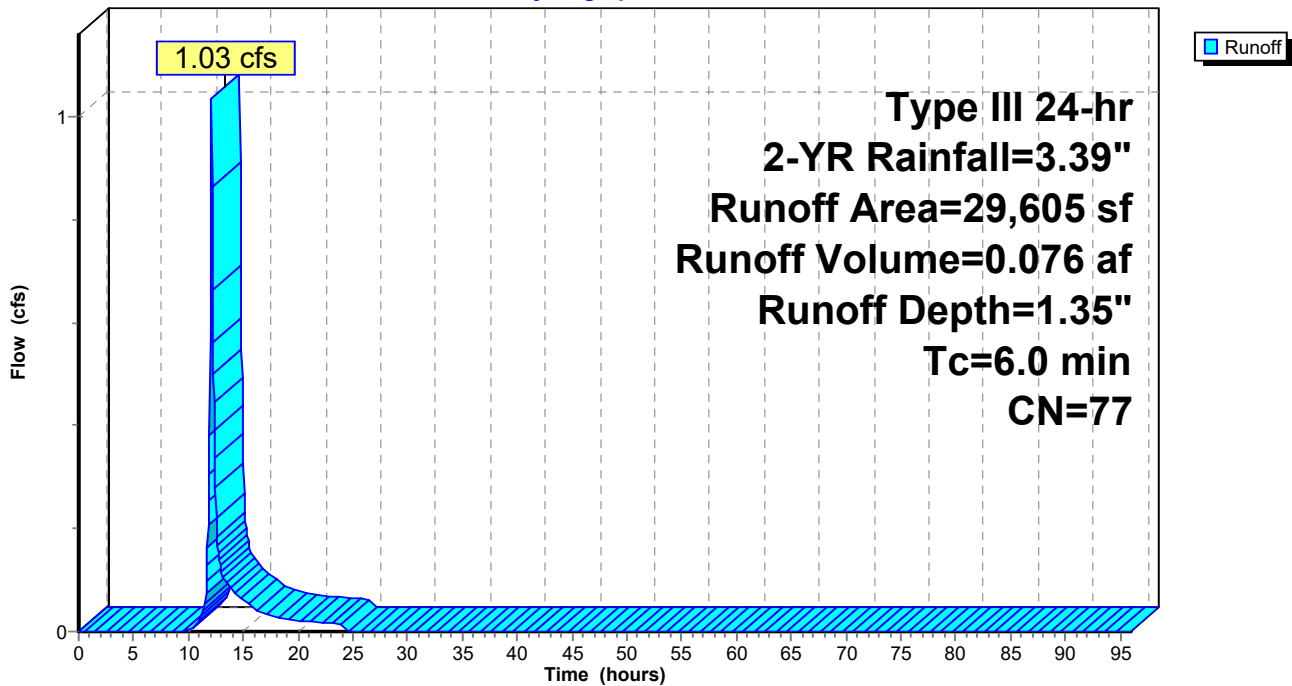
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.39"

Area (sf)	CN	Description
26,056	74	>75% Grass cover, Good, HSG C
3,096	98	Paved parking, HSG A
* 453	90	Pervious Pavers
29,605	77	Weighted Average
26,509		89.54% Pervious Area
3,096		10.46% Impervious Area

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

Subcatchment PrWs_4: Pr_Watashed 4

Hydrograph



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Type III 24-hr 2-YR Rainfall=3.39"

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Summary for Pond P1: Cultec 150 XLHD

Inflow Area = 0.035 ac, 100.00% Impervious, Inflow Depth = 3.16" for 2-YR event
Inflow = 0.11 cfs @ 12.09 hrs, Volume= 0.009 af
Outflow = 0.00 cfs @ 7.80 hrs, Volume= 0.009 af, Atten= 98%, Lag= 0.0 min
Discarded = 0.00 cfs @ 7.80 hrs, Volume= 0.009 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link #1 : POA-1

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 14.83' @ 17.79 hrs Surf.Area= 337 sf Storage= 275 cf

Plug-Flow detention time= 1,149.9 min calculated for 0.009 af (100% of inflow)
Center-of-Mass det. time= 1,150.5 min (1,905.7 - 755.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	13.50'	253 cf	14.50'W x 23.25'L x 2.54'H Field A 857 cf Overall - 225 cf Embedded = 632 cf x 40.0% Voids
#2A	14.00'	225 cf	Cultec R-150XLHD x 8 Inside #1 Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap Row Length Adjustment= +0.75' x 2.65 sf x 4 rows
		478 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	13.50'	0.270 in/hr Exfiltration over Surface area
#2	Primary	16.50'	6.0" Vert. Popup Emitter C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.00 cfs @ 7.80 hrs HW=13.54' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=13.50' (Free Discharge)
↑**2=Popup Emitter** (Controls 0.00 cfs)

11_Seal_Cove_Post-dev

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Type III 24-hr 2-YR Rainfall=3.39"

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Pond P1: Cultec 150 XLHD - Chamber Wizard Field A

Chamber Model = Cultec R-150XLHD (Cultec Recharger®150XLHD)

Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf

Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap

Row Length Adjustment= +0.75' x 2.65 sf x 4 rows

33.0" Wide + 6.0" Spacing = 39.0" C-C Row Spacing

2 Chambers/Row x 10.25' Long +0.75' Row Adjustment = 21.25' Row Length +12.0" End Stone x 2 =
23.25' Base Length

4 Rows x 33.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 14.50' Base Width

6.0" Stone Base + 18.5" Chamber Height + 6.0" Stone Cover = 2.54' Field Height

8 Chambers x 27.2 cf +0.75' Row Adjustment x 2.65 sf x 4 Rows = 225.2 cf Chamber Storage

856.9 cf Field - 225.2 cf Chambers = 631.7 cf Stone x 40.0% Voids = 252.7 cf Stone Storage

Chamber Storage + Stone Storage = 477.8 cf = 0.011 af

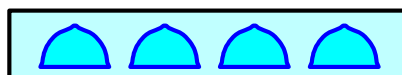
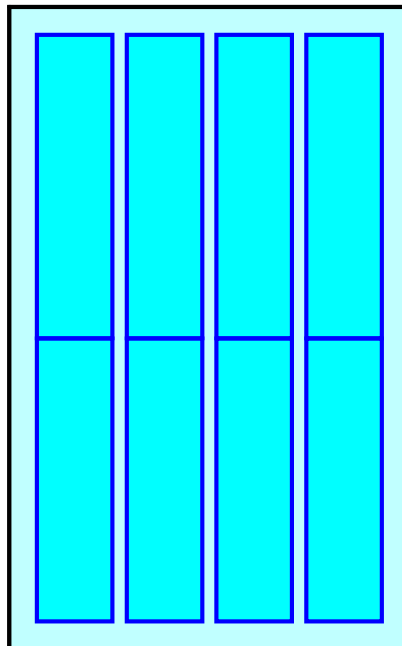
Overall Storage Efficiency = 55.8%

Overall System Size = 23.25' x 14.50' x 2.54'

8 Chambers

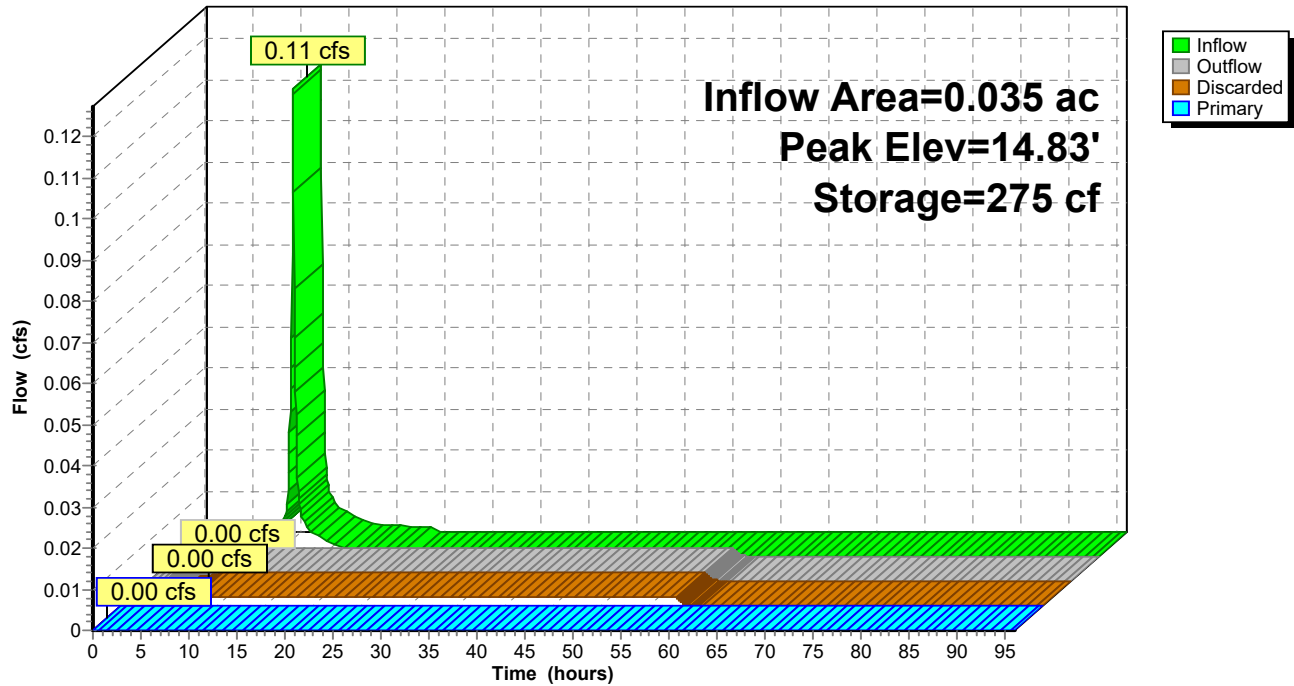
31.7 cy Field

23.4 cy Stone



Pond P1: Cultec 150 XLHD

Hydrograph



11_Seal_Cove_Post-dev

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Type III 24-hr 2-YR Rainfall=3.39"

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Summary for Pond P2: Cultec 150 XLHD

Inflow Area = 0.078 ac, 100.00% Impervious, Inflow Depth = 3.16" for 2-YR event
Inflow = 0.25 cfs @ 12.09 hrs, Volume= 0.020 af
Outflow = 0.00 cfs @ 6.65 hrs, Volume= 0.020 af, Atten= 99%, Lag= 0.0 min
Discarded = 0.00 cfs @ 6.65 hrs, Volume= 0.020 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link #2 : POA-2

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 14.63' @ 20.43 hrs Surf.Area= 534 sf Storage= 657 cf

Plug-Flow detention time= 1,717.5 min calculated for 0.020 af (100% of inflow)
Center-of-Mass det. time= 1,718.4 min (2,473.6 - 755.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	12.50'	407 cf	22.00'W x 24.25'L x 2.54'H Field A 1,356 cf Overall - 338 cf Embedded = 1,018 cf x 40.0% Voids
#2A	13.00'	338 cf	Cultec R-150XLHD x 12 Inside #1 Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap Row Length Adjustment= +0.75' x 2.65 sf x 6 rows
		745 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	12.50'	0.270 in/hr Exfiltration over Surface area
#2	Primary	15.00'	6.0" Vert. Popup Emitter C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.00 cfs @ 6.65 hrs HW=12.53' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=12.50' (Free Discharge)
↑**2=Popup Emitter** (Controls 0.00 cfs)

11_Seal_Cove_Post-dev

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Type III 24-hr 2-YR Rainfall=3.39"

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Pond P2: Cultec 150 XLHD - Chamber Wizard Field A

Chamber Model = Cultec R-150XLHD (Cultec Recharger®150XLHD)

Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf

Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap

Row Length Adjustment= +0.75' x 2.65 sf x 6 rows

33.0" Wide + 6.0" Spacing = 39.0" C-C Row Spacing

2 Chambers/Row x 10.25' Long +0.75' Row Adjustment = 21.25' Row Length +18.0" End Stone x 2 =
24.25' Base Length

6 Rows x 33.0" Wide + 6.0" Spacing x 5 + 18.0" Side Stone x 2 = 22.00' Base Width

6.0" Stone Base + 18.5" Chamber Height + 6.0" Stone Cover = 2.54' Field Height

12 Chambers x 27.2 cf +0.75' Row Adjustment x 2.65 sf x 6 Rows = 337.7 cf Chamber Storage

1,356.0 cf Field - 337.7 cf Chambers = 1,018.2 cf Stone x 40.0% Voids = 407.3 cf Stone Storage

Chamber Storage + Stone Storage = 745.0 cf = 0.017 af

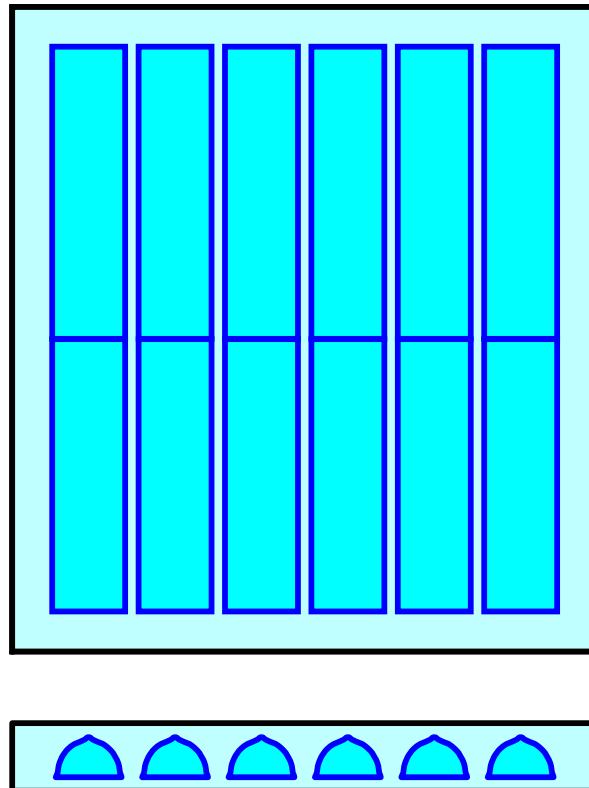
Overall Storage Efficiency = 54.9%

Overall System Size = 24.25' x 22.00' x 2.54'

12 Chambers

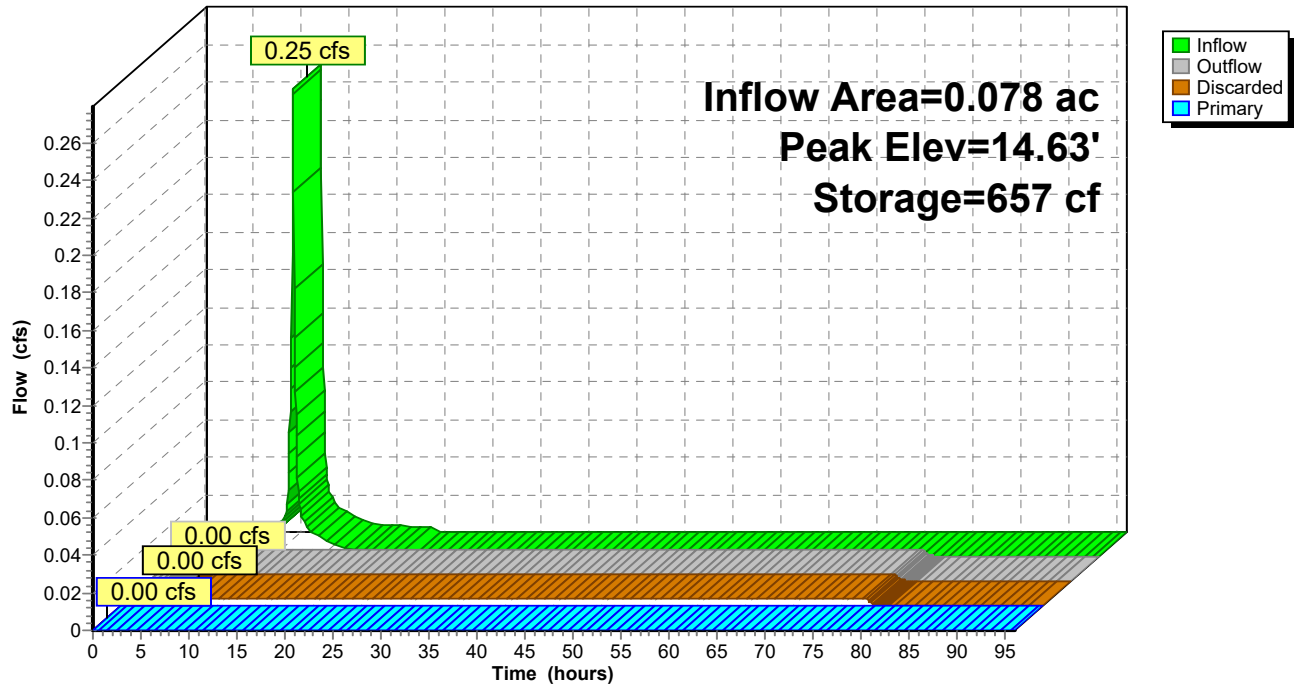
50.2 cy Field

37.7 cy Stone



Pond P2: Cultec 150 XLHD

Hydrograph



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Type III 24-hr 2-YR Rainfall=3.39"

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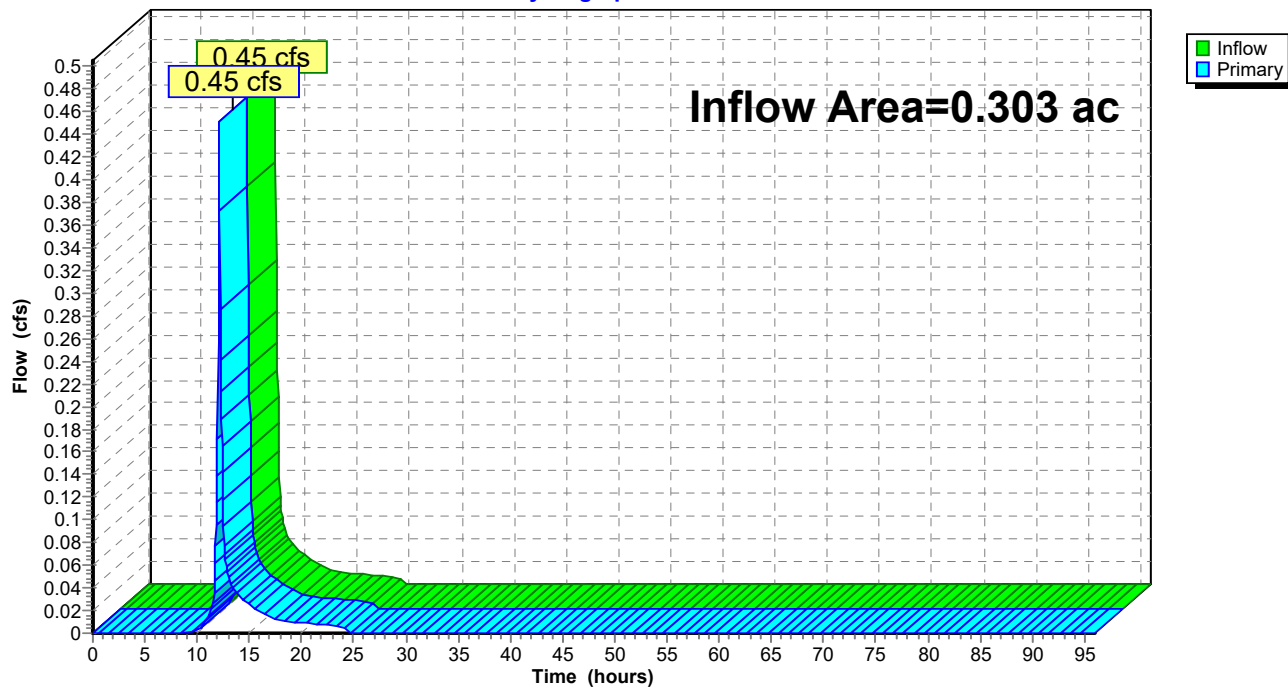
Summary for Link #1: POA-1

Inflow Area = 0.303 ac, 28.82% Impervious, Inflow Depth = 1.31" for 2-YR event
Inflow = 0.45 cfs @ 12.10 hrs, Volume= 0.033 af
Primary = 0.45 cfs @ 12.10 hrs, Volume= 0.033 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link #1: POA-1

Hydrograph



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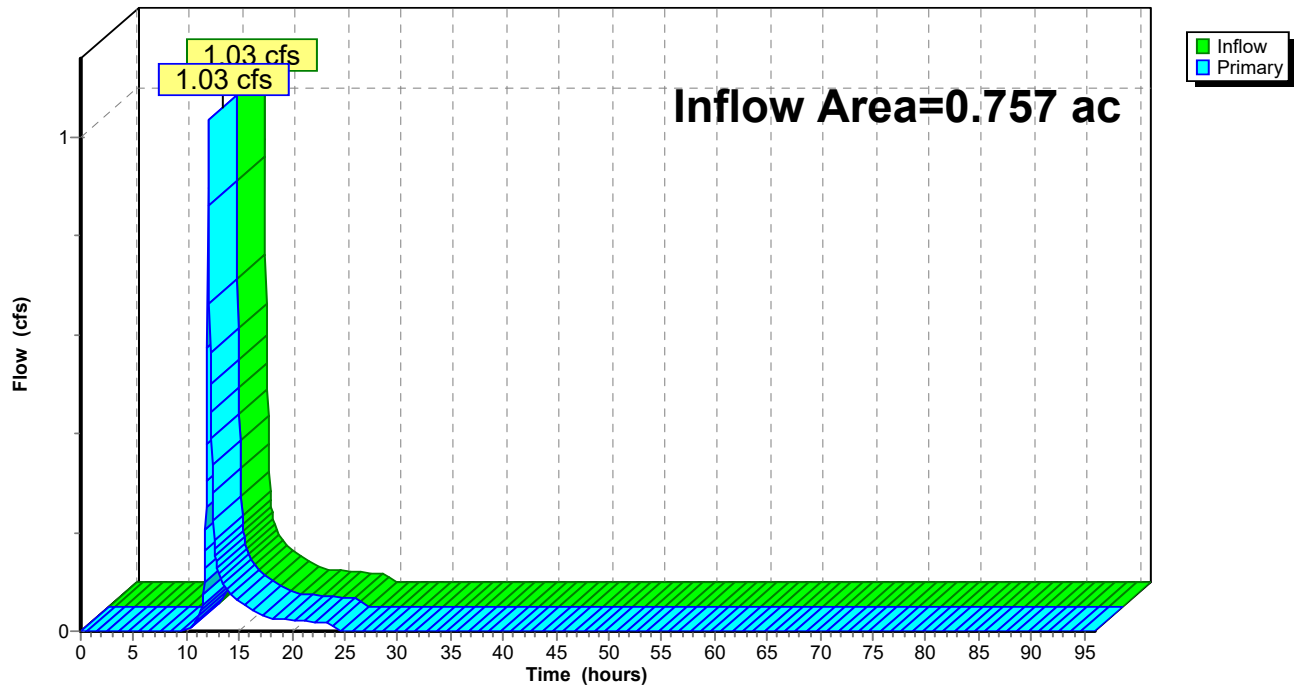
Summary for Link #2: POA-2

Inflow Area = 0.757 ac, 19.63% Impervious, Inflow Depth = 1.21" for 2-YR event
Inflow = 1.03 cfs @ 12.10 hrs, Volume= 0.076 af
Primary = 1.03 cfs @ 12.10 hrs, Volume= 0.076 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link #2: POA-2

Hydrograph



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Type III 24-hr 10-YR Rainfall=5.19"

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Summary for Subcatchment PrWs_1: Pr_Watashed 1

Runoff = 0.91 cfs @ 12.09 hrs, Volume= 0.066 af, Depth= 2.97"
Routed to Link #1 : POA-1

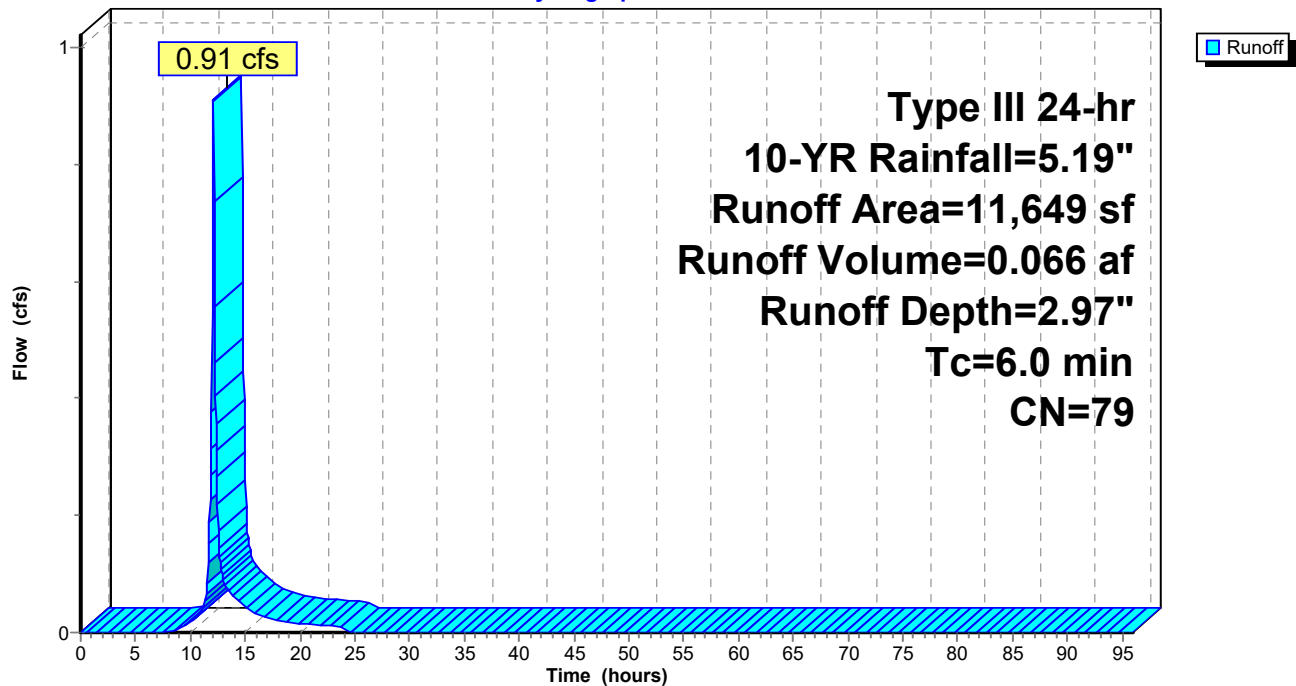
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.19"

Area (sf)	CN	Description
8,841	74	>75% Grass cover, Good, HSG C
2,112	98	Paved parking, HSG A
150	98	Unconnected pavement, HSG C
* 546	90	Pervious Pavers
11,649	79	Weighted Average
9,387		80.58% Pervious Area
2,262		19.42% Impervious Area
150		6.63% Unconnected

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

Subcatchment PrWs_1: Pr_Watashed 1

Hydrograph



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Type III 24-hr 10-YR Rainfall=5.19"

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Summary for Subcatchment PrWs_2: Portion of Roof Area

Runoff = 0.18 cfs @ 12.09 hrs, Volume= 0.015 af, Depth= 4.95"
Routed to Pond P1 : Cultec 150 XLHD

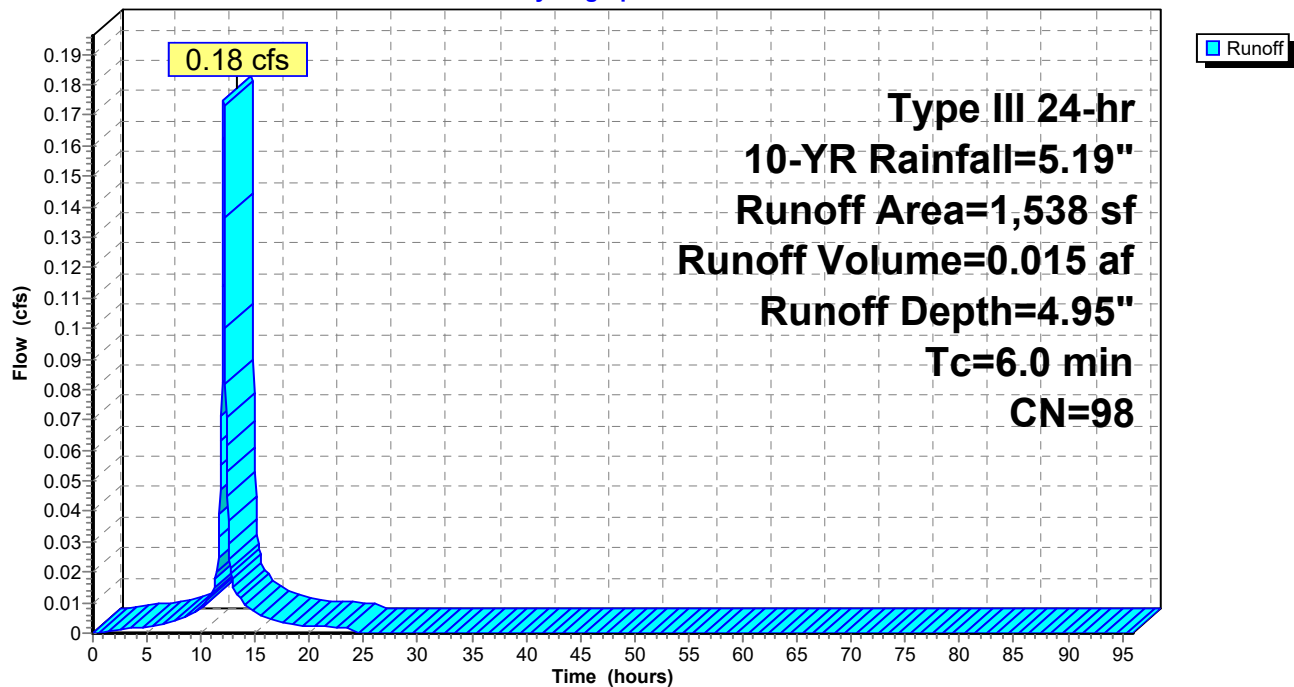
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.19"

Area (sf)	CN	Description
1,538	98	Unconnected roofs, HSG C
1,538		100.00% Impervious Area
1,538		100.00% Unconnected

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

Subcatchment PrWs_2: Portion of Roof Area

Hydrograph



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Type III 24-hr 10-YR Rainfall=5.19"

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Summary for Subcatchment PrWs_3: Rest of Roof

Runoff = 0.38 cfs @ 12.09 hrs, Volume= 0.032 af, Depth= 4.95"
Routed to Pond P2 : Cultec 150 XLHD

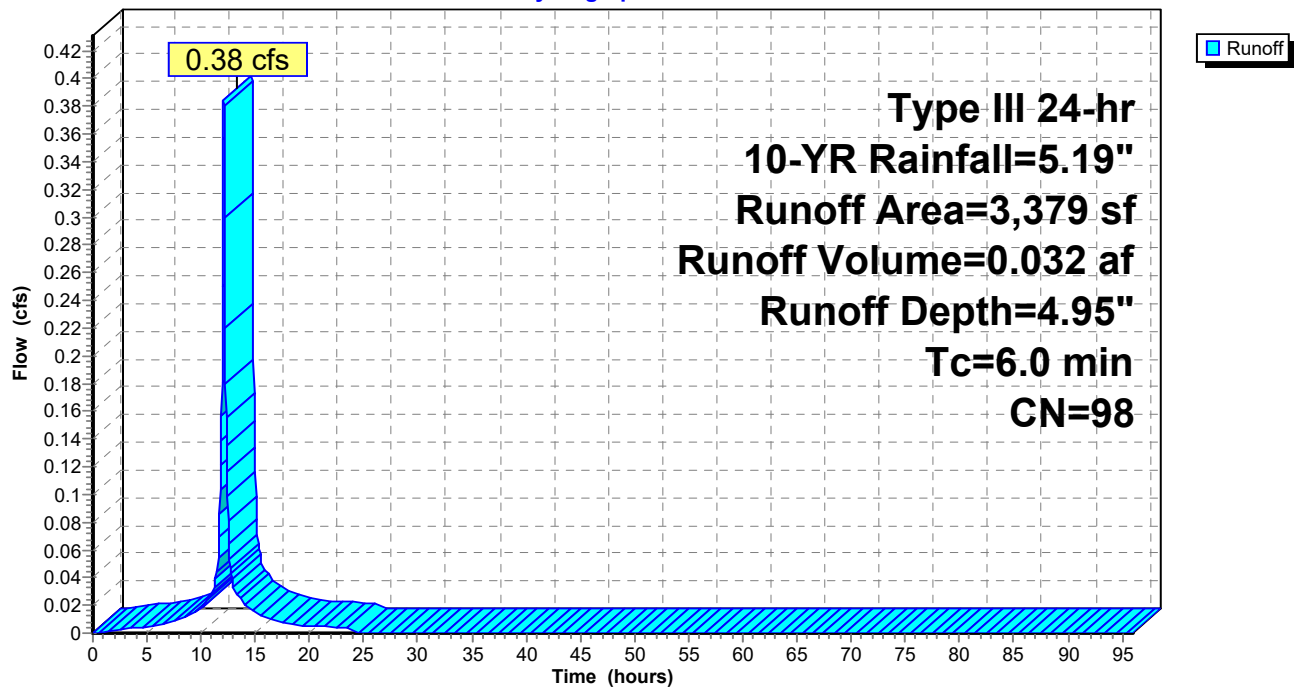
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.19"

Area (sf)	CN	Description
3,379	98	Unconnected roofs, HSG C
3,379		100.00% Impervious Area
3,379		100.00% Unconnected

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

Subcatchment PrWs_3: Rest of Roof

Hydrograph



11_Seal_Cove_Post-dev

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Type III 24-hr 10-YR Rainfall=5.19"

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Summary for Subcatchment PrWs_4: Pr_Watashed 4

Runoff = 2.17 cfs @ 12.09 hrs, Volume= 0.158 af, Depth= 2.78"
Routed to Link #2 : POA-2

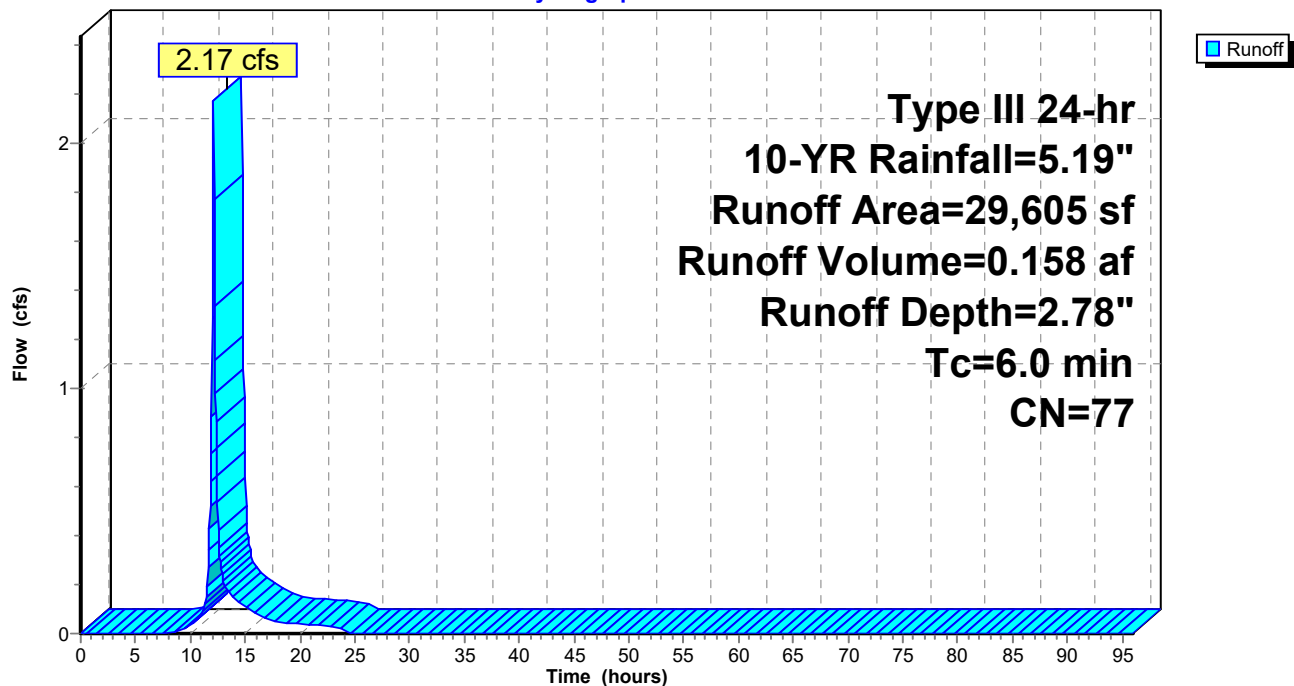
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.19"

Area (sf)	CN	Description
26,056	74	>75% Grass cover, Good, HSG C
3,096	98	Paved parking, HSG A
* 453	90	Pervious Pavers
29,605	77	Weighted Average
26,509		89.54% Pervious Area
3,096		10.46% Impervious Area

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

Subcatchment PrWs_4: Pr_Watashed 4

Hydrograph



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Type III 24-hr 10-YR Rainfall=5.19"

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Summary for Pond P1: Cultec 150 XLHD

Inflow Area = 0.035 ac, 100.00% Impervious, Inflow Depth = 4.95" for 10-YR event
Inflow = 0.18 cfs @ 12.09 hrs, Volume= 0.015 af
Outflow = 0.00 cfs @ 19.40 hrs, Volume= 0.015 af, Atten= 98%, Lag= 438.8 min
Discarded = 0.00 cfs @ 5.65 hrs, Volume= 0.015 af
Primary = 0.00 cfs @ 19.40 hrs, Volume= 0.000 af
Routed to Link #1 : POA-1

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 16.51' @ 19.40 hrs Surf.Area= 337 sf Storage= 478 cf

Plug-Flow detention time= 1,949.8 min calculated for 0.015 af (100% of inflow)

Center-of-Mass det. time= 1,949.7 min (2,697.1 - 747.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	13.50'	253 cf	14.50'W x 23.25'L x 2.54'H Field A 857 cf Overall - 225 cf Embedded = 632 cf x 40.0% Voids
#2A	14.00'	225 cf	Cultec R-150XLHD x 8 Inside #1 Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap Row Length Adjustment= +0.75' x 2.65 sf x 4 rows
		478 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	13.50'	0.270 in/hr Exfiltration over Surface area
#2	Primary	16.50'	6.0" Vert. Popup Emitter C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.00 cfs @ 5.65 hrs HW=13.54' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 19.40 hrs HW=16.51' (Free Discharge)

↑**2=Popup Emitter** (Orifice Controls 0.00 cfs @ 0.37 fps)

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Type III 24-hr 10-YR Rainfall=5.19"

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Pond P1: Cultec 150 XLHD - Chamber Wizard Field A

Chamber Model = Cultec R-150XLHD (Cultec Recharger®150XLHD)

Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf

Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap

Row Length Adjustment= +0.75' x 2.65 sf x 4 rows

33.0" Wide + 6.0" Spacing = 39.0" C-C Row Spacing

2 Chambers/Row x 10.25' Long +0.75' Row Adjustment = 21.25' Row Length +12.0" End Stone x 2 =
23.25' Base Length

4 Rows x 33.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 14.50' Base Width

6.0" Stone Base + 18.5" Chamber Height + 6.0" Stone Cover = 2.54' Field Height

8 Chambers x 27.2 cf +0.75' Row Adjustment x 2.65 sf x 4 Rows = 225.2 cf Chamber Storage

856.9 cf Field - 225.2 cf Chambers = 631.7 cf Stone x 40.0% Voids = 252.7 cf Stone Storage

Chamber Storage + Stone Storage = 477.8 cf = 0.011 af

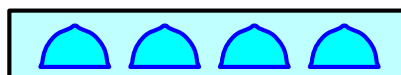
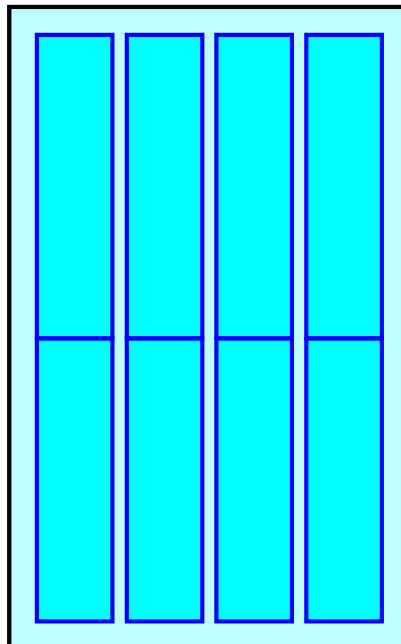
Overall Storage Efficiency = 55.8%

Overall System Size = 23.25' x 14.50' x 2.54'

8 Chambers

31.7 cy Field

23.4 cy Stone



11_Seal_Cove_Post-dev

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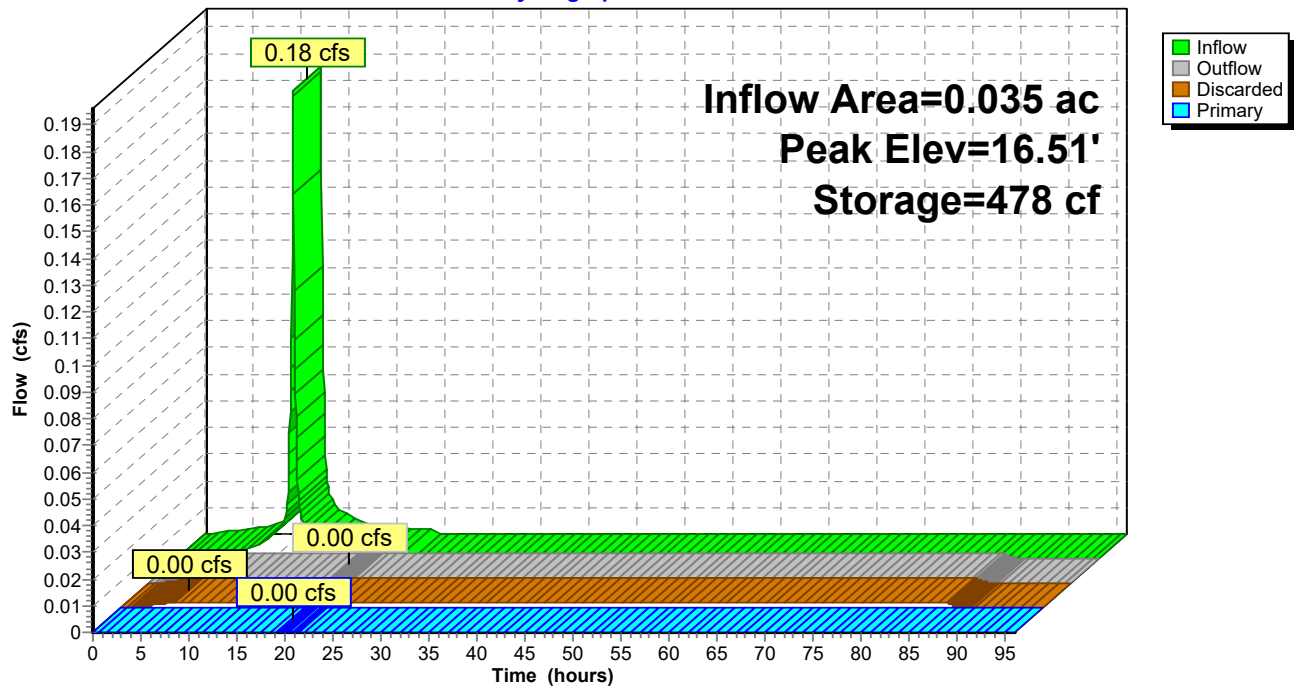
Type III 24-hr 10-YR Rainfall=5.19"

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Pond P1: Cultec 150 XLHD

Hydrograph



11_Seal_Cove_Post-dev

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Type III 24-hr 10-YR Rainfall=5.19"

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Summary for Pond P2: Cultec 150 XLHD

Inflow Area = 0.078 ac, 100.00% Impervious, Inflow Depth = 4.95" for 10-YR event
Inflow = 0.38 cfs @ 12.09 hrs, Volume= 0.032 af
Outflow = 0.19 cfs @ 12.36 hrs, Volume= 0.032 af, Atten= 51%, Lag= 16.1 min
Discarded = 0.00 cfs @ 4.20 hrs, Volume= 0.023 af
Primary = 0.18 cfs @ 12.36 hrs, Volume= 0.009 af
Routed to Link #2 : POA-2

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 15.27' @ 12.36 hrs Surf.Area= 534 sf Storage= 745 cf

Plug-Flow detention time= 1,388.9 min calculated for 0.032 af (100% of inflow)

Center-of-Mass det. time= 1,388.8 min (2,136.2 - 747.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	12.50'	407 cf	22.00'W x 24.25'L x 2.54'H Field A 1,356 cf Overall - 338 cf Embedded = 1,018 cf x 40.0% Voids
#2A	13.00'	338 cf	Cultec R-150XLHD x 12 Inside #1 Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap Row Length Adjustment= +0.75' x 2.65 sf x 6 rows
		745 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	12.50'	0.270 in/hr Exfiltration over Surface area
#2	Primary	15.00'	6.0" Vert. Popup Emitter C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.00 cfs @ 4.20 hrs HW=12.53' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.17 cfs @ 12.36 hrs HW=15.25' (Free Discharge)

↑**2=Popup Emitter** (Orifice Controls 0.17 cfs @ 1.70 fps)

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Type III 24-hr 10-YR Rainfall=5.19"

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Pond P2: Cultec 150 XLHD - Chamber Wizard Field A

Chamber Model = Cultec R-150XLHD (Cultec Recharger®150XLHD)

Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf

Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap

Row Length Adjustment= +0.75' x 2.65 sf x 6 rows

33.0" Wide + 6.0" Spacing = 39.0" C-C Row Spacing

2 Chambers/Row x 10.25' Long +0.75' Row Adjustment = 21.25' Row Length +18.0" End Stone x 2 = 24.25' Base Length

6 Rows x 33.0" Wide + 6.0" Spacing x 5 + 18.0" Side Stone x 2 = 22.00' Base Width

6.0" Stone Base + 18.5" Chamber Height + 6.0" Stone Cover = 2.54' Field Height

12 Chambers x 27.2 cf +0.75' Row Adjustment x 2.65 sf x 6 Rows = 337.7 cf Chamber Storage

1,356.0 cf Field - 337.7 cf Chambers = 1,018.2 cf Stone x 40.0% Voids = 407.3 cf Stone Storage

Chamber Storage + Stone Storage = 745.0 cf = 0.017 af

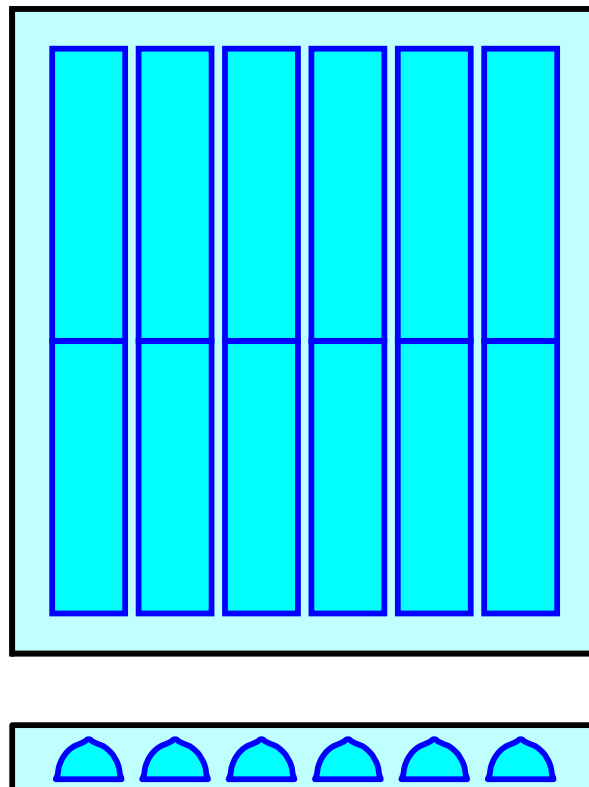
Overall Storage Efficiency = 54.9%

Overall System Size = 24.25' x 22.00' x 2.54'

12 Chambers

50.2 cy Field

37.7 cy Stone



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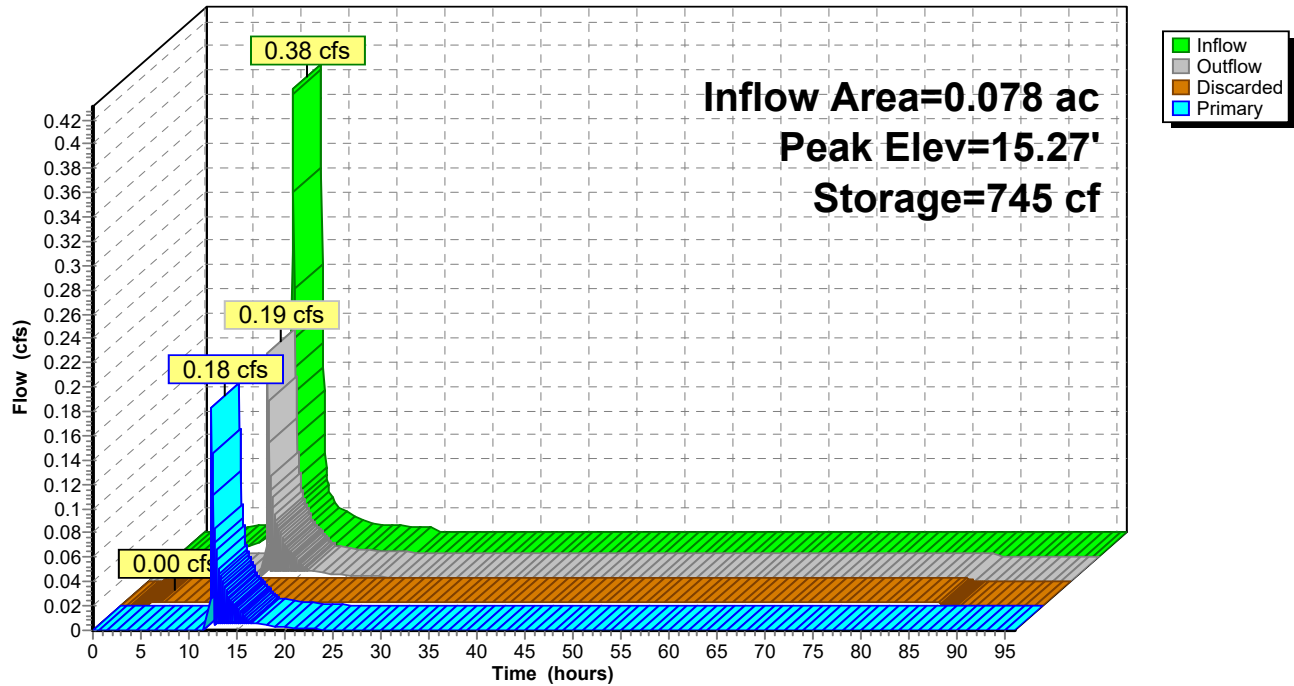
Type III 24-hr 10-YR Rainfall=5.19"

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Pond P2: Cultec 150 XLHD

Hydrograph



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Summary for Link #1: POA-1

Inflow Area = 0.303 ac, 28.82% Impervious, Inflow Depth = 2.62" for 10-YR event

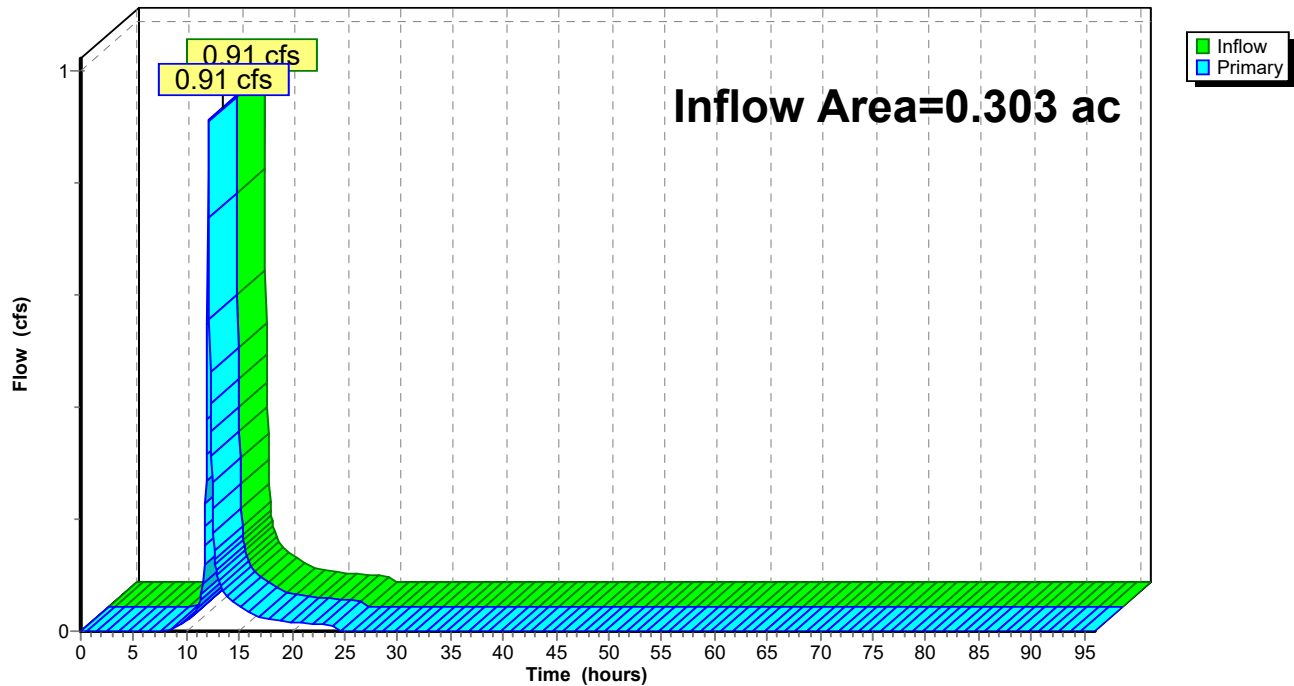
Inflow = 0.91 cfs @ 12.09 hrs, Volume= 0.066 af

Primary = 0.91 cfs @ 12.09 hrs, Volume= 0.066 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link #1: POA-1

Hydrograph



11_Seal_Cove_Post-dev

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Type III 24-hr 10-YR Rainfall=5.19"

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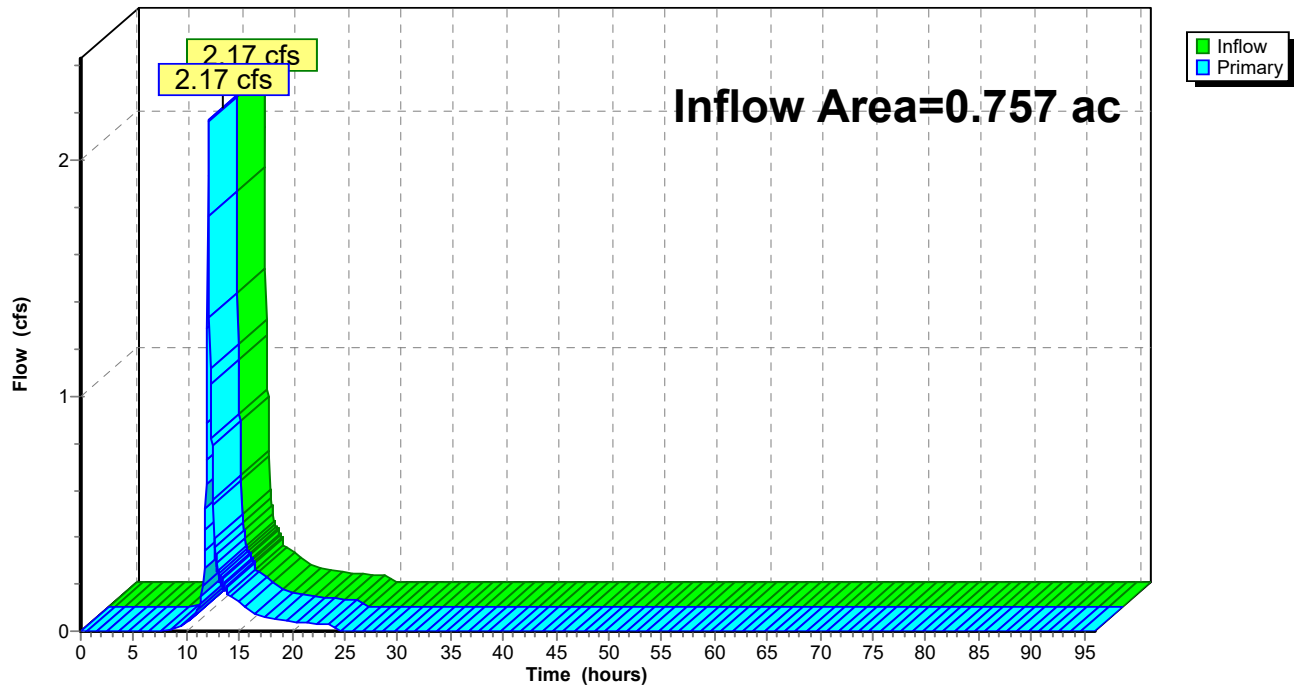
Summary for Link #2: POA-2

Inflow Area = 0.757 ac, 19.63% Impervious, Inflow Depth = 2.64" for 10-YR event
Inflow = 2.17 cfs @ 12.09 hrs, Volume= 0.167 af
Primary = 2.17 cfs @ 12.09 hrs, Volume= 0.167 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link #2: POA-2

Hydrograph



11_Seal_Cove_Post-dev

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Type III 24-hr 25-YR Rainfall=6.31"

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Summary for Subcatchment PrWs_1: Pr_Watashed 1

Runoff = 1.21 cfs @ 12.09 hrs, Volume= 0.088 af, Depth= 3.96"
Routed to Link #1 : POA-1

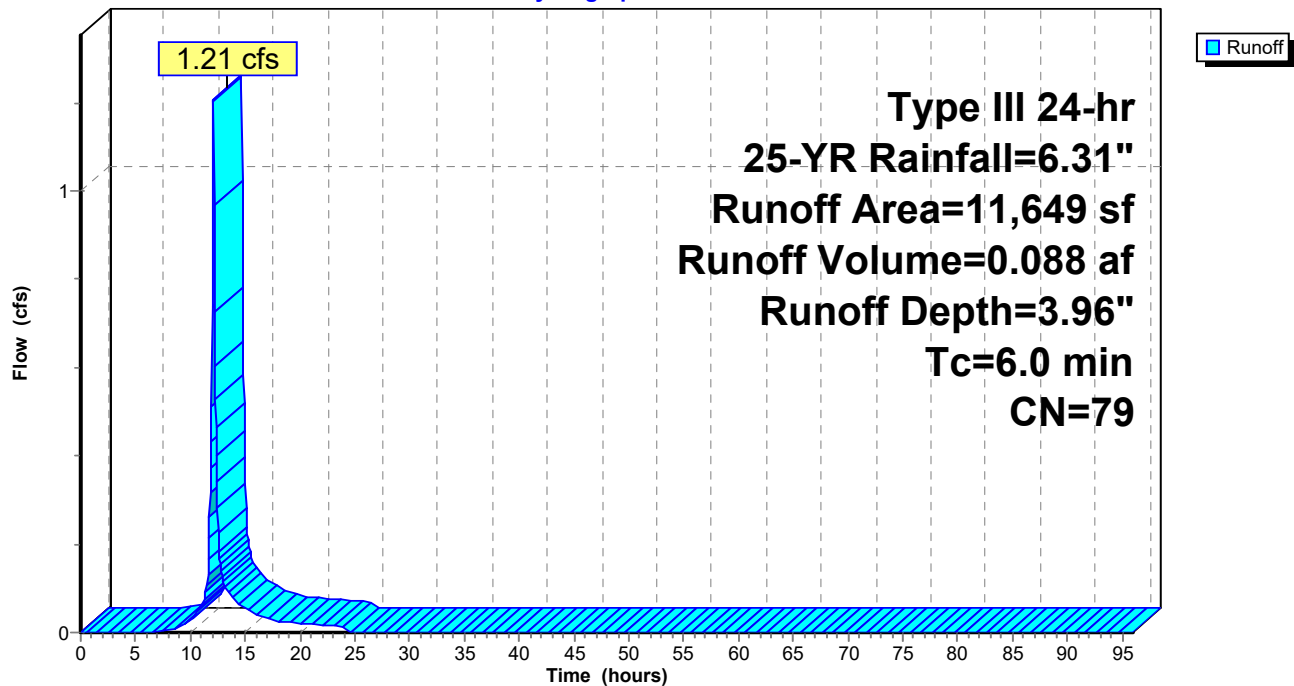
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.31"

Area (sf)	CN	Description
8,841	74	>75% Grass cover, Good, HSG C
2,112	98	Paved parking, HSG A
150	98	Unconnected pavement, HSG C
* 546	90	Pervious Pavers
11,649	79	Weighted Average
9,387		80.58% Pervious Area
2,262		19.42% Impervious Area
150		6.63% Unconnected

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

Subcatchment PrWs_1: Pr_Watashed 1

Hydrograph



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Type III 24-hr 25-YR Rainfall=6.31"

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Summary for Subcatchment PrWs_2: Portion of Roof Area

Runoff = 0.21 cfs @ 12.09 hrs, Volume= 0.018 af, Depth= 6.07"
Routed to Pond P1 : Cultec 150 XLHD

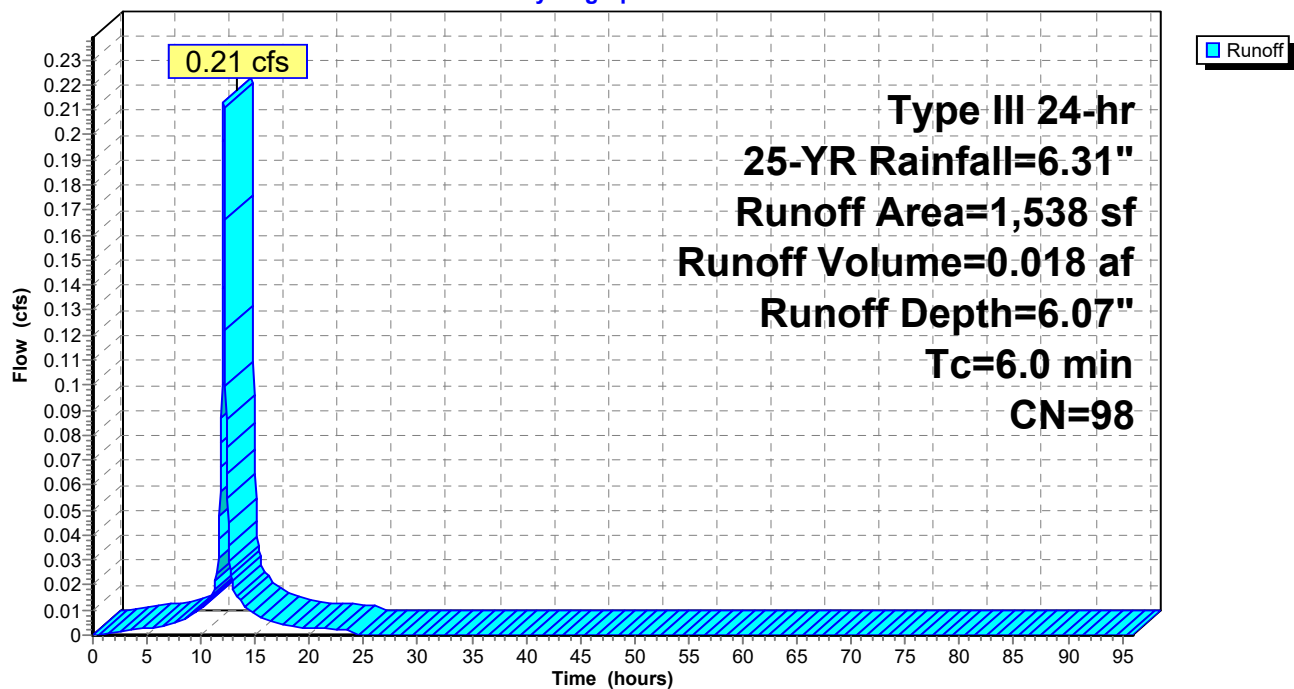
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.31"

Area (sf)	CN	Description
1,538	98	Unconnected roofs, HSG C
1,538		100.00% Impervious Area
1,538		100.00% Unconnected

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

Subcatchment PrWs_2: Portion of Roof Area

Hydrograph



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Type III 24-hr 25-YR Rainfall=6.31"

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Summary for Subcatchment PrWs_3: Rest of Roof

Runoff = 0.47 cfs @ 12.09 hrs, Volume= 0.039 af, Depth= 6.07"
Routed to Pond P2 : Cultec 150 XLHD

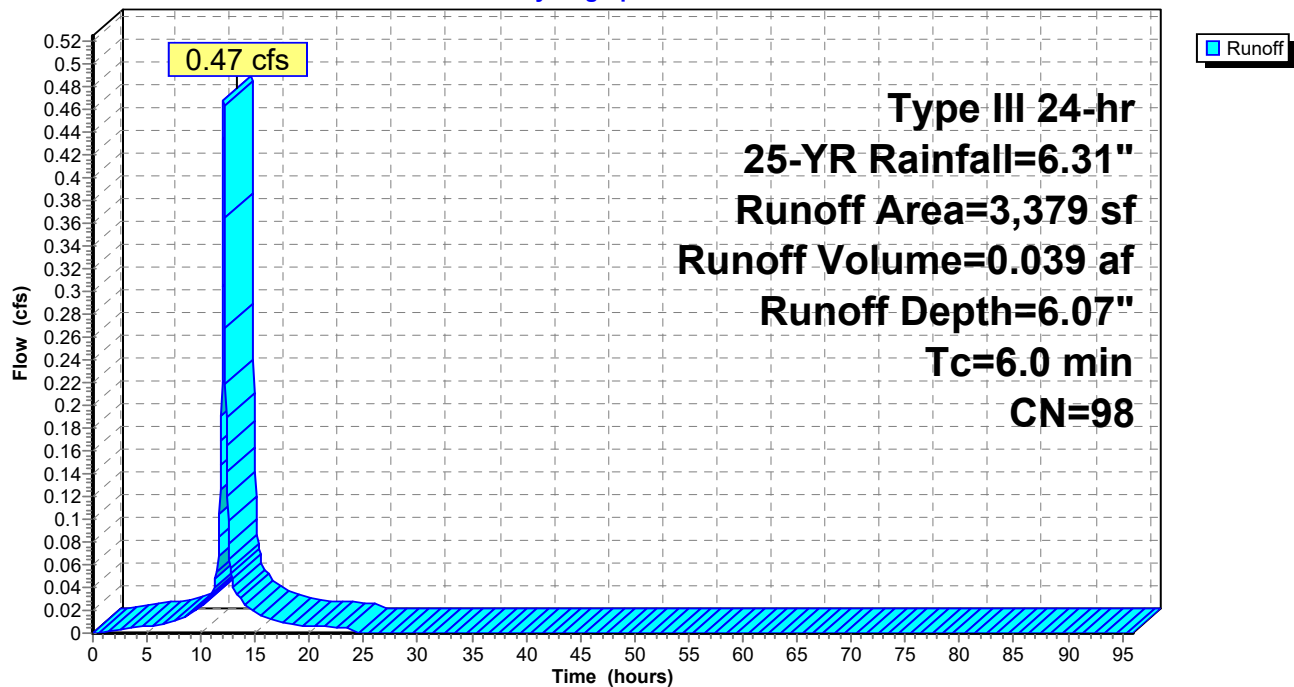
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.31"

Area (sf)	CN	Description
3,379	98	Unconnected roofs, HSG C
3,379		100.00% Impervious Area
3,379		100.00% Unconnected

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

Subcatchment PrWs_3: Rest of Roof

Hydrograph



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Type III 24-hr 25-YR Rainfall=6.31"

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Summary for Subcatchment PrWs_4: Pr_Watashed 4

Runoff = 2.93 cfs @ 12.09 hrs, Volume= 0.212 af, Depth= 3.75"
Routed to Link #2 : POA-2

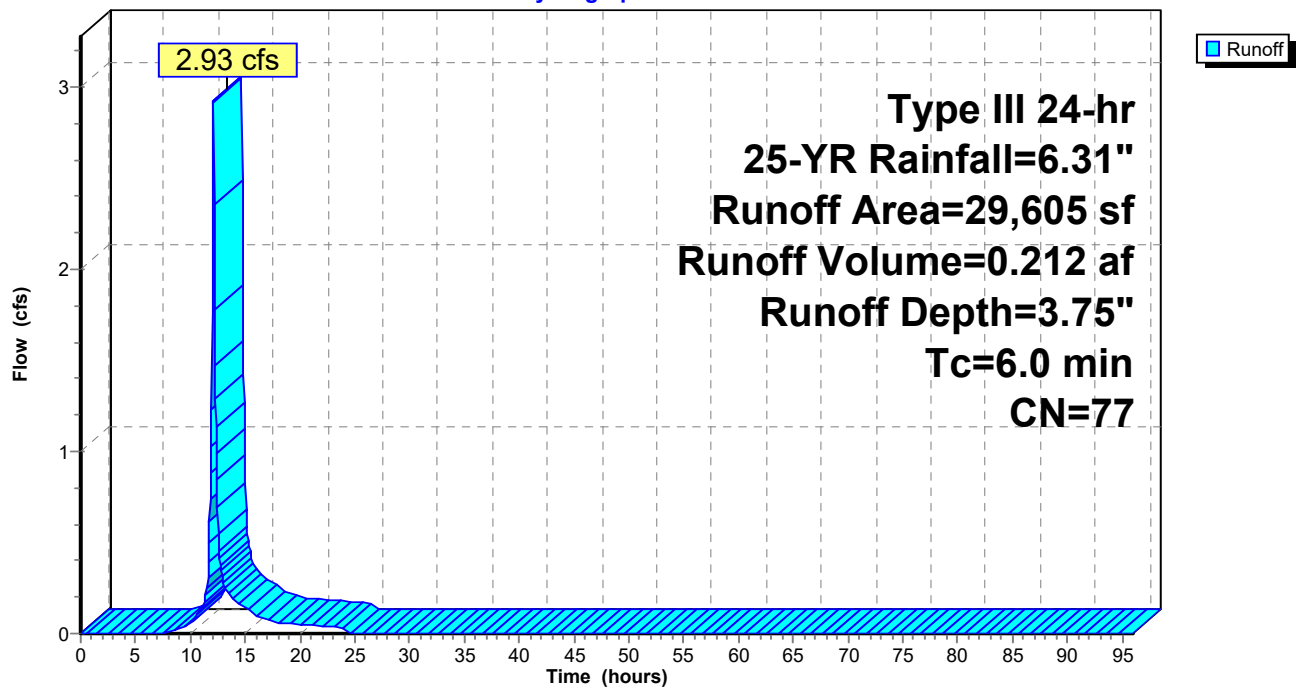
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.31"

Area (sf)	CN	Description
26,056	74	>75% Grass cover, Good, HSG C
3,096	98	Paved parking, HSG A
* 453	90	Pervious Pavers
29,605	77	Weighted Average
26,509		89.54% Pervious Area
3,096		10.46% Impervious Area

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

Subcatchment PrWs_4: Pr_Watashed 4

Hydrograph



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Type III 24-hr 25-YR Rainfall=6.31"

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Summary for Pond P1: Cultec 150 XLHD

Inflow Area = 0.035 ac, 100.00% Impervious, Inflow Depth = 6.07" for 25-YR event
Inflow = 0.21 cfs @ 12.09 hrs, Volume= 0.018 af
Outflow = 0.04 cfs @ 12.85 hrs, Volume= 0.018 af, Atten= 84%, Lag= 45.8 min
Discarded = 0.00 cfs @ 4.45 hrs, Volume= 0.015 af
Primary = 0.03 cfs @ 12.85 hrs, Volume= 0.003 af
Routed to Link #1 : POA-1

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 16.60' @ 12.85 hrs Surf.Area= 337 sf Storage= 478 cf

Plug-Flow detention time= 1,627.3 min calculated for 0.018 af (100% of inflow)

Center-of-Mass det. time= 1,628.4 min (2,372.8 - 744.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	13.50'	253 cf	14.50'W x 23.25'L x 2.54'H Field A 857 cf Overall - 225 cf Embedded = 632 cf x 40.0% Voids
#2A	14.00'	225 cf	Cultec R-150XLHD x 8 Inside #1 Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap Row Length Adjustment= +0.75' x 2.65 sf x 4 rows
		478 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	13.50'	0.270 in/hr Exfiltration over Surface area
#2	Primary	16.50'	6.0" Vert. Popup Emitter C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.00 cfs @ 4.45 hrs HW=13.54' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.03 cfs @ 12.85 hrs HW=16.60' (Free Discharge)

↑**2=Popup Emitter** (Orifice Controls 0.03 cfs @ 1.09 fps)

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Type III 24-hr 25-YR Rainfall=6.31"

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Pond P1: Cultec 150 XLHD - Chamber Wizard Field A

Chamber Model = Cultec R-150XLHD (Cultec Recharger®150XLHD)

Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf

Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap

Row Length Adjustment= +0.75' x 2.65 sf x 4 rows

33.0" Wide + 6.0" Spacing = 39.0" C-C Row Spacing

2 Chambers/Row x 10.25' Long +0.75' Row Adjustment = 21.25' Row Length +12.0" End Stone x 2 =
23.25' Base Length

4 Rows x 33.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 14.50' Base Width

6.0" Stone Base + 18.5" Chamber Height + 6.0" Stone Cover = 2.54' Field Height

8 Chambers x 27.2 cf +0.75' Row Adjustment x 2.65 sf x 4 Rows = 225.2 cf Chamber Storage

856.9 cf Field - 225.2 cf Chambers = 631.7 cf Stone x 40.0% Voids = 252.7 cf Stone Storage

Chamber Storage + Stone Storage = 477.8 cf = 0.011 af

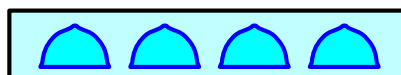
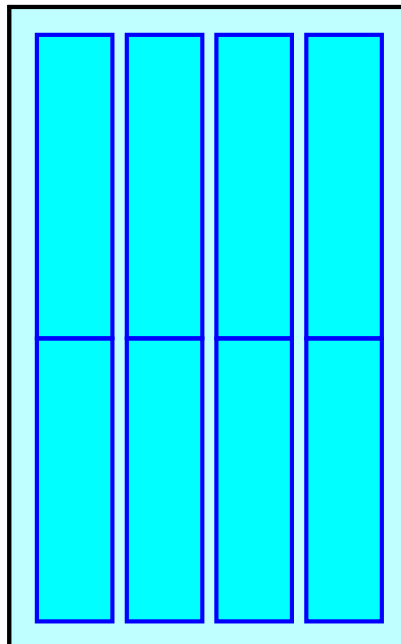
Overall Storage Efficiency = 55.8%

Overall System Size = 23.25' x 14.50' x 2.54'

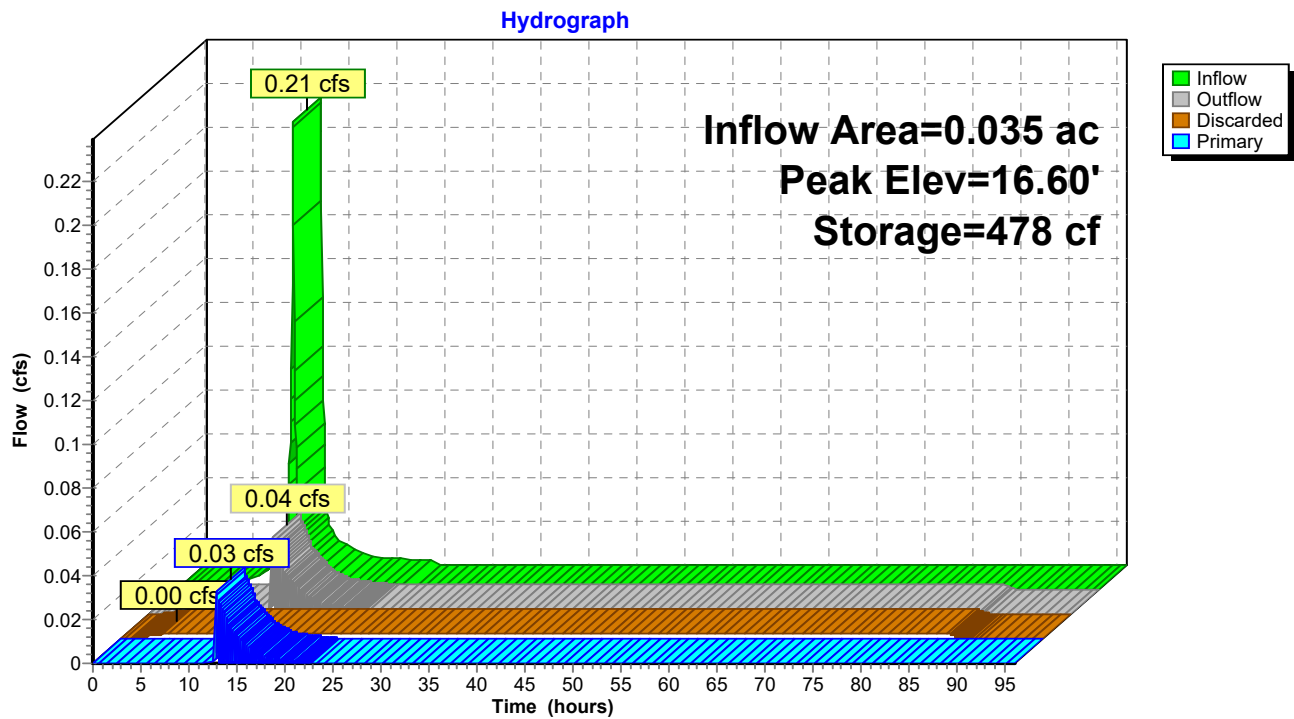
8 Chambers

31.7 cy Field

23.4 cy Stone



Pond P1: Cultec 150 XLHD



11_Seal_Cove_Post-dev

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Type III 24-hr 25-YR Rainfall=6.31"

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Summary for Pond P2: Cultec 150 XLHD

Inflow Area = 0.078 ac, 100.00% Impervious, Inflow Depth = 6.07" for 25-YR event
Inflow = 0.47 cfs @ 12.09 hrs, Volume= 0.039 af
Outflow = 0.52 cfs @ 12.15 hrs, Volume= 0.039 af, Atten= 0%, Lag= 4.0 min
Discarded = 0.00 cfs @ 3.30 hrs, Volume= 0.023 af
Primary = 0.51 cfs @ 12.15 hrs, Volume= 0.016 af
Routed to Link #2 : POA-2

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 15.55' @ 12.16 hrs Surf.Area= 534 sf Storage= 745 cf

Plug-Flow detention time= 1,146.4 min calculated for 0.039 af (100% of inflow)

Center-of-Mass det. time= 1,147.8 min (1,892.2 - 744.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	12.50'	407 cf	22.00'W x 24.25'L x 2.54'H Field A 1,356 cf Overall - 338 cf Embedded = 1,018 cf x 40.0% Voids
#2A	13.00'	338 cf	Cultec R-150XLHD x 12 Inside #1 Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap Row Length Adjustment= +0.75' x 2.65 sf x 6 rows
		745 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	12.50'	0.270 in/hr Exfiltration over Surface area
#2	Primary	15.00'	6.0" Vert. Popup Emitter C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.00 cfs @ 3.30 hrs HW=12.53' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.49 cfs @ 12.15 hrs HW=15.52' (Free Discharge)

↑**2=Popup Emitter** (Orifice Controls 0.49 cfs @ 2.51 fps)

11_Seal_Cove_Post-dev

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Type III 24-hr 25-YR Rainfall=6.31"

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Pond P2: Cultec 150 XLHD - Chamber Wizard Field A

Chamber Model = Cultec R-150XLHD (Cultec Recharger®150XLHD)

Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf

Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap

Row Length Adjustment= +0.75' x 2.65 sf x 6 rows

33.0" Wide + 6.0" Spacing = 39.0" C-C Row Spacing

2 Chambers/Row x 10.25' Long +0.75' Row Adjustment = 21.25' Row Length +18.0" End Stone x 2 = 24.25' Base Length

6 Rows x 33.0" Wide + 6.0" Spacing x 5 + 18.0" Side Stone x 2 = 22.00' Base Width

6.0" Stone Base + 18.5" Chamber Height + 6.0" Stone Cover = 2.54' Field Height

12 Chambers x 27.2 cf +0.75' Row Adjustment x 2.65 sf x 6 Rows = 337.7 cf Chamber Storage

1,356.0 cf Field - 337.7 cf Chambers = 1,018.2 cf Stone x 40.0% Voids = 407.3 cf Stone Storage

Chamber Storage + Stone Storage = 745.0 cf = 0.017 af

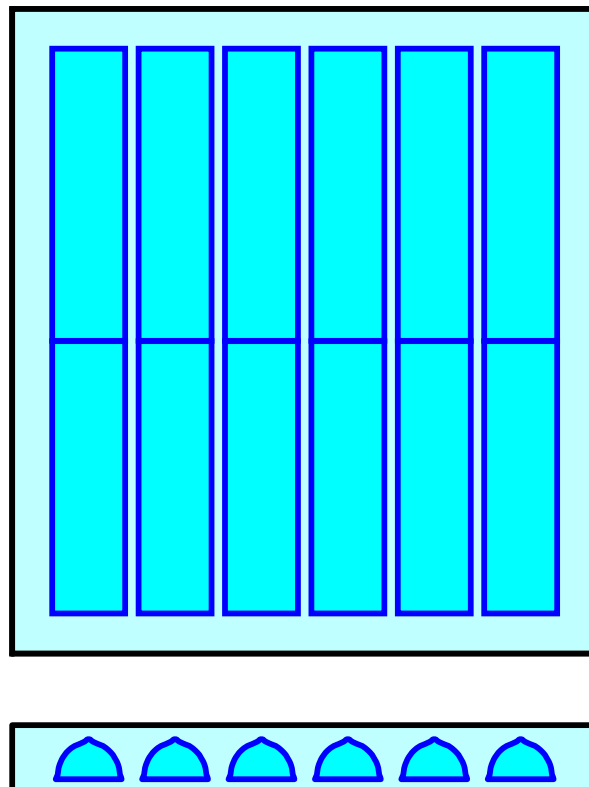
Overall Storage Efficiency = 54.9%

Overall System Size = 24.25' x 22.00' x 2.54'

12 Chambers

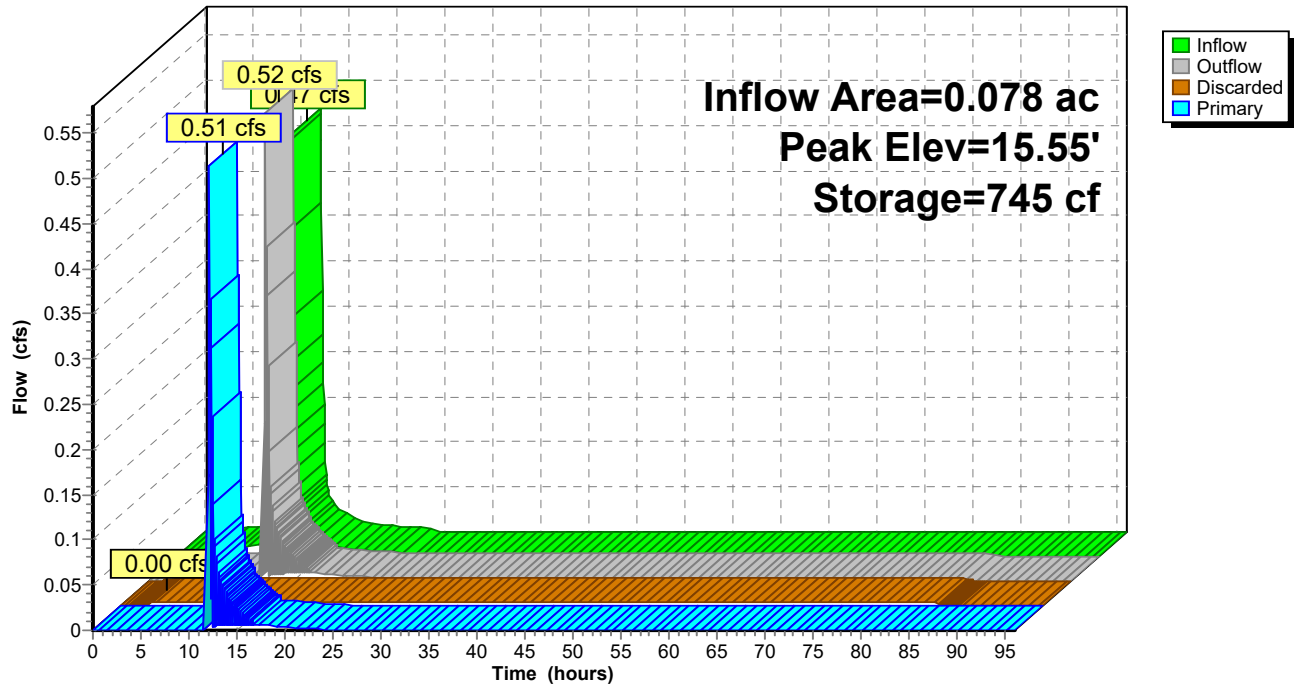
50.2 cy Field

37.7 cy Stone



Pond P2: Cultec 150 XLHD

Hydrograph



11_Seal_Cove_Post-dev

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Type III 24-hr 25-YR Rainfall=6.31"

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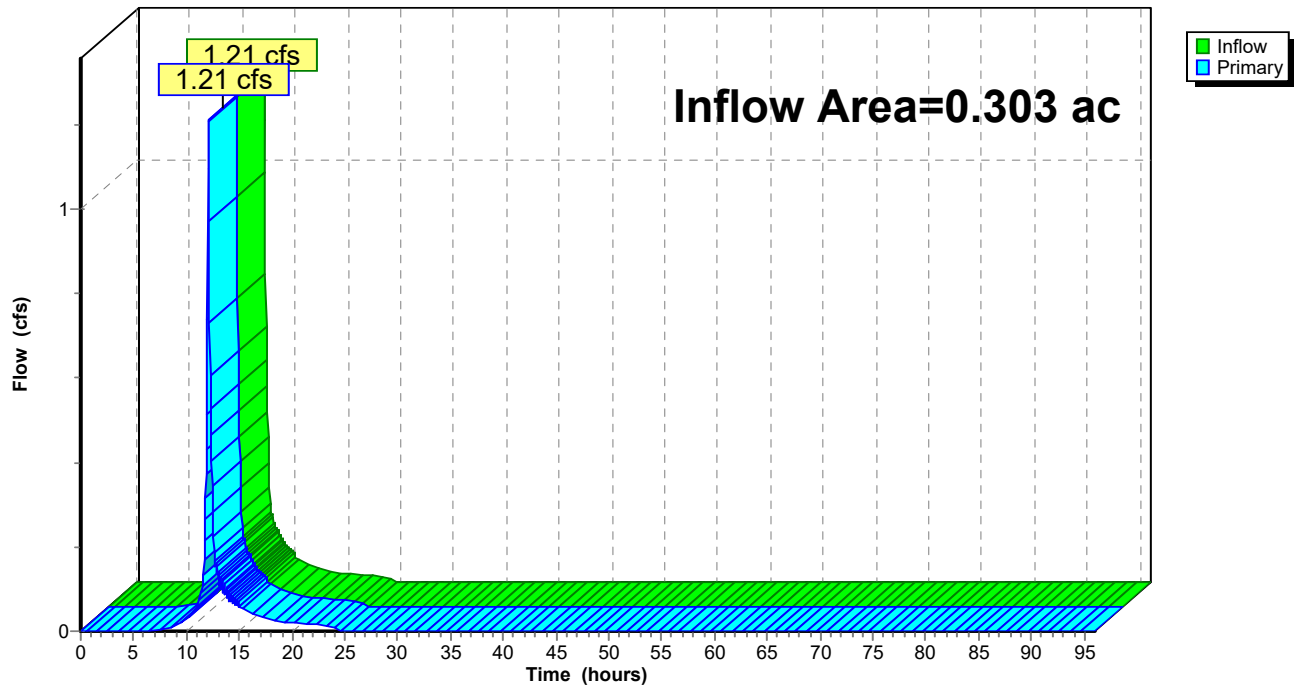
Summary for Link #1: POA-1

Inflow Area = 0.303 ac, 28.82% Impervious, Inflow Depth = 3.62" for 25-YR event
Inflow = 1.21 cfs @ 12.09 hrs, Volume= 0.091 af
Primary = 1.21 cfs @ 12.09 hrs, Volume= 0.091 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link #1: POA-1

Hydrograph



11_Seal_Cove_Post-dev

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Type III 24-hr 25-YR Rainfall=6.31"

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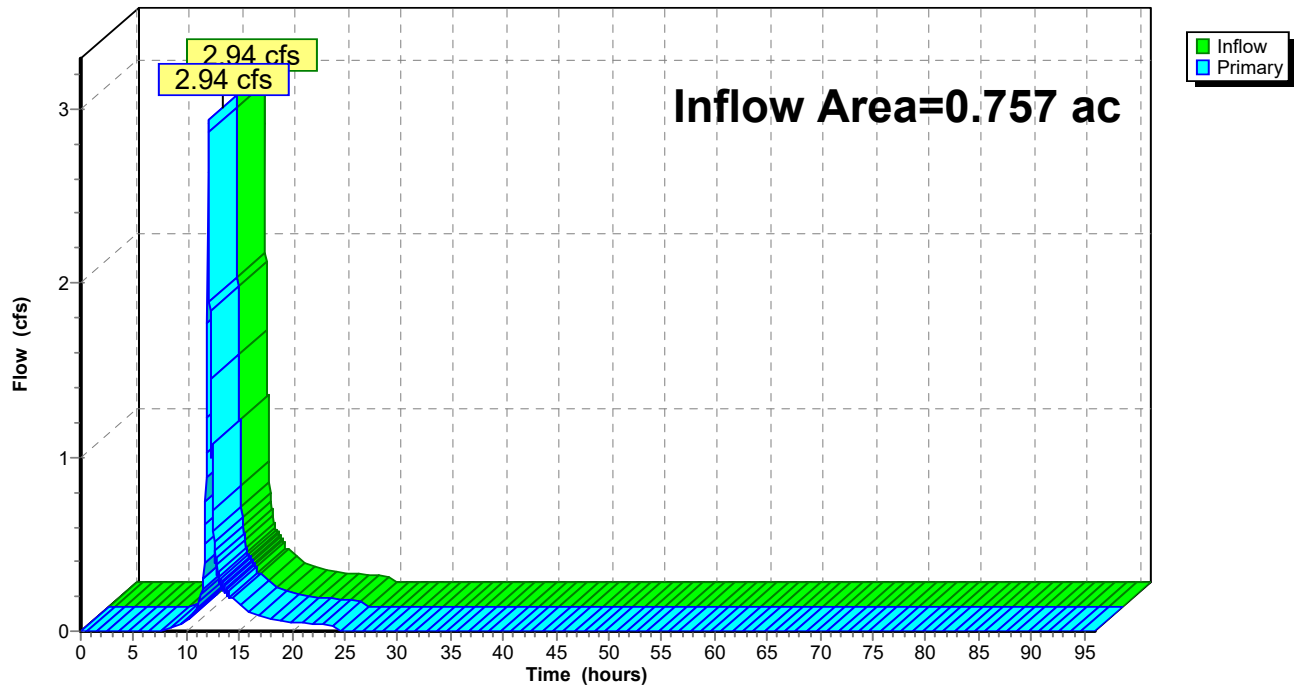
Summary for Link #2: POA-2

Inflow Area = 0.757 ac, 19.63% Impervious, Inflow Depth = 3.62" for 25-YR event
Inflow = 2.94 cfs @ 12.12 hrs, Volume= 0.229 af
Primary = 2.94 cfs @ 12.12 hrs, Volume= 0.229 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link #2: POA-2

Hydrograph



11_Seal_Cove_Post-dev

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Type III 24-hr 100-YR Rainfall=8.04"

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Summary for Subcatchment PrWs_1: Pr_Watashed 1

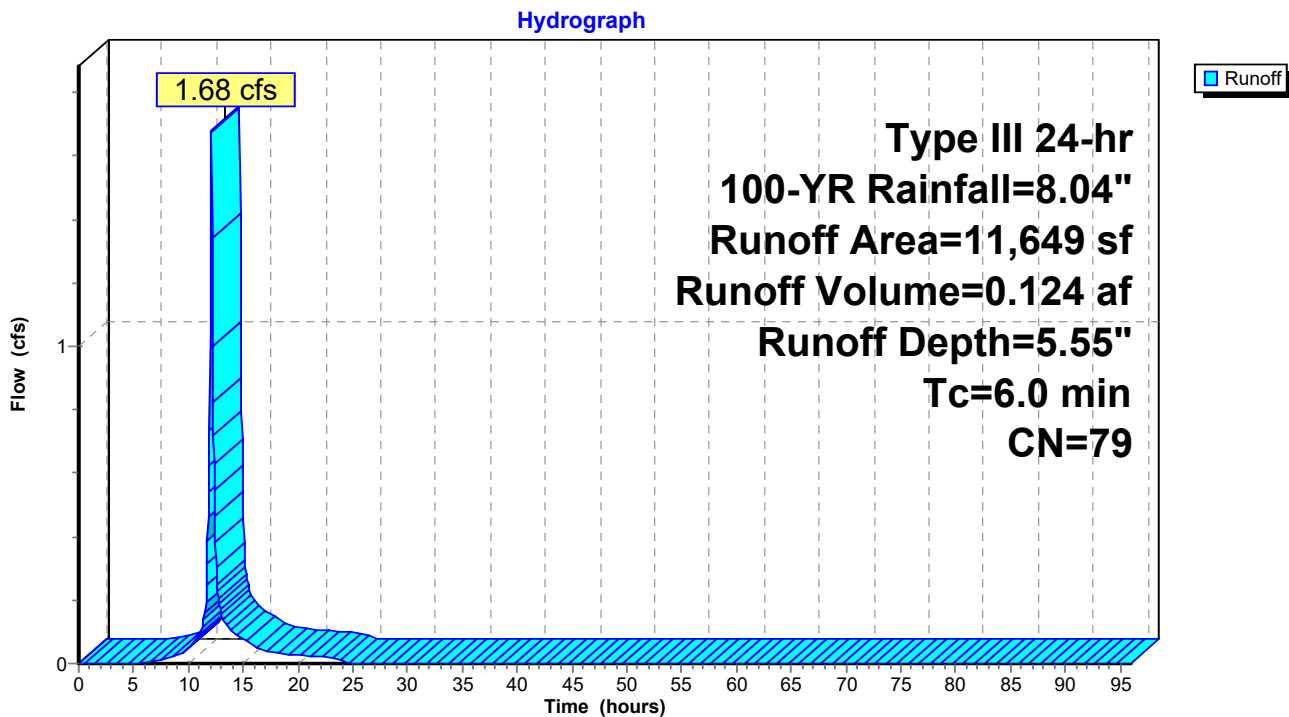
Runoff = 1.68 cfs @ 12.09 hrs, Volume= 0.124 af, Depth= 5.55"
Routed to Link #1 : POA-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.04"

Area (sf)	CN	Description
8,841	74	>75% Grass cover, Good, HSG C
2,112	98	Paved parking, HSG A
150	98	Unconnected pavement, HSG C
* 546	90	Pervious Pavers
11,649	79	Weighted Average
9,387		80.58% Pervious Area
2,262		19.42% Impervious Area
150		6.63% Unconnected

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

Subcatchment PrWs_1: Pr_Watashed 1



11_Seal_Cove_Post-dev

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Type III 24-hr 100-YR Rainfall=8.04"

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Summary for Subcatchment PrWs_2: Portion of Roof Area

Runoff = 0.27 cfs @ 12.09 hrs, Volume= 0.023 af, Depth= 7.80"
Routed to Pond P1 : Cultec 150 XLHD

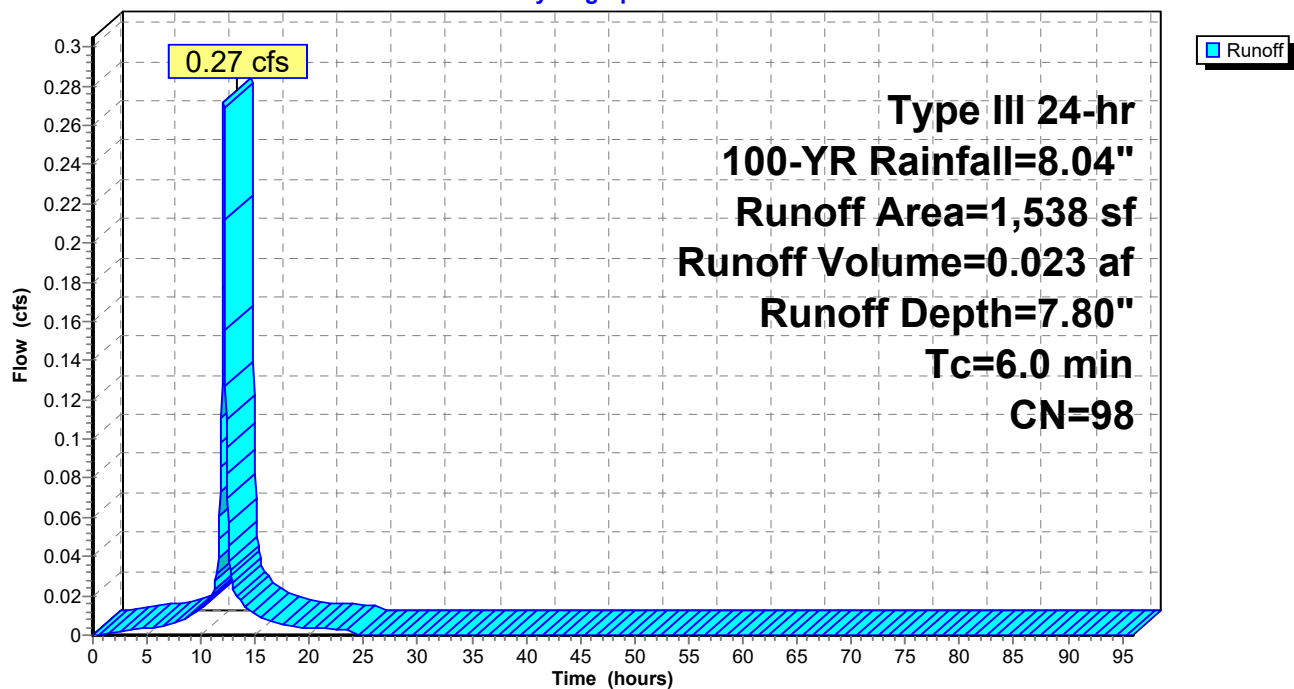
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.04"

Area (sf)	CN	Description
1,538	98	Unconnected roofs, HSG C
1,538		100.00% Impervious Area
1,538		100.00% Unconnected

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

Subcatchment PrWs_2: Portion of Roof Area

Hydrograph



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Type III 24-hr 100-YR Rainfall=8.04"

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Summary for Subcatchment PrWs_3: Rest of Roof

Runoff = 0.60 cfs @ 12.09 hrs, Volume= 0.050 af, Depth= 7.80"
Routed to Pond P2 : Cultec 150 XLHD

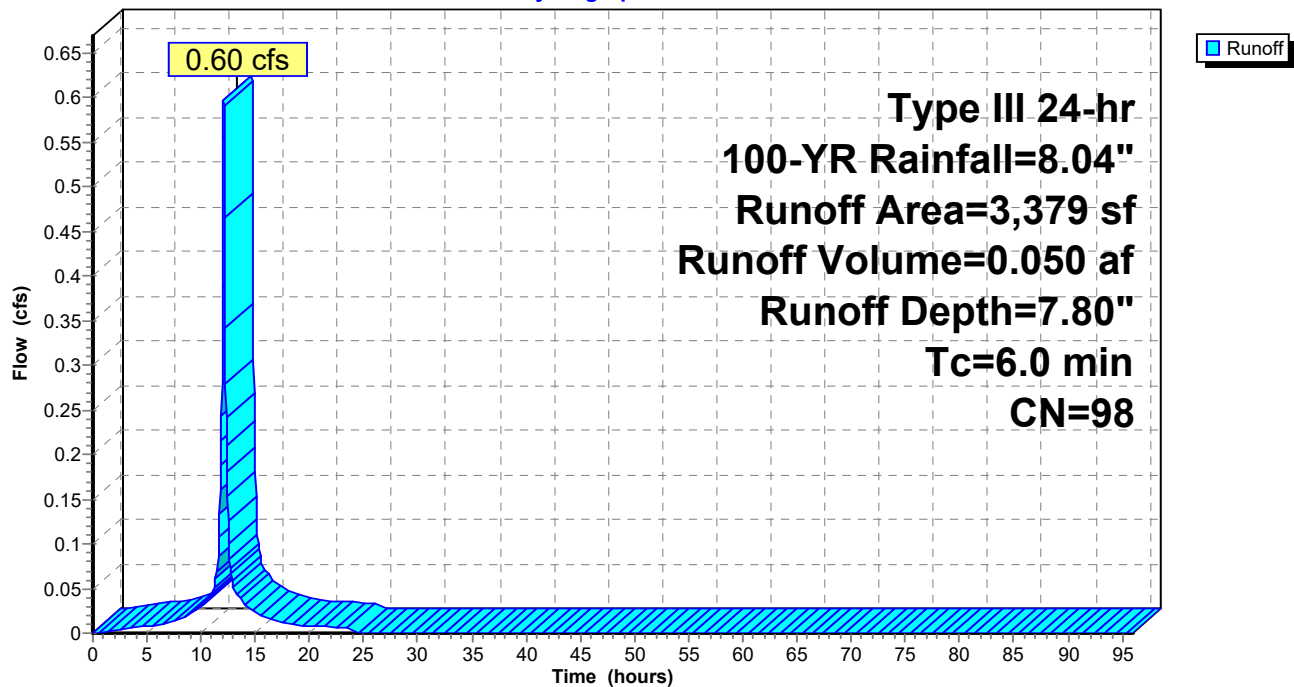
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.04"

Area (sf)	CN	Description
3,379	98	Unconnected roofs, HSG C
3,379		100.00% Impervious Area
3,379		100.00% Unconnected

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

Subcatchment PrWs_3: Rest of Roof

Hydrograph



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Type III 24-hr 100-YR Rainfall=8.04"

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Summary for Subcatchment PrWs_4: Pr_Watashed 4

Runoff = 4.11 cfs @ 12.09 hrs, Volume= 0.301 af, Depth= 5.31"
Routed to Link #2 : POA-2

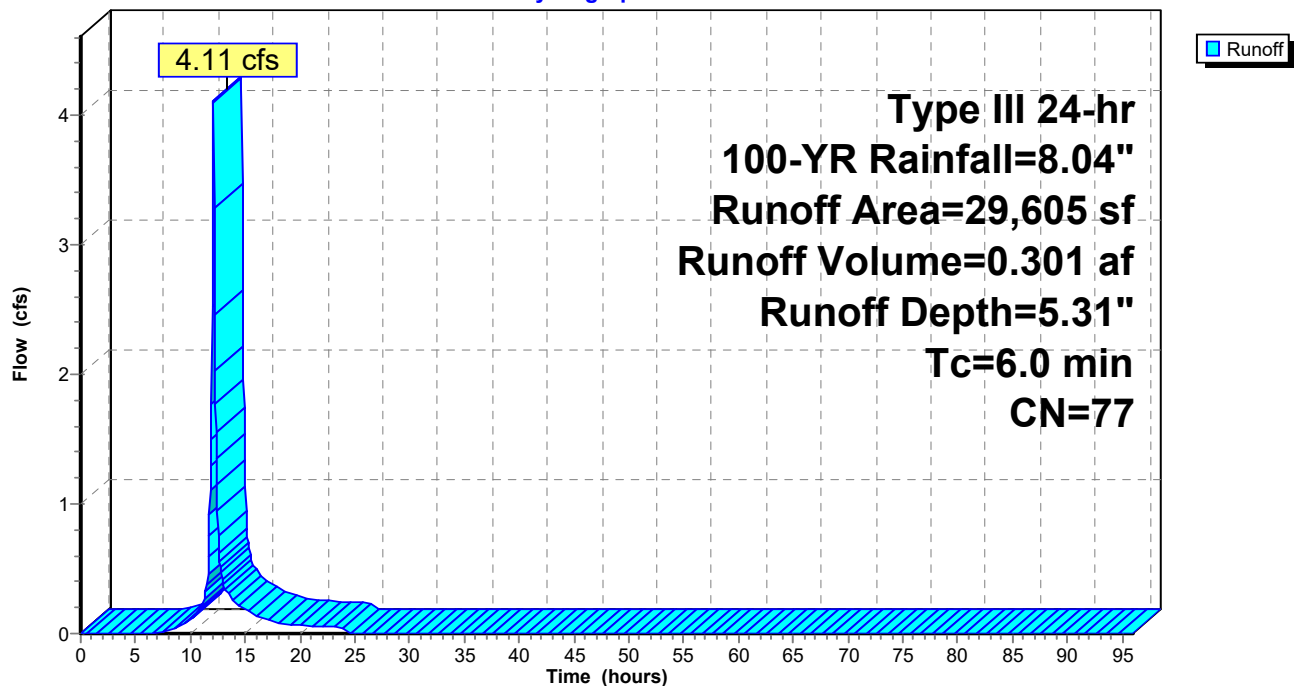
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.04"

Area (sf)	CN	Description
26,056	74	>75% Grass cover, Good, HSG C
3,096	98	Paved parking, HSG A
* 453	90	Pervious Pavers
29,605	77	Weighted Average
26,509		89.54% Pervious Area
3,096		10.46% Impervious Area

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

Subcatchment PrWs_4: Pr_Watashed 4

Hydrograph



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Type III 24-hr 100-YR Rainfall=8.04"

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Summary for Pond P1: Cultec 150 XLHD

Inflow Area = 0.035 ac, 100.00% Impervious, Inflow Depth = 7.80" for 100-YR event
Inflow = 0.27 cfs @ 12.09 hrs, Volume= 0.023 af
Outflow = 0.17 cfs @ 12.21 hrs, Volume= 0.023 af, Atten= 37%, Lag= 7.7 min
Discarded = 0.00 cfs @ 3.25 hrs, Volume= 0.015 af
Primary = 0.17 cfs @ 12.21 hrs, Volume= 0.008 af
Routed to Link #1 : POA-1

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 16.74' @ 12.20 hrs Surf.Area= 337 sf Storage= 478 cf

Plug-Flow detention time= 1,283.3 min calculated for 0.023 af (100% of inflow)

Center-of-Mass det. time= 1,283.2 min (2,024.3 - 741.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	13.50'	253 cf	14.50'W x 23.25'L x 2.54'H Field A 857 cf Overall - 225 cf Embedded = 632 cf x 40.0% Voids
#2A	14.00'	225 cf	Cultec R-150XLHD x 8 Inside #1 Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap Row Length Adjustment= +0.75' x 2.65 sf x 4 rows
478 cf			Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	13.50'	0.270 in/hr Exfiltration over Surface area
#2	Primary	16.50'	6.0" Vert. Popup Emitter C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.00 cfs @ 3.25 hrs HW=13.54' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.15 cfs @ 12.21 hrs HW=16.73' (Free Discharge)

↑**2=Popup Emitter** (Orifice Controls 0.15 cfs @ 1.64 fps)

11_Seal_Cove_Post-dev

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Type III 24-hr 100-YR Rainfall=8.04"

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Pond P1: Cultec 150 XLHD - Chamber Wizard Field A

Chamber Model = Cultec R-150XLHD (Cultec Recharger®150XLHD)

Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf

Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap

Row Length Adjustment= +0.75' x 2.65 sf x 4 rows

33.0" Wide + 6.0" Spacing = 39.0" C-C Row Spacing

2 Chambers/Row x 10.25' Long +0.75' Row Adjustment = 21.25' Row Length +12.0" End Stone x 2 =
23.25' Base Length

4 Rows x 33.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 14.50' Base Width

6.0" Stone Base + 18.5" Chamber Height + 6.0" Stone Cover = 2.54' Field Height

8 Chambers x 27.2 cf +0.75' Row Adjustment x 2.65 sf x 4 Rows = 225.2 cf Chamber Storage

856.9 cf Field - 225.2 cf Chambers = 631.7 cf Stone x 40.0% Voids = 252.7 cf Stone Storage

Chamber Storage + Stone Storage = 477.8 cf = 0.011 af

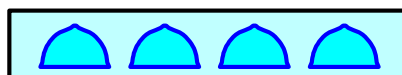
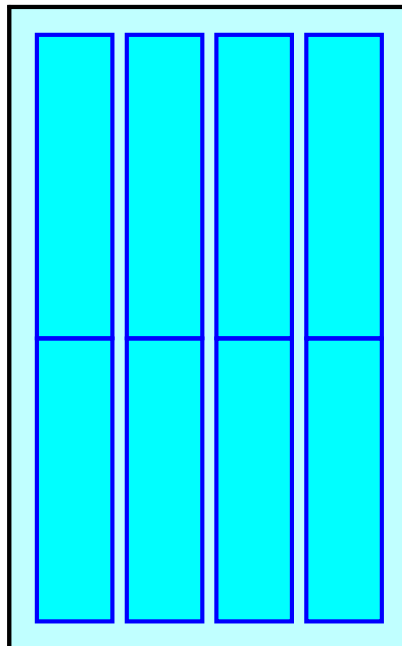
Overall Storage Efficiency = 55.8%

Overall System Size = 23.25' x 14.50' x 2.54'

8 Chambers

31.7 cy Field

23.4 cy Stone



11_Seal_Cove_Post-dev

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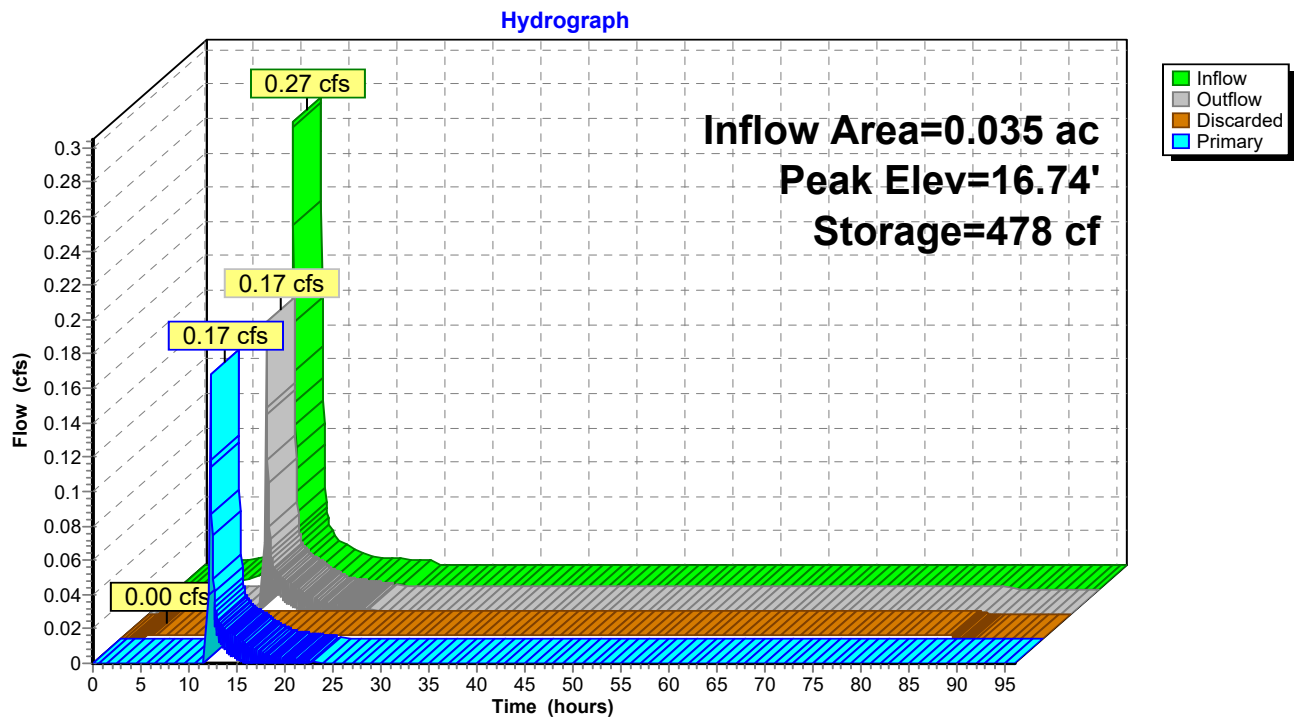
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Type III 24-hr 100-YR Rainfall=8.04"

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Pond P1: Cultec 150 XLHD



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Type III 24-hr 100-YR Rainfall=8.04"

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Summary for Pond P2: Cultec 150 XLHD

Inflow Area = 0.078 ac, 100.00% Impervious, Inflow Depth = 7.80" for 100-YR event
Inflow = 0.60 cfs @ 12.09 hrs, Volume= 0.050 af
Outflow = 0.67 cfs @ 12.06 hrs, Volume= 0.050 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 2.40 hrs, Volume= 0.023 af
Primary = 0.66 cfs @ 12.06 hrs, Volume= 0.027 af
Routed to Link #2 : POA-2

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 15.73' @ 12.06 hrs Surf.Area= 534 sf Storage= 745 cf

Plug-Flow detention time= 907.1 min calculated for 0.050 af (100% of inflow)

Center-of-Mass det. time= 908.6 min (1,649.7 - 741.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	12.50'	407 cf	22.00'W x 24.25'L x 2.54'H Field A 1,356 cf Overall - 338 cf Embedded = 1,018 cf x 40.0% Voids
#2A	13.00'	338 cf	Cultec R-150XLHD x 12 Inside #1 Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap Row Length Adjustment= +0.75' x 2.65 sf x 6 rows
		745 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	12.50'	0.270 in/hr Exfiltration over Surface area
#2	Primary	15.00'	6.0" Vert. Popup Emitter C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.00 cfs @ 2.40 hrs HW=12.53' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.62 cfs @ 12.06 hrs HW=15.69' (Free Discharge)

↑**2=Popup Emitter** (Orifice Controls 0.62 cfs @ 3.18 fps)

11_Seal_Cove_Post-dev

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Type III 24-hr 100-YR Rainfall=8.04"

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Pond P2: Cultec 150 XLHD - Chamber Wizard Field A

Chamber Model = Cultec R-150XLHD (Cultec Recharger®150XLHD)

Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf

Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap

Row Length Adjustment= +0.75' x 2.65 sf x 6 rows

33.0" Wide + 6.0" Spacing = 39.0" C-C Row Spacing

2 Chambers/Row x 10.25' Long +0.75' Row Adjustment = 21.25' Row Length +18.0" End Stone x 2 = 24.25' Base Length

6 Rows x 33.0" Wide + 6.0" Spacing x 5 + 18.0" Side Stone x 2 = 22.00' Base Width

6.0" Stone Base + 18.5" Chamber Height + 6.0" Stone Cover = 2.54' Field Height

12 Chambers x 27.2 cf +0.75' Row Adjustment x 2.65 sf x 6 Rows = 337.7 cf Chamber Storage

1,356.0 cf Field - 337.7 cf Chambers = 1,018.2 cf Stone x 40.0% Voids = 407.3 cf Stone Storage

Chamber Storage + Stone Storage = 745.0 cf = 0.017 af

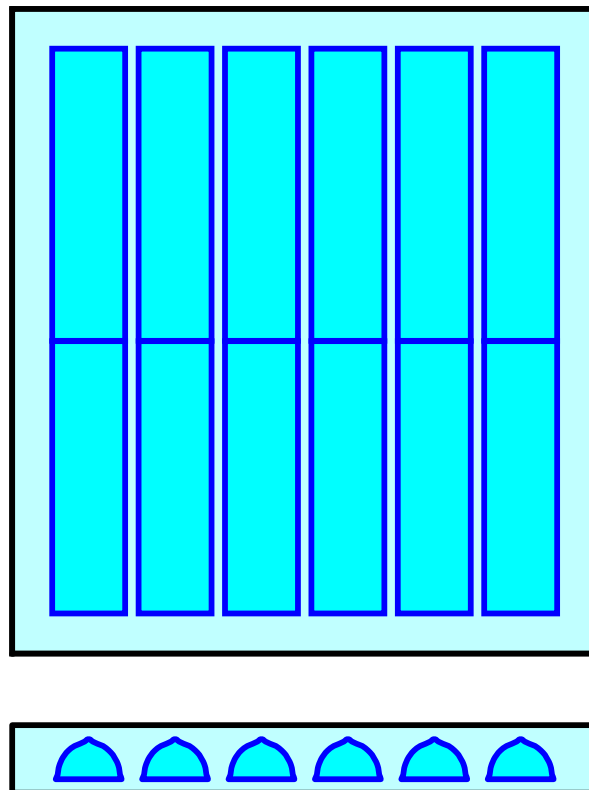
Overall Storage Efficiency = 54.9%

Overall System Size = 24.25' x 22.00' x 2.54'

12 Chambers

50.2 cy Field

37.7 cy Stone



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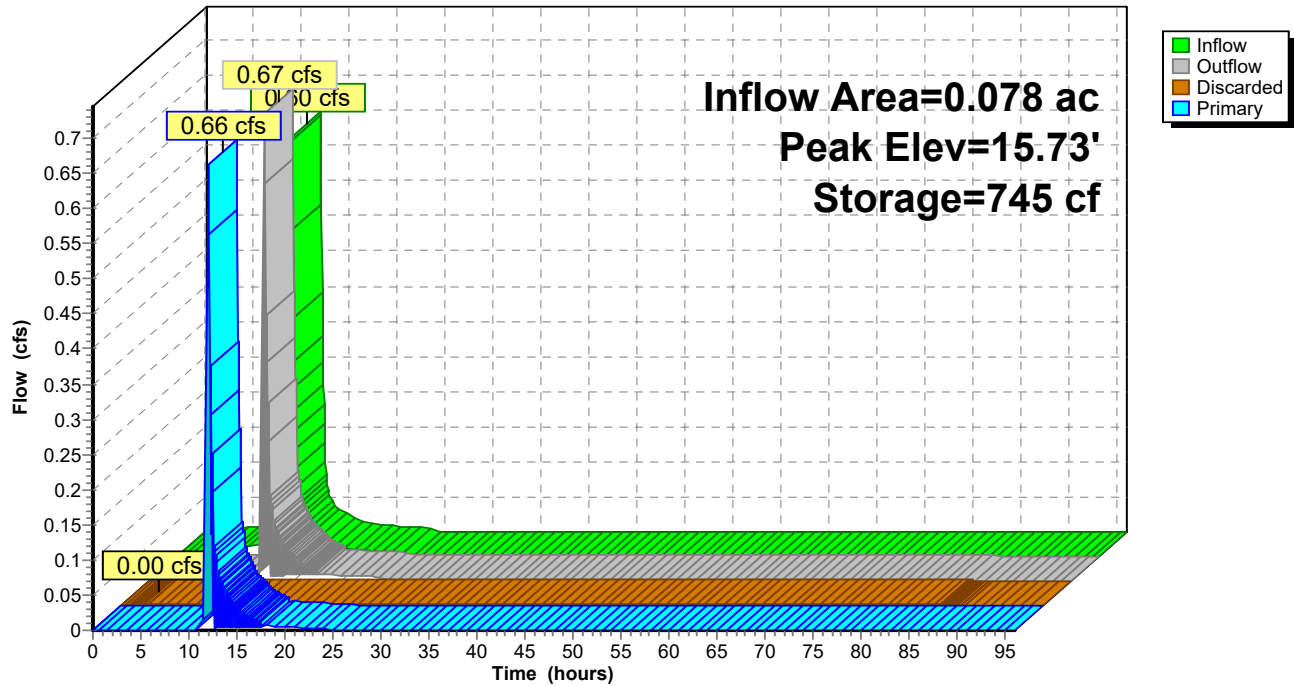
Type III 24-hr 100-YR Rainfall=8.04"

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Pond P2: Cultec 150 XLHD

Hydrograph



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Type III 24-hr 100-YR Rainfall=8.04"

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Summary for Link #1: POA-1

Inflow Area = 0.303 ac, 28.82% Impervious, Inflow Depth = 5.22" for 100-YR event

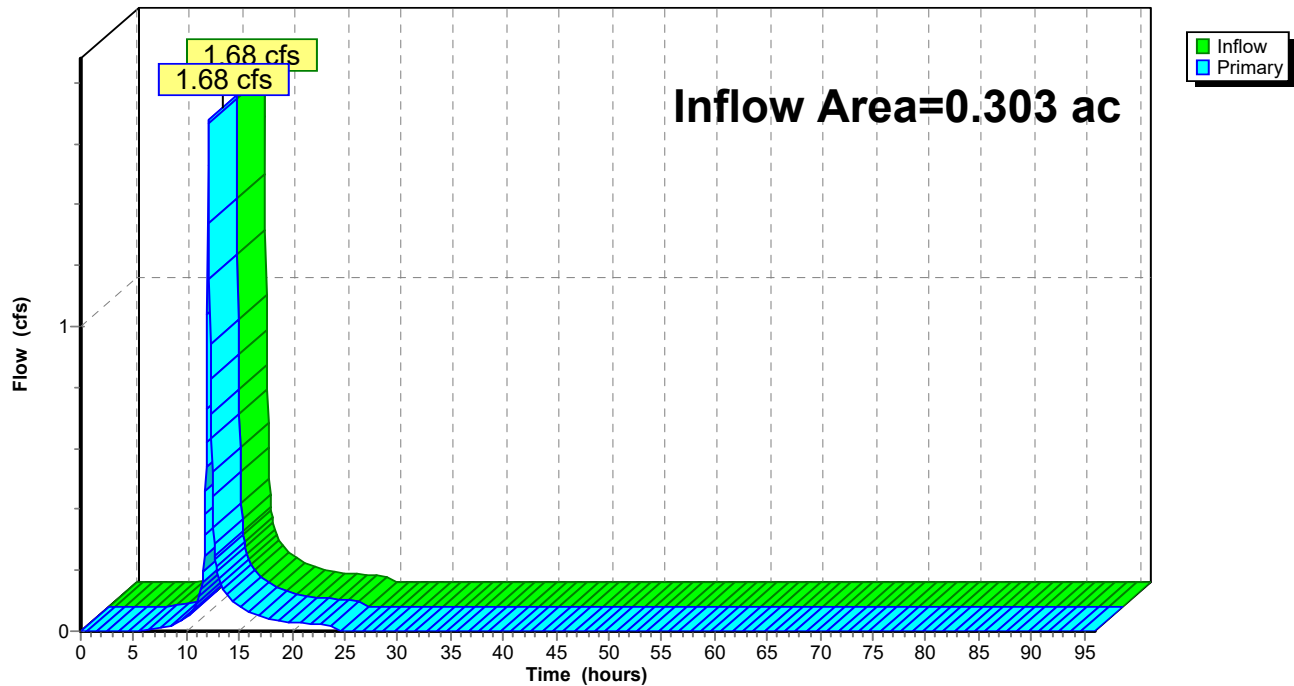
Inflow = 1.68 cfs @ 12.09 hrs, Volume= 0.132 af

Primary = 1.68 cfs @ 12.09 hrs, Volume= 0.132 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link #1: POA-1

Hydrograph



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Type III 24-hr 100-YR Rainfall=8.04"

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Summary for Link #2: POA-2

Inflow Area = 0.757 ac, 19.63% Impervious, Inflow Depth = 5.20" for 100-YR event

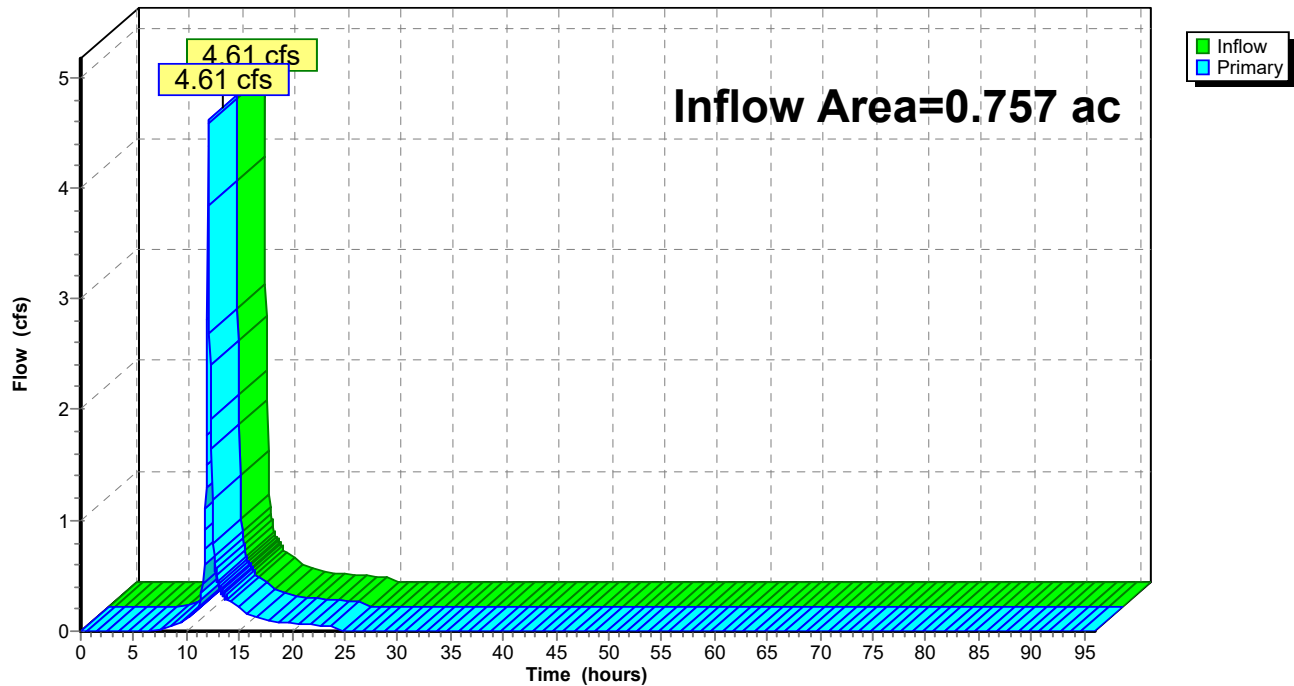
Inflow = 4.61 cfs @ 12.09 hrs, Volume= 0.328 af

Primary = 4.61 cfs @ 12.09 hrs, Volume= 0.328 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link #2: POA-2

Hydrograph



LONG TERM OPERATIONS & MAINTENANCE PLAN

11 SEAL COVE ROAD, HINGHAM MA

Date: August 12, 2026

PROJECT OVERVIEW

Prevention of offsite flooding and implementation of stormwater runoff, water quality, and groundwater recharge improvements where none currently exist on-site are the main priorities of the project with respect to drainage design. The project will improve existing stormwater management within the property with respect to the existing site condition, which currently includes no such improvements, by installing a stormwater management system comprising various Best Management Practices (BMPs). Long-term water quality BMPs to mitigate the runoff generated by the site improvements include a water quality unit, and an underground infiltration/detention system and periodic mechanical sweeping to remove sand and sediment from paved surfaces.

The permanent BMPs used in this design were chosen for their effectiveness and ease of maintenance. Providing for maintenance requirements that are practical is essential to achieve the desired result of improved stormwater quality, and peak attenuation. This plan will be provided to the property owner, property manager, and general contractor to educate them on the recommendations of this plan and the DEP Stormwater Management Guidelines.

POST-CONSTRUCTION BEST MANAGEMENT PRACTICES

a) NON-STRUCTURAL BEST MANAGEMENT PRACTICES

Implementing source controls can aid in reducing the types and concentrations of contaminants in stormwater runoff. This principle for pollution prevention and non-structural controls, or BMPs, is to minimize the volume of runoff and to minimize contact of stormwater with potential pollutants. Measures such as street sweeping, managing snow removal, and educating the owner/operator of good maintenance practices are examples of non-structural BMPs.

i. PUBLIC AWARENESS

The building owner shall issue periodic reminders to all residents or tenants to avoid dumping or releasing pollutants into the storm drains and onto the ground.

ii. SWEEPING

Driveway sweeping is an integral part of the stormwater management plan as a fundamental component of source reduction efforts. Sweeping activities shall begin on or around April 1. However, sweeping may be done after winter thaw and the onset of early spring. It is critical to remove the accumulated sediment in the driveway areas from the winter months as soon as possible before spring precipitation.

LONG TERM OPERATIONS & MAINTENANCE PLAN

11 SEAL COVE ROAD, HINGHAM MA

iii. SNOW AND SNOWMELT MANAGEMENT

The removal contractor shall avoid stockpiling snow directly on top of catch basin grates and also avoid stockpiling snow in the water quality unit and area drain.

It is suggested that during snowfall events, the snow be stockpiled in at the edge of the driveway only.

It is suggested that no de-icing compounds such as calcium chloride (CaCl_2), calcium magnesium acetate (CMA) or the like be used on the site. The snow removal contractor shall store all sand off-site.

b) STRUCTURAL BEST MANAGEMENT PRACTICES:

Structural BMPs are those physical facilities that are designed to manage both stormwater quantity and quality. Proper maintenance of the proposed structural BMPs will ensure design performance and promote longevity of the structure and may decrease operator maintenance costs.

i. UNDERGROUND INFILTRATION/DETENTION SYSTEMS

Two underground detention system consisting of Cultec Recharger 150XLHD chamber systems are proposed to provide detention, infiltration, and water quality volume for proposed pavement and roof runoff for the development. All underground detention/infiltration systems are sized to mitigate peak runoff increases associated with the proposed project for all storm events up to and including the 100-year storm.

It is anticipated that maintenance of the detention/infiltration systems will be limited. Post-construction, the systems shall be inspected twice per year, at the beginning of July and late October/ early November, to determine if any loss of capacity has occurred. The systems shall also be inspected 24 hours after a rainstorm of over 2.5 inches in a 24-hour period to ensure that the systems are free of extraneous debris and fines and are draining adequately. If inspections indicate accumulation of sediment within the systems, cleaning shall be conducted through the inspection ports via vacuum truck. Removed materials shall be hauled off site and disposed of in compliance with all local, state, and federal guidelines.

ii. ROOF DOWNSPOUTS, (LEAF FILTERS AND CLEANOUTS)

Runoff from the roof gutters flows towards the downspouts to the underground 6" ADS N12 pipe to either the underground infiltration/detention system or towards to area drains at the rear. At each downspout location there is a cleanout with a leaf filter. The function of the cleanout and leaf filter is to remove any debris that might come from the

LONG TERM OPERATIONS & MAINTENANCE PLAN

11 SEAL COVE ROAD, HINGHAM MA

downspouts such as leaves and provide maintenance access to the underground pipes. It is very important that the leaf filter at each downspout is inspected every three months and cleaned as needed. If the filter is observed to be damaged, it shall be replaced immediately.

iii. PERVIOUS PAVERS

Pervious pavers in the driveway and parking areas are proposed to promote recharge, stormwater storage and reduce peak runoff volume. These pavers work as designed when frequent cleaning is performed throughout the year.

Post-construction, the pavers shall be inspected three (3) times per year and cleaned at least twice per year. Once at the beginning of spring (March) and once at the end of foliage season (November). Cleaning shall be performed by sweeping or using regenerative air equipment to remove debris that might be stuck between the gaps.

During the winter season avoid using sand for traction or any salt products that contain sand. Refer to manufacturer's specifications for more information.

MAINTENANCE AGREEMENT

The legal property owner of 11 Seal Cove Road, Hingham MA 02043 shall inspect and maintain the drainage system and its accessories as outlined in this Long-Term Operations and Maintenance Report. The inspection logs provided with this maintenance plan shall be kept as records by the homeowner(s).

LONG TERM MAINTENANCE & OPERATIONS PLAN

11 SEAL COVE ROAD HINGHAM MA

BMP MAINTENANCE LOG

[illegible]

LONG TERM MAINTENANCE & OPERATIONS PLAN

11 SEAL COVE ROAD HINGHAM MA

DATE	NAME OF MAINTENANCE PERSONNEL/COMPANY	TYPE OF MAINTENANCE PERFORMED	ISSUES/NEED FOR FOLLOW-UP	WORK ORDER PROVIDED?

Reproduce log sheets as necessary over the life of this Operation and Maintenance Plan.

LONG TERM OPERATIONS & MAINTENANCE PLAN

11 SEAL COVE ROAD HINGHAM MA

INSPECTION FORM: UNDERGROUND INFILTRATION/DETENTION SYSTEM (P1)

Unit Number: P1 (Refer to Site Grading and Drainage Plan)

Inspector Name:

Date/Time:

Weather:

TYPE OF INSPECTION (CHECK ONE)	
☐	Routine (Every Six Months)
☐	Annual
☐	Post-Storm (Depth = _____ inches; Storm Duration = _____ hrs; Storm End Date = _____)
☐	Post-Spill (Time/Date of Spill: _____)

INSPECTION CHECKLIST (CHECK ALL THAT APPLY)	
☐	Check for settlement/ cracking of pavement
☐	Check for ground settlement at inspection port locations
☐	Check for sediment accumulation at inlets/outlet via inspection ports
☐	Confirm dry condition within system

CORRECTIVE ACTION REQUIRED	

ADDITIONAL NOTES/OBSERVATIONS	

LONG TERM OPERATIONS & MAINTENANCE PLAN

11 SEAL COVE ROAD HINGHAM MA

INSPECTION FORM: UNDERGROUND INFILTRATION/DETENTION SYSTEM (P2)

Unit Number: P2 (Refer to Site Grading and Drainage Plan)

Inspector Name:

Date/Time:

Weather:

TYPE OF INSPECTION (CHECK ONE)	
☐	Routine (Every Six Months)
☐	Annual
☐	Post-Storm (Depth = _____ inches; Storm Duration = _____ hrs; Storm End Date = _____)
☐	Post-Spill (Time/Date of Spill: _____)

INSPECTION CHECKLIST (CHECK ALL THAT APPLY)	
☐	Check for settlement/ cracking of pavement
☐	Check for ground settlement at inspection port locations
☐	Check for sediment accumulation at inlets/outlet via inspection ports
☐	Confirm dry condition within system

CORRECTIVE ACTION REQUIRED	

ADDITIONAL NOTES/OBSERVATIONS	

LONG TERM OPERATIONS & MAINTENANCE PLAN

11 SEAL COVE ROAD HINGHAM MA

INSPECTION FORM: PERVIOUS PAVER AREA

All Pervious Paver Area: (Refer to Site Grading and Drainage Plan)

Inspector Name:

Date/Time:

Weather:

TYPE OF INSPECTION (CHECK ONE)	
☐	Routine (3 Times per Year)
☐	Post-Storm (Depth = _____ inches; Storm Duration = _____ hrs; Storm End Date = _____)
☐	Post-Spill (Time/Date of Spill: _____)

INSPECTION CHECKLIST (CHECK ALL THAT APPLY)	
☐	Power wash pavement surface to dislodge trapped particles and vacuum sweep area
☐	Check pavement surface for differential settlement, spalling, cracking
☐	Conduct permeability test (per ASTM C 1701/C 1701M) (two tests per porous pavement area)
	Test 1: Water application rate = _____ Time elapsed = _____ Rate = _____
	Test 2: Water application rate = _____ Time elapsed = _____ Rate = _____

CORRECTIVE ACTION REQUIRED	

ADDITIONAL NOTES/OBSERVATIONS	