

STONEFIELD

STORMWATER MANAGEMENT REPORT

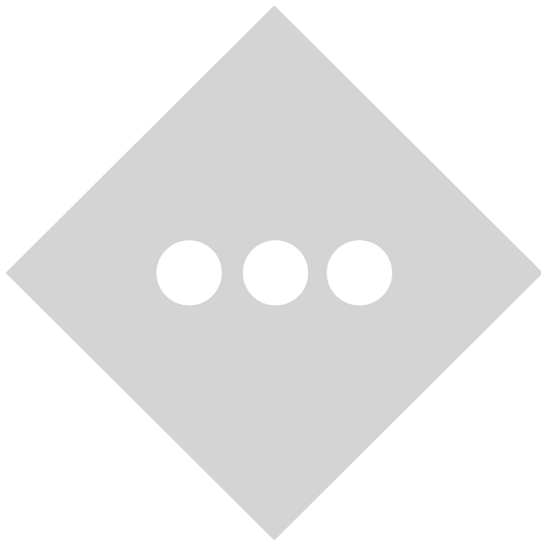
**PROPOSED SCHOOL
BLOCK 2104, LOT 21
60 SUNSET ROAD
PEQUANNOCK TOWNSHIP
MORRIS COUNTY, NEW JERSEY**

**PREPARED FOR:
ONE SCHOOL GLOBAL**

**PREPARED BY:
STONEFIELD ENGINEERING & DESIGN, LLC
92 PARK AVENUE
RUTHERFORD, NJ**

**REPORT DATE:
SEPTEMBER 30, 2022**

**REVISED:
FEBRUARY 15, 2023**



**JAKE MODESTOW, PE
NJ PE LICENSE #56119**

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1.0 PROJECT DESCRIPTION

One School Global is proposing to redevelop Block 2104, Lot 21, commonly known as 60 Sunset Road, Pequannock, Morris County, New Jersey (herein referred to as the “project site”) to accommodate a 27,825 SF school. Additional improvements include a soccer field, hard court, onsite parking, lighting, utilities, stormwater management systems and other associated site improvements.

The property is located within the R-15 Residential District of Pequannock Township. The proposed development is bounded by de Wilde Drive to the north, Sunset Road to the south, Roome Avenue to the east, and residential dwellings to the west. The site will be accessed via one (1) ingress-only driveway and one (1) egress-only driveway along Sunset Road. Refer to **APPENDIX A** for project maps of the project site.

The project site is 173,411 SF (3.98 acres), the extent of land disturbance is 178,670 SF (4.10 acres), and the total area of new impervious surfaces is 24,354 SF (0.56 acres). In addition, the project proposes the addition of 10,187 SF (0.23 acres) of new motor vehicle surface. The overall drainage area was modeled as 173,411 SF (3.98 acres).

This Report has been prepared to analyze the potential stormwater runoff impacts of the proposed project site and outline proposed measures to conform to the stormwater management regulations set forth by the Pequannock Township, Morris County Soil Conservation District, Morris County, the New Jersey Administrative Code NJAC), and the New Jersey Department of Environmental Protection (NJDEP).

2.0 EXISTING CONDITIONS

EXISTING SITE DEVELOPMENT

The project site is located along the northerly side of Sunset Road and is bounded by Roome Avenue to the east and de Wilde Drive to the north. The project site has been historically developed with a one-story Pompton Valley Presbyterian Church, one-story Sunset Co-op Nursery School, and a two-story residential dwelling with associated improvements including parking facilities and small accessory structures. The existing development is comprised of 46,746 SF of impervious area. An Aerial Map depicting the existing site conditions can be found in **APPENDIX A**.

EXISTING TOPOGRAPHY

The project site is generally flat. On-site topography slopes generally toward either the south towards the Sunset Road right-of-way, north towards Dewilde Drive, or east towards Roome Avenue, with several low points in the center of the site which ultimately discharge into the Township’s municipal storm drain system.

PROJECT SITE SOILS

Soil mapping was obtained from the National Resource Conservation Service (NRCS) for the project site and immediate area. Generally, the project site is underlain with one (1) major soil group: Urban Land-Riverhead complex (USRHVB). Overall, the soils drain well, and runoff flows overland directly to the municipal storm drain conveyance system. The table below provides a summary of soils for the project site:

TABLE 1: NRCS SOIL MAPPING RESULTS

Soil Unit Code	Soil Description	Approximate Project Coverage	Drainage Class	Hydrologic Soil Group
USRHVB	Urban land-Riverhead complex, 3% to 8% Slopes	100.0%	Well drained	B

Additional information regarding the NRCS soil mapping can be found in **APPENDIX B**.

WATERSHED / RECEIVING WATERS – TMDL DESIGNATION

Under existing conditions, the site drains to the Township of Pequannock storm drain system that ultimately discharges to the Pompton River, State Waterbody ID NJ02030103110020-01. The watershed for the development is part of the Pompton River as defined by the United States Environmental Protection Agency for Community Waterway Mapping. Per the New Jersey 2020 Integrated List of Waters prepared by the New Jersey Department of Environmental Protection, the Pequannock River is identified as impaired water for *Escherichia Coli* and Arsenic.

EXISTING ENVIRONMENTAL INVENTORY

Based on the survey and FEMA flood insurance rate mapping (FEMA Map #3453110003C revised 09/17/1992), the entire site is in Zone X. The majority of the site is located in the Unshaded Zone X which is determined to be outside the 500-year floodplain. The southern portion of the site is located in the Shaded Zone X which includes areas of 500-year flood, areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile, and areas protected by levees from 100-year flood. The FEMA Map can be found in **APPENDIX A** of this Report.

There are no federal (US Army Corps of Engineers) or state (NJDEP) regulated freshwater wetlands within 500 feet of the project site. Impacts to nearby freshwater wetlands are not anticipated with the proposed development. No records of endangered or threatened species sightings/suitable habitats are located within the vicinity of the proposed improvements.

3.0 PROPOSED CONDITIONS

PROPOSED SITE DEVELOPMENT

The proposed development will consist of a 27,825 SF School. Additional improvements include a soccer field, hard court, new site access, parking facilities, utilities, lighting, landscaping, and stormwater management improvements. The site will be accessed via one (1) ingress-only driveway and one (1) egress-only driveway along Sunset Road. Refer to **APPENDIX A** for a half-size Overall Site Plan depicting the proposed project improvements.

PROPOSED TOPOGRAPHY

Project site topography and drainage patterns will generally remain similar to existing conditions; however, as the site is extremely flat in existing conditions, additional fill has been provided on site to ensure positive pitch throughout the development. Additionally, ADA compliant grades (1.0% to 2.0%), have been provided along all accessible parking spaces and pedestrian walkways.

ANTICIPATED ENVIRONMENTAL INVENTORY IMPACTS

The proposed development will not disturb land within environmentally regulated areas (buffer areas, floodplains, sand dunes areas, floodways, and special flood zones). As such, permits for floodplain development and buffer zone disturbances will not be required to be obtained from the NJDEP to perform work for this development. The Township will remain apprised of the NJDEP permitting status as the project moves forward should it be determined to be required.

4.0 STORMWATER MANAGEMENT METHODOLOGY & PARAMETERS

HYDROLOGIC METHODOLOGY

The analysis program “HydroCAD” Version 10.0 by HydroCAD Software Solutions was utilized to calculate and plot the runoff hydrographs. The program incorporates the time of concentration, C values, rainfall data, and project drainage areas to calculate the runoff characteristics. The existing and proposed drainage areas have been analyzed utilizing Intensity-Duration-Frequency data obtained from NOAA for the project area; specifics of the rainfall distribution can be found in **APPENDIX C**. Additional key variables utilized in the analysis include:

TABLE 2: HYDROCAD DESIGN VARIABLES

Variable	Input	Variable	Input
Runoff Calculation Method	SCS TR-20	NRCS Rainfall Frequency Data Set	Morris
Pervious/Impervious CN Calculations	Separate	Storm Intervals (Year Events)	2, 10, 100
Stage-Storage Relationship	Dynamic	Storm Duration	24 Hours
Minimum time of concentration	6 minutes	Storm Curve	NOAA D

Additional information regarding the hydrologic calculations can be found in **APPENDIX C**.

5.0 STORMWATER ANALYSIS

EXISTING DRAINAGE AREAS

Under current conditions, the project site is subdivided into three (3) drainage areas, ultimately outfalling to three (3) Points of Interest (POI). Drainage area EX-1 consists of the center and western portion of the site including two (2) buildings and a parking lot, ultimately draining towards the Sunset Road right-of-way (POI-1). Area EX-2 consists of the eastern portion of the site including one building, ultimately draining towards the Roome Avenue (POI 2). Area EX-3 consists of the northwest portion of the site including the playground area and shed, ultimately draining towards Dewilde Drive (POI 3). See below for a short summary of each area:

TABLE 4: SUMMARY OF EXISTING DRAINAGE AREAS

Drainage Area	Description	Area Extents	Impervious Area	Time of Concentration
EX-1	Existing Drainage to Sunset Road Right-of-Way	87,431 SF	30,985 SF	11.8 Minutes
EX-2	Existing Drainage to Roome Avenue Right-of-Way	59,447 SF	13,506 SF	5.1 Minutes
EX-3	Existing Drainage to Dewilde Drive Right-of-Way	26,533 SF	2,264 SF	16.6 Minutes

All existing drainage areas were delineated based on field surveying data. Hydrologic calculations and parameters for each drainage area can be found in **APPENDIX C**; specific drainage area delineations and land cover can be found in **APPENDIX E**.

PROPOSED DRAINAGE AREAS

Under proposed conditions the site is comprised of six (6) drainage areas with three (3) Points of Interest (POI). Drainage area P-1A drains to Basin B-1, an infiltration basin along Sunset Road. Drainage area P-1B drains into a porous paving system in the tandem parking stalls, Basin B-2. Drainage area P-1C drains to Basin B-3, an infiltration basin in the rear of the site. Drainage area P-1D sheet flows undetained towards POI 1. Drainage area P-2 flows undetained to POI-2. Drainage area P-3 flows undetained toward POI-3. See below for a short summary of each area:

TABLE 5: SUMMARY OF PROPOSED DRAINAGE AREAS

Drainage Area	Description	Area Extents	Impervious Area	Time of Concentration
P-1A	Proposed Drainage to Infiltration Basin Along Sunset Road	56,325 SF	44,016 SF	2.1 Minutes
P-1B	Proposed Drainage to Porous Pavement in Tandem Spaces	12,659 SF	12,527 SF	2.6 Minutes
P-1C	Proposed Drainage to Infiltration Basin in Rear	67,796 SF	8,660 SF	10.1 Minutes
P-1D	Undetained Flow to Sunset Road	13,897 SF	880 SF	9.3 Minutes
POI-1	Proposed Drainage to Sunset Road	150,677 SF	66,083 SF	--
P-2 (POI-2)	Proposed Drainage to Roome Avenue	21,134 SF	3,464 SF	7.6 Minutes
P-3 (POI-3)	Proposed Drainage to Rear	1,600 SF	0 SF	2.0 Minutes

All proposed drainage areas were delineated based on the proposed grading design overlain on field survey data. Hydrologic calculations and parameters for each drainage area can be found in **APPENDIX C**; specific drainage area delineations and land cover can be found in **APPENDIX D**.

STORMWATER MANAGEMENT DESIGN PARAMETERS

The extent of development proposes to disturb more than one acre of land and add more than one-quarter acre of new impervious surfaces. As such, the project is considered a Major Development as defined in the Pequannock Ordinance and NJAC 7:8-1.2. A Major Development is subject to stormwater quantity, quality, and groundwater recharge requirements. See below for a summary of each design parameter and compliance requirements:

TABLE 6: STORMWATER MANAGEMENT DESIGN TARGET SUMMARY TABLE

Design Parameter	Design Target for Compliance
Stormwater Runoff Quantity	Design stormwater management measures so that the post-construction peak runoff rates for the 2-, 10-, and 100-year storm events are 50, 75 and 80 percent, respectively, of the pre-construction peak runoff rates. The percentages apply only to the post-construction stormwater runoff that is attributable to the portion of the site on which the proposed development or project is to be constructed. Demonstrate through hydrologic and hydraulic analysis that for stormwater leaving the site, post-construction runoff hydrographs for the 2-, 10-, and 100-year storm events do not exceed, at any point in time, the pre-construction runoff hydrographs for the same storm events.
Stormwater Runoff Quality	Stormwater management measures shall be designed to reduce the post-construction load of total suspended solids (TSS) in stormwater runoff generated from the water quality storm by 80% of the anticipated load from the developed site, expressed as an annual average.
Groundwater Recharge	The project is exempt from groundwater recharge requirements as the project site is located within State Planning Area PA-1 (Metropolitan).

STORMWATER RUNOFF QUANTITY

To attenuate peak stormwater runoff rates to the mandated regulatory levels two (2) infiltration basins and one (1) porous pavement system with associated outlet control structures are proposed. To analyze runoff quantities between the existing and proposed drainage areas, three (3) points of interest were selected:

TABLE 7: QUANTITY COMPARISON POINTS OF INTEREST

Point of Interest	Area Description	Existing Tributary Drainage Areas	Proposed Tributary Drainage Areas
POI - 1	Drainage to Sunset Road	EX-1	P-1A, P-1B, P-1C, P-1D
POI - 2	Drainage to Roome Avenue	EX-2	P-2
POI - 3	Drainage to Dewilde Drive	EX-3	P-3

The following tables summarize the results for the 2-year, 10-year, and 100-year storm events for each project point of interest:

TABLE 8: PEAK DISCHARGE TO SUNSET ROAD (POI-1)

Rainfall Event	Existing Flow Rate	Required % Reduction	Proposed Flow Rate	Proposed % Reduction
2-Year Storm	2.48 CFS	50%	1.14 CFS	54.03%
10-Year Storm	4.64 CFS	25%	2.22 CFS	52.16%
100-Year Storm	9.18 CFS	20%	7.33 CFS	20.15%

TABLE 9: PEAK DISCHARGE TO ROOME AVENUE (POI-2)

Rainfall Event	Existing Flow Rate	Required % Reduction	Proposed Flow Rate	Proposed % Reduction
2-Year Storm	1.68 CFS	--	0.45 CFS	73.21%*
10-Year Storm	3.47 CFS	--	1.02 CFS	70.61%*
100-Year Storm	7.33 CFS	--	2.26 CFS	69.17%*

*Post-Construction runoff hydrograph does not exceed, at any point in time, the pre-construction runoff hydrograph for the same storm. See **APPENDIX C**.

TABLE 10: PEAK DISCHARGE TO DEWILDE DRIVE (POI-3)

Rainfall Event	Existing Flow Rate	Required % Reduction	Proposed Flow Rate	Proposed % Reduction
2-Year Storm	0.31 CFS	--	0.03 CFS	90.32%
10-Year Storm	0.85 CFS	--	0.07 CFS	91.77%
100-Year Storm	2.05 CFS	--	0.18 CFS	91.22%

*Post-Construction runoff hydrograph does not exceed, at any point in time, the pre-construction runoff hydrograph for the same storm. See **APPENDIX C**.

The proposed infiltration basins and porous pavers provide sufficient flow rate attenuation to ensure that no adverse impacts are anticipated downstream of the project site. Detailed hydrologic calculations for each drainage area can be found in **APPENDIX C**.

STORMWATER RUNOFF QUALITY

The porous pavement system and infiltration basins proposed on site meet the total suspended solids removal (TSS) removal requirements as certified by the NJDEP BMP Manual. The proposed treatment design will exceed the regulatory requirements for stormwater runoff quality and ensure that runoff discharged into the unnamed tributary will not have any adverse effects on downstream waterways and environs.

Stormwater BMP Facility	NJDEP Certified Removal Efficiency
Infiltration Basin (B-1)	80%
Porous Pavement (B-2)	80%
Infiltration Basin (B-3)	80%

GROUNDWATER RECHARGE

As indicated by N.J.A.C. 7:8-5.1, a major development must comply with groundwater recharge requirements. This requirement is waived if the proposed development is located within the Metropolitan Planning Area, also known as the Urban Land Redevelopment Area (PA-1). The site is located within the designated planning area, and as such, is exempt from groundwater recharge requirements.

STORMWATER PIPE CONVEYANCE SYSTEM

The on-site stormwater conveyance system has been sized for the 25-year storm event and is able to safely convey runoff to the proposed stormwater management facilities without overflow or bypass.

6.0 STORMWATER FACILITY OPERATIONS & MAINTENANCE

A Stormwater Operations & Maintenance Manual will be submitted for review to the Township and will be forwarded to the relevant jurisdictional agencies prior to obtaining final land use approvals and permits. Any necessary easements or covenants associated with the stormwater improvements will be recorded prior to the start of construction.

7.0 EROSION & SEDIMENT CONTROL

A Soil Erosion & Sediment Control Plan has been prepared in accordance with the latest edition of the Standards for Soil Erosion and Sediment Control in New Jersey. This plan can be found within the Preliminary & Final Major Site Plans prepared by Stonefield in conjunction with this Report. Proposed temporary measures during construction include silt fencing, stabilized construction entrances, and inlet filters. No land disturbance will occur until certification and permits have been obtained from the Morris County Soil Conservation District.

8.0 CONCLUSIONS

As demonstrated in this Report, the increase in runoff flow rate generated by the proposed development will be satisfactorily mitigated by the introduction of two (2) infiltration basins and one (1) porous pavement system. Runoff water quality will be impacted by the increase in impervious surfaces and motor vehicle surfaces and the proposed infiltration basins and porous pavement system will provide treatment to remove total suspended solids to a satisfactory regulatory level.

The proposed project complies with all applicable stormwater management regulations and standards. As such, the project is not anticipated to have any adverse drainage impacts on neighboring properties, downstream watercourses, or adjoining conveyance systems.

9.0 REFERENCES

1. New Jersey Administrative Code Title 7, Chapter 8 Stormwater Management, last amended March 2, 2020
https://www.nj.gov/dep/rules/rules/njac7_8.pdf
2. New Jersey Stormwater Best Management Practices Manual, last revised March 2, 2020
https://www.njstormwater.org/bmp_manual2.htm
3. Pequannock Township Zoning Code, last amended November 23, 2021
<https://ecode360.com/36915264>

APPENDIX A

PROJECT FIGURES

INVENTORY

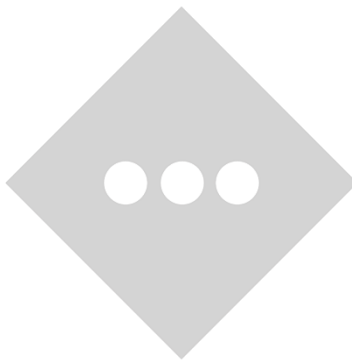
FIGURE 1: USGS LOCATION MAP

FIGURE 2: AERIAL MAP

FIGURE 3: TAX & ZONING MAP

FIGURE 4: FEMA MAP

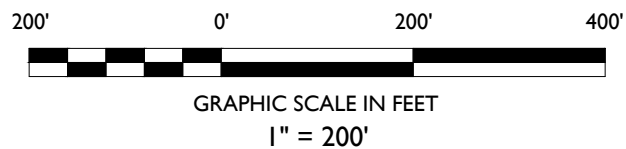
FIGURE 5: SITE PLAN



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AERIAL MAP



SOURCE: GOOGLE EARTH PRO 2020, IMAGE RETRIEVED JULY 11, 2022

ONE SCHOOL GLOBAL PROPOSED SCHOOLING REDEVELOPMENT

BLOCK 2103, LOT 21
60 SUNSET ROAD
TOWNSHIP OF PEQUANNOCK, MORRIS COUNTY, NEW JERSEY

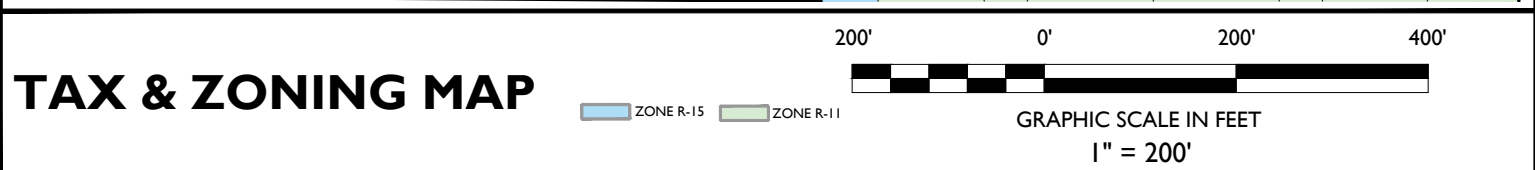
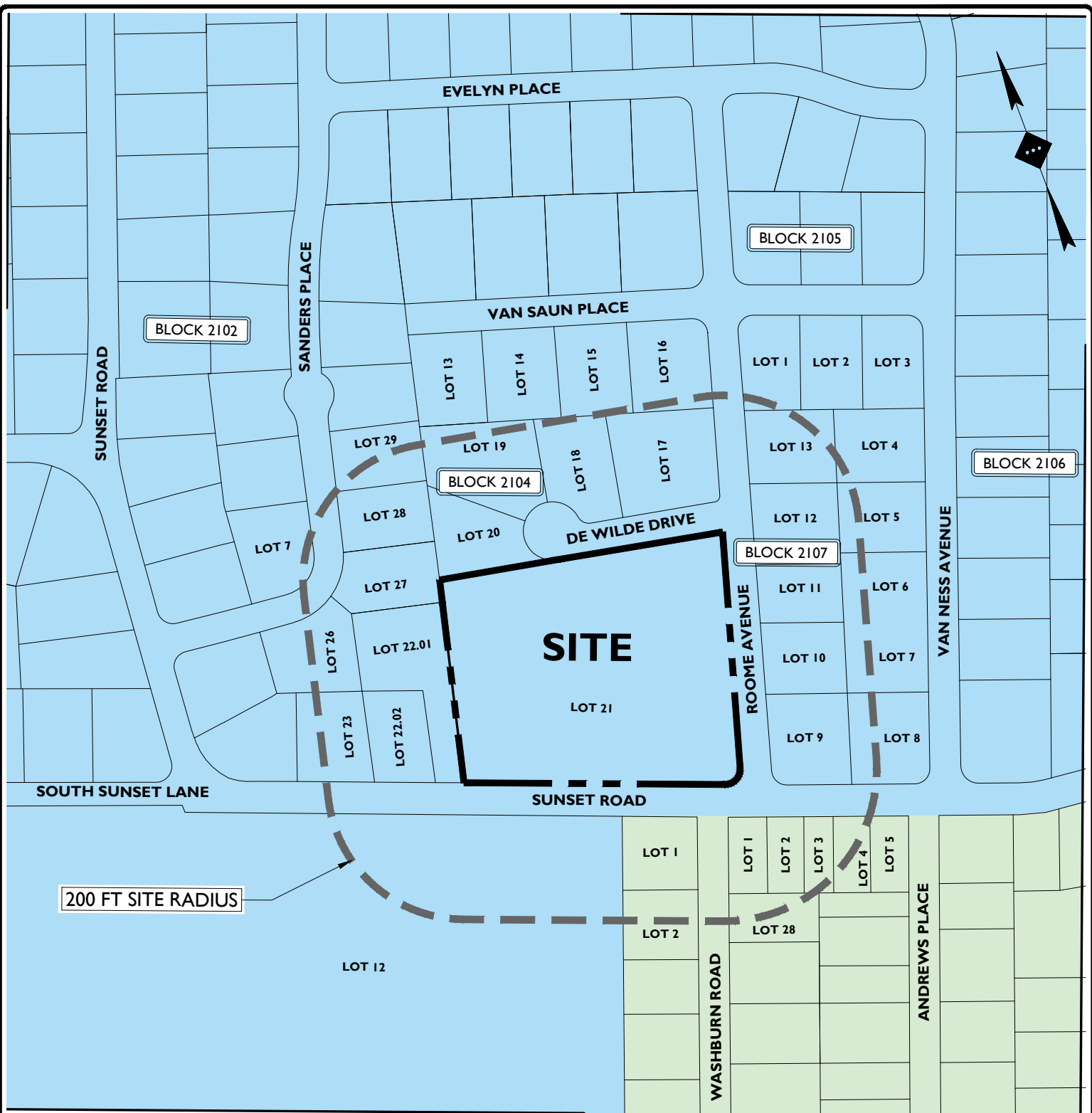
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PROJECT ID:	RUT-220209

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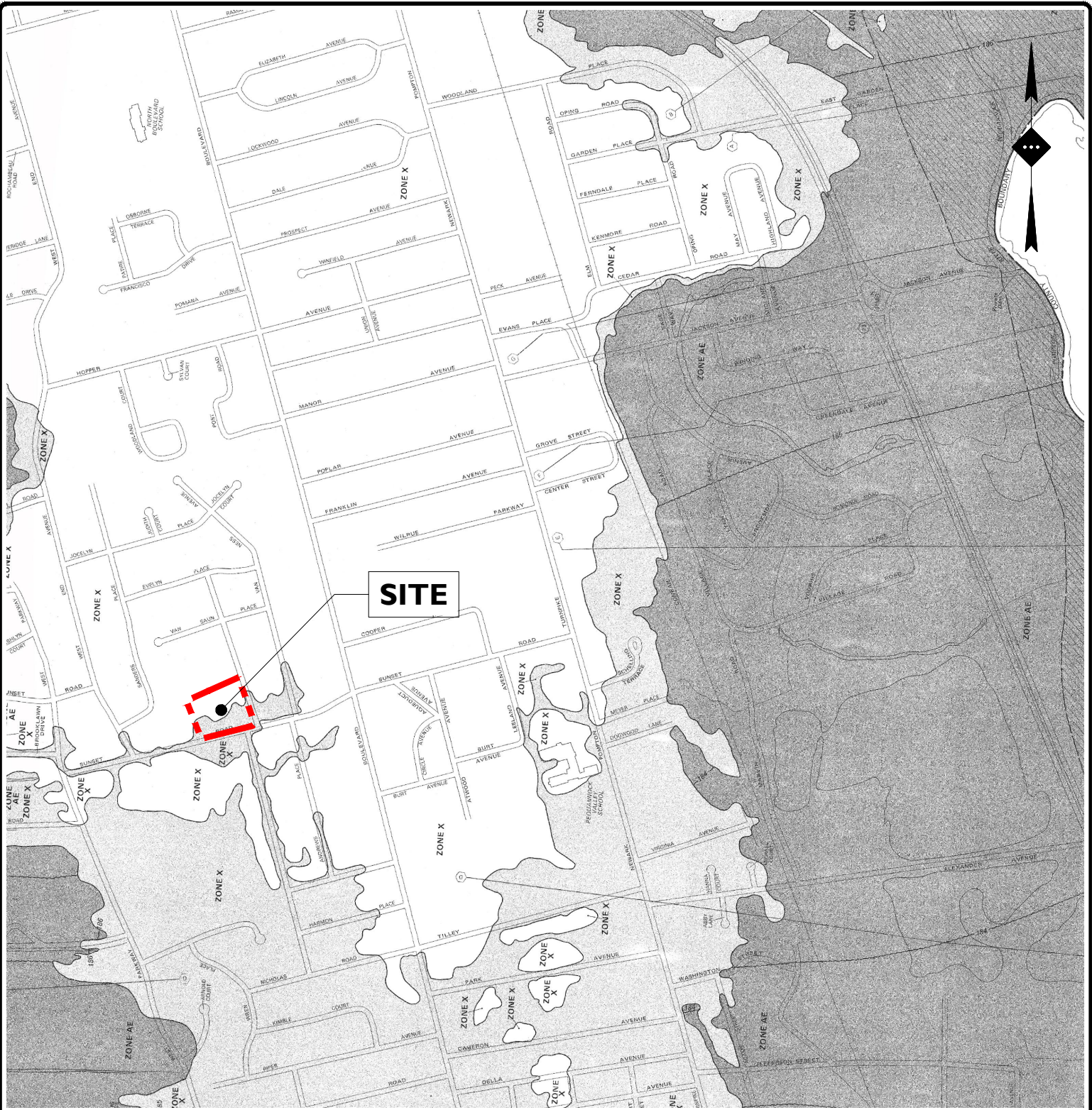
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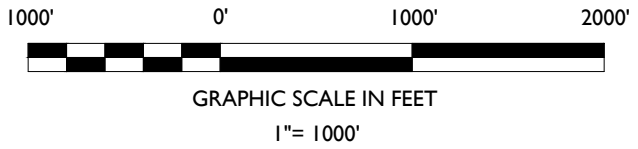


TAX & ZONING MAP		ONE SCHOOL GLOBAL		PROPOSED SCHOOLING REDEVELOPMENT	
SOURCE: TOWNSHIP OF PEQUANNOCK TAX MAP SHEETS 21 & 25 DATED APRIL 28, 2005. TOWNSHIP OF PEQUANNOCK ZONING MAP DATED APRIL, 2021.		BLOCK 2103, LOT 21 60 SUNSET ROAD TOWNSHIP OF PEQUANNOCK, MORRIS COUNTY, NEW JERSEY		DRAWN BY: LJ	
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				 STONEFIELD engineering & design	
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EFFECTIVE FEMA FIRM MAP



SOURCE: FLOOD INSURANCE RATE MAP, MORRIS COUNTY, NEW JERSEY, MAP NUMBERS 3453110003C DATED SEPTEMBER 17, 1992.

ONE SCHOOL GLOBAL PROPOSED SCHOOLING REDEVELOPMENT

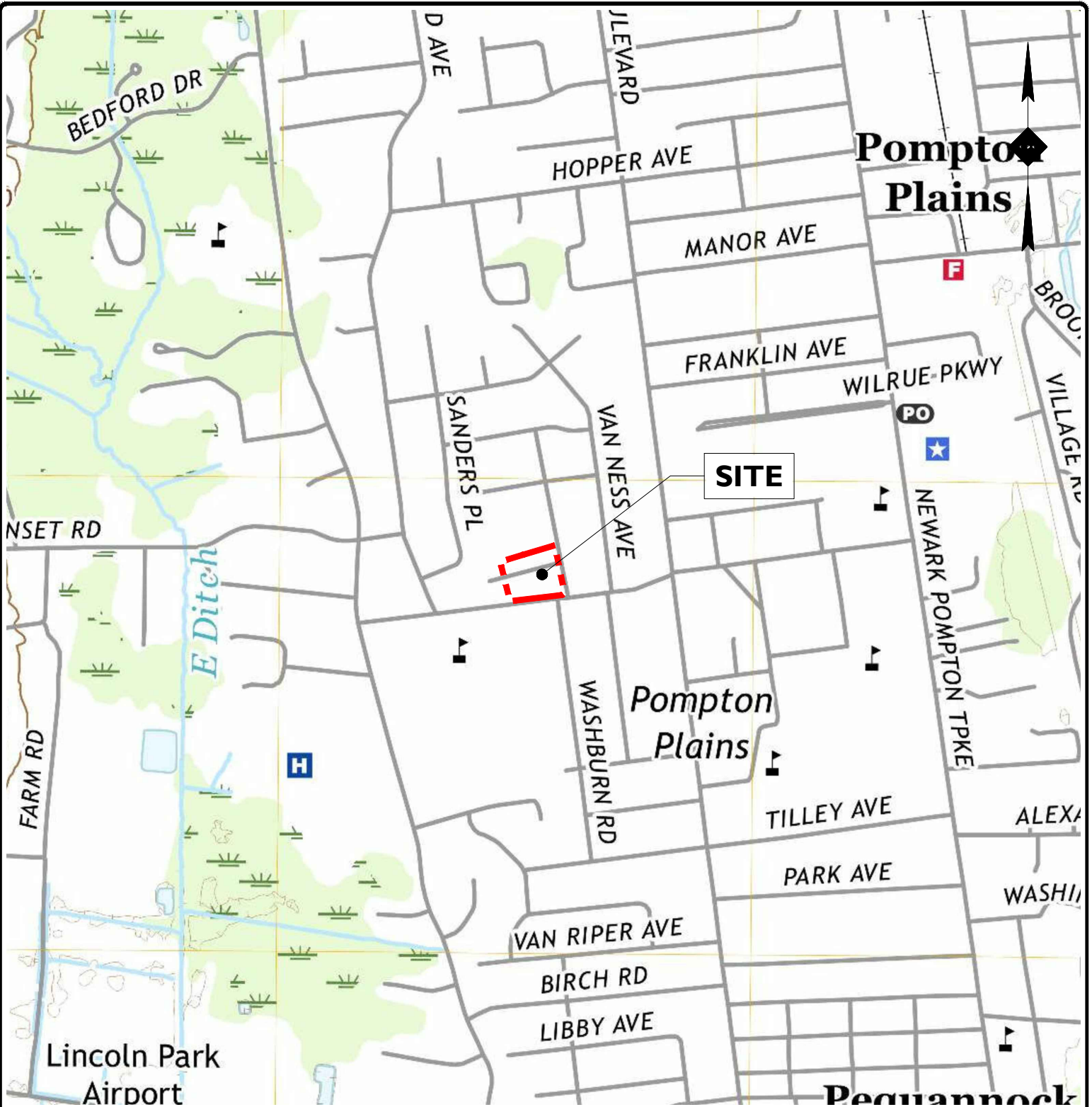
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USGS QUADRANGLE MAP

1000' 0' 1000' 2000'



GRAPHIC SCALE IN FEET

1" = 1000'

SOURCE: UNITED STATES GEOLOGICAL SURVEY QUADRANGLE MAP, POMPTON PLAINS, NEW JERSEY, 7.5 MINUTE SERIES, 2019.

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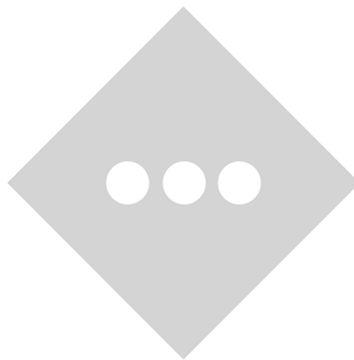
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CONDITIONAL USE REQUIREMENTS		
CODE SECTION	REQUIRED	PROPOSED
§360-.46.G.	MINIMUM LOT SIZE: 5 AC	3.98 AC (V)
§360-.46.G.	MINIMUM FRONTAGE: 50 FT	456.3 FT
§360-.46.G.	MINIMUM LOT WIDTH: 300 FT	456.3 FT
§360-.46.G.	MAXIMUM HEIGHT: 35 FT/2 STORIES	21.9 FT
§360-.46.G.	MINIMUM SIDE YARD SETBACK: 50 FT	105.3 FT
§360-.46.G.	MINIMUM REAR YARD SETBACK: 50 FT	154.2 FT
§360-.46.G.	SIDE YARD AND REAR YARD BUFFER: 25 FT	25 FT
§360-.56.E.(5)	NO PARKING FACILITIES FOR CONDITIONAL USES PERMITTED IN RESIDENTIAL ZONES MAY BE ESTABLISHED WITHIN THE FRONT YARD SETBACK.	50.0 FT

APPENDIX B

PROJECT SOILS





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 **Morris County, New Jersey**



August 8, 2022

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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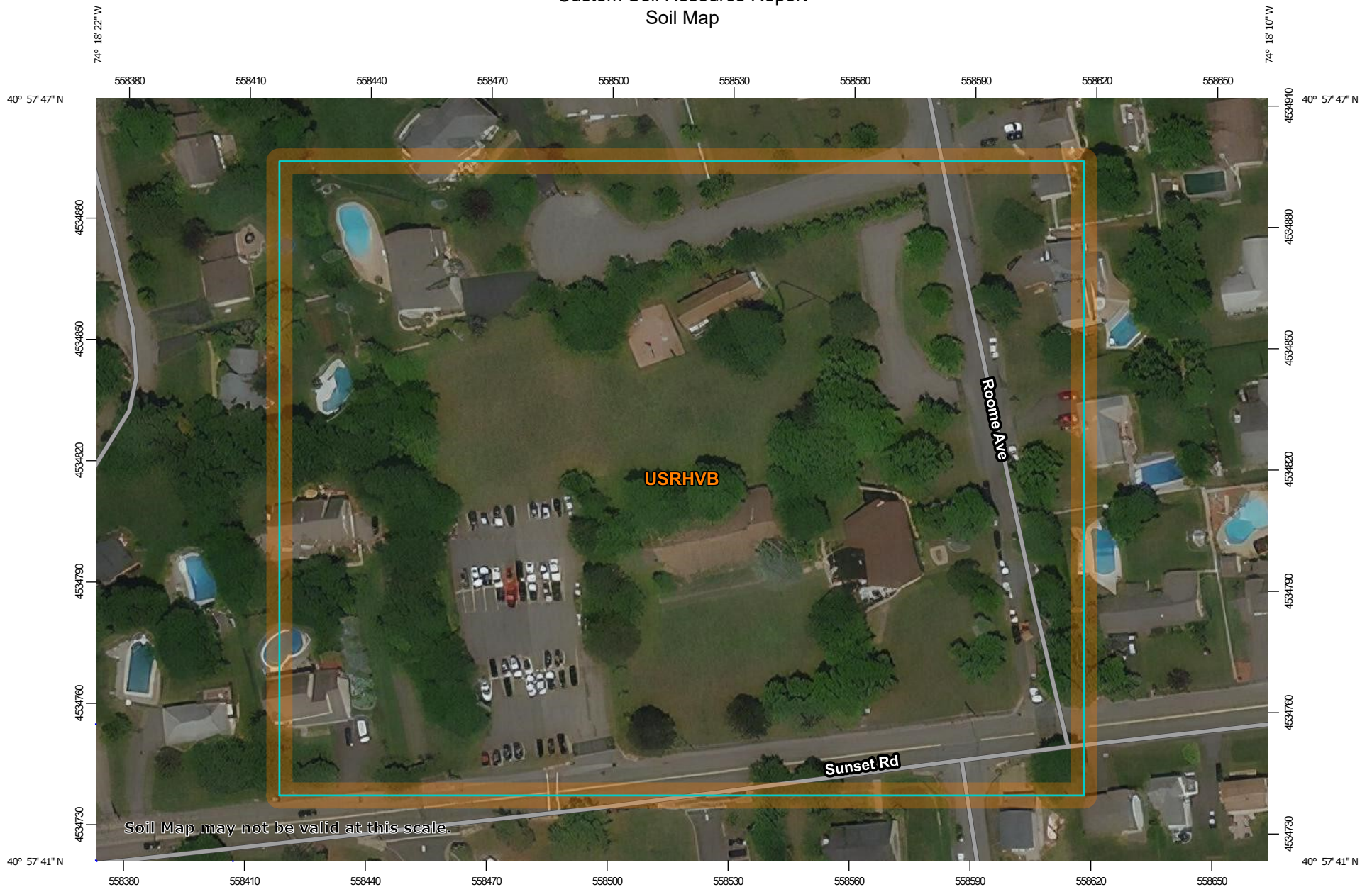
Contents

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Map Unit Legend.....	8
Map Unit Descriptions.....	8
Morris County, New Jersey.....	10
USRHVB—Urban land-Riverhead complex, 3 to 8 percent slopes.....	10
References	12

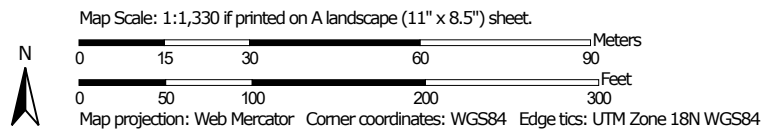
Soil Map

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



Soil Map may not be valid at this scale.



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 1:24,000.

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: Morris County, New Jersey
Survey Area Data: Version 16, Aug 31, 2021

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

Date(s) aerial images were photographed: Dec 31, 2009—Feb 26, 2017

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
USRHVB	Urban land-Riverhead complex, 3 to 8 percent slopes	7.8	100.0%
Totals for Area of Interest		7.8	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.

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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.

Morris County, New Jersey

USRHVB—Urban land-Riverhead complex, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 13q0d
Elevation: 0 to 950 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 60 percent
Riverhead and similar soils: 40 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landform: Outwash fans
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Linear, concave
Across-slope shape: Linear
Parent material: Surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

Typical profile

C - 0 to 60 inches: variable

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: Unranked

Description of Riverhead

Setting

Landform: Outwash fans
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Glaciofluvial deposits derived from granite and gneiss

Typical profile

A - 0 to 10 inches: sandy loam
Bw - 10 to 26 inches: gravelly sandy loam
BC - 26 to 36 inches: gravelly sandy loam
C - 36 to 60 inches: gravelly sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low

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Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2s

Hydrologic Soil Group: B

Hydric soil rating: No

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Custom Soil Resource Report

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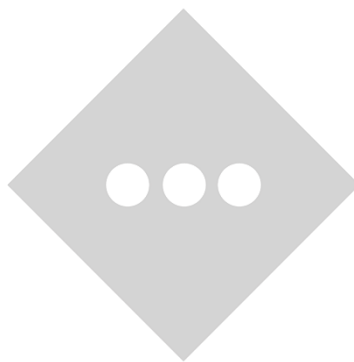
APPENDIX C

HYDROLOGIC & HYDRAULIC CALCULATIONS

INVENTORY

C-1: HYDROCAD NODE SCHEMATIC DIAGRAM

C-2: HYDROCAD HYDROLOGIC CALCULATIONS





EX-1
Existing Drainage
towards Sunset Road



EX-2
Existing Drainage
towards Roome
Avenue



EX-3
Existing Drainage
towards Dewilde Drive



P-1A
Drainage to Infiltration
Basin Along Sunset
Road



P-1B
Drainage to Porous
Pavement in Tandem
Spaces



P-1C
Drainage to Infiltration
Basin in Rear



P-2
Proposed Drainage to
Roome Avenue



P-3
Proposed Drainage
toward Dewilde Drive



B-1
Infiltration Basin Along
Sunset Road



B-2
Porous Pavement
Within Tandem Spaces



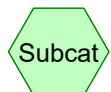
B-3
Infiltration Basin in Rear



P-1D
Undetained Flow to
Sunset Road



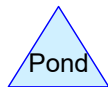
POI-1
Proposed Drainage to
Sunset Road



Subcat



Reach



Pond



Link

Routing Diagram for 2023-02-13_HydroCAD -PK

Prepared by Stonefield Engineering & Design, Printed 2/14/2023
HydroCAD® 10.20-2d s/n 10626 © 2021 HydroCAD Software Solutions LLC

Project Notes

Rainfall events imported from "NRCS-Rain.txt" for 6613 NJ Morris-D

Summary for Subcatchment EX-1: Existing Drainage towards Sunset Road

Runoff = 2.48 cfs @ 12.20 hrs, Volume= 11,316 cf, Depth= 1.55"

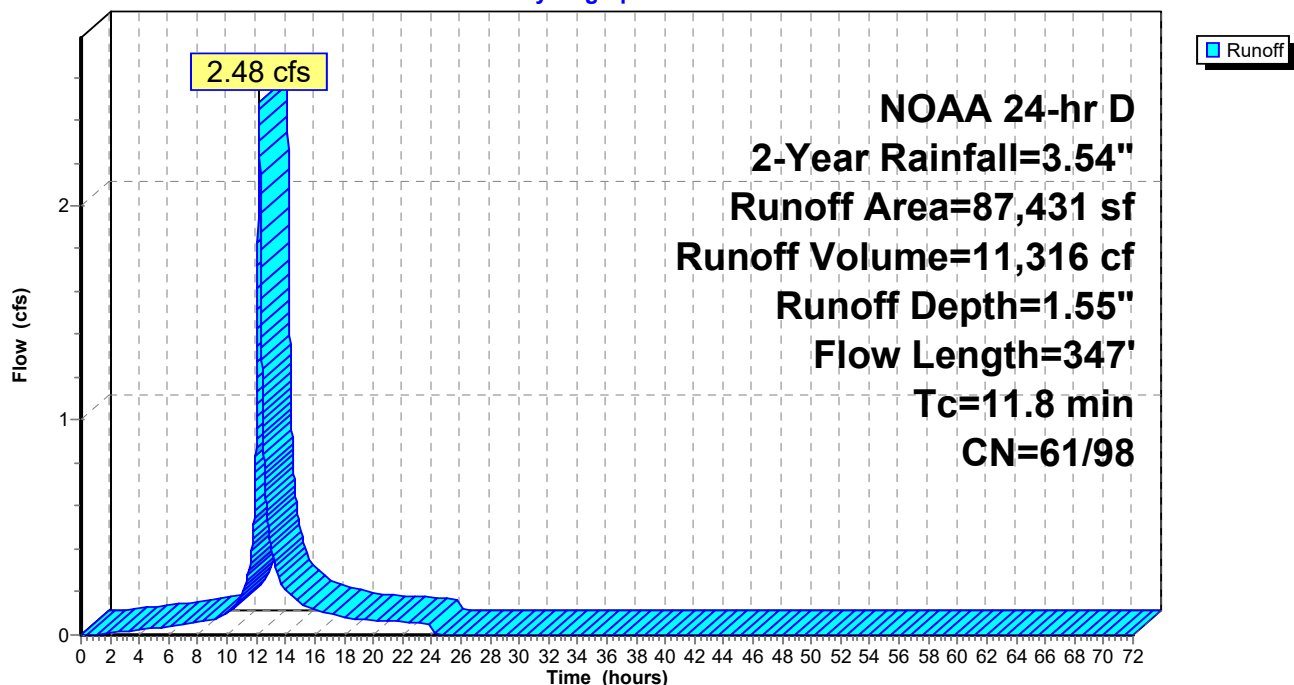
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 2-Year Rainfall=3.54"

	Area (sf)	CN	Description
*	30,985	98	Impervious
	56,446	61	>75% Grass cover, Good, HSG B
	87,431	74	Weighted Average
	56,446	61	64.56% Pervious Area
	30,985	98	35.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	100	0.0258	0.20		Sheet Flow, 100 LF Sheet Flow (1-2) Grass: Short n= 0.150 P2= 3.54"
1.6	86	0.0031	0.90		Shallow Concentrated Flow, 86 LF SCF (2-3) Unpaved Kv= 16.1 fps
0.1	10	0.0200	2.87		Shallow Concentrated Flow, 10 LF SCF (3-4) Paved Kv= 20.3 fps
1.7	151	0.0080	1.44		Shallow Concentrated Flow, 151 LF SCF (4-5) Unpaved Kv= 16.1 fps
11.8	347	Total			

Subcatchment EX-1: Existing Drainage towards Sunset Road

Hydrograph



Summary for Subcatchment EX-2: Existing Drainage towards Roome Avenue

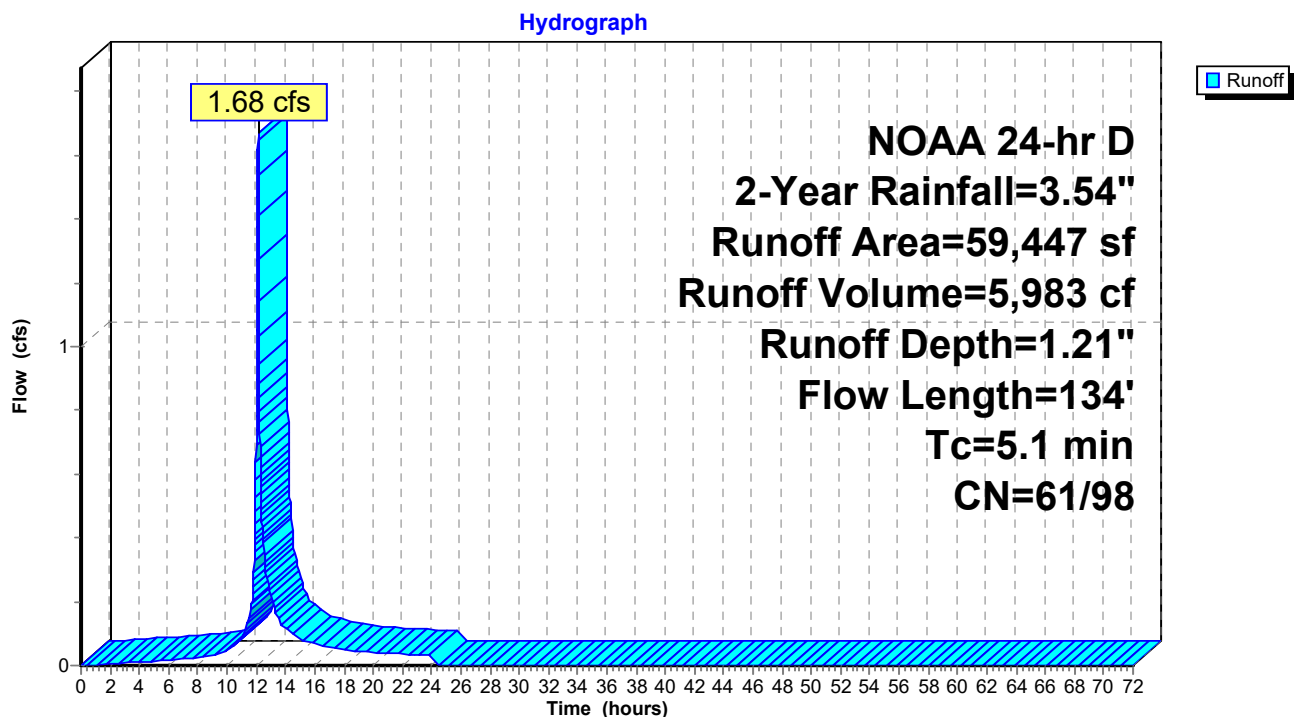
Runoff = 1.68 cfs @ 12.13 hrs, Volume= 5,983 cf, Depth= 1.21"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 2-Year Rainfall=3.54"

	Area (sf)	CN	Description
*	13,506	98	Impervious
	45,941	61	>75% Grass cover, Good, HSG B
	59,447	69	Weighted Average
	45,941	61	77.28% Pervious Area
	13,506	98	22.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	30	0.0170	0.13		Sheet Flow, 30 LF Sheet Flow (1-2) Grass: Short n= 0.150 P2= 3.54"
0.1	9	0.0110	2.13		Shallow Concentrated Flow, 9 LF SCF (2-3) Paved Kv= 20.3 fps
0.6	39	0.0050	1.14		Shallow Concentrated Flow, 39 LF SCF (3-4) Unpaved Kv= 16.1 fps
0.2	25	0.0092	1.95		Shallow Concentrated Flow, 25 LF SCF (4-5) Paved Kv= 20.3 fps
0.4	31	0.0081	1.45		Shallow Concentrated Flow, 31 LF SCF (5-6) Unpaved Kv= 16.1 fps
5.1	134	Total			

Subcatchment EX-2: Existing Drainage towards Roome Avenue



Summary for Subcatchment EX-3: Existing Drainage towards Dewilde Drive

Runoff = 0.31 cfs @ 12.27 hrs, Volume= 1,659 cf, Depth= 0.75"

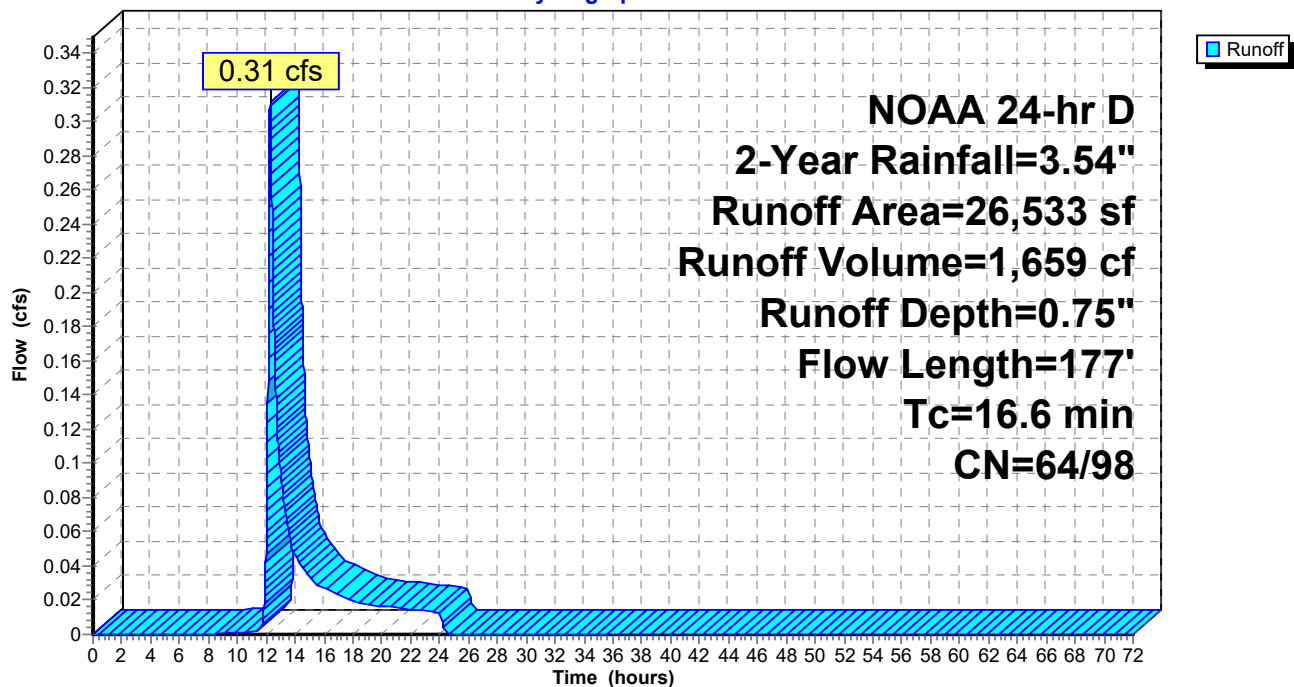
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 2-Year Rainfall=3.54"

Area (sf)	CN	Description
* 255	98	Impervious
2,009	96	Gravel surface, HSG B
24,269	61	>75% Grass cover, Good, HSG B
26,533	64	Weighted Average
26,278	64	99.04% Pervious Area
255	98	0.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.8	100	0.0053	0.11		Sheet Flow, 100 LF Sheet Flow (1-2)
					Grass: Short n= 0.150 P2= 3.54"
0.8	77	0.0111	1.70		Shallow Concentrated Flow, 77 LF SCF (2-3)
					Unpaved Kv= 16.1 fps
16.6	177	Total			

Subcatchment EX-3: Existing Drainage towards Dewilde Drive

Hydrograph



Summary for Subcatchment P-1A: Drainage to Infiltration Basin Along Sunset Road

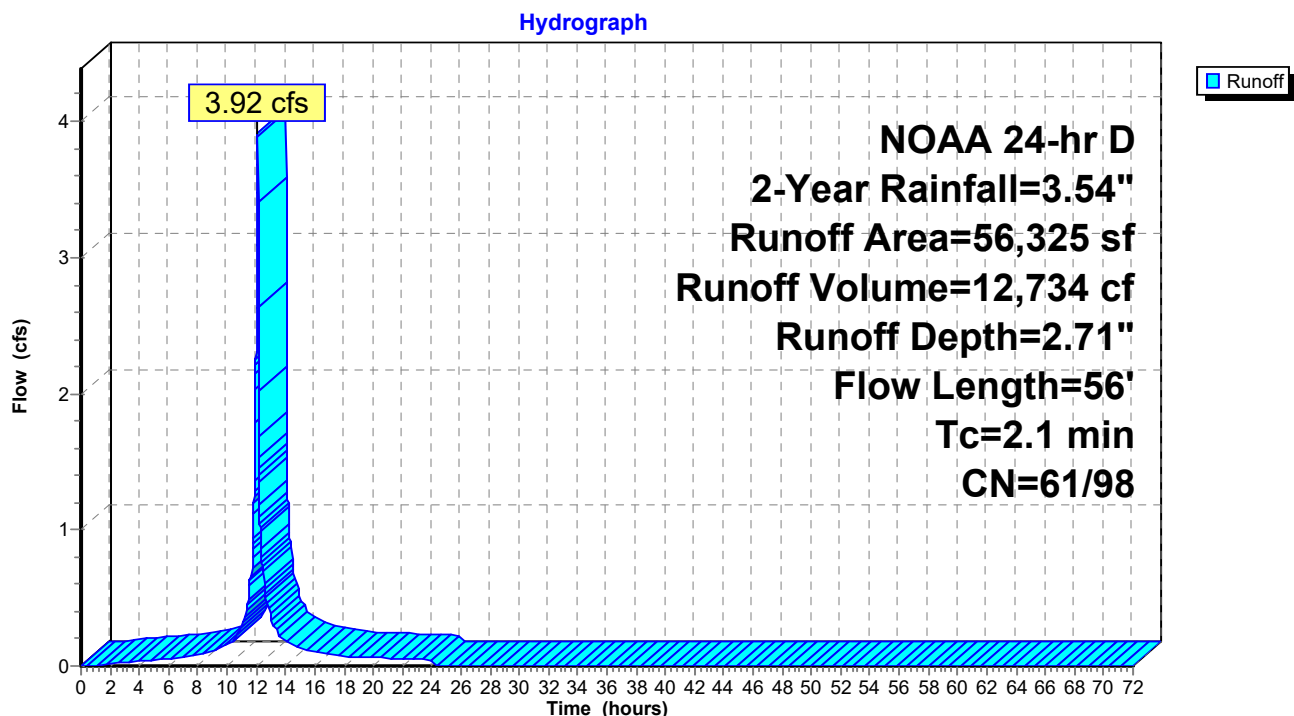
Runoff = 3.92 cfs @ 12.10 hrs, Volume= 12,734 cf, Depth= 2.71"

Routed to Pond B-1 : Infiltration Basin Along Sunset Road

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 2-Year Rainfall=3.54"

	Area (sf)	CN	Description
	12,309	61	>75% Grass cover, Good, HSG B
*	27,825	98	Roof Area
*	16,191	98	Impervious Area
	56,325	90	Weighted Average
	12,309	61	21.85% Pervious Area
	44,016	98	78.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	12	0.0127	0.10		Sheet Flow, 12 LF Sheet Flow (1-2) Grass: Short n= 0.150 P2= 3.54"
0.1	23	0.0167	2.62		Shallow Concentrated Flow, 23 LF SCF (2-3) Paved Kv= 20.3 fps
0.0	21	0.2500	8.05		Shallow Concentrated Flow, 21 LF SCF (3-4) Unpaved Kv= 16.1 fps
2.1	56	Total			

Subcatchment P-1A: Drainage to Infiltration Basin Along Sunset Road

Summary for Subcatchment P-1B: Drainage to Porous Pavement in Tandem Spaces

Runoff = 1.06 cfs @ 12.10 hrs, Volume= 3,458 cf, Depth= 3.28"
 Routed to Pond B-2 : Porous Pavement Within Tandem Spaces

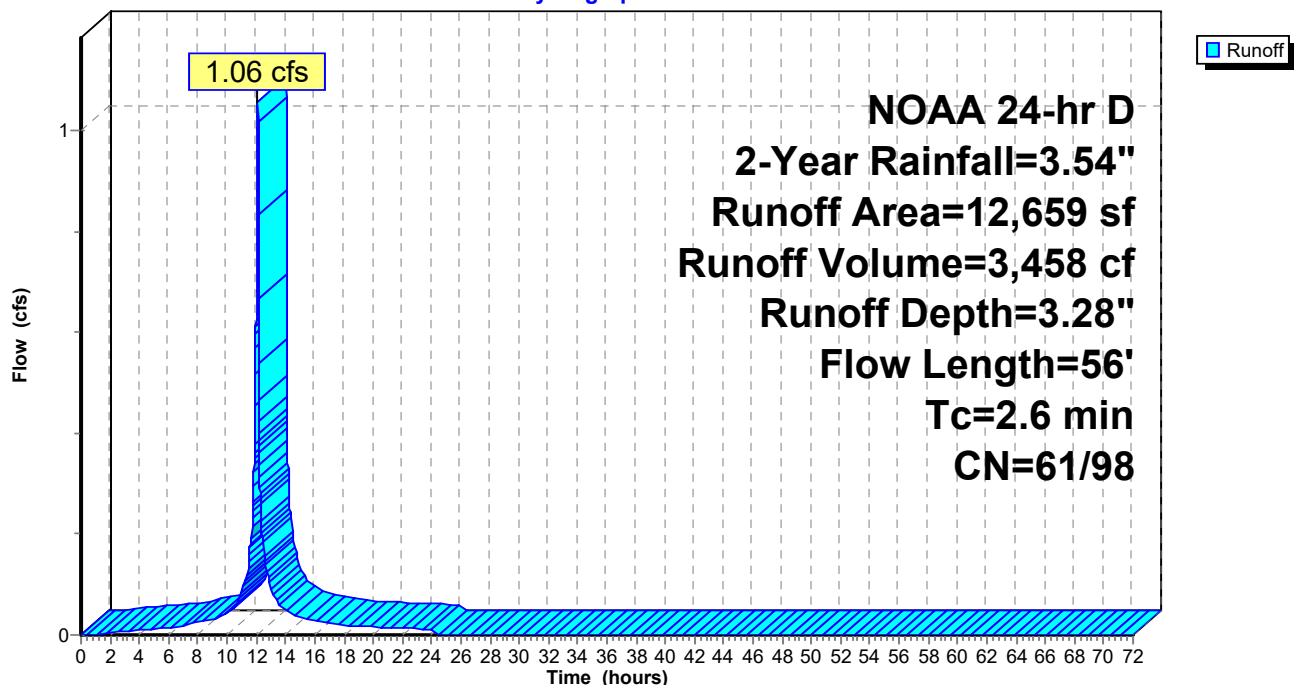
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Year Rainfall=3.54"

Area (sf)	CN	Description
132	61	>75% Grass cover, Good, HSG B
* 3,564	98	Porous Pavement
* 8,963	98	Impervious Area
12,659	98	Weighted Average
132	61	1.04% Pervious Area
12,527	98	98.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	15	0.0127	0.10		Sheet Flow, 15 LF Sheet Flow (1-2)
					Grass: Short n= 0.150 P2= 3.54"
0.2	41	0.0250	3.21		Shallow Concentrated Flow, 41 LF SCF (2-3)
					Paved Kv= 20.3 fps
2.6	56	Total			

Subcatchment P-1B: Drainage to Porous Pavement in Tandem Spaces

Hydrograph



Summary for Subcatchment P-1C: Drainage to Infiltration Basin in Rear

Runoff = 2.09 cfs @ 12.18 hrs, Volume= 8,039 cf, Depth= 1.42"
 Routed to Pond B-3 : Infiltration Basin in Rear

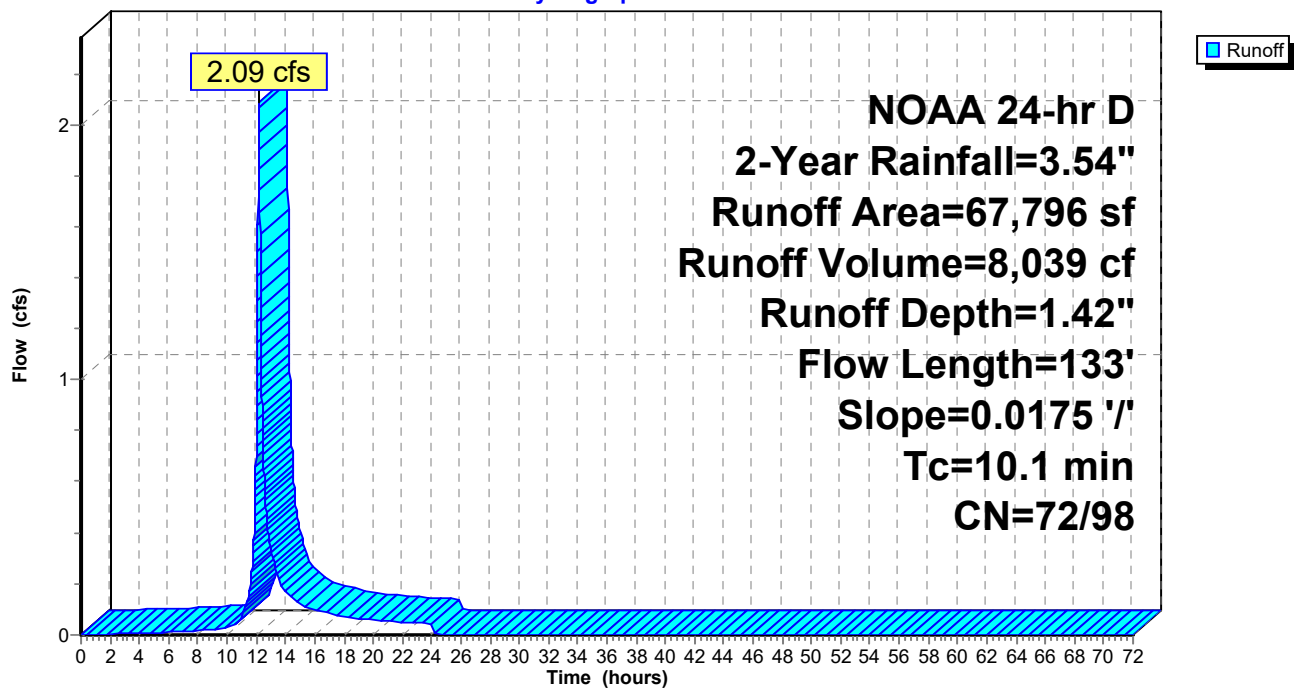
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Year Rainfall=3.54"

Area (sf)	CN	Description
26,076	61	>75% Grass cover, Good, HSG B
* 8,660	98	Impervious Area
* 33,060	80	Turf Field
67,796	75	Weighted Average
59,136	72	87.23% Pervious Area
8,660	98	12.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.0175	0.17		Sheet Flow, 100 LF Sheet Flow Grass: Short n= 0.150 P2= 3.54"
0.3	33	0.0175	2.13		Shallow Concentrated Flow, 33 LF SCF (2-3) Unpaved Kv= 16.1 fps
10.1	133	Total			

Subcatchment P-1C: Drainage to Infiltration Basin in Rear

Hydrograph



Summary for Subcatchment P-1D: Undetained Flow to Sunset Road

Runoff = 0.20 cfs @ 12.18 hrs, Volume= 883 cf, Depth= 0.76"
 Routed to Link POI-1 : Proposed Drainage to Sunset Road

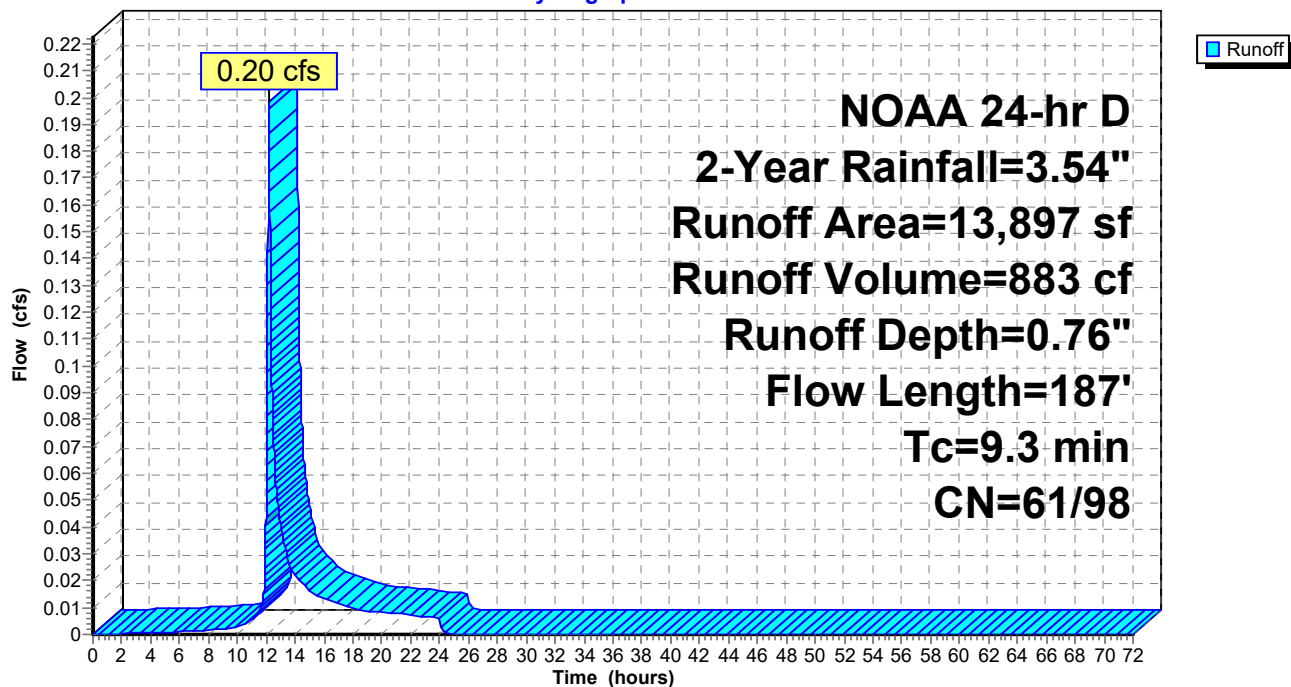
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 2-Year Rainfall=3.54"

Area (sf)	CN	Description
13,017	61	>75% Grass cover, Good, HSG B
* 880	98	Impervious Area
13,897	63	Weighted Average
13,017	61	93.67% Pervious Area
880	98	6.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	100	0.0250	0.20		Sheet Flow, 100 LF Sheet Flow (1-2) Grass: Short n= 0.150 P2= 3.54"
0.8	87	0.0135	1.87		Shallow Concentrated Flow, 87 LF SCF (2-3) Unpaved Kv= 16.1 fps
9.3	187	Total			

Subcatchment P-1D: Undetained Flow to Sunset Road

Hydrograph



Summary for Subcatchment P-2: Proposed Drainage to Roome Avenue

Runoff = 0.45 cfs @ 12.15 hrs, Volume= 1,824 cf, Depth= 1.04"

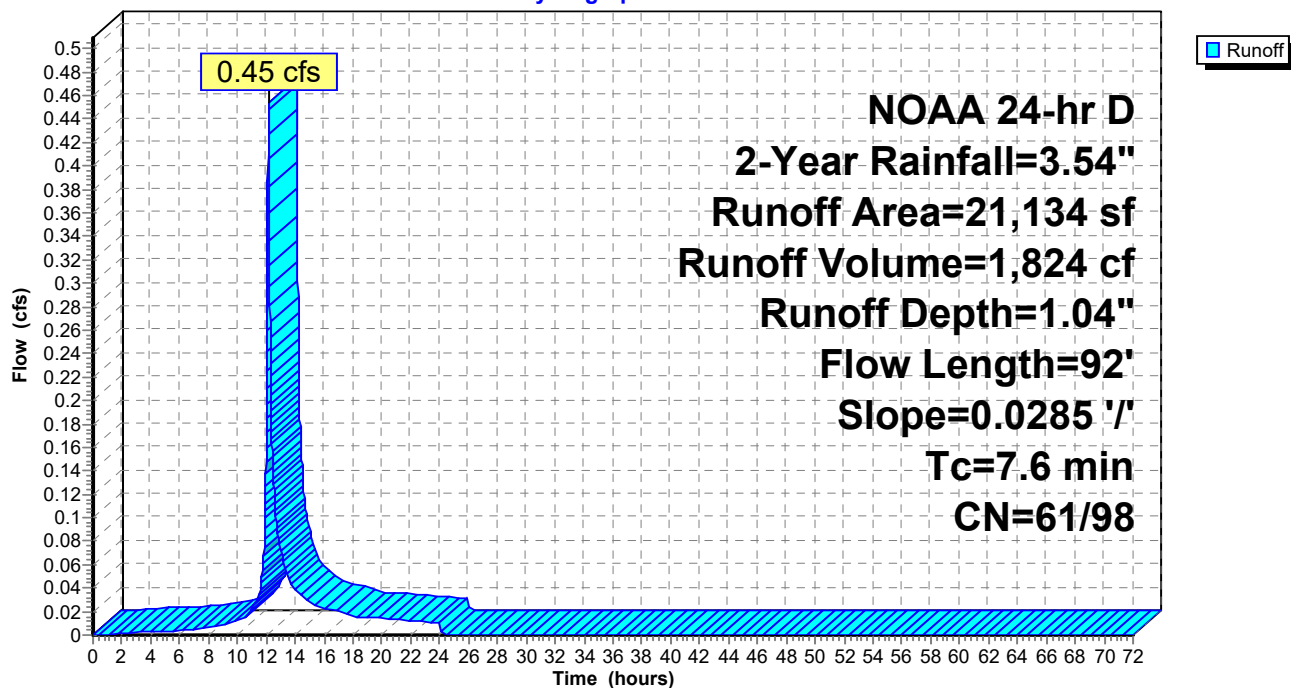
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 2-Year Rainfall=3.54"

Area (sf)	CN	Description
17,670	61	>75% Grass cover, Good, HSG B
* 3,464	98	Impervious Area
21,134	67	Weighted Average
17,670	61	83.61% Pervious Area
3,464	98	16.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	92	0.0285	0.20		Sheet Flow, 92 LF Sheet Flow (1-2)
					Grass: Short n= 0.150 P2= 3.54"

Subcatchment P-2: Proposed Drainage to Roome Avenue

Hydrograph



Summary for Subcatchment P-3: Proposed Drainage toward Dewilde Drive

Runoff = 0.03 cfs @ 12.11 hrs, Volume= 79 cf, Depth= 0.59"

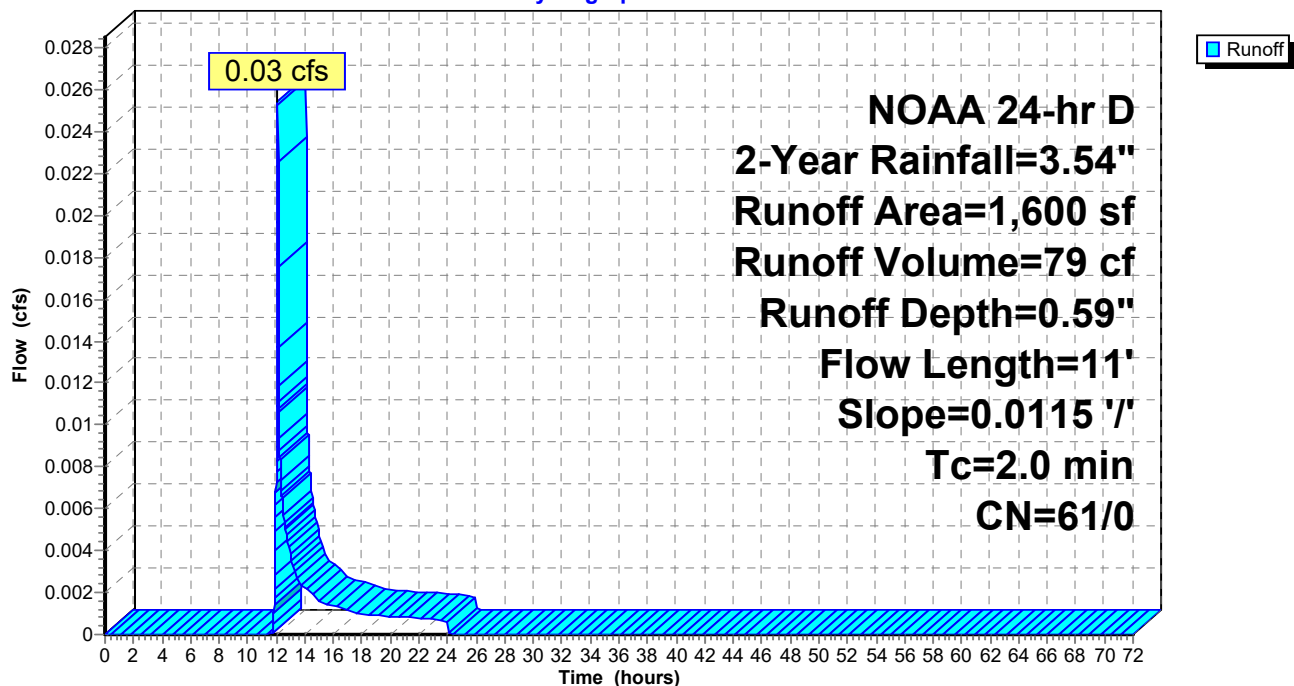
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 2-Year Rainfall=3.54"

Area (sf)	CN	Description
1,600	61	>75% Grass cover, Good, HSG B
1,600	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	11	0.0115	0.09		Sheet Flow, 11 LF Sheet Flow (1-2) Grass: Short n= 0.150 P2= 3.54"

Subcatchment P-3: Proposed Drainage toward Dewilde Drive

Hydrograph



Summary for Pond B-1: Infiltration Basin Along Sunset Road

Inflow Area = 56,325 sf, 78.15% Impervious, Inflow Depth = 2.71" for 2-Year event
 Inflow = 3.92 cfs @ 12.10 hrs, Volume= 12,734 cf
 Outflow = 0.45 cfs @ 12.75 hrs, Volume= 12,734 cf, Atten= 89%, Lag= 39.3 min
 Discarded = 0.08 cfs @ 12.75 hrs, Volume= 7,875 cf
 Primary = 0.37 cfs @ 12.75 hrs, Volume= 4,859 cf
 Routed to Link POI-1 : Proposed Drainage to Sunset Road

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 188.33' @ 12.75 hrs Surf.Area= 5,804 sf Storage= 6,120 cf

Plug-Flow detention time= 407.9 min calculated for 12,732 cf (100% of inflow)
 Center-of-Mass det. time= 408.0 min (1,168.2 - 760.3)

Volume	Invert	Avail.Storage	Storage Description		
#1	187.00'	14,171 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
187.00	3,406	592.8	0	0	3,406
188.00	5,212	611.7	4,277	4,277	5,315
189.00	7,076	630.5	6,120	10,397	7,275
189.50	8,029	639.9	3,774	14,171	8,276

Device	Routing	Invert	Outlet Devices
#1	Primary	185.89'	15.0" Round Culvert L= 26.0' Ke= 0.500 Inlet / Outlet Invert= 185.89' / 185.75' S= 0.0054 ' / Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	187.81'	5.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	188.60'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	189.15'	4.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#5	Discarded	187.00'	0.500 in/hr Exfiltration over Wetted area Conductivity to Groundwater Elevation = 180.00' Phase-In= 0.01'

Discarded OutFlow Max=0.08 cfs @ 12.75 hrs HW=188.33' (Free Discharge)

↑ **5=Exfiltration** (Controls 0.08 cfs)

Primary OutFlow Max=0.37 cfs @ 12.75 hrs HW=188.33' TW=0.00' (Dynamic Tailwater)

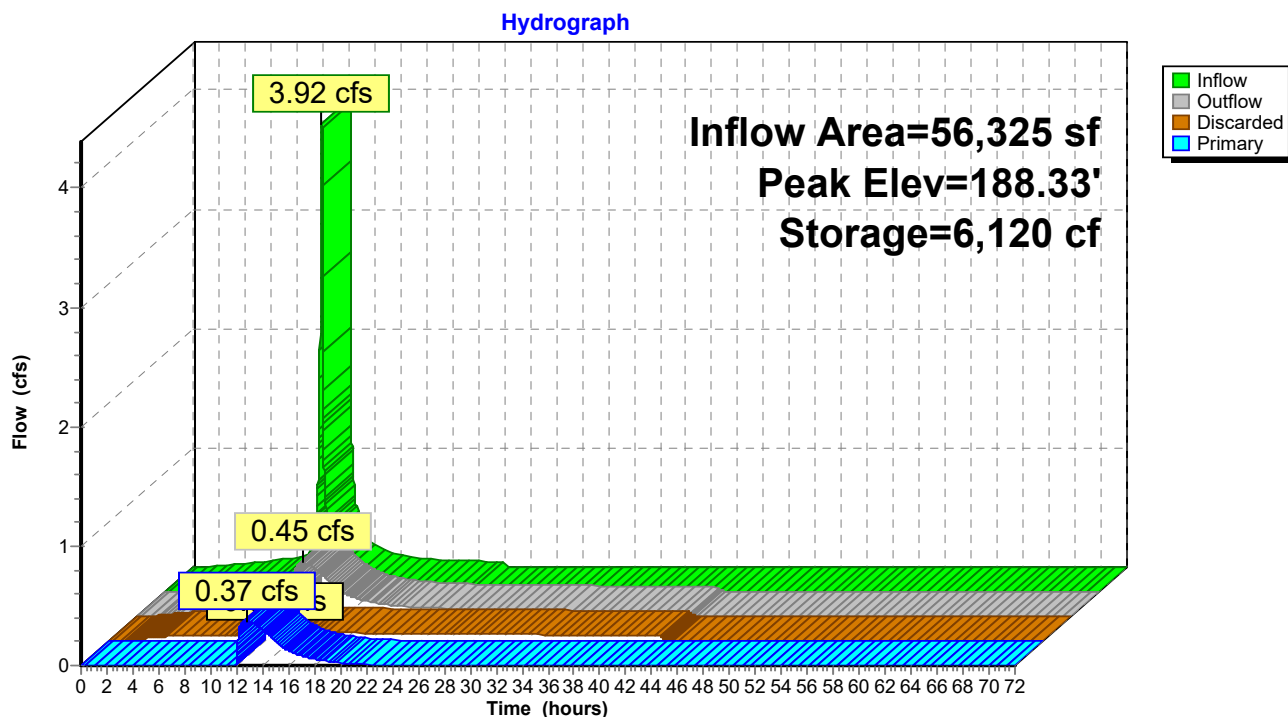
↑ **1=Culvert** (Passes 0.37 cfs of 7.84 cfs potential flow)

↑ **2=Orifice/Grate** (Orifice Controls 0.37 cfs @ 2.71 fps)

↑ **3=Orifice/Grate** (Controls 0.00 cfs)

↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B-1: Infiltration Basin Along Sunset Road



Summary for Pond B-2: Porous Pavement Within Tandem Spaces

Inflow Area = 12,659 sf, 98.96% Impervious, Inflow Depth = 3.28" for 2-Year event
 Inflow = 1.06 cfs @ 12.10 hrs, Volume= 3,458 cf
 Outflow = 0.12 cfs @ 12.73 hrs, Volume= 3,458 cf, Atten= 88%, Lag= 37.7 min
 Discarded = 0.05 cfs @ 12.73 hrs, Volume= 2,891 cf
 Primary = 0.07 cfs @ 12.73 hrs, Volume= 567 cf
 Routed to Link POI-1 : Proposed Drainage to Sunset Road

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 187.76' @ 12.73 hrs Surf.Area= 3,564 sf Storage= 1,295 cf

Plug-Flow detention time= 153.5 min calculated for 3,458 cf (100% of inflow)
 Center-of-Mass det. time= 153.5 min (906.8 - 753.3)

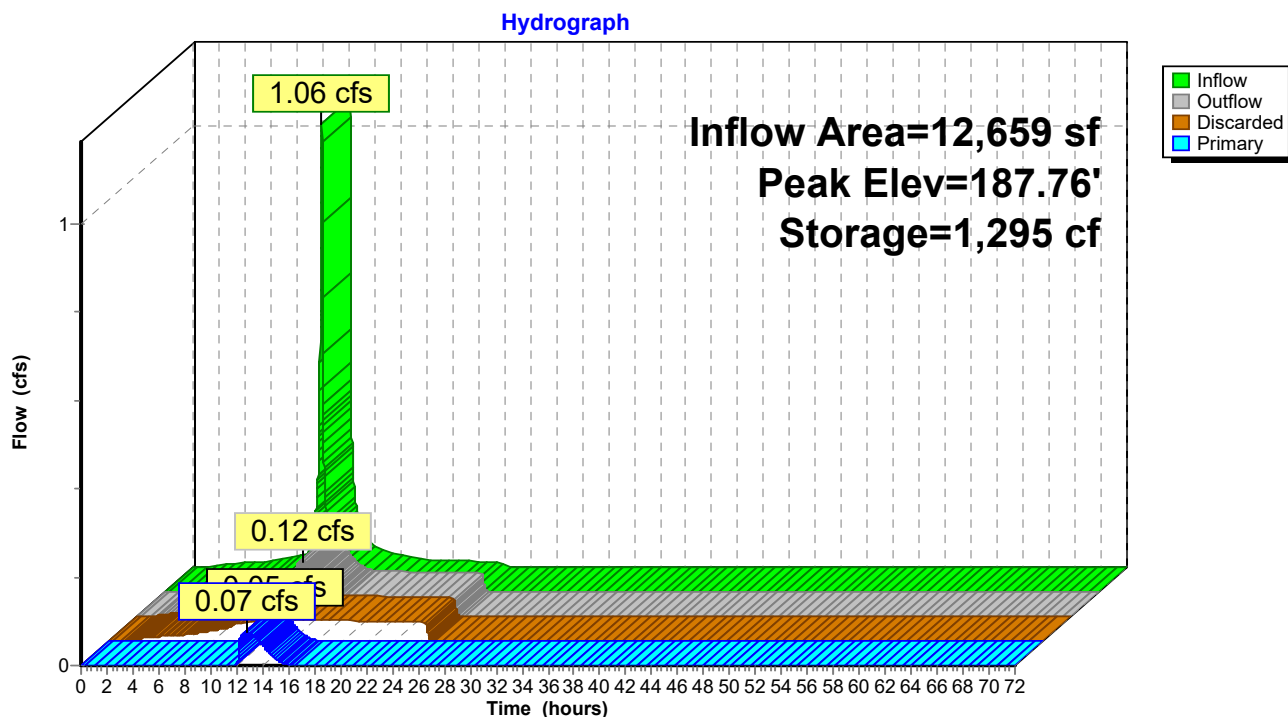
Volume	Invert	Avail.Storage	Storage Description
#1	186.85'	2,851 cf	Custom Stage Data (Irregular) Listed below (Recalc) 7,128 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
186.85	3,564	306.0	0	0	3,564
187.85	3,564	306.0	3,564	3,564	3,870
188.85	3,564	306.0	3,564	7,128	4,176

Device	Routing	Invert	Outlet Devices
#1	Primary	186.85'	15.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 186.85' / 185.75' S= 0.0081 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	187.45'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	188.45'	6.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#4	Discarded	186.85'	0.500 in/hr Exfiltration over Wetted area Conductivity to Groundwater Elevation = 180.00' Phase-In= 0.01'

Discarded OutFlow Max=0.05 cfs @ 12.73 hrs HW=187.76' (Free Discharge)
 ↳ **4=Exfiltration** (Controls 0.05 cfs)

Primary OutFlow Max=0.07 cfs @ 12.73 hrs HW=187.76' TW=0.00' (Dynamic Tailwater)
 ↳ **1=Culvert** (Passes 0.07 cfs of 3.00 cfs potential flow)
 ↳ **2=Orifice/Grate** (Orifice Controls 0.07 cfs @ 2.18 fps)
 ↳ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B-2: Porous Pavement Within Tandem Spaces

Summary for Pond B-3: Infiltration Basin in Rear

Inflow Area = 67,796 sf, 12.77% Impervious, Inflow Depth = 1.42" for 2-Year event
 Inflow = 2.09 cfs @ 12.18 hrs, Volume= 8,039 cf
 Outflow = 0.69 cfs @ 12.48 hrs, Volume= 8,039 cf, Atten= 67%, Lag= 17.9 min
 Discarded = 0.06 cfs @ 12.48 hrs, Volume= 3,548 cf
 Primary = 0.63 cfs @ 12.48 hrs, Volume= 4,492 cf
 Routed to Link POI-1 : Proposed Drainage to Sunset Road

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 188.61' @ 12.48 hrs Surf.Area= 4,045 sf Storage= 2,244 cf

Plug-Flow detention time= 125.0 min calculated for 8,038 cf (100% of inflow)
 Center-of-Mass det. time= 125.0 min (968.6 - 843.6)

Volume	Invert	Avail.Storage	Storage Description		
#1	188.00'	9,144 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
188.00	3,308	335.0	0	0	3,308
189.00	4,551	370.0	3,913	3,913	5,303
190.00	5,942	405.0	5,231	9,144	7,496

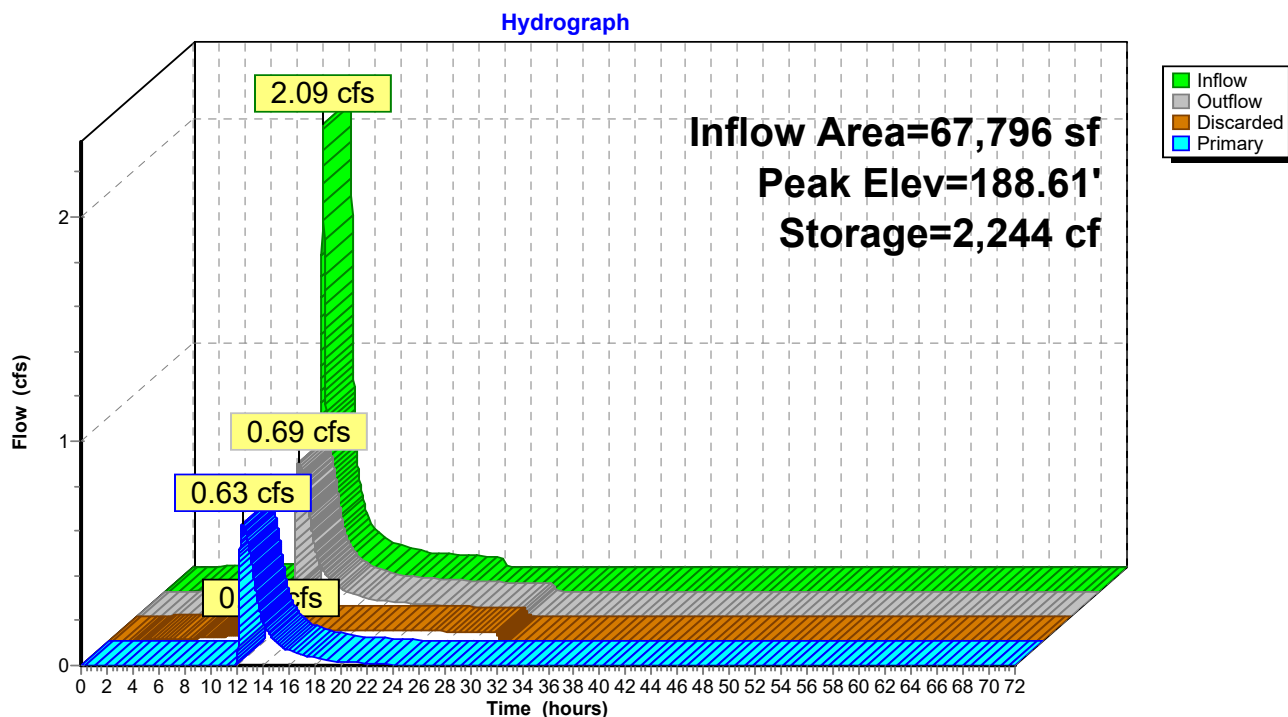
Device	Routing	Invert	Outlet Devices
#1	Primary	187.50'	15.0" Round Culvert L= 325.0' Ke= 0.500 Inlet / Outlet Invert= 187.50' / 185.85' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	188.25'	15.0" W x 2.5" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	188.85'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	189.65'	4.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#5	Discarded	188.00'	0.500 in/hr Exfiltration over Wetted area Conductivity to Groundwater Elevation = 180.10' Phase-In= 0.01'

Discarded OutFlow Max=0.06 cfs @ 12.48 hrs HW=188.61' (Free Discharge)

↑**5=Exfiltration** (Controls 0.06 cfs)

Primary OutFlow Max=0.63 cfs @ 12.48 hrs HW=188.61' TW=0.00' (Dynamic Tailwater)

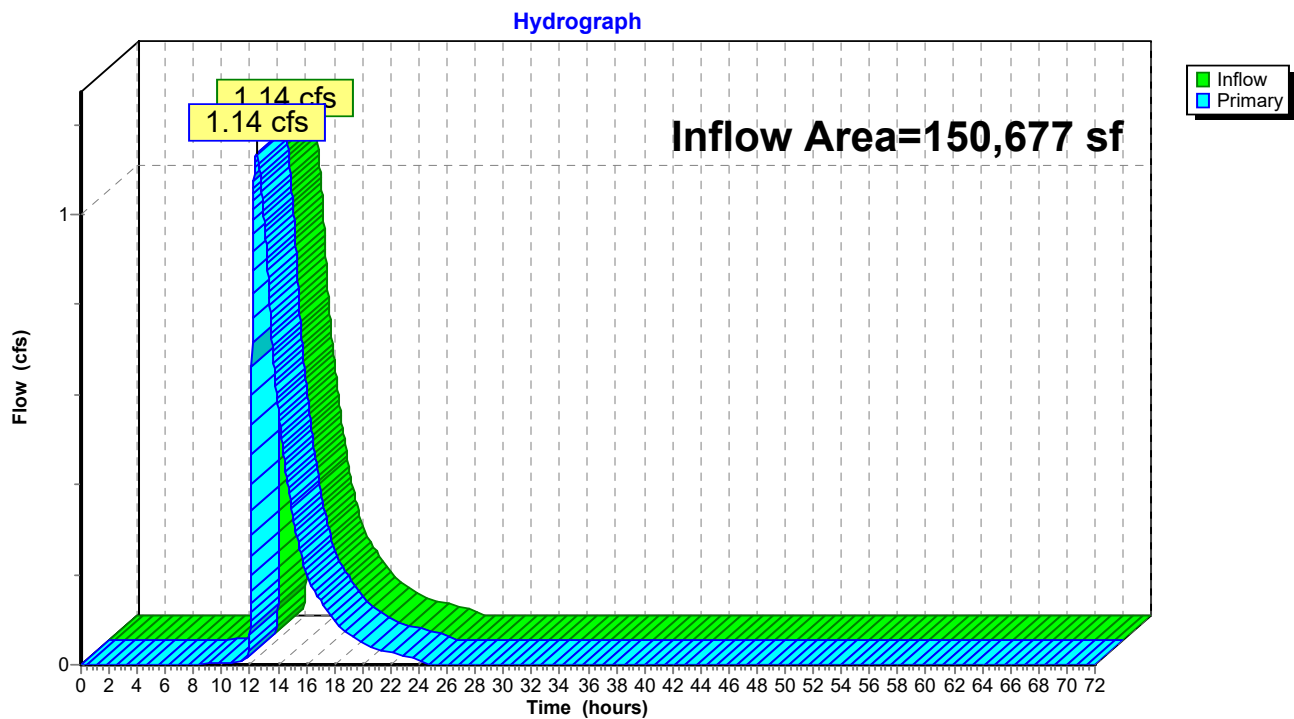
↑**1=Culvert** (Passes 0.63 cfs of 3.49 cfs potential flow)
 ↑**2=Orifice/Grate** (Orifice Controls 0.63 cfs @ 2.43 fps)
 ↑**3=Orifice/Grate** (Controls 0.00 cfs)
 ↑**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B-3: Infiltration Basin in Rear

Summary for Link POI-1: Proposed Drainage to Sunset Road

Inflow Area = 150,677 sf, 43.86% Impervious, Inflow Depth = 0.86" for 2-Year event
Inflow = 1.14 cfs @ 12.45 hrs, Volume= 10,802 cf
Primary = 1.14 cfs @ 12.45 hrs, Volume= 10,802 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link POI-1: Proposed Drainage to Sunset Road

Summary for Subcatchment EX-1: Existing Drainage towards Sunset Road

Runoff = 4.64 cfs @ 12.20 hrs, Volume= 20,046 cf, Depth= 2.75"

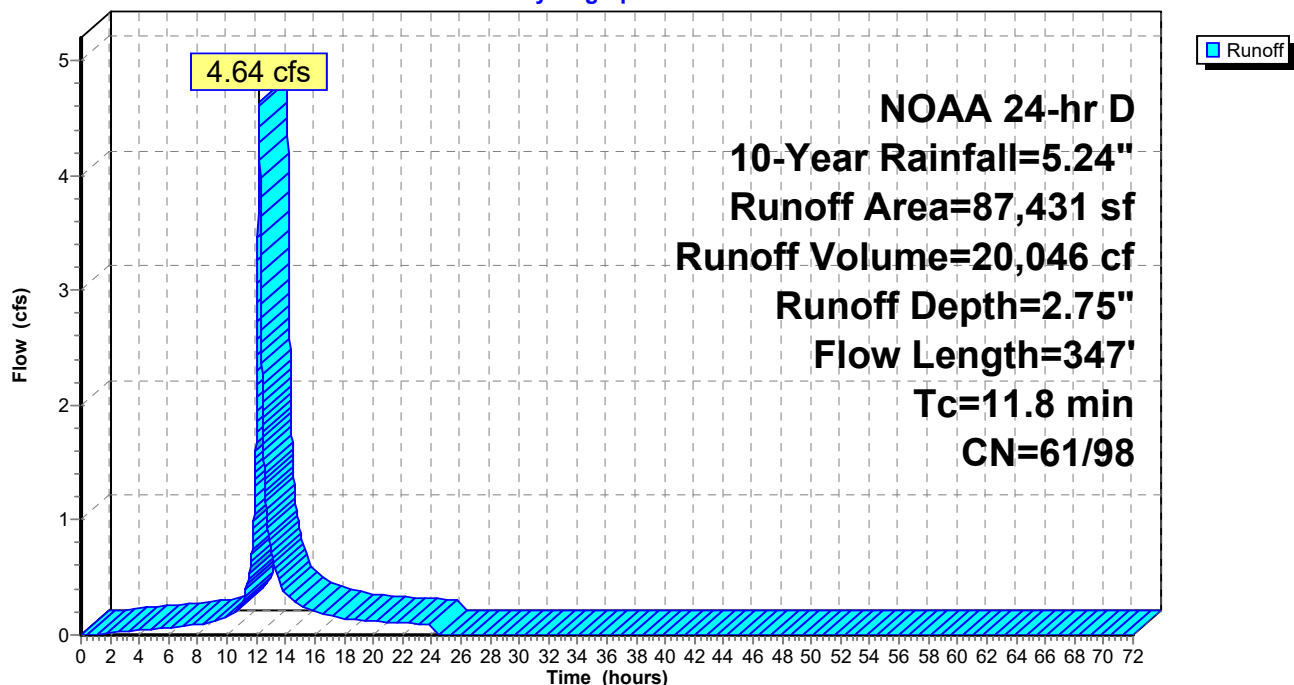
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 10-Year Rainfall=5.24"

	Area (sf)	CN	Description
*	30,985	98	Impervious
	56,446	61	>75% Grass cover, Good, HSG B
	87,431	74	Weighted Average
	56,446	61	64.56% Pervious Area
	30,985	98	35.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	100	0.0258	0.20		Sheet Flow, 100 LF Sheet Flow (1-2) Grass: Short n= 0.150 P2= 3.54"
1.6	86	0.0031	0.90		Shallow Concentrated Flow, 86 LF SCF (2-3) Unpaved Kv= 16.1 fps
0.1	10	0.0200	2.87		Shallow Concentrated Flow, 10 LF SCF (3-4) Paved Kv= 20.3 fps
1.7	151	0.0080	1.44		Shallow Concentrated Flow, 151 LF SCF (4-5) Unpaved Kv= 16.1 fps
11.8	347	Total			

Subcatchment EX-1: Existing Drainage towards Sunset Road

Hydrograph



Summary for Subcatchment EX-2: Existing Drainage towards Roome Avenue

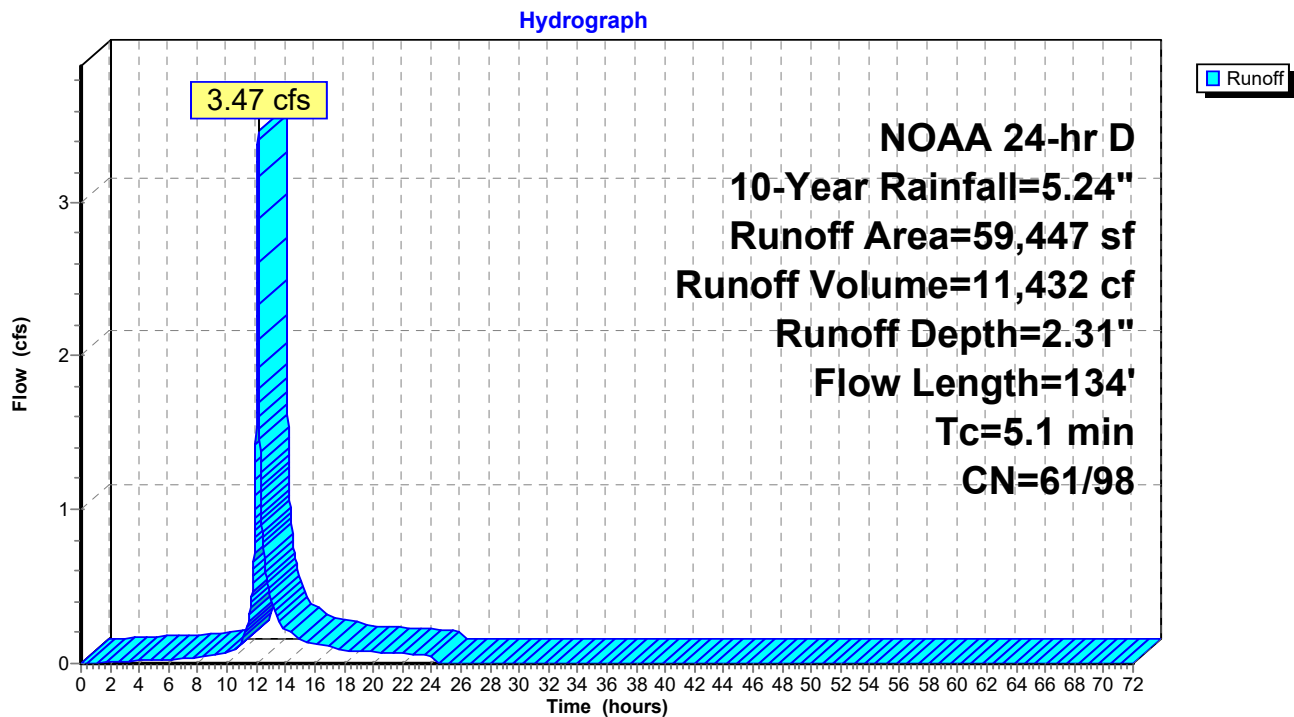
Runoff = 3.47 cfs @ 12.13 hrs, Volume= 11,432 cf, Depth= 2.31"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 10-Year Rainfall=5.24"

	Area (sf)	CN	Description
*	13,506	98	Impervious
	45,941	61	>75% Grass cover, Good, HSG B
	59,447	69	Weighted Average
	45,941	61	77.28% Pervious Area
	13,506	98	22.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	30	0.0170	0.13		Sheet Flow, 30 LF Sheet Flow (1-2) Grass: Short n= 0.150 P2= 3.54"
0.1	9	0.0110	2.13		Shallow Concentrated Flow, 9 LF SCF (2-3) Paved Kv= 20.3 fps
0.6	39	0.0050	1.14		Shallow Concentrated Flow, 39 LF SCF (3-4) Unpaved Kv= 16.1 fps
0.2	25	0.0092	1.95		Shallow Concentrated Flow, 25 LF SCF (4-5) Paved Kv= 20.3 fps
0.4	31	0.0081	1.45		Shallow Concentrated Flow, 31 LF SCF (5-6) Unpaved Kv= 16.1 fps
5.1	134	Total			

Subcatchment EX-2: Existing Drainage towards Roome Avenue



Summary for Subcatchment EX-3: Existing Drainage towards Dewilde Drive

Runoff = 0.85 cfs @ 12.26 hrs, Volume= 3,913 cf, Depth= 1.77"

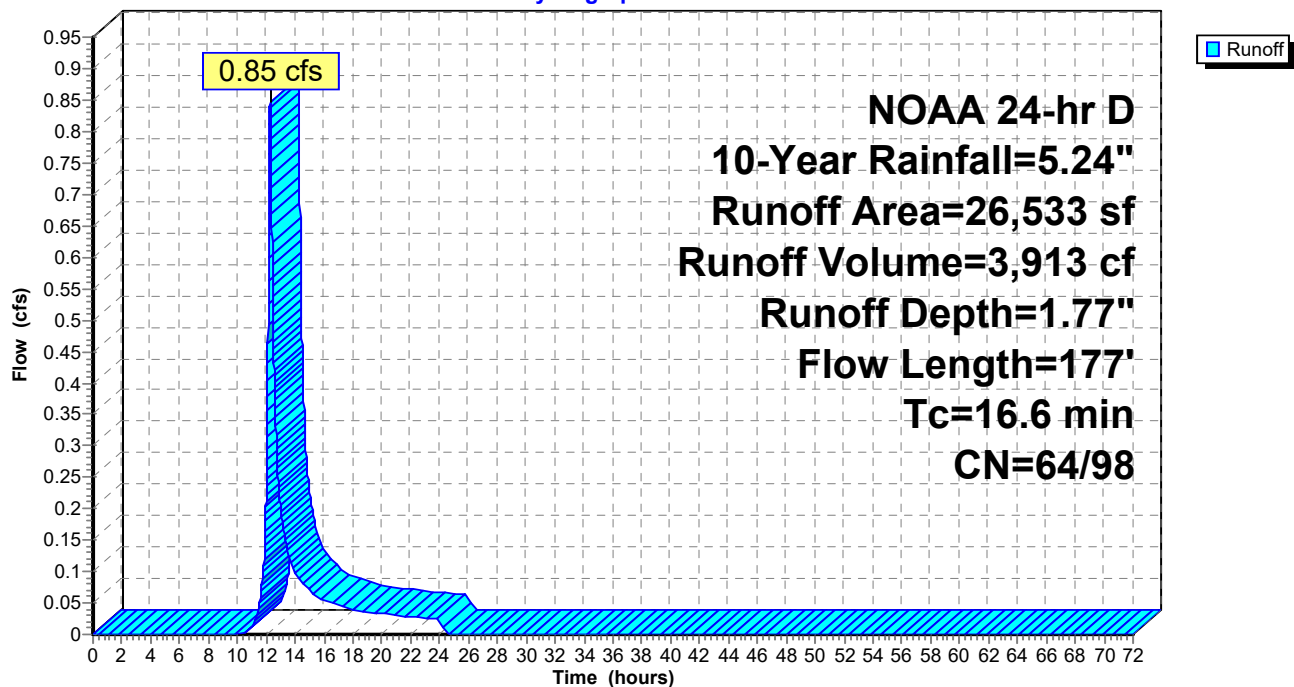
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 10-Year Rainfall=5.24"

Area (sf)	CN	Description
* 255	98	Impervious
2,009	96	Gravel surface, HSG B
24,269	61	>75% Grass cover, Good, HSG B
26,533	64	Weighted Average
26,278	64	99.04% Pervious Area
255	98	0.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.8	100	0.0053	0.11		Sheet Flow, 100 LF Sheet Flow (1-2)
					Grass: Short n= 0.150 P2= 3.54"
0.8	77	0.0111	1.70		Shallow Concentrated Flow, 77 LF SCF (2-3)
					Unpaved Kv= 16.1 fps
16.6	177	Total			

Subcatchment EX-3: Existing Drainage towards Dewilde Drive

Hydrograph



Summary for Subcatchment P-1A: Drainage to Infiltration Basin Along Sunset Road

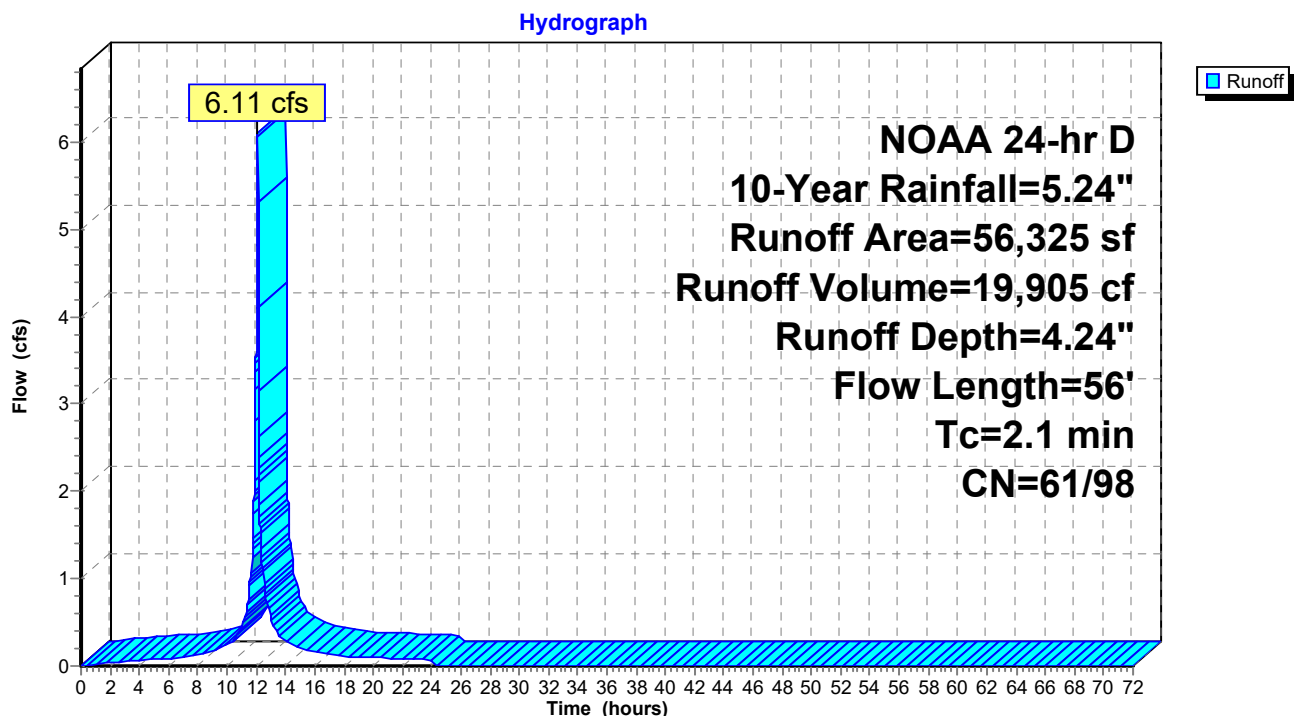
Runoff = 6.11 cfs @ 12.10 hrs, Volume= 19,905 cf, Depth= 4.24"

Routed to Pond B-1 : Infiltration Basin Along Sunset Road

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 10-Year Rainfall=5.24"

Area (sf)	CN	Description
12,309	61	>75% Grass cover, Good, HSG B
* 27,825	98	Roof Area
* 16,191	98	Impervious Area
56,325	90	Weighted Average
12,309	61	21.85% Pervious Area
44,016	98	78.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	12	0.0127	0.10		Sheet Flow, 12 LF Sheet Flow (1-2) Grass: Short n= 0.150 P2= 3.54"
0.1	23	0.0167	2.62		Shallow Concentrated Flow, 23 LF SCF (2-3) Paved Kv= 20.3 fps
0.0	21	0.2500	8.05		Shallow Concentrated Flow, 21 LF SCF (3-4) Unpaved Kv= 16.1 fps
2.1	56	Total			

Subcatchment P-1A: Drainage to Infiltration Basin Along Sunset Road

Summary for Subcatchment P-1B: Drainage to Porous Pavement in Tandem Spaces

Runoff = 1.58 cfs @ 12.10 hrs, Volume= 5,239 cf, Depth= 4.97"

Routed to Pond B-2 : Porous Pavement Within Tandem Spaces

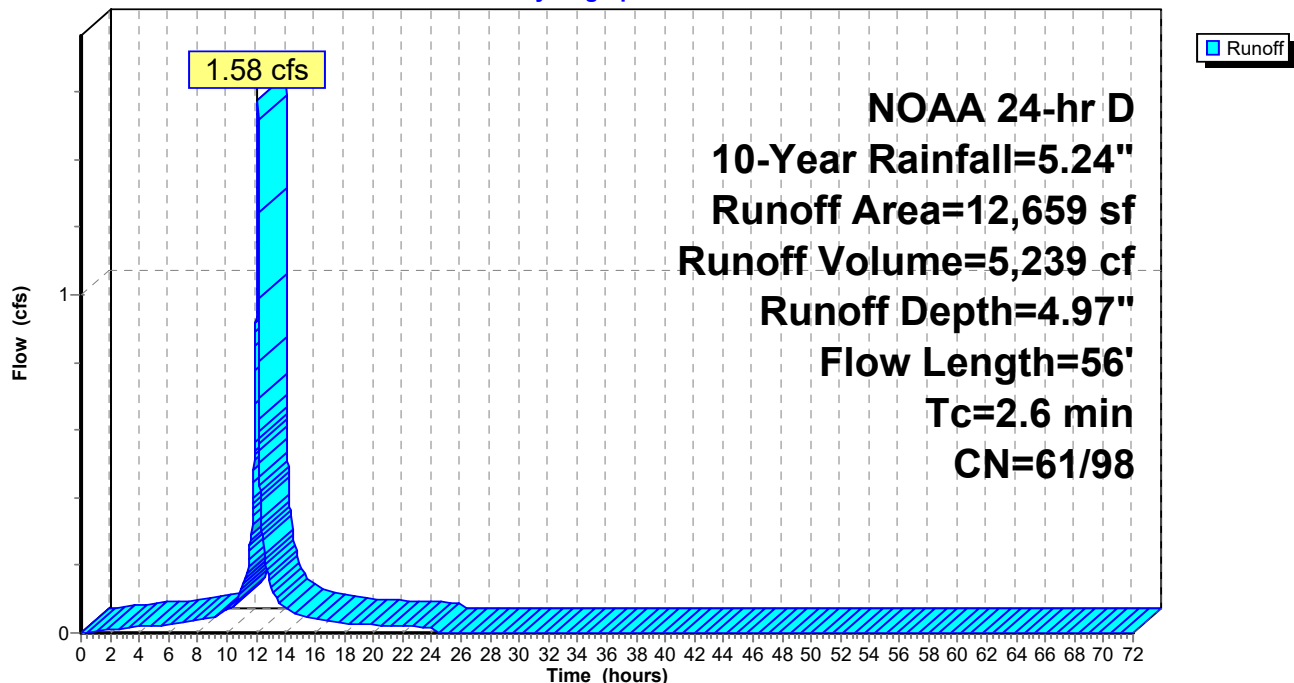
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 10-Year Rainfall=5.24"

Area (sf)	CN	Description
132	61	>75% Grass cover, Good, HSG B
* 3,564	98	Porous Pavement
* 8,963	98	Impervious Area
12,659	98	Weighted Average
132	61	1.04% Pervious Area
12,527	98	98.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	15	0.0127	0.10		Sheet Flow, 15 LF Sheet Flow (1-2)
					Grass: Short n= 0.150 P2= 3.54"
0.2	41	0.0250	3.21		Shallow Concentrated Flow, 41 LF SCF (2-3)
					Paved Kv= 20.3 fps
2.6	56	Total			

Subcatchment P-1B: Drainage to Porous Pavement in Tandem Spaces

Hydrograph



Summary for Subcatchment P-1C: Drainage to Infiltration Basin in Rear

Runoff = 4.12 cfs @ 12.18 hrs, Volume= 15,360 cf, Depth= 2.72"
 Routed to Pond B-3 : Infiltration Basin in Rear

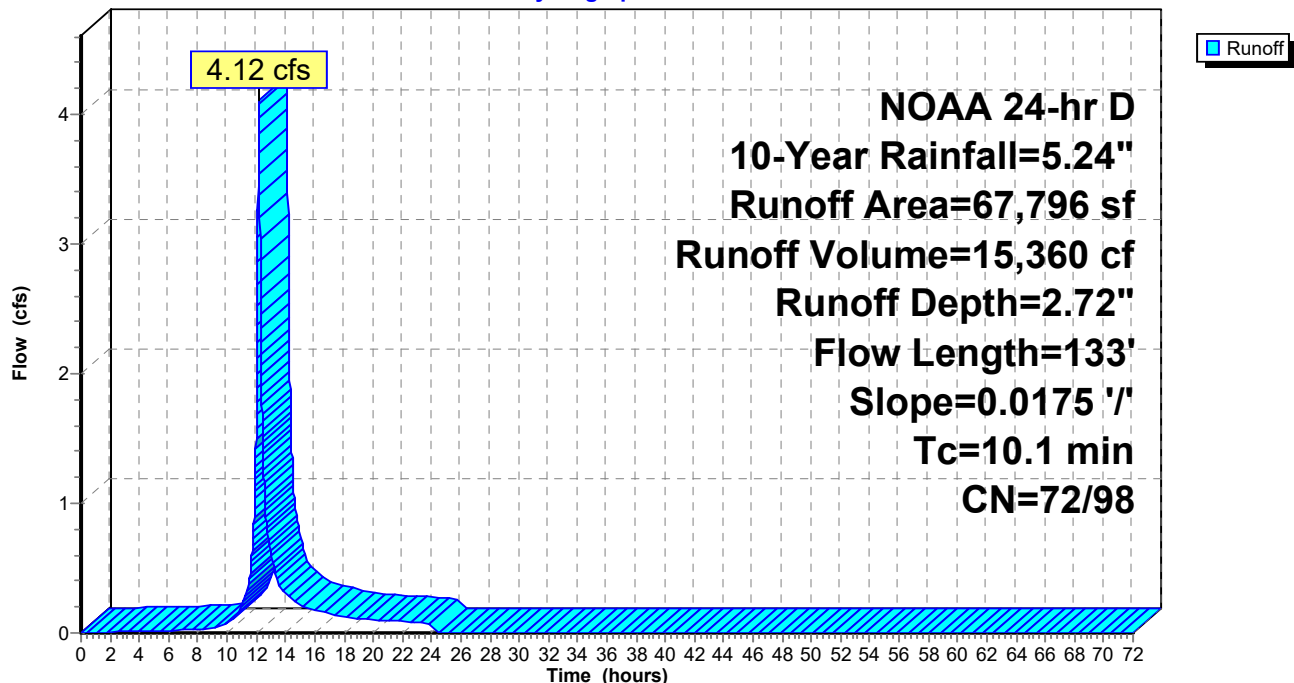
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 10-Year Rainfall=5.24"

Area (sf)	CN	Description
26,076	61	>75% Grass cover, Good, HSG B
* 8,660	98	Impervious Area
* 33,060	80	Turf Field
67,796	75	Weighted Average
59,136	72	87.23% Pervious Area
8,660	98	12.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.0175	0.17		Sheet Flow, 100 LF Sheet Flow Grass: Short n= 0.150 P2= 3.54"
0.3	33	0.0175	2.13		Shallow Concentrated Flow, 33 LF SCF (2-3) Unpaved Kv= 16.1 fps
10.1	133	Total			

Subcatchment P-1C: Drainage to Infiltration Basin in Rear

Hydrograph



Summary for Subcatchment P-1D: Undetained Flow to Sunset Road

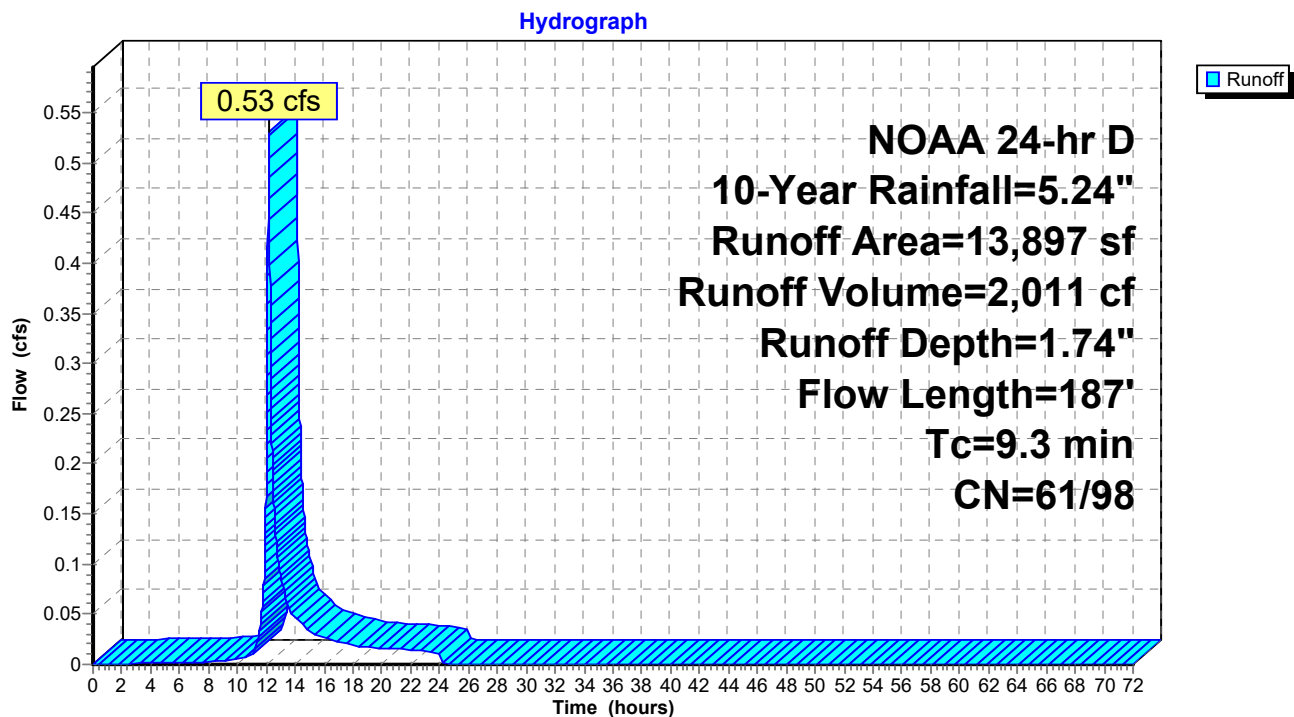
Runoff = 0.53 cfs @ 12.17 hrs, Volume= 2,011 cf, Depth= 1.74"

Routed to Link POI-1 : Proposed Drainage to Sunset Road

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 10-Year Rainfall=5.24"

Area (sf)	CN	Description
13,017	61	>75% Grass cover, Good, HSG B
* 880	98	Impervious Area
13,897	63	Weighted Average
13,017	61	93.67% Pervious Area
880	98	6.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	100	0.0250	0.20		Sheet Flow, 100 LF Sheet Flow (1-2)
					Grass: Short n= 0.150 P2= 3.54"
0.8	87	0.0135	1.87		Shallow Concentrated Flow, 87 LF SCF (2-3)
					Unpaved Kv= 16.1 fps
9.3	187	Total			

Subcatchment P-1D: Undetained Flow to Sunset Road

Summary for Subcatchment P-2: Proposed Drainage to Roome Avenue

Runoff = 1.02 cfs @ 12.15 hrs, Volume= 3,676 cf, Depth= 2.09"

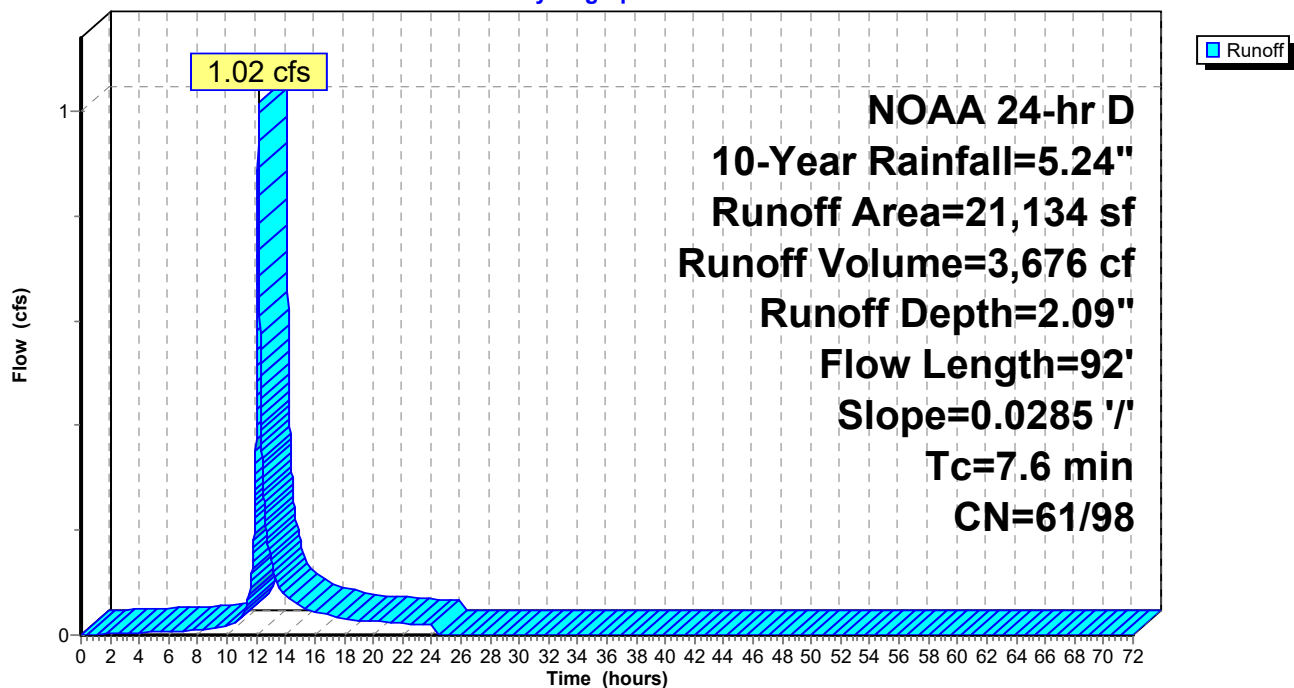
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 10-Year Rainfall=5.24"

Area (sf)	CN	Description
17,670	61	>75% Grass cover, Good, HSG B
* 3,464	98	Impervious Area
21,134	67	Weighted Average
17,670	61	83.61% Pervious Area
3,464	98	16.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	92	0.0285	0.20		Sheet Flow, 92 LF Sheet Flow (1-2) Grass: Short n= 0.150 P2= 3.54"

Subcatchment P-2: Proposed Drainage to Roome Avenue

Hydrograph



Summary for Subcatchment P-3: Proposed Drainage toward Dewilde Drive

Runoff = 0.07 cfs @ 12.10 hrs, Volume= 202 cf, Depth= 1.52"

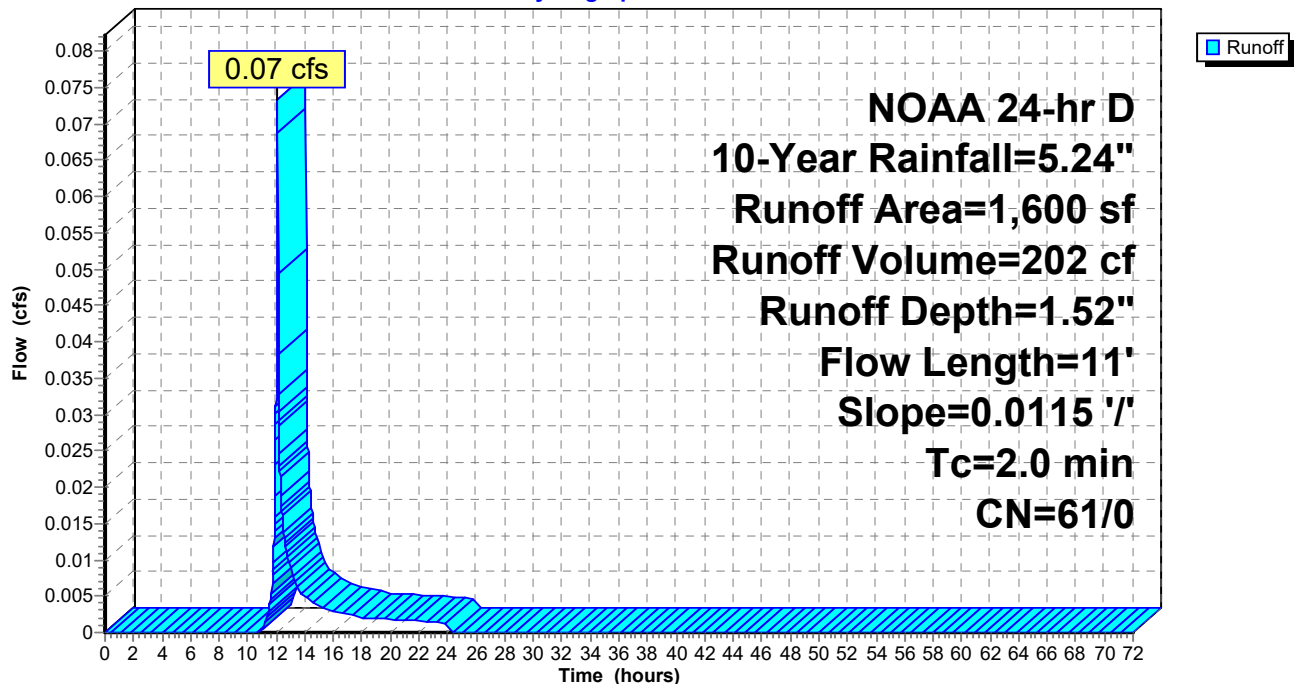
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 10-Year Rainfall=5.24"

Area (sf)	CN	Description
1,600	61	>75% Grass cover, Good, HSG B
1,600	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	11	0.0115	0.09		Sheet Flow, 11 LF Sheet Flow (1-2) Grass: Short n= 0.150 P2= 3.54"

Subcatchment P-3: Proposed Drainage toward Dewilde Drive

Hydrograph



Summary for Pond B-1: Infiltration Basin Along Sunset Road

Inflow Area = 56,325 sf, 78.15% Impervious, Inflow Depth = 4.24" for 10-Year event
 Inflow = 6.11 cfs @ 12.10 hrs, Volume= 19,905 cf
 Outflow = 0.78 cfs @ 12.63 hrs, Volume= 19,905 cf, Atten= 87%, Lag= 32.1 min
 Discarded = 0.10 cfs @ 12.63 hrs, Volume= 8,740 cf
 Primary = 0.68 cfs @ 12.63 hrs, Volume= 11,165 cf
 Routed to Link POI-1 : Proposed Drainage to Sunset Road

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 188.88' @ 12.63 hrs Surf.Area= 6,843 sf Storage= 9,583 cf

Plug-Flow detention time= 334.9 min calculated for 19,902 cf (100% of inflow)
 Center-of-Mass det. time= 335.1 min (1,090.4 - 755.3)

Volume	Invert	Avail.Storage	Storage Description		
#1	187.00'	14,171 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
187.00	3,406	592.8	0	0	3,406
188.00	5,212	611.7	4,277	4,277	5,315
189.00	7,076	630.5	6,120	10,397	7,275
189.50	8,029	639.9	3,774	14,171	8,276

Device	Routing	Invert	Outlet Devices
#1	Primary	185.89'	15.0" Round Culvert L= 26.0' Ke= 0.500 Inlet / Outlet Invert= 185.89' / 185.75' S= 0.0054 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	187.81'	5.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	188.60'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	189.15'	4.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#5	Discarded	187.00'	0.500 in/hr Exfiltration over Wetted area Conductivity to Groundwater Elevation = 180.00' Phase-In= 0.01'

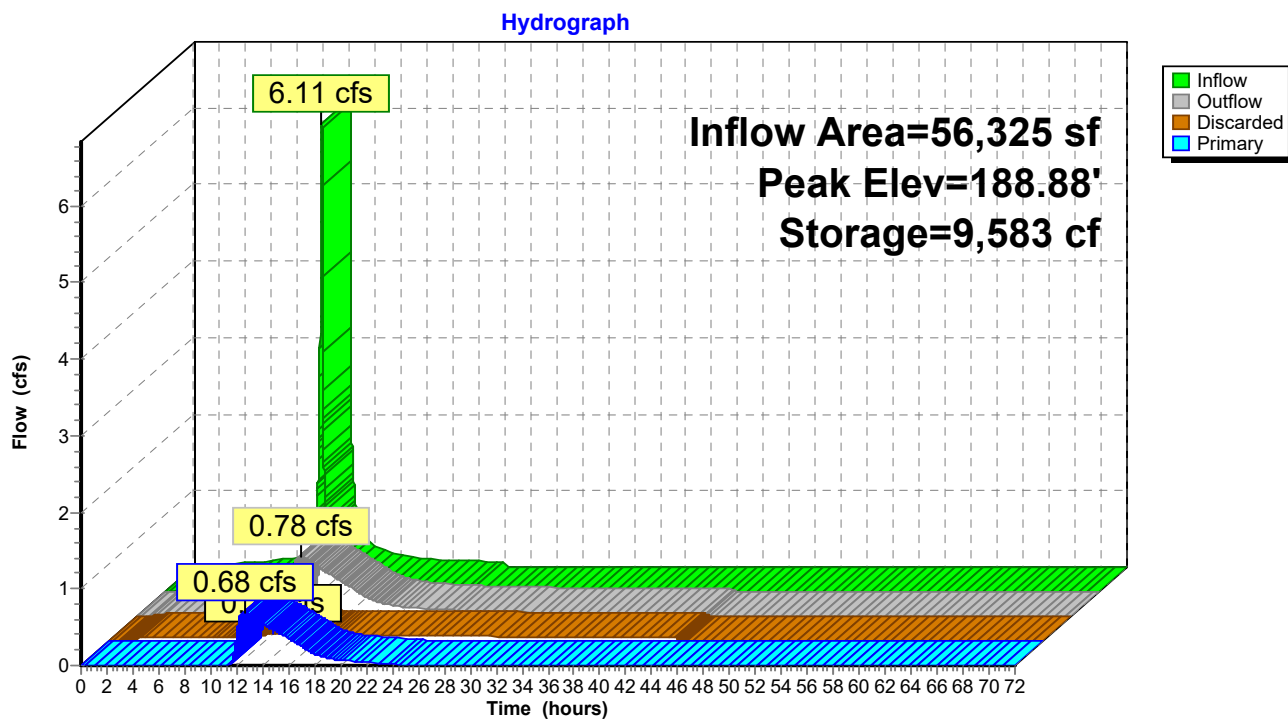
Discarded OutFlow Max=0.10 cfs @ 12.63 hrs HW=188.88' (Free Discharge)

↑**5=Exfiltration** (Controls 0.10 cfs)

Primary OutFlow Max=0.68 cfs @ 12.63 hrs HW=188.88' TW=0.00' (Dynamic Tailwater)

↑**1=Culvert** (Passes 0.68 cfs of 9.09 cfs potential flow)
 ↑**2=Orifice/Grate** (Orifice Controls 0.61 cfs @ 4.48 fps)
 ↑**3=Orifice/Grate** (Orifice Controls 0.07 cfs @ 2.04 fps)
 ↑**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B-1: Infiltration Basin Along Sunset Road



Summary for Pond B-2: Porous Pavement Within Tandem Spaces

Inflow Area = 12,659 sf, 98.96% Impervious, Inflow Depth = 4.97" for 10-Year event
 Inflow = 1.58 cfs @ 12.10 hrs, Volume= 5,239 cf
 Outflow = 0.20 cfs @ 12.64 hrs, Volume= 5,239 cf, Atten= 88%, Lag= 32.4 min
 Discarded = 0.06 cfs @ 12.64 hrs, Volume= 3,567 cf
 Primary = 0.14 cfs @ 12.64 hrs, Volume= 1,672 cf
 Routed to Link POI-1 : Proposed Drainage to Sunset Road

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 188.29' @ 12.64 hrs Surf.Area= 3,564 sf Storage= 2,057 cf

Plug-Flow detention time= 157.1 min calculated for 5,238 cf (100% of inflow)
 Center-of-Mass det. time= 157.1 min (902.9 - 745.7)

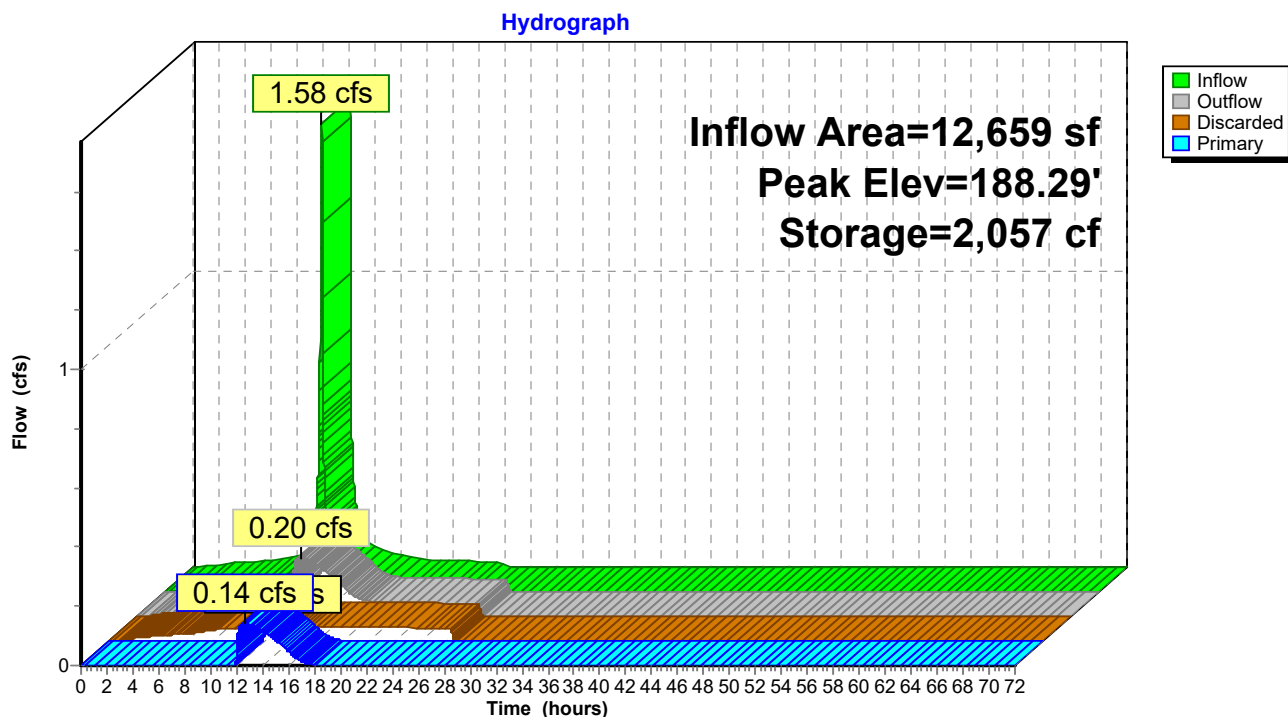
Volume	Invert	Avail.Storage	Storage Description
#1	186.85'	2,851 cf	Custom Stage Data (Irregular) Listed below (Recalc) 7,128 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
186.85	3,564	306.0	0	0	3,564
187.85	3,564	306.0	3,564	3,564	3,870
188.85	3,564	306.0	3,564	7,128	4,176

Device	Routing	Invert	Outlet Devices
#1	Primary	186.85'	15.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 186.85' / 185.75' S= 0.0081 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	187.45'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	188.45'	6.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#4	Discarded	186.85'	0.500 in/hr Exfiltration over Wetted area Conductivity to Groundwater Elevation = 180.00' Phase-In= 0.01'

Discarded OutFlow Max=0.06 cfs @ 12.64 hrs HW=188.29' (Free Discharge)
 ↳ **4=Exfiltration** (Controls 0.06 cfs)

Primary OutFlow Max=0.14 cfs @ 12.64 hrs HW=188.29' TW=0.00' (Dynamic Tailwater)
 ↳ **1=Culvert** (Passes 0.14 cfs of 5.34 cfs potential flow)
 ↳ **2=Orifice/Grate** (Orifice Controls 0.14 cfs @ 4.14 fps)
 ↳ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B-2: Porous Pavement Within Tandem Spaces

Summary for Pond B-3: Infiltration Basin in Rear

Inflow Area = 67,796 sf, 12.77% Impervious, Inflow Depth = 2.72" for 10-Year event
 Inflow = 4.12 cfs @ 12.18 hrs, Volume= 15,360 cf
 Outflow = 1.26 cfs @ 12.48 hrs, Volume= 15,360 cf, Atten= 69%, Lag= 18.5 min
 Discarded = 0.07 cfs @ 12.48 hrs, Volume= 4,039 cf
 Primary = 1.19 cfs @ 12.48 hrs, Volume= 11,321 cf
 Routed to Link POI-1 : Proposed Drainage to Sunset Road

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 189.14' @ 12.48 hrs Surf.Area= 4,740 sf Storage= 4,584 cf

Plug-Flow detention time= 91.5 min calculated for 15,360 cf (100% of inflow)
 Center-of-Mass det. time= 91.5 min (922.3 - 830.8)

Volume	Invert	Avail.Storage	Storage Description		
#1	188.00'	9,144 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
188.00	3,308	335.0	0	0	3,308
189.00	4,551	370.0	3,913	3,913	5,303
190.00	5,942	405.0	5,231	9,144	7,496

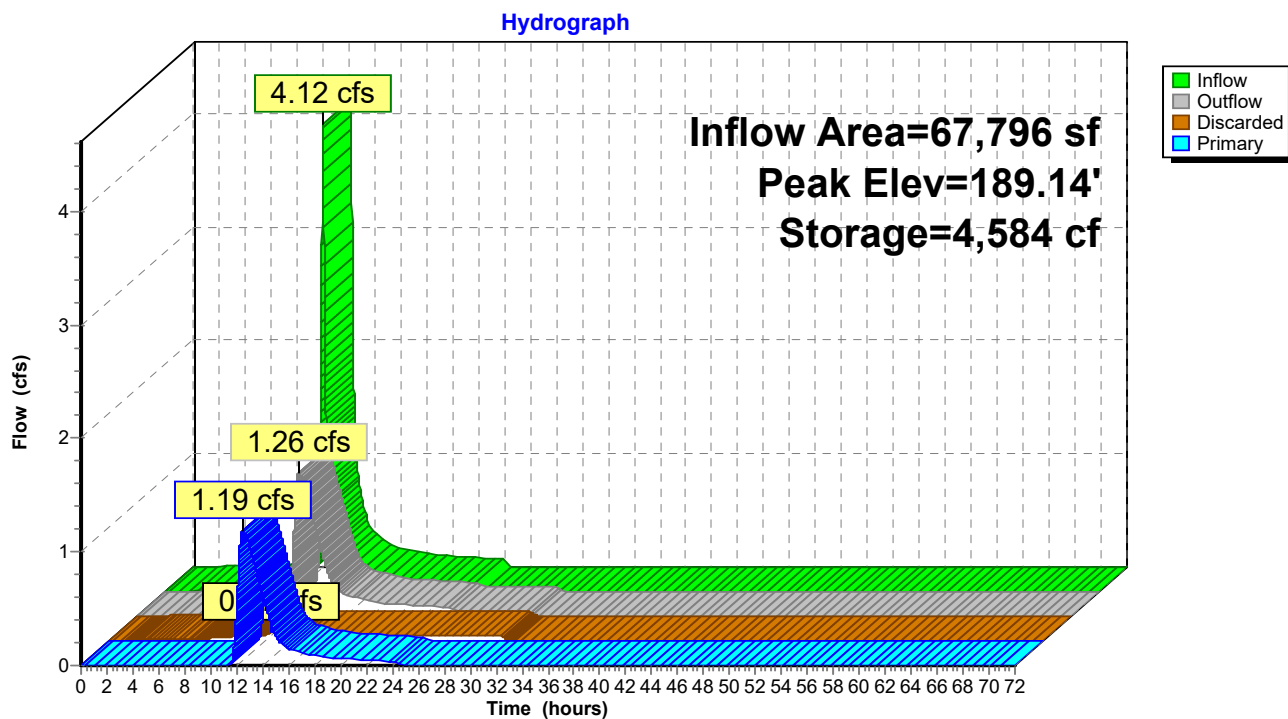
Device	Routing	Invert	Outlet Devices
#1	Primary	187.50'	15.0" Round Culvert L= 325.0' Ke= 0.500 Inlet / Outlet Invert= 187.50' / 185.85' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	188.25'	15.0" W x 2.5" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	188.85'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	189.65'	4.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#5	Discarded	188.00'	0.500 in/hr Exfiltration over Wetted area Conductivity to Groundwater Elevation = 180.10' Phase-In= 0.01'

Discarded OutFlow Max=0.07 cfs @ 12.48 hrs HW=189.14' (Free Discharge)

↑**5=Exfiltration** (Controls 0.07 cfs)

Primary OutFlow Max=1.19 cfs @ 12.48 hrs HW=189.14' TW=0.00' (Dynamic Tailwater)

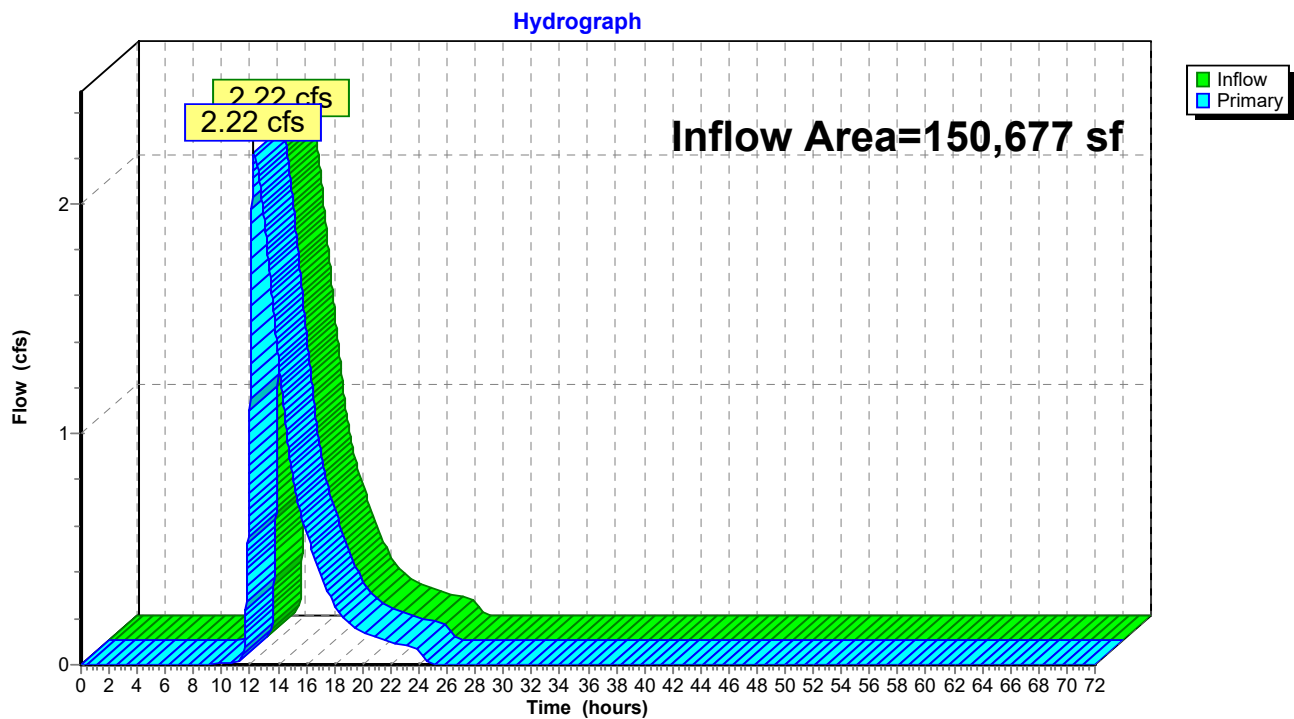
↑**1=Culvert** (Passes 1.19 cfs of 4.88 cfs potential flow)
 ↑**2=Orifice/Grate** (Orifice Controls 1.11 cfs @ 4.28 fps)
 ↑**3=Orifice/Grate** (Orifice Controls 0.07 cfs @ 2.10 fps)
 ↑**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B-3: Infiltration Basin in Rear

Summary for Link POI-1: Proposed Drainage to Sunset Road

Inflow Area = 150,677 sf, 43.86% Impervious, Inflow Depth = 2.08" for 10-Year event
Inflow = 2.22 cfs @ 12.26 hrs, Volume= 26,168 cf
Primary = 2.22 cfs @ 12.26 hrs, Volume= 26,168 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link POI-1: Proposed Drainage to Sunset Road

Summary for Subcatchment EX-1: Existing Drainage towards Sunset Road

Runoff = 9.18 cfs @ 12.19 hrs, Volume= 38,409 cf, Depth= 5.27"

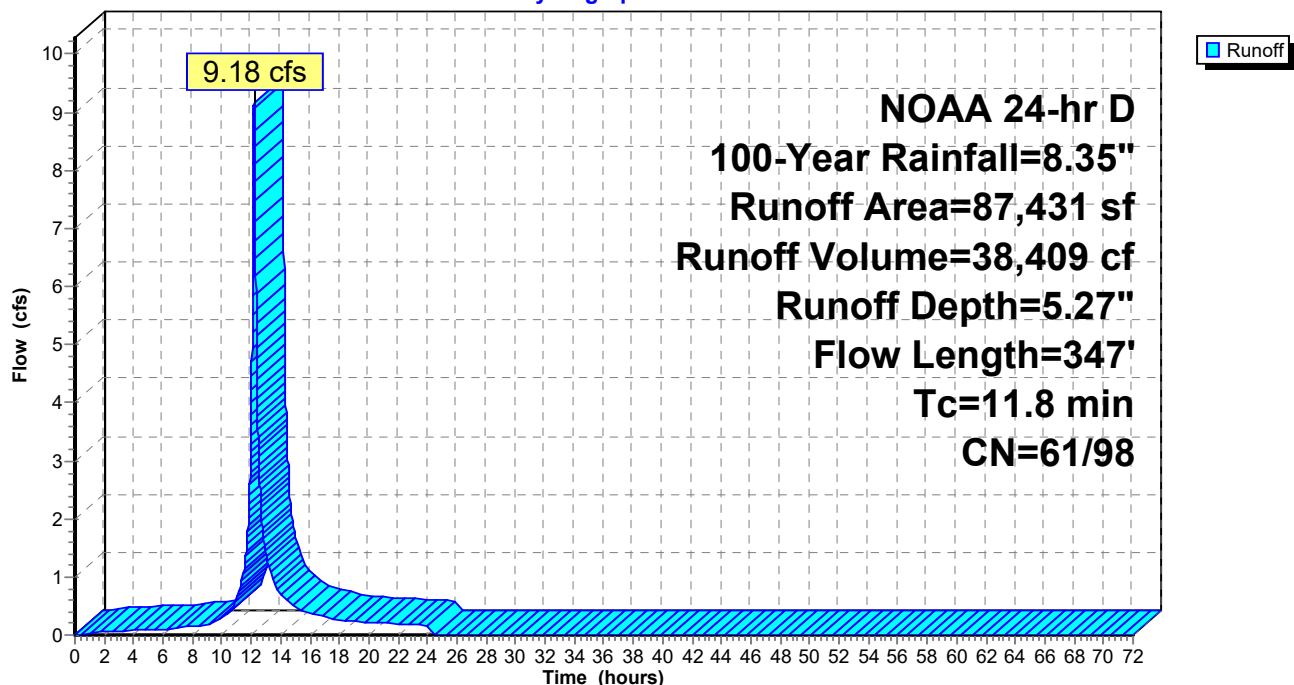
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 100-Year Rainfall=8.35"

	Area (sf)	CN	Description
*	30,985	98	Impervious
	56,446	61	>75% Grass cover, Good, HSG B
	87,431	74	Weighted Average
	56,446	61	64.56% Pervious Area
	30,985	98	35.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	100	0.0258	0.20		Sheet Flow, 100 LF Sheet Flow (1-2) Grass: Short n= 0.150 P2= 3.54"
1.6	86	0.0031	0.90		Shallow Concentrated Flow, 86 LF SCF (2-3) Unpaved Kv= 16.1 fps
0.1	10	0.0200	2.87		Shallow Concentrated Flow, 10 LF SCF (3-4) Paved Kv= 20.3 fps
1.7	151	0.0080	1.44		Shallow Concentrated Flow, 151 LF SCF (4-5) Unpaved Kv= 16.1 fps
11.8	347	Total			

Subcatchment EX-1: Existing Drainage towards Sunset Road

Hydrograph



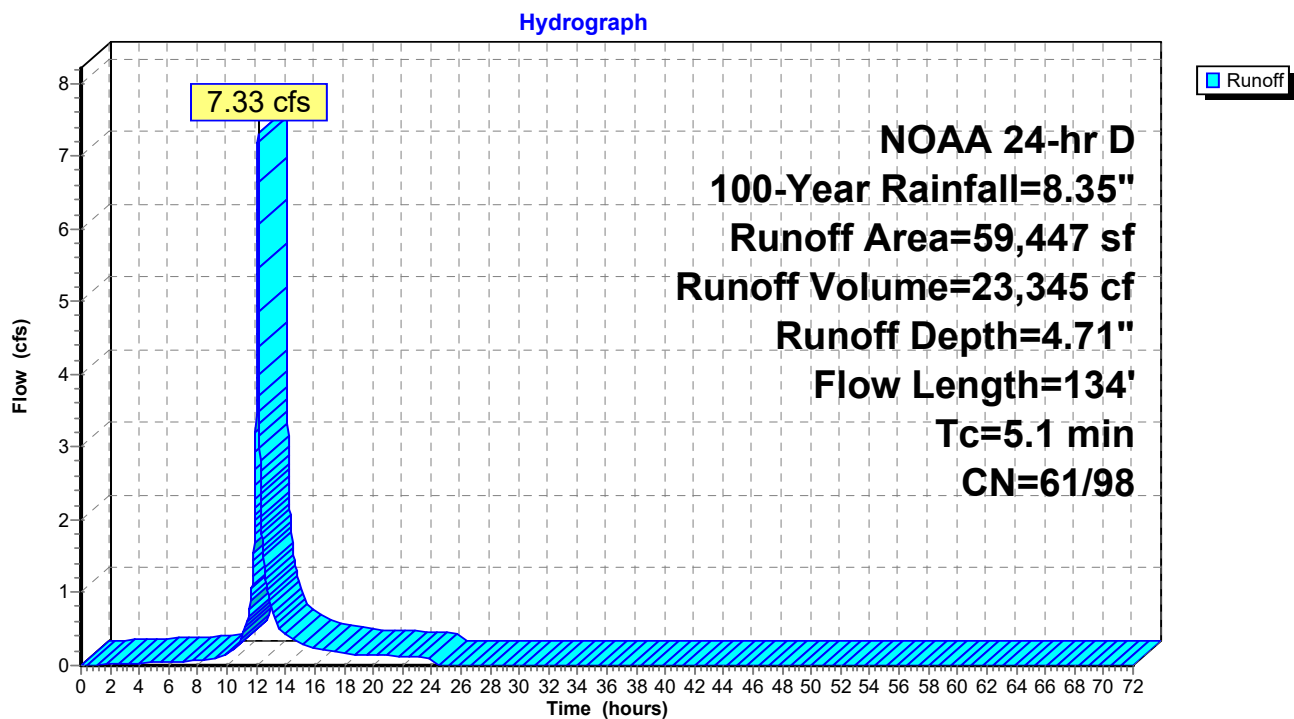
Summary for Subcatchment EX-2: Existing Drainage towards Roome Avenue

Runoff = 7.33 cfs @ 12.12 hrs, Volume= 23,345 cf, Depth= 4.71"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 100-Year Rainfall=8.35"

	Area (sf)	CN	Description
*	13,506	98	Impervious
	45,941	61	>75% Grass cover, Good, HSG B
	59,447	69	Weighted Average
	45,941	61	77.28% Pervious Area
	13,506	98	22.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	30	0.0170	0.13		Sheet Flow, 30 LF Sheet Flow (1-2) Grass: Short n= 0.150 P2= 3.54"
0.1	9	0.0110	2.13		Shallow Concentrated Flow, 9 LF SCF (2-3) Paved Kv= 20.3 fps
0.6	39	0.0050	1.14		Shallow Concentrated Flow, 39 LF SCF (3-4) Unpaved Kv= 16.1 fps
0.2	25	0.0092	1.95		Shallow Concentrated Flow, 25 LF SCF (4-5) Paved Kv= 20.3 fps
0.4	31	0.0081	1.45		Shallow Concentrated Flow, 31 LF SCF (5-6) Unpaved Kv= 16.1 fps
5.1	134	Total			

Subcatchment EX-2: Existing Drainage towards Roome Avenue

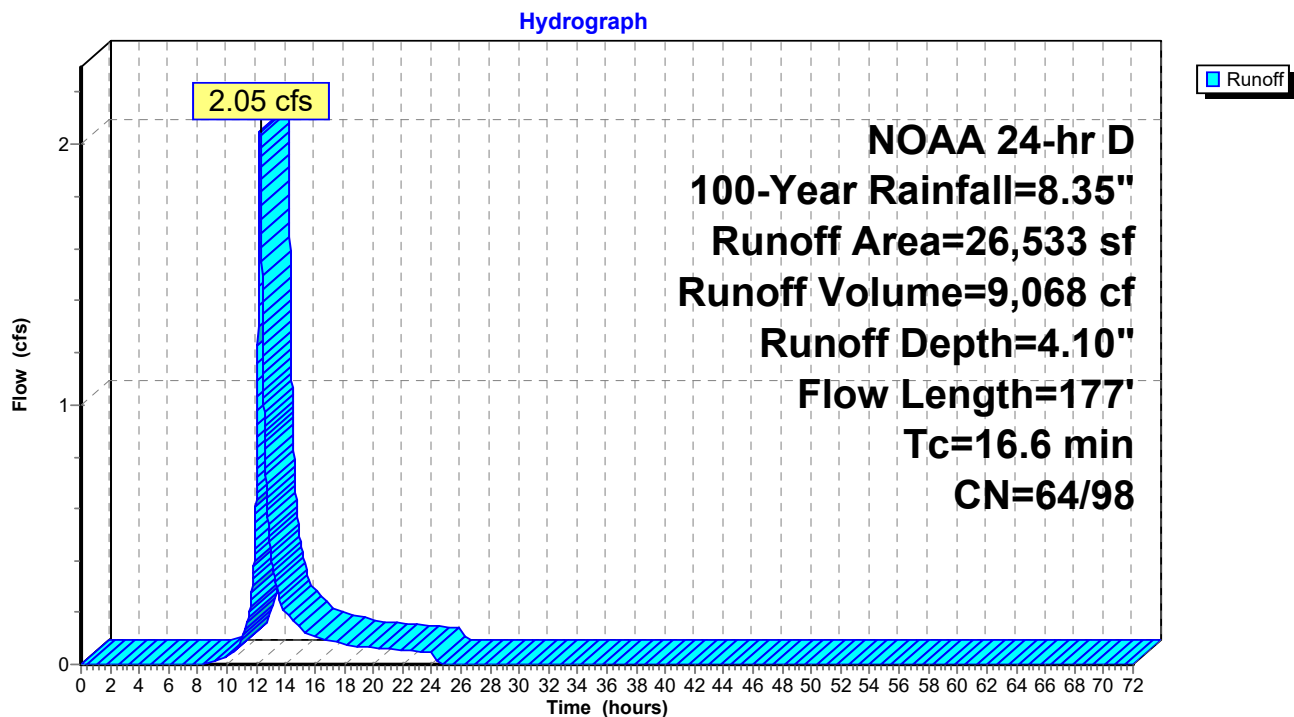
Summary for Subcatchment EX-3: Existing Drainage towards Dewilde Drive

Runoff = 2.05 cfs @ 12.25 hrs, Volume= 9,068 cf, Depth= 4.10"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 100-Year Rainfall=8.35"

Area (sf)	CN	Description
* 255	98	Impervious
2,009	96	Gravel surface, HSG B
24,269	61	>75% Grass cover, Good, HSG B
26,533	64	Weighted Average
26,278	64	99.04% Pervious Area
255	98	0.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.8	100	0.0053	0.11		Sheet Flow, 100 LF Sheet Flow (1-2) Grass: Short n= 0.150 P2= 3.54"
0.8	77	0.0111	1.70		Shallow Concentrated Flow, 77 LF SCF (2-3) Unpaved Kv= 16.1 fps
16.6	177	Total			

Subcatchment EX-3: Existing Drainage towards Dewilde Drive

Summary for Subcatchment P-1A: Drainage to Infiltration Basin Along Sunset Road

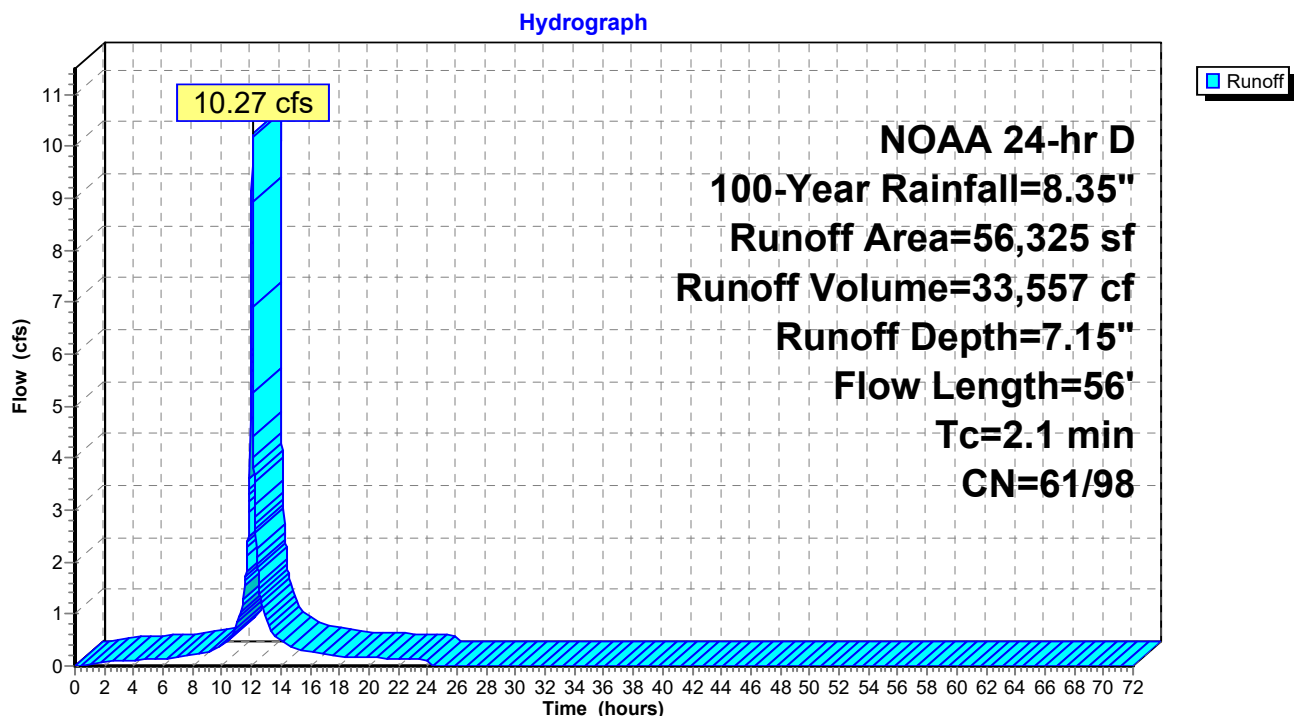
Runoff = 10.27 cfs @ 12.10 hrs, Volume= 33,557 cf, Depth= 7.15"

Routed to Pond B-1 : Infiltration Basin Along Sunset Road

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 100-Year Rainfall=8.35"

Area (sf)	CN	Description
12,309	61	>75% Grass cover, Good, HSG B
* 27,825	98	Roof Area
* 16,191	98	Impervious Area
56,325	90	Weighted Average
12,309	61	21.85% Pervious Area
44,016	98	78.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	12	0.0127	0.10		Sheet Flow, 12 LF Sheet Flow (1-2) Grass: Short n= 0.150 P2= 3.54"
0.1	23	0.0167	2.62		Shallow Concentrated Flow, 23 LF SCF (2-3) Paved Kv= 20.3 fps
0.0	21	0.2500	8.05		Shallow Concentrated Flow, 21 LF SCF (3-4) Unpaved Kv= 16.1 fps
2.1	56	Total			

Subcatchment P-1A: Drainage to Infiltration Basin Along Sunset Road

Summary for Subcatchment P-1B: Drainage to Porous Pavement in Tandem Spaces

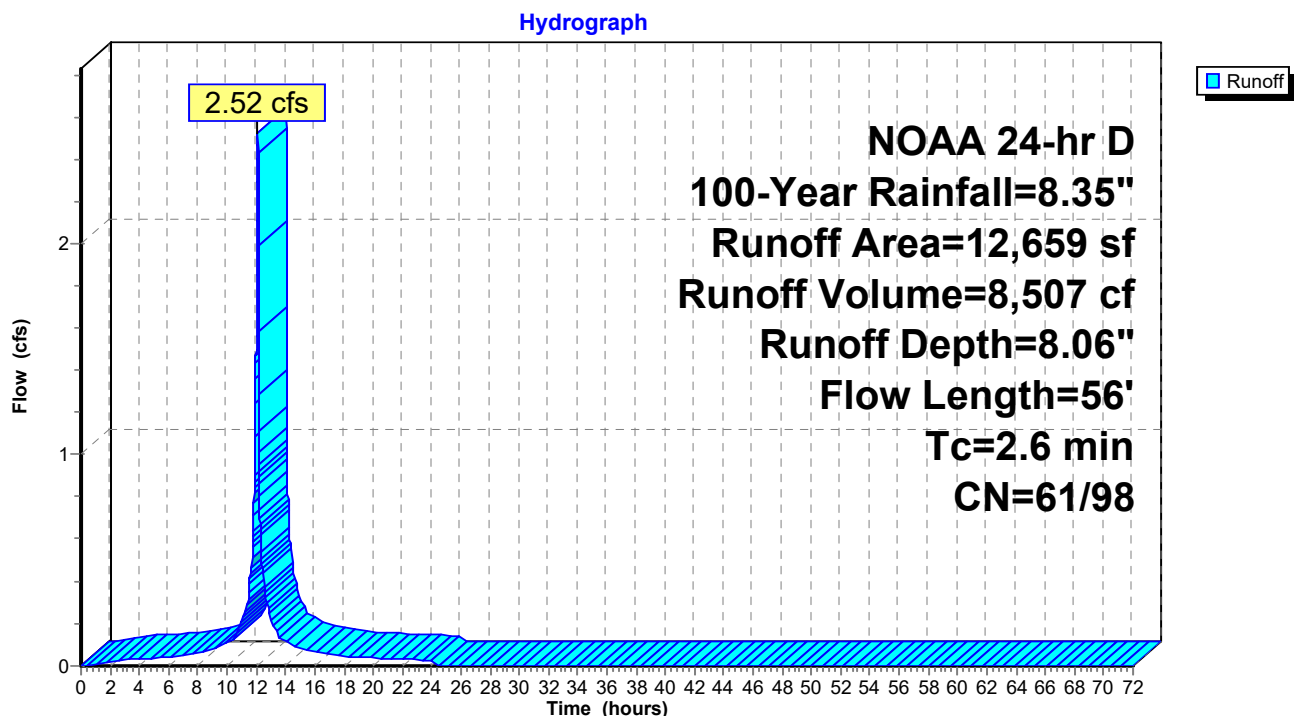
Runoff = 2.52 cfs @ 12.10 hrs, Volume= 8,507 cf, Depth= 8.06"

Routed to Pond B-2 : Porous Pavement Within Tandem Spaces

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 100-Year Rainfall=8.35"

Area (sf)	CN	Description
132	61	>75% Grass cover, Good, HSG B
* 3,564	98	Porous Pavement
* 8,963	98	Impervious Area
12,659	98	Weighted Average
132	61	1.04% Pervious Area
12,527	98	98.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	15	0.0127	0.10		Sheet Flow, 15 LF Sheet Flow (1-2)
					Grass: Short n= 0.150 P2= 3.54"
0.2	41	0.0250	3.21		Shallow Concentrated Flow, 41 LF SCF (2-3)
					Paved Kv= 20.3 fps
2.6	56	Total			

Subcatchment P-1B: Drainage to Porous Pavement in Tandem Spaces

Summary for Subcatchment P-1C: Drainage to Infiltration Basin in Rear

Runoff = 8.20 cfs @ 12.17 hrs, Volume= 30,507 cf, Depth= 5.40"
 Routed to Pond B-3 : Infiltration Basin in Rear

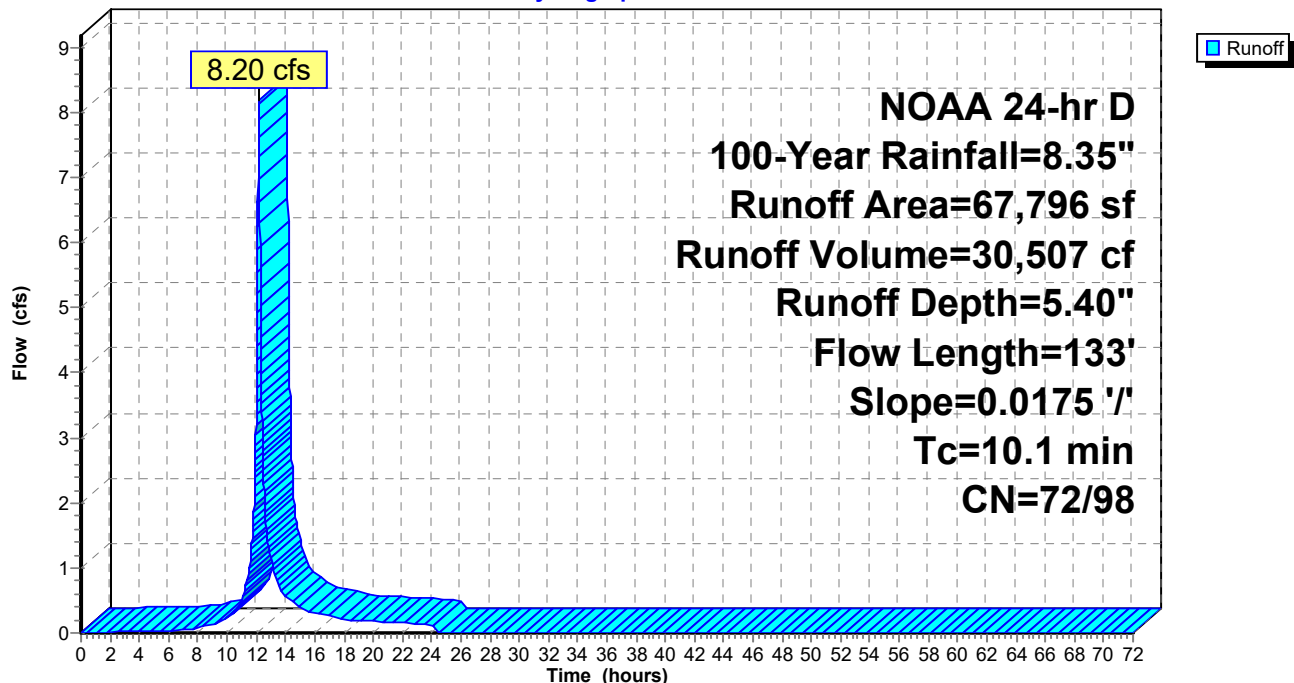
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Year Rainfall=8.35"

Area (sf)	CN	Description
26,076	61	>75% Grass cover, Good, HSG B
* 8,660	98	Impervious Area
* 33,060	80	Turf Field
67,796	75	Weighted Average
59,136	72	87.23% Pervious Area
8,660	98	12.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.0175	0.17		Sheet Flow, 100 LF Sheet Flow Grass: Short n= 0.150 P2= 3.54"
0.3	33	0.0175	2.13		Shallow Concentrated Flow, 33 LF SCF (2-3) Unpaved Kv= 16.1 fps
10.1	133	Total			

Subcatchment P-1C: Drainage to Infiltration Basin in Rear

Hydrograph



Summary for Subcatchment P-1D: Undetained Flow to Sunset Road

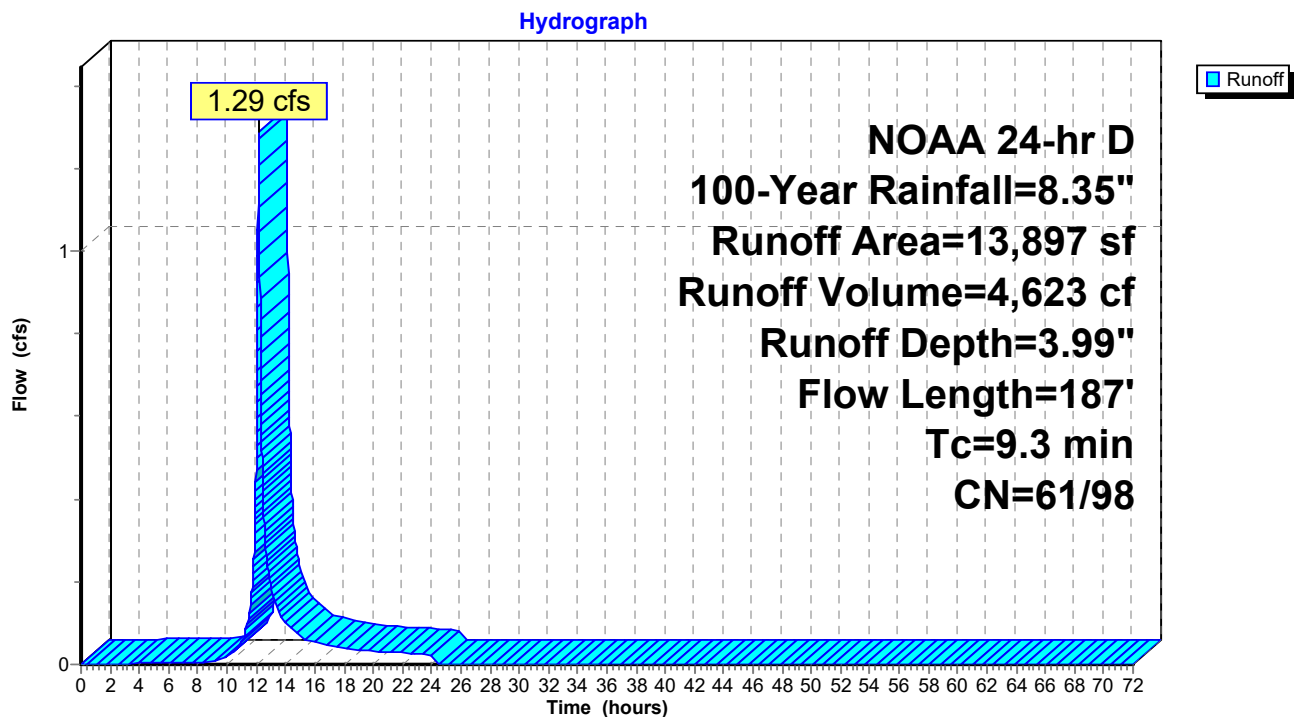
Runoff = 1.29 cfs @ 12.17 hrs, Volume= 4,623 cf, Depth= 3.99"

Routed to Link POI-1 : Proposed Drainage to Sunset Road

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 100-Year Rainfall=8.35"

Area (sf)	CN	Description
13,017	61	>75% Grass cover, Good, HSG B
* 880	98	Impervious Area
13,897	63	Weighted Average
13,017	61	93.67% Pervious Area
880	98	6.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	100	0.0250	0.20		Sheet Flow, 100 LF Sheet Flow (1-2) Grass: Short n= 0.150 P2= 3.54"
0.8	87	0.0135	1.87		Shallow Concentrated Flow, 87 LF SCF (2-3) Unpaved Kv= 16.1 fps
9.3	187	Total			

Subcatchment P-1D: Undetained Flow to Sunset Road

Summary for Subcatchment P-2: Proposed Drainage to Roome Avenue

Runoff = 2.26 cfs @ 12.15 hrs, Volume= 7,809 cf, Depth= 4.43"

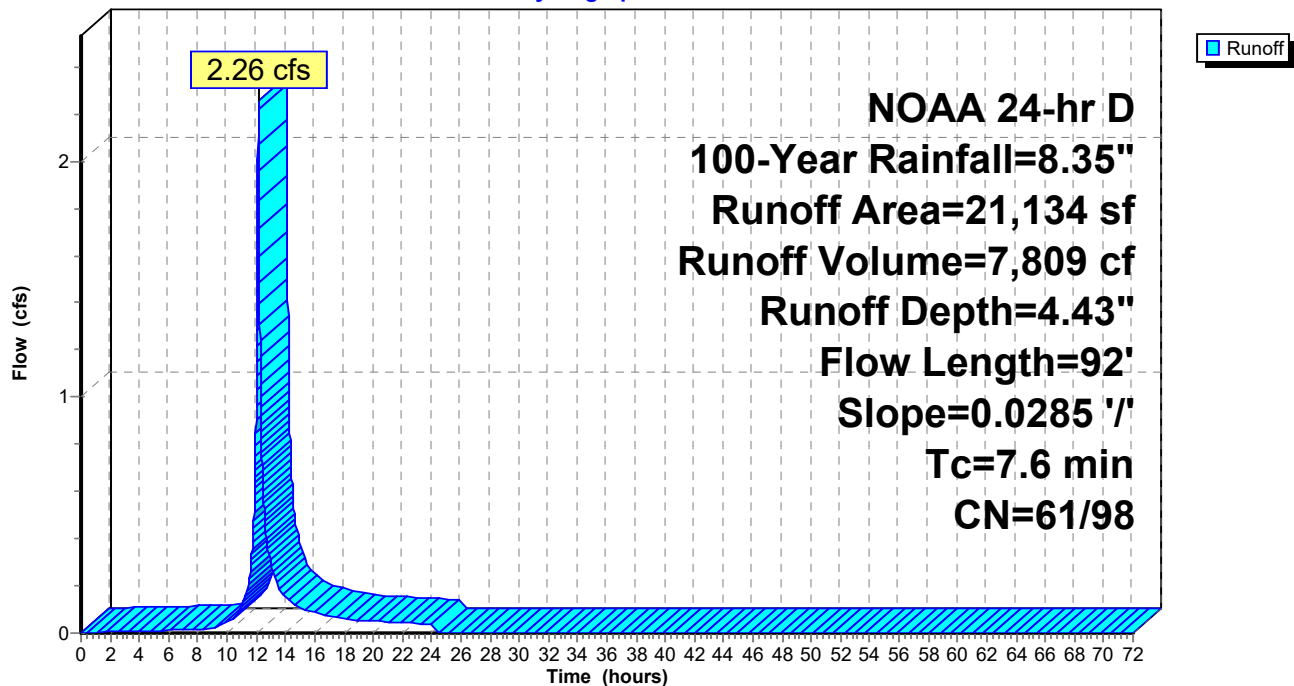
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 100-Year Rainfall=8.35"

Area (sf)	CN	Description
17,670	61	>75% Grass cover, Good, HSG B
* 3,464	98	Impervious Area
21,134	67	Weighted Average
17,670	61	83.61% Pervious Area
3,464	98	16.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	92	0.0285	0.20		Sheet Flow, 92 LF Sheet Flow (1-2) Grass: Short n= 0.150 P2= 3.54"

Subcatchment P-2: Proposed Drainage to Roome Avenue

Hydrograph



Summary for Subcatchment P-3: Proposed Drainage toward Dewilde Drive

Runoff = 0.18 cfs @ 12.10 hrs, Volume= 495 cf, Depth= 3.71"

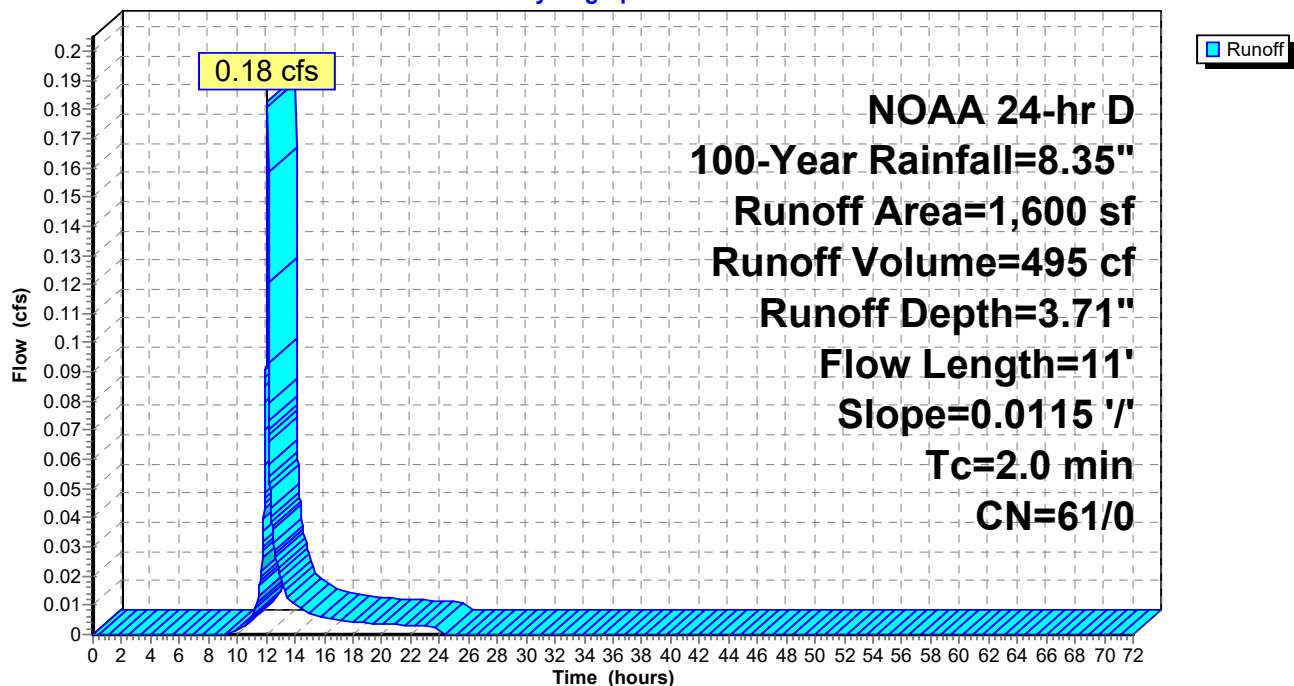
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 100-Year Rainfall=8.35"

Area (sf)	CN	Description
1,600	61	>75% Grass cover, Good, HSG B
1,600	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	11	0.0115	0.09		Sheet Flow, 11 LF Sheet Flow (1-2) Grass: Short n= 0.150 P2= 3.54"

Subcatchment P-3: Proposed Drainage toward Dewilde Drive

Hydrograph



Summary for Pond B-1: Infiltration Basin Along Sunset Road

Inflow Area = 56,325 sf, 78.15% Impervious, Inflow Depth = 7.15" for 100-Year event
 Inflow = 10.27 cfs @ 12.10 hrs, Volume= 33,557 cf
 Outflow = 3.10 cfs @ 12.23 hrs, Volume= 33,557 cf, Atten= 70%, Lag= 8.0 min
 Discarded = 0.12 cfs @ 12.23 hrs, Volume= 9,694 cf
 Primary = 2.99 cfs @ 12.23 hrs, Volume= 23,862 cf
 Routed to Link POI-1 : Proposed Drainage to Sunset Road

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 189.48' @ 12.23 hrs Surf.Area= 7,988 sf Storage= 14,005 cf

Plug-Flow detention time= 259.1 min calculated for 33,552 cf (100% of inflow)
 Center-of-Mass det. time= 259.2 min (1,009.7 - 750.5)

Volume	Invert	Avail.Storage	Storage Description		
#1	187.00'	14,171 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
187.00	3,406	592.8	0	0	3,406
188.00	5,212	611.7	4,277	4,277	5,315
189.00	7,076	630.5	6,120	10,397	7,275
189.50	8,029	639.9	3,774	14,171	8,276

Device	Routing	Invert	Outlet Devices
#1	Primary	185.89'	15.0" Round Culvert L= 26.0' Ke= 0.500 Inlet / Outlet Invert= 185.89' / 185.75' S= 0.0054 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	187.81'	5.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	188.60'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	189.15'	4.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#5	Discarded	187.00'	0.500 in/hr Exfiltration over Wetted area Conductivity to Groundwater Elevation = 180.00' Phase-In= 0.01'

Discarded OutFlow Max=0.12 cfs @ 12.23 hrs HW=189.48' (Free Discharge)

↑**5=Exfiltration** (Controls 0.12 cfs)

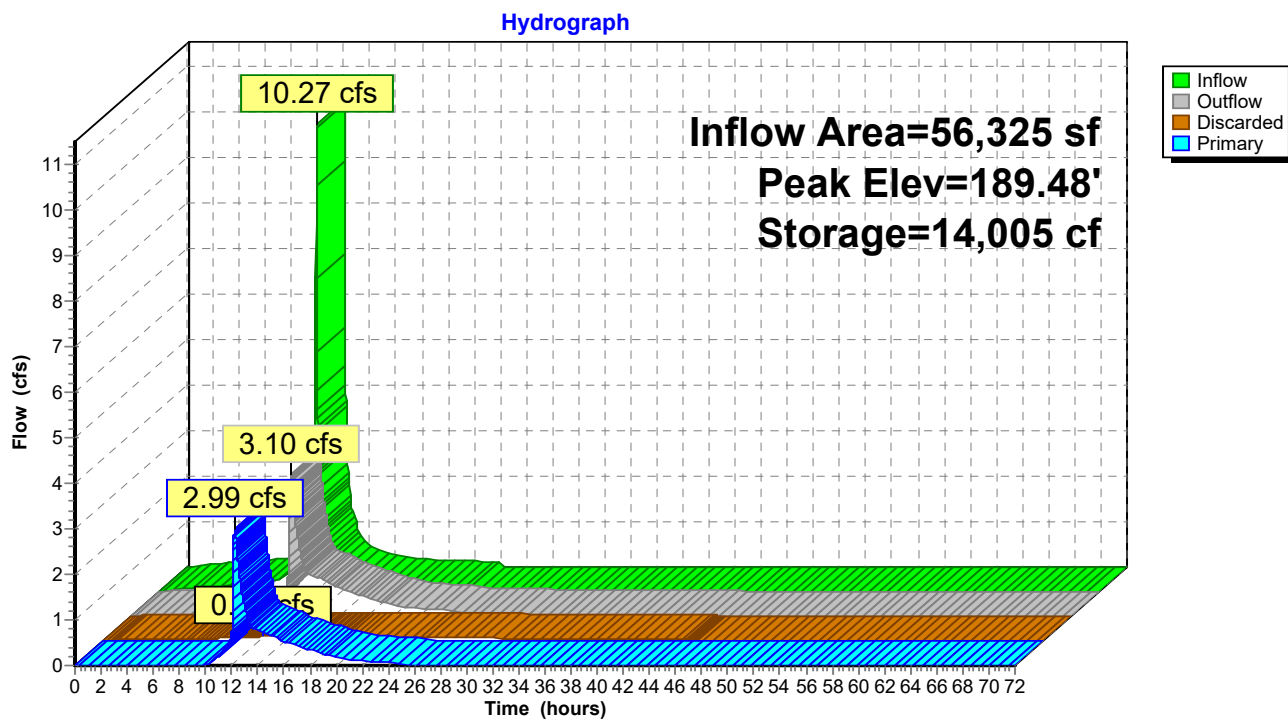
Primary OutFlow Max=2.99 cfs @ 12.23 hrs HW=189.48' TW=0.00' (Dynamic Tailwater)

↑**1=Culvert** (Passes 2.99 cfs of 10.17 cfs potential flow)

↑**2=Orifice/Grate** (Orifice Controls 0.79 cfs @ 5.82 fps)

↑**3=Orifice/Grate** (Orifice Controls 0.14 cfs @ 4.24 fps)

↑**4=Broad-Crested Rectangular Weir** (Weir Controls 2.05 cfs @ 1.55 fps)

Pond B-1: Infiltration Basin Along Sunset Road

Summary for Pond B-2: Porous Pavement Within Tandem Spaces

Inflow Area = 12,659 sf, 98.96% Impervious, Inflow Depth = 8.06" for 100-Year event
 Inflow = 2.52 cfs @ 12.10 hrs, Volume= 8,507 cf
 Outflow = 2.16 cfs @ 12.13 hrs, Volume= 8,507 cf, Atten= 15%, Lag= 1.6 min
 Discarded = 0.06 cfs @ 12.13 hrs, Volume= 4,332 cf
 Primary = 2.10 cfs @ 12.13 hrs, Volume= 4,175 cf
 Routed to Link POI-1 : Proposed Drainage to Sunset Road

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 188.69' @ 12.13 hrs Surf.Area= 3,564 sf Storage= 2,625 cf

Plug-Flow detention time= 137.4 min calculated for 8,506 cf (100% of inflow)
 Center-of-Mass det. time= 137.5 min (876.3 - 738.8)

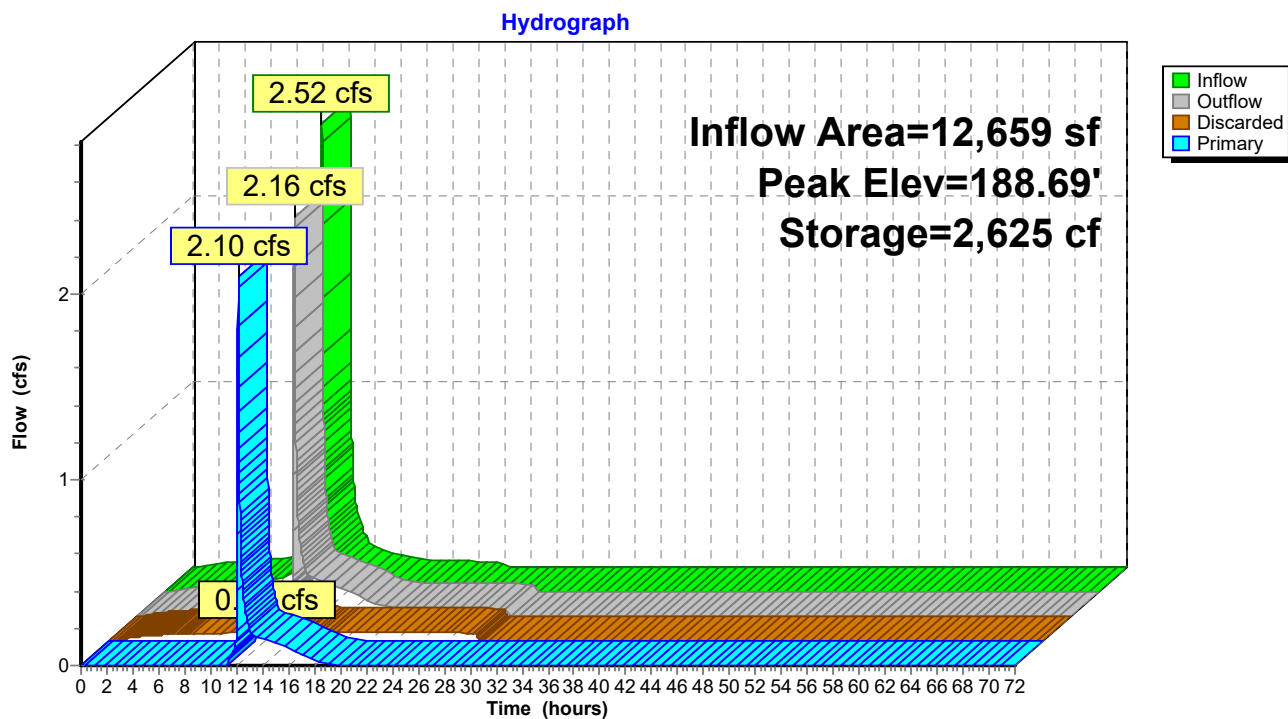
Volume	Invert	Avail.Storage	Storage Description
#1	186.85'	2,851 cf	Custom Stage Data (Irregular) Listed below (Recalc) 7,128 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
186.85	3,564	306.0	0	0	3,564
187.85	3,564	306.0	3,564	3,564	3,870
188.85	3,564	306.0	3,564	7,128	4,176

Device	Routing	Invert	Outlet Devices
#1	Primary	186.85'	15.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 186.85' / 185.75' S= 0.0081 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	187.45'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	188.45'	6.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#4	Discarded	186.85'	0.500 in/hr Exfiltration over Wetted area Conductivity to Groundwater Elevation = 180.00' Phase-In= 0.01'

Discarded OutFlow Max=0.06 cfs @ 12.13 hrs HW=188.69' (Free Discharge)
 ↳ **4=Exfiltration** (Controls 0.06 cfs)

Primary OutFlow Max=2.08 cfs @ 12.13 hrs HW=188.69' TW=0.00' (Dynamic Tailwater)
 ↳ **1=Culvert** (Passes 2.08 cfs of 5.94 cfs potential flow)
 ↳ **2=Orifice/Grate** (Orifice Controls 0.17 cfs @ 5.13 fps)
 ↳ **3=Broad-Crested Rectangular Weir** (Weir Controls 1.91 cfs @ 1.32 fps)

Pond B-2: Porous Pavement Within Tandem Spaces

Summary for Pond B-3: Infiltration Basin in Rear

Inflow Area = 67,796 sf, 12.77% Impervious, Inflow Depth = 5.40" for 100-Year event
 Inflow = 8.20 cfs @ 12.17 hrs, Volume= 30,507 cf
 Outflow = 3.43 cfs @ 12.38 hrs, Volume= 30,507 cf, Atten= 58%, Lag= 12.1 min
 Discarded = 0.10 cfs @ 12.38 hrs, Volume= 4,766 cf
 Primary = 3.33 cfs @ 12.38 hrs, Volume= 25,741 cf
 Routed to Link POI-1 : Proposed Drainage to Sunset Road

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 189.93' @ 12.38 hrs Surf.Area= 5,838 sf Storage= 8,730 cf

Plug-Flow detention time= 73.4 min calculated for 30,503 cf (100% of inflow)
 Center-of-Mass det. time= 73.5 min (888.2 - 814.8)

Volume	Invert	Avail.Storage	Storage Description		
#1	188.00'	9,144 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
188.00	3,308	335.0	0	0	3,308
189.00	4,551	370.0	3,913	3,913	5,303
190.00	5,942	405.0	5,231	9,144	7,496

Device	Routing	Invert	Outlet Devices
#1	Primary	187.50'	15.0" Round Culvert L= 325.0' Ke= 0.500 Inlet / Outlet Invert= 187.50' / 185.85' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	188.25'	15.0" W x 2.5" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	188.85'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	189.65'	4.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#5	Discarded	188.00'	0.500 in/hr Exfiltration over Wetted area Conductivity to Groundwater Elevation = 180.10' Phase-In= 0.01'

Discarded OutFlow Max=0.10 cfs @ 12.38 hrs HW=189.93' (Free Discharge)

↑ **5=Exfiltration** (Controls 0.10 cfs)

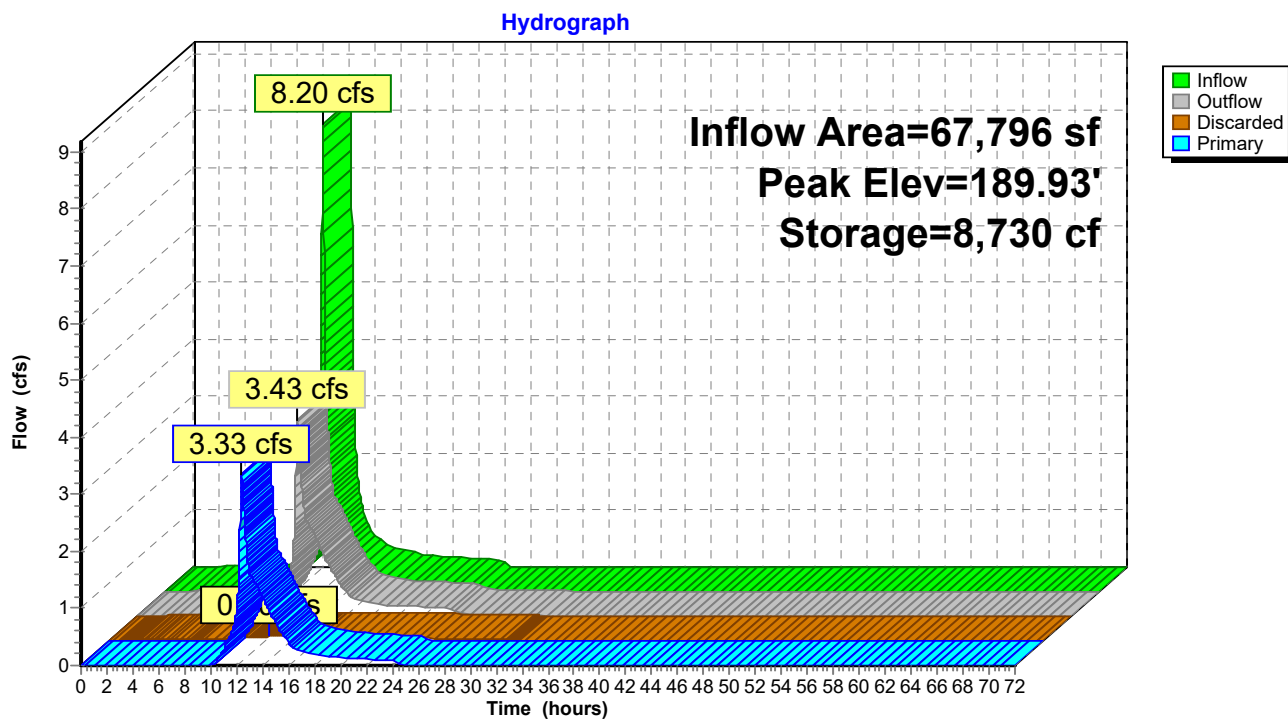
Primary OutFlow Max=3.33 cfs @ 12.38 hrs HW=189.93' TW=0.00' (Dynamic Tailwater)

↑ **1=Culvert** (Passes 3.33 cfs of 5.50 cfs potential flow)

↑ **2=Orifice/Grate** (Orifice Controls 1.57 cfs @ 6.04 fps)

↑ **3=Orifice/Grate** (Orifice Controls 0.16 cfs @ 4.76 fps)

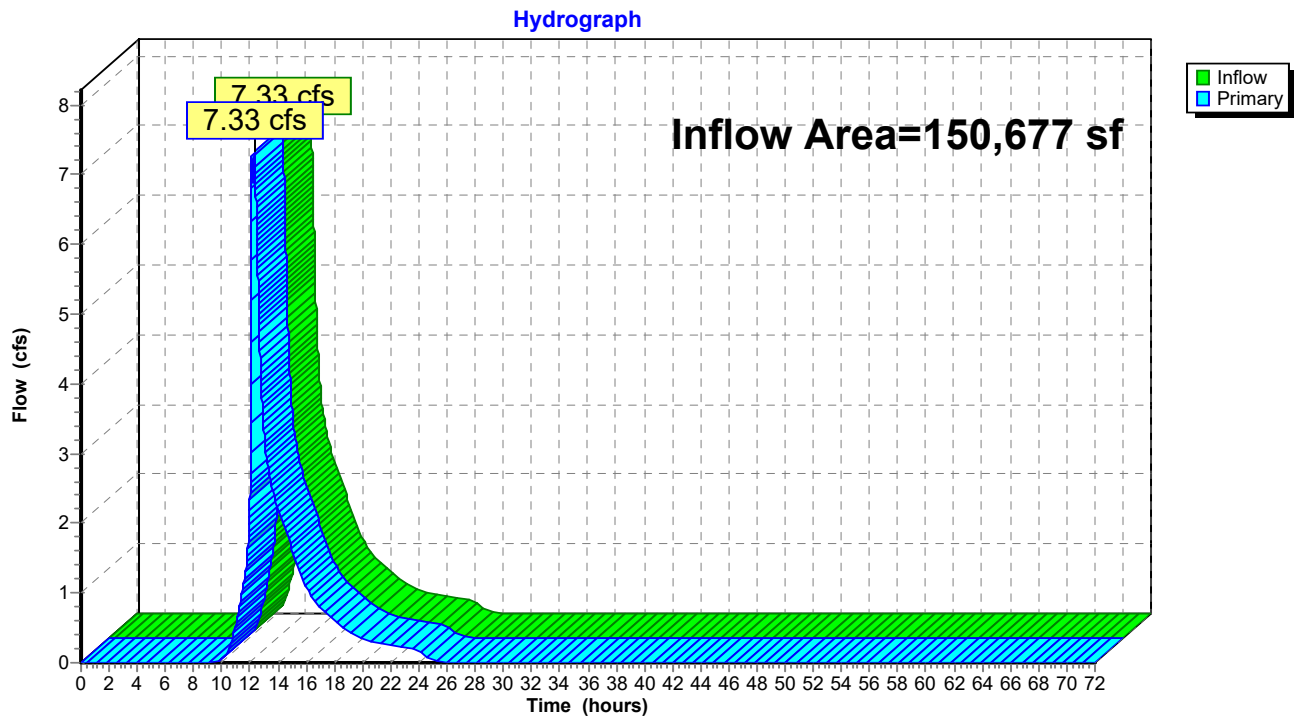
↑ **4=Broad-Crested Rectangular Weir** (Weir Controls 1.60 cfs @ 1.43 fps)

Pond B-3: Infiltration Basin in Rear

Summary for Link POI-1: Proposed Drainage to Sunset Road

Inflow Area = 150,677 sf, 43.86% Impervious, Inflow Depth = 4.65" for 100-Year event
Inflow = 7.33 cfs @ 12.31 hrs, Volume= 58,402 cf
Primary = 7.33 cfs @ 12.31 hrs, Volume= 58,402 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link POI-1: Proposed Drainage to Sunset Road

Summary for Subcatchment EX-1: Existing Drainage towards Sunset Road

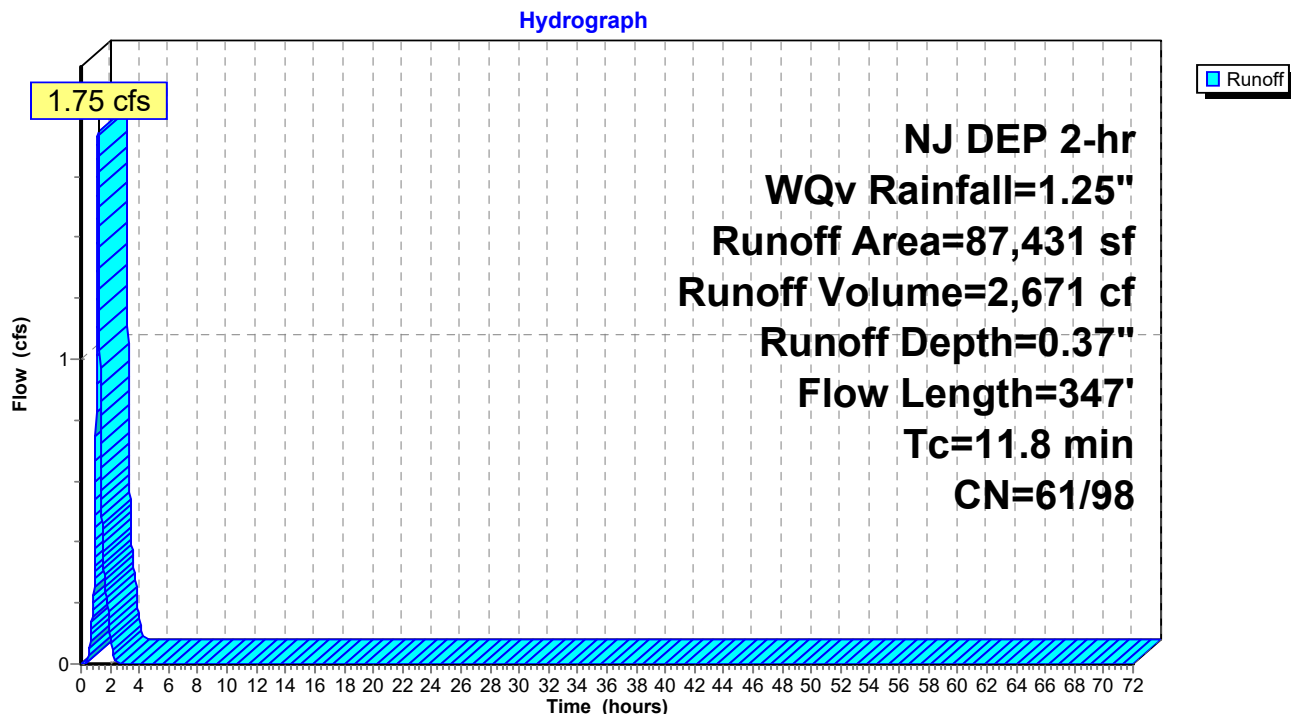
Runoff = 1.75 cfs @ 1.17 hrs, Volume= 2,671 cf, Depth= 0.37"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQv Rainfall=1.25"

	Area (sf)	CN	Description
*	30,985	98	Impervious
	56,446	61	>75% Grass cover, Good, HSG B
	87,431	74	Weighted Average
	56,446	61	64.56% Pervious Area
	30,985	98	35.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	100	0.0258	0.20		Sheet Flow, 100 LF Sheet Flow (1-2) Grass: Short n= 0.150 P2= 3.54"
1.6	86	0.0031	0.90		Shallow Concentrated Flow, 86 LF SCF (2-3) Unpaved Kv= 16.1 fps
0.1	10	0.0200	2.87		Shallow Concentrated Flow, 10 LF SCF (3-4) Paved Kv= 20.3 fps
1.7	151	0.0080	1.44		Shallow Concentrated Flow, 151 LF SCF (4-5) Unpaved Kv= 16.1 fps
11.8	347	Total			

Subcatchment EX-1: Existing Drainage towards Sunset Road



Summary for Subcatchment EX-2: Existing Drainage towards Roome Avenue

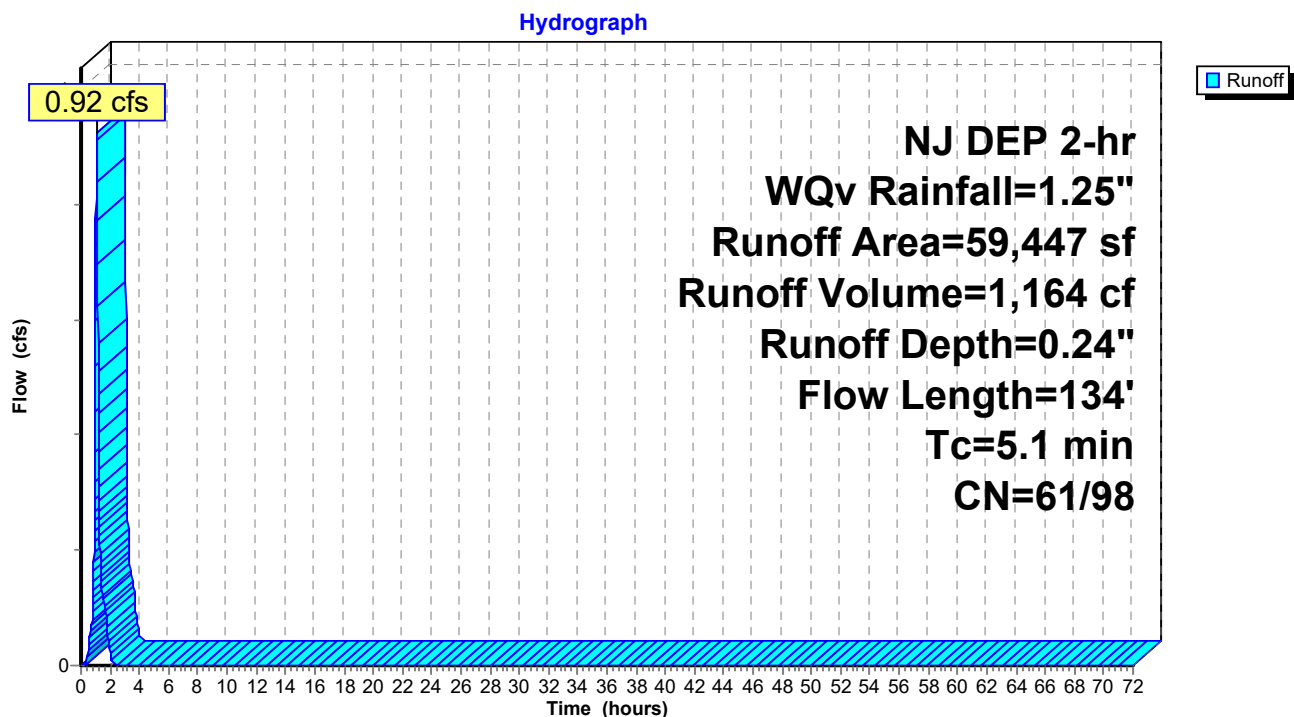
Runoff = 0.92 cfs @ 1.10 hrs, Volume= 1,164 cf, Depth= 0.24"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQv Rainfall=1.25"

	Area (sf)	CN	Description
*	13,506	98	Impervious
	45,941	61	>75% Grass cover, Good, HSG B
	59,447	69	Weighted Average
	45,941	61	77.28% Pervious Area
	13,506	98	22.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	30	0.0170	0.13		Sheet Flow, 30 LF Sheet Flow (1-2) Grass: Short n= 0.150 P2= 3.54"
0.1	9	0.0110	2.13		Shallow Concentrated Flow, 9 LF SCF (2-3) Paved Kv= 20.3 fps
0.6	39	0.0050	1.14		Shallow Concentrated Flow, 39 LF SCF (3-4) Unpaved Kv= 16.1 fps
0.2	25	0.0092	1.95		Shallow Concentrated Flow, 25 LF SCF (4-5) Paved Kv= 20.3 fps
0.4	31	0.0081	1.45		Shallow Concentrated Flow, 31 LF SCF (5-6) Unpaved Kv= 16.1 fps
5.1	134	Total			

Subcatchment EX-2: Existing Drainage towards Roome Avenue



Summary for Subcatchment EX-3: Existing Drainage towards Dewilde Drive

Runoff = 0.01 cfs @ 1.23 hrs, Volume= 28 cf, Depth= 0.01"

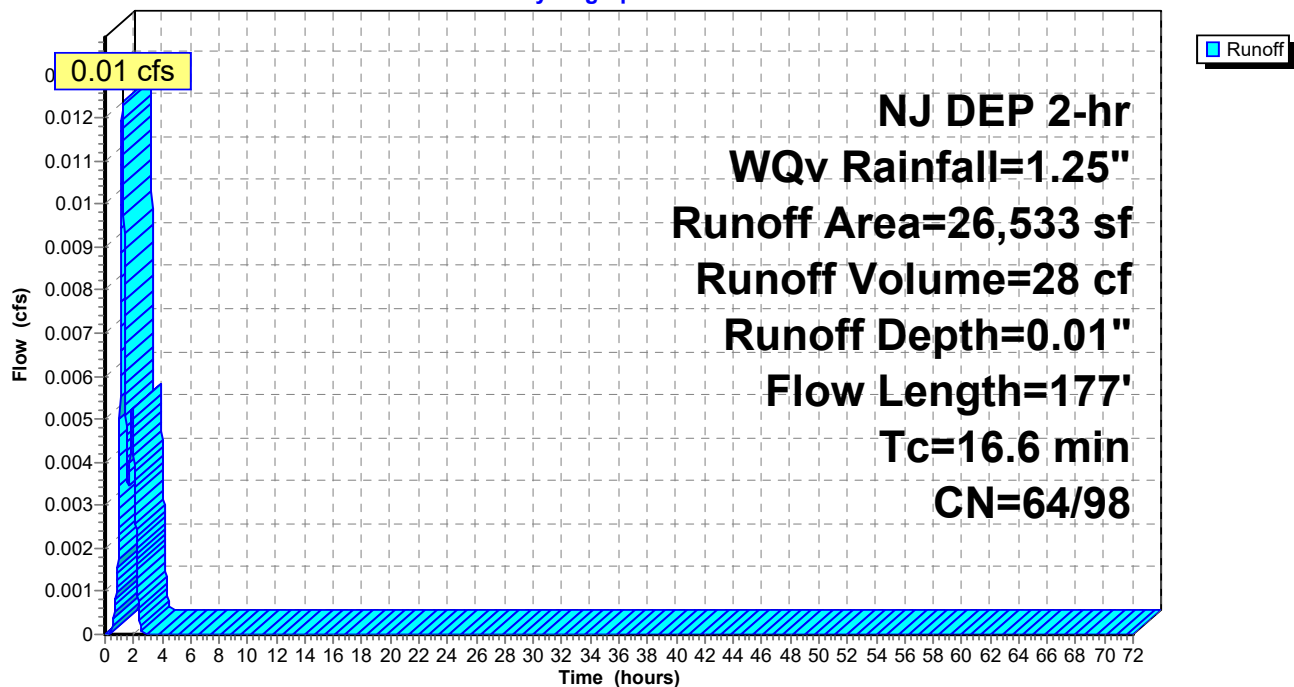
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQv Rainfall=1.25"

Area (sf)	CN	Description
* 255	98	Impervious
2,009	96	Gravel surface, HSG B
24,269	61	>75% Grass cover, Good, HSG B
26,533	64	Weighted Average
26,278	64	99.04% Pervious Area
255	98	0.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.8	100	0.0053	0.11		Sheet Flow, 100 LF Sheet Flow (1-2) Grass: Short n= 0.150 P2= 3.54"
0.8	77	0.0111	1.70		Shallow Concentrated Flow, 77 LF SCF (2-3) Unpaved Kv= 16.1 fps
16.6	177	Total			

Subcatchment EX-3: Existing Drainage towards Dewilde Drive

Hydrograph



Summary for Subcatchment P-1A: Drainage to Infiltration Basin Along Sunset Road

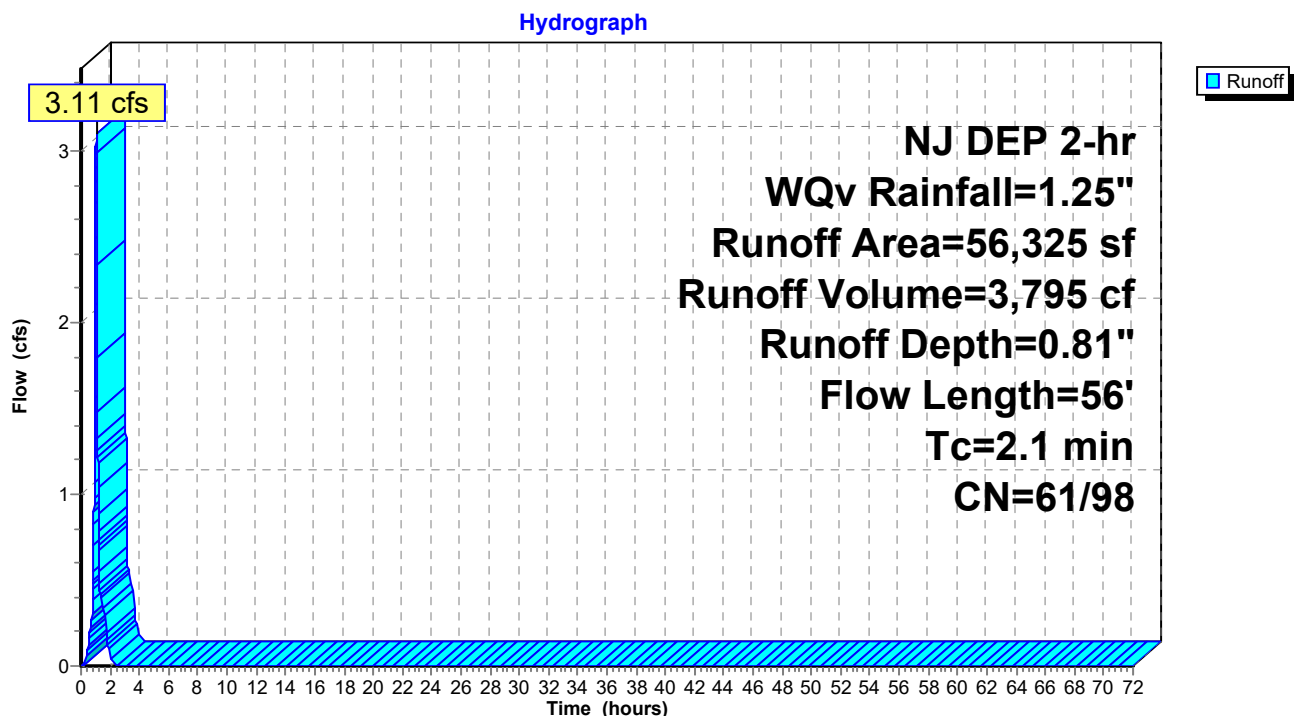
Runoff = 3.11 cfs @ 1.08 hrs, Volume= 3,795 cf, Depth= 0.81"

Routed to Pond B-1 : Infiltration Basin Along Sunset Road

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQv Rainfall=1.25"

	Area (sf)	CN	Description
	12,309	61	>75% Grass cover, Good, HSG B
*	27,825	98	Roof Area
*	16,191	98	Impervious Area
	56,325	90	Weighted Average
	12,309	61	21.85% Pervious Area
	44,016	98	78.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	12	0.0127	0.10		Sheet Flow, 12 LF Sheet Flow (1-2) Grass: Short n= 0.150 P2= 3.54"
0.1	23	0.0167	2.62		Shallow Concentrated Flow, 23 LF SCF (2-3) Paved Kv= 20.3 fps
0.0	21	0.2500	8.05		Shallow Concentrated Flow, 21 LF SCF (3-4) Unpaved Kv= 16.1 fps
2.1	56	Total			

Subcatchment P-1A: Drainage to Infiltration Basin Along Sunset Road

Summary for Subcatchment P-1B: Drainage to Porous Pavement in Tandem Spaces

Runoff = 0.88 cfs @ 1.08 hrs, Volume= 1,080 cf, Depth= 1.02"

Routed to Pond B-2 : Porous Pavement Within Tandem Spaces

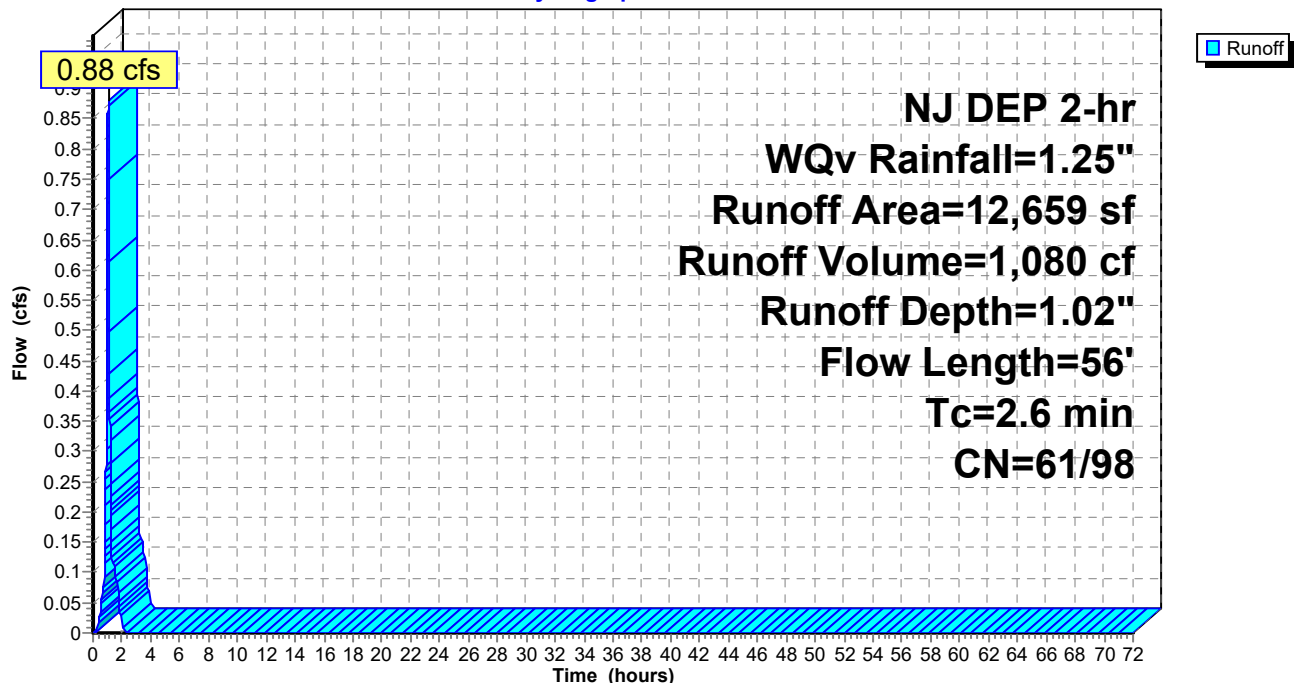
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQv Rainfall=1.25"

Area (sf)	CN	Description
132	61	>75% Grass cover, Good, HSG B
* 3,564	98	Porous Pavement
* 8,963	98	Impervious Area
12,659	98	Weighted Average
132	61	1.04% Pervious Area
12,527	98	98.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	15	0.0127	0.10		Sheet Flow, 15 LF Sheet Flow (1-2) Grass: Short n= 0.150 P2= 3.54"
0.2	41	0.0250	3.21		Shallow Concentrated Flow, 41 LF SCF (2-3) Paved Kv= 20.3 fps
2.6	56	Total			

Subcatchment P-1B: Drainage to Porous Pavement in Tandem Spaces

Hydrograph



Summary for Subcatchment P-1C: Drainage to Infiltration Basin in Rear

Runoff = 0.55 cfs @ 1.16 hrs, Volume= 999 cf, Depth= 0.18"
Routed to Pond B-3 : Infiltration Basin in Rear

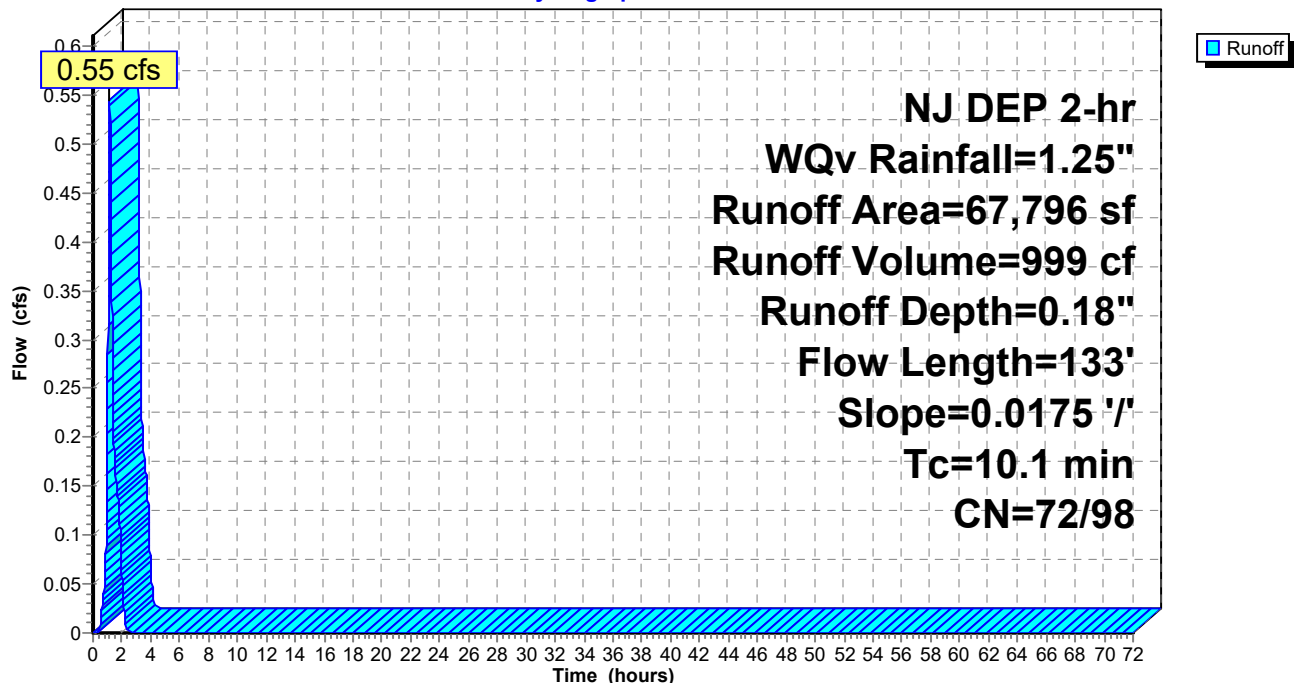
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQv Rainfall=1.25"

Area (sf)	CN	Description
26,076	61	>75% Grass cover, Good, HSG B
* 8,660	98	Impervious Area
* 33,060	80	Turf Field
67,796	75	Weighted Average
59,136	72	87.23% Pervious Area
8,660	98	12.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.0175	0.17		Sheet Flow, 100 LF Sheet Flow
					Grass: Short n= 0.150 P2= 3.54"
0.3	33	0.0175	2.13		Shallow Concentrated Flow, 33 LF SCF (2-3)
					Unpaved Kv= 16.1 fps
10.1	133	Total			

Subcatchment P-1C: Drainage to Infiltration Basin in Rear

Hydrograph



Summary for Subcatchment P-1D: Undetained Flow to Sunset Road

Runoff = 0.05 cfs @ 1.14 hrs, Volume= 76 cf, Depth= 0.07"

Routed to Link POI-1 : Proposed Drainage to Sunset Road

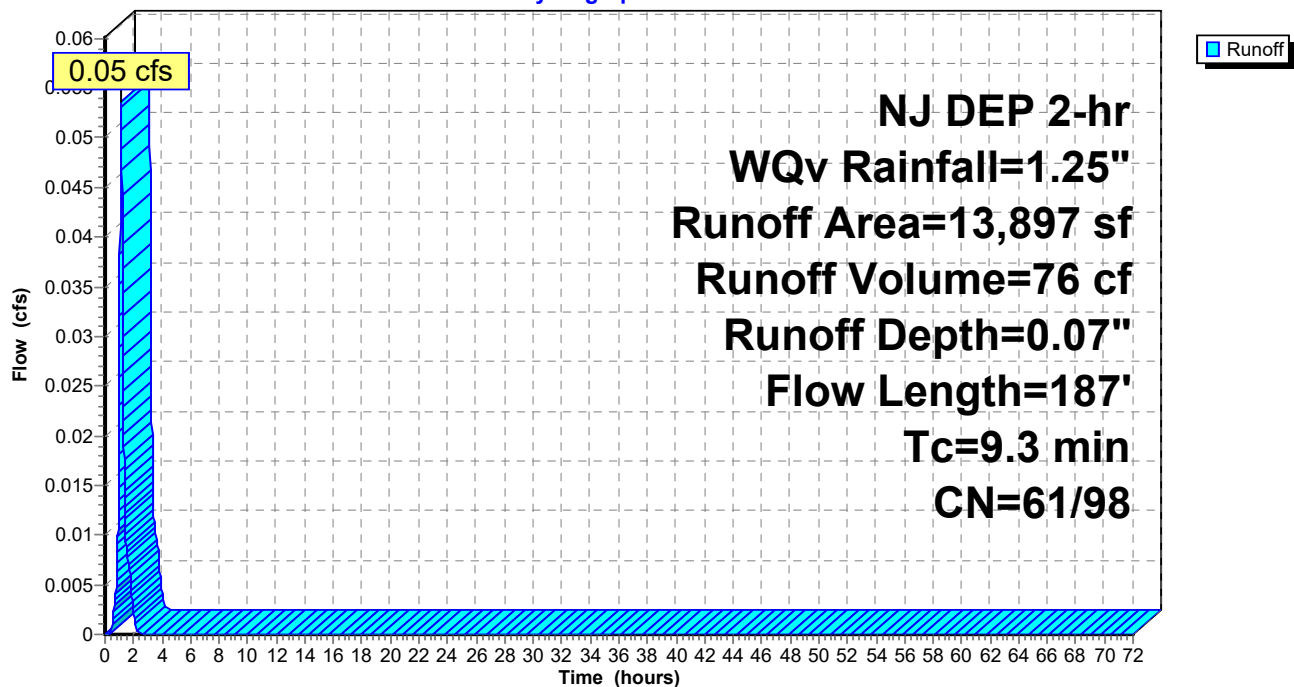
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQv Rainfall=1.25"

Area (sf)	CN	Description
13,017	61	>75% Grass cover, Good, HSG B
* 880	98	Impervious Area
13,897	63	Weighted Average
13,017	61	93.67% Pervious Area
880	98	6.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	100	0.0250	0.20		Sheet Flow, 100 LF Sheet Flow (1-2) Grass: Short n= 0.150 P2= 3.54"
0.8	87	0.0135	1.87		Shallow Concentrated Flow, 87 LF SCF (2-3) Unpaved Kv= 16.1 fps
9.3	187	Total			

Subcatchment P-1D: Undetained Flow to Sunset Road

Hydrograph



Summary for Subcatchment P-2: Proposed Drainage to Roome Avenue

Runoff = 0.22 cfs @ 1.12 hrs, Volume= 299 cf, Depth= 0.17"

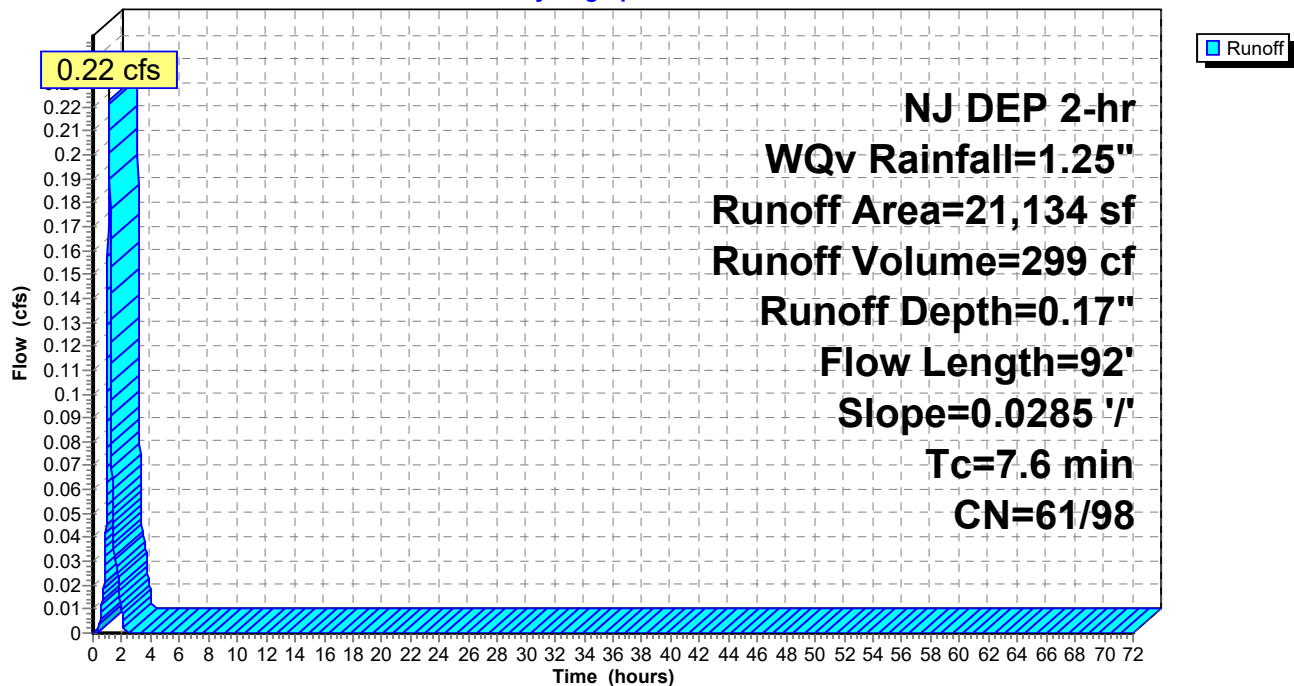
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQv Rainfall=1.25"

Area (sf)	CN	Description
17,670	61	>75% Grass cover, Good, HSG B
* 3,464	98	Impervious Area
21,134	67	Weighted Average
17,670	61	83.61% Pervious Area
3,464	98	16.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	92	0.0285	0.20		Sheet Flow, 92 LF Sheet Flow (1-2) Grass: Short n= 0.150 P2= 3.54"

Subcatchment P-2: Proposed Drainage to Roome Avenue

Hydrograph



Summary for Subcatchment P-3: Proposed Drainage toward Dewilde Drive

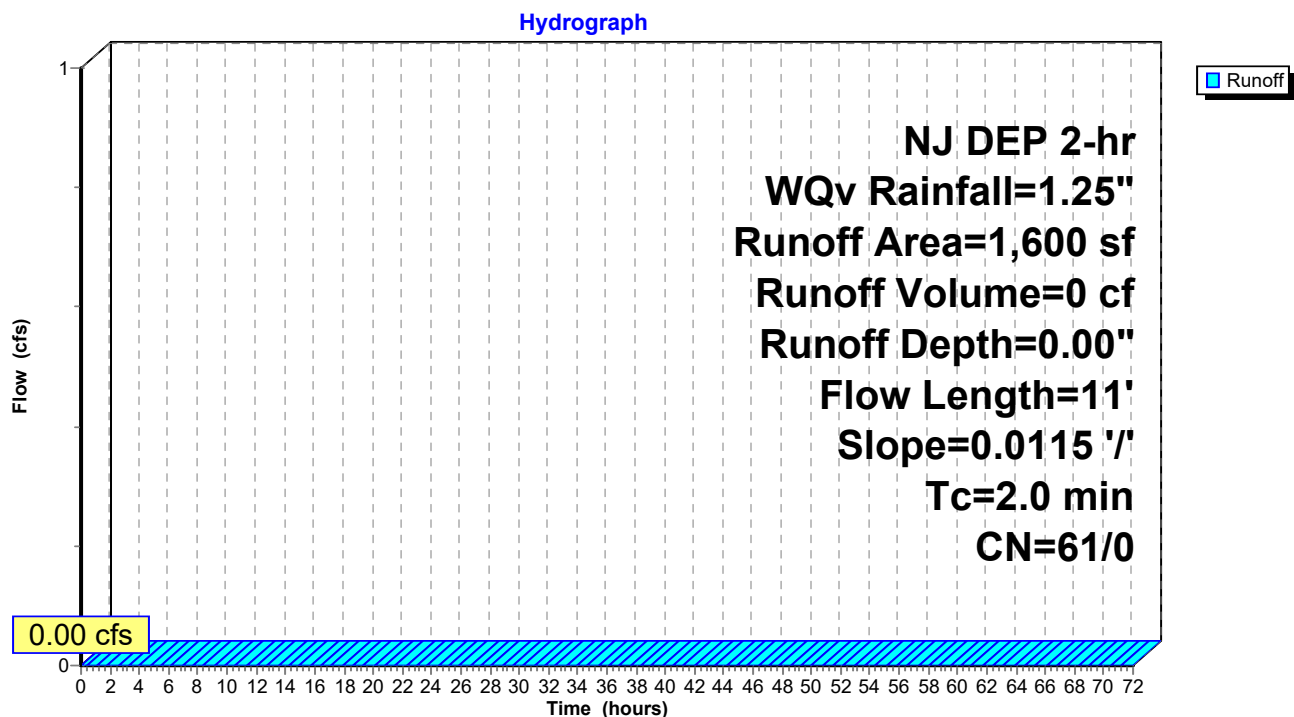
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQv Rainfall=1.25"

Area (sf)	CN	Description
1,600	61	>75% Grass cover, Good, HSG B
1,600	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	11	0.0115	0.09		Sheet Flow, 11 LF Sheet Flow (1-2) Grass: Short n= 0.150 P2= 3.54"

Subcatchment P-3: Proposed Drainage toward Dewilde Drive



Summary for Pond B-1: Infiltration Basin Along Sunset Road

Inflow Area = 56,325 sf, 78.15% Impervious, Inflow Depth = 0.81" for WQv event
 Inflow = 3.11 cfs @ 1.08 hrs, Volume= 3,795 cf
 Outflow = 0.07 cfs @ 2.02 hrs, Volume= 3,795 cf, Atten= 98%, Lag= 56.6 min
 Discarded = 0.06 cfs @ 2.02 hrs, Volume= 3,789 cf
 Primary = 0.00 cfs @ 2.02 hrs, Volume= 5 cf
 Routed to Link POI-1 : Proposed Drainage to Sunset Road

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 187.84' @ 2.02 hrs Surf.Area= 4,903 sf Storage= 3,482 cf

Plug-Flow detention time= 530.8 min calculated for 3,795 cf (100% of inflow)
 Center-of-Mass det. time= 530.8 min (597.5 - 66.7)

Volume	Invert	Avail.Storage	Storage Description		
#1	187.00'	14,171 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
187.00	3,406	592.8	0	0	3,406
188.00	5,212	611.7	4,277	4,277	5,315
189.00	7,076	630.5	6,120	10,397	7,275
189.50	8,029	639.9	3,774	14,171	8,276

Device	Routing	Invert	Outlet Devices
#1	Primary	185.89'	15.0" Round Culvert L= 26.0' Ke= 0.500 Inlet / Outlet Invert= 185.89' / 185.75' S= 0.0054 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	187.81'	5.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	188.60'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	189.15'	4.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#5	Discarded	187.00'	0.500 in/hr Exfiltration over Wetted area Conductivity to Groundwater Elevation = 180.00' Phase-In= 0.01'

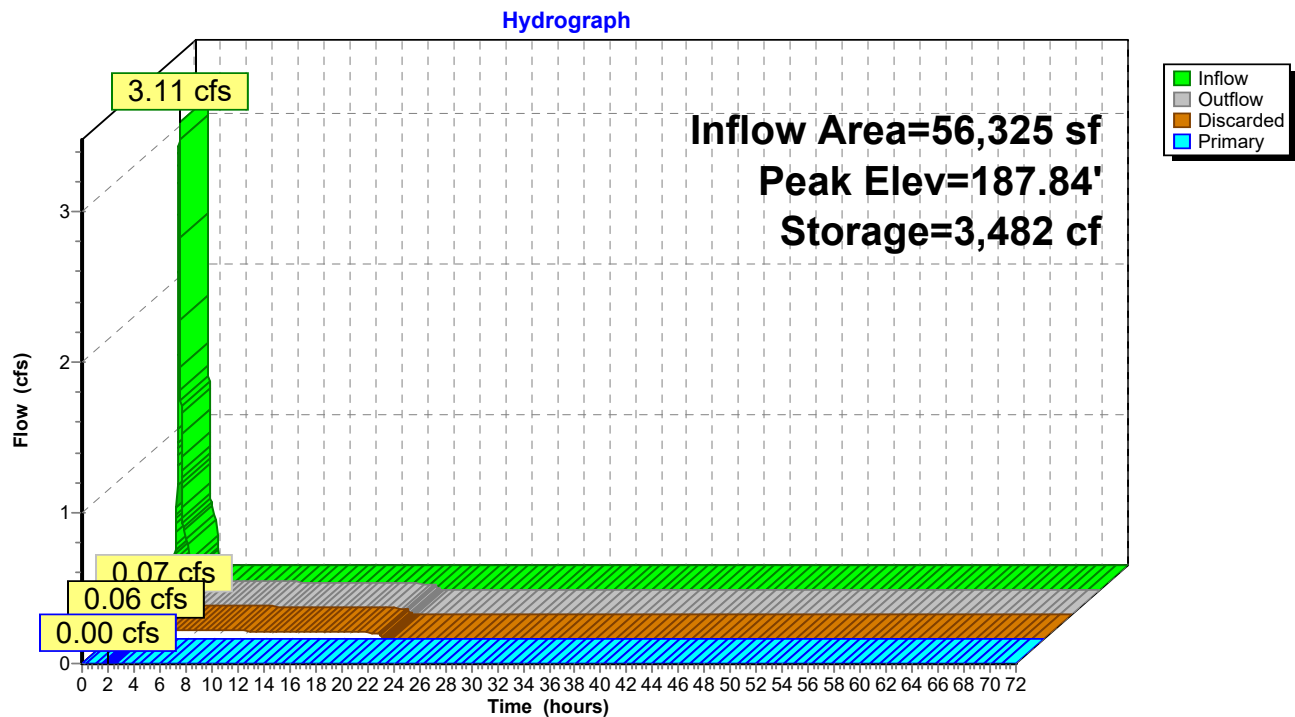
Discarded OutFlow Max=0.06 cfs @ 2.02 hrs HW=187.84' (Free Discharge)

↑ **5=Exfiltration** (Controls 0.06 cfs)

Primary OutFlow Max=0.00 cfs @ 2.02 hrs HW=187.84' TW=0.00' (Dynamic Tailwater)

↑ **1=Culvert** (Passes 0.00 cfs of 6.23 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 0.00 cfs @ 0.62 fps)
 ↑ **3=Orifice/Grate** (Controls 0.00 cfs)
 ↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B-1: Infiltration Basin Along Sunset Road



Summary for Pond B-2: Porous Pavement Within Tandem Spaces

Inflow Area = 12,659 sf, 98.96% Impervious, Inflow Depth = 1.02" for WQv event
 Inflow = 0.88 cfs @ 1.08 hrs, Volume= 1,080 cf
 Outflow = 0.05 cfs @ 1.80 hrs, Volume= 1,080 cf, Atten= 95%, Lag= 42.7 min
 Discarded = 0.05 cfs @ 1.80 hrs, Volume= 1,080 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Link POI-1 : Proposed Drainage to Sunset Road

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 187.45' @ 1.80 hrs Surf.Area= 3,564 sf Storage= 849 cf

Plug-Flow detention time= 164.4 min calculated for 1,080 cf (100% of inflow)
 Center-of-Mass det. time= 164.4 min (231.5 - 67.1)

Volume	Invert	Avail.Storage	Storage Description
#1	186.85'	2,851 cf	Custom Stage Data (Irregular) Listed below (Recalc) 7,128 cf Overall x 40.0% Voids

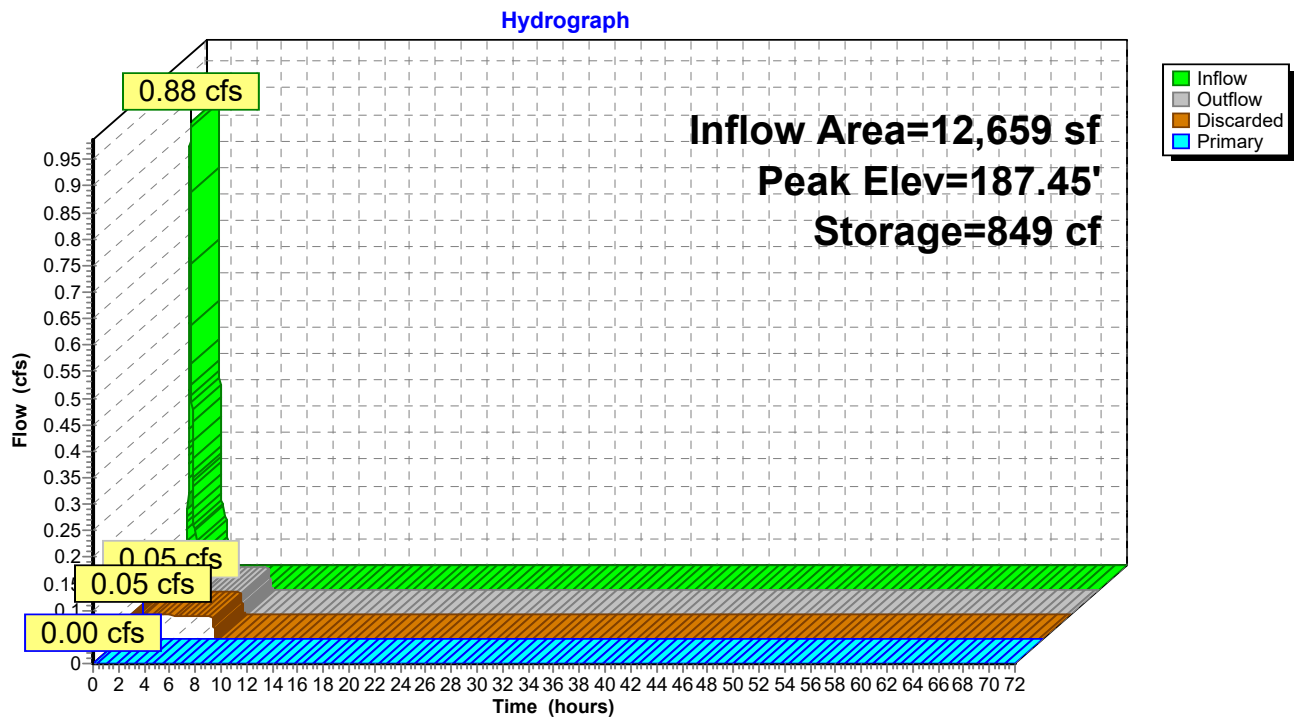
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
186.85	3,564	306.0	0	0	3,564
187.85	3,564	306.0	3,564	3,564	3,870
188.85	3,564	306.0	3,564	7,128	4,176

Device	Routing	Invert	Outlet Devices
#1	Primary	186.85'	15.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 186.85' / 185.75' S= 0.0081 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	187.45'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	188.45'	6.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#4	Discarded	186.85'	0.500 in/hr Exfiltration over Wetted area Conductivity to Groundwater Elevation = 180.00' Phase-In= 0.01'

Discarded OutFlow Max=0.05 cfs @ 1.80 hrs HW=187.45' (Free Discharge)
 ↳ **4=Exfiltration** (Controls 0.05 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=186.85' TW=0.00' (Dynamic Tailwater)
 ↳ **1=Culvert** (Controls 0.00 cfs)
 ↳ **2=Orifice/Grate** (Controls 0.00 cfs)
 ↳ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B-2: Porous Pavement Within Tandem Spaces



Summary for Pond B-3: Infiltration Basin in Rear

Inflow Area = 67,796 sf, 12.77% Impervious, Inflow Depth = 0.18" for WQv event
 Inflow = 0.55 cfs @ 1.16 hrs, Volume= 999 cf
 Outflow = 0.04 cfs @ 2.08 hrs, Volume= 999 cf, Atten= 92%, Lag= 55.0 min
 Discarded = 0.04 cfs @ 2.08 hrs, Volume= 999 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Link POI-1 : Proposed Drainage to Sunset Road

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 188.23' @ 2.08 hrs Surf.Area= 3,573 sf Storage= 782 cf

Plug-Flow detention time= 162.4 min calculated for 998 cf (100% of inflow)
 Center-of-Mass det. time= 162.4 min (241.6 - 79.2)

Volume	Invert	Avail.Storage	Storage Description		
#1	188.00'	9,144 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
188.00	3,308	335.0	0	0	3,308
189.00	4,551	370.0	3,913	3,913	5,303
190.00	5,942	405.0	5,231	9,144	7,496

Device	Routing	Invert	Outlet Devices
#1	Primary	187.50'	15.0" Round Culvert L= 325.0' Ke= 0.500 Inlet / Outlet Invert= 187.50' / 185.85' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	188.25'	15.0" W x 2.5" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	188.85'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	189.65'	4.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#5	Discarded	188.00'	0.500 in/hr Exfiltration over Wetted area Conductivity to Groundwater Elevation = 180.10' Phase-In= 0.01'

Discarded OutFlow Max=0.04 cfs @ 2.08 hrs HW=188.23' (Free Discharge)

↑**5=Exfiltration** (Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=188.00' TW=0.00' (Dynamic Tailwater)

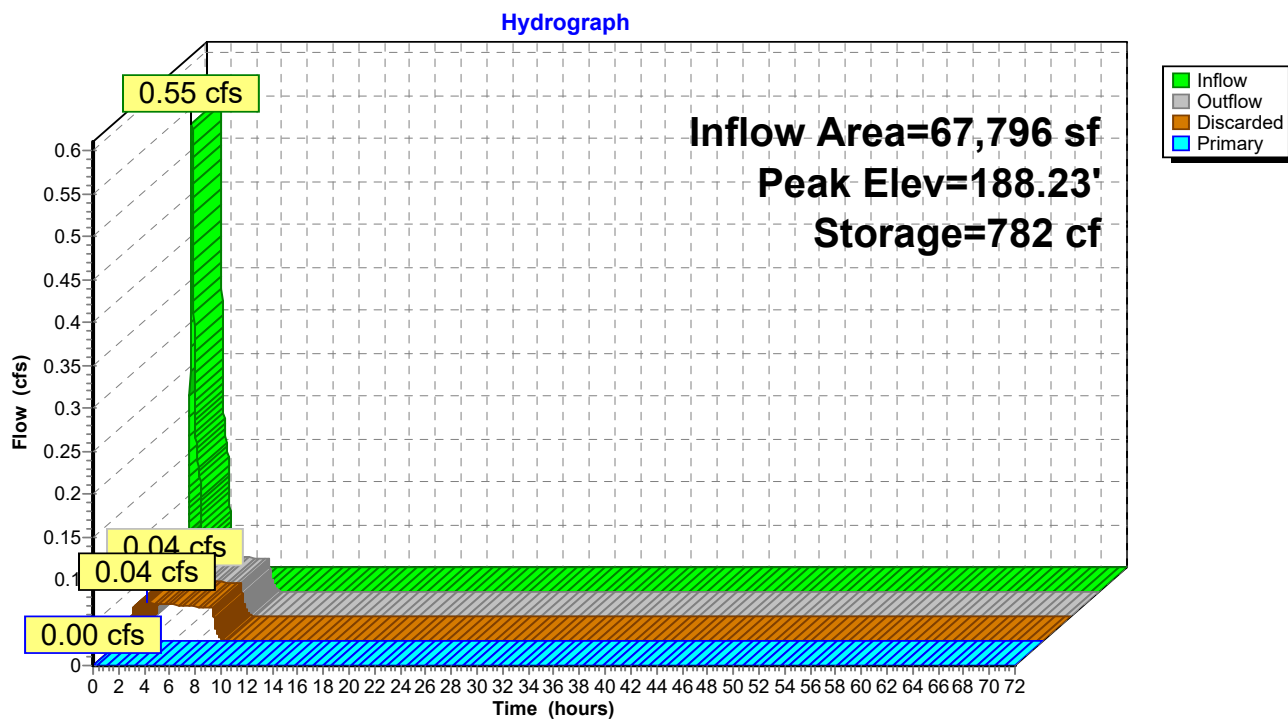
↑**1=Culvert** (Passes 0.00 cfs of 0.88 cfs potential flow)

↑**2=Orifice/Grate** (Controls 0.00 cfs)

↑**3=Orifice/Grate** (Controls 0.00 cfs)

↑**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

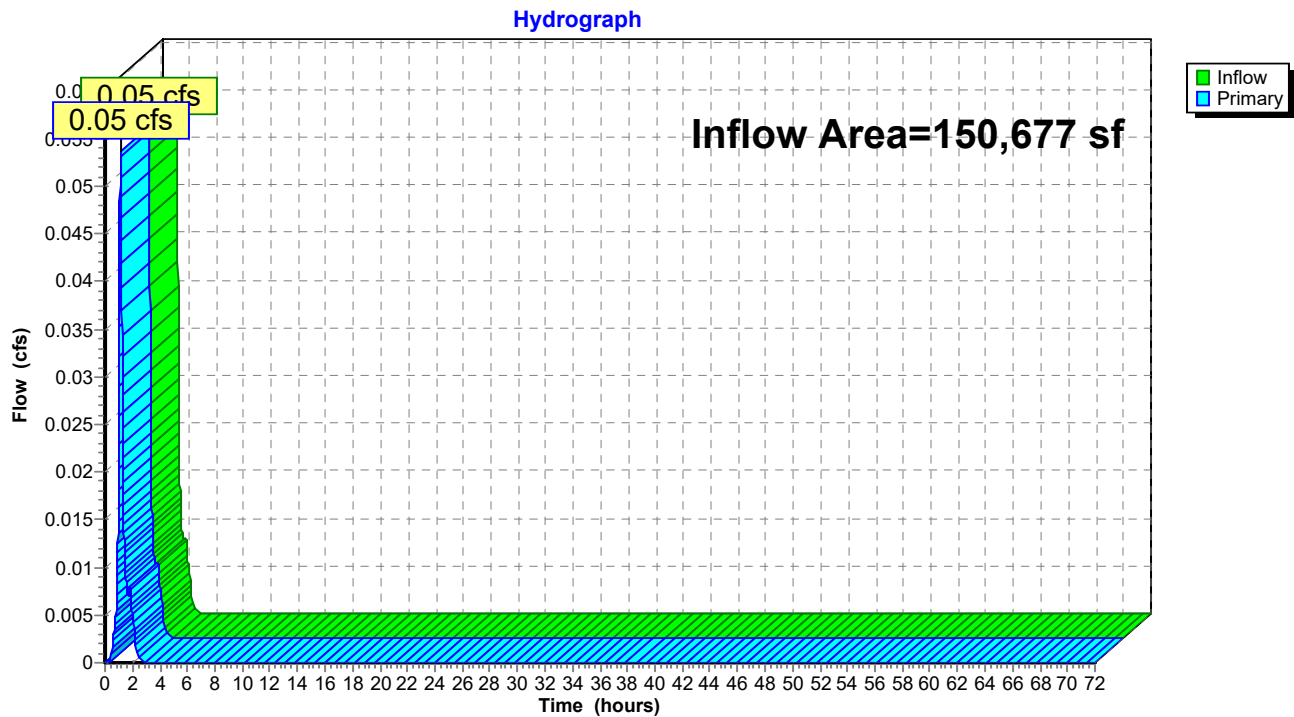
Pond B-3: Infiltration Basin in Rear



Summary for Link POI-1: Proposed Drainage to Sunset Road

Inflow Area = 150,677 sf, 43.86% Impervious, Inflow Depth = 0.01" for WQv event
Inflow = 0.05 cfs @ 1.14 hrs, Volume= 81 cf
Primary = 0.05 cfs @ 1.14 hrs, Volume= 81 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link POI-1: Proposed Drainage to Sunset Road

Summary for Subcatchment EX-1: Existing Drainage towards Sunset Road

Runoff = 9.18 cfs @ 12.19 hrs, Volume= 38,409 cf, Depth= 5.27"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 100-Year Rainfall=8.35"

	Area (sf)	CN	Description
*	30,985	98	Impervious
	56,446	61	>75% Grass cover, Good, HSG B
	87,431	74	Weighted Average
	56,446	61	64.56% Pervious Area
	30,985	98	35.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	100	0.0258	0.20		Sheet Flow, 100 LF Sheet Flow (1-2) Grass: Short n= 0.150 P2= 3.54"
1.6	86	0.0031	0.90		Shallow Concentrated Flow, 86 LF SCF (2-3) Unpaved Kv= 16.1 fps
0.1	10	0.0200	2.87		Shallow Concentrated Flow, 10 LF SCF (3-4) Paved Kv= 20.3 fps
1.7	151	0.0080	1.44		Shallow Concentrated Flow, 151 LF SCF (4-5) Unpaved Kv= 16.1 fps
11.8	347	Total			

Summary for Subcatchment EX-2: Existing Drainage towards Roome Avenue

Runoff = 7.33 cfs @ 12.12 hrs, Volume= 23,345 cf, Depth= 4.71"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 100-Year Rainfall=8.35"

	Area (sf)	CN	Description
*	13,506	98	Impervious
	45,941	61	>75% Grass cover, Good, HSG B
	59,447	69	Weighted Average
	45,941	61	77.28% Pervious Area
	13,506	98	22.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	30	0.0170	0.13		Sheet Flow, 30 LF Sheet Flow (1-2) Grass: Short n= 0.150 P2= 3.54"
0.1	9	0.0110	2.13		Shallow Concentrated Flow, 9 LF SCF (2-3) Paved Kv= 20.3 fps
0.6	39	0.0050	1.14		Shallow Concentrated Flow, 39 LF SCF (3-4) Unpaved Kv= 16.1 fps
0.2	25	0.0092	1.95		Shallow Concentrated Flow, 25 LF SCF (4-5) Paved Kv= 20.3 fps
0.4	31	0.0081	1.45		Shallow Concentrated Flow, 31 LF SCF (5-6) Unpaved Kv= 16.1 fps
5.1	134	Total			

Summary for Subcatchment EX-3: Existing Drainage towards Dewilde Drive

Runoff = 2.05 cfs @ 12.25 hrs, Volume= 9,068 cf, Depth= 4.10"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 100-Year Rainfall=8.35"

	Area (sf)	CN	Description
*	255	98	Impervious
	2,009	96	Gravel surface, HSG B
	24,269	61	>75% Grass cover, Good, HSG B
	26,533	64	Weighted Average
	26,278	64	99.04% Pervious Area
	255	98	0.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.8	100	0.0053	0.11		Sheet Flow, 100 LF Sheet Flow (1-2) Grass: Short n= 0.150 P2= 3.54"
0.8	77	0.0111	1.70		Shallow Concentrated Flow, 77 LF SCF (2-3) Unpaved Kv= 16.1 fps
16.6	177	Total			

Summary for Subcatchment P-1A: Drainage to Infiltration Basin Along Sunset Road

Runoff = 10.27 cfs @ 12.10 hrs, Volume= 33,557 cf, Depth= 7.15"

Routed to Pond B-1 : Infiltration Basin Along Sunset Road

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 100-Year Rainfall=8.35"

	Area (sf)	CN	Description
	12,309	61	>75% Grass cover, Good, HSG B
*	27,825	98	Roof Area
*	16,191	98	Impervious Area
	56,325	90	Weighted Average
	12,309	61	21.85% Pervious Area
	44,016	98	78.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	12	0.0127	0.10		Sheet Flow, 12 LF Sheet Flow (1-2) Grass: Short n= 0.150 P2= 3.54"
0.1	23	0.0167	2.62		Shallow Concentrated Flow, 23 LF SCF (2-3) Paved Kv= 20.3 fps
0.0	21	0.2500	8.05		Shallow Concentrated Flow, 21 LF SCF (3-4) Unpaved Kv= 16.1 fps
2.1	56	Total			

Summary for Subcatchment P-1B: Drainage to Porous Pavement in Tandem Spaces

Runoff = 2.52 cfs @ 12.10 hrs, Volume= 8,507 cf, Depth= 8.06"

Routed to Pond B-2 : Porous Pavement Within Tandem Spaces

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 100-Year Rainfall=8.35"

Area (sf)	CN	Description
132	61	>75% Grass cover, Good, HSG B
* 3,564	98	Porous Pavement
* 8,963	98	Impervious Area
12,659	98	Weighted Average
132	61	1.04% Pervious Area
12,527	98	98.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	15	0.0127	0.10		Sheet Flow, 15 LF Sheet Flow (1-2) Grass: Short n= 0.150 P2= 3.54"
0.2	41	0.0250	3.21		Shallow Concentrated Flow, 41 LF SCF (2-3) Paved Kv= 20.3 fps
2.6	56	Total			

Summary for Subcatchment P-1C: Drainage to Infiltration Basin in Rear

Runoff = 8.20 cfs @ 12.17 hrs, Volume= 30,507 cf, Depth= 5.40"
 Routed to Pond B-3 : Infiltration Basin in Rear

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100-Year Rainfall=8.35"

	Area (sf)	CN	Description
	26,076	61	>75% Grass cover, Good, HSG B
*	8,660	98	Impervious Area
*	33,060	80	Turf Field
	67,796	75	Weighted Average
	59,136	72	87.23% Pervious Area
	8,660	98	12.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.0175	0.17		Sheet Flow, 100 LF Sheet Flow Grass: Short n= 0.150 P2= 3.54"
0.3	33	0.0175	2.13		Shallow Concentrated Flow, 33 LF SCF (2-3) Unpaved Kv= 16.1 fps
10.1	133	Total			

Summary for Subcatchment P-1D: Undetained Flow to Sunset Road

Runoff = 1.29 cfs @ 12.17 hrs, Volume= 4,623 cf, Depth= 3.99"

Routed to Link POI-1 : Proposed Drainage to Sunset Road

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 100-Year Rainfall=8.35"

Area (sf)	CN	Description
13,017	61	>75% Grass cover, Good, HSG B
* 880	98	Impervious Area
13,897	63	Weighted Average
13,017	61	93.67% Pervious Area
880	98	6.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	100	0.0250	0.20		Sheet Flow, 100 LF Sheet Flow (1-2) Grass: Short n= 0.150 P2= 3.54"
0.8	87	0.0135	1.87		Shallow Concentrated Flow, 87 LF SCF (2-3) Unpaved Kv= 16.1 fps
9.3	187	Total			

Summary for Subcatchment P-2: Proposed Drainage to Roome Avenue

Runoff = 2.26 cfs @ 12.15 hrs, Volume= 7,809 cf, Depth= 4.43"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 100-Year Rainfall=8.35"

Area (sf)	CN	Description
17,670	61	>75% Grass cover, Good, HSG B
* 3,464	98	Impervious Area
21,134	67	Weighted Average
17,670	61	83.61% Pervious Area
3,464	98	16.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	92	0.0285	0.20		Sheet Flow, 92 LF Sheet Flow (1-2) Grass: Short n= 0.150 P2= 3.54"

Summary for Subcatchment P-3: Proposed Drainage toward Dewilde Drive

Runoff = 0.18 cfs @ 12.10 hrs, Volume= 495 cf, Depth= 3.71"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 100-Year Rainfall=8.35"

Area (sf)	CN	Description
1,600	61	>75% Grass cover, Good, HSG B
1,600	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	11	0.0115	0.09		Sheet Flow, 11 LF Sheet Flow (1-2) Grass: Short n= 0.150 P2= 3.54"

Summary for Pond B-1: Infiltration Basin Along Sunset Road

Inflow Area = 56,325 sf, 78.15% Impervious, Inflow Depth = 7.15" for 100-Year event
 Inflow = 10.27 cfs @ 12.10 hrs, Volume= 33,557 cf
 Outflow = 3.10 cfs @ 12.23 hrs, Volume= 33,557 cf, Atten= 70%, Lag= 8.0 min
 Discarded = 0.12 cfs @ 12.23 hrs, Volume= 9,694 cf
 Primary = 2.99 cfs @ 12.23 hrs, Volume= 23,862 cf
 Routed to Link POI-1 : Proposed Drainage to Sunset Road

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 189.48' @ 12.23 hrs Surf.Area= 7,988 sf Storage= 14,005 cf

Plug-Flow detention time= 259.1 min calculated for 33,552 cf (100% of inflow)
 Center-of-Mass det. time= 259.2 min (1,009.7 - 750.5)

Volume	Invert	Avail.Storage	Storage Description		
#1	187.00'	14,171 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
187.00	3,406	592.8	0	0	3,406
188.00	5,212	611.7	4,277	4,277	5,315
189.00	7,076	630.5	6,120	10,397	7,275
189.50	8,029	639.9	3,774	14,171	8,276

Device	Routing	Invert	Outlet Devices
#1	Primary	185.89'	15.0" Round Culvert L= 26.0' Ke= 0.500 Inlet / Outlet Invert= 185.89' / 185.75' S= 0.0054 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	187.81'	5.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	188.60'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	189.15'	4.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#5	Discarded	187.00'	0.500 in/hr Exfiltration over Wetted area Conductivity to Groundwater Elevation = 180.00' Phase-In= 0.01'

Discarded OutFlow Max=0.12 cfs @ 12.23 hrs HW=189.48' (Free Discharge)

↑**5=Exfiltration** (Controls 0.12 cfs)

Primary OutFlow Max=2.99 cfs @ 12.23 hrs HW=189.48' TW=0.00' (Dynamic Tailwater)

↑**1=Culvert** (Passes 2.99 cfs of 10.17 cfs potential flow)

↑**2=Orifice/Grate** (Orifice Controls 0.79 cfs @ 5.82 fps)

↑**3=Orifice/Grate** (Orifice Controls 0.14 cfs @ 4.24 fps)

↑**4=Broad-Crested Rectangular Weir** (Weir Controls 2.05 cfs @ 1.55 fps)

Stage-Discharge for Pond B-1: Infiltration Basin Along Sunset Road

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
187.00	0.00	0.00	0.00
187.10	0.04	0.04	0.00
187.20	0.04	0.04	0.00
187.30	0.05	0.05	0.00
187.40	0.05	0.05	0.00
187.50	0.05	0.05	0.00
187.60	0.06	0.06	0.00
187.70	0.06	0.06	0.00
187.80	0.06	0.06	0.00
187.90	0.09	0.07	0.02
188.00	0.16	0.07	0.09
188.10	0.26	0.07	0.19
188.20	0.36	0.07	0.28
188.30	0.43	0.08	0.35
188.40	0.49	0.08	0.41
188.50	0.54	0.08	0.46
188.60	0.59	0.09	0.50
188.70	0.65	0.09	0.56
188.80	0.73	0.09	0.63
188.90	0.79	0.10	0.69
189.00	0.84	0.10	0.74
189.10	0.89	0.10	0.79
189.20	1.06	0.11	0.95
189.30	1.61	0.11	1.50
189.40	2.37	0.12	2.26
189.50	3.31	0.12	3.19

Stage-Area-Storage for Pond B-1: Infiltration Basin Along Sunset Road

Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
187.00	3,406	3,406	0
187.10	3,569	3,594	349
187.20	3,737	3,783	714
187.30	3,908	3,972	1,096
187.40	4,082	4,162	1,496
187.50	4,261	4,353	1,913
187.60	4,444	4,544	2,348
187.70	4,630	4,736	2,802
187.80	4,820	4,928	3,274
187.90	5,014	5,121	3,766
188.00	5,212	5,315	4,277
188.10	5,386	5,508	4,807
188.20	5,562	5,702	5,354
188.30	5,741	5,897	5,919
188.40	5,923	6,092	6,503
188.50	6,108	6,287	7,104
188.60	6,296	6,484	7,724
188.70	6,487	6,680	8,364
188.80	6,680	6,878	9,022
188.90	6,877	7,076	9,700
189.00	7,076	7,275	10,397
189.10	7,262	7,474	11,114
189.20	7,450	7,674	11,850
189.30	7,641	7,874	12,604
189.40	7,834	8,075	13,378
189.50	8,029	8,276	14,171

Summary for Pond B-2: Porous Pavement Within Tandem Spaces

Inflow Area = 12,659 sf, 98.96% Impervious, Inflow Depth = 8.06" for 100-Year event
 Inflow = 2.52 cfs @ 12.10 hrs, Volume= 8,507 cf
 Outflow = 2.16 cfs @ 12.13 hrs, Volume= 8,507 cf, Atten= 15%, Lag= 1.6 min
 Discarded = 0.06 cfs @ 12.13 hrs, Volume= 4,332 cf
 Primary = 2.10 cfs @ 12.13 hrs, Volume= 4,175 cf
 Routed to Link POI-1 : Proposed Drainage to Sunset Road

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 188.69' @ 12.13 hrs Surf.Area= 3,564 sf Storage= 2,625 cf

Plug-Flow detention time= 137.4 min calculated for 8,506 cf (100% of inflow)
 Center-of-Mass det. time= 137.5 min (876.3 - 738.8)

Volume	Invert	Avail.Storage	Storage Description
#1	186.85'	2,851 cf	Custom Stage Data (Irregular) Listed below (Recalc) 7,128 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
186.85	3,564	306.0	0	0	3,564
187.85	3,564	306.0	3,564	3,564	3,870
188.85	3,564	306.0	3,564	7,128	4,176

Device	Routing	Invert	Outlet Devices
#1	Primary	186.85'	15.0" Round Culvert L= 135.0' Ke= 0.500 Inlet / Outlet Invert= 186.85' / 185.75' S= 0.0081 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	187.45'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	188.45'	6.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#4	Discarded	186.85'	0.500 in/hr Exfiltration over Wetted area Conductivity to Groundwater Elevation = 180.00' Phase-In= 0.01'

Discarded OutFlow Max=0.06 cfs @ 12.13 hrs HW=188.69' (Free Discharge)
 ↳ **4=Exfiltration** (Controls 0.06 cfs)

Primary OutFlow Max=2.08 cfs @ 12.13 hrs HW=188.69' TW=0.00' (Dynamic Tailwater)
 ↳ **1=Culvert** (Passes 2.08 cfs of 5.94 cfs potential flow)
 ↳ **2=Orifice/Grate** (Orifice Controls 0.17 cfs @ 5.13 fps)
 ↳ **3=Broad-Crested Rectangular Weir** (Weir Controls 1.91 cfs @ 1.32 fps)

Stage-Discharge for Pond B-2: Porous Pavement Within Tandem Spaces

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
186.85	0.00	0.00	0.00
186.95	0.04	0.04	0.00
187.05	0.04	0.04	0.00
187.15	0.04	0.04	0.00
187.25	0.05	0.05	0.00
187.35	0.05	0.05	0.00
187.45	0.05	0.05	0.00
187.55	0.07	0.05	0.02
187.65	0.10	0.05	0.05
187.75	0.12	0.05	0.07
187.85	0.14	0.05	0.09
187.95	0.16	0.05	0.10
188.05	0.17	0.05	0.12
188.15	0.18	0.05	0.13
188.25	0.19	0.06	0.14
188.35	0.20	0.06	0.15
188.45	0.21	0.06	0.16
188.55	0.73	0.06	0.67
188.65	1.67	0.06	1.62
188.75	2.91	0.06	2.85
188.85	4.38	0.06	4.32

Stage-Area-Storage for Pond B-2: Porous Pavement Within Tandem Spaces

Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
186.85	3,564	3,564	0
186.95	3,564	3,595	143
187.05	3,564	3,625	285
187.15	3,564	3,656	428
187.25	3,564	3,686	570
187.35	3,564	3,717	713
187.45	3,564	3,748	855
187.55	3,564	3,778	998
187.65	3,564	3,809	1,140
187.75	3,564	3,839	1,283
187.85	3,564	3,870	1,426
187.95	3,564	3,901	1,568
188.05	3,564	3,931	1,711
188.15	3,564	3,962	1,853
188.25	3,564	3,992	1,996
188.35	3,564	4,023	2,138
188.45	3,564	4,054	2,281
188.55	3,564	4,084	2,424
188.65	3,564	4,115	2,566
188.75	3,564	4,145	2,709
188.85	3,564	4,176	2,851

Summary for Pond B-3: Infiltration Basin in Rear

Inflow Area = 67,796 sf, 12.77% Impervious, Inflow Depth = 5.40" for 100-Year event
 Inflow = 8.20 cfs @ 12.17 hrs, Volume= 30,507 cf
 Outflow = 3.43 cfs @ 12.38 hrs, Volume= 30,507 cf, Atten= 58%, Lag= 12.1 min
 Discarded = 0.10 cfs @ 12.38 hrs, Volume= 4,766 cf
 Primary = 3.33 cfs @ 12.38 hrs, Volume= 25,741 cf
 Routed to Link POI-1 : Proposed Drainage to Sunset Road

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 189.93' @ 12.38 hrs Surf.Area= 5,838 sf Storage= 8,730 cf

Plug-Flow detention time= 73.4 min calculated for 30,503 cf (100% of inflow)
 Center-of-Mass det. time= 73.5 min (888.2 - 814.8)

Volume	Invert	Avail.Storage	Storage Description		
#1	188.00'	9,144 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
188.00	3,308	335.0	0	0	3,308
189.00	4,551	370.0	3,913	3,913	5,303
190.00	5,942	405.0	5,231	9,144	7,496

Device	Routing	Invert	Outlet Devices
#1	Primary	187.50'	15.0" Round Culvert L= 325.0' Ke= 0.500 Inlet / Outlet Invert= 187.50' / 185.85' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	188.25'	15.0" W x 2.5" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	188.85'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	189.65'	4.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#5	Discarded	188.00'	0.500 in/hr Exfiltration over Wetted area Conductivity to Groundwater Elevation = 180.10' Phase-In= 0.01'

Discarded OutFlow Max=0.10 cfs @ 12.38 hrs HW=189.93' (Free Discharge)

↑**5=Exfiltration** (Controls 0.10 cfs)

Primary OutFlow Max=3.33 cfs @ 12.38 hrs HW=189.93' TW=0.00' (Dynamic Tailwater)

↑**1=Culvert** (Passes 3.33 cfs of 5.50 cfs potential flow)

↑**2=Orifice/Grate** (Orifice Controls 1.57 cfs @ 6.04 fps)

↑**3=Orifice/Grate** (Orifice Controls 0.16 cfs @ 4.76 fps)

↑**4=Broad-Crested Rectangular Weir** (Weir Controls 1.60 cfs @ 1.43 fps)

Stage-Discharge for Pond B-3: Infiltration Basin in Rear

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
188.00	0.00	0.00	0.00
188.10	0.04	0.04	0.00
188.20	0.04	0.04	0.00
188.30	0.09	0.05	0.04
188.40	0.28	0.05	0.23
188.50	0.52	0.05	0.47
188.60	0.67	0.06	0.62
188.70	0.79	0.06	0.73
188.80	0.90	0.06	0.84
188.90	0.99	0.06	0.93
189.00	1.11	0.07	1.04
189.10	1.22	0.07	1.14
189.20	1.31	0.07	1.23
189.30	1.39	0.08	1.32
189.40	1.47	0.08	1.39
189.50	1.55	0.08	1.46
189.60	1.62	0.09	1.53
189.70	1.81	0.09	1.72
189.80	2.38	0.09	2.28
189.90	3.17	0.10	3.07
190.00	4.12	0.10	4.02

Stage-Area-Storage for Pond B-3: Infiltration Basin in Rear

Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
188.00	3,308	3,308	0
188.10	3,423	3,499	337
188.20	3,541	3,691	685
188.30	3,660	3,886	1,045
188.40	3,781	4,082	1,417
188.50	3,905	4,281	1,801
188.60	4,030	4,481	2,198
188.70	4,157	4,684	2,607
188.80	4,287	4,888	3,029
188.90	4,418	5,095	3,465
189.00	4,551	5,303	3,913
189.10	4,682	5,513	4,375
189.20	4,814	5,726	4,849
189.30	4,949	5,940	5,338
189.40	5,085	6,156	5,839
189.50	5,223	6,375	6,355
189.60	5,363	6,595	6,884
189.70	5,505	6,817	7,427
189.80	5,649	7,042	7,985
189.90	5,795	7,268	8,557
190.00	5,942	7,496	9,144

Summary for Link POI-1: Proposed Drainage to Sunset Road

Inflow Area = 150,677 sf, 43.86% Impervious, Inflow Depth = 4.65" for 100-Year event
Inflow = 7.33 cfs @ 12.31 hrs, Volume= 58,402 cf
Primary = 7.33 cfs @ 12.31 hrs, Volume= 58,402 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

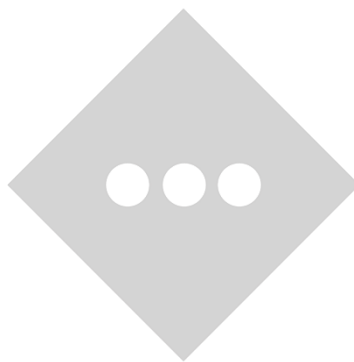
APPENDIX D

DRAINAGE AREA MAPS

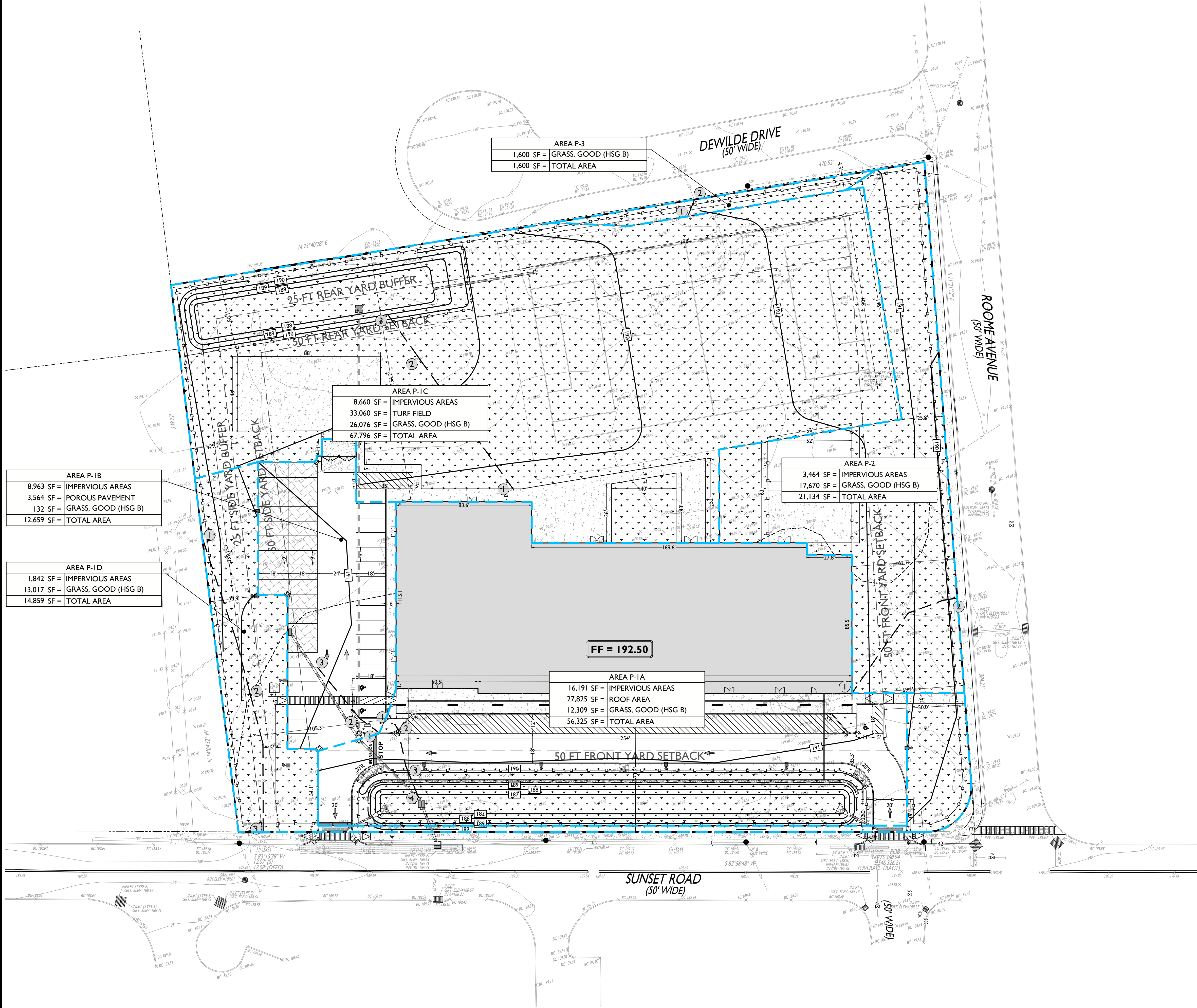
INVENTORY

SHEET 1 OF 2: EXISTING DRAINAGE AREA MAP

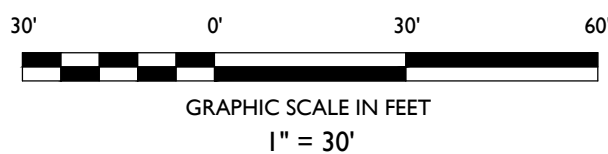
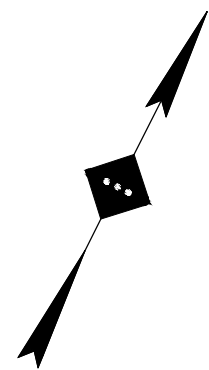
SHEET 2 OF 2: PROPOSED DRAINAGE AREA MAP

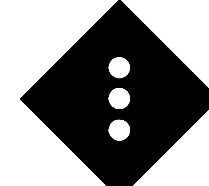


Z:\PROJECTS\DRAINAGE\ONE SCHOOL GLOBAL - 60 SUNSET ROAD PEQUANNOCK\WCD\DRAINAGE AREA MAPS\2023\2023.DWG



SYMBOL	DESCRIPTION
---	PROPERTY LINE
---	EXISTING DRAINAGE AREA
---	EXISTING PERVIOUS AREA



DRAINAGE AREA MAPS		FOR MUNICIPAL SUBMISSION	
ONE SCHOOL GLOBAL		PK	BY
PROPOSED SCHOOL		01	DATE
BLOCK 2104, LOT 21 60 SUNSET ROAD TOWNSHIP OF PEQUANNOCK MORRIS COUNTY, NEW JERSEY		01	ISSUE
NOT APPROVED FOR CONSTRUCTION			
STONEFIELD engineering & design Rutherford, NJ • New York, NY • Boston, MA Princeton, NJ • Tampa, FL • Detroit, MI www.stonefieldeng.com Headquarters: 92 Park Avenue, Rutherford, NJ 07070 Phone 201.340.4468 • Fax 201.340.4472			
ARTHUR KUYAN, P.E. NEW JERSEY LICENSE No. 55741 LICENSED PROFESSIONAL ENGINEER			
STONEFIELD engineering & design SCALE: 1" = 30' PROJECT ID: RUT-220209 TITLE: PROPOSED DRAINAGE AREA MAP DRAWING: 2 OF 2			