# 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:**
**APRIL 6, 2023**



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

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED IN THIS DOCUMENT AND ALL ATTACHMENTS AND THAT, BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING AND PREPARING THE INFORMATION, I BELIEVE THAT THE INFORMATION IS TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR KNOWINGLY SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT.

# REPORT CONTENTS

# APPENDICES

## 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 173,411SF (3.98 acres), the extent of land disturbance is 178,670 SF (4.10 acres), and the total area of new impervious surfaces is 20,887 SF (0.48 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 46,766 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 NJ0203010311 0020-01. 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 D.**

### 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:

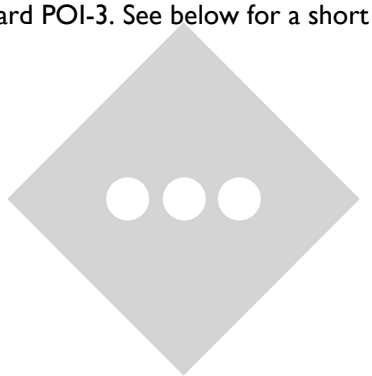

**TABLE 5: SUMMARY OF PROPOSED DRAINAGE AREAS**

| Drainage Area | Description | Area Extents | Impervious Area | Time of Concentration |
|---|---|---|---|---|
| P-1A | Proposed Drainage to Infiltration Basin Along Sunset Road | 55,744 SF | 43,435 SF | 2.1 Minutes |
| P-1B | Proposed Drainage to Porous Pavement in Tandem Spaces | 13,370 SF | 13,237 SF | 2.6 Minutes |
| P-1C | Proposed Drainage to Infiltration Basin in Rear | 67,084 SF | 8,326 SF | 10.1 Minutes |
| P-1D | Undetained Flow to Sunset Road | 14,481 SF | 970 SF | 9.3 Minutes |
| POI-1 | Proposed Drainage to Sunset Road | 150,679 SF | 65,968 SF | -- |
| P-2 (POI-2) | Proposed Drainage to Roome Avenue | 21,132 SF | 1,685 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.<br><br>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% | 0.87 CFS | 64.92% |
| 10-Year Storm | 4.64 CFS | 25% | 1.92 CFS | 58.62% |
| 100-Year Storm | 9.18 CFS | 20% | 5.50 CFS | 40.09% |

**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 | 50% | 0.35 CFS | 779.17%* |
| 10-Year Storm | 3.47 CFS | 25% | 0.89 CFS | 74.35%* |
| 100-Year Storm | 7.33 CFS | 20% | 2.12 CFS | 71.08%* |

*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 | 50% | 0.03 CFS | 90.32% |
| 10-Year Storm | 0.85 CFS | 25% | 0.07 CFS | 91.76% |
| 100-Year Storm | 2.05 CFS | 20% | 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.

### GROUNDWATER MOUNDING

Utilizing the Hantush Spreadsheet provided by the NJDEP, groundwater mounding analysis was conducted to determine groundwater mounding impacts. Test Pits #4 & #5, which sit within the footprint of the above ground infiltration basin, encountered a seasonal high groundwater elevation of 183.90, four feet below the bottom of the proposed basin.

A tested infiltration rate of 5.61 in/hr was found within test pit #4, and a design rate of 2.81 in/hr was initially utilized, incorporating a factor of safety of 2. Ultimately, in order to ensure a mounding height of less than four feet beneath the basin, a rate of 0.50 in/hr. was utilized in the final design of the stormwater system. Mounding shall not have an impact on the proposed basin or any nearby structures with the design infiltration rate. Refer to the spreadsheet and inputs in **APPENDIX C** of this Report.

### 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**


# AERIAL MAP

200' 0' 200' 400'

GRAPHIC SCALE IN FEET

1" = 200'

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

| | |
|---|---|
| DRAWN BY: | LJ |
| CHECKED BY: | KB |
| DATE: | 07/14/2022 |
| SCALE: | 1" = 200' |
| PROJECT ID: | RUT-220209 |

STONEFIELD engineering & design

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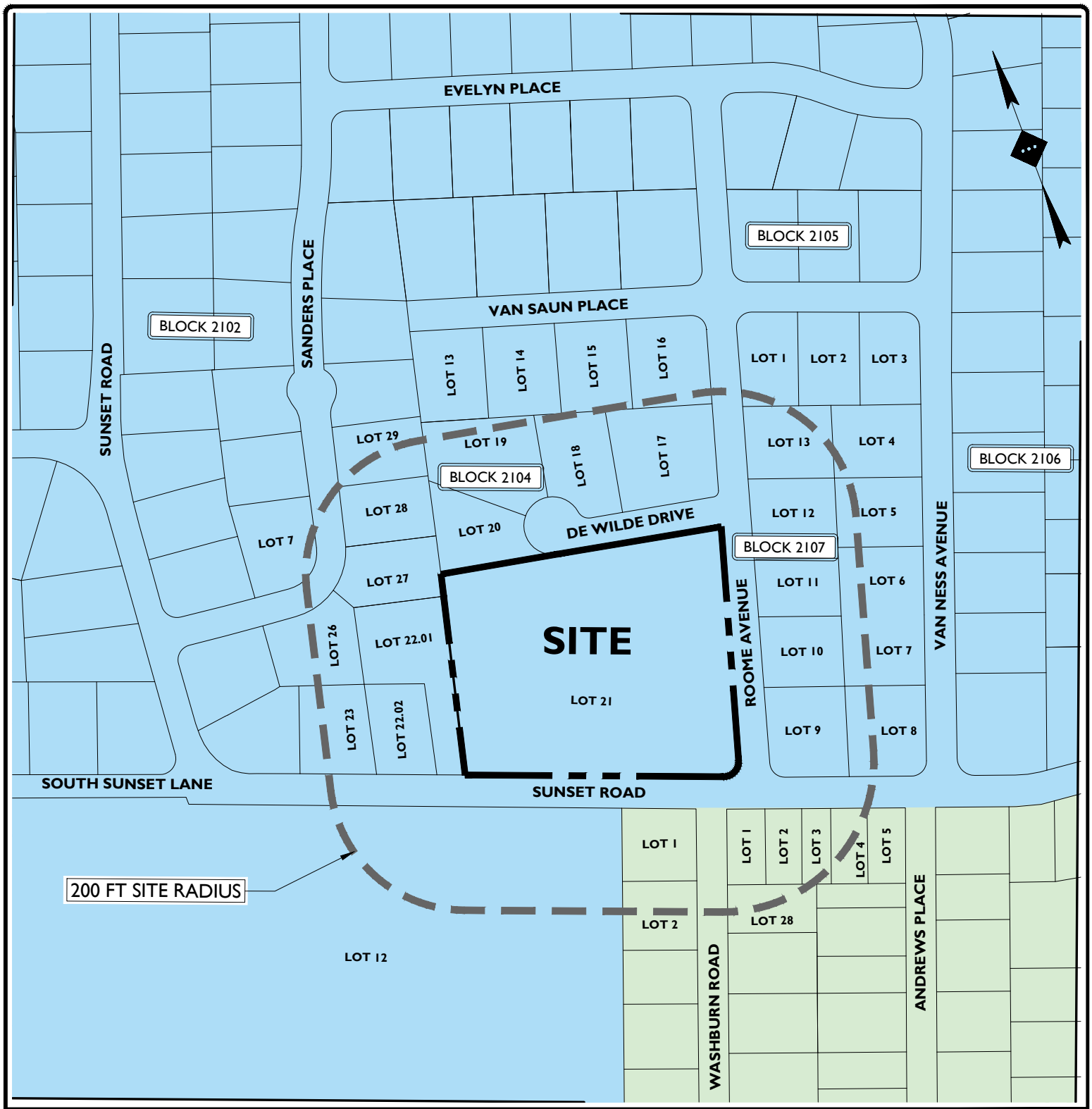


# TAX & ZONING MAP

ZONE R-15 ZONE R-11

200' 0' 200' 400'

GRAPHIC SCALE IN FEET

1" = 200'

SOURCE: TOWNSHIP OF PEQUANNOCK TAX MAP SHEETS 21 & 25 DATED APRIL 28, 2005. TOWNSHIP OF PEQUANNOCK ZONING MAP DATED APRIL, 2021.

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# EFFECTIVE FEMA FIRM MAP

1000' 0' 1000' 2000'

GRAPHIC SCALE IN FEET

1"= 1000'

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

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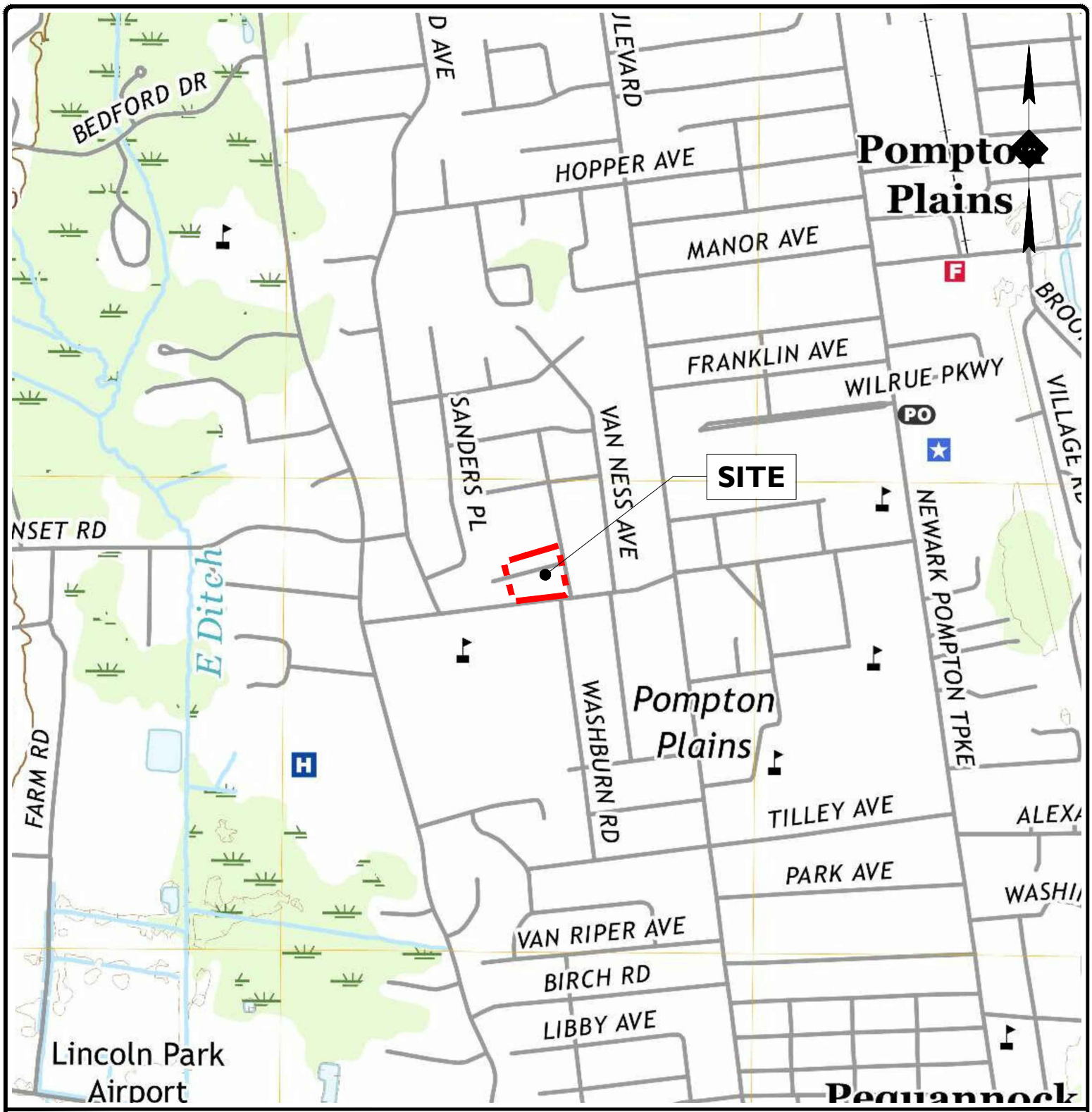


# USGS QUADRANGLE MAP

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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## 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 | 29.9 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 |

(V) VARIANCE
(N/A) NOT APPLICABLE

## LAND USE AND ZONING

**BLOCK 2104, LOT 21**

**RESIDENCE DISTRICT (R-15)**

**PROPOSED USE**

| | |
|---|---|
| SCHOOL | CONDITIONAL USE (V) |
| PRIVATE SPORT FACILITIES | PERMITTED ACCESSORY USE |

| ZONING REQUIREMENT | REQUIRED | EXISTING | PROPOSED |
|---|---|---|---|
| MINIMUM LOT AREA | 15,000 SF (0.34 AC) | 173,411 SF (3.98 AC) | 173,411 SF (3.98 AC) |
| MINIMUM LOT WIDTH | 100 FT | 456.3 FT | 456.3 FT |
| MINIMUM LOT DEPTH | 150 FT | 339.7 FT | 339.7 FT |
| MAXIMUM IMPERVIOUS COVERAGE | 35% (60,694 SF) | 27.0% (46,766 SF) | 39.0% (67,653 SF) (V) |
| MAXIMUM BUILDING COVERAGE | 17% (29,480 SF) | 6.2% (10,688 SF) | 16.0% (27,825 SF) |
| MAXIMUM BUILDING HEIGHT | 2.5 STORIES (35 FT) | 2 STORIES | 21.9 FT |
| MINIMUM FRONT YARD SETBACK | 50 FT | 54.0 FT | 62.7 FT |
| MINIMUM SIDE YARD SETBACK (ONE) | 15 FT | 201.8 FT | 105.3 FT |
| MINIMUM SIDE YARD SETBACK (BOTH) | 35 FT | 201.8 FT | 105.3 FT |
| MINIMUM REAR YARD SETBACK | 40 FT | 10.4 FT (EN) | 154.2 FT |
| MINIMUM LOT FRONTAGE | 100 FT | 456.3 FT | 456.3 FT |

(V) VARIANCE
(EN) EXISTING NON-CONFORMITY

## OFF-STREET PARKING REQUIREMENTS

| CODE SECTION | REQUIRED | PROPOSED |
|---|---|---|
| § 360-56.A. | MINIMUM PARKING STALL SIZE: 9 FT X 18 FT | 9 FT X 18 FT |
| § 360-56.B(3) | NO DRIVEWAY SHALL BE LOCATED CLOSER THAN 25 FT TO THE NEAREST R.O.W. LINE OF ANY INTERSECTING STREET. | 42 FT |
| § 360-56.B(4) | MINIMUM DRIVEWAY WIDTH<br>ONE WAY: 14 FT<br>TWO WAY: 24 FT | 20 FT<br>N/A |
| § 360-56.B(5)A. | MINIMUM AISLE WIDTH<br>TWO-WAY: 24 FT<br>ONE-WAY: 14 FT | 24 FT<br>18 FT |
| § 360-56.C. | SIDEWALKS WITH A MINIMUM WIDTH OF 4 FT SHALL BE PROVIDED IN ALL PARKING AREAS. | 6 FT |
| § 360-56.D.8(D) | WHEN OFF-STREET PARKING AREAS ARE LOCATED ADJACENT TO A RESIDENTIAL ZONE A SOLID FENCE OR MASONRY WALL SHALL BE PROVIDED ALONG THE PROPERTY LINE. THE FENCE OR WALL SHALL BE 4-6 FT HIGH. | COMPLIES |
| § 360-56.E(5) | NO PARKING FACILITIES FOR CONDITIONAL USES MAY BE ESTABLISHED WITHIN THE FRONT YARD SETBACK | COMPLIES |
| § 360-58.B. | REQUIRED PARKING*<br>SECONDARY SCHOOL: 2.5 PER CLASSROOM + 1 PER 10 STUDENTS<br>(2.5 SPACES * 7 CLASSROOMS) +(1/10 *100 STUDENTS) = 28 SPACES<br><br>ELEMENTARY : 2 PER CLASSROOM + 1 PER STAFF<br>(2 SPACES * 8 CLASSROOMS) + 12 STAFF MEMBERS = 28 SPACES<br><br>TOTAL REQUIRED = 56 SPACES | 44 SPACES (V) |
| § 360-57 | THE EQUIVALENT OF ONE LOADING SPACE SHALL BE PROVIDED FOR EACH 12,000 SF OF GROSS AREA.<br>27,825 SF * 1/12,000 SF = 2 LOADING SPACES | 2 SPACES |
| § 360-57 | MINIMUM LOADING SPACE<br>SIZE: 10 FT X 35 FT<br>HEIGHT CLEARANCE: 14 FT<br>NOT LOCATED IN FRONT YARD | 10 FT X 35 FT<br>COMPLIES<br>COMPLIES |

(V) VARIANCE
(N/A) NOT APPLICABLE
(*) THERE SHALL BE NO ADDITIONAL PARKING REQUIREMENT FOR ANY SQUARE FOOTAGE DEVOTED SOLELY TO ANCILLARY STORAGE, OFFICE OR EMPLOYEE LUNCHROOMS/EATING CLINIC FACILITIES ON ANY MEZZANINE SPACE WITHIN THAT PORTION OF A BUILDING OCCUPIED BY THE INDIVIDUAL USE TO WHICH THE STORAGE, OFFICE AND/OR EMPLOYEE LUNCHROOM/EATING CLINIC FACILITY IN ANCILLARY.

## SIGNAGE REQUIREMENTS

| CODE SECTION | REQUIRED | PROPOSED |
|---|---|---|
| § 360-82.A(2) | NO MORE THAN ONE PERMANENT SIGN IS PERMITTED ON ANY RESIDENTIALLY USED LOT. | 4 SIGNS (V) |
| § 360-82.A(3) | MAXIMUM SIGN AREA<br>NAMEPLATE: 2 SF<br>HOME OCCUPATION: 2 SF<br>PROFESSIONAL USE: 12 SF | ATTACHED: 40 SF (V)<br>FREESTANDING: 15.1 SF (V) |
| § 360-82.A(4) | SETBACK FROM PROPERTY LINE: 10 FT<br>MAX HEIGHT: 3 FT<br>MAX HEIGHT (PROFESSIONAL USE): 4 FT | 20.0 FT<br>6.5 FT (V) |
| § 360-82.D(2) | SIGNS PERMITTED FOR INSTITUTIONAL USES<br>1 FREESTANDING SIGN<br>1 CHANGEABLE LETTER SIGN<br>1 ATTACHED SIGN | 2 FREESTANDING SIGNS (V)<br>2 ATTACHED SIGNS (V) |
| § 360-82.D(3) | SIGN REQUIREMENTS<br>FREESTANDING: 20 SF<br>ATTACHED: 1% OF BUILDING FACADE<br>BUILDING FACADE = 5,620 SF<br>5,620 SF * (0.01) = 56.2 SF | FREESTANDING SIGN: 15.1 SF<br>ATTACHED SIGN 1: 40 SF<br>ATTACHED SIGN 2: 18 SF |
| § 360-82.D(4) | FREESTANDING SIGN REQUIREMENTS<br>MAXIMUM HEIGHT: 8FT<br>MINIMUM SETBACK FROM PROPERTY LINE: 20 FT | 6.5 FT<br>20.0 FT |
| § 360-82.D(4) | NO ATTACHED SIGN SHALL BE INSTALLED SUCH THAT THE TOP EDGE IS HIGHER THAN 14 FT MEASURED FROM THE GROUND | 16 FT (V) |
| § 360-82.D(5) | NO SIGN SHALL BE ILLUMINATED BETWEEN THE HOURS OF 10:00 PM AND 7:00 AM | COMPLIES |
| § 360-82.D(6) | ELECTRONIC MESSAGE CENTERS/BOARDS ARE SPECIFICALLY PROHIBITED | COMPLIES |
| § 360-82.E(1) | SIGNS THAT INDICATE THE LOCATION ON SCHOOLS SHALL BE ALLOWED AT A LOCATION OTHER THAN THAT OF THE INSTITUTIONAL USE PROVIDED | COMPLIES |
| § 360-82.E(2) | DIRECTIONAL SIGNS<br>MAXIMUM AREA: 3 SF | COMPLIES |

(V) VARIANCE

## GENERAL REQUIREMENTS

| CODE SECTION | REQUIRED | PROPOSED |
|---|---|---|
| §360-46.P.(1)(1) | FENCES LOCATED IN THE ESTABLISHED FRONT YARD SHALL HAVE A MAXIMUM HEIGHT OF 3 FT AND SHALL BE SETBACK A MINIMUM OF 5 FT FROM THE PROPERTY LINE | HEIGHT: 5 FT (V)<br>SETBACK: 5 FT |
| §360-46.P.(1)(2) | FENCES LOCATED IN THE SECONDARY FRONT YARD SHALL HAVE A MAXIMUM HEIGHT OF FOUR FEET AND SHALL BE SETBACK A MINIMUM OF 5 FT FROM THE PROPERTY LINE | HEIGHT: 5 FT (V)<br>SETBACK: 5 FT |
| §360-46.P.(1)(3) | A FENCE IN EXCESS OF FOUR FEET BUT NOT TO EXCEED SIX FEET IN HEIGHT SHALL BE PERMITTED IN THE SECONDARY FRONT YARD, PROVIDED THAT THE FENCE HAS A MINIMUM SETBACK OF THE REQUIRED FRONT YARD SETBACK FOR THE ZONE IN WHICH THE SITE IS LOCATED | HEIGHT: 5 FT<br>SETBACK: 5 FT (V) |
| §360-46.P.(1)(5) | FENCES WITH A MAXIMUM HEIGHT OF 6 FT ARE PERMITTED IN REAR AND SIDE YARDS WITH NO SETBACK REQUIRED, PROVIDED THAT THE FENCE IS INSTALLED ENTIRELY ON THE PROPERTY. | HEIGHT: 6 FT<br>SETBACK: 1.5 FT |
| §360-56.D.(8)(C) | INTERIOR LANDSCAPING SHALL INCLUDE LANDSCAPED STRIPS BETWEEN ROWS OF PARKING OR PARKING ISLANDS TO THE EXTENT THAT LANDSCAPED AREAS AMOUNT TO 5% OF THE TOTAL PARKING AREA.<br>(21,978 TOTAL SF)*(0.05) = 1,099 SF | 1,141 SF |

(V) VARIANCE

TRENCH NOTES:

1. ROAD TRENCH RESTORATION WIDTH SHALL BE A MINIMUM OF 10 FEET WIDE.
2. ROAD TRENCHING WILL REQUIRE A MINIMUM 6-MONTH SETTLEMENT PERIOD BEFORE FINISHING MILL/RESURFACE.

**GENERAL NOTES**

1. THE CONTRACTOR SHALL VERIFY AND FAMILIARIZE THEMSELVES WITH THE EXISTING SITE CONDITIONS AND THE PROPOSED SCOPE OF WORK (INCLUDING DIMENSIONS, LAYOUT, ETC.) PRIOR TO INITIATING THE IMPROVEMENTS IDENTIFIED WITHIN THESE DOCUMENTS. SHOULD ANY DISCREPANCY BE FOUND BETWEEN THE EXISTING SITE CONDITIONS AND THE PROPOSED WORK THE CONTRACTOR SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. PRIOR TO THE START OF CONSTRUCTION.
2. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND ENSURE THAT ALL REQUIRED APPROVALS HAVE BEEN OBTAINED PRIOR TO THE START OF CONSTRUCTION. COPIES OF ALL REQUIRED PERMITS AND APPROVALS SHALL BE KEPT ON SITE AT ALL TIMES DURING CONSTRUCTION.
3. ALL CONTRACTORS WILL, TO THE FULLEST EXTENT PERMITTED BY LAW, INDEMNIFY AND HOLD HARMLESS STONEFIELD ENGINEERING & DESIGN, LLC. AND IT'S SUB-CONSULTANTS FROM AND AGAINST ANY DAMAGES AND LIABILITIES INCLUDING ATTORNEY'S FEES ARISING OUT OF CLAIMS BY EMPLOYEES OF THE CONTRACTOR IN ADDITION TO CLAIMS CONNECTED TO THE PROJECT AS A RESULT OF NOT CARRYING THE PROPER INSURANCE FOR WORKERS COMPENSATION, LIABILITY INSURANCE, AND LIMITS OF COMMERCIAL GENERAL LIABILITY INSURANCE.
4. THE CONTRACTOR SHALL NOT DEVIATE FROM THE PROPOSED IMPROVEMENTS IDENTIFIED WITHIN THIS PLAN SET UNLESS APPROVAL IS PROVIDED IN WRITING BY STONEFIELD ENGINEERING & DESIGN, LLC.
5. THE CONTRACTOR IS RESPONSIBLE TO DETERMINE THE MEANS AND METHODS OF CONSTRUCTION.
6. THE CONTRACTOR SHALL NOT PERFORM ANY WORK OR CAUSE DISTURBANCE ON A PRIVATE PROPERTY NOT CONTROLLED BY THE PERSON OR ENTITY WHO HAS AUTHORIZED THE WORK WITHOUT PRIOR WRITTEN CONSENT FROM THE OWNER OF THE PRIVATE PROPERTY.
7. THE CONTRACTOR IS RESPONSIBLE TO RESTORE ANY DAMAGED OR UNDERMINED STRUCTURE OR SITE FEATURE THAT IS IDENTIFIED TO REMAIN ON THE PLAN SET. ALL REPAIRS SHALL USE NEW MATERIALS TO RESTORE THE FEATURE TO ITS EXISTING CONDITION AT THE CONTRACTORS EXPENSE.
8. CONTRACTOR IS RESPONSIBLE TO PROVIDE THE APPROPRIATE SHOP DRAWINGS, PRODUCT DATA, AND OTHER REQUIRED SUBMITTALS FOR REVIEW. STONEFIELD ENGINEERING & DESIGN, LLC. WILL REVIEW THE SUBMITTALS IN ACCORDANCE WITH THE DESIGN INTENT AS REFLECTED WITHIN THE PLAN SET.
9. THE CONTRACTOR IS RESPONSIBLE FOR TRAFFIC CONTROL IN ACCORDANCE WITH MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
10. THE CONTRACTOR IS REQUIRED TO PERFORM ALL WORK IN THE PUBLIC RIGHT-OF-WAY IN ACCORDANCE WITH THE APPROPRIATE GOVERNING AUTHORITY AND SHALL BE RESPONSIBLE FOR THE PROCUREMENT OF STREET OPENING PERMITS.
11. THE CONTRACTOR IS REQUIRED TO RETAIN AN OSHA CERTIFIED SAFETY INSPECTOR TO BE PRESENT ON SITE AT ALL TIMES DURING CONSTRUCTION & DEMOLITION ACTIVITIES.
12. SHOULD AN EMPLOYEE OF STONEFIELD ENGINEERING & DESIGN, LLC. BE PRESENT ON SITE AT ANY TIME DURING CONSTRUCTION, IT DOES NOT RELIEVE THE CONTRACTOR OF ANY OF THE RESPONSIBILITIES AND REQUIREMENTS LISTED IN THE NOTES WITHIN THIS PLAN SET.

30' 0' 30' 60'
GRAPHIC SCALE IN FEET
1" = 30'

| SYMBOL | DESCRIPTION |
|---|---|
| | PROPERTY LINE |
| | SETBACK LINE |
| | SAWCUT LINE |
| | PROPOSED CURB |
| | PROPOSED FLUSH CURB |
| | PROPOSED SIGNS / BOLLARDS |
| | PROPOSED BUILDING |
| | PROPOSED CONCRETE |
| | PROPOSED POROUS PAVERS |
| | PROPOSED AREA LIGHT |
| | PROPOSED BOARD ON BOARD FENCE |
| | PROPOSED ALUMINUM FENCE |
| | PROPOSED BUILDING DOORS |

| ISSUE | DATE | BY | DESCRIPTION |
|---|---|---|---|
| 5 | 04/06/2023 | EC | FOR MUNICIPAL SUBMISSION |
| 4 | 02/15/2023 | PK | FOR MUNICIPAL SUBMISSION |
| 3 | 12/02/2022 | PK | FOR COUNTY SUBMISSION |
| 2 | 11/08/2022 | PK | FOR MUNICIPAL SUBMISSION |
| 1 | 10/17/2022 | PK | FOR MUNICIPAL SUBMISSION |

NOT APPROVED FOR CONSTRUCTION


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PRELIMINARY & FINAL MAJOR SITE PLANS

# ONE SCHOOL GLOBAL

## PROPOSED K-12 GRADE SCHOOL

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


JAKE MODESTOW, P.E.
NEW JERSEY LICENSE No. 56119
LICENSED PROFESSIONAL ENGINEER


STONEFIELD engineering & design

SCALE: 1" = 30' | PROJECT ID: RUT-220209

TITLE: SITE PLAN

DRAWING: C-3

Z:\RUT\PROPOSAL\T220209\T-220209 ONE SCHOOL GLOBAL - 60 SUNSET ROAD, PEQUANNOCK, NJ\CAD\PLOT\XXXX-03-SITE.DWG

# APPENDIX B
# PROJECT SOILS

## INVENTORY

**B-1: NRCS SOILS REPORT**

**B-2: GEOTECHNICAL REPORT PREPARED BY EEI**

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.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

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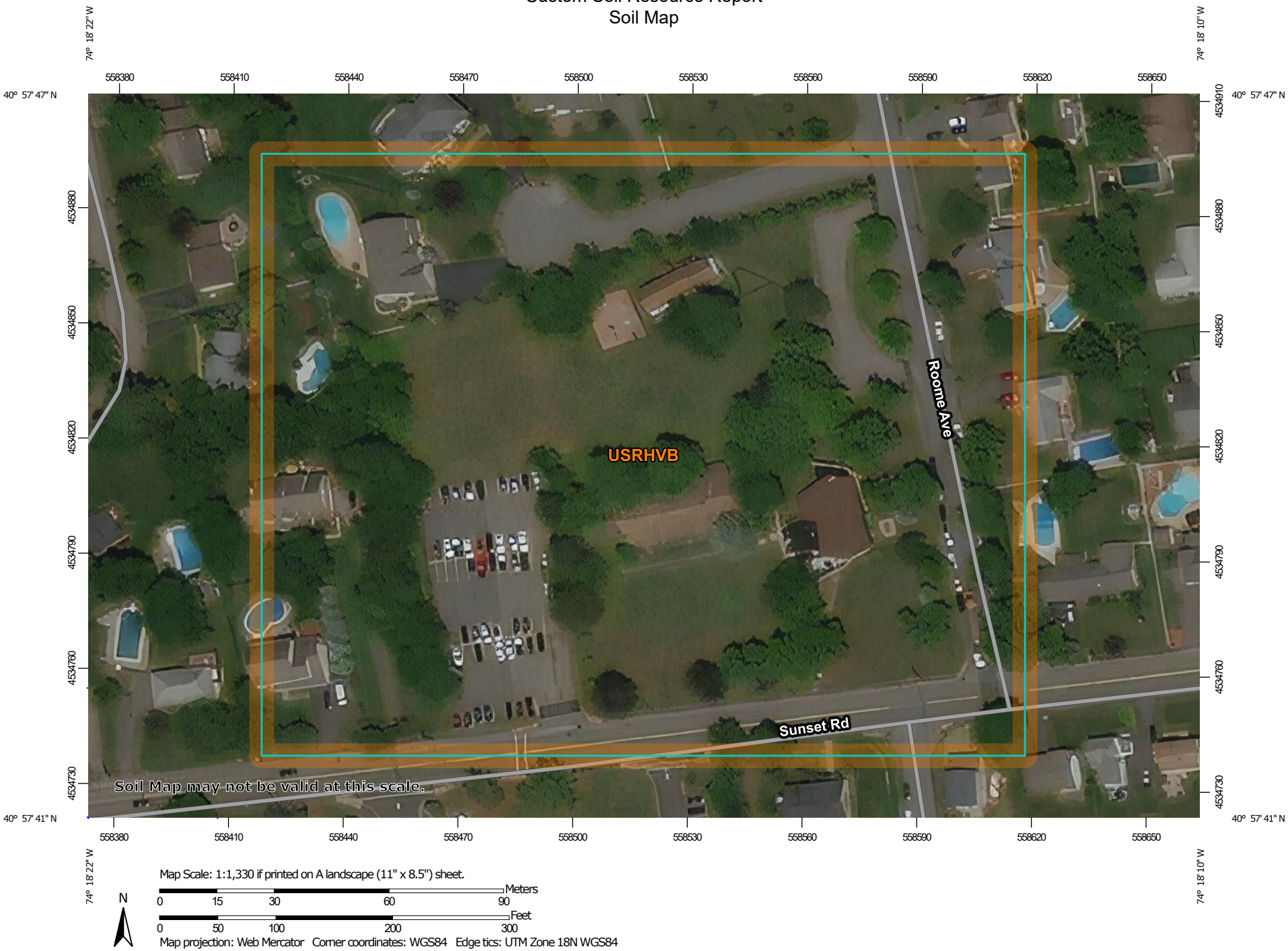
# Contents

# 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




Map Scale: 1:1,330 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 15 30 60 90

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

## 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.

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

*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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EARTH ENGINEERING INCORPORATED

*Geotechnical Engineers & Geologists*

# REPORT OF GEOTECHNICAL INVESTIGATION

# PROPOSED ONE SCHOOL GLOBAL BUILDING

## 60 SUNSET ROAD

## PEQUANNOCK TOWNSHIP

## MORRIS COUNTY, NEW JERSEY

Prepared For: Gregory Ralph, Architect
1924 Route 22
East Bound Brook, New Jersey 08805

EEI Project No. 35702.J0

March 8, 2023


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## APPENDIX

# I. INTRODUCTION

This report was prepared on behalf of Gregory Ralph, Architect of East Bound Brook, New Jersey and contains the results of a geotechnical engineering investigation conducted for the proposed One School Global Facility to be located at 60 Sunset Road in Pequannock Township, Morris County, New Jersey. The objective of this study was to evaluate the subsurface conditions within accessible locations of the site in relation to proposed construction areas as shown on preliminary concept plan compiled by the client. Based on the encountered conditions and the results of the testing performed for this project, EEI has developed geotechnical recommendations regarding building foundations, as well as general earthwork and construction guidelines for the development of this site.

The scope of work for this project included a subsurface field investigation, in-situ infiltration testing, laboratory derived permeability testing, geologic analysis of site conditions, laboratory testing program, and a geotechnical engineering analysis of the data obtained. This investigation was performed in general accordance with EEI Proposal No. WB-8868 (Revision #1), dated February 7, 2023. This report summarizes the results of the work performed and provides recommendations regarding foundation design, soil strength conditions, groundwater conditions, stormwater management characteristics and general foundation installation and earthwork criteria.

# II. SITE DESCRIPTION

The subject property is located at 60 Sunset Road in Peaquannock Township, Morris County, New Jersey. The site is referenced as Block 2104, Lot 21 on the Local Tax Map. Sunset Road borders the site to the south, with Roome Avenue bordering the site to the east. Sparse wooded areas and residential properties border the site to the west. The northern perimeter of the site is bordered by Wilde Drive and residential properties. The general location of the project site is

presented on the *Site Location Map* included in the Appendix.

Currently, a portion of the subject property is occupied by two (2) buildings associated with the former church facility. A residential property is also situated within the northern portion of the project site. Demolition of these existing site features will be required to accommodate the planned site development. The majority of the subject lot is predominately grass and weed covered also containing sparse trees. An asphalt paved parking lot is situated in the southwest portion of the site with an asphalt paved driveway situated in the northeast portion of the site. Furthermore, multiple utilities including, but not limited to, electric, gas, sewer, and stormwater traverse the project site. The topography in the area of planned development slopes from the northwest gently downward to the southeast. Based on an existing site plan provided by Stonefield Engineering & Design, topographic estimates indicate maximum relief across the area investigated is estimated at approximately 1.5 feet.

## III. PROJECT DESCRIPTION

The planned site development is expected to include the construction of a one-story school building measuring approximately 27,825 square feet in plan area. The proposed building is expected to be constructed using conventional steel and masonry methods and feature a concrete floor slab situated on-grade. The planned development is also expected to include the construction of an outdoor basketball court within the northeastern portion of the site, along with stormwater management systems, asphalt paved parking and driveway areas, concrete curbing, and landscaped islands located throughout the site.

At the time of this report, a finished first floor elevation for the new building was estimated at an elevation of +192.5 feet. Therefore, based on topographic estimates of the existing site conditions and proposed construction elevations, minor cuts and fills will be required to achieve proposed finished building pad subgrade elevations and final grading across the site. Information

provided by the project structural engineer, Baker Ingram & Associates, estimates that total column and wall loads for the proposed one-story building are expected not to exceed 75 kips and 3 kips per linear foot, respectively.

## IV. FIELD INVESTIGATION

A series of six (6) earth borings, referenced B-1 through B-6, were performed on February 16 and 17, 2023 under the direction of Earth Engineering Incorporated to evaluate the subsurface conditions underlying the proposed new building. The test borings extended down to depths ranging from approximately 20 to 30 feet below the existing ground surface. The test borings were conducted by F.M. & W. Drilling using a truck mounted drill rig equipped with hollow stem augers and split spoon samplers. Split-spoon samples, conducted in accordance with ASTM standard D1586, were taken at regular intervals throughout the depth of the borings. Standard Penetration Test (SPT) values were recorded for each sample. The SPT values, which are a measure of soil density and consistency, are the number of blows required to drive a 2-inch (outer diameter) split-barrel sampler one foot using a 140-pound weight dropped 30 inches. The number of blows required to advance the sampler over the 12-inch interval from 6 to 18 inches is considered the "N" value, or the SPT value which is recorded on the Boring Profiles, Sheet 1, found within the *Appendix*. Boring Logs, containing sample depths, descriptions of the materials encountered and SPT values, are also included in the *Appendix*. It should be noted that spoils generated during the drilling effort were used to backfill each borehole upon completion.

In addition to the test borings within the proposed building, five (5) test pits referenced as TP-1 through TP-5 and two (2) infiltration borings referenced as IB-1 and IB-2 were performed in areas of the site currently under consideration for stormwater management facilities. The test pits were excavated on February 21, 2023 by Neighbor Property Management, LLC, utilizing a *Bobcat EGO Excavator*. In-situ infiltration testing was performed at each of the five (6) test pit locations to

obtain infiltration characteristics of the subgrade soils. The details and results of the infiltration testing are provided within the *Infiltration Testing* section of this report. In areas of the site where space was a constraint and open pit excavation was not feasible, exploratory infiltration borings IB-1 and IB-2 were advanced to determine the infiltration characteristics of the subsurface soils. The sampling method consisted of hollow stem augers and 3.0 diameter split spoon sampling equipment to extract soil samples for tube permeameter testing in the laboratory. In accordance with the *New Jersey Stormwater BMP Manual,* primarily and replicate soil samples were retrieved at sampling depths via two (2) auger probes performed adjacent to infiltration borings IB-1 and IB-2.

The test borings and test pits were field located by representatives of EEI utilizing GPS equipment based on existing features and proposed site plans provided by the civil engineer. Supervision and monitoring of the test boring, test pit, and infiltration testing program were provided by a representative of Earth Engineering Incorporated. Ground surface elevations at each test boring and test pit location were topographically estimated based on site plans provided by the civil engineer. The relative location and corresponding number of each test boring, test pit, and infiltration test, relative to the existing site features, is shown on the attached *Testing Location Plan*, EEI Drawing Number 35702.J0-A-101, included in the Appendix.

## V. LABORATORY TESTING

All soil samples were taken to EEI's soils laboratory and visually classified by our engineers. In addition to visual classification, four (4) representative soil samples recovered from the subsurface investigation were subjected to laboratory analysis. The laboratory testing conducted on the samples consisted of standard classification testing, in accordance with ASTM standard D2487, to verify visual classifications and to establish engineering parameters required for foundation design analysis. The tests performed included Particle Size Analysis (ASTM D422), Atterberg Limits Determination (ASTM D4318), and Natural Moisture Content (ASTM D2216).

The results of the laboratory testing conducted are presented in Table I. Gradation curves, graphically depicting the results of the particle size analyses, are included in the *Appendix*.

| TABLE I – Laboratory Test Results | | | | | |
|---|---|---|---|---|---|
| **Boring Location** | | B-2, B-5 | B-3, B-6 | IB-1 | IB-2 |
| **Sample Number** | | S-1, S-2 | S-4, S-3 | S-1 | S-1 |
| **Sample Depths** | | 0.5'-2.0', 2.0'-4.0' | 6.0'-8.0', 4.0'-6.0' | 4.0 | 3.0' |
| **Stratum** | | FILL | Stratum I | Stratum I | Stratum I |
| **Particle Size Distribution** | | | | | |
| | 1.5" | 100 | 100 | 100 | 100 |
| | 3/4" | 97.7 | 97.0 | 100 | 100 |
| | 3/8" | 88.3 | 92.8 | 86.5 | 87.1 |
| | No. 4 | 78.6 | 79.5 | 67.5 | 66.3 |
| | No. 10 | 68.4 | 61.1 | 52.0 | 48.8 |
| | No. 40 | 47.3 | 29.2 | 26.3 | 20.7 |
| | No. 100 | 29.9 | 7.7 | 6.6 | 7.6 |
| | No. 200 | 26.0 | 4.4 | 4.3 | 5.1 |
| **Atterberg Limits** | | | | | |
| Liquid Limit | | Non-Plastic | Non-Plastic | Non-Plastic | Non-Plastic |
| Plastic Limit | | Non-Plastic | Non-Plastic | Non-Plastic | Non-Plastic |
| Plasticity Index | | Non-Plastic | Non-Plastic | Non-Plastic | Non-Plastic |
| **Natural Moisture Content (percent)** | | 12.7 | 15.8 | 10.5 | 4.6 |
| **Unified Soil Classification System (USCS) Group Symbol** | | SM | SP | SP | SP-SM |
| **ASTM Group Name** | | Silty Sand with Gravel | Poorly Graded Sand with Gravel | Poorly Graded Sand with Gravel | Poorly Graded Sand with Silt and Gravel |

# VI. SUBSURFACE CONDITIONS

## ***A. Geology***

According to the 1998 Bedrock Geologic Map of Northern New Jersey, the specific geologic formation within the region is known as the Boonton Formation (geologic symbol Jb) which is Lower Jurassic in age. This formation consists primarily of reddish brown to brownish purple fine-grained

sandstone, siltstone, and mudstone. The sandstone is commonly micaceous and interbedded with siltstone and mudstone in upward fining sequences. Red, gray, and brownish purple siltstone and black, blocky, partly dolomitic siltstone and shale common in the lower part of the formation. Based on the observations made during the field investigation, soils associated with the Boonton Formation were encountered in the test borings and test pits completed at the site.

***B. Soils***

Each of the soil samples recovered during the investigation were examined and visually classified by EEI, both in the field and in the laboratory. The surface of the site at nine (9) of the test locations was covered by a layer of topsoil ranging from approximately 6.0 to 17.0 inches in total thickness. The determination of "topsoil" was a cursory field evaluation not supported by laboratory testing. The ability of the topsoil to support plants and/or vegetation was not determined or implied by EEI. The surface of the site at the remaining test locations was covered by a layer of asphalt and measured approximately 4.0 inches in total thickness at each location. In addition, the depth or thickness of the surficial materials is expected to vary across the project site area and may be more or less than that stated above.

Based on the samples retrieved from the field investigation, soils at the site have been classified into a profile consisting of one (1) FILL layer and one (1) naturally occurring soil stratum. **It should be noted that a remnant topsoil layer was encountered immediately beneath the surficial topsoil in test pits TP-1 and TP-2. The remnant topsoil was found to extend down to depths of approximately 1.7 (TP-1) and 2.3 (TP-2) feet below the existing ground surface and measured as approximately 9.0 inches and 11.0 inches in thickness.**

Graphical soil stratum profiles of each test boring and test pit, which displays the soils encountered and other information obtained from the field investigation, are included within the *Appendix* on the Boring Profiles and Testing Profiles. Additional test boring and test pit information is also shown on the Boring Logs and Soil Description Logs included within the *Appendix*. A

general description of the soils encountered is as follows:

**FILL**

The soil designated as FILL was found to consist of dark brown to light brown to brownish yellow sandy SILT, trace to little gravel (Sandy Loam). Visual evaluation conducted on a representative soil sample retrieved from the FILL shows this material ranges from marginally fine-grained to marginally granular and non-plastic. As determined by laboratory testing, the USCS Group Symbol for the representative sample of this soil is SM. The corresponding ASTM Group Name for the sample tested is Silty Sand with Gravel. The FILL material was only encountered in six (6) of the test locations immediately beneath the surficial materials and extended downward to depths ranging from approximately 2.4 to 5.1 feet below the existing ground surface. The FILL material appears to have been placed for grading purposes during prior site grading activities.

SPT values ranging from 4 to 15 blows on the sampling barrel per foot of penetration were recorded while sampling this soil. Based on this range of values, the Stratum I soil exists in a very loose to medium dense state.

**STRATUM I**

The soil designated as Stratum I was found to consist of brown to dark brown to gray to reddish brown silty SAND, trace to little gravel (Loamy Sand). Laboratory testing and visual evaluation conducted on representative samples retrieved from Stratum I shows this soil to be primarily granular and non-plastic. As determined by laboratory testing, the USCS Group Symbols for the representative samples of this soil range from SP to SP-SM. The corresponding ASTM Group Names for the samples tested are Poorly Graded Sand with Gravel to Poorly Graded Sand with Silt and Gravel. Stratum I was encountered in each test location immediately beneath the surficial topsoil, remnant topsoil, or FILL and extended downward to the termination depths ranging from approximately 9.5 to 30.0 feet below the existing ground surface.

SPT values ranging from 4 to 48 blows on the sampling barrel per foot of penetration were

recorded while sampling this soil. Based on this range of values, the Stratum I soil exists in a very loose to dense state.

***C. Bedrock***

The bedrock surface, as defined by auger refusal or bucket refusal, was not encountered in any test boring or exploratory test pit performed during the field investigation.

***D. Groundwater***

The static groundwater was encountered in each test location performed during the field investigation. Subsequent groundwater levels were recorded within the test locations at depths ranging from approximately 5.4 to 7.0 feet below the existing ground surface. Mottling of the soils, which may be an indication of a seasonal high groundwater condition, was only identified in test pits TP-1 through TP-5 at depths ranging from approximately 5.0 to 6.3 feet below the existing ground surface. It should be noted that these observations were made at the time of the field investigation and that groundwater table elevations may fluctuate with daily, seasonal, and climatic variations. Measures to mitigate groundwater conditions during construction are provided in the *Groundwater Control* section of this report.

## VII. EXISTING FEATURES & DEMOLITION

Development of this site will include the complete removal of all previously existing foundations and structural elements, if any, encountered onsite. Any existing utilities, whether in service or abandoned, should also be completely removed from and rerouted outside the proposed new building area. It is noted that electric lines traverse across the project site and will likely require relocation to accommodate the planned site development.

The base of all excavations resulting from the removal of any existing and remnant foundations, building slabs, and structural elements, in addition to removal and/or relocation of existing utilities, should be proof-rolled to confirm stability prior to backfilling. Upon confirmation of a

stable soil subgrade, the excavations performed to remove existing site features can be backfilled with controlled compacted lifts of structural fill as detailed in the *Fill and Compaction* section of this report.

## VIII. SITE PREPARATION

In addition to removal of existing building elements, utilities, and any buried obstructions, initial site preparation measures should include the complete removal of all subsurface materials organics, including asphalt paving, topsoil, trees, and root mass extending a minimum distance of 10 feet beyond the proposed construction areas.

Following excavation to achieve proposed grades and prior to the placement of structural fill, the proposed building areas should be proof-rolled and compacted. It is recommended that a steel drum vibratory roller having a minimum static weight of 10 tons be utilized for this purpose. Proof-rolling and compaction procedures are necessary to compact and verify the integrity of the upper zones of the soils. Soft/loose zones of soil attributed to excessive soil moisture, if any, can be aerated and dried in-place. Aeration and drying of excessively moist soil are best accomplished in warm dry summer months. Following adequate drying time, the soils can be densified in-place. Alternately, any soft/loose zones of soil can be removed and replaced with structural fill, as outlined in the *Fill and Compaction* section of this report. The proof-rolling effort should be observed and evaluated by a qualified representative of the Geotechnical Engineer of Record.

The site should be graded during construction to direct surface runoff away from the construction areas. Proper grading and management of surface runoff will help minimize disturbance of the subgrade. Additionally, work areas should be sealed on a daily basis. Moreover, EEI recommends that all construction areas, including those which are excavated to achieve the planned subgrade elevation, be proof-rolled immediately prior to the placement of subbase stone

and again prior to the concrete floor and asphalt pavement section. This will allow for loose and weak areas to be observed and remediated.

## IX. FOUNDATION DESIGN RECOMMENDATIONS

The results of the field investigation, supported by laboratory testing, revealed that the general geotechnical cross-section across the project site is underlain by the very loose to medium dense FILL soils, underlain by the very loose to dense soil of Stratum I. Engineering analysis performed on the data obtained from the field investigation indicates that settlements within tolerable limits are anticipated if the new building foundations are situated on or above the suitably dense FILL and/or Stratum I soil. This recommendation is provided with the assumption that the FILL and/or Stratum I soils at the foundation bottom elevation are thoroughly densified in-place prior to the placement of reinforcing steel and concrete.

Based on the anticipated final site grading, excavations associated with new building construction will likely situate building foundation elements within or above the suitably dense natural soils of FILL and/or Stratum I. The soil situated at the footing bottom elevation should be thoroughly evaluated for the presence of organic and/or deleterious materials. If encountered, these unsuitable materials should be completely removed and replaced with structural fill placed under engineering control. Excavations should continue down to suitably dense soils are observed. The resulting excavated subgrade should be proof-rolled and compacted. Due to space constraints, a walk-behind dual-drum vibratory roller (ram-max) may be utilized for this operation. Any loose or unstable natural soils encountered during proof-rolling resulting from excessive soil moisture should be aerated, dried, and densified in-place or removed and replaced with structural fill. The in-place densification at the footing bottom elevation and any additional undercut, if necessary, should be field evaluated by a qualified representative of the Geotechnical Engineer of Record.

Upon confirmation of a stable subgrade, backfilling of the foundation undercut up to the footing bottom elevation should be performed with compacted lifts of select granular fill, dense graded aggregate and/or equivalent structural fill as detailed in the *Backfill and Compaction* section of this report. Compaction should be performed in controlled lifts using a walk-behind vibratory roller. **A jumping jack or plate tamper compactors are not considered acceptable substitutes.**

Additionally, slab elements may be supported on the suitably dense FILL, natural soil of Stratum I, and/or newly placed structural fill assuming the building pad is thoroughly proof-rolled and compacted. EEI recommends soils encountered during building pad preparation and foundation excavation be thoroughly evaluated for the occurrence of non-soil debris. Portions of the subgrade, if any, containing significant organics and/or deleterious materials should be removed and replaced with controlled, compacted lifts of structural fill. Proof-rolling and subsequent fill placement to achieve the proposed building pad subgrade elevation should be field inspected by a qualified representative of the Geotechnical Engineer of Record.

The following foundation system and soil bearing capacity recommendations are provided by EEI. These recommendations assume that the site preparation procedures stated within and specifications presented below are followed.

1. A foundation system consisting of strip and/or spread footings with slab-on grade is recommended for support of the proposed new building.

2. The base of the foundations should be situated within the suitably dense FILL, Stratum I soil, and/or approved structural fill soils placed and compacted as detailed in the *Fill and Compaction* section of this report. The base of all footings should be compacted with a walk behind dual-drum vibratory trench roller (ram-max) to densify soils loosened during excavation. If encountered, excessively moist soil that cannot be densified in place should be undercut and replaced with compacted lifts of structural fill. **New foundations shall not bear on or above in-place variable content materials, low density or weak FILL/Stratum I soils, organic/deleterious materials, and/or any previously existing structural elements or utilities.**

3. Supported on the suitably dense FILL, Stratum I soils, and/or properly placed approved structural fill, the foundation elements should be designed for a maximum allowable bearing capacity of 3,000 pounds per square foot (3,000 psf). Regardless of the load criteria, a minimum 18-inch wide strip footing and 36-inch spread footing

should be utilized.

4. Total foundation settlement is estimated not to exceed 1.0 inches. Differential settlement is estimated not to exceed 0.50 inches. These settlements were calculated using a bearing pressure of 3,000 pounds per square foot and estimated maximum column loads of 75 kips. Maximum wall loads for the building are estimated not to exceed 3.0 kips per linear foot. Should the anticipated loads differ, EEI should be notified so that our recommendations can be reviewed and revised, if necessary.

5. The bottom of exterior footings and footings in unheated areas should be placed at least 3 feet below the final exterior grade for protection from frost heave.

6. All footing bottoms should be completely cleaned of loose material or debris immediately prior to the placement of concrete.

7. The actual bearing conditions of the soil at the footing bottom elevation should be confirmed in the field during excavation, by inspection under the supervision of a Professional Engineer qualified in Geotechnical Engineering.

8. Floor slabs supported on a minimum 4-inch thick layer of a clean stone, AASHTO #57 or equivalent, can be designed using a modulus of subgrade reaction of approximately 150 psi/inch provided that the soils are compacted to a minimum of 95% of the soils maximum dry density as determined by ASTM D 1557 (Modified) in fill areas.

## X. EXCAVATION METHODS

Excavation necessary for the planned site development is expected to take place in the soils referenced as FILL and Stratum I. Based on expected site grading information and finished floor elevations, excavation of competent bedrock is not anticipated to be required during foundation construction for the proposed building construction.

Removal of the very dense portions of Stratum I during excavation with a standard back-hoe will prove difficult and result in slow excavation rates. Improved excavation rates over a standard back-hoe during utility installation, specifically within these very dense soils, will be realized utilizing a track-hoe.

Excavations may require temporary slopes constructed at a ratio of 2 horizontal to 1 vertical. This will significantly widen the excavation necessary for installation. Sloping, benching, or shoring

of all construction excavation should be conducted in accordance with 29 CFR 1926, Subpart P. A competent person as defined by the aforementioned regulation is required to confirm the stability of all excavations during construction. The actual excavation wall slopes, benching, or shoring should be field determined and should be based on the required depth of excavations and on the soil types encountered. All excavations should be carried out in accordance with the Occupational Safety and Health Administration (OSHA) requirements and specifically OSHA 1926.650.

## XI. GROUNDWATER CONTROL

As previously stated, the subsequent groundwater level was recorded in each test location at depths ranging from approximately 5.4 to 7.0 feet below the existing ground surface. Mottling of the soils, which may be an indication of a seasonal high groundwater condition, was only identified in test pits TP-1 through TP-5 at depths ranging from approximately 5.0 to 6.3 feet below the existing ground surface. Excavations associated with foundation construction are not expected to be impacted by groundwater. However, excavations associated with deeper utility installation and stormwater construction may approach groundwater and/or seasonal high groundwater depths recorded during the field investigation. Should localized water seepage be encountered during construction, EEI anticipates that it will be controllable using submersible pumps positioned within the excavation. Dewatering should be based on standard practices and on the flows encountered at the time of construction. The final number and positioning of pumps required to de-water the excavation should be made by the contractor, subject to review by the Engineer.

The contractor should be prepared to provide adequate dewatering in order to maintain the integrity of the subgrade soils during excavation. If water accumulation occurs at the construction elevation, softening of the bearing surface may occur and require subgrade stabilization. If stabilization is required, it is expected to consist of a 1.0 to 2.0 foot over-excavation of loose/unstable soil, or more, depending on conditions. The over-excavated soils should be

replaced with a minimum of 8.0 inches of 3/4" aggregate stone followed by structural fill placed under engineering control. This process will require the immediate placement of the aggregate stone after the unsuitable soils are excavated. Additionally, it is recommended that a track-hoe be utilized to perform the excavation in lieu of a track-loader so that the excavation can be performed from outside the subgrade area requiring stabilization. The stabilization process should be performed under the direction of a licensed professional geotechnical engineer.

## XII. FILL AND COMPACTION

### ***A. Fill Criteria***

Fill material which supports foundations, floor slabs, and pavements, in addition to material used for retaining wall backfill is considered structural fill. Following the site preparation measures discussed earlier, structural fill required to elevate construction pads and parking/driveway areas may be placed. Excavation necessary for the proposed site development will make available the FILL and natural soil of Stratum I for use as structural fill.

Visual evaluation and laboratory testing performed on the FILL indicates this material is ranges from marginally granular to marginally fine-grained (silt, fine sand) and generally non-plastic. As a result, the FILL is generally considered suitable for use as structural fill provided this material is absent of organic/deleterious materials and exists at or near its optimum moisture content.

Furthermore, laboratory testing and visual evaluation performed on Stratum I indicates this soil is primarily granular and non-plastic. Based on this information, the soil of Stratum I is generally considered generally suitable for use as structural fill.

All onsite soils to be used as backfill that contain significant organics or additional deleterious material should be stockpiled separately and used in non-structural areas of the site or disposed of properly. Furthermore, any large diameter rock fragments identified within FILL or Stratum I should be removed or processed to less than 4 inches in diameter.

Caution should be exercised during construction to not stockpile and/or expose soils to weather conditions for long periods of time. Materials stockpiled for use as structural fill should be graded to shed water and rolled to maintain the soils. During periods of wet site conditions, travel upon construction areas should be limited to minimize disturbance of the subgrade which will lead to instabilities.

Furthermore, any peripheral asphalt pavement and subbase aggregate that is stripped as a result of previous and proposed site development may be reused as structural fill material within the proposed new parking/driveway areas, as long as local regulations are adhered. EEI recommends the asphalt be processed to less than 4 inches in diameter and mixed with the crushed stone or suitable on-site soil to provide a well-graded mix. These materials will also prove useful in stabilizing any soft/loose subgrade conditions observed during proof-rolling of the parking lot and driveway areas. Additionally, asphalt fragments or processed asphalt millings should not be used as structural fill within the building pad or other structural areas of the site.

No other significant sources of structural fill material are present at the site. If necessary, EEI recommends that a borrow source with a granular soil be established, or a modified crushed aggregate, such as dense graded aggregate, be utilized for filling purposes at this site. Any structural or load-bearing soil for use in the tank or building footprint areas, which is required to be **imported** to the site, should meet the following criteria:

- Granular soils such as GW, GP, GM, SW, SP or SM as classified by ASTM D2487 are preferred, however soils having soil classifications GC, SC, ML or CL may be acceptable provided the Geotechnical Engineer of Record approves the soil;
- the largest particles within the fill should be no greater than 3 inches in diameter;
- not include deleterious materials such as construction debris, wood, glass, ash, trash, refuse, roots and other organic matter or contain frozen clumps of soil, snow or ice and
- have moisture contents within 3 percent of the soil's optimum moisture content

The above criteria are provided as a general guideline for soil materials to be imported to the site. Soil materials available for use as a structural fill should be submitted to the Geotechnical Engineer of Record for evaluation and subsequent consideration prior to its importation to the site.

***B. Compaction Criteria***

Structural fill should generally be placed in horizontal lifts not exceeding eight (8) inches in loose thickness and compacted with a minimum ten (10) ton steel-drum, smooth-barrel vibratory roller. Fill material should generally be placed in horizontal lifts not exceeding six (6) inches in loose thickness where compaction by hand-operated equipment is necessary. The optimum lift thickness and number of repetitions necessary to achieve the required percentage compaction values should be determined in the field with test passes of the chosen compaction equipment. The structural fill material should be placed at, or deviate nominally from, the optimum moisture content as determined in accordance with ASTM standard D1557 and compacted to a minimum percentage of the maximum dry density as indicated in Table II.

**TABLE II – Compaction Criteria**

| Fill Area | Percent of Maximum Dry Density As per ASTM Modified D1557 |
|---|---|
| Foundation Bearing and Slab-On-Grade Areas | 95 |
| Parking and Driveway Areas | 95 |
| Non-Structural | 92 |

## XIII. GENERAL SOIL PROPERTIES

***A. Lateral Earth Pressures***

Design of subsurface structures will require the consideration of lateral earth pressures imposed on these elements. The following soil characteristics are provided for use in establishing the design of these items. The data for the FILL and natural soils of Stratum I below in Table III were determined based upon laboratory testing and visual classification of the on-site soil samples compared to generally accepted published values for the various properties.

It is also recommended that a drainage system be installed for walls constructed below grade. The presence of a drainage system will serve to minimize hydrostatic pressures caused by water trapped against the walls. If adequate drainage is not provided the walls should be designed to resist hydrostatic loads.

| TABLE III - Soil Properties For Computation of Lateral Loads | |
|---|---|
| **Soil Property** | **FILL & Stratum I** |
| Angle of Internal Friction | 30.0º |
| Coefficient of Active Earth Pressure - $K_a$ | 0.33 |
| Coefficient of Passive Earth Pressure - $K_p$ | 3.00 |
| Coefficient of At Rest Earth Pressure - $K_o$ | 0.50 |
| Coefficient of Sliding Friction | 0.38 |
| Moist Unit Weight (pcf) | 120.0 |

## XIV. SITE SEISMIC CONDITIONS

According to the 2015 International Building Code IBC Section 1615.1.1 Site Class Definitions, and based on data from the borings and calculations performed by EEI, the average properties in the top 100 feet correspond to Site Class D.

## XV. PAVEMENT DESIGN RECOMMENDATIONS

The following pavement analyses were performed using the AASHTO methods of flexible pavement design and are based on the assumption that the pavement subgrades are well compacted, stable, and otherwise suitable for the placement of subbase and pavement materials. All pavement areas should be evaluated and thoroughly proof-rolled prior to the placement of final grading subbase stone and again prior to placement of the flexible pavement. The proof-rolling effort should be observed and evaluated by a qualified representative of the Geotechnical Engineer of Record. Any loose or unstable soil encountered during proof-rolling should be compacted in

place or removed and replaced with structural fill, as outlined in the *Fill and Compaction* section of this report.

Pavement design parameters including a 20-year design life and 18 kip Equivalent Single Axle Loading (ESAL) of 100,000 ESALs were estimated by EEI for light duty pavement, with 200,000 ESALs estimated for heavy duty pavement. The soils at the site which are expected to support the pavement section consist primarily of Sandy Loam to Loamy Sand. Based on the soil type and published information, the following flexible pavement recommendations have been developed using an estimated California Bearing Ratio (CBR) value of 6.0. The pavement design recommendations provided in Table IV and Table V assumes the existing subgrade material currently in-place is functioning as an adequate subbase.

| **Table IV – Light Flexible Pavement** | |
|---|---|
| **Layer Designation** | **Thickness** |
| Bituminous Wearing Coarse | 1.5 inches |
| Bituminous Binder Coarse | 3.5 inches |
| Dense Graded Aggregate | 6.0 inches |

Existing local pavement specifications should be adhered to if they are more stringent than those provided herein.

| **Table V – Heavy Flexible Pavement** | |
|---|---|
| **Layer Designation** | **Thickness** |
| Bituminous Wearing Coarse | 1.5 inches |
| Bituminous Binder Coarse | 4.5 inches |
| Dense Graded Aggregate | 6.0 inches |

Existing local pavement specifications should be adhered to if they are more stringent than those provided herein.

All aspects of the pavement installation process should be supervised and documented by the Geotechnical Engineer of Record. It is noted that periodic maintenance, such as patching and sealing, should also be performed at regular intervals.

# XVI. INFILTRATION TESTING

## ***A. Exploratory Test Pits***

As part of the field investigation, five (5) exploratory test pits were performed in areas of the site under consideration for the construction of underground/surface stormwater management basins. The purpose of the exploratory test pits was to investigate for potential limiting zones below proposed infiltration depths. Soil description providing the depth, thickness, and descriptions of the materials encountered are included in the *Appendix*. A limiting zone is defined as a horizon or condition of the soil or underlying strata which includes:

A. Seasonal high water table, weather-perched or regional, determined by direct observation of the water table or soil mottling.

B. Rock with open joints, fractures or solution channels, masses of loose rock fragments including gravel, with insufficient fine soil to fill the voids between the fragments.

C. Rock formation, other stratum, or soil condition which is so slowly permeable that it effectively limits the downward passage of effluent.

The soils encountered within each test location were visually classified and documented in the field during the investigation by a representative of EEI. Underlying the surficial topsoils and/or remnant topsoil, a generalized natural soil profile consisting of loamy sand (Stratum I) was concluded by EEI. The bedrock surface, which represents a limiting zone, was not encountered to the depths achieved during the field investigation.

The subsequent groundwater level was recorded in each of the five (5) test pits at depths ranging from approximately 5.4 to 7.0 feet below the existing ground surface. It should be noted that the groundwater observations were made at the time of the field investigation and that groundwater table elevations may fluctuate with daily, seasonal, and climatic variations. Soil mottling, which may be an indication of seasonal high groundwater was also observed in each of the five (5) of the test pits at depths ranging from approximately 5.0 to 6.3 feet below the existing

ground surface. The depths to soil mottling are detailed on the Soil Description Logs located in the Appendix.

As determined by laboratory testing performed on soils from test locations adjacent to the exploratory test pits, the ASTM Group Names for representative samples of the Stratum I soils were Silty Sand with Gravel, Poorly Graded Sand with Silt and Gravel, and Poorly Graded Sand with Gravel. These names correspond to USCS Group Symbols SM, SP-SM, and SP, respectively. This soil was most closely found to correspond to Loamy Sand (USDA). It should be noted that finer-grained soils were encountered within the upper zones of Stratum I at four (4) test locations.

The following table summarizes the type and depth of limiting zones encountered during the field investigation. Additional details regarding the soils and limiting zones are provided on the Soil Description Logs included in the Appendix.

**TABLE VI – LIMITING ZONE SUMMARY**

| Test Location | (1) Ground Surface Elevation (ft.) | Limiting Zone Condition | Depth of Limiting Zone(s) (ft.) | Depth of Infiltration Test (ft.) |
|---|---|---|---|---|
| TP-1 | 189.9 | Fine Grained Soil | 0.9-1.7 | 1.7 & 2.8 |
| | | Soil Mottling | 5.0 | |
| | | Groundwater | 5.5 | |
| TP-2 | 189.8 | Fine Grained Soil | 1.4-2.3 | 2.5 |
| | | Soil Mottling | 5.1 | |
| | | Groundwater | 5.4 | |
| TP-3 | 190.8 | Soil Mottling | 5.7 | 1.5 & 3.5 |
| | | Groundwater | 6.4 | |
| TP-4 | 190.5 | Fine Grained Soil | 0.9-2.0 | 1.5 & 3.5 |
| | | Soil Mottling | 6.1 | |
| | | Groundwater | 6.6 | |
| TP-5 | 190.5 | Fine Grained Soil | 1.1-2.2 | 1.5 & 3.5 |
| | | Soil Mottling | 6.3 | |
| | | Groundwater | 7.0 | |

**(1)** – Surface elevations shown on table were topographically estimated based on site plans provided by the client.

***B. Infiltration Testing***

Following completion of the exploratory test pits, infiltration tests were performed by EEI adjacent to the test pits to determine infiltration rates for the on-site soils. The infiltration testing was performed at depths ranging from 1.5 to 3.5 feet below the existing ground surface. All testing

procedures and calculations were performed in general accordance with the New Jersey Stormwater Best Management Practices Manual (NJ BMP Manual) Chapter 12. The following table summarizes the infiltration data for each test location. Detailed field information is shown on Table IA - Infiltrometer Test Results, included in the Appendix.

**TABLE VII - Single Ring Infiltrometer Test Results**

| Test Hole Number | (1) Ground Surface Elevation (feet) | Infiltration Depth (feet) | (1) Infiltration Elevation (feet) | Observed Infiltration Rate (inches/hour) | Hydraulic Conductivity Rate (inches/hour) |
|---|---|---|---|---|---|
| IT-1A | 189.9 | 1.7 | 188.2 | 8.67 | 2.97 |
| IT-1B | 189.9 | 1.7 | 188.2 | 10.22 | 3.50 |
| IT-1C | 189.9 | 2.8 | 187.1 | 80.00 | 27.39 |
| IT-1D | 189.9 | 2.8 | 187.1 | 74.07 | 25.36 |
| IT-2A | 189.8 | 2.5 | 187.3 | 1.98 | 0.68 |
| IT-2B | 189.8 | 2.5 | 187.3 | 1.48 | 0.51 |
| IT-3A | 190.8 | 3.5 | 187.3 | 45.11 | 15.45 |
| IT-3B | 190.8 | 3.5 | 187.3 | 45.11 | 15.45 |
| IT-3C | 190.8 | 1.5 | 189.3 | 48.00 | 16.43 |
| IT-3D | 190.8 | 1.5 | 189.3 | 37.97 | 13.00 |
| IT-4A | 190.5 | 3.5 | 187.0 | 50.00 | 27.39 |
| IT-4B | 190.5 | 3.5 | 187.0 | 65.22 | 22.33 |
| IT-4C | 190.5 | 1.5 | 189.0 | 40.00 | 13.70 |
| IT-4D | 190.5 | 1.5 | 189.0 | 16.39 | 5.61 |
| IT-5A | 190.5 | 3.5 | 187.0 | 142.86 | 48.91 |
| IT-5B | 190.5 | 3.5 | 187.0 | 120.00 | 41.10 |
| IT-5C | 190.5 | 1.5 | 189.0 | 10.60 | 3.63 |
| IT-5D | 190.5 | 1.5 | 189.0 | 7.27 | 2.49 |

(1) Surface elevations shown on table were topographically estimated based on site plans provided by the client.

As shown in the above table, the observed infiltration rates range from approximately 1.48 to 142.86 inches per hour. These observed infiltration rates correspond to hydraulic conductivity rates ranging from approximately 0.51 to 48.91 inches per hour. The infiltration and hydraulic conductivity rates shown above are field measured values and do not include a safety factor for design purposes. According to the referenced *NJ BMP Manual*, a minimum factor of safety of 2.0 is recommended for most cases. The determination of the appropriate design value for the storm

water management basins including application of the appropriate factors of safety is the responsibility of the project civil engineer. Based on the soil conditions and infiltration/hydraulic conductivity rates detailed above, stormwater infiltration generally appears to be feasible at the majority locations tested across the site.

Once final stormwater management designs are determined, EEI recommends performing in-situ infiltration testing following excavations to achieve the designed basin bottom infiltration elevations. This testing will serve to confirm design infiltration rates of the soils at the basin bottom elevation and can be used to delineate areas that may require over-excavation of low or non-permeable soils.

## XVII. TUBE PERMEAMETER TESTING

### ***A. Exploratory Test Borings***

In areas of the site where space was a constraint, two (2) exploratory test borings referenced IB-1 and IB-2 were advanced to investigate potential limiting zones below proposed basin bottom elevations. A limiting zone is defined as a horizon or condition of the soil or underlying strata which includes:

A. Seasonal high water table, weather-perched or regional, determined by direct observation of the water table or soil mottling.

B. Rock with open joints, fractures or solution channels, masses of loose rock fragments including gravel, with insufficient fine soil to fill the voids between the fragments.

C. Rock formation, other stratum, or soil condition which is so slowly permeable that it effectively limits the downward passage of effluent.

As previously stated, the bedrock surface which can represent a limiting zone was not encountered to the depths achieved during the investigation. Groundwater was encountered in each exploratory test boring at depths of approximately 6.3 (IB-2) and 6.5 (IB-1) feet below the

existing ground surface. Soil mottling, which may be an indication of a seasonal high groundwater level, was not observed within the exploratory test borings.

The soils encountered within the test borings were visually classified and documented in the field during the investigation by a representative of EEI. Visual evaluation performed on the FILL indicates this marginally fine-grained and non-plastic (Sandy Loam). As determined by field classifications and laboratory testing, the natural Stratum I soil was found to be primarily granular and non-plastic (Loamy Sand to Gravelly Loamy Sand). The ASTM Group Names for representative samples of the Stratum I soil tested were Poorly Graded Sand with Silt and Gravel and Poorly Graded Sand with Gravel. These names correspond to USCS Group Symbols SP-SM and SP, respectively. Fine grained soil conditions, typical of a limiting zone, were encountered in each exploratory test boring at varying depths.

The following table summarizes the type, depths and elevation of the limiting zones. Additional details regarding the soils and limiting zones is provided on the boring logs attached to this letter.

**TABLE VIII – LIMITING ZONE SUMMARY**

| Test Location | (1) Ground Surface Elevation (ft.) | Limiting Zone Condition | Depth of Limiting Zone(s) (ft.) | Depth of Permeability Test (ft.) |
|---|---|---|---|---|
| IB-1 | 189.0 | Fine Grained Soil | 0.3-2.5 | 4.0 |
| | | Groundwater | 6.5 | |
| IB-2 | 189.8 | Fine Grained Soil | 0.3-2.6 & 11.1-11.9 | 3.0 |
| | | Groundwater | 6.3 | |

(1) Indicated surface elevations were provided by the client

***B. Tube Permeameter Test Results***

Following completion of the field investigation, EEI performed tube permeameter testing on representative soils samples retrieved from the test borings to determine the permeability rates of soils situated beneath the proposed basin bottom elevation. The permeability tests were

performed on soils retrieved at depths ranging from 3.0 to 4.0 feet below the existing ground surface. The tube permeameter testing was performed in general accordance with NJAC 7:9-6.2 and Appendix E of the New Jersey Stormwater Best Management Practices Manual (NJ BMP Manual). The following table summarizes the results of tube permeameter testing for each test performed. Detailed testing information is shown on the Tube Permeameter Testing Data Sheets, in the Appendix of this Report.

**TABLE IX – Tube Permeameter Test Results**

| Test Location | (1) Surface Elevation (feet) | Approximate Testing Depths (feet) | Permeability Rate (inches/hour) | Permeability Class |
|---|---|---|---|---|
| IB-1A | 189.0 | 4.0 | 0.23 | K1 |
| IB-1B | 189.0 | 4.0 | 0.31 | K1 |
| IB-1C | 189.0 | 4.0 | 0.39 | K1 |
| IB-2A | 189.8 | 3.0 | 6.72 | K4 |
| IB-2B | 189.8 | 3.0 | 6.66 | K4 |
| IB-2C | 189.8 | 3.0 | 5.43 | K3 |

(1) Indicated surface elevations were provided by the client

As shown in Table IX, the permeability rates of the soils tested were found to range from 0.23 to 6.72 inches per hour. These permeability rates correspond to permeability class ratings ranging from K1 to K4.

## XVIII. CONSTRUCTION QUALITY CONTROL

The proposed development of this site will include significant earthwork activities, the quality of which directly impacts the validity of the recommendations presented in this report. Based upon past experience, the most effective and economical earthwork inspection is obtained through the presence of a qualified representative of the Geotechnical Engineer of Record during the placement of fill, and the installation of the foundation elements. Therefore, proof-rolling, placement of the fill, and verification of the foundation subgrades should be tested and confirmed by Earth Engineering Incorporated.

## XIX. LIMITATIONS

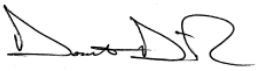
The conclusions and recommendations contained in this report are based upon the subsurface data collected, details stated in this report, and the assumption that the subsurface conditions do not deviate appreciably from those disclosed by the data acquisition activities performed. Should conditions arise which differ from those specifically stated herein, our office should be notified immediately so that our recommendations can be reviewed and revised, if necessary.

Unless specifically indicated to the contrary in this report, the scope of this report is limited to only investigations and evaluations of the geotechnical aspects of the site conditions and does not include any considerations of potential site pollution or contamination. This report offers no facts or opinions related to potential pollution or contamination on these sites.

The procedures followed during the subsurface exploration, and the analyses and conclusions contained herein, have followed generally accepted practices of geotechnical engineering. EEI provides no other warranties, either expressed or implied, as to the professional advice provided under the terms of EEI's agreement and included in this report. The conclusions and recommendations presented in this report are based on the assumption that recognized, proper, construction practices will be followed throughout construction and that a Professional Engineer qualified in Geotechnical Engineering will be retained to oversee the inspection of site preparation, proof-rolling, foundation construction, and other critical earthwork operations. **Furthermore, recommendations within this report are provided with the assumption that the project site is evaluated for slope stability concerns as referenced in the foundation section of this report.**

It is emphasized that this analysis was conducted on behalf of Gregory Ralph, Architect of East Bound Brook, New Jersey and contains the results of a geotechnical engineering investigation conducted for the proposed One School Global Facility to be located at 60 Sunset Road in Pequannock Township, Morris County, New Jersey. EEI does not assume any responsibility in using this report to generate foundation design other than at the specific site addressed.

**Respectfully submitted,**
***Earth Engineering Incorporated***

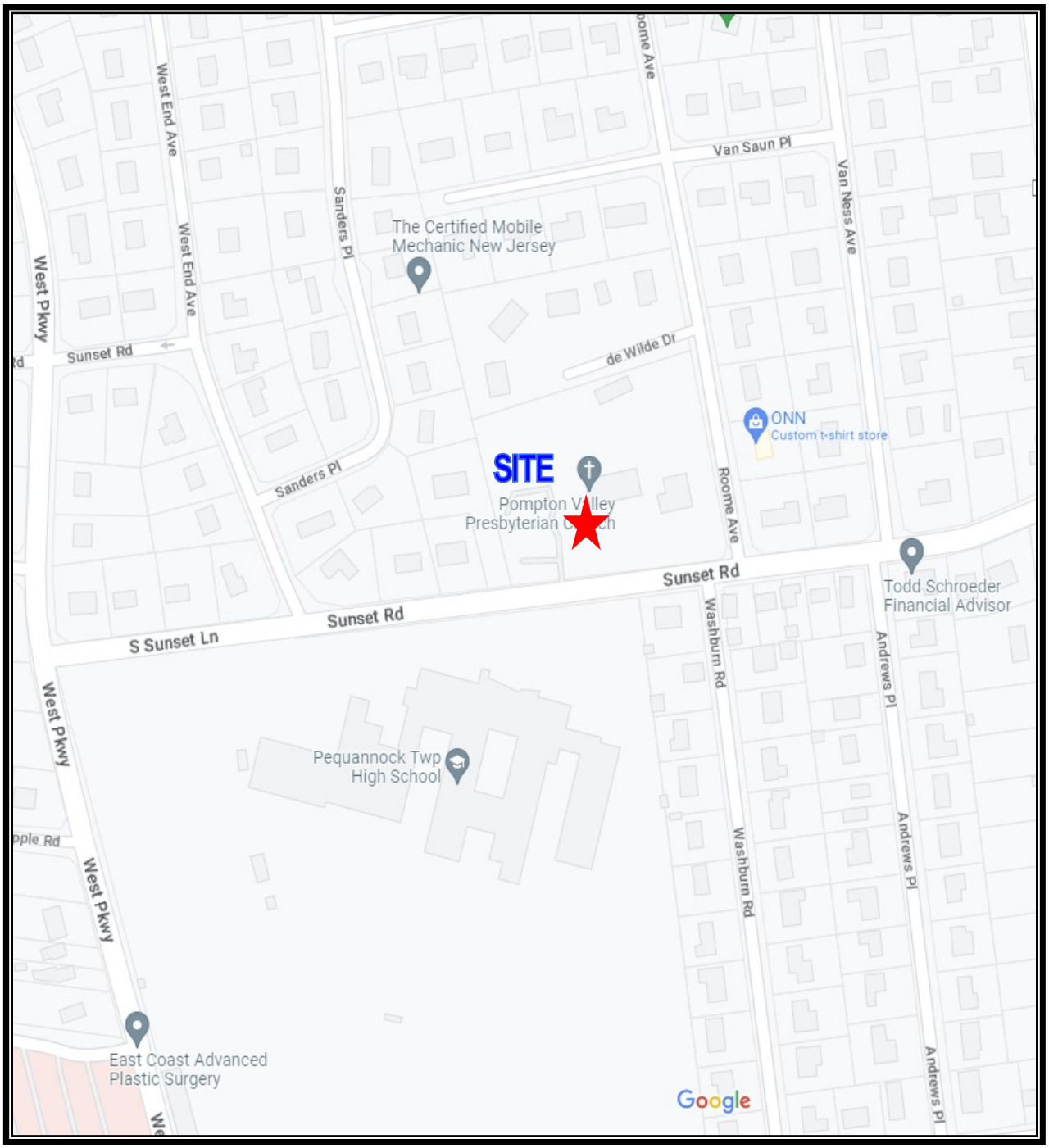


Donato O. DiRocco, P.G.
Geotechnical Project Manager

Thomas B. Louis, P.E.
Director - New Jersey Division
New Jersey Professional Engineer
License Number 40918

## APPENDIX

SITE LOCATION MAP
TESTING LOCATION PLAN
TEST BORING & TESTING PROFILES
TEST BORING & SOIL DESCRIPTION LOGS
INFILTRATION & PERMEABILITY LOGS
LABORATORY TEST RESULTS




**Site Location Map**

**One School Global Facility**
**Pequannock Township, Morris County, New Jersey**

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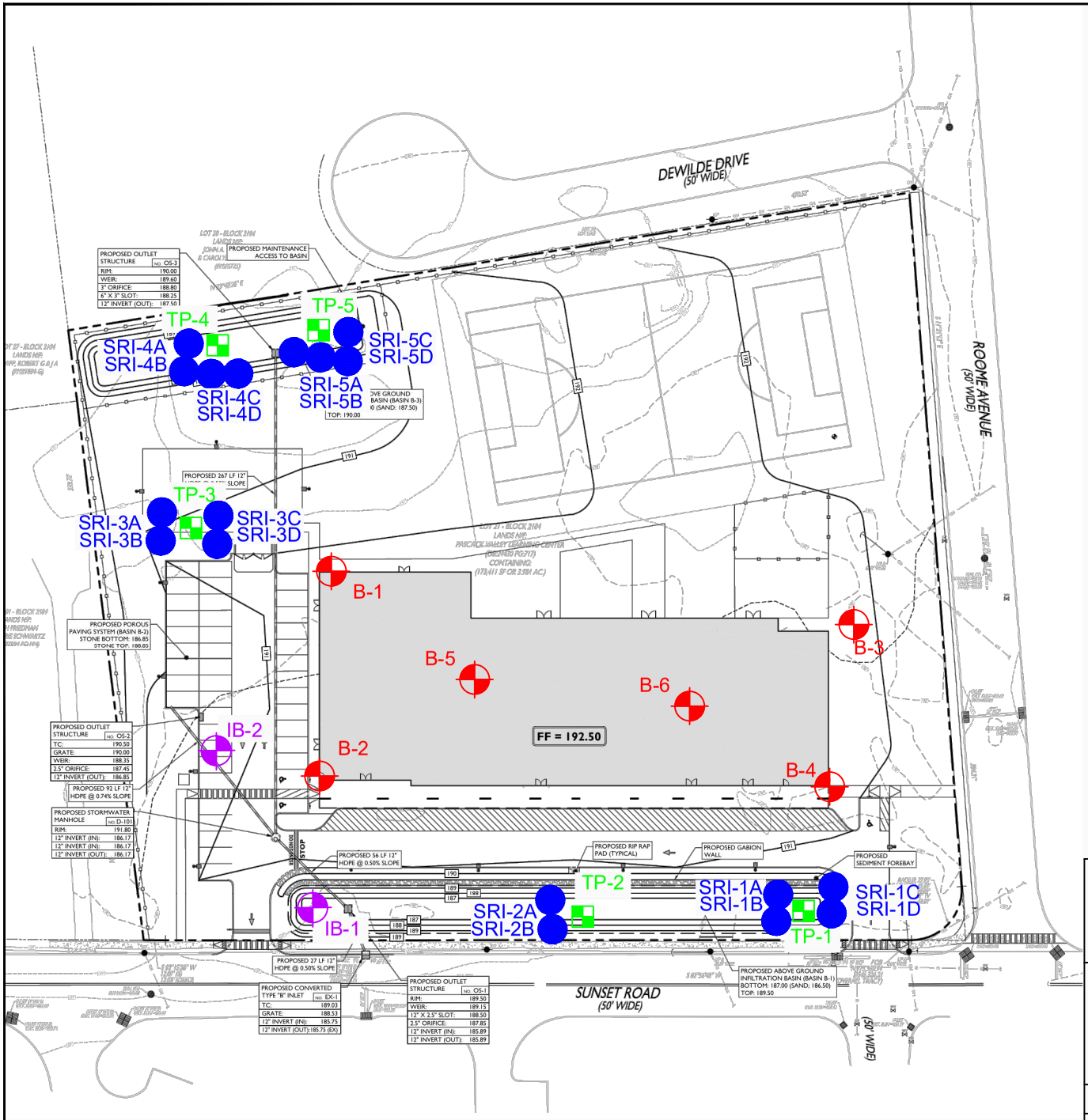
*Geotechnical Engineers & Geologists*




B-# INDICATES APPROXIMATE BORING LOCATION

IB-# INDICATES APPROXIMATE INFILTRATION BORING LOCATION

TP-# INDICATES APPROXIMATE TEST PIT LOCATION

SRI-# INDICATES APPROXIMATE SINGLE RING LOCATION

BASE PLAN PROVIDED BY STONEFIELD ENGINEERING & DESIGN

EARTH ENGINEERING INCORPORATED
Geotechnical Engineers & Geologists
403 Commerce Lane
West Berlin, NJ 08091
(856)768-1001 FAX(856)768-1144

# TESTING LOCATION PLAN

PREPARED FOR

## ONE SCHOOL GLOBAL FACILITY

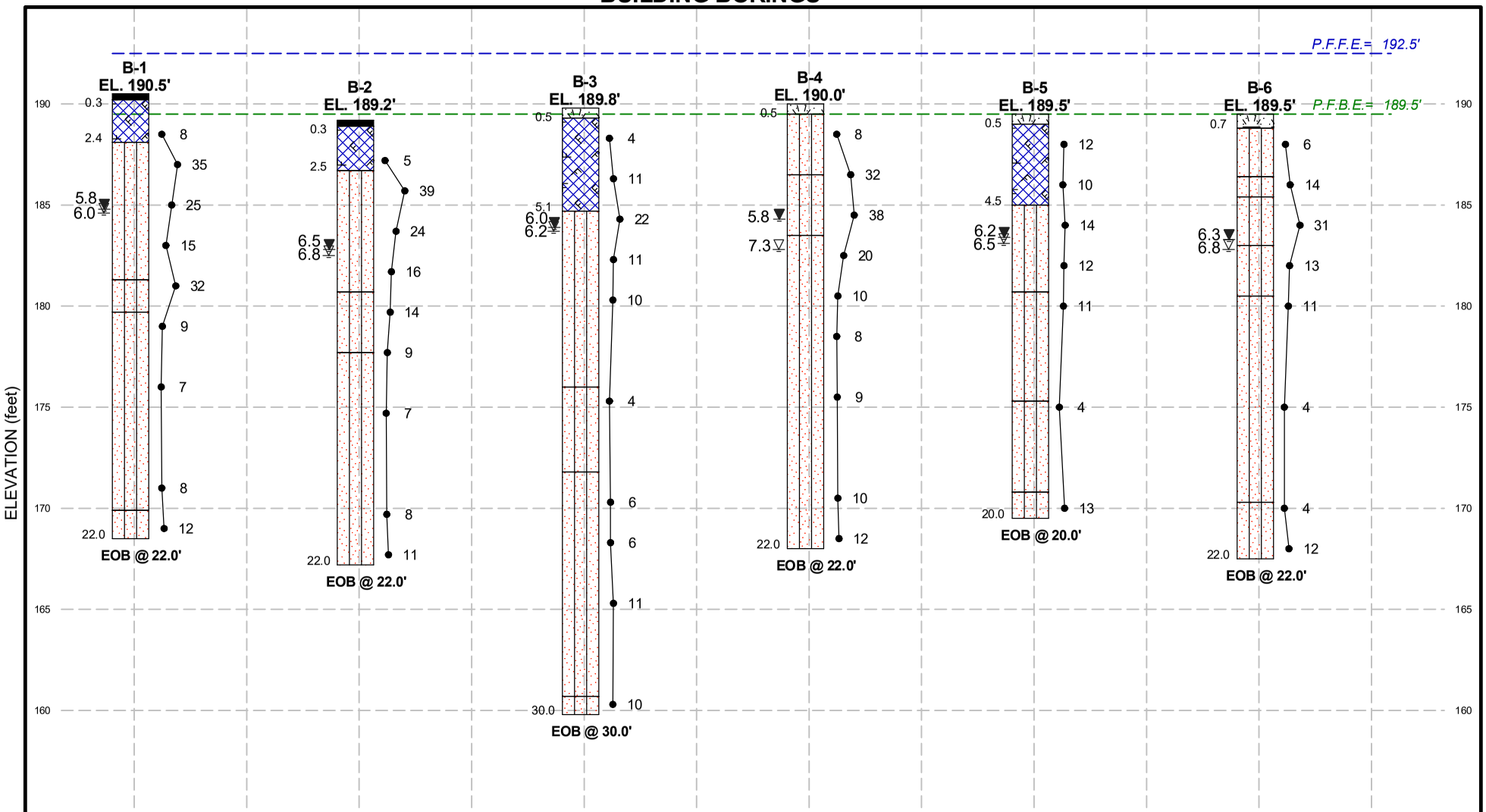
PEQUANNOCK TOWNSHIP MORRIS COUNTY NEW JERSEY

| Scale: | Date: | Drawn By: | Checked By: |
|---|---|---|---|
| NTS | 2/13/23 | CL | DD |

Drawing Number: 35702.J0-A-101

Approved By: TBL

# BUILDING BORINGS




## Lithology Graphics

- Asphalt
- Topsoil
- FILL - Dark Brown to Light Brown to Brownish Yellow Sandy SILT (SANDY LOAM) Trace to Little Gravel
- Stratum I - Brown to Dark Brown to Gray to Reddish Brown Silty SAND (LOAMY SAND) Trace to Little Gravel

EOB = End of Boring

▽ Initial Groundwater Level

▼ Subsequent Groundwater Level

*P.F.F.E.= Proposed Finished Floor Elevation*

*P.F.B.E.= Proposed Footing Bottom Elevation*

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## BORING PROFILES

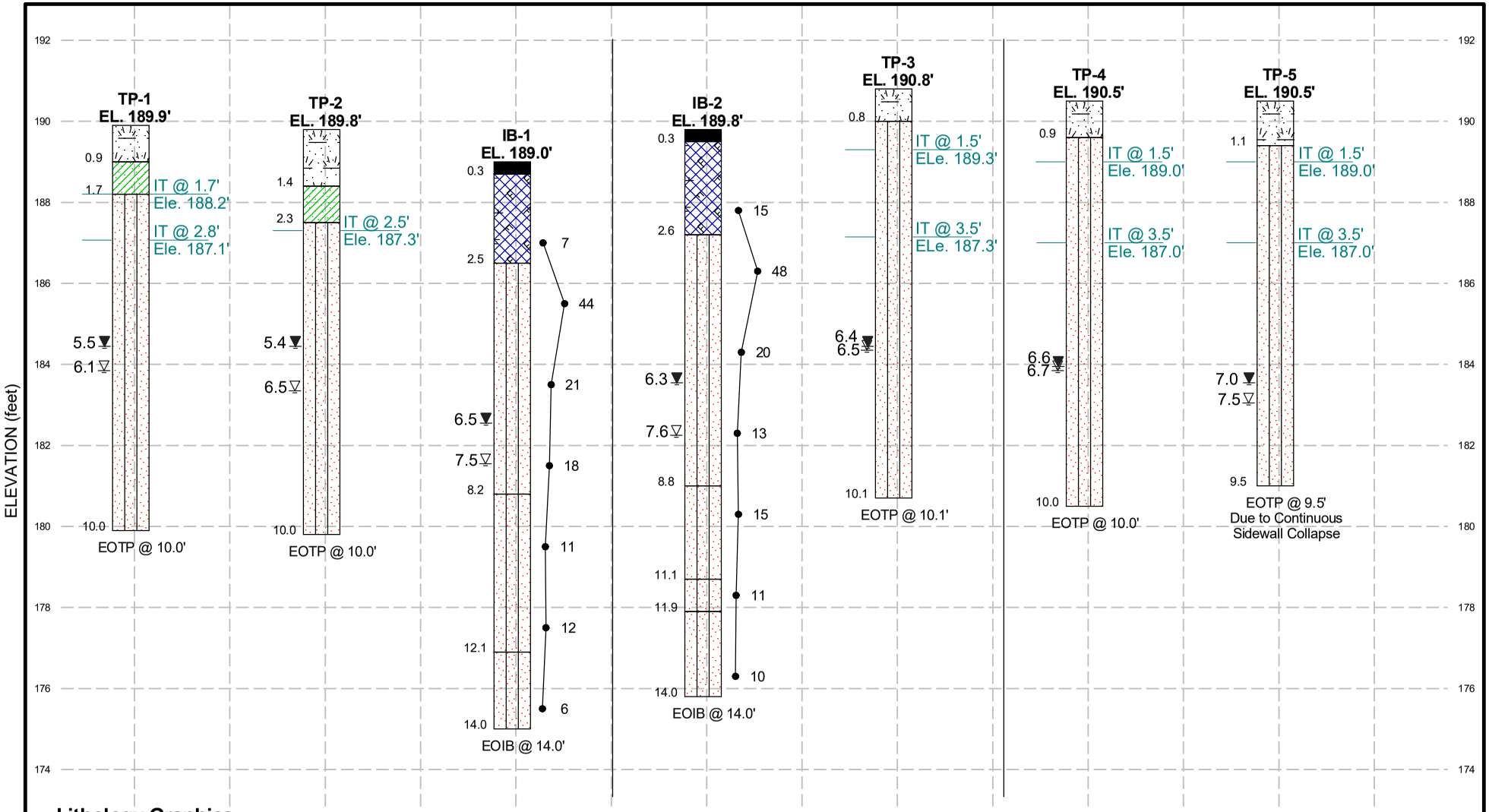
PREPARED FOR

## ONE SCHOOL GLOBAL FACILITY

PEQUANNOCK TOWNSHIP, MORRIS COUNTY, NEW JERSEY

| Project Number: 35702.J0 | Date: 2/24/2023 | SHEET: 1 |
|---|---|---|

# PROPOSED BASIN TEST LOCATIONS




## Lithology Graphics

- Topsoil
- Asphalt
- REMNANT Topsoil
- FILL - Dark Brown to Light Brown to Brownish Yellow Sandy SILT (SANDY LOAM) Trace to Little Gravel
- Stratum I - Brown to Dark Brown to Gray to Reddish Brown Silty SAND (LOAMY SAND) Trace to Little Gravel

EOIB = End of Infiltration Boring
EOTP = End of Test Pit
IT = Infiltration Test

▽ Initial Groundwater Level
▼ Subsequent Groundwater Level

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## TESTING PROFILES
PREPARED FOR
## ONE SCHOOL GLOBAL FACILITY
PEAQUANNOCK TOWNSHIP, MORRIS COUNTY, NEW JERSEY

| Project Number: 35702.J0 | Date: 2/24/2023 | SHEET: 2 |
|---|---|---|

**EARTH ENGINEERING INCORPORATED**
*Geotechnical Engineers & Geologists*

# *BORING LOG*

BORING NO. B-1
SHEET 1 OF 1
DATE: START 2/16/23
END 2/16/23
SURFACE ELEV. (FT) 190.5

PROJECT NAME One School Global Facility
PROJECT LOCATION Pequannock Township, Morris County, New Jersey
PROJECT NUMBER 35702.J0
INSPECTOR NAME B. Reeder
EQUIPMENT USED Truck Mounted Drill Rig
DRILLER NAME/COMPANY N. Sulmone/F.M.&W. Drilling Inc.
DRILLING METHODS Hollow Stem Augers/2.0" Diameter Split Spoon Samplers
AUGER: SIZE: ____ ; AUGER DEPTH: ____ ; WATER: DEPTH: 6.0' TIME: 0.25 Hrs. DATE: 2/16/2023
CHECKED BY: C. Lang ; DATE: 2/22/2023 DEPTH: 5.8' TIME: 1.0 Hrs. DATE: 2/16/2023
NOT ENCOUNTERED ☐

| DEPTH (FT) | SAMPLE NO./ TYPE/CORE RUN | BLOWS/0.5 FT. ON SAMPLER | RECOVERY (Ft.) | RECOVERY(%) / RQD (%) | USCS / AASHTO | $H_2O$ CONTENT | GRAPHIC LOG | DESCRIPTION | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | DEPTH ELEVATION | |
| 0.5 | | | | | | | | 0.3 Asphalt (4") 190.2 | |
| 2.0 | S-1 | 2 4 4 | 1.0' | - | | M | | FILL - Light Brown Silty SAND, Trace Gravel | |
| | S-2 | 10 15 20 16 | 1.5' | - | | M | | 2.4 188.1 Stratum I - Light Brown to Gray Silty SAND, Little Gravel | |
| 4.0 | S-3 | 11 14 11 11 | 1.5' | - | | M | | | |
| 6.0 | S-4 | 8 7 8 7 | 1.5' | - | | W | | | Subsequent Wet @ 6.0' Initial Wet @ 6.0' |
| 8.0 | S-5 | 6 18 14 8 | 1.5' | - | | W | | 9.2 181.3 Stratum I - Black Silty SAND, Trace Rock Fragments | |
| 10.0 | S-6 | 6 5 4 4 | 1.5' | - | | W | | 10.8 179.7 Stratum I - Brown Silty SAND | Drilling Fluid Introduced @ 10.0' |
| 12.0 | | | | | | | | | |
| 13.0 | S-7 | 4 3 4 5 | 1.8' | - | | W | | | |
| 15.0 | | | | | | | | | |
| 18.0 | S-8 | 3 4 4 5 | 1.8' | - | | W | | | Sandy SILT Interlayer @ 19.2' - 19.4' |
| 20.0 | S-9 | 5 6 6 6 | 1.8' | - | | W | | 20.6 169.9 Stratum I - Gray Sandy SILT | |
| 22.0 | | | | | | | | 22.0 168.5 | End of Boring (EOB) @ 22.0' Boring Caved to 5.8', Wet |

** D = DRY, M = MOIST, W = WET

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*Geotechnical Engineers & Geologists*

# *BORING LOG*

BORING NO. B-2
SHEET 1 OF 1
DATE: START 2/17/23
END 2/17/23
SURFACE ELEV. (FT) 189.2

PROJECT NAME One School Global Facility
PROJECT LOCATION Pequannock Township, Morris County, New Jersey
PROJECT NUMBER 35702.J0
INSPECTOR NAME B. Reeder
EQUIPMENT USED Truck Mounted Drill Rig
DRILLER NAME/COMPANY N. Sulmone/F.M.&W. Drilling Inc.
DRILLING METHODS Hollow Stem Augers/2.0" Diameter Split Spoon Samplers
AUGER: SIZE: ____ ; AUGER DEPTH: ____ ; WATER: DEPTH: 6.8' TIME: 0.25 Hrs. DATE: 2/17/2023
CHECKED BY: C. Lang ; DATE: 2/22/2023 DEPTH: 6.5' TIME: 1.0 Hrs. DATE: 2/17/2023
NOT ENCOUNTERED ☐

| DEPTH (FT) | SAMPLE NO./ TYPE/CORE RUN | BLOWS/0.5 FT. ON SAMPLER | RECOVERY (Ft.) | RECOVERY(%) / RQD (%) | USCS / AASHTO | $H_2O$ CONTENT | GRAPHIC LOG | DESCRIPTION | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | DEPTH ELEVATION | |
| 0.5 | | | | | | | | 0.3 Asphalt (4") 188.9 | |
| 2.0 | S-1 | 2 3 2 | 1.0' | - | | M | | FILL - Dark Gray Sandy SILT, Trace Gravel | |
| | S-2 | 12 18 21 25 | 1.5' | - | | M | | 2.5 186.7 Stratum I - Light Brown Silty SAND, Little Gravel | |
| 4.0 | S-3 | 12 12 12 11 | 1.5' | - | | M | | | |
| 6.0 | S-4 | 13 8 8 10 | 1.8' | - | | W | | | Subsequent Wet @ 6.5' Initial Wet @ 6.8' |
| 8.0 | S-5 | 4 8 6 5 | 1.8' | - | | W | | 8.5 180.7 Stratum I - Reddish Brown Silty SAND, Little Gravel | |
| 10.0 | S-6 | 5 5 4 4 | 1.5' | - | | W | | | Drilling Fluid Introduced @ 10.0' |
| 12.0 | | | | | | | | 11.5 177.7 Stratum I - Brown Silty SAND, Trace Gravel | |
| 13.0 | S-7 | 5 3 4 4 | 2.0' | - | | W | | | |
| 15.0 | | | | | | | | | |
| 18.0 | S-8 | 3 4 4 4 | 2.0' | - | | W | | | |
| 20.0 | S-9 | 4 5 6 7 | 2.0' | - | | W | | | |
| 22.0 | | | | | | | | 22.0 167.2 | EOB @ 22.0' Boring Caved to 6.5', Wet |

** D = DRY, M = MOIST, W = WET

**EARTH ENGINEERING INCORPORATED**
*Geotechnical Engineers & Geologists*

# BORING LOG

BORING NO. B-3
SHEET 1 OF 1
DATE: START 2/16/23
END 2/16/23
SURFACE ELEV. (FT) 189.8

PROJECT NAME One School Global Facility
PROJECT LOCATION Pequannock Township, Morris County, New Jersey
PROJECT NUMBER 35702.J0
INSPECTOR NAME B. Reeder
EQUIPMENT USED Truck Mounted Drill Rig
DRILLER NAME/COMPANY N. Sulmone/F.M.&W. Drilling Inc.
DRILLING METHODS Hollow Stem Augers/2.0" Diameter Split Spoon Samplers
AUGER: SIZE: ____ ; AUGER DEPTH: ____ ; WATER: DEPTH: 6.2' TIME: 0.25 Hrs. DATE: 2/16/2023
CHECKED BY: C. Lang ; DATE: 2/22/2023 DEPTH: 6.0' TIME: 1.0 Hrs. DATE: 2/16/2023
NOT ENCOUNTERED ☐

| DEPTH (FT) | SAMPLE NO./ TYPE/CORE RUN | BLOWS/0.5 FT. ON SAMPLER | RECOVERY (Ft.) | RECOVERY(%) / RQD (%) | USCS / AASHTO | $H_2O$ CONTENT | GRAPHIC LOG | DESCRIPTION | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | DEPTH ELEVATION | |
| 0.0 | S-1 | 2 2 2 3 | 0.5' | - | | M | | 0.5 Topsoil (6") 189.3 | |
| 2.0 | | | | | | | | FILL - Light Brown Silty SAND, Trace Gravel | |
| | S-2 | 3 5 6 11 | 1.0' | - | | M | | | |
| 4.0 | | | | | | | | | |
| | S-3 | 16 12 10 10 | 1.0' | - | | M | | 5.1 184.7 | |
| 6.0 | | | | | | | | Stratum I - Brownish Gray Silty SAND, Little Gravel | |
| | S-4 | 5 5 6 6 | 1.2' | - | | W | | | Subsequent Wet @ 6.0' Initial Wet @ 6.2' |
| 8.0 | | | | | | | | | |
| | S-5 | 5 5 5 5 | 1.2' | - | | W | | | |
| 10.0 | | | | | | | | | |
| | | | | | | | | | |
| 13.0 | | | | | | | | | |
| | S-6 | 5 2 2 2 | 1.8' | - | | W | | 13.8 176.0 | Drilling Fluid Introduced @ 13.0' |
| 15.0 | | | | | | | | Stratum I - Brown Silty SAND | |
| | | | | | | | | | |
| 18.0 | | | | | | | | 18.0 171.8 | |
| | S-7 | 2 3 3 4 | 1.8' | - | | W | | Stratum I - Brown Silty SAND, Trace Gravel | |
| 20.0 | | | | | | | | | |
| | S-8 | 2 3 3 4 | 1.8' | - | | W | | | |
| 22.0 | | | | | | | | | |
| 23.0 | | | | | | | | | |
| | S-9 | 4 5 6 6 | 1.8' | - | | W | | | |
| 25.0 | | | | | | | | | |
| | | | | | | | | | |
| 28.0 | | | | | | | | | |
| | S-10 | 6 5 5 5 | 1.8' | - | | W | | 29.1 160.7 | |
| 30.0 | | | | | | | | Stratum I - Gray Sandy SILT 30.0 159.8 | EOB @ 30.0' Boring Caved to 6.0', Wet |

** D = DRY, M = MOIST, W = WET

**EARTH ENGINEERING INCORPORATED**
*Geotechnical Engineers & Geologists*

# *BORING LOG*

BORING NO. **B-4**
SHEET **1** OF **1**
DATE: START **2/16/23**
END **2/16/23**
SURFACE ELEV. (FT) **190.0**

PROJECT NAME **One School Global Facility**
PROJECT LOCATION **Pequannock Township, Morris County, New Jersey**
PROJECT NUMBER **35702.J0**
INSPECTOR NAME **B. Reeder**
EQUIPMENT USED **Truck Mounted Drill Rig**
DRILLER NAME/COMPANY **N. Sulmone/F.M.&W. Drilling Inc.**
DRILLING METHODS **Hollow Stem Augers/2.0" Diameter Split Spoon Samplers**
AUGER: SIZE: _____ ; AUGER DEPTH: _____ ; WATER: DEPTH: **7.3'** TIME: **0.25 Hrs.** DATE: **2/16/2023**
CHECKED BY: **C. Lang** ; DATE: **2/22/2023** DEPTH: **5.8'** TIME: **1.0 Hrs.** DATE: **2/16/2023**
NOT ENCOUNTERED ☐

| DEPTH (FT) | SAMPLE NO./ TYPE/CORE RUN | BLOWS/0.5 FT. ON SAMPLER | RECOVERY (Ft.) | RECOVERY(%) / RQD (%) | USCS / AASHTO | $H_2O$ CONTENT | GRAPHIC LOG | DESCRIPTION | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | | | | | | | | DEPTH 0.5 Topsoil (6") ELEVATION 189.5 | |
| | S-1 | 2 4 4 5 | 1.0' | - | | M | | Stratum I - Brown Sandy SILT | |
| 2.0 | | | | | | | | | |
| | S-2 | 8 12 20 20 | 1.5' | - | | M | | 3.5 186.5 | |
| 4.0 | | | | | | | | Stratum I - Light Brown Silty SAND, Little Gravel | |
| | S-3 | 10 22 16 17 | 1.5' | - | | M | | | |
| 6.0 | | | | | | | | 6.5 183.5 | Subsequent Wet @ 5.8' |
| | S-4 | 8 10 10 10 | 1.5' | - | | M | | Stratum I - Brown Silty SAND, Little Gravel | |
| 8.0 | | | | | | | | | Soil Mottling @ 7.1' |
| | S-5 | 7 5 5 5 | 1.5' | - | | W | | | Initial Wet @ 7.3' |
| 10.0 | | | | | | | | | |
| | S-6 | 5 4 4 5 | 1.5' | - | | W | | | Drilling Fluid Introduced @ 10.0' |
| 12.0 | | | | | | | | | |
| 13.0 | | | | | | | | | |
| | S-7 | 5 5 4 6 | 1.8' | - | | W | | | |
| 15.0 | | | | | | | | | |
| 18.0 | | | | | | | | | |
| | S-8 | 3 5 5 6 | 1.8' | - | | W | | | |
| 20.0 | | | | | | | | | |
| | S-9 | 5 6 6 5 | 1.8' | - | | W | | | |
| 22.0 | | | | | | | | 22.0 168.0 | |
| | | | | | | | | | EOB @ 22.0' |
| | | | | | | | | | Boring Caved to 5.8', Wet |

** D = DRY, M = MOIST, W = WET

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# *BORING LOG*

BORING NO. B-5
SHEET 1 OF 1
DATE: START 2/16/23
END 2/16/23
SURFACE ELEV. (FT) 189.5

PROJECT NAME One School Global Facility
PROJECT LOCATION Pequannock Township, Morris County, New Jersey
PROJECT NUMBER 35702.J0
INSPECTOR NAME B. Reeder
EQUIPMENT USED Truck Mounted Drill Rig
DRILLER NAME/COMPANY N. Sulmone/F.M.&W. Drilling Inc.
DRILLING METHODS Hollow Stem Augers/2.0" Diameter Split Spoon Samplers
AUGER: SIZE: ____ ; AUGER DEPTH: ____ ; WATER: DEPTH: 6.5' TIME: 0.25 Hrs. DATE: 2/16/2023
CHECKED BY: C. Lang ; DATE: 2/22/2023 DEPTH: 6.2' TIME: 1.0 Hrs. DATE: 2/16/2023
NOT ENCOUNTERED ☐

| DEPTH (FT) | SAMPLE NO./ TYPE/CORE RUN | BLOWS/0.5 FT. ON SAMPLER | RECOVERY (Ft.) | RECOVERY(%) / RQD (%) | USCS / AASHTO | $H_2O$ CONTENT | GRAPHIC LOG | DESCRIPTION (DEPTH / ELEVATION) | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | S-1 | 2 5 7 5 | 0.5' | - | | M | | 0.5 Topsoil (6") 189.0<br>FILL - Brownish Yellow Sandy SILT, Little Gravel | |
| 2.0 | S-2 | 4 3 7 20 | 0.8' | - | | M | | | |
| 4.0 | S-3 | 13 8 6 5 | 1.2' | - | | M | | 4.5 185.0<br>Stratum I - Brown Silty SAND, Trace Gravel | |
| 6.0 | S-4 | 5 6 6 8 | 1.5' | - | | W | | | Subsequent Wet @ 6.2'<br>Initial Wet @ 6.5' |
| 8.0 | S-5 | 7 6 5 4 | 1.5' | - | | W | | 8.8 180.7<br>Stratum I - Light Brown Silty SAND, Little Gravel | |
| 10.0 | | | | | | | | | |
| 13.0 | S-6 | 3 2 2 3 | 1.5' | - | | W | | 14.2 175.3<br>Stratum I - Grayish Brown Silty SAND | |
| 15.0 | | | | | | | | | |
| 18.0 | S-7 | 3 6 7 8 | 1.5' | - | | W | | 18.7 170.8<br>Stratum I - Gray Silty SAND | |
| 20.0 | | | | | | | | 20.0 169.5 | EOB @ 20.0' |
| | | | | | | | | | Boring Caved to 6.2', Wet |

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# *BORING LOG*

BORING NO. B-6
SHEET 1 OF 1
DATE: START 2/16/23
END 2/16/23
SURFACE ELEV. (FT) 189.5

PROJECT NAME One School Global Facility
PROJECT LOCATION Pequannock Township, Morris County, New Jersey
PROJECT NUMBER 35702.J0
INSPECTOR NAME B. Reeder
EQUIPMENT USED Truck Mounted Drill Rig
DRILLER NAME/COMPANY N. Sulmone/F.M.&W. Drilling Inc.
DRILLING METHODS Hollow Stem Augers/2.0" Diameter Split Spoon Samplers
AUGER: SIZE: ____ ; AUGER DEPTH: ____ ; WATER: DEPTH: 6.8' TIME: 0.25 Hrs. DATE: 2/16/2023
CHECKED BY: C. Lang ; DATE: 2/22/2023 DEPTH: 6.3' TIME: 1.0 Hrs. DATE: 2/16/2023
NOT ENCOUNTERED ☐

| DEPTH (FT) | SAMPLE NO./ TYPE/CORE RUN | BLOWS/0.5 FT. ON SAMPLER | RECOVERY (Ft.) | RECOVERY(%) / RQD (%) | USCS / AASHTO | $H_2O$ CONTENT | GRAPHIC LOG | DESCRIPTION (DEPTH / ELEVATION) | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | S-1 | 2 3 3 5 | 1.6' | - | | M | | 0.7 Topsoil (8") 188.8<br>Stratum I - Light Brown Sandy SILT | |
| 2.0 | S-2 | 6 7 7 9 | 1.2' | - | | M | | 3.1 186.4<br>Stratum I - Reddish Yellow and Gray Sandy SILT | |
| 4.0 | S-3 | 10 16 15 12 | 1.2' | - | | M | | 4.1 185.4<br>Stratum I - Brownish Gray Silty SAND, Some Gravel | |
| 6.0 | S-4 | 8 6 7 6 | 1.6' | - | | W | | 6.5 183.0<br>Stratum I - Brown Silty SAND | Subsequent Wet @ 6.3'<br>Initial Wet @ 6.8' |
| 8.0 | S-5 | 3 5 6 4 | 1.6' | - | | W | | 9.0 180.5<br>Stratum I - Brown Silty SAND | |
| 10.0 | | | | | | | | | |
| 13.0 | S-6 | 3 2 2 3 | 1.3' | - | | W | | | |
| 15.0 | | | | | | | | | |
| 18.0 | S-7 | 2 2 2 2 | 1.5' | - | | W | | 19.2 170.3<br>Stratum - Brown Silty SAND, Trace Gravel | |
| 20.0 | S-8 | 4 5 7 6 | 1.5' | - | | W | | 22.0 167.5 | End of Boring (EOB) @ 22.0'<br>Boring Caved to 6.3', Wet |
| 22.0 | | | | | | | | | |

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# *BORING LOG*

BORING NO. IB-1
SHEET 1 OF 1
DATE: START 2/17/23
END 2/17/23
SURFACE ELEV. (FT) 189.0

PROJECT NAME One School Global Facility
PROJECT LOCATION Peaquannock Township, Morris County, New Jersey
PROJECT NUMBER 35702.J0
INSPECTOR NAME B. Reeder
EQUIPMENT USED Truck Mounted Drill Rig
DRILLER NAME/COMPANY N. Sulmone/F.M.&W. Drilling Inc.
DRILLING METHODS Hollow Stem Augers/3.0" Diameter Split Spoon Samplers
AUGER: SIZE: ____ ; AUGER DEPTH: ____ ; WATER: DEPTH: 7.5' TIME: 0.25 hrs. DATE: 2/17/2023
CHECKED BY: ____ ; DATE: ____ DEPTH: 6.5' TIME: 1.0 hrs. DATE: 2/17/2023
NOT ENCOUNTERED ☐

| DEPTH (FT) | SAMPLE NO./ TYPE/CORE RUN | BLOWS/0.5 FT. ON SAMPLER | RECOVERY (Ft.) | RECOVERY(%) / RQD (%) | USCS / AASHTO | $H_2O$ CONTENT | GRAPHIC LOG | DESCRIPTION | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | DEPTH 0.3 Asphalt (4") ELEVATION 188.7 | |
| 0.5 | S-1 | 2<br>3<br>4 | 1.0' | - | | M | | FILL - Yellowish Brown Sandy LOAM | Two (2) Auger Probes were Performed Adjacent to IB-1 and Advanced to the Tube Permeameter Sample Depths to Extract Replicate Soil Samples |
| 2.0 | S-2 | 19<br>22<br>22<br>15 | 1.5' | - | | M | | 2.5 186.5<br>Stratum I - Brown and Gray Loamy SAND, Little Gravel | |
| 4.0 | S-3 | 11<br>11<br>10<br>11 | 1.5' | - | | M | | | Tube Permeameter Sample @ 4'-6' |
| 6.0 | S-4 | 10<br>8<br>10<br>8 | 1.5' | - | | W | | | Subsequent Wet @ 6.5'<br>Initial Wet @ 7.5' |
| 8.0 | S-5 | 6<br>5<br>6<br>7 | 1.5' | - | | W | | 8.2 180.8<br>Stratum I - Yellowish Brown Loamy SAND, Little Gravel | |
| 10.0 | S-6 | 4<br>6<br>6<br>5 | 1.8' | - | | W | | | |
| 12.0 | S-7 | 5<br>3<br>3<br>4 | 2.0' | - | | W | | 12.1 176.9<br>Stratum I - Grayish Brown Loamy SAND, Trace Gravel | |
| 14.0 | | | | | | | | 14.0 175.0 | End of Boring (EOB) @ 14.0'<br>Boring Caved to 6.5', Wet |

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# *BORING LOG*

BORING NO. IB-2
SHEET 1 OF 1
DATE: START 2/17/23
END 2/17/23
SURFACE ELEV. (FT) 189.8

PROJECT NAME One School Global Facility
PROJECT LOCATION Peaquannock Township, Morris County, New Jersey
PROJECT NUMBER 35702.J0
INSPECTOR NAME B. Reeder
EQUIPMENT USED Truck Mounted Drill Rig
DRILLER NAME/COMPANY N. Sulmone/F.M.&W. Drilling Inc.
DRILLING METHODS Hollow Stem Augers/3.0" Diameter Split Spoon Samplers
AUGER: SIZE: ; AUGER DEPTH: ; WATER: DEPTH: 7.6' TIME: 0.25 hrs. DATE: 2/17/2023
CHECKED BY: ; DATE: DEPTH: 6.3' TIME: 1.0 hrs. DATE: 2/17/2023
NOT ENCOUNTERED ☐

| DEPTH (FT) | SAMPLE NO./ TYPE/CORE RUN | BLOWS/0.5 FT. ON SAMPLER | RECOVERY (Ft.) | RECOVERY(%) / RQD (%) | USCS / AASHTO | $H_2O$ CONTENT | GRAPHIC LOG | DESCRIPTION | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | DEPTH ELEVATION | |
| 0.5 | | | | | | | | 0.3 Asphalt (4") 189.5 | |
| | S-1 | 4<br>5<br>10 | 1.0' | - | | M | | FILL - Yellowish Brown Sandy LOAM | Two (2) Auger Probes were Performed Adjacent to IB-2 and Advanced to the Tube Permeameter Sample Depths to Extract Replicate Soil Samples |
| 2.0 | | | | | | | | 2.6 187.2 | |
| | S-2 | 22<br>25<br>23<br>20 | 1.5' | - | | M | | Stratum I - Light Brown and Gray Loamy SAND, Little Gravel | Tube Permeameter Sample @ 2.6'-4' |
| 4.0 | | | | | | | | | |
| | S-3 | 13<br>12<br>8<br>8 | 1.5' | - | | M | | | |
| 6.0 | | | | | | | | | |
| | S-4 | 5<br>7<br>6<br>11 | 1.5' | - | | W | | | Subsequent Wet @ 6.3' |
| 8.0 | | | | | | | | | Initial Wet @ 7.6' |
| | S-5 | 9<br>8<br>7<br>4 | 1.5' | - | | W | | 8.8 181.0<br>Stratum I - Reddish Brown Loamy SAND, Trace Gravel | |
| 10.0 | | | | | | | | | |
| | S-6 | 9<br>5<br>6<br>5 | 1.5' | - | | W | | 11.1 178.7<br>Stratum I - Light Brown Sandy LOAM | |
| 12.0 | | | | | | | | 11.9 177.9<br>Stratum I - Light Brown Loamy SAND | |
| | S-7 | 6<br>5<br>5<br>6 | 2.0' | - | | W | | | |
| 14.0 | | | | | | | | 14.0 175.8 | |
| | | | | | | | | | End of Boring (EOB) @ 14.0'<br>Boring Caved to 6.3', Wet |

** D = DRY, M = MOIST, W = WET

# Soil Description Log

**Test Pit Location:** TP-1
**Surface Elevation:** 189.9'
**Equipment Used:** *Bobcat EGO Excavator*
**Excavating Company:** Neighbor Property Management, LLC
**Total Depth:** 10.0'

**Ground Cover / Land Use:** Grass Covered
**Limiting Zone:** Fine Grained Soil @ 0.9' - 1.7', Soil Mottling @ 5.0', Groundwater @ 5.5'
**Initial Water Depth:** 6.1' **Time:** 0.25 Hrs **Date:** 2/21/2023
**Subsequent Water Depth:** 5.5' **Time:** 4.00 Hrs **Date:** 2/21/2023
**Additional Notes:** SRI Test @ 1.7' (El. 188.2') and 2.8' (El. 187.1')

| | Profile Description | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Depth (ft.) | Boundary | Matrix Color | Redox Mottles | Mottle Color | Texture | Structure | Consistence | Remarks |
| 1 | 0.0 - 0.9 | Clear Smooth | 10YR 3/3 Dark Brown | --- | --- | Sandy Loam | Granular | Very Friable | Topsoil, Many Fine to Medium Roots |
| 2 | 0.9 - 1.7 | Clear Smooth | 10YR 3/1 Very Dark Gray | --- | --- | Sandy Loam | Granular | Very Friable | Remanent Topsoil, Many Fine to Medium Roots |
| 3 | 1.7 - 2.8 | Gradual Smooth | 10YR 5/4 Yellowish Brown | --- | --- | Very Gravelly Sand | Subangular Blocky | Friable | 15% Gravel |
| 4 | 2.8 - 4.2 | Gradual Smooth | 10YR 5/3 Brown | --- | --- | Gravelly Loamy Sand | Single Grain | Loose | 30% Gravel |
| 5 | 4.2 - 8.2 | Gradual Smooth | 10YR 5/3 Brown | Few Fine Faint | 10YR 6/3 Pale Brown | Very Gravelly Sand | Single Grain | Loose | 50% Gravel, Soil Mottling @ 5.0', Wet @ 5.5' |
| 6 | 8.2 - 10.0 | --- | 7.5YR 5/6 Strong Brown | Few Common Faint | 10YR 4/4 Dark Yellowish Brown | Gravelly Sand | Single Grain | Loose | 15% Gravel, Wet |
| 7 | | | | | | | | | EOTP @ 10.0' |
| 8 | | | | | | | | | |

EARTH ENGINEERING INCORPORATED
*Geotechnical Engineers & Geologists*
403 Commerce Lane, West Berlin, NJ 08091
PHONE 856-768-1001 FAX 856-778-1144

**Project Name:** One School Global Facility
**Project Number:** 35702.J0
**Date of Testing:** 2/21/2023
**EEI Representative:** B. Reeder
**Compiled by:** K. Cease
**Date Compiled:** 2/22/2023
**Sheet Number:** 1

# Soil Description Log

**Test Pit Location:** TP-2
**Surface Elevation:** 189.8'
**Equipment Used:** *Bobcat EGO Excavator*
**Excavating Company:** Neighbor Property Management, LLC
**Total Depth:** 10.0'

**Ground Cover / Land Use:** Grass Covered
**Limiting Zone:** Fine Grained Soil @1.4' - 2.3', Soil Mottling @ 5.1', Groundwater @ 5.4'
**Initial Water Depth:** 6.5' **Time:** 0.25 Hrs **Date:** 2/21/2023
**Subsequent Water Depth:** 5.4' **Time:** 4.00 Hrs **Date:** 2/21/2023
**Additional Notes:** SRI Test @ 2.5' (El. 187.3')

| | Profile Description | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Depth (ft.) | Boundary | Matrix Color | Redox Mottles | Mottle Color | Texture | Structure | Consistence | Remarks |
| 1 | 0.0 - 1.4 | Abrupt Smooth | 10YR 3/3 Dark Brown | --- | --- | Loamy Sand | Granular | Very Friable | Topsoil, Fine to Medium Roots |
| 2 | 1.4 - 2.3 | Abrupt Smooth | 10YR 3/1 Very Dark Gray | --- | --- | Sandy Loam | Granular | Very Friable | Remanent Topsoil, Many Fine to Medium Roots |
| 3 | 2.3 - 4.5 | Gradual Smooth | 10YR 5/6 Yellowish Brown | --- | --- | Very Gravelly Sand | Subangular Blocky | Friable | 10% Gravel |
| 5 | 4.5 - 7.1 | Gradual Smooth | 10YR 5/3 Brown | Few Fine Faint | 10YR 6/4 Light Yellowish Brown | Gravelly Sand | Single Grain | Loose | 30% Gravel, Soil Mottling @ 5.1', Wet @ 5.4' |
| 6 | 7.1 - 10.0 | --- | 10YR 6/2 Light Brownish Gray | Few Fine Faint | 10YR 6/3 Pale Brown | Very Gravelly Sand | Single Grain | Loose | 50% Gravel, Wet, Continuous Sidewall Collapse |
| 7 | | | | | | | | | EOTP @ 10.0' |
| 8 | | | | | | | | | |

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**Project Name:** One School Global Facility
**Project Number:** 35702.J0
**Date of Testing:** 2/21/2023
**EEI Representative:** B. Reeder
**Compiled by:** K. Cease
**Date Compiled:** 2/22/2023
**Sheet Number:** 1

# Soil Description Log

**Test Pit Location:** TP-3
**Surface Elevation:** 190.8'
**Equipment Used:** *Bobcat EGO R2 Series*
**Excavating Company:** Neighbor Property Management, LLC
**Total Depth:** 10.1'

**Ground Cover / Land Use:** Grass Covered
**Limiting Zone:** Soil Mottling @ 5.7', Groundwater @ 6.4'
**Initial Water Depth:** 6.5' **Time:** 0.25 Hrs **Date:** 2/21/2023
**Subsequent Water Depth:** 6.4' **Time:** 4.00 Hrs **Date:** 2/21/2023
**Additional Notes:** SRI Test @ 1.5' (El. 189.3') and 3.5' (El. 187.3')

| | Profile Description | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Depth (ft.) | Boundary | Matrix Color | Redox Mottles | Mottle Color | Texture | Structure | Consistence | Remarks |
| 1 | 0.0 - 0.8 | Clear Smooth | 10YR 3/3 Dark Brown | --- | --- | Loamy Sand | Granular | Very Friable | Topsoil |
| 2 | 0.8 - 1.8 | Gradual Smooth | 10YR 5/4 Yellowish Brown | --- | --- | Gravelly Sand | Single Grain | Very Friable | 15% Gravel, Medium Dense, Moist, Easy Excavation |
| 3 | 1.8 - 3.7 | Clear Smooth | 10YR 5/3 Brown | --- | --- | Very Gravelly Sand | Subangular Blocky | Very Friable | 50% Gravel, Medium Dense, Moist, Easy Excavation |
| 4 | 3.7 - 7.3 | Clear Smooth | 7.5YR 3/1 Very Dark Gray | Few Fine Faint | 10YR 5/2 Grayish Brown | Very Gravelly Loamy Sand | Subangular Blocky | Very Friable | 50% Gravel, Soil Mottling @ 5.7', Wet @ 6.4', Moderate Excavation |
| 5 | 7.3 - 10.1 | --- | 5YR 4/3 Reddish Brown | Few Fine Faint | 7.5YR 6/4 Light Brown | Very Gravelly Loamy Sand | Subangular Blocky | Very Friable | 50% Gravel, Wet, Easy Excavation |
| 6 | | | | | | | | | EOTP @ 10.0' |
| 7 | | | | | | | | | |
| 8 | | | | | | | | | |

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**Project Name:** One School Global Facility
**Project Number:** 35702.J0
**Date of Testing:** 2/21/2023
**EEI Representative:** B. Reeder
**Compiled by:** K. Cease
**Date Compiled:** 2/22/2023
**Sheet Number:** 1

# Soil Description Log

**Test Pit Location:** TP-4
**Surface Elevation:** 190.5'
**Equipment Used:** *Bobcat EGO R2 Series*
**Excavating Company:** Neighbor Property Management, LLC
**Total Depth:** 10.0'

**Ground Cover / Land Use:** Grass Covered
**Limiting Zone:** Fine Grained Soil @ 0.9' - 2.0', Soil Mottling @ 6.1', Groundwater @ 6.6'
**Initial Water Depth:** 6.7' **Time:** 0.25 Hrs **Date:** 2/21/2023
**Subsequent Water Depth:** 6.6' **Time:** 4.00 Hrs **Date:** 2/21/2023
**Additional Notes:** SRI Test @ 1.5' (El. 189.0') and 3.5' (El. 187.0')

| | Profile Description | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Depth (ft.) | Boundary | Matrix Color | Redox Mottles | Mottle Color | Texture | Structure | Consistence | Remarks |
| 1 | 0.0 - 0.9 | Clear Smooth | 10YR 3/3 Dark Brown | --- | --- | Loamy Sand | Granular | Very Friable | Topsoil |
| 2 | 0.9 - 2.0 | Clear Smooth | 10YR 5/4 Yellowish Brown | --- | --- | Gravelly Sandy Loam | Single Grain | Very Friable | 15% Gravel, Medium Dense, Moist, Easy Excavation |
| 3 | 2.0 - 6.1 | Gradual Smooth | 10YR 5/3 Brown | --- | --- | Very Gravelly Sand | Subangular Blocky | Very Friable | 50% Gravel, Medium Dense, Easy Excavation |
| 4 | 6.1 - 8.1 | Clear Smooth | 7.5YR 3/1 Very Dark Gray | Few Fine Faint | 10YR 5/2 Grayish Brown | Very Gravelly Loamy Sand | Subangular Blocky | Very Friable | Soil Mottling @ 6.1', Wet @ 6.6', 50% Gravel, Easy Excavation |
| 5 | 8.1 - 8.5 | Clear Smooth | 5YR 4/3 Reddish Brown | Few Fine Faint | 7.5YR 6/4 Light Brown | Very Gravelly Loamy Sand | Subangular Blocky | Very Friable | 50% Gravel, Wet, Easy Excavation |
| 6 | 8.5 - 10.0 | --- | 10YR 6/3 Pale Brown | Common Coarse Distinct | 7.5YR 6/4 Light Brown | Loamy Sand | Subangular Blocky | Very Friable | Wet, Easy Excavation |
| 7 | | | | | | | | | EOTP @ 10.0' |
| 8 | | | | | | | | | |

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**Project Name:** One School Global Facility
**Project Number:** 35702.J0
**Date of Testing:** 2/21/2023
**EEI Representative:** B. Reeder
**Compiled by:** K. Cease
**Date Compiled:** 2/22/2023
**Sheet Number:** 1

# Soil Description Log

**Test Pit Location:** TP-5
**Surface Elevation:** 190.5'
**Equipment Used:** *Bobcat EGO R2 Series*
**Excavating Company:** Neighbor Property Management, LLC
**Total Depth:** 9.5'

**Ground Cover / Land Use:** Grass Covered
**Limiting Zone:** Fine Grained Soil @ 1.1' - 2.2', Soil Mottling @ 6.3', Groundwater @ 7.0'
**Initial Water Depth:** 7.5' **Time:** 0.25 Hrs **Date:** 2/21/2023
**Subsequent Water Depth:** 7.0' **Time:** 4.00 Hrs **Date:** 2/21/2023
**Additional Notes:** SRI Test @ 1.5' (El. 189.0') and 3.5' (El. 187.0')

**Profile Description**

| | Depth (ft.) | Boundary | Matrix Color | Redox Mottles | Mottle Color | Texture | Structure | Consistence | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.0 - 1.1 | Clear Smooth | 10YR 3/3 Dark Brown | --- | --- | Loamy Sand | Granular | Very Friable | Topsoil, 50% Gravel |
| 2 | 1.1 - 2.2 | Gradual Smooth | 10YR 5/4 Yellowish Brown | --- | --- | Gravelly Sandy Loam | Single Grain | Very Friable | 15% Gravel, Moist, Easy Excavation |
| 3 | 2.2 - 9.5 | --- | 10YR 5/3 Brown | Few Fine Faint | 10YR 6/3 Pale Brown | Very Gravelly Sand | Subangular Blocky | Very Friable | 50% Gravel, Soil Mottling @ 6.3', Wet @ 7.0', Easy Excavation |
| 4 | | | | | | | | | EOTP @ 9.5' Due to Continuous Sidewall Collapse |
| 5 | | | | | | | | | |
| 6 | | | | | | | | | |
| 7 | | | | | | | | | |
| 8 | | | | | | | | | |

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**Project Name:** One School Global Facility
**Project Number:** 35702.J0
**Date of Testing:** 2/21/2023
**EEI Representative:** B. Reeder
**Compiled by:** K. Cease
**Date Compiled:** 2/22/2023
**Sheet Number:** 1

# TABLE 1A - Single Ring Infiltrometer Test Results Log

| Test Hole Number | Surface Elevation (ft.) | *Infiltration Depth (ft.) | Drop in Water during 60 min Presoak Period (in) | Elapsed Time for Water to Drop 1 inch | | | | | | | | Infiltration Rate | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Run 1 (min) | Run 2 (min) | Run 3 (min) | Run 4 (min) | Run 5 (min) | Run 6 (min) | Run 7 (min) | Run 8 (min) | Observed Infiltration Rate (in/hr) | Hydraulic Conductivity (in/hr) |
| IT-1A | 189.9 | 1.7 | >3 | 6.72 | 6.83 | 6.92 | 6.92 | 6.92 | 6.92 | | | 8.67 | 2.97 |
| IT-1B | 189.9 | 1.7 | >3 | 5.24 | 5.61 | 5.80 | 5.87 | 5.87 | 5.87 | | | 10.22 | 3.50 |
| IT-1C | 189.9 | 2.8 | >3 | 0.51 | 0.58 | 0.36 | 0.75 | 0.75 | 0.75 | 0.75 | | 80.00 | 27.39 |
| IT-1D | 189.9 | 2.8 | >3 | 0.57 | 0.64 | 0.75 | 0.81 | 0.81 | 0.81 | 0.81 | | 74.07 | 25.36 |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

* Infiltration depths were measured from existing site grades at the time of the investigation.

** Infiltration test depth field adjusted based on depth to limiting zone.

(1) Hydraulic conductivity presented as <1.00 in/hr due to an observed field infiltration rate of less than 1 in/hr as per New Jersey Stormwater BMP Manual (Updated 11/2020)

| Test Hole Number | Surface Elevation (ft.) | *Infiltration Depth (ft.) | Drop in Water during 60 min Presoak Period (in) | Elapsed Time for Water to Drop 1 inch | | | | | | | | Infiltration Rate | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Run 1 (min) | Run 2 (min) | Run 3 (min) | Run 4 (min) | Run 5 (min) | Run 6 (min) | Run 7 (min) | Run 8 (min) | Observed Infiltration Rate (in/hr) | Hydraulic Conductivity (in/hr) |
| IT-2A | 189.8 | 2.5 | >3 | 23.79 | 30.25 | 30.25 | 30.25 | | | | | 1.98 | 0.68 |
| IT-2B | 189.8 | 2.5 | >3 | 35.15 | 40.50 | 40.50 | 40.50 | | | | | 1.48 | 0.51 |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

Indicates the final reading that was used to determine the infiltration rate at the corresponding location.

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## INFILTRATION TESTING LOG

**Project Name:** One School Global Facility
**Project Number:** 35702.J0
**Date of Testing:** 2/21/2023
**EEI Representative:** B. Reeder
**Drawn/ Compiled by:** K. Cease
**Date Compiled:** 2/22/2023

# TABLE 1A - Single Ring Infiltrometer Test Results Log

| Test Hole Number | Surface Elevation (ft.) | *Infiltration Depth (ft.) | Drop in Water during 60 min Presoak Period (in) | Elapsed Time for Water to Drop 1 inch | | | | | | | | Infiltration Rate | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Run 1 (min) | Run 2 (min) | Run 3 (min) | Run 4 (min) | Run 5 (min) | Run 6 (min) | Run 7 (min) | Run 8 (min) | Observed Infiltration Rate (in/hr) | Hydraulic Conductivity (in/hr) |
| IT-3A | 190.8 | 3.5 | >3 | 0.53 | 1.33 | 1.33 | 1.33 | | | | | 45.11 | 15.45 |
| IT-3B | 190.8 | 3.5 | >3 | 1.02 | 1.33 | 1.33 | 1.33 | | | | | 45.11 | 15.45 |
| IT-3C | 190.8 | 1.5 | >3 | 1.05 | 1.15 | 1.25 | 1.25 | 1.25 | | | | 48.00 | 16.43 |
| IT-3D | 190.8 | 1.5 | >3 | 1.20 | 1.35 | 1.58 | 1.58 | 1.58 | | | | 37.97 | 13.00 |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

* Infiltration depths were measured from existing site grades at the time of the investigation.

** Infiltration test depth field adjusted based on depth to limiting zone.

(1) Hydraulic conductivity presented as <1.00 in/hr due to an observed field infiltration rate of less than 1 in/hr as per New Jersey Stormwater BMP Manual (Updated 11/2020)

| Test Hole Number | Surface Elevation (ft.) | *Infiltration Depth (ft.) | Drop in Water during 60 min Presoak Period (in) | Elapsed Time for Water to Drop 1 inch | | | | | | | | Infiltration Rate | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Run 1 (min) | Run 2 (min) | Run 3 (min) | Run 4 (min) | Run 5 (min) | Run 6 (min) | Run 7 (min) | Run 8 (min) | Observed Infiltration Rate (in/hr) | Hydraulic Conductivity (in/hr) |
| IT-4A | 190.5 | 3.5 | >3 | 0.40 | 0.75 | 0.75 | 0.75 | | | | | 80.00 | 27.39 |
| IT-4B | 190.5 | 3.5 | >3 | 0.50 | 0.92 | 0.92 | 0.92 | | | | | 65.22 | 22.33 |
| IT-4C | 190.5 | 1.5 | >3 | 1.20 | 1.50 | 1.50 | 1.50 | 1.50 | | | | 40.00 | 13.70 |
| IT-4D | 190.5 | 1.5 | >3 | 3.00 | 3.33 | 3.66 | 3.66 | 3.66 | | | | 16.39 | 5.61 |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

Indicates the final reading that was used to determine the infiltration rate at the corresponding location.

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## INFILTRATION TESTING LOG

**Project Name:** One School Global Facility
**Project Number:** 35702.J0
**Date of Testing:** 2/21/2023
**EEI Representative:** B. Reeder
**Drawn/ Compiled by:** K. Cease
**Date Compiled:** 2/22/2023

# TABLE 1A - Single Ring Infiltrometer Test Results Log

| Test Hole Number | Surface Elevation (ft.) | *Infiltration Depth (ft.) | Drop in Water during 60 min Presoak Period (in) | Elapsed Time for Water to Drop 1 inch | | | | | | | | Infiltration Rate | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Run 1 (min) | Run 2 (min) | Run 3 (min) | Run 4 (min) | Run 5 (min) | Run 6 (min) | Run 7 (min) | Run 8 (min) | Observed Infiltration Rate (in/hr) | Hydraulic Conductivity (in/hr) |
| IT-5A | 190.5 | 3.5 | >3 | 0.24 | 0.42 | 0.42 | 0.42 | | | | | 142.86 | 48.91 |
| IT-5B | 190.5 | 3.5 | >3 | 0.30 | 0.50 | 0.50 | 0.50 | | | | | 120.00 | 41.10 |
| IT-5C | 190.5 | 1.5 | >3 | 4.45 | 5.20 | 5.66 | 5.66 | 5.66 | | | | 10.60 | 3.63 |
| IT-5D | 190.5 | 1.5 | >3 | 6.30 | 8.15 | 8.25 | 8.25 | 8.25 | | | | 7.27 | 2.49 |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

* Infiltration depths were measured from existing site grades at the time of the investigation.

** Infiltration test depth field adjusted based on depth to limiting zone.

(1) Hydraulic conductivity presented as <1.00 in/hr due to an observed field infiltration rate of less than 1 in/hr as per New Jersey Stormwater BMP Manual (Updated 11/2020)

| Test Hole Number | Surface Elevation (ft.) | *Infiltration Depth (ft.) | Drop in Water during 60 min Presoak Period (in) | Elapsed Time for Water to Drop 1 inch | | | | | | | | Infiltration Rate | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Run 1 (min) | Run 2 (min) | Run 3 (min) | Run 4 (min) | Run 5 (min) | Run 6 (min) | Run 7 (min) | Run 8 (min) | Observed Infiltration Rate (in/hr) | Hydraulic Conductivity (in/hr) |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | |

Indicates the final reading that was used to determine the infiltration rate at the corresponding location.

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## INFILTRATION TESTING LOG

**Project Name:** One School Global Facility
**Project Number:** 35702.J0
**Date of Testing:** 2/21/2023
**EEI Representative:** B. Reeder
**Drawn/ Compiled by:** K. Cease
**Date Compiled:** 2/22/2023

# Tube Permeameter Testing Data Sheet

| Test Number | Height of Sampling Tube (in.) | Empty Space in Tube (in) | Height of Soil Column (in.) (**L**) | Initial Water Level Height (in.) ($H_1$) | Run #1 | | | Run #2 | | | Run #3 | | | Permeability | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Subsequent Water Level Height (in.) | | Time Interval @ (min:sec) | Subsequent Water Level Height (in.) | | Time Interval @ (min:sec) | Subsequent Water Level Height (in.) | | Time Interval @ (min:sec) | | |
| | | | | | Drop | ($H_2$) | (**T**) | Drop | ($H_2$) | (**T**) | Drop | ($H_2$) | (**T**) | rate | class |
| IB-1A | 10.00 | 5.17 | 4.83 | 8.25 | 0.19 | 8.06 | 30.00 | 0.19 | 8.06 | 30.00 | 0.19 | 8.06 | 30.00 | 0.23 in/hr | K1 |
| IB-1B | 10.00 | 4.88 | 5.13 | 8.50 | 0.25 | 8.25 | 30.00 | 0.25 | 8.25 | 30.00 | 0.25 | 8.25 | 30.00 | 0.31 in/hr | K1 |
| IB-1C | 10.00 | 4.75 | 5.25 | 8.50 | 0.31 | 8.19 | 30.00 | 0.31 | 8.19 | 30.00 | 0.31 | 8.19 | 30.00 | 0.39 in/hr | K1 |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| IB-2A | 10.00 | 5.00 | 5.00 | 8.13 | 1.63 | 6.50 | 10.00 | 1.63 | 6.50 | 10.00 | 1.63 | 6.50 | 10.00 | 6.72 in/hr | K4 |
| IB-2B | 10.00 | 4.38 | 5.63 | 8.38 | 1.50 | 6.88 | 10.00 | 1.50 | 6.88 | 10.00 | 1.50 | 6.88 | 10.00 | 6.66 in/hr | K4 |
| IB-2C | 10.00 | 4.88 | 5.13 | 8.50 | 1.38 | 7.13 | 10.00 | 1.38 | 7.13 | 10.00 | 1.38 | 7.13 | 10.00 | 5.43 in/hr | K3 |

***Notes:*** **IB-1 Testing Depth 4.0', IB-2 Testing Depth 3.0'**

: ENTERED VALUES
: FILLED VALUES
: CALCULATED VALUES

***Permeability Rate Determination:*** $K$(in/hr) = 60 min/1hr * **L**(in.)/**T**(min) * $r^2/R^2$ * ln ($H_1/H_2$)

Radius of Standpipe, $r^2$= 0.0039"; Radius of Shelby Tube, $R^2$= 2.25"
** $r^2/R^2$ is omitted from equation when standpipe is not used


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## Project Information

**Project Name:** One School Global Facility

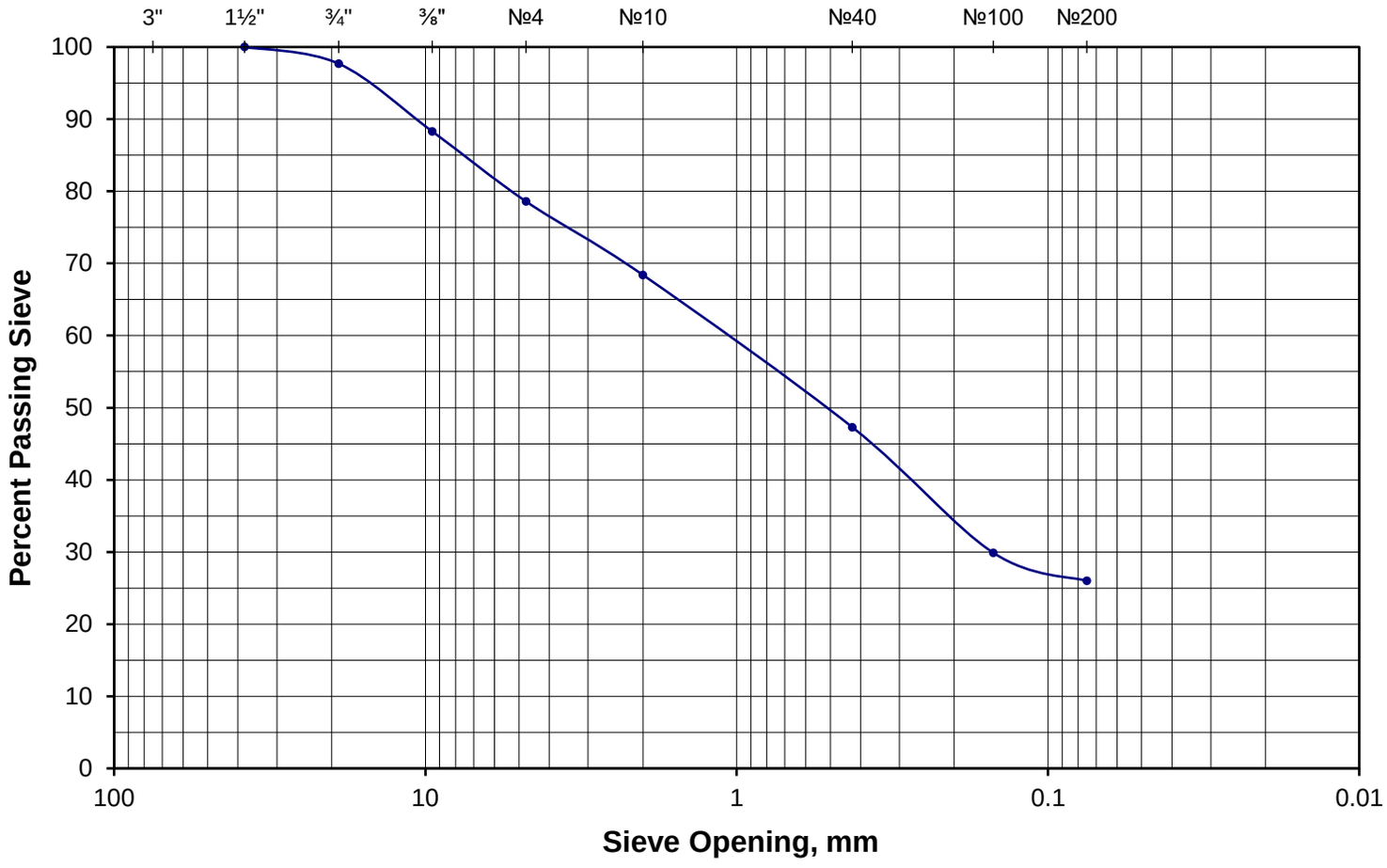
**Project Number:** 35702.J0

**Date of Testing:** 03/06/2023

**Location of Testing:** Laboratory

**EEI Representative:** C. Lang

# Particle Size Analysis of Soils




| | | | | | | |
|---|---|---|---|---|---|---|
| **As-rec'd water content:** 12.7 moist | **Odor:** none | Particle Size | | | | |
| **% Gravel:** 21.4 **Coarse:** 2.3 | **Fine:** 19.1 | US Standard Sieve Size | | | Diameter, | % Finer |
| **% Sand:** 52.6 **Coarse:** 10.2 | **Medium:** 21.1 **Fine:** 21.3 | GRAVEL | Coarse | 3" | 75 | |
| **Gravel description:** Gray, Reddish Brown, and Brown, subangular to subrounded | | | | 1½" | 38.1 | 100.0 |
| **Sand description:** Gray, Reddish Brown, and Brown, subangular to subrounded | | | | ¾" | 19.0 | 97.7 |
| | | | Fine | ⅜" | 9.5 | 88.3 |
| | | | | № 4 | 4.75 | 78.6 |
| **Consistency:** firm | **Hardness:** hard and durable | SAND | Coarse | № 10 | 2.00 | 68.4 |
| **Cementation:** NR | **Dry Strength:** NR | | Medium | № 40 | 0.425 | 47.3 |
| **Structure:** homogeneous | **Dilatency:** NR | | Fine | № 100 | 0.150 | 29.9 |
| **Reaction to HCl:** NR | **Toughness:** NR | | | № 200 | 0.075 | 26.0 |
| **USCS Classification:** SM, silty sand with gravel | | Hydrometer Analysis | | Clay Size | 0.005 | NR |
| **AASHTO Classification:** A-2-4 | | | | Colloids | 0.001 | NR |
| | | $G_s$: NR | $C_u$: N/A | $C_c$: N/A | | |
| **Project:** 35702.J0 - One School Global Facility | | **LL:** NP | **PL:** NP | **PI:** NP | | |
| **Client:** Baker Ingram & Associates | | | | | | |
| **Sample:** B-2, S-1; B-5, S-2 | | | | | | |
| **Depth:** 0.5'-2.0', 2.0'-4.0' | | | | | | |
| **Description:** Dark Brown Fine to Medium SAND, Some Silt and Gravel | | | | | | |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Central PA
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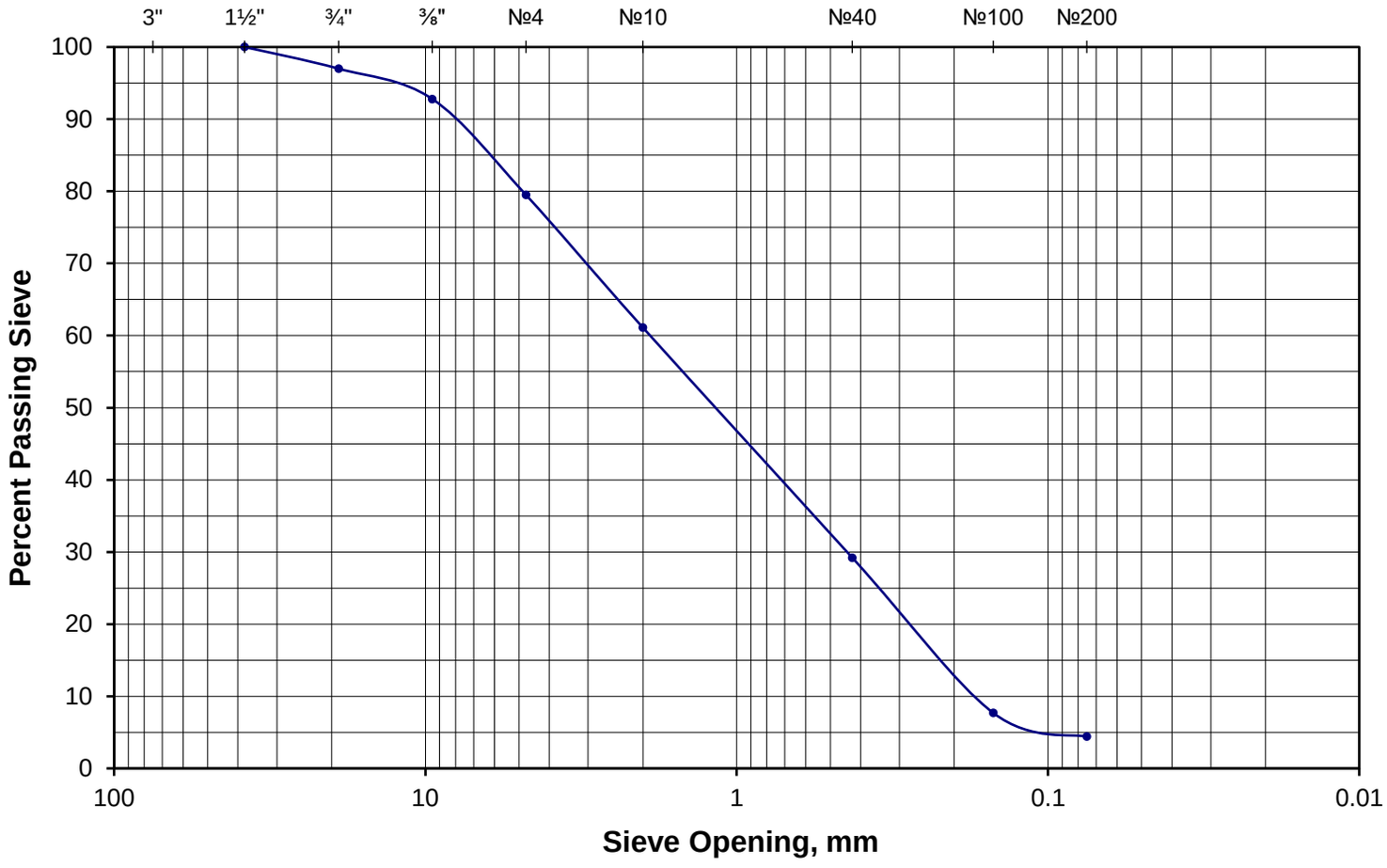
Lehigh Valley
610-967-4540


**Remarks:**

**Classification of Soils, ASTM D 2487-11 / D 2488-09a** ***March 3, 2023***

# Particle Size Analysis of Soils




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **As-rec'd water content:** 15.8 moist | | **Odor:** none | | Particle Size | | | | |
| **% Gravel:** 20.5 | **Coarse:** 3.0 | **Fine:** 17.5 | | US Standard Sieve Size | | | Diameter, | % Finer |
| **% Sand:** 75.1 | **Coarse:** 18.4 | **Medium:** 31.9 | **Fine:** 24.8 | GRAVEL | Coarse | 3" | 75 | |
| **Gravel description:** Gray and Brown, subrounded | | | | | | 1½" | 38.1 | 100.0 |
| | | | | | | ¾" | 19.0 | 97.0 |
| **Sand description:** Gray and Brown, subrounded | | | | | Fine | ⅜" | 9.5 | 92.8 |
| | | | | | | № 4 | 4.75 | 79.5 |
| **Consistency:** firm | **Hardness:** hard and durable | | | SAND | Coarse | № 10 | 2.00 | 61.1 |
| **Cementation:** NR | **Dry Strength:** NR | | | | Medium | № 40 | 0.425 | 29.2 |
| **Structure:** homogeneous | **Dilatency:** NR | | | | Fine | № 100 | 0.150 | 7.7 |
| **Reaction to HCl:** NR | **Toughness:** NR | | | | | № 200 | 0.075 | 4.4 |
| **USCS Classification:** SP, poorly graded sand with gravel | | | | Hydrometer Analysis | | Clay Size | 0.005 | NR |
| **AASHTO Classification:** A-1-b | | | | | | Colloids | 0.001 | NR |
| | | | | $G_s$: NR | $C_u$: 10.6 | $C_c$: 0.6 | | |
| **Project:** 35702.J0 - One School Global Facility | | | | **LL:** NP | **PL:** NP | **PI:** NP | | |
| **Client:** Baker Ingram & Associates | | | | | | | | |
| **Sample:** B-3, S-4; B-6, S-3 | | | | | | | | |
| **Depth:** 6.0'-8.0', 4.0'-6.0' | | | | | | | | |
| **Description:** Brown Fine to Coarse SAND, Some Gravel, Trace Silt | | | | | | | | |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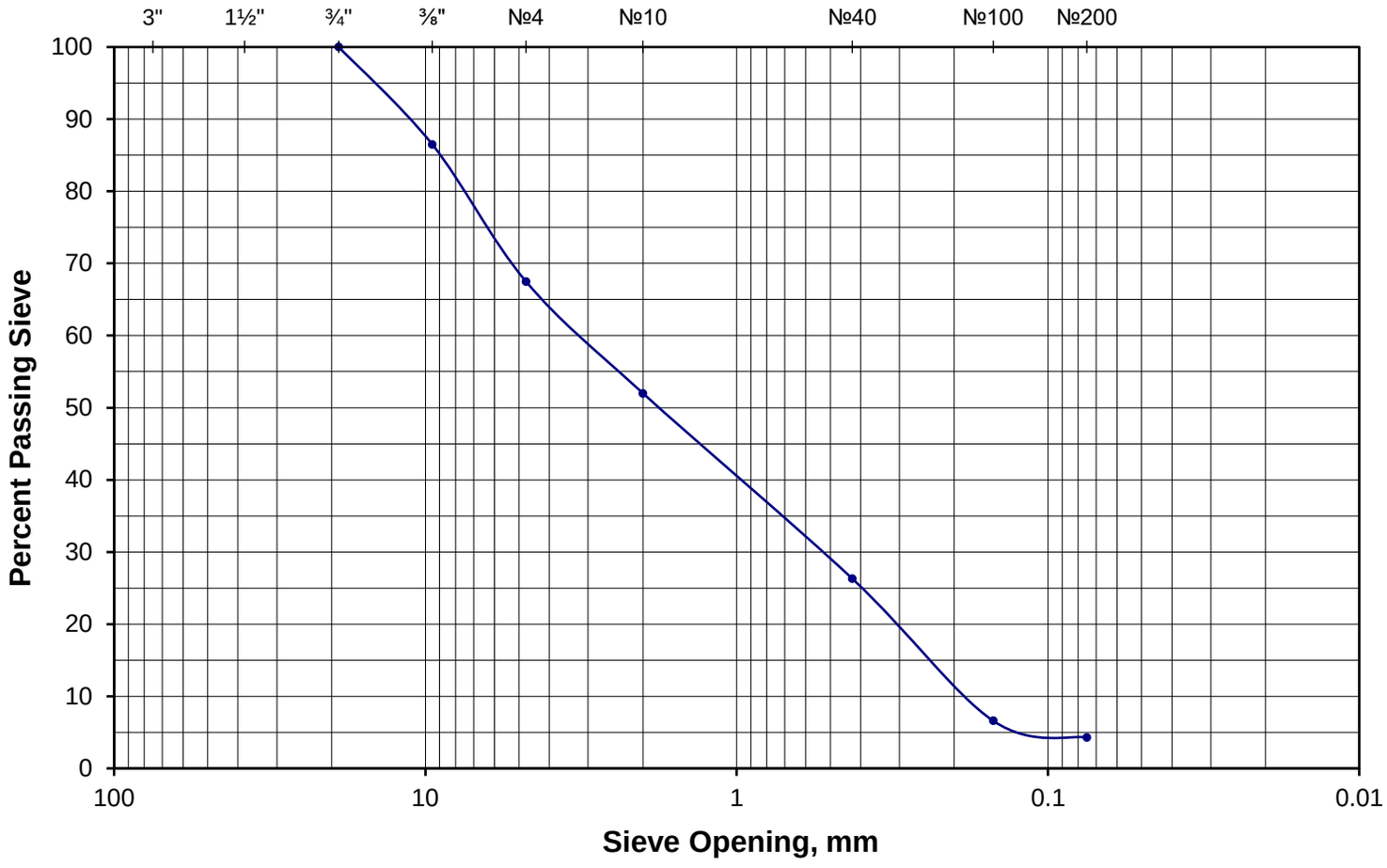
**Remarks:**

**Classification of Soils, ASTM D 2487-11 / D 2488-09a** ***March 3, 2023***

# Particle Size Analysis of Soils




| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **As-rec'd water content:** 10.5 moist | | **Odor:** none | | Particle Size | | | |
| **% Gravel:** 32.5 | **Coarse:** 0.0 | **Fine:** 32.5 | | US Standard Sieve Size | | | Diameter, | % Finer |
| **% Sand:** 63.2 | **Coarse:** 15.5 | **Medium:** 25.7 | **Fine:** 22.0 | GRAVEL | Coarse | 3" | 75 | |
| **Gravel description:** Gray and White, subangular to subrounded | | | | | | 1½" | 38.1 | |
| | | | | | | ¾" | 19.0 | 100.0 |
| **Sand description:** Gray, Brown, and White, subangular to subrounded | | | | | Fine | ⅜" | 9.5 | 86.5 |
| | | | | | | № 4 | 4.75 | 67.5 |
| **Consistency:** firm | | **Hardness:** hard and durable | | SAND | Coarse | № 10 | 2.00 | 52.0 |
| **Cementation:** NR | | **Dry Strength:** NR | | | Medium | № 40 | 0.425 | 26.3 |
| **Structure:** homogeneous | | **Dilatency:** NR | | | Fine | № 100 | 0.150 | 6.6 |
| **Reaction to HCl:** NR | | **Toughness:** NR | | | | № 200 | 0.075 | 4.3 |
| **USCS Classification:** SP, poorly graded sand with gravel | | | | Hydrometer Analysis | | Clay Size | 0.005 | NR |
| **AASHTO Classification:** A-1-b | | | | | | Colloids | 0.001 | NR |
| | | | | $G_s$: NR | $C_u$: 17.8 | $C_c$: 0.5 | | |
| **Project:** 35702.J0 - One School Global Facility | | | | **LL:** NP | **PL:** NP | **PI:** NP | | |
| **Client:** Baker Ingram & Associates | | | | | | | | |
| **Sample:** IB-1 | | | | | | | | |
| **Depth:** 4.0' | | | | | | | | |
| **Description:** Brown and Dark Gray Loamy SAND | | | | | | | | |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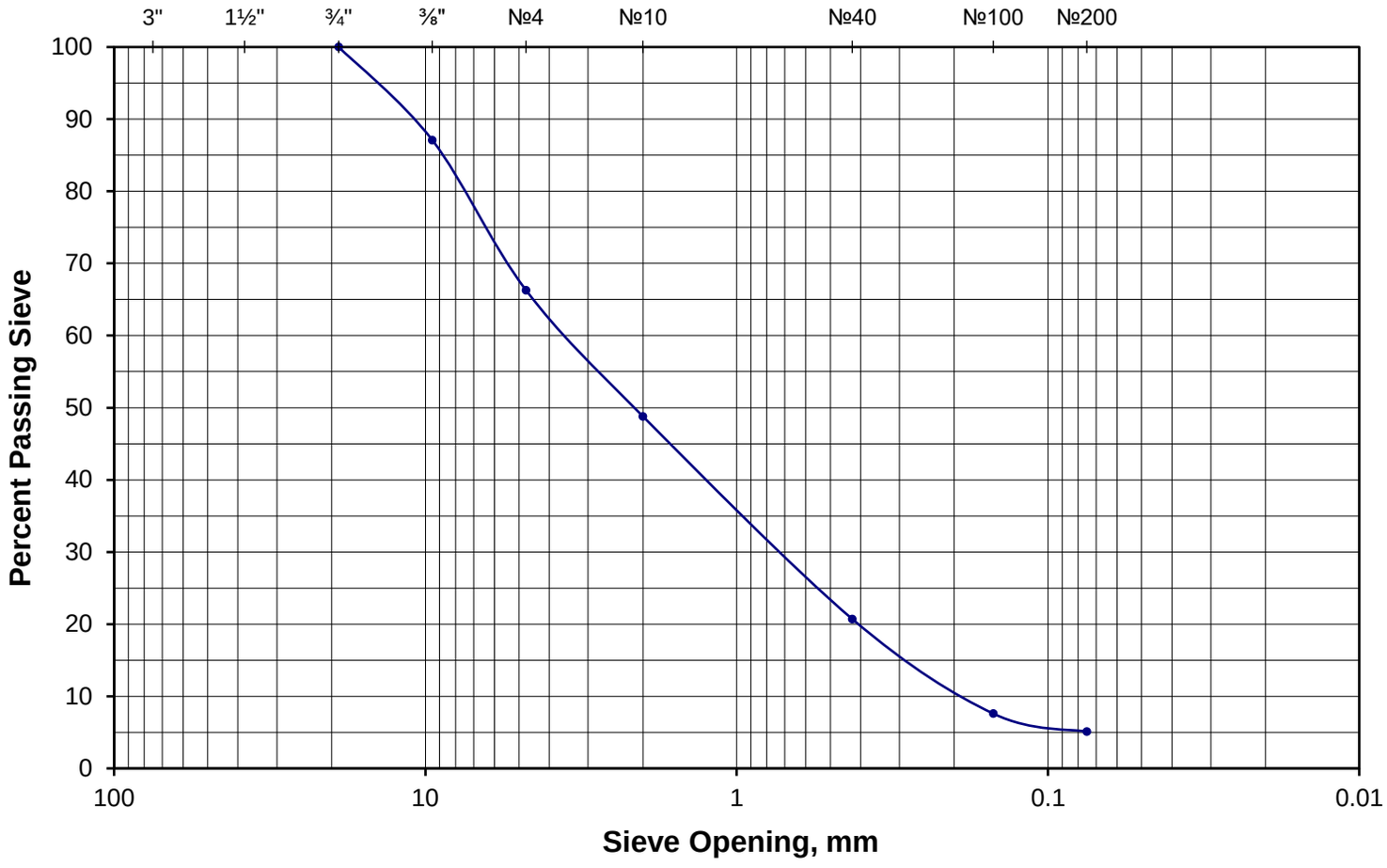
**Remarks:**

**Classification of Soils, ASTM D 2487-11 / D 2488-09a** ***March 6, 2023***

# Particle Size Analysis of Soils




| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **As-rec'd water content:** 4.6 moist | | **Odor:** none | | Particle Size | | | |
| **% Gravel:** 33.7 | **Coarse:** 0.0 | **Fine:** 33.7 | | US Standard Sieve Size | | | Diameter, | % Finer |
| **% Sand:** 61.2 | **Coarse:** 17.5 | **Medium:** 28.1 | **Fine:** 15.6 | GRAVEL | Coarse | 3" | 75 | |
| **Gravel description:** Gray and Light Brown , subangular to subrounded | | | | | | 1½" | 38.1 | |
| | | | | | | ¾" | 19.0 | 100.0 |
| **Sand description:** Gray and Light Brown , subangular to subrounded | | | | | Fine | ⅜" | 9.5 | 87.1 |
| | | | | | | № 4 | 4.75 | 66.3 |
| **Consistency:** firm | | **Hardness:** hard and durable | | SAND | Coarse | № 10 | 2.00 | 48.8 |
| **Cementation:** NR | | **Dry Strength:** NR | | | Medium | № 40 | 0.425 | 20.7 |
| **Structure:** homogeneous | | **Dilatency:** NR | | | Fine | № 100 | 0.150 | 7.6 |
| **Reaction to HCl:** NR | | **Toughness:** NR | | | | № 200 | 0.075 | 5.1 |
| **USCS Classification:** SP-SM, poorly graded sand with silt and gravel | | | | Hydrometer Analysis | | Clay Size | 0.005 | NR |
| **AASHTO Classification:** A-1-a | | | | | | Colloids | 0.001 | NR |
| | | | | $G_s$: NR | $C_u$: 18.4 | $C_c$: 0.8 | | |
| **Project:** 35702.J0 - One School Global Facility | | | | **LL:** NP | **PL:** NP | **PI:** NP | | |
| **Client:** Baker Ingram & Associates | | | | | | | | |
| **Sample:** IB-2 | | | | | | | | |
| **Depth:** 3.0' | | | | | | | | |
| **Description:** Light Brown Loamy SAND, Trace Gravel | | | | | | | | |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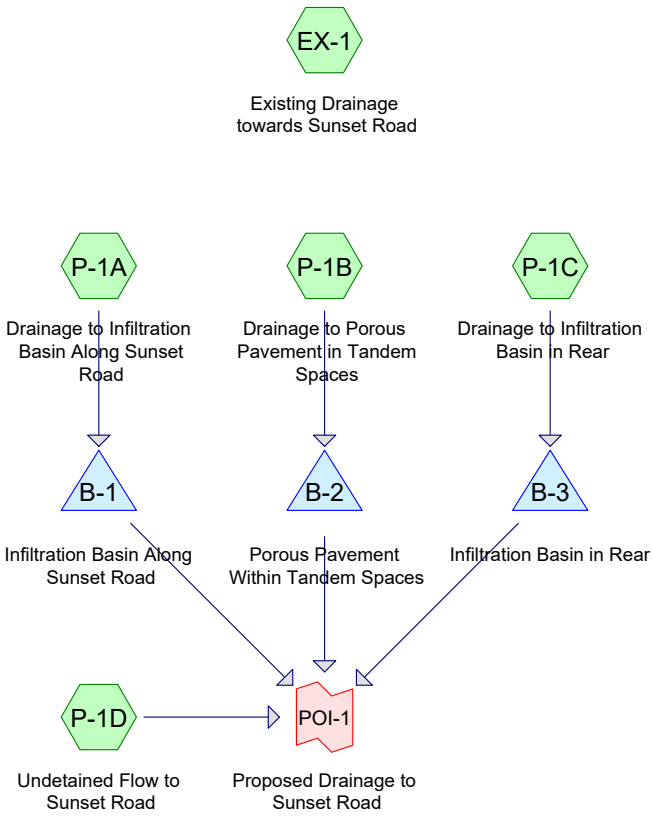
**Remarks:**

**Classification of Soils, ASTM D 2487-11 / D 2488-09a** ***March 6, 2023***

# APPENDIX C
# HYDROLOGIC & HYDRAULIC CALCULATIONS

## INVENTORY




Subcat Reach Pond Link

**Routing Diagram for 2023-04-05_ HydroCAD**
Prepared by Stonefield Engineering & Design, Printed 4/10/2023

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

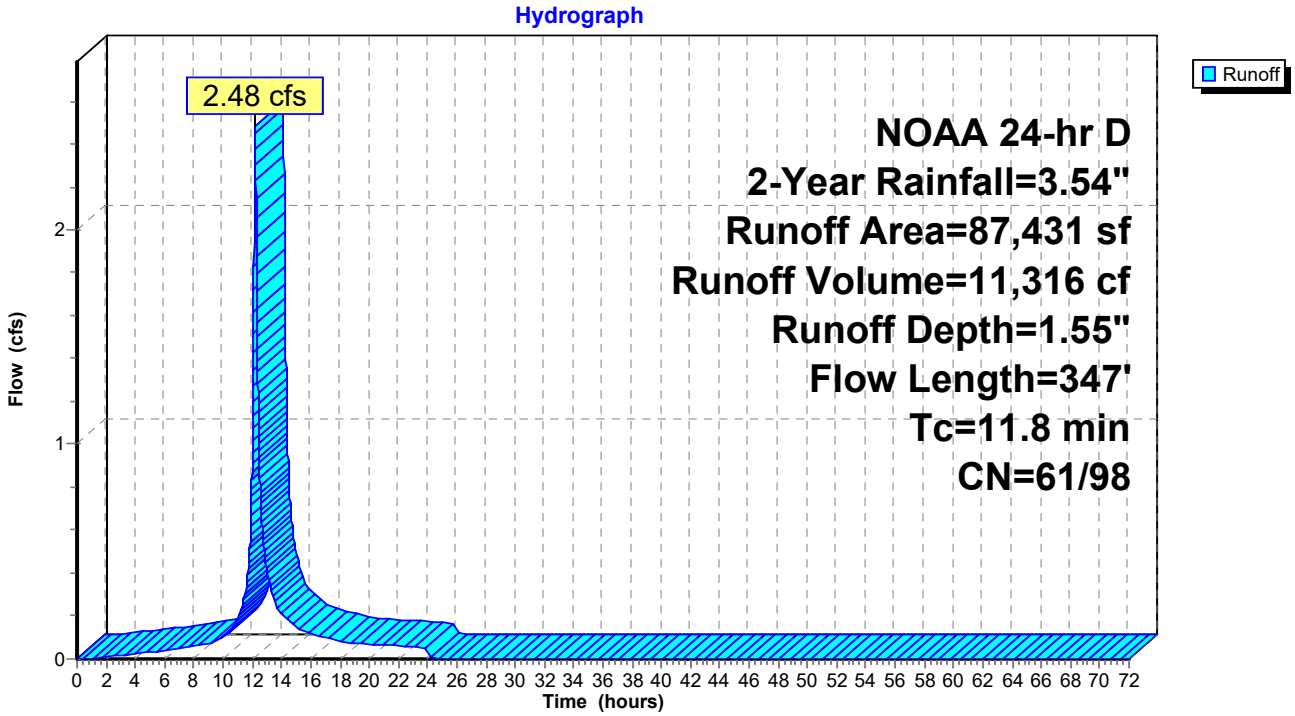
Runoff = 2.48 cfs @ 12.20 hrs, Volume= 11,316 cf, Depth= 1.55"

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 for Subcatchment EX-1: Existing Drainage towards Sunset Road

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.08 | 0.00 | 0.01 | 0.01 |
| 4.00 | 0.19 | 0.00 | 0.06 | 0.02 |
| 6.00 | 0.30 | 0.00 | 0.15 | 0.04 |
| 8.00 | 0.46 | 0.00 | 0.28 | 0.06 |
| 10.00 | 0.70 | 0.00 | 0.51 | 0.11 |
| 12.00 | 1.70 | 0.03 | 1.47 | **0.96** |
| 14.00 | 2.84 | 0.31 | 2.61 | **0.21** |
| 16.00 | 3.08 | 0.40 | 2.85 | 0.12 |
| 18.00 | 3.24 | 0.46 | 3.01 | 0.08 |
| 20.00 | 3.35 | 0.51 | 3.12 | 0.07 |
| 22.00 | 3.46 | 0.55 | 3.22 | 0.06 |
| 24.00 | **3.54** | **0.59** | **3.31** | 0.05 |
| 26.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 28.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 30.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 32.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 34.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 36.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 38.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 40.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 42.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 44.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 46.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 48.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 50.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 52.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 54.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 56.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 58.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 60.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 62.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 64.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 66.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 68.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 70.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 72.00 | 3.54 | 0.59 | 3.31 | 0.00 |

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

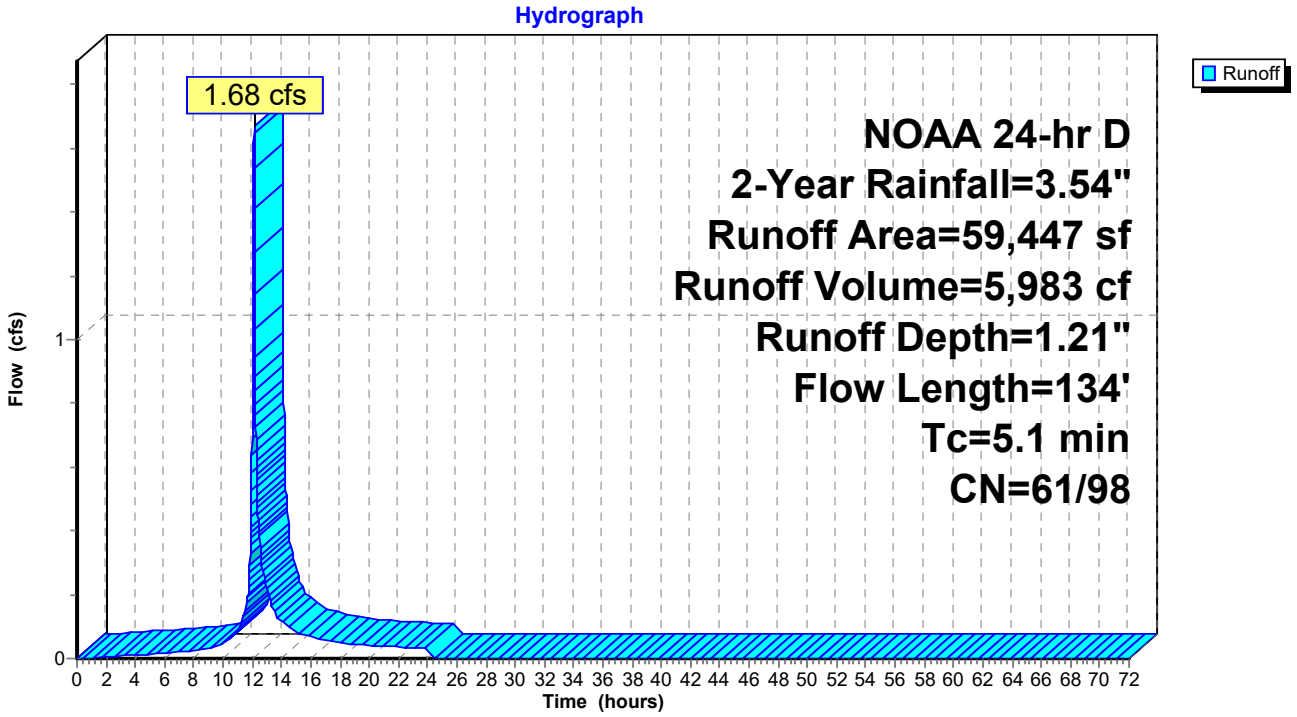
Runoff = 1.68 cfs @ 12.13 hrs, Volume= 5,983 cf, Depth= 1.21"

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



## Hydrograph for Subcatchment EX-2: Existing Drainage towards Roome Avenue

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.08 | 0.00 | 0.01 | 0.00 |
| 4.00 | 0.19 | 0.00 | 0.06 | 0.01 |
| 6.00 | 0.30 | 0.00 | 0.15 | 0.02 |
| 8.00 | 0.46 | 0.00 | 0.28 | 0.03 |
| 10.00 | 0.70 | 0.00 | 0.51 | 0.05 |
| 12.00 | 1.70 | 0.03 | 1.47 | **0.78** |
| 14.00 | 2.84 | 0.31 | 2.61 | **0.12** |
| 16.00 | 3.08 | 0.40 | 2.85 | 0.07 |
| 18.00 | 3.24 | 0.46 | 3.01 | 0.05 |
| 20.00 | 3.35 | 0.51 | 3.12 | 0.04 |
| 22.00 | 3.46 | 0.55 | 3.22 | 0.04 |
| 24.00 | **3.54** | **0.59** | **3.31** | 0.03 |
| 26.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 28.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 30.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 32.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 34.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 36.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 38.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 40.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 42.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 44.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 46.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 48.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 50.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 52.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 54.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 56.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 58.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 60.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 62.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 64.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 66.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 68.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 70.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 72.00 | 3.54 | 0.59 | 3.31 | 0.00 |

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

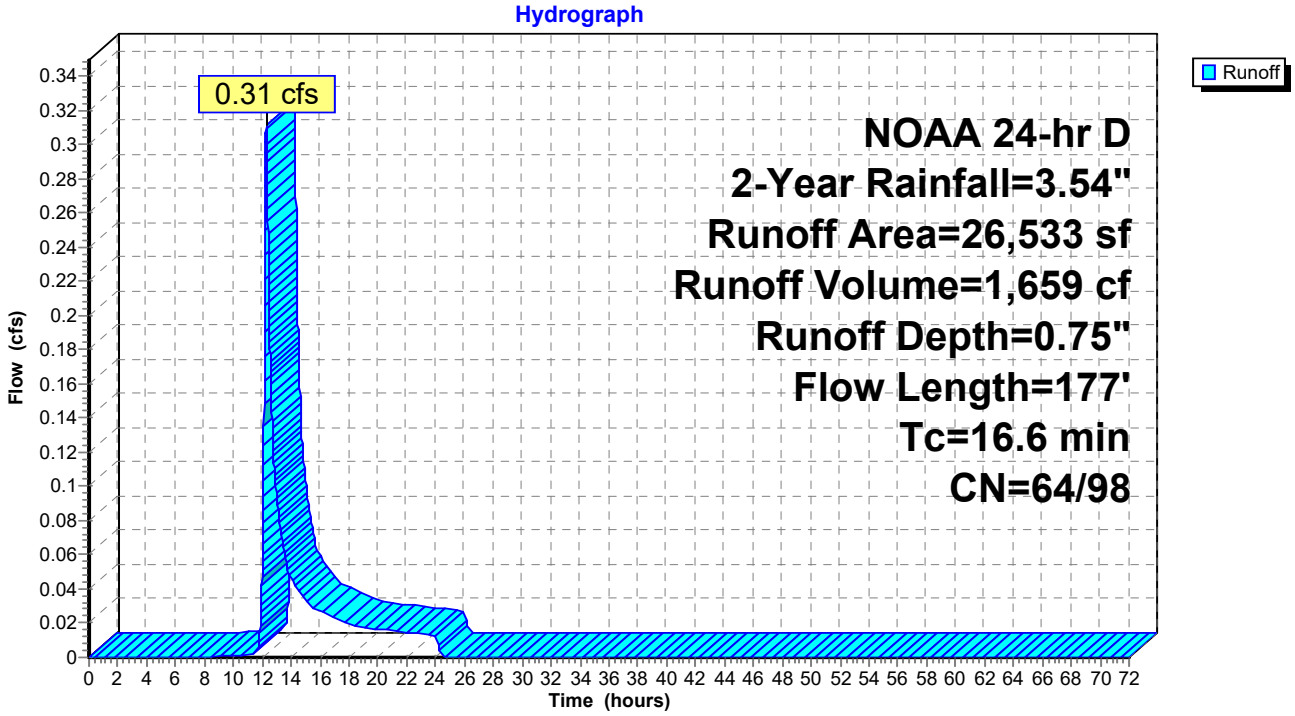
Runoff = 0.31 cfs @ 12.27 hrs, Volume= 1,659 cf, Depth= 0.75"

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 for Subcatchment EX-3: Existing Drainage towards Dewilde Drive

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.08 | 0.00 | 0.01 | 0.00 |
| 4.00 | 0.19 | 0.00 | 0.06 | 0.00 |
| 6.00 | 0.30 | 0.00 | 0.15 | 0.00 |
| 8.00 | 0.46 | 0.00 | 0.28 | 0.00 |
| 10.00 | 0.70 | 0.00 | 0.51 | 0.00 |
| 12.00 | 1.70 | 0.05 | 1.47 | **0.05** |
| 14.00 | 2.84 | 0.40 | 2.61 | **0.05** |
| 16.00 | 3.08 | 0.50 | 2.85 | 0.03 |
| 18.00 | 3.24 | 0.58 | 3.01 | 0.02 |
| 20.00 | 3.35 | 0.63 | 3.12 | 0.02 |
| 22.00 | 3.46 | 0.68 | 3.22 | 0.01 |
| 24.00 | **3.54** | **0.73** | **3.31** | 0.01 |
| 26.00 | 3.54 | 0.73 | 3.31 | 0.00 |
| 28.00 | 3.54 | 0.73 | 3.31 | 0.00 |
| 30.00 | 3.54 | 0.73 | 3.31 | 0.00 |
| 32.00 | 3.54 | 0.73 | 3.31 | 0.00 |
| 34.00 | 3.54 | 0.73 | 3.31 | 0.00 |
| 36.00 | 3.54 | 0.73 | 3.31 | 0.00 |
| 38.00 | 3.54 | 0.73 | 3.31 | 0.00 |
| 40.00 | 3.54 | 0.73 | 3.31 | 0.00 |
| 42.00 | 3.54 | 0.73 | 3.31 | 0.00 |
| 44.00 | 3.54 | 0.73 | 3.31 | 0.00 |
| 46.00 | 3.54 | 0.73 | 3.31 | 0.00 |
| 48.00 | 3.54 | 0.73 | 3.31 | 0.00 |
| 50.00 | 3.54 | 0.73 | 3.31 | 0.00 |
| 52.00 | 3.54 | 0.73 | 3.31 | 0.00 |
| 54.00 | 3.54 | 0.73 | 3.31 | 0.00 |
| 56.00 | 3.54 | 0.73 | 3.31 | 0.00 |
| 58.00 | 3.54 | 0.73 | 3.31 | 0.00 |
| 60.00 | 3.54 | 0.73 | 3.31 | 0.00 |
| 62.00 | 3.54 | 0.73 | 3.31 | 0.00 |
| 64.00 | 3.54 | 0.73 | 3.31 | 0.00 |
| 66.00 | 3.54 | 0.73 | 3.31 | 0.00 |
| 68.00 | 3.54 | 0.73 | 3.31 | 0.00 |
| 70.00 | 3.54 | 0.73 | 3.31 | 0.00 |
| 72.00 | 3.54 | 0.73 | 3.31 | 0.00 |

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

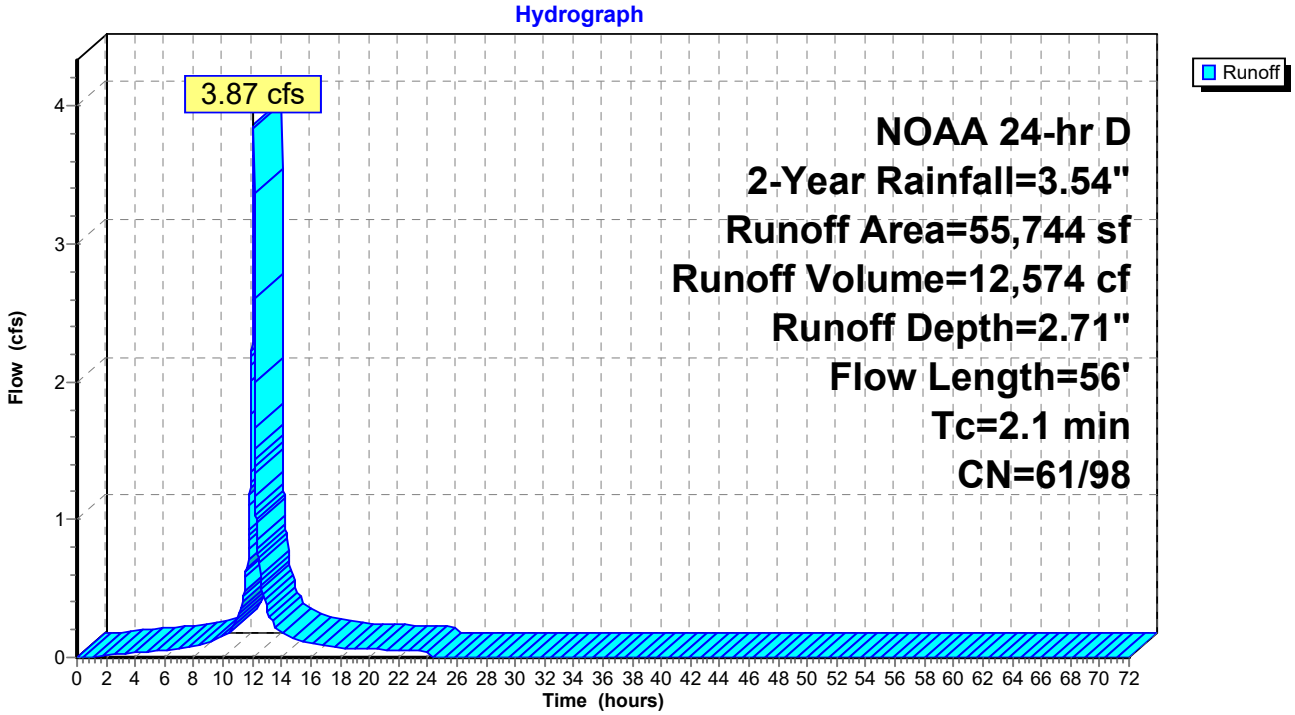
Runoff = 3.87 cfs @ 12.10 hrs, Volume= 12,574 cf, Depth= 2.71"

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 2-Year Rainfall=3.54"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 12,309 | 61 | >75% Grass cover, Good, HSG B |
| * | 27,825 | 98 | Roof Area |
| * | 15,610 | 98 | Impervious Area |
| | 55,744 | 90 | Weighted Average |
| | 12,309 | 61 | 22.08% Pervious Area |
| | 43,435 | 98 | 77.92% 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



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

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.08 | 0.00 | 0.01 | 0.01 |
| 4.00 | 0.19 | 0.00 | 0.06 | 0.04 |
| 6.00 | 0.30 | 0.00 | 0.15 | 0.05 |
| 8.00 | 0.46 | 0.00 | 0.28 | 0.08 |
| 10.00 | 0.70 | 0.00 | 0.51 | 0.16 |
| 12.00 | 1.70 | 0.03 | 1.47 | **2.26** |
| 14.00 | 2.84 | 0.31 | 2.61 | **0.19** |
| 16.00 | 3.08 | 0.40 | 2.85 | 0.11 |
| 18.00 | 3.24 | 0.46 | 3.01 | 0.07 |
| 20.00 | 3.35 | 0.51 | 3.12 | 0.06 |
| 22.00 | 3.46 | 0.55 | 3.22 | 0.05 |
| 24.00 | **3.54** | **0.59** | **3.31** | 0.04 |
| 26.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 28.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 30.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 32.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 34.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 36.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 38.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 40.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 42.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 44.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 46.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 48.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 50.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 52.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 54.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 56.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 58.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 60.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 62.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 64.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 66.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 68.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 70.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 72.00 | 3.54 | 0.59 | 3.31 | 0.00 |

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

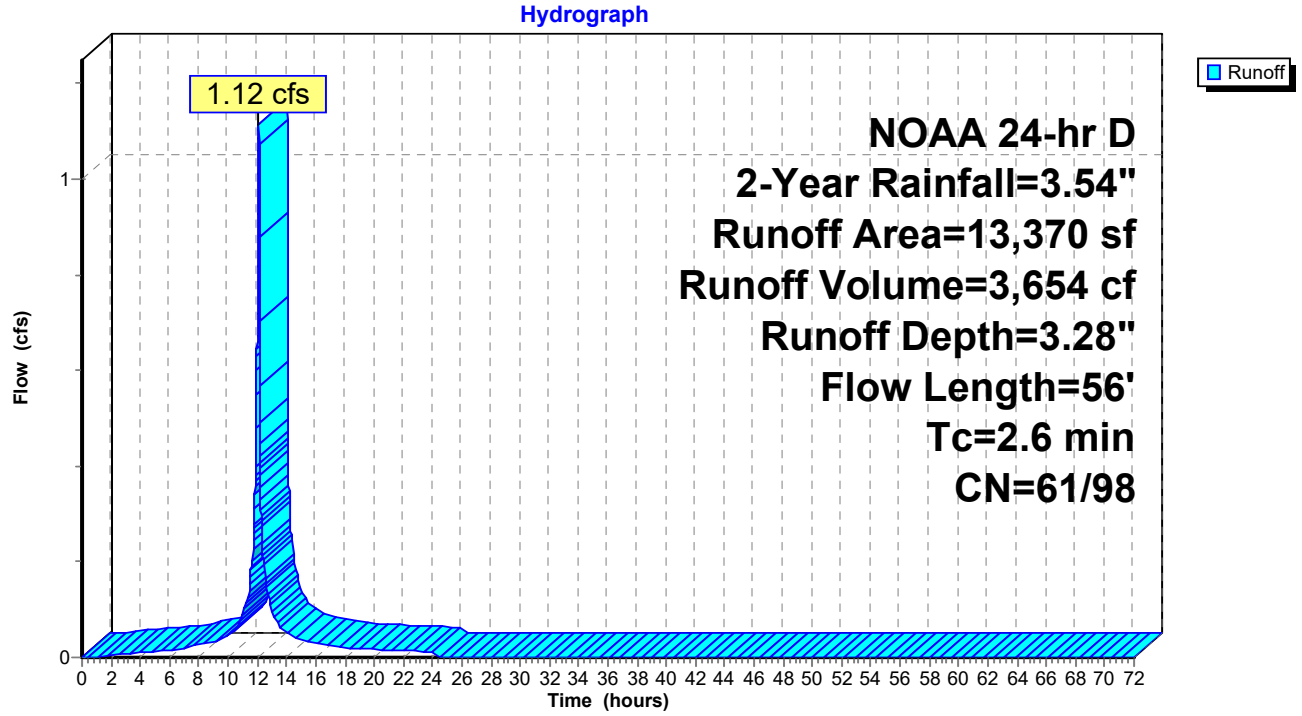
Runoff = 1.12 cfs @ 12.10 hrs, Volume= 3,654 cf, Depth= 3.28"

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 |
|---|---|---|---|
| | 133 | 61 | >75% Grass cover, Good, HSG B |
| * | 3,564 | 98 | Porous Pavement |
| * | 9,673 | 98 | Impervious Area |
| | 13,370 | 98 | Weighted Average |
| | 133 | 61 | 0.99% Pervious Area |
| | 13,237 | 98 | 99.01% 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 for Subcatchment P-1B: Drainage to Porous Pavement in Tandem Spaces

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.08 | 0.00 | 0.01 | 0.00 |
| 4.00 | 0.19 | 0.00 | 0.06 | 0.01 |
| 6.00 | 0.30 | 0.00 | 0.15 | 0.02 |
| 8.00 | 0.46 | 0.00 | 0.28 | 0.03 |
| 10.00 | 0.70 | 0.00 | 0.51 | 0.05 |
| 12.00 | 1.70 | 0.03 | 1.47 | **0.67** |
| 14.00 | 2.84 | 0.31 | 2.61 | **0.05** |
| 16.00 | 3.08 | 0.40 | 2.85 | 0.03 |
| 18.00 | 3.24 | 0.46 | 3.01 | 0.02 |
| 20.00 | 3.35 | 0.51 | 3.12 | 0.02 |
| 22.00 | 3.46 | 0.55 | 3.22 | 0.01 |
| 24.00 | **3.54** | **0.59** | **3.31** | 0.01 |
| 26.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 28.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 30.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 32.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 34.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 36.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 38.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 40.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 42.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 44.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 46.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 48.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 50.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 52.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 54.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 56.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 58.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 60.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 62.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 64.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 66.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 68.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 70.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 72.00 | 3.54 | 0.59 | 3.31 | 0.00 |

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

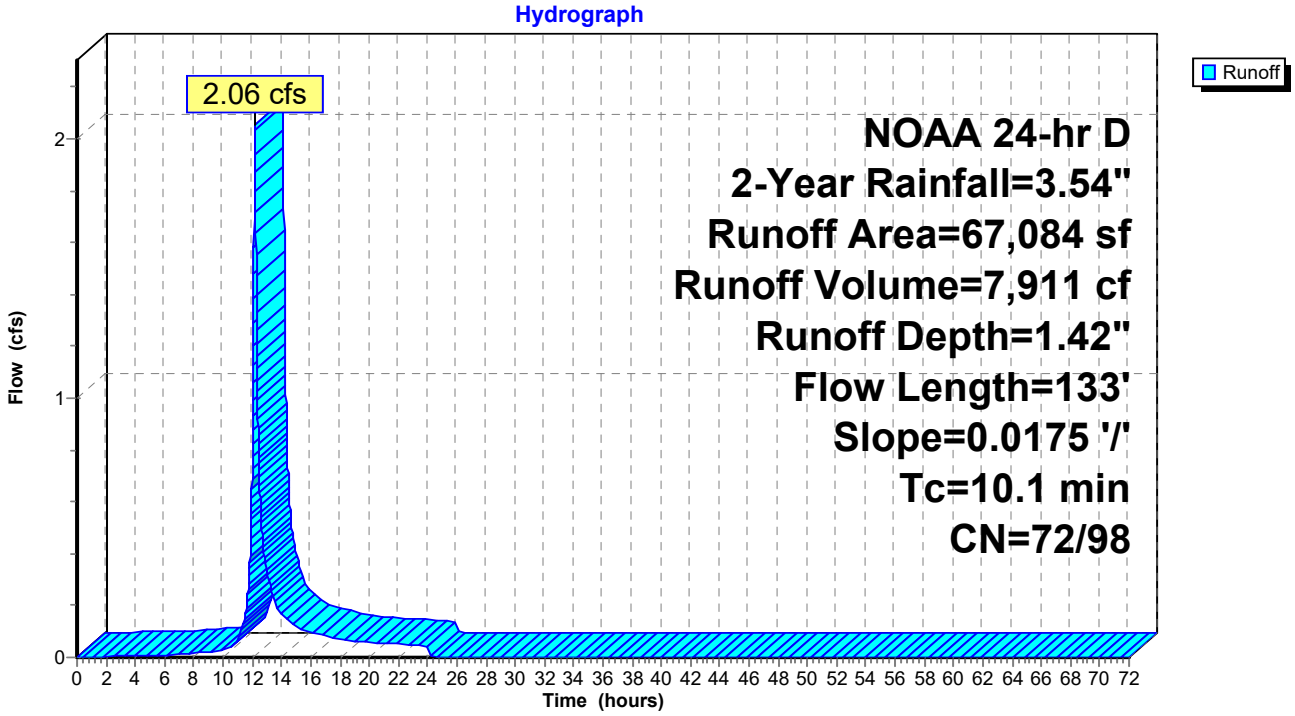
Runoff = 2.06 cfs @ 12.18 hrs, Volume= 7,911 cf, Depth= 1.42"

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 |
|---|---|---|---|
| | 25,698 | 61 | >75% Grass cover, Good, HSG B |
| * | 8,326 | 98 | Impervious Area |
| * | 33,060 | 80 | Turf Field |
| | 67,084 | 75 | Weighted Average |
| | 58,758 | 72 | 87.59% Pervious Area |
| | 8,326 | 98 | 12.41% 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 for Subcatchment P-1C: Drainage to Infiltration Basin in Rear

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.08 | 0.00 | 0.01 | 0.00 |
| 4.00 | 0.19 | 0.00 | 0.06 | 0.01 |
| 6.00 | 0.30 | 0.00 | 0.15 | 0.01 |
| 8.00 | 0.46 | 0.00 | 0.28 | 0.02 |
| 10.00 | 0.70 | 0.00 | 0.51 | 0.03 |
| 12.00 | 1.70 | 0.18 | 1.47 | **0.78** |
| 14.00 | 2.84 | 0.71 | 2.61 | **0.17** |
| 16.00 | 3.08 | 0.86 | 2.85 | 0.10 |
| 18.00 | 3.24 | 0.95 | 3.01 | 0.07 |
| 20.00 | 3.35 | 1.03 | 3.12 | 0.06 |
| 22.00 | 3.46 | 1.09 | 3.22 | 0.05 |
| 24.00 | **3.54** | **1.15** | **3.31** | 0.04 |
| 26.00 | 3.54 | 1.15 | 3.31 | 0.00 |
| 28.00 | 3.54 | 1.15 | 3.31 | 0.00 |
| 30.00 | 3.54 | 1.15 | 3.31 | 0.00 |
| 32.00 | 3.54 | 1.15 | 3.31 | 0.00 |
| 34.00 | 3.54 | 1.15 | 3.31 | 0.00 |
| 36.00 | 3.54 | 1.15 | 3.31 | 0.00 |
| 38.00 | 3.54 | 1.15 | 3.31 | 0.00 |
| 40.00 | 3.54 | 1.15 | 3.31 | 0.00 |
| 42.00 | 3.54 | 1.15 | 3.31 | 0.00 |
| 44.00 | 3.54 | 1.15 | 3.31 | 0.00 |
| 46.00 | 3.54 | 1.15 | 3.31 | 0.00 |
| 48.00 | 3.54 | 1.15 | 3.31 | 0.00 |
| 50.00 | 3.54 | 1.15 | 3.31 | 0.00 |
| 52.00 | 3.54 | 1.15 | 3.31 | 0.00 |
| 54.00 | 3.54 | 1.15 | 3.31 | 0.00 |
| 56.00 | 3.54 | 1.15 | 3.31 | 0.00 |
| 58.00 | 3.54 | 1.15 | 3.31 | 0.00 |
| 60.00 | 3.54 | 1.15 | 3.31 | 0.00 |
| 62.00 | 3.54 | 1.15 | 3.31 | 0.00 |
| 64.00 | 3.54 | 1.15 | 3.31 | 0.00 |
| 66.00 | 3.54 | 1.15 | 3.31 | 0.00 |
| 68.00 | 3.54 | 1.15 | 3.31 | 0.00 |
| 70.00 | 3.54 | 1.15 | 3.31 | 0.00 |
| 72.00 | 3.54 | 1.15 | 3.31 | 0.00 |

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

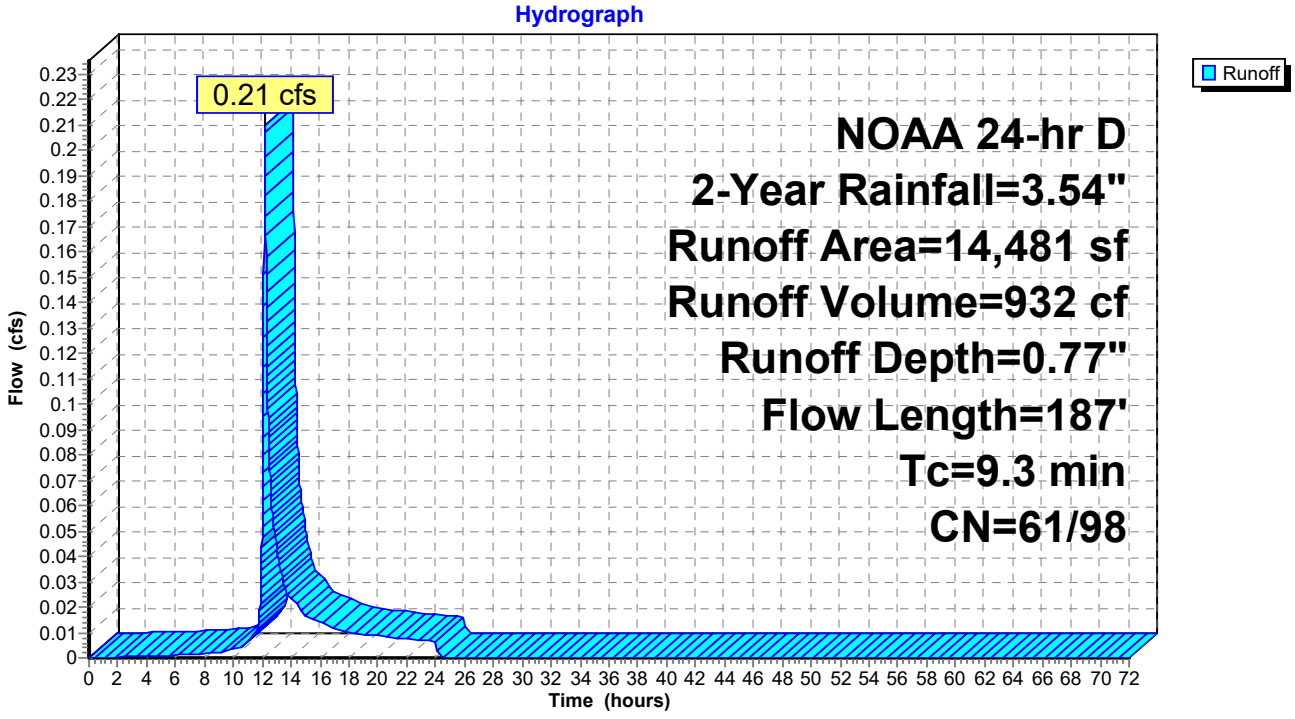
Runoff = 0.21 cfs @ 12.18 hrs, Volume= 932 cf, Depth= 0.77"

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 2-Year Rainfall=3.54"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 13,511 | 61 | >75% Grass cover, Good, HSG B |
| * | 970 | 98 | Impervious Area |
| | 14,481 | 63 | Weighted Average |
| | 13,511 | 61 | 93.30% Pervious Area |
| | 970 | 98 | 6.70% 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 for Subcatchment P-1D: Undetained Flow to Sunset Road

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.08 | 0.00 | 0.01 | 0.00 |
| 4.00 | 0.19 | 0.00 | 0.06 | 0.00 |
| 6.00 | 0.30 | 0.00 | 0.15 | 0.00 |
| 8.00 | 0.46 | 0.00 | 0.28 | 0.00 |
| 10.00 | 0.70 | 0.00 | 0.51 | 0.00 |
| 12.00 | 1.70 | 0.03 | 1.47 | **0.06** |
| 14.00 | 2.84 | 0.31 | 2.61 | **0.02** |
| 16.00 | 3.08 | 0.40 | 2.85 | 0.01 |
| 18.00 | 3.24 | 0.46 | 3.01 | 0.01 |
| 20.00 | 3.35 | 0.51 | 3.12 | 0.01 |
| 22.00 | 3.46 | 0.55 | 3.22 | 0.01 |
| 24.00 | **3.54** | **0.59** | **3.31** | 0.01 |
| 26.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 28.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 30.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 32.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 34.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 36.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 38.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 40.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 42.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 44.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 46.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 48.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 50.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 52.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 54.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 56.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 58.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 60.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 62.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 64.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 66.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 68.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 70.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 72.00 | 3.54 | 0.59 | 3.31 | 0.00 |

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

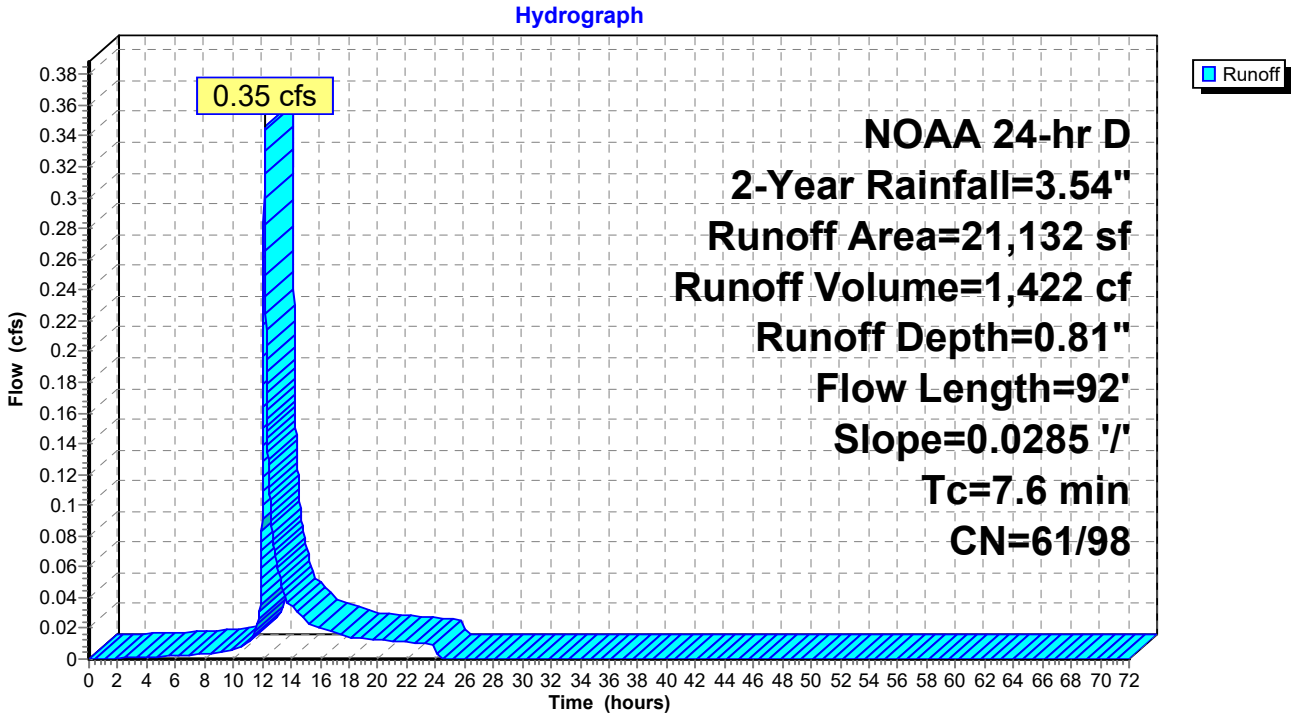
Runoff = 0.35 cfs @ 12.16 hrs, Volume= 1,422 cf, Depth= 0.81"

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 |
|---|---|---|---|
| | 19,447 | 61 | >75% Grass cover, Good, HSG B |
| * | 1,685 | 98 | Impervious Area |
| | 21,132 | 64 | Weighted Average |
| | 19,447 | 61 | 92.03% Pervious Area |
| | 1,685 | 98 | 7.97% 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 for Subcatchment P-2: Proposed Drainage to Roome Avenue

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.08 | 0.00 | 0.01 | 0.00 |
| 4.00 | 0.19 | 0.00 | 0.06 | 0.00 |
| 6.00 | 0.30 | 0.00 | 0.15 | 0.00 |
| 8.00 | 0.46 | 0.00 | 0.28 | 0.00 |
| 10.00 | 0.70 | 0.00 | 0.51 | 0.01 |
| 12.00 | 1.70 | 0.03 | 1.47 | **0.11** |
| 14.00 | 2.84 | 0.31 | 2.61 | **0.03** |
| 16.00 | 3.08 | 0.40 | 2.85 | 0.02 |
| 18.00 | 3.24 | 0.46 | 3.01 | 0.01 |
| 20.00 | 3.35 | 0.51 | 3.12 | 0.01 |
| 22.00 | 3.46 | 0.55 | 3.22 | 0.01 |
| 24.00 | **3.54** | **0.59** | **3.31** | 0.01 |
| 26.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 28.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 30.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 32.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 34.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 36.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 38.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 40.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 42.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 44.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 46.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 48.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 50.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 52.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 54.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 56.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 58.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 60.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 62.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 64.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 66.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 68.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 70.00 | 3.54 | 0.59 | 3.31 | 0.00 |
| 72.00 | 3.54 | 0.59 | 3.31 | 0.00 |

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

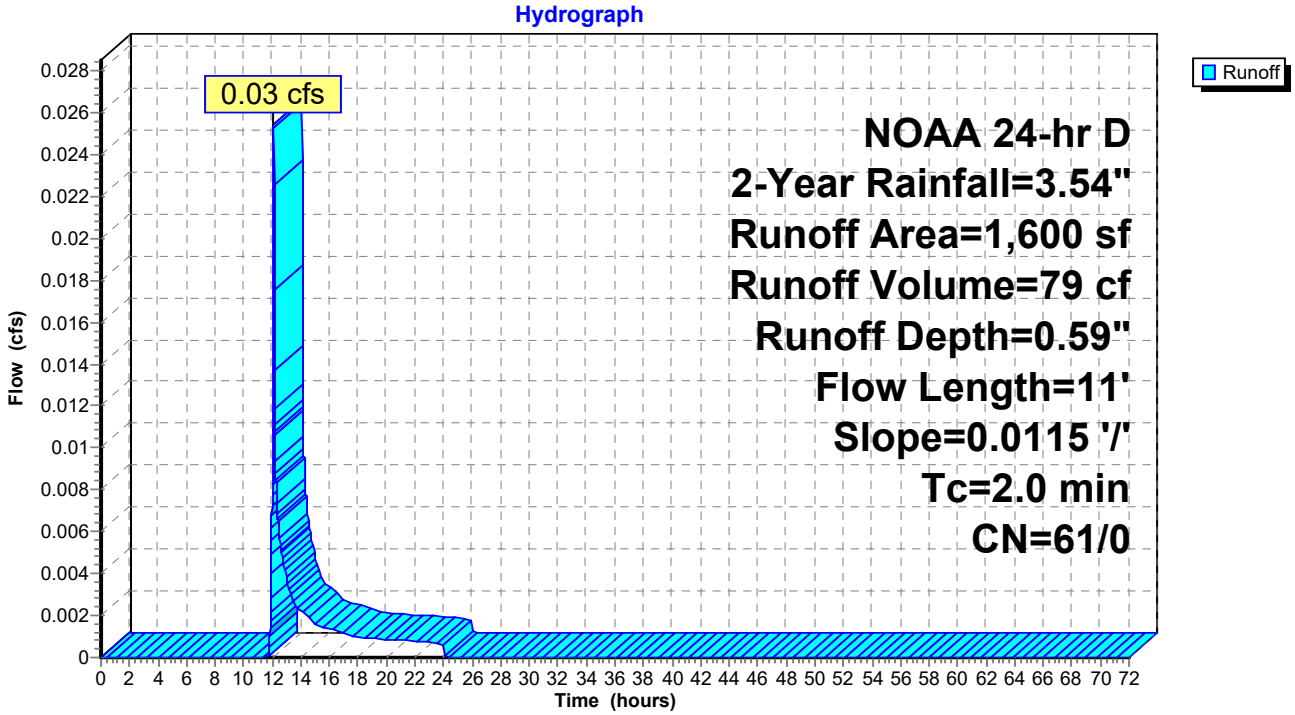
Runoff = 0.03 cfs @ 12.11 hrs, Volume= 79 cf, Depth= 0.59"

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 for Subcatchment P-3: Proposed Drainage toward Dewilde Drive

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | **0.00** | 0.00 |
| 2.00 | 0.08 | 0.00 | 0.00 | 0.00 |
| 4.00 | 0.19 | 0.00 | 0.00 | 0.00 |
| 6.00 | 0.30 | 0.00 | 0.00 | 0.00 |
| 8.00 | 0.46 | 0.00 | 0.00 | 0.00 |
| 10.00 | 0.70 | 0.00 | 0.00 | 0.00 |
| 12.00 | 1.70 | 0.03 | 0.00 | **0.01** |
| 14.00 | 2.84 | 0.31 | 0.00 | **0.00** |
| 16.00 | 3.08 | 0.40 | 0.00 | 0.00 |
| 18.00 | 3.24 | 0.46 | 0.00 | 0.00 |
| 20.00 | 3.35 | 0.51 | 0.00 | 0.00 |
| 22.00 | 3.46 | 0.55 | 0.00 | 0.00 |
| 24.00 | **3.54** | **0.59** | 0.00 | 0.00 |
| 26.00 | 3.54 | 0.59 | 0.00 | 0.00 |
| 28.00 | 3.54 | 0.59 | 0.00 | 0.00 |
| 30.00 | 3.54 | 0.59 | 0.00 | 0.00 |
| 32.00 | 3.54 | 0.59 | 0.00 | 0.00 |
| 34.00 | 3.54 | 0.59 | 0.00 | 0.00 |
| 36.00 | 3.54 | 0.59 | 0.00 | 0.00 |
| 38.00 | 3.54 | 0.59 | 0.00 | 0.00 |
| 40.00 | 3.54 | 0.59 | 0.00 | 0.00 |
| 42.00 | 3.54 | 0.59 | 0.00 | 0.00 |
| 44.00 | 3.54 | 0.59 | 0.00 | 0.00 |
| 46.00 | 3.54 | 0.59 | 0.00 | 0.00 |
| 48.00 | 3.54 | 0.59 | 0.00 | 0.00 |
| 50.00 | 3.54 | 0.59 | 0.00 | 0.00 |
| 52.00 | 3.54 | 0.59 | 0.00 | 0.00 |
| 54.00 | 3.54 | 0.59 | 0.00 | 0.00 |
| 56.00 | 3.54 | 0.59 | 0.00 | 0.00 |
| 58.00 | 3.54 | 0.59 | 0.00 | 0.00 |
| 60.00 | 3.54 | 0.59 | 0.00 | 0.00 |
| 62.00 | 3.54 | 0.59 | 0.00 | 0.00 |
| 64.00 | 3.54 | 0.59 | 0.00 | 0.00 |
| 66.00 | 3.54 | 0.59 | 0.00 | 0.00 |
| 68.00 | 3.54 | 0.59 | 0.00 | 0.00 |
| 70.00 | 3.54 | 0.59 | 0.00 | 0.00 |
| 72.00 | 3.54 | 0.59 | 0.00 | 0.00 |

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

Inflow Area = 55,744 sf, 77.92% Impervious, Inflow Depth = 2.71" for 2-Year event
Inflow = 3.87 cfs @ 12.10 hrs, Volume= 12,574 cf
Outflow = 0.44 cfs @ 12.80 hrs, Volume= 12,574 cf, Atten= 89%, Lag= 42.1 min
Discarded = 0.25 cfs @ 12.80 hrs, Volume= 11,349 cf
Primary = 0.19 cfs @ 12.80 hrs, Volume= 1,225 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 188.10' @ 12.80 hrs Surf.Area= 5,387 sf Storage= 4,810 cf

Plug-Flow detention time= 154.2 min calculated for 12,572 cf (100% of inflow)
Center-of-Mass det. time= 154.2 min ( 914.5 - 760.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 187.00' | 14,171 cf | **Custom Stage Data (Irregular)**Listed below (Recalc) |

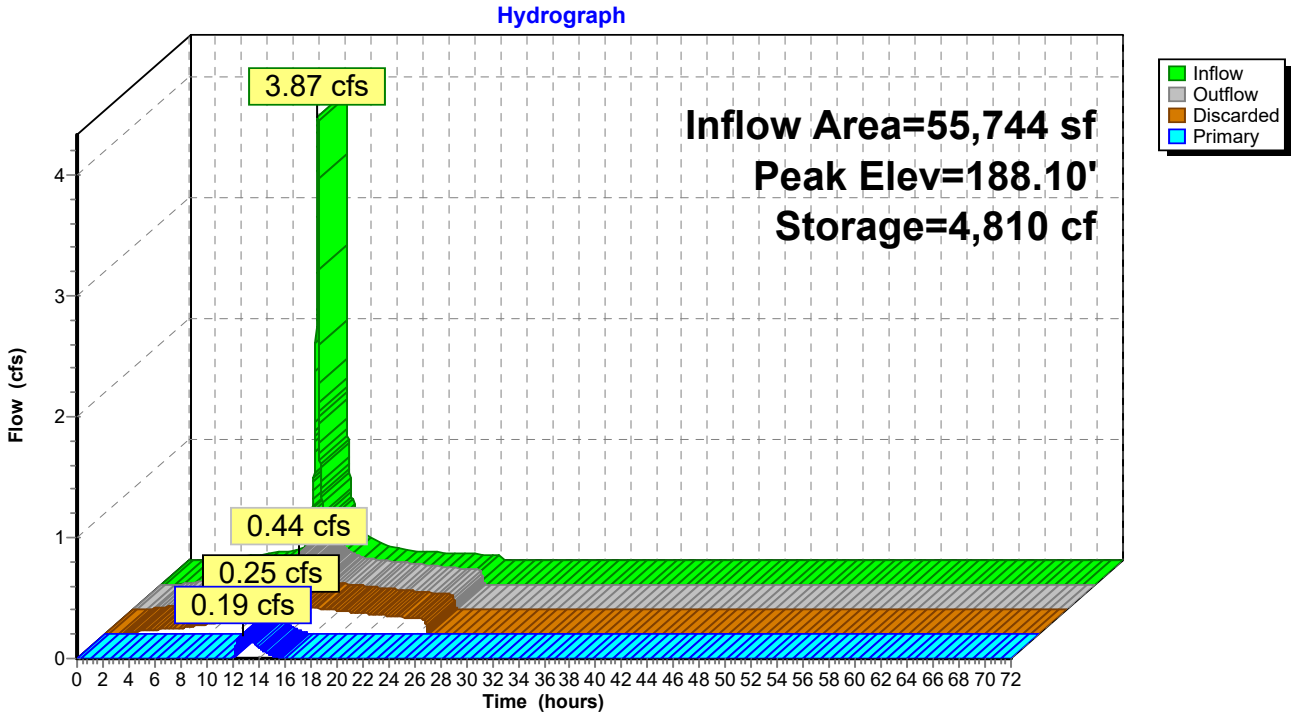
| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 187.00 | 3,406 | 592.8 | 0 | 0 | 3,406 |
| 188.00 | 5,212 | 611.7 | 4,277 | 4,277 | 5,315 |
| 189.00 | 7,076 | 630.5 | 6,120 | 10,397 | 7,275 |
| 189.50 | 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<br>Inlet / Outlet Invert= 185.89' / 185.75' S= 0.0054 '/' Cc= 0.900<br>n= 0.013, Flow Area= 1.23 sf |
| #2 | Device 1 | 187.81' | **5.0" Vert. Orifice/Grate** C= 0.600 |
| #3 | Device 1 | 188.60' | **2.5" Vert. Orifice/Grate** C= 0.600 |
| #4 | Device 1 | 189.15' | **4.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>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<br>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' | **1.485 in/hr Exfiltration over Wetted area**<br>Conductivity to Groundwater Elevation = 184.40' Phase-In= 0.01' |

**Discarded OutFlow** Max=0.25 cfs @ 12.80 hrs HW=188.10' (Free Discharge)
└**5=Exfiltration** ( Controls 0.25 cfs)

**Primary OutFlow** Max=0.19 cfs @ 12.80 hrs HW=188.10' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.19 cfs of 7.12 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.19 cfs @ 1.84 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



## Hydrograph for Pond B-1: Infiltration Basin Along Sunset Road

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Discarded (cfs) | Primary (cfs) |
|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.01 | 4 | 187.00 | 0.01 | 0.01 | 0.00 |
| 4.00 | 0.04 | 10 | 187.00 | 0.03 | 0.03 | 0.00 |
| 6.00 | 0.05 | 14 | 187.00 | 0.05 | 0.05 | 0.00 |
| 8.00 | 0.08 | 24 | 187.01 | 0.08 | 0.08 | 0.00 |
| 10.00 | 0.16 | 82 | 187.02 | 0.12 | 0.12 | 0.00 |
| 12.00 | **2.26** | **2,394** | **187.61** | **0.19** | **0.19** | **0.00** |
| 14.00 | **0.19** | **4,282** | **188.00** | **0.33** | **0.24** | **0.09** |
| 16.00 | 0.11 | 3,389 | 187.82 | 0.22 | 0.22 | 0.00 |
| 18.00 | 0.07 | 2,553 | 187.65 | 0.19 | 0.19 | 0.00 |
| 20.00 | 0.06 | 1,721 | 187.45 | 0.17 | 0.17 | 0.00 |
| 22.00 | 0.05 | 990 | 187.27 | 0.15 | 0.15 | 0.00 |
| 24.00 | 0.04 | 344 | 187.10 | 0.13 | 0.13 | 0.00 |
| 26.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 28.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 30.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 32.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 34.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 36.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 38.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 40.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 42.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 44.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 46.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 48.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 50.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 52.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 54.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 56.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 58.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 60.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 62.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 64.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 66.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 68.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 70.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 72.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |

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

Inflow Area = 13,370 sf, 99.01% Impervious, Inflow Depth = 3.28" for 2-Year event
Inflow = 1.12 cfs @ 12.10 hrs, Volume= 3,654 cf
Outflow = 0.58 cfs @ 12.15 hrs, Volume= 3,654 cf, Atten= 48%, Lag= 3.1 min
Discarded = 0.58 cfs @ 12.15 hrs, Volume= 3,654 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 187.01' @ 12.15 hrs Surf.Area= 3,564 sf Storage= 235 cf

Plug-Flow detention time= 1.3 min calculated for 3,653 cf (100% of inflow)
Center-of-Mass det. time= 1.3 min ( 754.5 - 753.2 )

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

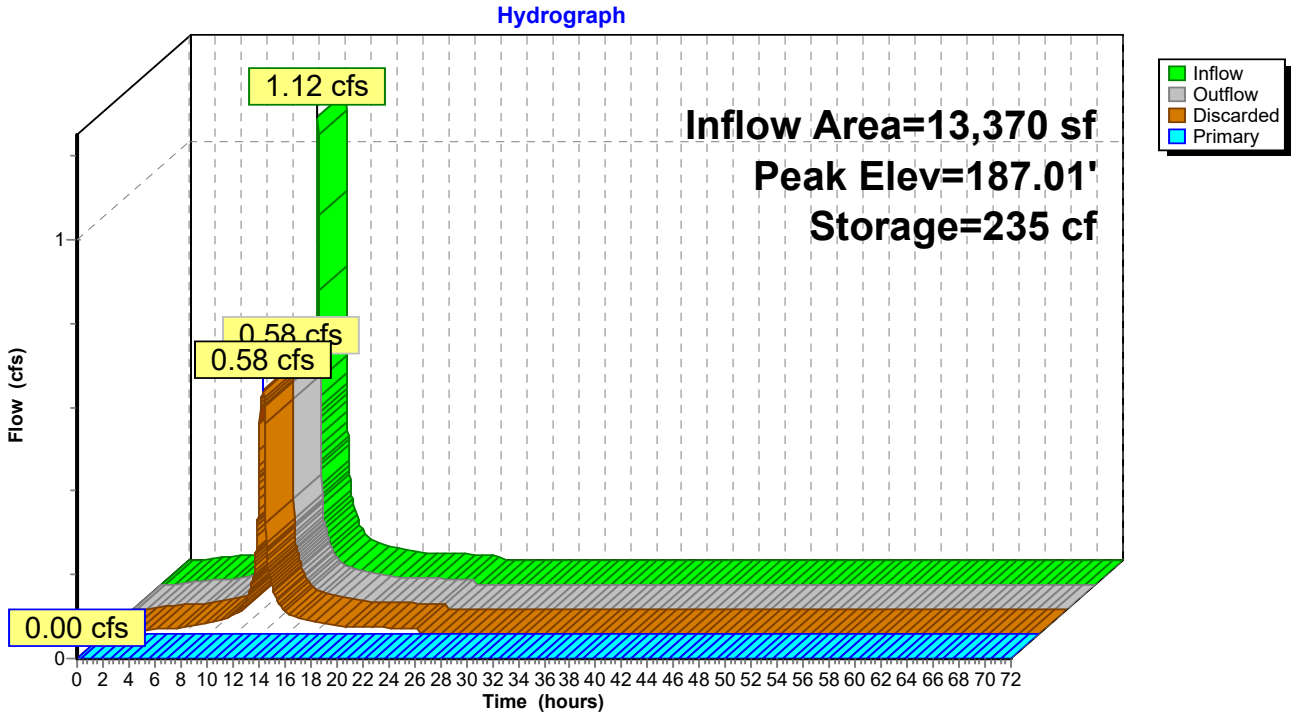
| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 186.85 | 3,564 | 306.0 | 0 | 0 | 3,564 |
| 187.85 | 3,564 | 306.0 | 3,564 | 3,564 | 3,870 |
| 188.85 | 3,564 | 306.0 | 3,564 | 7,128 | 4,176 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 186.85' | **15.0" Round Culvert** L= 135.0' Ke= 0.500<br>Inlet / Outlet Invert= 186.85' / 185.75' S= 0.0081 '/' Cc= 0.900<br>n= 0.013, Flow Area= 1.23 sf |
| #2 | Device 1 | 187.45' | **2.5" Vert. Orifice/Grate** C= 0.600 |
| #3 | Device 1 | 188.45' | **6.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>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<br>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' | **6.500 in/hr Exfiltration over Wetted area**<br>Conductivity to Groundwater Elevation = 184.40' Phase-In= 0.01' |

**Discarded OutFlow** Max=0.58 cfs @ 12.15 hrs HW=187.01' (Free Discharge)
└**4=Exfiltration** ( Controls 0.58 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



## Hydrograph for Pond B-2: Porous Pavement Within Tandem Spaces

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Discarded (cfs) | Primary (cfs) |
|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | **0.00** |
| 2.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 4.00 | 0.01 | 0 | 186.85 | 0.01 | 0.01 | 0.00 |
| 6.00 | 0.02 | 0 | 186.85 | 0.02 | 0.02 | 0.00 |
| 8.00 | 0.03 | 1 | 186.85 | 0.03 | 0.03 | 0.00 |
| 10.00 | 0.05 | 1 | 186.85 | 0.05 | 0.05 | 0.00 |
| 12.00 | **0.67** | **34** | **186.87** | **0.54** | **0.54** | 0.00 |
| 14.00 | **0.05** | **1** | **186.85** | **0.05** | **0.05** | 0.00 |
| 16.00 | 0.03 | 1 | 186.85 | 0.03 | 0.03 | 0.00 |
| 18.00 | 0.02 | 1 | 186.85 | 0.02 | 0.02 | 0.00 |
| 20.00 | 0.02 | 0 | 186.85 | 0.02 | 0.02 | 0.00 |
| 22.00 | 0.01 | 0 | 186.85 | 0.01 | 0.01 | 0.00 |
| 24.00 | 0.01 | 0 | 186.85 | 0.01 | 0.01 | 0.00 |
| 26.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 28.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 30.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 32.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 34.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 36.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 38.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 40.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 42.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 44.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 46.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 48.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 50.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 52.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 54.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 56.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 58.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 60.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 62.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 64.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 66.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 68.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 70.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 72.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |

## Summary for Pond B-3: Infiltration Basin in Rear

Inflow Area = 67,084 sf, 12.41% Impervious, Inflow Depth = 1.42" for 2-Year event
Inflow = 2.06 cfs @ 12.18 hrs, Volume= 7,911 cf
Outflow = 0.68 cfs @ 12.48 hrs, Volume= 7,911 cf, Atten= 67%, Lag= 17.9 min
Discarded = 0.06 cfs @ 12.48 hrs, Volume= 3,589 cf
Primary = 0.62 cfs @ 12.48 hrs, Volume= 4,322 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 188.60' @ 12.48 hrs Surf.Area= 4,032 sf Storage= 2,205 cf

Plug-Flow detention time= 125.2 min calculated for 7,911 cf (100% of inflow)
Center-of-Mass det. time= 125.2 min ( 969.7 - 844.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 188.00' | 9,144 cf | **Custom Stage Data (Irregular)**Listed below (Recalc) |

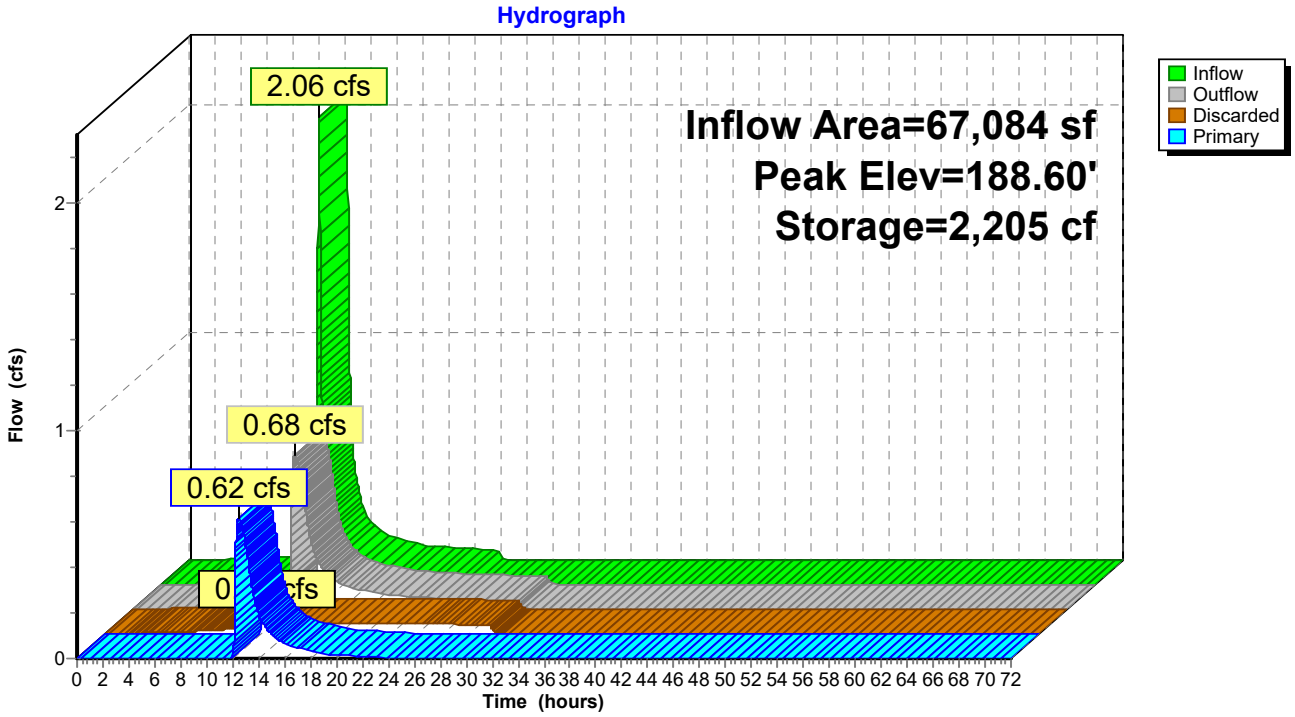
| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 188.00 | 3,308 | 335.0 | 0 | 0 | 3,308 |
| 189.00 | 4,551 | 370.0 | 3,913 | 3,913 | 5,303 |
| 190.00 | 5,942 | 405.0 | 5,231 | 9,144 | 7,496 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 187.50' | **15.0" Round Culvert** L= 325.0' Ke= 0.500<br>Inlet / Outlet Invert= 187.50' / 185.85' S= 0.0051 '/' Cc= 0.900<br>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 |
| #3 | Device 1 | 188.85' | **2.5" Vert. Orifice/Grate** C= 0.600 |
| #4 | Device 1 | 189.65' | **4.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>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<br>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**<br>Conductivity to Groundwater Elevation = 183.90' Phase-In= 0.01' |

**Discarded OutFlow** Max=0.06 cfs @ 12.48 hrs HW=188.60' (Free Discharge)
└**5=Exfiltration** ( Controls 0.06 cfs)

**Primary OutFlow** Max=0.62 cfs @ 12.48 hrs HW=188.60' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.62 cfs of 3.45 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.62 cfs @ 2.38 fps)
  ├**3=Orifice/Grate** ( Controls 0.00 cfs)
  └**4=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Pond B-3: Infiltration Basin in Rear



## Hydrograph for Pond B-3: Infiltration Basin in Rear

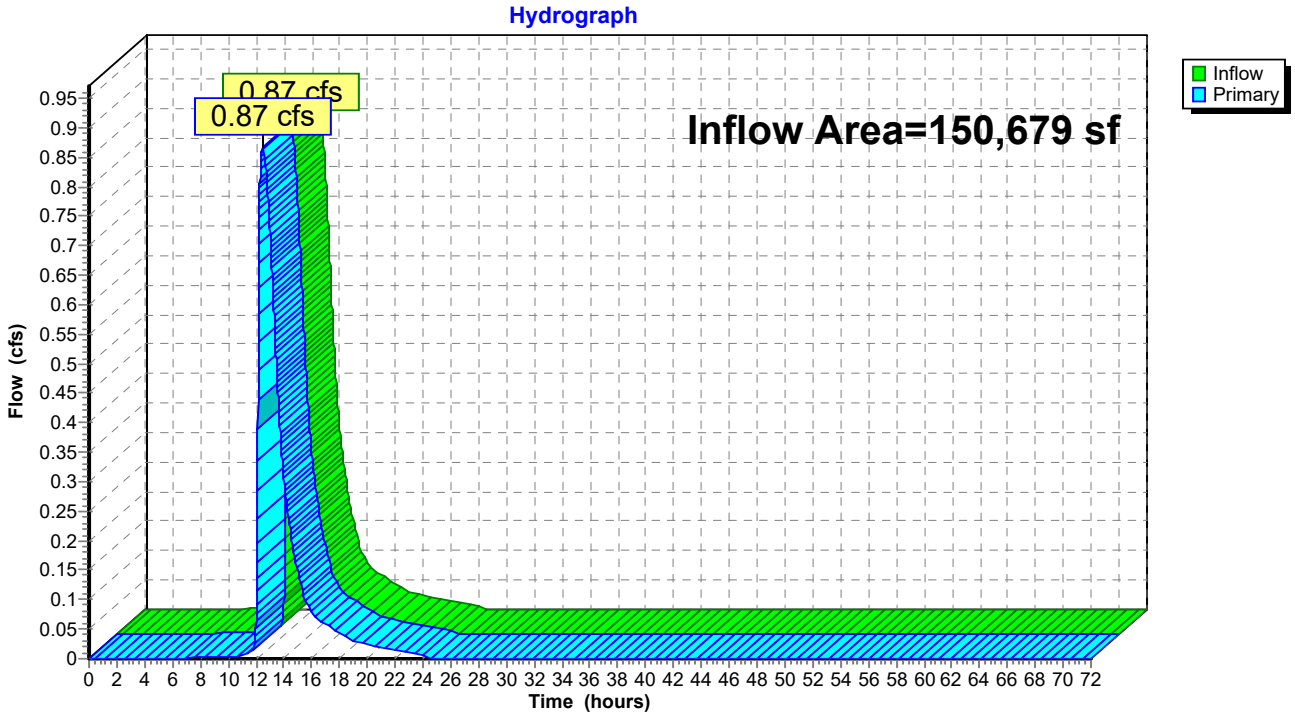
| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Discarded (cfs) | Primary (cfs) |
|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.00 | 2 | 188.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | 0.01 | 5 | 188.00 | 0.01 | 0.01 | 0.00 |
| 6.00 | 0.01 | 8 | 188.00 | 0.01 | 0.01 | 0.00 |
| 8.00 | 0.02 | 13 | 188.00 | 0.01 | 0.01 | 0.00 |
| 10.00 | 0.03 | 23 | 188.01 | 0.03 | 0.03 | 0.00 |
| 12.00 | **0.78** | **700** | **188.20** | **0.04** | **0.04** | **0.00** |
| 14.00 | **0.17** | **1,348** | **188.38** | **0.24** | **0.05** | **0.19** |
| 16.00 | 0.10 | 1,097 | 188.31 | 0.11 | 0.05 | 0.07 |
| 18.00 | 0.07 | 1,008 | 188.29 | 0.08 | 0.05 | 0.03 |
| 20.00 | 0.06 | 953 | 188.27 | 0.06 | 0.05 | 0.02 |
| 22.00 | 0.05 | 921 | 188.27 | 0.06 | 0.05 | 0.01 |
| 24.00 | 0.04 | 885 | 188.26 | 0.05 | 0.05 | 0.00 |
| 26.00 | 0.00 | 582 | 188.17 | 0.04 | 0.04 | 0.00 |
| 28.00 | 0.00 | 278 | 188.08 | 0.04 | 0.04 | 0.00 |
| 30.00 | 0.00 | 10 | 188.00 | 0.01 | 0.01 | 0.00 |
| 32.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 34.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 36.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 38.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 40.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 42.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 44.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 46.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 48.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 50.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 52.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 54.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 56.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 58.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 60.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 62.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 64.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 66.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 68.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 70.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 72.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |

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

Inflow Area = 150,679 sf, 43.78% Impervious, Inflow Depth = 0.52" for 2-Year event
Inflow = 0.87 cfs @ 12.52 hrs, Volume= 6,480 cf
Primary = 0.87 cfs @ 12.52 hrs, Volume= 6,480 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



## Hydrograph for Link POI-1: Proposed Drainage to Sunset Road

| Time (hours) | Inflow (cfs) | Elevation (feet) | Primary (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | **0.00** | 0.00 |
| 1.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.00 | 0.00 | 0.00 |
| 3.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | 0.00 | 0.00 | 0.00 |
| 5.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | 0.00 | 0.00 | 0.00 |
| 7.00 | 0.00 | 0.00 | 0.00 |
| 8.00 | 0.00 | 0.00 | 0.00 |
| 9.00 | 0.00 | 0.00 | 0.00 |
| 10.00 | 0.00 | 0.00 | 0.00 |
| 11.00 | 0.01 | 0.00 | 0.01 |
| 12.00 | **0.06** | 0.00 | **0.06** |
| 13.00 | **0.73** | 0.00 | **0.73** |
| 14.00 | 0.31 | 0.00 | 0.31 |
| 15.00 | 0.15 | 0.00 | 0.15 |
| 16.00 | 0.08 | 0.00 | 0.08 |
| 17.00 | 0.06 | 0.00 | 0.06 |
| 18.00 | 0.04 | 0.00 | 0.04 |
| 19.00 | 0.03 | 0.00 | 0.03 |
| 20.00 | 0.02 | 0.00 | 0.02 |
| 21.00 | 0.02 | 0.00 | 0.02 |
| 22.00 | 0.02 | 0.00 | 0.02 |
| 23.00 | 0.01 | 0.00 | 0.01 |
| 24.00 | 0.01 | 0.00 | 0.01 |
| 25.00 | 0.00 | 0.00 | 0.00 |
| 26.00 | 0.00 | 0.00 | 0.00 |
| 27.00 | 0.00 | 0.00 | 0.00 |
| 28.00 | 0.00 | 0.00 | 0.00 |
| 29.00 | 0.00 | 0.00 | 0.00 |
| 30.00 | 0.00 | 0.00 | 0.00 |
| 31.00 | 0.00 | 0.00 | 0.00 |
| 32.00 | 0.00 | 0.00 | 0.00 |
| 33.00 | 0.00 | 0.00 | 0.00 |
| 34.00 | 0.00 | 0.00 | 0.00 |
| 35.00 | 0.00 | 0.00 | 0.00 |
| 36.00 | 0.00 | 0.00 | 0.00 |
| 37.00 | 0.00 | 0.00 | 0.00 |
| 38.00 | 0.00 | 0.00 | 0.00 |
| 39.00 | 0.00 | 0.00 | 0.00 |
| 40.00 | 0.00 | 0.00 | 0.00 |
| 41.00 | 0.00 | 0.00 | 0.00 |
| 42.00 | 0.00 | 0.00 | 0.00 |
| 43.00 | 0.00 | 0.00 | 0.00 |
| 44.00 | 0.00 | 0.00 | 0.00 |
| 45.00 | 0.00 | 0.00 | 0.00 |
| 46.00 | 0.00 | 0.00 | 0.00 |
| 47.00 | 0.00 | 0.00 | 0.00 |
| 48.00 | 0.00 | 0.00 | 0.00 |
| 49.00 | 0.00 | 0.00 | 0.00 |
| 50.00 | 0.00 | 0.00 | 0.00 |
| 51.00 | 0.00 | 0.00 | 0.00 |
| 52.00 | 0.00 | 0.00 | 0.00 |
| 53.00 | 0.00 | 0.00 | 0.00 |
| 54.00 | 0.00 | 0.00 | 0.00 |
| 55.00 | 0.00 | 0.00 | 0.00 |
| 56.00 | 0.00 | 0.00 | 0.00 |
| 57.00 | 0.00 | 0.00 | 0.00 |
| 58.00 | 0.00 | 0.00 | 0.00 |
| 59.00 | 0.00 | 0.00 | 0.00 |
| 60.00 | 0.00 | 0.00 | 0.00 |
| 61.00 | 0.00 | 0.00 | 0.00 |
| 62.00 | 0.00 | 0.00 | 0.00 |
| 63.00 | 0.00 | 0.00 | 0.00 |
| 64.00 | 0.00 | 0.00 | 0.00 |
| 65.00 | 0.00 | 0.00 | 0.00 |
| 66.00 | 0.00 | 0.00 | 0.00 |
| 67.00 | 0.00 | 0.00 | 0.00 |
| 68.00 | 0.00 | 0.00 | 0.00 |
| 69.00 | 0.00 | 0.00 | 0.00 |
| 70.00 | 0.00 | 0.00 | 0.00 |
| 71.00 | 0.00 | 0.00 | 0.00 |
| 72.00 | 0.00 | 0.00 | 0.00 |

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

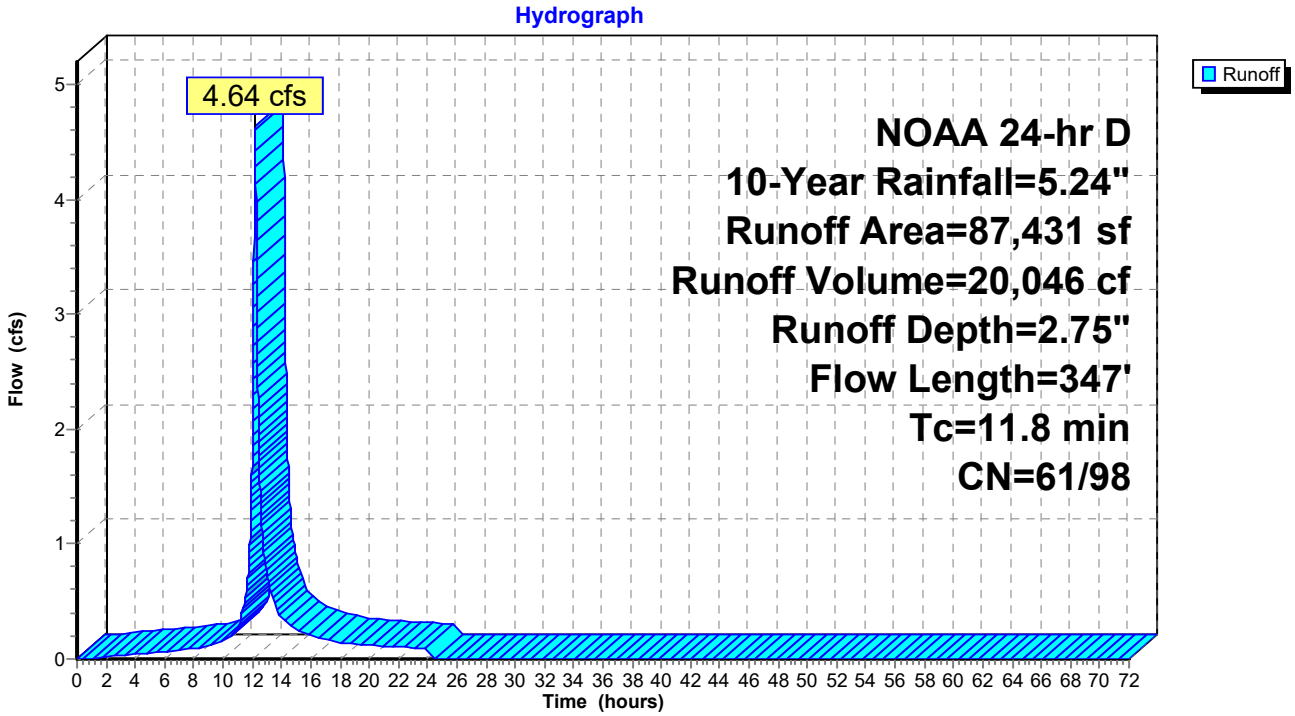
Runoff = 4.64 cfs @ 12.20 hrs, Volume= 20,046 cf, Depth= 2.75"

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 for Subcatchment EX-1: Existing Drainage towards Sunset Road

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.13 | 0.00 | 0.02 | 0.02 |
| 4.00 | 0.27 | 0.00 | 0.13 | 0.04 |
| 6.00 | 0.45 | 0.00 | 0.27 | 0.06 |
| 8.00 | 0.68 | 0.00 | 0.48 | 0.09 |
| 10.00 | 1.04 | 0.00 | 0.83 | 0.16 |
| 12.00 | 2.51 | 0.20 | 2.28 | **1.86** |
| 14.00 | 4.20 | 0.92 | 3.97 | **0.37** |
| 16.00 | 4.56 | 1.11 | 4.32 | 0.21 |
| 18.00 | 4.79 | 1.25 | 4.56 | 0.14 |
| 20.00 | 4.97 | 1.35 | 4.73 | 0.12 |
| 22.00 | 5.11 | 1.44 | 4.88 | 0.11 |
| 24.00 | **5.24** | **1.52** | **5.00** | 0.09 |
| 26.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 28.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 30.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 32.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 34.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 36.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 38.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 40.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 42.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 44.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 46.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 48.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 50.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 52.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 54.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 56.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 58.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 60.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 62.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 64.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 66.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 68.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 70.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 72.00 | 5.24 | 1.52 | 5.00 | 0.00 |

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

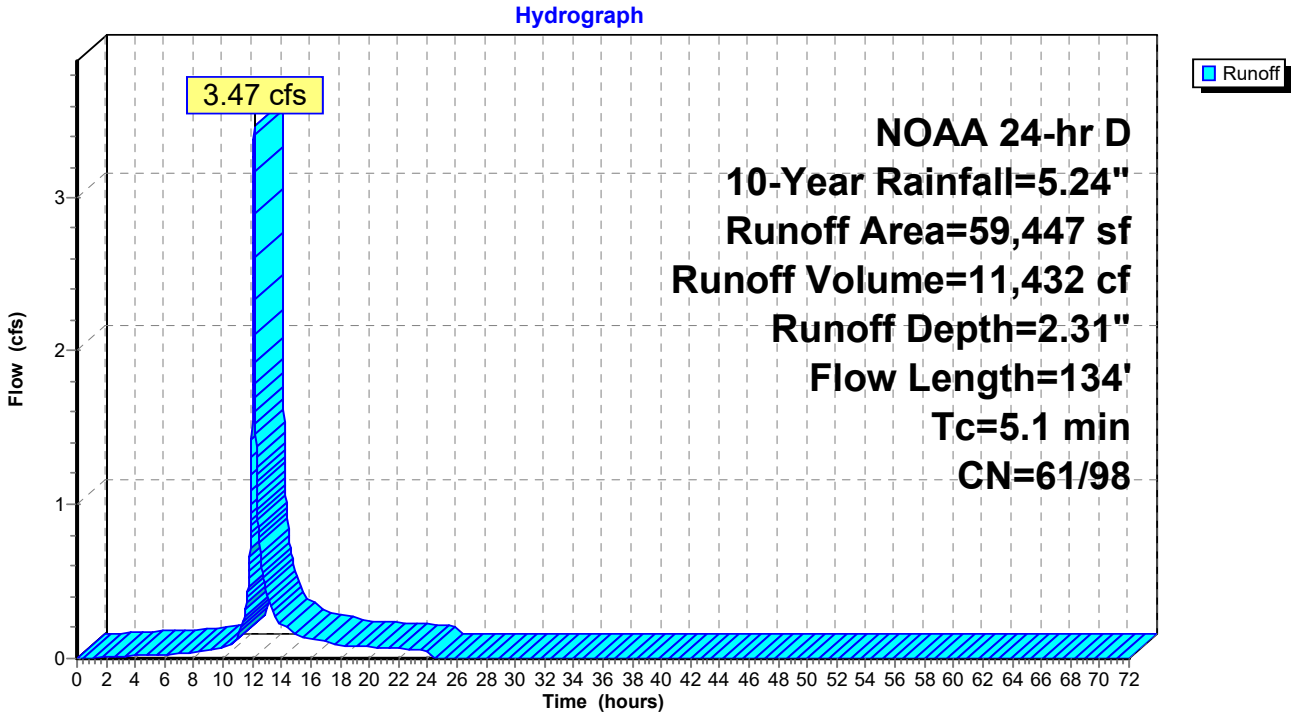
Runoff = 3.47 cfs @ 12.13 hrs, Volume= 11,432 cf, Depth= 2.31"

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



## Hydrograph for Subcatchment EX-2: Existing Drainage towards Roome Avenue

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.13 | 0.00 | 0.02 | 0.01 |
| 4.00 | 0.27 | 0.00 | 0.13 | 0.02 |
| 6.00 | 0.45 | 0.00 | 0.27 | 0.03 |
| 8.00 | 0.68 | 0.00 | 0.48 | 0.04 |
| 10.00 | 1.04 | 0.00 | 0.83 | 0.07 |
| 12.00 | 2.51 | 0.20 | 2.28 | **1.71** |
| 14.00 | 4.20 | 0.92 | 3.97 | **0.22** |
| 16.00 | 4.56 | 1.11 | 4.32 | 0.13 |
| 18.00 | 4.79 | 1.25 | 4.56 | 0.09 |
| 20.00 | 4.97 | 1.35 | 4.73 | 0.08 |
| 22.00 | 5.11 | 1.44 | 4.88 | 0.07 |
| 24.00 | **5.24** | **1.52** | **5.00** | 0.06 |
| 26.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 28.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 30.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 32.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 34.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 36.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 38.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 40.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 42.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 44.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 46.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 48.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 50.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 52.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 54.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 56.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 58.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 60.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 62.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 64.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 66.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 68.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 70.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 72.00 | 5.24 | 1.52 | 5.00 | 0.00 |

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

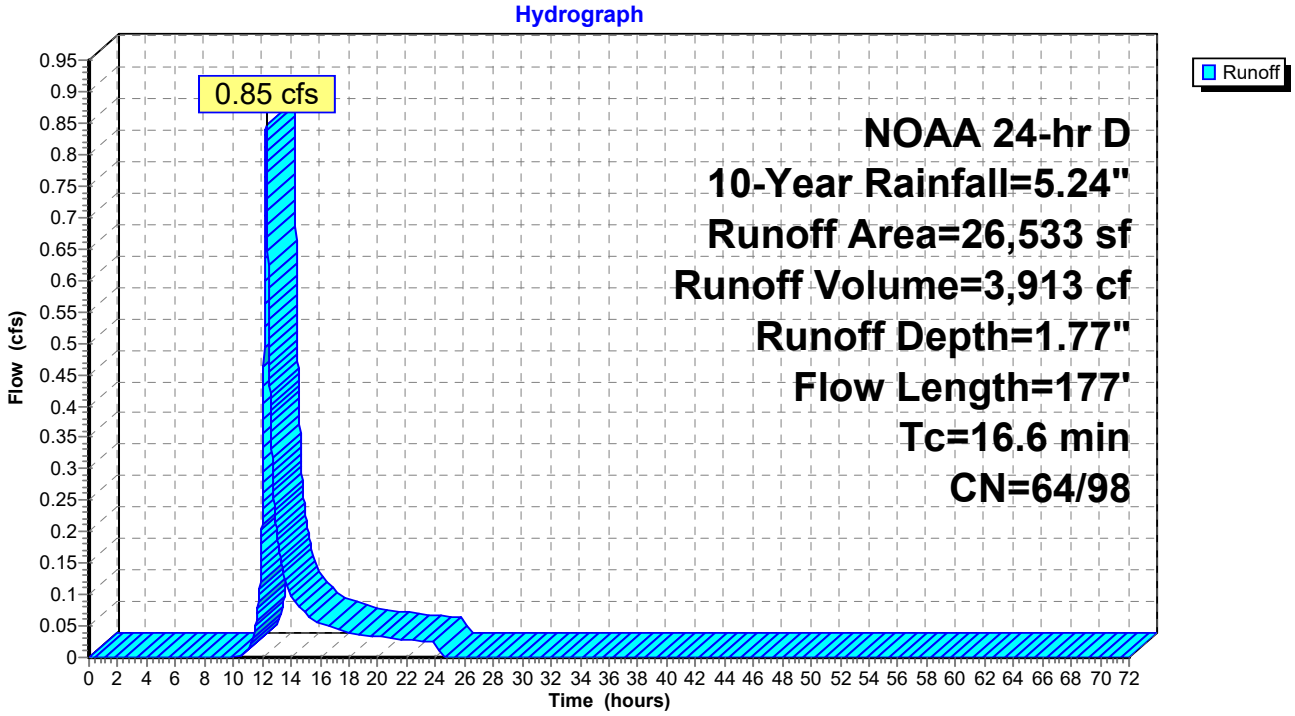
Runoff = 0.85 cfs @ 12.26 hrs, Volume= 3,913 cf, Depth= 1.77"

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 for Subcatchment EX-3: Existing Drainage towards Dewilde Drive

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.13 | 0.00 | 0.02 | 0.00 |
| 4.00 | 0.27 | 0.00 | 0.13 | 0.00 |
| 6.00 | 0.45 | 0.00 | 0.27 | 0.00 |
| 8.00 | 0.68 | 0.00 | 0.48 | 0.00 |
| 10.00 | 1.04 | 0.00 | 0.83 | 0.00 |
| 12.00 | 2.51 | 0.27 | 2.28 | **0.24** |
| 14.00 | 4.20 | 1.09 | 3.97 | **0.10** |
| 16.00 | 4.56 | 1.30 | 4.32 | 0.05 |
| 18.00 | 4.79 | 1.45 | 4.56 | 0.04 |
| 20.00 | 4.97 | 1.56 | 4.73 | 0.03 |
| 22.00 | 5.11 | 1.66 | 4.88 | 0.03 |
| 24.00 | **5.24** | **1.74** | **5.00** | 0.02 |
| 26.00 | 5.24 | 1.74 | 5.00 | 0.00 |
| 28.00 | 5.24 | 1.74 | 5.00 | 0.00 |
| 30.00 | 5.24 | 1.74 | 5.00 | 0.00 |
| 32.00 | 5.24 | 1.74 | 5.00 | 0.00 |
| 34.00 | 5.24 | 1.74 | 5.00 | 0.00 |
| 36.00 | 5.24 | 1.74 | 5.00 | 0.00 |
| 38.00 | 5.24 | 1.74 | 5.00 | 0.00 |
| 40.00 | 5.24 | 1.74 | 5.00 | 0.00 |
| 42.00 | 5.24 | 1.74 | 5.00 | 0.00 |
| 44.00 | 5.24 | 1.74 | 5.00 | 0.00 |
| 46.00 | 5.24 | 1.74 | 5.00 | 0.00 |
| 48.00 | 5.24 | 1.74 | 5.00 | 0.00 |
| 50.00 | 5.24 | 1.74 | 5.00 | 0.00 |
| 52.00 | 5.24 | 1.74 | 5.00 | 0.00 |
| 54.00 | 5.24 | 1.74 | 5.00 | 0.00 |
| 56.00 | 5.24 | 1.74 | 5.00 | 0.00 |
| 58.00 | 5.24 | 1.74 | 5.00 | 0.00 |
| 60.00 | 5.24 | 1.74 | 5.00 | 0.00 |
| 62.00 | 5.24 | 1.74 | 5.00 | 0.00 |
| 64.00 | 5.24 | 1.74 | 5.00 | 0.00 |
| 66.00 | 5.24 | 1.74 | 5.00 | 0.00 |
| 68.00 | 5.24 | 1.74 | 5.00 | 0.00 |
| 70.00 | 5.24 | 1.74 | 5.00 | 0.00 |
| 72.00 | 5.24 | 1.74 | 5.00 | 0.00 |

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

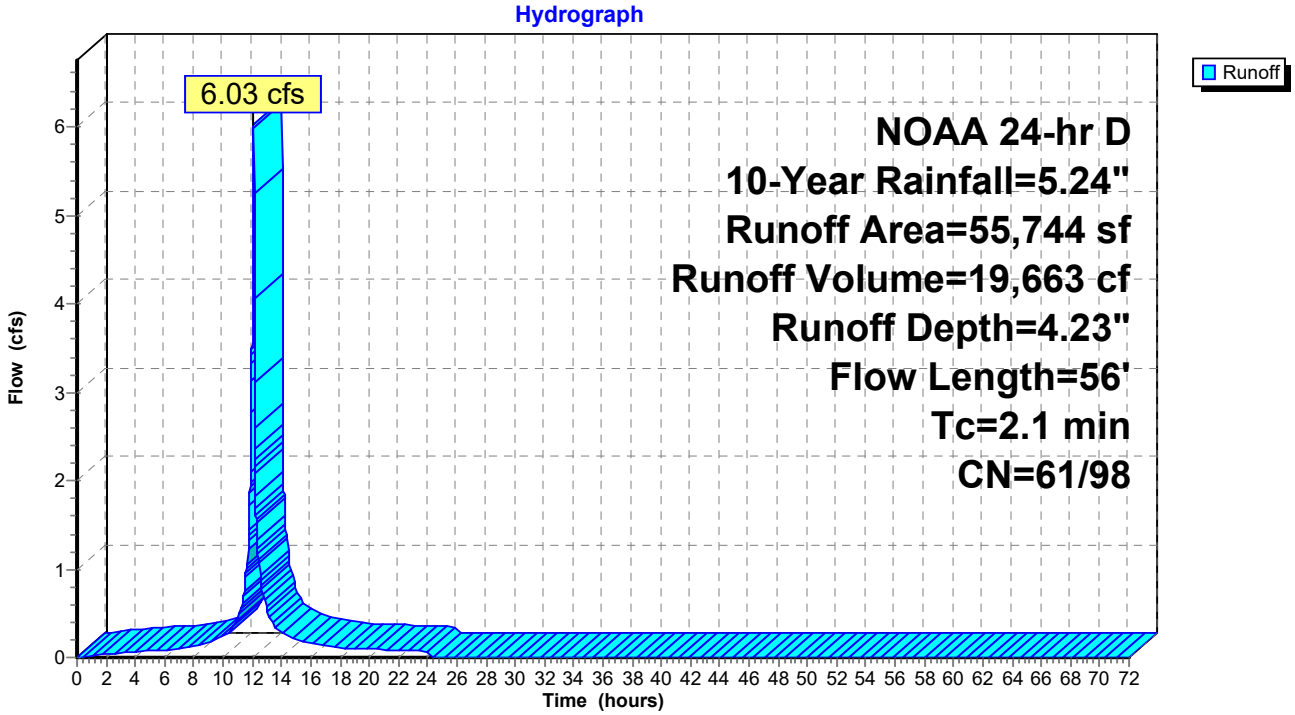
Runoff = 6.03 cfs @ 12.10 hrs, Volume= 19,663 cf, Depth= 4.23"

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 |
| * | 15,610 | 98 | Impervious Area |
| | 55,744 | 90 | Weighted Average |
| | 12,309 | 61 | 22.08% Pervious Area |
| | 43,435 | 98 | 77.92% 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



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

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.13 | 0.00 | 0.02 | 0.03 |
| 4.00 | 0.27 | 0.00 | 0.13 | 0.06 |
| 6.00 | 0.45 | 0.00 | 0.27 | 0.08 |
| 8.00 | 0.68 | 0.00 | 0.48 | 0.13 |
| 10.00 | 1.04 | 0.00 | 0.83 | 0.24 |
| 12.00 | 2.51 | 0.20 | 2.28 | **3.53** |
| 14.00 | 4.20 | 0.92 | 3.97 | **0.29** |
| 16.00 | 4.56 | 1.11 | 4.32 | 0.16 |
| 18.00 | 4.79 | 1.25 | 4.56 | 0.11 |
| 20.00 | 4.97 | 1.35 | 4.73 | 0.09 |
| 22.00 | 5.11 | 1.44 | 4.88 | 0.08 |
| 24.00 | **5.24** | **1.52** | **5.00** | 0.07 |
| 26.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 28.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 30.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 32.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 34.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 36.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 38.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 40.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 42.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 44.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 46.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 48.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 50.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 52.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 54.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 56.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 58.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 60.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 62.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 64.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 66.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 68.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 70.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 72.00 | 5.24 | 1.52 | 5.00 | 0.00 |

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

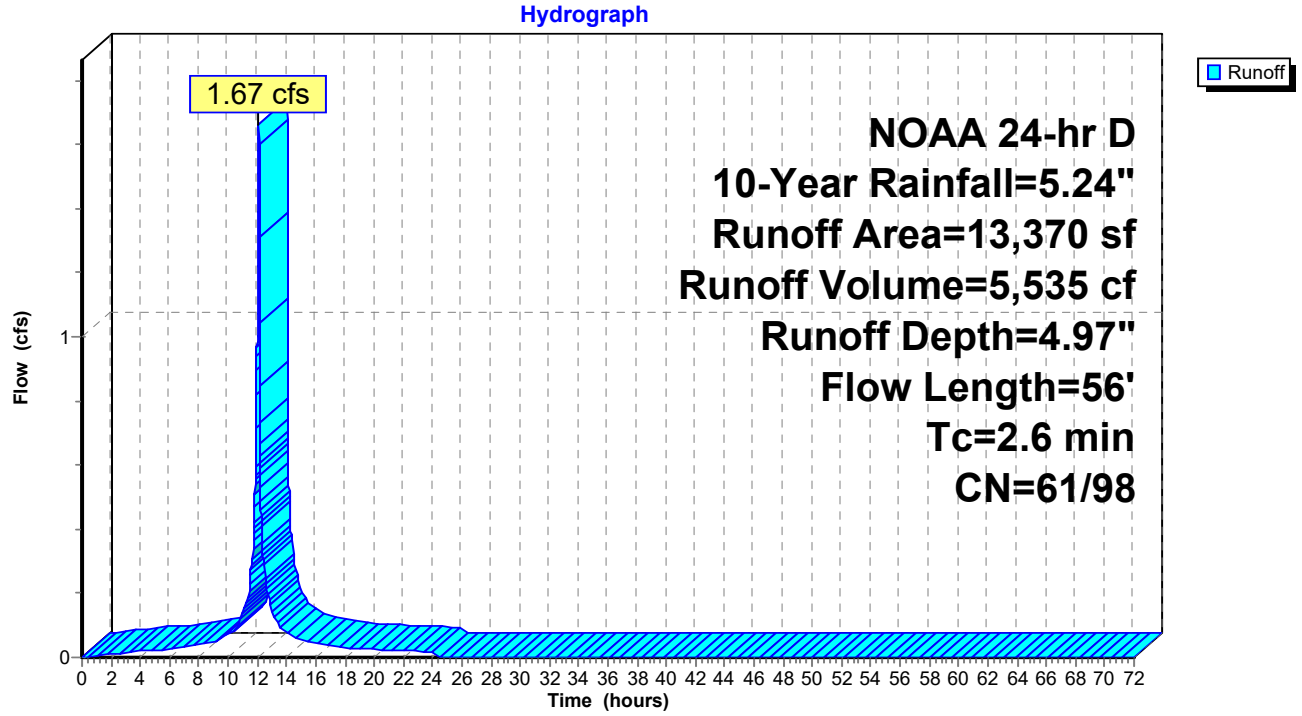
Runoff = 1.67 cfs @ 12.10 hrs, Volume= 5,535 cf, Depth= 4.97"

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 |
|---|---|---|---|
| | 133 | 61 | >75% Grass cover, Good, HSG B |
| * | 3,564 | 98 | Porous Pavement |
| * | 9,673 | 98 | Impervious Area |
| | 13,370 | 98 | Weighted Average |
| | 133 | 61 | 0.99% Pervious Area |
| | 13,237 | 98 | 99.01% 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 for Subcatchment P-1B: Drainage to Porous Pavement in Tandem Spaces

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.13 | 0.00 | 0.02 | 0.01 |
| 4.00 | 0.27 | 0.00 | 0.13 | 0.02 |
| 6.00 | 0.45 | 0.00 | 0.27 | 0.02 |
| 8.00 | 0.68 | 0.00 | 0.48 | 0.04 |
| 10.00 | 1.04 | 0.00 | 0.83 | 0.07 |
| 12.00 | 2.51 | 0.20 | 2.28 | **1.00** |
| 14.00 | 4.20 | 0.92 | 3.97 | **0.08** |
| 16.00 | 4.56 | 1.11 | 4.32 | 0.04 |
| 18.00 | 4.79 | 1.25 | 4.56 | 0.03 |
| 20.00 | 4.97 | 1.35 | 4.73 | 0.02 |
| 22.00 | 5.11 | 1.44 | 4.88 | 0.02 |
| 24.00 | **5.24** | **1.52** | **5.00** | 0.02 |
| 26.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 28.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 30.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 32.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 34.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 36.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 38.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 40.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 42.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 44.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 46.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 48.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 50.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 52.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 54.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 56.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 58.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 60.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 62.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 64.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 66.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 68.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 70.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 72.00 | 5.24 | 1.52 | 5.00 | 0.00 |

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

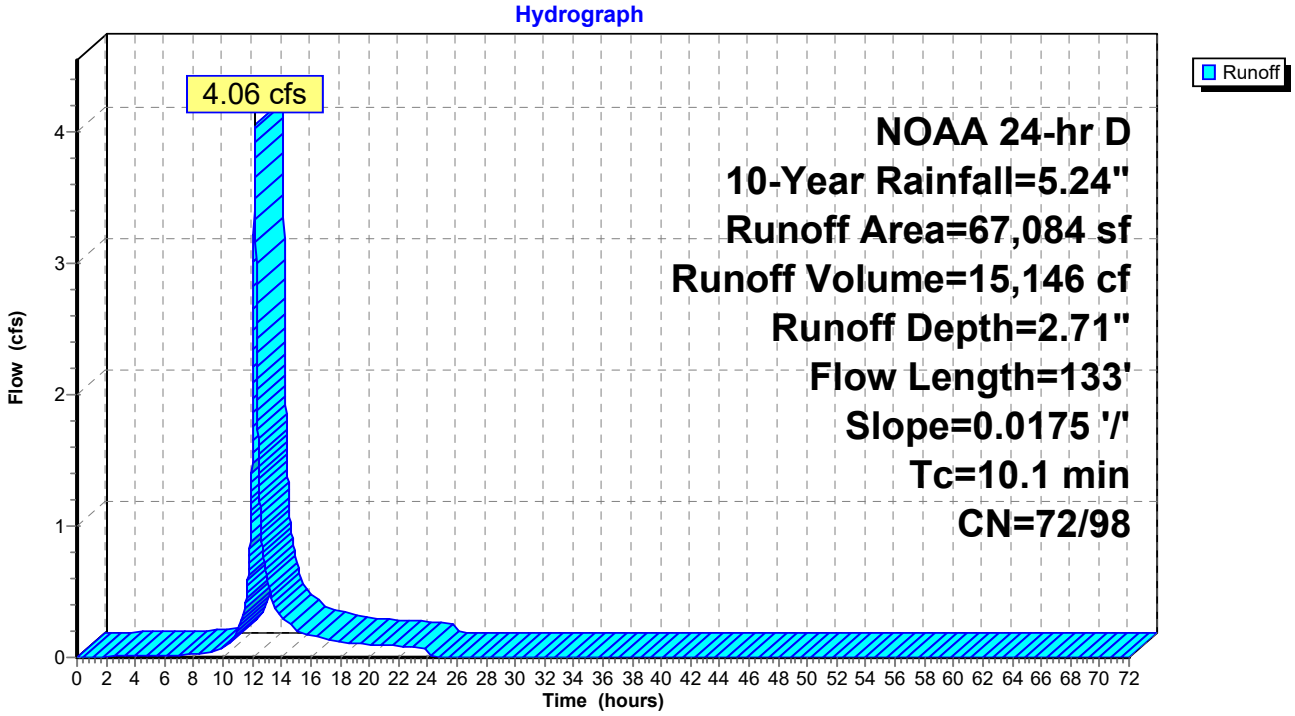
Runoff = 4.06 cfs @ 12.18 hrs, Volume= 15,146 cf, Depth= 2.71"

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 10-Year Rainfall=5.24"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 25,698 | 61 | >75% Grass cover, Good, HSG B |
| * | 8,326 | 98 | Impervious Area |
| * | 33,060 | 80 | Turf Field |
| | 67,084 | 75 | Weighted Average |
| | 58,758 | 72 | 87.59% Pervious Area |
| | 8,326 | 98 | 12.41% 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 for Subcatchment P-1C: Drainage to Infiltration Basin in Rear

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.13 | 0.00 | 0.02 | 0.01 |
| 4.00 | 0.27 | 0.00 | 0.13 | 0.01 |
| 6.00 | 0.45 | 0.00 | 0.27 | 0.02 |
| 8.00 | 0.68 | 0.00 | 0.48 | 0.02 |
| 10.00 | 1.04 | 0.02 | 0.83 | 0.08 |
| 12.00 | 2.51 | 0.53 | 2.28 | **1.66** |
| 14.00 | 4.20 | 1.60 | 3.97 | **0.30** |
| 16.00 | 4.56 | 1.86 | 4.32 | 0.17 |
| 18.00 | 4.79 | 2.04 | 4.56 | 0.12 |
| 20.00 | 4.97 | 2.17 | 4.73 | 0.10 |
| 22.00 | 5.11 | 2.29 | 4.88 | 0.09 |
| 24.00 | **5.24** | **2.38** | **5.00** | 0.07 |
| 26.00 | 5.24 | 2.38 | 5.00 | 0.00 |
| 28.00 | 5.24 | 2.38 | 5.00 | 0.00 |
| 30.00 | 5.24 | 2.38 | 5.00 | 0.00 |
| 32.00 | 5.24 | 2.38 | 5.00 | 0.00 |
| 34.00 | 5.24 | 2.38 | 5.00 | 0.00 |
| 36.00 | 5.24 | 2.38 | 5.00 | 0.00 |
| 38.00 | 5.24 | 2.38 | 5.00 | 0.00 |
| 40.00 | 5.24 | 2.38 | 5.00 | 0.00 |
| 42.00 | 5.24 | 2.38 | 5.00 | 0.00 |
| 44.00 | 5.24 | 2.38 | 5.00 | 0.00 |
| 46.00 | 5.24 | 2.38 | 5.00 | 0.00 |
| 48.00 | 5.24 | 2.38 | 5.00 | 0.00 |
| 50.00 | 5.24 | 2.38 | 5.00 | 0.00 |
| 52.00 | 5.24 | 2.38 | 5.00 | 0.00 |
| 54.00 | 5.24 | 2.38 | 5.00 | 0.00 |
| 56.00 | 5.24 | 2.38 | 5.00 | 0.00 |
| 58.00 | 5.24 | 2.38 | 5.00 | 0.00 |
| 60.00 | 5.24 | 2.38 | 5.00 | 0.00 |
| 62.00 | 5.24 | 2.38 | 5.00 | 0.00 |
| 64.00 | 5.24 | 2.38 | 5.00 | 0.00 |
| 66.00 | 5.24 | 2.38 | 5.00 | 0.00 |
| 68.00 | 5.24 | 2.38 | 5.00 | 0.00 |
| 70.00 | 5.24 | 2.38 | 5.00 | 0.00 |
| 72.00 | 5.24 | 2.38 | 5.00 | 0.00 |

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

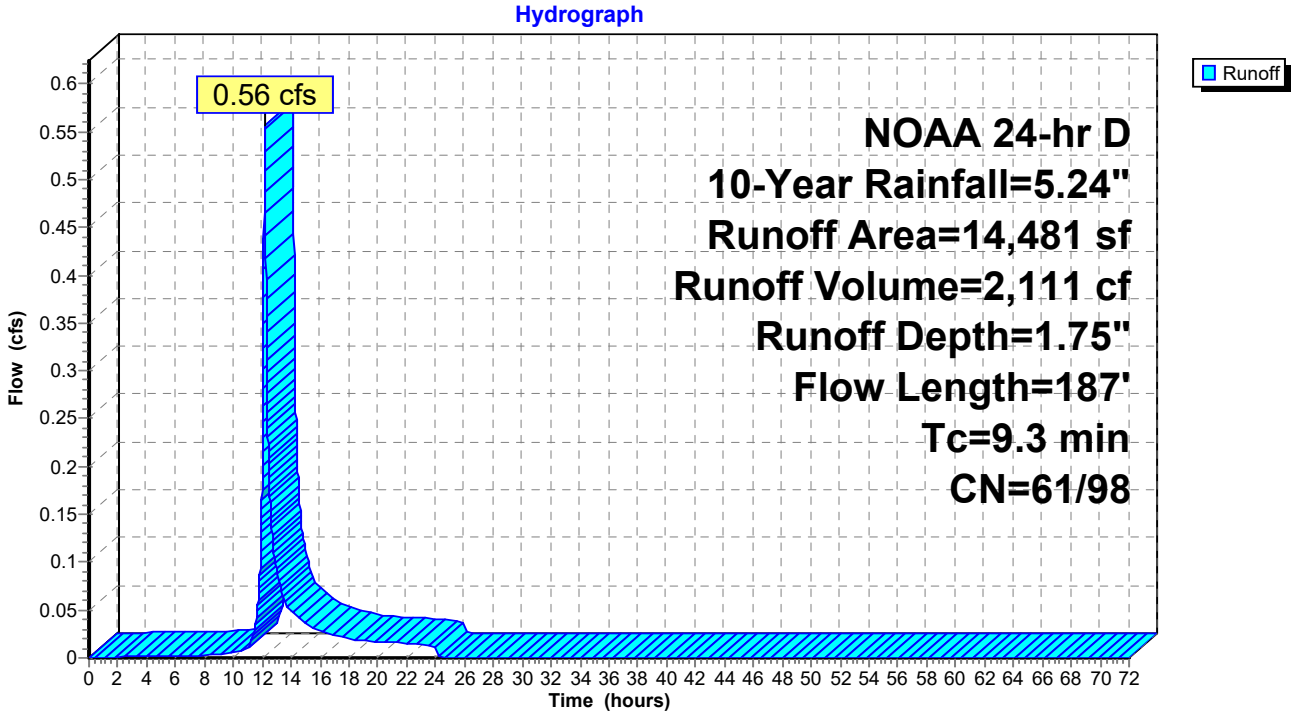
Runoff = 0.56 cfs @ 12.17 hrs, Volume= 2,111 cf, Depth= 1.75"

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 |
|---|---|---|---|
| | 13,511 | 61 | >75% Grass cover, Good, HSG B |
| * | 970 | 98 | Impervious Area |
| | 14,481 | 63 | Weighted Average |
| | 13,511 | 61 | 93.30% Pervious Area |
| | 970 | 98 | 6.70% 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 for Subcatchment P-1D: Undetained Flow to Sunset Road

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.13 | 0.00 | 0.02 | 0.00 |
| 4.00 | 0.27 | 0.00 | 0.13 | 0.00 |
| 6.00 | 0.45 | 0.00 | 0.27 | 0.00 |
| 8.00 | 0.68 | 0.00 | 0.48 | 0.00 |
| 10.00 | 1.04 | 0.00 | 0.83 | 0.01 |
| 12.00 | 2.51 | 0.20 | 2.28 | **0.20** |
| 14.00 | 4.20 | 0.92 | 3.97 | **0.05** |
| 16.00 | 4.56 | 1.11 | 4.32 | 0.03 |
| 18.00 | 4.79 | 1.25 | 4.56 | 0.02 |
| 20.00 | 4.97 | 1.35 | 4.73 | 0.02 |
| 22.00 | 5.11 | 1.44 | 4.88 | 0.01 |
| 24.00 | **5.24** | **1.52** | **5.00** | 0.01 |
| 26.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 28.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 30.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 32.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 34.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 36.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 38.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 40.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 42.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 44.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 46.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 48.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 50.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 52.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 54.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 56.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 58.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 60.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 62.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 64.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 66.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 68.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 70.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 72.00 | 5.24 | 1.52 | 5.00 | 0.00 |

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

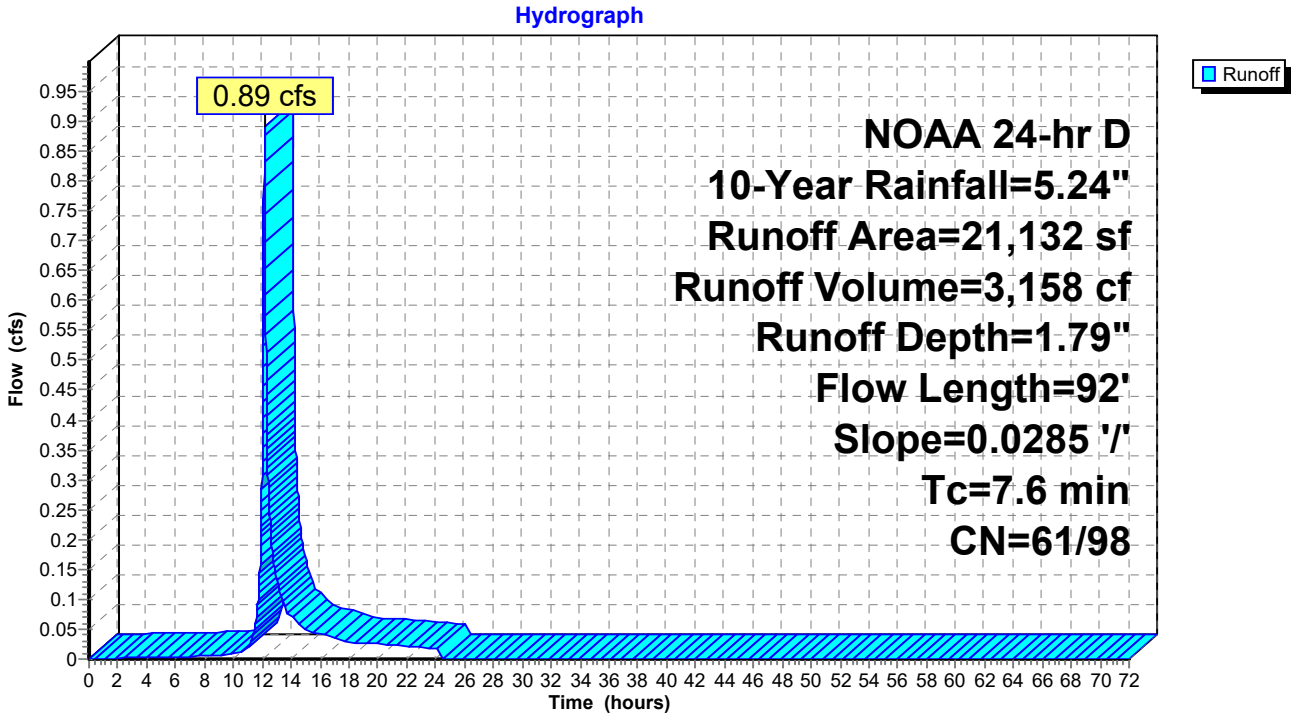
Runoff = 0.89 cfs @ 12.15 hrs, Volume= 3,158 cf, Depth= 1.79"

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 |
|---|---|---|---|
| | 19,447 | 61 | >75% Grass cover, Good, HSG B |
| * | 1,685 | 98 | Impervious Area |
| | 21,132 | 64 | Weighted Average |
| | 19,447 | 61 | 92.03% Pervious Area |
| | 1,685 | 98 | 7.97% 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 for Subcatchment P-2: Proposed Drainage to Roome Avenue

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.13 | 0.00 | 0.02 | 0.00 |
| 4.00 | 0.27 | 0.00 | 0.13 | 0.00 |
| 6.00 | 0.45 | 0.00 | 0.27 | 0.00 |
| 8.00 | 0.68 | 0.00 | 0.48 | 0.01 |
| 10.00 | 1.04 | 0.00 | 0.83 | 0.01 |
| 12.00 | 2.51 | 0.20 | 2.28 | **0.36** |
| 14.00 | 4.20 | 0.92 | 3.97 | **0.07** |
| 16.00 | 4.56 | 1.11 | 4.32 | 0.04 |
| 18.00 | 4.79 | 1.25 | 4.56 | 0.03 |
| 20.00 | 4.97 | 1.35 | 4.73 | 0.02 |
| 22.00 | 5.11 | 1.44 | 4.88 | 0.02 |
| 24.00 | **5.24** | **1.52** | **5.00** | 0.02 |
| 26.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 28.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 30.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 32.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 34.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 36.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 38.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 40.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 42.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 44.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 46.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 48.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 50.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 52.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 54.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 56.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 58.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 60.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 62.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 64.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 66.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 68.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 70.00 | 5.24 | 1.52 | 5.00 | 0.00 |
| 72.00 | 5.24 | 1.52 | 5.00 | 0.00 |

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

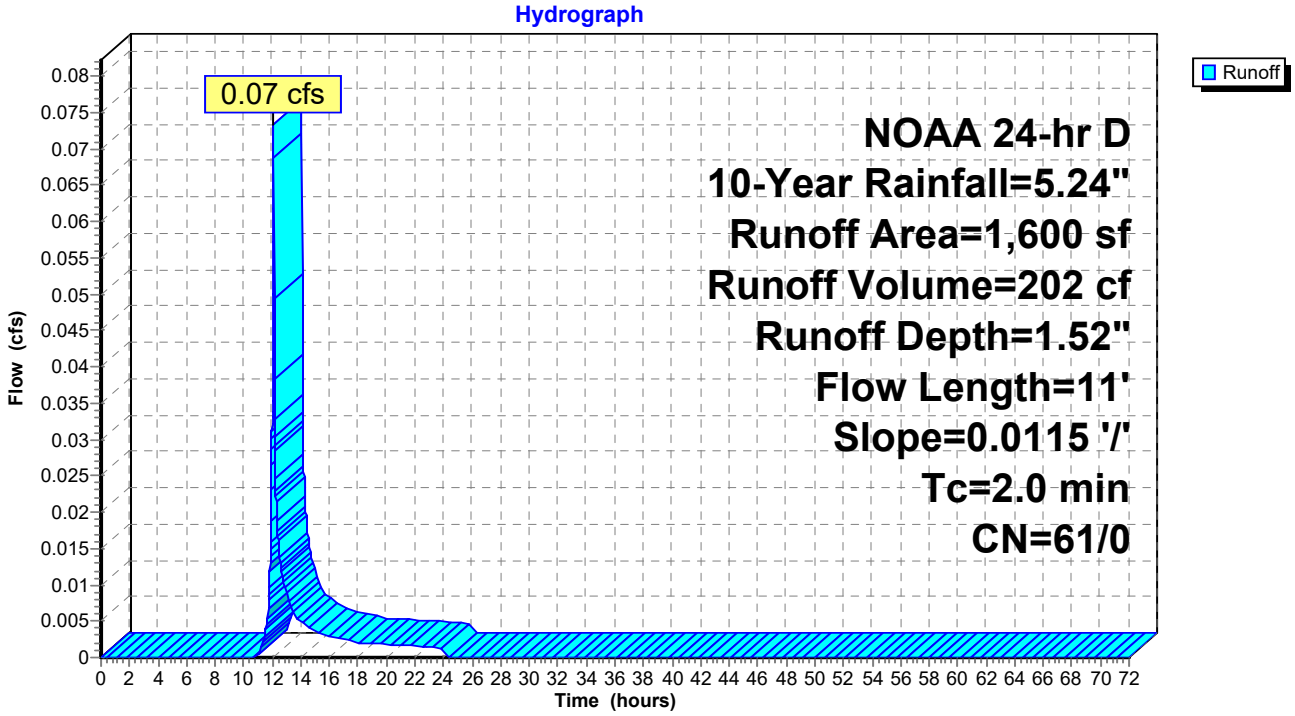
Runoff = 0.07 cfs @ 12.10 hrs, Volume= 202 cf, Depth= 1.52"

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 for Subcatchment P-3: Proposed Drainage toward Dewilde Drive

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | **0.00** | 0.00 |
| 2.00 | 0.13 | 0.00 | 0.00 | 0.00 |
| 4.00 | 0.27 | 0.00 | 0.00 | 0.00 |
| 6.00 | 0.45 | 0.00 | 0.00 | 0.00 |
| 8.00 | 0.68 | 0.00 | 0.00 | 0.00 |
| 10.00 | 1.04 | 0.00 | 0.00 | 0.00 |
| 12.00 | 2.51 | 0.20 | 0.00 | **0.03** |
| 14.00 | 4.20 | 0.92 | 0.00 | **0.00** |
| 16.00 | 4.56 | 1.11 | 0.00 | 0.00 |
| 18.00 | 4.79 | 1.25 | 0.00 | 0.00 |
| 20.00 | 4.97 | 1.35 | 0.00 | 0.00 |
| 22.00 | 5.11 | 1.44 | 0.00 | 0.00 |
| 24.00 | **5.24** | **1.52** | 0.00 | 0.00 |
| 26.00 | 5.24 | 1.52 | 0.00 | 0.00 |
| 28.00 | 5.24 | 1.52 | 0.00 | 0.00 |
| 30.00 | 5.24 | 1.52 | 0.00 | 0.00 |
| 32.00 | 5.24 | 1.52 | 0.00 | 0.00 |
| 34.00 | 5.24 | 1.52 | 0.00 | 0.00 |
| 36.00 | 5.24 | 1.52 | 0.00 | 0.00 |
| 38.00 | 5.24 | 1.52 | 0.00 | 0.00 |
| 40.00 | 5.24 | 1.52 | 0.00 | 0.00 |
| 42.00 | 5.24 | 1.52 | 0.00 | 0.00 |
| 44.00 | 5.24 | 1.52 | 0.00 | 0.00 |
| 46.00 | 5.24 | 1.52 | 0.00 | 0.00 |
| 48.00 | 5.24 | 1.52 | 0.00 | 0.00 |
| 50.00 | 5.24 | 1.52 | 0.00 | 0.00 |
| 52.00 | 5.24 | 1.52 | 0.00 | 0.00 |
| 54.00 | 5.24 | 1.52 | 0.00 | 0.00 |
| 56.00 | 5.24 | 1.52 | 0.00 | 0.00 |
| 58.00 | 5.24 | 1.52 | 0.00 | 0.00 |
| 60.00 | 5.24 | 1.52 | 0.00 | 0.00 |
| 62.00 | 5.24 | 1.52 | 0.00 | 0.00 |
| 64.00 | 5.24 | 1.52 | 0.00 | 0.00 |
| 66.00 | 5.24 | 1.52 | 0.00 | 0.00 |
| 68.00 | 5.24 | 1.52 | 0.00 | 0.00 |
| 70.00 | 5.24 | 1.52 | 0.00 | 0.00 |
| 72.00 | 5.24 | 1.52 | 0.00 | 0.00 |

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

Inflow Area = 55,744 sf, 77.92% Impervious, Inflow Depth = 4.23" for 10-Year event
Inflow = 6.03 cfs @ 12.10 hrs, Volume= 19,663 cf
Outflow = 0.81 cfs @ 12.56 hrs, Volume= 19,663 cf, Atten= 87%, Lag= 28.0 min
Discarded = 0.32 cfs @ 12.56 hrs, Volume= 14,672 cf
Primary = 0.49 cfs @ 12.56 hrs, Volume= 4,991 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 188.58' @ 12.56 hrs Surf.Area= 6,268 sf Storage= 7,629 cf

Plug-Flow detention time= 153.1 min calculated for 19,663 cf (100% of inflow)
Center-of-Mass det. time= 153.1 min ( 908.6 - 755.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 187.00' | 14,171 cf | **Custom Stage Data (Irregular)**Listed below (Recalc) |

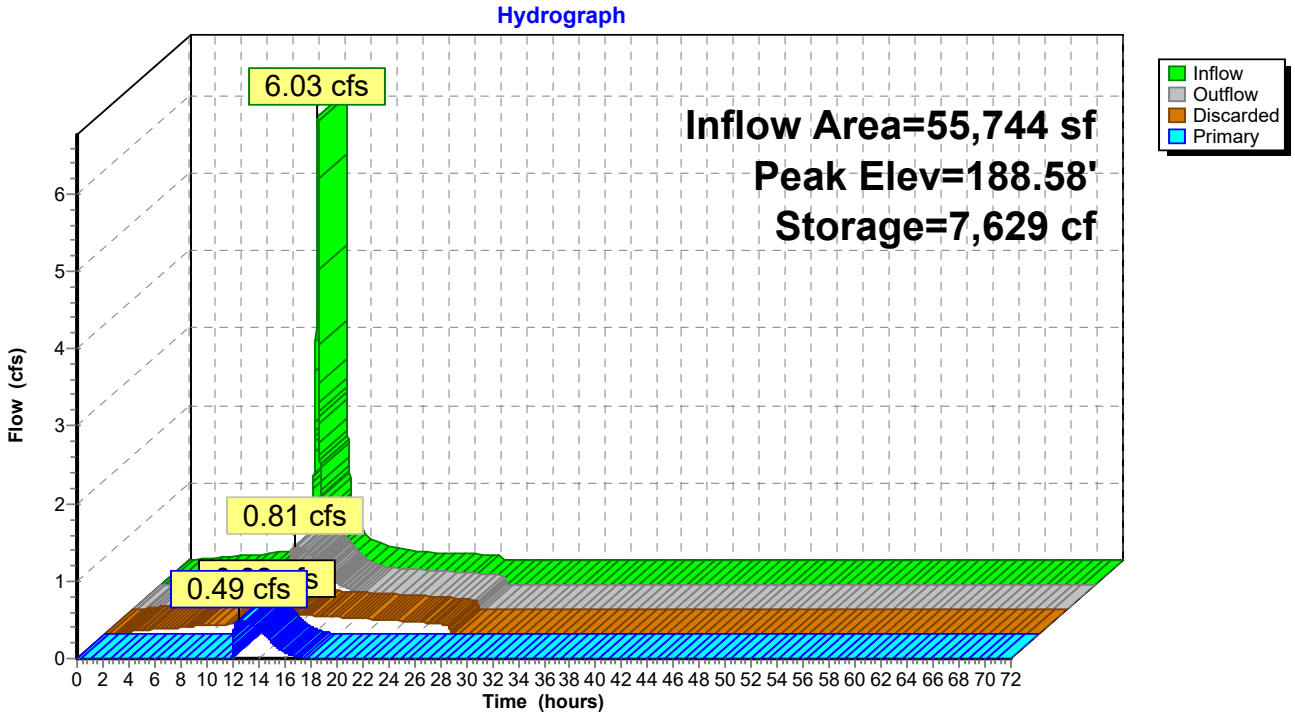
| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 187.00 | 3,406 | 592.8 | 0 | 0 | 3,406 |
| 188.00 | 5,212 | 611.7 | 4,277 | 4,277 | 5,315 |
| 189.00 | 7,076 | 630.5 | 6,120 | 10,397 | 7,275 |
| 189.50 | 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<br>Inlet / Outlet Invert= 185.89' / 185.75' S= 0.0054 '/' Cc= 0.900<br>n= 0.013, Flow Area= 1.23 sf |
| #2 | Device 1 | 187.81' | **5.0" Vert. Orifice/Grate** C= 0.600 |
| #3 | Device 1 | 188.60' | **2.5" Vert. Orifice/Grate** C= 0.600 |
| #4 | Device 1 | 189.15' | **4.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>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<br>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' | **1.485 in/hr Exfiltration over Wetted area**<br>Conductivity to Groundwater Elevation = 184.40' Phase-In= 0.01' |

**Discarded OutFlow** Max=0.32 cfs @ 12.56 hrs HW=188.58' (Free Discharge)
└**5=Exfiltration** ( Controls 0.32 cfs)

**Primary OutFlow** Max=0.49 cfs @ 12.56 hrs HW=188.58' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.49 cfs of 8.50 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 0.49 cfs @ 3.62 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



## Hydrograph for Pond B-1: Infiltration Basin Along Sunset Road

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Discarded (cfs) | Primary (cfs) |
|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.03 | 9 | 187.00 | 0.03 | 0.03 | 0.00 |
| 4.00 | 0.06 | 18 | 187.01 | 0.06 | 0.06 | 0.00 |
| 6.00 | 0.08 | 24 | 187.01 | 0.08 | 0.08 | 0.00 |
| 8.00 | 0.13 | 46 | 187.01 | 0.12 | 0.12 | 0.00 |
| 10.00 | 0.24 | 399 | 187.11 | 0.13 | 0.13 | 0.00 |
| 12.00 | **3.53** | **4,328** | **188.01** | **0.34** | **0.24** | **0.10** |
| 14.00 | **0.29** | **6,161** | **188.34** | **0.66** | **0.29** | **0.37** |
| 16.00 | 0.16 | 4,224 | 187.99 | 0.32 | 0.24 | 0.08 |
| 18.00 | 0.11 | 3,382 | 187.82 | 0.22 | 0.22 | 0.00 |
| 20.00 | 0.09 | 2,634 | 187.66 | 0.20 | 0.20 | 0.00 |
| 22.00 | 0.08 | 1,932 | 187.50 | 0.18 | 0.18 | 0.00 |
| 24.00 | 0.07 | 1,273 | 187.34 | 0.16 | 0.16 | 0.00 |
| 26.00 | 0.00 | 268 | 187.08 | 0.13 | 0.13 | 0.00 |
| 28.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 30.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 32.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 34.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 36.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 38.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 40.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 42.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 44.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 46.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 48.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 50.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 52.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 54.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 56.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 58.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 60.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 62.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 64.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 66.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 68.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 70.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 72.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |

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

Inflow Area = 13,370 sf, 99.01% Impervious, Inflow Depth = 4.97" for 10-Year event
Inflow = 1.67 cfs @ 12.10 hrs, Volume= 5,535 cf
Outflow = 0.64 cfs @ 12.18 hrs, Volume= 5,535 cf, Atten= 62%, Lag= 4.7 min
Discarded = 0.64 cfs @ 12.18 hrs, Volume= 5,535 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 187.24' @ 12.18 hrs Surf.Area= 3,564 sf Storage= 557 cf

Plug-Flow detention time= 3.0 min calculated for 5,535 cf (100% of inflow)
Center-of-Mass det. time= 3.0 min ( 748.8 - 745.7 )

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

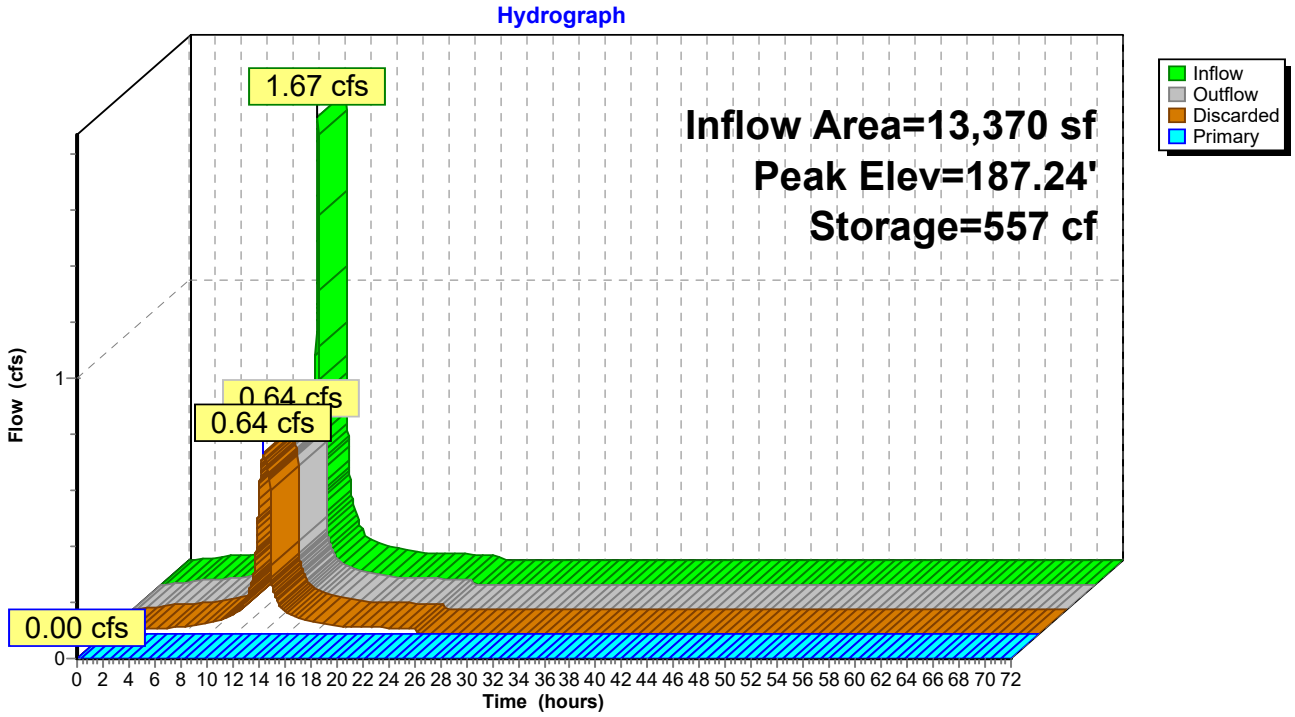
| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 186.85 | 3,564 | 306.0 | 0 | 0 | 3,564 |
| 187.85 | 3,564 | 306.0 | 3,564 | 3,564 | 3,870 |
| 188.85 | 3,564 | 306.0 | 3,564 | 7,128 | 4,176 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 186.85' | **15.0" Round Culvert** L= 135.0' Ke= 0.500<br>Inlet / Outlet Invert= 186.85' / 185.75' S= 0.0081 '/' Cc= 0.900<br>n= 0.013, Flow Area= 1.23 sf |
| #2 | Device 1 | 187.45' | **2.5" Vert. Orifice/Grate** C= 0.600 |
| #3 | Device 1 | 188.45' | **6.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>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<br>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' | **6.500 in/hr Exfiltration over Wetted area**<br>Conductivity to Groundwater Elevation = 184.40' Phase-In= 0.01' |

**Discarded OutFlow** Max=0.64 cfs @ 12.18 hrs HW=187.24' (Free Discharge)
└**4=Exfiltration** ( Controls 0.64 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



## Hydrograph for Pond B-2: Porous Pavement Within Tandem Spaces

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Discarded (cfs) | Primary (cfs) |
|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | **0.00** |
| 2.00 | 0.01 | 0 | 186.85 | 0.01 | 0.01 | 0.00 |
| 4.00 | 0.02 | 1 | 186.85 | 0.02 | 0.02 | 0.00 |
| 6.00 | 0.02 | 1 | 186.85 | 0.02 | 0.02 | 0.00 |
| 8.00 | 0.04 | 1 | 186.85 | 0.04 | 0.04 | 0.00 |
| 10.00 | 0.07 | 2 | 186.85 | 0.07 | 0.07 | 0.00 |
| 12.00 | **1.00** | **121** | **186.94** | **0.56** | **0.56** | 0.00 |
| 14.00 | **0.08** | **2** | **186.85** | **0.08** | **0.08** | 0.00 |
| 16.00 | 0.04 | 1 | 186.85 | 0.04 | 0.04 | 0.00 |
| 18.00 | 0.03 | 1 | 186.85 | 0.03 | 0.03 | 0.00 |
| 20.00 | 0.02 | 1 | 186.85 | 0.02 | 0.02 | 0.00 |
| 22.00 | 0.02 | 1 | 186.85 | 0.02 | 0.02 | 0.00 |
| 24.00 | 0.02 | 0 | 186.85 | 0.02 | 0.02 | 0.00 |
| 26.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 28.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 30.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 32.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 34.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 36.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 38.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 40.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 42.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 44.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 46.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 48.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 50.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 52.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 54.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 56.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 58.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 60.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 62.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 64.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 66.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 68.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 70.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 72.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |

## Summary for Pond B-3: Infiltration Basin in Rear

Inflow Area = 67,084 sf, 12.41% Impervious, Inflow Depth = 2.71" for 10-Year event
Inflow = 4.06 cfs @ 12.18 hrs, Volume= 15,146 cf
Outflow = 1.25 cfs @ 12.48 hrs, Volume= 15,146 cf, Atten= 69%, Lag= 18.3 min
Discarded = 0.08 cfs @ 12.48 hrs, Volume= 4,113 cf
Primary = 1.17 cfs @ 12.48 hrs, Volume= 11,033 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 189.13' @ 12.48 hrs Surf.Area= 4,720 sf Storage= 4,510 cf

Plug-Flow detention time= 91.4 min calculated for 15,144 cf (100% of inflow)
Center-of-Mass det. time= 91.4 min ( 922.8 - 831.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 188.00' | 9,144 cf | **Custom Stage Data (Irregular)**Listed below (Recalc) |

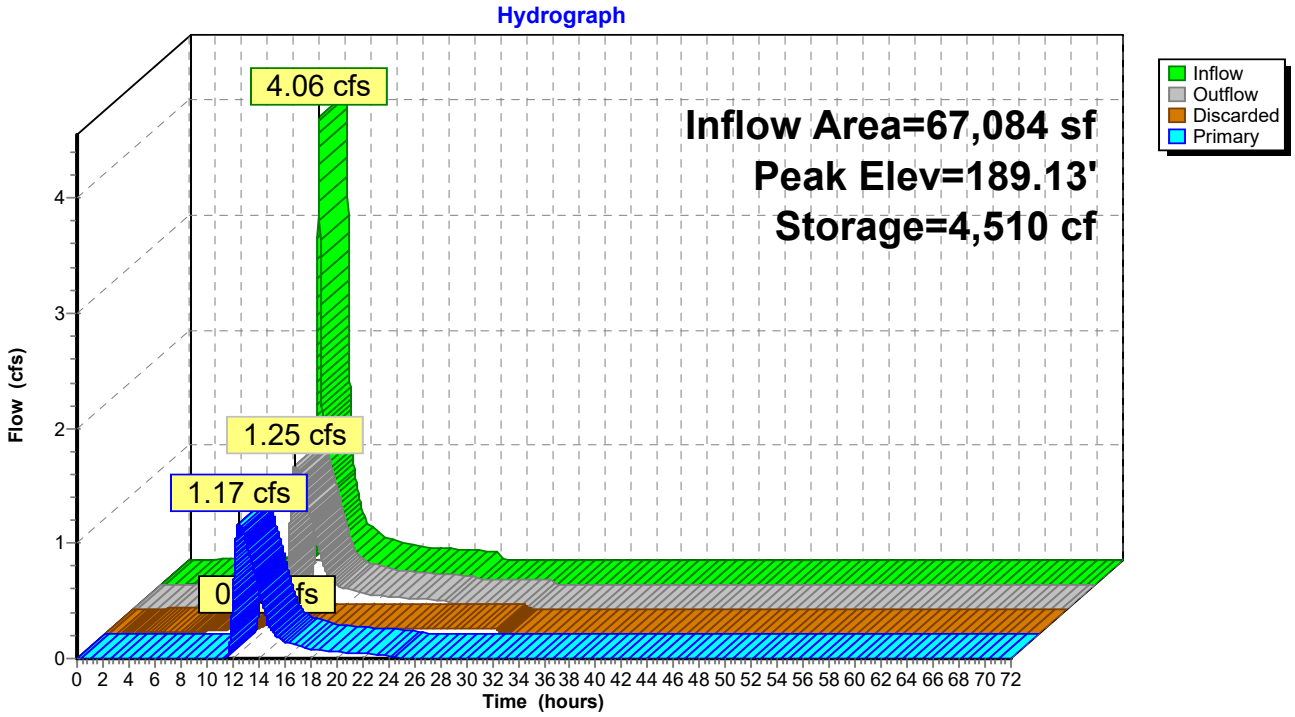
| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 188.00 | 3,308 | 335.0 | 0 | 0 | 3,308 |
| 189.00 | 4,551 | 370.0 | 3,913 | 3,913 | 5,303 |
| 190.00 | 5,942 | 405.0 | 5,231 | 9,144 | 7,496 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 187.50' | **15.0" Round Culvert** L= 325.0' Ke= 0.500<br>Inlet / Outlet Invert= 187.50' / 185.85' S= 0.0051 '/' Cc= 0.900<br>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 |
| #3 | Device 1 | 188.85' | **2.5" Vert. Orifice/Grate** C= 0.600 |
| #4 | Device 1 | 189.65' | **4.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>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<br>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**<br>Conductivity to Groundwater Elevation = 183.90' Phase-In= 0.01' |

**Discarded OutFlow** Max=0.08 cfs @ 12.48 hrs HW=189.13' (Free Discharge)
└**5=Exfiltration** ( Controls 0.08 cfs)

**Primary OutFlow** Max=1.17 cfs @ 12.48 hrs HW=189.13' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 1.17 cfs of 4.91 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 1.10 cfs @ 4.23 fps)
  ├**3=Orifice/Grate** (Orifice Controls 0.07 cfs @ 2.01 fps)
  └**4=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Pond B-3: Infiltration Basin in Rear



## Hydrograph for Pond B-3: Infiltration Basin in Rear

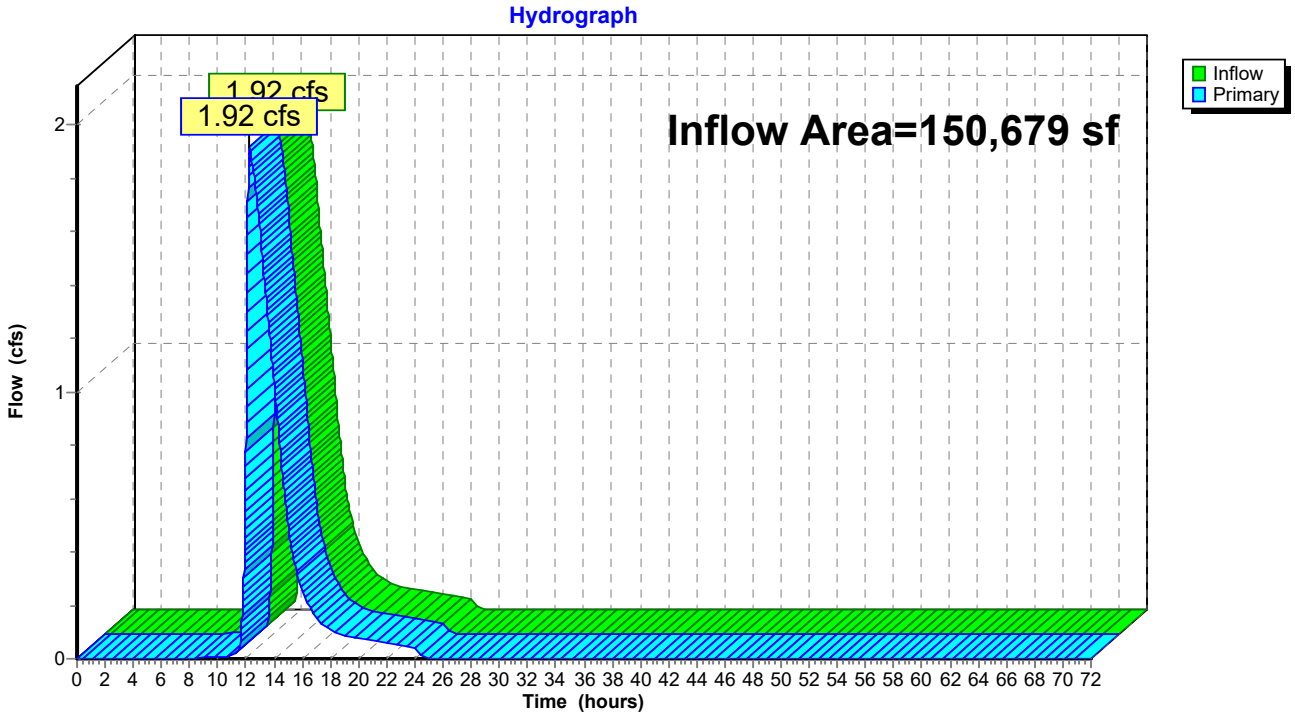
| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Discarded (cfs) | Primary (cfs) |
|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.01 | 4 | 188.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | 0.01 | 10 | 188.00 | 0.01 | 0.01 | 0.00 |
| 6.00 | 0.02 | 13 | 188.00 | 0.02 | 0.02 | 0.00 |
| 8.00 | 0.02 | 20 | 188.01 | 0.02 | 0.02 | 0.00 |
| 10.00 | 0.08 | 82 | 188.02 | 0.04 | 0.04 | 0.00 |
| 12.00 | **1.66** | **1,819** | **188.50** | **0.53** | **0.06** | **0.48** |
| 14.00 | **0.30** | **2,173** | **188.59** | **0.67** | **0.06** | **0.61** |
| 16.00 | 0.17 | 1,266 | 188.36 | 0.20 | 0.05 | 0.15 |
| 18.00 | 0.12 | 1,143 | 188.33 | 0.13 | 0.05 | 0.09 |
| 20.00 | 0.10 | 1,077 | 188.31 | 0.11 | 0.05 | 0.06 |
| 22.00 | 0.09 | 1,042 | 188.30 | 0.09 | 0.05 | 0.04 |
| 24.00 | 0.07 | 1,004 | 188.29 | 0.08 | 0.05 | 0.03 |
| 26.00 | 0.00 | 671 | 188.20 | 0.04 | 0.04 | 0.00 |
| 28.00 | 0.00 | 361 | 188.11 | 0.04 | 0.04 | 0.00 |
| 30.00 | 0.00 | 71 | 188.02 | 0.04 | 0.04 | 0.00 |
| 32.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 34.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 36.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 38.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 40.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 42.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 44.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 46.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 48.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 50.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 52.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 54.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 56.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 58.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 60.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 62.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 64.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 66.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 68.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 70.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 72.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |

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

Inflow Area = 150,679 sf, 43.78% Impervious, Inflow Depth = 1.44" for 10-Year event
Inflow = 1.92 cfs @ 12.24 hrs, Volume= 18,135 cf
Primary = 1.92 cfs @ 12.24 hrs, Volume= 18,135 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



## Hydrograph for Link POI-1: Proposed Drainage to Sunset Road

| Time (hours) | Inflow (cfs) | Elevation (feet) | Primary (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | **0.00** | 0.00 |
| 1.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.00 | 0.00 | 0.00 |
| 3.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | 0.00 | 0.00 | 0.00 |
| 5.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | 0.00 | 0.00 | 0.00 |
| 7.00 | 0.00 | 0.00 | 0.00 |
| 8.00 | 0.00 | 0.00 | 0.00 |
| 9.00 | 0.00 | 0.00 | 0.00 |
| 10.00 | 0.01 | 0.00 | 0.01 |
| 11.00 | 0.01 | 0.00 | 0.01 |
| 12.00 | **0.78** | 0.00 | **0.78** |
| 13.00 | **1.60** | 0.00 | **1.60** |
| 14.00 | 1.03 | 0.00 | 1.03 |
| 15.00 | 0.50 | 0.00 | 0.50 |
| 16.00 | 0.26 | 0.00 | 0.26 |
| 17.00 | 0.16 | 0.00 | 0.16 |
| 18.00 | 0.11 | 0.00 | 0.11 |
| 19.00 | 0.08 | 0.00 | 0.08 |
| 20.00 | 0.07 | 0.00 | 0.07 |
| 21.00 | 0.07 | 0.00 | 0.07 |
| 22.00 | 0.06 | 0.00 | 0.06 |
| 23.00 | 0.05 | 0.00 | 0.05 |
| 24.00 | 0.04 | 0.00 | 0.04 |
| 25.00 | 0.00 | 0.00 | 0.00 |
| 26.00 | 0.00 | 0.00 | 0.00 |
| 27.00 | 0.00 | 0.00 | 0.00 |
| 28.00 | 0.00 | 0.00 | 0.00 |
| 29.00 | 0.00 | 0.00 | 0.00 |
| 30.00 | 0.00 | 0.00 | 0.00 |
| 31.00 | 0.00 | 0.00 | 0.00 |
| 32.00 | 0.00 | 0.00 | 0.00 |
| 33.00 | 0.00 | 0.00 | 0.00 |
| 34.00 | 0.00 | 0.00 | 0.00 |
| 35.00 | 0.00 | 0.00 | 0.00 |
| 36.00 | 0.00 | 0.00 | 0.00 |
| 37.00 | 0.00 | 0.00 | 0.00 |
| 38.00 | 0.00 | 0.00 | 0.00 |
| 39.00 | 0.00 | 0.00 | 0.00 |
| 40.00 | 0.00 | 0.00 | 0.00 |
| 41.00 | 0.00 | 0.00 | 0.00 |
| 42.00 | 0.00 | 0.00 | 0.00 |
| 43.00 | 0.00 | 0.00 | 0.00 |
| 44.00 | 0.00 | 0.00 | 0.00 |
| 45.00 | 0.00 | 0.00 | 0.00 |
| 46.00 | 0.00 | 0.00 | 0.00 |
| 47.00 | 0.00 | 0.00 | 0.00 |
| 48.00 | 0.00 | 0.00 | 0.00 |
| 49.00 | 0.00 | 0.00 | 0.00 |
| 50.00 | 0.00 | 0.00 | 0.00 |
| 51.00 | 0.00 | 0.00 | 0.00 |
| 52.00 | 0.00 | 0.00 | 0.00 |
| 53.00 | 0.00 | 0.00 | 0.00 |
| 54.00 | 0.00 | 0.00 | 0.00 |
| 55.00 | 0.00 | 0.00 | 0.00 |
| 56.00 | 0.00 | 0.00 | 0.00 |
| 57.00 | 0.00 | 0.00 | 0.00 |
| 58.00 | 0.00 | 0.00 | 0.00 |
| 59.00 | 0.00 | 0.00 | 0.00 |
| 60.00 | 0.00 | 0.00 | 0.00 |
| 61.00 | 0.00 | 0.00 | 0.00 |
| 62.00 | 0.00 | 0.00 | 0.00 |
| 63.00 | 0.00 | 0.00 | 0.00 |
| 64.00 | 0.00 | 0.00 | 0.00 |
| 65.00 | 0.00 | 0.00 | 0.00 |
| 66.00 | 0.00 | 0.00 | 0.00 |
| 67.00 | 0.00 | 0.00 | 0.00 |
| 68.00 | 0.00 | 0.00 | 0.00 |
| 69.00 | 0.00 | 0.00 | 0.00 |
| 70.00 | 0.00 | 0.00 | 0.00 |
| 71.00 | 0.00 | 0.00 | 0.00 |
| 72.00 | 0.00 | 0.00 | 0.00 |

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

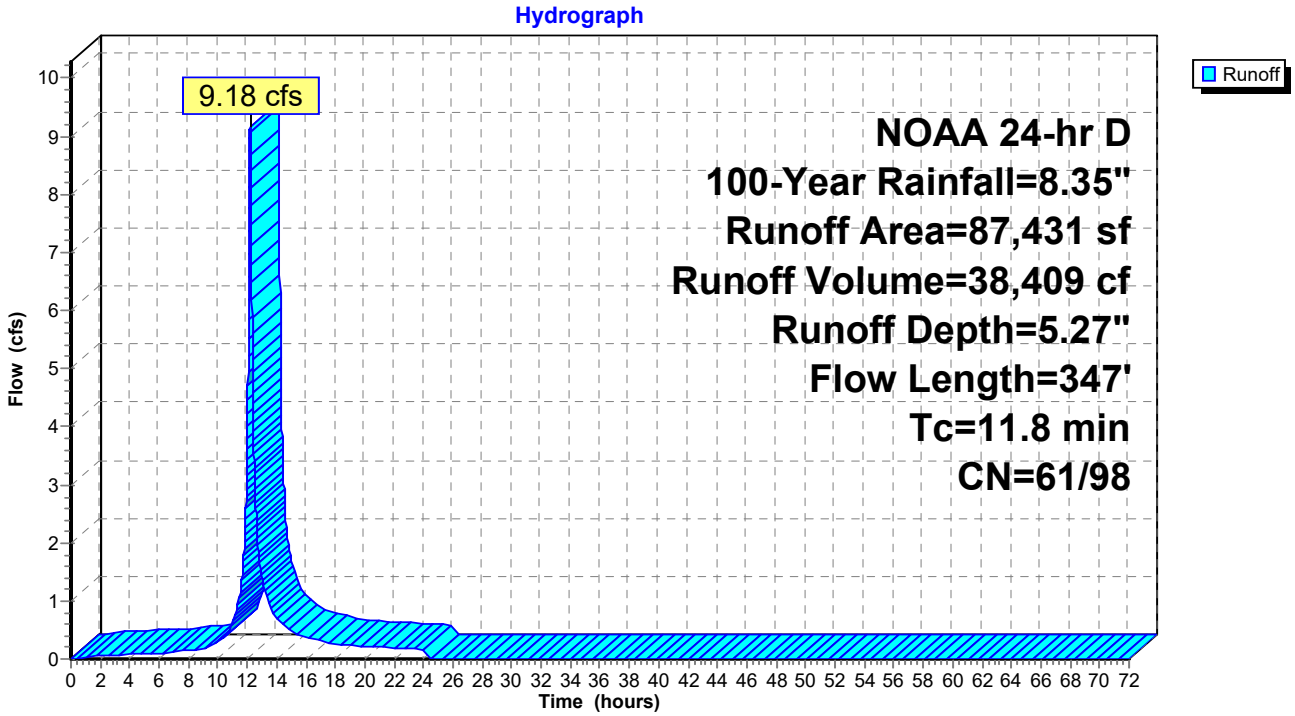
Runoff = 9.18 cfs @ 12.19 hrs, Volume= 38,409 cf, Depth= 5.27"

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 for Subcatchment EX-1: Existing Drainage towards Sunset Road

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.20 | 0.00 | 0.07 | 0.05 |
| 4.00 | 0.44 | 0.00 | 0.26 | 0.08 |
| 6.00 | 0.71 | 0.00 | 0.52 | 0.10 |
| 8.00 | 1.08 | 0.00 | 0.87 | 0.15 |
| 10.00 | 1.66 | 0.02 | 1.43 | 0.31 |
| 12.00 | 4.00 | 0.81 | 3.77 | **3.81** |
| 14.00 | 6.69 | 2.48 | 6.46 | **0.69** |
| 16.00 | 7.27 | 2.90 | 7.03 | 0.38 |
| 18.00 | 7.64 | 3.17 | 7.40 | 0.26 |
| 20.00 | 7.91 | 3.38 | 7.67 | 0.22 |
| 22.00 | 8.15 | 3.56 | 7.91 | 0.19 |
| 24.00 | **8.35** | **3.71** | **8.11** | 0.16 |
| 26.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 28.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 30.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 32.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 34.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 36.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 38.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 40.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 42.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 44.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 46.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 48.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 50.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 52.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 54.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 56.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 58.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 60.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 62.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 64.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 66.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 68.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 70.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 72.00 | 8.35 | 3.71 | 8.11 | 0.00 |

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

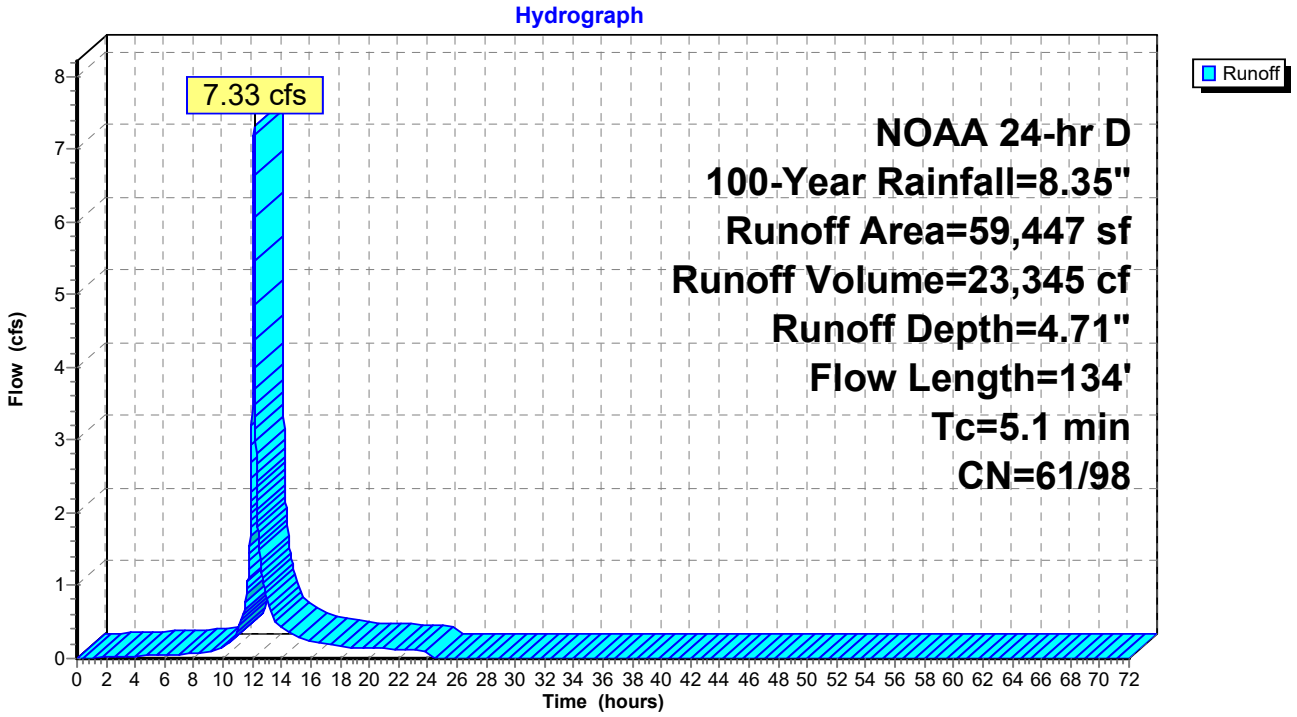
Runoff = 7.33 cfs @ 12.12 hrs, Volume= 23,345 cf, Depth= 4.71"

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



## Hydrograph for Subcatchment EX-2: Existing Drainage towards Roome Avenue

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.20 | 0.00 | 0.07 | 0.02 |
| 4.00 | 0.44 | 0.00 | 0.26 | 0.04 |
| 6.00 | 0.71 | 0.00 | 0.52 | 0.04 |
| 8.00 | 1.08 | 0.00 | 0.87 | 0.07 |
| 10.00 | 1.66 | 0.02 | 1.43 | 0.16 |
| 12.00 | 4.00 | 0.81 | 3.77 | **3.81** |
| 14.00 | 6.69 | 2.48 | 6.46 | **0.43** |
| 16.00 | 7.27 | 2.90 | 7.03 | 0.25 |
| 18.00 | 7.64 | 3.17 | 7.40 | 0.17 |
| 20.00 | 7.91 | 3.38 | 7.67 | 0.14 |
| 22.00 | 8.15 | 3.56 | 7.91 | 0.12 |
| 24.00 | **8.35** | **3.71** | **8.11** | 0.10 |
| 26.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 28.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 30.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 32.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 34.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 36.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 38.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 40.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 42.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 44.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 46.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 48.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 50.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 52.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 54.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 56.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 58.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 60.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 62.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 64.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 66.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 68.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 70.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 72.00 | 8.35 | 3.71 | 8.11 | 0.00 |

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

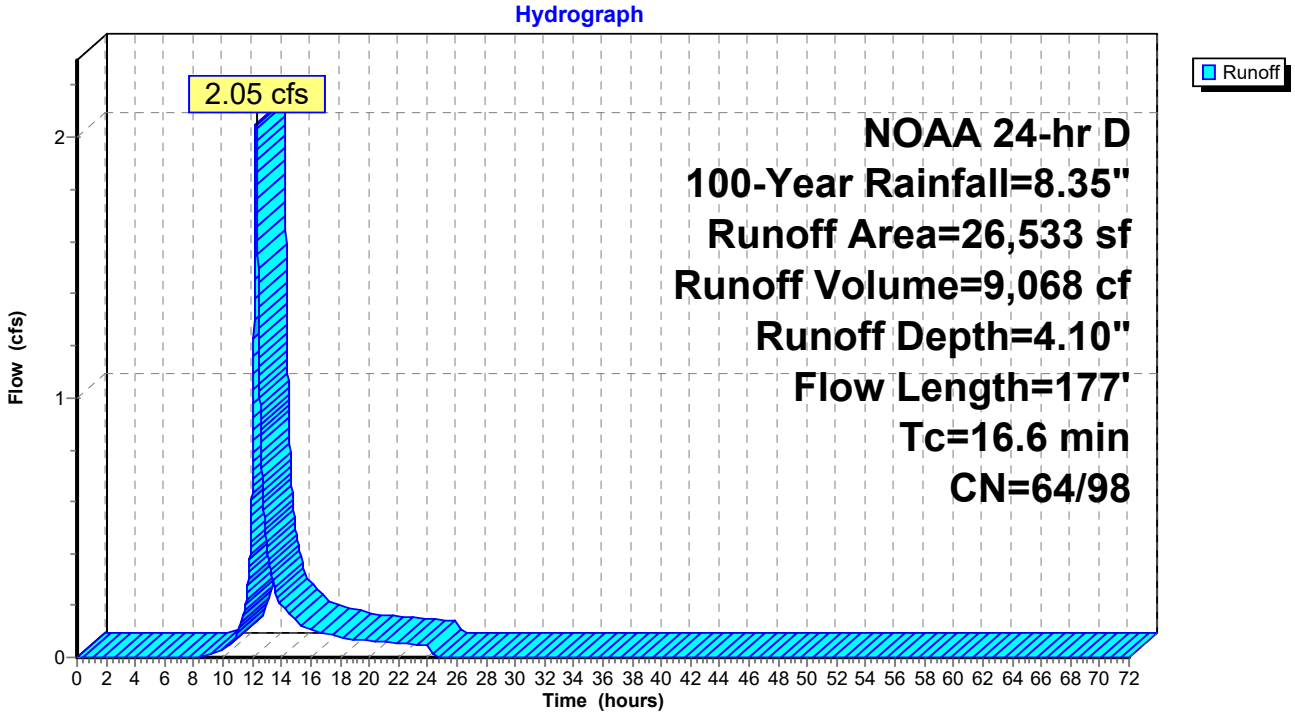
Runoff = 2.05 cfs @ 12.25 hrs, Volume= 9,068 cf, Depth= 4.10"

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



## Hydrograph for Subcatchment EX-3: Existing Drainage towards Dewilde Drive

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.20 | 0.00 | 0.07 | 0.00 |
| 4.00 | 0.44 | 0.00 | 0.26 | 0.00 |
| 6.00 | 0.71 | 0.00 | 0.52 | 0.00 |
| 8.00 | 1.08 | 0.00 | 0.87 | 0.00 |
| 10.00 | 1.66 | 0.05 | 1.43 | 0.03 |
| 12.00 | 4.00 | 0.97 | 3.77 | **0.69** |
| 14.00 | 6.69 | 2.77 | 6.46 | **0.20** |
| 16.00 | 7.27 | 3.21 | 7.03 | 0.11 |
| 18.00 | 7.64 | 3.49 | 7.40 | 0.08 |
| 20.00 | 7.91 | 3.71 | 7.67 | 0.06 |
| 22.00 | 8.15 | 3.90 | 7.91 | 0.06 |
| 24.00 | **8.35** | **4.06** | **8.11** | 0.05 |
| 26.00 | 8.35 | 4.06 | 8.11 | 0.00 |
| 28.00 | 8.35 | 4.06 | 8.11 | 0.00 |
| 30.00 | 8.35 | 4.06 | 8.11 | 0.00 |
| 32.00 | 8.35 | 4.06 | 8.11 | 0.00 |
| 34.00 | 8.35 | 4.06 | 8.11 | 0.00 |
| 36.00 | 8.35 | 4.06 | 8.11 | 0.00 |
| 38.00 | 8.35 | 4.06 | 8.11 | 0.00 |
| 40.00 | 8.35 | 4.06 | 8.11 | 0.00 |
| 42.00 | 8.35 | 4.06 | 8.11 | 0.00 |
| 44.00 | 8.35 | 4.06 | 8.11 | 0.00 |
| 46.00 | 8.35 | 4.06 | 8.11 | 0.00 |
| 48.00 | 8.35 | 4.06 | 8.11 | 0.00 |
| 50.00 | 8.35 | 4.06 | 8.11 | 0.00 |
| 52.00 | 8.35 | 4.06 | 8.11 | 0.00 |
| 54.00 | 8.35 | 4.06 | 8.11 | 0.00 |
| 56.00 | 8.35 | 4.06 | 8.11 | 0.00 |
| 58.00 | 8.35 | 4.06 | 8.11 | 0.00 |
| 60.00 | 8.35 | 4.06 | 8.11 | 0.00 |
| 62.00 | 8.35 | 4.06 | 8.11 | 0.00 |
| 64.00 | 8.35 | 4.06 | 8.11 | 0.00 |
| 66.00 | 8.35 | 4.06 | 8.11 | 0.00 |
| 68.00 | 8.35 | 4.06 | 8.11 | 0.00 |
| 70.00 | 8.35 | 4.06 | 8.11 | 0.00 |
| 72.00 | 8.35 | 4.06 | 8.11 | 0.00 |

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

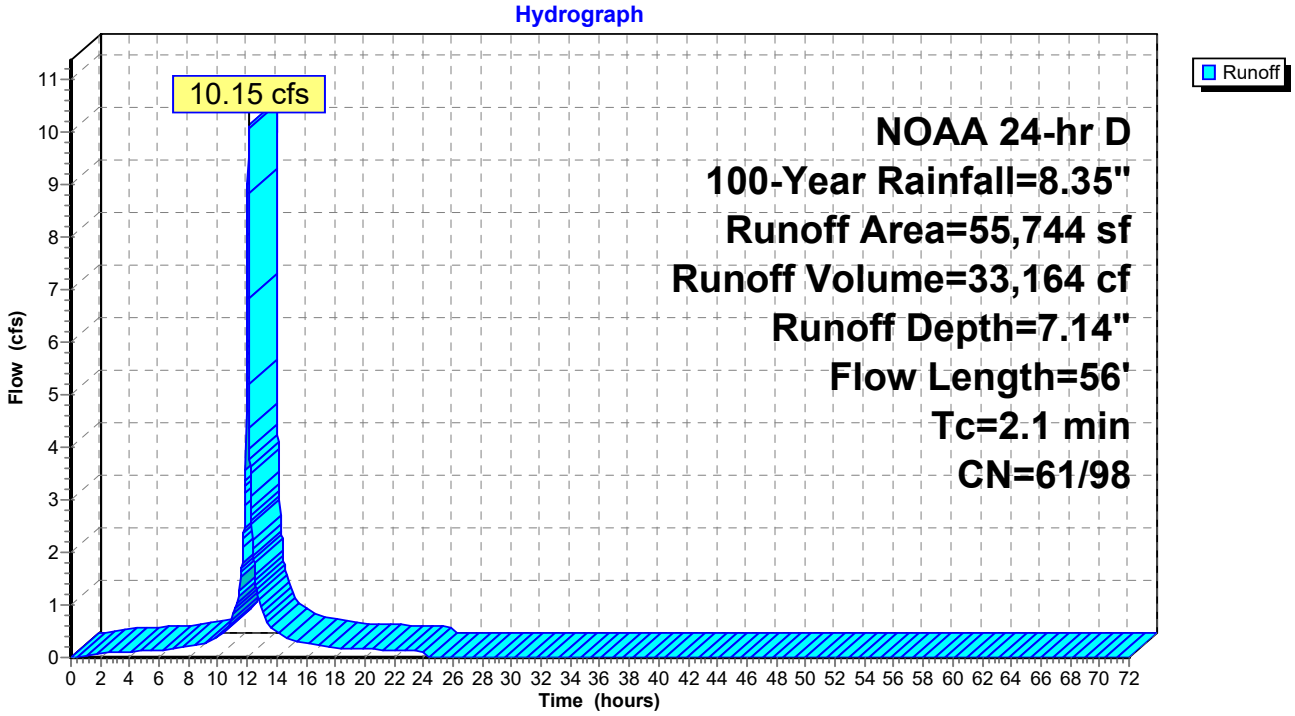
Runoff = 10.15 cfs @ 12.10 hrs, Volume= 33,164 cf, Depth= 7.14"

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 |
| * | 15,610 | 98 | Impervious Area |
| | 55,744 | 90 | Weighted Average |
| | 12,309 | 61 | 22.08% Pervious Area |
| | 43,435 | 98 | 77.92% 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



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

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.20 | 0.00 | 0.07 | 0.07 |
| 4.00 | 0.44 | 0.00 | 0.26 | 0.11 |
| 6.00 | 0.71 | 0.00 | 0.52 | 0.14 |
| 8.00 | 1.08 | 0.00 | 0.87 | 0.22 |
| 10.00 | 1.66 | 0.02 | 1.43 | 0.40 |
| 12.00 | 4.00 | 0.81 | 3.77 | **5.96** |
| 14.00 | 6.69 | 2.48 | 6.46 | **0.49** |
| 16.00 | 7.27 | 2.90 | 7.03 | 0.27 |
| 18.00 | 7.64 | 3.17 | 7.40 | 0.18 |
| 20.00 | 7.91 | 3.38 | 7.67 | 0.16 |
| 22.00 | 8.15 | 3.56 | 7.91 | 0.13 |
| 24.00 | **8.35** | **3.71** | **8.11** | 0.11 |
| 26.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 28.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 30.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 32.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 34.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 36.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 38.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 40.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 42.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 44.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 46.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 48.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 50.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 52.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 54.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 56.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 58.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 60.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 62.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 64.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 66.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 68.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 70.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 72.00 | 8.35 | 3.71 | 8.11 | 0.00 |

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

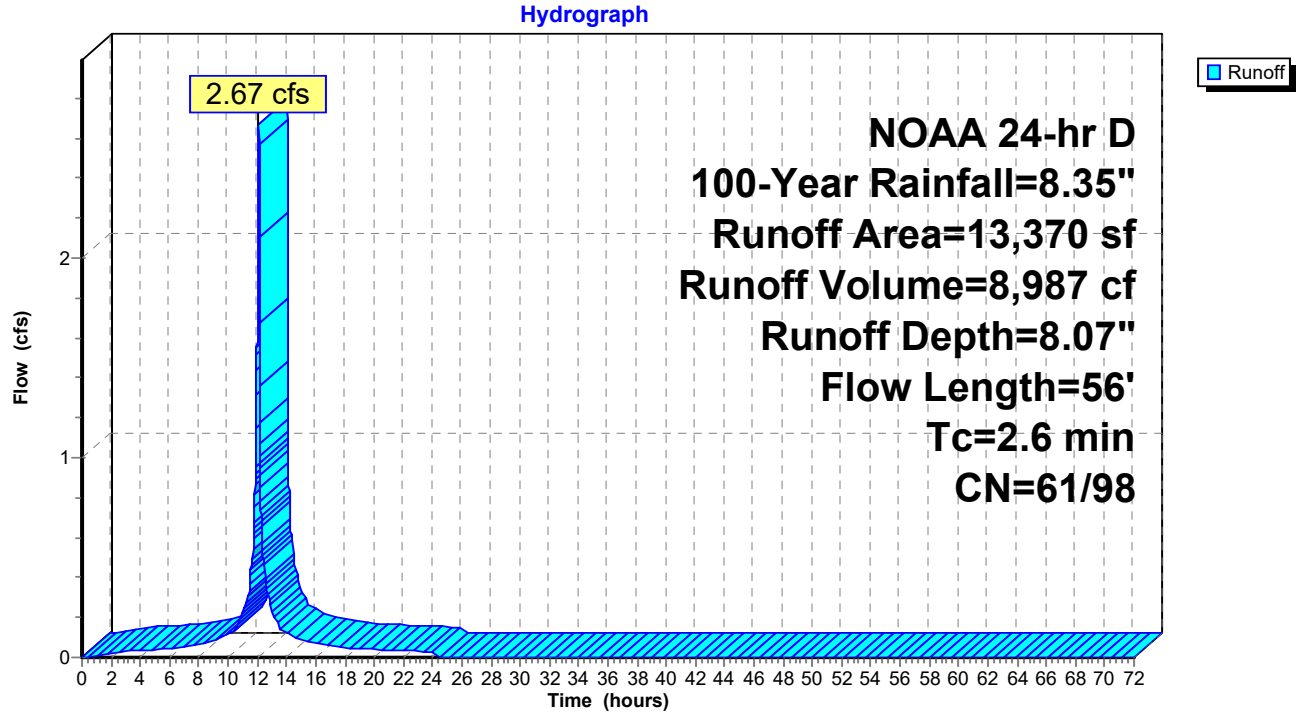
Runoff = 2.67 cfs @ 12.10 hrs, Volume= 8,987 cf, Depth= 8.07"

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 |
|---|---|---|---|
| | 133 | 61 | >75% Grass cover, Good, HSG B |
| * | 3,564 | 98 | Porous Pavement |
| * | 9,673 | 98 | Impervious Area |
| | 13,370 | 98 | Weighted Average |
| | 133 | 61 | 0.99% Pervious Area |
| | 13,237 | 98 | 99.01% 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 for Subcatchment P-1B: Drainage to Porous Pavement in Tandem Spaces

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.20 | 0.00 | 0.07 | 0.02 |
| 4.00 | 0.44 | 0.00 | 0.26 | 0.03 |
| 6.00 | 0.71 | 0.00 | 0.52 | 0.04 |
| 8.00 | 1.08 | 0.00 | 0.87 | 0.07 |
| 10.00 | 1.66 | 0.02 | 1.43 | 0.12 |
| 12.00 | 4.00 | 0.81 | 3.77 | **1.60** |
| 14.00 | 6.69 | 2.48 | 6.46 | **0.12** |
| 16.00 | 7.27 | 2.90 | 7.03 | 0.07 |
| 18.00 | 7.64 | 3.17 | 7.40 | 0.05 |
| 20.00 | 7.91 | 3.38 | 7.67 | 0.04 |
| 22.00 | 8.15 | 3.56 | 7.91 | 0.03 |
| 24.00 | **8.35** | **3.71** | **8.11** | 0.03 |
| 26.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 28.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 30.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 32.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 34.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 36.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 38.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 40.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 42.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 44.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 46.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 48.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 50.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 52.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 54.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 56.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 58.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 60.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 62.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 64.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 66.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 68.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 70.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 72.00 | 8.35 | 3.71 | 8.11 | 0.00 |

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

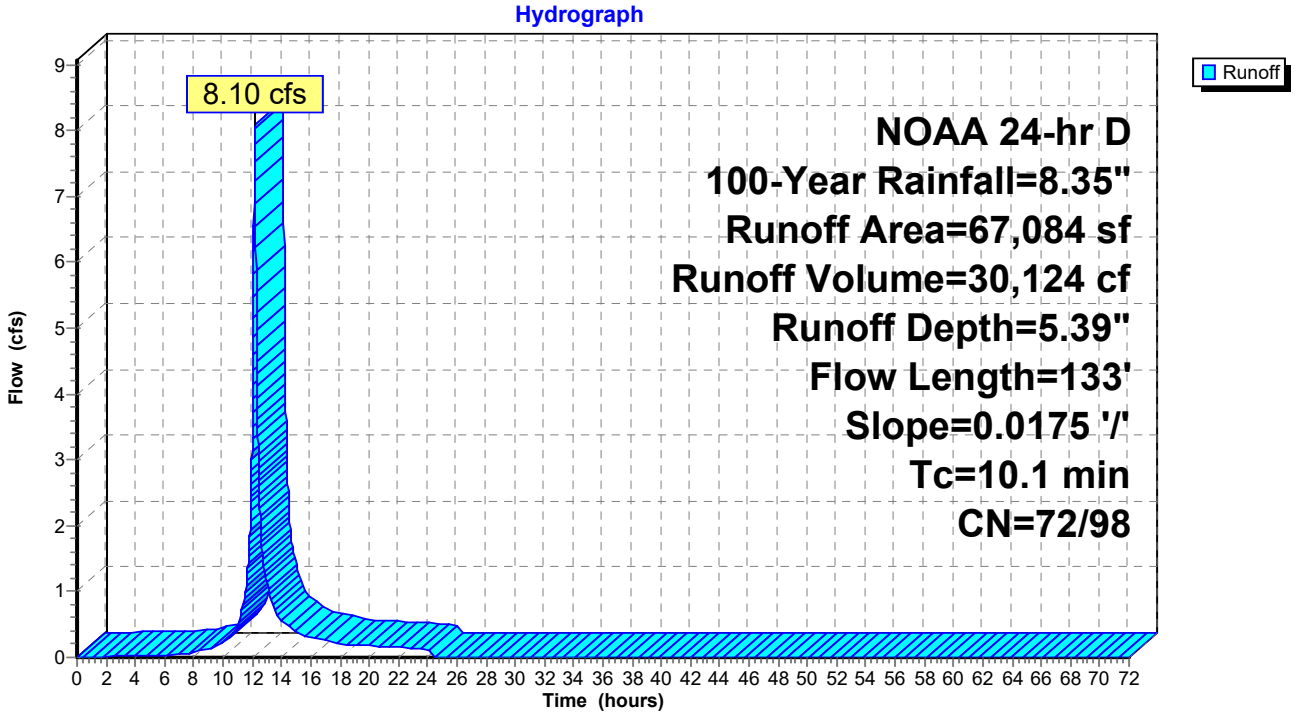
Runoff = 8.10 cfs @ 12.17 hrs, Volume= 30,124 cf, Depth= 5.39"

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 |
|---|---|---|---|
| | 25,698 | 61 | >75% Grass cover, Good, HSG B |
| * | 8,326 | 98 | Impervious Area |
| * | 33,060 | 80 | Turf Field |
| | 67,084 | 75 | Weighted Average |
| | 58,758 | 72 | 87.59% Pervious Area |
| | 8,326 | 98 | 12.41% 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 for Subcatchment P-1C: Drainage to Infiltration Basin in Rear

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.20 | 0.00 | 0.07 | 0.01 |
| 4.00 | 0.44 | 0.00 | 0.26 | 0.02 |
| 6.00 | 0.71 | 0.00 | 0.52 | 0.03 |
| 8.00 | 1.08 | 0.02 | 0.87 | 0.08 |
| 10.00 | 1.66 | 0.16 | 1.43 | 0.23 |
| 12.00 | 4.00 | 1.46 | 3.77 | **3.52** |
| 14.00 | 6.69 | 3.57 | 6.46 | **0.56** |
| 16.00 | 7.27 | 4.06 | 7.03 | 0.31 |
| 18.00 | 7.64 | 4.38 | 7.40 | 0.21 |
| 20.00 | 7.91 | 4.62 | 7.67 | 0.18 |
| 22.00 | 8.15 | 4.83 | 7.91 | 0.15 |
| 24.00 | **8.35** | **5.00** | **8.11** | 0.13 |
| 26.00 | 8.35 | 5.00 | 8.11 | 0.00 |
| 28.00 | 8.35 | 5.00 | 8.11 | 0.00 |
| 30.00 | 8.35 | 5.00 | 8.11 | 0.00 |
| 32.00 | 8.35 | 5.00 | 8.11 | 0.00 |
| 34.00 | 8.35 | 5.00 | 8.11 | 0.00 |
| 36.00 | 8.35 | 5.00 | 8.11 | 0.00 |
| 38.00 | 8.35 | 5.00 | 8.11 | 0.00 |
| 40.00 | 8.35 | 5.00 | 8.11 | 0.00 |
| 42.00 | 8.35 | 5.00 | 8.11 | 0.00 |
| 44.00 | 8.35 | 5.00 | 8.11 | 0.00 |
| 46.00 | 8.35 | 5.00 | 8.11 | 0.00 |
| 48.00 | 8.35 | 5.00 | 8.11 | 0.00 |
| 50.00 | 8.35 | 5.00 | 8.11 | 0.00 |
| 52.00 | 8.35 | 5.00 | 8.11 | 0.00 |
| 54.00 | 8.35 | 5.00 | 8.11 | 0.00 |
| 56.00 | 8.35 | 5.00 | 8.11 | 0.00 |
| 58.00 | 8.35 | 5.00 | 8.11 | 0.00 |
| 60.00 | 8.35 | 5.00 | 8.11 | 0.00 |
| 62.00 | 8.35 | 5.00 | 8.11 | 0.00 |
| 64.00 | 8.35 | 5.00 | 8.11 | 0.00 |
| 66.00 | 8.35 | 5.00 | 8.11 | 0.00 |
| 68.00 | 8.35 | 5.00 | 8.11 | 0.00 |
| 70.00 | 8.35 | 5.00 | 8.11 | 0.00 |
| 72.00 | 8.35 | 5.00 | 8.11 | 0.00 |

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

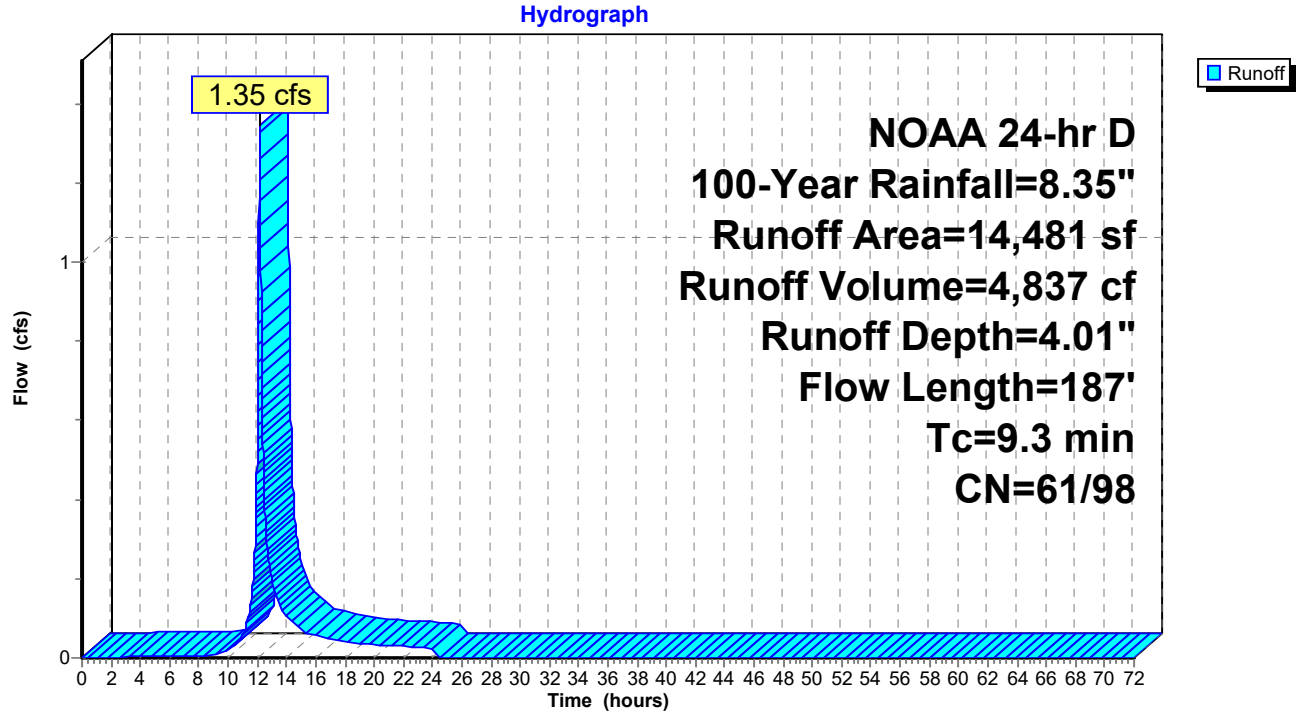
Runoff = 1.35 cfs @ 12.17 hrs, Volume= 4,837 cf, Depth= 4.01"

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 |
|---|---|---|---|
| | 13,511 | 61 | >75% Grass cover, Good, HSG B |
| * | 970 | 98 | Impervious Area |
| | 14,481 | 63 | Weighted Average |
| | 13,511 | 61 | 93.30% Pervious Area |
| | 970 | 98 | 6.70% 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 for Subcatchment P-1D: Undetained Flow to Sunset Road

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.20 | 0.00 | 0.07 | 0.00 |
| 4.00 | 0.44 | 0.00 | 0.26 | 0.00 |
| 6.00 | 0.71 | 0.00 | 0.52 | 0.00 |
| 8.00 | 1.08 | 0.00 | 0.87 | 0.00 |
| 10.00 | 1.66 | 0.02 | 1.43 | 0.02 |
| 12.00 | 4.00 | 0.81 | 3.77 | **0.55** |
| 14.00 | 6.69 | 2.48 | 6.46 | **0.10** |
| 16.00 | 7.27 | 2.90 | 7.03 | 0.06 |
| 18.00 | 7.64 | 3.17 | 7.40 | 0.04 |
| 20.00 | 7.91 | 3.38 | 7.67 | 0.03 |
| 22.00 | 8.15 | 3.56 | 7.91 | 0.03 |
| 24.00 | **8.35** | **3.71** | **8.11** | 0.02 |
| 26.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 28.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 30.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 32.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 34.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 36.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 38.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 40.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 42.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 44.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 46.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 48.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 50.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 52.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 54.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 56.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 58.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 60.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 62.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 64.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 66.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 68.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 70.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 72.00 | 8.35 | 3.71 | 8.11 | 0.00 |

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

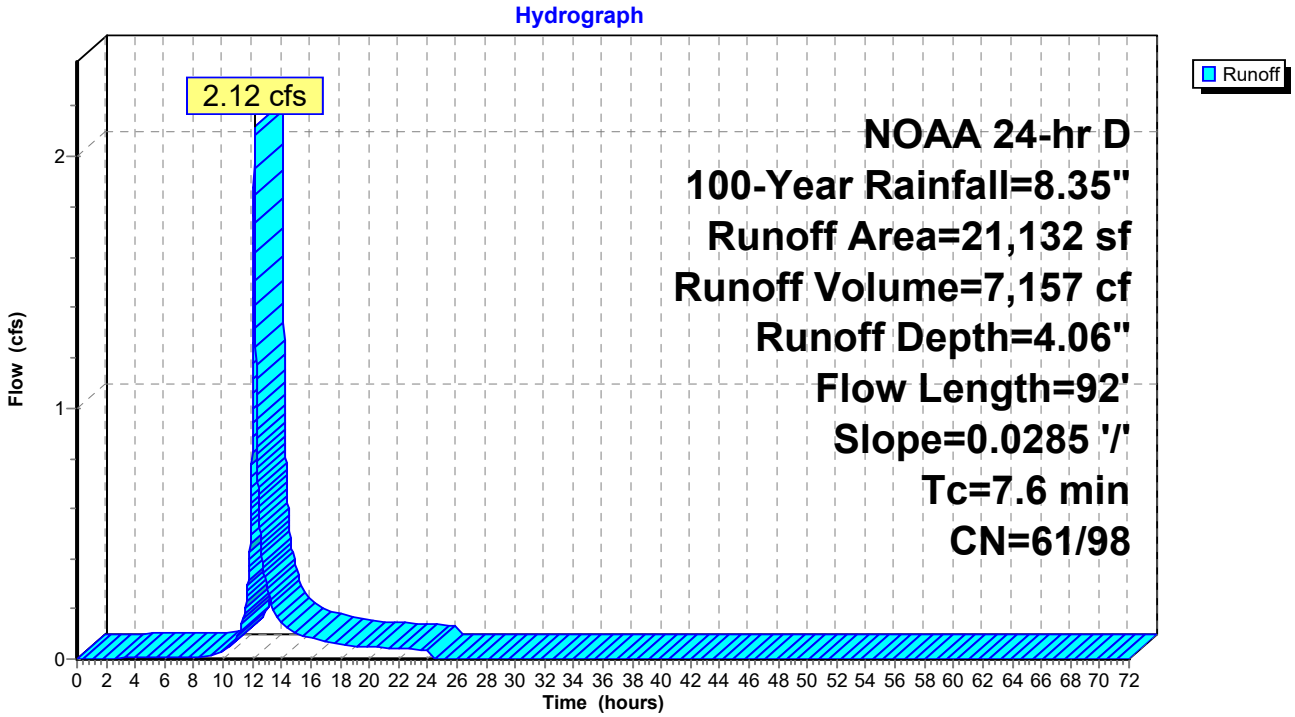
Runoff = 2.12 cfs @ 12.15 hrs, Volume= 7,157 cf, Depth= 4.06"

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 |
|---|---|---|---|
| | 19,447 | 61 | >75% Grass cover, Good, HSG B |
| * | 1,685 | 98 | Impervious Area |
| | 21,132 | 64 | Weighted Average |
| | 19,447 | 61 | 92.03% Pervious Area |
| | 1,685 | 98 | 7.97% 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 for Subcatchment P-2: Proposed Drainage to Roome Avenue

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.20 | 0.00 | 0.07 | 0.00 |
| 4.00 | 0.44 | 0.00 | 0.26 | 0.00 |
| 6.00 | 0.71 | 0.00 | 0.52 | 0.01 |
| 8.00 | 1.08 | 0.00 | 0.87 | 0.01 |
| 10.00 | 1.66 | 0.02 | 1.43 | 0.03 |
| 12.00 | 4.00 | 0.81 | 3.77 | **0.94** |
| 14.00 | 6.69 | 2.48 | 6.46 | **0.15** |
| 16.00 | 7.27 | 2.90 | 7.03 | 0.08 |
| 18.00 | 7.64 | 3.17 | 7.40 | 0.06 |
| 20.00 | 7.91 | 3.38 | 7.67 | 0.05 |
| 22.00 | 8.15 | 3.56 | 7.91 | 0.04 |
| 24.00 | **8.35** | **3.71** | **8.11** | 0.04 |
| 26.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 28.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 30.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 32.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 34.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 36.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 38.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 40.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 42.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 44.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 46.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 48.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 50.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 52.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 54.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 56.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 58.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 60.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 62.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 64.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 66.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 68.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 70.00 | 8.35 | 3.71 | 8.11 | 0.00 |
| 72.00 | 8.35 | 3.71 | 8.11 | 0.00 |

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

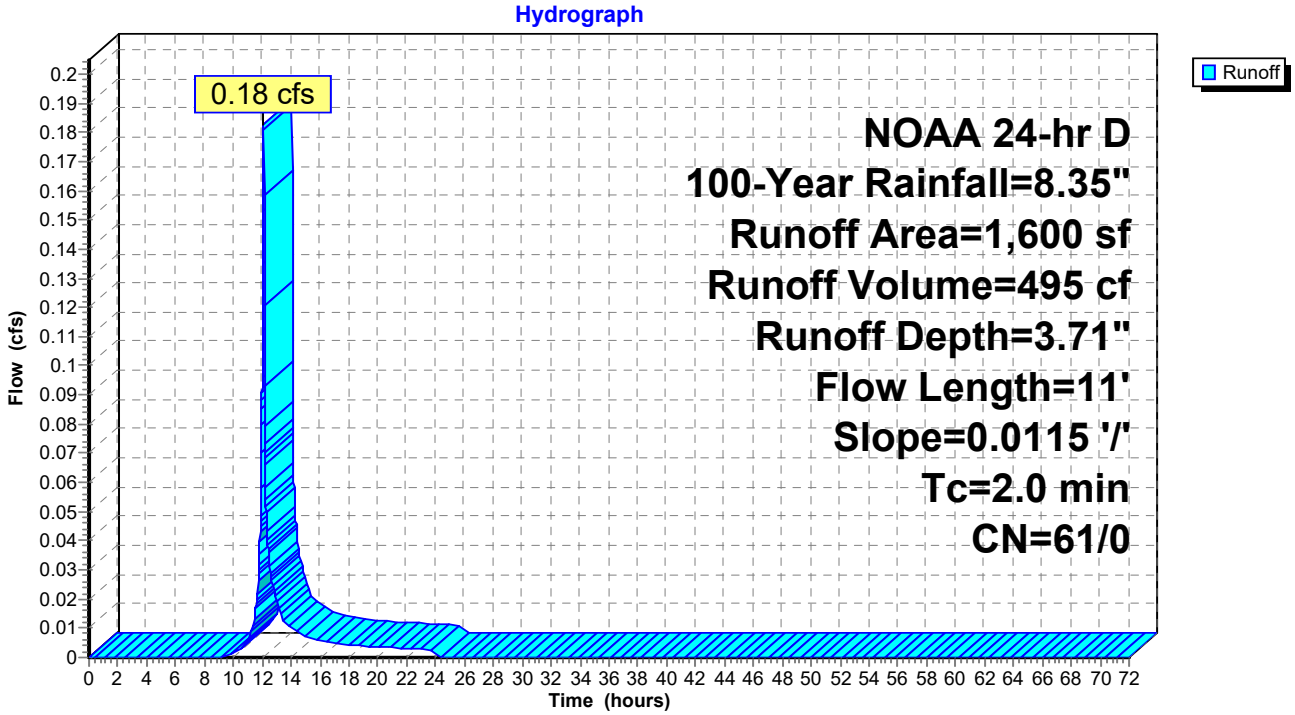
Runoff = 0.18 cfs @ 12.10 hrs, Volume= 495 cf, Depth= 3.71"

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 for Subcatchment P-3: Proposed Drainage toward Dewilde Drive

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | **0.00** | 0.00 |
| 2.00 | 0.20 | 0.00 | 0.00 | 0.00 |
| 4.00 | 0.44 | 0.00 | 0.00 | 0.00 |
| 6.00 | 0.71 | 0.00 | 0.00 | 0.00 |
| 8.00 | 1.08 | 0.00 | 0.00 | 0.00 |
| 10.00 | 1.66 | 0.02 | 0.00 | 0.00 |
| 12.00 | 4.00 | 0.81 | 0.00 | **0.09** |
| 14.00 | 6.69 | 2.48 | 0.00 | **0.01** |
| 16.00 | 7.27 | 2.90 | 0.00 | 0.01 |
| 18.00 | 7.64 | 3.17 | 0.00 | 0.00 |
| 20.00 | 7.91 | 3.38 | 0.00 | 0.00 |
| 22.00 | 8.15 | 3.56 | 0.00 | 0.00 |
| 24.00 | **8.35** | **3.71** | 0.00 | 0.00 |
| 26.00 | 8.35 | 3.71 | 0.00 | 0.00 |
| 28.00 | 8.35 | 3.71 | 0.00 | 0.00 |
| 30.00 | 8.35 | 3.71 | 0.00 | 0.00 |
| 32.00 | 8.35 | 3.71 | 0.00 | 0.00 |
| 34.00 | 8.35 | 3.71 | 0.00 | 0.00 |
| 36.00 | 8.35 | 3.71 | 0.00 | 0.00 |
| 38.00 | 8.35 | 3.71 | 0.00 | 0.00 |
| 40.00 | 8.35 | 3.71 | 0.00 | 0.00 |
| 42.00 | 8.35 | 3.71 | 0.00 | 0.00 |
| 44.00 | 8.35 | 3.71 | 0.00 | 0.00 |
| 46.00 | 8.35 | 3.71 | 0.00 | 0.00 |
| 48.00 | 8.35 | 3.71 | 0.00 | 0.00 |
| 50.00 | 8.35 | 3.71 | 0.00 | 0.00 |
| 52.00 | 8.35 | 3.71 | 0.00 | 0.00 |
| 54.00 | 8.35 | 3.71 | 0.00 | 0.00 |
| 56.00 | 8.35 | 3.71 | 0.00 | 0.00 |
| 58.00 | 8.35 | 3.71 | 0.00 | 0.00 |
| 60.00 | 8.35 | 3.71 | 0.00 | 0.00 |
| 62.00 | 8.35 | 3.71 | 0.00 | 0.00 |
| 64.00 | 8.35 | 3.71 | 0.00 | 0.00 |
| 66.00 | 8.35 | 3.71 | 0.00 | 0.00 |
| 68.00 | 8.35 | 3.71 | 0.00 | 0.00 |
| 70.00 | 8.35 | 3.71 | 0.00 | 0.00 |
| 72.00 | 8.35 | 3.71 | 0.00 | 0.00 |

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

Inflow Area = 55,744 sf, 77.92% Impervious, Inflow Depth = 7.14" for 100-Year event
Inflow = 10.15 cfs @ 12.10 hrs, Volume= 33,164 cf
Outflow = 2.08 cfs @ 12.34 hrs, Volume= 33,164 cf, Atten= 79%, Lag= 14.6 min
Discarded = 0.43 cfs @ 12.34 hrs, Volume= 19,509 cf
Primary = 1.65 cfs @ 12.34 hrs, Volume= 13,655 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 189.32' @ 12.34 hrs Surf.Area= 7,684 sf Storage= 12,777 cf

Plug-Flow detention time= 151.2 min calculated for 33,159 cf (100% of inflow)
Center-of-Mass det. time= 151.2 min ( 901.8 - 750.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 187.00' | 14,171 cf | **Custom Stage Data (Irregular)**Listed below (Recalc) |

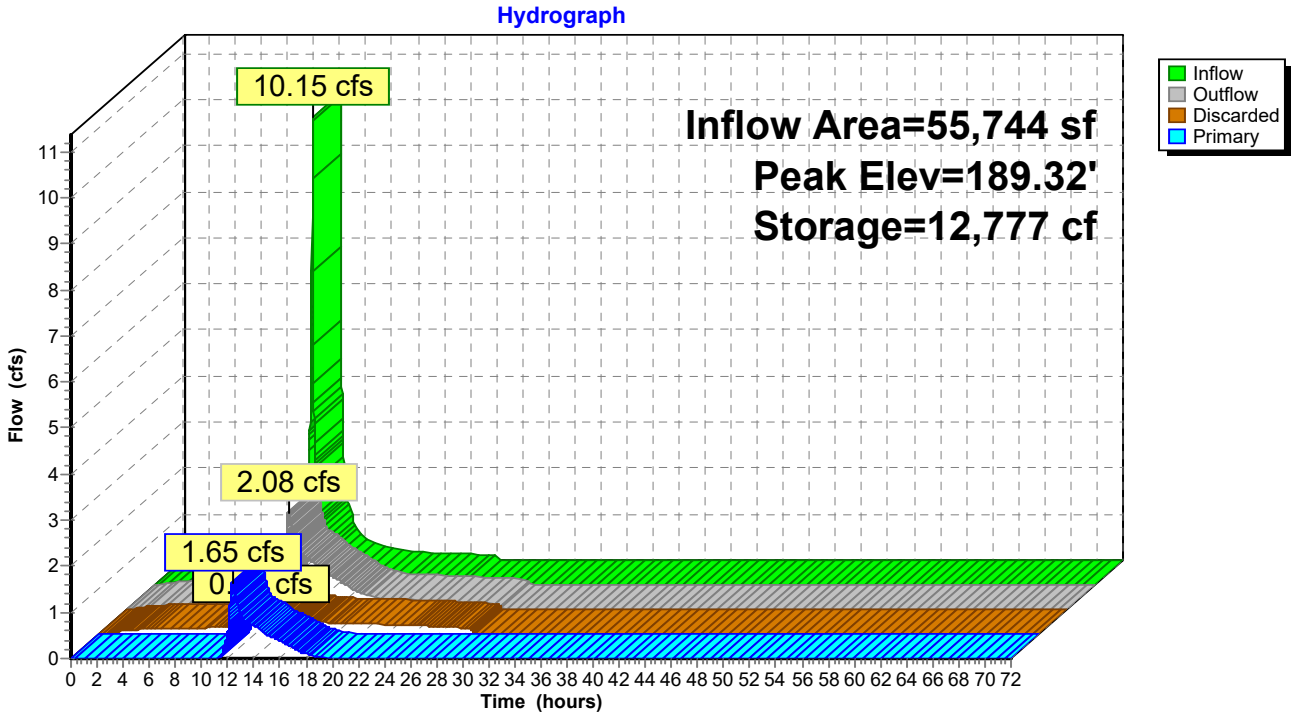
| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 187.00 | 3,406 | 592.8 | 0 | 0 | 3,406 |
| 188.00 | 5,212 | 611.7 | 4,277 | 4,277 | 5,315 |
| 189.00 | 7,076 | 630.5 | 6,120 | 10,397 | 7,275 |
| 189.50 | 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<br>Inlet / Outlet Invert= 185.89' / 185.75' S= 0.0054 '/' Cc= 0.900<br>n= 0.013, Flow Area= 1.23 sf |
| #2 | Device 1 | 187.81' | **5.0" Vert. Orifice/Grate** C= 0.600 |
| #3 | Device 1 | 188.60' | **2.5" Vert. Orifice/Grate** C= 0.600 |
| #4 | Device 1 | 189.15' | **4.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>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<br>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' | **1.485 in/hr Exfiltration over Wetted area**<br>Conductivity to Groundwater Elevation = 184.40' Phase-In= 0.01' |

**Discarded OutFlow** Max=0.43 cfs @ 12.34 hrs HW=189.32' (Free Discharge)
└**5=Exfiltration** ( Controls 0.43 cfs)

**Primary OutFlow** Max=1.65 cfs @ 12.34 hrs HW=189.32' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 1.65 cfs of 9.90 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 0.75 cfs @ 5.50 fps)
├**3=Orifice/Grate** (Orifice Controls 0.13 cfs @ 3.79 fps)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 0.77 cfs @ 1.12 fps)

## Pond B-1: Infiltration Basin Along Sunset Road



## Hydrograph for Pond B-1: Infiltration Basin Along Sunset Road

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Discarded (cfs) | Primary (cfs) |
|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.07 | 21 | 187.01 | 0.07 | 0.07 | 0.00 |
| 4.00 | 0.11 | 32 | 187.01 | 0.11 | 0.11 | 0.00 |
| 6.00 | 0.14 | 95 | 187.03 | 0.12 | 0.12 | 0.00 |
| 8.00 | 0.22 | 477 | 187.14 | 0.13 | 0.13 | 0.00 |
| 10.00 | 0.40 | 1,469 | 187.39 | 0.16 | 0.16 | 0.00 |
| 12.00 | **5.96** | **8,051** | **188.65** | **0.86** | **0.33** | **0.53** |
| 14.00 | **0.49** | **9,900** | **188.93** | **1.07** | **0.37** | **0.70** |
| 16.00 | 0.27 | 6,247 | 188.36 | 0.67 | 0.29 | 0.38 |
| 18.00 | 0.18 | 4,325 | 188.01 | 0.34 | 0.24 | 0.10 |
| 20.00 | 0.16 | 3,592 | 187.87 | 0.23 | 0.22 | 0.01 |
| 22.00 | 0.13 | 3,086 | 187.76 | 0.21 | 0.21 | 0.00 |
| 24.00 | 0.11 | 2,532 | 187.64 | 0.19 | 0.19 | 0.00 |
| 26.00 | 0.00 | 1,290 | 187.35 | 0.16 | 0.16 | 0.00 |
| 28.00 | 0.00 | 275 | 187.08 | 0.13 | 0.13 | 0.00 |
| 30.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 32.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 34.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 36.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 38.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 40.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 42.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 44.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 46.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 48.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 50.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 52.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 54.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 56.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 58.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 60.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 62.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 64.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 66.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 68.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 70.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 72.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |

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

Inflow Area = 13,370 sf, 99.01% Impervious, Inflow Depth = 8.07" for 100-Year event
Inflow = 2.67 cfs @ 12.10 hrs, Volume= 8,987 cf
Outflow = 0.85 cfs @ 12.23 hrs, Volume= 8,987 cf, Atten= 68%, Lag= 7.8 min
Discarded = 0.78 cfs @ 12.23 hrs, Volume= 8,899 cf
Primary = 0.07 cfs @ 12.23 hrs, Volume= 88 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 187.75' @ 12.23 hrs Surf.Area= 3,564 sf Storage= 1,276 cf

Plug-Flow detention time= 6.9 min calculated for 8,986 cf (100% of inflow)
Center-of-Mass det. time= 6.9 min ( 745.7 - 738.8 )

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

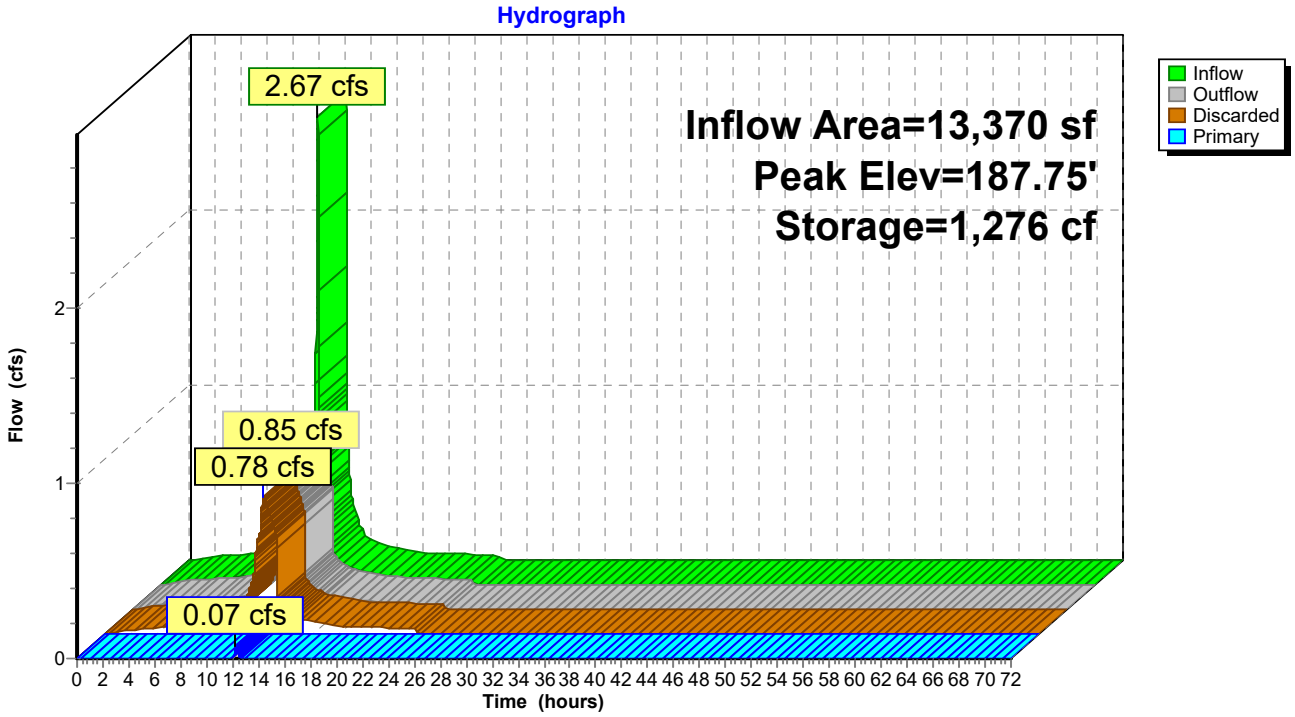
| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 186.85 | 3,564 | 306.0 | 0 | 0 | 3,564 |
| 187.85 | 3,564 | 306.0 | 3,564 | 3,564 | 3,870 |
| 188.85 | 3,564 | 306.0 | 3,564 | 7,128 | 4,176 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 186.85' | **15.0" Round Culvert** L= 135.0' Ke= 0.500<br>Inlet / Outlet Invert= 186.85' / 185.75' S= 0.0081 '/' Cc= 0.900<br>n= 0.013, Flow Area= 1.23 sf |
| #2 | Device 1 | 187.45' | **2.5" Vert. Orifice/Grate** C= 0.600 |
| #3 | Device 1 | 188.45' | **6.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>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<br>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' | **6.500 in/hr Exfiltration over Wetted area**<br>Conductivity to Groundwater Elevation = 184.40' Phase-In= 0.01' |

**Discarded OutFlow** Max=0.78 cfs @ 12.23 hrs HW=187.75' (Free Discharge)
└**4=Exfiltration** ( Controls 0.78 cfs)

**Primary OutFlow** Max=0.07 cfs @ 12.23 hrs HW=187.75' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.07 cfs of 2.93 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.07 cfs @ 2.10 fps)
  └**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Pond B-2: Porous Pavement Within Tandem Spaces



## Hydrograph for Pond B-2: Porous Pavement Within Tandem Spaces

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Discarded (cfs) | Primary (cfs) |
|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.02 | 1 | 186.85 | 0.02 | 0.02 | 0.00 |
| 4.00 | 0.03 | 1 | 186.85 | 0.03 | 0.03 | 0.00 |
| 6.00 | 0.04 | 1 | 186.85 | 0.04 | 0.04 | 0.00 |
| 8.00 | 0.07 | 2 | 186.85 | 0.07 | 0.07 | 0.00 |
| 10.00 | 0.12 | 3 | 186.85 | 0.12 | 0.12 | 0.00 |
| 12.00 | **1.60** | **406** | **187.14** | **0.61** | **0.61** | **0.00** |
| 14.00 | **0.12** | **3** | **186.85** | **0.12** | **0.12** | **0.00** |
| 16.00 | 0.07 | 2 | 186.85 | 0.07 | 0.07 | 0.00 |
| 18.00 | 0.05 | 1 | 186.85 | 0.05 | 0.05 | 0.00 |
| 20.00 | 0.04 | 1 | 186.85 | 0.04 | 0.04 | 0.00 |
| 22.00 | 0.03 | 1 | 186.85 | 0.03 | 0.03 | 0.00 |
| 24.00 | 0.03 | 1 | 186.85 | 0.03 | 0.03 | 0.00 |
| 26.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 28.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 30.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 32.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 34.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 36.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 38.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 40.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 42.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 44.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 46.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 48.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 50.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 52.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 54.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 56.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 58.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 60.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 62.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 64.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 66.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 68.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 70.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 72.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |

## Summary for Pond B-3: Infiltration Basin in Rear

Inflow Area = 67,084 sf, 12.41% Impervious, Inflow Depth = 5.39" for 100-Year event
Inflow = 8.10 cfs @ 12.17 hrs, Volume= 30,124 cf
Outflow = 3.33 cfs @ 12.38 hrs, Volume= 30,124 cf, Atten= 59%, Lag= 12.4 min
Discarded = 0.11 cfs @ 12.38 hrs, Volume= 4,910 cf
Primary = 3.22 cfs @ 12.38 hrs, Volume= 25,213 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 189.92' @ 12.38 hrs Surf.Area= 5,820 sf Storage= 8,658 cf

Plug-Flow detention time= 73.5 min calculated for 30,119 cf (100% of inflow)
Center-of-Mass det. time= 73.5 min ( 888.7 - 815.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 188.00' | 9,144 cf | **Custom Stage Data (Irregular)**Listed below (Recalc) |

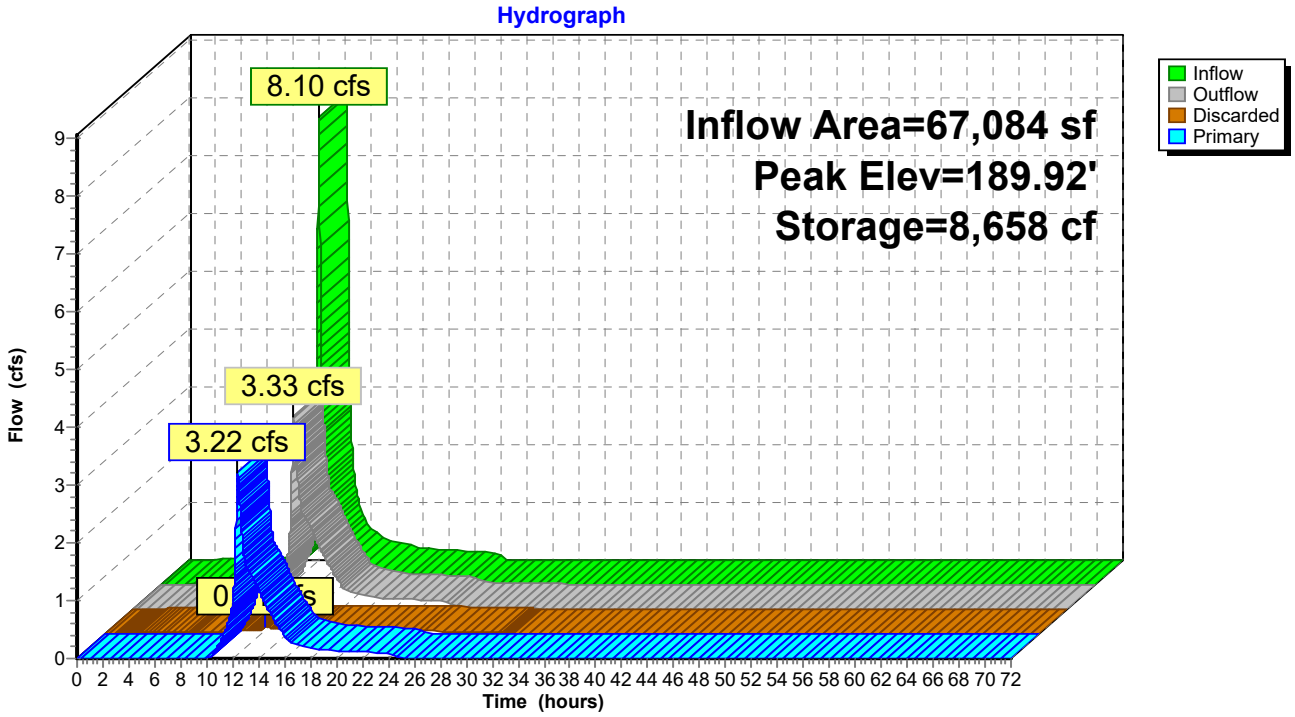
| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 188.00 | 3,308 | 335.0 | 0 | 0 | 3,308 |
| 189.00 | 4,551 | 370.0 | 3,913 | 3,913 | 5,303 |
| 190.00 | 5,942 | 405.0 | 5,231 | 9,144 | 7,496 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 187.50' | **15.0" Round Culvert** L= 325.0' Ke= 0.500<br>Inlet / Outlet Invert= 187.50' / 185.85' S= 0.0051 '/' Cc= 0.900<br>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 |
| #3 | Device 1 | 188.85' | **2.5" Vert. Orifice/Grate** C= 0.600 |
| #4 | Device 1 | 189.65' | **4.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>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<br>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**<br>Conductivity to Groundwater Elevation = 183.90' Phase-In= 0.01' |

**Discarded OutFlow** Max=0.11 cfs @ 12.38 hrs HW=189.92' (Free Discharge)
└**5=Exfiltration** ( Controls 0.11 cfs)

**Primary OutFlow** Max=3.22 cfs @ 12.38 hrs HW=189.92' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 3.22 cfs of 5.49 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 1.57 cfs @ 6.02 fps)
  ├**3=Orifice/Grate** (Orifice Controls 0.16 cfs @ 4.73 fps)
  └**4=Broad-Crested Rectangular Weir** (Weir Controls 1.49 cfs @ 1.40 fps)

## Pond B-3: Infiltration Basin in Rear



## Hydrograph for Pond B-3: Infiltration Basin in Rear

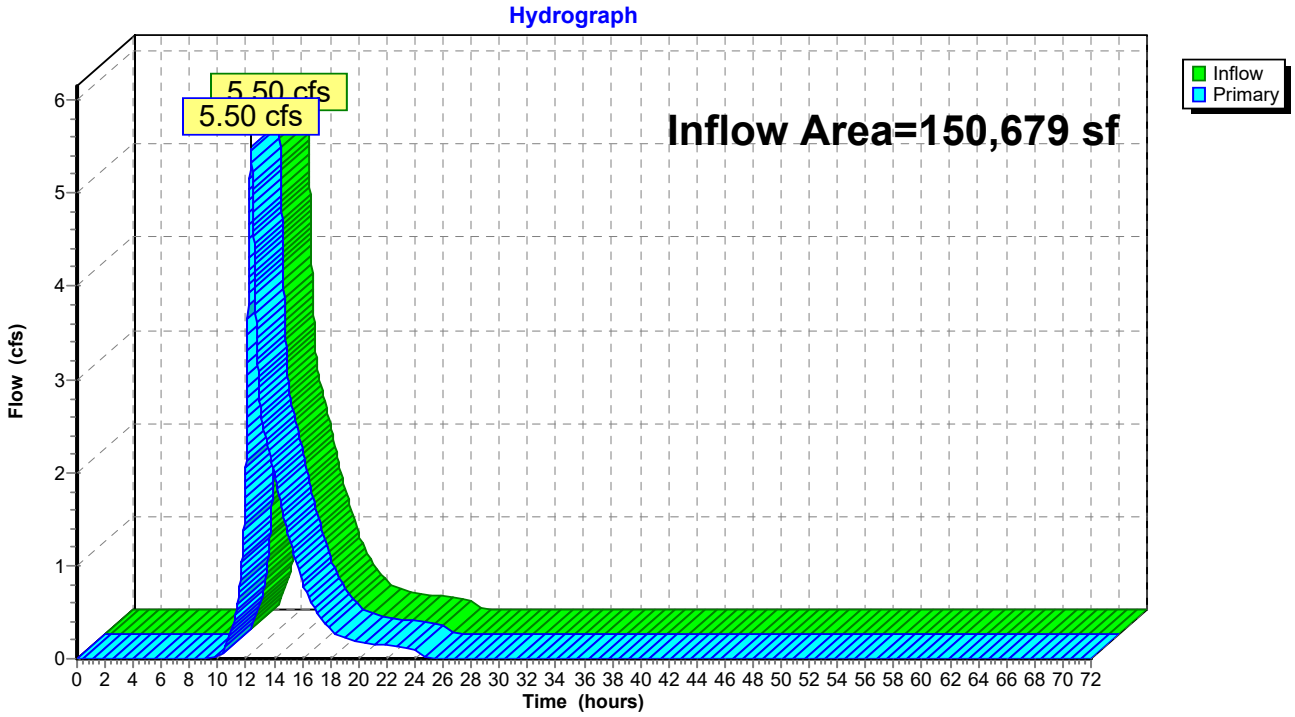
| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Discarded (cfs) | Primary (cfs) |
|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.01 | 10 | 188.00 | 0.01 | 0.01 | 0.00 |
| 4.00 | 0.02 | 18 | 188.01 | 0.02 | 0.02 | 0.00 |
| 6.00 | 0.03 | 22 | 188.01 | 0.03 | 0.03 | 0.00 |
| 8.00 | 0.08 | 105 | 188.03 | 0.04 | 0.04 | 0.00 |
| 10.00 | 0.23 | 785 | 188.23 | 0.05 | 0.05 | 0.00 |
| 12.00 | **3.52** | **3,596** | **188.93** | **1.03** | **0.07** | **0.96** |
| 14.00 | **0.56** | **4,618** | **189.15** | **1.27** | **0.08** | **1.19** |
| 16.00 | 0.31 | 1,648 | 188.46 | 0.44 | 0.05 | 0.39 |
| 18.00 | 0.21 | 1,336 | 188.38 | 0.24 | 0.05 | 0.18 |
| 20.00 | 0.18 | 1,247 | 188.35 | 0.19 | 0.05 | 0.14 |
| 22.00 | 0.15 | 1,199 | 188.34 | 0.16 | 0.05 | 0.11 |
| 24.00 | 0.13 | 1,148 | 188.33 | 0.14 | 0.05 | 0.09 |
| 26.00 | 0.00 | 734 | 188.21 | 0.05 | 0.05 | 0.00 |
| 28.00 | 0.00 | 420 | 188.12 | 0.04 | 0.04 | 0.00 |
| 30.00 | 0.00 | 126 | 188.04 | 0.04 | 0.04 | 0.00 |
| 32.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 34.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 36.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 38.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 40.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 42.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 44.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 46.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 48.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 50.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 52.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 54.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 56.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 58.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 60.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 62.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 64.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 66.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 68.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 70.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 72.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |

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

Inflow Area = 150,679 sf, 43.78% Impervious, Inflow Depth = 3.49" for 100-Year event
Inflow = 5.50 cfs @ 12.35 hrs, Volume= 43,793 cf
Primary = 5.50 cfs @ 12.35 hrs, Volume= 43,793 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



## Hydrograph for Link POI-1: Proposed Drainage to Sunset Road

| Time (hours) | Inflow (cfs) | Elevation (feet) | Primary (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | **0.00** | 0.00 |
| 1.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.00 | 0.00 | 0.00 |
| 3.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | 0.00 | 0.00 | 0.00 |
| 5.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | 0.00 | 0.00 | 0.00 |
| 7.00 | 0.00 | 0.00 | 0.00 |
| 8.00 | 0.00 | 0.00 | 0.00 |
| 9.00 | 0.01 | 0.00 | 0.01 |
| 10.00 | 0.02 | 0.00 | 0.02 |
| 11.00 | 0.32 | 0.00 | 0.32 |
| 12.00 | **2.04** | 0.00 | **2.04** |
| 13.00 | **2.75** | 0.00 | **2.75** |
| 14.00 | 2.00 | 0.00 | 2.00 |
| 15.00 | 1.33 | 0.00 | 1.33 |
| 16.00 | 0.83 | 0.00 | 0.83 |
| 17.00 | 0.52 | 0.00 | 0.52 |
| 18.00 | 0.32 | 0.00 | 0.32 |
| 19.00 | 0.22 | 0.00 | 0.22 |
| 20.00 | 0.18 | 0.00 | 0.18 |
| 21.00 | 0.16 | 0.00 | 0.16 |
| 22.00 | 0.14 | 0.00 | 0.14 |
| 23.00 | 0.13 | 0.00 | 0.13 |
| 24.00 | 0.11 | 0.00 | 0.11 |
| 25.00 | 0.00 | 0.00 | 0.00 |
| 26.00 | 0.00 | 0.00 | 0.00 |
| 27.00 | 0.00 | 0.00 | 0.00 |
| 28.00 | 0.00 | 0.00 | 0.00 |
| 29.00 | 0.00 | 0.00 | 0.00 |
| 30.00 | 0.00 | 0.00 | 0.00 |
| 31.00 | 0.00 | 0.00 | 0.00 |
| 32.00 | 0.00 | 0.00 | 0.00 |
| 33.00 | 0.00 | 0.00 | 0.00 |
| 34.00 | 0.00 | 0.00 | 0.00 |
| 35.00 | 0.00 | 0.00 | 0.00 |
| 36.00 | 0.00 | 0.00 | 0.00 |
| 37.00 | 0.00 | 0.00 | 0.00 |
| 38.00 | 0.00 | 0.00 | 0.00 |
| 39.00 | 0.00 | 0.00 | 0.00 |
| 40.00 | 0.00 | 0.00 | 0.00 |
| 41.00 | 0.00 | 0.00 | 0.00 |
| 42.00 | 0.00 | 0.00 | 0.00 |
| 43.00 | 0.00 | 0.00 | 0.00 |
| 44.00 | 0.00 | 0.00 | 0.00 |
| 45.00 | 0.00 | 0.00 | 0.00 |
| 46.00 | 0.00 | 0.00 | 0.00 |
| 47.00 | 0.00 | 0.00 | 0.00 |
| 48.00 | 0.00 | 0.00 | 0.00 |
| 49.00 | 0.00 | 0.00 | 0.00 |
| 50.00 | 0.00 | 0.00 | 0.00 |
| 51.00 | 0.00 | 0.00 | 0.00 |
| 52.00 | 0.00 | 0.00 | 0.00 |
| 53.00 | 0.00 | 0.00 | 0.00 |
| 54.00 | 0.00 | 0.00 | 0.00 |
| 55.00 | 0.00 | 0.00 | 0.00 |
| 56.00 | 0.00 | 0.00 | 0.00 |
| 57.00 | 0.00 | 0.00 | 0.00 |
| 58.00 | 0.00 | 0.00 | 0.00 |
| 59.00 | 0.00 | 0.00 | 0.00 |
| 60.00 | 0.00 | 0.00 | 0.00 |
| 61.00 | 0.00 | 0.00 | 0.00 |
| 62.00 | 0.00 | 0.00 | 0.00 |
| 63.00 | 0.00 | 0.00 | 0.00 |
| 64.00 | 0.00 | 0.00 | 0.00 |
| 65.00 | 0.00 | 0.00 | 0.00 |
| 66.00 | 0.00 | 0.00 | 0.00 |
| 67.00 | 0.00 | 0.00 | 0.00 |
| 68.00 | 0.00 | 0.00 | 0.00 |
| 69.00 | 0.00 | 0.00 | 0.00 |
| 70.00 | 0.00 | 0.00 | 0.00 |
| 71.00 | 0.00 | 0.00 | 0.00 |
| 72.00 | 0.00 | 0.00 | 0.00 |

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

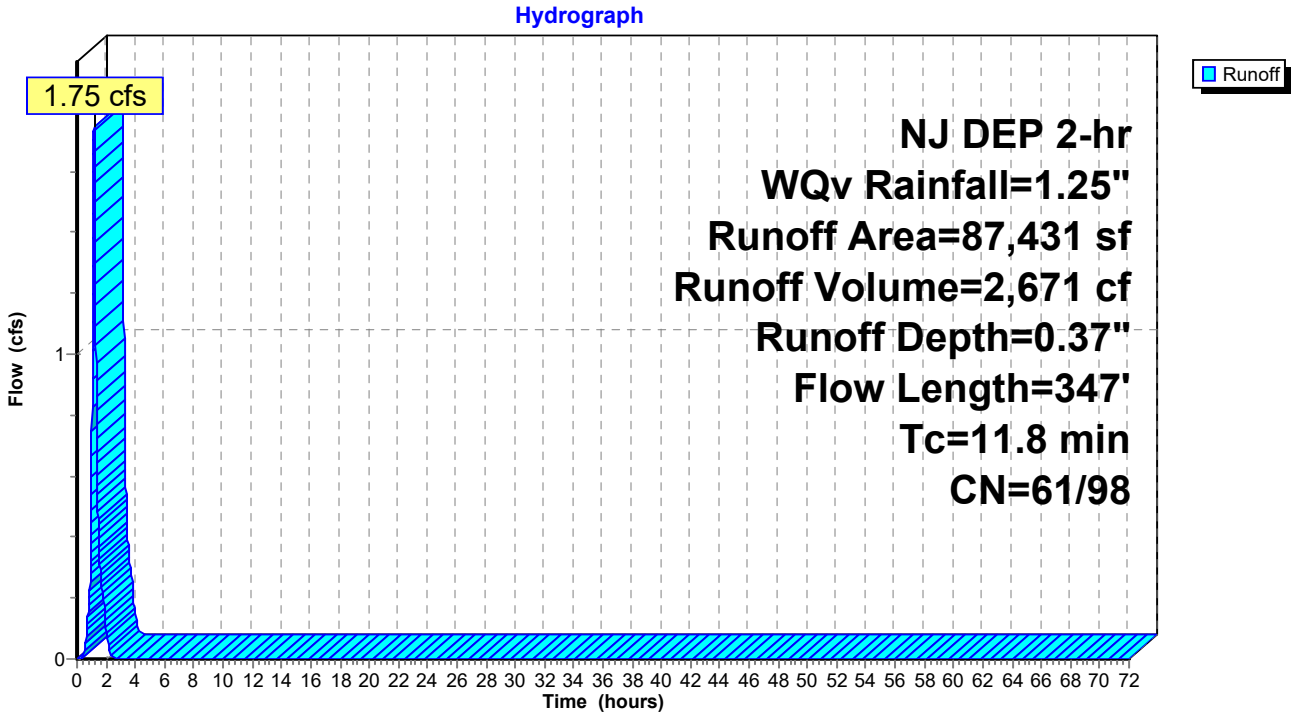
Runoff = 1.75 cfs @ 1.17 hrs, Volume= 2,671 cf, Depth= 0.37"

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



## Hydrograph for Subcatchment EX-1: Existing Drainage towards Sunset Road

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | **0.00** | 0.00 | **0.00** |
| 2.00 | **1.25** | 0.00 | **1.03** | **0.10** |
| 4.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 6.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 8.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 10.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 12.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 14.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 16.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 18.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 20.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 22.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 24.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 26.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 28.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 30.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 32.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 34.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 36.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 38.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 40.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 42.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 44.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 46.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 48.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 50.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 52.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 54.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 56.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 58.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 60.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 62.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 64.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 66.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 68.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 70.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 72.00 | 1.25 | 0.00 | 1.03 | 0.00 |

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

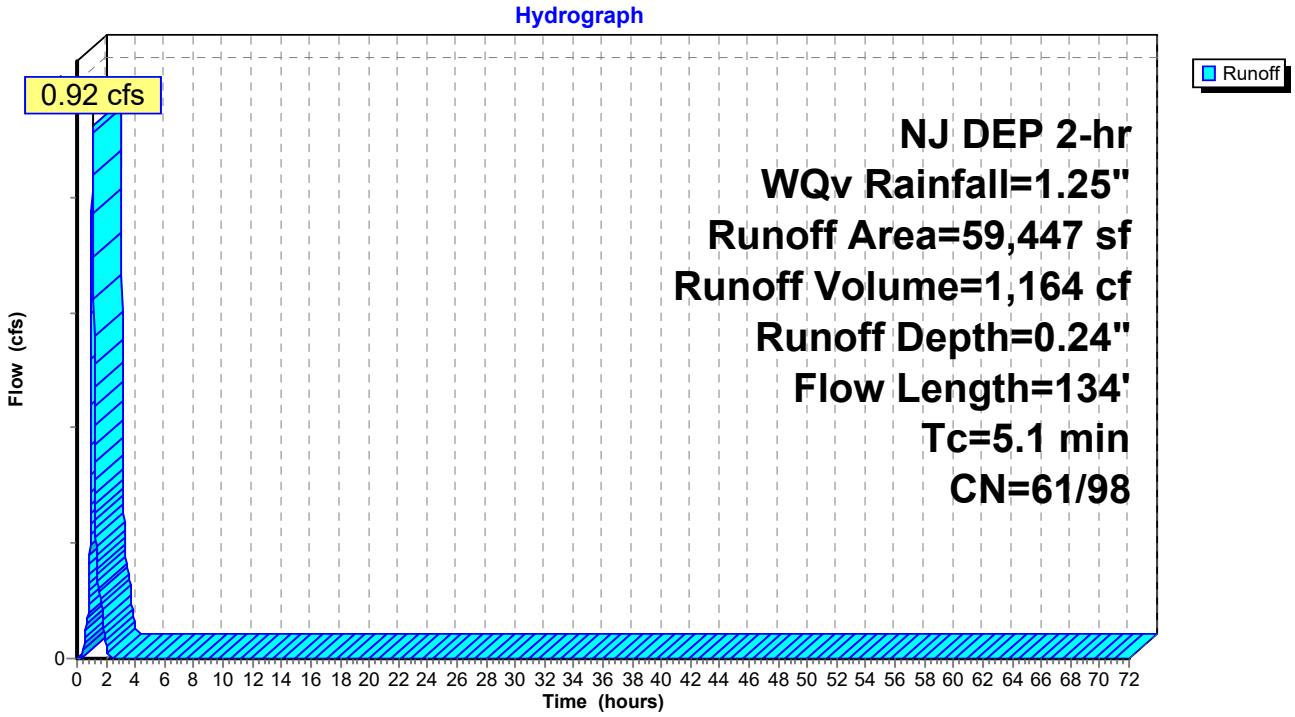
Runoff = 0.92 cfs @ 1.10 hrs, Volume= 1,164 cf, Depth= 0.24"

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



## Hydrograph for Subcatchment EX-2: Existing Drainage towards Roome Avenue

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | **0.00** | 0.00 | **0.00** |
| 2.00 | **1.25** | 0.00 | **1.03** | **0.03** |
| 4.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 6.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 8.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 10.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 12.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 14.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 16.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 18.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 20.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 22.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 24.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 26.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 28.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 30.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 32.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 34.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 36.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 38.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 40.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 42.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 44.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 46.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 48.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 50.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 52.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 54.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 56.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 58.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 60.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 62.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 64.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 66.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 68.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 70.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 72.00 | 1.25 | 0.00 | 1.03 | 0.00 |

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

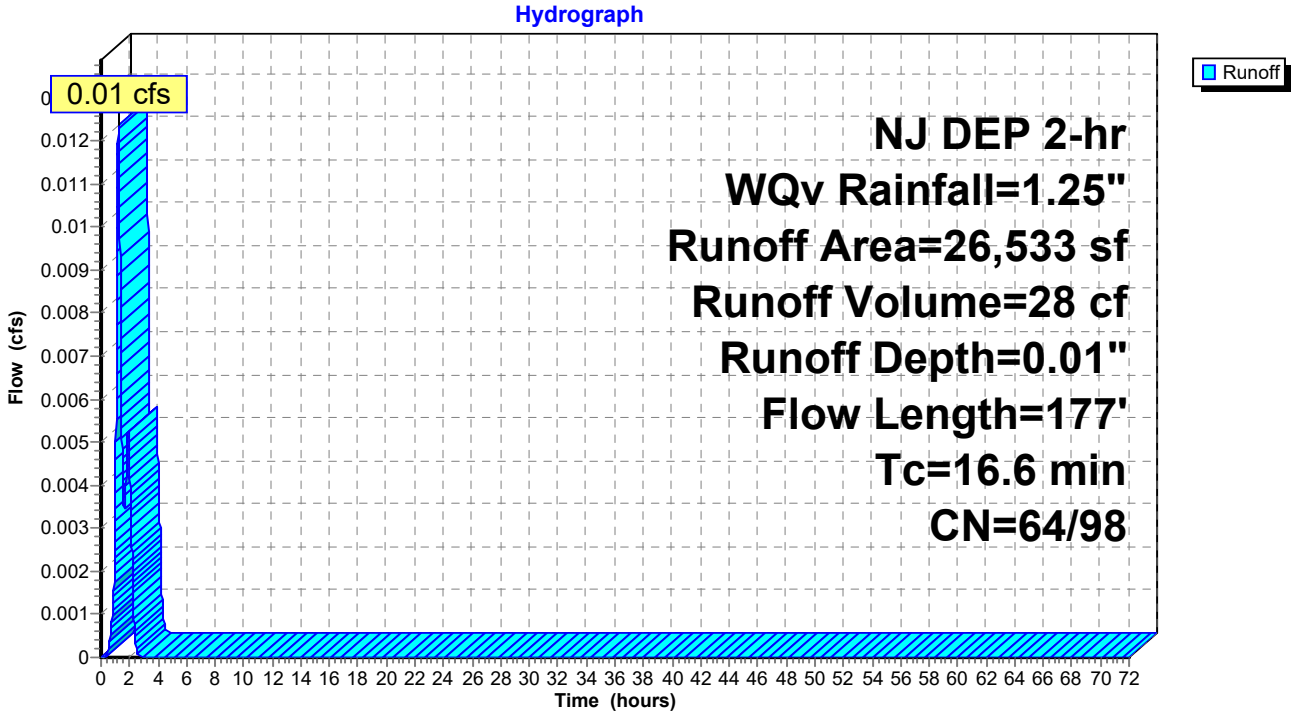
Runoff = 0.01 cfs @ 1.23 hrs, Volume= 28 cf, Depth= 0.01"

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 for Subcatchment EX-3: Existing Drainage towards Dewilde Drive

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | **0.00** |
| 2.00 | **1.25** | **0.00** | **1.03** | **0.00** |
| 4.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 6.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 8.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 10.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 12.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 14.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 16.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 18.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 20.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 22.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 24.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 26.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 28.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 30.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 32.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 34.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 36.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 38.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 40.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 42.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 44.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 46.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 48.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 50.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 52.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 54.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 56.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 58.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 60.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 62.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 64.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 66.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 68.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 70.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 72.00 | 1.25 | 0.00 | 1.03 | 0.00 |

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

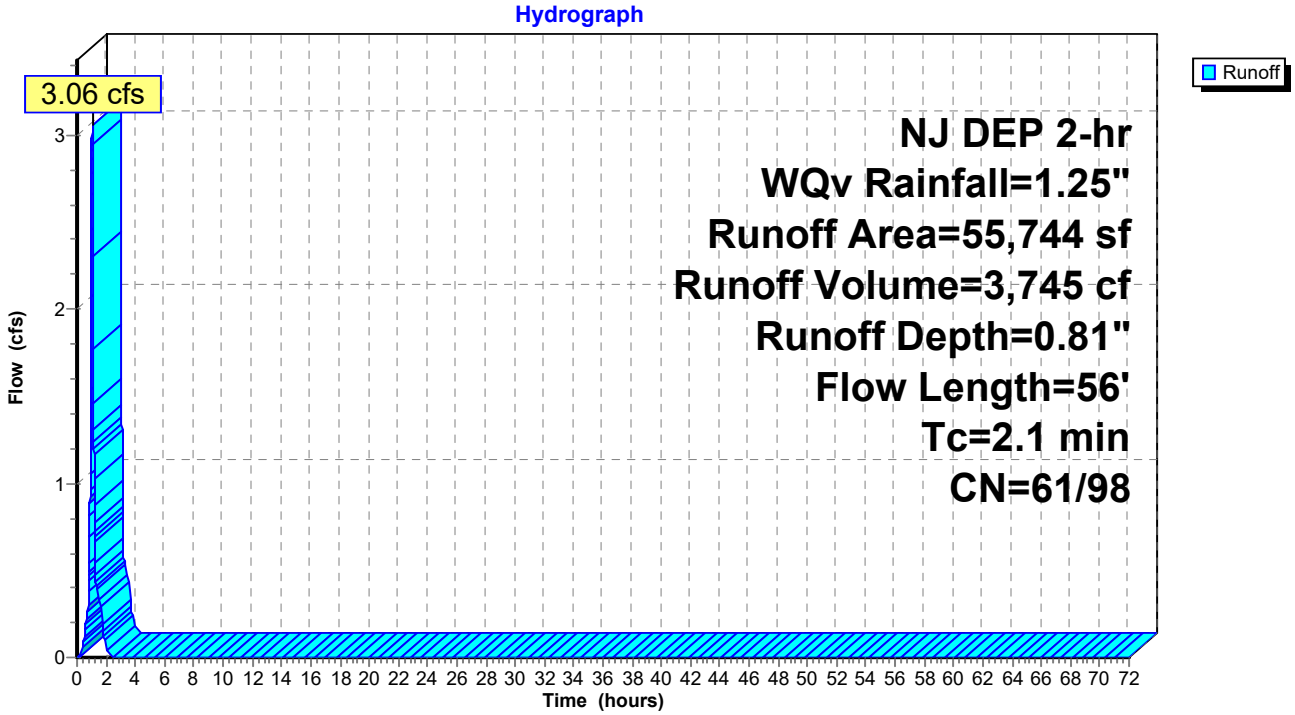
Runoff = 3.06 cfs @ 1.08 hrs, Volume= 3,745 cf, Depth= 0.81"

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 |
| * | 15,610 | 98 | Impervious Area |
| | 55,744 | 90 | Weighted Average |
| | 12,309 | 61 | 22.08% Pervious Area |
| | 43,435 | 98 | 77.92% 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



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

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | **0.00** | 0.00 | **0.00** |
| 2.00 | **1.25** | 0.00 | **1.03** | **0.10** |
| 4.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 6.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 8.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 10.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 12.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 14.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 16.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 18.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 20.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 22.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 24.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 26.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 28.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 30.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 32.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 34.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 36.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 38.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 40.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 42.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 44.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 46.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 48.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 50.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 52.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 54.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 56.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 58.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 60.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 62.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 64.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 66.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 68.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 70.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 72.00 | 1.25 | 0.00 | 1.03 | 0.00 |

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

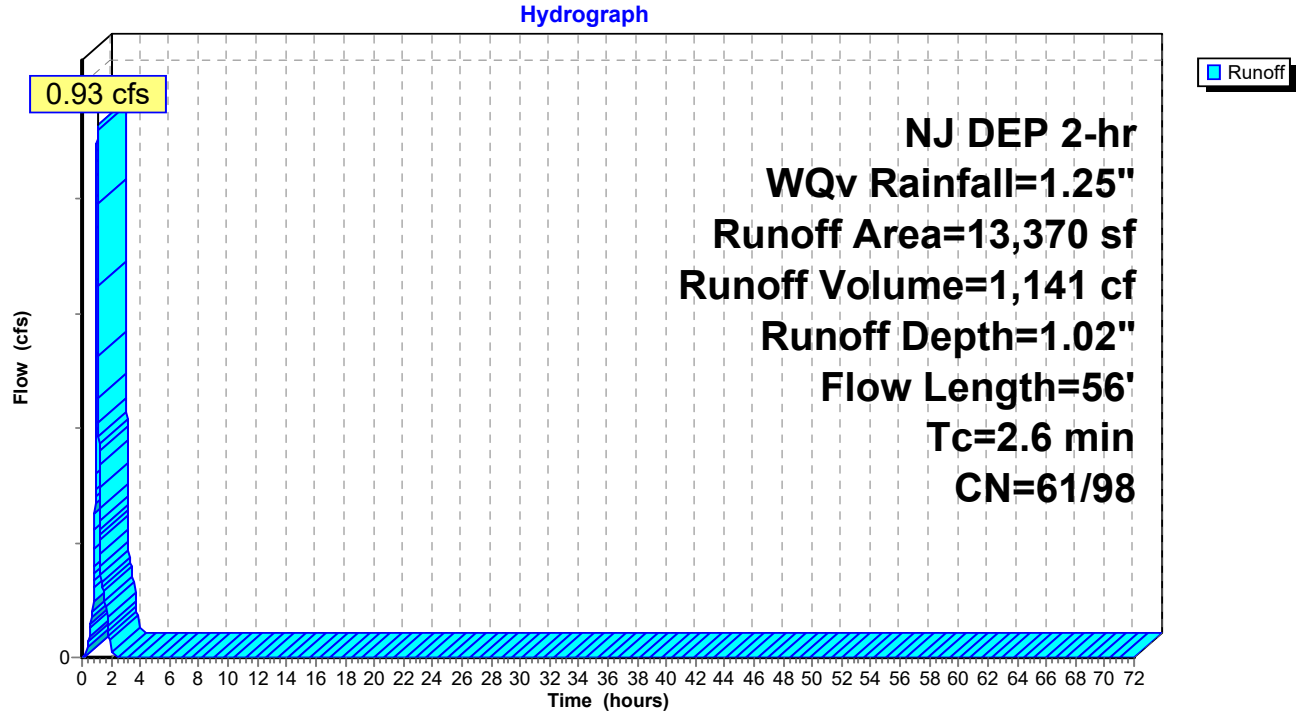
Runoff = 0.93 cfs @ 1.08 hrs, Volume= 1,141 cf, Depth= 1.02"

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 |
|---|---|---|---|
| | 133 | 61 | >75% Grass cover, Good, HSG B |
| * | 3,564 | 98 | Porous Pavement |
| * | 9,673 | 98 | Impervious Area |
| | 13,370 | 98 | Weighted Average |
| | 133 | 61 | 0.99% Pervious Area |
| | 13,237 | 98 | 99.01% 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 for Subcatchment P-1B: Drainage to Porous Pavement in Tandem Spaces

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | **0.00** | 0.00 | **0.00** |
| 2.00 | **1.25** | 0.00 | **1.03** | **0.03** |
| 4.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 6.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 8.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 10.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 12.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 14.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 16.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 18.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 20.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 22.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 24.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 26.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 28.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 30.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 32.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 34.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 36.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 38.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 40.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 42.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 44.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 46.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 48.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 50.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 52.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 54.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 56.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 58.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 60.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 62.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 64.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 66.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 68.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 70.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 72.00 | 1.25 | 0.00 | 1.03 | 0.00 |

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

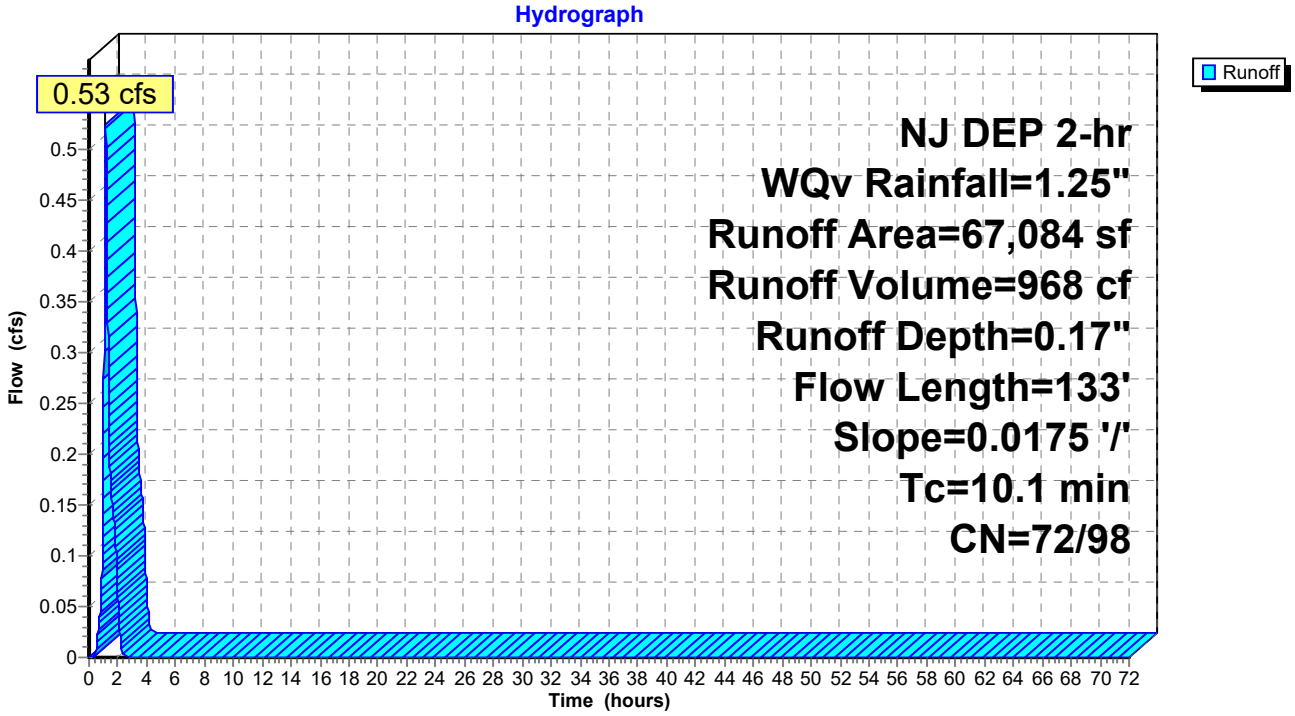
Runoff = 0.53 cfs @ 1.16 hrs, Volume= 968 cf, Depth= 0.17"

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 |
|---|---|---|---|
| | 25,698 | 61 | >75% Grass cover, Good, HSG B |
| * | 8,326 | 98 | Impervious Area |
| * | 33,060 | 80 | Turf Field |
| | 67,084 | 75 | Weighted Average |
| | 58,758 | 72 | 87.59% Pervious Area |
| | 8,326 | 98 | 12.41% 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 for Subcatchment P-1C: Drainage to Infiltration Basin in Rear

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | **0.00** |
| 2.00 | **1.25** | **0.05** | **1.03** | **0.06** |
| 4.00 | 1.25 | 0.05 | 1.03 | 0.00 |
| 6.00 | 1.25 | 0.05 | 1.03 | 0.00 |
| 8.00 | 1.25 | 0.05 | 1.03 | 0.00 |
| 10.00 | 1.25 | 0.05 | 1.03 | 0.00 |
| 12.00 | 1.25 | 0.05 | 1.03 | 0.00 |
| 14.00 | 1.25 | 0.05 | 1.03 | 0.00 |
| 16.00 | 1.25 | 0.05 | 1.03 | 0.00 |
| 18.00 | 1.25 | 0.05 | 1.03 | 0.00 |
| 20.00 | 1.25 | 0.05 | 1.03 | 0.00 |
| 22.00 | 1.25 | 0.05 | 1.03 | 0.00 |
| 24.00 | 1.25 | 0.05 | 1.03 | 0.00 |
| 26.00 | 1.25 | 0.05 | 1.03 | 0.00 |
| 28.00 | 1.25 | 0.05 | 1.03 | 0.00 |
| 30.00 | 1.25 | 0.05 | 1.03 | 0.00 |
| 32.00 | 1.25 | 0.05 | 1.03 | 0.00 |
| 34.00 | 1.25 | 0.05 | 1.03 | 0.00 |
| 36.00 | 1.25 | 0.05 | 1.03 | 0.00 |
| 38.00 | 1.25 | 0.05 | 1.03 | 0.00 |
| 40.00 | 1.25 | 0.05 | 1.03 | 0.00 |
| 42.00 | 1.25 | 0.05 | 1.03 | 0.00 |
| 44.00 | 1.25 | 0.05 | 1.03 | 0.00 |
| 46.00 | 1.25 | 0.05 | 1.03 | 0.00 |
| 48.00 | 1.25 | 0.05 | 1.03 | 0.00 |
| 50.00 | 1.25 | 0.05 | 1.03 | 0.00 |
| 52.00 | 1.25 | 0.05 | 1.03 | 0.00 |
| 54.00 | 1.25 | 0.05 | 1.03 | 0.00 |
| 56.00 | 1.25 | 0.05 | 1.03 | 0.00 |
| 58.00 | 1.25 | 0.05 | 1.03 | 0.00 |
| 60.00 | 1.25 | 0.05 | 1.03 | 0.00 |
| 62.00 | 1.25 | 0.05 | 1.03 | 0.00 |
| 64.00 | 1.25 | 0.05 | 1.03 | 0.00 |
| 66.00 | 1.25 | 0.05 | 1.03 | 0.00 |
| 68.00 | 1.25 | 0.05 | 1.03 | 0.00 |
| 70.00 | 1.25 | 0.05 | 1.03 | 0.00 |
| 72.00 | 1.25 | 0.05 | 1.03 | 0.00 |

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

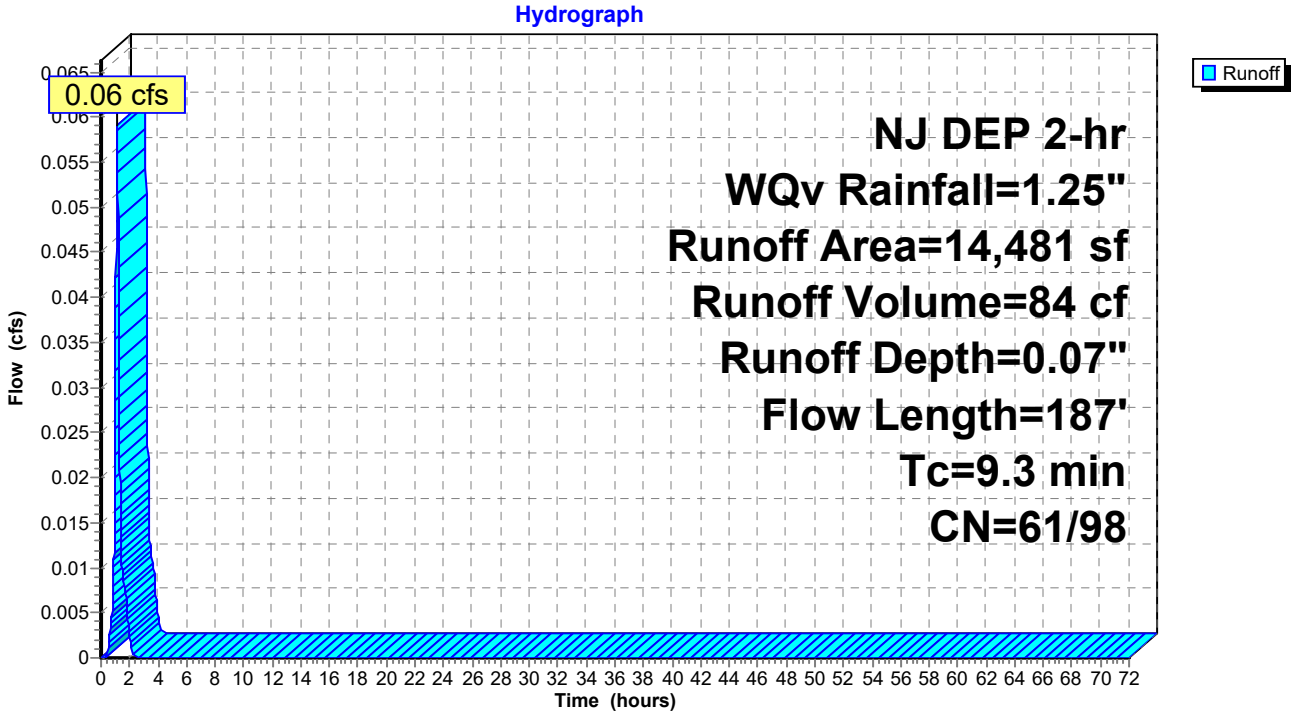
Runoff = 0.06 cfs @ 1.14 hrs, Volume= 84 cf, Depth= 0.07"

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 |
|---|---|---|---|
| | 13,511 | 61 | >75% Grass cover, Good, HSG B |
| * | 970 | 98 | Impervious Area |
| | 14,481 | 63 | Weighted Average |
| | 13,511 | 61 | 93.30% Pervious Area |
| | 970 | 98 | 6.70% 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 for Subcatchment P-1D: Undetained Flow to Sunset Road

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | **0.00** | 0.00 | **0.00** |
| 2.00 | **1.25** | 0.00 | **1.03** | **0.00** |
| 4.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 6.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 8.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 10.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 12.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 14.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 16.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 18.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 20.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 22.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 24.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 26.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 28.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 30.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 32.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 34.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 36.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 38.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 40.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 42.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 44.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 46.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 48.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 50.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 52.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 54.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 56.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 58.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 60.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 62.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 64.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 66.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 68.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 70.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 72.00 | 1.25 | 0.00 | 1.03 | 0.00 |

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

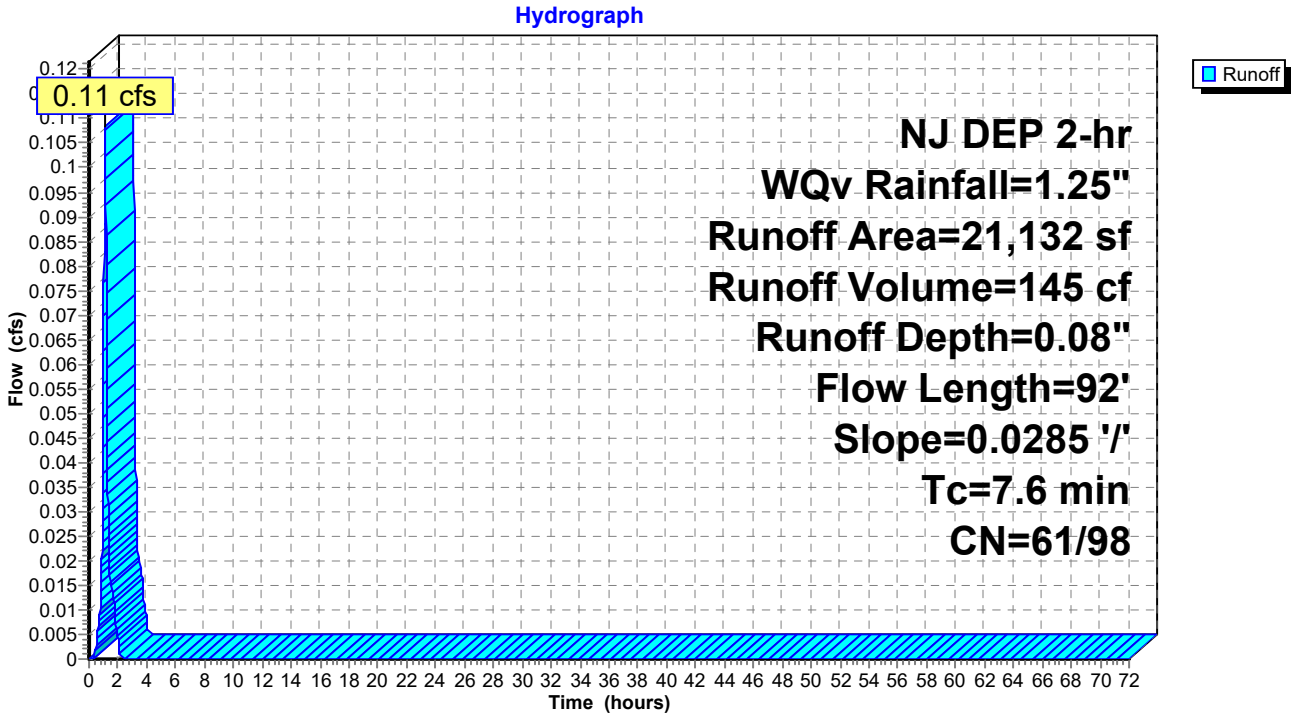
Runoff = 0.11 cfs @ 1.12 hrs, Volume= 145 cf, Depth= 0.08"

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 |
|---|---|---|---|
| | 19,447 | 61 | >75% Grass cover, Good, HSG B |
| * | 1,685 | 98 | Impervious Area |
| | 21,132 | 64 | Weighted Average |
| | 19,447 | 61 | 92.03% Pervious Area |
| | 1,685 | 98 | 7.97% 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 for Subcatchment P-2: Proposed Drainage to Roome Avenue

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | **0.00** | 0.00 | **0.00** |
| 2.00 | **1.25** | 0.00 | **1.03** | **0.00** |
| 4.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 6.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 8.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 10.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 12.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 14.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 16.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 18.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 20.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 22.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 24.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 26.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 28.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 30.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 32.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 34.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 36.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 38.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 40.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 42.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 44.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 46.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 48.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 50.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 52.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 54.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 56.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 58.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 60.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 62.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 64.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 66.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 68.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 70.00 | 1.25 | 0.00 | 1.03 | 0.00 |
| 72.00 | 1.25 | 0.00 | 1.03 | 0.00 |

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

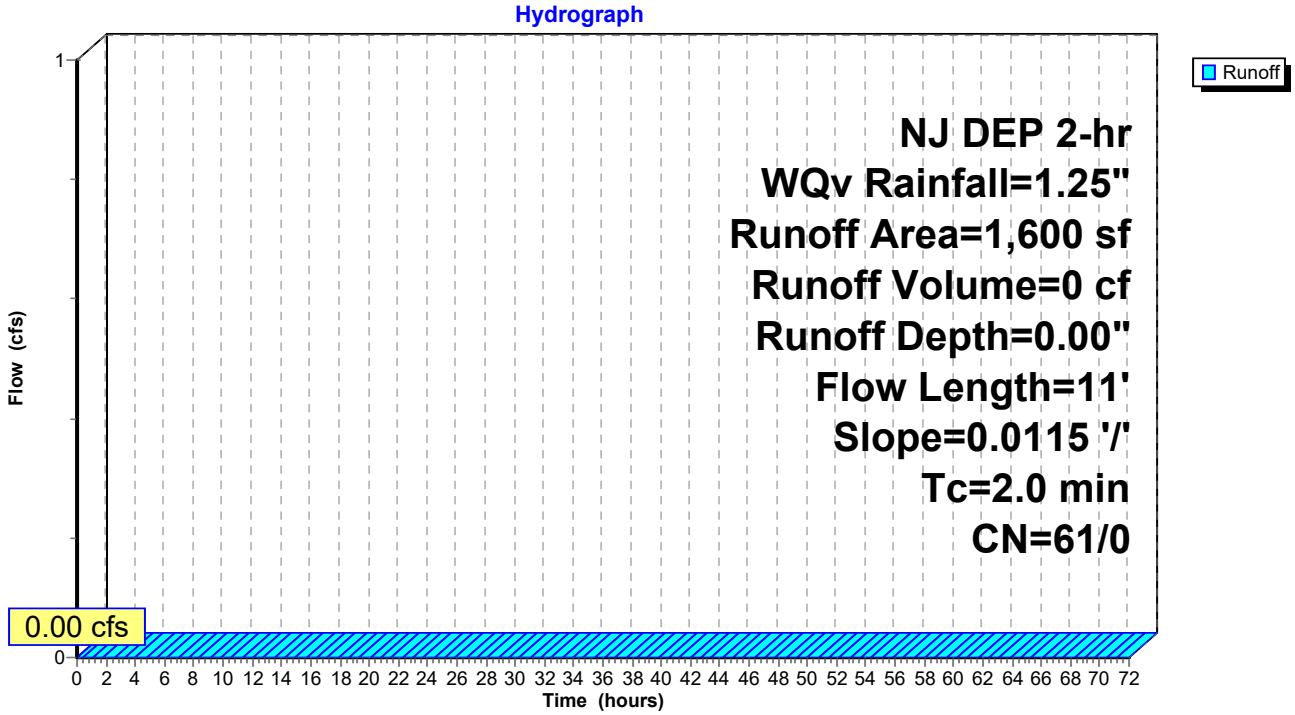
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

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



## Hydrograph for Subcatchment P-3: Proposed Drainage toward Dewilde Drive

| Time (hours) | Precip. (inches) | Perv.Excess (inches) | Imp.Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | **0.00** | **0.00** | **0.00** |
| 2.00 | **1.25** | 0.00 | 0.00 | 0.00 |
| 4.00 | 1.25 | 0.00 | 0.00 | 0.00 |
| 6.00 | 1.25 | 0.00 | 0.00 | 0.00 |
| 8.00 | 1.25 | 0.00 | 0.00 | 0.00 |
| 10.00 | 1.25 | 0.00 | 0.00 | 0.00 |
| 12.00 | 1.25 | 0.00 | 0.00 | 0.00 |
| 14.00 | 1.25 | 0.00 | 0.00 | 0.00 |
| 16.00 | 1.25 | 0.00 | 0.00 | 0.00 |
| 18.00 | 1.25 | 0.00 | 0.00 | 0.00 |
| 20.00 | 1.25 | 0.00 | 0.00 | 0.00 |
| 22.00 | 1.25 | 0.00 | 0.00 | 0.00 |
| 24.00 | 1.25 | 0.00 | 0.00 | 0.00 |
| 26.00 | 1.25 | 0.00 | 0.00 | 0.00 |
| 28.00 | 1.25 | 0.00 | 0.00 | 0.00 |
| 30.00 | 1.25 | 0.00 | 0.00 | 0.00 |
| 32.00 | 1.25 | 0.00 | 0.00 | 0.00 |
| 34.00 | 1.25 | 0.00 | 0.00 | 0.00 |
| 36.00 | 1.25 | 0.00 | 0.00 | 0.00 |
| 38.00 | 1.25 | 0.00 | 0.00 | 0.00 |
| 40.00 | 1.25 | 0.00 | 0.00 | 0.00 |
| 42.00 | 1.25 | 0.00 | 0.00 | 0.00 |
| 44.00 | 1.25 | 0.00 | 0.00 | 0.00 |
| 46.00 | 1.25 | 0.00 | 0.00 | 0.00 |
| 48.00 | 1.25 | 0.00 | 0.00 | 0.00 |
| 50.00 | 1.25 | 0.00 | 0.00 | 0.00 |
| 52.00 | 1.25 | 0.00 | 0.00 | 0.00 |
| 54.00 | 1.25 | 0.00 | 0.00 | 0.00 |
| 56.00 | 1.25 | 0.00 | 0.00 | 0.00 |
| 58.00 | 1.25 | 0.00 | 0.00 | 0.00 |
| 60.00 | 1.25 | 0.00 | 0.00 | 0.00 |
| 62.00 | 1.25 | 0.00 | 0.00 | 0.00 |
| 64.00 | 1.25 | 0.00 | 0.00 | 0.00 |
| 66.00 | 1.25 | 0.00 | 0.00 | 0.00 |
| 68.00 | 1.25 | 0.00 | 0.00 | 0.00 |
| 70.00 | 1.25 | 0.00 | 0.00 | 0.00 |
| 72.00 | 1.25 | 0.00 | 0.00 | 0.00 |

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

Inflow Area = 55,744 sf, 77.92% Impervious, Inflow Depth = 0.81" for WQv event
Inflow = 3.06 cfs @ 1.08 hrs, Volume= 3,745 cf
Outflow = 0.20 cfs @ 1.78 hrs, Volume= 3,745 cf, Atten= 93%, Lag= 41.9 min
Discarded = 0.20 cfs @ 1.78 hrs, Volume= 3,745 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 187.72' @ 1.78 hrs Surf.Area= 4,662 sf Storage= 2,880 cf

Plug-Flow detention time= 146.3 min calculated for 3,744 cf (100% of inflow)
Center-of-Mass det. time= 146.3 min ( 213.0 - 66.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 187.00' | 14,171 cf | **Custom Stage Data (Irregular)**Listed below (Recalc) |

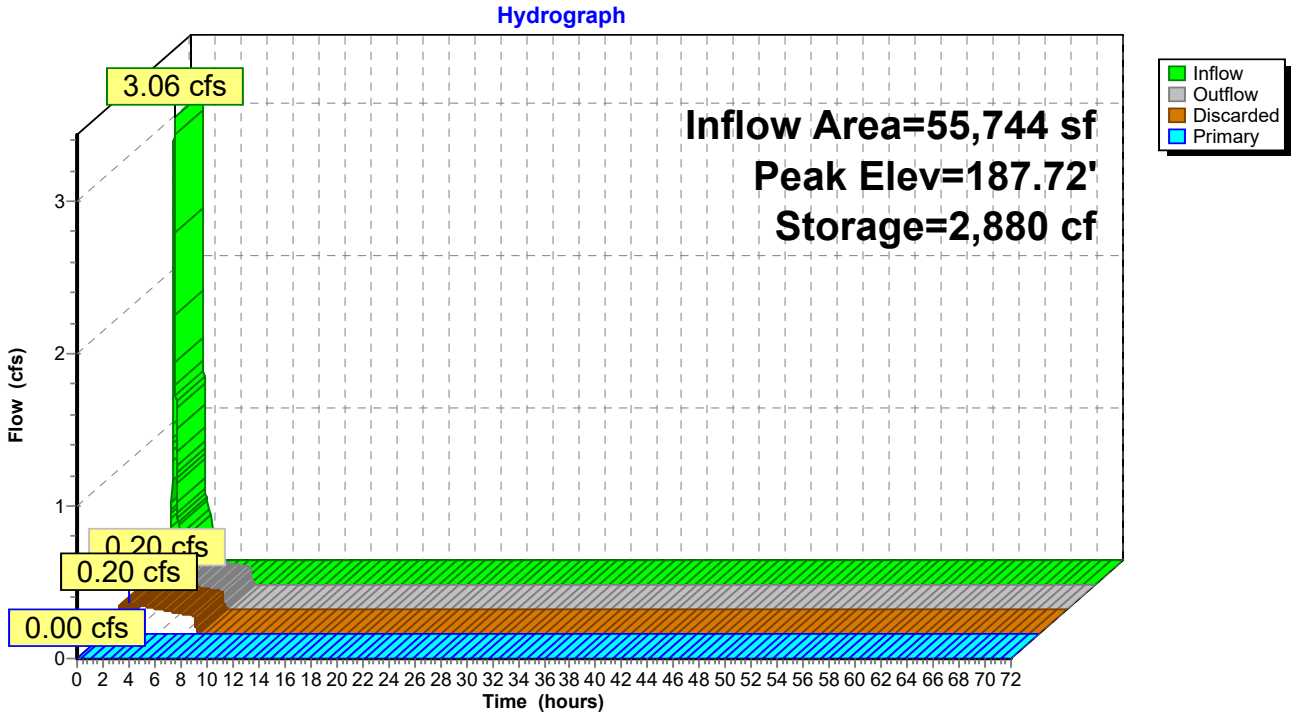
| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 187.00 | 3,406 | 592.8 | 0 | 0 | 3,406 |
| 188.00 | 5,212 | 611.7 | 4,277 | 4,277 | 5,315 |
| 189.00 | 7,076 | 630.5 | 6,120 | 10,397 | 7,275 |
| 189.50 | 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<br>Inlet / Outlet Invert= 185.89' / 185.75' S= 0.0054 '/' Cc= 0.900<br>n= 0.013, Flow Area= 1.23 sf |
| #2 | Device 1 | 187.81' | **5.0" Vert. Orifice/Grate** C= 0.600 |
| #3 | Device 1 | 188.60' | **2.5" Vert. Orifice/Grate** C= 0.600 |
| #4 | Device 1 | 189.15' | **4.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>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<br>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' | **1.485 in/hr Exfiltration over Wetted area**<br>Conductivity to Groundwater Elevation = 184.40' Phase-In= 0.01' |

**Discarded OutFlow** Max=0.20 cfs @ 1.78 hrs HW=187.72' (Free Discharge)
└**5=Exfiltration** ( Controls 0.20 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=187.00' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.00 cfs of 3.19 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-1: Infiltration Basin Along Sunset Road



## Hydrograph for Pond B-1: Infiltration Basin Along Sunset Road

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Discarded (cfs) | Primary (cfs) |
|---|---|---|---|---|---|---|
| 0.00 | **0.00** | **0** | **187.00** | **0.00** | **0.00** | **0.00** |
| 2.00 | **0.10** | **2,804** | **187.70** | **0.20** | **0.20** | 0.00 |
| 4.00 | 0.00 | 1,510 | 187.40 | 0.16 | 0.16 | 0.00 |
| 6.00 | 0.00 | 452 | 187.13 | 0.13 | 0.13 | 0.00 |
| 8.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 10.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 12.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 14.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 16.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 18.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 20.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 22.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 24.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 26.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 28.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 30.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 32.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 34.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 36.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 38.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 40.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 42.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 44.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 46.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 48.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 50.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 52.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 54.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 56.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 58.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 60.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 62.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 64.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 66.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 68.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 70.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |
| 72.00 | 0.00 | 0 | 187.00 | 0.00 | 0.00 | 0.00 |

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

Inflow Area = 13,370 sf, 99.01% Impervious, Inflow Depth = 1.02" for WQv event
Inflow = 0.93 cfs @ 1.08 hrs, Volume= 1,141 cf
Outflow = 0.57 cfs @ 1.13 hrs, Volume= 1,141 cf, Atten= 39%, Lag= 2.5 min
Discarded = 0.57 cfs @ 1.13 hrs, Volume= 1,141 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 186.99' @ 1.13 hrs Surf.Area= 3,564 sf Storage= 194 cf

Plug-Flow detention time= 2.3 min calculated for 1,141 cf (100% of inflow)
Center-of-Mass det. time= 2.3 min ( 69.4 - 67.1 )

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

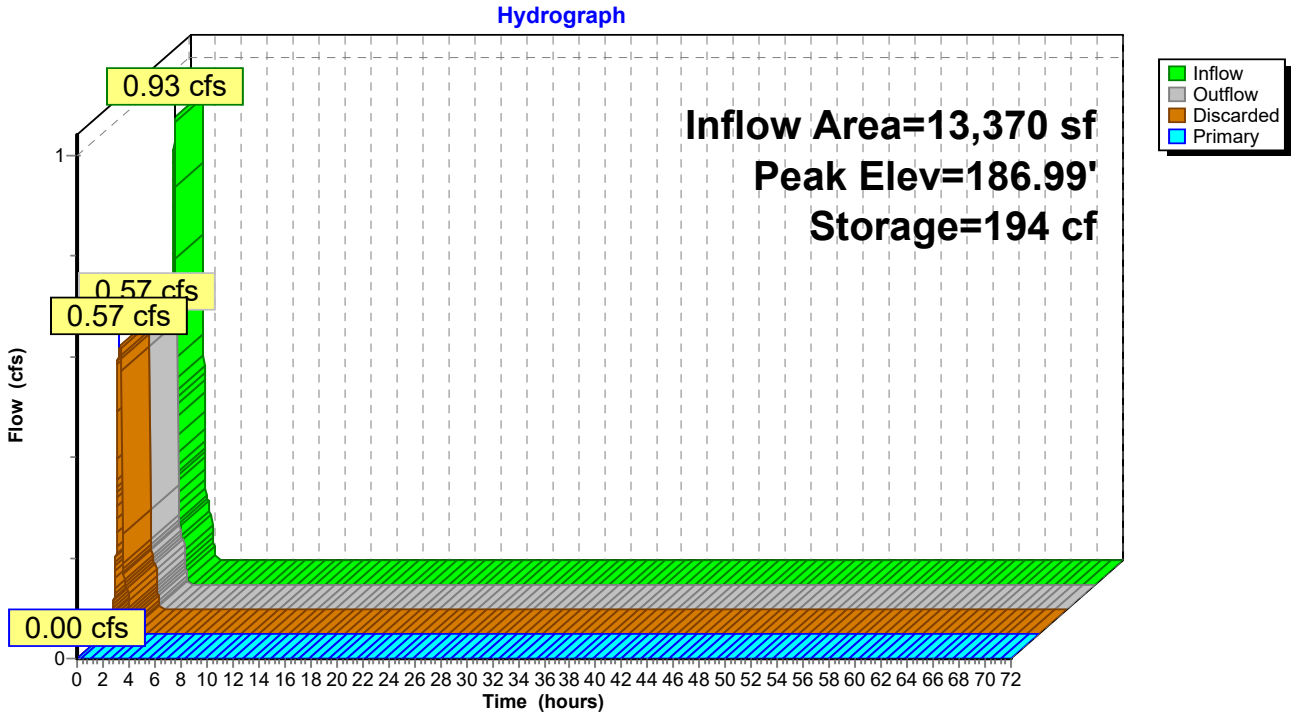
| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 186.85 | 3,564 | 306.0 | 0 | 0 | 3,564 |
| 187.85 | 3,564 | 306.0 | 3,564 | 3,564 | 3,870 |
| 188.85 | 3,564 | 306.0 | 3,564 | 7,128 | 4,176 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 186.85' | **15.0" Round Culvert** L= 135.0' Ke= 0.500<br>Inlet / Outlet Invert= 186.85' / 185.75' S= 0.0081 '/' Cc= 0.900<br>n= 0.013, Flow Area= 1.23 sf |
| #2 | Device 1 | 187.45' | **2.5" Vert. Orifice/Grate** C= 0.600 |
| #3 | Device 1 | 188.45' | **6.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>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<br>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' | **6.500 in/hr Exfiltration over Wetted area**<br>Conductivity to Groundwater Elevation = 184.40' Phase-In= 0.01' |

**Discarded OutFlow** Max=0.57 cfs @ 1.13 hrs HW=186.99' (Free Discharge)
└**4=Exfiltration** ( Controls 0.57 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



## Hydrograph for Pond B-2: Porous Pavement Within Tandem Spaces

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Discarded (cfs) | Primary (cfs) |
|---|---|---|---|---|---|---|
| 0.00 | **0.00** | **0** | **186.85** | **0.00** | **0.00** | **0.00** |
| 2.00 | **0.03** | **1** | **186.85** | **0.03** | **0.03** | 0.00 |
| 4.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 6.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 8.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 10.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 12.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 14.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 16.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 18.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 20.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 22.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 24.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 26.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 28.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 30.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 32.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 34.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 36.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 38.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 40.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 42.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 44.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 46.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 48.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 50.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 52.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 54.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 56.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 58.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 60.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 62.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 64.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 66.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 68.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 70.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |
| 72.00 | 0.00 | 0 | 186.85 | 0.00 | 0.00 | 0.00 |

## Summary for Pond B-3: Infiltration Basin in Rear

Inflow Area = 67,084 sf, 12.41% Impervious, Inflow Depth = 0.17" for WQv event
Inflow = 0.53 cfs @ 1.16 hrs, Volume= 968 cf
Outflow = 0.05 cfs @ 2.07 hrs, Volume= 968 cf, Atten= 91%, Lag= 54.6 min
Discarded = 0.05 cfs @ 2.07 hrs, Volume= 968 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 188.22' @ 2.07 hrs Surf.Area= 3,563 sf Storage= 751 cf

Plug-Flow detention time= 154.5 min calculated for 968 cf (100% of inflow)
Center-of-Mass det. time= 154.5 min ( 233.8 - 79.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 188.00' | 9,144 cf | **Custom Stage Data (Irregular)**Listed below (Recalc) |

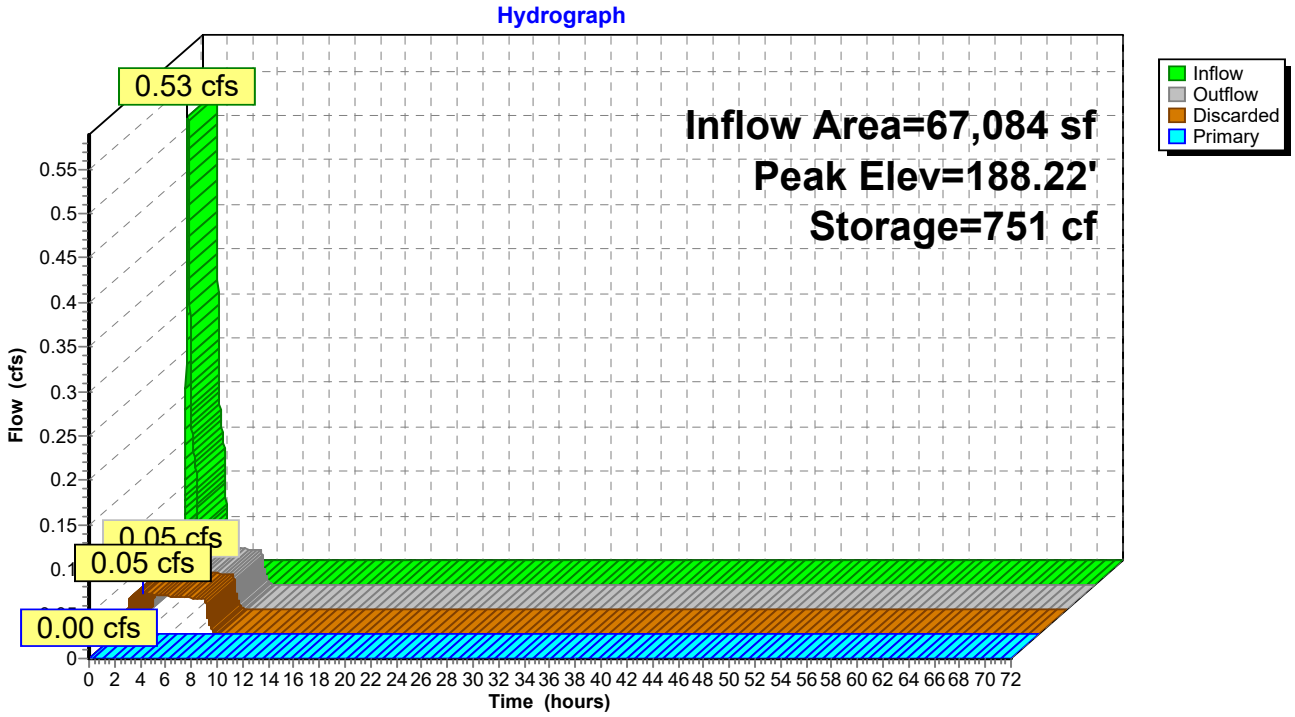
| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 188.00 | 3,308 | 335.0 | 0 | 0 | 3,308 |
| 189.00 | 4,551 | 370.0 | 3,913 | 3,913 | 5,303 |
| 190.00 | 5,942 | 405.0 | 5,231 | 9,144 | 7,496 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 187.50' | **15.0" Round Culvert** L= 325.0' Ke= 0.500<br>Inlet / Outlet Invert= 187.50' / 185.85' S= 0.0051 '/' Cc= 0.900<br>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 |
| #3 | Device 1 | 188.85' | **2.5" Vert. Orifice/Grate** C= 0.600 |
| #4 | Device 1 | 189.65' | **4.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>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<br>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**<br>Conductivity to Groundwater Elevation = 183.90' Phase-In= 0.01' |

**Discarded OutFlow** Max=0.05 cfs @ 2.07 hrs HW=188.22' (Free Discharge)
└**5=Exfiltration** ( Controls 0.05 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



## Hydrograph for Pond B-3: Infiltration Basin in Rear

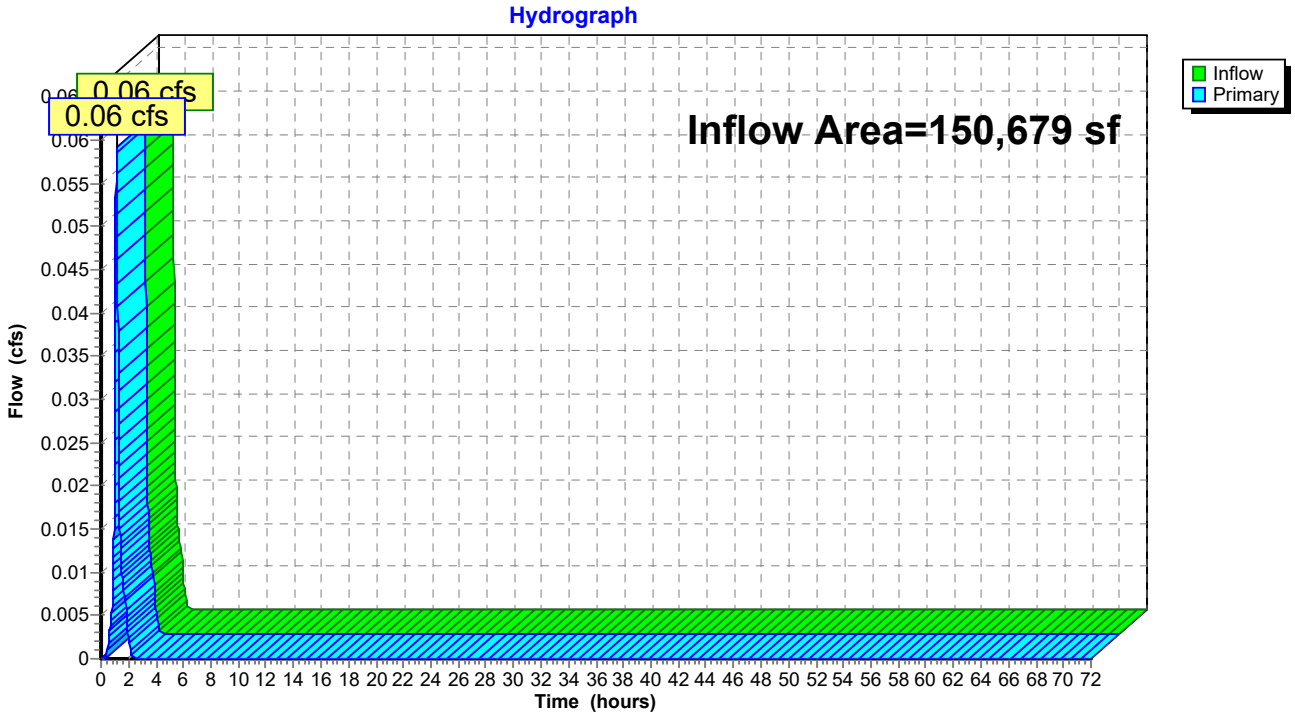
| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Discarded (cfs) | Primary (cfs) |
|---|---|---|---|---|---|---|
| 0.00 | **0.00** | 0 | 188.00 | 0.00 | 0.00 | **0.00** |
| 2.00 | **0.06** | **749** | **188.22** | **0.05** | **0.05** | 0.00 |
| 4.00 | 0.00 | **460** | **188.14** | **0.04** | **0.04** | 0.00 |
| 6.00 | 0.00 | 164 | 188.05 | 0.04 | 0.04 | 0.00 |
| 8.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 10.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 12.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 14.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 16.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 18.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 20.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 22.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 24.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 26.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 28.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 30.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 32.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 34.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 36.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 38.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 40.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 42.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 44.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 46.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 48.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 50.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 52.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 54.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 56.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 58.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 60.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 62.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 64.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 66.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 68.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 70.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |
| 72.00 | 0.00 | 0 | 188.00 | 0.00 | 0.00 | 0.00 |

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

Inflow Area = 150,679 sf, 43.78% Impervious, Inflow Depth = 0.01" for WQv event
Inflow = 0.06 cfs @ 1.14 hrs, Volume= 84 cf
Primary = 0.06 cfs @ 1.14 hrs, Volume= 84 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



## Hydrograph for Link POI-1: Proposed Drainage to Sunset Road

| Time (hours) | Inflow (cfs) | Elevation (feet) | Primary (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | **0.00** | 0.00 |
| 1.00 | **0.03** | 0.00 | **0.03** |
| 2.00 | **0.00** | 0.00 | **0.00** |
| 3.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | 0.00 | 0.00 | 0.00 |
| 5.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | 0.00 | 0.00 | 0.00 |
| 7.00 | 0.00 | 0.00 | 0.00 |
| 8.00 | 0.00 | 0.00 | 0.00 |
| 9.00 | 0.00 | 0.00 | 0.00 |
| 10.00 | 0.00 | 0.00 | 0.00 |
| 11.00 | 0.00 | 0.00 | 0.00 |
| 12.00 | 0.00 | 0.00 | 0.00 |
| 13.00 | 0.00 | 0.00 | 0.00 |
| 14.00 | 0.00 | 0.00 | 0.00 |
| 15.00 | 0.00 | 0.00 | 0.00 |
| 16.00 | 0.00 | 0.00 | 0.00 |
| 17.00 | 0.00 | 0.00 | 0.00 |
| 18.00 | 0.00 | 0.00 | 0.00 |
| 19.00 | 0.00 | 0.00 | 0.00 |
| 20.00 | 0.00 | 0.00 | 0.00 |
| 21.00 | 0.00 | 0.00 | 0.00 |
| 22.00 | 0.00 | 0.00 | 0.00 |
| 23.00 | 0.00 | 0.00 | 0.00 |
| 24.00 | 0.00 | 0.00 | 0.00 |
| 25.00 | 0.00 | 0.00 | 0.00 |
| 26.00 | 0.00 | 0.00 | 0.00 |
| 27.00 | 0.00 | 0.00 | 0.00 |
| 28.00 | 0.00 | 0.00 | 0.00 |
| 29.00 | 0.00 | 0.00 | 0.00 |
| 30.00 | 0.00 | 0.00 | 0.00 |
| 31.00 | 0.00 | 0.00 | 0.00 |
| 32.00 | 0.00 | 0.00 | 0.00 |
| 33.00 | 0.00 | 0.00 | 0.00 |
| 34.00 | 0.00 | 0.00 | 0.00 |
| 35.00 | 0.00 | 0.00 | 0.00 |
| 36.00 | 0.00 | 0.00 | 0.00 |
| 37.00 | 0.00 | 0.00 | 0.00 |
| 38.00 | 0.00 | 0.00 | 0.00 |
| 39.00 | 0.00 | 0.00 | 0.00 |
| 40.00 | 0.00 | 0.00 | 0.00 |
| 41.00 | 0.00 | 0.00 | 0.00 |
| 42.00 | 0.00 | 0.00 | 0.00 |
| 43.00 | 0.00 | 0.00 | 0.00 |
| 44.00 | 0.00 | 0.00 | 0.00 |
| 45.00 | 0.00 | 0.00 | 0.00 |
| 46.00 | 0.00 | 0.00 | 0.00 |
| 47.00 | 0.00 | 0.00 | 0.00 |
| 48.00 | 0.00 | 0.00 | 0.00 |
| 49.00 | 0.00 | 0.00 | 0.00 |
| 50.00 | 0.00 | 0.00 | 0.00 |
| 51.00 | 0.00 | 0.00 | 0.00 |
| 52.00 | 0.00 | 0.00 | 0.00 |
| 53.00 | 0.00 | 0.00 | 0.00 |
| 54.00 | 0.00 | 0.00 | 0.00 |
| 55.00 | 0.00 | 0.00 | 0.00 |
| 56.00 | 0.00 | 0.00 | 0.00 |
| 57.00 | 0.00 | 0.00 | 0.00 |
| 58.00 | 0.00 | 0.00 | 0.00 |
| 59.00 | 0.00 | 0.00 | 0.00 |
| 60.00 | 0.00 | 0.00 | 0.00 |
| 61.00 | 0.00 | 0.00 | 0.00 |
| 62.00 | 0.00 | 0.00 | 0.00 |
| 63.00 | 0.00 | 0.00 | 0.00 |
| 64.00 | 0.00 | 0.00 | 0.00 |
| 65.00 | 0.00 | 0.00 | 0.00 |
| 66.00 | 0.00 | 0.00 | 0.00 |
| 67.00 | 0.00 | 0.00 | 0.00 |
| 68.00 | 0.00 | 0.00 | 0.00 |
| 69.00 | 0.00 | 0.00 | 0.00 |
| 70.00 | 0.00 | 0.00 | 0.00 |
| 71.00 | 0.00 | 0.00 | 0.00 |
| 72.00 | 0.00 | 0.00 | 0.00 |

## 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 |
| 187.05 | 0.12 | 0.12 | 0.00 |
| 187.10 | 0.13 | 0.13 | 0.00 |
| 187.15 | 0.13 | 0.13 | 0.00 |
| 187.20 | 0.14 | 0.14 | 0.00 |
| 187.25 | 0.15 | 0.15 | 0.00 |
| 187.30 | 0.15 | 0.15 | 0.00 |
| 187.35 | 0.16 | 0.16 | 0.00 |
| 187.40 | 0.16 | 0.16 | 0.00 |
| 187.45 | 0.17 | 0.17 | 0.00 |
| 187.50 | 0.17 | 0.17 | 0.00 |
| 187.55 | 0.18 | 0.18 | 0.00 |
| 187.60 | 0.19 | 0.19 | 0.00 |
| 187.65 | 0.19 | 0.19 | 0.00 |
| 187.70 | 0.20 | 0.20 | 0.00 |
| 187.75 | 0.21 | 0.21 | 0.00 |
| 187.80 | 0.21 | 0.21 | 0.00 |
| 187.85 | 0.22 | 0.22 | 0.00 |
| 187.90 | 0.25 | 0.23 | 0.02 |
| 187.95 | 0.28 | 0.23 | 0.05 |
| 188.00 | 0.33 | 0.24 | 0.09 |
| 188.05 | 0.38 | 0.25 | 0.14 |
| 188.10 | 0.44 | 0.25 | 0.19 |
| 188.15 | 0.50 | 0.26 | 0.24 |
| 188.20 | 0.55 | 0.27 | 0.28 |
| 188.25 | 0.59 | 0.27 | 0.32 |
| 188.30 | 0.63 | 0.28 | 0.35 |
| 188.35 | 0.66 | 0.29 | 0.38 |
| 188.40 | 0.70 | 0.29 | 0.41 |
| 188.45 | 0.73 | 0.30 | 0.43 |
| 188.50 | 0.76 | 0.31 | 0.46 |
| 188.55 | 0.79 | 0.31 | 0.48 |
| 188.60 | 0.82 | 0.32 | 0.50 |
| 188.65 | 0.86 | 0.33 | 0.53 |
| 188.70 | 0.90 | 0.34 | 0.56 |
| 188.75 | 0.94 | 0.34 | 0.60 |
| 188.80 | 0.98 | 0.35 | 0.63 |
| 188.85 | 1.02 | 0.36 | 0.66 |
| 188.90 | 1.05 | 0.37 | 0.69 |
| 188.95 | 1.09 | 0.37 | 0.72 |
| 189.00 | 1.12 | 0.38 | 0.74 |
| 189.05 | 1.15 | 0.39 | 0.76 |
| 189.10 | 1.18 | 0.40 | 0.79 |
| 189.15 | 1.21 | 0.40 | 0.81 |
| 189.20 | 1.36 | 0.41 | 0.95 |
| 189.25 | 1.61 | 0.42 | 1.19 |
| 189.30 | 1.92 | 0.43 | 1.50 |
| 189.35 | 2.29 | 0.43 | 1.85 |
| 189.40 | 2.70 | 0.44 | 2.26 |
| 189.45 | 3.16 | 0.45 | 2.71 |
| 189.50 | **3.65** | **0.46** | **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 |
| 187.05 | 3,487 | 3,500 | 172 |
| 187.10 | 3,569 | 3,594 | 349 |
| 187.15 | 3,653 | 3,689 | 529 |
| 187.20 | 3,737 | 3,783 | 714 |
| 187.25 | 3,822 | 3,878 | 903 |
| 187.30 | 3,908 | 3,972 | 1,096 |
| 187.35 | 3,995 | 4,067 | 1,294 |
| 187.40 | 4,082 | 4,162 | 1,496 |
| 187.45 | 4,171 | 4,258 | 1,702 |
| 187.50 | 4,261 | 4,353 | 1,913 |
| 187.55 | 4,352 | 4,449 | 2,128 |
| 187.60 | 4,444 | 4,544 | 2,348 |
| 187.65 | 4,536 | 4,640 | 2,573 |
| 187.70 | 4,630 | 4,736 | 2,802 |
| 187.75 | 4,725 | 4,832 | 3,036 |
| 187.80 | 4,820 | 4,928 | 3,274 |
| 187.85 | 4,917 | 5,025 | 3,518 |
| 187.90 | 5,014 | 5,121 | 3,766 |
| 187.95 | 5,113 | 5,218 | 4,019 |
| 188.00 | 5,212 | 5,315 | 4,277 |
| 188.05 | 5,298 | 5,412 | 4,540 |
| 188.10 | 5,386 | 5,508 | 4,807 |
| 188.15 | 5,473 | 5,605 | 5,078 |
| 188.20 | 5,562 | 5,702 | 5,354 |
| 188.25 | 5,651 | 5,799 | 5,635 |
| 188.30 | 5,741 | 5,897 | 5,919 |
| 188.35 | 5,832 | 5,994 | 6,209 |
| 188.40 | 5,923 | 6,092 | 6,503 |
| 188.45 | 6,016 | 6,189 | 6,801 |
| 188.50 | 6,108 | 6,287 | 7,104 |
| 188.55 | 6,202 | 6,385 | 7,412 |
| 188.60 | 6,296 | 6,484 | 7,724 |
| 188.65 | 6,391 | 6,582 | 8,042 |
| 188.70 | 6,487 | 6,680 | 8,364 |
| 188.75 | 6,583 | 6,779 | 8,690 |
| 188.80 | 6,680 | 6,878 | 9,022 |
| 188.85 | 6,778 | 6,977 | 9,358 |
| 188.90 | 6,877 | 7,076 | 9,700 |
| 188.95 | 6,976 | 7,175 | 10,046 |
| 189.00 | 7,076 | 7,275 | 10,397 |
| 189.05 | 7,169 | 7,374 | 10,754 |
| 189.10 | 7,262 | 7,474 | 11,114 |
| 189.15 | 7,356 | 7,574 | 11,480 |
| 189.20 | 7,450 | 7,674 | 11,850 |
| 189.25 | 7,545 | 7,774 | 12,225 |
| 189.30 | 7,641 | 7,874 | 12,604 |
| 189.35 | 7,737 | 7,974 | 12,989 |
| 189.40 | 7,834 | 8,075 | 13,378 |
| 189.45 | 7,931 | 8,176 | 13,772 |
| 189.50 | **8,029** | **8,276** | **14,171** |

## 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 |
| 186.87 | 0.54 | 0.54 | 0.00 |
| 186.89 | 0.55 | 0.55 | 0.00 |
| 186.91 | 0.55 | 0.55 | 0.00 |
| 186.93 | 0.56 | 0.56 | 0.00 |
| 186.95 | 0.56 | 0.56 | 0.00 |
| 186.97 | 0.57 | 0.57 | 0.00 |
| 186.99 | 0.57 | 0.57 | 0.00 |
| 187.01 | 0.58 | 0.58 | 0.00 |
| 187.03 | 0.58 | 0.58 | 0.00 |
| 187.05 | 0.59 | 0.59 | 0.00 |
| 187.07 | 0.59 | 0.59 | 0.00 |
| 187.09 | 0.60 | 0.60 | 0.00 |
| 187.11 | 0.61 | 0.61 | 0.00 |
| 187.13 | 0.61 | 0.61 | 0.00 |
| 187.15 | 0.62 | 0.62 | 0.00 |
| 187.17 | 0.62 | 0.62 | 0.00 |
| 187.19 | 0.63 | 0.63 | 0.00 |
| 187.21 | 0.63 | 0.63 | 0.00 |
| 187.23 | 0.64 | 0.64 | 0.00 |
| 187.25 | 0.64 | 0.64 | 0.00 |
| 187.27 | 0.65 | 0.65 | 0.00 |
| 187.29 | 0.65 | 0.65 | 0.00 |
| 187.31 | 0.66 | 0.66 | 0.00 |
| 187.33 | 0.67 | 0.67 | 0.00 |
| 187.35 | 0.67 | 0.67 | 0.00 |
| 187.37 | 0.68 | 0.68 | 0.00 |
| 187.39 | 0.68 | 0.68 | 0.00 |
| 187.41 | 0.69 | 0.69 | 0.00 |
| 187.43 | 0.69 | 0.69 | 0.00 |
| 187.45 | 0.70 | 0.70 | 0.00 |
| 187.47 | 0.70 | 0.70 | 0.00 |
| 187.49 | 0.71 | 0.71 | 0.00 |
| 187.51 | 0.72 | 0.71 | 0.01 |
| 187.53 | 0.73 | 0.72 | 0.01 |
| 187.55 | 0.74 | 0.73 | 0.02 |
| 187.57 | 0.76 | 0.73 | 0.02 |
| 187.59 | 0.77 | 0.74 | 0.03 |
| 187.61 | 0.78 | 0.74 | 0.04 |
| 187.63 | 0.79 | 0.75 | 0.05 |
| 187.65 | 0.80 | 0.75 | 0.05 |
| 187.67 | 0.81 | 0.76 | 0.06 |
| 187.69 | 0.83 | 0.76 | 0.06 |
| 187.71 | 0.83 | 0.77 | 0.06 |
| 187.73 | 0.84 | 0.78 | 0.07 |
| 187.75 | 0.85 | 0.78 | 0.07 |
| 187.77 | 0.86 | 0.79 | 0.08 |
| 187.79 | 0.87 | 0.79 | 0.08 |
| 187.81 | 0.88 | 0.80 | 0.08 |
| 187.83 | 0.89 | 0.80 | 0.09 |
| 187.85 | 0.90 | 0.81 | 0.09 |
| 187.87 | 0.91 | 0.81 | 0.09 |
| 187.89 | 0.92 | 0.82 | 0.10 |
| 187.91 | 0.92 | 0.83 | 0.10 |
| 187.93 | 0.93 | 0.83 | 0.10 |
| 187.95 | 0.94 | 0.84 | 0.10 |
| 187.97 | 0.95 | 0.84 | 0.11 |
| 187.99 | 0.96 | 0.85 | 0.11 |
| 188.01 | 0.97 | 0.85 | 0.11 |
| 188.03 | 0.97 | 0.86 | 0.11 |
| 188.05 | 0.98 | 0.87 | 0.12 |
| 188.07 | 0.99 | 0.87 | 0.12 |
| 188.09 | 1.00 | 0.88 | 0.12 |
| 188.11 | 1.01 | 0.88 | 0.12 |
| 188.13 | 1.01 | 0.89 | 0.12 |
| 188.15 | 1.02 | 0.89 | 0.13 |
| 188.17 | 1.03 | 0.90 | 0.13 |
| 188.19 | 1.04 | 0.91 | 0.13 |
| 188.21 | 1.04 | 0.91 | 0.13 |
| 188.23 | 1.05 | 0.92 | 0.13 |
| 188.25 | 1.06 | 0.92 | 0.14 |
| 188.27 | 1.07 | 0.93 | 0.14 |
| 188.29 | 1.07 | 0.93 | 0.14 |
| 188.31 | 1.08 | 0.94 | 0.14 |
| 188.33 | 1.09 | 0.95 | 0.14 |
| 188.35 | 1.10 | 0.95 | 0.15 |
| 188.37 | 1.11 | 0.96 | 0.15 |
| 188.39 | 1.11 | 0.96 | 0.15 |
| 188.41 | 1.12 | 0.97 | 0.15 |
| 188.43 | 1.13 | 0.97 | 0.15 |
| 188.45 | 1.14 | 0.98 | 0.16 |
| 188.47 | 1.19 | 0.99 | 0.20 |
| 188.49 | 1.28 | 0.99 | 0.29 |
| 188.51 | 1.39 | 1.00 | 0.40 |
| 188.53 | 1.53 | 1.00 | 0.53 |
| 188.55 | 1.68 | 1.01 | 0.67 |
| 188.57 | 1.85 | 1.01 | 0.84 |
| 188.59 | 2.03 | 1.02 | 1.01 |
| 188.61 | 2.23 | 1.03 | 1.20 |
| 188.63 | 2.43 | 1.03 | 1.40 |
| 188.65 | 2.65 | 1.04 | 1.62 |
| 188.67 | 2.88 | 1.04 | 1.84 |
| 188.69 | 3.13 | 1.05 | 2.08 |
| 188.71 | 3.38 | 1.06 | 2.32 |
| 188.73 | 3.64 | 1.06 | 2.58 |
| 188.75 | 3.91 | 1.07 | 2.85 |
| 188.77 | 4.19 | 1.07 | 3.12 |
| 188.79 | 4.49 | 1.08 | 3.41 |
| 188.81 | 4.79 | 1.08 | 3.70 |
| 188.83 | 5.09 | 1.09 | 4.00 |
| 188.85 | **5.41** | **1.10** | **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 |
| 186.90 | 3,564 | 3,579 | 71 |
| 186.95 | 3,564 | 3,595 | 143 |
| 187.00 | 3,564 | 3,610 | 214 |
| 187.05 | 3,564 | 3,625 | 285 |
| 187.10 | 3,564 | 3,641 | 356 |
| 187.15 | 3,564 | 3,656 | 428 |
| 187.20 | 3,564 | 3,671 | 499 |
| 187.25 | 3,564 | 3,686 | 570 |
| 187.30 | 3,564 | 3,702 | 642 |
| 187.35 | 3,564 | 3,717 | 713 |
| 187.40 | 3,564 | 3,732 | 784 |
| 187.45 | 3,564 | 3,748 | 855 |
| 187.50 | 3,564 | 3,763 | 927 |
| 187.55 | 3,564 | 3,778 | 998 |
| 187.60 | 3,564 | 3,794 | 1,069 |
| 187.65 | 3,564 | 3,809 | 1,140 |
| 187.70 | 3,564 | 3,824 | 1,212 |
| 187.75 | 3,564 | 3,839 | 1,283 |
| 187.80 | 3,564 | 3,855 | 1,354 |
| 187.85 | 3,564 | 3,870 | 1,426 |
| 187.90 | 3,564 | 3,885 | 1,497 |
| 187.95 | 3,564 | 3,901 | 1,568 |
| 188.00 | 3,564 | 3,916 | 1,639 |
| 188.05 | 3,564 | 3,931 | 1,711 |
| 188.10 | 3,564 | 3,947 | 1,782 |
| 188.15 | 3,564 | 3,962 | 1,853 |
| 188.20 | 3,564 | 3,977 | 1,925 |
| 188.25 | 3,564 | 3,992 | 1,996 |
| 188.30 | 3,564 | 4,008 | 2,067 |
| 188.35 | 3,564 | 4,023 | 2,138 |
| 188.40 | 3,564 | 4,038 | 2,210 |
| 188.45 | 3,564 | 4,054 | 2,281 |
| 188.50 | 3,564 | 4,069 | 2,352 |
| 188.55 | 3,564 | 4,084 | 2,424 |
| 188.60 | 3,564 | 4,100 | 2,495 |
| 188.65 | 3,564 | 4,115 | 2,566 |
| 188.70 | 3,564 | 4,130 | 2,637 |
| 188.75 | 3,564 | 4,145 | 2,709 |
| 188.80 | 3,564 | 4,161 | 2,780 |
| 188.85 | 3,564 | **4,176** | **2,851** |

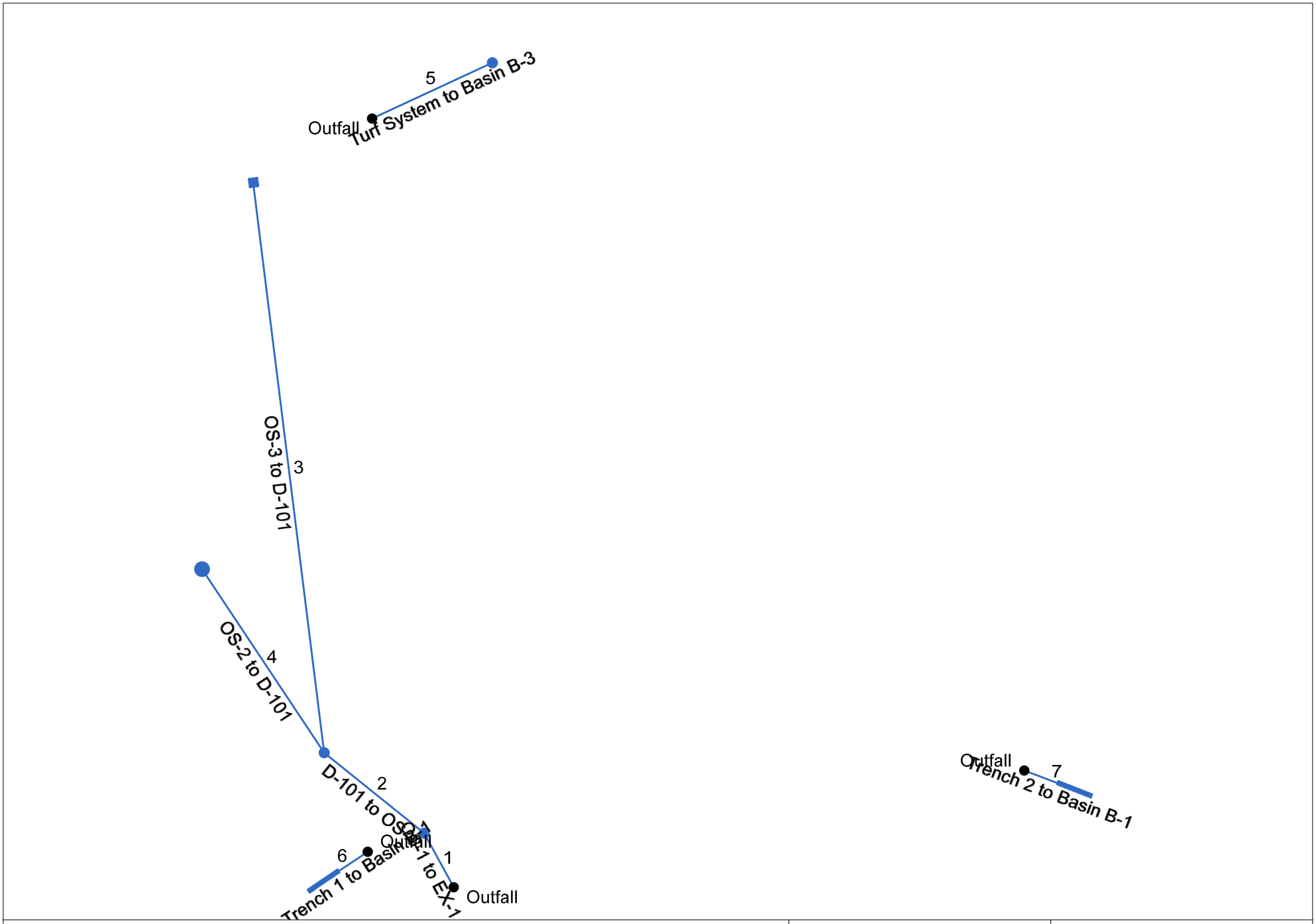
## Stage-Discharge for Pond B-3: Infiltration Basin in Rear

| Elevation (feet) | Discharge (cfs) | Discarded (cfs) | Primary (cfs) |
|---|---|---|---|
| 188.00 | 0.00 | 0.00 | 0.00 |
| 188.02 | 0.04 | 0.04 | 0.00 |
| 188.04 | 0.04 | 0.04 | 0.00 |
| 188.06 | 0.04 | 0.04 | 0.00 |
| 188.08 | 0.04 | 0.04 | 0.00 |
| 188.10 | 0.04 | 0.04 | 0.00 |
| 188.12 | 0.04 | 0.04 | 0.00 |
| 188.14 | 0.04 | 0.04 | 0.00 |
| 188.16 | 0.04 | 0.04 | 0.00 |
| 188.18 | 0.04 | 0.04 | 0.00 |
| 188.20 | 0.04 | 0.04 | 0.00 |
| 188.22 | 0.05 | 0.05 | 0.00 |
| 188.24 | 0.05 | 0.05 | 0.00 |
| 188.26 | 0.05 | 0.05 | 0.00 |
| 188.28 | 0.07 | 0.05 | 0.02 |
| 188.30 | 0.09 | 0.05 | 0.04 |
| 188.32 | 0.12 | 0.05 | 0.07 |
| 188.34 | 0.16 | 0.05 | 0.11 |
| 188.36 | 0.20 | 0.05 | 0.15 |
| 188.38 | 0.24 | 0.05 | 0.19 |
| 188.40 | 0.28 | 0.05 | 0.23 |
| 188.42 | 0.33 | 0.05 | 0.28 |
| 188.44 | 0.39 | 0.05 | 0.33 |
| 188.46 | 0.44 | 0.05 | 0.39 |
| 188.48 | 0.48 | 0.05 | 0.43 |
| 188.50 | 0.52 | 0.05 | 0.47 |
| 188.52 | 0.56 | 0.06 | 0.50 |
| 188.54 | 0.59 | 0.06 | 0.53 |
| 188.56 | 0.62 | 0.06 | 0.56 |
| 188.58 | 0.65 | 0.06 | 0.59 |
| 188.60 | 0.68 | 0.06 | 0.62 |
| 188.62 | 0.70 | 0.06 | 0.64 |
| 188.64 | 0.73 | 0.06 | 0.67 |
| 188.66 | 0.75 | 0.06 | 0.69 |
| 188.68 | 0.77 | 0.06 | 0.71 |
| 188.70 | 0.80 | 0.06 | 0.73 |
| 188.72 | 0.82 | 0.06 | 0.76 |
| 188.74 | 0.84 | 0.06 | 0.78 |
| 188.76 | 0.86 | 0.06 | 0.80 |
| 188.78 | 0.88 | 0.06 | 0.82 |
| 188.80 | 0.90 | 0.07 | 0.84 |
| 188.82 | 0.92 | 0.07 | 0.85 |
| 188.84 | 0.94 | 0.07 | 0.87 |
| 188.86 | 0.96 | 0.07 | 0.89 |
| 188.88 | 0.98 | 0.07 | 0.91 |
| 188.90 | 1.00 | 0.07 | 0.93 |
| 188.92 | 1.02 | 0.07 | 0.95 |
| 188.94 | 1.04 | 0.07 | 0.97 |
| 188.96 | 1.07 | 0.07 | 1.00 |
| 188.98 | 1.09 | 0.07 | 1.02 |
| 189.00 | 1.11 | 0.07 | 1.04 |
| 189.02 | 1.14 | 0.07 | 1.06 |
| 189.04 | 1.16 | 0.07 | 1.09 |
| 189.06 | 1.18 | 0.08 | 1.11 |
| 189.08 | 1.20 | 0.08 | 1.13 |
| 189.10 | 1.22 | 0.08 | 1.14 |
| 189.12 | 1.24 | 0.08 | 1.16 |
| 189.14 | 1.26 | 0.08 | 1.18 |
| 189.16 | 1.28 | 0.08 | 1.20 |
| 189.18 | 1.30 | 0.08 | 1.22 |
| 189.20 | 1.31 | 0.08 | 1.23 |
| 189.22 | 1.33 | 0.08 | 1.25 |
| 189.24 | 1.35 | 0.08 | 1.27 |
| 189.26 | 1.37 | 0.08 | 1.28 |
| 189.28 | 1.38 | 0.08 | 1.30 |
| 189.30 | 1.40 | 0.09 | 1.32 |
| 189.32 | 1.42 | 0.09 | 1.33 |
| 189.34 | 1.43 | 0.09 | 1.35 |
| 189.36 | 1.45 | 0.09 | 1.36 |
| 189.38 | 1.46 | 0.09 | 1.38 |
| 189.40 | 1.48 | 0.09 | 1.39 |
| 189.42 | 1.50 | 0.09 | 1.41 |
| 189.44 | 1.51 | 0.09 | 1.42 |
| 189.46 | 1.53 | 0.09 | 1.43 |
| 189.48 | 1.54 | 0.09 | 1.45 |
| 189.50 | 1.56 | 0.09 | 1.46 |
| 189.52 | 1.57 | 0.09 | 1.48 |
| 189.54 | 1.59 | 0.10 | 1.49 |
| 189.56 | 1.60 | 0.10 | 1.50 |
| 189.58 | 1.61 | 0.10 | 1.52 |
| 189.60 | 1.63 | 0.10 | 1.53 |
| 189.62 | 1.64 | 0.10 | 1.54 |
| 189.64 | 1.66 | 0.10 | 1.56 |
| 189.66 | 1.68 | 0.10 | 1.58 |
| 189.68 | 1.74 | 0.10 | 1.64 |
| 189.70 | 1.82 | 0.10 | 1.72 |
| 189.72 | 1.91 | 0.10 | 1.81 |
| 189.74 | 2.02 | 0.10 | 1.91 |
| 189.76 | 2.13 | 0.10 | 2.03 |
| 189.78 | 2.26 | 0.11 | 2.15 |
| 189.80 | 2.39 | 0.11 | 2.28 |
| 189.82 | 2.53 | 0.11 | 2.42 |
| 189.84 | 2.68 | 0.11 | 2.57 |
| 189.86 | 2.84 | 0.11 | 2.73 |
| 189.88 | 3.01 | 0.11 | 2.90 |
| 189.90 | 3.18 | 0.11 | 3.07 |
| 189.92 | 3.36 | 0.11 | 3.25 |
| 189.94 | 3.54 | 0.11 | 3.43 |
| 189.96 | 3.74 | 0.11 | 3.62 |
| 189.98 | 3.93 | 0.11 | 3.82 |
| 190.00 | **4.14** | **0.12** | **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 |
| 188.05 | 3,365 | 3,403 | 167 |
| 188.10 | 3,423 | 3,499 | 337 |
| 188.15 | 3,482 | 3,595 | 509 |
| 188.20 | 3,541 | 3,691 | 685 |
| 188.25 | 3,600 | 3,788 | 863 |
| 188.30 | 3,660 | 3,886 | 1,045 |
| 188.35 | 3,721 | 3,984 | 1,229 |
| 188.40 | 3,781 | 4,082 | 1,417 |
| 188.45 | 3,843 | 4,181 | 1,607 |
| 188.50 | 3,905 | 4,281 | 1,801 |
| 188.55 | 3,967 | 4,381 | 1,998 |
| 188.60 | 4,030 | 4,481 | 2,198 |
| 188.65 | 4,093 | 4,582 | 2,401 |
| 188.70 | 4,157 | 4,684 | 2,607 |
| 188.75 | 4,222 | 4,786 | 2,817 |
| 188.80 | 4,287 | 4,888 | 3,029 |
| 188.85 | 4,352 | 4,991 | 3,245 |
| 188.90 | 4,418 | 5,095 | 3,465 |
| 188.95 | 4,484 | 5,199 | 3,687 |
| 189.00 | 4,551 | 5,303 | 3,913 |
| 189.05 | 4,616 | 5,408 | 4,142 |
| 189.10 | 4,682 | 5,513 | 4,375 |
| 189.15 | 4,748 | 5,619 | 4,610 |
| 189.20 | 4,814 | 5,726 | 4,849 |
| 189.25 | 4,881 | 5,833 | 5,092 |
| 189.30 | 4,949 | 5,940 | 5,338 |
| 189.35 | 5,017 | 6,048 | 5,587 |
| 189.40 | 5,085 | 6,156 | 5,839 |
| 189.45 | 5,154 | 6,265 | 6,095 |
| 189.50 | 5,223 | 6,375 | 6,355 |
| 189.55 | 5,293 | 6,485 | 6,618 |
| 189.60 | 5,363 | 6,595 | 6,884 |
| 189.65 | 5,434 | 6,706 | 7,154 |
| 189.70 | 5,505 | 6,817 | 7,427 |
| 189.75 | 5,577 | 6,929 | 7,704 |
| 189.80 | 5,649 | 7,042 | 7,985 |
| 189.85 | 5,722 | 7,154 | 8,269 |
| 189.90 | 5,795 | 7,268 | 8,557 |
| 189.95 | 5,868 | 7,382 | 8,849 |
| 190.00 | **5,942** | **7,496** | **9,144** |

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




| Project File: 2023-04-07_Pipe Sizing.stm | Number of lines: 7 | Date: 4/7/2023 |
|---|---|---|

# SED



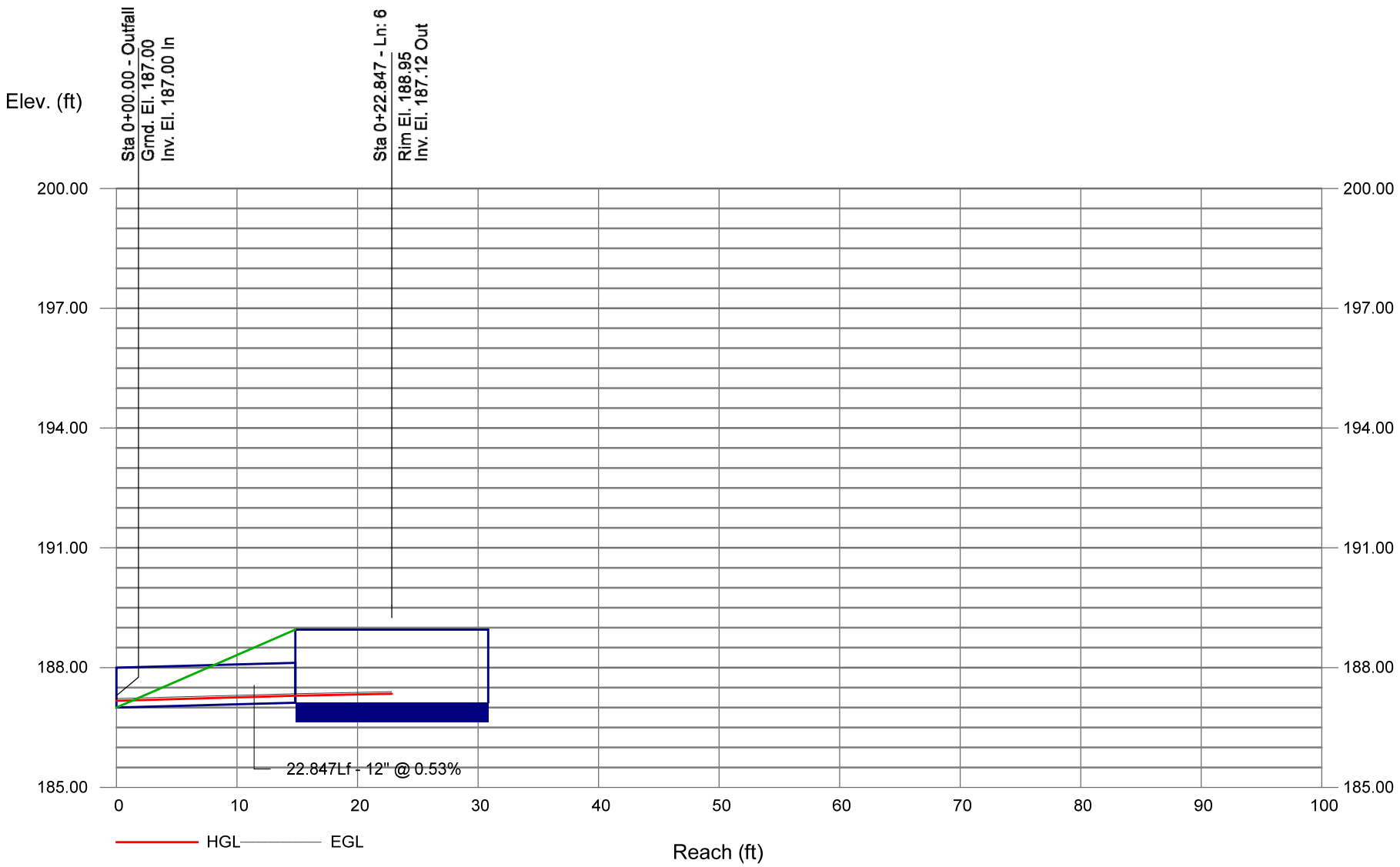
| Line No. | Line ID | Invert Dn (ft) | Invert Up (ft) | Line Size (in) | Line Slope (%) | Flow Rate (cfs) | Vel Dn (ft/s) | Capac Full (cfs) | HGL Dn (ft) | HGL Up (ft) | Drng Area (ac) | Tc (min) | i Inlet (in/hr) | n-val Pipe | Gnd/Rim El Dn (ft) | Gnd/Rim El Up (ft) | Line Length (ft) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | OS-1 to EX-1 | 185.75 | 185.89 | 18 | 0.52 | 6.36 | 4.04 | 7.61 | 187.00 | 187.07 | 0.00 | 8.1 | 0.00 | 0.013 | 188.53 | 189.50 | 26.681 | |
| 2 | D-101 to OS-1 | 185.89 | 186.17 | 15 | 0.50 | 4.28 | 3.49 | 4.59 | 187.26 | 187.50 | 0.00 | 7.9 | 0.00 | 0.013 | 189.50 | 191.80 | 55.511 | |
| 3 | OS-3 to D-101 | 186.17 | 187.50 | 15 | 0.53 | 3.43 | 2.80 | 4.72 | 187.64 | 188.39 | 0.00 | 6.0 | 0.00 | 0.013 | 191.80 | 190.00 | 249.023 | |
| 4 | OS-2 to D-101 | 186.23 | 186.85 | 15 | 0.65 | 0.85 | 0.69 | 5.20 | 187.64 | 187.66 | 0.00 | 6.0 | 0.00 | 0.013 | 191.80 | 190.00 | 95.461 | |
| 5 | Turf System to Basin B-3 | 188.00 | 188.32 | 15 | 0.56 | 2.33 | 3.92 | 4.83 | 188.61 | 188.94 | 0.76 | 6.0 | 8.77 | 0.013 | 188.00 | 191.50 | 57.293 | |
| 6 | Trench 1 to Basin B-1 | 187.00 | 187.12 | 12 | 0.53 | 0.17 | 1.88 | 2.58 | 187.17 | 187.29 | 0.02 | 6.0 | 8.77 | 0.013 | 187.00 | 188.95 | 22.847 | |
| 7 | Trench 2 to Basin B-1 | 187.00 | 187.12 | 12 | 0.52 | 0.17 | 1.88 | 2.56 | 187.17 | 187.30 | 0.02 | 6.0 | 8.77 | 0.013 | 187.00 | 189.25 | 23.204 | |

Project File: 2023-04-07_Pipe Sizing.stm | Number of lines: 7 | Date: 4/7/2023

NOTES: Intensity = 297.34 / (Inlet time + 23.30) ^ 1.04 -- Return period = 100 Yrs. ; ** Critical depth

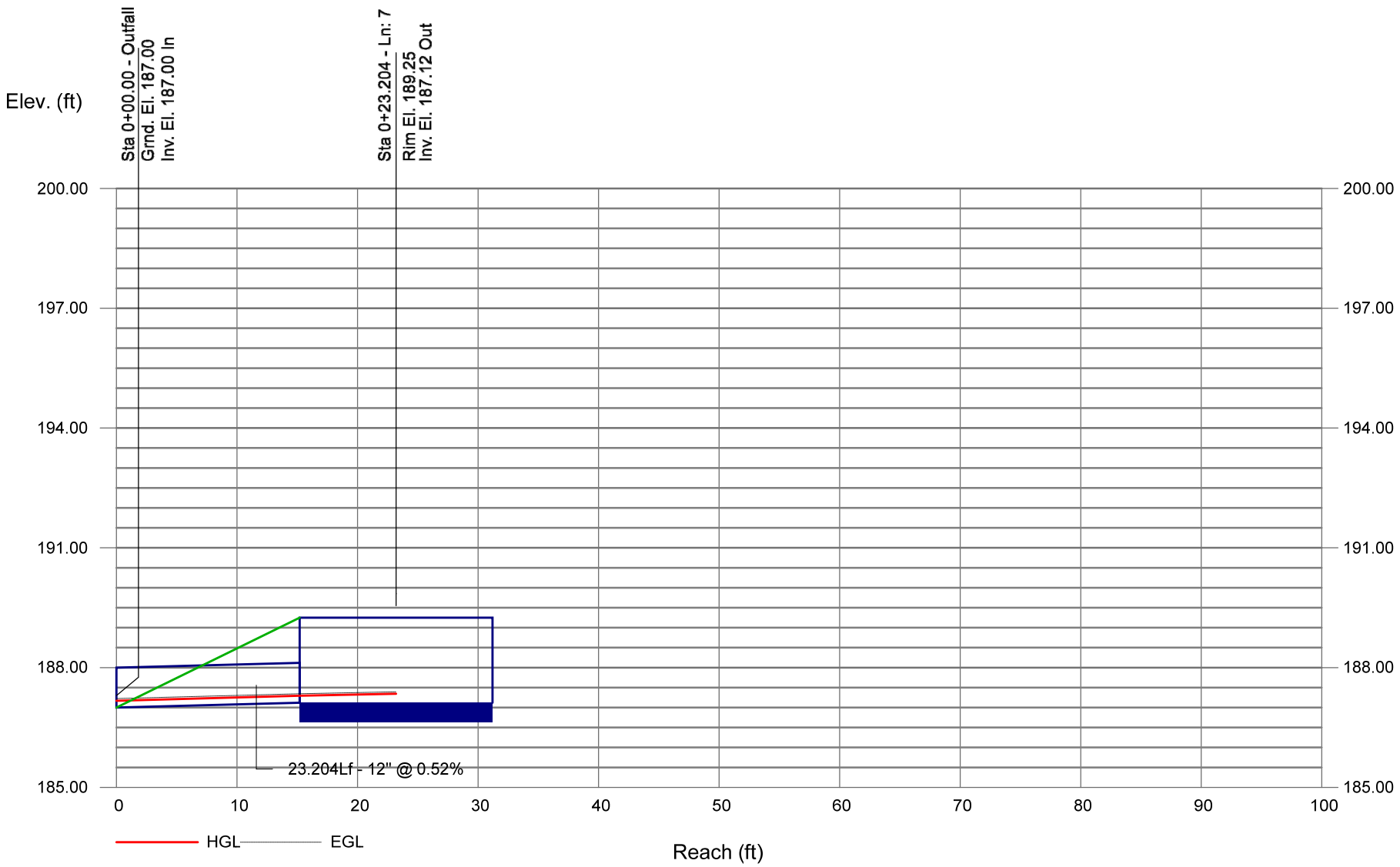
# Storm Sewer Profile

Proj. file: 2023-04-07_Pipe Sizing.stm



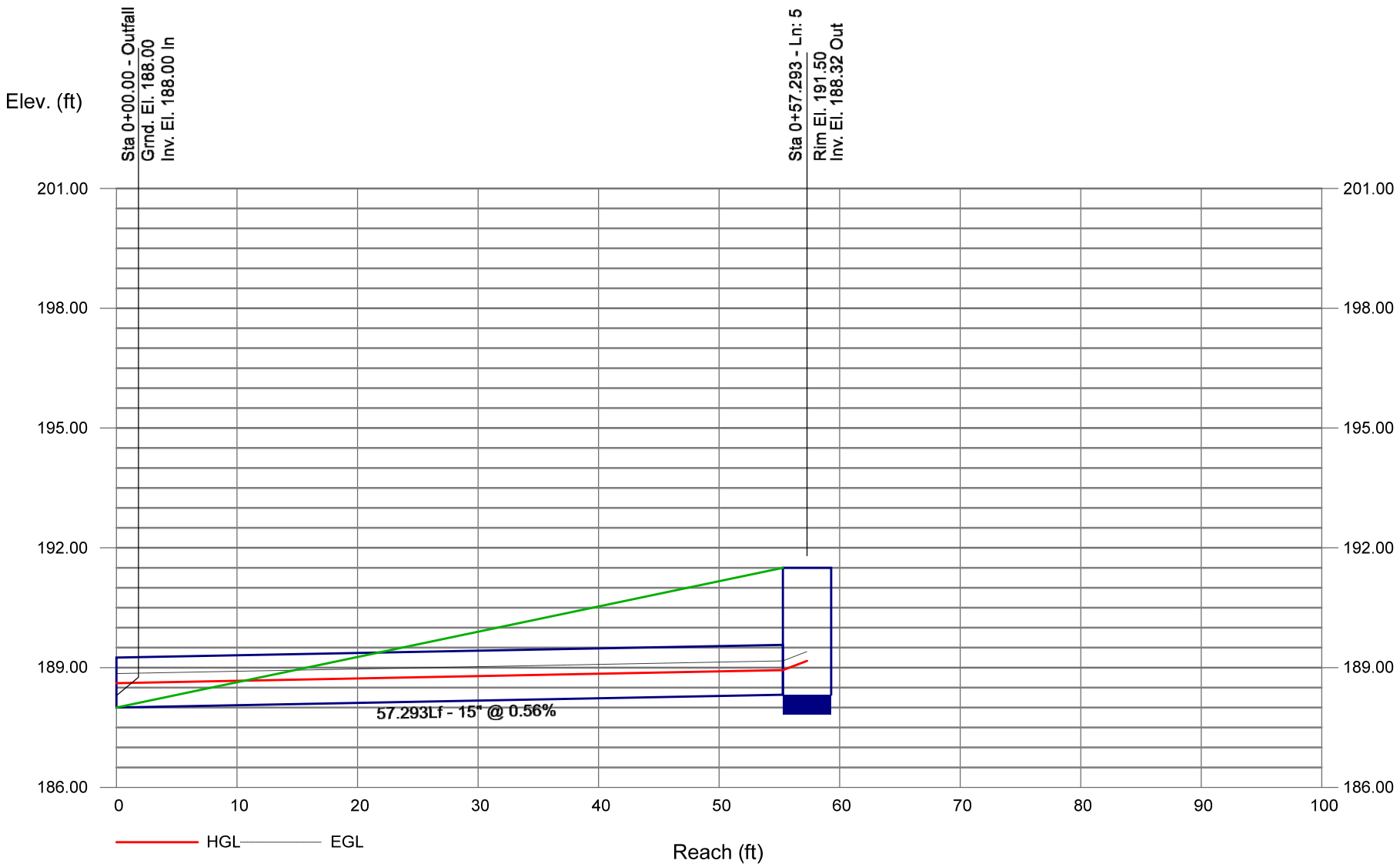
# Storm Sewer Profile

Proj. file: 2023-04-07_Pipe Sizing.stm



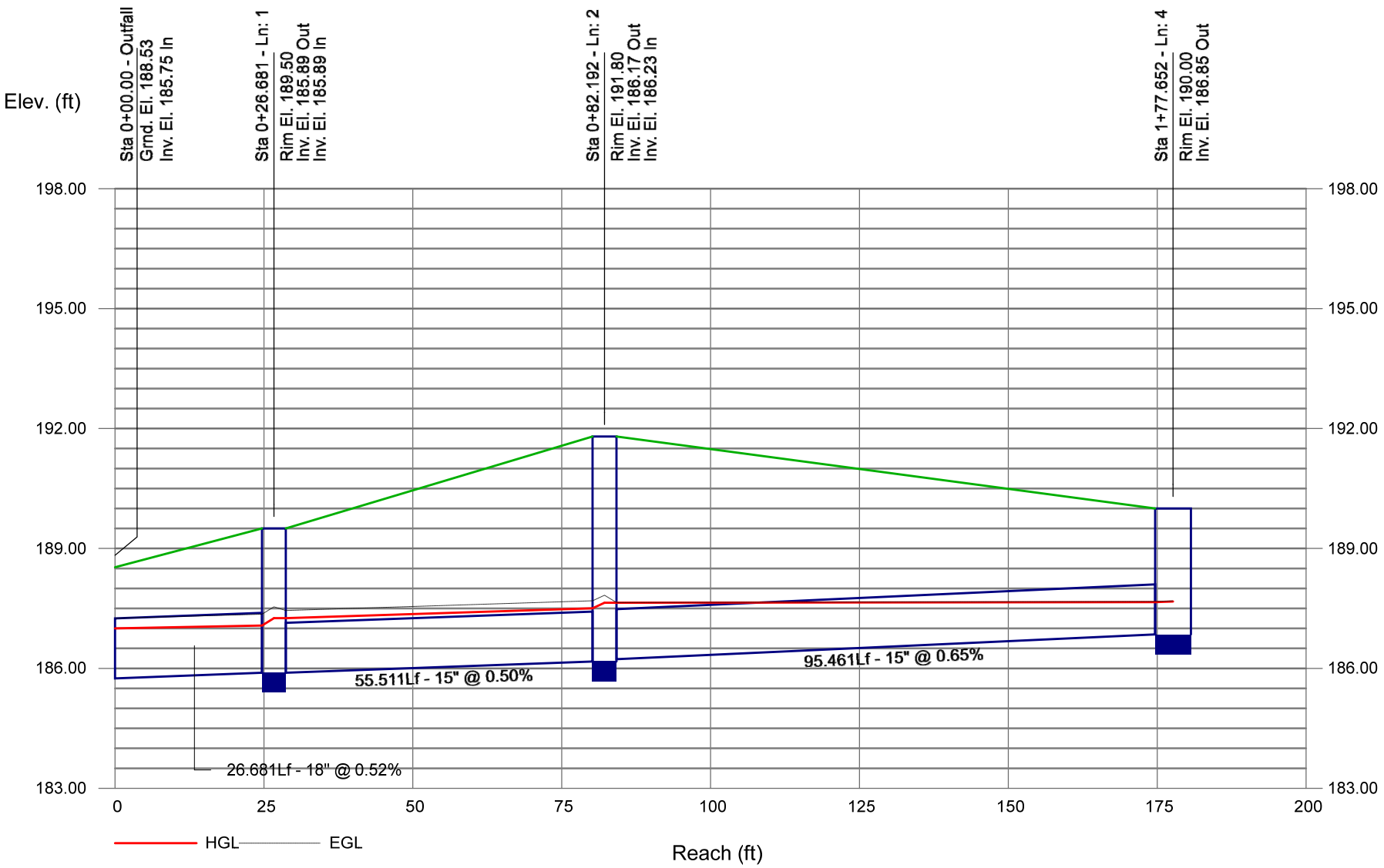
# Storm Sewer Profile

Proj. file: 2023-04-07_Pipe Sizing.stm



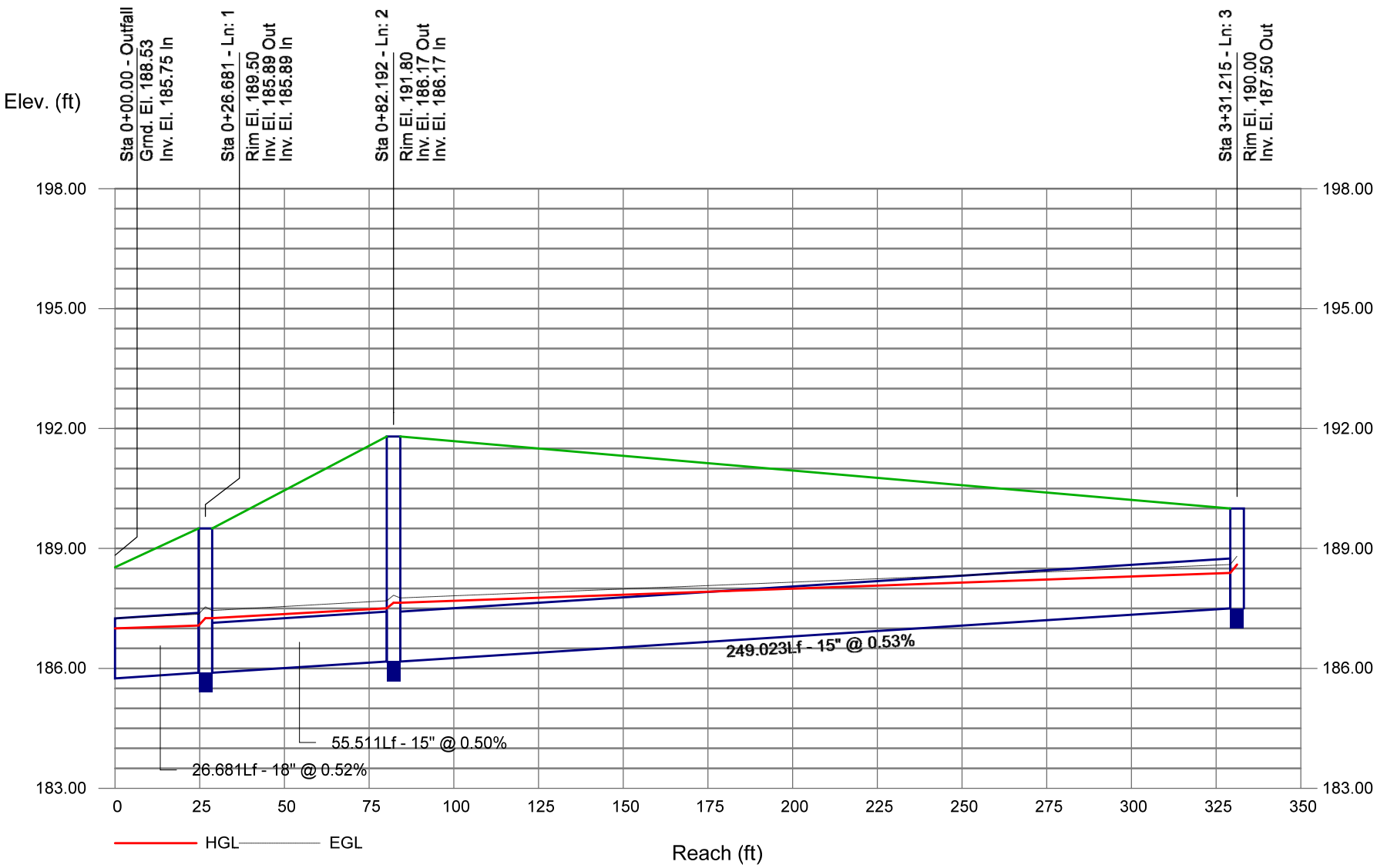
# Storm Sewer Profile

Proj. file: 2023-04-07_Pipe Sizing.stm



# Storm Sewer Profile

Proj. file: 2023-04-07_Pipe Sizing.stm



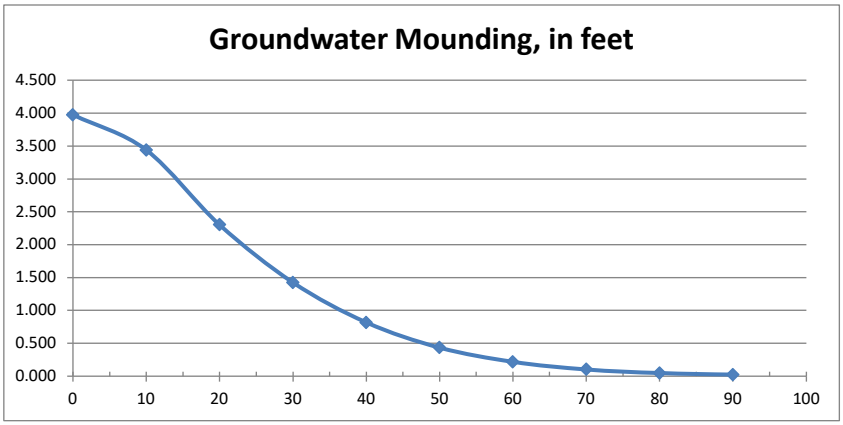
Input Values

| | | |
|---|---|---|
| *0.50* | *R* | Recharge rate (permeability rate) (in/hr) |
| *0.150* | Sy | Specific yield, Sy (dimensionless)<br>default value is 0.15; max value is 0.2 provided that a lab test data is submitted |
| 2.81 | Kh | Horizontal hydraulic conductivity (in/hr)<br>Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the coastal plan |
| 11.250 | x | 1/2 length of basin (x direction, in feet) |
| 74.000 | y | 1/2 width of basin (y direction, in feet) |
| 35.62 | t | Duration of infiltration period (hours) |
| 10.00 | hi(0) | Initial thickness of saturated zone (feet) |

| | | |
|---|---|---|
| 13.974 | h(max) | Maximum thickness of saturated zone (beneath center of basin at end of infiltration period) |
| 3.974 | Δh(max) | Maximum groundwater mounding (beneath center of basin at end of infiltration period) |

| Ground-water Mounding, in feet | Distance from center of basin in x direction, in feet |
|---|---|
| 3.974 | 0 |
| 3.438 | 10 |
| 2.303 | 20 |
| 1.423 | 30 |
| 0.814 | 40 |
| 0.433 | 50 |
| 0.215 | 60 |
| 0.101 | 70 |
| 0.045 | 80 |
| 0.020 | 90 |

Re-Calculate Now




## Disclaimer

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

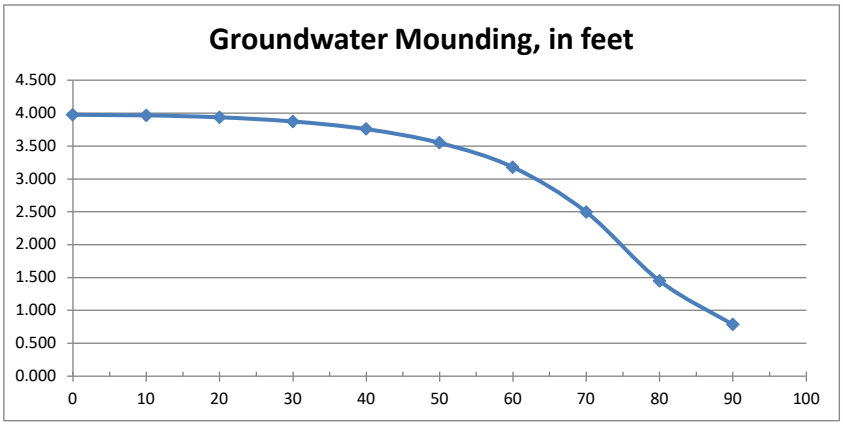
Input Values

| | | |
|---|---|---|
| *0.50* | *R* | Recharge rate (permeability rate) (in/hr) |
| *0.150* | Sy | Specific yield, Sy (dimensionless)<br>default value is 0.15; max value is 0.2 provided that a lab test data is submitted |
| 2.81 | Kh | Horizontal hydraulic conductivity (in/hr)<br>Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the coastal plan |
| 74.000 | x | 1/2 length of basin (x direction, in feet) |
| 11.250 | y | 1/2 width of basin (y direction, in feet) |
| 35.62 | t | Duration of infiltration period (hours) |
| 10.00 | hi(0) | Initial thickness of saturated zone (feet) |

| | | |
|---|---|---|
| 13.974 | h(max) | Maximum thickness of saturated zone (beneath center of basin at end of infiltration period) |
| 3.974 | Δh(max) | Maximum groundwater mounding (beneath center of basin at end of infiltration period) |

| Ground-water Mounding, in feet | Distance from center of basin in x direction, in feet |
|---|---|
| 3.974 | 0 |
| 3.965 | 10 |
| 3.935 | 20 |
| 3.873 | 30 |
| 3.757 | 40 |
| 3.547 | 50 |
| 3.176 | 60 |
| 2.496 | 70 |
| 1.447 | 80 |
| 0.782 | 90 |

Re-Calculate Now

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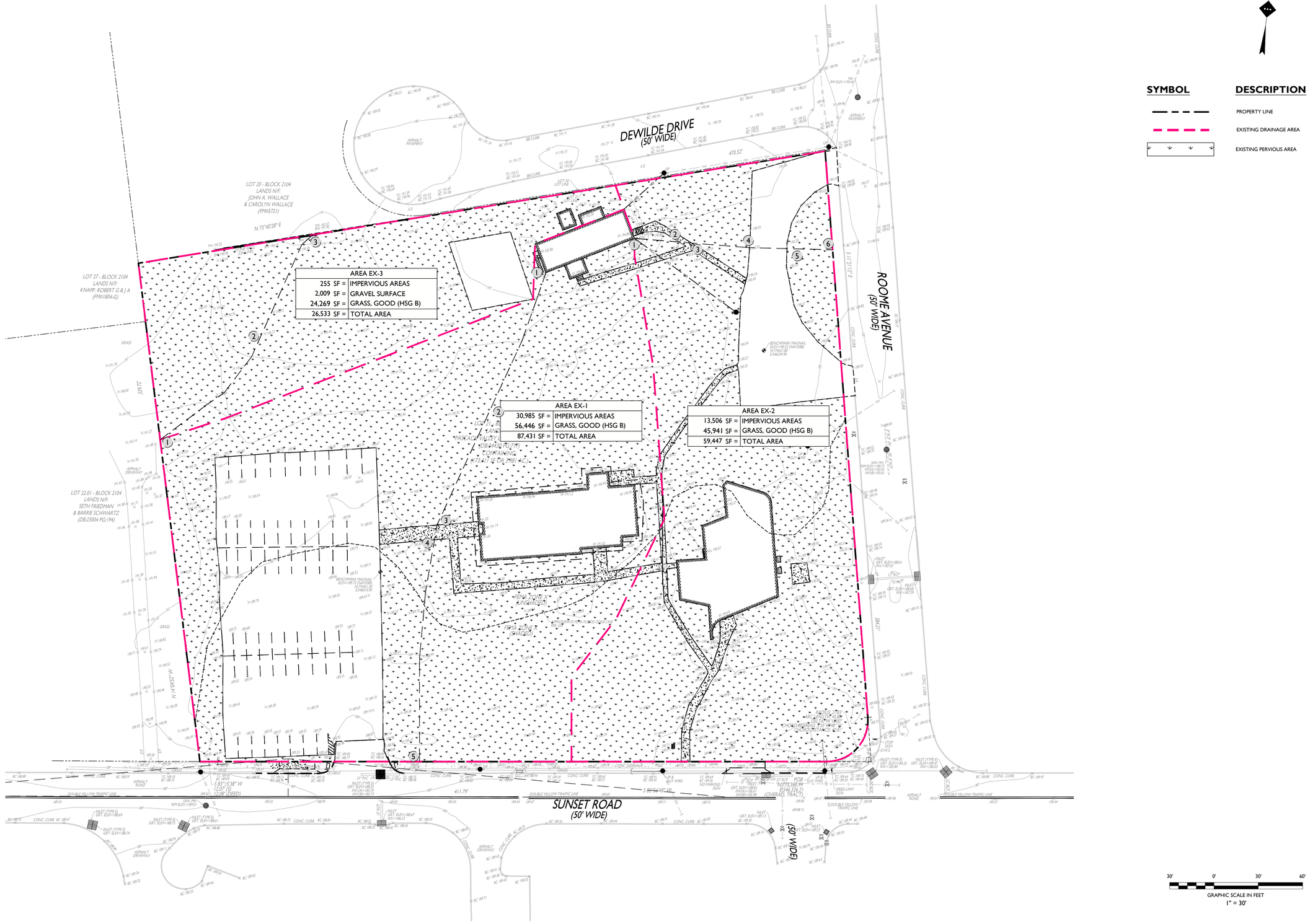
# APPENDIX D
# DRAINAGE AREA MAPS

## INVENTORY

**SHEET 1 OF 3: EXISTING DRAINAGE AREA MAP**

**SHEET 2 OF 3: PROPOSED DRAINAGE AREA MAP**

**SHEET 3 OF 3: INLET DRAINAGE AREA MAP**




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

GRAPHIC SCALE IN FEET
1" = 30'

| ISSUE | DATE | BY | DESCRIPTION |
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Phone 201.340.4468 · Fax 201.340.4472


DRAINAGE AREA MAPS

# ONE SCHOOL GLOBAL

## PROPOSED SCHOOL

BLOCK 2104, LOT 21
60 SUNSET ROAD
TOWNSHIP OF PEQUANNOCK
MORRIS COUNTY, NEW JERSEY


ARTHUR KUYAN, P.E.
NEW JERSEY LICENSE No. 55741
LICENSED PROFESSIONAL ENGINEER


STONEFIELD engineering & design

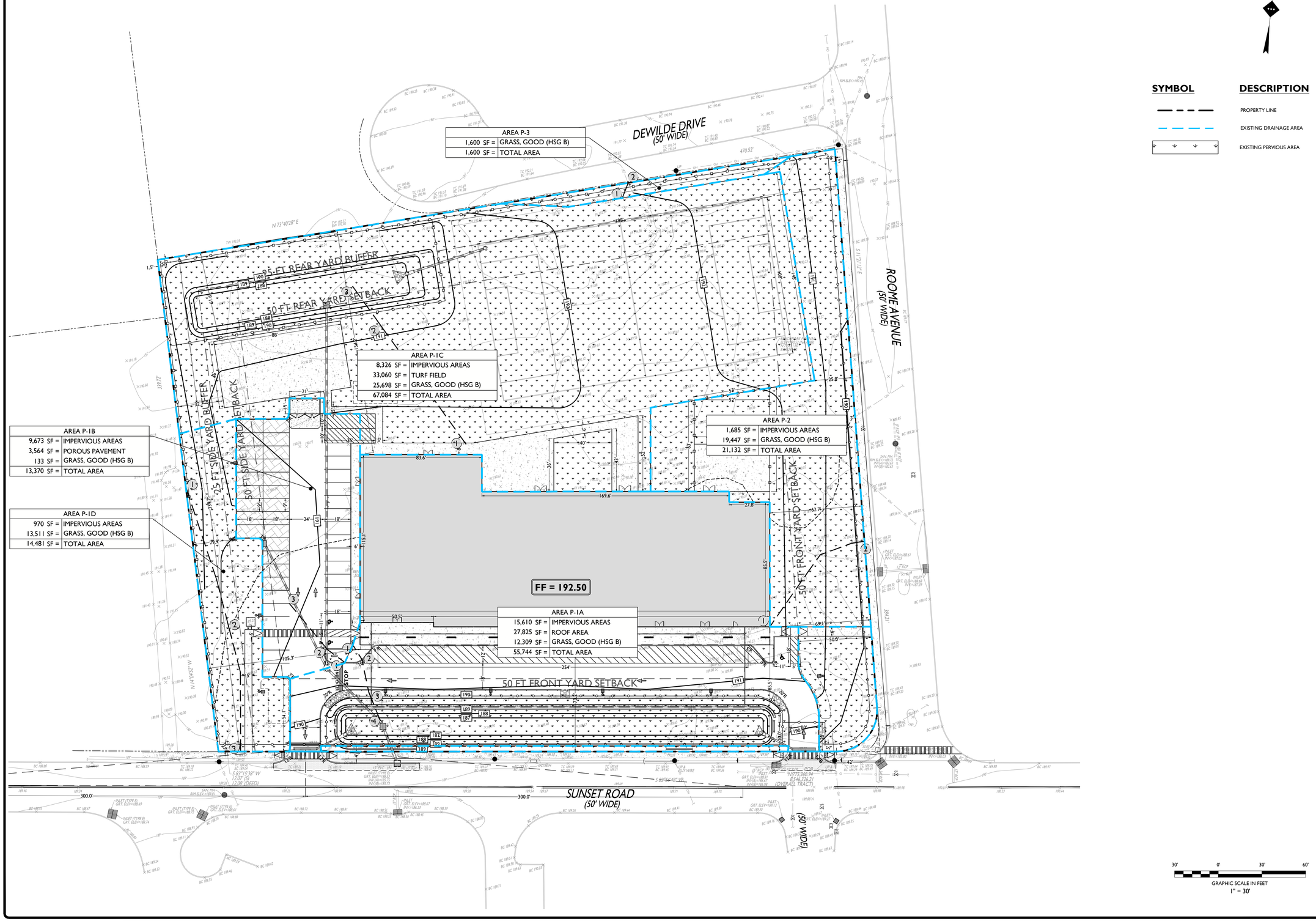
SCALE: 1" = 30' | PROJECT ID: RUT-220209

TITLE:

**EXISTING DRAINAGE AREA MAP**

DRAWING:

**1 OF 3**




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

GRAPHIC SCALE IN FEET
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LICENSED PROFESSIONAL ENGINEER


STONEFIELD engineering & design

SCALE: 1" = 30' | PROJECT ID: RUT-220209

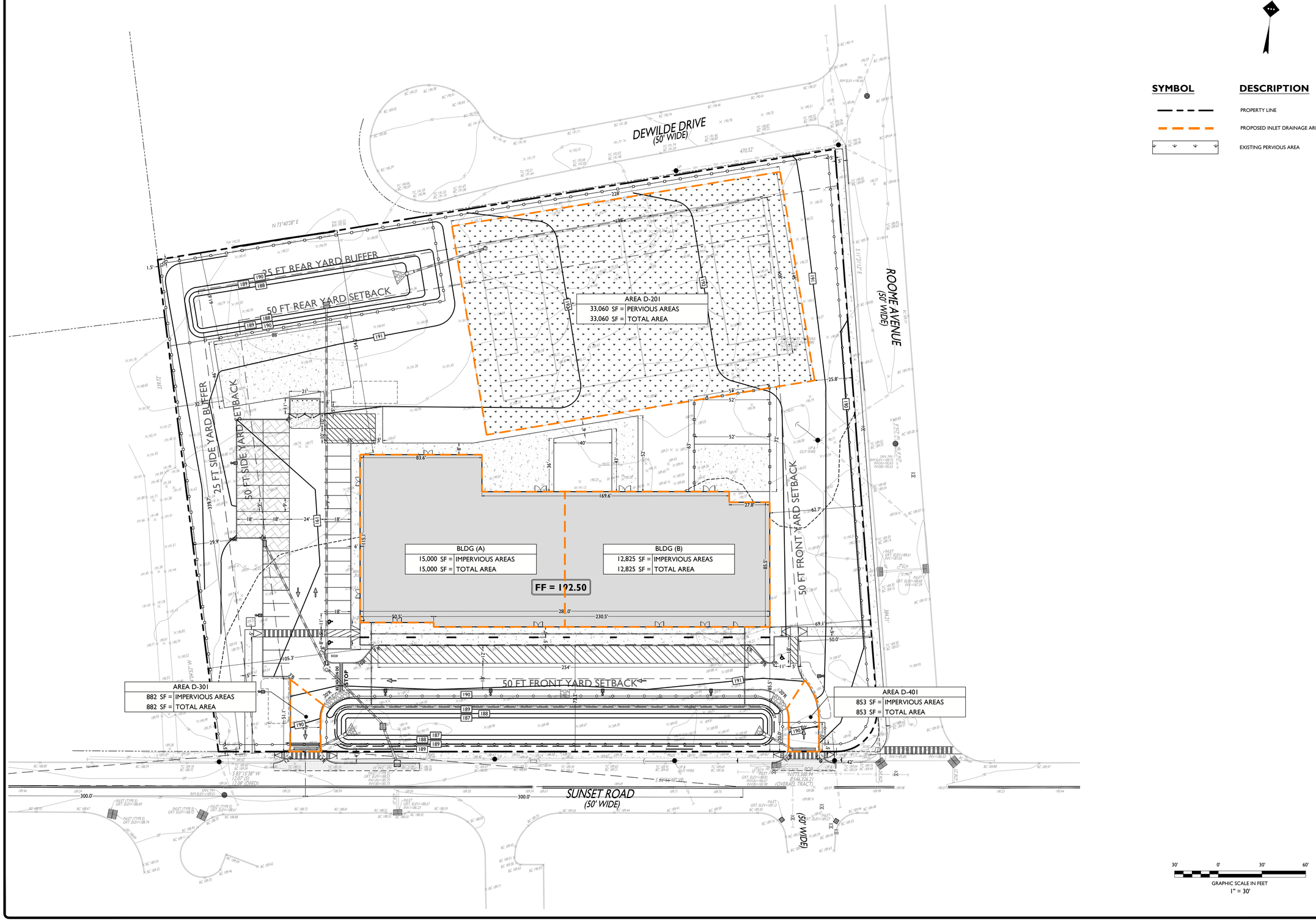
TITLE:

**PROPOSED DRAINAGE AREA MAP**

DRAWING:

**2 OF 3**

Z:\RUT\REPORTS\RUT2202\RUT-220209 ONE SCHOOL GLOBAL - 60 SUNSET ROAD, PEQUANNOCK NJ\CAD\DGN\RUT220209-DRAINAGE AREA MAPS2023-04-05_DRAINAGE AREA MAPS.DWG




| SYMBOL | DESCRIPTION |
|---|---|
| | PROPERTY LINE |
| | PROPOSED INLET DRAINAGE AREA |
| | EXISTING PERVIOUS AREA |

GRAPHIC SCALE IN FEET
1" = 30'

| ISSUE | DATE | BY | DESCRIPTION |
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DRAINAGE AREA MAPS

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STONEFIELD engineering & design

SCALE: 1" = 30' | PROJECT ID: RUT-220209

TITLE:
INLET DRAINAGE AREA MAP

DRAWING:
3 OF 3

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