# Drainage Report

# For:

# 2 Beach Lane
# Hingham, MA

**Prepared For:**

**Theo Sharp**

**Prepared By:**


**Hardy + Man Design Group, PC**
**1285 Washington Street**
**Weymouth, MA 02189**


**April 8, 2020**

COMMONWEALTH OF MASSACHUSETTS
CHI Y MAN
CIVIL
NO. 45441
REGISTERED
PROFESSIONAL ENGINEER

4-8-2020

## Existing Site Conditions

The existing site is a 13,888 SF parcel of land located at the crossing of Beach Lane and Wompatuck Road in Hingham. The parcel currently contains a single family dwelling which will be demolished. Part of this parcel is the coastal beach area with coastal beach stone revetment.

The topography of the site slopes toward the north from an approximate elevation of 9 feet (The North American Vertical Datum of 1988) at the southern corner of the site to 5 feet at the at the northern corner of the site. No stormwater controls exist on the site and the topography directs the stormwater to northern corner.

The property is located in Flood Zone AE (Elevation 11 NAVD 88) and Flood Zone VE (Elevation 13) based on a LOMR for the Town of Hingham, Dated August 14, 2015. (Firm 25023C0018J)

According to test pit information, the soils on site consist of a gravelly sandy loam material.

## Methodology

This drainage analysis will utilize TR-55 drainage guidelines which is an industry standard for urban hydrology small watersheds. The accompanying calculations analyze the increase in runoff from the proposed site development under a 24-hour 5.6-inch rain event, which is approximate to a 25-year storm event. Calculations were also performed for 10-year, and 2-year storm events. Analysis for 100-yr storm event is not provided as the site is within flood plain that it is anticipated that the entire parcel will be flooded during such 100-year storm event.

## Proposed Conditions

The applicant proposes the construction of a single-family dwelling building. An attached slab on grade parking garage will be located next to the building which has an appropriate driveway from Beach Lane. The reminder of the building will be constructed on pier that the building will be elevated above the 100-year flood elevation (AE 11).

The proposed impervious coverage on the site will increase from 2,274 SF to 4,991 SF, resulting in 2,717 SF of new impervious area. Runoff from the proposed roof will be routed directly into a gravel stormwater retention area located under the building, the size of this area is 3,557 SF with 10-inch depth crush stone basin under the building which has a storage volume of 2252 CF. The proposed finish grade of the stone basin will be at EL 8. The bottom of the basin meeting sub-grade will be at EL 7.33. The perimeter of the lawn around the house will be graded to pitch toward the building where the retention system can intercept the surface runoff from majority of the site and infiltrate into the ground. We have provided HydroCAD analysis of 2, 10, and 25-year stone event. Although the proposed development will increase impervious surface, the

stormwater retention basin will mitigate the runoff by on-site infiltration and reduce the surface runoff to neighboring land.

The following table depicts the peak runoff rates and volumes for the existing and proposed conditions for the three different storm events.

Peak Discharge Rates (cfs)

| | 2-year | 10-year | 25-year |
|---|---|---|---|
| Existing Conditions | 0.44 | 0.73 | 0.94 |
| Proposed Conditions | 0.07 | 0.11 | 0.13 |

Runoff Volume (af)

| | 2-year | 10-year | 25-year |
|---|---|---|---|
| Existing Conditions | 0.031 | 0.051 | 0.065 |
| Proposed Conditions | 0.010 | 0.015 | 0.018 |

## Erosion and Sedimentation Control Measures

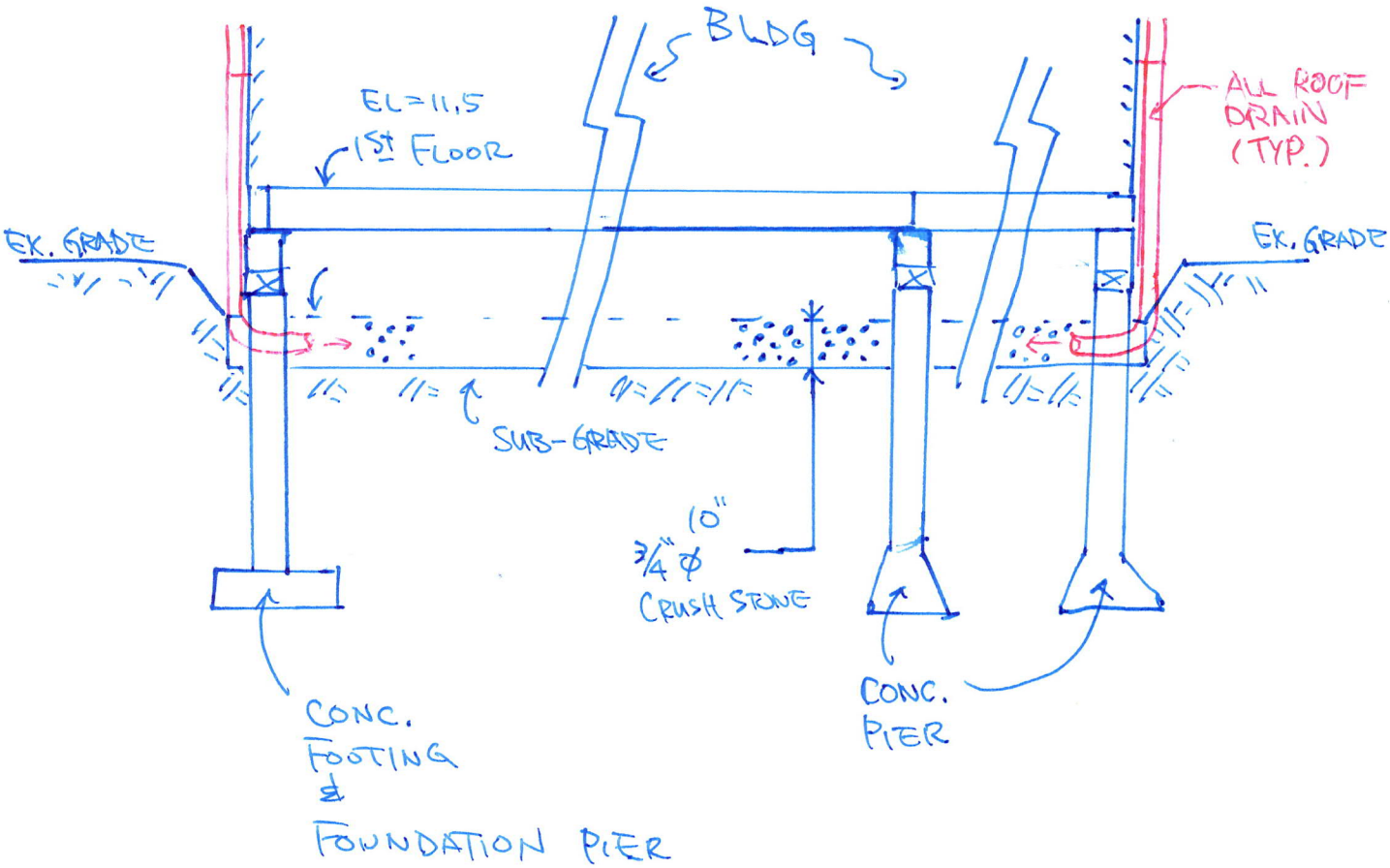
Erosion control measures to be employed include a staked “Filter Sock” erosion control barrier. The barrier shall be inspected daily and be kept in place until such time that disturbed areas are re-vegetated or paved and are no longer a potential source of siltation.

## Conclusion

The stormwater management system will reduce the stormwater runoff flowrate and volume by providing an on-site retention system under the building. These systems are composed of 3357 SF x 10 inches depth crush stone gravel basin. It has been sized to decrease existing peak flowrates and runoff volumes for the 2-year, 10-year, 25-year, and 100-year rainfall events.

During construction, the proposed erosion control measures protect sedimentation from construction activities from migrating from the site onto the public street and abutting properties.

The proposed stormwater management and erosion control design of the proposed development will meet the Mass DEP Stormwater Policy Guidelne.

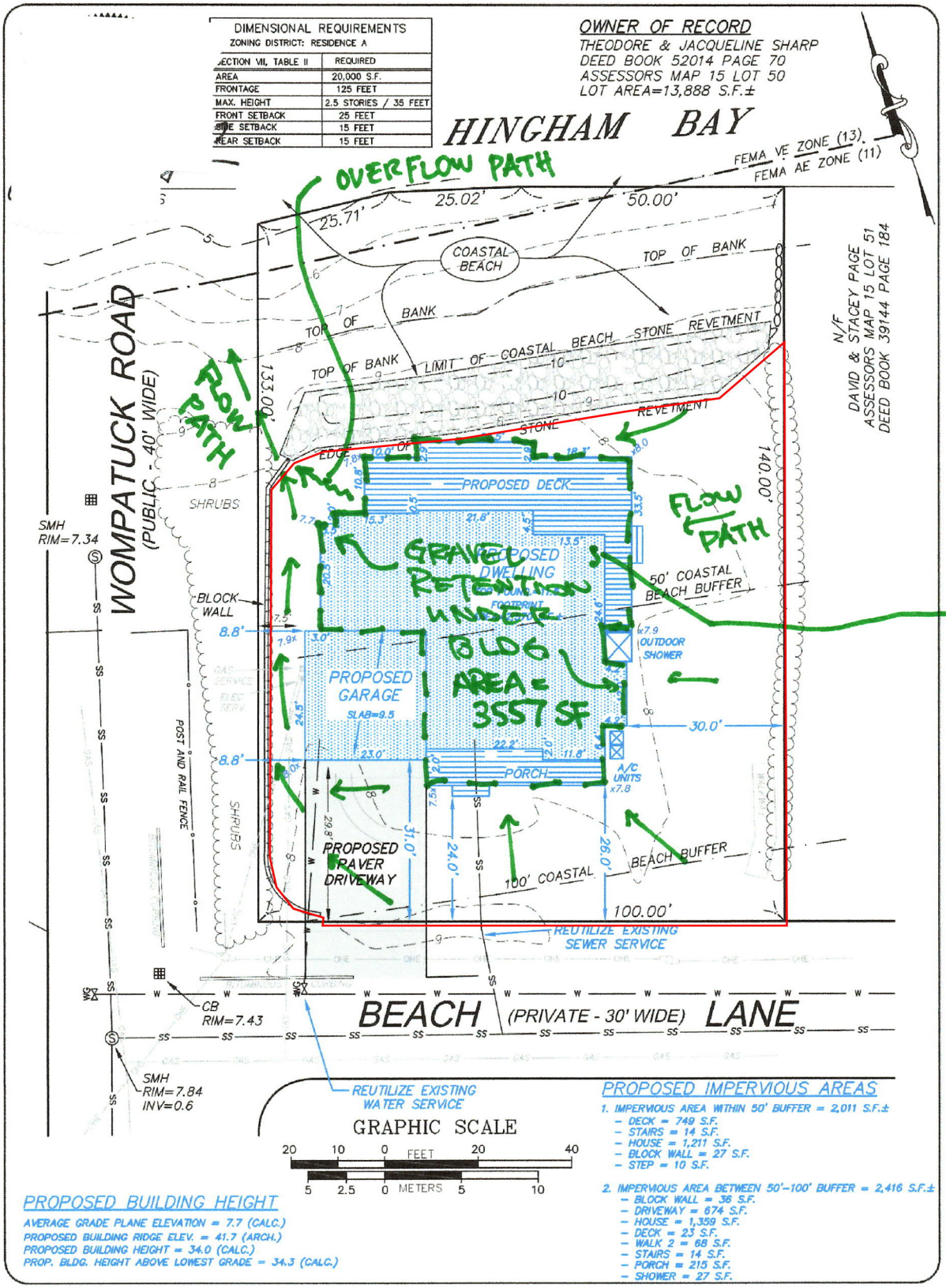



**PROPOSED RETENTION SYSTEM**
**2 BEACH LANE, HINGHAM, MA**

**RETENTION SYSTEM SECTION**
**4-8-2020 NTS**

HARDY+MAN DESIGN GROUP, PC
CIVIL ENGINEERING & LAND DEVELOPMENT CONSULTING

| DIMENSIONAL REQUIREMENTS<br>ZONING DISTRICT: RESIDENCE A | |
|---|---|
| SECTION VII, TABLE II | REQUIRED |
| AREA | 20,000 S.F. |
| FRONTAGE | 125 FEET |
| MAX. HEIGHT | 2.5 STORIES / 35 FEET |
| FRONT SETBACK | 25 FEET |
| SIDE SETBACK | 15 FEET |
| REAR SETBACK | 15 FEET |




## PROPOSED IMPERVIOUS AREAS

1. IMPERVIOUS AREA WITHIN 50' BUFFER = 2,011 S.F.±
   - DECK = 749 S.F.
   - STAIRS = 14 S.F.
   - HOUSE = 1,211 S.F.
   - BLOCK WALL = 27 S.F.
   - STEP = 10 S.F.
2. IMPERVIOUS AREA BETWEEN 50'-100' BUFFER = 2,416 S.F.±
   - BLOCK WALL = 36 S.F.
   - DRIVEWAY = 674 S.F.
   - HOUSE = 1,359 S.F.
   - DECK = 23 S.F.
   - WALK 2 = 68 S.F.
   - STAIRS = 14 S.F.
   - PORCH = 215 S.F.
   - SHOWER = 27 S.F.

## PROPOSED BUILDING HEIGHT

AVERAGE GRADE PLANE ELEVATION = 7.7 (CALC.)
PROPOSED BUILDING RIDGE ELEV. = 41.7 (ARCH.)
PROPOSED BUILDING HEIGHT = 34.0 (CALC.)
PROP. BLDG. HEIGHT ABOVE LOWEST GRADE = 34.3 (CALC.)

# POST DEVELOPMENT CONDITIONS DRAINAGE MAP

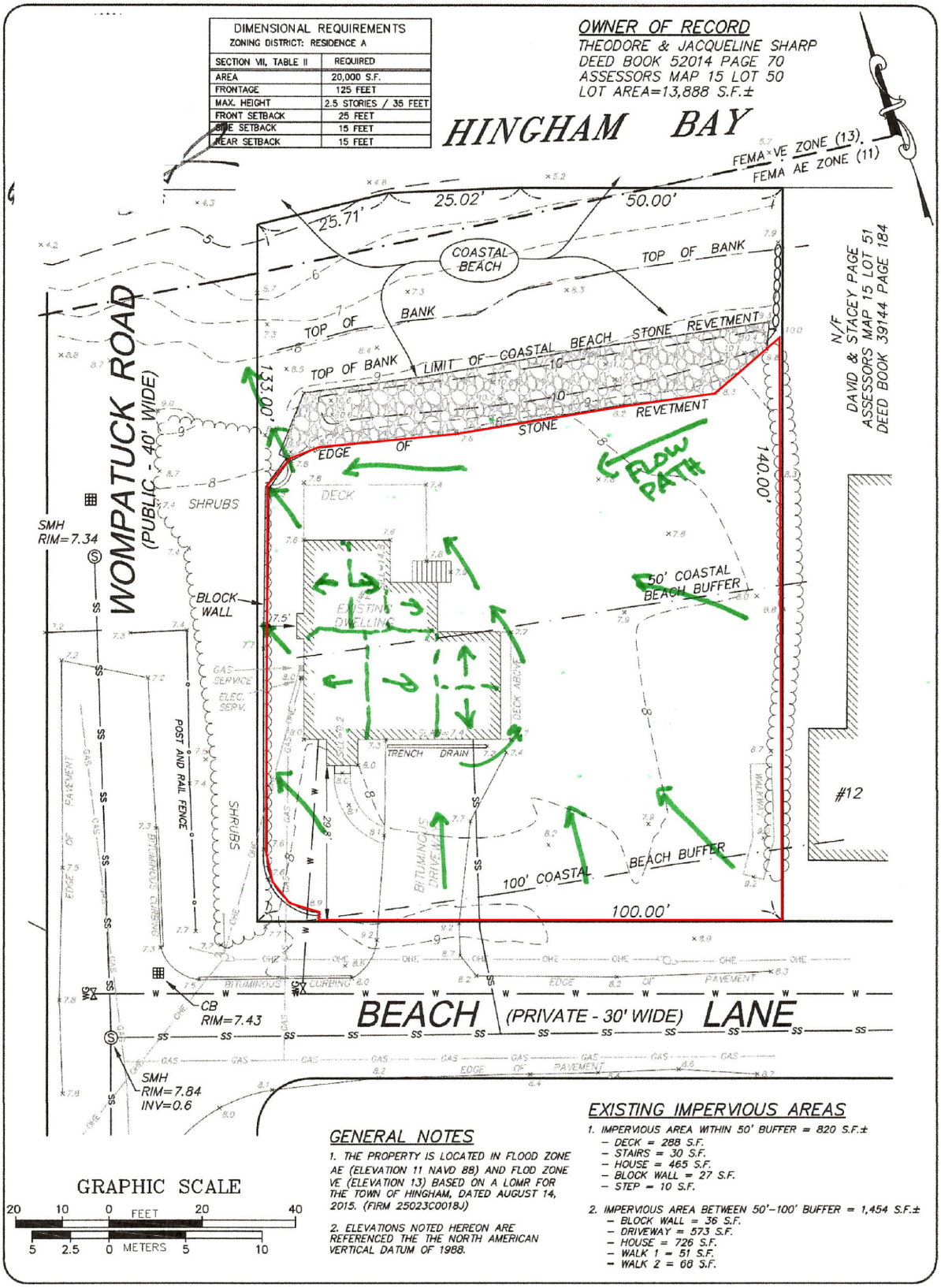

**Hardy + Man Design Group, PC**
1285 Washington Street, Weymouth, MA
781-335-1464


| Project Name | Prepared for |
|---|---|
| 2 BEACH LANE<br>HINGHAM, MASSACHUSETTS<br>PLYMOUTH COUNTY | SHARP REAL ESTATE<br>& DEVELOPMENT |

| Scale | Date | Fig. No. |
|---|---|---|
| 1"=20' | FEBRUARY 7, 2020 | 1 |
| | File No. | |

| DIMENSIONAL REQUIREMENTS<br>ZONING DISTRICT: RESIDENCE A | |
|---|---|
| SECTION VII, TABLE II | REQUIRED |
| AREA | 20,000 S.F. |
| FRONTAGE | 125 FEET |
| MAX. HEIGHT | 2.5 STORIES / 35 FEET |
| FRONT SETBACK | 25 FEET |
| SIDE SETBACK | 15 FEET |
| REAR SETBACK | 15 FEET |

**OWNER OF RECORD**
THEODORE & JACQUELINE SHARP
DEED BOOK 52014 PAGE 70
ASSESSORS MAP 15 LOT 50
LOT AREA=13,888 S.F.±




## GENERAL NOTES

1. THE PROPERTY IS LOCATED IN FLOOD ZONE AE (ELEVATION 11 NAVD 88) AND FLOOD ZONE VE (ELEVATION 13) BASED ON A LOMR FOR THE TOWN OF HINGHAM, DATED AUGUST 14, 2015. (FIRM 25023C0018J)

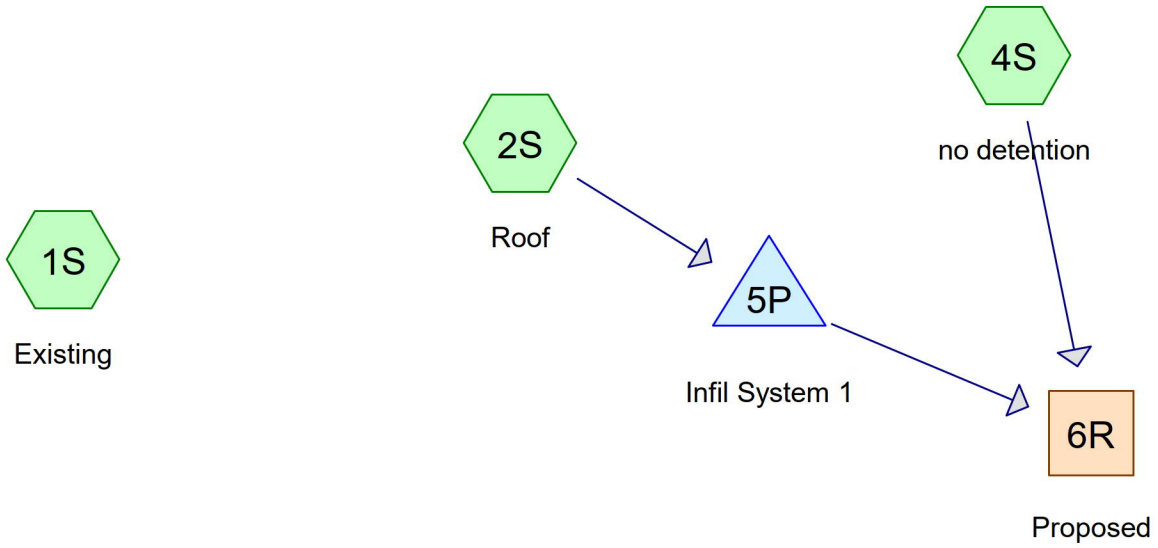
2. ELEVATIONS NOTED HEREON ARE REFERENCED THE THE NORTH AMERICAN VERTICAL DATUM OF 1988.

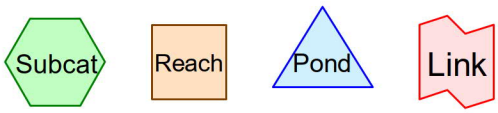
## EXISTING IMPERVIOUS AREAS

1. IMPERVIOUS AREA WITHIN 50' BUFFER = 820 S.F.±
   - DECK = 288 S.F.
   - STAIRS = 30 S.F.
   - HOUSE = 465 S.F.
   - BLOCK WALL = 27 S.F.
   - STEP = 10 S.F.
2. IMPERVIOUS AREA BETWEEN 50'-100' BUFFER = 1,454 S.F.±
   - BLOCK WALL = 36 S.F.
   - DRIVEWAY = 573 S.F.
   - HOUSE = 726 S.F.
   - WALK 1 = 51 S.F.
   - WALK 2 = 68 S.F.

GRAPHIC SCALE
20 10 0 FEET 20 40
5 2.5 0 METERS 5 10

| | | | |
|---|---|---|---|
| **EXISTING CONDITIONS DRAINAGE MAP** | Project Name<br>2 BEACH LANE<br>HINGHAM, MASSACHUSETTS<br>PLYMOUTH COUNTY | Prepared for<br>SHARP REAL ESTATE & DEVELOPMENT | |
| **Hardy + Man Design Group, PC**<br>**1285 Washington Street, Weymouth, MA**<br>**781-335-1464** | Scale<br>1"=20' | Date<br>FEBRUARY 7, 2020 | Fig. No.<br>1 |
| | | File No. | |




**Routing Diagram for 2 Beach Lane 4-8-2020**
Prepared by HP, Printed 4/8/2020
HydroCAD® 10.00-25 s/n 10163 © 2019 HydroCAD Software Solutions LLC

## Area Listing (all nodes)

| Area (acres) | CN | Description (subcatchment-numbers) |
|---|---|---|
| 0.265 | 80 | >75% Grass cover, Good, HSG D (1S, 2S, 4S) |
| 0.018 | 98 | Deck (2S) |
| 0.016 | 98 | Driveway (4S) |
| 0.013 | 98 | Garage (4S) |
| 0.004 | 98 | Other impervious (2S) |
| 0.005 | 98 | Porch (2S) |
| 0.059 | 98 | Roofs, HSG D (2S) |
| 0.052 | 98 | Unconnected pavement, HSG D (1S) |
| **0.431** | **87** | **TOTAL AREA** |

## Soil Listing (all nodes)

| Area (acres) | Soil Group | Subcatchment Numbers |
|---|---|---|
| 0.000 | HSG A | |
| 0.000 | HSG B | |
| 0.000 | HSG C | |
| 0.376 | HSG D | 1S, 2S, 4S |
| 0.056 | Other | 2S, 4S |
| **0.431** | | **TOTAL AREA** |

## Ground Covers (all nodes)

| HSG-A (acres) | HSG-B (acres) | HSG-C (acres) | HSG-D (acres) | Other (acres) | Total (acres) | Ground Cover | Subcatchment Numbers |
|---|---|---|---|---|---|---|---|
| 0.000 | 0.000 | 0.000 | 0.265 | 0.000 | 0.265 | >75% Grass cover, Good | 1S, 2S, 4S |
| 0.000 | 0.000 | 0.000 | 0.000 | 0.018 | 0.018 | Deck | 2S |
| 0.000 | 0.000 | 0.000 | 0.000 | 0.016 | 0.016 | Driveway | 4S |
| 0.000 | 0.000 | 0.000 | 0.000 | 0.013 | 0.013 | Garage | 4S |
| 0.000 | 0.000 | 0.000 | 0.000 | 0.004 | 0.004 | Other impervious | 2S |
| 0.000 | 0.000 | 0.000 | 0.000 | 0.005 | 0.005 | Porch | 2S |
| 0.000 | 0.000 | 0.000 | 0.059 | 0.000 | 0.059 | Roofs | 2S |
| 0.000 | 0.000 | 0.000 | 0.052 | 0.000 | 0.052 | Unconnected pavement | 1S |
| **0.000** | **0.000** | **0.000** | **0.376** | **0.056** | **0.431** | **TOTAL AREA** | |

Time span=0.00-40.00 hrs, dt=0.02 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1S: Existing** Runoff Area=9,394 sf 24.21% Impervious Runoff Depth=1.70"
Tc=5.0 min UI Adjusted CN=82 Runoff=0.44 cfs 0.031 af

**Subcatchment 2S: Roof** Runoff Area=7,297 sf 50.98% Impervious Runoff Depth=2.26"
Tc=5.0 min CN=89 Runoff=0.46 cfs 0.032 af

**Subcatchment 4S: no detention** Runoff Area=2,097 sf 60.61% Impervious Runoff Depth=2.45"
Flow Length=375' Tc=33.5 min CN=91 Runoff=0.07 cfs 0.010 af

**Reach 6R: Proposed** Inflow=0.07 cfs 0.010 af
Outflow=0.07 cfs 0.010 af

**Pond 5P: Infil System 1** Peak Elev=7.49' Storage=341 cf Inflow=0.46 cfs 0.032 af
Outflow=0.10 cfs 0.032 af

**Total Runoff Area = 0.431 ac Runoff Volume = 0.072 af Average Runoff Depth = 2.00"**
**61.33% Pervious = 0.265 ac 38.67% Impervious = 0.167 ac**

## Summary for Subcatchment 1S: Existing

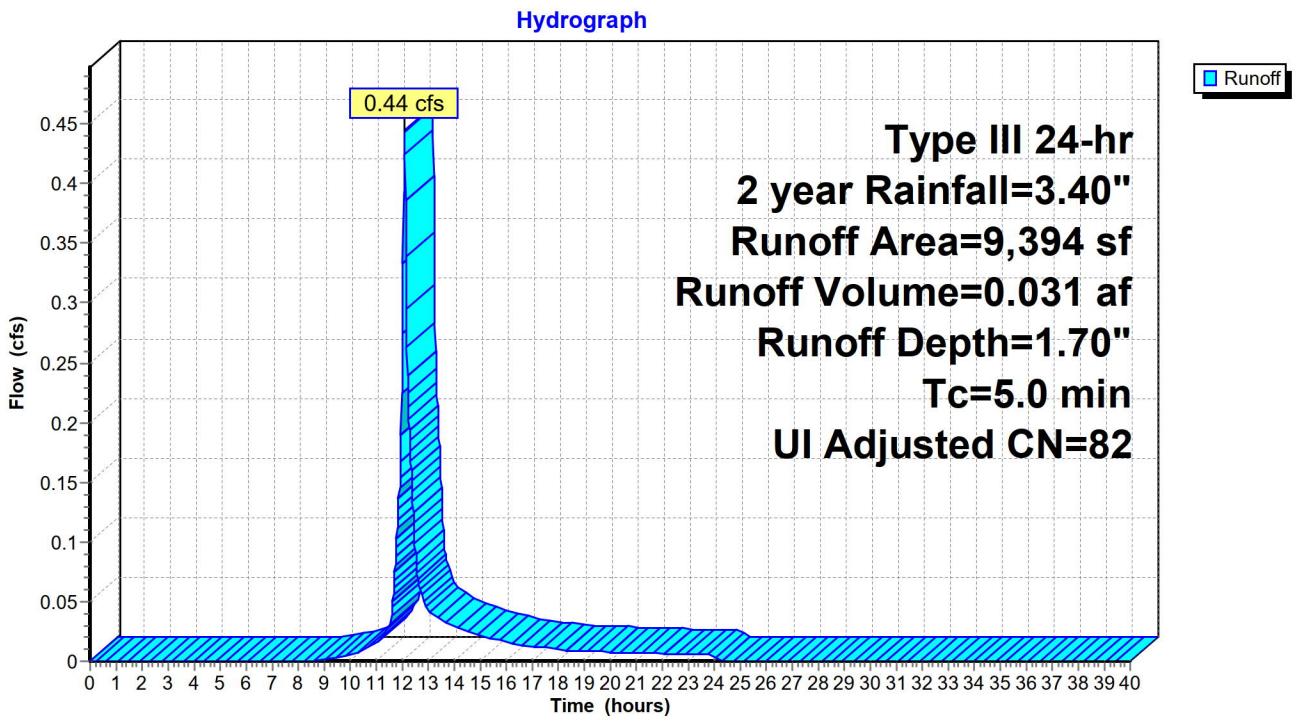
Runoff = 0.44 cfs @ 12.08 hrs, Volume= 0.031 af, Depth= 1.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs
Type III 24-hr 2 year Rainfall=3.40"

| Area (sf) | CN | Adj | Description |
|---|---|---|---|
| 2,274 | 98 | | Unconnected pavement, HSG D |
| 7,120 | 80 | | >75% Grass cover, Good, HSG D |
| 9,394 | 84 | 82 | Weighted Average, UI Adjusted |
| 7,120 | | | 75.79% Pervious Area |
| 2,274 | | | 24.21% Impervious Area |
| 2,274 | | | 100.00% Unconnected |

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

## Subcatchment 1S: Existing



## Hydrograph for Subcatchment 1S: Existing

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 21.20 | 3.30 | 1.62 | 0.01 |
| 0.40 | 0.01 | 0.00 | 0.00 | 21.60 | 3.32 | 1.63 | 0.01 |
| 0.80 | 0.03 | 0.00 | 0.00 | 22.00 | 3.33 | 1.65 | 0.01 |
| 1.20 | 0.04 | 0.00 | 0.00 | 22.40 | 3.35 | 1.66 | 0.01 |
| 1.60 | 0.05 | 0.00 | 0.00 | 22.80 | 3.36 | 1.67 | 0.01 |
| 2.00 | 0.07 | 0.00 | 0.00 | 23.20 | 3.38 | 1.68 | 0.01 |
| 2.40 | 0.08 | 0.00 | 0.00 | 23.60 | 3.39 | 1.69 | 0.01 |
| 2.80 | 0.10 | 0.00 | 0.00 | 24.00 | **3.40** | **1.70** | 0.01 |
| 3.20 | 0.11 | 0.00 | 0.00 | 24.40 | 3.40 | 1.70 | 0.00 |
| 3.60 | 0.13 | 0.00 | 0.00 | 24.80 | 3.40 | 1.70 | 0.00 |
| 4.00 | 0.15 | 0.00 | 0.00 | 25.20 | 3.40 | 1.70 | 0.00 |
| 4.40 | 0.16 | 0.00 | 0.00 | 25.60 | 3.40 | 1.70 | 0.00 |
| 4.80 | 0.18 | 0.00 | 0.00 | 26.00 | 3.40 | 1.70 | 0.00 |
| 5.20 | 0.20 | 0.00 | 0.00 | 26.40 | 3.40 | 1.70 | 0.00 |
| 5.60 | 0.22 | 0.00 | 0.00 | 26.80 | 3.40 | 1.70 | 0.00 |
| 6.00 | 0.24 | 0.00 | 0.00 | 27.20 | 3.40 | 1.70 | 0.00 |
| 6.40 | 0.27 | 0.00 | 0.00 | 27.60 | 3.40 | 1.70 | 0.00 |
| 6.80 | 0.29 | 0.00 | 0.00 | 28.00 | 3.40 | 1.70 | 0.00 |
| 7.20 | 0.32 | 0.00 | 0.00 | 28.40 | 3.40 | 1.70 | 0.00 |
| 7.60 | 0.35 | 0.00 | 0.00 | 28.80 | 3.40 | 1.70 | 0.00 |
| 8.00 | 0.39 | 0.00 | 0.00 | 29.20 | 3.40 | 1.70 | 0.00 |
| 8.40 | 0.43 | 0.00 | 0.00 | 29.60 | 3.40 | 1.70 | 0.00 |
| 8.80 | 0.47 | 0.00 | 0.00 | 30.00 | 3.40 | 1.70 | 0.00 |
| 9.20 | 0.52 | 0.00 | 0.00 | 30.40 | 3.40 | 1.70 | 0.00 |
| 9.60 | 0.58 | 0.01 | 0.00 | 30.80 | 3.40 | 1.70 | 0.00 |
| 10.00 | 0.64 | 0.02 | 0.01 | 31.20 | 3.40 | 1.70 | 0.00 |
| 10.40 | 0.72 | 0.03 | 0.01 | 31.60 | 3.40 | 1.70 | 0.00 |
| 10.80 | 0.80 | 0.05 | 0.01 | 32.00 | 3.40 | 1.70 | 0.00 |
| 11.20 | 0.91 | 0.08 | 0.02 | 32.40 | 3.40 | 1.70 | 0.00 |
| 11.60 | 1.07 | 0.14 | 0.04 | 32.80 | 3.40 | 1.70 | 0.00 |
| 12.00 | 1.70 | 0.46 | **0.27** | 33.20 | 3.40 | 1.70 | 0.00 |
| 12.40 | 2.33 | 0.88 | **0.14** | 33.60 | 3.40 | 1.70 | 0.00 |
| 12.80 | 2.49 | 0.99 | 0.05 | 34.00 | 3.40 | 1.70 | 0.00 |
| 13.20 | 2.60 | 1.07 | 0.04 | 34.40 | 3.40 | 1.70 | 0.00 |
| 13.60 | 2.68 | 1.14 | 0.03 | 34.80 | 3.40 | 1.70 | 0.00 |
| 14.00 | 2.76 | 1.19 | 0.03 | 35.20 | 3.40 | 1.70 | 0.00 |
| 14.40 | 2.82 | 1.24 | 0.03 | 35.60 | 3.40 | 1.70 | 0.00 |
| 14.80 | 2.88 | 1.28 | 0.02 | 36.00 | 3.40 | 1.70 | 0.00 |
| 15.20 | 2.93 | 1.32 | 0.02 | 36.40 | 3.40 | 1.70 | 0.00 |
| 15.60 | 2.97 | 1.36 | 0.02 | 36.80 | 3.40 | 1.70 | 0.00 |
| 16.00 | 3.01 | 1.39 | 0.02 | 37.20 | 3.40 | 1.70 | 0.00 |
| 16.40 | 3.05 | 1.42 | 0.01 | 37.60 | 3.40 | 1.70 | 0.00 |
| 16.80 | 3.08 | 1.44 | 0.01 | 38.00 | 3.40 | 1.70 | 0.00 |
| 17.20 | 3.11 | 1.46 | 0.01 | 38.40 | 3.40 | 1.70 | 0.00 |
| 17.60 | 3.13 | 1.48 | 0.01 | 38.80 | 3.40 | 1.70 | 0.00 |
| 18.00 | 3.16 | 1.50 | 0.01 | 39.20 | 3.40 | 1.70 | 0.00 |
| 18.40 | 3.18 | 1.52 | 0.01 | 39.60 | 3.40 | 1.70 | 0.00 |
| 18.80 | 3.20 | 1.54 | 0.01 | 40.00 | 3.40 | 1.70 | 0.00 |
| 19.20 | 3.22 | 1.55 | 0.01 | | | | |
| 19.60 | 3.24 | 1.57 | 0.01 | | | | |
| 20.00 | 3.25 | 1.58 | 0.01 | | | | |
| 20.40 | 3.27 | 1.60 | 0.01 | | | | |
| 20.80 | 3.29 | 1.61 | 0.01 | | | | |

## Summary for Subcatchment 2S: Roof

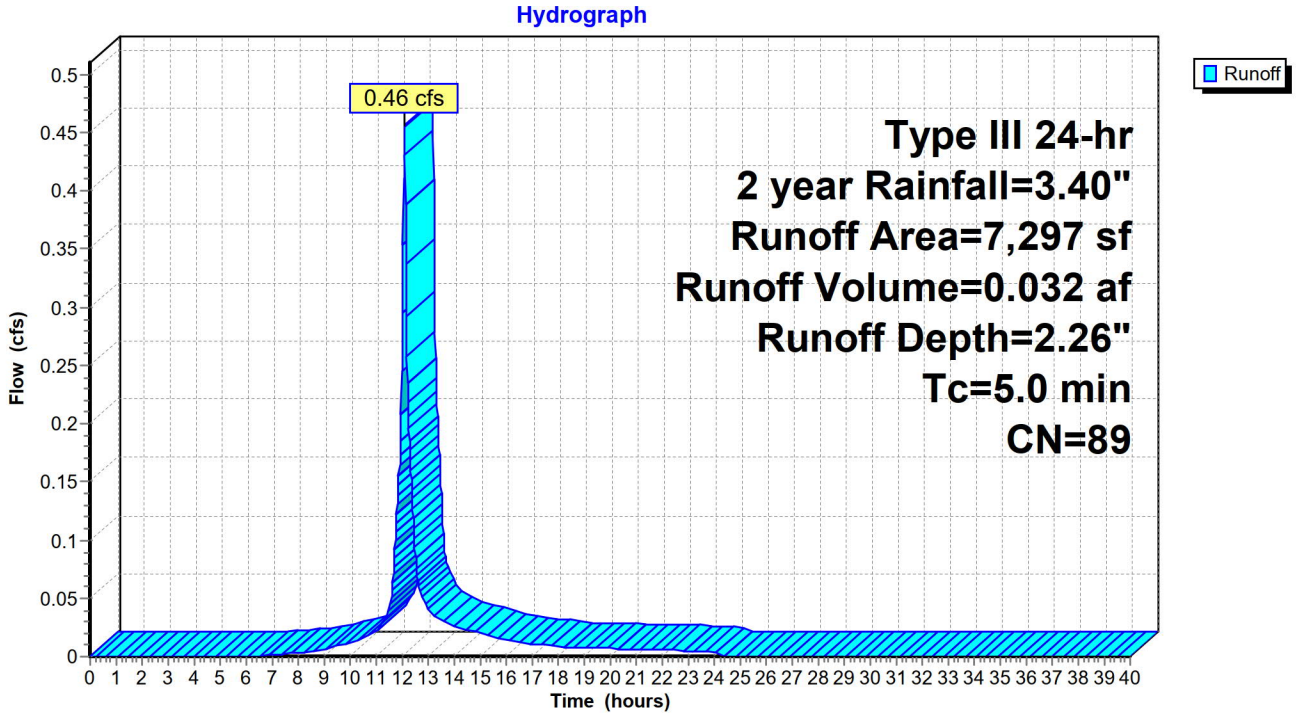
Runoff = 0.46 cfs @ 12.07 hrs, Volume= 0.032 af, Depth= 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs
Type III 24-hr 2 year Rainfall=3.40"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 2,570 | 98 | Roofs, HSG D |
| * | 772 | 98 | Deck |
| * | 215 | 98 | Porch |
| * | 163 | 98 | Other impervious |
| | 3,577 | 80 | >75% Grass cover, Good, HSG D |
| | 7,297 | 89 | Weighted Average |
| | 3,577 | | 49.02% Pervious Area |
| | 3,720 | | 50.98% Impervious Area |

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

### Subcatchment 2S: Roof



## Hydrograph for Subcatchment 2S: Roof

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 21.20 | 3.30 | 2.18 | 0.01 |
| 0.40 | 0.01 | 0.00 | 0.00 | 21.60 | 3.32 | 2.19 | 0.01 |
| 0.80 | 0.03 | 0.00 | 0.00 | 22.00 | 3.33 | 2.20 | 0.01 |
| 1.20 | 0.04 | 0.00 | 0.00 | 22.40 | 3.35 | 2.22 | 0.01 |
| 1.60 | 0.05 | 0.00 | 0.00 | 22.80 | 3.36 | 2.23 | 0.01 |
| 2.00 | 0.07 | 0.00 | 0.00 | 23.20 | 3.38 | 2.24 | 0.01 |
| 2.40 | 0.08 | 0.00 | 0.00 | 23.60 | 3.39 | 2.25 | 0.00 |
| 2.80 | 0.10 | 0.00 | 0.00 | 24.00 | **3.40** | **2.26** | 0.00 |
| 3.20 | 0.11 | 0.00 | 0.00 | 24.40 | 3.40 | 2.26 | 0.00 |
| 3.60 | 0.13 | 0.00 | 0.00 | 24.80 | 3.40 | 2.26 | 0.00 |
| 4.00 | 0.15 | 0.00 | 0.00 | 25.20 | 3.40 | 2.26 | 0.00 |
| 4.40 | 0.16 | 0.00 | 0.00 | 25.60 | 3.40 | 2.26 | 0.00 |
| 4.80 | 0.18 | 0.00 | 0.00 | 26.00 | 3.40 | 2.26 | 0.00 |
| 5.20 | 0.20 | 0.00 | 0.00 | 26.40 | 3.40 | 2.26 | 0.00 |
| 5.60 | 0.22 | 0.00 | 0.00 | 26.80 | 3.40 | 2.26 | 0.00 |
| 6.00 | 0.24 | 0.00 | 0.00 | 27.20 | 3.40 | 2.26 | 0.00 |
| 6.40 | 0.27 | 0.00 | 0.00 | 27.60 | 3.40 | 2.26 | 0.00 |
| 6.80 | 0.29 | 0.00 | 0.00 | 28.00 | 3.40 | 2.26 | 0.00 |
| 7.20 | 0.32 | 0.00 | 0.00 | 28.40 | 3.40 | 2.26 | 0.00 |
| 7.60 | 0.35 | 0.01 | 0.00 | 28.80 | 3.40 | 2.26 | 0.00 |
| 8.00 | 0.39 | 0.01 | 0.00 | 29.20 | 3.40 | 2.26 | 0.00 |
| 8.40 | 0.43 | 0.02 | 0.00 | 29.60 | 3.40 | 2.26 | 0.00 |
| 8.80 | 0.47 | 0.03 | 0.01 | 30.00 | 3.40 | 2.26 | 0.00 |
| 9.20 | 0.52 | 0.05 | 0.01 | 30.40 | 3.40 | 2.26 | 0.00 |
| 9.60 | 0.58 | 0.07 | 0.01 | 30.80 | 3.40 | 2.26 | 0.00 |
| 10.00 | 0.64 | 0.10 | 0.01 | 31.20 | 3.40 | 2.26 | 0.00 |
| 10.40 | 0.72 | 0.13 | 0.02 | 31.60 | 3.40 | 2.26 | 0.00 |
| 10.80 | 0.80 | 0.17 | 0.02 | 32.00 | 3.40 | 2.26 | 0.00 |
| 11.20 | 0.91 | 0.23 | 0.03 | 32.40 | 3.40 | 2.26 | 0.00 |
| 11.60 | 1.07 | 0.33 | 0.05 | 32.80 | 3.40 | 2.26 | 0.00 |
| 12.00 | 1.70 | 0.78 | **0.30** | 33.20 | 3.40 | 2.26 | 0.00 |
| 12.40 | 2.33 | 1.31 | **0.14** | 33.60 | 3.40 | 2.26 | 0.00 |
| 12.80 | 2.49 | 1.45 | 0.05 | 34.00 | 3.40 | 2.26 | 0.00 |
| 13.20 | 2.60 | 1.54 | 0.04 | 34.40 | 3.40 | 2.26 | 0.00 |
| 13.60 | 2.68 | 1.62 | 0.03 | 34.80 | 3.40 | 2.26 | 0.00 |
| 14.00 | 2.76 | 1.68 | 0.03 | 35.20 | 3.40 | 2.26 | 0.00 |
| 14.40 | 2.82 | 1.74 | 0.02 | 35.60 | 3.40 | 2.26 | 0.00 |
| 14.80 | 2.88 | 1.79 | 0.02 | 36.00 | 3.40 | 2.26 | 0.00 |
| 15.20 | 2.93 | 1.84 | 0.02 | 36.40 | 3.40 | 2.26 | 0.00 |
| 15.60 | 2.97 | 1.88 | 0.02 | 36.80 | 3.40 | 2.26 | 0.00 |
| 16.00 | 3.01 | 1.91 | 0.01 | 37.20 | 3.40 | 2.26 | 0.00 |
| 16.40 | 3.05 | 1.94 | 0.01 | 37.60 | 3.40 | 2.26 | 0.00 |
| 16.80 | 3.08 | 1.97 | 0.01 | 38.00 | 3.40 | 2.26 | 0.00 |
| 17.20 | 3.11 | 2.00 | 0.01 | 38.40 | 3.40 | 2.26 | 0.00 |
| 17.60 | 3.13 | 2.02 | 0.01 | 38.80 | 3.40 | 2.26 | 0.00 |
| 18.00 | 3.16 | 2.04 | 0.01 | 39.20 | 3.40 | 2.26 | 0.00 |
| 18.40 | 3.18 | 2.06 | 0.01 | 39.60 | 3.40 | 2.26 | 0.00 |
| 18.80 | 3.20 | 2.08 | 0.01 | 40.00 | 3.40 | 2.26 | 0.00 |
| 19.20 | 3.22 | 2.10 | 0.01 | | | | |
| 19.60 | 3.24 | 2.11 | 0.01 | | | | |
| 20.00 | 3.25 | 2.13 | 0.01 | | | | |
| 20.40 | 3.27 | 2.15 | 0.01 | | | | |
| 20.80 | 3.29 | 2.16 | 0.01 | | | | |

## Summary for Subcatchment 4S: no detention

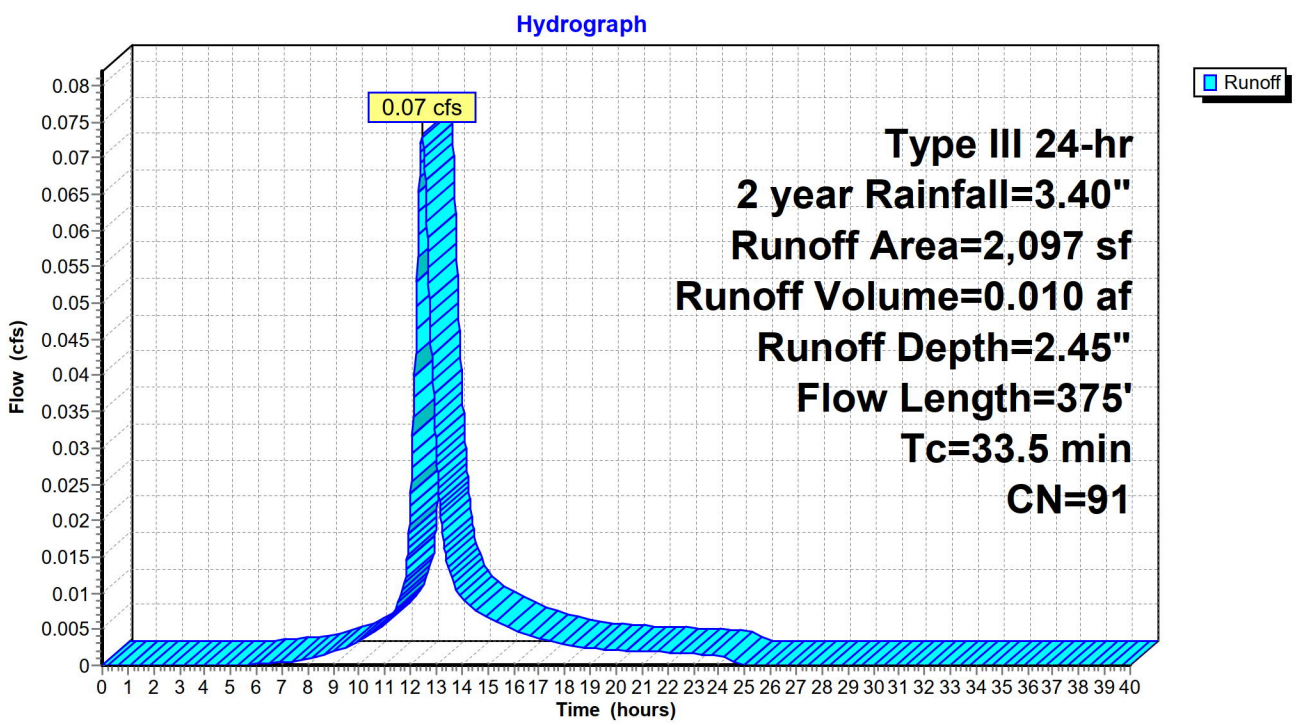
Runoff = 0.07 cfs @ 12.46 hrs, Volume= 0.010 af, Depth= 2.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs
Type III 24-hr 2 year Rainfall=3.40"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 707 | 98 | Driveway |
| | 826 | 80 | >75% Grass cover, Good, HSG D |
| * | 564 | 98 | Garage |
| | 2,097 | 91 | Weighted Average |
| | 826 | | 39.39% Pervious Area |
| | 1,271 | | 60.61% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 33.0 | 300 | 0.0600 | 0.15 | | **Sheet Flow,** Grass: Bermuda n= 0.410 P2= 3.40" |
| 0.5 | 75 | 0.0260 | 2.42 | | **Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps |
| 33.5 | 375 | Total | | | |

## Subcatchment 4S: no detention



## Hydrograph for Subcatchment 4S: no detention

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 21.20 | 3.30 | 2.36 | 0.00 |
| 0.40 | 0.01 | 0.00 | 0.00 | 21.60 | 3.32 | 2.37 | 0.00 |
| 0.80 | 0.03 | 0.00 | 0.00 | 22.00 | 3.33 | 2.38 | 0.00 |
| 1.20 | 0.04 | 0.00 | 0.00 | 22.40 | 3.35 | 2.40 | 0.00 |
| 1.60 | 0.05 | 0.00 | 0.00 | 22.80 | 3.36 | 2.41 | 0.00 |
| 2.00 | 0.07 | 0.00 | 0.00 | 23.20 | 3.38 | 2.42 | 0.00 |
| 2.40 | 0.08 | 0.00 | 0.00 | 23.60 | 3.39 | 2.44 | 0.00 |
| 2.80 | 0.10 | 0.00 | 0.00 | 24.00 | **3.40** | **2.45** | 0.00 |
| 3.20 | 0.11 | 0.00 | 0.00 | 24.40 | 3.40 | 2.45 | 0.00 |
| 3.60 | 0.13 | 0.00 | 0.00 | 24.80 | 3.40 | 2.45 | 0.00 |
| 4.00 | 0.15 | 0.00 | 0.00 | 25.20 | 3.40 | 2.45 | 0.00 |
| 4.40 | 0.16 | 0.00 | 0.00 | 25.60 | 3.40 | 2.45 | 0.00 |
| 4.80 | 0.18 | 0.00 | 0.00 | 26.00 | 3.40 | 2.45 | 0.00 |
| 5.20 | 0.20 | 0.00 | 0.00 | 26.40 | 3.40 | 2.45 | 0.00 |
| 5.60 | 0.22 | 0.00 | 0.00 | 26.80 | 3.40 | 2.45 | 0.00 |
| 6.00 | 0.24 | 0.00 | 0.00 | 27.20 | 3.40 | 2.45 | 0.00 |
| 6.40 | 0.27 | 0.00 | 0.00 | 27.60 | 3.40 | 2.45 | 0.00 |
| 6.80 | 0.29 | 0.01 | 0.00 | 28.00 | 3.40 | 2.45 | 0.00 |
| 7.20 | 0.32 | 0.01 | 0.00 | 28.40 | 3.40 | 2.45 | 0.00 |
| 7.60 | 0.35 | 0.02 | 0.00 | 28.80 | 3.40 | 2.45 | 0.00 |
| 8.00 | 0.39 | 0.03 | 0.00 | 29.20 | 3.40 | 2.45 | 0.00 |
| 8.40 | 0.43 | 0.04 | 0.00 | 29.60 | 3.40 | 2.45 | 0.00 |
| 8.80 | 0.47 | 0.06 | 0.00 | 30.00 | 3.40 | 2.45 | 0.00 |
| 9.20 | 0.52 | 0.08 | 0.00 | 30.40 | 3.40 | 2.45 | 0.00 |
| 9.60 | 0.58 | 0.11 | 0.00 | 30.80 | 3.40 | 2.45 | 0.00 |
| 10.00 | 0.64 | 0.14 | 0.00 | 31.20 | 3.40 | 2.45 | 0.00 |
| 10.40 | 0.72 | 0.18 | 0.00 | 31.60 | 3.40 | 2.45 | 0.00 |
| 10.80 | 0.80 | 0.23 | 0.01 | 32.00 | 3.40 | 2.45 | 0.00 |
| 11.20 | 0.91 | 0.30 | 0.01 | 32.40 | 3.40 | 2.45 | 0.00 |
| 11.60 | 1.07 | 0.41 | 0.01 | 32.80 | 3.40 | 2.45 | 0.00 |
| 12.00 | 1.70 | 0.91 | 0.02 | 33.20 | 3.40 | 2.45 | 0.00 |
| 12.40 | 2.33 | 1.46 | **0.07** | 33.60 | 3.40 | 2.45 | 0.00 |
| 12.80 | 2.49 | 1.61 | **0.04** | 34.00 | 3.40 | 2.45 | 0.00 |
| 13.20 | 2.60 | 1.70 | 0.02 | 34.40 | 3.40 | 2.45 | 0.00 |
| 13.60 | 2.68 | 1.78 | 0.01 | 34.80 | 3.40 | 2.45 | 0.00 |
| 14.00 | 2.76 | 1.85 | 0.01 | 35.20 | 3.40 | 2.45 | 0.00 |
| 14.40 | 2.82 | 1.90 | 0.01 | 35.60 | 3.40 | 2.45 | 0.00 |
| 14.80 | 2.88 | 1.96 | 0.01 | 36.00 | 3.40 | 2.45 | 0.00 |
| 15.20 | 2.93 | 2.01 | 0.01 | 36.40 | 3.40 | 2.45 | 0.00 |
| 15.60 | 2.97 | 2.05 | 0.01 | 36.80 | 3.40 | 2.45 | 0.00 |
| 16.00 | 3.01 | 2.08 | 0.00 | 37.20 | 3.40 | 2.45 | 0.00 |
| 16.40 | 3.05 | 2.11 | 0.00 | 37.60 | 3.40 | 2.45 | 0.00 |
| 16.80 | 3.08 | 2.14 | 0.00 | 38.00 | 3.40 | 2.45 | 0.00 |
| 17.20 | 3.11 | 2.17 | 0.00 | 38.40 | 3.40 | 2.45 | 0.00 |
| 17.60 | 3.13 | 2.19 | 0.00 | 38.80 | 3.40 | 2.45 | 0.00 |
| 18.00 | 3.16 | 2.22 | 0.00 | 39.20 | 3.40 | 2.45 | 0.00 |
| 18.40 | 3.18 | 2.24 | 0.00 | 39.60 | 3.40 | 2.45 | 0.00 |
| 18.80 | 3.20 | 2.26 | 0.00 | 40.00 | 3.40 | 2.45 | 0.00 |
| 19.20 | 3.22 | 2.27 | 0.00 | | | | |
| 19.60 | 3.24 | 2.29 | 0.00 | | | | |
| 20.00 | 3.25 | 2.31 | 0.00 | | | | |
| 20.40 | 3.27 | 2.33 | 0.00 | | | | |
| 20.80 | 3.29 | 2.34 | 0.00 | | | | |

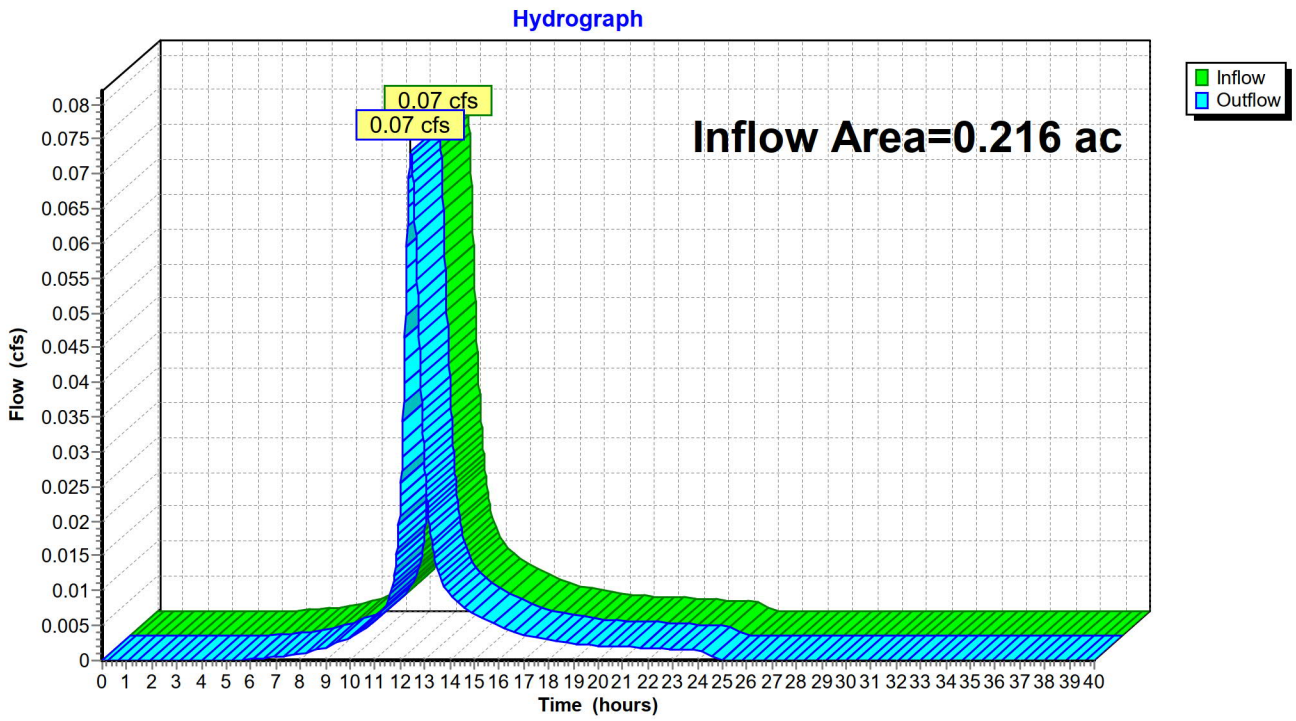
## Summary for Reach 6R: Proposed

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

Inflow Area = 0.216 ac, 53.13% Impervious, Inflow Depth = 0.55" for 2 year event
Inflow = 0.07 cfs @ 12.46 hrs, Volume= 0.010 af
Outflow = 0.07 cfs @ 12.46 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs

### Reach 6R: Proposed



## Hydrograph for Reach 6R: Proposed

| Time (hours) | Inflow (cfs) | Elevation (feet) | Outflow (cfs) | Time (hours) | Inflow (cfs) | Elevation (feet) | Outflow (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | | 0.00 | 21.20 | 0.00 | | 0.00 |
| 0.40 | 0.00 | | 0.00 | 21.60 | 0.00 | | 0.00 |
| 0.80 | 0.00 | | 0.00 | 22.00 | 0.00 | | 0.00 |
| 1.20 | 0.00 | | 0.00 | 22.40 | 0.00 | | 0.00 |
| 1.60 | 0.00 | | 0.00 | 22.80 | 0.00 | | 0.00 |
| 2.00 | 0.00 | | 0.00 | 23.20 | 0.00 | | 0.00 |
| 2.40 | 0.00 | | 0.00 | 23.60 | 0.00 | | 0.00 |
| 2.80 | 0.00 | | 0.00 | 24.00 | 0.00 | | 0.00 |
| 3.20 | 0.00 | | 0.00 | 24.40 | 0.00 | | 0.00 |
| 3.60 | 0.00 | | 0.00 | 24.80 | 0.00 | | 0.00 |
| 4.00 | 0.00 | | 0.00 | 25.20 | 0.00 | | 0.00 |
| 4.40 | 0.00 | | 0.00 | 25.60 | 0.00 | | 0.00 |
| 4.80 | 0.00 | | 0.00 | 26.00 | 0.00 | | 0.00 |
| 5.20 | 0.00 | | 0.00 | 26.40 | 0.00 | | 0.00 |
| 5.60 | 0.00 | | 0.00 | 26.80 | 0.00 | | 0.00 |
| 6.00 | 0.00 | | 0.00 | 27.20 | 0.00 | | 0.00 |
| 6.40 | 0.00 | | 0.00 | 27.60 | 0.00 | | 0.00 |
| 6.80 | 0.00 | | 0.00 | 28.00 | 0.00 | | 0.00 |
| 7.20 | 0.00 | | 0.00 | 28.40 | 0.00 | | 0.00 |
| 7.60 | 0.00 | | 0.00 | 28.80 | 0.00 | | 0.00 |
| 8.00 | 0.00 | | 0.00 | 29.20 | 0.00 | | 0.00 |
| 8.40 | 0.00 | | 0.00 | 29.60 | 0.00 | | 0.00 |
| 8.80 | 0.00 | | 0.00 | 30.00 | 0.00 | | 0.00 |
| 9.20 | 0.00 | | 0.00 | 30.40 | 0.00 | | 0.00 |
| 9.60 | 0.00 | | 0.00 | 30.80 | 0.00 | | 0.00 |
| 10.00 | 0.00 | | 0.00 | 31.20 | 0.00 | | 0.00 |
| 10.40 | 0.00 | | 0.00 | 31.60 | 0.00 | | 0.00 |
| 10.80 | 0.01 | | 0.01 | 32.00 | 0.00 | | 0.00 |
| 11.20 | 0.01 | | 0.01 | 32.40 | 0.00 | | 0.00 |
| 11.60 | 0.01 | | 0.01 | 32.80 | 0.00 | | 0.00 |
| 12.00 | 0.02 | | 0.02 | 33.20 | 0.00 | | 0.00 |
| 12.40 | **0.07** | | **0.07** | 33.60 | 0.00 | | 0.00 |
| 12.80 | **0.04** | | **0.04** | 34.00 | 0.00 | | 0.00 |
| 13.20 | 0.02 | | 0.02 | 34.40 | 0.00 | | 0.00 |
| 13.60 | 0.01 | | 0.01 | 34.80 | 0.00 | | 0.00 |
| 14.00 | 0.01 | | 0.01 | 35.20 | 0.00 | | 0.00 |
| 14.40 | 0.01 | | 0.01 | 35.60 | 0.00 | | 0.00 |
| 14.80 | 0.01 | | 0.01 | 36.00 | 0.00 | | 0.00 |
| 15.20 | 0.01 | | 0.01 | 36.40 | 0.00 | | 0.00 |
| 15.60 | 0.01 | | 0.01 | 36.80 | 0.00 | | 0.00 |
| 16.00 | 0.00 | | 0.00 | 37.20 | 0.00 | | 0.00 |
| 16.40 | 0.00 | | 0.00 | 37.60 | 0.00 | | 0.00 |
| 16.80 | 0.00 | | 0.00 | 38.00 | 0.00 | | 0.00 |
| 17.20 | 0.00 | | 0.00 | 38.40 | 0.00 | | 0.00 |
| 17.60 | 0.00 | | 0.00 | 38.80 | 0.00 | | 0.00 |
| 18.00 | 0.00 | | 0.00 | 39.20 | 0.00 | | 0.00 |
| 18.40 | 0.00 | | 0.00 | 39.60 | 0.00 | | 0.00 |
| 18.80 | 0.00 | | 0.00 | 40.00 | 0.00 | | 0.00 |
| 19.20 | 0.00 | | 0.00 | | | | |
| 19.60 | 0.00 | | 0.00 | | | | |
| 20.00 | 0.00 | | 0.00 | | | | |
| 20.40 | 0.00 | | 0.00 | | | | |
| 20.80 | 0.00 | | 0.00 | | | | |

## Summary for Pond 5P: Infil System 1

Inflow Area = 0.168 ac, 50.98% Impervious, Inflow Depth = 2.26" for 2 year event
Inflow = 0.46 cfs @ 12.07 hrs, Volume= 0.032 af
Outflow = 0.10 cfs @ 12.49 hrs, Volume= 0.032 af, Atten= 78%, Lag= 24.8 min
Discarded = 0.10 cfs @ 12.49 hrs, Volume= 0.032 af

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs
Peak Elev= 7.49' @ 12.49 hrs Surf.Area= 3,557 sf Storage= 341 cf

Plug-Flow detention time= 20.9 min calculated for 0.032 af (100% of inflow)
Center-of-Mass det. time= 20.9 min ( 828.6 - 807.8 )

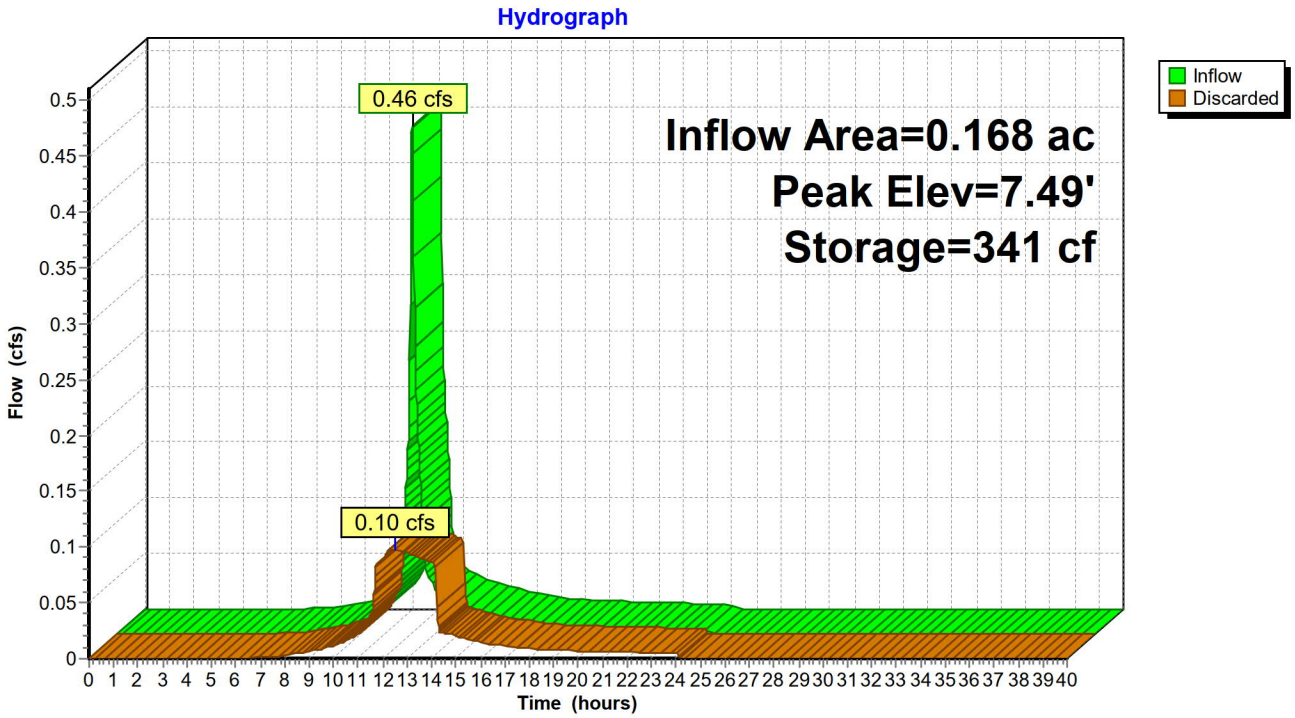
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 7.17' | 886 cf | **Custom Stage Data (Conic)** Listed below (Recalc)<br>2,952 cf Overall x 30.0% Voids |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|
| 7.17 | 3,557 | 0 | 0 | 3,557 |
| 8.00 | 3,557 | 2,952 | 2,952 | 3,732 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 7.17' | **1.020 in/hr Exfiltration over Wetted area**<br>Conductivity to Groundwater Elevation = 5.00' |

**Discarded OutFlow** Max=0.10 cfs @ 12.49 hrs HW=7.49' (Free Discharge)
↑—**1=Exfiltration** ( Controls 0.10 cfs)

## Pond 5P: Infil System 1



## Hydrograph for Pond 5P: Infil System 1

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Discarded (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 7.17 | 0.00 |
| 1.00 | 0.00 | 0 | 7.17 | 0.00 |
| 2.00 | 0.00 | 0 | 7.17 | 0.00 |
| 3.00 | 0.00 | 0 | 7.17 | 0.00 |
| 4.00 | 0.00 | 0 | 7.17 | 0.00 |
| 5.00 | 0.00 | 0 | 7.17 | 0.00 |
| 6.00 | 0.00 | 0 | 7.17 | 0.00 |
| 7.00 | 0.00 | 0 | 7.17 | 0.00 |
| 8.00 | 0.00 | 0 | 7.17 | 0.00 |
| 9.00 | 0.01 | 1 | 7.17 | 0.01 |
| 10.00 | 0.01 | 1 | 7.17 | 0.01 |
| 11.00 | 0.02 | 2 | 7.17 | 0.02 |
| 12.00 | **0.30** | **80** | **7.24** | **0.09** |
| 13.00 | **0.04** | **265** | **7.42** | **0.09** |
| 14.00 | 0.03 | 54 | 7.22 | 0.09 |
| 15.00 | 0.02 | 2 | 7.17 | 0.02 |
| 16.00 | 0.01 | 1 | 7.17 | 0.01 |
| 17.00 | 0.01 | 1 | 7.17 | 0.01 |
| 18.00 | 0.01 | 1 | 7.17 | 0.01 |
| 19.00 | 0.01 | 1 | 7.17 | 0.01 |
| 20.00 | 0.01 | 1 | 7.17 | 0.01 |
| 21.00 | 0.01 | 1 | 7.17 | 0.01 |
| 22.00 | 0.01 | 1 | 7.17 | 0.01 |
| 23.00 | 0.01 | 1 | 7.17 | 0.01 |
| 24.00 | 0.00 | 0 | 7.17 | 0.00 |
| 25.00 | 0.00 | 0 | 7.17 | 0.00 |
| 26.00 | 0.00 | 0 | 7.17 | 0.00 |
| 27.00 | 0.00 | 0 | 7.17 | 0.00 |
| 28.00 | 0.00 | 0 | 7.17 | 0.00 |
| 29.00 | 0.00 | 0 | 7.17 | 0.00 |
| 30.00 | 0.00 | 0 | 7.17 | 0.00 |
| 31.00 | 0.00 | 0 | 7.17 | 0.00 |
| 32.00 | 0.00 | 0 | 7.17 | 0.00 |
| 33.00 | 0.00 | 0 | 7.17 | 0.00 |
| 34.00 | 0.00 | 0 | 7.17 | 0.00 |
| 35.00 | 0.00 | 0 | 7.17 | 0.00 |
| 36.00 | 0.00 | 0 | 7.17 | 0.00 |
| 37.00 | 0.00 | 0 | 7.17 | 0.00 |
| 38.00 | 0.00 | 0 | 7.17 | 0.00 |
| 39.00 | 0.00 | 0 | 7.17 | 0.00 |
| 40.00 | 0.00 | 0 | 7.17 | 0.00 |

Time span=0.00-40.00 hrs, dt=0.02 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1S: Existing** Runoff Area=9,394 sf 24.21% Impervious Runoff Depth=2.81"
Tc=5.0 min UI Adjusted CN=82 Runoff=0.73 cfs 0.051 af

**Subcatchment 2S: Roof** Runoff Area=7,297 sf 50.98% Impervious Runoff Depth=3.49"
Tc=5.0 min CN=89 Runoff=0.69 cfs 0.049 af

**Subcatchment 4S: no detention** Runoff Area=2,097 sf 60.61% Impervious Runoff Depth=3.69"
Flow Length=375' Tc=33.5 min CN=91 Runoff=0.11 cfs 0.015 af

**Reach 6R: Proposed** Inflow=0.11 cfs 0.015 af
Outflow=0.11 cfs 0.015 af

**Pond 5P: Infil System 1** Peak Elev=7.77' Storage=640 cf Inflow=0.69 cfs 0.049 af
Outflow=0.11 cfs 0.049 af

**Total Runoff Area = 0.431 ac Runoff Volume = 0.114 af Average Runoff Depth = 3.17"**
**61.33% Pervious = 0.265 ac 38.67% Impervious = 0.167 ac**

## Summary for Subcatchment 1S: Existing

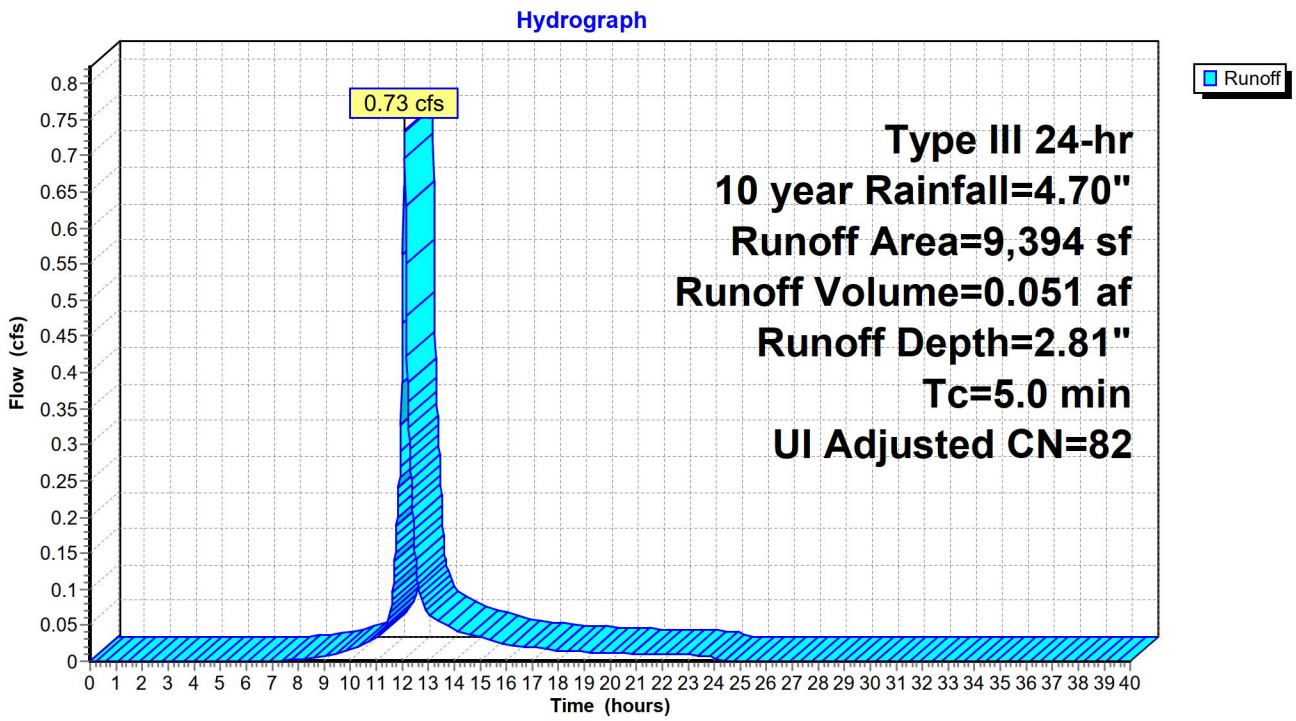
Runoff = 0.73 cfs @ 12.07 hrs, Volume= 0.051 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs
Type III 24-hr 10 year Rainfall=4.70"

| Area (sf) | CN | Adj | Description |
|---|---|---|---|
| 2,274 | 98 | | Unconnected pavement, HSG D |
| 7,120 | 80 | | >75% Grass cover, Good, HSG D |
| 9,394 | 84 | 82 | Weighted Average, UI Adjusted |
| 7,120 | | | 75.79% Pervious Area |
| 2,274 | | | 24.21% Impervious Area |
| 2,274 | | | 100.00% Unconnected |

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

## Subcatchment 1S: Existing



## Hydrograph for Subcatchment 1S: Existing

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 21.20 | 4.57 | 2.70 | 0.01 |
| 0.40 | 0.02 | 0.00 | 0.00 | 21.60 | 4.59 | 2.71 | 0.01 |
| 0.80 | 0.04 | 0.00 | 0.00 | 22.00 | 4.61 | 2.73 | 0.01 |
| 1.20 | 0.06 | 0.00 | 0.00 | 22.40 | 4.63 | 2.75 | 0.01 |
| 1.60 | 0.08 | 0.00 | 0.00 | 22.80 | 4.65 | 2.77 | 0.01 |
| 2.00 | 0.09 | 0.00 | 0.00 | 23.20 | 4.67 | 2.78 | 0.01 |
| 2.40 | 0.11 | 0.00 | 0.00 | 23.60 | 4.68 | 2.80 | 0.01 |
| 2.80 | 0.13 | 0.00 | 0.00 | 24.00 | **4.70** | **2.81** | 0.01 |
| 3.20 | 0.16 | 0.00 | 0.00 | 24.40 | 4.70 | 2.81 | 0.00 |
| 3.60 | 0.18 | 0.00 | 0.00 | 24.80 | 4.70 | 2.81 | 0.00 |
| 4.00 | 0.20 | 0.00 | 0.00 | 25.20 | 4.70 | 2.81 | 0.00 |
| 4.40 | 0.23 | 0.00 | 0.00 | 25.60 | 4.70 | 2.81 | 0.00 |
| 4.80 | 0.25 | 0.00 | 0.00 | 26.00 | 4.70 | 2.81 | 0.00 |
| 5.20 | 0.28 | 0.00 | 0.00 | 26.40 | 4.70 | 2.81 | 0.00 |
| 5.60 | 0.31 | 0.00 | 0.00 | 26.80 | 4.70 | 2.81 | 0.00 |
| 6.00 | 0.34 | 0.00 | 0.00 | 27.20 | 4.70 | 2.81 | 0.00 |
| 6.40 | 0.37 | 0.00 | 0.00 | 27.60 | 4.70 | 2.81 | 0.00 |
| 6.80 | 0.41 | 0.00 | 0.00 | 28.00 | 4.70 | 2.81 | 0.00 |
| 7.20 | 0.45 | 0.00 | 0.00 | 28.40 | 4.70 | 2.81 | 0.00 |
| 7.60 | 0.49 | 0.00 | 0.00 | 28.80 | 4.70 | 2.81 | 0.00 |
| 8.00 | 0.54 | 0.00 | 0.00 | 29.20 | 4.70 | 2.81 | 0.00 |
| 8.40 | 0.59 | 0.01 | 0.00 | 29.60 | 4.70 | 2.81 | 0.00 |
| 8.80 | 0.65 | 0.02 | 0.01 | 30.00 | 4.70 | 2.81 | 0.00 |
| 9.20 | 0.72 | 0.03 | 0.01 | 30.40 | 4.70 | 2.81 | 0.00 |
| 9.60 | 0.80 | 0.05 | 0.01 | 30.80 | 4.70 | 2.81 | 0.00 |
| 10.00 | 0.89 | 0.08 | 0.01 | 31.20 | 4.70 | 2.81 | 0.00 |
| 10.40 | 0.99 | 0.11 | 0.02 | 31.60 | 4.70 | 2.81 | 0.00 |
| 10.80 | 1.11 | 0.16 | 0.03 | 32.00 | 4.70 | 2.81 | 0.00 |
| 11.20 | 1.25 | 0.22 | 0.04 | 32.40 | 4.70 | 2.81 | 0.00 |
| 11.60 | 1.48 | 0.33 | 0.08 | 32.80 | 4.70 | 2.81 | 0.00 |
| 12.00 | 2.35 | 0.89 | **0.47** | 33.20 | 4.70 | 2.81 | 0.00 |
| 12.40 | 3.22 | 1.56 | **0.22** | 33.60 | 4.70 | 2.81 | 0.00 |
| 12.80 | 3.45 | 1.74 | 0.08 | 34.00 | 4.70 | 2.81 | 0.00 |
| 13.20 | 3.59 | 1.86 | 0.06 | 34.40 | 4.70 | 2.81 | 0.00 |
| 13.60 | 3.71 | 1.96 | 0.05 | 34.80 | 4.70 | 2.81 | 0.00 |
| 14.00 | 3.81 | 2.04 | 0.04 | 35.20 | 4.70 | 2.81 | 0.00 |
| 14.40 | 3.90 | 2.12 | 0.04 | 35.60 | 4.70 | 2.81 | 0.00 |
| 14.80 | 3.98 | 2.18 | 0.04 | 36.00 | 4.70 | 2.81 | 0.00 |
| 15.20 | 4.05 | 2.25 | 0.03 | 36.40 | 4.70 | 2.81 | 0.00 |
| 15.60 | 4.11 | 2.30 | 0.03 | 36.80 | 4.70 | 2.81 | 0.00 |
| 16.00 | 4.16 | 2.34 | 0.02 | 37.20 | 4.70 | 2.81 | 0.00 |
| 16.40 | 4.21 | 2.38 | 0.02 | 37.60 | 4.70 | 2.81 | 0.00 |
| 16.80 | 4.25 | 2.42 | 0.02 | 38.00 | 4.70 | 2.81 | 0.00 |
| 17.20 | 4.29 | 2.46 | 0.02 | 38.40 | 4.70 | 2.81 | 0.00 |
| 17.60 | 4.33 | 2.49 | 0.02 | 38.80 | 4.70 | 2.81 | 0.00 |
| 18.00 | 4.36 | 2.52 | 0.01 | 39.20 | 4.70 | 2.81 | 0.00 |
| 18.40 | 4.39 | 2.54 | 0.01 | 39.60 | 4.70 | 2.81 | 0.00 |
| 18.80 | 4.42 | 2.57 | 0.01 | 40.00 | 4.70 | 2.81 | 0.00 |
| 19.20 | 4.45 | 2.59 | 0.01 | | | | |
| 19.60 | 4.47 | 2.61 | 0.01 | | | | |
| 20.00 | 4.50 | 2.63 | 0.01 | | | | |
| 20.40 | 4.52 | 2.66 | 0.01 | | | | |
| 20.80 | 4.55 | 2.68 | 0.01 | | | | |

## Summary for Subcatchment 2S: Roof

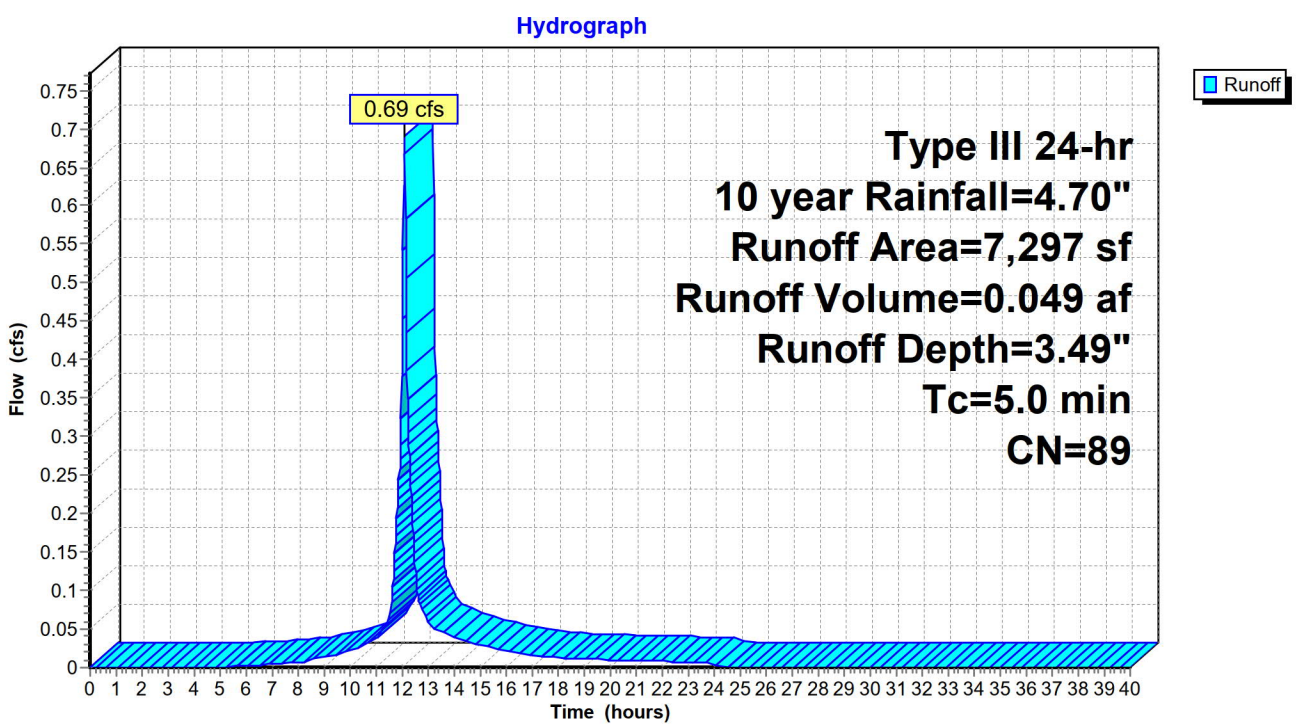
Runoff = 0.69 cfs @ 12.07 hrs, Volume= 0.049 af, Depth= 3.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs
Type III 24-hr 10 year Rainfall=4.70"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 2,570 | 98 | Roofs, HSG D |
| * | 772 | 98 | Deck |
| * | 215 | 98 | Porch |
| * | 163 | 98 | Other impervious |
| | 3,577 | 80 | >75% Grass cover, Good, HSG D |
| | 7,297 | 89 | Weighted Average |
| | 3,577 | | 49.02% Pervious Area |
| | 3,720 | | 50.98% Impervious Area |

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

## Subcatchment 2S: Roof



## Hydrograph for Subcatchment 2S: Roof

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 21.20 | 4.57 | 3.36 | 0.01 |
| 0.40 | 0.02 | 0.00 | 0.00 | 21.60 | 4.59 | 3.38 | 0.01 |
| 0.80 | 0.04 | 0.00 | 0.00 | 22.00 | 4.61 | 3.40 | 0.01 |
| 1.20 | 0.06 | 0.00 | 0.00 | 22.40 | 4.63 | 3.42 | 0.01 |
| 1.60 | 0.08 | 0.00 | 0.00 | 22.80 | 4.65 | 3.44 | 0.01 |
| 2.00 | 0.09 | 0.00 | 0.00 | 23.20 | 4.67 | 3.45 | 0.01 |
| 2.40 | 0.11 | 0.00 | 0.00 | 23.60 | 4.68 | 3.47 | 0.01 |
| 2.80 | 0.13 | 0.00 | 0.00 | 24.00 | **4.70** | **3.49** | 0.01 |
| 3.20 | 0.16 | 0.00 | 0.00 | 24.40 | 4.70 | 3.49 | 0.00 |
| 3.60 | 0.18 | 0.00 | 0.00 | 24.80 | 4.70 | 3.49 | 0.00 |
| 4.00 | 0.20 | 0.00 | 0.00 | 25.20 | 4.70 | 3.49 | 0.00 |
| 4.40 | 0.23 | 0.00 | 0.00 | 25.60 | 4.70 | 3.49 | 0.00 |
| 4.80 | 0.25 | 0.00 | 0.00 | 26.00 | 4.70 | 3.49 | 0.00 |
| 5.20 | 0.28 | 0.00 | 0.00 | 26.40 | 4.70 | 3.49 | 0.00 |
| 5.60 | 0.31 | 0.00 | 0.00 | 26.80 | 4.70 | 3.49 | 0.00 |
| 6.00 | 0.34 | 0.01 | 0.00 | 27.20 | 4.70 | 3.49 | 0.00 |
| 6.40 | 0.37 | 0.01 | 0.00 | 27.60 | 4.70 | 3.49 | 0.00 |
| 6.80 | 0.41 | 0.02 | 0.00 | 28.00 | 4.70 | 3.49 | 0.00 |
| 7.20 | 0.45 | 0.03 | 0.00 | 28.40 | 4.70 | 3.49 | 0.00 |
| 7.60 | 0.49 | 0.04 | 0.01 | 28.80 | 4.70 | 3.49 | 0.00 |
| 8.00 | 0.54 | 0.05 | 0.01 | 29.20 | 4.70 | 3.49 | 0.00 |
| 8.40 | 0.59 | 0.07 | 0.01 | 29.60 | 4.70 | 3.49 | 0.00 |
| 8.80 | 0.65 | 0.10 | 0.01 | 30.00 | 4.70 | 3.49 | 0.00 |
| 9.20 | 0.72 | 0.13 | 0.01 | 30.40 | 4.70 | 3.49 | 0.00 |
| 9.60 | 0.80 | 0.17 | 0.02 | 30.80 | 4.70 | 3.49 | 0.00 |
| 10.00 | 0.89 | 0.22 | 0.02 | 31.20 | 4.70 | 3.49 | 0.00 |
| 10.40 | 0.99 | 0.28 | 0.03 | 31.60 | 4.70 | 3.49 | 0.00 |
| 10.80 | 1.11 | 0.35 | 0.03 | 32.00 | 4.70 | 3.49 | 0.00 |
| 11.20 | 1.25 | 0.45 | 0.05 | 32.40 | 4.70 | 3.49 | 0.00 |
| 11.60 | 1.48 | 0.61 | 0.08 | 32.80 | 4.70 | 3.49 | 0.00 |
| 12.00 | 2.35 | 1.32 | **0.45** | 33.20 | 4.70 | 3.49 | 0.00 |
| 12.40 | 3.22 | 2.10 | **0.20** | 33.60 | 4.70 | 3.49 | 0.00 |
| 12.80 | 3.45 | 2.31 | 0.07 | 34.00 | 4.70 | 3.49 | 0.00 |
| 13.20 | 3.59 | 2.44 | 0.05 | 34.40 | 4.70 | 3.49 | 0.00 |
| 13.60 | 3.71 | 2.55 | 0.04 | 34.80 | 4.70 | 3.49 | 0.00 |
| 14.00 | 3.81 | 2.65 | 0.04 | 35.20 | 4.70 | 3.49 | 0.00 |
| 14.40 | 3.90 | 2.73 | 0.03 | 35.60 | 4.70 | 3.49 | 0.00 |
| 14.80 | 3.98 | 2.80 | 0.03 | 36.00 | 4.70 | 3.49 | 0.00 |
| 15.20 | 4.05 | 2.87 | 0.03 | 36.40 | 4.70 | 3.49 | 0.00 |
| 15.60 | 4.11 | 2.93 | 0.02 | 36.80 | 4.70 | 3.49 | 0.00 |
| 16.00 | 4.16 | 2.98 | 0.02 | 37.20 | 4.70 | 3.49 | 0.00 |
| 16.40 | 4.21 | 3.02 | 0.02 | 37.60 | 4.70 | 3.49 | 0.00 |
| 16.80 | 4.25 | 3.06 | 0.02 | 38.00 | 4.70 | 3.49 | 0.00 |
| 17.20 | 4.29 | 3.10 | 0.02 | 38.40 | 4.70 | 3.49 | 0.00 |
| 17.60 | 4.33 | 3.13 | 0.01 | 38.80 | 4.70 | 3.49 | 0.00 |
| 18.00 | 4.36 | 3.16 | 0.01 | 39.20 | 4.70 | 3.49 | 0.00 |
| 18.40 | 4.39 | 3.19 | 0.01 | 39.60 | 4.70 | 3.49 | 0.00 |
| 18.80 | 4.42 | 3.22 | 0.01 | 40.00 | 4.70 | 3.49 | 0.00 |
| 19.20 | 4.45 | 3.24 | 0.01 | | | | |
| 19.60 | 4.47 | 3.27 | 0.01 | | | | |
| 20.00 | 4.50 | 3.29 | 0.01 | | | | |
| 20.40 | 4.52 | 3.32 | 0.01 | | | | |
| 20.80 | 4.55 | 3.34 | 0.01 | | | | |

## Summary for Subcatchment 4S: no detention

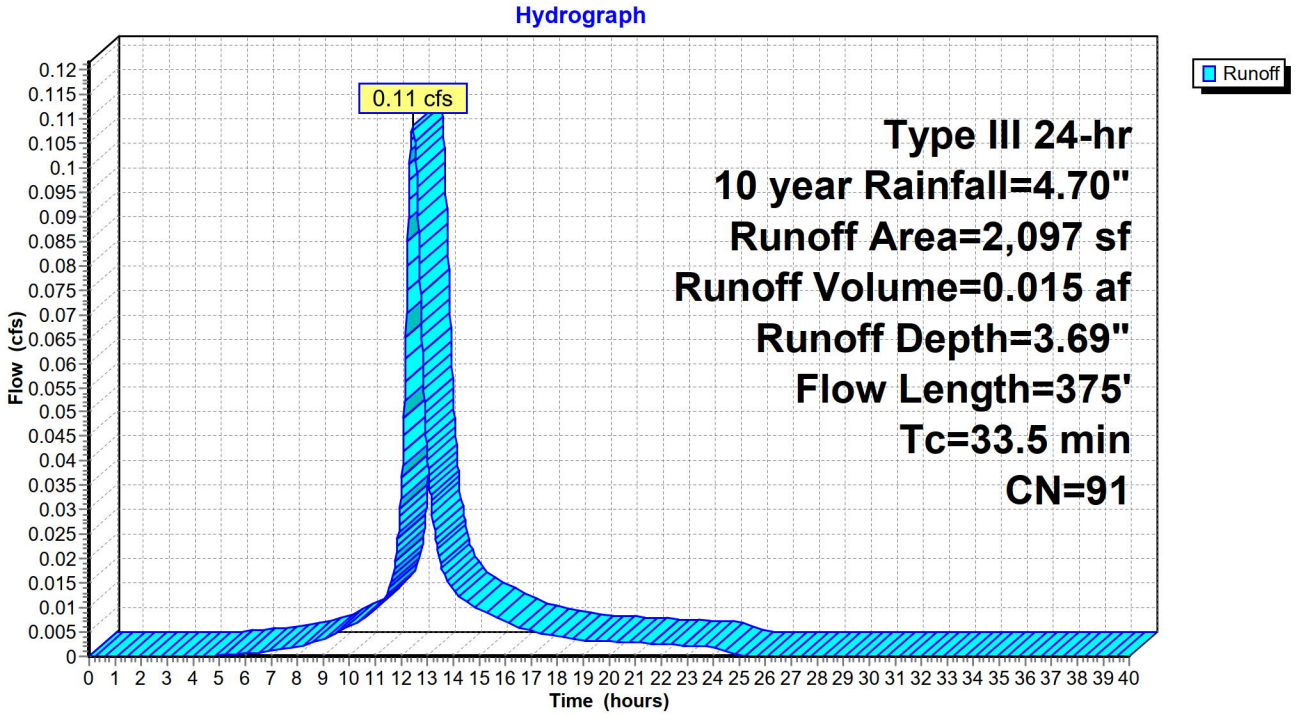
Runoff = 0.11 cfs @ 12.45 hrs, Volume= 0.015 af, Depth= 3.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs
Type III 24-hr 10 year Rainfall=4.70"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 707 | 98 | Driveway |
| | 826 | 80 | >75% Grass cover, Good, HSG D |
| * | 564 | 98 | Garage |
| | 2,097 | 91 | Weighted Average |
| | 826 | | 39.39% Pervious Area |
| | 1,271 | | 60.61% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 33.0 | 300 | 0.0600 | 0.15 | | **Sheet Flow,** Grass: Bermuda n= 0.410 P2= 3.40" |
| 0.5 | 75 | 0.0260 | 2.42 | | **Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps |
| 33.5 | 375 | Total | | | |

## Subcatchment 4S: no detention



## Hydrograph for Subcatchment 4S: no detention

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 21.20 | 4.57 | 3.56 | 0.00 |
| 0.40 | 0.02 | 0.00 | 0.00 | 21.60 | 4.59 | 3.58 | 0.00 |
| 0.80 | 0.04 | 0.00 | 0.00 | 22.00 | 4.61 | 3.60 | 0.00 |
| 1.20 | 0.06 | 0.00 | 0.00 | 22.40 | 4.63 | 3.62 | 0.00 |
| 1.60 | 0.08 | 0.00 | 0.00 | 22.80 | 4.65 | 3.64 | 0.00 |
| 2.00 | 0.09 | 0.00 | 0.00 | 23.20 | 4.67 | 3.66 | 0.00 |
| 2.40 | 0.11 | 0.00 | 0.00 | 23.60 | 4.68 | 3.68 | 0.00 |
| 2.80 | 0.13 | 0.00 | 0.00 | 24.00 | **4.70** | **3.69** | 0.00 |
| 3.20 | 0.16 | 0.00 | 0.00 | 24.40 | 4.70 | 3.69 | 0.00 |
| 3.60 | 0.18 | 0.00 | 0.00 | 24.80 | 4.70 | 3.69 | 0.00 |
| 4.00 | 0.20 | 0.00 | 0.00 | 25.20 | 4.70 | 3.69 | 0.00 |
| 4.40 | 0.23 | 0.00 | 0.00 | 25.60 | 4.70 | 3.69 | 0.00 |
| 4.80 | 0.25 | 0.00 | 0.00 | 26.00 | 4.70 | 3.69 | 0.00 |
| 5.20 | 0.28 | 0.01 | 0.00 | 26.40 | 4.70 | 3.69 | 0.00 |
| 5.60 | 0.31 | 0.01 | 0.00 | 26.80 | 4.70 | 3.69 | 0.00 |
| 6.00 | 0.34 | 0.02 | 0.00 | 27.20 | 4.70 | 3.69 | 0.00 |
| 6.40 | 0.37 | 0.03 | 0.00 | 27.60 | 4.70 | 3.69 | 0.00 |
| 6.80 | 0.41 | 0.04 | 0.00 | 28.00 | 4.70 | 3.69 | 0.00 |
| 7.20 | 0.45 | 0.05 | 0.00 | 28.40 | 4.70 | 3.69 | 0.00 |
| 7.60 | 0.49 | 0.07 | 0.00 | 28.80 | 4.70 | 3.69 | 0.00 |
| 8.00 | 0.54 | 0.09 | 0.00 | 29.20 | 4.70 | 3.69 | 0.00 |
| 8.40 | 0.59 | 0.11 | 0.00 | 29.60 | 4.70 | 3.69 | 0.00 |
| 8.80 | 0.65 | 0.14 | 0.00 | 30.00 | 4.70 | 3.69 | 0.00 |
| 9.20 | 0.72 | 0.18 | 0.00 | 30.40 | 4.70 | 3.69 | 0.00 |
| 9.60 | 0.80 | 0.23 | 0.00 | 30.80 | 4.70 | 3.69 | 0.00 |
| 10.00 | 0.89 | 0.28 | 0.01 | 31.20 | 4.70 | 3.69 | 0.00 |
| 10.40 | 0.99 | 0.35 | 0.01 | 31.60 | 4.70 | 3.69 | 0.00 |
| 10.80 | 1.11 | 0.44 | 0.01 | 32.00 | 4.70 | 3.69 | 0.00 |
| 11.20 | 1.25 | 0.54 | 0.01 | 32.40 | 4.70 | 3.69 | 0.00 |
| 11.60 | 1.48 | 0.72 | 0.01 | 32.80 | 4.70 | 3.69 | 0.00 |
| 12.00 | 2.35 | 1.47 | 0.03 | 33.20 | 4.70 | 3.69 | 0.00 |
| 12.40 | 3.22 | 2.28 | **0.11** | 33.60 | 4.70 | 3.69 | 0.00 |
| 12.80 | 3.45 | 2.49 | **0.07** | 34.00 | 4.70 | 3.69 | 0.00 |
| 13.20 | 3.59 | 2.63 | 0.03 | 34.40 | 4.70 | 3.69 | 0.00 |
| 13.60 | 3.71 | 2.74 | 0.02 | 34.80 | 4.70 | 3.69 | 0.00 |
| 14.00 | 3.81 | 2.84 | 0.01 | 35.20 | 4.70 | 3.69 | 0.00 |
| 14.40 | 3.90 | 2.92 | 0.01 | 35.60 | 4.70 | 3.69 | 0.00 |
| 14.80 | 3.98 | 3.00 | 0.01 | 36.00 | 4.70 | 3.69 | 0.00 |
| 15.20 | 4.05 | 3.06 | 0.01 | 36.40 | 4.70 | 3.69 | 0.00 |
| 15.60 | 4.11 | 3.12 | 0.01 | 36.80 | 4.70 | 3.69 | 0.00 |
| 16.00 | 4.16 | 3.17 | 0.01 | 37.20 | 4.70 | 3.69 | 0.00 |
| 16.40 | 4.21 | 3.22 | 0.01 | 37.60 | 4.70 | 3.69 | 0.00 |
| 16.80 | 4.25 | 3.26 | 0.01 | 38.00 | 4.70 | 3.69 | 0.00 |
| 17.20 | 4.29 | 3.30 | 0.00 | 38.40 | 4.70 | 3.69 | 0.00 |
| 17.60 | 4.33 | 3.33 | 0.00 | 38.80 | 4.70 | 3.69 | 0.00 |
| 18.00 | 4.36 | 3.36 | 0.00 | 39.20 | 4.70 | 3.69 | 0.00 |
| 18.40 | 4.39 | 3.39 | 0.00 | 39.60 | 4.70 | 3.69 | 0.00 |
| 18.80 | 4.42 | 3.42 | 0.00 | 40.00 | 4.70 | 3.69 | 0.00 |
| 19.20 | 4.45 | 3.45 | 0.00 | | | | |
| 19.60 | 4.47 | 3.47 | 0.00 | | | | |
| 20.00 | 4.50 | 3.50 | 0.00 | | | | |
| 20.40 | 4.52 | 3.52 | 0.00 | | | | |
| 20.80 | 4.55 | 3.54 | 0.00 | | | | |

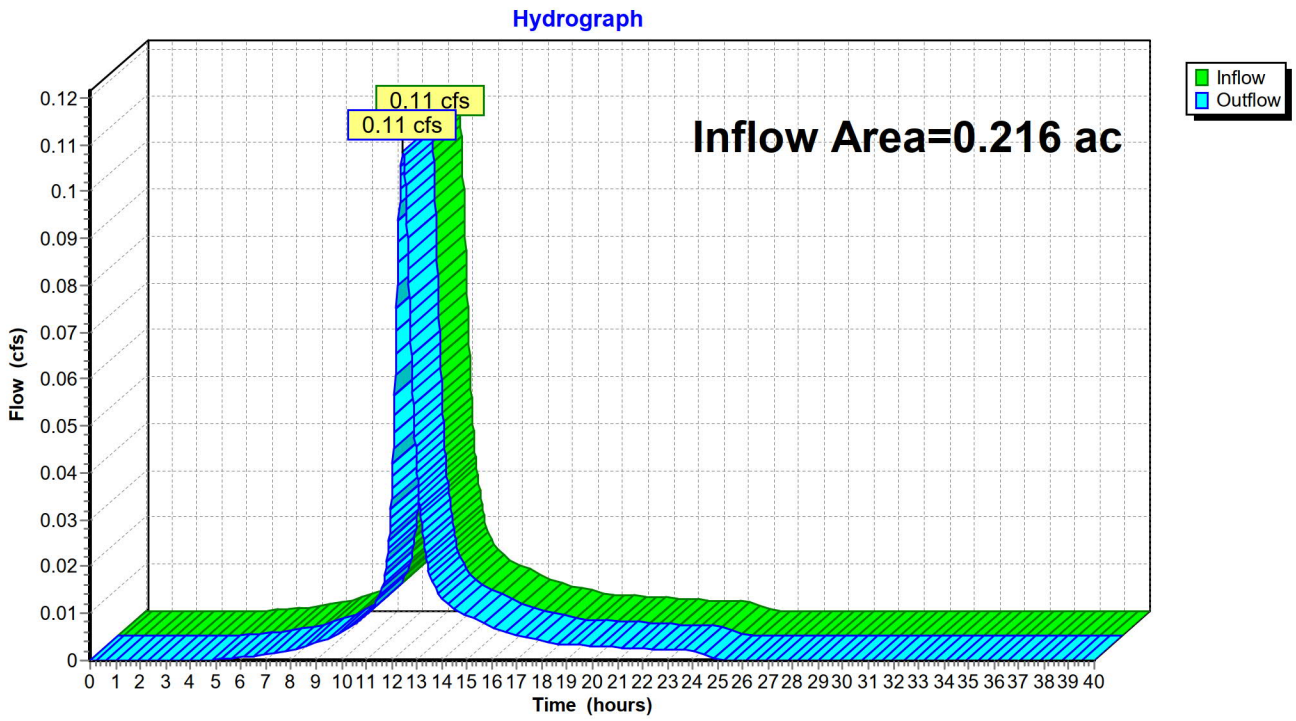
## Summary for Reach 6R: Proposed

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

Inflow Area = 0.216 ac, 53.13% Impervious, Inflow Depth = 0.82" for 10 year event
Inflow = 0.11 cfs @ 12.45 hrs, Volume= 0.015 af
Outflow = 0.11 cfs @ 12.45 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs

### Reach 6R: Proposed



## Hydrograph for Reach 6R: Proposed

| Time (hours) | Inflow (cfs) | Elevation (feet) | Outflow (cfs) | Time (hours) | Inflow (cfs) | Elevation (feet) | Outflow (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | | 0.00 | 21.20 | 0.00 | | 0.00 |
| 0.40 | 0.00 | | 0.00 | 21.60 | 0.00 | | 0.00 |
| 0.80 | 0.00 | | 0.00 | 22.00 | 0.00 | | 0.00 |
| 1.20 | 0.00 | | 0.00 | 22.40 | 0.00 | | 0.00 |
| 1.60 | 0.00 | | 0.00 | 22.80 | 0.00 | | 0.00 |
| 2.00 | 0.00 | | 0.00 | 23.20 | 0.00 | | 0.00 |
| 2.40 | 0.00 | | 0.00 | 23.60 | 0.00 | | 0.00 |
| 2.80 | 0.00 | | 0.00 | 24.00 | 0.00 | | 0.00 |
| 3.20 | 0.00 | | 0.00 | 24.40 | 0.00 | | 0.00 |
| 3.60 | 0.00 | | 0.00 | 24.80 | 0.00 | | 0.00 |
| 4.00 | 0.00 | | 0.00 | 25.20 | 0.00 | | 0.00 |
| 4.40 | 0.00 | | 0.00 | 25.60 | 0.00 | | 0.00 |
| 4.80 | 0.00 | | 0.00 | 26.00 | 0.00 | | 0.00 |
| 5.20 | 0.00 | | 0.00 | 26.40 | 0.00 | | 0.00 |
| 5.60 | 0.00 | | 0.00 | 26.80 | 0.00 | | 0.00 |
| 6.00 | 0.00 | | 0.00 | 27.20 | 0.00 | | 0.00 |
| 6.40 | 0.00 | | 0.00 | 27.60 | 0.00 | | 0.00 |
| 6.80 | 0.00 | | 0.00 | 28.00 | 0.00 | | 0.00 |
| 7.20 | 0.00 | | 0.00 | 28.40 | 0.00 | | 0.00 |
| 7.60 | 0.00 | | 0.00 | 28.80 | 0.00 | | 0.00 |
| 8.00 | 0.00 | | 0.00 | 29.20 | 0.00 | | 0.00 |
| 8.40 | 0.00 | | 0.00 | 29.60 | 0.00 | | 0.00 |
| 8.80 | 0.00 | | 0.00 | 30.00 | 0.00 | | 0.00 |
| 9.20 | 0.00 | | 0.00 | 30.40 | 0.00 | | 0.00 |
| 9.60 | 0.00 | | 0.00 | 30.80 | 0.00 | | 0.00 |
| 10.00 | 0.01 | | 0.01 | 31.20 | 0.00 | | 0.00 |
| 10.40 | 0.01 | | 0.01 | 31.60 | 0.00 | | 0.00 |
| 10.80 | 0.01 | | 0.01 | 32.00 | 0.00 | | 0.00 |
| 11.20 | 0.01 | | 0.01 | 32.40 | 0.00 | | 0.00 |
| 11.60 | 0.01 | | 0.01 | 32.80 | 0.00 | | 0.00 |
| 12.00 | 0.03 | | 0.03 | 33.20 | 0.00 | | 0.00 |
| 12.40 | **0.11** | | **0.11** | 33.60 | 0.00 | | 0.00 |
| 12.80 | **0.07** | | **0.07** | 34.00 | 0.00 | | 0.00 |
| 13.20 | 0.03 | | 0.03 | 34.40 | 0.00 | | 0.00 |
| 13.60 | 0.02 | | 0.02 | 34.80 | 0.00 | | 0.00 |
| 14.00 | 0.01 | | 0.01 | 35.20 | 0.00 | | 0.00 |
| 14.40 | 0.01 | | 0.01 | 35.60 | 0.00 | | 0.00 |
| 14.80 | 0.01 | | 0.01 | 36.00 | 0.00 | | 0.00 |
| 15.20 | 0.01 | | 0.01 | 36.40 | 0.00 | | 0.00 |
| 15.60 | 0.01 | | 0.01 | 36.80 | 0.00 | | 0.00 |
| 16.00 | 0.01 | | 0.01 | 37.20 | 0.00 | | 0.00 |
| 16.40 | 0.01 | | 0.01 | 37.60 | 0.00 | | 0.00 |
| 16.80 | 0.01 | | 0.01 | 38.00 | 0.00 | | 0.00 |
| 17.20 | 0.00 | | 0.00 | 38.40 | 0.00 | | 0.00 |
| 17.60 | 0.00 | | 0.00 | 38.80 | 0.00 | | 0.00 |
| 18.00 | 0.00 | | 0.00 | 39.20 | 0.00 | | 0.00 |
| 18.40 | 0.00 | | 0.00 | 39.60 | 0.00 | | 0.00 |
| 18.80 | 0.00 | | 0.00 | 40.00 | 0.00 | | 0.00 |
| 19.20 | 0.00 | | 0.00 | | | | |
| 19.60 | 0.00 | | 0.00 | | | | |
| 20.00 | 0.00 | | 0.00 | | | | |
| 20.40 | 0.00 | | 0.00 | | | | |
| 20.80 | 0.00 | | 0.00 | | | | |

## Summary for Pond 5P: Infil System 1

Inflow Area = 0.168 ac, 50.98% Impervious, Inflow Depth = 3.49" for 10 year event
Inflow = 0.69 cfs @ 12.07 hrs, Volume= 0.049 af
Outflow = 0.11 cfs @ 12.54 hrs, Volume= 0.049 af, Atten= 84%, Lag= 28.2 min
Discarded = 0.11 cfs @ 12.54 hrs, Volume= 0.049 af

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs
Peak Elev= 7.77' @ 12.54 hrs Surf.Area= 3,557 sf Storage= 640 cf

Plug-Flow detention time= 39.8 min calculated for 0.049 af (100% of inflow)
Center-of-Mass det. time= 39.8 min ( 835.4 - 795.7 )

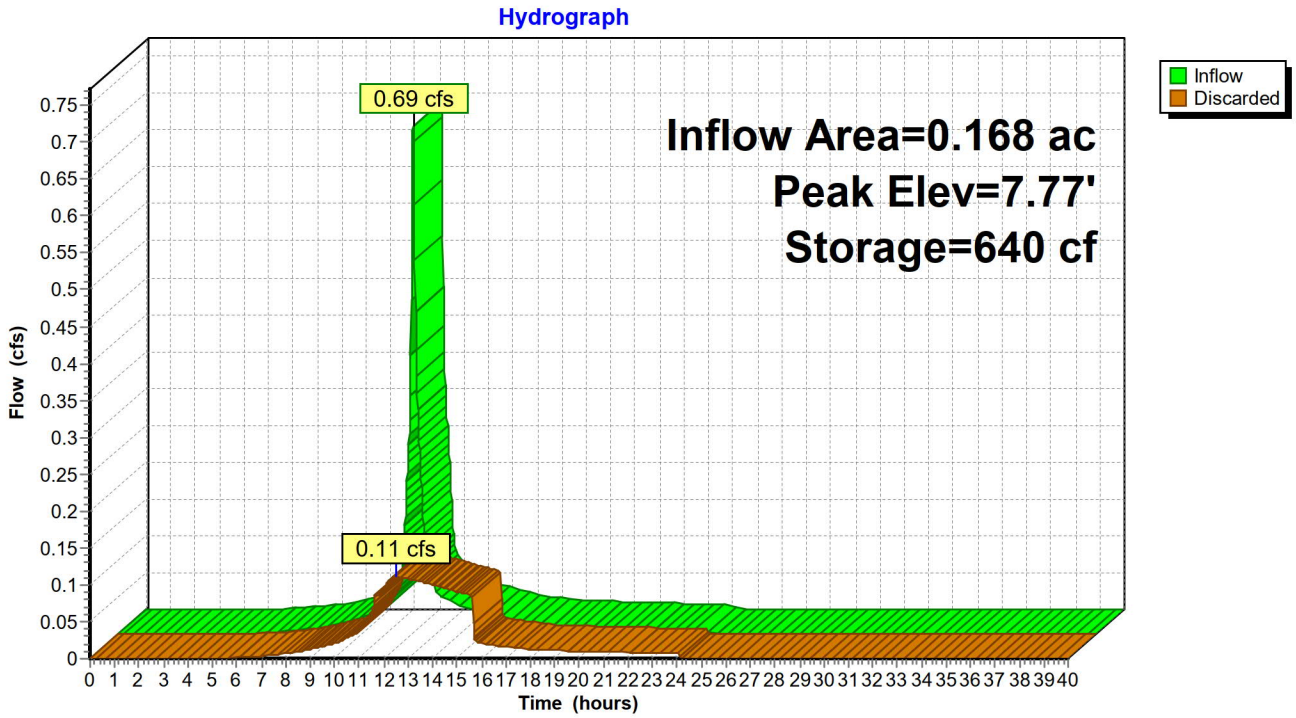
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 7.17' | 886 cf | **Custom Stage Data (Conic)** Listed below (Recalc)<br>2,952 cf Overall x 30.0% Voids |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|
| 7.17 | 3,557 | 0 | 0 | 3,557 |
| 8.00 | 3,557 | 2,952 | 2,952 | 3,732 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 7.17' | **1.020 in/hr Exfiltration over Wetted area**<br>Conductivity to Groundwater Elevation = 5.00' |

**Discarded OutFlow** Max=0.11 cfs @ 12.54 hrs HW=7.77' (Free Discharge)
↑—**1=Exfiltration** ( Controls 0.11 cfs)

## Pond 5P: Infil System 1



## Hydrograph for Pond 5P: Infil System 1

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Discarded (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 7.17 | 0.00 |
| 1.00 | 0.00 | 0 | 7.17 | 0.00 |
| 2.00 | 0.00 | 0 | 7.17 | 0.00 |
| 3.00 | 0.00 | 0 | 7.17 | 0.00 |
| 4.00 | 0.00 | 0 | 7.17 | 0.00 |
| 5.00 | 0.00 | 0 | 7.17 | 0.00 |
| 6.00 | 0.00 | 0 | 7.17 | 0.00 |
| 7.00 | 0.00 | 0 | 7.17 | 0.00 |
| 8.00 | 0.01 | 1 | 7.17 | 0.01 |
| 9.00 | 0.01 | 1 | 7.17 | 0.01 |
| 10.00 | 0.02 | 2 | 7.17 | 0.02 |
| 11.00 | 0.04 | 4 | 7.17 | 0.04 |
| 12.00 | **0.45** | **180** | **7.34** | **0.09** |
| 13.00 | **0.06** | **584** | **7.72** | **0.11** |
| 14.00 | 0.04 | 377 | 7.52 | 0.10 |
| 15.00 | 0.03 | 154 | 7.31 | 0.09 |
| 16.00 | 0.02 | 2 | 7.17 | 0.02 |
| 17.00 | 0.02 | 2 | 7.17 | 0.02 |
| 18.00 | 0.01 | 1 | 7.17 | 0.01 |
| 19.00 | 0.01 | 1 | 7.17 | 0.01 |
| 20.00 | 0.01 | 1 | 7.17 | 0.01 |
| 21.00 | 0.01 | 1 | 7.17 | 0.01 |
| 22.00 | 0.01 | 1 | 7.17 | 0.01 |
| 23.00 | 0.01 | 1 | 7.17 | 0.01 |
| 24.00 | 0.01 | 1 | 7.17 | 0.01 |
| 25.00 | 0.00 | 0 | 7.17 | 0.00 |
| 26.00 | 0.00 | 0 | 7.17 | 0.00 |
| 27.00 | 0.00 | 0 | 7.17 | 0.00 |
| 28.00 | 0.00 | 0 | 7.17 | 0.00 |
| 29.00 | 0.00 | 0 | 7.17 | 0.00 |
| 30.00 | 0.00 | 0 | 7.17 | 0.00 |
| 31.00 | 0.00 | 0 | 7.17 | 0.00 |
| 32.00 | 0.00 | 0 | 7.17 | 0.00 |
| 33.00 | 0.00 | 0 | 7.17 | 0.00 |
| 34.00 | 0.00 | 0 | 7.17 | 0.00 |
| 35.00 | 0.00 | 0 | 7.17 | 0.00 |
| 36.00 | 0.00 | 0 | 7.17 | 0.00 |
| 37.00 | 0.00 | 0 | 7.17 | 0.00 |
| 38.00 | 0.00 | 0 | 7.17 | 0.00 |
| 39.00 | 0.00 | 0 | 7.17 | 0.00 |
| 40.00 | 0.00 | 0 | 7.17 | 0.00 |

Time span=0.00-40.00 hrs, dt=0.02 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1S: Existing** Runoff Area=9,394 sf 24.21% Impervious Runoff Depth=3.62"
Tc=5.0 min UI Adjusted CN=82 Runoff=0.94 cfs 0.065 af

**Subcatchment 2S: Roof** Runoff Area=7,297 sf 50.98% Impervious Runoff Depth=4.35"
Tc=5.0 min CN=89 Runoff=0.85 cfs 0.061 af

**Subcatchment 4S: no detention** Runoff Area=2,097 sf 60.61% Impervious Runoff Depth=4.57"
Flow Length=375' Tc=33.5 min CN=91 Runoff=0.13 cfs 0.018 af

**Reach 6R: Proposed** Inflow=0.13 cfs 0.018 af
Outflow=0.13 cfs 0.018 af

**Pond 5P: Infil System 1** Peak Elev=7.97' Storage=855 cf Inflow=0.85 cfs 0.061 af
Outflow=0.12 cfs 0.061 af

**Total Runoff Area = 0.431 ac Runoff Volume = 0.144 af Average Runoff Depth = 4.01"**
**61.33% Pervious = 0.265 ac 38.67% Impervious = 0.167 ac**

## Summary for Subcatchment 1S: Existing

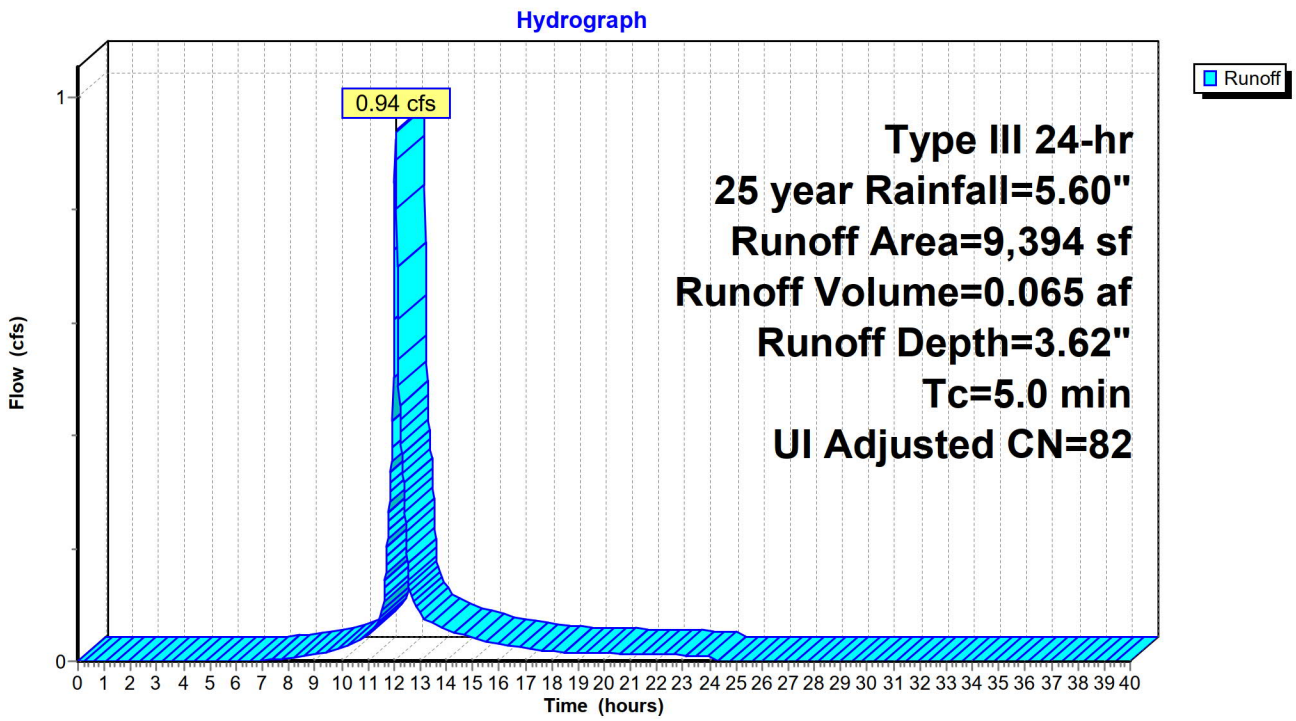
Runoff = 0.94 cfs @ 12.07 hrs, Volume= 0.065 af, Depth= 3.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs
Type III 24-hr 25 year Rainfall=5.60"

| Area (sf) | CN | Adj | Description |
|---|---|---|---|
| 2,274 | 98 | | Unconnected pavement, HSG D |
| 7,120 | 80 | | >75% Grass cover, Good, HSG D |
| 9,394 | 84 | 82 | Weighted Average, UI Adjusted |
| 7,120 | | | 75.79% Pervious Area |
| 2,274 | | | 24.21% Impervious Area |
| 2,274 | | | 100.00% Unconnected |

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

## Subcatchment 1S: Existing



## Hydrograph for Subcatchment 1S: Existing

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 21.20 | 5.44 | 3.48 | 0.01 |
| 0.40 | 0.02 | 0.00 | 0.00 | 21.60 | 5.47 | 3.50 | 0.01 |
| 0.80 | 0.04 | 0.00 | 0.00 | 22.00 | 5.49 | 3.52 | 0.01 |
| 1.20 | 0.07 | 0.00 | 0.00 | 22.40 | 5.52 | 3.54 | 0.01 |
| 1.60 | 0.09 | 0.00 | 0.00 | 22.80 | 5.54 | 3.56 | 0.01 |
| 2.00 | 0.11 | 0.00 | 0.00 | 23.20 | 5.56 | 3.58 | 0.01 |
| 2.40 | 0.14 | 0.00 | 0.00 | 23.60 | 5.58 | 3.60 | 0.01 |
| 2.80 | 0.16 | 0.00 | 0.00 | 24.00 | **5.60** | **3.62** | 0.01 |
| 3.20 | 0.19 | 0.00 | 0.00 | 24.40 | 5.60 | 3.62 | 0.00 |
| 3.60 | 0.21 | 0.00 | 0.00 | 24.80 | 5.60 | 3.62 | 0.00 |
| 4.00 | 0.24 | 0.00 | 0.00 | 25.20 | 5.60 | 3.62 | 0.00 |
| 4.40 | 0.27 | 0.00 | 0.00 | 25.60 | 5.60 | 3.62 | 0.00 |
| 4.80 | 0.30 | 0.00 | 0.00 | 26.00 | 5.60 | 3.62 | 0.00 |
| 5.20 | 0.33 | 0.00 | 0.00 | 26.40 | 5.60 | 3.62 | 0.00 |
| 5.60 | 0.37 | 0.00 | 0.00 | 26.80 | 5.60 | 3.62 | 0.00 |
| 6.00 | 0.40 | 0.00 | 0.00 | 27.20 | 5.60 | 3.62 | 0.00 |
| 6.40 | 0.44 | 0.00 | 0.00 | 27.60 | 5.60 | 3.62 | 0.00 |
| 6.80 | 0.48 | 0.00 | 0.00 | 28.00 | 5.60 | 3.62 | 0.00 |
| 7.20 | 0.53 | 0.00 | 0.00 | 28.40 | 5.60 | 3.62 | 0.00 |
| 7.60 | 0.58 | 0.01 | 0.00 | 28.80 | 5.60 | 3.62 | 0.00 |
| 8.00 | 0.64 | 0.02 | 0.00 | 29.20 | 5.60 | 3.62 | 0.00 |
| 8.40 | 0.70 | 0.03 | 0.01 | 29.60 | 5.60 | 3.62 | 0.00 |
| 8.80 | 0.78 | 0.04 | 0.01 | 30.00 | 5.60 | 3.62 | 0.00 |
| 9.20 | 0.86 | 0.07 | 0.01 | 30.40 | 5.60 | 3.62 | 0.00 |
| 9.60 | 0.95 | 0.10 | 0.02 | 30.80 | 5.60 | 3.62 | 0.00 |
| 10.00 | 1.06 | 0.14 | 0.02 | 31.20 | 5.60 | 3.62 | 0.00 |
| 10.40 | 1.18 | 0.19 | 0.03 | 31.60 | 5.60 | 3.62 | 0.00 |
| 10.80 | 1.32 | 0.25 | 0.04 | 32.00 | 5.60 | 3.62 | 0.00 |
| 11.20 | 1.49 | 0.34 | 0.05 | 32.40 | 5.60 | 3.62 | 0.00 |
| 11.60 | 1.76 | 0.50 | 0.10 | 32.80 | 5.60 | 3.62 | 0.00 |
| 12.00 | 2.80 | 1.22 | **0.61** | 33.20 | 5.60 | 3.62 | 0.00 |
| 12.40 | 3.84 | 2.07 | **0.28** | 33.60 | 5.60 | 3.62 | 0.00 |
| 12.80 | 4.11 | 2.30 | 0.10 | 34.00 | 5.60 | 3.62 | 0.00 |
| 13.20 | 4.28 | 2.44 | 0.07 | 34.40 | 5.60 | 3.62 | 0.00 |
| 13.60 | 4.42 | 2.57 | 0.06 | 34.80 | 5.60 | 3.62 | 0.00 |
| 14.00 | 4.54 | 2.67 | 0.05 | 35.20 | 5.60 | 3.62 | 0.00 |
| 14.40 | 4.65 | 2.76 | 0.05 | 35.60 | 5.60 | 3.62 | 0.00 |
| 14.80 | 4.74 | 2.85 | 0.04 | 36.00 | 5.60 | 3.62 | 0.00 |
| 15.20 | 4.82 | 2.92 | 0.04 | 36.40 | 5.60 | 3.62 | 0.00 |
| 15.60 | 4.90 | 2.99 | 0.03 | 36.80 | 5.60 | 3.62 | 0.00 |
| 16.00 | 4.96 | 3.04 | 0.03 | 37.20 | 5.60 | 3.62 | 0.00 |
| 16.40 | 5.02 | 3.09 | 0.03 | 37.60 | 5.60 | 3.62 | 0.00 |
| 16.80 | 5.07 | 3.14 | 0.02 | 38.00 | 5.60 | 3.62 | 0.00 |
| 17.20 | 5.12 | 3.18 | 0.02 | 38.40 | 5.60 | 3.62 | 0.00 |
| 17.60 | 5.16 | 3.22 | 0.02 | 38.80 | 5.60 | 3.62 | 0.00 |
| 18.00 | 5.20 | 3.26 | 0.02 | 39.20 | 5.60 | 3.62 | 0.00 |
| 18.40 | 5.23 | 3.29 | 0.02 | 39.60 | 5.60 | 3.62 | 0.00 |
| 18.80 | 5.27 | 3.32 | 0.02 | 40.00 | 5.60 | 3.62 | 0.00 |
| 19.20 | 5.30 | 3.35 | 0.02 | | | | |
| 19.60 | 5.33 | 3.38 | 0.02 | | | | |
| 20.00 | 5.36 | 3.40 | 0.01 | | | | |
| 20.40 | 5.39 | 3.43 | 0.01 | | | | |
| 20.80 | 5.42 | 3.45 | 0.01 | | | | |

## Summary for Subcatchment 2S: Roof

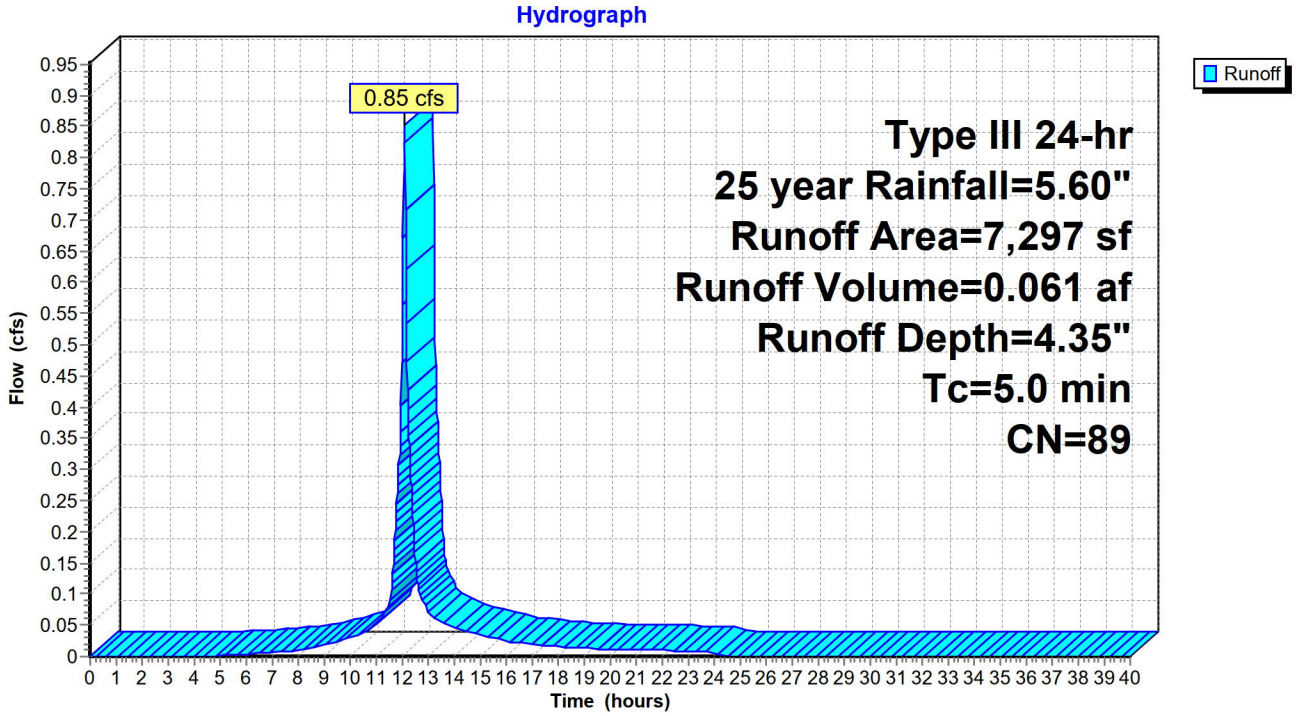
Runoff = 0.85 cfs @ 12.07 hrs, Volume= 0.061 af, Depth= 4.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs
Type III 24-hr 25 year Rainfall=5.60"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 2,570 | 98 | Roofs, HSG D |
| * | 772 | 98 | Deck |
| * | 215 | 98 | Porch |
| * | 163 | 98 | Other impervious |
| | 3,577 | 80 | >75% Grass cover, Good, HSG D |
| | 7,297 | 89 | Weighted Average |
| | 3,577 | | 49.02% Pervious Area |
| | 3,720 | | 50.98% Impervious Area |

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

## Subcatchment 2S: Roof



## Hydrograph for Subcatchment 2S: Roof

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 21.20 | 5.44 | 4.20 | 0.01 |
| 0.40 | 0.02 | 0.00 | 0.00 | 21.60 | 5.47 | 4.22 | 0.01 |
| 0.80 | 0.04 | 0.00 | 0.00 | 22.00 | 5.49 | 4.24 | 0.01 |
| 1.20 | 0.07 | 0.00 | 0.00 | 22.40 | 5.52 | 4.27 | 0.01 |
| 1.60 | 0.09 | 0.00 | 0.00 | 22.80 | 5.54 | 4.29 | 0.01 |
| 2.00 | 0.11 | 0.00 | 0.00 | 23.20 | 5.56 | 4.31 | 0.01 |
| 2.40 | 0.14 | 0.00 | 0.00 | 23.60 | 5.58 | 4.33 | 0.01 |
| 2.80 | 0.16 | 0.00 | 0.00 | 24.00 | **5.60** | **4.35** | 0.01 |
| 3.20 | 0.19 | 0.00 | 0.00 | 24.40 | 5.60 | 4.35 | 0.00 |
| 3.60 | 0.21 | 0.00 | 0.00 | 24.80 | 5.60 | 4.35 | 0.00 |
| 4.00 | 0.24 | 0.00 | 0.00 | 25.20 | 5.60 | 4.35 | 0.00 |
| 4.40 | 0.27 | 0.00 | 0.00 | 25.60 | 5.60 | 4.35 | 0.00 |
| 4.80 | 0.30 | 0.00 | 0.00 | 26.00 | 5.60 | 4.35 | 0.00 |
| 5.20 | 0.33 | 0.01 | 0.00 | 26.40 | 5.60 | 4.35 | 0.00 |
| 5.60 | 0.37 | 0.01 | 0.00 | 26.80 | 5.60 | 4.35 | 0.00 |
| 6.00 | 0.40 | 0.02 | 0.00 | 27.20 | 5.60 | 4.35 | 0.00 |
| 6.40 | 0.44 | 0.03 | 0.00 | 27.60 | 5.60 | 4.35 | 0.00 |
| 6.80 | 0.48 | 0.04 | 0.01 | 28.00 | 5.60 | 4.35 | 0.00 |
| 7.20 | 0.53 | 0.05 | 0.01 | 28.40 | 5.60 | 4.35 | 0.00 |
| 7.60 | 0.58 | 0.07 | 0.01 | 28.80 | 5.60 | 4.35 | 0.00 |
| 8.00 | 0.64 | 0.09 | 0.01 | 29.20 | 5.60 | 4.35 | 0.00 |
| 8.40 | 0.70 | 0.12 | 0.01 | 29.60 | 5.60 | 4.35 | 0.00 |
| 8.80 | 0.78 | 0.16 | 0.02 | 30.00 | 5.60 | 4.35 | 0.00 |
| 9.20 | 0.86 | 0.20 | 0.02 | 30.40 | 5.60 | 4.35 | 0.00 |
| 9.60 | 0.95 | 0.26 | 0.02 | 30.80 | 5.60 | 4.35 | 0.00 |
| 10.00 | 1.06 | 0.32 | 0.03 | 31.20 | 5.60 | 4.35 | 0.00 |
| 10.40 | 1.18 | 0.40 | 0.04 | 31.60 | 5.60 | 4.35 | 0.00 |
| 10.80 | 1.32 | 0.50 | 0.04 | 32.00 | 5.60 | 4.35 | 0.00 |
| 11.20 | 1.49 | 0.62 | 0.06 | 32.40 | 5.60 | 4.35 | 0.00 |
| 11.60 | 1.76 | 0.83 | 0.11 | 32.80 | 5.60 | 4.35 | 0.00 |
| 12.00 | 2.80 | 1.72 | **0.56** | 33.20 | 5.60 | 4.35 | 0.00 |
| 12.40 | 3.84 | 2.67 | **0.24** | 33.60 | 5.60 | 4.35 | 0.00 |
| 12.80 | 4.11 | 2.92 | 0.09 | 34.00 | 5.60 | 4.35 | 0.00 |
| 13.20 | 4.28 | 3.09 | 0.06 | 34.40 | 5.60 | 4.35 | 0.00 |
| 13.60 | 4.42 | 3.22 | 0.05 | 34.80 | 5.60 | 4.35 | 0.00 |
| 14.00 | 4.54 | 3.33 | 0.05 | 35.20 | 5.60 | 4.35 | 0.00 |
| 14.40 | 4.65 | 3.43 | 0.04 | 35.60 | 5.60 | 4.35 | 0.00 |
| 14.80 | 4.74 | 3.52 | 0.04 | 36.00 | 5.60 | 4.35 | 0.00 |
| 15.20 | 4.82 | 3.60 | 0.03 | 36.40 | 5.60 | 4.35 | 0.00 |
| 15.60 | 4.90 | 3.67 | 0.03 | 36.80 | 5.60 | 4.35 | 0.00 |
| 16.00 | 4.96 | 3.74 | 0.02 | 37.20 | 5.60 | 4.35 | 0.00 |
| 16.40 | 5.02 | 3.79 | 0.02 | 37.60 | 5.60 | 4.35 | 0.00 |
| 16.80 | 5.07 | 3.84 | 0.02 | 38.00 | 5.60 | 4.35 | 0.00 |
| 17.20 | 5.12 | 3.88 | 0.02 | 38.40 | 5.60 | 4.35 | 0.00 |
| 17.60 | 5.16 | 3.92 | 0.02 | 38.80 | 5.60 | 4.35 | 0.00 |
| 18.00 | 5.20 | 3.96 | 0.01 | 39.20 | 5.60 | 4.35 | 0.00 |
| 18.40 | 5.23 | 3.99 | 0.01 | 39.60 | 5.60 | 4.35 | 0.00 |
| 18.80 | 5.27 | 4.03 | 0.01 | 40.00 | 5.60 | 4.35 | 0.00 |
| 19.20 | 5.30 | 4.06 | 0.01 | | | | |
| 19.60 | 5.33 | 4.09 | 0.01 | | | | |
| 20.00 | 5.36 | 4.12 | 0.01 | | | | |
| 20.40 | 5.39 | 4.14 | 0.01 | | | | |
| 20.80 | 5.42 | 4.17 | 0.01 | | | | |

## Summary for Subcatchment 4S: no detention

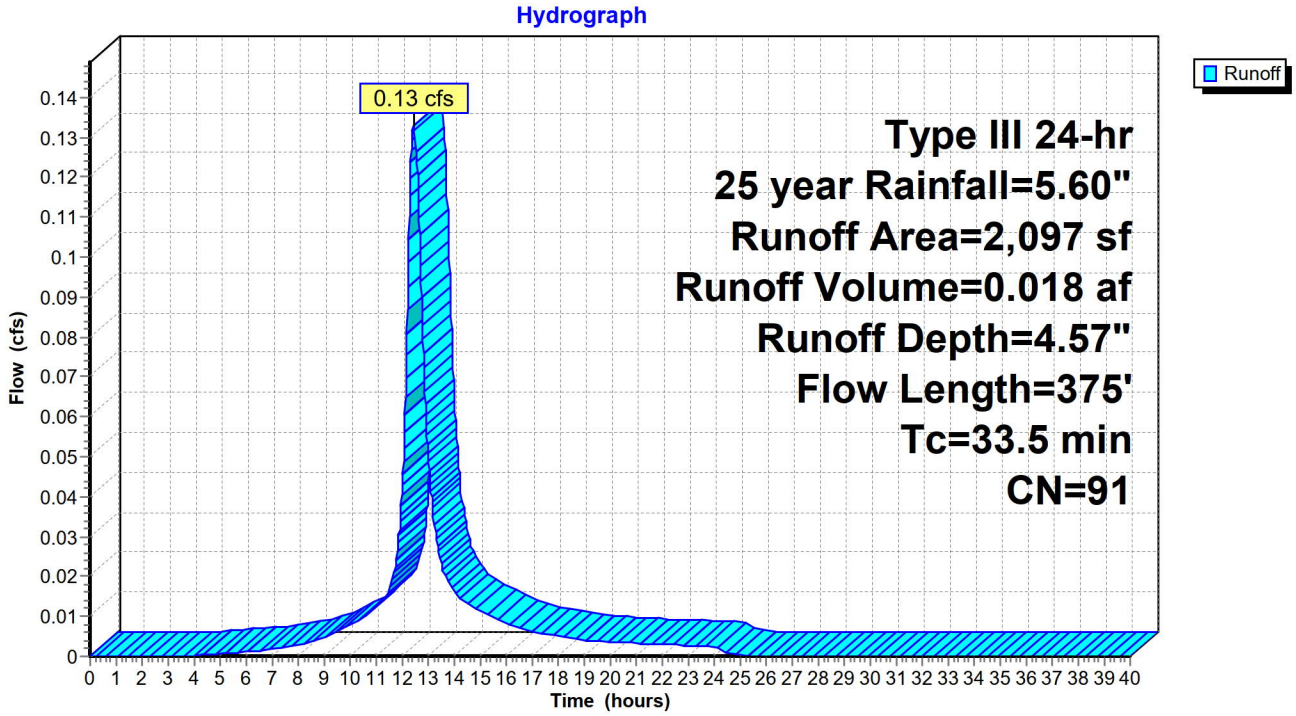
Runoff = 0.13 cfs @ 12.45 hrs, Volume= 0.018 af, Depth= 4.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs
Type III 24-hr 25 year Rainfall=5.60"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 707 | 98 | Driveway |
| | 826 | 80 | >75% Grass cover, Good, HSG D |
| * | 564 | 98 | Garage |
| | 2,097 | 91 | Weighted Average |
| | 826 | | 39.39% Pervious Area |
| | 1,271 | | 60.61% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 33.0 | 300 | 0.0600 | 0.15 | | **Sheet Flow,** Grass: Bermuda n= 0.410 P2= 3.40" |
| 0.5 | 75 | 0.0260 | 2.42 | | **Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps |
| 33.5 | 375 | Total | | | |

## Subcatchment 4S: no detention



## Hydrograph for Subcatchment 4S: no detention

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 21.20 | 5.44 | 4.41 | 0.00 |
| 0.40 | 0.02 | 0.00 | 0.00 | 21.60 | 5.47 | 4.44 | 0.00 |
| 0.80 | 0.04 | 0.00 | 0.00 | 22.00 | 5.49 | 4.46 | 0.00 |
| 1.20 | 0.07 | 0.00 | 0.00 | 22.40 | 5.52 | 4.48 | 0.00 |
| 1.60 | 0.09 | 0.00 | 0.00 | 22.80 | 5.54 | 4.51 | 0.00 |
| 2.00 | 0.11 | 0.00 | 0.00 | 23.20 | 5.56 | 4.53 | 0.00 |
| 2.40 | 0.14 | 0.00 | 0.00 | 23.60 | 5.58 | 4.55 | 0.00 |
| 2.80 | 0.16 | 0.00 | 0.00 | 24.00 | **5.60** | **4.57** | 0.00 |
| 3.20 | 0.19 | 0.00 | 0.00 | 24.40 | 5.60 | 4.57 | 0.00 |
| 3.60 | 0.21 | 0.00 | 0.00 | 24.80 | 5.60 | 4.57 | 0.00 |
| 4.00 | 0.24 | 0.00 | 0.00 | 25.20 | 5.60 | 4.57 | 0.00 |
| 4.40 | 0.27 | 0.00 | 0.00 | 25.60 | 5.60 | 4.57 | 0.00 |
| 4.80 | 0.30 | 0.01 | 0.00 | 26.00 | 5.60 | 4.57 | 0.00 |
| 5.20 | 0.33 | 0.02 | 0.00 | 26.40 | 5.60 | 4.57 | 0.00 |
| 5.60 | 0.37 | 0.02 | 0.00 | 26.80 | 5.60 | 4.57 | 0.00 |
| 6.00 | 0.40 | 0.04 | 0.00 | 27.20 | 5.60 | 4.57 | 0.00 |
| 6.40 | 0.44 | 0.05 | 0.00 | 27.60 | 5.60 | 4.57 | 0.00 |
| 6.80 | 0.48 | 0.06 | 0.00 | 28.00 | 5.60 | 4.57 | 0.00 |
| 7.20 | 0.53 | 0.08 | 0.00 | 28.40 | 5.60 | 4.57 | 0.00 |
| 7.60 | 0.58 | 0.11 | 0.00 | 28.80 | 5.60 | 4.57 | 0.00 |
| 8.00 | 0.64 | 0.14 | 0.00 | 29.20 | 5.60 | 4.57 | 0.00 |
| 8.40 | 0.70 | 0.17 | 0.00 | 29.60 | 5.60 | 4.57 | 0.00 |
| 8.80 | 0.78 | 0.21 | 0.00 | 30.00 | 5.60 | 4.57 | 0.00 |
| 9.20 | 0.86 | 0.27 | 0.01 | 30.40 | 5.60 | 4.57 | 0.00 |
| 9.60 | 0.95 | 0.33 | 0.01 | 30.80 | 5.60 | 4.57 | 0.00 |
| 10.00 | 1.06 | 0.40 | 0.01 | 31.20 | 5.60 | 4.57 | 0.00 |
| 10.40 | 1.18 | 0.49 | 0.01 | 31.60 | 5.60 | 4.57 | 0.00 |
| 10.80 | 1.32 | 0.60 | 0.01 | 32.00 | 5.60 | 4.57 | 0.00 |
| 11.20 | 1.49 | 0.73 | 0.01 | 32.40 | 5.60 | 4.57 | 0.00 |
| 11.60 | 1.76 | 0.96 | 0.02 | 32.80 | 5.60 | 4.57 | 0.00 |
| 12.00 | 2.80 | 1.89 | 0.04 | 33.20 | 5.60 | 4.57 | 0.00 |
| 12.40 | 3.84 | 2.86 | **0.13** | 33.60 | 5.60 | 4.57 | 0.00 |
| 12.80 | 4.11 | 3.12 | **0.08** | 34.00 | 5.60 | 4.57 | 0.00 |
| 13.20 | 4.28 | 3.29 | 0.03 | 34.40 | 5.60 | 4.57 | 0.00 |
| 13.60 | 4.42 | 3.42 | 0.02 | 34.80 | 5.60 | 4.57 | 0.00 |
| 14.00 | 4.54 | 3.54 | 0.02 | 35.20 | 5.60 | 4.57 | 0.00 |
| 14.40 | 4.65 | 3.64 | 0.01 | 35.60 | 5.60 | 4.57 | 0.00 |
| 14.80 | 4.74 | 3.73 | 0.01 | 36.00 | 5.60 | 4.57 | 0.00 |
| 15.20 | 4.82 | 3.81 | 0.01 | 36.40 | 5.60 | 4.57 | 0.00 |
| 15.60 | 4.90 | 3.88 | 0.01 | 36.80 | 5.60 | 4.57 | 0.00 |
| 16.00 | 4.96 | 3.94 | 0.01 | 37.20 | 5.60 | 4.57 | 0.00 |
| 16.40 | 5.02 | 4.00 | 0.01 | 37.60 | 5.60 | 4.57 | 0.00 |
| 16.80 | 5.07 | 4.05 | 0.01 | 38.00 | 5.60 | 4.57 | 0.00 |
| 17.20 | 5.12 | 4.09 | 0.01 | 38.40 | 5.60 | 4.57 | 0.00 |
| 17.60 | 5.16 | 4.14 | 0.01 | 38.80 | 5.60 | 4.57 | 0.00 |
| 18.00 | 5.20 | 4.17 | 0.00 | 39.20 | 5.60 | 4.57 | 0.00 |
| 18.40 | 5.23 | 4.21 | 0.00 | 39.60 | 5.60 | 4.57 | 0.00 |
| 18.80 | 5.27 | 4.24 | 0.00 | 40.00 | 5.60 | 4.57 | 0.00 |
| 19.20 | 5.30 | 4.27 | 0.00 | | | | |
| 19.60 | 5.33 | 4.30 | 0.00 | | | | |
| 20.00 | 5.36 | 4.33 | 0.00 | | | | |
| 20.40 | 5.39 | 4.36 | 0.00 | | | | |
| 20.80 | 5.42 | 4.39 | 0.00 | | | | |

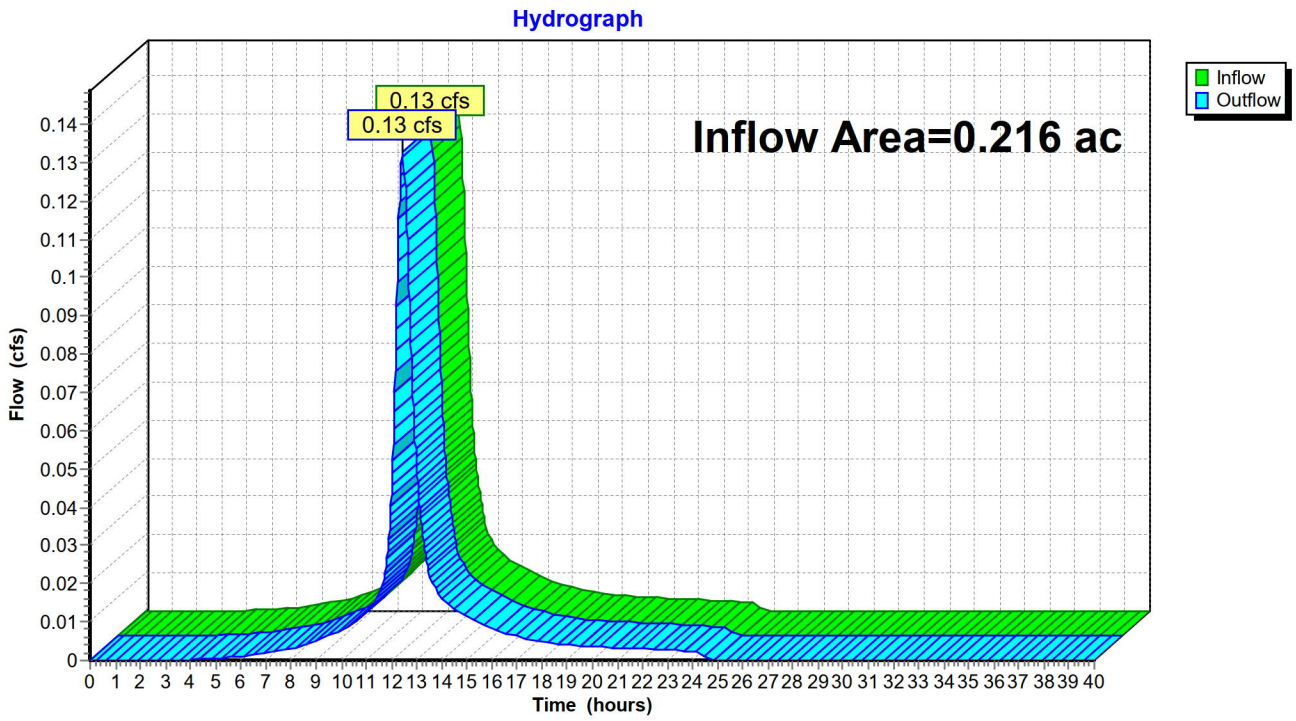
## Summary for Reach 6R: Proposed

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

Inflow Area = 0.216 ac, 53.13% Impervious, Inflow Depth = 1.02" for 25 year event
Inflow = 0.13 cfs @ 12.45 hrs, Volume= 0.018 af
Outflow = 0.13 cfs @ 12.45 hrs, Volume= 0.018 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs

### Reach 6R: Proposed



## Hydrograph for Reach 6R: Proposed

| Time (hours) | Inflow (cfs) | Elevation (feet) | Outflow (cfs) | Time (hours) | Inflow (cfs) | Elevation (feet) | Outflow (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | | 0.00 | 21.20 | 0.00 | | 0.00 |
| 0.40 | 0.00 | | 0.00 | 21.60 | 0.00 | | 0.00 |
| 0.80 | 0.00 | | 0.00 | 22.00 | 0.00 | | 0.00 |
| 1.20 | 0.00 | | 0.00 | 22.40 | 0.00 | | 0.00 |
| 1.60 | 0.00 | | 0.00 | 22.80 | 0.00 | | 0.00 |
| 2.00 | 0.00 | | 0.00 | 23.20 | 0.00 | | 0.00 |
| 2.40 | 0.00 | | 0.00 | 23.60 | 0.00 | | 0.00 |
| 2.80 | 0.00 | | 0.00 | 24.00 | 0.00 | | 0.00 |
| 3.20 | 0.00 | | 0.00 | 24.40 | 0.00 | | 0.00 |
| 3.60 | 0.00 | | 0.00 | 24.80 | 0.00 | | 0.00 |
| 4.00 | 0.00 | | 0.00 | 25.20 | 0.00 | | 0.00 |
| 4.40 | 0.00 | | 0.00 | 25.60 | 0.00 | | 0.00 |
| 4.80 | 0.00 | | 0.00 | 26.00 | 0.00 | | 0.00 |
| 5.20 | 0.00 | | 0.00 | 26.40 | 0.00 | | 0.00 |
| 5.60 | 0.00 | | 0.00 | 26.80 | 0.00 | | 0.00 |
| 6.00 | 0.00 | | 0.00 | 27.20 | 0.00 | | 0.00 |
| 6.40 | 0.00 | | 0.00 | 27.60 | 0.00 | | 0.00 |
| 6.80 | 0.00 | | 0.00 | 28.00 | 0.00 | | 0.00 |
| 7.20 | 0.00 | | 0.00 | 28.40 | 0.00 | | 0.00 |
| 7.60 | 0.00 | | 0.00 | 28.80 | 0.00 | | 0.00 |
| 8.00 | 0.00 | | 0.00 | 29.20 | 0.00 | | 0.00 |
| 8.40 | 0.00 | | 0.00 | 29.60 | 0.00 | | 0.00 |
| 8.80 | 0.00 | | 0.00 | 30.00 | 0.00 | | 0.00 |
| 9.20 | 0.01 | | 0.01 | 30.40 | 0.00 | | 0.00 |
| 9.60 | 0.01 | | 0.01 | 30.80 | 0.00 | | 0.00 |
| 10.00 | 0.01 | | 0.01 | 31.20 | 0.00 | | 0.00 |
| 10.40 | 0.01 | | 0.01 | 31.60 | 0.00 | | 0.00 |
| 10.80 | 0.01 | | 0.01 | 32.00 | 0.00 | | 0.00 |
| 11.20 | 0.01 | | 0.01 | 32.40 | 0.00 | | 0.00 |
| 11.60 | 0.02 | | 0.02 | 32.80 | 0.00 | | 0.00 |
| 12.00 | 0.04 | | 0.04 | 33.20 | 0.00 | | 0.00 |
| 12.40 | **0.13** | | **0.13** | 33.60 | 0.00 | | 0.00 |
| 12.80 | **0.08** | | **0.08** | 34.00 | 0.00 | | 0.00 |
| 13.20 | 0.03 | | 0.03 | 34.40 | 0.00 | | 0.00 |
| 13.60 | 0.02 | | 0.02 | 34.80 | 0.00 | | 0.00 |
| 14.00 | 0.02 | | 0.02 | 35.20 | 0.00 | | 0.00 |
| 14.40 | 0.01 | | 0.01 | 35.60 | 0.00 | | 0.00 |
| 14.80 | 0.01 | | 0.01 | 36.00 | 0.00 | | 0.00 |
| 15.20 | 0.01 | | 0.01 | 36.40 | 0.00 | | 0.00 |
| 15.60 | 0.01 | | 0.01 | 36.80 | 0.00 | | 0.00 |
| 16.00 | 0.01 | | 0.01 | 37.20 | 0.00 | | 0.00 |
| 16.40 | 0.01 | | 0.01 | 37.60 | 0.00 | | 0.00 |
| 16.80 | 0.01 | | 0.01 | 38.00 | 0.00 | | 0.00 |
| 17.20 | 0.01 | | 0.01 | 38.40 | 0.00 | | 0.00 |
| 17.60 | 0.01 | | 0.01 | 38.80 | 0.00 | | 0.00 |
| 18.00 | 0.00 | | 0.00 | 39.20 | 0.00 | | 0.00 |
| 18.40 | 0.00 | | 0.00 | 39.60 | 0.00 | | 0.00 |
| 18.80 | 0.00 | | 0.00 | 40.00 | 0.00 | | 0.00 |
| 19.20 | 0.00 | | 0.00 | | | | |
| 19.60 | 0.00 | | 0.00 | | | | |
| 20.00 | 0.00 | | 0.00 | | | | |
| 20.40 | 0.00 | | 0.00 | | | | |
| 20.80 | 0.00 | | 0.00 | | | | |

## Summary for Pond 5P: Infil System 1

Inflow Area = 0.168 ac, 50.98% Impervious, Inflow Depth = 4.35" for 25 year event
Inflow = 0.85 cfs @ 12.07 hrs, Volume= 0.061 af
Outflow = 0.12 cfs @ 12.57 hrs, Volume= 0.061 af, Atten= 86%, Lag= 29.8 min
Discarded = 0.12 cfs @ 12.57 hrs, Volume= 0.061 af

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.02 hrs
Peak Elev= 7.97' @ 12.57 hrs Surf.Area= 3,557 sf Storage= 855 cf

Plug-Flow detention time= 52.4 min calculated for 0.061 af (100% of inflow)
Center-of-Mass det. time= 52.4 min ( 841.9 - 789.6 )

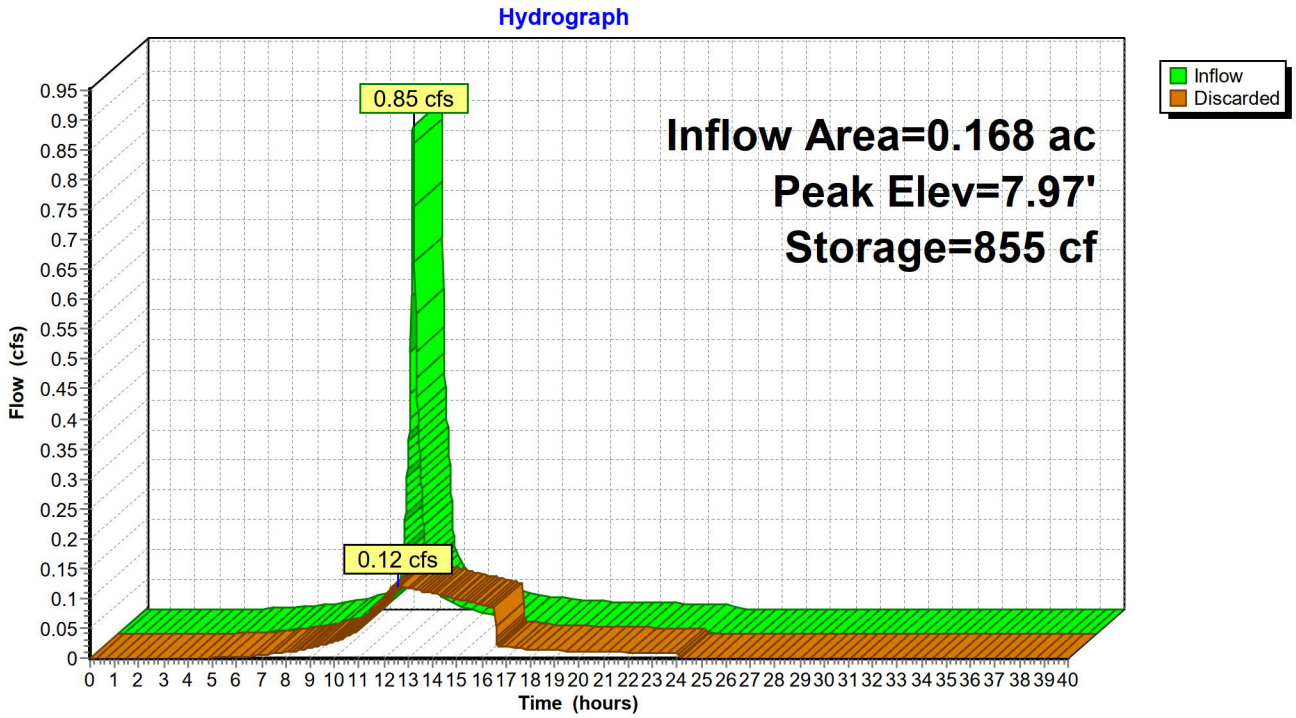
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 7.17' | 886 cf | **Custom Stage Data (Conic)** Listed below (Recalc)<br>2,952 cf Overall x 30.0% Voids |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|
| 7.17 | 3,557 | 0 | 0 | 3,557 |
| 8.00 | 3,557 | 2,952 | 2,952 | 3,732 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 7.17' | **1.020 in/hr Exfiltration over Wetted area**<br>Conductivity to Groundwater Elevation = 5.00' |

**Discarded OutFlow** Max=0.12 cfs @ 12.57 hrs HW=7.97' (Free Discharge)
↑—**1=Exfiltration** ( Controls 0.12 cfs)

## Pond 5P: Infil System 1



## Hydrograph for Pond 5P: Infil System 1

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Discarded (cfs) |
|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 7.17 | 0.00 |
| 1.00 | 0.00 | 0 | 7.17 | 0.00 |
| 2.00 | 0.00 | 0 | 7.17 | 0.00 |
| 3.00 | 0.00 | 0 | 7.17 | 0.00 |
| 4.00 | 0.00 | 0 | 7.17 | 0.00 |
| 5.00 | 0.00 | 0 | 7.17 | 0.00 |
| 6.00 | 0.00 | 0 | 7.17 | 0.00 |
| 7.00 | 0.01 | 1 | 7.17 | 0.01 |
| 8.00 | 0.01 | 1 | 7.17 | 0.01 |
| 9.00 | 0.02 | 2 | 7.17 | 0.02 |
| 10.00 | 0.03 | 3 | 7.17 | 0.03 |
| 11.00 | 0.05 | 5 | 7.17 | 0.05 |
| 12.00 | **0.56** | **257** | **7.41** | **0.09** |
| 13.00 | **0.07** | **810** | **7.93** | **0.12** |
| 14.00 | 0.05 | 605 | 7.74 | 0.11 |
| 15.00 | 0.03 | 373 | 7.52 | 0.10 |
| 16.00 | 0.02 | 138 | 7.30 | 0.09 |
| 17.00 | 0.02 | 2 | 7.17 | 0.02 |
| 18.00 | 0.01 | 2 | 7.17 | 0.02 |
| 19.00 | 0.01 | 1 | 7.17 | 0.01 |
| 20.00 | 0.01 | 1 | 7.17 | 0.01 |
| 21.00 | 0.01 | 1 | 7.17 | 0.01 |
| 22.00 | 0.01 | 1 | 7.17 | 0.01 |
| 23.00 | 0.01 | 1 | 7.17 | 0.01 |
| 24.00 | 0.01 | 1 | 7.17 | 0.01 |
| 25.00 | 0.00 | 0 | 7.17 | 0.00 |
| 26.00 | 0.00 | 0 | 7.17 | 0.00 |
| 27.00 | 0.00 | 0 | 7.17 | 0.00 |
| 28.00 | 0.00 | 0 | 7.17 | 0.00 |
| 29.00 | 0.00 | 0 | 7.17 | 0.00 |
| 30.00 | 0.00 | 0 | 7.17 | 0.00 |
| 31.00 | 0.00 | 0 | 7.17 | 0.00 |
| 32.00 | 0.00 | 0 | 7.17 | 0.00 |
| 33.00 | 0.00 | 0 | 7.17 | 0.00 |
| 34.00 | 0.00 | 0 | 7.17 | 0.00 |
| 35.00 | 0.00 | 0 | 7.17 | 0.00 |
| 36.00 | 0.00 | 0 | 7.17 | 0.00 |
| 37.00 | 0.00 | 0 | 7.17 | 0.00 |
| 38.00 | 0.00 | 0 | 7.17 | 0.00 |
| 39.00 | 0.00 | 0 | 7.17 | 0.00 |
| 40.00 | 0.00 | 0 | 7.17 | 0.00 |