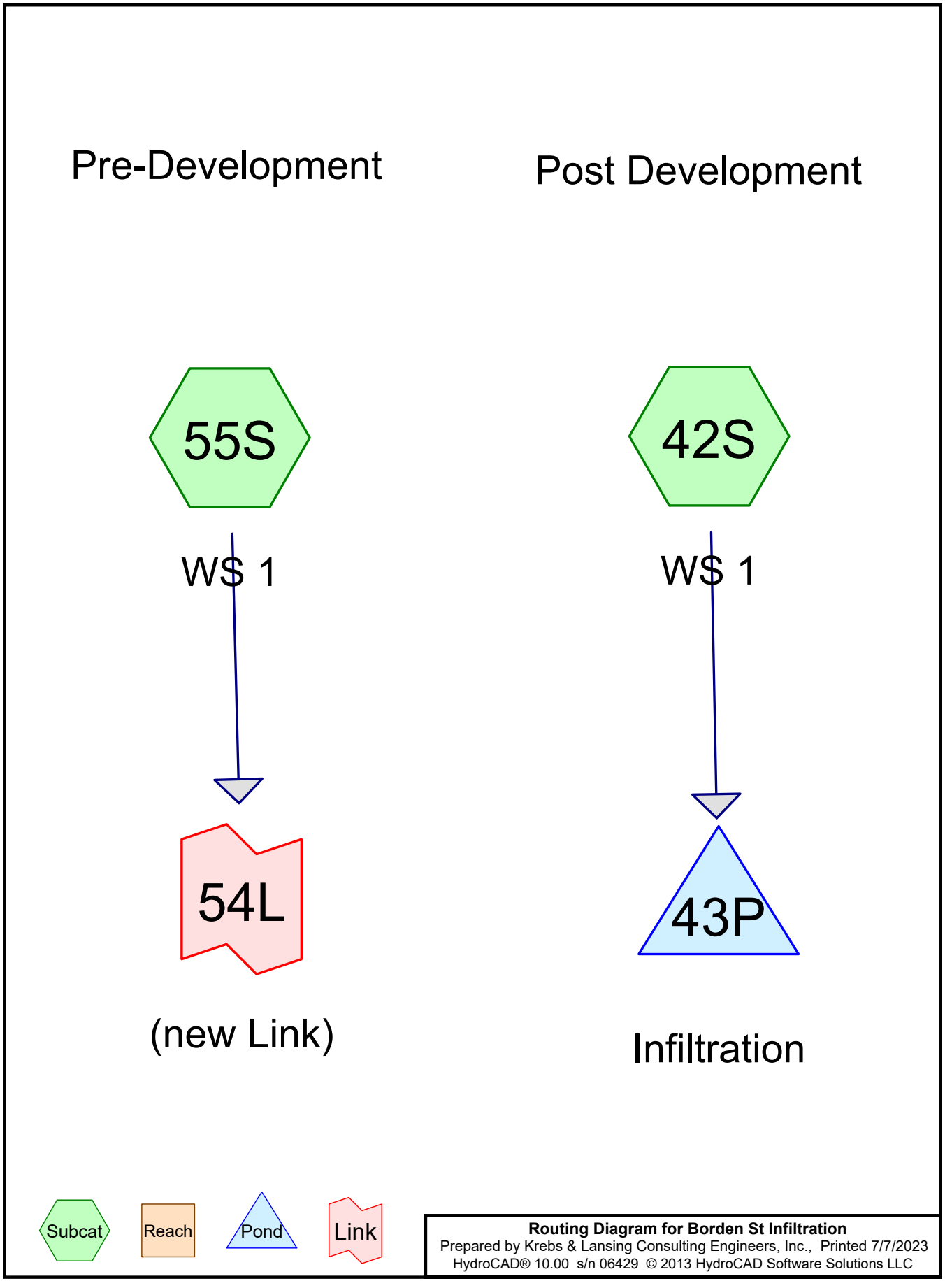


**Routing Diagram for Borden St Infiltration**
Prepared by Krebs & Lansing Consulting Engineers, Inc., Printed 7/7/2023
HydroCAD® 10.00 s/n 06429 © 2013 HydroCAD Software Solutions LLC

**Practice Drainage Area Runoff Calculator**

| | |
|---|---|
| **Project Name:** | **Richmond Village Housing** |
| **Discharge Point:** | **1** |
| **Infiltration Practice #** | **1** |

This tool may be used to calculate the required treatment volumes for the area draining to an individual practice where the practices drainage area is only a portion of of the area draining to a discharge point. Where the practice receives runoff from the entire area to a discharge point, this calculator will give the same information as the Standards Compliance Workbook.

**Precipitation Data** * Preciptation values shall be obtained from NOAA Atlas 14

| **Storm** | **WQ Storm** | **1 yr, 24 hr** | **10 yr, 24 hr** | **100 yr, 24 hr** |
|---|---|---|---|---|
| Precipitation (inches) | 1.00 | 1.98 | 3.47 | 5.25 |

**Drainage Area Information**

Pre Development Land Use (acres)

| | Hydrologic Soil Group | | | | |
|---|---|---|---|---|---|
| Landuse | A | B | C | D | Total (acres) |
| Grass | 0.555 | 0.000 | 0.000 | 0.000 | **0.555** |
| Meadow | 0.000 | 0.000 | 0.000 | 0.000 | **0.000** |
| Woods | 0.000 | 0.000 | 0.000 | 0.000 | **0.000** |
| Pavement, roofs, and other impervious | 0.933 | 0.000 | 0.000 | 0.000 | **0.933** |
| Total | **1.488** | **0.000** | **0.000** | **0.000** | **1.488** |

Post Development Land Use (acres)

| | Hydrologic Soil Group | | | | |
|---|---|---|---|---|---|
| Landuse | A | B | C | D | Total (acres) |
| Grass | 0.555 | 0.000 | 0.000 | 0.000 | **0.555** |
| Meadow | 0.000 | 0.000 | 0.000 | 0.000 | **0.000** |
| Woods | 0.000 | 0.000 | 0.000 | 0.000 | **0.000** |
| Pavement, roofs, and other impervious | 0.933 | 0.000 | 0.000 | 0.000 | **0.933** |
| Total | **1.488** | **0.000** | **0.000** | **0.000** | **1.488** |

$T_V$ of upstream practices: 0.000 ac-ft  $T_V$ credit of this practice: 0.000 ac-ft

| **Treatment Standard** | **Required Treatment Volume** | Post Development Runoff Volume | Pre-development Runoff Volume | Post Composite CN (to practice) | $CN_{Adj}$ (with $T_V$ practice credit) | Pre Composite CN |
|---|---|---|---|---|---|---|
| Channel Protection (Hydrologic Condition Method) | **0.0000** | 0.1364 | 0.1364 | 90 | 90 | 90 |
| Overbank Flood | **0.0000** | 0.2520 | 0.2520 | 86 | 86 | 86 |
| Extreme Flood | **0.0000** | 0.4015 | 0.4015 | 81 | 81 | 81 |

**Information for Calculating $T_C$ by the Watershed Lag Method**

| | Average Catchment Slope, Y (%) | Hydraulic Length, l (ft) | Time of Concentration, $T_C$ (min) | | |
|---|---|---|---|---|---|
| | | | 1 yr | 10 yr | 100 yr |
| Pre Development | 7.00% | 370.00 | 3.8 | 4.5 | 5.2 |
| Post Development, upstream of practice | 7.00% | 370.00 | 3.8 | 4.5 | 5.2 |
| Post Development, with $T_V$ credit from practice | 0.00% | 0.00 | 0.0 | 0.0 | 0.0 |

**NOAA Atlas 14, Volume 10, Version 3**
**Location name: Richmond, Vermont, USA***
**Latitude: 44.405°, Longitude: -72.9968°**
**Elevation: 311 ft****
* source: ESRI Maps
** source: USGS

**POINT PRECIPITATION FREQUENCY ESTIMATES**

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

## PF tabular

**PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]**

| Duration | Average recurrence interval (years) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 5 | 10 | 25 | 50 | 100 | 200 | 500 | 1000 |
| 5-min | 0.308 (0.240-0.392) | 0.362 (0.282-0.461) | 0.450 (0.349-0.575) | 0.523 (0.404-0.672) | 0.624 (0.464-0.830) | 0.702 (0.510-0.951) | 0.779 (0.548-1.09) | 0.857 (0.578-1.24) | 0.960 (0.623-1.43) | 1.04 (0.657-1.58) |
| 10-min | 0.437 (0.340-0.556) | 0.513 (0.399-0.653) | 0.638 (0.495-0.815) | 0.741 (0.572-0.953) | 0.884 (0.658-1.18) | 0.994 (0.723-1.35) | 1.10 (0.776-1.54) | 1.21 (0.819-1.75) | 1.36 (0.883-2.03) | 1.47 (0.931-2.24) |
| 15-min | 0.514 (0.401-0.654) | 0.604 (0.470-0.769) | 0.751 (0.582-0.959) | 0.872 (0.673-1.12) | 1.04 (0.774-1.38) | 1.17 (0.850-1.58) | 1.30 (0.913-1.81) | 1.43 (0.963-2.06) | 1.60 (1.04-2.39) | 1.73 (1.10-2.63) |
| 30-min | 0.696 (0.542-0.885) | 0.817 (0.636-1.04) | 1.02 (0.787-1.30) | 1.18 (0.909-1.51) | 1.40 (1.05-1.87) | 1.58 (1.15-2.14) | 1.75 (1.23-2.45) | 1.93 (1.30-2.78) | 2.16 (1.40-3.22) | 2.34 (1.48-3.56) |
| 60-min | 0.877 (0.684-1.12) | 1.03 (0.802-1.31) | 1.28 (0.992-1.64) | 1.49 (1.15-1.91) | 1.77 (1.32-2.36) | 1.99 (1.45-2.70) | 2.21 (1.55-3.08) | 2.43 (1.64-3.51) | 2.72 (1.77-4.06) | 2.94 (1.86-4.48) |
| 2-hr | 1.09 (0.858-1.38) | 1.28 (1.00-1.62) | 1.58 (1.24-2.01) | 1.84 (1.42-2.34) | 2.18 (1.64-2.89) | 2.45 (1.80-3.31) | 2.72 (1.93-3.80) | 3.01 (2.04-4.32) | 3.41 (2.22-5.06) | 3.73 (2.37-5.65) |
| 3-hr | 1.23 (0.966-1.54) | 1.44 (1.13-1.81) | 1.78 (1.39-2.25) | 2.06 (1.60-2.62) | 2.45 (1.85-3.24) | 2.74 (2.02-3.70) | 3.05 (2.18-4.26) | 3.39 (2.30-4.85) | 3.88 (2.53-5.73) | 4.27 (2.72-6.44) |
| 6-hr | 1.46 (1.16-1.83) | 1.72 (1.36-2.15) | 2.14 (1.68-2.68) | 2.48 (1.95-3.14) | 2.96 (2.25-3.91) | 3.32 (2.47-4.47) | 3.70 (2.68-5.18) | 4.15 (2.82-5.90) | 4.80 (3.14-7.06) | 5.34 (3.41-8.01) |
| 12-hr | 1.70 (1.36-2.11) | 2.02 (1.61-2.51) | 2.54 (2.01-3.16) | 2.96 (2.34-3.72) | 3.56 (2.72-4.66) | 4.00 (2.99-5.36) | 4.47 (3.25-6.23) | 5.03 (3.44-7.11) | 5.87 (3.85-8.59) | 6.59 (4.22-9.82) |
| 24-hr | 1.98 (1.59-2.44) | 2.35 (1.89-2.90) | 2.96 (2.37-3.67) | 3.47 (2.76-4.33) | 4.17 (3.21-5.44) | 4.69 (3.54-6.26) | 5.25 (3.84-7.28) | 5.92 (4.06-8.32) | 6.92 (4.55-10.1) | 7.76 (4.99-11.5) |
| 2-day | 2.33 (1.88-2.86) | 2.75 (2.22-3.37) | 3.43 (2.76-4.22) | 4.00 (3.20-4.95) | 4.78 (3.70-6.18) | 5.37 (4.06-7.09) | 5.99 (4.39-8.22) | 6.71 (4.63-9.37) | 7.78 (5.14-11.2) | 8.67 (5.59-12.8) |
| 3-day | 2.60 (2.10-3.17) | 3.04 (2.46-3.71) | 3.76 (3.03-4.60) | 4.35 (3.49-5.37) | 5.18 (4.01-6.66) | 5.79 (4.39-7.61) | 6.44 (4.73-8.79) | 7.19 (4.97-10.0) | 8.28 (5.49-11.9) | 9.18 (5.93-13.5) |
| 4-day | 2.82 (2.29-3.43) | 3.28 (2.66-4.00) | 4.03 (3.26-4.92) | 4.65 (3.74-5.72) | 5.51 (4.28-7.06) | 6.15 (4.67-8.05) | 6.83 (5.02-9.27) | 7.60 (5.26-10.5) | 8.70 (5.78-12.5) | 9.62 (6.22-14.1) |
| 7-day | 3.40 (2.78-4.12) | 3.91 (3.20-4.74) | 4.75 (3.86-5.77) | 5.44 (4.40-6.64) | 6.39 (4.98-8.13) | 7.11 (5.41-9.23) | 7.85 (5.78-10.6) | 8.68 (6.04-12.0) | 9.86 (6.57-14.1) | 10.8 (7.02-15.8) |
| 10-day | 3.96 (3.25-4.78) | 4.52 (3.70-5.45) | 5.43 (4.43-6.58) | 6.18 (5.02-7.53) | 7.23 (5.65-9.15) | 8.01 (6.12-10.4) | 8.83 (6.50-11.8) | 9.72 (6.78-13.4) | 11.0 (7.32-15.6) | 12.0 (7.77-17.4) |
| 20-day | 5.67 (4.68-6.79) | 6.36 (5.25-7.63) | 7.50 (6.16-9.02) | 8.44 (6.89-10.2) | 9.74 (7.65-12.2) | 10.7 (8.22-13.7) | 11.7 (8.65-15.5) | 12.8 (8.96-17.4) | 14.2 (9.53-20.1) | 15.3 (9.97-22.1) |
| 30-day | 7.12 (5.91-8.49) | 7.92 (6.56-9.45) | 9.22 (7.61-11.0) | 10.3 (8.45-12.4) | 11.8 (9.30-14.7) | 12.9 (9.94-16.5) | 14.1 (10.4-18.5) | 15.3 (10.7-20.7) | 16.8 (11.3-23.6) | 18.0 (11.7-25.8) |
| 45-day | 8.95 (7.45-10.6) | 9.86 (8.20-11.7) | 11.4 (9.41-13.6) | 12.6 (10.4-15.1) | 14.3 (11.3-17.8) | 15.6 (12.0-19.8) | 16.9 (12.5-22.1) | 18.2 (12.9-24.7) | 19.9 (13.4-27.9) | 21.1 (13.8-30.3) |
| 60-day | 10.5 (8.76-12.4) | 11.5 (9.59-13.6) | 13.1 (10.9-15.6) | 14.5 (12.0-17.4) | 16.4 (13.0-20.3) | 17.9 (13.8-22.5) | 19.3 (14.3-25.0) | 20.7 (14.6-27.9) | 22.4 (15.1-31.3) | 23.7 (15.5-33.8) |

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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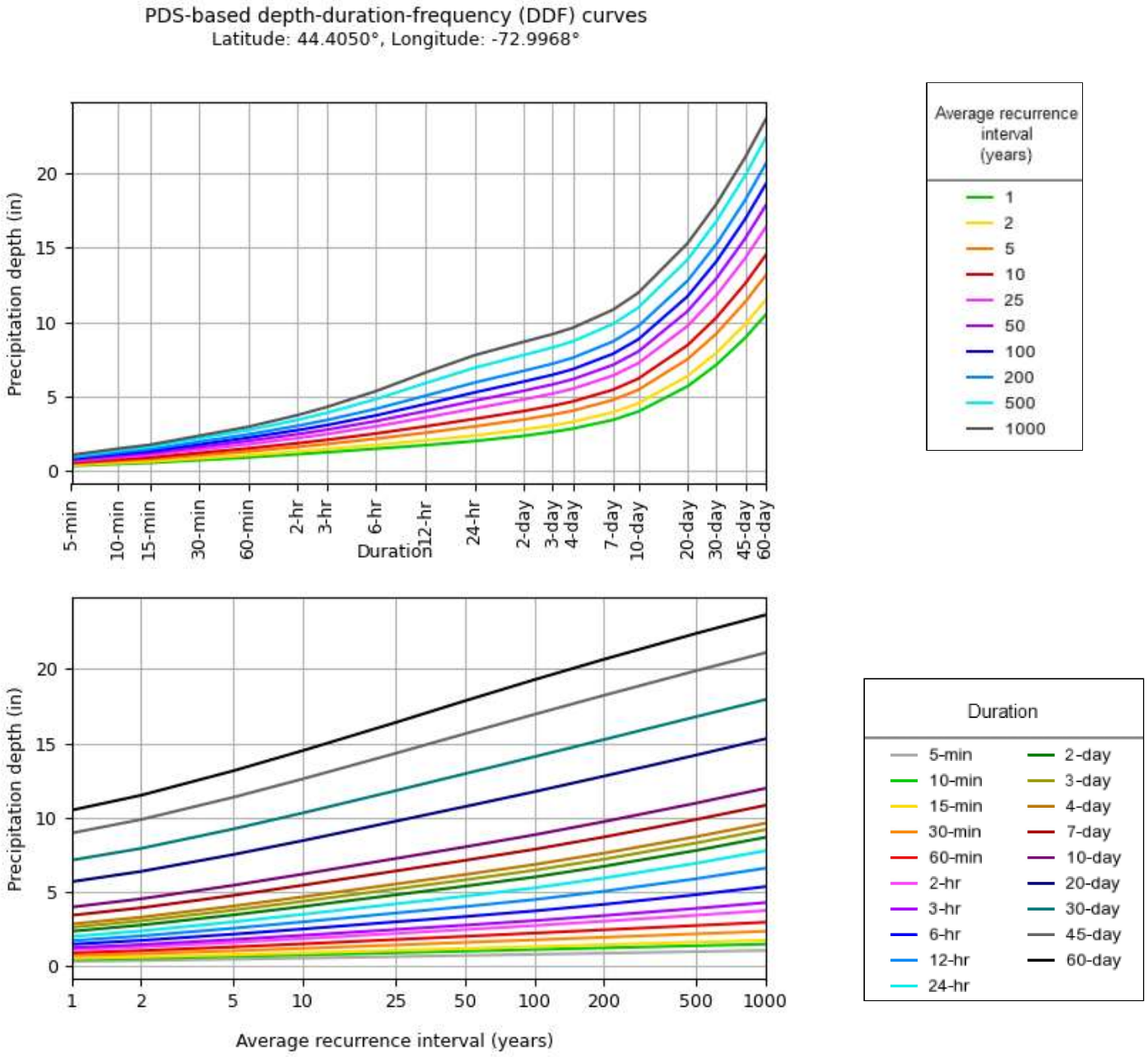
## PF graphical




NOAA Atlas 14, Volume 10, Version 3 Created (GMT): Fri May 19 20:01:31 2023

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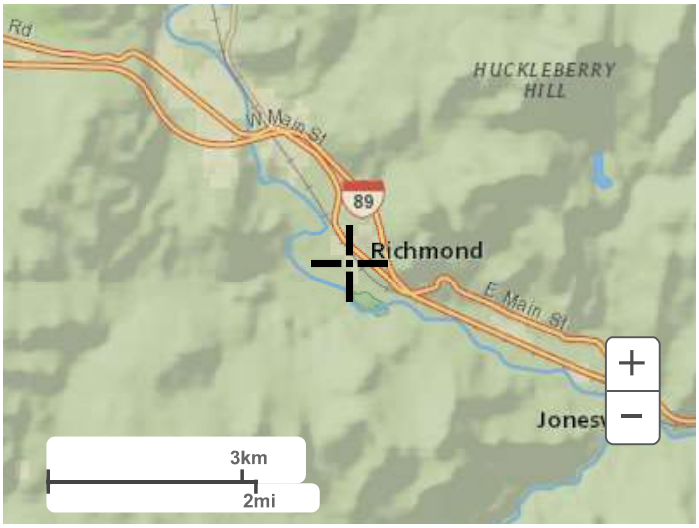
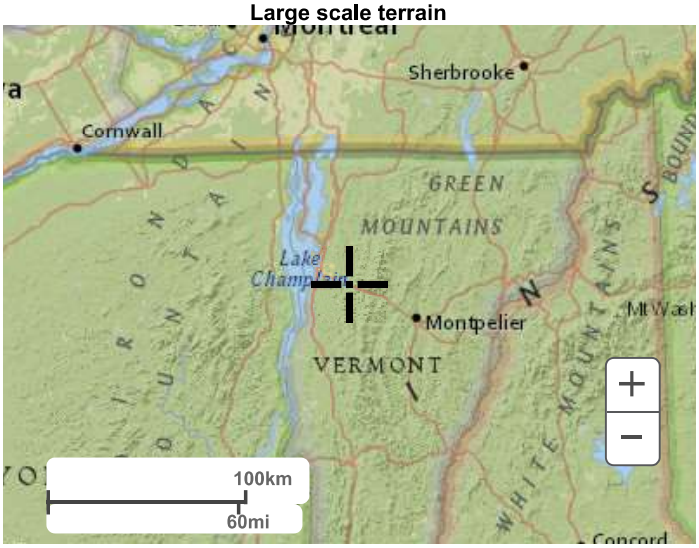
## Maps & aerials

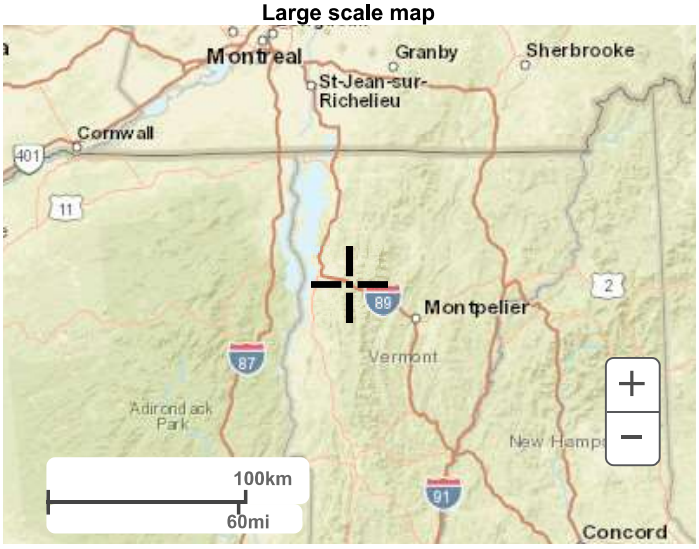
**Small scale terrain**



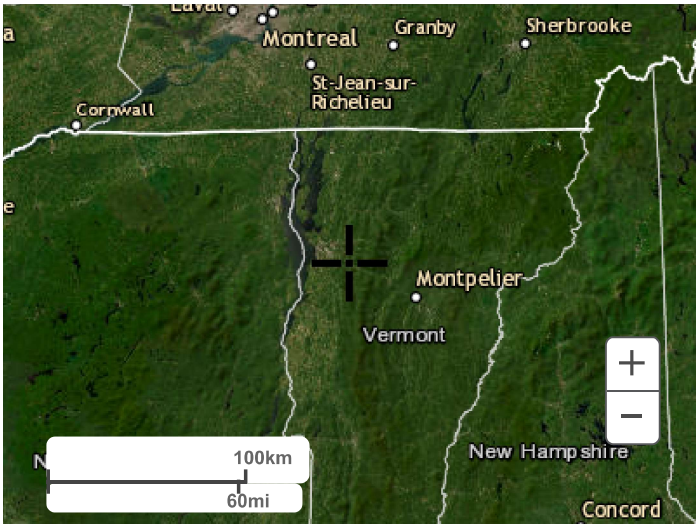

**Large scale terrain**




**Large scale map**




**Large scale aerial**

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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

## Project Notes

Richmond Village Housing
Stormwater Modeling

## Area Listing (selected nodes)

| Area (acres) | CN | Description (subcatchment-numbers) |
|---|---|---|
| 2.976 | 86 | Worksheet - Interpolated (42S, 55S) |
| **2.976** | **86** | **TOTAL AREA** |

Time span=1.00-120.00 hrs, dt=0.01 hrs, 11901 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 42S: WS 1** Runoff Area=1.488 ac 0.00% Impervious Runoff Depth=2.70"
Tc=4.5 min CN=86 Runoff=7.36 cfs 0.335 af

**Subcatchment 55S: WS 1** Runoff Area=1.488 ac 0.00% Impervious Runoff Depth=2.70"
Tc=4.5 min CN=86 Runoff=7.36 cfs 0.335 af

**Pond 43P: Infiltration** Peak Elev=310.50' Storage=7,321 cf Inflow=7.36 cfs 0.335 af
Discarded=0.25 cfs 0.335 af Primary=0.00 cfs 0.000 af Outflow=0.25 cfs 0.335 af

**Link 54L: (new Link)** Inflow=7.36 cfs 0.335 af
Primary=7.36 cfs 0.335 af

**Total Runoff Area = 2.976 ac Runoff Volume = 0.670 af Average Runoff Depth = 2.70"**
**100.00% Pervious = 2.976 ac 0.00% Impervious = 0.000 ac**

## Summary for Subcatchment 42S: WS 1

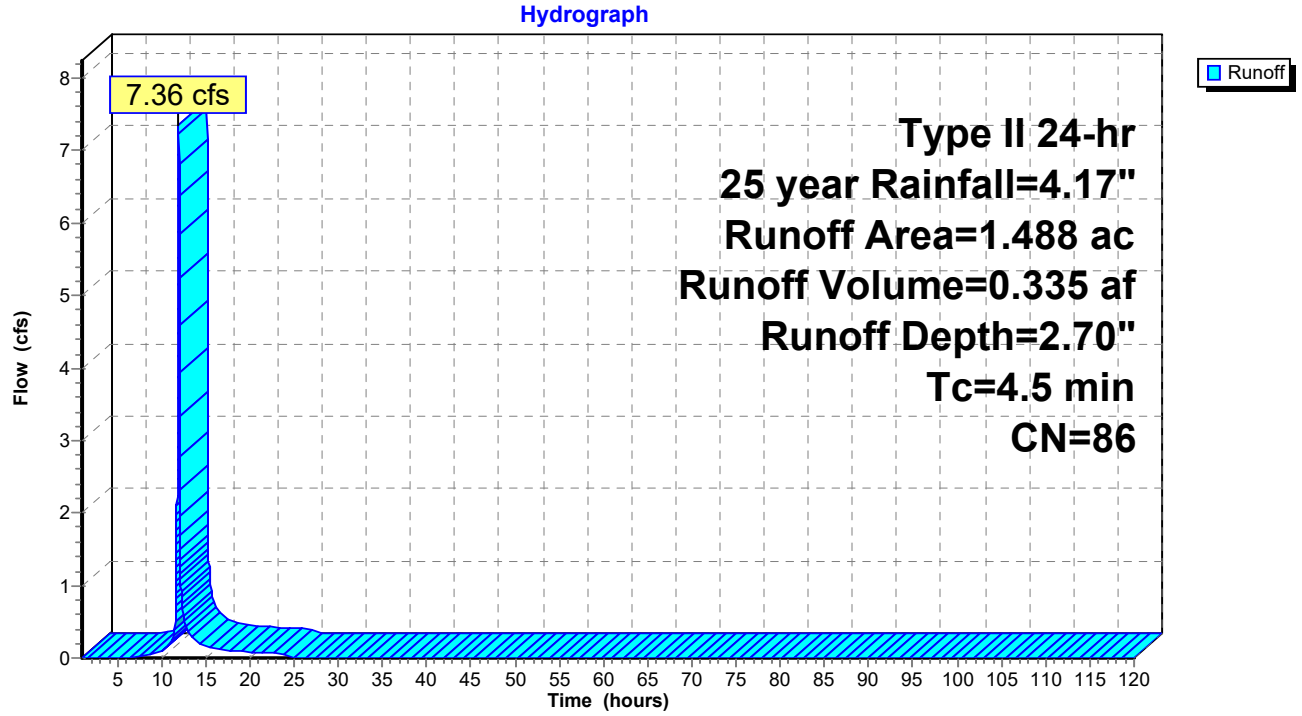
Runoff = 7.36 cfs @ 11.95 hrs, Volume= 0.335 af, Depth= 2.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 1.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 year Rainfall=4.17"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.488 | 86 | Worksheet - Interpolated |
| | 1.488 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.5 | | | | | **Direct Entry, Tc From Worksheet - Interpolated** |

## Subcatchment 42S: WS 1



Pre-development peak discharge rate for 25 year storm



## Summary for Subcatchment 55S: WS 1

Predevelopment Watershed

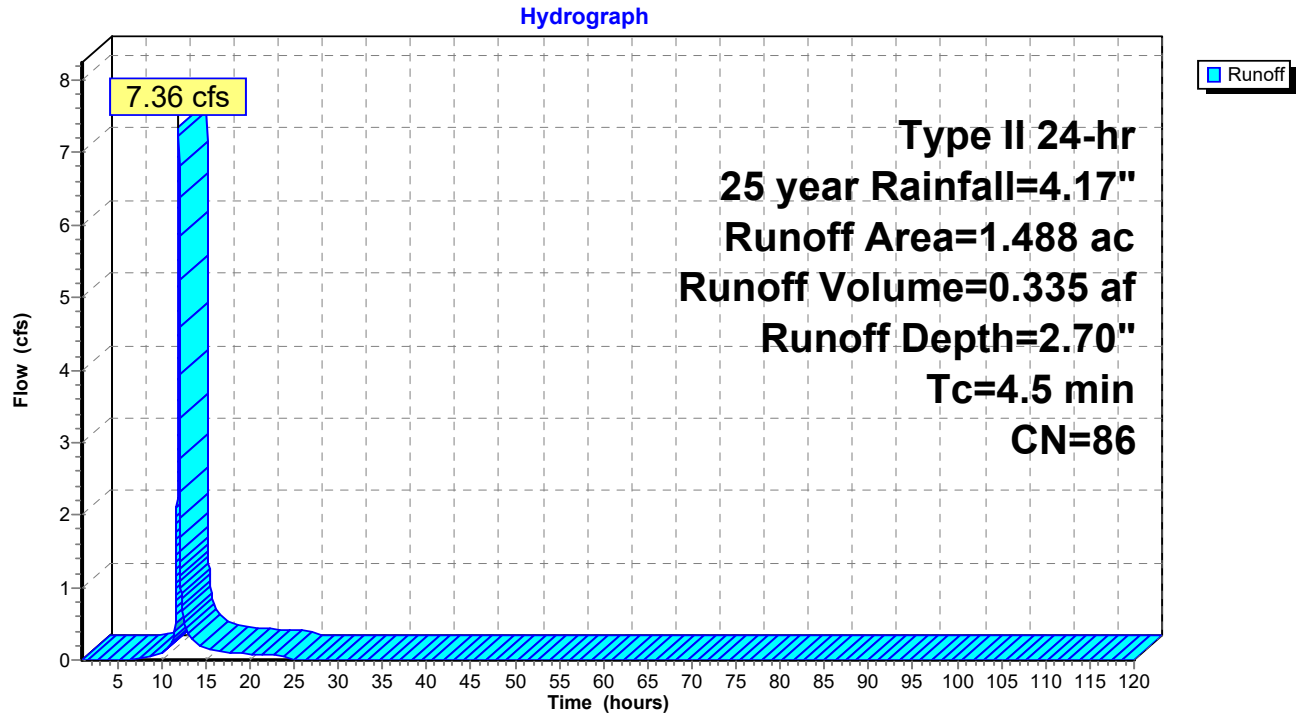
Runoff = 7.36 cfs @ 11.95 hrs, Volume= 0.335 af, Depth= 2.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 1.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 25 year Rainfall=4.17"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.488 | 86 | Worksheet - Interpolated |
| | 1.488 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.5 | | | | | **Direct Entry, Tc From Worksheet - Interpolated** |

## Subcatchment 55S: WS 1



## Summary for Pond 43P: Infiltration

Inflow Area = 1.488 ac, 0.00% Impervious, Inflow Depth = 2.70" for 25 year event
Inflow = 7.36 cfs @ 11.95 hrs, Volume= 0.335 af
Outflow = 0.25 cfs @ 11.24 hrs, Volume= 0.335 af, Atten= 97%, Lag= 0.0 min
Discarded = 0.25 cfs @ 11.24 hrs, Volume= 0.335 af
Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-120.00 hrs, dt= 0.01 hrs
Peak Elev= 310.50' @ 13.62 hrs Surf.Area= 3,747 sf Storage= 7,321 cf

Plug-Flow detention time= 273.1 min calculated for 0.335 af (100% of inflow)
Center-of-Mass det. time= 273.0 min ( 1,080.1 - 807.0 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 308.00' | 11,413 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 308.00 | 2,180 | 0 | 0 |
| 309.00 | 2,760 | 2,470 | 2,470 |
| 310.00 | 3,400 | 3,080 | 5,550 |
| 311.00 | 4,100 | 3,750 | 9,300 |
| 311.50 | 4,350 | 2,113 | 11,413 |

Design Infiltration rate used

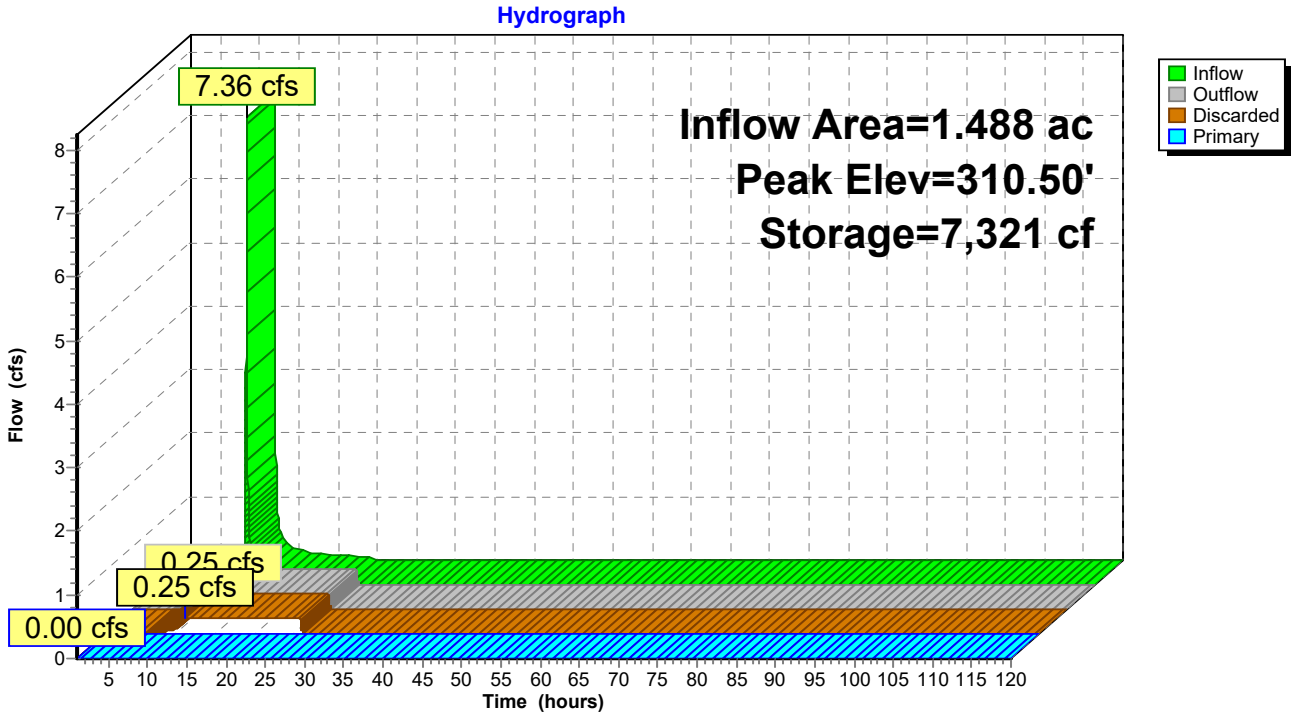
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 308.00' | **5.000 in/hr Exfiltration over Surface area below 308.01'** |
| #2 | Primary | 311.06' | **15.0' long x 6.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50<br>Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83 |

**Discarded OutFlow** Max=0.25 cfs @ 11.24 hrs HW=308.04' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.25 cfs)

**Primary OutFlow** Max=0.00 cfs @ 1.00 hrs HW=308.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

No discharge from 25 year storm
(Type II 24 hour Rainfall distribution)

## Pond 43P: Infiltration

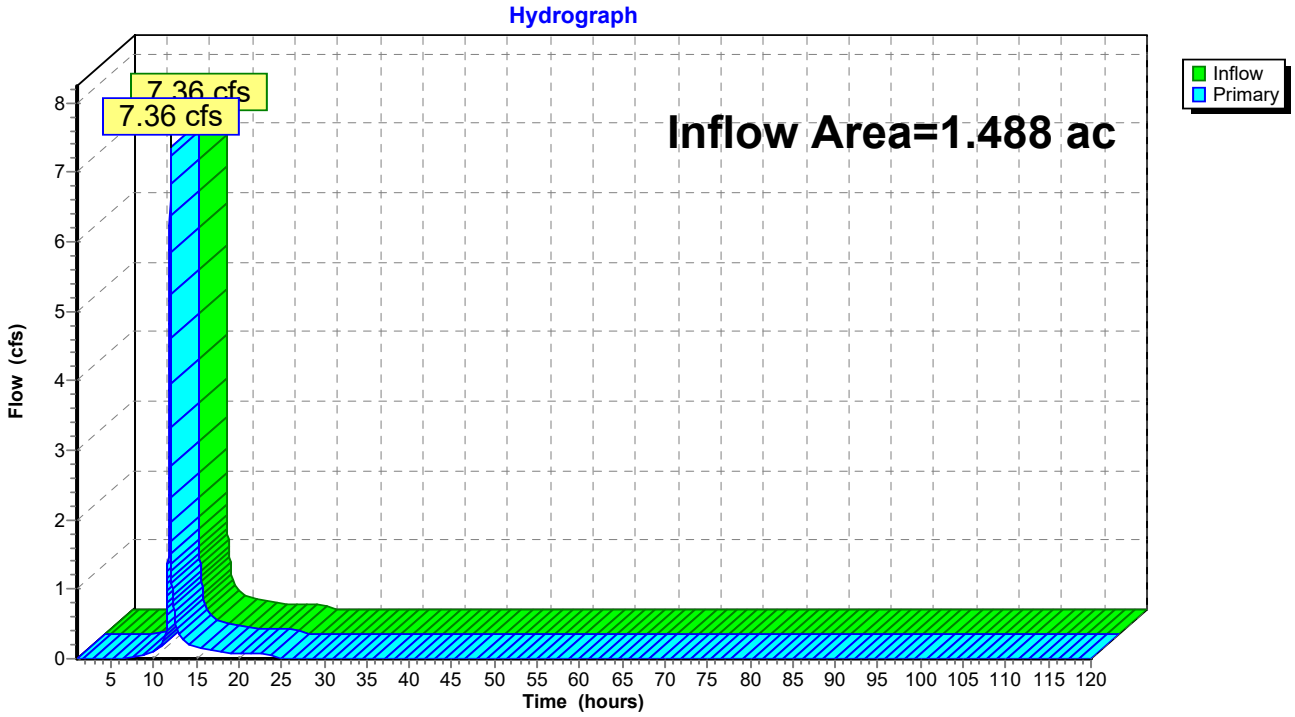


## Summary for Link 54L: (new Link)

Inflow Area = 1.488 ac, 0.00% Impervious, Inflow Depth = 2.70" for 25 year event
Inflow = 7.36 cfs @ 11.95 hrs, Volume= 0.335 af
Primary = 7.36 cfs @ 11.95 hrs, Volume= 0.335 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-120.00 hrs, dt= 0.01 hrs

## Link 54L: (new Link)



Time span=1.00-120.00 hrs, dt=0.01 hrs, 11901 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 42S: WS 1** Runoff Area=1.488 ac 0.00% Impervious Runoff Depth=3.18"
Tc=4.5 min CN=86 Runoff=8.59 cfs 0.394 af

**Subcatchment 55S: WS 1** Runoff Area=1.488 ac 0.00% Impervious Runoff Depth=3.18"
Tc=4.5 min CN=86 Runoff=8.59 cfs 0.394 af

**Pond 43P: Infiltration** Peak Elev=310.93' Storage=8,997 cf Inflow=8.59 cfs 0.394 af
Discarded=0.25 cfs 0.394 af Primary=0.00 cfs 0.000 af Outflow=0.25 cfs 0.394 af

**Link 54L: (new Link)** Inflow=8.59 cfs 0.394 af
Primary=8.59 cfs 0.394 af

**Total Runoff Area = 2.976 ac Runoff Volume = 0.788 af Average Runoff Depth = 3.18"**
**100.00% Pervious = 2.976 ac 0.00% Impervious = 0.000 ac**

## Summary for Subcatchment 42S: WS 1

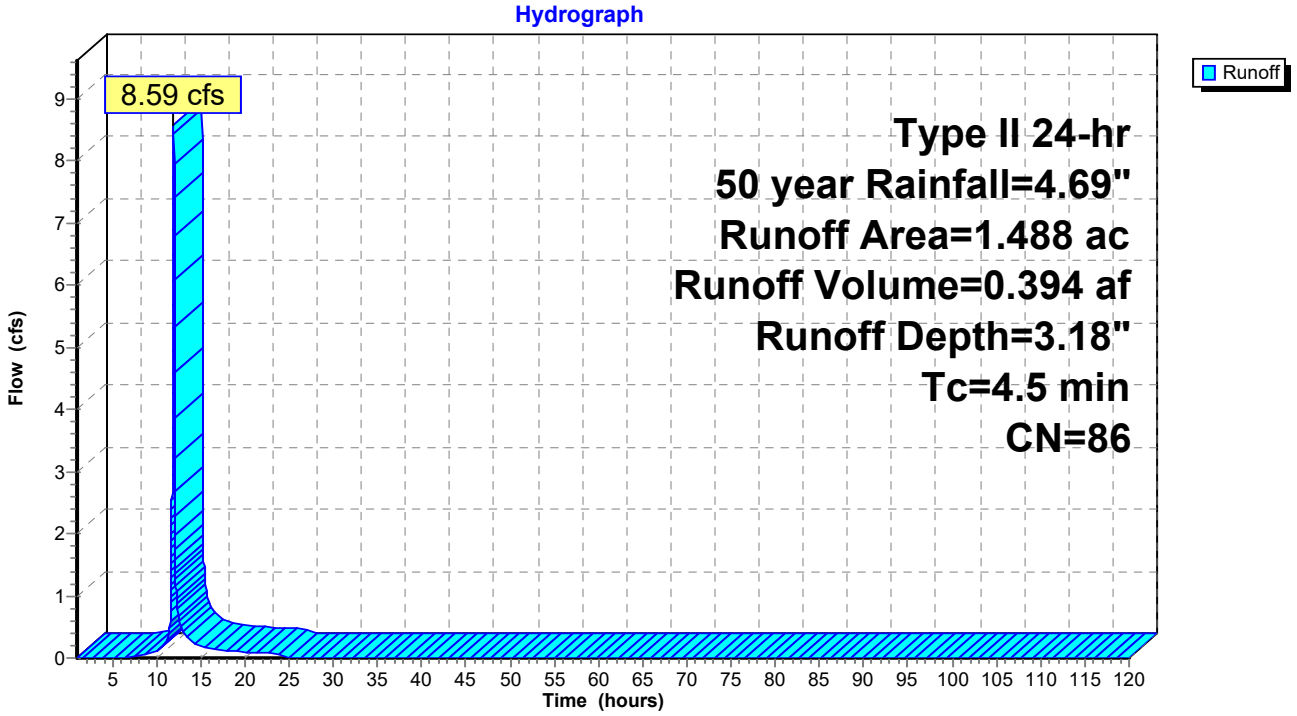
Runoff = 8.59 cfs @ 11.95 hrs, Volume= 0.394 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 1.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 50 year Rainfall=4.69"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.488 | 86 | Worksheet - Interpolated |
| | 1.488 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.5 | | | | | **Direct Entry, Tc From Worksheet - Interpolated** |

## Subcatchment 42S: WS 1



Pre-development peak discharge rate for 50 year storm



## Summary for Subcatchment 55S: WS 1

Predevelopment Watershed

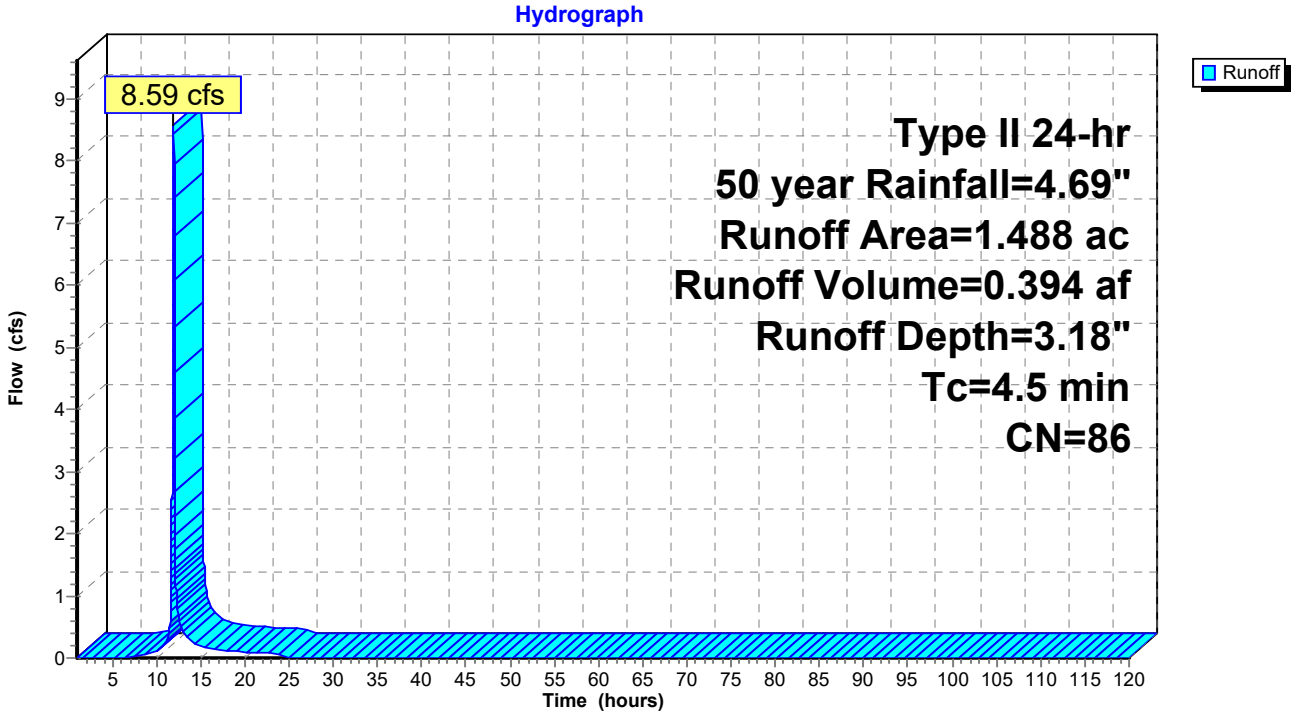
Runoff = 8.59 cfs @ 11.95 hrs, Volume= 0.394 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 1.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 50 year Rainfall=4.69"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.488 | 86 | Worksheet - Interpolated |
| | 1.488 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.5 | | | | | **Direct Entry, Tc From Worksheet - Interpolated** |

## Subcatchment 55S: WS 1



Peak water surface elevation below the overflow spillway elevation of 311.06'

## Summary for Pond 43P: Infiltration

Inflow Area = 1.488 ac, 0.00% Impervious, Inflow Depth = 3.18" for 50 year event
Inflow = 8.59 cfs @ 11.95 hrs, Volume= 0.394 af
Outflow = 0.25 cfs @ 11.06 hrs, Volume= 0.394 af, Atten= 97%, Lag= 0.0 min
Discarded = 0.25 cfs @ 11.06 hrs, Volume= 0.394 af
Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-120.00 hrs, dt= 0.01 hrs
Peak Elev= 310.93' @ 13.92 hrs Surf.Area= 4,048 sf Storage= 8,997 cf

Plug-Flow detention time= 340.2 min calculated for 0.394 af (100% of inflow)
Center-of-Mass det. time= 340.2 min ( 1,142.6 - 802.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 308.00' | 11,413 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 308.00 | 2,180 | 0 | 0 |
| 309.00 | 2,760 | 2,470 | 2,470 |
| 310.00 | 3,400 | 3,080 | 5,550 |
| 311.00 | 4,100 | 3,750 | 9,300 |
| 311.50 | 4,350 | 2,113 | 11,413 |

Design Infiltration rate used

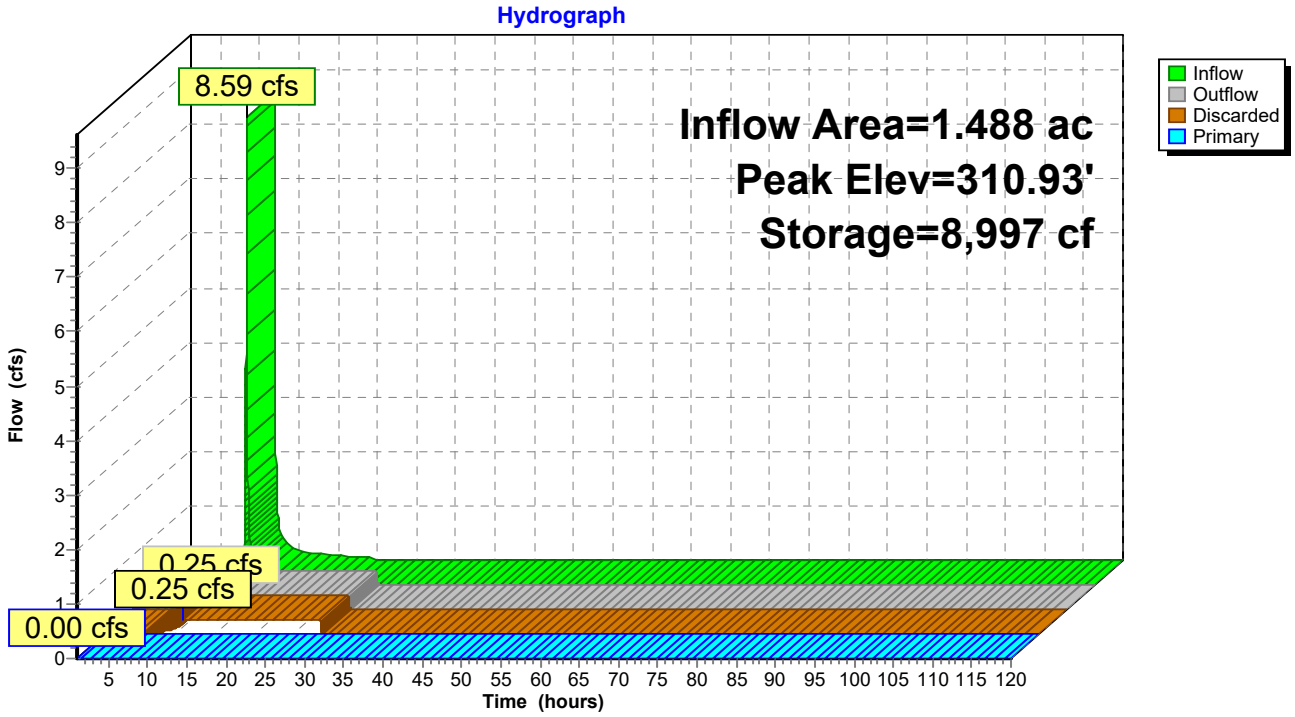
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 308.00' | **5.000 in/hr Exfiltration over Surface area below 308.01'** |
| #2 | Primary | 311.06' | **15.0' long x 6.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50<br>Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83 |

**Discarded OutFlow** Max=0.25 cfs @ 11.06 hrs HW=308.04' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.25 cfs)

**Primary OutFlow** Max=0.00 cfs @ 1.00 hrs HW=308.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

No discharge from 50 year storm (Type II 24 hour Rainfall distribution)

## Pond 43P: Infiltration

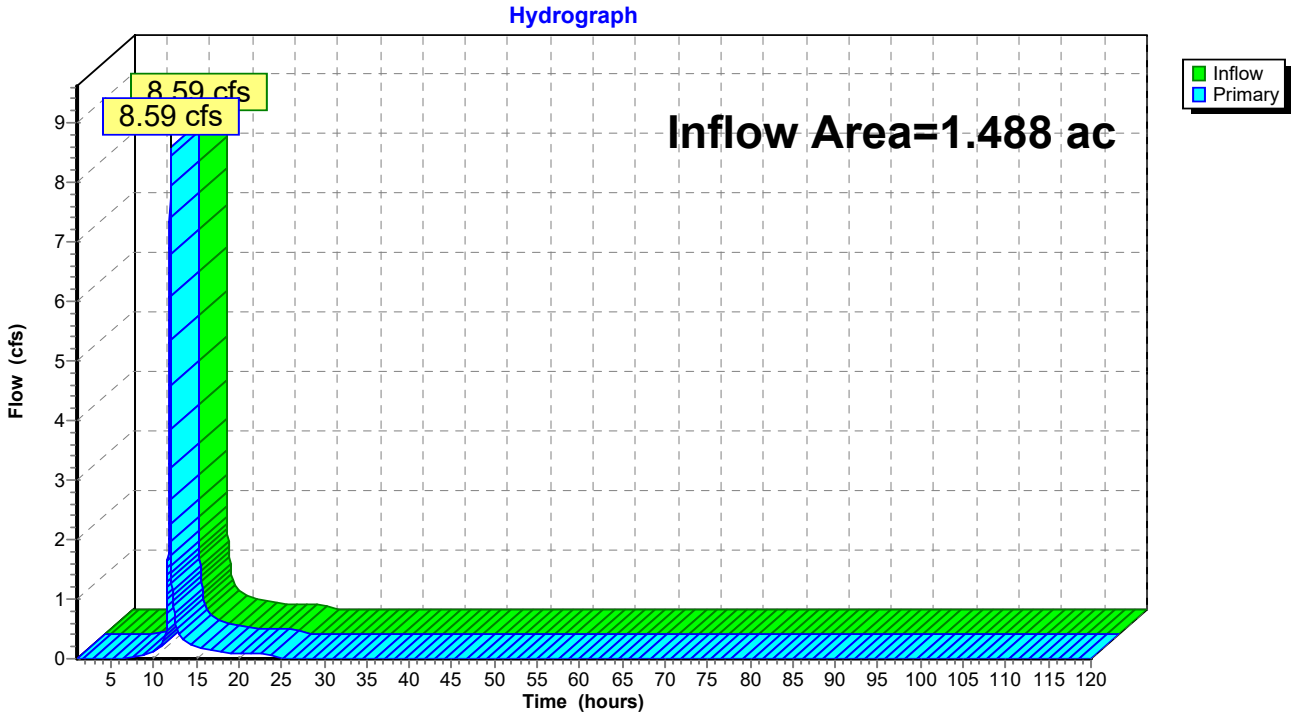


## Summary for Link 54L: (new Link)

Inflow Area = 1.488 ac, 0.00% Impervious, Inflow Depth = 3.18" for 50 year event
Inflow = 8.59 cfs @ 11.95 hrs, Volume= 0.394 af
Primary = 8.59 cfs @ 11.95 hrs, Volume= 0.394 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-120.00 hrs, dt= 0.01 hrs

## Link 54L: (new Link)



Time span=1.00-120.00 hrs, dt=0.01 hrs, 11901 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 42S: WS 1** Runoff Area=1.488 ac 0.00% Impervious Runoff Depth=3.70"
Tc=4.5 min CN=86 Runoff=9.91 cfs 0.459 af

**Subcatchment 55S: WS 1** Runoff Area=1.488 ac 0.00% Impervious Runoff Depth=3.70"
Tc=4.5 min CN=86 Runoff=9.91 cfs 0.459 af

**Pond 43P: Infiltration** Peak Elev=311.11' Storage=9,770 cf Inflow=9.91 cfs 0.459 af
Discarded=0.25 cfs 0.428 af Primary=0.45 cfs 0.031 af Outflow=0.70 cfs 0.459 af

**Link 54L: (new Link)** Inflow=9.91 cfs 0.459 af
Primary=9.91 cfs 0.459 af

**Total Runoff Area = 2.976 ac Runoff Volume = 0.918 af Average Runoff Depth = 3.70"**
**100.00% Pervious = 2.976 ac 0.00% Impervious = 0.000 ac**

## Summary for Subcatchment 42S: WS 1

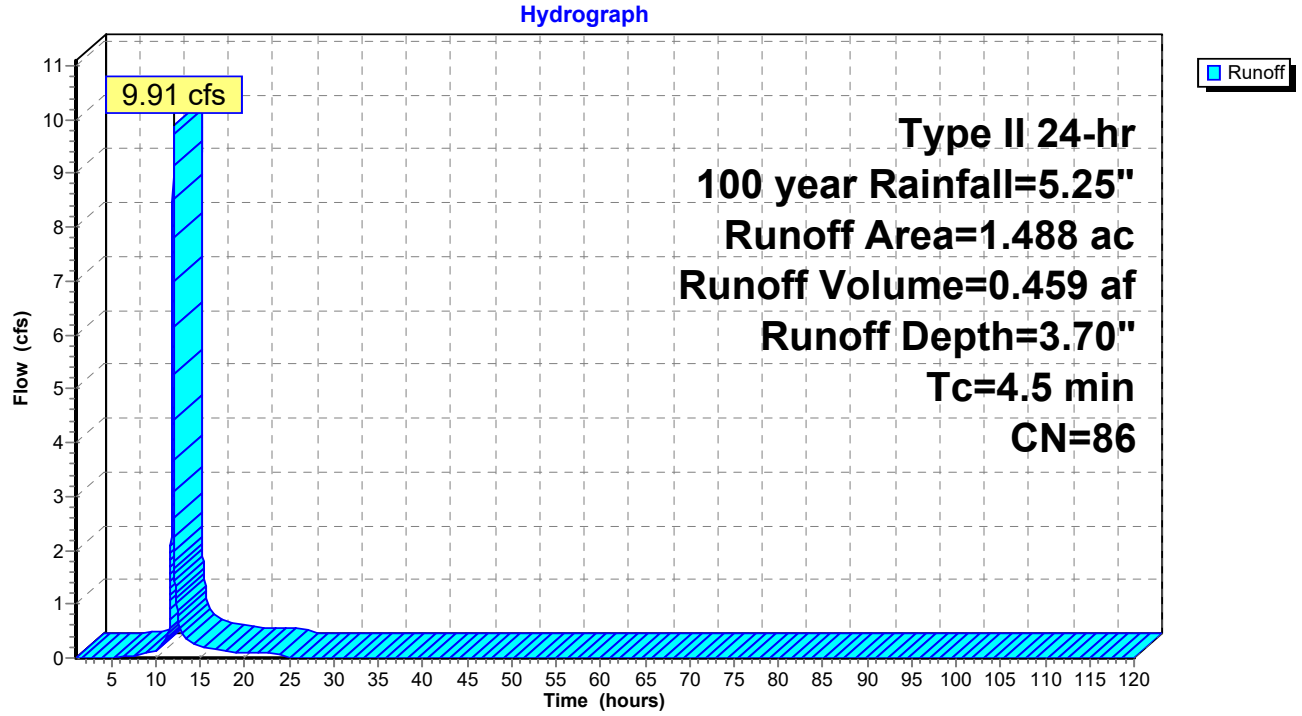
Runoff = 9.91 cfs @ 11.95 hrs, Volume= 0.459 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 1.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 year Rainfall=5.25"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.488 | 86 | Worksheet - Interpolated |
| | 1.488 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.5 | | | | | **Direct Entry, Tc From Worksheet - Interpolated** |

## Subcatchment 42S: WS 1



Pre-development peak discharge rate for 100 year storm

## Summary for Subcatchment 55S: WS 1

Predevelopment Watershed

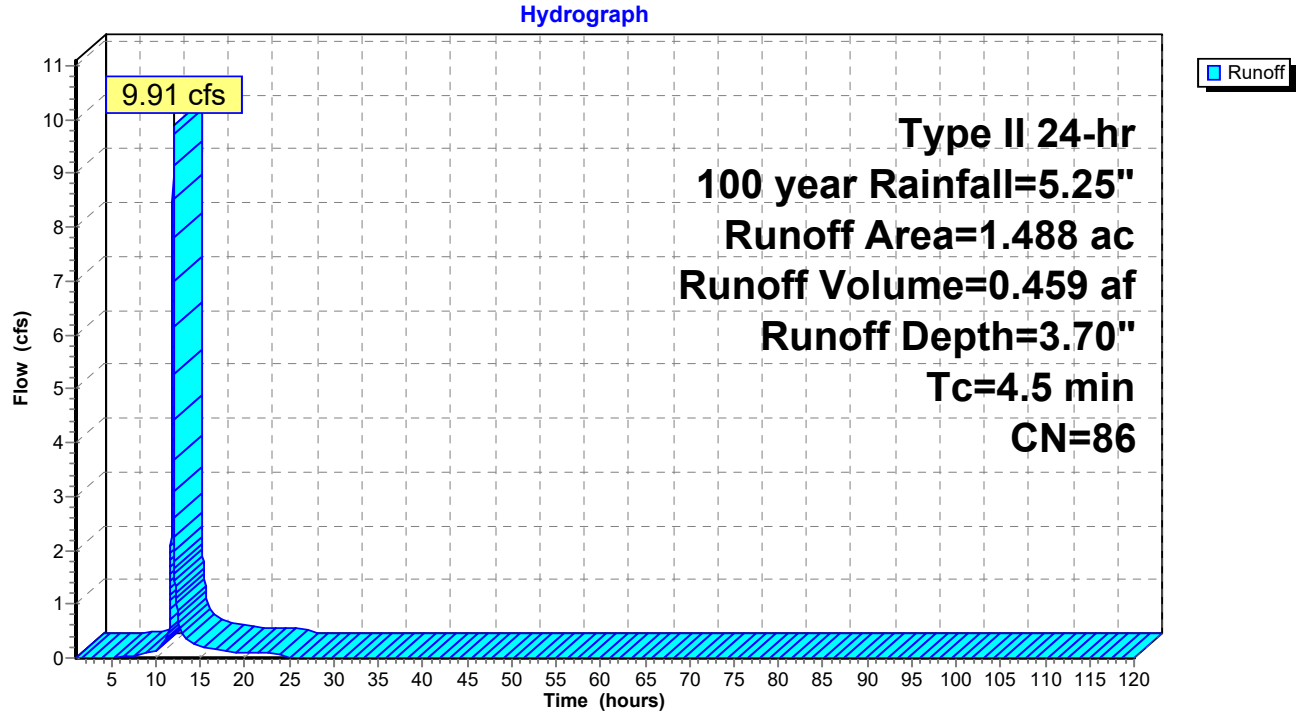
Runoff = 9.91 cfs @ 11.95 hrs, Volume= 0.459 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 1.00-120.00 hrs, dt= 0.01 hrs
Type II 24-hr 100 year Rainfall=5.25"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.488 | 86 | Worksheet - Interpolated |
| | 1.488 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.5 | | | | | **Direct Entry, Tc From Worksheet - Interpolated** |

### Subcatchment 55S: WS 1



Peak water surface elevation

## Summary for Pond 43P: Infiltration

Inflow Area = 1.488 ac, 0.00% Impervious, Inflow Depth = 3.70" for 100 year event
Inflow = 9.91 cfs @ 11.95 hrs, Volume= 0.459 af
Outflow = 0.70 cfs @ 12.52 hrs, Volume= 0.459 af, Atten= 93%, Lag= 33.9 min
Discarded = 0.25 cfs @ 10.82 hrs, Volume= 0.428 af
Primary = 0.45 cfs @ 12.52 hrs, Volume= 0.031 af

Routing by Stor-Ind method, Time Span= 1.00-120.00 hrs, dt= 0.01 hrs
Peak Elev= 311.11' @ 12.52 hrs Surf.Area= 4,157 sf Storage= 9,770 cf

Plug-Flow detention time= 343.3 min calculated for 0.459 af (100% of inflow)
Center-of-Mass det. time= 343.3 min ( 1,141.4 - 798.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 308.00' | 11,413 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 308.00 | 2,180 | 0 | 0 |
| 309.00 | 2,760 | 2,470 | 2,470 |
| 310.00 | 3,400 | 3,080 | 5,550 |
| 311.00 | 4,100 | 3,750 | 9,300 |
| 311.50 | 4,350 | 2,113 | 11,413 |

Design Infiltration rate used

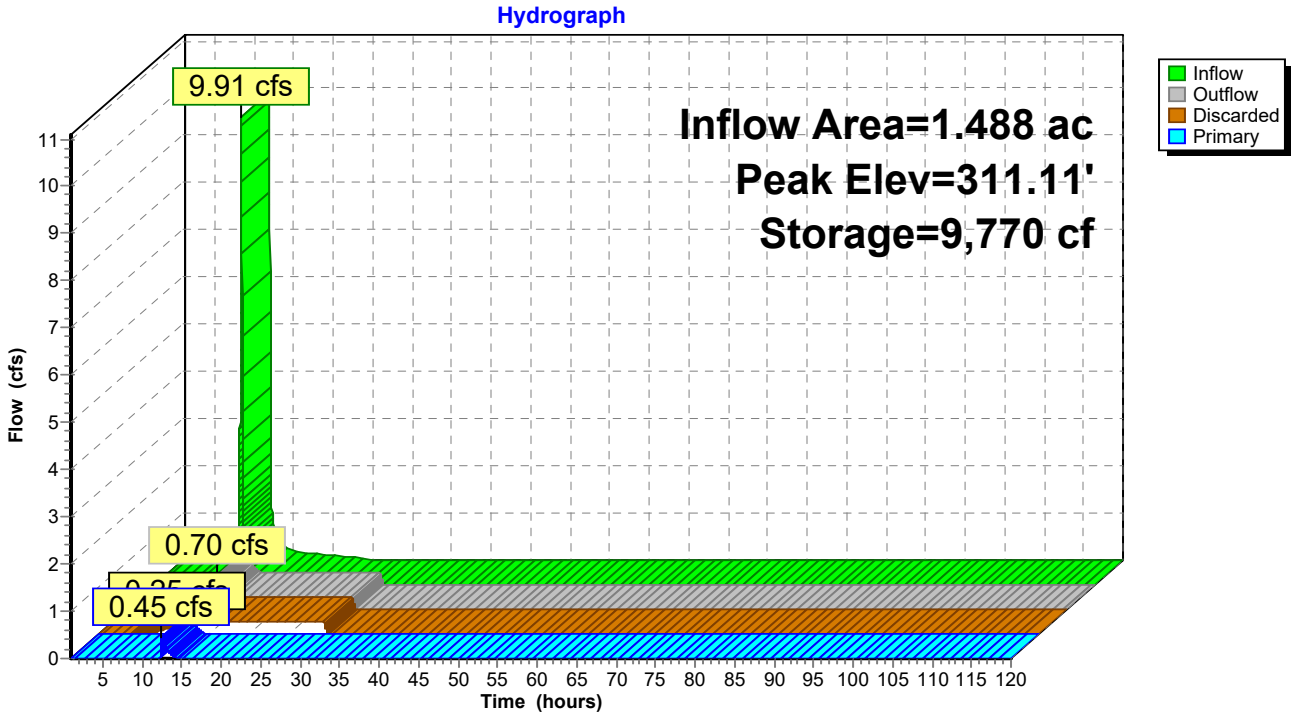
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 308.00' | **5.000 in/hr Exfiltration over Surface area below 308.01'** |
| #2 | Primary | 311.06' | **15.0' long x 6.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50<br>Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83 |

**Discarded OutFlow** Max=0.25 cfs @ 10.82 hrs HW=308.04' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.25 cfs)

**Primary OutFlow** Max=0.44 cfs @ 12.52 hrs HW=311.11' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 0.44 cfs @ 0.55 fps)

Peak Discharge Rate for 100 year storm

## Pond 43P: Infiltration



## Summary for Link 54L: (new Link)

Inflow Area = 1.488 ac, 0.00% Impervious, Inflow Depth = 3.70" for 100 year event
Inflow = 9.91 cfs @ 11.95 hrs, Volume= 0.459 af
Primary = 9.91 cfs @ 11.95 hrs, Volume= 0.459 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-120.00 hrs, dt= 0.01 hrs

## Link 54L: (new Link)