# *STORM WATER MANAGEMENT CALCULATIONS*

# *FOR*

# *PROPOSED SUBDIVISION*

# *"THE BEST SUBDIVISION"*

***Township of Neptune***
***Monmouth County***
***New Jersey***

## *Block 617, Lots 39*

***Project No. 17040***

**September 11, 2018**
**Revision 1, March 15, 2021**


***PREPARED BY***
***Landmark Surveying & Engineering, inc.***
***813 Main Street***
***Avon-by-the-Sea, New Jersey 07717***
***(732) 775-8558***



***DANIEL W. CARUSO, P.E.***
***NJPE GE35687***

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# *DESIGN SUMMARY*

***Drainage design calculations for the proposed subdivision are presented herein. The SCS TR-55 method was used throughout to determine the quantity of storm water run-off from the site. The (2 yr., 10 yr., & 100 yr.) storm events were analyzed using the NRCS New Jersey 24 Hour Rainfall Frequency data.***

***The proposed subdivision project consists of a total lot size of 78,595 s.f. (1.80Ac.). We are proposing 3 residential dwelling lots and 1 commercial lot. Out proposed subdivision is disturbing 43,540 s.f. (0.99 Ac.)of the property for the proposed improvements. There will only be an increase of impervious coverage; including buildings and sidewalks, of 7,257 s.f. (16.66%)***

***Our drainage analysis was broken down as follows: existing conditions flow to the rear of the property and three proposed drainage areas; drainage flow that continues to flow to the rear of the property, drainage flow that will drainage to the front of the property and drainage flow that will be captured by under ground infiltrators.***

***Our drainage analysis will include an area of 65,665 s.f. (1.51Ac.) Based on the topography of the rear of the property, this area is wetlands and is the lowest point of the wetland area. Any run-off that flows to this area will remain in the wetlands and not leave out property. We analyzed the run-off from our proposed project that will flow towards rear wetlands area and calculated to see if the increase run-off will in fact remain on the property. Our analysis of the run-off flow to the rear will remain on our property.***

***We analyzed the proposed drainage flow to the front of the property and calculated the flows as outlined in the drainage summary chart. There will be a small increase in flow from existing conditions for the 2 yr. and 10 yr. storm events leaving our property and flowing to the front.***

***We are proposing an infiltration system to capture the run-off from the proposed buildings. This system will capture the 2yr., 10yr. and 100yr. storm events and infiltrate the run-off back into the ground.***

***We have included a design summary chart outlining the existing and proposed flows for this project***

# *Design Flow Summary Chart*

| ***STORM EVENTS*** | ***2 yr.*** | ***10 yr.*** | ***100 yr*** |
|---|---|---|---|
| ***EXISTING CONDITIONS*** | ***0.04*** | ***0.59*** | ***3.02*** |
| ***PROPOSED CONDITIONS FLOWING TO THE REAR OF THE PROPERTY*** | ***0.08*** | ***0.53*** | ***2.13*** |
| ***(THE FLOW TO THE REAR OF THE PROPERTY WILL NOT LEAVE OUR PROPERTY)*** | | | |
| ***PROPOSED CONDITIONS FLOWING TO THE FRONT OF THE PROPERTY*** | ***0.39*** | ***0.94*** | ***2.24*** |
| ***(THE INCREASE IN FLOW TO THE FRONT OF THE PROPERTY WILL NOT ADVERSELY AFFECT THE EXISTING DRAINAGE SYSTEM ALONG THE PROPERTY FRONTAGE)*** | | | |
| ***FLOWING TO THE INFILTRATOR SYSTEM*** | ***0.00*** | ***0.00*** | ***0.00*** |

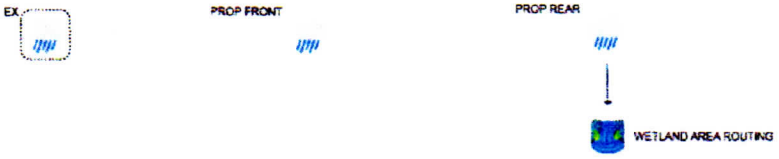
***There will be no adverse impact to adjoining property from this project.***

# Basin Model

Hydrology Studio v 2.0.0.53

Project Name:

09-11-2018



# *EXISTING CONDITIONS*

# TR55 Worksheet

Project Name:

Hydrology Studio v 2.0.0.53

09-11-2018

## EX
## NRCS Runoff

**Hyd. No. 1**

| Description | Segments A | B | C | Tc (min) |
|---|---|---|---|---|
| **Sheet Flow** | | | | |
| Description | LAWN | WOOD | | |
| Manning's n | 0.240 | 0.400 | 0.013 | |
| Flow Length (ft) | 55 | 45 | | |
| 2-yr, 24-hr Precip. (in) | 3.4000 | 3.4000 | 3.4000 | |
| Land Slope (%) | 2 | 2 | | |
| **Travel Time (min)** | **8.58** | **11.00** | **0.00** | **19.58** |
| **Shallow Concentrated Flow** | | | | |
| Flow Length (ft) | 126 | 25 | 75 | |
| Watercourse Slope (%) | 1.19 | 4 | 1.2 | |
| Surface Description | Unpaved | Unpaved | Unpaved | |
| Average Velocity (ft/s) | 1.76 | 3.23 | 1.77 | |
| **Travel Time (min)** | **1.19** | **0.13** | **0.71** | **2.03** |
| **Channel Flow** | | | | |
| X-sectional Flow Area (sqft) | | | | |
| Wetted Perimiter (ft) | | | | |
| Channel Slope (%) | | | | |
| Manning's n | 0.013 | 0.013 | 0.013 | |
| Velocity (ft/s) | | | | |
| Flow Length (ft) | | | | |
| **Travel Time (min)** | **0.00** | **0.00** | **0.00** | **0.00** |
| **Total Travel Time** | | | | **21.61 min** |

# Hydrograph Report

Project Name:

Hydrology Studio v 2.0.0.53

09-11-2018

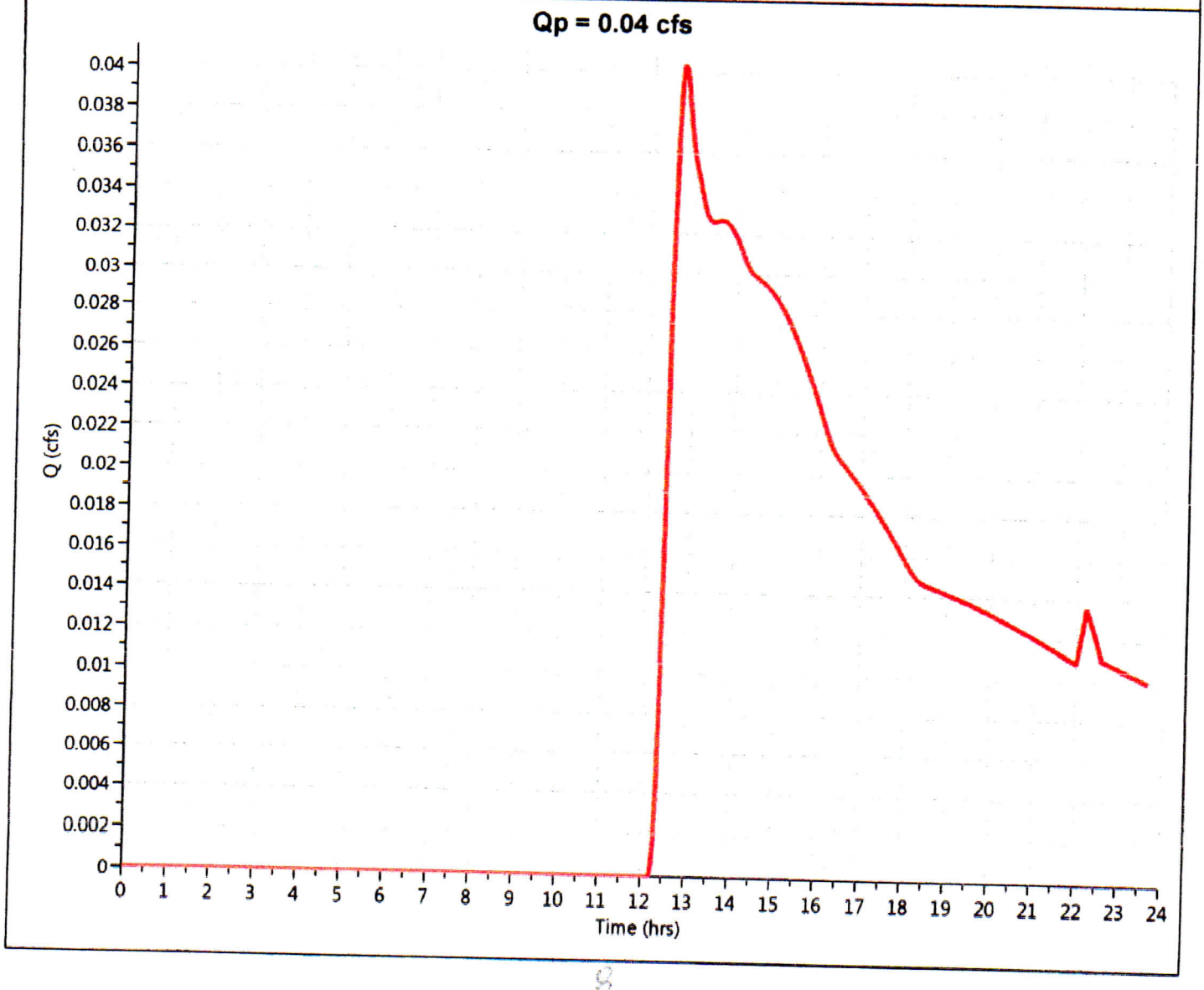
## EX

## Hyd. No. 1

| | | | |
|---|---|---|---|
| Hydrograph Type | = NRCS Runoff | Peak Flow | = 0.040 cfs |
| Storm Frequency | = 2-yr | Time to Peak | = 12.70 hrs |
| Time Interval | = 1 min | Runoff Volume | = 815 cuft |
| Drainage Area | = 1.5 ac | Curve Number | = 49* |
| Tc Method | = TR55 (See Worksheet) | Time of Conc. (Tc) | = 21.61 min |
| Total Rainfall | = 3.4000 in | Design Storm | = Type III |
| Storm Duration | = 24 hrs | Shape Factor | = 484 |

**Composite CN Worksheet**

| AREA (ac) | CN | DESCRIPTION |
|---|---|---|
| 1.26 | 45 | WOODED |
| 0.18 | 61 | GRASS |
| 0.07 | 98 | IMPREV |
| 1.5 | 49 | Weighted Average |



# Hydrograph Report

Project Name:

Hydrology Studio v 2.0.0.53

09-11-2018

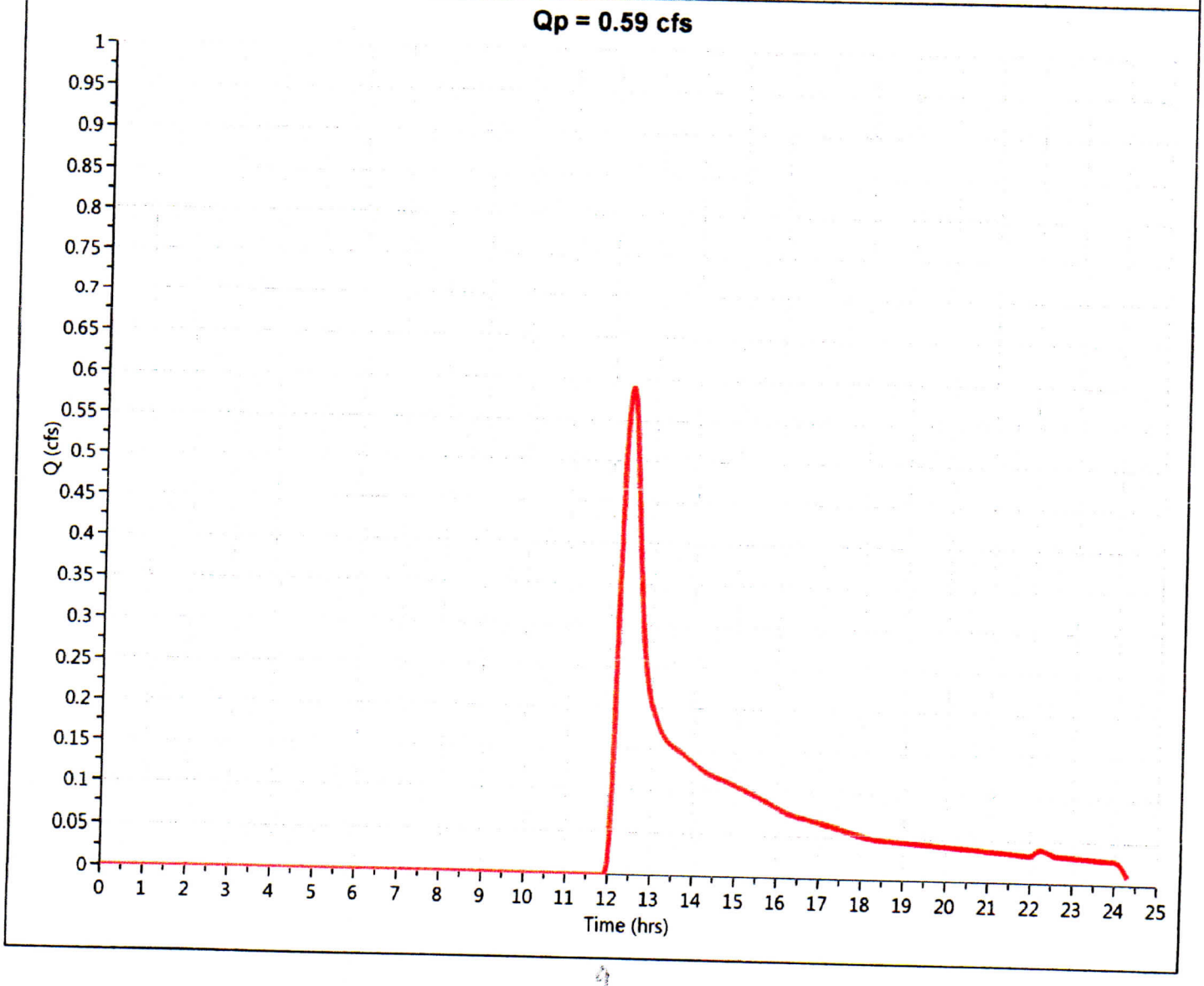
## EX

## Hyd. No. 1

| | | | |
|---|---|---|---|
| Hydrograph Type | = NRCS Runoff | Peak Flow | = 0.591 cfs |
| Storm Frequency | = 10-yr | Time to Peak | = 12.40 hrs |
| Time Interval | = 1 min | Runoff Volume | = 3,952 cuft |
| Drainage Area | = 1.5 ac | Curve Number | = 49* |
| Tc Method | = TR55 (See Worksheet) | Time of Conc. (Tc) | = 21.61 min |
| Total Rainfall | = 5.2000 in | Design Storm | = Type III |
| Storm Duration | = 24 hrs | Shape Factor | = 484 |

**Composite CN Worksheet**

| AREA (ac) | CN | DESCRIPTION |
|---|---|---|
| 1.26 | 45 | WOODED |
| 0.18 | 61 | GRASS |
| 0.07 | 98 | IMPREV |
| 1.5 | 49 | Weighted Average |



# Hydrograph Report

Project Name:

Hydrology Studio v 2.0.0.53

09-11-2018

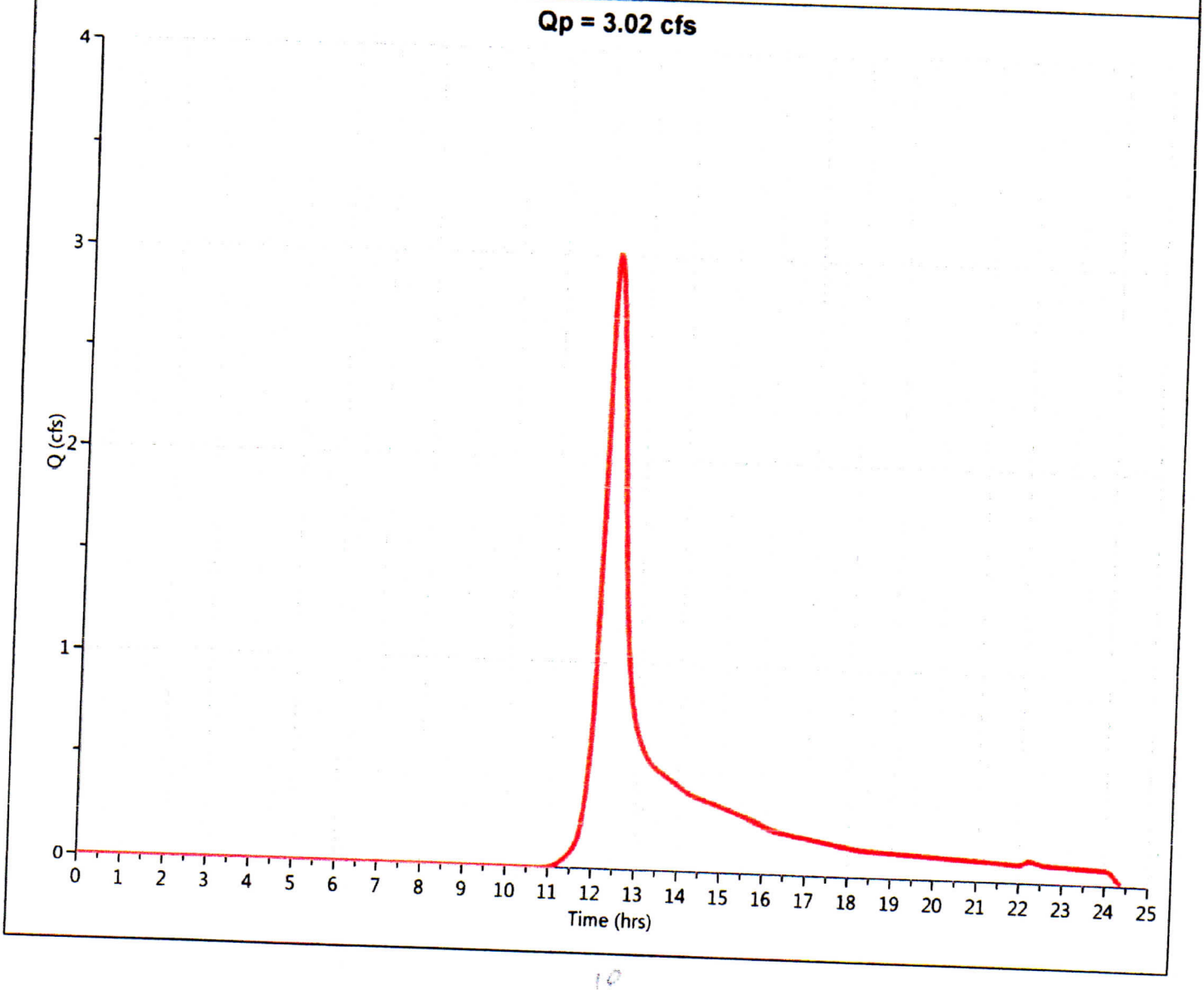
## EX

**Hyd. No. 1**

| | | | |
|---|---|---|---|
| Hydrograph Type | = NRCS Runoff | Peak Flow | = 3.021 cfs |
| Storm Frequency | = 100-yr | Time to Peak | = 12.28 hrs |
| Time Interval | = 1 min | Runoff Volume | = 14,836 cuft |
| Drainage Area | = 1.5 ac | Curve Number | = 49* |
| Tc Method | = TR55 (See Worksheet) | Time of Conc. (Tc) | = 21.61 min |
| Total Rainfall | = 8.9000 in | Design Storm | = Type III |
| Storm Duration | = 24 hrs | Shape Factor | = 484 |

**Composite CN Worksheet**

| AREA (ac) | CN | DESCRIPTION |
|---|---|---|
| 1.26 | 45 | WOODED |
| 0.18 | 61 | GRASS |
| 0.07 | 98 | IMPREV |
| 1.5 | 49 | Weighted Average |



***PROPOSED CONDITIONS***
***FLOW TO REAR OF THE PROPERTY***

# TR55 Worksheet

Project Name:

Hydrology Studio v 2.0.0.53

09-11-2018

## PROP REAR
## NRCS Runoff

**Hyd. No. 2**

| Description | Segments A | B | C | Tc (min) |
|---|---|---|---|---|
| **Sheet Flow** | | | | |
| Description | LAWN | | | |
| Manning's n | 0.240 | 0.013 | 0.013 | |
| Flow Length (ft) | 100 | | | |
| 2-yr, 24-hr Precip. (in) | 3.4000 | 3.4000 | 3.4000 | |
| Land Slope (%) | .8 | | | |
| **Travel Time (min)** | **19.97** | **0.00** | **0.00** | **19.97** |
| **Shallow Concentrated Flow** | | | | |
| Flow Length (ft) | 64 | 22 | 64 | |
| Watercourse Slope (%) | 1.25 | 4.55 | 3.13 | |
| Surface Description | Unpaved | Unpaved | Unpaved | |
| Average Velocity (ft/s) | 1.8 | 3.44 | 2.85 | |
| **Travel Time (min)** | **0.59** | **0.11** | **0.37** | **1.07** |
| **Channel Flow** | | | | |
| X-sectional Flow Area (sqft) | | | | |
| Wetted Perimiter (ft) | | | | |
| Channel Slope (%) | | | | |
| Manning's n | 0.013 | 0.013 | 0.013 | |
| Velocity (ft/s) | | | | |
| Flow Length (ft) | | | | |
| **Travel Time (min)** | **0.00** | **0.00** | **0.00** | **0.00** |
| **Total Travel Time** | | | | **21.04 min** |

# Hydrograph Report

Project Name:

Hydrology Studio v 2.0.0.53

09-11-2018

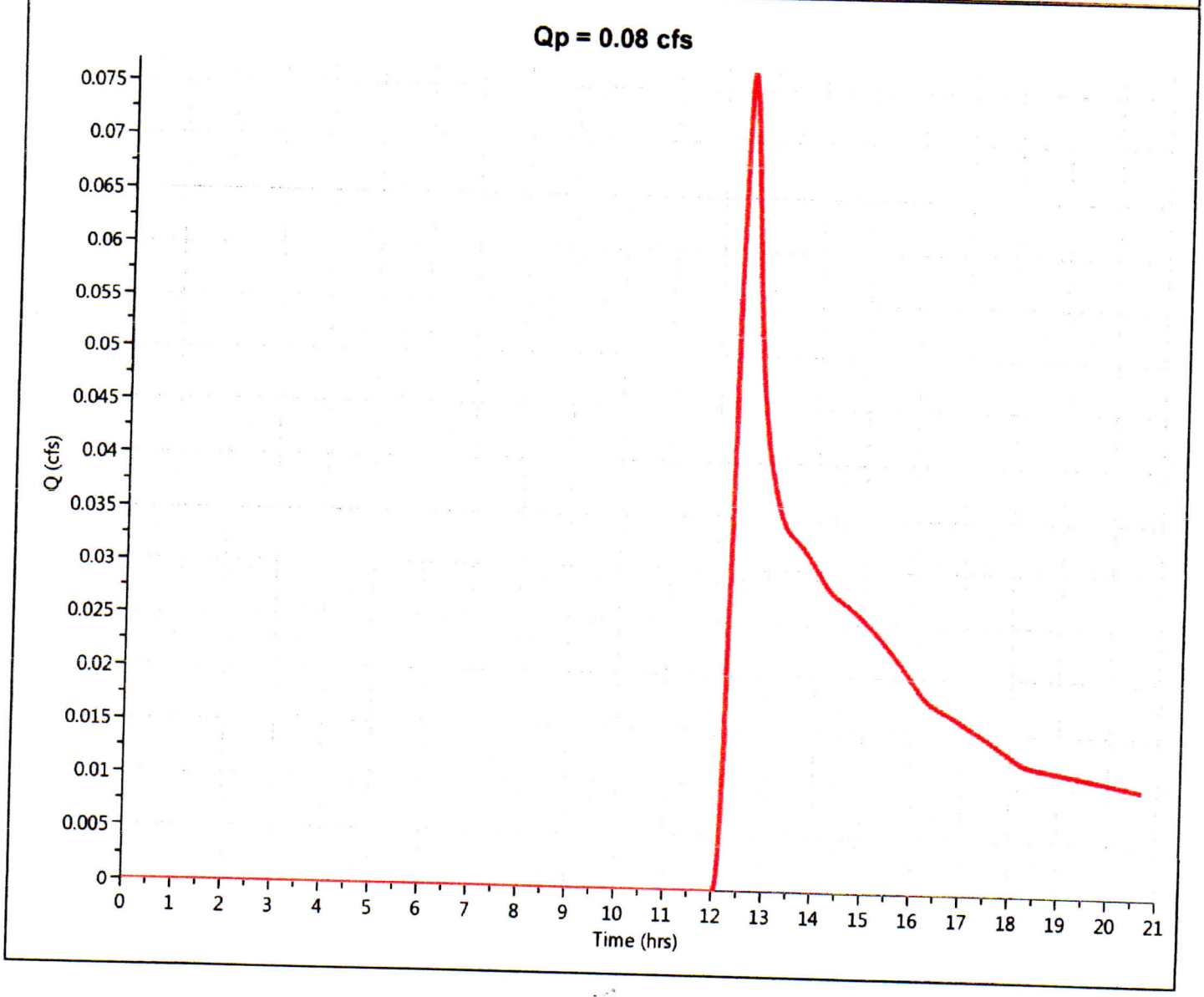
## PROP REAR

## Hyd. No. 2

| | | | |
|---|---|---|---|
| Hydrograph Type | = NRCS Runoff | Peak Flow | = 0.077 cfs |
| Storm Frequency | = 2-yr | Time to Peak | = 12.53 hrs |
| Time Interval | = 1 min | Runoff Volume | = 804 cuft |
| Drainage Area | = 0.87 ac | Curve Number | = 53* |
| Tc Method | = TR55 (See Worksheet) | Time of Conc. (Tc) | = 21.04 min |
| Total Rainfall | = 3.4000 in | Design Storm | = Type III |
| Storm Duration | = 24 hrs | Shape Factor | = 484 |

**Composite CN Worksheet**

| AREA (ac) | CN | DESCRIPTION |
|---|---|---|
| 0.44 | 61 | GRASS |
| 0.43 | 45 | WOODED |
| 0.87 | 53 | Weighted Average |



# Hydrograph Report

Project Name:

Hydrology Studio v 2.0.0.53

09-11-2018

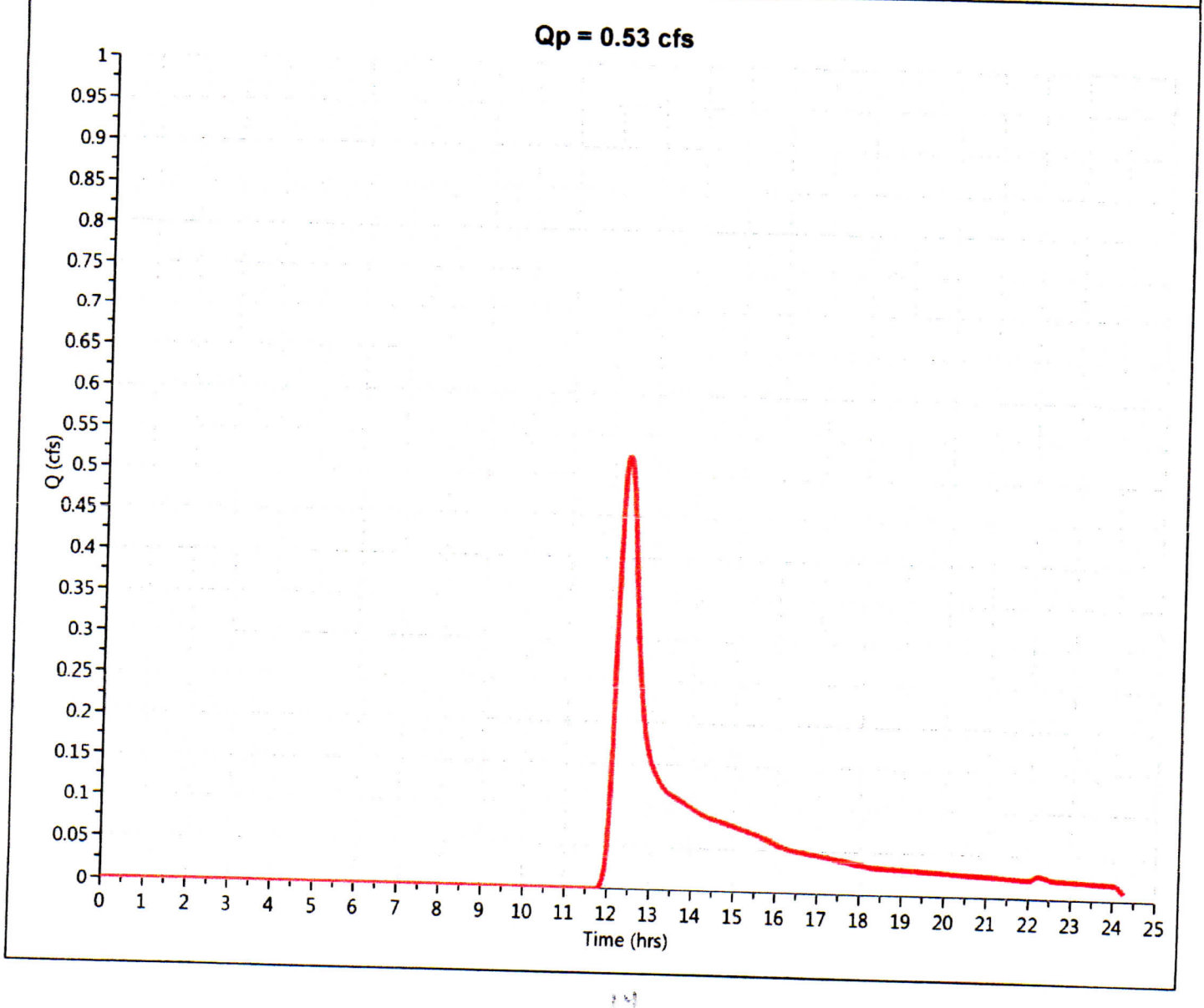
## PROP REAR

## Hyd. No. 2

| | | | |
|---|---|---|---|
| Hydrograph Type | = NRCS Runoff | Peak Flow | = 0.526 cfs |
| Storm Frequency | = 10-yr | Time to Peak | = 12.35 hrs |
| Time Interval | = 1 min | Runoff Volume | = 3,045 cuft |
| Drainage Area | = 0.87 ac | Curve Number | = 53* |
| Tc Method | = TR55 (See Worksheet) | Time of Conc. (Tc) | = 21.04 min |
| Total Rainfall | = 5.2000 in | Design Storm | = Type III |
| Storm Duration | = 24 hrs | Shape Factor | = 484 |

**Composite CN Worksheet**

| AREA (ac) | CN | DESCRIPTION |
|---|---|---|
| 0.44 | 61 | GRASS |
| 0.43 | 45 | WOODED |
| 0.87 | 53 | Weighted Average |



# Hydrograph Report

Project Name:

Hydrology Studio v 2.0.0.53

09-11-2018

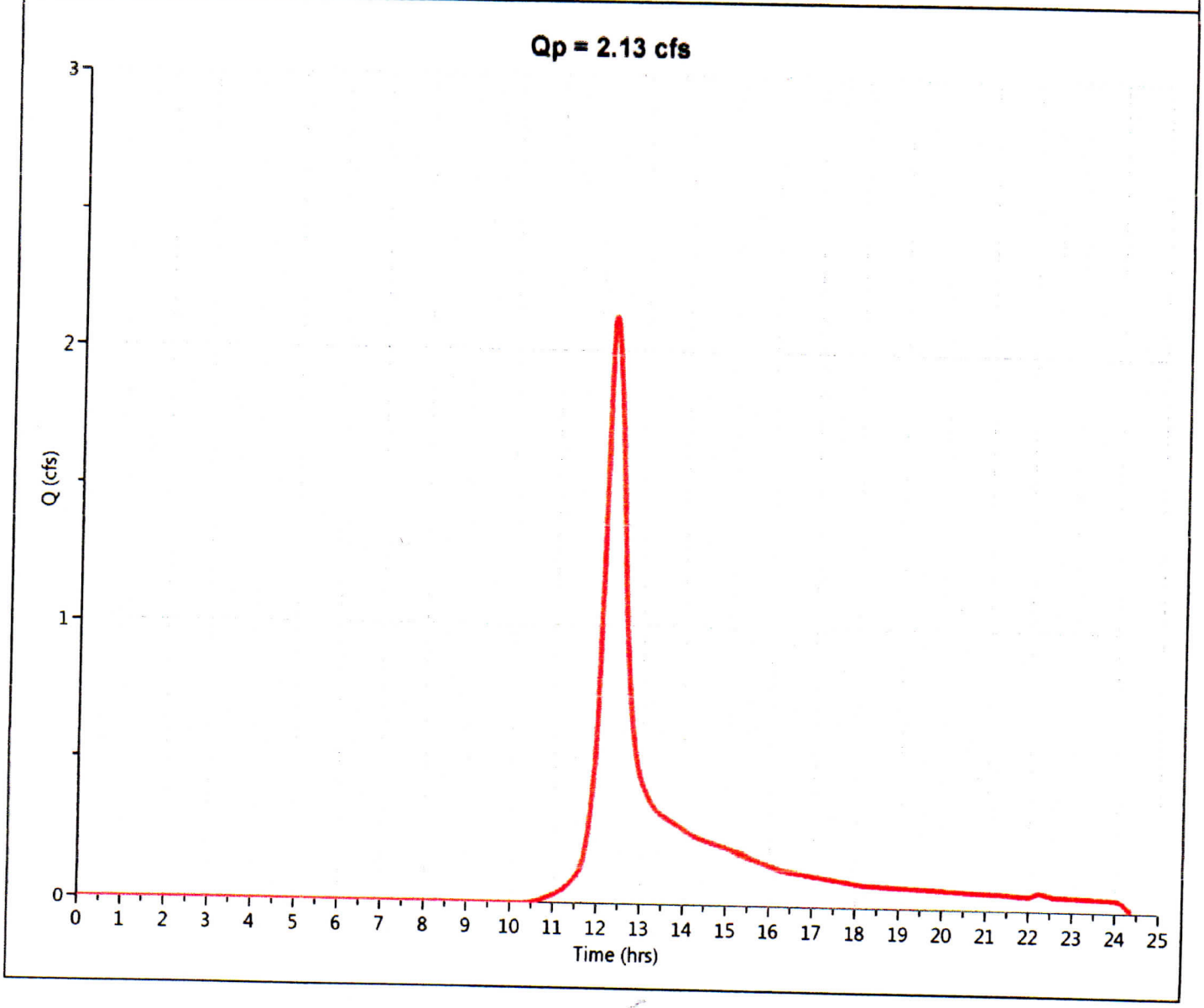
## PROP REAR

## Hyd. No. 2

| | | | |
|---|---|---|---|
| Hydrograph Type | = NRCS Runoff | Peak Flow | = 2.128 cfs |
| Storm Frequency | = 100-yr | Time to Peak | = 12.27 hrs |
| Time Interval | = 1 min | Runoff Volume | = 10,124 cuft |
| Drainage Area | = 0.87 ac | Curve Number | = 53* |
| Tc Method | = TR55 (See Worksheet) | Time of Conc. (Tc) | = 21.04 min |
| Total Rainfall | = 8.9000 in | Design Storm | = Type III |
| Storm Duration | = 24 hrs | Shape Factor | = 484 |

**Composite CN Worksheet**

| AREA (ac) | CN | DESCRIPTION |
|---|---|---|
| 0.44 | 61 | GRASS |
| 0.43 | 45 | WOODED |
| 0.87 | 53 | Weighted Average |



***PROPOSED CONDITIONS***
***FLOW TO THE FRONT OF THE PROPERTY***

# TR55 Worksheet

Project Name:

Hydrology Studio v 2.0.0.53

09-11-2018

## PROP FRONT
## NRCS Runoff

**Hyd. No. 4**

| Description | Segments A | B | C | Tc (min) |
|---|---|---|---|---|
| **Sheet Flow** | | | | |
| Description | GRASS | | | |
| Manning's n | 0.240 | 0.013 | 0.013 | |
| Flow Length (ft) | 90 | | | |
| 2-yr, 24-hr Precip. (in) | 3.4000 | 2.2800 | 2.2800 | |
| Land Slope (%) | 1.11 | | | |
| **Travel Time (min)** | **16.10** | **0.00** | **0.00** | **16.10** |
| **Shallow Concentrated Flow** | | | | |
| Flow Length (ft) | | | | |
| Watercourse Slope (%) | | | | |
| Surface Description | Paved | Paved | Paved | |
| Average Velocity (ft/s) | | | | |
| **Travel Time (min)** | **0.00** | **0.00** | **0.00** | **0.00** |
| **Channel Flow** | | | | |
| X-sectional Flow Area (sqft) | | | | |
| Wetted Perimiter (ft) | | | | |
| Channel Slope (%) | | | | |
| Manning's n | 0.013 | 0.013 | 0.013 | |
| Velocity (ft/s) | | | | |
| Flow Length (ft) | | | | |
| **Travel Time (min)** | **0.00** | **0.00** | **0.00** | **0.00** |
| **Total Travel Time** | | | | **16.1 min** |

# Hydrograph Report

Project Name:

Hydrology Studio v 2.0.0.53

09-11-2018

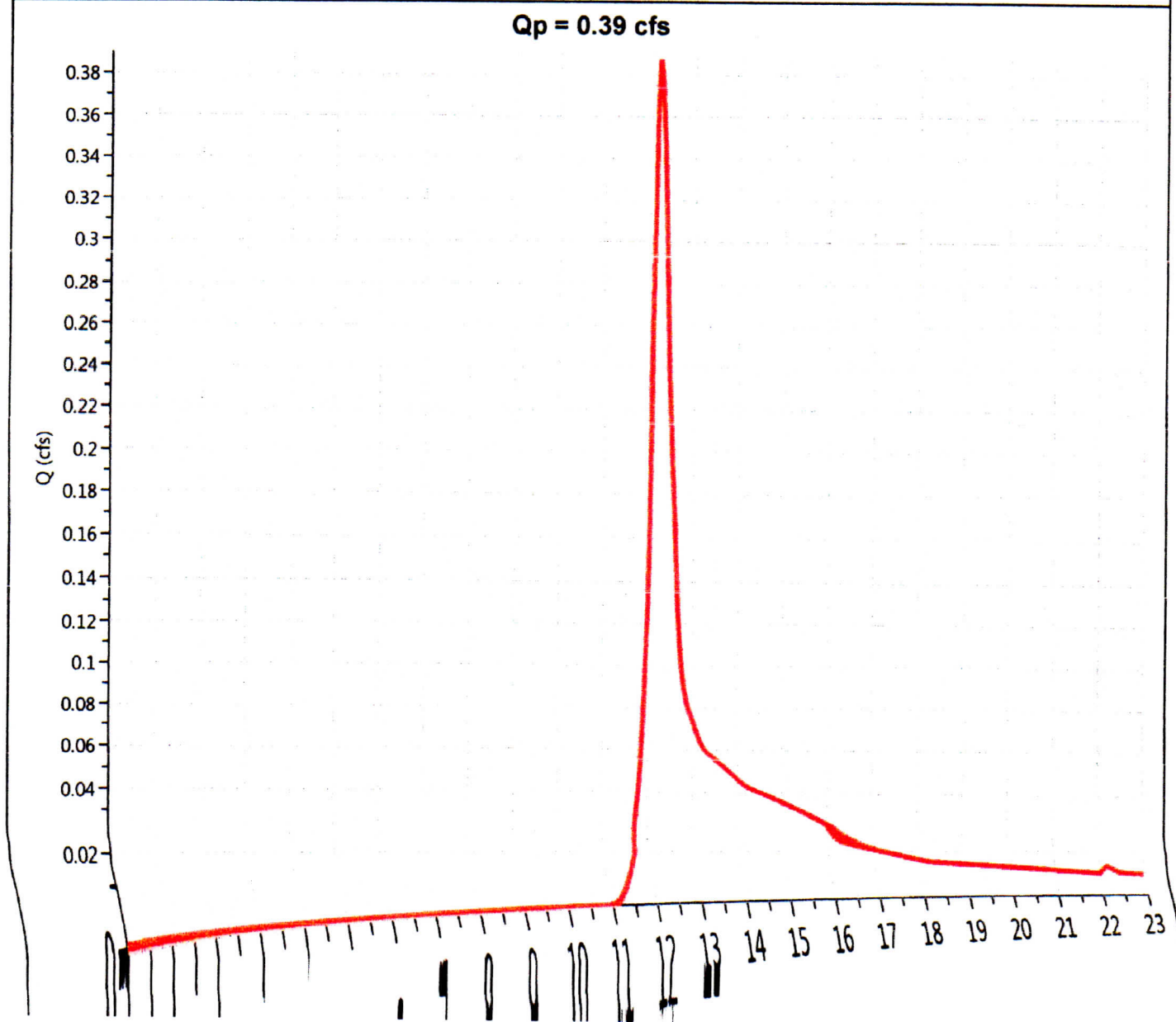
## PROP FRONT

**Hyd. No. 4**

| | | | |
|---|---|---|---|
| Hydrograph Type | = NRCS Runoff | Peak Flow | = 0.387 cfs |
| Storm Frequency | = 2-yr | Time to Peak | = 12.22 hrs |
| Time Interval | = 1 min | Runoff Volume | = 1,729 cuft |
| Drainage Area | = 0.47 ac | Curve Number | = 71* |
| Tc Method | = TR55 (See Worksheet) | Time of Conc. (Tc) | = 16.1 min |
| Total Rainfall | = 3.4000 in | Design Storm | = Type III |
| Storm Duration | = 24 hrs | Shape Factor | = 484 |

**Composite CN Worksheet**

| AREA (ac) | CN | DESCRIPTION |
|---|---|---|
| 0.26 | 61 | GRASS |
| 0.07 | 98 | SIDEWALK/CONCRETE |
| 0.14 | 76 | PAVERS |
| 0.47 | 71 | Weighted Average |



# Hydrograph Report

Project Name:

Hydrology Studio v 2.0.0.53

09-11-2018

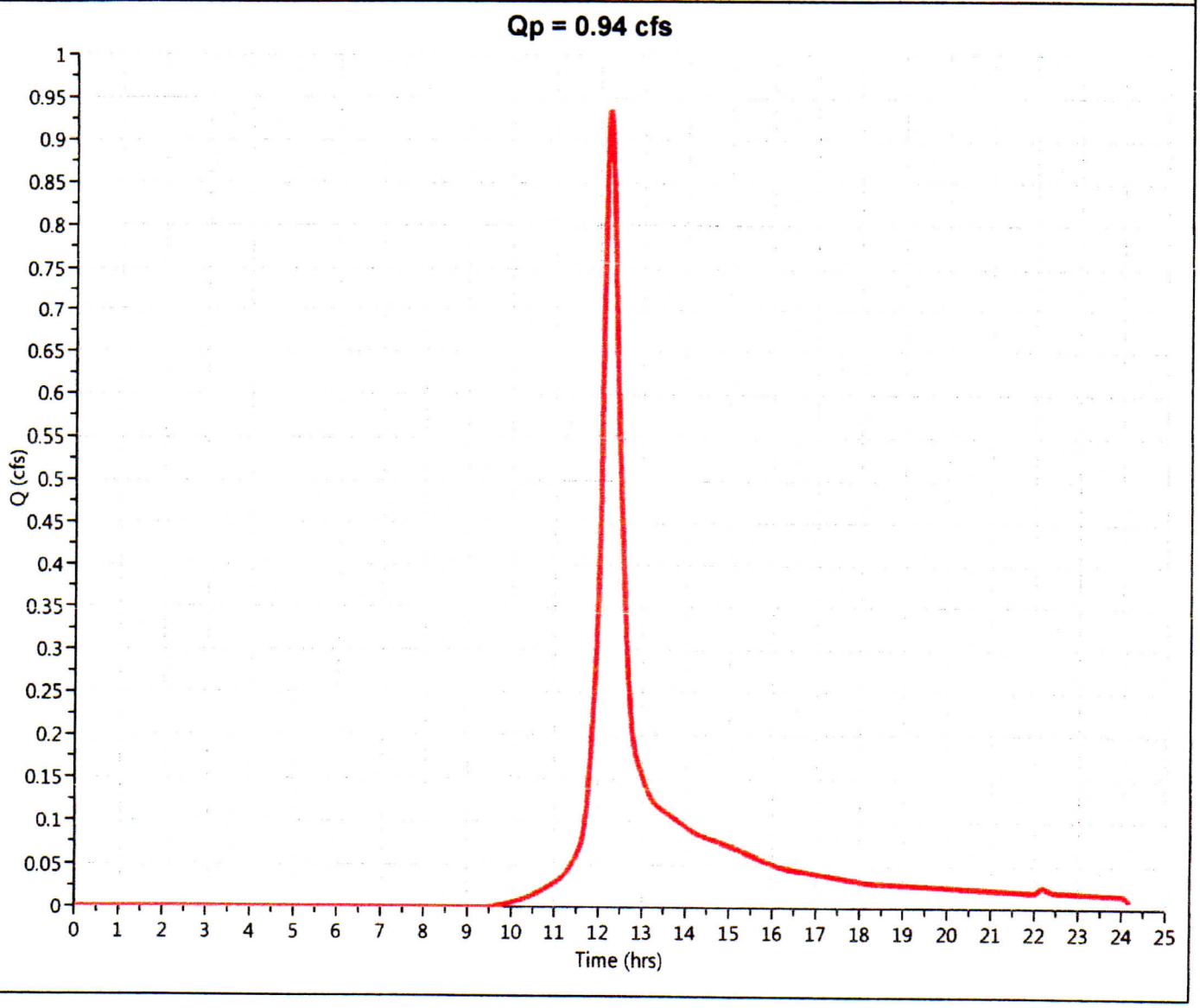
## PROP FRONT

## Hyd. No. 4

| | | | |
|---|---|---|---|
| Hydrograph Type | = NRCS Runoff | Peak Flow | = 0.937 cfs |
| Storm Frequency | = 10-yr | Time to Peak | = 12.20 hrs |
| Time Interval | = 1 min | Runoff Volume | = 3,919 cuft |
| Drainage Area | = 0.47 ac | Curve Number | = 71* |
| Tc Method | = TR55 (See Worksheet) | Time of Conc. (Tc) | = 16.1 min |
| Total Rainfall | = 5.2000 in | Design Storm | = Type III |
| Storm Duration | = 24 hrs | Shape Factor | = 484 |

**Composite CN Worksheet**

| AREA (ac) | CN | DESCRIPTION |
|---|---|---|
| 0.26 | 61 | GRASS |
| 0.07 | 98 | SIDEWALK/CONCRETE |
| 0.14 | 76 | PAVERS |
| 0.47 | 71 | Weighted Average |



# Hydrograph Report

Project Name:

Hydrology Studio v 2.0.0.53

09-11-2018

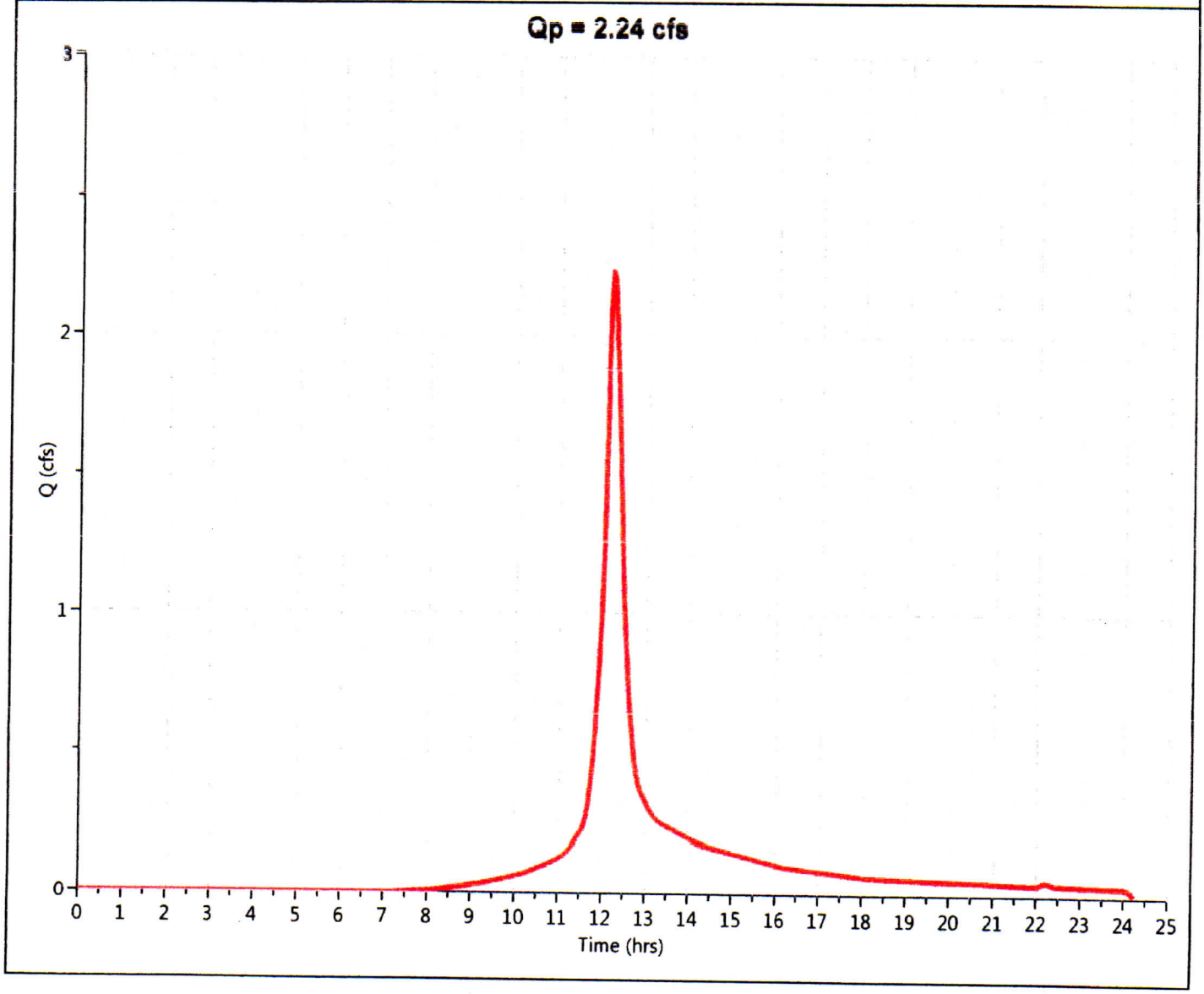
## PROP FRONT

## Hyd. No. 4

| | | | |
|---|---|---|---|
| Hydrograph Type | = NRCS Runoff | Peak Flow | = 2.243 cfs |
| Storm Frequency | = 100-yr | Time to Peak | = 12.18 hrs |
| Time Interval | = 1 min | Runoff Volume | = 9,276 cuft |
| Drainage Area | = 0.47 ac | Curve Number | = 71* |
| Tc Method | = TR55 (See Worksheet) | Time of Conc. (Tc) | = 16.1 min |
| Total Rainfall | = 8.9000 in | Design Storm | = Type III |
| Storm Duration | = 24 hrs | Shape Factor | = 484 |

**Composite CN Worksheet**

| AREA (ac) | CN | DESCRIPTION |
|---|---|---|
| 0.26 | 61 | GRASS |
| 0.07 | 98 | SIDEWALK/CONCRETE |
| 0.14 | 76 | PAVERS |
| 0.47 | 71 | Weighted Average |



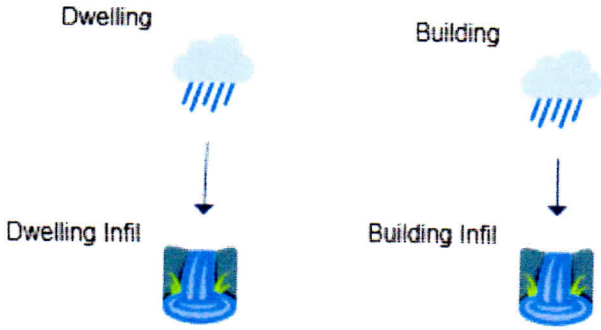
# *PROPOSED CONDITIONS*
# *FLOW TO INFILTRATOR SYSTEMS*

# Basin Model

Hydrology Studio v 3.0.0.17

Project Name:

03-15-2021



# *PROPOSED CONDITIONS*
# *DWELLING INFILTRATORS*

# Hydrograph Report

Project Name:

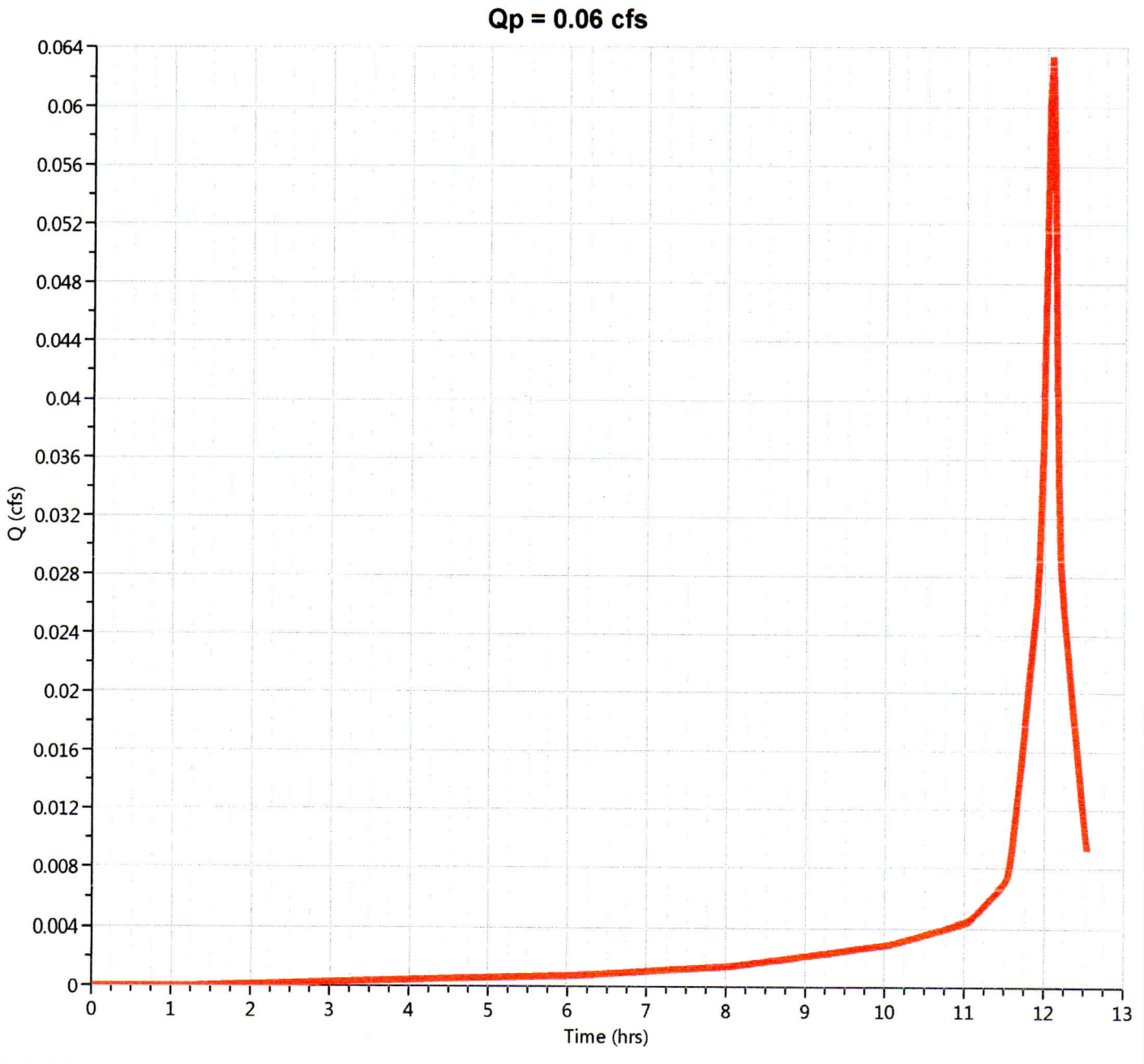
Hydrology Studio v 3.0.0.17

03-15-2021

## Dwelling

## Hyd. No. 1

| | | | |
|---|---|---|---|
| Hydrograph Type | = NRCS Runoff | Peak Flow | = 0.063 cfs |
| Storm Frequency | = 2-yr | Time to Peak | = 12.07 hrs |
| Time Interval | = 2 min | Runoff Volume | = 214 cuft |
| Drainage Area | = 0.02 ac | Curve Number | = 98 |
| Tc Method | = User | Time of Conc. (Tc) | = 6.0 min |
| Total Rainfall | = 3.38 in | Design Storm | = Type III |
| Storm Duration | = 24 hrs | Shape Factor | = 484 |



# Design Storm Report

Custom Storm filename:

Hydrology Studio v 3.0.0.17

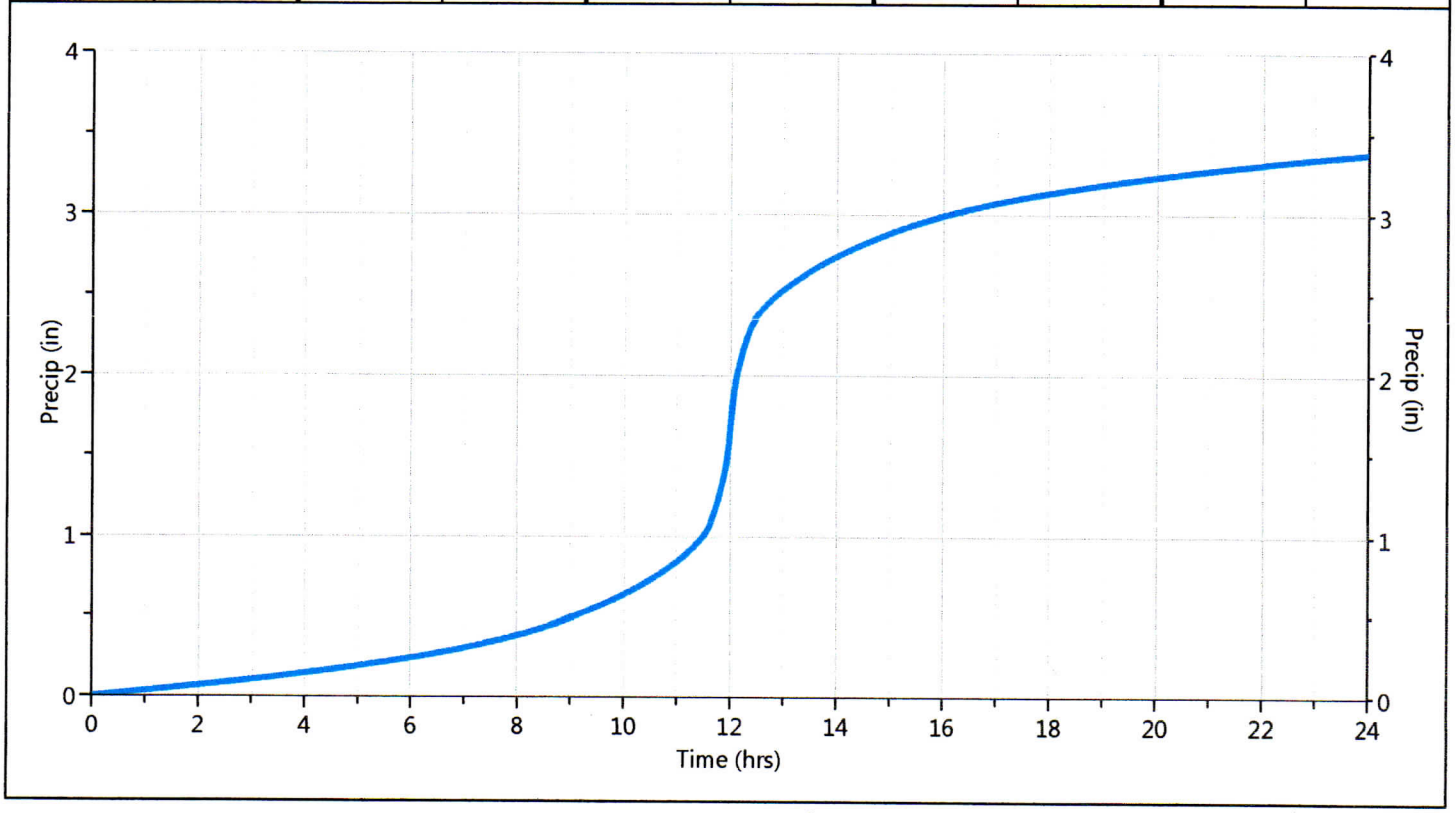
03-15-2021

## Storm Distribution: NRCS/SCS - Type III

| Storm Duration | Total Rainfall Volume (in) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1-yr | ✓ 2-yr | 3-yr | 5-yr | 10-yr | 25-yr | 50-yr | 100-yr | |
| 24 hrs | 2.76 | 3.38 | 0.00 | 0.00 | 5.23 | 6.52 | 13.40 | 8.93 | |

**Incremental Rainfall Distribution, 2-yr**

| Time (hrs) | Precip (in) | Time (hrs) | Precip (in) | Time (hrs) | Precip (in) | Time (hrs) | Precip (in) | Time (hrs) | Precip (in) |
|---|---|---|---|---|---|---|---|---|---|
| 11.00 | 0.008180 | 11.37 | 0.011853 | 11.73 | 0.034889 | 12.10 | 0.066924 | 12.47 | 0.018365 |
| 11.03 | 0.008397 | 11.40 | 0.012198 | 11.77 | 0.038194 | 12.13 | 0.051513 | 12.50 | 0.015060 |
| 11.07 | 0.008743 | 11.43 | 0.012544 | 11.80 | 0.041499 | 12.17 | 0.048109 | 12.53 | 0.013216 |
| 11.10 | 0.009088 | 11.47 | 0.012889 | 11.83 | 0.044804 | 12.20 | 0.044804 | 12.57 | 0.012889 |
| 11.13 | 0.009434 | 11.50 | 0.013235 | 11.87 | 0.048109 | 12.23 | 0.041499 | 12.60 | 0.012544 |
| 11.17 | 0.009780 | 11.53 | 0.015041 | 11.90 | 0.051414 | 12.27 | 0.038194 | 12.63 | 0.012198 |
| 11.20 | 0.010125 | 11.57 | 0.018365 | 11.93 | 0.067021 | 12.30 | 0.034889 | 12.67 | 0.011853 |
| 11.23 | 0.010470 | 11.60 | 0.021670 | 11.97 | 0.094640 | 12.33 | 0.031584 | 12.70 | 0.011507 |
| 11.27 | 0.010816 | 11.63 | 0.024974 | **12.00** | **0.122356** | 12.37 | 0.028279 | 12.73 | 0.011162 |
| 11.30 | 0.011162 | 11.67 | 0.028279 | 12.03 | 0.122201 | 12.40 | 0.024975 | 12.77 | 0.010816 |
| 11.33 | 0.011507 | 11.70 | 0.031584 | 12.07 | 0.094640 | 12.43 | 0.021670 | 12.80 | 0.010470 |



# Hydrograph Report

Project Name:

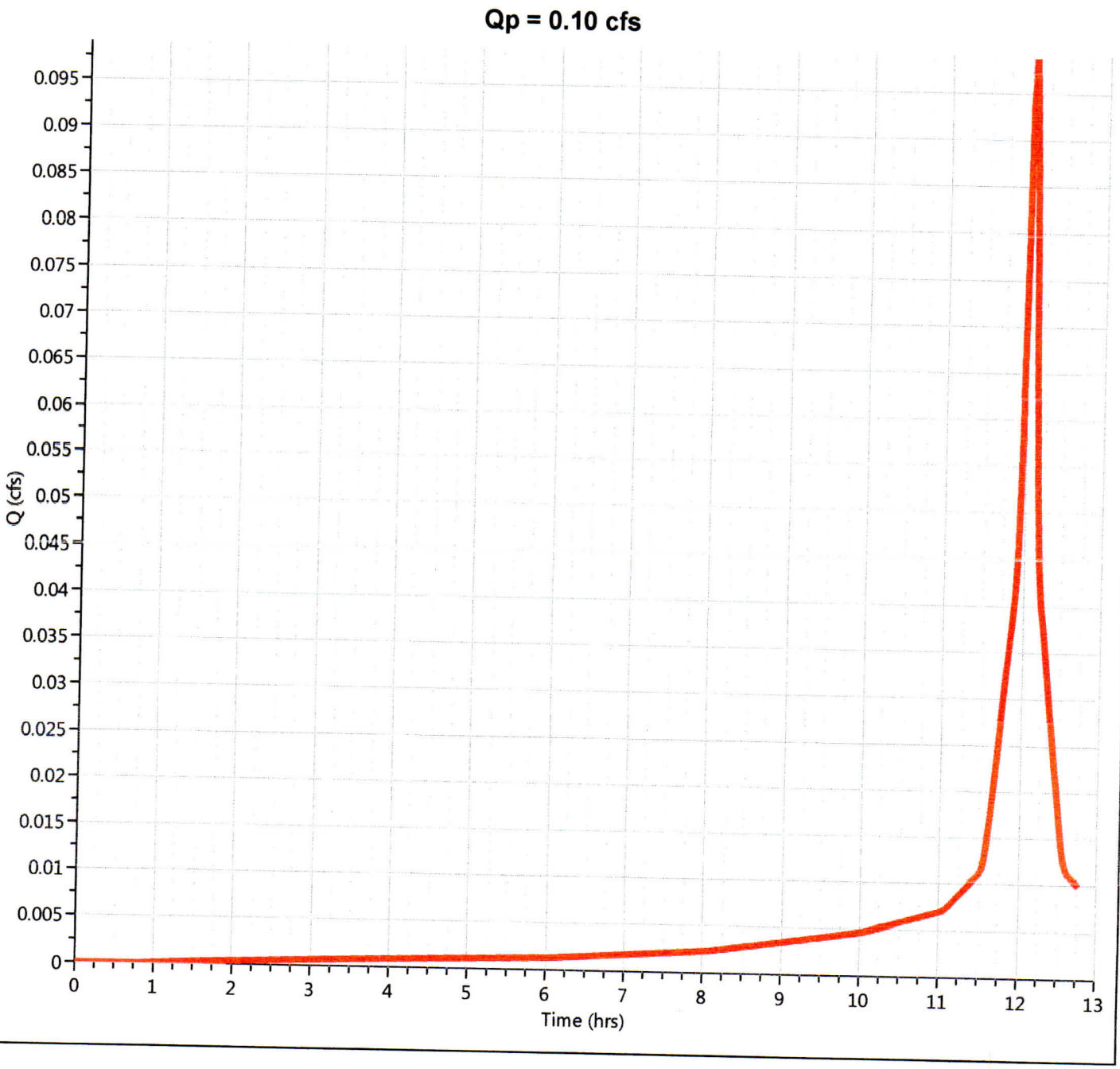
Hydrology Studio v 3.0.0.17

03-15-2021

## Dwelling

**Hyd. No. 1**

| | | | |
|---|---|---|---|
| Hydrograph Type | = NRCS Runoff | Peak Flow | = 0.099 cfs |
| Storm Frequency | = 10-yr | Time to Peak | = 12.07 hrs |
| Time Interval | = 2 min | Runoff Volume | = 340 cuft |
| Drainage Area | = 0.02 ac | Curve Number | = 98 |
| Tc Method | = User | Time of Conc. (Tc) | = 6.0 min |
| Total Rainfall | = 5.23 in | Design Storm | = Type III |
| Storm Duration | = 24 hrs | Shape Factor | = 484 |



# Design Storm Report

Custom Storm filename:

Hydrology Studio v 3.0.0.17

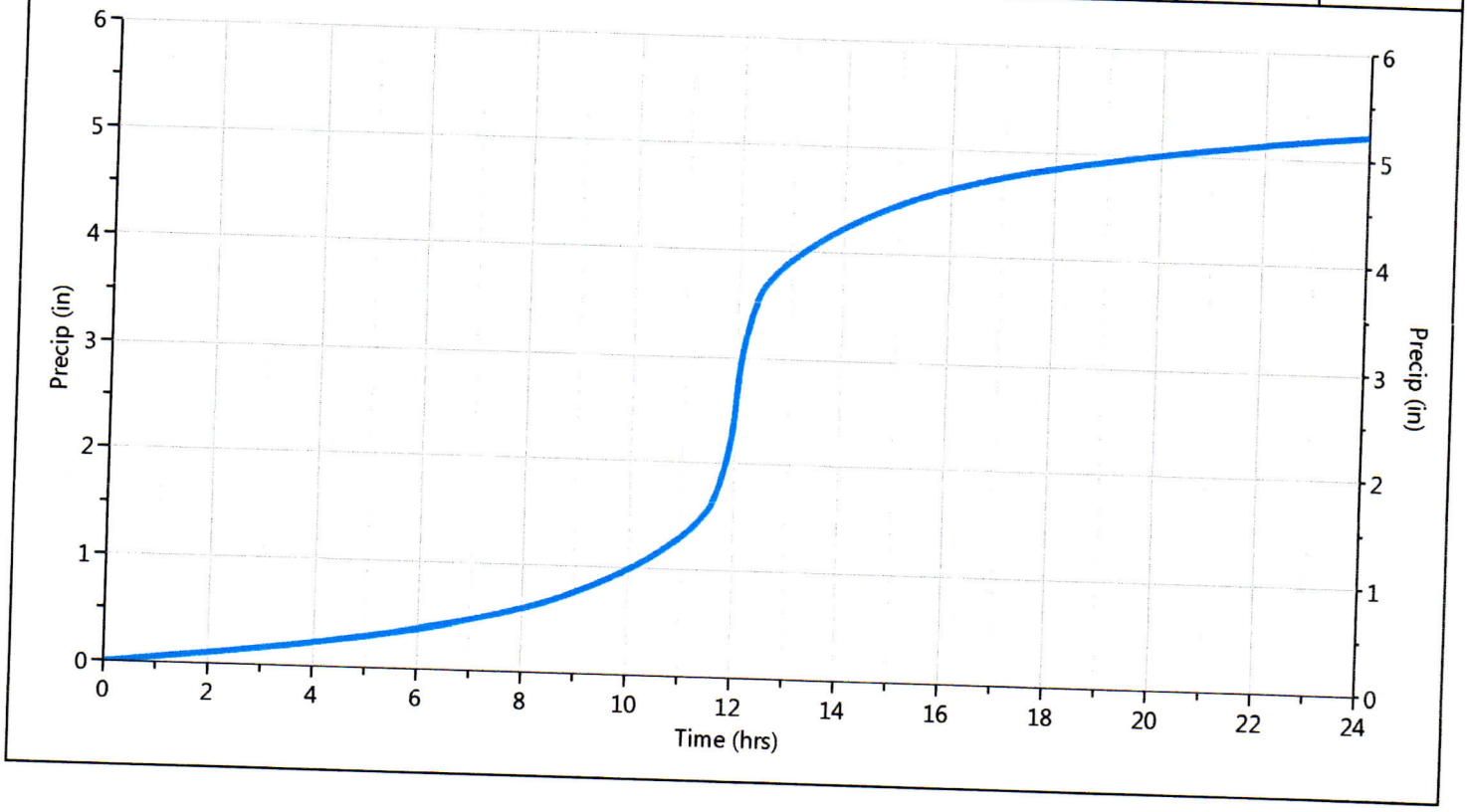
03-15-2021

## Storm Distribution: NRCS/SCS - Type III

| Storm Duration | Total Rainfall Volume (in) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1-yr | 2-yr | 3-yr | 5-yr | ✓ 10-yr | 25-yr | 50-yr | 100-yr | |
| 24 hrs | 2.76 | 3.38 | 0.00 | 0.00 | 5.23 | 6.52 | 13.40 | 8.93 | |

**Incremental Rainfall Distribution, 10-yr**

| Time (hrs) | Precip (in) | Time (hrs) | Precip (in) | Time (hrs) | Precip (in) | Time (hrs) | Precip (in) | Time (hrs) | Precip (in) |
|---|---|---|---|---|---|---|---|---|---|
| 11.00 | 0.012657 | 11.37 | 0.018340 | 11.73 | 0.053985 | 12.10 | 0.103553 | 12.47 | 0.028416 |
| 11.03 | 0.012993 | 11.40 | 0.018874 | 11.77 | 0.059099 | 12.13 | 0.079708 | 12.50 | 0.023303 |
| 11.07 | 0.013528 | 11.43 | 0.019409 | 11.80 | 0.064213 | 12.17 | 0.074440 | 12.53 | 0.020449 |
| 11.10 | 0.014063 | 11.47 | 0.019944 | 11.83 | 0.069326 | 12.20 | 0.069327 | 12.57 | 0.019944 |
| 11.13 | 0.014598 | 11.50 | 0.020478 | 11.87 | 0.074440 | 12.23 | 0.064213 | 12.60 | 0.019409 |
| 11.17 | 0.015132 | 11.53 | 0.023273 | 11.90 | 0.079554 | 12.27 | 0.059099 | 12.63 | 0.018874 |
| 11.20 | 0.015667 | 11.57 | 0.028416 | 11.93 | 0.103704 | 12.30 | 0.053985 | 12.67 | 0.018340 |
| 11.23 | 0.016201 | 11.60 | 0.033530 | 11.97 | 0.146441 | 12.33 | 0.048872 | 12.70 | 0.017805 |
| 11.27 | 0.016736 | 11.63 | 0.038644 | 12.00 | 0.189327 | 12.37 | 0.043758 | 12.73 | 0.017271 |
| 11.30 | 0.017271 | 11.67 | 0.043758 | 12.03 | 0.189086 | 12.40 | 0.038644 | 12.77 | 0.016736 |
| 11.33 | 0.017805 | 11.70 | 0.048871 | 12.07 | 0.146439 | 12.43 | 0.033530 | 12.80 | 0.016202 |



# Hydrograph Report

Project Name:

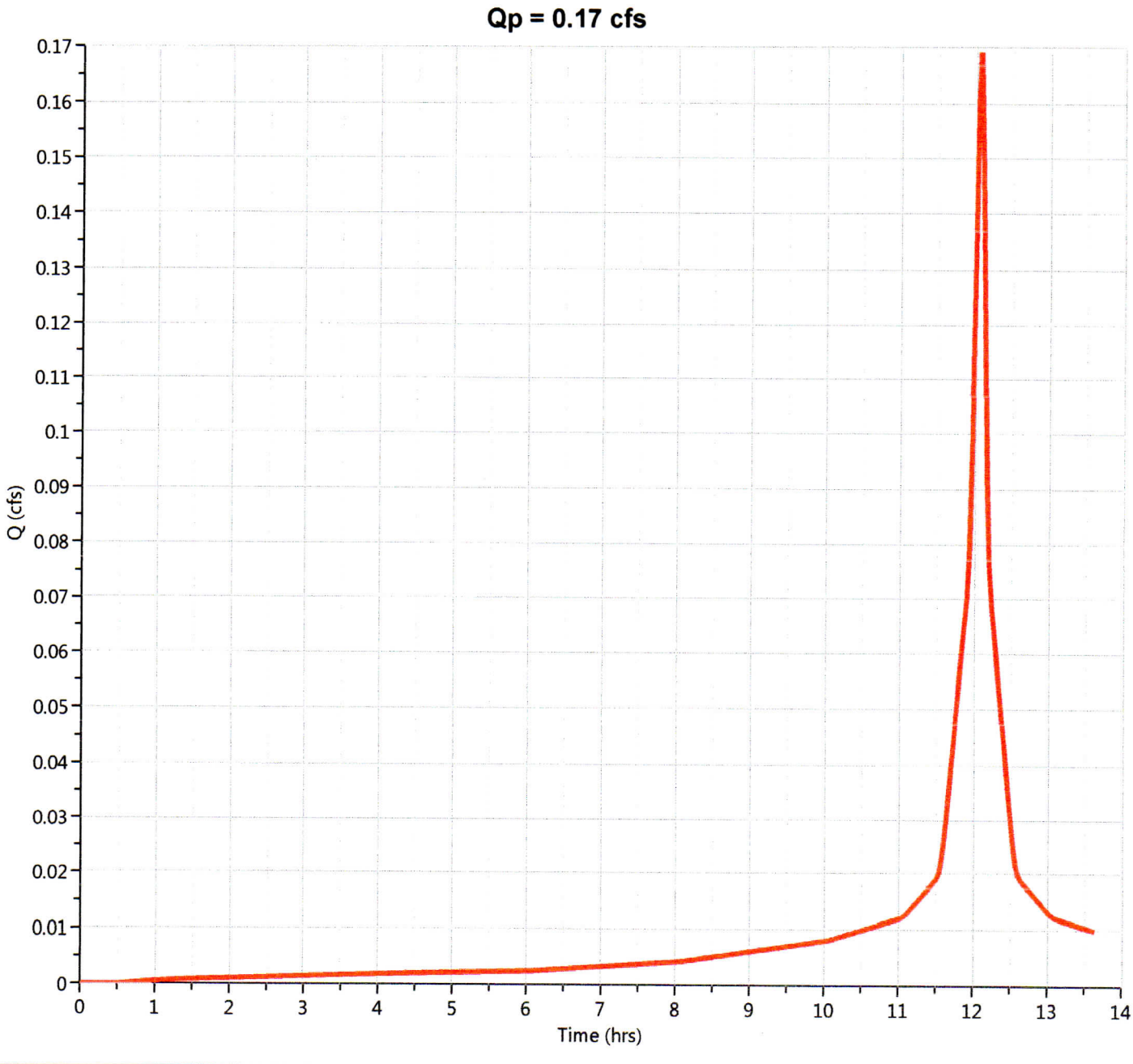
Hydrology Studio v 3.0.0.17

03-15-2021

## Dwelling

## Hyd. No. 1

| | | | |
|---|---|---|---|
| Hydrograph Type | = NRCS Runoff | Peak Flow | = 0.169 cfs |
| Storm Frequency | = 100-yr | Time to Peak | = 12.07 hrs |
| Time Interval | = 2 min | Runoff Volume | = 591 cuft |
| Drainage Area | = 0.02 ac | Curve Number | = 98 |
| Tc Method | = User | Time of Conc. (Tc) | = 6.0 min |
| Total Rainfall | = 8.93 in | Design Storm | = Type III |
| Storm Duration | = 24 hrs | Shape Factor | = 484 |



# Design Storm Report

Custom Storm filename:

Hydrology Studio v 3.0.0.17

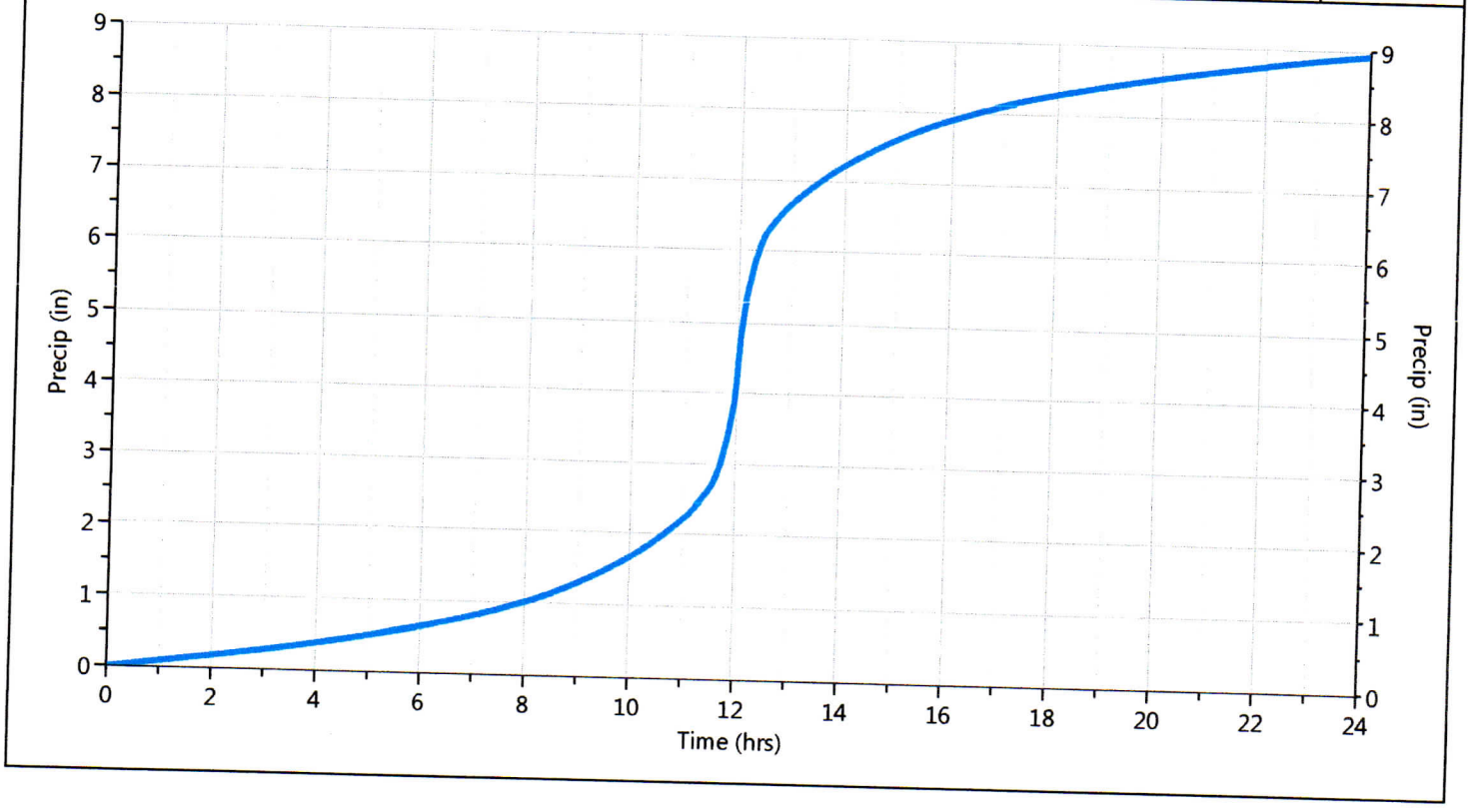
03-15-2021

## Storm Distribution: NRCS/SCS - Type III

| Storm Duration | Total Rainfall Volume (in) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1-yr | 2-yr | 3-yr | 5-yr | 10-yr | 25-yr | 50-yr | ✓ 100-yr | |
| 24 hrs | 2.76 | 3.38 | 0.00 | 0.00 | 5.23 | 6.52 | 13.40 | 8.93 | |

**Incremental Rainfall Distribution, 100-yr**

| Time (hrs) | Precip (in) | Time (hrs) | Precip (in) | Time (hrs) | Precip (in) | Time (hrs) | Precip (in) | Time (hrs) | Precip (in) |
|---|---|---|---|---|---|---|---|---|---|
| 11.00 | 0.021611 | 11.37 | 0.031315 | 11.73 | 0.092177 | 12.10 | 0.176813 | 12.47 | 0.048520 |
| 11.03 | 0.022185 | 11.40 | 0.032227 | 11.77 | 0.100909 | 12.13 | 0.136097 | 12.50 | 0.039789 |
| 11.07 | 0.023099 | 11.43 | 0.033140 | 11.80 | 0.109640 | 12.17 | 0.127104 | 12.53 | 0.034915 |
| 11.10 | 0.024012 | 11.47 | 0.034053 | 11.83 | 0.118372 | 12.20 | 0.118372 | 12.57 | 0.034053 |
| 11.13 | 0.024925 | 11.50 | 0.034966 | 11.87 | 0.127104 | 12.23 | 0.109641 | 12.60 | 0.033141 |
| 11.17 | 0.025837 | 11.53 | 0.039737 | 11.90 | 0.135835 | 12.27 | 0.100909 | 12.63 | 0.032227 |
| 11.20 | 0.026750 | 11.57 | 0.048519 | 11.93 | 0.177069 | 12.30 | 0.092177 | 12.67 | 0.031315 |
| 11.23 | 0.027663 | 11.60 | 0.057251 | 11.97 | 0.250041 | 12.33 | 0.083446 | 12.70 | 0.030402 |
| 11.27 | 0.028576 | 11.63 | 0.065983 | **12.00** | **0.323267** | 12.37 | 0.074715 | 12.73 | 0.029489 |
| 11.30 | 0.029489 | 11.67 | 0.074714 | 12.03 | 0.322856 | 12.40 | 0.065983 | 12.77 | 0.028576 |
| 11.33 | 0.030402 | 11.70 | 0.083446 | 12.07 | 0.250039 | 12.43 | 0.057251 | 12.80 | 0.027663 |



# Pond Report

Project Name:

Hydrology Studio v 3.0.0.17

03-15-2021

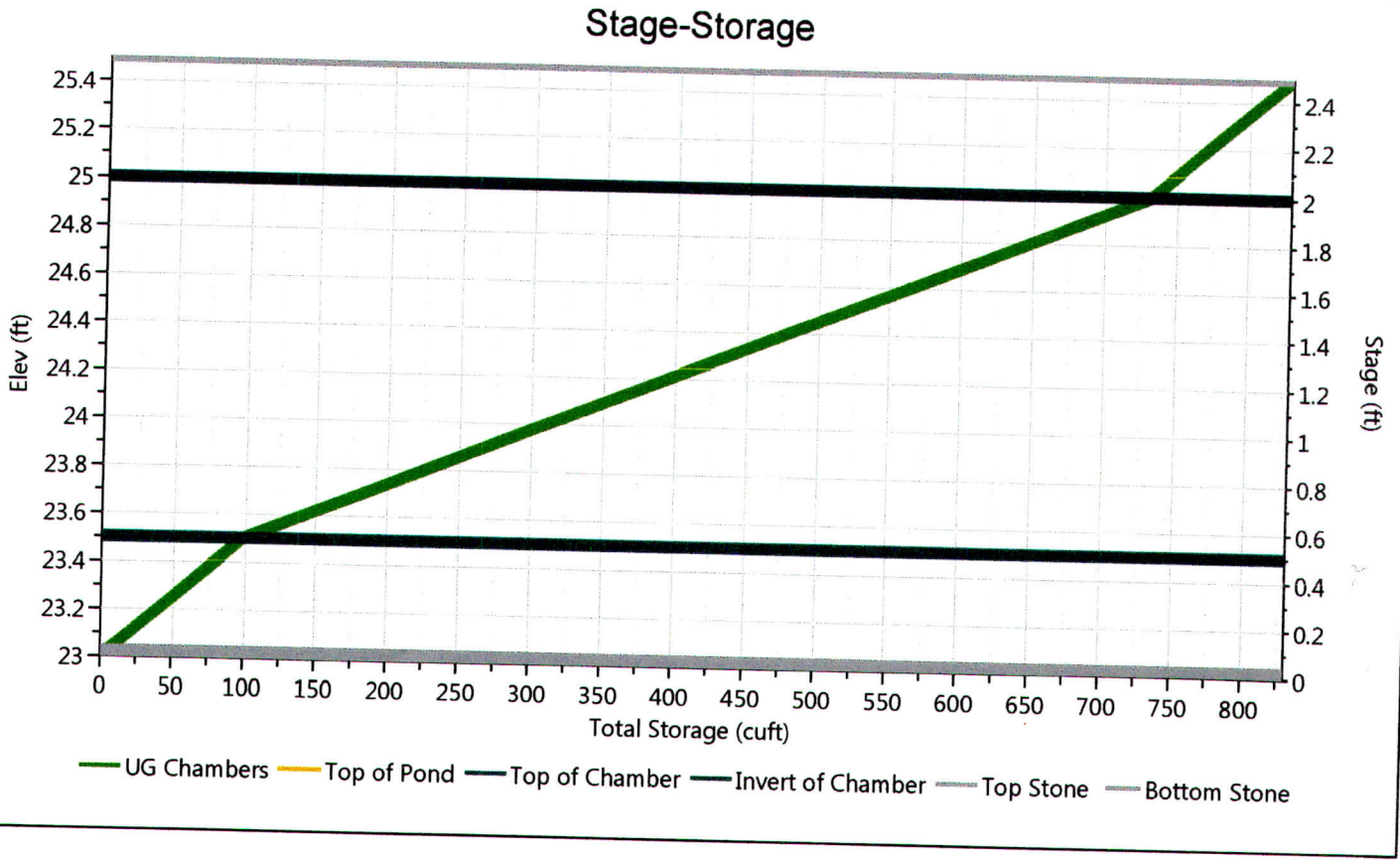
## dwelling Infiltration

## Stage-Storage

| Description | Input |
|---|---|
| Chamber Height, in | 18 |
| Chamber Shape | Box |
| Chamber Width, in | 18 |
| Installed Length, ft | 3.00 |
| No. Chambers | 90 |
| Bare Chamber Stor, cuft | 589 |
| No. Rows | 10 |
| Space Between Rows, in | 0 |
| Stone Above, in | 6 |
| Stone Below, in | 6 |
| Stone Sides, in | 12 |
| Stone Ends, in | 12 |
| Encasement Voids, % | 40.00 |
| Encasement Bottom Elevation, ft | 23.00 |

**Stage / Storage Table**

| Stage (in) | Elevation (ft) | Contour Area (sqft) | Incr. Storage (cuft) | Total Storage (cuft) |
|---|---|---|---|---|
| 0.0 | 23.00 | 493 | 0.000 | 0.000 |
| 1.5 | 23.13 | 493 | 24.7 | 24.7 |
| 3.0 | 23.25 | 493 | 24.7 | 49.3 |
| 4.5 | 23.38 | 493 | 24.7 | 74.0 |
| 6.0 | 23.50 | 493 | 24.7 | 98.6 |
| 7.5 | 23.63 | 493 | 52.7 | 151 |
| 9.0 | 23.75 | 493 | 52.7 | 204 |
| 10.5 | 23.88 | 493 | 52.7 | 257 |
| 12.0 | 24.00 | 493 | 52.7 | 310 |
| 13.5 | 24.13 | 493 | 52.7 | 362 |
| 15.0 | 24.25 | 493 | 52.7 | 415 |
| 16.5 | 24.38 | 493 | 52.7 | 468 |
| 18.0 | 24.50 | 493 | 52.7 | 521 |
| 19.5 | 24.63 | 493 | 52.7 | 573 |
| 21.0 | 24.75 | 493 | 52.7 | 626 |
| 22.5 | 24.88 | 493 | 52.7 | 679 |
| 24.0 | 25.00 | 493 | 52.7 | 732 |
| 25.5 | 25.13 | 493 | 24.6 | 756 |
| 27.0 | 25.25 | 493 | 24.7 | 781 |
| 28.5 | 25.38 | 493 | 24.7 | 806 |
| 30.0 | 25.50 | 493 | 24.6 | 830 |



# Pond Report

Project Name:

Hydrology Studio v 3.0.0.17

03-15-2021

## Building Infil

## Stage-Discharge

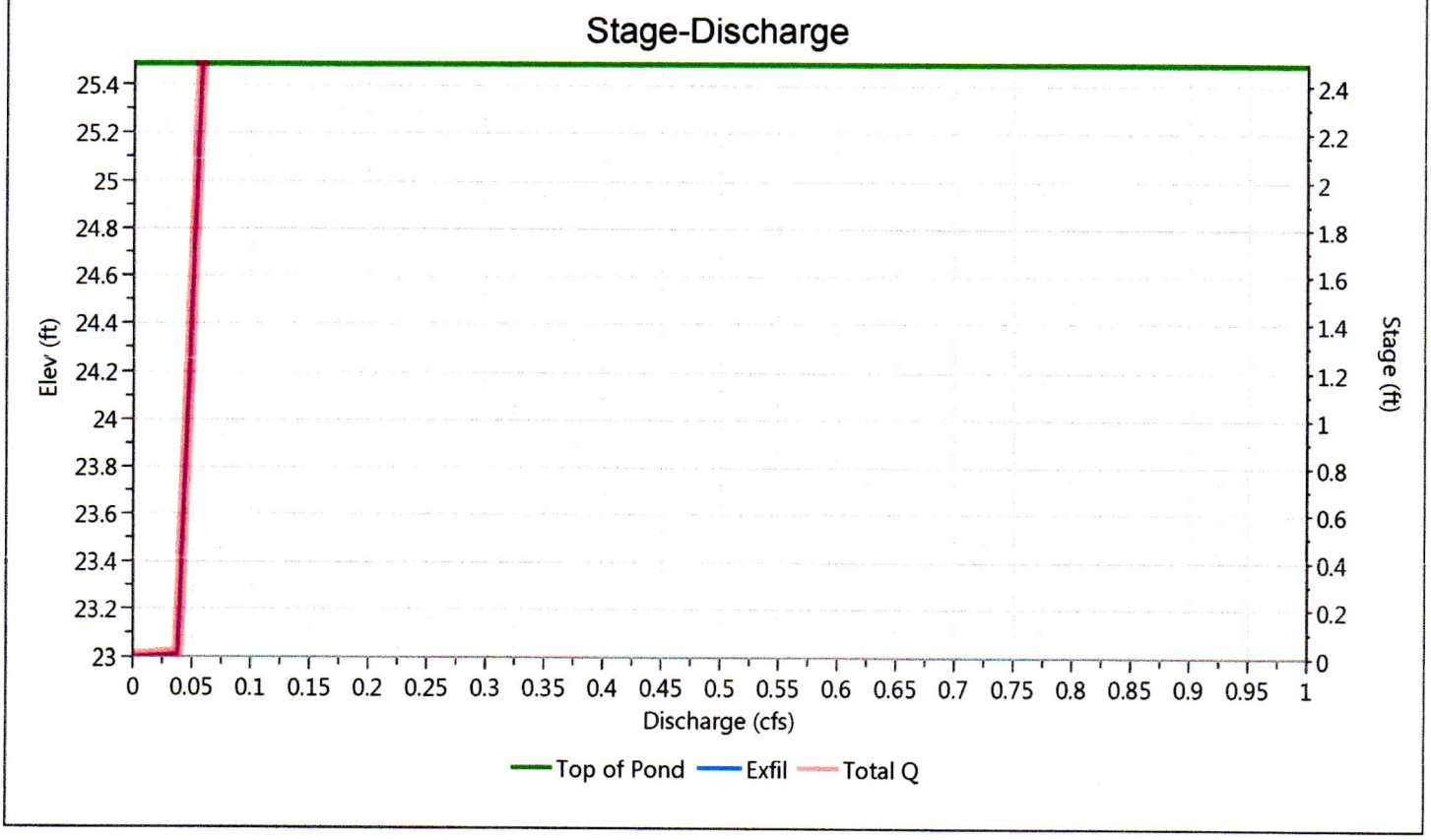
| Culvert / Orifices | Culvert | Orifices 1 | Orifices 2 | Orifices 3 |
|---|---|---|---|---|
| Rise, in | | | | |
| Span, in | | | | |
| No. Barrels | 1 | | | |
| Invert Elevation, ft | 23.00 | | | |
| Orifice Coefficient, Co | 0.68 | | | |
| Length, ft | | | | |
| Barrel Slope, % | | | | |
| N-Value, n | 0.000 | | | |

| Weirs | Riser* | Weirs 1 | Weirs 2 | Weirs 3 |
|---|---|---|---|---|
| Shape / Type | | | | |
| Crest Elevation, ft | | | | |
| Crest Length, ft | | | | |
| Angle, deg | | | | |
| Weir Coefficient, Cw | | | | |

| Perforated Riser | |
|---|---|
| Hole Diameter, in | |
| No. holes | |
| Invert Elevation, ft | |
| Height, ft | |
| Orifice Coefficient, Co | |

| Ancillary | |
|---|---|
| Exfiltration, in/hr | 1.02** |

*Routes through Culvert. **Rate applied to contours.



# Pond Report

Project Name:

Hydrology Studio v 3.0.0.17

03-15-2021

## Building Infil

## Stage-Storage-Discharge Summary

| Stage (ft) | Elev. (ft) | Storage (cuft) | Culvert (cfs) | Orifices, cfs | | | Riser (cfs) | Weirs, cfs | | | Pf Riser (cfs) | Exfil (cfs) | User (cfs) | Total (cfs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 | | 1 | 2 | 3 | | | | |
| 0.00 | 23.00 | 0.000 | | | | | | | | | | 0.000 | | 0.000 |
| 0.13 | 23.13 | 80.0 | | | | | | | | | | 0.039 | | 0.039 |
| 0.25 | 23.25 | 160 | | | | | | | | | | 0.040 | | 0.040 |
| 0.38 | 23.38 | 240 | | | | | | | | | | 0.041 | | 0.041 |
| 0.50 | 23.50 | 320 | | | | | | | | | | 0.042 | | 0.042 |
| 0.63 | 23.63 | 500 | | | | | | | | | | 0.043 | | 0.043 |
| 0.75 | 23.75 | 680 | | | | | | | | | | 0.044 | | 0.044 |
| 0.88 | 23.88 | 860 | | | | | | | | | | 0.045 | | 0.045 |
| 1.00 | 24.00 | 1,040 | | | | | | | | | | 0.046 | | 0.046 |
| 1.13 | 24.13 | 1,220 | | | | | | | | | | 0.047 | | 0.047 |
| 1.25 | 24.25 | 1,399 | | | | | | | | | | 0.048 | | 0.048 |
| 1.38 | 24.38 | 1,579 | | | | | | | | | | 0.049 | | 0.049 |
| 1.50 | 24.50 | 1,759 | | | | | | | | | | 0.050 | | 0.050 |
| 1.63 | 24.63 | 1,939 | | | | | | | | | | 0.051 | | 0.051 |
| 1.75 | 24.75 | 2,119 | | | | | | | | | | 0.052 | | 0.052 |
| 1.88 | 24.88 | 2,299 | | | | | | | | | | 0.053 | | 0.053 |
| 2.00 | 25.00 | 2,479 | | | | | | | | | | 0.054 | | 0.054 |
| 2.13 | 25.13 | 2,559 | | | | | | | | | | 0.055 | | 0.055 |
| 2.25 | 25.25 | 2,639 | | | | | | | | | | 0.056 | | 0.056 |
| 2.38 | 25.38 | 2,719 | | | | | | | | | | 0.057 | | 0.057 |
| 2.50 | 25.50 | 2,799 | | | | | | | | | | 0.058 | | 0.058 |

*Suffix key: ic = inlet control, oc = outlet control, s = submerged weir*

# Pond Report

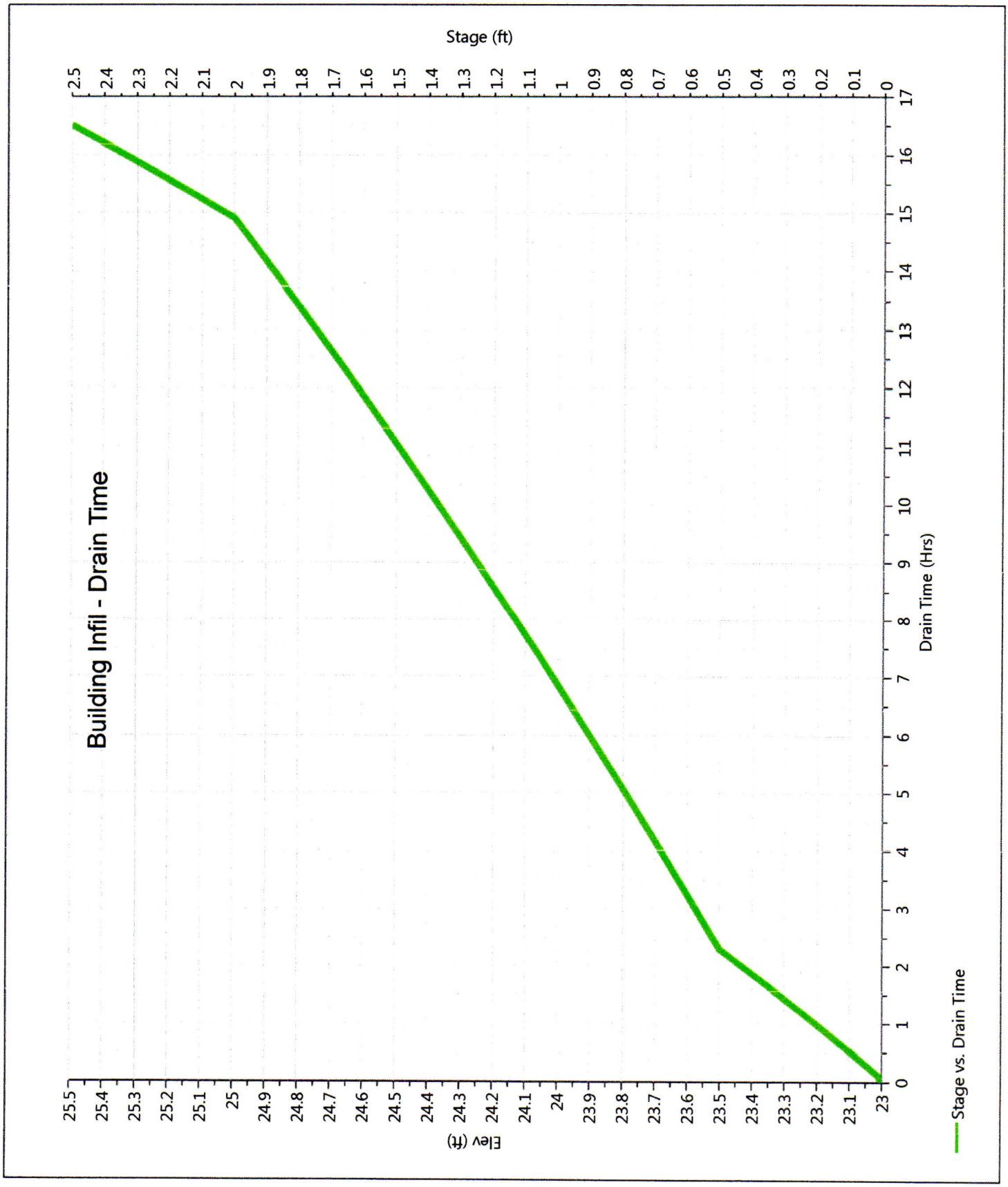
Project Name:

Hydrology Studio v 3.0.0.17

03-15-2021

## Building Infil

## Pond Drawdown




30 C

# Pond Report

Project Name:

Hydrology Studio v 2.0.0.54

09-13-2018

## dwelling

## Stage-Storage-Discharge Summary

| Stage (ft) | Elev. (ft) | Storage (cuft) | Culvert (cfs) | Orifices, cfs | | | Riser (cfs) | Weirs, cfs | | | Pf Riser (cfs) | Exfil (cfs) | User (cfs) | Total (cfs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 | | 1 | 2 | 3 | | | | |
| 0.00 | 100.00 | 0.000 | | | | | | | | | | | | 0.00 |
| 0.08 | 100.08 | 30.4 | | | | | | | | | | | | 0.00 |
| 0.15 | 100.15 | 60.8 | | | | | | | | | | | | 0.00 |
| 0.23 | 100.23 | 91.1 | | | | | | | | | | | | 0.00 |
| 0.30 | 100.30 | 122 | | | | | | | | | | | | 0.00 |
| 0.38 | 100.38 | 152 | | | | | | | | | | | | 0.00 |
| 0.45 | 100.45 | 182 | | | | | | | | | | | | 0.00 |
| 0.53 | 100.53 | 213 | | | | | | | | | | | | 0.00 |
| 0.60 | 100.60 | 243 | | | | | | | | | | | | 0.00 |
| 0.68 | 100.68 | 273 | | | | | | | | | | | | 0.00 |
| 0.75 | 100.75 | 304 | | | | | | | | | | | | 0.00 |
| 0.82 | 100.83 | 334 | | | | | | | | | | | | 0.00 |
| 0.90 | 100.90 | 365 | | | | | | | | | | | | 0.00 |
| 0.97 | 100.98 | 395 | | | | | | | | | | | | 0.00 |
| 1.05 | 101.05 | 425 | | | | | | | | | | | | 0.00 |
| 1.13 | 101.13 | 456 | | | | | | | | | | | | 0.00 |
| 1.20 | 101.20 | 486 | | | | | | | | | | | | 0.00 |
| 1.28 | 101.28 | 516 | | | | | | | | | | | | 0.00 |
| 1.35 | 101.35 | 547 | | | | | | | | | | | | 0.00 |
| 1.43 | 101.43 | 577 | | | | | | | | | | | | 0.00 |
| 1.50 | 101.50 | 608 | | | | | | | | | | | | 0.00 |

*Suffix key: ic = inlet control, oc = outlet control, s = submerged weir*

# Hydrograph Report

Project Name:

Hydrology Studio v 2.0.0.54

09-13-2018

## Dwelling Routing

## Hyd. No. 3

| | | | |
|---|---|---|---|
| Hydrograph Type | = Pond Route | Peak Flow | = 0.00 cfs |
| Storm Frequency | = 2-yr | Time to Peak | = 0.00 hrs |
| Time Interval | = 2 min | Hydrograph Volume | = 0.000 cuft |
| Inflow Hydrograph | = 1 - proposed dwelling | Max. Elevation | = 100.53 ft |
| Pond Name | = dwelling | Max. Storage | = 216 cuft |

*Pond Routing by Storage Indication Method*

**Qp = 0.00 cfs**

# Hydrograph Report

Project Name:

Hydrology Studio v 2.0.0.54

09-13-2018

## Dwelling Routing

## Hyd. No. 3

| | | | |
|---|---|---|---|
| Hydrograph Type | = Pond Route | Peak Flow | = 0.00 cfs |
| Storm Frequency | = 10-yr | Time to Peak | = 0.00 hrs |
| Time Interval | = 2 min | Hydrograph Volume | = 0.000 cuft |
| Inflow Hydrograph | = 1 - proposed dwelling | Max. Elevation | = 100.83 ft |
| Pond Name | = dwelling | Max. Storage | = 338 cuft |

*Pond Routing by Storage Indication Method*

**Qp = 0.00 cfs**

# Hydrograph Report

Project Name:

Hydrology Studio v 2.0.0.54

09-13-2018

## Dwelling Routing

## Hyd. No. 3

| | | | |
|---|---|---|---|
| Hydrograph Type | = Pond Route | Peak Flow | = 0.00 cfs |
| Storm Frequency | = 100-yr | Time to Peak | = 0.00 hrs |
| Time Interval | = 2 min | Hydrograph Volume | = 0.000 cuft |
| Inflow Hydrograph | = 1 - proposed dwelling | Max. Elevation | = 101.46 ft |
| Pond Name | = dwelling | Max. Storage | = 589 cuft |

*Pond Routing by Storage Indication Method*

**Qp = 0.00 cfs**

# *PROPOSED CONDITIONS*
# *BUILDING INFILTRATORS*

# Hydrograph Report

Project Name:

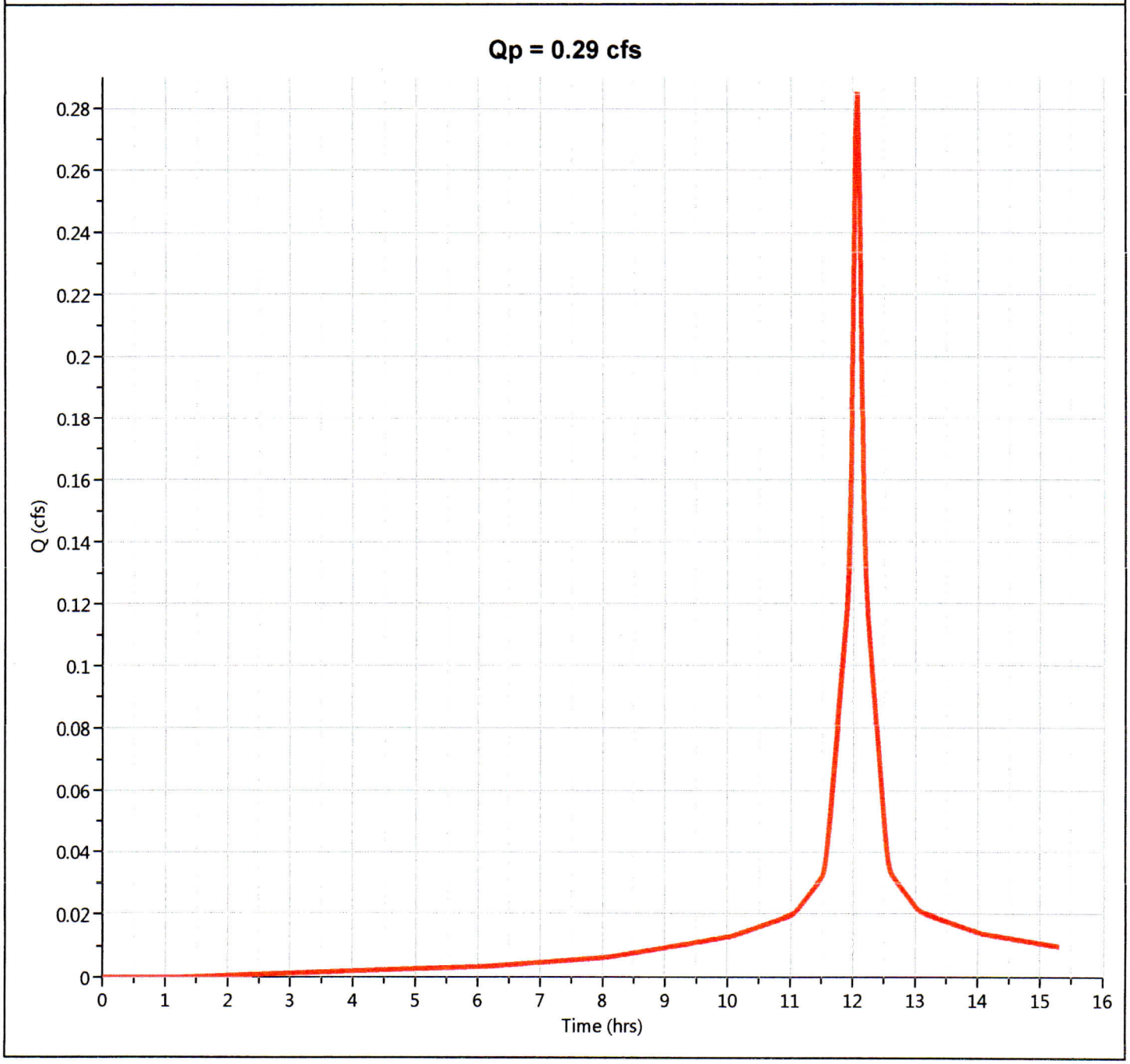
Hydrology Studio v 3.0.0.17

03-15-2021

## Building

## Hyd. No. 3

| | | | |
|---|---|---|---|
| Hydrograph Type | = NRCS Runoff | Peak Flow | = 0.285 cfs |
| Storm Frequency | = 2-yr | Time to Peak | = 12.07 hrs |
| Time Interval | = 2 min | Runoff Volume | = 964 cuft |
| Drainage Area | = 0.09 ac | Curve Number | = 98 |
| Tc Method | = User | Time of Conc. (Tc) | = 6.0 min |
| Total Rainfall | = 3.38 in | Design Storm | = Type III |
| Storm Duration | = 24 hrs | Shape Factor | = 484 |



# Design Storm Report

Custom Storm filename:

Hydrology Studio v 2.0.0.54

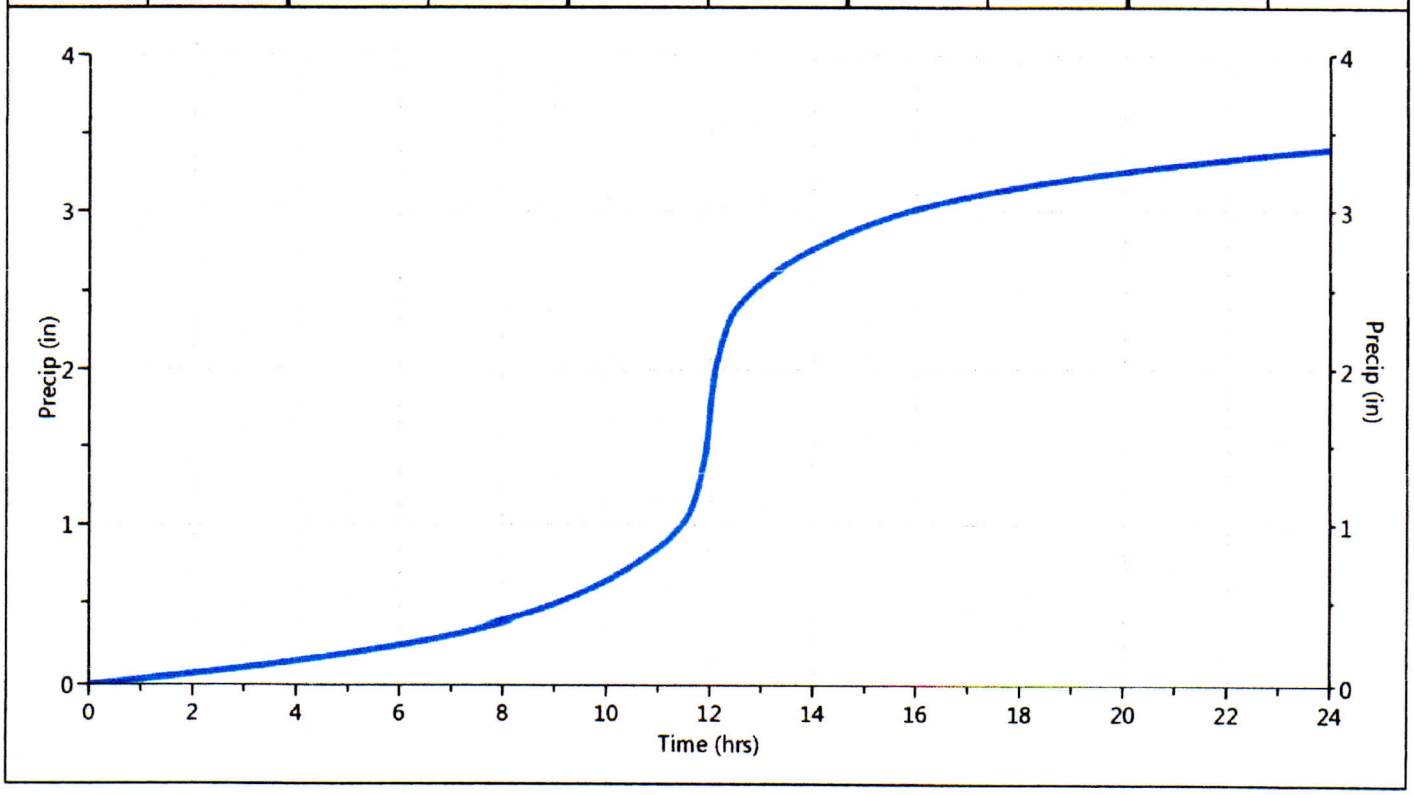
09-13-2018

## Storm Distribution: NRCS/SCS - Type III

| Storm Duration | Total Rainfall Volume (in) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1-yr | ✓ 2-yr | 3-yr | 5-yr | 10-yr | 25-yr | 50-yr | 100-yr | |
| 24 hrs | 0.00 | 3.40 | 0.00 | 0.00 | 5.20 | 6.50 | 0.00 | 8.90 | |

**Incremental Rainfall Distribution, 2-yr**

| Time (hrs) | Precip (in) | Time (hrs) | Precip (in) | Time (hrs) | Precip (in) | Time (hrs) | Precip (in) | Time (hrs) | Precip (in) |
|---|---|---|---|---|---|---|---|---|---|
| 11.00 | 0.0082 | 11.37 | 0.0119 | 11.73 | 0.0351 | 12.10 | 0.0673 | 12.47 | 0.0185 |
| 11.03 | 0.0084 | 11.40 | 0.0123 | 11.77 | 0.0384 | 12.13 | 0.0518 | 12.50 | 0.0151 |
| 11.07 | 0.0088 | 11.43 | 0.0126 | 11.80 | 0.0417 | 12.17 | 0.0484 | 12.53 | 0.0133 |
| 11.10 | 0.0091 | 11.47 | 0.0130 | 11.83 | 0.0451 | 12.20 | 0.0451 | 12.57 | 0.0130 |
| 11.13 | 0.0095 | 11.50 | 0.0133 | 11.87 | 0.0484 | 12.23 | 0.0417 | 12.60 | 0.0126 |
| 11.17 | 0.0098 | 11.53 | 0.0151 | 11.90 | 0.0517 | 12.27 | 0.0384 | 12.63 | 0.0123 |
| 11.20 | 0.0102 | 11.57 | 0.0185 | 11.93 | 0.0674 | 12.30 | 0.0351 | 12.67 | 0.0119 |
| 11.23 | 0.0105 | 11.60 | 0.0218 | 11.97 | 0.0952 | 12.33 | 0.0318 | 12.70 | 0.0116 |
| 11.27 | 0.0109 | 11.63 | 0.0251 | **12.00** | **0.1231** | 12.37 | 0.0284 | 12.73 | 0.0112 |
| 11.30 | 0.0112 | 11.67 | 0.0284 | 12.03 | 0.1229 | 12.40 | 0.0251 | 12.77 | 0.0109 |
| 11.33 | 0.0116 | 11.70 | 0.0318 | 12.07 | 0.0952 | 12.43 | 0.0218 | 12.80 | 0.0105 |



# Hydrograph Report

Project Name:

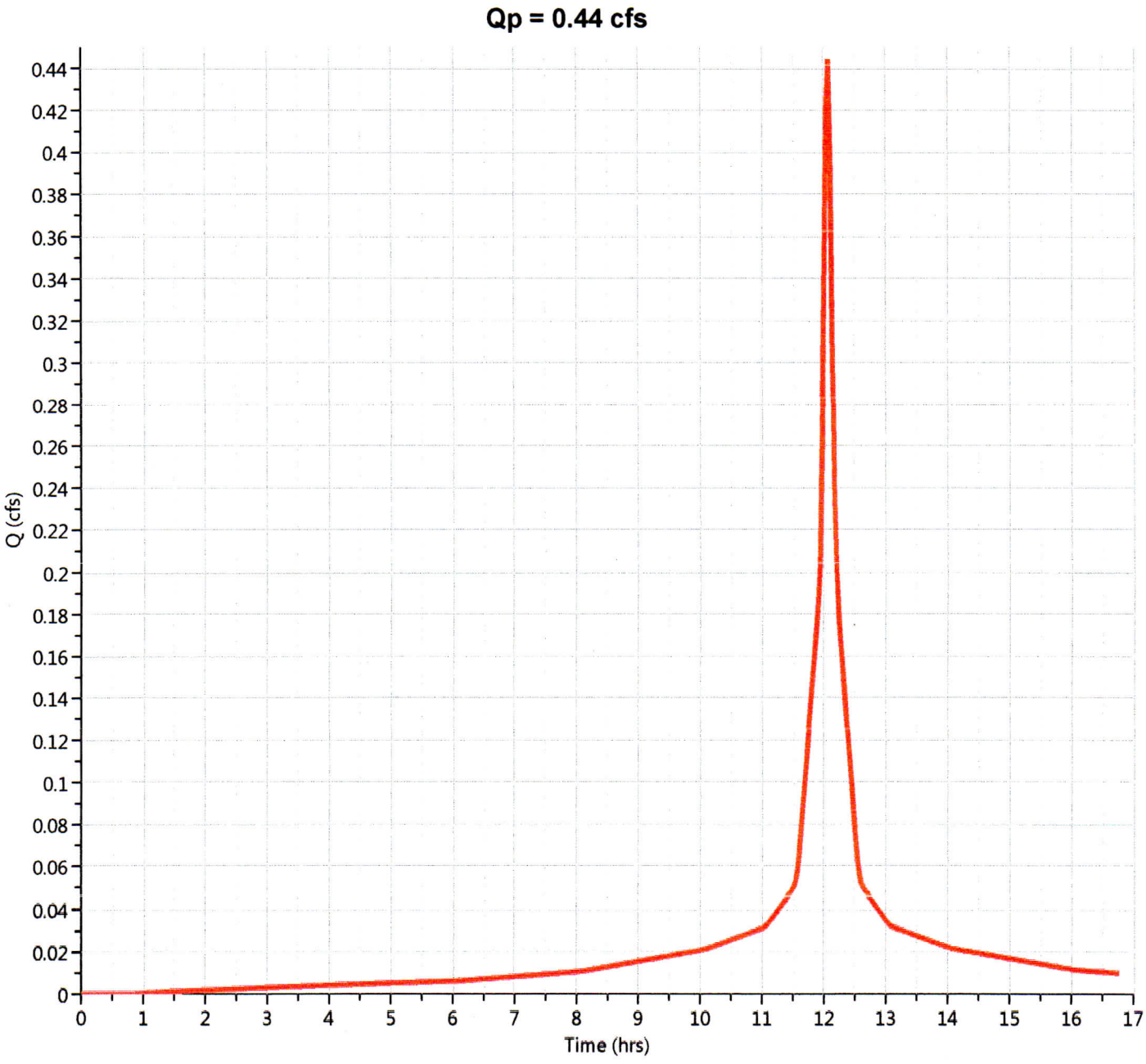
Hydrology Studio v 3.0.0.17

03-15-2021

## Building

## Hyd. No. 3

| | | | |
|---|---|---|---|
| Hydrograph Type | = NRCS Runoff | Peak Flow | = 0.444 cfs |
| Storm Frequency | = 10-yr | Time to Peak | = 12.07 hrs |
| Time Interval | = 2 min | Runoff Volume | = 1,529 cuft |
| Drainage Area | = 0.09 ac | Curve Number | = 98 |
| Tc Method | = User | Time of Conc. (Tc) | = 6.0 min |
| Total Rainfall | = 5.23 in | Design Storm | = Type III |
| Storm Duration | = 24 hrs | Shape Factor | = 484 |



# Design Storm Report

Custom Storm filename:

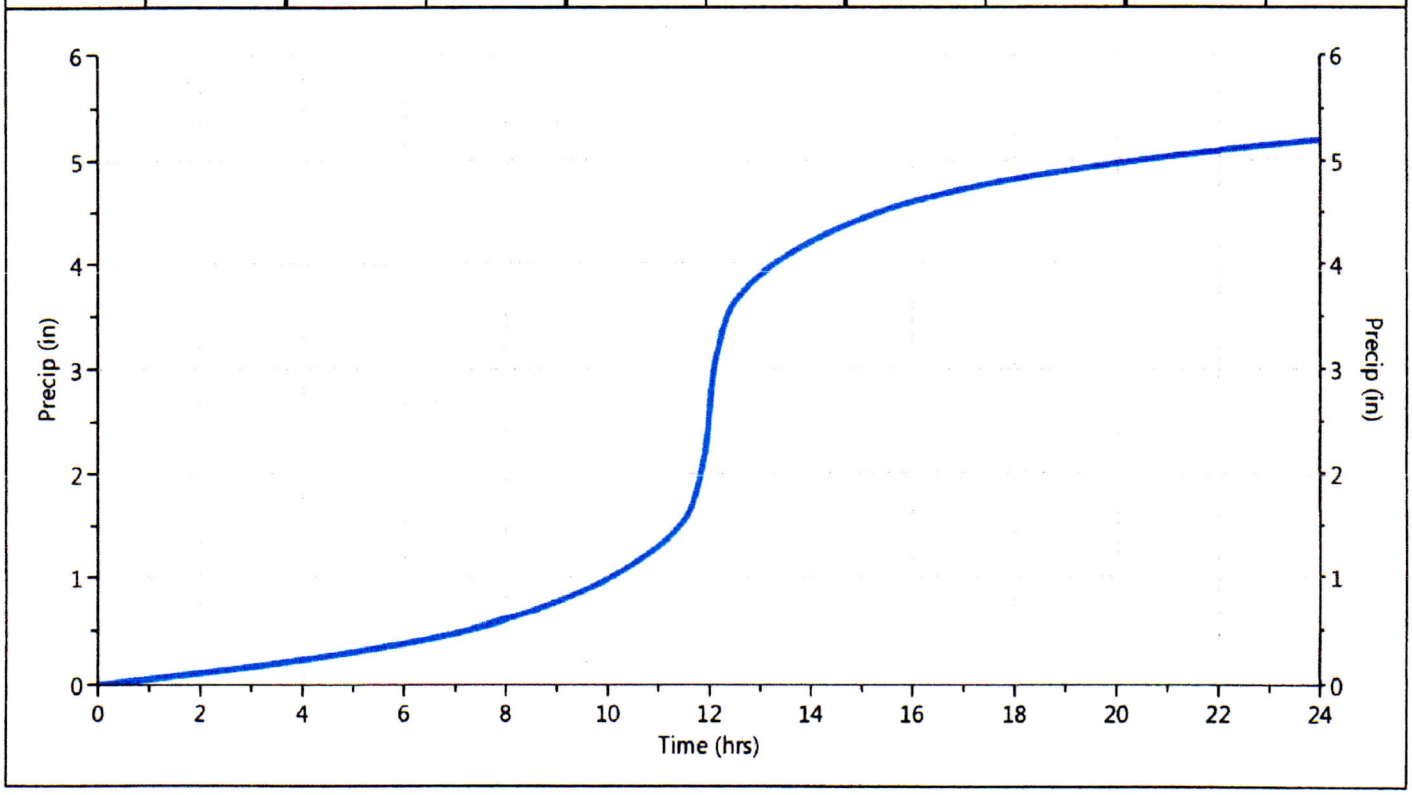
Hydrology Studio v 2.0.0.54

09-13-2018

## Storm Distribution: NRCS/SCS - Type III

| Storm Duration | Total Rainfall Volume (in) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1-yr | 2-yr | 3-yr | 5-yr | ✓ 10-yr | 25-yr | 50-yr | 100-yr | |
| 24 hrs | 0.00 | 3.40 | 0.00 | 0.00 | 5.20 | 6.50 | 0.00 | 8.90 | |

| Incremental Rainfall Distribution, 10-yr | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Time (hrs) | Precip (in) | Time (hrs) | Precip (in) | Time (hrs) | Precip (in) | Time (hrs) | Precip (in) | Time (hrs) | Precip (in) |
| 11.00 | 0.0126 | 11.37 | 0.0182 | 11.73 | 0.0537 | 12.10 | 0.1030 | 12.47 | 0.0283 |
| 11.03 | 0.0129 | 11.40 | 0.0188 | 11.77 | 0.0588 | 12.13 | 0.0793 | 12.50 | 0.0232 |
| 11.07 | 0.0135 | 11.43 | 0.0193 | 11.80 | 0.0638 | 12.17 | 0.0740 | 12.53 | 0.0203 |
| 11.10 | 0.0140 | 11.47 | 0.0198 | 11.83 | 0.0689 | 12.20 | 0.0689 | 12.57 | 0.0198 |
| 11.13 | 0.0145 | 11.50 | 0.0204 | 11.87 | 0.0740 | 12.23 | 0.0638 | 12.60 | 0.0193 |
| 11.17 | 0.0150 | 11.53 | 0.0231 | 11.90 | 0.0791 | 12.27 | 0.0588 | 12.63 | 0.0188 |
| 11.20 | 0.0156 | 11.57 | 0.0283 | 11.93 | 0.1031 | 12.30 | 0.0537 | 12.67 | 0.0182 |
| 11.23 | 0.0161 | 11.60 | 0.0333 | 11.97 | 0.1456 | 12.33 | 0.0486 | 12.70 | 0.0177 |
| 11.27 | 0.0166 | 11.63 | 0.0384 | **12.00** | **0.1882** | 12.37 | 0.0435 | 12.73 | 0.0172 |
| 11.30 | 0.0172 | 11.67 | 0.0435 | 12.03 | 0.1880 | 12.40 | 0.0384 | 12.77 | 0.0166 |
| 11.33 | 0.0177 | 11.70 | 0.0486 | 12.07 | 0.1456 | 12.43 | 0.0333 | 12.80 | 0.0161 |



# Hydrograph Report

Project Name:

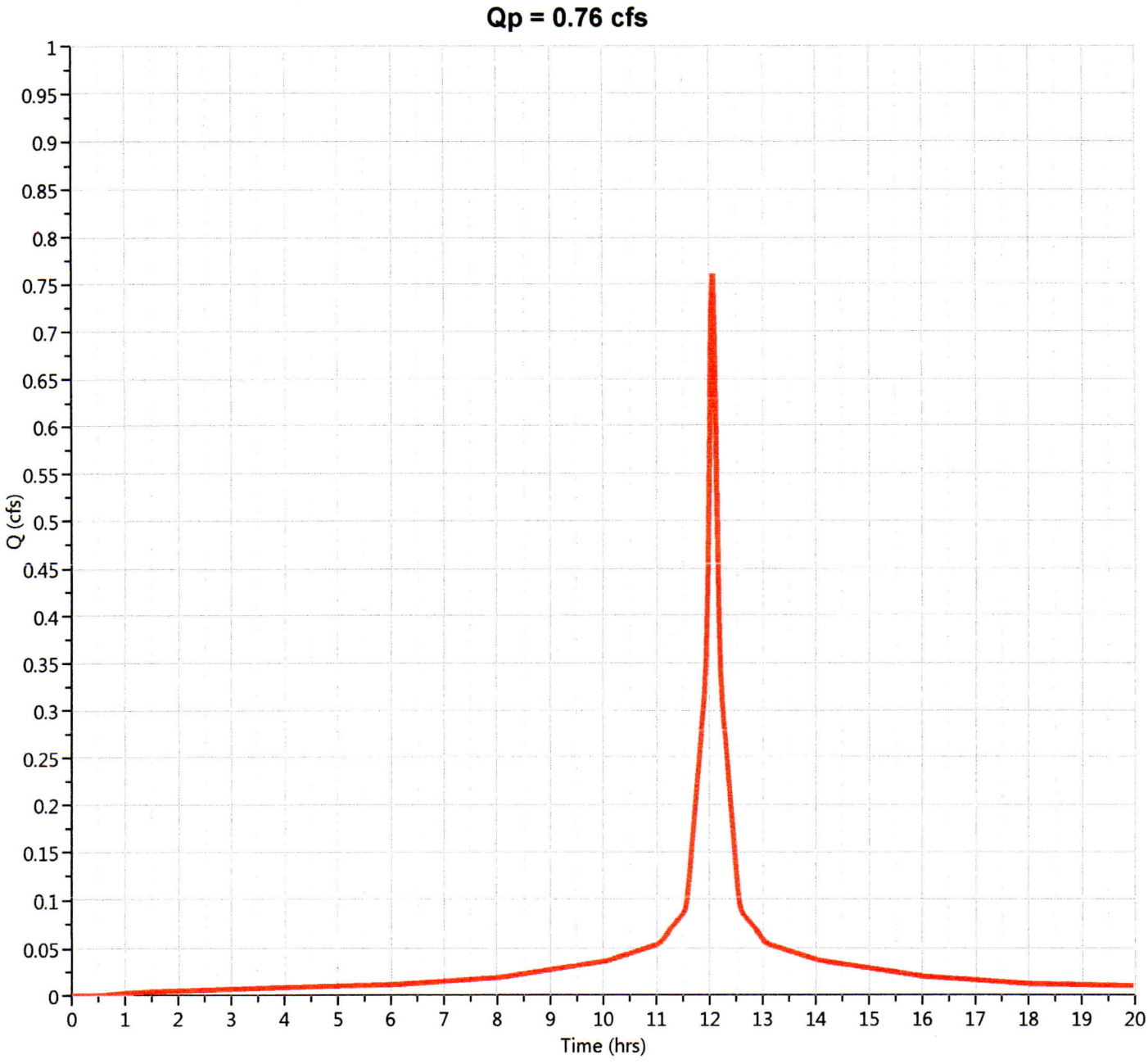
Hydrology Studio v 3.0.0.17

03-15-2021

## Building

## Hyd. No. 3

| | | | |
|---|---|---|---|
| Hydrograph Type | = NRCS Runoff | Peak Flow | = 0.761 cfs |
| Storm Frequency | = 100-yr | Time to Peak | = 12.07 hrs |
| Time Interval | = 2 min | Runoff Volume | = 2,661 cuft |
| Drainage Area | = 0.09 ac | Curve Number | = 98 |
| Tc Method | = User | Time of Conc. (Tc) | = 6.0 min |
| Total Rainfall | = 8.93 in | Design Storm | = Type III |
| Storm Duration | = 24 hrs | Shape Factor | = 484 |



# Design Storm Report

Custom Storm filename:

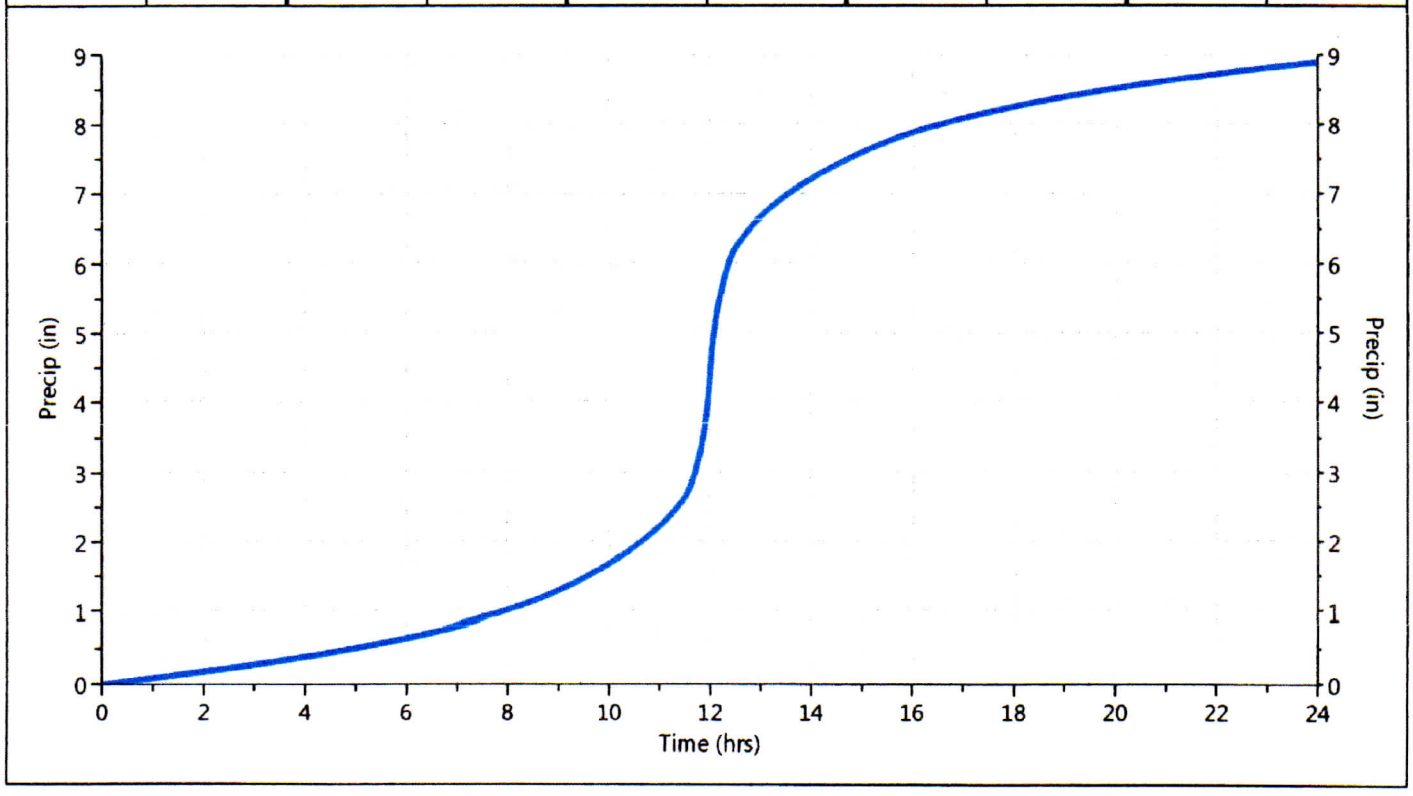
Hydrology Studio v 2.0.0.54

09-13-2018

## Storm Distribution: NRCS/SCS - Type III

| Storm Duration | Total Rainfall Volume (in) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1-yr | 2-yr | 3-yr | 5-yr | 10-yr | 25-yr | 50-yr | ✓ 100-yr | |
| 24 hrs | 0.00 | 3.40 | 0.00 | 0.00 | 5.20 | 6.50 | 0.00 | 8.90 | |

| Incremental Rainfall Distribution, 100-yr | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Time (hrs) | Precip (in) | Time (hrs) | Precip (in) | Time (hrs) | Precip (in) | Time (hrs) | Precip (in) | Time (hrs) | Precip (in) |
| 11.00 | 0.0215 | 11.37 | 0.0312 | 11.73 | 0.0919 | 12.10 | 0.1762 | 12.47 | 0.0484 |
| 11.03 | 0.0221 | 11.40 | 0.0321 | 11.77 | 0.1006 | 12.13 | 0.1356 | 12.50 | 0.0397 |
| 11.07 | 0.0230 | 11.43 | 0.0330 | 11.80 | 0.1093 | 12.17 | 0.1267 | 12.53 | 0.0348 |
| 11.10 | 0.0239 | 11.47 | 0.0339 | 11.83 | 0.1180 | 12.20 | 0.1180 | 12.57 | 0.0339 |
| 11.13 | 0.0248 | 11.50 | 0.0348 | 11.87 | 0.1267 | 12.23 | 0.1093 | 12.60 | 0.0330 |
| 11.17 | 0.0258 | 11.53 | 0.0396 | 11.90 | 0.1354 | 12.27 | 0.1006 | 12.63 | 0.0321 |
| 11.20 | 0.0267 | 11.57 | 0.0484 | 11.93 | 0.1765 | 12.30 | 0.0919 | 12.67 | 0.0312 |
| 11.23 | 0.0276 | 11.60 | 0.0571 | 11.97 | 0.2492 | 12.33 | 0.0832 | 12.70 | 0.0303 |
| 11.27 | 0.0285 | 11.63 | 0.0658 | **12.00** | **0.3222** | 12.37 | 0.0745 | 12.73 | 0.0294 |
| 11.30 | 0.0294 | 11.67 | 0.0745 | 12.03 | 0.3218 | 12.40 | 0.0658 | 12.77 | 0.0285 |
| 11.33 | 0.0303 | 11.70 | 0.0832 | 12.07 | 0.2492 | 12.43 | 0.0571 | 12.80 | 0.0276 |



# Pond Report

Project Name:

Hydrology Studio v 3.0.0.17

03-15-2021

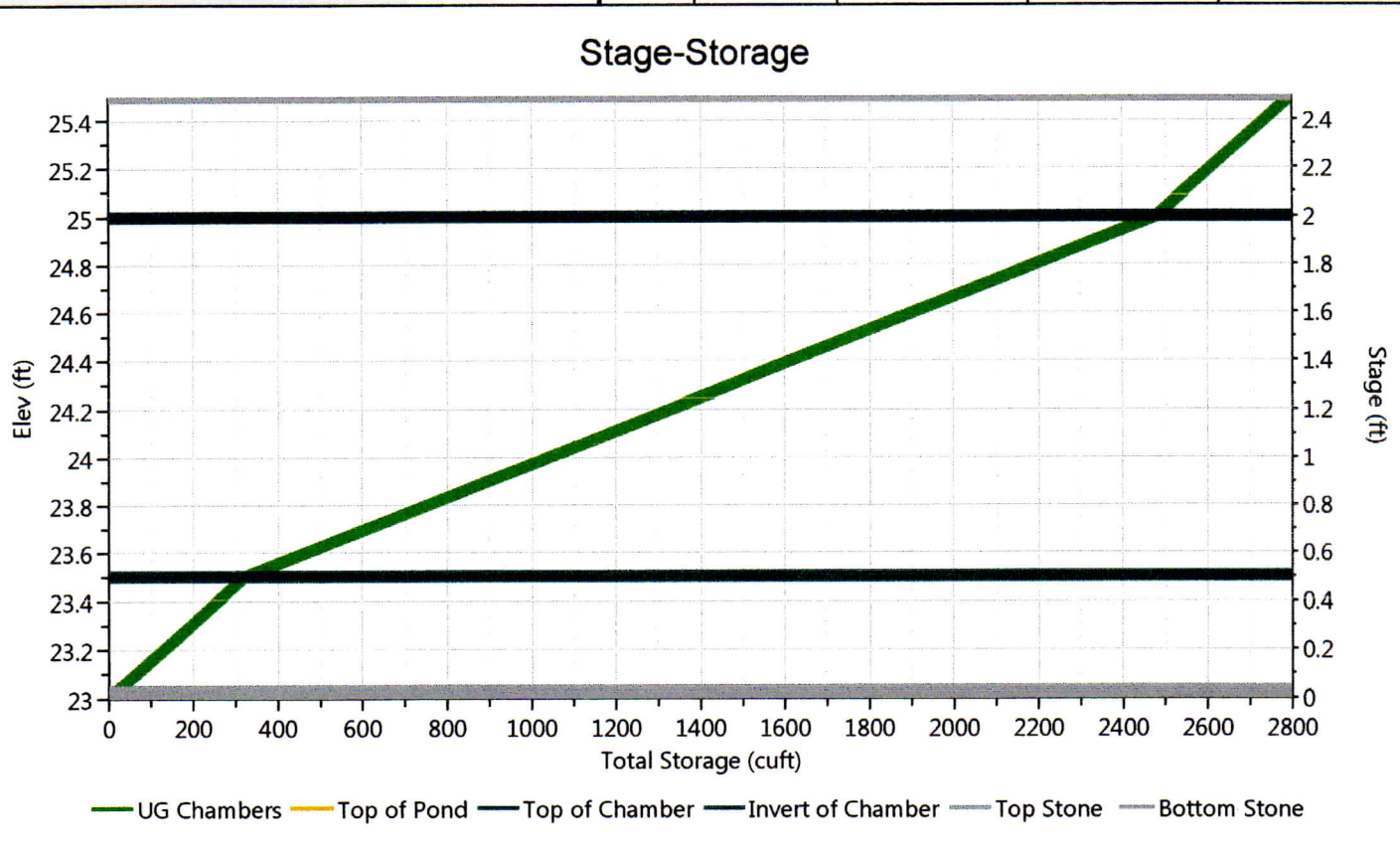
## Building Infil

## Stage-Storage

| Description | Input |
|---|---|
| Chamber Height, in | 18 |
| Chamber Shape | Box |
| Chamber Width, in | 18 |
| Installed Length, ft | 3.00 |
| No. Chambers | 320 |
| Bare Chamber Stor, cuft | 2,093 |
| No. Rows | 20 |
| Space Between Rows, in | 0 |
| Stone Above, in | 6 |
| Stone Below, in | 6 |
| Stone Sides, in | 12 |
| Stone Ends, in | 12 |
| Encasement Voids, % | 40.00 |
| Encasement Bottom Elevation, ft | 23.00 |

**Stage / Storage Table**

| Stage (in) | Elevation (ft) | Contour Area (sqft) | Incr. Storage (cuft) | Total Storage (cuft) |
|---|---|---|---|---|
| 0.0 | 23.00 | 1,600 | 0.000 | 0.000 |
| 1.5 | 23.13 | 1,600 | 80.0 | 80.0 |
| 3.0 | 23.25 | 1,600 | 80.0 | 160 |
| 4.5 | 23.38 | 1,600 | 80.0 | 240 |
| 6.0 | 23.50 | 1,600 | 80.0 | 320 |
| 7.5 | 23.63 | 1,600 | 180 | 500 |
| 9.0 | 23.75 | 1,600 | 180 | 680 |
| 10.5 | 23.88 | 1,600 | 180 | 860 |
| 12.0 | 24.00 | 1,600 | 180 | 1,040 |
| 13.5 | 24.13 | 1,600 | 180 | 1,220 |
| 15.0 | 24.25 | 1,600 | 180 | 1,399 |
| 16.5 | 24.38 | 1,600 | 180 | 1,579 |
| 18.0 | 24.50 | 1,600 | 180 | 1,759 |
| 19.5 | 24.63 | 1,600 | 180 | 1,939 |
| 21.0 | 24.75 | 1,600 | 180 | 2,119 |
| 22.5 | 24.88 | 1,600 | 180 | 2,299 |
| 24.0 | 25.00 | 1,600 | 180 | 2,479 |
| 25.5 | 25.13 | 1,600 | 80.0 | 2,559 |
| 27.0 | 25.25 | 1,600 | 80.0 | 2,639 |
| 28.5 | 25.38 | 1,600 | 80.0 | 2,719 |
| 30.0 | 25.50 | 1,600 | 80.0 | 2,799 |



# Pond Report

Project Name:

Hydrology Studio v 3.0.0.17

03-15-2021

## dwelling Infiltration

## Stage-Discharge

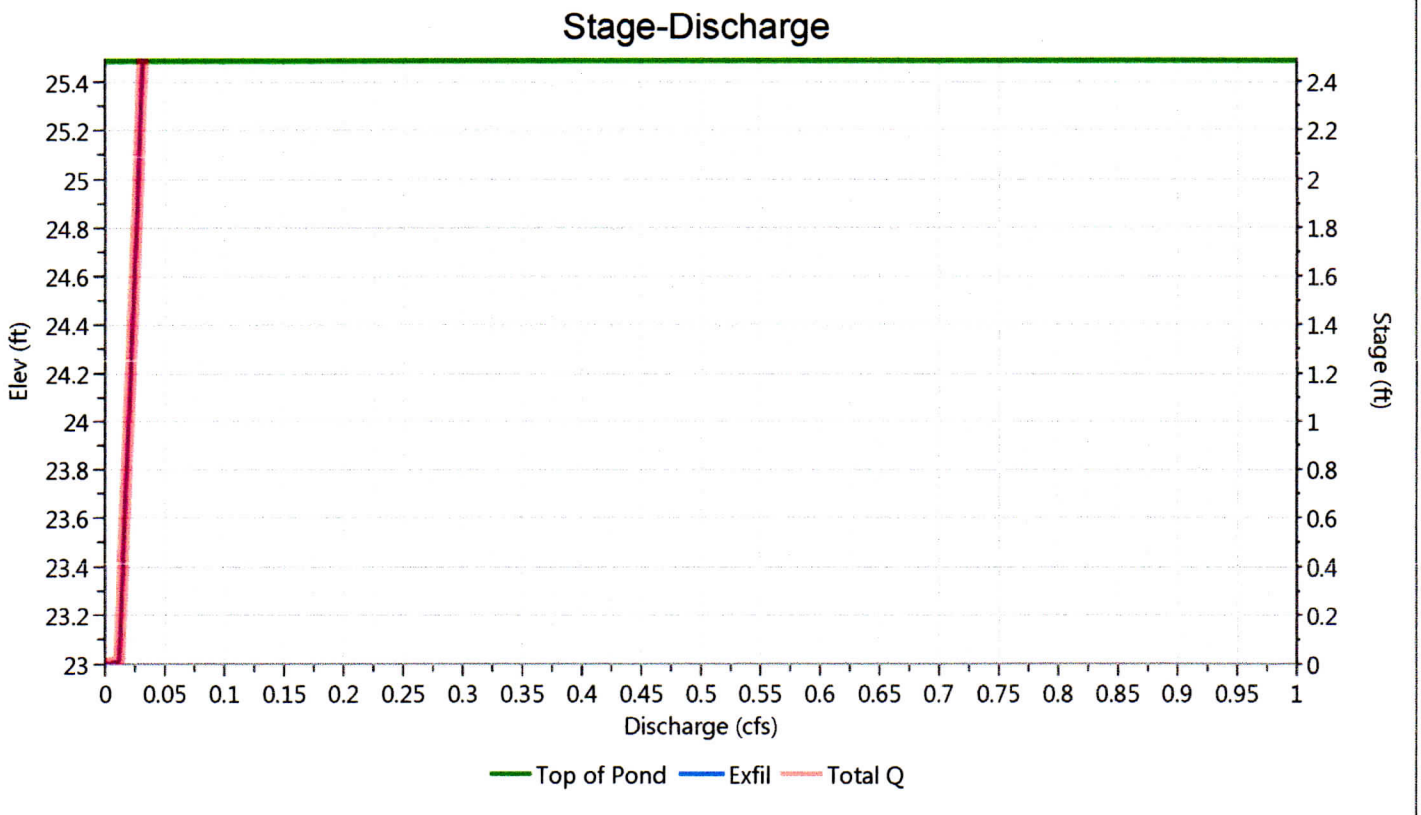
| Culvert / Orifices | Culvert | Orifices 1 | Orifices 2 | Orifices 3 |
|---|---|---|---|---|
| Rise, in | | | | |
| Span, in | | | | |
| No. Barrels | | | | |
| Invert Elevation, ft | | | | |
| Orifice Coefficient, Co | | | | |
| Length, ft | | | | |
| Barrel Slope, % | | | | |
| N-Value, n | 0.000 | | | |

| Weirs | Riser* | Weirs 1 | Weirs 2 | Weirs 3 |
|---|---|---|---|---|
| Shape / Type | | | | |
| Crest Elevation, ft | | | | |
| Crest Length, ft | | | | |
| Angle, deg | | | | |
| Weir Coefficient, Cw | | | | |

| Perforated Riser | |
|---|---|
| Hole Diameter, in | |
| No. holes | |
| Invert Elevation, ft | |
| Height, ft | |
| Orifice Coefficient, Co | |

| Ancillary | |
|---|---|
| Exfiltration, in/hr | 1.02** |

*Routes through Culvert. **Rate applied to contours.



# Pond Report

Project Name:

Hydrology Studio v 3.0.0.17

03-15-2021

## dwelling Infiltration

## Stage-Storage-Discharge Summary

| Stage (ft) | Elev. (ft) | Storage (cuft) | Culvert (cfs) | Orifices, cfs | | | Riser (cfs) | Weirs, cfs | | | Pf Riser (cfs) | Exfil (cfs) | User (cfs) | Total (cfs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 | | 1 | 2 | 3 | | | | |
| 0.00 | 23.00 | 0.000 | | | | | | | | | | 0.000 | | 0.000 |
| 0.13 | 23.13 | 24.7 | | | | | | | | | | 0.013 | | 0.013 |
| 0.25 | 23.25 | 49.3 | | | | | | | | | | 0.014 | | 0.014 |
| 0.38 | 23.38 | 74.0 | | | | | | | | | | 0.015 | | 0.015 |
| 0.50 | 23.50 | 98.6 | | | | | | | | | | 0.016 | | 0.016 |
| 0.63 | 23.63 | 151 | | | | | | | | | | 0.017 | | 0.017 |
| 0.75 | 23.75 | 204 | | | | | | | | | | 0.018 | | 0.018 |
| 0.88 | 23.88 | 257 | | | | | | | | | | 0.019 | | 0.019 |
| 1.00 | 24.00 | 310 | | | | | | | | | | 0.020 | | 0.020 |
| 1.13 | 24.13 | 362 | | | | | | | | | | 0.021 | | 0.021 |
| 1.25 | 24.25 | 415 | | | | | | | | | | 0.022 | | 0.022 |
| 1.38 | 24.38 | 468 | | | | | | | | | | 0.023 | | 0.023 |
| 1.50 | 24.50 | 521 | | | | | | | | | | 0.024 | | 0.024 |
| 1.63 | 24.63 | 573 | | | | | | | | | | 0.025 | | 0.025 |
| 1.75 | 24.75 | 626 | | | | | | | | | | 0.026 | | 0.026 |
| 1.88 | 24.88 | 679 | | | | | | | | | | 0.027 | | 0.027 |
| 2.00 | 25.00 | 732 | | | | | | | | | | 0.028 | | 0.028 |
| 2.13 | 25.13 | 756 | | | | | | | | | | 0.029 | | 0.029 |
| 2.25 | 25.25 | 781 | | | | | | | | | | 0.030 | | 0.030 |
| 2.38 | 25.38 | 806 | | | | | | | | | | 0.031 | | 0.031 |
| 2.50 | 25.50 | 830 | | | | | | | | | | 0.032 | | 0.032 |

*Suffix key: ic = inlet control, oc = outlet control, s = submerged weir*

# Pond Report

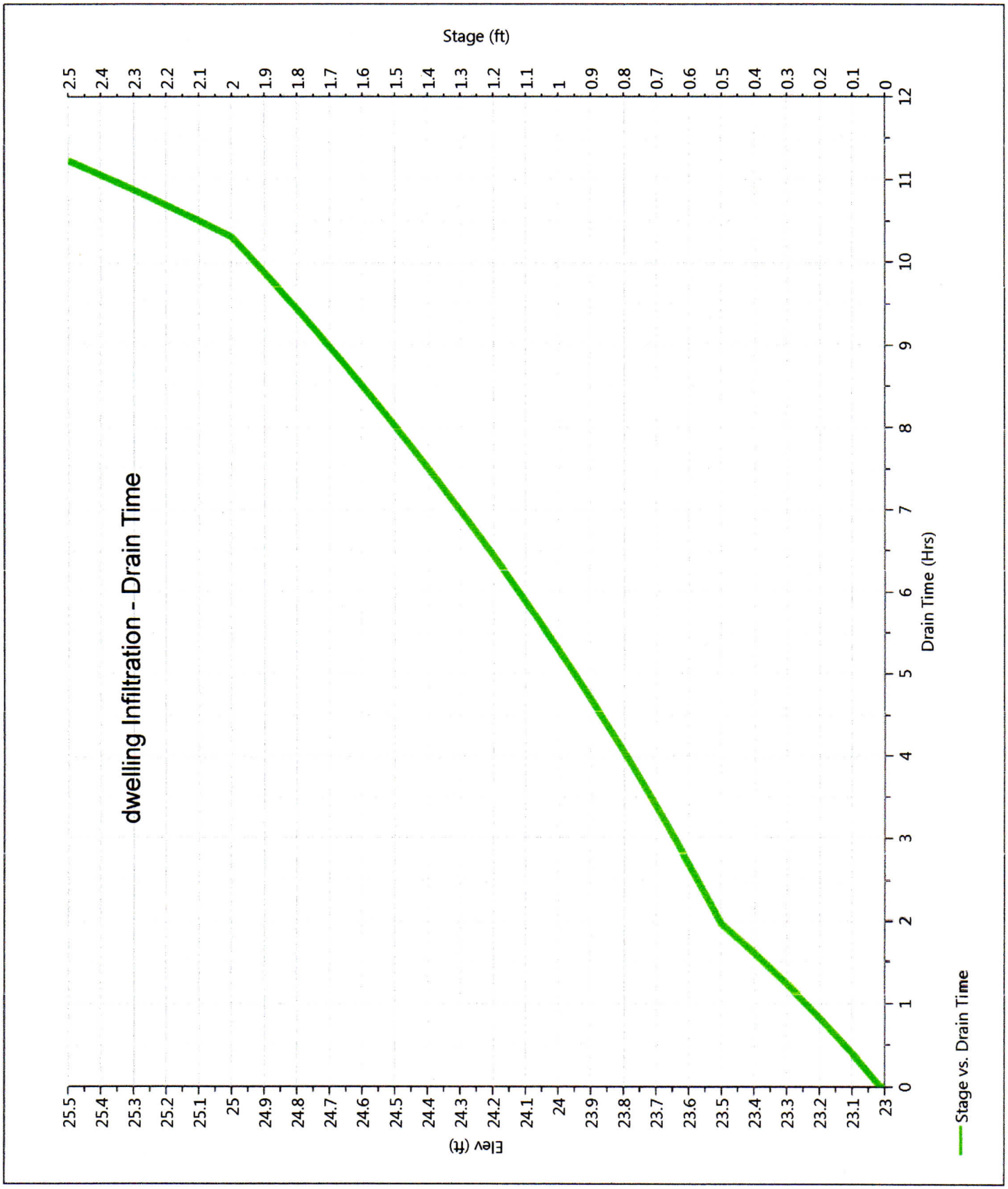
Project Name:

Hydrology Studio v 3.0.0.17

03-15-2021

## dwelling Infiltration

## Pond Drawdown



# Pond Report

Project Name:

Hydrology Studio v 2.0.0.54

09-13-2018

## building infiltrators

## Stage-Storage-Discharge Summary

| Stage (ft) | Elev. (ft) | Storage (cuft) | Culvert (cfs) | Orifices, cfs | | | Riser (cfs) | Weirs, cfs | | | Pf Riser (cfs) | Exfil (cfs) | User (cfs) | Total (cfs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 | | 1 | 2 | 3 | | | | |
| 0.00 | 100.00 | 0.000 | | | | | | | | | | | | 0.00 |
| 0.08 | 100.08 | 126 | | | | | | | | | | | | 0.00 |
| 0.15 | 100.15 | 253 | | | | | | | | | | | | 0.00 |
| 0.23 | 100.23 | 379 | | | | | | | | | | | | 0.00 |
| 0.30 | 100.30 | 505 | | | | | | | | | | | | 0.00 |
| 0.38 | 100.38 | 631 | | | | | | | | | | | | 0.00 |
| 0.45 | 100.45 | 758 | | | | | | | | | | | | 0.00 |
| 0.53 | 100.53 | 884 | | | | | | | | | | | | 0.00 |
| 0.60 | 100.60 | 1,010 | | | | | | | | | | | | 0.00 |
| 0.68 | 100.68 | 1,136 | | | | | | | | | | | | 0.00 |
| 0.75 | 100.75 | 1,263 | | | | | | | | | | | | 0.00 |
| 0.82 | 100.83 | 1,389 | | | | | | | | | | | | 0.00 |
| 0.90 | 100.90 | 1,515 | | | | | | | | | | | | 0.00 |
| 0.97 | 100.98 | 1,641 | | | | | | | | | | | | 0.00 |
| 1.05 | 101.05 | 1,768 | | | | | | | | | | | | 0.00 |
| 1.13 | 101.13 | 1,894 | | | | | | | | | | | | 0.00 |
| 1.20 | 101.20 | 2,020 | | | | | | | | | | | | 0.00 |
| 1.28 | 101.28 | 2,146 | | | | | | | | | | | | 0.00 |
| 1.35 | 101.35 | 2,273 | | | | | | | | | | | | 0.00 |
| 1.43 | 101.43 | 2,399 | | | | | | | | | | | | 0.00 |
| 1.50 | 101.50 | 2,525 | | | | | | | | | | | | 0.00 |

*Suffix key: ic = inlet control, oc = outlet control, s = submerged weir*

# Hydrograph Report

Project Name:

Hydrology Studio v 2.0.0.54

09-13-2018

## Building Routing

**Hyd. No. 4**

| | | | |
|---|---|---|---|
| Hydrograph Type | = Pond Route | Peak Flow | = 0.00 cfs |
| Storm Frequency | = 2-yr | Time to Peak | = 0.00 hrs |
| Time Interval | = 2 min | Hydrograph Volume | = 0.000 cuft |
| Inflow Hydrograph | = 2 - proposed building | Max. Elevation | = 100.54 ft |
| Pond Name | = building infiltrators | Max. Storage | = 916 cuft |

*Pond Routing by Storage Indication Method*

**Qp = 0.00 cfs**

# Hydrograph Report

Project Name:

Hydrology Studio v 2.0.0.54

09-13-2018

## Building Routing

**Hyd. No. 4**

| | | | |
|---|---|---|---|
| Hydrograph Type | = Pond Route | Peak Flow | = 0.00 cfs |
| Storm Frequency | = 10-yr | Time to Peak | = 0.00 hrs |
| Time Interval | = 2 min | Hydrograph Volume | = 0.000 cuft |
| Inflow Hydrograph | = 2 - proposed building | Max. Elevation | = 100.85 ft |
| Pond Name | = building infiltrators | Max. Storage | = 1,436 cuft |

*Pond Routing by Storage Indication Method*

**Qp = 0.00 cfs**

# Hydrograph Report

Project Name:

Hydrology Studio v 2.0.0.54

09-13-2018

## Building Routing

**Hyd. No. 4**

| | | | |
|---|---|---|---|
| Hydrograph Type | = Pond Route | Peak Flow | = 0.00 cfs |
| Storm Frequency | = 100-yr | Time to Peak | = 0.00 hrs |
| Time Interval | = 2 min | Hydrograph Volume | = 0.000 cuft |
| Inflow Hydrograph | = 2 - proposed building | Max. Elevation | = 101.49 ft |
| Pond Name | = building infiltrators | Max. Storage | = 2,505 cuft |

*Pond Routing by Storage Indication Method*

**Qp = 0.00 cfs**