NOTE:
ALL SOILS IN PROJECT AREA ARE HYDROLOGIC SOIL GROUP B.

GRAPHIC SCALE
160 80 40 0 80
(IN FEET)
1 inch = 80 ft.

Drainage Area Summary			
NAME	AREA (Acres)	Weighted CN Value	Tc Time (Minutes)
DA #1S	5.07	60	25.2
DA #2S	5.41	62	24.6
DA #3S	4.00	64	42.6
AREA 1 TOTAL	14.48	62	--
DA #4S	4.30	62	64.9
DA #5S	0.42	60	34.7
AREA 2 TOTAL	4.72	62	--

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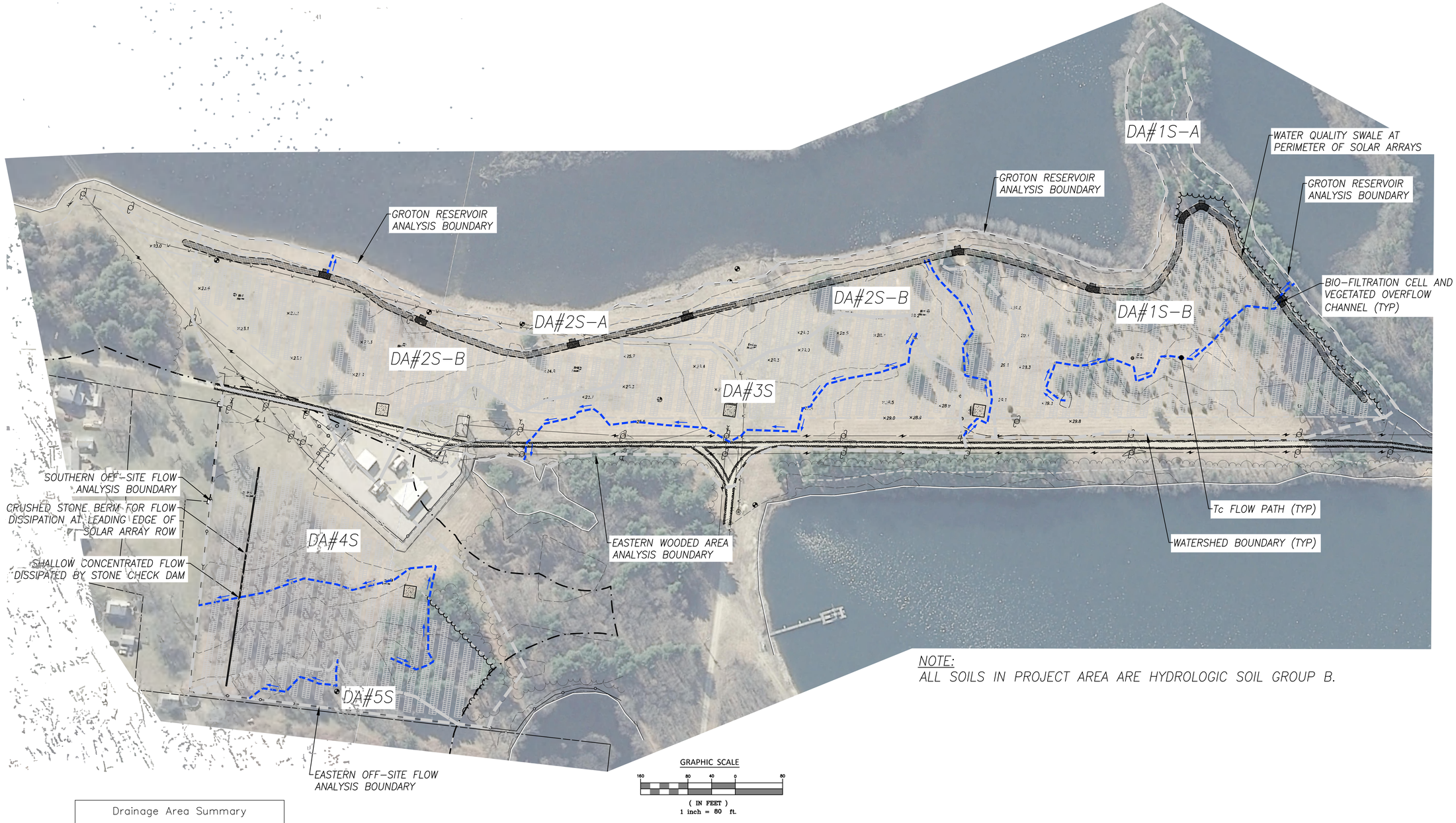
Wellesley, MA 02481
www.solarbrownfields.com

SolarCity
714 Brook Street
Rocky Hill, CT 06067
www.solarcity.com

Figure 2
"Pre-Development Conditions Watershed Map"
SolarCity Corporation
1240 Poquonnock Road, Groton, Connecticut

SCALE:	1"=80'
DATE:	September 2015
JOB I.D. NO.	15-2347
Revisions	
SHEET NO.	1 / 2



GRAPHIC SCALE

160 80 40 0 80

(IN FEET)

1 inch = 80 ft.

NOTE:

ALL SOILS IN PROJECT AREA ARE HYDROLOGIC SOIL GROUP B.

Drainage Area Summary

NAME	AREA (Acres)	Weighted CN Value	Tc Time (Minutes)
DA #1S-A	1.30	57	4.6
DA #1S-B	3.77	61	24.8
DA #2S-A	1.00	61	4.2
DA #2S-B	4.41	62	24.8
DA #3S	4.00	64	42.6
AREA 1 TOTAL	14.48	62	--
DA #4S	4.30	63	75.0
DA #5S	0.42	61	30.4
AREA 2 TOTAL	4.72	63	--

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SolarCity
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Rocky Hill, CT 06067
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Figure 3
"Post-Development Conditions Watershed Map"
SolarCity Corporation
1240 Poquonnock Road, Groton, Connecticut

SCALE: 1"=80'

DATE: September 2015

JOB I.D. NO. 15-2347

Revisions

SHEET NO.

2 / 2

Appendix A
NRCS Web Soil Survey Soils Report

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for State of Connecticut

August 12, 2015

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut
Survey Area Data: Version 13, Oct 28, 2014

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

Date(s) aerial images were photographed: Mar 28, 2011—May 12, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

State of Connecticut (CT600)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
32A	Haven and Enfield soils, 0 to 3 percent slopes	25.8	91.2%
306	Udorthents-Urban land complex	0.1	0.5%
W	Water	2.4	8.3%
Totals for Area of Interest		**28.3**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If

intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

State of Connecticut

32A—Haven and Enfield soils, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 9lmr
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Haven and similar soils: 60 percent
Enfield and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Haven

Setting

Landform: Outwash plains, terraces
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Coarse-loamy eolian deposits over sandy and gravelly glaciofluvial deposits derived from granite and/or schist and/or gneiss

Typical profile

Ap - 0 to 7 inches: silt loam
Bw1 - 7 to 14 inches: silt loam
Bw2 - 14 to 20 inches: silt loam
BC - 20 to 24 inches: fine sandy loam
2C - 24 to 60 inches: stratified very gravelly sand to gravelly fine sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: B

Description of Enfield

Setting

Landform: Outwash plains, terraces
Down-slope shape: Convex

Across-slope shape: Linear
Parent material: Coarse-silty eolian deposits over sandy and gravelly glaciofluvial deposits derived from granite and/or schist and/or gneiss

Typical profile

O - 0 to 3 inches: slightly decomposed plant material
O - 3 to 4 inches: moderately decomposed plant material
Ap - 4 to 12 inches: silt loam
Bw1 - 12 to 20 inches: silt loam
Bw2 - 20 to 26 inches: silt loam
Bw3 - 26 to 30 inches: silt loam
2C - 30 to 37 inches: stratified coarse sand to very gravelly loamy sand
3C - 37 to 65 inches: stratified very gravelly coarse sand to loamy sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: B

Minor Components

Agawam

Percent of map unit: 4 percent
Landform: Outwash plains, terraces
Down-slope shape: Linear
Across-slope shape: Linear

Branford

Percent of map unit: 3 percent
Landform: Outwash plains, terraces
Down-slope shape: Linear
Across-slope shape: Linear

Raypol

Percent of map unit: 2 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Concave

Ninigret

Percent of map unit: 2 percent
Landform: Outwash plains, terraces
Down-slope shape: Linear
Across-slope shape: Concave

Unnamed, gravelly surface
Percent of map unit: 2 percent

Tisbury
Percent of map unit: 2 percent
Landform: Outwash plains, terraces
Down-slope shape: Concave
Across-slope shape: Linear

306—Udorthents-Urban land complex

Map Unit Setting
National map unit symbol: 9lmg
Elevation: 0 to 2,000 feet
Mean annual precipitation: 43 to 56 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 120 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition
Udorthents and similar soils: 50 percent
Urban land: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Setting
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Drift

Typical profile
A - 0 to 5 inches: loam
C1 - 5 to 21 inches: gravelly loam
C2 - 21 to 80 inches: very gravelly sandy loam

Properties and qualities
Slope: 0 to 25 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 1.98 in/hr)
Depth to water table: About 54 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B

Description of Urban Land

Typical profile

H - 0 to 6 inches: material

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D

Minor Components

Unnamed, undisturbed soils

Percent of map unit: 8 percent

Udorthents, wet substratum

Percent of map unit: 5 percent
Down-slope shape: Convex
Across-slope shape: Linear

Rock outcrop

Percent of map unit: 2 percent

W—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

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Survey Area Data: Version 13, Oct 28, 2014

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Date(s) aerial images were photographed: Mar 28, 2011—May 12, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — State of Connecticut (CT600)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
32A	Haven and Enfield soils, 0 to 3 percent slopes	B	25.8	91.2%
306	Udorthents-Urban land complex	B	0.1	0.5%
W	Water		2.4	8.3%
Totals for Area of Interest			**28.3**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

References

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Appendix B
HydroCAD Modeling Results

Groundwater Recharge Volume

GRV = (D)(A)(I)/12

GRV = Groundwater Recharge Volume (acre-feet)

D = Depth of Runoff to be Recharged (inches)

A = Site Area (acres)

I = Post-Development Imperviousness (decimal)

D=	0.25	inches*	IA=	0.05	acres
A =	13.50	acres	I =	0.0034	

*(HSG B from Table 7-4, Stormwater Quality Manual)

GRV =	0.0010	acre-feet
=	**42.17**	**cubic feet**

Water Quality Volume

WQV = (1")(R)(A)/12

WQV = Water Quality Volume (acre-feet)

R = Runoff Co-Efficient = 0.005 + 0.009(I)

I = Impervious Area (%)

A = Site Area (acres)

IA=	0.05	acres	R =	0.01	
I =	0.34	%	A =	13.50	

WQV =	0.0091	acre-feet
=	**396.83**	**cubic feet**

Required Treatment Volume

Embedment of crushed stone check dam is sized to treat both the GRV and the WQV.

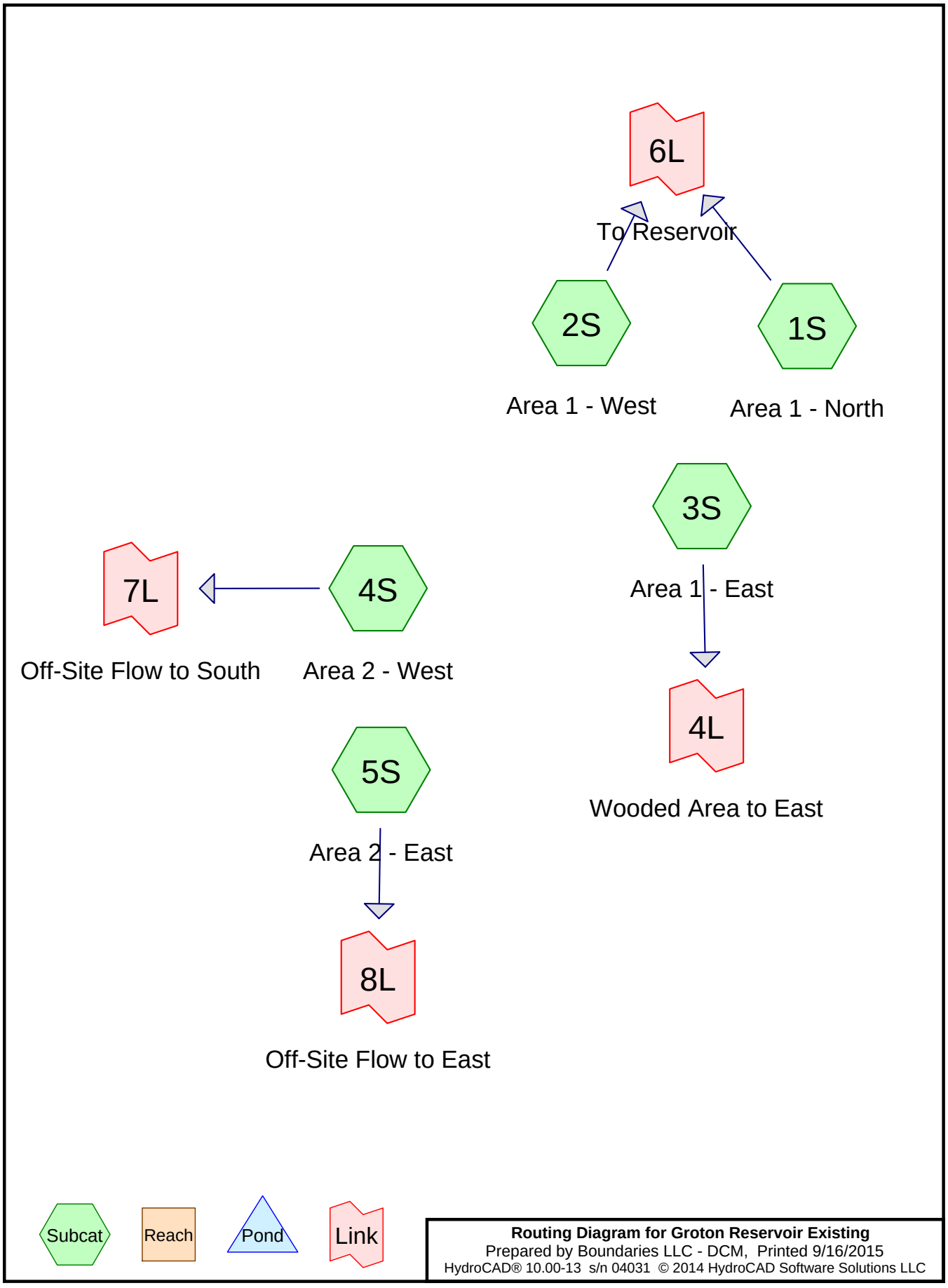
WQV requirements are reduced by the amount of GRV provided.

Required treatment volume = (WQV - GRV) + GRV

Volume Required	**396.83**	**cubic feet**
Length of Check Dam	**374.00**	**feet**
Width of Check Dam	**2.00**	**feet**
Embedment of Check Dam	**0.50**	**feet**
Porosity of Crushed Stone	**0.40**	
Volume Provided	**149.60**	**cubic feet**
Length of Biofiltration Cell	**20.00**	**feet**
Width of Biofiltration Cell	**4.00**	**feet**
Depth of Biofiltration Cell	**0.50**	**feet**
Side Slopes of Biofiltration Cell	**3H:1V**	
Volume of Biofiltration Cell	**55.00**	**cubic feet**
Number of Biofiltration Cells	**9.00**	
Volume Provided	**495**	**cubic feet**
Total Volume Provided	**644.60**	**cubic feet**

Because volume provided exceeds volume required the design meets the requirements of the Stormwater Quality Manual.

Existing Conditions Results



Routing Diagram for Groton Reservoir Existing
Prepared by Boundaries LLC - DCM, Printed 9/16/2015

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
13.174	61	>75% Grass cover, Good, HSG B (1S, 2S, 3S, 4S, 5S)
0.988	85	Gravel roads, HSG B (2S, 3S, 4S)
5.035	60	Woods, Fair, HSG B (1S, 2S, 4S, 5S)
19.197	**62**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
19.197	HSG B	1S, 2S, 3S, 4S, 5S
0.000	HSG C	
0.000	HSG D	
0.000	Other	
19.197		**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	13.174	0.000	0.000	0.000	13.174	>75% Grass cover, Good	1S, 2S, 3S, 4S, 5S
0.000	0.988	0.000	0.000	0.000	0.988	Gravel roads	2S, 3S, 4S
0.000	5.035	0.000	0.000	0.000	5.035	Woods, Fair	1S, 2S, 4S, 5S
0.000	**19.197**	**0.000**	**0.000**	**0.000**	**19.197**	**TOTAL AREA**	

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Area 1 - North Runoff Area=5.074 ac 0.00% Impervious Runoff Depth>0.48"
Flow Length=596' Tc=25.2 min CN=60 Runoff=1.2 cfs 0.205 af

Subcatchment 2S: Area 1 - West Runoff Area=5.408 ac 0.00% Impervious Runoff Depth>0.56"
Flow Length=437' Tc=24.6 min CN=62 Runoff=1.7 cfs 0.254 af

Subcatchment 3S: Area 1 - East Runoff Area=4.001 ac 0.00% Impervious Runoff Depth>0.65"
Flow Length=831' Tc=42.6 min CN=64 Runoff=1.2 cfs 0.215 af

Subcatchment 4S: Area 2 - West Runoff Area=4.295 ac 0.00% Impervious Runoff Depth>0.56"
Flow Length=662' Tc=64.9 min CN=62 Runoff=0.8 cfs 0.199 af

Subcatchment 5S: Area 2 - East Runoff Area=0.419 ac 0.00% Impervious Runoff Depth>0.48"
Flow Length=214' Tc=34.7 min CN=60 Runoff=0.1 cfs 0.017 af

Link 4L: Wooded Area to East Inflow=1.2 cfs 0.215 af
Primary=1.2 cfs 0.215 af

Link 6L: To Reservoir Inflow=2.9 cfs 0.459 af
Primary=2.9 cfs 0.459 af

Link 7L: Off-Site Flow to South Inflow=0.8 cfs 0.199 af
Primary=0.8 cfs 0.199 af

Link 8L: Off-Site Flow to East Inflow=0.1 cfs 0.017 af
Primary=0.1 cfs 0.017 af

Total Runoff Area = 19.197 ac Runoff Volume = 0.890 af Average Runoff Depth = 0.56"
100.00% Pervious = 19.197 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: Area 1 - North

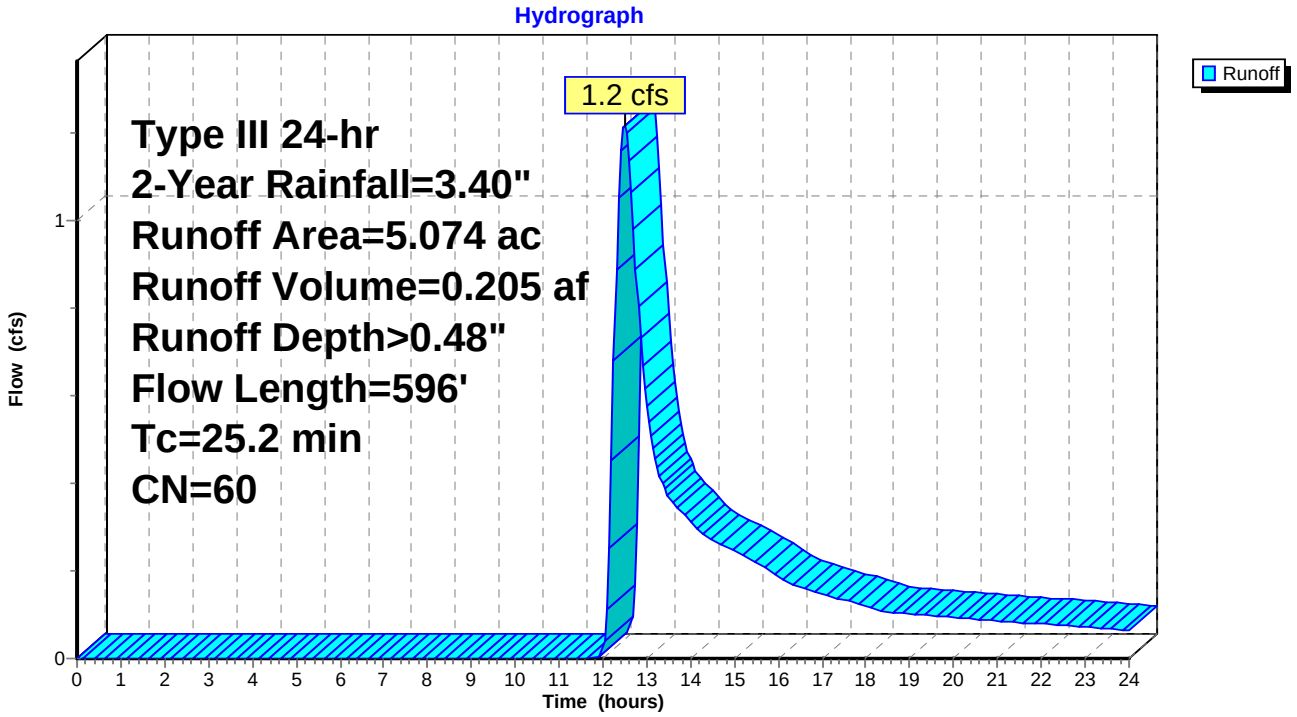
Runoff = 1.2 cfs @ 12.48 hrs, Volume= 0.205 af, Depth> 0.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.40"

Area (ac)	CN	Description
2.589	60	Woods, Fair, HSG B
2.485	61	>75% Grass cover, Good, HSG B
5.074	60	Weighted Average
5.074		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5	100	0.0177	0.11		**Sheet Flow, Grass and Trees** Grass: Dense n= 0.240 P2= 3.40"
1.0	40	0.0085	0.65		**Shallow Concentrated Flow, Grass and Trees** Short Grass Pasture Kv= 7.0 fps
0.3	32	0.0625	1.75		**Shallow Concentrated Flow, Grass and Trees** Short Grass Pasture Kv= 7.0 fps
2.9	143	0.0140	0.83		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
5.2	211	0.0095	0.68		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
1.3	70	0.0323	0.90		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
25.2	596	Total			

Subcatchment 1S: Area 1 - North



Summary for Subcatchment 2S: Area 1 - West

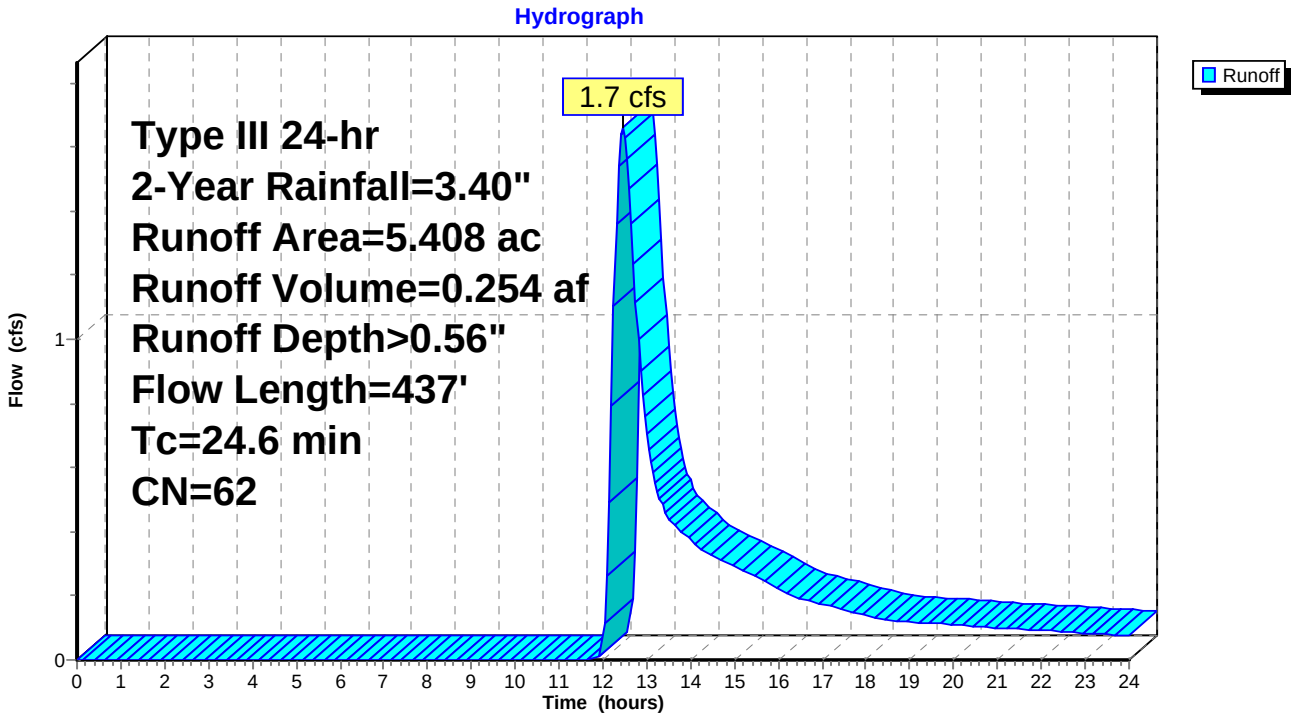
Runoff = 1.7 cfs @ 12.45 hrs, Volume= 0.254 af, Depth> 0.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.40"

Area (ac)	CN	Description
5.144	61	>75% Grass cover, Good, HSG B
0.068	60	Woods, Fair, HSG B
0.196	85	Gravel roads, HSG B
5.408	62	Weighted Average
5.408		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.0	100	0.0120	0.10		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.40"
7.5	312	0.0099	0.70		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.1	25	0.1581	2.78		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
24.6	437	Total			

Subcatchment 2S: Area 1 - West



Summary for Subcatchment 3S: Area 1 - East

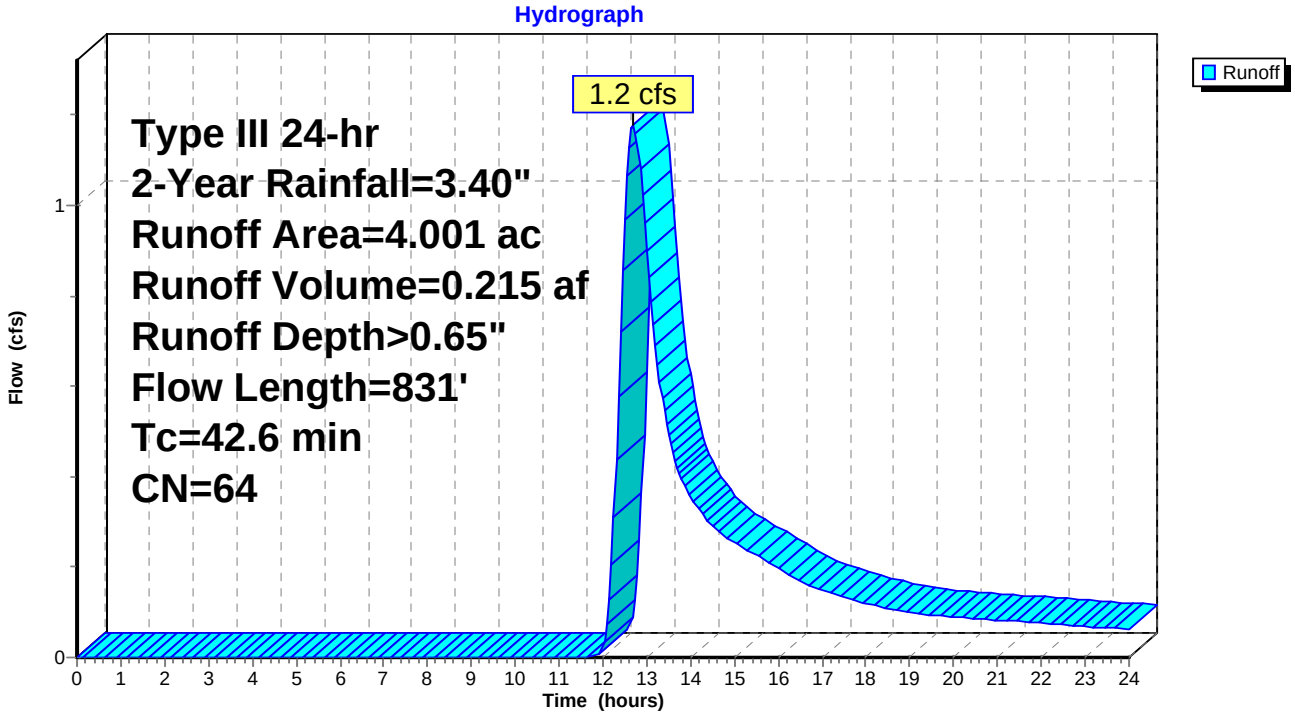
Runoff = 1.2 cfs @ 12.70 hrs, Volume= 0.215 af, Depth> 0.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.40"

Area (ac)	CN	Description
0.450	85	Gravel roads, HSG B
3.551	61	>75% Grass cover, Good, HSG B
4.001	64	Weighted Average
4.001		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	100	0.0090	0.09		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.40"
7.1	174	0.0034	0.41		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
16.3	526	0.0059	0.54		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.1	31	0.0742	4.39		**Shallow Concentrated Flow, Grass/Gravel** Unpaved Kv= 16.1 fps
42.6	831	Total			

Subcatchment 3S: Area 1 - East



Summary for Subcatchment 4S: Area 2 - West

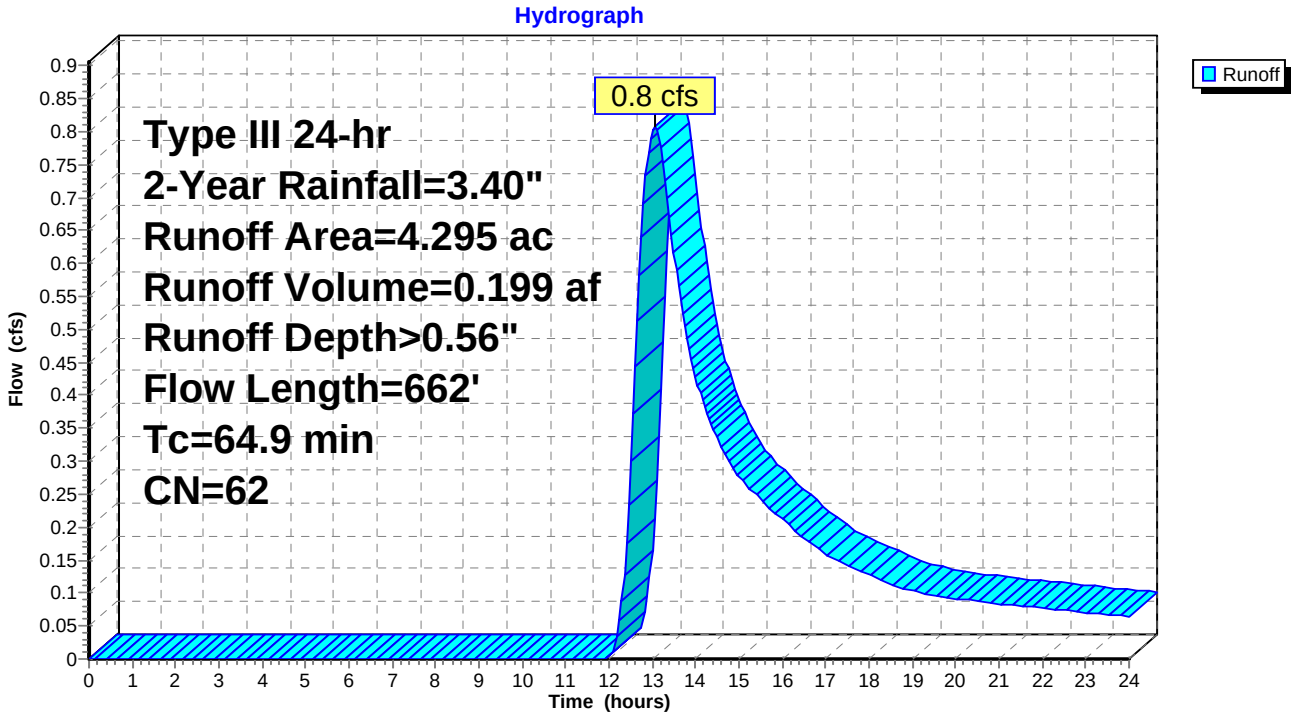
Runoff = 0.8 cfs @ 13.05 hrs, Volume= 0.199 af, Depth> 0.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.40"

Area (ac)	CN	Description
2.163	60	Woods, Fair, HSG B
1.790	61	>75% Grass cover, Good, HSG B
0.342	85	Gravel roads, HSG B
4.295	62	Weighted Average
4.295		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.1	100	0.0080	0.06		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.40"
1.9	86	0.0233	0.76		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
7.5	235	0.0055	0.52		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
25.4	241	0.0010	0.16		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
64.9	662	Total			

Subcatchment 4S: Area 2 - West



Summary for Subcatchment 5S: Area 2 - East

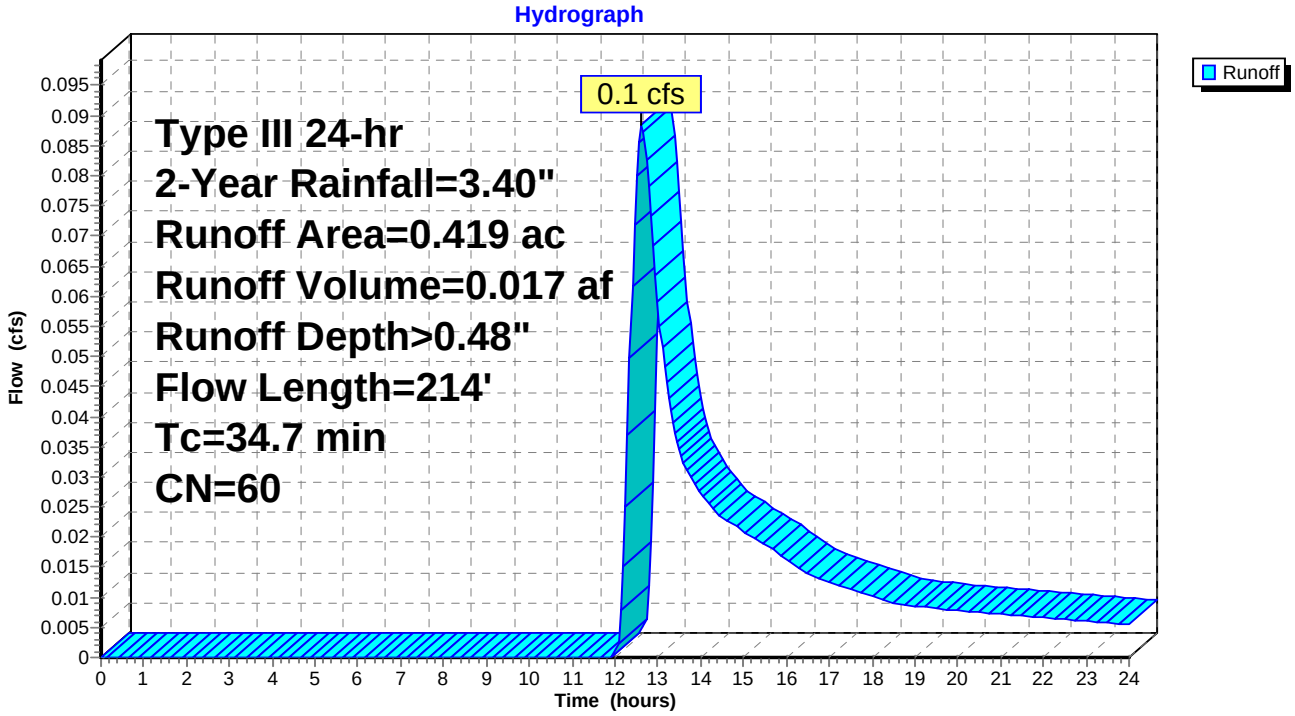
Runoff = 0.1 cfs @ 12.62 hrs, Volume= 0.017 af, Depth> 0.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.40"

Area (ac)	CN	Description
0.215	60	Woods, Fair, HSG B
0.204	61	>75% Grass cover, Good, HSG B
0.419	60	Weighted Average
0.419		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	58	0.0034	0.05		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.40"
12.8	42	0.0119	0.05		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.40"
2.8	86	0.0105	0.51		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
0.9	28	0.0050	0.49		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
34.7	214	Total			

Subcatchment 5S: Area 2 - East

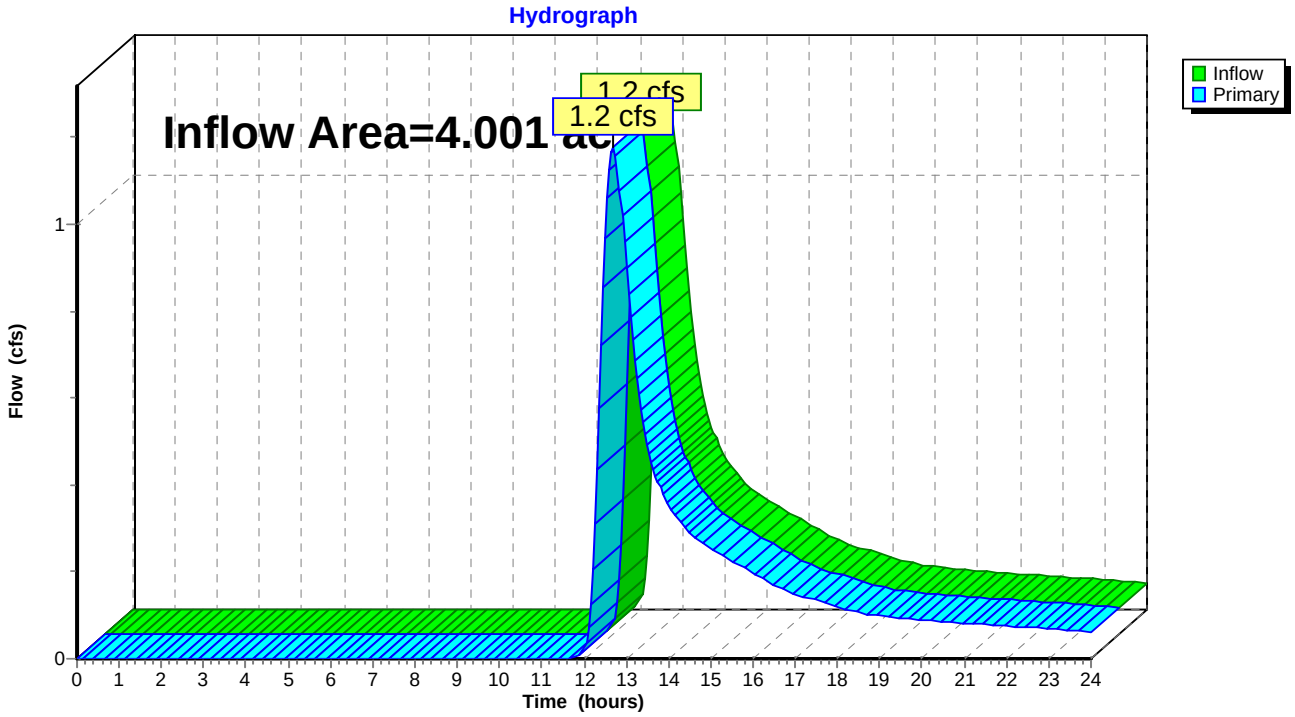


Summary for Link 4L: Wooded Area to East

Inflow Area = 4.001 ac, 0.00% Impervious, Inflow Depth > 0.65" for 2-Year event
Inflow = 1.2 cfs @ 12.70 hrs, Volume= 0.215 af
Primary = 1.2 cfs @ 12.70 hrs, Volume= 0.215 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 4L: Wooded Area to East

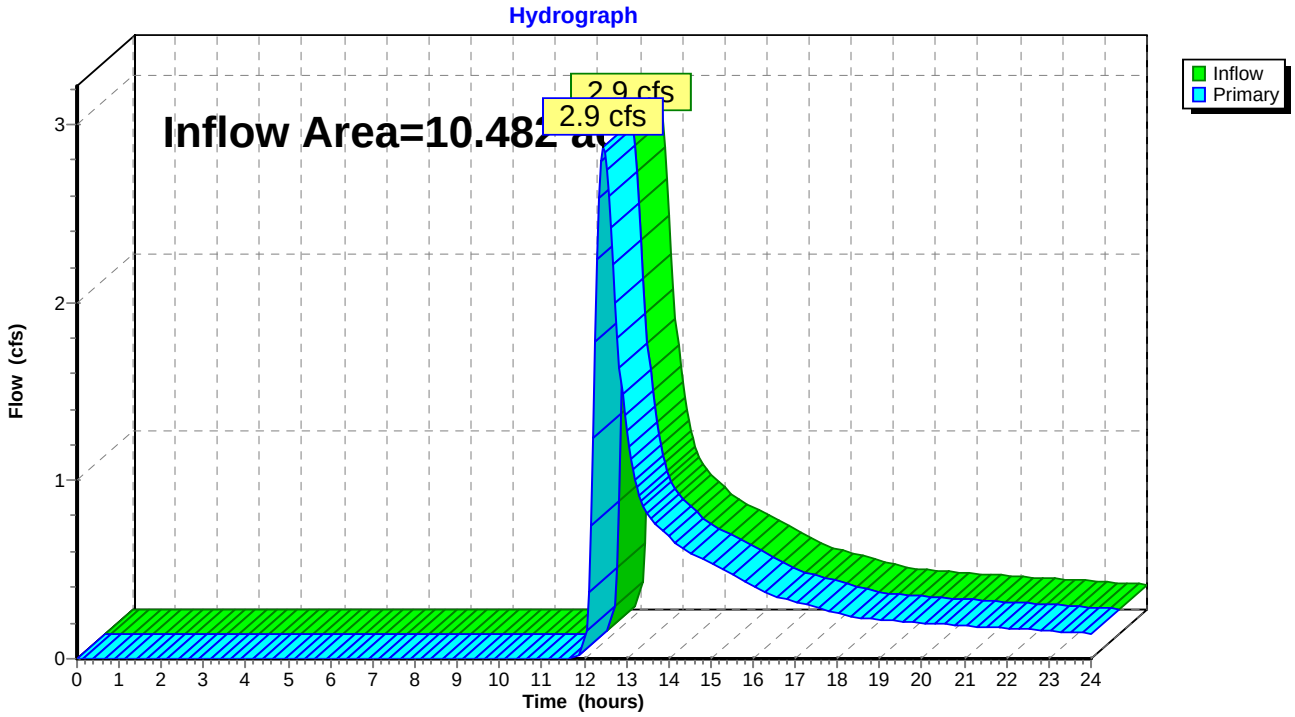


Summary for Link 6L: To Reservoir

Inflow Area = 10.482 ac, 0.00% Impervious, Inflow Depth > 0.53" for 2-Year event
Inflow = 2.9 cfs @ 12.46 hrs, Volume= 0.459 af
Primary = 2.9 cfs @ 12.46 hrs, Volume= 0.459 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 6L: To Reservoir

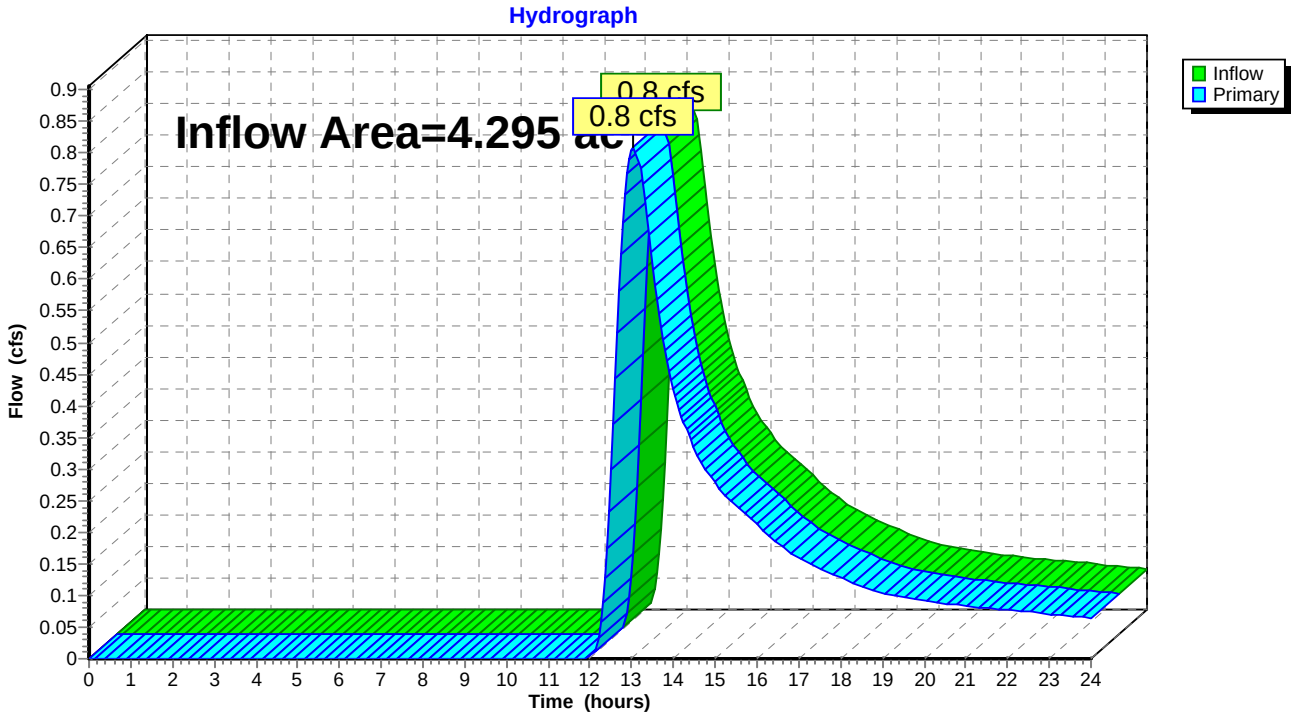


Summary for Link 7L: Off-Site Flow to South

Inflow Area = 4.295 ac, 0.00% Impervious, Inflow Depth > 0.56" for 2-Year event
Inflow = 0.8 cfs @ 13.05 hrs, Volume= 0.199 af
Primary = 0.8 cfs @ 13.05 hrs, Volume= 0.199 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 7L: Off-Site Flow to South

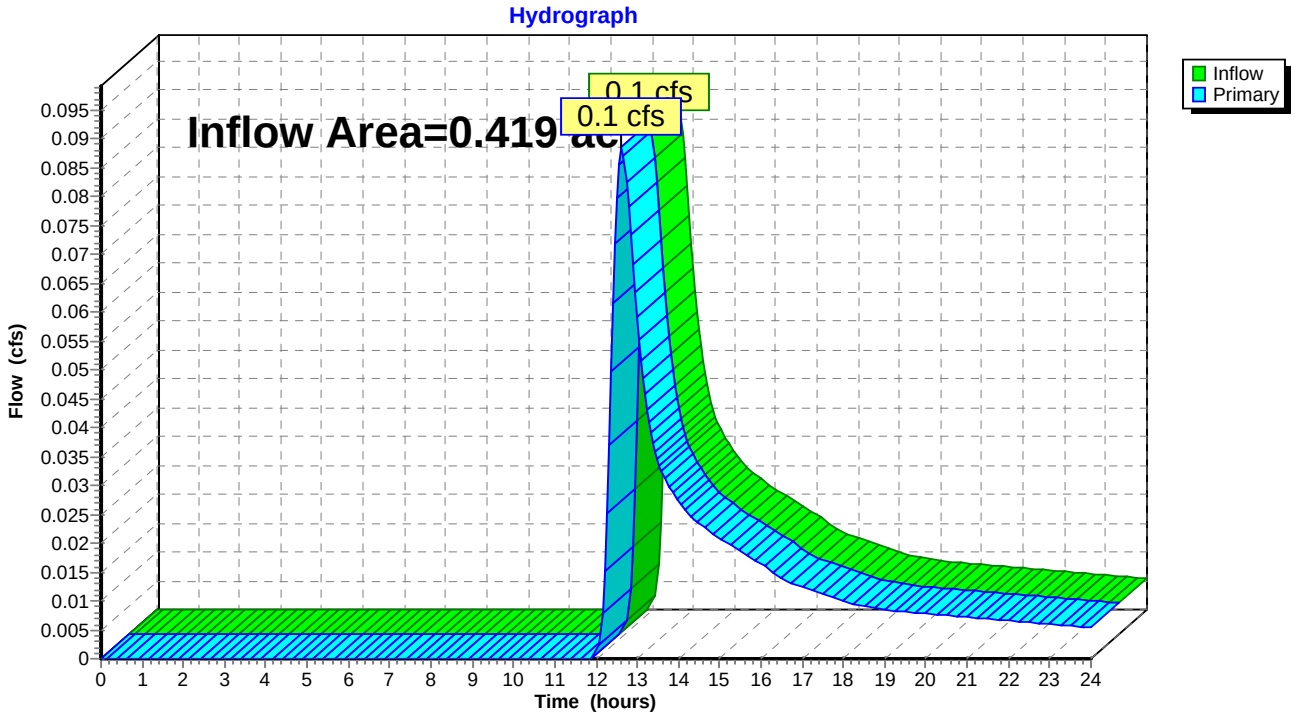


Summary for Link 8L: Off-Site Flow to East

Inflow Area = 0.419 ac, 0.00% Impervious, Inflow Depth > 0.48" for 2-Year event
Inflow = 0.1 cfs @ 12.62 hrs, Volume= 0.017 af
Primary = 0.1 cfs @ 12.62 hrs, Volume= 0.017 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 8L: Off-Site Flow to East



Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Area 1 - North Runoff Area=5.074 ac 0.00% Impervious Runoff Depth>0.91"
Flow Length=596' Tc=25.2 min CN=60 Runoff=2.8 cfs 0.383 af

Subcatchment 2S: Area 1 - West Runoff Area=5.408 ac 0.00% Impervious Runoff Depth>1.02"
Flow Length=437' Tc=24.6 min CN=62 Runoff=3.5 cfs 0.459 af

Subcatchment 3S: Area 1 - East Runoff Area=4.001 ac 0.00% Impervious Runoff Depth>1.13"
Flow Length=831' Tc=42.6 min CN=64 Runoff=2.3 cfs 0.377 af

Subcatchment 4S: Area 2 - West Runoff Area=4.295 ac 0.00% Impervious Runoff Depth>1.01"
Flow Length=662' Tc=64.9 min CN=62 Runoff=1.7 cfs 0.360 af

Subcatchment 5S: Area 2 - East Runoff Area=0.419 ac 0.00% Impervious Runoff Depth>0.90"
Flow Length=214' Tc=34.7 min CN=60 Runoff=0.2 cfs 0.032 af

Link 4L: Wooded Area to East Inflow=2.3 cfs 0.377 af
Primary=2.3 cfs 0.377 af

Link 6L: To Reservoir Inflow=6.2 cfs 0.843 af
Primary=6.2 cfs 0.843 af

Link 7L: Off-Site Flow to South Inflow=1.7 cfs 0.360 af
Primary=1.7 cfs 0.360 af

Link 8L: Off-Site Flow to East Inflow=0.2 cfs 0.032 af
Primary=0.2 cfs 0.032 af

Total Runoff Area = 19.197 ac Runoff Volume = 1.611 af Average Runoff Depth = 1.01"
100.00% Pervious = 19.197 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: Area 1 - North

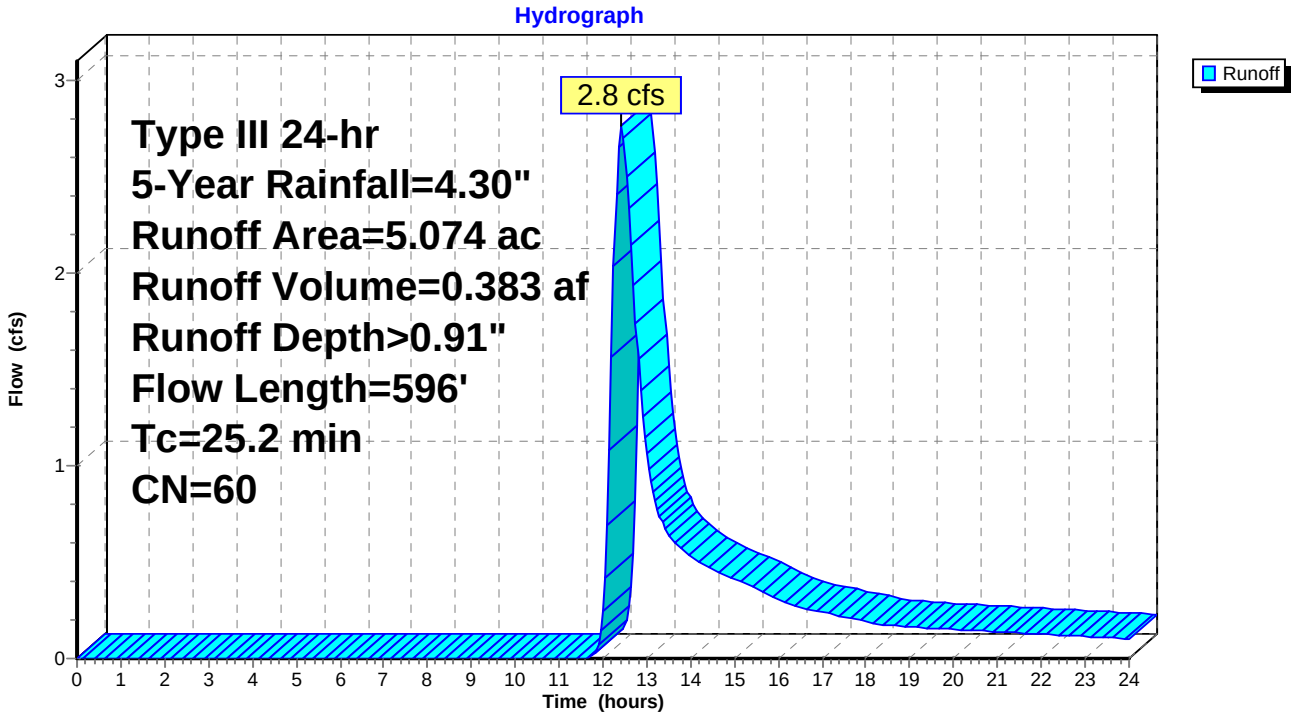
Runoff = 2.8 cfs @ 12.42 hrs, Volume= 0.383 af, Depth> 0.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-Year Rainfall=4.30"

Area (ac)	CN	Description
2.589	60	Woods, Fair, HSG B
2.485	61	>75% Grass cover, Good, HSG B
5.074	60	Weighted Average
5.074		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5	100	0.0177	0.11		**Sheet Flow, Grass and Trees** Grass: Dense n= 0.240 P2= 3.40"
1.0	40	0.0085	0.65		**Shallow Concentrated Flow, Grass and Trees** Short Grass Pasture Kv= 7.0 fps
0.3	32	0.0625	1.75		**Shallow Concentrated Flow, Grass and Trees** Short Grass Pasture Kv= 7.0 fps
2.9	143	0.0140	0.83		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
5.2	211	0.0095	0.68		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
1.3	70	0.0323	0.90		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
25.2	596	Total			

Subcatchment 1S: Area 1 - North



Summary for Subcatchment 2S: Area 1 - West

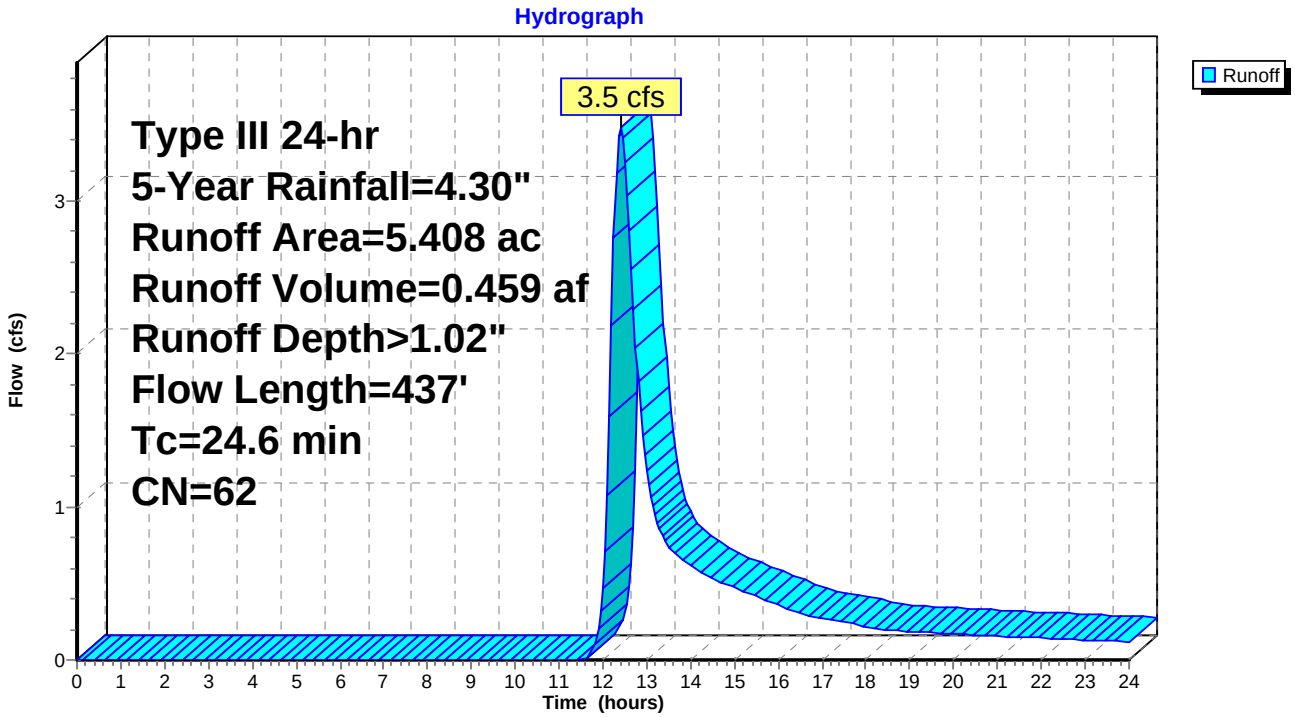
Runoff = 3.5 cfs @ 12.40 hrs, Volume= 0.459 af, Depth> 1.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-Year Rainfall=4.30"

Area (ac)	CN	Description
5.144	61	>75% Grass cover, Good, HSG B
0.068	60	Woods, Fair, HSG B
0.196	85	Gravel roads, HSG B
5.408	62	Weighted Average
5.408		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.0	100	0.0120	0.10		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.40"
7.5	312	0.0099	0.70		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.1	25	0.1581	2.78		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
24.6	437	Total			

Subcatchment 2S: Area 1 - West



Summary for Subcatchment 3S: Area 1 - East

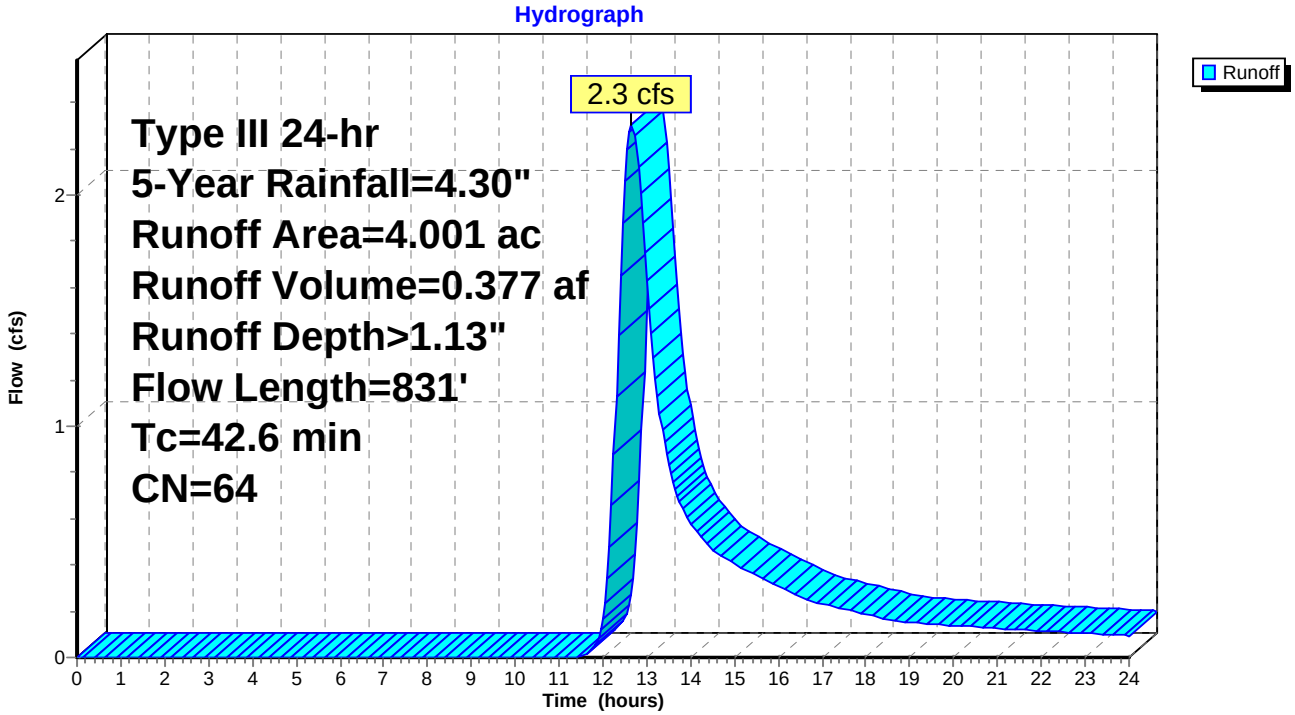
Runoff = 2.3 cfs @ 12.66 hrs, Volume= 0.377 af, Depth> 1.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-Year Rainfall=4.30"

Area (ac)	CN	Description
0.450	85	Gravel roads, HSG B
3.551	61	>75% Grass cover, Good, HSG B
4.001	64	Weighted Average
4.001		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	100	0.0090	0.09		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.40"
7.1	174	0.0034	0.41		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
16.3	526	0.0059	0.54		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.1	31	0.0742	4.39		**Shallow Concentrated Flow, Grass/Gravel** Unpaved Kv= 16.1 fps
42.6	831	Total			

Subcatchment 3S: Area 1 - East



Summary for Subcatchment 4S: Area 2 - West

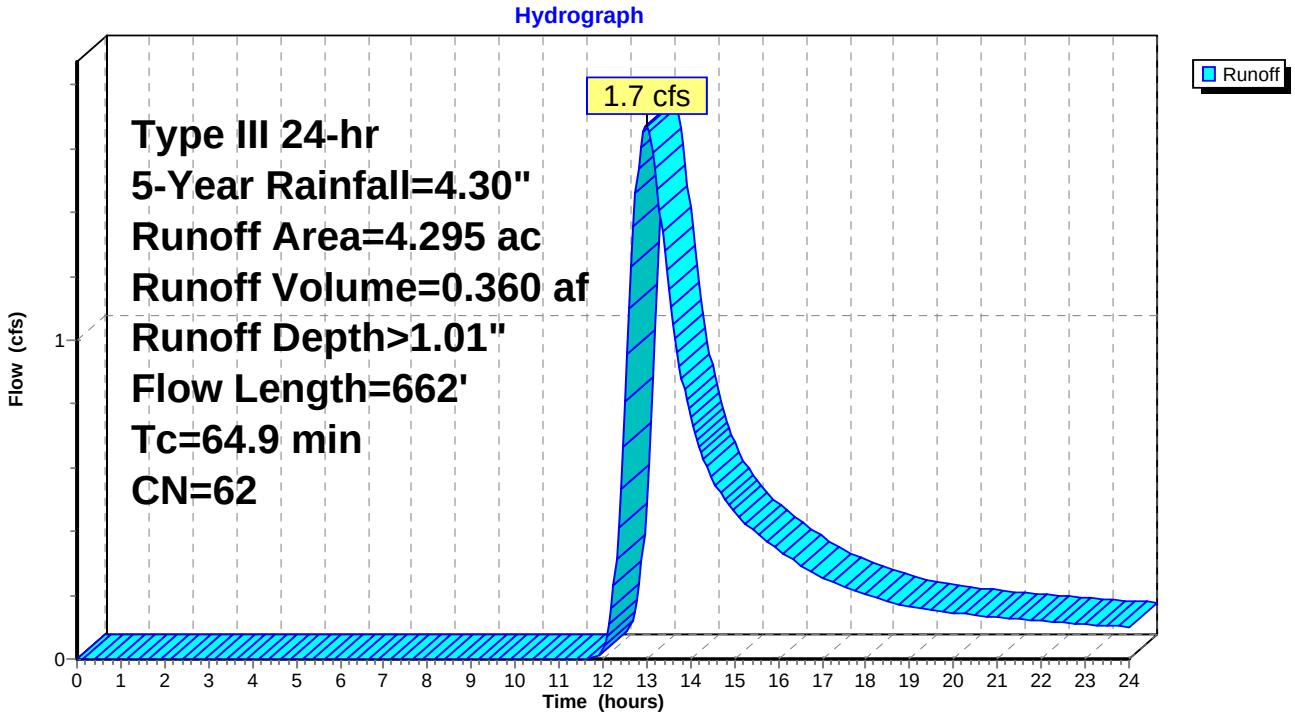
Runoff = 1.7 cfs @ 12.98 hrs, Volume= 0.360 af, Depth> 1.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-Year Rainfall=4.30"

Area (ac)	CN	Description
2.163	60	Woods, Fair, HSG B
1.790	61	>75% Grass cover, Good, HSG B
0.342	85	Gravel roads, HSG B
4.295	62	Weighted Average
4.295		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.1	100	0.0080	0.06		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.40"
1.9	86	0.0233	0.76		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
7.5	235	0.0055	0.52		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
25.4	241	0.0010	0.16		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
64.9	662	Total			

Subcatchment 4S: Area 2 - West



Summary for Subcatchment 5S: Area 2 - East

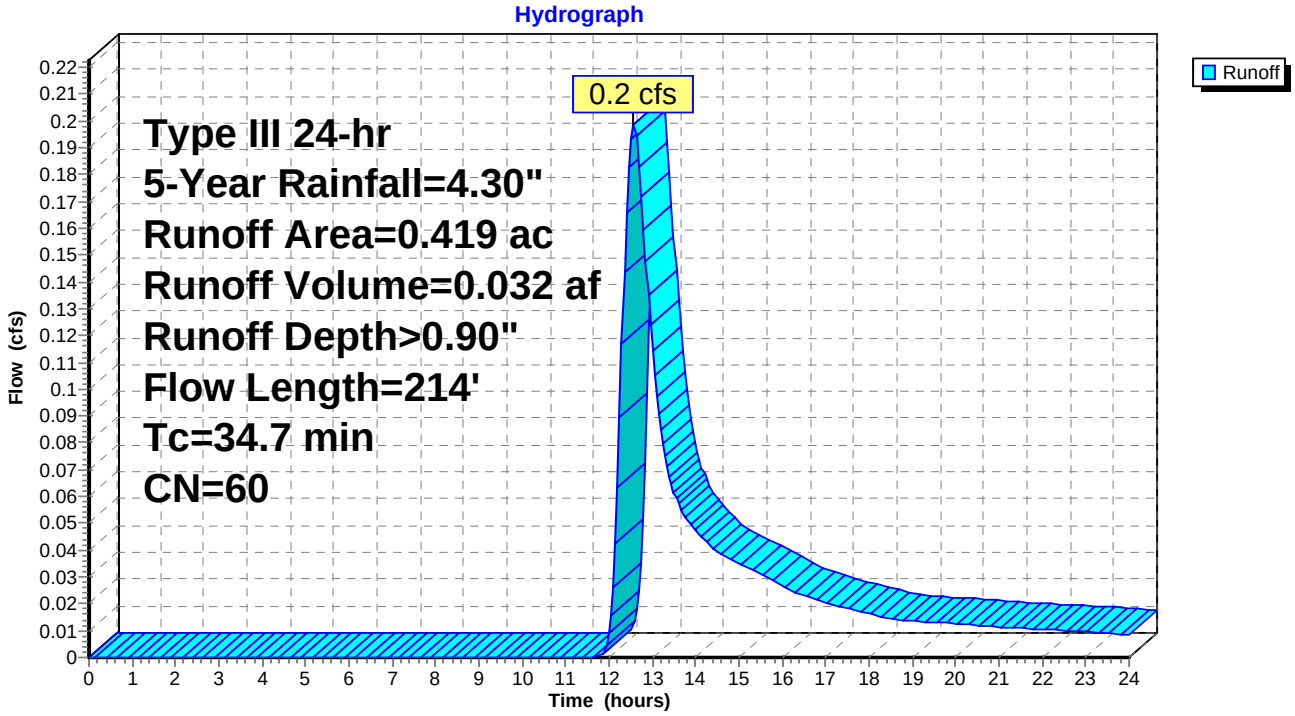
Runoff = 0.2 cfs @ 12.57 hrs, Volume= 0.032 af, Depth> 0.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-Year Rainfall=4.30"

Area (ac)	CN	Description
0.215	60	Woods, Fair, HSG B
0.204	61	>75% Grass cover, Good, HSG B
0.419	60	Weighted Average
0.419		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	58	0.0034	0.05		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.40"
12.8	42	0.0119	0.05		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.40"
2.8	86	0.0105	0.51		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
0.9	28	0.0050	0.49		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
34.7	214	Total			

Subcatchment 5S: Area 2 - East

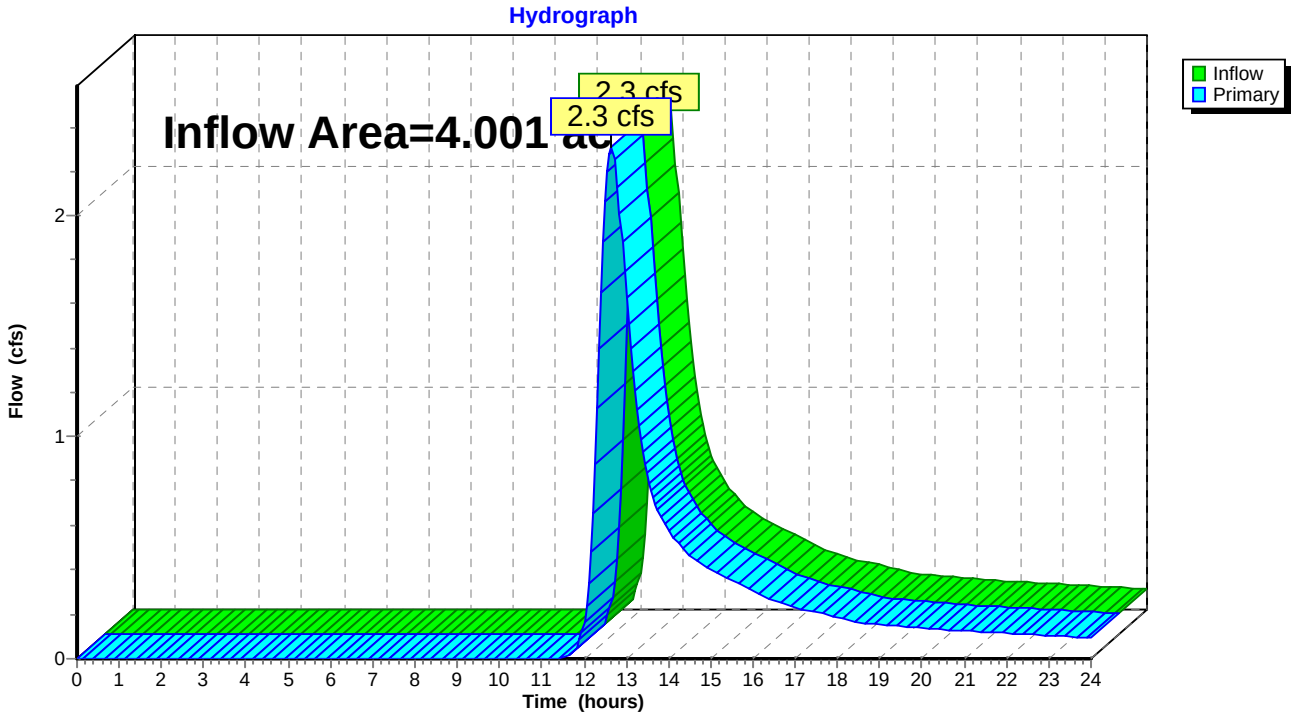


Summary for Link 4L: Wooded Area to East

Inflow Area = 4.001 ac, 0.00% Impervious, Inflow Depth > 1.13" for 5-Year event
Inflow = 2.3 cfs @ 12.66 hrs, Volume= 0.377 af
Primary = 2.3 cfs @ 12.66 hrs, Volume= 0.377 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 4L: Wooded Area to East

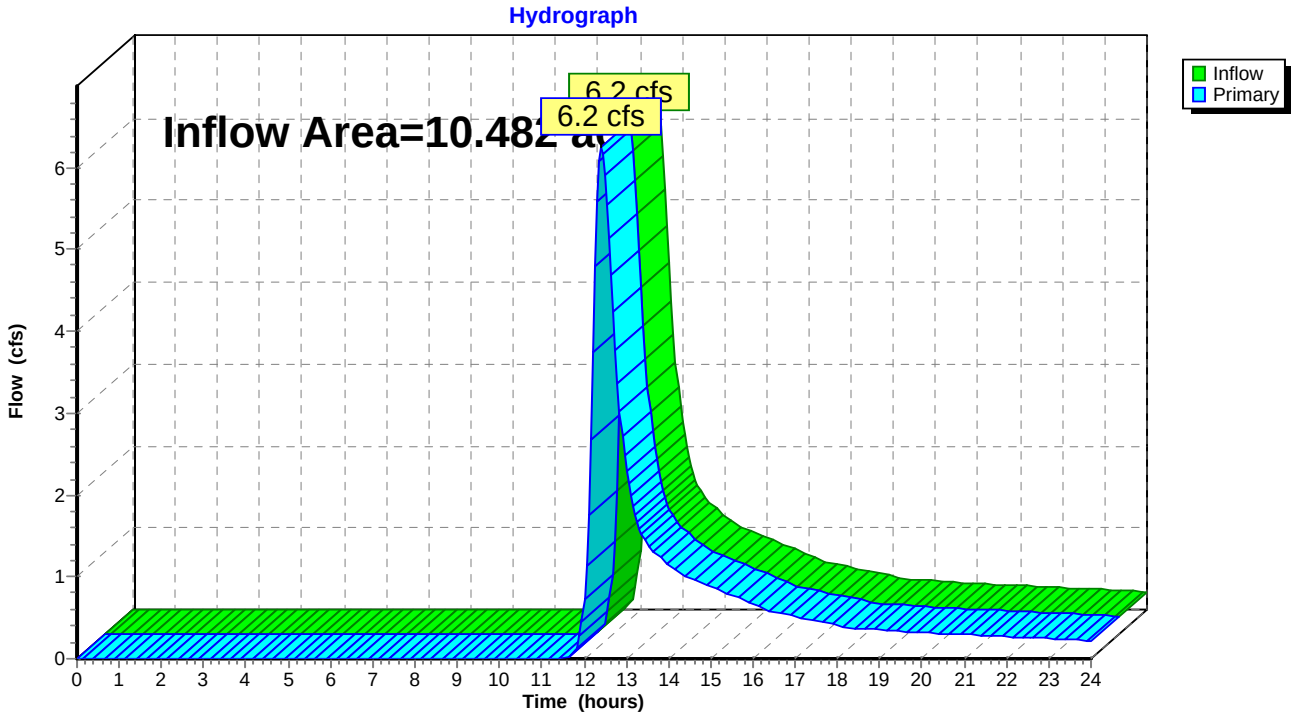


Summary for Link 6L: To Reservoir

Inflow Area = 10.482 ac, 0.00% Impervious, Inflow Depth > 0.96" for 5-Year event
Inflow = 6.2 cfs @ 12.41 hrs, Volume= 0.843 af
Primary = 6.2 cfs @ 12.41 hrs, Volume= 0.843 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 6L: To Reservoir

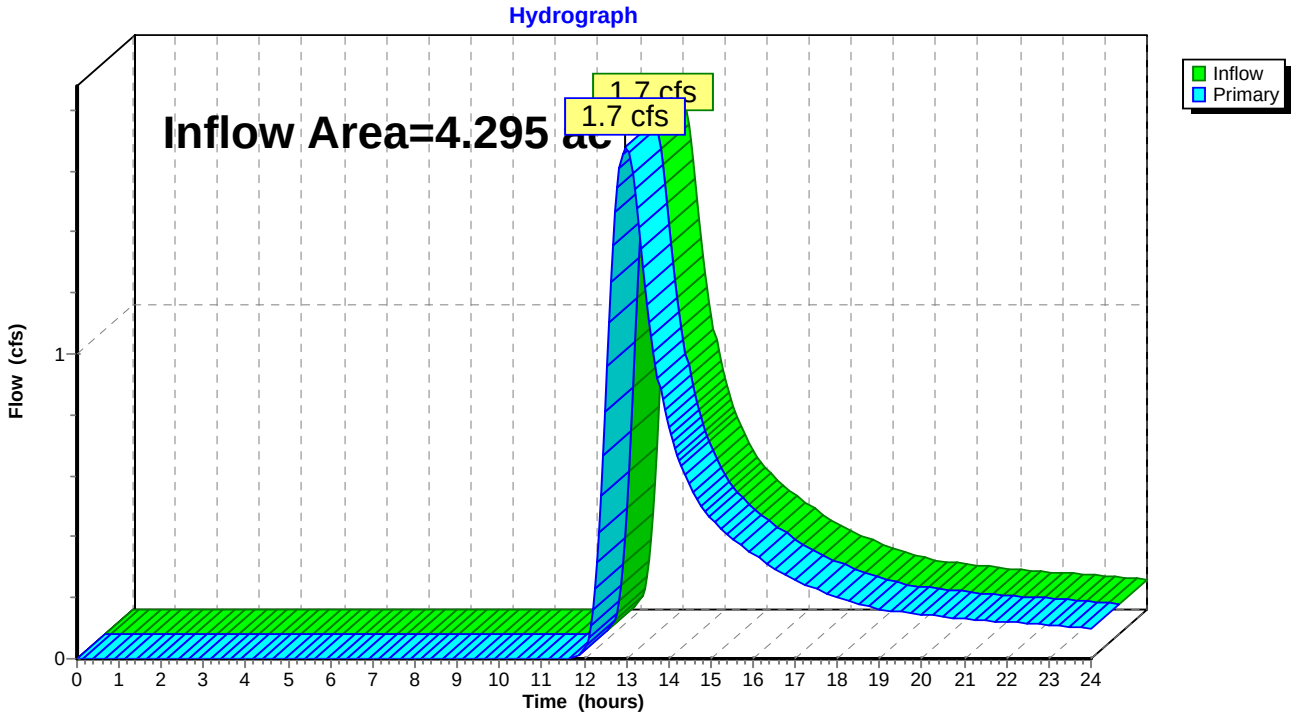


Summary for Link 7L: Off-Site Flow to South

Inflow Area = 4.295 ac, 0.00% Impervious, Inflow Depth > 1.01" for 5-Year event
Inflow = 1.7 cfs @ 12.98 hrs, Volume= 0.360 af
Primary = 1.7 cfs @ 12.98 hrs, Volume= 0.360 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 7L: Off-Site Flow to South

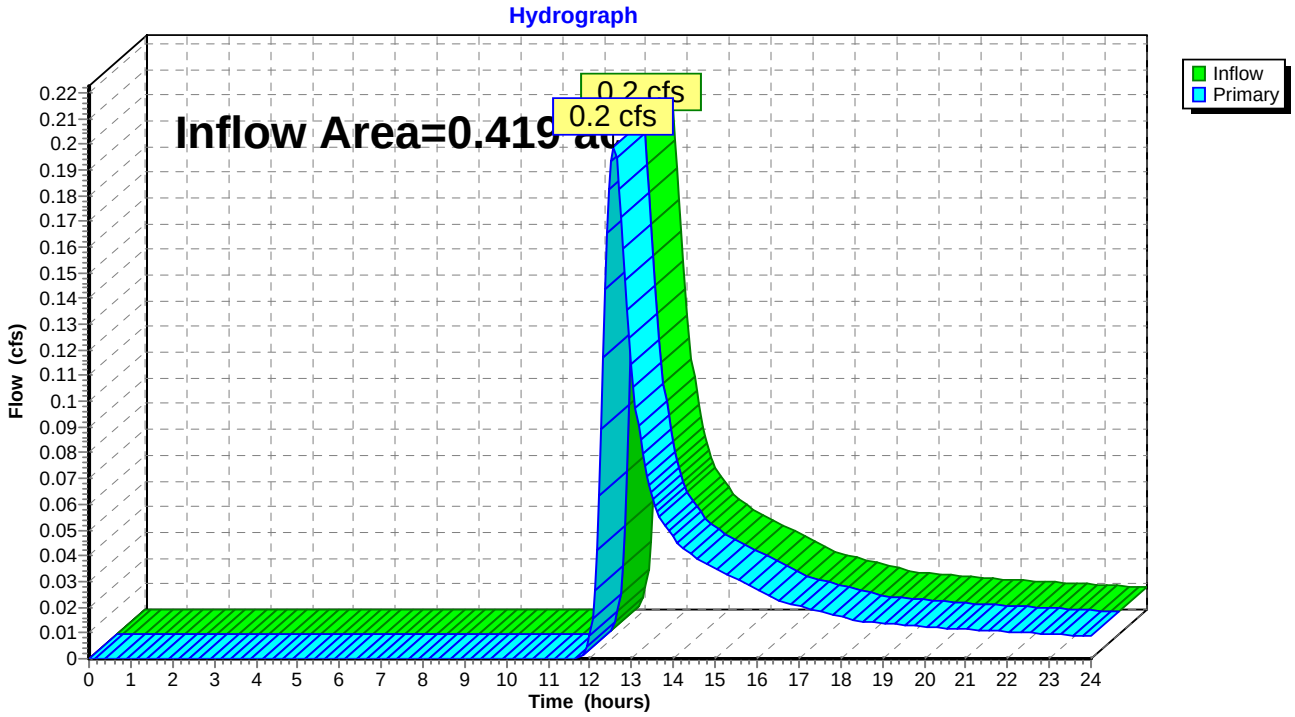


Summary for Link 8L: Off-Site Flow to East

Inflow Area = 0.419 ac, 0.00% Impervious, Inflow Depth > 0.90" for 5-Year event
Inflow = 0.2 cfs @ 12.57 hrs, Volume= 0.032 af
Primary = 0.2 cfs @ 12.57 hrs, Volume= 0.032 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 8L: Off-Site Flow to East



Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Area 1 - North Runoff Area=5.074 ac 0.00% Impervious Runoff Depth>1.29"
Flow Length=596' Tc=25.2 min CN=60 Runoff=4.2 cfs 0.546 af

Subcatchment 2S: Area 1 - West Runoff Area=5.408 ac 0.00% Impervious Runoff Depth>1.43"
Flow Length=437' Tc=24.6 min CN=62 Runoff=5.2 cfs 0.644 af

Subcatchment 3S: Area 1 - East Runoff Area=4.001 ac 0.00% Impervious Runoff Depth>1.56"
Flow Length=831' Tc=42.6 min CN=64 Runoff=3.3 cfs 0.521 af

Subcatchment 4S: Area 2 - West Runoff Area=4.295 ac 0.00% Impervious Runoff Depth>1.41"
Flow Length=662' Tc=64.9 min CN=62 Runoff=2.5 cfs 0.505 af

Subcatchment 5S: Area 2 - East Runoff Area=0.419 ac 0.00% Impervious Runoff Depth>1.29"
Flow Length=214' Tc=34.7 min CN=60 Runoff=0.3 cfs 0.045 af

Link 4L: Wooded Area to East Inflow=3.3 cfs 0.521 af
Primary=3.3 cfs 0.521 af

Link 6L: To Reservoir Inflow=9.4 cfs 1.190 af
Primary=9.4 cfs 1.190 af

Link 7L: Off-Site Flow to South Inflow=2.5 cfs 0.505 af
Primary=2.5 cfs 0.505 af

Link 8L: Off-Site Flow to East Inflow=0.3 cfs 0.045 af
Primary=0.3 cfs 0.045 af

Total Runoff Area = 19.197 ac Runoff Volume = 2.261 af Average Runoff Depth = 1.41"
100.00% Pervious = 19.197 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: Area 1 - North

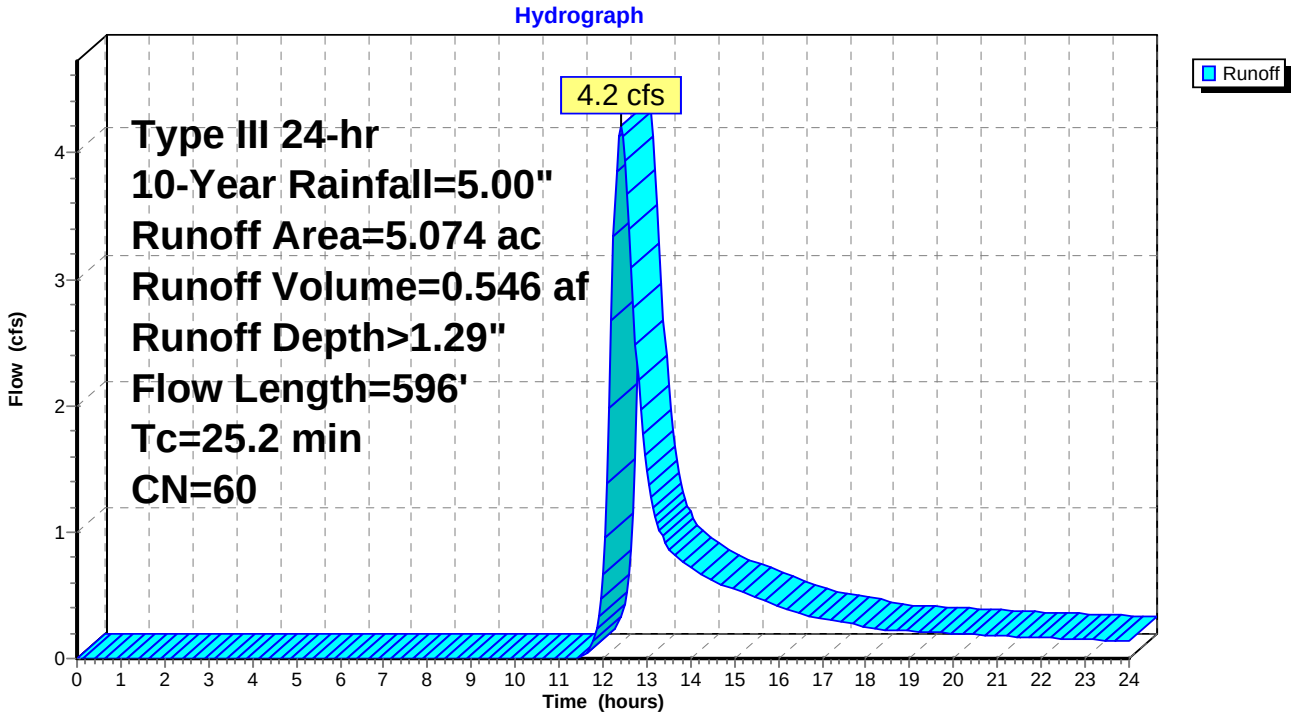
Runoff = 4.2 cfs @ 12.40 hrs, Volume= 0.546 af, Depth> 1.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.00"

Area (ac)	CN	Description
2.589	60	Woods, Fair, HSG B
2.485	61	>75% Grass cover, Good, HSG B
5.074	60	Weighted Average
5.074		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5	100	0.0177	0.11		**Sheet Flow, Grass and Trees** Grass: Dense n= 0.240 P2= 3.40"
1.0	40	0.0085	0.65		**Shallow Concentrated Flow, Grass and Trees** Short Grass Pasture Kv= 7.0 fps
0.3	32	0.0625	1.75		**Shallow Concentrated Flow, Grass and Trees** Short Grass Pasture Kv= 7.0 fps
2.9	143	0.0140	0.83		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
5.2	211	0.0095	0.68		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
1.3	70	0.0323	0.90		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
25.2	596	Total			

Subcatchment 1S: Area 1 - North



Summary for Subcatchment 2S: Area 1 - West

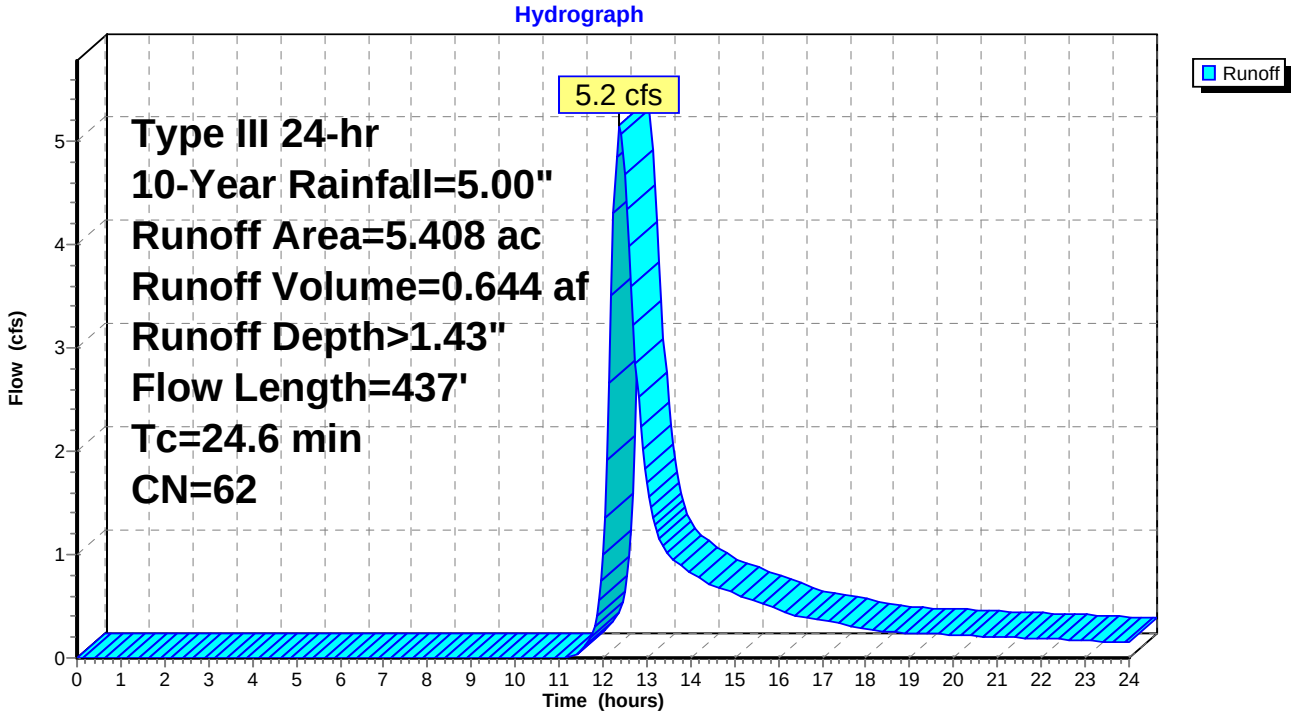
Runoff = 5.2 cfs @ 12.38 hrs, Volume= 0.644 af, Depth> 1.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.00"

Area (ac)	CN	Description
5.144	61	>75% Grass cover, Good, HSG B
0.068	60	Woods, Fair, HSG B
0.196	85	Gravel roads, HSG B
5.408	62	Weighted Average
5.408		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.0	100	0.0120	0.10		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.40"
7.5	312	0.0099	0.70		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.1	25	0.1581	2.78		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
24.6	437	Total			

Subcatchment 2S: Area 1 - West



Summary for Subcatchment 3S: Area 1 - East

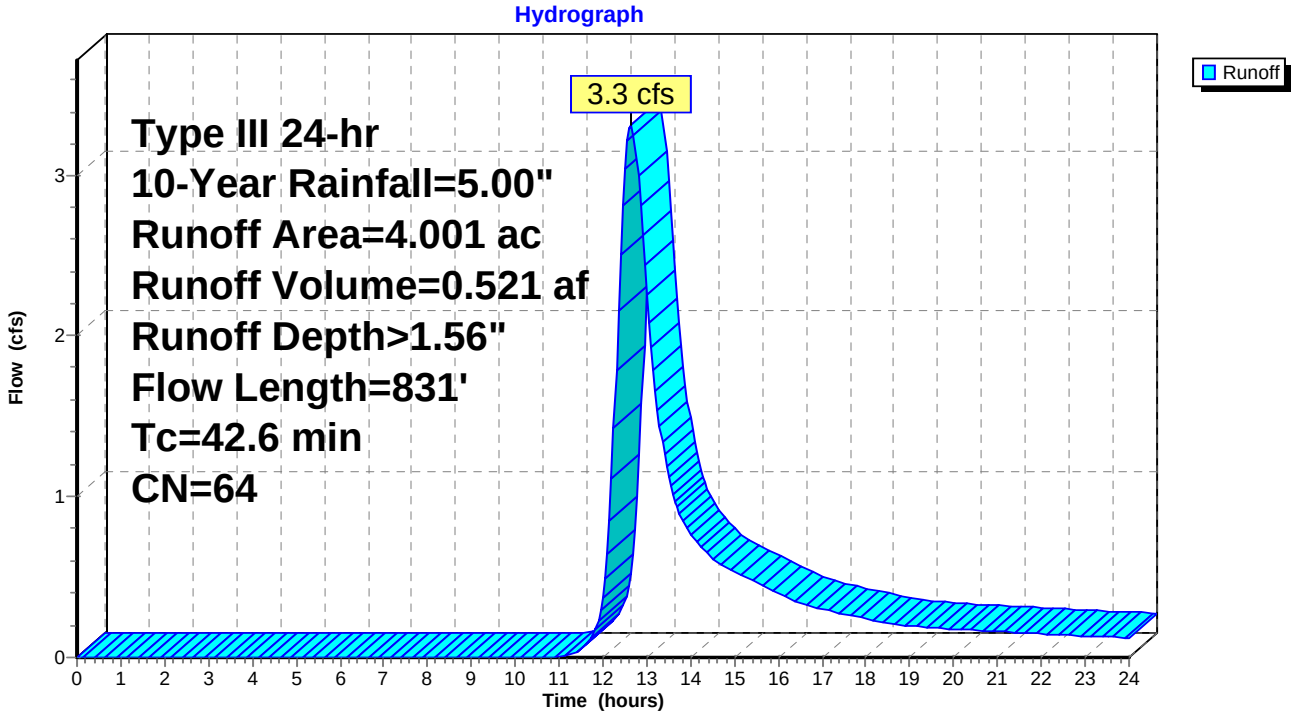
Runoff = 3.3 cfs @ 12.64 hrs, Volume= 0.521 af, Depth> 1.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.00"

Area (ac)	CN	Description
0.450	85	Gravel roads, HSG B
3.551	61	>75% Grass cover, Good, HSG B
4.001	64	Weighted Average
4.001		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	100	0.0090	0.09		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.40"
7.1	174	0.0034	0.41		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
16.3	526	0.0059	0.54		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.1	31	0.0742	4.39		**Shallow Concentrated Flow, Grass/Gravel** Unpaved Kv= 16.1 fps
42.6	831	Total			

Subcatchment 3S: Area 1 - East



Summary for Subcatchment 4S: Area 2 - West

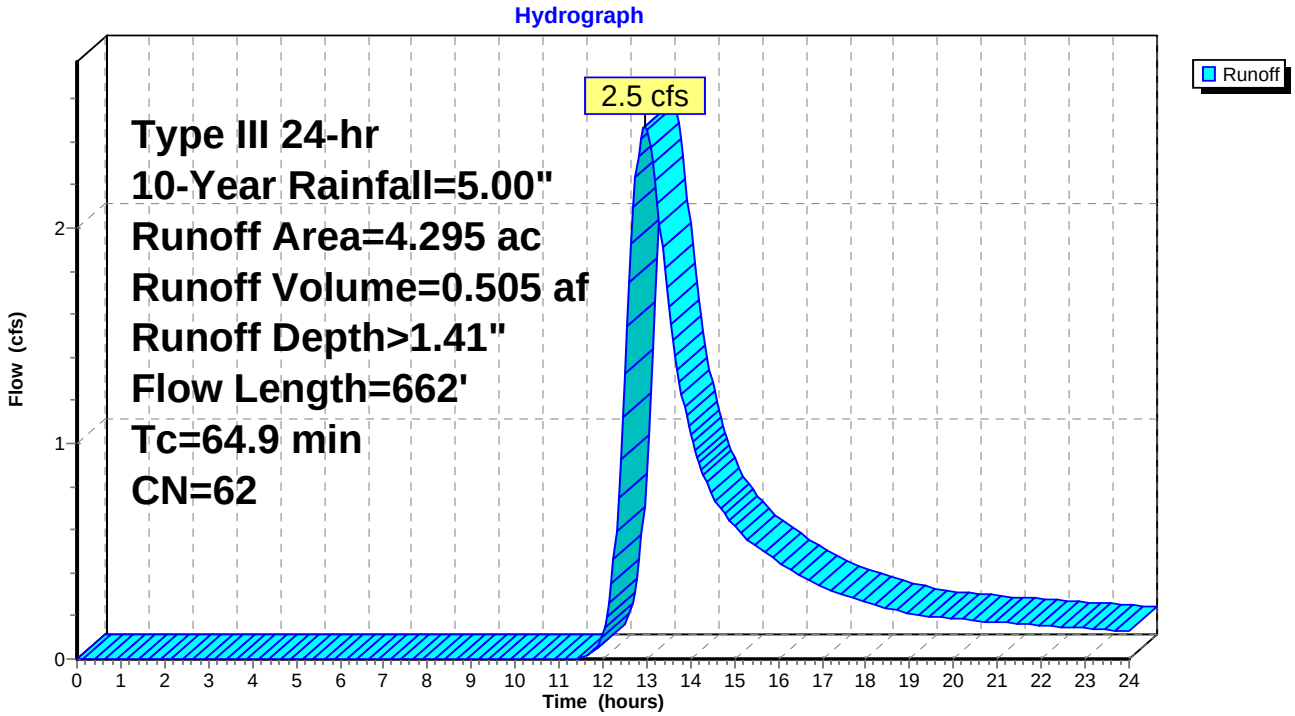
Runoff = 2.5 cfs @ 12.95 hrs, Volume= 0.505 af, Depth> 1.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.00"

Area (ac)	CN	Description
2.163	60	Woods, Fair, HSG B
1.790	61	>75% Grass cover, Good, HSG B
0.342	85	Gravel roads, HSG B
4.295	62	Weighted Average
4.295		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.1	100	0.0080	0.06		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.40"
1.9	86	0.0233	0.76		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
7.5	235	0.0055	0.52		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
25.4	241	0.0010	0.16		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
64.9	662	Total			

Subcatchment 4S: Area 2 - West



Summary for Subcatchment 5S: Area 2 - East

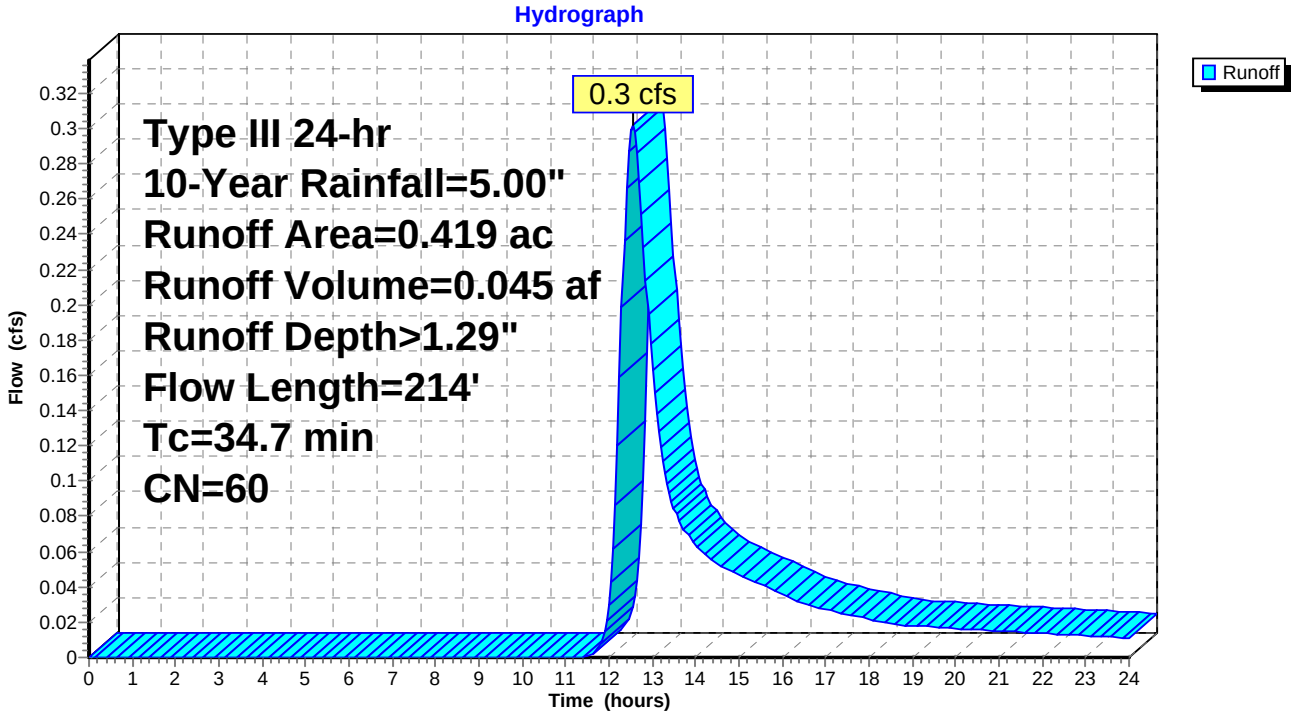
Runoff = 0.3 cfs @ 12.55 hrs, Volume= 0.045 af, Depth> 1.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.00"

Area (ac)	CN	Description
0.215	60	Woods, Fair, HSG B
0.204	61	>75% Grass cover, Good, HSG B
0.419	60	Weighted Average
0.419		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	58	0.0034	0.05		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.40"
12.8	42	0.0119	0.05		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.40"
2.8	86	0.0105	0.51		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
0.9	28	0.0050	0.49		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
34.7	214	Total			

Subcatchment 5S: Area 2 - East

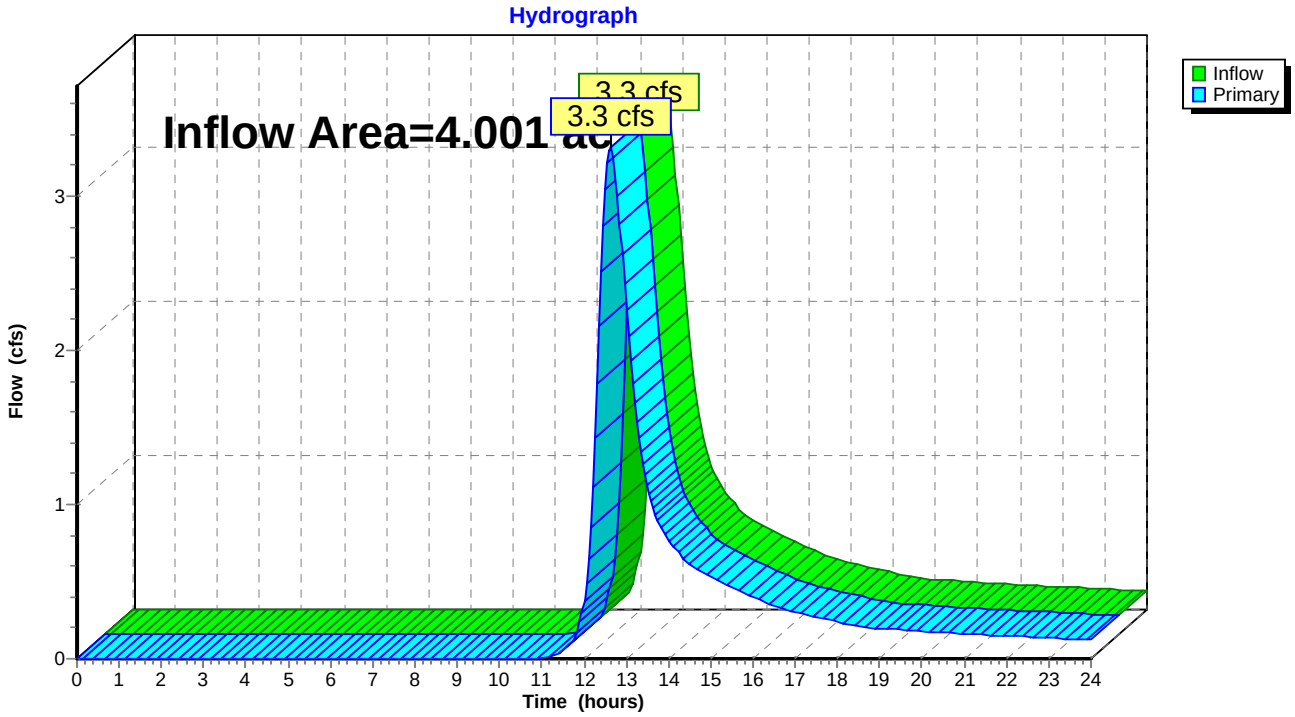


Summary for Link 4L: Wooded Area to East

Inflow Area = 4.001 ac, 0.00% Impervious, Inflow Depth > 1.56" for 10-Year event
Inflow = 3.3 cfs @ 12.64 hrs, Volume= 0.521 af
Primary = 3.3 cfs @ 12.64 hrs, Volume= 0.521 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 4L: Wooded Area to East

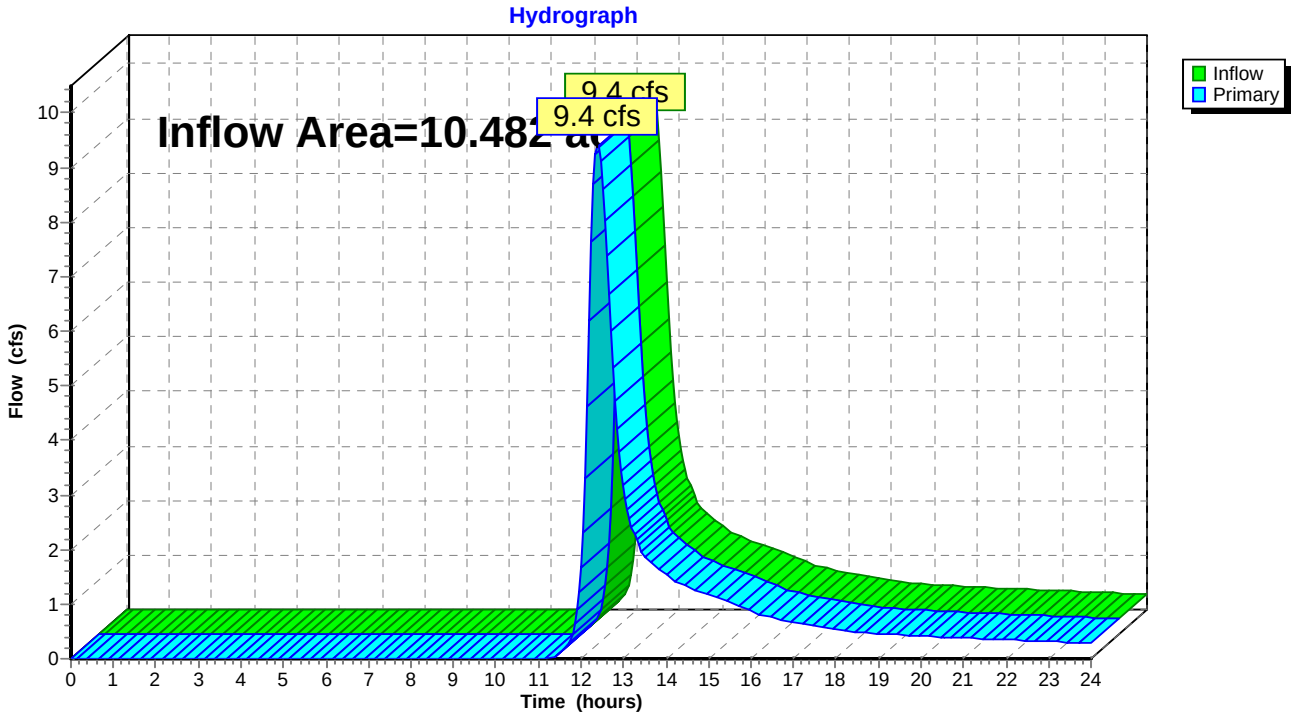


Summary for Link 6L: To Reservoir

Inflow Area = 10.482 ac, 0.00% Impervious, Inflow Depth > 1.36" for 10-Year event
Inflow = 9.4 cfs @ 12.39 hrs, Volume= 1.190 af
Primary = 9.4 cfs @ 12.39 hrs, Volume= 1.190 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 6L: To Reservoir

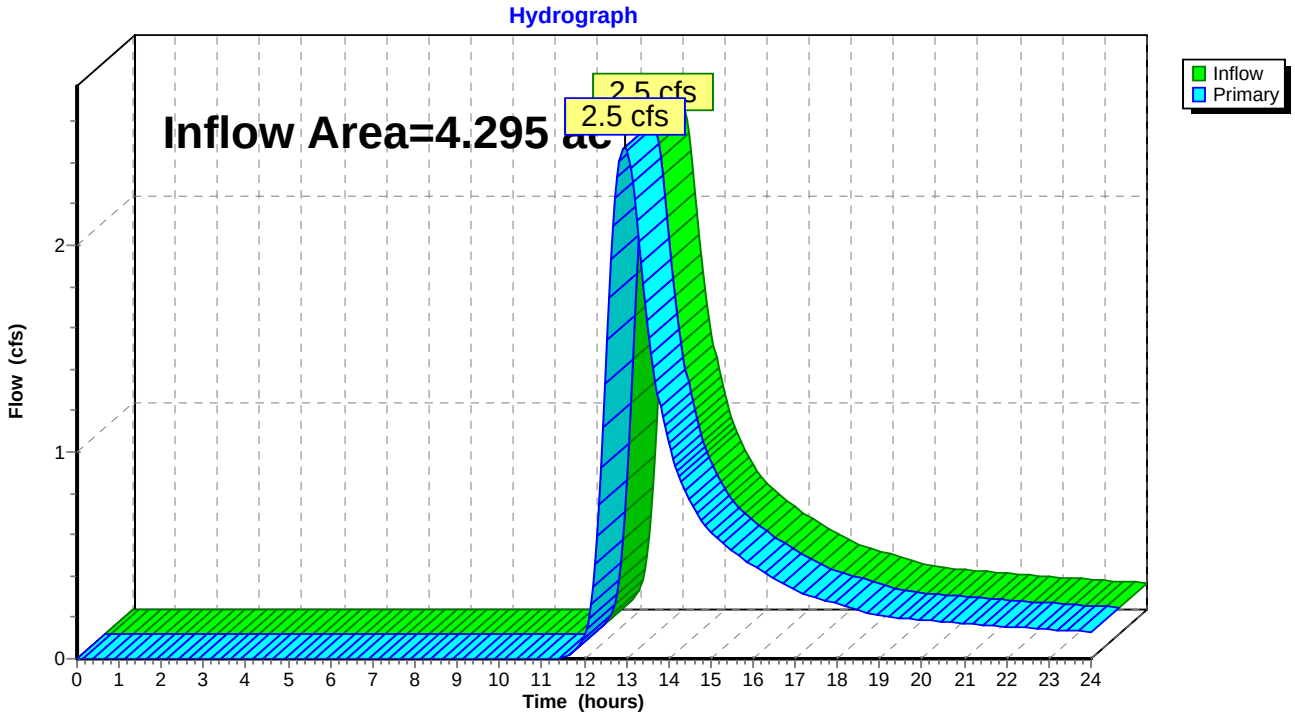


Summary for Link 7L: Off-Site Flow to South

Inflow Area = 4.295 ac, 0.00% Impervious, Inflow Depth > 1.41" for 10-Year event
Inflow = 2.5 cfs @ 12.95 hrs, Volume= 0.505 af
Primary = 2.5 cfs @ 12.95 hrs, Volume= 0.505 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 7L: Off-Site Flow to South

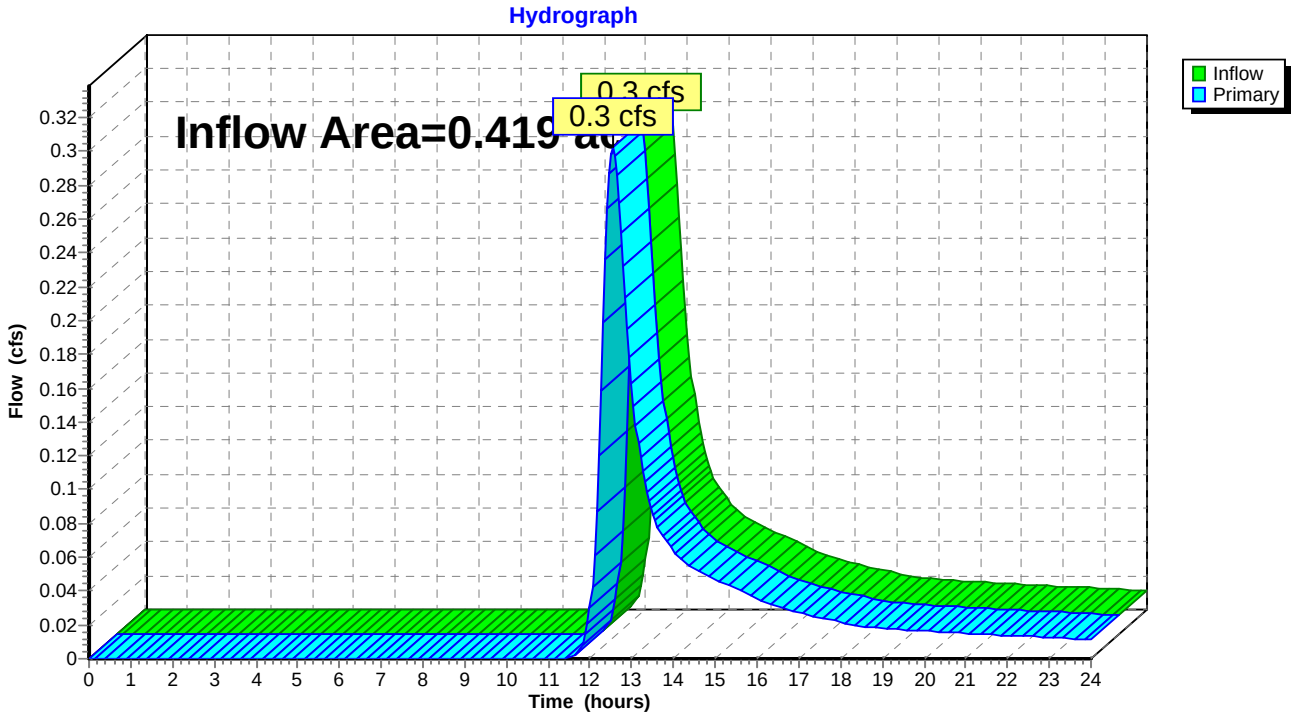


Summary for Link 8L: Off-Site Flow to East

Inflow Area = 0.419 ac, 0.00% Impervious, Inflow Depth > 1.29" for 10-Year event
Inflow = 0.3 cfs @ 12.55 hrs, Volume= 0.045 af
Primary = 0.3 cfs @ 12.55 hrs, Volume= 0.045 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 8L: Off-Site Flow to East



Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Area 1 - North Runoff Area=5.074 ac 0.00% Impervious Runoff Depth>1.72"
Flow Length=596' Tc=25.2 min CN=60 Runoff=5.8 cfs 0.726 af

Subcatchment 2S: Area 1 - West Runoff Area=5.408 ac 0.00% Impervious Runoff Depth>1.88"
Flow Length=437' Tc=24.6 min CN=62 Runoff=7.0 cfs 0.846 af

Subcatchment 3S: Area 1 - East Runoff Area=4.001 ac 0.00% Impervious Runoff Depth>2.03"
Flow Length=831' Tc=42.6 min CN=64 Runoff=4.4 cfs 0.677 af

Subcatchment 4S: Area 2 - West Runoff Area=4.295 ac 0.00% Impervious Runoff Depth>1.85"
Flow Length=662' Tc=64.9 min CN=62 Runoff=3.4 cfs 0.664 af

Subcatchment 5S: Area 2 - East Runoff Area=0.419 ac 0.00% Impervious Runoff Depth>1.71"
Flow Length=214' Tc=34.7 min CN=60 Runoff=0.4 cfs 0.060 af

Link 4L: Wooded Area to East Inflow=4.4 cfs 0.677 af
Primary=4.4 cfs 0.677 af

Link 6L: To Reservoir Inflow=12.8 cfs 1.571 af
Primary=12.8 cfs 1.571 af

Link 7L: Off-Site Flow to South Inflow=3.4 cfs 0.664 af
Primary=3.4 cfs 0.664 af

Link 8L: Off-Site Flow to East Inflow=0.4 cfs 0.060 af
Primary=0.4 cfs 0.060 af

Total Runoff Area = 19.197 ac Runoff Volume = 2.971 af Average Runoff Depth = 1.86"
100.00% Pervious = 19.197 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: Area 1 - North

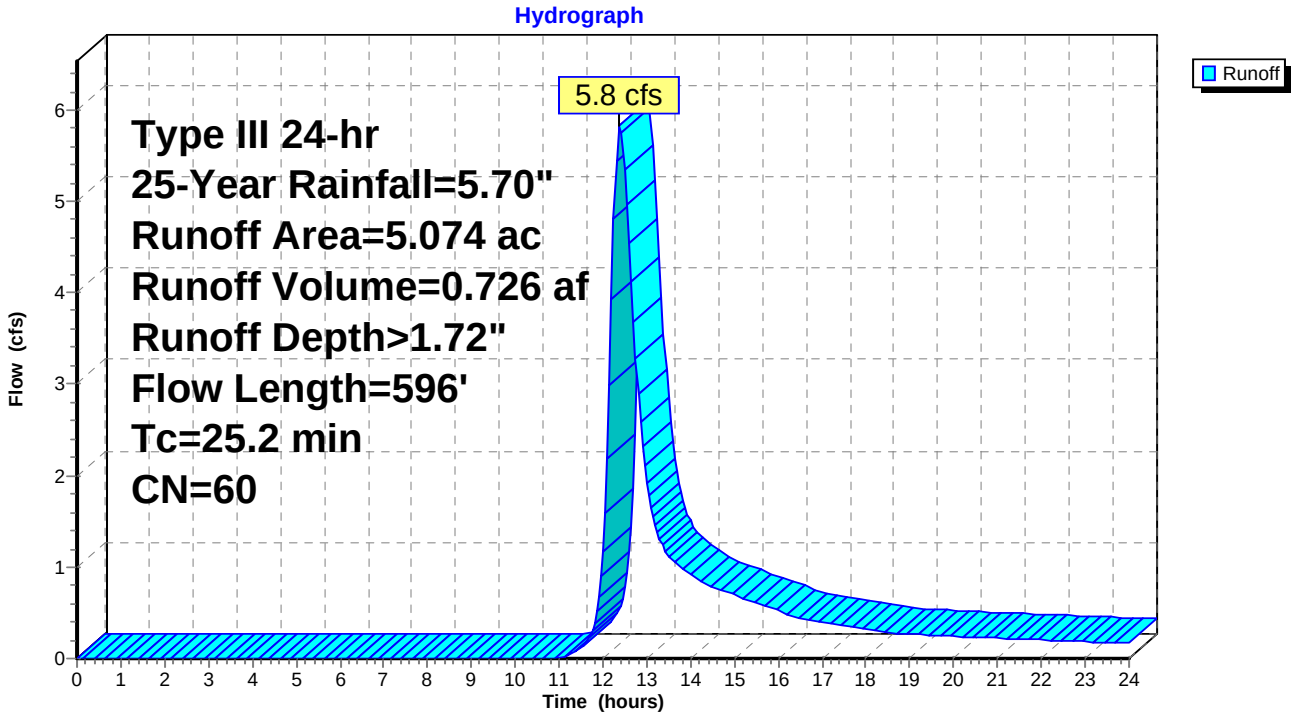
Runoff = 5.8 cfs @ 12.39 hrs, Volume= 0.726 af, Depth> 1.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.70"

Area (ac)	CN	Description
2.589	60	Woods, Fair, HSG B
2.485	61	>75% Grass cover, Good, HSG B
5.074	60	Weighted Average
5.074		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5	100	0.0177	0.11		**Sheet Flow, Grass and Trees** Grass: Dense n= 0.240 P2= 3.40"
1.0	40	0.0085	0.65		**Shallow Concentrated Flow, Grass and Trees** Short Grass Pasture Kv= 7.0 fps
0.3	32	0.0625	1.75		**Shallow Concentrated Flow, Grass and Trees** Short Grass Pasture Kv= 7.0 fps
2.9	143	0.0140	0.83		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
5.2	211	0.0095	0.68		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
1.3	70	0.0323	0.90		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
25.2	596	Total			

Subcatchment 1S: Area 1 - North



Summary for Subcatchment 2S: Area 1 - West

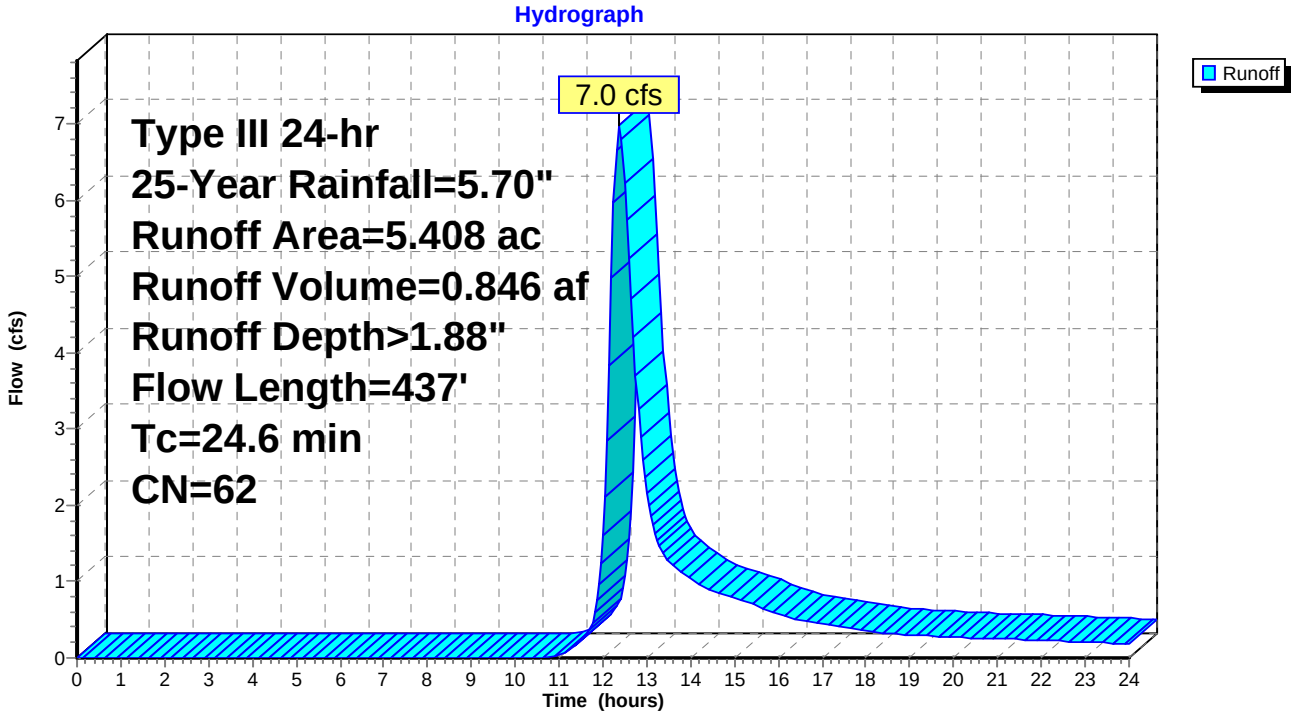
Runoff = 7.0 cfs @ 12.37 hrs, Volume= 0.846 af, Depth> 1.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.70"

Area (ac)	CN	Description
5.144	61	>75% Grass cover, Good, HSG B
0.068	60	Woods, Fair, HSG B
0.196	85	Gravel roads, HSG B
5.408	62	Weighted Average
5.408		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.0	100	0.0120	0.10		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.40"
7.5	312	0.0099	0.70		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.1	25	0.1581	2.78		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
24.6	437	Total			

Subcatchment 2S: Area 1 - West



Summary for Subcatchment 3S: Area 1 - East

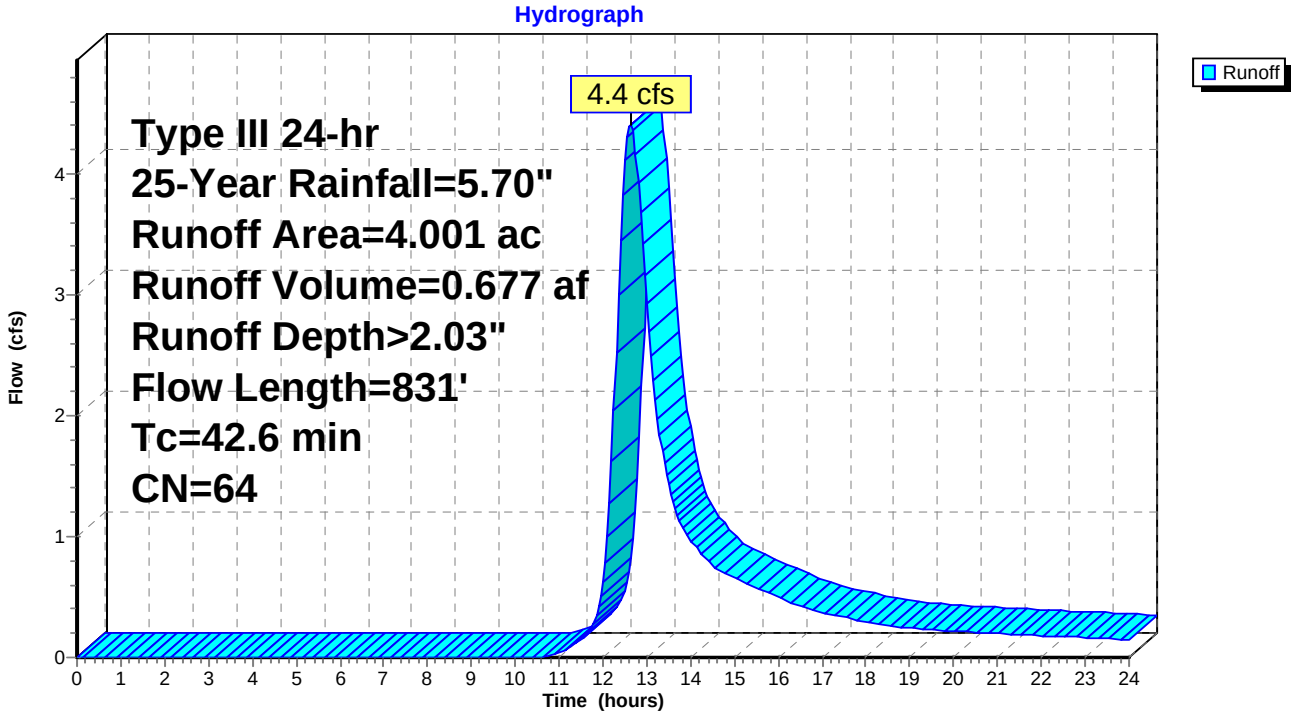
Runoff = 4.4 cfs @ 12.63 hrs, Volume= 0.677 af, Depth> 2.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.70"

Area (ac)	CN	Description
0.450	85	Gravel roads, HSG B
3.551	61	>75% Grass cover, Good, HSG B
4.001	64	Weighted Average
4.001		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	100	0.0090	0.09		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.40"
7.1	174	0.0034	0.41		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
16.3	526	0.0059	0.54		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.1	31	0.0742	4.39		**Shallow Concentrated Flow, Grass/Gravel** Unpaved Kv= 16.1 fps
42.6	831	Total			

Subcatchment 3S: Area 1 - East



Summary for Subcatchment 4S: Area 2 - West

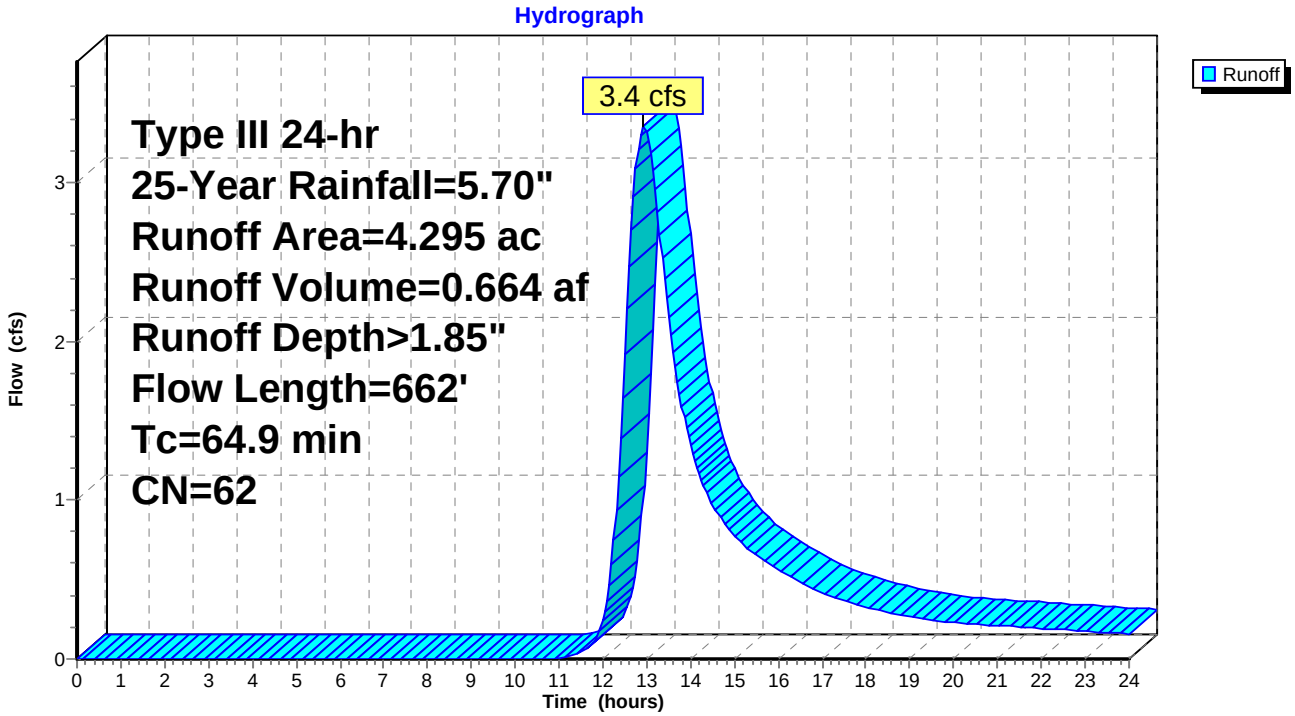
Runoff = 3.4 cfs @ 12.93 hrs, Volume= 0.664 af, Depth> 1.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.70"

Area (ac)	CN	Description
2.163	60	Woods, Fair, HSG B
1.790	61	>75% Grass cover, Good, HSG B
0.342	85	Gravel roads, HSG B
4.295	62	Weighted Average
4.295		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.1	100	0.0080	0.06		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.40"
1.9	86	0.0233	0.76		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
7.5	235	0.0055	0.52		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
25.4	241	0.0010	0.16		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
64.9	662	Total			

Subcatchment 4S: Area 2 - West



Summary for Subcatchment 5S: Area 2 - East

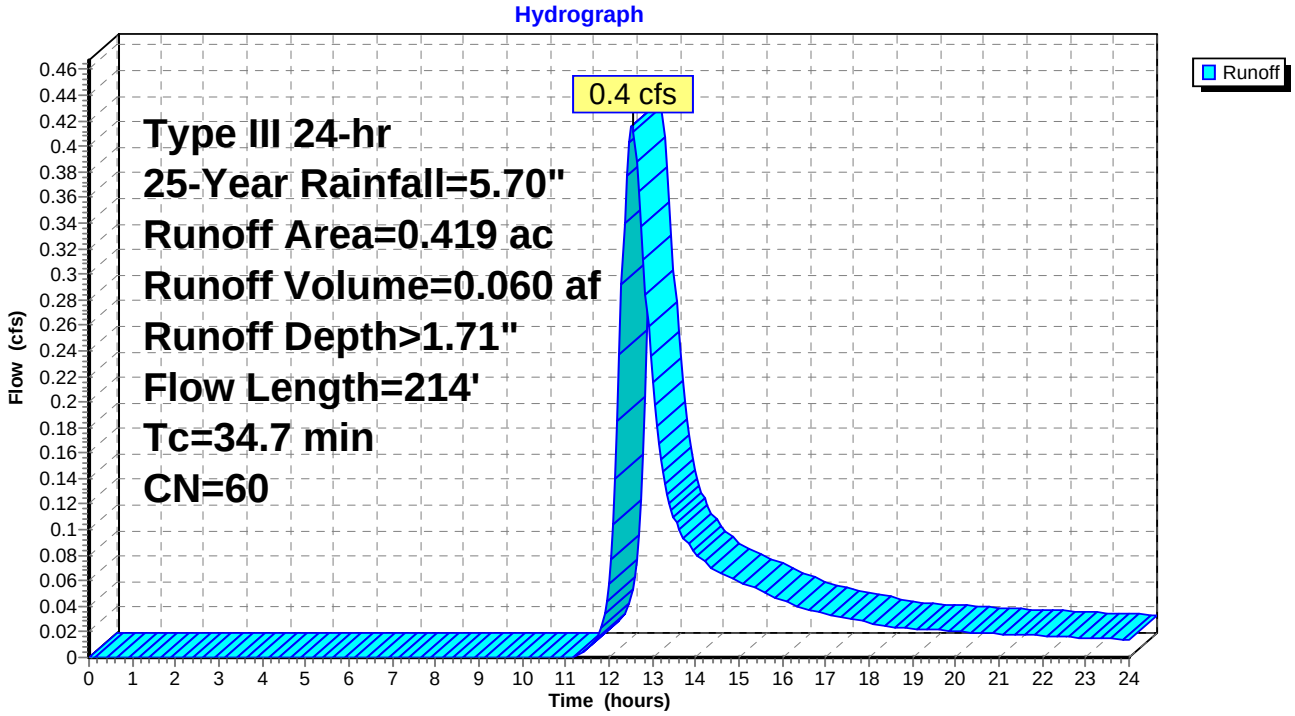
Runoff = 0.4 cfs @ 12.53 hrs, Volume= 0.060 af, Depth> 1.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.70"

Area (ac)	CN	Description
0.215	60	Woods, Fair, HSG B
0.204	61	>75% Grass cover, Good, HSG B
0.419	60	Weighted Average
0.419		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	58	0.0034	0.05		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.40"
12.8	42	0.0119	0.05		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.40"
2.8	86	0.0105	0.51		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
0.9	28	0.0050	0.49		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
34.7	214	Total			

Subcatchment 5S: Area 2 - East

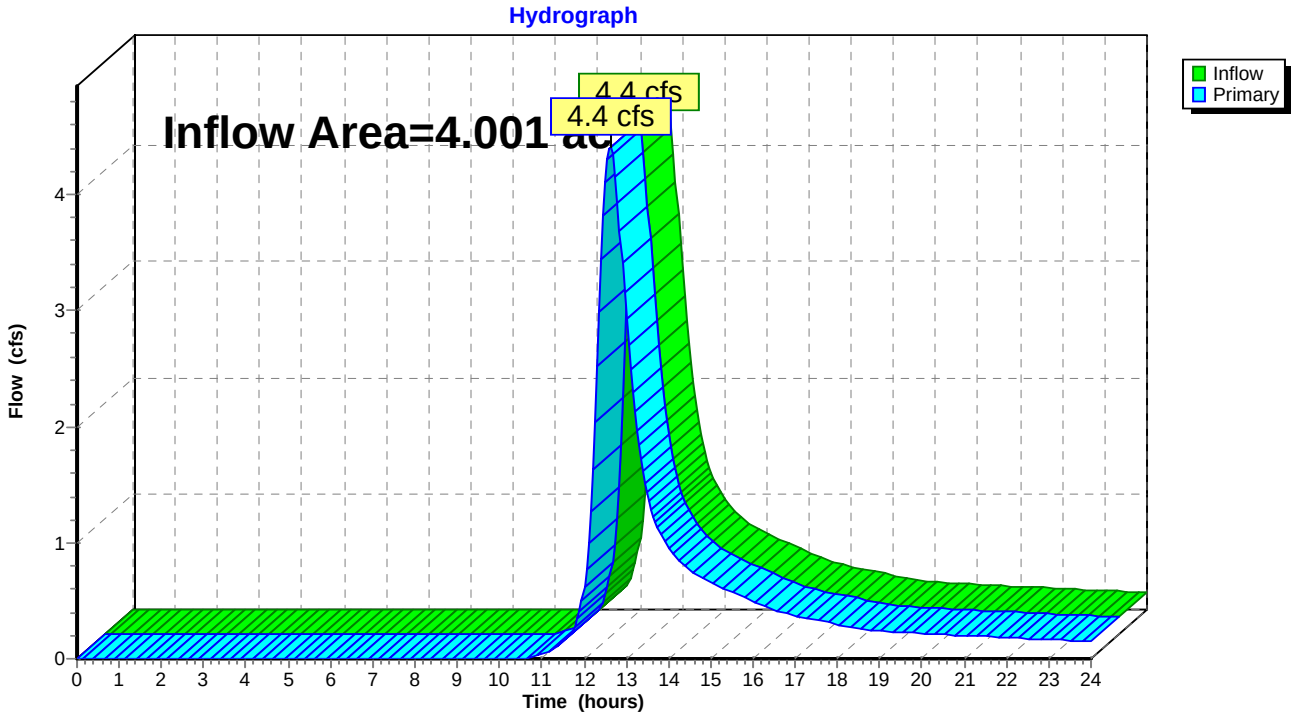


Summary for Link 4L: Wooded Area to East

Inflow Area = 4.001 ac, 0.00% Impervious, Inflow Depth > 2.03" for 25-Year event
Inflow = 4.4 cfs @ 12.63 hrs, Volume= 0.677 af
Primary = 4.4 cfs @ 12.63 hrs, Volume= 0.677 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 4L: Wooded Area to East

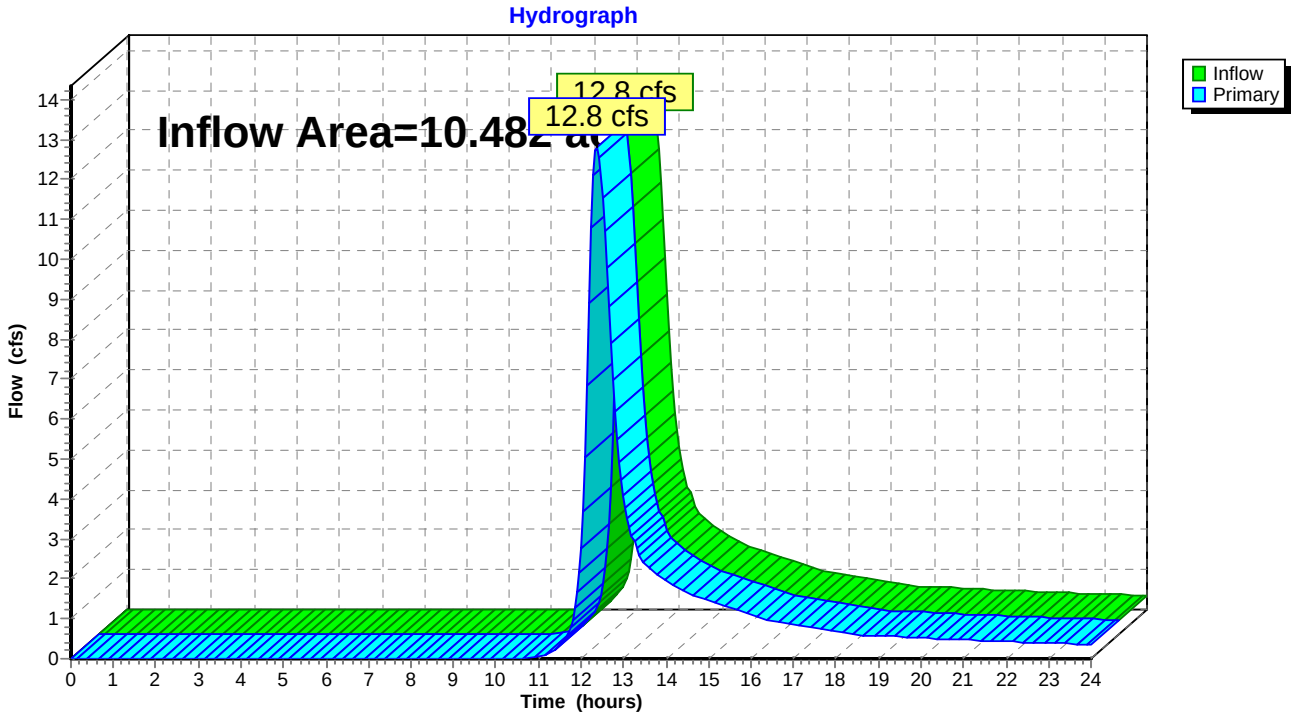


Summary for Link 6L: To Reservoir

Inflow Area = 10.482 ac, 0.00% Impervious, Inflow Depth > 1.80" for 25-Year event
Inflow = 12.8 cfs @ 12.38 hrs, Volume= 1.571 af
Primary = 12.8 cfs @ 12.38 hrs, Volume= 1.571 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 6L: To Reservoir

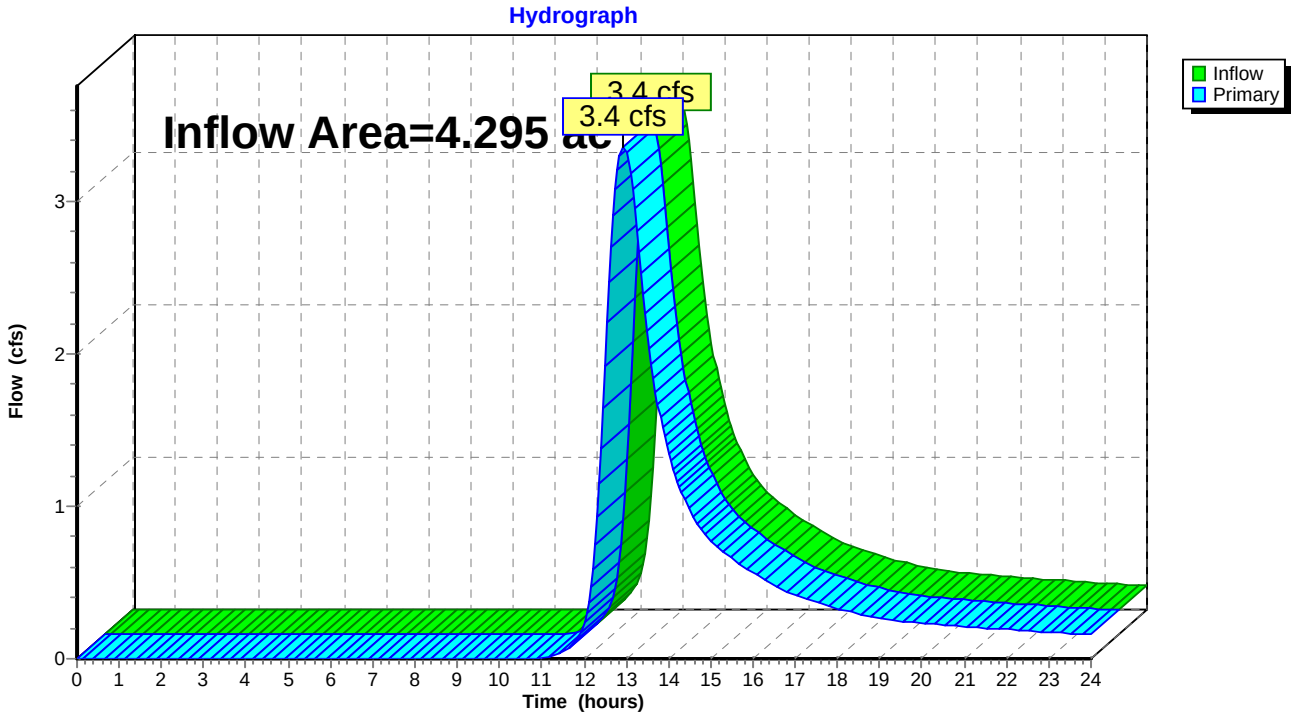


Summary for Link 7L: Off-Site Flow to South

Inflow Area = 4.295 ac, 0.00% Impervious, Inflow Depth > 1.85" for 25-Year event
Inflow = 3.4 cfs @ 12.93 hrs, Volume= 0.664 af
Primary = 3.4 cfs @ 12.93 hrs, Volume= 0.664 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 7L: Off-Site Flow to South

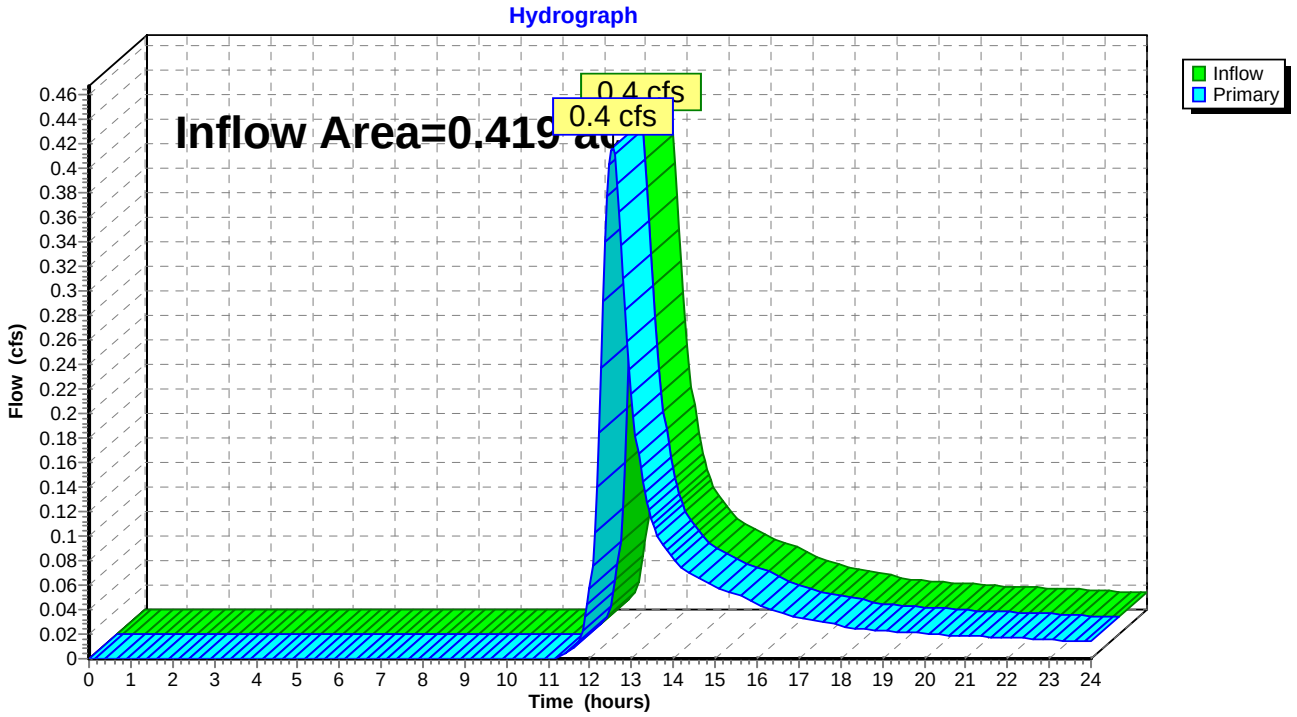


Summary for Link 8L: Off-Site Flow to East

Inflow Area = 0.419 ac, 0.00% Impervious, Inflow Depth > 1.71" for 25-Year event
Inflow = 0.4 cfs @ 12.53 hrs, Volume= 0.060 af
Primary = 0.4 cfs @ 12.53 hrs, Volume= 0.060 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 8L: Off-Site Flow to East



Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Area 1 - North Runoff Area=5.074 ac 0.00% Impervious Runoff Depth>2.11"
Flow Length=596' Tc=25.2 min CN=60 Runoff=7.3 cfs 0.891 af

Subcatchment 2S: Area 1 - West Runoff Area=5.408 ac 0.00% Impervious Runoff Depth>2.28"
Flow Length=437' Tc=24.6 min CN=62 Runoff=8.7 cfs 1.030 af

Subcatchment 3S: Area 1 - East Runoff Area=4.001 ac 0.00% Impervious Runoff Depth>2.45"
Flow Length=831' Tc=42.6 min CN=64 Runoff=5.4 cfs 0.818 af

Subcatchment 4S: Area 2 - West Runoff Area=4.295 ac 0.00% Impervious Runoff Depth>2.26"
Flow Length=662' Tc=64.9 min CN=62 Runoff=4.2 cfs 0.808 af

Subcatchment 5S: Area 2 - East Runoff Area=0.419 ac 0.00% Impervious Runoff Depth>2.10"
Flow Length=214' Tc=34.7 min CN=60 Runoff=0.5 cfs 0.073 af

Link 4L: Wooded Area to East Inflow=5.4 cfs 0.818 af
Primary=5.4 cfs 0.818 af

Link 6L: To Reservoir Inflow=16.0 cfs 1.920 af
Primary=16.0 cfs 1.920 af

Link 7L: Off-Site Flow to South Inflow=4.2 cfs 0.808 af
Primary=4.2 cfs 0.808 af

Link 8L: Off-Site Flow to East Inflow=0.5 cfs 0.073 af
Primary=0.5 cfs 0.073 af

Total Runoff Area = 19.197 ac Runoff Volume = 3.620 af Average Runoff Depth = 2.26"
100.00% Pervious = 19.197 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: Area 1 - North

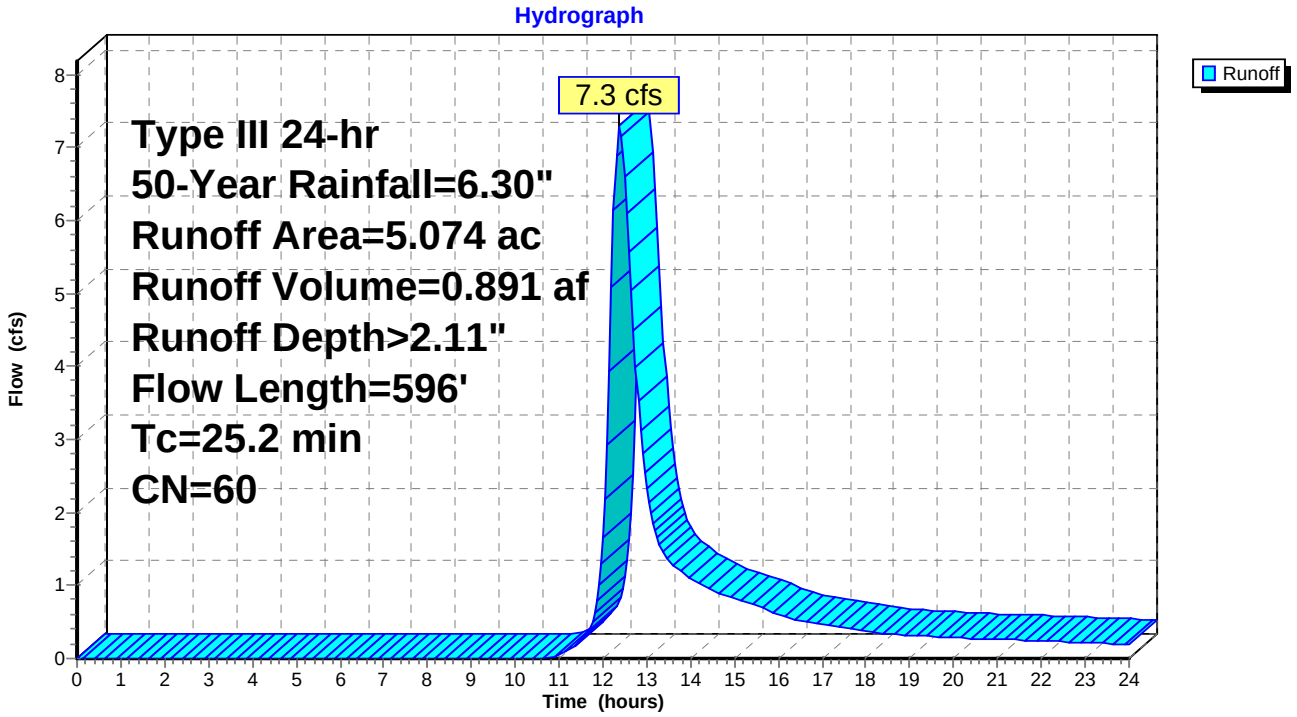
Runoff = 7.3 cfs @ 12.38 hrs, Volume= 0.891 af, Depth> 2.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=6.30"

Area (ac)	CN	Description
2.589	60	Woods, Fair, HSG B
2.485	61	>75% Grass cover, Good, HSG B
5.074	60	Weighted Average
5.074		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5	100	0.0177	0.11		**Sheet Flow, Grass and Trees** Grass: Dense n= 0.240 P2= 3.40"
1.0	40	0.0085	0.65		**Shallow Concentrated Flow, Grass and Trees** Short Grass Pasture Kv= 7.0 fps
0.3	32	0.0625	1.75		**Shallow Concentrated Flow, Grass and Trees** Short Grass Pasture Kv= 7.0 fps
2.9	143	0.0140	0.83		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
5.2	211	0.0095	0.68		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
1.3	70	0.0323	0.90		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
25.2	596	Total			

Subcatchment 1S: Area 1 - North



Summary for Subcatchment 2S: Area 1 - West

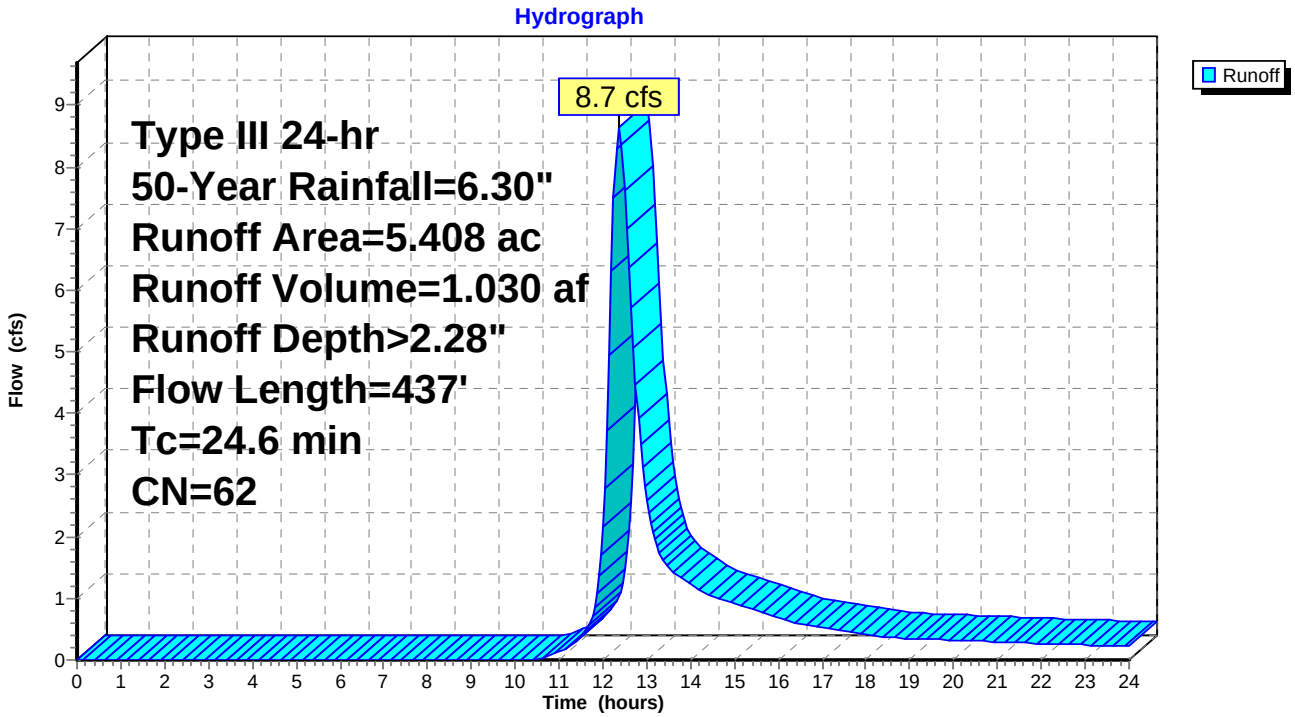
Runoff = 8.7 cfs @ 12.37 hrs, Volume= 1.030 af, Depth> 2.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=6.30"

Area (ac)	CN	Description
5.144	61	>75% Grass cover, Good, HSG B
0.068	60	Woods, Fair, HSG B
0.196	85	Gravel roads, HSG B
5.408	62	Weighted Average
5.408		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.0	100	0.0120	0.10		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.40"
7.5	312	0.0099	0.70		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.1	25	0.1581	2.78		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
24.6	437	Total			

Subcatchment 2S: Area 1 - West



Summary for Subcatchment 3S: Area 1 - East

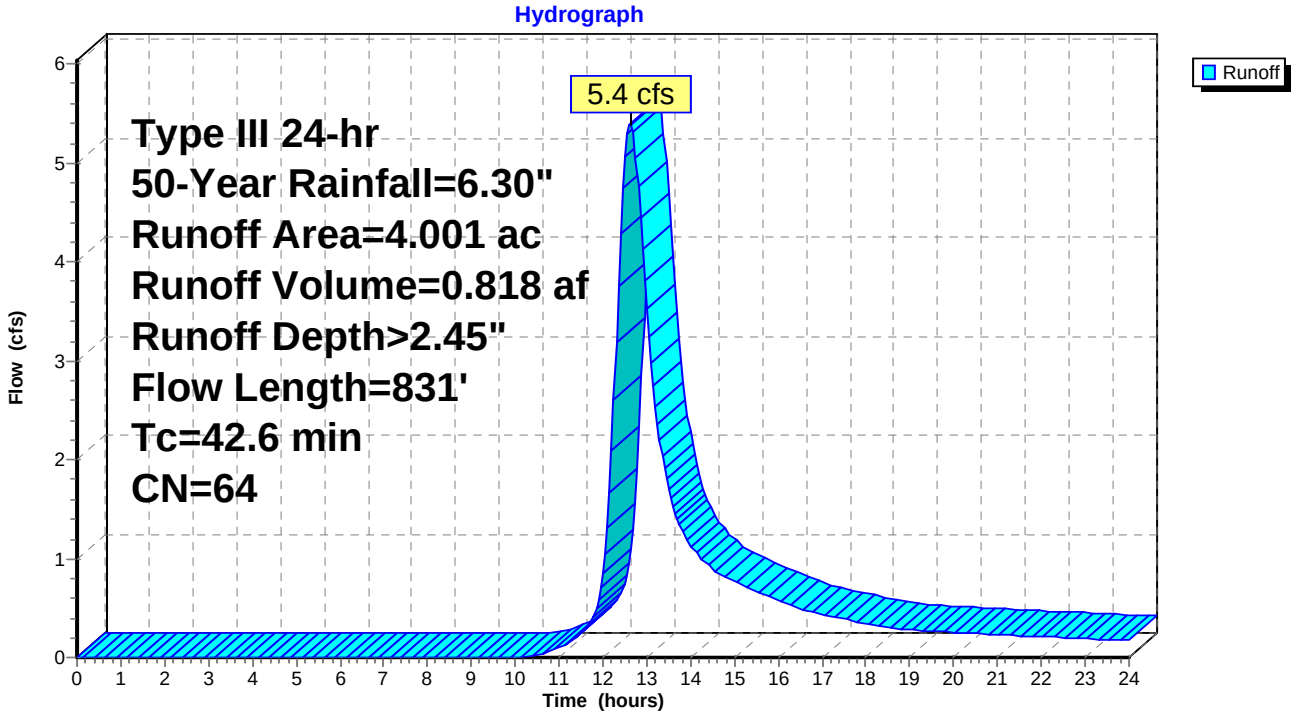
Runoff = 5.4 cfs @ 12.62 hrs, Volume= 0.818 af, Depth> 2.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=6.30"

Area (ac)	CN	Description
0.450	85	Gravel roads, HSG B
3.551	61	>75% Grass cover, Good, HSG B
4.001	64	Weighted Average
4.001		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	100	0.0090	0.09		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.40"
7.1	174	0.0034	0.41		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
16.3	526	0.0059	0.54		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.1	31	0.0742	4.39		**Shallow Concentrated Flow, Grass/Gravel** Unpaved Kv= 16.1 fps
42.6	831	Total			

Subcatchment 3S: Area 1 - East



Summary for Subcatchment 4S: Area 2 - West

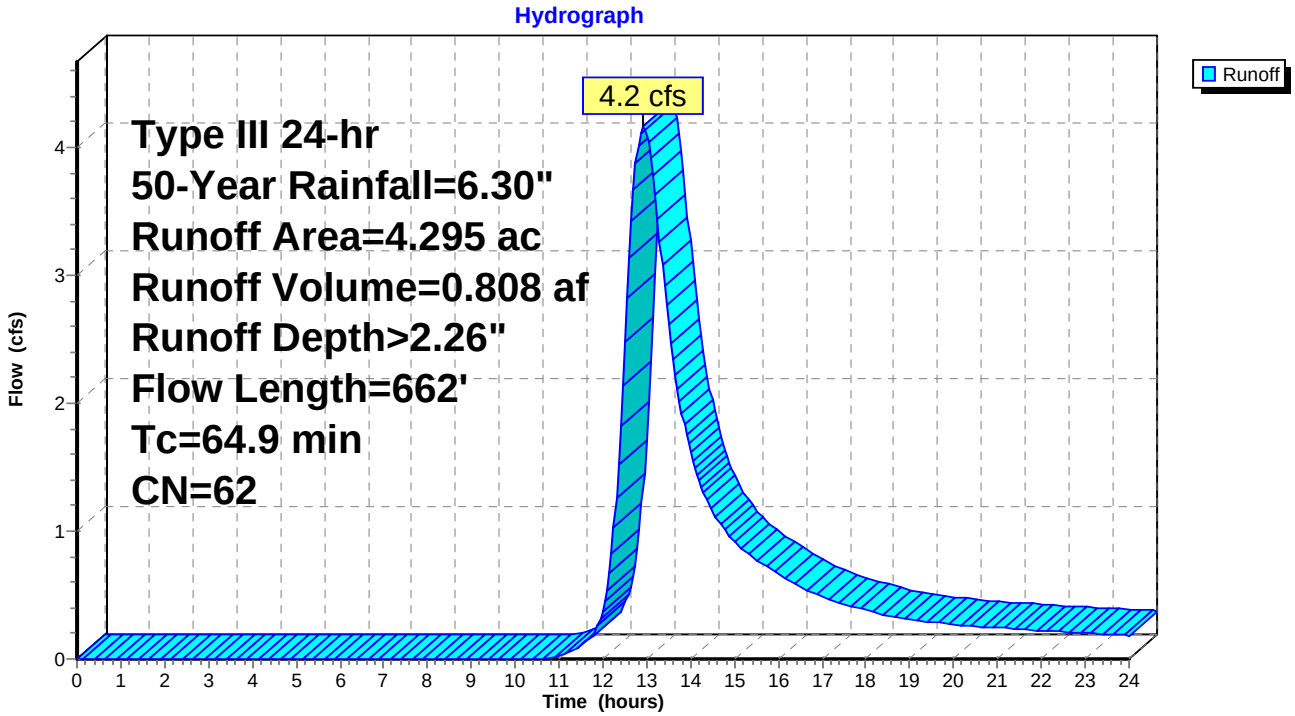
Runoff = 4.2 cfs @ 12.92 hrs, Volume= 0.808 af, Depth> 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=6.30"

Area (ac)	CN	Description
2.163	60	Woods, Fair, HSG B
1.790	61	>75% Grass cover, Good, HSG B
0.342	85	Gravel roads, HSG B
4.295	62	Weighted Average
4.295		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.1	100	0.0080	0.06		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.40"
1.9	86	0.0233	0.76		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
7.5	235	0.0055	0.52		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
25.4	241	0.0010	0.16		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
64.9	662	Total			

Subcatchment 4S: Area 2 - West



Summary for Subcatchment 5S: Area 2 - East

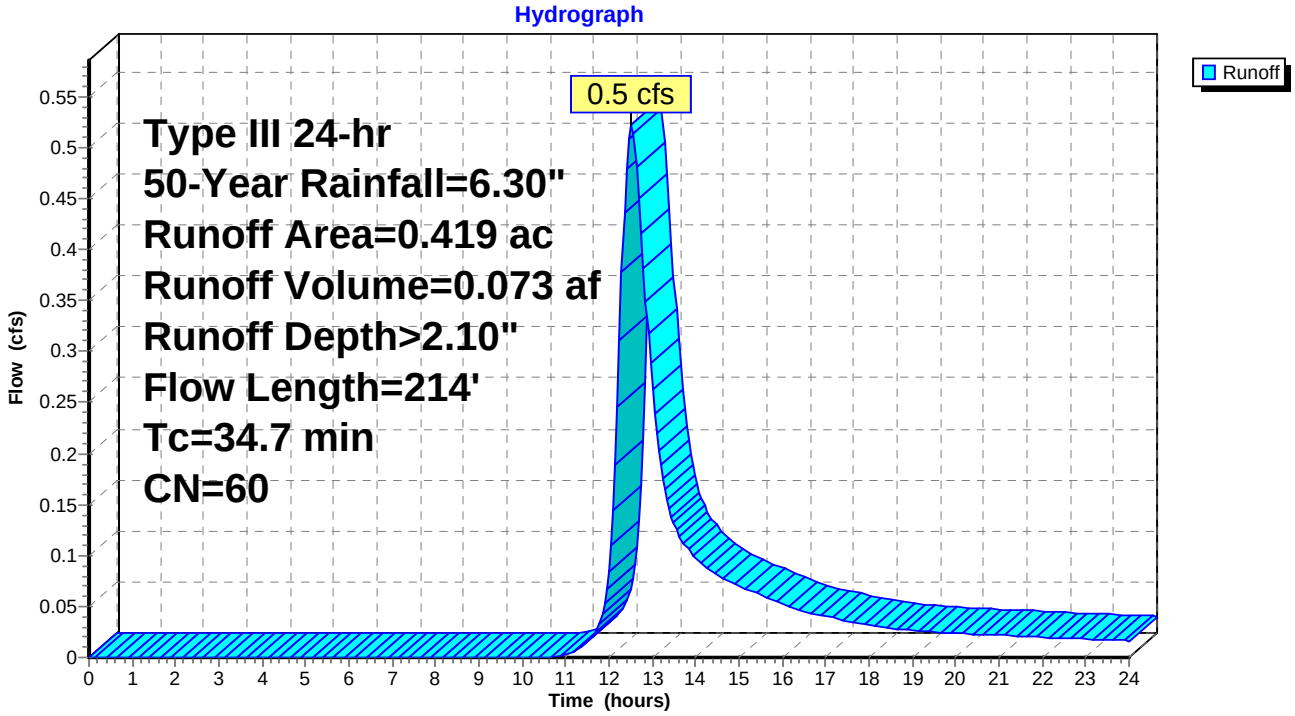
Runoff = 0.5 cfs @ 12.52 hrs, Volume= 0.073 af, Depth> 2.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=6.30"

Area (ac)	CN	Description
0.215	60	Woods, Fair, HSG B
0.204	61	>75% Grass cover, Good, HSG B
0.419	60	Weighted Average
0.419		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	58	0.0034	0.05		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.40"
12.8	42	0.0119	0.05		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.40"
2.8	86	0.0105	0.51		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
0.9	28	0.0050	0.49		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
34.7	214	Total			

Subcatchment 5S: Area 2 - East

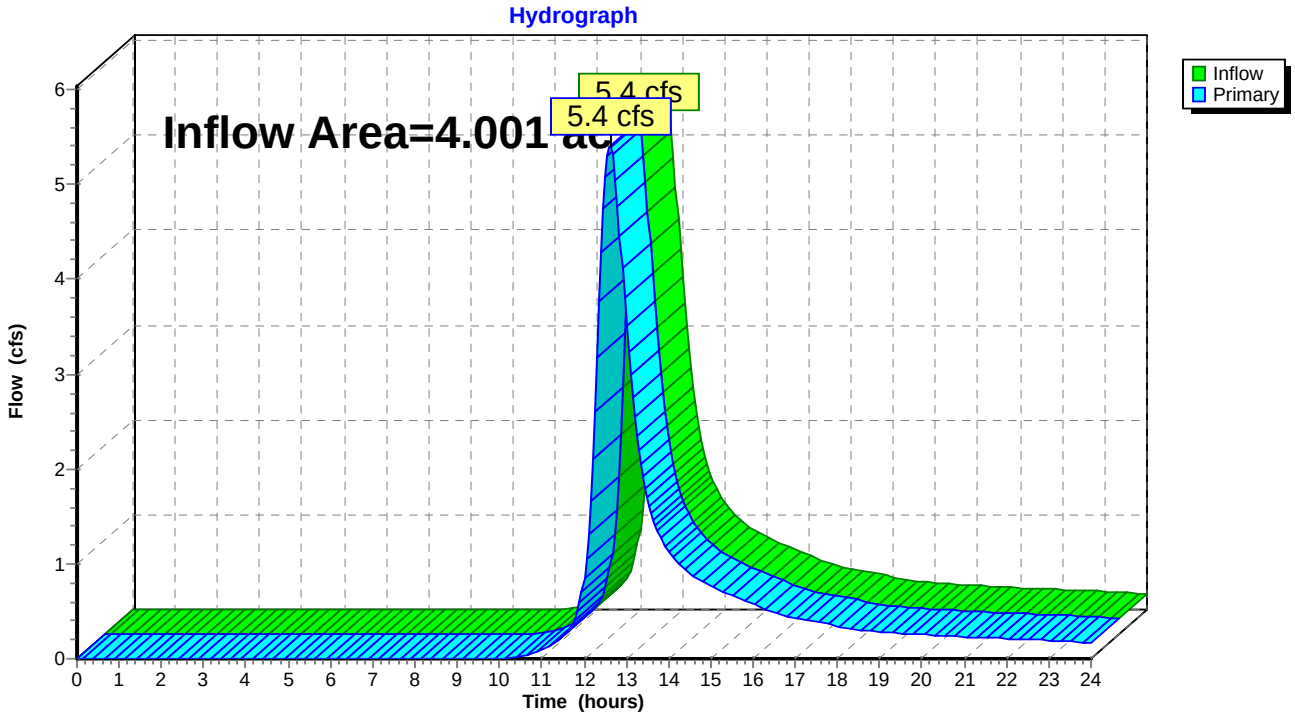


Summary for Link 4L: Wooded Area to East

Inflow Area = 4.001 ac, 0.00% Impervious, Inflow Depth > 2.45" for 50-Year event
Inflow = 5.4 cfs @ 12.62 hrs, Volume= 0.818 af
Primary = 5.4 cfs @ 12.62 hrs, Volume= 0.818 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 4L: Wooded Area to East

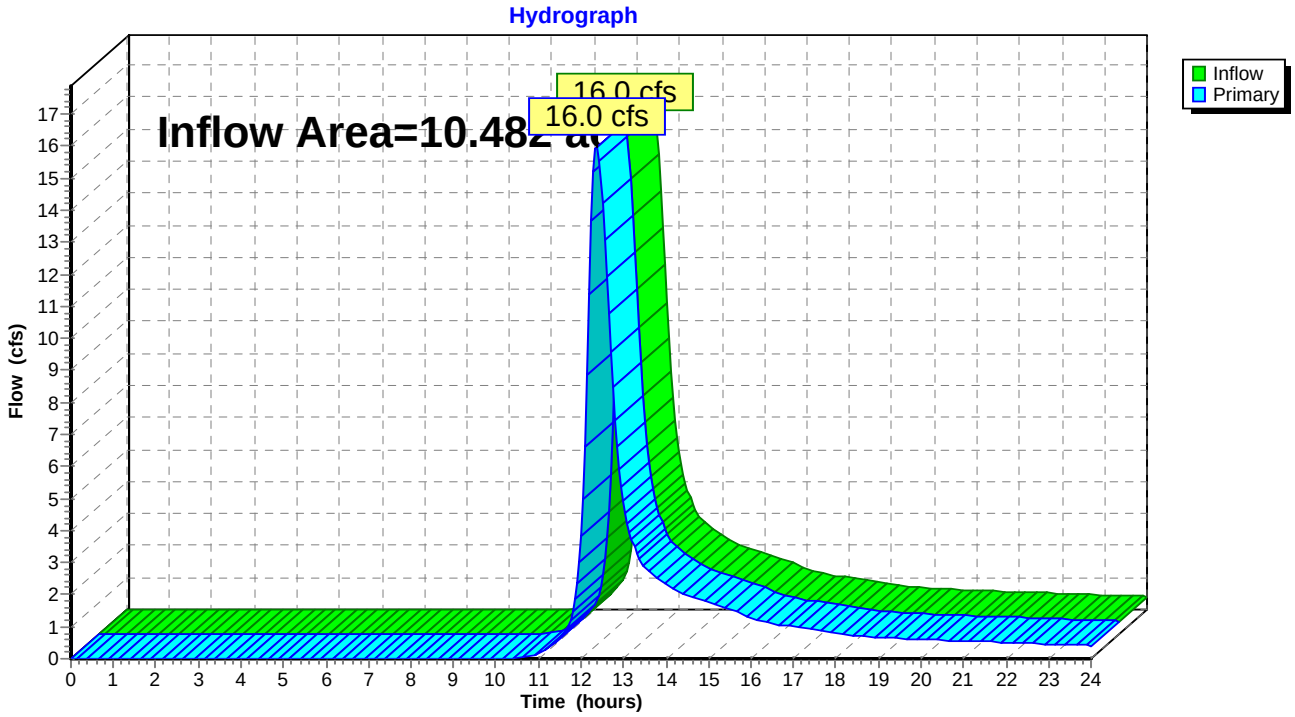


Summary for Link 6L: To Reservoir

Inflow Area = 10.482 ac, 0.00% Impervious, Inflow Depth > 2.20" for 50-Year event
Inflow = 16.0 cfs @ 12.37 hrs, Volume= 1.920 af
Primary = 16.0 cfs @ 12.37 hrs, Volume= 1.920 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 6L: To Reservoir

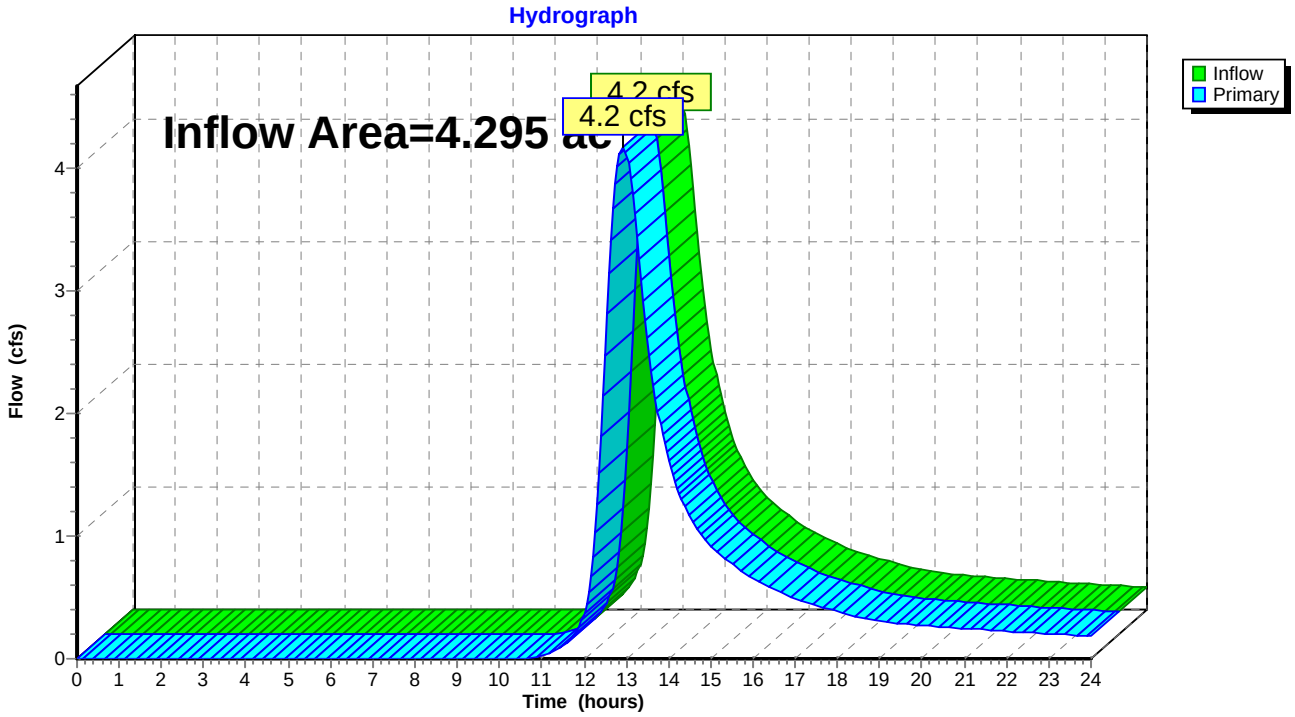


Summary for Link 7L: Off-Site Flow to South

Inflow Area = 4.295 ac, 0.00% Impervious, Inflow Depth > 2.26" for 50-Year event
Inflow = 4.2 cfs @ 12.92 hrs, Volume= 0.808 af
Primary = 4.2 cfs @ 12.92 hrs, Volume= 0.808 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 7L: Off-Site Flow to South

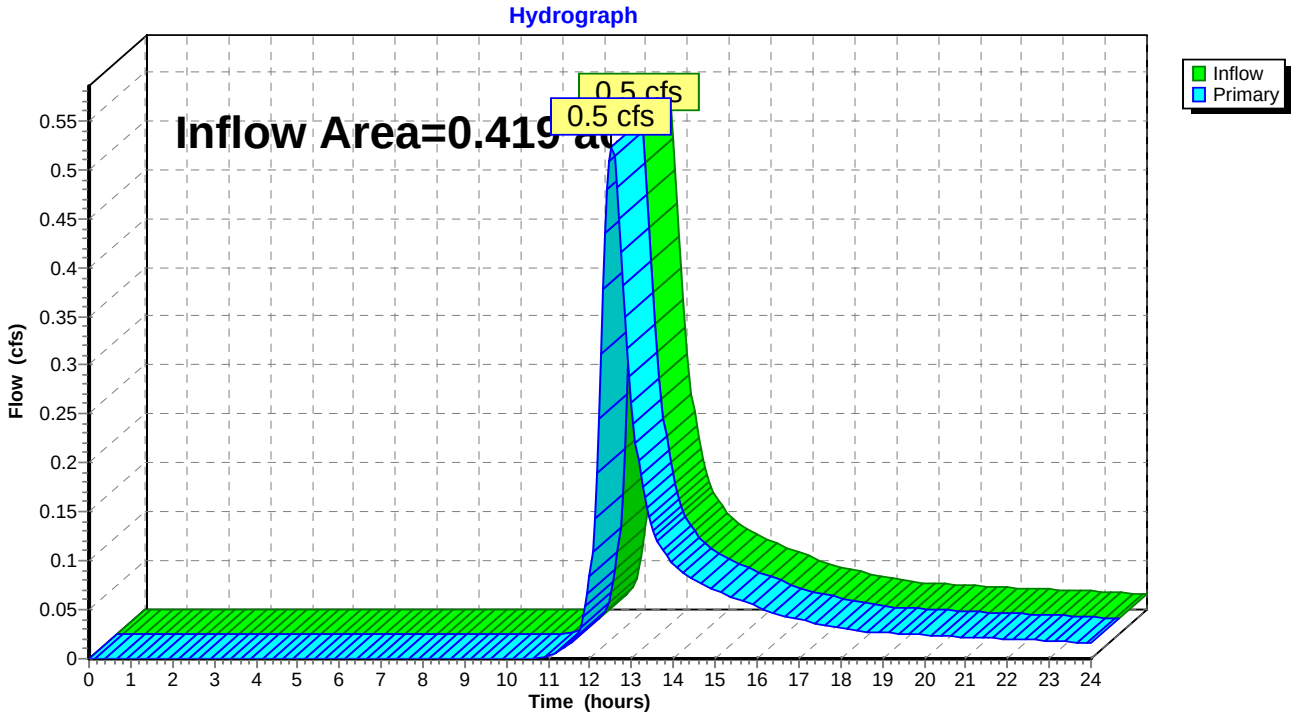


Summary for Link 8L: Off-Site Flow to East

Inflow Area = 0.419 ac, 0.00% Impervious, Inflow Depth > 2.10" for 50-Year event
Inflow = 0.5 cfs @ 12.52 hrs, Volume= 0.073 af
Primary = 0.5 cfs @ 12.52 hrs, Volume= 0.073 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 8L: Off-Site Flow to East



Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Area 1 - North Runoff Area=5.074 ac 0.00% Impervious Runoff Depth>2.66"
Flow Length=596' Tc=25.2 min CN=60 Runoff=9.4 cfs 1.124 af

Subcatchment 2S: Area 1 - West Runoff Area=5.408 ac 0.00% Impervious Runoff Depth>2.86"
Flow Length=437' Tc=24.6 min CN=62 Runoff=11.0 cfs 1.288 af

Subcatchment 3S: Area 1 - East Runoff Area=4.001 ac 0.00% Impervious Runoff Depth>3.05"
Flow Length=831' Tc=42.6 min CN=64 Runoff=6.8 cfs 1.016 af

Subcatchment 4S: Area 2 - West Runoff Area=4.295 ac 0.00% Impervious Runoff Depth>2.83"
Flow Length=662' Tc=64.9 min CN=62 Runoff=5.3 cfs 1.012 af

Subcatchment 5S: Area 2 - East Runoff Area=0.419 ac 0.00% Impervious Runoff Depth>2.65"
Flow Length=214' Tc=34.7 min CN=60 Runoff=0.7 cfs 0.093 af

Link 4L: Wooded Area to East Inflow=6.8 cfs 1.016 af
Primary=6.8 cfs 1.016 af

Link 6L: To Reservoir Inflow=20.4 cfs 2.412 af
Primary=20.4 cfs 2.412 af

Link 7L: Off-Site Flow to South Inflow=5.3 cfs 1.012 af
Primary=5.3 cfs 1.012 af

Link 8L: Off-Site Flow to East Inflow=0.7 cfs 0.093 af
Primary=0.7 cfs 0.093 af

Total Runoff Area = 19.197 ac Runoff Volume = 4.533 af Average Runoff Depth = 2.83"
100.00% Pervious = 19.197 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: Area 1 - North

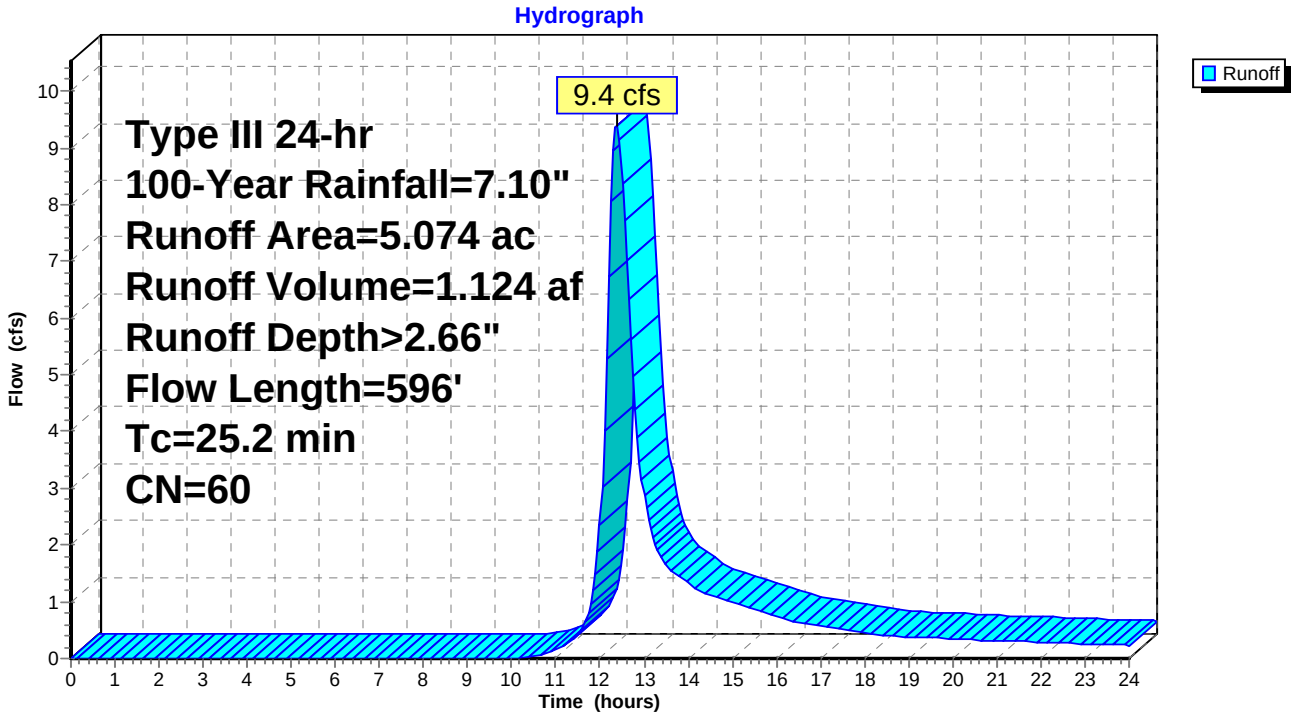
Runoff = 9.4 cfs @ 12.37 hrs, Volume= 1.124 af, Depth> 2.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.10"

Area (ac)	CN	Description
2.589	60	Woods, Fair, HSG B
2.485	61	>75% Grass cover, Good, HSG B
5.074	60	Weighted Average
5.074		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5	100	0.0177	0.11		**Sheet Flow, Grass and Trees** Grass: Dense n= 0.240 P2= 3.40"
1.0	40	0.0085	0.65		**Shallow Concentrated Flow, Grass and Trees** Short Grass Pasture Kv= 7.0 fps
0.3	32	0.0625	1.75		**Shallow Concentrated Flow, Grass and Trees** Short Grass Pasture Kv= 7.0 fps
2.9	143	0.0140	0.83		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
5.2	211	0.0095	0.68		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
1.3	70	0.0323	0.90		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
25.2	596	Total			

Subcatchment 1S: Area 1 - North



Summary for Subcatchment 2S: Area 1 - West

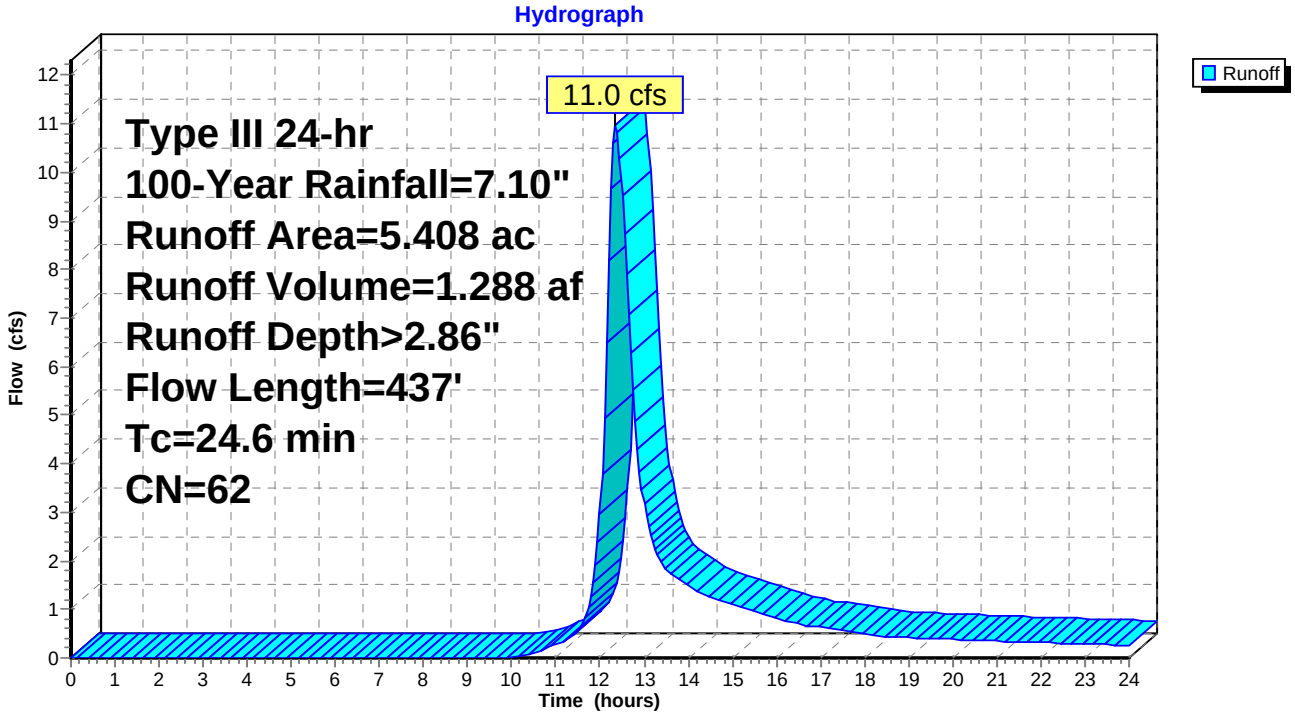
Runoff = 11.0 cfs @ 12.36 hrs, Volume= 1.288 af, Depth> 2.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.10"

Area (ac)	CN	Description
5.144	61	>75% Grass cover, Good, HSG B
0.068	60	Woods, Fair, HSG B
0.196	85	Gravel roads, HSG B
5.408	62	Weighted Average
5.408		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.0	100	0.0120	0.10		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.40"
7.5	312	0.0099	0.70		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.1	25	0.1581	2.78		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
24.6	437	Total			

Subcatchment 2S: Area 1 - West



Summary for Subcatchment 3S: Area 1 - East

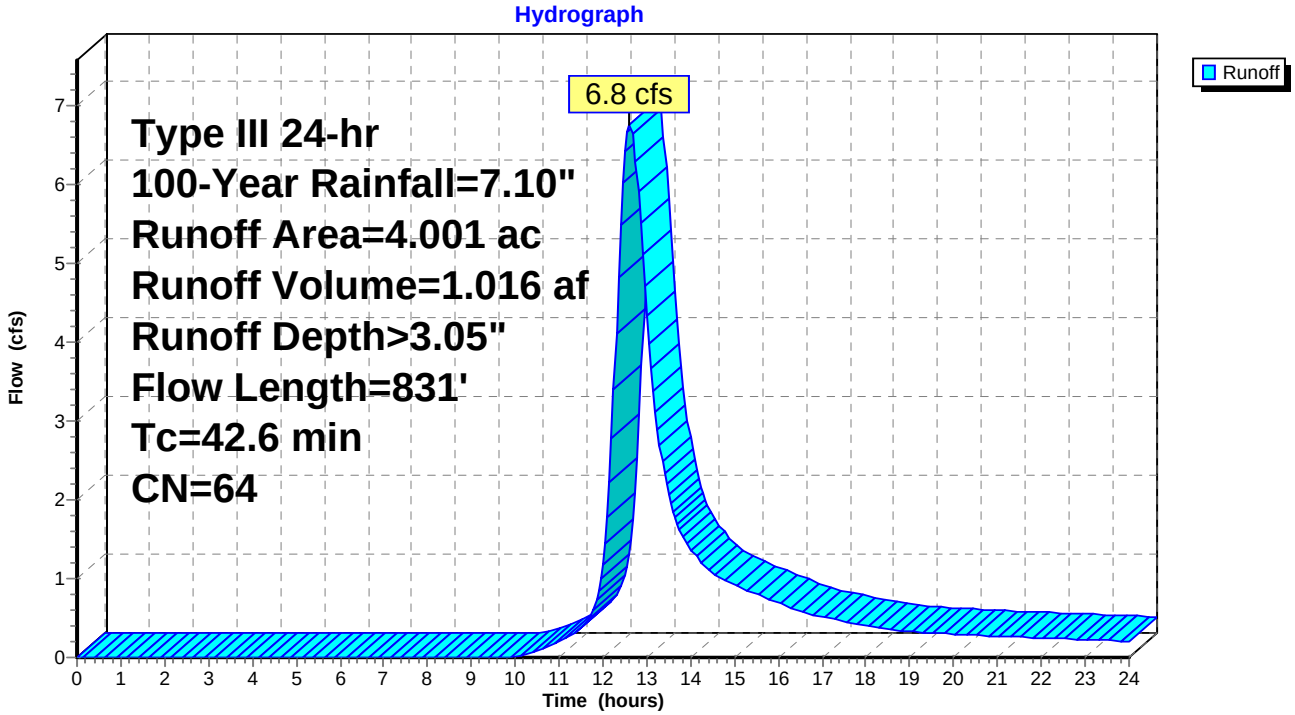
Runoff = 6.8 cfs @ 12.61 hrs, Volume= 1.016 af, Depth> 3.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.10"

Area (ac)	CN	Description
0.450	85	Gravel roads, HSG B
3.551	61	>75% Grass cover, Good, HSG B
4.001	64	Weighted Average
4.001		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	100	0.0090	0.09		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.40"
7.1	174	0.0034	0.41		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
16.3	526	0.0059	0.54		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.1	31	0.0742	4.39		**Shallow Concentrated Flow, Grass/Gravel** Unpaved Kv= 16.1 fps
42.6	831	Total			

Subcatchment 3S: Area 1 - East



Summary for Subcatchment 4S: Area 2 - West

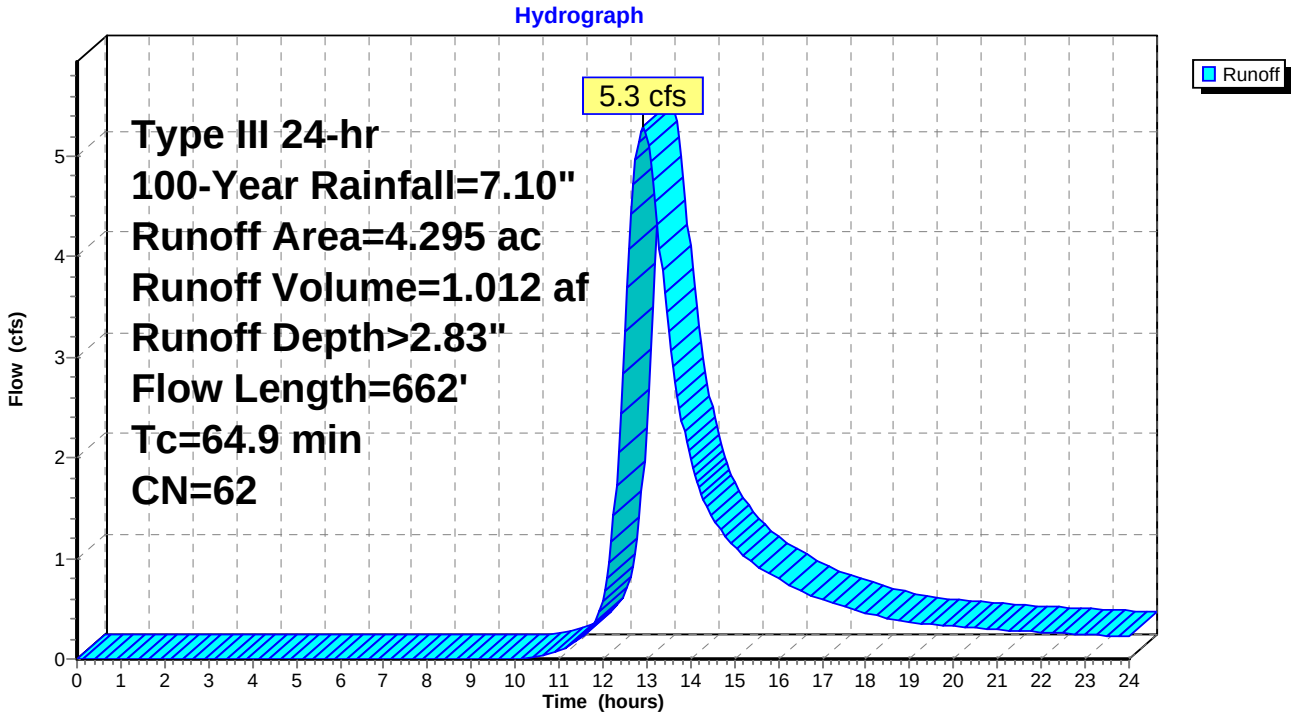
Runoff = 5.3 cfs @ 12.91 hrs, Volume= 1.012 af, Depth> 2.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.10"

Area (ac)	CN	Description
2.163	60	Woods, Fair, HSG B
1.790	61	>75% Grass cover, Good, HSG B
0.342	85	Gravel roads, HSG B
4.295	62	Weighted Average
4.295		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.1	100	0.0080	0.06		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.40"
1.9	86	0.0233	0.76		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
7.5	235	0.0055	0.52		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
25.4	241	0.0010	0.16		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
64.9	662	Total			

Subcatchment 4S: Area 2 - West



Summary for Subcatchment 5S: Area 2 - East

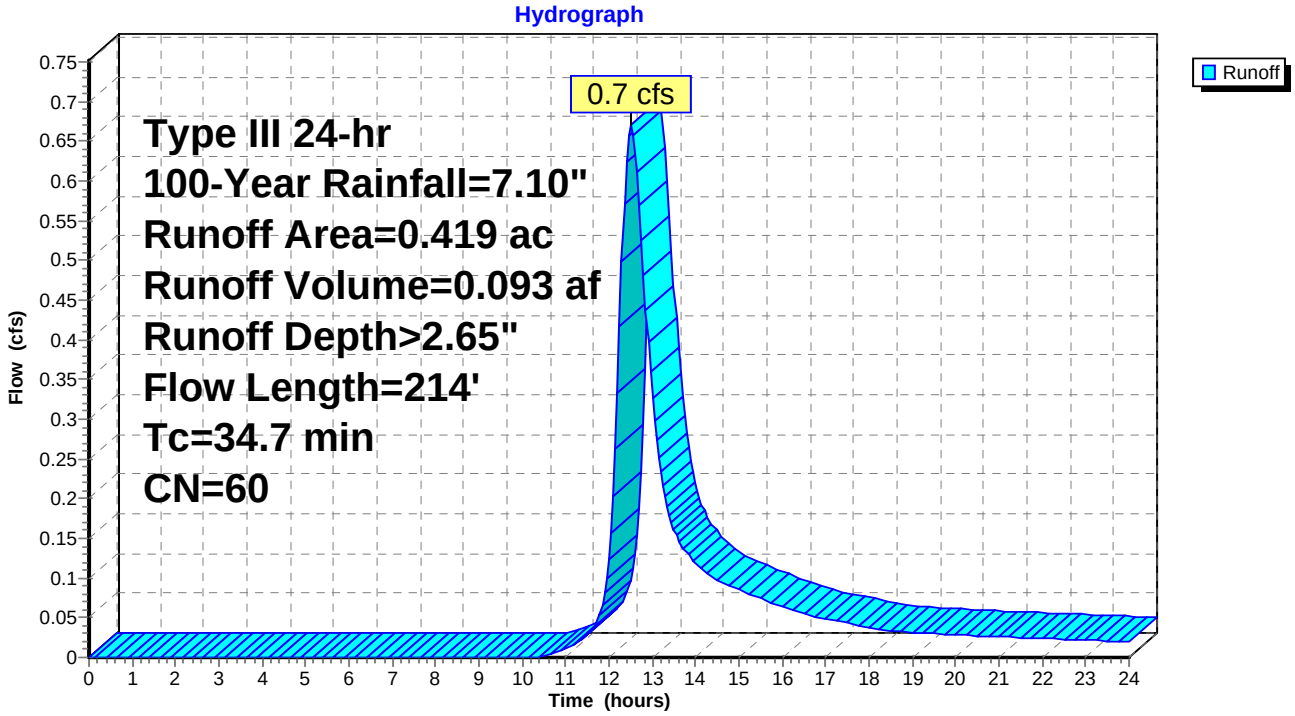
Runoff = 0.7 cfs @ 12.51 hrs, Volume= 0.093 af, Depth> 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.10"

Area (ac)	CN	Description
0.215	60	Woods, Fair, HSG B
0.204	61	>75% Grass cover, Good, HSG B
0.419	60	Weighted Average
0.419		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	58	0.0034	0.05		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.40"
12.8	42	0.0119	0.05		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.40"
2.8	86	0.0105	0.51		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
0.9	28	0.0050	0.49		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
34.7	214	Total			

Subcatchment 5S: Area 2 - East

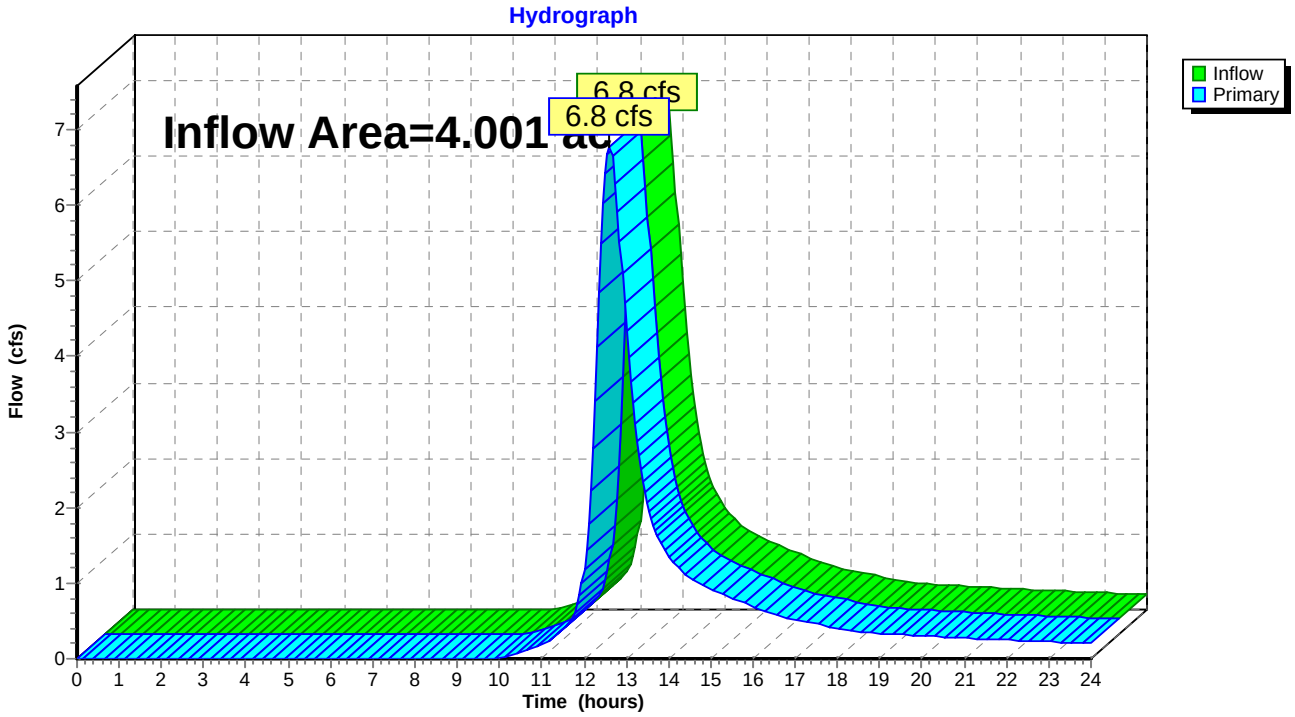


Summary for Link 4L: Wooded Area to East

Inflow Area = 4.001 ac, 0.00% Impervious, Inflow Depth > 3.05" for 100-Year event
Inflow = 6.8 cfs @ 12.61 hrs, Volume= 1.016 af
Primary = 6.8 cfs @ 12.61 hrs, Volume= 1.016 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 4L: Wooded Area to East

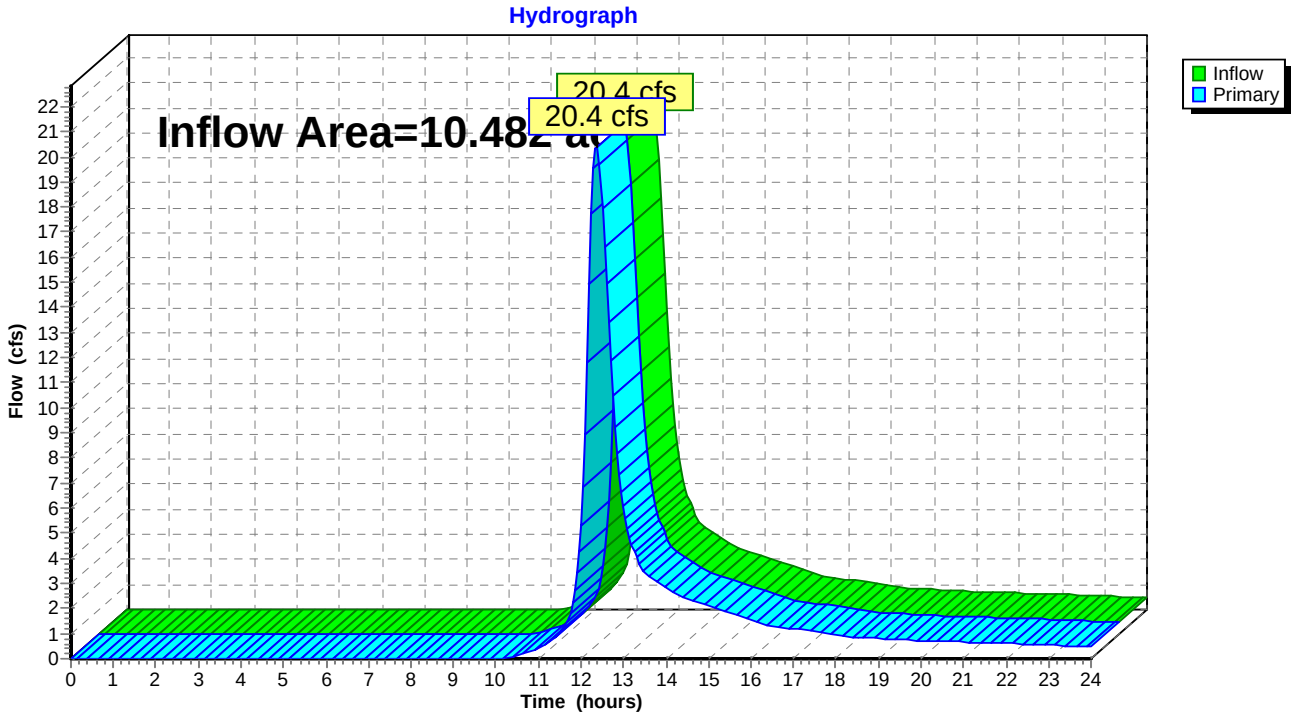


Summary for Link 6L: To Reservoir

Inflow Area = 10.482 ac, 0.00% Impervious, Inflow Depth > 2.76" for 100-Year event
Inflow = 20.4 cfs @ 12.37 hrs, Volume= 2.412 af
Primary = 20.4 cfs @ 12.37 hrs, Volume= 2.412 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 6L: To Reservoir

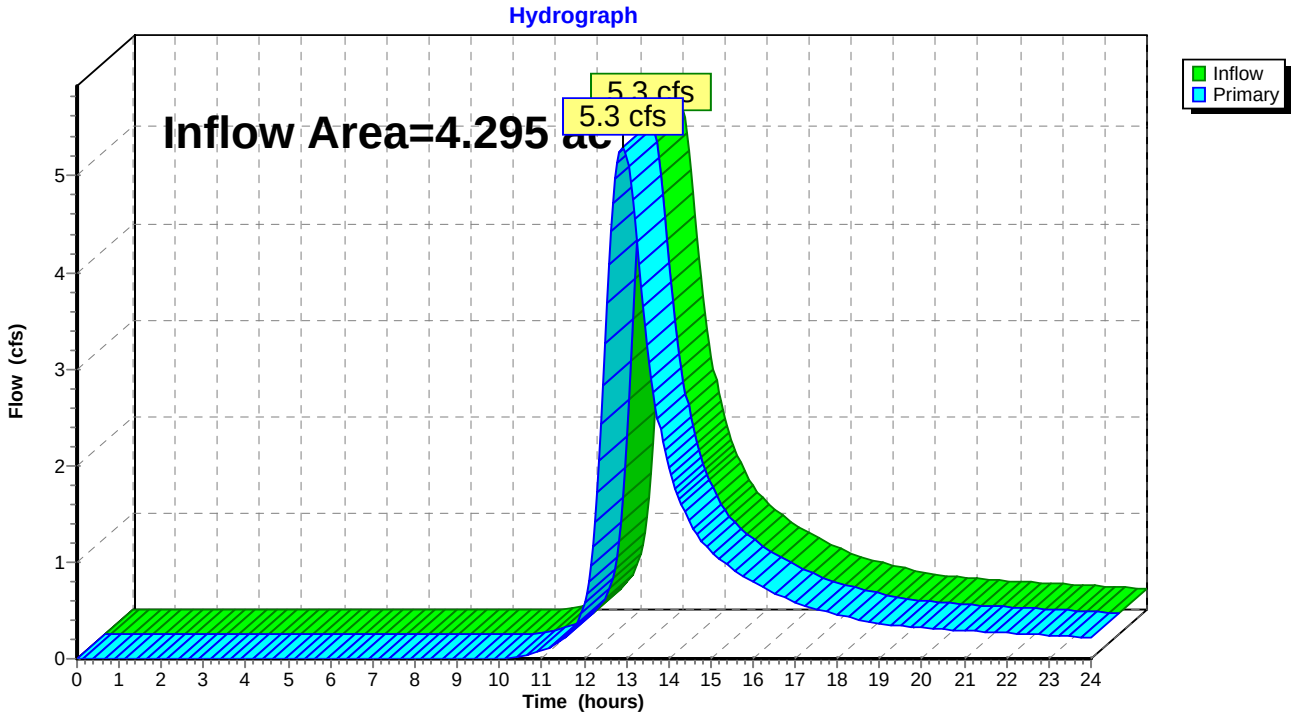


Summary for Link 7L: Off-Site Flow to South

Inflow Area = 4.295 ac, 0.00% Impervious, Inflow Depth > 2.83" for 100-Year event
Inflow = 5.3 cfs @ 12.91 hrs, Volume= 1.012 af
Primary = 5.3 cfs @ 12.91 hrs, Volume= 1.012 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 7L: Off-Site Flow to South

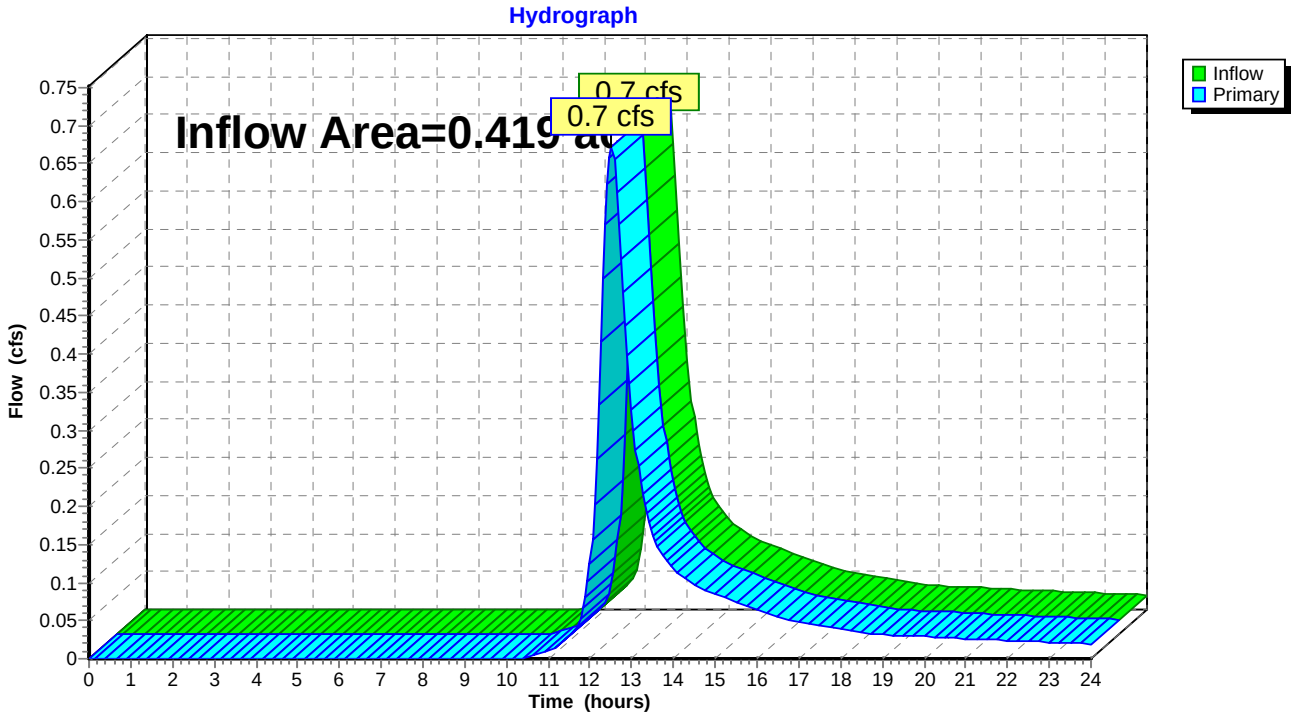


Summary for Link 8L: Off-Site Flow to East

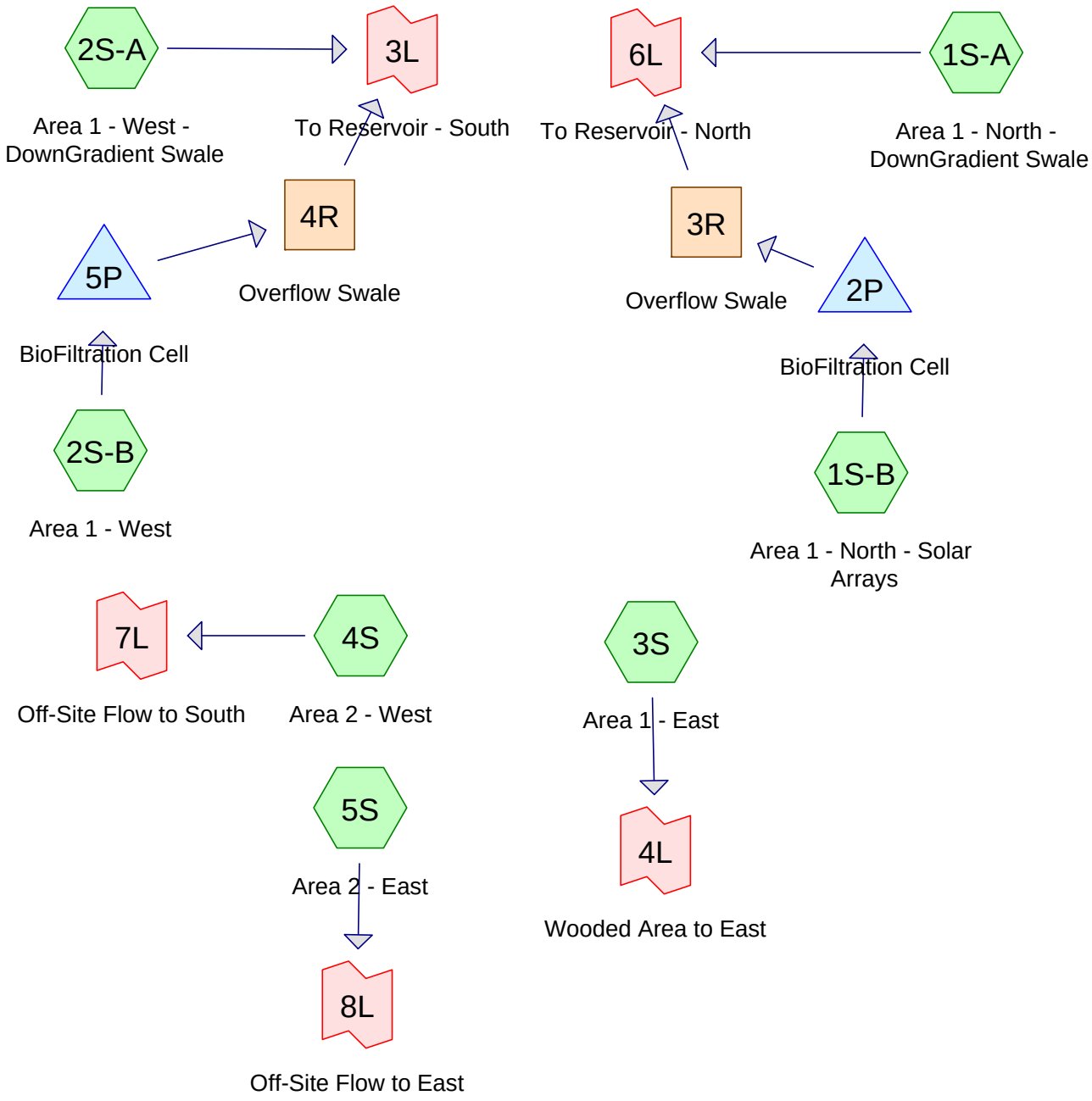
Inflow Area = 0.419 ac, 0.00% Impervious, Inflow Depth > 2.65" for 100-Year event
Inflow = 0.7 cfs @ 12.51 hrs, Volume= 0.093 af
Primary = 0.7 cfs @ 12.51 hrs, Volume= 0.093 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 8L: Off-Site Flow to East



Proposed Conditions Results



Routing Diagram for Groton Reservoir Proposed - WQS
Prepared by Boundaries LLC - DCM, Printed 12/3/2015

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.450	61	>75% Grass cover, Good, HSG B (1S-A, 2S-A)
15.095	61	>75% Grass cover, Solar Array Area, HSG B (1S-B, 2S-B, 3S, 4S, 5S)
0.027	98	Concrete Equipment Pad, HSG B (2S-B, 4S)
0.018	98	Concrete Equipment Pads, HSG B (3S)
0.988	85	Gravel roads, HSG B (2S-B, 3S, 4S)
0.000	98	Solar Array Racking Posts, HSG B (3S, 4S, 5S)
0.768	60	Woods, Fair, HSG B (1S-B, 4S)
0.850	55	Woods, Good, HSG B (1S-A)
19.197	**62**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
19.197	HSG B	1S-A, 1S-B, 2S-A, 2S-B, 3S, 4S, 5S
0.000	HSG C	
0.000	HSG D	
0.000	Other	
19.197		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchme Numbers
0.000	1.450	0.000	0.000	0.000	1.450	>75% Grass cover, Good	
0.000	15.095	0.000	0.000	0.000	15.095	>75% Grass cover, Solar Array Area	
0.000	0.027	0.000	0.000	0.000	0.027	Concrete Equipment Pad	
0.000	0.018	0.000	0.000	0.000	0.018	Concrete Equipment Pads	
0.000	0.988	0.000	0.000	0.000	0.988	Gravel roads	
0.000	0.000	0.000	0.000	0.000	0.000	Solar Array Racking Posts	
0.000	0.768	0.000	0.000	0.000	0.768	Woods, Fair	
0.000	0.850	0.000	0.000	0.000	0.850	Woods, Good	
0.000	**19.197**	**0.000**	**0.000**	**0.000**	**19.197**	**TOTAL AREA**	

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S-A: Area 1 - North - Runoff Area=1.300 ac 0.00% Impervious Runoff Depth>0.38"
Flow Length=30' Slope=0.0770 '/' Tc=6.0 min CN=57 Runoff=0.3 cfs 0.041 af

Subcatchment 1S-B: Area 1 - North - Solar Runoff Area=164,396 sf 0.00% Impervious Runoff Depth>0.52"
Flow Length=562' Tc=24.8 min CN=61 Runoff=1.0 cfs 0.165 af

Subcatchment 2S-A: Area 1 - West - Runoff Area=1.000 ac 0.00% Impervious Runoff Depth>0.53"
Flow Length=30' Slope=0.0350 '/' Tc=6.0 min CN=61 Runoff=0.4 cfs 0.044 af

Subcatchment 2S-B: Area 1 - West Runoff Area=192,013 sf 0.41% Impervious Runoff Depth>0.56"
Flow Length=412' Tc=24.8 min CN=62 Runoff=1.4 cfs 0.207 af

Subcatchment 3S: Area 1 - East Runoff Area=174,284 sf 0.46% Impervious Runoff Depth>0.65"
Flow Length=831' Tc=42.6 min CN=64 Runoff=1.2 cfs 0.215 af

Subcatchment 4S: Area 2 - West Runoff Area=187,084 sf 0.22% Impervious Runoff Depth>0.59"
Flow Length=664' Tc=75.0 min CN=63 Runoff=0.8 cfs 0.213 af

Subcatchment 5S: Area 2 - East Runoff Area=18,251 sf 0.01% Impervious Runoff Depth>0.52"
Flow Length=214' Tc=30.4 min CN=61 Runoff=0.1 cfs 0.018 af

Reach 3R: Overflow Swale Avg. Flow Depth=0.08' Max Vel=1.26 fps Inflow=1.0 cfs 0.163 af
n=0.035 L=30.0' S=0.0267 '/' Capacity=23.0 cfs Outflow=1.0 cfs 0.163 af

Reach 4R: Overflow Swale Avg. Flow Depth=0.06' Max Vel=2.08 fps Inflow=1.4 cfs 0.206 af
n=0.035 L=30.0' S=0.0973 '/' Capacity=43.9 cfs Outflow=1.4 cfs 0.206 af

Pond 2P: BioFiltration Cell Peak Elev=22.94' Storage=0.002 af Inflow=1.0 cfs 0.165 af
Outflow=1.0 cfs 0.163 af

Pond 5P: BioFiltration Cell Peak Elev=25.16' Storage=0.002 af Inflow=1.4 cfs 0.207 af
Outflow=1.4 cfs 0.206 af

Link 3L: To Reservoir - South Inflow=1.6 cfs 0.250 af
Primary=1.6 cfs 0.250 af

Link 4L: Wooded Area to East Inflow=1.2 cfs 0.215 af
Primary=1.2 cfs 0.215 af

Link 6L: To Reservoir - North Inflow=1.2 cfs 0.204 af
Primary=1.2 cfs 0.204 af

Link 7L: Off-Site Flow to South Inflow=0.8 cfs 0.213 af
Primary=0.8 cfs 0.213 af

Link 8L: Off-Site Flow to East Inflow=0.1 cfs 0.018 af
Primary=0.1 cfs 0.018 af

Total Runoff Area = 19.197 ac Runoff Volume = 0.903 af Average Runoff Depth = 0.56"
99.76% Pervious = 19.151 ac 0.24% Impervious = 0.046 ac

Summary for Subcatchment 1S-A: Area 1 - North - DownGradient Swale

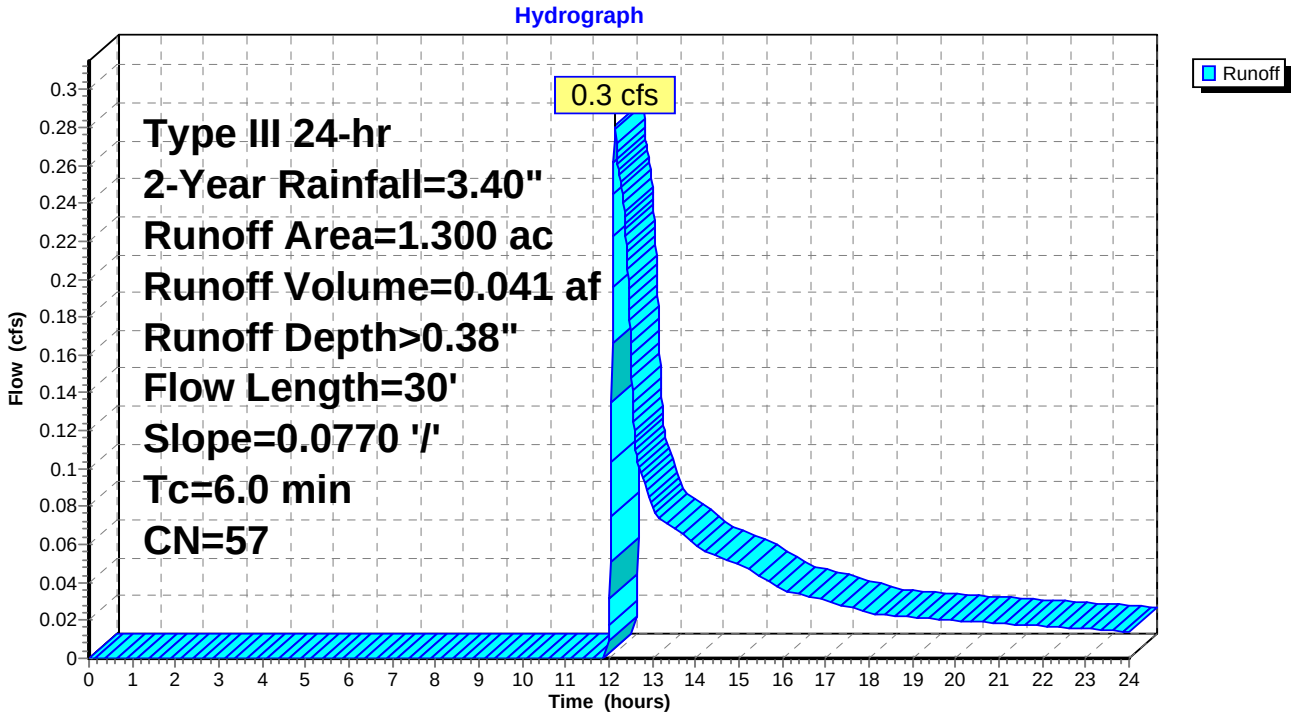
Runoff = 0.3 cfs @ 12.14 hrs, Volume= 0.041 af, Depth> 0.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.40"

Area (ac)	CN	Description
0.850	55	Woods, Good, HSG B
0.450	61	>75% Grass cover, Good, HSG B
1.300	57	Weighted Average
1.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	30	0.0770	0.11		**Sheet Flow, Wooded Slope** Woods: Light underbrush n= 0.400 P2= 3.40"
4.6	30	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 1S-A: Area 1 - North - DownGradient Swale



Summary for Subcatchment 1S-B: Area 1 - North - Solar Arrays

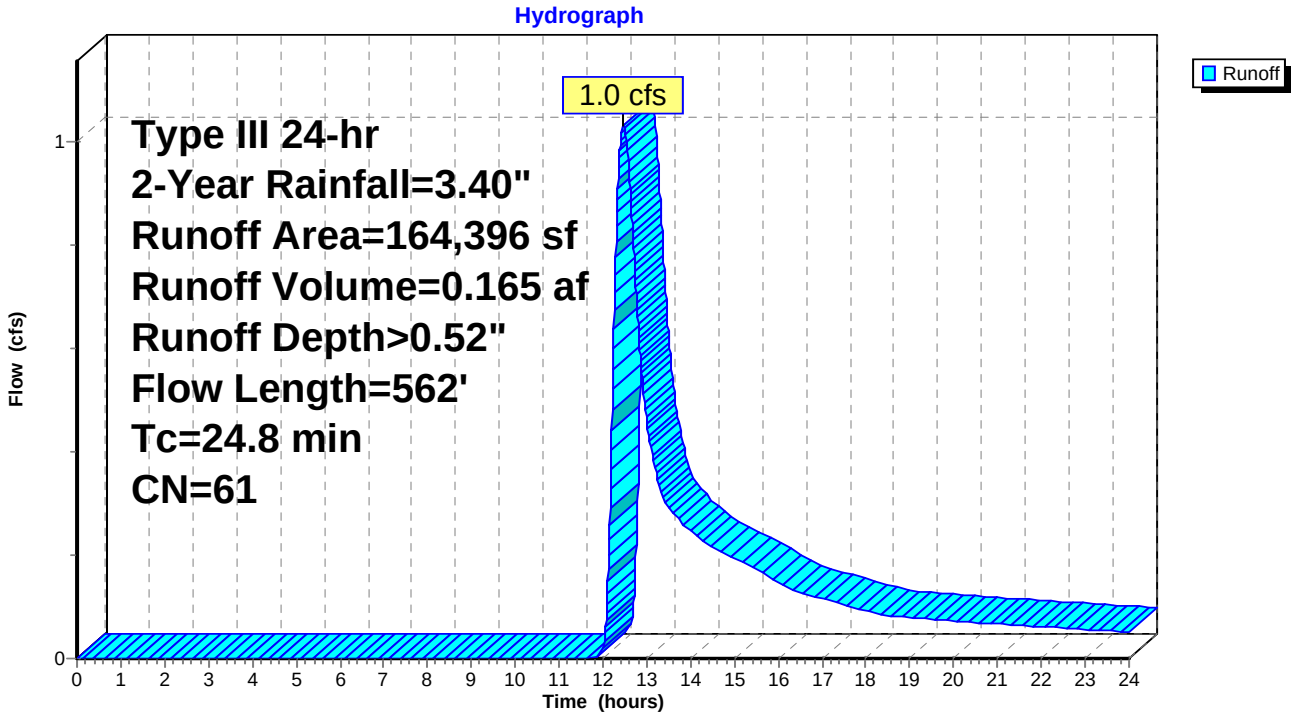
Runoff = 1.0 cfs @ 12.46 hrs, Volume= 0.165 af, Depth> 0.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.40"

	Area (sf)	CN	Description
	23,392	60	Woods, Fair, HSG B
*	141,004	61	>75% Grass cover, Solar Array Area, HSG B
*	0	98	Solar Array Posts, HSG B
	164,396	61	Weighted Average
	164,396		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5	100	0.0177	0.11		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
1.0	40	0.0085	0.65		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
0.3	32	0.0625	1.75		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
2.9	143	0.0140	0.83		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
5.2	211	0.0095	0.68		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
0.4	31	0.0323	1.26		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
0.5	5	0.2000	0.17		**Sheet Flow, To swale (Flow disrupted by stone level spreader)** Grass: Dense n= 0.240 P2= 3.40"
24.8	562	Total			

Subcatchment 1S-B: Area 1 - North - Solar Arrays



Summary for Subcatchment 2S-A: Area 1 - West - DownGradient Swale

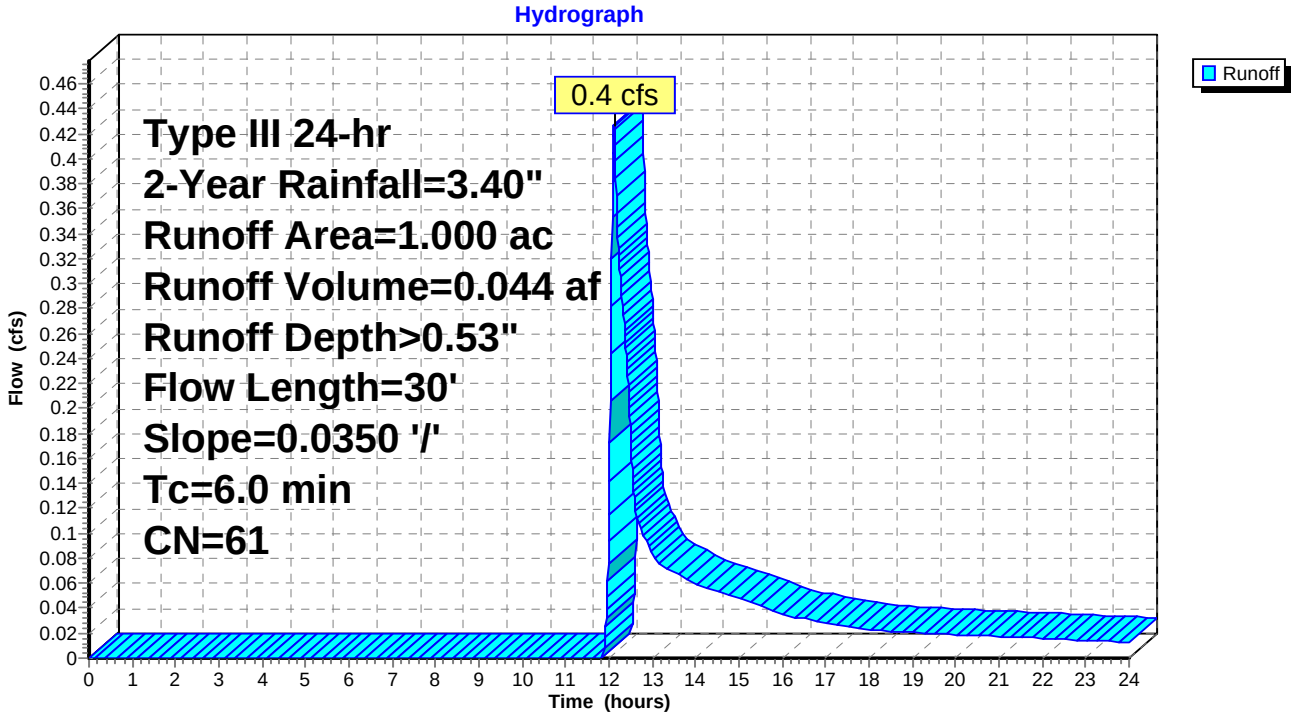
Runoff = 0.4 cfs @ 12.12 hrs, Volume= 0.044 af, Depth> 0.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.40"

Area (ac)	CN	Description
1.000	61	>75% Grass cover, Good, HSG B
1.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	30	0.0350	0.12		**Sheet Flow, Grass Slope** Grass: Dense n= 0.240 P2= 3.40"
4.2	30	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 2S-A: Area 1 - West - DownGradient Swale



Summary for Subcatchment 2S-B: Area 1 - West

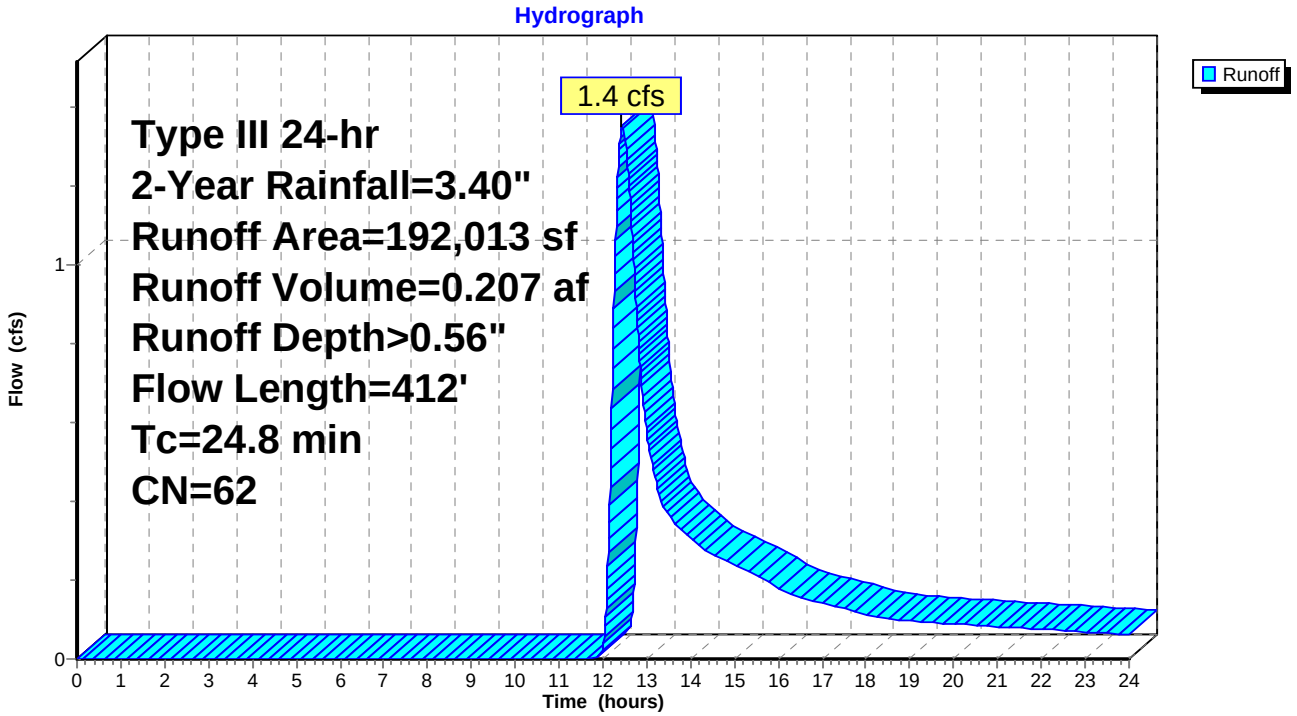
Runoff = 1.4 cfs @ 12.43 hrs, Volume= 0.207 af, Depth> 0.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.40"

	Area (sf)	CN	Description
*	182,691	61	>75% Grass cover, Solar Array Area, HSG B
	8,538	85	Gravel roads, HSG B
*	0	98	Solar Array Racking Posts, HSG B
*	784	98	Concrete Equipment Pad, HSG B
	192,013	62	Weighted Average
	191,229		99.59% Pervious Area
	784		0.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.0	100	0.0120	0.10		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
7.3	307	0.0099	0.70		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
0.5	5	0.2000	0.17		**Sheet Flow, Swale Slope (flow disrupted by stone level spreade** Grass: Dense n= 0.240 P2= 3.40"
24.8	412	Total			

Subcatchment 2S-B: Area 1 - West



Summary for Subcatchment 3S: Area 1 - East

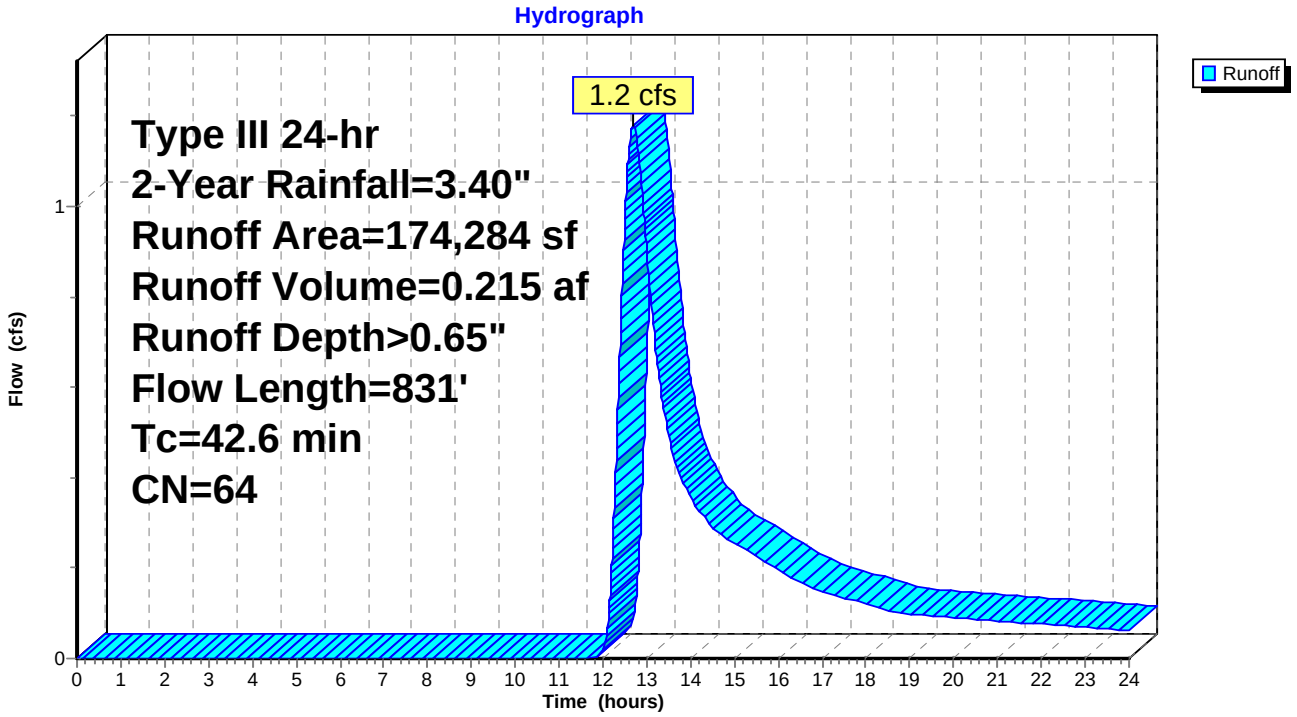
Runoff = 1.2 cfs @ 12.69 hrs, Volume= 0.215 af, Depth> 0.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.40"

	Area (sf)	CN	Description
	19,602	85	Gravel roads, HSG B
*	153,878	61	>75% Grass cover, Solar Array Area, HSG B
*	4	98	Solar Array Racking Posts, HSG B
*	800	98	Concrete Equipment Pads, HSG B
	174,284	64	Weighted Average
	173,480		99.54% Pervious Area
	804		0.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	100	0.0090	0.09		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
7.1	174	0.0034	0.41		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
16.3	526	0.0059	0.54		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.1	31	0.0742	4.39		**Shallow Concentrated Flow, Grass/Gravel** Unpaved Kv= 16.1 fps
42.6	831	Total			

Subcatchment 3S: Area 1 - East



Summary for Subcatchment 4S: Area 2 - West

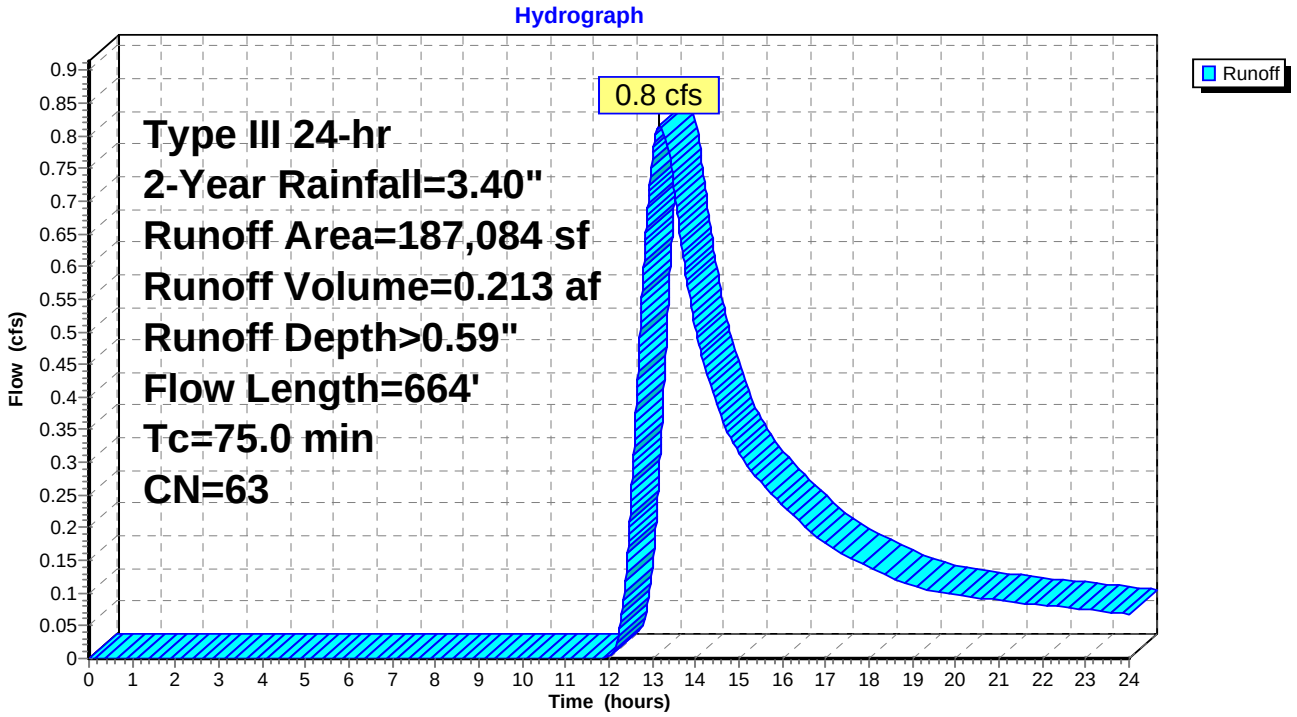
Runoff = 0.8 cfs @ 13.17 hrs, Volume= 0.213 af, Depth> 0.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.40"

	Area (sf)	CN	Description
	10,060	60	Woods, Fair, HSG B
*	161,719	61	>75% Grass cover, Solar Array Area, HSG B
	14,898	85	Gravel roads, HSG B
*	7	98	Solar Array Racking Posts, HSG B
*	400	98	Concrete Equipment Pad, HSG B
	187,084	63	Weighted Average
	186,677		99.78% Pervious Area
	407		0.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0080	0.08		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
1.3	86	0.0233	1.07		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
7.5	235	0.0055	0.52		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
13.3	177	0.0010	0.22		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
32.9	66	0.0010	0.03		**Sheet Flow, Grass (Flow disrupted by stone check dam)** Grass: Dense n= 0.240 P2= 3.40"
75.0	664	Total			

Subcatchment 4S: Area 2 - West



Summary for Subcatchment 5S: Area 2 - East

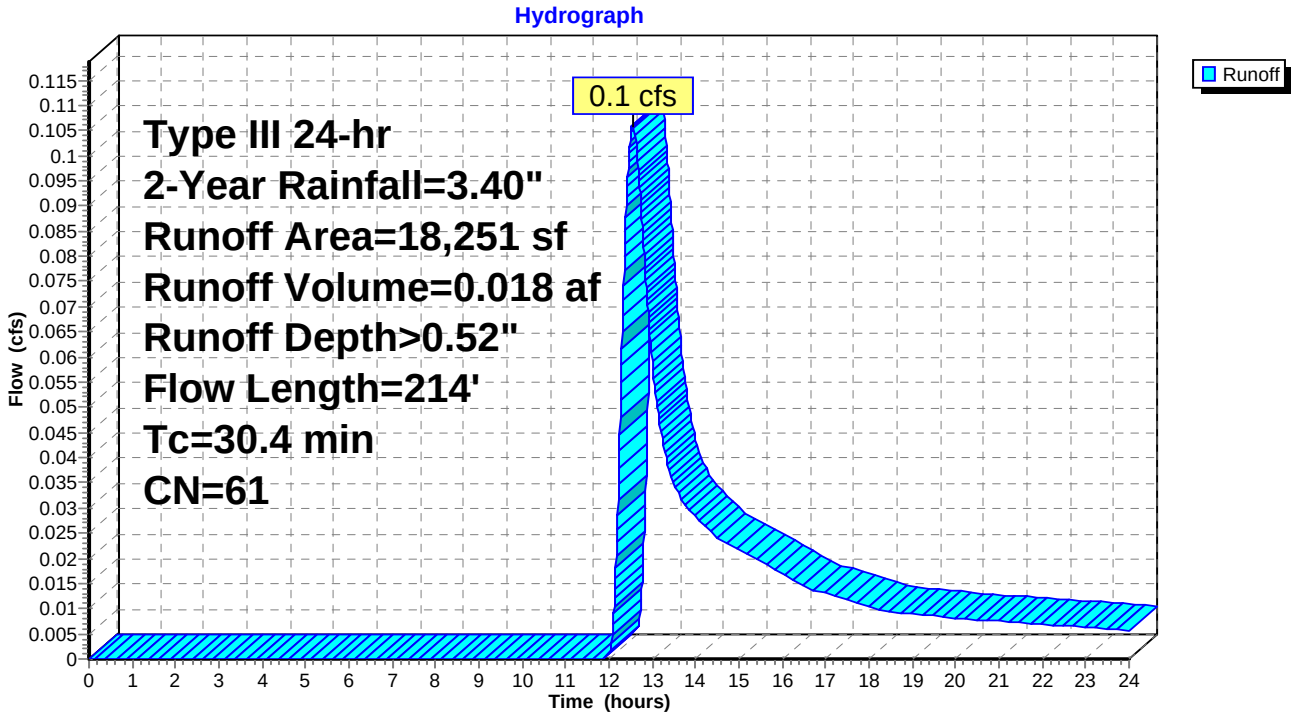
Runoff = 0.1 cfs @ 12.54 hrs, Volume= 0.018 af, Depth> 0.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.40"

	Area (sf)	CN	Description
*	18,250	61	>75% Grass cover, Solar Array Area, HSG B
*	1	98	Solar Array Racking Posts, HSG B
	18,251	61	Weighted Average
	18,250		99.99% Pervious Area
	1		0.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	58	0.0034	0.05		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
8.5	42	0.0119	0.08		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
2.8	86	0.0105	0.51		**Shallow Concentrated Flow, Grass - Solar Array Area** Woodland Kv= 5.0 fps
0.9	28	0.0050	0.49		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
30.4	214	Total			

Subcatchment 5S: Area 2 - East



Summary for Reach 3R: Overflow Swale

Inflow Area = 3.774 ac, 0.00% Impervious, Inflow Depth > 0.52" for 2-Year event
Inflow = 1.0 cfs @ 12.46 hrs, Volume= 0.163 af
Outflow = 1.0 cfs @ 12.47 hrs, Volume= 0.163 af, Atten= 0%, Lag= 0.3 min

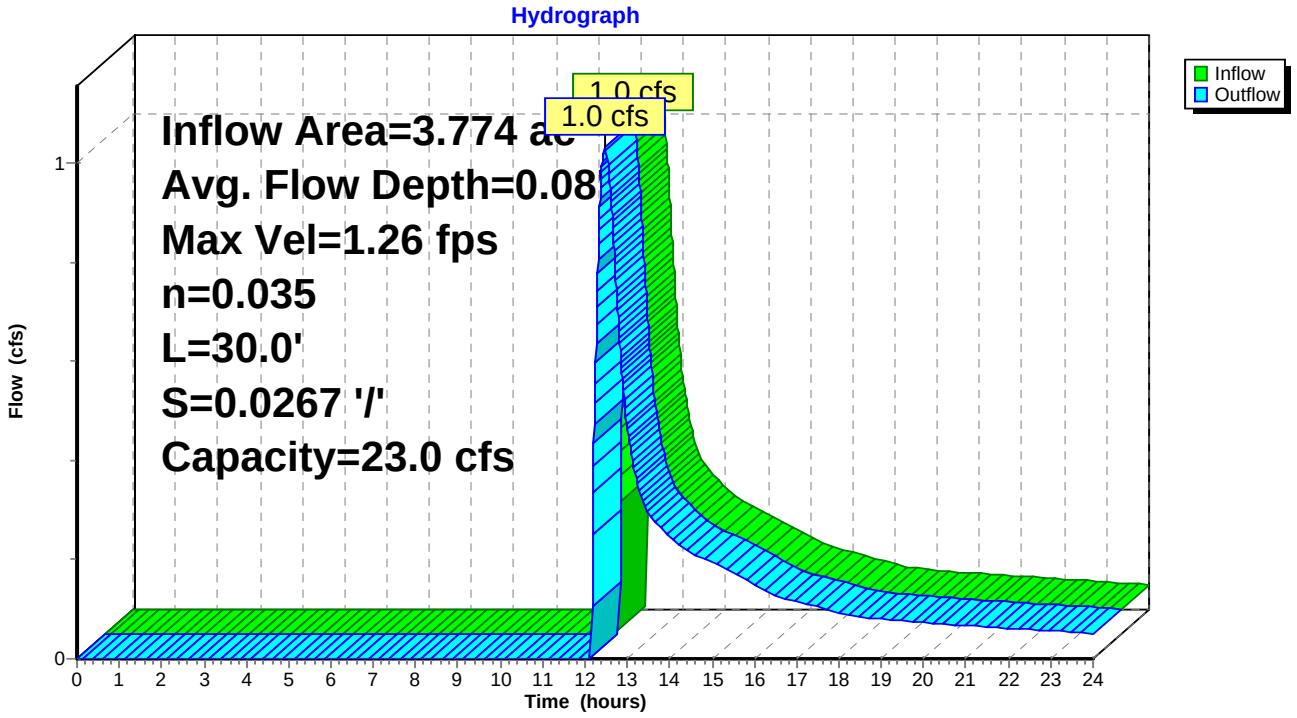
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 1.26 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 0.57 fps, Avg. Travel Time= 0.9 min

Peak Storage= 24 cf @ 12.47 hrs
Average Depth at Peak Storage= 0.08'
Bank-Full Depth= 0.50' Flow Area= 5.8 sf, Capacity= 23.0 cfs

10.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 3.0 '/' Top Width= 13.00'
Length= 30.0' Slope= 0.0267 '/'
Inlet Invert= 22.80', Outlet Invert= 22.00'

‡

Reach 3R: Overflow Swale



Summary for Reach 4R: Overflow Swale

Inflow Area = 4.408 ac, 0.41% Impervious, Inflow Depth > 0.56" for 2-Year event
Inflow = 1.4 cfs @ 12.44 hrs, Volume= 0.206 af
Outflow = 1.4 cfs @ 12.45 hrs, Volume= 0.206 af, Atten= 0%, Lag= 0.1 min

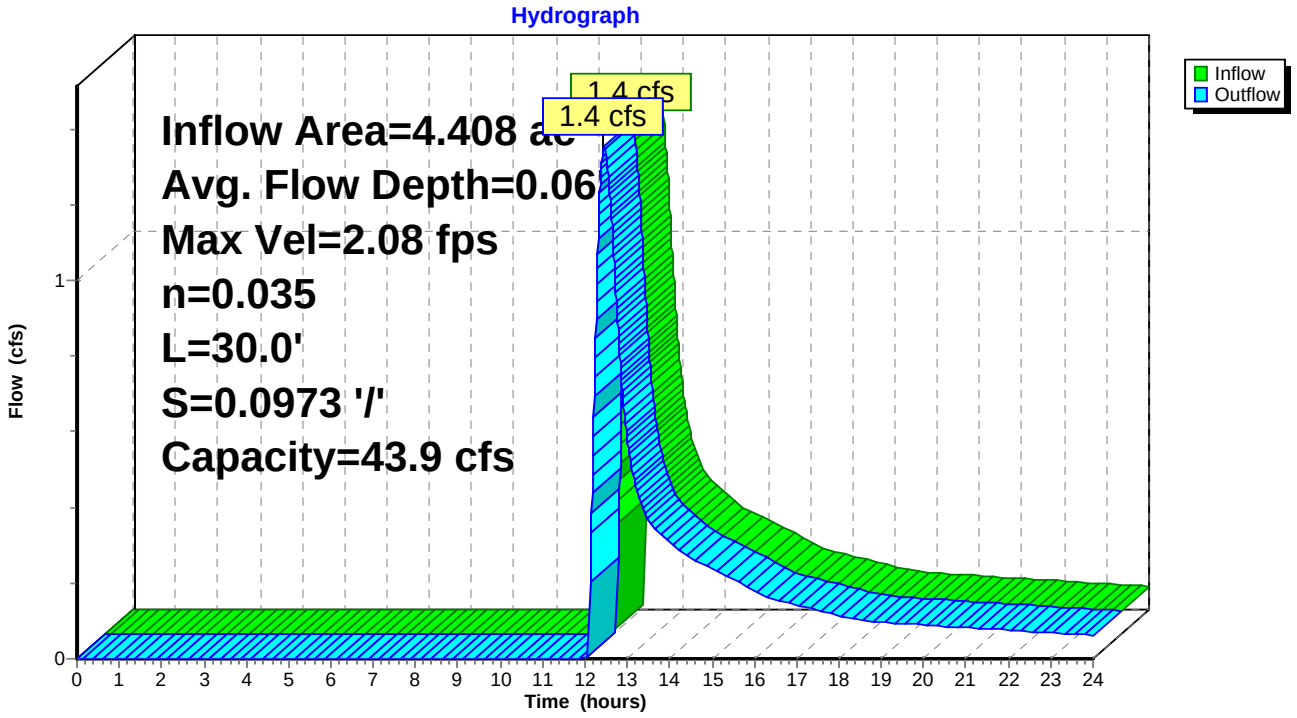
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.08 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 0.91 fps, Avg. Travel Time= 0.5 min

Peak Storage= 19 cf @ 12.45 hrs
Average Depth at Peak Storage= 0.06'
Bank-Full Depth= 0.50' Flow Area= 5.8 sf, Capacity= 43.9 cfs

10.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 3.0 '/' Top Width= 13.00'
Length= 30.0' Slope= 0.0973 '/'
Inlet Invert= 25.00', Outlet Invert= 22.08'

‡

Reach 4R: Overflow Swale



Summary for Pond 2P: BioFiltration Cell

Inflow Area = 3.774 ac, 0.00% Impervious, Inflow Depth > 0.52" for 2-Year event
Inflow = 1.0 cfs @ 12.46 hrs, Volume= 0.165 af
Outflow = 1.0 cfs @ 12.46 hrs, Volume= 0.163 af, Atten= 0%, Lag= 0.3 min
Primary = 1.0 cfs @ 12.46 hrs, Volume= 0.163 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 22.94' @ 12.46 hrs Surf.Area= 0.004 ac Storage= 0.002 af

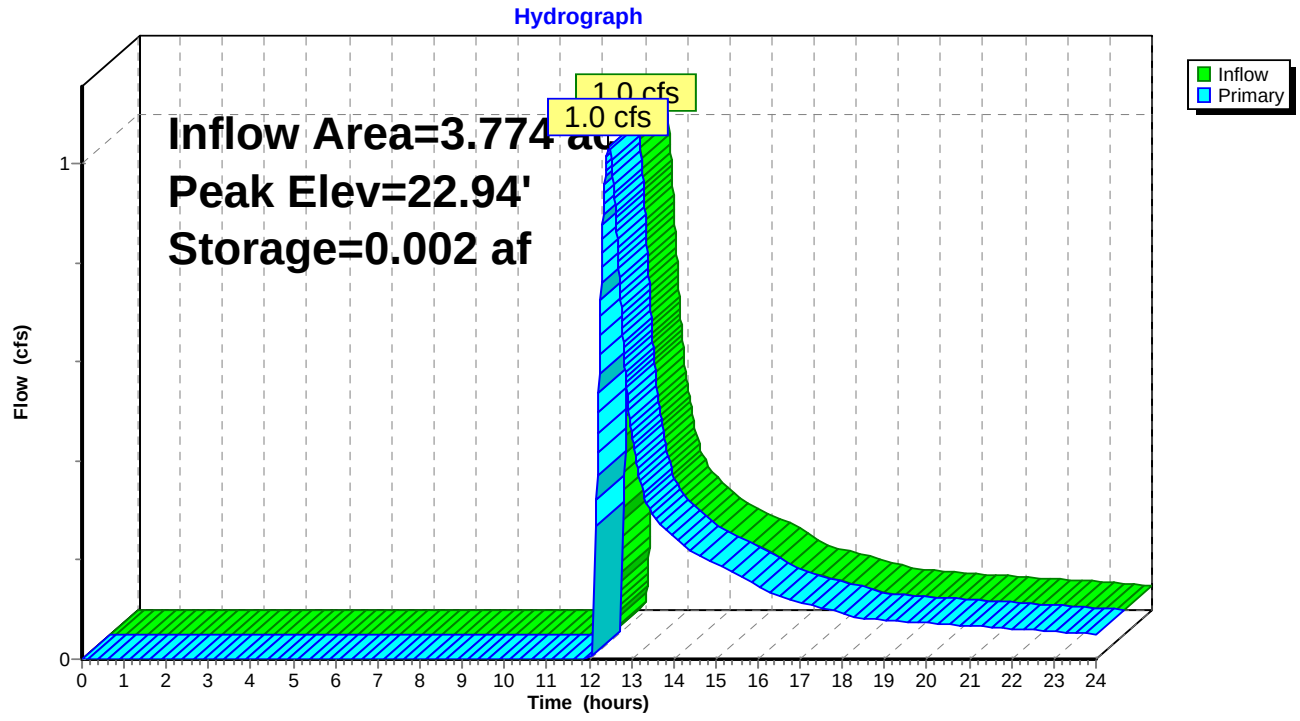
Plug-Flow detention time= 6.5 min calculated for 0.163 af (99% of inflow)
Center-of-Mass det. time= 2.0 min (921.8 - 919.8)

Volume	Invert	Avail.Storage	Storage Description
#1	22.30'	0.004 af	**4.00'W x 20.00'L x 1.00'H Filtration Cell Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	22.80'	**10.0' long x 5.0' breadth Vegetated Swale** 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 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=1.0 cfs @ 12.46 hrs HW=22.94' TW=22.88' (Dynamic Tailwater)
└─**1=Vegetated Swale** (Weir Controls 1.0 cfs @ 0.72 fps)

Pond 2P: BioFiltration Cell



Summary for Pond 5P: BioFiltration Cell

Inflow Area = 4.408 ac, 0.41% Impervious, Inflow Depth > 0.56" for 2-Year event
Inflow = 1.4 cfs @ 12.43 hrs, Volume= 0.207 af
Outflow = 1.4 cfs @ 12.44 hrs, Volume= 0.206 af, Atten= 0%, Lag= 0.8 min
Primary = 1.4 cfs @ 12.44 hrs, Volume= 0.206 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 25.16' @ 12.44 hrs Surf.Area= 0.004 ac Storage= 0.002 af

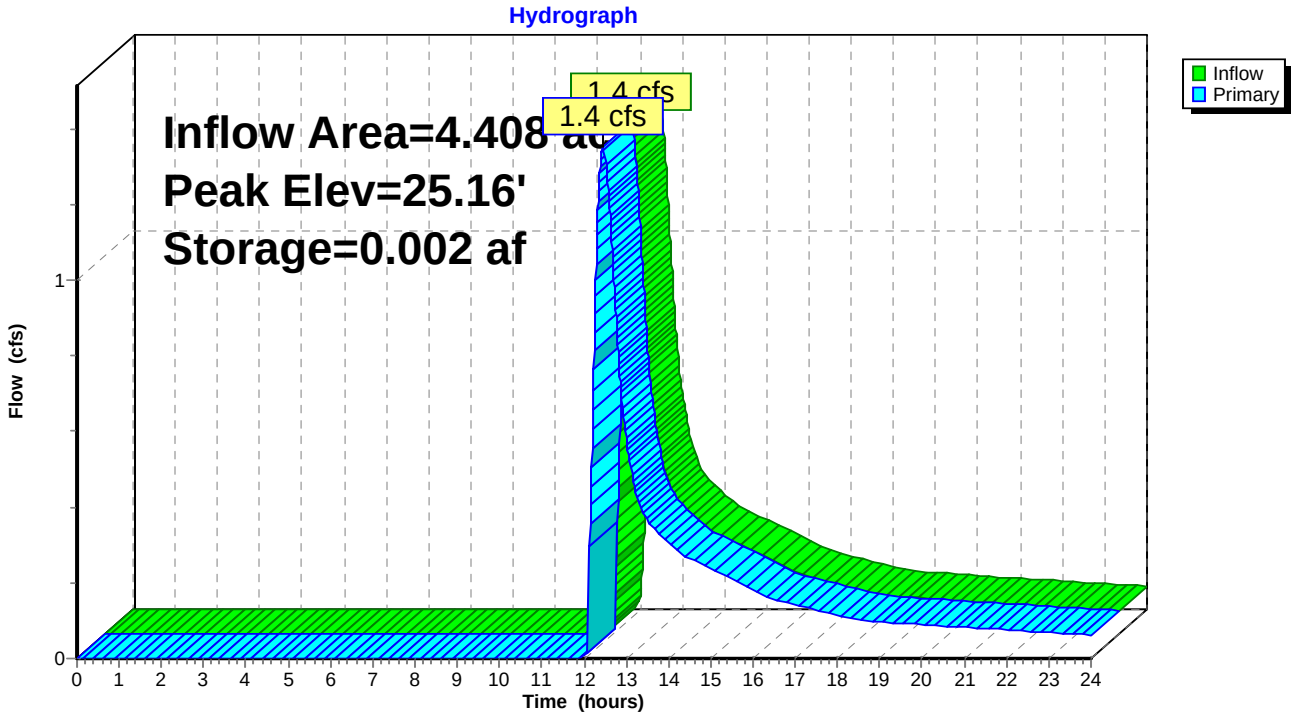
Plug-Flow detention time= 5.3 min calculated for 0.206 af (99% of inflow)
Center-of-Mass det. time= 1.6 min (916.8 - 915.1)

Volume	Invert	Avail.Storage	Storage Description
#1	24.50'	0.004 af	**4.00'W x 20.00'L x 1.10'H Filtration Cell Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	25.00'	**10.0' long x 5.0' breadth Vegetated Swale** 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 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#2	Primary	25.50'	**20.0' long x 5.0' breadth Swale Overtopping** 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 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=1.4 cfs @ 12.44 hrs HW=25.16' TW=25.06' (Dynamic Tailwater)
└─**1=Vegetated Swale** (Weir Controls 1.4 cfs @ 0.84 fps)
└─**2=Swale Overtopping** (Controls 0.0 cfs)

Pond 5P: BioFiltration Cell

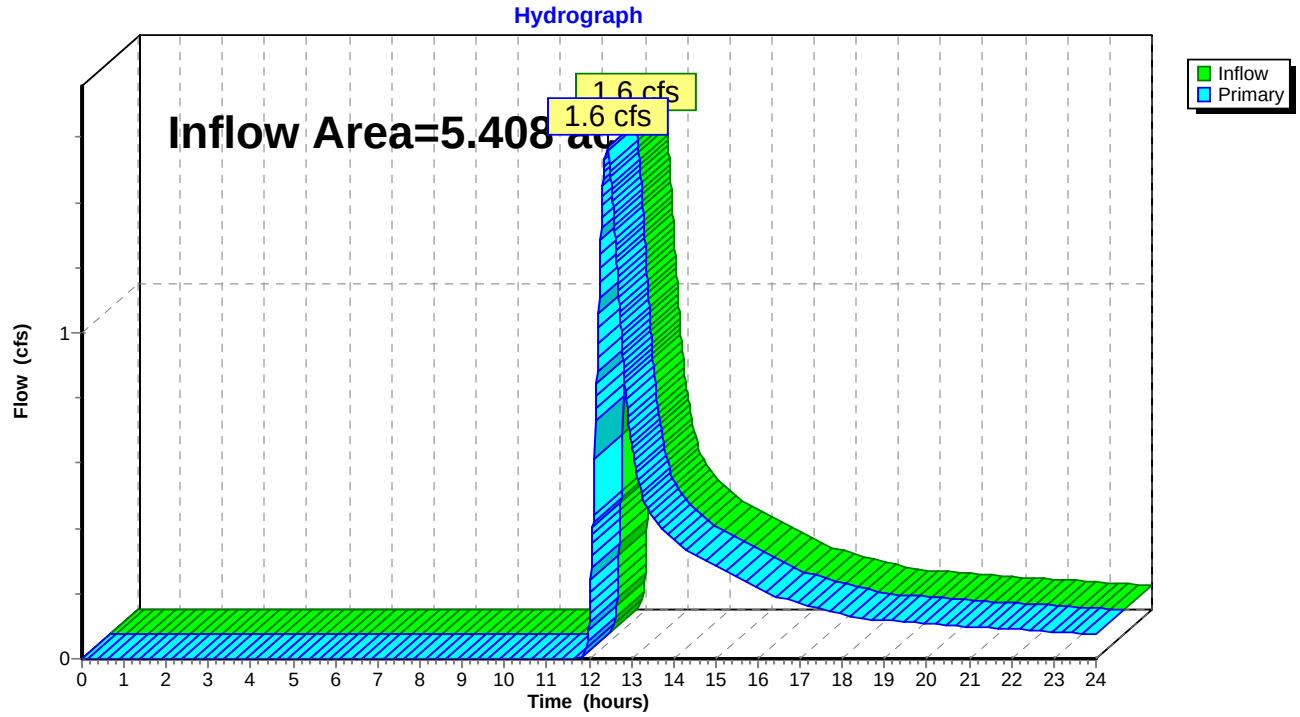


Summary for Link 3L: To Reservoir - South

Inflow Area = 5.408 ac, 0.33% Impervious, Inflow Depth > 0.55" for 2-Year event
Inflow = 1.6 cfs @ 12.43 hrs, Volume= 0.250 af
Primary = 1.6 cfs @ 12.43 hrs, Volume= 0.250 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 3L: To Reservoir - South

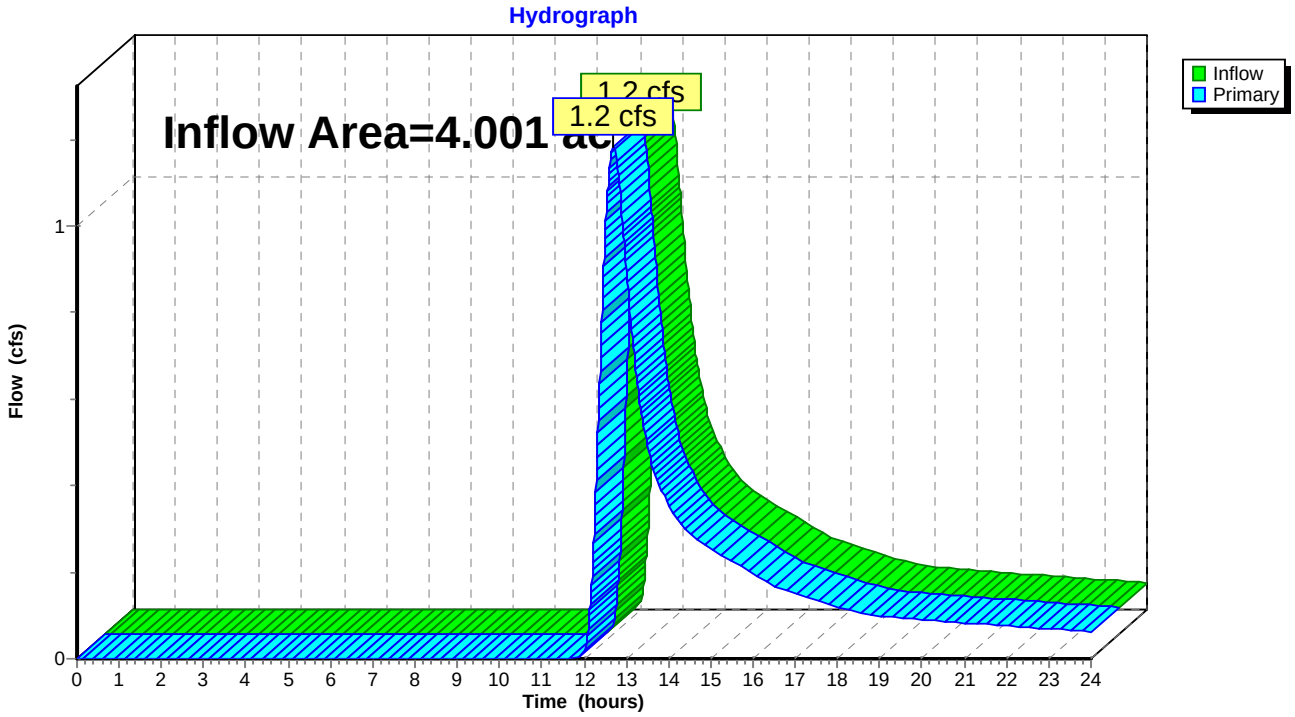


Summary for Link 4L: Wooded Area to East

Inflow Area = 4.001 ac, 0.46% Impervious, Inflow Depth > 0.65" for 2-Year event
Inflow = 1.2 cfs @ 12.69 hrs, Volume= 0.215 af
Primary = 1.2 cfs @ 12.69 hrs, Volume= 0.215 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 4L: Wooded Area to East

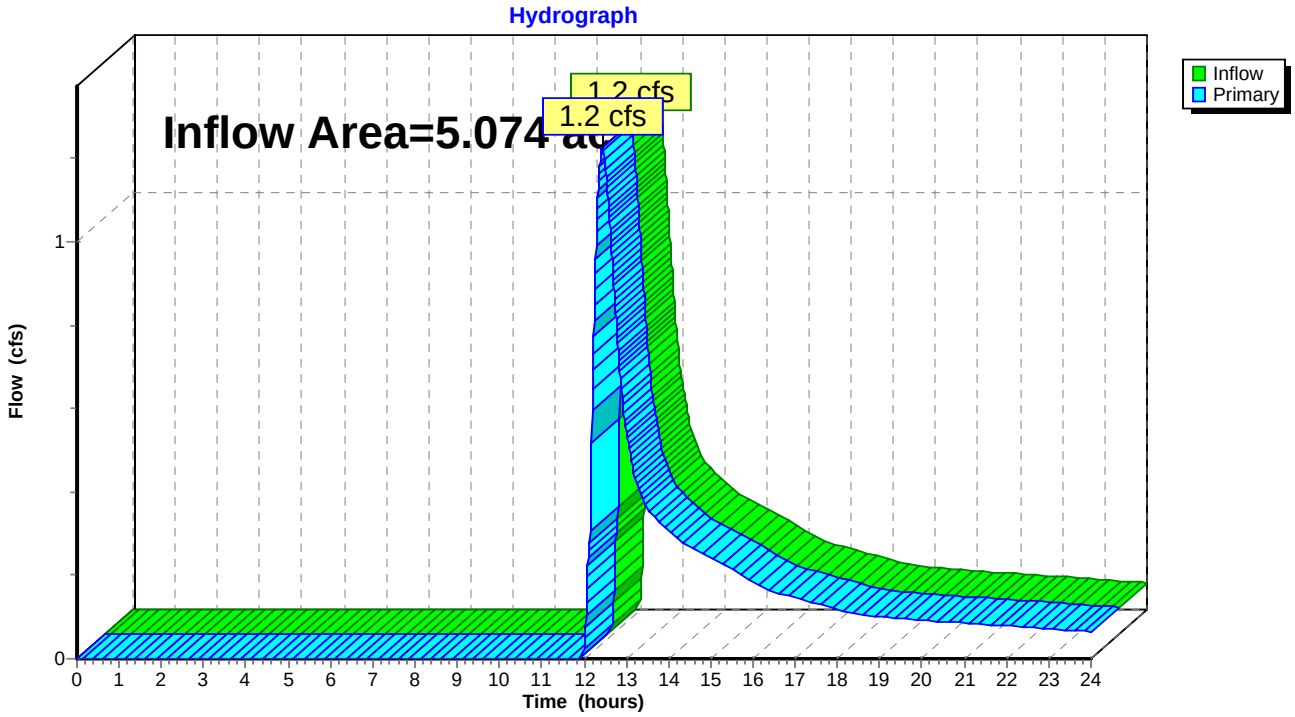


Summary for Link 6L: To Reservoir - North

Inflow Area = 5.074 ac, 0.00% Impervious, Inflow Depth > 0.48" for 2-Year event
Inflow = 1.2 cfs @ 12.44 hrs, Volume= 0.204 af
Primary = 1.2 cfs @ 12.44 hrs, Volume= 0.204 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 6L: To Reservoir - North

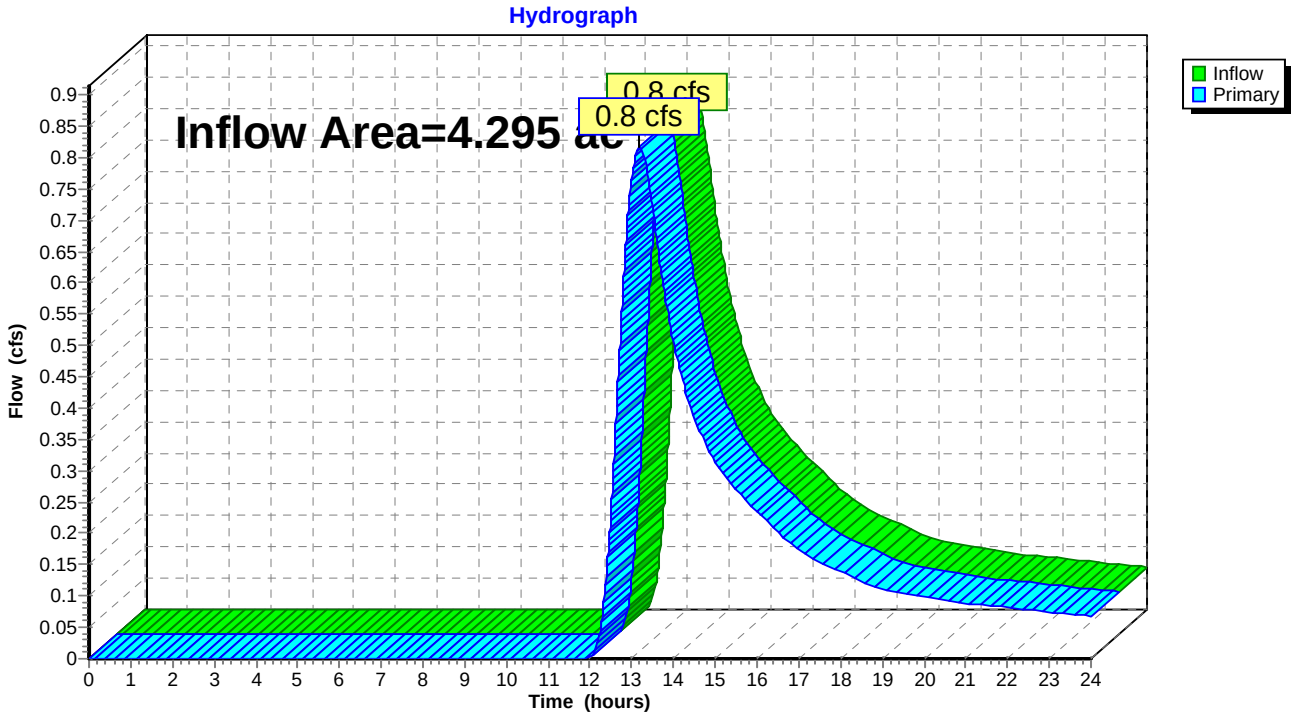


Summary for Link 7L: Off-Site Flow to South

Inflow Area = 4.295 ac, 0.22% Impervious, Inflow Depth > 0.59" for 2-Year event
Inflow = 0.8 cfs @ 13.17 hrs, Volume= 0.213 af
Primary = 0.8 cfs @ 13.17 hrs, Volume= 0.213 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 7L: Off-Site Flow to South

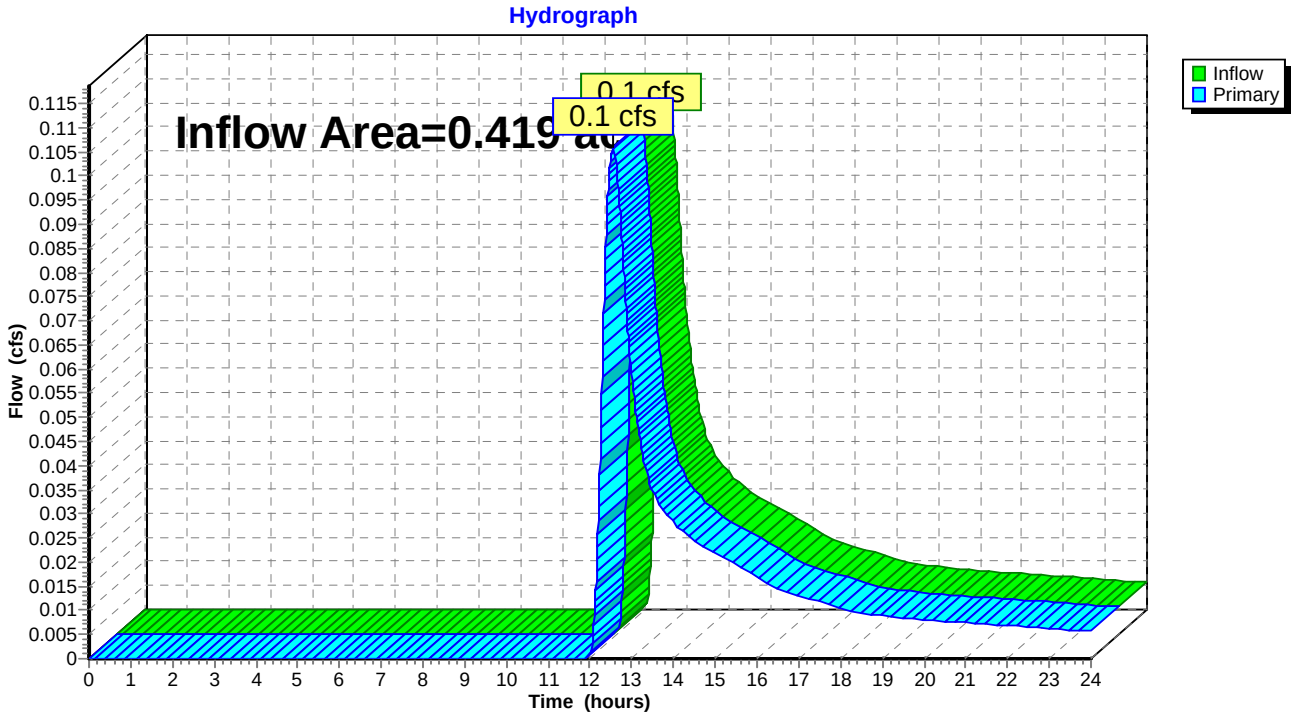


Summary for Link 8L: Off-Site Flow to East

Inflow Area = 0.419 ac, 0.01% Impervious, Inflow Depth > 0.52" for 2-Year event
Inflow = 0.1 cfs @ 12.54 hrs, Volume= 0.018 af
Primary = 0.1 cfs @ 12.54 hrs, Volume= 0.018 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 8L: Off-Site Flow to East



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S-A: Area 1 - North - Runoff Area=1.300 ac 0.00% Impervious Runoff Depth>0.75"
Flow Length=30' Slope=0.0770 '/' Tc=6.0 min CN=57 Runoff=0.9 cfs 0.082 af

Subcatchment 1S-B: Area 1 - North - Solar Runoff Area=164,396 sf 0.00% Impervious Runoff Depth>0.96"
Flow Length=562' Tc=24.8 min CN=61 Runoff=2.2 cfs 0.303 af

Subcatchment 2S-A: Area 1 - West - Runoff Area=1.000 ac 0.00% Impervious Runoff Depth>0.97"
Flow Length=30' Slope=0.0350 '/' Tc=6.0 min CN=61 Runoff=1.0 cfs 0.081 af

Subcatchment 2S-B: Area 1 - West Runoff Area=192,013 sf 0.41% Impervious Runoff Depth>1.02"
Flow Length=412' Tc=24.8 min CN=62 Runoff=2.8 cfs 0.374 af

Subcatchment 3S: Area 1 - East Runoff Area=174,284 sf 0.46% Impervious Runoff Depth>1.13"
Flow Length=831' Tc=42.6 min CN=64 Runoff=2.3 cfs 0.377 af

Subcatchment 4S: Area 2 - West Runoff Area=187,084 sf 0.22% Impervious Runoff Depth>1.06"
Flow Length=664' Tc=75.0 min CN=63 Runoff=1.6 cfs 0.379 af

Subcatchment 5S: Area 2 - East Runoff Area=18,251 sf 0.01% Impervious Runoff Depth>0.96"
Flow Length=214' Tc=30.4 min CN=61 Runoff=0.2 cfs 0.034 af

Reach 3R: Overflow Swale Avg. Flow Depth=0.13' Max Vel=1.71 fps Inflow=2.2 cfs 0.301 af
n=0.035 L=30.0' S=0.0267 '/' Capacity=23.0 cfs Outflow=2.2 cfs 0.301 af

Reach 4R: Overflow Swale Avg. Flow Depth=0.10' Max Vel=2.78 fps Inflow=2.8 cfs 0.373 af
n=0.035 L=30.0' S=0.0973 '/' Capacity=43.9 cfs Outflow=2.8 cfs 0.373 af

Pond 2P: BioFiltration Cell Peak Elev=23.04' Storage=0.002 af Inflow=2.2 cfs 0.303 af
Outflow=2.2 cfs 0.301 af

Pond 5P: BioFiltration Cell Peak Elev=25.26' Storage=0.002 af Inflow=2.8 cfs 0.374 af
Outflow=2.8 cfs 0.373 af

Link 3L: To Reservoir - South Inflow=3.3 cfs 0.453 af
Primary=3.3 cfs 0.453 af

Link 4L: Wooded Area to East Inflow=2.3 cfs 0.377 af
Primary=2.3 cfs 0.377 af

Link 6L: To Reservoir - North Inflow=2.7 cfs 0.382 af
Primary=2.7 cfs 0.382 af

Link 7L: Off-Site Flow to South Inflow=1.6 cfs 0.379 af
Primary=1.6 cfs 0.379 af

Link 8L: Off-Site Flow to East Inflow=0.2 cfs 0.034 af
Primary=0.2 cfs 0.034 af

Total Runoff Area = 19.197 ac Runoff Volume = 1.629 af Average Runoff Depth = 1.02"
99.76% Pervious = 19.151 ac 0.24% Impervious = 0.046 ac

Summary for Subcatchment 1S-A: Area 1 - North - DownGradient Swale

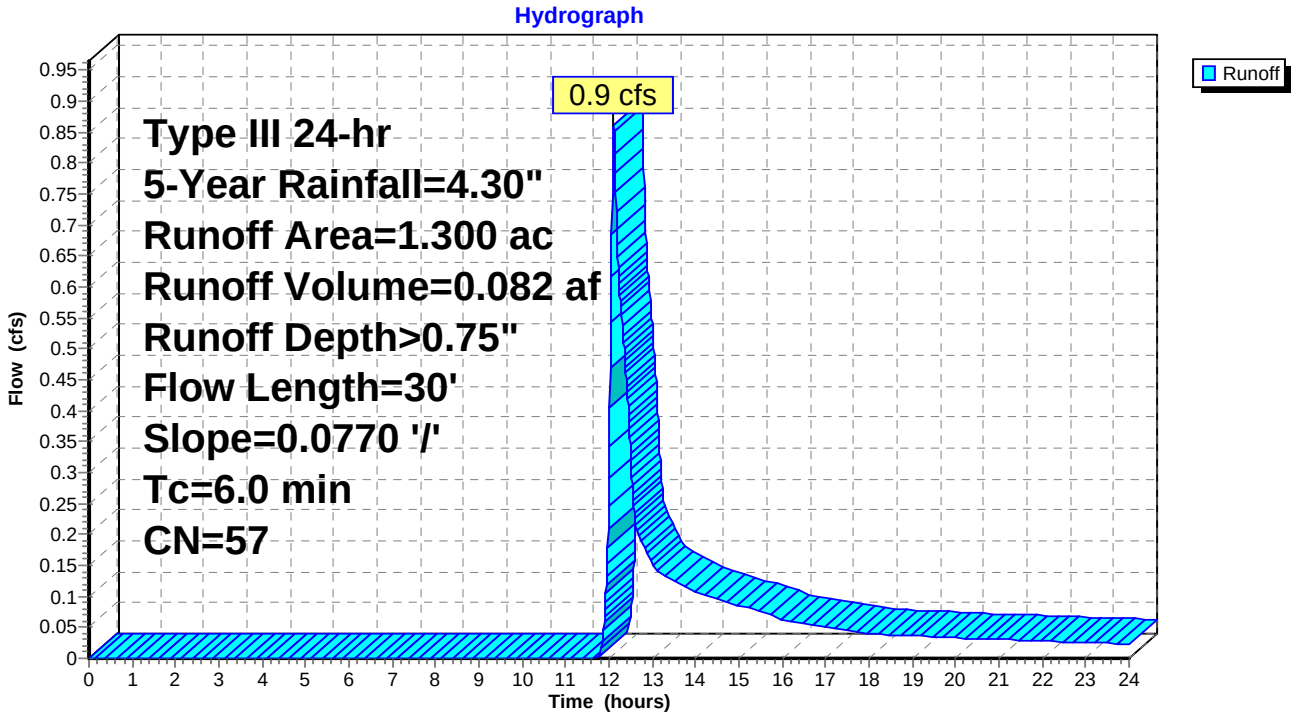
Runoff = 0.9 cfs @ 12.11 hrs, Volume= 0.082 af, Depth> 0.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 5-Year Rainfall=4.30"

Area (ac)	CN	Description
0.850	55	Woods, Good, HSG B
0.450	61	>75% Grass cover, Good, HSG B
1.300	57	Weighted Average
1.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	30	0.0770	0.11		**Sheet Flow, Wooded Slope** Woods: Light underbrush n= 0.400 P2= 3.40"
4.6	30	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 1S-A: Area 1 - North - DownGradient Swale



Summary for Subcatchment 1S-B: Area 1 - North - Solar Arrays

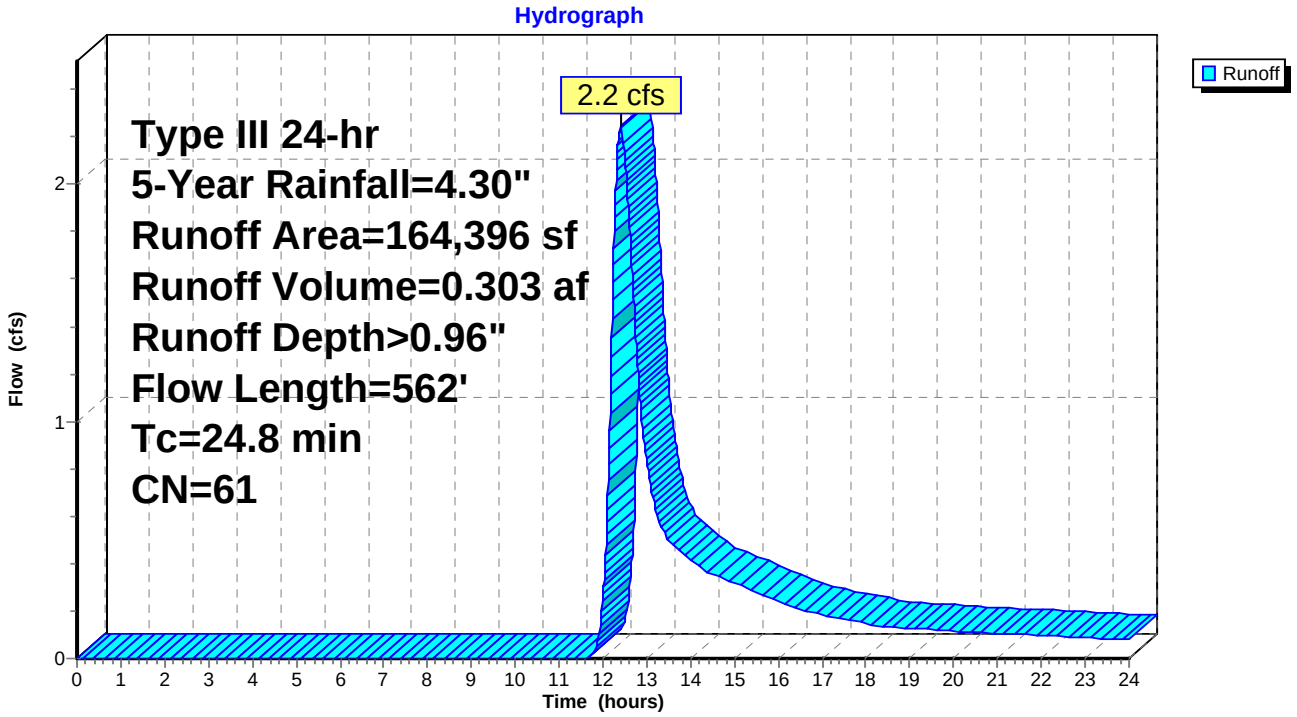
Runoff = 2.2 cfs @ 12.40 hrs, Volume= 0.303 af, Depth> 0.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 5-Year Rainfall=4.30"

	Area (sf)	CN	Description
	23,392	60	Woods, Fair, HSG B
*	141,004	61	>75% Grass cover, Solar Array Area, HSG B
*	0	98	Solar Array Posts, HSG B
	164,396	61	Weighted Average
	164,396		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5	100	0.0177	0.11		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
1.0	40	0.0085	0.65		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
0.3	32	0.0625	1.75		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
2.9	143	0.0140	0.83		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
5.2	211	0.0095	0.68		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
0.4	31	0.0323	1.26		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
0.5	5	0.2000	0.17		**Sheet Flow, To swale (Flow disrupted by stone level spreader)** Grass: Dense n= 0.240 P2= 3.40"
24.8	562	Total			

Subcatchment 1S-B: Area 1 - North - Solar Arrays



Summary for Subcatchment 2S-A: Area 1 - West - DownGradient Swale

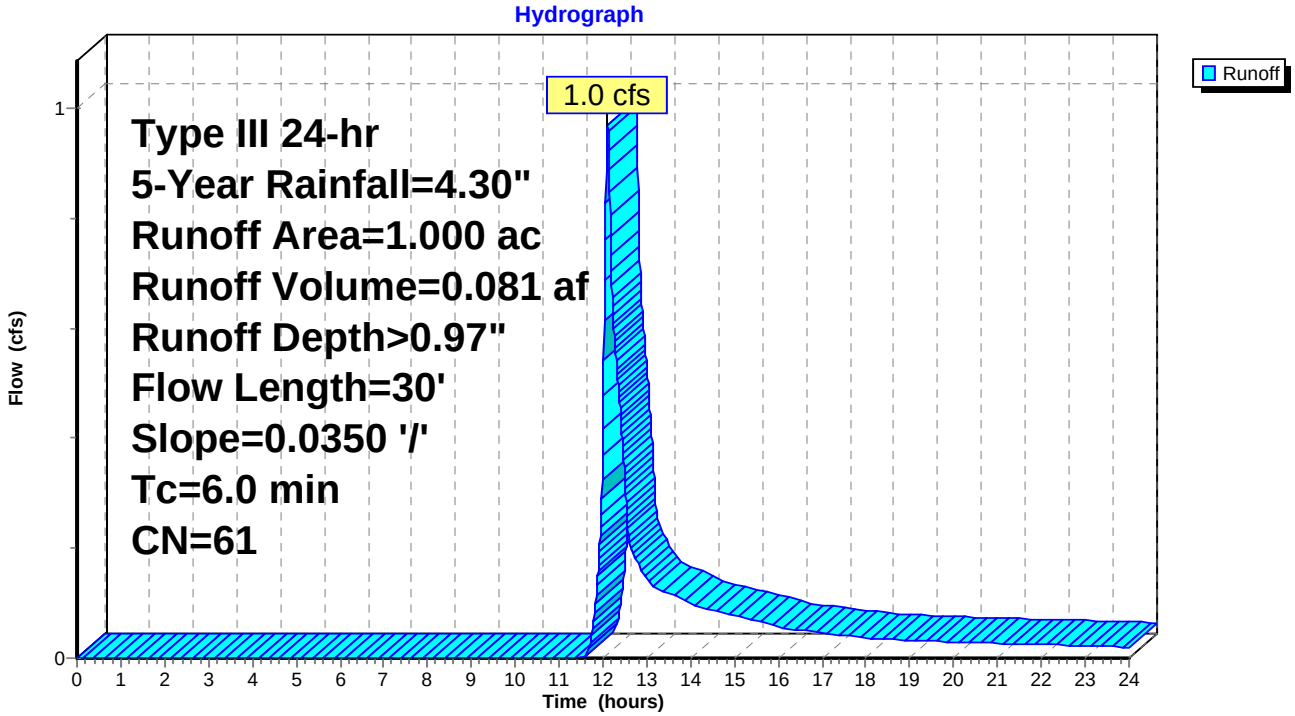
Runoff = 1.0 cfs @ 12.10 hrs, Volume= 0.081 af, Depth> 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 5-Year Rainfall=4.30"

Area (ac)	CN	Description
1.000	61	>75% Grass cover, Good, HSG B
1.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	30	0.0350	0.12		**Sheet Flow, Grass Slope** Grass: Dense n= 0.240 P2= 3.40"
4.2	30	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 2S-A: Area 1 - West - DownGradient Swale



Summary for Subcatchment 2S-B: Area 1 - West

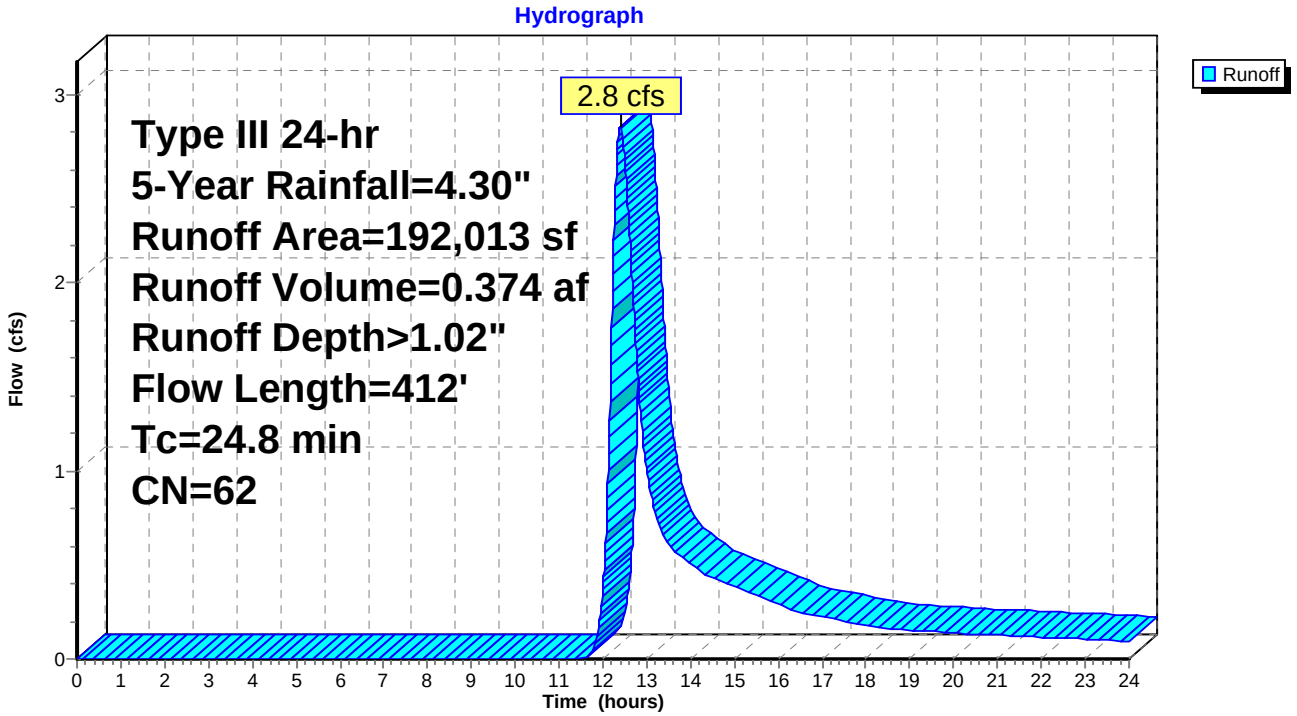
Runoff = 2.8 cfs @ 12.40 hrs, Volume= 0.374 af, Depth> 1.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 5-Year Rainfall=4.30"

	Area (sf)	CN	Description
*	182,691	61	>75% Grass cover, Solar Array Area, HSG B
	8,538	85	Gravel roads, HSG B
*	0	98	Solar Array Racking Posts, HSG B
*	784	98	Concrete Equipment Pad, HSG B
	192,013	62	Weighted Average
	191,229		99.59% Pervious Area
	784		0.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.0	100	0.0120	0.10		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
7.3	307	0.0099	0.70		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
0.5	5	0.2000	0.17		**Sheet Flow, Swale Slope (flow disrupted by stone level spreade** Grass: Dense n= 0.240 P2= 3.40"
24.8	412	Total			

Subcatchment 2S-B: Area 1 - West



Summary for Subcatchment 3S: Area 1 - East

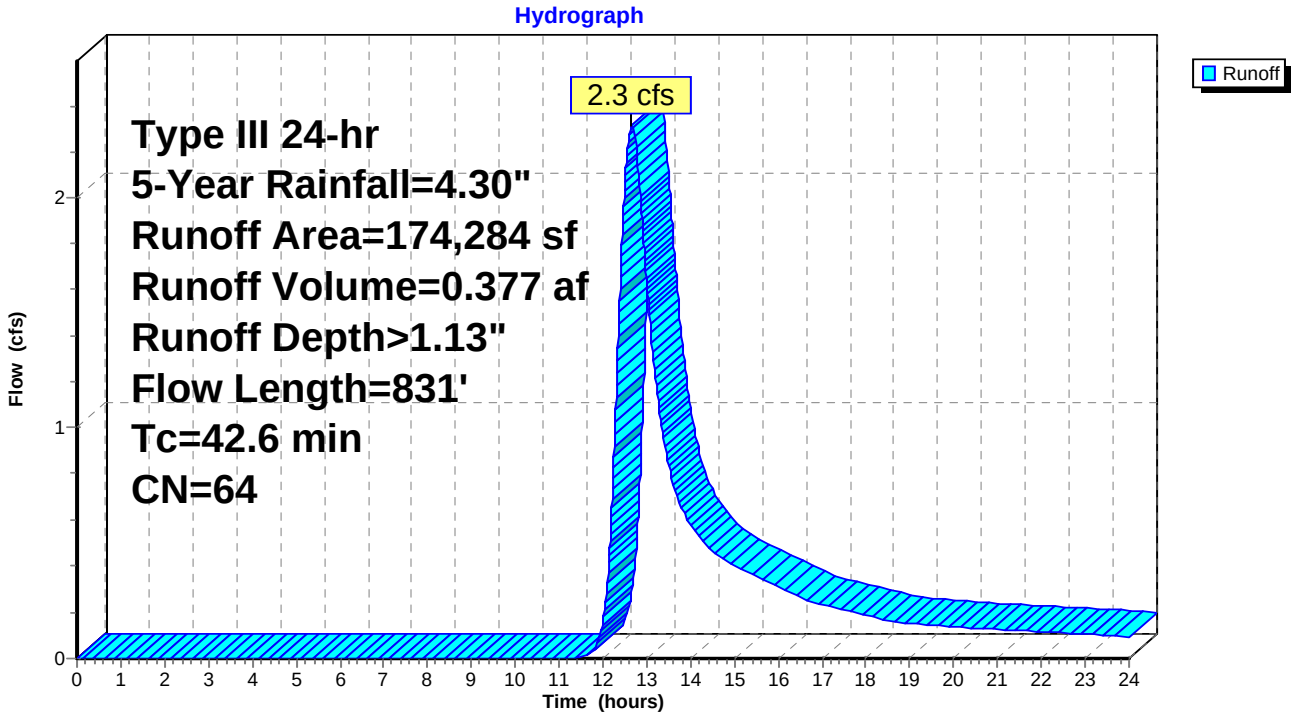
Runoff = 2.3 cfs @ 12.64 hrs, Volume= 0.377 af, Depth> 1.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 5-Year Rainfall=4.30"

	Area (sf)	CN	Description
	19,602	85	Gravel roads, HSG B
*	153,878	61	>75% Grass cover, Solar Array Area, HSG B
*	4	98	Solar Array Racking Posts, HSG B
*	800	98	Concrete Equipment Pads, HSG B
	174,284	64	Weighted Average
	173,480		99.54% Pervious Area
	804		0.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	100	0.0090	0.09		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
7.1	174	0.0034	0.41		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
16.3	526	0.0059	0.54		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.1	31	0.0742	4.39		**Shallow Concentrated Flow, Grass/Gravel** Unpaved Kv= 16.1 fps
42.6	831	Total			

Subcatchment 3S: Area 1 - East



Summary for Subcatchment 4S: Area 2 - West

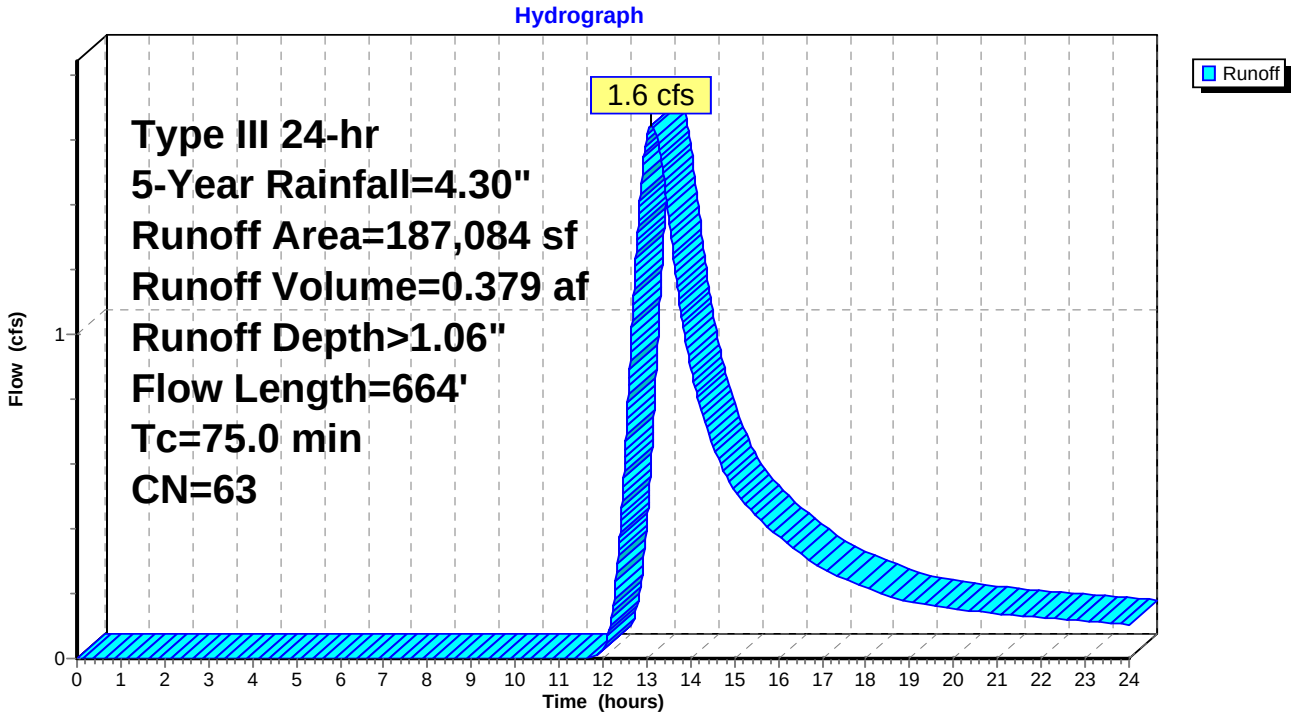
Runoff = 1.6 cfs @ 13.09 hrs, Volume= 0.379 af, Depth> 1.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 5-Year Rainfall=4.30"

	Area (sf)	CN	Description
	10,060	60	Woods, Fair, HSG B
*	161,719	61	>75% Grass cover, Solar Array Area, HSG B
	14,898	85	Gravel roads, HSG B
*	7	98	Solar Array Racking Posts, HSG B
*	400	98	Concrete Equipment Pad, HSG B
	187,084	63	Weighted Average
	186,677		99.78% Pervious Area
	407		0.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0080	0.08		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
1.3	86	0.0233	1.07		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
7.5	235	0.0055	0.52		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
13.3	177	0.0010	0.22		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
32.9	66	0.0010	0.03		**Sheet Flow, Grass (Flow disrupted by stone check dam)** Grass: Dense n= 0.240 P2= 3.40"
75.0	664	Total			

Subcatchment 4S: Area 2 - West



Summary for Subcatchment 5S: Area 2 - East

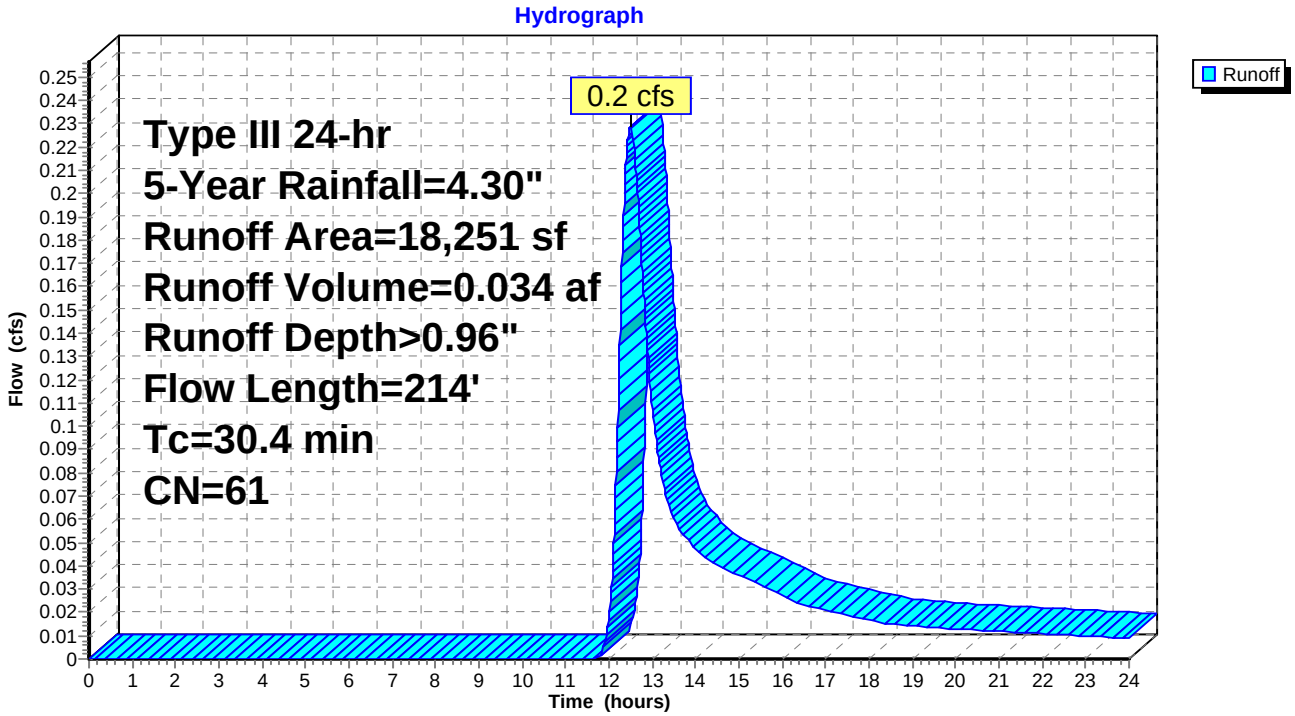
Runoff = 0.2 cfs @ 12.50 hrs, Volume= 0.034 af, Depth> 0.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 5-Year Rainfall=4.30"

	Area (sf)	CN	Description
*	18,250	61	>75% Grass cover, Solar Array Area, HSG B
*	1	98	Solar Array Racking Posts, HSG B
	18,251	61	Weighted Average
	18,250		99.99% Pervious Area
	1		0.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	58	0.0034	0.05		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
8.5	42	0.0119	0.08		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
2.8	86	0.0105	0.51		**Shallow Concentrated Flow, Grass - Solar Array Area** Woodland Kv= 5.0 fps
0.9	28	0.0050	0.49		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
30.4	214	Total			

Subcatchment 5S: Area 2 - East



Summary for Reach 3R: Overflow Swale

Inflow Area = 3.774 ac, 0.00% Impervious, Inflow Depth > 0.96" for 5-Year event
Inflow = 2.2 cfs @ 12.41 hrs, Volume= 0.301 af
Outflow = 2.2 cfs @ 12.41 hrs, Volume= 0.301 af, Atten= 0%, Lag= 0.2 min

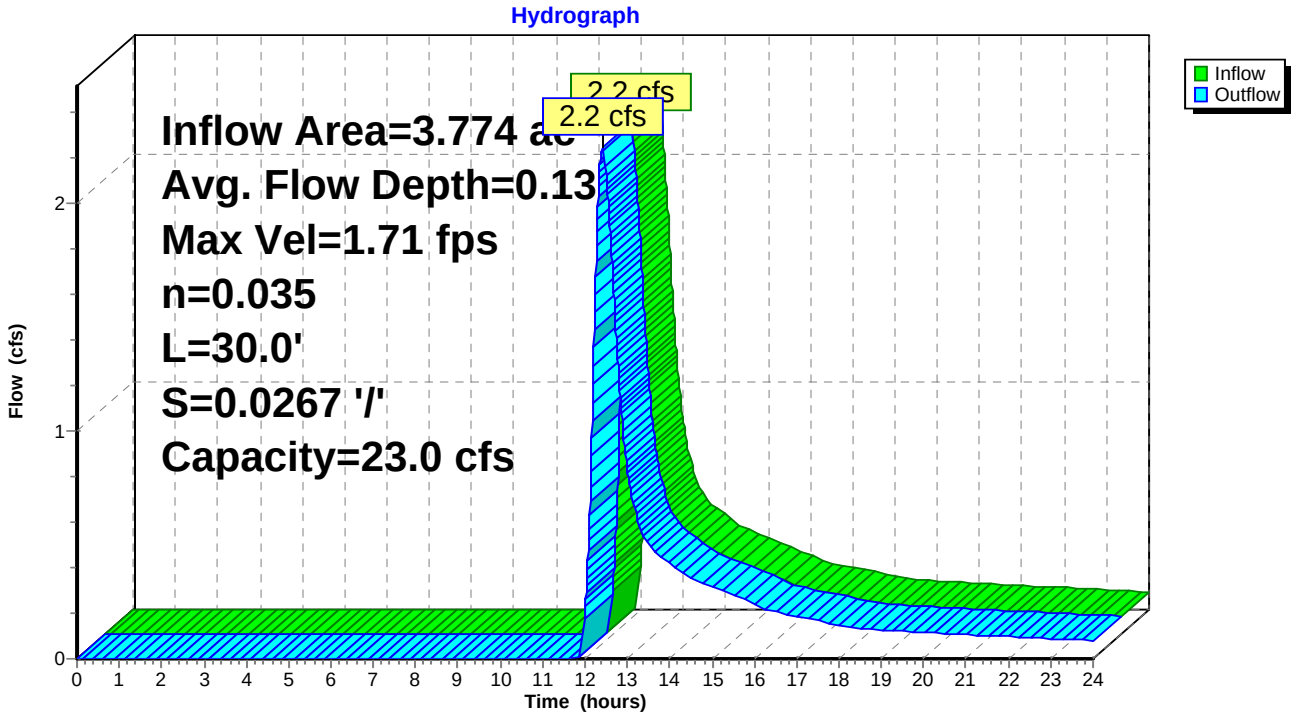
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 1.71 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.70 fps, Avg. Travel Time= 0.7 min

Peak Storage= 40 cf @ 12.41 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 0.50' Flow Area= 5.8 sf, Capacity= 23.0 cfs

10.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 3.0 '/' Top Width= 13.00'
Length= 30.0' Slope= 0.0267 '/'
Inlet Invert= 22.80', Outlet Invert= 22.00'

‡

Reach 3R: Overflow Swale



Summary for Reach 4R: Overflow Swale

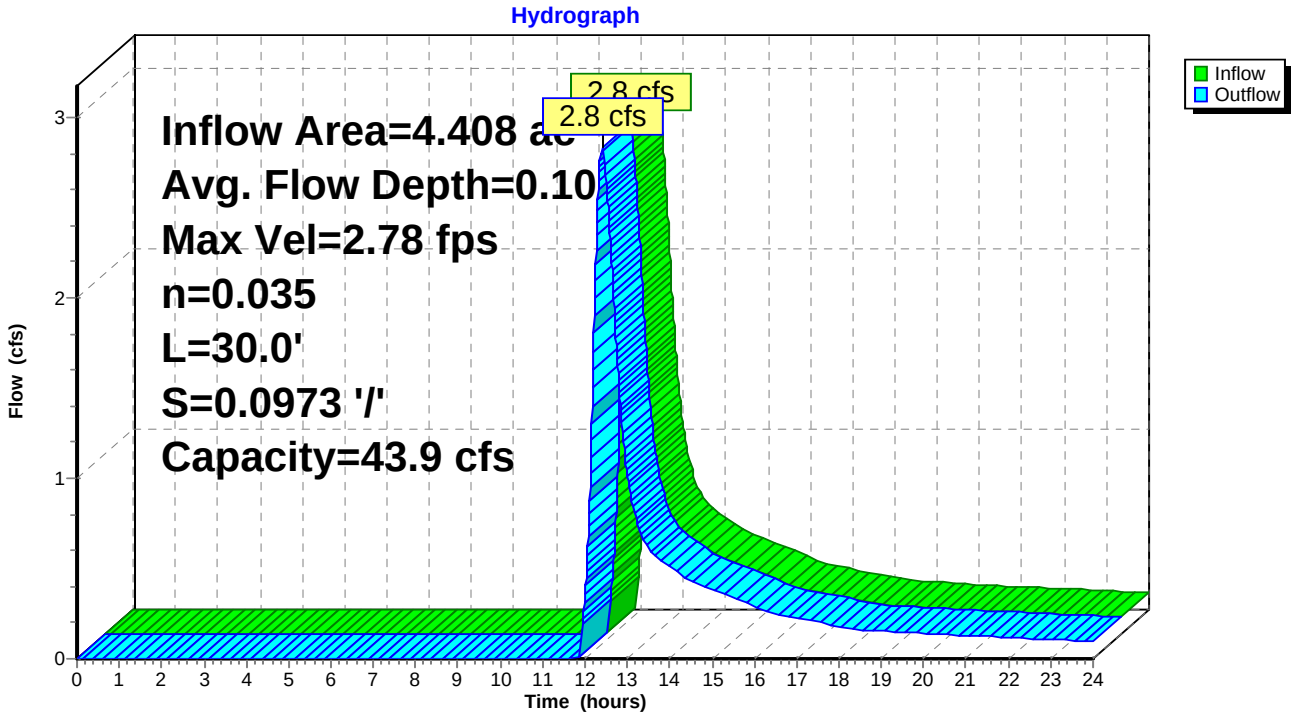
Inflow Area = 4.408 ac, 0.41% Impervious, Inflow Depth > 1.01" for 5-Year event
Inflow = 2.8 cfs @ 12.40 hrs, Volume= 0.373 af
Outflow = 2.8 cfs @ 12.41 hrs, Volume= 0.373 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.78 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.12 fps, Avg. Travel Time= 0.4 min

Peak Storage= 31 cf @ 12.41 hrs
Average Depth at Peak Storage= 0.10'
Bank-Full Depth= 0.50' Flow Area= 5.8 sf, Capacity= 43.9 cfs

10.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 3.0 '/' Top Width= 13.00'
Length= 30.0' Slope= 0.0973 '/'
Inlet Invert= 25.00', Outlet Invert= 22.08'

Reach 4R: Overflow Swale



Summary for Pond 2P: BioFiltration Cell

Inflow Area = 3.774 ac, 0.00% Impervious, Inflow Depth > 0.96" for 5-Year event
Inflow = 2.2 cfs @ 12.40 hrs, Volume= 0.303 af
Outflow = 2.2 cfs @ 12.41 hrs, Volume= 0.301 af, Atten= 0%, Lag= 0.4 min
Primary = 2.2 cfs @ 12.41 hrs, Volume= 0.301 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 23.04' @ 12.41 hrs Surf.Area= 0.005 ac Storage= 0.002 af

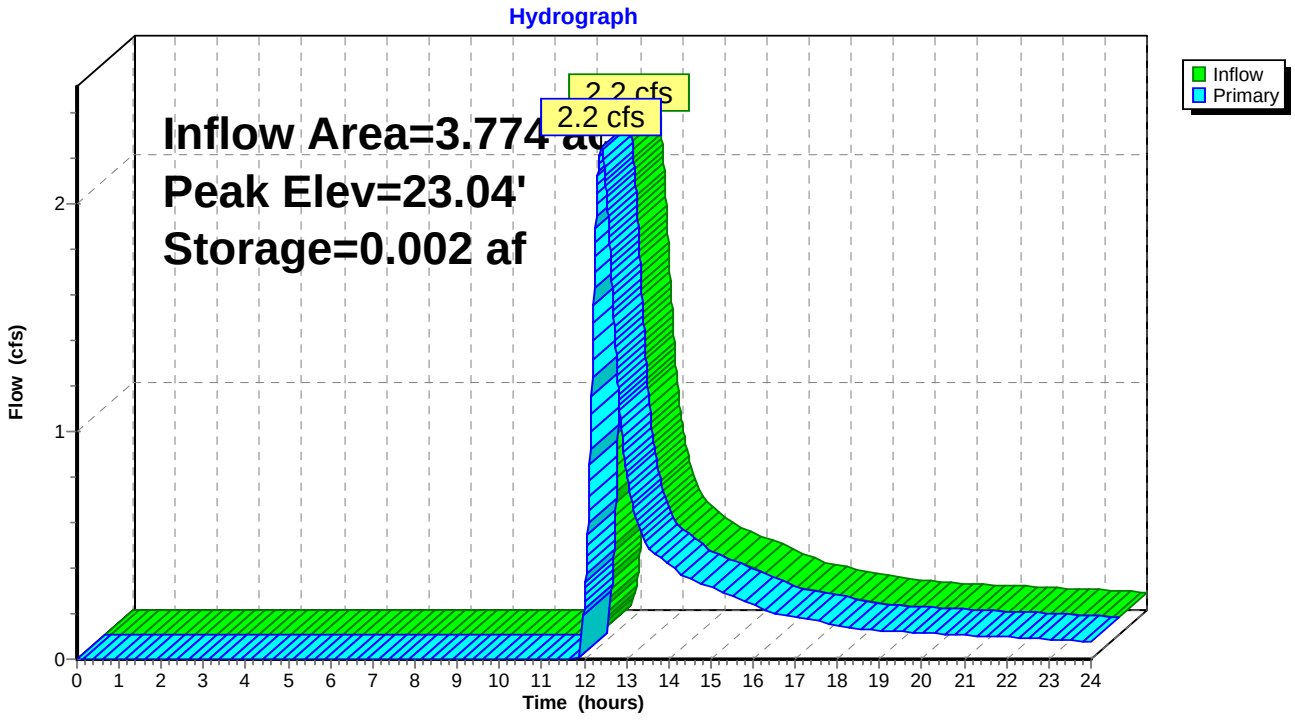
Plug-Flow detention time= 3.8 min calculated for 0.301 af (100% of inflow)
Center-of-Mass det. time= 1.2 min (898.3 - 897.1)

Volume	Invert	Avail.Storage	Storage Description
#1	22.30'	0.004 af	**4.00'W x 20.00'L x 1.00'H Filtration Cell Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	22.80'	**10.0' long x 5.0' breadth Vegetated Swale** 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 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=2.2 cfs @ 12.41 hrs HW=23.04' TW=22.93' (Dynamic Tailwater)
└─**1=Vegetated Swale** (Weir Controls 2.2 cfs @ 0.95 fps)

Pond 2P: BioFiltration Cell



Summary for Pond 5P: BioFiltration Cell

Inflow Area = 4.408 ac, 0.41% Impervious, Inflow Depth > 1.02" for 5-Year event
Inflow = 2.8 cfs @ 12.40 hrs, Volume= 0.374 af
Outflow = 2.8 cfs @ 12.40 hrs, Volume= 0.373 af, Atten= 0%, Lag= 0.2 min
Primary = 2.8 cfs @ 12.40 hrs, Volume= 0.373 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 25.26' @ 12.40 hrs Surf.Area= 0.005 ac Storage= 0.002 af

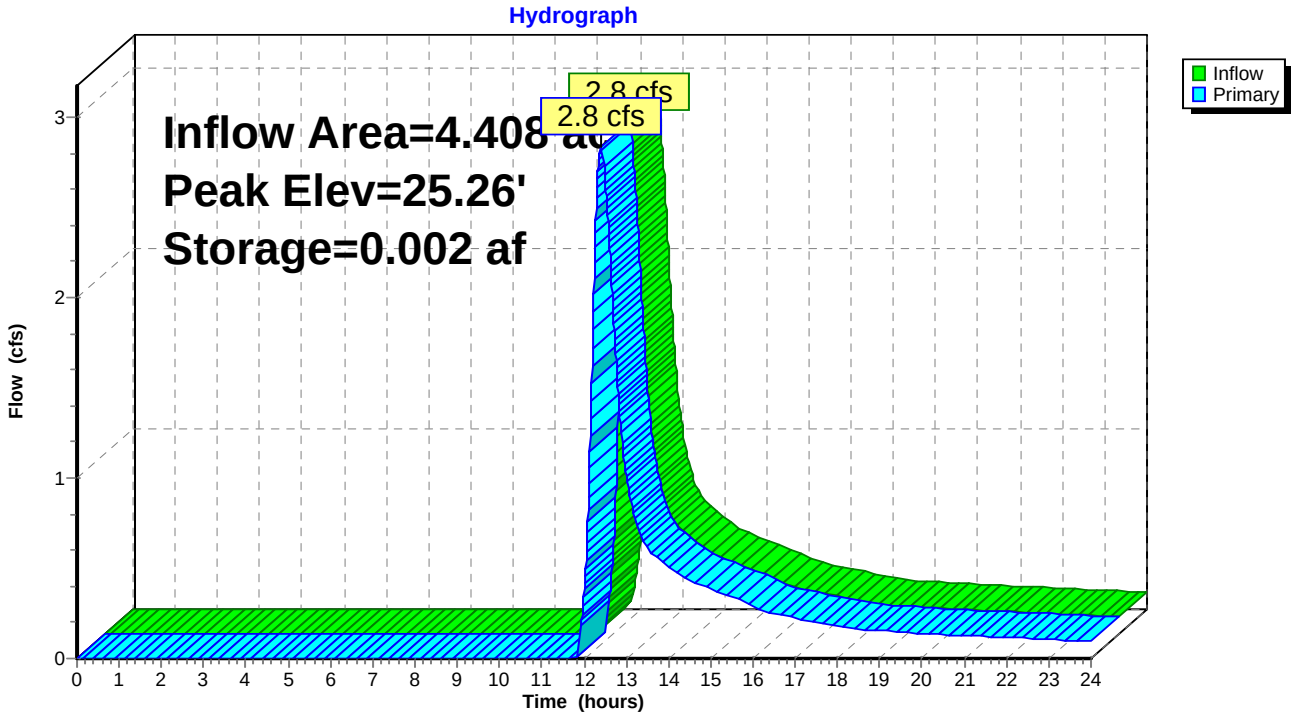
Plug-Flow detention time= 3.1 min calculated for 0.373 af (100% of inflow)
Center-of-Mass det. time= 1.0 min (894.7 - 893.7)

Volume	Invert	Avail.Storage	Storage Description
#1	24.50'	0.004 af	**4.00'W x 20.00'L x 1.10'H Filtration Cell Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	25.00'	**10.0' long x 5.0' breadth Vegetated Swale** 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 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#2	Primary	25.50'	**20.0' long x 5.0' breadth Swale Overtopping** 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 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=2.8 cfs @ 12.40 hrs HW=25.26' TW=25.10' (Dynamic Tailwater)
└─**1=Vegetated Swale** (Weir Controls 2.8 cfs @ 1.09 fps)
└─**2=Swale Overtopping** (Controls 0.0 cfs)

Pond 5P: BioFiltration Cell

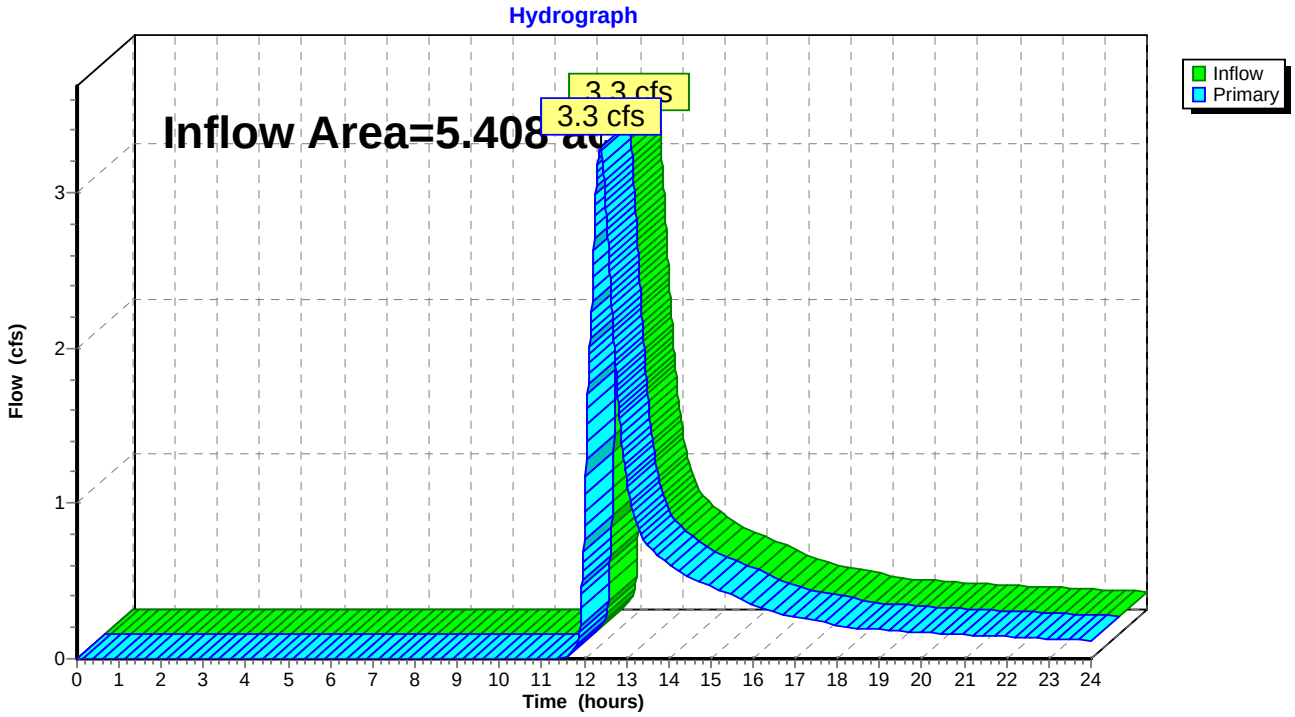


Summary for Link 3L: To Reservoir - South

Inflow Area = 5.408 ac, 0.33% Impervious, Inflow Depth > 1.01" for 5-Year event
Inflow = 3.3 cfs @ 12.38 hrs, Volume= 0.453 af
Primary = 3.3 cfs @ 12.38 hrs, Volume= 0.453 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 3L: To Reservoir - South

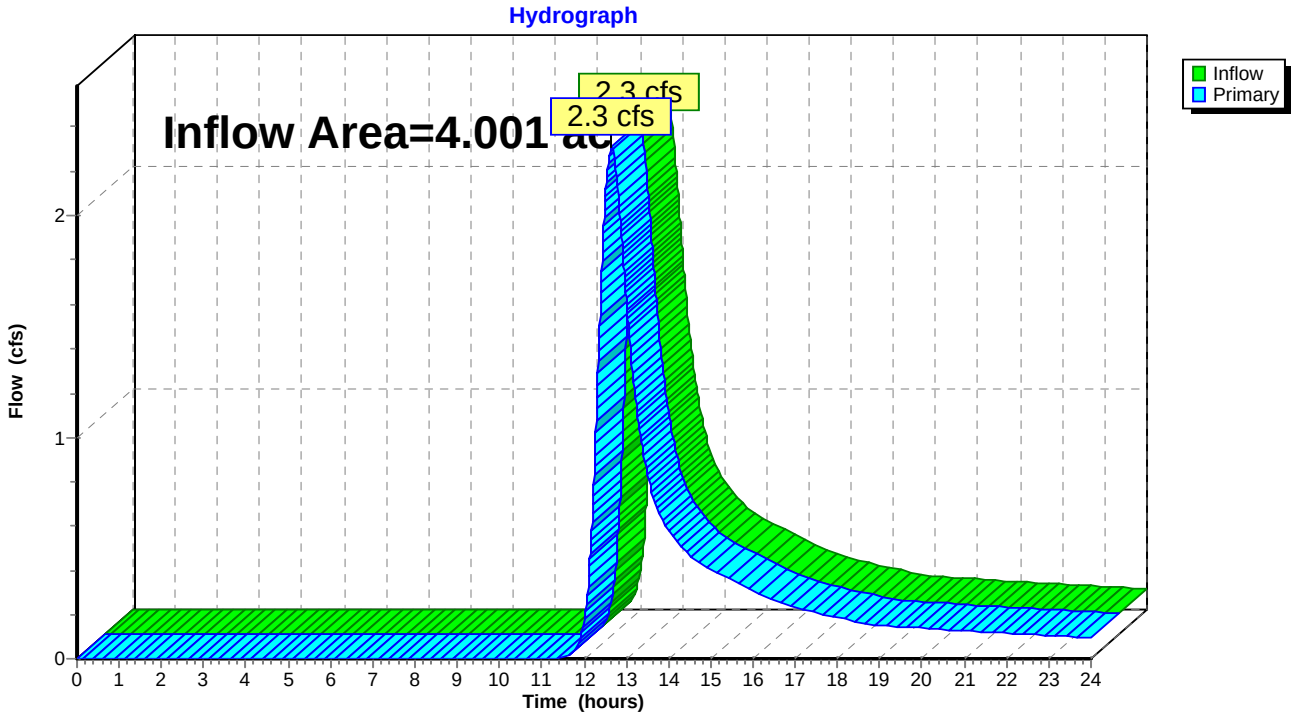


Summary for Link 4L: Wooded Area to East

Inflow Area = 4.001 ac, 0.46% Impervious, Inflow Depth > 1.13" for 5-Year event
Inflow = 2.3 cfs @ 12.64 hrs, Volume= 0.377 af
Primary = 2.3 cfs @ 12.64 hrs, Volume= 0.377 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 4L: Wooded Area to East

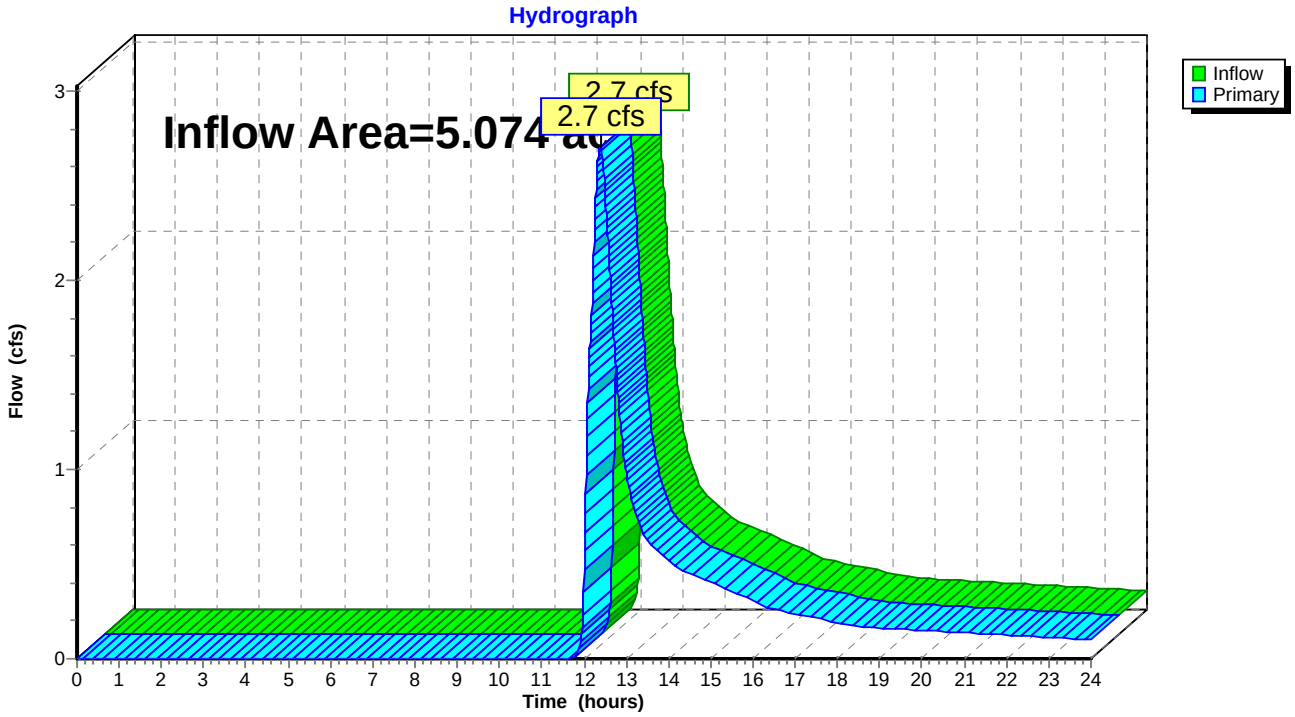


Summary for Link 6L: To Reservoir - North

Inflow Area = 5.074 ac, 0.00% Impervious, Inflow Depth > 0.90" for 5-Year event
Inflow = 2.7 cfs @ 12.38 hrs, Volume= 0.382 af
Primary = 2.7 cfs @ 12.38 hrs, Volume= 0.382 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 6L: To Reservoir - North

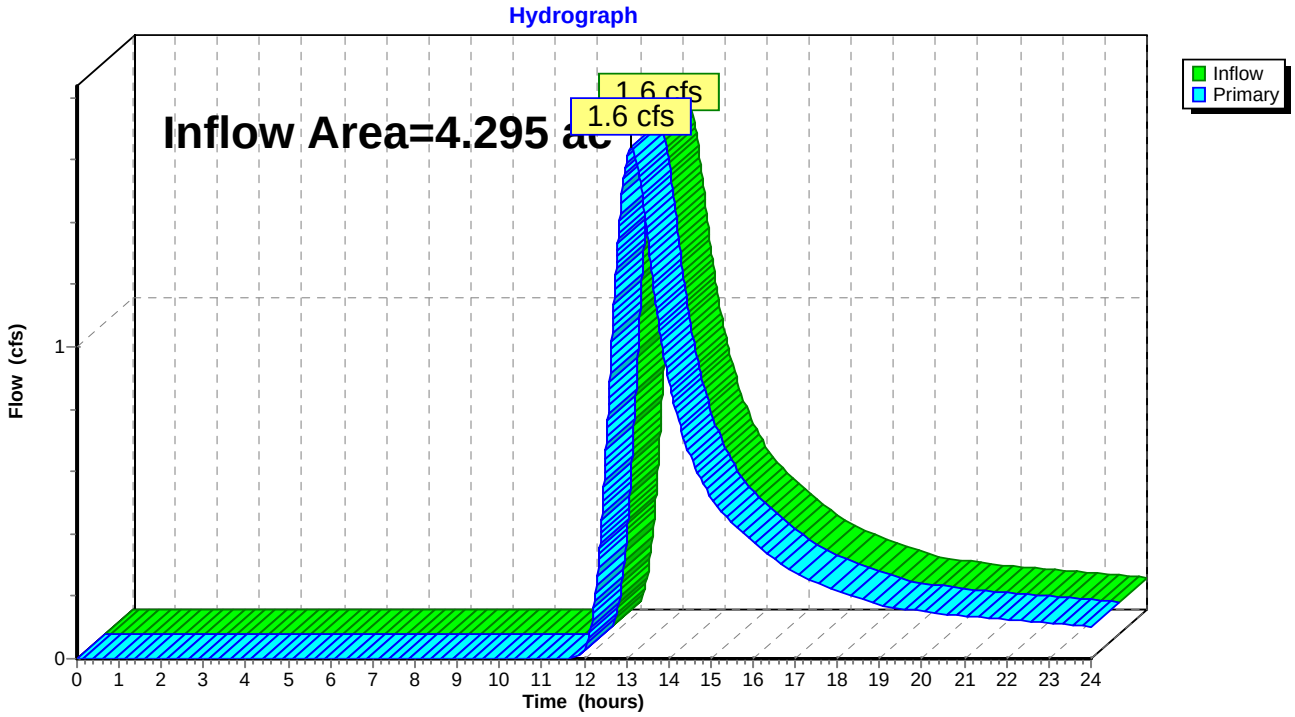


Summary for Link 7L: Off-Site Flow to South

Inflow Area = 4.295 ac, 0.22% Impervious, Inflow Depth > 1.06" for 5-Year event
Inflow = 1.6 cfs @ 13.09 hrs, Volume= 0.379 af
Primary = 1.6 cfs @ 13.09 hrs, Volume= 0.379 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 7L: Off-Site Flow to South

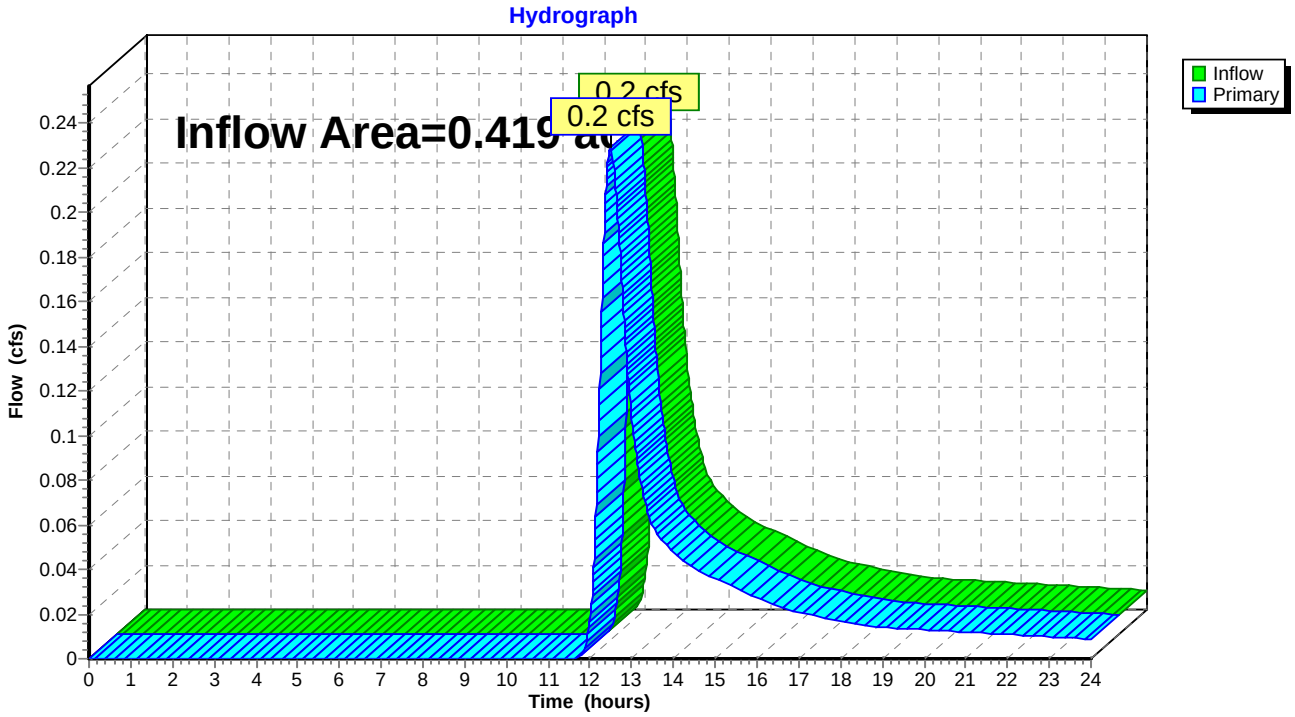


Summary for Link 8L: Off-Site Flow to East

Inflow Area = 0.419 ac, 0.01% Impervious, Inflow Depth > 0.96" for 5-Year event
Inflow = 0.2 cfs @ 12.50 hrs, Volume= 0.034 af
Primary = 0.2 cfs @ 12.50 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 8L: Off-Site Flow to East



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S-A: Area 1 - North - Runoff Area=1.300 ac 0.00% Impervious Runoff Depth>1.10"
Flow Length=30' Slope=0.0770 '/' Tc=6.0 min CN=57 Runoff=1.4 cfs 0.119 af

Subcatchment 1S-B: Area 1 - North - Solar Runoff Area=164,396 sf 0.00% Impervious Runoff Depth>1.36"
Flow Length=562' Tc=24.8 min CN=61 Runoff=3.4 cfs 0.427 af

Subcatchment 2S-A: Area 1 - West - Runoff Area=1.000 ac 0.00% Impervious Runoff Depth>1.37"
Flow Length=30' Slope=0.0350 '/' Tc=6.0 min CN=61 Runoff=1.5 cfs 0.114 af

Subcatchment 2S-B: Area 1 - West Runoff Area=192,013 sf 0.41% Impervious Runoff Depth>1.43"
Flow Length=412' Tc=24.8 min CN=62 Runoff=4.2 cfs 0.525 af

Subcatchment 3S: Area 1 - East Runoff Area=174,284 sf 0.46% Impervious Runoff Depth>1.56"
Flow Length=831' Tc=42.6 min CN=64 Runoff=3.3 cfs 0.521 af

Subcatchment 4S: Area 2 - West Runoff Area=187,084 sf 0.22% Impervious Runoff Depth>1.48"
Flow Length=664' Tc=75.0 min CN=63 Runoff=2.4 cfs 0.528 af

Subcatchment 5S: Area 2 - East Runoff Area=18,251 sf 0.01% Impervious Runoff Depth>1.36"
Flow Length=214' Tc=30.4 min CN=61 Runoff=0.3 cfs 0.047 af

Reach 3R: Overflow Swale Avg. Flow Depth=0.16' Max Vel=1.99 fps Inflow=3.4 cfs 0.426 af
n=0.035 L=30.0' S=0.0267 '/' Capacity=23.0 cfs Outflow=3.4 cfs 0.426 af

Reach 4R: Overflow Swale Avg. Flow Depth=0.13' Max Vel=3.23 fps Inflow=4.2 cfs 0.523 af
n=0.035 L=30.0' S=0.0973 '/' Capacity=43.9 cfs Outflow=4.2 cfs 0.523 af

Pond 2P: BioFiltration Cell Peak Elev=23.10' Storage=0.003 af Inflow=3.4 cfs 0.427 af
Outflow=3.4 cfs 0.426 af

Pond 5P: BioFiltration Cell Peak Elev=25.33' Storage=0.003 af Inflow=4.2 cfs 0.525 af
Outflow=4.2 cfs 0.523 af

Link 3L: To Reservoir - South Inflow=4.8 cfs 0.637 af
Primary=4.8 cfs 0.637 af

Link 4L: Wooded Area to East Inflow=3.3 cfs 0.521 af
Primary=3.3 cfs 0.521 af

Link 6L: To Reservoir - North Inflow=4.1 cfs 0.545 af
Primary=4.1 cfs 0.545 af

Link 7L: Off-Site Flow to South Inflow=2.4 cfs 0.528 af
Primary=2.4 cfs 0.528 af

Link 8L: Off-Site Flow to East Inflow=0.3 cfs 0.047 af
Primary=0.3 cfs 0.047 af

Total Runoff Area = 19.197 ac Runoff Volume = 2.281 af Average Runoff Depth = 1.43"
99.76% Pervious = 19.151 ac 0.24% Impervious = 0.046 ac

Summary for Subcatchment 1S-A: Area 1 - North - DownGradient Swale

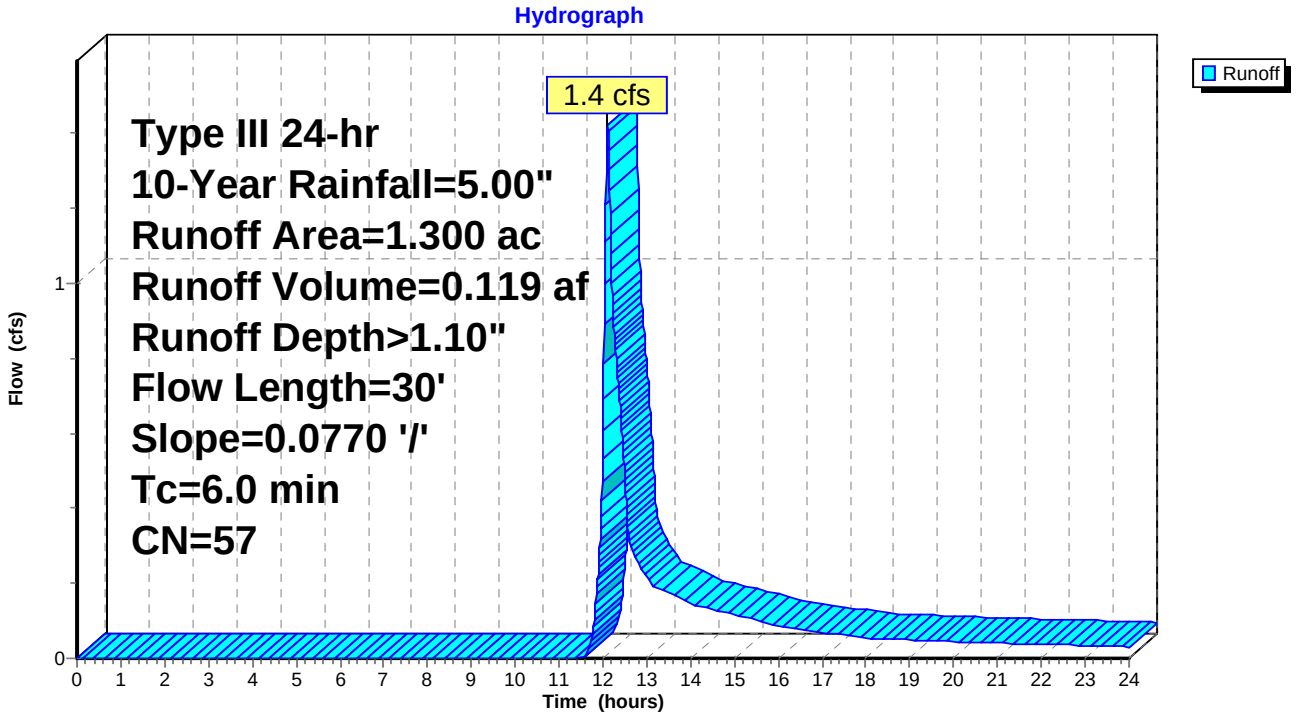
Runoff = 1.4 cfs @ 12.10 hrs, Volume= 0.119 af, Depth> 1.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.00"

Area (ac)	CN	Description
0.850	55	Woods, Good, HSG B
0.450	61	>75% Grass cover, Good, HSG B
1.300	57	Weighted Average
1.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	30	0.0770	0.11		**Sheet Flow, Wooded Slope** Woods: Light underbrush n= 0.400 P2= 3.40"
4.6	30	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 1S-A: Area 1 - North - DownGradient Swale



Summary for Subcatchment 1S-B: Area 1 - North - Solar Arrays

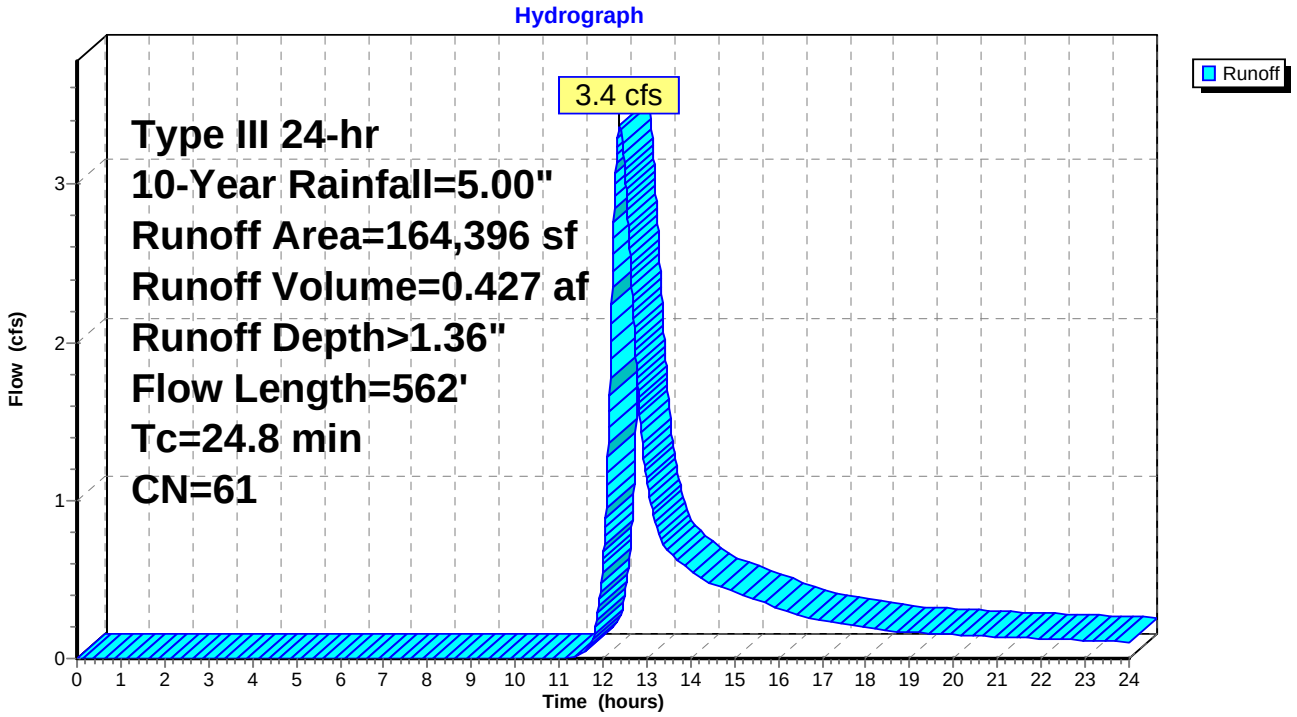
Runoff = 3.4 cfs @ 12.38 hrs, Volume= 0.427 af, Depth> 1.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.00"

	Area (sf)	CN	Description
	23,392	60	Woods, Fair, HSG B
*	141,004	61	>75% Grass cover, Solar Array Area, HSG B
*	0	98	Solar Array Posts, HSG B
	164,396	61	Weighted Average
	164,396		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5	100	0.0177	0.11		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
1.0	40	0.0085	0.65		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
0.3	32	0.0625	1.75		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
2.9	143	0.0140	0.83		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
5.2	211	0.0095	0.68		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
0.4	31	0.0323	1.26		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
0.5	5	0.2000	0.17		**Sheet Flow, To swale (Flow disrupted by stone level spreader)** Grass: Dense n= 0.240 P2= 3.40"
24.8	562	Total			

Subcatchment 1S-B: Area 1 - North - Solar Arrays



Summary for Subcatchment 2S-A: Area 1 - West - DownGradient Swale

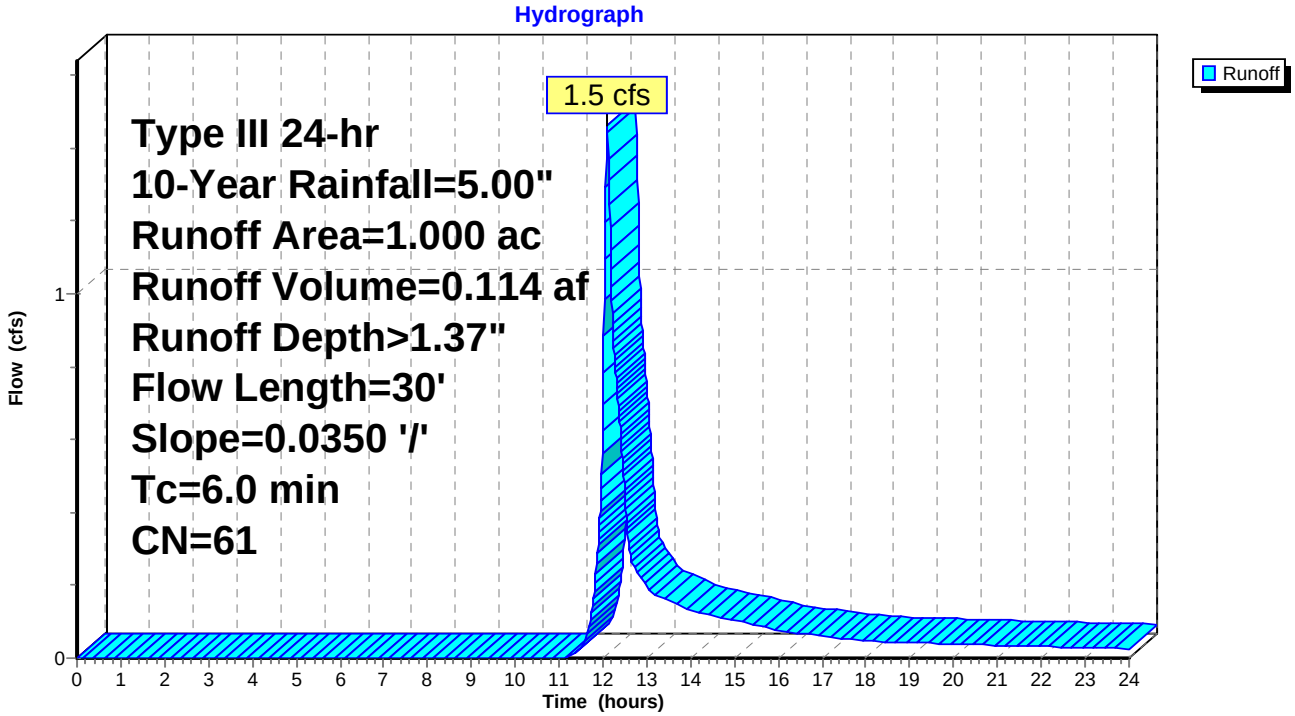
Runoff = 1.5 cfs @ 12.10 hrs, Volume= 0.114 af, Depth> 1.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.00"

Area (ac)	CN	Description
1.000	61	>75% Grass cover, Good, HSG B
1.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	30	0.0350	0.12		**Sheet Flow, Grass Slope** Grass: Dense n= 0.240 P2= 3.40"
4.2	30	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 2S-A: Area 1 - West - DownGradient Swale



Summary for Subcatchment 2S-B: Area 1 - West

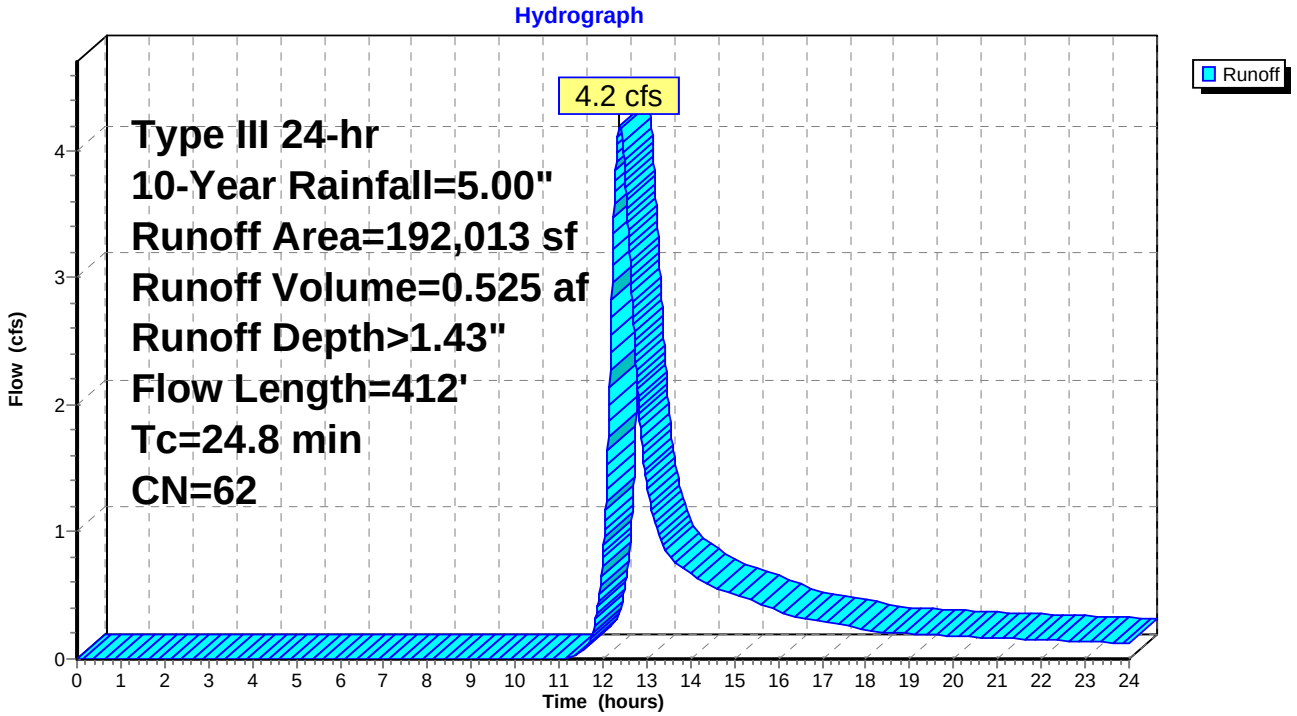
Runoff = 4.2 cfs @ 12.38 hrs, Volume= 0.525 af, Depth> 1.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.00"

	Area (sf)	CN	Description
*	182,691	61	>75% Grass cover, Solar Array Area, HSG B
	8,538	85	Gravel roads, HSG B
*	0	98	Solar Array Racking Posts, HSG B
*	784	98	Concrete Equipment Pad, HSG B
	192,013	62	Weighted Average
	191,229		99.59% Pervious Area
	784		0.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.0	100	0.0120	0.10		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
7.3	307	0.0099	0.70		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
0.5	5	0.2000	0.17		**Sheet Flow, Swale Slope (flow disrupted by stone level spreade** Grass: Dense n= 0.240 P2= 3.40"
24.8	412	Total			

Subcatchment 2S-B: Area 1 - West



Summary for Subcatchment 3S: Area 1 - East

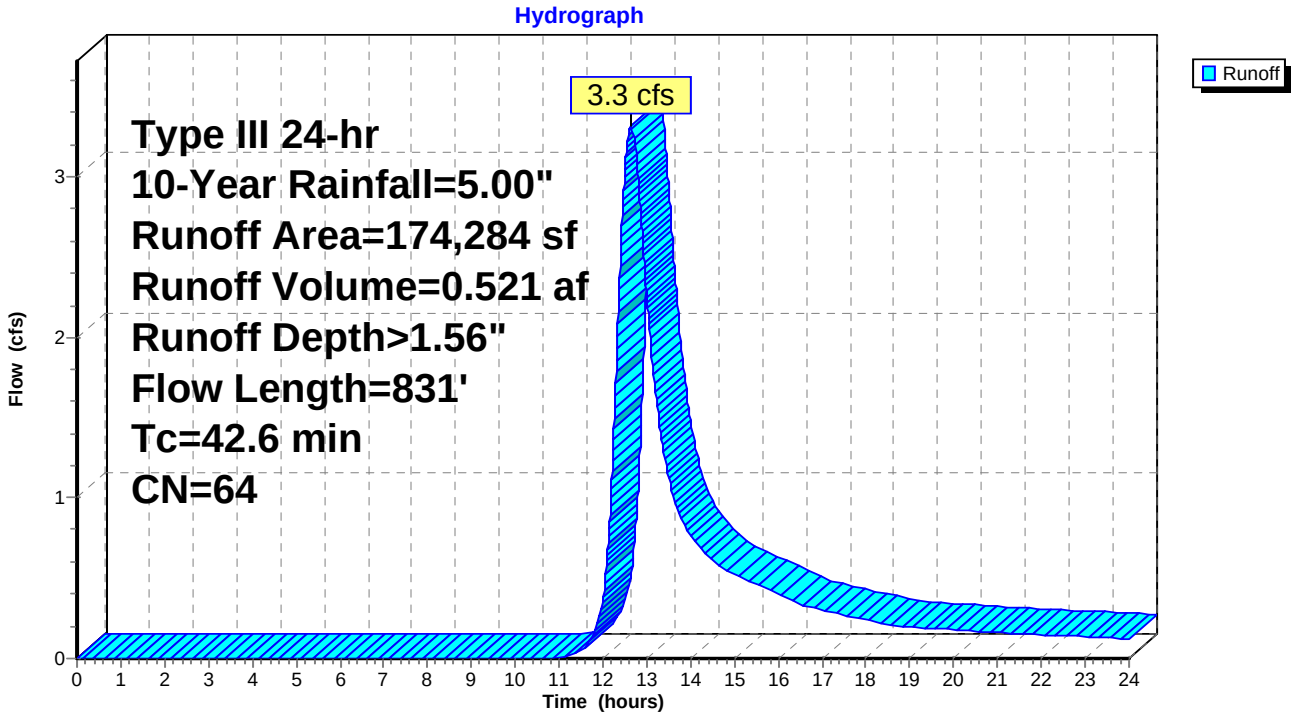
Runoff = 3.3 cfs @ 12.64 hrs, Volume= 0.521 af, Depth> 1.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.00"

	Area (sf)	CN	Description
	19,602	85	Gravel roads, HSG B
*	153,878	61	>75% Grass cover, Solar Array Area, HSG B
*	4	98	Solar Array Racking Posts, HSG B
*	800	98	Concrete Equipment Pads, HSG B
	174,284	64	Weighted Average
	173,480		99.54% Pervious Area
	804		0.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	100	0.0090	0.09		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
7.1	174	0.0034	0.41		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
16.3	526	0.0059	0.54		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.1	31	0.0742	4.39		**Shallow Concentrated Flow, Grass/Gravel** Unpaved Kv= 16.1 fps
42.6	831	Total			

Subcatchment 3S: Area 1 - East



Summary for Subcatchment 4S: Area 2 - West

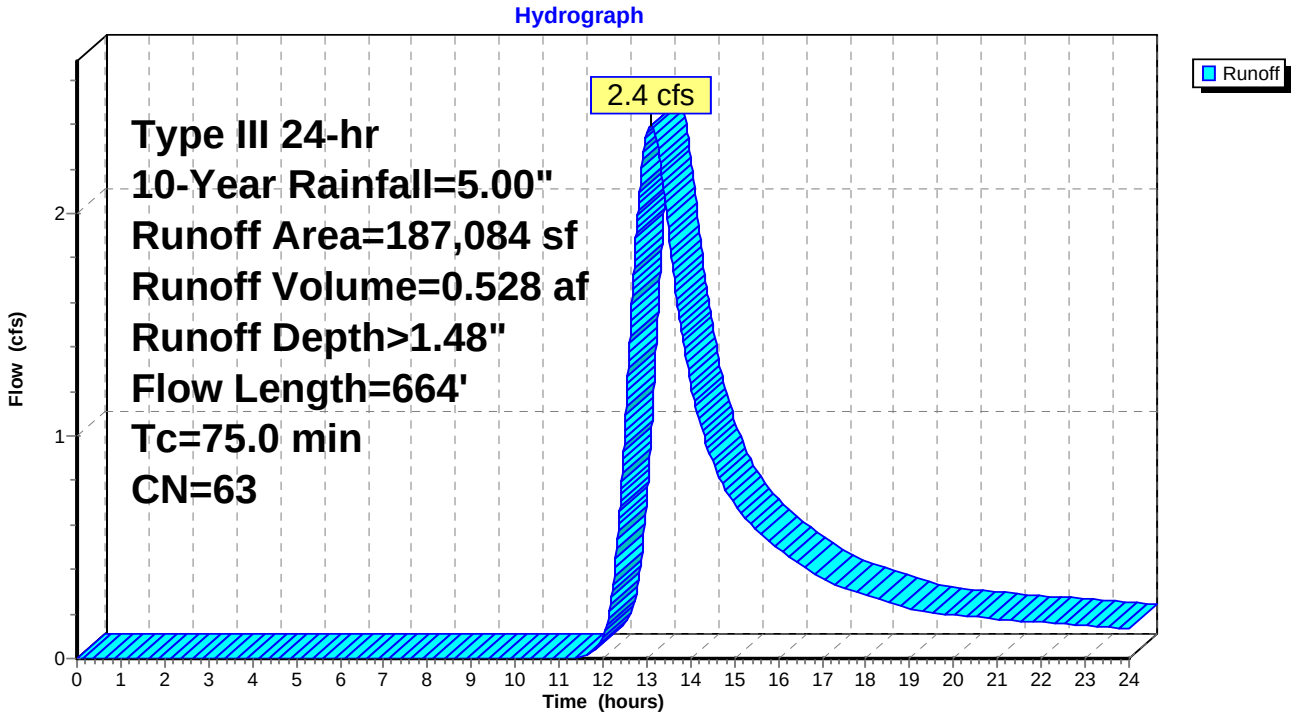
Runoff = 2.4 cfs @ 13.08 hrs, Volume= 0.528 af, Depth> 1.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.00"

	Area (sf)	CN	Description
	10,060	60	Woods, Fair, HSG B
*	161,719	61	>75% Grass cover, Solar Array Area, HSG B
	14,898	85	Gravel roads, HSG B
*	7	98	Solar Array Racking Posts, HSG B
*	400	98	Concrete Equipment Pad, HSG B
	187,084	63	Weighted Average
	186,677		99.78% Pervious Area
	407		0.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0080	0.08		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
1.3	86	0.0233	1.07		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
7.5	235	0.0055	0.52		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
13.3	177	0.0010	0.22		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
32.9	66	0.0010	0.03		**Sheet Flow, Grass (Flow disrupted by stone check dam)** Grass: Dense n= 0.240 P2= 3.40"
75.0	664	Total			

Subcatchment 4S: Area 2 - West



Summary for Subcatchment 5S: Area 2 - East

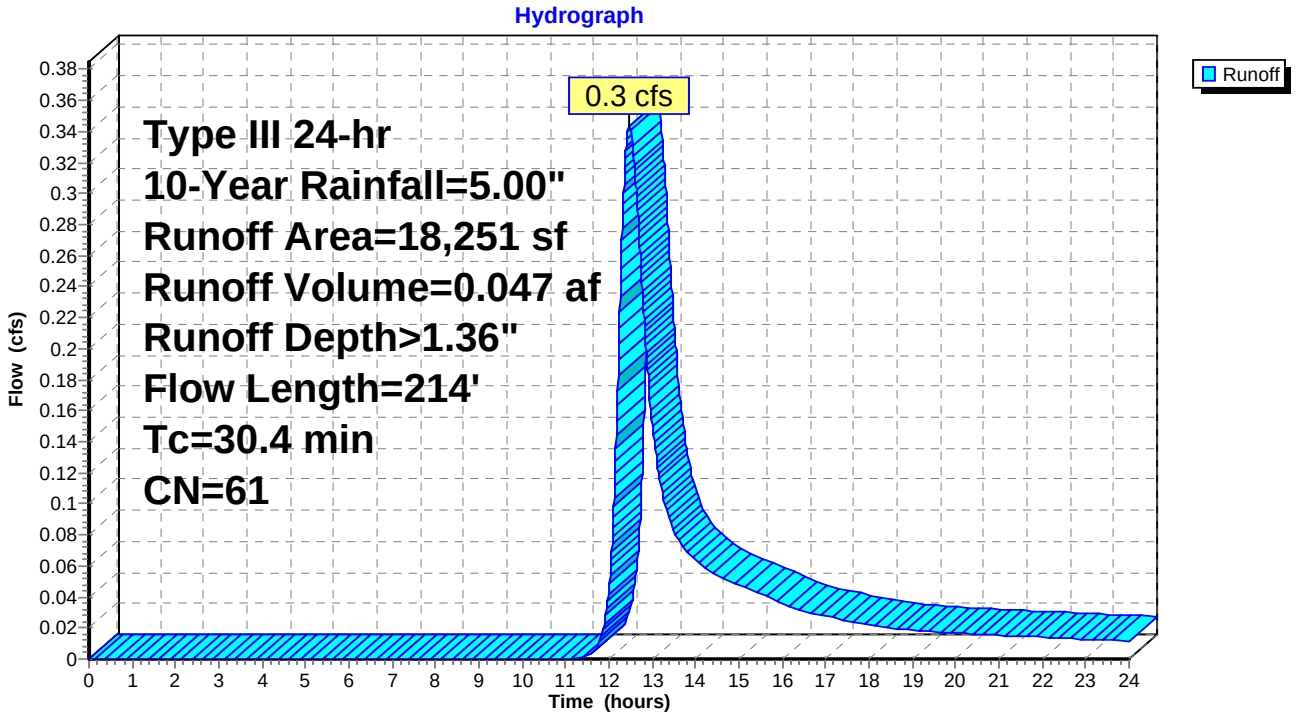
Runoff = 0.3 cfs @ 12.47 hrs, Volume= 0.047 af, Depth> 1.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.00"

	Area (sf)	CN	Description
*	18,250	61	>75% Grass cover, Solar Array Area, HSG B
*	1	98	Solar Array Racking Posts, HSG B
	18,251	61	Weighted Average
	18,250		99.99% Pervious Area
	1		0.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	58	0.0034	0.05		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
8.5	42	0.0119	0.08		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
2.8	86	0.0105	0.51		**Shallow Concentrated Flow, Grass - Solar Array Area** Woodland Kv= 5.0 fps
0.9	28	0.0050	0.49		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
30.4	214	Total			

Subcatchment 5S: Area 2 - East



Summary for Reach 3R: Overflow Swale

Inflow Area = 3.774 ac, 0.00% Impervious, Inflow Depth > 1.35" for 10-Year event
Inflow = 3.4 cfs @ 12.38 hrs, Volume= 0.426 af
Outflow = 3.4 cfs @ 12.39 hrs, Volume= 0.426 af, Atten= 0%, Lag= 0.3 min

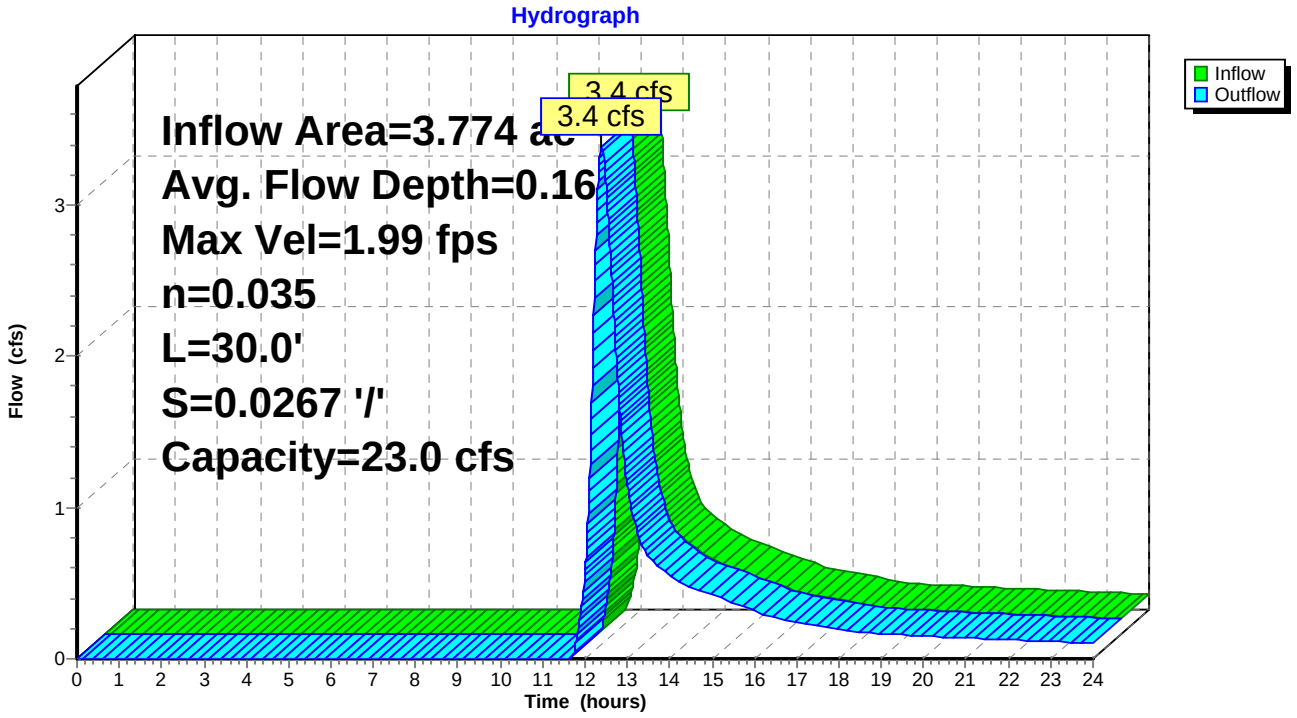
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 1.99 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.78 fps, Avg. Travel Time= 0.6 min

Peak Storage= 51 cf @ 12.39 hrs
Average Depth at Peak Storage= 0.16'
Bank-Full Depth= 0.50' Flow Area= 5.8 sf, Capacity= 23.0 cfs

10.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 3.0 '/' Top Width= 13.00'
Length= 30.0' Slope= 0.0267 '/'
Inlet Invert= 22.80', Outlet Invert= 22.00'

‡

Reach 3R: Overflow Swale



Summary for Reach 4R: Overflow Swale

Inflow Area = 4.408 ac, 0.41% Impervious, Inflow Depth > 1.42" for 10-Year event
Inflow = 4.2 cfs @ 12.38 hrs, Volume= 0.523 af
Outflow = 4.2 cfs @ 12.38 hrs, Volume= 0.523 af, Atten= 0%, Lag= 0.1 min

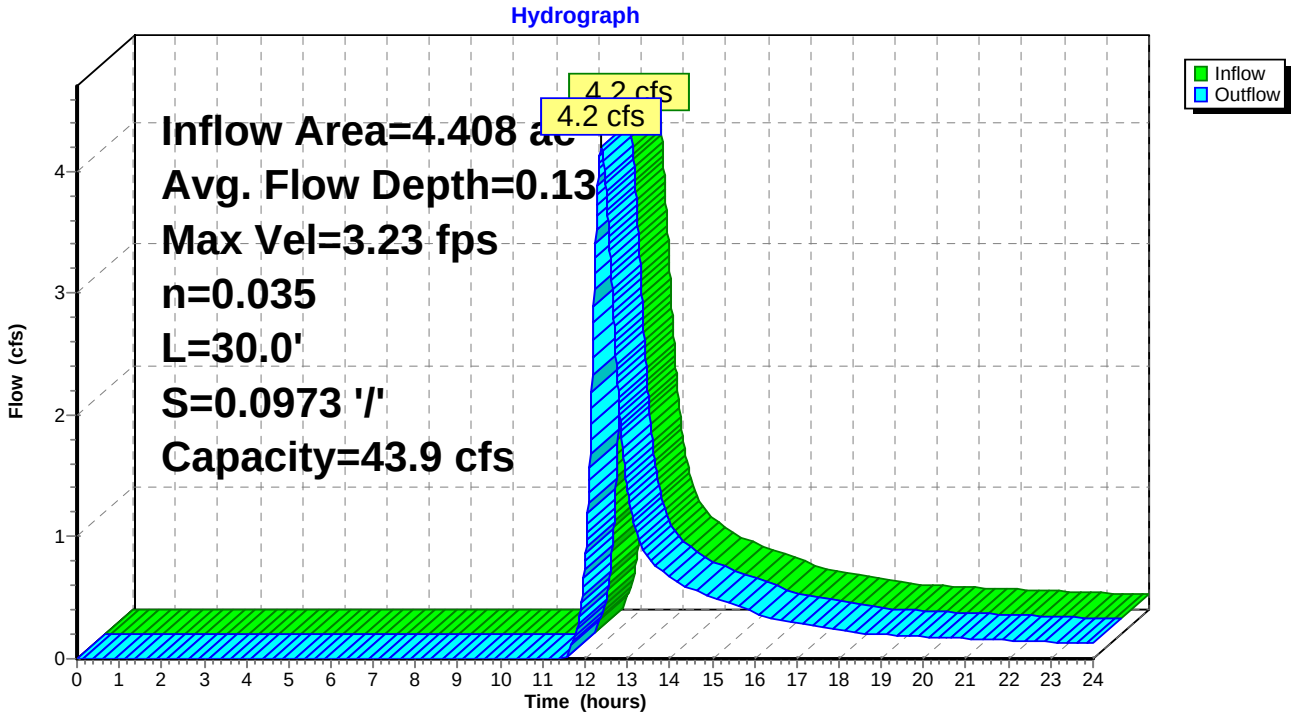
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.23 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.25 fps, Avg. Travel Time= 0.4 min

Peak Storage= 39 cf @ 12.38 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 0.50' Flow Area= 5.8 sf, Capacity= 43.9 cfs

10.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 3.0 '/' Top Width= 13.00'
Length= 30.0' Slope= 0.0973 '/'
Inlet Invert= 25.00', Outlet Invert= 22.08'

‡

Reach 4R: Overflow Swale



Summary for Pond 2P: BioFiltration Cell

Inflow Area = 3.774 ac, 0.00% Impervious, Inflow Depth > 1.36" for 10-Year event
Inflow = 3.4 cfs @ 12.38 hrs, Volume= 0.427 af
Outflow = 3.4 cfs @ 12.38 hrs, Volume= 0.426 af, Atten= 0%, Lag= 0.2 min
Primary = 3.4 cfs @ 12.38 hrs, Volume= 0.426 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 23.10' @ 12.38 hrs Surf.Area= 0.005 ac Storage= 0.003 af

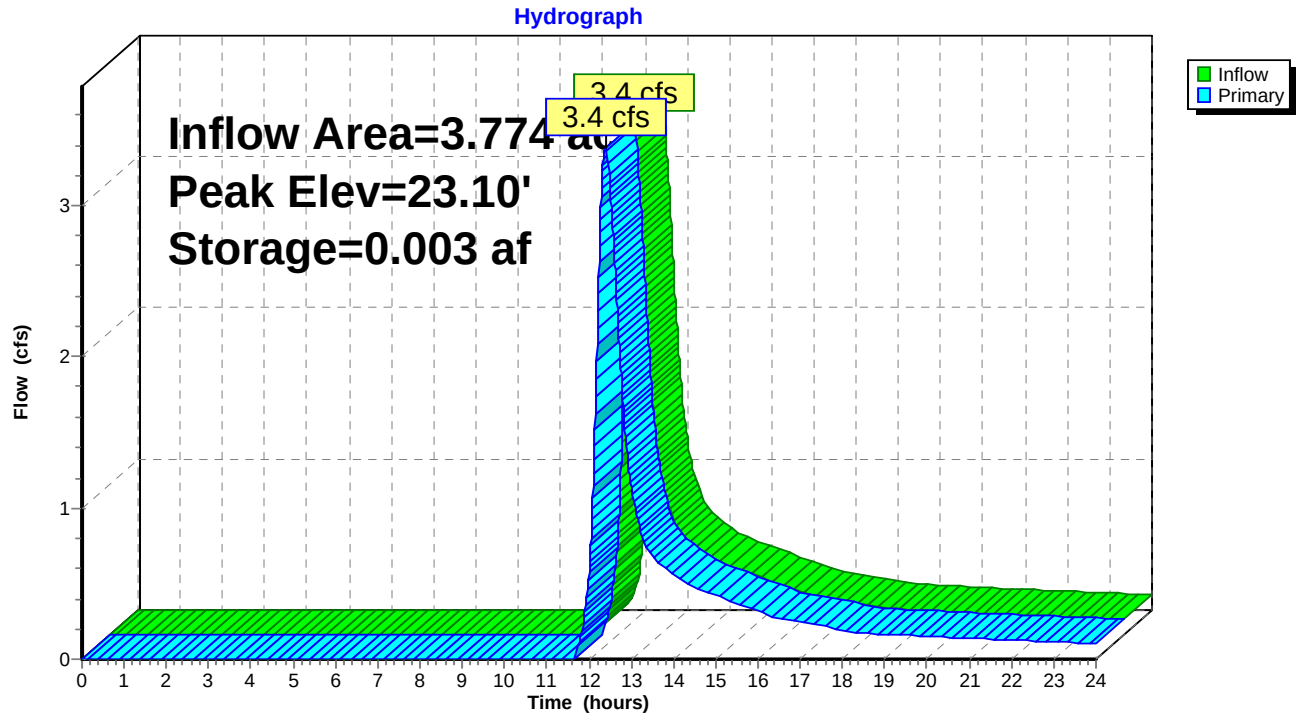
Plug-Flow detention time= 2.8 min calculated for 0.426 af (100% of inflow)
Center-of-Mass det. time= 0.9 min (886.6 - 885.6)

Volume	Invert	Avail.Storage	Storage Description
#1	22.30'	0.004 af	**4.00'W x 20.00'L x 1.00'H Filtration Cell Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	22.80'	**10.0' long x 5.0' breadth Vegetated Swale** 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 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=3.4 cfs @ 12.38 hrs HW=23.10' TW=22.96' (Dynamic Tailwater)
└─**1=Vegetated Swale** (Weir Controls 3.4 cfs @ 1.11 fps)

Pond 2P: BioFiltration Cell



Summary for Pond 5P: BioFiltration Cell

Inflow Area = 4.408 ac, 0.41% Impervious, Inflow Depth > 1.43" for 10-Year event
Inflow = 4.2 cfs @ 12.38 hrs, Volume= 0.525 af
Outflow = 4.2 cfs @ 12.38 hrs, Volume= 0.523 af, Atten= 0%, Lag= 0.2 min
Primary = 4.2 cfs @ 12.38 hrs, Volume= 0.523 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 25.33' @ 12.38 hrs Surf.Area= 0.005 ac Storage= 0.003 af

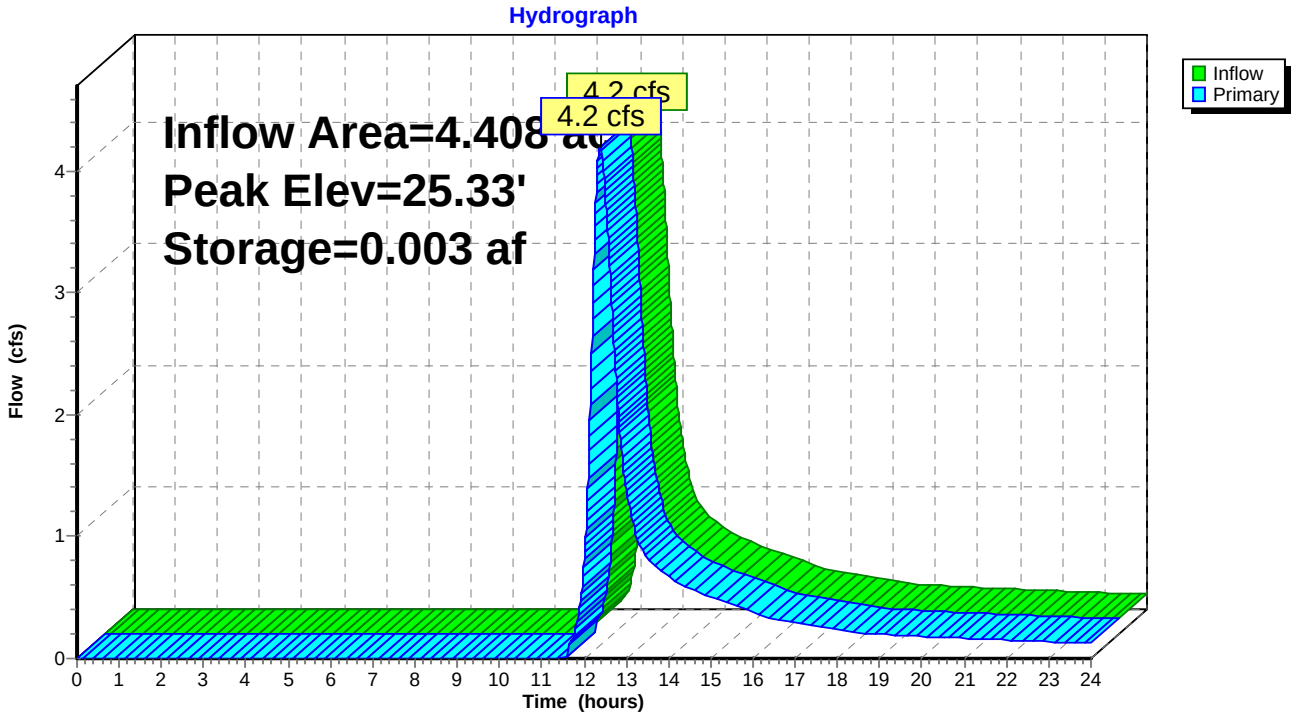
Plug-Flow detention time= 2.4 min calculated for 0.523 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (883.5 - 882.7)

Volume	Invert	Avail.Storage	Storage Description
#1	24.50'	0.004 af	**4.00'W x 20.00'L x 1.10'H Filtration Cell Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	25.00'	**10.0' long x 5.0' breadth Vegetated Swale** 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 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#2	Primary	25.50'	**20.0' long x 5.0' breadth Swale Overtopping** 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 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=4.2 cfs @ 12.38 hrs HW=25.33' TW=25.13' (Dynamic Tailwater)
└─**1=Vegetated Swale** (Weir Controls 4.2 cfs @ 1.27 fps)
└─**2=Swale Overtopping** (Controls 0.0 cfs)

Pond 5P: BioFiltration Cell

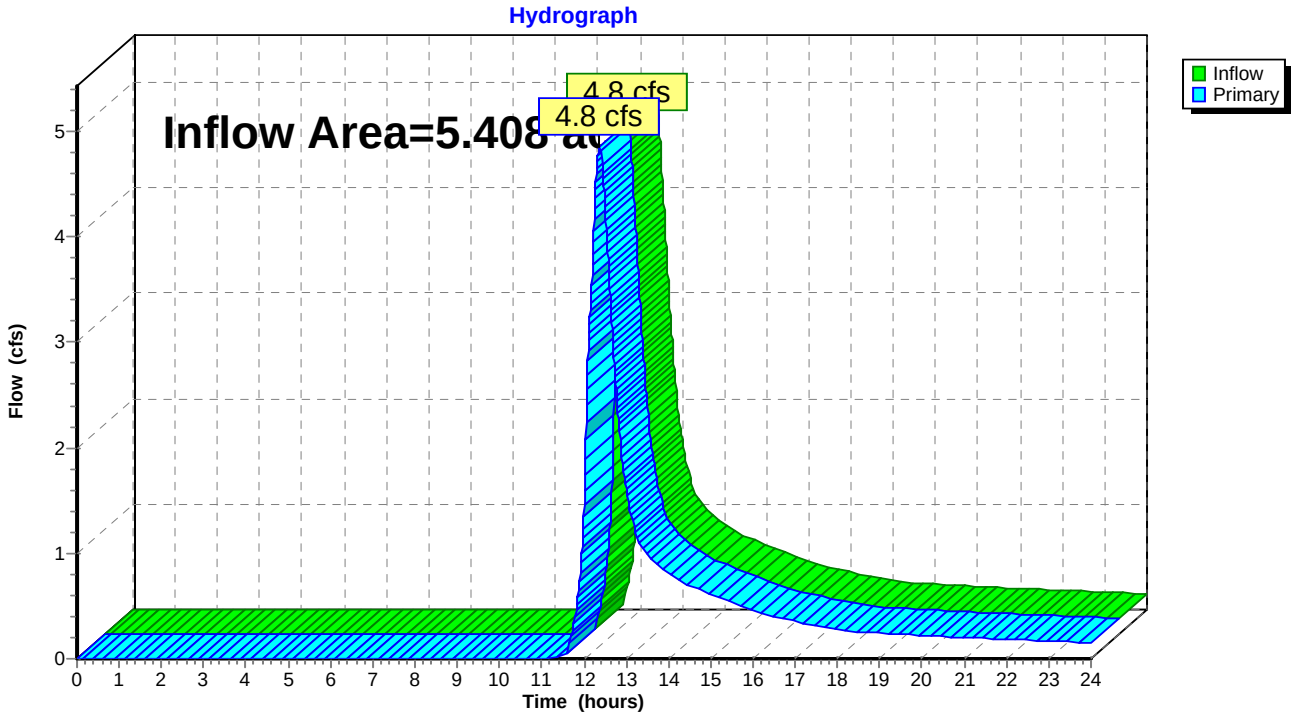


Summary for Link 3L: To Reservoir - South

Inflow Area = 5.408 ac, 0.33% Impervious, Inflow Depth > 1.41" for 10-Year event
Inflow = 4.8 cfs @ 12.37 hrs, Volume= 0.637 af
Primary = 4.8 cfs @ 12.37 hrs, Volume= 0.637 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 3L: To Reservoir - South

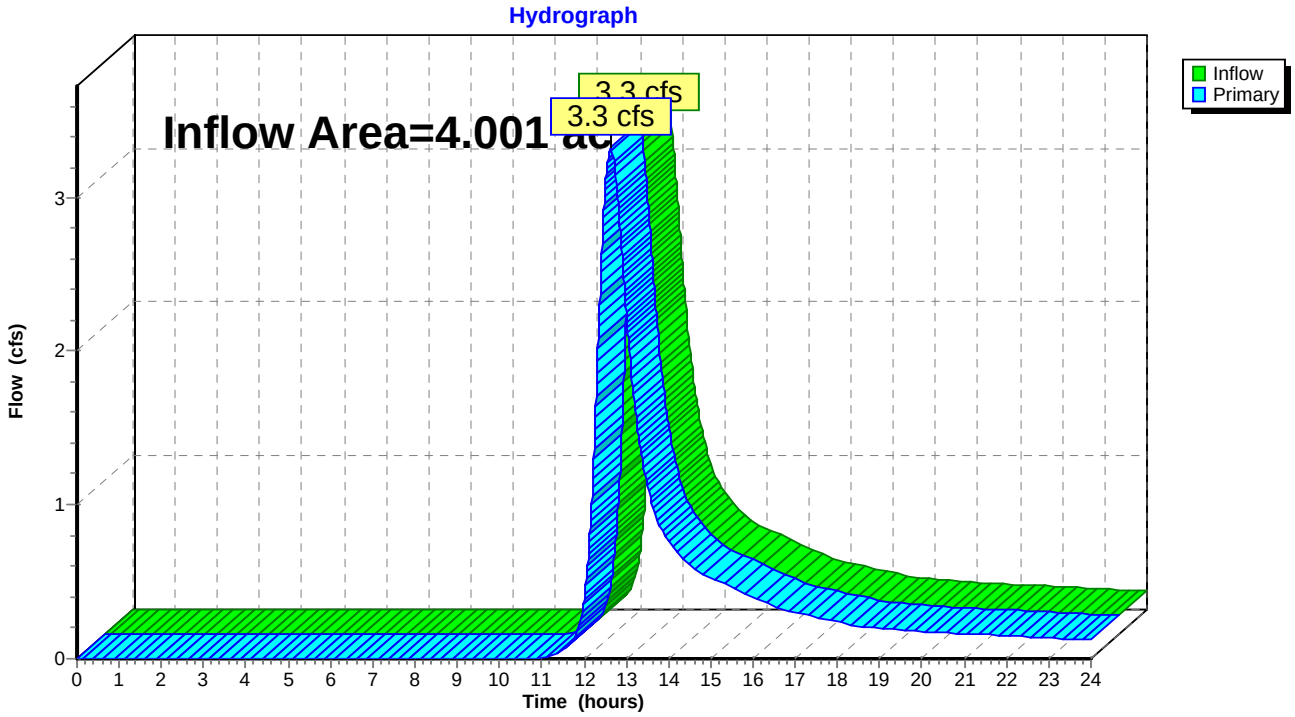


Summary for Link 4L: Wooded Area to East

Inflow Area = 4.001 ac, 0.46% Impervious, Inflow Depth > 1.56" for 10-Year event
Inflow = 3.3 cfs @ 12.64 hrs, Volume= 0.521 af
Primary = 3.3 cfs @ 12.64 hrs, Volume= 0.521 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 4L: Wooded Area to East

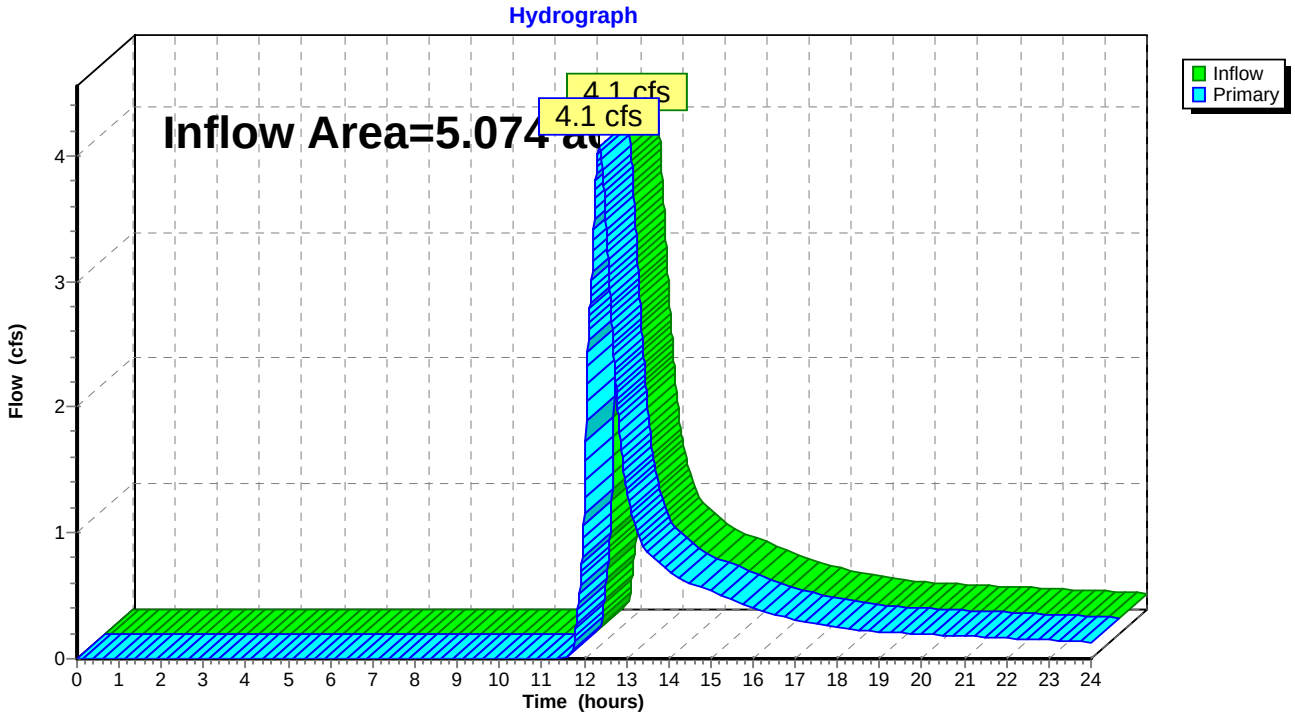


Summary for Link 6L: To Reservoir - North

Inflow Area = 5.074 ac, 0.00% Impervious, Inflow Depth > 1.29" for 10-Year event
Inflow = 4.1 cfs @ 12.37 hrs, Volume= 0.545 af
Primary = 4.1 cfs @ 12.37 hrs, Volume= 0.545 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 6L: To Reservoir - North

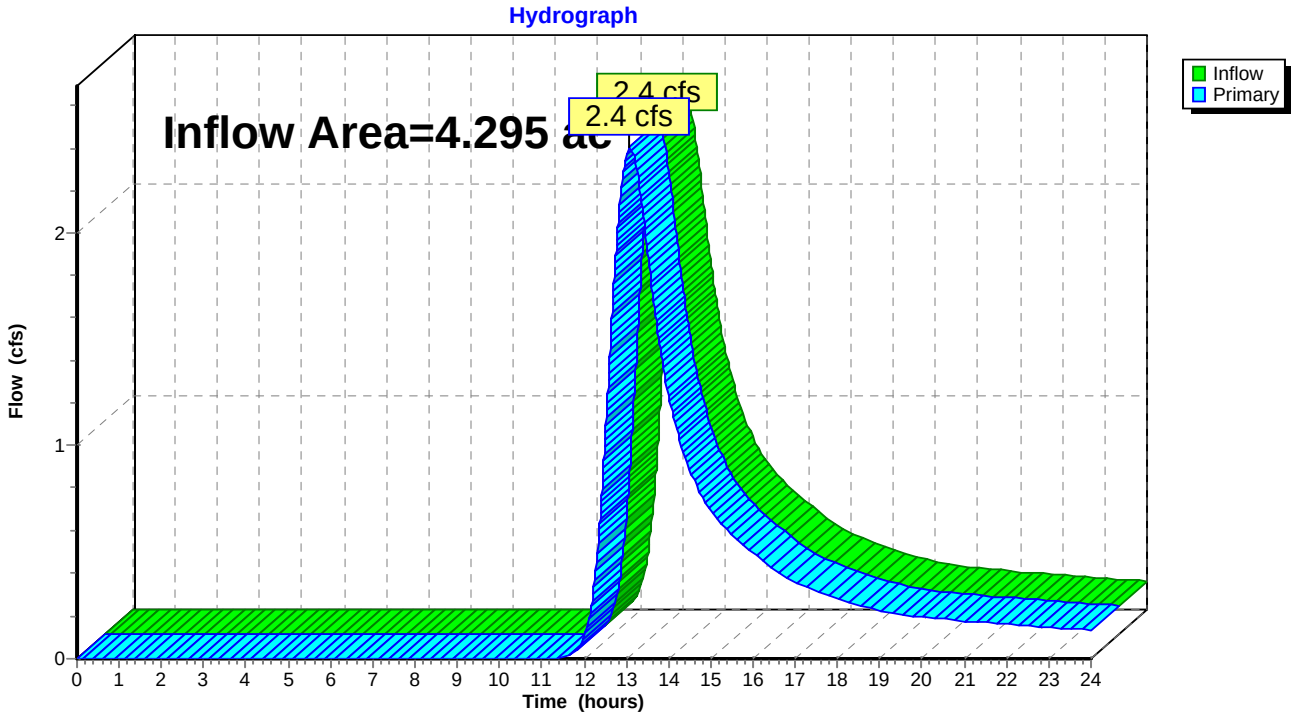


Summary for Link 7L: Off-Site Flow to South

Inflow Area = 4.295 ac, 0.22% Impervious, Inflow Depth > 1.48" for 10-Year event
Inflow = 2.4 cfs @ 13.08 hrs, Volume= 0.528 af
Primary = 2.4 cfs @ 13.08 hrs, Volume= 0.528 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 7L: Off-Site Flow to South

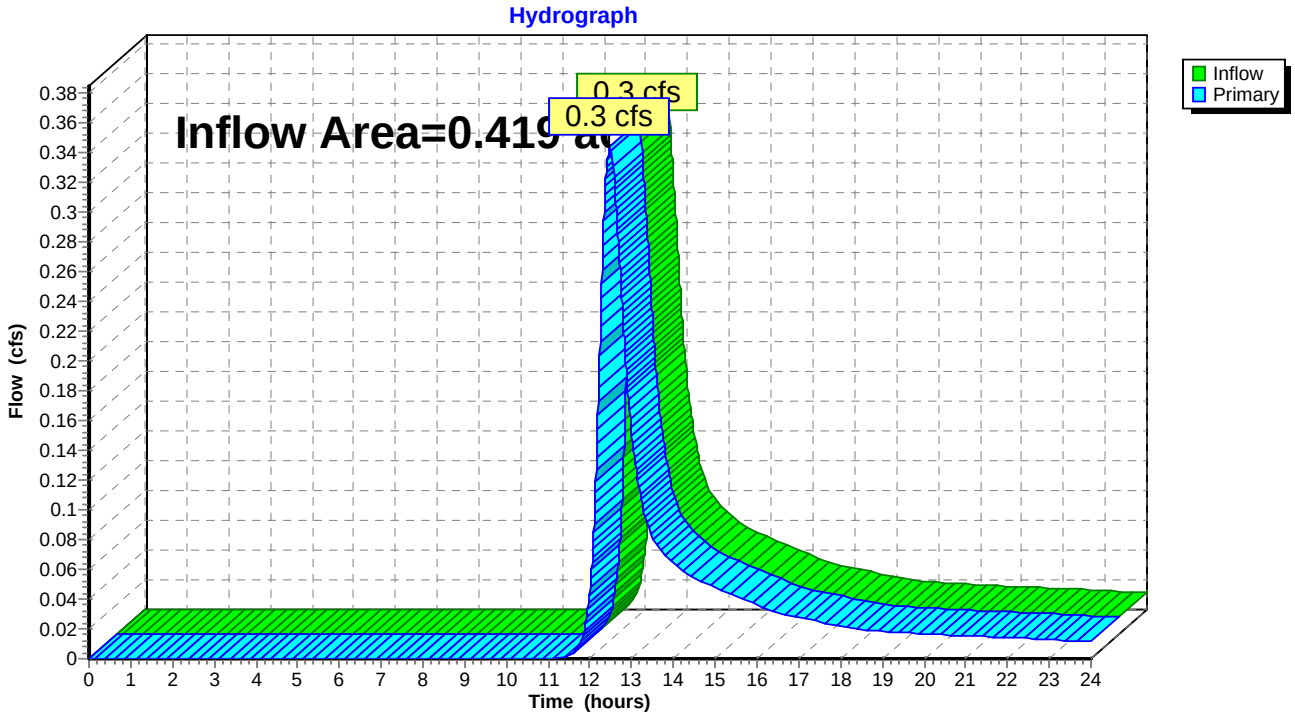


Summary for Link 8L: Off-Site Flow to East

Inflow Area = 0.419 ac, 0.01% Impervious, Inflow Depth > 1.36" for 10-Year event
Inflow = 0.3 cfs @ 12.47 hrs, Volume= 0.047 af
Primary = 0.3 cfs @ 12.47 hrs, Volume= 0.047 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 8L: Off-Site Flow to East



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S-A: Area 1 - North - Runoff Area=1.300 ac 0.00% Impervious Runoff Depth>1.49"
Flow Length=30' Slope=0.0770 '/' Tc=6.0 min CN=57 Runoff=2.1 cfs 0.162 af

Subcatchment 1S-B: Area 1 - North - Solar Runoff Area=164,396 sf 0.00% Impervious Runoff Depth>1.80"
Flow Length=562' Tc=24.8 min CN=61 Runoff=4.6 cfs 0.565 af

Subcatchment 2S-A: Area 1 - West - Runoff Area=1.000 ac 0.00% Impervious Runoff Depth>1.80"
Flow Length=30' Slope=0.0350 '/' Tc=6.0 min CN=61 Runoff=2.0 cfs 0.150 af

Subcatchment 2S-B: Area 1 - West Runoff Area=192,013 sf 0.41% Impervious Runoff Depth>1.88"
Flow Length=412' Tc=24.8 min CN=62 Runoff=5.7 cfs 0.689 af

Subcatchment 3S: Area 1 - East Runoff Area=174,284 sf 0.46% Impervious Runoff Depth>2.03"
Flow Length=831' Tc=42.6 min CN=64 Runoff=4.4 cfs 0.676 af

Subcatchment 4S: Area 2 - West Runoff Area=187,084 sf 0.22% Impervious Runoff Depth>1.93"
Flow Length=664' Tc=75.0 min CN=63 Runoff=3.2 cfs 0.690 af

Subcatchment 5S: Area 2 - East Runoff Area=18,251 sf 0.01% Impervious Runoff Depth>1.79"
Flow Length=214' Tc=30.4 min CN=61 Runoff=0.5 cfs 0.063 af

Reach 3R: Overflow Swale Avg. Flow Depth=0.19' Max Vel=2.24 fps Inflow=4.6 cfs 0.563 af
n=0.035 L=30.0' S=0.0267 '/' Capacity=23.0 cfs Outflow=4.6 cfs 0.563 af

Reach 4R: Overflow Swale Avg. Flow Depth=0.15' Max Vel=3.63 fps Inflow=5.7 cfs 0.687 af
n=0.035 L=30.0' S=0.0973 '/' Capacity=43.9 cfs Outflow=5.7 cfs 0.687 af

Pond 2P: BioFiltration Cell Peak Elev=23.17' Storage=0.003 af Inflow=4.6 cfs 0.565 af
Outflow=4.6 cfs 0.563 af

Pond 5P: BioFiltration Cell Peak Elev=25.40' Storage=0.003 af Inflow=5.7 cfs 0.689 af
Outflow=5.7 cfs 0.687 af

Link 3L: To Reservoir - South Inflow=6.5 cfs 0.838 af
Primary=6.5 cfs 0.838 af

Link 4L: Wooded Area to East Inflow=4.4 cfs 0.676 af
Primary=4.4 cfs 0.676 af

Link 6L: To Reservoir - North Inflow=5.6 cfs 0.725 af
Primary=5.6 cfs 0.725 af

Link 7L: Off-Site Flow to South Inflow=3.2 cfs 0.690 af
Primary=3.2 cfs 0.690 af

Link 8L: Off-Site Flow to East Inflow=0.5 cfs 0.063 af
Primary=0.5 cfs 0.063 af

Total Runoff Area = 19.197 ac Runoff Volume = 2.995 af Average Runoff Depth = 1.87"
99.76% Pervious = 19.151 ac 0.24% Impervious = 0.046 ac

Summary for Subcatchment 1S-A: Area 1 - North - DownGradient Swale

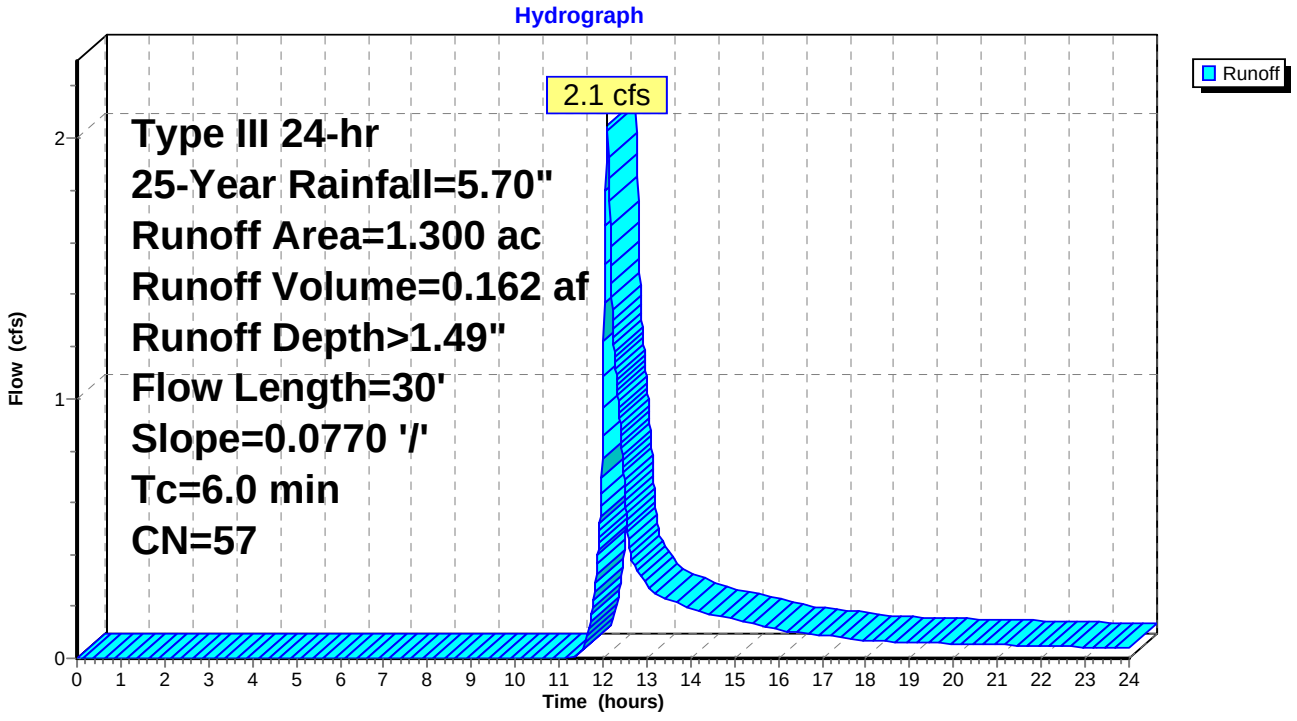
Runoff = 2.1 cfs @ 12.10 hrs, Volume= 0.162 af, Depth> 1.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.70"

Area (ac)	CN	Description
0.850	55	Woods, Good, HSG B
0.450	61	>75% Grass cover, Good, HSG B
1.300	57	Weighted Average
1.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	30	0.0770	0.11		**Sheet Flow, Wooded Slope** Woods: Light underbrush n= 0.400 P2= 3.40"
4.6	30	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 1S-A: Area 1 - North - DownGradient Swale



Summary for Subcatchment 1S-B: Area 1 - North - Solar Arrays

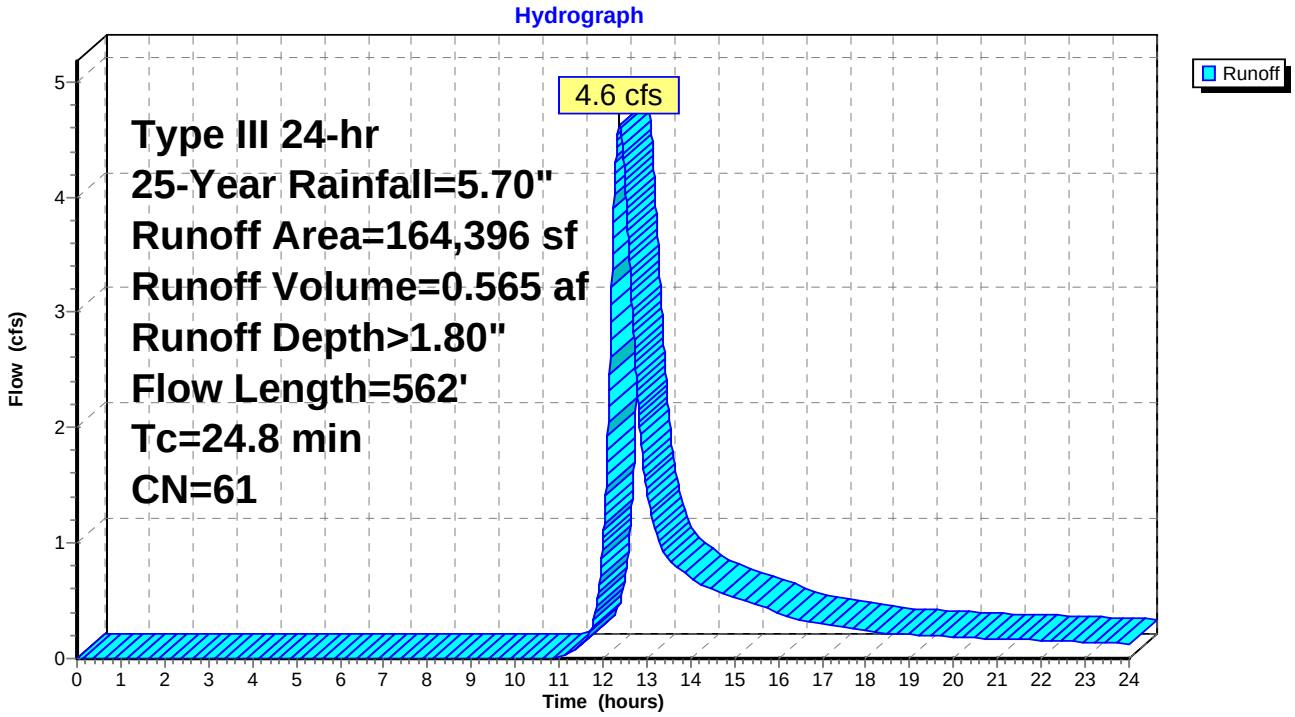
Runoff = 4.6 cfs @ 12.37 hrs, Volume= 0.565 af, Depth> 1.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.70"

	Area (sf)	CN	Description
	23,392	60	Woods, Fair, HSG B
*	141,004	61	>75% Grass cover, Solar Array Area, HSG B
*	0	98	Solar Array Posts, HSG B
	164,396	61	Weighted Average
	164,396		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5	100	0.0177	0.11		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
1.0	40	0.0085	0.65		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
0.3	32	0.0625	1.75		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
2.9	143	0.0140	0.83		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
5.2	211	0.0095	0.68		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
0.4	31	0.0323	1.26		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
0.5	5	0.2000	0.17		**Sheet Flow, To swale (Flow disrupted by stone level spreader)** Grass: Dense n= 0.240 P2= 3.40"
24.8	562	Total			

Subcatchment 1S-B: Area 1 - North - Solar Arrays



Summary for Subcatchment 2S-A: Area 1 - West - DownGradient Swale

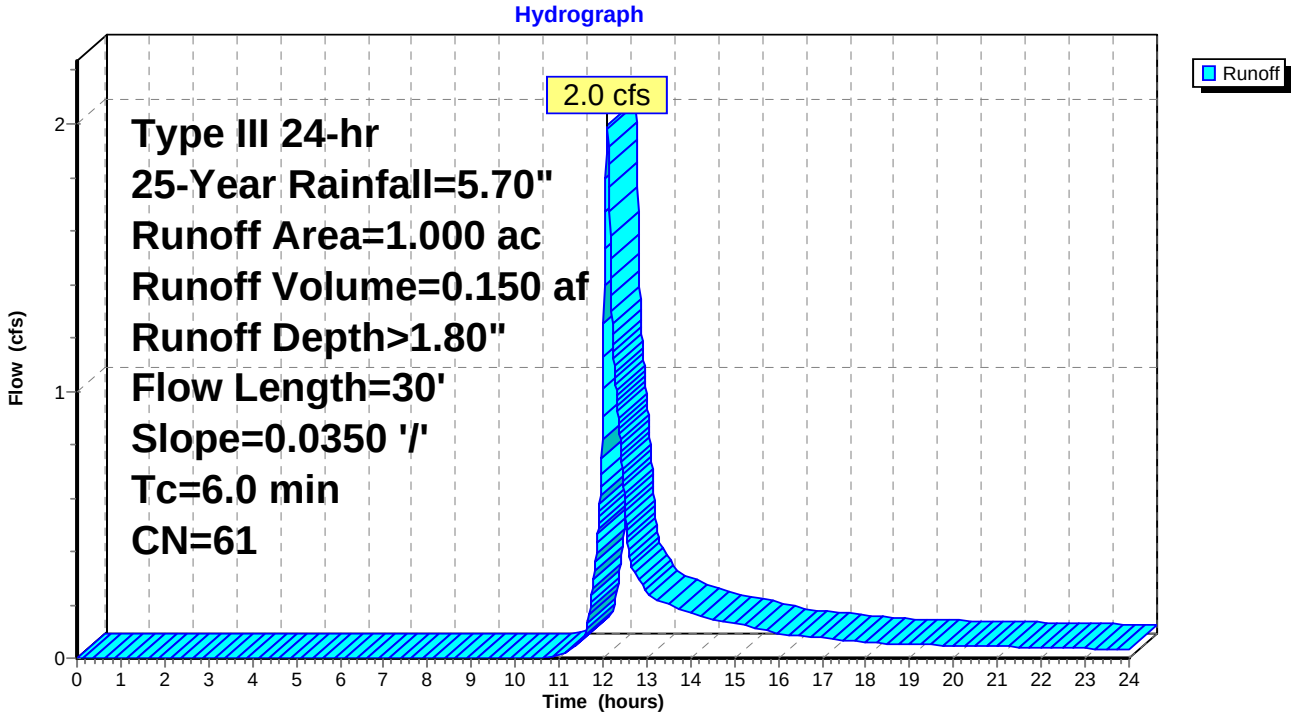
Runoff = 2.0 cfs @ 12.10 hrs, Volume= 0.150 af, Depth> 1.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.70"

Area (ac)	CN	Description
1.000	61	>75% Grass cover, Good, HSG B
1.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	30	0.0350	0.12		**Sheet Flow, Grass Slope** Grass: Dense n= 0.240 P2= 3.40"
4.2	30	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 2S-A: Area 1 - West - DownGradient Swale



Summary for Subcatchment 2S-B: Area 1 - West

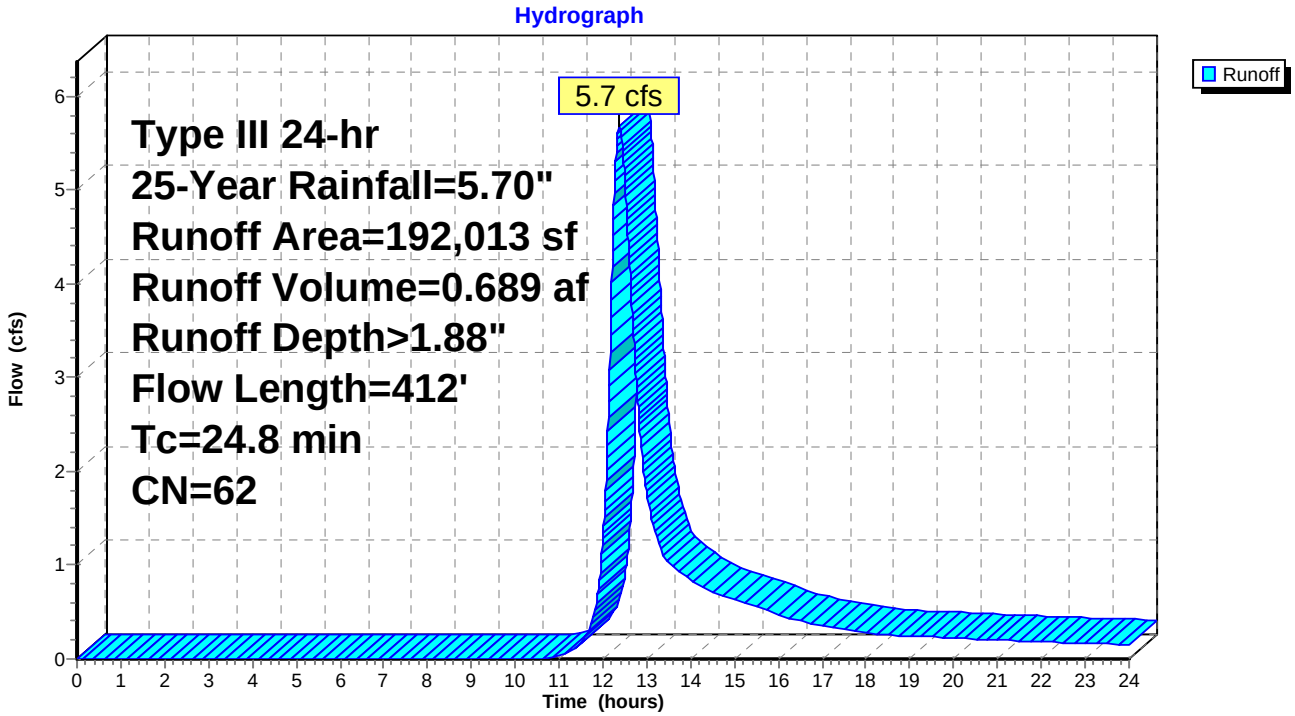
Runoff = 5.7 cfs @ 12.37 hrs, Volume= 0.689 af, Depth> 1.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.70"

	Area (sf)	CN	Description
*	182,691	61	>75% Grass cover, Solar Array Area, HSG B
	8,538	85	Gravel roads, HSG B
*	0	98	Solar Array Racking Posts, HSG B
*	784	98	Concrete Equipment Pad, HSG B
	192,013	62	Weighted Average
	191,229		99.59% Pervious Area
	784		0.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.0	100	0.0120	0.10		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
7.3	307	0.0099	0.70		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
0.5	5	0.2000	0.17		**Sheet Flow, Swale Slope (flow disrupted by stone level spreade** Grass: Dense n= 0.240 P2= 3.40"
24.8	412	Total			

Subcatchment 2S-B: Area 1 - West



Summary for Subcatchment 3S: Area 1 - East

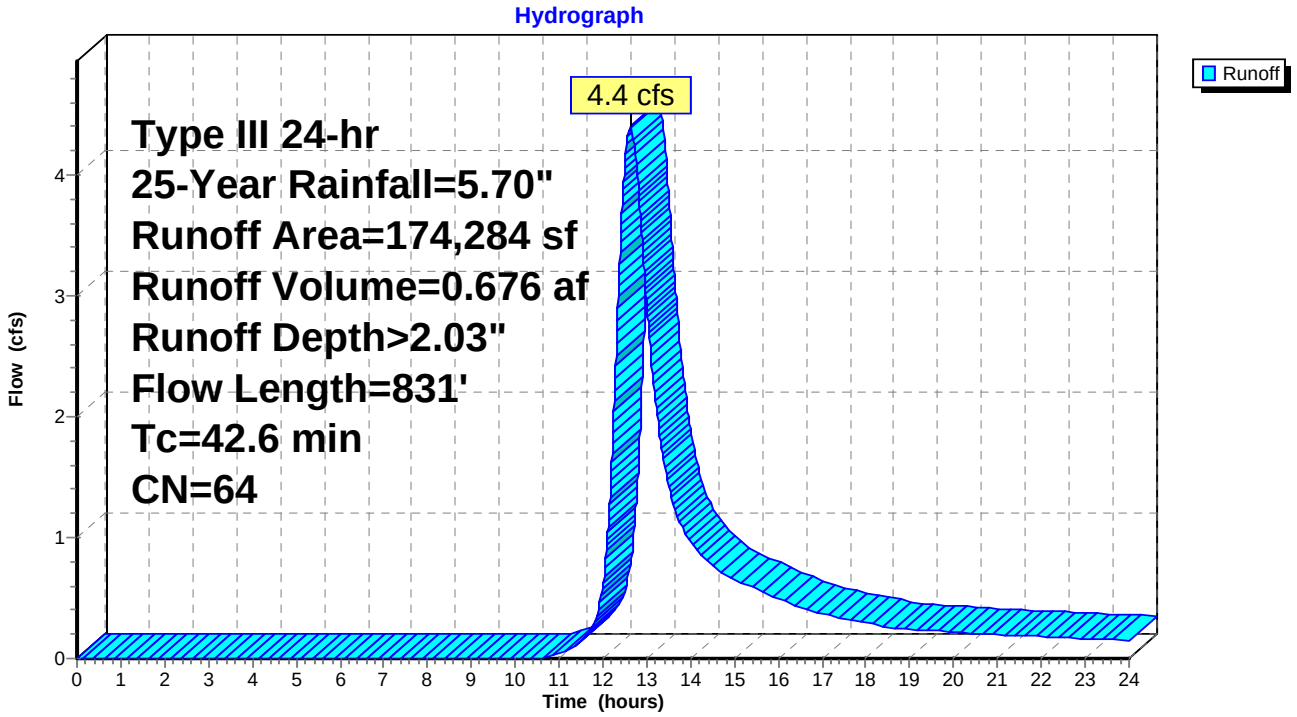
Runoff = 4.4 cfs @ 12.64 hrs, Volume= 0.676 af, Depth> 2.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.70"

	Area (sf)	CN	Description
	19,602	85	Gravel roads, HSG B
*	153,878	61	>75% Grass cover, Solar Array Area, HSG B
*	4	98	Solar Array Racking Posts, HSG B
*	800	98	Concrete Equipment Pads, HSG B
	174,284	64	Weighted Average
	173,480		99.54% Pervious Area
	804		0.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	100	0.0090	0.09		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
7.1	174	0.0034	0.41		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
16.3	526	0.0059	0.54		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.1	31	0.0742	4.39		**Shallow Concentrated Flow, Grass/Gravel** Unpaved Kv= 16.1 fps
42.6	831	Total			

Subcatchment 3S: Area 1 - East



Summary for Subcatchment 4S: Area 2 - West

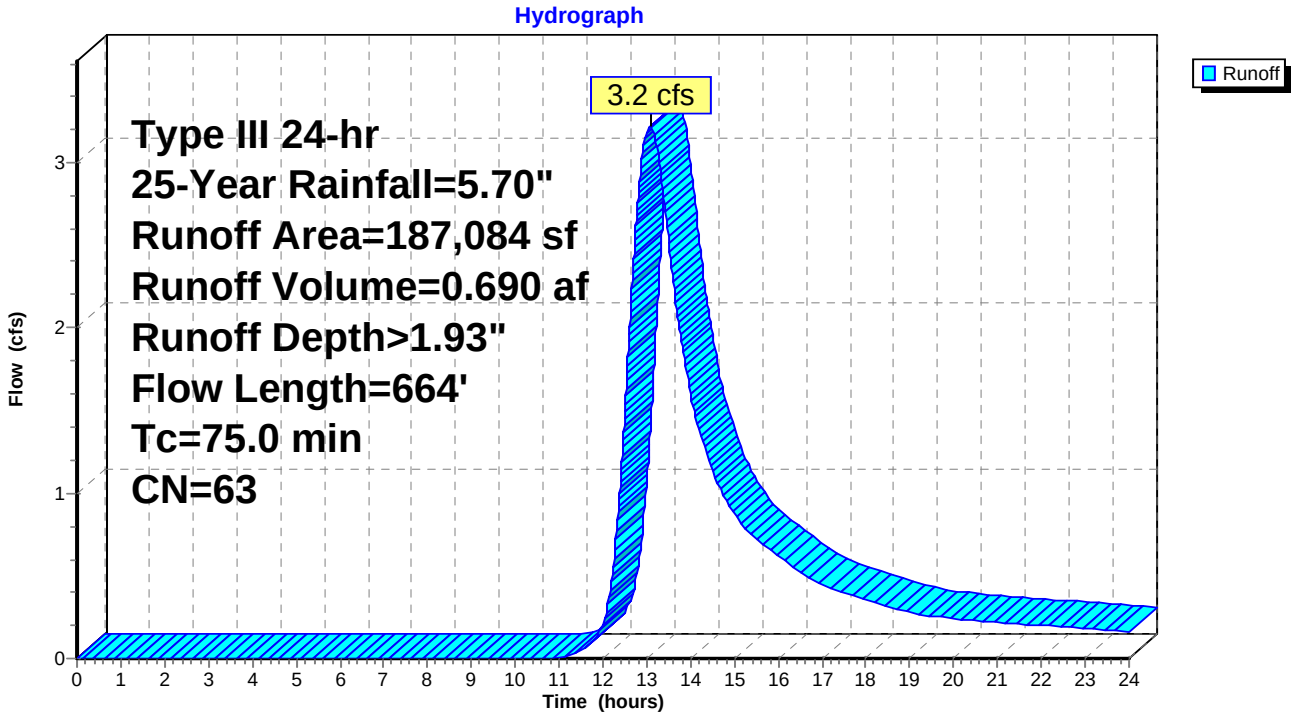
Runoff = 3.2 cfs @ 13.08 hrs, Volume= 0.690 af, Depth> 1.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.70"

	Area (sf)	CN	Description
	10,060	60	Woods, Fair, HSG B
*	161,719	61	>75% Grass cover, Solar Array Area, HSG B
	14,898	85	Gravel roads, HSG B
*	7	98	Solar Array Racking Posts, HSG B
*	400	98	Concrete Equipment Pad, HSG B
	187,084	63	Weighted Average
	186,677		99.78% Pervious Area
	407		0.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0080	0.08		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
1.3	86	0.0233	1.07		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
7.5	235	0.0055	0.52		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
13.3	177	0.0010	0.22		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
32.9	66	0.0010	0.03		**Sheet Flow, Grass (Flow disrupted by stone check dam)** Grass: Dense n= 0.240 P2= 3.40"
75.0	664	Total			

Subcatchment 4S: Area 2 - West



Summary for Subcatchment 5S: Area 2 - East

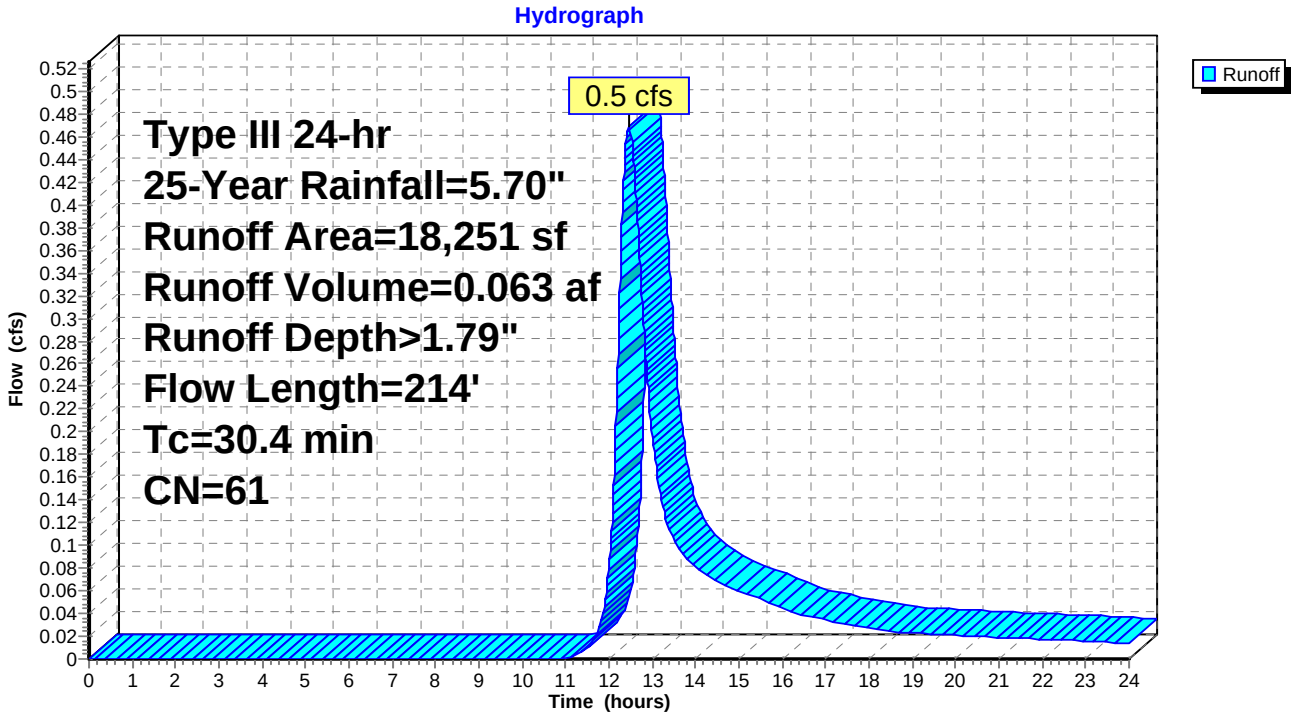
Runoff = 0.5 cfs @ 12.46 hrs, Volume= 0.063 af, Depth> 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.70"

	Area (sf)	CN	Description
*	18,250	61	>75% Grass cover, Solar Array Area, HSG B
*	1	98	Solar Array Racking Posts, HSG B
	18,251	61	Weighted Average
	18,250		99.99% Pervious Area
	1		0.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	58	0.0034	0.05		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
8.5	42	0.0119	0.08		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
2.8	86	0.0105	0.51		**Shallow Concentrated Flow, Grass - Solar Array Area** Woodland Kv= 5.0 fps
0.9	28	0.0050	0.49		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
30.4	214	Total			

Subcatchment 5S: Area 2 - East



Summary for Reach 3R: Overflow Swale

Inflow Area = 3.774 ac, 0.00% Impervious, Inflow Depth > 1.79" for 25-Year event
Inflow = 4.6 cfs @ 12.38 hrs, Volume= 0.563 af
Outflow = 4.6 cfs @ 12.38 hrs, Volume= 0.563 af, Atten= 0%, Lag= 0.1 min

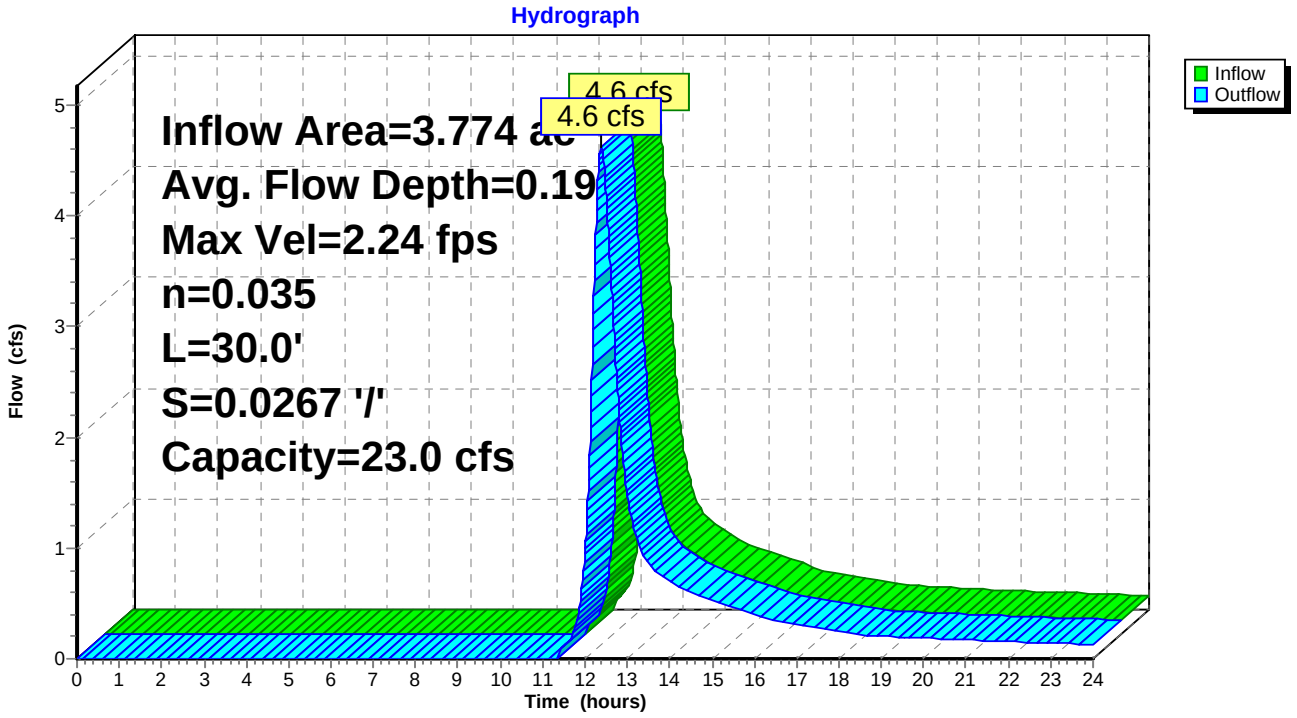
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.24 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 0.85 fps, Avg. Travel Time= 0.6 min

Peak Storage= 62 cf @ 12.38 hrs
Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 0.50' Flow Area= 5.8 sf, Capacity= 23.0 cfs

10.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 3.0 '/' Top Width= 13.00'
Length= 30.0' Slope= 0.0267 '/'
Inlet Invert= 22.80', Outlet Invert= 22.00'

‡

Reach 3R: Overflow Swale



Summary for Reach 4R: Overflow Swale

Inflow Area = 4.408 ac, 0.41% Impervious, Inflow Depth > 1.87" for 25-Year event
Inflow = 5.7 cfs @ 12.38 hrs, Volume= 0.687 af
Outflow = 5.7 cfs @ 12.38 hrs, Volume= 0.687 af, Atten= 0%, Lag= 0.1 min

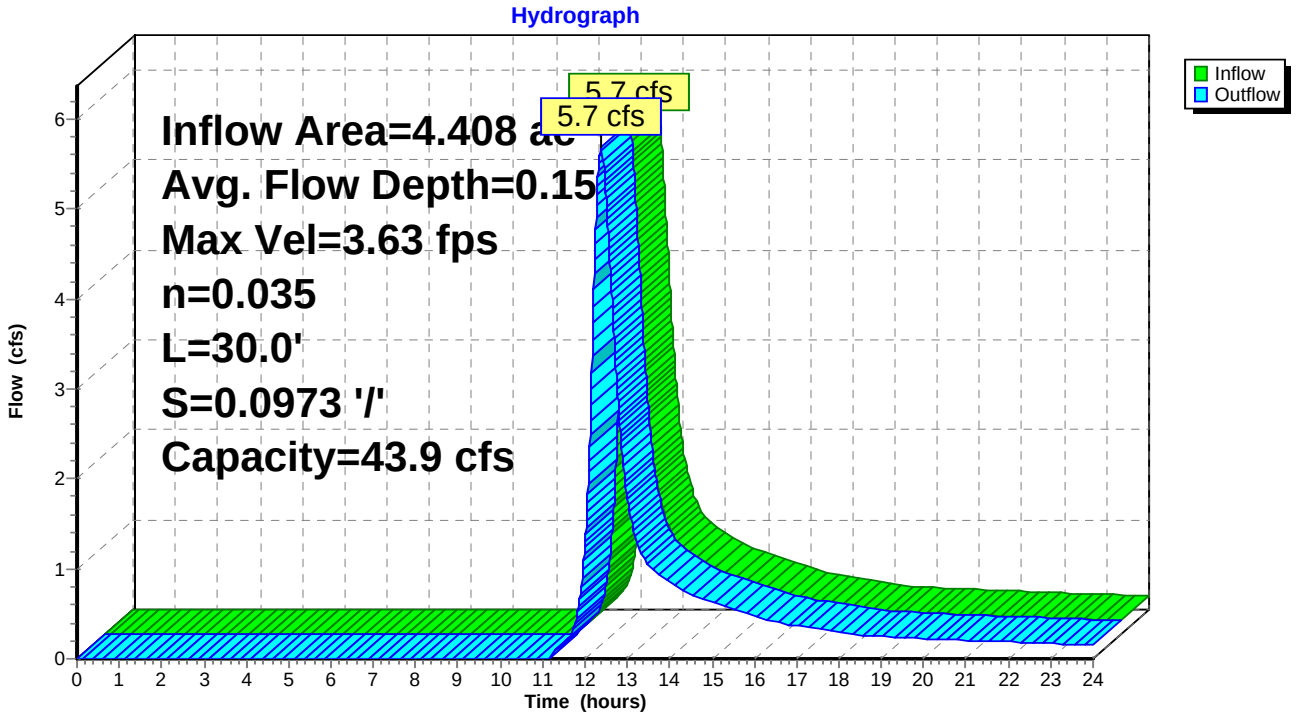
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.63 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.36 fps, Avg. Travel Time= 0.4 min

Peak Storage= 47 cf @ 12.38 hrs
Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 0.50' Flow Area= 5.8 sf, Capacity= 43.9 cfs

10.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 3.0 '/' Top Width= 13.00'
Length= 30.0' Slope= 0.0973 '/'
Inlet Invert= 25.00', Outlet Invert= 22.08'

‡

Reach 4R: Overflow Swale



Summary for Pond 2P: BioFiltration Cell

Inflow Area = 3.774 ac, 0.00% Impervious, Inflow Depth > 1.80" for 25-Year event
Inflow = 4.6 cfs @ 12.37 hrs, Volume= 0.565 af
Outflow = 4.6 cfs @ 12.38 hrs, Volume= 0.563 af, Atten= 0%, Lag= 0.3 min
Primary = 4.6 cfs @ 12.38 hrs, Volume= 0.563 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 23.17' @ 12.38 hrs Surf.Area= 0.005 ac Storage= 0.003 af

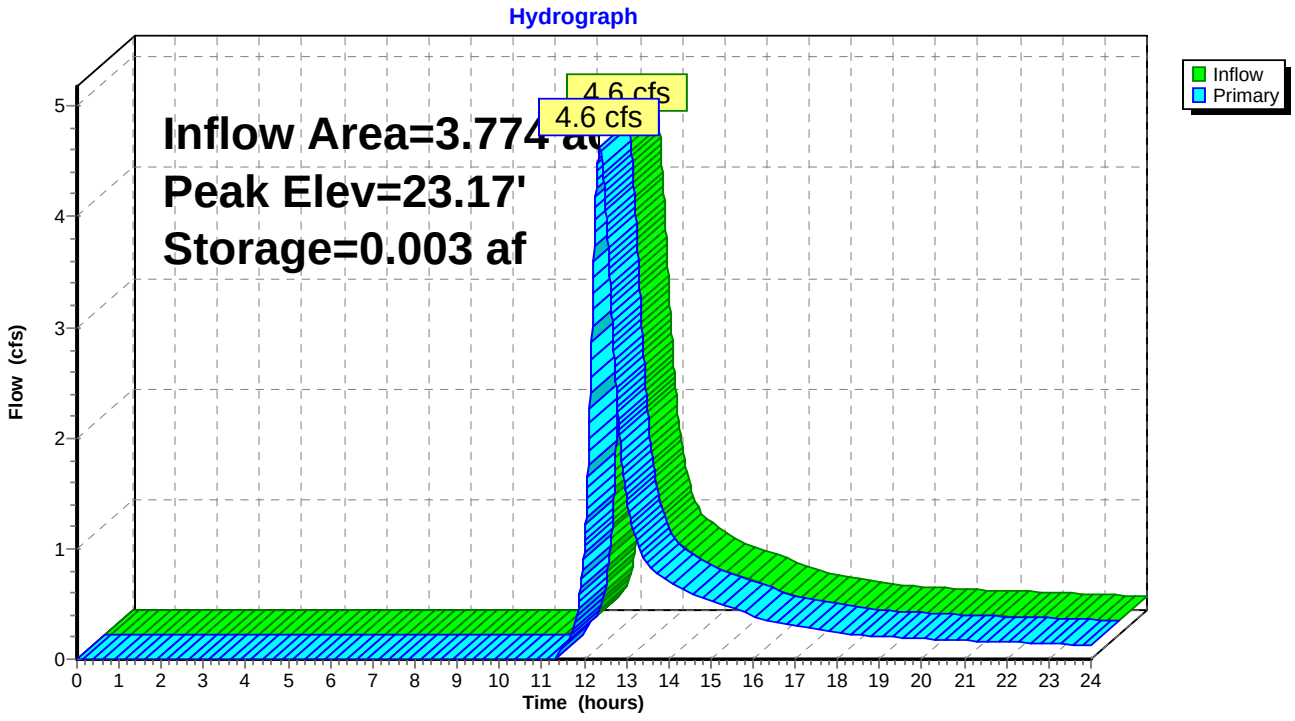
Plug-Flow detention time= 2.3 min calculated for 0.563 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (877.7 - 876.9)

Volume	Invert	Avail.Storage	Storage Description
#1	22.30'	0.004 af	**4.00'W x 20.00'L x 1.00'H Filtration Cell Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	22.80'	**10.0' long x 5.0' breadth Vegetated Swale** 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 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=4.6 cfs @ 12.38 hrs HW=23.17' TW=22.99' (Dynamic Tailwater)
└**1=Vegetated Swale** (Weir Controls 4.6 cfs @ 1.25 fps)

Pond 2P: BioFiltration Cell



Summary for Pond 5P: BioFiltration Cell

Inflow Area = 4.408 ac, 0.41% Impervious, Inflow Depth > 1.88" for 25-Year event
Inflow = 5.7 cfs @ 12.37 hrs, Volume= 0.689 af
Outflow = 5.7 cfs @ 12.38 hrs, Volume= 0.687 af, Atten= 0%, Lag= 0.2 min
Primary = 5.7 cfs @ 12.38 hrs, Volume= 0.687 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 25.40' @ 12.38 hrs Surf.Area= 0.005 ac Storage= 0.003 af

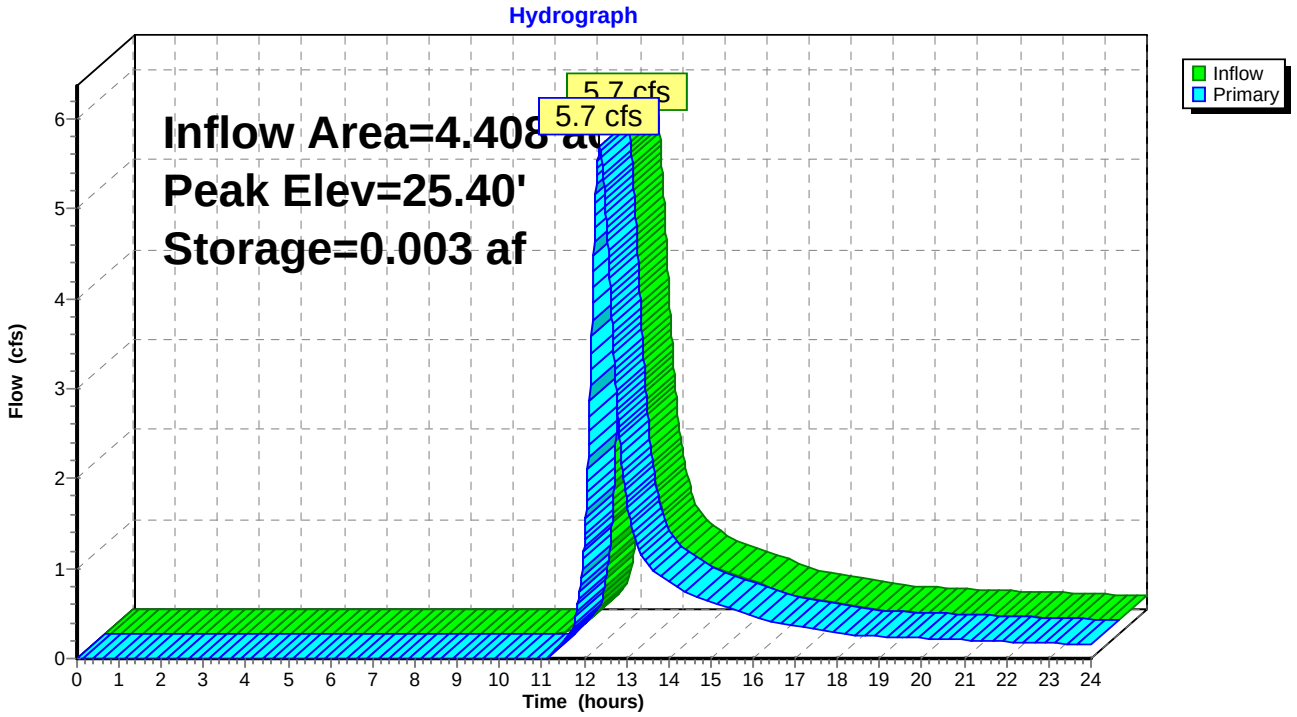
Plug-Flow detention time= 1.9 min calculated for 0.687 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (875.0 - 874.3)

Volume	Invert	Avail.Storage	Storage Description
#1	24.50'	0.004 af	**4.00'W x 20.00'L x 1.10'H Filtration Cell Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	25.00'	**10.0' long x 5.0' breadth Vegetated Swale** 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 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#2	Primary	25.50'	**20.0' long x 5.0' breadth Swale Overtopping** 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 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=5.7 cfs @ 12.38 hrs HW=25.40' TW=25.15' (Dynamic Tailwater)
└─**1=Vegetated Swale** (Weir Controls 5.7 cfs @ 1.43 fps)
└─**2=Swale Overtopping** (Controls 0.0 cfs)

Pond 5P: BioFiltration Cell

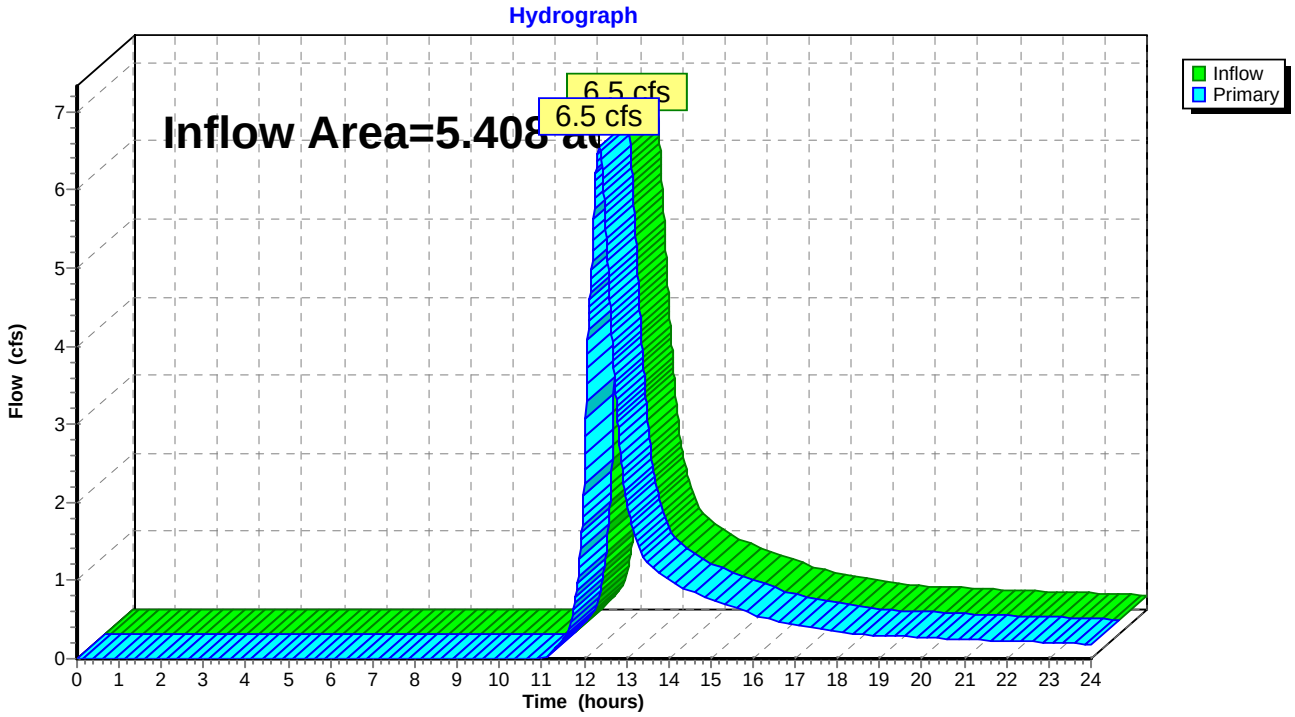


Summary for Link 3L: To Reservoir - South

Inflow Area = 5.408 ac, 0.33% Impervious, Inflow Depth > 1.86" for 25-Year event
Inflow = 6.5 cfs @ 12.36 hrs, Volume= 0.838 af
Primary = 6.5 cfs @ 12.36 hrs, Volume= 0.838 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 3L: To Reservoir - South

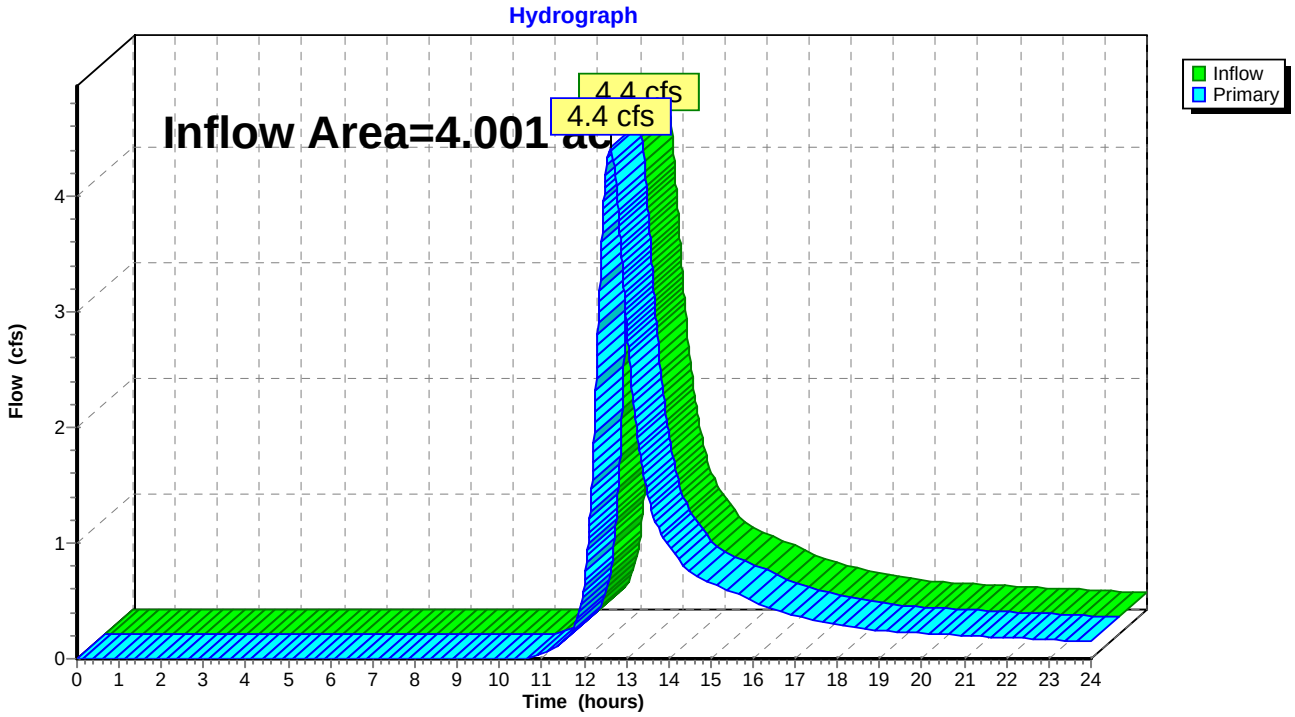


Summary for Link 4L: Wooded Area to East

Inflow Area = 4.001 ac, 0.46% Impervious, Inflow Depth > 2.03" for 25-Year event
Inflow = 4.4 cfs @ 12.64 hrs, Volume= 0.676 af
Primary = 4.4 cfs @ 12.64 hrs, Volume= 0.676 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 4L: Wooded Area to East

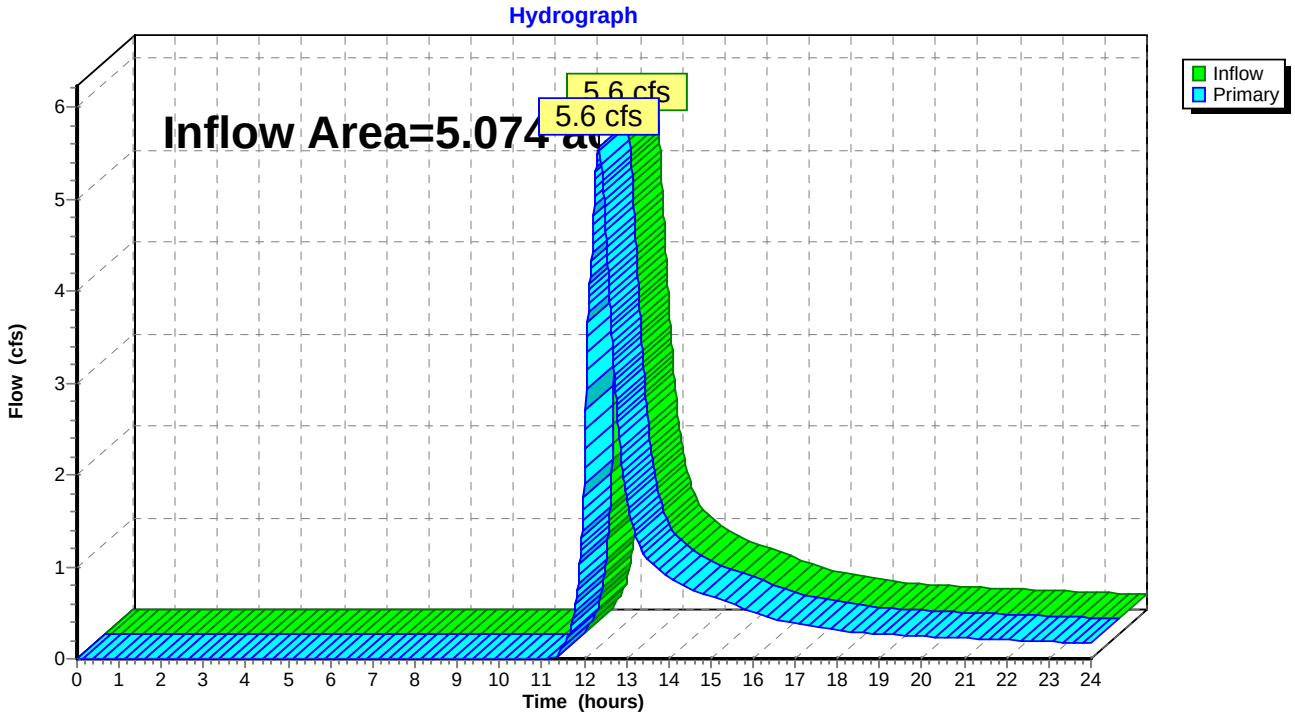


Summary for Link 6L: To Reservoir - North

Inflow Area = 5.074 ac, 0.00% Impervious, Inflow Depth > 1.71" for 25-Year event
Inflow = 5.6 cfs @ 12.36 hrs, Volume= 0.725 af
Primary = 5.6 cfs @ 12.36 hrs, Volume= 0.725 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 6L: To Reservoir - North

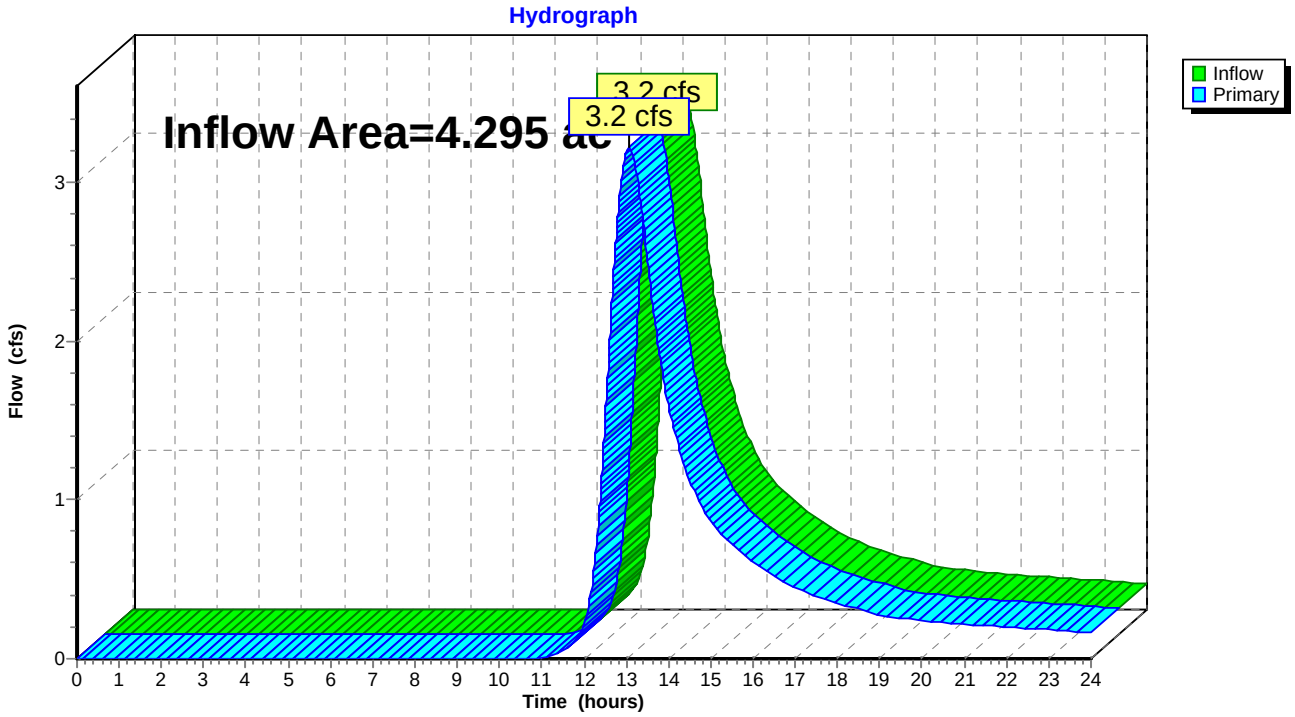


Summary for Link 7L: Off-Site Flow to South

Inflow Area = 4.295 ac, 0.22% Impervious, Inflow Depth > 1.93" for 25-Year event
Inflow = 3.2 cfs @ 13.08 hrs, Volume= 0.690 af
Primary = 3.2 cfs @ 13.08 hrs, Volume= 0.690 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 7L: Off-Site Flow to South

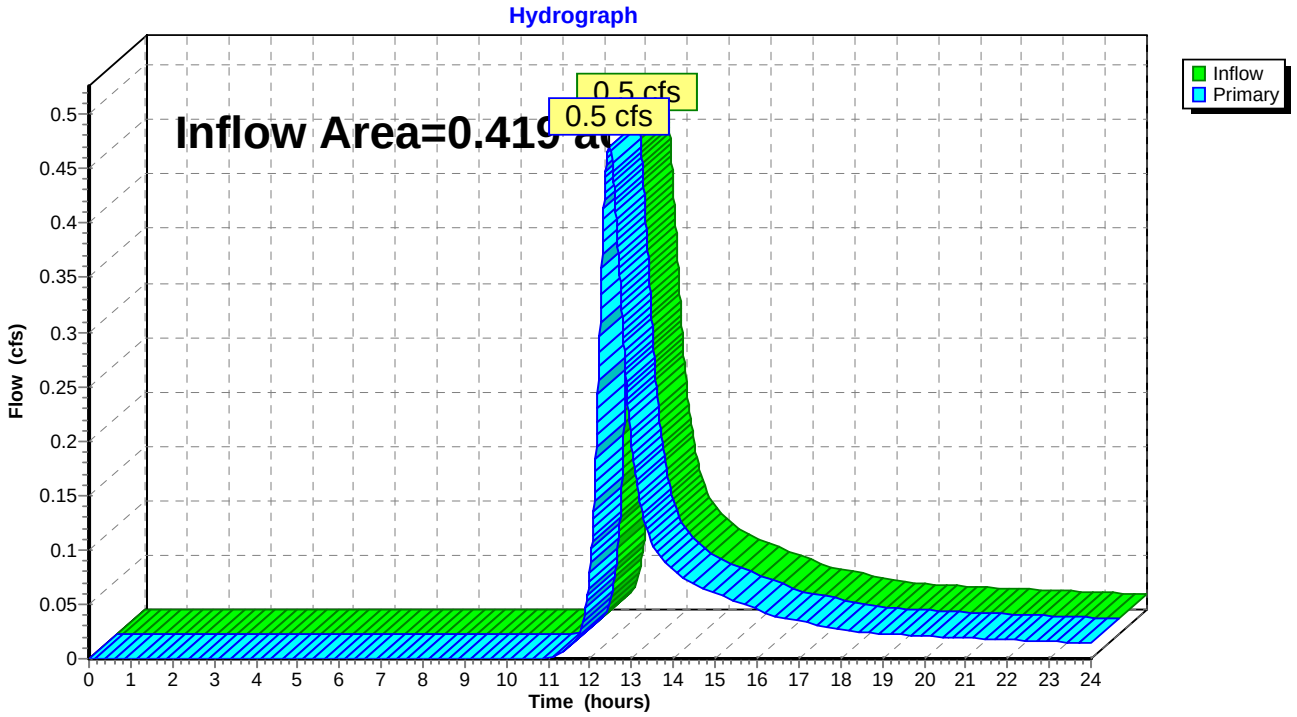


Summary for Link 8L: Off-Site Flow to East

Inflow Area = 0.419 ac, 0.01% Impervious, Inflow Depth > 1.79" for 25-Year event
Inflow = 0.5 cfs @ 12.46 hrs, Volume= 0.063 af
Primary = 0.5 cfs @ 12.46 hrs, Volume= 0.063 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 8L: Off-Site Flow to East



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S-A: Area 1 - North - Runoff Area=1.300 ac 0.00% Impervious Runoff Depth>1.86"
Flow Length=30' Slope=0.0770 '/' Tc=6.0 min CN=57 Runoff=2.6 cfs 0.201 af

Subcatchment 1S-B: Area 1 - North - Solar Runoff Area=164,396 sf 0.00% Impervious Runoff Depth>2.19"
Flow Length=562' Tc=24.8 min CN=61 Runoff=5.8 cfs 0.690 af

Subcatchment 2S-A: Area 1 - West - Runoff Area=1.000 ac 0.00% Impervious Runoff Depth>2.21"
Flow Length=30' Slope=0.0350 '/' Tc=6.0 min CN=61 Runoff=2.5 cfs 0.184 af

Subcatchment 2S-B: Area 1 - West Runoff Area=192,013 sf 0.41% Impervious Runoff Depth>2.28"
Flow Length=412' Tc=24.8 min CN=62 Runoff=7.0 cfs 0.839 af

Subcatchment 3S: Area 1 - East Runoff Area=174,284 sf 0.46% Impervious Runoff Depth>2.45"
Flow Length=831' Tc=42.6 min CN=64 Runoff=5.4 cfs 0.818 af

Subcatchment 4S: Area 2 - West Runoff Area=187,084 sf 0.22% Impervious Runoff Depth>2.34"
Flow Length=664' Tc=75.0 min CN=63 Runoff=4.0 cfs 0.838 af

Subcatchment 5S: Area 2 - East Runoff Area=18,251 sf 0.01% Impervious Runoff Depth>2.19"
Flow Length=214' Tc=30.4 min CN=61 Runoff=0.6 cfs 0.077 af

Reach 3R: Overflow Swale Avg. Flow Depth=0.22' Max Vel=2.43 fps Inflow=5.8 cfs 0.689 af
n=0.035 L=30.0' S=0.0267 '/' Capacity=23.0 cfs Outflow=5.8 cfs 0.688 af

Reach 4R: Overflow Swale Avg. Flow Depth=0.17' Max Vel=3.93 fps Inflow=7.0 cfs 0.837 af
n=0.035 L=30.0' S=0.0973 '/' Capacity=43.9 cfs Outflow=7.0 cfs 0.837 af

Pond 2P: BioFiltration Cell Peak Elev=23.22' Storage=0.003 af Inflow=5.8 cfs 0.690 af
Outflow=5.8 cfs 0.689 af

Pond 5P: BioFiltration Cell Peak Elev=25.45' Storage=0.003 af Inflow=7.0 cfs 0.839 af
Outflow=7.0 cfs 0.837 af

Link 3L: To Reservoir - South Inflow=8.1 cfs 1.021 af
Primary=8.1 cfs 1.021 af

Link 4L: Wooded Area to East Inflow=5.4 cfs 0.818 af
Primary=5.4 cfs 0.818 af

Link 6L: To Reservoir - North Inflow=6.9 cfs 0.890 af
Primary=6.9 cfs 0.890 af

Link 7L: Off-Site Flow to South Inflow=4.0 cfs 0.838 af
Primary=4.0 cfs 0.838 af

Link 8L: Off-Site Flow to East Inflow=0.6 cfs 0.077 af
Primary=0.6 cfs 0.077 af

Total Runoff Area = 19.197 ac Runoff Volume = 3.646 af Average Runoff Depth = 2.28"
99.76% Pervious = 19.151 ac 0.24% Impervious = 0.046 ac

Summary for Subcatchment 1S-A: Area 1 - North - DownGradient Swale

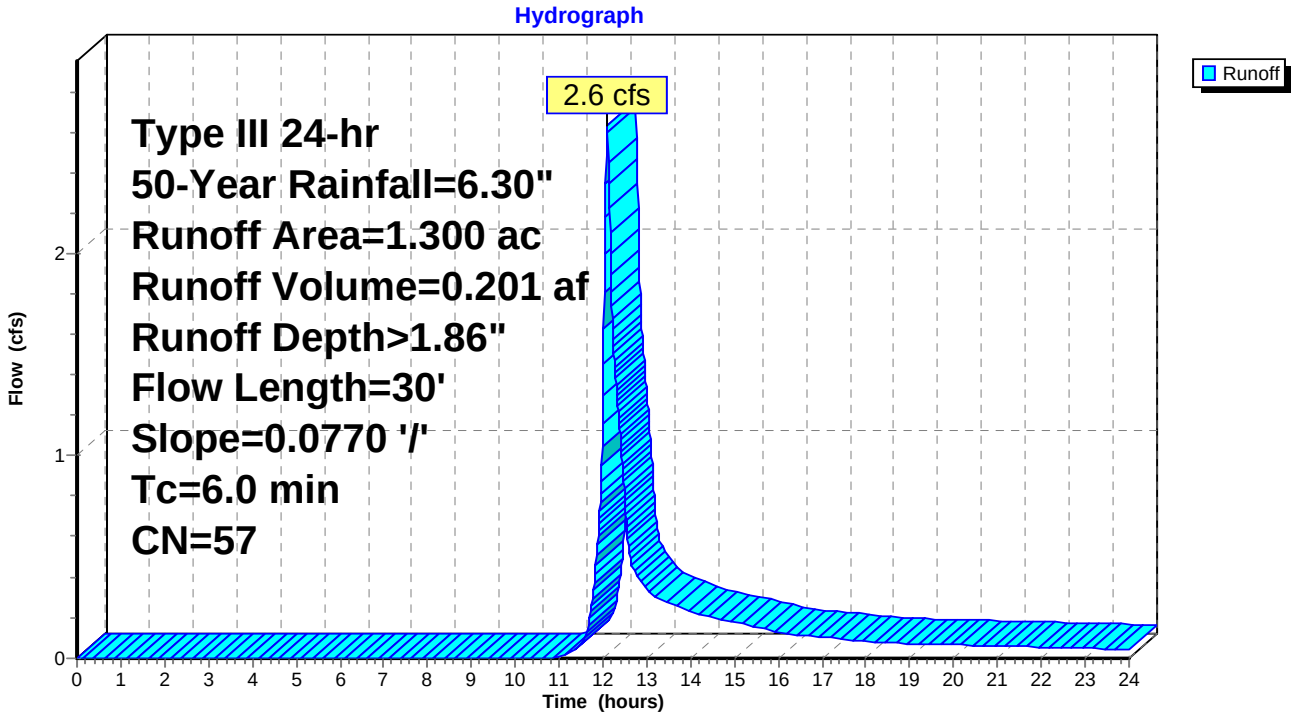
Runoff = 2.6 cfs @ 12.10 hrs, Volume= 0.201 af, Depth> 1.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=6.30"

Area (ac)	CN	Description
0.850	55	Woods, Good, HSG B
0.450	61	>75% Grass cover, Good, HSG B
1.300	57	Weighted Average
1.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	30	0.0770	0.11		**Sheet Flow, Wooded Slope** Woods: Light underbrush n= 0.400 P2= 3.40"
4.6	30	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 1S-A: Area 1 - North - DownGradient Swale



Summary for Subcatchment 1S-B: Area 1 - North - Solar Arrays

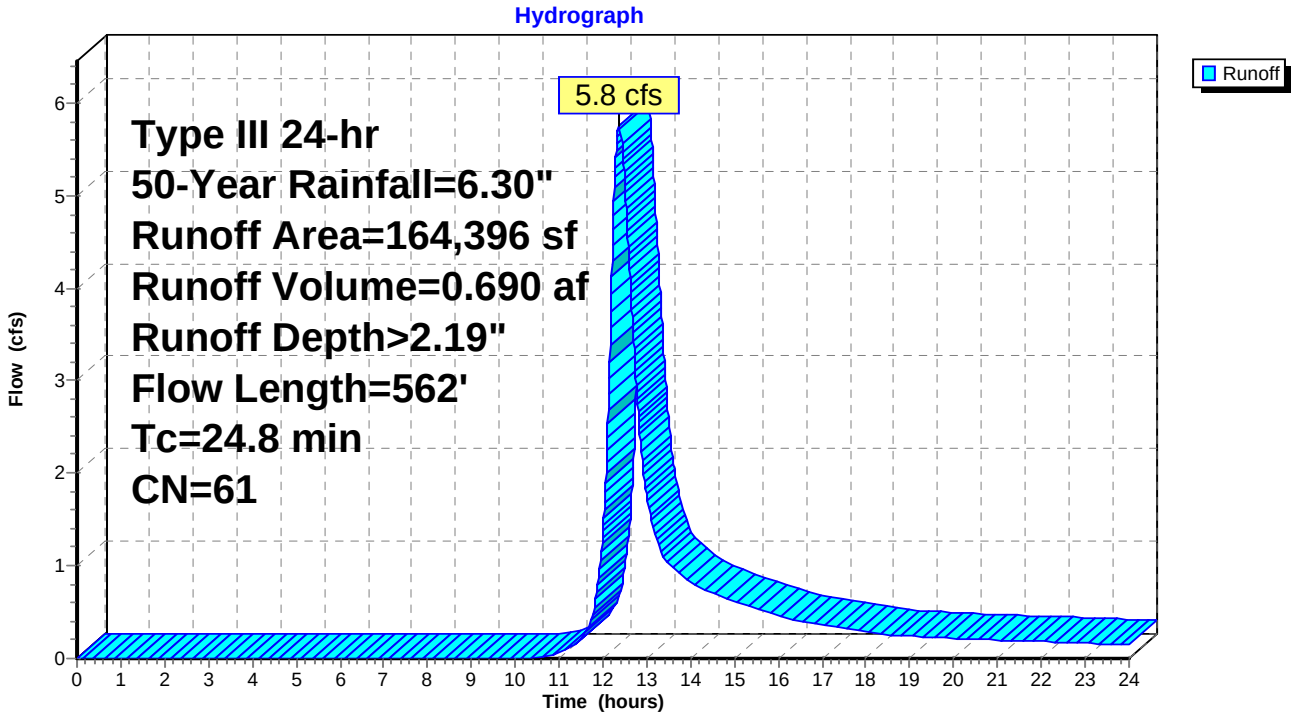
Runoff = 5.8 cfs @ 12.37 hrs, Volume= 0.690 af, Depth> 2.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=6.30"

	Area (sf)	CN	Description
	23,392	60	Woods, Fair, HSG B
*	141,004	61	>75% Grass cover, Solar Array Area, HSG B
*	0	98	Solar Array Posts, HSG B
	164,396	61	Weighted Average
	164,396		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5	100	0.0177	0.11		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
1.0	40	0.0085	0.65		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
0.3	32	0.0625	1.75		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
2.9	143	0.0140	0.83		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
5.2	211	0.0095	0.68		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
0.4	31	0.0323	1.26		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
0.5	5	0.2000	0.17		**Sheet Flow, To swale (Flow disrupted by stone level spreader)** Grass: Dense n= 0.240 P2= 3.40"
24.8	562	Total			

Subcatchment 1S-B: Area 1 - North - Solar Arrays



Summary for Subcatchment 2S-A: Area 1 - West - DownGradient Swale

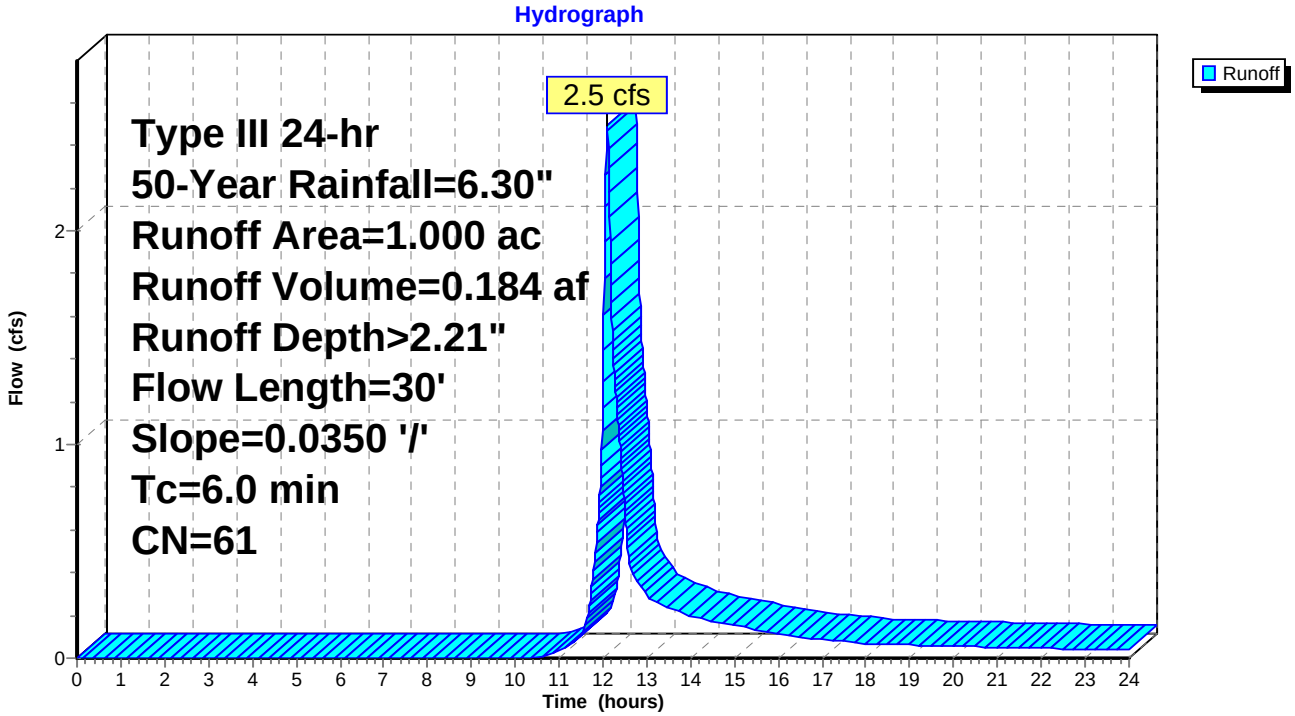
Runoff = 2.5 cfs @ 12.09 hrs, Volume= 0.184 af, Depth> 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=6.30"

Area (ac)	CN	Description
1.000	61	>75% Grass cover, Good, HSG B
1.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	30	0.0350	0.12		**Sheet Flow, Grass Slope** Grass: Dense n= 0.240 P2= 3.40"
4.2	30	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 2S-A: Area 1 - West - DownGradient Swale



Summary for Subcatchment 2S-B: Area 1 - West

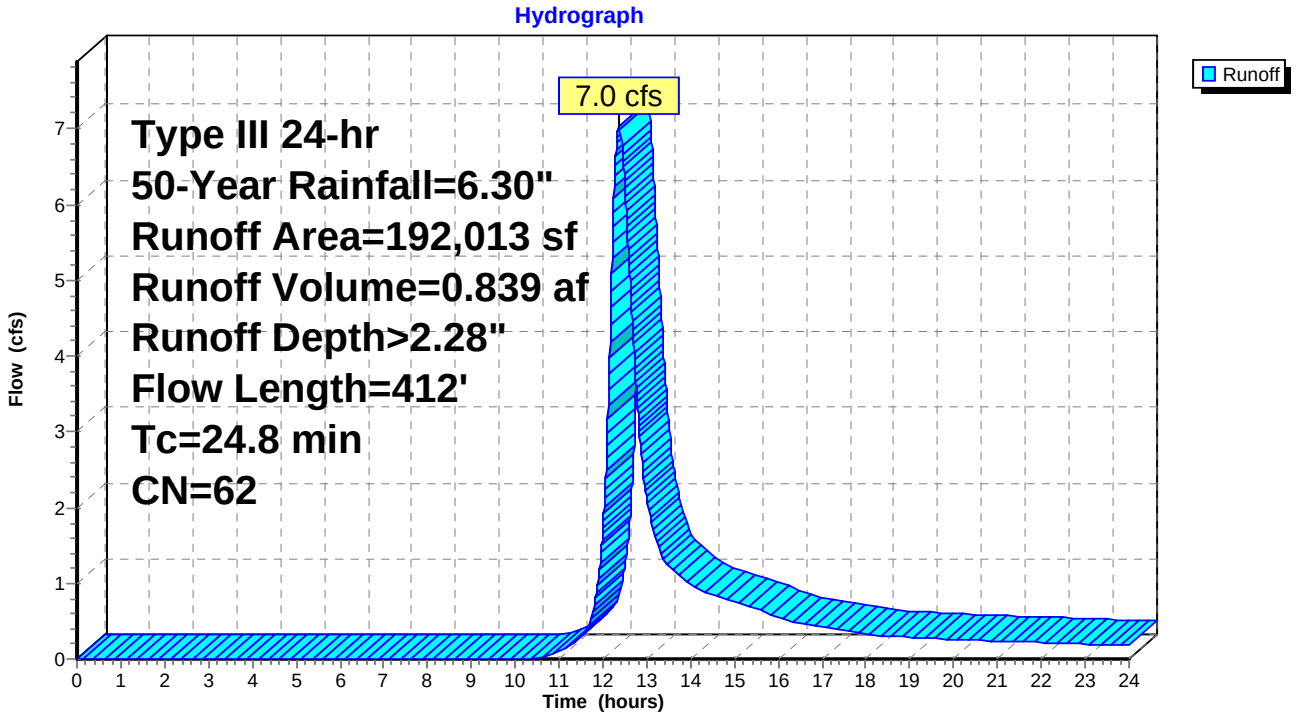
Runoff = 7.0 cfs @ 12.37 hrs, Volume= 0.839 af, Depth> 2.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=6.30"

	Area (sf)	CN	Description
*	182,691	61	>75% Grass cover, Solar Array Area, HSG B
	8,538	85	Gravel roads, HSG B
*	0	98	Solar Array Racking Posts, HSG B
*	784	98	Concrete Equipment Pad, HSG B
	192,013	62	Weighted Average
	191,229		99.59% Pervious Area
	784		0.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.0	100	0.0120	0.10		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
7.3	307	0.0099	0.70		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
0.5	5	0.2000	0.17		**Sheet Flow, Swale Slope (flow disrupted by stone level spreade** Grass: Dense n= 0.240 P2= 3.40"
24.8	412	Total			

Subcatchment 2S-B: Area 1 - West



Summary for Subcatchment 3S: Area 1 - East

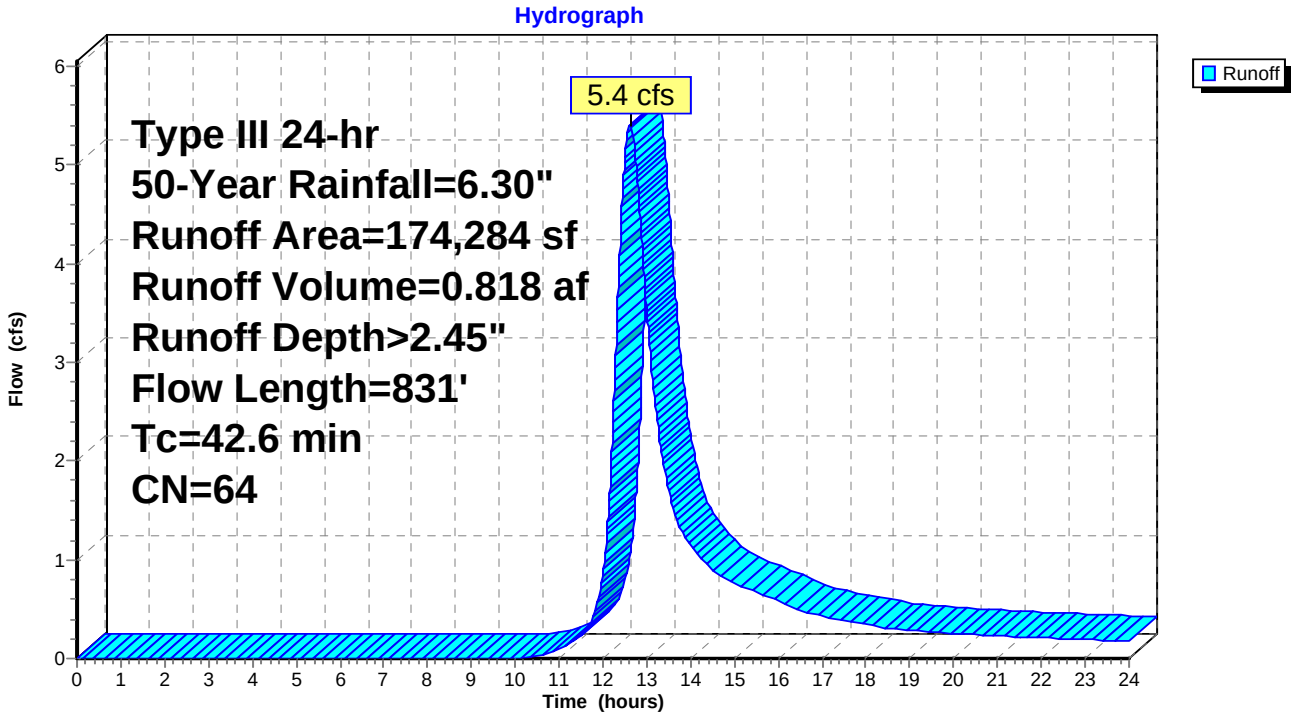
Runoff = 5.4 cfs @ 12.63 hrs, Volume= 0.818 af, Depth> 2.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=6.30"

	Area (sf)	CN	Description
	19,602	85	Gravel roads, HSG B
*	153,878	61	>75% Grass cover, Solar Array Area, HSG B
*	4	98	Solar Array Racking Posts, HSG B
*	800	98	Concrete Equipment Pads, HSG B
	174,284	64	Weighted Average
	173,480		99.54% Pervious Area
	804		0.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	100	0.0090	0.09		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
7.1	174	0.0034	0.41		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
16.3	526	0.0059	0.54		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.1	31	0.0742	4.39		**Shallow Concentrated Flow, Grass/Gravel** Unpaved Kv= 16.1 fps
42.6	831	Total			

Subcatchment 3S: Area 1 - East



Summary for Subcatchment 4S: Area 2 - West

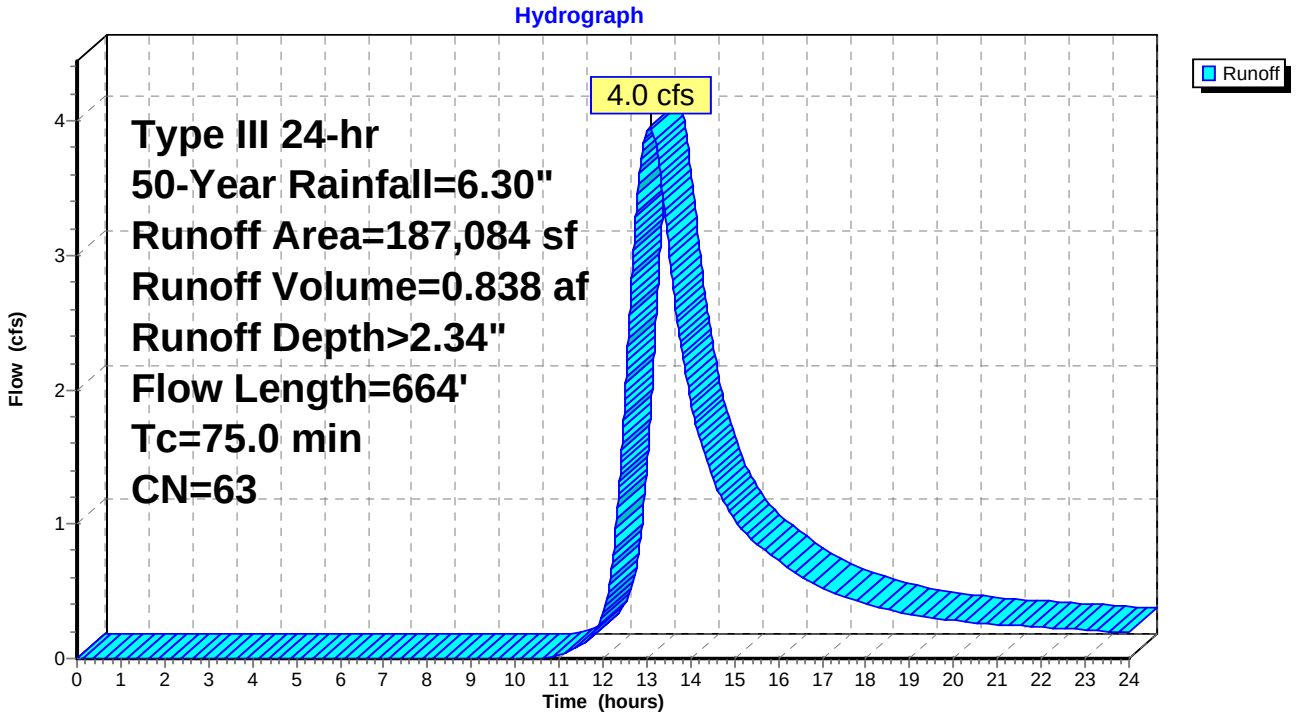
Runoff = 4.0 cfs @ 13.08 hrs, Volume= 0.838 af, Depth> 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=6.30"

	Area (sf)	CN	Description
	10,060	60	Woods, Fair, HSG B
*	161,719	61	>75% Grass cover, Solar Array Area, HSG B
	14,898	85	Gravel roads, HSG B
*	7	98	Solar Array Racking Posts, HSG B
*	400	98	Concrete Equipment Pad, HSG B
	187,084	63	Weighted Average
	186,677		99.78% Pervious Area
	407		0.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0080	0.08		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
1.3	86	0.0233	1.07		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
7.5	235	0.0055	0.52		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
13.3	177	0.0010	0.22		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
32.9	66	0.0010	0.03		**Sheet Flow, Grass (Flow disrupted by stone check dam)** Grass: Dense n= 0.240 P2= 3.40"
75.0	664	Total			

Subcatchment 4S: Area 2 - West



Summary for Subcatchment 5S: Area 2 - East

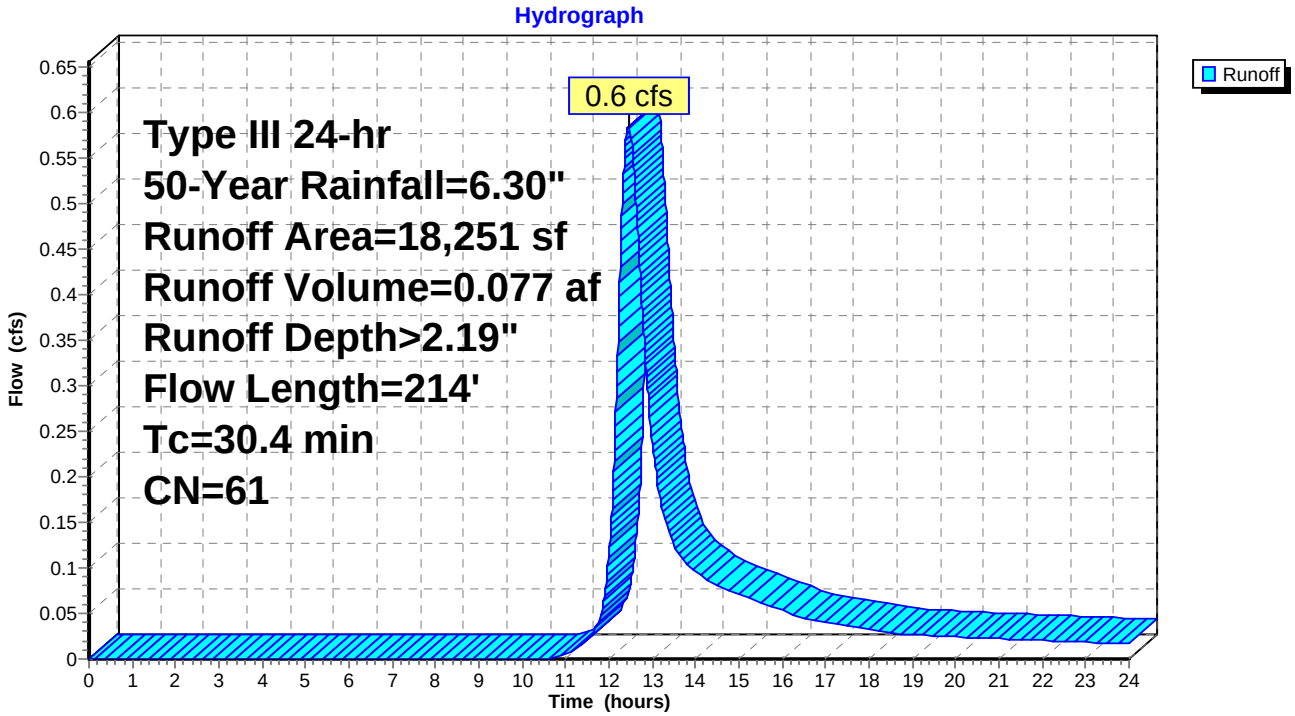
Runoff = 0.6 cfs @ 12.46 hrs, Volume= 0.077 af, Depth> 2.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=6.30"

	Area (sf)	CN	Description
*	18,250	61	>75% Grass cover, Solar Array Area, HSG B
*	1	98	Solar Array Racking Posts, HSG B
	18,251	61	Weighted Average
	18,250		99.99% Pervious Area
	1		0.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	58	0.0034	0.05		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
8.5	42	0.0119	0.08		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
2.8	86	0.0105	0.51		**Shallow Concentrated Flow, Grass - Solar Array Area** Woodland Kv= 5.0 fps
0.9	28	0.0050	0.49		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
30.4	214	Total			

Subcatchment 5S: Area 2 - East



Summary for Reach 3R: Overflow Swale

Inflow Area = 3.774 ac, 0.00% Impervious, Inflow Depth > 2.19" for 50-Year event
Inflow = 5.8 cfs @ 12.37 hrs, Volume= 0.689 af
Outflow = 5.8 cfs @ 12.38 hrs, Volume= 0.688 af, Atten= 0%, Lag= 0.2 min

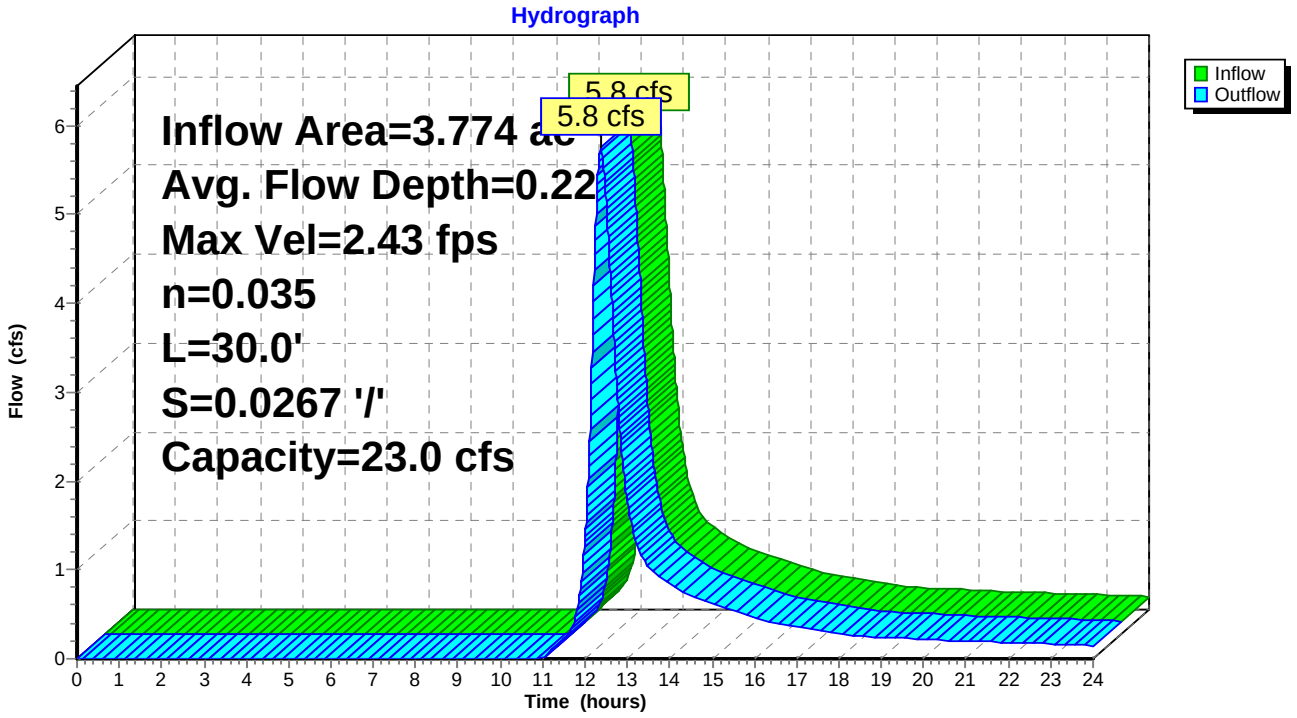
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.43 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 0.91 fps, Avg. Travel Time= 0.6 min

Peak Storage= 71 cf @ 12.38 hrs
Average Depth at Peak Storage= 0.22'
Bank-Full Depth= 0.50' Flow Area= 5.8 sf, Capacity= 23.0 cfs

10.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 3.0 '/' Top Width= 13.00'
Length= 30.0' Slope= 0.0267 '/'
Inlet Invert= 22.80', Outlet Invert= 22.00'

‡

Reach 3R: Overflow Swale



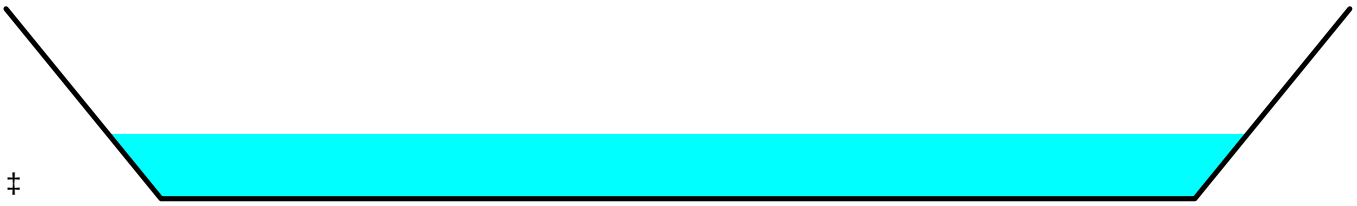
Summary for Reach 4R: Overflow Swale

Inflow Area = 4.408 ac, 0.41% Impervious, Inflow Depth > 2.28" for 50-Year event
Inflow = 7.0 cfs @ 12.37 hrs, Volume= 0.837 af
Outflow = 7.0 cfs @ 12.37 hrs, Volume= 0.837 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.93 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.44 fps, Avg. Travel Time= 0.3 min

Peak Storage= 54 cf @ 12.37 hrs
Average Depth at Peak Storage= 0.17'
Bank-Full Depth= 0.50' Flow Area= 5.8 sf, Capacity= 43.9 cfs

10.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 3.0 '/' Top Width= 13.00'
Length= 30.0' Slope= 0.0973 '/'
Inlet Invert= 25.00', Outlet Invert= 22.08'



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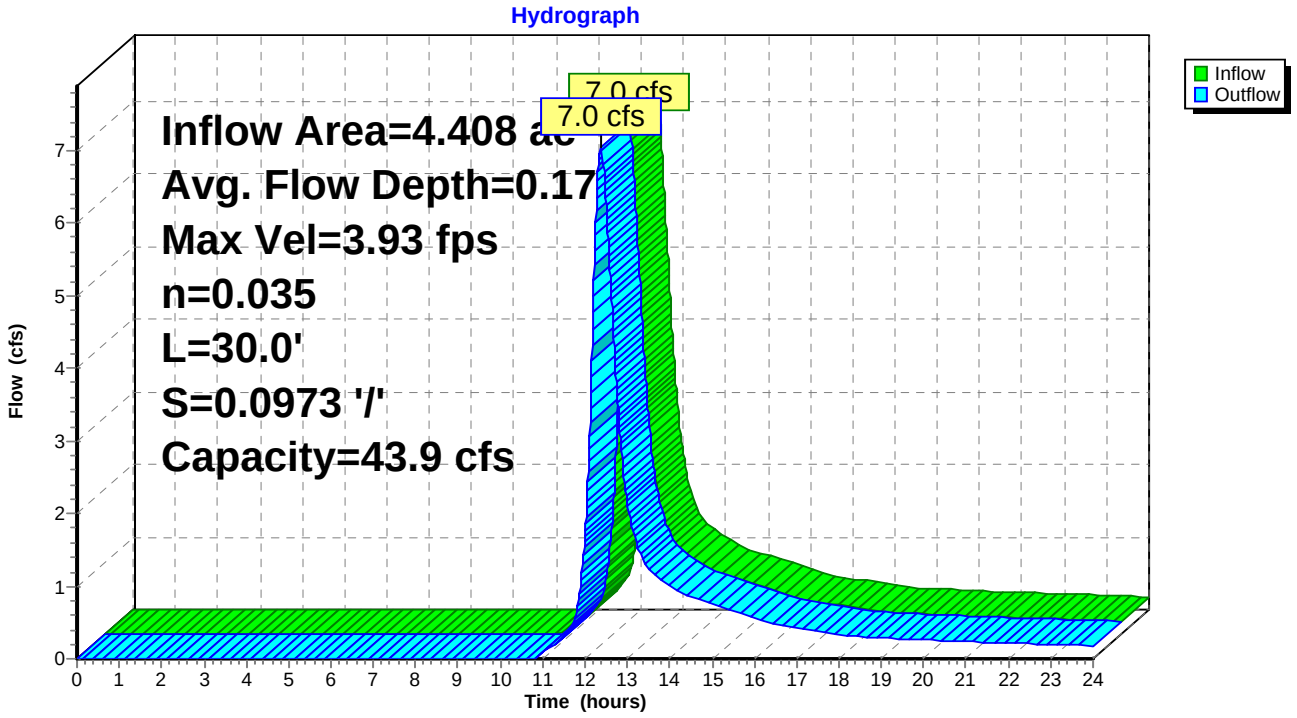
Reach 4R: Overflow Swale



Summary for Pond 2P: BioFiltration Cell

Inflow Area = 3.774 ac, 0.00% Impervious, Inflow Depth > 2.19" for 50-Year event
Inflow = 5.8 cfs @ 12.37 hrs, Volume= 0.690 af
Outflow = 5.8 cfs @ 12.37 hrs, Volume= 0.689 af, Atten= 0%, Lag= 0.2 min
Primary = 5.8 cfs @ 12.37 hrs, Volume= 0.689 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 23.22' @ 12.37 hrs Surf.Area= 0.006 ac Storage= 0.003 af

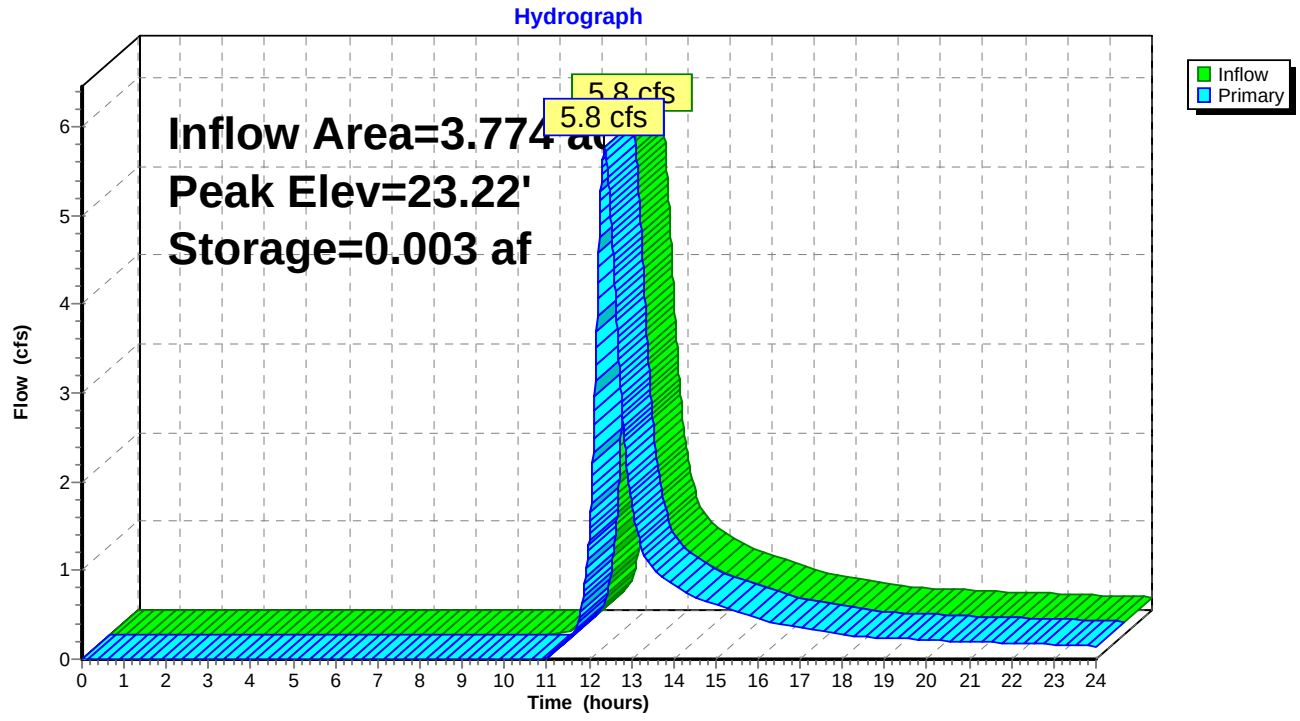
Plug-Flow detention time= 2.0 min calculated for 0.688 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (871.6 - 870.9)

Volume	Invert	Avail.Storage	Storage Description
#1	22.30'	0.004 af	**4.00'W x 20.00'L x 1.00'H Filtration Cell Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	22.80'	**10.0' long x 5.0' breadth Vegetated Swale** 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 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=5.8 cfs @ 12.37 hrs HW=23.22' TW=23.02' (Dynamic Tailwater)
└**1=Vegetated Swale** (Weir Controls 5.8 cfs @ 1.36 fps)

Pond 2P: BioFiltration Cell



Summary for Pond 5P: BioFiltration Cell

Inflow Area = 4.408 ac, 0.41% Impervious, Inflow Depth > 2.28" for 50-Year event
Inflow = 7.0 cfs @ 12.37 hrs, Volume= 0.839 af
Outflow = 7.0 cfs @ 12.37 hrs, Volume= 0.837 af, Atten= 0%, Lag= 0.1 min
Primary = 7.0 cfs @ 12.37 hrs, Volume= 0.837 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 25.45' @ 12.37 hrs Surf.Area= 0.006 ac Storage= 0.003 af

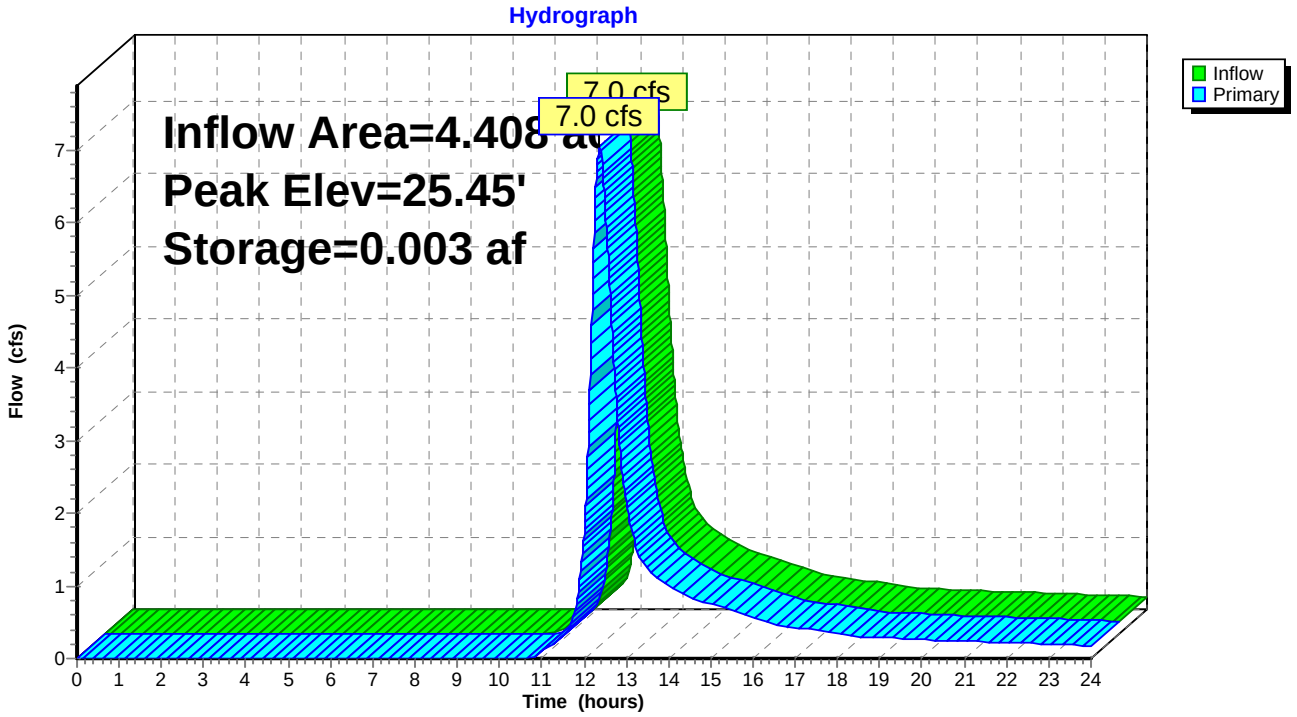
Plug-Flow detention time= 1.7 min calculated for 0.837 af (100% of inflow)
Center-of-Mass det. time= 0.6 min (869.1 - 868.5)

Volume	Invert	Avail.Storage	Storage Description
#1	24.50'	0.004 af	**4.00'W x 20.00'L x 1.10'H Filtration Cell Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	25.00'	**10.0' long x 5.0' breadth Vegetated Swale** 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 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#2	Primary	25.50'	**20.0' long x 5.0' breadth Swale Overtopping** 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 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=7.0 cfs @ 12.37 hrs HW=25.45' TW=25.17' (Dynamic Tailwater)
└─**1=Vegetated Swale** (Weir Controls 7.0 cfs @ 1.55 fps)
└─**2=Swale Overtopping** (Controls 0.0 cfs)

Pond 5P: BioFiltration Cell

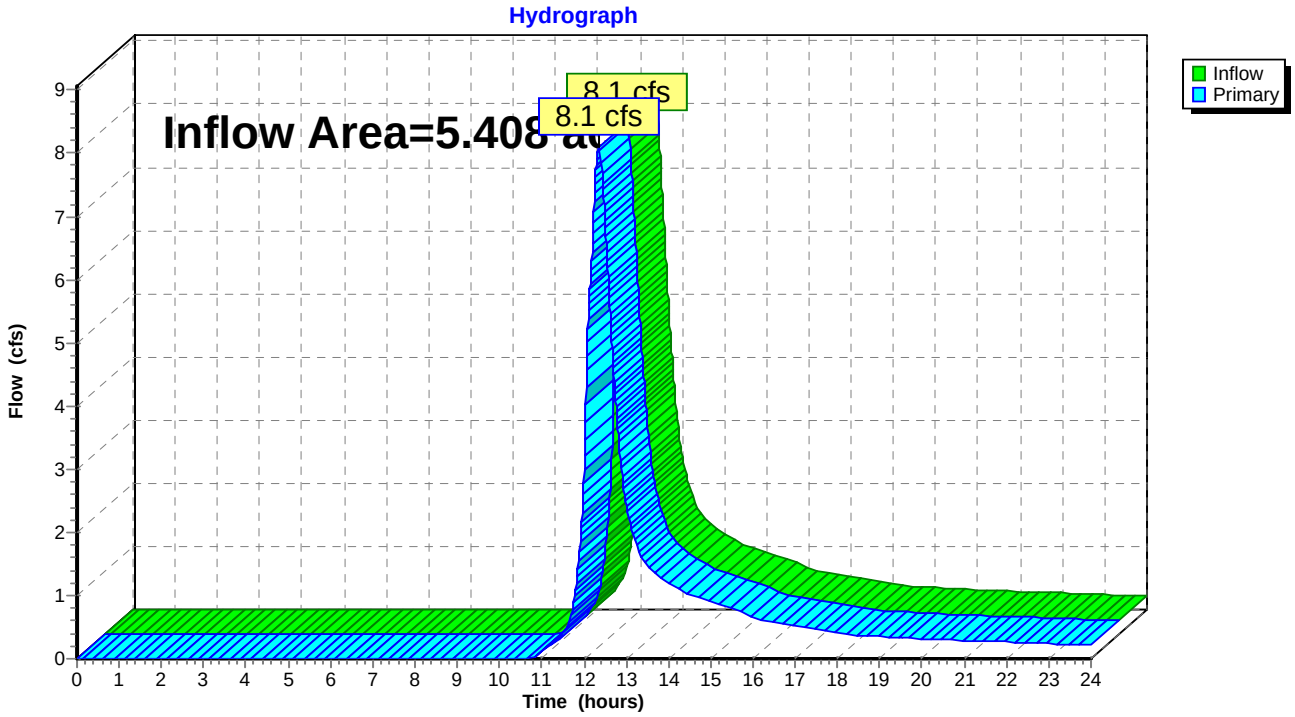


Summary for Link 3L: To Reservoir - South

Inflow Area = 5.408 ac, 0.33% Impervious, Inflow Depth > 2.27" for 50-Year event
Inflow = 8.1 cfs @ 12.35 hrs, Volume= 1.021 af
Primary = 8.1 cfs @ 12.35 hrs, Volume= 1.021 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 3L: To Reservoir - South

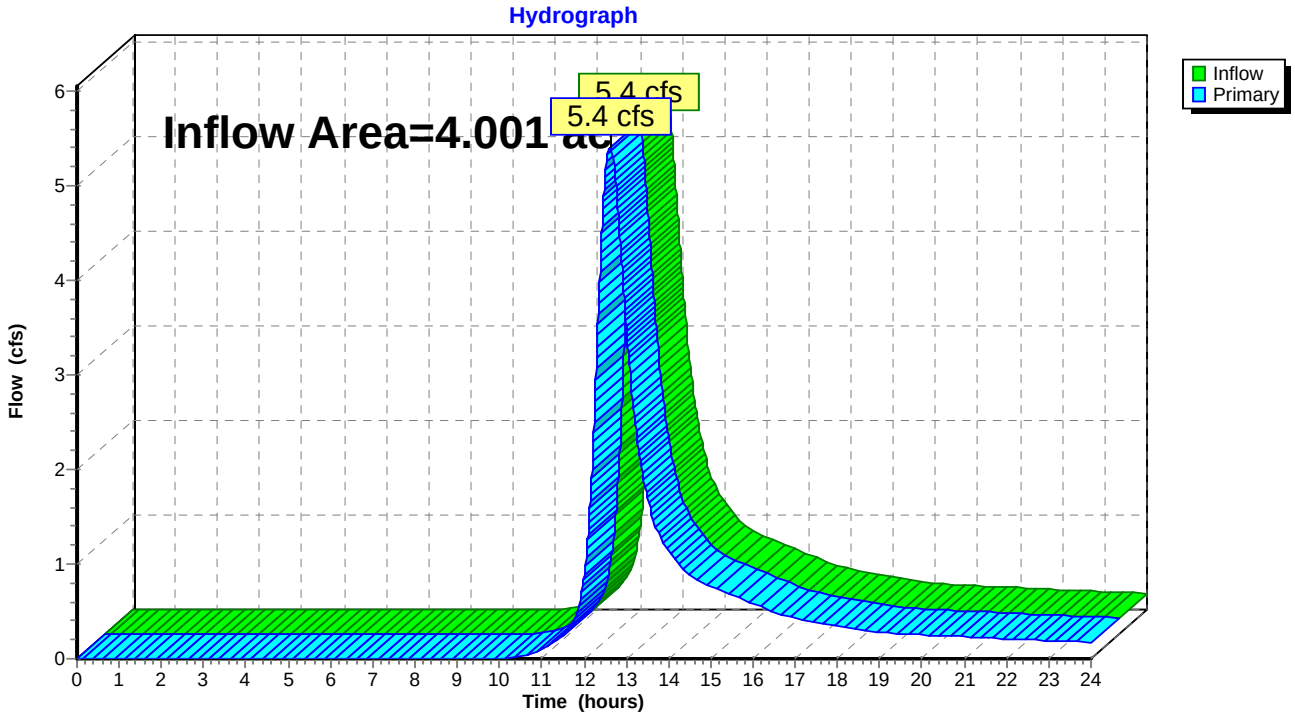


Summary for Link 4L: Wooded Area to East

Inflow Area = 4.001 ac, 0.46% Impervious, Inflow Depth > 2.45" for 50-Year event
Inflow = 5.4 cfs @ 12.63 hrs, Volume= 0.818 af
Primary = 5.4 cfs @ 12.63 hrs, Volume= 0.818 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 4L: Wooded Area to East

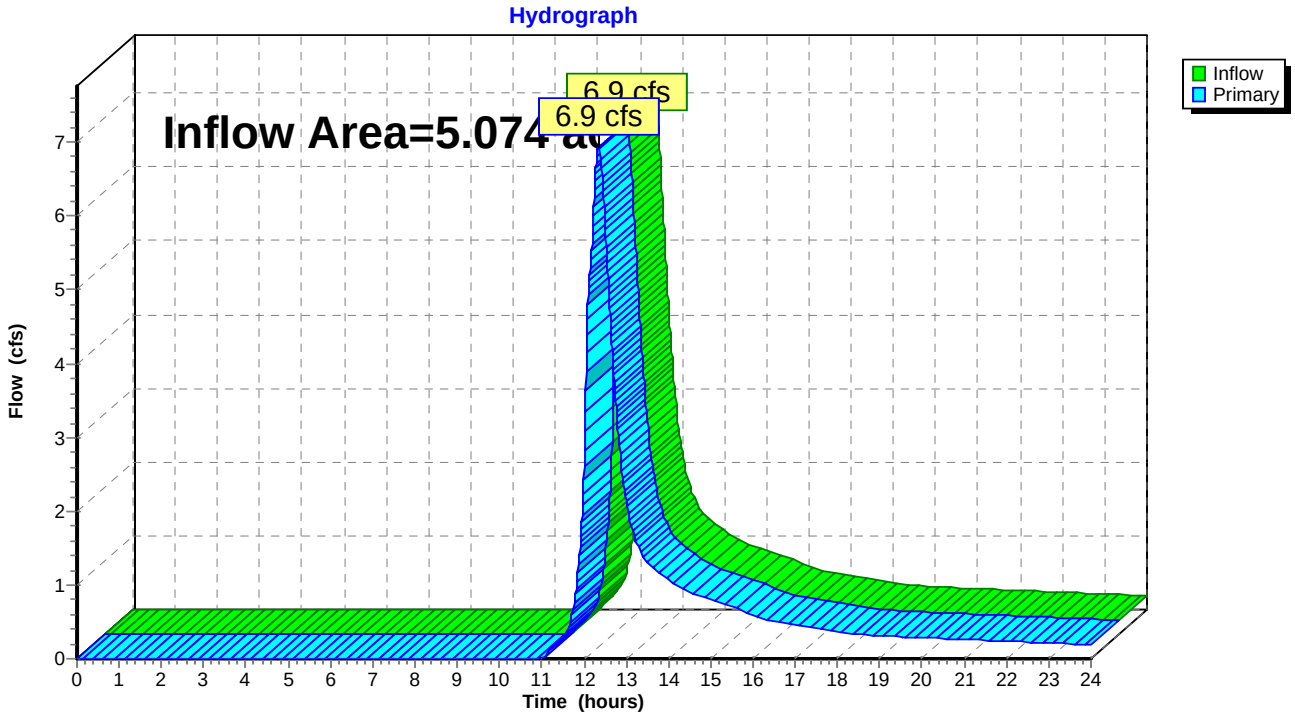


Summary for Link 6L: To Reservoir - North

Inflow Area = 5.074 ac, 0.00% Impervious, Inflow Depth > 2.10" for 50-Year event
Inflow = 6.9 cfs @ 12.35 hrs, Volume= 0.890 af
Primary = 6.9 cfs @ 12.35 hrs, Volume= 0.890 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 6L: To Reservoir - North

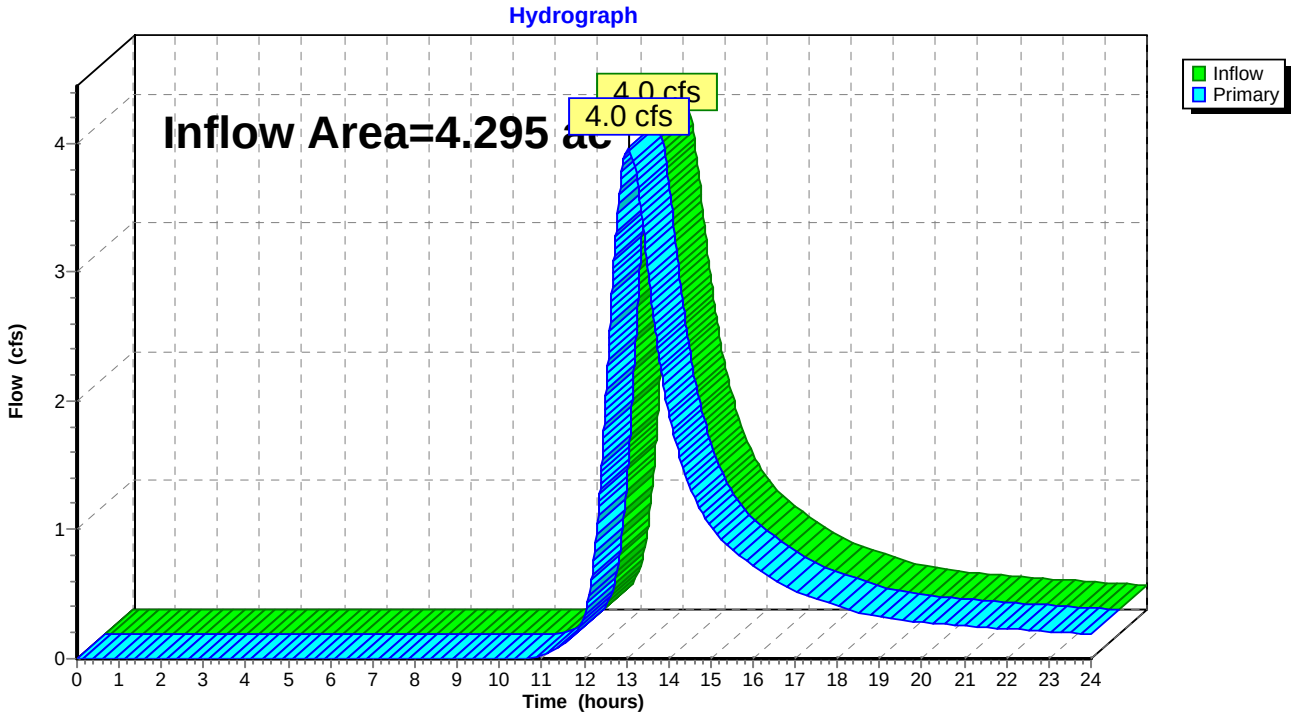


Summary for Link 7L: Off-Site Flow to South

Inflow Area = 4.295 ac, 0.22% Impervious, Inflow Depth > 2.34" for 50-Year event
Inflow = 4.0 cfs @ 13.08 hrs, Volume= 0.838 af
Primary = 4.0 cfs @ 13.08 hrs, Volume= 0.838 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 7L: Off-Site Flow to South

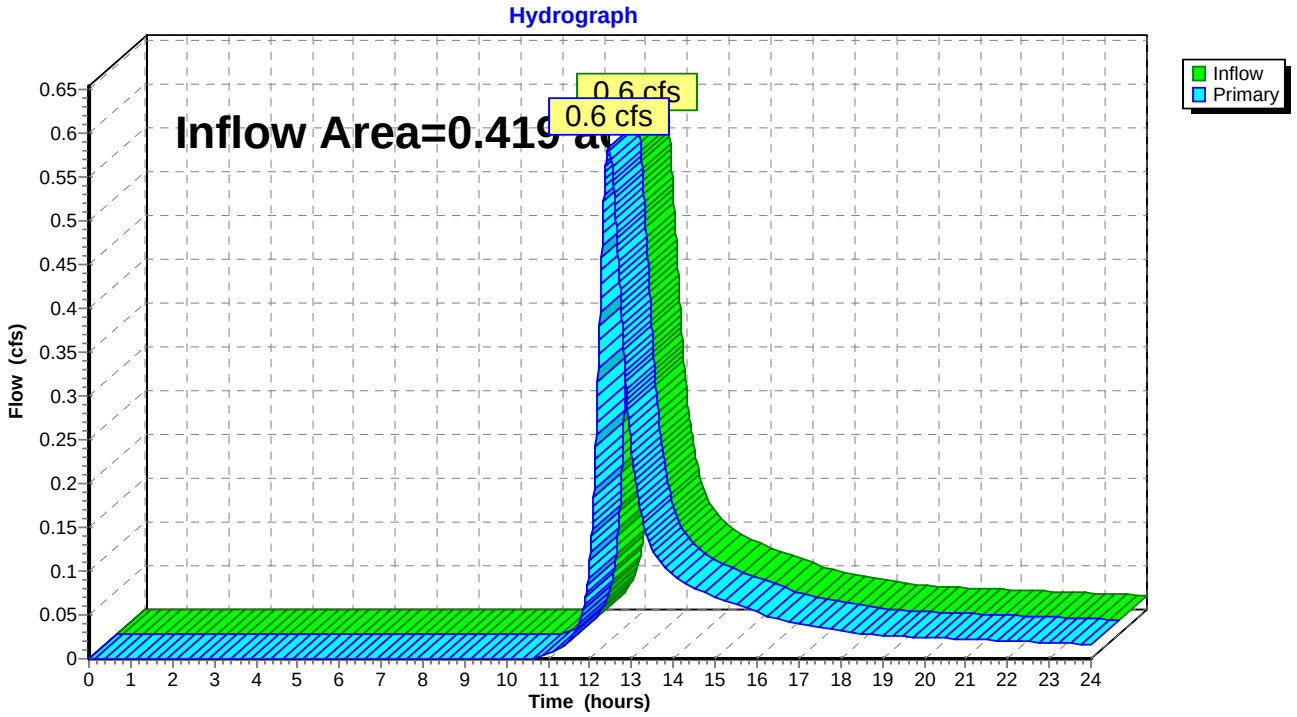


Summary for Link 8L: Off-Site Flow to East

Inflow Area = 0.419 ac, 0.01% Impervious, Inflow Depth > 2.19" for 50-Year event
Inflow = 0.6 cfs @ 12.46 hrs, Volume= 0.077 af
Primary = 0.6 cfs @ 12.46 hrs, Volume= 0.077 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 8L: Off-Site Flow to East



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S-A: Area 1 - North - Runoff Area=1.300 ac 0.00% Impervious Runoff Depth>2.38"
Flow Length=30' Slope=0.0770 '/' Tc=6.0 min CN=57 Runoff=3.5 cfs 0.257 af

Subcatchment 1S-B: Area 1 - North - Solar Runoff Area=164,396 sf 0.00% Impervious Runoff Depth>2.76"
Flow Length=562' Tc=24.8 min CN=61 Runoff=7.4 cfs 0.867 af

Subcatchment 2S-A: Area 1 - West - Runoff Area=1.000 ac 0.00% Impervious Runoff Depth>2.77"
Flow Length=30' Slope=0.0350 '/' Tc=6.0 min CN=61 Runoff=3.2 cfs 0.231 af

Subcatchment 2S-B: Area 1 - West Runoff Area=192,013 sf 0.41% Impervious Runoff Depth>2.86"
Flow Length=412' Tc=24.8 min CN=62 Runoff=8.9 cfs 1.050 af

Subcatchment 3S: Area 1 - East Runoff Area=174,284 sf 0.46% Impervious Runoff Depth>3.05"
Flow Length=831' Tc=42.6 min CN=64 Runoff=6.8 cfs 1.016 af

Subcatchment 4S: Area 2 - West Runoff Area=187,084 sf 0.22% Impervious Runoff Depth>2.92"
Flow Length=664' Tc=75.0 min CN=63 Runoff=5.0 cfs 1.045 af

Subcatchment 5S: Area 2 - East Runoff Area=18,251 sf 0.01% Impervious Runoff Depth>2.75"
Flow Length=214' Tc=30.4 min CN=61 Runoff=0.7 cfs 0.096 af

Reach 3R: Overflow Swale Avg. Flow Depth=0.26' Max Vel=2.66 fps Inflow=7.4 cfs 0.866 af
n=0.035 L=30.0' S=0.0267 '/' Capacity=23.0 cfs Outflow=7.3 cfs 0.865 af

Reach 4R: Overflow Swale Avg. Flow Depth=0.20' Max Vel=4.30 fps Inflow=8.9 cfs 1.048 af
n=0.035 L=30.0' S=0.0973 '/' Capacity=43.9 cfs Outflow=8.9 cfs 1.048 af

Pond 2P: BioFiltration Cell Peak Elev=23.29' Storage=0.004 af Inflow=7.4 cfs 0.867 af
Outflow=7.4 cfs 0.866 af

Pond 5P: BioFiltration Cell Peak Elev=25.52' Storage=0.004 af Inflow=8.9 cfs 1.050 af
Outflow=8.9 cfs 1.048 af

Link 3L: To Reservoir - South Inflow=10.3 cfs 1.279 af
Primary=10.3 cfs 1.279 af

Link 4L: Wooded Area to East Inflow=6.8 cfs 1.016 af
Primary=6.8 cfs 1.016 af

Link 6L: To Reservoir - North Inflow=8.9 cfs 1.123 af
Primary=8.9 cfs 1.123 af

Link 7L: Off-Site Flow to South Inflow=5.0 cfs 1.045 af
Primary=5.0 cfs 1.045 af

Link 8L: Off-Site Flow to East Inflow=0.7 cfs 0.096 af
Primary=0.7 cfs 0.096 af

Total Runoff Area = 19.197 ac Runoff Volume = 4.561 af Average Runoff Depth = 2.85"
99.76% Pervious = 19.151 ac 0.24% Impervious = 0.046 ac

Summary for Subcatchment 1S-A: Area 1 - North - DownGradient Swale

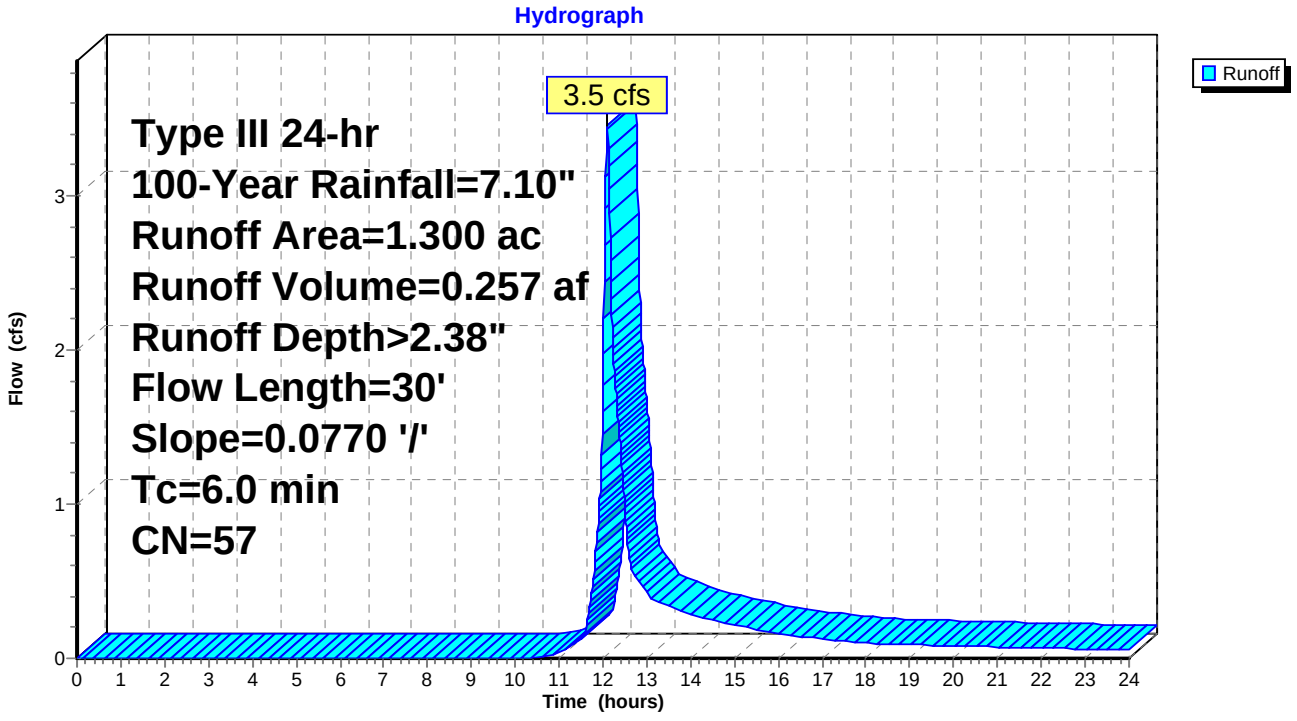
Runoff = 3.5 cfs @ 12.10 hrs, Volume= 0.257 af, Depth> 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=7.10"

Area (ac)	CN	Description
0.850	55	Woods, Good, HSG B
0.450	61	>75% Grass cover, Good, HSG B
1.300	57	Weighted Average
1.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	30	0.0770	0.11		**Sheet Flow, Wooded Slope** Woods: Light underbrush n= 0.400 P2= 3.40"
4.6	30	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 1S-A: Area 1 - North - DownGradient Swale



Summary for Subcatchment 1S-B: Area 1 - North - Solar Arrays

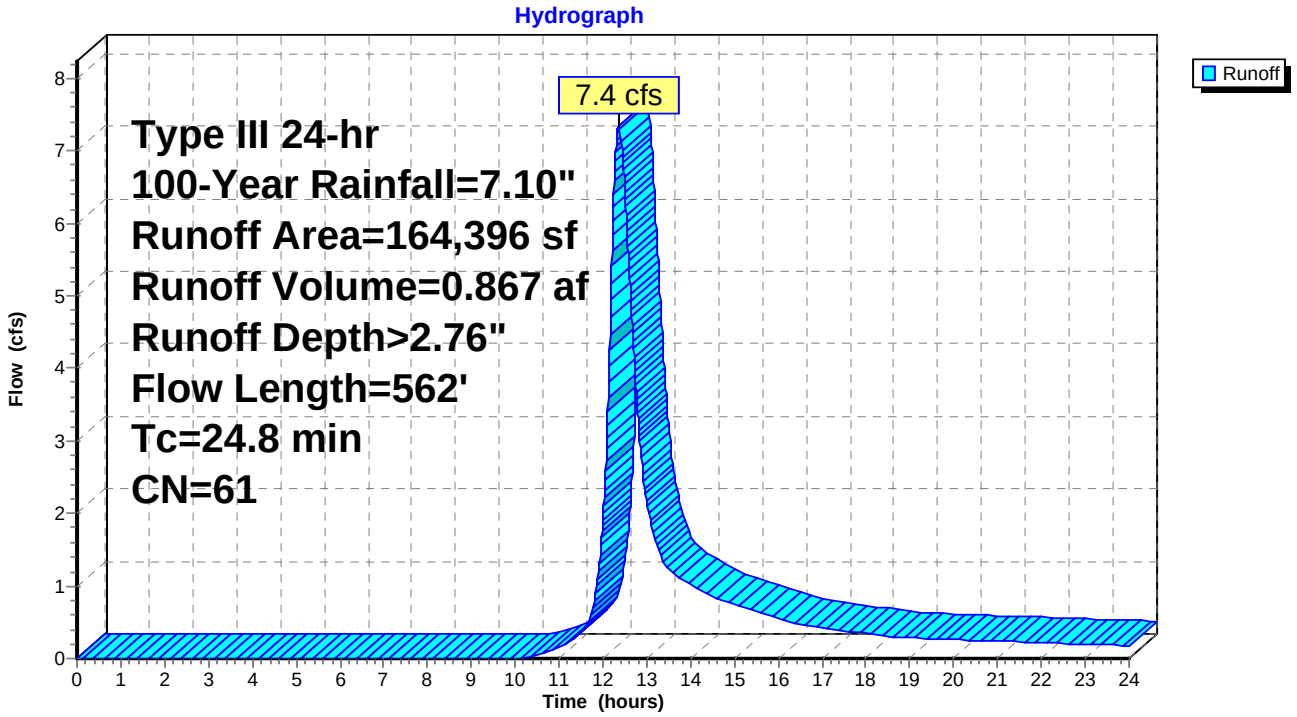
Runoff = 7.4 cfs @ 12.37 hrs, Volume= 0.867 af, Depth> 2.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=7.10"

	Area (sf)	CN	Description
	23,392	60	Woods, Fair, HSG B
*	141,004	61	>75% Grass cover, Solar Array Area, HSG B
*	0	98	Solar Array Posts, HSG B
	164,396	61	Weighted Average
	164,396		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5	100	0.0177	0.11		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
1.0	40	0.0085	0.65		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
0.3	32	0.0625	1.75		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
2.9	143	0.0140	0.83		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
5.2	211	0.0095	0.68		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
0.4	31	0.0323	1.26		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
0.5	5	0.2000	0.17		**Sheet Flow, To swale (Flow disrupted by stone level spreader)** Grass: Dense n= 0.240 P2= 3.40"
24.8	562	Total			

Subcatchment 1S-B: Area 1 - North - Solar Arrays



Summary for Subcatchment 2S-A: Area 1 - West - DownGradient Swale

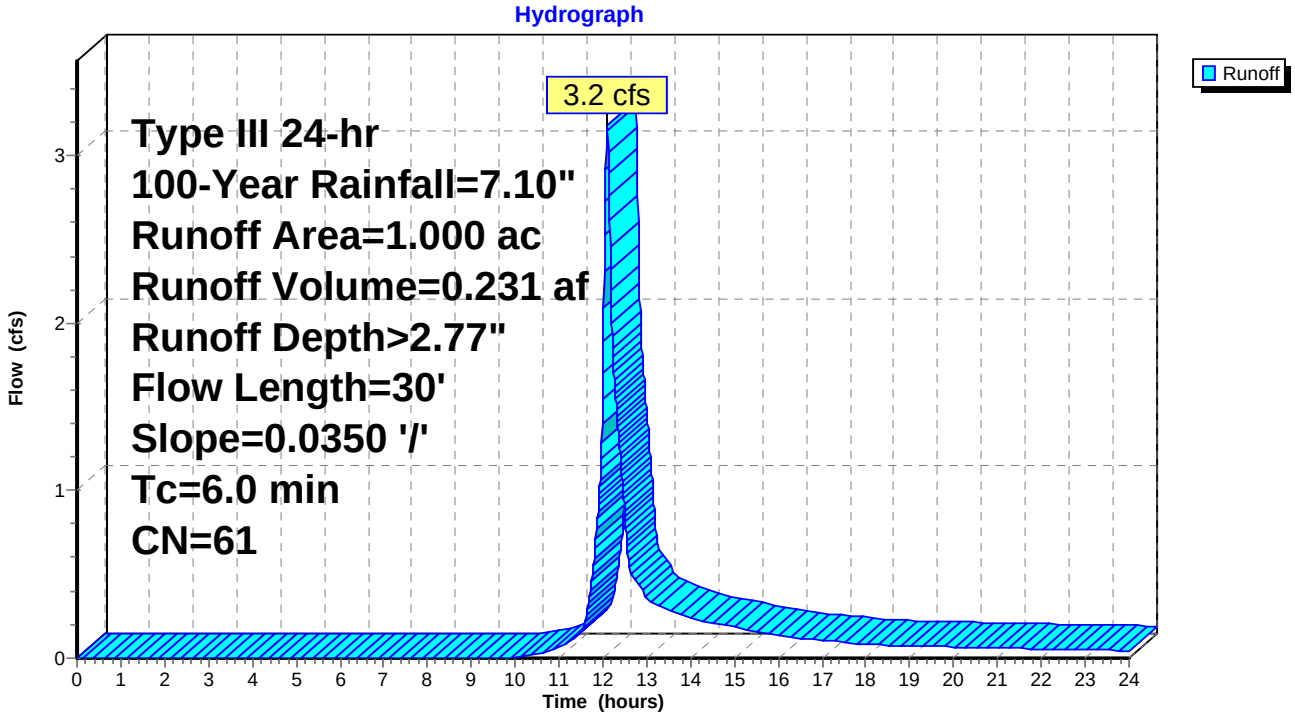
Runoff = 3.2 cfs @ 12.09 hrs, Volume= 0.231 af, Depth> 2.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=7.10"

Area (ac)	CN	Description
1.000	61	>75% Grass cover, Good, HSG B
1.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	30	0.0350	0.12		**Sheet Flow, Grass Slope** Grass: Dense n= 0.240 P2= 3.40"
4.2	30	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 2S-A: Area 1 - West - DownGradient Swale



Summary for Subcatchment 2S-B: Area 1 - West

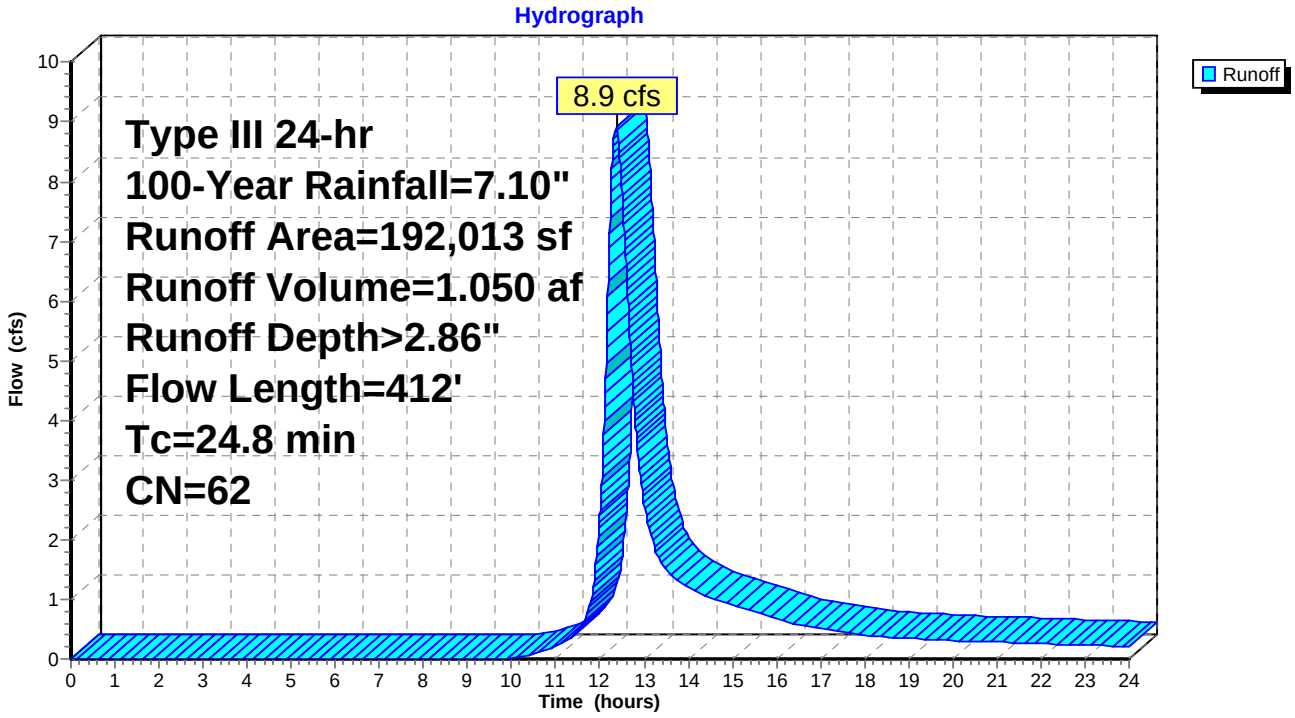
Runoff = 8.9 cfs @ 12.37 hrs, Volume= 1.050 af, Depth> 2.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=7.10"

	Area (sf)	CN	Description
*	182,691	61	>75% Grass cover, Solar Array Area, HSG B
	8,538	85	Gravel roads, HSG B
*	0	98	Solar Array Racking Posts, HSG B
*	784	98	Concrete Equipment Pad, HSG B
	192,013	62	Weighted Average
	191,229		99.59% Pervious Area
	784		0.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.0	100	0.0120	0.10		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
7.3	307	0.0099	0.70		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
0.5	5	0.2000	0.17		**Sheet Flow, Swale Slope (flow disrupted by stone level spreade** Grass: Dense n= 0.240 P2= 3.40"
24.8	412	Total			

Subcatchment 2S-B: Area 1 - West



Summary for Subcatchment 3S: Area 1 - East

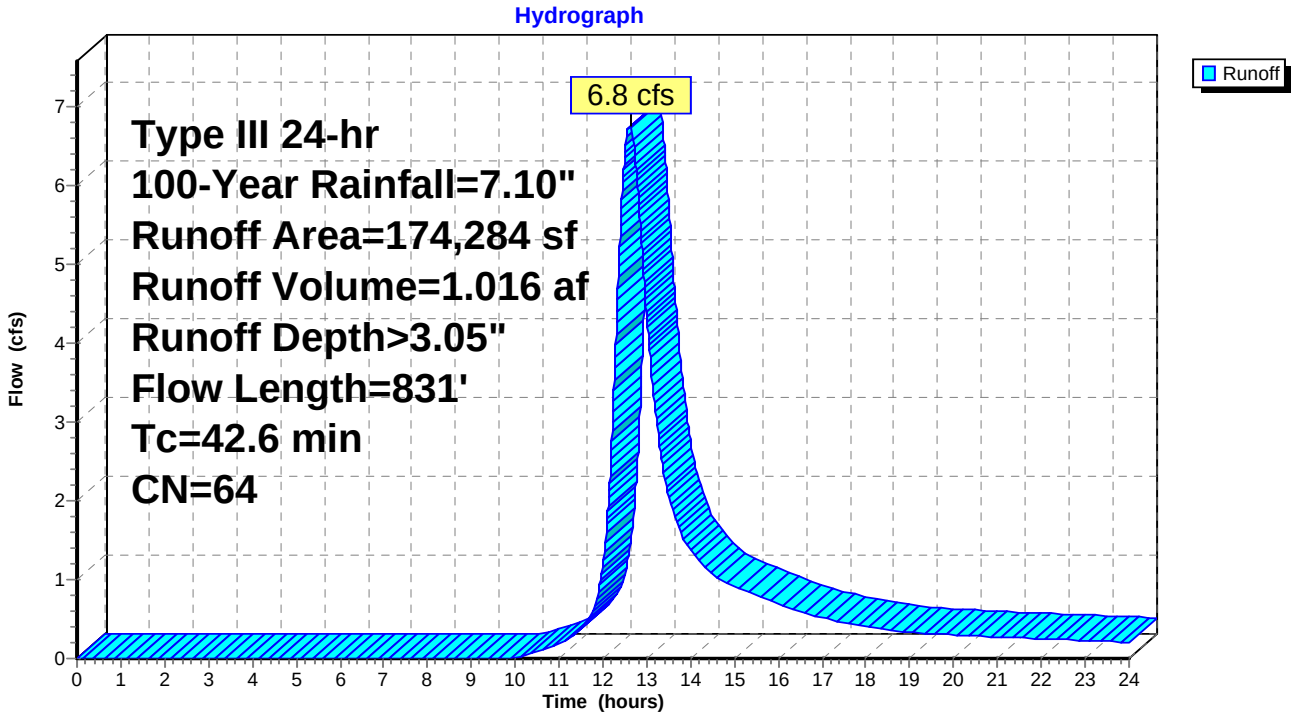
Runoff = 6.8 cfs @ 12.63 hrs, Volume= 1.016 af, Depth> 3.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=7.10"

	Area (sf)	CN	Description
	19,602	85	Gravel roads, HSG B
*	153,878	61	>75% Grass cover, Solar Array Area, HSG B
*	4	98	Solar Array Racking Posts, HSG B
*	800	98	Concrete Equipment Pads, HSG B
	174,284	64	Weighted Average
	173,480		99.54% Pervious Area
	804		0.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	100	0.0090	0.09		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
7.1	174	0.0034	0.41		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
16.3	526	0.0059	0.54		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.1	31	0.0742	4.39		**Shallow Concentrated Flow, Grass/Gravel** Unpaved Kv= 16.1 fps
42.6	831	Total			

Subcatchment 3S: Area 1 - East



Summary for Subcatchment 4S: Area 2 - West

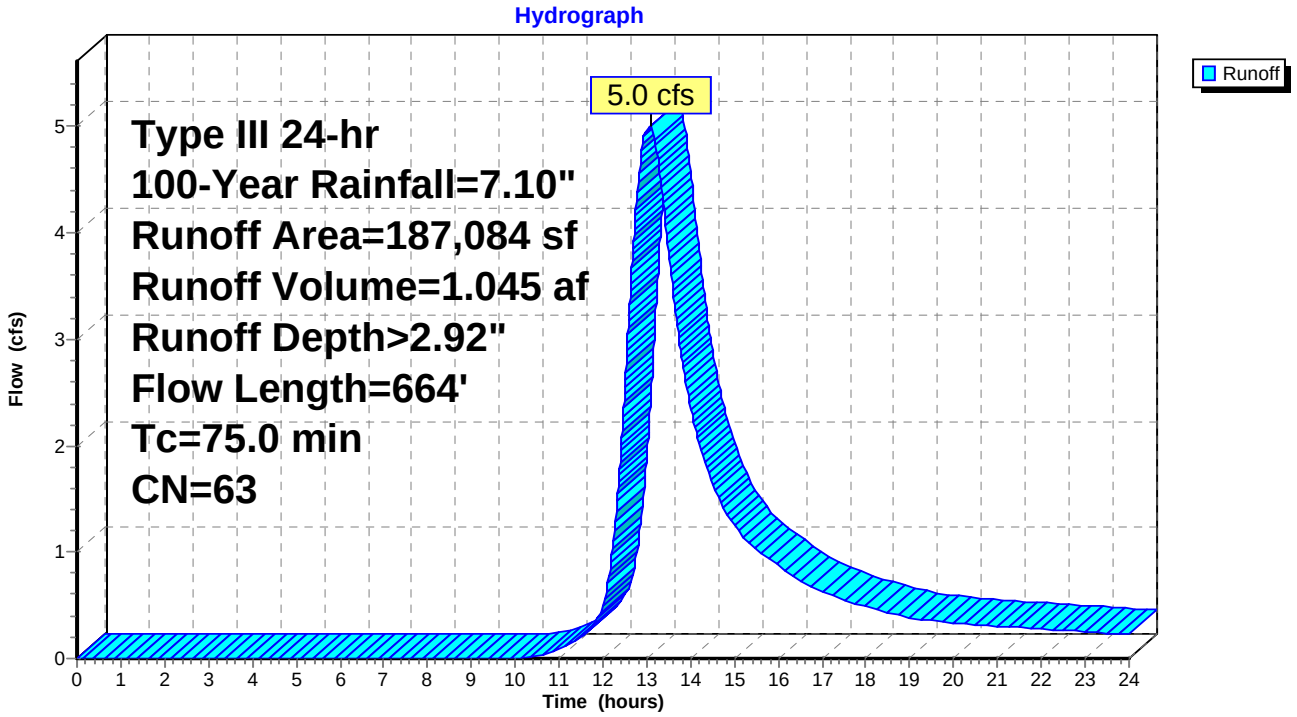
Runoff = 5.0 cfs @ 13.08 hrs, Volume= 1.045 af, Depth> 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=7.10"

	Area (sf)	CN	Description
	10,060	60	Woods, Fair, HSG B
*	161,719	61	>75% Grass cover, Solar Array Area, HSG B
	14,898	85	Gravel roads, HSG B
*	7	98	Solar Array Racking Posts, HSG B
*	400	98	Concrete Equipment Pad, HSG B
	187,084	63	Weighted Average
	186,677		99.78% Pervious Area
	407		0.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0080	0.08		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
1.3	86	0.0233	1.07		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
7.5	235	0.0055	0.52		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
13.3	177	0.0010	0.22		**Shallow Concentrated Flow, Grass - Solar Array Area** Short Grass Pasture Kv= 7.0 fps
32.9	66	0.0010	0.03		**Sheet Flow, Grass (Flow disrupted by stone check dam)** Grass: Dense n= 0.240 P2= 3.40"
75.0	664	Total			

Subcatchment 4S: Area 2 - West



Summary for Subcatchment 5S: Area 2 - East

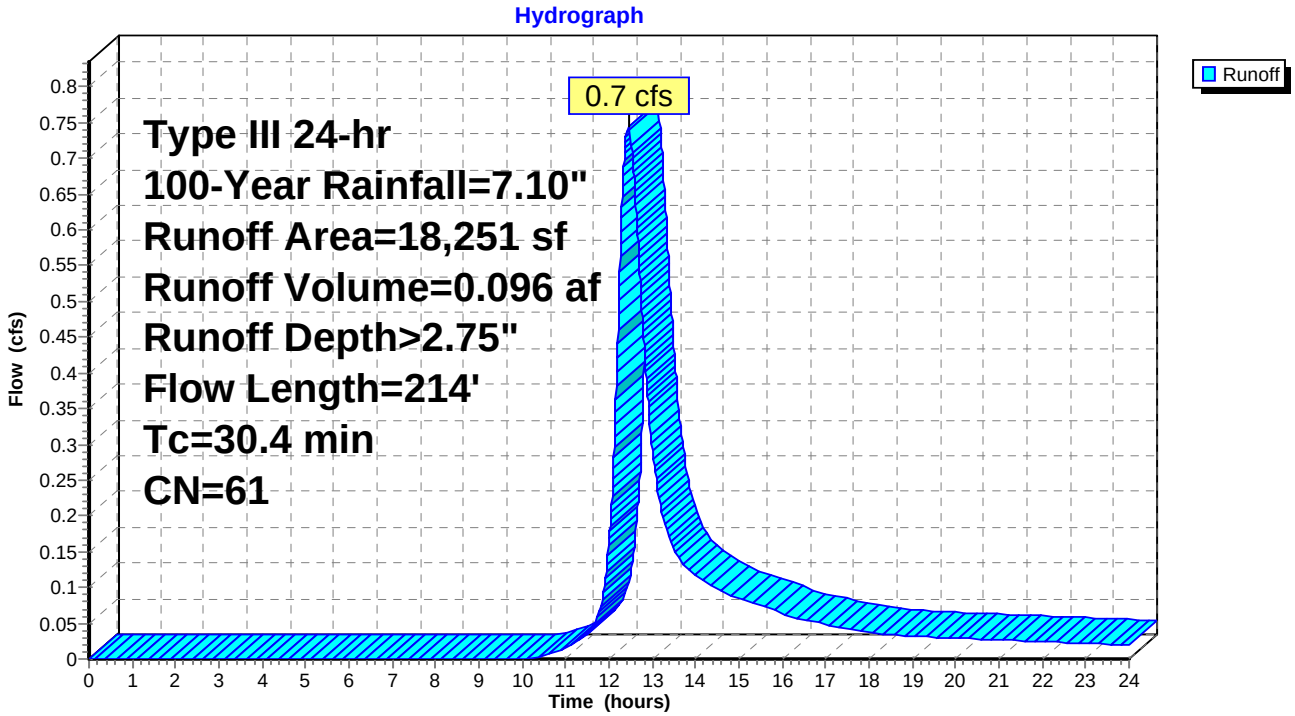
Runoff = 0.7 cfs @ 12.46 hrs, Volume= 0.096 af, Depth> 2.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=7.10"

	Area (sf)	CN	Description
*	18,250	61	>75% Grass cover, Solar Array Area, HSG B
*	1	98	Solar Array Racking Posts, HSG B
	18,251	61	Weighted Average
	18,250		99.99% Pervious Area
	1		0.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	58	0.0034	0.05		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
8.5	42	0.0119	0.08		**Sheet Flow, Grass - Solar Array Area** Grass: Dense n= 0.240 P2= 3.40"
2.8	86	0.0105	0.51		**Shallow Concentrated Flow, Grass - Solar Array Area** Woodland Kv= 5.0 fps
0.9	28	0.0050	0.49		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
30.4	214	Total			

Subcatchment 5S: Area 2 - East



Summary for Reach 3R: Overflow Swale

Inflow Area = 3.774 ac, 0.00% Impervious, Inflow Depth > 2.75" for 100-Year event
Inflow = 7.4 cfs @ 12.37 hrs, Volume= 0.866 af
Outflow = 7.3 cfs @ 12.37 hrs, Volume= 0.865 af, Atten= 0%, Lag= 0.1 min

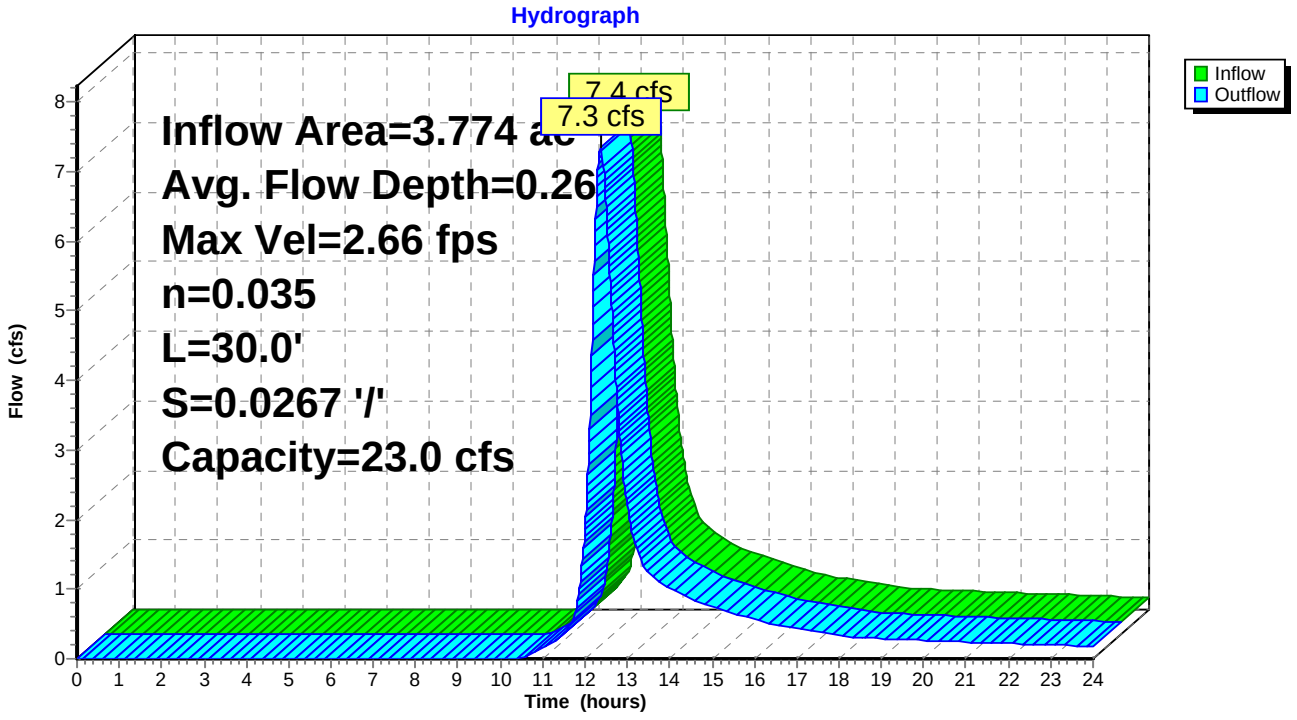
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.66 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 0.97 fps, Avg. Travel Time= 0.5 min

Peak Storage= 83 cf @ 12.37 hrs
Average Depth at Peak Storage= 0.26'
Bank-Full Depth= 0.50' Flow Area= 5.8 sf, Capacity= 23.0 cfs

10.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 3.0 '/' Top Width= 13.00'
Length= 30.0' Slope= 0.0267 '/'
Inlet Invert= 22.80', Outlet Invert= 22.00'

‡

Reach 3R: Overflow Swale



Summary for Reach 4R: Overflow Swale

Inflow Area = 4.408 ac, 0.41% Impervious, Inflow Depth > 2.85" for 100-Year event
Inflow = 8.9 cfs @ 12.37 hrs, Volume= 1.048 af
Outflow = 8.9 cfs @ 12.37 hrs, Volume= 1.048 af, Atten= 0%, Lag= 0.0 min

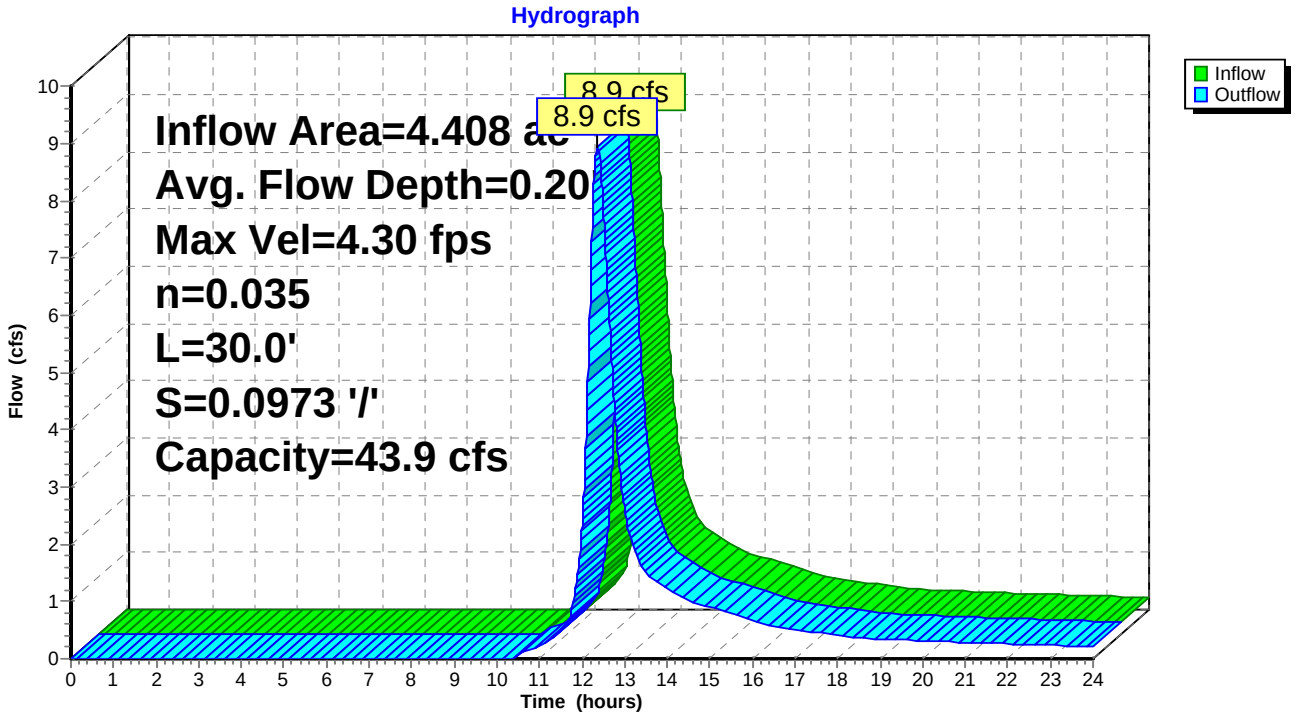
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.30 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.55 fps, Avg. Travel Time= 0.3 min

Peak Storage= 62 cf @ 12.37 hrs
Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 0.50' Flow Area= 5.8 sf, Capacity= 43.9 cfs

10.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 3.0 '/' Top Width= 13.00'
Length= 30.0' Slope= 0.0973 '/'
Inlet Invert= 25.00', Outlet Invert= 22.08'

‡

Reach 4R: Overflow Swale



Summary for Pond 2P: BioFiltration Cell

Inflow Area = 3.774 ac, 0.00% Impervious, Inflow Depth > 2.76" for 100-Year event
Inflow = 7.4 cfs @ 12.37 hrs, Volume= 0.867 af
Outflow = 7.4 cfs @ 12.37 hrs, Volume= 0.866 af, Atten= 0%, Lag= 0.1 min
Primary = 7.4 cfs @ 12.37 hrs, Volume= 0.866 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 23.29' @ 12.37 hrs Surf.Area= 0.006 ac Storage= 0.004 af

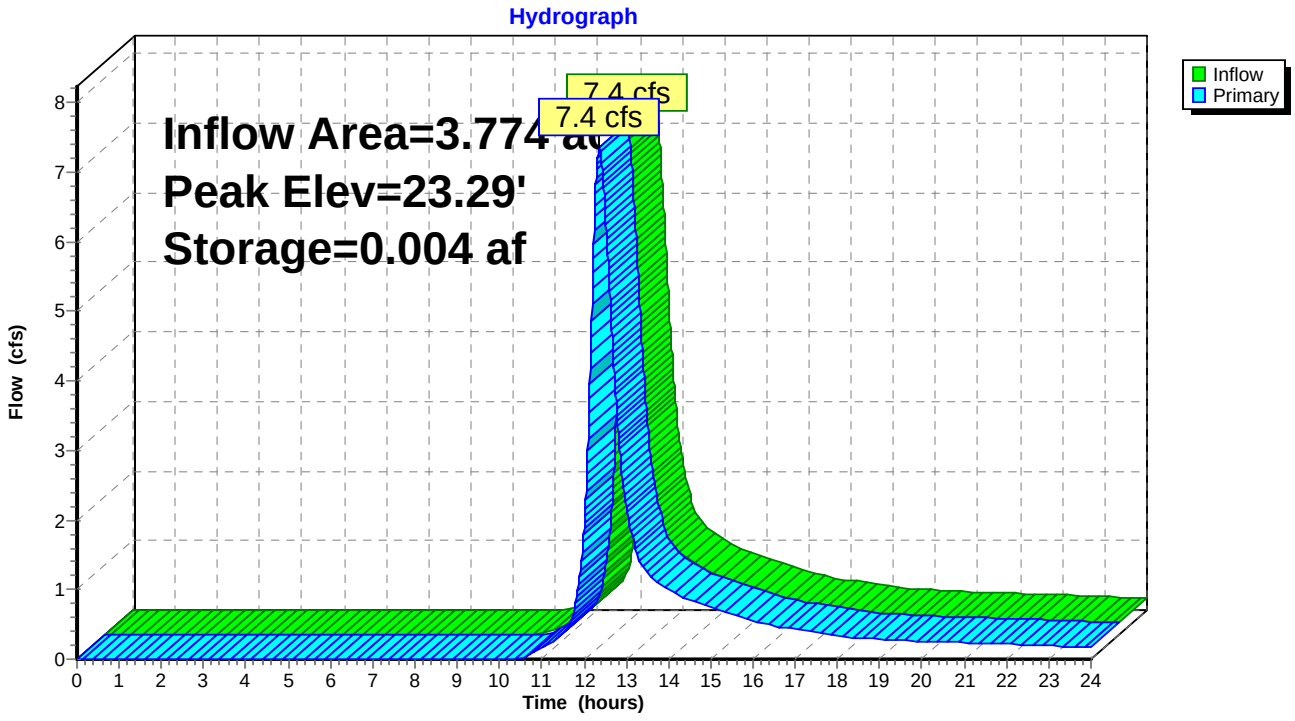
Plug-Flow detention time= 1.7 min calculated for 0.865 af (100% of inflow)
Center-of-Mass det. time= 0.6 min (864.8 - 864.2)

Volume	Invert	Avail.Storage	Storage Description
#1	22.30'	0.004 af	**4.00'W x 20.00'L x 1.00'H Filtration Cell Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	22.80'	**10.0' long x 5.0' breadth Vegetated Swale** 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 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=7.4 cfs @ 12.37 hrs HW=23.29' TW=23.06' (Dynamic Tailwater)
└─**1=Vegetated Swale** (Weir Controls 7.4 cfs @ 1.50 fps)

Pond 2P: BioFiltration Cell



Summary for Pond 5P: BioFiltration Cell

Inflow Area = 4.408 ac, 0.41% Impervious, Inflow Depth > 2.86" for 100-Year event
Inflow = 8.9 cfs @ 12.37 hrs, Volume= 1.050 af
Outflow = 8.9 cfs @ 12.37 hrs, Volume= 1.048 af, Atten= 0%, Lag= 0.1 min
Primary = 8.9 cfs @ 12.37 hrs, Volume= 1.048 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 25.52' @ 12.37 hrs Surf.Area= 0.006 ac Storage= 0.004 af

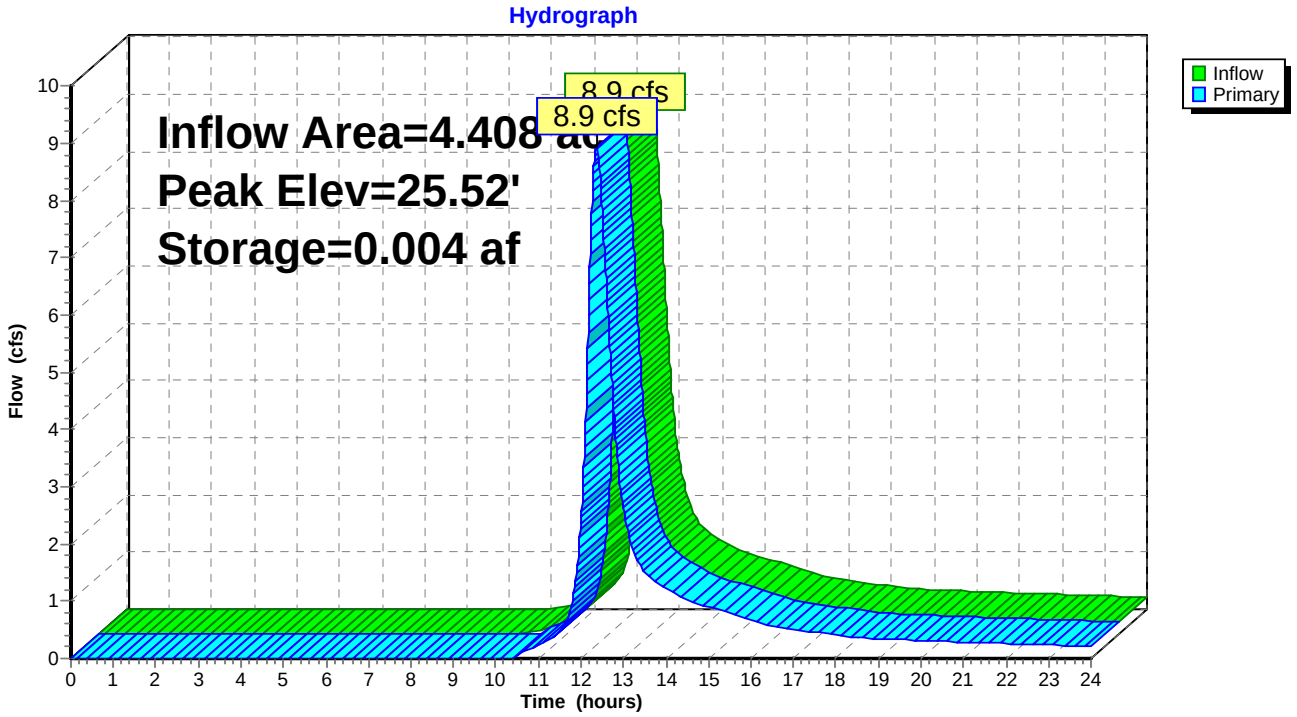
Plug-Flow detention time= 1.4 min calculated for 1.048 af (100% of inflow)
Center-of-Mass det. time= 0.6 min (862.5 - 861.9)

Volume	Invert	Avail.Storage	Storage Description
#1	24.50'	0.004 af	**4.00'W x 20.00'L x 1.10'H Filtration Cell Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	25.00'	**10.0' long x 5.0' breadth Vegetated Swale** 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 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#2	Primary	25.50'	**20.0' long x 5.0' breadth Swale Overtopping** 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 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=8.9 cfs @ 12.37 hrs HW=25.52' TW=25.20' (Dynamic Tailwater)
└─**1=Vegetated Swale** (Weir Controls 8.8 cfs @ 1.70 fps)
└─**2=Swale Overtopping** (Weir Controls 0.1 cfs @ 0.32 fps)

Pond 5P: BioFiltration Cell

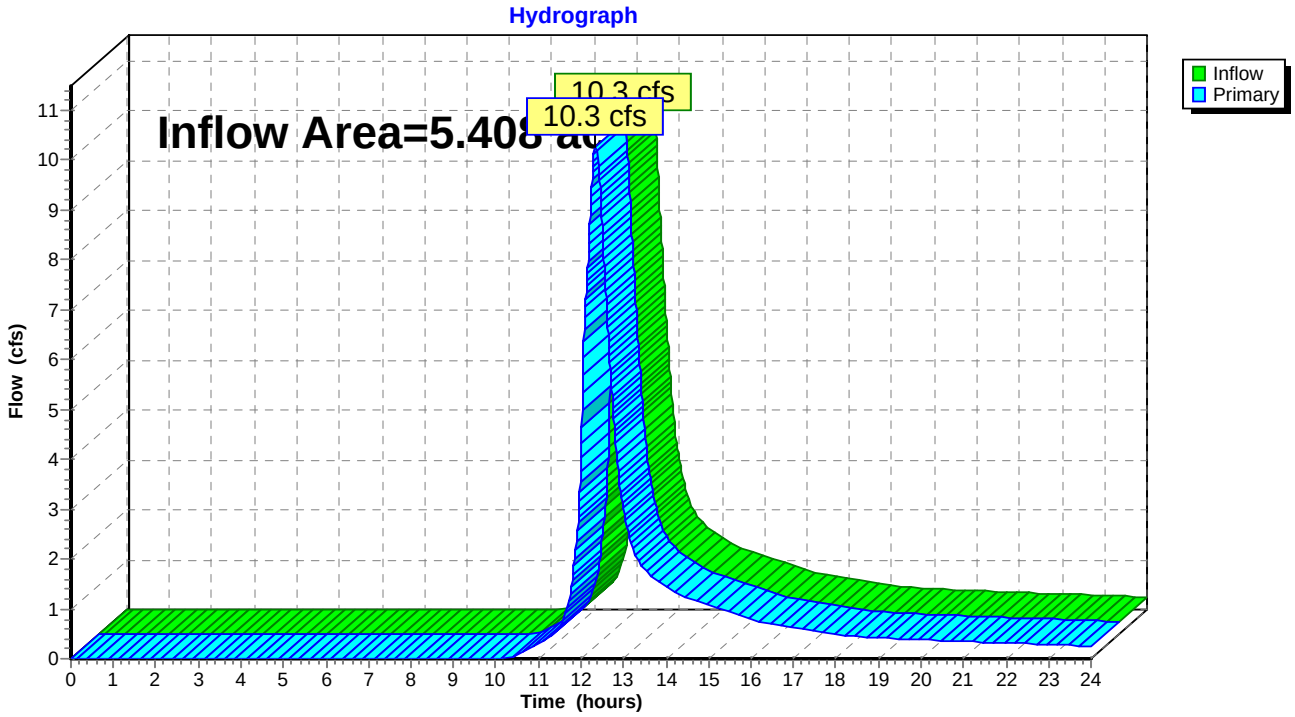


Summary for Link 3L: To Reservoir - South

Inflow Area = 5.408 ac, 0.33% Impervious, Inflow Depth > 2.84" for 100-Year event
Inflow = 10.3 cfs @ 12.34 hrs, Volume= 1.279 af
Primary = 10.3 cfs @ 12.34 hrs, Volume= 1.279 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 3L: To Reservoir - South

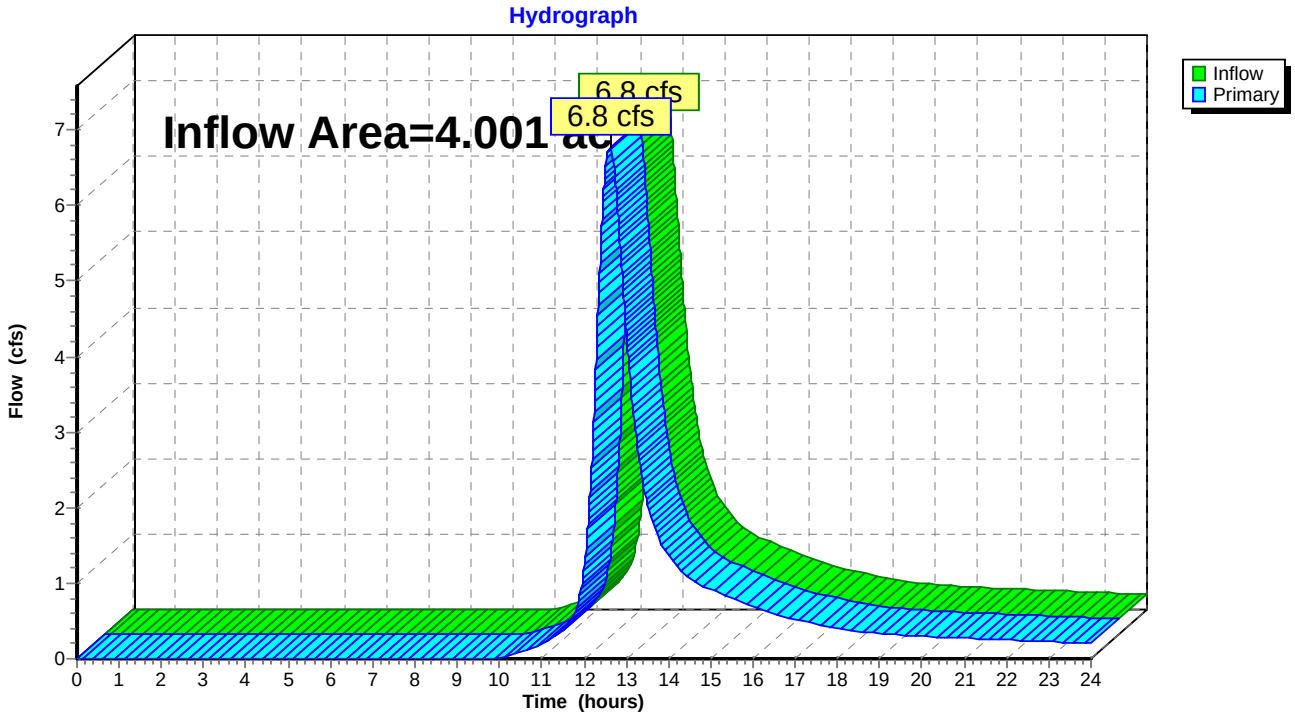


Summary for Link 4L: Wooded Area to East

Inflow Area = 4.001 ac, 0.46% Impervious, Inflow Depth > 3.05" for 100-Year event
Inflow = 6.8 cfs @ 12.63 hrs, Volume= 1.016 af
Primary = 6.8 cfs @ 12.63 hrs, Volume= 1.016 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 4L: Wooded Area to East

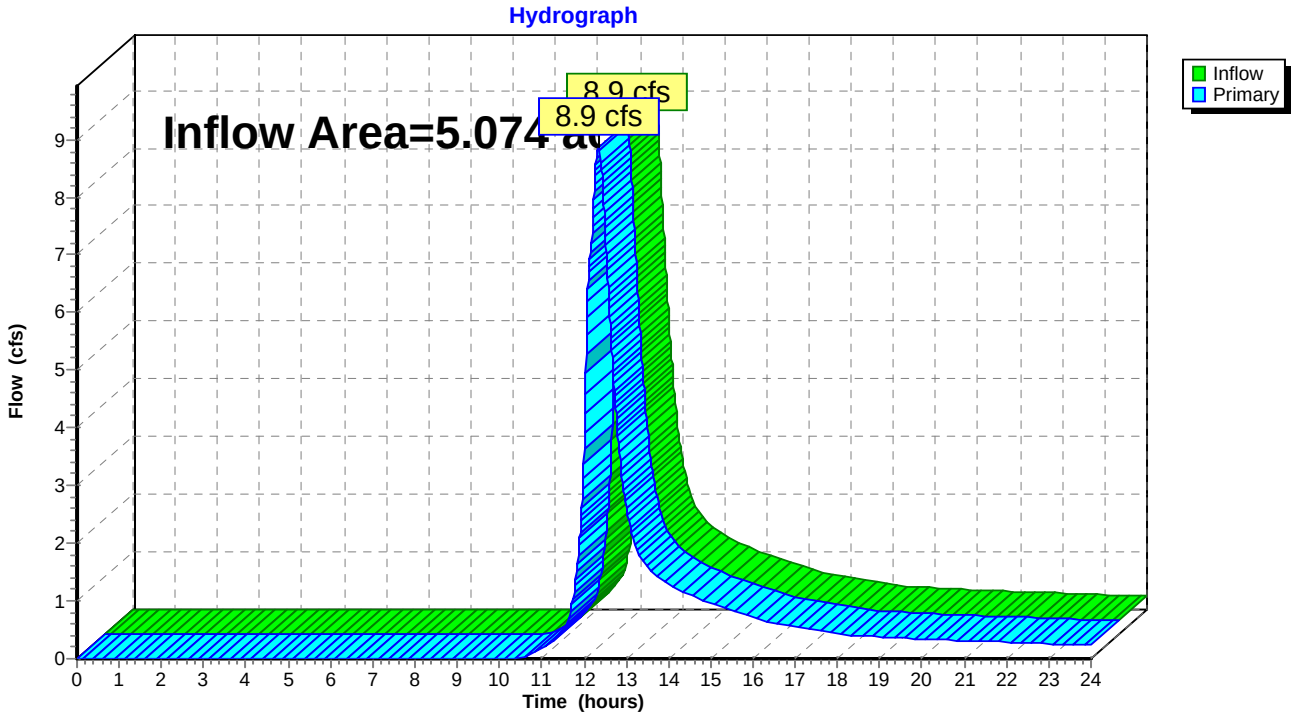


Summary for Link 6L: To Reservoir - North

Inflow Area = 5.074 ac, 0.00% Impervious, Inflow Depth > 2.66" for 100-Year event
Inflow = 8.9 cfs @ 12.33 hrs, Volume= 1.123 af
Primary = 8.9 cfs @ 12.33 hrs, Volume= 1.123 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 6L: To Reservoir - North

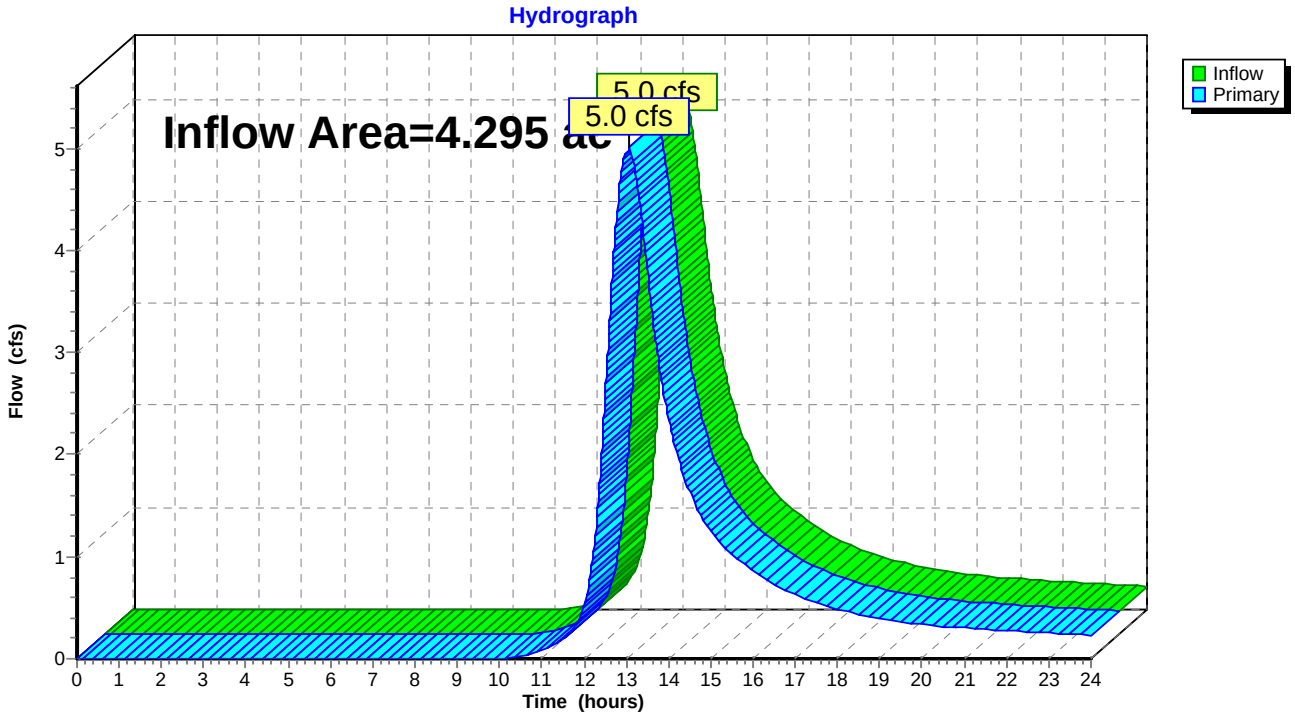


Summary for Link 7L: Off-Site Flow to South

Inflow Area = 4.295 ac, 0.22% Impervious, Inflow Depth > 2.92" for 100-Year event
Inflow = 5.0 cfs @ 13.08 hrs, Volume= 1.045 af
Primary = 5.0 cfs @ 13.08 hrs, Volume= 1.045 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 7L: Off-Site Flow to South

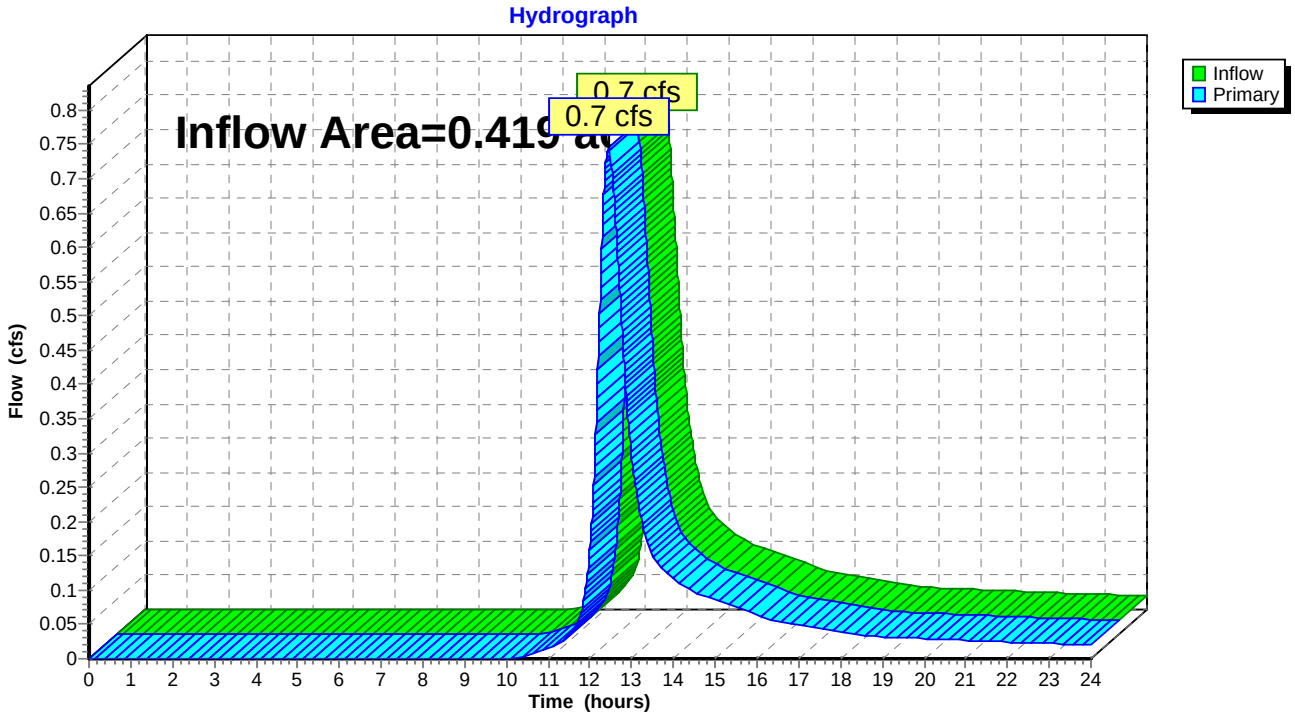


Summary for Link 8L: Off-Site Flow to East

Inflow Area = 0.419 ac, 0.01% Impervious, Inflow Depth > 2.75" for 100-Year event
Inflow = 0.7 cfs @ 12.46 hrs, Volume= 0.096 af
Primary = 0.7 cfs @ 12.46 hrs, Volume= 0.096 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

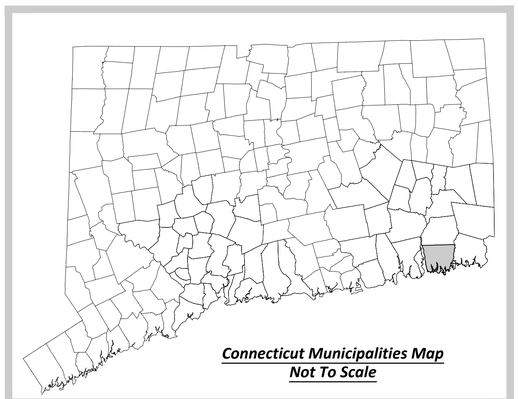
Link 8L: Off-Site Flow to East



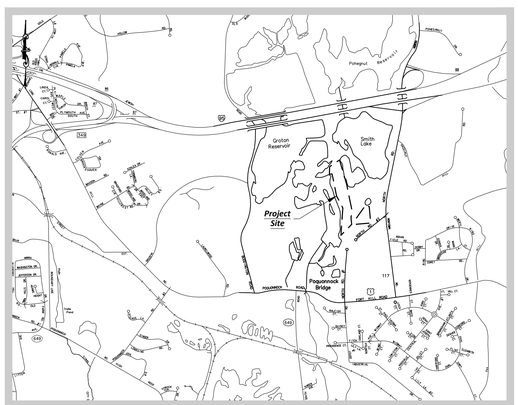
Appendix C
Site Development Plans

POQUONNOCK ROAD SOLAR PROJECT
DEVELOPMENT AND MANAGEMENT PLAN
SolarCity Corporation
1240 Poquonnock Road - Groton, Connecticut
October 2015

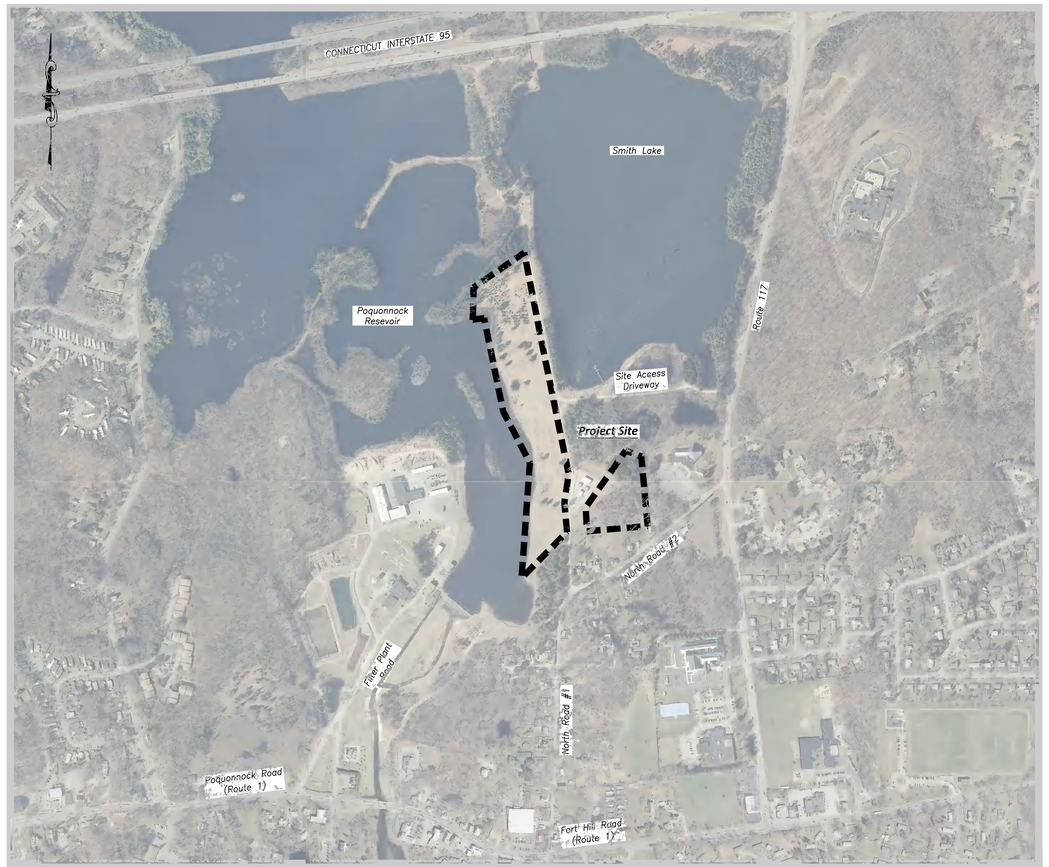
Revision "A" - Per Groton Utilities Comments - 12/09/15
Revision "B" - Add Environmental Notes - 2/09/16



Connecticut Municipalities Map
Not To Scale



Site Location Map
Scale: 1"=2000'



Site Location Aerial View
Not To Scale

Project Information	
Developed By:	***Electrical Engineer:***
Brightfields Development, LLC *40 Walnut Street, Suite 301* *Wellesley, MA 02481*	*SolarCity Corporation* *714 Brook Street* *Rocky Hill, CT 06067*
SolarCity Corporation *714 Brook Street* *Rocky Hill, CT 06067*	***Host:*** *City of Groton* *295 Meridian Street* *Groton, CT 06340*
Civil Engineer: *Boundaries LLC* *179 Pachaug River Drive* *Griswold, CT 06351*	***Utility:*** *Groton Utilities* *295 Meridian Street* *Groton, CT 06340*

Index To Drawings	
Sheet	*Sheet Title*
1	*Cover Sheet*
2-3	*Topographic Survey-Existing Conditions*
4	*Site Logistics Plan*
5-6	*Site Preparation and Demolition Plan*
7-8	*Site Development Plan Solar Modules and Infrastructure*
9	*Erosion & Sediment and Spill Prevention & Control Plan*
10	*Site Details*

SURVEY NOTES

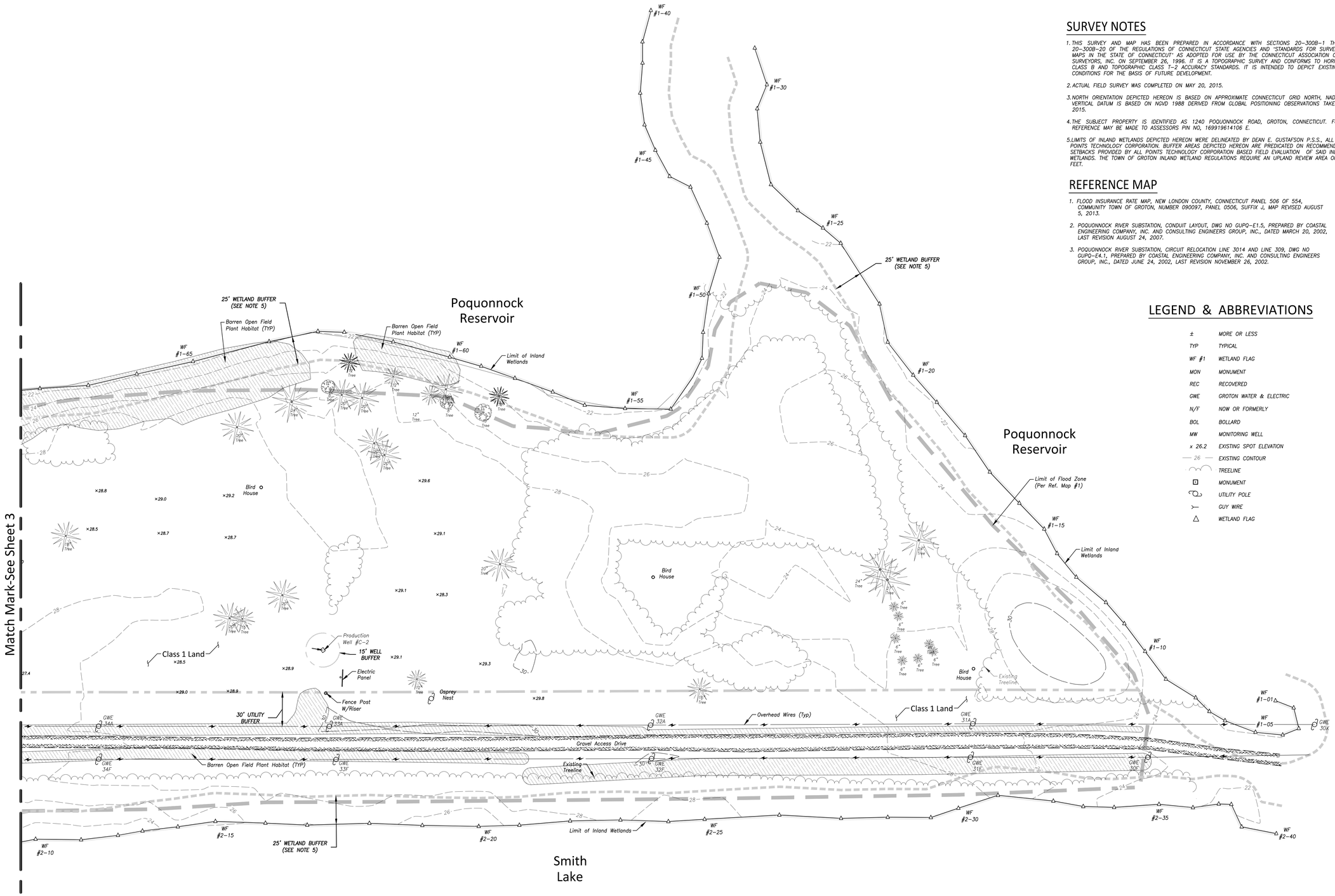
1. THIS SURVEY AND MAP HAS BEEN PREPARED IN ACCORDANCE WITH SECTIONS 20-300B-1 THROUGH 20-300B-20 OF THE REGULATIONS OF CONNECTICUT STATE AGENCIES AND "STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ADOPTED FOR USE BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPTEMBER 26, 1996. IT IS A TOPOGRAPHIC SURVEY AND CONFORMS TO HORIZONTAL CLASS B AND TOPOGRAPHIC CLASS T-2 ACCURACY STANDARDS. IT IS INTENDED TO DEPICT EXISTING SITE CONDITIONS FOR THE BASIS OF FUTURE DEVELOPMENT.
2. ACTUAL FIELD SURVEY WAS COMPLETED ON MAY 20, 2015.
3. NORTH ORIENTATION DEPICTED HEREON IS BASED ON APPROXIMATE CONNECTICUT GRID NORTH, NAD 1983, VERTICAL DATUM IS BASED ON NGVD 1988 DERIVED FROM GLOBAL POSITIONING OBSERVATIONS TAKEN MAY 2015.
4. THE SUBJECT PROPERTY IS IDENTIFIED AS 1240 POQUONNOCK ROAD, GROTON, CONNECTICUT. FURTHER REFERENCE MAY BE MADE TO ASSESSORS PIN NO, 1699191614106 E.
5. LIMITS OF INLAND WETLANDS DEPICTED HEREON WERE DELINEATED BY DEAN E. GUSTAFSON P.S.S., ALL POINTS TECHNOLOGY CORPORATION. BUFFER AREAS DEPICTED HEREON ARE PREDICATED ON RECOMMENDED SETBACKS PROVIDED BY ALL POINTS TECHNOLOGY CORPORATION BASED FIELD EVALUATION OF SAID INLAND WETLANDS. THE TOWN OF GROTON INLAND WETLAND REGULATIONS REQUIRE AN UPLAND REVIEW AREA OF 100 FEET.

REFERENCE MAP

1. FLOOD INSURANCE RATE MAP, NEW LONDON COUNTY, CONNECTICUT PANEL 506 OF 554, COMMUNITY TOWN OF GROTON, NUMBER 090097, PANEL 0506, SUFFIX J, MAP REVISED AUGUST 5, 2013.
2. POQUONNOCK RIVER SUBSTATION, CONDUIT LAYOUT, DWG NO GUPO-E1.5, PREPARED BY COASTAL ENGINEERING COMPANY, INC. AND CONSULTING ENGINEERS GROUP, INC., DATED MARCH 20, 2002, LAST REVISION AUGUST 24, 2007.
3. POQUONNOCK RIVER SUBSTATION, CIRCUIT RELOCATION LINE 3014 AND LINE 309, DWG NO GUPO-E4.1, PREPARED BY COASTAL ENGINEERING COMPANY, INC. AND CONSULTING ENGINEERS GROUP, INC., DATED JUNE 24, 2002, LAST REVISION NOVEMBER 26, 2002.

LEGEND & ABBREVIATIONS

±	MORE OR LESS
TYP	TYPICAL
WF #1	WETLAND FLAG
MON	MONUMENT
REC	RECOVERED
GWE	GROTON WATER & ELECTRIC
N/F	NOW OR FORMERLY
BOL	BOLLARD
MW	MONITORING WELL
x 26.2	EXISTING SPOT ELEVATION
26	EXISTING CONTOUR
	TREELINE
	MONUMENT
	UTILITY POLE
	GUY WIRE
	WETLAND FLAG



GRAPHIC SCALE

80 40 20 0 40

(IN FEET)
1 inch = 40 ft.

"TO MY KNOWLEDGE AND BELIEF THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON."

JOHN U. FAULISE JR. L.S. | 70016 LICENSE NO. | 2-9-2016 DATE

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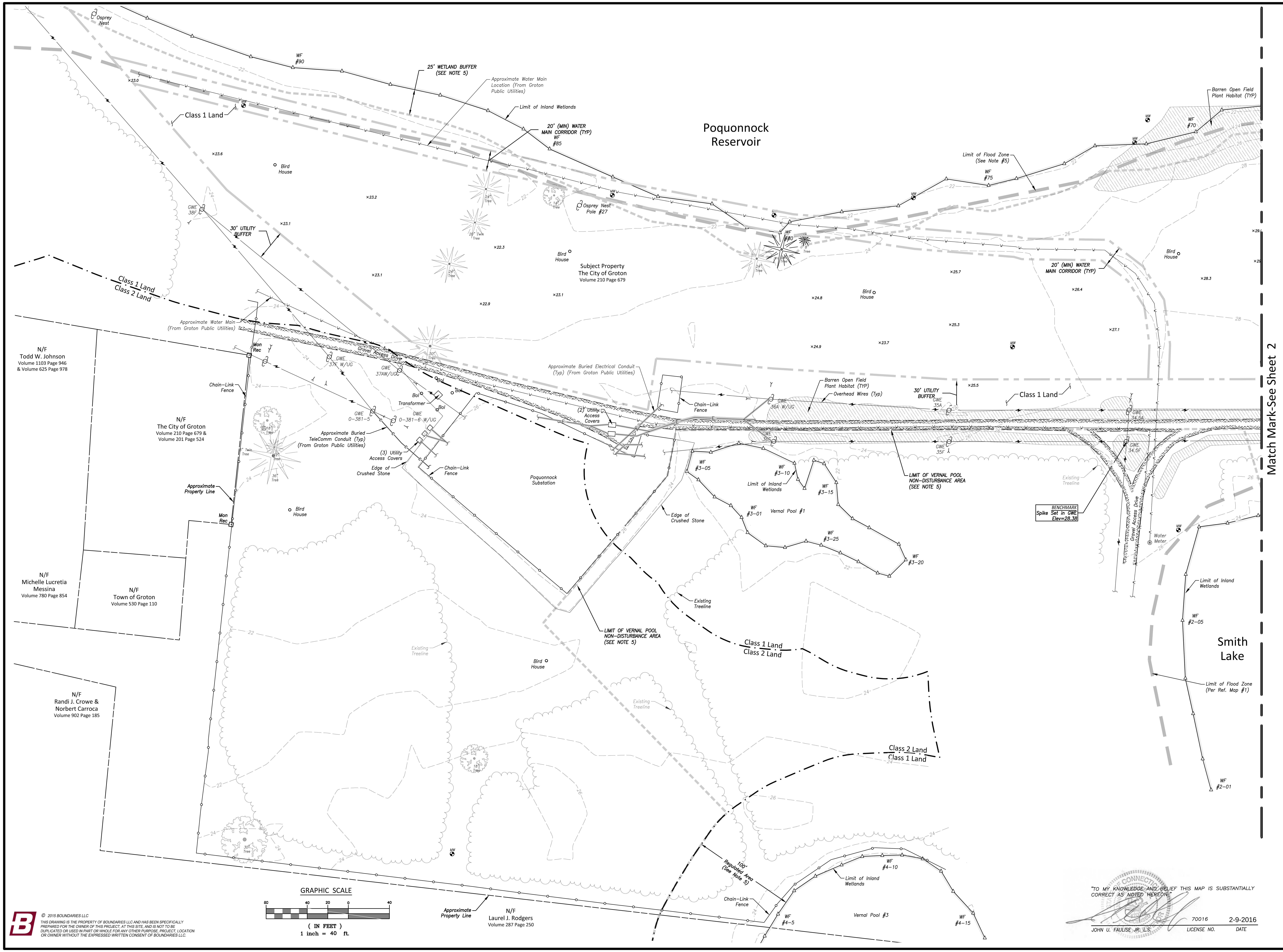
SolarCity Corporation
Proposed Solar Photovoltaic System
1240 Poquonnock Road
Groton, Connecticut
Topographic Survey-Existing Conditions

SCALE: 1"=40'
DATE: October 2015
JOB I.D. NO. 15-2347

Revisions
Rev. A - Per Groton Utilities Comments - 12/09/15
Rev. B - Add Environmental Notes - 2/09/16

SHEET NO.
2
10



Poquonnock Reservoir
Osprey Nest
WF #90
25' WETLAND BUFFER (SEE NOTE 5)
Approximate Water Main Location (From Groton Public Utilities)
Limit of Inland Wetlands
Class 1 Land
20' (MIN) WATER MAIN CORRIDOR (TYP)
WF #85
Bird House
Osprey Nest Pole #27
30' UTILITY BUFFER
Subject Property
The City of Groton
Volume 210 Page 679
Class 1 Land
Class 2 Land
Approximate Water Main (From Groton Public Utilities)
N/F
Todd W. Johnson
Volume 1103 Page 946 & Volume 625 Page 978
Chain-Link Fence
Mon Rec
Gravel Access Drive
Approximate Buried Electrical Conduit (Typ) (From Groton Public Utilities)
Transformer
(2) Utility Access Covers
Approximate Buried TeleComm Conduit (Typ) (From Groton Public Utilities)
(3) Utility Access Covers
Edge of Crushed Stone
N/F
The City of Groton
Volume 210 Page 679 & Volume 201 Page 524
Approximate Property Line
Poquonnock Substation
Barren Open Field Plant Habitat (TYP)
Overhead Wires (Typ)
30' UTILITY BUFFER
Class 1 Land
LIMIT OF VERNAL POOL NON-DISTURBANCE AREA (SEE NOTE 5)
Limit of Inland Wetlands
Vernal Pool #1
Edge of Crushed Stone
Existing Treeline
BENCHMARK Spike Set in GWE Elev=28.38
Barren Open Field Plant Habitat (TYP)
WF #70
Limit of Flood Zone (See Note #5)
WF #75
20' (MIN) WATER MAIN CORRIDOR (TYP)
Water Meter
Limit of Inland Wetlands
Smith Lake
Limit of Flood Zone (Per Ref. Map #1)
N/F
Michelle Lucretia Messina
Volume 780 Page 854
N/F
Town of Groton
Volume 530 Page 110
N/F
Randi J. Crowe & Norbert Carroca
Volume 902 Page 185
LIMIT OF VERNAL POOL NON-DISTURBANCE AREA (SEE NOTE 5)
Class 1 Land
Class 2 Land
Class 2 Land
Class 1 Land
100' Regulated Area (See Note 5)
Limit of Inland Wetlands
Vernal Pool #3
Chain-Link Fence
Match Mark-See Sheet 2
GRAPHIC SCALE
(IN FEET)
1 inch = 40 ft.
Approximate Property Line
N/F
Laurel J. Rodgers
Volume 287 Page 250
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JOHN U. FAULISE JR. L.S.
70016
LICENSE NO.
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SHEET NO.
3
10

GRAPHIC SCALE

200 100 50 0 100

(IN FEET)
1 inch = 100 ft.

POTENTIAL PHASE 2 SOLAR PV ARRAY

GRAPHIC SCALE

80 40 20 0 40

(IN FEET)
1 inch = 40 ft.

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Groton, Connecticut
Site Logistics Plan

SCALE: As Noted
DATE: October 2015
JOB I.D. NO. 15-2347

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SHEET NO.
4
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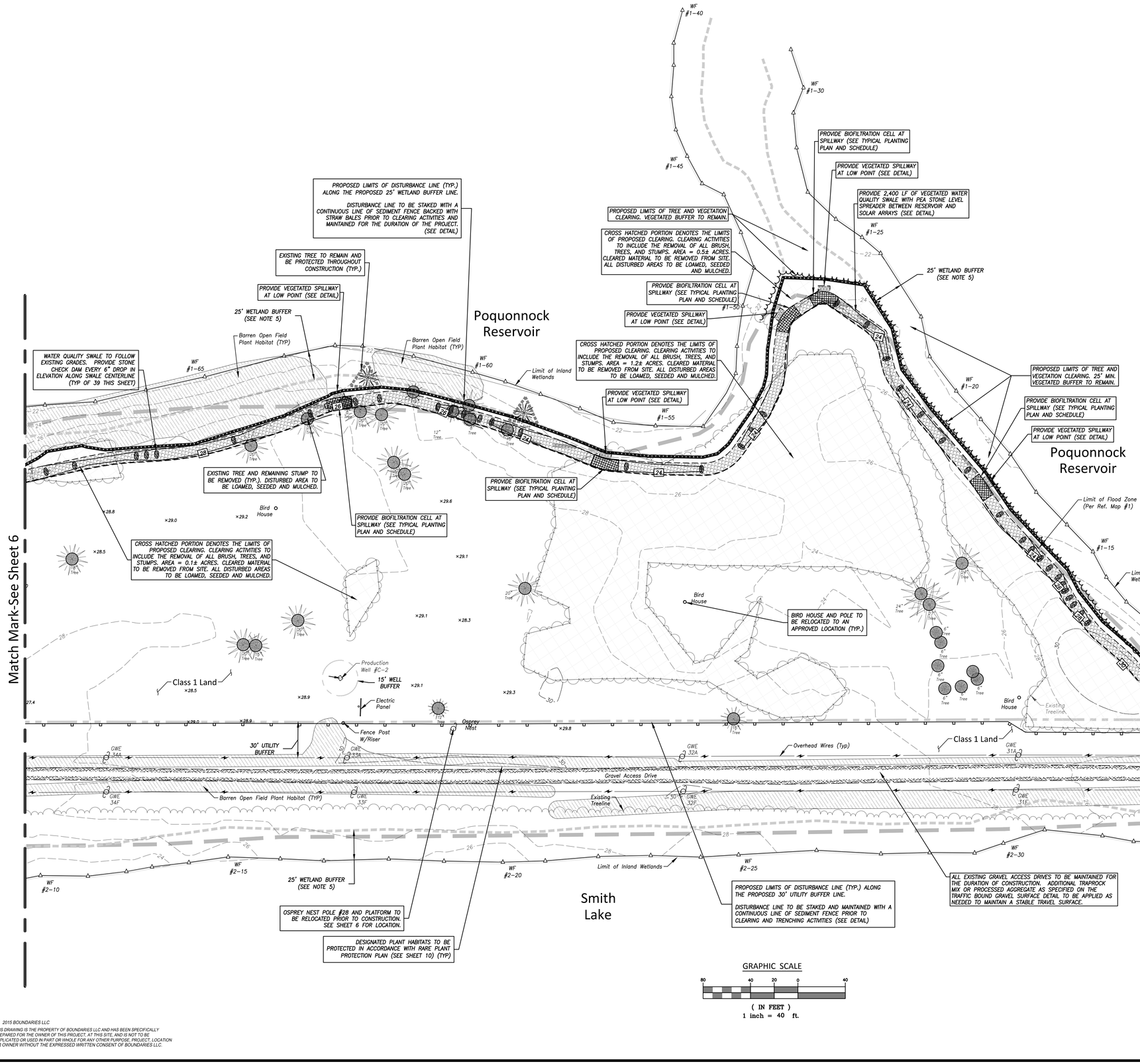

LEGEND & ABBREVIATIONS

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TYP	TYPICAL
WF #1	WETLAND FLAG
MON	MONUMENT
REC	RECOVERED
GWE	GROTON WATER & ELECTRIC
N/F	NOW OR FORMERLY
BOL	BOLLARD
MW	MONITORING WELL
× 26.2	EXISTING SPOT ELEVATION
26	EXISTING CONTOUR
	TREELINE
	MONUMENT
	UTILITY POLE
	GUY WIRE
	WETLAND FLAG

GRAPHIC SCALE

80 40 20 0 40

(IN FEET)

1 inch = 40 ft.

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SHEET NO.

5 / 10

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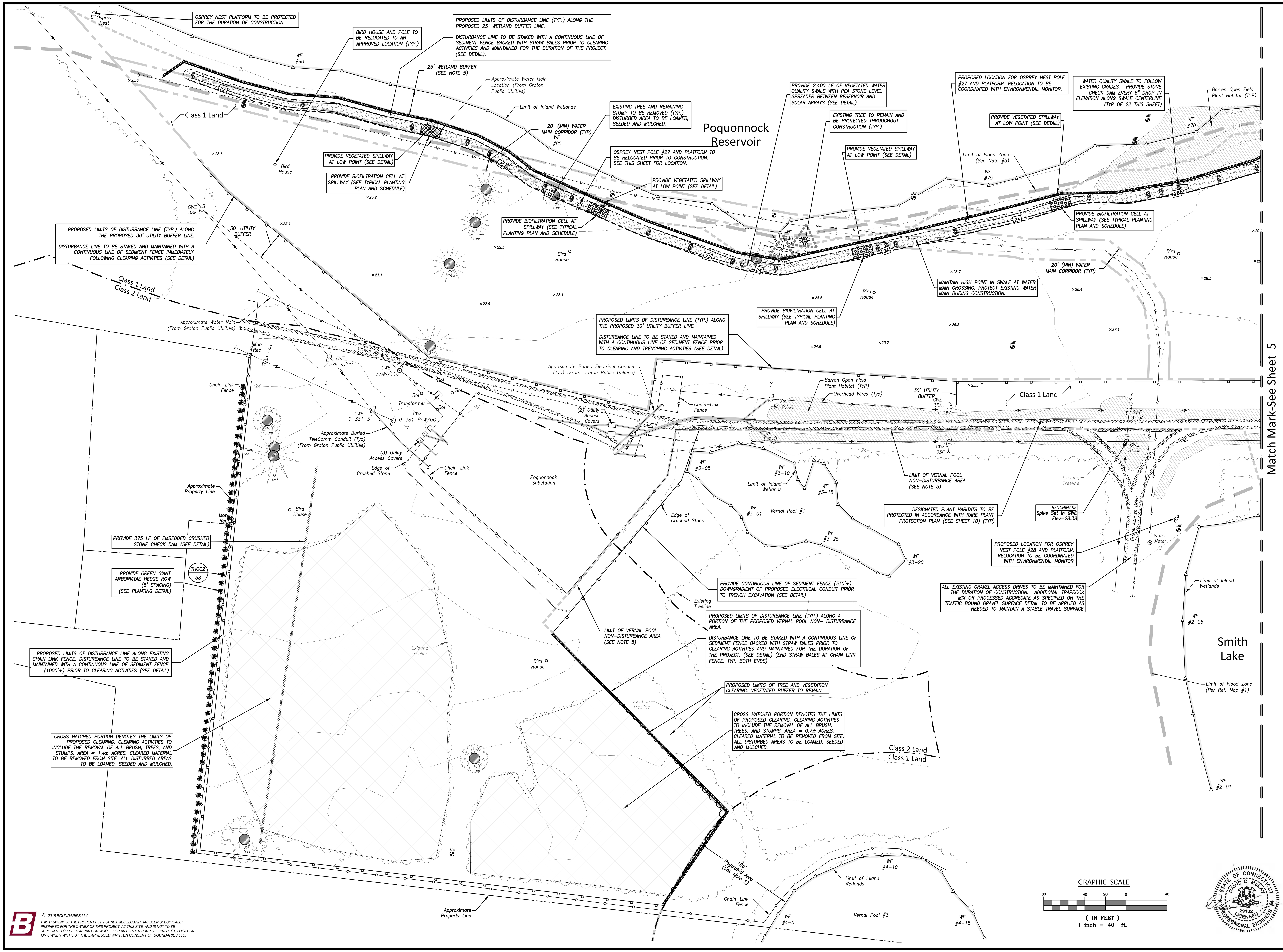

OSPREY NEST PLATFORM TO BE PROTECTED FOR THE DURATION OF CONSTRUCTION.
BIRD HOUSE AND POLE TO BE RELOCATED TO AN APPROVED LOCATION (TYP.)
PROPOSED LIMITS OF DISTURBANCE LINE (TYP.) ALONG THE PROPOSED 25' WETLAND BUFFER LINE.
DISTURBANCE LINE TO BE STAKED WITH A CONTINUOUS LINE OF SEDIMENT FENCE BACKED WITH STRAW BALES PRIOR TO CLEARING ACTIVITIES AND MAINTAINED FOR THE DURATION OF THE PROJECT. (SEE DETAIL)
25' WETLAND BUFFER (SEE NOTE 5)
Approximate Water Main Location (From Groton Public Utilities)
Limit of Inland Wetlands
Class 1 Land
20' (MIN) WATER MAIN CORRIDOR (TYP)
EXISTING TREE AND REMAINING STUMP TO BE REMOVED (TYP.). DISTURBED AREA TO BE LOAMED, SEEDED AND MULCHED.
Poquonnock Reservoir
PROVIDE 2,400 LF OF VEGETATED WATER QUALITY SWALE WITH PEA STONE LEVEL SPREADER BETWEEN RESERVOIR AND SOLAR ARRAYS (SEE DETAIL)
EXISTING TREE TO REMAIN AND BE PROTECTED THROUGHOUT CONSTRUCTION (TYP.)
PROPOSED LOCATION FOR OSPREY NEST POLE #27 AND PLATFORM. RELOCATION TO BE COORDINATED WITH ENVIRONMENTAL MONITOR.
WATER QUALITY SWALE TO FOLLOW EXISTING GRADES. PROVIDE STONE CHECK DAM EVERY 6" DROP IN ELEVATION ALONG SWALE CENTERLINE (TYP OF 22 THIS SHEET)
Barren Open Field Plant Habitat (TYP)
PROVIDE VEGETATED SPILLWAY AT LOW POINT (SEE DETAIL)
PROVIDE BIOFILTRATION CELL AT SPILLWAY (SEE TYPICAL PLANTING PLAN AND SCHEDULE)
OSPREY NEST POLE #27 AND PLATFORM TO BE RELOCATED PRIOR TO CONSTRUCTION. SEE THIS SHEET FOR LOCATION.
Limit of Flood Zone (See Note #5)
PROPOSED LIMITS OF DISTURBANCE LINE (TYP.) ALONG THE PROPOSED 30' UTILITY BUFFER LINE.
DISTURBANCE LINE TO BE STAKED AND MAINTAINED WITH A CONTINUOUS LINE OF SEDIMENT FENCE IMMEDIATELY FOLLOWING CLEARING ACTIVITIES (SEE DETAIL)
30' UTILITY BUFFER
Bird House
MAINTAIN HIGH POINT IN SWALE AT WATER MAIN CROSSING. PROTECT EXISTING WATER MAIN DURING CONSTRUCTION.
20' (MIN) WATER MAIN CORRIDOR (TYP)
Class 1 Land
Class 2 Land
PROPOSED LIMITS OF DISTURBANCE LINE (TYP.) ALONG THE PROPOSED 30' UTILITY BUFFER LINE.
DISTURBANCE LINE TO BE STAKED AND MAINTAINED WITH A CONTINUOUS LINE OF SEDIMENT FENCE PRIOR TO CLEARING AND TRENCHING ACTIVITIES (SEE DETAIL)
Approximate Water Main (From Groton Public Utilities)
Gravel Access Drive
Approximate Buried Electrical Conduit (Typ) (From Groton Public Utilities)
Chain-Link Fence
Transformer
(2) Utility Access Covers
Approximate Buried TeleComm Conduit (Typ) (From Groton Public Utilities)
(3) Utility Access Covers
Edge of Crushed Stone
Poquonnock Substation
Barren Open Field Plant Habitat (TYP)
Overhead Wires (Typ)
Class 1 Land
LIMIT OF VERNAL POOL NON-DISTURBANCE AREA (SEE NOTE 5)
Vernal Pool #1
DESIGNATED PLANT HABITATS TO BE PROTECTED IN ACCORDANCE WITH RARE PLANT PROTECTION PLAN (SEE SHEET 10) (TYP)
Spike Set in GWE Elev=28.38
Match Mark-See Sheet 5
Approximate Property Line
PROVIDE 375 LF OF EMBEDDED CRUSHED STONE CHECK DAM (SEE DETAIL)
PROVIDE GREEN GIANT ARBORVITAE HEDGE ROW (8' SPACING) (SEE PLANTING DETAIL)
PROVIDE CONTINUOUS LINE OF SEDIMENT FENCE (330'±) DOWNGRADIENT OF PROPOSED ELECTRICAL CONDUIT PRIOR TO TRENCH EXCAVATION (SEE DETAIL)
PROPOSED LOCATION FOR OSPREY NEST POLE #28 AND PLATFORM. RELOCATION TO BE COORDINATED WITH ENVIRONMENTAL MONITOR
ALL EXISTING GRAVEL ACCESS DRIVES TO BE MAINTAINED FOR THE DURATION OF CONSTRUCTION. ADDITIONAL TRAPROCK MIX OR PROCESSED AGGREGATE AS SPECIFIED ON THE TRAFFIC BOUND GRAVEL SURFACE DETAIL TO BE APPLIED AS NEEDED TO MAINTAIN A STABLE TRAVEL SURFACE.
PROPOSED LIMITS OF DISTURBANCE LINE (TYP.) ALONG A PORTION OF THE PROPOSED VERNAL POOL NON- DISTURBANCE AREA.
DISTURBANCE LINE TO BE STAKED WITH A CONTINUOUS LINE OF SEDIMENT FENCE BACKED WITH STRAW BALES PRIOR TO CLEARING ACTIVITIES AND MAINTAINED FOR THE DURATION OF THE PROJECT. (SEE DETAIL) (END STRAW BALES AT CHAIN LINK FENCE, TYP. BOTH ENDS)
Smith Lake
PROPOSED LIMITS OF DISTURBANCE LINE ALONG EXISTING CHAIN LINK FENCE. DISTURBANCE LINE TO BE STAKED AND MAINTAINED WITH A CONTINUOUS LINE OF SEDIMENT FENCE (1000'±) PRIOR TO CLEARING ACTIVITIES (SEE DETAIL)
Existing Treeline
PROPOSED LIMITS OF TREE AND VEGETATION CLEARING. VEGETATED BUFFER TO REMAIN.
Limit of Flood Zone (Per Ref. Map #1)
CROSS HATCHED PORTION DENOTES THE LIMITS OF PROPOSED CLEARING. CLEARING ACTIVITIES TO INCLUDE THE REMOVAL OF ALL BRUSH, TREES, AND STUMPS. AREA = 1.4± ACRES. CLEARED MATERIAL TO BE REMOVED FROM SITE. ALL DISTURBED AREAS TO BE LOAMED, SEEDED AND MULCHED.
CROSS HATCHED PORTION DENOTES THE LIMITS OF PROPOSED CLEARING. CLEARING ACTIVITIES TO INCLUDE THE REMOVAL OF ALL BRUSH, TREES, AND STUMPS. AREA = 0.7± ACRES. CLEARED MATERIAL TO BE REMOVED FROM SITE. ALL DISTURBED AREAS TO BE LOAMED, SEEDED AND MULCHED.
Class 2 Land
Class 1 Land
100' Regulated Area (See Note 5)
Limit of Inland Wetlands
Vernal Pool #3
GRAPHIC SCALE
(IN FEET)
1 inch = 40 ft.

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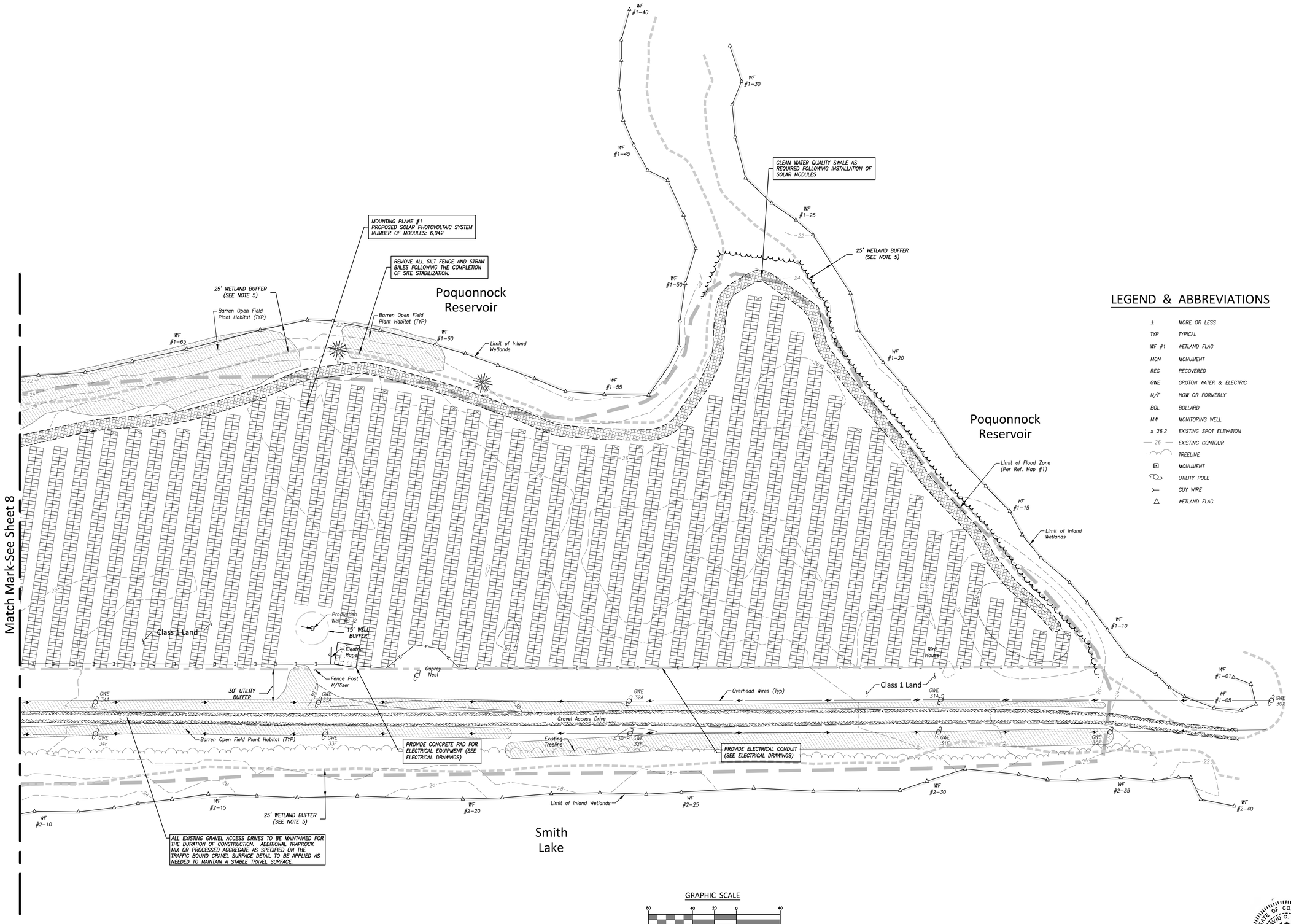
SHEET NO.
6
10



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26	EXISTING CONTOUR
	TREELINE
	MONUMENT
	UTILITY POLE
	GUY WIRE
	WETLAND FLAG

GRAPHIC SCALE

80 40 20 0 40

(IN FEET)
1 inch = 40 ft.

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STATE OF CONNECTICUT · DAVID C. MOSAY · 29102 · LICENSED PROFESSIONAL ENGINEER

SHEET NO.

7

10

Poquonnock Reservoir

Smith Lake

Match Mark-See Sheet 7

Osprey Nest

WF #90

25' WETLAND BUFFER (SEE NOTE 5)

Approximate Water Main Location (From Groton Public Utilities)

Limit of Inland Wetlands

20' (MIN) WATER MAIN CORRIDOR (TYP)

WF #85

MOUNTING PLANE #2
PROPOSED SOLAR PHOTOVOLTAIC SYSTEM
NUMBER OF MODULES: 2,850

Class 1 Land

Osprey Nest Date #27

REMOVE ALL SILT FENCE AND STRAW BALES FOLLOWING THE COMPLETION OF SITE STABILIZATION.

RELOCATED OSPREY NEST POLE #27

Limit of Flood Zone (See Note #5)

WF #75

WF #70

Barren Open Field Plant Habitat (TYP)

WF #80

Tree

20' (MIN) WATER MAIN CORRIDOR (TYP)

GWE 38F

30' UTILITY BUFFER

Class 1 Land
Class 2 Land

Approximate Water Main (From Groton Public Utilities)

Mon Rec

GWE 37F W/UG

Gravel Access Drive

GWE 37AW/UG

Approximate Buried Electrical Conduit (Typ) (From Groton Public Utilities)

PROTECT EXISTING UTILITIES DURING CONDUIT INSTALLATION (TYP)

Barren Open Field Plant Habitat (TYP)

Overhead Wires (Typ)

30' UTILITY BUFFER

GWE 35A

Class 1 Land

Chain-Link Fence

Bol

Transformer

GWE 0-381-5

GWE 0-381-6 W/UG

(2) Utility Access Covers

Approximate Buried TeleComm Conduit (Typ) (From Groton Public Utilities)

(3) Utility Access Covers

Edge of Crushed Stone

Chain-Link Fence

Approximate Property Line

Mon Rec

MAINTAIN PROPOSED GREEN GIANT ARBORVITAE HEDGEROW AS REQUIRED

REPAIR CRUSHED STONE CHECK DAM AS REQUIRED FOLLOWING INSTALLATION OF SOLAR MODULES

PROVIDE CONCRETE PAD FOR ELECTRICAL EQUIPMENT (SEE ELECTRICAL DRAWINGS)

Poquonnock Substation

WF #3-05

MAINTAIN REQUIRED CLEARANCES FROM OVERHEAD UTILITIES DURING CONDUIT INSTALLATION (TYP)

WF #3-10

Limit of Inland Wetlands

WF #3-15

LIMIT OF VERNAL POOL NON-DISTURBANCE AREA (SEE NOTE 5)

PROVIDE CONCRETE PAD FOR ELECTRICAL EQUIPMENT (SEE ELECTRICAL DRAWINGS)

PROPOSED POINT OF INTERCONNECTION (SEE ELECTRICAL DRAWINGS)

RELOCATED OSPREY NEST POLE #28

BENCHMARK
Spike Set in GWE
Elev=28.36

WF #3-01

Vernal Pool #1

WF #3-25

WF #3-20

PROVIDE ELECTRICAL CONDUIT (SEE ELECTRICAL DRAWINGS)

ALL EXISTING GRAVEL ACCESS DRIVES TO BE MAINTAINED FOR THE DURATION OF CONSTRUCTION. ADDITIONAL TRAPROCK MIX OR PROCESSED AGGREGATE AS SPECIFIED ON THE TRAFFIC BOUND GRAVEL SURFACE DETAIL TO BE APPLIED AS NEEDED TO MAINTAIN A STABLE TRAVEL SURFACE.

Water Meter

Limit of Inland Wetlands

WF #2-05

Limit of Flood Zone (Per Ref. Map #1)

WF #2-01

Existing Treeline

LIMIT OF VERNAL POOL NON-DISTURBANCE AREA (SEE NOTE 5)

PROVIDE CONCRETE PAD FOR ELECTRICAL EQUIPMENT (SEE ELECTRICAL DRAWINGS)

Class 1 Land
Class 2 Land

MOUNTING PLANE #3
PROPOSED SOLAR PHOTOVOLTAIC SYSTEM
NUMBER OF MODULES: 3,572

REMOVE ALL SILT FENCE FOLLOWING THE COMPLETION OF SITE STABILIZATION. WOOD CHIP BERM TO REMAIN.

Class 2 Land
Class 1 Land

100' Regulated Area (See Note 5)

Limit of Inland Wetlands

WF #4-10

Chain-Link Fence

WF #4-5

Vernal Pool #3

WF #4-15

Approximate Property Line

GRAPHIC SCALE

80 40 20 0 40

(IN FEET)
1 inch = 40 ft.

STATE OF CONNECTICUT
DAVID C. McKAY
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Wellesley, MA 02481
www.solarbrownfields.com

SolarCity
714 Brook Street
Rocky Hill, CT 06067
www.solarcity.com

SolarCity Corporation
Proposed Solar Photovoltaic System
1240 Poquonnock Road
Groton, Connecticut
Site Development Plan Solar Modules And Infrastructure

SCALE: 1"=40'

DATE: October 2015

JOB I.D. NO. 15-2347

Revisions

Rev. A - Per Groton Utilities Comments - 12/09/15

Rev. B - Add Environmental Notes - 2/09/16

SHEET NO.

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