"Proposed 7 Lot Subdivision"

1040 Main Street
Glastonbury, Connecticut

Draft Drainage Calculations

Prepared For

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1.0 PROJECT DESCRIPTION

This project consists of the subdivision of an existing 9.3 acre parcel currently known as #1040 Main Street into 7 Lots. The subject parcel is located on the east side of Main Street, across from Southgate Drive. The proposed development is located in the Residence AA and Groundwater Protection Zone 1 zoning districts.

2.0 EXISTING CONDITIONS

The existing parcel is primarily wooded. There is a steep upward slope that begins approximately 20 feet east of Main Street and extends to a north/south ridge. The property then gradually slopes down to the northeast corner of the property. There are two wetland areas on the property, as well as a vernal pool that is located in the southeast corner of the property.

3.0 PROPOSED CONDITIONS

It is proposed to develop the parcel into 7 residential building lots. The proposed road is 650 feet long and 22 feet wide, and will have curbing along each gutter. The proposed roadway drainage system consists of Type "C" catch basins and a sediment structure connected with reinforced concrete pipe, with 15" diameter minimum pipe size. Runoff from the proposed roadway, building lots, and driveways will be directed to the proposed stormwater/water quality basin. Roof leader drains are proposed to be directed into underground stormwater infiltration chambers. The stormwater basin was designed to provide a zero increase in runoff for the 2, 10, 25, and 100-year storm events assuming zero infiltration into the basin floor (conservative). An underdrain is proposed to drain the basin following storm events. The following table summarizes the pre and post development flows for the watershed that is being routed through the stormwater management area:

DRAINAGE SUMMARY				
CONDITION	FLOW (CFS)			
	2 Year	10 Year	25 Year	100 Year
Existing Conditions at Analysis Point	0.02	0.88	2.62	7.06
Discharge From Stormwater Management Area	0.00	0.71	2.13	5.30
Proposed Flow at Analysis Point	0.02	0.88	2.58	6.53
Change in Flow at Analysis Point	0.00	0.00	-0.04	-0.53

All of the proposed flows and design calculations for the proposed drainage system and stormwater basins are attached to this document.

4.0 METHODS

The SCS method was used to determine the peak discharge rates contributing to the stormwater management area. The rational method was used to calculate flow to each catch basin and the storm sewer system was sized and analyzed for the 10-year storm event using procedures outlined in Chapter 6 of the Drainage Manual for Hydrology and Chapter 11 for stormwater piping design. Soil types were obtained from NRCS soil mapping. Groundwater Recharge Volume calculations were performed in accordance with the 2004 Connecticut Stormwater Quality Manual Hydrologic Soil Group Approach.

5.0 - N.R.C.S. SOIL 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

January 15, 2021

Preface

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

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

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

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

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

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

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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 Scale: 1:1,790 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 25 50 100 150

Feet: 0 50 100 200 300

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

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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:
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 20, Jun 9, 2020

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

Date(s) aerial images were photographed: Jul 15, 2019—Aug 29, 2019

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
15	Scarboro muck, 0 to 3 percent slopes	1.2	10.3%
37C	Manchester gravelly sandy loam, 3 to 15 percent slopes	1.3	10.8%
37E	Manchester gravelly sandy loam, 15 to 45 percent slopes	5.0	42.9%
306	Udorthents-Urban land complex	0.4	3.0%
704A	Enfield silt loam, 0 to 3 percent slopes	2.5	21.0%
704B	Enfield silt loam, 3 to 8 percent slopes	1.4	11.8%
Totals for Area of Interest		**11.7**	**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

15—Scarboro muck, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2svkt
Elevation: 0 to 1,350 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Scarboro and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Scarboro

Setting

Landform: Outwash deltas, depressions, drainageways, outwash terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread, dip
Down-slope shape: Concave
Across-slope shape: Concave, linear
Parent material: Sandy glaciofluvial deposits derived from schist and/or gneiss and/or granite

Typical profile

Oa - 0 to 8 inches: muck
A - 8 to 14 inches: mucky fine sandy loam
Cg1 - 14 to 22 inches: sand
Cg2 - 22 to 65 inches: gravelly sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (1.42 to 14.17 in/hr)
Depth to water table: About 0 to 2 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: A/D
Ecological site: F144AY031MA - Very Wet Outwash
Hydric soil rating: Yes

Minor Components

Timakwa

Percent of map unit: 10 percent
Landform: Swamps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread, dip
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

Walpole

Percent of map unit: 8 percent
Landform: Deltas, outwash terraces, depressions, outwash plains, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Deerfield

Percent of map unit: 2 percent
Landform: Outwash plains, terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

37C—Manchester gravelly sandy loam, 3 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9ln6
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: Farmland of statewide importance

Map Unit Composition

Manchester and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Manchester

Setting

Landform: Terraces, eskers, kames, outwash plains
Down-slope shape: Convex
Across-slope shape: Convex

Parent material: Sandy and gravelly glaciofluvial deposits derived from sandstone and shale and/or basalt

Typical profile

Ap - 0 to 9 inches: gravelly sandy loam
Bw - 9 to 18 inches: gravelly loamy sand
C - 18 to 65 inches: stratified extremely gravelly coarse sand to very gravelly loamy sand

Properties and qualities

Slope: 3 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: F145XY008MA - Dry Outwash
Hydric soil rating: No

Minor Components

Penwood

Percent of map unit: 5 percent
Landform: Outwash plains, terraces
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Hartford

Percent of map unit: 5 percent
Landform: Terraces, outwash plains
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Branford

Percent of map unit: 3 percent
Landform: Outwash plains, terraces
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Ellington

Percent of map unit: 3 percent
Landform: Outwash plains, terraces
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Unnamed, nongravelly surface
Percent of map unit: 2 percent
Hydric soil rating: No

Unnamed, gravelly loamy sand surface
Percent of map unit: 2 percent
Hydric soil rating: No

37E—Manchester gravelly sandy loam, 15 to 45 percent slopes

Map Unit Setting
National map unit symbol: 9ln7
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: Not prime farmland

Map Unit Composition
Manchester and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Manchester

Setting
Landform: Eskers, kames, outwash plains, terraces
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy and gravelly glaciofluvial deposits derived from sandstone and shale and/or basalt

Typical profile
Ap - 0 to 9 inches: gravelly sandy loam
Bw - 9 to 18 inches: gravelly loamy sand
C - 18 to 65 inches: stratified extremely gravelly coarse sand to very gravelly loamy sand

Properties and qualities
Slope: 15 to 45 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: F145XY008MA - Dry Outwash
Hydric soil rating: No

Minor Components

Penwood

Percent of map unit: 5 percent
Landform: Outwash plains, terraces
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Branford

Percent of map unit: 5 percent
Landform: Outwash plains, terraces
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Hartford

Percent of map unit: 5 percent
Landform: Outwash plains, terraces
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Walpole

Percent of map unit: 3 percent
Landform: Depressions on terraces, drainageways on terraces
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Scitico

Percent of map unit: 2 percent
Landform: Terraces, depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

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
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 capacity: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Hydric soil rating: No

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
Hydric soil rating: Unranked

Minor Components

Unnamed, undisturbed soils

Percent of map unit: 8 percent
Hydric soil rating: No

Udorthents, wet substratum

Percent of map unit: 5 percent

Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Rock outcrop
Percent of map unit: 2 percent
Hydric soil rating: No

704A—Enfield silt loam, 0 to 3 percent slopes

Map Unit Setting
National map unit symbol: 2y07p
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
Enfield and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Enfield

Setting
Landform: Outwash terraces, outwash plains
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Coarse-silty eolian deposits over sandy and gravelly glaciofluvial deposits derived from granite, schist, and/or gneiss

Typical profile
Ap - 0 to 7 inches: silt loam
Bw1 - 7 to 15 inches: silt loam
Bw2 - 15 to 25 inches: silt loam
2C - 25 to 60 inches: stratified very gravelly coarse sand to loamy sand

Properties and qualities
Slope: 0 to 3 percent
Depth to restrictive feature: 16 to 39 inches to strongly contrasting textural stratification
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 capacity: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: B
Ecological site: F145XY009CT - Well Drained Outwash
Hydric soil rating: No

Minor Components

Haven

Percent of map unit: 5 percent
Landform: Outwash terraces, outwash plains
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Tisbury

Percent of map unit: 5 percent
Landform: Valley trains, outwash terraces, outwash plains, deltas
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: No

Agawam

Percent of map unit: 3 percent
Landform: Kames, moraines, outwash terraces, outwash plains, kame terraces
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Side slope, crest, tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Raypol

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

704B—Enfield silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2y07q
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

Enfield and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Enfield

Setting

Landform: Outwash terraces, outwash plains
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Coarse-silty eolian deposits over sandy and gravelly glaciofluvial deposits derived from granite, schist, and/or gneiss

Typical profile

Ap - 0 to 7 inches: silt loam
Bw1 - 7 to 15 inches: silt loam
Bw2 - 15 to 25 inches: silt loam
2C - 25 to 60 inches: stratified very gravelly coarse sand to loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 16 to 39 inches to strongly contrasting textural stratification
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 capacity: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F145XY009CT - Well Drained Outwash
Hydric soil rating: No

Minor Components

Haven

Percent of map unit: 5 percent
Landform: Outwash plains, outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Tisbury

Percent of map unit: 5 percent
Landform: Outwash plains, deltas, valley trains, outwash terraces
Landform position (three-dimensional): Tread

Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: No

Agawam

Percent of map unit: 3 percent
Landform: Kames, moraines, outwash terraces, outwash plains, kame terraces
Landform position (two-dimensional): Backslope, shoulder, footslope, summit, toeslope
Landform position (three-dimensional): Side slope, crest, head slope, nose slope, tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Raypol

Percent of map unit: 2 percent
Landform: Drainageways, depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

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6.0 - HYDROLOGY AND DRAINAGE CALCULATIONS

6.1 - HYDROLOGIC DATA AND DETENTION POND CALCULATIONS

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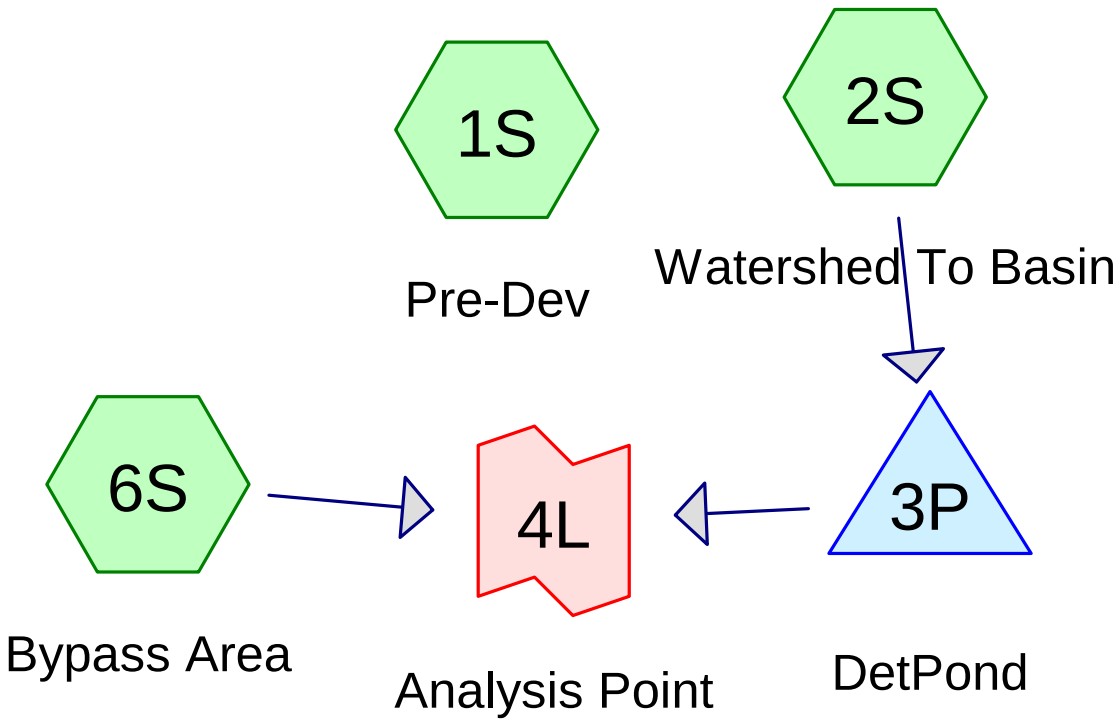


Subcat Reach Pond Link

Routing Diagram for 1040HCad
Prepared by {enter your company name here}, Printed 5/26/2021

Project Notes

Defined 6 rainfall events from PF_Depth_English_PDS IDF
Defined 4 rainfall events from PF_Depth_English_PDS IDF

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-yr	Type III 24-hr		Default	24.00	1	3.20	2
2	10-yr	Type III 24-hr		Default	24.00	1	5.01	2
3	25-yr	Type III 24-hr		Default	24.00	1	6.14	2
4	100-yr	Type III 24-hr		Default	24.00	1	7.88	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.380	39	>75% Grass cover, Good, HSG A (2S, 6S)
2.160	61	>75% Grass cover, Good, HSG B (2S, 6S)
0.121	80	>75% Grass cover, Good, HSG D (2S, 6S)
0.030	98	Paved parking, HSG A (6S)
0.760	98	Paved roads w/curbs & sewers (2S)
5.610	30	Woods, Good, HSG A (1S, 2S, 6S)
3.400	55	Woods, Good, HSG B (1S, 2S, 6S)
1.100	77	Woods, Good, HSG D (1S, 6S)
15.561	**48**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
8.020	HSG A	1S, 2S, 6S
5.560	HSG B	1S, 2S, 6S
0.000	HSG C	
1.221	HSG D	1S, 2S, 6S
0.760	Other	2S
15.561		**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
2.380	2.160	0.000	0.121	0.000	4.661	>75% Grass cover, Good	2S, 6S
0.030	0.000	0.000	0.000	0.000	0.030	Paved parking	6S
0.000	0.000	0.000	0.000	0.760	0.760	Paved roads w/curbs & sewers	2S
5.610	3.400	0.000	1.100	0.000	10.110	Woods, Good	1S, 2S, 6S
8.020	**5.560**	**0.000**	**1.221**	**0.760**	**15.561**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
1	2S	0.00	0.00	755.0	0.0050	0.011	0.0	15.0	0.0
2	3P	93.00	92.40	120.0	0.0050	0.013	0.0	18.0	0.0

Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Pre-Dev Runoff Area=7.620 ac 0.00% Impervious Runoff Depth=0.02"
Flow Length=945' Tc=18.9 min CN=43 Runoff=0.02 cfs 0.014 af

Subcatchment 2S: Watershed To Basin Runoff Area=5.431 ac 13.99% Impervious Runoff Depth=0.31"
Flow Length=1,324' Tc=18.1 min CN=57 Runoff=0.70 cfs 0.140 af

Subcatchment 6S: Bypass Area Runoff Area=2.510 ac 1.20% Impervious Runoff Depth=0.06"
Flow Length=584' Tc=9.3 min CN=46 Runoff=0.02 cfs 0.012 af

Pond 3P: DetPond Peak Elev=96.72' Storage=6,106 cf Inflow=0.70 cfs 0.140 af
Outflow=0.00 cfs 0.000 af

Link 4L: Analysis Point Inflow=0.02 cfs 0.012 af
Primary=0.02 cfs 0.012 af

Total Runoff Area = 15.561 ac Runoff Volume = 0.166 af Average Runoff Depth = 0.13"
94.92% Pervious = 14.771 ac 5.08% Impervious = 0.790 ac

Summary for Subcatchment 1S: Pre-Dev

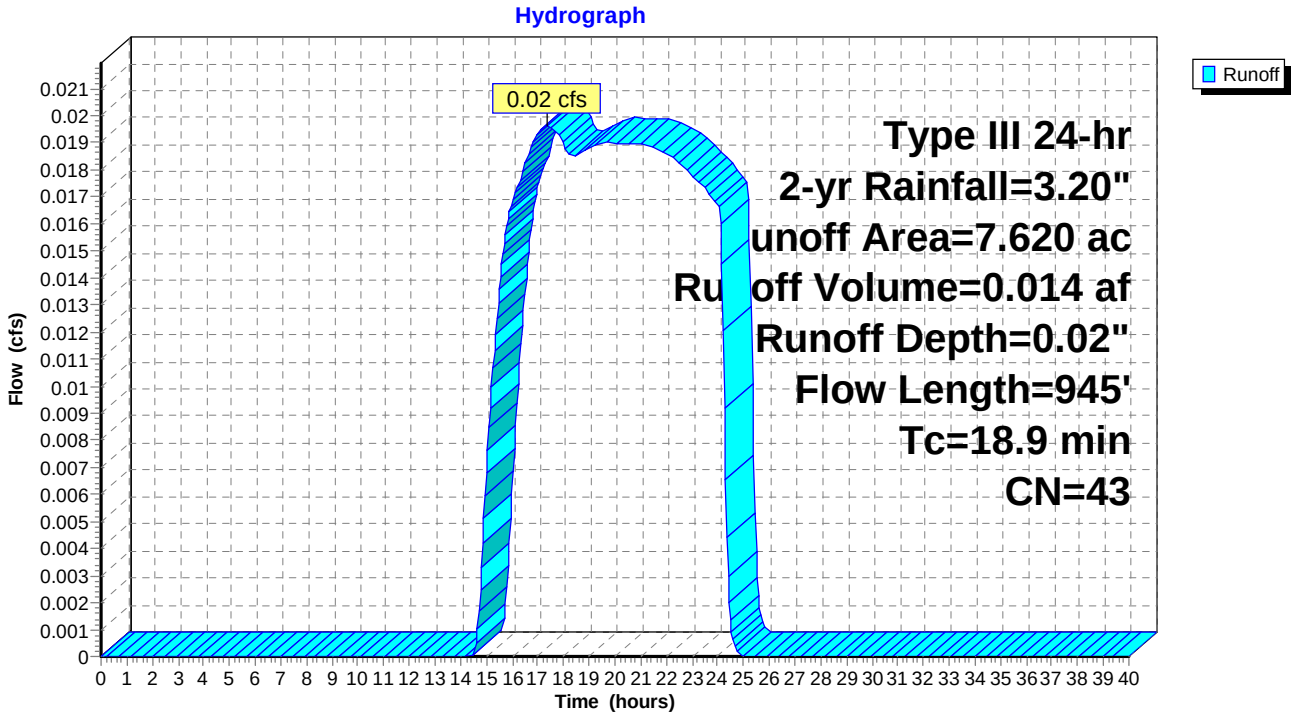
Runoff = 0.02 cfs @ 17.36 hrs, Volume= 0.014 af, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.20"

	Area (ac)	CN	Description
*	4.090	30	Woods, Good, HSG A
	2.920	55	Woods, Good, HSG B
	0.610	77	Woods, Good, HSG D
	7.620	43	Weighted Average
	7.620		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.2700	0.22		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.20"
10.4	667	0.0460	1.07		**Shallow Concentrated Flow, Shallow Woods** Woodland Kv= 5.0 fps
0.9	178	0.0120	3.37	13.50	**Trap/Vee/Rect Channel Flow, Int Stream** Bot.W=2.00' D=1.00' Z= 2.0 '/' Top.W=6.00' n= 0.035 Earth, dense weeds
18.9	945	Total			

Subcatchment 1S: Pre-Dev



Hydrograph for Subcatchment 1S: Pre-Dev

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.02	0.00	0.00
1.00	0.03	0.00	0.00
1.50	0.05	0.00	0.00
2.00	0.06	0.00	0.00
2.50	0.08	0.00	0.00
3.00	0.10	0.00	0.00
3.50	0.12	0.00	0.00
4.00	0.14	0.00	0.00
4.50	0.16	0.00	0.00
5.00	0.18	0.00	0.00
5.50	0.21	0.00	0.00
6.00	0.23	0.00	0.00
6.50	0.26	0.00	0.00
7.00	0.29	0.00	0.00
7.50	0.33	0.00	0.00
8.00	0.36	0.00	0.00
8.50	0.41	0.00	0.00
9.00	0.47	0.00	0.00
9.50	0.53	0.00	0.00
10.00	0.60	0.00	0.00
10.50	0.69	0.00	0.00
11.00	0.80	0.00	0.00
11.50	0.95	0.00	0.00
12.00	1.60	0.00	0.00
12.50	2.25	0.00	0.00
13.00	2.40	0.00	0.00
13.50	2.51	0.00	0.00
14.00	2.60	0.00	0.00
14.50	2.67	0.00	0.00
15.00	2.73	0.00	0.01
15.50	2.79	0.00	0.01
16.00	2.84	0.00	0.02
16.50	2.87	0.00	0.02
17.00	2.91	0.00	**0.02**
17.50	2.94	0.01	**0.02**
18.00	2.97	0.01	0.02
18.50	2.99	0.01	0.02
19.00	3.02	0.01	0.02
19.50	3.04	0.01	0.02
20.00	3.06	0.01	0.02
20.50	3.08	0.01	0.02
21.00	3.10	0.01	0.02
21.50	3.12	0.02	0.02
22.00	3.14	0.02	0.02
22.50	3.16	0.02	0.02
23.00	3.17	0.02	0.02
23.50	3.19	0.02	0.02
24.00	**3.20**	**0.02**	0.02
24.50	3.20	0.02	0.00
25.00	3.20	0.02	0.00
25.50	3.20	0.02	0.00
26.00	3.20	0.02	0.00
26.50	3.20	0.02	0.00
27.00	3.20	0.02	0.00
27.50	3.20	0.02	0.00
28.00	3.20	0.02	0.00
28.50	3.20	0.02	0.00
29.00	3.20	0.02	0.00
29.50	3.20	0.02	0.00
30.00	3.20	0.02	0.00
30.50	3.20	0.02	0.00
31.00	3.20	0.02	0.00
31.50	3.20	0.02	0.00
32.00	3.20	0.02	0.00
32.50	3.20	0.02	0.00
33.00	3.20	0.02	0.00
33.50	3.20	0.02	0.00
34.00	3.20	0.02	0.00
34.50	3.20	0.02	0.00
35.00	3.20	0.02	0.00
35.50	3.20	0.02	0.00
36.00	3.20	0.02	0.00
36.50	3.20	0.02	0.00
37.00	3.20	0.02	0.00
37.50	3.20	0.02	0.00
38.00	3.20	0.02	0.00
38.50	3.20	0.02	0.00
39.00	3.20	0.02	0.00
39.50	3.20	0.02	0.00
40.00	3.20	0.02	0.00

Summary for Subcatchment 2S: Watershed To Basin

House roofs to underground infiltration systems.

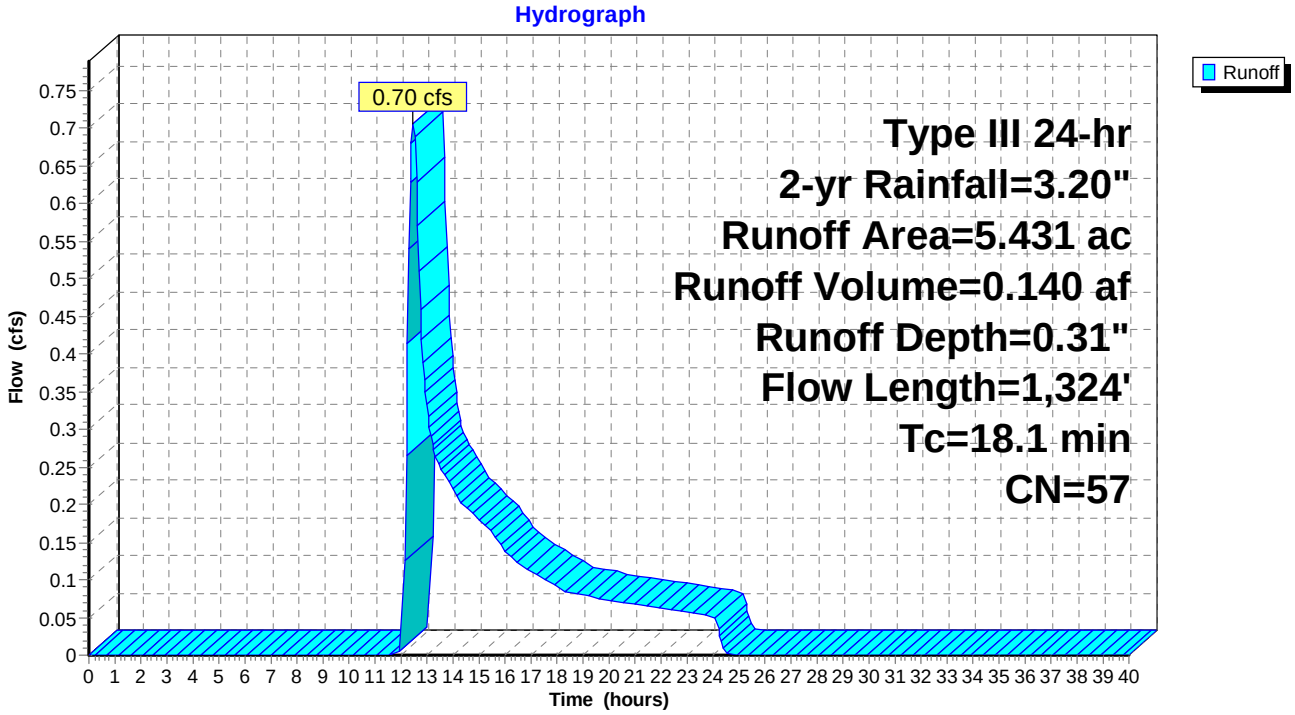
Runoff = 0.70 cfs @ 12.47 hrs, Volume= 0.140 af, Depth= 0.31"
Routed to Pond 3P : DetPond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.20"

	Area (ac)	CN	Description
*	0.760	98	Paved roads w/curbs & sewers
	1.950	39	>75% Grass cover, Good, HSG A
	2.050	61	>75% Grass cover, Good, HSG B
	0.001	80	>75% Grass cover, Good, HSG D
	0.220	30	Woods, Good, HSG A
	0.450	55	Woods, Good, HSG B
	5.431	57	Weighted Average
	4.671		86.01% Pervious Area
	0.760		13.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	70	0.0570	0.11		**Sheet Flow, Sheet Flow Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
2.2	30	0.2000	0.23		**Sheet Flow, Sheet Flow Grass** Grass: Dense n= 0.240 P2= 3.20"
1.2	161	0.0960	2.17		**Shallow Concentrated Flow, Shallow Grass** Short Grass Pasture Kv= 7.0 fps
1.2	308	0.0450	4.31		**Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps
2.9	755	0.0050	4.40	5.40	**Pipe Channel, Pipe** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
18.1	1,324	Total			

Subcatchment 2S: Watershed To Basin



Hydrograph for Subcatchment 2S: Watershed To Basin

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.02	0.00	0.00
1.00	0.03	0.00	0.00
1.50	0.05	0.00	0.00
2.00	0.06	0.00	0.00
2.50	0.08	0.00	0.00
3.00	0.10	0.00	0.00
3.50	0.12	0.00	0.00
4.00	0.14	0.00	0.00
4.50	0.16	0.00	0.00
5.00	0.18	0.00	0.00
5.50	0.21	0.00	0.00
6.00	0.23	0.00	0.00
6.50	0.26	0.00	0.00
7.00	0.29	0.00	0.00
7.50	0.33	0.00	0.00
8.00	0.36	0.00	0.00
8.50	0.41	0.00	0.00
9.00	0.47	0.00	0.00
9.50	0.53	0.00	0.00
10.00	0.60	0.00	0.00
10.50	0.69	0.00	0.00
11.00	0.80	0.00	0.00
11.50	0.95	0.00	0.00
12.00	1.60	0.00	**0.00**
12.50	2.25	0.07	**0.70**
13.00	2.40	0.09	0.33
13.50	2.51	0.12	0.25
14.00	2.60	0.14	0.22
14.50	2.67	0.15	0.20
15.00	2.73	0.17	0.18
15.50	2.79	0.19	0.16
16.00	2.84	0.20	0.14
16.50	2.87	0.21	0.12
17.00	2.91	0.22	0.11
17.50	2.94	0.23	0.10
18.00	2.97	0.24	0.09
18.50	2.99	0.24	0.08
19.00	3.02	0.25	0.08
19.50	3.04	0.26	0.08
20.00	3.06	0.27	0.07
20.50	3.08	0.27	0.07
21.00	3.10	0.28	0.07
21.50	3.12	0.28	0.07
22.00	3.14	0.29	0.06
22.50	3.16	0.29	0.06
23.00	3.17	0.30	0.06
23.50	3.19	0.31	0.05
24.00	**3.20**	**0.31**	0.05
24.50	3.20	0.31	0.00
25.00	3.20	0.31	0.00
25.50	3.20	0.31	0.00
26.00	3.20	0.31	0.00
26.50	3.20	0.31	0.00
27.00	3.20	0.31	0.00
27.50	3.20	0.31	0.00
28.00	3.20	0.31	0.00
28.50	3.20	0.31	0.00
29.00	3.20	0.31	0.00
29.50	3.20	0.31	0.00
30.00	3.20	0.31	0.00
30.50	3.20	0.31	0.00
31.00	3.20	0.31	0.00
31.50	3.20	0.31	0.00
32.00	3.20	0.31	0.00
32.50	3.20	0.31	0.00
33.00	3.20	0.31	0.00
33.50	3.20	0.31	0.00
34.00	3.20	0.31	0.00
34.50	3.20	0.31	0.00
35.00	3.20	0.31	0.00
35.50	3.20	0.31	0.00
36.00	3.20	0.31	0.00
36.50	3.20	0.31	0.00
37.00	3.20	0.31	0.00
37.50	3.20	0.31	0.00
38.00	3.20	0.31	0.00
38.50	3.20	0.31	0.00
39.00	3.20	0.31	0.00
39.50	3.20	0.31	0.00
40.00	3.20	0.31	0.00

Summary for Subcatchment 6S: Bypass Area

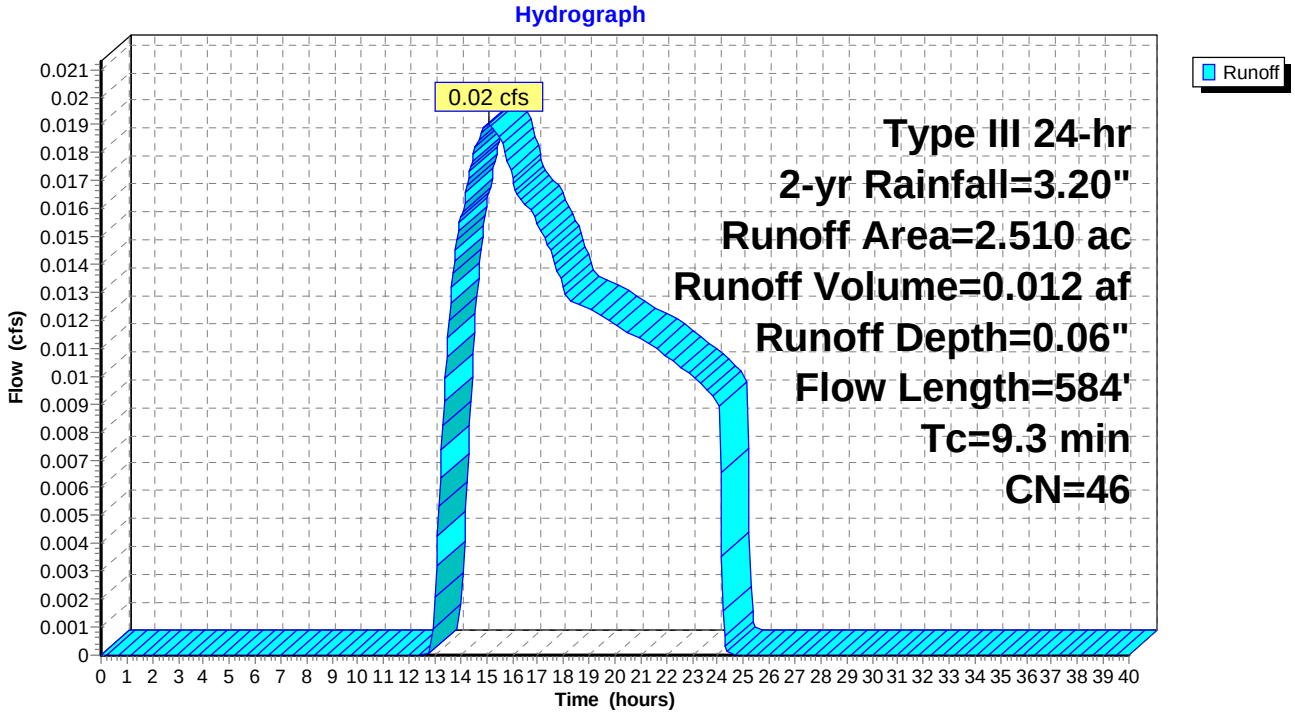
Runoff = 0.02 cfs @ 15.10 hrs, Volume= 0.012 af, Depth= 0.06"
Routed to Link 4L : Analysis Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.20"

Area (ac)	CN	Description
1.300	30	Woods, Good, HSG A
0.030	55	Woods, Good, HSG B
0.490	77	Woods, Good, HSG D
0.430	39	>75% Grass cover, Good, HSG A
0.110	61	>75% Grass cover, Good, HSG B
0.120	80	>75% Grass cover, Good, HSG D
0.030	98	Paved parking, HSG A
2.510	46	Weighted Average
2.480		98.80% Pervious Area
0.030		1.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	100	0.3600	0.25		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.20"
1.6	306	0.3900	3.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	178	0.0120	3.37	13.50	**Trap/Vee/Rect Channel Flow, Int stream** Bot.W=2.00' D=1.00' Z= 2.0 '/' Top.W=6.00' n= 0.035
9.3	584	Total			

Subcatchment 6S: Bypass Area



Hydrograph for Subcatchment 6S: Bypass Area

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.02	0.00	0.00
1.00	0.03	0.00	0.00
1.50	0.05	0.00	0.00
2.00	0.06	0.00	0.00
2.50	0.08	0.00	0.00
3.00	0.10	0.00	0.00
3.50	0.12	0.00	0.00
4.00	0.14	0.00	0.00
4.50	0.16	0.00	0.00
5.00	0.18	0.00	0.00
5.50	0.21	0.00	0.00
6.00	0.23	0.00	0.00
6.50	0.26	0.00	0.00
7.00	0.29	0.00	0.00
7.50	0.33	0.00	0.00
8.00	0.36	0.00	0.00
8.50	0.41	0.00	0.00
9.00	0.47	0.00	0.00
9.50	0.53	0.00	0.00
10.00	0.60	0.00	0.00
10.50	0.69	0.00	0.00
11.00	0.80	0.00	0.00
11.50	0.95	0.00	0.00
12.00	1.60	0.00	0.00
12.50	2.25	0.00	0.00
13.00	2.40	0.00	0.00
13.50	2.51	0.00	0.01
14.00	2.60	0.01	0.02
14.50	2.67	0.01	0.02
15.00	2.73	0.01	**0.02**
15.50	2.79	0.02	**0.02**
16.00	2.84	0.02	0.02
16.50	2.87	0.02	0.02
17.00	2.91	0.03	0.02
17.50	2.94	0.03	0.01
18.00	2.97	0.03	0.01
18.50	2.99	0.03	0.01
19.00	3.02	0.04	0.01
19.50	3.04	0.04	0.01
20.00	3.06	0.04	0.01
20.50	3.08	0.04	0.01
21.00	3.10	0.05	0.01
21.50	3.12	0.05	0.01
22.00	3.14	0.05	0.01
22.50	3.16	0.05	0.01
23.00	3.17	0.05	0.01
23.50	3.19	0.06	0.01
24.00	**3.20**	**0.06**	0.01
24.50	3.20	0.06	0.00
25.00	3.20	0.06	0.00
25.50	3.20	0.06	0.00
26.00	3.20	0.06	0.00
26.50	3.20	0.06	0.00
27.00	3.20	0.06	0.00
27.50	3.20	0.06	0.00
28.00	3.20	0.06	0.00
28.50	3.20	0.06	0.00
29.00	3.20	0.06	0.00
29.50	3.20	0.06	0.00
30.00	3.20	0.06	0.00
30.50	3.20	0.06	0.00
31.00	3.20	0.06	0.00
31.50	3.20	0.06	0.00
32.00	3.20	0.06	0.00
32.50	3.20	0.06	0.00
33.00	3.20	0.06	0.00
33.50	3.20	0.06	0.00
34.00	3.20	0.06	0.00
34.50	3.20	0.06	0.00
35.00	3.20	0.06	0.00
35.50	3.20	0.06	0.00
36.00	3.20	0.06	0.00
36.50	3.20	0.06	0.00
37.00	3.20	0.06	0.00
37.50	3.20	0.06	0.00
38.00	3.20	0.06	0.00
38.50	3.20	0.06	0.00
39.00	3.20	0.06	0.00
39.50	3.20	0.06	0.00
40.00	3.20	0.06	0.00

Summary for Pond 3P: DetPond

Inflow Area = 5.431 ac, 13.99% Impervious, Inflow Depth = 0.31" for 2-yr event
Inflow = 0.70 cfs @ 12.47 hrs, Volume= 0.140 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 4L : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 96.72' @ 25.05 hrs Surf.Area= 3,546 sf Storage= 6,106 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

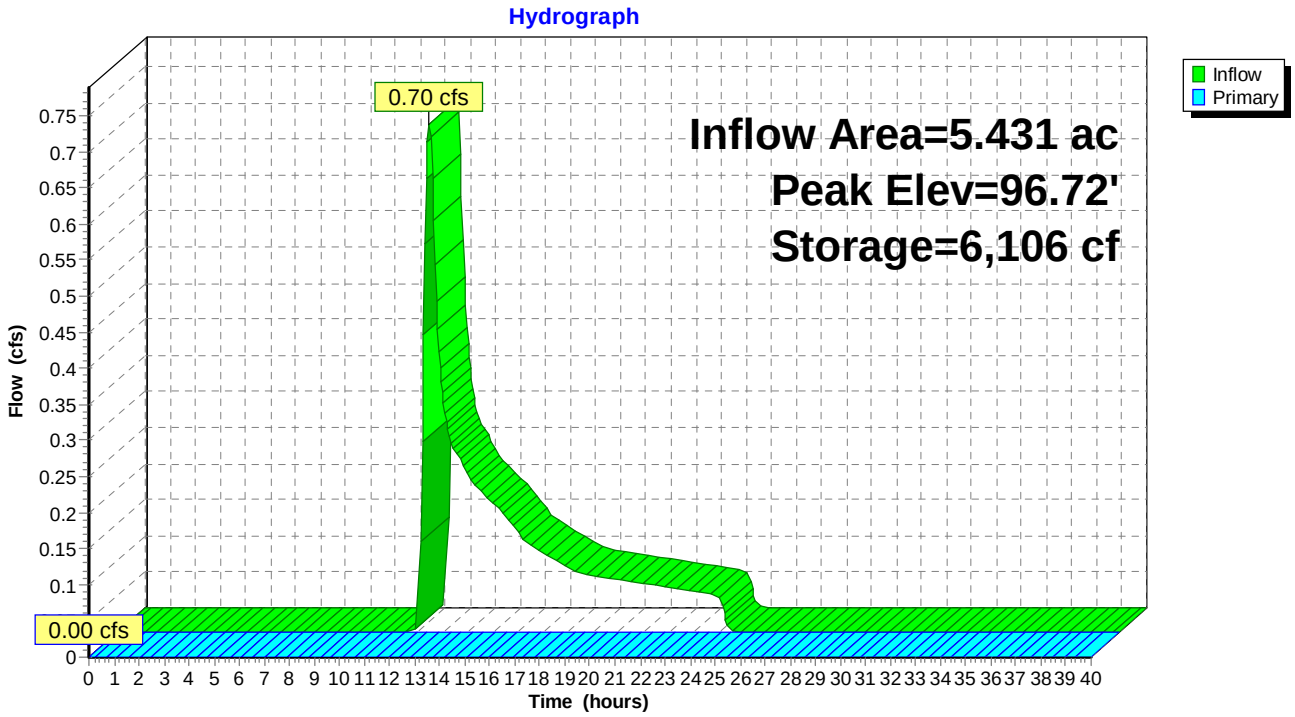
Volume	Invert	Avail.Storage	Storage Description
#1	94.00'	24,410 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
94.00	1,107	174.0	0	0	1,107
96.00	2,850	235.0	3,822	3,822	3,134
98.00	4,985	299.0	7,736	11,558	5,906
99.00	6,430	358.0	5,692	17,251	9,008
100.00	7,914	384.0	7,159	24,410	10,587

Device	Routing	Invert	Outlet Devices
#1	Primary	93.00'	**18.0" Round Culvert** L= 120.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 93.00' / 92.40' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	96.90'	**5.5" W x 31.2" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	99.50'	**36.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.00' (Free Discharge)
↑**1=Culvert** (Passes 0.00 cfs of 3.55 cfs potential flow)
↑**2=Orifice/Grate** (Controls 0.00 cfs)
3=Orifice/Grate (Controls 0.00 cfs)

Pond 3P: DetPond



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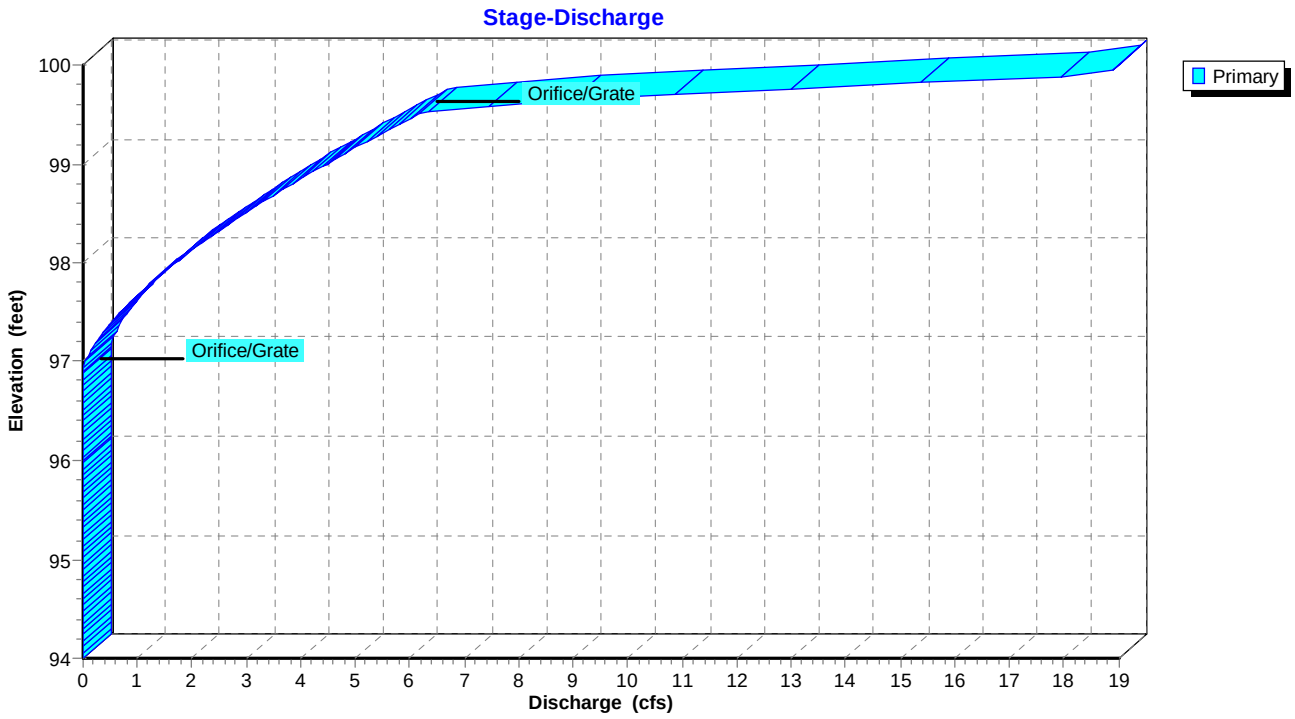
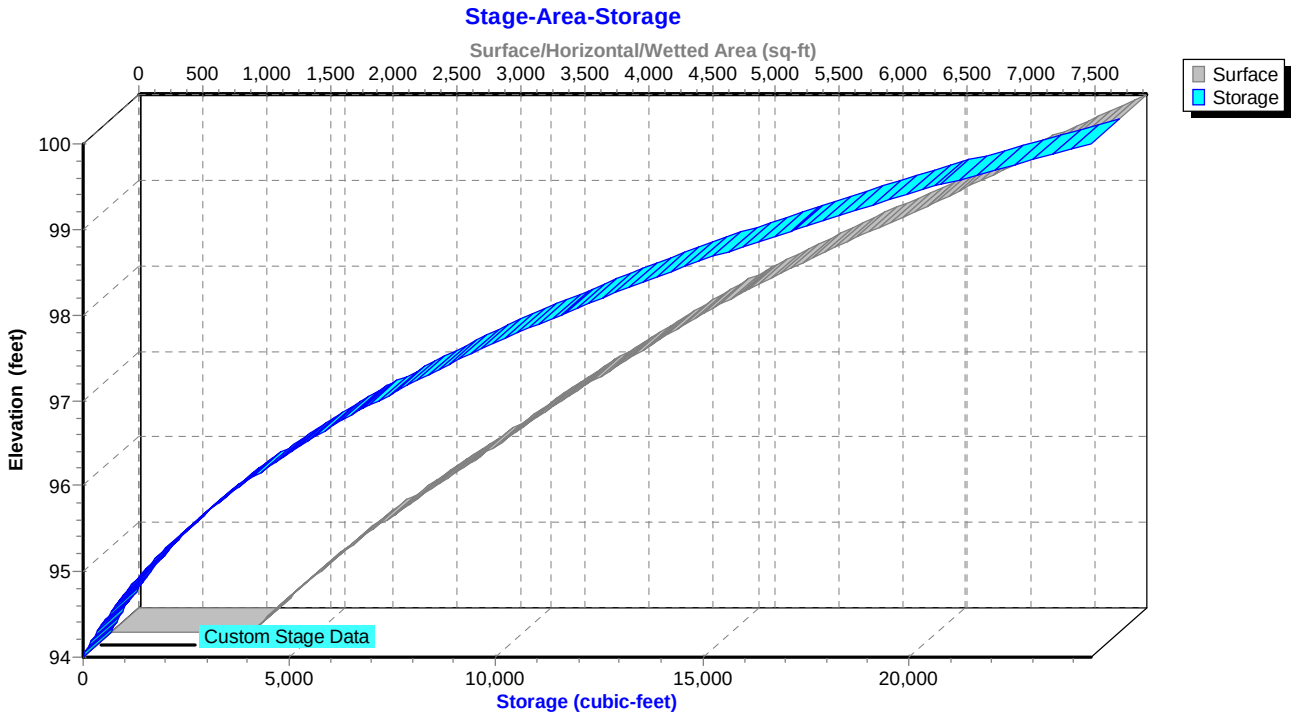


Pond 3P: DetPond



Hydrograph for Pond 3P: DetPond

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	94.00	**0.00**
1.00	0.00	0	94.00	0.00
2.00	0.00	0	94.00	0.00
3.00	0.00	0	94.00	0.00
4.00	0.00	0	94.00	0.00
5.00	0.00	0	94.00	0.00
6.00	0.00	0	94.00	0.00
7.00	0.00	0	94.00	0.00
8.00	0.00	0	94.00	0.00
9.00	0.00	0	94.00	0.00
10.00	0.00	0	94.00	0.00
11.00	0.00	0	94.00	0.00
12.00	**0.00**	0	94.00	0.00
13.00	**0.33**	1,553	95.04	0.00
14.00	0.22	2,480	95.48	0.00
15.00	0.18	3,194	95.77	0.00
16.00	0.14	3,775	95.98	0.00
17.00	0.11	4,219	96.14	0.00
18.00	0.09	4,584	96.26	0.00
19.00	0.08	4,883	96.35	0.00
20.00	0.07	5,158	96.44	0.00
21.00	0.07	5,411	96.51	0.00
22.00	0.06	5,645	96.58	0.00
23.00	0.06	5,860	96.65	0.00
24.00	0.05	6,055	96.70	0.00
25.00	0.00	**6,106**	**96.72**	0.00
26.00	0.00	**6,106**	**96.72**	0.00
27.00	0.00	6,106	96.72	0.00
28.00	0.00	6,106	96.72	0.00
29.00	0.00	6,106	96.72	0.00
30.00	0.00	6,106	96.72	0.00
31.00	0.00	6,106	96.72	0.00
32.00	0.00	6,106	96.72	0.00
33.00	0.00	6,106	96.72	0.00
34.00	0.00	6,106	96.72	0.00
35.00	0.00	6,106	96.72	0.00
36.00	0.00	6,106	96.72	0.00
37.00	0.00	6,106	96.72	0.00
38.00	0.00	6,106	96.72	0.00
39.00	0.00	6,106	96.72	0.00
40.00	0.00	6,106	96.72	0.00

Stage-Discharge for Pond 3P: DetPond

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
94.00	0.00	96.70	0.00	99.40	5.82
94.05	0.00	96.75	0.00	99.45	5.99
94.10	0.00	96.80	0.00	99.50	6.17
94.15	0.00	96.85	0.00	99.55	6.84
94.20	0.00	96.90	0.00	99.60	7.93
94.25	0.00	96.95	0.02	99.65	9.28
94.30	0.00	97.00	0.05	99.70	10.86
94.35	0.00	97.05	0.09	99.75	12.62
94.40	0.00	97.10	0.13	99.80	14.55
94.45	0.00	97.15	0.18	99.85	16.63
94.50	0.00	97.20	0.24	99.90	18.85
94.55	0.00	97.25	0.30	99.95	18.93
94.60	0.00	97.30	0.37	100.00	**19.01**
94.65	0.00	97.35	0.44		
94.70	0.00	97.40	0.52		
94.75	0.00	97.45	0.60		
94.80	0.00	97.50	0.68		
94.85	0.00	97.55	0.77		
94.90	0.00	97.60	0.86		
94.95	0.00	97.65	0.96		
95.00	0.00	97.70	1.05		
95.05	0.00	97.75	1.15		
95.10	0.00	97.80	1.26		
95.15	0.00	97.85	1.36		
95.20	0.00	97.90	1.47		
95.25	0.00	97.95	1.58		
95.30	0.00	98.00	1.70		
95.35	0.00	98.05	1.81		
95.40	0.00	98.10	1.93		
95.45	0.00	98.15	2.06		
95.50	0.00	98.20	2.18		
95.55	0.00	98.25	2.31		
95.60	0.00	98.30	2.44		
95.65	0.00	98.35	2.57		
95.70	0.00	98.40	2.70		
95.75	0.00	98.45	2.84		
95.80	0.00	98.50	2.98		
95.85	0.00	98.55	3.12		
95.90	0.00	98.60	3.26		
95.95	0.00	98.65	3.41		
96.00	0.00	98.70	3.55		
96.05	0.00	98.75	3.70		
96.10	0.00	98.80	3.85		
96.15	0.00	98.85	4.01		
96.20	0.00	98.90	4.16		
96.25	0.00	98.95	4.32		
96.30	0.00	99.00	4.48		
96.35	0.00	99.05	4.64		
96.40	0.00	99.10	4.80		
96.45	0.00	99.15	4.97		
96.50	0.00	99.20	5.13		
96.55	0.00	99.25	5.30		
96.60	0.00	99.30	5.47		
96.65	0.00	99.35	5.64		

Stage-Area-Storage for Pond 3P: DetPond

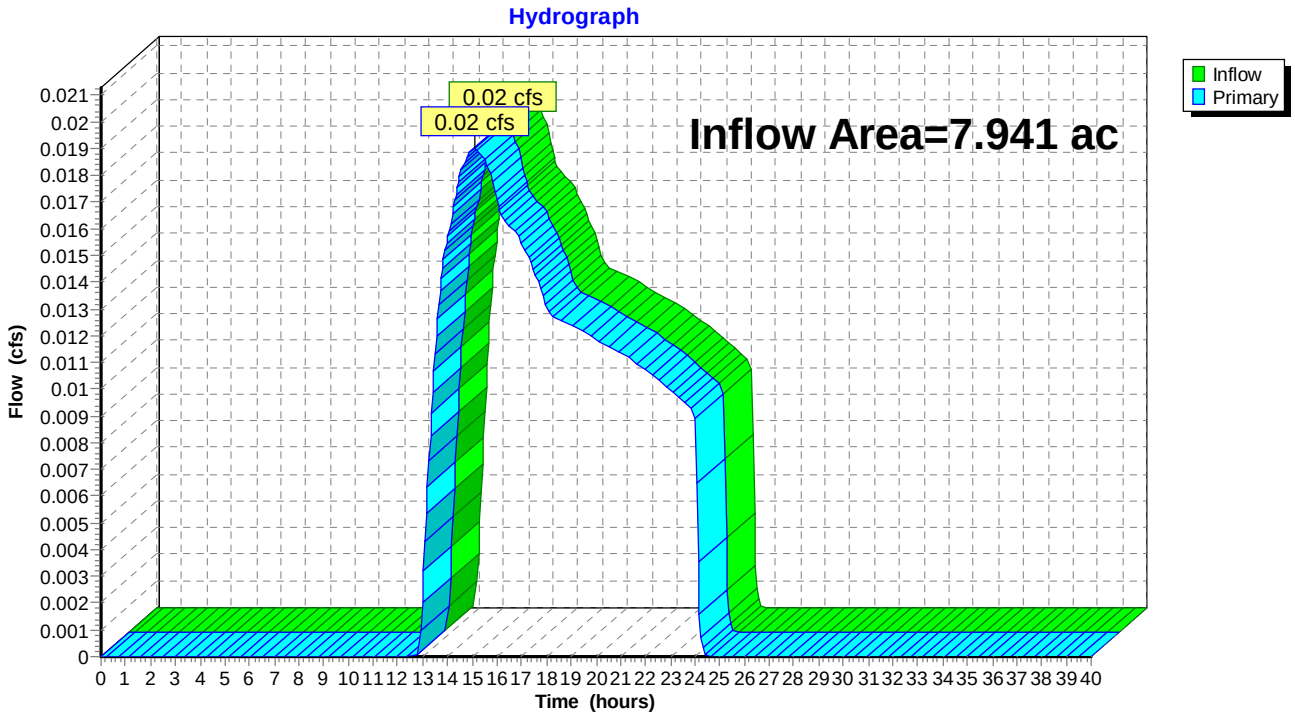
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
94.00	1,107	0
94.10	1,175	114
94.20	1,245	235
94.30	1,317	363
94.40	1,391	498
94.50	1,467	641
94.60	1,545	792
94.70	1,625	950
94.80	1,707	1,117
94.90	1,791	1,292
95.00	1,877	1,475
95.10	1,966	1,667
95.20	2,056	1,868
95.30	2,148	2,079
95.40	2,242	2,298
95.50	2,338	2,527
95.60	2,437	2,766
95.70	2,537	3,015
95.80	2,639	3,273
95.90	2,744	3,542
96.00	2,850	3,822
96.10	2,943	4,112
96.20	3,037	4,411
96.30	3,132	4,719
96.40	3,230	5,037
96.50	3,328	5,365
96.60	3,428	5,703
96.70	3,530	6,051
96.80	3,633	6,409
96.90	3,737	6,777
97.00	3,843	7,156
97.10	3,951	7,546
97.20	4,060	7,947
97.30	4,170	8,358
97.40	4,282	8,781
97.50	4,396	9,215
97.60	4,511	9,660
97.70	4,627	10,117
97.80	4,745	10,585
97.90	4,864	11,066
98.00	4,985	11,558
98.10	5,121	12,064
98.20	5,259	12,583
98.30	5,399	13,116
98.40	5,541	13,663
98.50	5,685	14,224
98.60	5,830	14,799
98.70	5,977	15,390
98.80	6,126	15,995
98.90	6,277	16,615
99.00	6,430	17,251
99.10	6,571	17,901
99.20	6,714	18,565
99.30	6,859	19,244
99.40	7,005	19,937
99.50	7,153	20,645
99.60	7,302	21,367
99.70	7,453	22,105
99.80	7,605	22,858
99.90	7,759	23,626
100.00	**7,914**	**24,410**

Summary for Link 4L: Analysis Point

Inflow Area = 7.941 ac, 9.95% Impervious, Inflow Depth = 0.02" for 2-yr event
Inflow = 0.02 cfs @ 15.10 hrs, Volume= 0.012 af
Primary = 0.02 cfs @ 15.10 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Link 4L: Analysis Point



Hydrograph for Link 4L: Analysis Point

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	27.00	0.00	0.00	0.00
0.50	0.00	0.00	0.00	27.50	0.00	0.00	0.00
1.00	0.00	0.00	0.00	28.00	0.00	0.00	0.00
1.50	0.00	0.00	0.00	28.50	0.00	0.00	0.00
2.00	0.00	0.00	0.00	29.00	0.00	0.00	0.00
2.50	0.00	0.00	0.00	29.50	0.00	0.00	0.00
3.00	0.00	0.00	0.00	30.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00	30.50	0.00	0.00	0.00
4.00	0.00	0.00	0.00	31.00	0.00	0.00	0.00
4.50	0.00	0.00	0.00	31.50	0.00	0.00	0.00
5.00	0.00	0.00	0.00	32.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	32.50	0.00	0.00	0.00
6.00	0.00	0.00	0.00	33.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	33.50	0.00	0.00	0.00
7.00	0.00	0.00	0.00	34.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	34.50	0.00	0.00	0.00
8.00	0.00	0.00	0.00	35.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00	35.50	0.00	0.00	0.00
9.00	0.00	0.00	0.00	36.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	36.50	0.00	0.00	0.00
10.00	0.00	0.00	0.00	37.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00	37.50	0.00	0.00	0.00
11.00	0.00	0.00	0.00	38.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00	38.50	0.00	0.00	0.00
12.00	0.00	0.00	0.00	39.00	0.00	0.00	0.00
12.50	0.00	0.00	0.00	39.50	0.00	0.00	0.00
13.00	0.00	0.00	0.00	40.00	0.00	0.00	0.00
13.50	0.01	0.00	0.01				
14.00	0.02	0.00	0.02				
14.50	0.02	0.00	0.02				
15.00	**0.02**	0.00	**0.02**				
15.50	**0.02**	0.00	**0.02**				
16.00	0.02	0.00	0.02				
16.50	0.02	0.00	0.02				
17.00	0.02	0.00	0.02				
17.50	0.01	0.00	0.01				
18.00	0.01	0.00	0.01				
18.50	0.01	0.00	0.01				
19.00	0.01	0.00	0.01				
19.50	0.01	0.00	0.01				
20.00	0.01	0.00	0.01				
20.50	0.01	0.00	0.01				
21.00	0.01	0.00	0.01				
21.50	0.01	0.00	0.01				
22.00	0.01	0.00	0.01				
22.50	0.01	0.00	0.01				
23.00	0.01	0.00	0.01				
23.50	0.01	0.00	0.01				
24.00	0.01	0.00	0.01				
24.50	0.00	0.00	0.00				
25.00	0.00	0.00	0.00				
25.50	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
26.50	0.00	0.00	0.00				

Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Pre-Dev Runoff Area=7.620 ac 0.00% Impervious Runoff Depth=0.36"
Flow Length=945' Tc=18.9 min CN=43 Runoff=0.88 cfs 0.226 af

Subcatchment 2S: Watershed To Basin Runoff Area=5.431 ac 13.99% Impervious Runoff Depth=1.11"
Flow Length=1,324' Tc=18.1 min CN=57 Runoff=4.14 cfs 0.502 af

Subcatchment 6S: Bypass Area Runoff Area=2.510 ac 1.20% Impervious Runoff Depth=0.49"
Flow Length=584' Tc=9.3 min CN=46 Runoff=0.58 cfs 0.103 af

Pond 3P: DetPond Peak Elev=97.52' Storage=9,286 cf Inflow=4.14 cfs 0.502 af
Outflow=0.71 cfs 0.347 af

Link 4L: Analysis Point Inflow=0.88 cfs 0.450 af
Primary=0.88 cfs 0.450 af

Total Runoff Area = 15.561 ac Runoff Volume = 0.832 af Average Runoff Depth = 0.64"
94.92% Pervious = 14.771 ac 5.08% Impervious = 0.790 ac

Summary for Subcatchment 1S: Pre-Dev

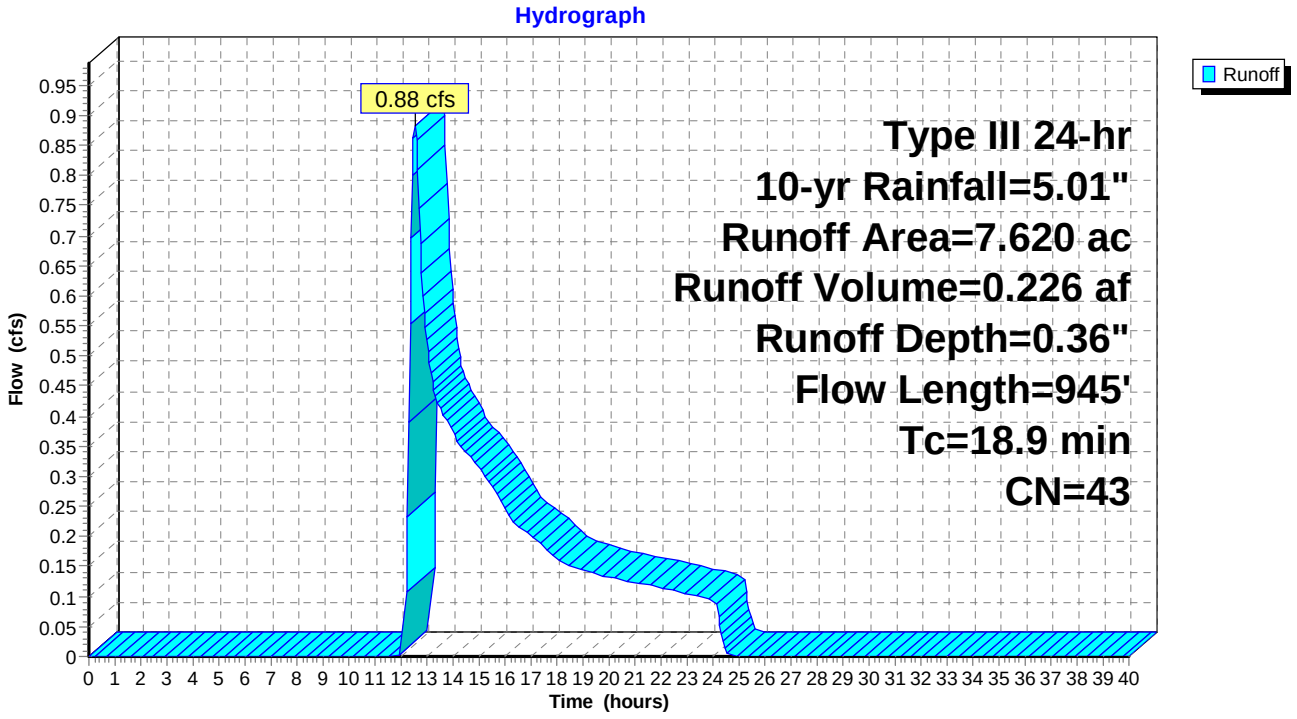
Runoff = 0.88 cfs @ 12.55 hrs, Volume= 0.226 af, Depth= 0.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.01"

	Area (ac)	CN	Description
*	4.090	30	Woods, Good, HSG A
	2.920	55	Woods, Good, HSG B
	0.610	77	Woods, Good, HSG D
	7.620	43	Weighted Average
	7.620		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.2700	0.22		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.20"
10.4	667	0.0460	1.07		**Shallow Concentrated Flow, Shallow Woods** Woodland Kv= 5.0 fps
0.9	178	0.0120	3.37	13.50	**Trap/Vee/Rect Channel Flow, Int Stream** Bot.W=2.00' D=1.00' Z= 2.0 '/' Top.W=6.00' n= 0.035 Earth, dense weeds
18.9	945	Total			

Subcatchment 1S: Pre-Dev



Hydrograph for Subcatchment 1S: Pre-Dev

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.03	0.00	0.00
1.00	0.05	0.00	0.00
1.50	0.08	0.00	0.00
2.00	0.10	0.00	0.00
2.50	0.13	0.00	0.00
3.00	0.15	0.00	0.00
3.50	0.18	0.00	0.00
4.00	0.22	0.00	0.00
4.50	0.25	0.00	0.00
5.00	0.28	0.00	0.00
5.50	0.32	0.00	0.00
6.00	0.36	0.00	0.00
6.50	0.40	0.00	0.00
7.00	0.45	0.00	0.00
7.50	0.51	0.00	0.00
8.00	0.57	0.00	0.00
8.50	0.64	0.00	0.00
9.00	0.73	0.00	0.00
9.50	0.83	0.00	0.00
10.00	0.95	0.00	0.00
10.50	1.08	0.00	0.00
11.00	1.25	0.00	0.00
11.50	1.49	0.00	0.00
12.00	2.50	0.00	0.00
12.50	3.52	0.05	**0.86**
13.00	3.76	0.09	**0.53**
13.50	3.93	0.11	0.41
14.00	4.06	0.14	0.38
14.50	4.18	0.16	0.34
15.00	4.28	0.18	0.32
15.50	4.37	0.20	0.28
16.00	4.44	0.21	0.25
16.50	4.50	0.23	0.22
17.00	4.56	0.24	0.20
17.50	4.61	0.25	0.18
18.00	4.65	0.26	0.16
18.50	4.69	0.27	0.15
19.00	4.73	0.28	0.14
19.50	4.76	0.29	0.14
20.00	4.79	0.30	0.13
20.50	4.83	0.31	0.13
21.00	4.86	0.31	0.12
21.50	4.89	0.32	0.12
22.00	4.91	0.33	0.11
22.50	4.94	0.34	0.11
23.00	4.96	0.34	0.10
23.50	4.99	0.35	0.10
24.00	**5.01**	**0.36**	0.09
24.50	5.01	0.36	0.01
25.00	5.01	0.36	0.00
25.50	5.01	0.36	0.00
26.00	5.01	0.36	0.00
26.50	5.01	0.36	0.00
27.00	5.01	0.36	0.00
27.50	5.01	0.36	0.00
28.00	5.01	0.36	0.00
28.50	5.01	0.36	0.00
29.00	5.01	0.36	0.00
29.50	5.01	0.36	0.00
30.00	5.01	0.36	0.00
30.50	5.01	0.36	0.00
31.00	5.01	0.36	0.00
31.50	5.01	0.36	0.00
32.00	5.01	0.36	0.00
32.50	5.01	0.36	0.00
33.00	5.01	0.36	0.00
33.50	5.01	0.36	0.00
34.00	5.01	0.36	0.00
34.50	5.01	0.36	0.00
35.00	5.01	0.36	0.00
35.50	5.01	0.36	0.00
36.00	5.01	0.36	0.00
36.50	5.01	0.36	0.00
37.00	5.01	0.36	0.00
37.50	5.01	0.36	0.00
38.00	5.01	0.36	0.00
38.50	5.01	0.36	0.00
39.00	5.01	0.36	0.00
39.50	5.01	0.36	0.00
40.00	5.01	0.36	0.00

Summary for Subcatchment 2S: Watershed To Basin

House roofs to underground infiltration systems.

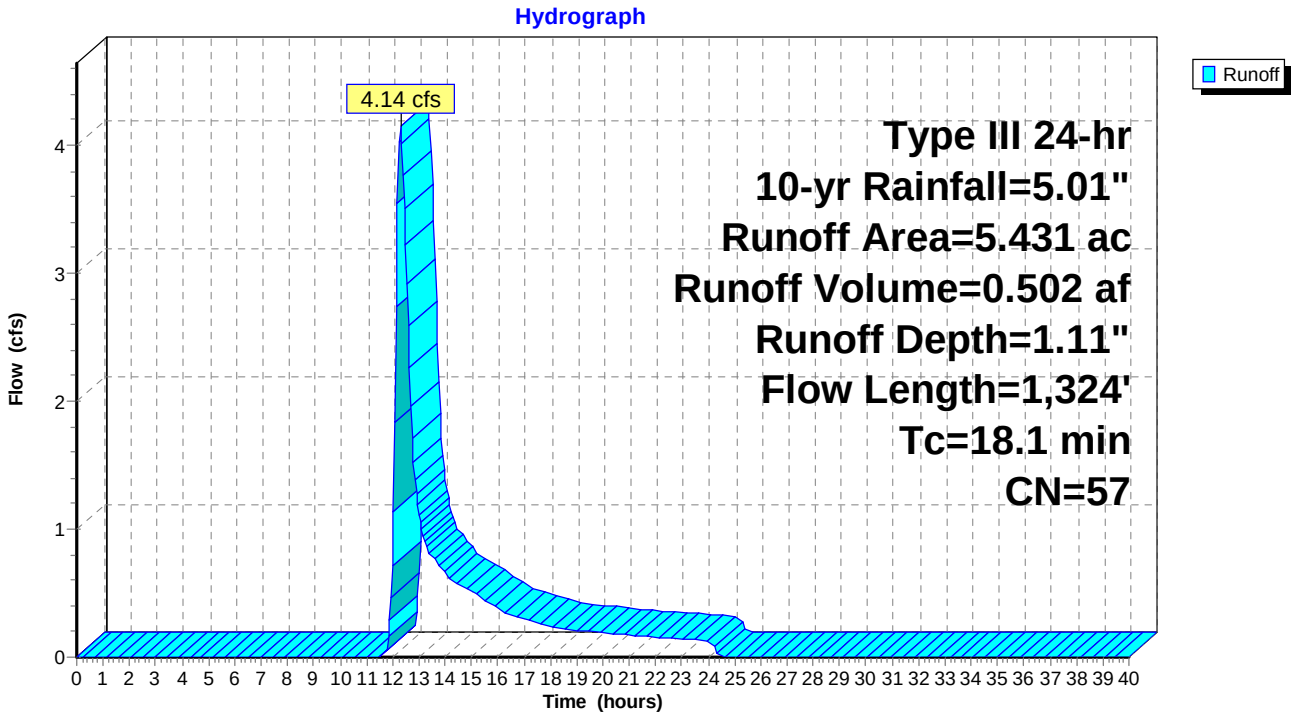
Runoff = 4.14 cfs @ 12.30 hrs, Volume= 0.502 af, Depth= 1.11"
Routed to Pond 3P : DetPond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.01"

	Area (ac)	CN	Description
*	0.760	98	Paved roads w/curbs & sewers
	1.950	39	>75% Grass cover, Good, HSG A
	2.050	61	>75% Grass cover, Good, HSG B
	0.001	80	>75% Grass cover, Good, HSG D
	0.220	30	Woods, Good, HSG A
	0.450	55	Woods, Good, HSG B
	5.431	57	Weighted Average
	4.671		86.01% Pervious Area
	0.760		13.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	70	0.0570	0.11		**Sheet Flow, Sheet Flow Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
2.2	30	0.2000	0.23		**Sheet Flow, Sheet Flow Grass** Grass: Dense n= 0.240 P2= 3.20"
1.2	161	0.0960	2.17		**Shallow Concentrated Flow, Shallow Grass** Short Grass Pasture Kv= 7.0 fps
1.2	308	0.0450	4.31		**Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps
2.9	755	0.0050	4.40	5.40	**Pipe Channel, Pipe** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
18.1	1,324	Total			

Subcatchment 2S: Watershed To Basin



Hydrograph for Subcatchment 2S: Watershed To Basin

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.03	0.00	0.00
1.00	0.05	0.00	0.00
1.50	0.08	0.00	0.00
2.00	0.10	0.00	0.00
2.50	0.13	0.00	0.00
3.00	0.15	0.00	0.00
3.50	0.18	0.00	0.00
4.00	0.22	0.00	0.00
4.50	0.25	0.00	0.00
5.00	0.28	0.00	0.00
5.50	0.32	0.00	0.00
6.00	0.36	0.00	0.00
6.50	0.40	0.00	0.00
7.00	0.45	0.00	0.00
7.50	0.51	0.00	0.00
8.00	0.57	0.00	0.00
8.50	0.64	0.00	0.00
9.00	0.73	0.00	0.00
9.50	0.83	0.00	0.00
10.00	0.95	0.00	0.00
10.50	1.08	0.00	0.00
11.00	1.25	0.00	0.00
11.50	1.49	0.00	0.00
12.00	2.50	0.12	**0.71**
12.50	3.52	0.42	**3.22**
13.00	3.76	0.52	1.12
13.50	3.93	0.59	0.78
14.00	4.06	0.65	0.66
14.50	4.18	0.70	0.57
15.00	4.28	0.74	0.51
15.50	4.37	0.79	0.45
16.00	4.44	0.82	0.38
16.50	4.50	0.85	0.33
17.00	4.56	0.88	0.30
17.50	4.61	0.90	0.27
18.00	4.65	0.92	0.24
18.50	4.69	0.94	0.22
19.00	4.73	0.96	0.21
19.50	4.76	0.98	0.20
20.00	4.79	1.00	0.19
20.50	4.83	1.01	0.18
21.00	4.86	1.03	0.17
21.50	4.89	1.04	0.17
22.00	4.91	1.06	0.16
22.50	4.94	1.07	0.15
23.00	4.96	1.09	0.14
23.50	4.99	1.10	0.14
24.00	**5.01**	**1.11**	0.13
24.50	5.01	1.11	0.01
25.00	5.01	1.11	0.00
25.50	5.01	1.11	0.00
26.00	5.01	1.11	0.00
26.50	5.01	1.11	0.00
27.00	5.01	1.11	0.00
27.50	5.01	1.11	0.00
28.00	5.01	1.11	0.00
28.50	5.01	1.11	0.00
29.00	5.01	1.11	0.00
29.50	5.01	1.11	0.00
30.00	5.01	1.11	0.00
30.50	5.01	1.11	0.00
31.00	5.01	1.11	0.00
31.50	5.01	1.11	0.00
32.00	5.01	1.11	0.00
32.50	5.01	1.11	0.00
33.00	5.01	1.11	0.00
33.50	5.01	1.11	0.00
34.00	5.01	1.11	0.00
34.50	5.01	1.11	0.00
35.00	5.01	1.11	0.00
35.50	5.01	1.11	0.00
36.00	5.01	1.11	0.00
36.50	5.01	1.11	0.00
37.00	5.01	1.11	0.00
37.50	5.01	1.11	0.00
38.00	5.01	1.11	0.00
38.50	5.01	1.11	0.00
39.00	5.01	1.11	0.00
39.50	5.01	1.11	0.00
40.00	5.01	1.11	0.00

Summary for Subcatchment 6S: Bypass Area

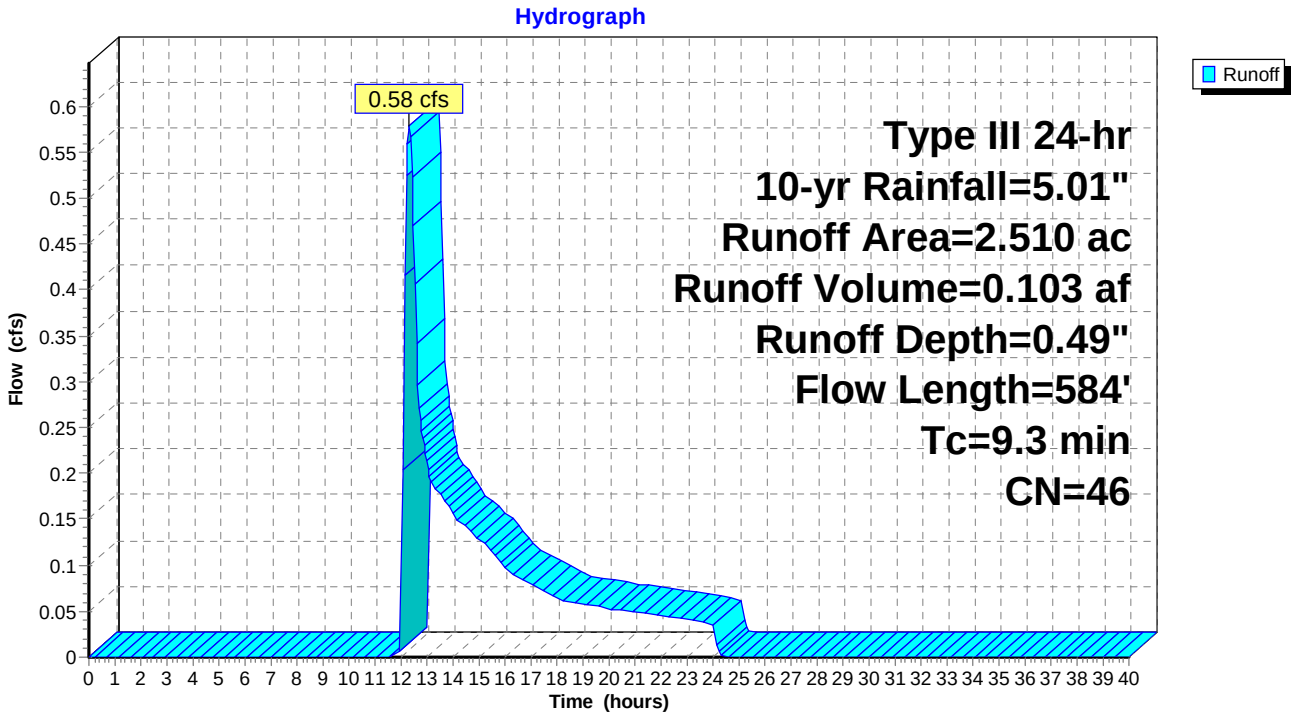
Runoff = 0.58 cfs @ 12.33 hrs, Volume= 0.103 af, Depth= 0.49"
Routed to Link 4L : Analysis Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.01"

Area (ac)	CN	Description
1.300	30	Woods, Good, HSG A
0.030	55	Woods, Good, HSG B
0.490	77	Woods, Good, HSG D
0.430	39	>75% Grass cover, Good, HSG A
0.110	61	>75% Grass cover, Good, HSG B
0.120	80	>75% Grass cover, Good, HSG D
0.030	98	Paved parking, HSG A
2.510	46	Weighted Average
2.480		98.80% Pervious Area
0.030		1.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	100	0.3600	0.25		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.20"
1.6	306	0.3900	3.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	178	0.0120	3.37	13.50	**Trap/Vee/Rect Channel Flow, Int stream** Bot.W=2.00' D=1.00' Z= 2.0 '/' Top.W=6.00' n= 0.035
9.3	584	Total			

Subcatchment 6S: Bypass Area



Hydrograph for Subcatchment 6S: Bypass Area

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.03	0.00	0.00
1.00	0.05	0.00	0.00
1.50	0.08	0.00	0.00
2.00	0.10	0.00	0.00
2.50	0.13	0.00	0.00
3.00	0.15	0.00	0.00
3.50	0.18	0.00	0.00
4.00	0.22	0.00	0.00
4.50	0.25	0.00	0.00
5.00	0.28	0.00	0.00
5.50	0.32	0.00	0.00
6.00	0.36	0.00	0.00
6.50	0.40	0.00	0.00
7.00	0.45	0.00	0.00
7.50	0.51	0.00	0.00
8.00	0.57	0.00	0.00
8.50	0.64	0.00	0.00
9.00	0.73	0.00	0.00
9.50	0.83	0.00	0.00
10.00	0.95	0.00	0.00
10.50	1.08	0.00	0.00
11.00	1.25	0.00	0.00
11.50	1.49	0.00	0.00
12.00	2.50	0.00	**0.00**
12.50	3.52	0.11	**0.47**
13.00	3.76	0.15	0.21
13.50	3.93	0.19	0.18
14.00	4.06	0.22	0.16
14.50	4.18	0.25	0.14
15.00	4.28	0.27	0.13
15.50	4.37	0.30	0.11
16.00	4.44	0.32	0.10
16.50	4.50	0.33	0.09
17.00	4.56	0.35	0.08
17.50	4.61	0.36	0.07
18.00	4.65	0.38	0.06
18.50	4.69	0.39	0.06
19.00	4.73	0.40	0.06
19.50	4.76	0.41	0.06
20.00	4.79	0.42	0.05
20.50	4.83	0.43	0.05
21.00	4.86	0.44	0.05
21.50	4.89	0.45	0.05
22.00	4.91	0.46	0.05
22.50	4.94	0.47	0.04
23.00	4.96	0.48	0.04
23.50	4.99	0.48	0.04
24.00	**5.01**	**0.49**	0.04
24.50	5.01	0.49	0.00
25.00	5.01	0.49	0.00
25.50	5.01	0.49	0.00
26.00	5.01	0.49	0.00
26.50	5.01	0.49	0.00
27.00	5.01	0.49	0.00
27.50	5.01	0.49	0.00
28.00	5.01	0.49	0.00
28.50	5.01	0.49	0.00
29.00	5.01	0.49	0.00
29.50	5.01	0.49	0.00
30.00	5.01	0.49	0.00
30.50	5.01	0.49	0.00
31.00	5.01	0.49	0.00
31.50	5.01	0.49	0.00
32.00	5.01	0.49	0.00
32.50	5.01	0.49	0.00
33.00	5.01	0.49	0.00
33.50	5.01	0.49	0.00
34.00	5.01	0.49	0.00
34.50	5.01	0.49	0.00
35.00	5.01	0.49	0.00
35.50	5.01	0.49	0.00
36.00	5.01	0.49	0.00
36.50	5.01	0.49	0.00
37.00	5.01	0.49	0.00
37.50	5.01	0.49	0.00
38.00	5.01	0.49	0.00
38.50	5.01	0.49	0.00
39.00	5.01	0.49	0.00
39.50	5.01	0.49	0.00
40.00	5.01	0.49	0.00

Summary for Pond 3P: DetPond

Inflow Area = 5.431 ac, 13.99% Impervious, Inflow Depth = 1.11" for 10-yr event
Inflow = 4.14 cfs @ 12.30 hrs, Volume= 0.502 af
Outflow = 0.71 cfs @ 13.79 hrs, Volume= 0.347 af, Atten= 83%, Lag= 89.3 min
Primary = 0.71 cfs @ 13.79 hrs, Volume= 0.347 af
Routed to Link 4L : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 97.52' @ 13.79 hrs Surf.Area= 4,414 sf Storage= 9,286 cf

Plug-Flow detention time= 255.9 min calculated for 0.347 af (69% of inflow)
Center-of-Mass det. time= 144.7 min (1,041.0 - 896.4)

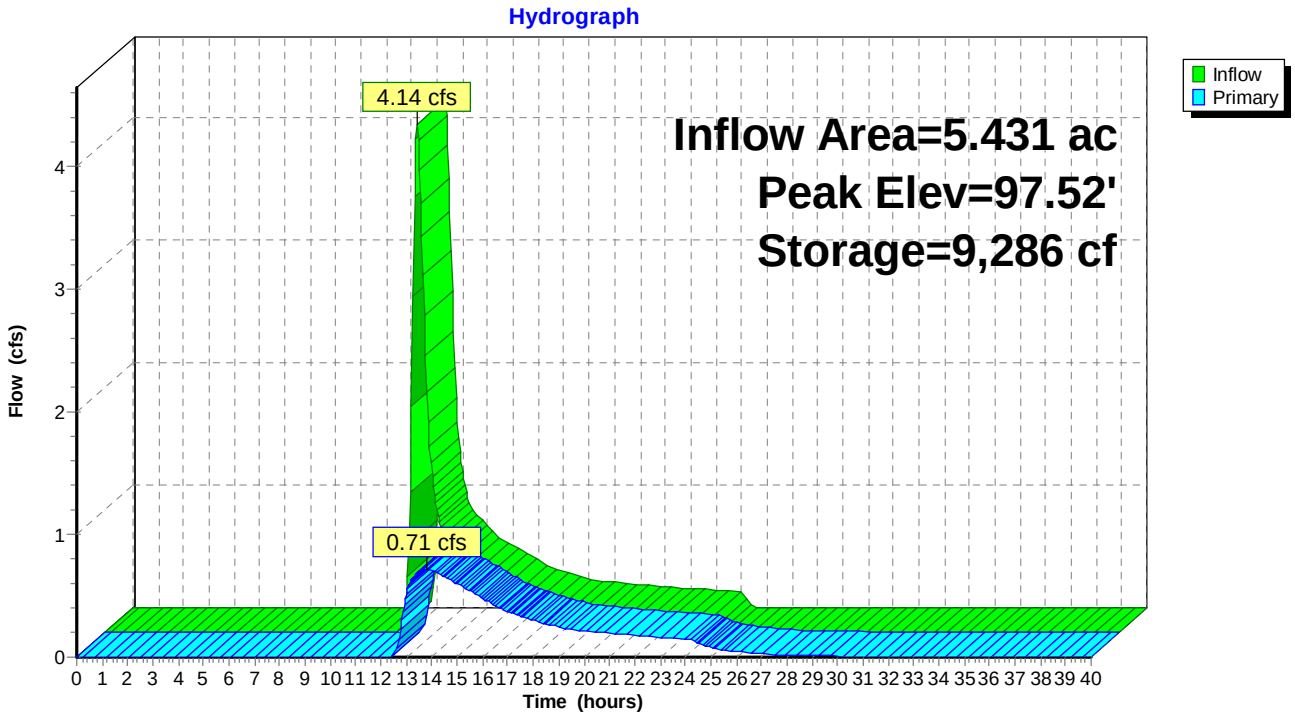
Volume	Invert	Avail.Storage	Storage Description
#1	94.00'	24,410 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
94.00	1,107	174.0	0	0	1,107
96.00	2,850	235.0	3,822	3,822	3,134
98.00	4,985	299.0	7,736	11,558	5,906
99.00	6,430	358.0	5,692	17,251	9,008
100.00	7,914	384.0	7,159	24,410	10,587

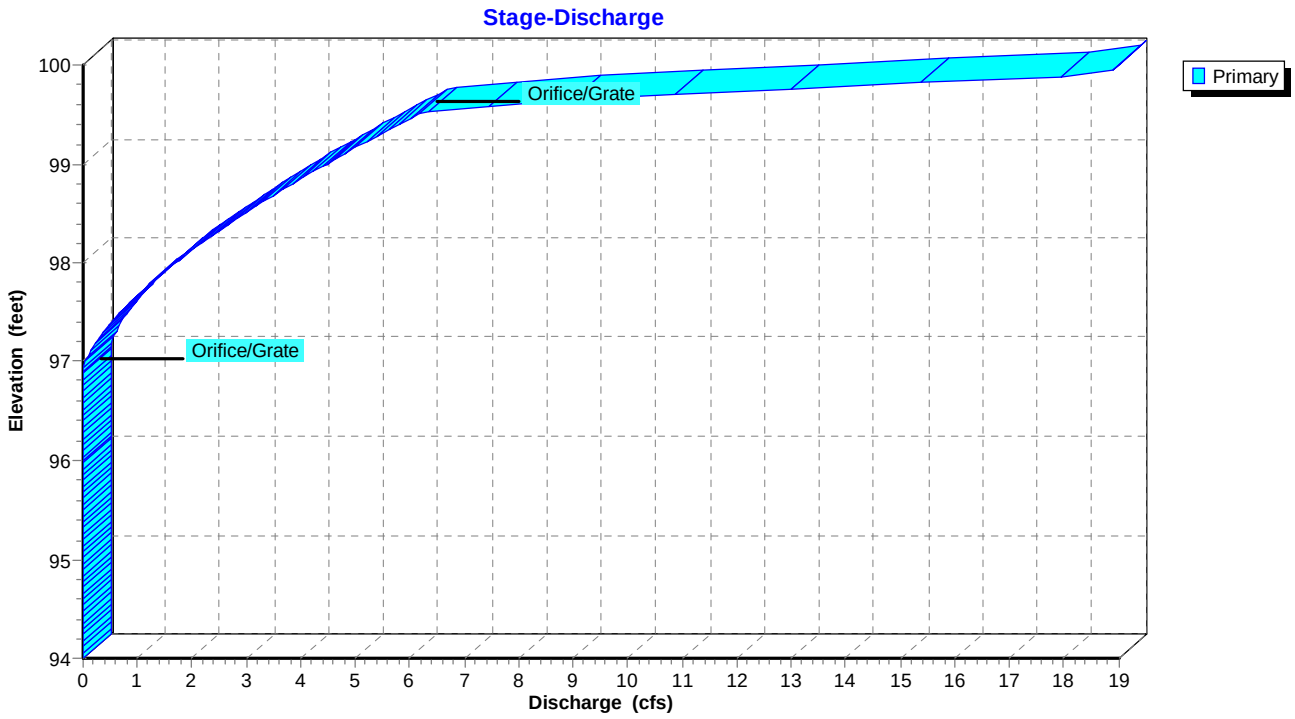
Device	Routing	Invert	Outlet Devices
#1	Primary	93.00'	**18.0" Round Culvert** L= 120.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 93.00' / 92.40' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	96.90'	**5.5" W x 31.2" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	99.50'	**36.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.71 cfs @ 13.79 hrs HW=97.52' (Free Discharge)
↑**1=Culvert** (Passes 0.71 cfs of 14.64 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 0.71 cfs @ 2.52 fps)
3=Orifice/Grate (Controls 0.00 cfs)

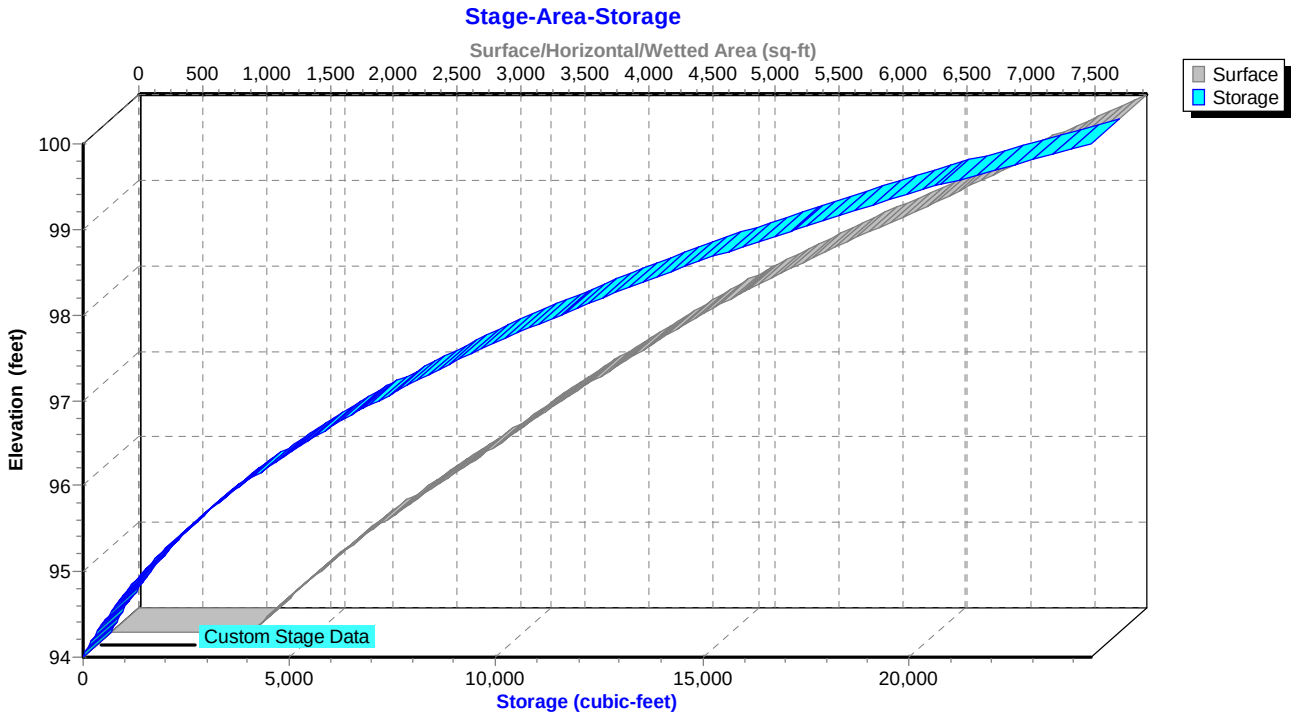
Pond 3P: DetPond



Pond 3P: DetPond



Pond 3P: DetPond



Hydrograph for Pond 3P: DetPond

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	94.00	0.00
1.00	0.00	0	94.00	0.00
2.00	0.00	0	94.00	0.00
3.00	0.00	0	94.00	0.00
4.00	0.00	0	94.00	0.00
5.00	0.00	0	94.00	0.00
6.00	0.00	0	94.00	0.00
7.00	0.00	0	94.00	0.00
8.00	0.00	0	94.00	0.00
9.00	0.00	0	94.00	0.00
10.00	0.00	0	94.00	0.00
11.00	0.00	0	94.00	0.00
12.00	**0.71**	253	94.21	0.00
13.00	**1.12**	**8,774**	**97.40**	**0.52**
14.00	0.66	**9,269**	**97.51**	**0.71**
15.00	0.51	8,989	97.45	0.60
16.00	0.38	8,665	97.37	0.48
17.00	0.30	8,354	97.30	0.37
18.00	0.24	8,127	97.24	0.30
19.00	0.21	7,950	97.20	0.24
20.00	0.19	7,847	97.18	0.21
21.00	0.17	7,771	97.16	0.19
22.00	0.16	7,710	97.14	0.18
23.00	0.14	7,654	97.13	0.16
24.00	0.13	7,597	97.11	0.14
25.00	0.00	7,311	97.04	0.08
26.00	0.00	7,111	96.99	0.04
27.00	0.00	7,001	96.96	0.02
28.00	0.00	6,937	96.94	0.01
29.00	0.00	6,898	96.93	0.01
30.00	0.00	6,868	96.92	0.01
31.00	0.00	6,846	96.92	0.01
32.00	0.00	6,829	96.91	0.00
33.00	0.00	6,816	96.91	0.00
34.00	0.00	6,807	96.91	0.00
35.00	0.00	6,800	96.91	0.00
36.00	0.00	6,794	96.90	0.00
37.00	0.00	6,790	96.90	0.00
38.00	0.00	6,787	96.90	0.00
39.00	0.00	6,785	96.90	0.00
40.00	0.00	6,783	96.90	0.00

Stage-Discharge for Pond 3P: DetPond

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
94.00	0.00	96.70	0.00	99.40	5.82
94.05	0.00	96.75	0.00	99.45	5.99
94.10	0.00	96.80	0.00	99.50	6.17
94.15	0.00	96.85	0.00	99.55	6.84
94.20	0.00	96.90	0.00	99.60	7.93
94.25	0.00	96.95	0.02	99.65	9.28
94.30	0.00	97.00	0.05	99.70	10.86
94.35	0.00	97.05	0.09	99.75	12.62
94.40	0.00	97.10	0.13	99.80	14.55
94.45	0.00	97.15	0.18	99.85	16.63
94.50	0.00	97.20	0.24	99.90	18.85
94.55	0.00	97.25	0.30	99.95	18.93
94.60	0.00	97.30	0.37	100.00	**19.01**
94.65	0.00	97.35	0.44		
94.70	0.00	97.40	0.52		
94.75	0.00	97.45	0.60		
94.80	0.00	97.50	0.68		
94.85	0.00	97.55	0.77		
94.90	0.00	97.60	0.86		
94.95	0.00	97.65	0.96		
95.00	0.00	97.70	1.05		
95.05	0.00	97.75	1.15		
95.10	0.00	97.80	1.26		
95.15	0.00	97.85	1.36		
95.20	0.00	97.90	1.47		
95.25	0.00	97.95	1.58		
95.30	0.00	98.00	1.70		
95.35	0.00	98.05	1.81		
95.40	0.00	98.10	1.93		
95.45	0.00	98.15	2.06		
95.50	0.00	98.20	2.18		
95.55	0.00	98.25	2.31		
95.60	0.00	98.30	2.44		
95.65	0.00	98.35	2.57		
95.70	0.00	98.40	2.70		
95.75	0.00	98.45	2.84		
95.80	0.00	98.50	2.98		
95.85	0.00	98.55	3.12		
95.90	0.00	98.60	3.26		
95.95	0.00	98.65	3.41		
96.00	0.00	98.70	3.55		
96.05	0.00	98.75	3.70		
96.10	0.00	98.80	3.85		
96.15	0.00	98.85	4.01		
96.20	0.00	98.90	4.16		
96.25	0.00	98.95	4.32		
96.30	0.00	99.00	4.48		
96.35	0.00	99.05	4.64		
96.40	0.00	99.10	4.80		
96.45	0.00	99.15	4.97		
96.50	0.00	99.20	5.13		
96.55	0.00	99.25	5.30		
96.60	0.00	99.30	5.47		
96.65	0.00	99.35	5.64		

Stage-Area-Storage for Pond 3P: DetPond

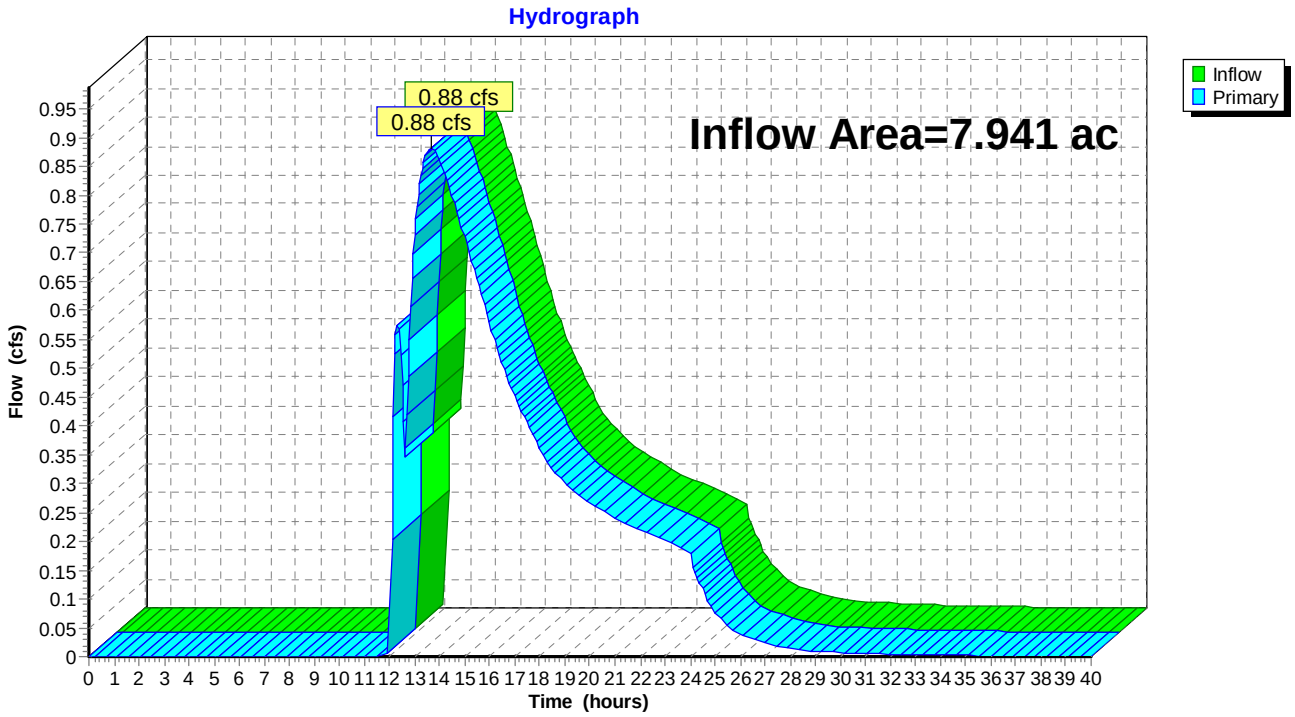
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
94.00	1,107	0
94.10	1,175	114
94.20	1,245	235
94.30	1,317	363
94.40	1,391	498
94.50	1,467	641
94.60	1,545	792
94.70	1,625	950
94.80	1,707	1,117
94.90	1,791	1,292
95.00	1,877	1,475
95.10	1,966	1,667
95.20	2,056	1,868
95.30	2,148	2,079
95.40	2,242	2,298
95.50	2,338	2,527
95.60	2,437	2,766
95.70	2,537	3,015
95.80	2,639	3,273
95.90	2,744	3,542
96.00	2,850	3,822
96.10	2,943	4,112
96.20	3,037	4,411
96.30	3,132	4,719
96.40	3,230	5,037
96.50	3,328	5,365
96.60	3,428	5,703
96.70	3,530	6,051
96.80	3,633	6,409
96.90	3,737	6,777
97.00	3,843	7,156
97.10	3,951	7,546
97.20	4,060	7,947
97.30	4,170	8,358
97.40	4,282	8,781
97.50	4,396	9,215
97.60	4,511	9,660
97.70	4,627	10,117
97.80	4,745	10,585
97.90	4,864	11,066
98.00	4,985	11,558
98.10	5,121	12,064
98.20	5,259	12,583
98.30	5,399	13,116
98.40	5,541	13,663
98.50	5,685	14,224
98.60	5,830	14,799
98.70	5,977	15,390
98.80	6,126	15,995
98.90	6,277	16,615
99.00	6,430	17,251
99.10	6,571	17,901
99.20	6,714	18,565
99.30	6,859	19,244
99.40	7,005	19,937
99.50	7,153	20,645
99.60	7,302	21,367
99.70	7,453	22,105
99.80	7,605	22,858
99.90	7,759	23,626
100.00	**7,914**	**24,410**

Summary for Link 4L: Analysis Point

Inflow Area = 7.941 ac, 9.95% Impervious, Inflow Depth > 0.68" for 10-yr event
Inflow = 0.88 cfs @ 13.67 hrs, Volume= 0.450 af
Primary = 0.88 cfs @ 13.67 hrs, Volume= 0.450 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Link 4L: Analysis Point



Hydrograph for Link 4L: Analysis Point

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	27.00	0.02	0.00	0.02
0.50	0.00	0.00	0.00	27.50	0.02	0.00	0.02
1.00	0.00	0.00	0.00	28.00	0.01	0.00	0.01
1.50	0.00	0.00	0.00	28.50	0.01	0.00	0.01
2.00	0.00	0.00	0.00	29.00	0.01	0.00	0.01
2.50	0.00	0.00	0.00	29.50	0.01	0.00	0.01
3.00	0.00	0.00	0.00	30.00	0.01	0.00	0.01
3.50	0.00	0.00	0.00	30.50	0.01	0.00	0.01
4.00	0.00	0.00	0.00	31.00	0.01	0.00	0.01
4.50	0.00	0.00	0.00	31.50	0.00	0.00	0.00
5.00	0.00	0.00	0.00	32.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	32.50	0.00	0.00	0.00
6.00	0.00	0.00	0.00	33.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	33.50	0.00	0.00	0.00
7.00	0.00	0.00	0.00	34.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	34.50	0.00	0.00	0.00
8.00	0.00	0.00	0.00	35.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00	35.50	0.00	0.00	0.00
9.00	0.00	0.00	0.00	36.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	36.50	0.00	0.00	0.00
10.00	0.00	0.00	0.00	37.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00	37.50	0.00	0.00	0.00
11.00	0.00	0.00	0.00	38.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00	38.50	0.00	0.00	0.00
12.00	0.00	0.00	0.00	39.00	0.00	0.00	0.00
12.50	0.47	0.00	0.47	39.50	0.00	0.00	0.00
13.00	0.73	0.00	0.73	40.00	0.00	0.00	0.00
13.50	**0.88**	0.00	**0.88**				
14.00	**0.86**	0.00	**0.86**				
14.50	0.80	0.00	0.80				
15.00	0.73	0.00	0.73				
15.50	0.65	0.00	0.65				
16.00	0.58	0.00	0.58				
16.50	0.51	0.00	0.51				
17.00	0.45	0.00	0.45				
17.50	0.40	0.00	0.40				
18.00	0.36	0.00	0.36				
18.50	0.33	0.00	0.33				
19.00	0.30	0.00	0.30				
19.50	0.28	0.00	0.28				
20.00	0.27	0.00	0.27				
20.50	0.25	0.00	0.25				
21.00	0.24	0.00	0.24				
21.50	0.23	0.00	0.23				
22.00	0.22	0.00	0.22				
22.50	0.21	0.00	0.21				
23.00	0.20	0.00	0.20				
23.50	0.19	0.00	0.19				
24.00	0.18	0.00	0.18				
24.50	0.12	0.00	0.12				
25.00	0.08	0.00	0.08				
25.50	0.05	0.00	0.05				
26.00	0.04	0.00	0.04				
26.50	0.03	0.00	0.03				

Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Pre-Dev Runoff Area=7.620 ac 0.00% Impervious Runoff Depth=0.73"
Flow Length=945' Tc=18.9 min CN=43 Runoff=2.62 cfs 0.462 af

Subcatchment 2S: Watershed To Basin Runoff Area=5.431 ac 13.99% Impervious Runoff Depth=1.76"
Flow Length=1,324' Tc=18.1 min CN=57 Runoff=7.15 cfs 0.797 af

Subcatchment 6S: Bypass Area Runoff Area=2.510 ac 1.20% Impervious Runoff Depth=0.93"
Flow Length=584' Tc=9.3 min CN=46 Runoff=1.61 cfs 0.194 af

Pond 3P: DetPond Peak Elev=98.18' Storage=12,482 cf Inflow=7.15 cfs 0.797 af
Outflow=2.13 cfs 0.642 af

Link 4L: Analysis Point Inflow=2.58 cfs 0.835 af
Primary=2.58 cfs 0.835 af

Total Runoff Area = 15.561 ac Runoff Volume = 1.453 af Average Runoff Depth = 1.12"
94.92% Pervious = 14.771 ac 5.08% Impervious = 0.790 ac

Summary for Subcatchment 1S: Pre-Dev

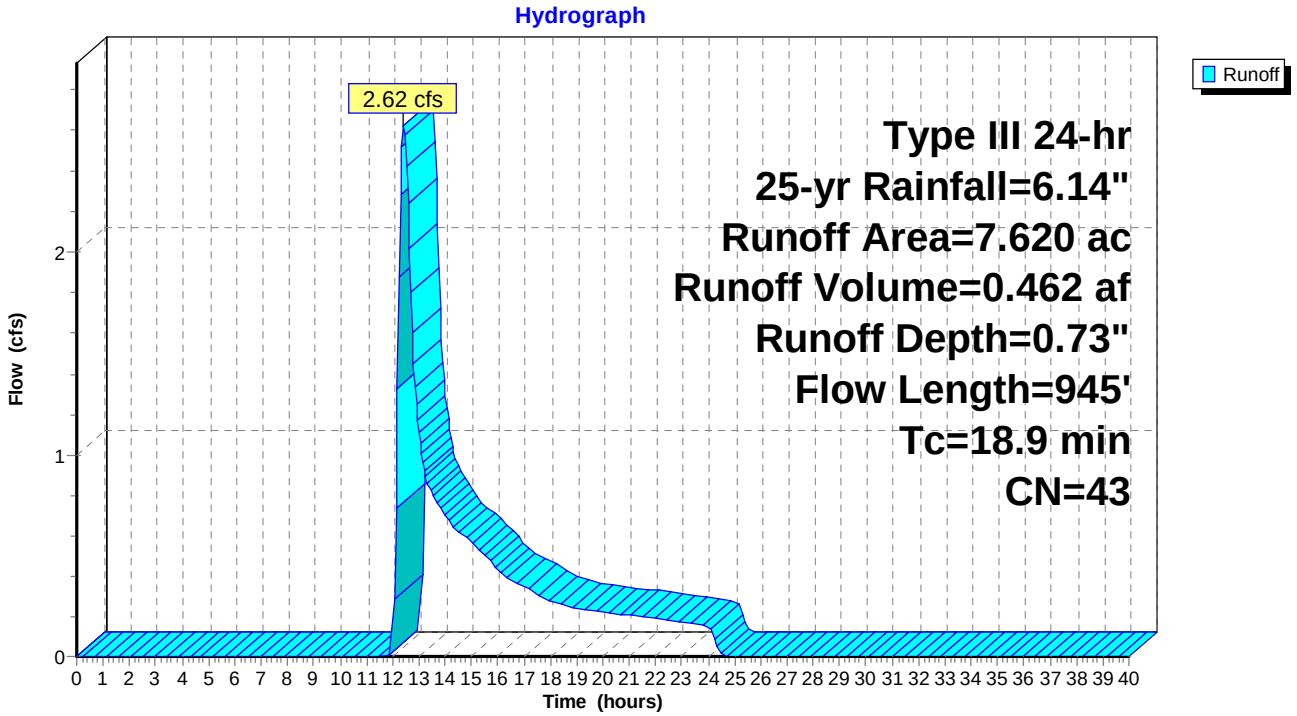
Runoff = 2.62 cfs @ 12.43 hrs, Volume= 0.462 af, Depth= 0.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=6.14"

	Area (ac)	CN	Description
*	4.090	30	Woods, Good, HSG A
	2.920	55	Woods, Good, HSG B
	0.610	77	Woods, Good, HSG D
	7.620	43	Weighted Average
	7.620		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.2700	0.22		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.20"
10.4	667	0.0460	1.07		**Shallow Concentrated Flow, Shallow Woods** Woodland Kv= 5.0 fps
0.9	178	0.0120	3.37	13.50	**Trap/Vee/Rect Channel Flow, Int Stream** Bot.W=2.00' D=1.00' Z= 2.0 '/' Top.W=6.00' n= 0.035 Earth, dense weeds
18.9	945	Total			

Subcatchment 1S: Pre-Dev



Hydrograph for Subcatchment 1S: Pre-Dev

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.03	0.00	0.00
1.00	0.06	0.00	0.00
1.50	0.09	0.00	0.00
2.00	0.12	0.00	0.00
2.50	0.15	0.00	0.00
3.00	0.19	0.00	0.00
3.50	0.23	0.00	0.00
4.00	0.26	0.00	0.00
4.50	0.31	0.00	0.00
5.00	0.35	0.00	0.00
5.50	0.39	0.00	0.00
6.00	0.44	0.00	0.00
6.50	0.50	0.00	0.00
7.00	0.56	0.00	0.00
7.50	0.62	0.00	0.00
8.00	0.70	0.00	0.00
8.50	0.79	0.00	0.00
9.00	0.89	0.00	0.00
9.50	1.02	0.00	0.00
10.00	1.16	0.00	0.00
10.50	1.33	0.00	0.00
11.00	1.54	0.00	0.00
11.50	1.83	0.00	0.00
12.00	3.07	0.01	**0.01**
12.50	4.31	0.18	**2.56**
13.00	4.60	0.25	1.11
13.50	4.81	0.30	0.81
14.00	4.98	0.35	0.71
14.50	5.12	0.39	0.62
15.00	5.25	0.42	0.57
15.50	5.35	0.46	0.50
16.00	5.44	0.48	0.43
16.50	5.52	0.51	0.38
17.00	5.58	0.53	0.35
17.50	5.64	0.55	0.31
18.00	5.70	0.57	0.28
18.50	5.75	0.59	0.25
19.00	5.79	0.60	0.24
19.50	5.83	0.62	0.23
20.00	5.88	0.63	0.22
20.50	5.92	0.64	0.21
21.00	5.95	0.66	0.21
21.50	5.99	0.67	0.20
22.00	6.02	0.68	0.19
22.50	6.05	0.70	0.18
23.00	6.08	0.71	0.17
23.50	6.11	0.72	0.16
24.00	**6.14**	**0.73**	0.15
24.50	6.14	0.73	0.01
25.00	6.14	0.73	0.00
25.50	6.14	0.73	0.00
26.00	6.14	0.73	0.00
26.50	6.14	0.73	0.00
27.00	6.14	0.73	0.00
27.50	6.14	0.73	0.00
28.00	6.14	0.73	0.00
28.50	6.14	0.73	0.00
29.00	6.14	0.73	0.00
29.50	6.14	0.73	0.00
30.00	6.14	0.73	0.00
30.50	6.14	0.73	0.00
31.00	6.14	0.73	0.00
31.50	6.14	0.73	0.00
32.00	6.14	0.73	0.00
32.50	6.14	0.73	0.00
33.00	6.14	0.73	0.00
33.50	6.14	0.73	0.00
34.00	6.14	0.73	0.00
34.50	6.14	0.73	0.00
35.00	6.14	0.73	0.00
35.50	6.14	0.73	0.00
36.00	6.14	0.73	0.00
36.50	6.14	0.73	0.00
37.00	6.14	0.73	0.00
37.50	6.14	0.73	0.00
38.00	6.14	0.73	0.00
38.50	6.14	0.73	0.00
39.00	6.14	0.73	0.00
39.50	6.14	0.73	0.00
40.00	6.14	0.73	0.00

Summary for Subcatchment 2S: Watershed To Basin

House roofs to underground infiltration systems.

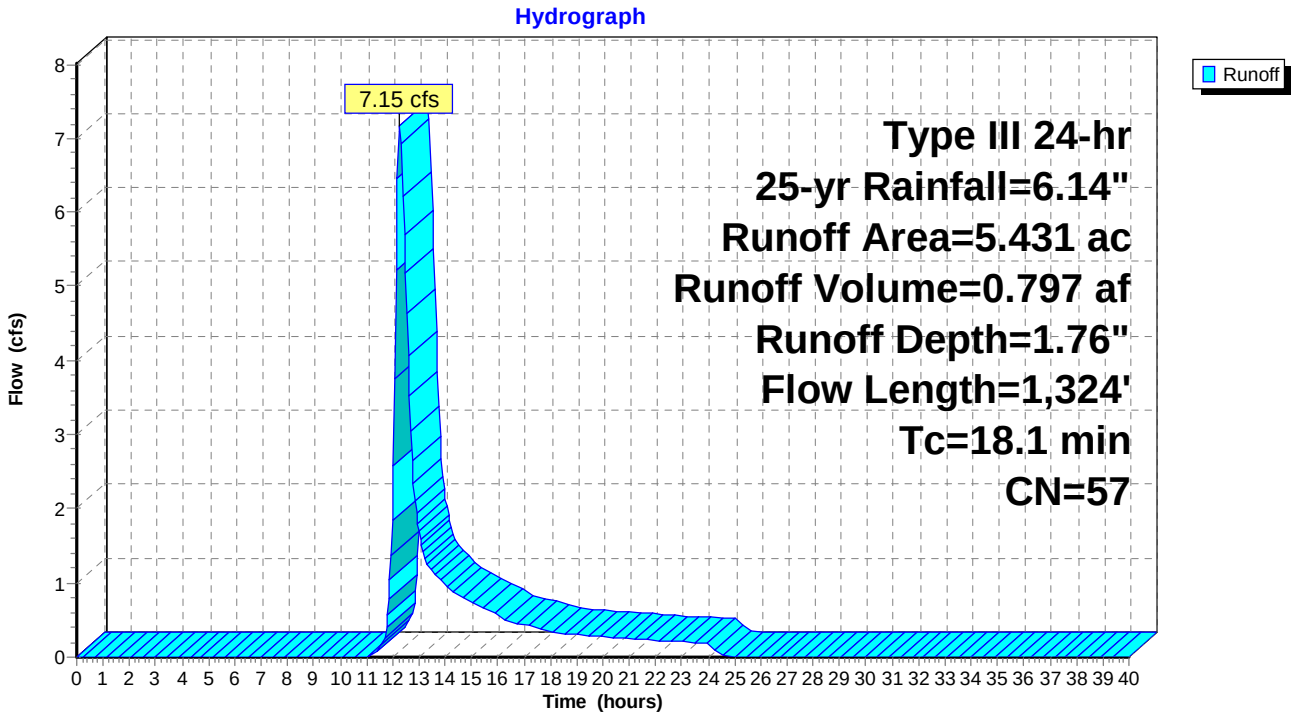
Runoff = 7.15 cfs @ 12.28 hrs, Volume= 0.797 af, Depth= 1.76"
Routed to Pond 3P : DetPond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=6.14"

	Area (ac)	CN	Description
*	0.760	98	Paved roads w/curbs & sewers
	1.950	39	>75% Grass cover, Good, HSG A
	2.050	61	>75% Grass cover, Good, HSG B
	0.001	80	>75% Grass cover, Good, HSG D
	0.220	30	Woods, Good, HSG A
	0.450	55	Woods, Good, HSG B
	5.431	57	Weighted Average
	4.671		86.01% Pervious Area
	0.760		13.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	70	0.0570	0.11		**Sheet Flow, Sheet Flow Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
2.2	30	0.2000	0.23		**Sheet Flow, Sheet Flow Grass** Grass: Dense n= 0.240 P2= 3.20"
1.2	161	0.0960	2.17		**Shallow Concentrated Flow, Shallow Grass** Short Grass Pasture Kv= 7.0 fps
1.2	308	0.0450	4.31		**Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps
2.9	755	0.0050	4.40	5.40	**Pipe Channel, Pipe** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
18.1	1,324	Total			

Subcatchment 2S: Watershed To Basin



Hydrograph for Subcatchment 2S: Watershed To Basin

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.03	0.00	0.00
1.00	0.06	0.00	0.00
1.50	0.09	0.00	0.00
2.00	0.12	0.00	0.00
2.50	0.15	0.00	0.00
3.00	0.19	0.00	0.00
3.50	0.23	0.00	0.00
4.00	0.26	0.00	0.00
4.50	0.31	0.00	0.00
5.00	0.35	0.00	0.00
5.50	0.39	0.00	0.00
6.00	0.44	0.00	0.00
6.50	0.50	0.00	0.00
7.00	0.56	0.00	0.00
7.50	0.62	0.00	0.00
8.00	0.70	0.00	0.00
8.50	0.79	0.00	0.00
9.00	0.89	0.00	0.00
9.50	1.02	0.00	0.00
10.00	1.16	0.00	0.00
10.50	1.33	0.00	0.00
11.00	1.54	0.00	0.00
11.50	1.83	0.01	0.12
12.00	3.07	0.27	**1.85**
12.50	4.31	0.76	**5.17**
13.00	4.60	0.90	1.69
13.50	4.81	1.01	1.16
14.00	4.98	1.09	0.98
14.50	5.12	1.17	0.84
15.00	5.25	1.24	0.75
15.50	5.35	1.30	0.65
16.00	5.44	1.35	0.55
16.50	5.52	1.39	0.48
17.00	5.58	1.43	0.43
17.50	5.64	1.46	0.39
18.00	5.70	1.50	0.34
18.50	5.75	1.52	0.31
19.00	5.79	1.55	0.30
19.50	5.83	1.58	0.28
20.00	5.88	1.60	0.27
20.50	5.92	1.62	0.26
21.00	5.95	1.65	0.25
21.50	5.99	1.67	0.24
22.00	6.02	1.69	0.23
22.50	6.05	1.71	0.22
23.00	6.08	1.73	0.20
23.50	6.11	1.75	0.19
24.00	**6.14**	**1.76**	0.18
24.50	6.14	1.76	0.01
25.00	6.14	1.76	0.00
25.50	6.14	1.76	0.00
26.00	6.14	1.76	0.00
26.50	6.14	1.76	0.00
27.00	6.14	1.76	0.00
27.50	6.14	1.76	0.00
28.00	6.14	1.76	0.00
28.50	6.14	1.76	0.00
29.00	6.14	1.76	0.00
29.50	6.14	1.76	0.00
30.00	6.14	1.76	0.00
30.50	6.14	1.76	0.00
31.00	6.14	1.76	0.00
31.50	6.14	1.76	0.00
32.00	6.14	1.76	0.00
32.50	6.14	1.76	0.00
33.00	6.14	1.76	0.00
33.50	6.14	1.76	0.00
34.00	6.14	1.76	0.00
34.50	6.14	1.76	0.00
35.00	6.14	1.76	0.00
35.50	6.14	1.76	0.00
36.00	6.14	1.76	0.00
36.50	6.14	1.76	0.00
37.00	6.14	1.76	0.00
37.50	6.14	1.76	0.00
38.00	6.14	1.76	0.00
38.50	6.14	1.76	0.00
39.00	6.14	1.76	0.00
39.50	6.14	1.76	0.00
40.00	6.14	1.76	0.00

Summary for Subcatchment 6S: Bypass Area

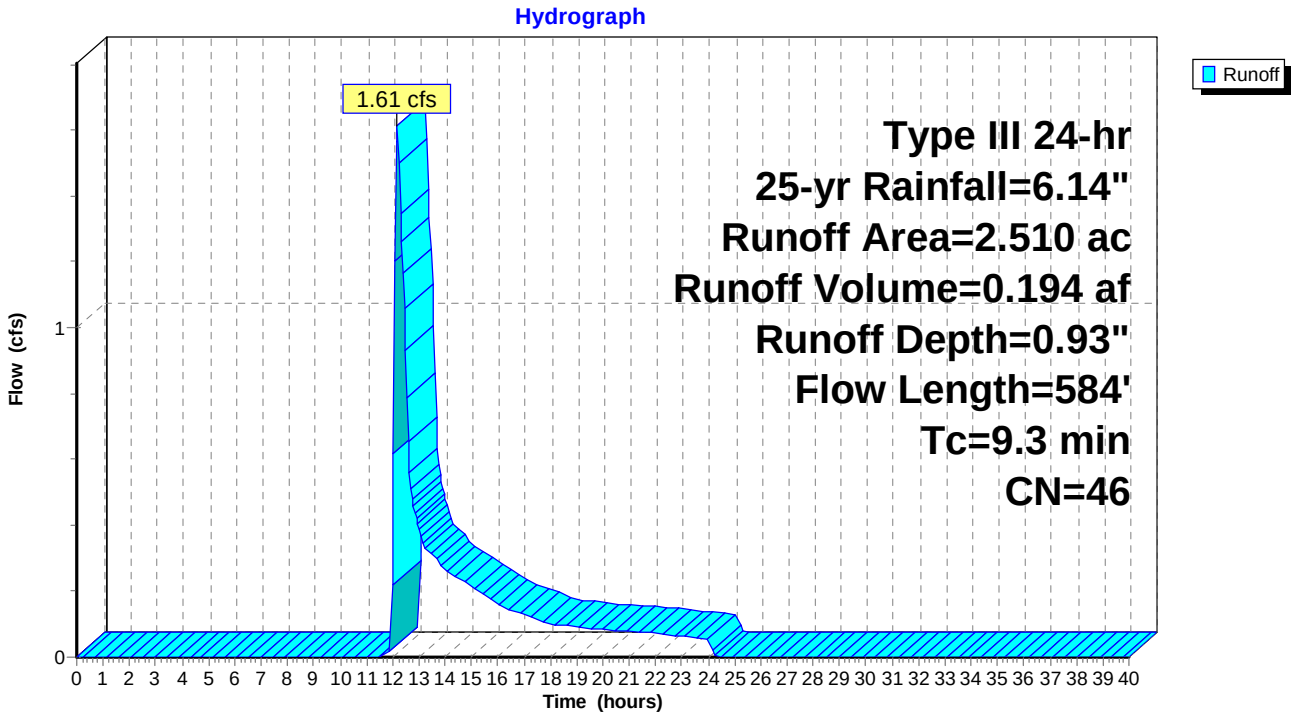
Runoff = 1.61 cfs @ 12.17 hrs, Volume= 0.194 af, Depth= 0.93"
Routed to Link 4L : Analysis Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=6.14"

Area (ac)	CN	Description
1.300	30	Woods, Good, HSG A
0.030	55	Woods, Good, HSG B
0.490	77	Woods, Good, HSG D
0.430	39	>75% Grass cover, Good, HSG A
0.110	61	>75% Grass cover, Good, HSG B
0.120	80	>75% Grass cover, Good, HSG D
0.030	98	Paved parking, HSG A
2.510	46	Weighted Average
2.480		98.80% Pervious Area
0.030		1.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	100	0.3600	0.25		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.20"
1.6	306	0.3900	3.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	178	0.0120	3.37	13.50	**Trap/Vee/Rect Channel Flow, Int stream** Bot.W=2.00' D=1.00' Z= 2.0 '/' Top.W=6.00' n= 0.035
9.3	584	Total			

Subcatchment 6S: Bypass Area



Hydrograph for Subcatchment 6S: Bypass Area

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.03	0.00	0.00
1.00	0.06	0.00	0.00
1.50	0.09	0.00	0.00
2.00	0.12	0.00	0.00
2.50	0.15	0.00	0.00
3.00	0.19	0.00	0.00
3.50	0.23	0.00	0.00
4.00	0.26	0.00	0.00
4.50	0.31	0.00	0.00
5.00	0.35	0.00	0.00
5.50	0.39	0.00	0.00
6.00	0.44	0.00	0.00
6.50	0.50	0.00	0.00
7.00	0.56	0.00	0.00
7.50	0.62	0.00	0.00
8.00	0.70	0.00	0.00
8.50	0.79	0.00	0.00
9.00	0.89	0.00	0.00
9.50	1.02	0.00	0.00
10.00	1.16	0.00	0.00
10.50	1.33	0.00	0.00
11.00	1.54	0.00	0.00
11.50	1.83	0.00	0.00
12.00	3.07	0.04	**0.22**
12.50	4.31	0.28	**0.93**
13.00	4.60	0.36	0.39
13.50	4.81	0.43	0.31
14.00	4.98	0.48	0.27
14.50	5.12	0.53	0.24
15.00	5.25	0.57	0.22
15.50	5.35	0.61	0.19
16.00	5.44	0.64	0.16
16.50	5.52	0.67	0.14
17.00	5.58	0.70	0.13
17.50	5.64	0.72	0.12
18.00	5.70	0.74	0.10
18.50	5.75	0.76	0.10
19.00	5.79	0.78	0.09
19.50	5.83	0.80	0.09
20.00	5.88	0.82	0.08
20.50	5.92	0.83	0.08
21.00	5.95	0.85	0.08
21.50	5.99	0.86	0.07
22.00	6.02	0.88	0.07
22.50	6.05	0.89	0.07
23.00	6.08	0.90	0.06
23.50	6.11	0.91	0.06
24.00	**6.14**	**0.93**	0.06
24.50	6.14	0.93	0.00
25.00	6.14	0.93	0.00
25.50	6.14	0.93	0.00
26.00	6.14	0.93	0.00
26.50	6.14	0.93	0.00
27.00	6.14	0.93	0.00
27.50	6.14	0.93	0.00
28.00	6.14	0.93	0.00
28.50	6.14	0.93	0.00
29.00	6.14	0.93	0.00
29.50	6.14	0.93	0.00
30.00	6.14	0.93	0.00
30.50	6.14	0.93	0.00
31.00	6.14	0.93	0.00
31.50	6.14	0.93	0.00
32.00	6.14	0.93	0.00
32.50	6.14	0.93	0.00
33.00	6.14	0.93	0.00
33.50	6.14	0.93	0.00
34.00	6.14	0.93	0.00
34.50	6.14	0.93	0.00
35.00	6.14	0.93	0.00
35.50	6.14	0.93	0.00
36.00	6.14	0.93	0.00
36.50	6.14	0.93	0.00
37.00	6.14	0.93	0.00
37.50	6.14	0.93	0.00
38.00	6.14	0.93	0.00
38.50	6.14	0.93	0.00
39.00	6.14	0.93	0.00
39.50	6.14	0.93	0.00
40.00	6.14	0.93	0.00

Summary for Pond 3P: DetPond

Inflow Area = 5.431 ac, 13.99% Impervious, Inflow Depth = 1.76" for 25-yr event
Inflow = 7.15 cfs @ 12.28 hrs, Volume= 0.797 af
Outflow = 2.13 cfs @ 12.85 hrs, Volume= 0.642 af, Atten= 70%, Lag= 34.4 min
Primary = 2.13 cfs @ 12.85 hrs, Volume= 0.642 af
Routed to Link 4L : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 98.18' @ 12.85 hrs Surf.Area= 5,233 sf Storage= 12,482 cf

Plug-Flow detention time= 178.7 min calculated for 0.642 af (80% of inflow)
Center-of-Mass det. time= 97.6 min (978.3 - 880.7)

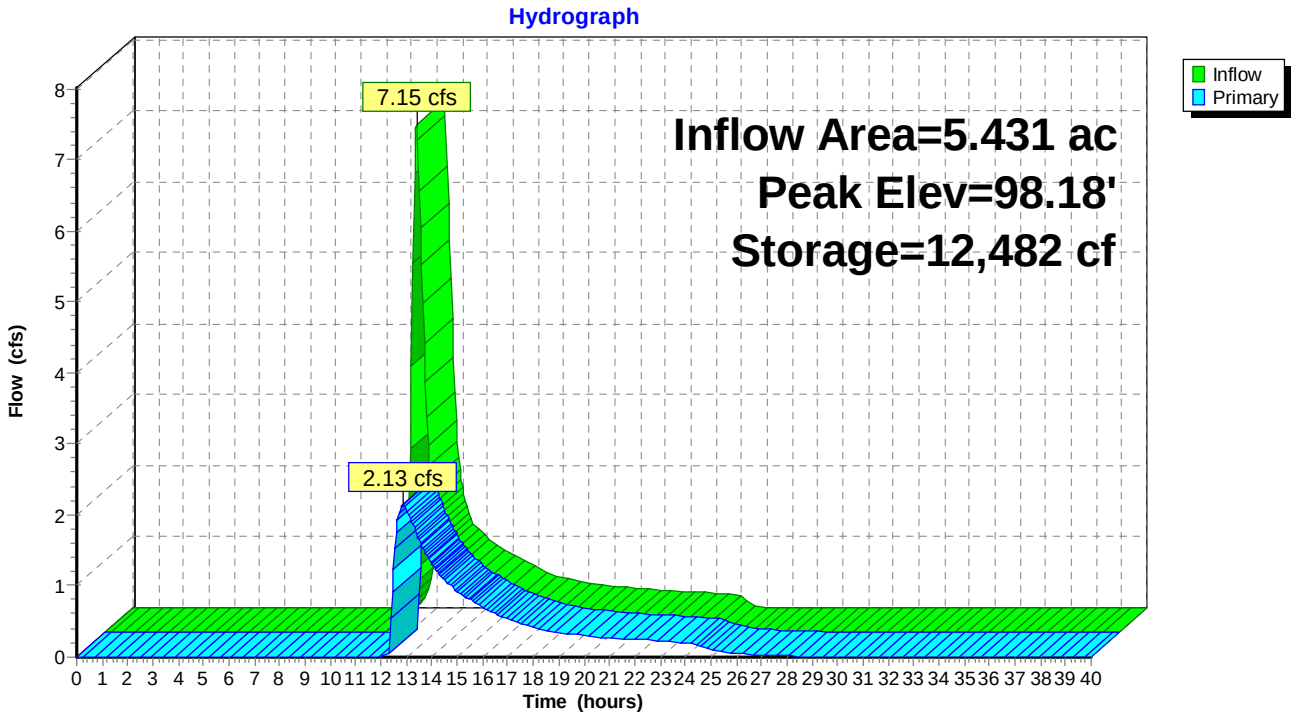
Volume	Invert	Avail.Storage	Storage Description
#1	94.00'	24,410 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
94.00	1,107	174.0	0	0	1,107
96.00	2,850	235.0	3,822	3,822	3,134
98.00	4,985	299.0	7,736	11,558	5,906
99.00	6,430	358.0	5,692	17,251	9,008
100.00	7,914	384.0	7,159	24,410	10,587

Device	Routing	Invert	Outlet Devices
#1	Primary	93.00'	**18.0" Round Culvert** L= 120.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 93.00' / 92.40' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	96.90'	**5.5" W x 31.2" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	99.50'	**36.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.13 cfs @ 12.85 hrs HW=98.18' (Free Discharge)
↑—**1=Culvert** (Passes 2.13 cfs of 15.93 cfs potential flow)
↑—**2=Orifice/Grate** (Orifice Controls 2.13 cfs @ 3.63 fps)
—**3=Orifice/Grate** (Controls 0.00 cfs)

Pond 3P: DetPond



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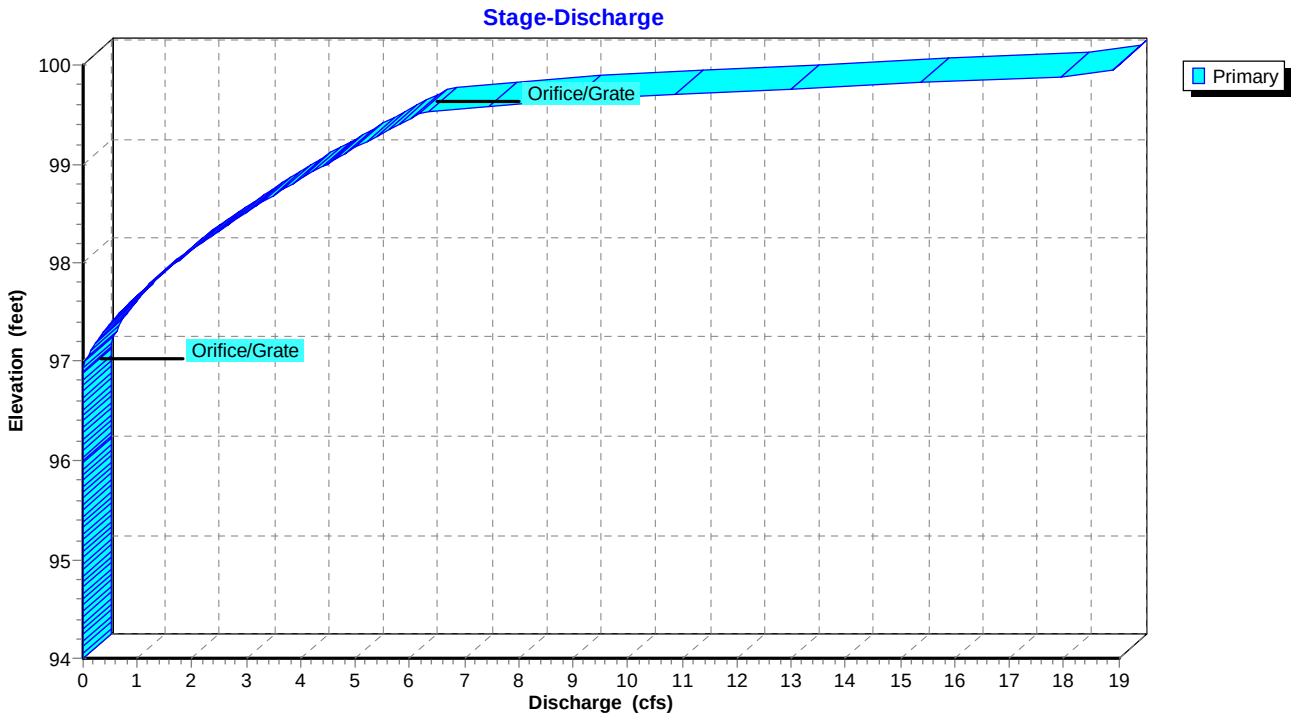
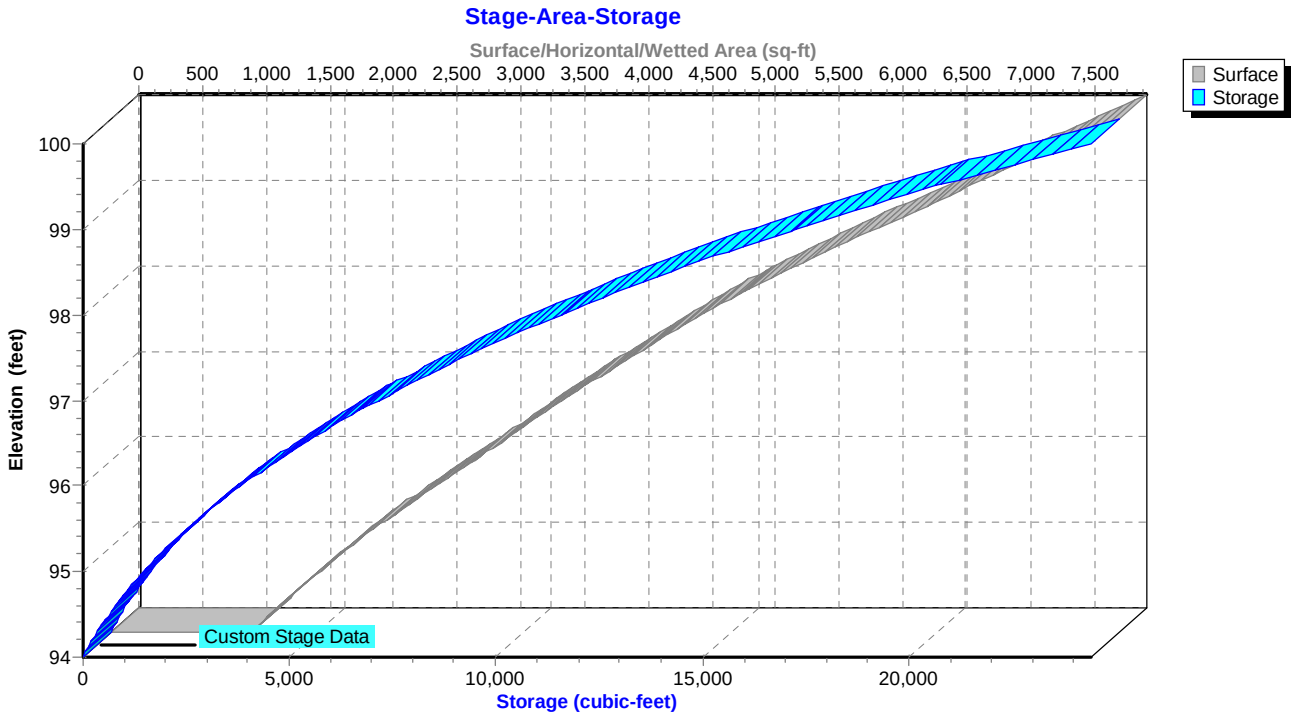


Pond 3P: DetPond



Hydrograph for Pond 3P: DetPond

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	94.00	0.00
1.00	0.00	0	94.00	0.00
2.00	0.00	0	94.00	0.00
3.00	0.00	0	94.00	0.00
4.00	0.00	0	94.00	0.00
5.00	0.00	0	94.00	0.00
6.00	0.00	0	94.00	0.00
7.00	0.00	0	94.00	0.00
8.00	0.00	0	94.00	0.00
9.00	0.00	0	94.00	0.00
10.00	0.00	0	94.00	0.00
11.00	0.00	0	94.00	0.00
12.00	**1.85**	**1,154**	**94.82**	**0.00**
13.00	**1.69**	**12,361**	**98.16**	**2.07**
14.00	0.98	10,720	97.83	1.32
15.00	0.75	9,818	97.63	0.93
16.00	0.55	9,257	97.51	0.70
17.00	0.43	8,808	97.41	0.53
18.00	0.34	8,501	97.33	0.42
19.00	0.30	8,268	97.28	0.34
20.00	0.27	8,136	97.25	0.30
21.00	0.25	8,039	97.22	0.27
22.00	0.23	7,961	97.20	0.25
23.00	0.20	7,888	97.19	0.22
24.00	0.18	7,813	97.17	0.20
25.00	0.00	7,424	97.07	0.10
26.00	0.00	7,166	97.00	0.05
27.00	0.00	7,033	96.97	0.03
28.00	0.00	6,956	96.95	0.02
29.00	0.00	6,911	96.94	0.01
30.00	0.00	6,878	96.93	0.01
31.00	0.00	6,853	96.92	0.01
32.00	0.00	6,835	96.92	0.00
33.00	0.00	6,821	96.91	0.00
34.00	0.00	6,810	96.91	0.00
35.00	0.00	6,802	96.91	0.00
36.00	0.00	6,796	96.90	0.00
37.00	0.00	6,791	96.90	0.00
38.00	0.00	6,788	96.90	0.00
39.00	0.00	6,785	96.90	0.00
40.00	0.00	6,783	96.90	0.00

Stage-Discharge for Pond 3P: DetPond

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
94.00	0.00	96.70	0.00	99.40	5.82
94.05	0.00	96.75	0.00	99.45	5.99
94.10	0.00	96.80	0.00	99.50	6.17
94.15	0.00	96.85	0.00	99.55	6.84
94.20	0.00	96.90	0.00	99.60	7.93
94.25	0.00	96.95	0.02	99.65	9.28
94.30	0.00	97.00	0.05	99.70	10.86
94.35	0.00	97.05	0.09	99.75	12.62
94.40	0.00	97.10	0.13	99.80	14.55
94.45	0.00	97.15	0.18	99.85	16.63
94.50	0.00	97.20	0.24	99.90	18.85
94.55	0.00	97.25	0.30	99.95	18.93
94.60	0.00	97.30	0.37	100.00	**19.01**
94.65	0.00	97.35	0.44		
94.70	0.00	97.40	0.52		
94.75	0.00	97.45	0.60		
94.80	0.00	97.50	0.68		
94.85	0.00	97.55	0.77		
94.90	0.00	97.60	0.86		
94.95	0.00	97.65	0.96		
95.00	0.00	97.70	1.05		
95.05	0.00	97.75	1.15		
95.10	0.00	97.80	1.26		
95.15	0.00	97.85	1.36		
95.20	0.00	97.90	1.47		
95.25	0.00	97.95	1.58		
95.30	0.00	98.00	1.70		
95.35	0.00	98.05	1.81		
95.40	0.00	98.10	1.93		
95.45	0.00	98.15	2.06		
95.50	0.00	98.20	2.18		
95.55	0.00	98.25	2.31		
95.60	0.00	98.30	2.44		
95.65	0.00	98.35	2.57		
95.70	0.00	98.40	2.70		
95.75	0.00	98.45	2.84		
95.80	0.00	98.50	2.98		
95.85	0.00	98.55	3.12		
95.90	0.00	98.60	3.26		
95.95	0.00	98.65	3.41		
96.00	0.00	98.70	3.55		
96.05	0.00	98.75	3.70		
96.10	0.00	98.80	3.85		
96.15	0.00	98.85	4.01		
96.20	0.00	98.90	4.16		
96.25	0.00	98.95	4.32		
96.30	0.00	99.00	4.48		
96.35	0.00	99.05	4.64		
96.40	0.00	99.10	4.80		
96.45	0.00	99.15	4.97		
96.50	0.00	99.20	5.13		
96.55	0.00	99.25	5.30		
96.60	0.00	99.30	5.47		
96.65	0.00	99.35	5.64		

Stage-Area-Storage for Pond 3P: DetPond

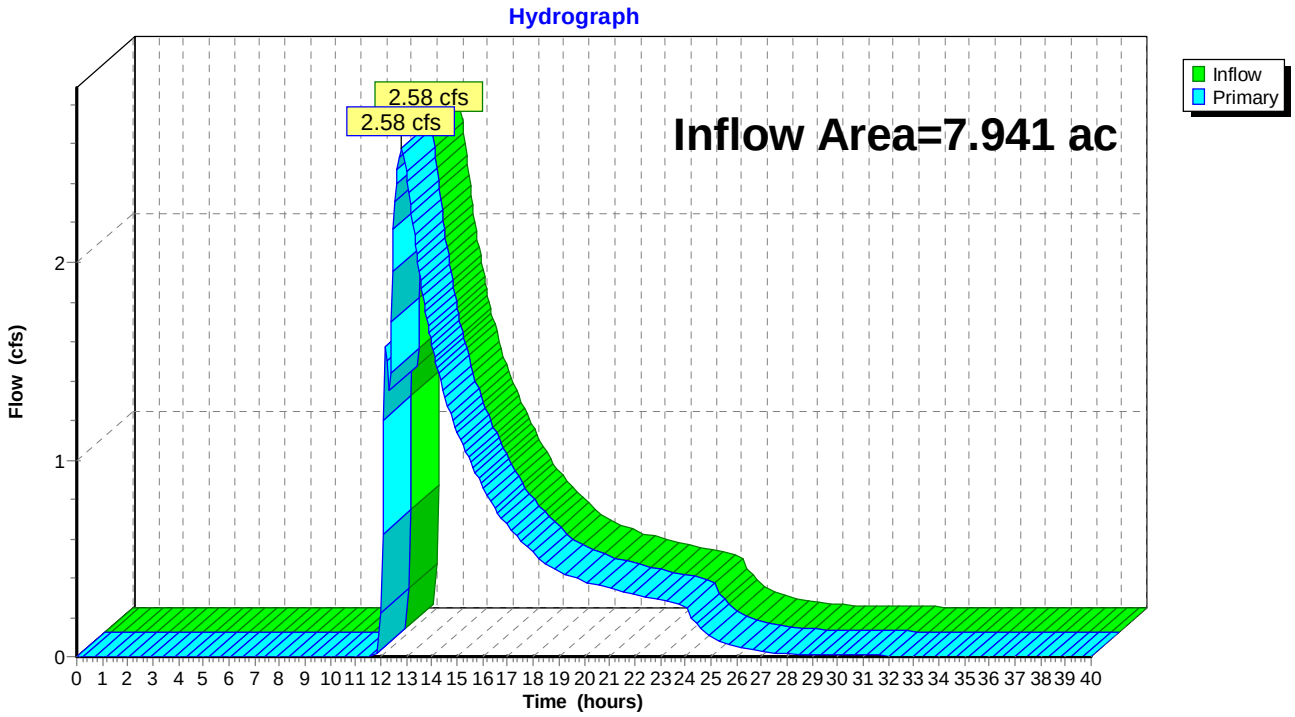
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
94.00	1,107	0
94.10	1,175	114
94.20	1,245	235
94.30	1,317	363
94.40	1,391	498
94.50	1,467	641
94.60	1,545	792
94.70	1,625	950
94.80	1,707	1,117
94.90	1,791	1,292
95.00	1,877	1,475
95.10	1,966	1,667
95.20	2,056	1,868
95.30	2,148	2,079
95.40	2,242	2,298
95.50	2,338	2,527
95.60	2,437	2,766
95.70	2,537	3,015
95.80	2,639	3,273
95.90	2,744	3,542
96.00	2,850	3,822
96.10	2,943	4,112
96.20	3,037	4,411
96.30	3,132	4,719
96.40	3,230	5,037
96.50	3,328	5,365
96.60	3,428	5,703
96.70	3,530	6,051
96.80	3,633	6,409
96.90	3,737	6,777
97.00	3,843	7,156
97.10	3,951	7,546
97.20	4,060	7,947
97.30	4,170	8,358
97.40	4,282	8,781
97.50	4,396	9,215
97.60	4,511	9,660
97.70	4,627	10,117
97.80	4,745	10,585
97.90	4,864	11,066
98.00	4,985	11,558
98.10	5,121	12,064
98.20	5,259	12,583
98.30	5,399	13,116
98.40	5,541	13,663
98.50	5,685	14,224
98.60	5,830	14,799
98.70	5,977	15,390
98.80	6,126	15,995
98.90	6,277	16,615
99.00	6,430	17,251
99.10	6,571	17,901
99.20	6,714	18,565
99.30	6,859	19,244
99.40	7,005	19,937
99.50	7,153	20,645
99.60	7,302	21,367
99.70	7,453	22,105
99.80	7,605	22,858
99.90	7,759	23,626
100.00	**7,914**	**24,410**

Summary for Link 4L: Analysis Point

Inflow Area = 7.941 ac, 9.95% Impervious, Inflow Depth > 1.26" for 25-yr event
Inflow = 2.58 cfs @ 12.80 hrs, Volume= 0.835 af
Primary = 2.58 cfs @ 12.80 hrs, Volume= 0.835 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Link 4L: Analysis Point



Hydrograph for Link 4L: Analysis Point

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	27.00	0.03	0.00	0.03
0.50	0.00	0.00	0.00	27.50	0.02	0.00	0.02
1.00	0.00	0.00	0.00	28.00	0.02	0.00	0.02
1.50	0.00	0.00	0.00	28.50	0.01	0.00	0.01
2.00	0.00	0.00	0.00	29.00	0.01	0.00	0.01
2.50	0.00	0.00	0.00	29.50	0.01	0.00	0.01
3.00	0.00	0.00	0.00	30.00	0.01	0.00	0.01
3.50	0.00	0.00	0.00	30.50	0.01	0.00	0.01
4.00	0.00	0.00	0.00	31.00	0.01	0.00	0.01
4.50	0.00	0.00	0.00	31.50	0.01	0.00	0.01
5.00	0.00	0.00	0.00	32.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	32.50	0.00	0.00	0.00
6.00	0.00	0.00	0.00	33.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	33.50	0.00	0.00	0.00
7.00	0.00	0.00	0.00	34.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	34.50	0.00	0.00	0.00
8.00	0.00	0.00	0.00	35.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00	35.50	0.00	0.00	0.00
9.00	0.00	0.00	0.00	36.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	36.50	0.00	0.00	0.00
10.00	0.00	0.00	0.00	37.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00	37.50	0.00	0.00	0.00
11.00	0.00	0.00	0.00	38.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00	38.50	0.00	0.00	0.00
12.00	0.22	0.00	0.22	39.00	0.00	0.00	0.00
12.50	**2.17**	0.00	**2.17**	39.50	0.00	0.00	0.00
13.00	**2.46**	0.00	**2.46**	40.00	0.00	0.00	0.00
13.50	1.95	0.00	1.95				
14.00	1.58	0.00	1.58				
14.50	1.32	0.00	1.32				
15.00	1.14	0.00	1.14				
15.50	1.00	0.00	1.00				
16.00	0.86	0.00	0.86				
16.50	0.75	0.00	0.75				
17.00	0.66	0.00	0.66				
17.50	0.59	0.00	0.59				
18.00	0.52	0.00	0.52				
18.50	0.47	0.00	0.47				
19.00	0.43	0.00	0.43				
19.50	0.41	0.00	0.41				
20.00	0.38	0.00	0.38				
20.50	0.36	0.00	0.36				
21.00	0.35	0.00	0.35				
21.50	0.33	0.00	0.33				
22.00	0.32	0.00	0.32				
22.50	0.30	0.00	0.30				
23.00	0.29	0.00	0.29				
23.50	0.28	0.00	0.28				
24.00	0.26	0.00	0.26				
24.50	0.16	0.00	0.16				
25.00	0.10	0.00	0.10				
25.50	0.07	0.00	0.07				
26.00	0.05	0.00	0.05				
26.50	0.04	0.00	0.04				

Time span=0.00-40.00 hrs, dt=0.05 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Pre-Dev Runoff Area=7.620 ac 0.00% Impervious Runoff Depth=1.48"
Flow Length=945' Tc=18.9 min CN=43 Runoff=7.06 cfs 0.939 af

Subcatchment 2S: Watershed To Basin Runoff Area=5.431 ac 13.99% Impervious Runoff Depth=2.92"
Flow Length=1,324' Tc=18.1 min CN=57 Runoff=12.55 cfs 1.320 af

Subcatchment 6S: Bypass Area Runoff Area=2.510 ac 1.20% Impervious Runoff Depth=1.77"
Flow Length=584' Tc=9.3 min CN=46 Runoff=3.90 cfs 0.371 af

Pond 3P: DetPond Peak Elev=99.25' Storage=18,892 cf Inflow=12.55 cfs 1.320 af
Outflow=5.30 cfs 1.165 af

Link 4L: Analysis Point Inflow=6.53 cfs 1.535 af
Primary=6.53 cfs 1.535 af

Total Runoff Area = 15.561 ac Runoff Volume = 2.630 af Average Runoff Depth = 2.03"
94.92% Pervious = 14.771 ac 5.08% Impervious = 0.790 ac

Summary for Subcatchment 1S: Pre-Dev

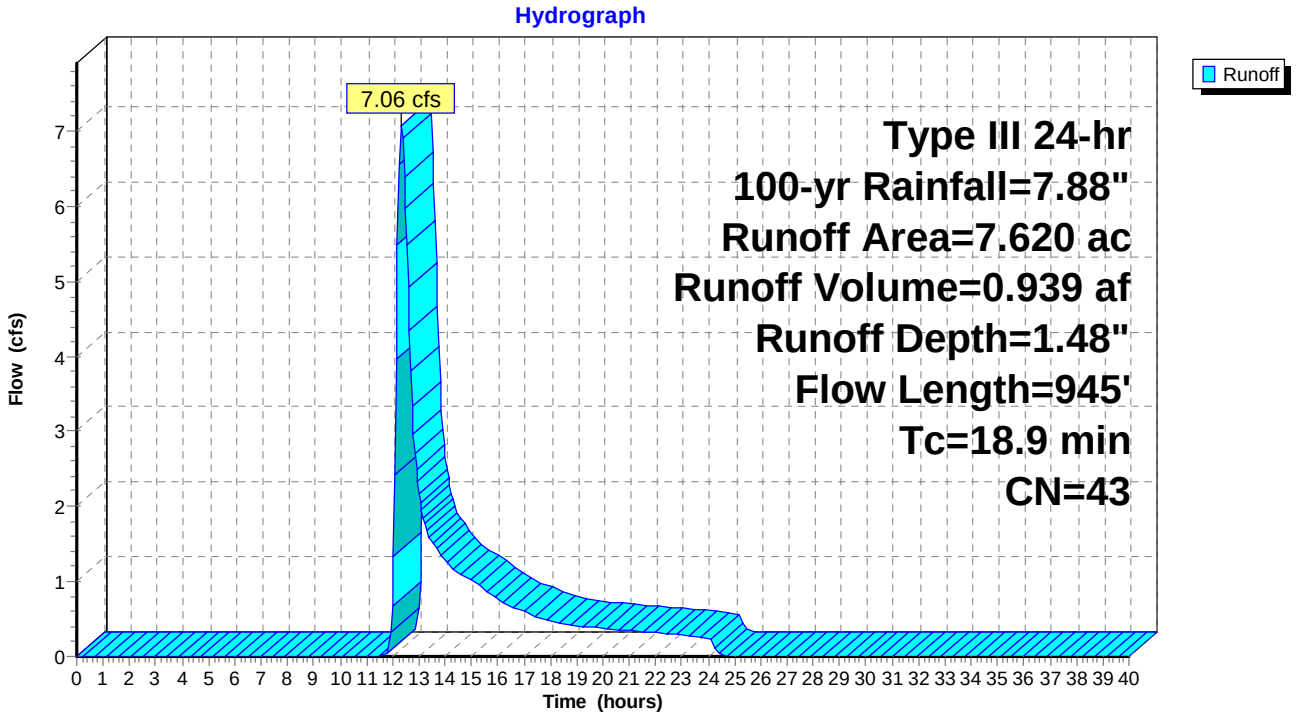
Runoff = 7.06 cfs @ 12.33 hrs, Volume= 0.939 af, Depth= 1.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=7.88"

	Area (ac)	CN	Description
*	4.090	30	Woods, Good, HSG A
	2.920	55	Woods, Good, HSG B
	0.610	77	Woods, Good, HSG D
	7.620	43	Weighted Average
	7.620		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.2700	0.22		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.20"
10.4	667	0.0460	1.07		**Shallow Concentrated Flow, Shallow Woods** Woodland Kv= 5.0 fps
0.9	178	0.0120	3.37	13.50	**Trap/Vee/Rect Channel Flow, Int Stream** Bot.W=2.00' D=1.00' Z= 2.0 '/' Top.W=6.00' n= 0.035 Earth, dense weeds
18.9	945	Total			

Subcatchment 1S: Pre-Dev



Hydrograph for Subcatchment 1S: Pre-Dev

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.04	0.00	0.00
1.00	0.08	0.00	0.00
1.50	0.12	0.00	0.00
2.00	0.16	0.00	0.00
2.50	0.20	0.00	0.00
3.00	0.24	0.00	0.00
3.50	0.29	0.00	0.00
4.00	0.34	0.00	0.00
4.50	0.39	0.00	0.00
5.00	0.45	0.00	0.00
5.50	0.51	0.00	0.00
6.00	0.57	0.00	0.00
6.50	0.64	0.00	0.00
7.00	0.71	0.00	0.00
7.50	0.80	0.00	0.00
8.00	0.90	0.00	0.00
8.50	1.01	0.00	0.00
9.00	1.15	0.00	0.00
9.50	1.31	0.00	0.00
10.00	1.49	0.00	0.00
10.50	1.71	0.00	0.00
11.00	1.97	0.00	0.00
11.50	2.35	0.00	0.00
12.00	3.94	0.11	**0.67**
12.50	5.53	0.51	**5.98**
13.00	5.91	0.64	2.18
13.50	6.17	0.74	1.51
14.00	6.39	0.82	1.30
14.50	6.57	0.90	1.12
15.00	6.73	0.96	1.01
15.50	6.87	1.02	0.89
16.00	6.98	1.07	0.76
16.50	7.08	1.11	0.66
17.00	7.17	1.15	0.60
17.50	7.24	1.18	0.54
18.00	7.31	1.21	0.48
18.50	7.37	1.24	0.43
19.00	7.43	1.27	0.41
19.50	7.49	1.29	0.40
20.00	7.54	1.32	0.38
20.50	7.59	1.34	0.36
21.00	7.64	1.36	0.35
21.50	7.68	1.39	0.33
22.00	7.73	1.41	0.32
22.50	7.77	1.43	0.30
23.00	7.81	1.44	0.29
23.50	7.85	1.46	0.27
24.00	**7.88**	**1.48**	0.26
24.50	7.88	1.48	0.02
25.00	7.88	1.48	0.00
25.50	7.88	1.48	0.00
26.00	7.88	1.48	0.00
26.50	7.88	1.48	0.00
27.00	7.88	1.48	0.00
27.50	7.88	1.48	0.00
28.00	7.88	1.48	0.00
28.50	7.88	1.48	0.00
29.00	7.88	1.48	0.00
29.50	7.88	1.48	0.00
30.00	7.88	1.48	0.00
30.50	7.88	1.48	0.00
31.00	7.88	1.48	0.00
31.50	7.88	1.48	0.00
32.00	7.88	1.48	0.00
32.50	7.88	1.48	0.00
33.00	7.88	1.48	0.00
33.50	7.88	1.48	0.00
34.00	7.88	1.48	0.00
34.50	7.88	1.48	0.00
35.00	7.88	1.48	0.00
35.50	7.88	1.48	0.00
36.00	7.88	1.48	0.00
36.50	7.88	1.48	0.00
37.00	7.88	1.48	0.00
37.50	7.88	1.48	0.00
38.00	7.88	1.48	0.00
38.50	7.88	1.48	0.00
39.00	7.88	1.48	0.00
39.50	7.88	1.48	0.00
40.00	7.88	1.48	0.00

Summary for Subcatchment 2S: Watershed To Basin

House roofs to underground infiltration systems.

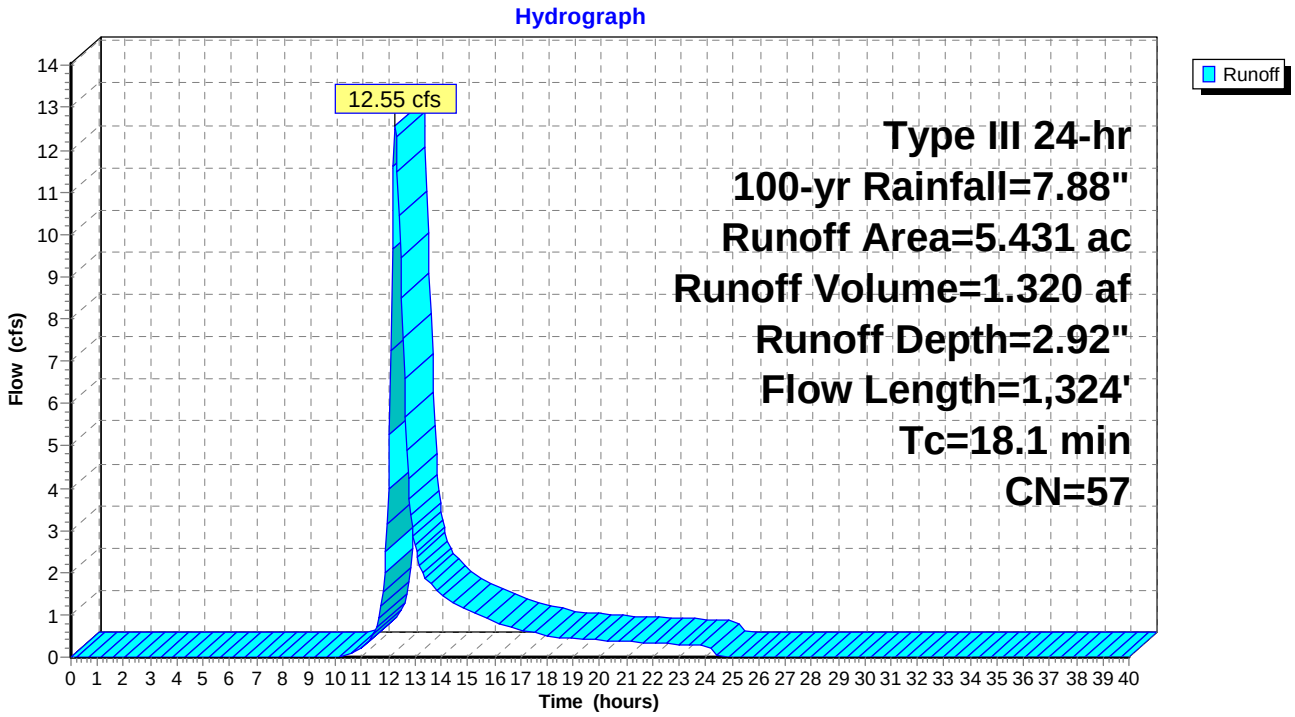
Runoff = 12.55 cfs @ 12.27 hrs, Volume= 1.320 af, Depth= 2.92"
Routed to Pond 3P : DetPond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=7.88"

	Area (ac)	CN	Description
*	0.760	98	Paved roads w/curbs & sewers
	1.950	39	>75% Grass cover, Good, HSG A
	2.050	61	>75% Grass cover, Good, HSG B
	0.001	80	>75% Grass cover, Good, HSG D
	0.220	30	Woods, Good, HSG A
	0.450	55	Woods, Good, HSG B
	5.431	57	Weighted Average
	4.671		86.01% Pervious Area
	0.760		13.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	70	0.0570	0.11		**Sheet Flow, Sheet Flow Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
2.2	30	0.2000	0.23		**Sheet Flow, Sheet Flow Grass** Grass: Dense n= 0.240 P2= 3.20"
1.2	161	0.0960	2.17		**Shallow Concentrated Flow, Shallow Grass** Short Grass Pasture Kv= 7.0 fps
1.2	308	0.0450	4.31		**Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps
2.9	755	0.0050	4.40	5.40	**Pipe Channel, Pipe** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
18.1	1,324	Total			

Subcatchment 2S: Watershed To Basin



Hydrograph for Subcatchment 2S: Watershed To Basin

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.04	0.00	0.00
1.00	0.08	0.00	0.00
1.50	0.12	0.00	0.00
2.00	0.16	0.00	0.00
2.50	0.20	0.00	0.00
3.00	0.24	0.00	0.00
3.50	0.29	0.00	0.00
4.00	0.34	0.00	0.00
4.50	0.39	0.00	0.00
5.00	0.45	0.00	0.00
5.50	0.51	0.00	0.00
6.00	0.57	0.00	0.00
6.50	0.64	0.00	0.00
7.00	0.71	0.00	0.00
7.50	0.80	0.00	0.00
8.00	0.90	0.00	0.00
8.50	1.01	0.00	0.00
9.00	1.15	0.00	0.00
9.50	1.31	0.00	0.00
10.00	1.49	0.00	0.00
10.50	1.71	0.01	0.05
11.00	1.97	0.03	0.22
11.50	2.35	0.08	0.59
12.00	3.94	0.59	**3.97**
12.50	5.53	1.40	**8.50**
13.00	5.91	1.62	2.65
13.50	6.17	1.78	1.79
14.00	6.39	1.92	1.50
14.50	6.57	2.03	1.28
15.00	6.73	2.14	1.14
15.50	6.87	2.23	0.99
16.00	6.98	2.30	0.83
16.50	7.08	2.37	0.72
17.00	7.17	2.42	0.65
17.50	7.24	2.48	0.58
18.00	7.31	2.52	0.51
18.50	7.37	2.57	0.46
19.00	7.43	2.61	0.44
19.50	7.49	2.64	0.42
20.00	7.54	2.68	0.40
20.50	7.59	2.72	0.38
21.00	7.64	2.75	0.37
21.50	7.68	2.78	0.35
22.00	7.73	2.81	0.33
22.50	7.77	2.84	0.32
23.00	7.81	2.87	0.30
23.50	7.85	2.89	0.28
24.00	**7.88**	**2.92**	0.27
24.50	7.88	2.92	0.02
25.00	7.88	2.92	0.00
25.50	7.88	2.92	0.00
26.00	7.88	2.92	0.00
26.50	7.88	2.92	0.00
27.00	7.88	2.92	0.00
27.50	7.88	2.92	0.00
28.00	7.88	2.92	0.00
28.50	7.88	2.92	0.00
29.00	7.88	2.92	0.00
29.50	7.88	2.92	0.00
30.00	7.88	2.92	0.00
30.50	7.88	2.92	0.00
31.00	7.88	2.92	0.00
31.50	7.88	2.92	0.00
32.00	7.88	2.92	0.00
32.50	7.88	2.92	0.00
33.00	7.88	2.92	0.00
33.50	7.88	2.92	0.00
34.00	7.88	2.92	0.00
34.50	7.88	2.92	0.00
35.00	7.88	2.92	0.00
35.50	7.88	2.92	0.00
36.00	7.88	2.92	0.00
36.50	7.88	2.92	0.00
37.00	7.88	2.92	0.00
37.50	7.88	2.92	0.00
38.00	7.88	2.92	0.00
38.50	7.88	2.92	0.00
39.00	7.88	2.92	0.00
39.50	7.88	2.92	0.00
40.00	7.88	2.92	0.00

Summary for Subcatchment 6S: Bypass Area

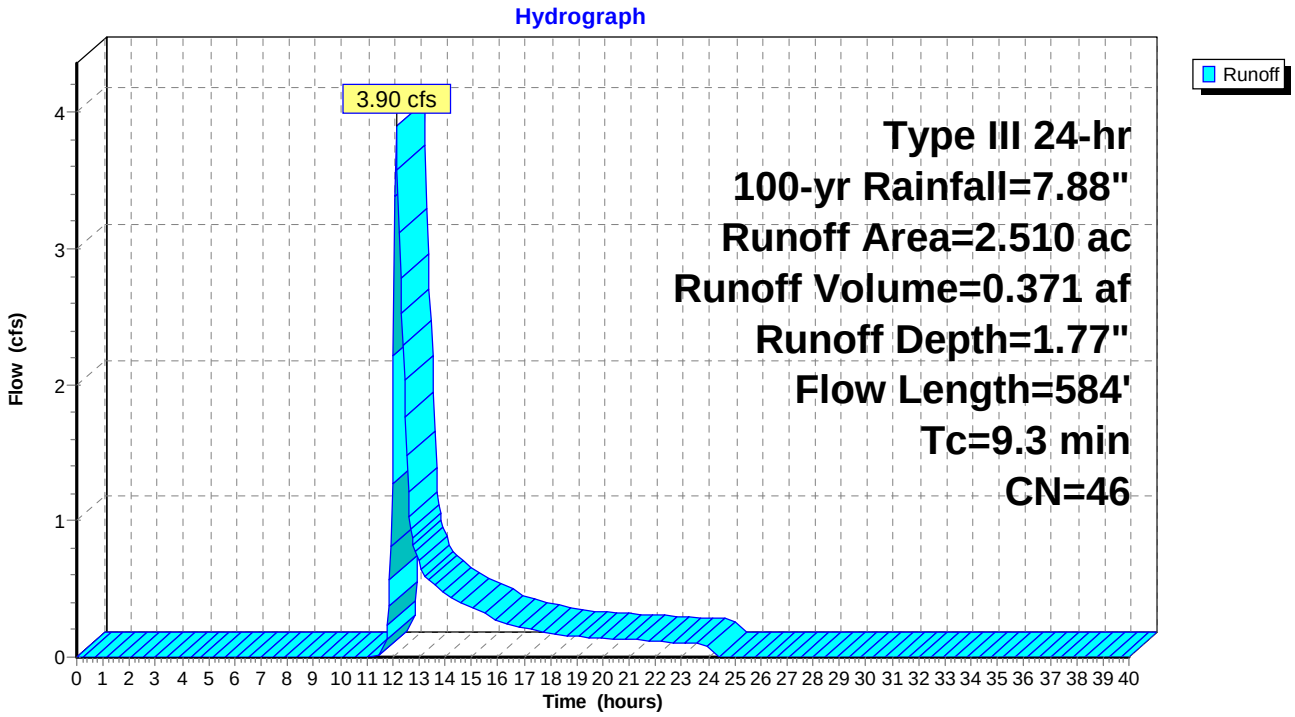
Runoff = 3.90 cfs @ 12.16 hrs, Volume= 0.371 af, Depth= 1.77"
Routed to Link 4L : Analysis Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=7.88"

Area (ac)	CN	Description
1.300	30	Woods, Good, HSG A
0.030	55	Woods, Good, HSG B
0.490	77	Woods, Good, HSG D
0.430	39	>75% Grass cover, Good, HSG A
0.110	61	>75% Grass cover, Good, HSG B
0.120	80	>75% Grass cover, Good, HSG D
0.030	98	Paved parking, HSG A
2.510	46	Weighted Average
2.480		98.80% Pervious Area
0.030		1.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	100	0.3600	0.25		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.20"
1.6	306	0.3900	3.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	178	0.0120	3.37	13.50	**Trap/Vee/Rect Channel Flow, Int stream** Bot.W=2.00' D=1.00' Z= 2.0 '/' Top.W=6.00' n= 0.035
9.3	584	Total			

Subcatchment 6S: Bypass Area



Hydrograph for Subcatchment 6S: Bypass Area

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.04	0.00	0.00
1.00	0.08	0.00	0.00
1.50	0.12	0.00	0.00
2.00	0.16	0.00	0.00
2.50	0.20	0.00	0.00
3.00	0.24	0.00	0.00
3.50	0.29	0.00	0.00
4.00	0.34	0.00	0.00
4.50	0.39	0.00	0.00
5.00	0.45	0.00	0.00
5.50	0.51	0.00	0.00
6.00	0.57	0.00	0.00
6.50	0.64	0.00	0.00
7.00	0.71	0.00	0.00
7.50	0.80	0.00	0.00
8.00	0.90	0.00	0.00
8.50	1.01	0.00	0.00
9.00	1.15	0.00	0.00
9.50	1.31	0.00	0.00
10.00	1.49	0.00	0.00
10.50	1.71	0.00	0.00
11.00	1.97	0.00	0.00
11.50	2.35	0.00	0.00
12.00	3.94	0.19	**1.27**
12.50	5.53	0.68	**1.76**
13.00	5.91	0.83	0.69
13.50	6.17	0.94	0.55
14.00	6.39	1.04	0.46
14.50	6.57	1.12	0.41
15.00	6.73	1.19	0.36
15.50	6.87	1.26	0.32
16.00	6.98	1.31	0.27
16.50	7.08	1.36	0.24
17.00	7.17	1.40	0.21
17.50	7.24	1.44	0.19
18.00	7.31	1.48	0.17
18.50	7.37	1.51	0.16
19.00	7.43	1.54	0.15
19.50	7.49	1.57	0.14
20.00	7.54	1.59	0.14
20.50	7.59	1.62	0.13
21.00	7.64	1.64	0.13
21.50	7.68	1.67	0.12
22.00	7.73	1.69	0.12
22.50	7.77	1.71	0.11
23.00	7.81	1.73	0.10
23.50	7.85	1.75	0.10
24.00	**7.88**	**1.77**	0.09
24.50	7.88	1.77	0.00
25.00	7.88	1.77	0.00
25.50	7.88	1.77	0.00
26.00	7.88	1.77	0.00
26.50	7.88	1.77	0.00
27.00	7.88	1.77	0.00
27.50	7.88	1.77	0.00
28.00	7.88	1.77	0.00
28.50	7.88	1.77	0.00
29.00	7.88	1.77	0.00
29.50	7.88	1.77	0.00
30.00	7.88	1.77	0.00
30.50	7.88	1.77	0.00
31.00	7.88	1.77	0.00
31.50	7.88	1.77	0.00
32.00	7.88	1.77	0.00
32.50	7.88	1.77	0.00
33.00	7.88	1.77	0.00
33.50	7.88	1.77	0.00
34.00	7.88	1.77	0.00
34.50	7.88	1.77	0.00
35.00	7.88	1.77	0.00
35.50	7.88	1.77	0.00
36.00	7.88	1.77	0.00
36.50	7.88	1.77	0.00
37.00	7.88	1.77	0.00
37.50	7.88	1.77	0.00
38.00	7.88	1.77	0.00
38.50	7.88	1.77	0.00
39.00	7.88	1.77	0.00
39.50	7.88	1.77	0.00
40.00	7.88	1.77	0.00

Summary for Pond 3P: DetPond

Inflow Area = 5.431 ac, 13.99% Impervious, Inflow Depth = 2.92" for 100-yr event
Inflow = 12.55 cfs @ 12.27 hrs, Volume= 1.320 af
Outflow = 5.30 cfs @ 12.67 hrs, Volume= 1.165 af, Atten= 58%, Lag= 24.5 min
Primary = 5.30 cfs @ 12.67 hrs, Volume= 1.165 af
Routed to Link 4L : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs
Peak Elev= 99.25' @ 12.67 hrs Surf.Area= 6,784 sf Storage= 18,892 cf

Plug-Flow detention time= 125.9 min calculated for 1.163 af (88% of inflow)
Center-of-Mass det. time= 71.4 min (936.5 - 865.0)

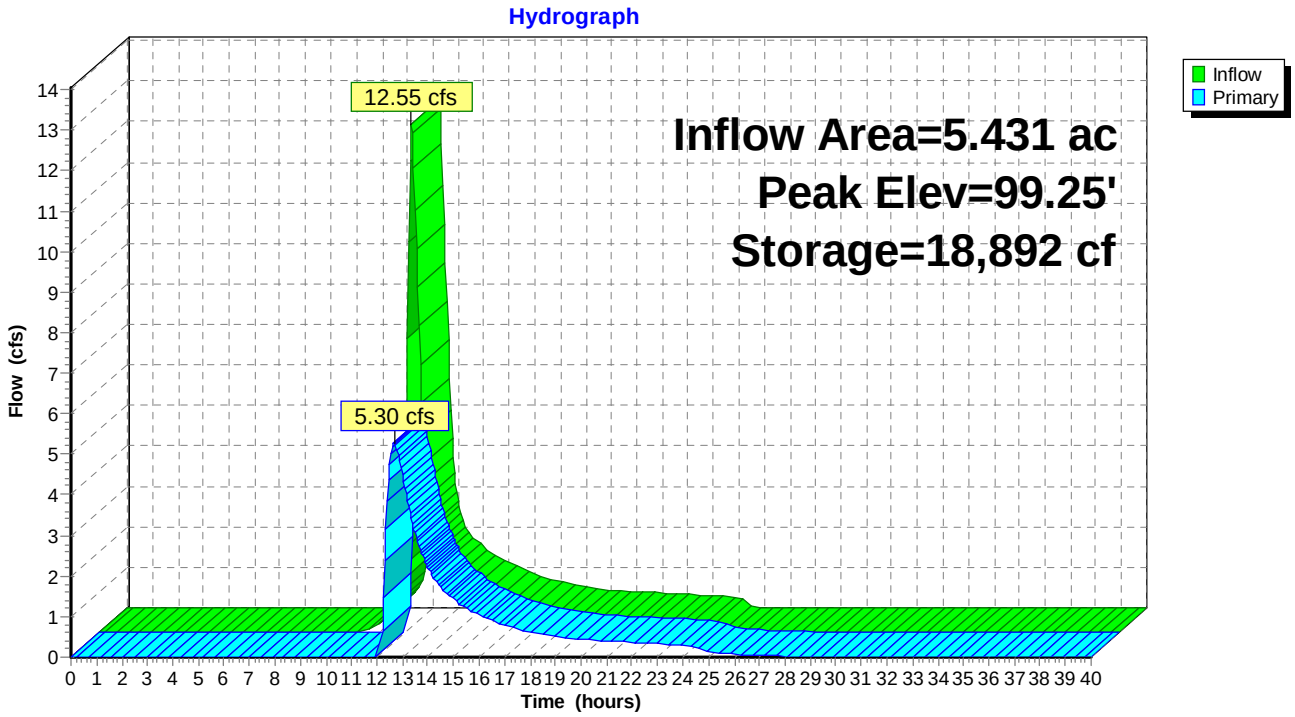
Volume	Invert	Avail.Storage	Storage Description
#1	94.00'	24,410 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
94.00	1,107	174.0	0	0	1,107
96.00	2,850	235.0	3,822	3,822	3,134
98.00	4,985	299.0	7,736	11,558	5,906
99.00	6,430	358.0	5,692	17,251	9,008
100.00	7,914	384.0	7,159	24,410	10,587

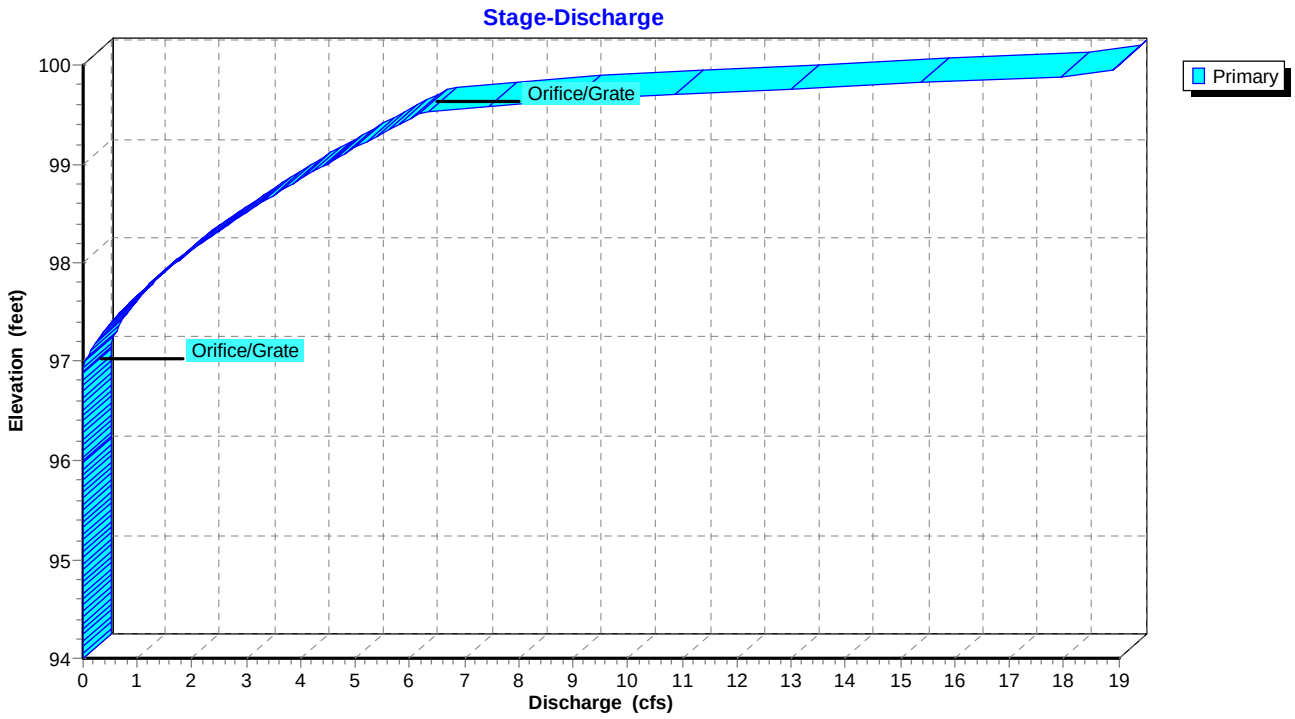
Device	Routing	Invert	Outlet Devices
#1	Primary	93.00'	**18.0" Round Culvert** L= 120.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 93.00' / 92.40' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	96.90'	**5.5" W x 31.2" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	99.50'	**36.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.28 cfs @ 12.67 hrs HW=99.25' (Free Discharge)
↑└**1=Culvert** (Passes 5.28 cfs of 17.80 cfs potential flow)
↑├**2=Orifice/Grate** (Orifice Controls 5.28 cfs @ 4.92 fps)
└**3=Orifice/Grate** (Controls 0.00 cfs)

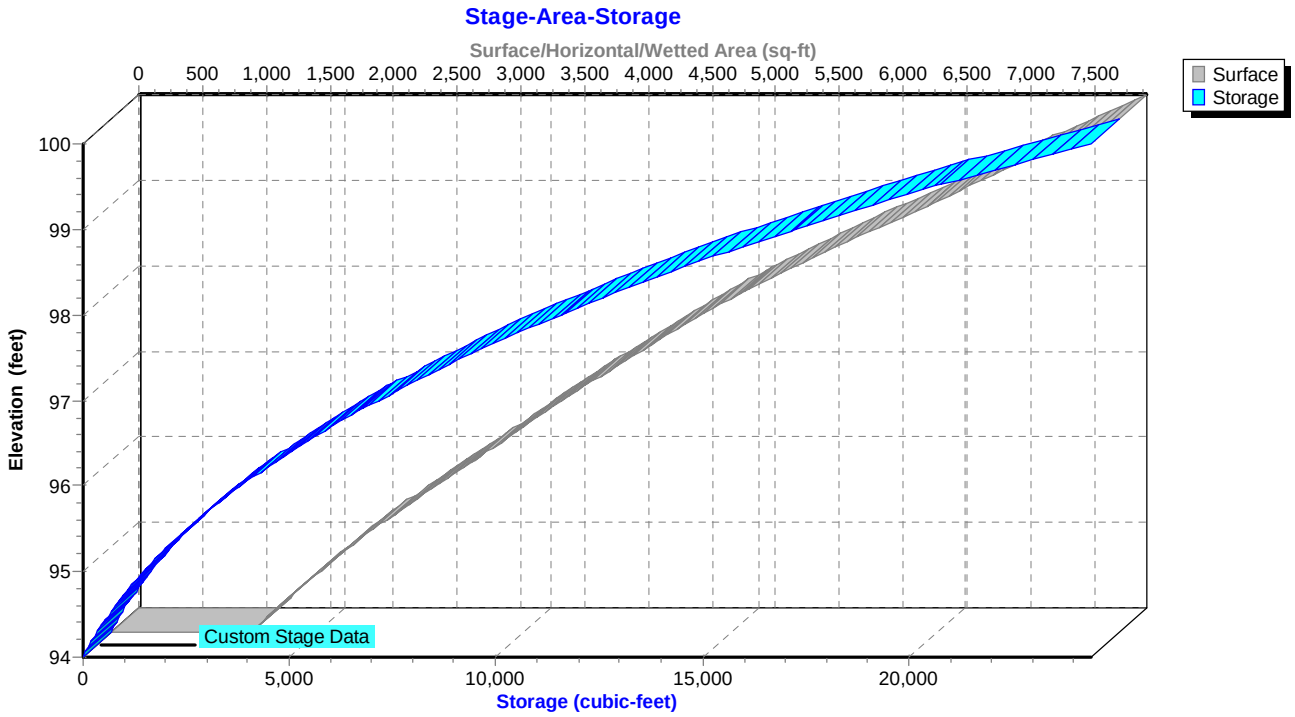
Pond 3P: DetPond



Pond 3P: DetPond



Pond 3P: DetPond



Hydrograph for Pond 3P: DetPond

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	94.00	0.00
1.00	0.00	0	94.00	0.00
2.00	0.00	0	94.00	0.00
3.00	0.00	0	94.00	0.00
4.00	0.00	0	94.00	0.00
5.00	0.00	0	94.00	0.00
6.00	0.00	0	94.00	0.00
7.00	0.00	0	94.00	0.00
8.00	0.00	0	94.00	0.00
9.00	0.00	0	94.00	0.00
10.00	0.00	0	94.00	0.00
11.00	0.22	252	94.21	0.00
12.00	**3.97**	**3,775**	**95.98**	**0.00**
13.00	**2.65**	**17,296**	**99.01**	**4.50**
14.00	1.50	12,661	98.21	2.22
15.00	1.14	10,972	97.88	1.43
16.00	0.83	10,105	97.70	1.05
17.00	0.65	9,465	97.56	0.78
18.00	0.51	9,043	97.46	0.62
19.00	0.44	8,729	97.39	0.50
20.00	0.40	8,555	97.35	0.44
21.00	0.37	8,427	97.32	0.40
22.00	0.33	8,324	97.29	0.36
23.00	0.30	8,225	97.27	0.33
24.00	0.27	8,124	97.24	0.30
25.00	0.00	7,578	97.11	0.14
26.00	0.00	7,237	97.02	0.06
27.00	0.00	7,072	96.98	0.03
28.00	0.00	6,979	96.95	0.02
29.00	0.00	6,925	96.94	0.01
30.00	0.00	6,888	96.93	0.01
31.00	0.00	6,861	96.92	0.01
32.00	0.00	6,841	96.92	0.00
33.00	0.00	6,825	96.91	0.00
34.00	0.00	6,813	96.91	0.00
35.00	0.00	6,805	96.91	0.00
36.00	0.00	6,798	96.91	0.00
37.00	0.00	6,793	96.90	0.00
38.00	0.00	6,789	96.90	0.00
39.00	0.00	6,786	96.90	0.00
40.00	0.00	6,784	96.90	0.00

Stage-Discharge for Pond 3P: DetPond

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
94.00	0.00	96.70	0.00	99.40	5.82
94.05	0.00	96.75	0.00	99.45	5.99
94.10	0.00	96.80	0.00	99.50	6.17
94.15	0.00	96.85	0.00	99.55	6.84
94.20	0.00	96.90	0.00	99.60	7.93
94.25	0.00	96.95	0.02	99.65	9.28
94.30	0.00	97.00	0.05	99.70	10.86
94.35	0.00	97.05	0.09	99.75	12.62
94.40	0.00	97.10	0.13	99.80	14.55
94.45	0.00	97.15	0.18	99.85	16.63
94.50	0.00	97.20	0.24	99.90	18.85
94.55	0.00	97.25	0.30	99.95	18.93
94.60	0.00	97.30	0.37	100.00	**19.01**
94.65	0.00	97.35	0.44		
94.70	0.00	97.40	0.52		
94.75	0.00	97.45	0.60		
94.80	0.00	97.50	0.68		
94.85	0.00	97.55	0.77		
94.90	0.00	97.60	0.86		
94.95	0.00	97.65	0.96		
95.00	0.00	97.70	1.05		
95.05	0.00	97.75	1.15		
95.10	0.00	97.80	1.26		
95.15	0.00	97.85	1.36		
95.20	0.00	97.90	1.47		
95.25	0.00	97.95	1.58		
95.30	0.00	98.00	1.70		
95.35	0.00	98.05	1.81		
95.40	0.00	98.10	1.93		
95.45	0.00	98.15	2.06		
95.50	0.00	98.20	2.18		
95.55	0.00	98.25	2.31		
95.60	0.00	98.30	2.44		
95.65	0.00	98.35	2.57		
95.70	0.00	98.40	2.70		
95.75	0.00	98.45	2.84		
95.80	0.00	98.50	2.98		
95.85	0.00	98.55	3.12		
95.90	0.00	98.60	3.26		
95.95	0.00	98.65	3.41		
96.00	0.00	98.70	3.55		
96.05	0.00	98.75	3.70		
96.10	0.00	98.80	3.85		
96.15	0.00	98.85	4.01		
96.20	0.00	98.90	4.16		
96.25	0.00	98.95	4.32		
96.30	0.00	99.00	4.48		
96.35	0.00	99.05	4.64		
96.40	0.00	99.10	4.80		
96.45	0.00	99.15	4.97		
96.50	0.00	99.20	5.13		
96.55	0.00	99.25	5.30		
96.60	0.00	99.30	5.47		
96.65	0.00	99.35	5.64		

Stage-Area-Storage for Pond 3P: DetPond

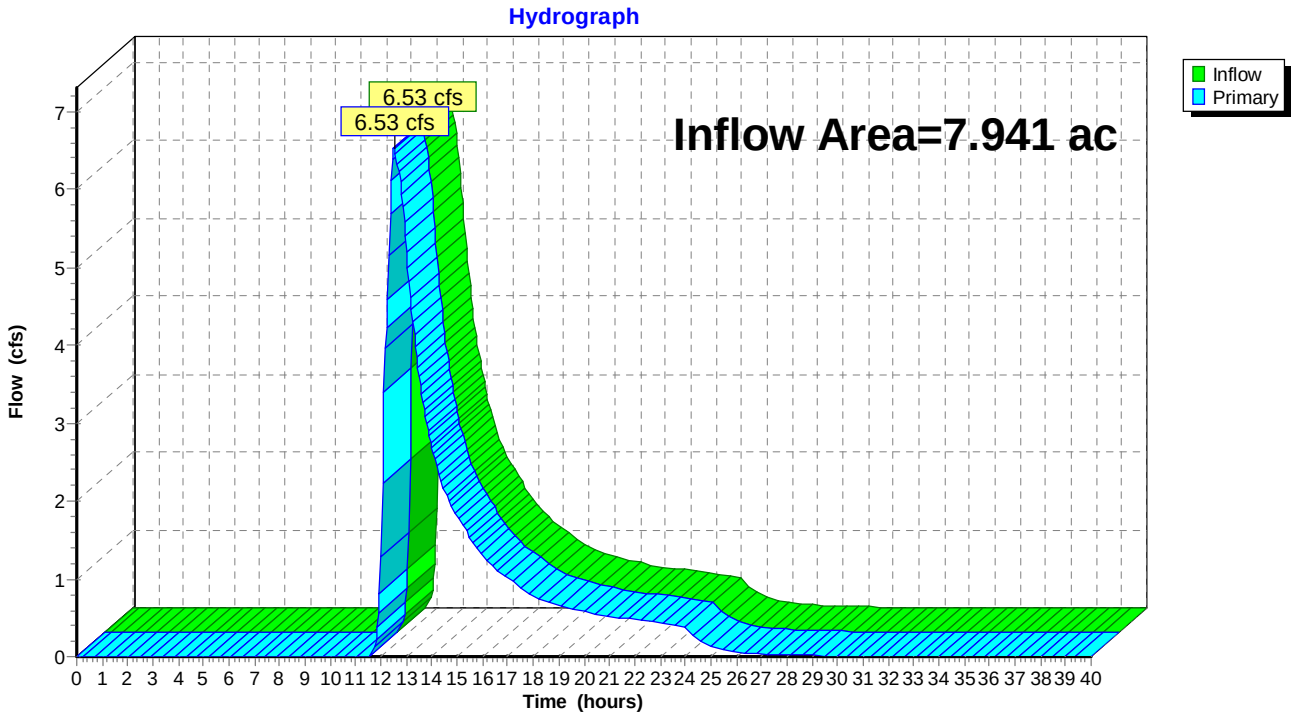
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
94.00	1,107	0
94.10	1,175	114
94.20	1,245	235
94.30	1,317	363
94.40	1,391	498
94.50	1,467	641
94.60	1,545	792
94.70	1,625	950
94.80	1,707	1,117
94.90	1,791	1,292
95.00	1,877	1,475
95.10	1,966	1,667
95.20	2,056	1,868
95.30	2,148	2,079
95.40	2,242	2,298
95.50	2,338	2,527
95.60	2,437	2,766
95.70	2,537	3,015
95.80	2,639	3,273
95.90	2,744	3,542
96.00	2,850	3,822
96.10	2,943	4,112
96.20	3,037	4,411
96.30	3,132	4,719
96.40	3,230	5,037
96.50	3,328	5,365
96.60	3,428	5,703
96.70	3,530	6,051
96.80	3,633	6,409
96.90	3,737	6,777
97.00	3,843	7,156
97.10	3,951	7,546
97.20	4,060	7,947
97.30	4,170	8,358
97.40	4,282	8,781
97.50	4,396	9,215
97.60	4,511	9,660
97.70	4,627	10,117
97.80	4,745	10,585
97.90	4,864	11,066
98.00	4,985	11,558
98.10	5,121	12,064
98.20	5,259	12,583
98.30	5,399	13,116
98.40	5,541	13,663
98.50	5,685	14,224
98.60	5,830	14,799
98.70	5,977	15,390
98.80	6,126	15,995
98.90	6,277	16,615
99.00	6,430	17,251
99.10	6,571	17,901
99.20	6,714	18,565
99.30	6,859	19,244
99.40	7,005	19,937
99.50	7,153	20,645
99.60	7,302	21,367
99.70	7,453	22,105
99.80	7,605	22,858
99.90	7,759	23,626
100.00	**7,914**	**24,410**

Summary for Link 4L: Analysis Point

Inflow Area = 7.941 ac, 9.95% Impervious, Inflow Depth = 2.32" for 100-yr event
Inflow = 6.53 cfs @ 12.52 hrs, Volume= 1.535 af
Primary = 6.53 cfs @ 12.52 hrs, Volume= 1.535 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.05 hrs

Link 4L: Analysis Point



Hydrograph for Link 4L: Analysis Point

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	27.00	0.03	0.00	0.03
0.50	0.00	0.00	0.00	27.50	0.03	0.00	0.03
1.00	0.00	0.00	0.00	28.00	0.02	0.00	0.02
1.50	0.00	0.00	0.00	28.50	0.01	0.00	0.01
2.00	0.00	0.00	0.00	29.00	0.01	0.00	0.01
2.50	0.00	0.00	0.00	29.50	0.01	0.00	0.01
3.00	0.00	0.00	0.00	30.00	0.01	0.00	0.01
3.50	0.00	0.00	0.00	30.50	0.01	0.00	0.01
4.00	0.00	0.00	0.00	31.00	0.01	0.00	0.01
4.50	0.00	0.00	0.00	31.50	0.01	0.00	0.01
5.00	0.00	0.00	0.00	32.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	32.50	0.00	0.00	0.00
6.00	0.00	0.00	0.00	33.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	33.50	0.00	0.00	0.00
7.00	0.00	0.00	0.00	34.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	34.50	0.00	0.00	0.00
8.00	0.00	0.00	0.00	35.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00	35.50	0.00	0.00	0.00
9.00	0.00	0.00	0.00	36.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	36.50	0.00	0.00	0.00
10.00	0.00	0.00	0.00	37.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00	37.50	0.00	0.00	0.00
11.00	0.00	0.00	0.00	38.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00	38.50	0.00	0.00	0.00
12.00	1.27	0.00	1.27	39.00	0.00	0.00	0.00
12.50	**6.51**	0.00	**6.51**	39.50	0.00	0.00	0.00
13.00	5.19	0.00	5.19	40.00	0.00	0.00	0.00
13.50	3.60	0.00	3.60				
14.00	2.68	0.00	2.68				
14.50	2.13	0.00	2.13				
15.00	1.79	0.00	1.79				
15.50	1.54	0.00	1.54				
16.00	1.31	0.00	1.31				
16.50	1.13	0.00	1.13				
17.00	1.00	0.00	1.00				
17.50	0.89	0.00	0.89				
18.00	0.79	0.00	0.79				
18.50	0.71	0.00	0.71				
19.00	0.65	0.00	0.65				
19.50	0.61	0.00	0.61				
20.00	0.58	0.00	0.58				
20.50	0.55	0.00	0.55				
21.00	0.52	0.00	0.52				
21.50	0.50	0.00	0.50				
22.00	0.48	0.00	0.48				
22.50	0.45	0.00	0.45				
23.00	0.43	0.00	0.43				
23.50	0.41	0.00	0.41				
24.00	0.39	0.00	0.39				
24.50	0.23	0.00	0.23				
25.00	0.14	0.00	0.14				
25.50	0.09	0.00	0.09				
26.00	0.06	0.00	0.06				
26.50	0.04	0.00	0.04				

6.2 - CATCH BASIN DRAINAGE AREAS, PIPE SIZING

PROJECT: 1040 Main Street

PROJECT NO.:

TOWN: Glastonbury, CT

ROUTE: Carson Way

LOCATION: See Below

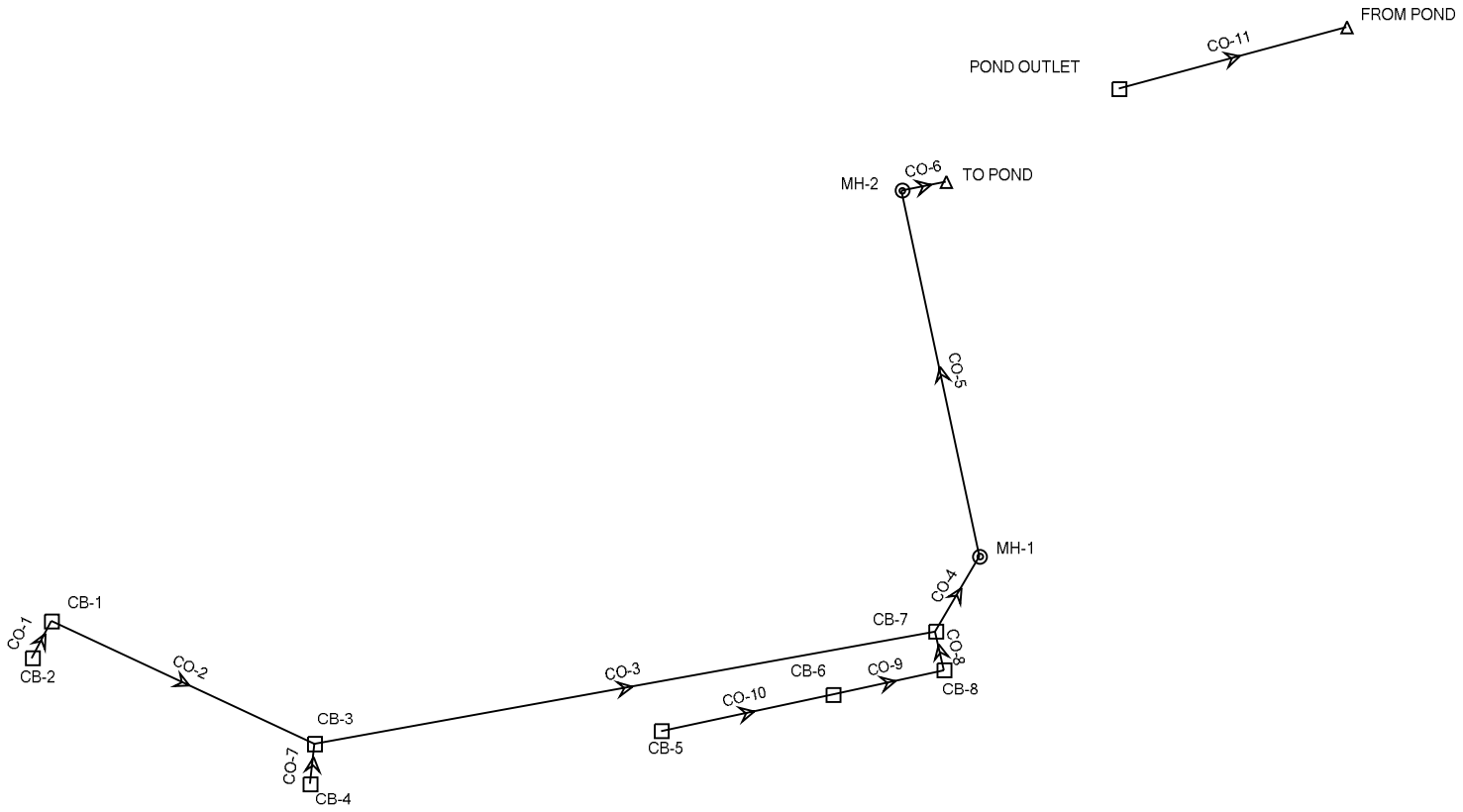
DESIGNED BY: RPW DATE: 05/26/21

CHECKED BY: RPW DATE: 05/26/21

Inlet	Total Area (Sq. Ft.)	Total Area (Acres)	Weighted Coef.	AC
CB-1	9,742	0.224	0.40	0.090
CB-2	15,956	0.366	0.39	0.144
CB-3	9,782	0.225	0.39	0.088
CB-4	31,232	0.717	0.368	0.264
CB-5	2,994	0.069	0.556	0.038
CB-6	25,930	0.595	0.358	0.213
CB-7 West	16,120	0.370	0.38	0.140
CB-7 East	6,643	0.153	0.62	0.094
CB-7 Total	22,763	0.523	0.45	0.234
CB-8 West	11,779	0.270	0.425	0.115
CB-8 East	28,599	0.657	0.418	0.274
CB-8 Total	40,378	0.927	0.42	0.389

Pavement Area (Sq. Ft.)	Coef.	Wooded Area (Sq. Ft.)	Coef.	Grass Area (Sq. Ft.)	Coef.
1,692	0.9	0	0.2	8,050	0.3
2,454	0.9	0	0.2	13,502	0.3
1,464	0.9	0	0.2	8,318	0.3
4,092	0.9	3,352	0.2	23,788	0.3
1,275	0.9	0	0.2	1,719	0.3
2,796	0.9	1,747	0.2	21,387	0.3
2,074	0.9	0	0.2	14,046	0.3
3,530	0.9	0	0.2	3,113	0.3
5,604	0.9	0	0.2	17,159	0.3
2,638	0.9	1,149	0.2	7,992	0.3
6,028	0.9	2,491	0.2	20,080	0.3
8,666	0.9	3,640	0.2	28,072	0.3

Scenario: 1040 Main Street (10 year)



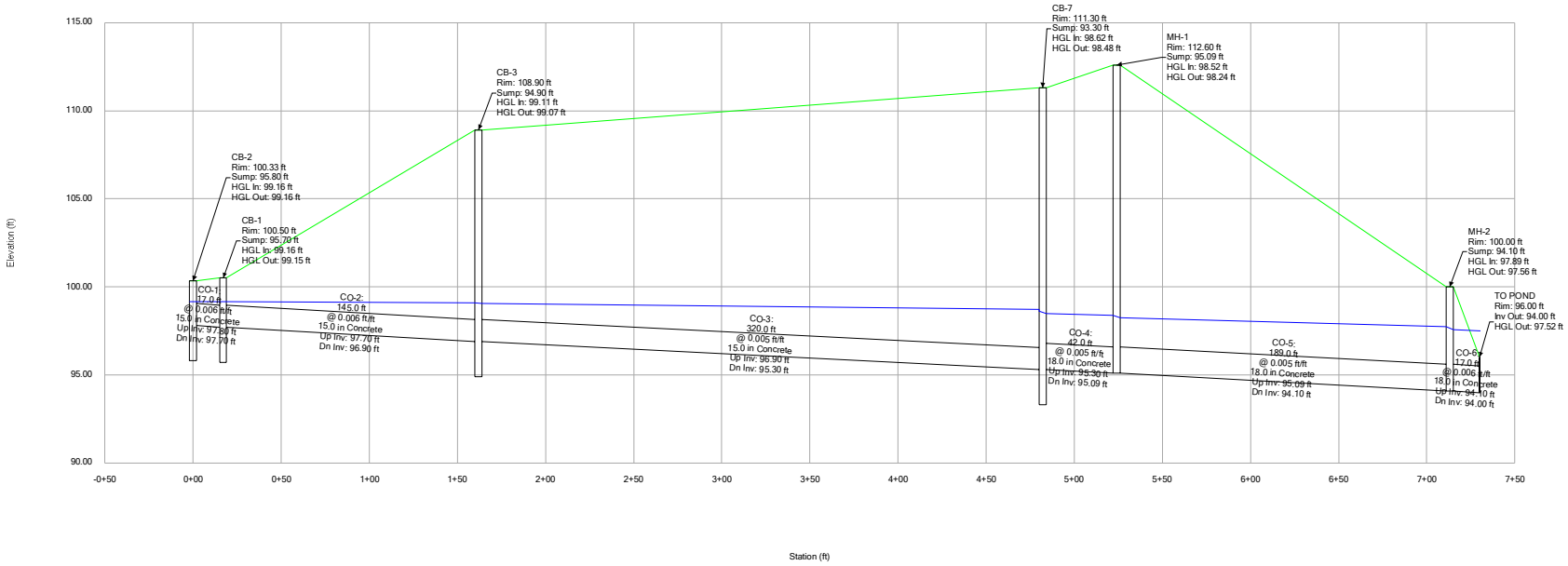
Conduit FlexTable: Storm Drain Analysis

Label	Start Node	Stop Node	Length (Unified) (ft)	System CA (acres)	Time (Pipe Flow) (min)	System Flow Time (min)	System Intensity (in/h)	System Rational Flow (ft^3/s)	Capacity (Full Flow) (ft^3/s)	Conduit Description	Manning's n	Slope (Calculated) (ft/ft)	Velocity (ft/s)	Invert (Start) (ft)	Invert (Stop) (ft)	Elevation Ground (Start) (ft)	Elevation Ground (Stop) (ft)
CO-1	CB-2	CB-1	17.0	0.137	0.476	10.000	5.290	0.73	4.95	Circle - 15.0 in	0.013	0.006	0.60	97.80	97.70	100.33	100.50
CO-2	CB-1	CB-3	145.0	0.212	2.678	10.476	5.181	1.11	4.80	Circle - 15.0 in	0.013	0.006	0.90	97.70	96.90	100.50	108.90
CO-3	CB-3	CB-7	320.0	0.454	3.129	13.154	4.571	2.09	4.57	Circle - 15.0 in	0.013	0.005	1.70	96.90	95.30	108.90	111.30
CO-4	CB-7	MH-1	42.0	1.327	0.229	16.283	4.035	5.40	7.43	Circle - 18.0 in	0.013	0.005	3.05	95.30	95.09	111.30	112.60
CO-5	MH-1	MH-2	189.0	1.327	1.037	16.513	4.014	5.37	7.60	Circle - 18.0 in	0.013	0.005	3.04	95.09	94.10	112.60	100.00
CO-6	MH-2	TO POND	17.0	1.327	0.095	17.549	3.921	5.24	8.06	Circle - 18.0 in	0.013	0.006	2.97	94.10	94.00	100.00	96.00
CO-7	CB-4	CB-3	21.0	0.168	0.094	10.000	5.290	0.90	3.48	Circle - 12.0 in	0.013	0.010	3.71	105.40	105.20	108.90	108.90
CO-8	CB-8	CB-7	17.0	0.643	0.050	10.205	5.243	3.40	7.01	Circle - 15.0 in	0.013	0.012	5.67	107.80	107.60	111.30	111.30
CO-11	POND OUTLET	FROM POND	120.0	1.064	0.432	10.000	5.290	5.67	7.43	Circle - 18.0 in	0.013	0.005	4.63	93.00	92.40	99.50	94.00
CO-10	CB-5	CB-6	90.0	0.031	0.473	5.000	7.460	0.23	9.14	Circle - 15.0 in	0.013	0.020	3.17	110.20	108.40	113.80	111.90
CO-9	CB-6	CB-8	48.0	0.153	0.205	10.000	5.290	0.82	7.22	Circle - 15.0 in	0.013	0.013	3.90	108.40	107.80	111.90	111.30

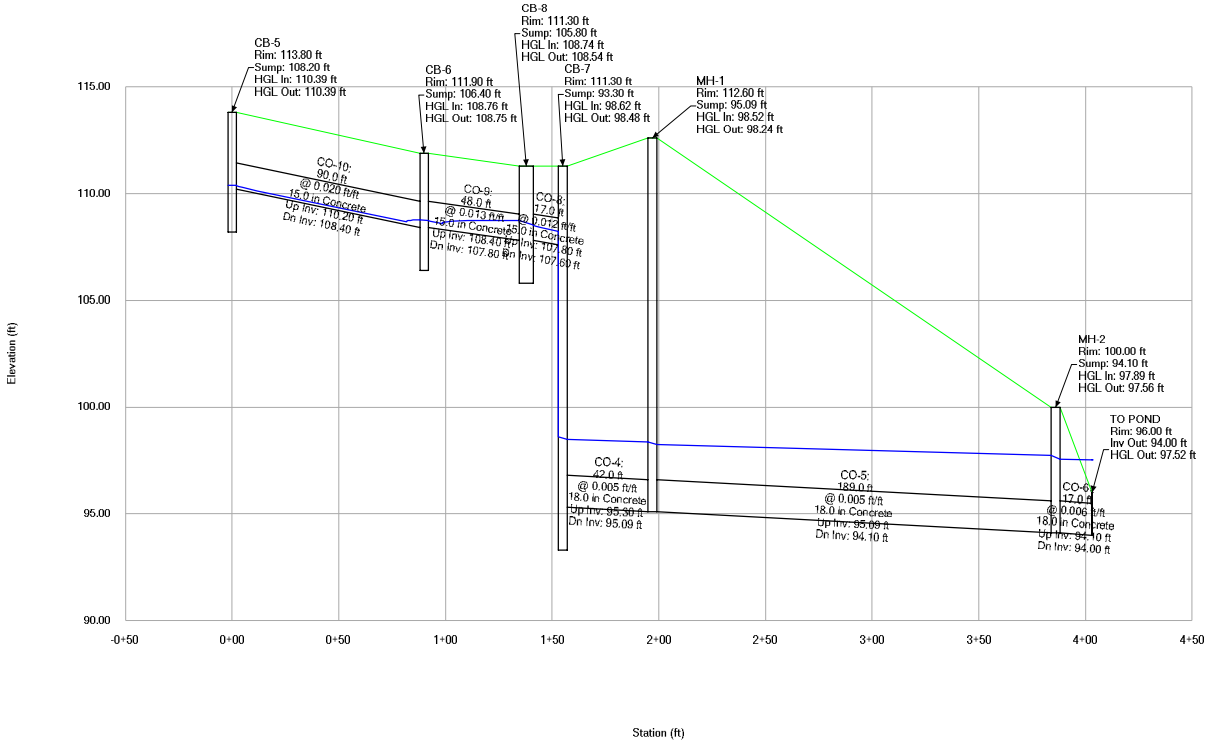
Conduit FlexTable: HGL Report

Label	Start Node	Stop Node	Conduit Description	Flow (ft^3/s)	Length (Unified) (ft)	Velocity (In) (ft/s)	Velocity (Out) (ft/s)	Velocity Head (Out) (ft)	Velocity Head (Downstream Conduit) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Elevation Ground (Start) (ft)	Elevation Ground (Stop) (ft)
CO-1	CB-2	CB-1	Circle - 15.0 in	0.73	17.0	0.60	0.60	0.01	0.01	99.17	99.17	99.16	99.16	100.33	100.50
CO-2	CB-1	CB-3	Circle - 15.0 in	1.11	145.0	0.90	0.90	0.01	0.05	99.16	99.12	99.15	99.11	100.50	108.90
CO-3	CB-3	CB-7	Circle - 15.0 in	2.09	320.0	1.70	1.70	0.05	0.14	99.12	98.78	99.07	98.74	108.90	111.30
CO-4	CB-7	MH-1	Circle - 18.0 in	5.40	42.0	3.05	3.05	0.14	0.14	98.63	98.52	98.48	98.37	111.30	112.60
CO-5	MH-1	MH-2	Circle - 18.0 in	5.37	189.0	3.04	3.04	0.14	0.14	98.38	97.89	98.24	97.75	112.60	100.00
CO-6	MH-2	TO POND	Circle - 18.0 in	5.24	17.0	2.97	2.97	0.14	(N/A)	97.70	97.66	97.56	97.52	100.00	96.00
CO-7	CB-4	CB-3	Circle - 12.0 in	0.90	21.0	3.09	3.71	0.21	0.05	105.94	105.76	105.80	105.55	108.90	108.90
CO-8	CB-8	CB-7	Circle - 15.0 in	3.40	17.0	4.47	5.45	0.46	0.14	108.85	108.69	108.54	108.23	111.30	111.30
CO-11	POND OUTLET	FROM POND	Circle - 18.0 in	5.67	120.0	4.63	5.00	0.39	(N/A)	94.31	93.71	93.98	93.32	99.50	94.00
CO-10	CB-5	CB-6	Circle - 15.0 in	0.23	90.0	2.04	0.79	0.01	0.13	110.45	108.77	110.39	108.76	113.80	111.90
CO-9	CB-6	CB-8	Circle - 15.0 in	0.82	48.0	2.85	0.82	0.01	0.31	108.88	108.75	108.75	108.74	111.90	111.30

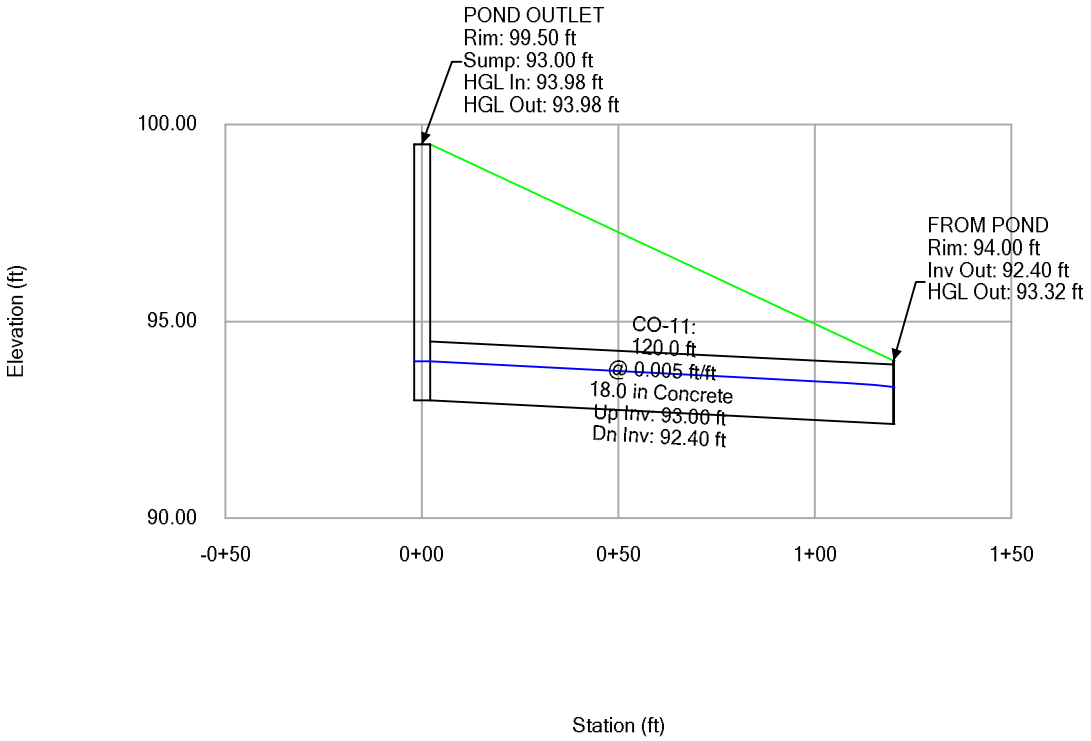
Profile Report
Engineering Profile - Profile - 1 (1040 Main Street.stsw)



Profile Report
Engineering Profile - Profile - 2 (1040 Main Street.stsw)



Profile Report
Engineering Profile - Profile - 3 (1040 Main Street.stsw)



6.3 - GUTTER FLOW ANALYSIS, LOW POINT ANALYSIS

PROJECT: 1040 Main Street
PROJECT NO.:
TOWN: Glastonbury, CT
ROUTE: Carson Way
LOCATION: See Below

DESIGNED BY: RPW DATE: 05/26/21
CHECKED BY: RPW DATE: 05/26/21

GUTTER FLOW ANALYSIS - 10 YR STORM

Inlet ID	Inlet Station and Offset	Area in Acres (A)	Runoff Coeff. (C)	Time to Inlet (min.)	Rainfall Intensity (in/hr)	AC	Total AC	Q to Inlet (cfs)	Grade of Gutter ft/ft (S_L)	Cross Slope Of Shoulder ft/ft (S_x)	Depth of Flow of Gutter (ft)	Gutter Flow Width (ft)	Q Bypassing Inlet (cfs)	AC Bypassing Inlet	AC Entering Catch Basin	Inlet Type
Carson Way - North Gutter from High Point Sta. 3+57 to CB at Sta. 0+60																
CB-3	2+15 11' LT	0.225	0.39	10	5.29	0.088	0.088	0.464	0.075	0.03125	0.088	2.815	0.074	0.014	0.074	"C" CB
CB-1	0+60 11' LT	0.224	0.40	10	5.29	0.090	0.104	0.548	0.030	0.03125	0.111	3.558	0.151	0.029	0.075	"C" CB
Carson Way - South Gutter from High Point Sta. 3+57 to CB at Sta. 0+60																
CB-4	2+15 11' RT	0.717	0.37	10	5.29	0.264	0.264	1.396	0.075	0.03125	0.133	4.254	0.507	0.096	0.168	"C" CB
CB-2	0+60 11' RT	0.366	0.39	10	5.29	0.143	0.239	1.266	0.030	0.03125	0.152	4.870	0.540	0.102	0.137	"C" CB
Carson Way - South Gutter from High Point Sta. 3+57 to Low Point at Sta. 5+44																
CB-5	3+95 11' RT	0.069	0.56	5	7.46	0.038	0.038	0.286	0.020	0.03125	0.094	3.009	0.055	0.007	0.031	"C" CB
CB-6	4+90 11' RT	0.595	0.36	10	5.29	0.213	0.220	1.166	0.020	0.03125	0.159	5.095	0.521	0.098	0.122	"C" CB
CB-8	5+44 11' RT	0.270	0.43	10	5.29	0.115	0.213	1.128	0.020	0.03125	0.157	5.032	Low-Point			"C" CB
Carson Way - South Gutter from Cul-De-Sac to Low Point Sta. 5+44																
CB-8	5+44 11' RT	0.657	0.42	10	5.29	0.275	0.275	1.453	0.030	0.03125	0.160	5.128	Low-Point			"C" CB
Carson Way - North Gutter from High Point Sta. 3+57 to Low Point at Sta. 5+44																
CB-7	5+44 11' LT	0.370	0.38	10	5.29	0.141	0.141	0.744	0.010	0.03125	0.153	4.902	Low-Point			"C" CB
Carson Way - North Gutter from Cul-De-Sac to Low Point Sta. 5+44																
CB-7	5+44 11' LT	0.153	0.62	10	5.29	0.095	0.095	0.502	0.015	0.03125	0.122	3.920	Low-Point			"C" CB

Notes:
1.) Manning's n = 0.016 (asphalt).

PROJECT: 1040 Main Street

PROJECT NO.:

TOWN: Glastonbury, CT

ROUTE: Carson Way

LOCATION: See Below

DESIGNED BY: RPW DATE: 05/26/21

CHECKED BY: RPW DATE: 05/26/21

GUTTER FLOW ANALYSIS AT LOW POINT (10 YEAR)

ID Number	Inlet Station & Offset	Area In Acres (A)	Runoff Coeff. (C)	Time to Inlet (min.)	Rainfall Intensity (in/hr)	A*C	A*C Bypassing Previous Inlet		Total A*C	Total Q to Low Point Inlet (cfs)	Cross Slope of Shoulder (ft/ft)	Depth of Flow of Gutter (ft)		Width of Flow (ft)	Remarks
							Left	Right				Weir	Orifice		
Brewer Street															
CB-8	5+44 11' RT	0.927	0.42	10	5.29	0.39	0.098	0	0.49	2.58	0.031	0.24	0.01	7.7	use type "c" cb dbl type 2
CB-7	5+44 11' LT	0.523	0.45	10	5.29	0.23	0	0	0.23	1.24	0.031	0.19	0.01	6.1	use type "c" cb

7.0 - WATER QUALITY CALCULATIONS

	WOLFF ENGINEERING						Project	
	COMPUTATION SHEET						Made By:	RPW
Subject:	**1040 Main Street Glastonbury**						Date:	4/1/2021
							Chkd by:	SDG
							Date:	4/10/2021

WATER QUALITY VOLUME, (WQV)

Contributing On-site Areas To Basin	Wooded Area (acres)	Grass Area (acres)	Paved Area (acres)	Total Area (acres)	Description
1	0.67	4.0	0.760	5.430	Drainage Area
Total	0.670	4.000	0.760	5.430	

Equation 10.31: WQV = (1")(R)(A)/12

I = % of Impervious Cover =	14.0%		
R = volumetric runoff coeff. 0.05 + 0.009(I) =	0.176		
A = site area (acres) =	5.430	acres =	
Equation 10.31: WQV = (1")(R)(A)/12 =	0.080	acre-feet =	**3468 Cubic Feet**

WATER QUALITY VOLUME PROVIDED IN POND

ELEV.	AREA SQ. FT.	AVG. AREA SQ. FT.	VOLUME, CU. FT.
96.9	3681		
		3265.5	2938.95
96	2850		
		1978.5	3957
94	1107		
WQV PROVIDED IN BASIN =			**6895.95**

REQUIRED WQV = 3468 Cubic Feet

WQV PROVIDED IN POND OK

CHECK WQV PROVIDED IN FOREBAY

ELEV.	AREA SQ. FT.	AVG. AREA SQ. FT.	VOLUME, CU. FT.
96	756		
		591	591
95	426		
		299.5	299.5
94	173		
WQV PROVIDED IN FOREBAY =			**890.5**

REQUIRED WQV IN FOREBAY = 10% OF WQV =	347	CUBIC FEET
WQV PROVIDED IN FOREBAY OK		

8.0 - GROUNDWATER RECHARGE VOLUME CALCULATIONS

	WOLFF ENGINEERING						Project	
	COMPUTATION SHEET						Made By:	RPW
Subject:	**1040 Main Street Glastonbury**						Date:	4/1/2021
							Chkd by:	SDG
							Date:	4/10/2021

GROUNDWATER RECHARGE VOLUME (GRV)

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

1. COMPUTE RUNOFF DEPTH TO BE RECHARGED, (D)

NRCS HYDROLOGIC SOIL GROUP: A

GROUNDWATER RECHARGE DEPTH, (D): 0.4 Inches (Table 7-4 2004, Stormwater Quality Manual)

2. COMPUTE NET INCREASE IN SITE IMPERVIOUSNESS I (Proposed) - I (Existing)

SITE AREA, A = 9.343 Acres

I (Existing) = 0

COMPUTE PROPOSED IMPERVIOUS AREAS:

Impervious Area #	Impervious Area (acres)	Description
1	0.600	Road, Driveways, Roofs, Sidewalk
Total	0.600	

I (Proposed) = 0.064

I (Proposed) - I (Existing) = 0.064

GRV REQ'D = 0.020 Acre-Ft

GRV REQ'D = 871 cubic feet

1. COMPUTE RUNOFF DEPTH TO BE RECHARGED, (D)

NRCS HYDROLOGIC SOIL GROUP: B

GROUNDWATER RECHARGE DEPTH, (D): 0.25 Inches (Table 7-4 2004, Stormwater Quality Manual)

2. COMPUTE NET INCREASE IN SITE IMPERVIOUSNESS I (Proposed) - I (Existing)

SITE AREA, A = 9.343 Acres

I (Existing) = 0

COMPUTE PROPOSED IMPERVIOUS AREAS:

Impervious Area #	Impervious Area (acres)	Description
1	0.600	Road, Driveways, Roofs, Sidewalk
Total	0.600	

I (Proposed) = 0.064

I (Proposed) - I (Existing) = 0.064

GRV REQ'D = 0.013 Acre-Ft

GRV REQ'D = 545 cubic feet

TOTAL GRV REQ'D = 1416

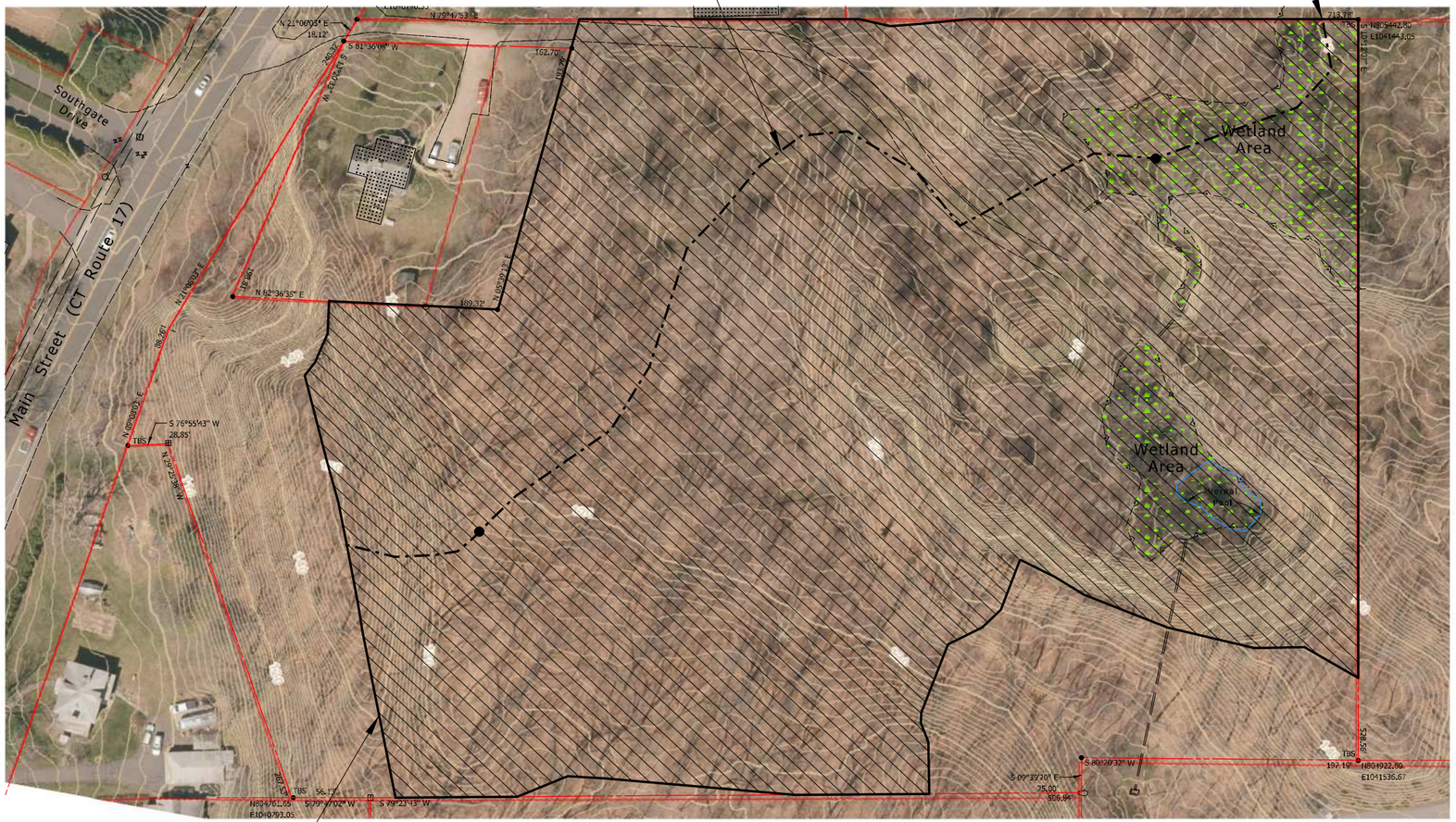
Assume a minimum of 4 Cultec R-180 stormwater chambers per house roof @ 207.7 c.f. per system

GRV Provided by House Roof stormater chambers = 1453.9 cubic feet

Total GRV provided = 1453.9 cubic feet

GRV provided satisfies GRV requirement for development.

9.0 - WATERSHED MAPS



CT Grid North
NAD 83

PLAN

SCALE: 1"=100'

EXISTING WATERSHED MAP

WOLFF ENGINEERING

CIVIL & STRUCTURAL ENGINEERING

CORNERSTONE PROFESSIONAL PARK, SUITE C101
39 SHERMAN HILL ROAD, WOODBURY, CT 06798
TEL.: 203.263.7447 FAX: 203.263.0060

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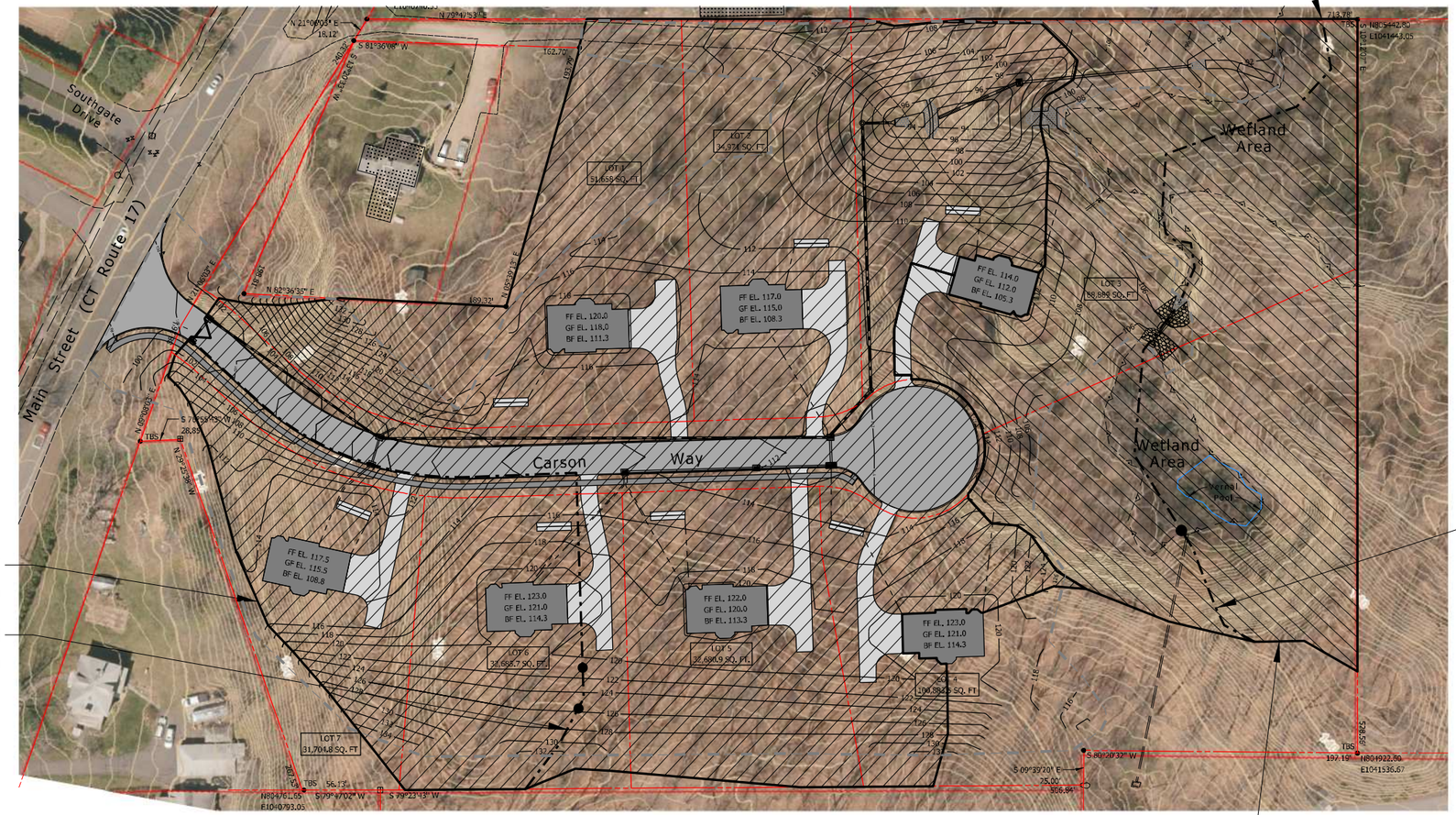
ANALYSIS POINT



WATERSHED BOUNDARY FOR STORMWATER POND

FLOW PATH (STORMWATER POND)

FLOW PATH (BYPASS AREA)

WATERSHED BOUNDARY FOR STORMWATER POND BYPASS AREA

CT Grid North NAD 83

PLAN

SCALE: 1"=100'

PROPOSED WATERSHED MAP

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TEL.: 203.263.7447 FAX: 203.263.0060

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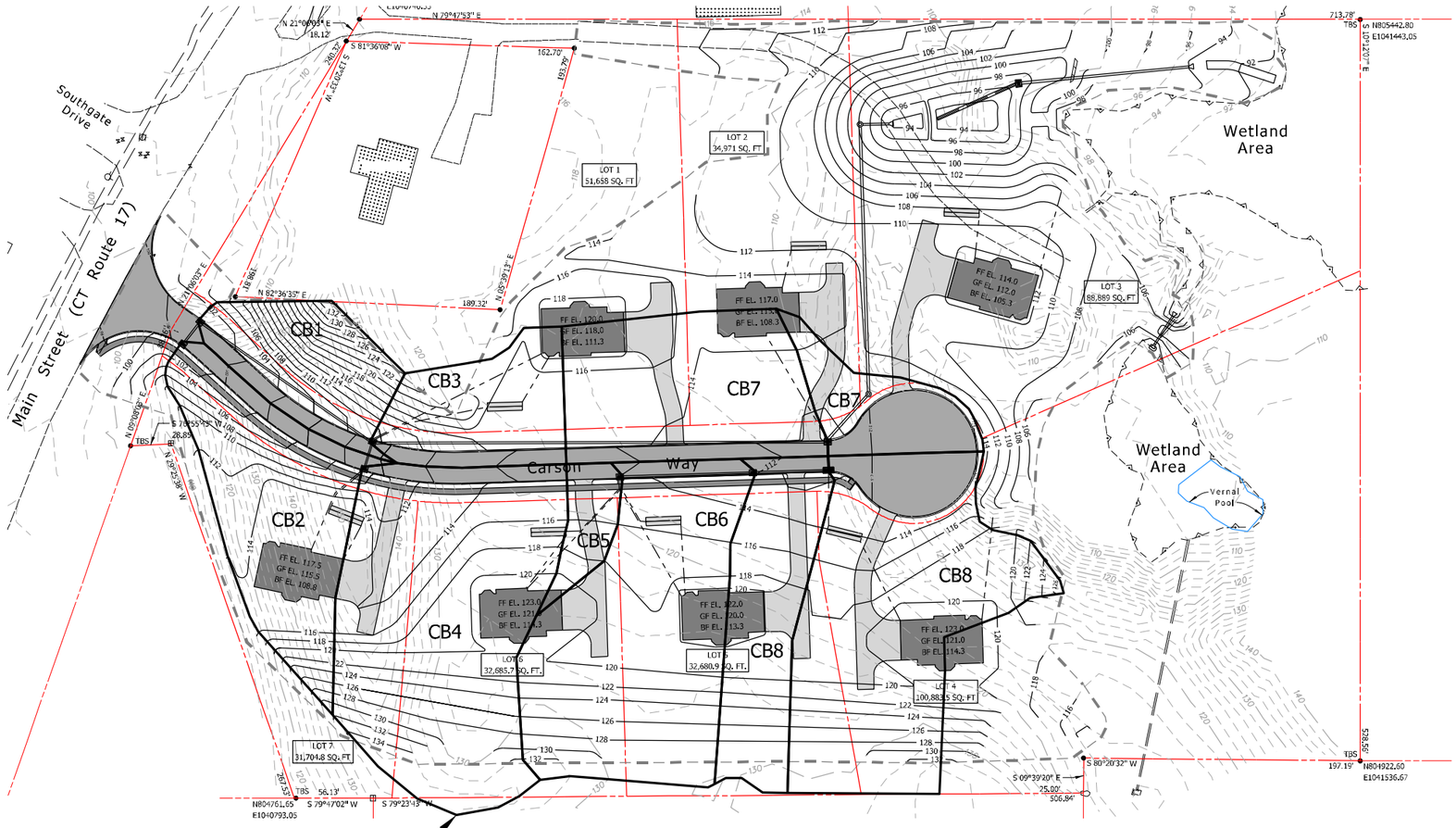

PLAN

SCALE: 1"=100'

CATCHBASIN WATERSHED MAP

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