

Stormwater Management Report

For the Proposed:

Costco at Evergreen Walk

Located at:

**Evergreen Walk – Unit 12
151 Buckland Road
South Windsor, CT**

Prepared for Submission to:

Town of South Windsor, Connecticut

August 14, 2020

Prepared for:

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Executive Summary

The proposed project is to develop Unit 12 at Evergreen Walk with a Costco with fueling station. The building pad site consists of approximately 16.2 acres of the entire development parcel with a total area of approximately 240 acres. Unit 12 is part of the Evergreen Walk Master Plan Area.

The site to be developed currently consists of predominantly grassed area. The ground generally slopes from east to west. Stormwater currently flows either to the existing stormwater management basin (Detention Basin #7) or the existing wetlands system west of the site. The existing developments to the east (LA Fitness) and northeast (ECHN II) both have existing stormwater conveyance pipes that transverse the site although they do not collect stormwater runoff from the proposed development area. They will continue to function in their current capacity with some minor relocation due to the proposed site layout.

The proposed site improvements will include the proposed Costco building, fueling station, paved parking areas, landscaped areas, pedestrian sidewalks, site utilities, and a stormwater management system. As a master planned development, the existing stormwater management system has been designed to convey the stormwater discharge from the previous approved developed site conditions. The current proposed site development will increase the amount of impervious ground cover on-site as well as a reduction of storage volume in Detention Basin #7 as necessary to accommodate the needs of the business. The existing stormwater management system will be supplemented with a subsurface detention system in order to maintain stormwater runoff rates as approved in the master plan.

The proposed 163,265 SF Costco building will have public water, sanitary sewer, natural gas, electric, and telecommunications services connections. Domestic and fire protection water shall be connected from an existing 8" service main installed beneath Tamarack Avenue as part of the master plan construction activities. This service will also loop to an existing 8" stub to the site installed as part of the master plan construction activities. Sanitary sewer laterals shall be pumped to a doghouse manhole on the existing 8" sanitary sewer main installed beneath Evergreen Way at the intersection with the access road. A natural gas connection is to be connected to an existing service line to the east, beneath Evergreen Way, the size and exact location of the proposed service lateral are to be coordinated with the local service provider. Electrical and telecommunications services shall be connected at an existing electrical and telephone service located within Tamarack Avenue. Two new transformers will be located on site.

This report has been prepared to complement the submitted project plans as well as to represent the technical basis for the stormwater management system designs presented herein. The proposed

stormwater management system is designed to be in compliance with the 2002 State of Connecticut Guidelines for Soil Erosion and Sediment Control, and the 2004 State of Connecticut Stormwater Quality Manual.

Water Quality Best Management Practices (BMP's) have also been incorporated in this design and include catch basins with deep sumps, hooded catch basin outlets, hydrodynamic separators, and a subsurface detention system which will connect to the existing drainage system previously sized and installed under the master plan.

A HydroCAD model, using TR-55 methodology, was developed to evaluate the existing and proposed drainage conditions of the property. The results of the analysis demonstrate that there will not be an increase in peak stormwater runoff rates for the 2-, 10-, 25-, and 100-year storm events.

Existing Site Conditions and Hydrologic Conditions

General Site Information

The site soil identified by the United States Department of Agriculture (USDA) Natural Resources Conservation Services (NRCS) consists of Scitico, Shaker, and Maybid soils, Elmridge fine sandy loam, 3 to 8 percent slopes, Saco silt loam, Tisbury silt loam, 0 to 3 percent slopes, Tisbury silt loam, 3 to 8 percent slopes, Enfield silt loam, 0 to 3 percent slopes, and Enfield silt loam, 3 to 8 percent slopes. Per the USDA the NRCS Hydrologic Soil Group the soil rating for within the project area is C/D, C, B/D, C, C, B, and B, respectively. A copy of the USDA NRCS Hydrologic Soil Group Map is included in Appendix A for reference.

Per the FEMA Flood Insurance Rate Map Number 09003C0383F for Hartford County, Connecticut, map revised date: September 26, 2008, the site resides in FEMA Flood Hazard Area X (unshaded). This is defined as "areas determined to be outside the 0.2% annual chance floodplain". Zone X may have ponding and local drainage problems that don't warrant a detailed study or designation as base floodplain. A copy of the FEMA Flood insurance rate Map is included in Appendix A for reference.

Existing Hydrologic Conditions

The existing site drainage area that was analyzed totals 40.27 acres and is approximately 64.2% impervious as approved as part of the master plan development. This area consists of 4 drainage areas within the master plan drainage area map. The only stormwater management system onsite

is Detention Basin #7. Stormwater from the rest of the analyzed site flows to the wetland system to the west.

The following is a brief analysis of the existing design points as shown on the enclosed Existing Drainage Mapping (ED-1) Map, in Appendix E.

Existing Drainage Area 1 (EDA-1): This drainage area consists of the entire area of the site draining to Detention Basin #7 (DP-1), it is 19.31 acres and is approximately 71% impervious. EDA-1 as approved as part of the master plan development consists mainly of building roof area, impervious parking lot area, and landscaped areas. The buildings consist of 5 office buildings and a hotel.

Existing Drainage Area 2 (EDA-2): This drainage area consists of a large portion of the site draining to the wetlands to the west of the site which was designated in the master plan drainage area map (DP-2), it is 17.17 acres and is approximately 71% impervious. EDA-2 as approved as part of the master plan development consists mainly of building roof area, impervious parking lot area, and landscaped areas. The buildings consist of 2 office buildings, a LA Fitness, 4 retail buildings, and a hotel.

Existing Drainage Area 3 (EDA-3): This drainage area consists of the area of the site draining to the culvert under the western road crossing the wetland (DP-3), it is 1.05 acres and is approximately 0% impervious. EDA-3 was not included in the master plan development since there was no proposed development in that area. EDA-3 consists mainly of grass and brush wetland areas.

Existing Drainage Area 4 (EDA-4): This drainage area consists of the area of the site draining to the culvert under the eastern road, Tamarack Avenue, crossing the wetland (DP-4), it is 2.74 acres and is approximately 0% impervious. EDA-4 was not included in the master plan development since there was no proposed development in that area. EDA-4 consists mainly of grass and brush wetland areas.

Table 1 – Pre-Development (Existing Conditions) Drainage Characteristics.

Drainage Area	Area (acres)	Composite Curve Number	Impervious Cover (%)	Time of Concentration (minutes)
EDA-1 (Area to Detention Basin #7)	19.31	90	71	15.0
EDA-2 (Area to Wetland DP-2)	17.17	90	71	8.0
EDA-3 (Area to Wetland DP-3)	1.05	73	0	9.3
EDA-4 (Area to Wetland DP-4)	2.74	69	0	18.1

Table 2 – Pre-Development Conditions Peak Flows

Analysis Point	Peak Flow (cfs)			
	2-yr	10-yr	25-yr	100-yr
Design Point 1	0.69	1.72	2.31	3.59
Design Point 2	46.65	82.76	105.35	140.06
Design Point 3	1.83	5.39	7.91	12.06
Design Point 4	1.42	4.16	6.10	9.28

Developed Site Conditions and Hydrologic Conditions

The proposed site drainage area totals 40.61 acres and is approximately 69.3% impervious. The intent of the proposed site drainage is to mimic existing drainage patterns to the maximum extent practical, however the exact area that was modeled for proposed conditions varies slightly from the existing due to the modifications of the overall master plan catchment areas. The site stormwater system will provide stormwater detention and quality improvements through the installation of catch basins with deep sumps and hooded outlets, hydrodynamic separators, a subsurface detention system, and a formalized street sweeping program for the impervious surfaces. These measures will treat the stormwater quality flow through structural means to provide water quality treatment in conformance with the State of Connecticut Water Quality Manual.

For the hydrologic analysis, the developed site retained the same Design Points as the existing model. The following drainage areas were developed to model the proposed site improvements.

Proposed Drainage Area 1A (PDA-1A): This drainage area consists of the northeastern portion of the site that drains to Detention Basin #7. It consists of two ECHN II buildings (constructed), 2 office buildings approved in the master plan development, Detention Basin #7 and a corner of the proposed fueling station. It is 11.60 acres and is approximately 74% impervious. PDA-1A consists mainly of impervious parking area and building roof area with landscaping. The majority of the

drainage in this area will remain unchanged. The existing drain pipe from the majority of PDA-1A will be rerouted around the proposed fueling station. The corner of the fueling station will drain to a curb inlet type catch basin, through a hydrodynamic separator, connect with the rerouted pipe, and eventually into Detention Basin #7.

Proposed Drainage Area 1B (PDA-1B): This drainage area consists of the southwestern portion of the site that drains to Detention Basin #7. It consists of the majority of the Costco parking lot as well as a portion of the fueling station. It is 7.79 acres and is approximately 86% impervious. PDA-1B consists mainly of impervious parking area with landscaping. The drainage area will drain to a series of curb and curb-less inlet hooded catch basins with deep sumps, through hydrodynamic separators, into a subsurface detention system, and eventually into Detention Basin #7.

Proposed Drainage Area 2A (PDA-2A): This drainage area consists of the eastern portion of the site that drains to wetland drainage point 2. It consists of LA Fitness and 4 retail buildings approved in the master plan development. It is 10.79 acres and is approximately 67% impervious. PDA-2A consists mainly of impervious parking area and building roof area with landscaping. This area will remain unchanged with the proposed development. The site discharges through an existing storm pipe that will be rerouted through the proposed development to eventually discharge to the wetlands to the west of the site.

Proposed Drainage Area 2B (PDA-2B): This drainage area consists of the southwestern portion of the site that drains to wetland drainage point 2. It consists of the Costco roof area as well as a portion of the parking lot and drive aisles. It is 6.59 acres and is approximately 85% impervious. PDA-1B consists mainly of impervious parking and roof area with landscaping. The drainage area will drain to a series of hooded catch basins with deep sumps, through hydrodynamic separators, and eventually discharging to western wetland.

Proposed Drainage Area 3 (PDA-3): This drainage area consists of the area of the site draining to the culvert under the western road crossing the wetland (DP-3), it is 1.09 acres and is approximately 0% impervious. The drainage area will remain largely unchanged except for some minor regrading. PDA-3 consists mainly of grass and brush wetland areas.

Proposed Drainage Area 4 (PDA-4): This drainage area consists of the area of the site draining to the culvert under the eastern road, Tamarack Avenue, crossing the wetland (DP-4), it is 2.74 acres and is approximately 0% impervious. PDA-4 remains entirely unchanged. PDA-4 consists mainly of grass and brush wetland areas.

Table 3 – Post Development Drainage Characteristics.

Drainage Area / Design Point	Area (acres)	Composite Curve Number	Impervious Cover (%)	Time of Concentration (minutes)
PDA-1A (Area to Detention Basin #7)	11.60	91	74	15.9
PDA-1B (Area to Subsurface Detention System)	7.79	94	86	5.0
PDA-2A (Area to Wetland DP-2)	10.79	88	67	8.0
PDA-2B (Building Area)	6.59	94	85	5.0
PDA-3 (Area to Wetland DP-3)	1.09	74	0	9.3
PDA-4 (Area to Wetland DP-4)	2.74	69	0	18.1

Table 4 – Post-Development Conditions Peak Flows

Analysis Point	Peak Flow (cfs)			
	2-yr	10-yr	25-yr	100-yr
Design Point 1	0.68	1.71	2.30	3.59
Design Point 2	44.30	79.63	101.82	136.05
Design Point 3	1.88	5.49	8.04	12.23
Design Point 4	1.42	4.16	6.10	9.28

Table 5 – Existing vs Proposed Peak Rates of Runoff

	Peak Flow Rate in Cubic Feet per Second (cfs)			
Drainage Area	2-yr	10-yr	25-yr	100-yr
Design Point 1				
Existing	0.69	1.72	2.31	3.59
Proposed	0.68	1.71	2.30	3.59
Percent Change	-1.4%	-0.6%	-0.4%	0.0%
Design Point 2				
Existing	46.65	82.76	105.35	140.06
Proposed	44.30	79.63	101.82	136.05
Percent Change	-5.0%	-3.8%	-3.4%	-2.9%
Design Point 3				
Existing	1.83	5.39	7.91	12.06
Proposed	1.88	5.49	8.04	12.23
Percent Change	2.7%	1.9%	1.6%	1.4%
Design Point 4				
Existing	1.42	4.16	6.10	9.28
Proposed	1.42	4.16	6.10	9.28
Percent Change	0.0%	0.0%	0.0%	0.0%

Stormwater Management

Hydrologic Modeling of the Entire Site

The hydrologic analysis to determine peak stormwater discharge rates was performed using the HydroCAD stormwater modeling system computer program, version 10.00 developed by HydroCAD Software Solutions, LLC. Hydrographs for each watershed were developed using the SCS Synthetic Unit Hydrograph Method. Rainfall depths and distribution per the NOAA Atlas 14 for South Windsor, CT were used for the calculation of peak flow rates and are listed in Table 6. The drainage areas, or subcatchments as labeled by the program, are depicted by hexagons on the attached drainage diagrams. Pre-development HydroCAD output can be found in Appendix B and Post-development HydroCAD output can be found in Appendix C.

Table 6 – Rainfall Depths per NOAA Atlas 14
Appendix B - 24-hour Rainfall Data

Return Period	24-hour Rainfall Depth
2-year	3.11”
10-year	4.91”
25-year	6.03”
100-year	7.77”

Summary

The post-development peak discharge rates for the total developed site have been matched or decreased for all storm events for Drainage Areas 1, 2, and 4. There is a slight increase in discharge rates for Drainage Area 3, however, Drainage Area 3 flows into Drainage Area 2 and there is a reduction in discharge rates overall. All post development stormwater will be discharged offsite to mimic existing drainage patterns. Stormwater quality is being addressed by formulized street sweeping, catch basins with deep sumps and hooded outlets, hydrodynamic separators, and a subsurface detention system. These features will provide the minimum required 80% TSS removal as required in the CT Stormwater Manual. The proposed stormwater management system will meet the stormwater quality requirements of the State of Connecticut.

APPENDIX A

LOCATION MAPS

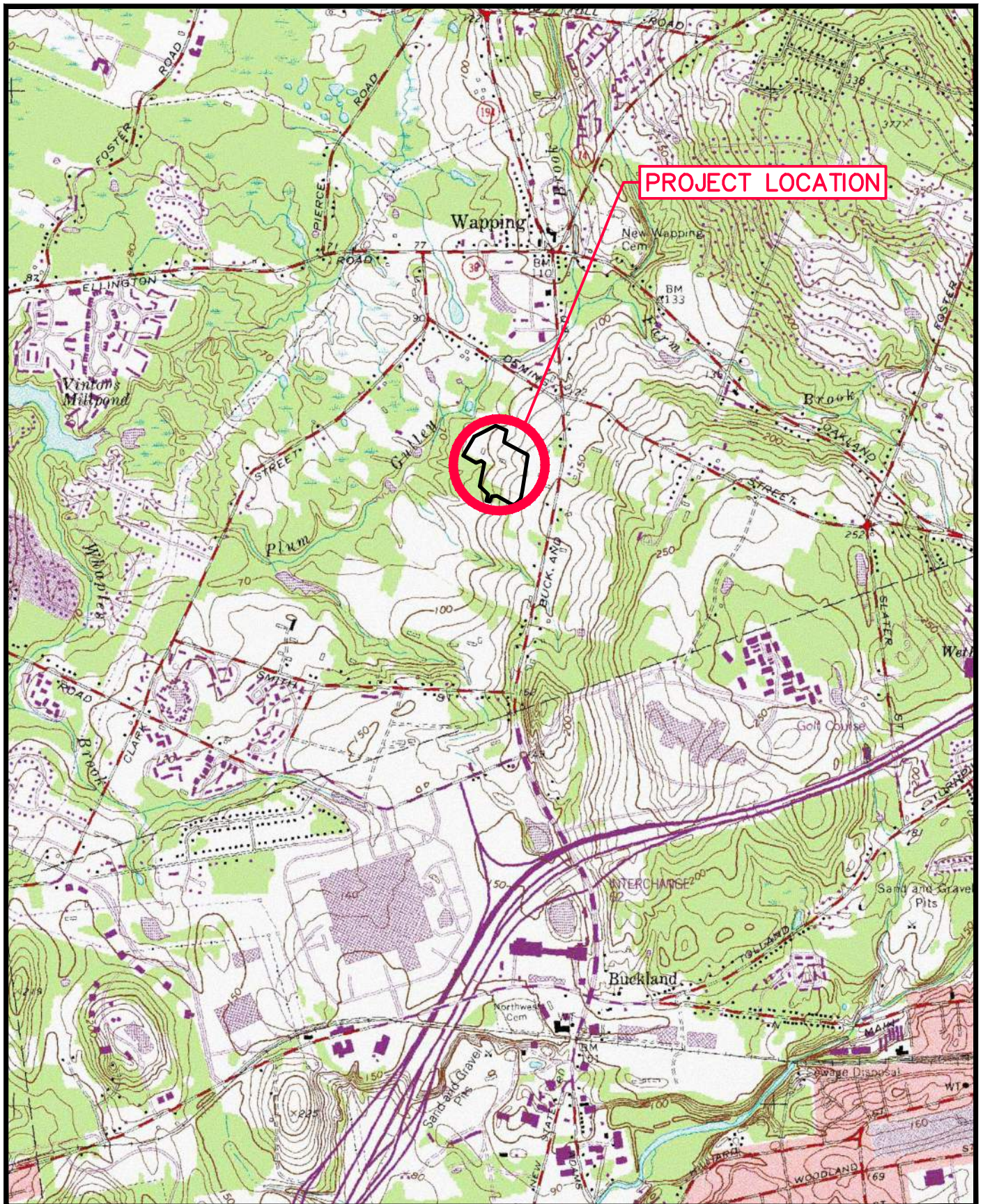
Figure 1: USGS Location Map

Figure 2: Aerial Location Map

Figure 3: NRCS Soil Survey Map with Hydrologic Soil Group Data

Figure 4: FEMA Federal Insurance Rate Map

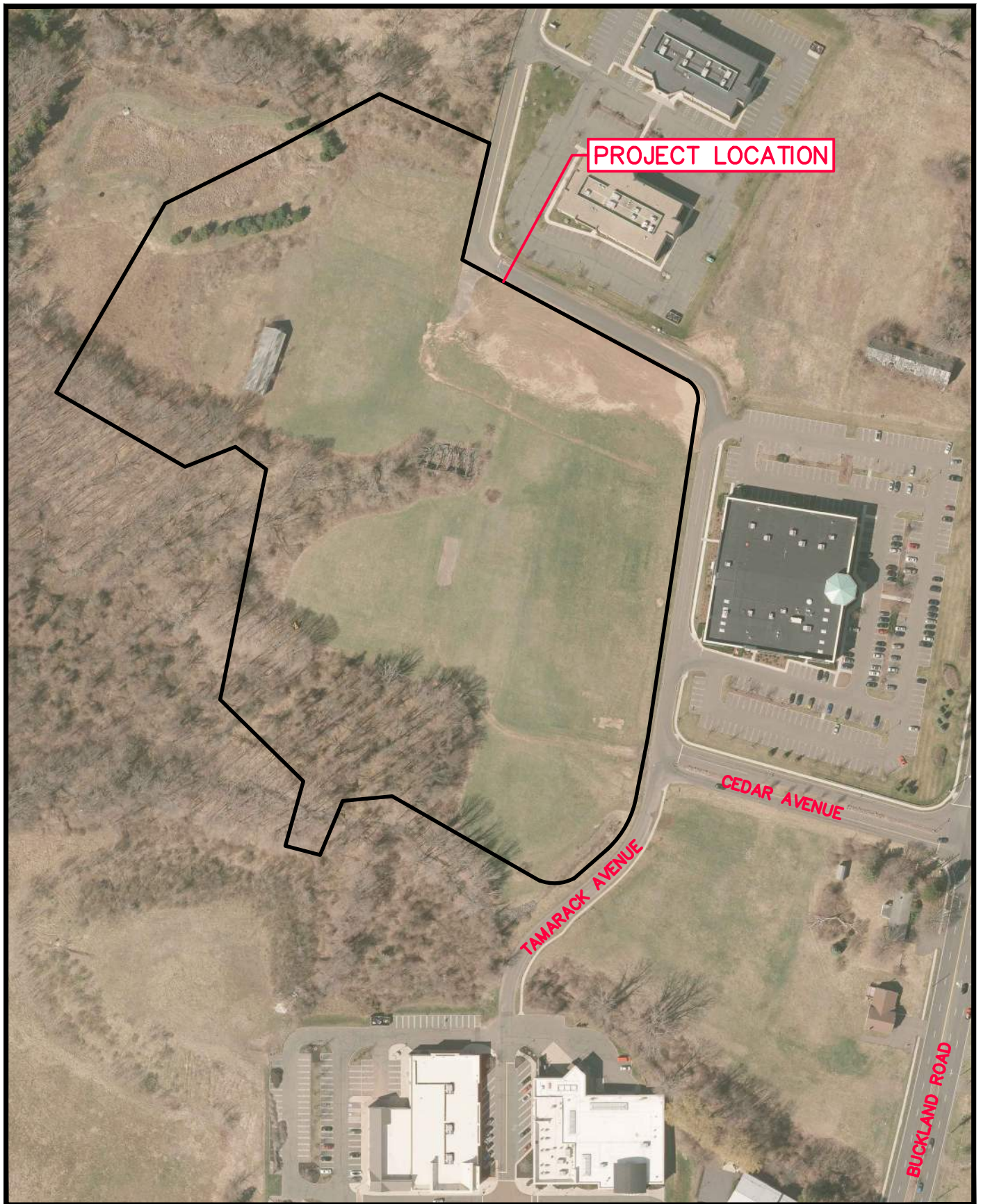
Figure 5: NOAA Atlas 14 Storm Data



PROPOSED
COSTCO AT EVERGREEN WALK
 EVERGREEN WALK – UNIT 12
 151 BUCKLAND ROAD
 SOUTH WINDSOR, CONNECTICUT

Designed S.E.L.
 Drawn S.E.L.
 Checked M.J.B.
 Approved M.J.B.
 Scale 1"=2,000'
 Project No. 13C4718
 Date 10/03/2018
 CAD File LOC13C471801

FIGURE 1
USGS LOCATION MAP



ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

PROPOSED COSTCO AT EVERGREEN WALK

EVERGREEN WALK — UNIT 12
151 BUCKLAND ROAD
SOUTH WINDSOR, CONNECTICUT

Designed
Drawn
Checked
Approved
Scale
Project No.
Date
CAD File

S.E.L.
S.E.L.
M.J.B.
M.J.B.
1"=2,000'
13C4718
10/03/2018
LOC13C471801

FIGURE 2

AERIAL LOCATION MAP



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



September 26, 2018

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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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






Custom Soil Resource Report

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 17, Sep 5, 2018

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

Date(s) aerial images were photographed: Mar 28, 2011—Apr 18, 2011

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
9	Scitico, Shaker, and Maybid soils	1.5	1.5%
12	Raypol silt loam	2.5	2.4%
28A	Elmridge fine sandy loam, 0 to 3 percent slopes	2.1	2.1%
28B	Elmridge fine sandy loam, 3 to 8 percent slopes	14.0	13.4%
29B	Agawam fine sandy loam, 3 to 8 percent slopes	0.8	0.7%
108	Saco silt loam	14.5	13.8%
702A	Tisbury silt loam, 0 to 3 percent slopes	4.7	4.5%
702B	Tisbury silt loam, 3 to 8 percent slopes	10.8	10.4%
704A	Enfield silt loam, 0 to 3 percent slopes	15.2	14.6%
704B	Enfield silt loam, 3 to 8 percent slopes	38.4	36.7%
Totals for Area of Interest		104.6	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

9—Scitico, Shaker, and Maybid soils

Map Unit Setting

National map unit symbol: 9lrq
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 50 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

Scitico and similar soils: 40 percent
Shaker and similar soils: 30 percent
Maybid and similar soils: 15 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Scitico

Setting

Landform: Depressions, drainageways, terraces
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Clayey glaciolacustrine deposits

Typical profile

Ap - 0 to 8 inches: silt loam
Eg - 8 to 11 inches: silt loam
Bg1 - 11 to 18 inches: silty clay loam
Bg2 - 18 to 30 inches: silty clay loam
Bg3 - 30 to 38 inches: silty clay
Cg1 - 38 to 52 inches: silty clay loam
Cg2 - 52 to 65 inches: silty clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 11.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D
Hydric soil rating: Yes

Description of Shaker

Setting

Landform: Depressions, drainageways, terraces

Down-slope shape: Concave

Across-slope shape: Concave

Parent material: Coarse-loamy eolian deposits over clayey glaciolacustrine deposits

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material

Ap - 2 to 6 inches: fine sandy loam

Bg - 6 to 20 inches: sandy loam

Bw - 20 to 30 inches: sandy loam

2C - 30 to 65 inches: silty clay

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Poorly drained

Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)

Depth to water table: About 0 to 18 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4w

Hydrologic Soil Group: C/D

Hydric soil rating: Yes

Description of Maybid

Setting

Landform: Depressions, drainageways, terraces

Down-slope shape: Concave

Across-slope shape: Concave

Parent material: Clayey glaciolacustrine deposits

Typical profile

A - 0 to 9 inches: silt loam

Bg1 - 9 to 18 inches: silty clay loam

Bg2 - 18 to 26 inches: silty clay loam

Cg1 - 26 to 36 inches: silty clay loam

Cg2 - 36 to 60 inches: silty clay loam

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Very poorly drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)

Depth to water table: About 0 to 6 inches

Custom Soil Resource Report

Frequency of flooding: None
Frequency of ponding: Occasional
Available water storage in profile: High (about 11.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: C/D
Hydric soil rating: Yes

Minor Components

Brancroft

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

Elmridge

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

Unnamed, sand or gravel substratum

Percent of map unit: 3 percent
Hydric soil rating: No

Unnamed, red parent material

Percent of map unit: 2 percent

12—Raypol silt loam

Map Unit Setting

National map unit symbol: 9ljx
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

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

Description of Raypol

Setting

Landform: Depressions, drainageways

Down-slope shape: Concave

Across-slope shape: Concave

Parent material: Coarse-loamy eolian deposits over sandy and gravelly glaciofluvial deposits derived from granite and/or schist and/or gneiss

Typical profile

Ap - 0 to 8 inches: silt loam

Bg1 - 8 to 12 inches: very fine sandy loam

Bg2 - 12 to 20 inches: silt loam

Bw1 - 20 to 26 inches: silt loam

Bw2 - 26 to 29 inches: very fine sandy loam

2C1 - 29 to 52 inches: stratified very gravelly coarse sand to loamy fine sand

2C2 - 52 to 65 inches: stratified very gravelly coarse sand to loamy fine sand

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Poorly 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: About 0 to 12 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Moderate (about 7.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4w

Hydrologic Soil Group: C/D

Hydric soil rating: Yes

Minor Components

Haven

Percent of map unit: 5 percent

Landform: Outwash plains, terraces

Down-slope shape: Convex

Across-slope shape: Linear

Hydric soil rating: No

Enfield

Percent of map unit: 5 percent

Landform: Outwash plains, terraces

Down-slope shape: Convex

Across-slope shape: Linear

Hydric soil rating: No

Ninigret

Percent of map unit: 3 percent

Landform: Outwash plains, terraces

Down-slope shape: Linear

Across-slope shape: Concave

Hydric soil rating: No

Tisbury

Percent of map unit: 2 percent

Landform: Outwash plains, terraces

Down-slope shape: Concave

Across-slope shape: Linear

Hydric soil rating: No

Walpole

Percent of map unit: 2 percent

Landform: Depressions on terraces, drainageways on terraces

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Scarboro

Percent of map unit: 2 percent

Landform: Terraces, depressions, drainageways

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Unnamed, loamy substratum

Percent of map unit: 1 percent

28A—Elmridge fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 9lm0

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

Elmridge and similar soils: 80 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Elmridge

Setting

Landform: Terraces

Down-slope shape: Concave

Across-slope shape: Linear

Parent material: Coarse-loamy eolian sands over clayey glaciolacustrine deposits

Typical profile

Ap - 0 to 6 inches: fine sandy loam

Bw1 - 6 to 10 inches: fine sandy loam

Custom Soil Resource Report

Bw2 - 10 to 18 inches: fine sandy loam
Bw3 - 18 to 25 inches: sandy loam
2C - 25 to 65 inches: silty clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Brancroft

Percent of map unit: 4 percent
Landform: Terraces
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Belgrade

Percent of map unit: 4 percent
Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Unnamed, red parent material

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

Ninigret

Percent of map unit: 2 percent
Landform: Outwash plains, terraces
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Sudbury

Percent of map unit: 2 percent
Landform: Terraces, outwash plains
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Scitico

Percent of map unit: 2 percent

Custom Soil Resource Report

Landform: Drainageways, terraces, depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Shaker

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

Berlin

Percent of map unit: 1 percent
Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Maybid

Percent of map unit: 1 percent
Landform: Depressions, drainageways, terraces
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

28B—Elmridge fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9lm1
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

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

Description of Elmridge

Setting

Landform: Terraces
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Coarse-loamy eolian sands over clayey glaciolacustrine deposits

Typical profile

Ap - 0 to 6 inches: fine sandy loam

Custom Soil Resource Report

Bw1 - 6 to 10 inches: fine sandy loam
Bw2 - 10 to 18 inches: fine sandy loam
Bw3 - 18 to 25 inches: sandy loam
2C - 25 to 65 inches: silty clay

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Brancroft

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

Shaker

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

Unnamed, red parent material

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

Sudbury

Percent of map unit: 2 percent
Landform: Outwash plains, terraces
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Belgrade

Percent of map unit: 2 percent
Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Ninigret

Percent of map unit: 2 percent
Landform: Outwash plains, terraces
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Scitico

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

Berlin

Percent of map unit: 1 percent
Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Maybid

Percent of map unit: 1 percent
Landform: Depressions, drainageways, terraces
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

29B—Agawam fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2tyqx
Elevation: 0 to 820 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 250 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Agawam

Setting

Landform: Outwash terraces, kame terraces, kames, outwash plains, moraines
Landform position (two-dimensional): Backslope, shoulder, footslope, summit
Landform position (three-dimensional): Side slope, crest, tread, riser, rise, dip
Down-slope shape: Convex

Custom Soil Resource Report

Across-slope shape: Convex

Parent material: Coarse-loamy eolian deposits over sandy and gravelly glaciofluvial deposits derived from gneiss, granite, schist, and/or phyllite

Typical profile

Ap - 0 to 11 inches: fine sandy loam

Bw1 - 11 to 16 inches: fine sandy loam

Bw2 - 16 to 26 inches: fine sandy loam

2C1 - 26 to 45 inches: loamy fine sand

2C2 - 45 to 55 inches: loamy fine sand

2C3 - 55 to 65 inches: loamy sand

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: 15 to 35 inches to strongly contrasting textural stratification

Natural drainage class: Well drained

Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2s

Hydrologic Soil Group: B

Hydric soil rating: No

Minor Components

Sudbury

Percent of map unit: 5 percent

Landform: Outwash plains, terraces, deltas

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Tread, dip

Down-slope shape: Concave

Across-slope shape: Linear

Hydric soil rating: No

Hinckley

Percent of map unit: 5 percent

Landform: Outwash plains, eskers, kames, deltas

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Nose slope, side slope, crest, head slope, rise

Down-slope shape: Convex

Across-slope shape: Linear, convex

Hydric soil rating: No

Merrimac

Percent of map unit: 3 percent

Landform: Kames, eskers, moraines, outwash terraces, outwash plains

Landform position (two-dimensional): Backslope, footslope, shoulder, summit

Custom Soil Resource Report

Landform position (three-dimensional): Side slope, crest, riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Windsor

Percent of map unit: 2 percent
Landform: Deltas, outwash plains, dunes, outwash terraces
Landform position (three-dimensional): Riser, tread
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Hydric soil rating: No

108—Saco silt loam

Map Unit Setting

National map unit symbol: 9ljv
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

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

Description of Saco

Setting

Landform: Flood plains
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Coarse-silty alluvium

Typical profile

A - 0 to 12 inches: silt loam
Cg1 - 12 to 32 inches: silt loam
Cg2 - 32 to 48 inches: silt loam
2Cg3 - 48 to 60 inches: stratified very gravelly coarse sand to loamy fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly 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: About 0 to 6 inches
Frequency of flooding: Frequent

Custom Soil Resource Report

Frequency of ponding: Frequent

Available water storage in profile: High (about 10.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6w

Hydrologic Soil Group: B/D

Hydric soil rating: Yes

Minor Components

Lim

Percent of map unit: 5 percent

Landform: Flood plains

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Limerick

Percent of map unit: 5 percent

Landform: Flood plains

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Winooski

Percent of map unit: 3 percent

Landform: Flood plains

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Rippowam

Percent of map unit: 3 percent

Landform: Flood plains

Down-slope shape: Linear

Across-slope shape: Concave

Hydric soil rating: Yes

Hadley

Percent of map unit: 2 percent

Landform: Flood plains

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Bash

Percent of map unit: 2 percent

Landform: Flood plains

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

702A—Tisbury silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2y07g

Elevation: 0 to 1,260 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

Tisbury and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tisbury

Setting

Landform: Valley trains, outwash plains, deltas, outwash terraces

Landform position (three-dimensional): Tread

Down-slope shape: Concave

Across-slope shape: Concave

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

Typical profile

Ap - 0 to 8 inches: silt loam

Bw1 - 8 to 18 inches: silt loam

Bw2 - 18 to 26 inches: silt loam

2C - 26 to 65 inches: extremely gravelly sand

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: 24 to 36 inches to strongly contrasting textural stratification

Natural drainage class: Moderately well drained

Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)

Depth to water table: About 18 to 30 inches

Frequency of flooding: None

Frequency of ponding: None

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: C

Hydric soil rating: No

Minor Components

Merrimac

Percent of map unit: 5 percent
Landform: Eskers, moraines, outwash terraces, outwash plains, kames
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Side slope, crest, tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Agawam

Percent of map unit: 5 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

Ninigret

Percent of map unit: 3 percent
Landform: Outwash terraces, kames, moraines, outwash plains, kame terraces
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Linear, convex
Across-slope shape: Concave, 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

702B—Tisbury silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2y07h
Elevation: 0 to 1,260 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

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

Description of Tisbury

Setting

Landform: Deltas, valley trains, outwash plains, outwash terraces

Landform position (three-dimensional): Tread

Down-slope shape: Concave

Across-slope shape: Concave

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

Typical profile

Ap - 0 to 8 inches: silt loam

Bw1 - 8 to 18 inches: silt loam

Bw2 - 18 to 26 inches: silt loam

2C - 26 to 65 inches: extremely gravelly sand

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: 24 to 36 inches to strongly contrasting textural stratification

Natural drainage class: Moderately well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)

Depth to water table: About 18 to 30 inches

Frequency of flooding: None

Frequency of ponding: None

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: C

Hydric soil rating: No

Minor Components

Merrimac

Percent of map unit: 5 percent

Landform: Outwash plains, kames, eskers, moraines, outwash terraces

Landform position (two-dimensional): Backslope, footslope, shoulder, 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

Agawam

Percent of map unit: 5 percent

Landform: Kame terraces, kames, moraines, outwash terraces, outwash plains

Landform position (two-dimensional): Backslope, shoulder, footslope, summit, toeslope

Landform position (three-dimensional): Side slope, crest, head slope, nose slope, tread

Custom Soil Resource Report

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

Ninigret

Percent of map unit: 3 percent
Landform: Outwash terraces, kames, outwash plains, kame terraces, moraines
Landform position (two-dimensional): Footslope, backslope, toeslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Linear, convex
Across-slope shape: Concave, 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

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
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: B
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: Deltas, valley trains, outwash terraces, outwash plains
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 plains, outwash terraces

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

Natural drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: B

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: Outwash plains, kame terraces, kames, moraines, outwash 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

Soil Information for All Uses

Soil Properties and Qualities

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

Soil Qualities and Features

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

Hydrologic Soil Group

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

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

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

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

Custom Soil Resource Report

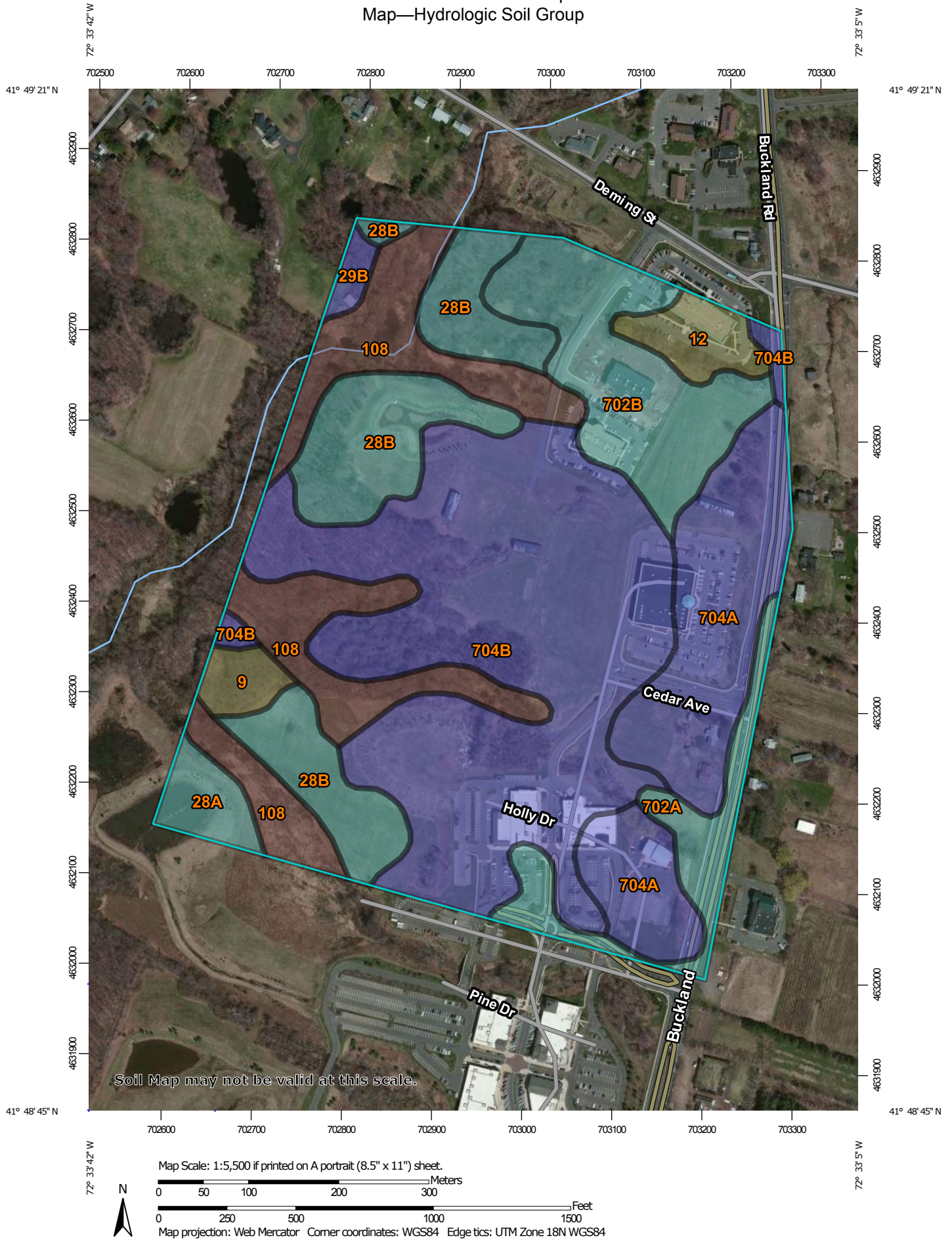
Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

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

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

Custom Soil Resource Report

Map—Hydrologic Soil Group








MAP LEGEND

Area of Interest (AOI)









Area of Interest (AOI)

Soils

Soil Rating Polygons





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

Soil Rating Lines


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

Soil Rating Points






	A
	A/D
	B
	B/D

	C
	C/D
	D
	Not rated or not available


Water Features

 Streams and Canals

Transportation

	Rails
	Interstate Highways
	US Routes
	Major Roads
	Local Roads

Background

 Aerial Photography

MAP INFORMATION

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

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 17, Sep 5, 2018

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

Date(s) aerial images were photographed: Mar 28, 2011—Apr 18, 2011

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

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
9	Scitico, Shaker, and Maybid soils	C/D	1.5	1.5%
12	Raypol silt loam	C/D	2.5	2.4%
28A	Elmridge fine sandy loam, 0 to 3 percent slopes	C	2.1	2.1%
28B	Elmridge fine sandy loam, 3 to 8 percent slopes	C	14.0	13.4%
29B	Agawam fine sandy loam, 3 to 8 percent slopes	B	0.8	0.7%
108	Saco silt loam	B/D	14.5	13.8%
702A	Tisbury silt loam, 0 to 3 percent slopes	C	4.7	4.5%
702B	Tisbury silt loam, 3 to 8 percent slopes	C	10.8	10.4%
704A	Enfield silt loam, 0 to 3 percent slopes	B	15.2	14.6%
704B	Enfield silt loam, 3 to 8 percent slopes	B	38.4	36.7%
Totals for Area of Interest			104.6	100.0%

Rating Options—Hydrologic Soil Group*Aggregation Method: Dominant Condition**Component Percent Cutoff: None Specified**Tie-break Rule: Higher*

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevation** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevation (BFEs) shown on this map apply only landward of 0.0' North American Vertical Datum (NAVD). Users of this FIRM should be aware that coastal flood elevations may also be provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this community. Elevations shown in the Summary of Stillwater Elevations table should be used for construction, and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map is Universal Transverse Mercator (UTM) zone 18. The **horizontal datum** is NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East West Highway
Silver Spring, Maryland 20910
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit their website at www.ngs.noaa.gov.

Base map information shown on this FIRM was provided in digital format by CT DEP.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

An accompanying Flood Insurance Study report, Letters of Map Revision or Letters of Map Amendment revising portions of this panel, and digital versions of this PANEL may be available. Contact the **FEMA Map Service Center** at the following phone numbers and Internet address for information on all related products available from FEMA:

Phone: 800-358-9616
FAX: 800-358-9620
<http://msc.fema.gov/>

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA-MAP** (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov/business/nfip/>

This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report may reflect stream channel distances that differ from what is shown on this map.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AD, AR, A99, V, and VE. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood.

- ZONE A** No base flood elevations determined.
- ZONE AE** Base flood elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently identified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood event.
- ZONE A99** Area to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no base flood elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square miles; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D** Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or velocities
- Base Flood Elevation line and value; elevation in 0'
- Base Flood Elevation value where uniform within zone; elevation in 0'

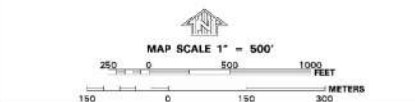
*Referenced to the North American Vertical Datum of 1988

- Cross Section Line
- Transect Line
- Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 1000-meter Universal Transverse Mercator grid values, zone 18
- 5000-foot grid ticks
- Bench mark; see explanation in Notes to Users section of this FIRM panel.
- Rever Mile

MAP REPOSITORY
Refer to Repository Listing on Index Map
EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
SEPTEMBER 26, 2008
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at (800) 638-6820.



PANEL 0383F

FIRM FLOOD INSURANCE RATE MAP HARTFORD COUNTY, CONNECTICUT (ALL JURISDICTIONS)

PANEL 383 OF 675

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

COMMUNITY

NUMBER PANEL SURF

MANCHESTER, TOWN OF 090031 0383 F

SOUTH WINDSOR, TOWN OF 090036 0383 F

Notes to User: The Map Number shown below should be used when placing map orders. The Community Number shown above should be used in insurance applications for the subject community.

MAP NUMBER
09003C0383F

EFFECTIVE DATE:
SEPTEMBER 26, 2008

Federal Emergency Management Agency



NOAA Atlas 14, Volume 10, Version 2
Location name: South Windsor, Connecticut, USA*
Latitude: 41.8163°, Longitude: -72.5538°
Elevation: 148.62 ft**
* source: ESRI Maps
** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

[PF tabular](#) | [PF graphical](#) | [Maps & aerals](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.334 (0.259-0.431)	0.406 (0.314-0.524)	0.523 (0.403-0.677)	0.620 (0.476-0.807)	0.754 (0.560-1.03)	0.857 (0.625-1.19)	0.960 (0.681-1.39)	1.09 (0.732-1.61)	1.26 (0.816-1.93)	1.39 (0.880-2.17)
10-min	0.473 (0.367-0.610)	0.575 (0.445-0.742)	0.741 (0.571-0.959)	0.878 (0.674-1.14)	1.07 (0.794-1.46)	1.21 (0.885-1.69)	1.36 (0.964-1.97)	1.54 (1.04-2.28)	1.79 (1.16-2.74)	1.97 (1.25-3.08)
15-min	0.557 (0.431-0.718)	0.676 (0.523-0.873)	0.871 (0.672-1.13)	1.03 (0.793-1.35)	1.26 (0.934-1.71)	1.43 (1.04-1.99)	1.60 (1.13-2.31)	1.82 (1.22-2.69)	2.10 (1.36-3.22)	2.32 (1.47-3.62)
30-min	0.748 (0.580-0.964)	0.910 (0.705-1.18)	1.18 (0.907-1.52)	1.40 (1.07-1.82)	1.70 (1.26-2.31)	1.93 (1.41-2.69)	2.16 (1.53-3.13)	2.46 (1.65-3.63)	2.84 (1.84-4.36)	3.14 (1.98-4.90)
60-min	0.939 (0.728-1.21)	1.14 (0.886-1.48)	1.48 (1.14-1.92)	1.76 (1.35-2.29)	2.14 (1.59-2.91)	2.43 (1.77-3.39)	2.73 (1.93-3.95)	3.10 (2.08-4.58)	3.59 (2.32-5.49)	3.95 (2.50-6.18)
2-hr	1.21 (0.946-1.56)	1.47 (1.14-1.89)	1.89 (1.47-2.43)	2.24 (1.72-2.90)	2.71 (2.03-3.69)	3.08 (2.27-4.29)	3.45 (2.47-5.00)	3.96 (2.67-5.83)	4.64 (3.01-7.07)	5.15 (3.27-8.00)
3-hr	1.40 (1.09-1.79)	1.69 (1.32-2.17)	2.17 (1.69-2.79)	2.57 (1.99-3.32)	3.11 (2.34-4.22)	3.54 (2.61-4.91)	3.96 (2.85-5.73)	4.57 (3.09-6.70)	5.38 (3.50-8.17)	5.99 (3.81-9.28)
6-hr	1.75 (1.38-2.23)	2.13 (1.67-2.71)	2.74 (2.14-3.50)	3.24 (2.52-4.17)	3.94 (2.98-5.32)	4.48 (3.33-6.20)	5.01 (3.64-7.25)	5.83 (3.95-8.49)	6.90 (4.50-10.4)	7.72 (4.92-11.9)
12-hr	2.14 (1.69-2.71)	2.62 (2.07-3.32)	3.41 (2.68-4.33)	4.06 (3.17-5.18)	4.95 (3.76-6.65)	5.64 (4.21-7.76)	6.33 (4.62-9.10)	7.38 (5.02-10.7)	8.77 (5.74-13.2)	9.83 (6.29-15.0)
24-hr	2.51 (1.99-3.15)	3.11 (2.47-3.91)	4.09 (3.24-5.17)	4.91 (3.86-6.24)	6.03 (4.61-8.08)	6.90 (5.19-9.47)	7.77 (5.71-11.2)	9.15 (6.24-13.2)	11.0 (7.20-16.3)	12.4 (7.93-18.8)
2-day	2.83 (2.26-3.54)	3.56 (2.84-4.45)	4.75 (3.78-5.97)	5.74 (4.54-7.25)	7.11 (5.47-9.49)	8.16 (6.18-11.2)	9.21 (6.84-13.3)	11.0 (7.53-15.8)	13.4 (8.81-19.8)	15.2 (9.78-22.9)
3-day	3.08 (2.47-3.84)	3.88 (3.10-4.84)	5.19 (4.14-6.50)	6.28 (4.97-7.90)	7.77 (6.00-10.4)	8.93 (6.78-12.2)	10.1 (7.52-14.5)	12.1 (8.29-17.3)	14.8 (9.72-21.8)	16.8 (10.8-25.2)
4-day	3.30 (2.65-4.11)	4.15 (3.33-5.17)	5.55 (4.43-6.93)	6.70 (5.33-8.42)	8.30 (6.42-11.0)	9.52 (7.25-13.0)	10.8 (8.03-15.4)	12.9 (8.85-18.3)	15.7 (10.4-23.1)	17.9 (11.5-26.7)
7-day	3.91 (3.15-4.84)	4.87 (3.92-6.03)	6.43 (5.16-8.00)	7.73 (6.16-9.66)	9.51 (7.39-12.6)	10.9 (8.31-14.8)	12.3 (9.17-17.4)	14.6 (10.1-20.7)	17.7 (11.7-25.9)	20.0 (13.0-29.8)
10-day	4.53 (3.66-5.59)	5.54 (4.47-6.85)	7.19 (5.79-8.92)	8.56 (6.85-10.7)	10.5 (8.13-13.7)	11.9 (9.09-16.0)	13.4 (9.97-18.8)	15.7 (10.9-22.2)	18.9 (12.5-27.5)	21.2 (13.8-31.5)
20-day	6.51 (5.30-7.99)	7.59 (6.16-9.32)	9.34 (7.56-11.5)	10.8 (8.68-13.4)	12.8 (9.97-16.6)	14.3 (10.9-19.0)	15.9 (11.8-21.9)	18.1 (12.5-25.2)	20.9 (14.0-30.2)	23.1 (15.0-34.0)
30-day	8.21 (6.70-10.1)	9.31 (7.59-11.4)	11.1 (9.02-13.7)	12.6 (10.2-15.6)	14.7 (11.4-18.8)	16.2 (12.4-21.3)	17.8 (13.1-24.2)	19.8 (13.8-27.5)	22.3 (14.9-32.1)	24.3 (15.8-35.6)
45-day	10.4 (8.47-12.6)	11.5 (9.39-14.0)	13.3 (10.9-16.3)	14.9 (12.0-18.3)	17.0 (13.3-21.6)	18.6 (14.2-24.2)	20.3 (14.8-27.1)	21.9 (15.3-30.3)	24.1 (16.2-34.5)	25.8 (16.8-37.7)
60-day	12.2 (9.97-14.8)	13.3 (10.9-16.2)	15.2 (12.4-18.6)	16.8 (13.6-20.7)	19.0 (14.8-24.1)	20.7 (15.7-26.7)	22.4 (16.4-29.6)	23.8 (16.7-32.8)	25.8 (17.3-36.7)	27.2 (17.8-39.7)

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

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

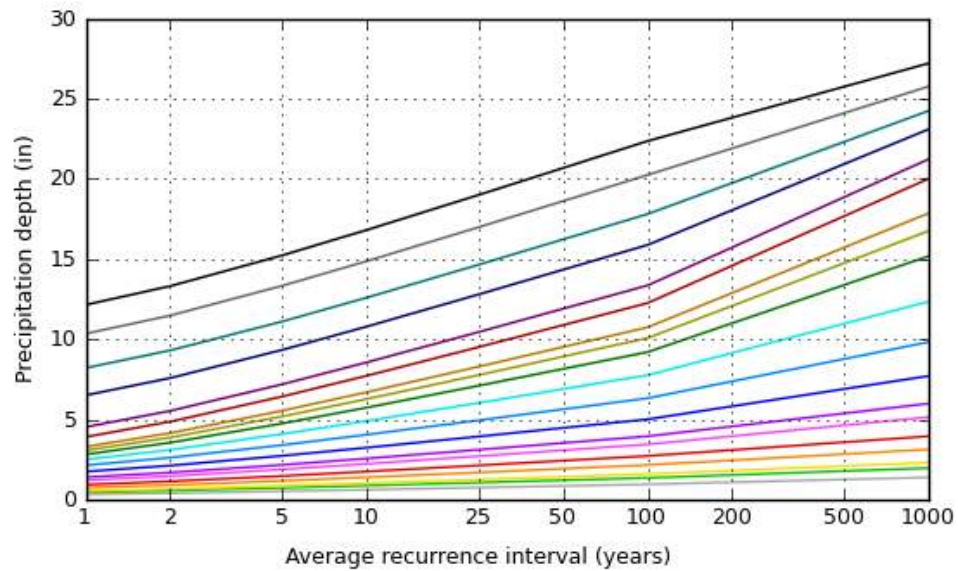
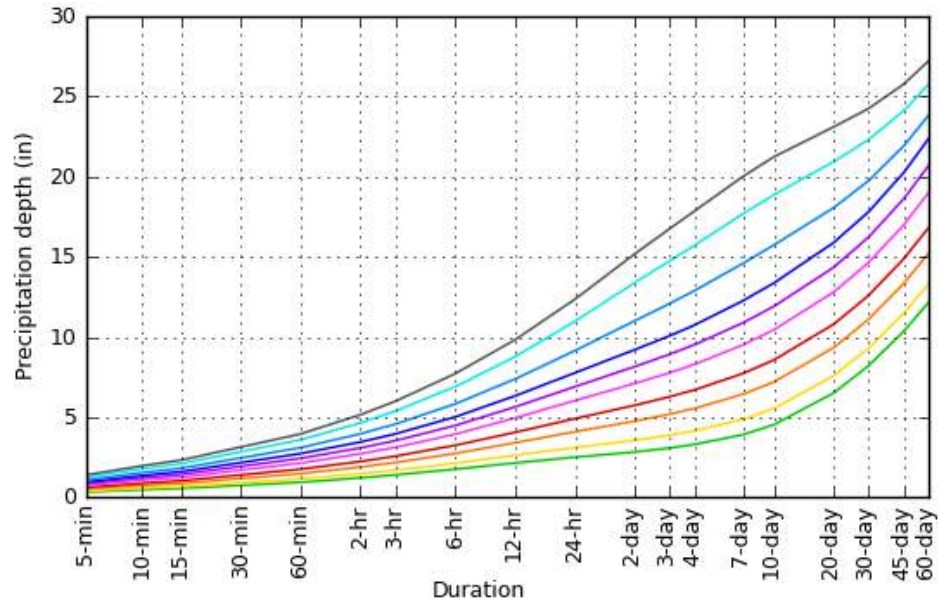
Please refer to NOAA Atlas 14 document for more information.

[Back to Top](#)

PF graphical

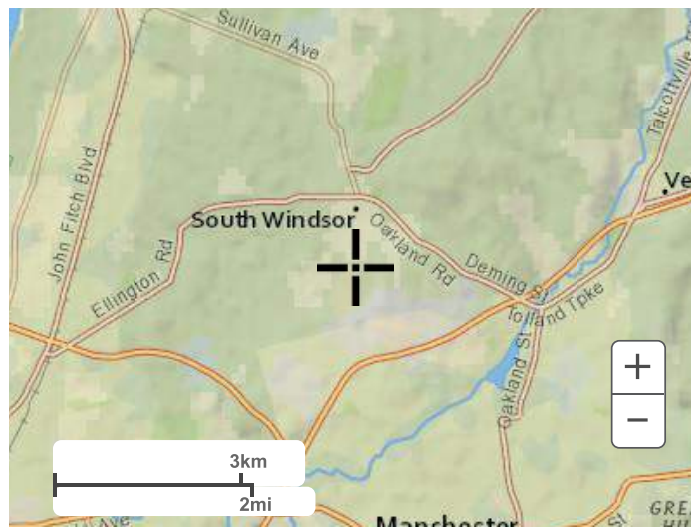
PDS-based depth-duration-frequency (DDF) curves

Latitude: 41.8163°, Longitude: -72.5538°

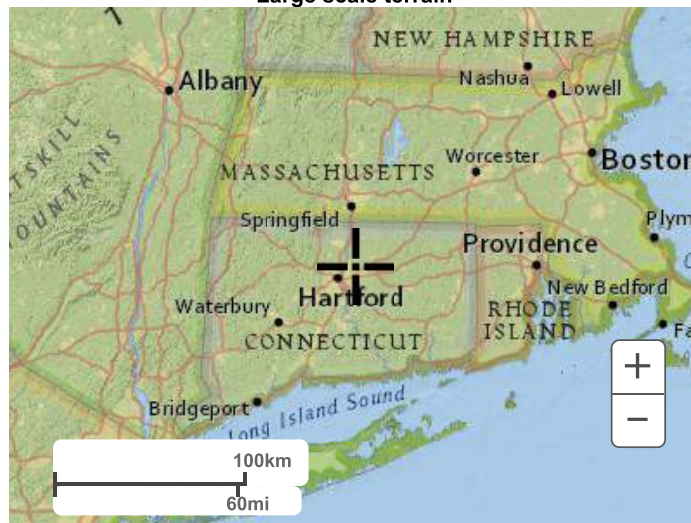


Maps & aerials

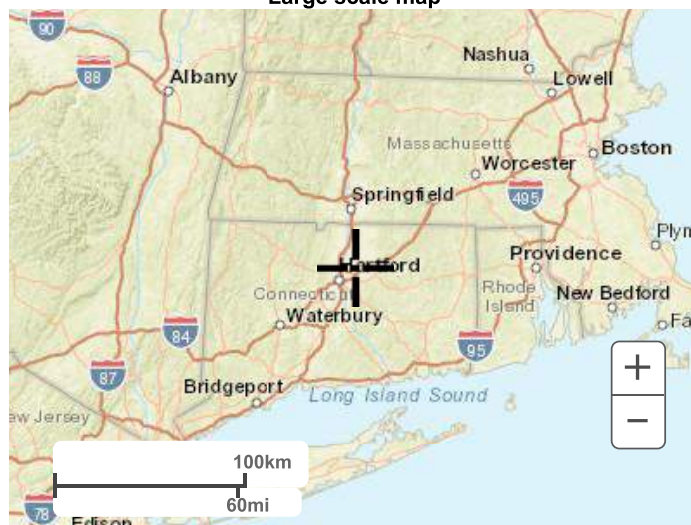
Small scale terrain



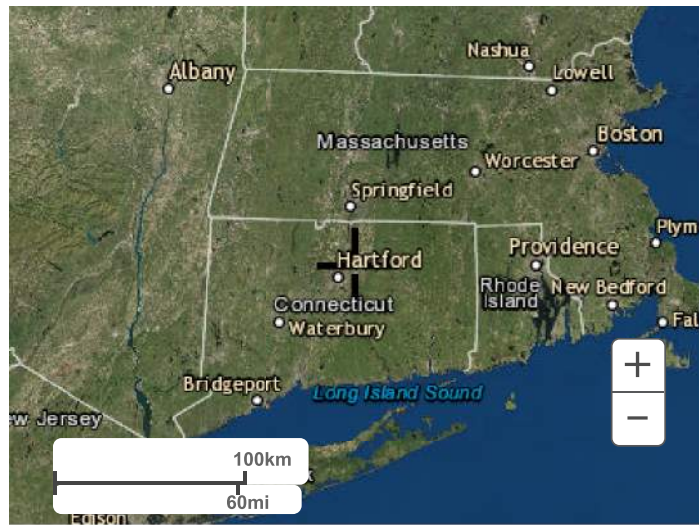
Large scale terrain



Large scale map



Large scale aerial



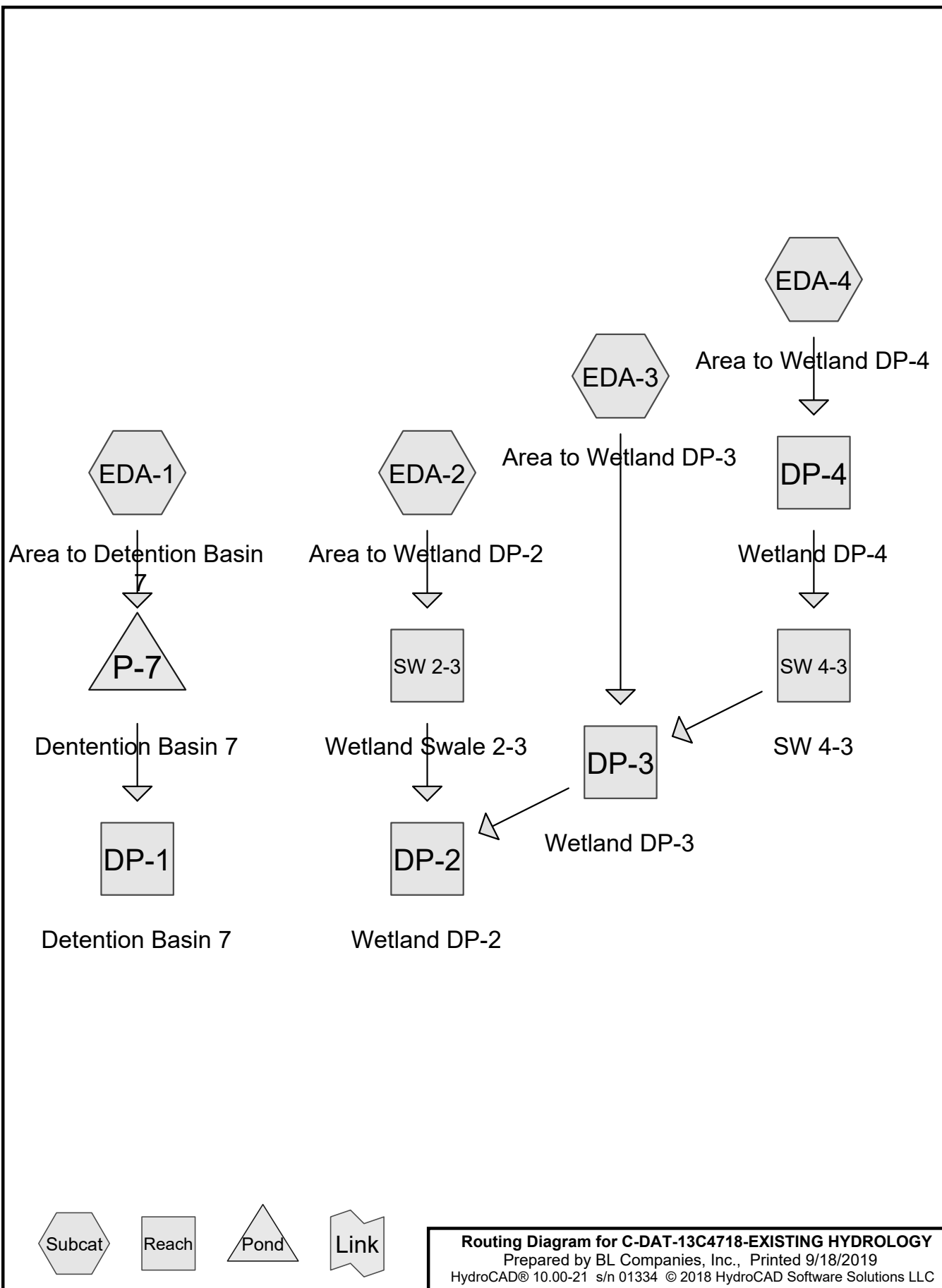
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APPENDIX B

PRE-DEVELOPMENT HYDROLOGY



C-DAT-13C4718-EXISTING HYD CT-SOUTH WINDSOR-13C4718 24-hr S1 2-yr Rainfall=3.11"

Prepared by BL Companies, Inc.

Printed 9/18/2019

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Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 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 EDA-1: Area to Detention Runoff Area=840,987 sf 70.56% Impervious Runoff Depth=2.09"
Tc=15.0 min CN=90 Runoff=38.21 cfs 3.355 af

Subcatchment EDA-2: Area to Wetland Runoff Area=747,775 sf 71.15% Impervious Runoff Depth=2.09"
Flow Length=1,211' Tc=8.0 min CN=90 Runoff=45.99 cfs 2.983 af

Subcatchment EDA-3: Area to Wetland DP-3 Runoff Area=45,946 sf 0.00% Impervious Runoff Depth=0.93"
Flow Length=347' Tc=9.3 min CN=73 Runoff=1.06 cfs 0.081 af

Subcatchment EDA-4: Area to Wetland Runoff Area=119,565 sf 0.00% Impervious Runoff Depth=0.73"
Flow Length=808' Tc=18.1 min CN=69 Runoff=1.42 cfs 0.167 af

Reach DP-1: Detention Basin 7 Inflow=0.69 cfs 1.818 af
Outflow=0.69 cfs 1.818 af

Reach DP-2: Wetland DP-2 Inflow=46.65 cfs 3.231 af
Outflow=46.65 cfs 3.231 af

Reach DP-3: Wetland DP-3 Inflow=1.83 cfs 0.248 af
Outflow=1.83 cfs 0.248 af

Reach DP-4: Wetland DP-4 Inflow=1.42 cfs 0.167 af
Outflow=1.42 cfs 0.167 af

Reach SW 2-3: Wetland Swale 2-3 Avg. Flow Depth=0.56' Max Vel=7.39 fps Inflow=45.99 cfs 2.983 af
n=0.030 L=396.0' S=0.0556 '/' Capacity=1,486.07 cfs Outflow=45.33 cfs 2.983 af

Reach SW 4-3: SW 4-3 Avg. Flow Depth=0.07' Max Vel=1.99 fps Inflow=1.42 cfs 0.167 af
n=0.030 L=343.7' S=0.0541 '/' Capacity=1,466.70 cfs Outflow=1.39 cfs 0.167 af

Pond P-7: Detention Basin 7 Peak Elev=93.90' Storage=117,300 cf Inflow=38.21 cfs 3.355 af
Outflow=0.69 cfs 1.818 af

Total Runoff Area = 40.273 ac Runoff Volume = 6.587 af Average Runoff Depth = 1.96"
35.84% Pervious = 14.435 ac 64.16% Impervious = 25.837 ac

Summary for Subcatchment EDA-1: Area to Detention Basin 7

Runoff = 38.21 cfs @ 12.15 hrs, Volume= 3.355 af, Depth= 2.09"

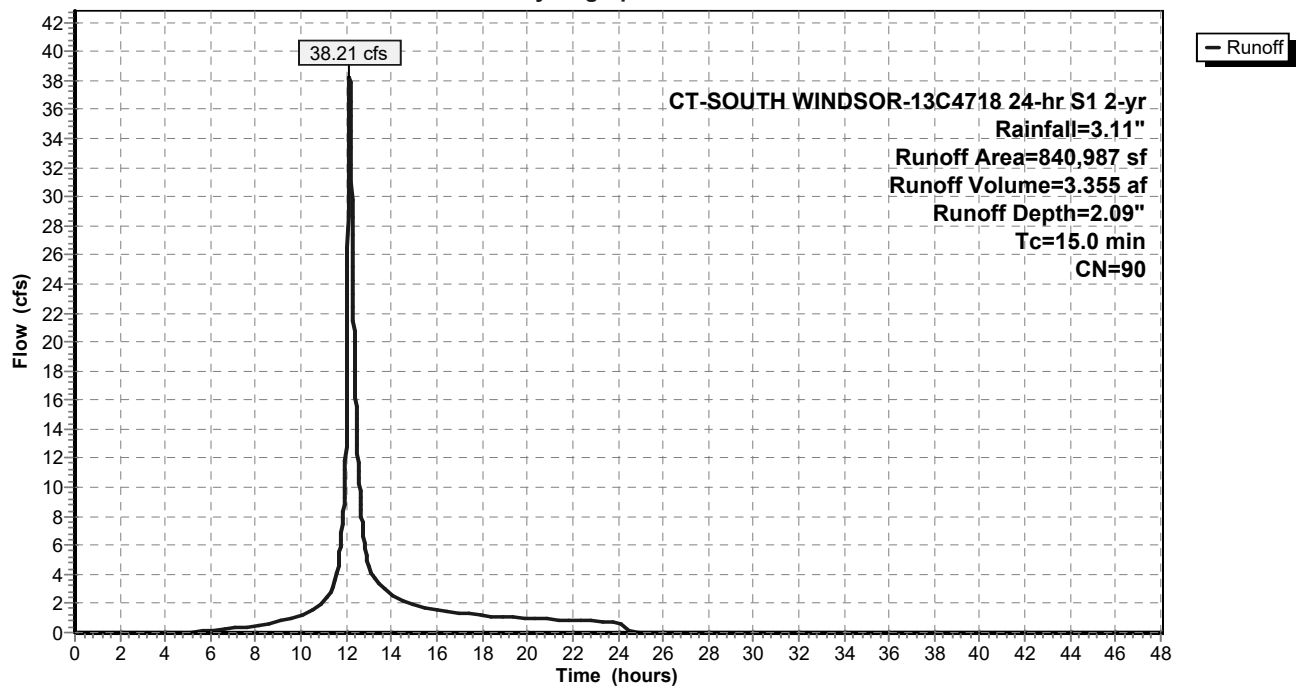
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-SOUTH WINDSOR-13C4718 24-hr S1 2-yr Rainfall=3.11"

Area (sf)	CN	Description
299,131	98	Paved parking, HSG B
282,062	98	Paved parking, HSG C
11,034	98	Paved parking, HSG B
1,191	98	Paved parking, HSG C
180,158	69	50-75% Grass cover, Fair, HSG B
59,799	79	50-75% Grass cover, Fair, HSG C
7,145	69	50-75% Grass cover, Fair, HSG B
467	79	50-75% Grass cover, Fair, HSG C
840,987	90	Weighted Average
247,569		29.44% Pervious Area
593,418		70.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry, Master Planned Tc

Subcatchment EDA-1: Area to Detention Basin 7

Hydrograph



Summary for Subcatchment EDA-2: Area to Wetland DP-2

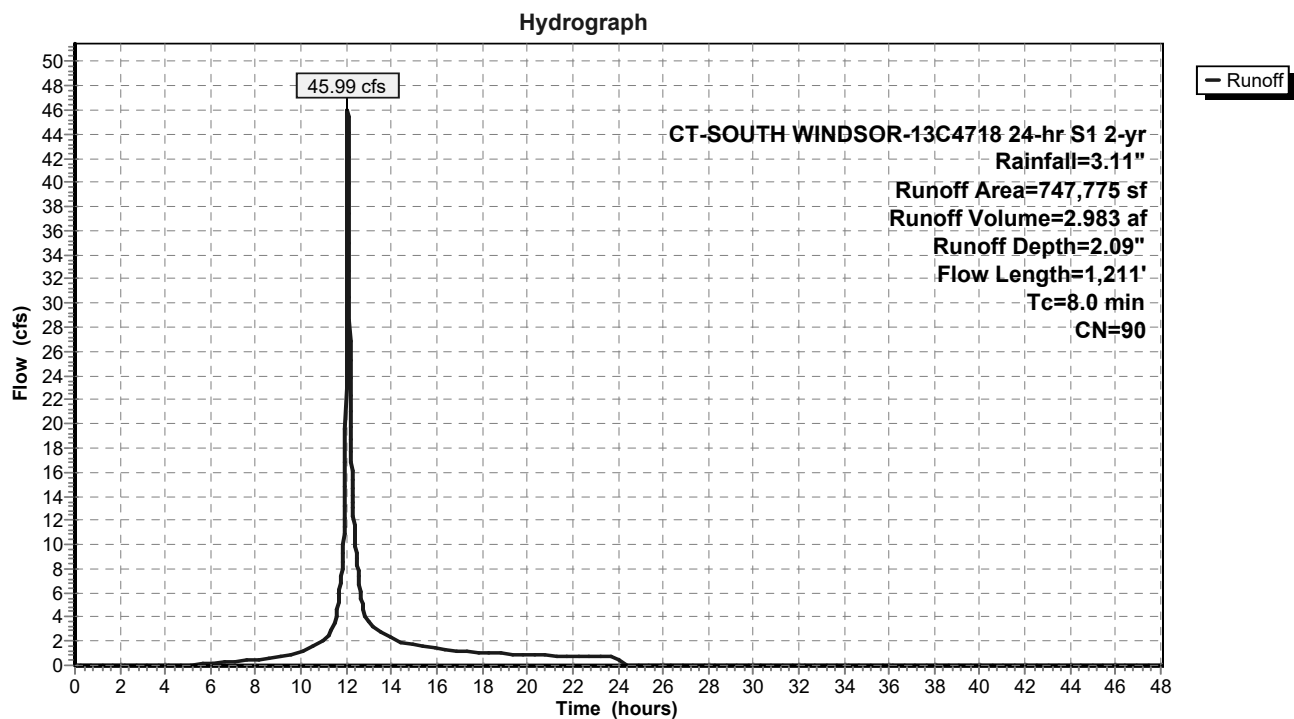
Runoff = 45.99 cfs @ 12.06 hrs, Volume= 2.983 af, Depth= 2.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-SOUTH WINDSOR-13C4718 24-hr S1 2-yr Rainfall=3.11"

Area (sf)	CN	Description
517,459	98	Paved parking, HSG B
10,227	98	Paved parking, HSG C
4,362	98	Paved parking, HSG D
213,896	69	50-75% Grass cover, Fair, HSG B
588	79	50-75% Grass cover, Fair, HSG C
1,243	84	50-75% Grass cover, Fair, HSG D
747,775	90	Weighted Average
215,727		28.85% Pervious Area
532,048		71.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	74	0.1350	0.34		Sheet Flow, 1 Grass: Short n= 0.150 P2= 3.11"
0.4	26	0.0250	1.13		Sheet Flow, 2 Smooth surfaces n= 0.011 P2= 3.11"
1.1	216	0.0250	3.21		Shallow Concentrated Flow, 3 Paved Kv= 20.3 fps
1.7	744	0.0050	7.35	23.11	Pipe Channel, RCP_Round 24" 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.009 Corrugated PE, smooth interior
1.2	151	0.0200	2.12		Shallow Concentrated Flow, 4 Grassed Waterway Kv= 15.0 fps
8.0	1,211	Total			

Subcatchment EDA-2: Area to Wetland DP-2



Summary for Subcatchment EDA-3: Area to Wetland DP-3

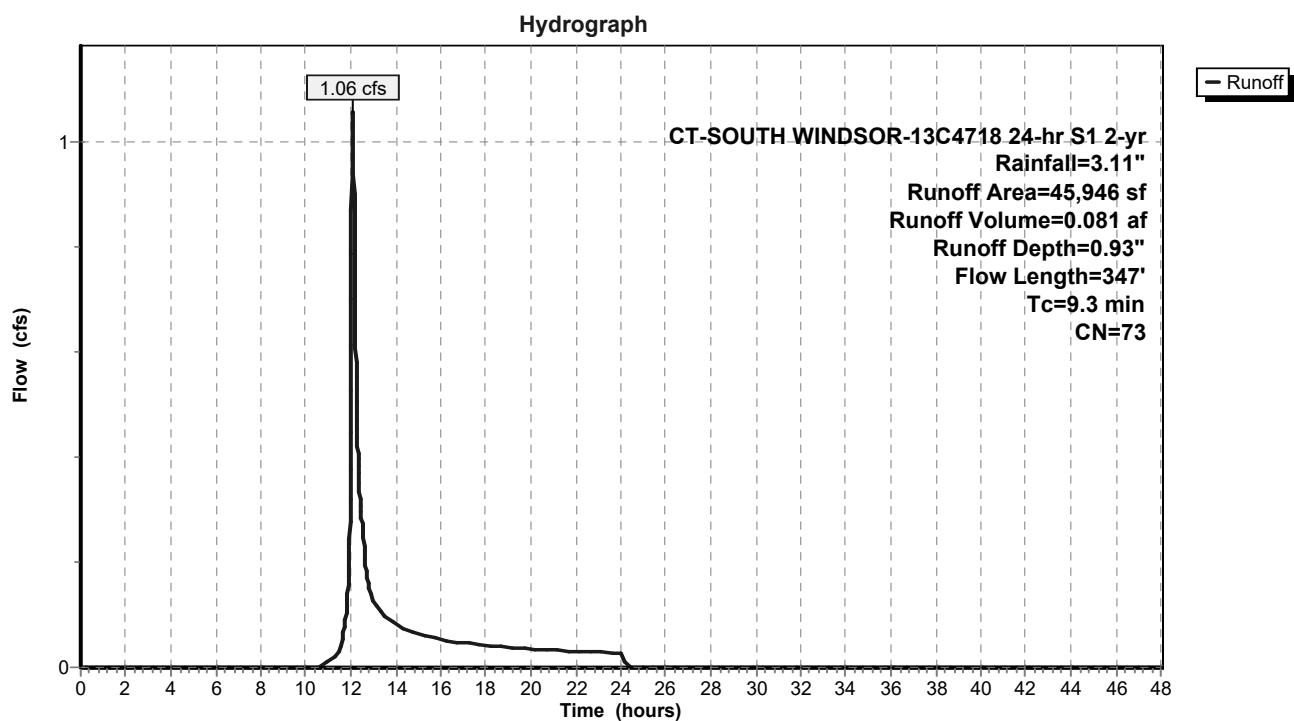
Runoff = 1.06 cfs @ 12.08 hrs, Volume= 0.081 af, Depth= 0.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-SOUTH WINDSOR-13C4718 24-hr S1 2-yr Rainfall=3.11"

Area (sf)	CN	Description
0	98	Paved parking, HSG B
0	98	Paved parking, HSG C
0	98	Paved parking, HSG D
21,004	69	50-75% Grass cover, Fair, HSG B
0	79	50-75% Grass cover, Fair, HSG C
5,451	84	50-75% Grass cover, Fair, HSG D
2,225	56	Brush, Fair, HSG B
17,266	77	Brush, Fair, HSG D
45,946	73	Weighted Average
45,946		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	100	0.0400	0.22		Sheet Flow, 1 Grass: Short n= 0.150 P2= 3.11"
0.6	125	0.0480	3.29		Shallow Concentrated Flow, 2 Grassed Waterway Kv= 15.0 fps
1.2	122	0.1060	1.63		Shallow Concentrated Flow, 3 Woodland Kv= 5.0 fps
9.3	347	Total			

Subcatchment EDA-3: Area to Wetland DP-3



Summary for Subcatchment EDA-4: Area to Wetland DP-4

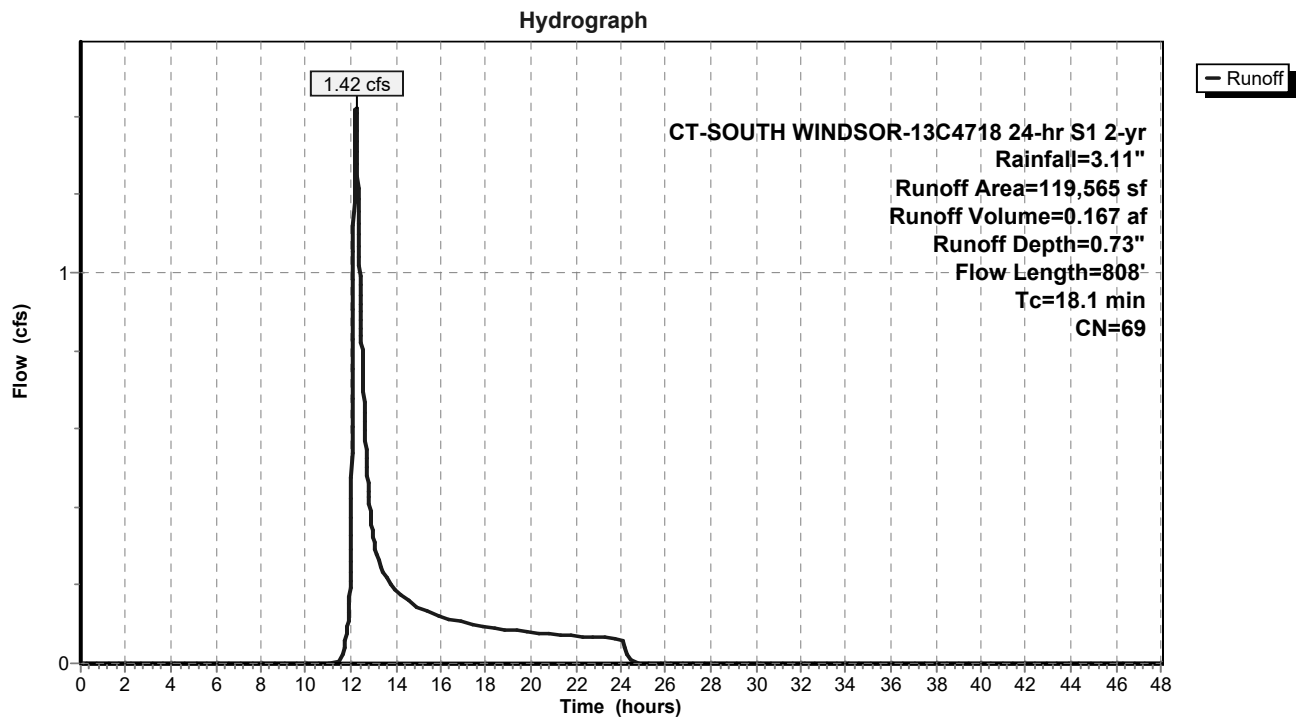
Runoff = 1.42 cfs @ 12.23 hrs, Volume= 0.167 af, Depth= 0.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-SOUTH WINDSOR-13C4718 24-hr S1 2-yr Rainfall=3.11"

Area (sf)	CN	Description
0	98	Paved parking, HSG B
0	98	Paved parking, HSG C
0	98	Paved parking, HSG D
57,679	69	50-75% Grass cover, Fair, HSG B
26,837	79	50-75% Grass cover, Fair, HSG C
0	84	50-75% Grass cover, Fair, HSG D
25,526	56	Brush, Fair, HSG B
9,523	70	Brush, Fair, HSG C
119,565	69	Weighted Average
119,565		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	100	0.0800	0.29		Sheet Flow, 1 Grass: Short n= 0.150 P2= 3.11"
0.2	39	0.0800	4.24		Shallow Concentrated Flow, 2 Grassed Waterway Kv= 15.0 fps
12.1	595	0.0270	0.82		Shallow Concentrated Flow, 3 Woodland Kv= 5.0 fps
0.1	74	0.0270	19.82	194.19	Channel Flow, 4 Area= 9.8 sf Perim= 15.7' r= 0.62' n= 0.009 Corrugated PE, smooth interior
18.1	808	Total			

Subcatchment EDA-4: Area to Wetland DP-4

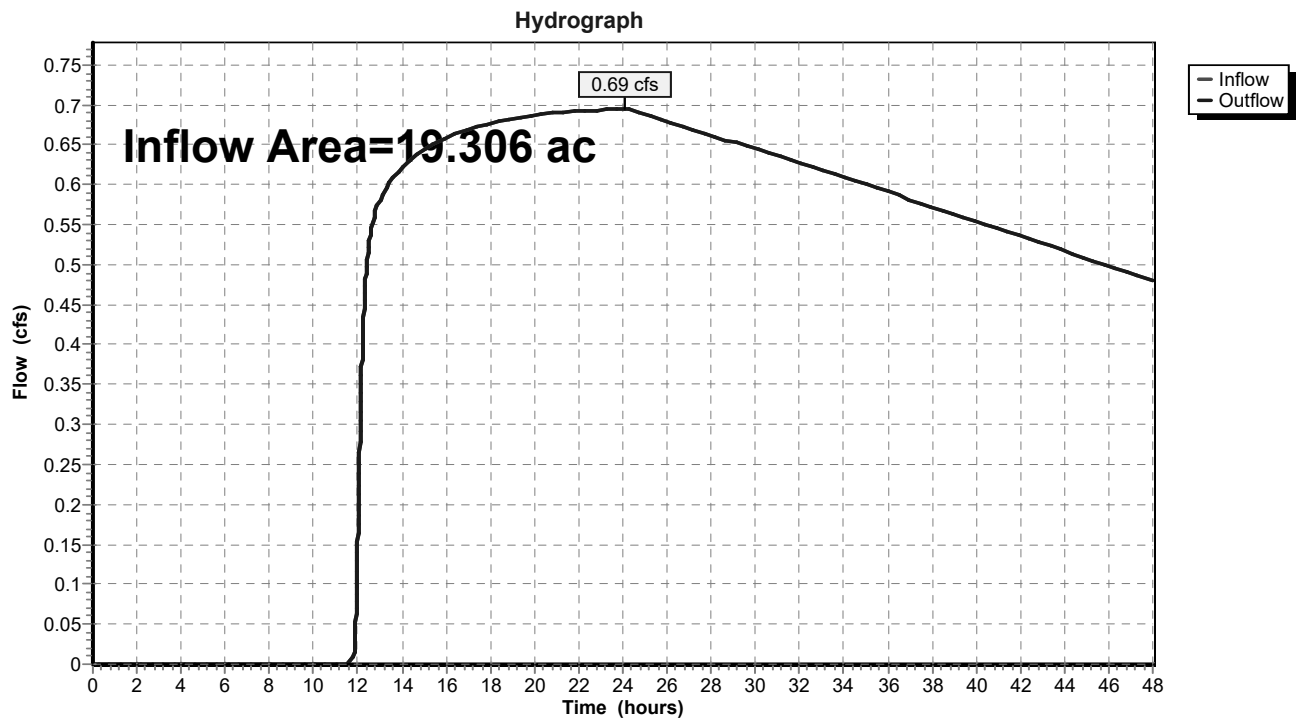


Summary for Reach DP-1: Detention Basin 7

Inflow Area = 19.306 ac, 70.56% Impervious, Inflow Depth > 1.13" for 2-yr event
Inflow = 0.69 cfs @ 24.10 hrs, Volume= 1.818 af
Outflow = 0.69 cfs @ 24.10 hrs, Volume= 1.818 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP-1: Detention Basin 7

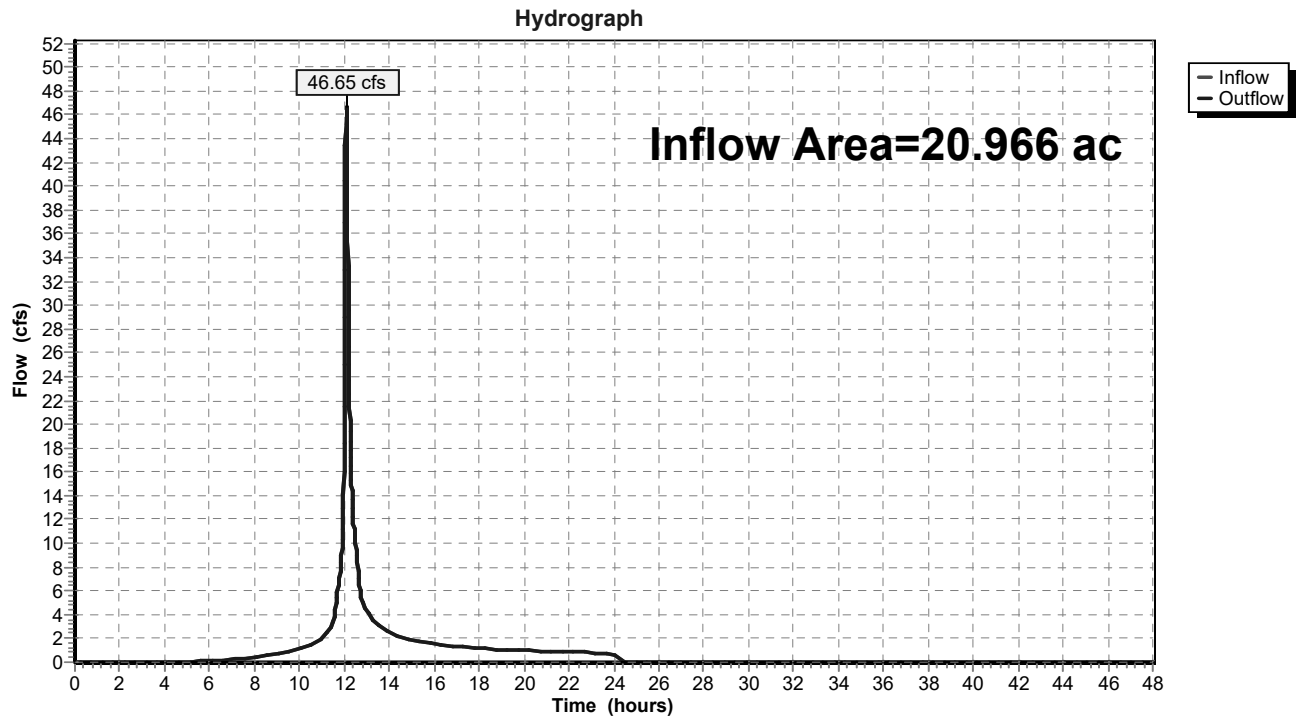


Summary for Reach DP-2: Wetland DP-2

Inflow Area = 20.966 ac, 58.26% Impervious, Inflow Depth = 1.85" for 2-yr event
Inflow = 46.65 cfs @ 12.09 hrs, Volume= 3.231 af
Outflow = 46.65 cfs @ 12.09 hrs, Volume= 3.231 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP-2: Wetland DP-2

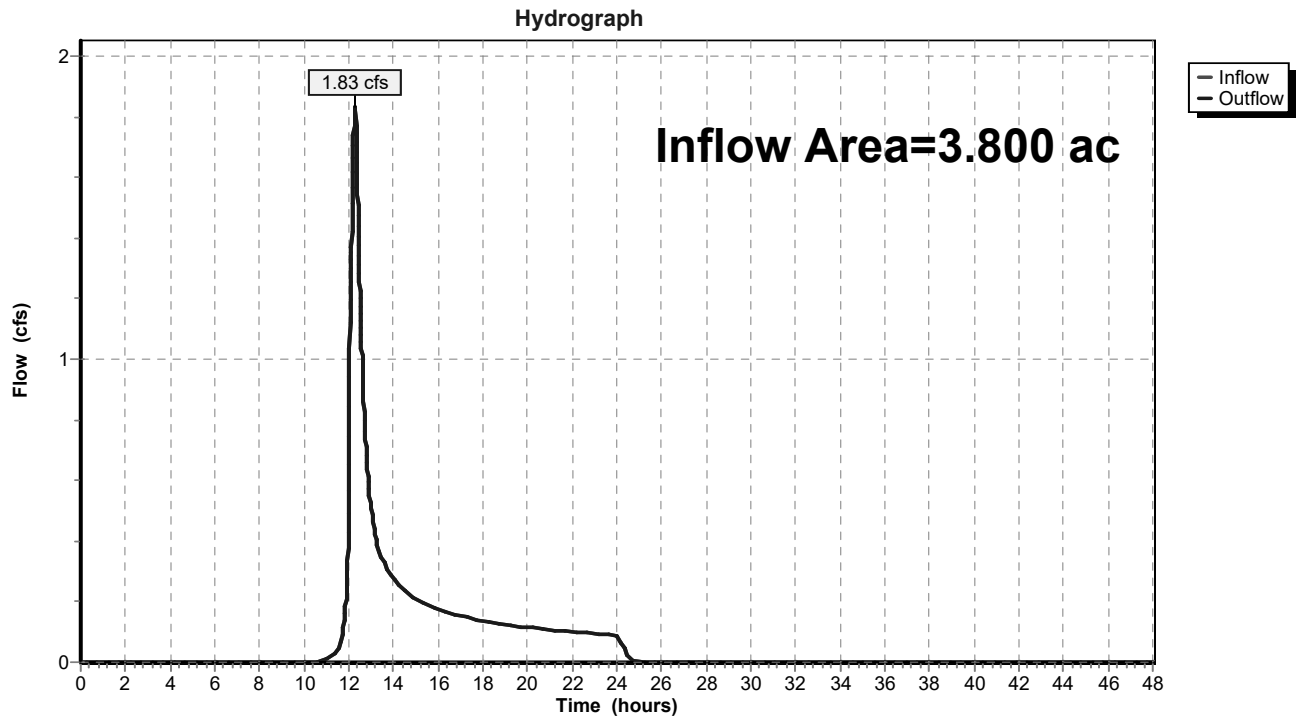


Summary for Reach DP-3: Wetland DP-3

Inflow Area = 3.800 ac, 0.00% Impervious, Inflow Depth = 0.78" for 2-yr event
Inflow = 1.83 cfs @ 12.28 hrs, Volume= 0.248 af
Outflow = 1.83 cfs @ 12.28 hrs, Volume= 0.248 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP-3: Wetland DP-3

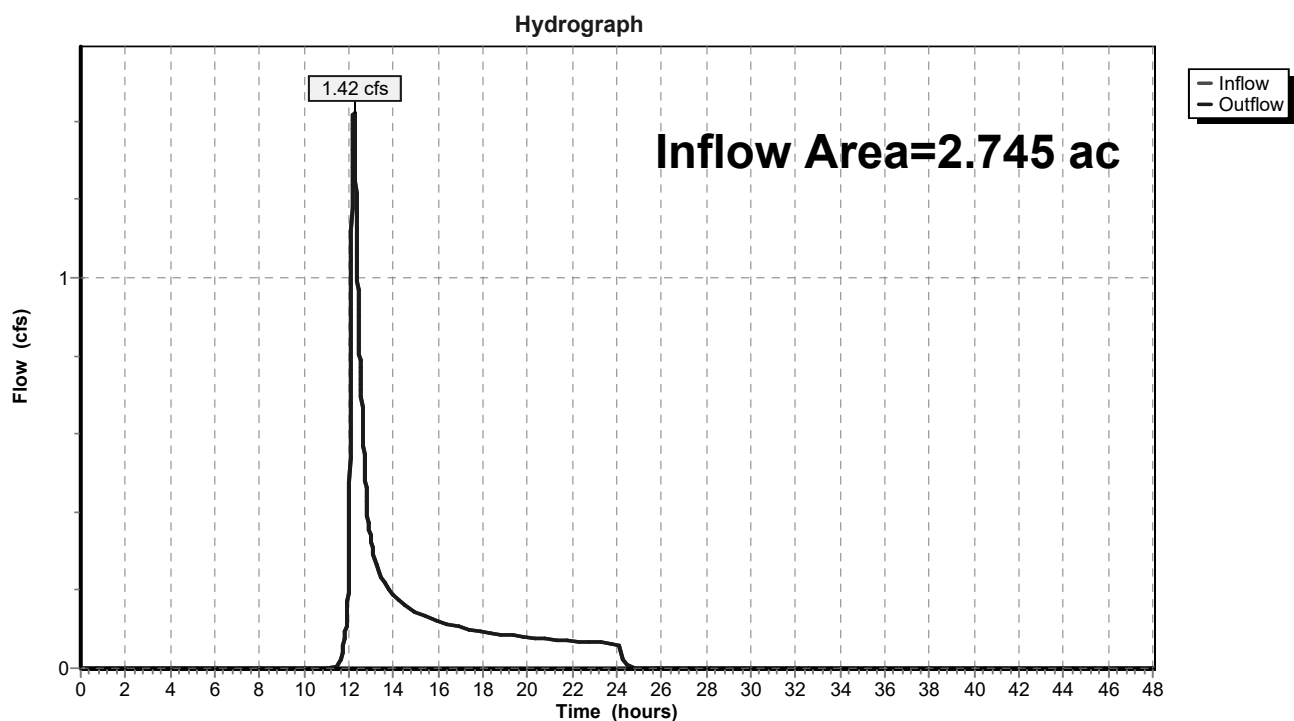


Summary for Reach DP-4: Wetland DP-4

Inflow Area = 2.745 ac, 0.00% Impervious, Inflow Depth = 0.73" for 2-yr event
Inflow = 1.42 cfs @ 12.23 hrs, Volume= 0.167 af
Outflow = 1.42 cfs @ 12.23 hrs, Volume= 0.167 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP-4: Wetland DP-4



Summary for Reach SW 2-3: Wetland Swale 2-3

Inflow Area = 17.167 ac, 71.15% Impervious, Inflow Depth = 2.09" for 2-yr event
 Inflow = 45.99 cfs @ 12.06 hrs, Volume= 2.983 af
 Outflow = 45.33 cfs @ 12.09 hrs, Volume= 2.983 af, Atten= 1%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Max. Velocity= 7.39 fps, Min. Travel Time= 0.9 min
 Avg. Velocity = 1.93 fps, Avg. Travel Time= 3.4 min

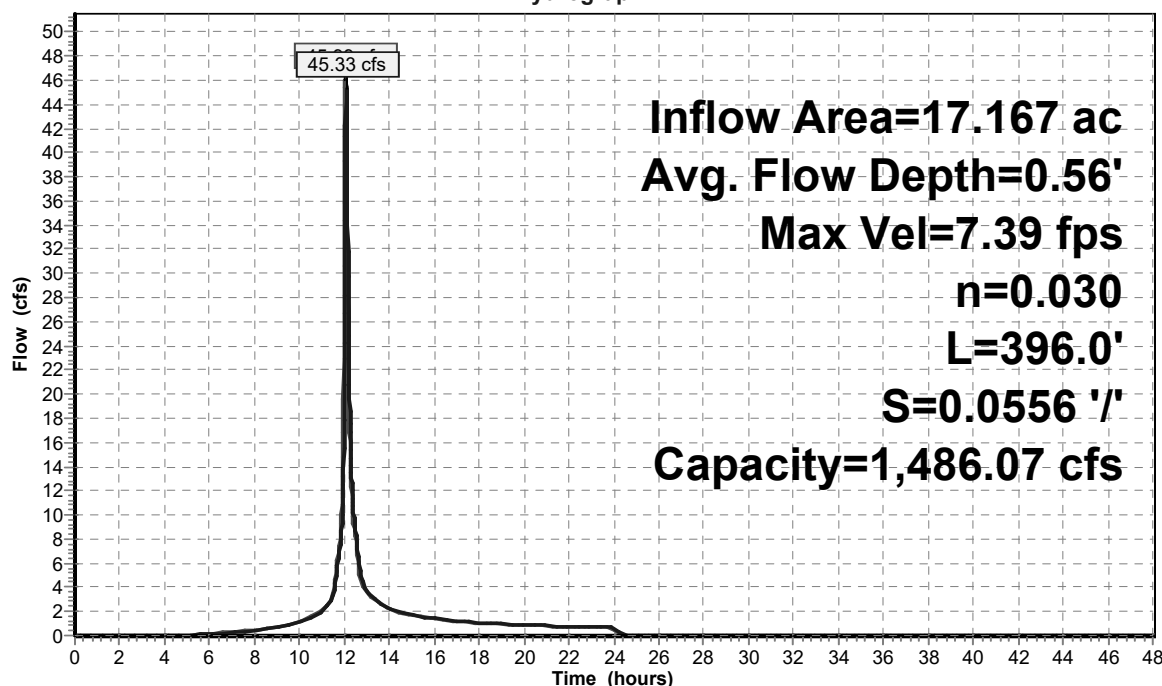
Peak Storage= 2,436 cf @ 12.07 hrs
 Average Depth at Peak Storage= 0.56'
 Bank-Full Depth= 4.00' Flow Area= 67.2 sf, Capacity= 1,486.07 cfs

10.00' x 4.00' deep channel, n= 0.030 Earth, grassed & winding
 Side Slope Z-value= 1.7 ' ' Top Width= 23.60'
 Length= 396.0' Slope= 0.0556 ' '
 Inlet Invert= 127.00', Outlet Invert= 105.00'



Reach SW 2-3: Wetland Swale 2-3

Hydrograph



Summary for Reach SW 4-3: SW 4-3

Inflow Area = 2.745 ac, 0.00% Impervious, Inflow Depth = 0.73" for 2-yr event
 Inflow = 1.42 cfs @ 12.23 hrs, Volume= 0.167 af
 Outflow = 1.39 cfs @ 12.31 hrs, Volume= 0.167 af, Atten= 3%, Lag= 5.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Max. Velocity= 1.99 fps, Min. Travel Time= 2.9 min
 Avg. Velocity = 1.36 fps, Avg. Travel Time= 4.2 min

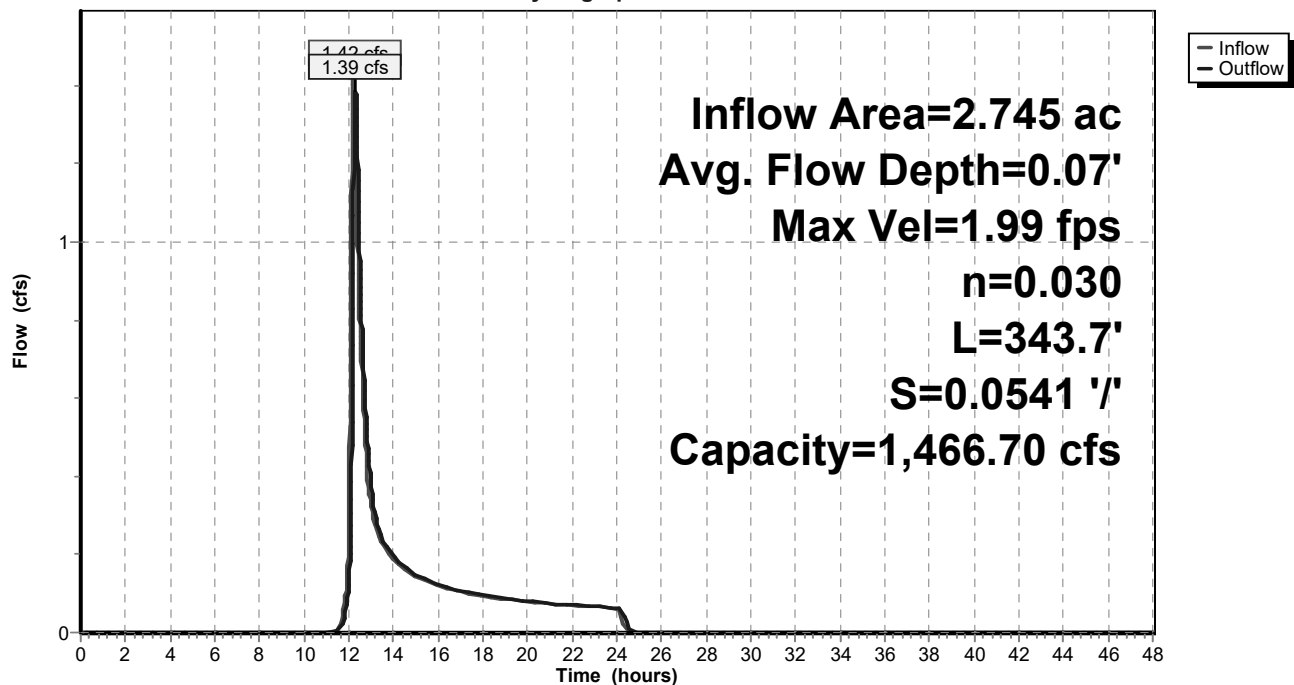
Peak Storage= 240 cf @ 12.26 hrs
 Average Depth at Peak Storage= 0.07'
 Bank-Full Depth= 4.00' Flow Area= 67.2 sf, Capacity= 1,466.70 cfs

10.00' x 4.00' deep channel, n= 0.030 Earth, grassed & winding
 Side Slope Z-value= 1.7 '/' Top Width= 23.60'
 Length= 343.7' Slope= 0.0541 '/'
 Inlet Invert= 123.60', Outlet Invert= 105.00'



Reach SW 4-3: SW 4-3

Hydrograph



Summary for Pond P-7: Dentention Basin 7

Inflow Area = 19.306 ac, 70.56% Impervious, Inflow Depth = 2.09" for 2-yr event
 Inflow = 38.21 cfs @ 12.15 hrs, Volume= 3.355 af
 Outflow = 0.69 cfs @ 24.10 hrs, Volume= 1.818 af, Atten= 98%, Lag= 716.8 min
 Primary = 0.69 cfs @ 24.10 hrs, Volume= 1.818 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 93.90' @ 24.10 hrs Surf.Area= 37,037 sf Storage= 117,300 cf

Plug-Flow detention time= 1,054.9 min calculated for 1.818 af (54% of inflow)
 Center-of-Mass det. time= 922.1 min (1,751.6 - 829.5)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	396,479 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

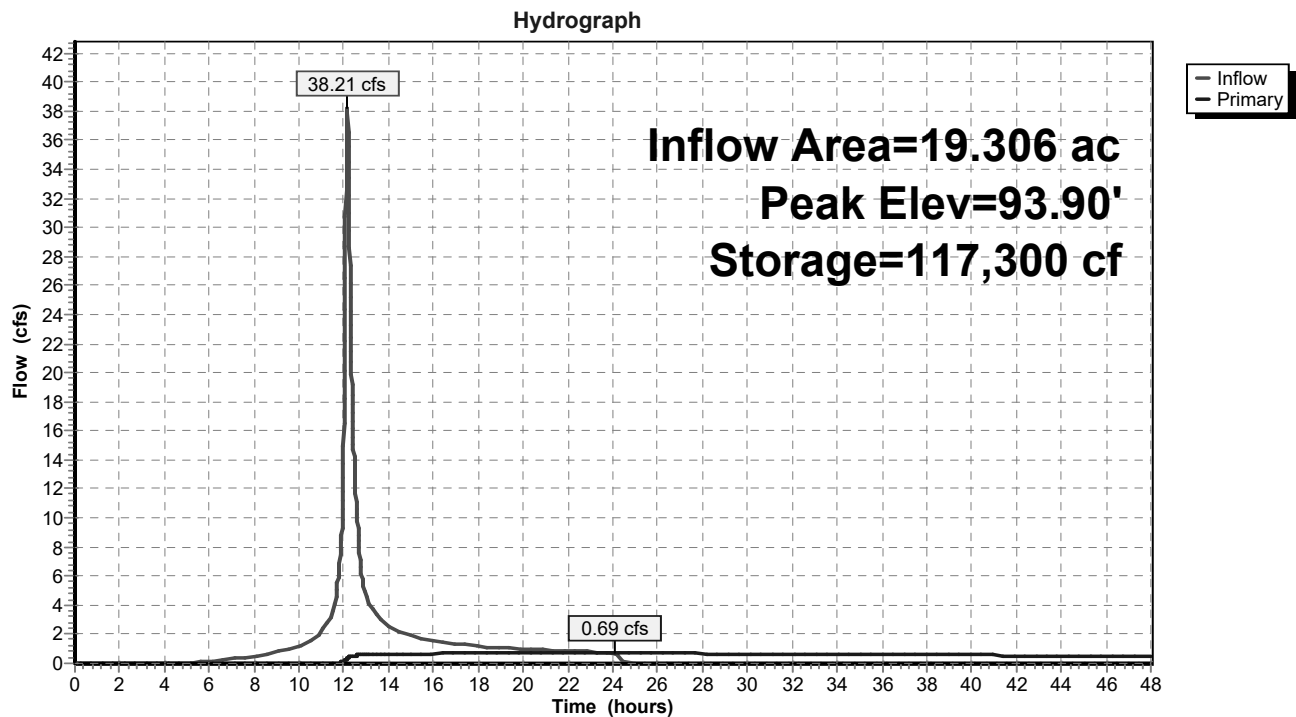
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.00	19,765	0	0
92.00	31,993	51,758	51,758
94.00	37,305	69,298	121,056
96.00	42,927	80,232	201,288
98.00	48,699	91,626	292,914
100.00	54,866	103,565	396,479

Device	Routing	Invert	Outlet Devices
#1	Primary	88.00'	18.0" Round Culvert L= 71.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 88.00' / 84.50' S= 0.0493 ' / Cc= 0.900 n= 0.009 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	91.00'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	95.00'	6.0" Vert. Orifice/Grate C= 0.600
#4	Device 1	98.00'	6.0" Vert. Orifice/Grate C= 0.600
#5	Device 1	99.00'	36.0" x 78.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.69 cfs @ 24.10 hrs HW=93.90' (Free Discharge)

1=Culvert (Passes 0.69 cfs of 19.31 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.69 cfs @ 7.96 fps)
 3=Orifice/Grate (Controls 0.00 cfs)
 4=Orifice/Grate (Controls 0.00 cfs)
 5=Orifice/Grate (Controls 0.00 cfs)

Pond P-7: Dentention Basin 7



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 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 EDA-1: Area to Detention Runoff Area=840,987 sf 70.56% Impervious Runoff Depth=3.79"
Tc=15.0 min CN=90 Runoff=66.14 cfs 6.097 af

Subcatchment EDA-2: Area to Wetland Runoff Area=747,775 sf 71.15% Impervious Runoff Depth=3.79"
Flow Length=1,211' Tc=8.0 min CN=90 Runoff=79.37 cfs 5.421 af

Subcatchment EDA-3: Area to Wetland DP-3 Runoff Area=45,946 sf 0.00% Impervious Runoff Depth=2.21"
Flow Length=347' Tc=9.3 min CN=73 Runoff=2.67 cfs 0.194 af

Subcatchment EDA-4: Area to Wetland Runoff Area=119,565 sf 0.00% Impervious Runoff Depth=1.89"
Flow Length=808' Tc=18.1 min CN=69 Runoff=4.16 cfs 0.433 af

Reach DP-1: Detention Basin 7 Inflow=1.72 cfs 3.394 af
Outflow=1.72 cfs 3.394 af

Reach DP-2: Wetland DP-2 Inflow=82.76 cfs 6.048 af
Outflow=82.76 cfs 6.048 af

Reach DP-3: Wetland DP-3 Inflow=5.39 cfs 0.627 af
Outflow=5.39 cfs 0.627 af

Reach DP-4: Wetland DP-4 Inflow=4.16 cfs 0.433 af
Outflow=4.16 cfs 0.433 af

Reach SW 2-3: Wetland Swale 2-3 Avg. Flow Depth=0.78' Max Vel=8.96 fps Inflow=79.37 cfs 5.421 af
n=0.030 L=396.0' S=0.0556 '/' Capacity=1,486.07 cfs Outflow=78.58 cfs 5.421 af

Reach SW 4-3: SW 4-3 Avg. Flow Depth=0.13' Max Vel=3.00 fps Inflow=4.16 cfs 0.433 af
n=0.030 L=343.7' S=0.0541 '/' Capacity=1,466.70 cfs Outflow=4.12 cfs 0.433 af

Pond P-7: Detention Basin 7 Peak Elev=95.97' Storage=199,916 cf Inflow=66.14 cfs 6.097 af
Outflow=1.72 cfs 3.394 af

Total Runoff Area = 40.273 ac Runoff Volume = 12.145 af Average Runoff Depth = 3.62"
35.84% Pervious = 14.435 ac 64.16% Impervious = 25.837 ac

Summary for Subcatchment EDA-1: Area to Detention Basin 7

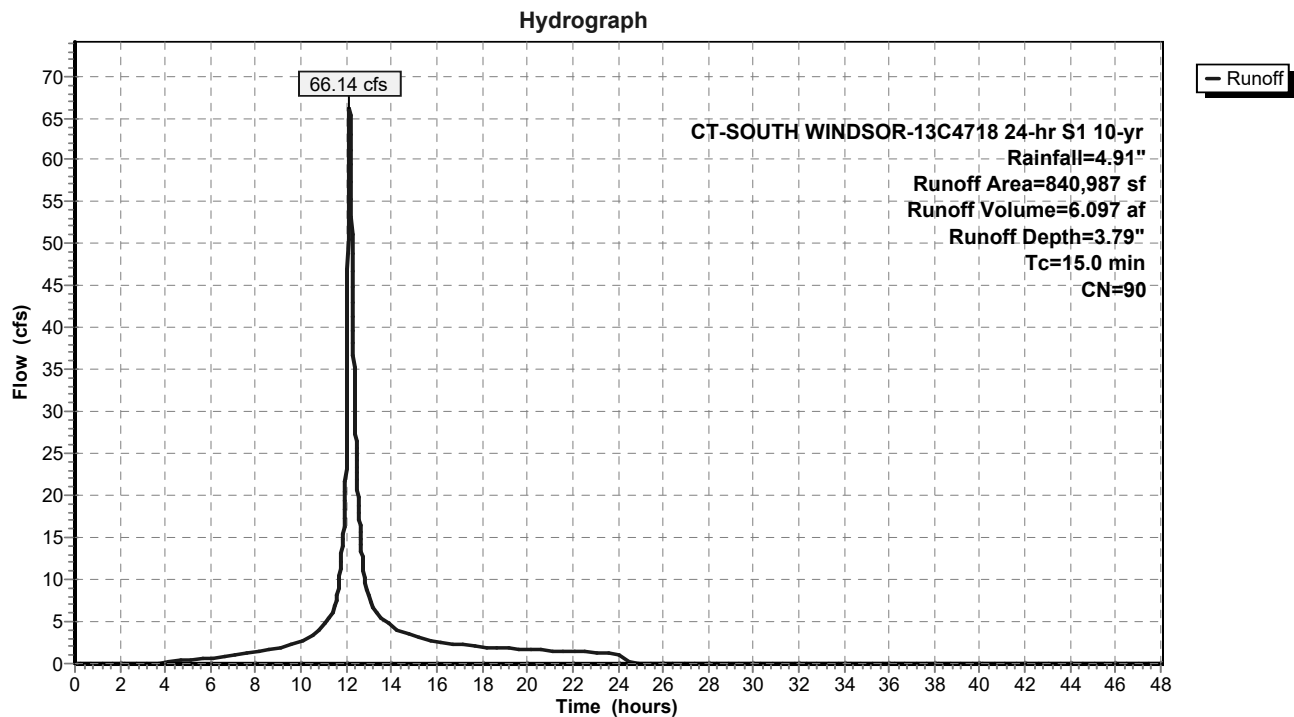
Runoff = 66.14 cfs @ 12.15 hrs, Volume= 6.097 af, Depth= 3.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 CT-SOUTH WINDSOR-13C4718 24-hr S1 10-yr Rainfall=4.91"

Area (sf)	CN	Description
299,131	98	Paved parking, HSG B
282,062	98	Paved parking, HSG C
11,034	98	Paved parking, HSG B
1,191	98	Paved parking, HSG C
180,158	69	50-75% Grass cover, Fair, HSG B
59,799	79	50-75% Grass cover, Fair, HSG C
7,145	69	50-75% Grass cover, Fair, HSG B
467	79	50-75% Grass cover, Fair, HSG C
840,987	90	Weighted Average
247,569		29.44% Pervious Area
593,418		70.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry, Master Planned Tc

Subcatchment EDA-1: Area to Detention Basin 7



Summary for Subcatchment EDA-2: Area to Wetland DP-2

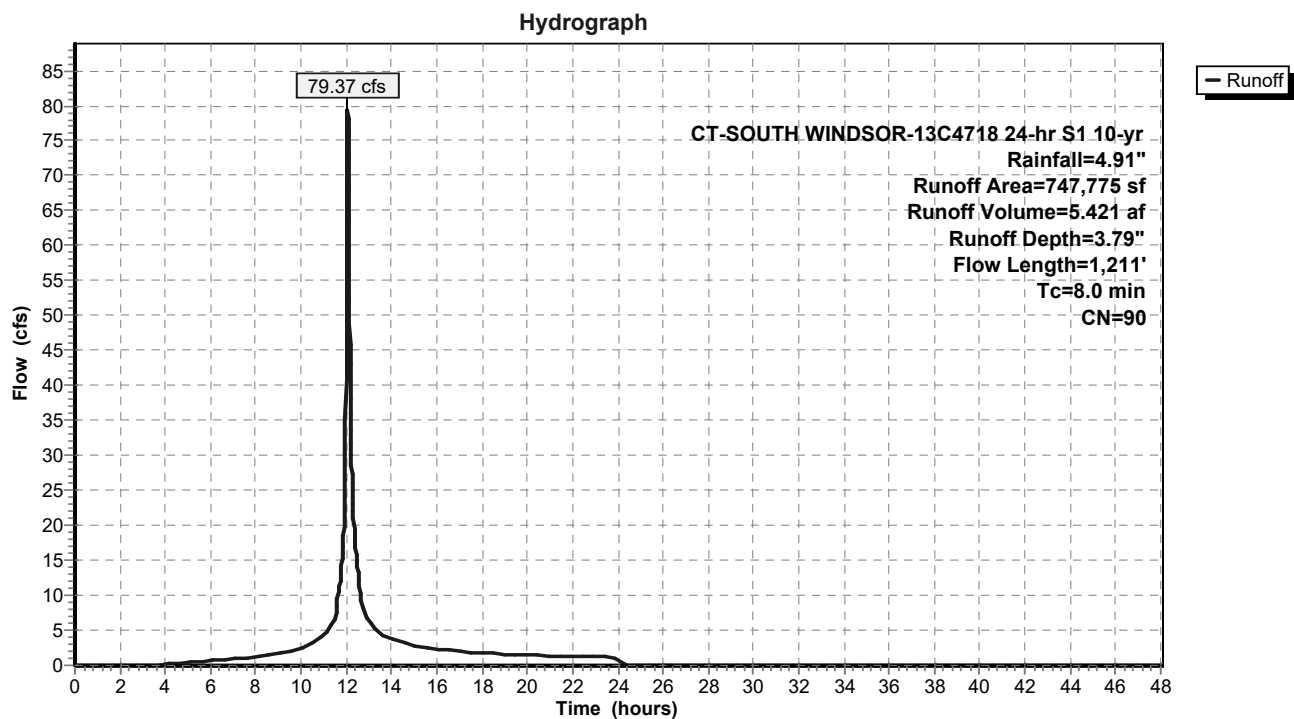
Runoff = 79.37 cfs @ 12.06 hrs, Volume= 5.421 af, Depth= 3.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-SOUTH WINDSOR-13C4718 24-hr S1 10-yr Rainfall=4.91"

Area (sf)	CN	Description
517,459	98	Paved parking, HSG B
10,227	98	Paved parking, HSG C
4,362	98	Paved parking, HSG D
213,896	69	50-75% Grass cover, Fair, HSG B
588	79	50-75% Grass cover, Fair, HSG C
1,243	84	50-75% Grass cover, Fair, HSG D
747,775	90	Weighted Average
215,727		28.85% Pervious Area
532,048		71.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	74	0.1350	0.34		Sheet Flow, 1 Grass: Short n= 0.150 P2= 3.11"
0.4	26	0.0250	1.13		Sheet Flow, 2 Smooth surfaces n= 0.011 P2= 3.11"
1.1	216	0.0250	3.21		Shallow Concentrated Flow, 3 Paved Kv= 20.3 fps
1.7	744	0.0050	7.35	23.11	Pipe Channel, RCP_Round 24" 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.009 Corrugated PE, smooth interior
1.2	151	0.0200	2.12		Shallow Concentrated Flow, 4 Grassed Waterway Kv= 15.0 fps
8.0	1,211	Total			

Subcatchment EDA-2: Area to Wetland DP-2



Summary for Subcatchment EDA-3: Area to Wetland DP-3

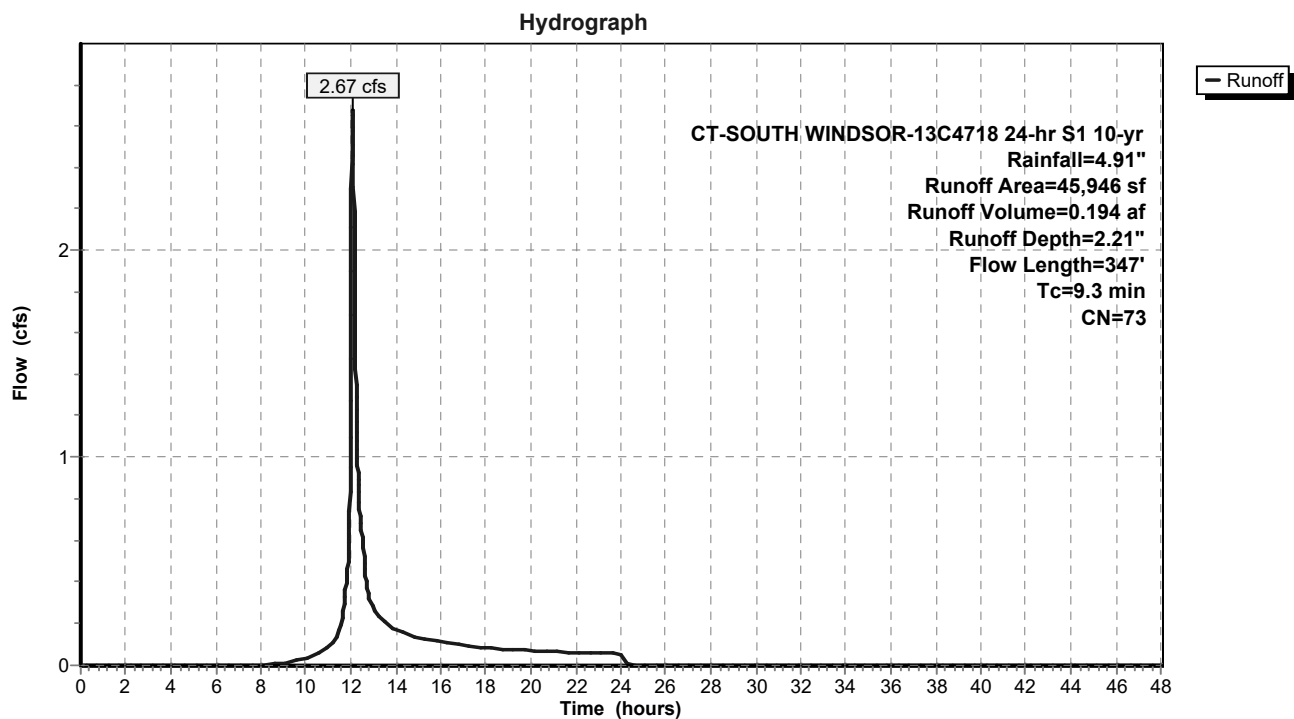
Runoff = 2.67 cfs @ 12.08 hrs, Volume= 0.194 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 CT-SOUTH WINDSOR-13C4718 24-hr S1 10-yr Rainfall=4.91"

Area (sf)	CN	Description
0	98	Paved parking, HSG B
0	98	Paved parking, HSG C
0	98	Paved parking, HSG D
21,004	69	50-75% Grass cover, Fair, HSG B
0	79	50-75% Grass cover, Fair, HSG C
5,451	84	50-75% Grass cover, Fair, HSG D
2,225	56	Brush, Fair, HSG B
17,266	77	Brush, Fair, HSG D
45,946	73	Weighted Average
45,946		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	100	0.0400	0.22		Sheet Flow, 1
					Grass: Short n= 0.150 P2= 3.11"
0.6	125	0.0480	3.29		Shallow Concentrated Flow, 2
					Grassed Waterway Kv= 15.0 fps
1.2	122	0.1060	1.63		Shallow Concentrated Flow, 3
					Woodland Kv= 5.0 fps
9.3	347	Total			

Subcatchment EDA-3: Area to Wetland DP-3



Summary for Subcatchment EDA-4: Area to Wetland DP-4

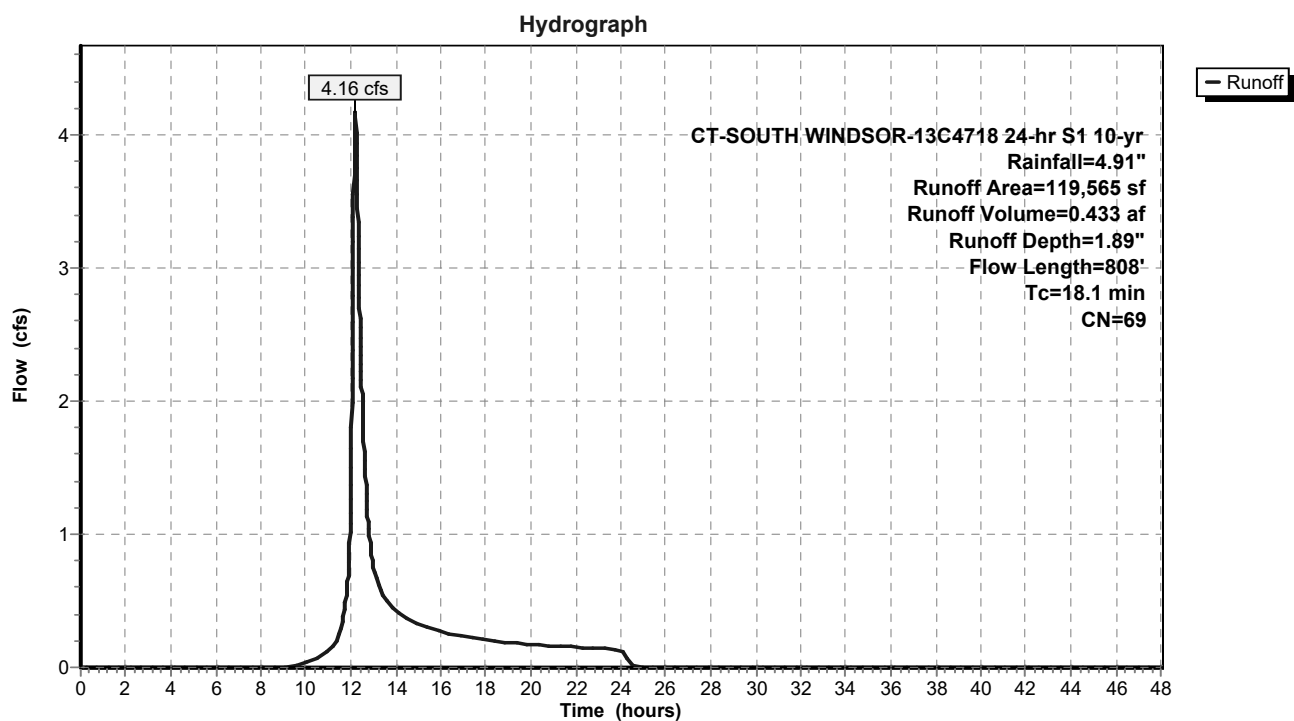
Runoff = 4.16 cfs @ 12.21 hrs, Volume= 0.433 af, Depth= 1.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 CT-SOUTH WINDSOR-13C4718 24-hr S1 10-yr Rainfall=4.91"

Area (sf)	CN	Description
0	98	Paved parking, HSG B
0	98	Paved parking, HSG C
0	98	Paved parking, HSG D
57,679	69	50-75% Grass cover, Fair, HSG B
26,837	79	50-75% Grass cover, Fair, HSG C
0	84	50-75% Grass cover, Fair, HSG D
25,526	56	Brush, Fair, HSG B
9,523	70	Brush, Fair, HSG C
119,565	69	Weighted Average
119,565		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	100	0.0800	0.29		Sheet Flow, 1 Grass: Short n= 0.150 P2= 3.11"
0.2	39	0.0800	4.24		Shallow Concentrated Flow, 2 Grassed Waterway Kv= 15.0 fps
12.1	595	0.0270	0.82		Shallow Concentrated Flow, 3 Woodland Kv= 5.0 fps
0.1	74	0.0270	19.82	194.19	Channel Flow, 4 Area= 9.8 sf Perim= 15.7' r= 0.62' n= 0.009 Corrugated PE, smooth interior
18.1	808	Total			

Subcatchment EDA-4: Area to Wetland DP-4

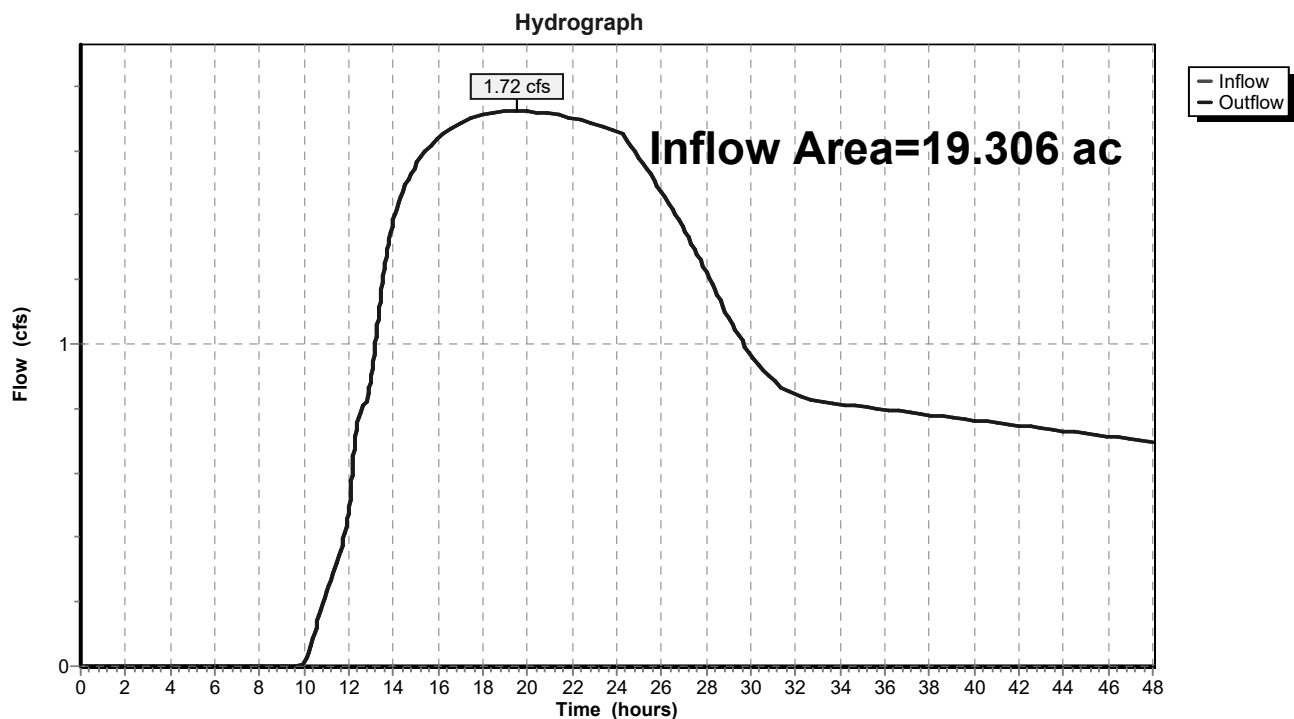


Summary for Reach DP-1: Detention Basin 7

Inflow Area = 19.306 ac, 70.56% Impervious, Inflow Depth > 2.11" for 10-yr event
Inflow = 1.72 cfs @ 19.53 hrs, Volume= 3.394 af
Outflow = 1.72 cfs @ 19.53 hrs, Volume= 3.394 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP-1: Detention Basin 7

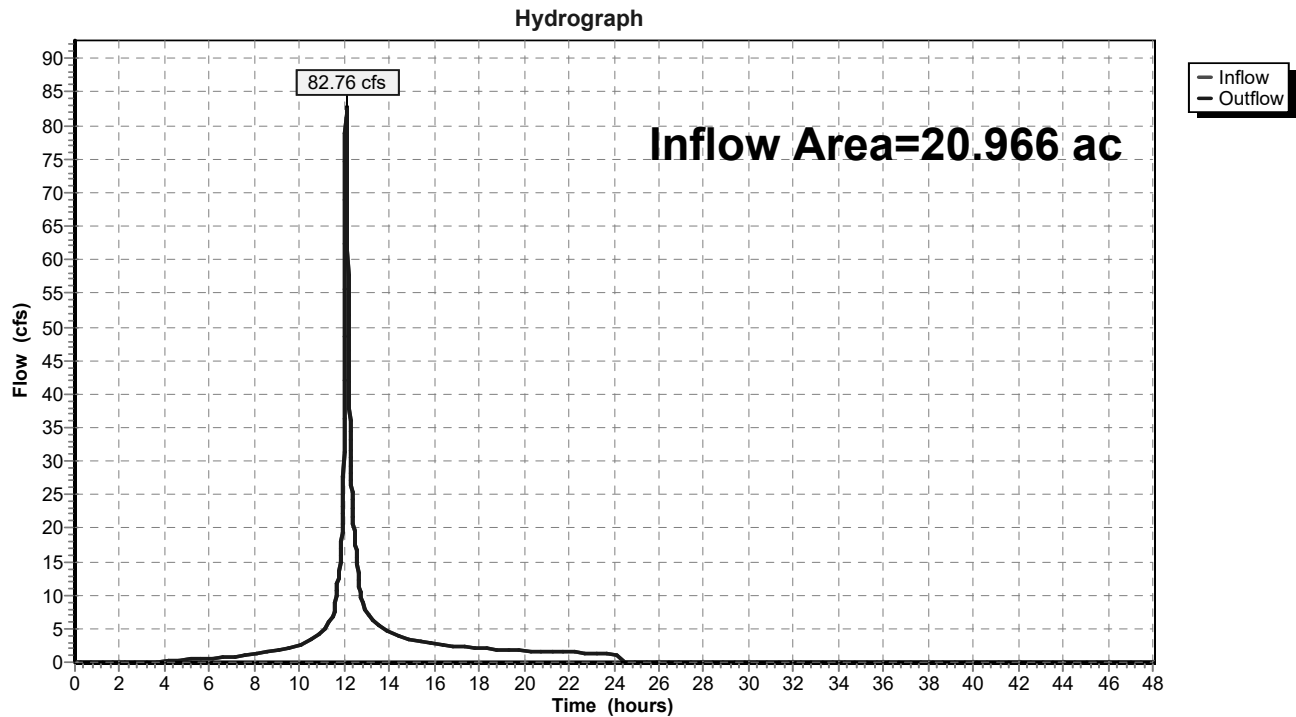


Summary for Reach DP-2: Wetland DP-2

Inflow Area = 20.966 ac, 58.26% Impervious, Inflow Depth = 3.46" for 10-yr event
Inflow = 82.76 cfs @ 12.08 hrs, Volume= 6.048 af
Outflow = 82.76 cfs @ 12.08 hrs, Volume= 6.048 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP-2: Wetland DP-2

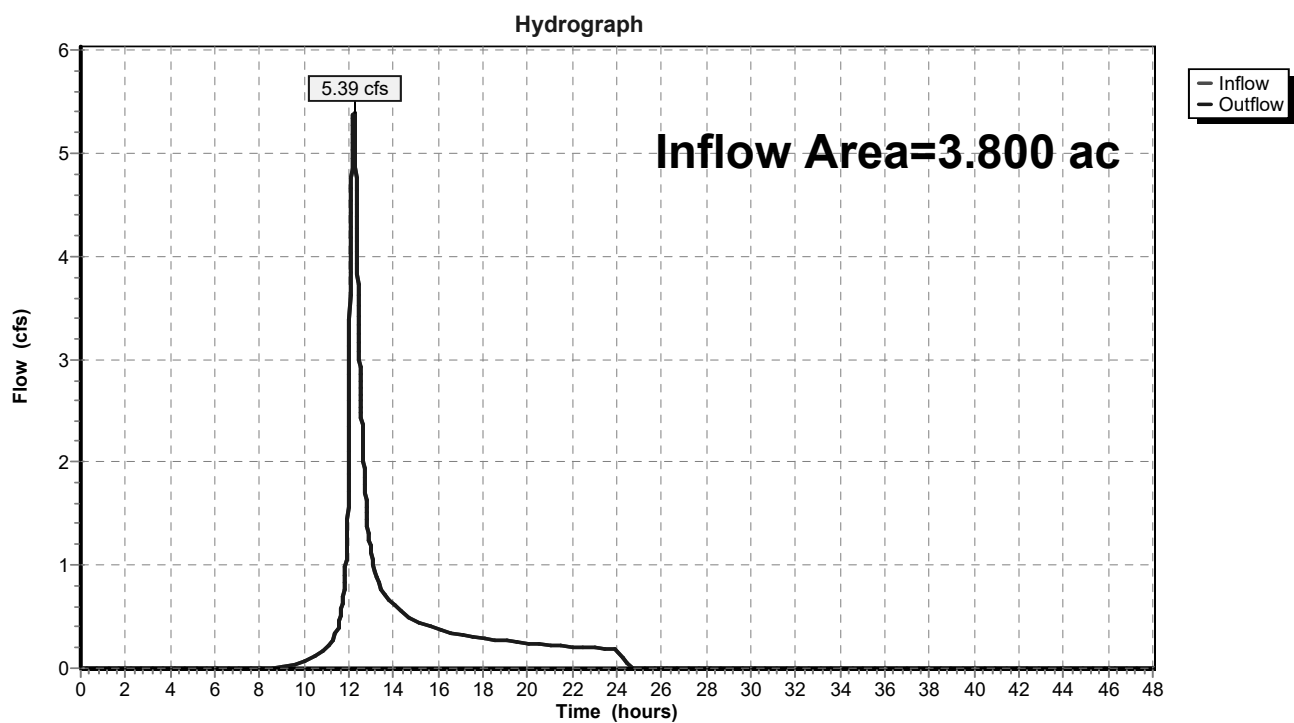


Summary for Reach DP-3: Wetland DP-3

Inflow Area = 3.800 ac, 0.00% Impervious, Inflow Depth = 1.98" for 10-yr event
Inflow = 5.39 cfs @ 12.22 hrs, Volume= 0.627 af
Outflow = 5.39 cfs @ 12.22 hrs, Volume= 0.627 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP-3: Wetland DP-3

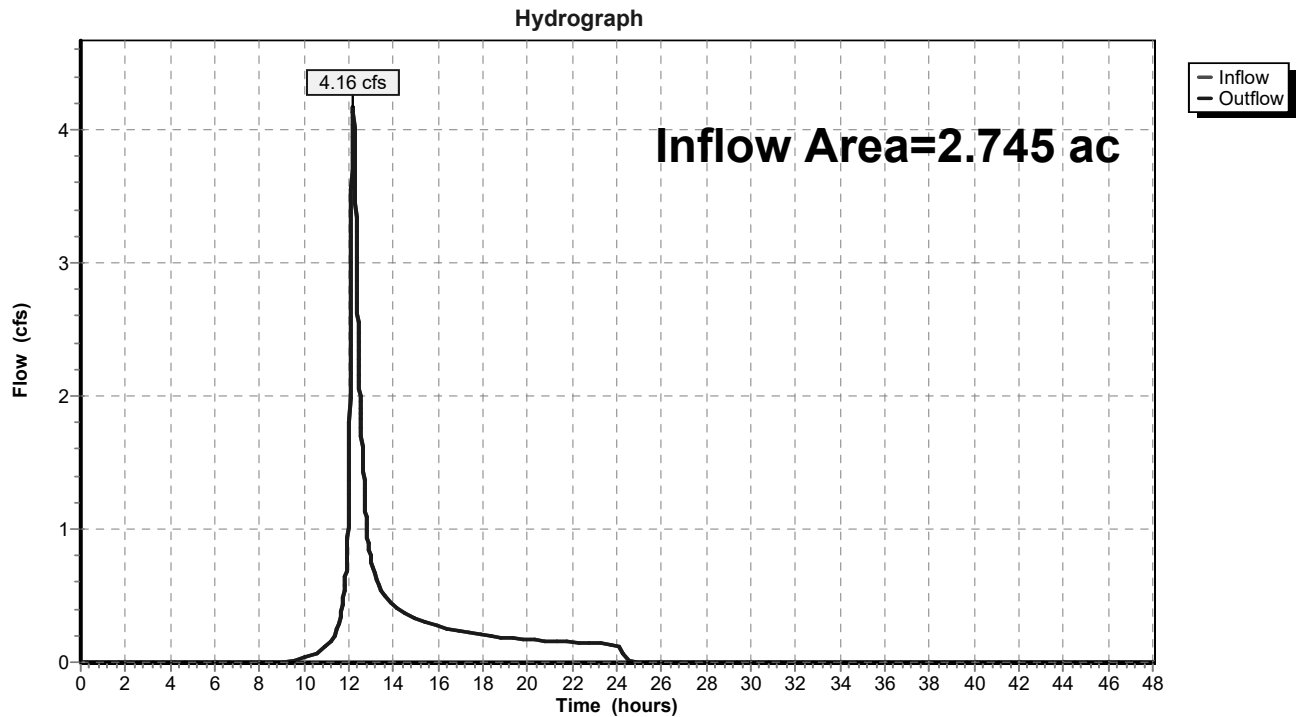


Summary for Reach DP-4: Wetland DP-4

Inflow Area = 2.745 ac, 0.00% Impervious, Inflow Depth = 1.89" for 10-yr event
Inflow = 4.16 cfs @ 12.21 hrs, Volume= 0.433 af
Outflow = 4.16 cfs @ 12.21 hrs, Volume= 0.433 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP-4: Wetland DP-4



Summary for Reach SW 2-3: Wetland Swale 2-3

Inflow Area = 17.167 ac, 71.15% Impervious, Inflow Depth = 3.79" for 10-yr event
 Inflow = 79.37 cfs @ 12.06 hrs, Volume= 5.421 af
 Outflow = 78.58 cfs @ 12.08 hrs, Volume= 5.421 af, Atten= 1%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Max. Velocity= 8.96 fps, Min. Travel Time= 0.7 min
 Avg. Velocity = 2.30 fps, Avg. Travel Time= 2.9 min

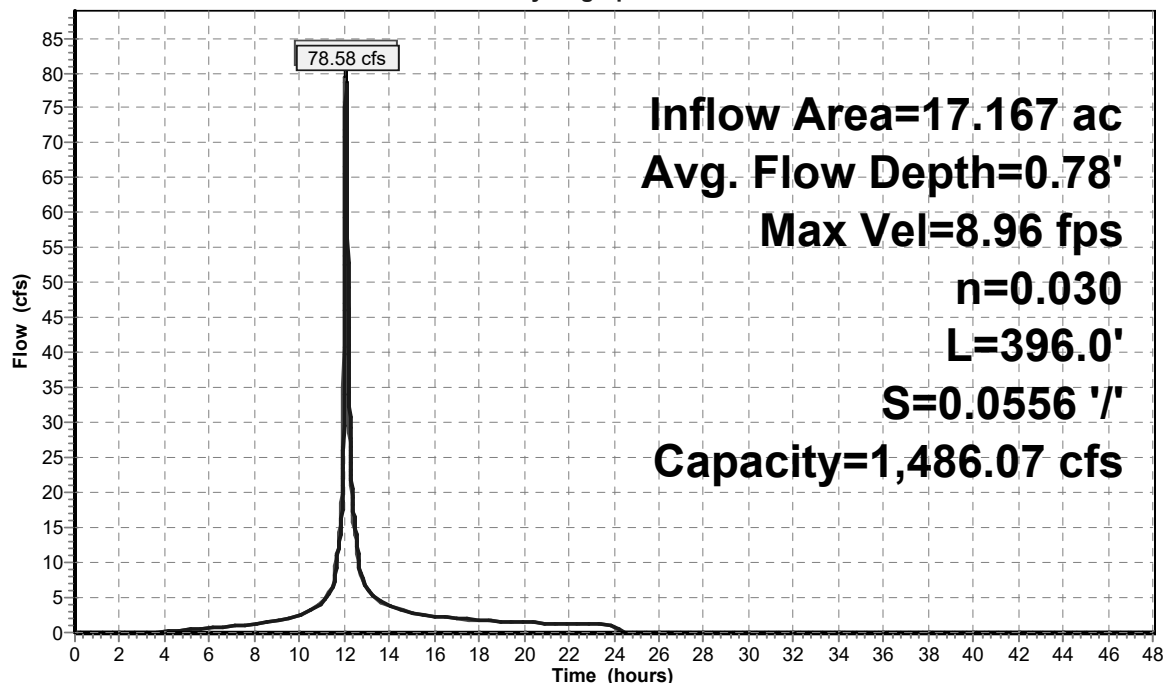
Peak Storage= 3,478 cf @ 12.07 hrs
 Average Depth at Peak Storage= 0.78'
 Bank-Full Depth= 4.00' Flow Area= 67.2 sf, Capacity= 1,486.07 cfs

10.00' x 4.00' deep channel, n= 0.030 Earth, grassed & winding
 Side Slope Z-value= 1.7 '/' Top Width= 23.60'
 Length= 396.0' Slope= 0.0556 '/'
 Inlet Invert= 127.00', Outlet Invert= 105.00'



Reach SW 2-3: Wetland Swale 2-3

Hydrograph



Summary for Reach SW 4-3: SW 4-3

Inflow Area = 2.745 ac, 0.00% Impervious, Inflow Depth = 1.89" for 10-yr event
 Inflow = 4.16 cfs @ 12.21 hrs, Volume= 0.433 af
 Outflow = 4.12 cfs @ 12.26 hrs, Volume= 0.433 af, Atten= 1%, Lag= 3.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Max. Velocity= 3.00 fps, Min. Travel Time= 1.9 min
 Avg. Velocity = 1.40 fps, Avg. Travel Time= 4.1 min

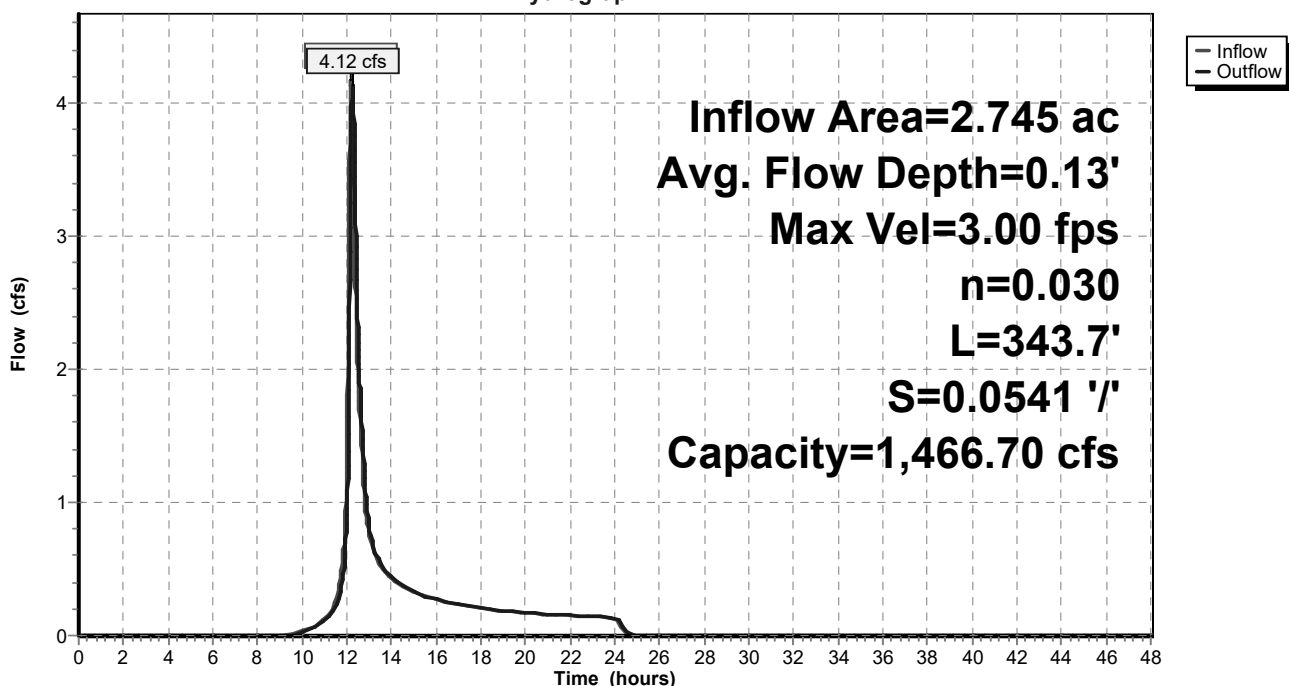
Peak Storage= 473 cf @ 12.23 hrs
 Average Depth at Peak Storage= 0.13'
 Bank-Full Depth= 4.00' Flow Area= 67.2 sf, Capacity= 1,466.70 cfs

10.00' x 4.00' deep channel, n= 0.030 Earth, grassed & winding
 Side Slope Z-value= 1.7 '/' Top Width= 23.60'
 Length= 343.7' Slope= 0.0541 '/'
 Inlet Invert= 123.60', Outlet Invert= 105.00'



Reach SW 4-3: SW 4-3

Hydrograph



Summary for Pond P-7: Dentention Basin 7

Inflow Area = 19.306 ac, 70.56% Impervious, Inflow Depth = 3.79" for 10-yr event
 Inflow = 66.14 cfs @ 12.15 hrs, Volume= 6.097 af
 Outflow = 1.72 cfs @ 19.53 hrs, Volume= 3.394 af, Atten= 97%, Lag= 442.8 min
 Primary = 1.72 cfs @ 19.53 hrs, Volume= 3.394 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 95.97' @ 19.53 hrs Surf.Area= 42,837 sf Storage= 199,916 cf

Plug-Flow detention time= 937.0 min calculated for 3.394 af (56% of inflow)
 Center-of-Mass det. time= 803.3 min (1,613.0 - 809.8)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	396,479 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

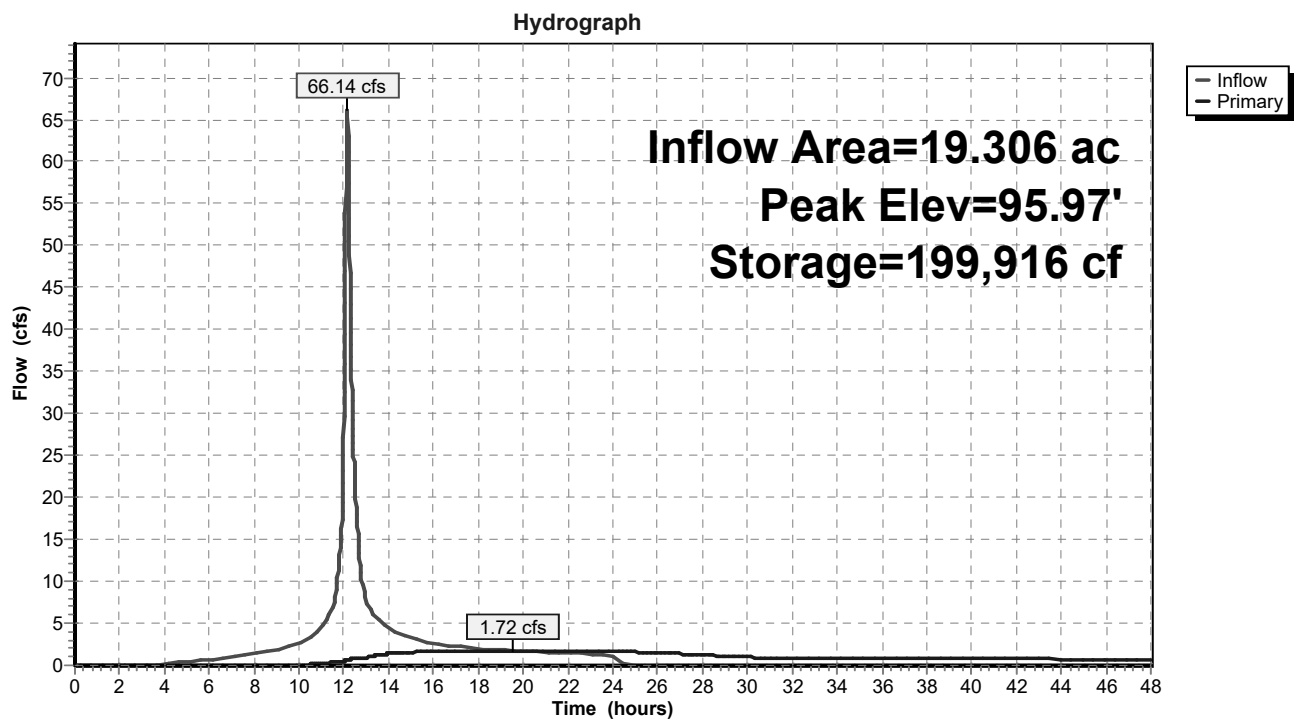
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.00	19,765	0	0
92.00	31,993	51,758	51,758
94.00	37,305	69,298	121,056
96.00	42,927	80,232	201,288
98.00	48,699	91,626	292,914
100.00	54,866	103,565	396,479

Device	Routing	Invert	Outlet Devices
#1	Primary	88.00'	18.0" Round Culvert L= 71.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 88.00' / 84.50' S= 0.0493 ' / Cc= 0.900 n= 0.009 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	91.00'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	95.00'	6.0" Vert. Orifice/Grate C= 0.600
#4	Device 1	98.00'	6.0" Vert. Orifice/Grate C= 0.600
#5	Device 1	99.00'	36.0" x 78.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.72 cfs @ 19.53 hrs HW=95.97' (Free Discharge)

1=Culvert (Passes 1.72 cfs of 22.86 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.92 cfs @ 10.55 fps)
 3=Orifice/Grate (Orifice Controls 0.80 cfs @ 4.08 fps)
 4=Orifice/Grate (Controls 0.00 cfs)
 5=Orifice/Grate (Controls 0.00 cfs)

Pond P-7: Dentention Basin 7



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentEDA-1: Area to Detention Runoff Area=840,987 sf 70.56% Impervious Runoff Depth=4.88"
Tc=15.0 min CN=90 Runoff=83.26 cfs 7.843 af

SubcatchmentEDA-2: Area to Wetland Runoff Area=747,775 sf 71.15% Impervious Runoff Depth=4.88"
Flow Length=1,211' Tc=8.0 min CN=90 Runoff=99.88 cfs 6.974 af

SubcatchmentEDA-3: Area to Wetland DP-3 Runoff Area=45,946 sf 0.00% Impervious Runoff Depth=3.11"
Flow Length=347' Tc=9.3 min CN=73 Runoff=3.78 cfs 0.274 af

SubcatchmentEDA-4: Area to Wetland Runoff Area=119,565 sf 0.00% Impervious Runoff Depth=2.74"
Flow Length=808' Tc=18.1 min CN=69 Runoff=6.10 cfs 0.626 af

Reach DP-1: Detention Basin 7 Inflow=2.31 cfs 4.742 af
Outflow=2.31 cfs 4.742 af

Reach DP-2: Wetland DP-2 Inflow=105.35 cfs 7.874 af
Outflow=105.35 cfs 7.874 af

Reach DP-3: Wetland DP-3 Inflow=7.91 cfs 0.899 af
Outflow=7.91 cfs 0.899 af

Reach DP-4: Wetland DP-4 Inflow=6.10 cfs 0.626 af
Outflow=6.10 cfs 0.626 af

Reach SW 2-3: Wetland Swale 2-3 Avg. Flow Depth=0.89' Max Vel=9.70 fps Inflow=99.88 cfs 6.974 af
n=0.030 L=396.0' S=0.0556 '/' Capacity=1,486.07 cfs Outflow=99.04 cfs 6.974 af

Reach SW 4-3: SW 4-3 Avg. Flow Depth=0.17' Max Vel=3.47 fps Inflow=6.10 cfs 0.626 af
n=0.030 L=343.7' S=0.0541 '/' Capacity=1,466.70 cfs Outflow=6.06 cfs 0.626 af

Pond P-7: Dentention Basin 7 Peak Elev=97.11' Storage=250,580 cf Inflow=83.26 cfs 7.843 af
Outflow=2.31 cfs 4.742 af

Total Runoff Area = 40.273 ac Runoff Volume = 15.717 af Average Runoff Depth = 4.68"
35.84% Pervious = 14.435 ac 64.16% Impervious = 25.837 ac

Summary for Subcatchment EDA-1: Area to Detention Basin 7

Runoff = 83.26 cfs @ 12.15 hrs, Volume= 7.843 af, Depth= 4.88"

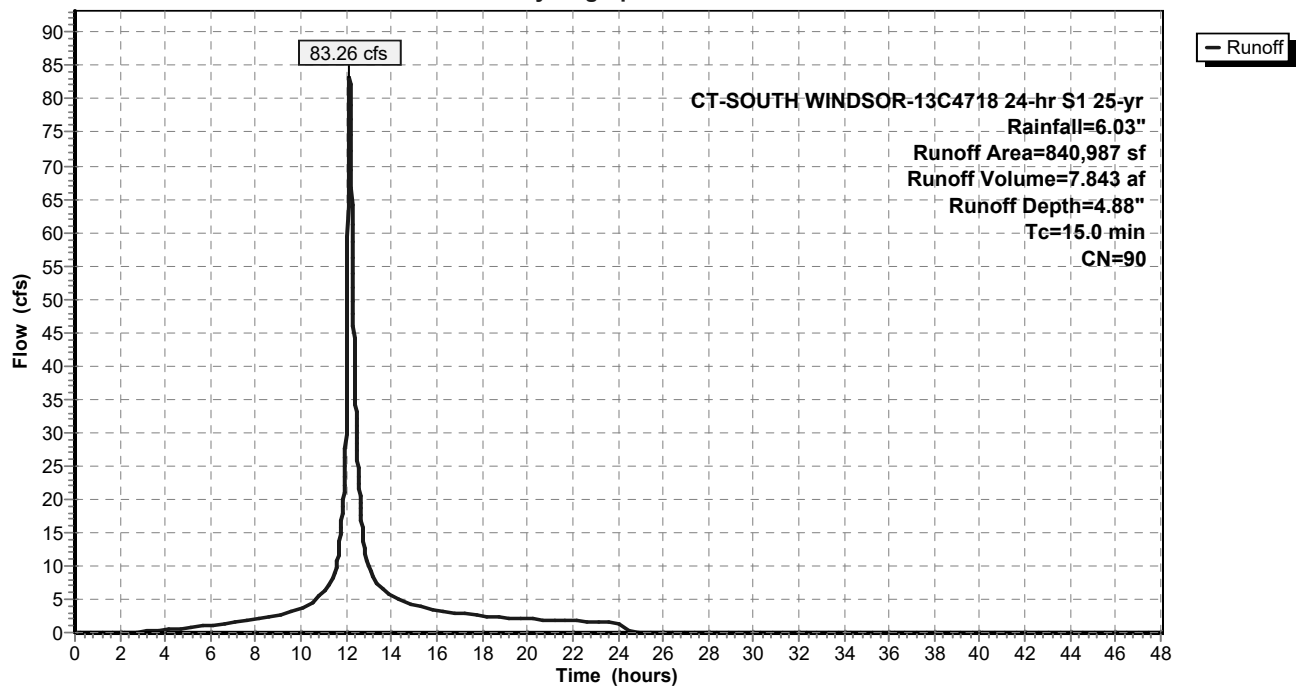
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-SOUTH WINDSOR-13C4718 24-hr S1 25-yr Rainfall=6.03"

Area (sf)	CN	Description
299,131	98	Paved parking, HSG B
282,062	98	Paved parking, HSG C
11,034	98	Paved parking, HSG B
1,191	98	Paved parking, HSG C
180,158	69	50-75% Grass cover, Fair, HSG B
59,799	79	50-75% Grass cover, Fair, HSG C
7,145	69	50-75% Grass cover, Fair, HSG B
467	79	50-75% Grass cover, Fair, HSG C
840,987	90	Weighted Average
247,569		29.44% Pervious Area
593,418		70.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry, Master Planned Tc

Subcatchment EDA-1: Area to Detention Basin 7

Hydrograph



Summary for Subcatchment EDA-2: Area to Wetland DP-2

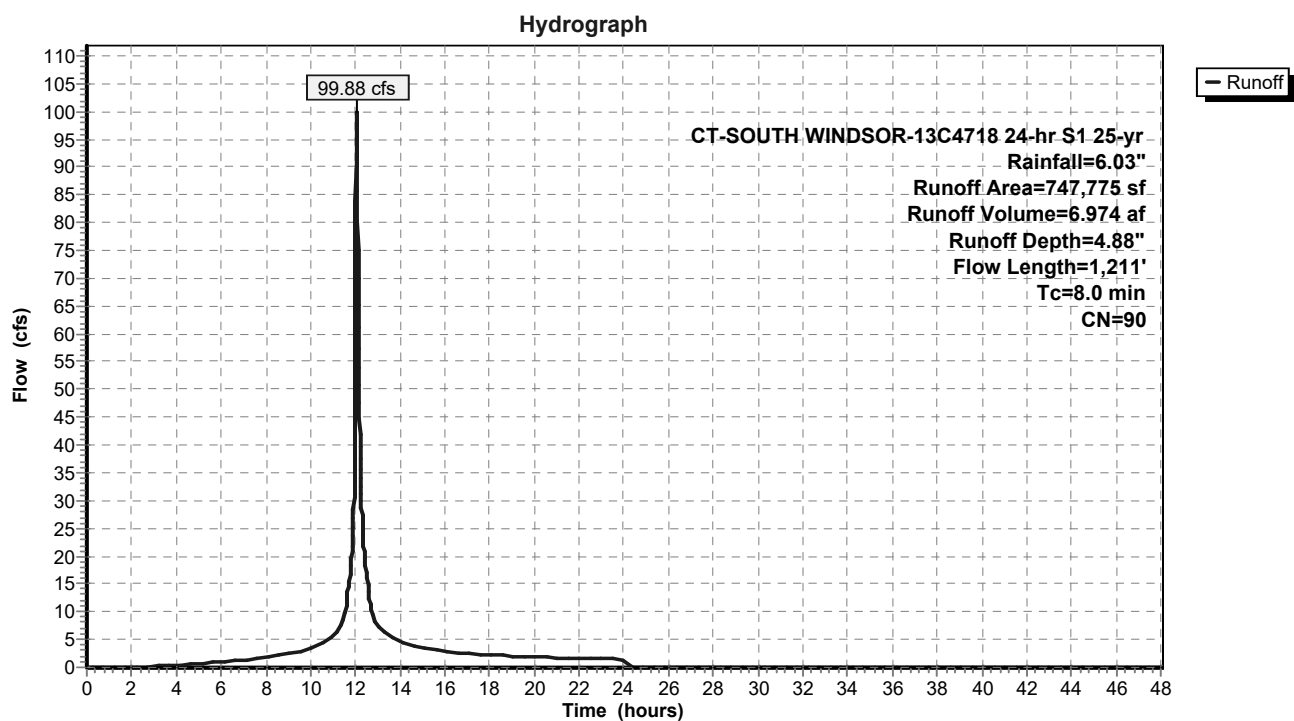
Runoff = 99.88 cfs @ 12.06 hrs, Volume= 6.974 af, Depth= 4.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-SOUTH WINDSOR-13C4718 24-hr S1 25-yr Rainfall=6.03"

Area (sf)	CN	Description
517,459	98	Paved parking, HSG B
10,227	98	Paved parking, HSG C
4,362	98	Paved parking, HSG D
213,896	69	50-75% Grass cover, Fair, HSG B
588	79	50-75% Grass cover, Fair, HSG C
1,243	84	50-75% Grass cover, Fair, HSG D
747,775	90	Weighted Average
215,727		28.85% Pervious Area
532,048		71.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	74	0.1350	0.34		Sheet Flow, 1 Grass: Short n= 0.150 P2= 3.11"
0.4	26	0.0250	1.13		Sheet Flow, 2 Smooth surfaces n= 0.011 P2= 3.11"
1.1	216	0.0250	3.21		Shallow Concentrated Flow, 3 Paved Kv= 20.3 fps
1.7	744	0.0050	7.35	23.11	Pipe Channel, RCP_Round 24" 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.009 Corrugated PE, smooth interior
1.2	151	0.0200	2.12		Shallow Concentrated Flow, 4 Grassed Waterway Kv= 15.0 fps
8.0	1,211	Total			

Subcatchment EDA-2: Area to Wetland DP-2



Summary for Subcatchment EDA-3: Area to Wetland DP-3

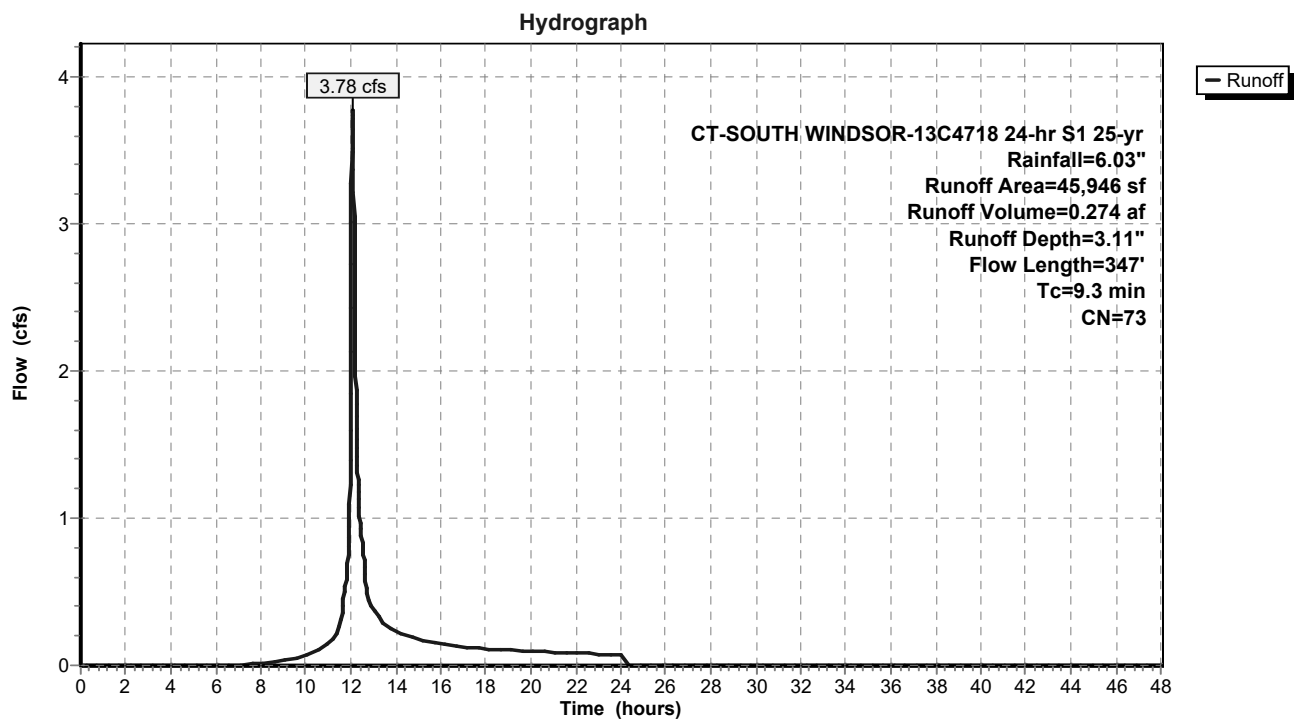
Runoff = 3.78 cfs @ 12.08 hrs, Volume= 0.274 af, Depth= 3.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 CT-SOUTH WINDSOR-13C4718 24-hr S1 25-yr Rainfall=6.03"

Area (sf)	CN	Description
0	98	Paved parking, HSG B
0	98	Paved parking, HSG C
0	98	Paved parking, HSG D
21,004	69	50-75% Grass cover, Fair, HSG B
0	79	50-75% Grass cover, Fair, HSG C
5,451	84	50-75% Grass cover, Fair, HSG D
2,225	56	Brush, Fair, HSG B
17,266	77	Brush, Fair, HSG D
45,946	73	Weighted Average
45,946		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	100	0.0400	0.22		Sheet Flow, 1 Grass: Short n= 0.150 P2= 3.11"
0.6	125	0.0480	3.29		Shallow Concentrated Flow, 2 Grassed Waterway Kv= 15.0 fps
1.2	122	0.1060	1.63		Shallow Concentrated Flow, 3 Woodland Kv= 5.0 fps
9.3	347	Total			

Subcatchment EDA-3: Area to Wetland DP-3



Summary for Subcatchment EDA-4: Area to Wetland DP-4

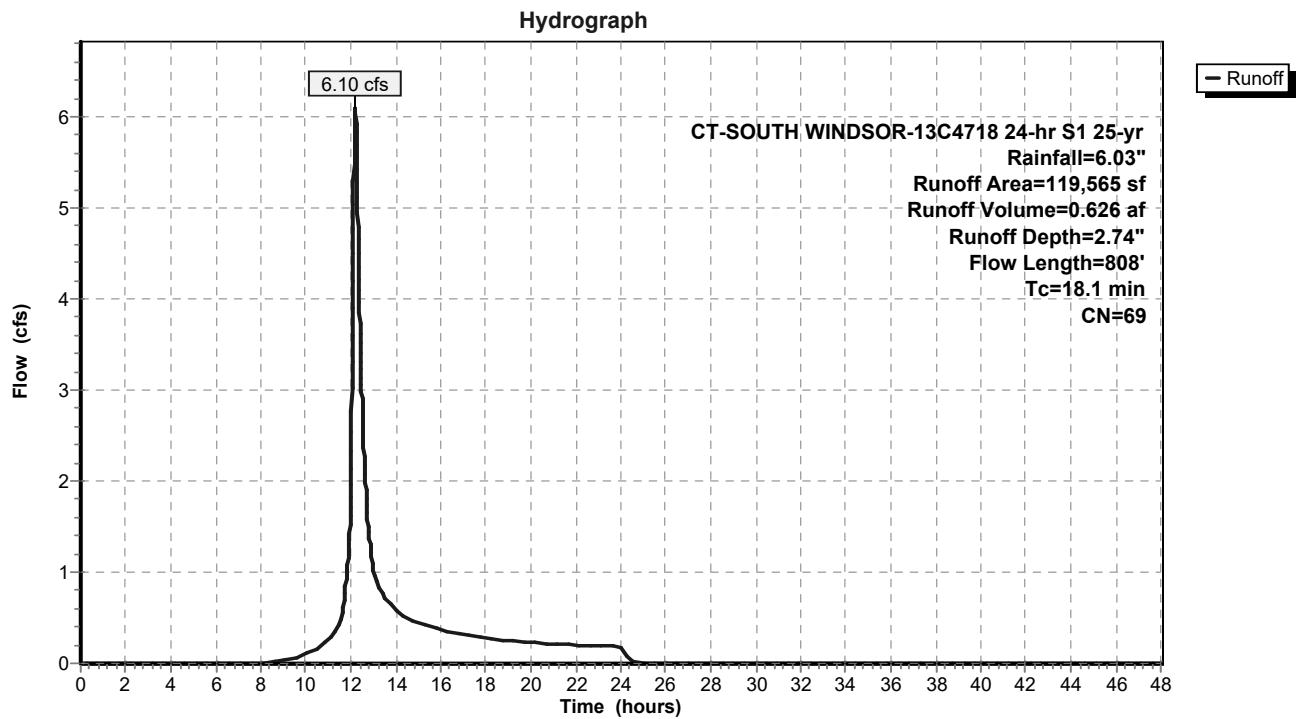
Runoff = 6.10 cfs @ 12.21 hrs, Volume= 0.626 af, Depth= 2.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-SOUTH WINDSOR-13C4718 24-hr S1 25-yr Rainfall=6.03"

Area (sf)	CN	Description
0	98	Paved parking, HSG B
0	98	Paved parking, HSG C
0	98	Paved parking, HSG D
57,679	69	50-75% Grass cover, Fair, HSG B
26,837	79	50-75% Grass cover, Fair, HSG C
0	84	50-75% Grass cover, Fair, HSG D
25,526	56	Brush, Fair, HSG B
9,523	70	Brush, Fair, HSG C
119,565	69	Weighted Average
119,565		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	100	0.0800	0.29		Sheet Flow, 1 Grass: Short n= 0.150 P2= 3.11"
0.2	39	0.0800	4.24		Shallow Concentrated Flow, 2 Grassed Waterway Kv= 15.0 fps
12.1	595	0.0270	0.82		Shallow Concentrated Flow, 3 Woodland Kv= 5.0 fps
0.1	74	0.0270	19.82	194.19	Channel Flow, 4 Area= 9.8 sf Perim= 15.7' r= 0.62' n= 0.009 Corrugated PE, smooth interior
18.1	808	Total			

Subcatchment EDA-4: Area to Wetland DP-4

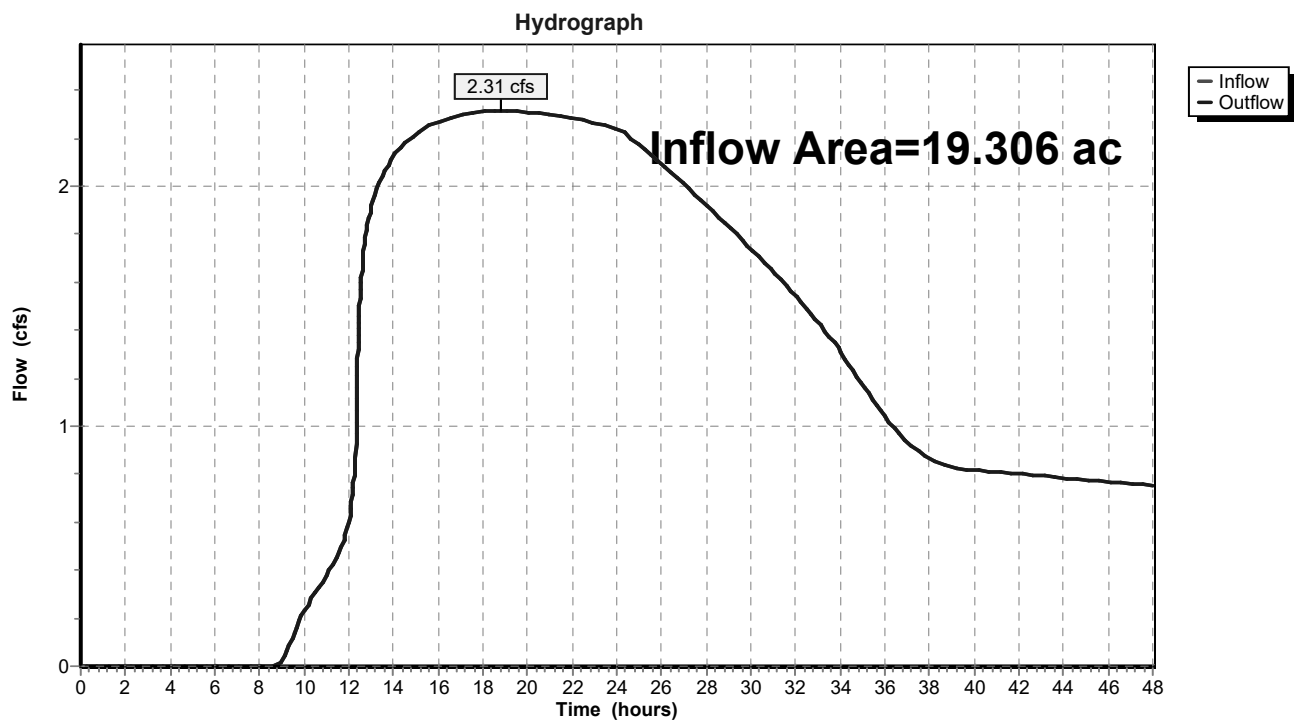


Summary for Reach DP-1: Detention Basin 7

Inflow Area = 19.306 ac, 70.56% Impervious, Inflow Depth > 2.95" for 25-yr event
Inflow = 2.31 cfs @ 18.82 hrs, Volume= 4.742 af
Outflow = 2.31 cfs @ 18.82 hrs, Volume= 4.742 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP-1: Detention Basin 7

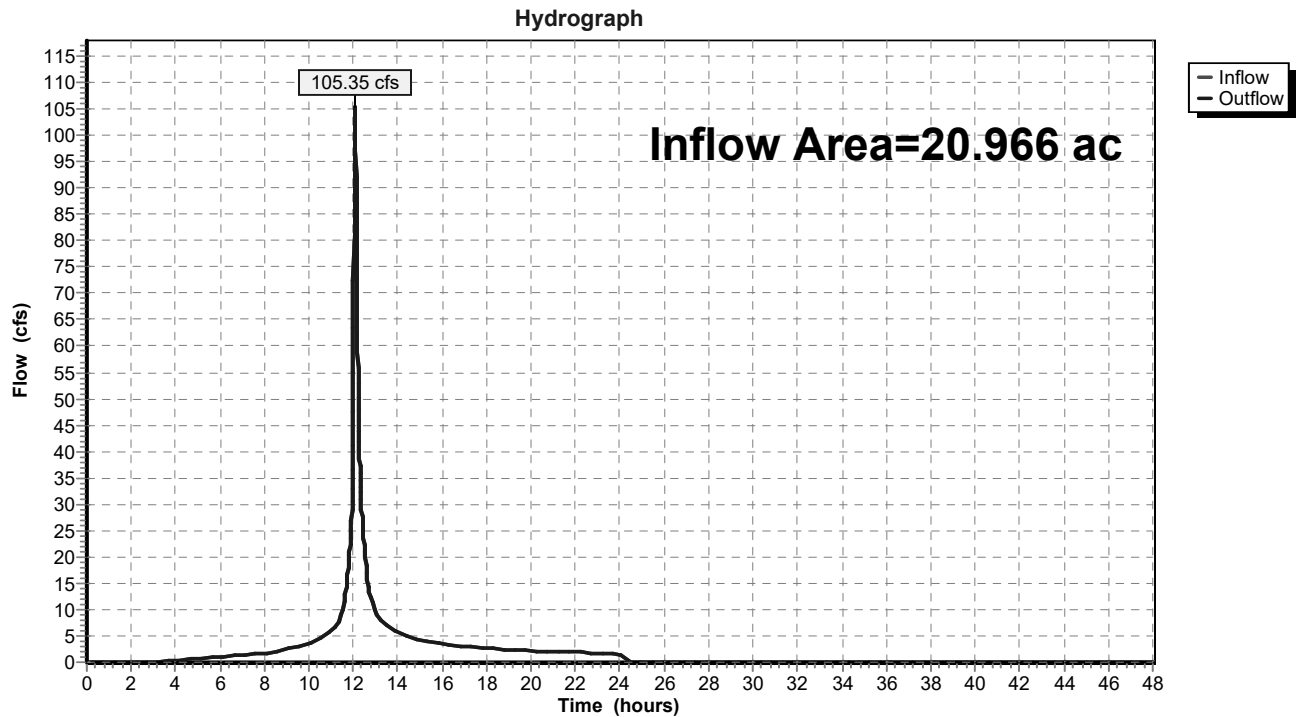


Summary for Reach DP-2: Wetland DP-2

Inflow Area = 20.966 ac, 58.26% Impervious, Inflow Depth = 4.51" for 25-yr event
Inflow = 105.35 cfs @ 12.08 hrs, Volume= 7.874 af
Outflow = 105.35 cfs @ 12.08 hrs, Volume= 7.874 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP-2: Wetland DP-2

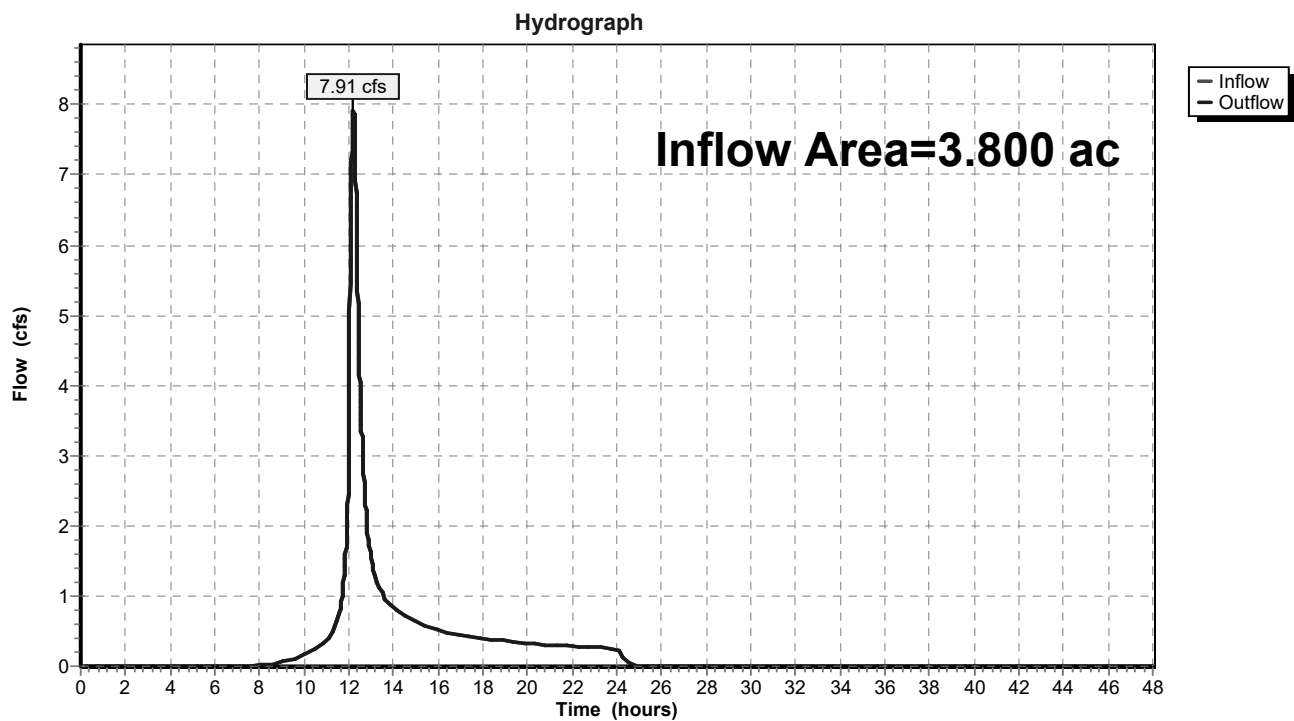


Summary for Reach DP-3: Wetland DP-3

Inflow Area = 3.800 ac, 0.00% Impervious, Inflow Depth = 2.84" for 25-yr event
Inflow = 7.91 cfs @ 12.21 hrs, Volume= 0.899 af
Outflow = 7.91 cfs @ 12.21 hrs, Volume= 0.899 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP-3: Wetland DP-3

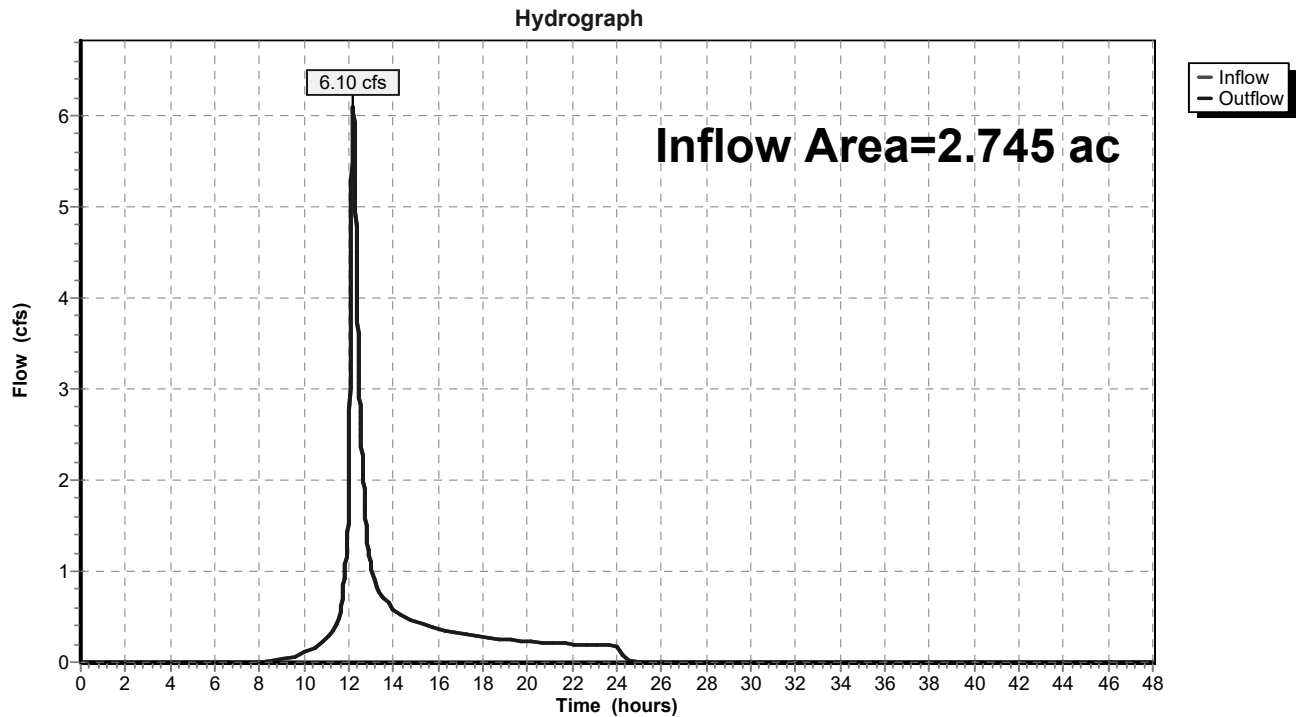


Summary for Reach DP-4: Wetland DP-4

Inflow Area = 2.745 ac, 0.00% Impervious, Inflow Depth = 2.74" for 25-yr event
Inflow = 6.10 cfs @ 12.21 hrs, Volume= 0.626 af
Outflow = 6.10 cfs @ 12.21 hrs, Volume= 0.626 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP-4: Wetland DP-4



Summary for Reach SW 2-3: Wetland Swale 2-3

Inflow Area = 17.167 ac, 71.15% Impervious, Inflow Depth = 4.88" for 25-yr event
 Inflow = 99.88 cfs @ 12.06 hrs, Volume= 6.974 af
 Outflow = 99.04 cfs @ 12.08 hrs, Volume= 6.974 af, Atten= 1%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Max. Velocity= 9.70 fps, Min. Travel Time= 0.7 min
 Avg. Velocity = 2.49 fps, Avg. Travel Time= 2.6 min

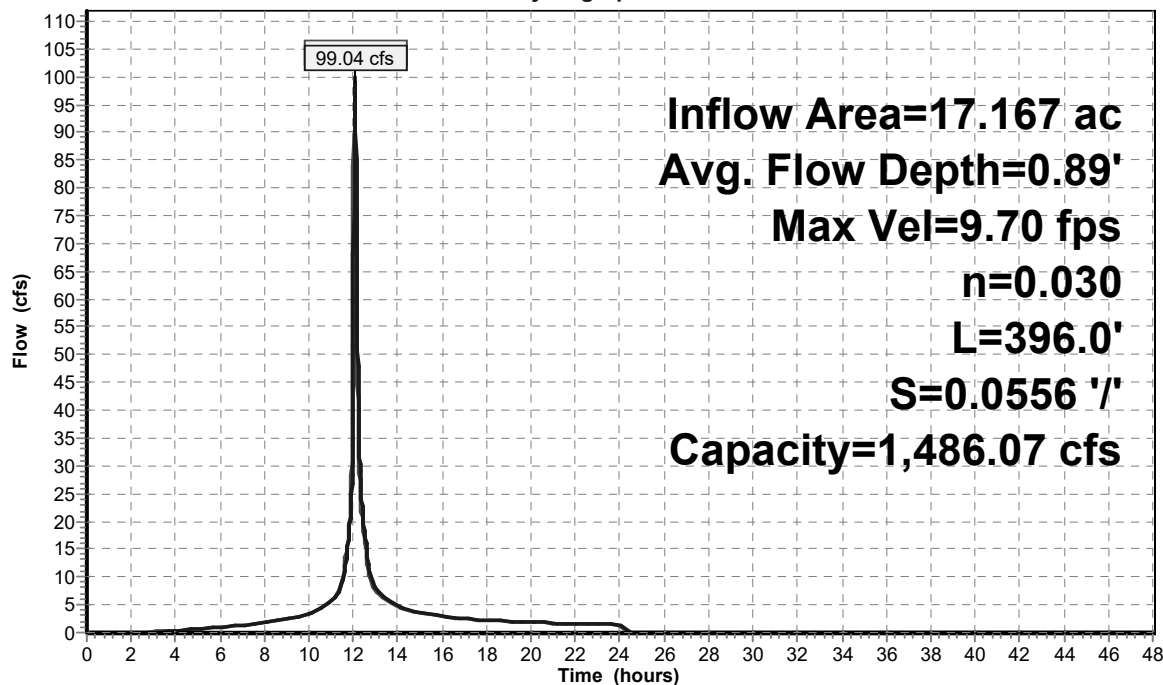
Peak Storage= 4,049 cf @ 12.07 hrs
 Average Depth at Peak Storage= 0.89'
 Bank-Full Depth= 4.00' Flow Area= 67.2 sf, Capacity= 1,486.07 cfs

10.00' x 4.00' deep channel, n= 0.030 Earth, grassed & winding
 Side Slope Z-value= 1.7 '/' Top Width= 23.60'
 Length= 396.0' Slope= 0.0556 '/'
 Inlet Invert= 127.00', Outlet Invert= 105.00'



Reach SW 2-3: Wetland Swale 2-3

Hydrograph



Summary for Reach SW 4-3: SW 4-3

Inflow Area = 2.745 ac, 0.00% Impervious, Inflow Depth = 2.74" for 25-yr event
Inflow = 6.10 cfs @ 12.21 hrs, Volume= 0.626 af
Outflow = 6.06 cfs @ 12.25 hrs, Volume= 0.626 af, Atten= 1%, Lag= 2.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.47 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 1.44 fps, Avg. Travel Time= 4.0 min

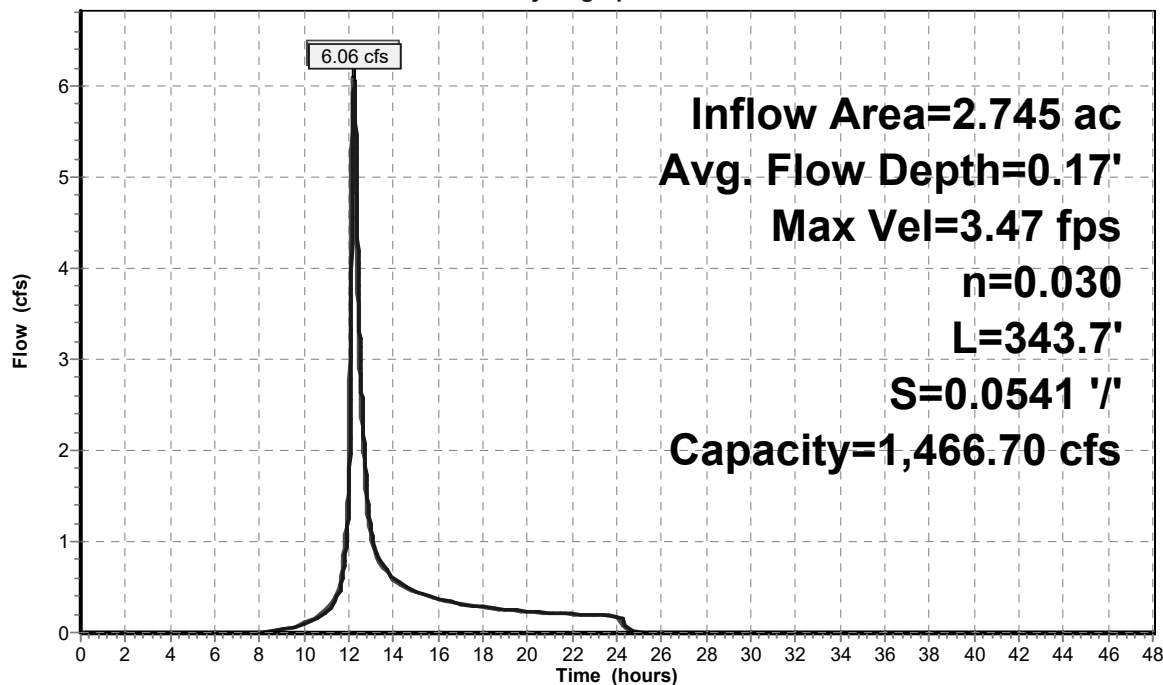
Peak Storage= 601 cf @ 12.22 hrs
Average Depth at Peak Storage= 0.17'
Bank-Full Depth= 4.00' Flow Area= 67.2 sf, Capacity= 1,466.70 cfs

10.00' x 4.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 1.7 '/' Top Width= 23.60'
Length= 343.7' Slope= 0.0541 '/'
Inlet Invert= 123.60', Outlet Invert= 105.00'



Reach SW 4-3: SW 4-3

Hydrograph



Summary for Pond P-7: Dentention Basin 7

Inflow Area = 19.306 ac, 70.56% Impervious, Inflow Depth = 4.88" for 25-yr event
 Inflow = 83.26 cfs @ 12.15 hrs, Volume= 7.843 af
 Outflow = 2.31 cfs @ 18.82 hrs, Volume= 4.742 af, Atten= 97%, Lag= 399.9 min
 Primary = 2.31 cfs @ 18.82 hrs, Volume= 4.742 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 97.11' @ 18.82 hrs Surf.Area= 46,122 sf Storage= 250,580 cf

Plug-Flow detention time= 894.3 min calculated for 4.741 af (60% of inflow)
 Center-of-Mass det. time= 765.9 min (1,567.4 - 801.6)

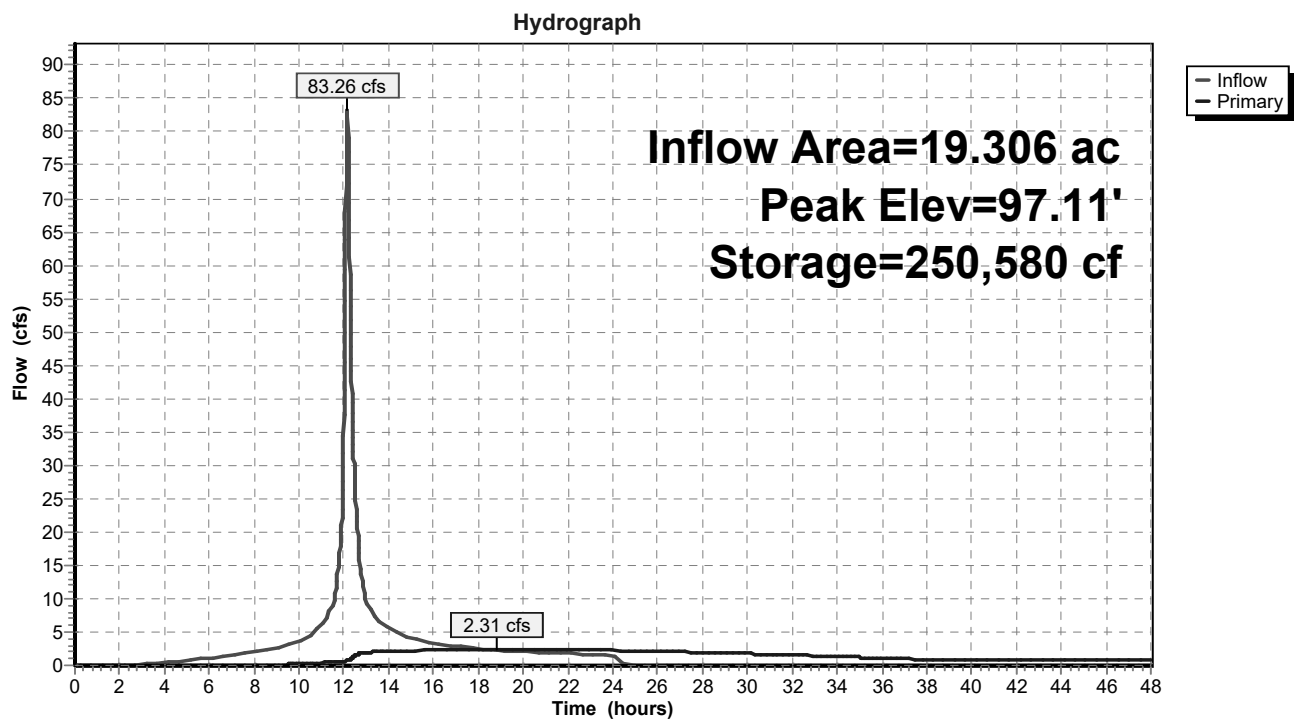
Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	396,479 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.00	19,765	0	0
92.00	31,993	51,758	51,758
94.00	37,305	69,298	121,056
96.00	42,927	80,232	201,288
98.00	48,699	91,626	292,914
100.00	54,866	103,565	396,479

Device	Routing	Invert	Outlet Devices
#1	Primary	88.00'	18.0" Round Culvert L= 71.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 88.00' / 84.50' S= 0.0493 ' / Cc= 0.900 n= 0.009 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	91.00'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	95.00'	6.0" Vert. Orifice/Grate C= 0.600
#4	Device 1	98.00'	6.0" Vert. Orifice/Grate C= 0.600
#5	Device 1	99.00'	36.0" x 78.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.31 cfs @ 18.82 hrs HW=97.11' (Free Discharge)

- 1=Culvert (Passes 2.31 cfs of 24.60 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 1.02 cfs @ 11.74 fps)
- 3=Orifice/Grate (Orifice Controls 1.29 cfs @ 6.56 fps)
- 4=Orifice/Grate (Controls 0.00 cfs)
- 5=Orifice/Grate (Controls 0.00 cfs)

Pond P-7: Dentention Basin 7



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 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 EDA-1: Area to Detention Runoff Area=840,987 sf 70.56% Impervious Runoff Depth=6.58"
 Tc=15.0 min CN=90 Runoff=109.41 cfs 10.585 af

Subcatchment EDA-2: Area to Wetland Runoff Area=747,775 sf 71.15% Impervious Runoff Depth=6.58"
 Flow Length=1,211' Tc=8.0 min CN=90 Runoff=131.15 cfs 9.412 af

Subcatchment EDA-3: Area to Wetland DP-3 Runoff Area=45,946 sf 0.00% Impervious Runoff Depth=4.61"
 Flow Length=347' Tc=9.3 min CN=73 Runoff=5.55 cfs 0.405 af

Subcatchment EDA-4: Area to Wetland Runoff Area=119,565 sf 0.00% Impervious Runoff Depth=4.15"
 Flow Length=808' Tc=18.1 min CN=69 Runoff=9.28 cfs 0.950 af

Reach DP-1: Detention Basin 7 Inflow=3.59 cfs 7.003 af
 Outflow=3.59 cfs 7.003 af

Reach DP-2: Wetland DP-2 Inflow=140.06 cfs 10.767 af
 Outflow=140.06 cfs 10.767 af

Reach DP-3: Wetland DP-3 Inflow=12.06 cfs 1.355 af
 Outflow=12.06 cfs 1.355 af

Reach DP-4: Wetland DP-4 Inflow=9.28 cfs 0.950 af
 Outflow=9.28 cfs 0.950 af

Reach SW 2-3: Wetland Swale 2-3 Avg. Flow Depth=1.04' Max Vel=10.62 fps Inflow=131.15 cfs 9.412 af
 n=0.030 L=396.0' S=0.0556 '/' Capacity=1,486.07 cfs Outflow=130.29 cfs 9.412 af

Reach SW 4-3: SW 4-3 Avg. Flow Depth=0.22' Max Vel=4.07 fps Inflow=9.28 cfs 0.950 af
 n=0.030 L=343.7' S=0.0541 '/' Capacity=1,466.70 cfs Outflow=9.23 cfs 0.950 af

Pond P-7: Detention Basin 7 Peak Elev=98.74' Storage=329,940 cf Inflow=109.41 cfs 10.585 af
 Outflow=3.59 cfs 7.003 af

Total Runoff Area = 40.273 ac Runoff Volume = 21.352 af Average Runoff Depth = 6.36"
35.84% Pervious = 14.435 ac 64.16% Impervious = 25.837 ac

Summary for Subcatchment EDA-1: Area to Detention Basin 7

Runoff = 109.41 cfs @ 12.15 hrs, Volume= 10.585 af, Depth= 6.58"

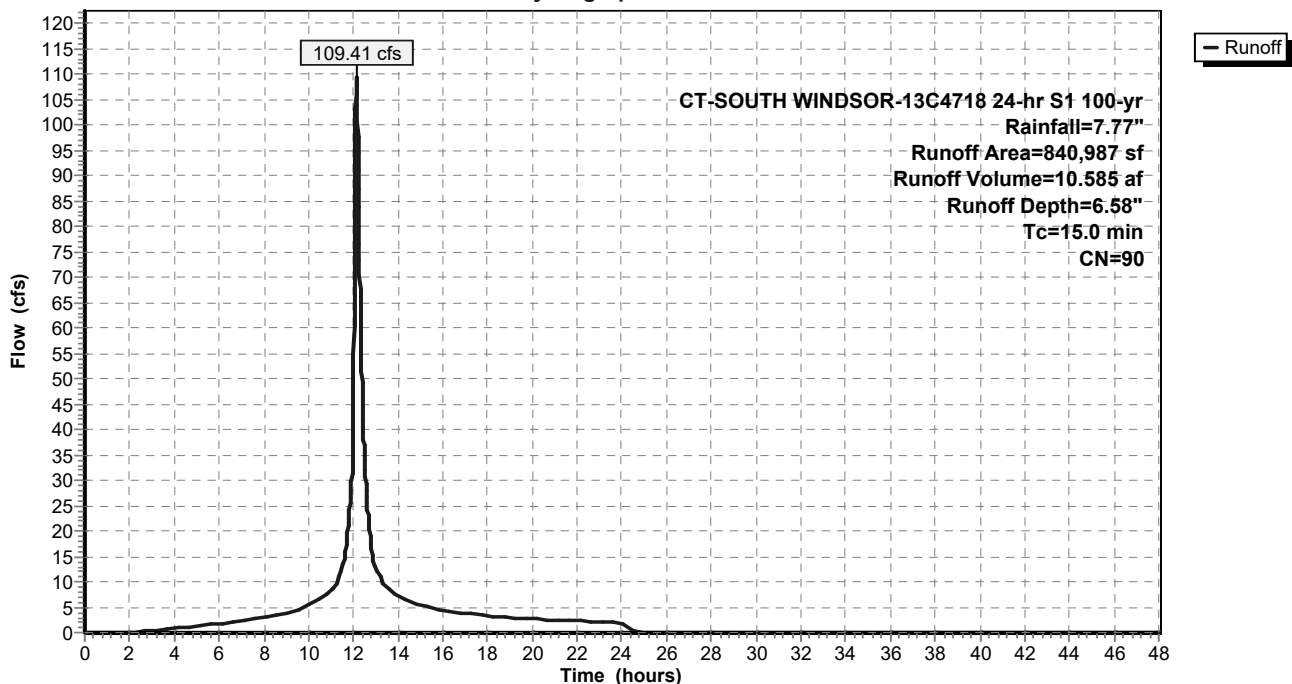
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 CT-SOUTH WINDSOR-13C4718 24-hr S1 100-yr Rainfall=7.77"

Area (sf)	CN	Description
299,131	98	Paved parking, HSG B
282,062	98	Paved parking, HSG C
11,034	98	Paved parking, HSG B
1,191	98	Paved parking, HSG C
180,158	69	50-75% Grass cover, Fair, HSG B
59,799	79	50-75% Grass cover, Fair, HSG C
7,145	69	50-75% Grass cover, Fair, HSG B
467	79	50-75% Grass cover, Fair, HSG C
840,987	90	Weighted Average
247,569		29.44% Pervious Area
593,418		70.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry, Master Planned Tc

Subcatchment EDA-1: Area to Detention Basin 7

Hydrograph



Summary for Subcatchment EDA-2: Area to Wetland DP-2

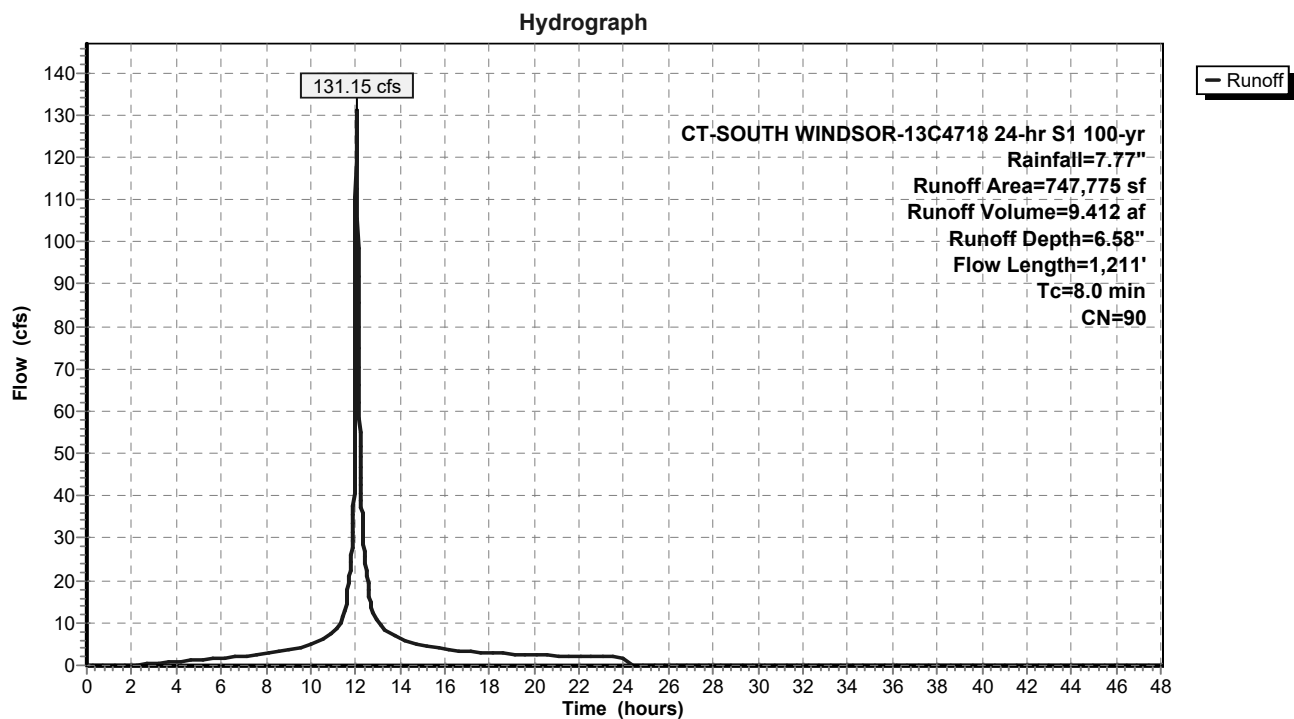
Runoff = 131.15 cfs @ 12.06 hrs, Volume= 9.412 af, Depth= 6.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 CT-SOUTH WINDSOR-13C4718 24-hr S1 100-yr Rainfall=7.77"

Area (sf)	CN	Description
517,459	98	Paved parking, HSG B
10,227	98	Paved parking, HSG C
4,362	98	Paved parking, HSG D
213,896	69	50-75% Grass cover, Fair, HSG B
588	79	50-75% Grass cover, Fair, HSG C
1,243	84	50-75% Grass cover, Fair, HSG D
747,775	90	Weighted Average
215,727		28.85% Pervious Area
532,048		71.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	74	0.1350	0.34		Sheet Flow, 1 Grass: Short n= 0.150 P2= 3.11"
0.4	26	0.0250	1.13		Sheet Flow, 2 Smooth surfaces n= 0.011 P2= 3.11"
1.1	216	0.0250	3.21		Shallow Concentrated Flow, 3 Paved Kv= 20.3 fps
1.7	744	0.0050	7.35	23.11	Pipe Channel, RCP_Round 24" 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.009 Corrugated PE, smooth interior
1.2	151	0.0200	2.12		Shallow Concentrated Flow, 4 Grassed Waterway Kv= 15.0 fps
8.0	1,211	Total			

Subcatchment EDA-2: Area to Wetland DP-2



Summary for Subcatchment EDA-3: Area to Wetland DP-3

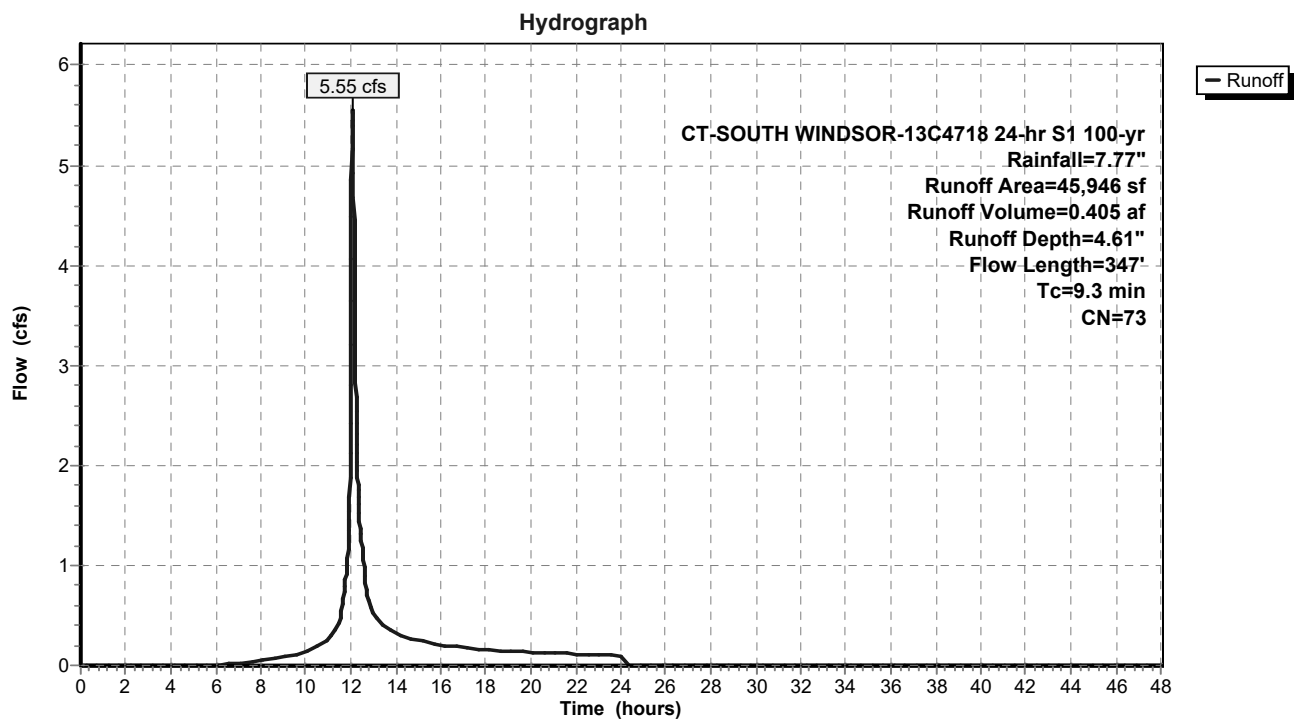
Runoff = 5.55 cfs @ 12.08 hrs, Volume= 0.405 af, Depth= 4.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-SOUTH WINDSOR-13C4718 24-hr S1 100-yr Rainfall=7.77"

Area (sf)	CN	Description
0	98	Paved parking, HSG B
0	98	Paved parking, HSG C
0	98	Paved parking, HSG D
21,004	69	50-75% Grass cover, Fair, HSG B
0	79	50-75% Grass cover, Fair, HSG C
5,451	84	50-75% Grass cover, Fair, HSG D
2,225	56	Brush, Fair, HSG B
17,266	77	Brush, Fair, HSG D
45,946	73	Weighted Average
45,946		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	100	0.0400	0.22		Sheet Flow, 1 Grass: Short n= 0.150 P2= 3.11"
0.6	125	0.0480	3.29		Shallow Concentrated Flow, 2 Grassed Waterway Kv= 15.0 fps
1.2	122	0.1060	1.63		Shallow Concentrated Flow, 3 Woodland Kv= 5.0 fps
9.3	347	Total			

Subcatchment EDA-3: Area to Wetland DP-3



Summary for Subcatchment EDA-4: Area to Wetland DP-4

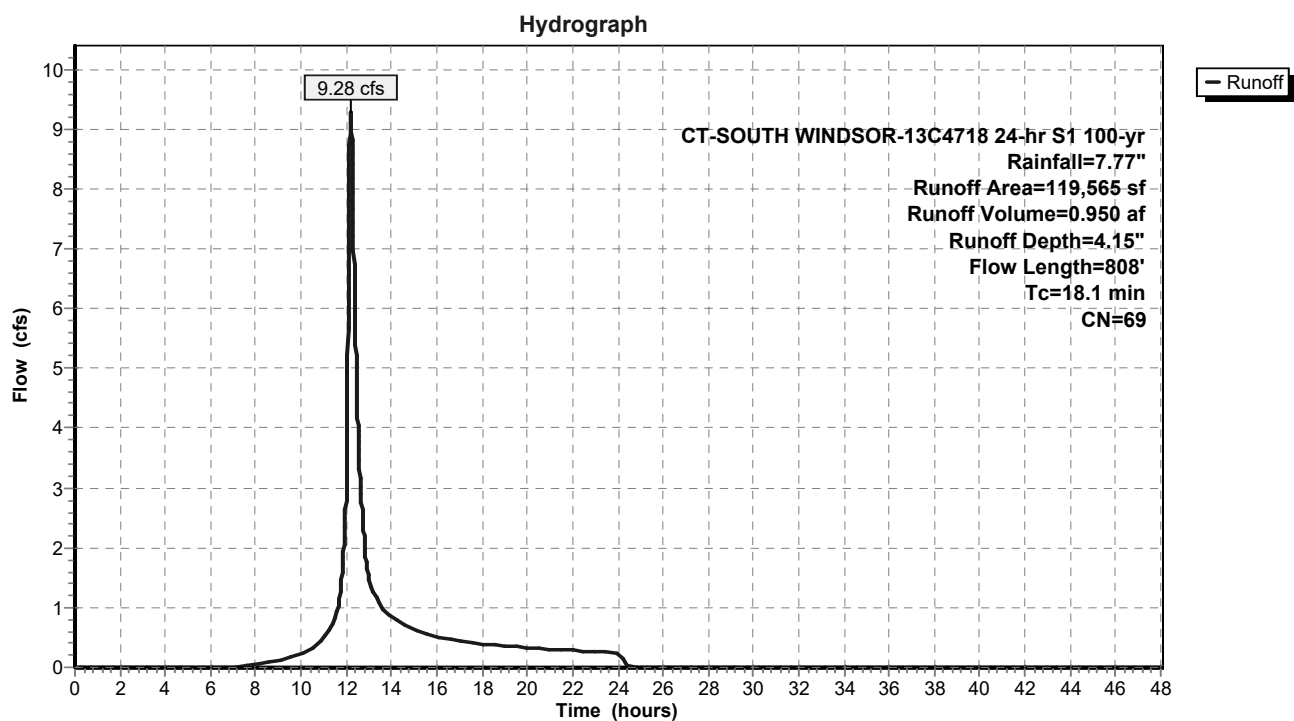
Runoff = 9.28 cfs @ 12.20 hrs, Volume= 0.950 af, Depth= 4.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-SOUTH WINDSOR-13C4718 24-hr S1 100-yr Rainfall=7.77"

Area (sf)	CN	Description
0	98	Paved parking, HSG B
0	98	Paved parking, HSG C
0	98	Paved parking, HSG D
57,679	69	50-75% Grass cover, Fair, HSG B
26,837	79	50-75% Grass cover, Fair, HSG C
0	84	50-75% Grass cover, Fair, HSG D
25,526	56	Brush, Fair, HSG B
9,523	70	Brush, Fair, HSG C
119,565	69	Weighted Average
119,565		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	100	0.0800	0.29		Sheet Flow, 1 Grass: Short n= 0.150 P2= 3.11"
0.2	39	0.0800	4.24		Shallow Concentrated Flow, 2 Grassed Waterway Kv= 15.0 fps
12.1	595	0.0270	0.82		Shallow Concentrated Flow, 3 Woodland Kv= 5.0 fps
0.1	74	0.0270	19.82	194.19	Channel Flow, 4 Area= 9.8 sf Perim= 15.7' r= 0.62' n= 0.009 Corrugated PE, smooth interior
18.1	808	Total			

Subcatchment EDA-4: Area to Wetland DP-4

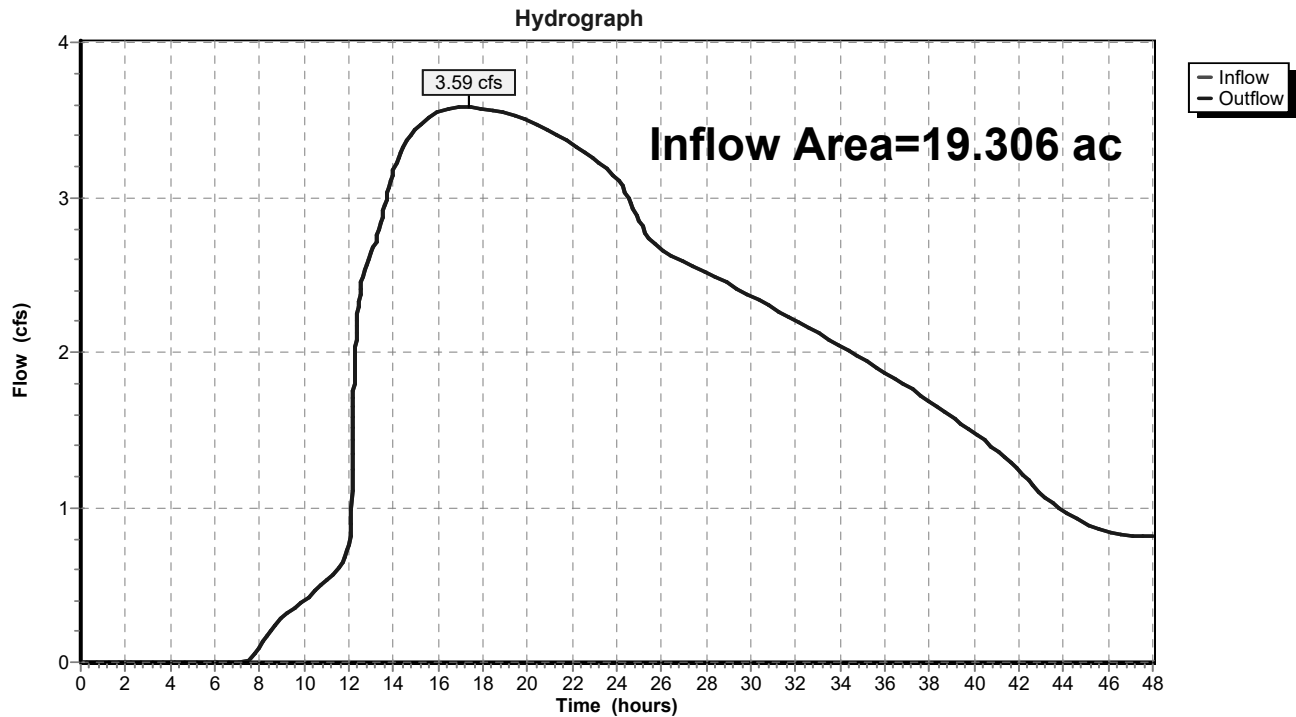


Summary for Reach DP-1: Detention Basin 7

Inflow Area = 19.306 ac, 70.56% Impervious, Inflow Depth > 4.35" for 100-yr event
Inflow = 3.59 cfs @ 17.35 hrs, Volume= 7.003 af
Outflow = 3.59 cfs @ 17.35 hrs, Volume= 7.003 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP-1: Detention Basin 7

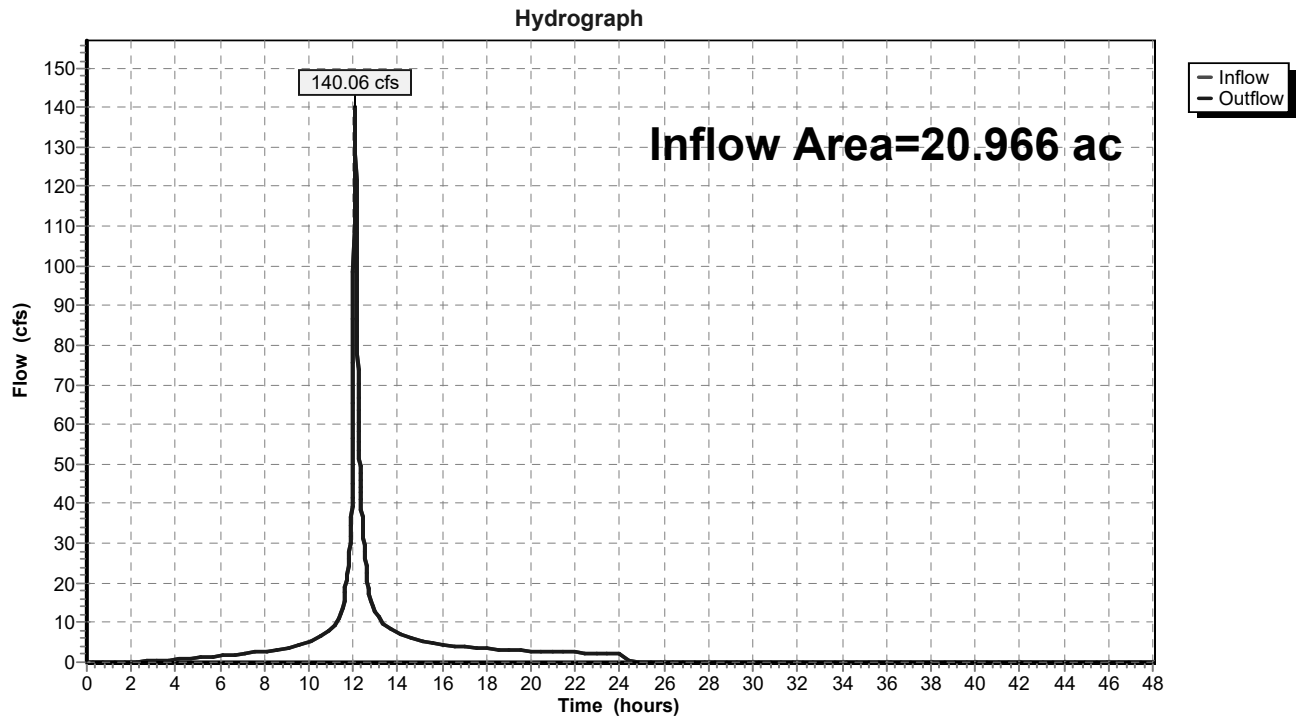


Summary for Reach DP-2: Wetland DP-2

Inflow Area = 20.966 ac, 58.26% Impervious, Inflow Depth = 6.16" for 100-yr event
Inflow = 140.06 cfs @ 12.08 hrs, Volume= 10.767 af
Outflow = 140.06 cfs @ 12.08 hrs, Volume= 10.767 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP-2: Wetland DP-2

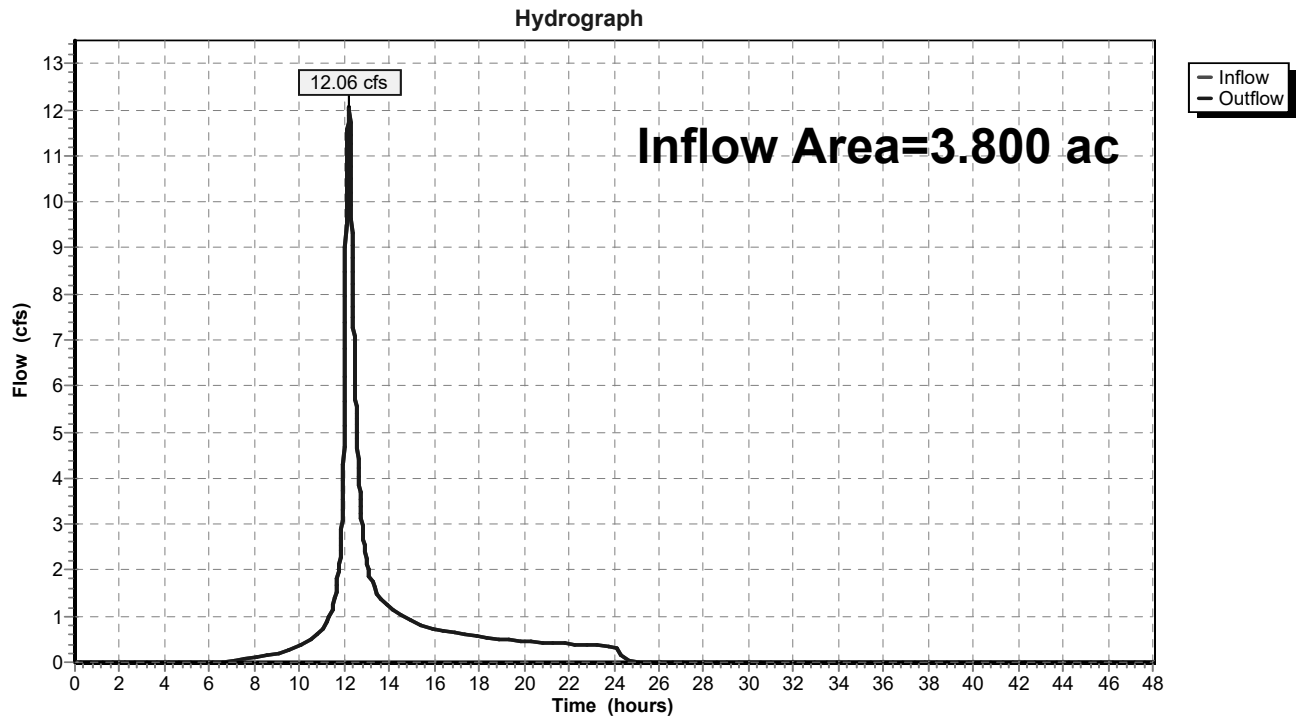


Summary for Reach DP-3: Wetland DP-3

Inflow Area = 3.800 ac, 0.00% Impervious, Inflow Depth = 4.28" for 100-yr event
Inflow = 12.06 cfs @ 12.20 hrs, Volume= 1.355 af
Outflow = 12.06 cfs @ 12.20 hrs, Volume= 1.355 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP-3: Wetland DP-3

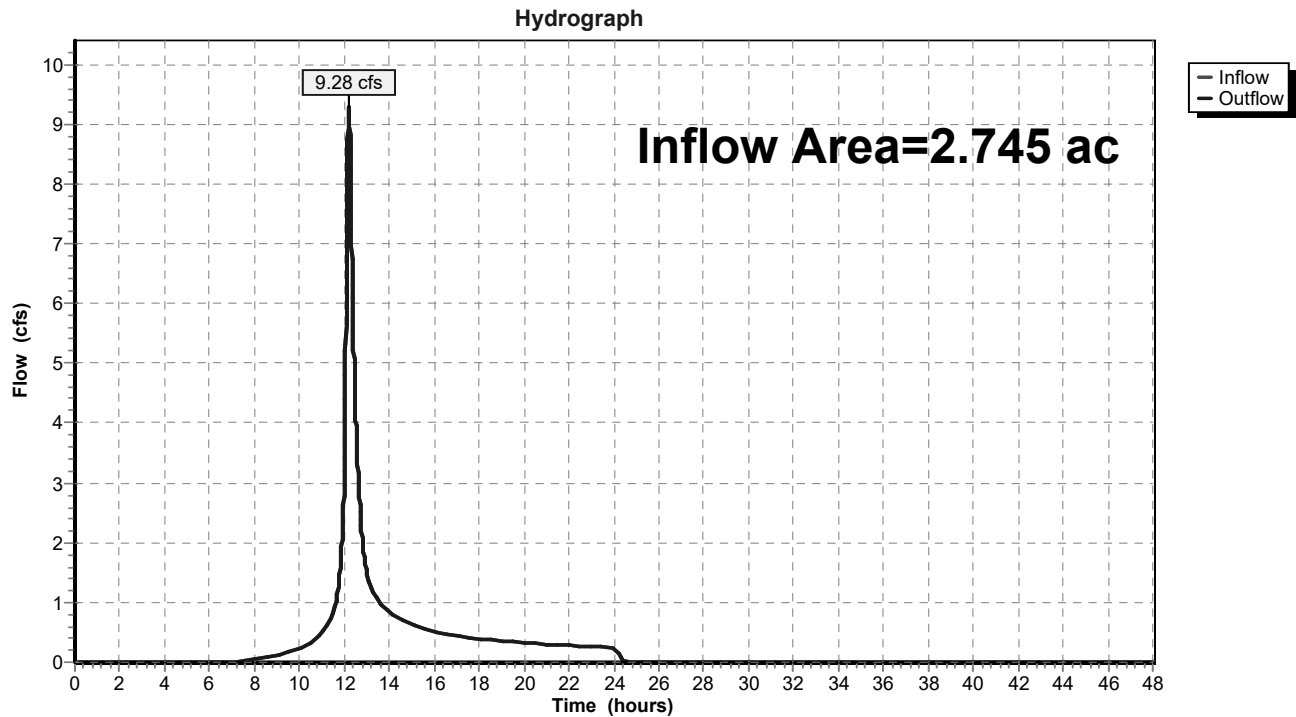


Summary for Reach DP-4: Wetland DP-4

Inflow Area = 2.745 ac, 0.00% Impervious, Inflow Depth = 4.15" for 100-yr event
Inflow = 9.28 cfs @ 12.20 hrs, Volume= 0.950 af
Outflow = 9.28 cfs @ 12.20 hrs, Volume= 0.950 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Reach DP-4: Wetland DP-4



Summary for Reach SW 2-3: Wetland Swale 2-3

Inflow Area = 17.167 ac, 71.15% Impervious, Inflow Depth = 6.58" for 100-yr event
Inflow = 131.15 cfs @ 12.06 hrs, Volume= 9.412 af
Outflow = 130.29 cfs @ 12.08 hrs, Volume= 9.412 af, Atten= 1%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 10.62 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 2.76 fps, Avg. Travel Time= 2.4 min

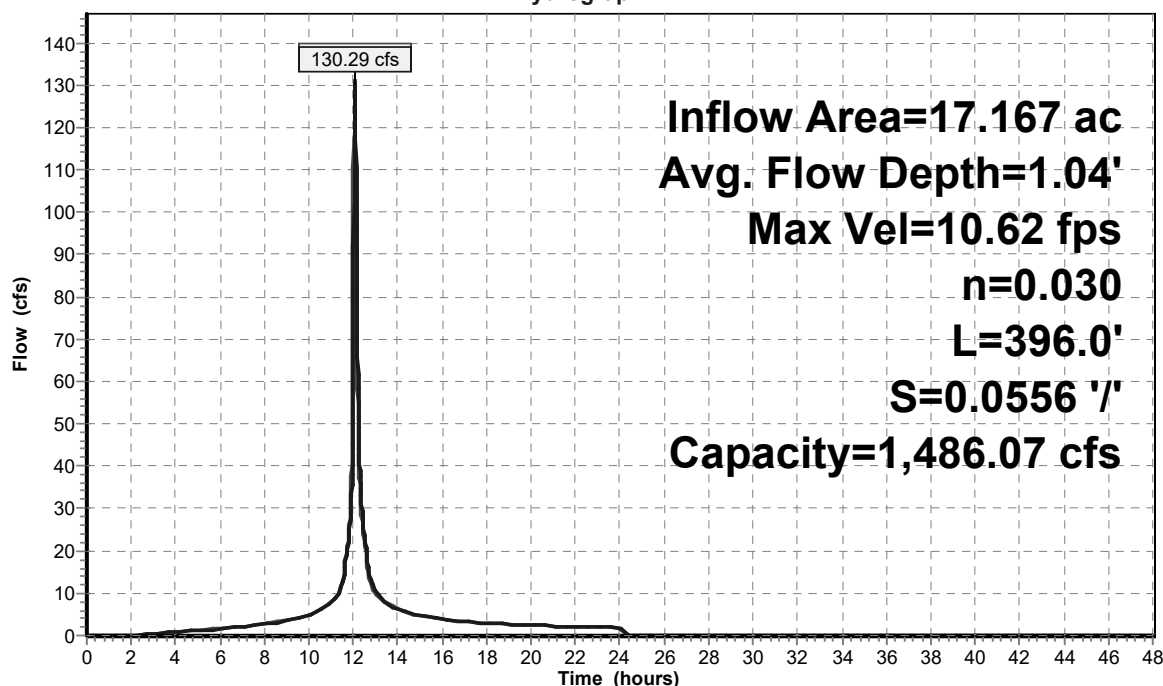
Peak Storage= 4,855 cf @ 12.07 hrs
Average Depth at Peak Storage= 1.04'
Bank-Full Depth= 4.00' Flow Area= 67.2 sf, Capacity= 1,486.07 cfs

10.00' x 4.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 1.7 '/' Top Width= 23.60'
Length= 396.0' Slope= 0.0556 '/'
Inlet Invert= 127.00', Outlet Invert= 105.00'



Reach SW 2-3: Wetland Swale 2-3

Hydrograph



Summary for Reach SW 4-3: SW 4-3

Inflow Area = 2.745 ac, 0.00% Impervious, Inflow Depth = 4.15" for 100-yr event
 Inflow = 9.28 cfs @ 12.20 hrs, Volume= 0.950 af
 Outflow = 9.23 cfs @ 12.24 hrs, Volume= 0.950 af, Atten= 1%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Max. Velocity= 4.07 fps, Min. Travel Time= 1.4 min
 Avg. Velocity = 1.49 fps, Avg. Travel Time= 3.8 min

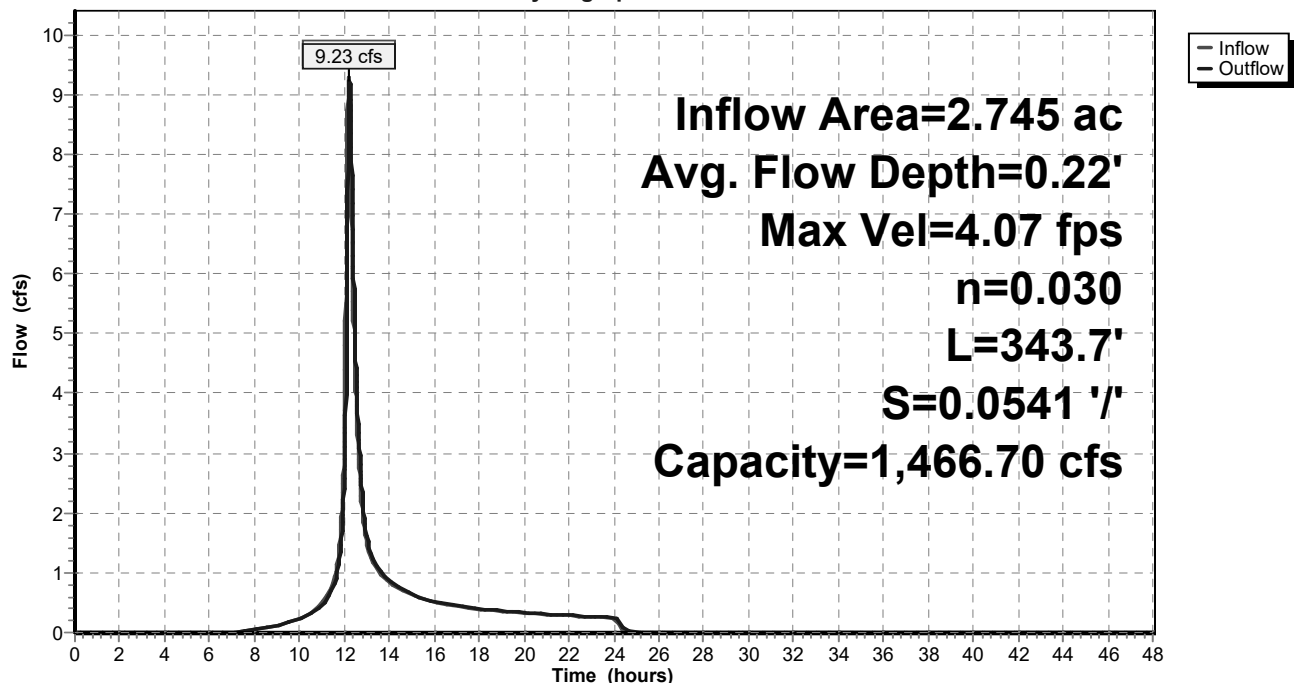
Peak Storage= 780 cf @ 12.22 hrs
 Average Depth at Peak Storage= 0.22'
 Bank-Full Depth= 4.00' Flow Area= 67.2 sf, Capacity= 1,466.70 cfs

10.00' x 4.00' deep channel, n= 0.030 Earth, grassed & winding
 Side Slope Z-value= 1.7 '/' Top Width= 23.60'
 Length= 343.7' Slope= 0.0541 '/'
 Inlet Invert= 123.60', Outlet Invert= 105.00'



Reach SW 4-3: SW 4-3

Hydrograph



Summary for Pond P-7: Dentention Basin 7

Inflow Area = 19.306 ac, 70.56% Impervious, Inflow Depth = 6.58" for 100-yr event
 Inflow = 109.41 cfs @ 12.15 hrs, Volume= 10.585 af
 Outflow = 3.59 cfs @ 17.35 hrs, Volume= 7.003 af, Atten= 97%, Lag= 312.2 min
 Primary = 3.59 cfs @ 17.35 hrs, Volume= 7.003 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 98.74' @ 17.35 hrs Surf.Area= 50,990 sf Storage= 329,940 cf

Plug-Flow detention time= 885.9 min calculated for 7.001 af (66% of inflow)
 Center-of-Mass det. time= 764.7 min (1,556.8 - 792.1)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	396,479 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

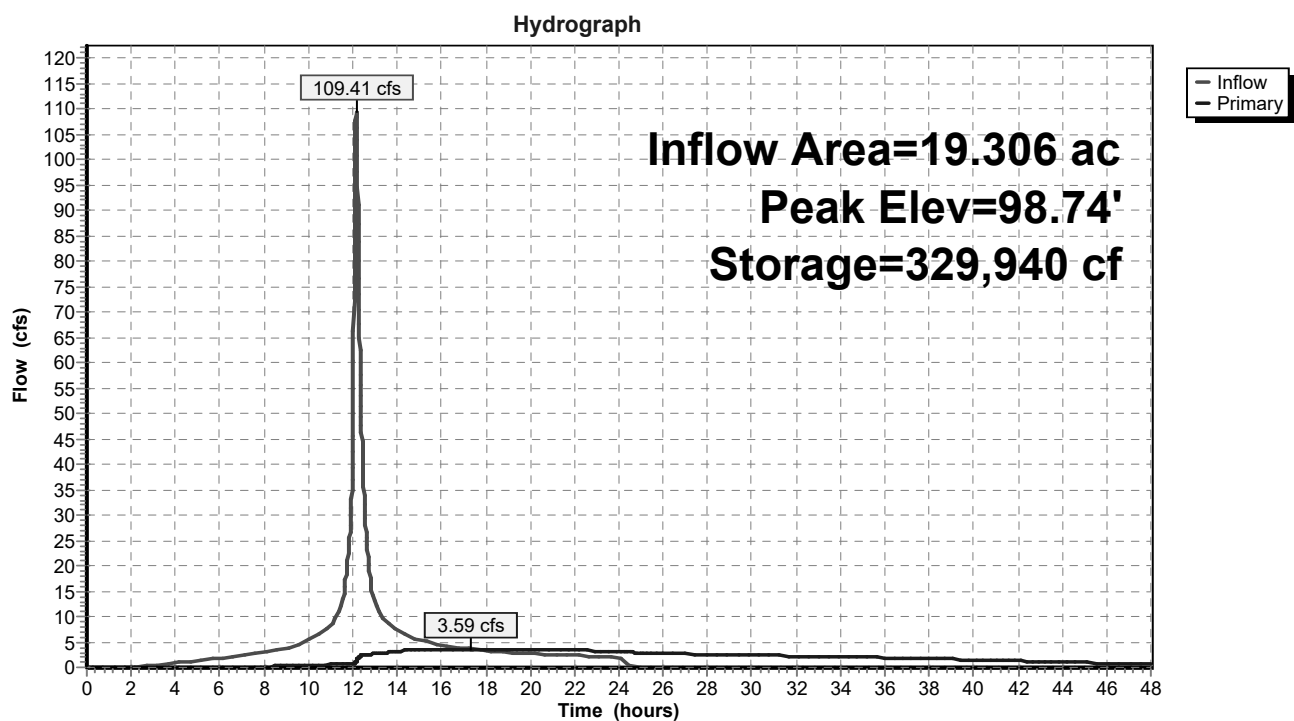
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.00	19,765	0	0
92.00	31,993	51,758	51,758
94.00	37,305	69,298	121,056
96.00	42,927	80,232	201,288
98.00	48,699	91,626	292,914
100.00	54,866	103,565	396,479

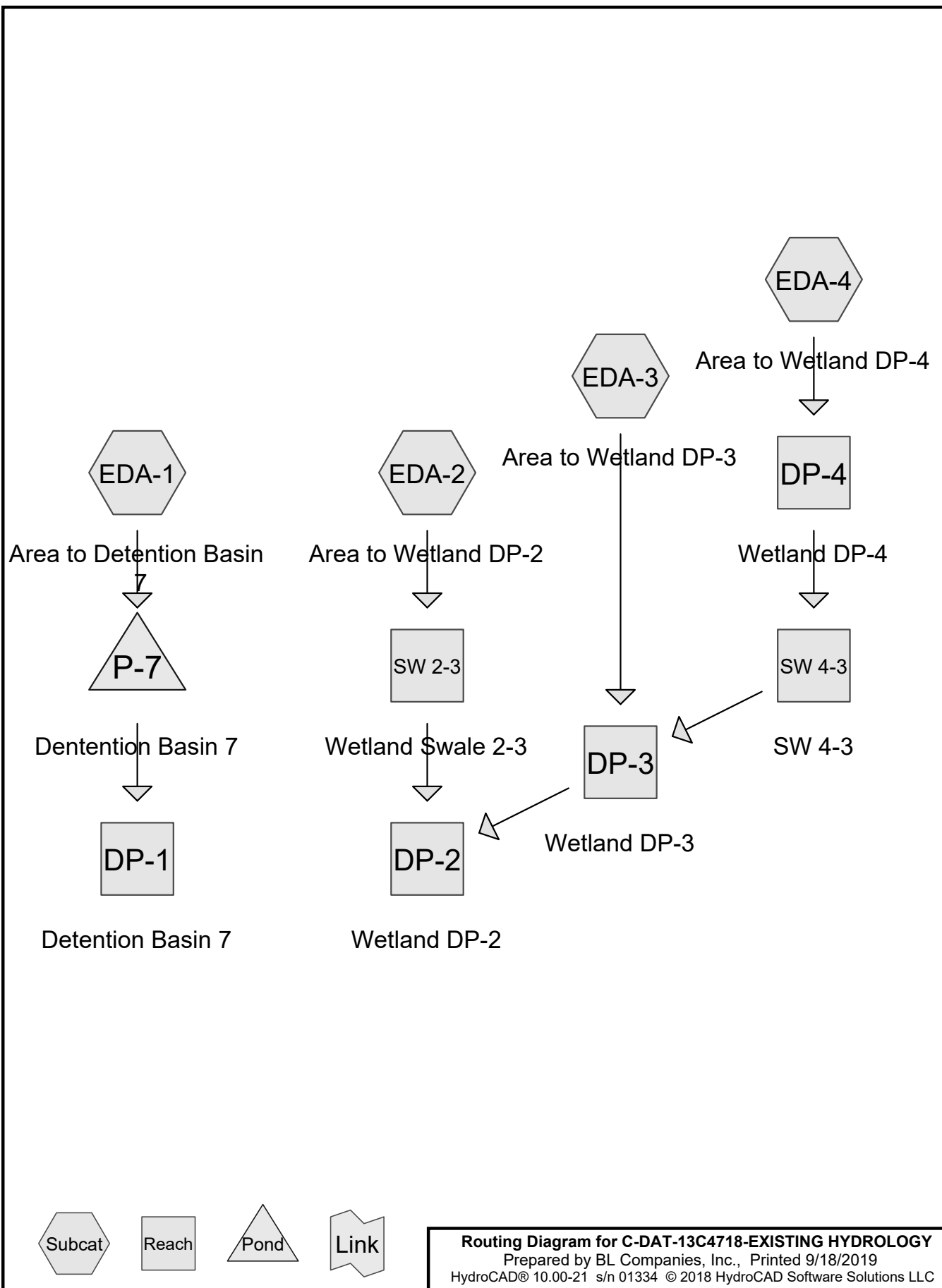
Device	Routing	Invert	Outlet Devices
#1	Primary	88.00'	18.0" Round Culvert L= 71.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 88.00' / 84.50' S= 0.0493 ' / Cc= 0.900 n= 0.009 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	91.00'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	95.00'	6.0" Vert. Orifice/Grate C= 0.600
#4	Device 1	98.00'	6.0" Vert. Orifice/Grate C= 0.600
#5	Device 1	99.00'	36.0" x 78.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.59 cfs @ 17.35 hrs HW=98.74' (Free Discharge)

1=Culvert (Passes 3.59 cfs of 26.90 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 1.16 cfs @ 13.25 fps)
 3=Orifice/Grate (Orifice Controls 1.77 cfs @ 9.00 fps)
 4=Orifice/Grate (Orifice Controls 0.66 cfs @ 3.38 fps)
 5=Orifice/Grate (Controls 0.00 cfs)

Pond P-7: Dentention Basin 7





Time span=0.00-140.00 hrs, dt=0.01 hrs, 14001 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 EDA-1: Area to Detention Runoff Area=840,987 sf 70.56% Impervious Runoff Depth=2.09"
Tc=15.0 min CN=90 Runoff=38.21 cfs 3.355 af

Subcatchment EDA-2: Area to Wetland Runoff Area=747,775 sf 71.15% Impervious Runoff Depth=2.09"
Flow Length=1,211' Tc=8.0 min CN=90 Runoff=45.99 cfs 2.983 af

Subcatchment EDA-3: Area to Wetland DP-3 Runoff Area=45,946 sf 0.00% Impervious Runoff Depth=0.93"
Flow Length=347' Tc=9.3 min CN=73 Runoff=1.06 cfs 0.081 af

Subcatchment EDA-4: Area to Wetland Runoff Area=119,565 sf 0.00% Impervious Runoff Depth=0.73"
Flow Length=808' Tc=18.1 min CN=69 Runoff=1.42 cfs 0.167 af

Reach DP-1: Detention Basin 7 Inflow=0.69 cfs 2.814 af
Outflow=0.69 cfs 2.814 af

Reach DP-2: Wetland DP-2 Inflow=46.65 cfs 3.231 af
Outflow=46.65 cfs 3.231 af

Reach DP-3: Wetland DP-3 Inflow=1.83 cfs 0.248 af
Outflow=1.83 cfs 0.248 af

Reach DP-4: Wetland DP-4 Inflow=1.42 cfs 0.167 af
Outflow=1.42 cfs 0.167 af

Reach SW 2-3: Wetland Swale 2-3 Avg. Flow Depth=0.56' Max Vel=7.39 fps Inflow=45.99 cfs 2.983 af
n=0.030 L=396.0' S=0.0556 '/' Capacity=1,486.07 cfs Outflow=45.33 cfs 2.983 af

Reach SW 4-3: SW 4-3 Avg. Flow Depth=0.07' Max Vel=1.99 fps Inflow=1.42 cfs 0.167 af
n=0.030 L=343.7' S=0.0541 '/' Capacity=1,466.70 cfs Outflow=1.39 cfs 0.167 af

Pond P-7: Detention Basin 7 Peak Elev=93.90' Storage=117,300 cf Inflow=38.21 cfs 3.355 af
Outflow=0.69 cfs 2.814 af

Total Runoff Area = 40.273 ac Runoff Volume = 6.587 af Average Runoff Depth = 1.96"
35.84% Pervious = 14.435 ac 64.16% Impervious = 25.837 ac

Summary for Subcatchment EDA-1: Area to Detention Basin 7

Runoff = 38.21 cfs @ 12.15 hrs, Volume= 3.355 af, Depth= 2.09"

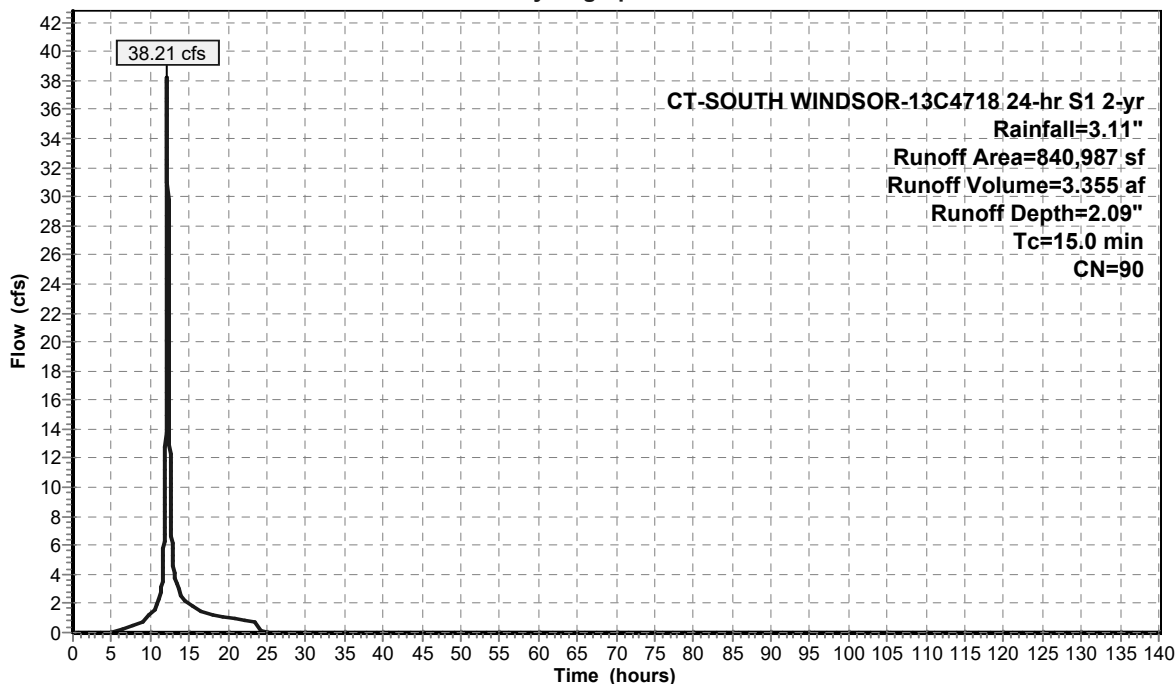
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 CT-SOUTH WINDSOR-13C4718 24-hr S1 2-yr Rainfall=3.11"

Area (sf)	CN	Description
299,131	98	Paved parking, HSG B
282,062	98	Paved parking, HSG C
11,034	98	Paved parking, HSG B
1,191	98	Paved parking, HSG C
180,158	69	50-75% Grass cover, Fair, HSG B
59,799	79	50-75% Grass cover, Fair, HSG C
7,145	69	50-75% Grass cover, Fair, HSG B
467	79	50-75% Grass cover, Fair, HSG C
840,987	90	Weighted Average
247,569		29.44% Pervious Area
593,418		70.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry, Master Planned Tc

Subcatchment EDA-1: Area to Detention Basin 7

Hydrograph



Summary for Subcatchment EDA-2: Area to Wetland DP-2

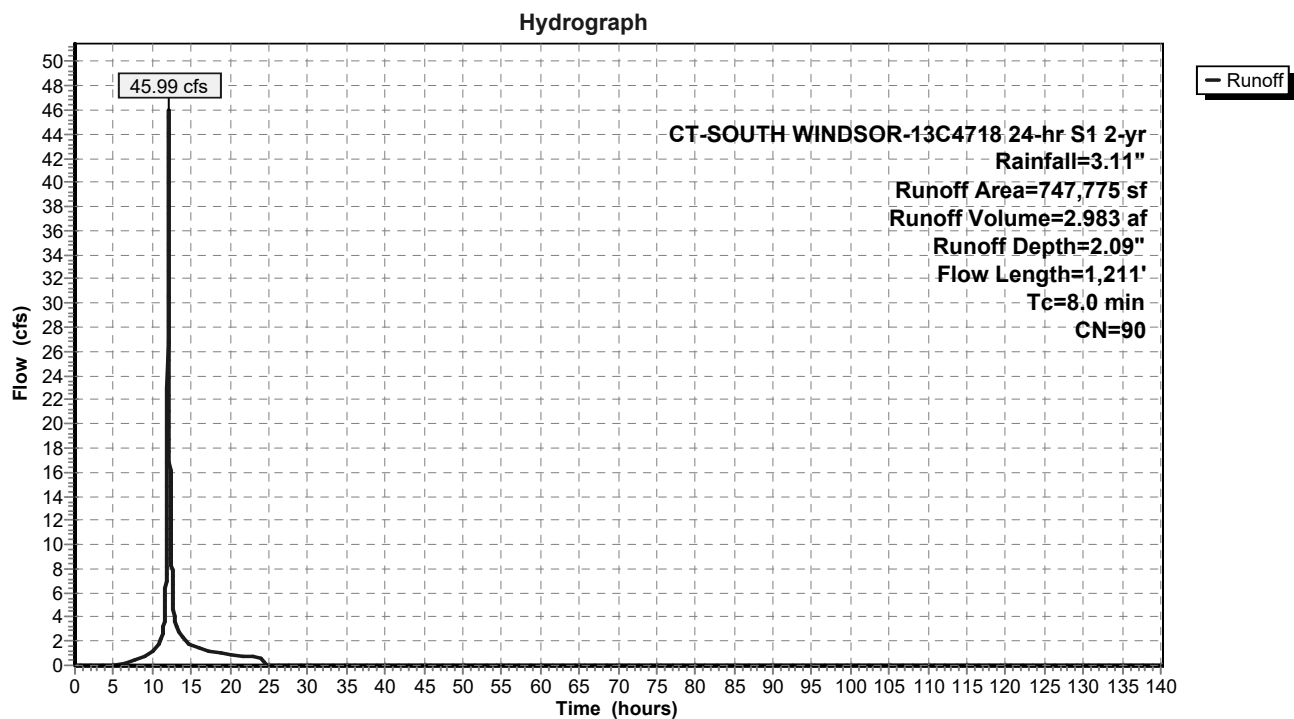
Runoff = 45.99 cfs @ 12.06 hrs, Volume= 2.983 af, Depth= 2.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
CT-SOUTH WINDSOR-13C4718 24-hr S1 2-yr Rainfall=3.11"

Area (sf)	CN	Description
517,459	98	Paved parking, HSG B
10,227	98	Paved parking, HSG C
4,362	98	Paved parking, HSG D
213,896	69	50-75% Grass cover, Fair, HSG B
588	79	50-75% Grass cover, Fair, HSG C
1,243	84	50-75% Grass cover, Fair, HSG D
747,775	90	Weighted Average
215,727		28.85% Pervious Area
532,048		71.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	74	0.1350	0.34		Sheet Flow, 1 Grass: Short n= 0.150 P2= 3.11"
0.4	26	0.0250	1.13		Sheet Flow, 2 Smooth surfaces n= 0.011 P2= 3.11"
1.1	216	0.0250	3.21		Shallow Concentrated Flow, 3 Paved Kv= 20.3 fps
1.7	744	0.0050	7.35	23.11	Pipe Channel, RCP_Round 24" 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.009 Corrugated PE, smooth interior
1.2	151	0.0200	2.12		Shallow Concentrated Flow, 4 Grassed Waterway Kv= 15.0 fps
8.0	1,211	Total			

Subcatchment EDA-2: Area to Wetland DP-2



Summary for Subcatchment EDA-3: Area to Wetland DP-3

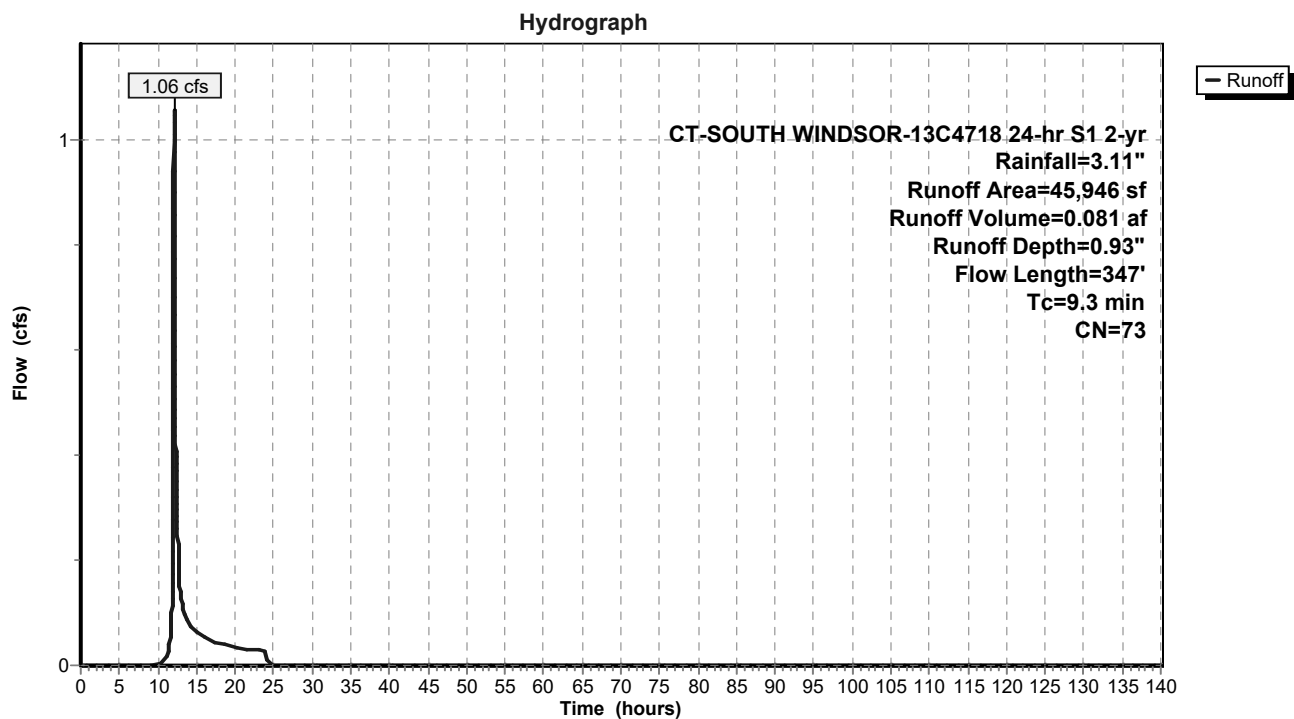
Runoff = 1.06 cfs @ 12.08 hrs, Volume= 0.081 af, Depth= 0.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
CT-SOUTH WINDSOR-13C4718 24-hr S1 2-yr Rainfall=3.11"

Area (sf)	CN	Description
0	98	Paved parking, HSG B
0	98	Paved parking, HSG C
0	98	Paved parking, HSG D
21,004	69	50-75% Grass cover, Fair, HSG B
0	79	50-75% Grass cover, Fair, HSG C
5,451	84	50-75% Grass cover, Fair, HSG D
2,225	56	Brush, Fair, HSG B
17,266	77	Brush, Fair, HSG D
45,946	73	Weighted Average
45,946		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	100	0.0400	0.22		Sheet Flow, 1 Grass: Short n= 0.150 P2= 3.11"
0.6	125	0.0480	3.29		Shallow Concentrated Flow, 2 Grassed Waterway Kv= 15.0 fps
1.2	122	0.1060	1.63		Shallow Concentrated Flow, 3 Woodland Kv= 5.0 fps
9.3	347	Total			

Subcatchment EDA-3: Area to Wetland DP-3



Summary for Subcatchment EDA-4: Area to Wetland DP-4

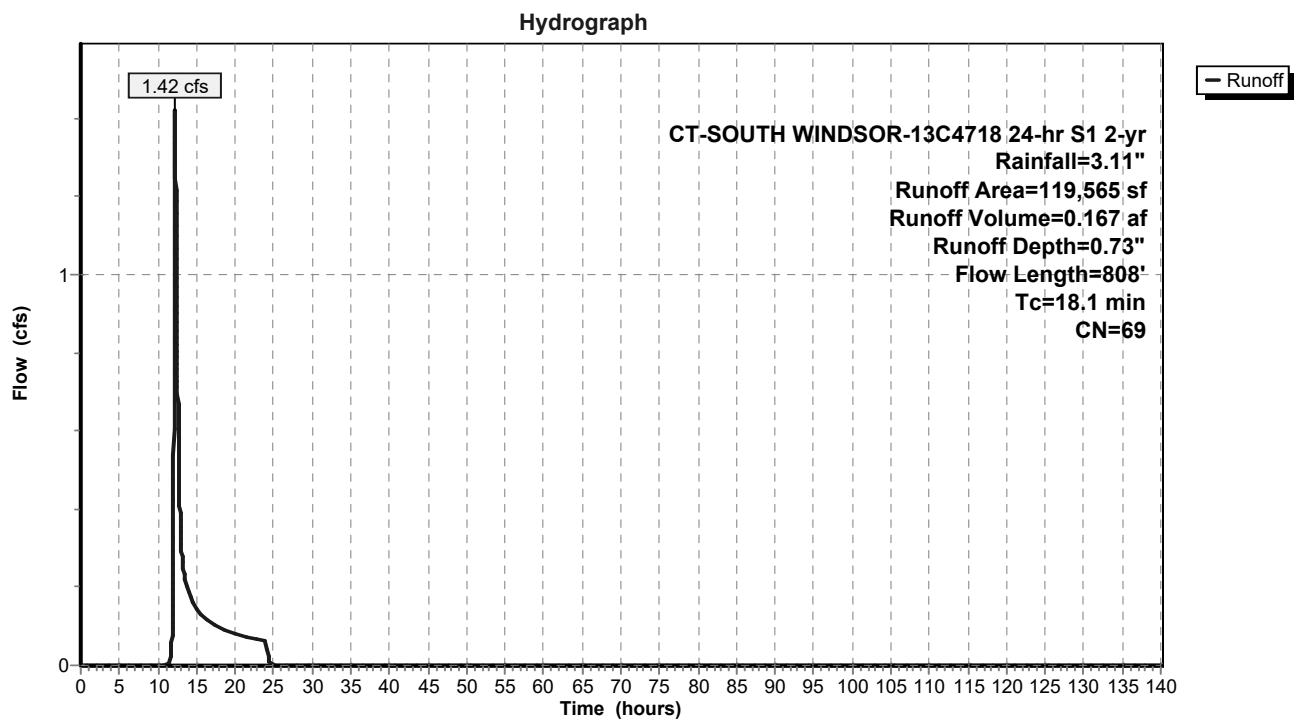
Runoff = 1.42 cfs @ 12.23 hrs, Volume= 0.167 af, Depth= 0.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 CT-SOUTH WINDSOR-13C4718 24-hr S1 2-yr Rainfall=3.11"

Area (sf)	CN	Description
0	98	Paved parking, HSG B
0	98	Paved parking, HSG C
0	98	Paved parking, HSG D
57,679	69	50-75% Grass cover, Fair, HSG B
26,837	79	50-75% Grass cover, Fair, HSG C
0	84	50-75% Grass cover, Fair, HSG D
25,526	56	Brush, Fair, HSG B
9,523	70	Brush, Fair, HSG C
119,565	69	Weighted Average
119,565		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	100	0.0800	0.29		Sheet Flow, 1 Grass: Short n= 0.150 P2= 3.11"
0.2	39	0.0800	4.24		Shallow Concentrated Flow, 2 Grassed Waterway Kv= 15.0 fps
12.1	595	0.0270	0.82		Shallow Concentrated Flow, 3 Woodland Kv= 5.0 fps
0.1	74	0.0270	19.82	194.19	Channel Flow, 4 Area= 9.8 sf Perim= 15.7' r= 0.62' n= 0.009 Corrugated PE, smooth interior
18.1	808	Total			

Subcatchment EDA-4: Area to Wetland DP-4

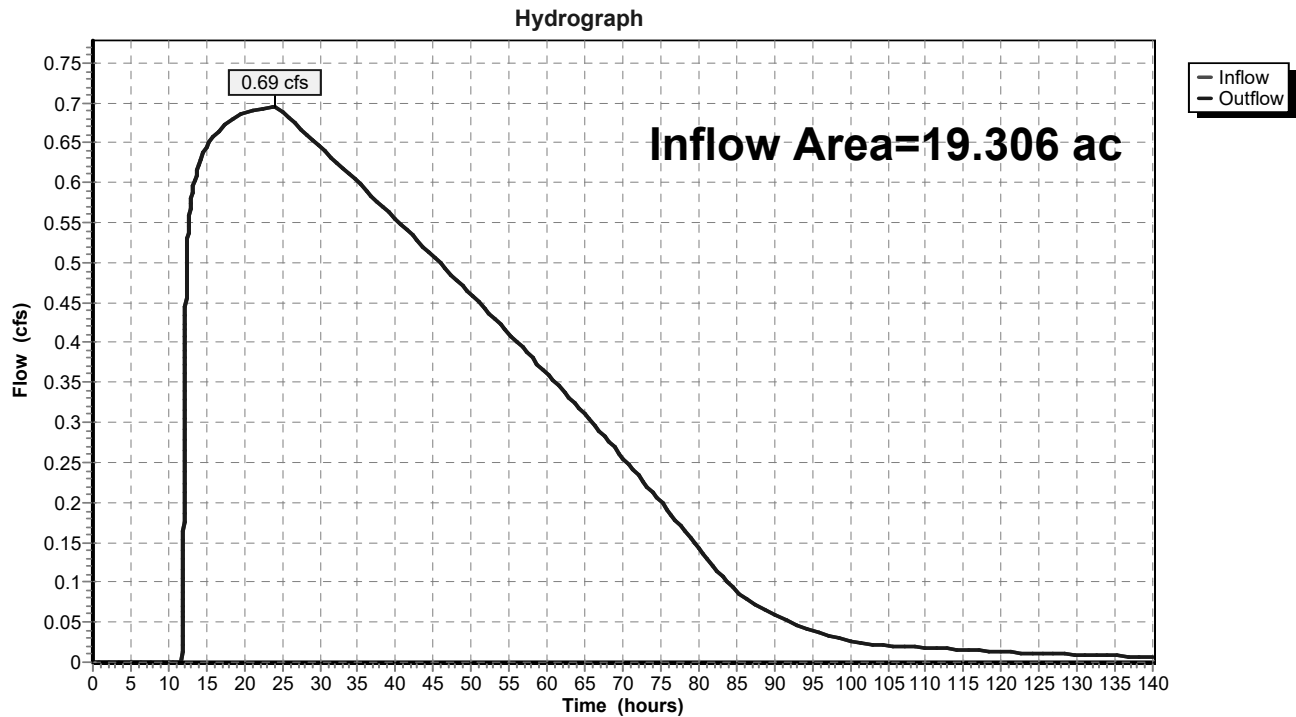


Summary for Reach DP-1: Detention Basin 7

Inflow Area = 19.306 ac, 70.56% Impervious, Inflow Depth > 1.75" for 2-yr event
Inflow = 0.69 cfs @ 24.10 hrs, Volume= 2.814 af
Outflow = 0.69 cfs @ 24.10 hrs, Volume= 2.814 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Reach DP-1: Detention Basin 7

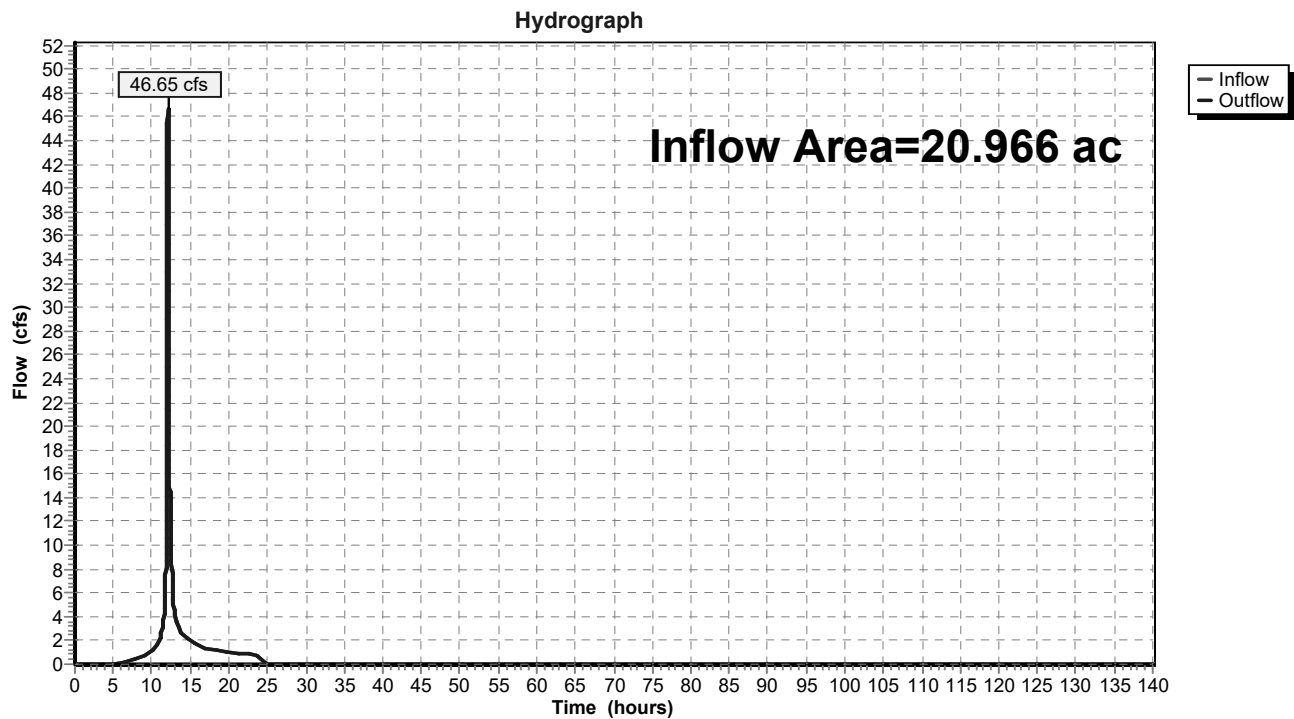


Summary for Reach DP-2: Wetland DP-2

Inflow Area = 20.966 ac, 58.26% Impervious, Inflow Depth = 1.85" for 2-yr event
Inflow = 46.65 cfs @ 12.09 hrs, Volume= 3.231 af
Outflow = 46.65 cfs @ 12.09 hrs, Volume= 3.231 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Reach DP-2: Wetland DP-2

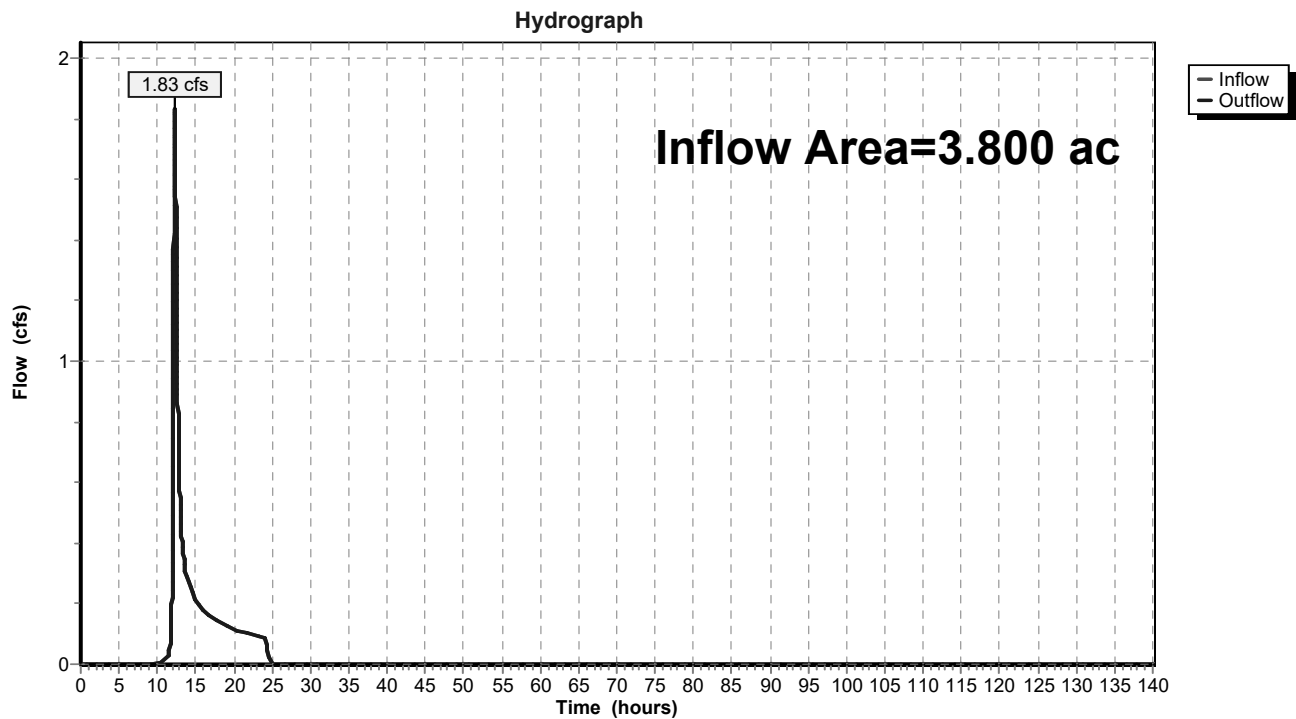


Summary for Reach DP-3: Wetland DP-3

Inflow Area = 3.800 ac, 0.00% Impervious, Inflow Depth = 0.78" for 2-yr event
Inflow = 1.83 cfs @ 12.28 hrs, Volume= 0.248 af
Outflow = 1.83 cfs @ 12.28 hrs, Volume= 0.248 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Reach DP-3: Wetland DP-3

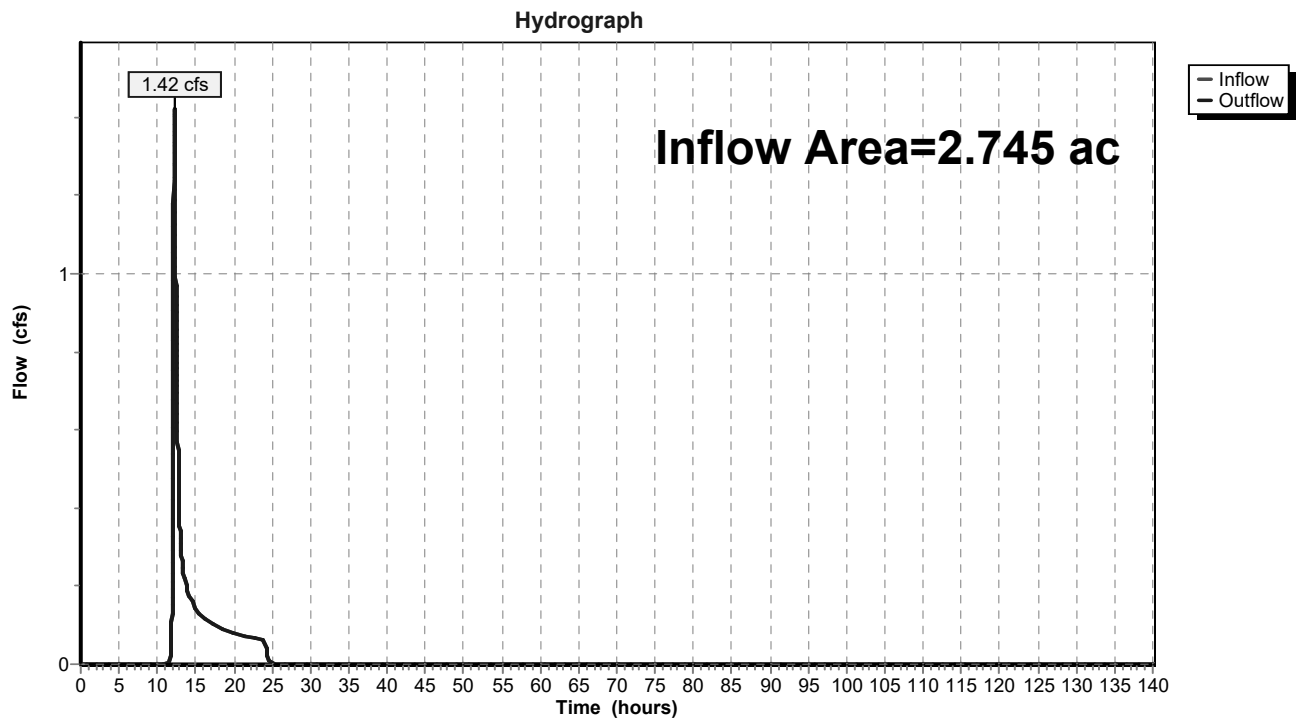


Summary for Reach DP-4: Wetland DP-4

Inflow Area = 2.745 ac, 0.00% Impervious, Inflow Depth = 0.73" for 2-yr event
Inflow = 1.42 cfs @ 12.23 hrs, Volume= 0.167 af
Outflow = 1.42 cfs @ 12.23 hrs, Volume= 0.167 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Reach DP-4: Wetland DP-4



Summary for Reach SW 2-3: Wetland Swale 2-3

Inflow Area = 17.167 ac, 71.15% Impervious, Inflow Depth = 2.09" for 2-yr event
 Inflow = 45.99 cfs @ 12.06 hrs, Volume= 2.983 af
 Outflow = 45.33 cfs @ 12.09 hrs, Volume= 2.983 af, Atten= 1%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 Max. Velocity= 7.39 fps, Min. Travel Time= 0.9 min
 Avg. Velocity = 1.93 fps, Avg. Travel Time= 3.4 min

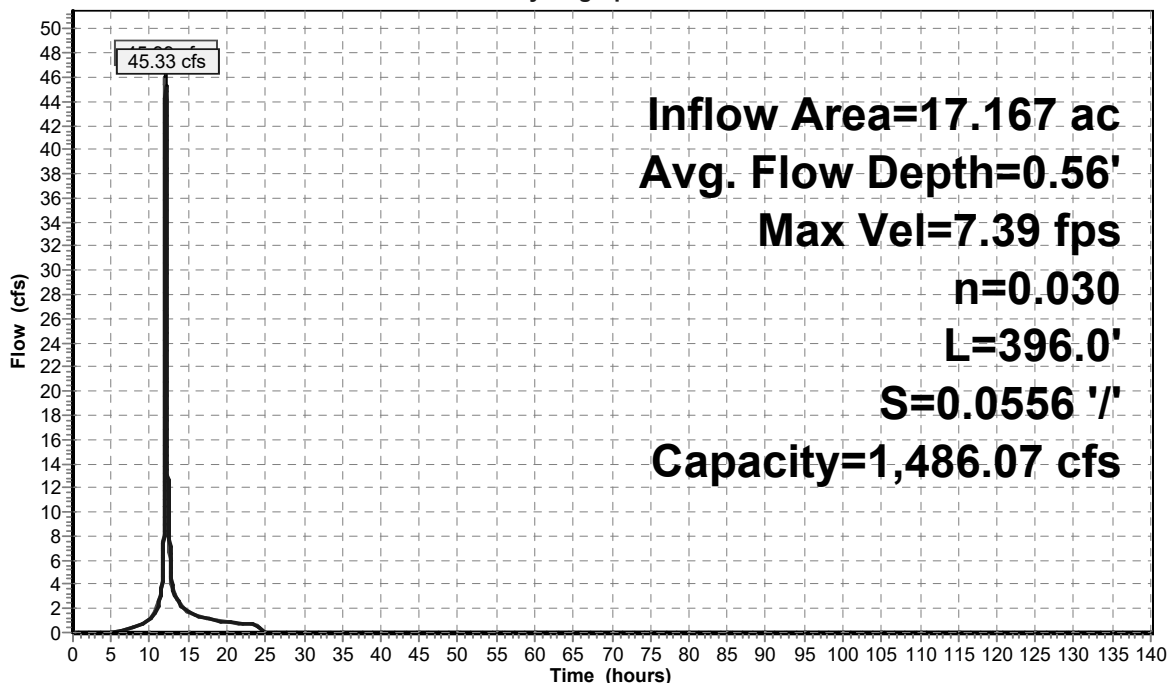
Peak Storage= 2,436 cf @ 12.07 hrs
 Average Depth at Peak Storage= 0.56'
 Bank-Full Depth= 4.00' Flow Area= 67.2 sf, Capacity= 1,486.07 cfs

10.00' x 4.00' deep channel, n= 0.030 Earth, grassed & winding
 Side Slope Z-value= 1.7 '/' Top Width= 23.60'
 Length= 396.0' Slope= 0.0556 '/'
 Inlet Invert= 127.00', Outlet Invert= 105.00'



Reach SW 2-3: Wetland Swale 2-3

Hydrograph



Summary for Reach SW 4-3: SW 4-3

Inflow Area = 2.745 ac, 0.00% Impervious, Inflow Depth = 0.73" for 2-yr event
Inflow = 1.42 cfs @ 12.23 hrs, Volume= 0.167 af
Outflow = 1.39 cfs @ 12.31 hrs, Volume= 0.167 af, Atten= 3%, Lag= 5.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Max. Velocity= 1.99 fps, Min. Travel Time= 2.9 min

Avg. Velocity = 1.36 fps, Avg. Travel Time= 4.2 min

Peak Storage= 240 cf @ 12.26 hrs

Average Depth at Peak Storage= 0.07'

Bank-Full Depth= 4.00' Flow Area= 67.2 sf, Capacity= 1,466.70 cfs

10.00' x 4.00' deep channel, n= 0.030 Earth, grassed & winding

Side Slope Z-value= 1.7 ' ' Top Width= 23.60'

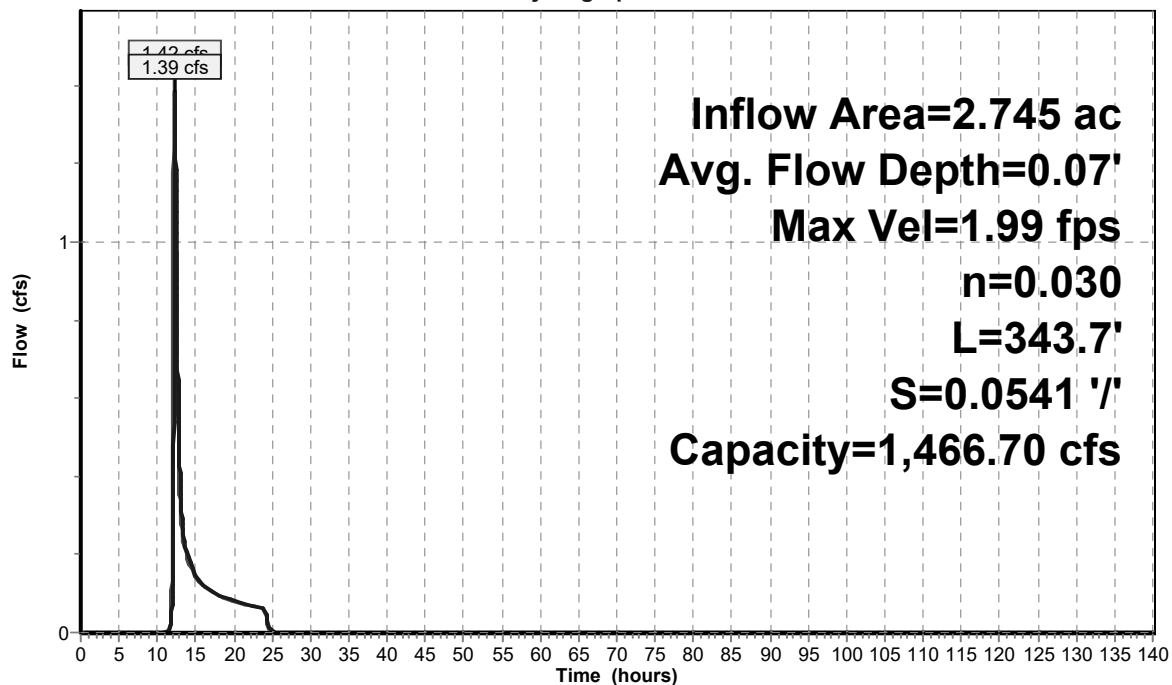
Length= 343.7' Slope= 0.0541 ' '

Inlet Invert= 123.60', Outlet Invert= 105.00'



Reach SW 4-3: SW 4-3

Hydrograph



Summary for Pond P-7: Dentention Basin 7

Inflow Area = 19.306 ac, 70.56% Impervious, Inflow Depth = 2.09" for 2-yr event
 Inflow = 38.21 cfs @ 12.15 hrs, Volume= 3.355 af
 Outflow = 0.69 cfs @ 24.10 hrs, Volume= 2.814 af, Atten= 98%, Lag= 716.8 min
 Primary = 0.69 cfs @ 24.10 hrs, Volume= 2.814 af

Routing by Stor-Ind method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 Peak Elev= 93.90' @ 24.10 hrs Surf.Area= 37,037 sf Storage= 117,300 cf

Plug-Flow detention time= 1,793.4 min calculated for 2.814 af (84% of inflow)
 Center-of-Mass det. time= 1,717.2 min (2,546.8 - 829.5)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	396,479 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

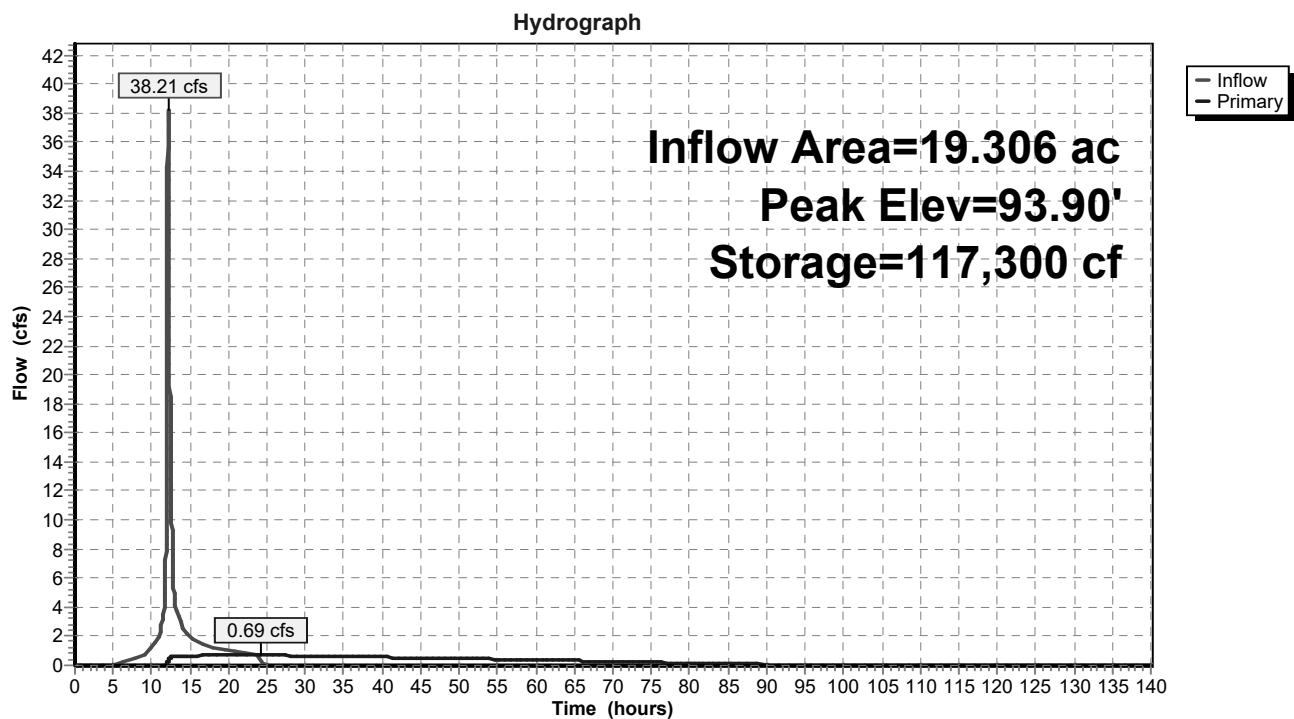
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.00	19,765	0	0
92.00	31,993	51,758	51,758
94.00	37,305	69,298	121,056
96.00	42,927	80,232	201,288
98.00	48,699	91,626	292,914
100.00	54,866	103,565	396,479

Device	Routing	Invert	Outlet Devices
#1	Primary	88.00'	18.0" Round Culvert L= 71.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 88.00' / 84.50' S= 0.0493 ' / Cc= 0.900 n= 0.009 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	91.00'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	95.00'	6.0" Vert. Orifice/Grate C= 0.600
#4	Device 1	98.00'	6.0" Vert. Orifice/Grate C= 0.600
#5	Device 1	99.00'	36.0" x 78.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.69 cfs @ 24.10 hrs HW=93.90' (Free Discharge)

1=Culvert (Passes 0.69 cfs of 19.31 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.69 cfs @ 7.96 fps)
 3=Orifice/Grate (Controls 0.00 cfs)
 4=Orifice/Grate (Controls 0.00 cfs)
 5=Orifice/Grate (Controls 0.00 cfs)

Pond P-7: Dentention Basin 7



Time span=0.00-140.00 hrs, dt=0.01 hrs, 14001 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 EDA-1: Area to Detention Runoff Area=840,987 sf 70.56% Impervious Runoff Depth=3.79"
Tc=15.0 min CN=90 Runoff=66.14 cfs 6.097 af

Subcatchment EDA-2: Area to Wetland Runoff Area=747,775 sf 71.15% Impervious Runoff Depth=3.79"
Flow Length=1,211' Tc=8.0 min CN=90 Runoff=79.37 cfs 5.421 af

Subcatchment EDA-3: Area to Wetland DP-3 Runoff Area=45,946 sf 0.00% Impervious Runoff Depth=2.21"
Flow Length=347' Tc=9.3 min CN=73 Runoff=2.67 cfs 0.194 af

Subcatchment EDA-4: Area to Wetland Runoff Area=119,565 sf 0.00% Impervious Runoff Depth=1.89"
Flow Length=808' Tc=18.1 min CN=69 Runoff=4.16 cfs 0.433 af

Reach DP-1: Detention Basin 7 Inflow=1.72 cfs 5.536 af
Outflow=1.72 cfs 5.536 af

Reach DP-2: Wetland DP-2 Inflow=82.76 cfs 6.048 af
Outflow=82.76 cfs 6.048 af

Reach DP-3: Wetland DP-3 Inflow=5.39 cfs 0.627 af
Outflow=5.39 cfs 0.627 af

Reach DP-4: Wetland DP-4 Inflow=4.16 cfs 0.433 af
Outflow=4.16 cfs 0.433 af

Reach SW 2-3: Wetland Swale 2-3 Avg. Flow Depth=0.78' Max Vel=8.96 fps Inflow=79.37 cfs 5.421 af
n=0.030 L=396.0' S=0.0556 '/' Capacity=1,486.07 cfs Outflow=78.58 cfs 5.421 af

Reach SW 4-3: SW 4-3 Avg. Flow Depth=0.13' Max Vel=3.00 fps Inflow=4.16 cfs 0.433 af
n=0.030 L=343.7' S=0.0541 '/' Capacity=1,466.70 cfs Outflow=4.12 cfs 0.433 af

Pond P-7: Detention Basin 7 Peak Elev=95.97' Storage=199,916 cf Inflow=66.14 cfs 6.097 af
Outflow=1.72 cfs 5.536 af

Total Runoff Area = 40.273 ac Runoff Volume = 12.145 af Average Runoff Depth = 3.62"
35.84% Pervious = 14.435 ac 64.16% Impervious = 25.837 ac

Summary for Subcatchment EDA-1: Area to Detention Basin 7

Runoff = 66.14 cfs @ 12.15 hrs, Volume= 6.097 af, Depth= 3.79"

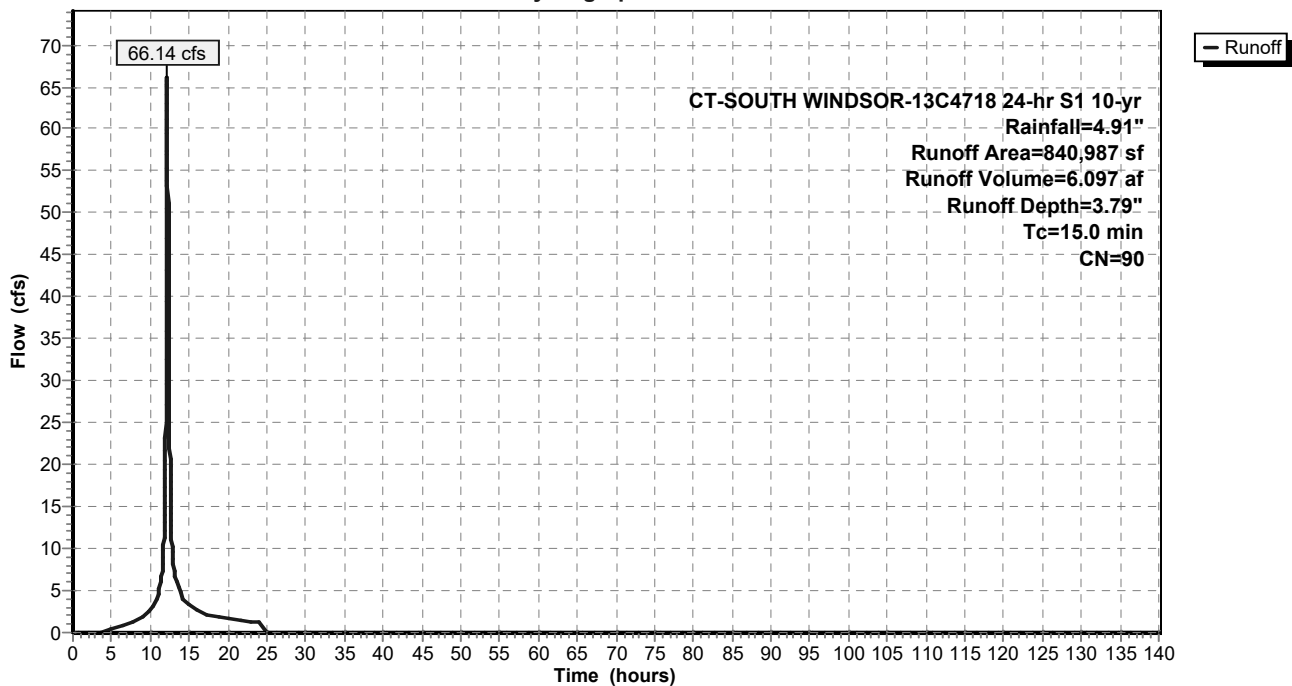
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 CT-SOUTH WINDSOR-13C4718 24-hr S1 10-yr Rainfall=4.91"

Area (sf)	CN	Description
299,131	98	Paved parking, HSG B
282,062	98	Paved parking, HSG C
11,034	98	Paved parking, HSG B
1,191	98	Paved parking, HSG C
180,158	69	50-75% Grass cover, Fair, HSG B
59,799	79	50-75% Grass cover, Fair, HSG C
7,145	69	50-75% Grass cover, Fair, HSG B
467	79	50-75% Grass cover, Fair, HSG C
840,987	90	Weighted Average
247,569		29.44% Pervious Area
593,418		70.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry, Master Planned Tc

Subcatchment EDA-1: Area to Detention Basin 7

Hydrograph



Summary for Subcatchment EDA-2: Area to Wetland DP-2

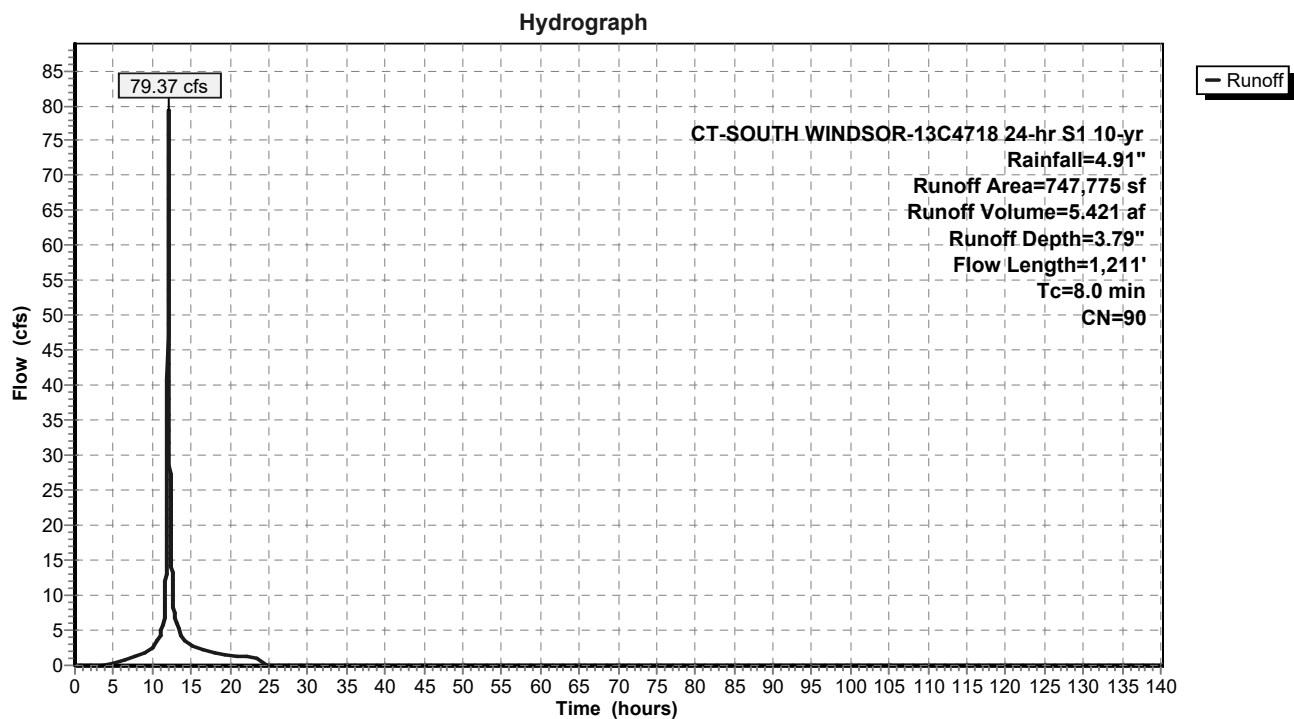
Runoff = 79.37 cfs @ 12.06 hrs, Volume= 5.421 af, Depth= 3.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
CT-SOUTH WINDSOR-13C4718 24-hr S1 10-yr Rainfall=4.91"

Area (sf)	CN	Description
517,459	98	Paved parking, HSG B
10,227	98	Paved parking, HSG C
4,362	98	Paved parking, HSG D
213,896	69	50-75% Grass cover, Fair, HSG B
588	79	50-75% Grass cover, Fair, HSG C
1,243	84	50-75% Grass cover, Fair, HSG D
747,775	90	Weighted Average
215,727		28.85% Pervious Area
532,048		71.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	74	0.1350	0.34		Sheet Flow, 1 Grass: Short n= 0.150 P2= 3.11"
0.4	26	0.0250	1.13		Sheet Flow, 2 Smooth surfaces n= 0.011 P2= 3.11"
1.1	216	0.0250	3.21		Shallow Concentrated Flow, 3 Paved Kv= 20.3 fps
1.7	744	0.0050	7.35	23.11	Pipe Channel, RCP_Round 24" 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.009 Corrugated PE, smooth interior
1.2	151	0.0200	2.12		Shallow Concentrated Flow, 4 Grassed Waterway Kv= 15.0 fps
8.0	1,211	Total			

Subcatchment EDA-2: Area to Wetland DP-2



Summary for Subcatchment EDA-3: Area to Wetland DP-3

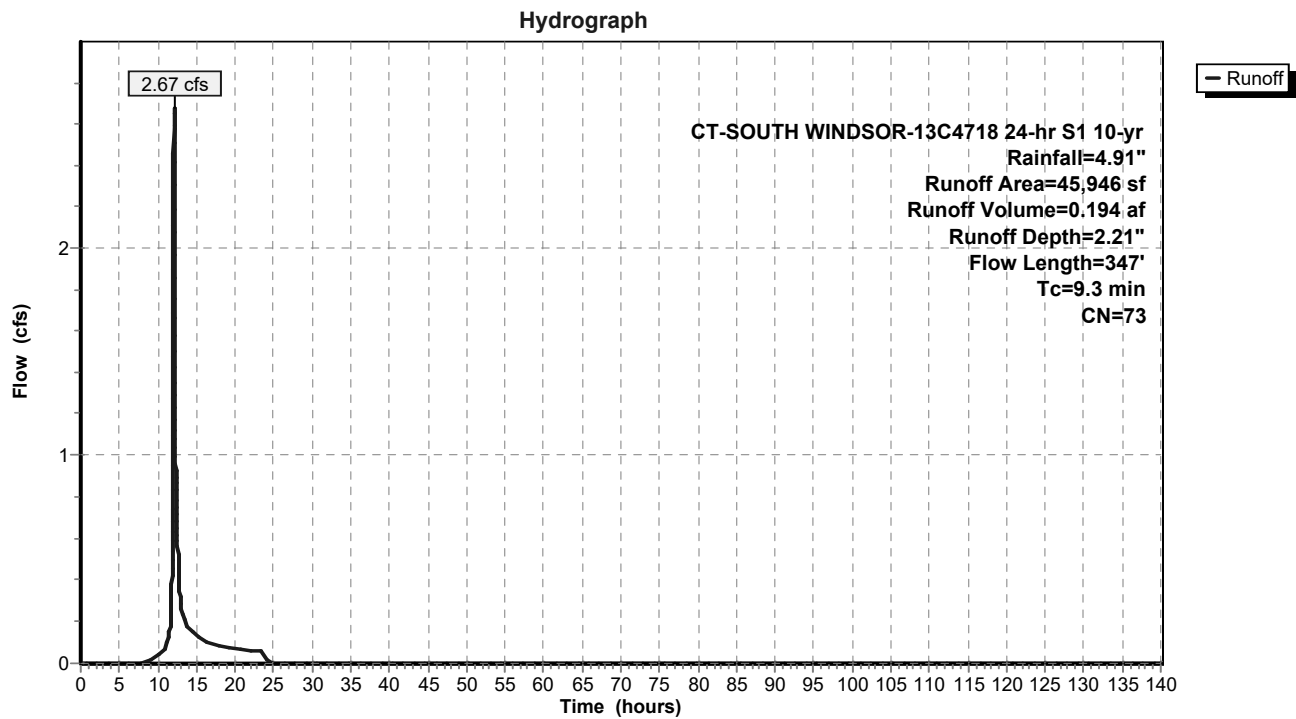
Runoff = 2.67 cfs @ 12.08 hrs, Volume= 0.194 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
CT-SOUTH WINDSOR-13C4718 24-hr S1 10-yr Rainfall=4.91"

Area (sf)	CN	Description
0	98	Paved parking, HSG B
0	98	Paved parking, HSG C
0	98	Paved parking, HSG D
21,004	69	50-75% Grass cover, Fair, HSG B
0	79	50-75% Grass cover, Fair, HSG C
5,451	84	50-75% Grass cover, Fair, HSG D
2,225	56	Brush, Fair, HSG B
17,266	77	Brush, Fair, HSG D
45,946	73	Weighted Average
45,946		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	100	0.0400	0.22		Sheet Flow, 1 Grass: Short n= 0.150 P2= 3.11"
0.6	125	0.0480	3.29		Shallow Concentrated Flow, 2 Grassed Waterway Kv= 15.0 fps
1.2	122	0.1060	1.63		Shallow Concentrated Flow, 3 Woodland Kv= 5.0 fps
9.3	347	Total			

Subcatchment EDA-3: Area to Wetland DP-3



Summary for Subcatchment EDA-4: Area to Wetland DP-4

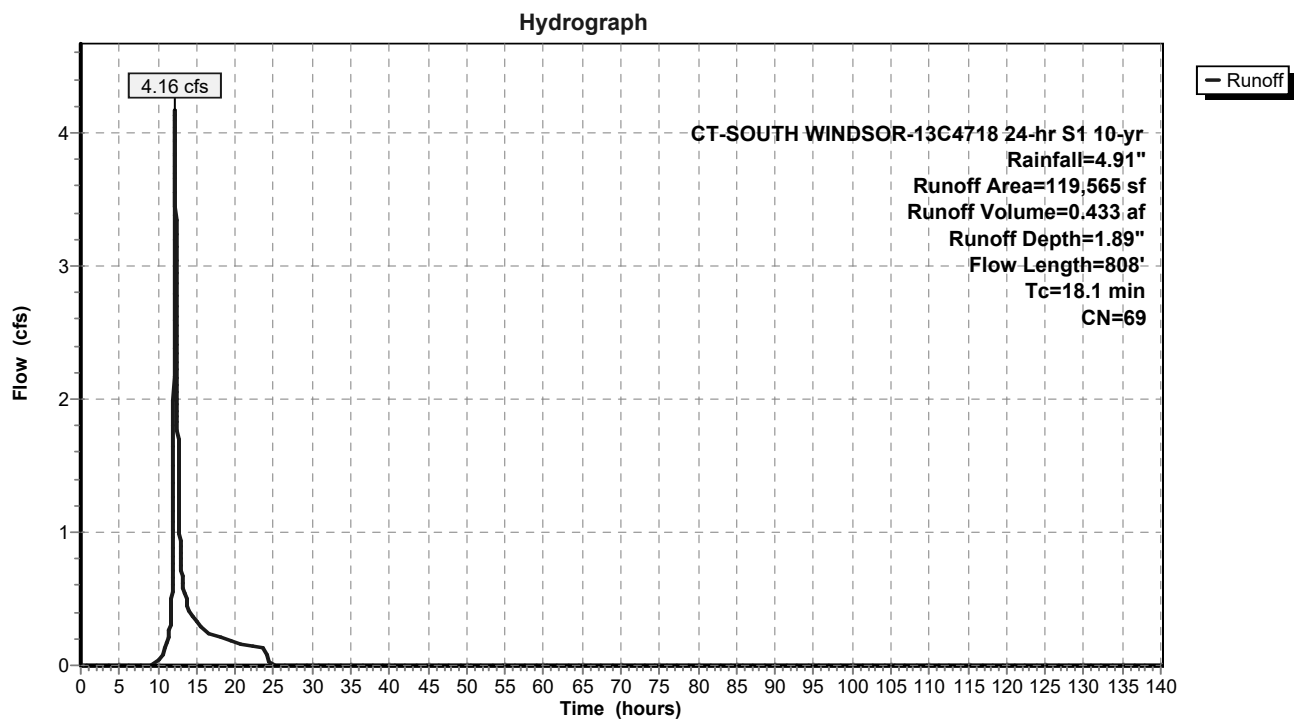
Runoff = 4.16 cfs @ 12.21 hrs, Volume= 0.433 af, Depth= 1.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
CT-SOUTH WINDSOR-13C4718 24-hr S1 10-yr Rainfall=4.91"

Area (sf)	CN	Description
0	98	Paved parking, HSG B
0	98	Paved parking, HSG C
0	98	Paved parking, HSG D
57,679	69	50-75% Grass cover, Fair, HSG B
26,837	79	50-75% Grass cover, Fair, HSG C
0	84	50-75% Grass cover, Fair, HSG D
25,526	56	Brush, Fair, HSG B
9,523	70	Brush, Fair, HSG C
119,565	69	Weighted Average
119,565		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	100	0.0800	0.29		Sheet Flow, 1
					Grass: Short n= 0.150 P2= 3.11"
0.2	39	0.0800	4.24		Shallow Concentrated Flow, 2
					Grassed Waterway Kv= 15.0 fps
12.1	595	0.0270	0.82		Shallow Concentrated Flow, 3
					Woodland Kv= 5.0 fps
0.1	74	0.0270	19.82	194.19	Channel Flow, 4
					Area= 9.8 sf Perim= 15.7' r= 0.62'
					n= 0.009 Corrugated PE, smooth interior
18.1	808	Total			

Subcatchment EDA-4: Area to Wetland DP-4

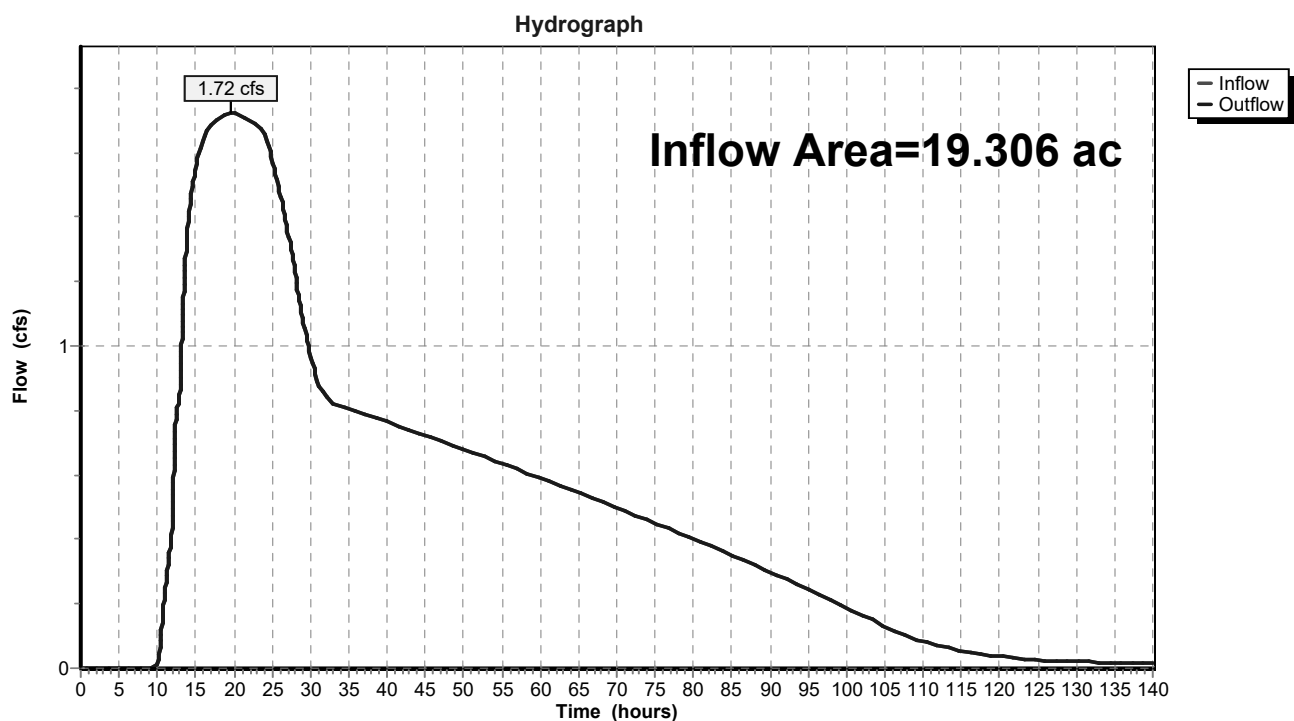


Summary for Reach DP-1: Detention Basin 7

Inflow Area = 19.306 ac, 70.56% Impervious, Inflow Depth > 3.44" for 10-yr event
Inflow = 1.72 cfs @ 19.53 hrs, Volume= 5.536 af
Outflow = 1.72 cfs @ 19.53 hrs, Volume= 5.536 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Reach DP-1: Detention Basin 7

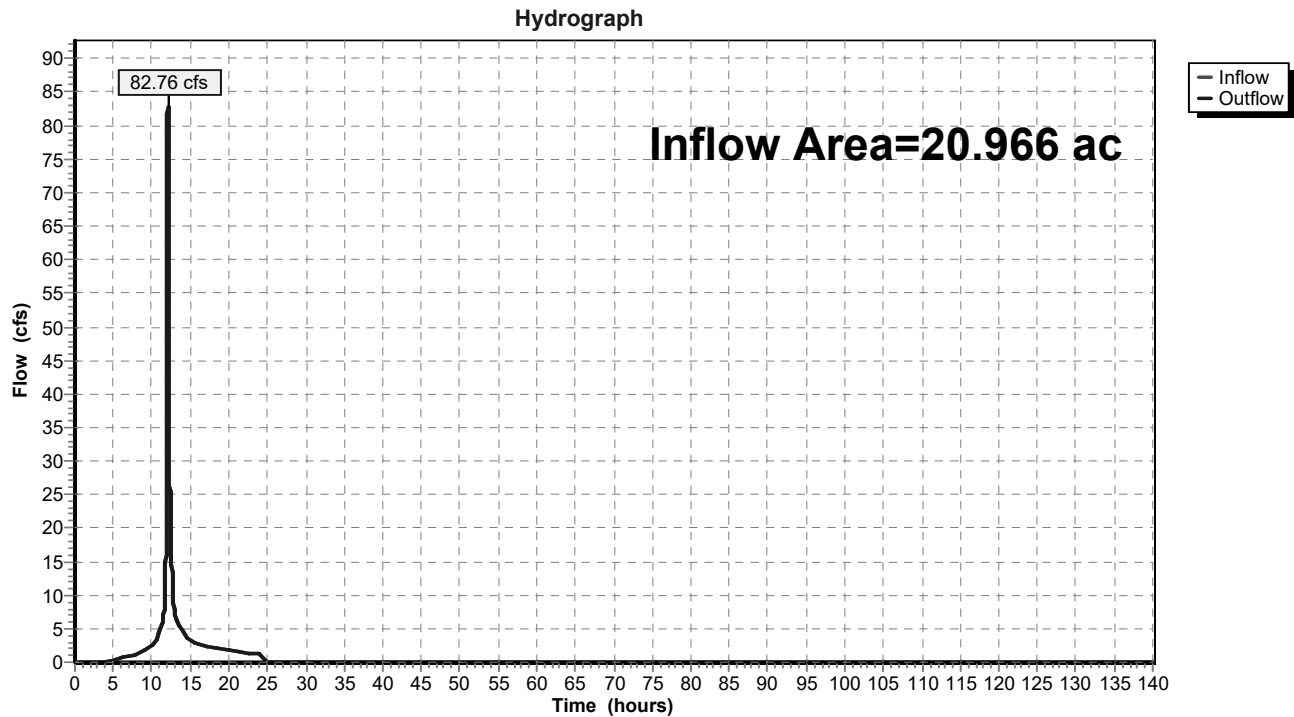


Summary for Reach DP-2: Wetland DP-2

Inflow Area = 20.966 ac, 58.26% Impervious, Inflow Depth = 3.46" for 10-yr event
Inflow = 82.76 cfs @ 12.08 hrs, Volume= 6.048 af
Outflow = 82.76 cfs @ 12.08 hrs, Volume= 6.048 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Reach DP-2: Wetland DP-2

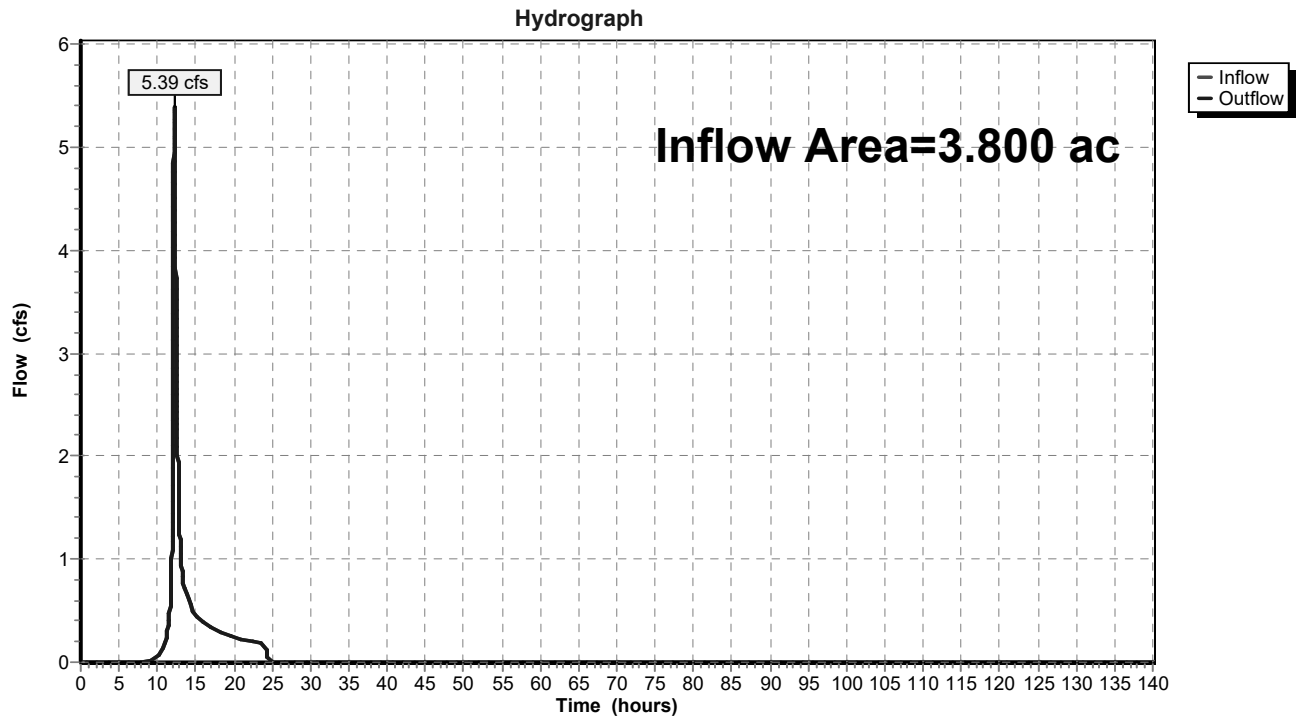


Summary for Reach DP-3: Wetland DP-3

Inflow Area = 3.800 ac, 0.00% Impervious, Inflow Depth = 1.98" for 10-yr event
Inflow = 5.39 cfs @ 12.22 hrs, Volume= 0.627 af
Outflow = 5.39 cfs @ 12.22 hrs, Volume= 0.627 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Reach DP-3: Wetland DP-3

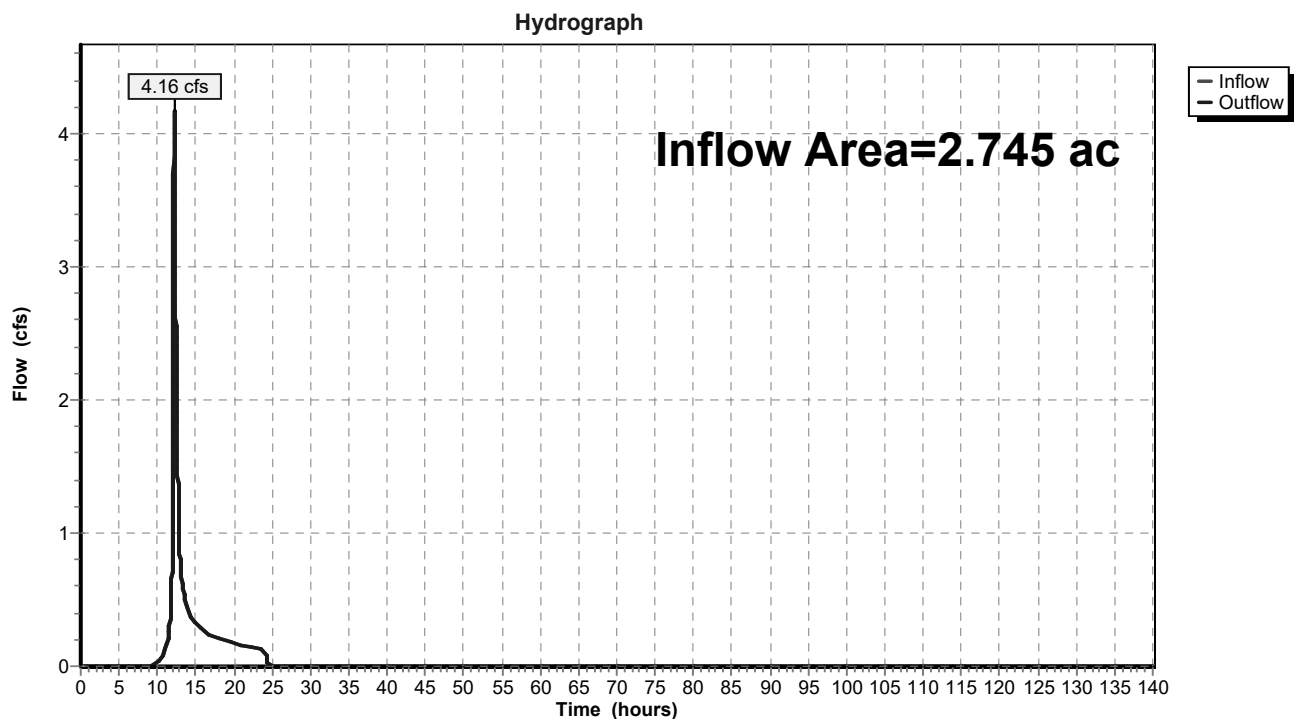


Summary for Reach DP-4: Wetland DP-4

Inflow Area = 2.745 ac, 0.00% Impervious, Inflow Depth = 1.89" for 10-yr event
Inflow = 4.16 cfs @ 12.21 hrs, Volume= 0.433 af
Outflow = 4.16 cfs @ 12.21 hrs, Volume= 0.433 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Reach DP-4: Wetland DP-4



Summary for Reach SW 2-3: Wetland Swale 2-3

Inflow Area = 17.167 ac, 71.15% Impervious, Inflow Depth = 3.79" for 10-yr event
 Inflow = 79.37 cfs @ 12.06 hrs, Volume= 5.421 af
 Outflow = 78.58 cfs @ 12.08 hrs, Volume= 5.421 af, Atten= 1%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 Max. Velocity= 8.96 fps, Min. Travel Time= 0.7 min
 Avg. Velocity = 2.30 fps, Avg. Travel Time= 2.9 min

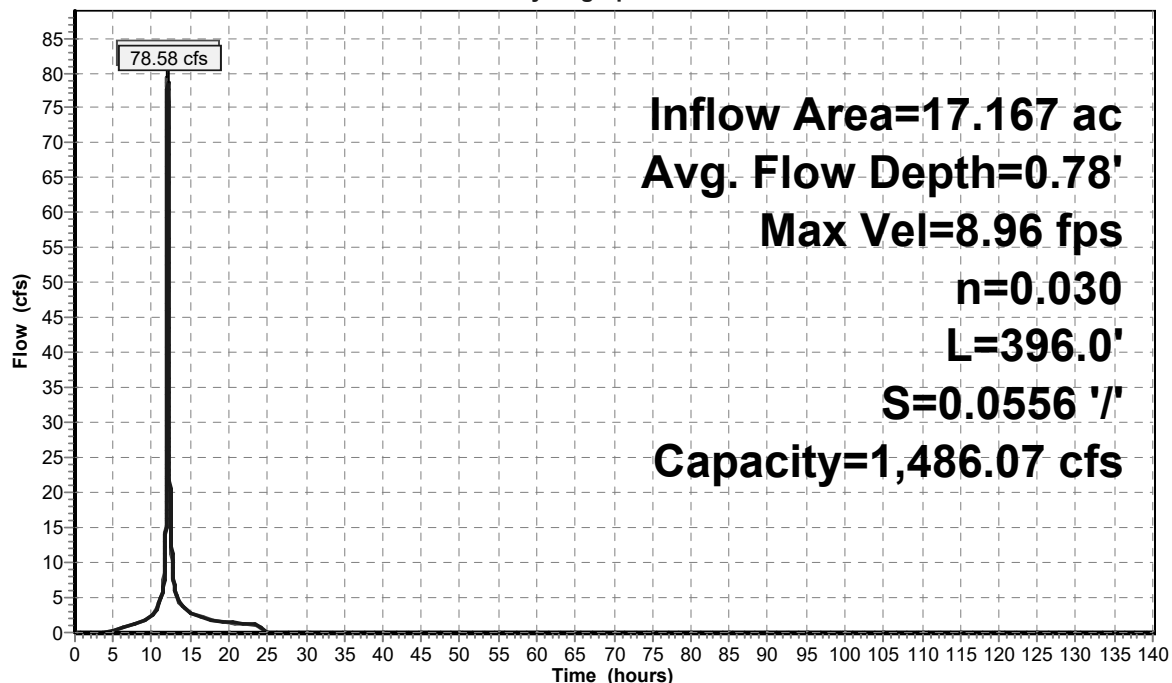
Peak Storage= 3,478 cf @ 12.07 hrs
 Average Depth at Peak Storage= 0.78'
 Bank-Full Depth= 4.00' Flow Area= 67.2 sf, Capacity= 1,486.07 cfs

10.00' x 4.00' deep channel, n= 0.030 Earth, grassed & winding
 Side Slope Z-value= 1.7 '/' Top Width= 23.60'
 Length= 396.0' Slope= 0.0556 '/'
 Inlet Invert= 127.00', Outlet Invert= 105.00'



Reach SW 2-3: Wetland Swale 2-3

Hydrograph



Summary for Reach SW 4-3: SW 4-3

Inflow Area = 2.745 ac, 0.00% Impervious, Inflow Depth = 1.89" for 10-yr event
Inflow = 4.16 cfs @ 12.21 hrs, Volume= 0.433 af
Outflow = 4.12 cfs @ 12.26 hrs, Volume= 0.433 af, Atten= 1%, Lag= 3.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.00 fps, Min. Travel Time= 1.9 min
Avg. Velocity= 1.40 fps, Avg. Travel Time= 4.1 min

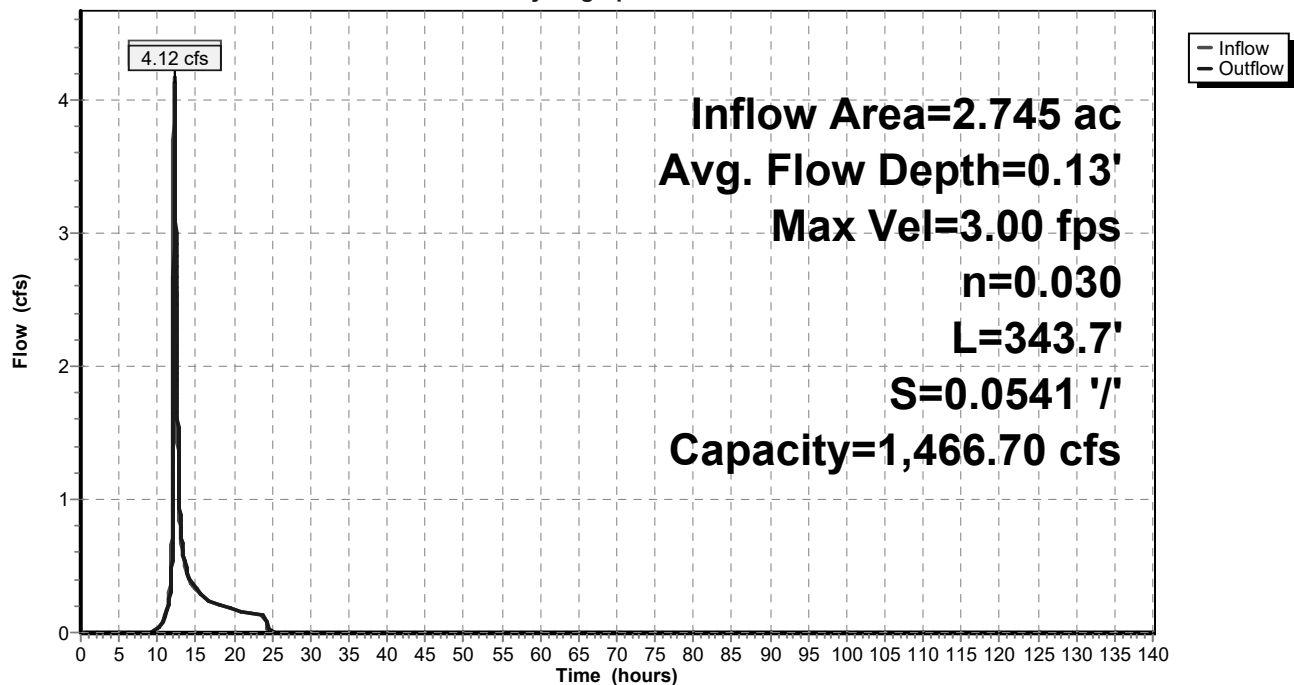
Peak Storage= 473 cf @ 12.23 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 4.00' Flow Area= 67.2 sf, Capacity= 1,466.70 cfs

10.00' x 4.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 1.7 '/' Top Width= 23.60'
Length= 343.7' Slope= 0.0541 '/'
Inlet Invert= 123.60', Outlet Invert= 105.00'



Reach SW 4-3: SW 4-3

Hydrograph



Summary for Pond P-7: Dentention Basin 7

Inflow Area = 19.306 ac, 70.56% Impervious, Inflow Depth = 3.79" for 10-yr event
 Inflow = 66.14 cfs @ 12.15 hrs, Volume= 6.097 af
 Outflow = 1.72 cfs @ 19.53 hrs, Volume= 5.536 af, Atten= 97%, Lag= 442.8 min
 Primary = 1.72 cfs @ 19.53 hrs, Volume= 5.536 af

Routing by Stor-Ind method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 Peak Elev= 95.97' @ 19.53 hrs Surf.Area= 42,837 sf Storage= 199,916 cf

Plug-Flow detention time= 1,923.0 min calculated for 5.536 af (91% of inflow)
 Center-of-Mass det. time= 1,872.7 min (2,682.5 - 809.8)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	396,479 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

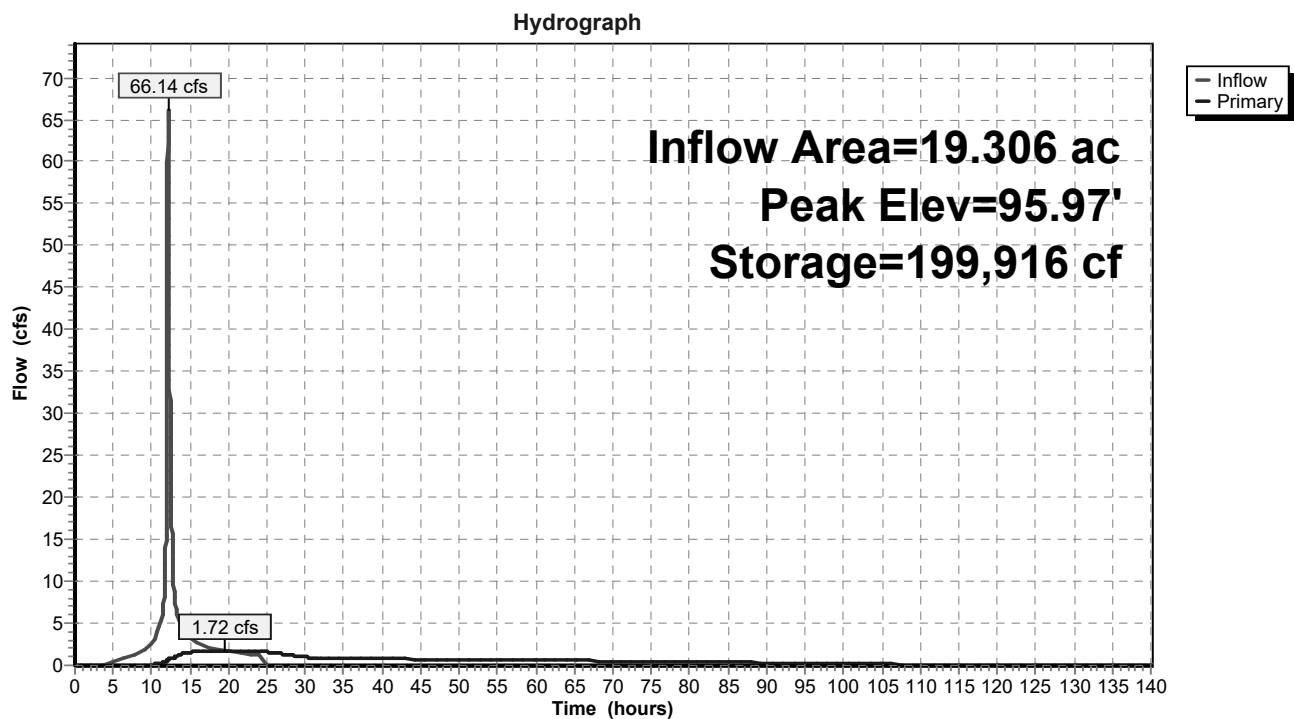
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.00	19,765	0	0
92.00	31,993	51,758	51,758
94.00	37,305	69,298	121,056
96.00	42,927	80,232	201,288
98.00	48,699	91,626	292,914
100.00	54,866	103,565	396,479

Device	Routing	Invert	Outlet Devices
#1	Primary	88.00'	18.0" Round Culvert L= 71.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 88.00' / 84.50' S= 0.0493 ' / Cc= 0.900 n= 0.009 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	91.00'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	95.00'	6.0" Vert. Orifice/Grate C= 0.600
#4	Device 1	98.00'	6.0" Vert. Orifice/Grate C= 0.600
#5	Device 1	99.00'	36.0" x 78.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.72 cfs @ 19.53 hrs HW=95.97' (Free Discharge)

1=Culvert (Passes 1.72 cfs of 22.86 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.92 cfs @ 10.55 fps)
 3=Orifice/Grate (Orifice Controls 0.80 cfs @ 4.08 fps)
 4=Orifice/Grate (Controls 0.00 cfs)
 5=Orifice/Grate (Controls 0.00 cfs)

Pond P-7: Dentention Basin 7



Time span=0.00-140.00 hrs, dt=0.01 hrs, 14001 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentEDA-1: Area to Detention Runoff Area=840,987 sf 70.56% Impervious Runoff Depth=4.88"
Tc=15.0 min CN=90 Runoff=83.26 cfs 7.843 af

SubcatchmentEDA-2: Area to Wetland Runoff Area=747,775 sf 71.15% Impervious Runoff Depth=4.88"
Flow Length=1,211' Tc=8.0 min CN=90 Runoff=99.88 cfs 6.974 af

SubcatchmentEDA-3: Area to Wetland DP-3 Runoff Area=45,946 sf 0.00% Impervious Runoff Depth=3.11"
Flow Length=347' Tc=9.3 min CN=73 Runoff=3.78 cfs 0.274 af

SubcatchmentEDA-4: Area to Wetland Runoff Area=119,565 sf 0.00% Impervious Runoff Depth=2.74"
Flow Length=808' Tc=18.1 min CN=69 Runoff=6.10 cfs 0.626 af

Reach DP-1: Detention Basin 7 Inflow=2.31 cfs 7.273 af
Outflow=2.31 cfs 7.273 af

Reach DP-2: Wetland DP-2 Inflow=105.35 cfs 7.874 af
Outflow=105.35 cfs 7.874 af

Reach DP-3: Wetland DP-3 Inflow=7.91 cfs 0.899 af
Outflow=7.91 cfs 0.899 af

Reach DP-4: Wetland DP-4 Inflow=6.10 cfs 0.626 af
Outflow=6.10 cfs 0.626 af

Reach SW 2-3: Wetland Swale 2-3 Avg. Flow Depth=0.89' Max Vel=9.70 fps Inflow=99.88 cfs 6.974 af
n=0.030 L=396.0' S=0.0556 '/' Capacity=1,486.07 cfs Outflow=99.04 cfs 6.974 af

Reach SW 4-3: SW 4-3 Avg. Flow Depth=0.17' Max Vel=3.47 fps Inflow=6.10 cfs 0.626 af
n=0.030 L=343.7' S=0.0541 '/' Capacity=1,466.70 cfs Outflow=6.06 cfs 0.626 af

Pond P-7: Dentention Basin 7 Peak Elev=97.11' Storage=250,580 cf Inflow=83.26 cfs 7.843 af
Outflow=2.31 cfs 7.273 af

Total Runoff Area = 40.273 ac Runoff Volume = 15.717 af Average Runoff Depth = 4.68"
35.84% Pervious = 14.435 ac 64.16% Impervious = 25.837 ac

Summary for Subcatchment EDA-1: Area to Detention Basin 7

Runoff = 83.26 cfs @ 12.15 hrs, Volume= 7.843 af, Depth= 4.88"

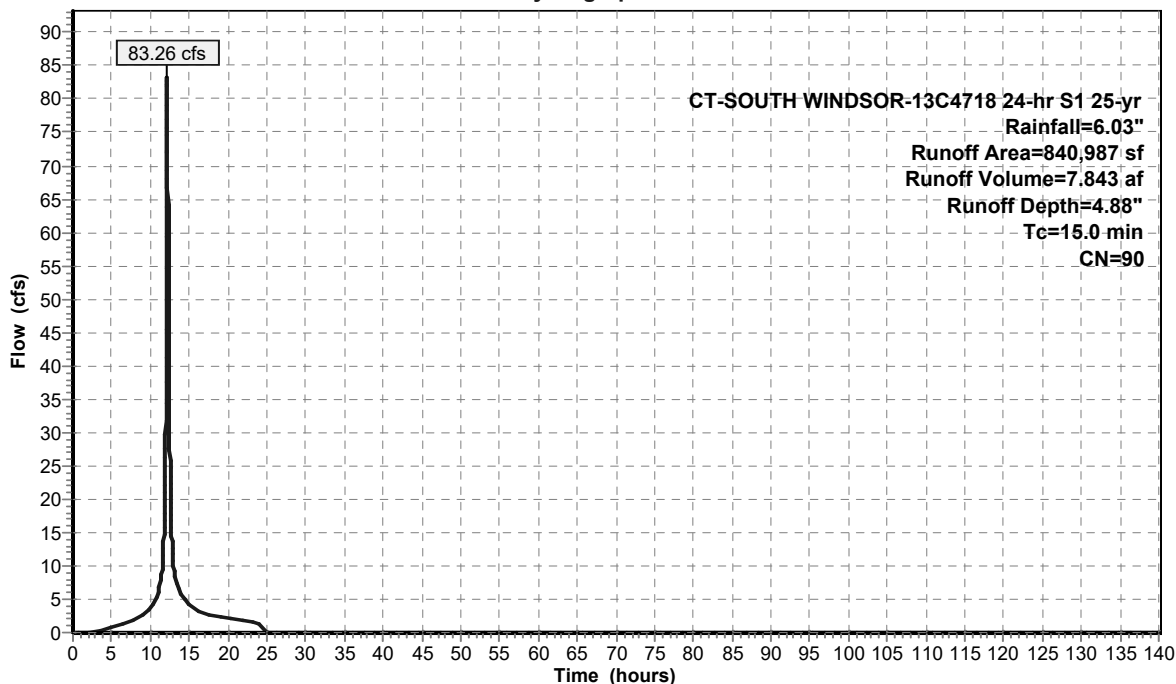
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
CT-SOUTH WINDSOR-13C4718 24-hr S1 25-yr Rainfall=6.03"

Area (sf)	CN	Description
299,131	98	Paved parking, HSG B
282,062	98	Paved parking, HSG C
11,034	98	Paved parking, HSG B
1,191	98	Paved parking, HSG C
180,158	69	50-75% Grass cover, Fair, HSG B
59,799	79	50-75% Grass cover, Fair, HSG C
7,145	69	50-75% Grass cover, Fair, HSG B
467	79	50-75% Grass cover, Fair, HSG C
840,987	90	Weighted Average
247,569		29.44% Pervious Area
593,418		70.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry, Master Planned Tc

Subcatchment EDA-1: Area to Detention Basin 7

Hydrograph



Summary for Subcatchment EDA-2: Area to Wetland DP-2

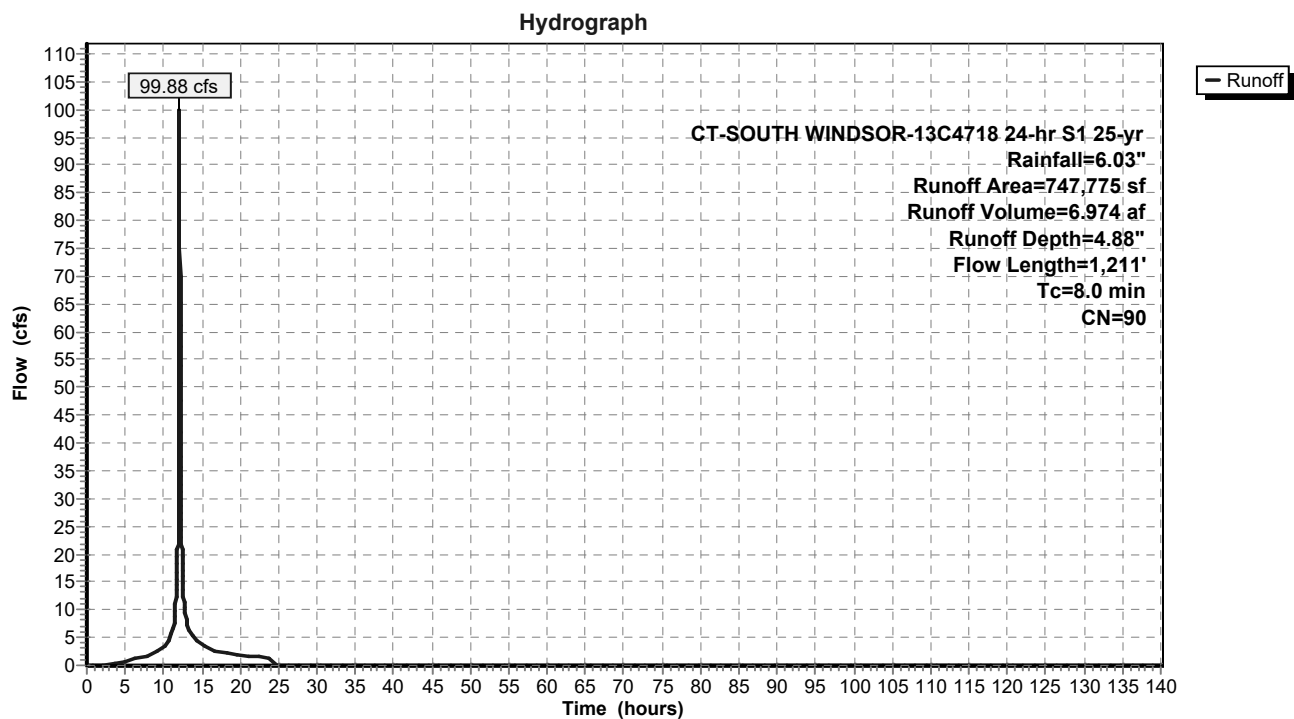
Runoff = 99.88 cfs @ 12.06 hrs, Volume= 6.974 af, Depth= 4.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 CT-SOUTH WINDSOR-13C4718 24-hr S1 25-yr Rainfall=6.03"

Area (sf)	CN	Description
517,459	98	Paved parking, HSG B
10,227	98	Paved parking, HSG C
4,362	98	Paved parking, HSG D
213,896	69	50-75% Grass cover, Fair, HSG B
588	79	50-75% Grass cover, Fair, HSG C
1,243	84	50-75% Grass cover, Fair, HSG D
747,775	90	Weighted Average
215,727		28.85% Pervious Area
532,048		71.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	74	0.1350	0.34		Sheet Flow, 1 Grass: Short n= 0.150 P2= 3.11"
0.4	26	0.0250	1.13		Sheet Flow, 2 Smooth surfaces n= 0.011 P2= 3.11"
1.1	216	0.0250	3.21		Shallow Concentrated Flow, 3 Paved Kv= 20.3 fps
1.7	744	0.0050	7.35	23.11	Pipe Channel, RCP_Round 24" 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.009 Corrugated PE, smooth interior
1.2	151	0.0200	2.12		Shallow Concentrated Flow, 4 Grassed Waterway Kv= 15.0 fps
8.0	1,211	Total			

Subcatchment EDA-2: Area to Wetland DP-2



Summary for Subcatchment EDA-3: Area to Wetland DP-3

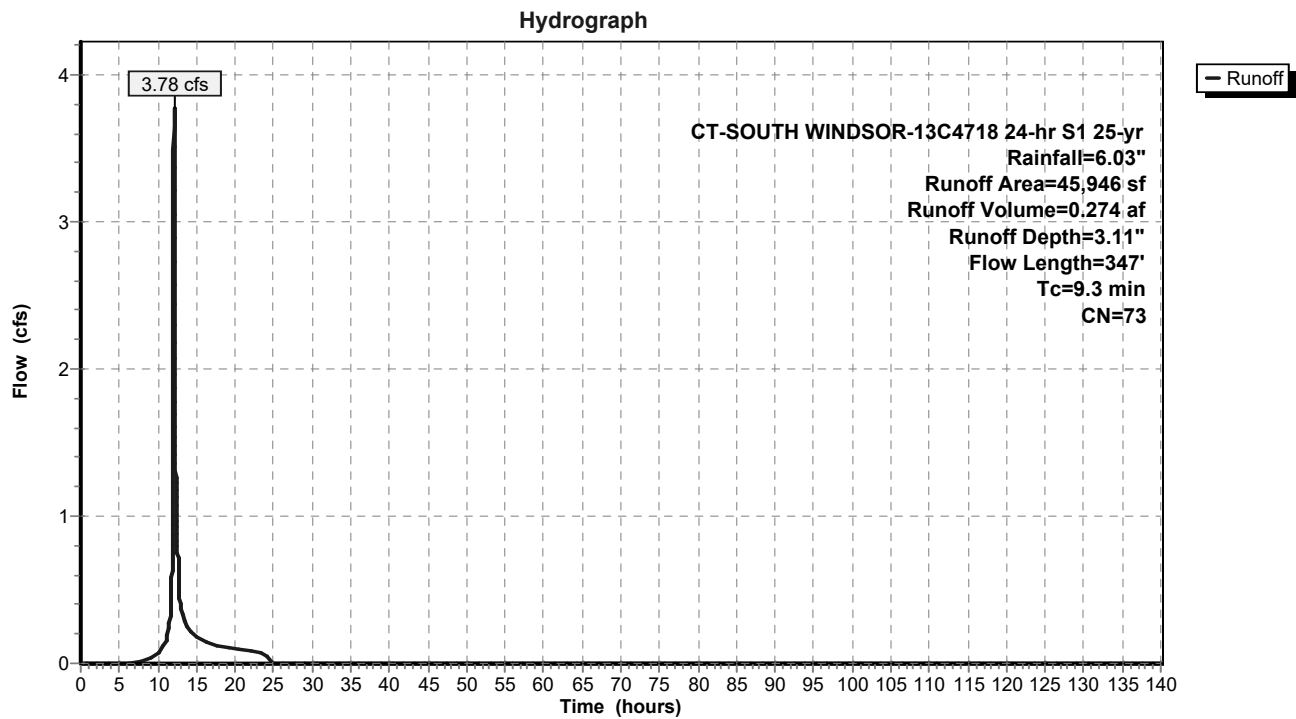
Runoff = 3.78 cfs @ 12.08 hrs, Volume= 0.274 af, Depth= 3.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 CT-SOUTH WINDSOR-13C4718 24-hr S1 25-yr Rainfall=6.03"

Area (sf)	CN	Description
0	98	Paved parking, HSG B
0	98	Paved parking, HSG C
0	98	Paved parking, HSG D
21,004	69	50-75% Grass cover, Fair, HSG B
0	79	50-75% Grass cover, Fair, HSG C
5,451	84	50-75% Grass cover, Fair, HSG D
2,225	56	Brush, Fair, HSG B
17,266	77	Brush, Fair, HSG D
45,946	73	Weighted Average
45,946		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	100	0.0400	0.22		Sheet Flow, 1 Grass: Short n= 0.150 P2= 3.11"
0.6	125	0.0480	3.29		Shallow Concentrated Flow, 2 Grassed Waterway Kv= 15.0 fps
1.2	122	0.1060	1.63		Shallow Concentrated Flow, 3 Woodland Kv= 5.0 fps
9.3	347	Total			

Subcatchment EDA-3: Area to Wetland DP-3



Summary for Subcatchment EDA-4: Area to Wetland DP-4

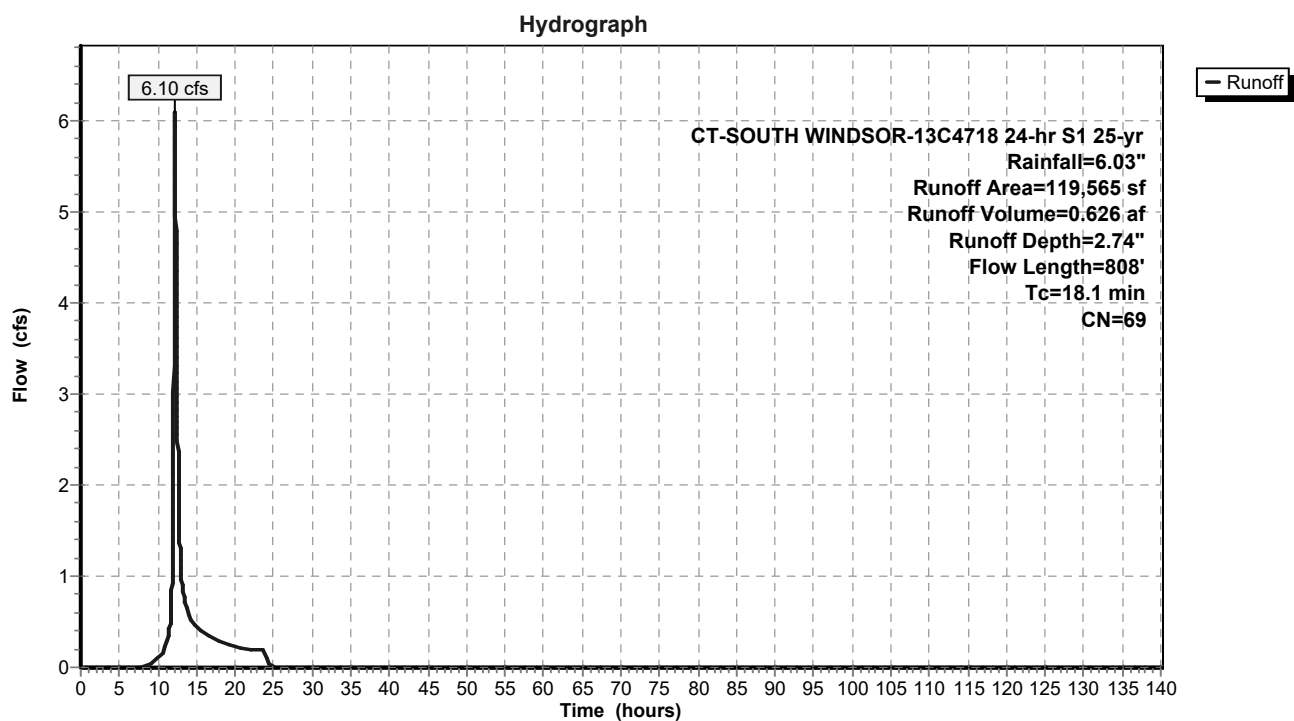
Runoff = 6.10 cfs @ 12.21 hrs, Volume= 0.626 af, Depth= 2.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
CT-SOUTH WINDSOR-13C4718 24-hr S1 25-yr Rainfall=6.03"

Area (sf)	CN	Description
0	98	Paved parking, HSG B
0	98	Paved parking, HSG C
0	98	Paved parking, HSG D
57,679	69	50-75% Grass cover, Fair, HSG B
26,837	79	50-75% Grass cover, Fair, HSG C
0	84	50-75% Grass cover, Fair, HSG D
25,526	56	Brush, Fair, HSG B
9,523	70	Brush, Fair, HSG C
119,565	69	Weighted Average
119,565		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	100	0.0800	0.29		Sheet Flow, 1
					Grass: Short n= 0.150 P2= 3.11"
0.2	39	0.0800	4.24		Shallow Concentrated Flow, 2
					Grassed Waterway Kv= 15.0 fps
12.1	595	0.0270	0.82		Shallow Concentrated Flow, 3
					Woodland Kv= 5.0 fps
0.1	74	0.0270	19.82	194.19	Channel Flow, 4
					Area= 9.8 sf Perim= 15.7' r= 0.62'
					n= 0.009 Corrugated PE, smooth interior
18.1	808	Total			

Subcatchment EDA-4: Area to Wetland DP-4

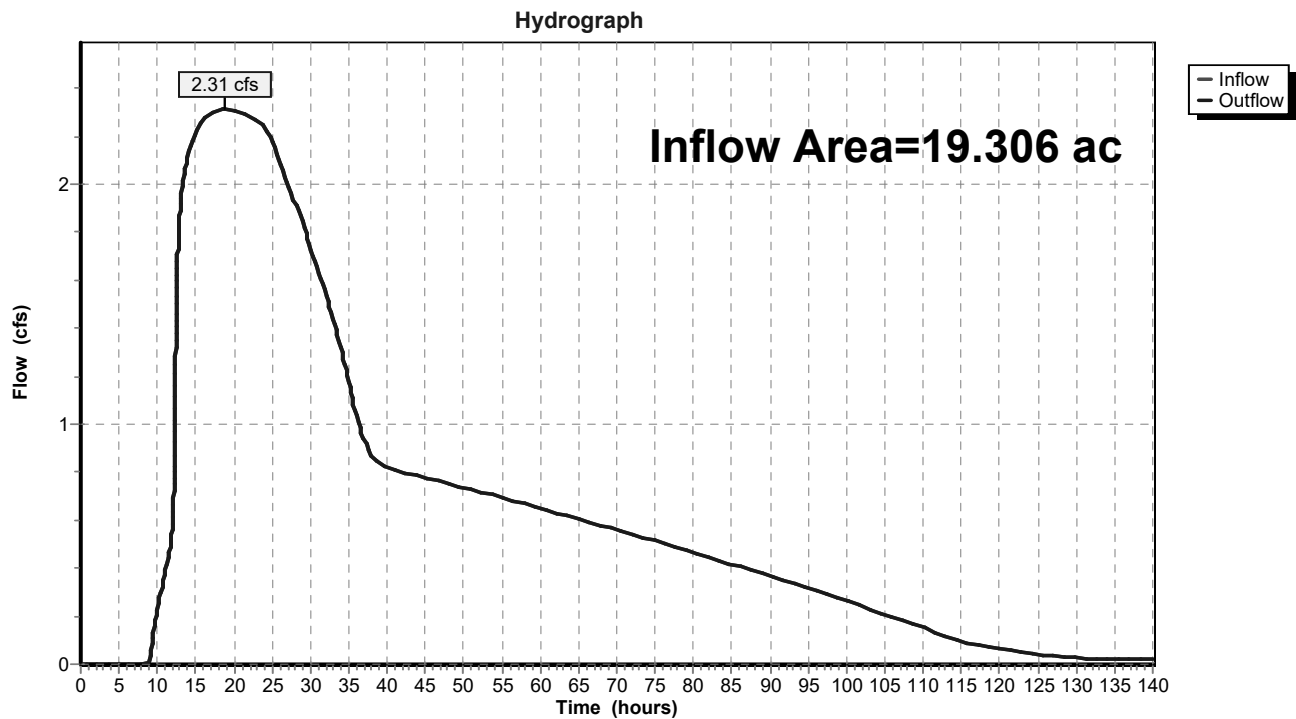


Summary for Reach DP-1: Detention Basin 7

Inflow Area = 19.306 ac, 70.56% Impervious, Inflow Depth > 4.52" for 25-yr event
Inflow = 2.31 cfs @ 18.82 hrs, Volume= 7.273 af
Outflow = 2.31 cfs @ 18.82 hrs, Volume= 7.273 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Reach DP-1: Detention Basin 7

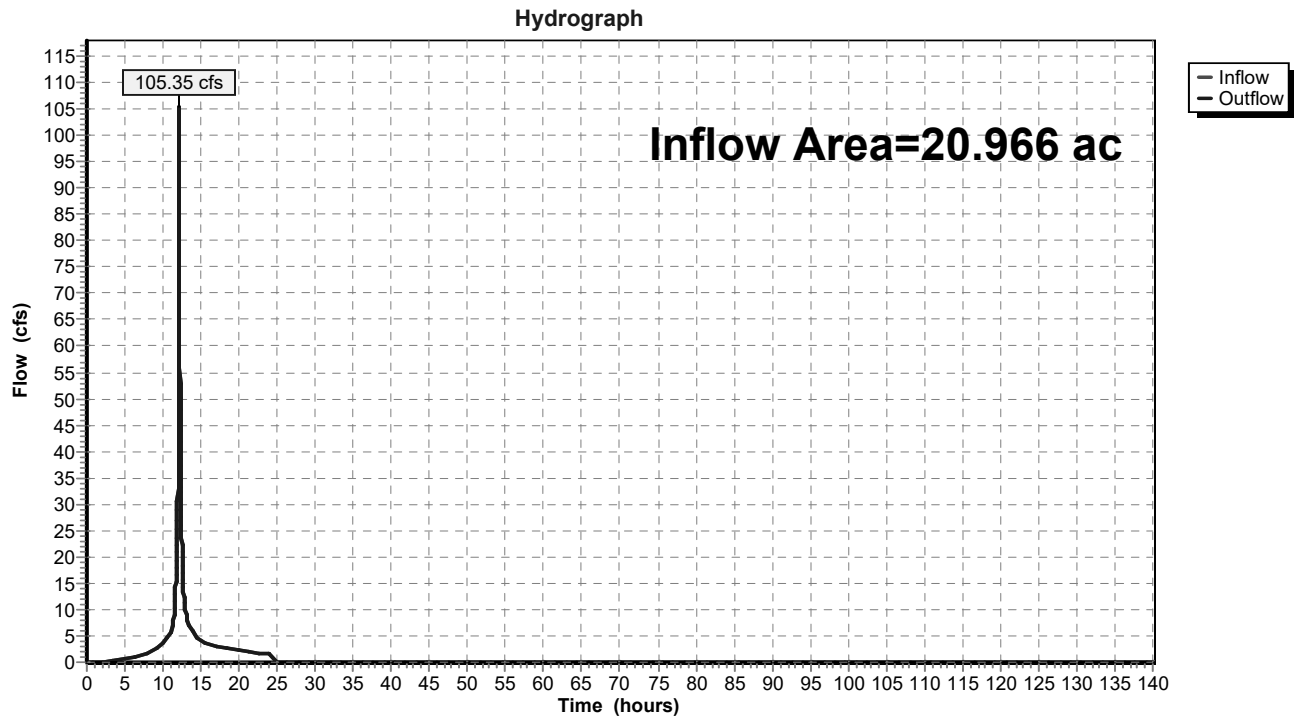


Summary for Reach DP-2: Wetland DP-2

Inflow Area = 20.966 ac, 58.26% Impervious, Inflow Depth = 4.51" for 25-yr event
Inflow = 105.35 cfs @ 12.08 hrs, Volume= 7.874 af
Outflow = 105.35 cfs @ 12.08 hrs, Volume= 7.874 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Reach DP-2: Wetland DP-2

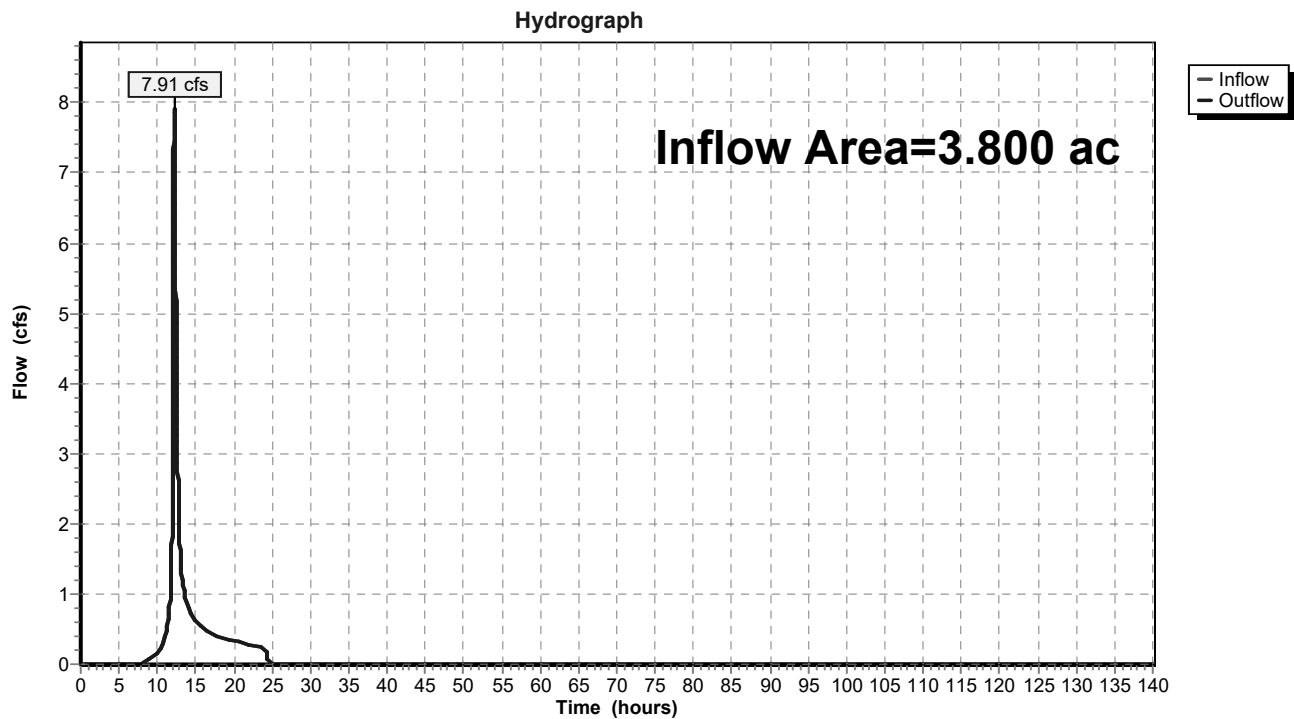


Summary for Reach DP-3: Wetland DP-3

Inflow Area = 3.800 ac, 0.00% Impervious, Inflow Depth = 2.84" for 25-yr event
Inflow = 7.91 cfs @ 12.21 hrs, Volume= 0.899 af
Outflow = 7.91 cfs @ 12.21 hrs, Volume= 0.899 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Reach DP-3: Wetland DP-3

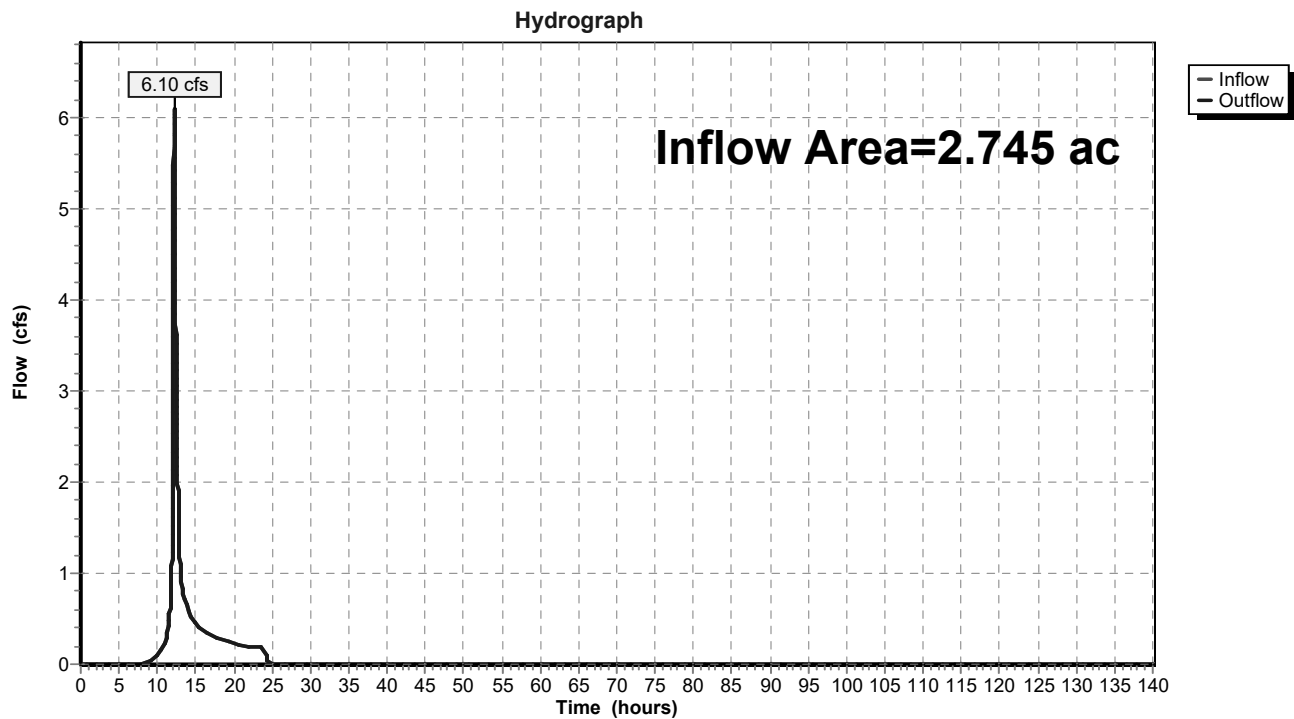


Summary for Reach DP-4: Wetland DP-4

Inflow Area = 2.745 ac, 0.00% Impervious, Inflow Depth = 2.74" for 25-yr event
Inflow = 6.10 cfs @ 12.21 hrs, Volume= 0.626 af
Outflow = 6.10 cfs @ 12.21 hrs, Volume= 0.626 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Reach DP-4: Wetland DP-4



Summary for Reach SW 2-3: Wetland Swale 2-3

Inflow Area = 17.167 ac, 71.15% Impervious, Inflow Depth = 4.88" for 25-yr event
 Inflow = 99.88 cfs @ 12.06 hrs, Volume= 6.974 af
 Outflow = 99.04 cfs @ 12.08 hrs, Volume= 6.974 af, Atten= 1%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 Max. Velocity= 9.70 fps, Min. Travel Time= 0.7 min
 Avg. Velocity = 2.49 fps, Avg. Travel Time= 2.6 min

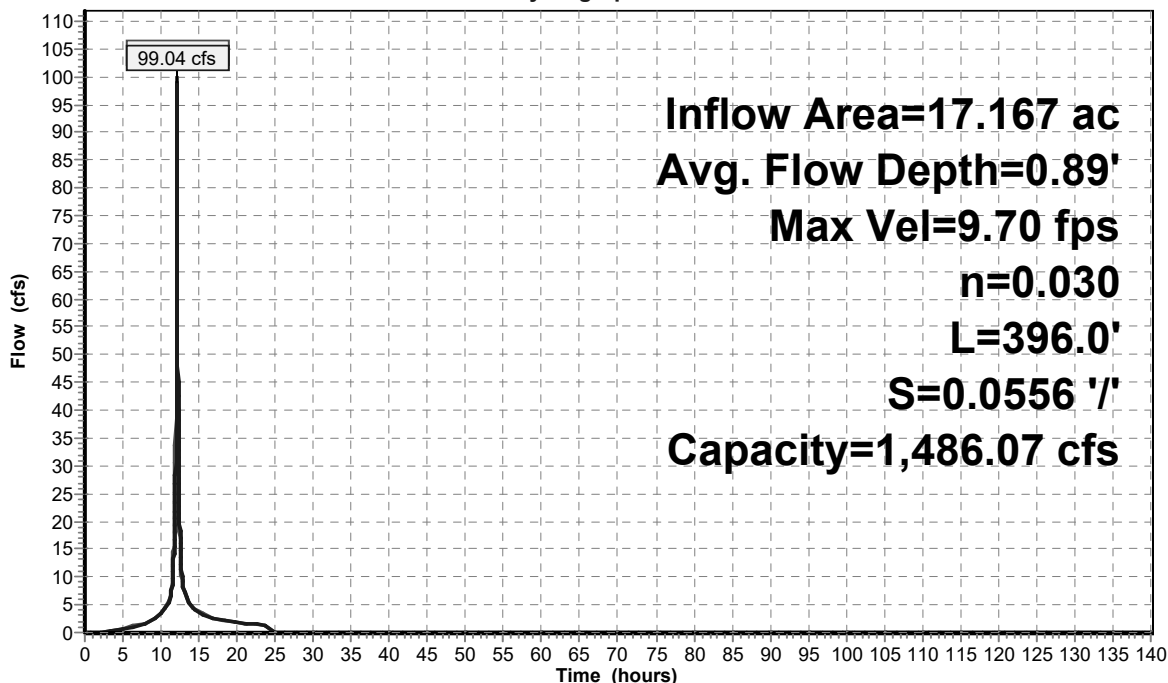
Peak Storage= 4,049 cf @ 12.07 hrs
 Average Depth at Peak Storage= 0.89'
 Bank-Full Depth= 4.00' Flow Area= 67.2 sf, Capacity= 1,486.07 cfs

10.00' x 4.00' deep channel, n= 0.030 Earth, grassed & winding
 Side Slope Z-value= 1.7 '/' Top Width= 23.60'
 Length= 396.0' Slope= 0.0556 '/'
 Inlet Invert= 127.00', Outlet Invert= 105.00'



Reach SW 2-3: Wetland Swale 2-3

Hydrograph



Summary for Reach SW 4-3: SW 4-3

Inflow Area = 2.745 ac, 0.00% Impervious, Inflow Depth = 2.74" for 25-yr event
Inflow = 6.10 cfs @ 12.21 hrs, Volume= 0.626 af
Outflow = 6.06 cfs @ 12.25 hrs, Volume= 0.626 af, Atten= 1%, Lag= 2.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Max. Velocity= 3.47 fps, Min. Travel Time= 1.7 min

Avg. Velocity = 1.44 fps, Avg. Travel Time= 4.0 min

Peak Storage= 601 cf @ 12.22 hrs

Average Depth at Peak Storage= 0.17'

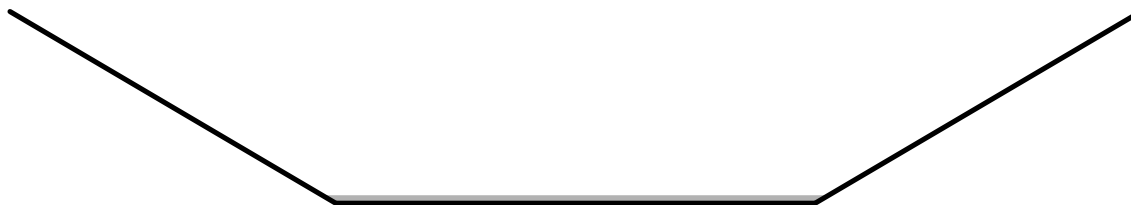
Bank-Full Depth= 4.00' Flow Area= 67.2 sf, Capacity= 1,466.70 cfs

10.00' x 4.00' deep channel, n= 0.030 Earth, grassed & winding

Side Slope Z-value= 1.7 '/' Top Width= 23.60'

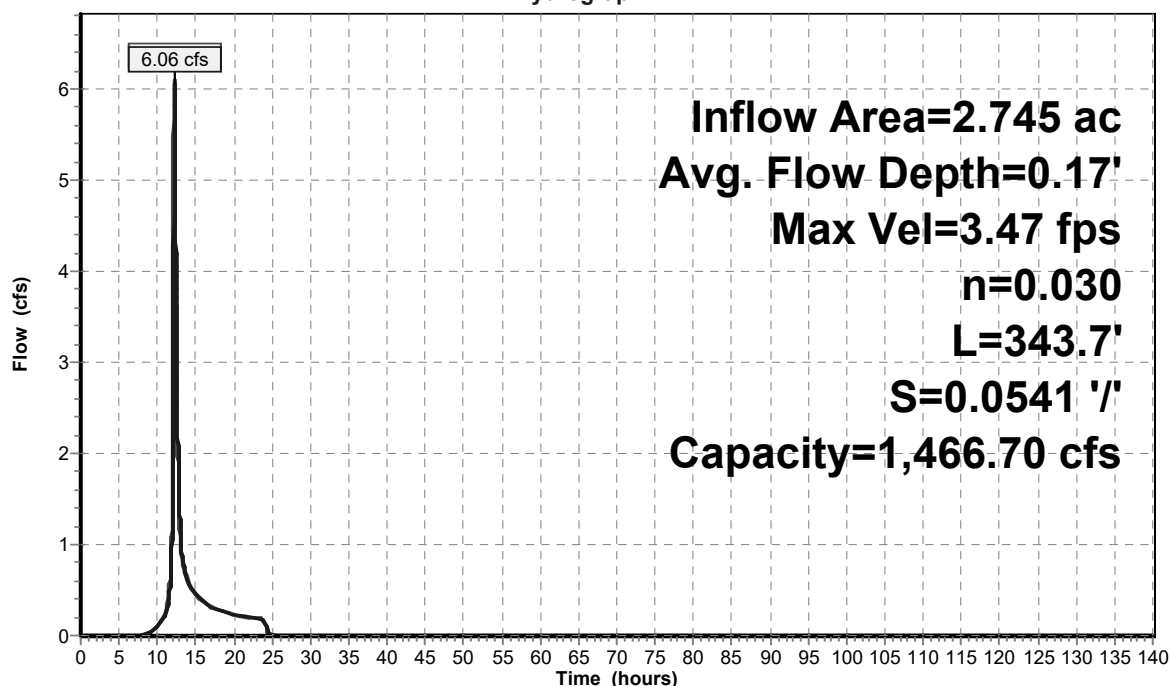
Length= 343.7' Slope= 0.0541 '/'

Inlet Invert= 123.60', Outlet Invert= 105.00'



Reach SW 4-3: SW 4-3

Hydrograph



Summary for Pond P-7: Dentention Basin 7

Inflow Area = 19.306 ac, 70.56% Impervious, Inflow Depth = 4.88" for 25-yr event
 Inflow = 83.26 cfs @ 12.15 hrs, Volume= 7.843 af
 Outflow = 2.31 cfs @ 18.82 hrs, Volume= 7.273 af, Atten= 97%, Lag= 399.9 min
 Primary = 2.31 cfs @ 18.82 hrs, Volume= 7.273 af

Routing by Stor-Ind method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 Peak Elev= 97.11' @ 18.82 hrs Surf.Area= 46,122 sf Storage= 250,580 cf

Plug-Flow detention time= 1,826.0 min calculated for 7.272 af (93% of inflow)
 Center-of-Mass det. time= 1,784.8 min (2,586.4 - 801.6)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	396,479 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

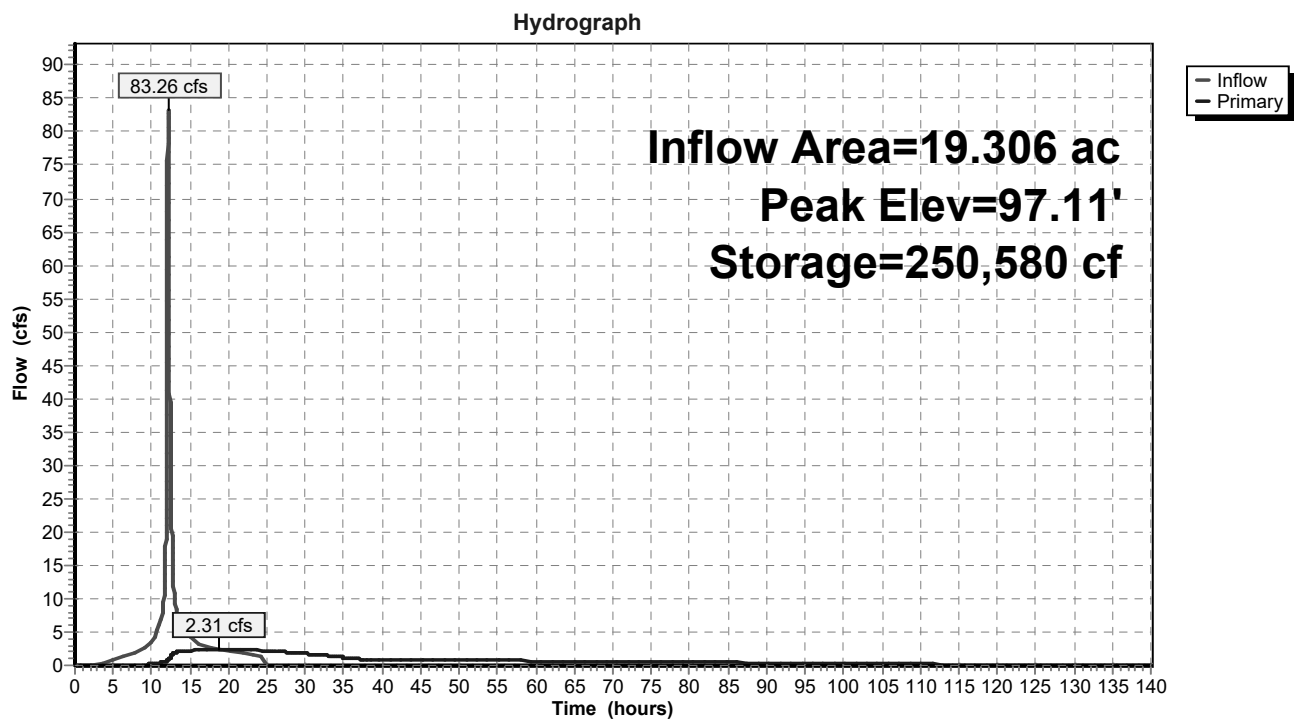
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.00	19,765	0	0
92.00	31,993	51,758	51,758
94.00	37,305	69,298	121,056
96.00	42,927	80,232	201,288
98.00	48,699	91,626	292,914
100.00	54,866	103,565	396,479

Device	Routing	Invert	Outlet Devices
#1	Primary	88.00'	18.0" Round Culvert L= 71.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 88.00' / 84.50' S= 0.0493 ' / Cc= 0.900 n= 0.009 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	91.00'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	95.00'	6.0" Vert. Orifice/Grate C= 0.600
#4	Device 1	98.00'	6.0" Vert. Orifice/Grate C= 0.600
#5	Device 1	99.00'	36.0" x 78.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.31 cfs @ 18.82 hrs HW=97.11' (Free Discharge)

1=Culvert (Passes 2.31 cfs of 24.60 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 1.02 cfs @ 11.74 fps)
 3=Orifice/Grate (Orifice Controls 1.29 cfs @ 6.56 fps)
 4=Orifice/Grate (Controls 0.00 cfs)
 5=Orifice/Grate (Controls 0.00 cfs)

Pond P-7: Dentention Basin 7



C-DAT-13C4718-EXISTING HYCT-SOUTH WINDSOR-13C4718 24-hr S1 100-yr Rainfall=7.77"

Prepared by BL Companies, Inc.

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Time span=0.00-140.00 hrs, dt=0.01 hrs, 14001 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentEDA-1: Area to Detention Runoff Area=840,987 sf 70.56% Impervious Runoff Depth=6.58"
Tc=15.0 min CN=90 Runoff=109.41 cfs 10.585 af

SubcatchmentEDA-2: Area to Wetland Runoff Area=747,775 sf 71.15% Impervious Runoff Depth=6.58"
Flow Length=1,211' Tc=8.0 min CN=90 Runoff=131.15 cfs 9.412 af

SubcatchmentEDA-3: Area to Wetland DP-3 Runoff Area=45,946 sf 0.00% Impervious Runoff Depth=4.61"
Flow Length=347' Tc=9.3 min CN=73 Runoff=5.55 cfs 0.405 af

SubcatchmentEDA-4: Area to Wetland Runoff Area=119,565 sf 0.00% Impervious Runoff Depth=4.15"
Flow Length=808' Tc=18.1 min CN=69 Runoff=9.28 cfs 0.950 af

Reach DP-1: Detention Basin 7 Inflow=3.59 cfs 10.002 af
Outflow=3.59 cfs 10.002 af

Reach DP-2: Wetland DP-2 Inflow=140.06 cfs 10.767 af
Outflow=140.06 cfs 10.767 af

Reach DP-3: Wetland DP-3 Inflow=12.06 cfs 1.355 af
Outflow=12.06 cfs 1.355 af

Reach DP-4: Wetland DP-4 Inflow=9.28 cfs 0.950 af
Outflow=9.28 cfs 0.950 af

Reach SW 2-3: Wetland Swale 2-3 Avg. Flow Depth=1.04' Max Vel=10.62 fps Inflow=131.15 cfs 9.412 af
n=0.030 L=396.0' S=0.0556 '/' Capacity=1,486.07 cfs Outflow=130.29 cfs 9.412 af

Reach SW 4-3: SW 4-3 Avg. Flow Depth=0.22' Max Vel=4.07 fps Inflow=9.28 cfs 0.950 af
n=0.030 L=343.7' S=0.0541 '/' Capacity=1,466.70 cfs Outflow=9.23 cfs 0.950 af

Pond P-7: Detention Basin 7 Peak Elev=98.74' Storage=329,940 cf Inflow=109.41 cfs 10.585 af
Outflow=3.59 cfs 10.002 af

Total Runoff Area = 40.273 ac Runoff Volume = 21.352 af Average Runoff Depth = 6.36"
35.84% Pervious = 14.435 ac 64.16% Impervious = 25.837 ac

Summary for Subcatchment EDA-1: Area to Detention Basin 7

Runoff = 109.41 cfs @ 12.15 hrs, Volume= 10.585 af, Depth= 6.58"

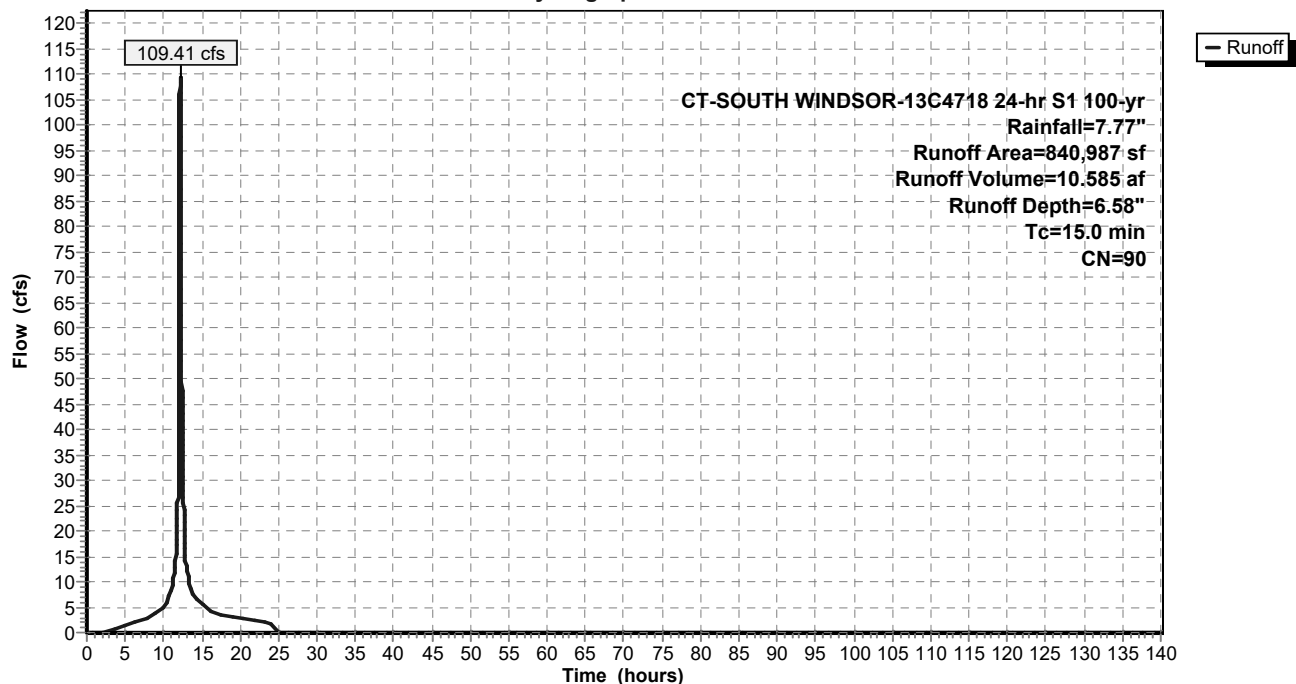
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
CT-SOUTH WINDSOR-13C4718 24-hr S1 100-yr Rainfall=7.77"

Area (sf)	CN	Description
299,131	98	Paved parking, HSG B
282,062	98	Paved parking, HSG C
11,034	98	Paved parking, HSG B
1,191	98	Paved parking, HSG C
180,158	69	50-75% Grass cover, Fair, HSG B
59,799	79	50-75% Grass cover, Fair, HSG C
7,145	69	50-75% Grass cover, Fair, HSG B
467	79	50-75% Grass cover, Fair, HSG C
840,987	90	Weighted Average
247,569		29.44% Pervious Area
593,418		70.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry, Master Planned Tc

Subcatchment EDA-1: Area to Detention Basin 7

Hydrograph



Summary for Subcatchment EDA-2: Area to Wetland DP-2

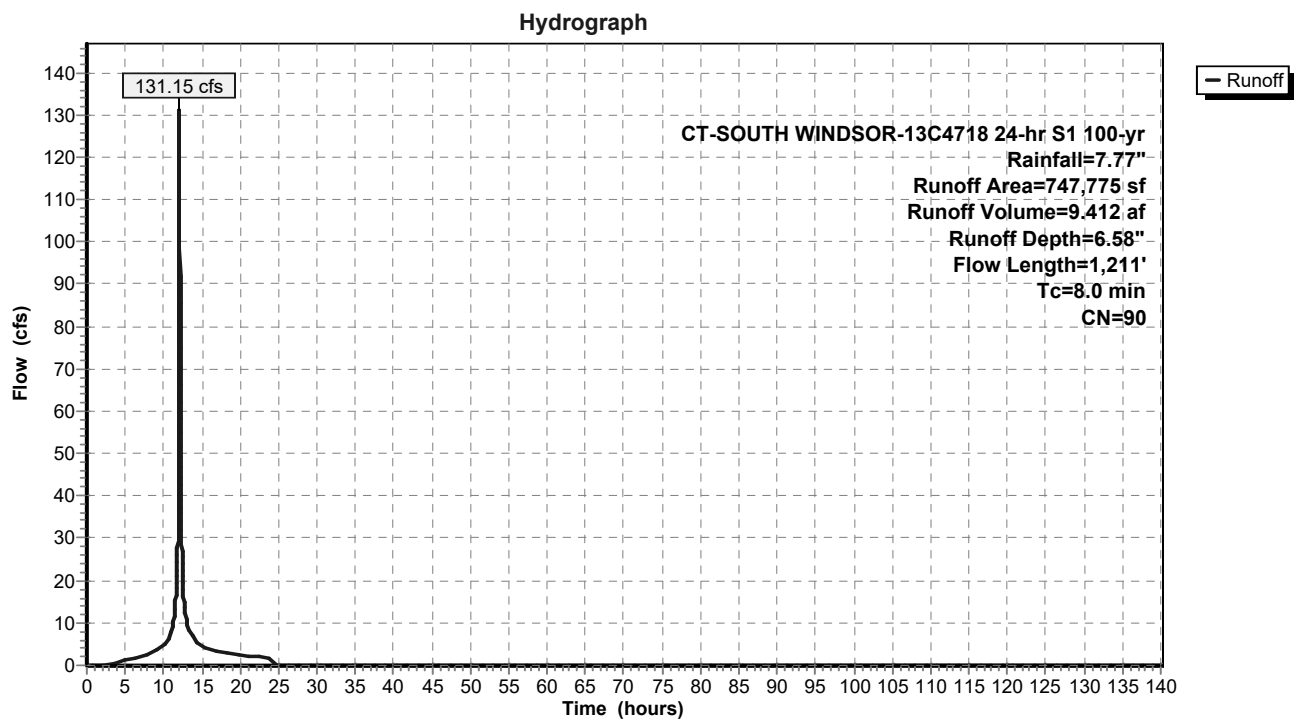
Runoff = 131.15 cfs @ 12.06 hrs, Volume= 9.412 af, Depth= 6.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 CT-SOUTH WINDSOR-13C4718 24-hr S1 100-yr Rainfall=7.77"

Area (sf)	CN	Description
517,459	98	Paved parking, HSG B
10,227	98	Paved parking, HSG C
4,362	98	Paved parking, HSG D
213,896	69	50-75% Grass cover, Fair, HSG B
588	79	50-75% Grass cover, Fair, HSG C
1,243	84	50-75% Grass cover, Fair, HSG D
747,775	90	Weighted Average
215,727		28.85% Pervious Area
532,048		71.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	74	0.1350	0.34		Sheet Flow, 1 Grass: Short n= 0.150 P2= 3.11"
0.4	26	0.0250	1.13		Sheet Flow, 2 Smooth surfaces n= 0.011 P2= 3.11"
1.1	216	0.0250	3.21		Shallow Concentrated Flow, 3 Paved Kv= 20.3 fps
1.7	744	0.0050	7.35	23.11	Pipe Channel, RCP_Round 24" 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.009 Corrugated PE, smooth interior
1.2	151	0.0200	2.12		Shallow Concentrated Flow, 4 Grassed Waterway Kv= 15.0 fps
8.0	1,211	Total			

Subcatchment EDA-2: Area to Wetland DP-2



Summary for Subcatchment EDA-3: Area to Wetland DP-3

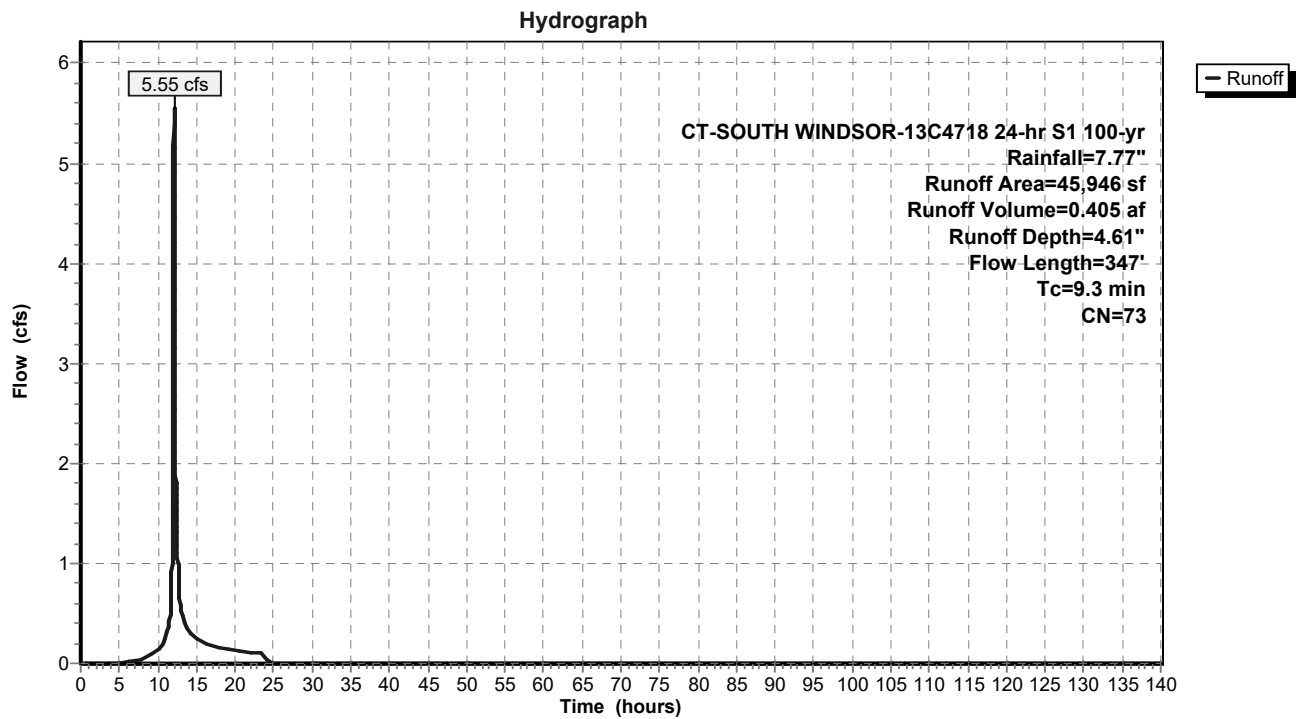
Runoff = 5.55 cfs @ 12.08 hrs, Volume= 0.405 af, Depth= 4.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
CT-SOUTH WINDSOR-13C4718 24-hr S1 100-yr Rainfall=7.77"

Area (sf)	CN	Description
0	98	Paved parking, HSG B
0	98	Paved parking, HSG C
0	98	Paved parking, HSG D
21,004	69	50-75% Grass cover, Fair, HSG B
0	79	50-75% Grass cover, Fair, HSG C
5,451	84	50-75% Grass cover, Fair, HSG D
2,225	56	Brush, Fair, HSG B
17,266	77	Brush, Fair, HSG D
45,946	73	Weighted Average
45,946		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	100	0.0400	0.22		Sheet Flow, 1
					Grass: Short n= 0.150 P2= 3.11"
0.6	125	0.0480	3.29		Shallow Concentrated Flow, 2
					Grassed Waterway Kv= 15.0 fps
1.2	122	0.1060	1.63		Shallow Concentrated Flow, 3
					Woodland Kv= 5.0 fps
9.3	347	Total			

Subcatchment EDA-3: Area to Wetland DP-3



Summary for Subcatchment EDA-4: Area to Wetland DP-4

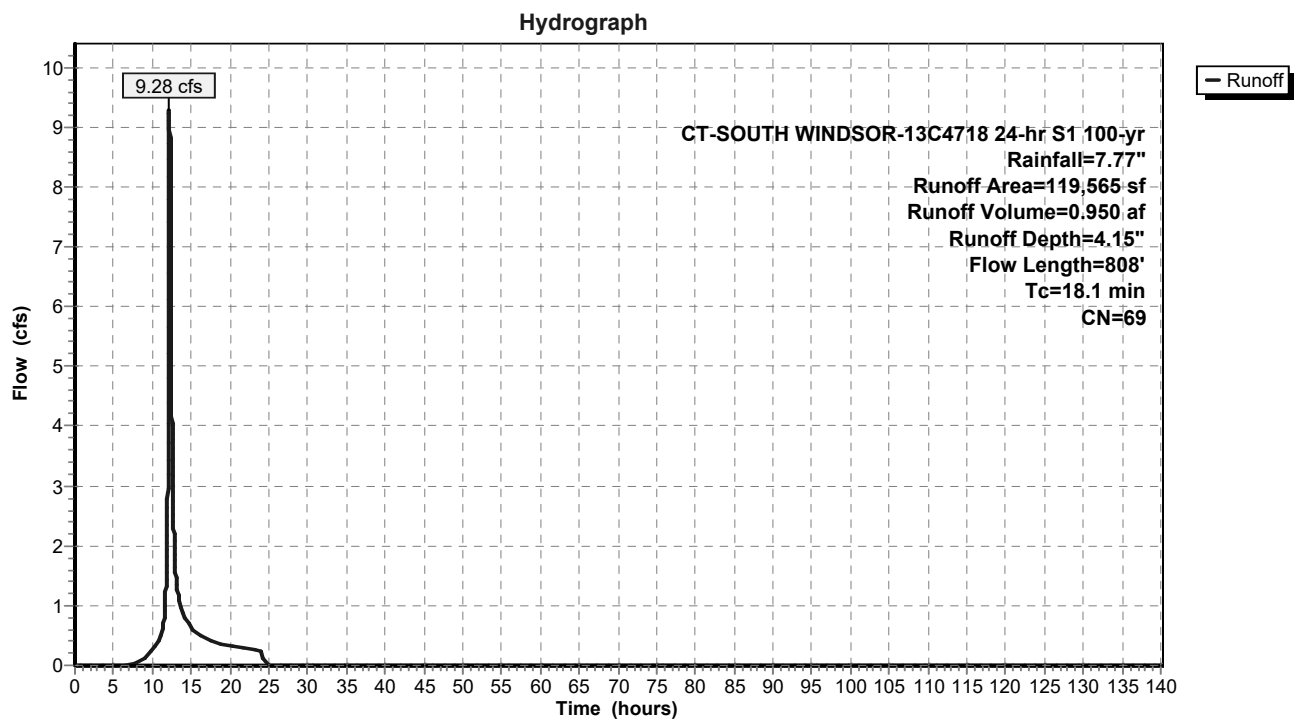
Runoff = 9.28 cfs @ 12.20 hrs, Volume= 0.950 af, Depth= 4.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
CT-SOUTH WINDSOR-13C4718 24-hr S1 100-yr Rainfall=7.77"

Area (sf)	CN	Description
0	98	Paved parking, HSG B
0	98	Paved parking, HSG C
0	98	Paved parking, HSG D
57,679	69	50-75% Grass cover, Fair, HSG B
26,837	79	50-75% Grass cover, Fair, HSG C
0	84	50-75% Grass cover, Fair, HSG D
25,526	56	Brush, Fair, HSG B
9,523	70	Brush, Fair, HSG C
119,565	69	Weighted Average
119,565		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	100	0.0800	0.29		Sheet Flow, 1
					Grass: Short n= 0.150 P2= 3.11"
0.2	39	0.0800	4.24		Shallow Concentrated Flow, 2
					Grassed Waterway Kv= 15.0 fps
12.1	595	0.0270	0.82		Shallow Concentrated Flow, 3
					Woodland Kv= 5.0 fps
0.1	74	0.0270	19.82	194.19	Channel Flow, 4
					Area= 9.8 sf Perim= 15.7' r= 0.62'
					n= 0.009 Corrugated PE, smooth interior
18.1	808	Total			

Subcatchment EDA-4: Area to Wetland DP-4

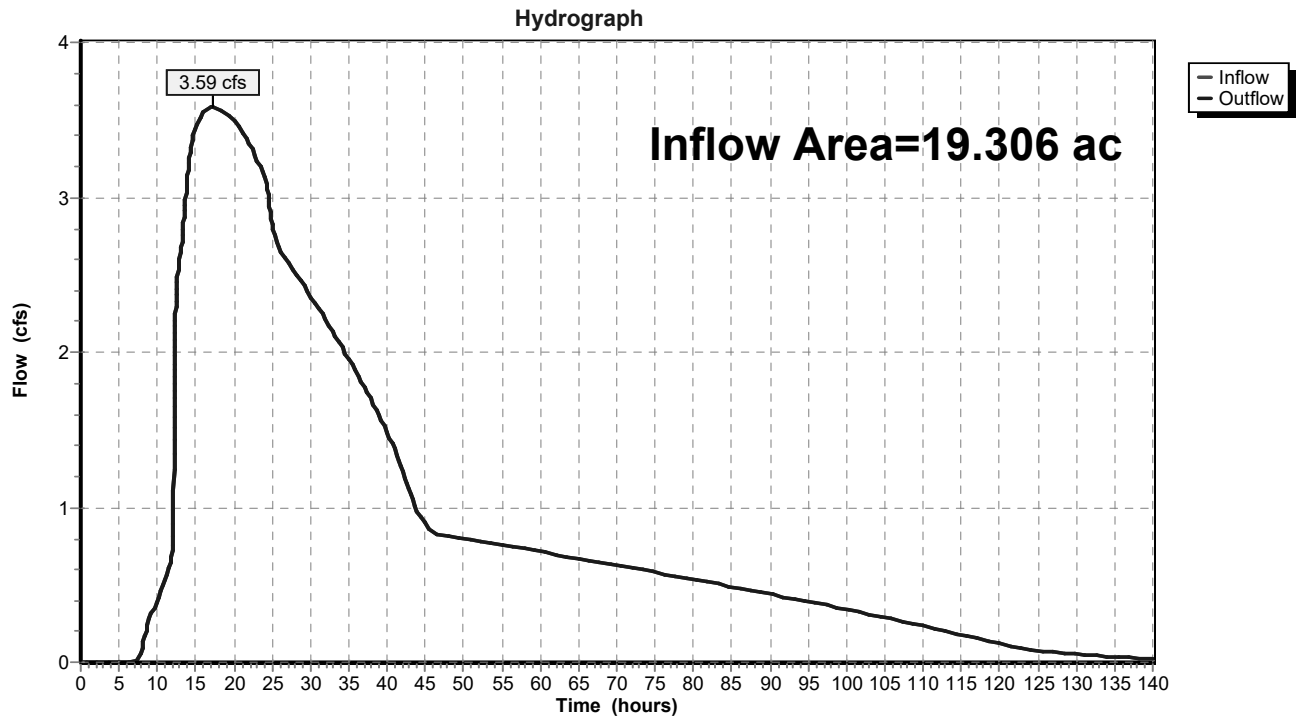


Summary for Reach DP-1: Detention Basin 7

Inflow Area = 19.306 ac, 70.56% Impervious, Inflow Depth > 6.22" for 100-yr event
Inflow = 3.59 cfs @ 17.35 hrs, Volume= 10.002 af
Outflow = 3.59 cfs @ 17.35 hrs, Volume= 10.002 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Reach DP-1: Detention Basin 7

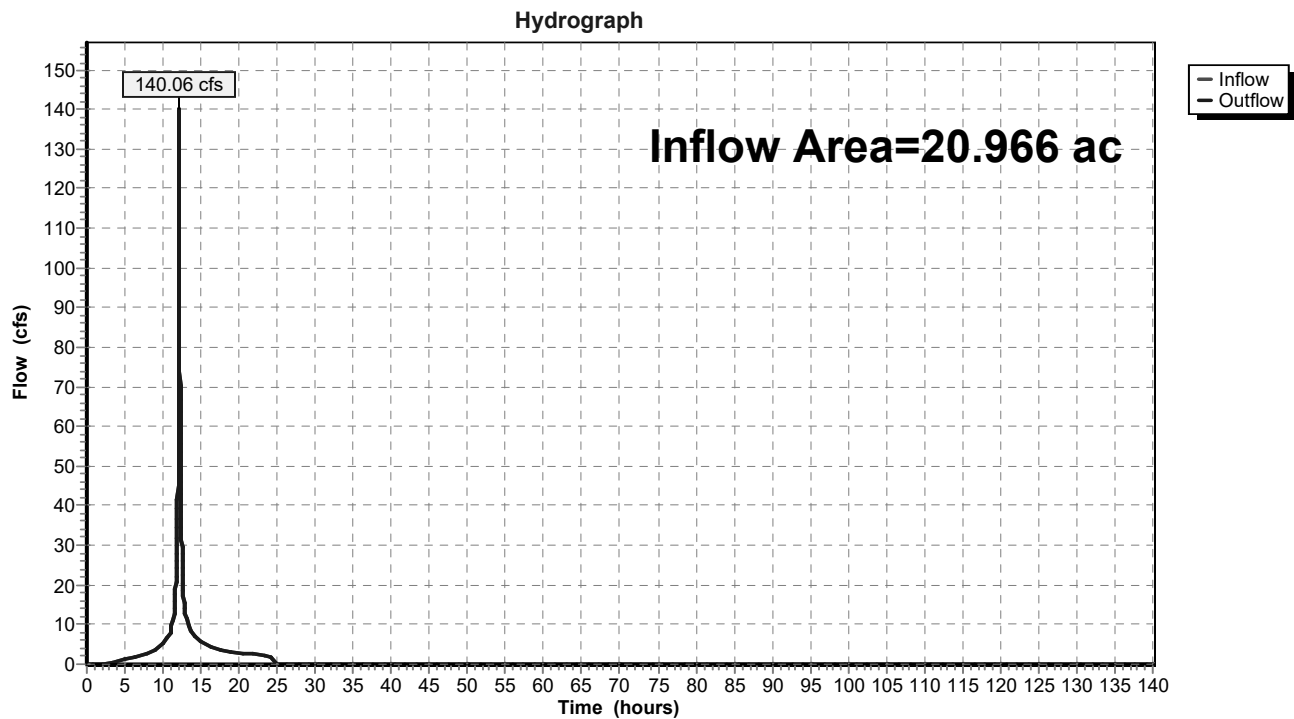


Summary for Reach DP-2: Wetland DP-2

Inflow Area = 20.966 ac, 58.26% Impervious, Inflow Depth = 6.16" for 100-yr event
Inflow = 140.06 cfs @ 12.08 hrs, Volume= 10.767 af
Outflow = 140.06 cfs @ 12.08 hrs, Volume= 10.767 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Reach DP-2: Wetland DP-2

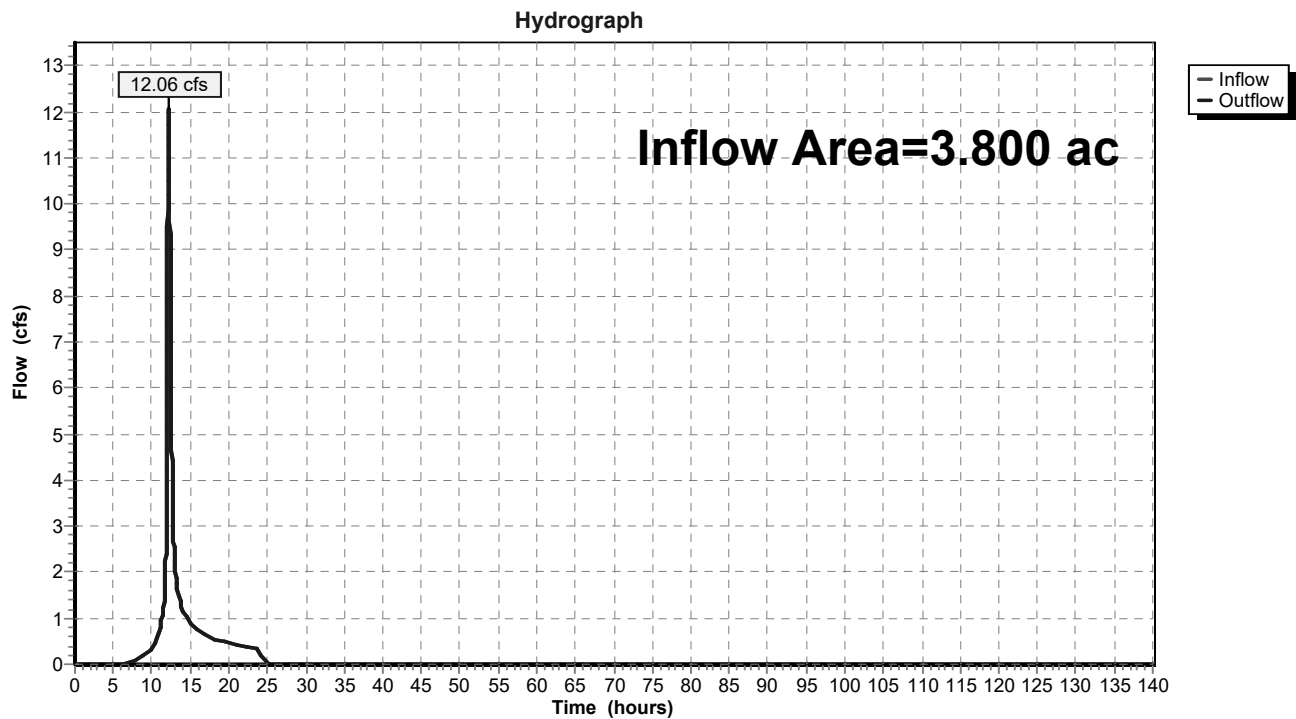


Summary for Reach DP-3: Wetland DP-3

Inflow Area = 3.800 ac, 0.00% Impervious, Inflow Depth = 4.28" for 100-yr event
Inflow = 12.06 cfs @ 12.20 hrs, Volume= 1.355 af
Outflow = 12.06 cfs @ 12.20 hrs, Volume= 1.355 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Reach DP-3: Wetland DP-3

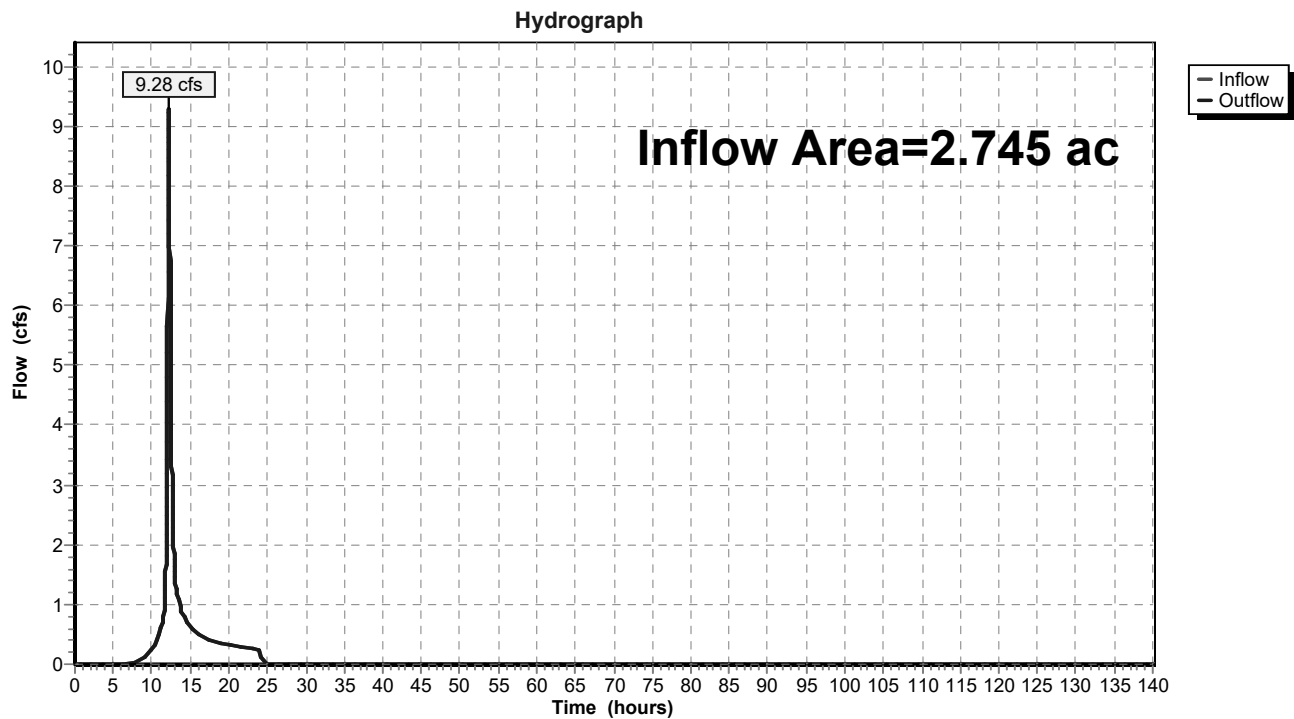


Summary for Reach DP-4: Wetland DP-4

Inflow Area = 2.745 ac, 0.00% Impervious, Inflow Depth = 4.15" for 100-yr event
Inflow = 9.28 cfs @ 12.20 hrs, Volume= 0.950 af
Outflow = 9.28 cfs @ 12.20 hrs, Volume= 0.950 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Reach DP-4: Wetland DP-4



Summary for Reach SW 2-3: Wetland Swale 2-3

Inflow Area = 17.167 ac, 71.15% Impervious, Inflow Depth = 6.58" for 100-yr event
 Inflow = 131.15 cfs @ 12.06 hrs, Volume= 9.412 af
 Outflow = 130.29 cfs @ 12.08 hrs, Volume= 9.412 af, Atten= 1%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 Max. Velocity= 10.62 fps, Min. Travel Time= 0.6 min
 Avg. Velocity = 2.76 fps, Avg. Travel Time= 2.4 min

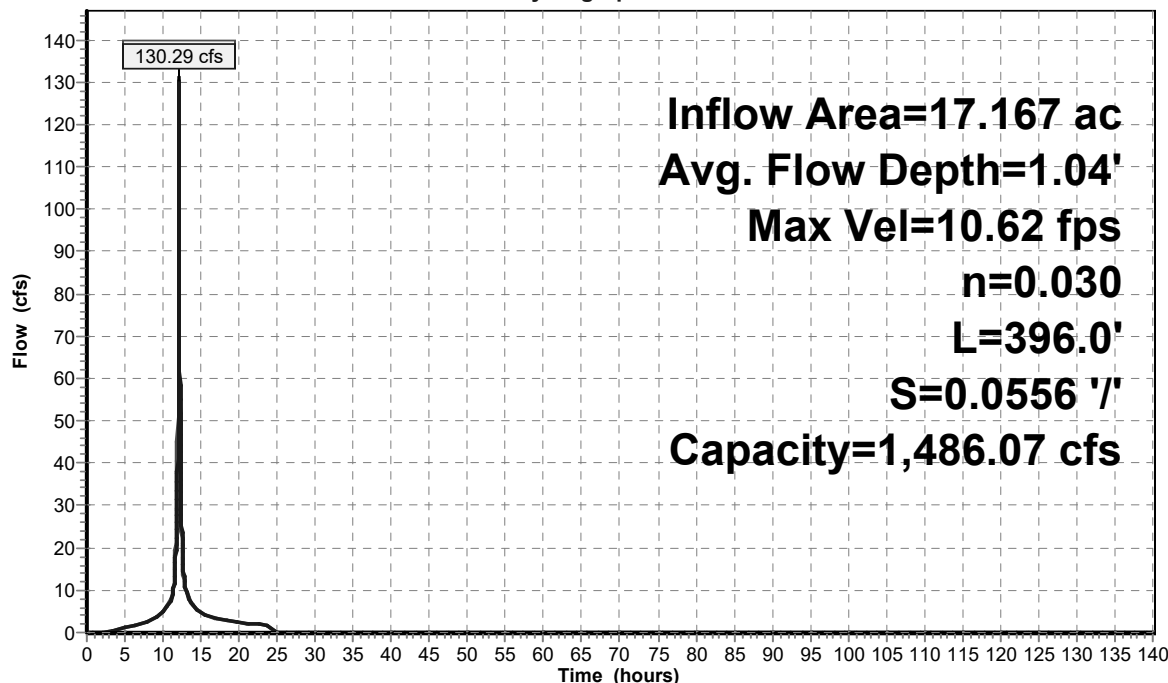
Peak Storage= 4,855 cf @ 12.07 hrs
 Average Depth at Peak Storage= 1.04'
 Bank-Full Depth= 4.00' Flow Area= 67.2 sf, Capacity= 1,486.07 cfs

10.00' x 4.00' deep channel, n= 0.030 Earth, grassed & winding
 Side Slope Z-value= 1.7 ' ' Top Width= 23.60'
 Length= 396.0' Slope= 0.0556 ' '
 Inlet Invert= 127.00', Outlet Invert= 105.00'



Reach SW 2-3: Wetland Swale 2-3

Hydrograph



Summary for Reach SW 4-3: SW 4-3

Inflow Area = 2.745 ac, 0.00% Impervious, Inflow Depth = 4.15" for 100-yr event
Inflow = 9.28 cfs @ 12.20 hrs, Volume= 0.950 af
Outflow = 9.23 cfs @ 12.24 hrs, Volume= 0.950 af, Atten= 1%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Max. Velocity= 4.07 fps, Min. Travel Time= 1.4 min

Avg. Velocity = 1.49 fps, Avg. Travel Time= 3.8 min

Peak Storage= 780 cf @ 12.22 hrs

Average Depth at Peak Storage= 0.22'

Bank-Full Depth= 4.00' Flow Area= 67.2 sf, Capacity= 1,466.70 cfs

10.00' x 4.00' deep channel, n= 0.030 Earth, grassed & winding

Side Slope Z-value= 1.7 '/' Top Width= 23.60'

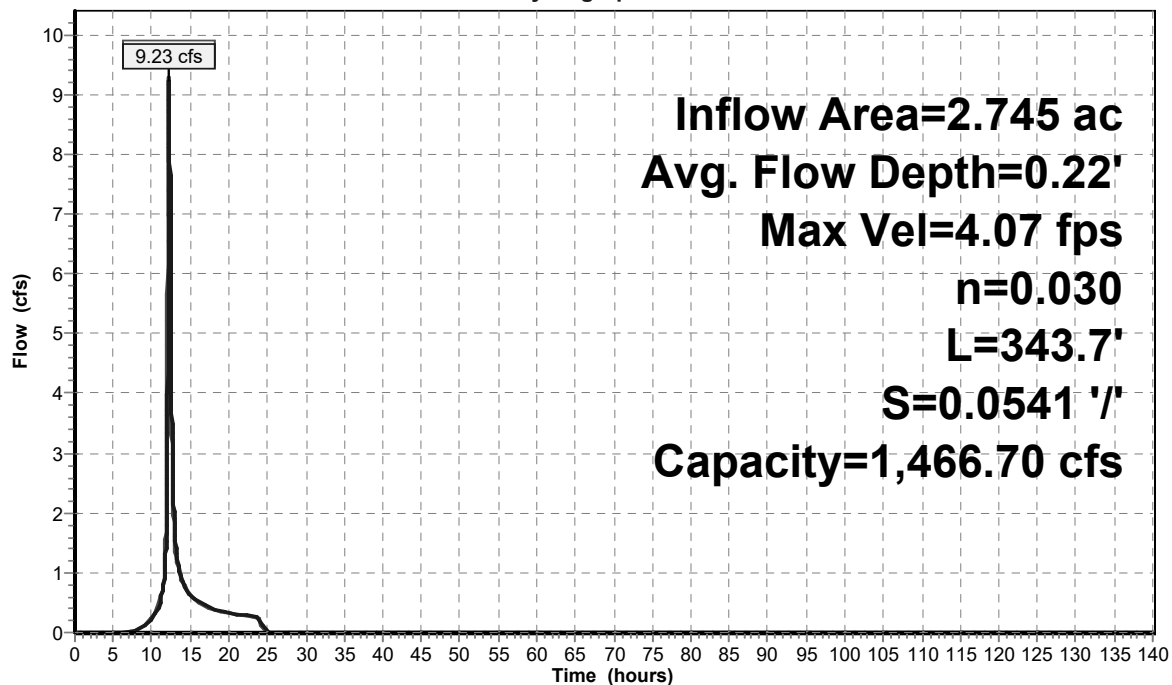
Length= 343.7' Slope= 0.0541 '/'

Inlet Invert= 123.60', Outlet Invert= 105.00'



Reach SW 4-3: SW 4-3

Hydrograph



Summary for Pond P-7: Dentention Basin 7

Inflow Area = 19.306 ac, 70.56% Impervious, Inflow Depth = 6.58" for 100-yr event
 Inflow = 109.41 cfs @ 12.15 hrs, Volume= 10.585 af
 Outflow = 3.59 cfs @ 17.35 hrs, Volume= 10.002 af, Atten= 97%, Lag= 312.2 min
 Primary = 3.59 cfs @ 17.35 hrs, Volume= 10.002 af

Routing by Stor-Ind method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 Peak Elev= 98.74' @ 17.35 hrs Surf.Area= 50,990 sf Storage= 329,940 cf

Plug-Flow detention time= 1,719.0 min calculated for 10.001 af (94% of inflow)
 Center-of-Mass det. time= 1,686.5 min (2,478.6 - 792.1)

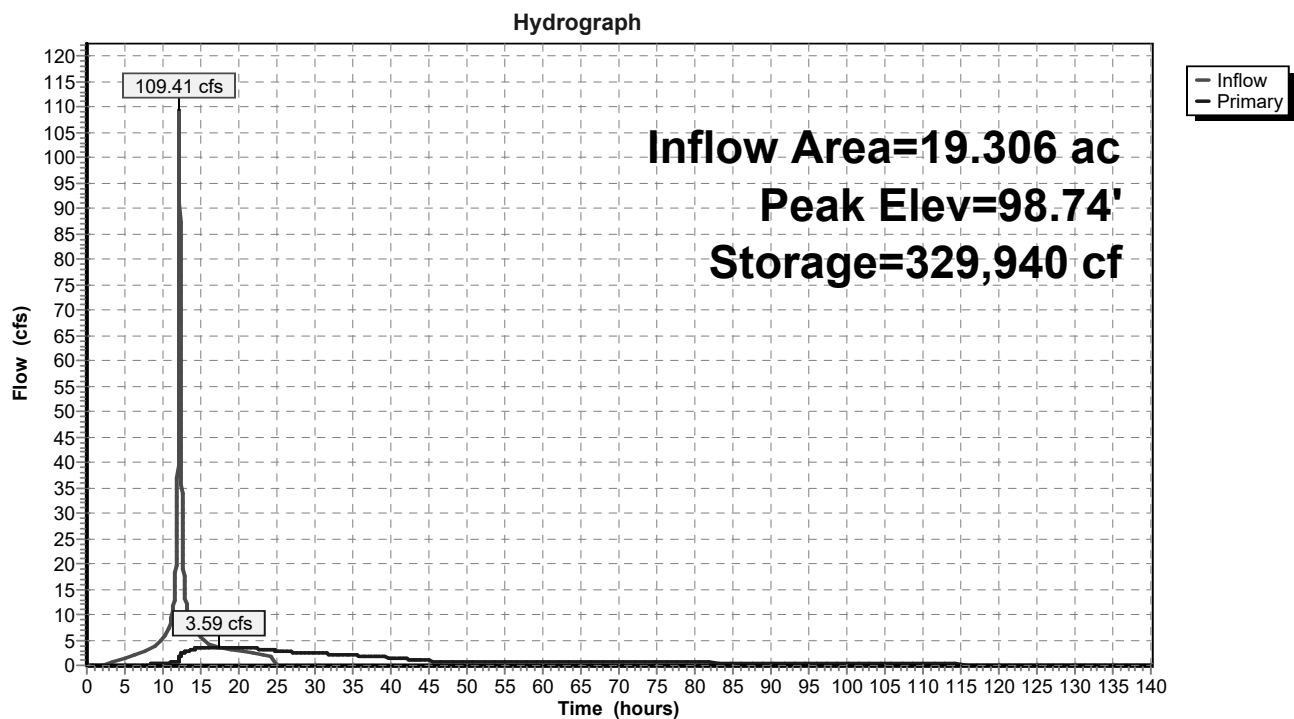
Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	396,479 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.00	19,765	0	0
92.00	31,993	51,758	51,758
94.00	37,305	69,298	121,056
96.00	42,927	80,232	201,288
98.00	48,699	91,626	292,914
100.00	54,866	103,565	396,479

Device	Routing	Invert	Outlet Devices
#1	Primary	88.00'	18.0" Round Culvert L= 71.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 88.00' / 84.50' S= 0.0493 ' / Cc= 0.900 n= 0.009 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	91.00'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	95.00'	6.0" Vert. Orifice/Grate C= 0.600
#4	Device 1	98.00'	6.0" Vert. Orifice/Grate C= 0.600
#5	Device 1	99.00'	36.0" x 78.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.59 cfs @ 17.35 hrs HW=98.74' (Free Discharge)

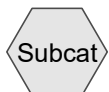
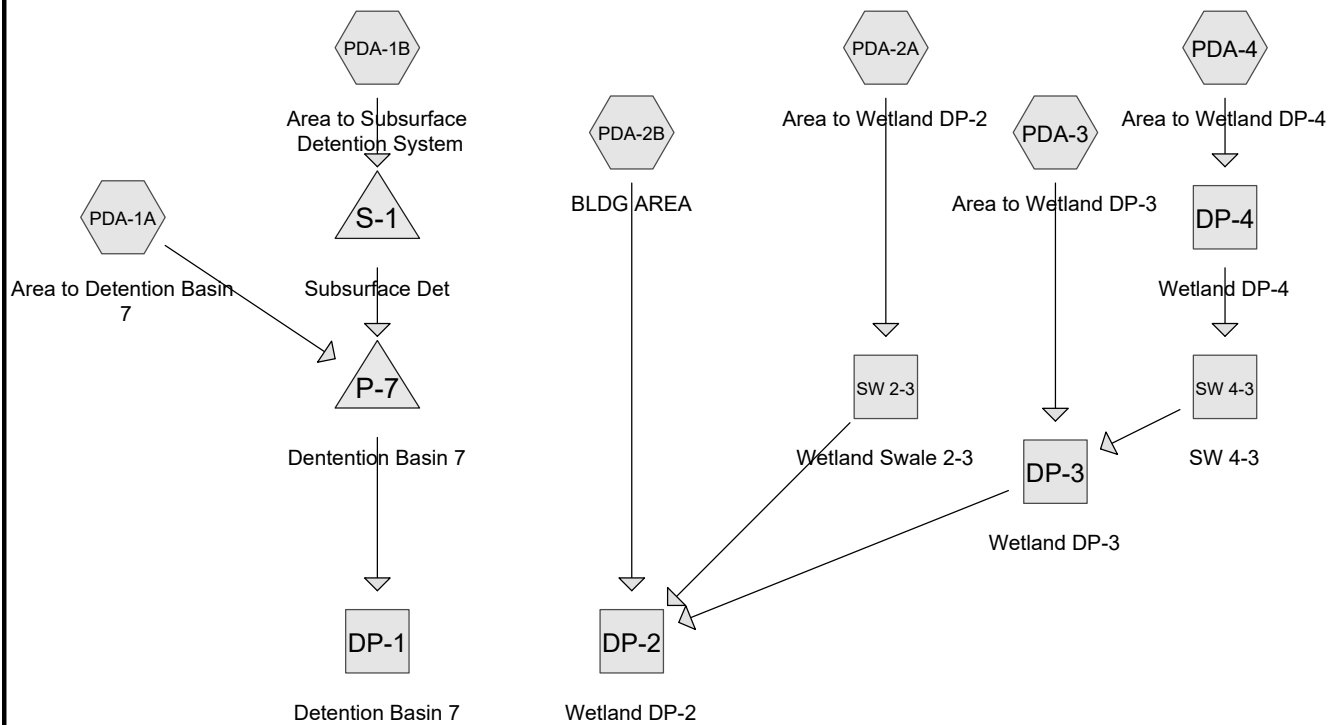
- 1=Culvert (Passes 3.59 cfs of 26.90 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 1.16 cfs @ 13.25 fps)
- 3=Orifice/Grate (Orifice Controls 1.77 cfs @ 9.00 fps)
- 4=Orifice/Grate (Orifice Controls 0.66 cfs @ 3.38 fps)
- 5=Orifice/Grate (Controls 0.00 cfs)

Pond P-7: Dentention Basin 7



APPENDIX C

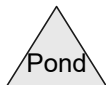
POST-DEVELOPMENT HYDROLOGY



Subcat



Reach



Pond



Link

Routing Diagram for C-DAT-13C4718-PROPOSED HYDROLOGY

Prepared by BL Companies, Inc., Printed 9/18/2019

HydroCAD® 10.00-21 s/n 01334 © 2018 HydroCAD Software Solutions LLC

Time span=0.00-140.00 hrs, dt=0.01 hrs, 14001 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentPDA-1A: Area to Detention Runoff Area=505,152 sf 73.61% Impervious Runoff Depth=2.17"
 Flow Length=1,379' Tc=15.9 min CN=91 Runoff=22.94 cfs 2.101 af

SubcatchmentPDA-1B: Area to Runoff Area=339,526 sf 85.88% Impervious Runoff Depth=2.46"
 Tc=5.0 min CN=94 Runoff=28.14 cfs 1.596 af

SubcatchmentPDA-2A: Area to Wetland Runoff Area=470,105 sf 67.01% Impervious Runoff Depth=1.92"
 Flow Length=1,211' Tc=8.0 min CN=88 Runoff=26.68 cfs 1.723 af

SubcatchmentPDA-2B: BLDG AREA Runoff Area=287,020 sf 85.22% Impervious Runoff Depth=2.46"
 Tc=5.0 min CN=94 Runoff=23.79 cfs 1.349 af

SubcatchmentPDA-3: Area to Wetland DP-3 Runoff Area=47,497 sf 0.13% Impervious Runoff Depth=0.98"
 Flow Length=347' Tc=9.3 min CN=74 Runoff=1.18 cfs 0.089 af

SubcatchmentPDA-4: Area to Wetland Runoff Area=119,565 sf 0.00% Impervious Runoff Depth=0.73"
 Flow Length=808' Tc=18.1 min CN=69 Runoff=1.42 cfs 0.167 af

Reach DP-1: Detention Basin 7 Inflow=0.68 cfs 2.769 af
 Outflow=0.68 cfs 2.769 af

Reach DP-2: Wetland DP-2 Inflow=44.30 cfs 3.328 af
 Outflow=44.30 cfs 3.328 af

Reach DP-3: Wetland DP-3 Inflow=1.88 cfs 0.256 af
 Outflow=1.88 cfs 0.256 af

Reach DP-4: Wetland DP-4 Inflow=1.42 cfs 0.167 af
 Outflow=1.42 cfs 0.167 af

Reach SW 2-3: Wetland Swale 2-3 Avg. Flow Depth=0.41' Max Vel=6.06 fps Inflow=26.68 cfs 1.723 af
 n=0.030 L=396.0' S=0.0556 '/' Capacity=1,486.07 cfs Outflow=26.22 cfs 1.723 af

Reach SW 4-3: SW 4-3 Avg. Flow Depth=0.07' Max Vel=1.99 fps Inflow=1.42 cfs 0.167 af
 n=0.030 L=343.7' S=0.0541 '/' Capacity=1,466.70 cfs Outflow=1.39 cfs 0.167 af

Pond P-7: Dentention Basin 7 Peak Elev=93.82' Storage=79,955 cf Inflow=23.14 cfs 3.128 af
 Outflow=0.68 cfs 2.769 af

Pond S-1: Subsurface Det Peak Elev=102.68' Storage=53,965 cf Inflow=28.14 cfs 1.596 af
 Outflow=0.39 cfs 1.028 af

Total Runoff Area = 40.608 ac Runoff Volume = 7.025 af Average Runoff Depth = 2.08"
30.85% Pervious = 12.529 ac 69.15% Impervious = 28.078 ac

Summary for Subcatchment PDA-1A: Area to Detention Basin 7

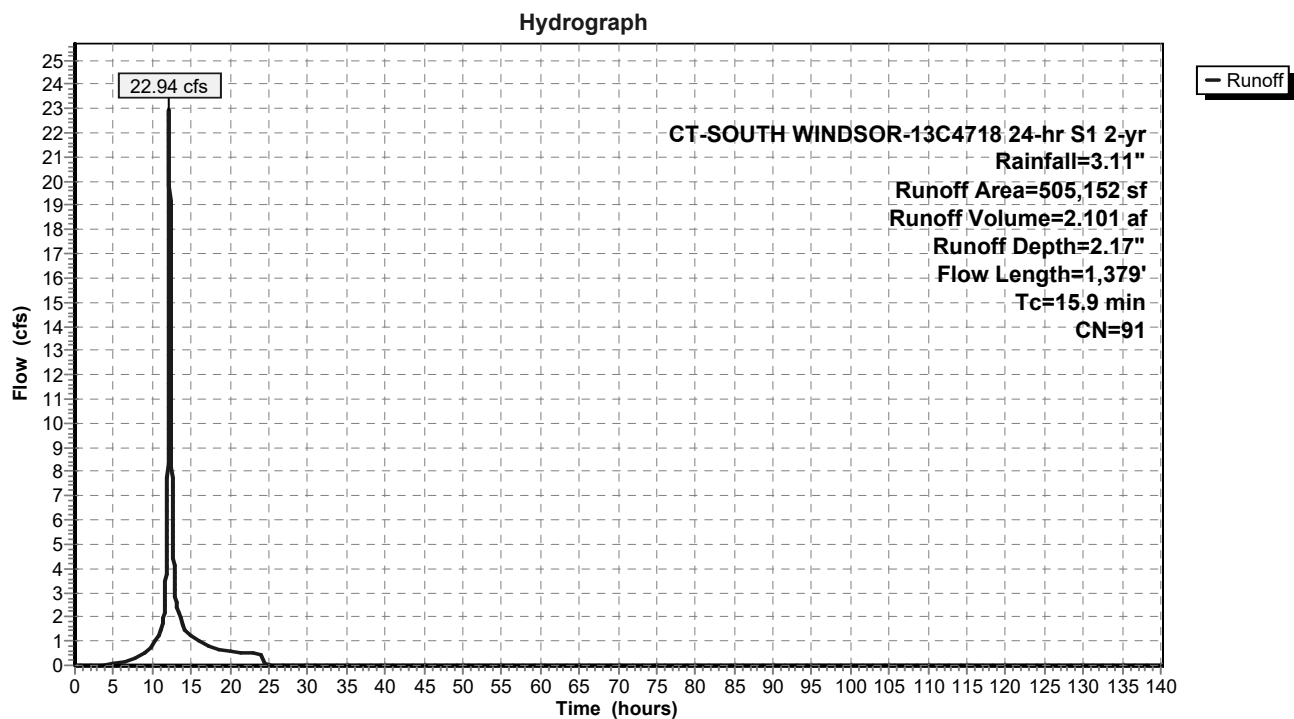
Runoff = 22.94 cfs @ 12.17 hrs, Volume= 2.101 af, Depth= 2.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 CT-SOUTH WINDSOR-13C4718 24-hr S1 2-yr Rainfall=3.11"

Area (sf)	CN	Description
82,516	98	Paved parking, HSG B
275,911	98	Paved parking, HSG C
12,219	98	Paved parking, HSG B
1,191	98	Paved parking, HSG C
78,680	69	50-75% Grass cover, Fair, HSG B
41,252	79	50-75% Grass cover, Fair, HSG C
10,535	69	50-75% Grass cover, Fair, HSG B
467	79	50-75% Grass cover, Fair, HSG C
0	85	Gravel roads, HSG B
389	89	Gravel roads, HSG C
1,992	85	Gravel roads, HSG B
0	89	Gravel roads, HSG C
505,152	91	Weighted Average
133,315		26.39% Pervious Area
371,837		73.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	100	0.0900	0.21		Sheet Flow, Grass: Dense n= 0.240 P2= 3.11"
2.7	249	0.0480	1.53		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
4.8	383	0.0078	1.32		Shallow Concentrated Flow, swale Grassed Waterway Kv= 15.0 fps
0.5	647	0.0400	20.80	65.35	Pipe Channel, 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.009 Corrugated PE, smooth interior
15.9	1,379	Total			

Subcatchment PDA-1A: Area to Detention Basin 7



Summary for Subcatchment PDA-1B: Area to Subsurface Detention System

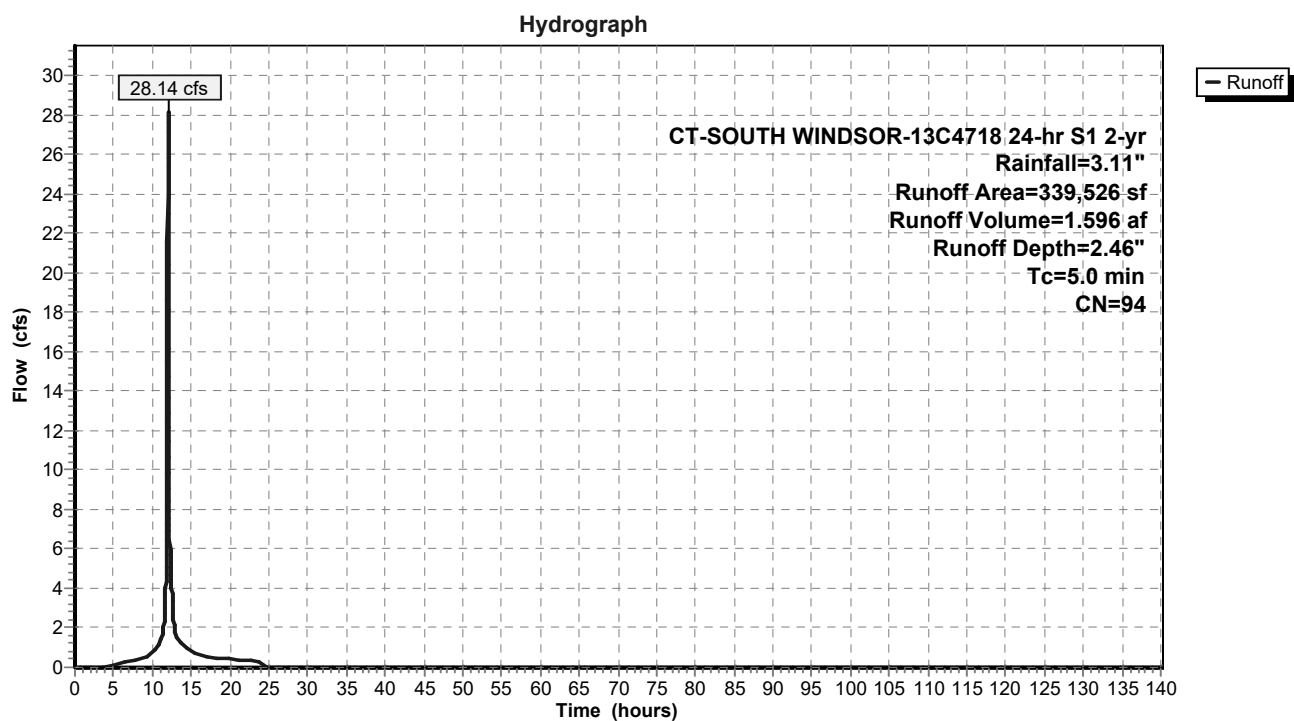
Runoff = 28.14 cfs @ 12.03 hrs, Volume= 1.596 af, Depth= 2.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 CT-SOUTH WINDSOR-13C4718 24-hr S1 2-yr Rainfall=3.11"

Area (sf)	CN	Description
269,483	98	Paved parking, HSG B
22,100	98	Paved parking, HSG C
0	98	Paved parking, HSG B
0	98	Paved parking, HSG C
43,113	69	50-75% Grass cover, Fair, HSG B
4,830	79	50-75% Grass cover, Fair, HSG C
0	69	50-75% Grass cover, Fair, HSG B
0	79	50-75% Grass cover, Fair, HSG C
0	85	Gravel roads, HSG B
0	89	Gravel roads, HSG C
0	85	Gravel roads, HSG B
0	89	Gravel roads, HSG C
339,526	94	Weighted Average
47,943		14.12% Pervious Area
291,583		85.88% Impervious Area

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

Subcatchment PDA-1B: Area to Subsurface Detention System



Summary for Subcatchment PDA-2A: Area to Wetland DP-2

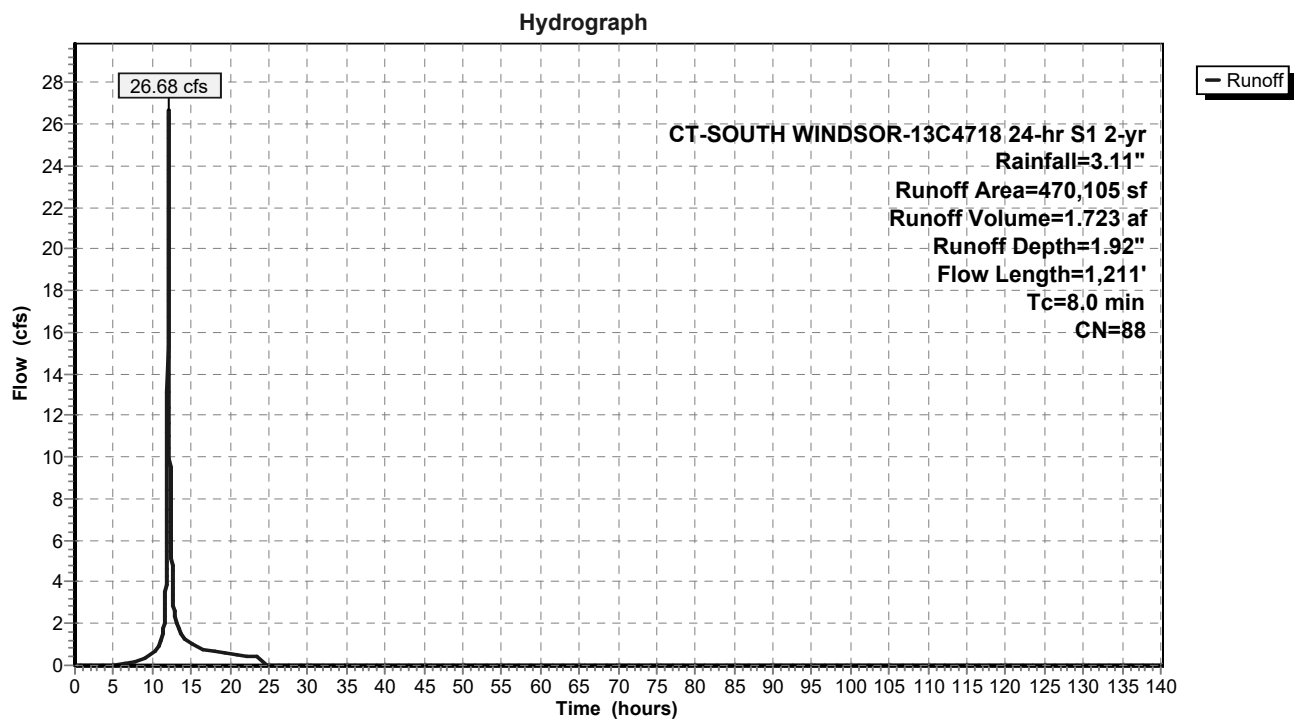
Runoff = 26.68 cfs @ 12.06 hrs, Volume= 1.723 af, Depth= 1.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 CT-SOUTH WINDSOR-13C4718 24-hr S1 2-yr Rainfall=3.11"

Area (sf)	CN	Description
304,766	98	Paved parking, HSG B
10,251	98	Paved parking, HSG C
0	98	Paved parking, HSG D
154,500	69	50-75% Grass cover, Fair, HSG B
588	79	50-75% Grass cover, Fair, HSG C
0	84	50-75% Grass cover, Fair, HSG D
470,105	88	Weighted Average
155,088		32.99% Pervious Area
315,017		67.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	74	0.1350	0.34		Sheet Flow, 1 Grass: Short n= 0.150 P2= 3.11"
0.4	26	0.0250	1.13		Sheet Flow, 2 Smooth surfaces n= 0.011 P2= 3.11"
1.1	216	0.0250	3.21		Shallow Concentrated Flow, 3 Paved Kv= 20.3 fps
1.7	744	0.0050	7.35	23.11	Pipe Channel, RCP_Round 24" 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.009 Corrugated PE, smooth interior
1.2	151	0.0200	2.12		Shallow Concentrated Flow, 4 Grassed Waterway Kv= 15.0 fps
8.0	1,211	Total			

Subcatchment PDA-2A: Area to Wetland DP-2



Summary for Subcatchment PDA-2B: BLDG AREA

Runoff = 23.79 cfs @ 12.03 hrs, Volume= 1.349 af, Depth= 2.46"

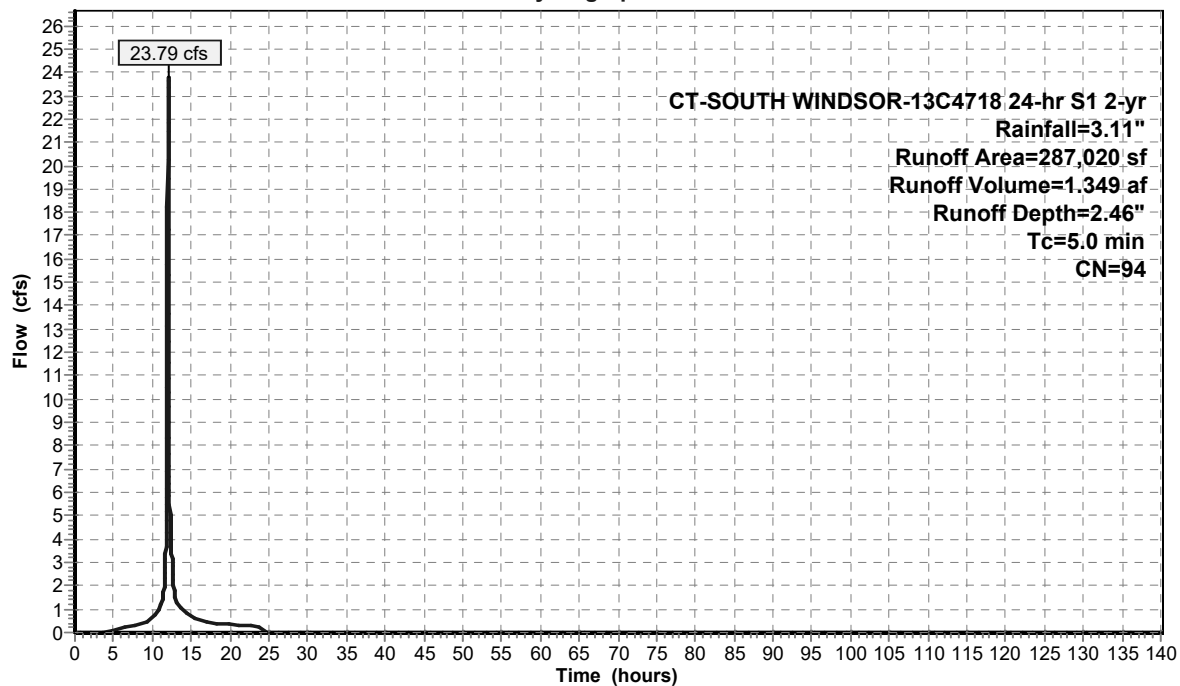
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
CT-SOUTH WINDSOR-13C4718 24-hr S1 2-yr Rainfall=3.11"

Area (sf)	CN	Description
240,618	98	Paved parking, HSG B
0	98	Paved parking, HSG C
3,973	98	Paved parking, HSG D
39,809	69	50-75% Grass cover, Fair, HSG B
0	79	50-75% Grass cover, Fair, HSG C
2,620	84	50-75% Grass cover, Fair, HSG D
287,020	94	Weighted Average
42,429		14.78% Pervious Area
244,591		85.22% Impervious Area

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

Subcatchment PDA-2B: BLDG AREA

Hydrograph



Summary for Subcatchment PDA-3: Area to Wetland DP-3

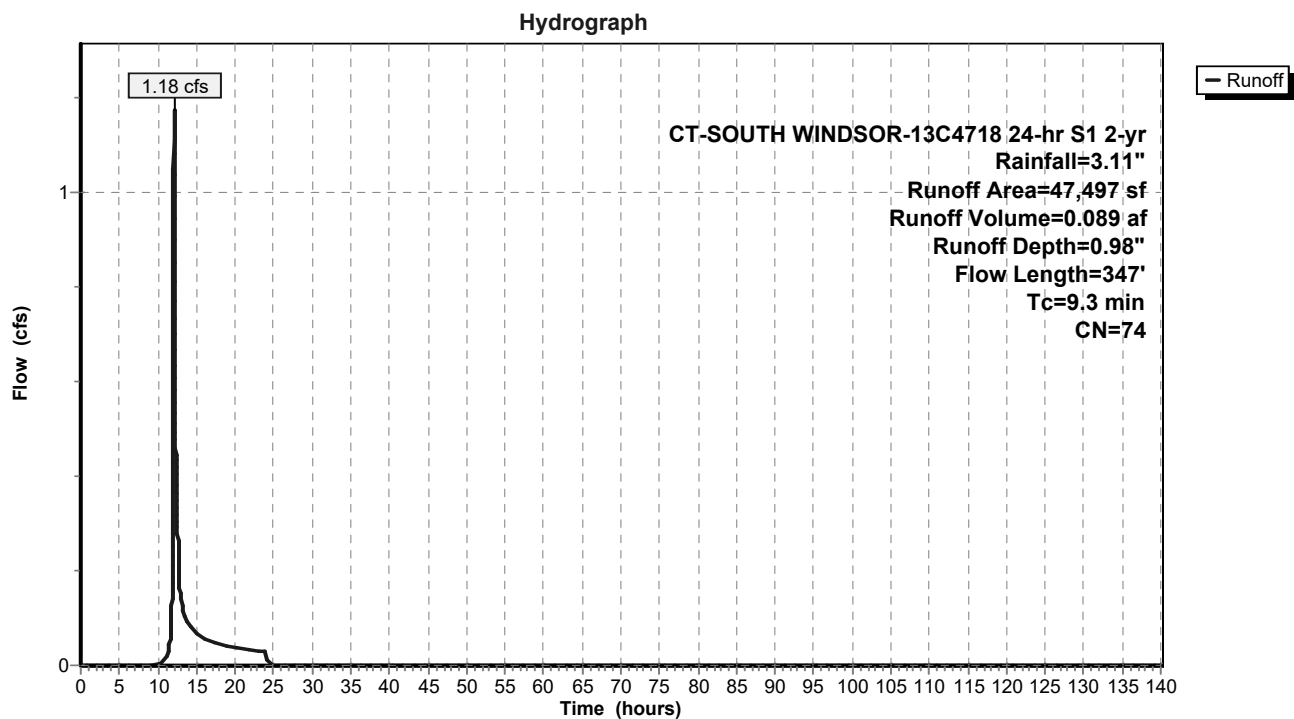
Runoff = 1.18 cfs @ 12.08 hrs, Volume= 0.089 af, Depth= 0.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
CT-SOUTH WINDSOR-13C4718 24-hr S1 2-yr Rainfall=3.11"

Area (sf)	CN	Description
63	98	Paved parking, HSG B
0	98	Paved parking, HSG C
0	98	Paved parking, HSG D
20,845	69	50-75% Grass cover, Fair, HSG B
0	79	50-75% Grass cover, Fair, HSG C
7,654	84	50-75% Grass cover, Fair, HSG D
2,047	56	Brush, Fair, HSG B
16,888	77	Brush, Fair, HSG D
47,497	74	Weighted Average
47,434		99.87% Pervious Area
63		0.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	100	0.0400	0.22		Sheet Flow, 1 Grass: Short n= 0.150 P2= 3.11"
0.6	125	0.0480	3.29		Shallow Concentrated Flow, 2 Grassed Waterway Kv= 15.0 fps
1.2	122	0.1060	1.63		Shallow Concentrated Flow, 3 Woodland Kv= 5.0 fps
9.3	347	Total			

Subcatchment PDA-3: Area to Wetland DP-3



Summary for Subcatchment PDA-4: Area to Wetland DP-4

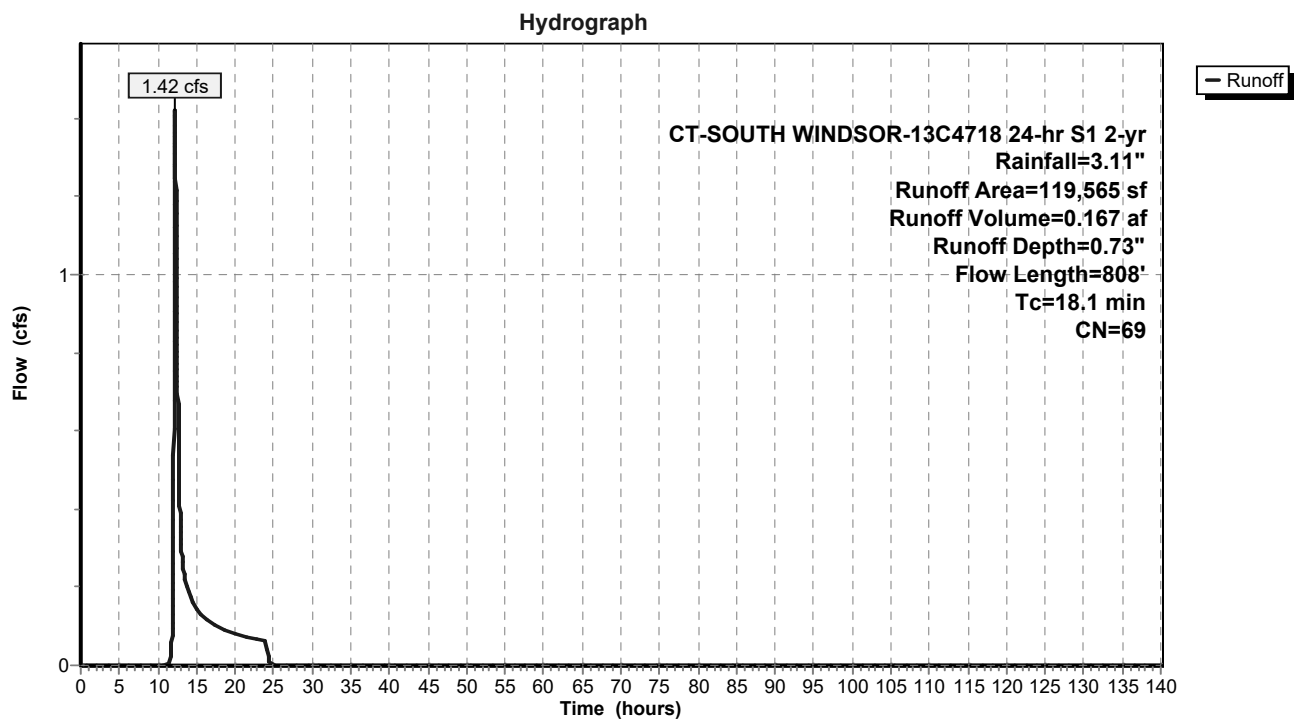
Runoff = 1.42 cfs @ 12.23 hrs, Volume= 0.167 af, Depth= 0.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
CT-SOUTH WINDSOR-13C4718 24-hr S1 2-yr Rainfall=3.11"

Area (sf)	CN	Description
0	98	Paved parking, HSG B
0	98	Paved parking, HSG C
0	98	Paved parking, HSG D
57,679	69	50-75% Grass cover, Fair, HSG B
26,837	79	50-75% Grass cover, Fair, HSG C
0	84	50-75% Grass cover, Fair, HSG D
25,526	56	Brush, Fair, HSG B
9,523	70	Brush, Fair, HSG C
119,565	69	Weighted Average
119,565		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	100	0.0800	0.29		Sheet Flow, 1 Grass: Short n= 0.150 P2= 3.11"
0.2	39	0.0800	4.24		Shallow Concentrated Flow, 2 Grassed Waterway Kv= 15.0 fps
12.1	595	0.0270	0.82		Shallow Concentrated Flow, 3 Woodland Kv= 5.0 fps
0.1	74	0.0270	19.82	194.19	Channel Flow, 4 Area= 9.8 sf Perim= 15.7' r= 0.62' n= 0.009 Corrugated PE, smooth interior
18.1	808	Total			

Subcatchment PDA-4: Area to Wetland DP-4

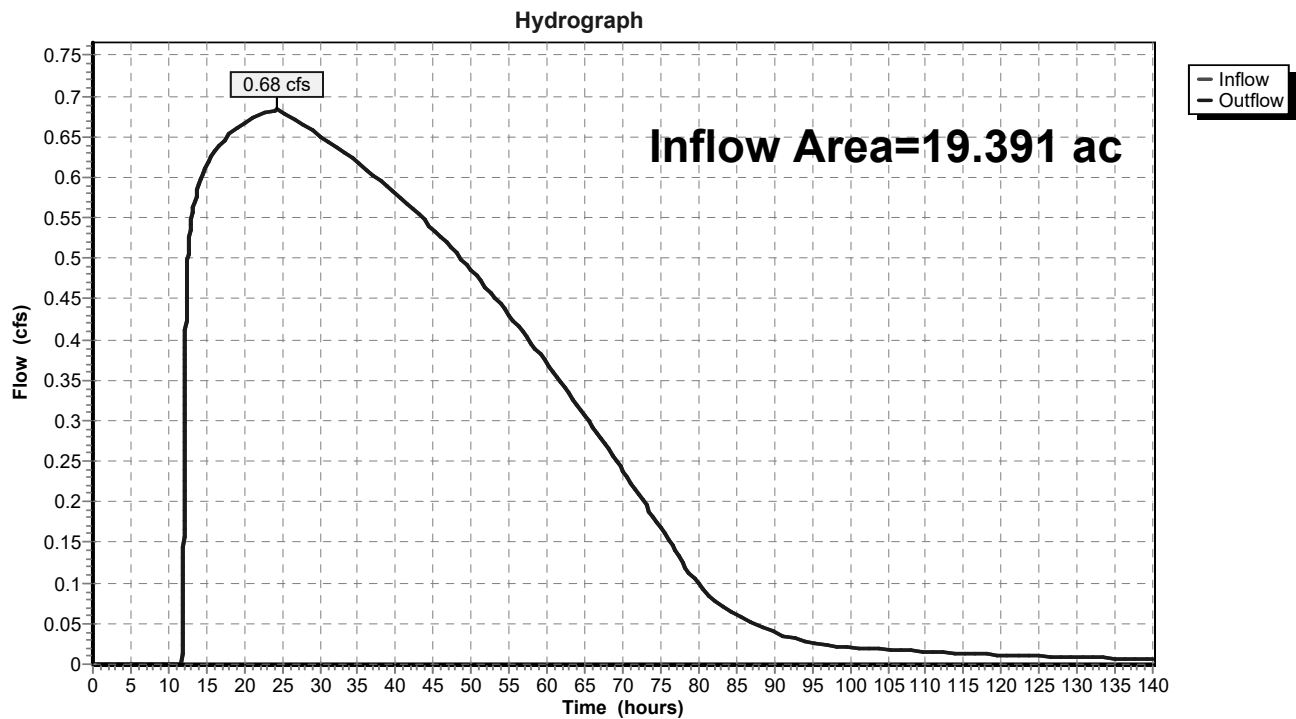


Summary for Reach DP-1: Detention Basin 7

Inflow Area = 19.391 ac, 78.54% Impervious, Inflow Depth > 1.71" for 2-yr event
Inflow = 0.68 cfs @ 24.19 hrs, Volume= 2.769 af
Outflow = 0.68 cfs @ 24.19 hrs, Volume= 2.769 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Reach DP-1: Detention Basin 7

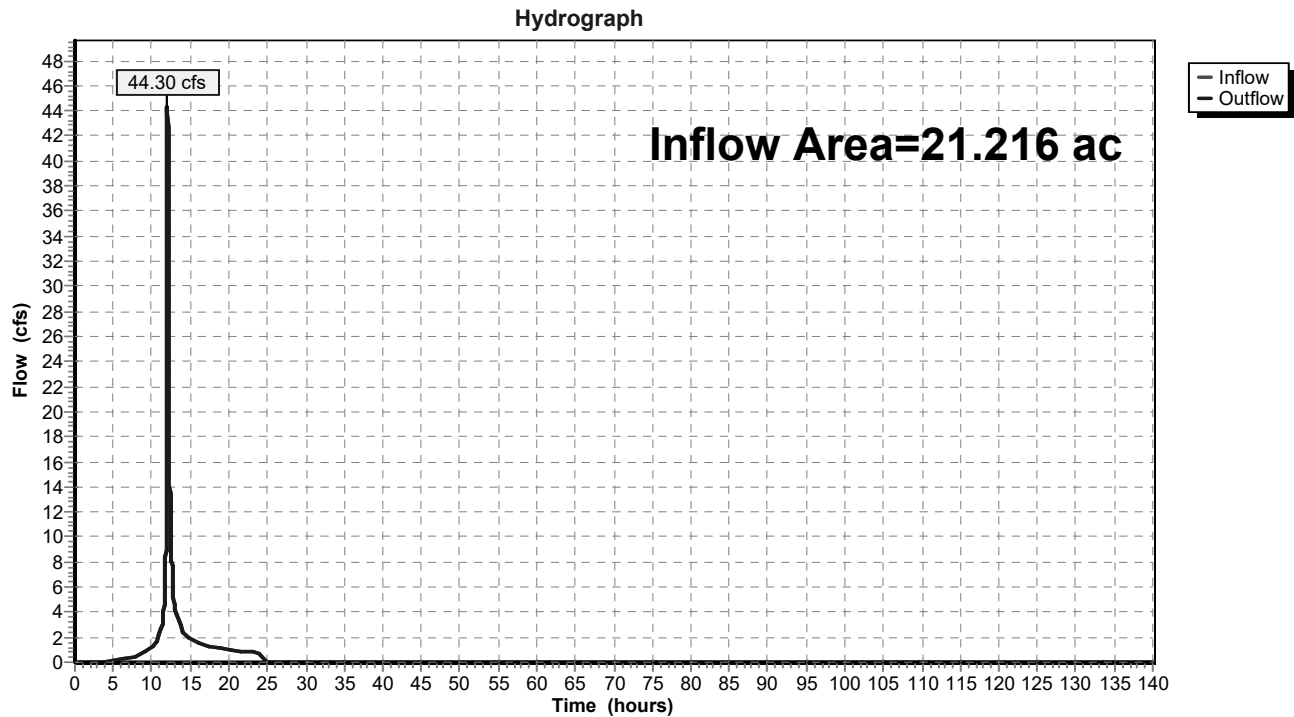


Summary for Reach DP-2: Wetland DP-2

Inflow Area = 21.216 ac, 60.56% Impervious, Inflow Depth = 1.88" for 2-yr event
Inflow = 44.30 cfs @ 12.05 hrs, Volume= 3.328 af
Outflow = 44.30 cfs @ 12.05 hrs, Volume= 3.328 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Reach DP-2: Wetland DP-2

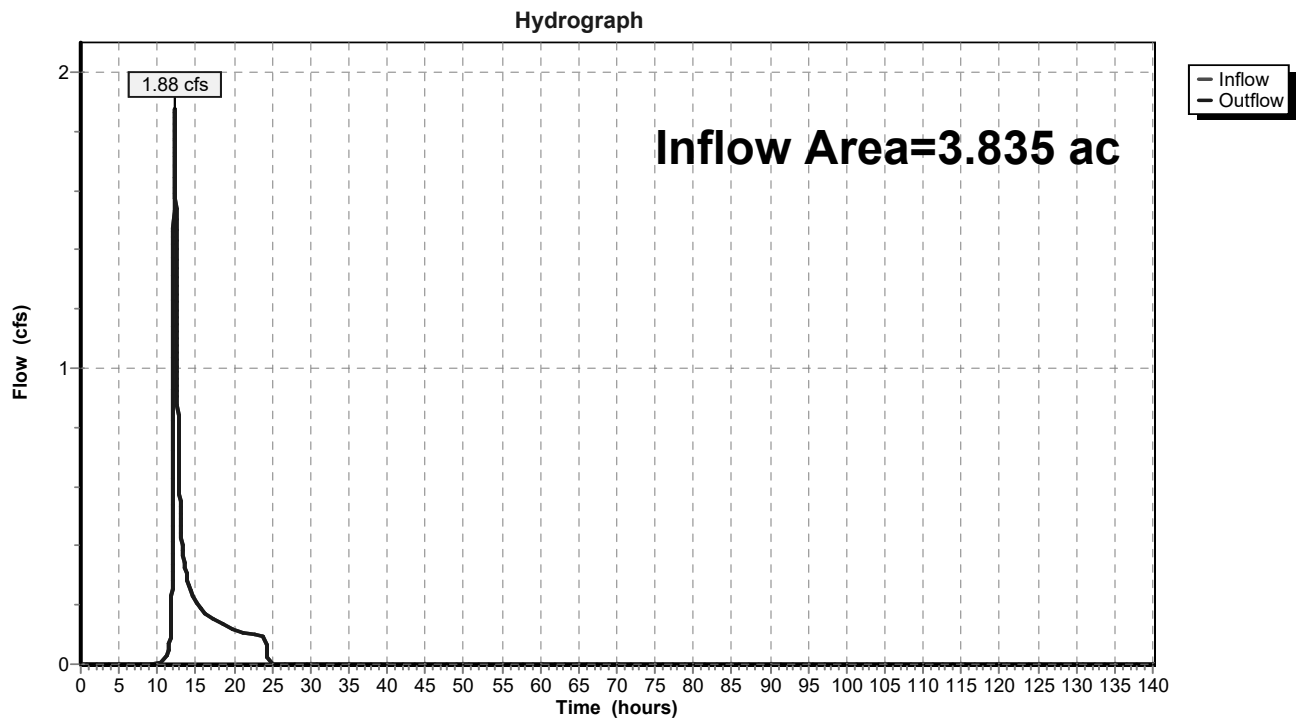


Summary for Reach DP-3: Wetland DP-3

Inflow Area = 3.835 ac, 0.04% Impervious, Inflow Depth = 0.80" for 2-yr event
Inflow = 1.88 cfs @ 12.27 hrs, Volume= 0.256 af
Outflow = 1.88 cfs @ 12.27 hrs, Volume= 0.256 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Reach DP-3: Wetland DP-3

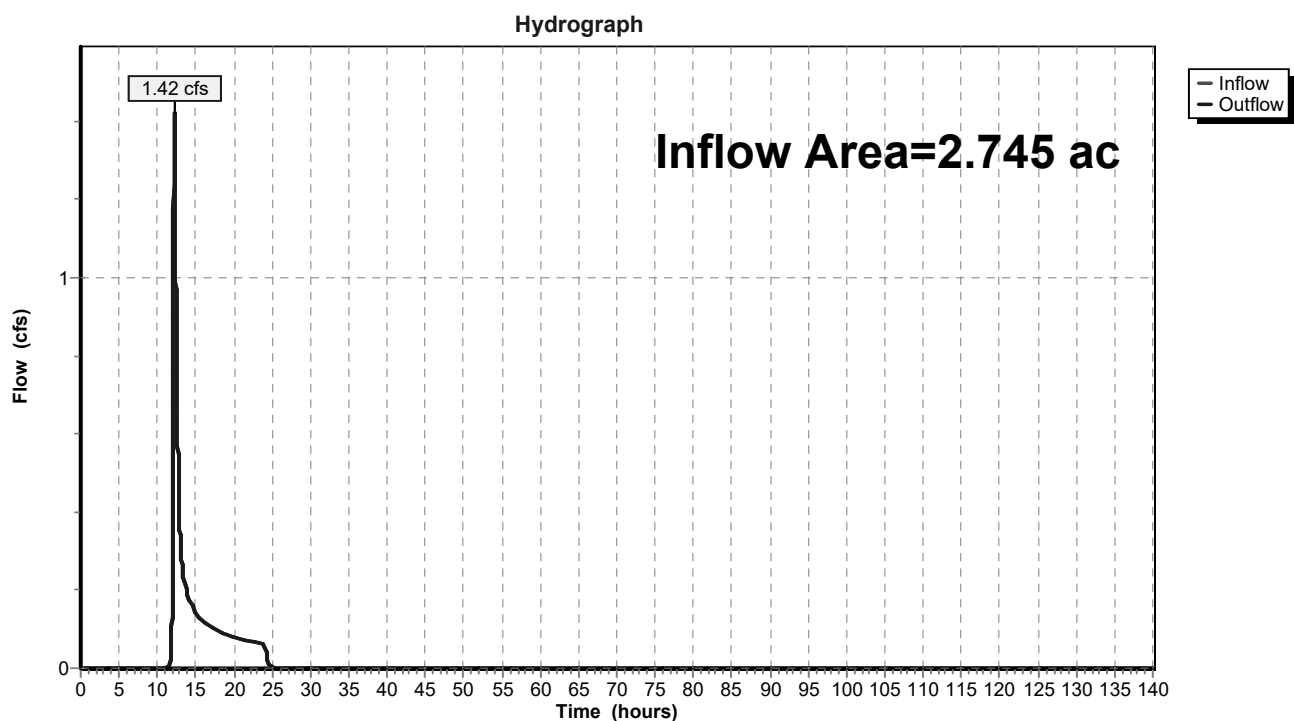


Summary for Reach DP-4: Wetland DP-4

Inflow Area = 2.745 ac, 0.00% Impervious, Inflow Depth = 0.73" for 2-yr event
Inflow = 1.42 cfs @ 12.23 hrs, Volume= 0.167 af
Outflow = 1.42 cfs @ 12.23 hrs, Volume= 0.167 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Reach DP-4: Wetland DP-4



Summary for Reach SW 2-3: Wetland Swale 2-3

Inflow Area = 10.792 ac, 67.01% Impervious, Inflow Depth = 1.92" for 2-yr event
Inflow = 26.68 cfs @ 12.06 hrs, Volume= 1.723 af
Outflow = 26.22 cfs @ 12.09 hrs, Volume= 1.723 af, Atten= 2%, Lag= 1.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Max. Velocity= 6.06 fps, Min. Travel Time= 1.1 min

Avg. Velocity = 1.66 fps, Avg. Travel Time= 4.0 min

Peak Storage= 1,716 cf @ 12.07 hrs

Average Depth at Peak Storage= 0.41'

Bank-Full Depth= 4.00' Flow Area= 67.2 sf, Capacity= 1,486.07 cfs

10.00' x 4.00' deep channel, n= 0.030 Earth, grassed & winding

Side Slope Z-value= 1.7 '/' Top Width= 23.60'

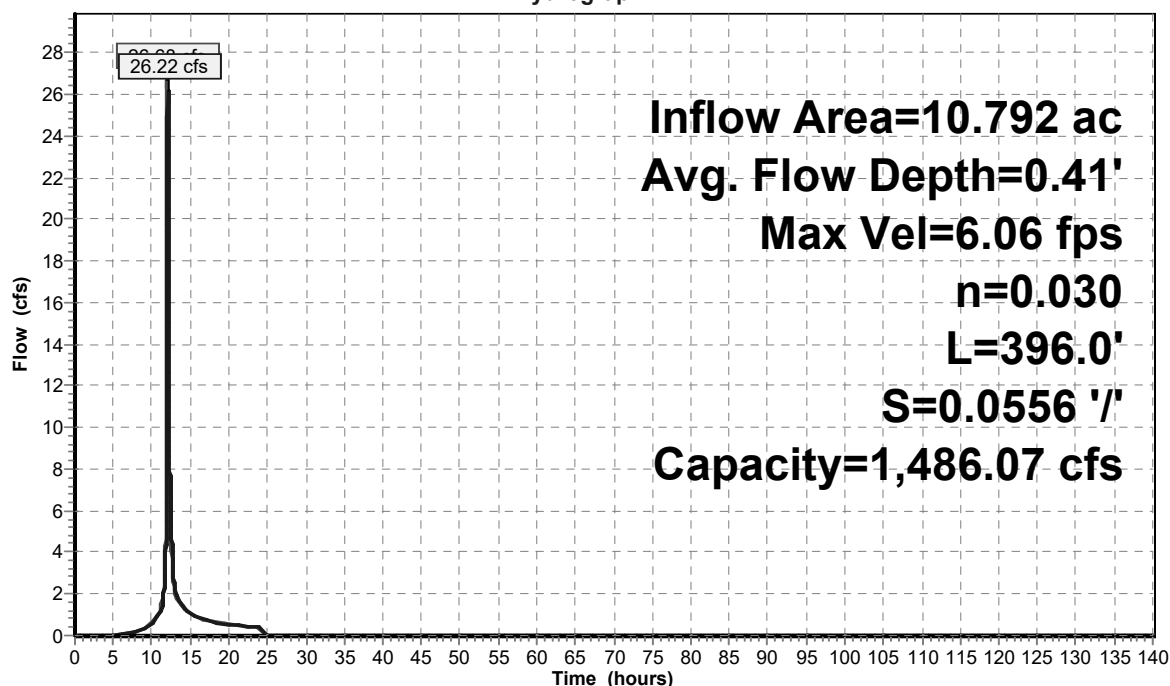
Length= 396.0' Slope= 0.0556 '/'

Inlet Invert= 127.00', Outlet Invert= 105.00'



Reach SW 2-3: Wetland Swale 2-3

Hydrograph



Summary for Reach SW 4-3: SW 4-3

Inflow Area = 2.745 ac, 0.00% Impervious, Inflow Depth = 0.73" for 2-yr event
 Inflow = 1.42 cfs @ 12.23 hrs, Volume= 0.167 af
 Outflow = 1.39 cfs @ 12.31 hrs, Volume= 0.167 af, Atten= 3%, Lag= 5.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 Max. Velocity= 1.99 fps, Min. Travel Time= 2.9 min
 Avg. Velocity = 1.36 fps, Avg. Travel Time= 4.2 min

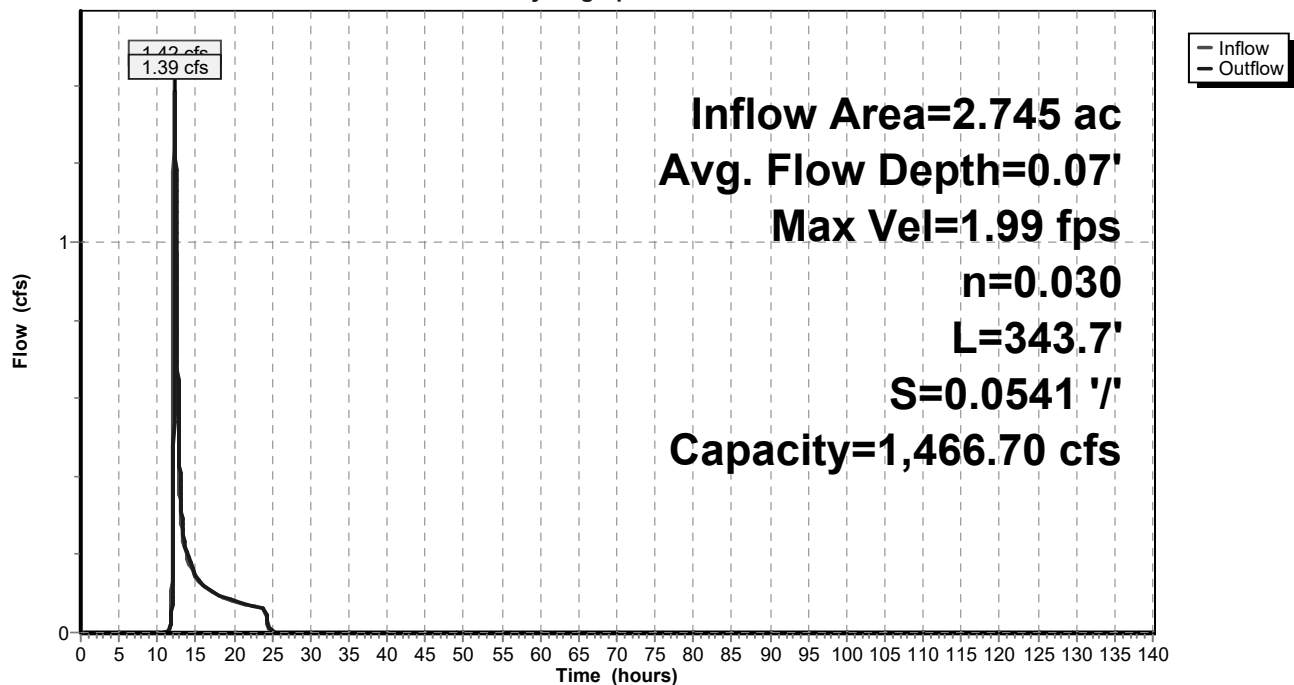
Peak Storage= 240 cf @ 12.26 hrs
 Average Depth at Peak Storage= 0.07'
 Bank-Full Depth= 4.00' Flow Area= 67.2 sf, Capacity= 1,466.70 cfs

10.00' x 4.00' deep channel, n= 0.030 Earth, grassed & winding
 Side Slope Z-value= 1.7 '/' Top Width= 23.60'
 Length= 343.7' Slope= 0.0541 '/'
 Inlet Invert= 123.60', Outlet Invert= 105.00'



Reach SW 4-3: SW 4-3

Hydrograph



Summary for Pond P-7: Dentention Basin 7

Inflow Area = 19.391 ac, 78.54% Impervious, Inflow Depth > 1.94" for 2-yr event
 Inflow = 23.14 cfs @ 12.17 hrs, Volume= 3.128 af
 Outflow = 0.68 cfs @ 24.19 hrs, Volume= 2.769 af, Atten= 97%, Lag= 721.1 min
 Primary = 0.68 cfs @ 24.19 hrs, Volume= 2.769 af

Routing by Stor-Ind method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 Peak Elev= 93.82' @ 24.19 hrs Surf.Area= 26,229 sf Storage= 79,955 cf

Plug-Flow detention time= 1,535.6 min calculated for 2.769 af (89% of inflow)
 Center-of-Mass det. time= 1,283.0 min (2,497.4 - 1,214.5)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	280,770 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

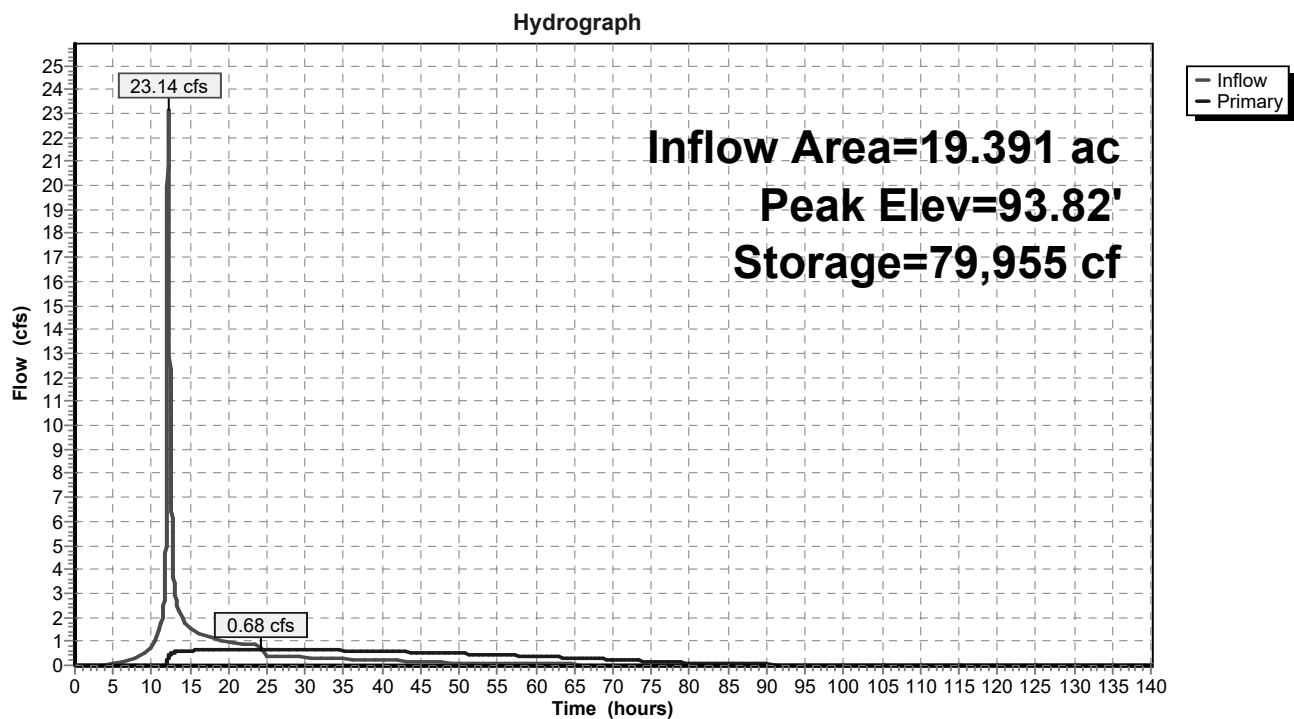
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.00	12,621	0	0
92.00	22,814	35,435	35,435
94.00	26,576	49,390	84,825
96.00	30,501	57,077	141,902
98.00	34,640	65,141	207,043
100.00	39,087	73,727	280,770

Device	Routing	Invert	Outlet Devices
#1	Primary	88.00'	18.0" Round Culvert L= 71.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 88.00' / 84.50' S= 0.0493 ' / Cc= 0.900 n= 0.009 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	91.00'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	95.00'	6.0" Vert. Orifice/Grate C= 0.600
#4	Device 1	98.00'	6.0" Vert. Orifice/Grate C= 0.600
#5	Device 1	99.00'	36.0" x 78.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.68 cfs @ 24.19 hrs HW=93.82' (Free Discharge)

1=Culvert (Passes 0.68 cfs of 19.15 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.68 cfs @ 7.84 fps)
 3=Orifice/Grate (Controls 0.00 cfs)
 4=Orifice/Grate (Controls 0.00 cfs)
 5=Orifice/Grate (Controls 0.00 cfs)

Pond P-7: Dentention Basin 7



Summary for Pond S-1: Subsurface Det

Inflow Area = 7.794 ac, 85.88% Impervious, Inflow Depth = 2.46" for 2-yr event
 Inflow = 28.14 cfs @ 12.03 hrs, Volume= 1.596 af
 Outflow = 0.39 cfs @ 20.56 hrs, Volume= 1.028 af, Atten= 99%, Lag= 512.2 min
 Primary = 0.39 cfs @ 20.56 hrs, Volume= 1.028 af

Routing by Stor-Ind method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 Peak Elev= 102.68' @ 20.56 hrs Surf.Area= 31,034 sf Storage= 53,965 cf

Plug-Flow detention time= 1,334.7 min calculated for 1.027 af (64% of inflow)
 Center-of-Mass det. time= 1,215.4 min (2,011.0 - 795.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	100.25'	49,002 cf	228.33'W x 135.92'L x 6.75'H Field A 209,482 cf Overall - 86,977 cf Embedded = 122,504 cf x 40.0% Voids
#2A	101.00'	86,977 cf	ADS_StormTech MC-4500 +Cap x 800 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 25 Rows of 32 Chambers Cap Storage= +35.7 cf x 2 x 25 rows = 1,785.0 cf
		135,979 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	101.50'	24.0" Round Culvert L= 200.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.50' / 99.50' S= 0.0100 ' /' Cc= 0.900 n= 0.009 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	101.55'	3.0" W x 4.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	103.40'	5.0" W x 4.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	106.00'	4.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.39 cfs @ 20.56 hrs HW=102.68' (Free Discharge)

- 1=Culvert (Passes 0.39 cfs of 7.12 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.39 cfs @ 4.72 fps)
- 3=Orifice/Grate (Controls 0.00 cfs)
- 4=Broad-Crested Rectangular Weir(Controls 0.00 cfs)

Pond S-1: Subsurface Det - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-4500 +Cap (ADS StormTech®MC-4500 with cap volume)

Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf

Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap

Cap Storage= +35.7 cf x 2 x 25 rows = 1,785.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

32 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 133.92' Row Length +12.0" End Stone x 2 =
135.92' Base Length

25 Rows x 100.0" Wide + 9.0" Spacing x 24 + 12.0" Side Stone x 2 = 228.33' Base Width

9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

800 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 25 Rows = 86,977.3 cf Chamber Storage

209,481.6 cf Field - 86,977.3 cf Chambers = 122,504.2 cf Stone x 40.0% Voids = 49,001.7 cf Stone
Storage

Chamber Storage + Stone Storage = 135,979.0 cf = 3.122 af

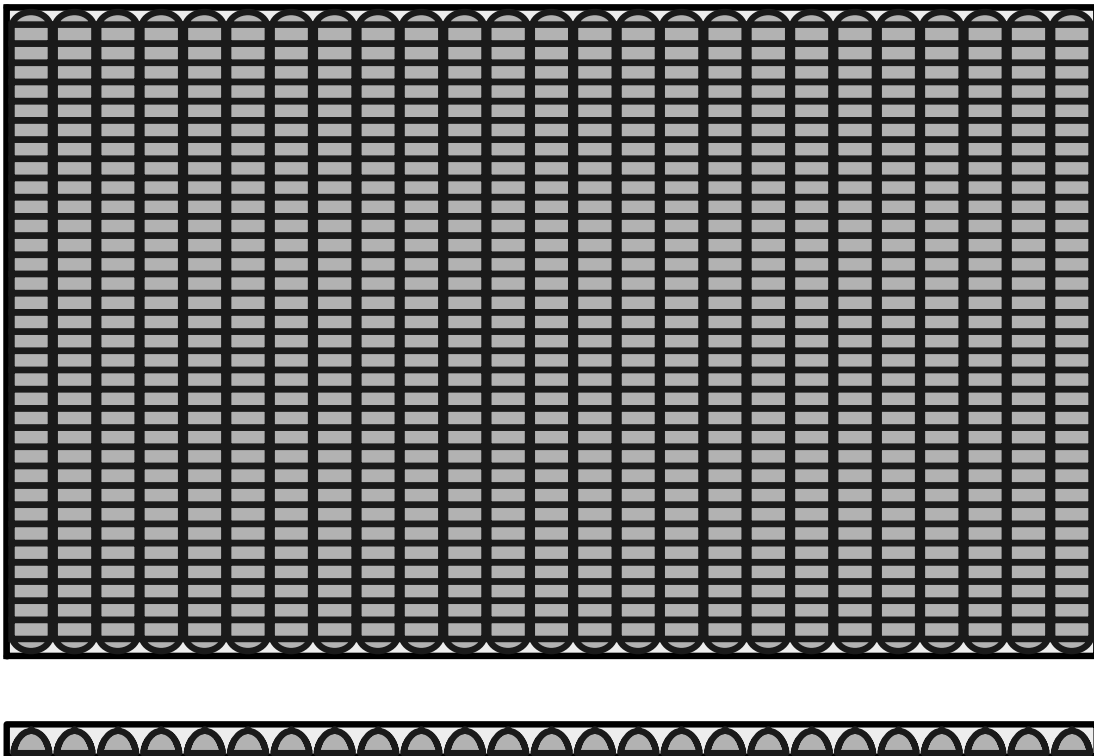
Overall Storage Efficiency = 64.9%

Overall System Size = 135.92' x 228.33' x 6.75'

800 Chambers

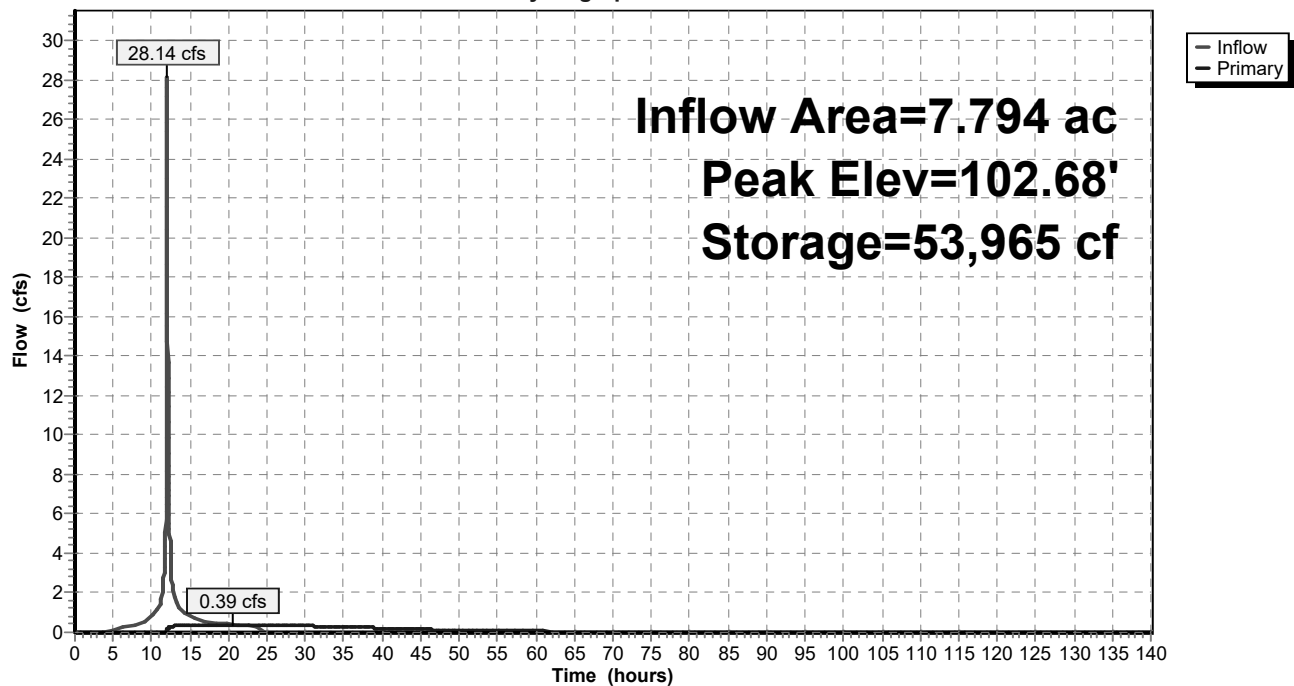
7,758.6 cy Field

4,537.2 cy Stone



Pond S-1: Subsurface Det

Hydrograph



C-DAT-13C4718-PROPOSED HCT-SOUTH WINDSOR-13C4718 24-hr S1 10-yr Rainfall=4.91"

Prepared by BL Companies, Inc.

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Time span=0.00-140.00 hrs, dt=0.01 hrs, 14001 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentPDA-1A: Area to Detention Runoff Area=505,152 sf 73.61% Impervious Runoff Depth=3.89"
Flow Length=1,379' Tc=15.9 min CN=91 Runoff=39.04 cfs 3.764 af

SubcatchmentPDA-1B: Area to Runoff Area=339,526 sf 85.88% Impervious Runoff Depth=4.22"
Tc=5.0 min CN=94 Runoff=45.45 cfs 2.741 af

SubcatchmentPDA-2A: Area to Wetland Runoff Area=470,105 sf 67.01% Impervious Runoff Depth=3.58"
Flow Length=1,211' Tc=8.0 min CN=88 Runoff=47.69 cfs 3.223 af

SubcatchmentPDA-2B: BLDG AREA Runoff Area=287,020 sf 85.22% Impervious Runoff Depth=4.22"
Tc=5.0 min CN=94 Runoff=38.42 cfs 2.317 af

SubcatchmentPDA-3: Area to Wetland DP-3 Runoff Area=47,497 sf 0.13% Impervious Runoff Depth=2.29"
Flow Length=347' Tc=9.3 min CN=74 Runoff=2.88 cfs 0.208 af

SubcatchmentPDA-4: Area to Wetland Runoff Area=119,565 sf 0.00% Impervious Runoff Depth=1.89"
Flow Length=808' Tc=18.1 min CN=69 Runoff=4.16 cfs 0.433 af

Reach DP-1: Detention Basin 7 Inflow=1.71 cfs 5.564 af
Outflow=1.71 cfs 5.564 af

Reach DP-2: Wetland DP-2 Inflow=79.63 cfs 6.181 af
Outflow=79.63 cfs 6.181 af

Reach DP-3: Wetland DP-3 Inflow=5.49 cfs 0.641 af
Outflow=5.49 cfs 0.641 af

Reach DP-4: Wetland DP-4 Inflow=4.16 cfs 0.433 af
Outflow=4.16 cfs 0.433 af

Reach SW 2-3: Wetland Swale 2-3 Avg. Flow Depth=0.57' Max Vel=7.49 fps Inflow=47.69 cfs 3.223 af
n=0.030 L=396.0' S=0.0556 '/' Capacity=1,486.07 cfs Outflow=47.06 cfs 3.223 af

Reach SW 4-3: SW 4-3 Avg. Flow Depth=0.13' Max Vel=3.00 fps Inflow=4.16 cfs 0.433 af
n=0.030 L=343.7' S=0.0541 '/' Capacity=1,466.70 cfs Outflow=4.12 cfs 0.433 af

Pond P-7: Dentention Basin 7 Peak Elev=95.95' Storage=140,381 cf Inflow=39.50 cfs 5.932 af
Outflow=1.71 cfs 5.564 af

Pond S-1: Subsurface Det Peak Elev=103.98' Storage=85,981 cf Inflow=45.45 cfs 2.741 af
Outflow=1.03 cfs 2.168 af

Total Runoff Area = 40.608 ac Runoff Volume = 12.685 af Average Runoff Depth = 3.75"
30.85% Pervious = 12.529 ac 69.15% Impervious = 28.078 ac

Summary for Subcatchment PDA-1A: Area to Detention Basin 7

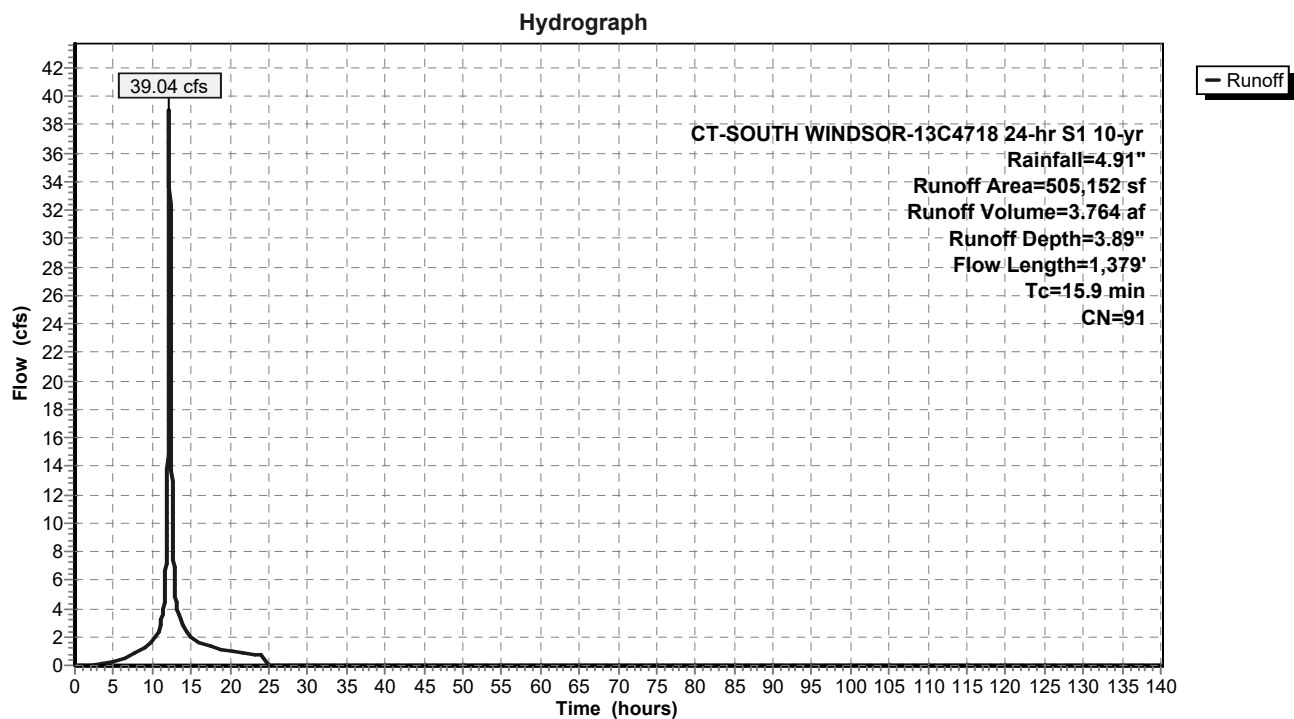
Runoff = 39.04 cfs @ 12.17 hrs, Volume= 3.764 af, Depth= 3.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
CT-SOUTH WINDSOR-13C4718 24-hr S1 10-yr Rainfall=4.91"

Area (sf)	CN	Description
82,516	98	Paved parking, HSG B
275,911	98	Paved parking, HSG C
12,219	98	Paved parking, HSG B
1,191	98	Paved parking, HSG C
78,680	69	50-75% Grass cover, Fair, HSG B
41,252	79	50-75% Grass cover, Fair, HSG C
10,535	69	50-75% Grass cover, Fair, HSG B
467	79	50-75% Grass cover, Fair, HSG C
0	85	Gravel roads, HSG B
389	89	Gravel roads, HSG C
1,992	85	Gravel roads, HSG B
0	89	Gravel roads, HSG C
505,152	91	Weighted Average
133,315		26.39% Pervious Area
371,837		73.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	100	0.0900	0.21		Sheet Flow, Grass: Dense n= 0.240 P2= 3.11"
2.7	249	0.0480	1.53		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
4.8	383	0.0078	1.32		Shallow Concentrated Flow, swale Grassed Waterway Kv= 15.0 fps
0.5	647	0.0400	20.80	65.35	Pipe Channel, 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.009 Corrugated PE, smooth interior
15.9	1,379	Total			

Subcatchment PDA-1A: Area to Detention Basin 7



Summary for Subcatchment PDA-1B: Area to Subsurface Detention System

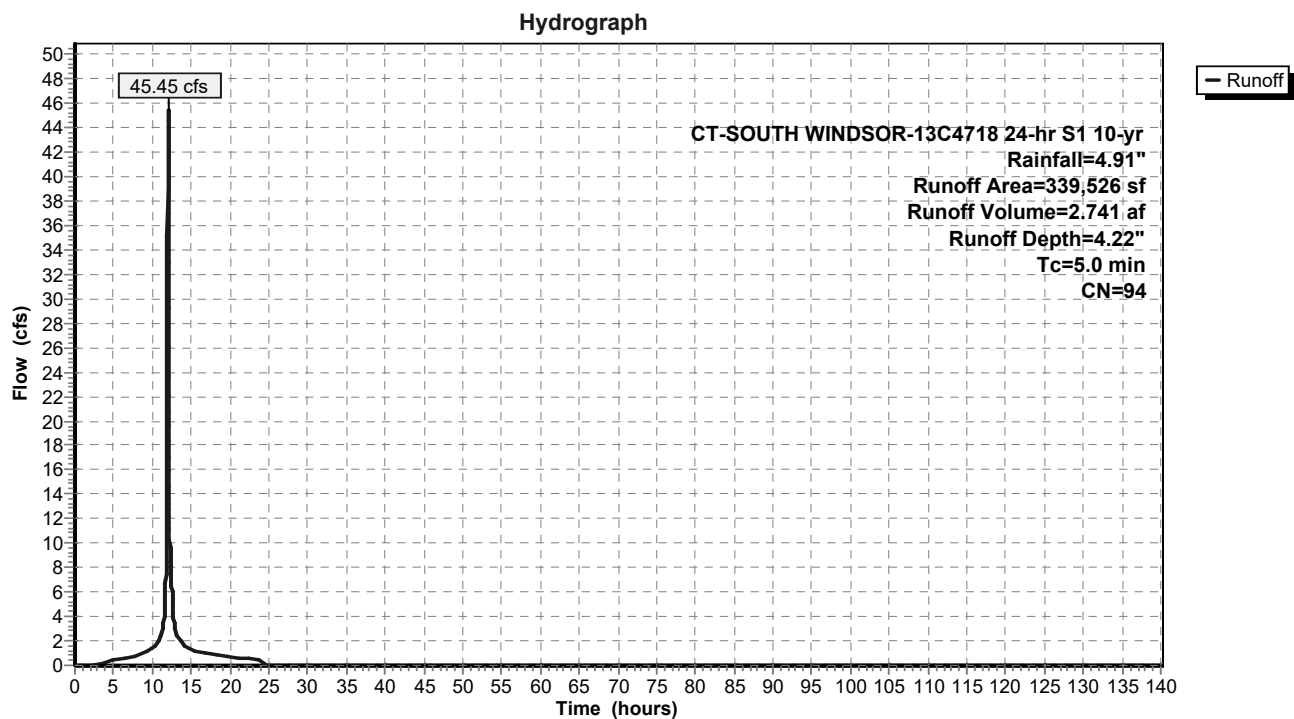
Runoff = 45.45 cfs @ 12.03 hrs, Volume= 2.741 af, Depth= 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
CT-SOUTH WINDSOR-13C4718 24-hr S1 10-yr Rainfall=4.91"

Area (sf)	CN	Description
269,483	98	Paved parking, HSG B
22,100	98	Paved parking, HSG C
0	98	Paved parking, HSG B
0	98	Paved parking, HSG C
43,113	69	50-75% Grass cover, Fair, HSG B
4,830	79	50-75% Grass cover, Fair, HSG C
0	69	50-75% Grass cover, Fair, HSG B
0	79	50-75% Grass cover, Fair, HSG C
0	85	Gravel roads, HSG B
0	89	Gravel roads, HSG C
0	85	Gravel roads, HSG B
0	89	Gravel roads, HSG C
339,526	94	Weighted Average
47,943		14.12% Pervious Area
291,583		85.88% Impervious Area

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

Subcatchment PDA-1B: Area to Subsurface Detention System



Summary for Subcatchment PDA-2A: Area to Wetland DP-2

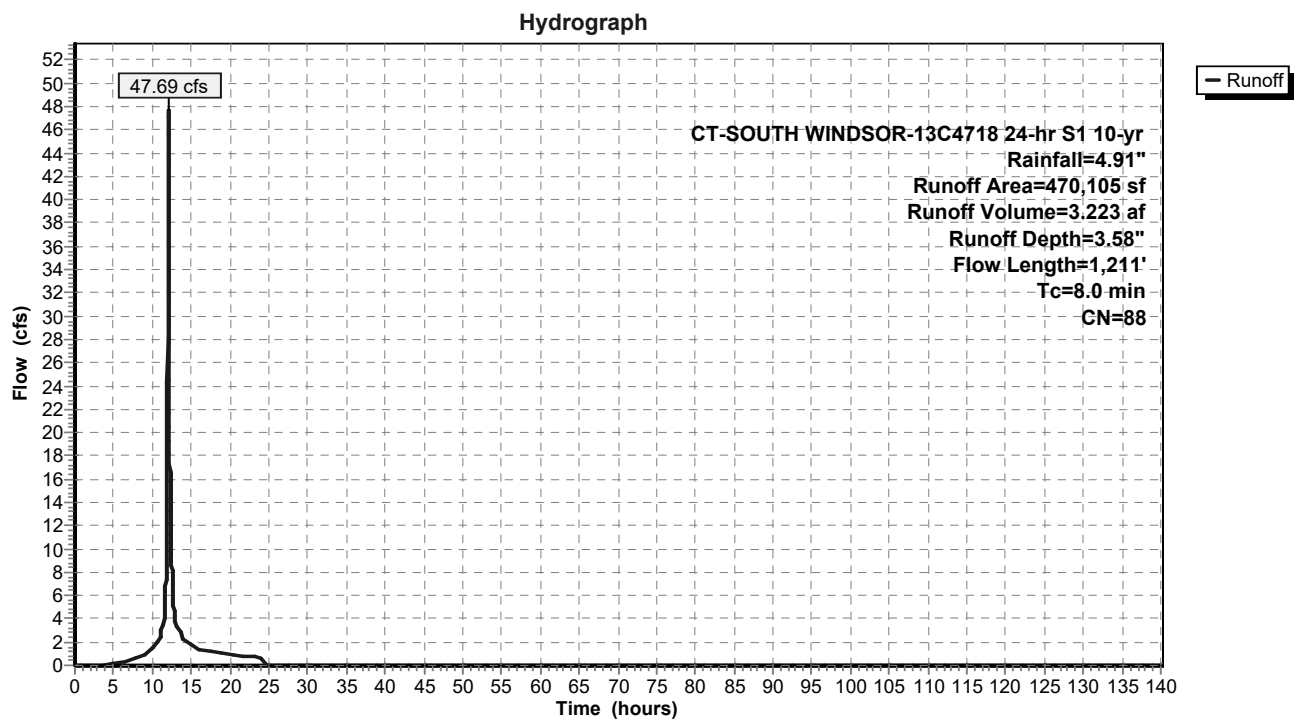
Runoff = 47.69 cfs @ 12.06 hrs, Volume= 3.223 af, Depth= 3.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 CT-SOUTH WINDSOR-13C4718 24-hr S1 10-yr Rainfall=4.91"

Area (sf)	CN	Description
304,766	98	Paved parking, HSG B
10,251	98	Paved parking, HSG C
0	98	Paved parking, HSG D
154,500	69	50-75% Grass cover, Fair, HSG B
588	79	50-75% Grass cover, Fair, HSG C
0	84	50-75% Grass cover, Fair, HSG D
470,105	88	Weighted Average
155,088		32.99% Pervious Area
315,017		67.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	74	0.1350	0.34		Sheet Flow, 1 Grass: Short n= 0.150 P2= 3.11"
0.4	26	0.0250	1.13		Sheet Flow, 2 Smooth surfaces n= 0.011 P2= 3.11"
1.1	216	0.0250	3.21		Shallow Concentrated Flow, 3 Paved Kv= 20.3 fps
1.7	744	0.0050	7.35	23.11	Pipe Channel, RCP_Round 24" 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.009 Corrugated PE, smooth interior
1.2	151	0.0200	2.12		Shallow Concentrated Flow, 4 Grassed Waterway Kv= 15.0 fps
8.0	1,211	Total			

Subcatchment PDA-2A: Area to Wetland DP-2



Summary for Subcatchment PDA-2B: BLDG AREA

Runoff = 38.42 cfs @ 12.03 hrs, Volume= 2.317 af, Depth= 4.22"

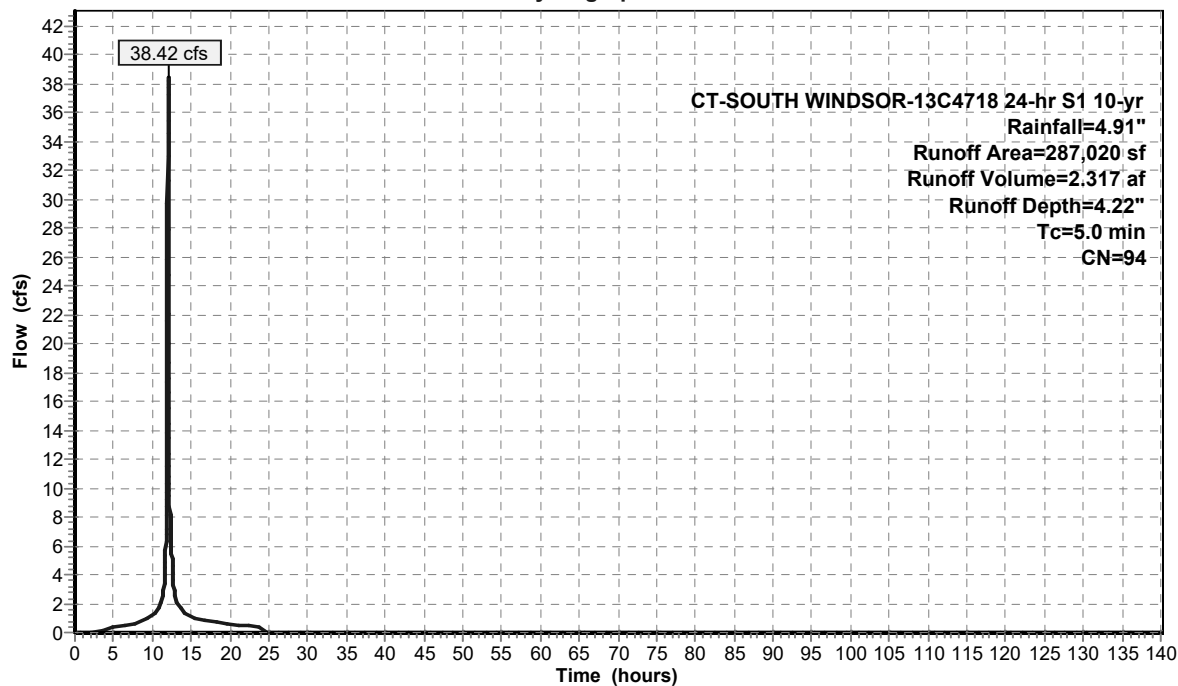
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
CT-SOUTH WINDSOR-13C4718 24-hr S1 10-yr Rainfall=4.91"

Area (sf)	CN	Description
240,618	98	Paved parking, HSG B
0	98	Paved parking, HSG C
3,973	98	Paved parking, HSG D
39,809	69	50-75% Grass cover, Fair, HSG B
0	79	50-75% Grass cover, Fair, HSG C
2,620	84	50-75% Grass cover, Fair, HSG D
287,020	94	Weighted Average
42,429		14.78% Pervious Area
244,591		85.22% Impervious Area

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

Subcatchment PDA-2B: BLDG AREA

Hydrograph



Summary for Subcatchment PDA-3: Area to Wetland DP-3

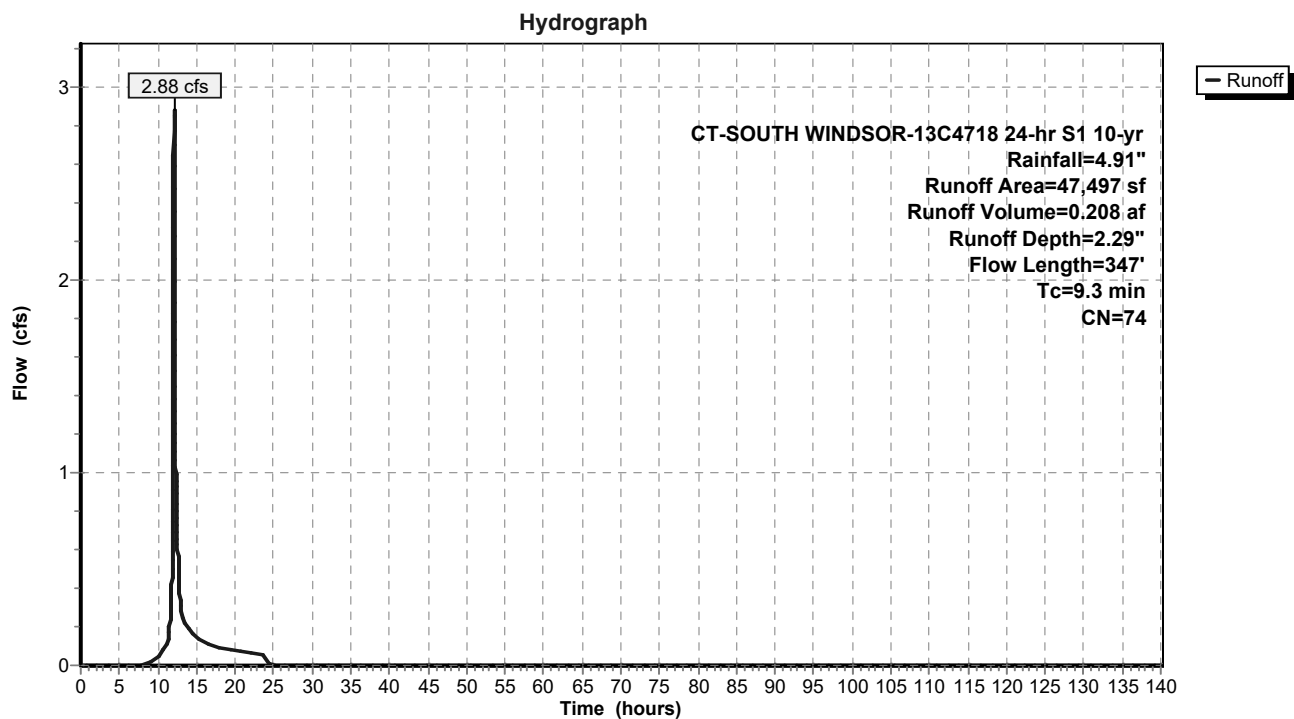
Runoff = 2.88 cfs @ 12.08 hrs, Volume= 0.208 af, Depth= 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
CT-SOUTH WINDSOR-13C4718 24-hr S1 10-yr Rainfall=4.91"

Area (sf)	CN	Description
63	98	Paved parking, HSG B
0	98	Paved parking, HSG C
0	98	Paved parking, HSG D
20,845	69	50-75% Grass cover, Fair, HSG B
0	79	50-75% Grass cover, Fair, HSG C
7,654	84	50-75% Grass cover, Fair, HSG D
2,047	56	Brush, Fair, HSG B
16,888	77	Brush, Fair, HSG D
47,497	74	Weighted Average
47,434		99.87% Pervious Area
63		0.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	100	0.0400	0.22		Sheet Flow, 1
					Grass: Short n= 0.150 P2= 3.11"
0.6	125	0.0480	3.29		Shallow Concentrated Flow, 2
					Grassed Waterway Kv= 15.0 fps
1.2	122	0.1060	1.63		Shallow Concentrated Flow, 3
					Woodland Kv= 5.0 fps
9.3	347	Total			

Subcatchment PDA-3: Area to Wetland DP-3



Summary for Subcatchment PDA-4: Area to Wetland DP-4

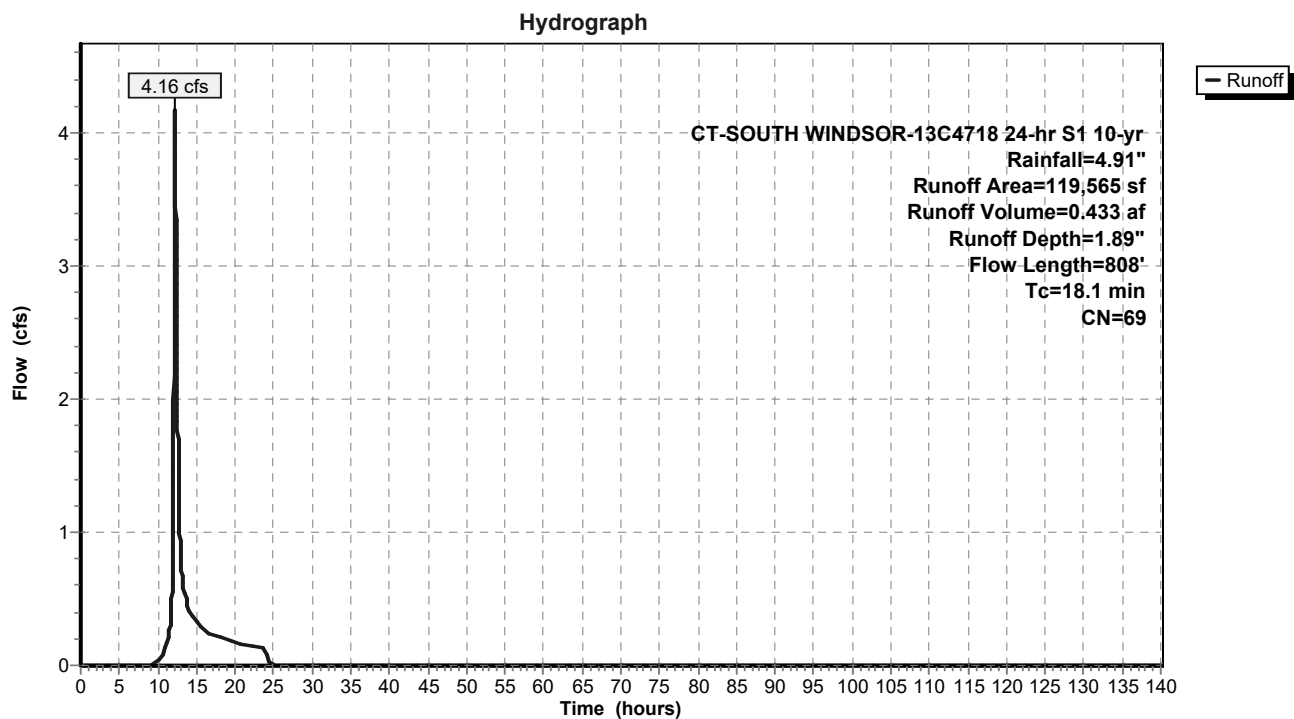
Runoff = 4.16 cfs @ 12.21 hrs, Volume= 0.433 af, Depth= 1.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
CT-SOUTH WINDSOR-13C4718 24-hr S1 10-yr Rainfall=4.91"

Area (sf)	CN	Description
0	98	Paved parking, HSG B
0	98	Paved parking, HSG C
0	98	Paved parking, HSG D
57,679	69	50-75% Grass cover, Fair, HSG B
26,837	79	50-75% Grass cover, Fair, HSG C
0	84	50-75% Grass cover, Fair, HSG D
25,526	56	Brush, Fair, HSG B
9,523	70	Brush, Fair, HSG C
119,565	69	Weighted Average
119,565		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	100	0.0800	0.29		Sheet Flow, 1 Grass: Short n= 0.150 P2= 3.11"
0.2	39	0.0800	4.24		Shallow Concentrated Flow, 2 Grassed Waterway Kv= 15.0 fps
12.1	595	0.0270	0.82		Shallow Concentrated Flow, 3 Woodland Kv= 5.0 fps
0.1	74	0.0270	19.82	194.19	Channel Flow, 4 Area= 9.8 sf Perim= 15.7' r= 0.62' n= 0.009 Corrugated PE, smooth interior
18.1	808	Total			

Subcatchment PDA-4: Area to Wetland DP-4

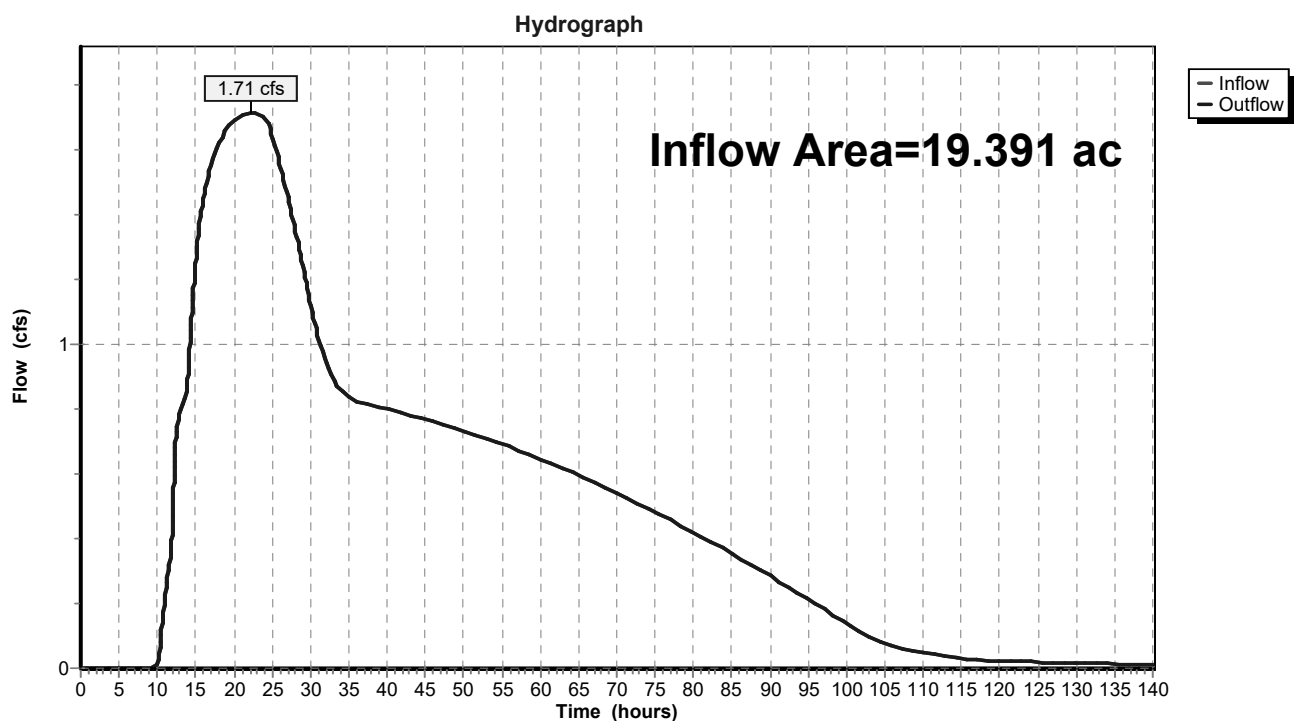


Summary for Reach DP-1: Detention Basin 7

Inflow Area = 19.391 ac, 78.54% Impervious, Inflow Depth > 3.44" for 10-yr event
Inflow = 1.71 cfs @ 22.32 hrs, Volume= 5.564 af
Outflow = 1.71 cfs @ 22.32 hrs, Volume= 5.564 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Reach DP-1: Detention Basin 7

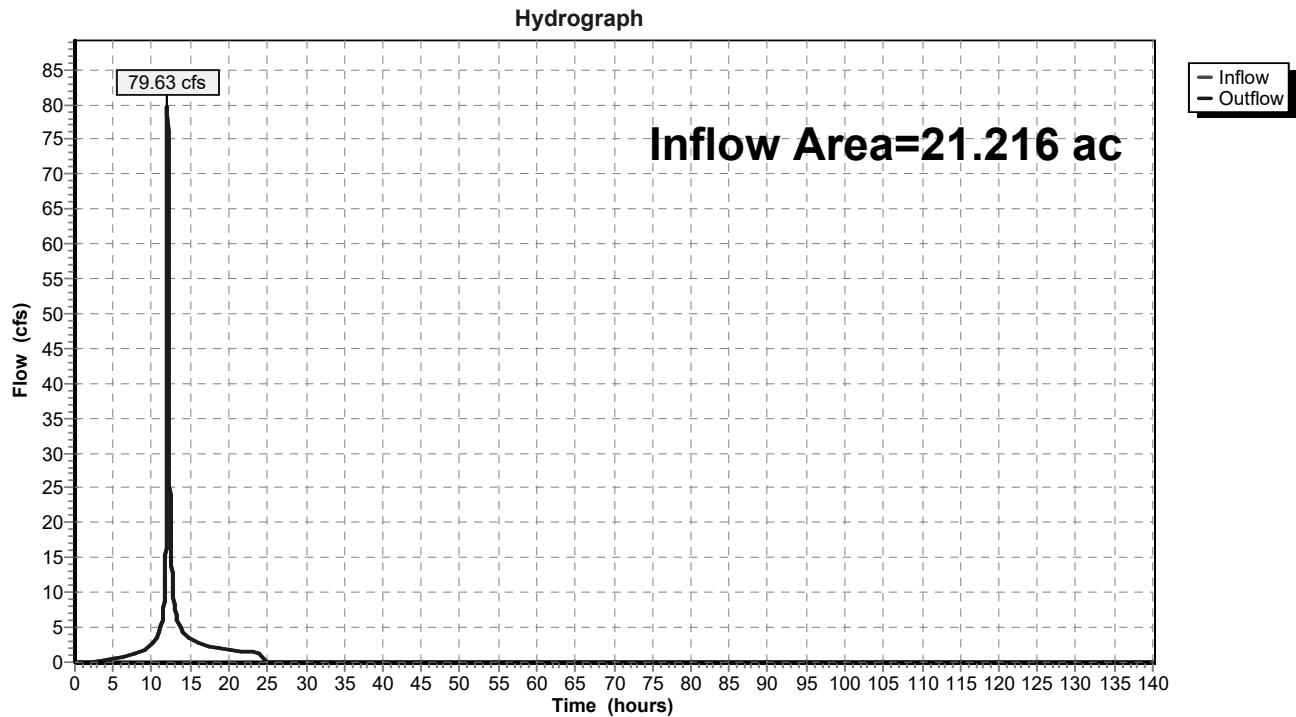


Summary for Reach DP-2: Wetland DP-2

Inflow Area = 21.216 ac, 60.56% Impervious, Inflow Depth = 3.50" for 10-yr event
Inflow = 79.63 cfs @ 12.05 hrs, Volume= 6.181 af
Outflow = 79.63 cfs @ 12.05 hrs, Volume= 6.181 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Reach DP-2: Wetland DP-2

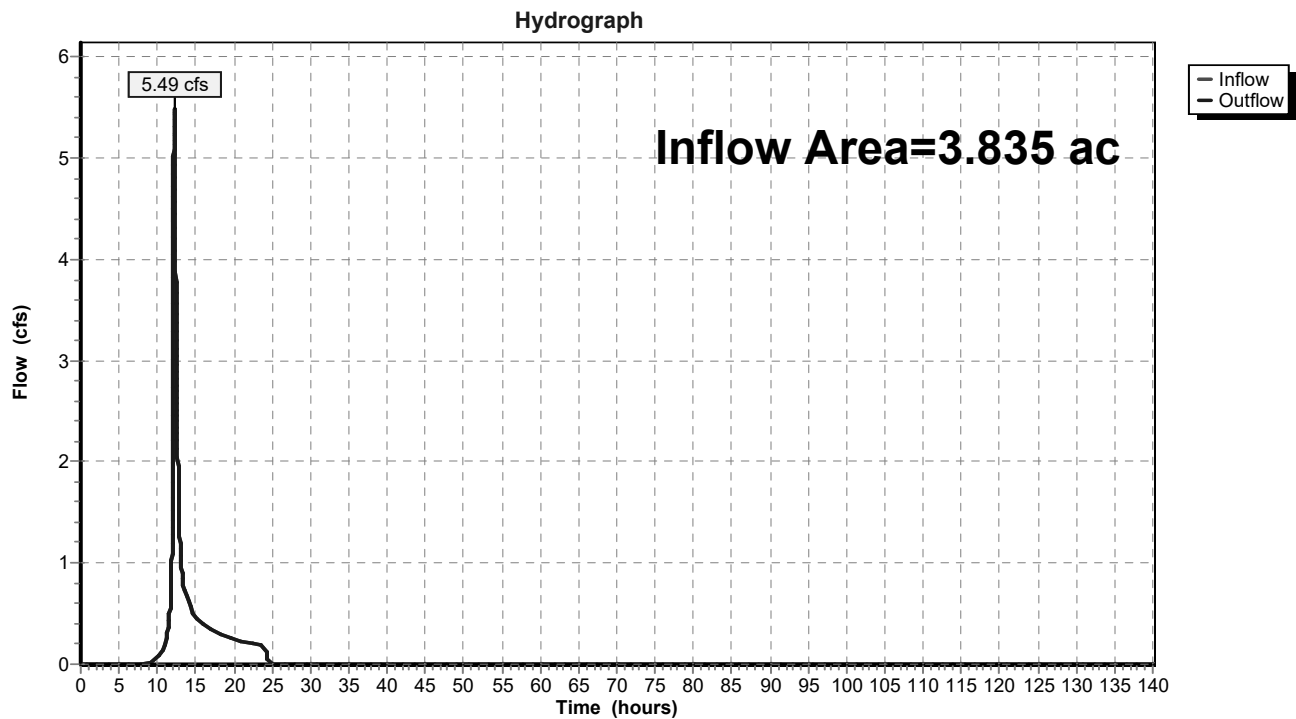


Summary for Reach DP-3: Wetland DP-3

Inflow Area = 3.835 ac, 0.04% Impervious, Inflow Depth = 2.01" for 10-yr event
Inflow = 5.49 cfs @ 12.22 hrs, Volume= 0.641 af
Outflow = 5.49 cfs @ 12.22 hrs, Volume= 0.641 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Reach DP-3: Wetland DP-3

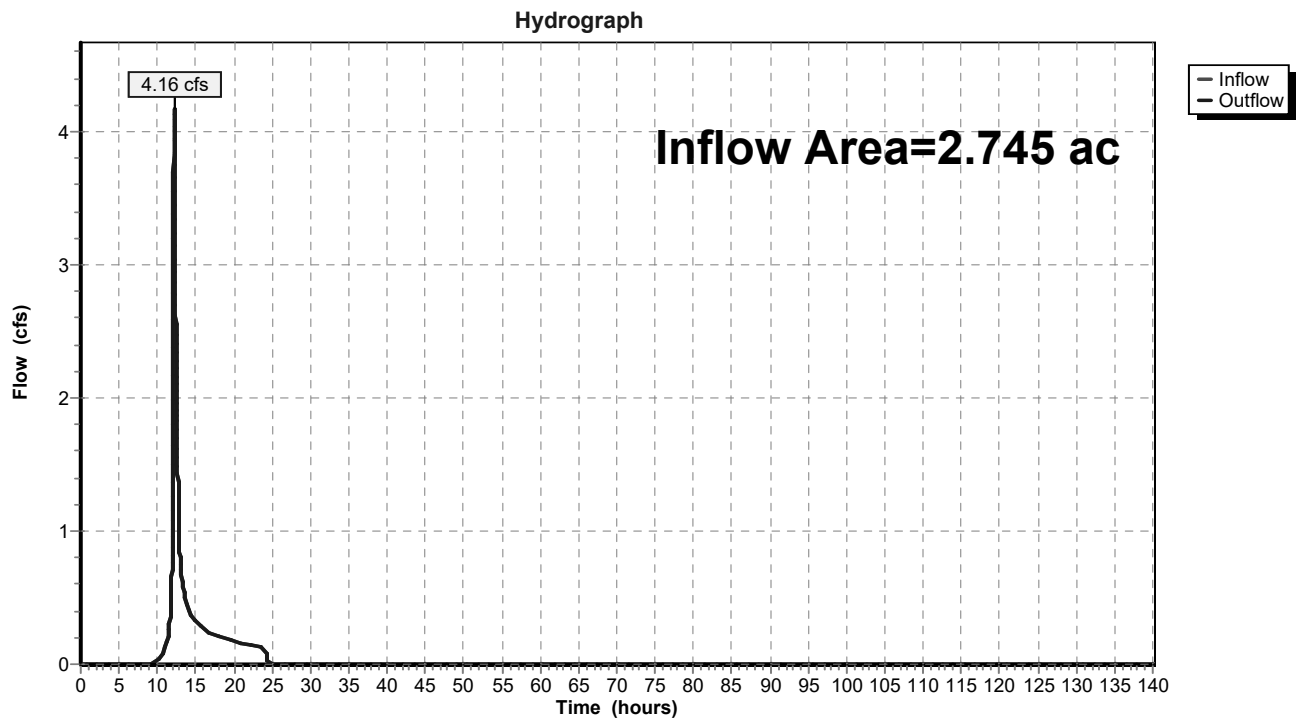


Summary for Reach DP-4: Wetland DP-4

Inflow Area = 2.745 ac, 0.00% Impervious, Inflow Depth = 1.89" for 10-yr event
Inflow = 4.16 cfs @ 12.21 hrs, Volume= 0.433 af
Outflow = 4.16 cfs @ 12.21 hrs, Volume= 0.433 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Reach DP-4: Wetland DP-4



Summary for Reach SW 2-3: Wetland Swale 2-3

Inflow Area = 10.792 ac, 67.01% Impervious, Inflow Depth = 3.58" for 10-yr event
 Inflow = 47.69 cfs @ 12.06 hrs, Volume= 3.223 af
 Outflow = 47.06 cfs @ 12.08 hrs, Volume= 3.223 af, Atten= 1%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 Max. Velocity= 7.49 fps, Min. Travel Time= 0.9 min
 Avg. Velocity = 1.95 fps, Avg. Travel Time= 3.4 min

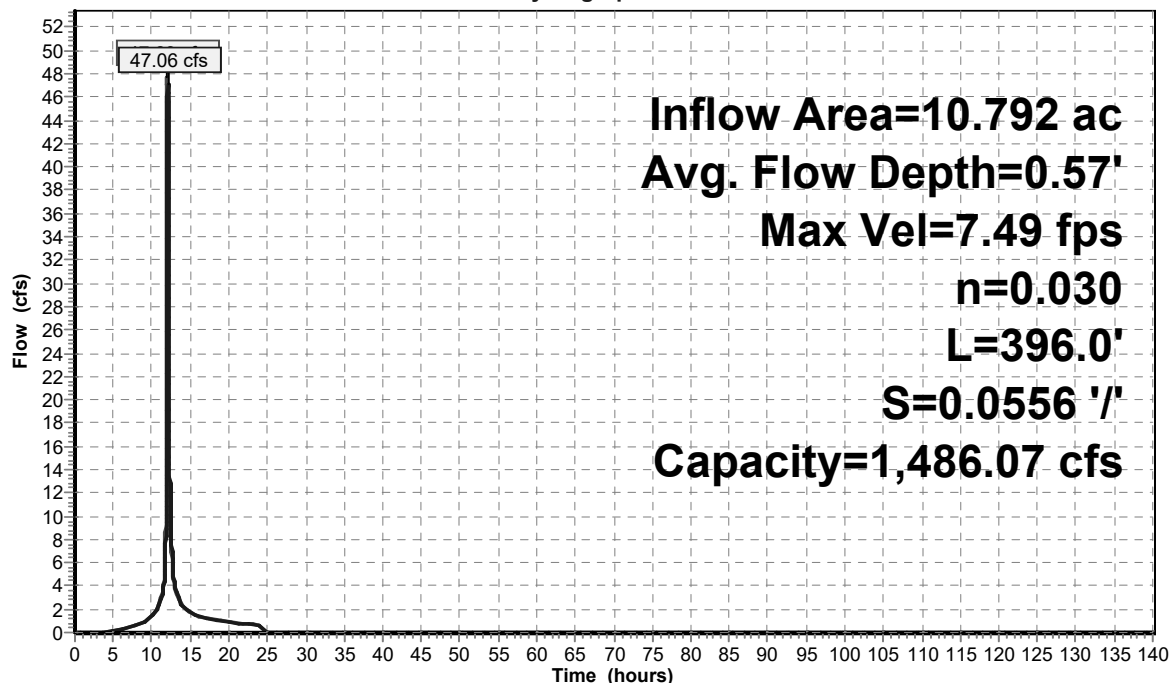
Peak Storage= 2,494 cf @ 12.07 hrs
 Average Depth at Peak Storage= 0.57'
 Bank-Full Depth= 4.00' Flow Area= 67.2 sf, Capacity= 1,486.07 cfs

10.00' x 4.00' deep channel, n= 0.030 Earth, grassed & winding
 Side Slope Z-value= 1.7 '/' Top Width= 23.60'
 Length= 396.0' Slope= 0.0556 '/'
 Inlet Invert= 127.00', Outlet Invert= 105.00'



Reach SW 2-3: Wetland Swale 2-3

Hydrograph



Summary for Reach SW 4-3: SW 4-3

Inflow Area = 2.745 ac, 0.00% Impervious, Inflow Depth = 1.89" for 10-yr event
Inflow = 4.16 cfs @ 12.21 hrs, Volume= 0.433 af
Outflow = 4.12 cfs @ 12.26 hrs, Volume= 0.433 af, Atten= 1%, Lag= 3.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.00 fps, Min. Travel Time= 1.9 min
Avg. Velocity= 1.40 fps, Avg. Travel Time= 4.1 min

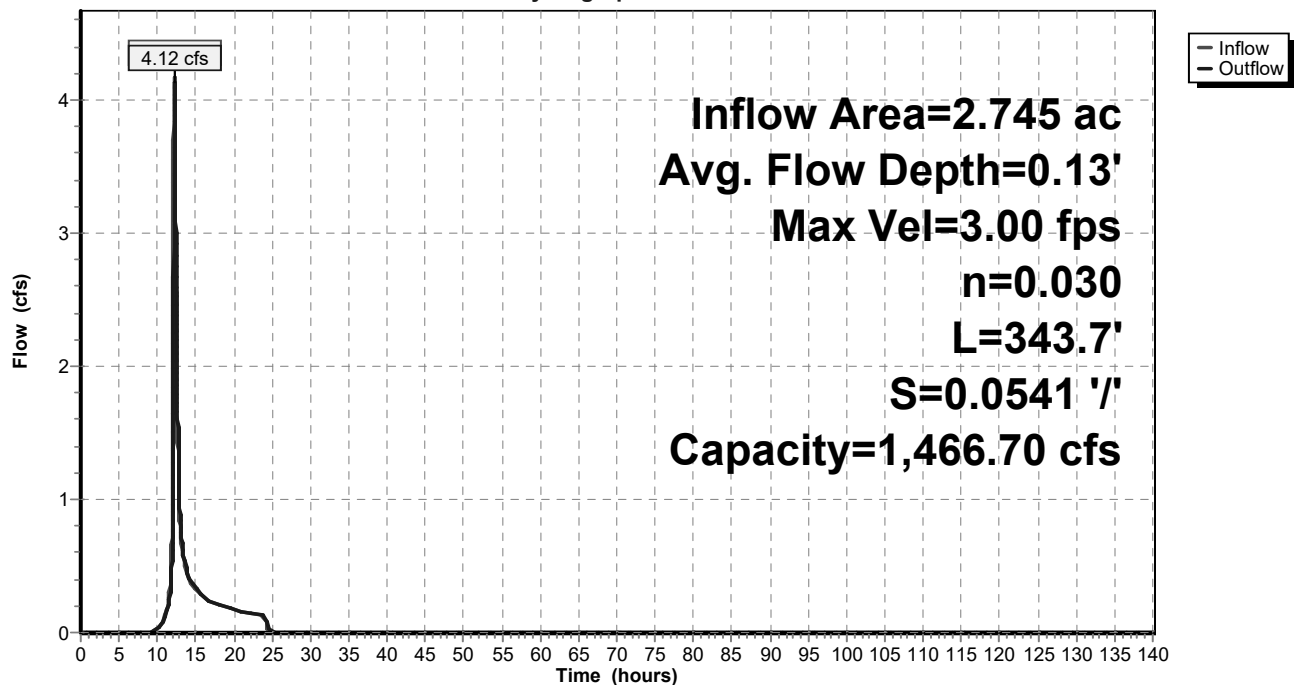
Peak Storage= 473 cf @ 12.23 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 4.00' Flow Area= 67.2 sf, Capacity= 1,466.70 cfs

10.00' x 4.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 1.7 '/' Top Width= 23.60'
Length= 343.7' Slope= 0.0541 '/'
Inlet Invert= 123.60', Outlet Invert= 105.00'



Reach SW 4-3: SW 4-3

Hydrograph



Summary for Pond P-7: Dentention Basin 7

Inflow Area = 19.391 ac, 78.54% Impervious, Inflow Depth = 3.67" for 10-yr event
 Inflow = 39.50 cfs @ 12.17 hrs, Volume= 5.932 af
 Outflow = 1.71 cfs @ 22.32 hrs, Volume= 5.564 af, Atten= 96%, Lag= 609.1 min
 Primary = 1.71 cfs @ 22.32 hrs, Volume= 5.564 af

Routing by Stor-Ind method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 Peak Elev= 95.95' @ 22.32 hrs Surf.Area= 30,403 sf Storage= 140,381 cf

Plug-Flow detention time= 1,607.0 min calculated for 5.564 af (94% of inflow)
 Center-of-Mass det. time= 1,427.6 min (2,662.5 - 1,235.0)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	280,770 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

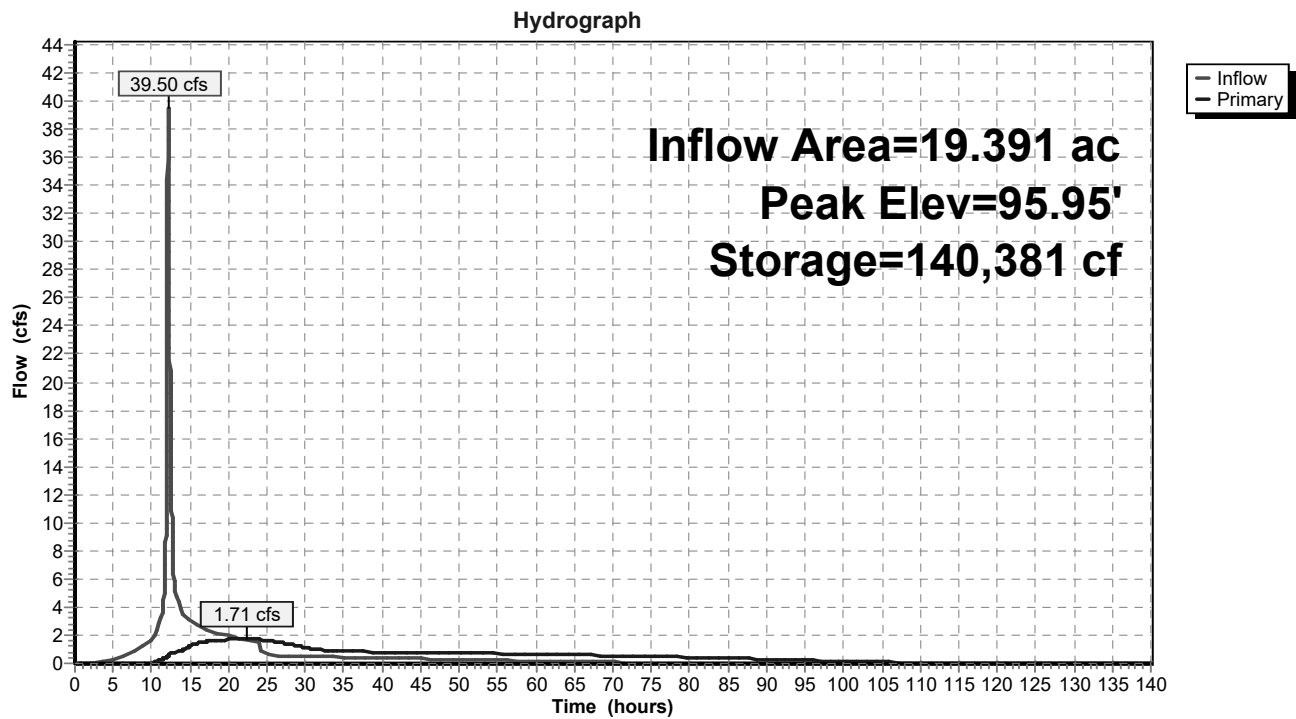
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.00	12,621	0	0
92.00	22,814	35,435	35,435
94.00	26,576	49,390	84,825
96.00	30,501	57,077	141,902
98.00	34,640	65,141	207,043
100.00	39,087	73,727	280,770

Device	Routing	Invert	Outlet Devices
#1	Primary	88.00'	18.0" Round Culvert L= 71.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 88.00' / 84.50' S= 0.0493 ' / Cc= 0.900 n= 0.009 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	91.00'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	95.00'	6.0" Vert. Orifice/Grate C= 0.600
#4	Device 1	98.00'	6.0" Vert. Orifice/Grate C= 0.600
#5	Device 1	99.00'	36.0" x 78.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.71 cfs @ 22.32 hrs HW=95.95' (Free Discharge)

1=Culvert (Passes 1.71 cfs of 22.83 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.92 cfs @ 10.53 fps)
 3=Orifice/Grate (Orifice Controls 0.79 cfs @ 4.03 fps)
 4=Orifice/Grate (Controls 0.00 cfs)
 5=Orifice/Grate (Controls 0.00 cfs)

Pond P-7: Dentention Basin 7



Summary for Pond S-1: Subsurface Det

Inflow Area = 7.794 ac, 85.88% Impervious, Inflow Depth = 4.22" for 10-yr event
 Inflow = 45.45 cfs @ 12.03 hrs, Volume= 2.741 af
 Outflow = 1.03 cfs @ 16.27 hrs, Volume= 2.168 af, Atten= 98%, Lag= 254.9 min
 Primary = 1.03 cfs @ 16.27 hrs, Volume= 2.168 af

Routing by Stor-Ind method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 Peak Elev= 103.98' @ 16.27 hrs Surf.Area= 31,034 sf Storage= 85,981 cf

Plug-Flow detention time= 1,293.5 min calculated for 2.168 af (79% of inflow)
 Center-of-Mass det. time= 1,201.0 min (1,980.0 - 779.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	100.25'	49,002 cf	228.33'W x 135.92'L x 6.75'H Field A 209,482 cf Overall - 86,977 cf Embedded = 122,504 cf x 40.0% Voids
#2A	101.00'	86,977 cf	ADS_StormTech MC-4500 +Cap x 800 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 25 Rows of 32 Chambers Cap Storage= +35.7 cf x 2 x 25 rows = 1,785.0 cf
		135,979 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	101.50'	24.0" Round Culvert L= 200.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.50' / 99.50' S= 0.0100 ' /' Cc= 0.900 n= 0.009 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	101.55'	3.0" W x 4.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	103.40'	5.0" W x 4.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	106.00'	4.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=1.03 cfs @ 16.27 hrs HW=103.98' (Free Discharge)

- 1=Culvert (Passes 1.03 cfs of 18.43 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.60 cfs @ 7.25 fps)
- 3=Orifice/Grate (Orifice Controls 0.43 cfs @ 3.09 fps)
- 4=Broad-Crested Rectangular Weir(Controls 0.00 cfs)

Pond S-1: Subsurface Det - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-4500 +Cap (ADS StormTech®MC-4500 with cap volume)

Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf

Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap

Cap Storage= +35.7 cf x 2 x 25 rows = 1,785.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

32 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 133.92' Row Length +12.0" End Stone x 2 =
135.92' Base Length

25 Rows x 100.0" Wide + 9.0" Spacing x 24 + 12.0" Side Stone x 2 = 228.33' Base Width

9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

800 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 25 Rows = 86,977.3 cf Chamber Storage

209,481.6 cf Field - 86,977.3 cf Chambers = 122,504.2 cf Stone x 40.0% Voids = 49,001.7 cf Stone
Storage

Chamber Storage + Stone Storage = 135,979.0 cf = 3.122 af

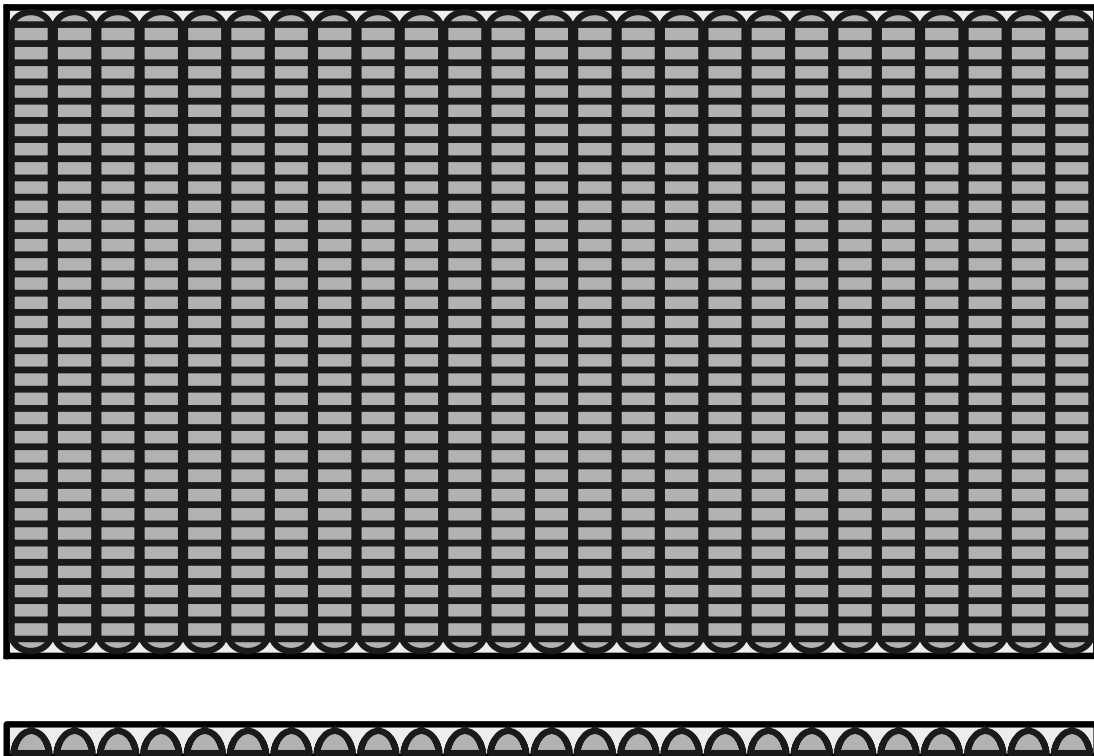
Overall Storage Efficiency = 64.9%

Overall System Size = 135.92' x 228.33' x 6.75'

800 Chambers

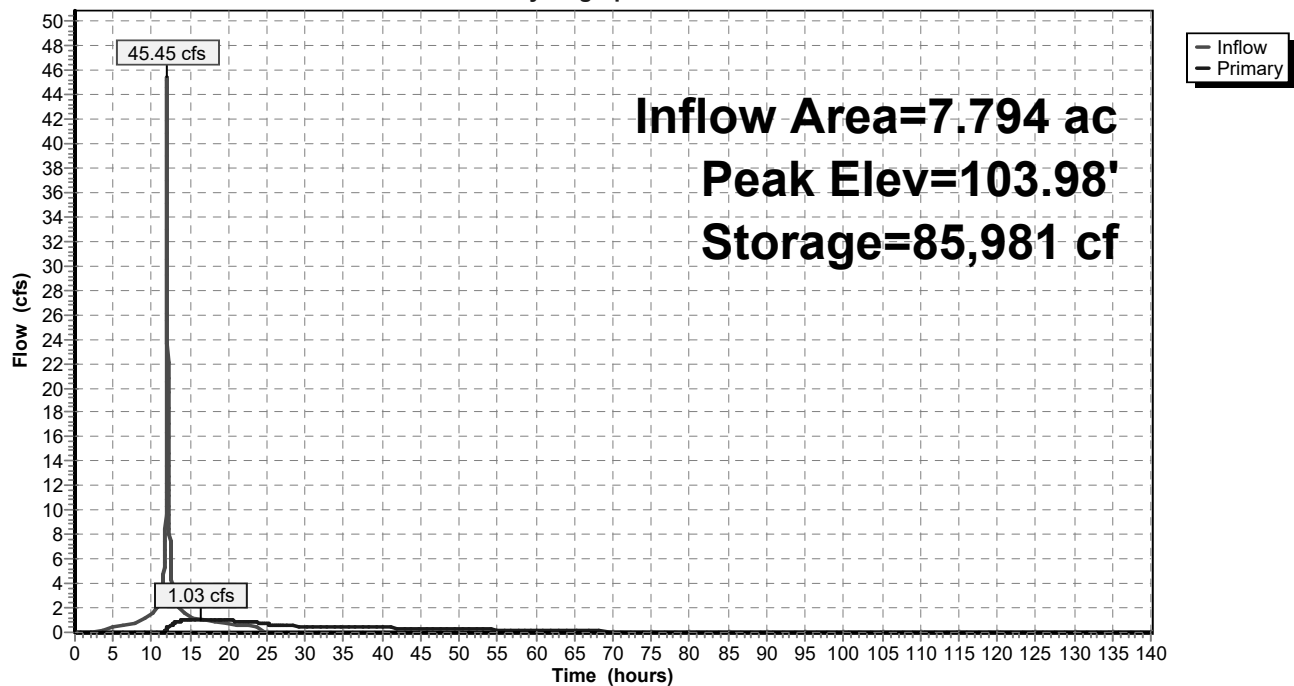
7,758.6 cy Field

4,537.2 cy Stone



Pond S-1: Subsurface Det

Hydrograph



C-DAT-13C4718-PROPOSED HCT-SOUTH WINDSOR-13C4718 24-hr S1 25-yr Rainfall=6.03"

Prepared by BL Companies, Inc.

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Time span=0.00-140.00 hrs, dt=0.01 hrs, 14001 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentPDA-1A: Area to Detention Runoff Area=505,152 sf 73.61% Impervious Runoff Depth=4.99"
Flow Length=1,379' Tc=15.9 min CN=91 Runoff=48.88 cfs 4.819 af

SubcatchmentPDA-1B: Area to Runoff Area=339,526 sf 85.88% Impervious Runoff Depth=5.33"
Tc=5.0 min CN=94 Runoff=56.09 cfs 3.460 af

SubcatchmentPDA-2A: Area to Wetland Runoff Area=470,105 sf 67.01% Impervious Runoff Depth=4.65"
Flow Length=1,211' Tc=8.0 min CN=88 Runoff=60.69 cfs 4.186 af

SubcatchmentPDA-2B: BLDG AREA Runoff Area=287,020 sf 85.22% Impervious Runoff Depth=5.33"
Tc=5.0 min CN=94 Runoff=47.42 cfs 2.925 af

SubcatchmentPDA-3: Area to Wetland DP-3 Runoff Area=47,497 sf 0.13% Impervious Runoff Depth=3.21"
Flow Length=347' Tc=9.3 min CN=74 Runoff=4.03 cfs 0.292 af

SubcatchmentPDA-4: Area to Wetland Runoff Area=119,565 sf 0.00% Impervious Runoff Depth=2.74"
Flow Length=808' Tc=18.1 min CN=69 Runoff=6.10 cfs 0.626 af

Reach DP-1: Detention Basin 7 Inflow=2.30 cfs 7.335 af
Outflow=2.30 cfs 7.335 af

Reach DP-2: Wetland DP-2 Inflow=101.82 cfs 8.028 af
Outflow=101.82 cfs 8.028 af

Reach DP-3: Wetland DP-3 Inflow=8.04 cfs 0.918 af
Outflow=8.04 cfs 0.918 af

Reach DP-4: Wetland DP-4 Inflow=6.10 cfs 0.626 af
Outflow=6.10 cfs 0.626 af

Reach SW 2-3: Wetland Swale 2-3 Avg. Flow Depth=0.66' Max Vel=8.16 fps Inflow=60.69 cfs 4.186 af
n=0.030 L=396.0' S=0.0556 '/' Capacity=1,486.07 cfs Outflow=59.98 cfs 4.186 af

Reach SW 4-3: SW 4-3 Avg. Flow Depth=0.17' Max Vel=3.47 fps Inflow=6.10 cfs 0.626 af
n=0.030 L=343.7' S=0.0541 '/' Capacity=1,466.70 cfs Outflow=6.06 cfs 0.626 af

Pond P-7: Dentention Basin 7 Peak Elev=97.07' Storage=175,878 cf Inflow=49.74 cfs 7.705 af
Outflow=2.30 cfs 7.335 af

Pond S-1: Subsurface Det Peak Elev=104.85' Storage=104,765 cf Inflow=56.09 cfs 3.460 af
Outflow=1.47 cfs 2.886 af

Total Runoff Area = 40.608 ac Runoff Volume = 16.307 af Average Runoff Depth = 4.82"
30.85% Pervious = 12.529 ac 69.15% Impervious = 28.078 ac

Summary for Subcatchment PDA-1A: Area to Detention Basin 7

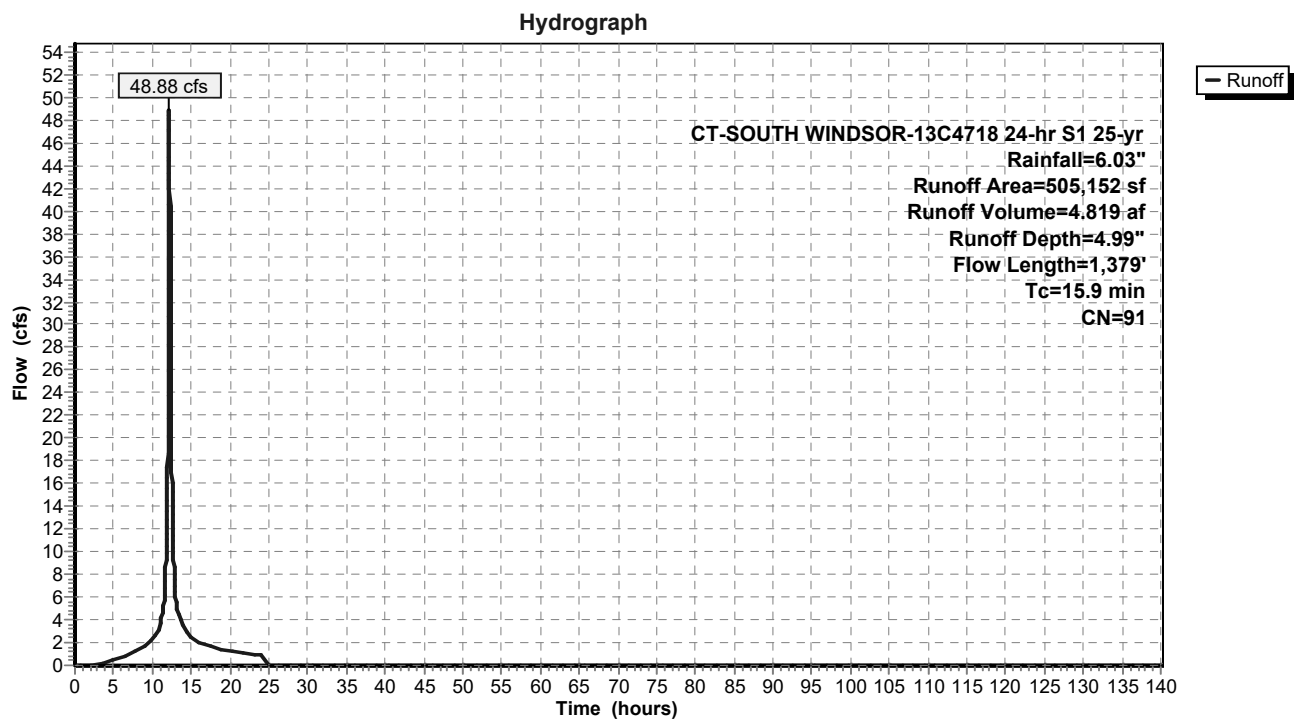
Runoff = 48.88 cfs @ 12.17 hrs, Volume= 4.819 af, Depth= 4.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
CT-SOUTH WINDSOR-13C4718 24-hr S1 25-yr Rainfall=6.03"

Area (sf)	CN	Description
82,516	98	Paved parking, HSG B
275,911	98	Paved parking, HSG C
12,219	98	Paved parking, HSG B
1,191	98	Paved parking, HSG C
78,680	69	50-75% Grass cover, Fair, HSG B
41,252	79	50-75% Grass cover, Fair, HSG C
10,535	69	50-75% Grass cover, Fair, HSG B
467	79	50-75% Grass cover, Fair, HSG C
0	85	Gravel roads, HSG B
389	89	Gravel roads, HSG C
1,992	85	Gravel roads, HSG B
0	89	Gravel roads, HSG C
505,152	91	Weighted Average
133,315		26.39% Pervious Area
371,837		73.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	100	0.0900	0.21		Sheet Flow, Grass: Dense n= 0.240 P2= 3.11"
2.7	249	0.0480	1.53		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
4.8	383	0.0078	1.32		Shallow Concentrated Flow, swale Grassed Waterway Kv= 15.0 fps
0.5	647	0.0400	20.80	65.35	Pipe Channel, 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.009 Corrugated PE, smooth interior
15.9	1,379	Total			

Subcatchment PDA-1A: Area to Detention Basin 7



Summary for Subcatchment PDA-1B: Area to Subsurface Detention System

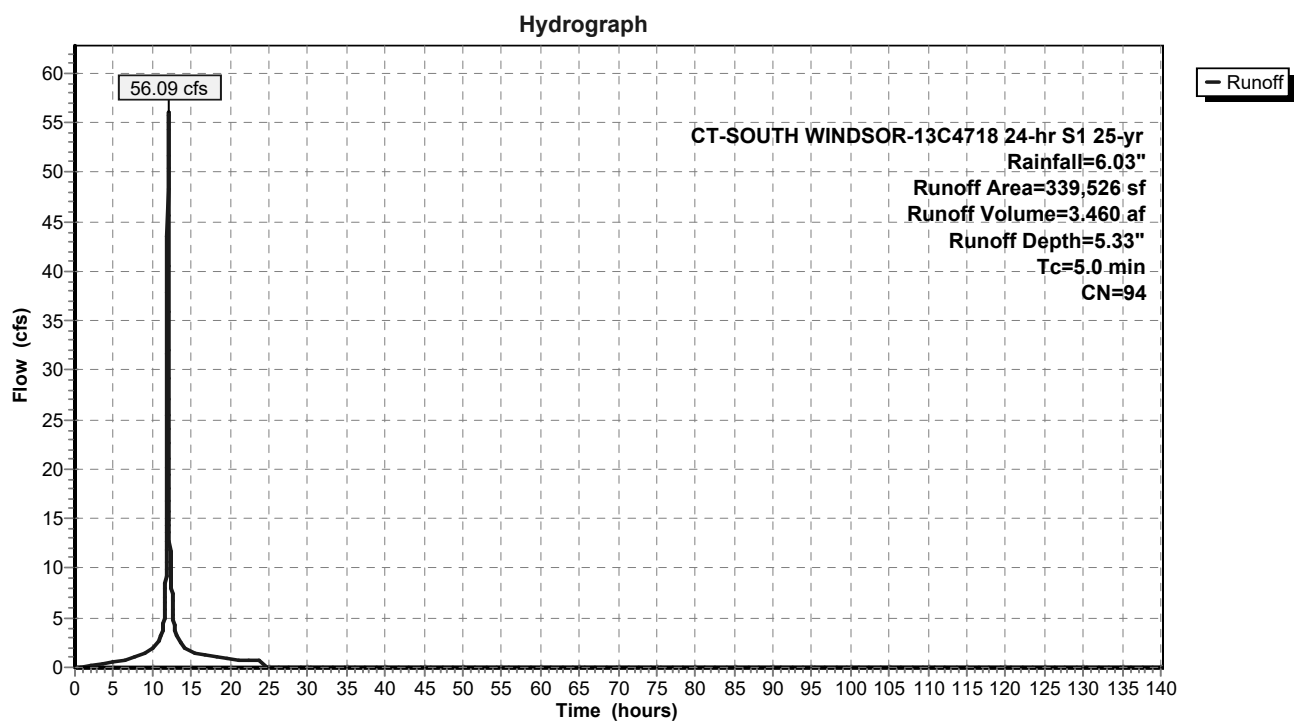
Runoff = 56.09 cfs @ 12.03 hrs, Volume= 3.460 af, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
CT-SOUTH WINDSOR-13C4718 24-hr S1 25-yr Rainfall=6.03"

Area (sf)	CN	Description
269,483	98	Paved parking, HSG B
22,100	98	Paved parking, HSG C
0	98	Paved parking, HSG B
0	98	Paved parking, HSG C
43,113	69	50-75% Grass cover, Fair, HSG B
4,830	79	50-75% Grass cover, Fair, HSG C
0	69	50-75% Grass cover, Fair, HSG B
0	79	50-75% Grass cover, Fair, HSG C
0	85	Gravel roads, HSG B
0	89	Gravel roads, HSG C
0	85	Gravel roads, HSG B
0	89	Gravel roads, HSG C
339,526	94	Weighted Average
47,943		14.12% Pervious Area
291,583		85.88% Impervious Area

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

Subcatchment PDA-1B: Area to Subsurface Detention System



Summary for Subcatchment PDA-2A: Area to Wetland DP-2

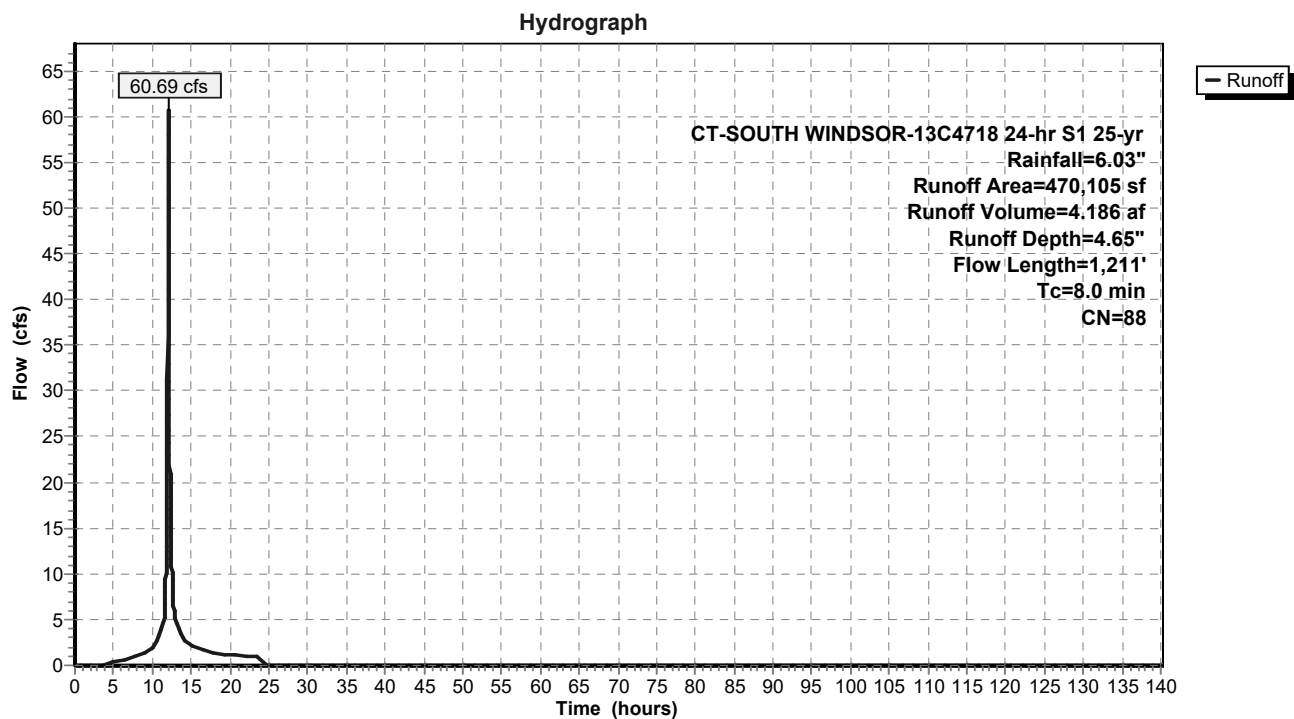
Runoff = 60.69 cfs @ 12.06 hrs, Volume= 4.186 af, Depth= 4.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
CT-SOUTH WINDSOR-13C4718 24-hr S1 25-yr Rainfall=6.03"

Area (sf)	CN	Description
304,766	98	Paved parking, HSG B
10,251	98	Paved parking, HSG C
0	98	Paved parking, HSG D
154,500	69	50-75% Grass cover, Fair, HSG B
588	79	50-75% Grass cover, Fair, HSG C
0	84	50-75% Grass cover, Fair, HSG D
470,105	88	Weighted Average
155,088		32.99% Pervious Area
315,017		67.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	74	0.1350	0.34		Sheet Flow, 1 Grass: Short n= 0.150 P2= 3.11"
0.4	26	0.0250	1.13		Sheet Flow, 2 Smooth surfaces n= 0.011 P2= 3.11"
1.1	216	0.0250	3.21		Shallow Concentrated Flow, 3 Paved Kv= 20.3 fps
1.7	744	0.0050	7.35	23.11	Pipe Channel, RCP_Round 24" 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.009 Corrugated PE, smooth interior
1.2	151	0.0200	2.12		Shallow Concentrated Flow, 4 Grassed Waterway Kv= 15.0 fps
8.0	1,211	Total			

Subcatchment PDA-2A: Area to Wetland DP-2



Summary for Subcatchment PDA-2B: BLDG AREA

Runoff = 47.42 cfs @ 12.03 hrs, Volume= 2.925 af, Depth= 5.33"

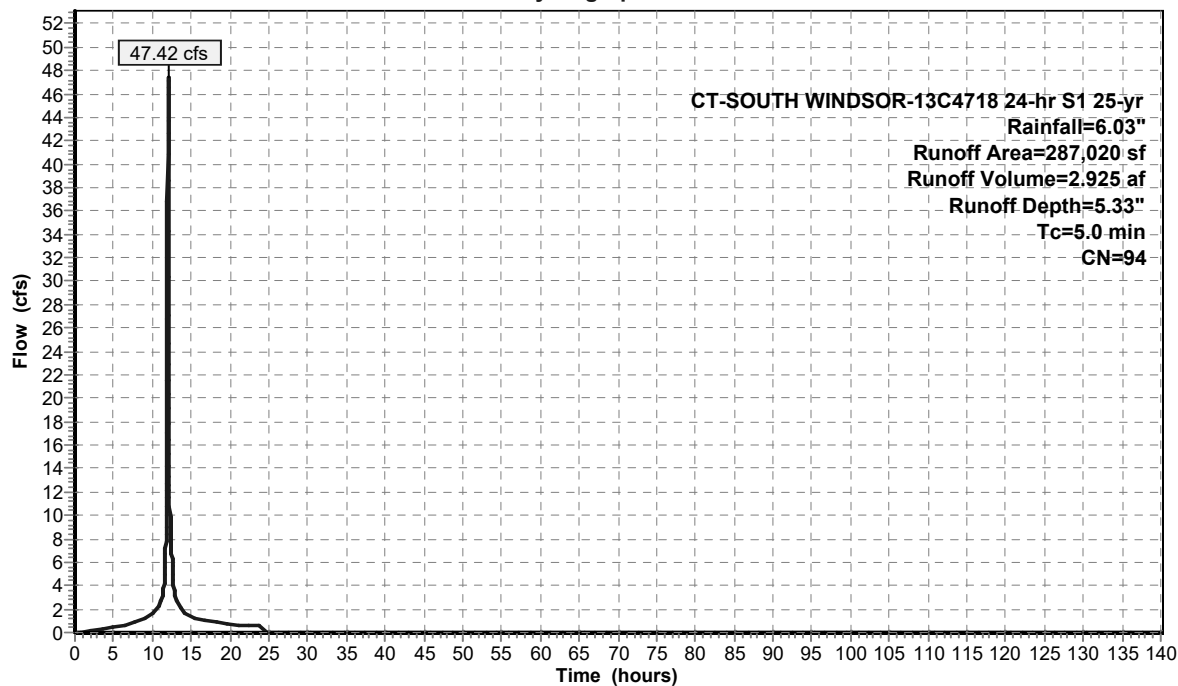
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
CT-SOUTH WINDSOR-13C4718 24-hr S1 25-yr Rainfall=6.03"

Area (sf)	CN	Description
240,618	98	Paved parking, HSG B
0	98	Paved parking, HSG C
3,973	98	Paved parking, HSG D
39,809	69	50-75% Grass cover, Fair, HSG B
0	79	50-75% Grass cover, Fair, HSG C
2,620	84	50-75% Grass cover, Fair, HSG D
287,020	94	Weighted Average
42,429		14.78% Pervious Area
244,591		85.22% Impervious Area

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

Subcatchment PDA-2B: BLDG AREA

Hydrograph



Summary for Subcatchment PDA-3: Area to Wetland DP-3

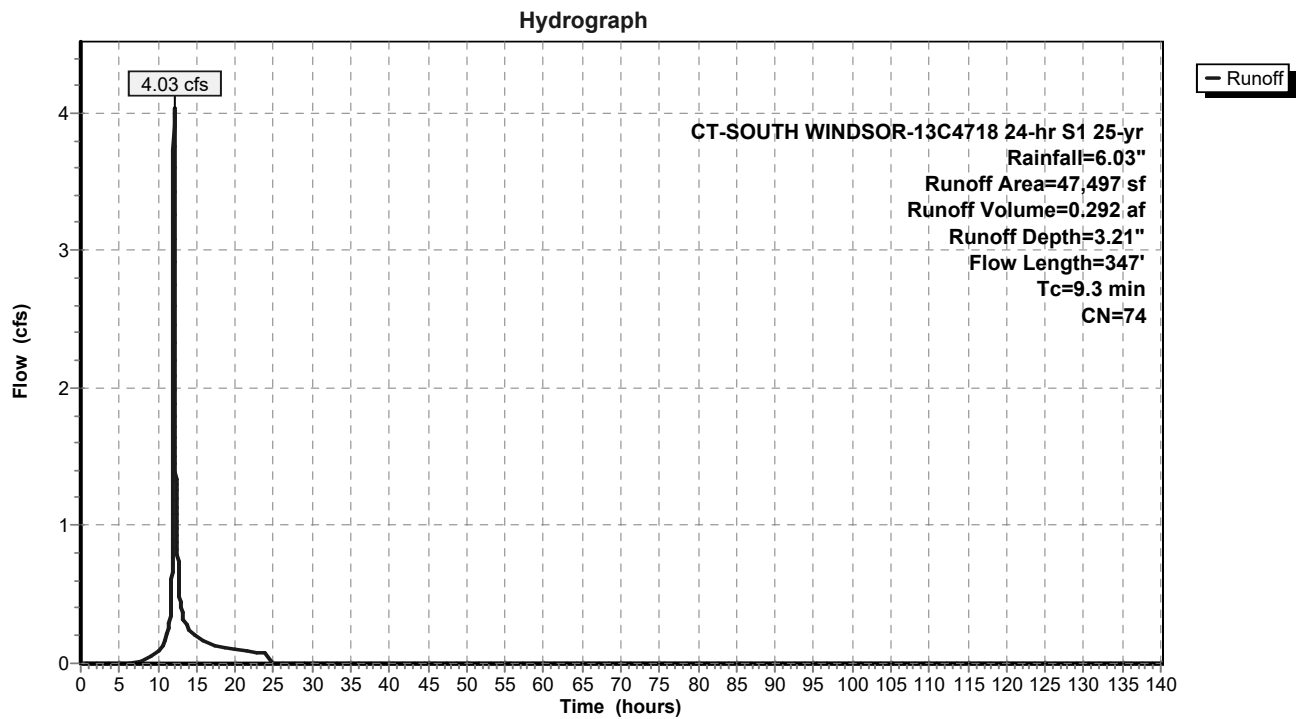
Runoff = 4.03 cfs @ 12.08 hrs, Volume= 0.292 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
CT-SOUTH WINDSOR-13C4718 24-hr S1 25-yr Rainfall=6.03"

Area (sf)	CN	Description
63	98	Paved parking, HSG B
0	98	Paved parking, HSG C
0	98	Paved parking, HSG D
20,845	69	50-75% Grass cover, Fair, HSG B
0	79	50-75% Grass cover, Fair, HSG C
7,654	84	50-75% Grass cover, Fair, HSG D
2,047	56	Brush, Fair, HSG B
16,888	77	Brush, Fair, HSG D
47,497	74	Weighted Average
47,434		99.87% Pervious Area
63		0.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	100	0.0400	0.22		Sheet Flow, 1
					Grass: Short n= 0.150 P2= 3.11"
0.6	125	0.0480	3.29		Shallow Concentrated Flow, 2
					Grassed Waterway Kv= 15.0 fps
1.2	122	0.1060	1.63		Shallow Concentrated Flow, 3
					Woodland Kv= 5.0 fps
9.3	347	Total			

Subcatchment PDA-3: Area to Wetland DP-3



Summary for Subcatchment PDA-4: Area to Wetland DP-4

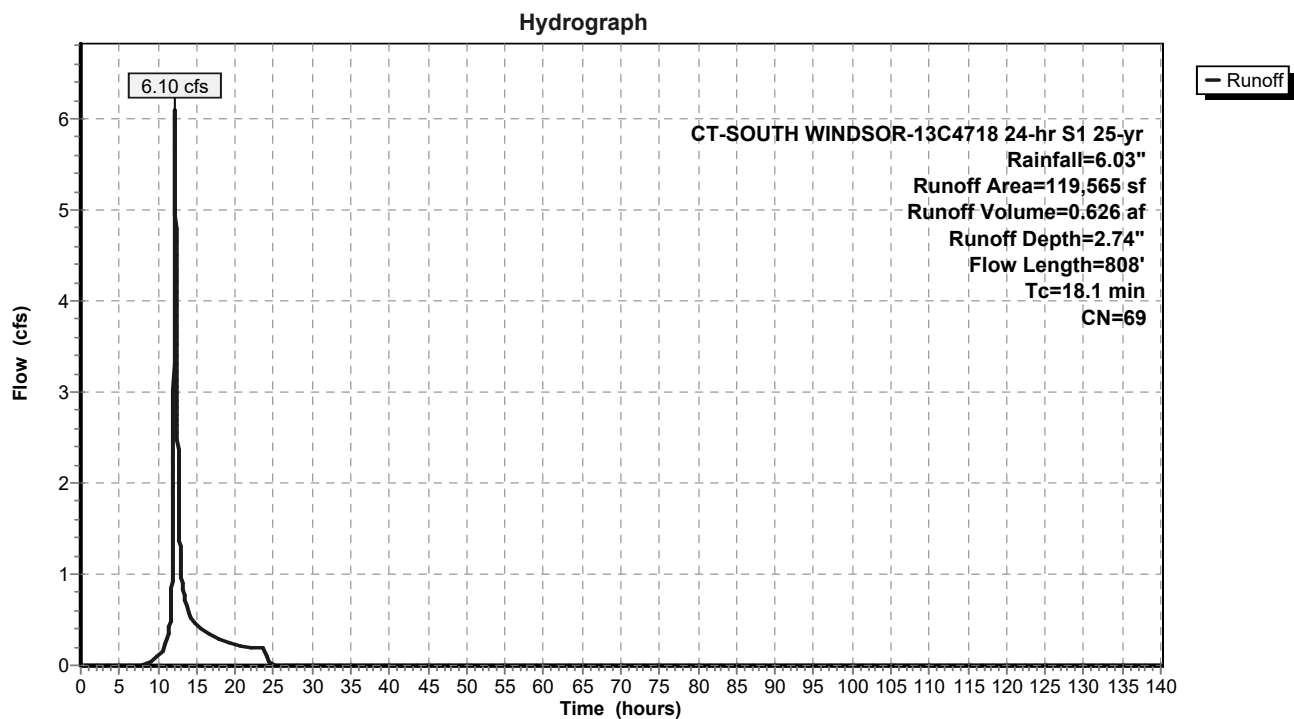
Runoff = 6.10 cfs @ 12.21 hrs, Volume= 0.626 af, Depth= 2.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
CT-SOUTH WINDSOR-13C4718 24-hr S1 25-yr Rainfall=6.03"

Area (sf)	CN	Description
0	98	Paved parking, HSG B
0	98	Paved parking, HSG C
0	98	Paved parking, HSG D
57,679	69	50-75% Grass cover, Fair, HSG B
26,837	79	50-75% Grass cover, Fair, HSG C
0	84	50-75% Grass cover, Fair, HSG D
25,526	56	Brush, Fair, HSG B
9,523	70	Brush, Fair, HSG C
119,565	69	Weighted Average
119,565		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	100	0.0800	0.29		Sheet Flow, 1 Grass: Short n= 0.150 P2= 3.11"
0.2	39	0.0800	4.24		Shallow Concentrated Flow, 2 Grassed Waterway Kv= 15.0 fps
12.1	595	0.0270	0.82		Shallow Concentrated Flow, 3 Woodland Kv= 5.0 fps
0.1	74	0.0270	19.82	194.19	Channel Flow, 4 Area= 9.8 sf Perim= 15.7' r= 0.62' n= 0.009 Corrugated PE, smooth interior
18.1	808	Total			

Subcatchment PDA-4: Area to Wetland DP-4

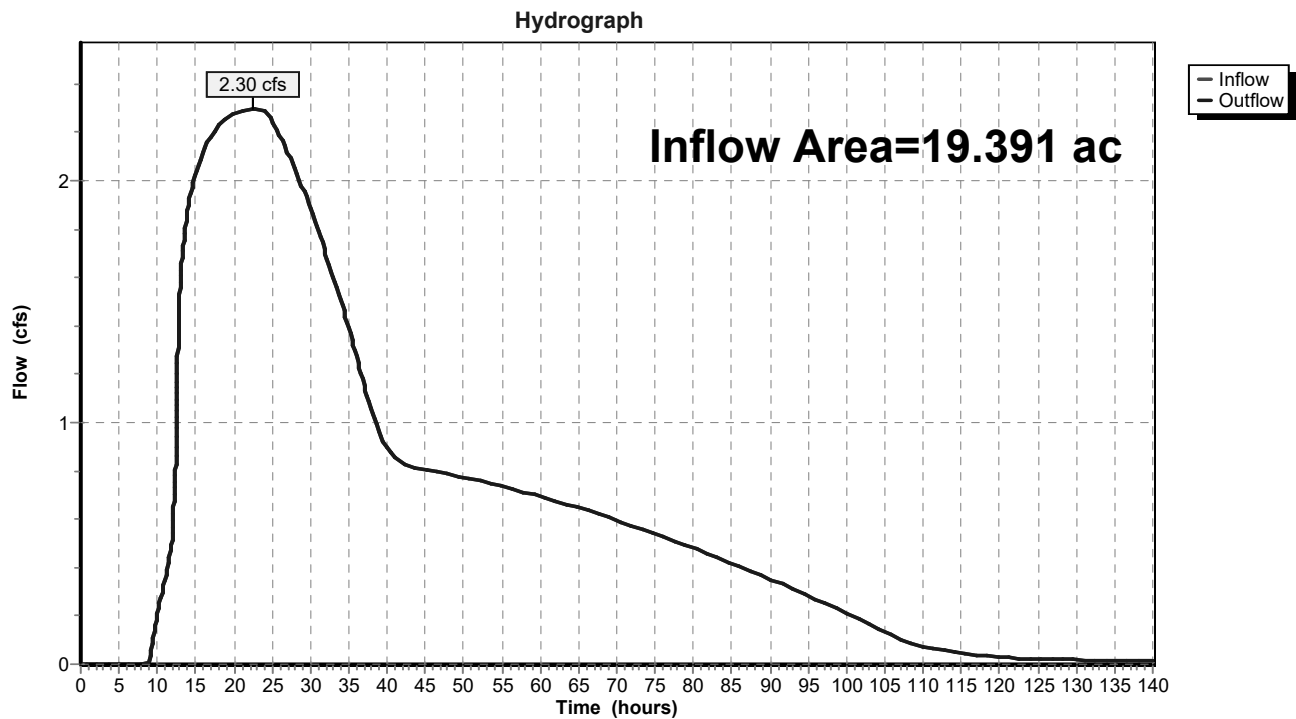


Summary for Reach DP-1: Detention Basin 7

Inflow Area = 19.391 ac, 78.54% Impervious, Inflow Depth > 4.54" for 25-yr event
Inflow = 2.30 cfs @ 22.39 hrs, Volume= 7.335 af
Outflow = 2.30 cfs @ 22.39 hrs, Volume= 7.335 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Reach DP-1: Detention Basin 7

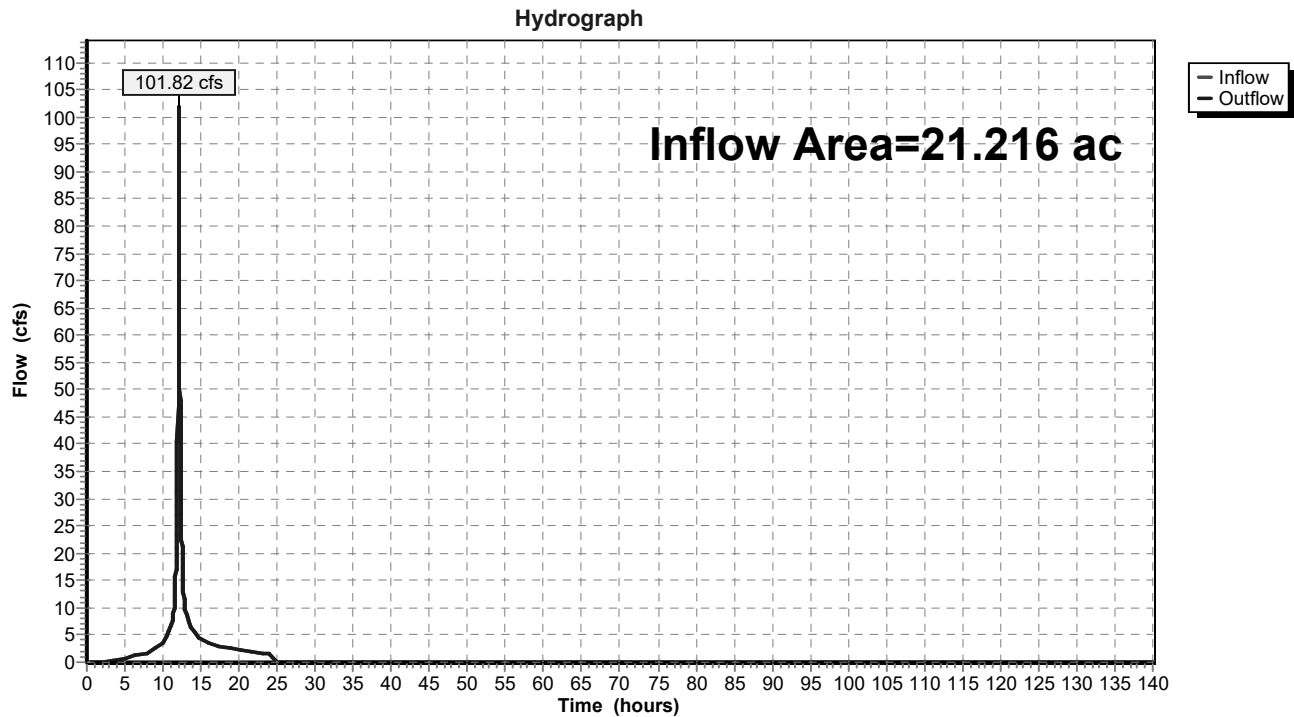


Summary for Reach DP-2: Wetland DP-2

Inflow Area = 21.216 ac, 60.56% Impervious, Inflow Depth = 4.54" for 25-yr event
Inflow = 101.82 cfs @ 12.05 hrs, Volume= 8.028 af
Outflow = 101.82 cfs @ 12.05 hrs, Volume= 8.028 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Reach DP-2: Wetland DP-2

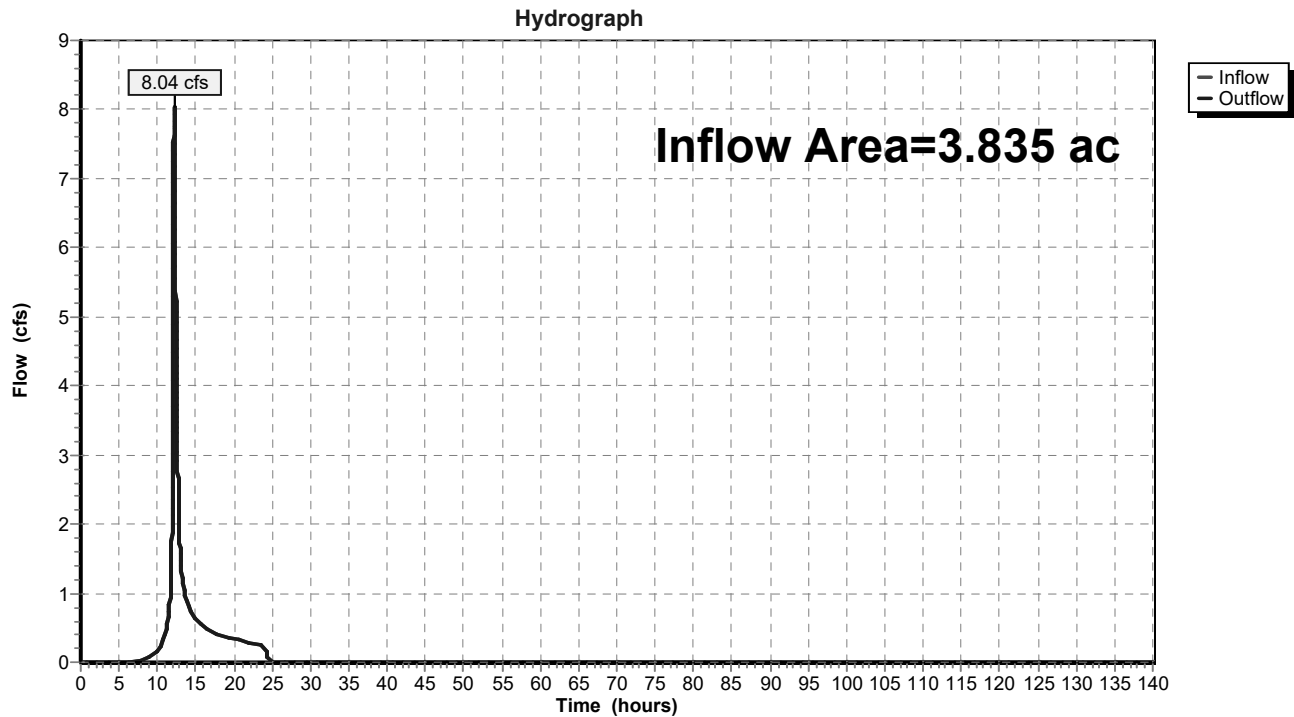


Summary for Reach DP-3: Wetland DP-3

Inflow Area = 3.835 ac, 0.04% Impervious, Inflow Depth = 2.87" for 25-yr event
Inflow = 8.04 cfs @ 12.21 hrs, Volume= 0.918 af
Outflow = 8.04 cfs @ 12.21 hrs, Volume= 0.918 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Reach DP-3: Wetland DP-3

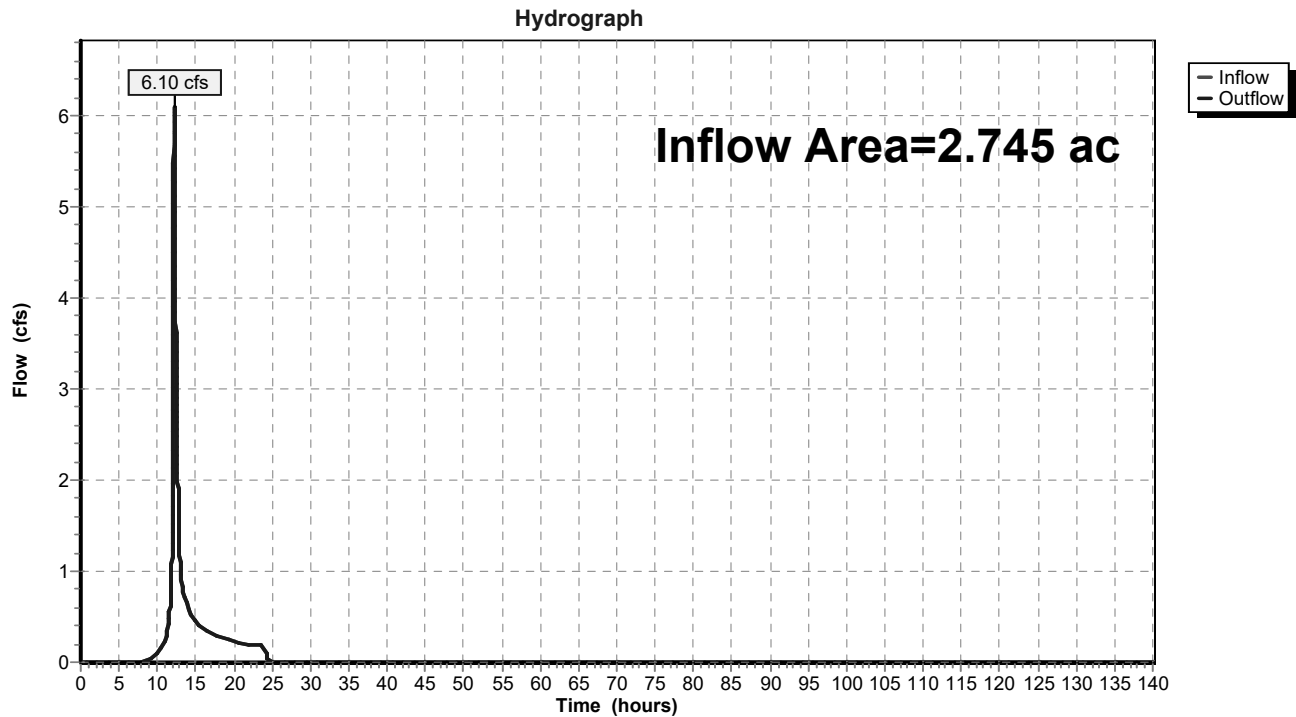


Summary for Reach DP-4: Wetland DP-4

Inflow Area = 2.745 ac, 0.00% Impervious, Inflow Depth = 2.74" for 25-yr event
Inflow = 6.10 cfs @ 12.21 hrs, Volume= 0.626 af
Outflow = 6.10 cfs @ 12.21 hrs, Volume= 0.626 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Reach DP-4: Wetland DP-4



Summary for Reach SW 2-3: Wetland Swale 2-3

Inflow Area = 10.792 ac, 67.01% Impervious, Inflow Depth = 4.65" for 25-yr event
 Inflow = 60.69 cfs @ 12.06 hrs, Volume= 4.186 af
 Outflow = 59.98 cfs @ 12.08 hrs, Volume= 4.186 af, Atten= 1%, Lag= 1.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 Max. Velocity= 8.16 fps, Min. Travel Time= 0.8 min
 Avg. Velocity = 2.11 fps, Avg. Travel Time= 3.1 min

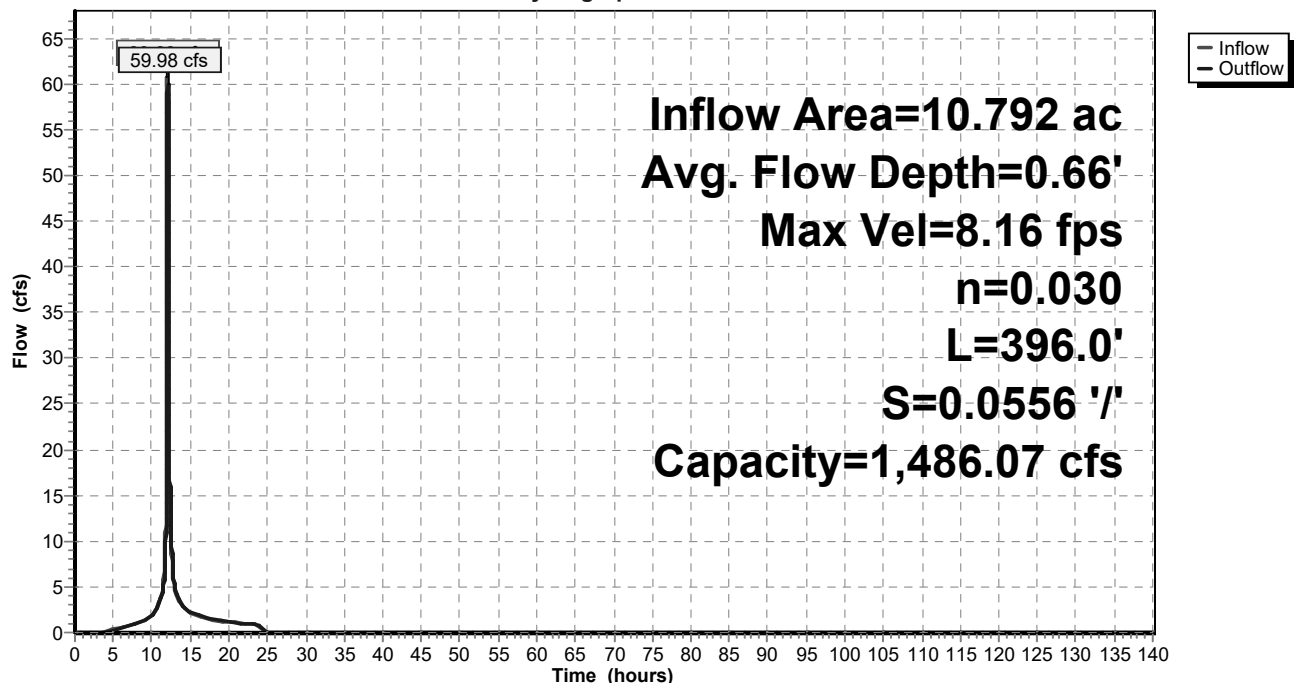
Peak Storage= 2,917 cf @ 12.07 hrs
 Average Depth at Peak Storage= 0.66'
 Bank-Full Depth= 4.00' Flow Area= 67.2 sf, Capacity= 1,486.07 cfs

10.00' x 4.00' deep channel, n= 0.030 Earth, grassed & winding
 Side Slope Z-value= 1.7 ' ' Top Width= 23.60'
 Length= 396.0' Slope= 0.0556 ' '
 Inlet Invert= 127.00', Outlet Invert= 105.00'



Reach SW 2-3: Wetland Swale 2-3

Hydrograph



Summary for Reach SW 4-3: SW 4-3

Inflow Area = 2.745 ac, 0.00% Impervious, Inflow Depth = 2.74" for 25-yr event
Inflow = 6.10 cfs @ 12.21 hrs, Volume= 0.626 af
Outflow = 6.06 cfs @ 12.25 hrs, Volume= 0.626 af, Atten= 1%, Lag= 2.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Max. Velocity= 3.47 fps, Min. Travel Time= 1.7 min

Avg. Velocity = 1.44 fps, Avg. Travel Time= 4.0 min

Peak Storage= 601 cf @ 12.22 hrs

Average Depth at Peak Storage= 0.17'

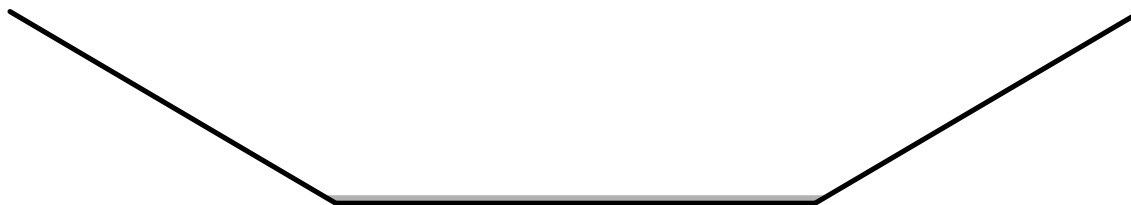
Bank-Full Depth= 4.00' Flow Area= 67.2 sf, Capacity= 1,466.70 cfs

10.00' x 4.00' deep channel, n= 0.030 Earth, grassed & winding

Side Slope Z-value= 1.7 '/' Top Width= 23.60'

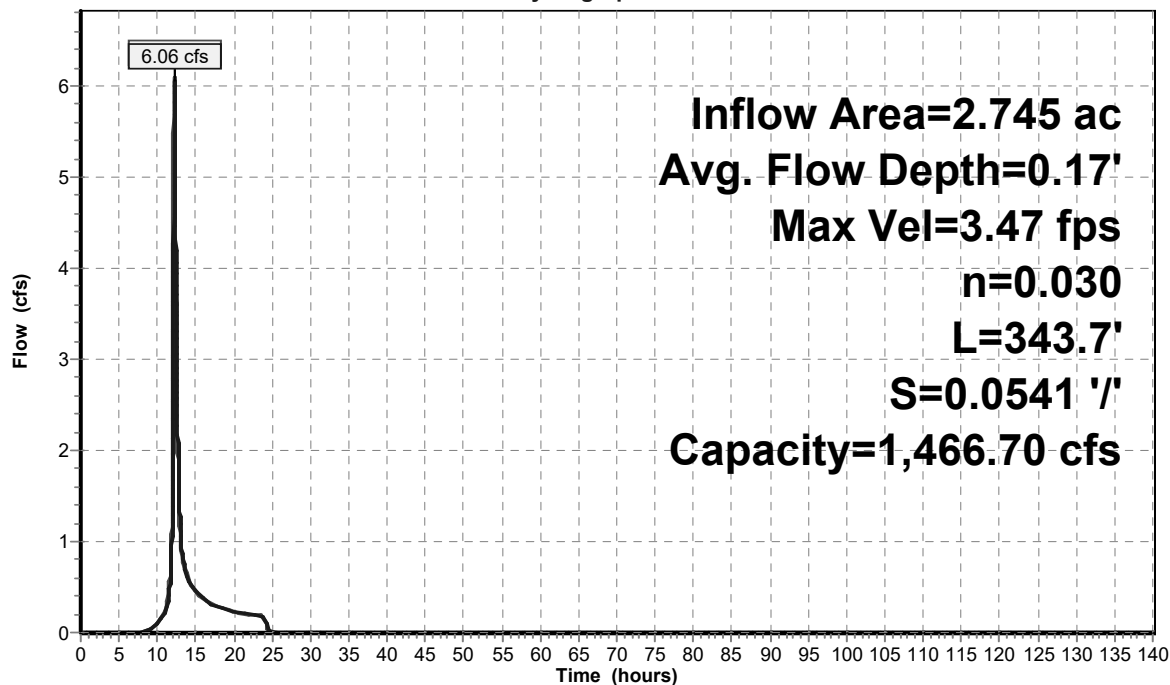
Length= 343.7' Slope= 0.0541 '/'

Inlet Invert= 123.60', Outlet Invert= 105.00'



Reach SW 4-3: SW 4-3

Hydrograph



Summary for Pond P-7: Dentention Basin 7

Inflow Area = 19.391 ac, 78.54% Impervious, Inflow Depth = 4.77" for 25-yr event
 Inflow = 49.74 cfs @ 12.17 hrs, Volume= 7.705 af
 Outflow = 2.30 cfs @ 22.39 hrs, Volume= 7.335 af, Atten= 95%, Lag= 613.6 min
 Primary = 2.30 cfs @ 22.39 hrs, Volume= 7.335 af

Routing by Stor-Ind method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 Peak Elev= 97.07' @ 22.39 hrs Surf.Area= 32,725 sf Storage= 175,878 cf

Plug-Flow detention time= 1,473.3 min calculated for 7.335 af (95% of inflow)
 Center-of-Mass det. time= 1,325.4 min (2,529.1 - 1,203.7)

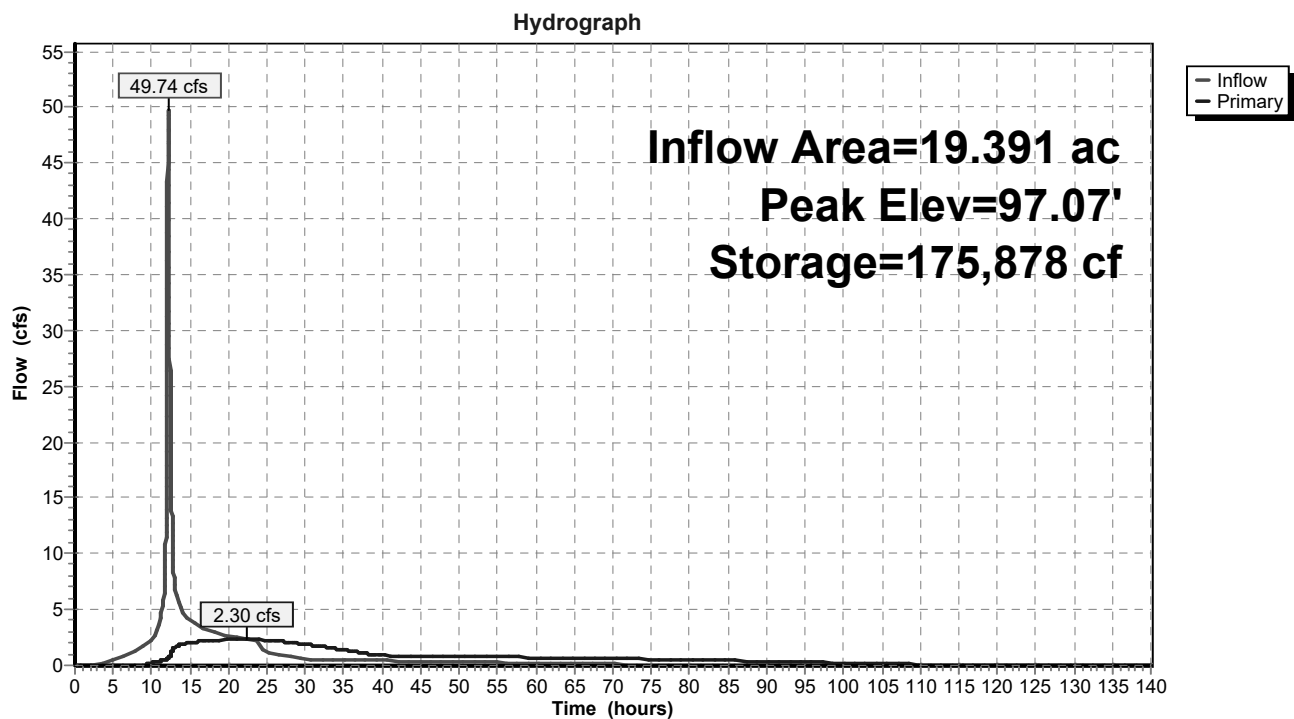
Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	280,770 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.00	12,621	0	0
92.00	22,814	35,435	35,435
94.00	26,576	49,390	84,825
96.00	30,501	57,077	141,902
98.00	34,640	65,141	207,043
100.00	39,087	73,727	280,770

Device	Routing	Invert	Outlet Devices
#1	Primary	88.00'	18.0" Round Culvert L= 71.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 88.00' / 84.50' S= 0.0493 ' / Cc= 0.900 n= 0.009 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	91.00'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	95.00'	6.0" Vert. Orifice/Grate C= 0.600
#4	Device 1	98.00'	6.0" Vert. Orifice/Grate C= 0.600
#5	Device 1	99.00'	36.0" x 78.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.30 cfs @ 22.39 hrs HW=97.07' (Free Discharge)

- 1=Culvert (Passes 2.30 cfs of 24.55 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 1.02 cfs @ 11.70 fps)
- 3=Orifice/Grate (Orifice Controls 1.28 cfs @ 6.50 fps)
- 4=Orifice/Grate (Controls 0.00 cfs)
- 5=Orifice/Grate (Controls 0.00 cfs)

Pond P-7: Dentention Basin 7



Summary for Pond S-1: Subsurface Det

Inflow Area = 7.794 ac, 85.88% Impervious, Inflow Depth = 5.33" for 25-yr event
 Inflow = 56.09 cfs @ 12.03 hrs, Volume= 3.460 af
 Outflow = 1.47 cfs @ 15.53 hrs, Volume= 2.886 af, Atten= 97%, Lag= 210.1 min
 Primary = 1.47 cfs @ 15.53 hrs, Volume= 2.886 af

Routing by Stor-Ind method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 Peak Elev= 104.85' @ 15.53 hrs Surf.Area= 31,034 sf Storage= 104,765 cf

Plug-Flow detention time= 1,189.7 min calculated for 2.886 af (83% of inflow)
 Center-of-Mass det. time= 1,109.0 min (1,881.3 - 772.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	100.25'	49,002 cf	228.33'W x 135.92'L x 6.75'H Field A 209,482 cf Overall - 86,977 cf Embedded = 122,504 cf x 40.0% Voids
#2A	101.00'	86,977 cf	ADS_StormTech MC-4500 +Cap x 800 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 25 Rows of 32 Chambers Cap Storage= +35.7 cf x 2 x 25 rows = 1,785.0 cf
		135,979 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	101.50'	24.0" Round Culvert L= 200.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.50' / 99.50' S= 0.0100 ' / ' Cc= 0.900 n= 0.009 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	101.55'	3.0" W x 4.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	103.40'	5.0" W x 4.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	106.00'	4.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=1.47 cfs @ 15.53 hrs HW=104.85' (Free Discharge)

- 1=Culvert (Passes 1.47 cfs of 23.18 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.71 cfs @ 8.52 fps)
- 3=Orifice/Grate (Orifice Controls 0.76 cfs @ 5.45 fps)
- 4=Broad-Crested Rectangular Weir(Controls 0.00 cfs)

Pond S-1: Subsurface Det - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-4500 +Cap (ADS StormTech®MC-4500 with cap volume)

Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf

Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap

Cap Storage= +35.7 cf x 2 x 25 rows = 1,785.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

32 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 133.92' Row Length +12.0" End Stone x 2 =
135.92' Base Length

25 Rows x 100.0" Wide + 9.0" Spacing x 24 + 12.0" Side Stone x 2 = 228.33' Base Width

9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

800 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 25 Rows = 86,977.3 cf Chamber Storage

209,481.6 cf Field - 86,977.3 cf Chambers = 122,504.2 cf Stone x 40.0% Voids = 49,001.7 cf Stone
Storage

Chamber Storage + Stone Storage = 135,979.0 cf = 3.122 af

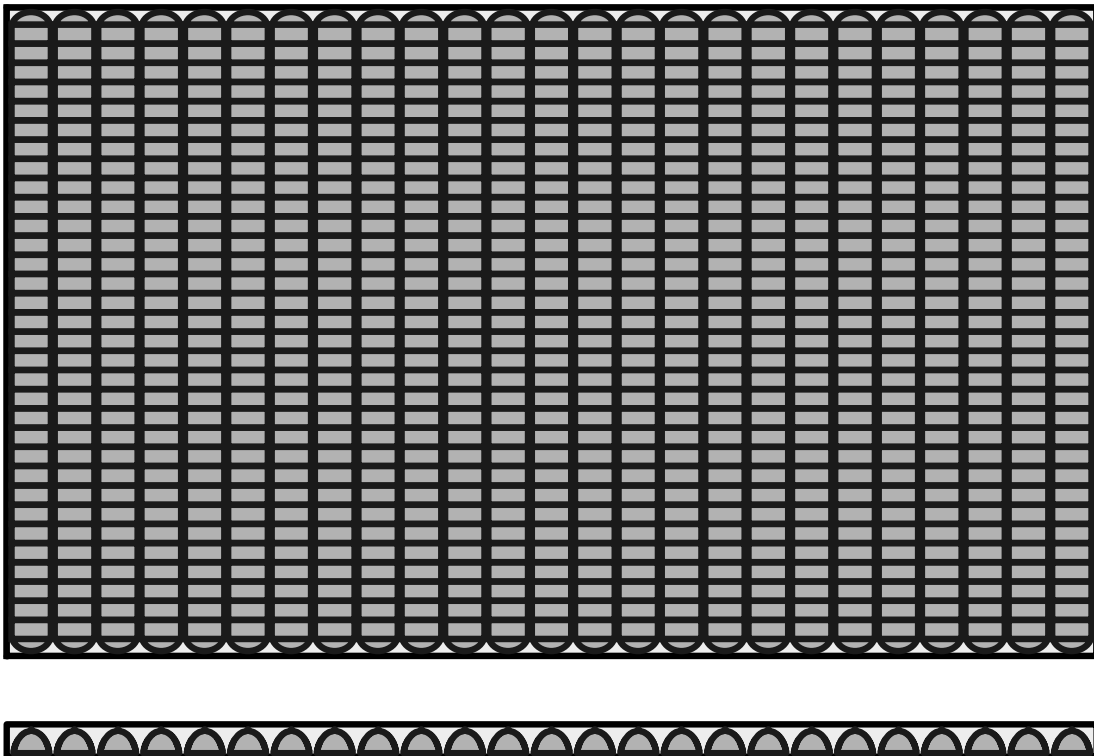
Overall Storage Efficiency = 64.9%

Overall System Size = 135.92' x 228.33' x 6.75'

800 Chambers

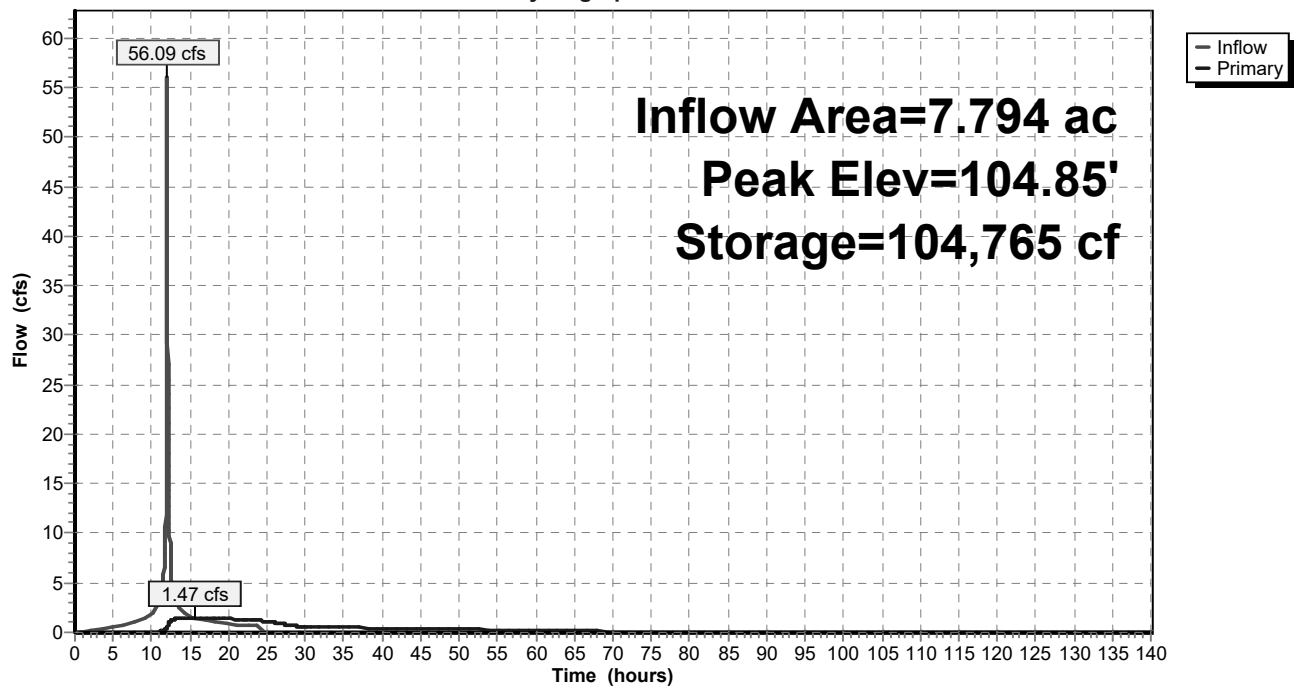
7,758.6 cy Field

4,537.2 cy Stone



Pond S-1: Subsurface Det

Hydrograph



Time span=0.00-140.00 hrs, dt=0.01 hrs, 14001 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentPDA-1A: Area to Detention Runoff Area=505,152 sf 73.61% Impervious Runoff Depth=6.70"
 Flow Length=1,379' Tc=15.9 min CN=91 Runoff=63.92 cfs 6.472 af

SubcatchmentPDA-1B: Area to Runoff Area=339,526 sf 85.88% Impervious Runoff Depth=7.05"
 Tc=5.0 min CN=94 Runoff=72.33 cfs 4.581 af

SubcatchmentPDA-2A: Area to Wetland Runoff Area=470,105 sf 67.01% Impervious Runoff Depth=6.34"
 Flow Length=1,211' Tc=8.0 min CN=88 Runoff=80.53 cfs 5.705 af

SubcatchmentPDA-2B: BLDG AREA Runoff Area=287,020 sf 85.22% Impervious Runoff Depth=7.05"
 Tc=5.0 min CN=94 Runoff=61.15 cfs 3.873 af

SubcatchmentPDA-3: Area to Wetland DP-3 Runoff Area=47,497 sf 0.13% Impervious Runoff Depth=4.72"
 Flow Length=347' Tc=9.3 min CN=74 Runoff=5.88 cfs 0.429 af

SubcatchmentPDA-4: Area to Wetland Runoff Area=119,565 sf 0.00% Impervious Runoff Depth=4.15"
 Flow Length=808' Tc=18.1 min CN=69 Runoff=9.28 cfs 0.950 af

Reach DP-1: Detention Basin 7 Inflow=3.59 cfs 10.105 af
 Outflow=3.59 cfs 10.105 af

Reach DP-2: Wetland DP-2 Inflow=136.05 cfs 10.957 af
 Outflow=136.05 cfs 10.957 af

Reach DP-3: Wetland DP-3 Inflow=12.23 cfs 1.379 af
 Outflow=12.23 cfs 1.379 af

Reach DP-4: Wetland DP-4 Inflow=9.28 cfs 0.950 af
 Outflow=9.28 cfs 0.950 af

Reach SW 2-3: Wetland Swale 2-3 Avg. Flow Depth=0.78' Max Vel=9.01 fps Inflow=80.53 cfs 5.705 af
 n=0.030 L=396.0' S=0.0556 '/' Capacity=1,486.07 cfs Outflow=79.74 cfs 5.705 af

Reach SW 4-3: SW 4-3 Avg. Flow Depth=0.22' Max Vel=4.07 fps Inflow=9.28 cfs 0.950 af
 n=0.030 L=343.7' S=0.0541 '/' Capacity=1,466.70 cfs Outflow=9.23 cfs 0.950 af

Pond P-7: Dentention Basin 7 Peak Elev=98.75' Storage=233,651 cf Inflow=65.43 cfs 10.479 af
 Outflow=3.59 cfs 10.105 af

Pond S-1: Subsurface Det Peak Elev=106.32' Storage=127,577 cf Inflow=72.33 cfs 4.581 af
 Outflow=4.08 cfs 4.007 af

Total Runoff Area = 40.608 ac Runoff Volume = 22.011 af Average Runoff Depth = 6.50"
30.85% Pervious = 12.529 ac 69.15% Impervious = 28.078 ac

Summary for Subcatchment PDA-1A: Area to Detention Basin 7

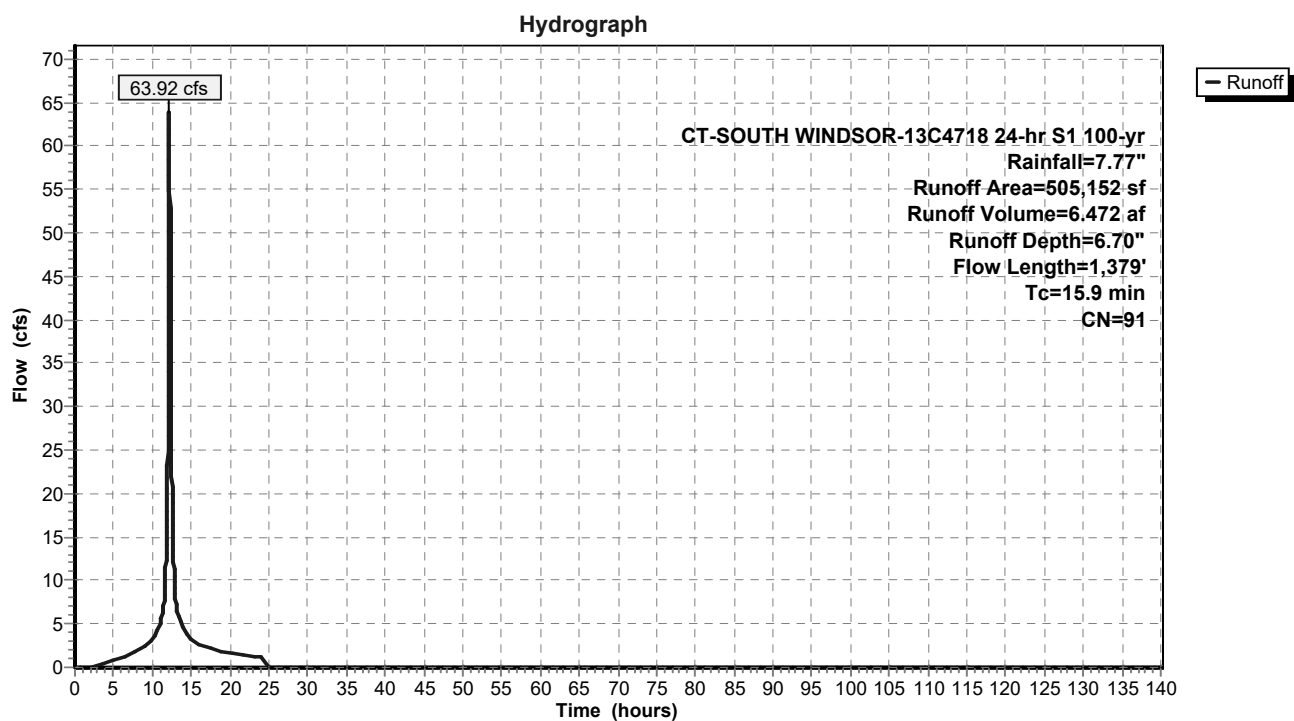
Runoff = 63.92 cfs @ 12.17 hrs, Volume= 6.472 af, Depth= 6.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 CT-SOUTH WINDSOR-13C4718 24-hr S1 100-yr Rainfall=7.77"

Area (sf)	CN	Description
82,516	98	Paved parking, HSG B
275,911	98	Paved parking, HSG C
12,219	98	Paved parking, HSG B
1,191	98	Paved parking, HSG C
78,680	69	50-75% Grass cover, Fair, HSG B
41,252	79	50-75% Grass cover, Fair, HSG C
10,535	69	50-75% Grass cover, Fair, HSG B
467	79	50-75% Grass cover, Fair, HSG C
0	85	Gravel roads, HSG B
389	89	Gravel roads, HSG C
1,992	85	Gravel roads, HSG B
0	89	Gravel roads, HSG C
505,152	91	Weighted Average
133,315		26.39% Pervious Area
371,837		73.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	100	0.0900	0.21		Sheet Flow, Grass: Dense n= 0.240 P2= 3.11"
2.7	249	0.0480	1.53		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
4.8	383	0.0078	1.32		Shallow Concentrated Flow, swale Grassed Waterway Kv= 15.0 fps
0.5	647	0.0400	20.80	65.35	Pipe Channel, 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.009 Corrugated PE, smooth interior
15.9	1,379	Total			

Subcatchment PDA-1A: Area to Detention Basin 7



Summary for Subcatchment PDA-1B: Area to Subsurface Detention System

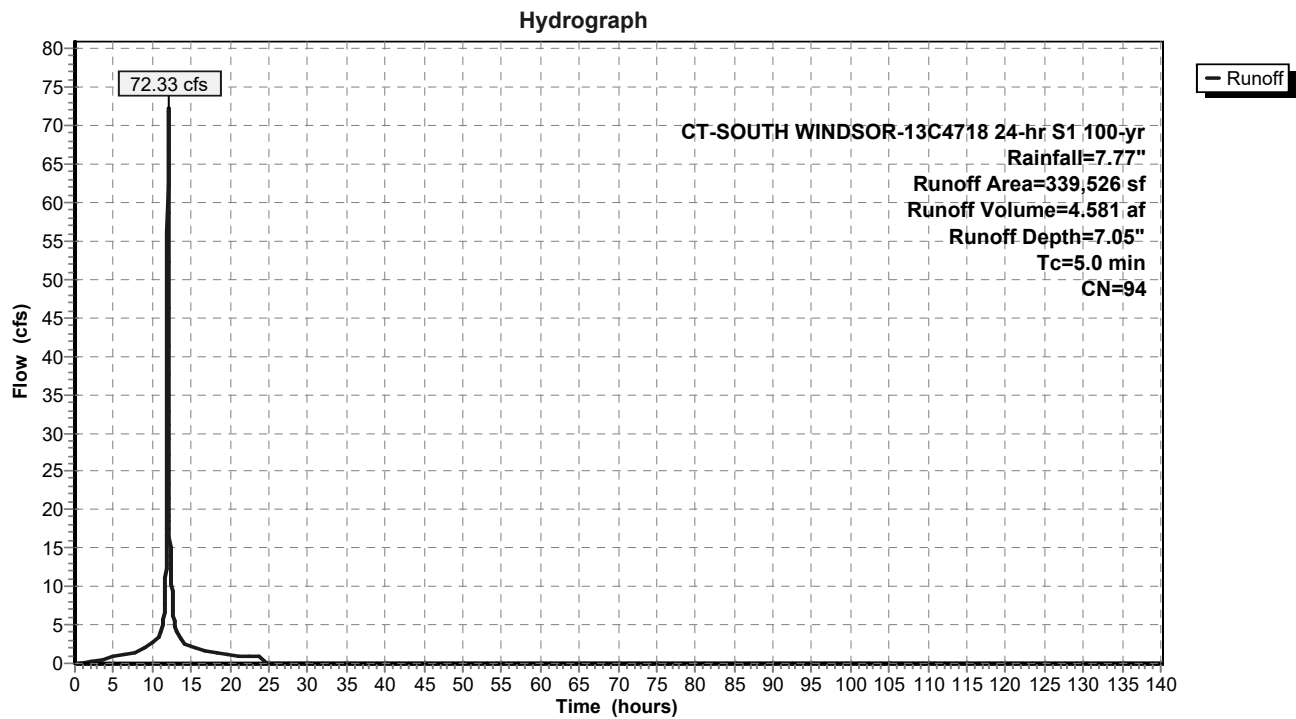
Runoff = 72.33 cfs @ 12.03 hrs, Volume= 4.581 af, Depth= 7.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 CT-SOUTH WINDSOR-13C4718 24-hr S1 100-yr Rainfall=7.77"

Area (sf)	CN	Description
269,483	98	Paved parking, HSG B
22,100	98	Paved parking, HSG C
0	98	Paved parking, HSG B
0	98	Paved parking, HSG C
43,113	69	50-75% Grass cover, Fair, HSG B
4,830	79	50-75% Grass cover, Fair, HSG C
0	69	50-75% Grass cover, Fair, HSG B
0	79	50-75% Grass cover, Fair, HSG C
0	85	Gravel roads, HSG B
0	89	Gravel roads, HSG C
0	85	Gravel roads, HSG B
0	89	Gravel roads, HSG C
339,526	94	Weighted Average
47,943		14.12% Pervious Area
291,583		85.88% Impervious Area

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

Subcatchment PDA-1B: Area to Subsurface Detention System



Summary for Subcatchment PDA-2A: Area to Wetland DP-2

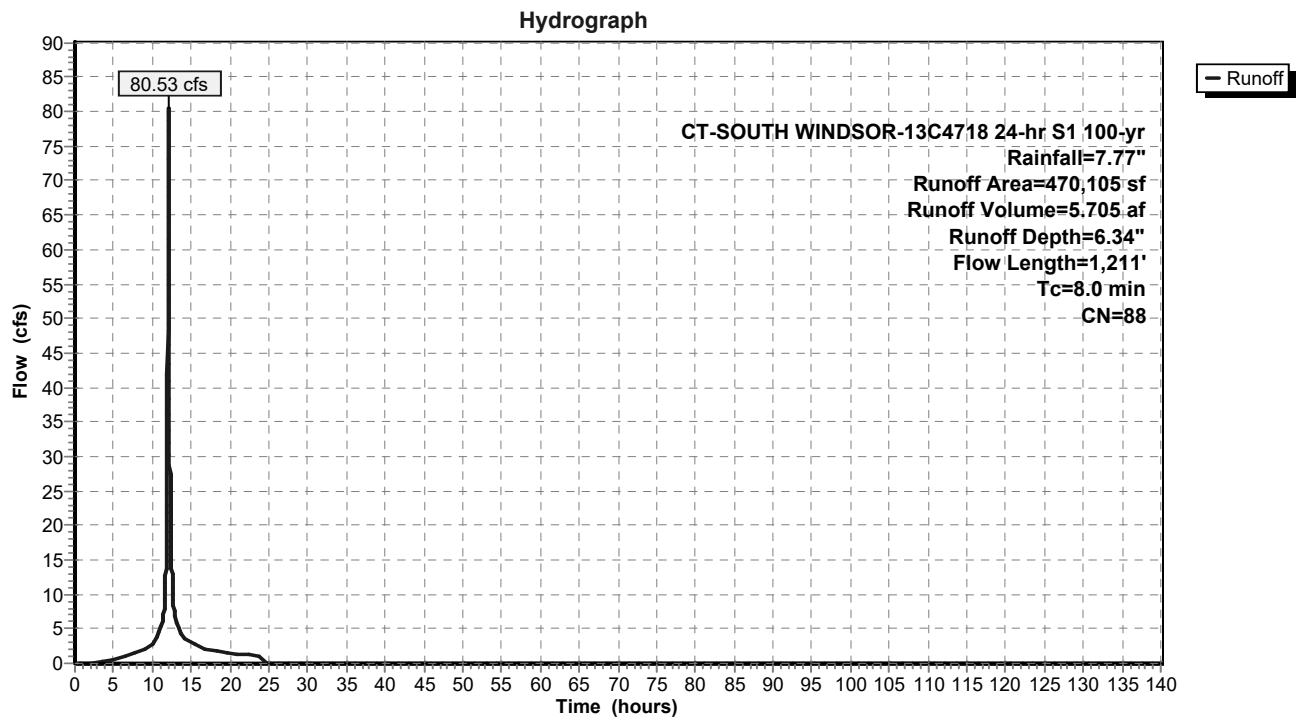
Runoff = 80.53 cfs @ 12.06 hrs, Volume= 5.705 af, Depth= 6.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 CT-SOUTH WINDSOR-13C4718 24-hr S1 100-yr Rainfall=7.77"

Area (sf)	CN	Description
304,766	98	Paved parking, HSG B
10,251	98	Paved parking, HSG C
0	98	Paved parking, HSG D
154,500	69	50-75% Grass cover, Fair, HSG B
588	79	50-75% Grass cover, Fair, HSG C
0	84	50-75% Grass cover, Fair, HSG D
470,105	88	Weighted Average
155,088		32.99% Pervious Area
315,017		67.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	74	0.1350	0.34		Sheet Flow, 1 Grass: Short n= 0.150 P2= 3.11"
0.4	26	0.0250	1.13		Sheet Flow, 2 Smooth surfaces n= 0.011 P2= 3.11"
1.1	216	0.0250	3.21		Shallow Concentrated Flow, 3 Paved Kv= 20.3 fps
1.7	744	0.0050	7.35	23.11	Pipe Channel, RCP_Round 24" 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.009 Corrugated PE, smooth interior
1.2	151	0.0200	2.12		Shallow Concentrated Flow, 4 Grassed Waterway Kv= 15.0 fps
8.0	1,211	Total			

Subcatchment PDA-2A: Area to Wetland DP-2



Summary for Subcatchment PDA-2B: BLDG AREA

Runoff = 61.15 cfs @ 12.03 hrs, Volume= 3.873 af, Depth= 7.05"

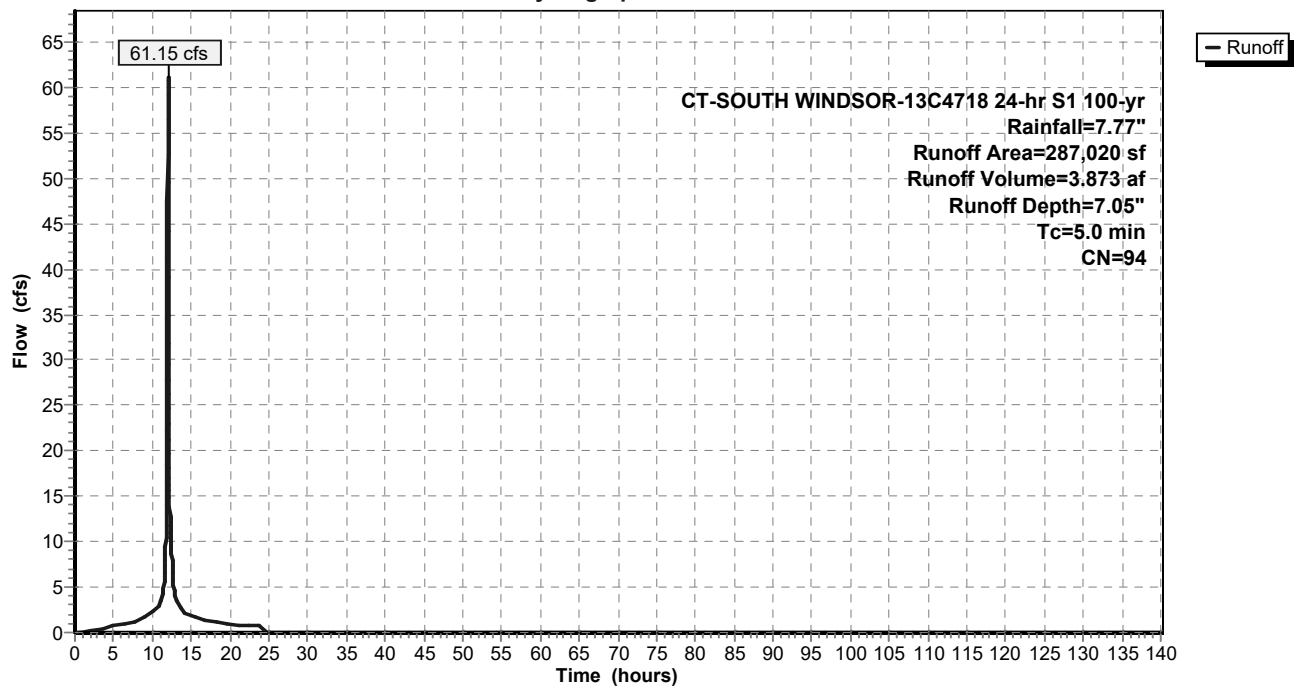
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 CT-SOUTH WINDSOR-13C4718 24-hr S1 100-yr Rainfall=7.77"

Area (sf)	CN	Description
240,618	98	Paved parking, HSG B
0	98	Paved parking, HSG C
3,973	98	Paved parking, HSG D
39,809	69	50-75% Grass cover, Fair, HSG B
0	79	50-75% Grass cover, Fair, HSG C
2,620	84	50-75% Grass cover, Fair, HSG D
287,020	94	Weighted Average
42,429		14.78% Pervious Area
244,591		85.22% Impervious Area

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

Subcatchment PDA-2B: BLDG AREA

Hydrograph



Summary for Subcatchment PDA-3: Area to Wetland DP-3

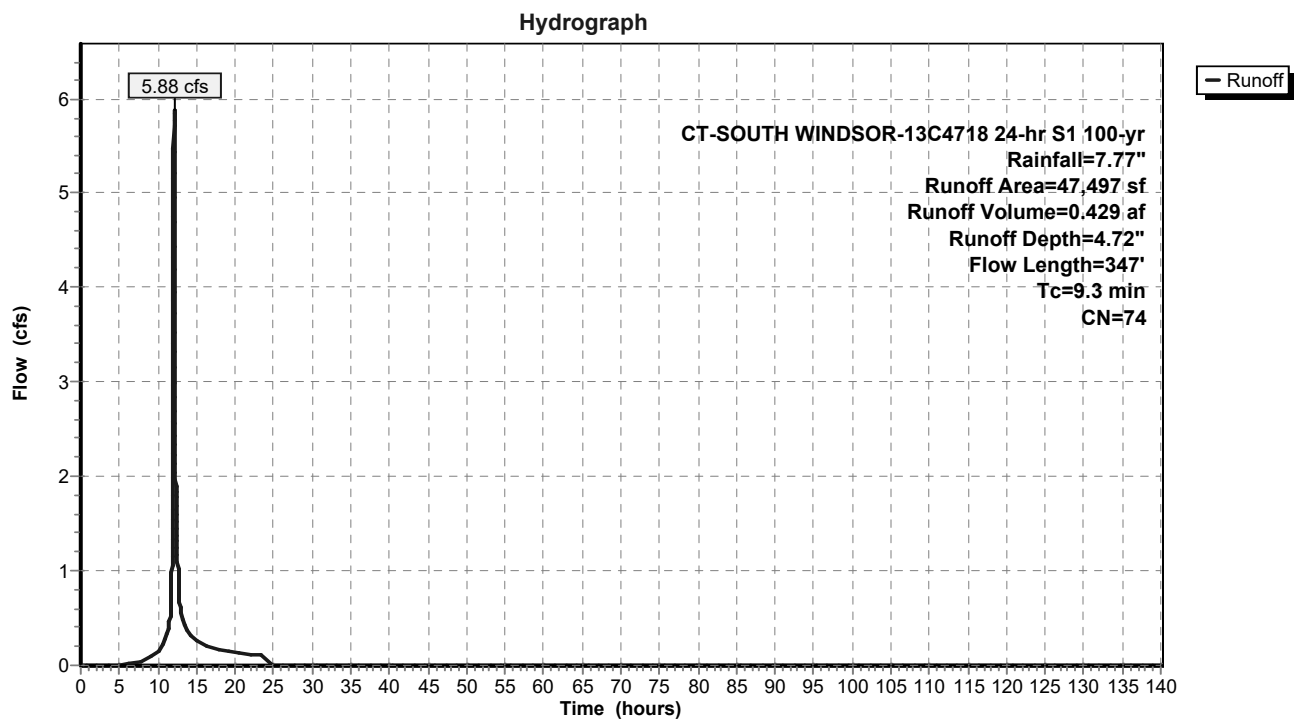
Runoff = 5.88 cfs @ 12.08 hrs, Volume= 0.429 af, Depth= 4.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 CT-SOUTH WINDSOR-13C4718 24-hr S1 100-yr Rainfall=7.77"

Area (sf)	CN	Description
63	98	Paved parking, HSG B
0	98	Paved parking, HSG C
0	98	Paved parking, HSG D
20,845	69	50-75% Grass cover, Fair, HSG B
0	79	50-75% Grass cover, Fair, HSG C
7,654	84	50-75% Grass cover, Fair, HSG D
2,047	56	Brush, Fair, HSG B
16,888	77	Brush, Fair, HSG D
47,497	74	Weighted Average
47,434		99.87% Pervious Area
63		0.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	100	0.0400	0.22		Sheet Flow, 1
					Grass: Short n= 0.150 P2= 3.11"
0.6	125	0.0480	3.29		Shallow Concentrated Flow, 2
					Grassed Waterway Kv= 15.0 fps
1.2	122	0.1060	1.63		Shallow Concentrated Flow, 3
					Woodland Kv= 5.0 fps
9.3	347	Total			

Subcatchment PDA-3: Area to Wetland DP-3



Summary for Subcatchment PDA-4: Area to Wetland DP-4

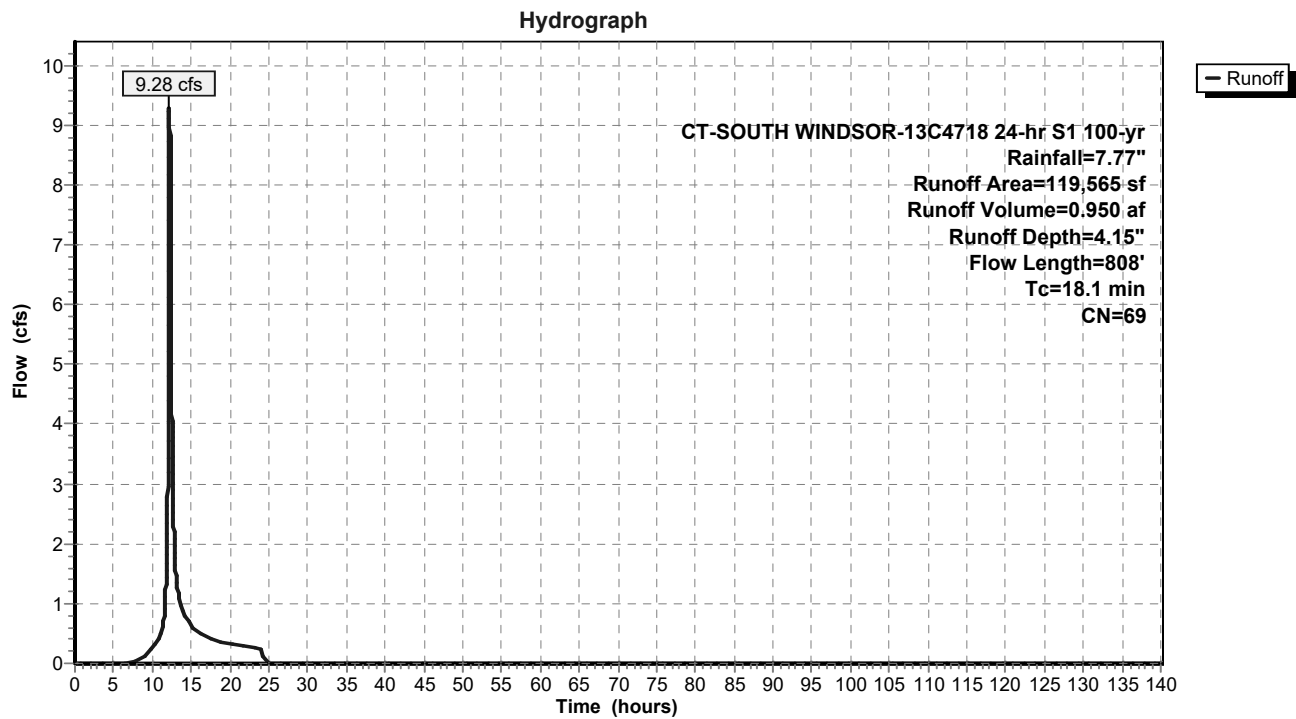
Runoff = 9.28 cfs @ 12.20 hrs, Volume= 0.950 af, Depth= 4.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 CT-SOUTH WINDSOR-13C4718 24-hr S1 100-yr Rainfall=7.77"

Area (sf)	CN	Description
0	98	Paved parking, HSG B
0	98	Paved parking, HSG C
0	98	Paved parking, HSG D
57,679	69	50-75% Grass cover, Fair, HSG B
26,837	79	50-75% Grass cover, Fair, HSG C
0	84	50-75% Grass cover, Fair, HSG D
25,526	56	Brush, Fair, HSG B
9,523	70	Brush, Fair, HSG C
119,565	69	Weighted Average
119,565		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	100	0.0800	0.29		Sheet Flow, 1 Grass: Short n= 0.150 P2= 3.11"
0.2	39	0.0800	4.24		Shallow Concentrated Flow, 2 Grassed Waterway Kv= 15.0 fps
12.1	595	0.0270	0.82		Shallow Concentrated Flow, 3 Woodland Kv= 5.0 fps
0.1	74	0.0270	19.82	194.19	Channel Flow, 4 Area= 9.8 sf Perim= 15.7' r= 0.62' n= 0.009 Corrugated PE, smooth interior
18.1	808	Total			

Subcatchment PDA-4: Area to Wetland DP-4

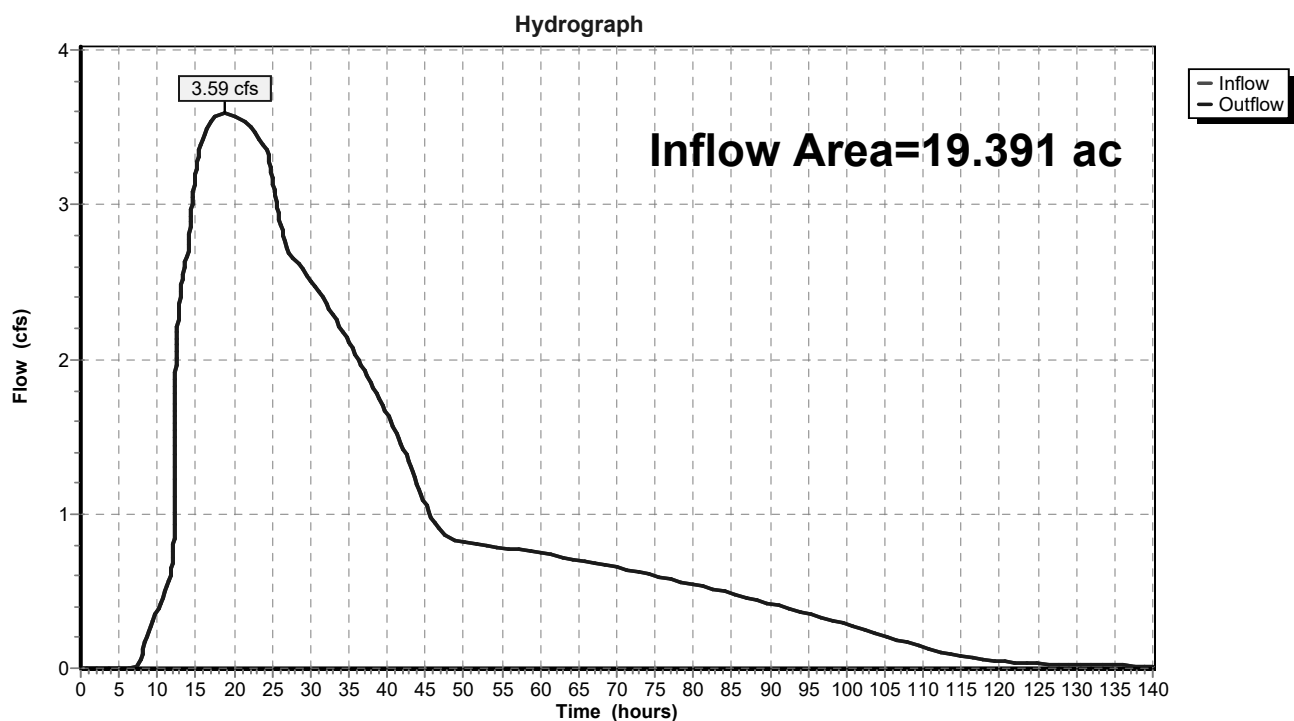


Summary for Reach DP-1: Detention Basin 7

Inflow Area = 19.391 ac, 78.54% Impervious, Inflow Depth > 6.25" for 100-yr event
Inflow = 3.59 cfs @ 18.93 hrs, Volume= 10.105 af
Outflow = 3.59 cfs @ 18.93 hrs, Volume= 10.105 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Reach DP-1: Detention Basin 7

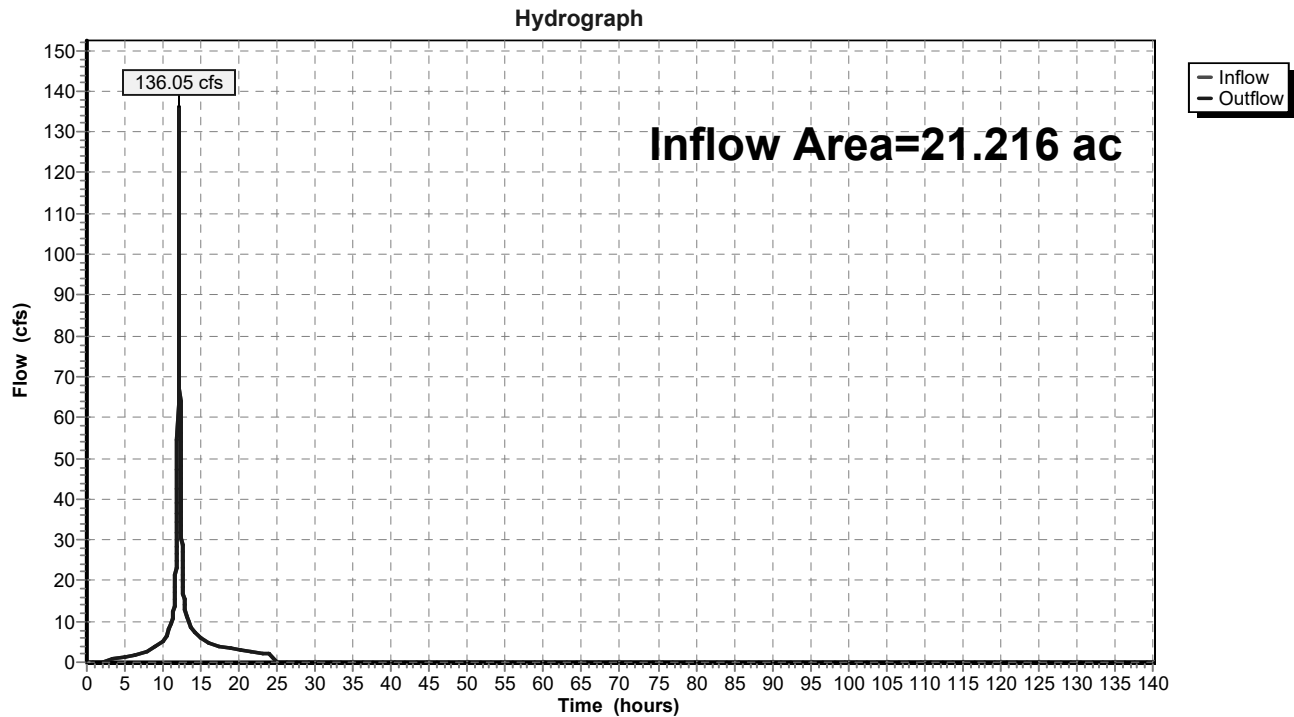


Summary for Reach DP-2: Wetland DP-2

Inflow Area = 21.216 ac, 60.56% Impervious, Inflow Depth = 6.20" for 100-yr event
Inflow = 136.05 cfs @ 12.05 hrs, Volume= 10.957 af
Outflow = 136.05 cfs @ 12.05 hrs, Volume= 10.957 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Reach DP-2: Wetland DP-2

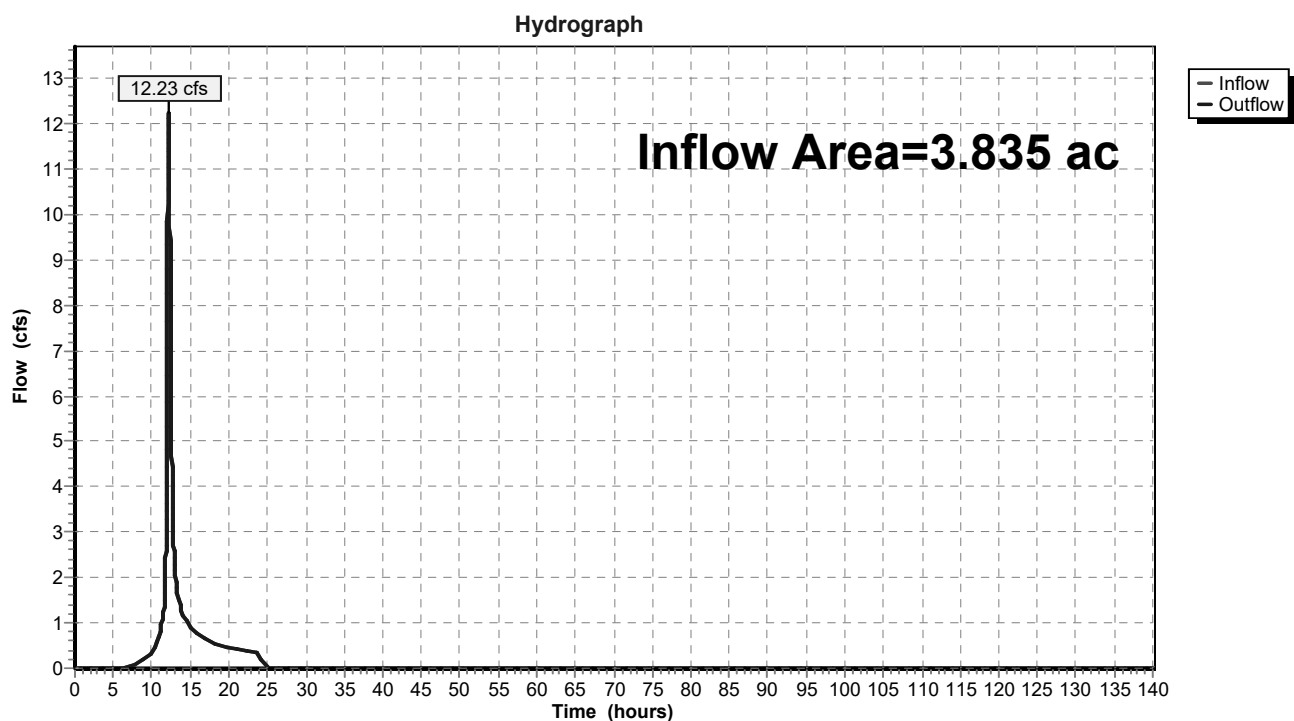


Summary for Reach DP-3: Wetland DP-3

Inflow Area = 3.835 ac, 0.04% Impervious, Inflow Depth = 4.32" for 100-yr event
Inflow = 12.23 cfs @ 12.20 hrs, Volume= 1.379 af
Outflow = 12.23 cfs @ 12.20 hrs, Volume= 1.379 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Reach DP-3: Wetland DP-3

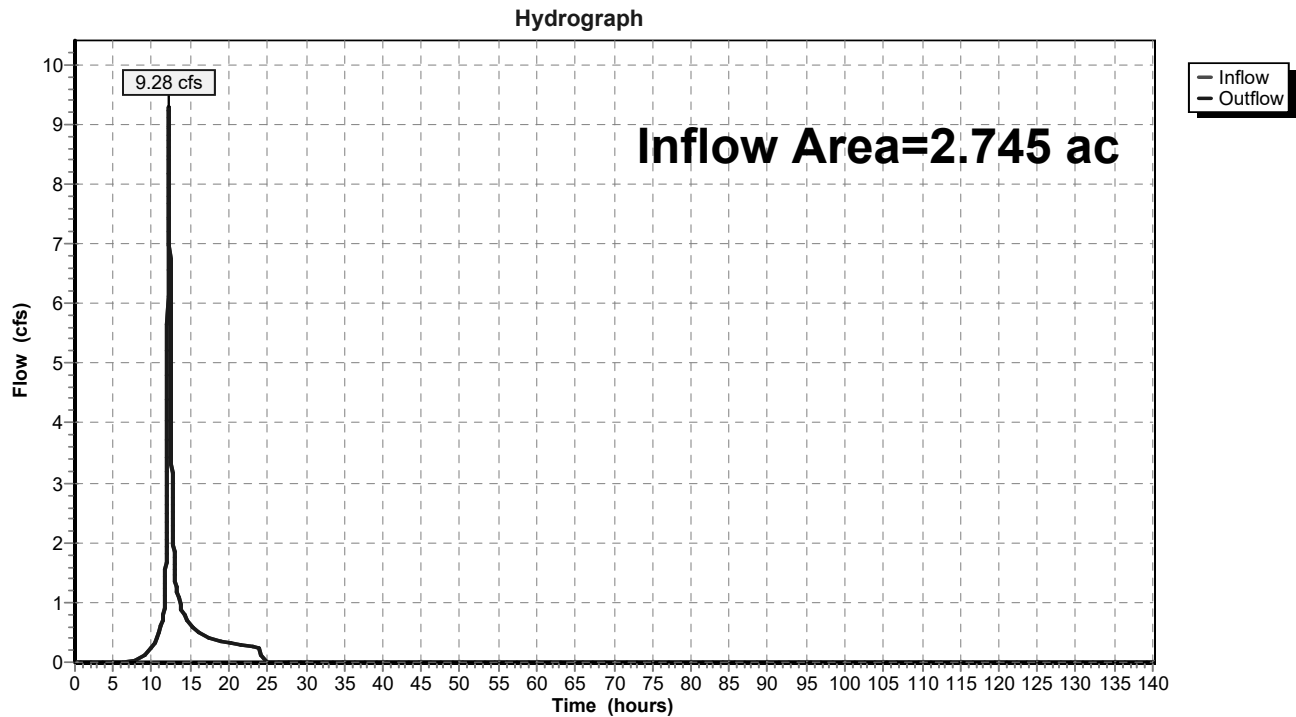


Summary for Reach DP-4: Wetland DP-4

Inflow Area = 2.745 ac, 0.00% Impervious, Inflow Depth = 4.15" for 100-yr event
Inflow = 9.28 cfs @ 12.20 hrs, Volume= 0.950 af
Outflow = 9.28 cfs @ 12.20 hrs, Volume= 0.950 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs

Reach DP-4: Wetland DP-4



Summary for Reach SW 2-3: Wetland Swale 2-3

Inflow Area = 10.792 ac, 67.01% Impervious, Inflow Depth = 6.34" for 100-yr event
 Inflow = 80.53 cfs @ 12.06 hrs, Volume= 5.705 af
 Outflow = 79.74 cfs @ 12.08 hrs, Volume= 5.705 af, Atten= 1%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 Max. Velocity= 9.01 fps, Min. Travel Time= 0.7 min
 Avg. Velocity = 2.33 fps, Avg. Travel Time= 2.8 min

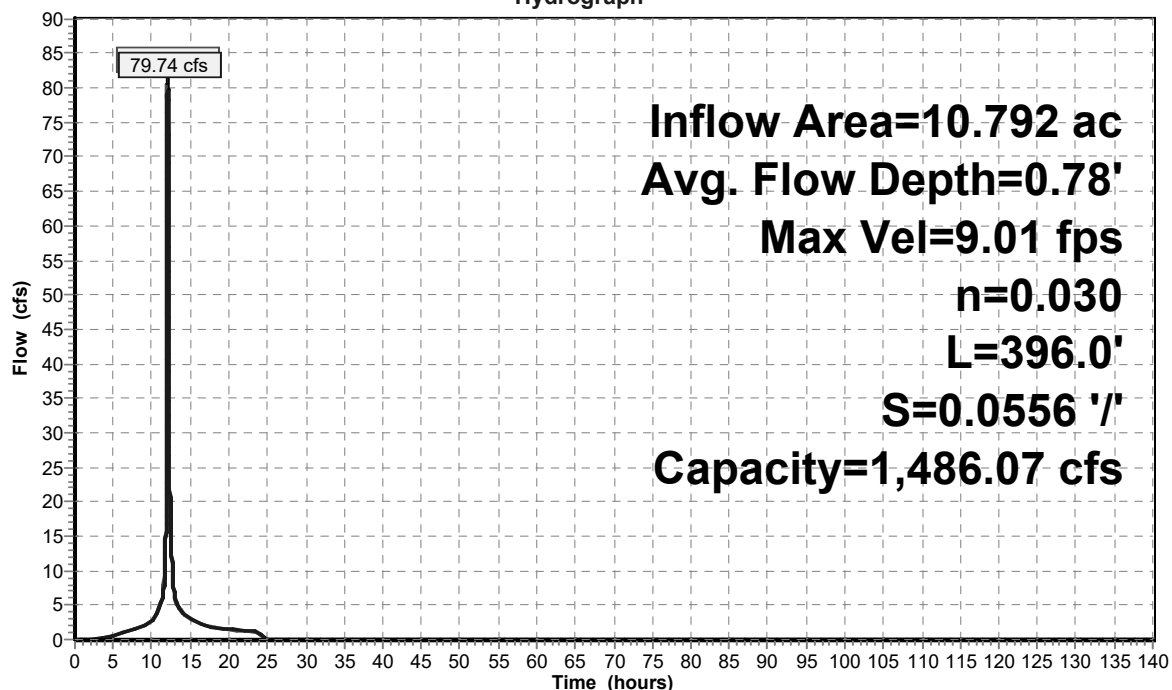
Peak Storage= 3,511 cf @ 12.07 hrs
 Average Depth at Peak Storage= 0.78'
 Bank-Full Depth= 4.00' Flow Area= 67.2 sf, Capacity= 1,486.07 cfs

10.00' x 4.00' deep channel, n= 0.030 Earth, grassed & winding
 Side Slope Z-value= 1.7 '/' Top Width= 23.60'
 Length= 396.0' Slope= 0.0556 '/'
 Inlet Invert= 127.00', Outlet Invert= 105.00'



Reach SW 2-3: Wetland Swale 2-3

Hydrograph



Summary for Reach SW 4-3: SW 4-3

Inflow Area = 2.745 ac, 0.00% Impervious, Inflow Depth = 4.15" for 100-yr event
 Inflow = 9.28 cfs @ 12.20 hrs, Volume= 0.950 af
 Outflow = 9.23 cfs @ 12.24 hrs, Volume= 0.950 af, Atten= 1%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 Max. Velocity= 4.07 fps, Min. Travel Time= 1.4 min
 Avg. Velocity = 1.49 fps, Avg. Travel Time= 3.8 min

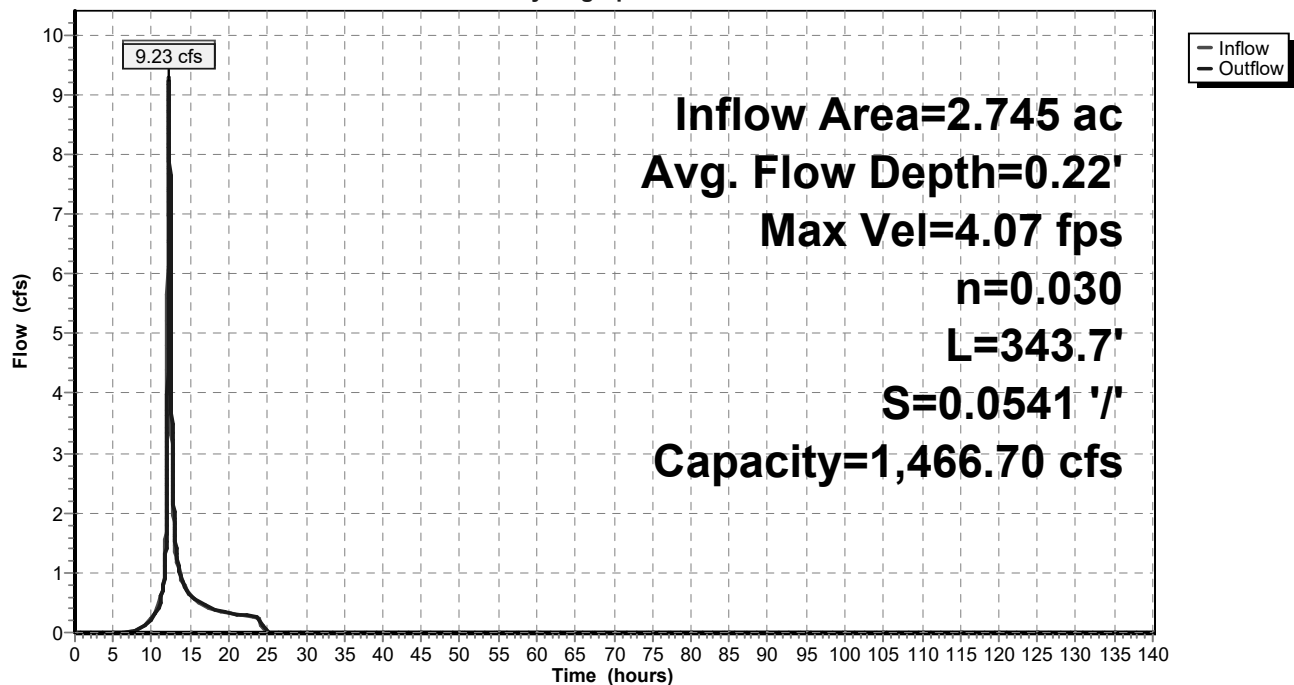
Peak Storage= 780 cf @ 12.22 hrs
 Average Depth at Peak Storage= 0.22'
 Bank-Full Depth= 4.00' Flow Area= 67.2 sf, Capacity= 1,466.70 cfs

10.00' x 4.00' deep channel, n= 0.030 Earth, grassed & winding
 Side Slope Z-value= 1.7 '/' Top Width= 23.60'
 Length= 343.7' Slope= 0.0541 '/'
 Inlet Invert= 123.60', Outlet Invert= 105.00'



Reach SW 4-3: SW 4-3

Hydrograph



Summary for Pond P-7: Dentention Basin 7

Inflow Area = 19.391 ac, 78.54% Impervious, Inflow Depth = 6.49" for 100-yr event
 Inflow = 65.43 cfs @ 12.17 hrs, Volume= 10.479 af
 Outflow = 3.59 cfs @ 18.93 hrs, Volume= 10.105 af, Atten= 95%, Lag= 405.7 min
 Primary = 3.59 cfs @ 18.93 hrs, Volume= 10.105 af

Routing by Stor-Ind method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 Peak Elev= 98.75' @ 18.93 hrs Surf.Area= 36,308 sf Storage= 233,651 cf

Plug-Flow detention time= 1,347.2 min calculated for 10.105 af (96% of inflow)
 Center-of-Mass det. time= 1,230.5 min (2,386.3 - 1,155.7)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	280,770 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

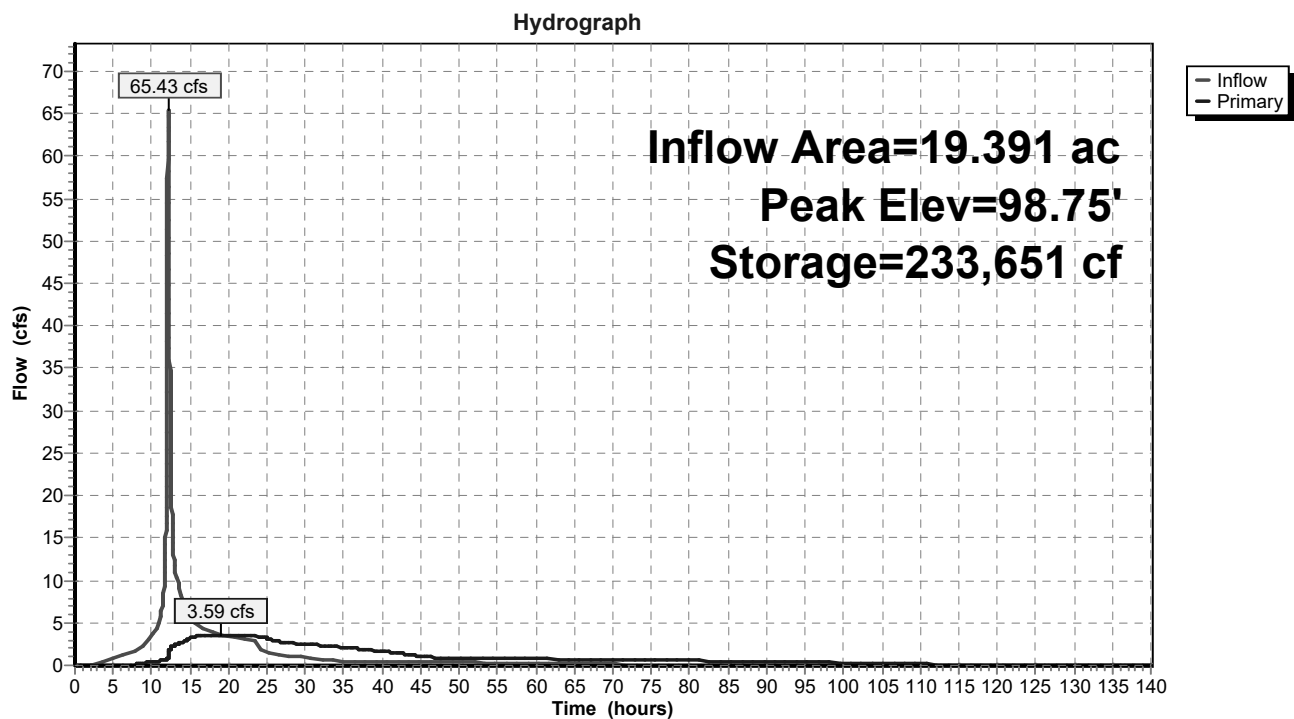
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.00	12,621	0	0
92.00	22,814	35,435	35,435
94.00	26,576	49,390	84,825
96.00	30,501	57,077	141,902
98.00	34,640	65,141	207,043
100.00	39,087	73,727	280,770

Device	Routing	Invert	Outlet Devices
#1	Primary	88.00'	18.0" Round Culvert L= 71.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 88.00' / 84.50' S= 0.0493 ' / Cc= 0.900 n= 0.009 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	91.00'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	95.00'	6.0" Vert. Orifice/Grate C= 0.600
#4	Device 1	98.00'	6.0" Vert. Orifice/Grate C= 0.600
#5	Device 1	99.00'	36.0" x 78.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.59 cfs @ 18.93 hrs HW=98.75' (Free Discharge)

- 1=Culvert (Passes 3.59 cfs of 26.91 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 1.16 cfs @ 13.26 fps)
- 3=Orifice/Grate (Orifice Controls 1.77 cfs @ 9.01 fps)
- 4=Orifice/Grate (Orifice Controls 0.67 cfs @ 3.40 fps)
- 5=Orifice/Grate (Controls 0.00 cfs)

Pond P-7: Dentention Basin 7



Summary for Pond S-1: Subsurface Det

Inflow Area = 7.794 ac, 85.88% Impervious, Inflow Depth = 7.05" for 100-yr event
 Inflow = 72.33 cfs @ 12.03 hrs, Volume= 4.581 af
 Outflow = 4.08 cfs @ 13.17 hrs, Volume= 4.007 af, Atten= 94%, Lag= 68.4 min
 Primary = 4.08 cfs @ 13.17 hrs, Volume= 4.007 af

Routing by Stor-Ind method, Time Span= 0.00-140.00 hrs, dt= 0.01 hrs
 Peak Elev= 106.32' @ 13.17 hrs Surf.Area= 31,034 sf Storage= 127,577 cf

Plug-Flow detention time= 1,049.9 min calculated for 4.007 af (87% of inflow)
 Center-of-Mass det. time= 983.7 min (1,748.5 - 764.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	100.25'	49,002 cf	228.33'W x 135.92'L x 6.75'H Field A 209,482 cf Overall - 86,977 cf Embedded = 122,504 cf x 40.0% Voids
#2A	101.00'	86,977 cf	ADS_StormTech MC-4500 +Cap x 800 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 25 Rows of 32 Chambers Cap Storage= +35.7 cf x 2 x 25 rows = 1,785.0 cf
		135,979 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	101.50'	24.0" Round Culvert L= 200.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.50' / 99.50' S= 0.0100 ' /' Cc= 0.900 n= 0.009 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	101.55'	3.0" W x 4.0" H Vert. Orifice/Grate C= 0.600
#3	Device 1	103.40'	5.0" W x 4.0" H Vert. Orifice/Grate C= 0.600
#4	Device 1	106.00'	4.0' long x 0.5' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=4.08 cfs @ 13.17 hrs HW=106.32' (Free Discharge)

- 1=Culvert (Passes 4.08 cfs of 29.58 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.86 cfs @ 10.33 fps)
- 3=Orifice/Grate (Orifice Controls 1.11 cfs @ 7.99 fps)
- 4=Broad-Crested Rectangular Weir (Weir Controls 2.11 cfs @ 1.63 fps)

Pond S-1: Subsurface Det - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-4500 +Cap (ADS StormTech®MC-4500 with cap volume)

Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf

Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap

Cap Storage= +35.7 cf x 2 x 25 rows = 1,785.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

32 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 133.92' Row Length +12.0" End Stone x 2 =
135.92' Base Length

25 Rows x 100.0" Wide + 9.0" Spacing x 24 + 12.0" Side Stone x 2 = 228.33' Base Width

9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

800 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 25 Rows = 86,977.3 cf Chamber Storage

209,481.6 cf Field - 86,977.3 cf Chambers = 122,504.2 cf Stone x 40.0% Voids = 49,001.7 cf Stone
Storage

Chamber Storage + Stone Storage = 135,979.0 cf = 3.122 af

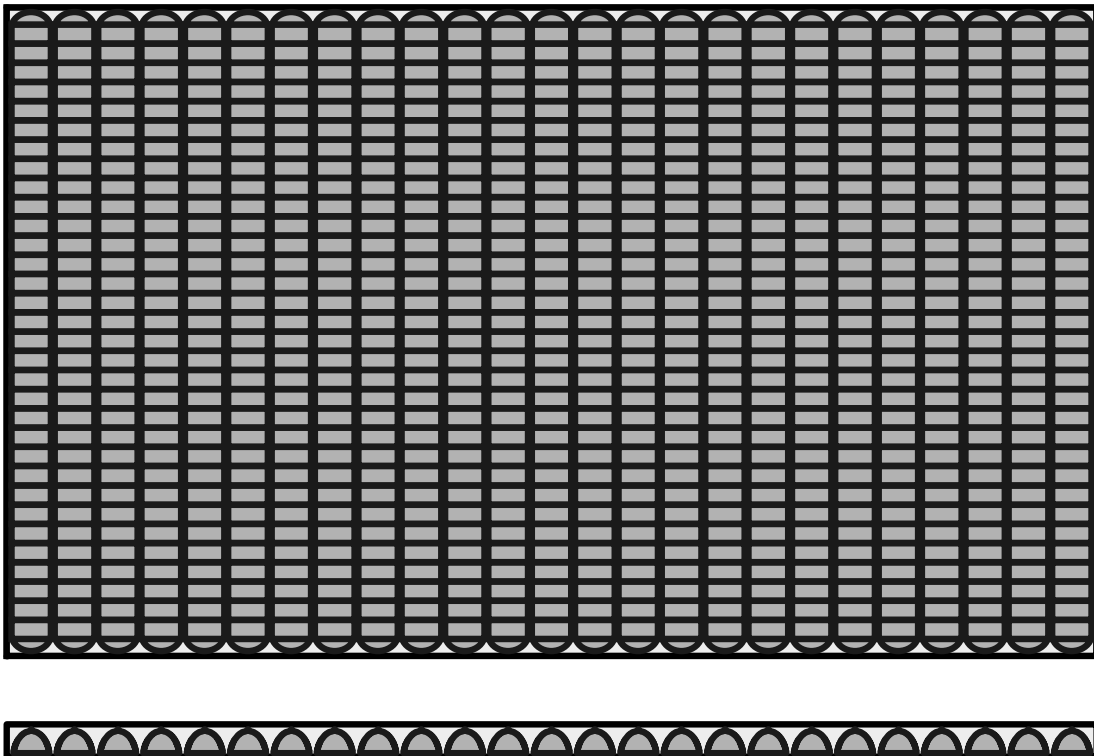
Overall Storage Efficiency = 64.9%

Overall System Size = 135.92' x 228.33' x 6.75'

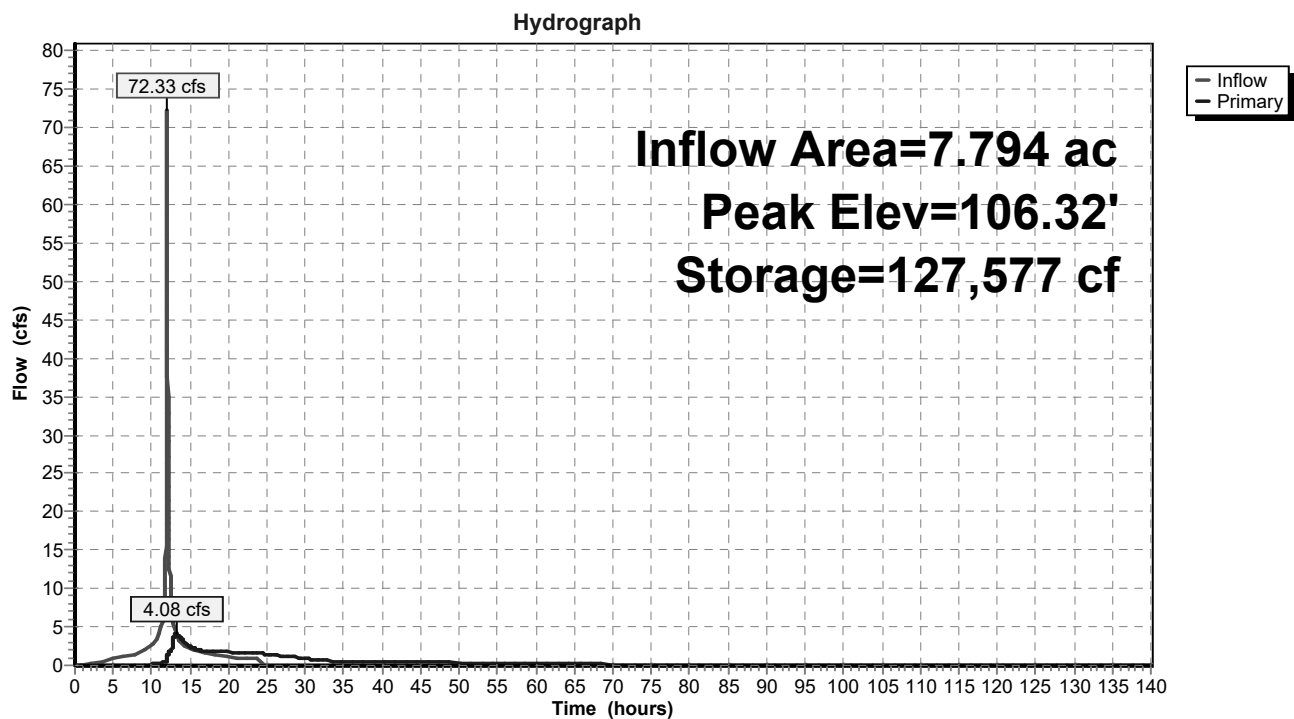
800 Chambers

7,758.6 cy Field

4,537.2 cy Stone



Pond S-1: Subsurface Det



APPENDIX D

WATER QUALITY CALCULATIONS

CTDEEP Water Quality Volume Calculations

CTDEEP Water Quality Flow Calculations

Treatment Train Efficiency Worksheet

CTDOT Hydrodynamic Separator Sizing

Flow Splitter Manhole Calculations

Water Quality Calculations

Determine Water Quality Volume

From CT 2004 Stormwater Quality Manual:

$$WQV = \frac{(I)(R)(A)}{12}$$

$$R = 0.05 + 0.009(I)$$

WQV = water quality volume (ac-ft)

R = volumetric runoff coefficient

I = percent impervious cover

A = site area in acres

Area	ID	Total Area		Impervious Area		Impervious Cover	Volumetric Runoff Coefficient	Water Quality Volume (WQV)	
		ac	ft ²	ac	ft ²			acre-feet	ft ³
PDA-1B_1		4.762	207,431	4.056	176,659	85.17	0.817	0.324	14,113
PDA-1B_2		2.847	124,036	2.453	106,866	86.16	0.825	0.196	8,538
PDA-1B_3		0.341	14,868	0.307	13,387	90.03	0.860	0.024	1,045
PDA-2		3.079	134,143	2.105	91,714	68.37	0.665	0.171	7,449

0.715 31,145

Water Quality Calculations**Determine Water Quality Flow**

From CT 2004 Stormwater Quality Manual:

$$CN = \frac{1000}{\left[10 + 5P + 10Q - 10(Q^2 + 1.25QP)^{\frac{1}{2}} \right]}$$

$$Q = \frac{[WQV(acre - feet) \times [12(inches / foot)]]}{DrainageArea(acres)}$$

$$WQF = (q_u)(A)(Q)$$

CN = Runoff Curve Number

P = design precipitation, inches, (1" for water quality storm)

Q = runoff depth (in watershed inches)

T_c = time of concentrationI_a = Initial abstraction, inches, from Table 4-1, Chapter 4, TR-55q_u = unit peak discharge,

WQF = water quality flow (cfs)

Area	Hydrodynamic Separator	Facility ID	Total Area			Imp Area		Imp Cover	R	WQV	Q	P	CN	T _c		I _a	I _a /P	q _u ¹	WQF
			ft ²	ac	mi ²	ft ²	ac							mins	hours			cfs/mi ² /in	
PDA-1B_1	HDS-211		207,431	4.762	0.0074	176,659	4.056	85.17	0.817	0.324	0.82	1.00	98	5.0	0.08	0.041	0.041	660	4.03
PDA-1B_2	HDS-204		124,036	2.847	0.0044	106,866	2.453	86.16	0.825	0.196	0.83	1.00	98	5.0	0.08	0.041	0.041	660	2.44
PDA-1B_3	HDS-100		14,868	0.341	0.0005	13,387	0.307	90.03	0.860	0.024	0.84	1.00	99	5.0	0.08	0.041	0.041	660	0.30
PDA-2	HDS-319		134,143	3.079	0.0048	91,714	2.105	68.37	0.665	0.171	0.67	1.00	97	5.0	0.08	0.062	0.062	660	2.13

1

From Exhibit 4-III: Unit peak discharge (q_u) for SCS type III rainfall distribution, Urban Hydrology for Small Watersheds (TR-55), USDS< SCS, June 1986.

Best Management Practice (BMP) Treatment Train Efficiency Worksheet

Prepared for:
Retail Development
Evergreen Walk
South Windsor, CT

Prepared by:
BL Companies
100 Constitution Plaza
Hartford, CT

Date prepared:
September 18, 2019

Overall Site Treatment Train Efficiency OF-1

BMP	BMP Description	Type of Treatment	Efficiency
			Rate %
E1	Impervious Surface Sweeping***	secondary (conventional)	10
E2	catch basin (hoods & deep sumps)***	secondary (conventional)	25
E3	Hydrodynamic Separator**	Secondary	75
E4	Micropool Extended Detention Pond	Primary	0

$E_t = [1 - (1 - E_1)(1 - E_2)(1 - E_3)(1 - E_4)(1 - E_5)] \times 100$

Overall Treatment Train Efficiency (Et)= 83.125 % Total Suspended Solids (TSS) Removal

* 80% require per CT DEP

** Manufacturers claim 80% TSS removal

*** Schueler 1996 & EPA 1993

**** University of New Hampshire

BMP	Type of Treatment	TSS Removal	Starting TSS	Amount	Remaining
		Rate	Load	Removed	Load
Impervious Surface Sweeping***	secondary (conventional)	0.1	1	0.1	0.9
catch basin (hoods & deep sumps)***	secondary (conventional)	0.25	0.9	0.225	0.675
Hydrodynamic Separator **	Secondary	0.75	0.675	0.50625	0.16875
Micropool Extended Detention Pond	Primary	0	0.16875	0	0.16875

Overall Treatment Train Efficiency (%)

83%

TSS Removal Rates (adapted from Schueler, 1996, & EPA, 1993)

BMP List	Design Rate	Range of Average TSS Removal Rates	Brief Design Requirements
Extended Detention Pond	70%	60-80%	Sediment forebay
Wet Pond (a)	70%	60-80%	Sediment forebay
Constructed Wetland (b)	80%	65-80%	Designed to infiltrate or retain
Water Quality Swale	70%	60-80%	Designed to infiltrate or retain
Infiltration Trench	80%	75-80%	Pretreatment critical
Infiltration Basin	80%	75-80% (predicted)	Pretreatment critical
Dry Well	80%	80% (predicted)	Rooflop runoff (uncontaminated only)
Sand Filter (c)	80%	80%	Pretreatment
Organic Filter (d)	80%	80%+	Pretreatment
Water Quality Inlet	25%	15-35% w/ cleanout	Off-line only; 0.1" minimum Water Quality Volume (WQV) storage
Sediment Trap (Forebay)	25%	25% w/ cleanout	Storm flows for 2-year event must not cause erosion; 0.1" minimum WQV storage
Drainage Channel	25%	25%	Check dams; non-erosive for 2-yr.
Deep Sump and Hooded Catch Basin	25%	25% w/ cleanout	Deep sump general rule = 4 x pipe diameter or 4.0' for pipes 18" or less
Street Sweeping	10%	10%	Discretionary non-structural credit, must be part of approved plan

Best Management Practice (BMP) Treatment Train Efficiency Worksheet

Prepared for:
Retail Development
Evergreen Walk
South Windsor, CT

Prepared by:
BL Companies
100 Constitution Plaza
Hartford CT

Date prepared:
September 18, 2019

Overall Site Treatment Train Efficiency OF-2

Et=[1-(1-E1)(1-E2)(1-E3)(1-E4)(1-E?)]*100	<u>BMP</u>	<u>BMP Description</u>	<u>Type of Treatment</u>	<u>Efficiency Rate %</u>
	E1	Impervious Surface Sweeping***	secondary (conventional)	10
	E2	catch basin (hoods & deep sumps)***	secondary (conventional)	25
	E3	Hydrodynamic Separator**	Secondary	75

Overall Treatment Train Efficiency (Et)= 83.125 % Total Suspended Solids (TSS) Removal

* 80% require per CT DEP
** Manufacturers claim 80% TSS removal
*** Schueler 1996 & EPA 1993
**** University of New Hampshire

<u>BMP</u>	<u>Type of Treatment</u>	<u>TSS Removal Rate</u>	<u>Starting TSS Load</u>	<u>Amount Removed</u>	<u>Remaining Load</u>
Impervious Surface Sweeping***	secondary (conventional)	0.1	1	0.1	0.9
catch basin (hoods & deep sumps)***	secondary (conventional)	0.25	0.9	0.225	0.675
Hydrodynamic Separator **	Secondary	0.75	0.675	0.50625	0.16875
Overall Treatment Train Efficiency (%)					83%

TSS Removal Rates (adapted from Schueler, 1996, & EPA, 1993)

BMP List	Design Rate	Range of Average TSS Removal Rates	Brief Design Requirements
Extended Detention Pond	70%	60-80%	Sediment forebay
Wet Pond (a)	70%	60-80%	Sediment forebay
Constructed Wetland (b)	80%	65-80%	Designed to infiltrate or retain
Water Quality Swale	70%	60-80%	Designed to infiltrate or retain
Infiltration Trench	80%	75-80%	Pretreatment critical
Infiltration Basin	80%	75-80% (predicted)	Pretreatment critical
Dry Well	80%	80% (predicted)	Roofoff runoff (uncontaminated only)
Sand Filter (c)	80%	80%	Pretreatment
Organic Filter (d)	80%	80%+	Pretreatment
Water Quality Inlet	25%	15-35% w/ cleanout	Off-line only; 0.1" minimum Water Quality Volume (WQV) storage
Sediment Trap (Forebay)	25%	25% w/ cleanout	Storm flows for 2-year event must not cause erosion; 0.1" minimum WQV storage
Drainage Channel	25%	25%	Check dams; non-erosive for 2-yr.
Deep Sump and Hooded Catch Basin	25%	25% w/ cleanout	Deep sump general rule = 4 x pipe diameter or 4.0' for pipes 18" or less
Street Sweeping	10%	10%	Discretionary non-structural credit, must be part of approved plan

TABLE 2 - PERFORMANCE MATRIX FOR CONNDOT APPROVED HYDRODYNAMIC SEPARATORS

Maximum WQF (cfs)	Product Model								
	<i>Downstream Defender</i>	<i>Flogard</i>	<i>High Eff. CDS</i>	<i>Hydroguard</i>	<i>Stormceptor OSR</i>	<i>Stormceptor STC</i>	<i>Vortechs</i>	<i>Vortsentry</i>	<i>V2B1</i>
0.4	4-ft	DVS-36	2015-4G; 2015-4	HG 4	065	450	1000	VS30	2
0.5	4-ft	DVS-36	2015-4G; 2015-4	HG 4	065	900	1000	VS30	2
0.6	4-ft	DVS-36	2015-4G; 2015-4	HG 4	065	900	1000	VS40	2
0.7	4-ft	DVS-48	2015-4G; 2015-4	HG 4	140	900	1000	VS40	2
0.8	4-ft	DVS-48	2015-4G; 2015-4	HG 4	140	900	1000	VS40	2
0.9	4-ft	DVS-48	2015-4G; 2015-4	HG 4	140	1200	1000	VS40	3
1.0	4-ft	DVS-48	2015-4G; 2015-4	HG 4	140	1800	1000	VS40	3
1.1	4-ft	DVS-48	2015-4G; 2015-4	HG 4	140	1800	1000	VS40	4
1.2	6-ft	DVS-48	2015	HG 5	140	2400	1000	VS50	4
1.3	6-ft	DVS-60	2015	HG 5	140	2400	1000	VS50	4
1.4	6-ft	DVS-60	2015	HG 5	140	2400	2000	VS50	4
1.5	6-ft	DVS-60	2020	HG 5	140	2400	2000	VS50	6
1.6	6-ft	DVS-60	2020	HG 5	140	2400	2000	VS50	6
1.7	6-ft	DVS-60	2020	HG 5	250	2400	2000	VS50	6
1.8	6-ft	DVS-60	2020	HG 6	250	2400	2000	VS50	7
1.9	6-ft	DVS-60	2020	HG 6	250	3600	2000	VS60	7
2.0	6-ft	DVS-60	2020	HG 6	250	3600	2000	VS60	7
2.1	6-ft	DVS-60	2020	HG 6	250	3600	2000	VS60	9
2.2	6-ft	DVS-72	2025	HG 6	250	3600	2000	VS60	8
2.3	6-ft	DVS-72	3020, 3020-D	HG 6	250	3600	2000	VS60	8
2.4	6-ft	DVS-72	3035; 3035-D	HG 6	250	4800	2000	VS60	8
2.5	6-ft	DVS-72	3035; 3035-D	HG 6	250	4800	3000	VS60	10
2.6	6-ft	DVS-72	3035; 3035-D	HG 6	250	4800	3000	VS60	11
2.7	6-ft	DVS-72	3035; 3035-D	HG 7	250	4800	3000	VS60	11
2.8	6-ft	DVS-72	3035; 3035-D	HG 7	250	4800	3000	VS70	11
2.9	6-ft	DVS-72	3035; 3035-D	HG 7	250	4800	3000	VS70	12
3.0	6-ft	DVS-72	3035; 3035-D	HG 7	390	4800	3000	VS70	12

TABLE 2 - PERFORMANCE MATRIX FOR CONNDOT APPROVED HYDRODYNAMIC SEPARATORS (continued)

Maximum WQF (cfs)	Product Model								
	<i>Downstream Defender</i>	<i>Flogard</i>	<i>High Eff. CDS</i>	<i>Hydroguard</i>	<i>Stormceptor OSR</i>	<i>Stormceptor STC</i>	<i>Vortechs</i>	<i>Vortsentry</i>	<i>V2B1</i>
3.1	8-ft	DVS-72	3035; 3035-D	HG 7	390	4800	3000	VS70	12
3.2	8-ft	DVS-72	3035; 3035-D	HG 7	390	4800	3000	VS70	12
3.3	8-ft	DVS-72	3035; 3035-D	HG 7	390	4800	3000	VS70	14
3.4	8-ft	DVS-72	3035; 3035-D	HG 7	390	6000	3000	VS70	14
3.5	8-ft	DVS-72	3030; 3030-DV, 3030-D; 4030-D	HG 7	390	6000	3000	VS70	14
3.6	8-ft	DVS-72	4030	HG 7	390	6000	3000	VS70	14
3.7	8-ft	DVS-84	4030	HG 8	390	6000	3000	VS70	14
3.8	8-ft	DVS-84	4030	HG 8	390	6000	4000	VS70	13
3.9	8-ft	DVS-84	4030	HG 8	390	7200	4000	VS70	15
4.0	8-ft	DVS-84	4030	HG 8	390	7200	4000	VS80	15
4.1	8-ft	DVS-84	4030	HG 8	390	7200	4000	VS80	15
4.2	8-ft	DVS-84	4030	HG 8	390	7200	4000	VS80	16
4.3	8-ft	DVS-84	4030	HG 8	390	7200	4000	VS80	16
4.4	8-ft	DVS-84	4030	HG 8	390	7200	4000	VS80	16
4.5	8-ft	DVS-84	4030	HG 8	390	7200	4000	VS80	16
4.6	8-ft	DVS-84	5640-D	HG 8	390	7200	4000	VS80	17
4.7	8-ft	DVS-84	5640-D	HG 8	390	7200	4000	VS80	17
4.8	8-ft	DVS-84	5640-D	HG 8	390	7200	4000	VS80	17
4.9	8-ft	DVS-84	5640-D	HG 8	390	11000s	4000	VS80	17
5.0	8-ft	DVS-84	5640-D	HG 9	390	11000s	4000	VS80	19
5.2	8-ft	DVS-84	4040-D	HG 9	390	11000s	4000	VS80	20
5.4	8-ft	DVS-96	4040-D	HG 9	390	11000s	4000	VS100	20
5.5	8-ft	DVS-96	4045-D	HG 9	390	11000s	5000	VS100	18
5.6	8-ft	DVS-96	4045-D	HG 9	560	11000s	5000	VS100	18
6.0	8-ft	DVS-96	4040	HG 9	560	11000s	5000	VS100	18
6.1	8-ft	DVS-96	4040	HG 9	560	11000s	5000	VS100	21

TABLE 2 - PERFORMANCE MATRIX FOR CONNDOT APPROVED HYDRODYNAMIC SEPARATORS (continued)

Maximum WQF (cfs)	Product Model								
	<i>Downstream Defender</i>	<i>Flogard</i>	<i>High Eff. CDS</i>	<i>Hydroguard</i>	<i>Stormceptor OSR</i>	<i>Stormceptor STC</i>	<i>Vortechs</i>	<i>Vortsentry</i>	<i>V2B1</i>
6.3	8-ft	DVS-96	4040	HG 9	560	11000s	5000	VS100	25
6.4	10-ft	DVS-96	4040	HG 9	560	11000s	5000	VS100	25
6.5	10-ft	DVS-96	4040	HG 10	560	11000s	5000	VS100	25
6.9	10-ft	DVS-96	4040	HG 10	560	11000s	5000	VS100	25
7.0	10-ft	DVS-96	4040	HG 10	560	11000s	5000	VS100	22
7.1	10-ft	DVS-96	5042-D	HG 10	560	11000s	5000	VS100	22
7.2	10-ft	DVS-96	5042-D	HG 10	560	13000s	5000	VS100	22
7.3	10-ft	DVS-96	4045	HG 10	560	13000s	5000	VS100	22
7.5	10-ft	DVS-96	5653-D	HG 10	560	13000s	7000	VS100	22
7.7	10-ft	DVS-120	5653-D	HG 10	560	13000s	7000	VS100	22
7.8	10-ft	DVS-120	5653-D	HG 10	560	13000s	7000	VS100	50
7.9	10-ft	DVS-120	5653-D	HG 10	780	13000s	7000	VS100	50
8.0	10-ft	DVS-120	5658-D	HG 10	780	13000s	7000	VS100	50
8.2	10-ft	DVS-120	5658-D	HG 10	780	16000s	7000	VS100	50
8.5	10-ft	DVS-120	5658-D	HG 12	780	16000s	7000	VS100	50
8.6	10-ft	DVS-120	5658-D	HG 12	780	16000s	7000	VS100	50
8.9	10-ft	DVS-120	5678-D	HG 12	780	16000s	7000	VS100	50
9.0	10-ft	DVS-120	5678-D	HG 12	780	16000s	7000	VS120	50
9.2	10-ft	DVS-120	5678-D	HG 12	780	16000s	7000	VS120	50
9.5	10-ft	DVS-120	5050-DV	HG 12	780	16000s	7000	VS120	50
9.6	10-ft	DVS-120	5050-DV	HG 12	780	16000s	7000	VS120	50
10.0	10-ft	DVS-120	5050-DV	HG 12	780	16000s	9000	VS120	50
10.1	10-ft	DVS-120	5050-DV	HG 12	780	16000s	9000	VS120	50
10.5	10-ft	DVS-120	5050-DV	HG 12	780		9000	VS120	50
10.9	10-ft	DVS-120	5050-DV	HG 12	780		9000	VS120	50
11.0	10-ft	DVS-120	7070-DV	HG 12	780		9000	VS120	50
11.2	10-ft	DVS-120	7070-DV	HG 12	1125		9000	VS120	50

TABLE 2 - PERFORMANCE MATRIX FOR CONNDOT APPROVED HYDRODYNAMIC SEPARATORS (continued)

Maximum WQF (cfs)	Product Model								
	<i>Downstream Defender</i>	<i>Flogard</i>	<i>High Eff. CDS</i>	<i>Hydroguard</i>	<i>Stormceptor OSR</i>	<i>Stormceptor STC</i>	<i>Vortechs</i>	<i>Vortsentry</i>	<i>V2B1</i>
11.5		DVS-120	7070-DV	HG 12	1125		9000	VS120	50
11.8		DVS-120	7070-DV	HG 12	1125		9000	VS120	50
11.9		DVS-120	7070-DV	HG 12	1125		9000	VS120	60
12.0		DVS-120	7070-DV	HG 12	1125		9000	VS120	60
12.1		DVS-120	7070-DV	HG 12	1125		9000	VS120	60
12.5		DVS-120	7070-DV	HG 12	1125		11000	VS120	60
13.0		DVS-120	7070-DV		1125		11000	VS120	60
13.5		DVS-120	7070-DV		1125		11000	VS120	60
13.6		DVS-120	7070-DV		1125		11000	VS120	60
14.0		DVS-144	7070-DV		1125		11000	VS120	60
14.5		DVS-144	7070-DV		1125		11000		60
14.9		DVS-144	7070-DV		1125		11000		60
15.0		DVS-144	7070-DV		1125		16000		60
15.5		DVS-144	7070-DV		1125		16000		60
15.7		DVS-144	7070-DV		1125		16000		60
16.0		DVS-144	7070-DV				16000		60
16.5		DVS-144	7070-DV				16000		60
17.0		DVS-144	7070-DV				16000		
17.5		DVS-144	7070-DV				16000		
18.0		DVS-144	7070-DV				16000		
18.5		DVS-144	7070-DV				16000		
19.0		DVS-144	7070-DV				16000		
19.7		DVS-144	7070-DV				16000		
20.0		DVS-144	10060-DV				16000		
21.5		DVS-144	10060-DV				16000		
22.3		DVS-144	10060-DV				1319		
25.0			10060-DV				1319		
25.2			10060-DV				1319		

TABLE 2 - PERFORMANCE MATRIX FOR CONNDOT APPROVED HYDRODYNAMIC SEPARATORS (continued)

Maximum WQF (cfs)	Product Model								
	<i>Downstream Defender</i>	<i>Flogard</i>	<i>High Eff. CDS</i>	<i>Hydroguard</i>	<i>Stormceptor OSR</i>	<i>Stormceptor STC</i>	<i>Vortechs</i>	<i>Vortsentry</i>	<i>V2B1</i>
27.6			10060-DV				1421		
29.3			10080-DV				1421		
30.0			10080-DV				1522		
31.2			10080-DV				1522		
33.6			100100-DV				1522		
35.0			100100-DV				1624		
38.2			100100-DV				1624		
40.0			100100-DV				1726		
43.2			100100-DV				1726		
49.3			100100-DV						

TABLE 3 - STANDARD SEDIMENT STORAGE CAPACITY FOR CONNDOT APPROVED HYDRODYNAMIC SEPARATORS

Sediment Storage (cubic yards)	Product Model								
	<i>Downstream Defender</i>	<i>Flogard</i>	<i>High Eff. CDS</i>	<i>Hydroguard</i>	<i>Stormceptor OSR</i>	<i>Stormceptor STC</i>	<i>Vortechs</i>	<i>Vortsentry</i>	<i>V2B1</i>
0.3	4-ft	DVS-36					1000		
0.5									
0.6							2000		
0.7		DVS-48		HG 4					
0.8					065	450		VS30	2; 3
0.9			2015-4G; 2015-4						
1.0 (minimum)							3000		
1.1					140	900			
1.2				HG 5					
1.3		DVS-60							
1.4							4000	VS40	
1.5			2015; 2020; 2025						
1.6									4
1.7				HG 6					
1.8	6-ft					1200			
1.9							5000		
2.0									
2.1									
2.2		DVS-72						VS50	
2.3				HG 7					
2.4									6; 7
2.5							7000		
2.6			3020, 3020-D; 3030, 3030-DV, 3030-D; 3035, 3035-D						
2.9					250	2400			

TABLE 3 - STANDARD SEDIMENT STORAGE CAPACITY FOR CONNDOT APPROVED HYDRODYNAMIC SEPARATORS (continued)

Sediment Storage (cubic yards)	Product Model								
	<i>Downstream Defender</i>	<i>Flogard</i>	<i>High Eff. CDS</i>	<i>Hydroguard</i>	<i>Stormceptor OSR</i>	<i>Stormceptor STC</i>	<i>Vortechs</i>	<i>Vortsentry</i>	<i>V2B1</i>
3.0				HG 8					
3.1							9000	VS60	
3.2									8; 9
3.3						1800			
3.4									
3.5		DVS-84							
3.6									
3.7	8-ft		5640-D						
3.8				HG 9					
3.9							11000		
4.0									
4.2									10; 11; 12
4.3			4030-D; 4040-D; 4045-D					VS70	
4.5									
4.6									
4.7									13
5.0				HG 10					
5.1									
5.3		DVS-96	5042-DV; 5050-DV						
5.5									
5.6			4030; 4040; 4045; 5653-D; 5658-D; 5678-D				16000	VS80	
5.7									
6.0						3600			
6.5									

TABLE 3 - STANDARD SEDIMENT STORAGE CAPACITY FOR CONNDOT APPROVED HYDRODYNAMIC SEPARATORS (continued)

Sediment Storage (cubic yards)	Product Model								
	<i>Downstream Defender</i>	<i>Flogard</i>	<i>High Eff. CDS</i>	<i>Hydroguard</i>	<i>Stormceptor OSR</i>	<i>Stormceptor STC</i>	<i>Vortechs</i>	<i>Vortsentry</i>	<i>V2B1</i>
6.6							1319		
6.9									
7.0									
7.1									
7.2									
7.3									14; 15; 16; 17; 18
7.5				HG 12					
7.6							1421		
7.7									
8.0									
8.3									
8.4			7070-DV						
8.6						4800			
8.7	10-ft				390		1522	VS100	
9.0									
9.5									
9.6									
9.9							1624		
10.0									
10.3		DVS-120							
10.5									19; 20
11.0									
11.2							1726		
11.3						6000			
11.5									21; 22
11.8									

TABLE 3 - STANDARD SEDIMENT STORAGE CAPACITY FOR CONNDOT APPROVED HYDRODYNAMIC SEPARATORS (continued)

Sediment Storage (cubic yards)	Product Model								
	<i>Downstream Defender</i>	<i>Flogard</i>	<i>High Eff. CDS</i>	<i>Hydroguard</i>	<i>Stormceptor OSR</i>	<i>Stormceptor STC</i>	<i>Vortechs</i>	<i>Vortsenry</i>	<i>V2B1</i>
12.0									
12.6								VS120	25
12.9					560				
13.0									
13.4						7200			
15.0									
17.5					780				
17.8		DVS-144	10060-DV;10080-DV; 100100-DV						
20.0									
22.3									50
25.0									
25.8					1125				
26.1						11000s			
26.2									
30.0									
34.1						13000s			
34.9									60
35.0									
38.7									
40.0									
40.7						16000s			

PROJECT Retail Development - Evergreen Walk, South Windsor CT
DATE 9/18/2019
SUBJECT Splitter Manhole Calculation

PREPARED BY J. Bates
CHECKED BY

HDS-211:

WQF = 4.03 cfs

Low Flow Orifice		Overflow Weir		
Dia. (In.)	Inv. Elev.	Bottom El.	Height (Ft.)	Length (Ft.)
18	103.80	103.80	1.00	4.00

Orifice A Orifice "C"
(s.f.)
1.767 0.6

W.S. Elev. ft.	H (Orifice) ft.	Q (Orifice) cfs	H (Weir) ft.	Q (Weir) cfs	Q (Total) cfs
104.80	0.25	4.25	0.00	0.00	4.25
104.90	0.35	5.03	0.10	0.42	5.45
105.00	0.45	5.71	0.20	1.19	6.90
105.10	0.55	6.31	0.30	2.19	8.50
105.20	0.65	6.86	0.40	3.37	10.23
105.30	0.75	7.37	0.50	4.71	12.08
105.40	0.85	7.84	0.60	6.19	14.04
105.50	0.95	8.29	0.70	7.80	16.09
105.60	1.05	8.72	0.80	9.53	18.25
105.70	1.15	9.12	0.90	11.37	20.50
105.80	1.25	9.51	1.00	13.32	22.83
105.90	1.35	9.89	1.10	15.37	25.25
106.00	1.45	10.25	1.20	17.51	27.76
106.10	1.55	10.59	1.30	19.74	30.34
106.20	1.65	10.93	1.40	22.06	32.99
106.30	1.75	11.26	1.50	24.47	35.73
106.40	1.85	11.57	1.60	26.96	38.53
106.50	1.95	11.88	1.70	29.52	41.41
106.60	2.05	12.18	1.80	32.17	44.35
106.70	2.15	12.48	1.90	34.88	47.36
106.80	2.25	12.76	2.00	37.67	50.44
106.90	2.35	13.04	2.10	40.54	53.58
107.00	2.45	13.32	2.20	43.46	56.78
107.10	2.55	13.59	2.30	46.46	60.05
107.20	2.65	13.85	2.40	49.52	63.38
107.30	2.75	14.11	2.50	52.65	66.76
107.40	2.85	14.36	2.60	55.84	70.21
107.50	2.95	14.61	2.70	59.09	73.71
107.60	3.05	14.86	2.80	62.41	77.27
107.70	3.15	15.10	2.90	65.78	80.88
107.80	3.25	15.34	3.00	69.21	84.55
107.90	3.35	15.57	3.10	72.70	88.28
108.00	3.45	15.80	3.20	76.25	92.05
108.10	3.55	16.03	3.30	79.85	95.88
108.20	3.65	16.26	3.40	83.51	99.76
108.25	3.70	16.37	3.45	85.36	101.72
108.30	3.75	16.48	3.50	87.22	103.69
108.40	3.85	16.69	3.60	90.98	107.68

PROJECT Retail Development - Evergreen Walk, South Windsor CT
DATE 9/18/2019
SUBJECT Splitter Manhole Calculation

PREPARED BY J. Bates
CHECKED BY

HDS-204:

WQF = 2.44 cfs

Low Flow Orifice		Overflow Weir		
Dia. (In.)	Inv. Elev.	Bottom El.	Height (Ft.)	Length (Ft.)
15	104.90	104.90	0.80	4.00

Orifice A
(s.f.)
1.227

Orifice "C"
0.6

W.S. Elev. ft.	H (Orifice) ft.	Q (Orifice) cfs	H (Weir) ft.	Q (Weir) cfs	Q (Total) cfs
105.70	0.17	2.47	0.00	0.00	2.47
105.80	0.27	3.10	0.10	0.42	3.52
105.90	0.37	3.62	0.20	1.19	4.81
106.00	0.47	4.07	0.30	2.19	6.26
106.10	0.57	4.48	0.40	3.37	7.85
106.20	0.67	4.85	0.50	4.71	9.56
106.30	0.77	5.20	0.60	6.19	11.39
106.40	0.87	5.53	0.70	7.80	13.33
106.50	0.97	5.83	0.80	9.53	15.37
106.60	1.07	6.13	0.90	11.37	17.50
106.70	1.17	6.40	1.00	13.32	19.72
106.80	1.27	6.67	1.10	15.37	22.04
106.90	1.37	6.93	1.20	17.51	24.44
107.00	1.47	7.18	1.30	19.74	26.92
107.10	1.57	7.42	1.40	22.06	29.48
107.20	1.67	7.65	1.50	24.47	32.12
107.30	1.77	7.87	1.60	26.96	34.83
107.40	1.87	8.09	1.70	29.52	37.61
107.50	1.97	8.30	1.80	32.17	40.47
107.60	2.07	8.51	1.90	34.88	43.40
107.70	2.17	8.71	2.00	37.67	46.39
107.80	2.27	8.91	2.10	40.54	49.45
107.90	2.37	9.11	2.20	43.46	52.57
108.00	2.47	9.30	2.30	46.46	55.76
108.10	2.57	9.48	2.40	49.52	59.01
108.20	2.67	9.66	2.50	52.65	62.32
108.30	2.77	9.84	2.60	55.84	65.69
108.40	2.87	10.02	2.70	59.09	69.11
108.50	2.97	10.19	2.80	62.41	72.60
108.60	3.07	10.36	2.90	65.78	76.14
108.70	3.17	10.53	3.00	69.21	79.74
108.80	3.27	10.69	3.10	72.70	83.40
108.90	3.37	10.85	3.20	76.25	87.10
109.00	3.47	11.01	3.30	79.85	90.86
109.10	3.57	11.17	3.40	83.51	94.68
109.15	3.62	11.25	3.45	85.36	96.61
109.20	3.67	11.33	3.50	87.22	98.55
109.30	3.77	11.48	3.60	90.98	102.46

PROJECT Retail Development - Evergreen Walk, South Windsor CT
 DATE 9/18/2019
 SUBJECT Splitter Manhole Calculation

PREPARED BY J. Bates
 CHECKED BY

HDS-319:

WQF = 2.13 cfs

Low Flow Orifice		Overflow Weir		
Dia. (In.)	Inv. Elev.	Bottom El.	Height (Ft.)	Length (Ft.)
15	105.40	105.40	0.80	4.00

Orifice A (s.f.) 1.227
 Orifice "C" 0.6

W.S. Elev. ft.	H (Orifice) ft.	Q (Orifice) cfs	H (Weir) ft.	Q (Weir) cfs	Q (Total) cfs
106.20	0.17	2.47	0.00	0.00	2.47
106.30	0.27	3.10	0.10	0.42	3.52
106.40	0.37	3.62	0.20	1.19	4.81
106.50	0.47	4.07	0.30	2.19	6.26
106.60	0.57	4.48	0.40	3.37	7.85
106.70	0.67	4.85	0.50	4.71	9.56
106.80	0.77	5.20	0.60	6.19	11.39
106.90	0.87	5.53	0.70	7.80	13.33
107.00	0.97	5.83	0.80	9.53	15.37
107.10	1.07	6.13	0.90	11.37	17.50
107.20	1.17	6.40	1.00	13.32	19.72
107.30	1.27	6.67	1.10	15.37	22.04
107.40	1.37	6.93	1.20	17.51	24.44
107.50	1.47	7.18	1.30	19.74	26.92
107.60	1.57	7.42	1.40	22.06	29.48
107.70	1.67	7.65	1.50	24.47	32.12
107.80	1.77	7.87	1.60	26.96	34.83
107.90	1.87	8.09	1.70	29.52	37.61
108.00	1.97	8.30	1.80	32.17	40.47
108.10	2.07	8.51	1.90	34.88	43.40
108.20	2.17	8.71	2.00	37.67	46.39
108.30	2.27	8.91	2.10	40.54	49.45
108.40	2.37	9.11	2.20	43.46	52.57
108.50	2.47	9.30	2.30	46.46	55.76
108.60	2.57	9.48	2.40	49.52	59.01
108.70	2.67	9.66	2.50	52.65	62.32
108.80	2.77	9.84	2.60	55.84	65.69
108.90	2.87	10.02	2.70	59.09	69.11
109.00	2.97	10.19	2.80	62.41	72.60
109.10	3.07	10.36	2.90	65.78	76.14
109.20	3.17	10.53	3.00	69.21	79.74
109.30	3.27	10.69	3.10	72.70	83.40
109.40	3.37	10.85	3.20	76.25	87.10
109.50	3.47	11.01	3.30	79.85	90.86
109.60	3.57	11.17	3.40	83.51	94.68
109.65	3.62	11.25	3.45	85.36	96.61
109.70	3.67	11.33	3.50	87.22	98.55
109.80	3.77	11.48	3.60	90.98	102.46

APPENDIX E

DRAINAGE MAPS

DRA-1 – Existing Master Plan Drainage Areas

ED-1 – Existing Drainage Mapping

PD-1 – Proposed Drainage Mapping

File Path: \\blcompanies.com\dfs\proj\JOBS\13\13C4718\RECORD\IN\2015-12-03 master plan drainage area map\Prop.Dra - Standard\STC Drainage\Prop.Dra.dwg, Layout: PROP.DRA Tue, Jun 12, 2018 - 11:42 AM User: sleclerc

UCS: WORLD CTB: LMAN: MS VIEW:

LAND USE TABLE

LAND AREA WITHIN:	
THE ROCKLAND ROAD GATEWAY DEVELOPMENT ZONE	229.9 AC.
THE 'RURAL' RESIDENTIAL ZONE	13.1 AC.
OVERALL PROPERTY	243 AC.

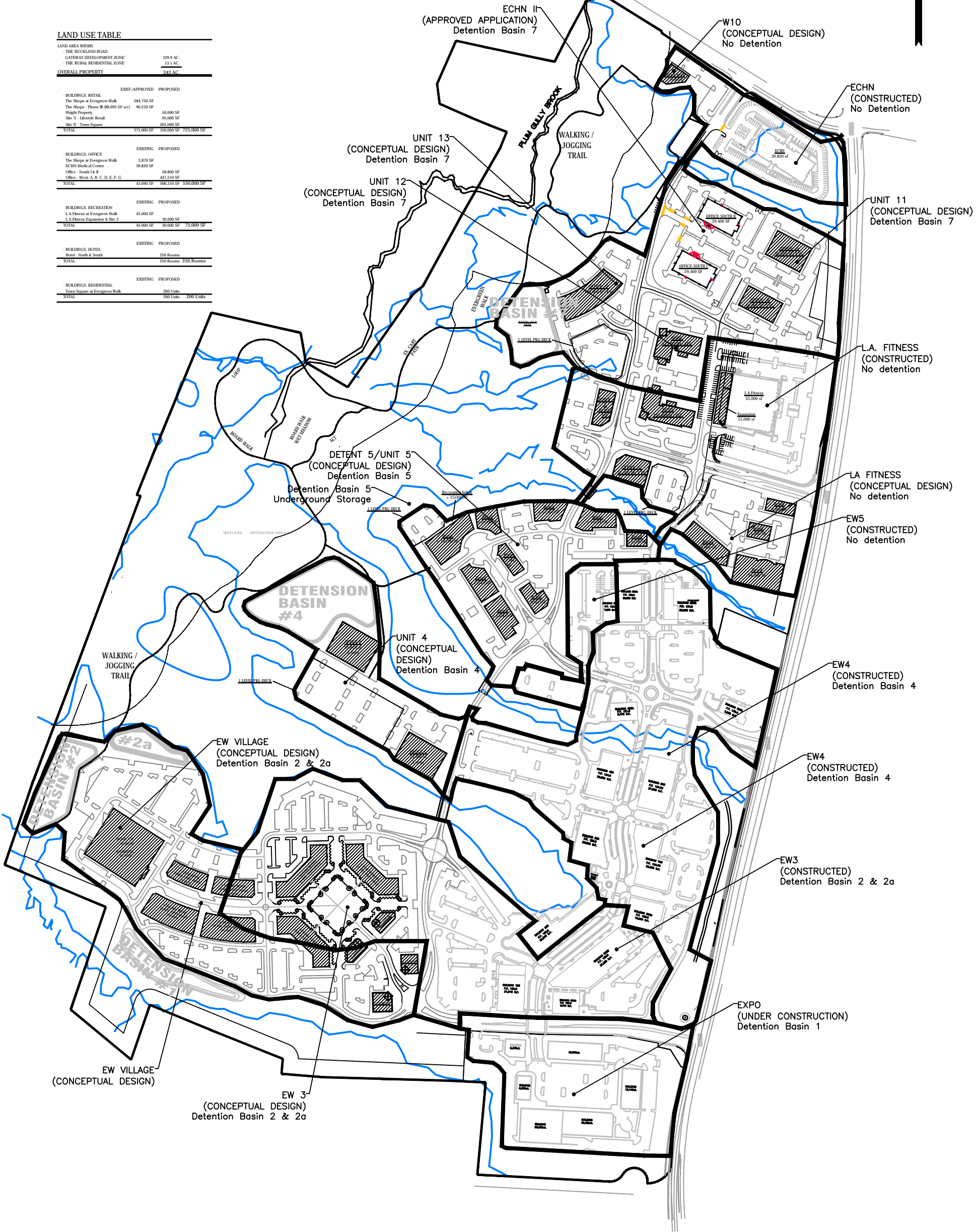
	EXIST./APPROVED	PROPOSED
BUILDINGS, RETAIL		
The Shops at Evergreen Walk	284,750 SF	
The Shops - Phase II (88,095 SF w/ c)	90,250 SF	
Wright Property	50,000 SF	
Site "T" Lifestyle Retail	65,000 SF	
Site "W" Town Square	205,000 SF	
TOTAL	375,000 SF	350,000 SF 725,000 SF

	EXISTING	PROPOSED
BUILDINGS, OFFICE		
The Shops at Evergreen Walk	3,870 SF	
ECHN Medical Center	39,820 SF	
Office - South I & II	58,800 SF	
Office - West A, B, C, D, E, F, G	447,210 SF	
TOTAL	43,690 SF	506,310 SF 550,000 SF

	EXISTING	PROPOSED
BUILDINGS, RECREATION		
L.A. Fitness at Evergreen Walk	45,000 SF	
L.A. Fitness Expansion & Site 3	30,000 SF	
TOTAL	45,000 SF	30,000 SF 75,000 SF

	EXISTING	PROPOSED
BUILDINGS, HOTEL		
Hotel - North & South	250 Rooms	
TOTAL	250 Rooms	250 Rooms

	EXISTING	PROPOSED
BUILDINGS, RESIDENTIAL		
Town Square at Evergreen Walk	200 Units	
TOTAL	200 Units	200 Units



SCALE:	
HORZ.: 1" = 400'	
VERT.:	
DATUM:	
HORZ.:	
VERT.:	
0 200 400	
GRAPHIC SCALE	



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EVERGREEN WALK MASTER DEVELOPMENT PLAN

SOUTH WINDSOR

CONNECTICUT

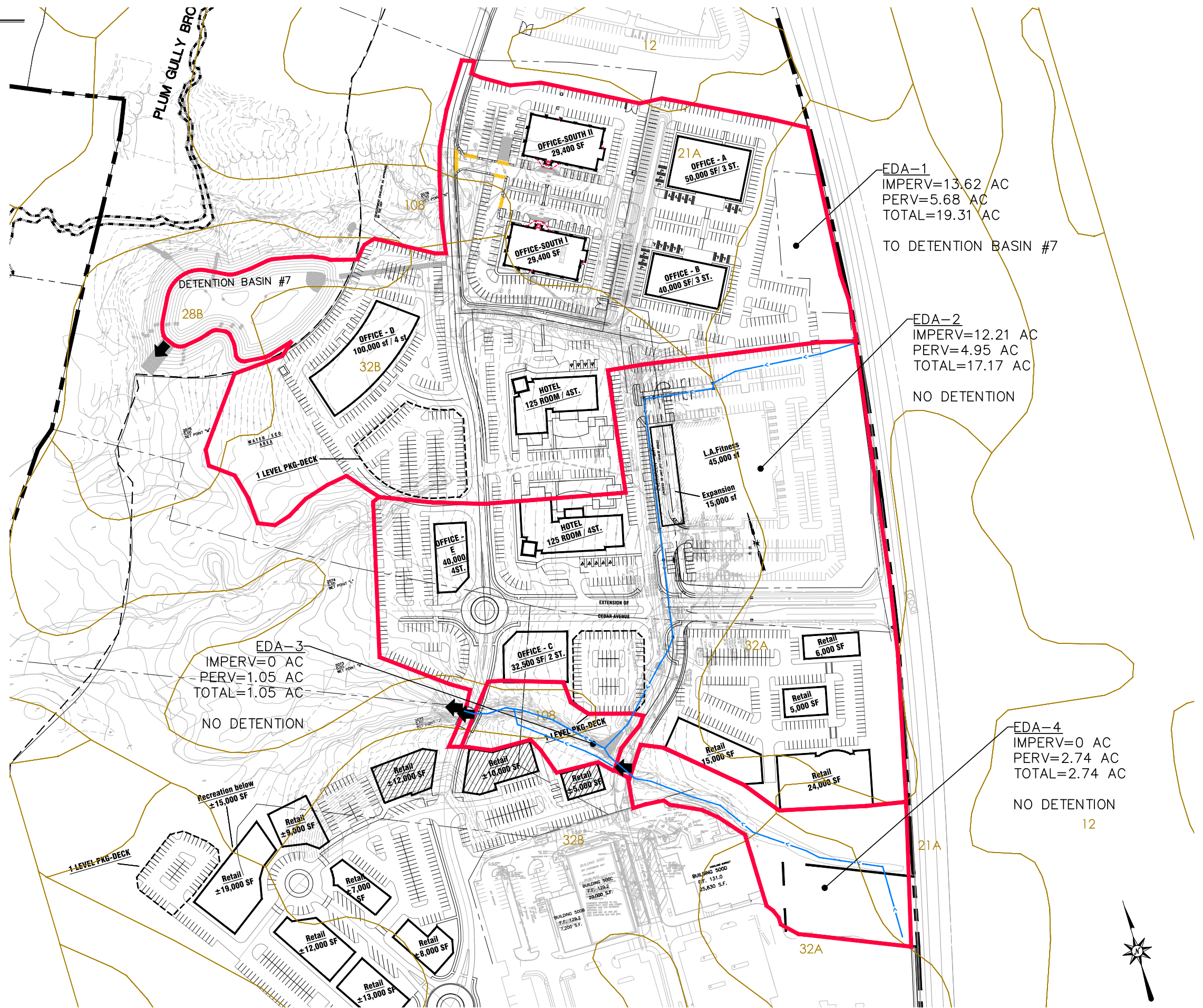
PROJ. No.: 2000 481 A30
DATE: 6/8/2007

DRA-1

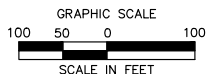
HYDROLOGY LEGEND

- PROPERTY LINE
- DRAINAGE AREA BOUNDARY
- SOIL TYPE BOUNDARY
- SOIL TYPE DESIGNATION
- TIME OF CONCENTRATION FLOW PATH

307



FOR PERMITTING PURPOSES ONLY
NOT RELEASED FOR CONSTRUCTION



Desc.

Date

No.

Desig.

Drawn

Reviewed

Scale

Project No.

Date

CAD File:

Title

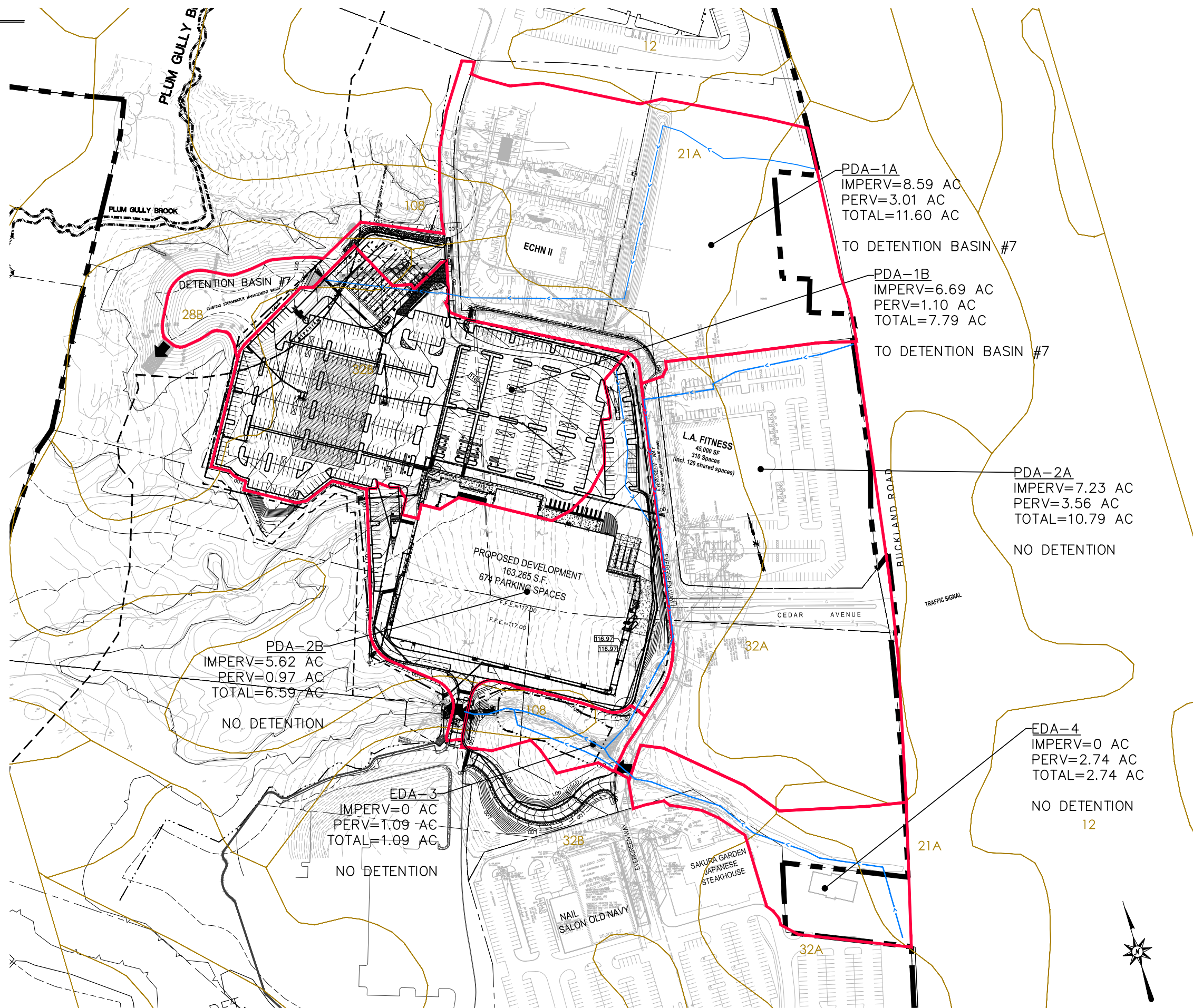
Sheet No.

ED-1

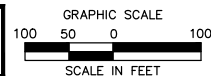
HYDROLOGY LEGEND

- PROPERTY LINE
- DRAINAGE AREA BOUNDARY
- SOIL TYPE BOUNDARY
- SOIL TYPE DESIGNATION
- TIME OF CONCENTRATION FLOW PATH

307



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100 Constitution Plaza, 10th Floor
Hartford, CT 06103
(860) 249-2200
(860) 249-2400 Fax

PROPOSED DEVELOPMENT
EVERGREEN WALK - UNIT 12
151 BUCKLAND ROAD
SOUTH WINDSOR, CONNECTICUT

Desc.
DRAINAGE MODIFICATION
PLANNING AND DESIGN SUBMISSION

REVISIONS
No. 1
Date 07/02/2020
08/14/2020

Designed S.E.L.
Drawn S.E.L.
Reviewed
Scale 1"=100'
Project No. 13C4718
Date 09/18/2019
CAD File: PD13C471801

Title
PROPOSED DRAINAGE MAPPING

Sheet No.

PD-1

APPENDIX F

STORMWATER SYSTEM
OPERATION AND MAINTENANCE MANUAL

Appendix F:

**Stormwater System
Operations and Maintenance Plan**

For the Proposed:
Retail Development at Evergreen Walk, Unit 12

Located at:
151 Buckland Road
South Windsor, CT

Prepared for Submission to:
**Town of South Windsor
Land Use Agencies**

**September 18, 2019
Revised August 14, 2020**

Prepared by:



BL Companies
100 Constitution Plaza, 10th Floor
Hartford, Connecticut 06103
Phone: (860) 249-2200
Fax: (860) 249-2400

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General Overview

The proposed project is to develop Unit 12 at Evergreen Walk with a Costco with fueling station. The building pad site consists of approximately 16.2 acres of the entire development parcel with a total area of approximately 240 acres. Unit 12 is part of the Evergreen Walk Master Plan Area.

The proposed site improvements will include the proposed Costco building, fueling station, paved parking areas, landscaped areas, pedestrian sidewalks, site utilities, and a stormwater management system. As a master planned development, the existing stormwater management system has been designed to convey the stormwater discharge from the previous approved developed site conditions. The current proposed site development will increase the amount of impervious ground cover on-site as well as a reduction of storage volume in Detention Basin #7 as necessary to accommodate the needs of the business. The existing stormwater management system will be supplemented with a subsurface detention system in order to maintain stormwater runoff rates as approved in the master plan.

The following Operations and Maintenance Plan was prepared specifically for this site development in South Windsor, Connecticut. The Plan was developed to satisfy the South Windsor Inland Wetland and Watercourse and Zoning Commissions.

Purpose & Goals

The purpose of this Manual is ensuring that the site is operated in accordance with all approvals and permits. The primary goal is to inform all the property managers about how the system operates and what maintenance items are necessary to protect downstream wetlands and watercourses. The secondary goal is to provide a practical, efficient means of maintenance planning and record keeping to verify permit compliance.

Responsible Parties

The property owner will be responsible for implementing the Plan on the property. The party may retain a management company to oversee the maintenance of the site.

Some utilities located on the site will be owned and maintained by the various utility companies in accordance with their standards. The property owner may maintain the service connections.

List of Permits & Special Conditions

The site will receive a number of permits, which may contain special conditions that require compliance by the owners and maintenance contractors. These permits may include the following:

Town of South Windsor:

Planning and Zoning Commission: Site Plan Approval.

Inland Wetlands and Water Course Commission: Inland Wetlands Approval

State of Connecticut:

OSTA

Maintenance Logs and Checklists

The property owner will keep a record of all maintenance procedures performed, date of inspection/ cleanings, etc. Copies of inspection reports and maintenance records shall be kept on site in the facility manager's office once it is established.

Forms

The following forms will be developed for annual maintenance. Copies of the forms will be kept on-site as part of the Storm Water Management Plan.

- Annual Checklist
- Quarterly Checklist
- Monthly Checklist

Employee Training

The site will have an employee-training program, with annual up-dates, to ensure that the employees charged with maintaining the site do so in accordance with the approved permit conditions. All sub-contractors (Vactor, landscaping, snowplowing, etc.) will be informed of requirements and responsibilities.

Spill Control

In addition to the good housekeeping and material management practices discussed in the previous sections of this plan, the following practices will be followed for spill prevention and clean-up:

- Manufacturer's recommended methods for spill clean-up will be clearly posted and site personnel will be made aware of the procedures and the location of the information and clean-up supplies.
- Materials and equipment necessary for spill clean-up will be kept in the material storage area on-site. Equipment and materials will include but not be limited to: absorbent booms or mats, brooms, dust pans, mops, rags, gloves, goggles, sand, and plastic and metal trash containers specifically for this purpose.
- All spills will be cleaned immediately after discovery.
- The spill area will be kept well-ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with hazardous substance.
- Spills of toxic or hazardous material, regardless of size, will be reported to the appropriate State or local government agency.
- If a spill occurs, this plan will be adjusted to include measures to prevent this type of spill from reoccurring and how to clean the spill if there is another one. A description of the spill, the cause, and the remediation measures will also be included.

A spill report shall be prepared by the property owner following each occurrence. The spill report shall present a description of the release, including quantity and type of material, date of spill, circumstances leading to the release, location of spill, response actions and personnel, documentation of notifications and corrective measures implemented to prevent reoccurrence.

The property owner shall identify an appropriately qualified and trained site employee involved with day-to-day site operations to be the spill prevention and clean-up coordinator. The name(s) of responsible spill personnel shall be posted on-site. Each employee shall be instructed that all spills are to be reported to the spill prevention and clean-up coordinator.

The operators of the fuel facility will be trained on the operation and maintenance of the isolation gate valves installed on the stormwater management system. In the event of a fuel spill that could potentially be captured by the stormwater management system the gate valves will immediately be closed to prevent any contaminants from discharging from the site. Isolation gate valves shall be actuated once yearly to ensure function and shall be maintained as needed.

Storm Water Management

System Components

The storm water management system has several components that are shown on the Grading and Drainage drawings (GD-1, and GD-2), and they perform various functions in treating storm water runoff:

Catch Basins are inlets, which trap road sand and floatable debris prior to draining through the storm sewer system. The proposed catch basins (CBs) are equipped with deep sumps with sump depths 4' below the outlet pipe, and hoods over the outlet pipes.

Catch Basins and Manholes

The property owner is responsible for cleaning the catch basins and manholes on the property. A Connecticut Licensed hauler shall clean the sumps and dispose of removed sand legally. The road sand may be reused for winter sanding but may not be stored on-site. As part of the hauling contract, the hauler shall notify the property owner in writing where the material is being disposed.

Each catch basin shall be inspected every four months, with one inspection occurring during the month of April. Any debris occurring within one foot from the bottom of each sump shall be removed by Vacuum "Vactor" type of maintenance equipment.

During the inspection of each of the catch basin sumps, the hoods (where provided) on each of the outlet pipes shall also be observed. In the event that a hood is damaged or off the hanger, it shall be reset or repaired.

Hydrodynamic Separators

The hydrodynamic separator manholes will be cleaned periodically during construction, and at the end of construction once the landscaped areas are fully stabilized.

For the first year of operation following construction, inspect each manhole once each month for the months of January, February, March and April, and once every four months thereafter. A graduated measuring device (stadia rod) shall be inserted into each grit chamber and measurements of any accumulations shall be recorded. Any debris, which has accumulated to within one foot of the water surface inside the grit chamber portion of each tank, shall be removed by vacuum "Vactor" type of equipment.

After the first year of operation, each manhole shall be inspected at a minimum, three times yearly with one inspection occurring in the month of April in the same manner as described above for the first season of operation. Any accumulations found to be occurring within one foot of the water surface shall be removed from the manhole and properly disposed off-site. Also, any floating material discovered during inspections shall be removed from the tank.

A detailed maintenance logbook shall be kept for each manhole. Information is to include, but not be limited to, the date of inspection, record of grit depth, condition of baffles, observation of any floatable, and date of cleaning performed.

Subsurface Stormwater Management Systems (underground Detention Systems)

The underground detention systems shall be inspected every six months in the months of April and October. Each of the inspection ports provided shall be opened and visually checked from the surface. Observation of grit inside of the detention system shall be noted and any deposits found to be 2 inches or more, as measured from the invert of pipe, shall be cleaned and removed. The underground detention system qualifies as a Confined Space under OSHA regulations, and any maintenance involving entry into the pipes should comply with OSHA Confined Space Entry Regulations.

Underground detention systems may be installed with an isolation gate valve (spill control device) as indicated on the Grading and Drainage Plan. Isolation gate valves shall be test operated to ensure functionality and lubricated when the underground detention system is inspected every six months in the months of April and October.

Rip Rap Aprons

The riprap aprons or swales are excavated depressions which are lined with rock riprap to prevent scouring. The depressions permit the dissipation of excessive energy and turbulence associated with the flow of stormwater being discharged from a conduit system.

Management actions include the following measures:

1. Inspect the surface of the scour hole quarterly for the first year and adjust as necessary (but at least annually) to ensure surface is free of debris and the discharge is flowing via sheet flow and not concentrated. Remove accumulated sediment when sediment depth

within the scour hole reaches 50% of the total depth. Frequency of cleaning depends on loading rate.

2. Inspect the discharge lip area for low points and down gradient flow areas for active scour or soil erosion. Repair scour and rills with compacted sandy till, and riprap as needed to prevent scouring.

Site Maintenance

Parking Lots

Parking lots, driveways and sidewalks shall be swept regularly by the property owner to clean trash and other debris. The property owner will sweep parking lots on its property in the spring to remove winter accumulations of road sand.

Landscaping

The property owner will maintain landscaped areas. Normally the landscaping maintenance will consist of pruning, mulching, planting, mowing lawns, raking leaves, etc. Use of fertilizers and pesticides will be controlled and limited to minimal amounts necessary for healthy landscape maintenance.

Soil tests, possibly by the Connecticut Cooperative Extension Service, will be performed prior to fertilization. Trees, shrub and lawn fertilization will be done according to the recommendations of the soil test report. Liming of lawn areas to control pH will be done in the spring if testing indicates that it is necessary. The detention basin, drainage channels, and low-maintenance slopes will not be fertilized following initial planting and stabilization.

The lawn areas, once established, will be maintained at a typical height of 2½"-3". This will allow the grass to be maintained with minimal impact from weeds and/or pests. The low-maintenance slope areas will be maintained as a meadow or allowed to revert back to natural conditions.

Pesticides will only be used as a control method when a problem has been clearly identified and other natural control methods are not successful. All pesticide applications shall be by licensed applicators, where necessary.

Topsoil, brush, leaves, clippings, woodchips, mulch, and other material shall be stored off site.

Trash Collection

All trash will be contained in a self-contained trash container on site with access to an exterior door. The self-contained trash container will be enclosed. All trash will be collected on a regular basis and disposed of legally off-site.

Outdoor Storage

There will be no outdoor storage of hazardous chemicals, fertilizer, pesticides, or herbicides anywhere in the site.

Clean wooden pallets and baled cardboard may be stored outside periodically. These items will be removed from the site on a regular schedule.

Snow Removal & Storage

Snow shall be shoveled and plowed from sidewalks, driveways and parking areas as soon as practical during and after winter storms and stored in snow storage areas on site where practical.

Utilities

Sanitary Sewer System

On-Site Collection Sewer: The property owner will annually inspect the manholes within the on-site sewer system on the property, and check for debris and blockage. Any low-flow lines with accumulations will be cleaned with water-jetting.

Water System

The on-site mains, fire hydrants, and off-site mains will be owned and maintained by others. The property owner will be responsible for maintaining the domestic and fire service lines to the buildings.

Gas\Electric\Telephone\Cable TV System

The electric system will be owned and maintained up to the switches and transformers by Eversource (aka CL&P). The gas system on site will be owned and maintained by the property owner and gas will be provided by Eversource (aka Yankee Gas). The property owner will maintain the secondary lines from the transformers to the buildings. The telephone system will be owned and maintained by Frontier (aka AT&T) up to the buildings. The cable TV system will be owned and maintained by Comcast of Connecticut.

Site Lighting

The property owner is responsible for maintaining the parking lot, driveway and building-mounted lights on the property.

MAINTENANCE SCHEDULE

During the First Year of Operation:		
Task:	Completion Date:	Manager's Initials:
JANUARY:		
Employee Training Program with Spill Program		
*Catch Basin and HDS Inspection		
*Subsurface Stormwater System and Basin Inspection		
FEBRUARY:		
*Catch Basin and HDS Inspection		
MARCH:		
*Catch Basin and HDS Inspection		
APRIL:		
*Catch Basin and HDS Inspection		
*Subsurface Stormwater System and Basin Inspection		
Sweeping of Paved Surfaces		
Shrub Fertilization		
Lawn Liming (if necessary)		
JUNE:		
*Catch Basin and HDS Inspection		
Sweeping of Paved Surfaces		
SEPTEMBER:		
*Subsurface Stormwater System and Basin Inspection		
Sweeping of Paved Surfaces		
Tree and Lawn Fertilization		
DECEMBER:		
*Catch Basin and HDS Inspection		
*Subsurface Stormwater System and Basin Inspection		
*Bioretention Basin (Rain Garden) Inspection		
Sweeping of Paved Surfaces		

*NOTE: Use appropriate worksheet found in this plan to conduct the inspection.

After the First Year of Operation:			
FOR YEAR _____			
Task:		Completion Date:	Manager's Initials:
JANUARY:			
Employee Training Program with Spill Program			
*Catch Basin and HDS Inspection			
APRIL:			
*Catch Basin and HDS Inspection			
*Subsurface Stormwater System and Basin Inspection			
*Bioretention Basin (Rain Garden) Inspection			
Sweeping of Paved Surfaces			
Shrub Fertilization			
Lawn Liming (if necessary)			
JUNE:			
Sweeping of Paved Surfaces			
SEPTEMBER:			
*Subsurface Stormwater System and Basin Inspection			
*Catch Basin and HDS Inspection			
Sweeping of Paved Surfaces			
Tree and Lawn Fertilization			
DECEMBER:			
*Catch Basin and HDS Inspection			
Sweeping of Paved Surfaces			

*NOTE: Use appropriate worksheet found in this plan to conduct the inspection.

CATCH BASIN / CATCH BASIN INSERT INSPECTION LOG

Name of Inspector:

Date:

Catch Basin ID	Condition (circle one)		Debris above 1' within sump? (If yes then catch basin is to be cleaned)		Date of Catch Basin/Cleaning (if debris is greater than 1')		Condition of Hood (if applicable, remove trash/debris if necessary)	Comments:
	Excellent							
	Fair	Poor	Yes	No	Yes	No		
	Excellent							
	Fair	Poor	Yes	No	Yes	No		
	Excellent							
	Fair	Poor	Yes	No	Yes	No		
	Excellent							
	Fair	Poor	Yes	No	Yes	No		
	Excellent							
	Fair	Poor	Yes	No	Yes	No		
	Excellent							
	Fair	Poor	Yes	No	Yes	No		
	Excellent							
	Fair	Poor	Yes	No	Yes	No		
	Excellent							
	Fair	Poor	Yes	No	Yes	No		
	Excellent							

On-site Procedures for Inspection and Maintenance of Catch Basin Inserts and Hydrodynamic Separators (HDS)

- Secure traffic and pedestrian traffic with cones, barrels, etc.
- Clean surface area around each catch basin.
- Remove grates and set aside
- Clean grates, remove litter and debris that may be trapped within the grate
- Visually inspect condition of outlet hood and remove trash and debris from hood if necessary.
- Remove by vacuum hose the debris that has been trapped in the trough area. Dispose of in accordance with local, state and federal regulatory agency requirements. Most debris that is captured in the trough or sump area will fall into the non-hazardous waste category.
- Visually inspect and check the condition of the trough area.
- Replace grate and lockdown as needed.
- Un-secure traffic control area.
- Complete service report and submit to facility owner.

SUBSURFACE STORMWATER DETENTION SYSTEM AND BASIN INSPECTION LOG

[illegible]

1 – Sediment deposits shall be removed from the subsurface detention basin when the deposited material reaches a height of 2" measured from the top of the stone bedding.