Stormwater Management Report

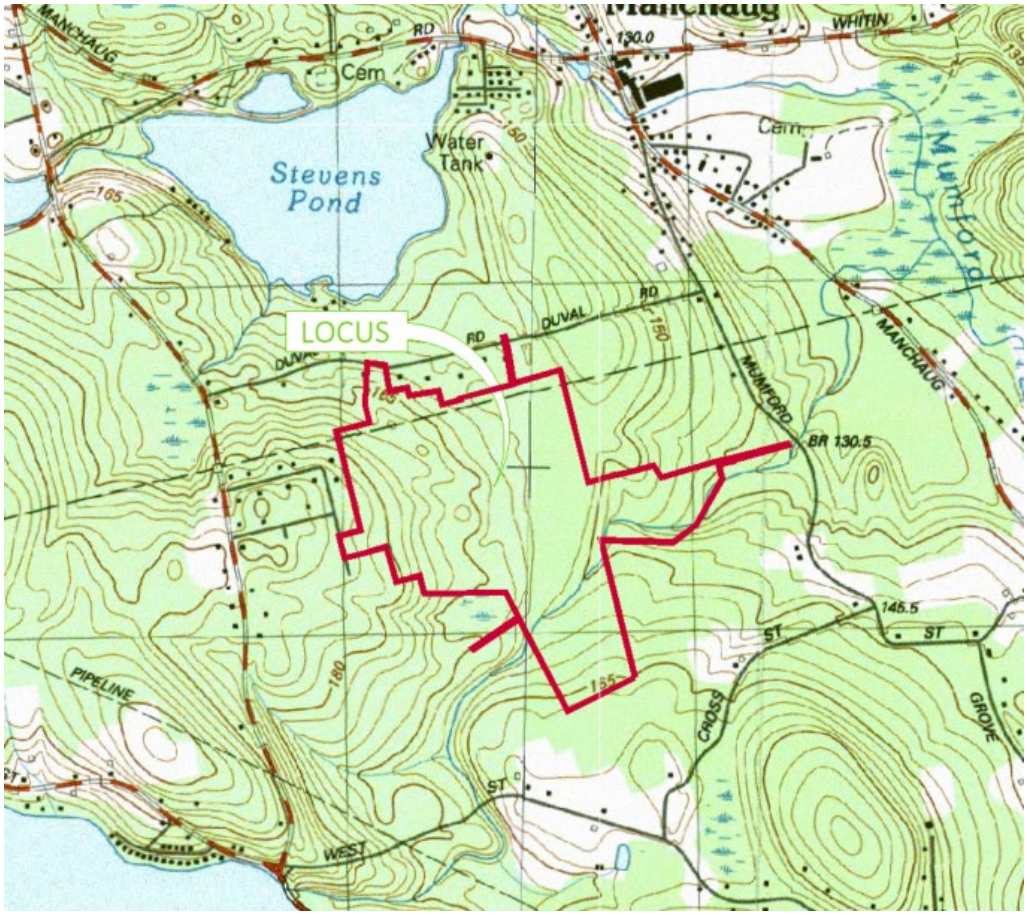
Date: February 2022

Project: Residential Subdivision
Duval Road, Sutton, Massachusetts
Forest Street, Douglas, Massachusetts

Prepared For:
Sutton Douglas Development c/o
Flynn Build & Develop
945 Concord Street, Suite 100
Framingham, Massachusetts

FLYNN
build & develop™

Locus Map:



LAND DESIGN COLLABORATIVE

Stormwater quality and quantity calculations have been performed for the construction of a new residential subdivision development on property off Duval Road in Sutton, and Forest Street in Douglas, Massachusetts. The calculations have prepared to demonstrate compliance with the MassDEP Stormwater Standards as enumerated in the Wetland Protection Regulations (310 CMR 10) and the towns' Subdivision Rules and Regulations.

The site is presently occupied by two single-family homes near the road frontages at Duval Road and Forest Street. The remainder of the land is wooded with a few cart roads. The terrain is variable, with moderate to steep slopes in the northern, southern, and western sides of the property and moderate to gentle slopes in the eastern and central portions of the property. There are four distinct points of discharge. Two of the points eventually reach the Mumford River in Douglas. One flows to Duval Road in Sutton. The fourth (central portion of site) reaches a historic drainage channel that runs north/south through the eastern wetland. This channel steers low flows toward Duval Road but would discharge (overflow) to the Mumford River before overtopping Duval Road. Bordering vegetated wetlands located in the eastern and south-central portions of the property have been delineated and survey located. The Mumford River flows west to east and through the southern portion of the property with the associated 200' Riverfront Area on a portion of the property. None of the site is located within FEMA Zone A or AE (i.e., areas of 100-Year Flood) as shown on the NFIP FIRMs for the Towns of Sutton and Douglas (Map Numbers 25027C0984E and 25027C1003E). USDA/NRCS soil mapping indicates the site is primarily Montauk and Scituate sandy loams, Hydrologic Soil Group (HSG) C, with some sandier Canton soils (HSG B) on the western side of the site and some poorer Whitman soils (HSG D) in the southern portion of the site. Site specific soil testing was somewhat inconsistent with the USDA/NRCS soil mapping, as soils were found to be more loamy sand or sands, than sandy loam. Seasonal high groundwater was observed at 30 to 40 inches.

The Applicant is proposing to develop the land as a 31-lot residential subdivision for single-family homes. The property will be accessed in the same locations as the existing residential driveways. The stormwater system is comprised of large undisturbed wooded, pervious areas (LID principal); areas draining overland through naturally lined channels; and areas draining to catch basin and manhole, piped collection/conveyance systems flowing to open stormwater detention and infiltration basins. All stormwater runoff from proposed impervious areas is pre-treated for TSS and water quality volume prior to be infiltrated or discharged to a wetland buffer zone.

This Report contains:

A) MassDEP Stormwater Management Checklist

B) Existing and Proposed Hydrologic Calculations (MassDEP Standards 1 & 2)

C) Water Quality Calculations (MassDEP Standards 3, 4, 5, 6 & 7)

D) Construction Period Pollution Prevention Plan, Long-Term Pollution Prevention Plan, Long-Term Operations & Maintenance Plan, and Illicit Discharge Statement (MassDEP Standards 8, 9 & 10)

E) Soils Information

F) FEMA Flood Map

G) Existing Hydrology Map

H) Proposed Hydrology Map

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A) MassDEP Stormwater Management Checklist (8 pages)

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

A. Introduction

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.

A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.[1] This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8[2]
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

[1] The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

[2] For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature

2-10-2022

Signature and Date

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

☐ New development

☐ Redevelopment

☒ Mix of New Development and Redevelopment

Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

☒ No disturbance to any Wetland Resource Areas

☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)

☐ Reduced Impervious Area (Redevelopment Only)

☐ Minimizing disturbance to existing trees and shrubs

☐ LID Site Design Credit Requested:

- ☐ Credit 1
- ☐ Credit 2
- ☐ Credit 3

☐ Use of "country drainage" versus curb and gutter conveyance and pipe

☐ Bioretention Cells (includes Rain Gardens)

☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)

☐ Treebox Filter

☐ Water Quality Swale

☐ Grass Channel

☐ Green Roof

☒ Other (describe): large tract of open space remains

Standard 1: No New Untreated Discharges

☒ No new untreated discharges

☒ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth

☒ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.

☐ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

☒ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

☒ Soil Analysis provided.

☒ Required Recharge Volume calculation provided.

☐ Required Recharge volume reduced through use of the LID site Design Credits.

☒ Sizing the infiltration, BMPs is based on the following method: Check the method used.

☒ Static ☐ Simple Dynamic ☐ Dynamic Field[1]

☐ Runoff from all impervious areas at the site discharging to the infiltration BMP.

☒ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.

☒ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.

☒ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:

☒ Site is comprised solely of C and D soils and/or bedrock at the land surface

☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000

☐ Solid Waste Landfill pursuant to 310 CMR 19.000

☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☒ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

[1] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

☐ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

☒ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☒ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☐ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☐ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☐ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☐ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☒ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

☒ The BMP is sized (and calculations provided) based on:

- ☐ The ½" or 1" Water Quality Volume or
- ☒ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☒ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☐ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☐ Critical areas and BMPs are identified in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

☒ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

- ☐ Limited Project
- ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☐ Bike Path and/or Foot Path
- ☐ Redevelopment Project
- ☒ Redevelopment portion of mix of new and redevelopment.

☐ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☐ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☒ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☐ The project is ***not*** covered by a NPDES Construction General Permit.

☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☒ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☒ Name of the stormwater management system owners;
- ☒ Party responsible for operation and maintenance;
- ☒ Schedule for implementation of routine and non-routine maintenance tasks;
- ☒ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☐ Description and delineation of public safety features;
- ☐ Estimated operation and maintenance budget; and
- ☒ Operation and Maintenance Log Form.

☐ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

☒ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

☒ An Illicit Discharge Compliance Statement is attached;

☐ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

B) Pre- and Post-Development Hydrologic Calculations (Standards 1 & 2)

Standard 1)

The stormwater system has been designed to collect and infiltrate stormwater runoff from the new roadway and much of the future home and driveway (i.e., impervious) areas on the Site. There are no new untreated discharges to wetland areas.

Standard 2)

The Project results in new impervious surfaces. The subdivision roadway and walkways, as well as future homes and driveways make up the new impervious areas. The existing homes and driveways make up the existing impervious areas. The proposed stormwater management system has been designed to mitigate stormwater runoff rates for the required storm events, and runoff volumes for the portion of the system discharging to Sutton (refer to HydroCAD calculations). The four study points are:

L1 E and P – The land to the south and east of the ditch. This portion of the property flows to the Mumford River and eventually offsite to the east.

L2 E and P – The land in the central portion of the site, primarily the area of development, that flows to the ditch and then either to Duval Road or the Mumford River.

L3 E and P – The land in the southwestern portion of the property that flows to an isolated depression near the southern property line. Runoff would flow to the south into the Mumford River should the depression overflow.

L4 E and P – The land in the northwestern portion of the property that drains to Duval Road, eventually flowing under Duval Road in an existing 12-inch culvert.

USDA/NRCS soil mapping indicates the site is primarily Montauk and Scituate sandy loams, Hydrologic Soil Group (HSG) C, with some sandier Canton soils (HSG B) on the western side of the site and some poorer Whitman soils (HSG D) in the southern portion of the site. Site specific soil testing was somewhat inconsistent with the USDA/NRCS soil mapping, as soils were found to be more loamy sand or sands, than sandy loam. For purposes of this analysis, the areas of HSG B, C, and D as mapped by the USDA/NRSC have been used. For the infiltration basins, all with HSG C mapped soils, a Rawls rate of 0.52 inches per hour has been used.

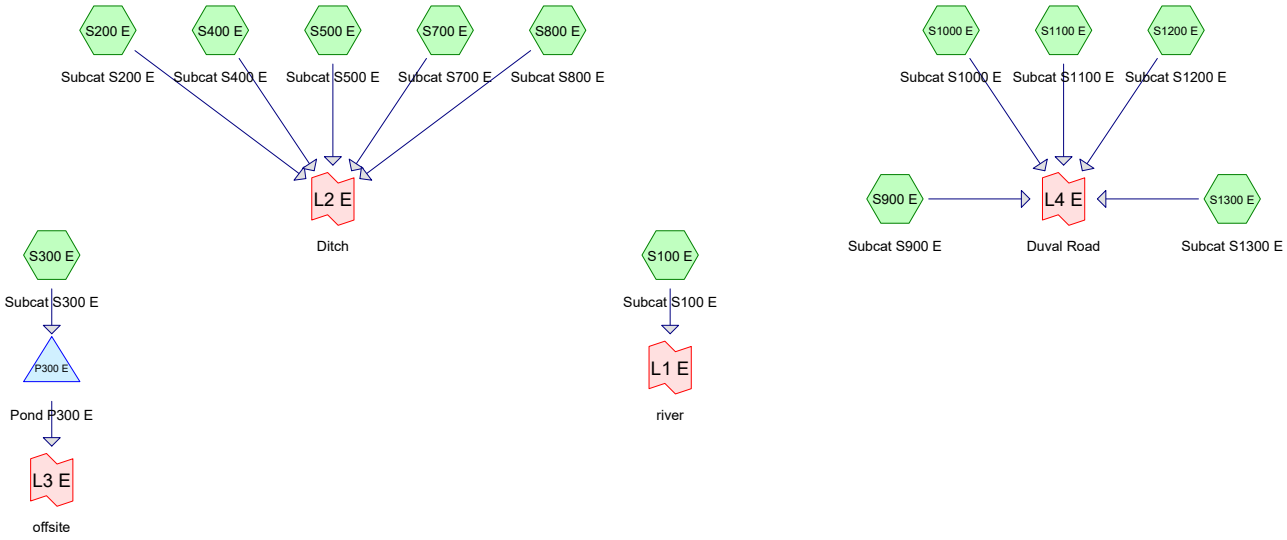
The areas to be used for stormwater recharge are entirely comprised of Hydrologic Soils Group C and as result, the recharge is provided to the extent practicable. While the required volumes have been provided, a groundwater offset of two feet has been used. We note a separate a hydrologic analysis was performed with no recharge/infiltration in the infiltration basins, and no negative impact to the rates or volumes of runoff occurred. For these reasons, the recharge volume provided by the stormwater management system meets the standard as required. The flow rates and volumes are summarized in the following tables:

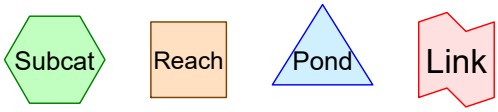
Flow Rates:

Sub-watershed	Storm Event / Runoff (cfs)		
	2-Year	10-Year	100-Year
L1 E	*19.4*	*50.1*	*100.1*
L1 P	19.4	50.1	100.1
L2 E	*20.4*	*54.6*	*111.0*
L2 P	20.2	50.4	116.4
L3 E	*0.0*	*0.0*	*0.0*
L3 P	0.0	0.0	0.0
L4 E	*4.7*	*12.1*	*24.0*
L4 P	3.4	8.5	17.8

Volumes:

Sub-watershed	Storm Event / Runoff (cubic feet)		
	2-Year	10-Year	100-Year
L1 E	*177,911*	*413,819*	*801,929*
L1 P	177,917	413,834	801,958
L2 E	*193,596*	*457,165*	*894,329*
L2 P	223,104	508,395	982,363
L3 E	*0*	*0*	*0*
L3 P	0	0	0
L4 E	*30,091*	*69,840*	*135,353*
L4 P	17,670	46,808	93.693





Routing Diagram for 21-0083 Exist
Prepared by Land Design Collaborative
HydroCAD® 10.10-7a s/n 11266 © 2021 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
102,540	61	>75% Grass cover, Good, HSG B (S1000 E, S1100 E, S200 E, S400 E, S500 E)
33,068	74	>75% Grass cover, Good, HSG C (S1000 E, S1200 E, S1300 E, S900 E)
14,671	89	Gravel roads, HSG C (S1000 E, S1200 E, S1300 E, S900 E)
15,070	98	Paved parking, HSG B (S200 E, S400 E, S500 E)
19,132	89	Paved roads w/open ditches, 50% imp, HSG B (S400 E, S500 E)
8,146	98	Roofs, HSG B (S200 E, S400 E)
2,528	98	Roofs, HSG C (S1000 E, S900 E)
5,552	98	Unconnected pavement, HSG B (S200 E, S400 E)
689	98	Water Surface, 0% imp, HSG B (S100 E)
73,604	98	Water Surface, 0% imp, HSG C (S100 E)
978,403	55	Woods, Good, HSG B (S100 E, S1000 E, S1100 E, S200 E, S300 E, S400 E, S500 E)
4,823,957	70	Woods, Good, HSG C (S100 E, S1000 E, S1100 E, S1200 E, S1300 E, S200 E, S300 E, S400 E, S500 E, S700 E, S800 E, S900 E)
300,108	77	Woods, Good, HSG D (S200 E, S400 E, S500 E)
6,377,468	**68**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
1,129,532	HSG B	S100 E, S1000 E, S1100 E, S200 E, S300 E, S400 E, S500 E
4,947,828	HSG C	S100 E, S1000 E, S1100 E, S1200 E, S1300 E, S200 E, S300 E, S400 E, S500 E, S700 E, S800 E, S900 E
300,108	HSG D	S200 E, S400 E, S500 E
0	Other	
6,377,468		**TOTAL AREA**

Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 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 S100 E: Subcat S100 E Runoff Area=2,738,542 sf 0.00% Impervious Runoff Depth=0.78"
Flow Length=930' Tc=61.3 min CN=69 Runoff=19.4 cfs 177,911 cf

Subcatchment S1000 E: Subcat S1000 E Runoff Area=161,197 sf 0.87% Impervious Runoff Depth=0.73"
Flow Length=860' Tc=28.1 min CN=68 Runoff=1.6 cfs 9,841 cf

Subcatchment S1100 E: Subcat S1100 E Runoff Area=59,436 sf 0.00% Impervious Runoff Depth=0.41"
Flow Length=440' Tc=17.1 min CN=60 Runoff=0.3 cfs 2,022 cf

Subcatchment S1200 E: Subcat S1200 E Runoff Area=44,272 sf 0.00% Impervious Runoff Depth=0.93"
Flow Length=435' Tc=26.2 min CN=72 Runoff=0.6 cfs 3,430 cf

Subcatchment S1300 E: Subcat S1300 E Runoff Area=24,002 sf 0.00% Impervious Runoff Depth=0.93"
Flow Length=135' Tc=14.1 min CN=72 Runoff=0.4 cfs 1,859 cf

Subcatchment S200 E: Subcat S200 E Runoff Area=434,059 sf 1.79% Impervious Runoff Depth=0.78"
Flow Length=1,975' Tc=63.8 min CN=69 Runoff=3.0 cfs 28,199 cf

Subcatchment S300 E: Subcat S300 E Runoff Area=41,857 sf 0.00% Impervious Runoff Depth=0.41"
Flow Length=345' Tc=20.2 min CN=60 Runoff=0.2 cfs 1,424 cf

Subcatchment S400 E: Subcat S400 E Runoff Area=1,128,435 sf 2.46% Impervious Runoff Depth=0.64"
Flow Length=2,475' Tc=45.6 min CN=66 Runoff=7.3 cfs 60,466 cf

Subcatchment S500 E: Subcat S500 E Runoff Area=824,035 sf 0.34% Impervious Runoff Depth=0.78"
Flow Length=2,280' Tc=76.5 min CN=69 Runoff=5.1 cfs 53,534 cf

Subcatchment S700 E: Subcat S700 E Runoff Area=651,442 sf 0.00% Impervious Runoff Depth=0.83"
Flow Length=720' Tc=47.6 min CN=70 Runoff=5.8 cfs 44,954 cf

Subcatchment S800 E: Subcat S800 E Runoff Area=93,376 sf 0.00% Impervious Runoff Depth=0.83"
Flow Length=660' Tc=30.2 min CN=70 Runoff=1.0 cfs 6,444 cf

Subcatchment S900 E: Subcat S900 E Runoff Area=176,815 sf 0.64% Impervious Runoff Depth=0.88"
Flow Length=690' Tc=33.3 min CN=71 Runoff=2.0 cfs 12,938 cf

Pond P300 E: Pond P300 E Peak Elev=560.34' Storage=618 cf Inflow=0.2 cfs 1,424 cf
Discarded=0.0 cfs 1,424 cf Primary=0.0 cfs 0 cf Outflow=0.0 cfs 1,424 cf

Link L1 E: river Inflow=19.4 cfs 177,911 cf
Primary=19.4 cfs 177,911 cf

Link L2 E: Ditch Inflow=20.4 cfs 193,596 cf
Primary=20.4 cfs 193,596 cf

Link L3 E: offsite Inflow=0.0 cfs 0 cf
Primary=0.0 cfs 0 cf

Link L4 E: Duval Road Inflow=4.7 cfs 30,091 cf
Primary=4.7 cfs 30,091 cf

Total Runoff Area = 6,377,468 sf Runoff Volume = 403,022 cf Average Runoff Depth = 0.76"
99.36% Pervious = 6,336,606 sf 0.64% Impervious = 40,862 sf

Summary for Subcatchment S100 E: Subcat S100 E

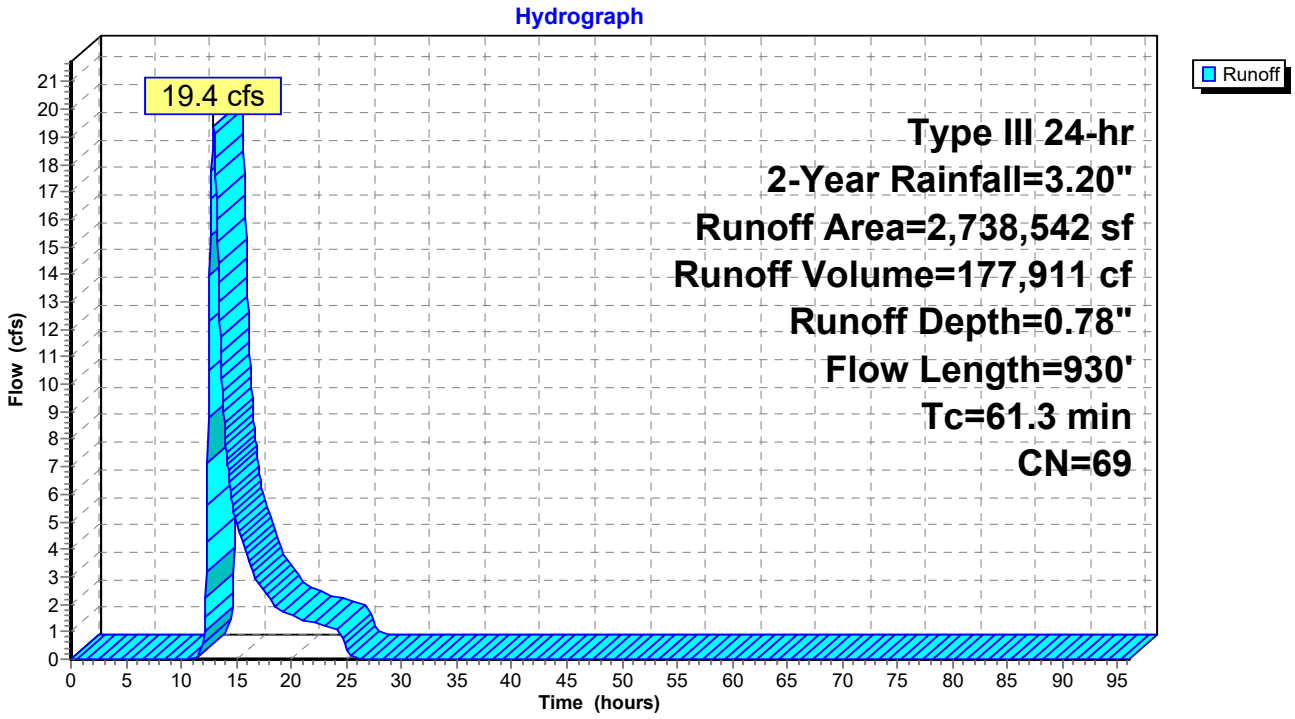
Runoff = 19.4 cfs @ 12.93 hrs, Volume= 177,911 cf, Depth= 0.78"
Routed to Link L1 E : river

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
948,052	70	Woods, Good, HSG C
37,618	70	Woods, Good, HSG C
20,698	70	Woods, Good, HSG C
1,160	55	Woods, Good, HSG B
81,766	55	Woods, Good, HSG B
14,718	55	Woods, Good, HSG B
249,605	55	Woods, Good, HSG B
5,573	55	Woods, Good, HSG B
689	98	Water Surface, 0% imp, HSG B
782	98	Water Surface, 0% imp, HSG C
3,830	98	Water Surface, 0% imp, HSG C
68,992	98	Water Surface, 0% imp, HSG C
1,133	70	Woods, Good, HSG C
1,819	70	Woods, Good, HSG C
340	70	Woods, Good, HSG C
1,027	70	Woods, Good, HSG C
1,082	70	Woods, Good, HSG C
863,715	70	Woods, Good, HSG C
435,943	70	Woods, Good, HSG C
2,738,542	69	Weighted Average
2,738,542		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	50	0.0500	0.06		**Sheet Flow, uppermost**
					Woods: Dense underbrush n= 0.800 P2= 3.20"
46.4	880	0.0160	0.32		**Shallow Concentrated Flow, above river**
					Forest w/Heavy Litter Kv= 2.5 fps
61.3	930	Total			

Subcatchment S100 E: Subcat S100 E



Summary for Subcatchment S1000 E: Subcat S1000 E

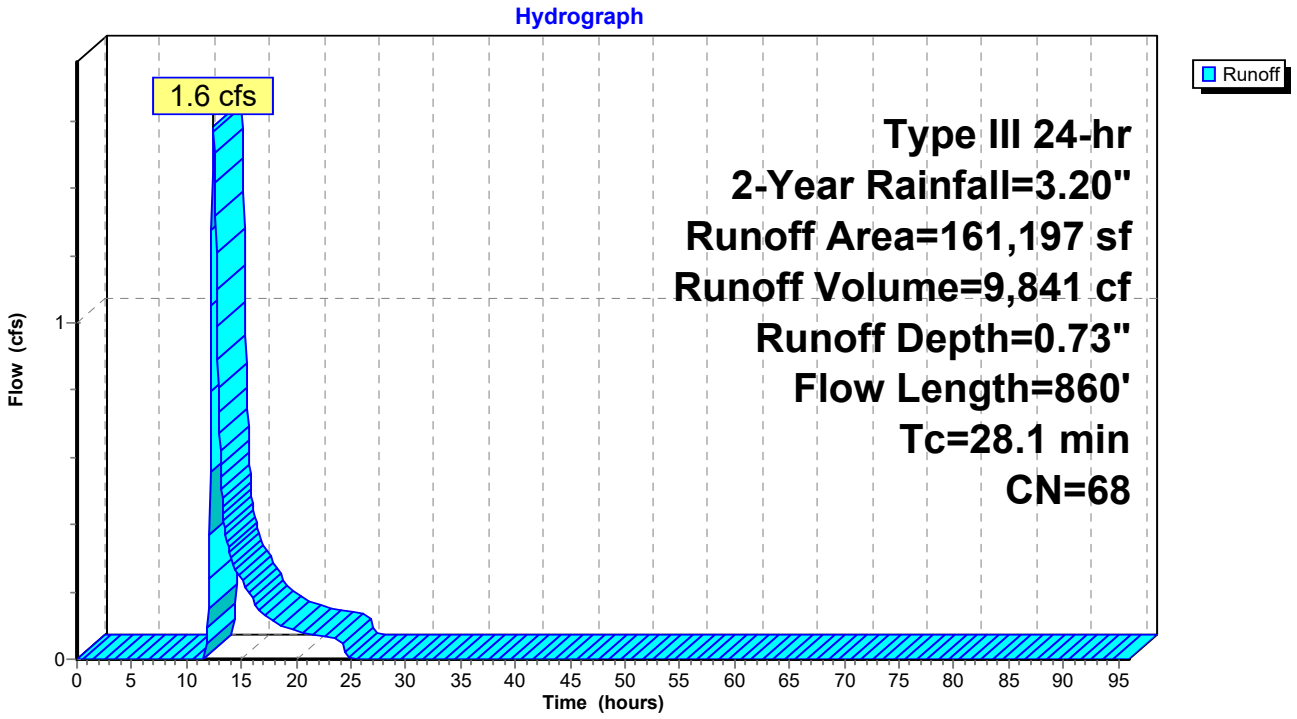
Runoff = 1.6 cfs @ 12.46 hrs, Volume= 9,841 cf, Depth= 0.73"
Routed to Link L4 E : Duval Road

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
418	61	>75% Grass cover, Good, HSG B
34,613	55	Woods, Good, HSG B
819	89	Gravel roads, HSG C
1,846	89	Gravel roads, HSG C
0	98	Roofs, HSG C
1,396	98	Roofs, HSG C
10,892	74	>75% Grass cover, Good, HSG C
648	74	>75% Grass cover, Good, HSG C
110,565	70	Woods, Good, HSG C
0	70	Woods, Good, HSG C
0	70	Woods, Good, HSG C
161,197	68	Weighted Average
159,801		99.13% Pervious Area
1,396		0.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.10		**Sheet Flow, uppermost** Grass: Dense n= 0.240 P2= 3.20"
19.9	810	0.0740	0.68		**Shallow Concentrated Flow, to offisite** Forest w/Heavy Litter Kv= 2.5 fps
28.1	860	Total			

Subcatchment S1000 E: Subcat S1000 E



Summary for Subcatchment S1100 E: Subcat S1100 E

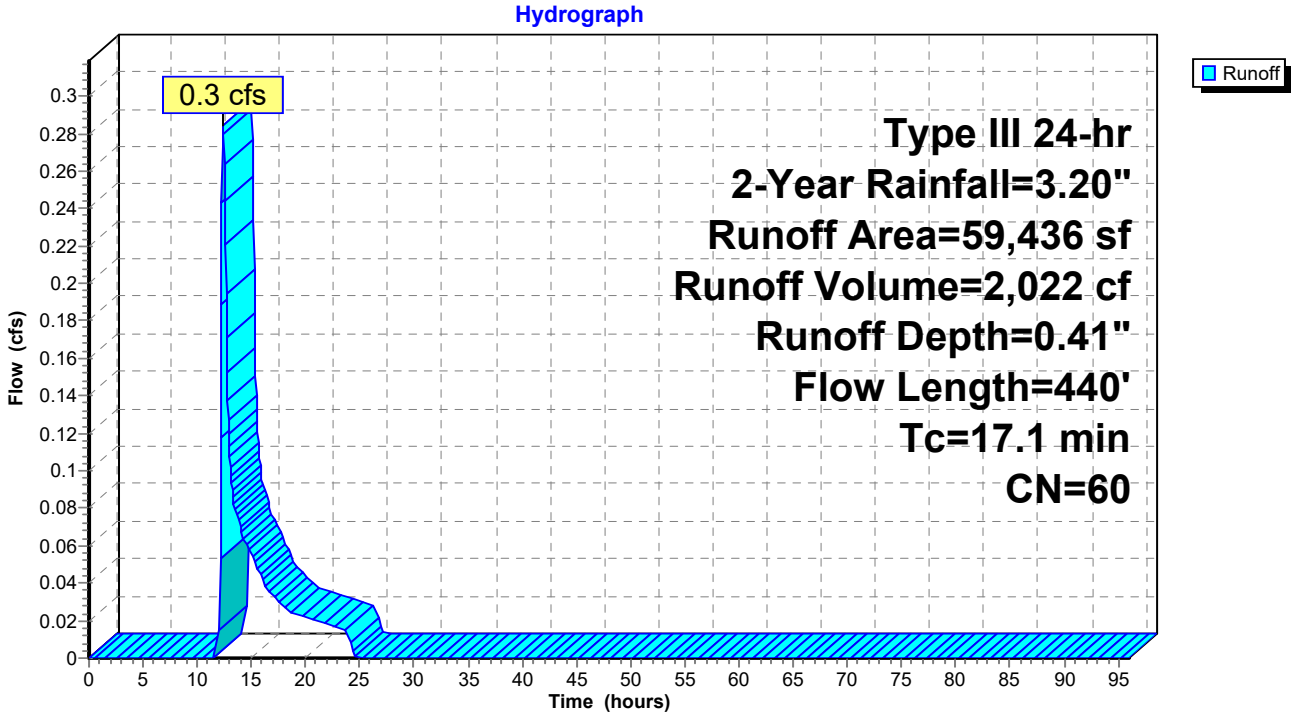
Runoff = 0.3 cfs @ 12.37 hrs, Volume= 2,022 cf, Depth= 0.41"
Routed to Link L4 E : Duval Road

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
36,605	55	Woods, Good, HSG B
520	61	>75% Grass cover, Good, HSG B
3,042	61	>75% Grass cover, Good, HSG B
19,269	70	Woods, Good, HSG C
59,436	60	Weighted Average
59,436		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	50	0.1800	0.09		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
8.2	390	0.1010	0.79		**Shallow Concentrated Flow, to offisite** Forest w/Heavy Litter Kv= 2.5 fps
17.1	440	Total			

Subcatchment S1100 E: Subcat S1100 E



Summary for Subcatchment S1200 E: Subcat S1200 E

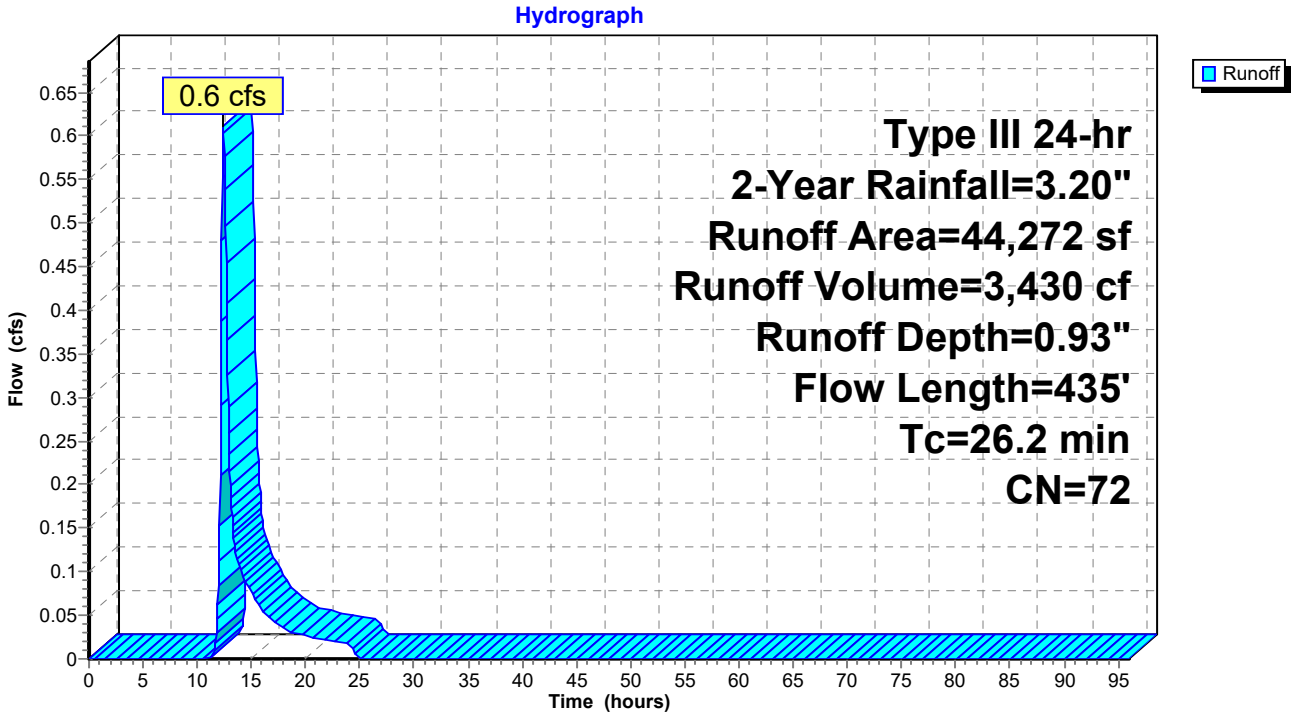
Runoff = 0.6 cfs @ 12.41 hrs, Volume= 3,430 cf, Depth= 0.93"
Routed to Link L4 E : Duval Road

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
4,143	89	Gravel roads, HSG C
0	98	Roofs, HSG C
0	98	Roofs, HSG C
6,107	74	>75% Grass cover, Good, HSG C
30,185	70	Woods, Good, HSG C
3,837	70	Woods, Good, HSG C
44,272	72	Weighted Average
44,272		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	50	0.0500	0.06		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
11.3	385	0.0520	0.57		**Shallow Concentrated Flow, to Duval Road** Forest w/Heavy Litter Kv= 2.5 fps
26.2	435	Total			

Subcatchment S1200 E: Subcat S1200 E



Summary for Subcatchment S1300 E: Subcat S1300 E

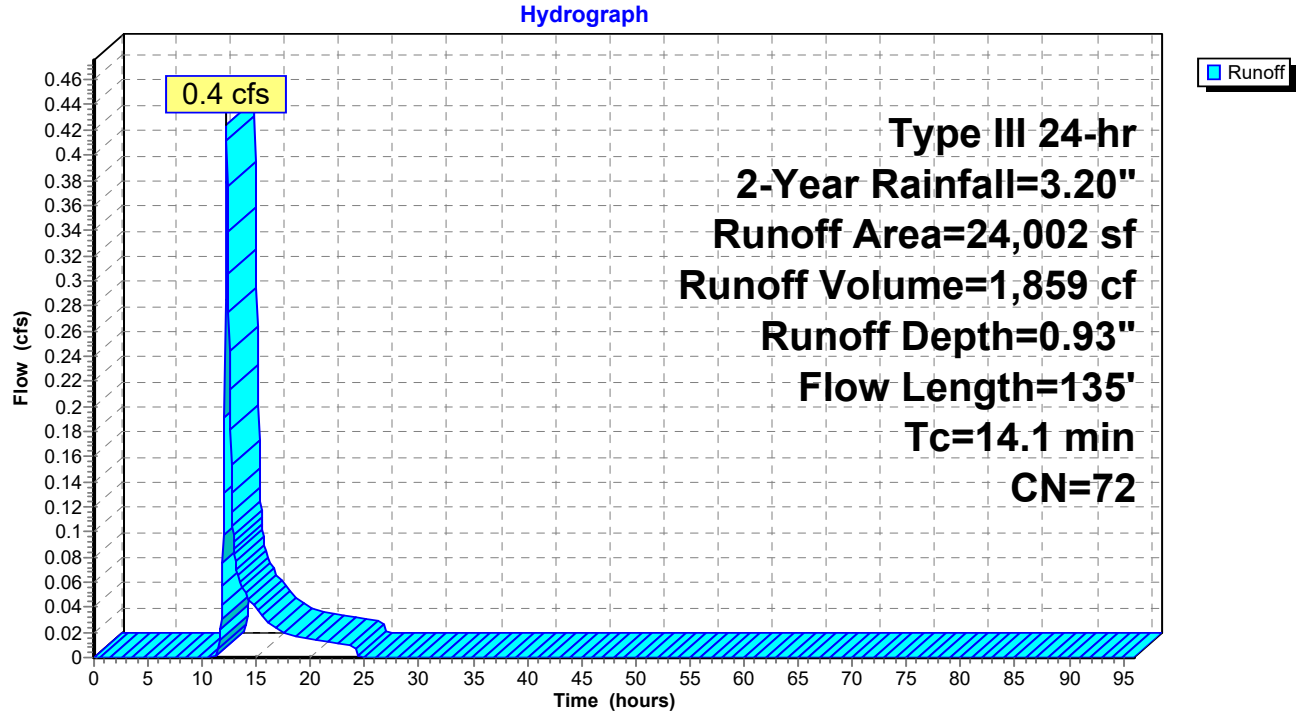
Runoff = 0.4 cfs @ 12.22 hrs, Volume= 1,859 cf, Depth= 0.93"
Routed to Link L4 E : Duval Road

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
2,199	89	Gravel roads, HSG C
0	98	Roofs, HSG C
2,210	74	>75% Grass cover, Good, HSG C
738	74	>75% Grass cover, Good, HSG C
18,748	70	Woods, Good, HSG C
0	70	Woods, Good, HSG C
0	70	Woods, Good, HSG C
107	70	Woods, Good, HSG C
24,002	72	Weighted Average
24,002		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0800	0.07		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
1.8	85	0.1000	0.79		**Shallow Concentrated Flow, to offsite** Forest w/Heavy Litter Kv= 2.5 fps
14.1	135	Total			

Subcatchment S1300 E: Subcat S1300 E



Summary for Subcatchment S200 E: Subcat S200 E

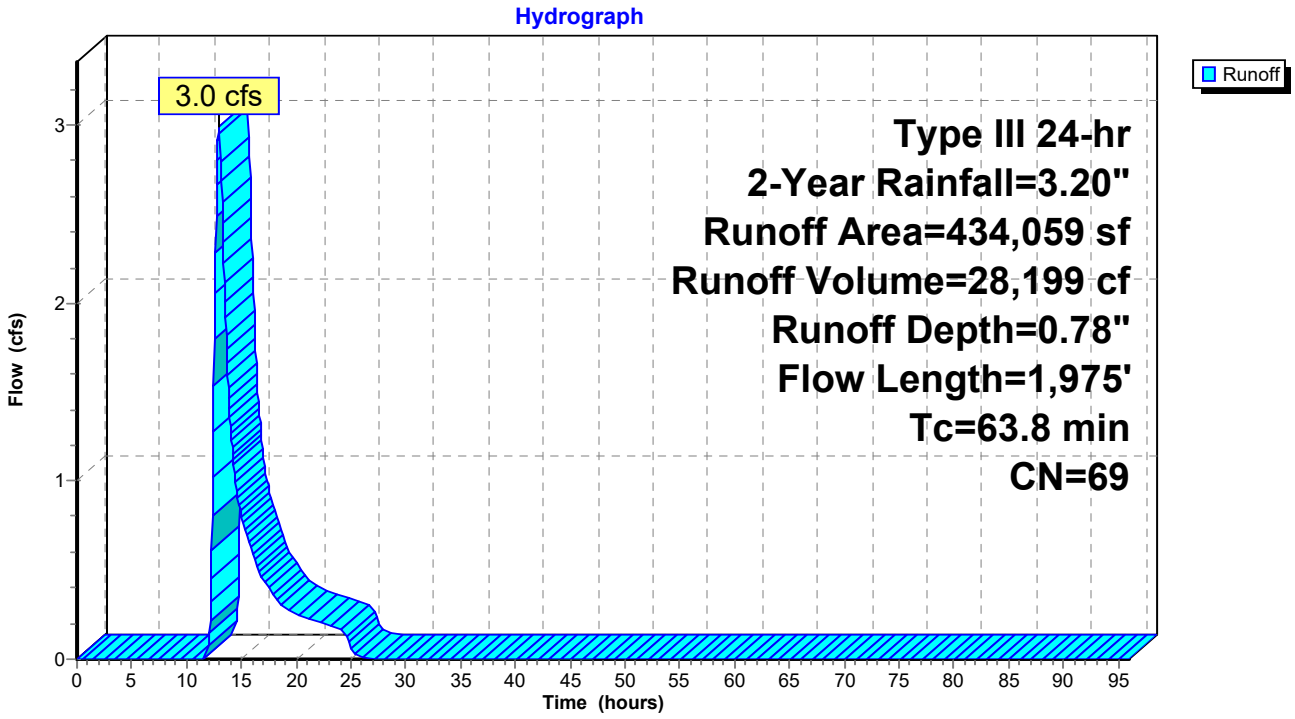
Runoff = 3.0 cfs @ 12.97 hrs, Volume= 28,199 cf, Depth= 0.78"
Routed to Link L2 E : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
135,720	77	Woods, Good, HSG D
2,365	98	Roofs, HSG B
2,299	98	Paved parking, HSG B
3,092	98	Unconnected pavement, HSG B
4,529	61	>75% Grass cover, Good, HSG B
1,036	55	Woods, Good, HSG B
80,157	55	Woods, Good, HSG B
510	55	Woods, Good, HSG B
368	55	Woods, Good, HSG B
13,678	55	Woods, Good, HSG B
190,305	70	Woods, Good, HSG C
434,059	69	Weighted Average
426,303		98.21% Pervious Area
7,756		1.79% Impervious Area
3,092		39.87% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	50	0.1000	0.13		**Sheet Flow, uppermost**
					Woods: Light underbrush n= 0.400 P2= 3.20"
0.2	50	0.0900	4.83		**Shallow Concentrated Flow, yard**
					Unpaved Kv= 16.1 fps
57.1	1,875	0.0480	0.55		**Shallow Concentrated Flow, above ditch**
					Forest w/Heavy Litter Kv= 2.5 fps
63.8	1,975	Total			

Subcatchment S200 E: Subcat S200 E



Summary for Subcatchment S300 E: Subcat S300 E

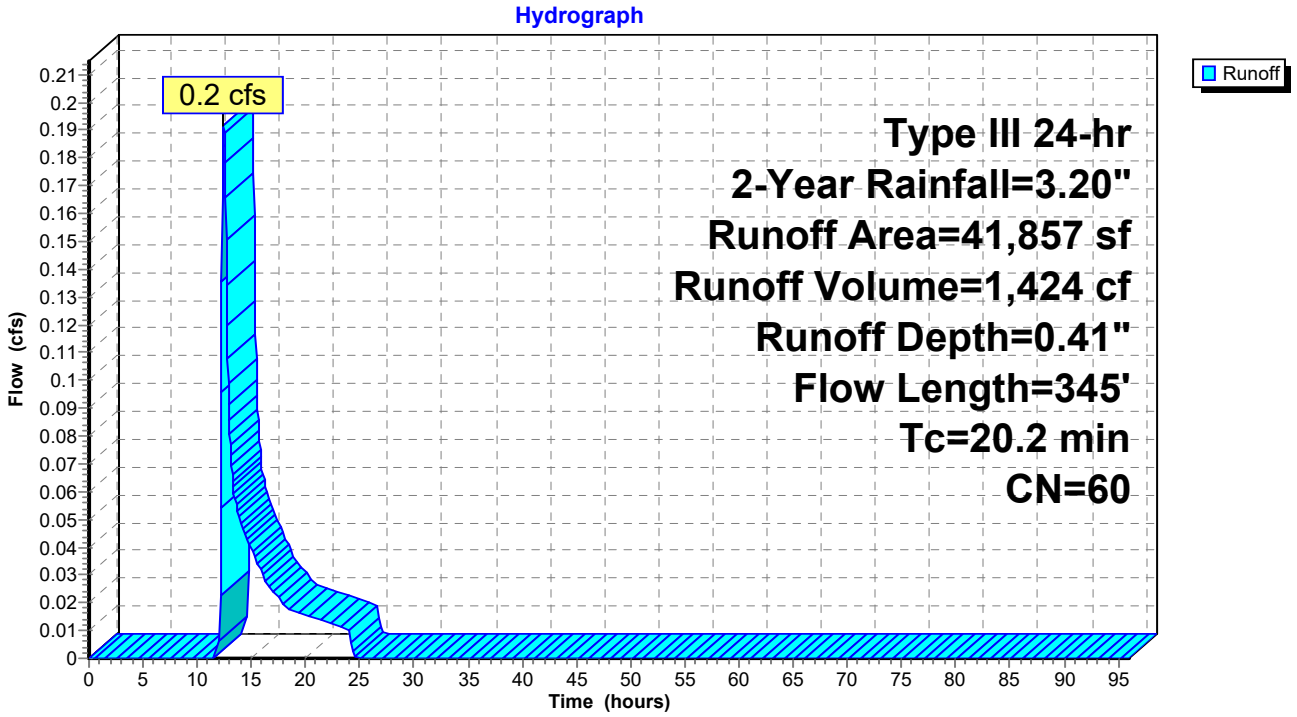
Runoff = 0.2 cfs @ 12.43 hrs, Volume= 1,424 cf, Depth= 0.41"
Routed to Pond P300 E : Pond P300 E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
17,941	55	Woods, Good, HSG B
8,630	55	Woods, Good, HSG B
15,286	70	Woods, Good, HSG C
41,857	60	Weighted Average
41,857		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	50	0.0500	0.06		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
5.3	295	0.1400	0.94		**Shallow Concentrated Flow, to depression** Forest w/Heavy Litter Kv= 2.5 fps
20.2	345	Total			

Subcatchment S300 E: Subcat S300 E



Summary for Subcatchment S400 E: Subcat S400 E

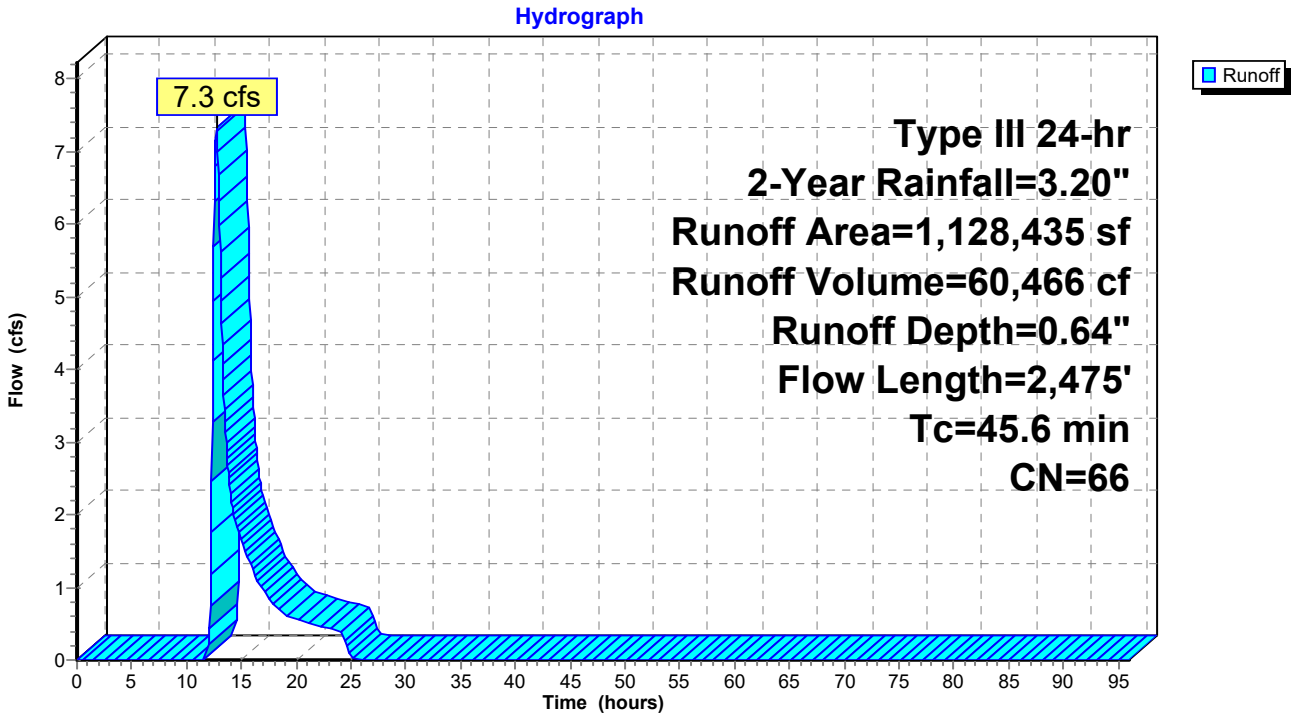
Runoff = 7.3 cfs @ 12.74 hrs, Volume= 60,466 cf, Depth= 0.64"
Routed to Link L2 E : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
62,408	77	Woods, Good, HSG D
1,061	98	Roofs, HSG B
1,199	61	>75% Grass cover, Good, HSG B
1,836	98	Roofs, HSG B
1,221	98	Roofs, HSG B
1,566	98	Roofs, HSG B
97	98	Roofs, HSG B
1,439	98	Paved parking, HSG B
2,655	98	Paved parking, HSG B
1,394	98	Paved parking, HSG B
2,691	98	Paved parking, HSG B
1,498	98	Paved parking, HSG B
1,466	98	Paved parking, HSG B
85	98	Paved parking, HSG B
240	98	Unconnected pavement, HSG B
266	98	Unconnected pavement, HSG B
1,057	98	Unconnected pavement, HSG B
1,830	61	>75% Grass cover, Good, HSG B
897	98	Unconnected pavement, HSG B
3,341	61	>75% Grass cover, Good, HSG B
16,544	89	Paved roads w/open ditches, 50% imp, HSG B
10,972	61	>75% Grass cover, Good, HSG B
438	61	>75% Grass cover, Good, HSG B
27,951	61	>75% Grass cover, Good, HSG B
16,004	61	>75% Grass cover, Good, HSG B
1,750	61	>75% Grass cover, Good, HSG B
872	61	>75% Grass cover, Good, HSG B
19,439	61	>75% Grass cover, Good, HSG B
2,232	61	>75% Grass cover, Good, HSG B
57,008	55	Woods, Good, HSG B
13,841	55	Woods, Good, HSG B
23,027	55	Woods, Good, HSG B
1,440	55	Woods, Good, HSG B
0	55	Woods, Good, HSG B
0	55	Woods, Good, HSG B
1,370	55	Woods, Good, HSG B
138,497	55	Woods, Good, HSG B
85,994	55	Woods, Good, HSG B
622,809	70	Woods, Good, HSG C
1,128,435	66	Weighted Average
1,100,694		97.54% Pervious Area
27,741		2.46% Impervious Area
2,460		8.87% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.10		**Sheet Flow, uppermost** Grass: Dense n= 0.240 P2= 3.20"
4.4	325	0.0610	1.23		**Shallow Concentrated Flow, above Forest Street** Woodland Kv= 5.0 fps
33.0	2,100	0.0450	1.06		**Shallow Concentrated Flow, below Forest Street** Woodland Kv= 5.0 fps
45.6	2,475	Total			

Subcatchment S400 E: Subcat S400 E



Summary for Subcatchment S500 E: Subcat S500 E

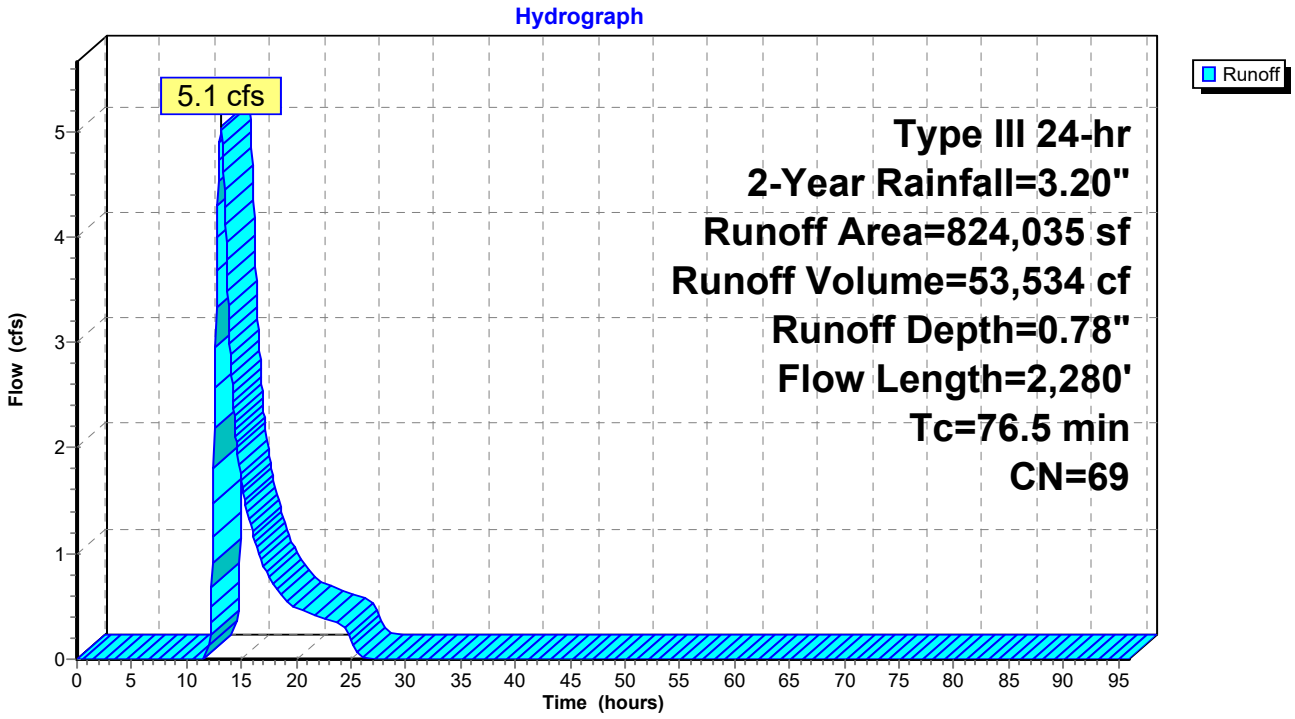
Runoff = 5.1 cfs @ 13.15 hrs, Volume= 53,534 cf, Depth= 0.78"
Routed to Link L2 E : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
101,980	77	Woods, Good, HSG D
1,543	98	Paved parking, HSG B
1,524	61	>75% Grass cover, Good, HSG B
149	61	>75% Grass cover, Good, HSG B
2,588	89	Paved roads w/open ditches, 50% imp, HSG B
6,330	61	>75% Grass cover, Good, HSG B
3,281	55	Woods, Good, HSG B
6,566	55	Woods, Good, HSG B
101,019	55	Woods, Good, HSG B
599,055	70	Woods, Good, HSG C
824,035	69	Weighted Average
821,198		99.66% Pervious Area
2,837		0.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.3	50	0.1000	0.07		**Sheet Flow, uppermost**
					Woods: Dense underbrush n= 0.800 P2= 3.20"
2.3	90	0.0660	0.64		**Shallow Concentrated Flow, to house**
					Forest w/Heavy Litter Kv= 2.5 fps
0.5	110	0.0500	3.60		**Shallow Concentrated Flow, yard**
					Unpaved Kv= 16.1 fps
62.4	2,030	0.0470	0.54		**Shallow Concentrated Flow, to ditch**
					Forest w/Heavy Litter Kv= 2.5 fps
76.5	2,280	Total			

Subcatchment S500 E: Subcat S500 E



Summary for Subcatchment S700 E: Subcat S700 E

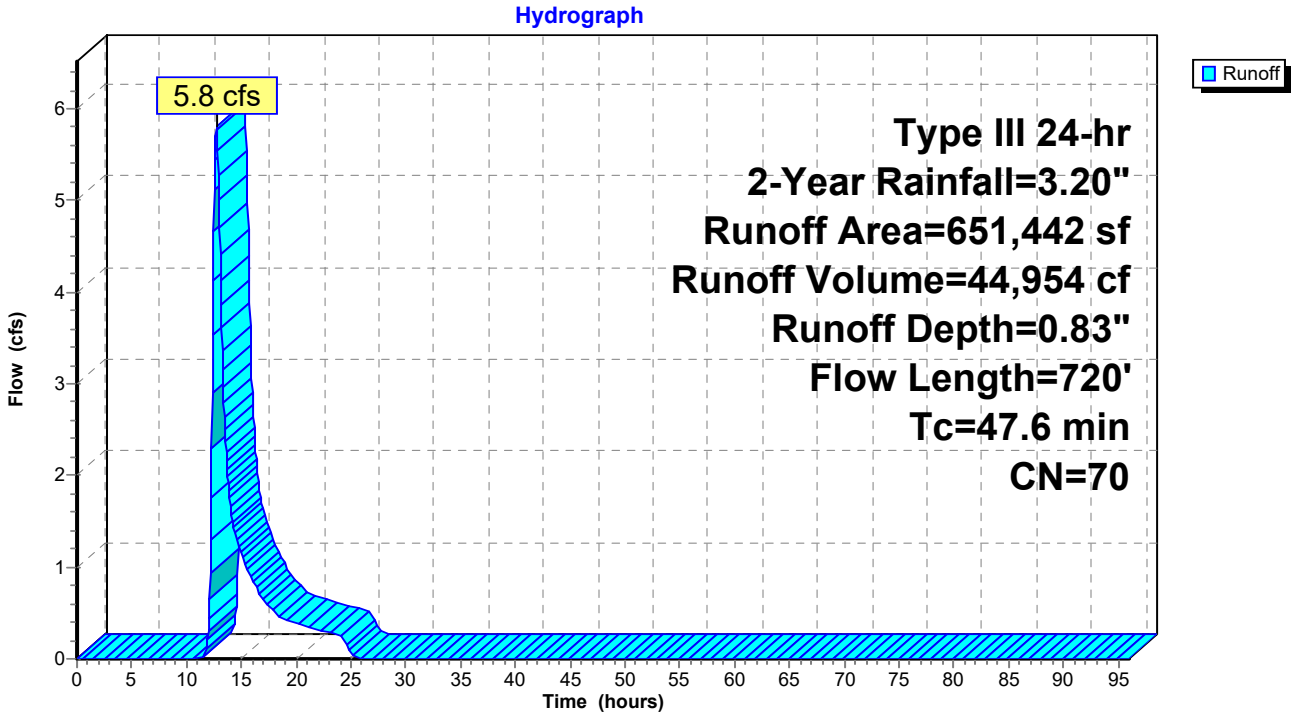
Runoff = 5.8 cfs @ 12.73 hrs, Volume= 44,954 cf, Depth= 0.83"
Routed to Link L2 E : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
651,442	70	Woods, Good, HSG C
651,442		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0800	0.07		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
35.3	670	0.0160	0.32		**Shallow Concentrated Flow, to ditch** Forest w/Heavy Litter Kv= 2.5 fps
47.6	720	Total			

Subcatchment S700 E: Subcat S700 E



Summary for Subcatchment S800 E: Subcat S800 E

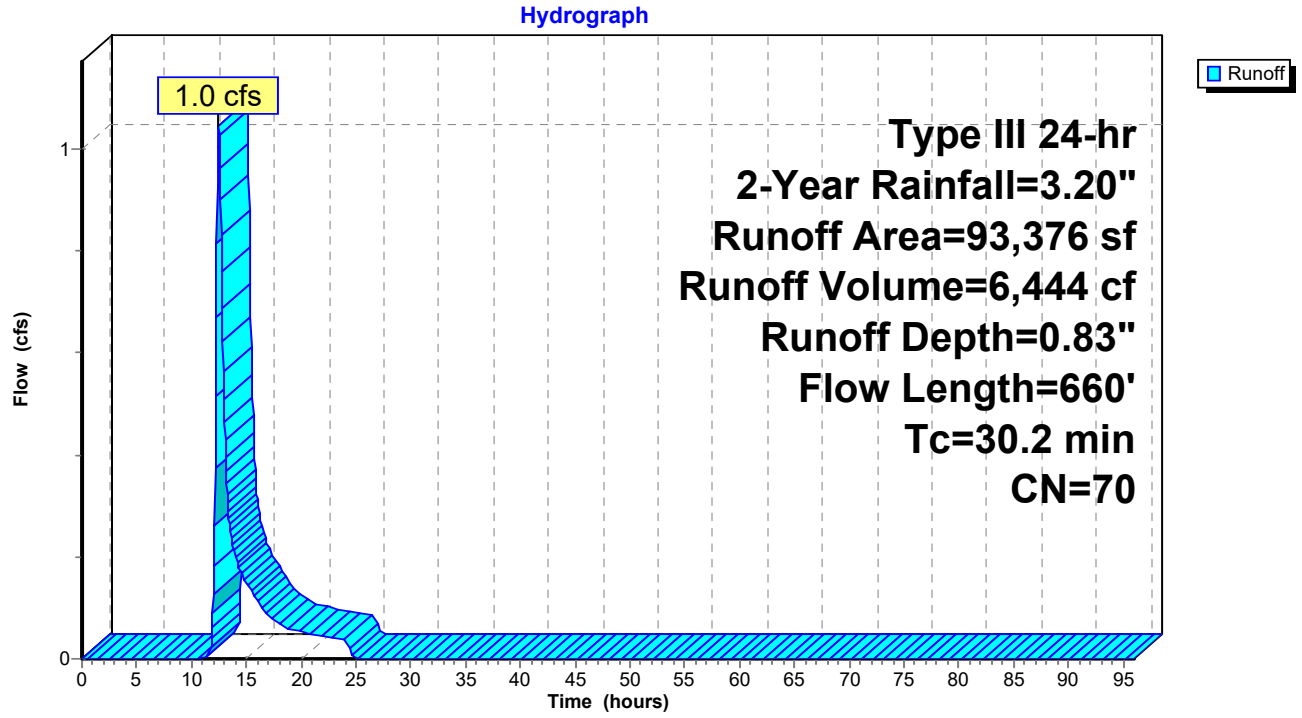
Runoff = 1.0 cfs @ 12.48 hrs, Volume= 6,444 cf, Depth= 0.83"
Routed to Link L2 E : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
93,376	70	Woods, Good, HSG C
93,376		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	50	0.0500	0.06		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
15.3	610	0.0710	0.67		**Shallow Concentrated Flow, to offsite** Forest w/Heavy Litter Kv= 2.5 fps
30.2	660	Total			

Subcatchment S800 E: Subcat S800 E



Summary for Subcatchment S900 E: Subcat S900 E

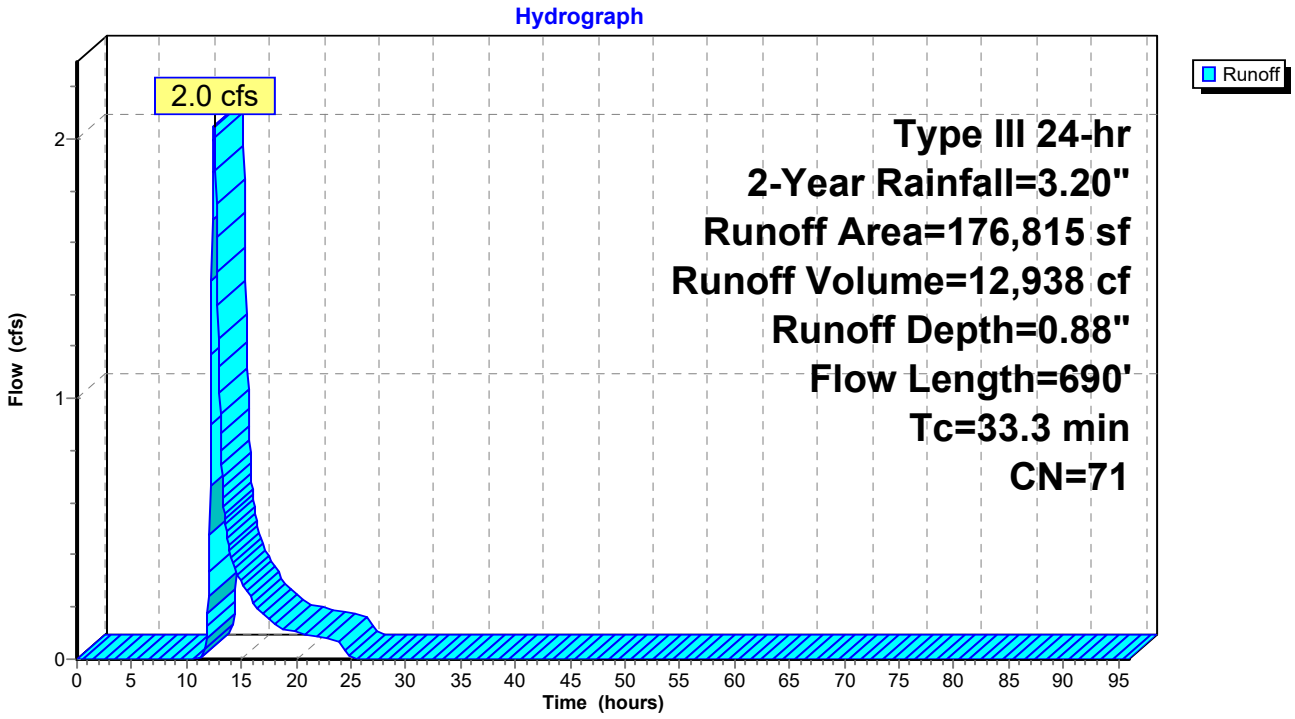
Runoff = 2.0 cfs @ 12.52 hrs, Volume= 12,938 cf, Depth= 0.88"
Routed to Link L4 E : Duval Road

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
1,132	98	Roofs, HSG C
5,664	89	Gravel roads, HSG C
8,190	74	>75% Grass cover, Good, HSG C
3,135	74	>75% Grass cover, Good, HSG C
1,148	74	>75% Grass cover, Good, HSG C
0	74	>75% Grass cover, Good, HSG C
1	70	Woods, Good, HSG C
6,727	70	Woods, Good, HSG C
150,818	70	Woods, Good, HSG C
0	70	Woods, Good, HSG C
0	70	Woods, Good, HSG C
176,815	71	Weighted Average
175,683		99.36% Pervious Area
1,132		0.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8	50	0.0600	0.06		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
19.5	640	0.0480	0.55		**Shallow Concentrated Flow, to offfsite** Forest w/Heavy Litter Kv= 2.5 fps
33.3	690	Total			

Subcatchment S900 E: Subcat S900 E



Summary for Pond P300 E: Pond P300 E

Inflow Area = 41,857 sf, 0.00% Impervious, Inflow Depth = 0.41" for 2-Year event
Inflow = 0.2 cfs @ 12.43 hrs, Volume= 1,424 cf
Outflow = 0.0 cfs @ 16.27 hrs, Volume= 1,424 cf, Atten= 86%, Lag= 230.5 min
Discarded = 0.0 cfs @ 16.27 hrs, Volume= 1,424 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link L3 E : offsite

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 560.34' @ 16.27 hrs Surf.Area= 1,286 sf Storage= 618 cf

Plug-Flow detention time= 323.6 min calculated for 1,424 cf (100% of inflow)
Center-of-Mass det. time= 323.4 min (1,257.0 - 933.5)

Volume	Invert	Avail.Storage	Storage Description
#1	559.30'	17,507 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

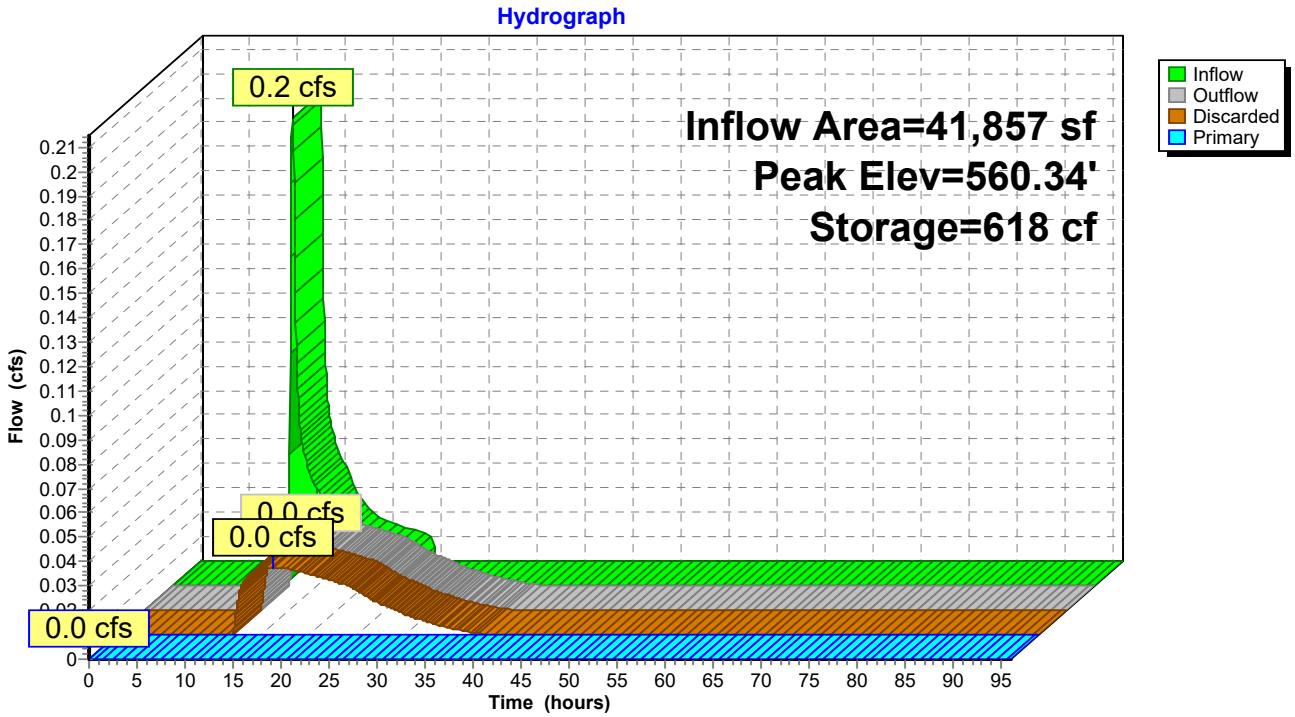
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
559.30	10	0	0
560.00	760	270	270
562.00	3,845	4,605	4,875
563.00	6,130	4,988	9,862
564.00	9,160	7,645	17,507

Device	Routing	Invert	Outlet Devices
#1	Primary	563.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Discarded	559.30'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 559.00'

Discarded OutFlow Max=0.0 cfs @ 16.27 hrs HW=560.34' (Free Discharge)
↑**2=Exfiltration** (Controls 0.0 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=559.30' (Free Discharge)
↑**1=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond P300 E: Pond P300 E

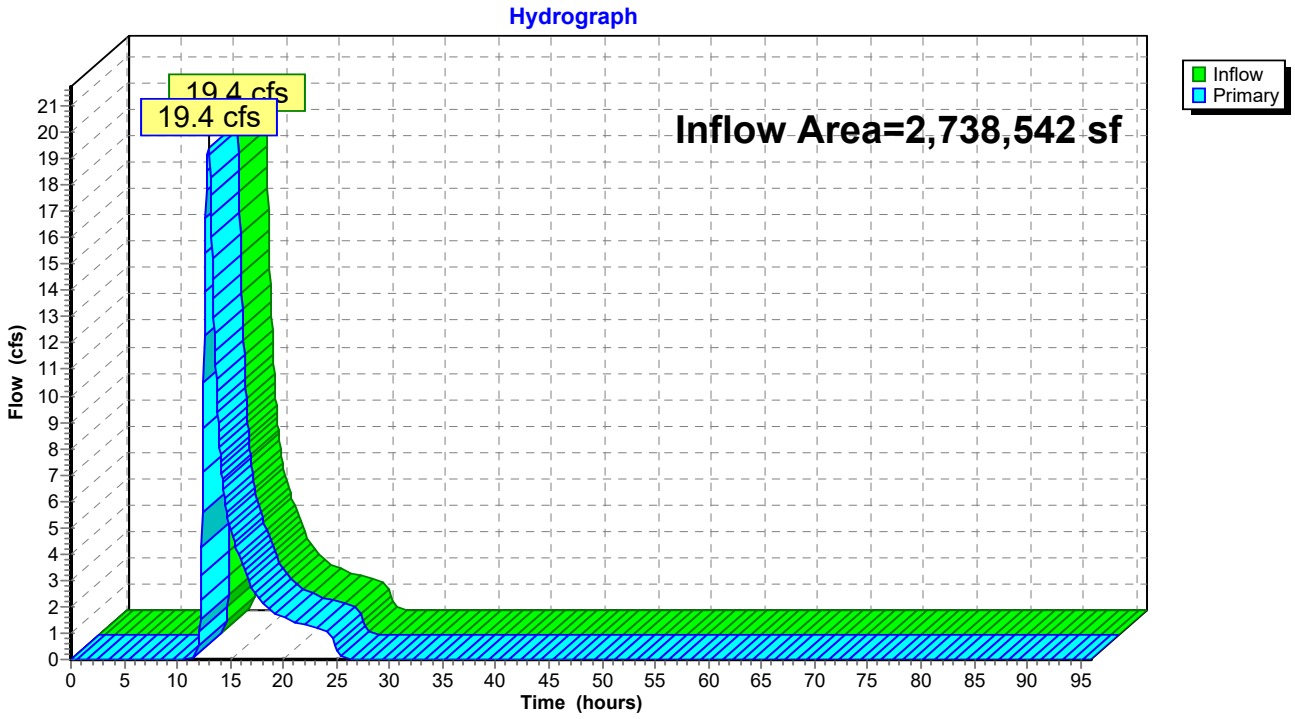


Summary for Link L1 E: river

Inflow Area = 2,738,542 sf, 0.00% Impervious, Inflow Depth = 0.78" for 2-Year event
Inflow = 19.4 cfs @ 12.93 hrs, Volume= 177,911 cf
Primary = 19.4 cfs @ 12.93 hrs, Volume= 177,911 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link L1 E: river

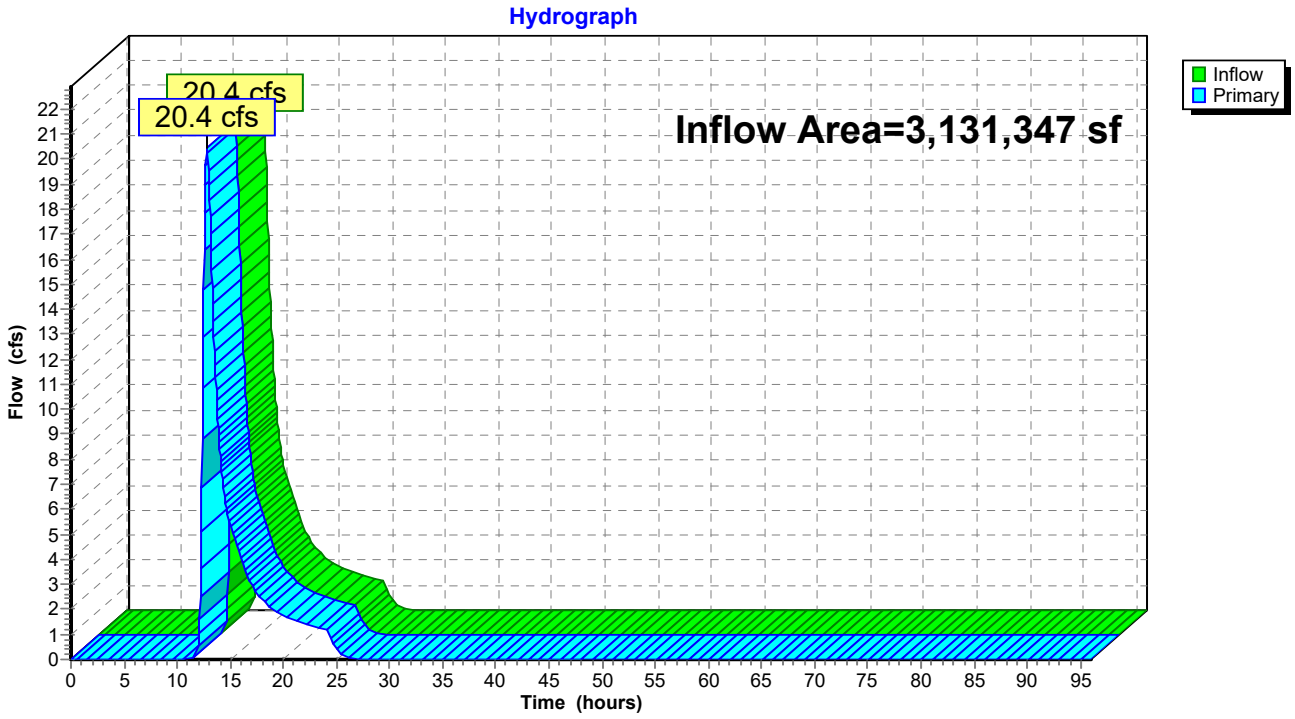


Summary for Link L2 E: Ditch

Inflow Area = 3,131,347 sf, 1.22% Impervious, Inflow Depth = 0.74" for 2-Year event
Inflow = 20.4 cfs @ 12.81 hrs, Volume= 193,596 cf
Primary = 20.4 cfs @ 12.81 hrs, Volume= 193,596 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link L2 E: Ditch

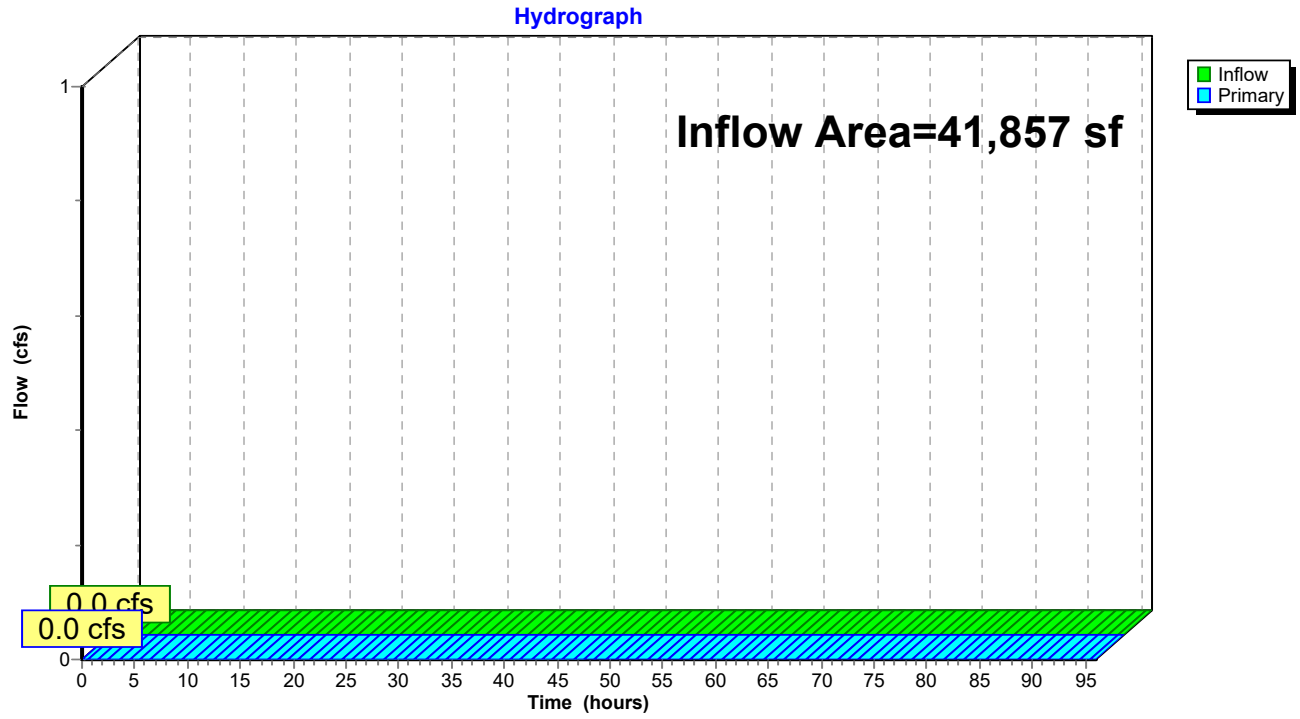


Summary for Link L3 E: offsite

Inflow Area = 41,857 sf, 0.00% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link L3 E: offsite

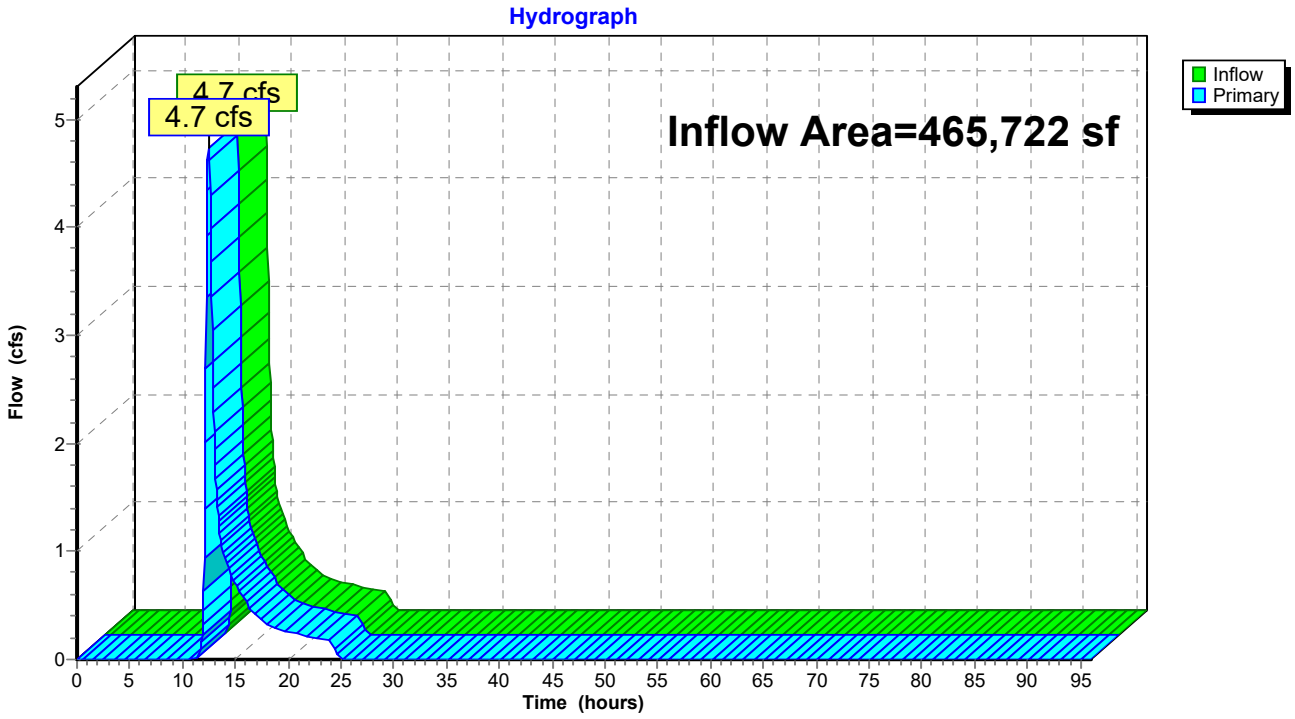


Summary for Link L4 E: Duval Road

Inflow Area = 465,722 sf, 0.54% Impervious, Inflow Depth = 0.78" for 2-Year event
Inflow = 4.7 cfs @ 12.46 hrs, Volume= 30,091 cf
Primary = 4.7 cfs @ 12.46 hrs, Volume= 30,091 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link L4 E: Duval Road



Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 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 S100 E: Subcat S100 E Runoff Area=2,738,542 sf 0.00% Impervious Runoff Depth=1.81"
Flow Length=930' Tc=61.3 min CN=69 Runoff=50.1 cfs 413,819 cf

Subcatchment S1000 E: Subcat S1000 E Runoff Area=161,197 sf 0.87% Impervious Runoff Depth=1.74"
Flow Length=860' Tc=28.1 min CN=68 Runoff=4.2 cfs 23,355 cf

Subcatchment S1100 E: Subcat S1100 E Runoff Area=59,436 sf 0.00% Impervious Runoff Depth=1.19"
Flow Length=440' Tc=17.1 min CN=60 Runoff=1.2 cfs 5,874 cf

Subcatchment S1200 E: Subcat S1200 E Runoff Area=44,272 sf 0.00% Impervious Runoff Depth=2.05"
Flow Length=435' Tc=26.2 min CN=72 Runoff=1.4 cfs 7,545 cf

Subcatchment S1300 E: Subcat S1300 E Runoff Area=24,002 sf 0.00% Impervious Runoff Depth=2.05"
Flow Length=135' Tc=14.1 min CN=72 Runoff=1.0 cfs 4,090 cf

Subcatchment S200 E: Subcat S200 E Runoff Area=434,059 sf 1.79% Impervious Runoff Depth=1.81"
Flow Length=1,975' Tc=63.8 min CN=69 Runoff=7.7 cfs 65,590 cf

Subcatchment S300 E: Subcat S300 E Runoff Area=41,857 sf 0.00% Impervious Runoff Depth=1.19"
Flow Length=345' Tc=20.2 min CN=60 Runoff=0.8 cfs 4,137 cf

Subcatchment S400 E: Subcat S400 E Runoff Area=1,128,435 sf 2.46% Impervious Runoff Depth=1.59"
Flow Length=2,475' Tc=45.6 min CN=66 Runoff=21.1 cfs 149,791 cf

Subcatchment S500 E: Subcat S500 E Runoff Area=824,035 sf 0.34% Impervious Runoff Depth=1.81"
Flow Length=2,280' Tc=76.5 min CN=69 Runoff=13.1 cfs 124,519 cf

Subcatchment S700 E: Subcat S700 E Runoff Area=651,442 sf 0.00% Impervious Runoff Depth=1.89"
Flow Length=720' Tc=47.6 min CN=70 Runoff=14.5 cfs 102,563 cf

Subcatchment S800 E: Subcat S800 E Runoff Area=93,376 sf 0.00% Impervious Runoff Depth=1.89"
Flow Length=660' Tc=30.2 min CN=70 Runoff=2.6 cfs 14,701 cf

Subcatchment S900 E: Subcat S900 E Runoff Area=176,815 sf 0.64% Impervious Runoff Depth=1.97"
Flow Length=690' Tc=33.3 min CN=71 Runoff=4.9 cfs 28,976 cf

Pond P300 E: Pond P300 E Peak Elev=561.18' Storage=2,243 cf Inflow=0.8 cfs 4,137 cf
Discarded=0.1 cfs 4,137 cf Primary=0.0 cfs 0 cf Outflow=0.1 cfs 4,137 cf

Link L1 E: river Inflow=50.1 cfs 413,819 cf
Primary=50.1 cfs 413,819 cf

Link L2 E: Ditch Inflow=54.6 cfs 457,165 cf
Primary=54.6 cfs 457,165 cf

Link L3 E: offsite Inflow=0.0 cfs 0 cf
Primary=0.0 cfs 0 cf

Link L4 E: Duval Road Inflow=12.1 cfs 69,840 cf
Primary=12.1 cfs 69,840 cf

Total Runoff Area = 6,377,468 sf Runoff Volume = 944,960 cf Average Runoff Depth = 1.78"
99.36% Pervious = 6,336,606 sf 0.64% Impervious = 40,862 sf

Summary for Subcatchment S100 E: Subcat S100 E

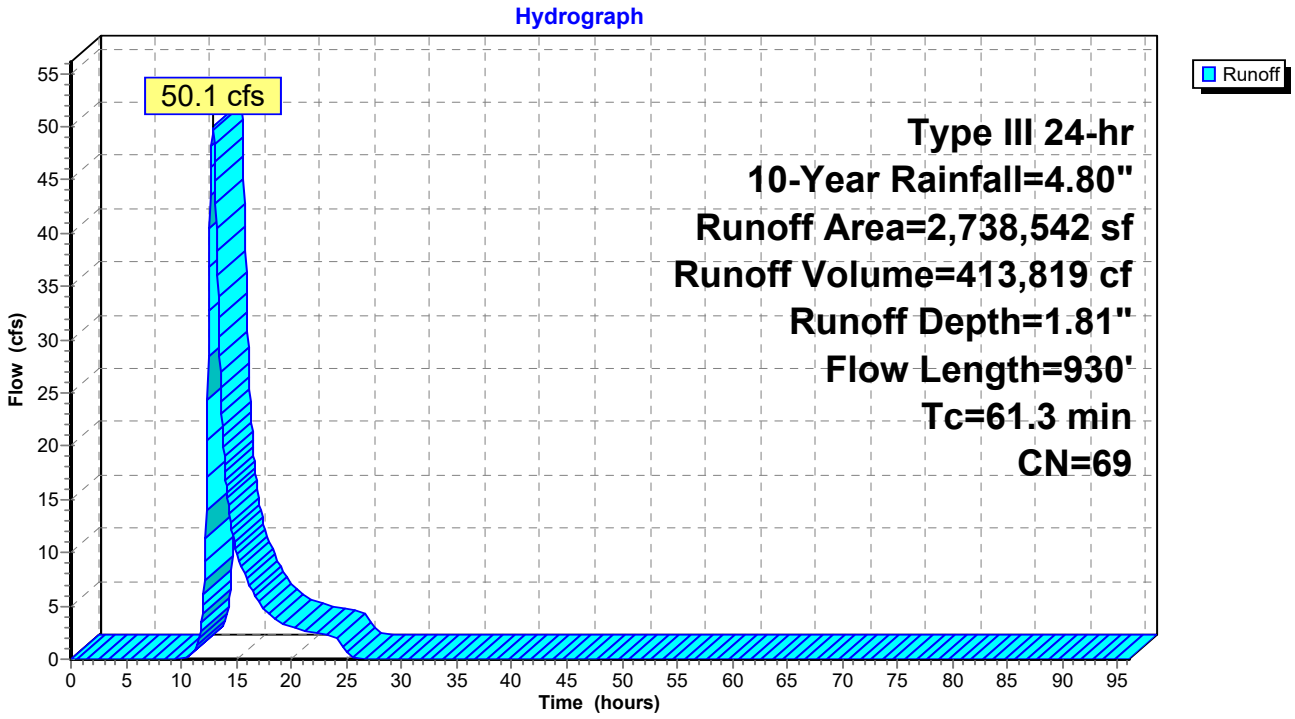
Runoff = 50.1 cfs @ 12.87 hrs, Volume= 413,819 cf, Depth= 1.81"
Routed to Link L1 E : river

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
948,052	70	Woods, Good, HSG C
37,618	70	Woods, Good, HSG C
20,698	70	Woods, Good, HSG C
1,160	55	Woods, Good, HSG B
81,766	55	Woods, Good, HSG B
14,718	55	Woods, Good, HSG B
249,605	55	Woods, Good, HSG B
5,573	55	Woods, Good, HSG B
689	98	Water Surface, 0% imp, HSG B
782	98	Water Surface, 0% imp, HSG C
3,830	98	Water Surface, 0% imp, HSG C
68,992	98	Water Surface, 0% imp, HSG C
1,133	70	Woods, Good, HSG C
1,819	70	Woods, Good, HSG C
340	70	Woods, Good, HSG C
1,027	70	Woods, Good, HSG C
1,082	70	Woods, Good, HSG C
863,715	70	Woods, Good, HSG C
435,943	70	Woods, Good, HSG C
2,738,542	69	Weighted Average
2,738,542		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	50	0.0500	0.06		**Sheet Flow, uppermost**
					Woods: Dense underbrush n= 0.800 P2= 3.20"
46.4	880	0.0160	0.32		**Shallow Concentrated Flow, above river**
					Forest w/Heavy Litter Kv= 2.5 fps
61.3	930	Total			

Subcatchment S100 E: Subcat S100 E



Summary for Subcatchment S1000 E: Subcat S1000 E

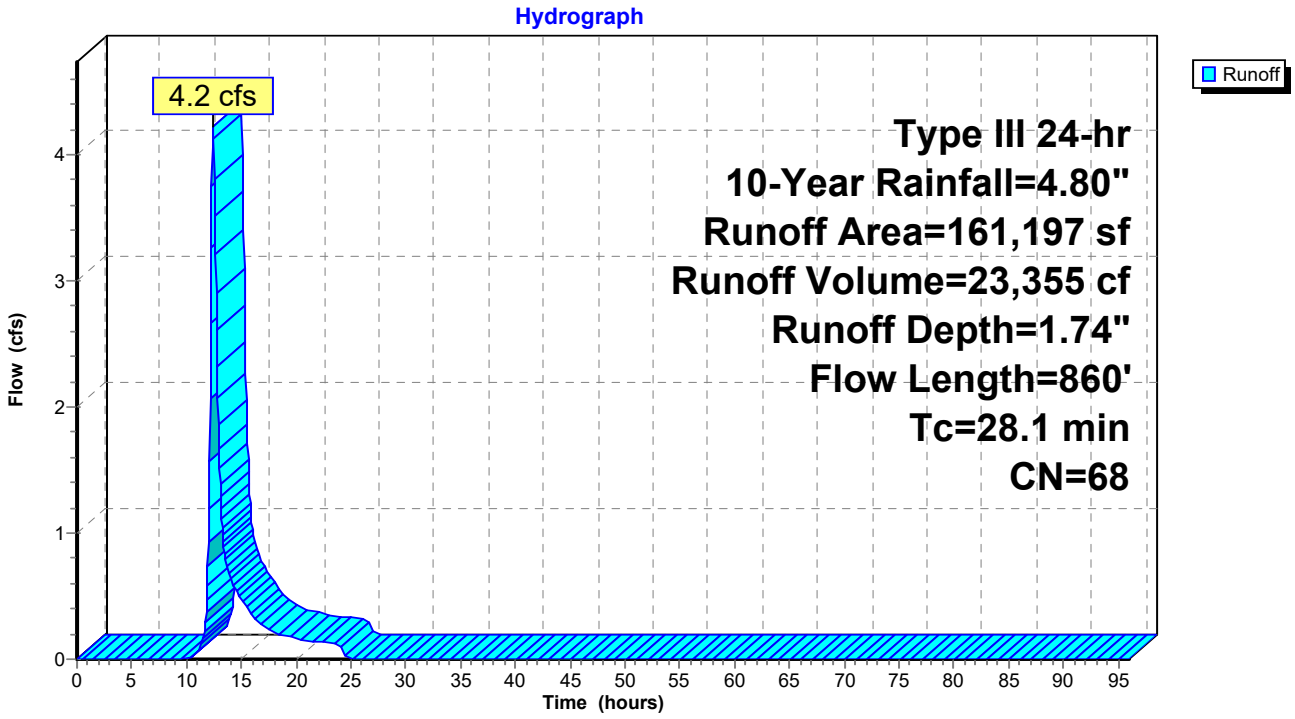
Runoff = 4.2 cfs @ 12.42 hrs, Volume= 23,355 cf, Depth= 1.74"
Routed to Link L4 E : Duval Road

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
418	61	>75% Grass cover, Good, HSG B
34,613	55	Woods, Good, HSG B
819	89	Gravel roads, HSG C
1,846	89	Gravel roads, HSG C
0	98	Roofs, HSG C
1,396	98	Roofs, HSG C
10,892	74	>75% Grass cover, Good, HSG C
648	74	>75% Grass cover, Good, HSG C
110,565	70	Woods, Good, HSG C
0	70	Woods, Good, HSG C
0	70	Woods, Good, HSG C
161,197	68	Weighted Average
159,801		99.13% Pervious Area
1,396		0.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.10		**Sheet Flow, uppermost** Grass: Dense n= 0.240 P2= 3.20"
19.9	810	0.0740	0.68		**Shallow Concentrated Flow, to offisite** Forest w/Heavy Litter Kv= 2.5 fps
28.1	860	Total			

Subcatchment S1000 E: Subcat S1000 E



Summary for Subcatchment S1100 E: Subcat S1100 E

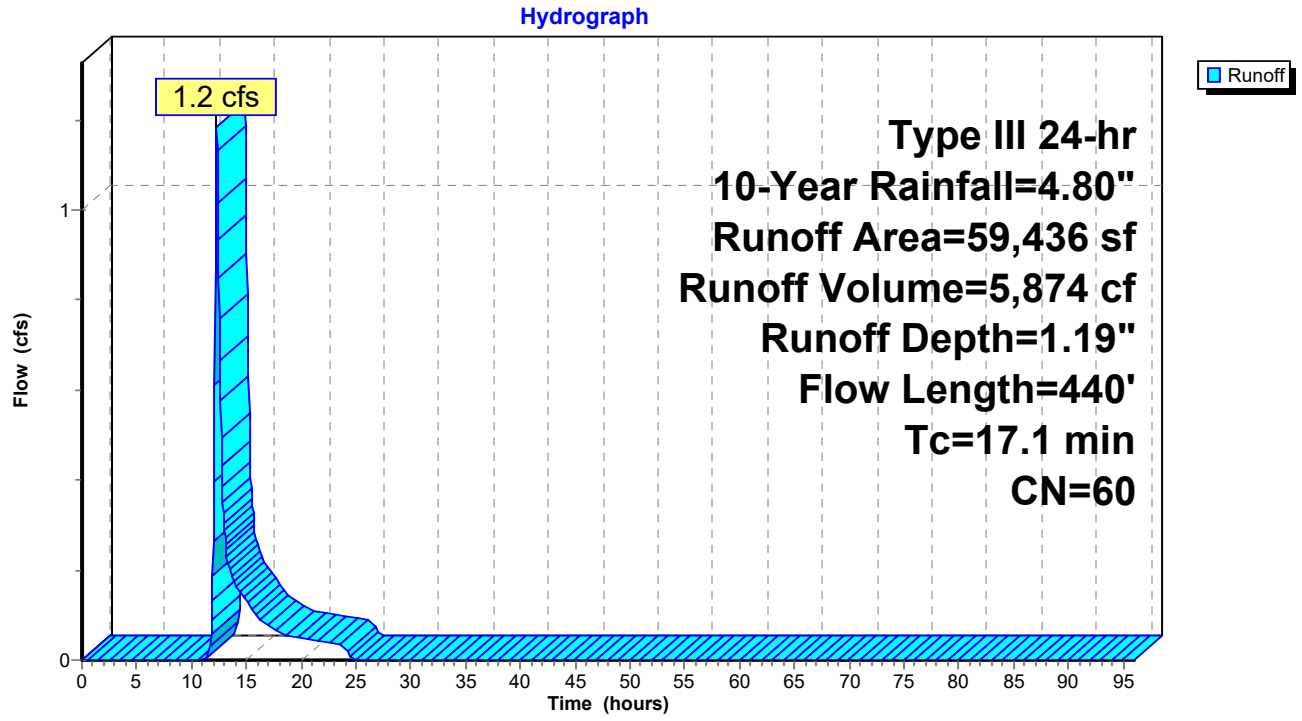
Runoff = 1.2 cfs @ 12.27 hrs, Volume= 5,874 cf, Depth= 1.19"
Routed to Link L4 E : Duval Road

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
36,605	55	Woods, Good, HSG B
520	61	>75% Grass cover, Good, HSG B
3,042	61	>75% Grass cover, Good, HSG B
19,269	70	Woods, Good, HSG C
59,436	60	Weighted Average
59,436		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	50	0.1800	0.09		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
8.2	390	0.1010	0.79		**Shallow Concentrated Flow, to offisite** Forest w/Heavy Litter Kv= 2.5 fps
17.1	440	Total			

Subcatchment S1100 E: Subcat S1100 E



Summary for Subcatchment S1200 E: Subcat S1200 E

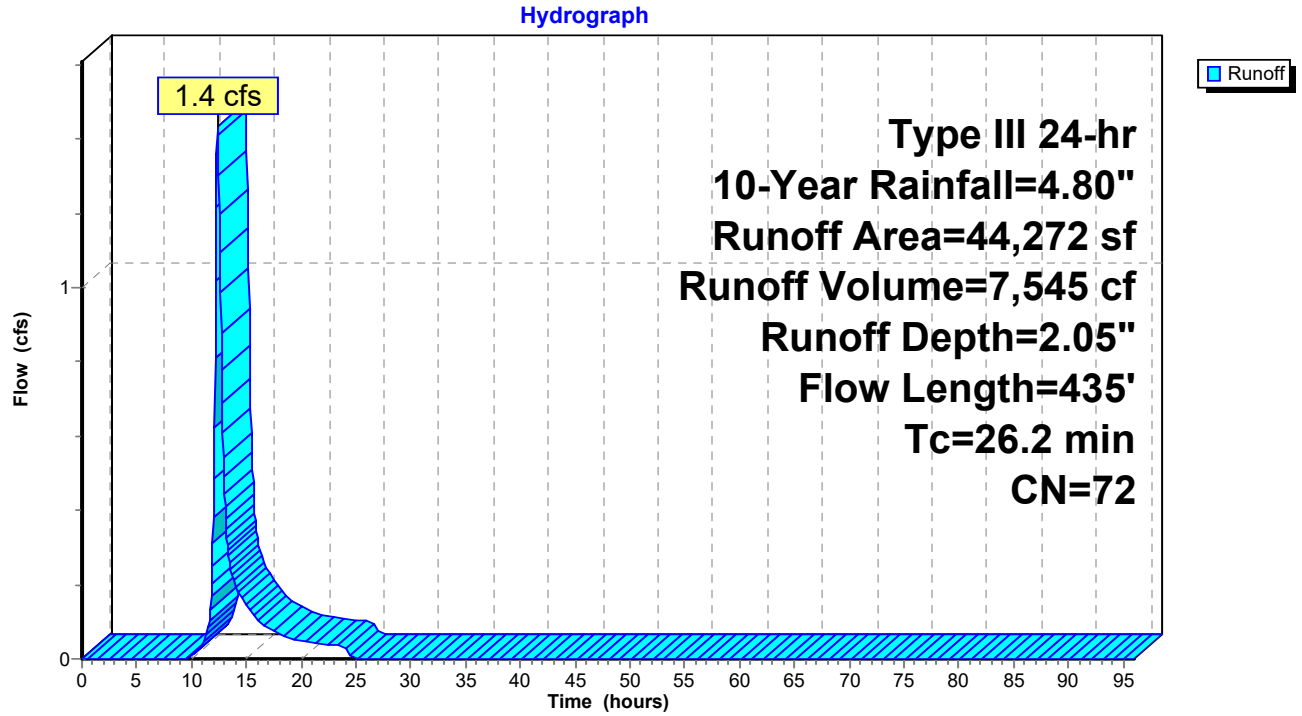
Runoff = 1.4 cfs @ 12.38 hrs, Volume= 7,545 cf, Depth= 2.05"
Routed to Link L4 E : Duval Road

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
4,143	89	Gravel roads, HSG C
0	98	Roofs, HSG C
0	98	Roofs, HSG C
6,107	74	>75% Grass cover, Good, HSG C
30,185	70	Woods, Good, HSG C
3,837	70	Woods, Good, HSG C
44,272	72	Weighted Average
44,272		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	50	0.0500	0.06		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
11.3	385	0.0520	0.57		**Shallow Concentrated Flow, to Duval Road** Forest w/Heavy Litter Kv= 2.5 fps
26.2	435	Total			

Subcatchment S1200 E: Subcat S1200 E



Summary for Subcatchment S1300 E: Subcat S1300 E

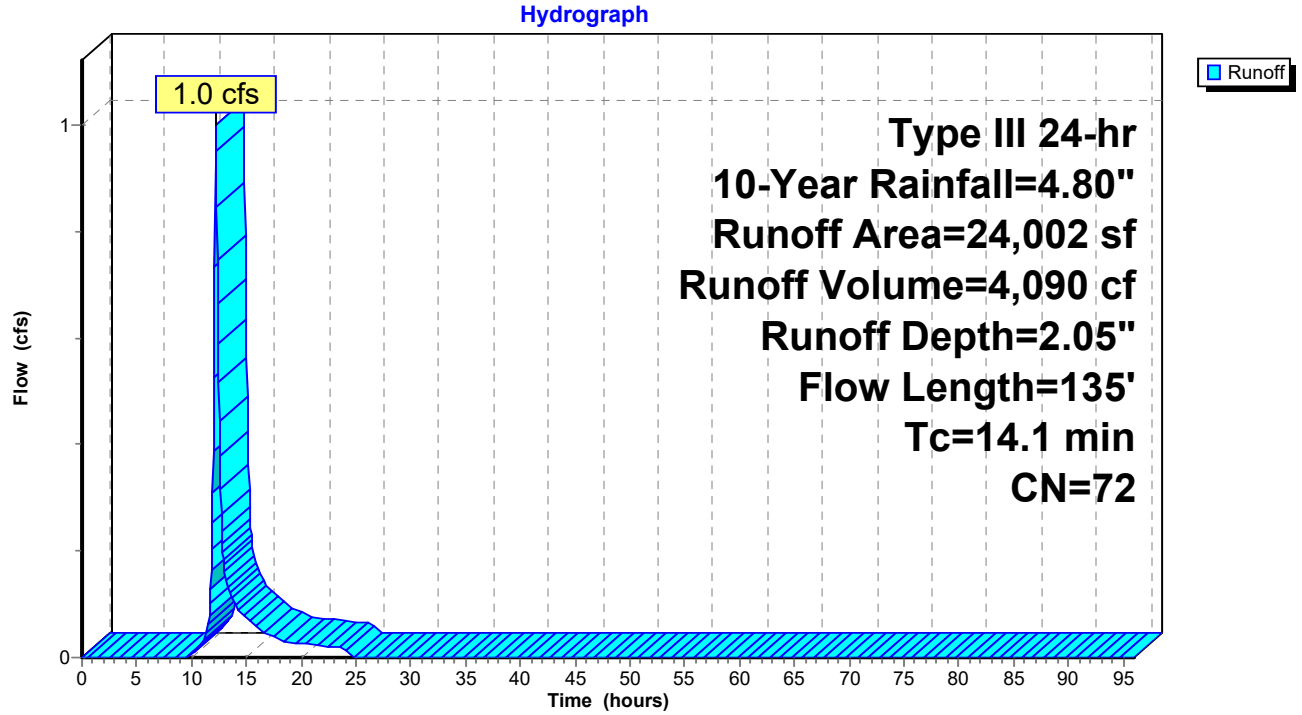
Runoff = 1.0 cfs @ 12.20 hrs, Volume= 4,090 cf, Depth= 2.05"
Routed to Link L4 E : Duval Road

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
2,199	89	Gravel roads, HSG C
0	98	Roofs, HSG C
2,210	74	>75% Grass cover, Good, HSG C
738	74	>75% Grass cover, Good, HSG C
18,748	70	Woods, Good, HSG C
0	70	Woods, Good, HSG C
0	70	Woods, Good, HSG C
107	70	Woods, Good, HSG C
24,002	72	Weighted Average
24,002		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0800	0.07		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
1.8	85	0.1000	0.79		**Shallow Concentrated Flow, to offsite** Forest w/Heavy Litter Kv= 2.5 fps
14.1	135	Total			

Subcatchment S1300 E: Subcat S1300 E



Summary for Subcatchment S200 E: Subcat S200 E

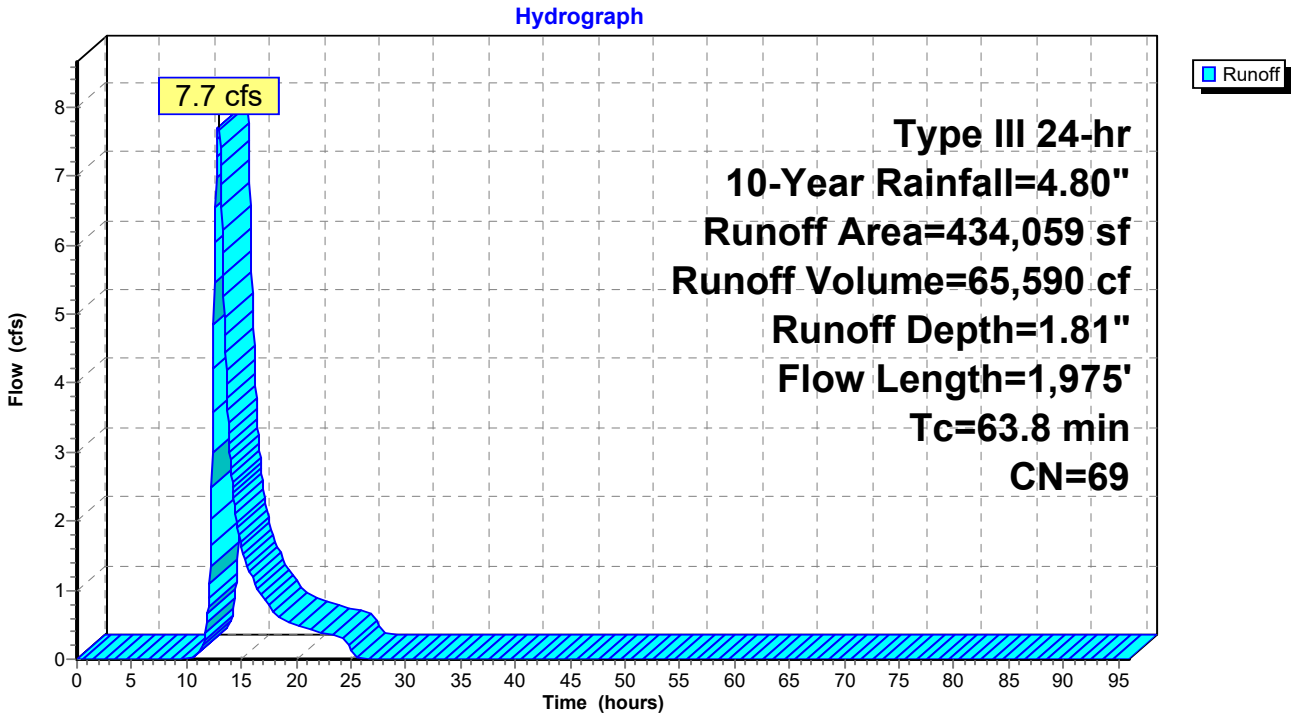
Runoff = 7.7 cfs @ 12.90 hrs, Volume= 65,590 cf, Depth= 1.81"
Routed to Link L2 E : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
135,720	77	Woods, Good, HSG D
2,365	98	Roofs, HSG B
2,299	98	Paved parking, HSG B
3,092	98	Unconnected pavement, HSG B
4,529	61	>75% Grass cover, Good, HSG B
1,036	55	Woods, Good, HSG B
80,157	55	Woods, Good, HSG B
510	55	Woods, Good, HSG B
368	55	Woods, Good, HSG B
13,678	55	Woods, Good, HSG B
190,305	70	Woods, Good, HSG C
434,059	69	Weighted Average
426,303		98.21% Pervious Area
7,756		1.79% Impervious Area
3,092		39.87% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	50	0.1000	0.13		**Sheet Flow, uppermost**
					Woods: Light underbrush n= 0.400 P2= 3.20"
0.2	50	0.0900	4.83		**Shallow Concentrated Flow, yard**
					Unpaved Kv= 16.1 fps
57.1	1,875	0.0480	0.55		**Shallow Concentrated Flow, above ditch**
					Forest w/Heavy Litter Kv= 2.5 fps
63.8	1,975	Total			

Subcatchment S200 E: Subcat S200 E



Summary for Subcatchment S300 E: Subcat S300 E

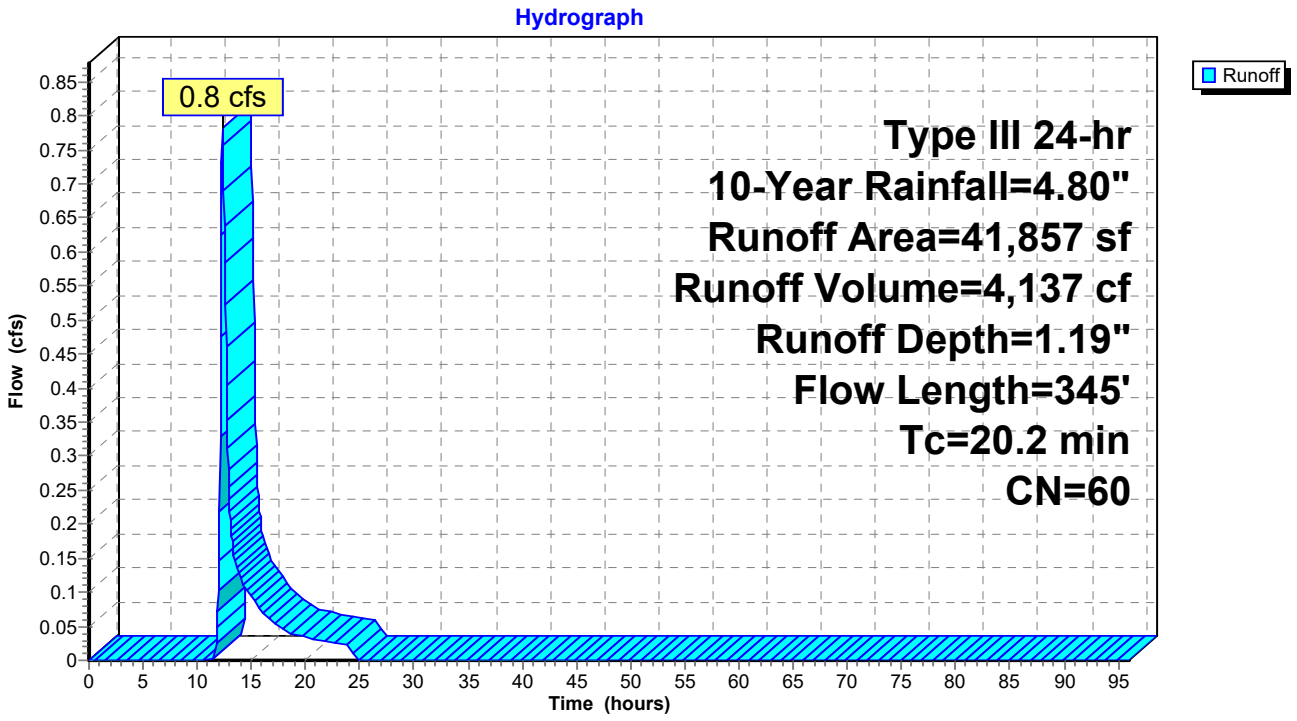
Runoff = 0.8 cfs @ 12.32 hrs, Volume= 4,137 cf, Depth= 1.19"
Routed to Pond P300 E : Pond P300 E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
17,941	55	Woods, Good, HSG B
8,630	55	Woods, Good, HSG B
15,286	70	Woods, Good, HSG C
41,857	60	Weighted Average
41,857		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	50	0.0500	0.06		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
5.3	295	0.1400	0.94		**Shallow Concentrated Flow, to depression** Forest w/Heavy Litter Kv= 2.5 fps
20.2	345	Total			

Subcatchment S300 E: Subcat S300 E



Summary for Subcatchment S400 E: Subcat S400 E

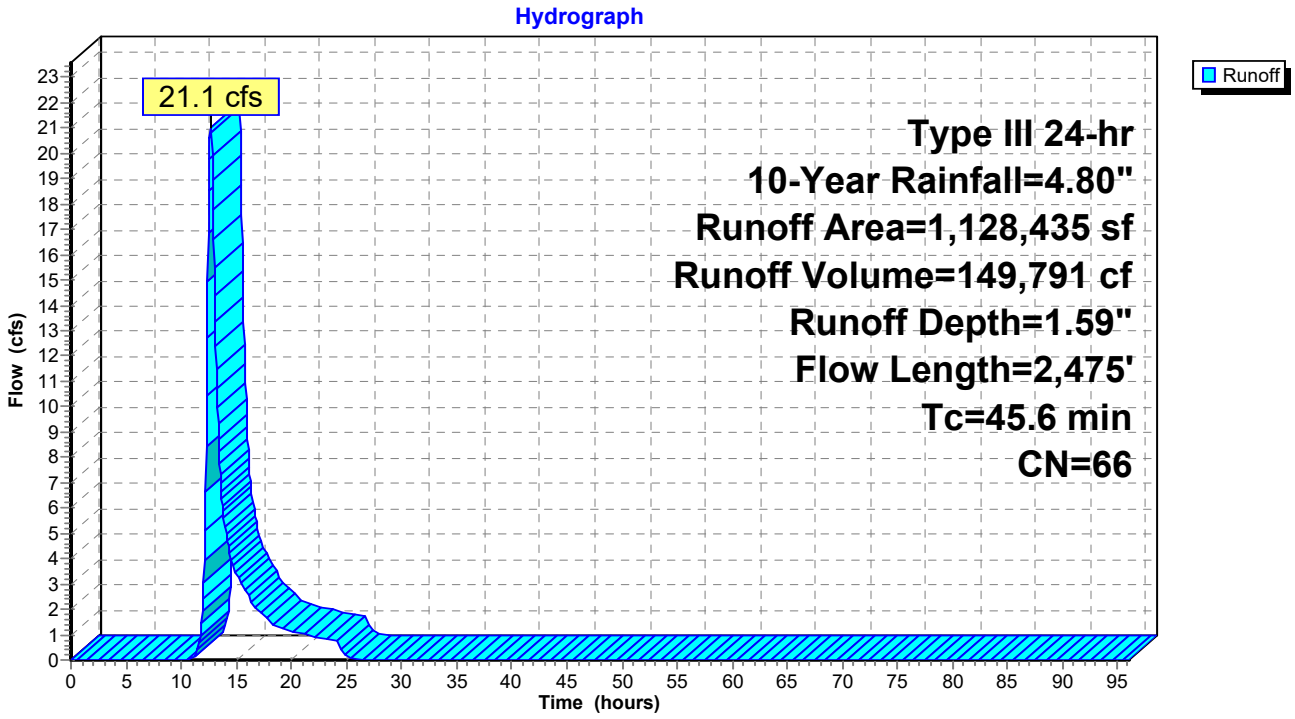
Runoff = 21.1 cfs @ 12.67 hrs, Volume= 149,791 cf, Depth= 1.59"
Routed to Link L2 E : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
62,408	77	Woods, Good, HSG D
1,061	98	Roofs, HSG B
1,199	61	>75% Grass cover, Good, HSG B
1,836	98	Roofs, HSG B
1,221	98	Roofs, HSG B
1,566	98	Roofs, HSG B
97	98	Roofs, HSG B
1,439	98	Paved parking, HSG B
2,655	98	Paved parking, HSG B
1,394	98	Paved parking, HSG B
2,691	98	Paved parking, HSG B
1,498	98	Paved parking, HSG B
1,466	98	Paved parking, HSG B
85	98	Paved parking, HSG B
240	98	Unconnected pavement, HSG B
266	98	Unconnected pavement, HSG B
1,057	98	Unconnected pavement, HSG B
1,830	61	>75% Grass cover, Good, HSG B
897	98	Unconnected pavement, HSG B
3,341	61	>75% Grass cover, Good, HSG B
16,544	89	Paved roads w/open ditches, 50% imp, HSG B
10,972	61	>75% Grass cover, Good, HSG B
438	61	>75% Grass cover, Good, HSG B
27,951	61	>75% Grass cover, Good, HSG B
16,004	61	>75% Grass cover, Good, HSG B
1,750	61	>75% Grass cover, Good, HSG B
872	61	>75% Grass cover, Good, HSG B
19,439	61	>75% Grass cover, Good, HSG B
2,232	61	>75% Grass cover, Good, HSG B
57,008	55	Woods, Good, HSG B
13,841	55	Woods, Good, HSG B
23,027	55	Woods, Good, HSG B
1,440	55	Woods, Good, HSG B
0	55	Woods, Good, HSG B
0	55	Woods, Good, HSG B
1,370	55	Woods, Good, HSG B
138,497	55	Woods, Good, HSG B
85,994	55	Woods, Good, HSG B
622,809	70	Woods, Good, HSG C
1,128,435	66	Weighted Average
1,100,694		97.54% Pervious Area
27,741		2.46% Impervious Area
2,460		8.87% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.10		**Sheet Flow, uppermost** Grass: Dense n= 0.240 P2= 3.20"
4.4	325	0.0610	1.23		**Shallow Concentrated Flow, above Forest Street** Woodland Kv= 5.0 fps
33.0	2,100	0.0450	1.06		**Shallow Concentrated Flow, below Forest Street** Woodland Kv= 5.0 fps
45.6	2,475	Total			

Subcatchment S400 E: Subcat S400 E



Summary for Subcatchment S500 E: Subcat S500 E

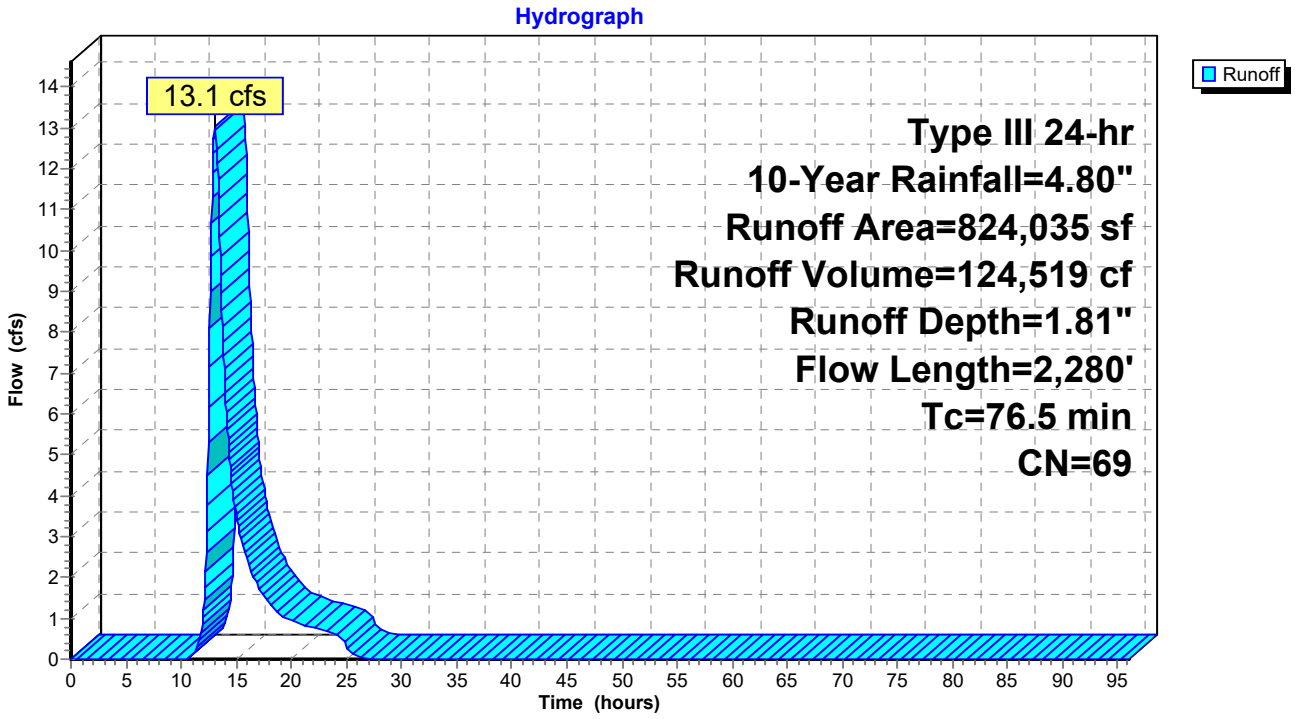
Runoff = 13.1 cfs @ 13.07 hrs, Volume= 124,519 cf, Depth= 1.81"
Routed to Link L2 E : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
101,980	77	Woods, Good, HSG D
1,543	98	Paved parking, HSG B
1,524	61	>75% Grass cover, Good, HSG B
149	61	>75% Grass cover, Good, HSG B
2,588	89	Paved roads w/open ditches, 50% imp, HSG B
6,330	61	>75% Grass cover, Good, HSG B
3,281	55	Woods, Good, HSG B
6,566	55	Woods, Good, HSG B
101,019	55	Woods, Good, HSG B
599,055	70	Woods, Good, HSG C
824,035	69	Weighted Average
821,198		99.66% Pervious Area
2,837		0.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.3	50	0.1000	0.07		**Sheet Flow, uppermost**
					Woods: Dense underbrush n= 0.800 P2= 3.20"
2.3	90	0.0660	0.64		**Shallow Concentrated Flow, to house**
					Forest w/Heavy Litter Kv= 2.5 fps
0.5	110	0.0500	3.60		**Shallow Concentrated Flow, yard**
					Unpaved Kv= 16.1 fps
62.4	2,030	0.0470	0.54		**Shallow Concentrated Flow, to ditch**
					Forest w/Heavy Litter Kv= 2.5 fps
76.5	2,280	Total			

Subcatchment S500 E: Subcat S500 E



Summary for Subcatchment S700 E: Subcat S700 E

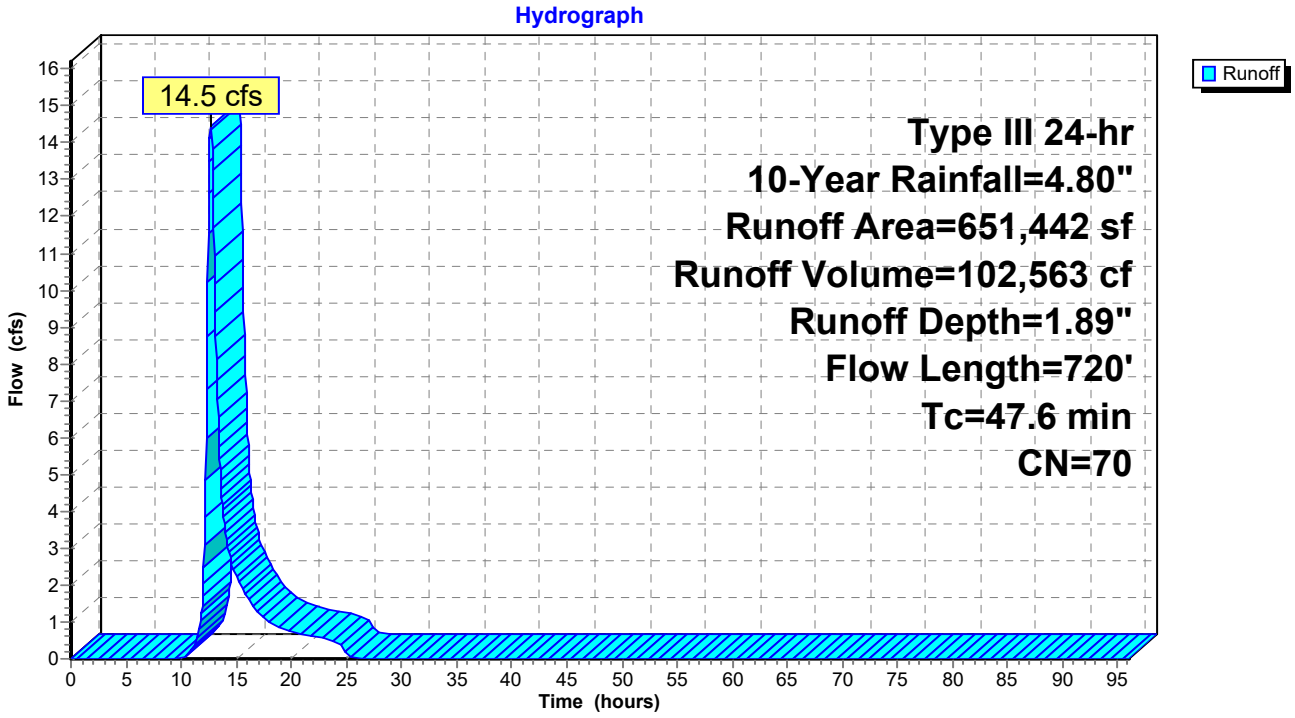
Runoff = 14.5 cfs @ 12.68 hrs, Volume= 102,563 cf, Depth= 1.89"
Routed to Link L2 E : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
651,442	70	Woods, Good, HSG C
651,442		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0800	0.07		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
35.3	670	0.0160	0.32		**Shallow Concentrated Flow, to ditch** Forest w/Heavy Litter Kv= 2.5 fps
47.6	720	Total			

Subcatchment S700 E: Subcat S700 E



Summary for Subcatchment S800 E: Subcat S800 E

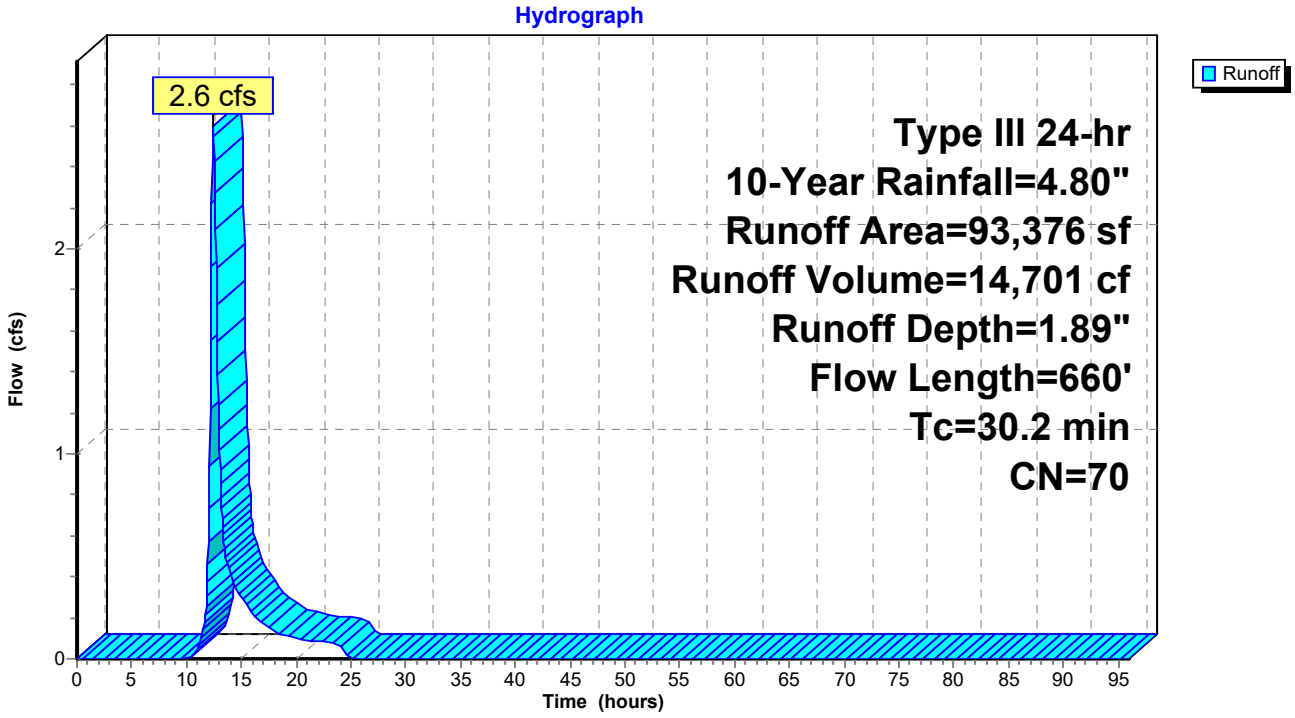
Runoff = 2.6 cfs @ 12.44 hrs, Volume= 14,701 cf, Depth= 1.89"
Routed to Link L2 E : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
93,376	70	Woods, Good, HSG C
93,376		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	50	0.0500	0.06		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
15.3	610	0.0710	0.67		**Shallow Concentrated Flow, to offsite** Forest w/Heavy Litter Kv= 2.5 fps
30.2	660	Total			

Subcatchment S800 E: Subcat S800 E



Summary for Subcatchment S900 E: Subcat S900 E

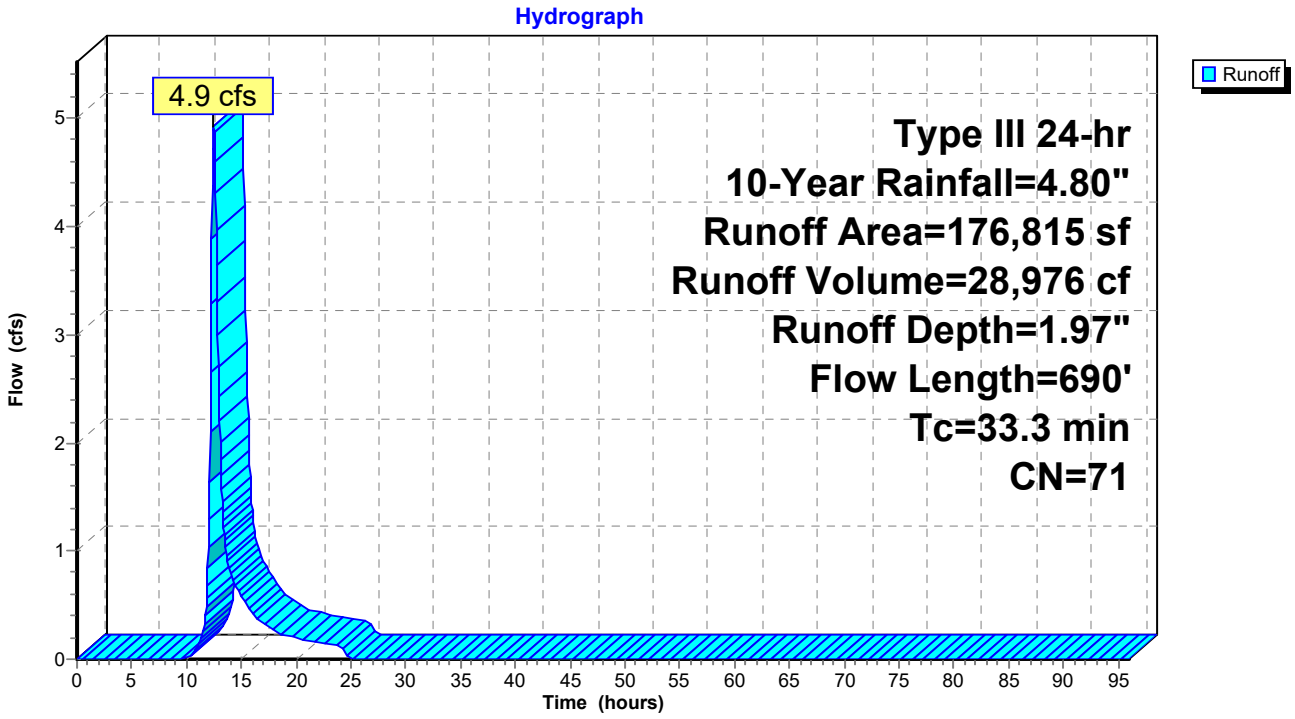
Runoff = 4.9 cfs @ 12.49 hrs, Volume= 28,976 cf, Depth= 1.97"
Routed to Link L4 E : Duval Road

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
1,132	98	Roofs, HSG C
5,664	89	Gravel roads, HSG C
8,190	74	>75% Grass cover, Good, HSG C
3,135	74	>75% Grass cover, Good, HSG C
1,148	74	>75% Grass cover, Good, HSG C
0	74	>75% Grass cover, Good, HSG C
1	70	Woods, Good, HSG C
6,727	70	Woods, Good, HSG C
150,818	70	Woods, Good, HSG C
0	70	Woods, Good, HSG C
0	70	Woods, Good, HSG C
176,815	71	Weighted Average
175,683		99.36% Pervious Area
1,132		0.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8	50	0.0600	0.06		**Sheet Flow, uppermost**
					Woods: Dense underbrush n= 0.800 P2= 3.20"
19.5	640	0.0480	0.55		**Shallow Concentrated Flow, to offfsite**
					Forest w/Heavy Litter Kv= 2.5 fps
33.3	690	Total			

Subcatchment S900 E: Subcat S900 E



Summary for Pond P300 E: Pond P300 E

Inflow Area = 41,857 sf, 0.00% Impervious, Inflow Depth = 1.19" for 10-Year event
Inflow = 0.8 cfs @ 12.32 hrs, Volume= 4,137 cf
Outflow = 0.1 cfs @ 16.26 hrs, Volume= 4,137 cf, Atten= 92%, Lag= 236.2 min
Discarded = 0.1 cfs @ 16.26 hrs, Volume= 4,137 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link L3 E : offsite

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 561.18' @ 16.26 hrs Surf.Area= 2,582 sf Storage= 2,243 cf

Plug-Flow detention time= 488.1 min calculated for 4,135 cf (100% of inflow)
Center-of-Mass det. time= 488.6 min (1,380.3 - 891.7)

Volume	Invert	Avail.Storage	Storage Description
#1	559.30'	17,507 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

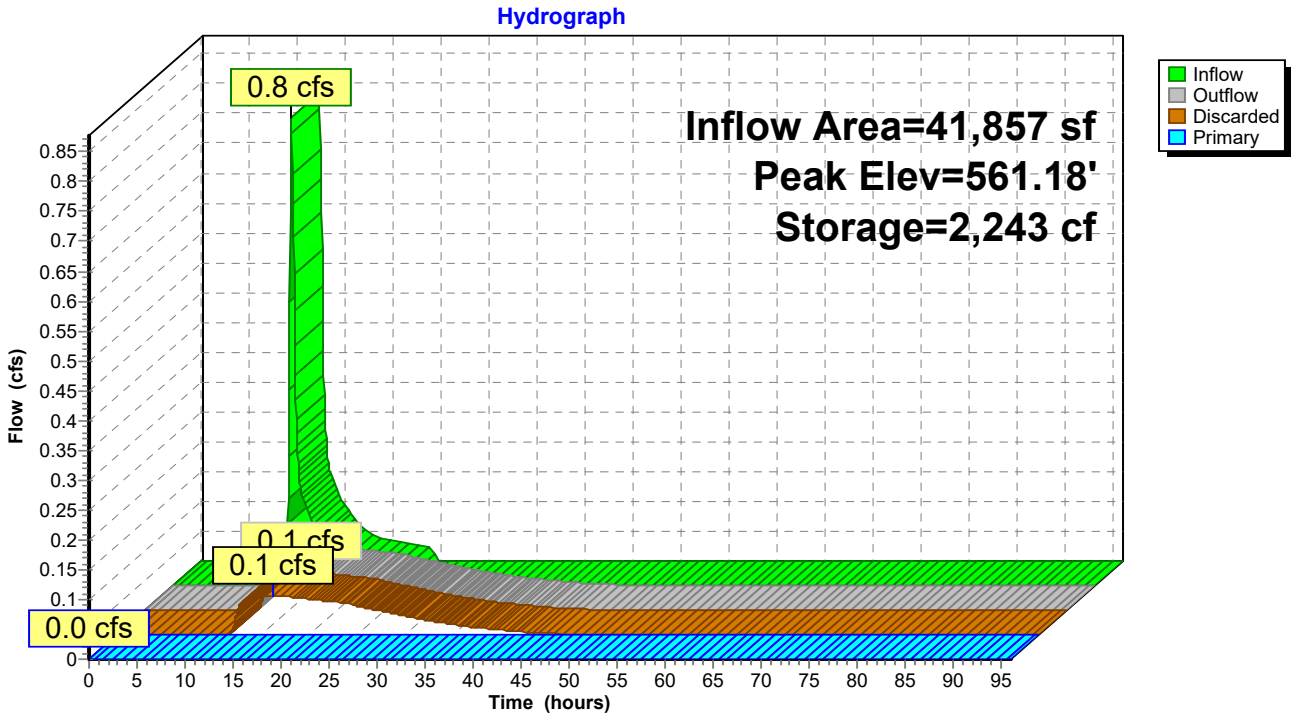
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
559.30	10	0	0
560.00	760	270	270
562.00	3,845	4,605	4,875
563.00	6,130	4,988	9,862
564.00	9,160	7,645	17,507

Device	Routing	Invert	Outlet Devices
#1	Primary	563.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Discarded	559.30'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 559.00'

Discarded OutFlow Max=0.1 cfs @ 16.26 hrs HW=561.18' (Free Discharge)
↑**2=Exfiltration** (Controls 0.1 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=559.30' (Free Discharge)
↑**1=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond P300 E: Pond P300 E

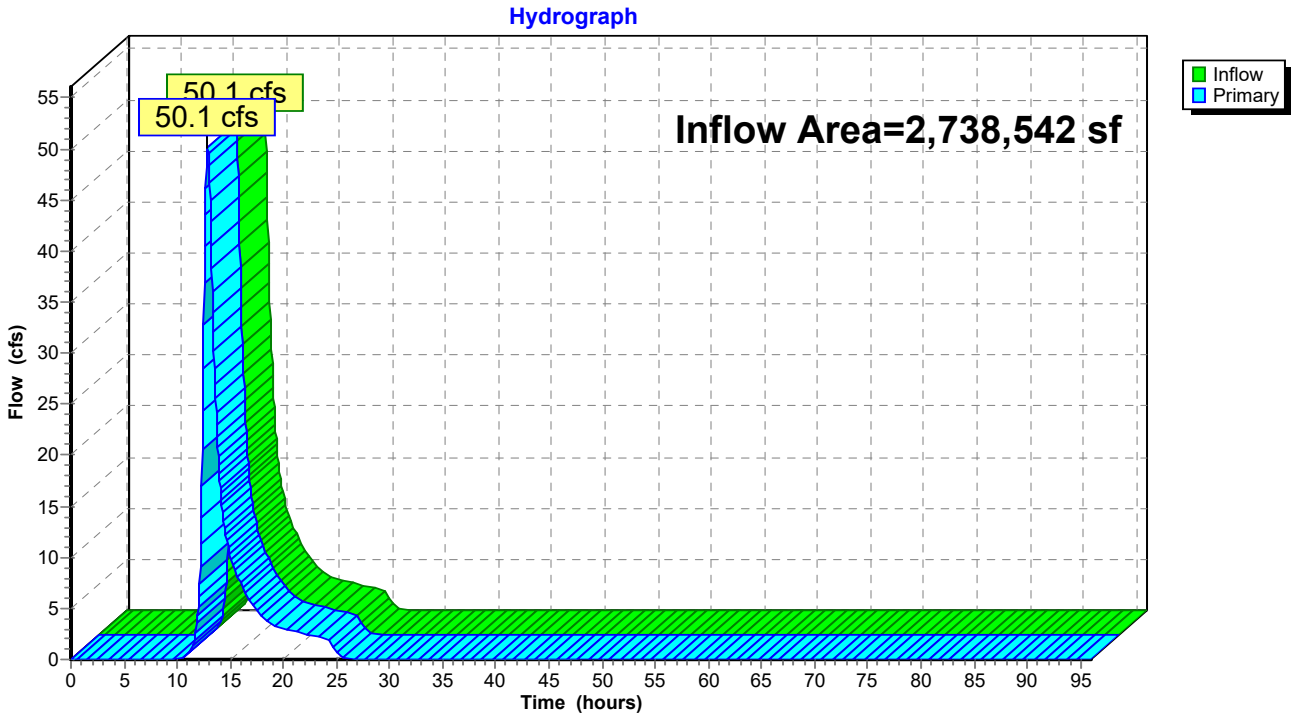


Summary for Link L1 E: river

Inflow Area = 2,738,542 sf, 0.00% Impervious, Inflow Depth = 1.81" for 10-Year event
Inflow = 50.1 cfs @ 12.87 hrs, Volume= 413,819 cf
Primary = 50.1 cfs @ 12.87 hrs, Volume= 413,819 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link L1 E: river

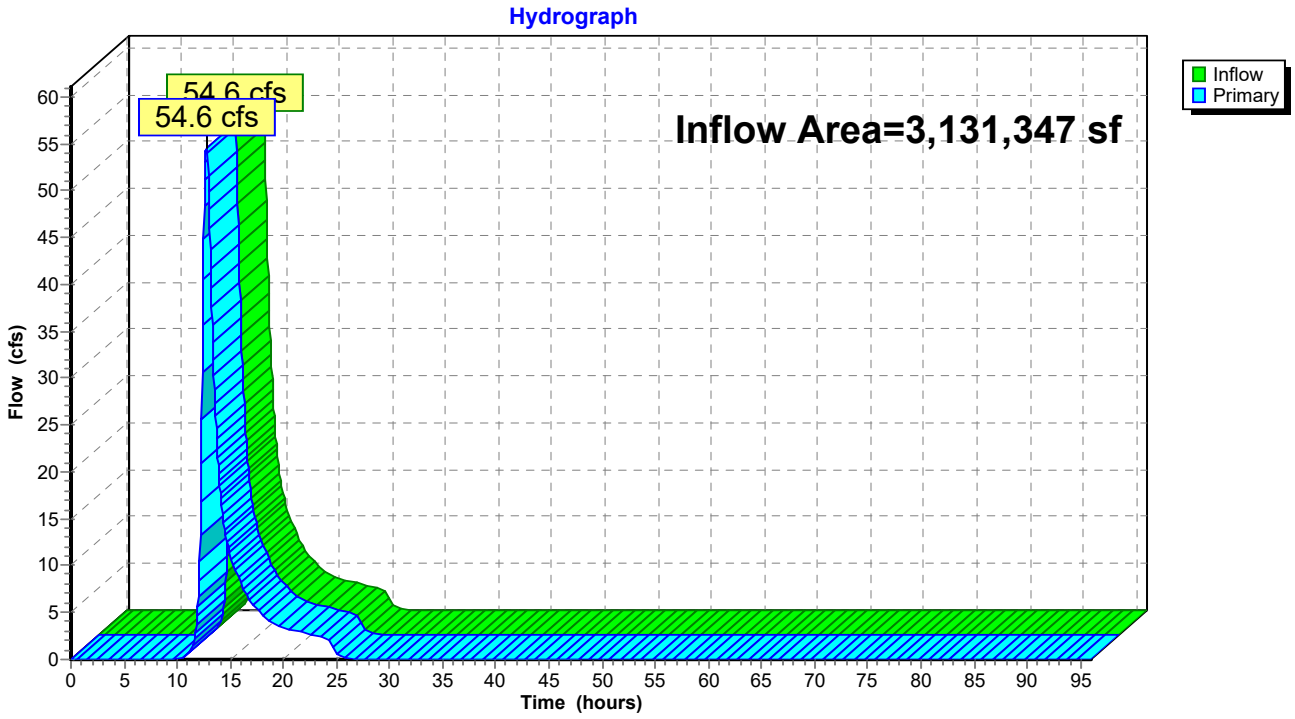


Summary for Link L2 E: Ditch

Inflow Area = 3,131,347 sf, 1.22% Impervious, Inflow Depth = 1.75" for 10-Year event
Inflow = 54.6 cfs @ 12.75 hrs, Volume= 457,165 cf
Primary = 54.6 cfs @ 12.75 hrs, Volume= 457,165 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link L2 E: Ditch

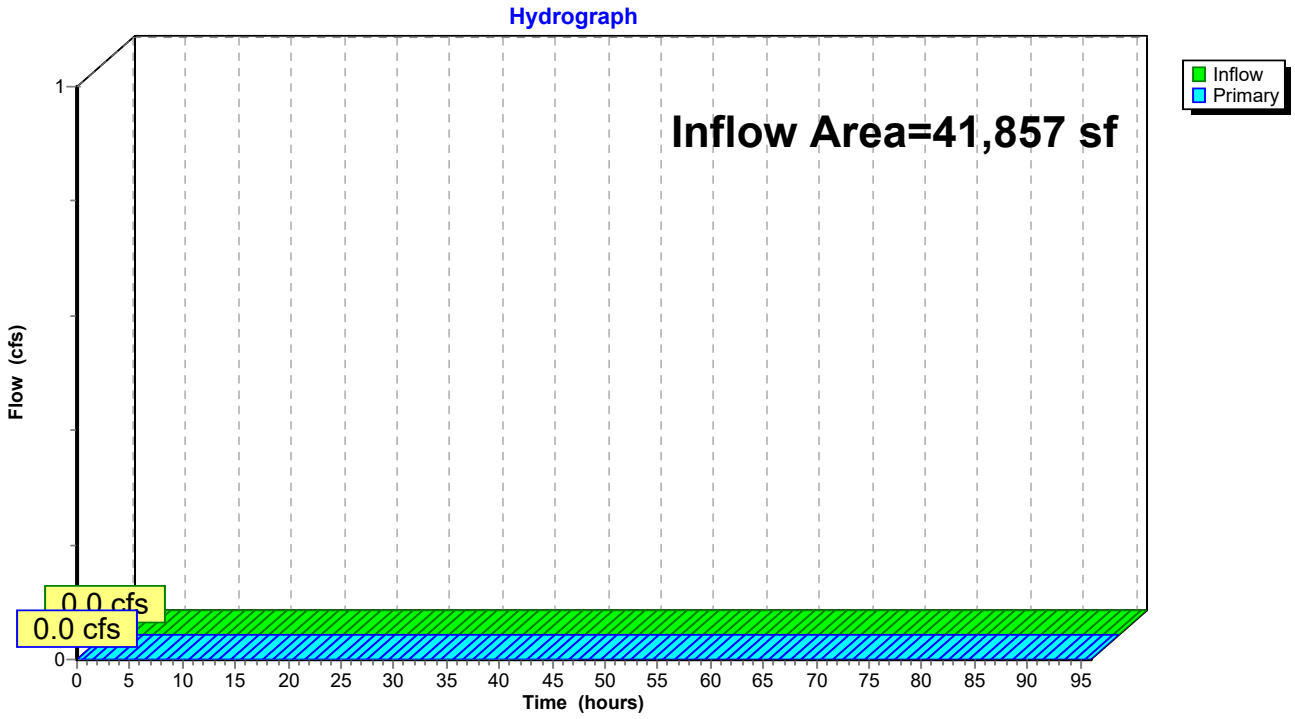


Summary for Link L3 E: offsite

Inflow Area = 41,857 sf, 0.00% Impervious, Inflow Depth = 0.00" for 10-Year event
Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link L3 E: offsite

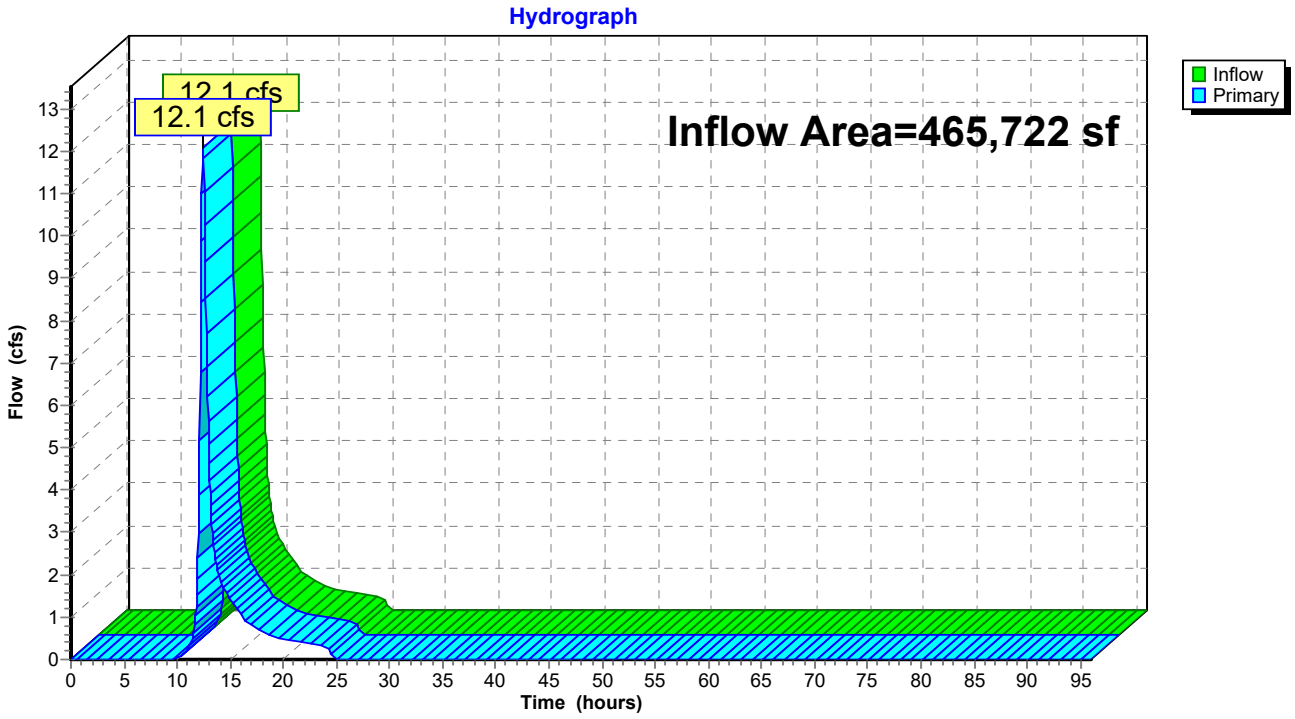


Summary for Link L4 E: Duval Road

Inflow Area = 465,722 sf, 0.54% Impervious, Inflow Depth = 1.80" for 10-Year event
Inflow = 12.1 cfs @ 12.42 hrs, Volume= 69,840 cf
Primary = 12.1 cfs @ 12.42 hrs, Volume= 69,840 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link L4 E: Duval Road



Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 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 S100 E: Subcat S100 E Runoff Area=2,738,542 sf 0.00% Impervious Runoff Depth=3.51"
Flow Length=930' Tc=61.3 min CN=69 Runoff=100.1 cfs 801,929 cf

Subcatchment S1000 E: Subcat S1000 E Runoff Area=161,197 sf 0.87% Impervious Runoff Depth=3.41"
Flow Length=860' Tc=28.1 min CN=68 Runoff=8.6 cfs 45,809 cf

Subcatchment S1100 E: Subcat S1100 E Runoff Area=59,436 sf 0.00% Impervious Runoff Depth=2.60"
Flow Length=440' Tc=17.1 min CN=60 Runoff=2.9 cfs 12,896 cf

Subcatchment S1200 E: Subcat S1200 E Runoff Area=44,272 sf 0.00% Impervious Runoff Depth=3.83"
Flow Length=435' Tc=26.2 min CN=72 Runoff=2.7 cfs 14,127 cf

Subcatchment S1300 E: Subcat S1300 E Runoff Area=24,002 sf 0.00% Impervious Runoff Depth=3.83"
Flow Length=135' Tc=14.1 min CN=72 Runoff=1.9 cfs 7,659 cf

Subcatchment S200 E: Subcat S200 E Runoff Area=434,059 sf 1.79% Impervious Runoff Depth=3.51"
Flow Length=1,975' Tc=63.8 min CN=69 Runoff=15.5 cfs 127,106 cf

Subcatchment S300 E: Subcat S300 E Runoff Area=41,857 sf 0.00% Impervious Runoff Depth=2.60"
Flow Length=345' Tc=20.2 min CN=60 Runoff=1.9 cfs 9,082 cf

Subcatchment S400 E: Subcat S400 E Runoff Area=1,128,435 sf 2.46% Impervious Runoff Depth=3.20"
Flow Length=2,475' Tc=45.6 min CN=66 Runoff=44.3 cfs 301,334 cf

Subcatchment S500 E: Subcat S500 E Runoff Area=824,035 sf 0.34% Impervious Runoff Depth=3.51"
Flow Length=2,280' Tc=76.5 min CN=69 Runoff=26.2 cfs 241,303 cf

Subcatchment S700 E: Subcat S700 E Runoff Area=651,442 sf 0.00% Impervious Runoff Depth=3.62"
Flow Length=720' Tc=47.6 min CN=70 Runoff=28.4 cfs 196,431 cf

Subcatchment S800 E: Subcat S800 E Runoff Area=93,376 sf 0.00% Impervious Runoff Depth=3.62"
Flow Length=660' Tc=30.2 min CN=70 Runoff=5.1 cfs 28,156 cf

Subcatchment S900 E: Subcat S900 E Runoff Area=176,815 sf 0.64% Impervious Runoff Depth=3.72"
Flow Length=690' Tc=33.3 min CN=71 Runoff=9.5 cfs 54,863 cf

Pond P300 E: Pond P300 E Peak Elev=562.17' Storage=5,545 cf Inflow=1.9 cfs 9,082 cf
Discarded=0.1 cfs 9,082 cf Primary=0.0 cfs 0 cf Outflow=0.1 cfs 9,082 cf

Link L1 E: river Inflow=100.1 cfs 801,929 cf
Primary=100.1 cfs 801,929 cf

Link L2 E: Ditch Inflow=111.0 cfs 894,329 cf
Primary=111.0 cfs 894,329 cf

Link L3 E: offsite Inflow=0.0 cfs 0 cf
Primary=0.0 cfs 0 cf

Link L4 E: Duval Road Inflow=24.0 cfs 135,353 cf
Primary=24.0 cfs 135,353 cf

Total Runoff Area = 6,377,468 sf Runoff Volume = 1,840,693 cf Average Runoff Depth = 3.46"
99.36% Pervious = 6,336,606 sf 0.64% Impervious = 40,862 sf

Summary for Subcatchment S100 E: Subcat S100 E

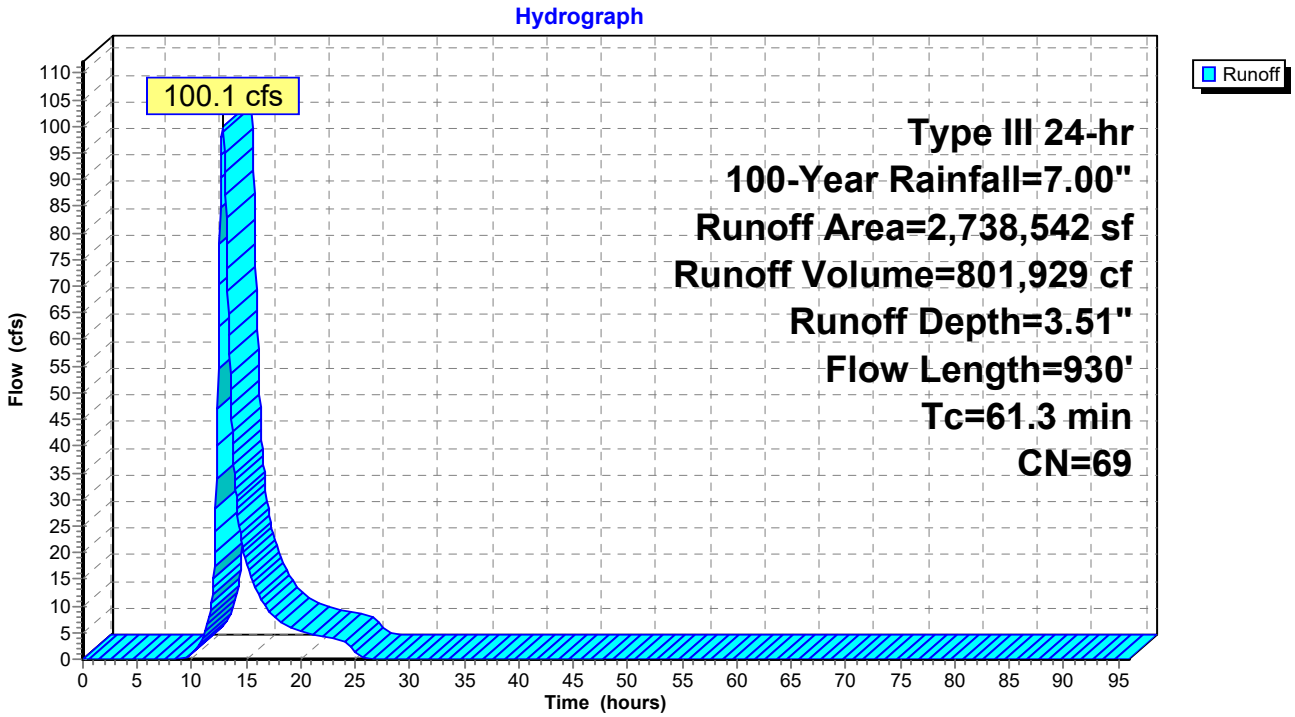
Runoff = 100.1 cfs @ 12.85 hrs, Volume= 801,929 cf, Depth= 3.51"
Routed to Link L1 E : river

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
948,052	70	Woods, Good, HSG C
37,618	70	Woods, Good, HSG C
20,698	70	Woods, Good, HSG C
1,160	55	Woods, Good, HSG B
81,766	55	Woods, Good, HSG B
14,718	55	Woods, Good, HSG B
249,605	55	Woods, Good, HSG B
5,573	55	Woods, Good, HSG B
689	98	Water Surface, 0% imp, HSG B
782	98	Water Surface, 0% imp, HSG C
3,830	98	Water Surface, 0% imp, HSG C
68,992	98	Water Surface, 0% imp, HSG C
1,133	70	Woods, Good, HSG C
1,819	70	Woods, Good, HSG C
340	70	Woods, Good, HSG C
1,027	70	Woods, Good, HSG C
1,082	70	Woods, Good, HSG C
863,715	70	Woods, Good, HSG C
435,943	70	Woods, Good, HSG C
2,738,542	69	Weighted Average
2,738,542		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	50	0.0500	0.06		**Sheet Flow, uppermost**
					Woods: Dense underbrush n= 0.800 P2= 3.20"
46.4	880	0.0160	0.32		**Shallow Concentrated Flow, above river**
					Forest w/Heavy Litter Kv= 2.5 fps
61.3	930	Total			

Subcatchment S100 E: Subcat S100 E



Summary for Subcatchment S1000 E: Subcat S1000 E

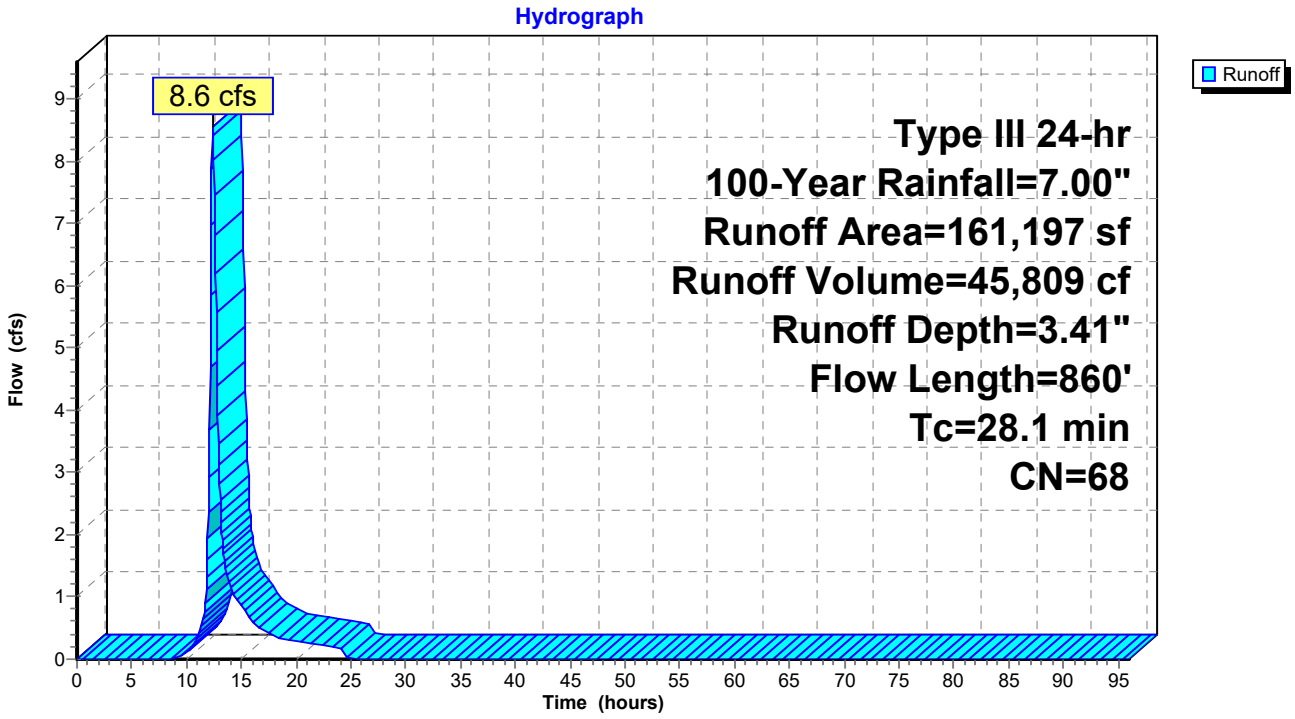
Runoff = 8.6 cfs @ 12.40 hrs, Volume= 45,809 cf, Depth= 3.41"
Routed to Link L4 E : Duval Road

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
418	61	>75% Grass cover, Good, HSG B
34,613	55	Woods, Good, HSG B
819	89	Gravel roads, HSG C
1,846	89	Gravel roads, HSG C
0	98	Roofs, HSG C
1,396	98	Roofs, HSG C
10,892	74	>75% Grass cover, Good, HSG C
648	74	>75% Grass cover, Good, HSG C
110,565	70	Woods, Good, HSG C
0	70	Woods, Good, HSG C
0	70	Woods, Good, HSG C
161,197	68	Weighted Average
159,801		99.13% Pervious Area
1,396		0.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.10		**Sheet Flow, uppermost** Grass: Dense n= 0.240 P2= 3.20"
19.9	810	0.0740	0.68		**Shallow Concentrated Flow, to offisite** Forest w/Heavy Litter Kv= 2.5 fps
28.1	860	Total			

Subcatchment S1000 E: Subcat S1000 E



Summary for Subcatchment S1100 E: Subcat S1100 E

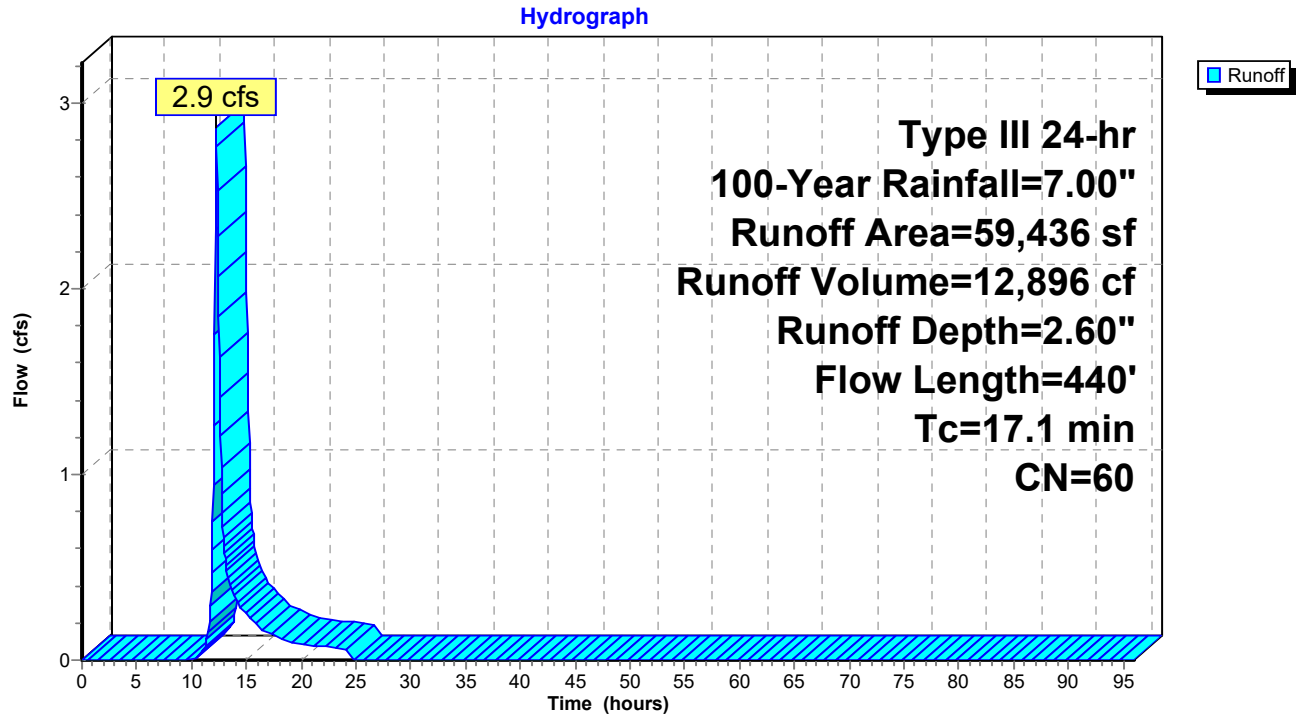
Runoff = 2.9 cfs @ 12.25 hrs, Volume= 12,896 cf, Depth= 2.60"
Routed to Link L4 E : Duval Road

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
36,605	55	Woods, Good, HSG B
520	61	>75% Grass cover, Good, HSG B
3,042	61	>75% Grass cover, Good, HSG B
19,269	70	Woods, Good, HSG C
59,436	60	Weighted Average
59,436		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	50	0.1800	0.09		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
8.2	390	0.1010	0.79		**Shallow Concentrated Flow, to offisite** Forest w/Heavy Litter Kv= 2.5 fps
17.1	440	Total			

Subcatchment S1100 E: Subcat S1100 E



Summary for Subcatchment S1200 E: Subcat S1200 E

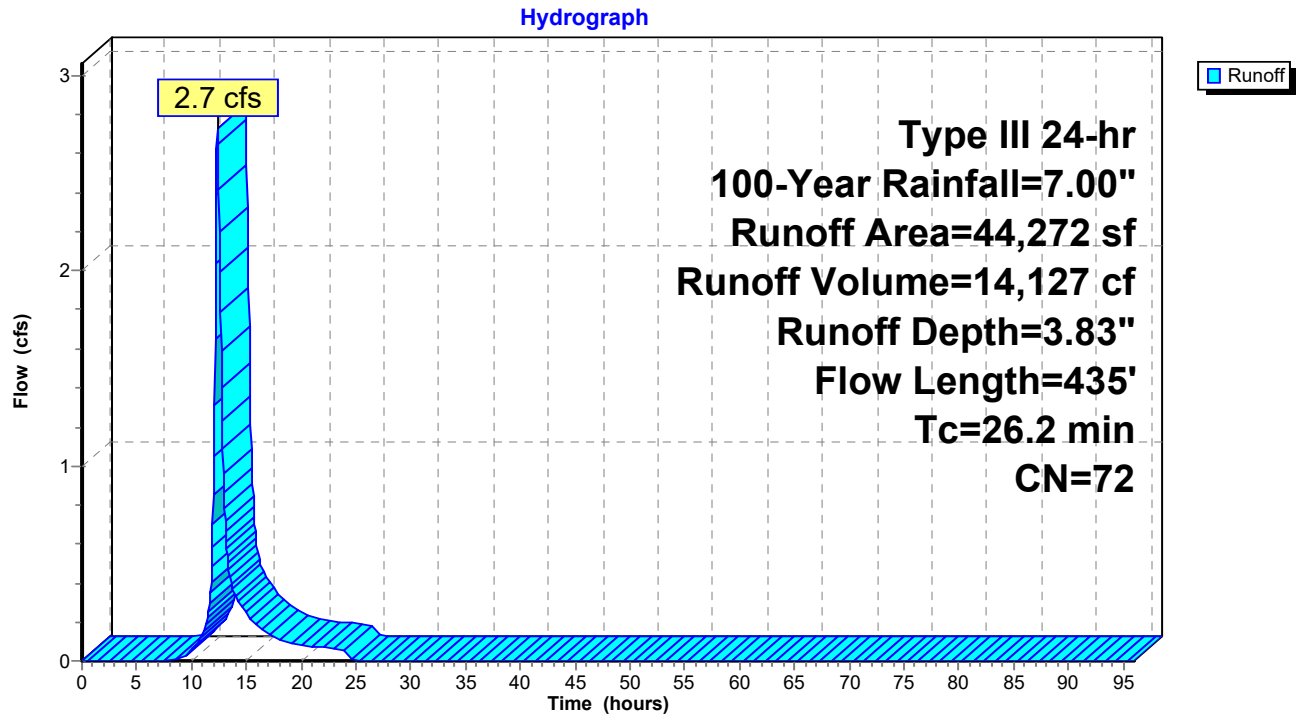
Runoff = 2.7 cfs @ 12.37 hrs, Volume= 14,127 cf, Depth= 3.83"
Routed to Link L4 E : Duval Road

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
4,143	89	Gravel roads, HSG C
0	98	Roofs, HSG C
0	98	Roofs, HSG C
6,107	74	>75% Grass cover, Good, HSG C
30,185	70	Woods, Good, HSG C
3,837	70	Woods, Good, HSG C
44,272	72	Weighted Average
44,272		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	50	0.0500	0.06		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
11.3	385	0.0520	0.57		**Shallow Concentrated Flow, to Duval Road** Forest w/Heavy Litter Kv= 2.5 fps
26.2	435	Total			

Subcatchment S1200 E: Subcat S1200 E



Summary for Subcatchment S1300 E: Subcat S1300 E

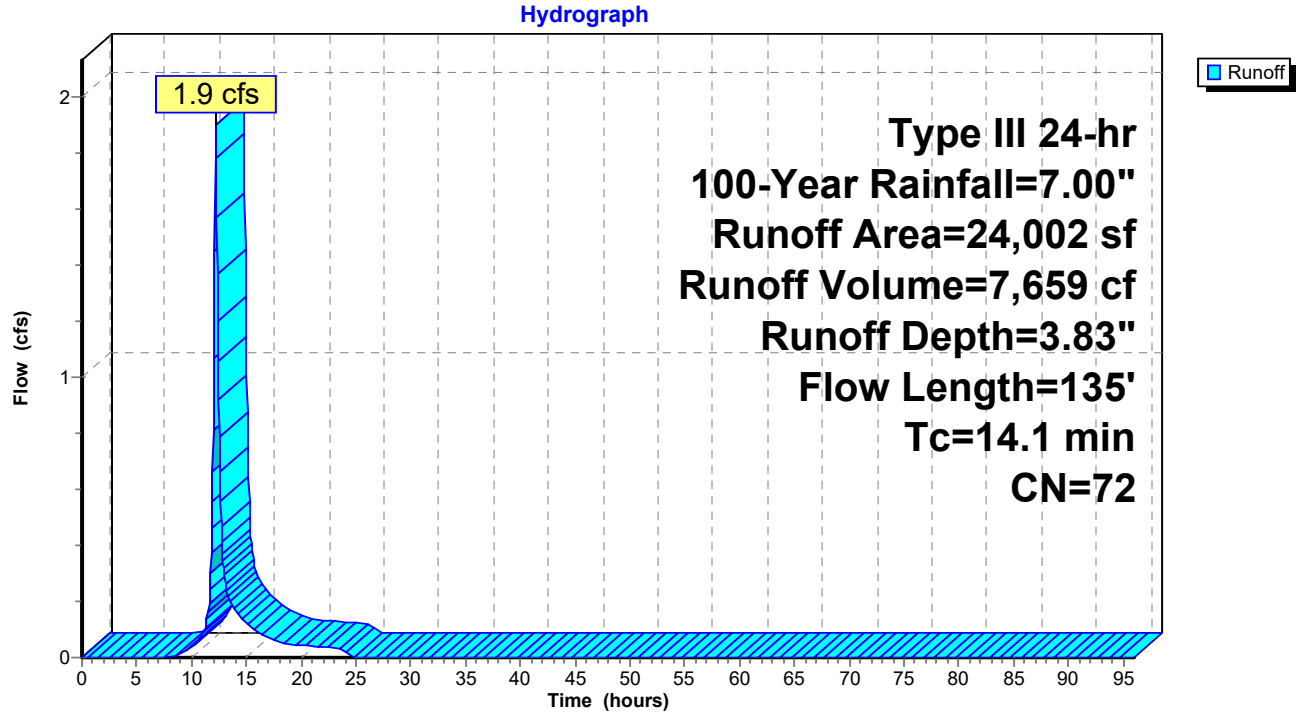
Runoff = 1.9 cfs @ 12.20 hrs, Volume= 7,659 cf, Depth= 3.83"
Routed to Link L4 E : Duval Road

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
2,199	89	Gravel roads, HSG C
0	98	Roofs, HSG C
2,210	74	>75% Grass cover, Good, HSG C
738	74	>75% Grass cover, Good, HSG C
18,748	70	Woods, Good, HSG C
0	70	Woods, Good, HSG C
0	70	Woods, Good, HSG C
107	70	Woods, Good, HSG C
24,002	72	Weighted Average
24,002		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0800	0.07		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
1.8	85	0.1000	0.79		**Shallow Concentrated Flow, to offsite** Forest w/Heavy Litter Kv= 2.5 fps
14.1	135	Total			

Subcatchment S1300 E: Subcat S1300 E



Summary for Subcatchment S200 E: Subcat S200 E

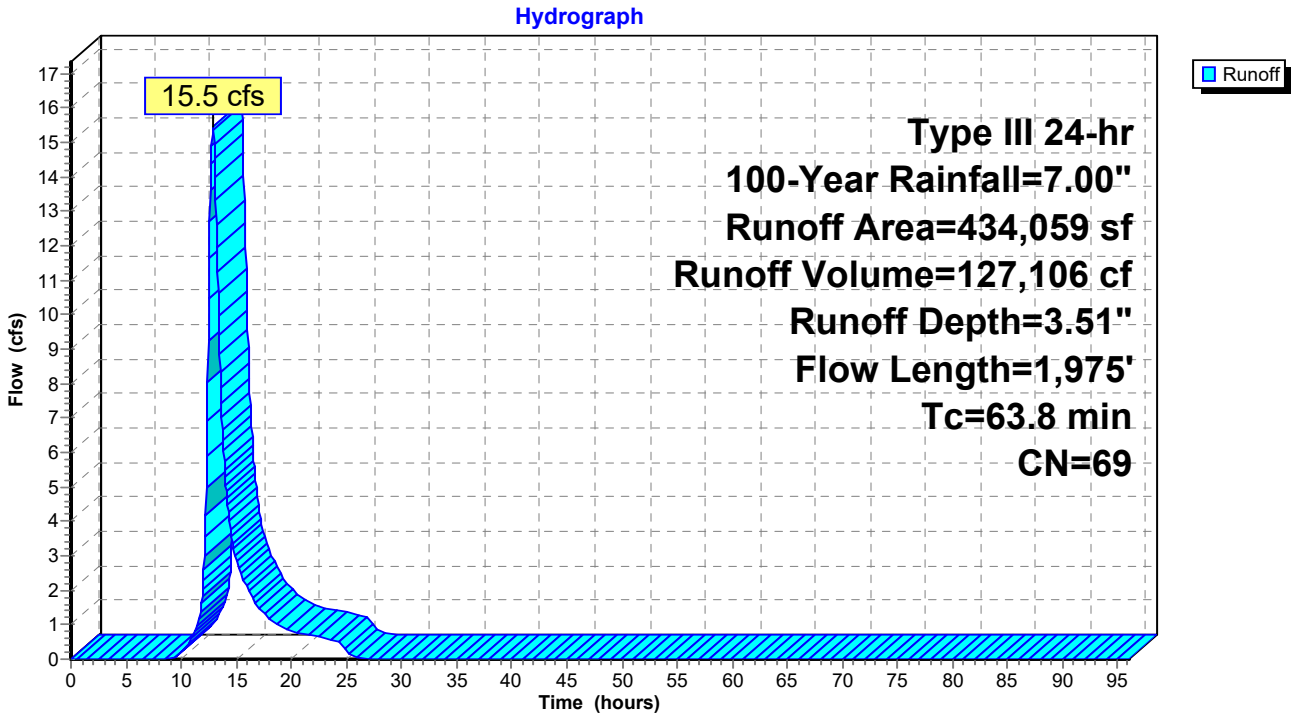
Runoff = 15.5 cfs @ 12.87 hrs, Volume= 127,106 cf, Depth= 3.51"
Routed to Link L2 E : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
135,720	77	Woods, Good, HSG D
2,365	98	Roofs, HSG B
2,299	98	Paved parking, HSG B
3,092	98	Unconnected pavement, HSG B
4,529	61	>75% Grass cover, Good, HSG B
1,036	55	Woods, Good, HSG B
80,157	55	Woods, Good, HSG B
510	55	Woods, Good, HSG B
368	55	Woods, Good, HSG B
13,678	55	Woods, Good, HSG B
190,305	70	Woods, Good, HSG C
434,059	69	Weighted Average
426,303		98.21% Pervious Area
7,756		1.79% Impervious Area
3,092		39.87% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	50	0.1000	0.13		**Sheet Flow, uppermost**
					Woods: Light underbrush n= 0.400 P2= 3.20"
0.2	50	0.0900	4.83		**Shallow Concentrated Flow, yard**
					Unpaved Kv= 16.1 fps
57.1	1,875	0.0480	0.55		**Shallow Concentrated Flow, above ditch**
					Forest w/Heavy Litter Kv= 2.5 fps
63.8	1,975	Total			

Subcatchment S200 E: Subcat S200 E



Summary for Subcatchment S300 E: Subcat S300 E

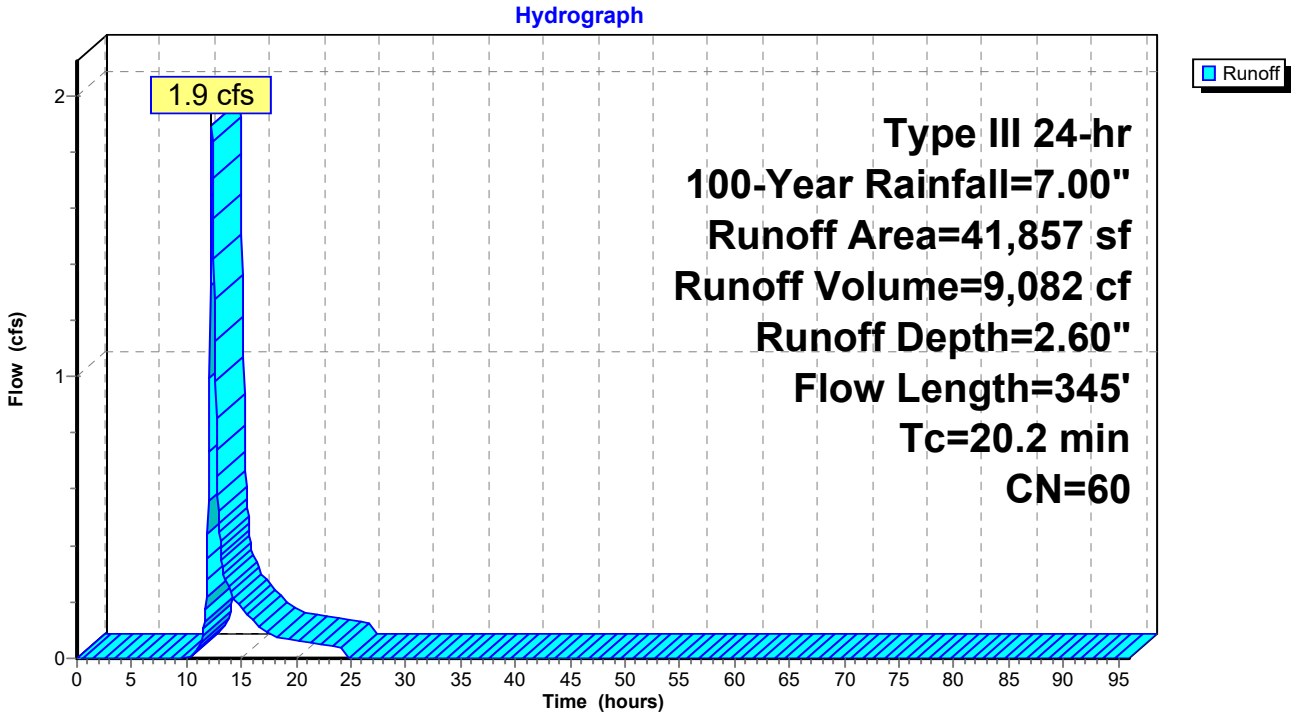
Runoff = 1.9 cfs @ 12.30 hrs, Volume= 9,082 cf, Depth= 2.60"
Routed to Pond P300 E : Pond P300 E

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
17,941	55	Woods, Good, HSG B
8,630	55	Woods, Good, HSG B
15,286	70	Woods, Good, HSG C
41,857	60	Weighted Average
41,857		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	50	0.0500	0.06		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
5.3	295	0.1400	0.94		**Shallow Concentrated Flow, to depression** Forest w/Heavy Litter Kv= 2.5 fps
20.2	345	Total			

Subcatchment S300 E: Subcat S300 E



Summary for Subcatchment S400 E: Subcat S400 E

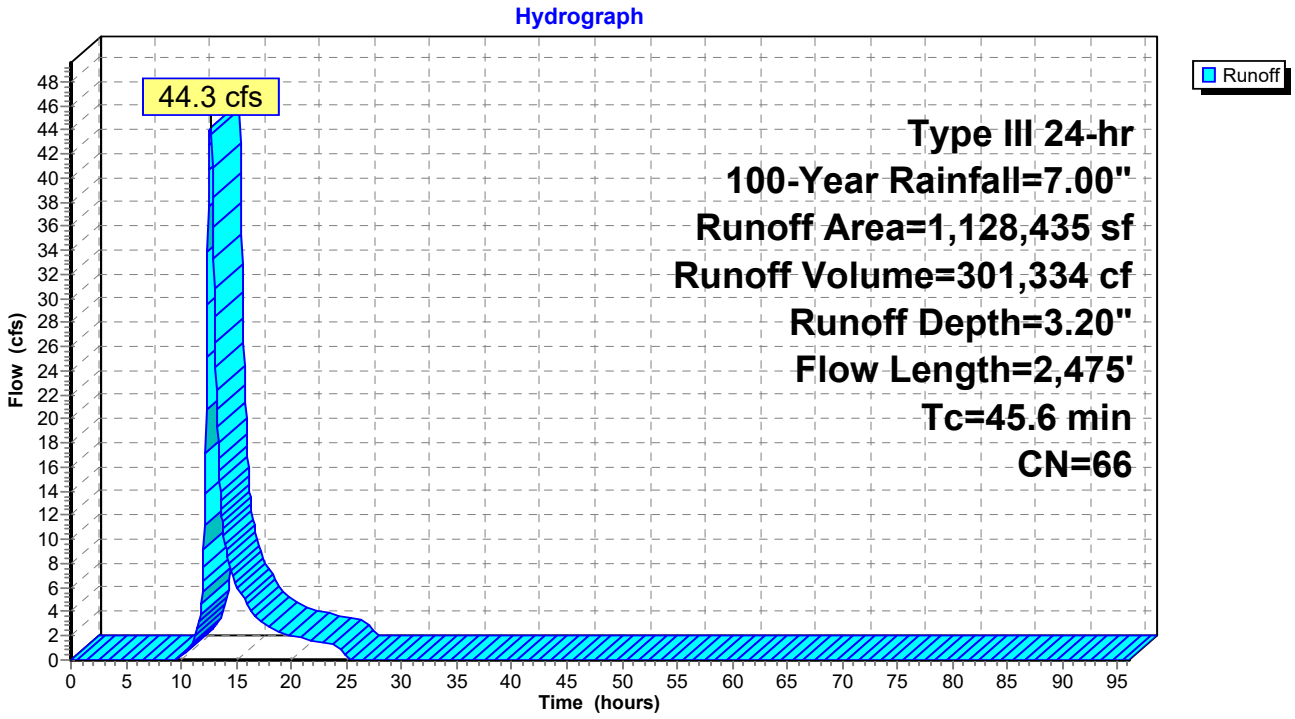
Runoff = 44.3 cfs @ 12.64 hrs, Volume= 301,334 cf, Depth= 3.20"
Routed to Link L2 E : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
62,408	77	Woods, Good, HSG D
1,061	98	Roofs, HSG B
1,199	61	>75% Grass cover, Good, HSG B
1,836	98	Roofs, HSG B
1,221	98	Roofs, HSG B
1,566	98	Roofs, HSG B
97	98	Roofs, HSG B
1,439	98	Paved parking, HSG B
2,655	98	Paved parking, HSG B
1,394	98	Paved parking, HSG B
2,691	98	Paved parking, HSG B
1,498	98	Paved parking, HSG B
1,466	98	Paved parking, HSG B
85	98	Paved parking, HSG B
240	98	Unconnected pavement, HSG B
266	98	Unconnected pavement, HSG B
1,057	98	Unconnected pavement, HSG B
1,830	61	>75% Grass cover, Good, HSG B
897	98	Unconnected pavement, HSG B
3,341	61	>75% Grass cover, Good, HSG B
16,544	89	Paved roads w/open ditches, 50% imp, HSG B
10,972	61	>75% Grass cover, Good, HSG B
438	61	>75% Grass cover, Good, HSG B
27,951	61	>75% Grass cover, Good, HSG B
16,004	61	>75% Grass cover, Good, HSG B
1,750	61	>75% Grass cover, Good, HSG B
872	61	>75% Grass cover, Good, HSG B
19,439	61	>75% Grass cover, Good, HSG B
2,232	61	>75% Grass cover, Good, HSG B
57,008	55	Woods, Good, HSG B
13,841	55	Woods, Good, HSG B
23,027	55	Woods, Good, HSG B
1,440	55	Woods, Good, HSG B
0	55	Woods, Good, HSG B
0	55	Woods, Good, HSG B
1,370	55	Woods, Good, HSG B
138,497	55	Woods, Good, HSG B
85,994	55	Woods, Good, HSG B
622,809	70	Woods, Good, HSG C
1,128,435	66	Weighted Average
1,100,694		97.54% Pervious Area
27,741		2.46% Impervious Area
2,460		8.87% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.10		**Sheet Flow, uppermost** Grass: Dense n= 0.240 P2= 3.20"
4.4	325	0.0610	1.23		**Shallow Concentrated Flow, above Forest Street** Woodland Kv= 5.0 fps
33.0	2,100	0.0450	1.06		**Shallow Concentrated Flow, below Forest Street** Woodland Kv= 5.0 fps
45.6	2,475	Total			

Subcatchment S400 E: Subcat S400 E



Summary for Subcatchment S500 E: Subcat S500 E

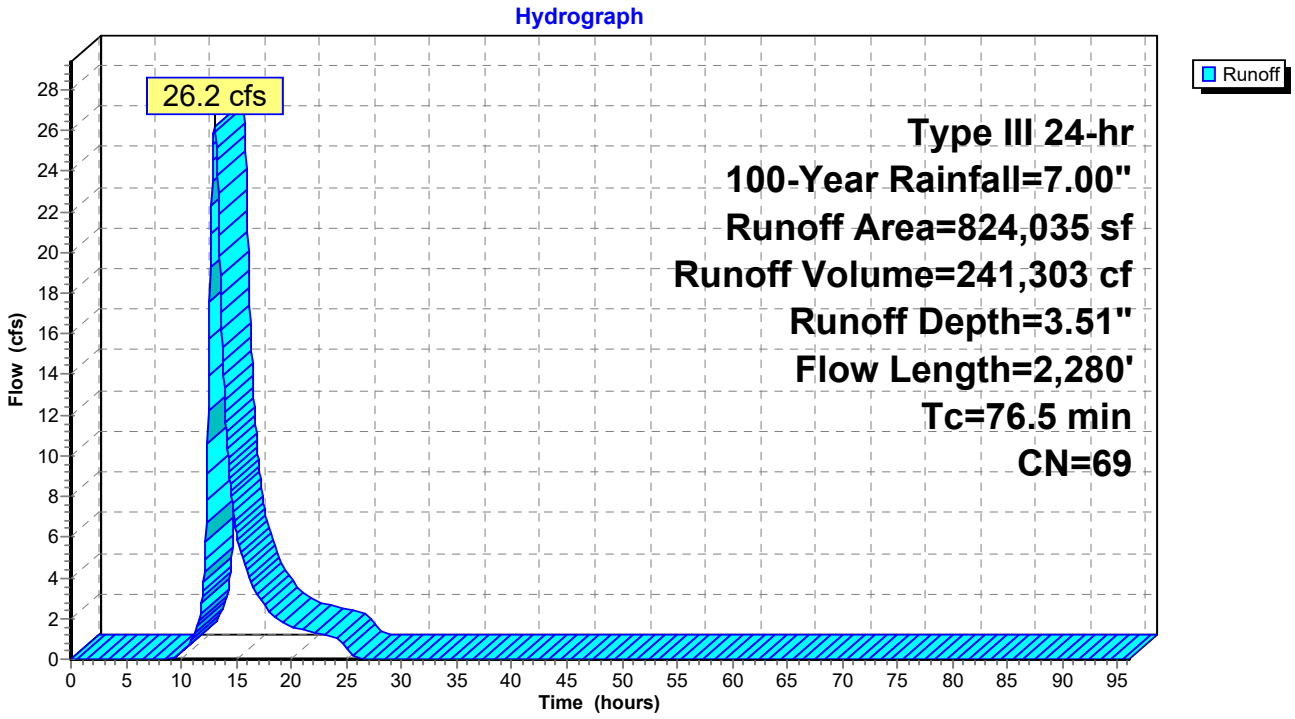
Runoff = 26.2 cfs @ 13.02 hrs, Volume= 241,303 cf, Depth= 3.51"
Routed to Link L2 E : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
101,980	77	Woods, Good, HSG D
1,543	98	Paved parking, HSG B
1,524	61	>75% Grass cover, Good, HSG B
149	61	>75% Grass cover, Good, HSG B
2,588	89	Paved roads w/open ditches, 50% imp, HSG B
6,330	61	>75% Grass cover, Good, HSG B
3,281	55	Woods, Good, HSG B
6,566	55	Woods, Good, HSG B
101,019	55	Woods, Good, HSG B
599,055	70	Woods, Good, HSG C
824,035	69	Weighted Average
821,198		99.66% Pervious Area
2,837		0.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.3	50	0.1000	0.07		**Sheet Flow, uppermost**
					Woods: Dense underbrush n= 0.800 P2= 3.20"
2.3	90	0.0660	0.64		**Shallow Concentrated Flow, to house**
					Forest w/Heavy Litter Kv= 2.5 fps
0.5	110	0.0500	3.60		**Shallow Concentrated Flow, yard**
					Unpaved Kv= 16.1 fps
62.4	2,030	0.0470	0.54		**Shallow Concentrated Flow, to ditch**
					Forest w/Heavy Litter Kv= 2.5 fps
76.5	2,280	Total			

Subcatchment S500 E: Subcat S500 E



Summary for Subcatchment S700 E: Subcat S700 E

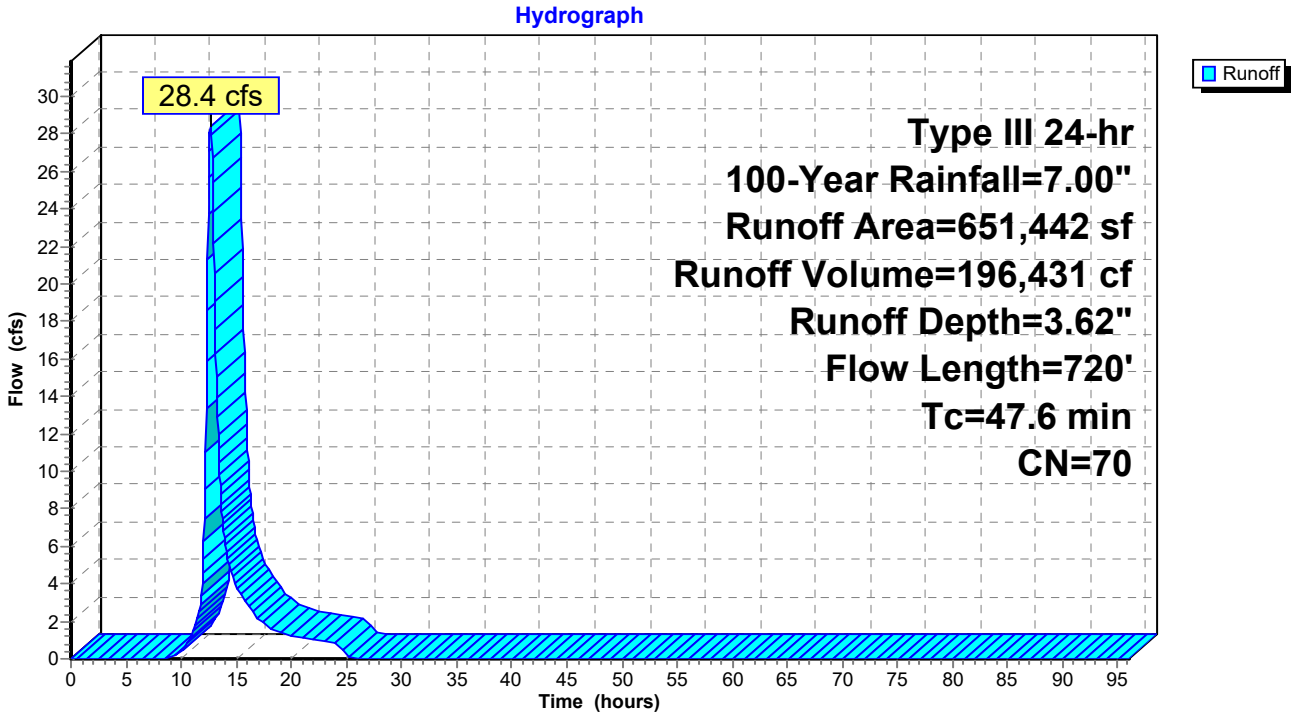
Runoff = 28.4 cfs @ 12.66 hrs, Volume= 196,431 cf, Depth= 3.62"
Routed to Link L2 E : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
651,442	70	Woods, Good, HSG C
651,442		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0800	0.07		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
35.3	670	0.0160	0.32		**Shallow Concentrated Flow, to ditch** Forest w/Heavy Litter Kv= 2.5 fps
47.6	720	Total			

Subcatchment S700 E: Subcat S700 E



Summary for Subcatchment S800 E: Subcat S800 E

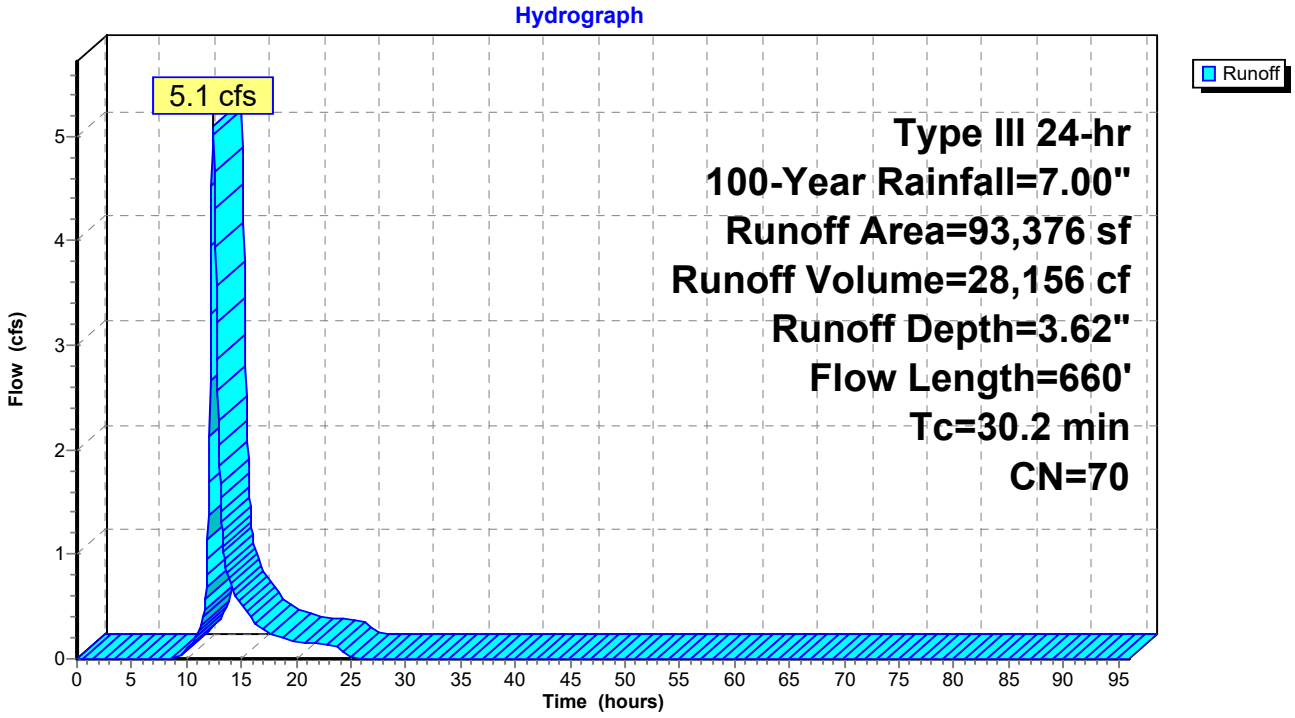
Runoff = 5.1 cfs @ 12.43 hrs, Volume= 28,156 cf, Depth= 3.62"
Routed to Link L2 E : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
93,376	70	Woods, Good, HSG C
93,376		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	50	0.0500	0.06		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
15.3	610	0.0710	0.67		**Shallow Concentrated Flow, to offsite** Forest w/Heavy Litter Kv= 2.5 fps
30.2	660	Total			

Subcatchment S800 E: Subcat S800 E



Summary for Subcatchment S900 E: Subcat S900 E

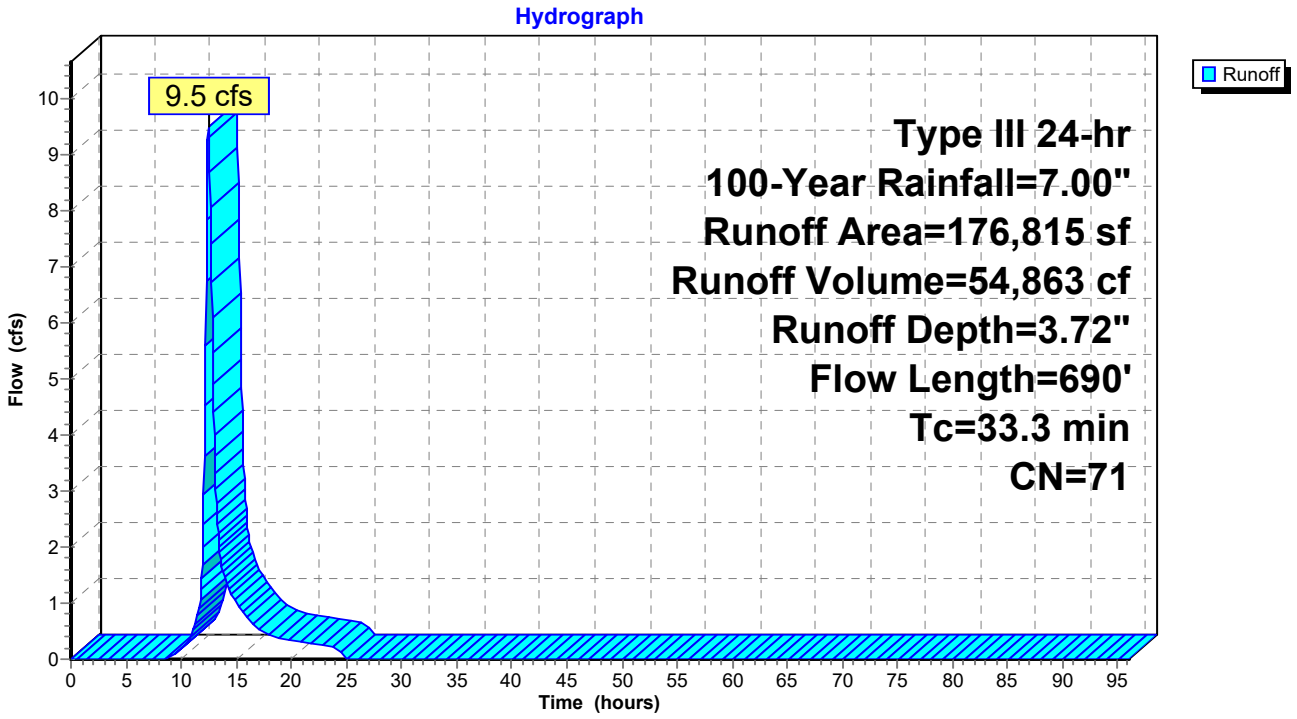
Runoff = 9.5 cfs @ 12.47 hrs, Volume= 54,863 cf, Depth= 3.72"
Routed to Link L4 E : Duval Road

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
1,132	98	Roofs, HSG C
5,664	89	Gravel roads, HSG C
8,190	74	>75% Grass cover, Good, HSG C
3,135	74	>75% Grass cover, Good, HSG C
1,148	74	>75% Grass cover, Good, HSG C
0	74	>75% Grass cover, Good, HSG C
1	70	Woods, Good, HSG C
6,727	70	Woods, Good, HSG C
150,818	70	Woods, Good, HSG C
0	70	Woods, Good, HSG C
0	70	Woods, Good, HSG C
176,815	71	Weighted Average
175,683		99.36% Pervious Area
1,132		0.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8	50	0.0600	0.06		**Sheet Flow, uppermost**
					Woods: Dense underbrush n= 0.800 P2= 3.20"
19.5	640	0.0480	0.55		**Shallow Concentrated Flow, to offfsite**
					Forest w/Heavy Litter Kv= 2.5 fps
33.3	690	Total			

Subcatchment S900 E: Subcat S900 E



Summary for Pond P300 E: Pond P300 E

Inflow Area = 41,857 sf, 0.00% Impervious, Inflow Depth = 2.60" for 100-Year event
Inflow = 1.9 cfs @ 12.30 hrs, Volume= 9,082 cf
Outflow = 0.1 cfs @ 16.40 hrs, Volume= 9,082 cf, Atten= 94%, Lag= 245.8 min
Discarded = 0.1 cfs @ 16.40 hrs, Volume= 9,082 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link L3 E : offsite

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 562.17' @ 16.40 hrs Surf.Area= 4,225 sf Storage= 5,545 cf

Plug-Flow detention time= 658.3 min calculated for 9,082 cf (100% of inflow)
Center-of-Mass det. time= 658.1 min (1,524.8 - 866.7)

Volume	Invert	Avail.Storage	Storage Description
#1	559.30'	17,507 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

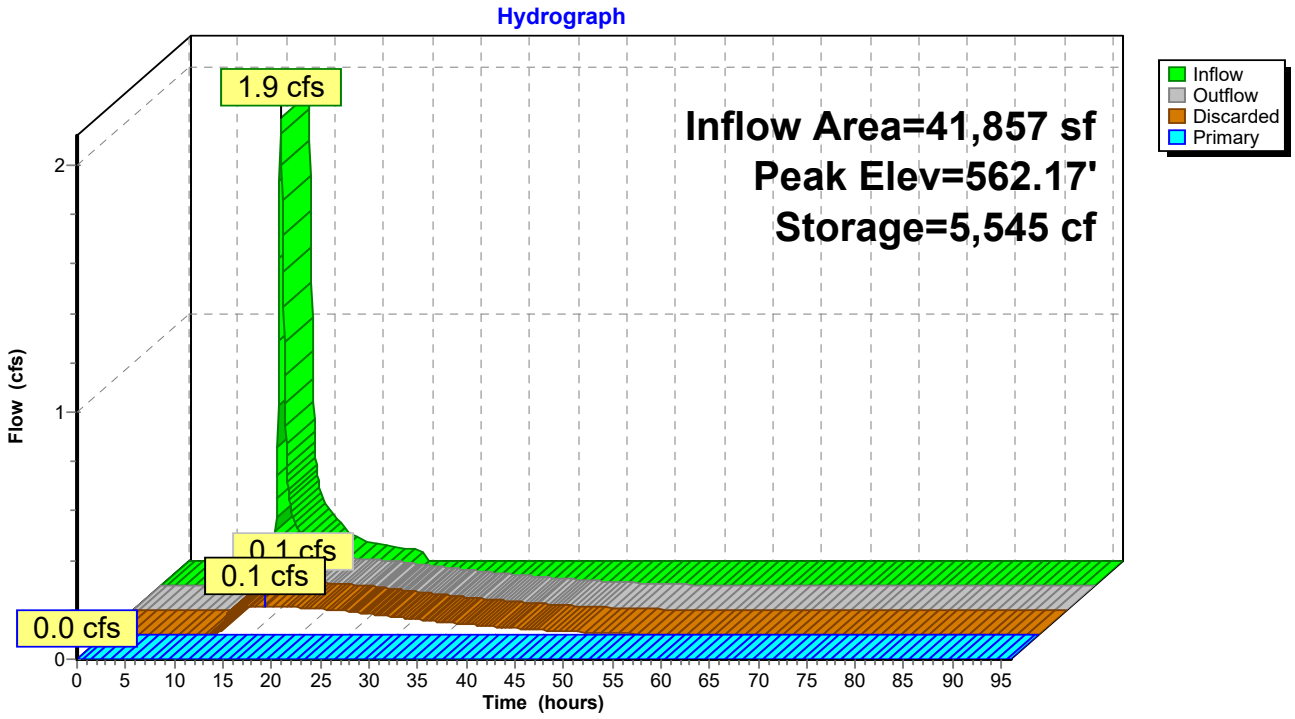
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
559.30	10	0	0
560.00	760	270	270
562.00	3,845	4,605	4,875
563.00	6,130	4,988	9,862
564.00	9,160	7,645	17,507

Device	Routing	Invert	Outlet Devices
#1	Primary	563.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Discarded	559.30'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 559.00'

Discarded OutFlow Max=0.1 cfs @ 16.40 hrs HW=562.17' (Free Discharge)
↑**2=Exfiltration** (Controls 0.1 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=559.30' (Free Discharge)
↑**1=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond P300 E: Pond P300 E

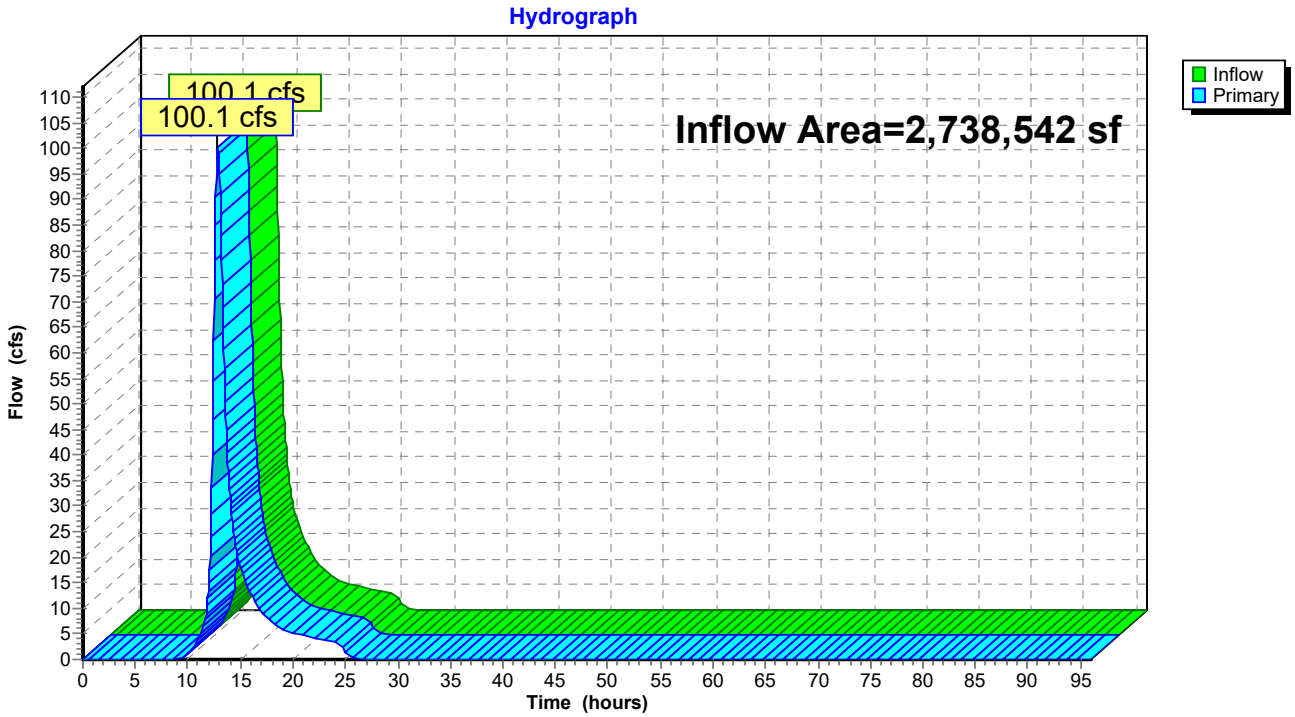


Summary for Link L1 E: river

Inflow Area = 2,738,542 sf, 0.00% Impervious, Inflow Depth = 3.51" for 100-Year event
Inflow = 100.1 cfs @ 12.85 hrs, Volume= 801,929 cf
Primary = 100.1 cfs @ 12.85 hrs, Volume= 801,929 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link L1 E: river

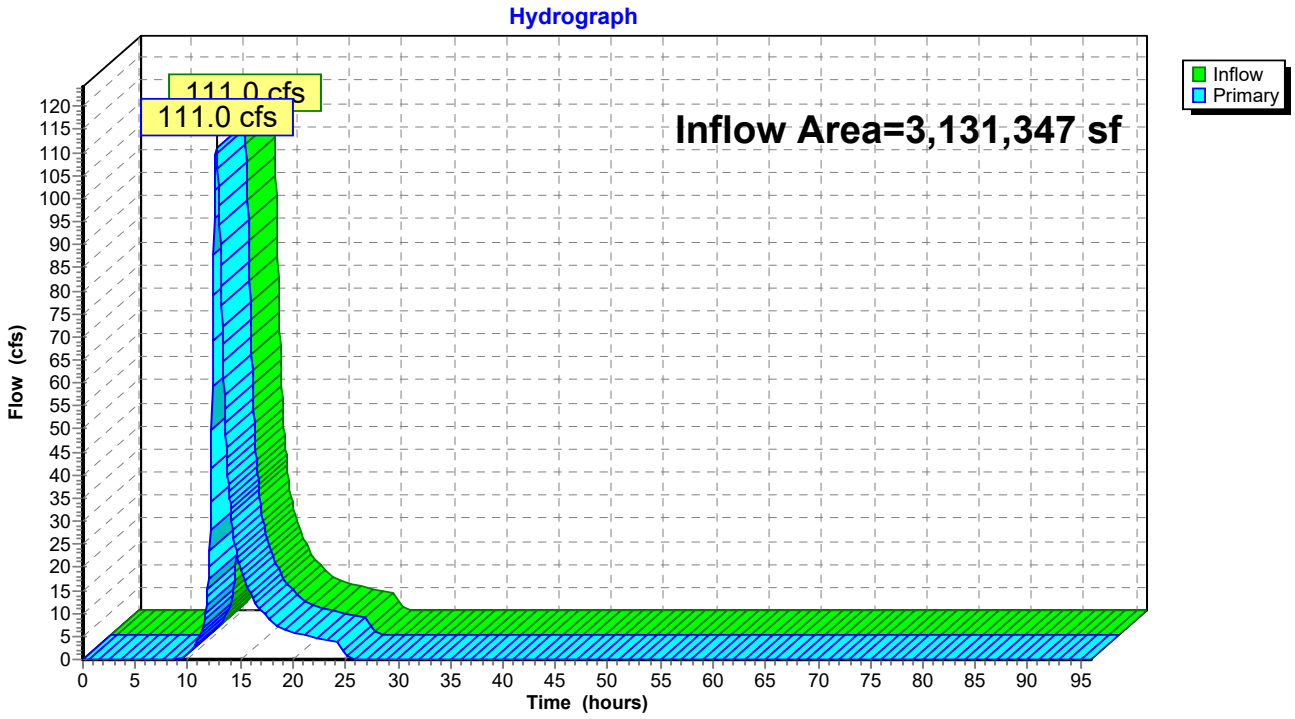


Summary for Link L2 E: Ditch

Inflow Area = 3,131,347 sf, 1.22% Impervious, Inflow Depth = 3.43" for 100-Year event
Inflow = 111.0 cfs @ 12.72 hrs, Volume= 894,329 cf
Primary = 111.0 cfs @ 12.72 hrs, Volume= 894,329 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link L2 E: Ditch

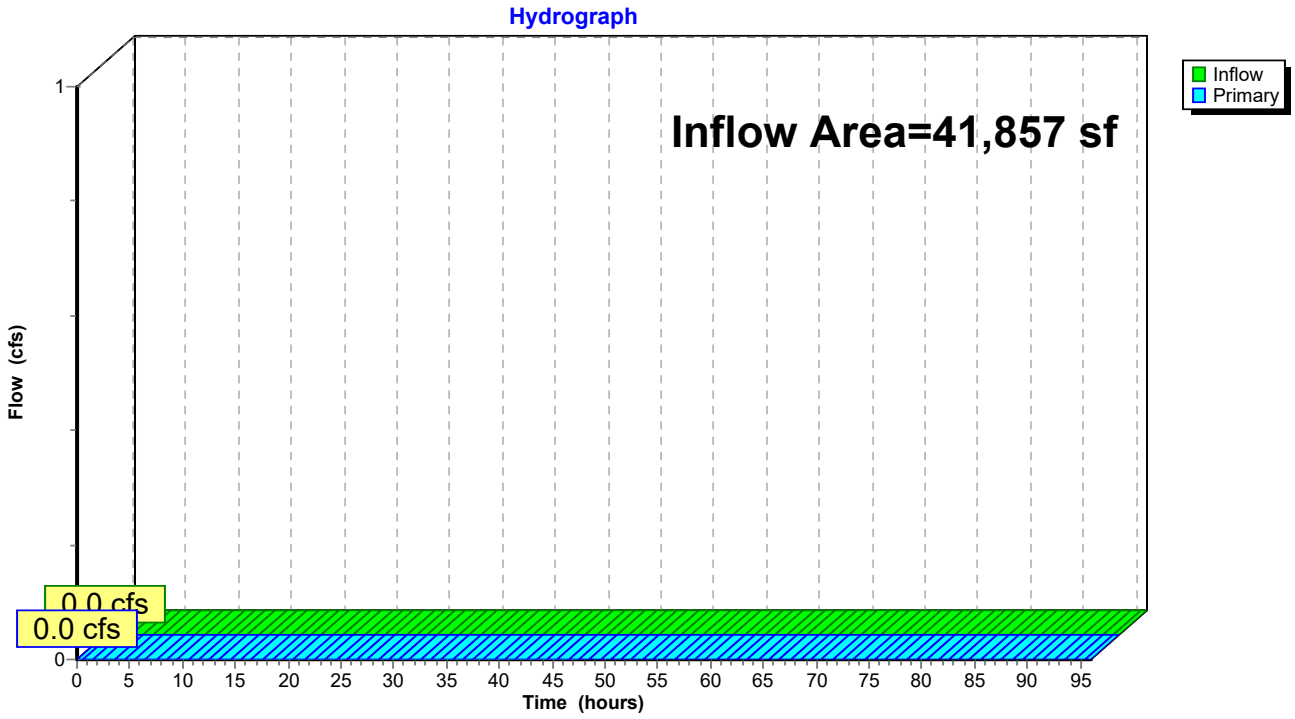


Summary for Link L3 E: offsite

Inflow Area = 41,857 sf, 0.00% Impervious, Inflow Depth = 0.00" for 100-Year event
Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link L3 E: offsite

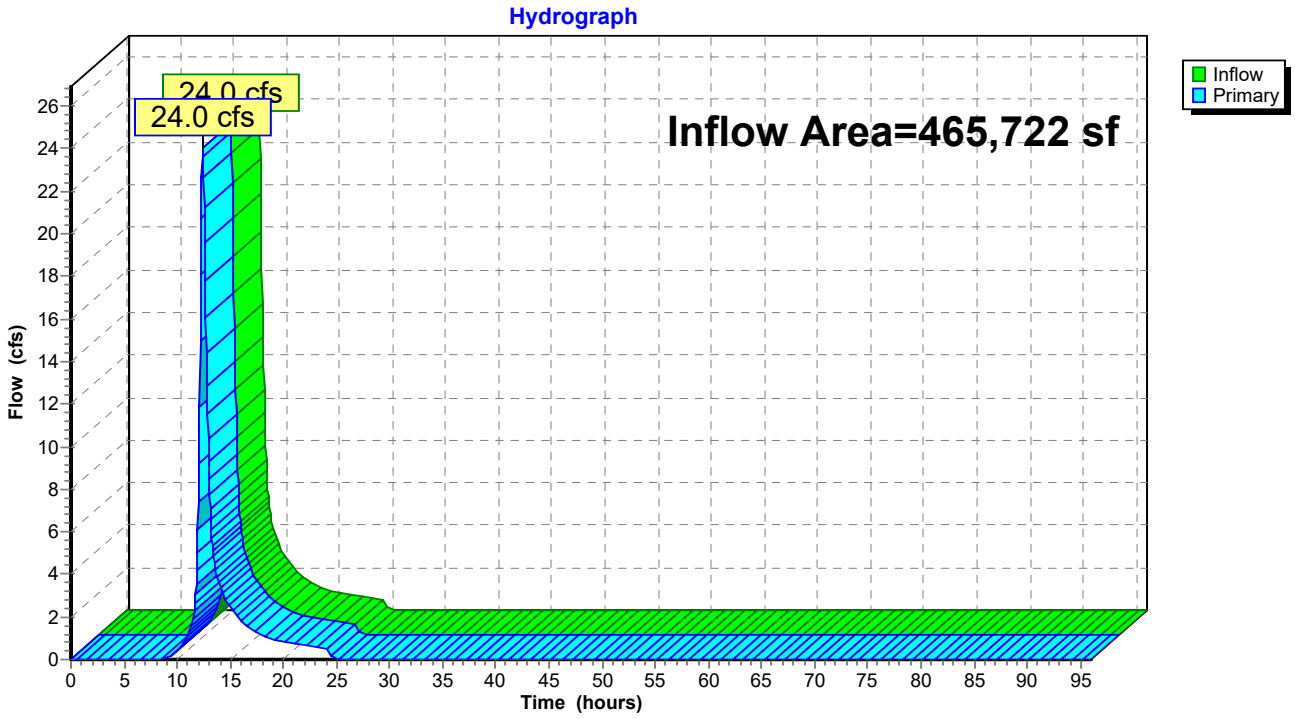


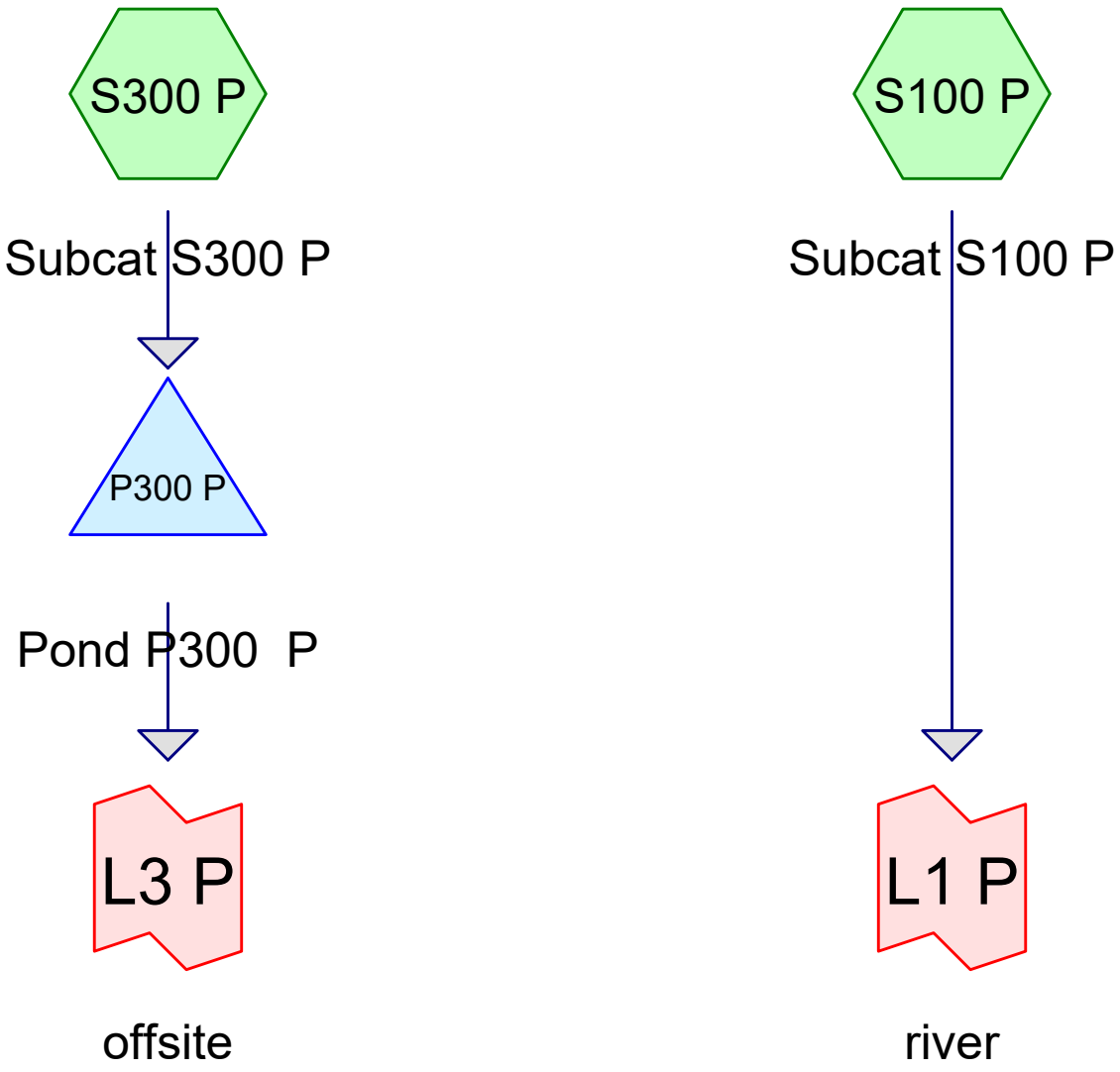
Summary for Link L4 E: Duval Road

Inflow Area = 465,722 sf, 0.54% Impervious, Inflow Depth = 3.49" for 100-Year event
Inflow = 24.0 cfs @ 12.40 hrs, Volume= 135,353 cf
Primary = 24.0 cfs @ 12.40 hrs, Volume= 135,353 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link L4 E: Duval Road





Subcat Reach Pond Link

Routing Diagram for 21-0083 Prop. river and offsite (southerly)
Prepared by Land Design Collaborative
HydroCAD® 10.10-7a s/n 11266 © 2021 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
156	61	>75% Grass cover, Good, HSG B (S300 P)
75,123	74	>75% Grass cover, Good, HSG C (S100 P, S300 P)
9,850	98	Paved parking, HSG C (S100 P)
10,512	98	Roofs, HSG C (S100 P, S300 P)
12,083	98	Unconnected pavement, HSG C (S100 P)
689	98	Water Surface, 0% imp, HSG B (S100 P)
73,604	98	Water Surface, 0% imp, HSG C (S100 P)
378,428	55	Woods, Good, HSG B (S100 P, S300 P)
2,221,625	70	Woods, Good, HSG C (S100 P, S300 P)
2,782,070	**69**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
379,273	HSG B	S100 P, S300 P
2,402,797	HSG C	S100 P, S300 P
0	HSG D	
0	Other	
2,782,070		**TOTAL AREA**

Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 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 S100 P: Subcat S100 P Runoff Area=2,738,640 sf 1.16% Impervious Runoff Depth=0.78"
Flow Length=930' Tc=61.3 min CN=69 Runoff=19.4 cfs 177,917 cf

Subcatchment S300 P: Subcat S300 P Runoff Area=43,430 sf 1.33% Impervious Runoff Depth=0.48"
Flow Length=345' Tc=20.2 min CN=62 Runoff=0.3 cfs 1,741 cf

Pond P300 P: Pond P300 P Peak Elev=560.47' Storage=795 cf Inflow=0.3 cfs 1,741 cf
Discarded=0.0 cfs 1,741 cf Primary=0.0 cfs 0 cf Outflow=0.0 cfs 1,741 cf

Link L1 P: river Inflow=19.4 cfs 177,917 cf
Primary=19.4 cfs 177,917 cf

Link L3 P: offsite Inflow=0.0 cfs 0 cf
Primary=0.0 cfs 0 cf

Total Runoff Area = 2,782,070 sf Runoff Volume = 179,658 cf Average Runoff Depth = 0.77"
98.83% Pervious = 2,749,625 sf 1.17% Impervious = 32,445 sf

Summary for Subcatchment S100 P: Subcat S100 P

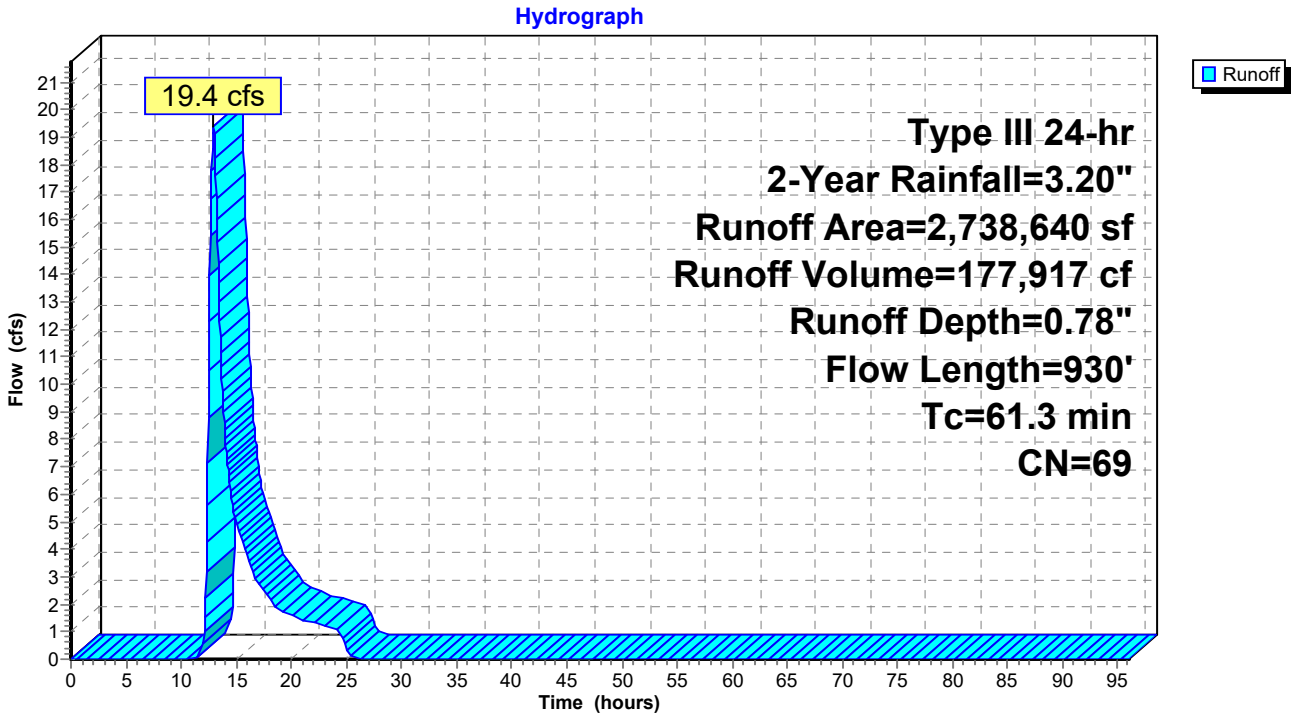
Runoff = 19.4 cfs @ 12.93 hrs, Volume= 177,917 cf, Depth= 0.78"
Routed to Link L1 P : river

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
3,312	98	Roofs, HSG C
3,674	98	Paved parking, HSG C
20,776	74	>75% Grass cover, Good, HSG C
1,135	70	Woods, Good, HSG C
1,027	70	Woods, Good, HSG C
340	70	Woods, Good, HSG C
1,082	70	Woods, Good, HSG C
1,819	70	Woods, Good, HSG C
770,419	70	Woods, Good, HSG C
20,698	70	Woods, Good, HSG C
37,618	70	Woods, Good, HSG C
948,053	70	Woods, Good, HSG C
1,160	55	Woods, Good, HSG B
81,766	55	Woods, Good, HSG B
14,718	55	Woods, Good, HSG B
5,573	55	Woods, Good, HSG B
249,604	55	Woods, Good, HSG B
40,706	74	>75% Grass cover, Good, HSG C
14,454	70	Woods, Good, HSG C
2,051	98	Paved parking, HSG C
4,125	98	Paved parking, HSG C
73,604	98	Water Surface, 0% imp, HSG C
689	98	Water Surface, 0% imp, HSG B
3,312	98	Roofs, HSG C
3,312	98	Roofs, HSG C
101,264	70	Woods, Good, HSG C
305,066	70	Woods, Good, HSG C
2,375	74	>75% Grass cover, Good, HSG C
509	74	>75% Grass cover, Good, HSG C
7,463	74	>75% Grass cover, Good, HSG C
11,670	98	Unconnected pavement, HSG C
413	98	Unconnected pavement, HSG C
4,853	70	Woods, Good, HSG C
2,738,640	69	Weighted Average
2,706,771		98.84% Pervious Area
31,869		1.16% Impervious Area
12,083		37.91% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	50	0.0500	0.06		**Sheet Flow, uppermost**
					Woods: Dense underbrush n= 0.800 P2= 3.20"
46.4	880	0.0160	0.32		**Shallow Concentrated Flow, above river**
					Forest w/Heavy Litter Kv= 2.5 fps
61.3	930	Total			

Subcatchment S100 P: Subcat S100 P



Summary for Subcatchment S300 P: Subcat S300 P

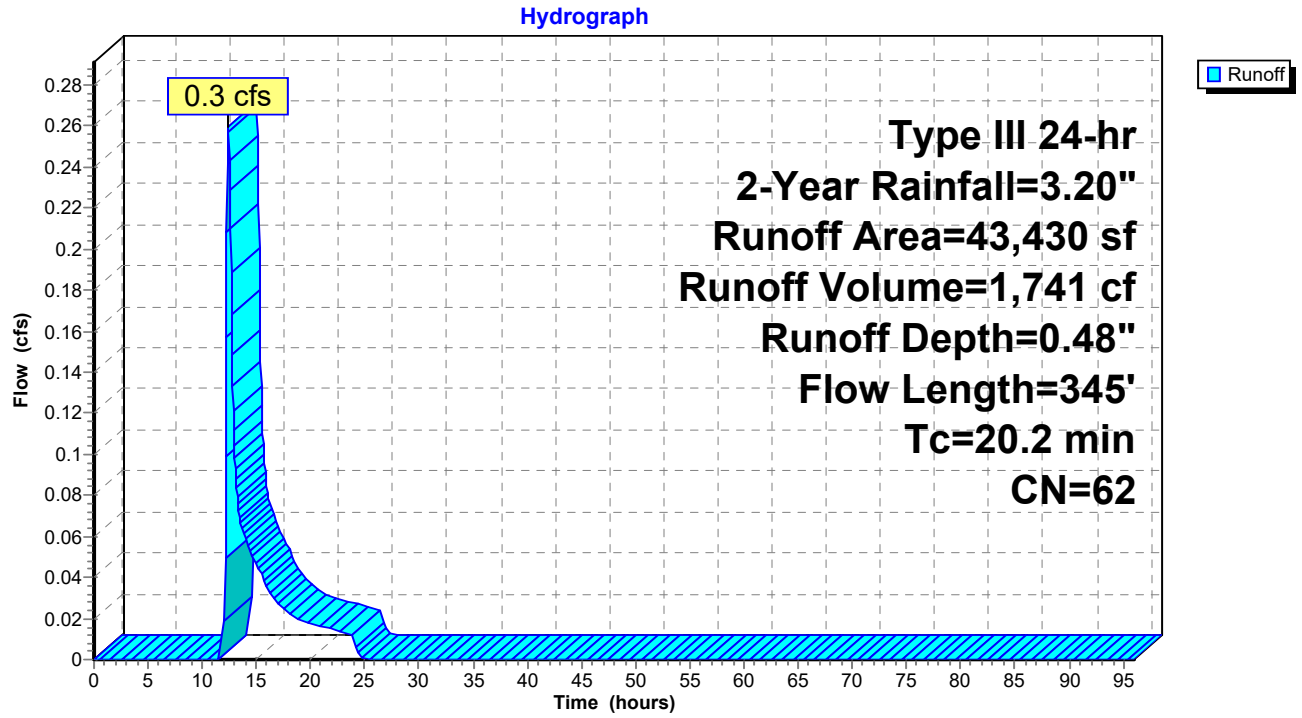
Runoff = 0.3 cfs @ 12.39 hrs, Volume= 1,741 cf, Depth= 0.48"
Routed to Pond P300 P : Pond P300 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
122	61	>75% Grass cover, Good, HSG B
8,182	55	Woods, Good, HSG B
34	61	>75% Grass cover, Good, HSG B
17,425	55	Woods, Good, HSG B
576	98	Roofs, HSG C
13,797	70	Woods, Good, HSG C
195	74	>75% Grass cover, Good, HSG C
3,099	74	>75% Grass cover, Good, HSG C
43,430	62	Weighted Average
42,854		98.67% Pervious Area
576		1.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	50	0.0500	0.06		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
5.3	295	0.1400	0.94		**Shallow Concentrated Flow, to depression** Forest w/Heavy Litter Kv= 2.5 fps
20.2	345	Total			

Subcatchment S300 P: Subcat S300 P



Summary for Pond P300 P: Pond P300 P

Inflow Area = 43,430 sf, 1.33% Impervious, Inflow Depth = 0.48" for 2-Year event
Inflow = 0.3 cfs @ 12.39 hrs, Volume= 1,741 cf
Outflow = 0.0 cfs @ 16.20 hrs, Volume= 1,741 cf, Atten= 87%, Lag= 228.7 min
Discarded = 0.0 cfs @ 16.20 hrs, Volume= 1,741 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link L3 P : offsite

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 560.47' @ 16.20 hrs Surf.Area= 1,483 sf Storage= 795 cf

Plug-Flow detention time= 348.9 min calculated for 1,740 cf (100% of inflow)
Center-of-Mass det. time= 349.2 min (1,271.9 - 922.7)

Volume	Invert	Avail.Storage	Storage Description
#1	559.30'	17,507 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

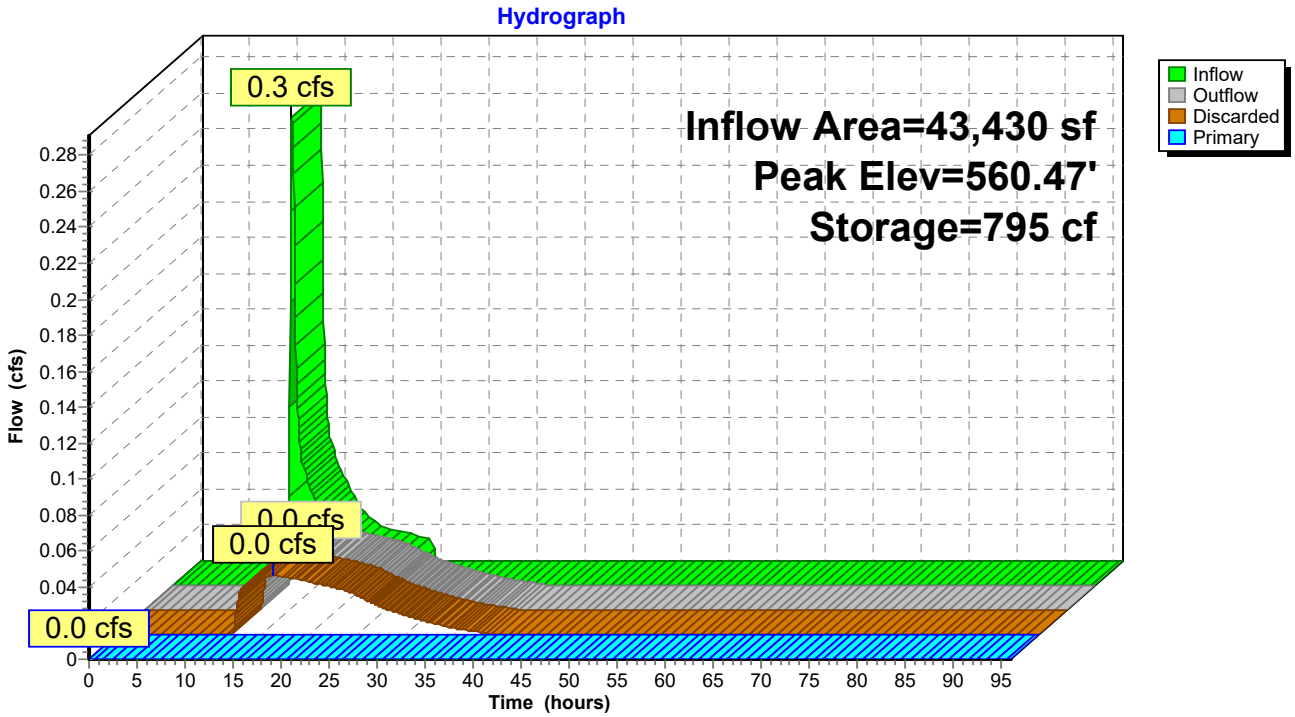
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
559.30	10	0	0
560.00	760	270	270
562.00	3,845	4,605	4,875
563.00	6,130	4,988	9,862
564.00	9,160	7,645	17,507

Device	Routing	Invert	Outlet Devices
#1	Primary	563.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Discarded	559.30'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 559.00'

Discarded OutFlow Max=0.0 cfs @ 16.20 hrs HW=560.47' (Free Discharge)
↑**2=Exfiltration** (Controls 0.0 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=559.30' (Free Discharge)
↑**1=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond P300 P: Pond P300 P

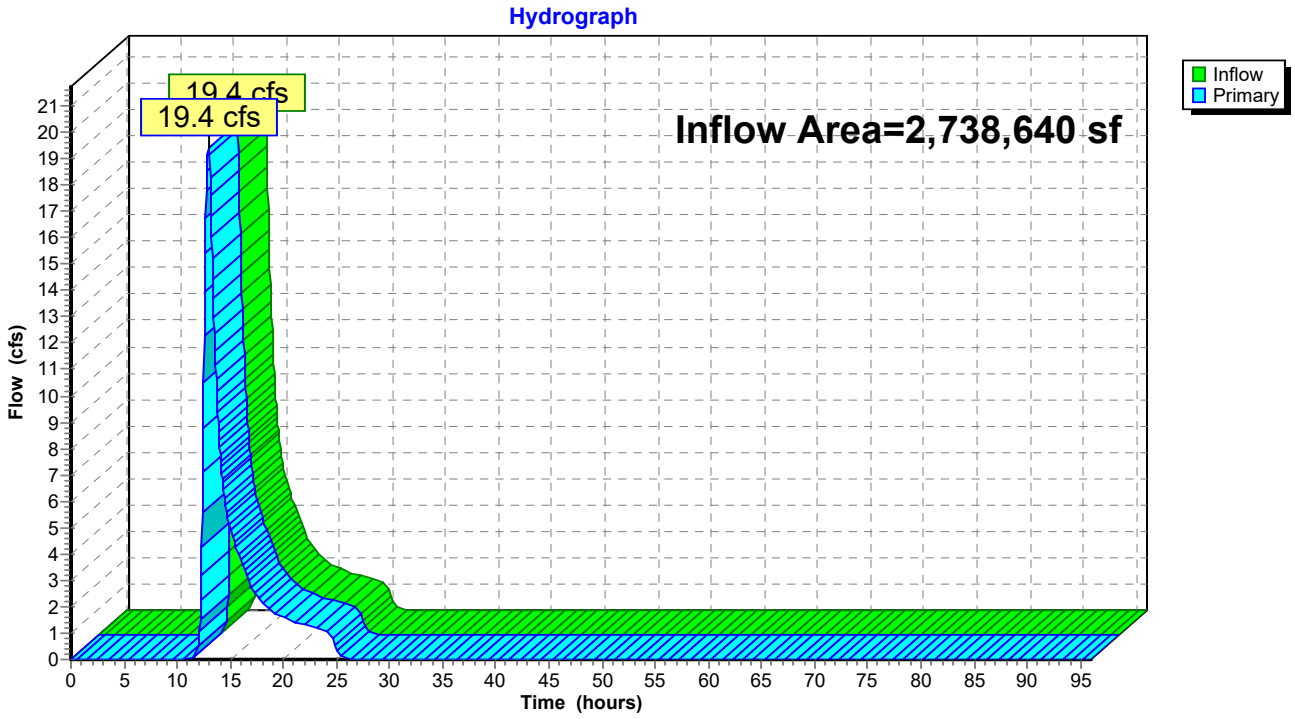


Summary for Link L1 P: river

Inflow Area = 2,738,640 sf, 1.16% Impervious, Inflow Depth = 0.78" for 2-Year event
Inflow = 19.4 cfs @ 12.93 hrs, Volume= 177,917 cf
Primary = 19.4 cfs @ 12.93 hrs, Volume= 177,917 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link L1 P: river

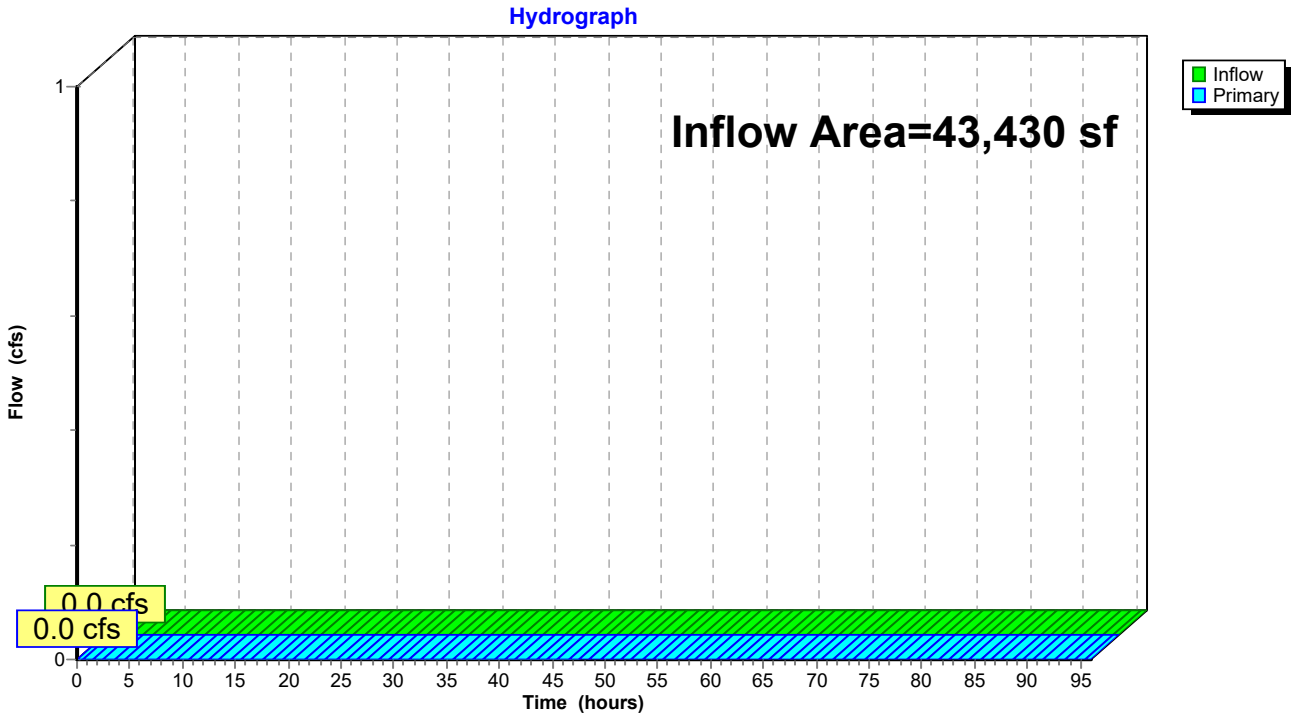


Summary for Link L3 P: offsite

Inflow Area = 43,430 sf, 1.33% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link L3 P: offsite



Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 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 S100 P: Subcat S100 P Runoff Area=2,738,640 sf 1.16% Impervious Runoff Depth=1.81"
Flow Length=930' Tc=61.3 min CN=69 Runoff=50.1 cfs 413,834 cf

Subcatchment S300 P: Subcat S300 P Runoff Area=43,430 sf 1.33% Impervious Runoff Depth=1.32"
Flow Length=345' Tc=20.2 min CN=62 Runoff=0.9 cfs 4,765 cf

Pond P300 P: Pond P300 P Peak Elev=561.33' Storage=2,653 cf Inflow=0.9 cfs 4,765 cf
Discarded=0.1 cfs 4,765 cf Primary=0.0 cfs 0 cf Outflow=0.1 cfs 4,765 cf

Link L1 P: river Inflow=50.1 cfs 413,834 cf
Primary=50.1 cfs 413,834 cf

Link L3 P: offsite Inflow=0.0 cfs 0 cf
Primary=0.0 cfs 0 cf

Total Runoff Area = 2,782,070 sf Runoff Volume = 418,599 cf Average Runoff Depth = 1.81"
98.83% Pervious = 2,749,625 sf 1.17% Impervious = 32,445 sf

Summary for Subcatchment S100 P: Subcat S100 P

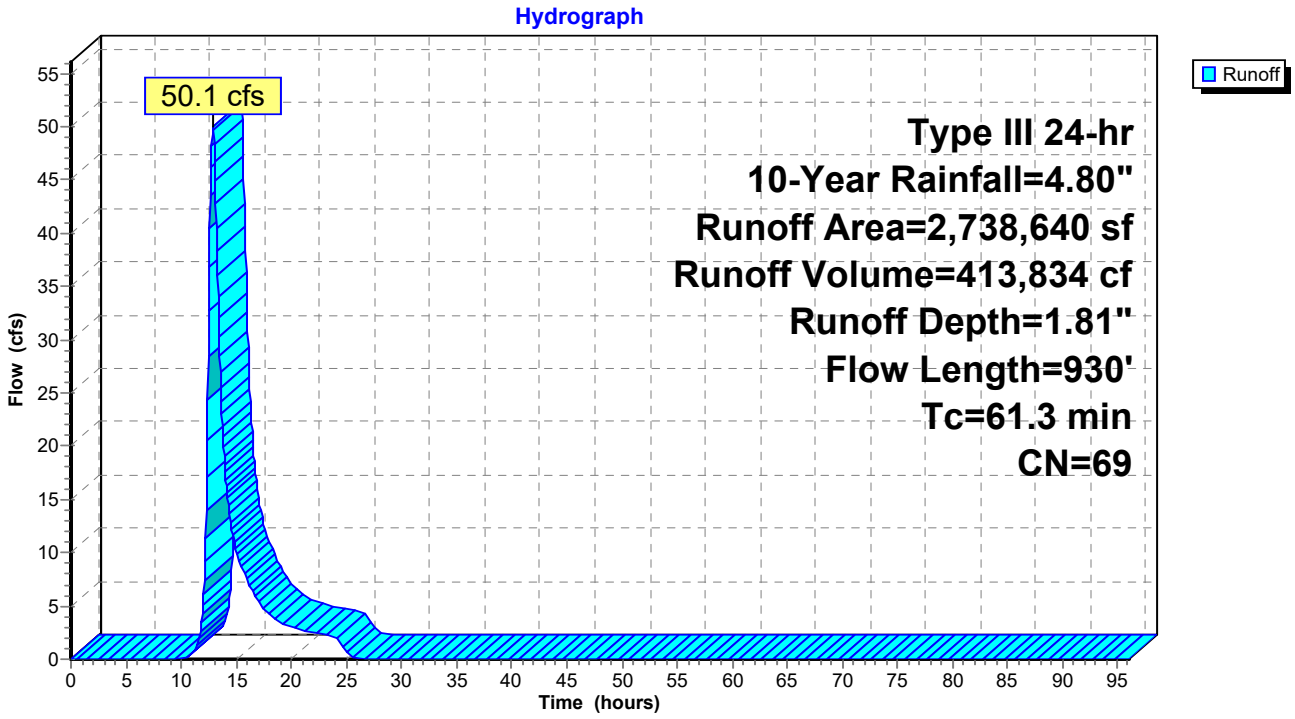
Runoff = 50.1 cfs @ 12.87 hrs, Volume= 413,834 cf, Depth= 1.81"
Routed to Link L1 P : river

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
3,312	98	Roofs, HSG C
3,674	98	Paved parking, HSG C
20,776	74	>75% Grass cover, Good, HSG C
1,135	70	Woods, Good, HSG C
1,027	70	Woods, Good, HSG C
340	70	Woods, Good, HSG C
1,082	70	Woods, Good, HSG C
1,819	70	Woods, Good, HSG C
770,419	70	Woods, Good, HSG C
20,698	70	Woods, Good, HSG C
37,618	70	Woods, Good, HSG C
948,053	70	Woods, Good, HSG C
1,160	55	Woods, Good, HSG B
81,766	55	Woods, Good, HSG B
14,718	55	Woods, Good, HSG B
5,573	55	Woods, Good, HSG B
249,604	55	Woods, Good, HSG B
40,706	74	>75% Grass cover, Good, HSG C
14,454	70	Woods, Good, HSG C
2,051	98	Paved parking, HSG C
4,125	98	Paved parking, HSG C
73,604	98	Water Surface, 0% imp, HSG C
689	98	Water Surface, 0% imp, HSG B
3,312	98	Roofs, HSG C
3,312	98	Roofs, HSG C
101,264	70	Woods, Good, HSG C
305,066	70	Woods, Good, HSG C
2,375	74	>75% Grass cover, Good, HSG C
509	74	>75% Grass cover, Good, HSG C
7,463	74	>75% Grass cover, Good, HSG C
11,670	98	Unconnected pavement, HSG C
413	98	Unconnected pavement, HSG C
4,853	70	Woods, Good, HSG C
2,738,640	69	Weighted Average
2,706,771		98.84% Pervious Area
31,869		1.16% Impervious Area
12,083		37.91% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	50	0.0500	0.06		**Sheet Flow, uppermost**
					Woods: Dense underbrush n= 0.800 P2= 3.20"
46.4	880	0.0160	0.32		**Shallow Concentrated Flow, above river**
					Forest w/Heavy Litter Kv= 2.5 fps
61.3	930	Total			

Subcatchment S100 P: Subcat S100 P



Summary for Subcatchment S300 P: Subcat S300 P

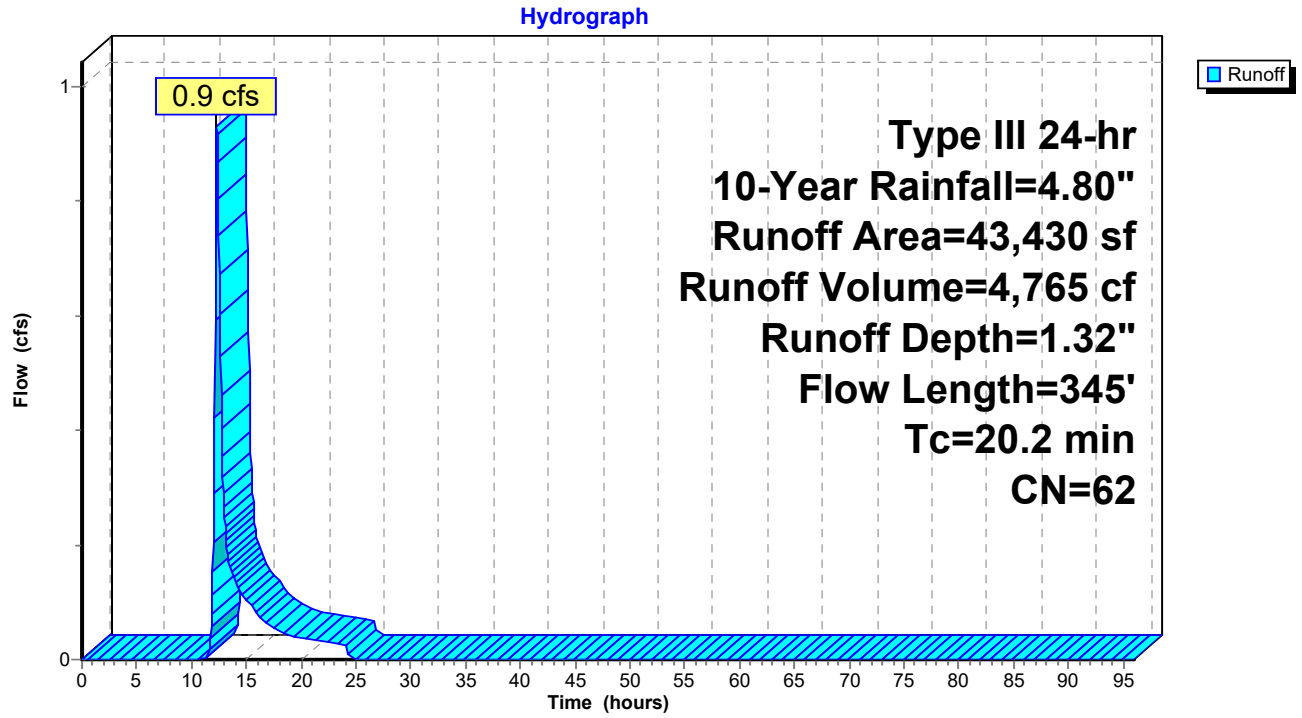
Runoff = 0.9 cfs @ 12.31 hrs, Volume= 4,765 cf, Depth= 1.32"
Routed to Pond P300 P : Pond P300 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
122	61	>75% Grass cover, Good, HSG B
8,182	55	Woods, Good, HSG B
34	61	>75% Grass cover, Good, HSG B
17,425	55	Woods, Good, HSG B
576	98	Roofs, HSG C
13,797	70	Woods, Good, HSG C
195	74	>75% Grass cover, Good, HSG C
3,099	74	>75% Grass cover, Good, HSG C
43,430	62	Weighted Average
42,854		98.67% Pervious Area
576		1.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	50	0.0500	0.06		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
5.3	295	0.1400	0.94		**Shallow Concentrated Flow, to depression** Forest w/Heavy Litter Kv= 2.5 fps
20.2	345	Total			

Subcatchment S300 P: Subcat S300 P



Summary for Pond P300 P: Pond P300 P

Inflow Area = 43,430 sf, 1.33% Impervious, Inflow Depth = 1.32" for 10-Year event
Inflow = 0.9 cfs @ 12.31 hrs, Volume= 4,765 cf
Outflow = 0.1 cfs @ 16.24 hrs, Volume= 4,765 cf, Atten= 92%, Lag= 235.7 min
Discarded = 0.1 cfs @ 16.24 hrs, Volume= 4,765 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link L3 P : offsite

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 561.33' @ 16.24 hrs Surf.Area= 2,816 sf Storage= 2,653 cf

Plug-Flow detention time= 515.8 min calculated for 4,762 cf (100% of inflow)
Center-of-Mass det. time= 516.3 min (1,401.7 - 885.4)

Volume	Invert	Avail.Storage	Storage Description
#1	559.30'	17,507 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

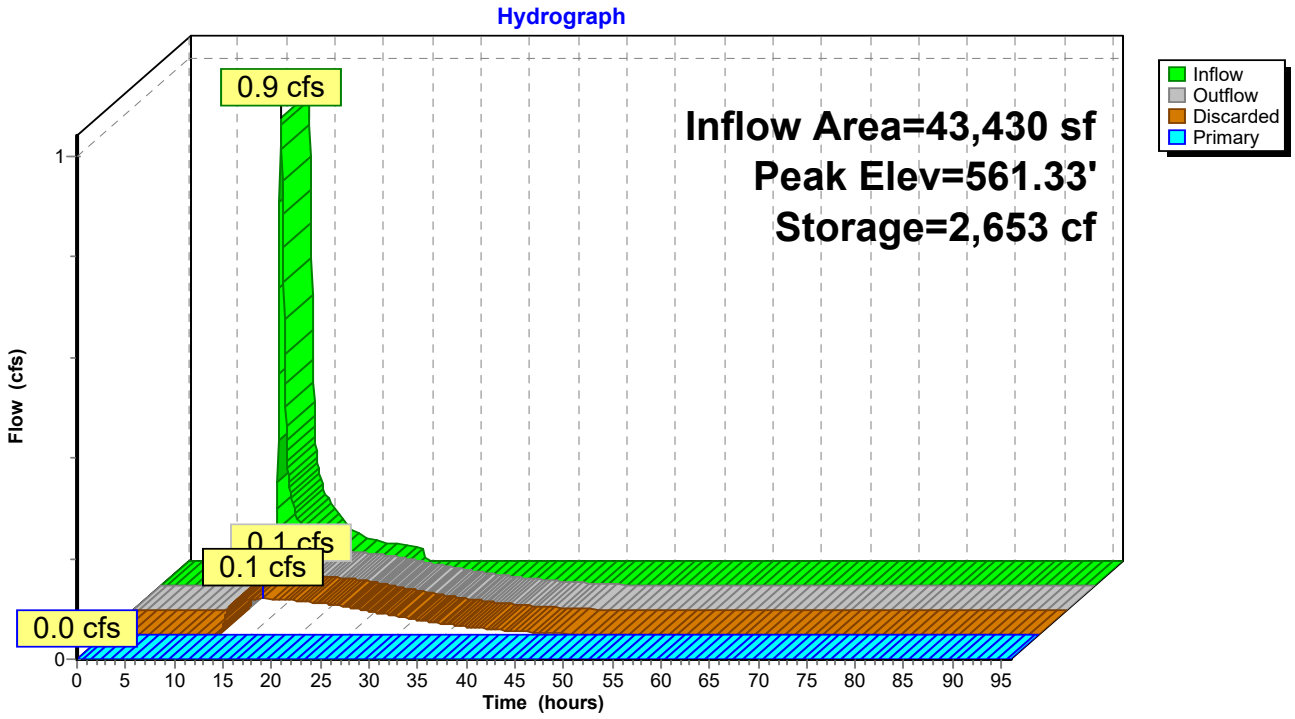
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
559.30	10	0	0
560.00	760	270	270
562.00	3,845	4,605	4,875
563.00	6,130	4,988	9,862
564.00	9,160	7,645	17,507

Device	Routing	Invert	Outlet Devices
#1	Primary	563.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Discarded	559.30'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 559.00'

Discarded OutFlow Max=0.1 cfs @ 16.24 hrs HW=561.33' (Free Discharge)
↑**2=Exfiltration** (Controls 0.1 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=559.30' (Free Discharge)
↑**1=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond P300 P: Pond P300 P

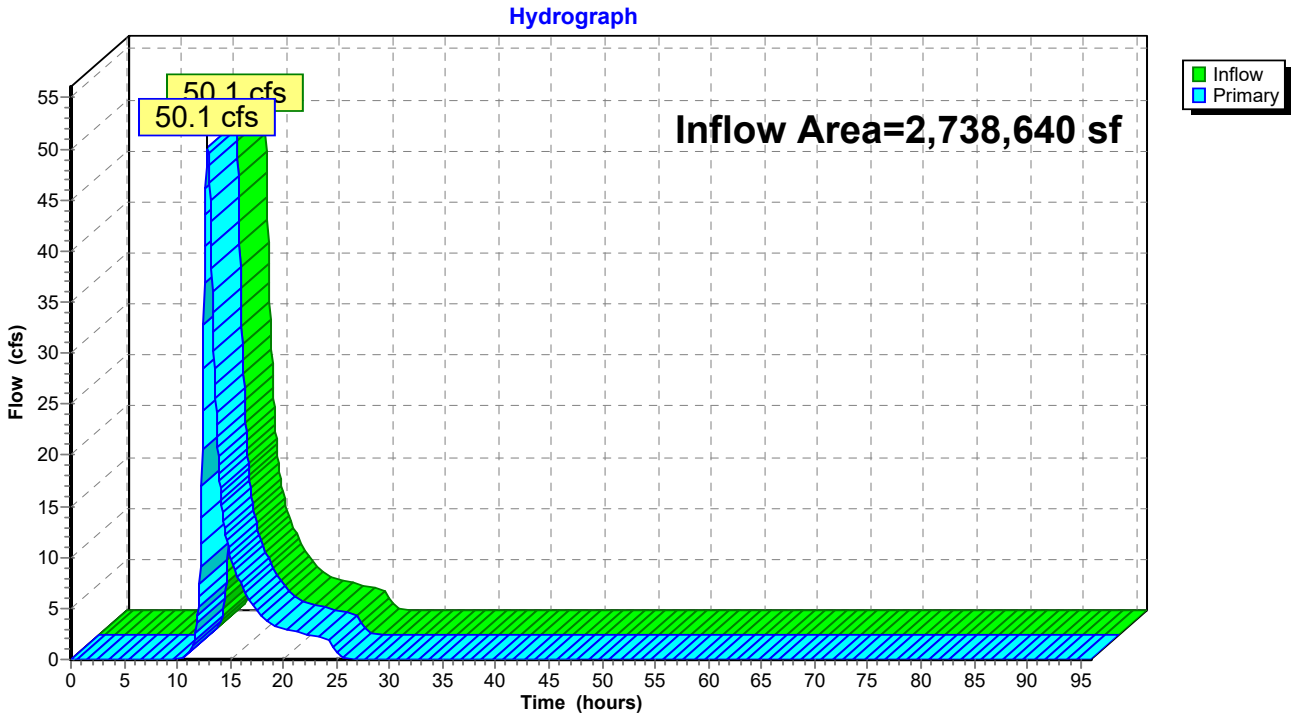


Summary for Link L1 P: river

Inflow Area = 2,738,640 sf, 1.16% Impervious, Inflow Depth = 1.81" for 10-Year event
Inflow = 50.1 cfs @ 12.87 hrs, Volume= 413,834 cf
Primary = 50.1 cfs @ 12.87 hrs, Volume= 413,834 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link L1 P: river

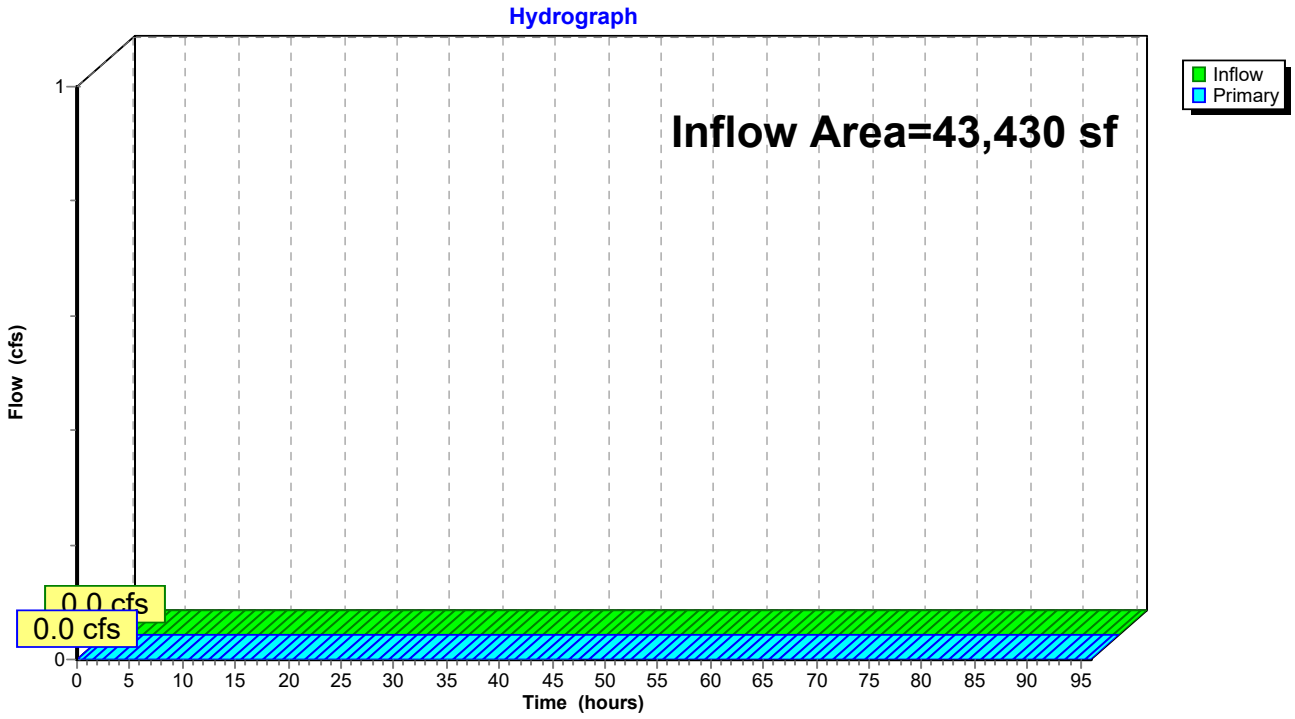


Summary for Link L3 P: offsite

Inflow Area = 43,430 sf, 1.33% Impervious, Inflow Depth = 0.00" for 10-Year event
Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link L3 P: offsite



Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 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 S100 P: Subcat S100 P Runoff Area=2,738,640 sf 1.16% Impervious Runoff Depth=3.51"
Flow Length=930' Tc=61.3 min CN=69 Runoff=100.1 cfs 801,958 cf

Subcatchment S300 P: Subcat S300 P Runoff Area=43,430 sf 1.33% Impervious Runoff Depth=2.80"
Flow Length=345' Tc=20.2 min CN=62 Runoff=2.1 cfs 10,137 cf

Pond P300 P: Pond P300 P Peak Elev=562.33' Storage=6,275 cf Inflow=2.1 cfs 10,137 cf
Discarded=0.1 cfs 10,137 cf Primary=0.0 cfs 0 cf Outflow=0.1 cfs 10,137 cf

Link L1 P: river Inflow=100.1 cfs 801,958 cf
Primary=100.1 cfs 801,958 cf

Link L3 P: offsite Inflow=0.0 cfs 0 cf
Primary=0.0 cfs 0 cf

Total Runoff Area = 2,782,070 sf Runoff Volume = 812,095 cf Average Runoff Depth = 3.50"
98.83% Pervious = 2,749,625 sf 1.17% Impervious = 32,445 sf

Summary for Subcatchment S100 P: Subcat S100 P

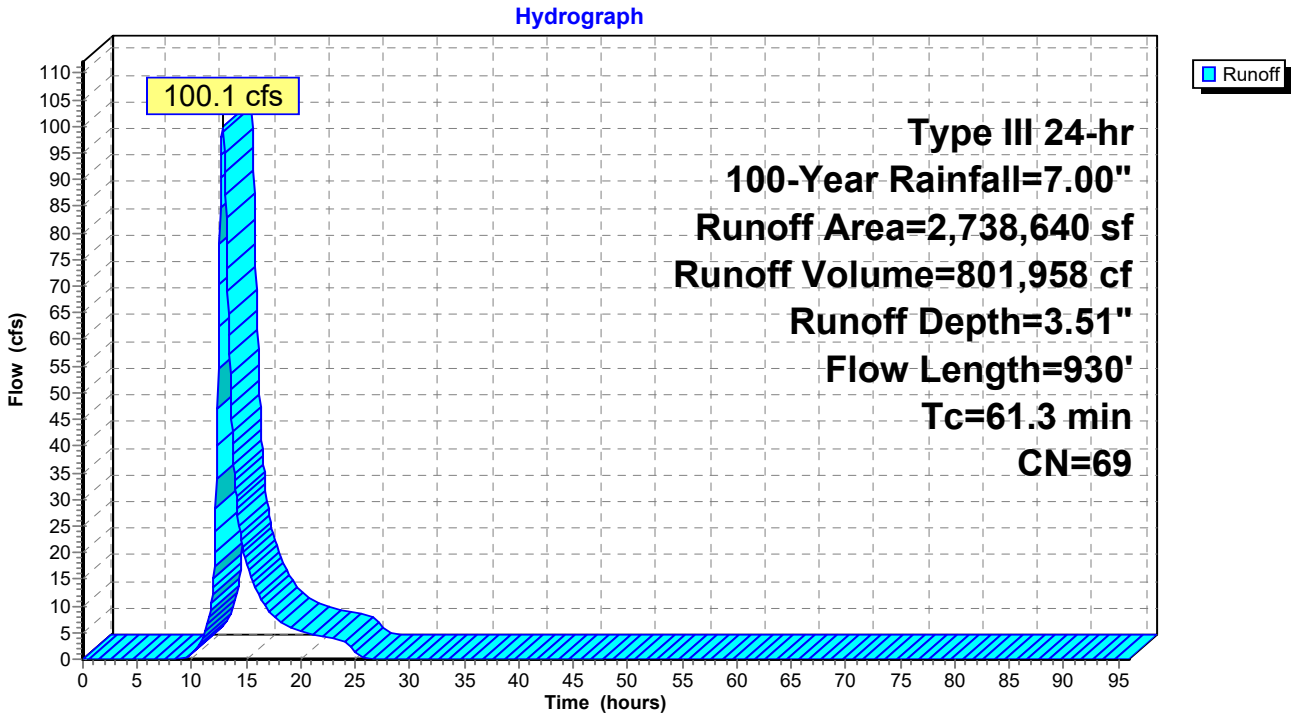
Runoff = 100.1 cfs @ 12.85 hrs, Volume= 801,958 cf, Depth= 3.51"
Routed to Link L1 P : river

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
3,312	98	Roofs, HSG C
3,674	98	Paved parking, HSG C
20,776	74	>75% Grass cover, Good, HSG C
1,135	70	Woods, Good, HSG C
1,027	70	Woods, Good, HSG C
340	70	Woods, Good, HSG C
1,082	70	Woods, Good, HSG C
1,819	70	Woods, Good, HSG C
770,419	70	Woods, Good, HSG C
20,698	70	Woods, Good, HSG C
37,618	70	Woods, Good, HSG C
948,053	70	Woods, Good, HSG C
1,160	55	Woods, Good, HSG B
81,766	55	Woods, Good, HSG B
14,718	55	Woods, Good, HSG B
5,573	55	Woods, Good, HSG B
249,604	55	Woods, Good, HSG B
40,706	74	>75% Grass cover, Good, HSG C
14,454	70	Woods, Good, HSG C
2,051	98	Paved parking, HSG C
4,125	98	Paved parking, HSG C
73,604	98	Water Surface, 0% imp, HSG C
689	98	Water Surface, 0% imp, HSG B
3,312	98	Roofs, HSG C
3,312	98	Roofs, HSG C
101,264	70	Woods, Good, HSG C
305,066	70	Woods, Good, HSG C
2,375	74	>75% Grass cover, Good, HSG C
509	74	>75% Grass cover, Good, HSG C
7,463	74	>75% Grass cover, Good, HSG C
11,670	98	Unconnected pavement, HSG C
413	98	Unconnected pavement, HSG C
4,853	70	Woods, Good, HSG C
2,738,640	69	Weighted Average
2,706,771		98.84% Pervious Area
31,869		1.16% Impervious Area
12,083		37.91% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	50	0.0500	0.06		**Sheet Flow, uppermost**
					Woods: Dense underbrush n= 0.800 P2= 3.20"
46.4	880	0.0160	0.32		**Shallow Concentrated Flow, above river**
					Forest w/Heavy Litter Kv= 2.5 fps
61.3	930	Total			

Subcatchment S100 P: Subcat S100 P



Summary for Subcatchment S300 P: Subcat S300 P

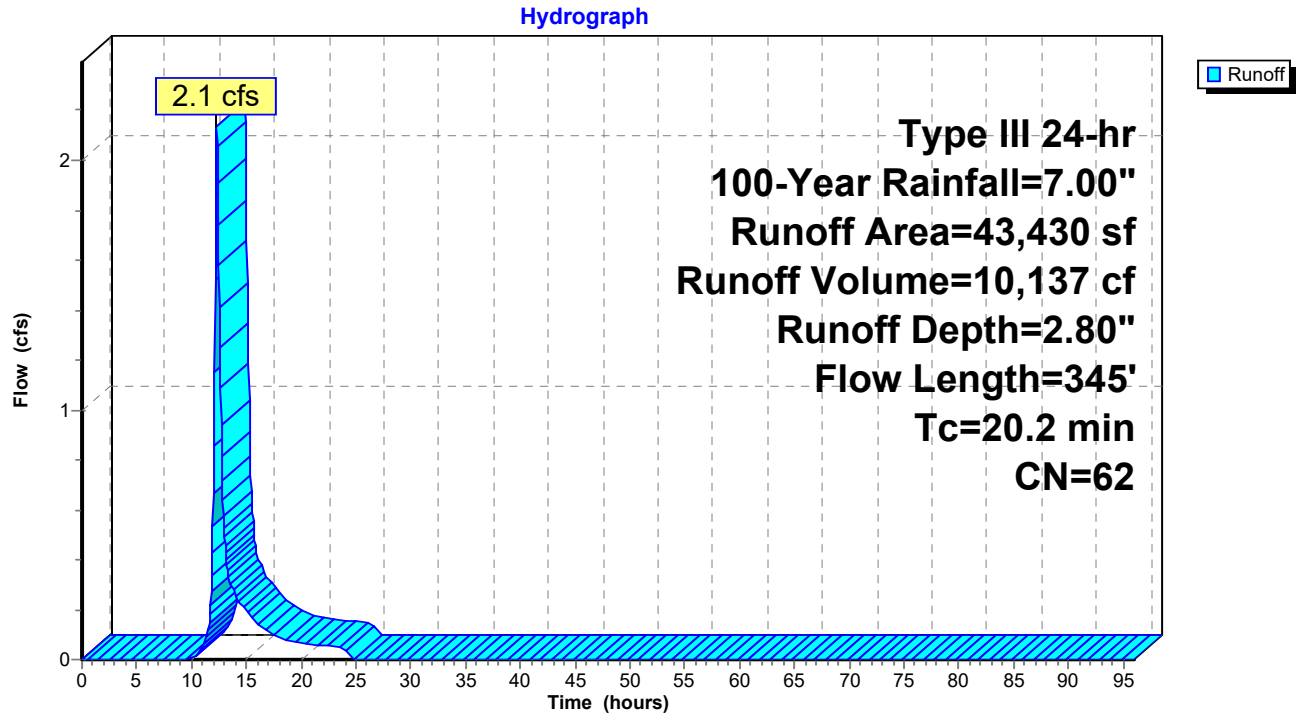
Runoff = 2.1 cfs @ 12.30 hrs, Volume= 10,137 cf, Depth= 2.80"
Routed to Pond P300 P : Pond P300 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
122	61	>75% Grass cover, Good, HSG B
8,182	55	Woods, Good, HSG B
34	61	>75% Grass cover, Good, HSG B
17,425	55	Woods, Good, HSG B
576	98	Roofs, HSG C
13,797	70	Woods, Good, HSG C
195	74	>75% Grass cover, Good, HSG C
3,099	74	>75% Grass cover, Good, HSG C
43,430	62	Weighted Average
42,854		98.67% Pervious Area
576		1.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	50	0.0500	0.06		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
5.3	295	0.1400	0.94		**Shallow Concentrated Flow, to depression** Forest w/Heavy Litter Kv= 2.5 fps
20.2	345	Total			

Subcatchment S300 P: Subcat S300 P



Summary for Pond P300 P: Pond P300 P

Inflow Area = 43,430 sf, 1.33% Impervious, Inflow Depth = 2.80" for 100-Year event
Inflow = 2.1 cfs @ 12.30 hrs, Volume= 10,137 cf
Outflow = 0.1 cfs @ 16.36 hrs, Volume= 10,137 cf, Atten= 94%, Lag= 244.1 min
Discarded = 0.1 cfs @ 16.36 hrs, Volume= 10,137 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link L3 P : offsite

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 562.33' @ 16.36 hrs Surf.Area= 4,603 sf Storage= 6,275 cf

Plug-Flow detention time= 681.6 min calculated for 10,132 cf (100% of inflow)
Center-of-Mass det. time= 682.3 min (1,544.3 - 862.0)

Volume	Invert	Avail.Storage	Storage Description
#1	559.30'	17,507 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

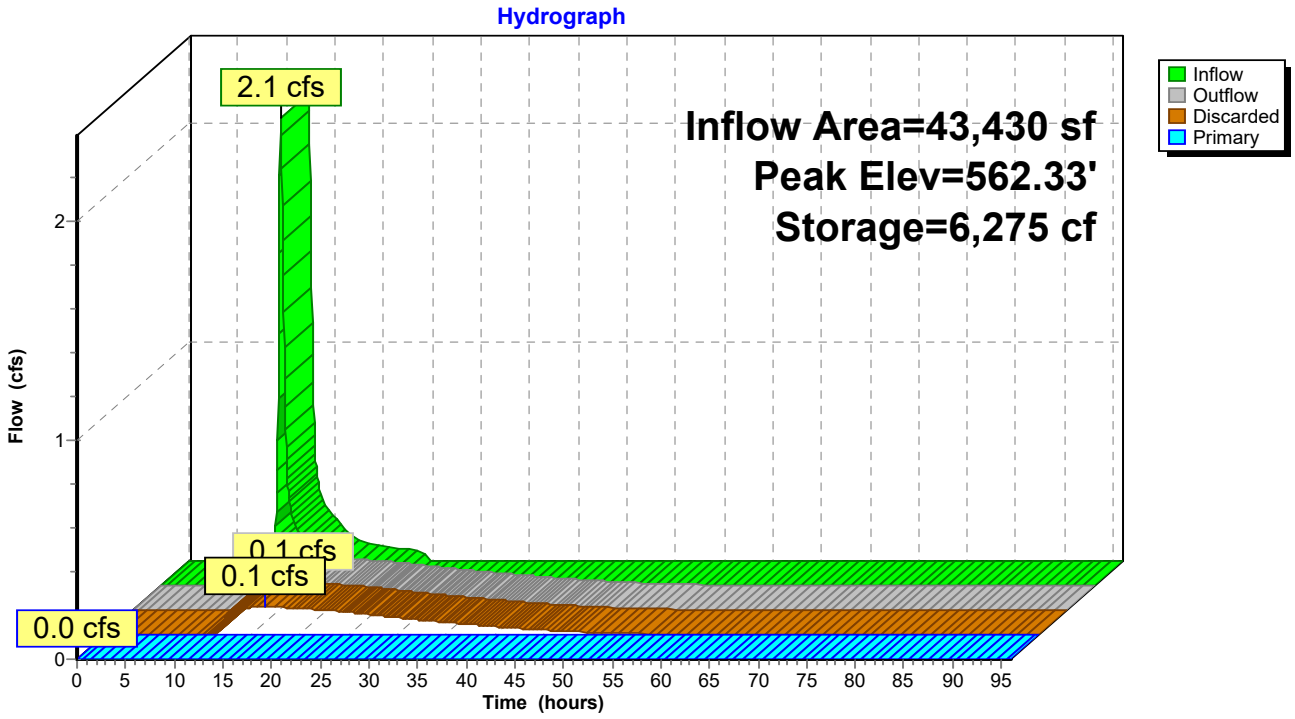
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
559.30	10	0	0
560.00	760	270	270
562.00	3,845	4,605	4,875
563.00	6,130	4,988	9,862
564.00	9,160	7,645	17,507

Device	Routing	Invert	Outlet Devices
#1	Primary	563.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Discarded	559.30'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 559.00'

Discarded OutFlow Max=0.1 cfs @ 16.36 hrs HW=562.33' (Free Discharge)
↑**2=Exfiltration** (Controls 0.1 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=559.30' (Free Discharge)
↑**1=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond P300 P: Pond P300 P

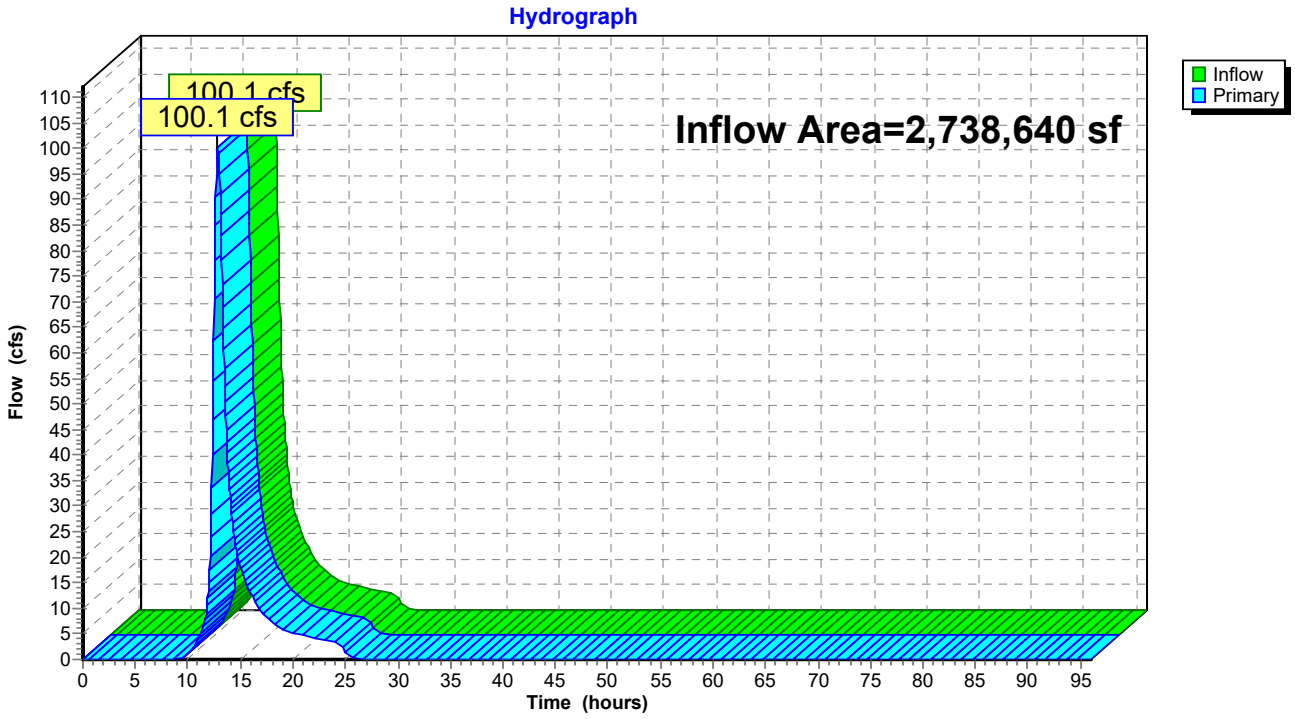


Summary for Link L1 P: river

Inflow Area = 2,738,640 sf, 1.16% Impervious, Inflow Depth = 3.51" for 100-Year event
Inflow = 100.1 cfs @ 12.85 hrs, Volume= 801,958 cf
Primary = 100.1 cfs @ 12.85 hrs, Volume= 801,958 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link L1 P: river

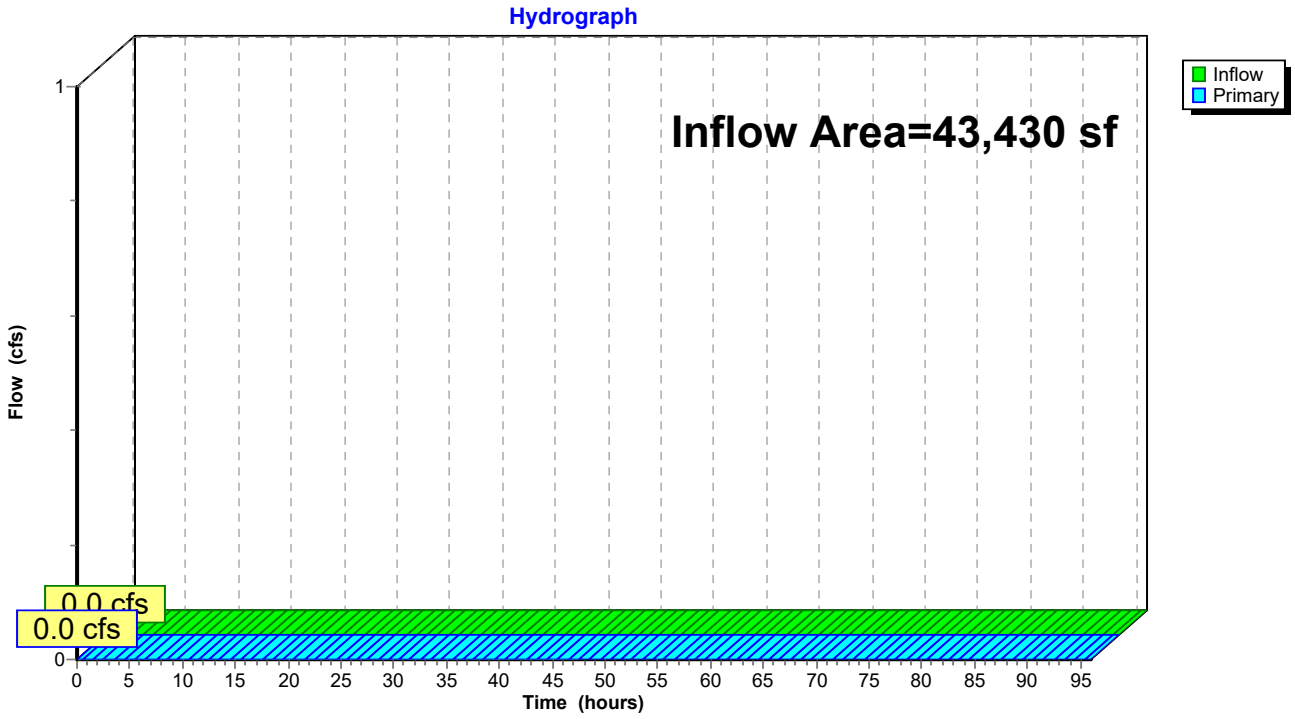


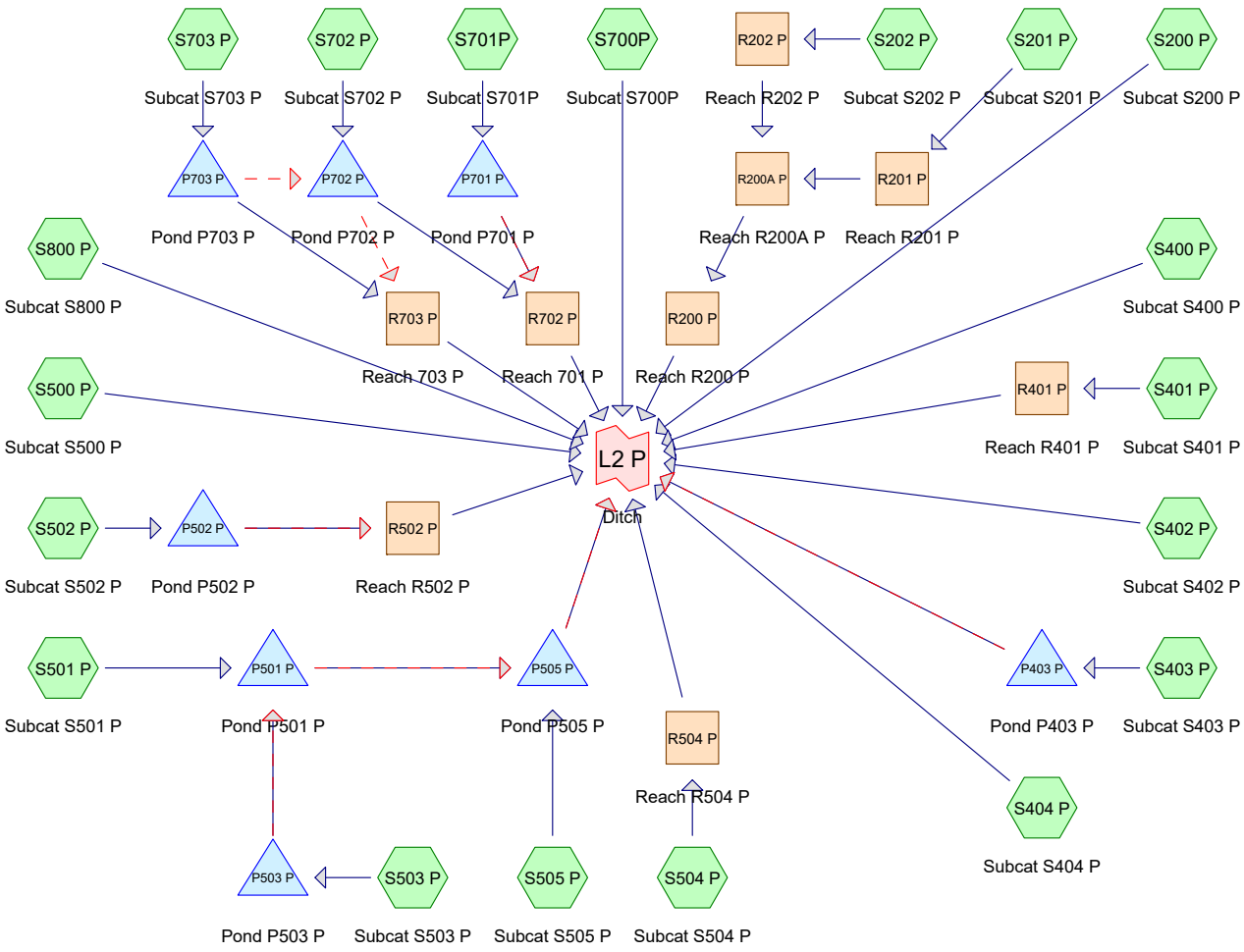
Summary for Link L3 P: offsite

Inflow Area = 43,430 sf, 1.33% Impervious, Inflow Depth = 0.00" for 100-Year event
Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link L3 P: offsite





Routing Diagram for 21-0083 Prop. Ditch
Prepared by Land Design Collaborative
HydroCAD® 10.10-7a s/n 11266 © 2021 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
179,673	61	>75% Grass cover, Good, HSG B (S201 P, S202 P, S402 P, S403 P, S501 P, S502 P, S503 P, S504 P, S703 P)
781,915	74	>75% Grass cover, Good, HSG C (S200 P, S201 P, S400 P, S401 P, S402 P, S403 P, S404 P, S500 P, S501 P, S502 P, S503 P, S504 P, S505 P, S700P, S701P, S702 P, S703 P, S800 P)
60,877	80	>75% Grass cover, Good, HSG D (S200 P, S400 P, S404 P, S500 P)
37,799	98	Paved parking, HSG B (S201 P, S402 P, S403 P, S501 P, S502 P, S503 P, S504 P, S703 P)
83,279	98	Paved parking, HSG C (S200 P, S400 P, S401 P, S403 P, S404 P, S500 P, S501 P, S502 P, S503 P, S700P, S701P, S702 P, S703 P, S800 P)
3,145	98	Paved parking, HSG D (S400 P, S404 P, S500 P)
13,672	98	Paved roads w/curbs & sewers, HSG B (S403 P, S501 P, S503 P, S504 P)
112,400	98	Paved roads w/curbs & sewers, HSG C (S403 P, S404 P, S500 P, S501 P, S502 P, S503 P, S701P, S702 P, S703 P)
4,584	98	Paved roads w/curbs & sewers, HSG D (S404 P)
18,856	98	Roofs, HSG B (S201 P, S402 P, S403 P, S501 P, S503 P, S504 P, S703 P)
61,466	98	Roofs, HSG C (S200 P, S400 P, S401 P, S403 P, S404 P, S500 P, S501 P, S503 P, S700P, S701P, S702 P, S703 P, S800 P)
5,637	98	Roofs, HSG D (S200 P, S400 P, S404 P, S500 P)
4,290	98	Unconnected pavement, HSG B (S504 P)
422,013	55	Woods, Good, HSG B (S200 P, S201 P, S202 P, S402 P, S403 P, S501 P, S502 P, S503 P, S504 P, S703 P)
1,248,078	70	Woods, Good, HSG C (S200 P, S201 P, S400 P, S401 P, S402 P, S403 P, S404 P, S500 P, S501 P, S502 P, S503 P, S504 P, S700P, S701P, S702 P, S703 P, S800 P)
225,865	77	Woods, Good, HSG D (S200 P, S400 P, S404 P, S500 P)
3,263,549	**72**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
676,303	HSG B	S200 P, S201 P, S202 P, S402 P, S403 P, S501 P, S502 P, S503 P, S504 P, S703 P
2,287,138	HSG C	S200 P, S201 P, S400 P, S401 P, S402 P, S403 P, S404 P, S500 P, S501 P, S502 P, S503 P, S504 P, S505 P, S700P, S701P, S702 P, S703 P, S800 P
300,108	HSG D	S200 P, S400 P, S404 P, S500 P
0	Other	
3,263,549		**TOTAL AREA**

Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 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 S200 P: Subcat S200 P Runoff Area=290,544 sf 4.03% Impervious Runoff Depth=1.09"
Flow Length=1,490' Tc=62.5 min CN=75 Runoff=3.1 cfs 26,486 cf

Subcatchment S201 P: Subcat S201 P Runoff Area=96,709 sf 4.82% Impervious Runoff Depth=0.34"
Flow Length=575' Tc=26.7 min CN=58 Runoff=0.3 cfs 2,750 cf

Subcatchment S202 P: Subcat S202 P Runoff Area=40,444 sf 0.00% Impervious Runoff Depth=0.31"
Flow Length=465' Tc=14.4 min CN=57 Runoff=0.1 cfs 1,044 cf

Subcatchment S400 P: Subcat S400 P Runoff Area=373,885 sf 3.56% Impervious Runoff Depth=0.98"
Flow Length=1,125' Tc=24.7 min CN=73 Runoff=5.7 cfs 30,621 cf

Subcatchment S401 P: Subcat S401 P Runoff Area=39,667 sf 13.75% Impervious Runoff Depth=1.15"
Flow Length=215' Tc=10.6 min CN=76 Runoff=1.0 cfs 3,808 cf

Subcatchment S402 P: Subcat S402 P Runoff Area=93,224 sf 3.45% Impervious Runoff Depth=0.34"
Flow Length=795' Tc=18.4 min CN=58 Runoff=0.3 cfs 2,651 cf

Subcatchment S403 P: Subcat S403 P Runoff Area=163,769 sf 20.12% Impervious Runoff Depth=0.98"
Flow Length=150' Tc=9.1 min CN=73 Runoff=3.6 cfs 13,413 cf

Subcatchment S404 P: Subcat S404 P Runoff Area=97,529 sf 33.15% Impervious Runoff Depth=1.54"
Flow Length=130' Tc=10.9 min CN=82 Runoff=3.4 cfs 12,501 cf

Subcatchment S500 P: Subcat S500 P Runoff Area=484,459 sf 8.28% Impervious Runoff Depth=1.09"
Flow Length=1,060' Tc=47.3 min CN=75 Runoff=6.1 cfs 44,164 cf

Subcatchment S501 P: Subcat S501 P Runoff Area=79,903 sf 14.81% Impervious Runoff Depth=0.73"
Flow Length=380' Tc=16.8 min CN=68 Runoff=1.0 cfs 4,878 cf

Subcatchment S502 P: Subcat S502 P Runoff Area=86,237 sf 17.89% Impervious Runoff Depth=1.09"
Tc=6.0 min CN=75 Runoff=2.4 cfs 7,862 cf

Subcatchment S503 P: Subcat S503 P Runoff Area=82,329 sf 25.04% Impervious Runoff Depth=1.21"
Flow Length=330' Tc=9.3 min CN=77 Runoff=2.3 cfs 8,314 cf

Subcatchment S504 P: Subcat S504 P Runoff Area=277,905 sf 13.64% Impervious Runoff Depth=0.48"
Flow Length=745' Tc=18.2 min UI Adjusted CN=62 Runoff=1.7 cfs 11,139 cf

Subcatchment S505 P: Subcat S505 P Runoff Area=13,197 sf 0.00% Impervious Runoff Depth=1.04"
Tc=6.0 min CN=74 Runoff=0.3 cfs 1,141 cf

Subcatchment S700P: Subcat S700P Runoff Area=340,792 sf 1.99% Impervious Runoff Depth=0.88"
Flow Length=720' Tc=47.6 min CN=71 Runoff=3.3 cfs 24,937 cf

Subcatchment S701P: Subcat S701P Runoff Area=91,083 sf 17.79% Impervious Runoff Depth=1.21"
Flow Length=350' Tc=15.4 min CN=77 Runoff=2.1 cfs 9,198 cf

Subcatchment S702 P: Subcat S702 P Runoff Area=181,154 sf 22.95% Impervious Runoff Depth=1.34"
Flow Length=395' Tc=10.0 min CN=79 Runoff=5.5 cfs 20,179 cf

Subcatchment S703 P: Subcat S703 P Runoff Area=346,988 sf 13.63% Impervious Runoff Depth=1.04"
Flow Length=500' Tc=7.7 min CN=74 Runoff=8.5 cfs 30,001 cf

Subcatchment S800 P: Subcat S800 P Runoff Area=83,731 sf 4.42% Impervious Runoff Depth=0.93"
Flow Length=660' Tc=27.4 min CN=72 Runoff=1.1 cfs 6,487 cf

Reach R200 P: Reach R200 P Avg. Flow Depth=0.02' Max Vel=0.23 fps Inflow=0.4 cfs 3,794 cf
n=0.070 L=800.0' S=0.0213 '/' Capacity=433.1 cfs Outflow=0.2 cfs 3,794 cf

Reach R200A P: Reach R200A P Avg. Flow Depth=0.17' Max Vel=4.74 fps Inflow=0.4 cfs 3,794 cf
12.0" Round Pipe n=0.013 L=340.0' S=0.0353 '/' Capacity=6.7 cfs Outflow=0.4 cfs 3,794 cf

Reach R201 P: Reach R201 P Avg. Flow Depth=0.15' Max Vel=4.03 fps Inflow=0.3 cfs 2,750 cf
12.0" Round Pipe n=0.020 L=115.0' S=0.0696 '/' Capacity=6.1 cfs Outflow=0.3 cfs 2,750 cf

Reach R202 P: Reach R202 P Avg. Flow Depth=0.09' Max Vel=3.38 fps Inflow=0.1 cfs 1,044 cf
12.0" Round Pipe n=0.020 L=390.0' S=0.0885 '/' Capacity=6.9 cfs Outflow=0.1 cfs 1,044 cf

Reach R401 P: Reach R401 P Avg. Flow Depth=0.08' Max Vel=0.61 fps Inflow=1.0 cfs 3,808 cf
n=0.070 L=990.0' S=0.0273 '/' Capacity=271.5 cfs Outflow=0.5 cfs 3,808 cf

Reach R502 P: Reach R502 P Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.0 cfs 0 cf
n=0.070 L=975.0' S=0.0338 '/' Capacity=247.1 cfs Outflow=0.0 cfs 0 cf

Reach R504 P: Reach R504 P Avg. Flow Depth=0.13' Max Vel=0.77 fps Inflow=1.7 cfs 11,139 cf
n=0.070 L=1,120.0' S=0.0241 '/' Capacity=255.2 cfs Outflow=1.1 cfs 11,139 cf

Reach R702 P: Reach 701 P Avg. Flow Depth=0.13' Max Vel=0.72 fps Inflow=1.2 cfs 17,340 cf
n=0.070 L=135.0' S=0.0222 '/' Capacity=307.8 cfs Outflow=1.1 cfs 17,340 cf

Reach R703 P: Reach 703 P Avg. Flow Depth=0.10' Max Vel=0.59 fps Inflow=0.7 cfs 30,001 cf
n=0.070 L=815.0' S=0.0196 '/' Capacity=289.3 cfs Outflow=0.7 cfs 30,001 cf

Pond P403 P: Pond P403 P Peak Elev=547.14' Storage=5,344 cf Inflow=3.6 cfs 13,413 cf
Discarded=0.1 cfs 4,238 cf Primary=0.4 cfs 9,174 cf Secondary=0.0 cfs 0 cf Outflow=0.5 cfs 13,413 cf

Pond P501 P: Pond P501 P Peak Elev=565.81' Storage=0 cf Inflow=2.8 cfs 12,900 cf
Primary=2.8 cfs 12,900 cf Secondary=0.0 cfs 0 cf Outflow=2.8 cfs 12,900 cf

Pond P502 P: Pond P502 P Peak Elev=555.92' Storage=5,271 cf Inflow=2.4 cfs 7,862 cf
Discarded=0.1 cfs 7,862 cf Primary=0.0 cfs 0 cf Secondary=0.0 cfs 0 cf Outflow=0.1 cfs 7,862 cf

Pond P503 P: Pond P503 P Peak Elev=585.65' Storage=541 cf Inflow=2.3 cfs 8,314 cf
Discarded=0.0 cfs 292 cf Primary=1.9 cfs 8,022 cf Secondary=0.0 cfs 0 cf Outflow=1.9 cfs 8,314 cf

Pond P505 P: Pond P505 P Peak Elev=552.25' Storage=9,890 cf Inflow=3.0 cfs 14,041 cf
Discarded=0.1 cfs 14,041 cf Primary=0.0 cfs 0 cf Secondary=0.0 cfs 0 cf Outflow=0.1 cfs 14,041 cf

Pond P701 P: Pond P701 P Peak Elev=516.36' Storage=2,858 cf Inflow=2.1 cfs 9,198 cf
Discarded=0.0 cfs 1,857 cf Primary=1.2 cfs 7,341 cf Secondary=0.0 cfs 0 cf Outflow=1.2 cfs 9,198 cf

Pond P702 P: Pond P702 P Peak Elev=523.04' Storage=13,038 cf Inflow=5.5 cfs 20,179 cf
Primary=0.3 cfs 10,000 cf Secondary=0.0 cfs 0 cf Outflow=0.3 cfs 10,000 cf

Pond P703 P: Pond P703 P Peak Elev=536.92' Storage=13,576 cf Inflow=8.5 cfs 30,001 cf
Primary=0.7 cfs 30,001 cf Secondary=0.0 cfs 0 cf Outflow=0.7 cfs 30,001 cf

Link L2 P: Ditch Inflow=20.2 cfs 223,104 cf
Primary=20.2 cfs 223,104 cf

Total Runoff Area = 3,263,549 sf Runoff Volume = 261,573 cf Average Runoff Depth = 0.96"
89.42% Pervious = 2,918,421 sf 10.58% Impervious = 345,128 sf

Summary for Subcatchment S200 P: Subcat S200 P

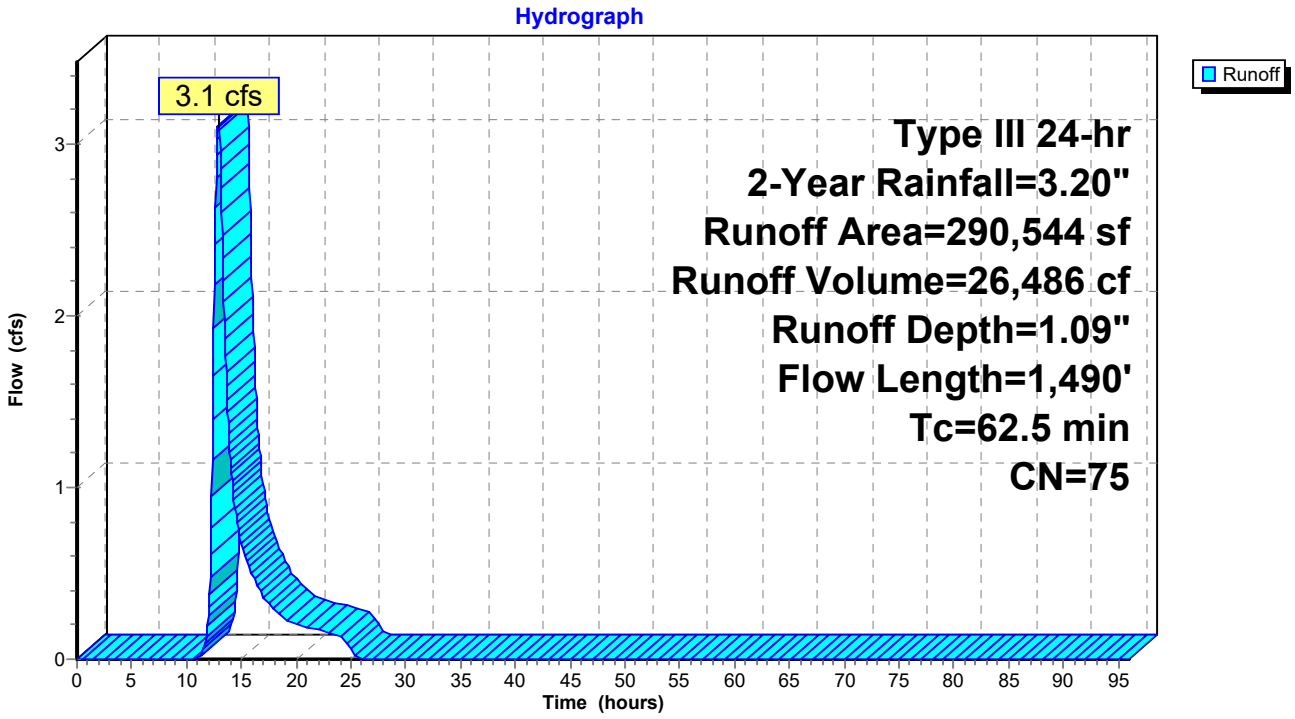
Runoff = 3.1 cfs @ 12.89 hrs, Volume= 26,486 cf, Depth= 1.09"
Routed to Link L2 P : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
147	98	Roofs, HSG C
1,906	98	Roofs, HSG C
1,193	98	Paved parking, HSG C
1,363	98	Paved parking, HSG C
495	70	Woods, Good, HSG C
2,373	74	>75% Grass cover, Good, HSG C
1,215	74	>75% Grass cover, Good, HSG C
4,844	74	>75% Grass cover, Good, HSG C
658	74	>75% Grass cover, Good, HSG C
1,645	74	>75% Grass cover, Good, HSG C
2,619	74	>75% Grass cover, Good, HSG C
1,972	74	>75% Grass cover, Good, HSG C
71	70	Woods, Good, HSG C
75,576	70	Woods, Good, HSG C
2,305	70	Woods, Good, HSG C
25,963	70	Woods, Good, HSG C
110,354	77	Woods, Good, HSG D
23,647	80	>75% Grass cover, Good, HSG D
2,213	98	Roofs, HSG D
454	98	Roofs, HSG D
142	77	Woods, Good, HSG D
753	77	Woods, Good, HSG D
368	55	Woods, Good, HSG B
510	55	Woods, Good, HSG B
2,875	70	Woods, Good, HSG C
1,695	98	Paved parking, HSG C
2,736	98	Roofs, HSG C
15,978	74	>75% Grass cover, Good, HSG C
1,008	74	>75% Grass cover, Good, HSG C
3,233	70	Woods, Good, HSG C
162	74	>75% Grass cover, Good, HSG C
71	74	>75% Grass cover, Good, HSG C
290,544	75	Weighted Average
278,837		95.97% Pervious Area
11,707		4.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0800	0.12		**Sheet Flow, uppermost**
					Woods: Light underbrush n= 0.400 P2= 3.20"
0.4	135	0.1100	5.34		**Shallow Concentrated Flow, on lots**
					Unpaved Kv= 16.1 fps
55.0	1,305	0.0250	0.40		**Shallow Concentrated Flow, above ditch**
					Forest w/Heavy Litter Kv= 2.5 fps
62.5	1,490	Total			

Subcatchment S200 P: Subcat S200 P



Summary for Subcatchment S201 P: Subcat S201 P

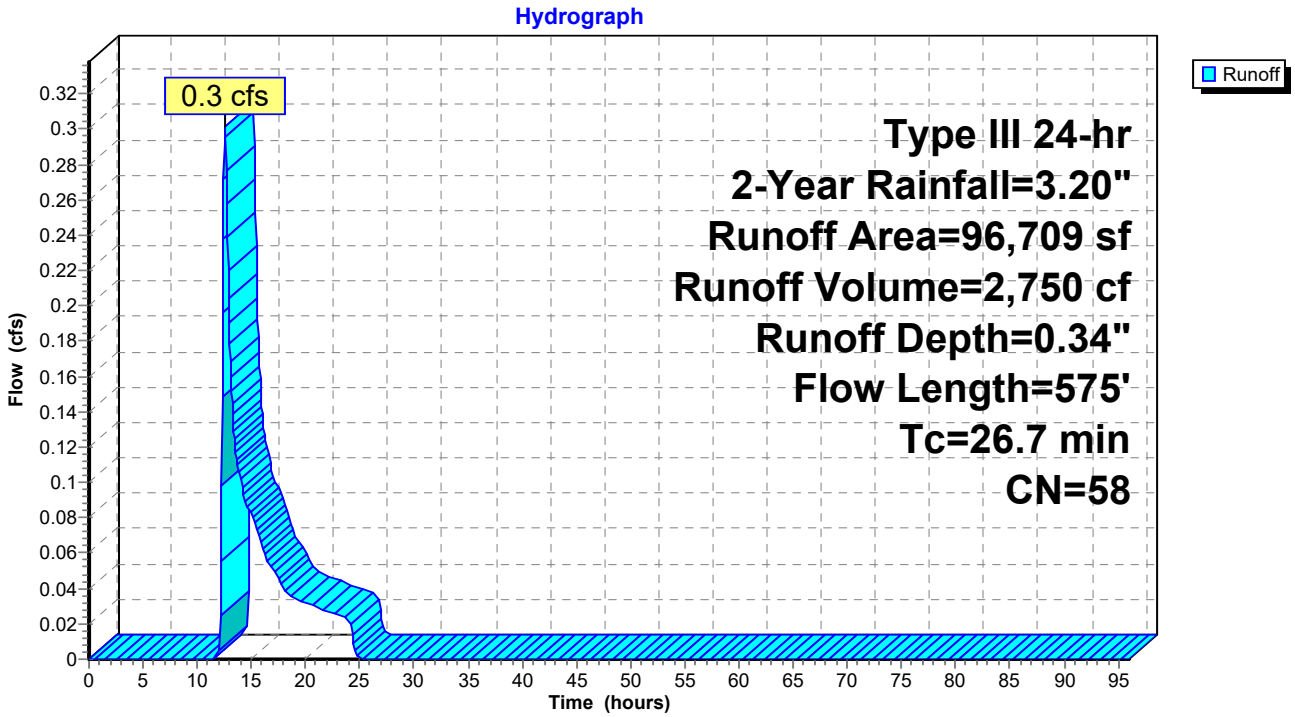
Runoff = 0.3 cfs @ 12.57 hrs, Volume= 2,750 cf, Depth= 0.34"
Routed to Reach R201 P : Reach R201 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
731	61	>75% Grass cover, Good, HSG B
1,695	55	Woods, Good, HSG B
74,781	55	Woods, Good, HSG B
2,189	61	>75% Grass cover, Good, HSG B
1,036	55	Woods, Good, HSG B
2,365	98	Roofs, HSG B
2,299	98	Paved parking, HSG B
4,529	61	>75% Grass cover, Good, HSG B
499	55	Woods, Good, HSG B
3,092	61	>75% Grass cover, Good, HSG B
1,740	70	Woods, Good, HSG C
1,738	74	>75% Grass cover, Good, HSG C
15	70	Woods, Good, HSG C
96,709	58	Weighted Average
92,045		95.18% Pervious Area
4,664		4.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	50	0.1000	0.13		**Sheet Flow, uppermost**
					Woods: Light underbrush n= 0.400 P2= 3.20"
0.2	50	0.0900	4.83		**Shallow Concentrated Flow, yard**
					Unpaved Kv= 16.1 fps
20.0	475	0.0250	0.40		**Shallow Concentrated Flow, above channel**
					Forest w/Heavy Litter Kv= 2.5 fps
26.7	575	Total			

Subcatchment S201 P: Subcat S201 P



Summary for Subcatchment S202 P: Subcat S202 P

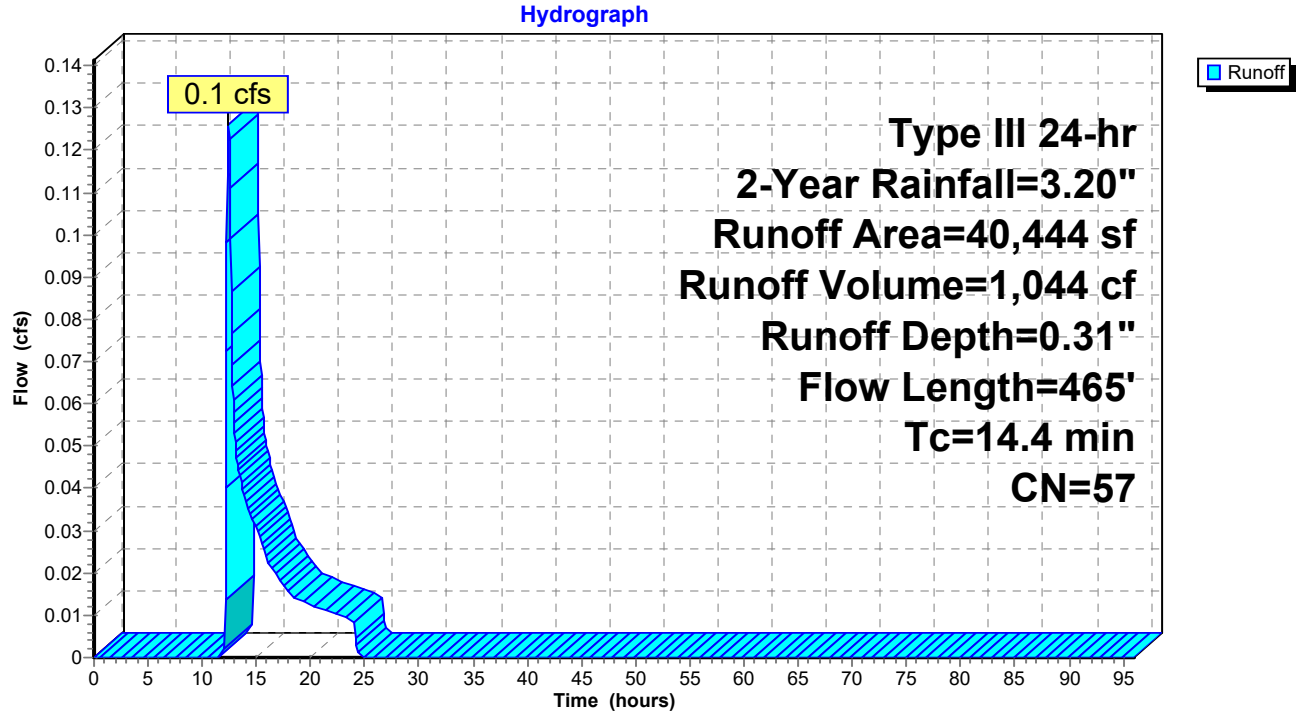
Runoff = 0.1 cfs @ 12.42 hrs, Volume= 1,044 cf, Depth= 0.31"
Routed to Reach R202 P : Reach R202 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
744	55	Woods, Good, HSG B
1,343	61	>75% Grass cover, Good, HSG B
27,977	55	Woods, Good, HSG B
10,366	61	>75% Grass cover, Good, HSG B
14	55	Woods, Good, HSG B
40,444	57	Weighted Average
40,444		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	50	0.0800	0.18		**Sheet Flow, uppermost** Grass: Dense n= 0.240 P2= 3.20"
9.1	225	0.0270	0.41		**Shallow Concentrated Flow, above channel and pipe** Forest w/Heavy Litter Kv= 2.5 fps
0.6	190	0.0605	5.16	103.26	**Trap/Vee/Rect Channel Flow, channel** Bot.W=4.00' D=2.00' Z= 3.0 '/' Top.W=16.00' n= 0.080 Earth, long dense weeds
14.4	465	Total			

Subcatchment S202 P: Subcat S202 P



Summary for Subcatchment S400 P: Subcat S400 P

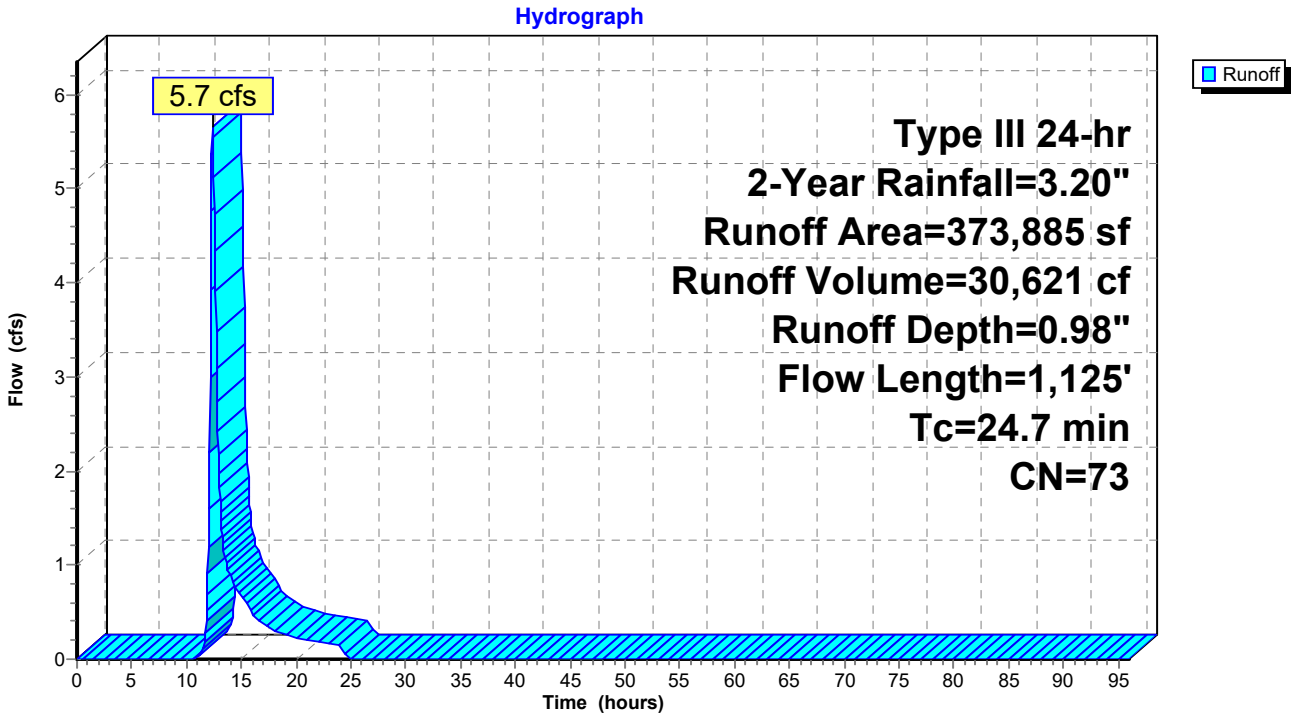
Runoff = 5.7 cfs @ 12.38 hrs, Volume= 30,621 cf, Depth= 0.98"
Routed to Link L2 P : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
181	70	Woods, Good, HSG C
16,816	74	>75% Grass cover, Good, HSG C
9,901	74	>75% Grass cover, Good, HSG C
5,763	74	>75% Grass cover, Good, HSG C
892	74	>75% Grass cover, Good, HSG C
3,067	70	Woods, Good, HSG C
39,249	74	>75% Grass cover, Good, HSG C
112	74	>75% Grass cover, Good, HSG C
12,077	74	>75% Grass cover, Good, HSG C
72	74	>75% Grass cover, Good, HSG C
180	74	>75% Grass cover, Good, HSG C
3,312	98	Roofs, HSG C
1,700	98	Roofs, HSG C
1,002	98	Roofs, HSG C
1,656	98	Roofs, HSG C
1,013	98	Paved parking, HSG C
2,142	98	Paved parking, HSG C
254	98	Paved parking, HSG C
1,288	98	Paved parking, HSG C
387	70	Woods, Good, HSG C
231	70	Woods, Good, HSG C
508	70	Woods, Good, HSG C
177,471	70	Woods, Good, HSG C
55,433	70	Woods, Good, HSG C
32,135	77	Woods, Good, HSG D
3,572	80	>75% Grass cover, Good, HSG D
2,343	80	>75% Grass cover, Good, HSG D
296	98	Roofs, HSG D
178	98	Roofs, HSG D
476	98	Paved parking, HSG D
178	77	Woods, Good, HSG D
373,885	73	Weighted Average
360,568		96.44% Pervious Area
13,317		3.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	50	0.0800	0.18		**Sheet Flow, uppermost**
					Grass: Dense n= 0.240 P2= 3.20"
20.0	1,075	0.0320	0.89		**Shallow Concentrated Flow, to ditch**
					Woodland Kv= 5.0 fps
24.7	1,125	Total			

Subcatchment S400 P: Subcat S400 P



Summary for Subcatchment S401 P: Subcat S401 P

Tc based on walkout elevation and lawn behind home

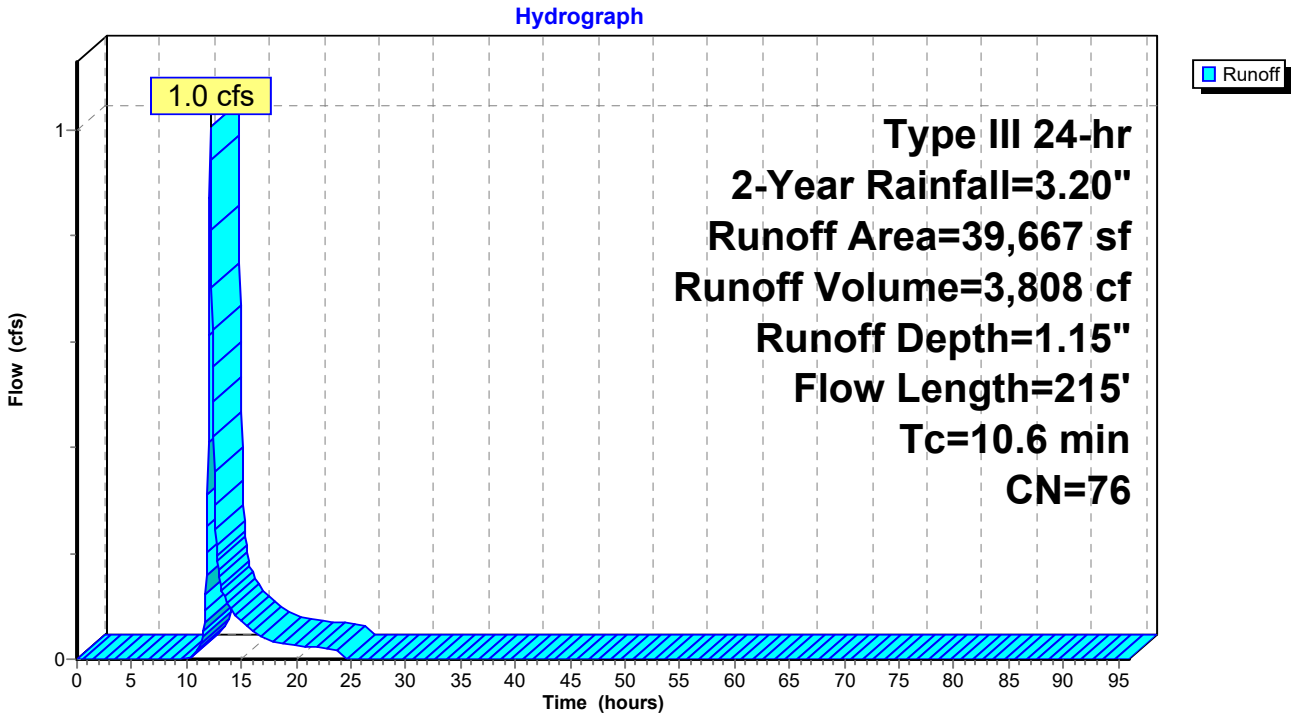
Runoff = 1.0 cfs @ 12.16 hrs, Volume= 3,808 cf, Depth= 1.15"
Routed to Reach R401 P : Reach R401 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
299	70	Woods, Good, HSG C
2,143	98	Paved parking, HSG C
3,312	98	Roofs, HSG C
11,155	70	Woods, Good, HSG C
22,758	74	>75% Grass cover, Good, HSG C
39,667	76	Weighted Average
34,212		86.25% Pervious Area
5,455		13.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.10		**Sheet Flow, uppermost** Grass: Dense n= 0.240 P2= 3.20"
0.8	105	0.0200	2.28		**Shallow Concentrated Flow, lawn area** Unpaved Kv= 16.1 fps
1.6	60	0.0160	0.63		**Shallow Concentrated Flow, woods above pipe and channel** Woodland Kv= 5.0 fps
10.6	215	Total			

Subcatchment S401 P: Subcat S401 P



Summary for Subcatchment S402 P: Subcat S402 P

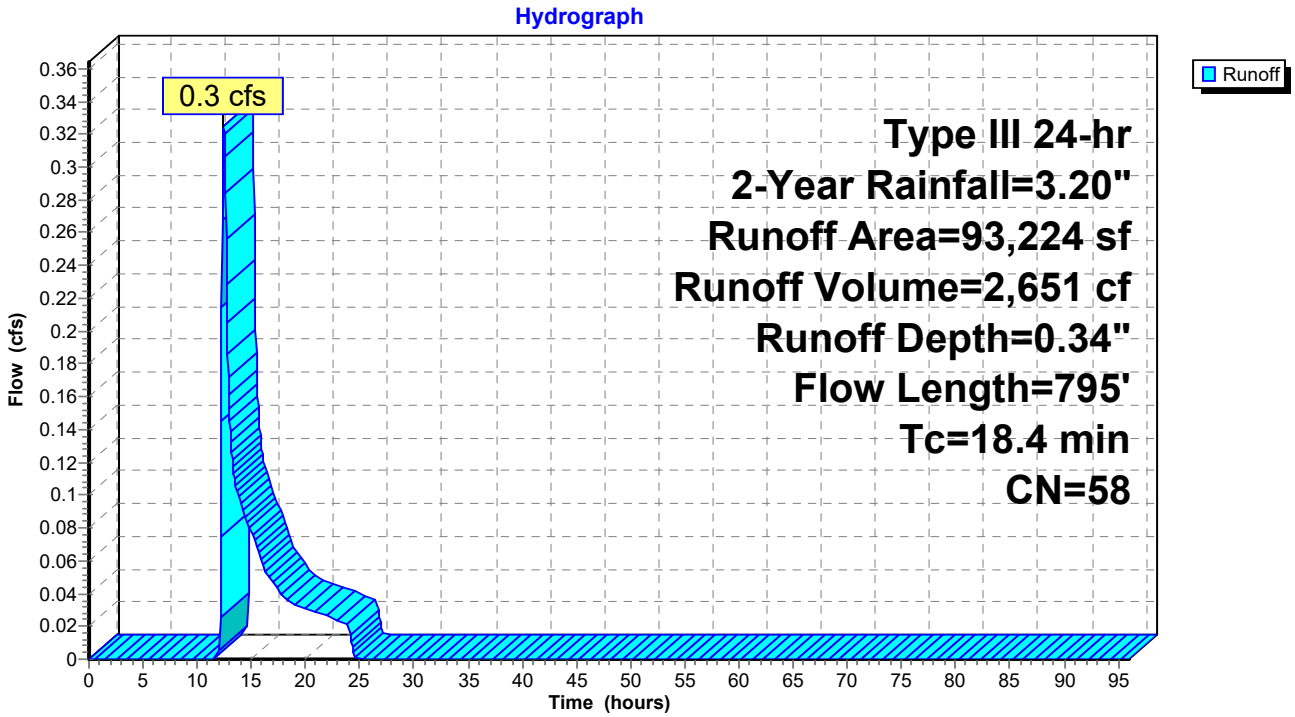
Runoff = 0.3 cfs @ 12.45 hrs, Volume= 2,651 cf, Depth= 0.34"
Routed to Link L2 P : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
76,881	55	Woods, Good, HSG B
350	55	Woods, Good, HSG B
3,802	61	>75% Grass cover, Good, HSG B
1,524	98	Roofs, HSG B
149	98	Roofs, HSG B
1,543	98	Paved parking, HSG B
6,327	61	>75% Grass cover, Good, HSG B
1,308	74	>75% Grass cover, Good, HSG C
37	70	Woods, Good, HSG C
1,303	70	Woods, Good, HSG C
93,224	58	Weighted Average
90,008		96.55% Pervious Area
3,216		3.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow, uppermost** Woods: Light underbrush n= 0.400 P2= 3.20"
5.0	270	0.0330	0.91		**Shallow Concentrated Flow, above channel and pipe** Woodland Kv= 5.0 fps
4.1	475	0.0084	1.92	38.48	**Trap/Vee/Rect Channel Flow, channel** Bot.W=4.00' D=2.00' Z= 3.0 '/' Top.W=16.00' n= 0.080 Earth, long dense weeds
18.4	795	Total			

Subcatchment S402 P: Subcat S402 P



Summary for Subcatchment S403 P: Subcat S403 P

Tc based on lawn for lot

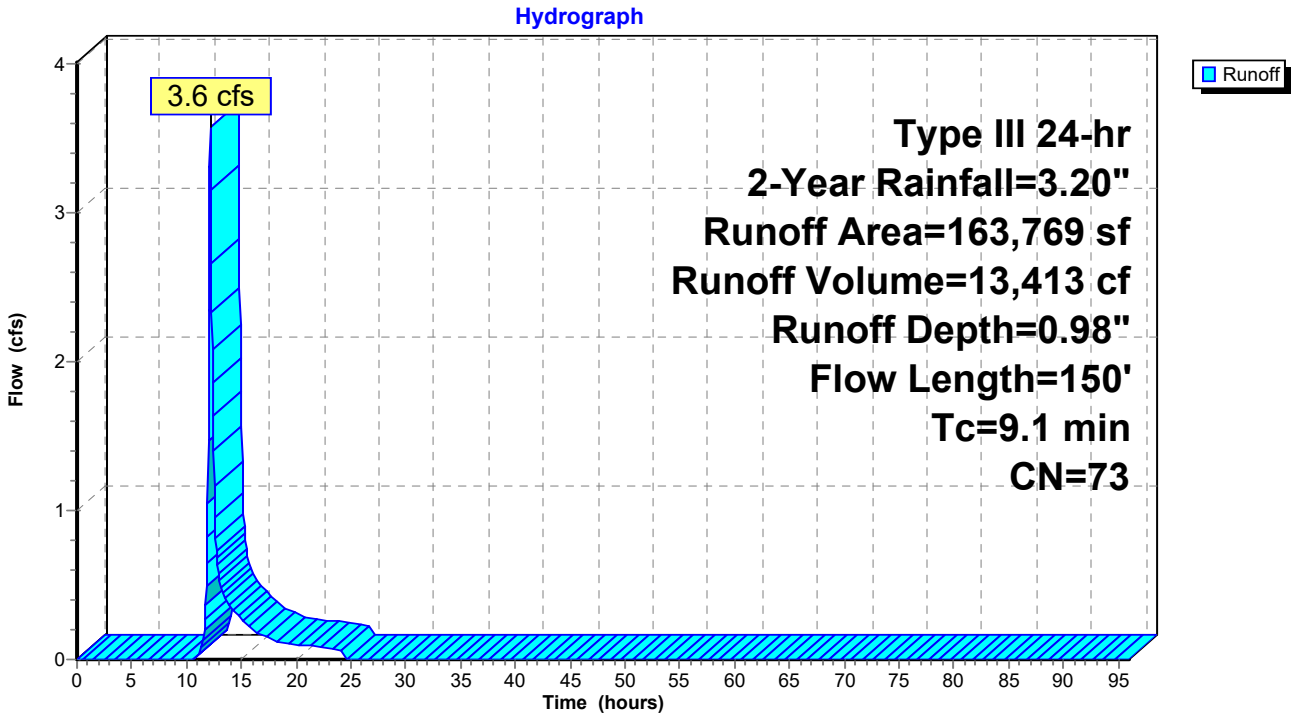
Runoff = 3.6 cfs @ 12.14 hrs, Volume= 13,413 cf, Depth= 0.98"
Routed to Pond P403 P : Pond P403 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
249	98	Roofs, HSG C
791	98	Roofs, HSG C
299	98	Roofs, HSG C
115	98	Paved parking, HSG C
1,577	70	Woods, Good, HSG C
2,089	74	>75% Grass cover, Good, HSG C
1,613	70	Woods, Good, HSG C
1,133	70	Woods, Good, HSG C
1,235	74	>75% Grass cover, Good, HSG C
4,825	74	>75% Grass cover, Good, HSG C
322	74	>75% Grass cover, Good, HSG C
8,593	74	>75% Grass cover, Good, HSG C
2,271	98	Roofs, HSG B
2,128	98	Paved parking, HSG B
340	98	Paved parking, HSG B
1,890	98	Paved roads w/curbs & sewers, HSG B
7,562	55	Woods, Good, HSG B
3,370	55	Woods, Good, HSG B
2,224	55	Woods, Good, HSG B
447	55	Woods, Good, HSG B
2,851	61	>75% Grass cover, Good, HSG B
315	61	>75% Grass cover, Good, HSG B
18,665	61	>75% Grass cover, Good, HSG B
6,689	55	Woods, Good, HSG B
2,470	55	Woods, Good, HSG B
611	98	Roofs, HSG B
506	98	Paved parking, HSG B
481	55	Woods, Good, HSG B
1,441	55	Woods, Good, HSG B
4,804	61	>75% Grass cover, Good, HSG B
861	74	>75% Grass cover, Good, HSG C
25,322	74	>75% Grass cover, Good, HSG C
961	74	>75% Grass cover, Good, HSG C
672	74	>75% Grass cover, Good, HSG C
84	74	>75% Grass cover, Good, HSG C
227	74	>75% Grass cover, Good, HSG C
2,260	74	>75% Grass cover, Good, HSG C
536	70	Woods, Good, HSG C
18,288	70	Woods, Good, HSG C
15,778	98	Paved roads w/curbs & sewers, HSG C
977	98	Paved parking, HSG C
1,245	98	Paved parking, HSG C
639	98	Paved parking, HSG C
118	98	Paved parking, HSG C
1,053	98	Paved parking, HSG C
56	98	Paved parking, HSG C
1,192	98	Paved parking, HSG C
1,037	98	Paved parking, HSG C
1,656	98	Roofs, HSG C
3,901	70	Woods, Good, HSG C
5,000	74	>75% Grass cover, Good, HSG C
163,769	73	Weighted Average
130,818		79.88% Pervious Area
32,951		20.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.10		**Sheet Flow, uppermost** Grass: Dense n= 0.240 P2= 3.20"
0.9	100	0.1500	1.94		**Shallow Concentrated Flow, woods on lot** Woodland Kv= 5.0 fps
9.1	150	Total			

Subcatchment S403 P: Subcat S403 P



Summary for Subcatchment S404 P: Subcat S404 P

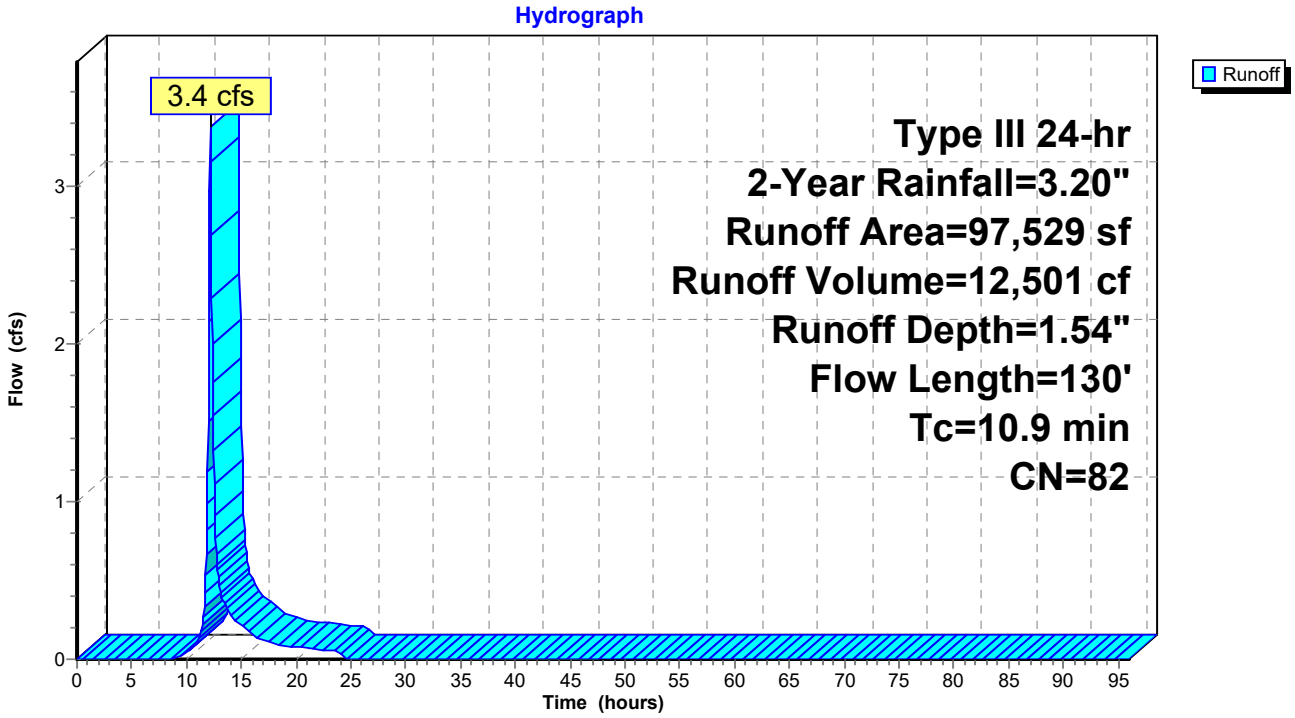
Runoff = 3.4 cfs @ 12.16 hrs, Volume= 12,501 cf, Depth= 1.54"
Routed to Link L2 P : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
167	74	>75% Grass cover, Good, HSG C
2,875	74	>75% Grass cover, Good, HSG C
676	74	>75% Grass cover, Good, HSG C
4,929	74	>75% Grass cover, Good, HSG C
971	70	Woods, Good, HSG C
5,612	70	Woods, Good, HSG C
55	98	Roofs, HSG C
916	98	Roofs, HSG C
1,041	98	Paved parking, HSG C
1,042	98	Paved parking, HSG C
1,725	98	Paved parking, HSG C
478	98	Paved parking, HSG C
1,177	98	Paved parking, HSG C
384	98	Paved parking, HSG C
459	74	>75% Grass cover, Good, HSG C
1,168	74	>75% Grass cover, Good, HSG C
580	74	>75% Grass cover, Good, HSG C
165	70	Woods, Good, HSG C
28	70	Woods, Good, HSG C
435	74	>75% Grass cover, Good, HSG C
321	74	>75% Grass cover, Good, HSG C
291	98	Paved parking, HSG C
67	98	Paved parking, HSG C
451	98	Paved parking, HSG C
368	98	Paved parking, HSG C
1,149	70	Woods, Good, HSG C
6,425	70	Woods, Good, HSG C
5,610	98	Paved roads w/curbs & sewers, HSG C
11,150	98	Paved roads w/curbs & sewers, HSG C
2,076	74	>75% Grass cover, Good, HSG C
8,934	74	>75% Grass cover, Good, HSG C
4,166	74	>75% Grass cover, Good, HSG C
471	74	>75% Grass cover, Good, HSG C
24	74	>75% Grass cover, Good, HSG C
7,933	74	>75% Grass cover, Good, HSG C
1,821	74	>75% Grass cover, Good, HSG C
2,988	80	>75% Grass cover, Good, HSG D
239	77	Woods, Good, HSG D
6,270	80	>75% Grass cover, Good, HSG D
4,584	98	Paved roads w/curbs & sewers, HSG D
3,352	77	Woods, Good, HSG D
309	98	Roofs, HSG D
264	98	Roofs, HSG D
1,425	98	Paved parking, HSG D
663	98	Paved parking, HSG D
253	98	Paved parking, HSG D
75	98	Paved parking, HSG D
370	80	>75% Grass cover, Good, HSG D
54	80	>75% Grass cover, Good, HSG D
213	80	>75% Grass cover, Good, HSG D
245	80	>75% Grass cover, Good, HSG D
85	77	Woods, Good, HSG D
97,529	82	Weighted Average
65,201		66.85% Pervious Area
32,328		33.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.1200	0.08		**Sheet Flow, uppermost**
					Woods: Dense underbrush n= 0.800 P2= 3.20"
0.4	80	0.0380	3.14		**Shallow Concentrated Flow, to Road A**
					Unpaved Kv= 16.1 fps
10.9	130	Total			

Subcatchment S404 P: Subcat S404 P



Summary for Subcatchment S500 P: Subcat S500 P

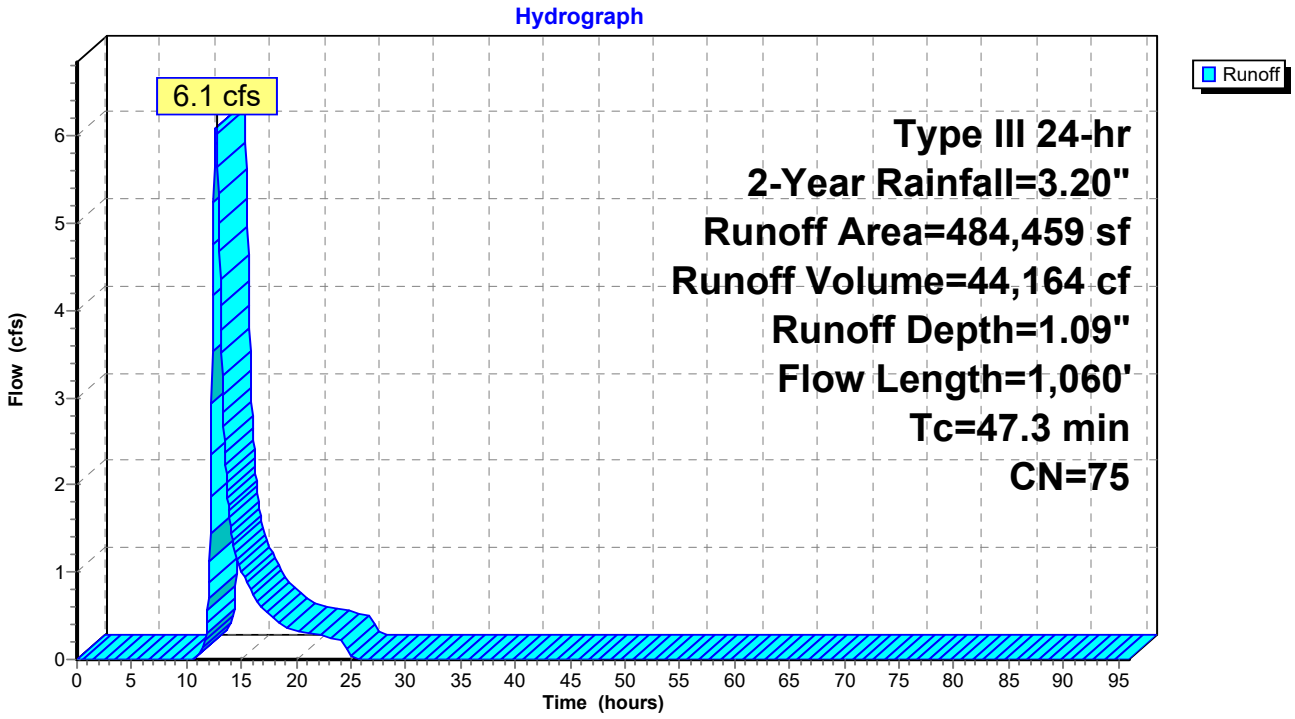
Runoff = 6.1 cfs @ 12.69 hrs, Volume= 44,164 cf, Depth= 1.09"
Routed to Link L2 P : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
9,388	74	>75% Grass cover, Good, HSG C
60,665	70	Woods, Good, HSG C
26,198	74	>75% Grass cover, Good, HSG C
16,018	74	>75% Grass cover, Good, HSG C
16,331	74	>75% Grass cover, Good, HSG C
14,669	98	Paved roads w/curbs & sewers, HSG C
756	74	>75% Grass cover, Good, HSG C
725	74	>75% Grass cover, Good, HSG C
816	98	Roofs, HSG C
2,360	98	Roofs, HSG C
2,360	98	Roofs, HSG C
1,080	98	Roofs, HSG C
437	98	Roofs, HSG C
2,360	98	Roofs, HSG C
1,123	98	Paved parking, HSG C
1,277	98	Paved parking, HSG C
1,795	98	Paved parking, HSG C
4,989	98	Paved parking, HSG C
2,187	98	Paved parking, HSG C
79	98	Paved parking, HSG C
646	98	Paved parking, HSG C
254	98	Paved parking, HSG C
379	74	>75% Grass cover, Good, HSG C
176	74	>75% Grass cover, Good, HSG C
588	74	>75% Grass cover, Good, HSG C
1,196	74	>75% Grass cover, Good, HSG C
4,845	70	Woods, Good, HSG C
933	70	Woods, Good, HSG C
1,315	70	Woods, Good, HSG C
724	98	Paved parking, HSG C
802	98	Paved parking, HSG C
7,741	74	>75% Grass cover, Good, HSG C
2,182	74	>75% Grass cover, Good, HSG C
2,480	74	>75% Grass cover, Good, HSG C
2,952	74	>75% Grass cover, Good, HSG C
1,204	74	>75% Grass cover, Good, HSG C
15,588	74	>75% Grass cover, Good, HSG C
4,215	74	>75% Grass cover, Good, HSG C
338	70	Woods, Good, HSG C
59,630	70	Woods, Good, HSG C
104,943	70	Woods, Good, HSG C
76,494	77	Woods, Good, HSG D
21,175	80	>75% Grass cover, Good, HSG D
1,923	98	Roofs, HSG D
151	98	Paved parking, HSG D
102	98	Paved parking, HSG D
2,133	77	Woods, Good, HSG D
3,737	70	Woods, Good, HSG C
484,459	75	Weighted Average
444,325		91.72% Pervious Area
40,134		8.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	50	0.0900	0.07		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
35.5	1,010	0.0360	0.47		**Shallow Concentrated Flow, to ditch** Forest w/Heavy Litter Kv= 2.5 fps
47.3	1,060	Total			

Subcatchment S500 P: Subcat S500 P



Summary for Subcatchment S501 P: Subcat S501 P

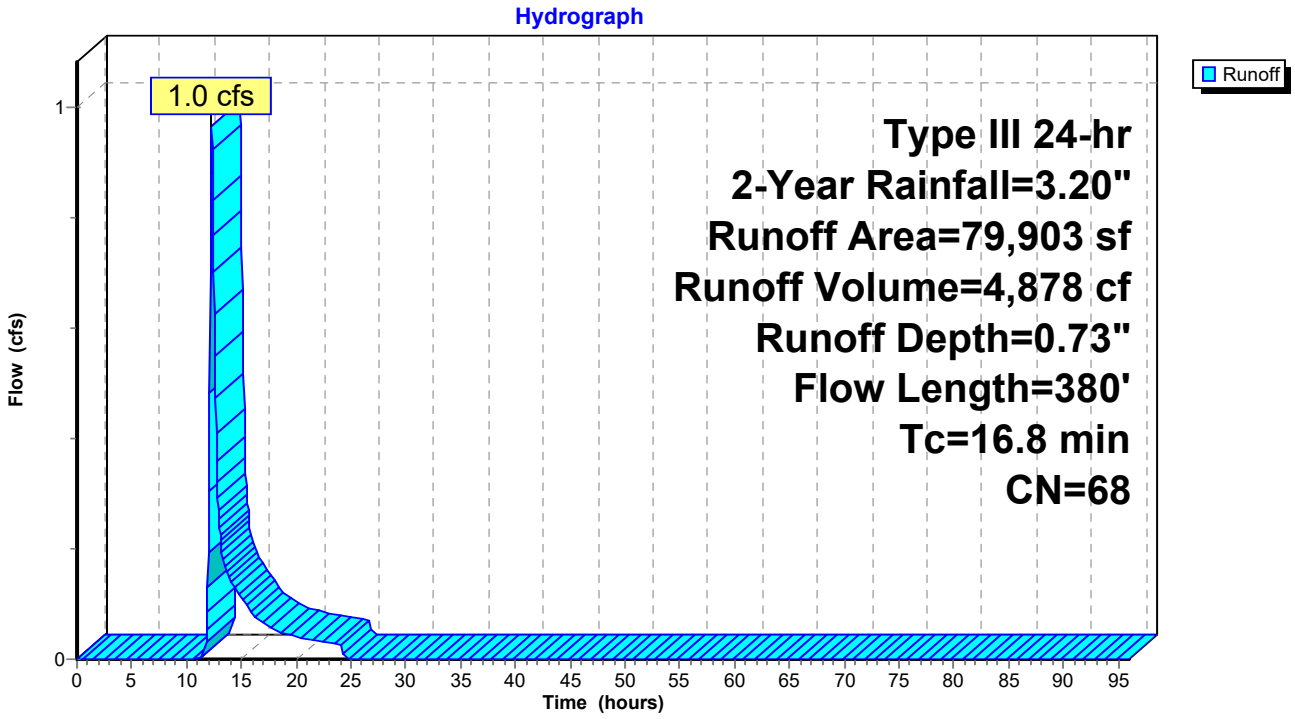
Runoff = 1.0 cfs @ 12.27 hrs, Volume= 4,878 cf, Depth= 0.73"
Routed to Pond P501 P : Pond P501 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
1,838	98	Roofs, HSG C
5,525	70	Woods, Good, HSG C
3,760	74	>75% Grass cover, Good, HSG C
6,142	74	>75% Grass cover, Good, HSG C
339	74	>75% Grass cover, Good, HSG C
81	70	Woods, Good, HSG C
6,958	61	>75% Grass cover, Good, HSG B
2,852	98	Paved roads w/curbs & sewers, HSG B
727	98	Paved parking, HSG B
5,343	55	Woods, Good, HSG B
14,295	55	Woods, Good, HSG B
714	61	>75% Grass cover, Good, HSG B
4,475	61	>75% Grass cover, Good, HSG B
4,540	61	>75% Grass cover, Good, HSG B
1,552	61	>75% Grass cover, Good, HSG B
1,209	61	>75% Grass cover, Good, HSG B
564	98	Roofs, HSG B
1,408	98	Paved parking, HSG B
3,688	55	Woods, Good, HSG B
676	55	Woods, Good, HSG B
792	74	>75% Grass cover, Good, HSG C
118	70	Woods, Good, HSG C
857	98	Paved parking, HSG C
3,586	98	Paved roads w/curbs & sewers, HSG C
7,864	74	>75% Grass cover, Good, HSG C
79,903	68	Weighted Average
68,071		85.19% Pervious Area
11,832		14.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow, uppermost**
					Woods: Light underbrush n= 0.400 P2= 3.20"
7.5	330	0.0850	0.73		**Shallow Concentrated Flow, above pipe**
					Forest w/Heavy Litter Kv= 2.5 fps
16.8	380	Total			

Subcatchment S501 P: Subcat S501 P



Summary for Subcatchment S502 P: Subcat S502 P

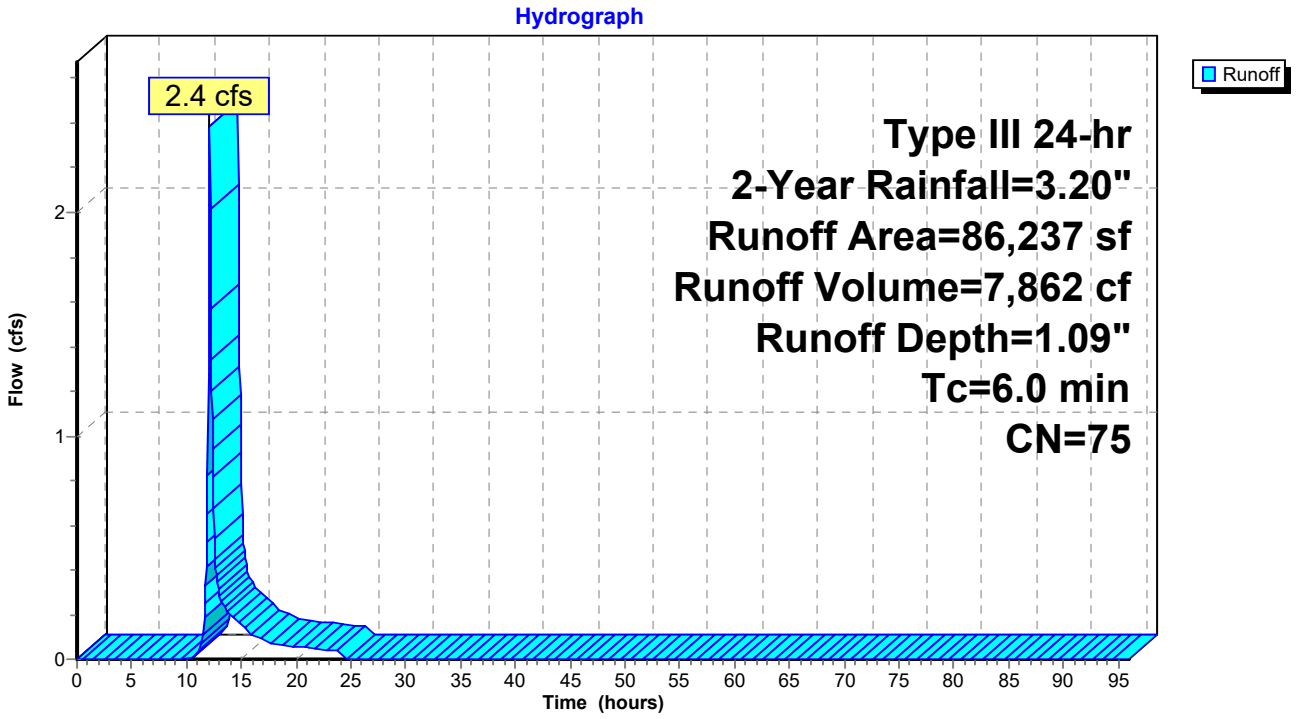
Runoff = 2.4 cfs @ 12.10 hrs, Volume= 7,862 cf, Depth= 1.09"
Routed to Pond P502 P : Pond P502 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
774	98	Paved parking, HSG C
211	98	Paved parking, HSG C
638	74	>75% Grass cover, Good, HSG C
4,747	74	>75% Grass cover, Good, HSG C
2,591	61	>75% Grass cover, Good, HSG B
440	98	Paved parking, HSG B
3,438	55	Woods, Good, HSG B
357	55	Woods, Good, HSG B
1,425	74	>75% Grass cover, Good, HSG C
8,594	70	Woods, Good, HSG C
7,746	70	Woods, Good, HSG C
131	74	>75% Grass cover, Good, HSG C
7,601	70	Woods, Good, HSG C
167	70	Woods, Good, HSG C
129	98	Paved parking, HSG C
55	98	Paved parking, HSG C
4,562	98	Paved parking, HSG C
13,013	74	>75% Grass cover, Good, HSG C
604	74	>75% Grass cover, Good, HSG C
392	74	>75% Grass cover, Good, HSG C
5,640	74	>75% Grass cover, Good, HSG C
9,254	98	Paved roads w/curbs & sewers, HSG C
337	70	Woods, Good, HSG C
13,391	70	Woods, Good, HSG C
86,237	75	Weighted Average
70,812		82.11% Pervious Area
15,425		17.89% Impervious Area

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

Subcatchment S502 P: Subcat S502 P



Summary for Subcatchment S503 P: Subcat S503 P

Tc based on lawn behind future home

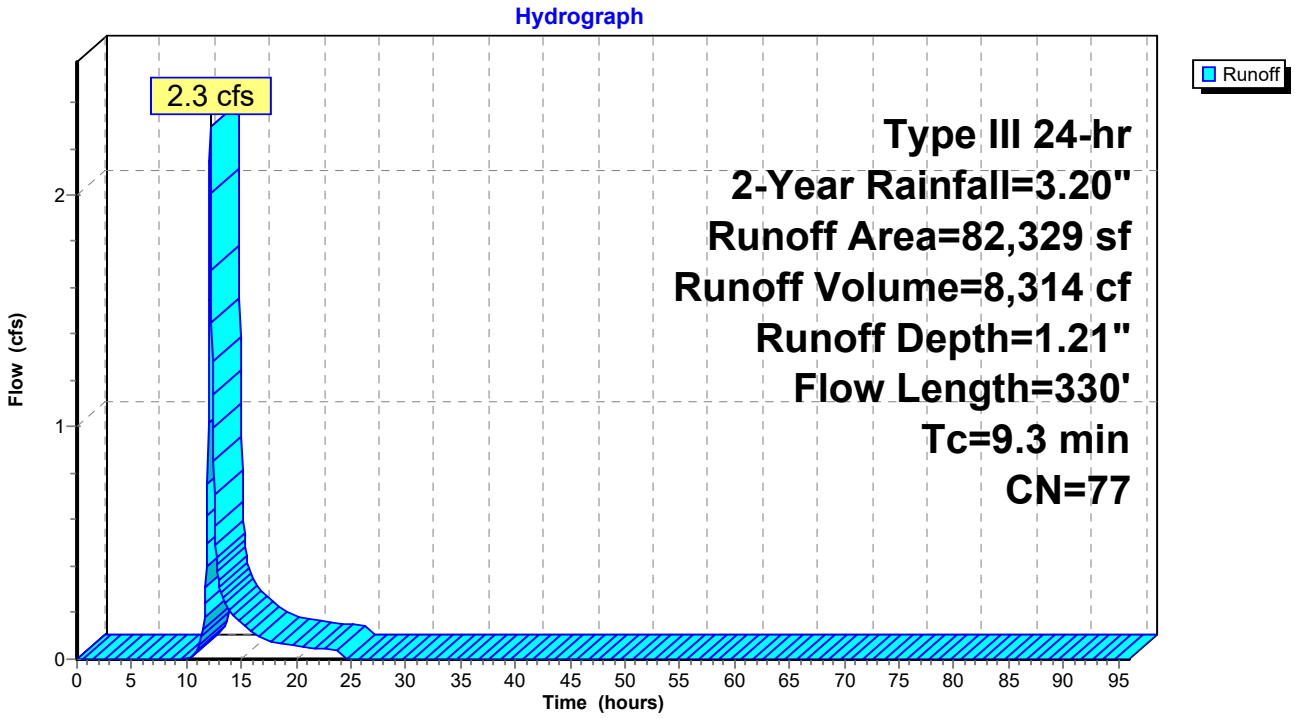
Runoff = 2.3 cfs @ 12.14 hrs, Volume= 8,314 cf, Depth= 1.21"
Routed to Pond P503 P : Pond P503 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
1,798	61	>75% Grass cover, Good, HSG B
2,567	61	>75% Grass cover, Good, HSG B
3,471	61	>75% Grass cover, Good, HSG B
198	61	>75% Grass cover, Good, HSG B
3,489	61	>75% Grass cover, Good, HSG B
8,567	98	Paved roads w/curbs & sewers, HSG B
578	98	Roofs, HSG B
1,963	98	Paved parking, HSG B
192	98	Paved parking, HSG B
1,559	98	Paved parking, HSG B
112	98	Paved parking, HSG B
216	55	Woods, Good, HSG B
2,353	55	Woods, Good, HSG B
197	61	>75% Grass cover, Good, HSG B
1,566	61	>75% Grass cover, Good, HSG B
280	74	>75% Grass cover, Good, HSG C
5,164	70	Woods, Good, HSG C
708	70	Woods, Good, HSG C
438	70	Woods, Good, HSG C
234	98	Paved parking, HSG C
325	98	Paved parking, HSG C
2,734	98	Roofs, HSG C
3,312	98	Roofs, HSG C
1,038	98	Paved roads w/curbs & sewers, HSG C
442	74	>75% Grass cover, Good, HSG C
4,889	70	Woods, Good, HSG C
31,694	74	>75% Grass cover, Good, HSG C
2,245	74	>75% Grass cover, Good, HSG C
82,329	77	Weighted Average
61,715		74.96% Pervious Area
20,614		25.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.10		**Sheet Flow, uppermost**
					Grass: Dense n= 0.240 P2= 3.20"
1.1	280	0.0710	4.29		**Shallow Concentrated Flow, to basin 503**
					Unpaved Kv= 16.1 fps
9.3	330	Total			

Subcatchment S503 P: Subcat S503 P



Summary for Subcatchment S504 P: Subcat S504 P

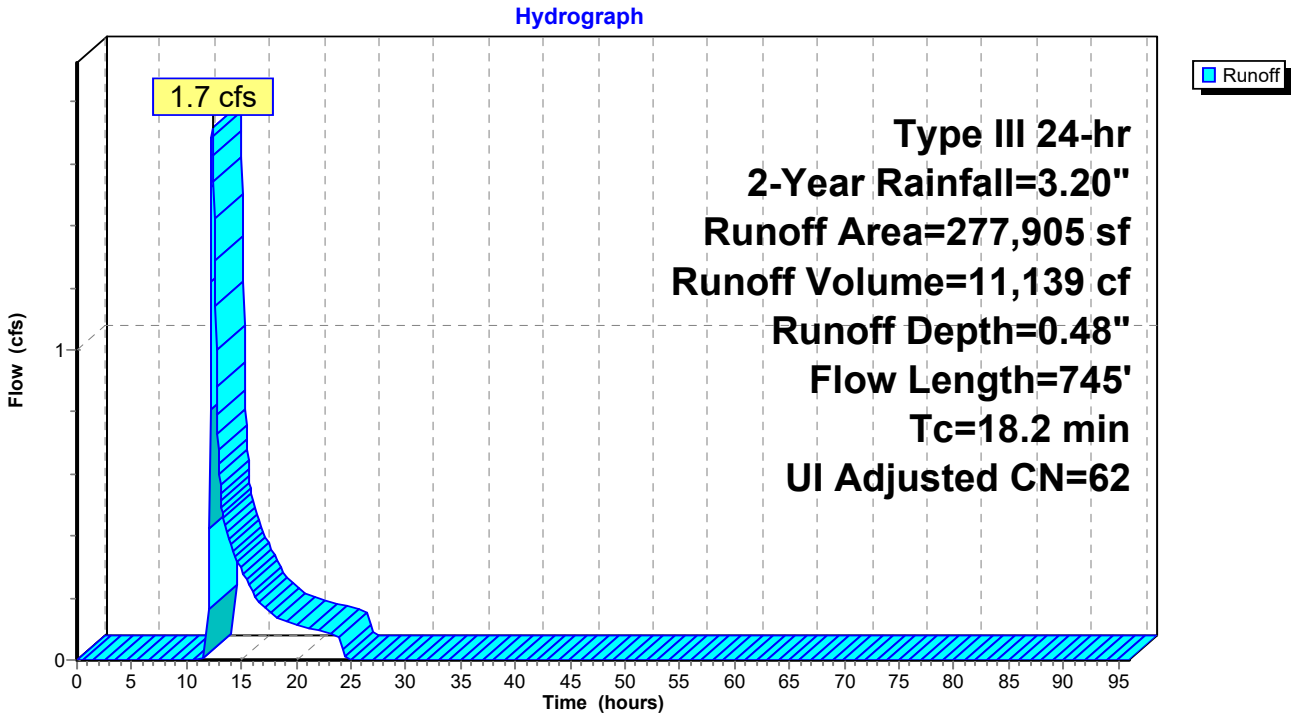
Runoff = 1.7 cfs @ 12.35 hrs, Volume= 11,139 cf, Depth= 0.48"
Routed to Reach R504 P : Reach R504 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Adj	Description
21,140	61		>75% Grass cover, Good, HSG B
90,440	55		Woods, Good, HSG B
683	61		>75% Grass cover, Good, HSG B
363	98		Paved roads w/curbs & sewers, HSG B
63	55		Woods, Good, HSG B
1,199	98		Roofs, HSG B
3,341	98		Roofs, HSG B
1,221	98		Roofs, HSG B
1,836	98		Roofs, HSG B
1,566	98		Roofs, HSG B
1,439	98		Paved parking, HSG B
2,655	98		Paved parking, HSG B
1,394	98		Paved parking, HSG B
2,691	98		Paved parking, HSG B
1,466	98		Paved parking, HSG B
51	98		Paved parking, HSG B
14,405	98		Paved parking, HSG B
240	98		Unconnected pavement, HSG B
266	98		Unconnected pavement, HSG B
1,057	98		Unconnected pavement, HSG B
1,830	98		Unconnected pavement, HSG B
897	98		Unconnected pavement, HSG B
10,972	61		>75% Grass cover, Good, HSG B
16,004	61		>75% Grass cover, Good, HSG B
1,750	61		>75% Grass cover, Good, HSG B
874	61		>75% Grass cover, Good, HSG B
19,439	61		>75% Grass cover, Good, HSG B
35	55		Woods, Good, HSG B
40	61		>75% Grass cover, Good, HSG B
57,008	55		Woods, Good, HSG B
13,834	55		Woods, Good, HSG B
1,370	55		Woods, Good, HSG B
2,234	55		Woods, Good, HSG B
73	70		Woods, Good, HSG C
1,307	70		Woods, Good, HSG C
2,722	74		>75% Grass cover, Good, HSG C
277,905	63	62	Weighted Average, UI Adjusted
239,988			86.36% Pervious Area
37,917			13.64% Impervious Area
4,290			11.31% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.10		**Sheet Flow, uppermost** Grass: Dense n= 0.240 P2= 3.20"
4.4	325	0.0610	1.23		**Shallow Concentrated Flow, above Forest Street** Woodland Kv= 5.0 fps
5.6	370	0.0480	1.10		**Shallow Concentrated Flow, below Forest Street** Woodland Kv= 5.0 fps
18.2	745	Total			

Subcatchment S504 P: Subcat S504 P



Summary for Subcatchment S505 P: Subcat S505 P

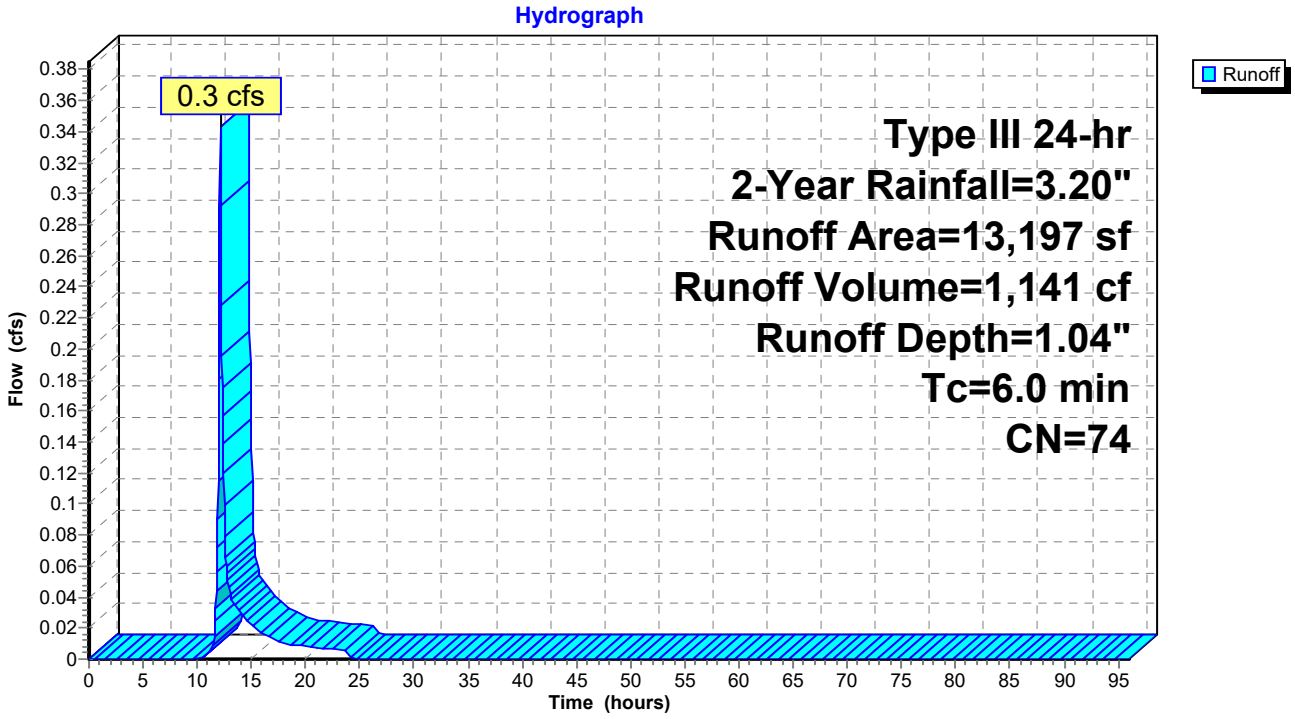
Runoff = 0.3 cfs @ 12.10 hrs, Volume= 1,141 cf, Depth= 1.04"
Routed to Pond P505 P : Pond P505 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
13,197	74	>75% Grass cover, Good, HSG C
13,197		100.00% Pervious Area

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

Subcatchment S505 P: Subcat S505 P



Summary for Subcatchment S700P: Subcat S700P

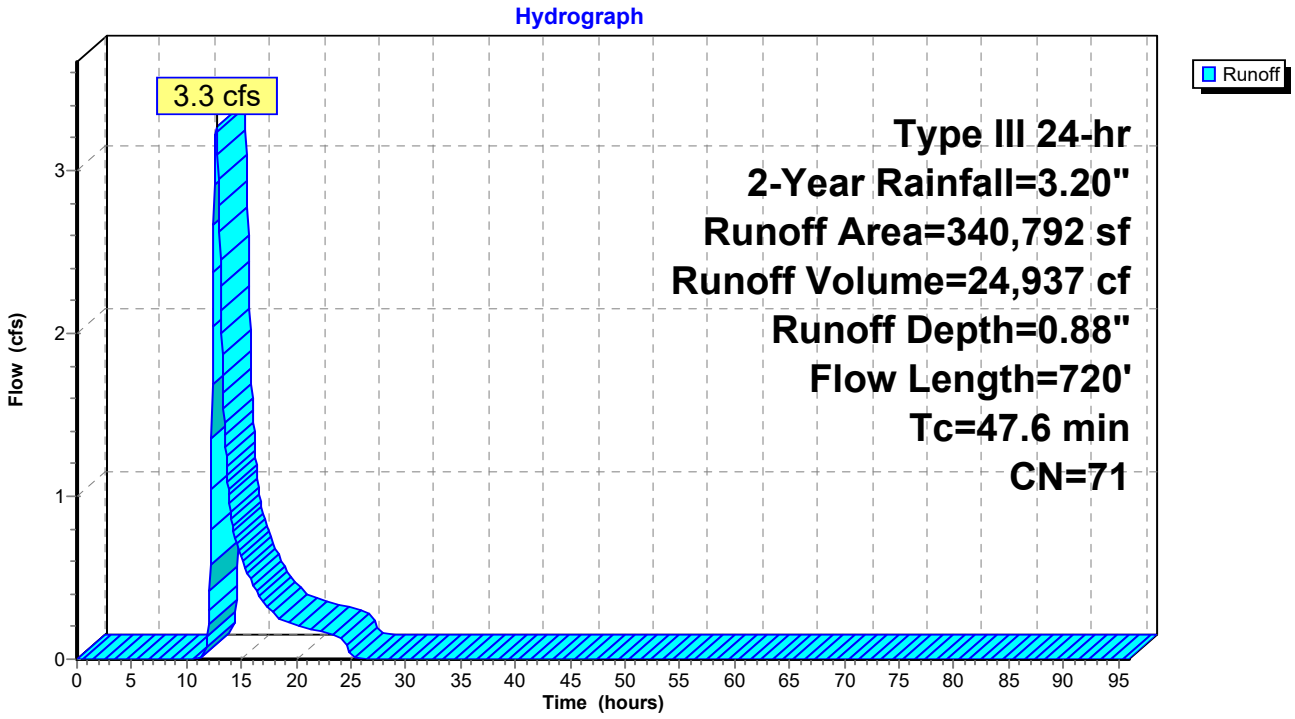
Runoff = 3.3 cfs @ 12.73 hrs, Volume= 24,937 cf, Depth= 0.88"
Routed to Link L2 P : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
37,111	74	>75% Grass cover, Good, HSG C
1,218	74	>75% Grass cover, Good, HSG C
2,795	74	>75% Grass cover, Good, HSG C
1,624	74	>75% Grass cover, Good, HSG C
289,700	70	Woods, Good, HSG C
2,232	98	Roofs, HSG C
1,656	98	Roofs, HSG C
2,166	98	Paved parking, HSG C
728	98	Paved parking, HSG C
327	70	Woods, Good, HSG C
455	70	Woods, Good, HSG C
780	70	Woods, Good, HSG C
340,792	71	Weighted Average
334,010		98.01% Pervious Area
6,782		1.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0800	0.07		**Sheet Flow, uppermost**
					Woods: Dense underbrush n= 0.800 P2= 3.20"
35.3	670	0.0160	0.32		**Shallow Concentrated Flow, to ditch**
					Forest w/Heavy Litter Kv= 2.5 fps
47.6	720	Total			

Subcatchment S700P: Subcat S700P



Summary for Subcatchment S701P: Subcat S701P

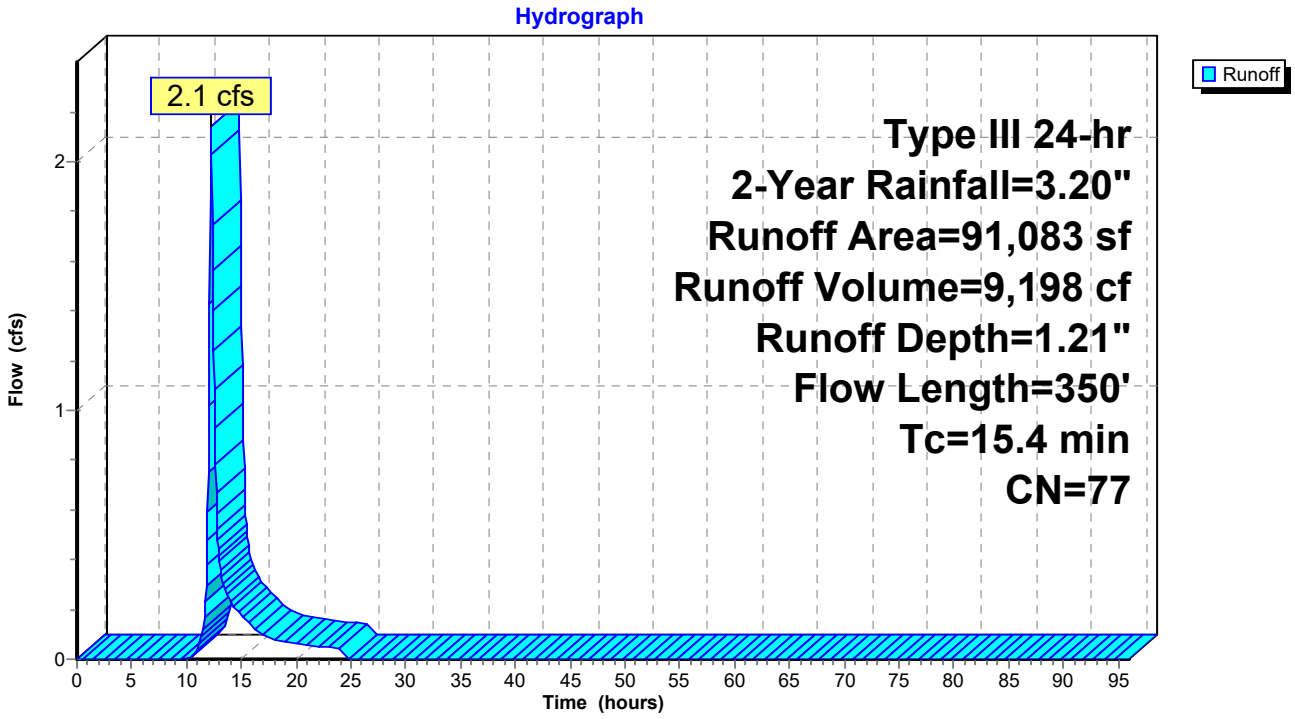
Runoff = 2.1 cfs @ 12.22 hrs, Volume= 9,198 cf, Depth= 1.21"
Routed to Pond P701 P : Pond P701 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
8,126	74	>75% Grass cover, Good, HSG C
6,133	74	>75% Grass cover, Good, HSG C
565	74	>75% Grass cover, Good, HSG C
25,718	74	>75% Grass cover, Good, HSG C
10,539	70	Woods, Good, HSG C
3,309	70	Woods, Good, HSG C
75	74	>75% Grass cover, Good, HSG C
205	74	>75% Grass cover, Good, HSG C
6,831	98	Paved roads w/curbs & sewers, HSG C
1,544	98	Roofs, HSG C
1,656	98	Roofs, HSG C
1,586	98	Paved parking, HSG C
1,132	98	Paved parking, HSG C
2,006	98	Paved parking, HSG C
605	98	Paved parking, HSG C
521	98	Paved parking, HSG C
234	98	Paved parking, HSG C
85	98	Paved parking, HSG C
513	74	>75% Grass cover, Good, HSG C
516	74	>75% Grass cover, Good, HSG C
244	74	>75% Grass cover, Good, HSG C
67	74	>75% Grass cover, Good, HSG C
3,665	70	Woods, Good, HSG C
523	70	Woods, Good, HSG C
8,674	70	Woods, Good, HSG C
1,039	70	Woods, Good, HSG C
1,235	70	Woods, Good, HSG C
3,737	74	>75% Grass cover, Good, HSG C
91,083	77	Weighted Average
74,883		82.21% Pervious Area
16,200		17.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.1200	0.08		**Sheet Flow, uppermost**
					Woods: Dense underbrush n= 0.800 P2= 3.20"
4.3	140	0.0480	0.55		**Shallow Concentrated Flow, above lawn**
					Forest w/Heavy Litter Kv= 2.5 fps
0.6	160	0.0800	4.55		**Shallow Concentrated Flow, across lawn to basin 701**
					Unpaved Kv= 16.1 fps
15.4	350	Total			

Subcatchment S701P: Subcat S701P



Summary for Subcatchment S702 P: Subcat S702 P

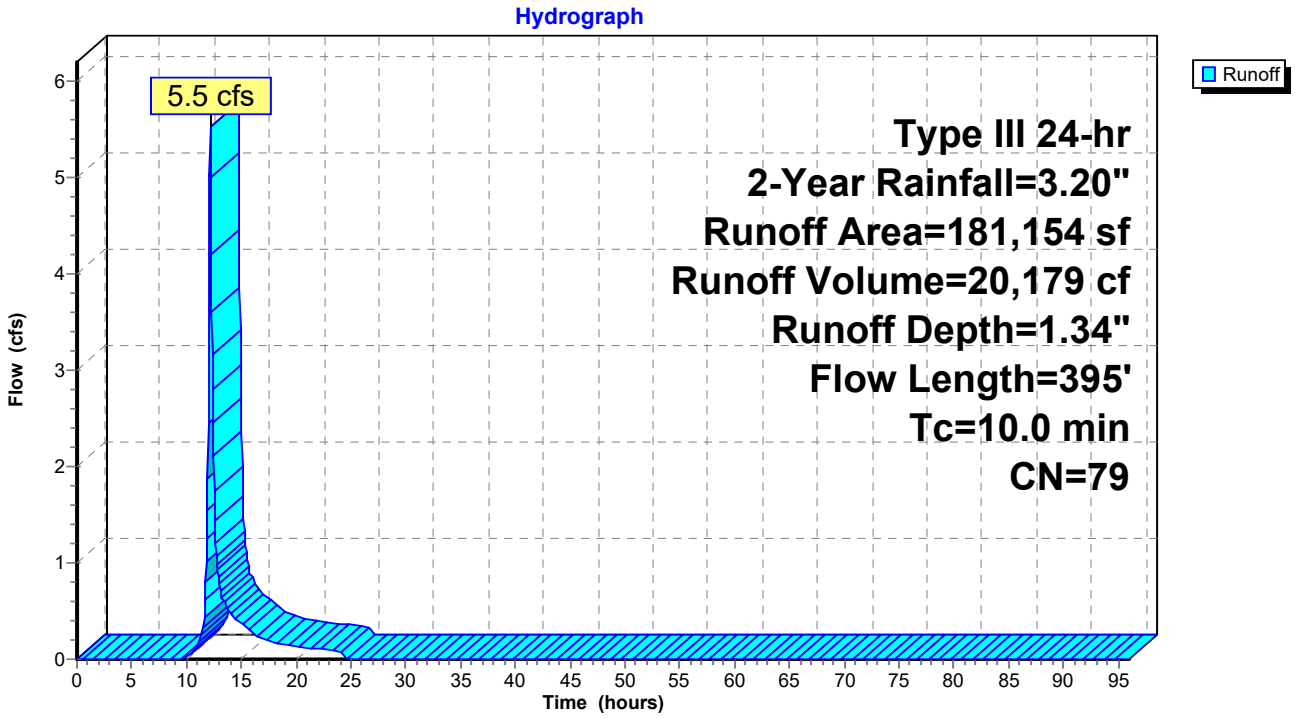
Runoff = 5.5 cfs @ 12.15 hrs, Volume= 20,179 cf, Depth= 1.34"
Routed to Pond P702 P : Pond P702 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
961	74	>75% Grass cover, Good, HSG C
1,199	70	Woods, Good, HSG C
3,578	70	Woods, Good, HSG C
992	74	>75% Grass cover, Good, HSG C
1,469	74	>75% Grass cover, Good, HSG C
1,015	74	>75% Grass cover, Good, HSG C
424	74	>75% Grass cover, Good, HSG C
287	70	Woods, Good, HSG C
74	70	Woods, Good, HSG C
17,926	70	Woods, Good, HSG C
7,387	70	Woods, Good, HSG C
2,388	98	Paved parking, HSG C
180	98	Paved parking, HSG C
446	98	Paved parking, HSG C
1,026	98	Paved parking, HSG C
975	98	Paved parking, HSG C
1,479	98	Paved parking, HSG C
1,022	98	Paved parking, HSG C
1,144	98	Paved parking, HSG C
179	98	Paved parking, HSG C
519	98	Paved parking, HSG C
669	98	Paved parking, HSG C
1,319	98	Roofs, HSG C
3,312	98	Roofs, HSG C
2,160	98	Roofs, HSG C
392	70	Woods, Good, HSG C
4,725	70	Woods, Good, HSG C
50,160	74	>75% Grass cover, Good, HSG C
9,468	74	>75% Grass cover, Good, HSG C
24,764	98	Paved roads w/curbs & sewers, HSG C
38,359	74	>75% Grass cover, Good, HSG C
1,156	74	>75% Grass cover, Good, HSG C
181,154	79	Weighted Average
139,572		77.05% Pervious Area
41,582		22.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.10		**Sheet Flow, uppermost**
					Grass: Dense n= 0.240 P2= 3.20"
1.8	345	0.0410	3.26		**Shallow Concentrated Flow, above Road B**
					Unpaved Kv= 16.1 fps
10.0	395	Total			

Subcatchment S702 P: Subcat S702 P



Summary for Subcatchment S703 P: Subcat S703 P

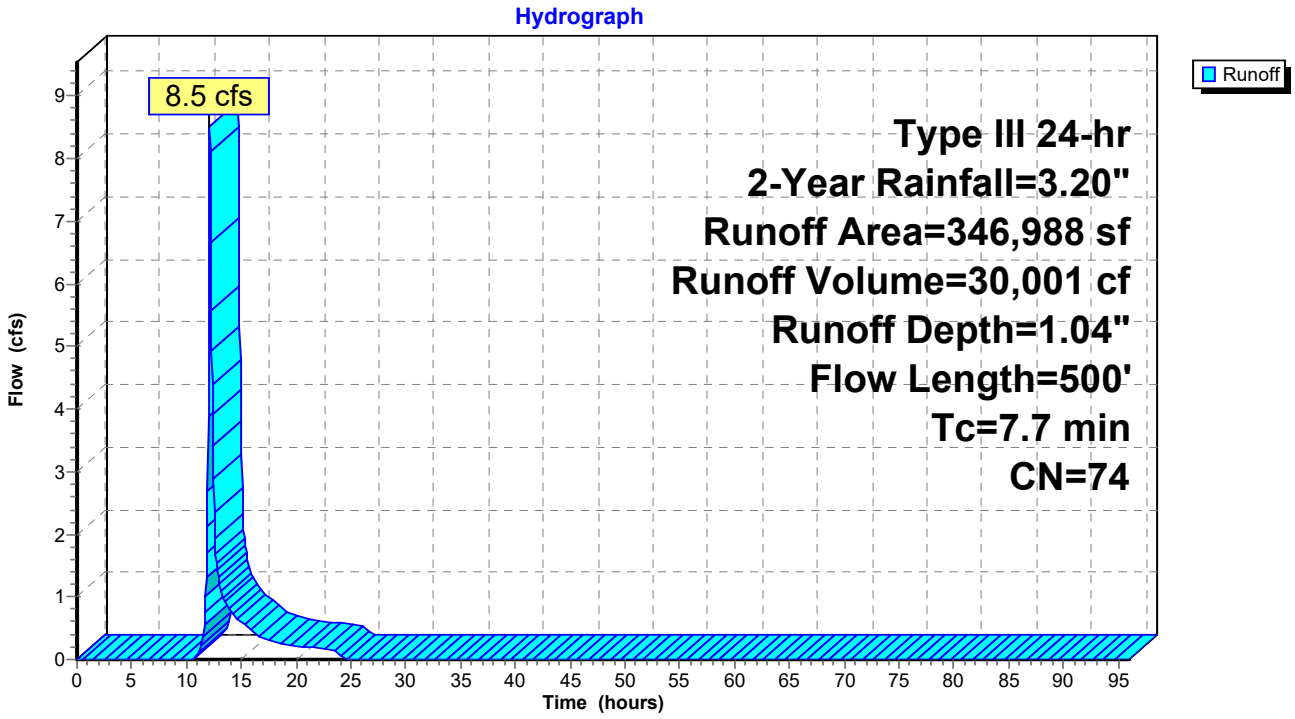
Runoff = 8.5 cfs @ 12.12 hrs, Volume= 30,001 cf, Depth= 1.04"
Routed to Pond P703 P : Pond P703 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
23,947	70	Woods, Good, HSG C
14,302	70	Woods, Good, HSG C
11,818	74	>75% Grass cover, Good, HSG C
25,861	74	>75% Grass cover, Good, HSG C
2,823	74	>75% Grass cover, Good, HSG C
14,333	61	>75% Grass cover, Good, HSG B
17,099	55	Woods, Good, HSG B
99	61	>75% Grass cover, Good, HSG B
881	98	Roofs, HSG B
705	98	Roofs, HSG B
45	98	Roofs, HSG B
481	98	Paved parking, HSG B
25	55	Woods, Good, HSG B
185	74	>75% Grass cover, Good, HSG C
429	74	>75% Grass cover, Good, HSG C
568	74	>75% Grass cover, Good, HSG C
419	74	>75% Grass cover, Good, HSG C
643	70	Woods, Good, HSG C
3,904	70	Woods, Good, HSG C
1,180	74	>75% Grass cover, Good, HSG C
1,039	74	>75% Grass cover, Good, HSG C
69,627	74	>75% Grass cover, Good, HSG C
1,501	70	Woods, Good, HSG C
457	70	Woods, Good, HSG C
615	70	Woods, Good, HSG C
551	70	Woods, Good, HSG C
163	70	Woods, Good, HSG C
3,386	70	Woods, Good, HSG C
66,370	70	Woods, Good, HSG C
3,744	98	Paved parking, HSG C
1,011	98	Paved parking, HSG C
1,047	98	Paved parking, HSG C
188	98	Paved parking, HSG C
1,186	98	Paved parking, HSG C
400	98	Paved parking, HSG C
160	98	Paved parking, HSG C
1,510	98	Paved parking, HSG C
2,068	98	Paved parking, HSG C
5,010	98	Paved parking, HSG C
585	98	Paved parking, HSG C
1,710	98	Roofs, HSG C
1,152	98	Roofs, HSG C
3,312	98	Roofs, HSG C
2,386	98	Roofs, HSG C
18,777	74	>75% Grass cover, Good, HSG C
16,951	70	Woods, Good, HSG C
1,464	74	>75% Grass cover, Good, HSG C
19,720	98	Paved roads w/curbs & sewers, HSG C
1,151	74	>75% Grass cover, Good, HSG C
346,988	74	Weighted Average
299,687		86.37% Pervious Area
47,301		13.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	50	0.1200	0.14		**Sheet Flow, uppermost** Woods: Light underbrush n= 0.400 P2= 3.20"
1.7	450	0.0770	4.47		**Shallow Concentrated Flow, above Road A** Unpaved Kv= 16.1 fps
7.7	500	Total			

Subcatchment S703 P: Subcat S703 P



Summary for Subcatchment S800 P: Subcat S800 P

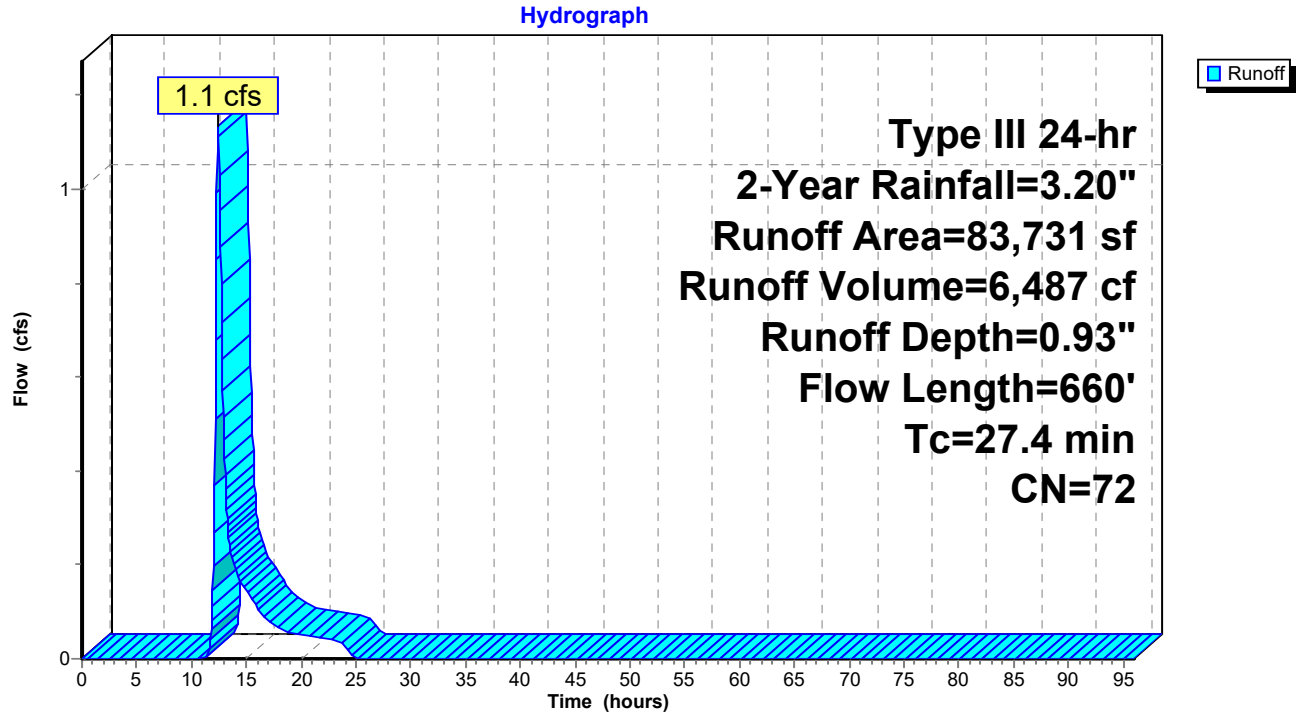
Runoff = 1.1 cfs @ 12.42 hrs, Volume= 6,487 cf, Depth= 0.93"
Routed to Link L2 P : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
1,710	98	Paved parking, HSG C
1,993	98	Roofs, HSG C
63,186	70	Woods, Good, HSG C
1,468	74	>75% Grass cover, Good, HSG C
448	74	>75% Grass cover, Good, HSG C
14,926	74	>75% Grass cover, Good, HSG C
83,731	72	Weighted Average
80,028		95.58% Pervious Area
3,703		4.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8	50	0.0600	0.06		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
13.6	610	0.0890	0.75		**Shallow Concentrated Flow, to offsite** Forest w/Heavy Litter Kv= 2.5 fps
27.4	660	Total			

Subcatchment S800 P: Subcat S800 P



Summary for Reach R200 P: Reach R200 P

Inflow Area = 137,153 sf, 3.40% Impervious, Inflow Depth = 0.33" for 2-Year event
Inflow = 0.4 cfs @ 12.59 hrs, Volume= 3,794 cf
Outflow = 0.2 cfs @ 14.26 hrs, Volume= 3,794 cf, Atten= 55%, Lag= 100.2 min
Routed to Link L2 P : Ditch

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.23 fps, Min. Travel Time= 57.8 min
Avg. Velocity = 0.23 fps, Avg. Travel Time= 58.6 min

Peak Storage= 649 cf @ 13.29 hrs
Average Depth at Peak Storage= 0.02' , Surface Width= 40.20'
Bank-Full Depth= 2.00' Flow Area= 100.0 sf, Capacity= 433.1 cfs

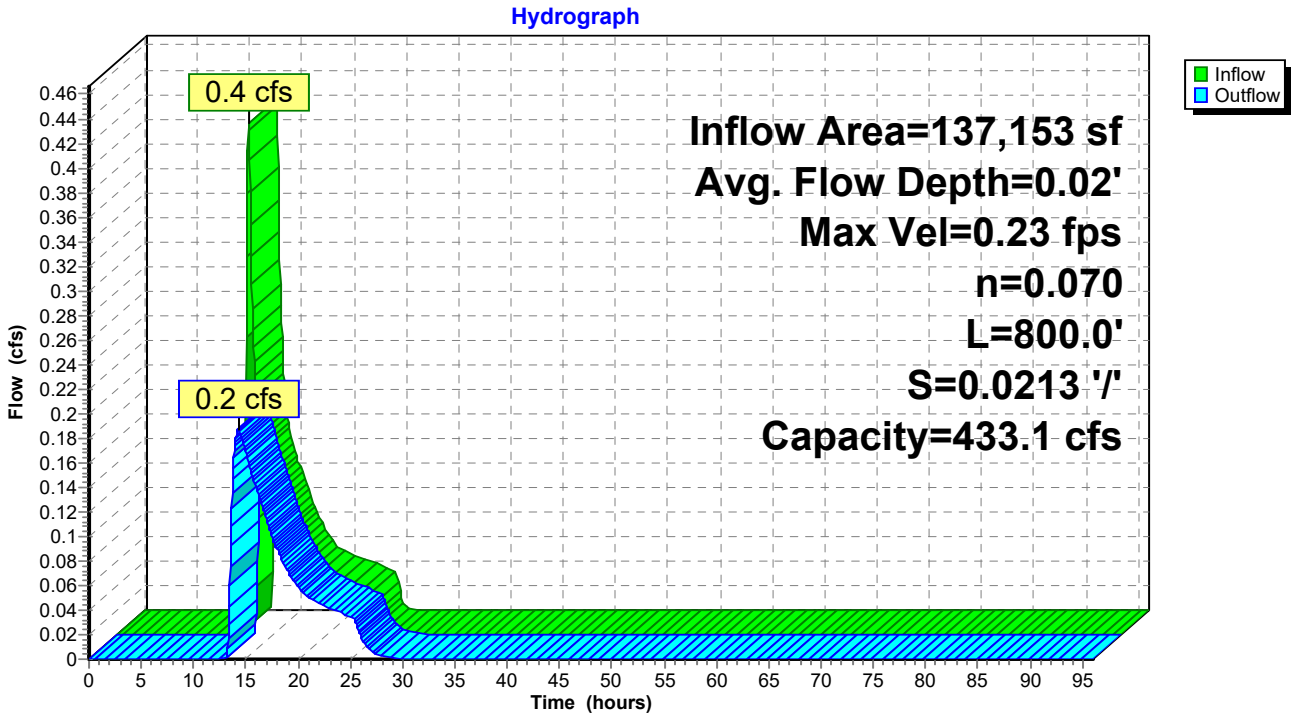
Custom cross-section, Length= 800.0' Slope= 0.0213 '/'
Constant n= 0.070 Medium-dense brush, winter
Inlet Invert= 536.00', Outlet Invert= 519.00'

‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	2.00	0.00
10.00	0.00	2.00
50.00	0.00	2.00
60.00	2.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Width (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	40.0	0.0	0	0.0
2.00	100.0	60.4	60.0	80,000	433.1

Reach R200 P: Reach R200 P



Summary for Reach R200A P: Reach R200A P

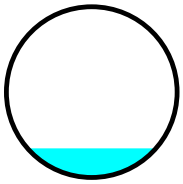
[52] Hint: Inlet/Outlet conditions not evaluated
[62] Hint: Exceeded Reach R201 P OUTLET depth by 0.02' @ 12.50 hrs
[62] Hint: Exceeded Reach R202 P OUTLET depth by 0.08' @ 12.70 hrs

Inflow Area = 137,153 sf, 3.40% Impervious, Inflow Depth = 0.33" for 2-Year event
Inflow = 0.4 cfs @ 12.55 hrs, Volume= 3,794 cf
Outflow = 0.4 cfs @ 12.59 hrs, Volume= 3,794 cf, Atten= 1%, Lag= 2.1 min
Routed to Reach R200 P : Reach R200 P

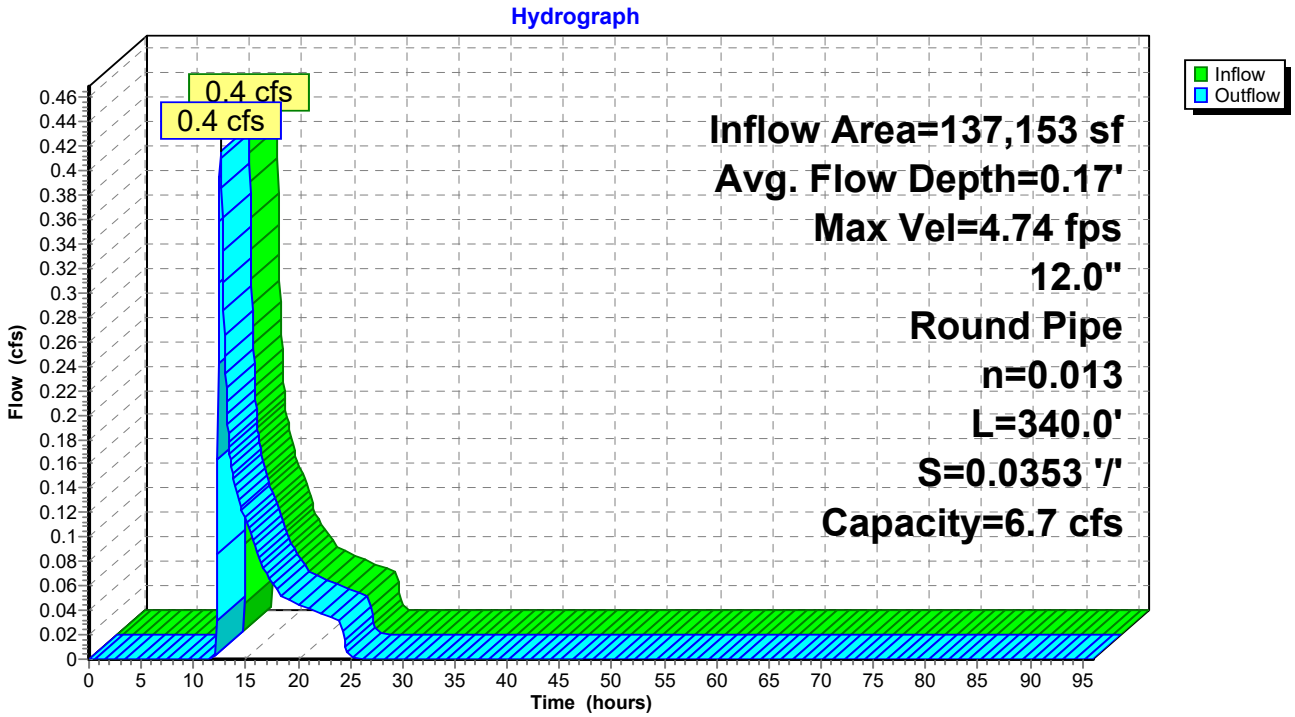
Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.74 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 2.63 fps, Avg. Travel Time= 2.2 min

Peak Storage= 30 cf @ 12.57 hrs
Average Depth at Peak Storage= 0.17' , Surface Width= 0.75'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.7 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 340.0' Slope= 0.0353 '/'
Inlet Invert= 554.00', Outlet Invert= 542.00'



Reach R200A P: Reach R200A P



Summary for Reach R201 P: Reach R201 P

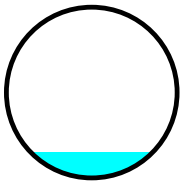
[52] Hint: Inlet/Outlet conditions not evaluated

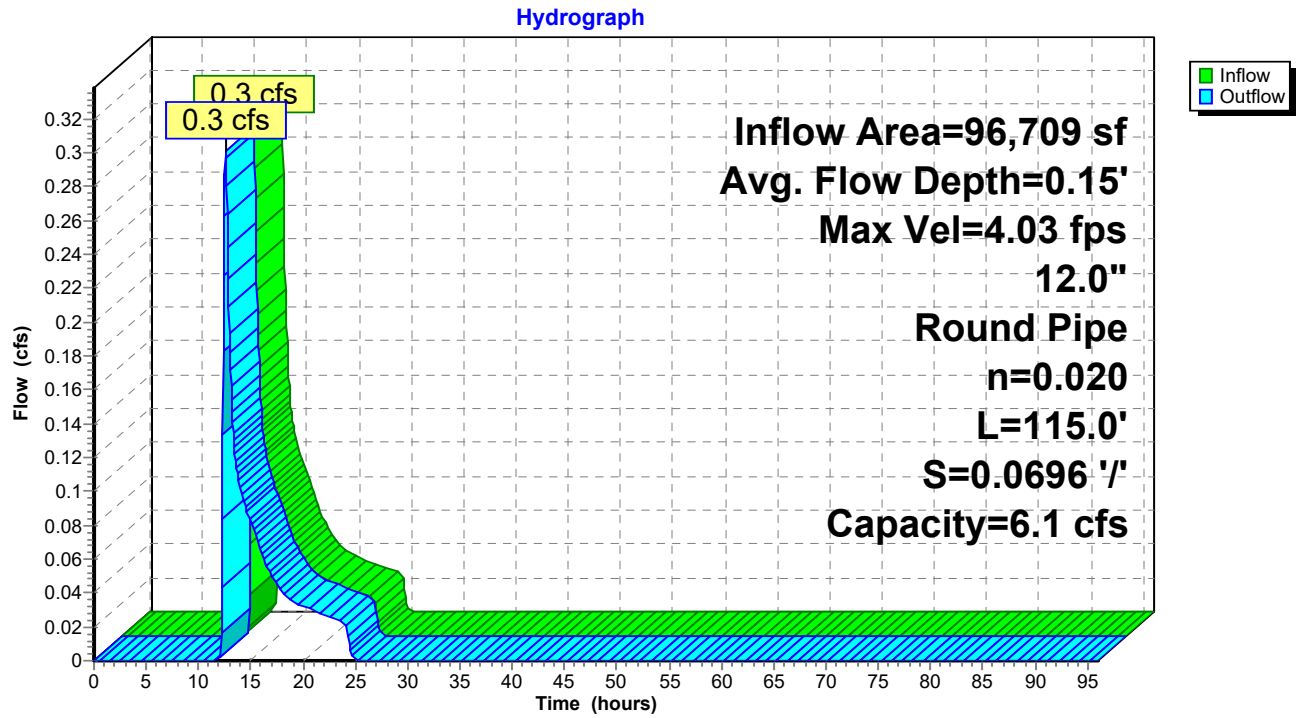
Inflow Area = 96,709 sf, 4.82% Impervious, Inflow Depth = 0.34" for 2-Year event
Inflow = 0.3 cfs @ 12.57 hrs, Volume= 2,750 cf
Outflow = 0.3 cfs @ 12.58 hrs, Volume= 2,750 cf, Atten= 0%, Lag= 0.9 min
Routed to Reach R200A P : Reach R200A P

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.03 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 2.26 fps, Avg. Travel Time= 0.8 min

Peak Storage= 9 cf @ 12.58 hrs
Average Depth at Peak Storage= 0.15' , Surface Width= 0.72'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.1 cfs

12.0" Round Pipe
n= 0.020 Corrugated PE, corrugated interior
Length= 115.0' Slope= 0.0696 '/'
Inlet Invert= 562.00', Outlet Invert= 554.00'





Summary for Reach R202 P: Reach R202 P

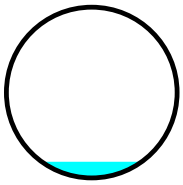
[52] Hint: Inlet/Outlet conditions not evaluated

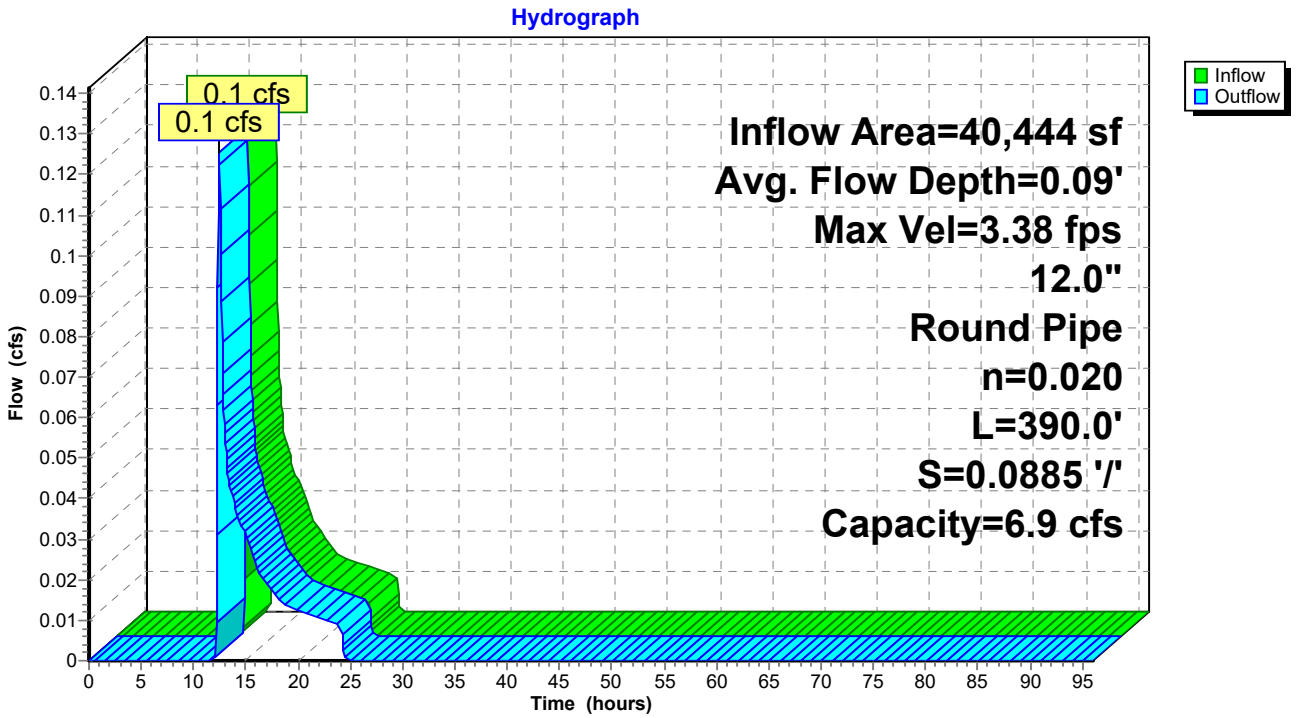
Inflow Area = 40,444 sf, 0.00% Impervious, Inflow Depth = 0.31" for 2-Year event
Inflow = 0.1 cfs @ 12.42 hrs, Volume= 1,044 cf
Outflow = 0.1 cfs @ 12.47 hrs, Volume= 1,044 cf, Atten= 1%, Lag= 3.3 min
Routed to Reach R200A P : Reach R200A P

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.38 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 1.88 fps, Avg. Travel Time= 3.5 min

Peak Storage= 14 cf @ 12.44 hrs
Average Depth at Peak Storage= 0.09' , Surface Width= 0.58'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.9 cfs

12.0" Round Pipe
n= 0.020 Corrugated PE, corrugated interior
Length= 390.0' Slope= 0.0885 '/'
Inlet Invert= 588.50', Outlet Invert= 554.00'





Summary for Reach R401 P: Reach R401 P

Inflow Area = 39,667 sf, 13.75% Impervious, Inflow Depth = 1.15" for 2-Year event
Inflow = 1.0 cfs @ 12.16 hrs, Volume= 3,808 cf
Outflow = 0.5 cfs @ 12.87 hrs, Volume= 3,808 cf, Atten= 47%, Lag= 42.4 min
Routed to Link L2 P : Ditch

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.61 fps, Min. Travel Time= 27.0 min
Avg. Velocity = 0.28 fps, Avg. Travel Time= 58.5 min

Peak Storage= 862 cf @ 12.42 hrs
Average Depth at Peak Storage= 0.08' , Surface Width= 11.98'
Bank-Full Depth= 2.00' Flow Area= 70.0 sf, Capacity= 271.5 cfs

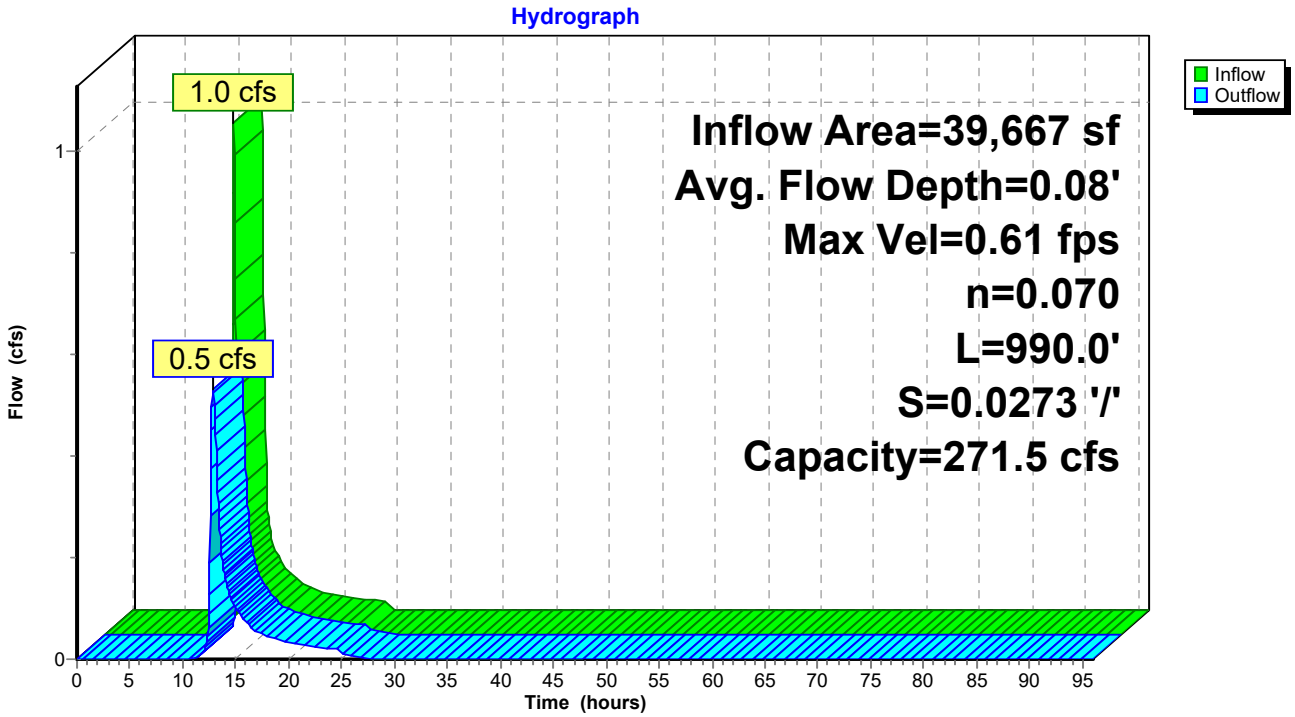
Custom cross-section, Length= 990.0' Slope= 0.0273 '/'
Constant n= 0.070 Medium-dense brush, winter
Inlet Invert= 546.00', Outlet Invert= 519.00'

‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	2.00	0.00
25.00	0.00	2.00
35.00	0.00	2.00
60.00	2.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Width (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	10.0	0.0	0	0.0
2.00	70.0	60.2	60.0	69,300	271.5

Reach R401 P: Reach R401 P



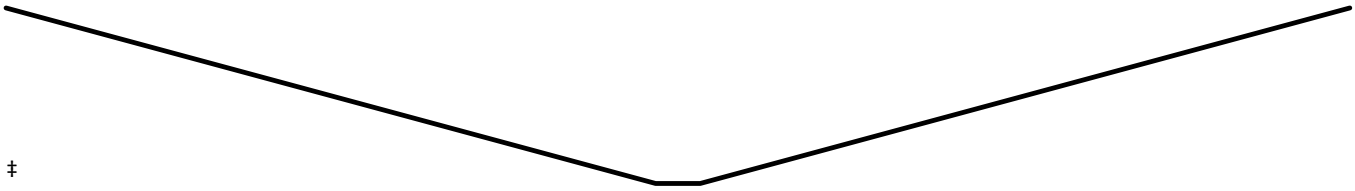
Summary for Reach R502 P: Reach R502 P

Inflow Area = 86,237 sf, 17.89% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Routed to Link L2 P : Ditch

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 2.00' Flow Area= 62.0 sf, Capacity= 247.1 cfs

Custom cross-section, Length= 975.0' Slope= 0.0338 '/'
Constant n= 0.070 Medium-dense brush, winter
Inlet Invert= 548.00', Outlet Invert= 515.00'

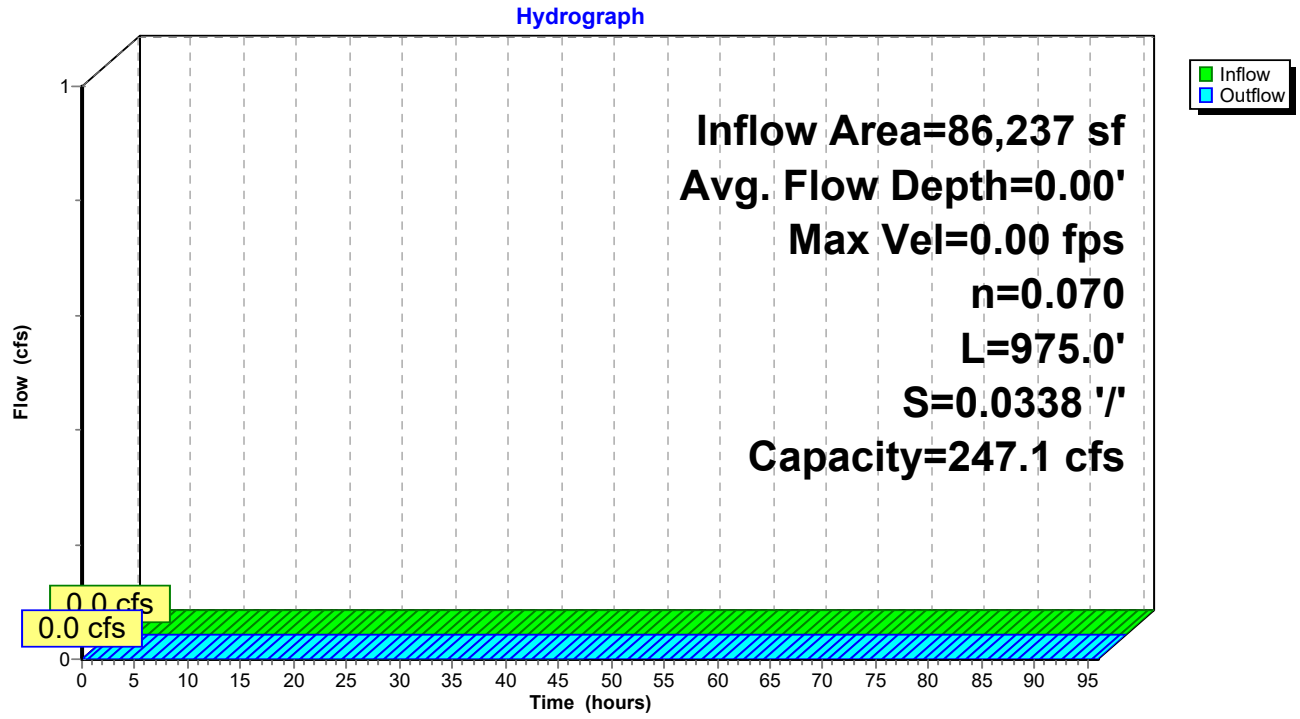


‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	2.00	0.00
29.00	0.00	2.00
31.00	0.00	2.00
60.00	2.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Width (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	2.0	0.0	0	0.0
2.00	62.0	60.1	60.0	60,450	247.1

Reach R502 P: Reach R502 P



Summary for Reach R504 P: Reach R504 P

Inflow Area = 277,905 sf, 13.64% Impervious, Inflow Depth = 0.48" for 2-Year event
Inflow = 1.7 cfs @ 12.35 hrs, Volume= 11,139 cf
Outflow = 1.1 cfs @ 13.06 hrs, Volume= 11,139 cf, Atten= 35%, Lag= 42.7 min
Routed to Link L2 P : Ditch

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.77 fps, Min. Travel Time= 24.4 min
Avg. Velocity = 0.34 fps, Avg. Travel Time= 55.7 min

Peak Storage= 1,647 cf @ 12.66 hrs
Average Depth at Peak Storage= 0.13' , Surface Width= 13.17'
Bank-Full Depth= 2.00' Flow Area= 70.0 sf, Capacity= 255.2 cfs

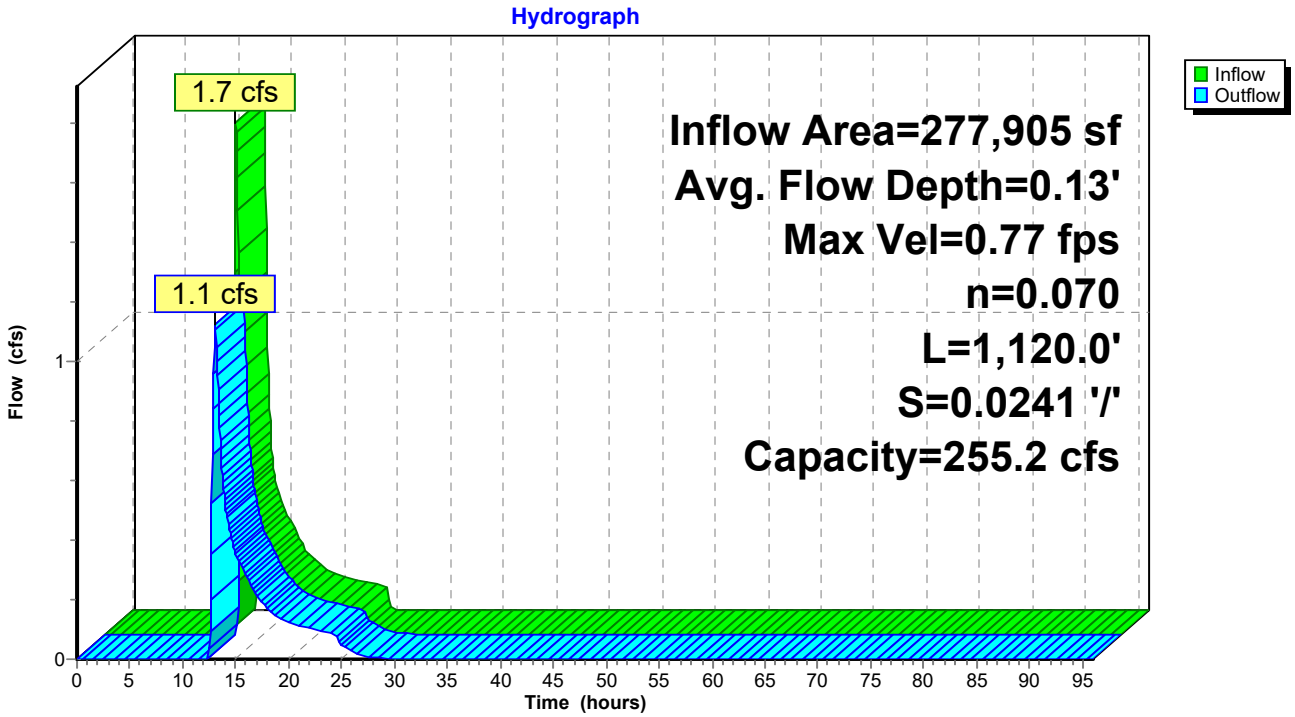
Custom cross-section, Length= 1,120.0' Slope= 0.0241 '/'
Constant n= 0.070 Medium-dense brush, winter
Inlet Invert= 546.00', Outlet Invert= 519.00'

‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	2.00	0.00
25.00	0.00	2.00
35.00	0.00	2.00
60.00	2.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Width (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	10.0	0.0	0	0.0
2.00	70.0	60.2	60.0	78,400	255.2

Reach R504 P: Reach R504 P



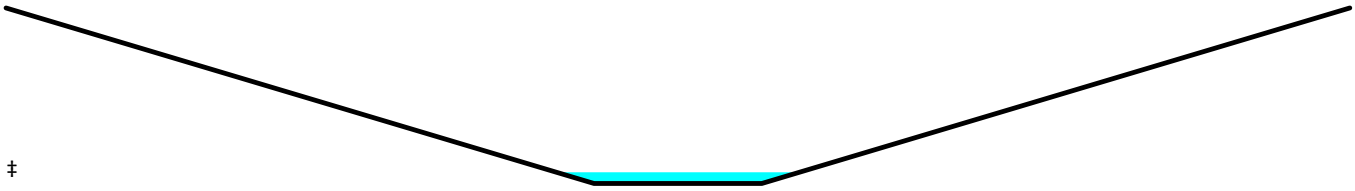
Summary for Reach R702 P: Reach 701 P

Inflow Area = 272,237 sf, 21.22% Impervious, Inflow Depth = 0.76" for 2-Year event
Inflow = 1.2 cfs @ 12.52 hrs, Volume= 17,340 cf
Outflow = 1.1 cfs @ 12.62 hrs, Volume= 17,340 cf, Atten= 6%, Lag= 6.0 min
Routed to Link L2 P : Ditch

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.72 fps, Min. Travel Time= 3.1 min
Avg. Velocity = 0.32 fps, Avg. Travel Time= 7.1 min

Peak Storage= 211 cf @ 12.57 hrs
Average Depth at Peak Storage= 0.13' , Surface Width= 14.46'
Bank-Full Depth= 2.00' Flow Area= 90.0 sf, Capacity= 307.8 cfs

Custom cross-section, Length= 135.0' Slope= 0.0222 '/'
Constant n= 0.070 Medium-dense brush, winter
Inlet Invert= 511.00', Outlet Invert= 508.00'



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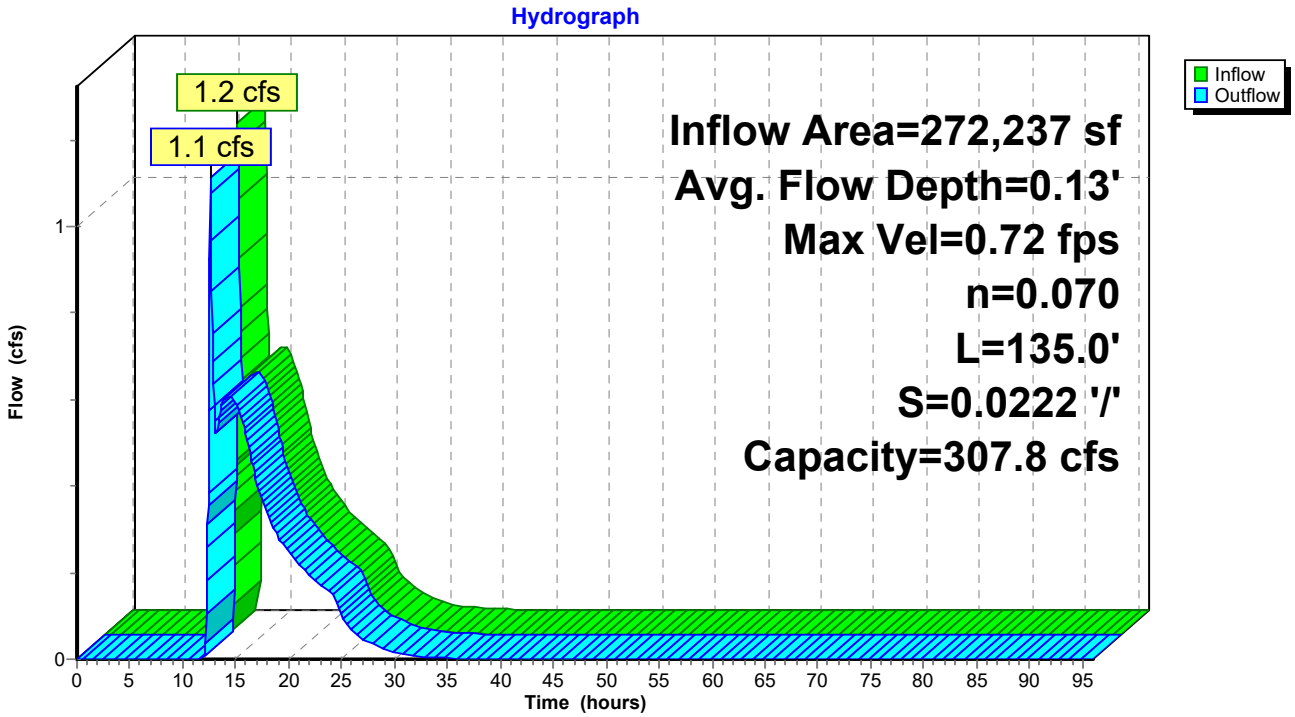
Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	2.00	0.00
35.00	0.00	2.00
45.00	0.00	2.00
80.00	2.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Width (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	10.0	0.0	0	0.0
2.00	90.0	80.1	80.0	12,150	307.8

Reach R702 P: Reach 701 P



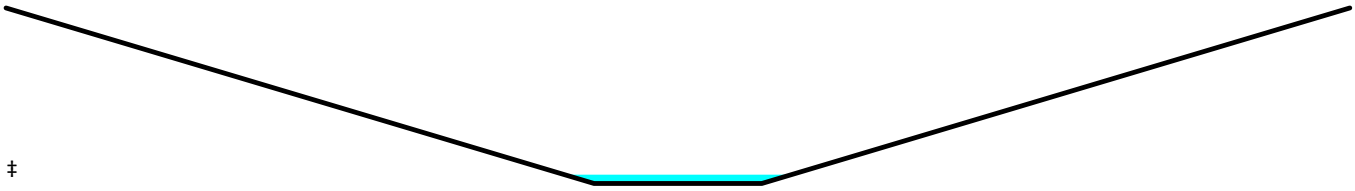
Summary for Reach R703 P: Reach 703 P

Inflow Area = 346,988 sf, 13.63% Impervious, Inflow Depth = 1.04" for 2-Year event
Inflow = 0.7 cfs @ 14.33 hrs, Volume= 30,001 cf
Outflow = 0.7 cfs @ 15.02 hrs, Volume= 30,001 cf, Atten= 0%, Lag= 41.4 min
Routed to Link L2 P : Ditch

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.59 fps, Min. Travel Time= 23.1 min
Avg. Velocity = 0.39 fps, Avg. Travel Time= 34.7 min

Peak Storage= 967 cf @ 14.63 hrs
Average Depth at Peak Storage= 0.10' , Surface Width= 13.53'
Bank-Full Depth= 2.00' Flow Area= 90.0 sf, Capacity= 289.3 cfs

Custom cross-section, Length= 815.0' Slope= 0.0196 '/'
Constant n= 0.070 Medium-dense brush, winter
Inlet Invert= 520.00', Outlet Invert= 504.00'

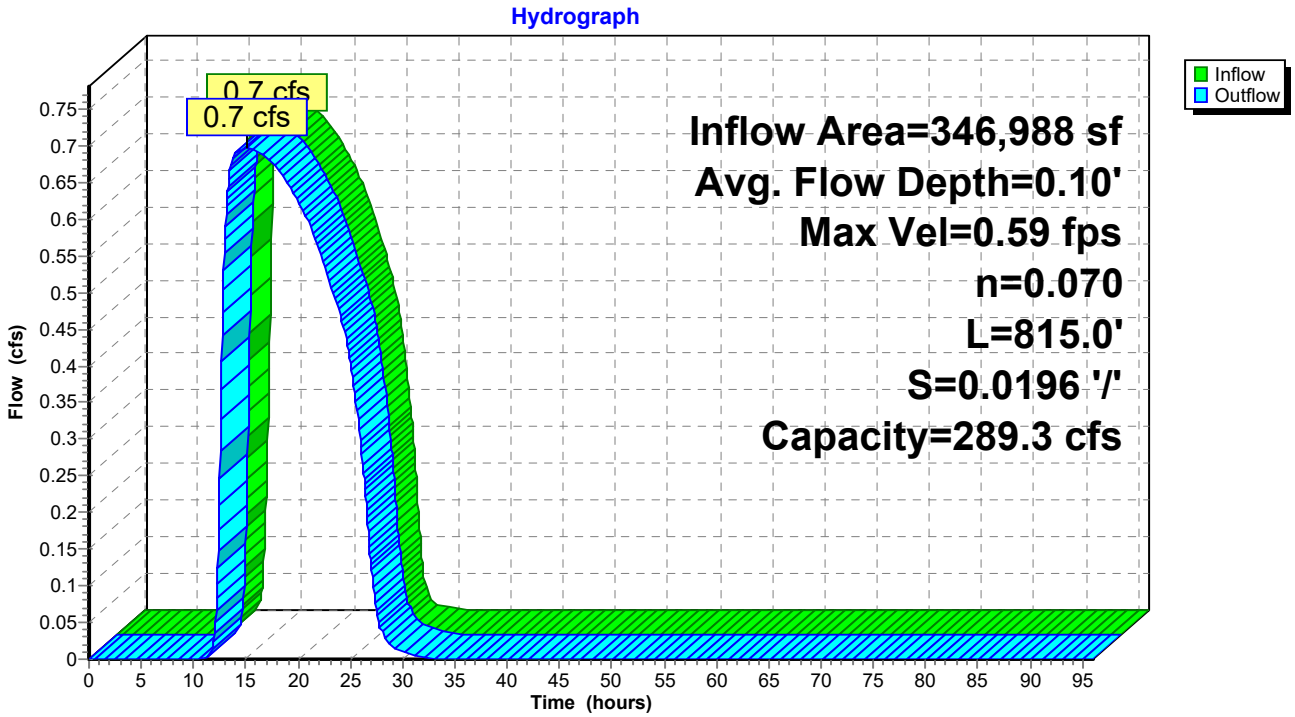


‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	2.00	0.00
35.00	0.00	2.00
45.00	0.00	2.00
80.00	2.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Width (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	10.0	0.0	0	0.0
2.00	90.0	80.1	80.0	73,350	289.3

Reach R703 P: Reach 703 P



Summary for Pond P403 P: Pond P403 P

Inflow Area = 163,769 sf, 20.12% Impervious, Inflow Depth = 0.98" for 2-Year event
Inflow = 3.6 cfs @ 12.14 hrs, Volume= 13,413 cf
Outflow = 0.5 cfs @ 13.10 hrs, Volume= 13,413 cf, Atten= 86%, Lag= 57.1 min
Discarded = 0.1 cfs @ 13.10 hrs, Volume= 4,238 cf
Primary = 0.4 cfs @ 13.10 hrs, Volume= 9,174 cf
Routed to Link L2 P : Ditch
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link L2 P : Ditch

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 547.14' @ 13.10 hrs Surf.Area= 4,361 sf Storage= 5,344 cf

Plug-Flow detention time= 236.3 min calculated for 13,406 cf (100% of inflow)
Center-of-Mass det. time= 236.9 min (1,105.1 - 868.3)

Volume	Invert	Avail.Storage	Storage Description
#1	545.00'	26,863 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
545.00	730	0	0
546.00	2,380	1,555	1,555
547.00	4,045	3,213	4,768
548.00	6,350	5,198	9,965
549.00	8,640	7,495	17,460
550.00	10,165	9,403	26,863

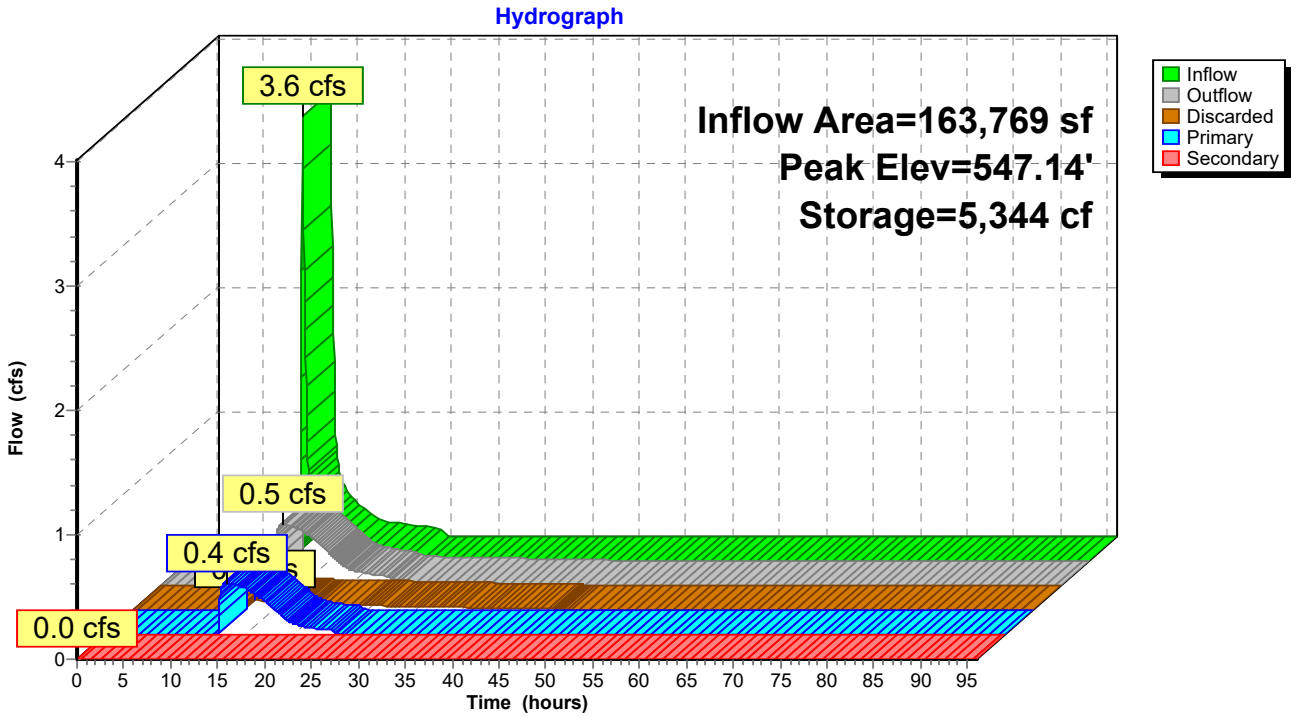
Device	Routing	Invert	Outlet Devices
#1	Primary	541.20'	**18.0" Round Culvert** L= 117.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 541.20' / 540.00' S= 0.0103 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	546.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	548.70'	**16.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#4	Secondary	549.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	545.00'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 543.00'

Discarded OutFlow Max=0.1 cfs @ 13.10 hrs HW=547.14' (Free Discharge)
└**5=Exfiltration** (Controls 0.1 cfs)

Primary OutFlow Max=0.4 cfs @ 13.10 hrs HW=547.14' (Free Discharge)
└**1=Culvert** (Passes 0.4 cfs of 17.6 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.4 cfs @ 4.74 fps)
  └**3=Sharp-Crested Rectangular Weir** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=545.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond P403 P: Pond P403 P



Summary for Pond P501 P: Pond P501 P

Device #4 is for calculation purposes only.

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[44] Hint: Outlet device #1 is below defined storage

Inflow Area = 162,232 sf, 20.00% Impervious, Inflow Depth = 0.95" for 2-Year event
Inflow = 2.8 cfs @ 12.24 hrs, Volume= 12,900 cf
Outflow = 2.8 cfs @ 12.24 hrs, Volume= 12,900 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.8 cfs @ 12.24 hrs, Volume= 12,900 cf
Routed to Pond P505 P : Pond P505 P
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond P505 P : Pond P505 P

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 565.81' @ 12.24 hrs Surf.Area= 11 sf Storage= 0 cf

Plug-Flow detention time= 0.0 min calculated for 12,893 cf (100% of inflow)
Center-of-Mass det. time= 0.0 min (870.6 - 870.6)

Volume	Invert	Avail.Storage	Storage Description
#1	565.80'	1,588 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

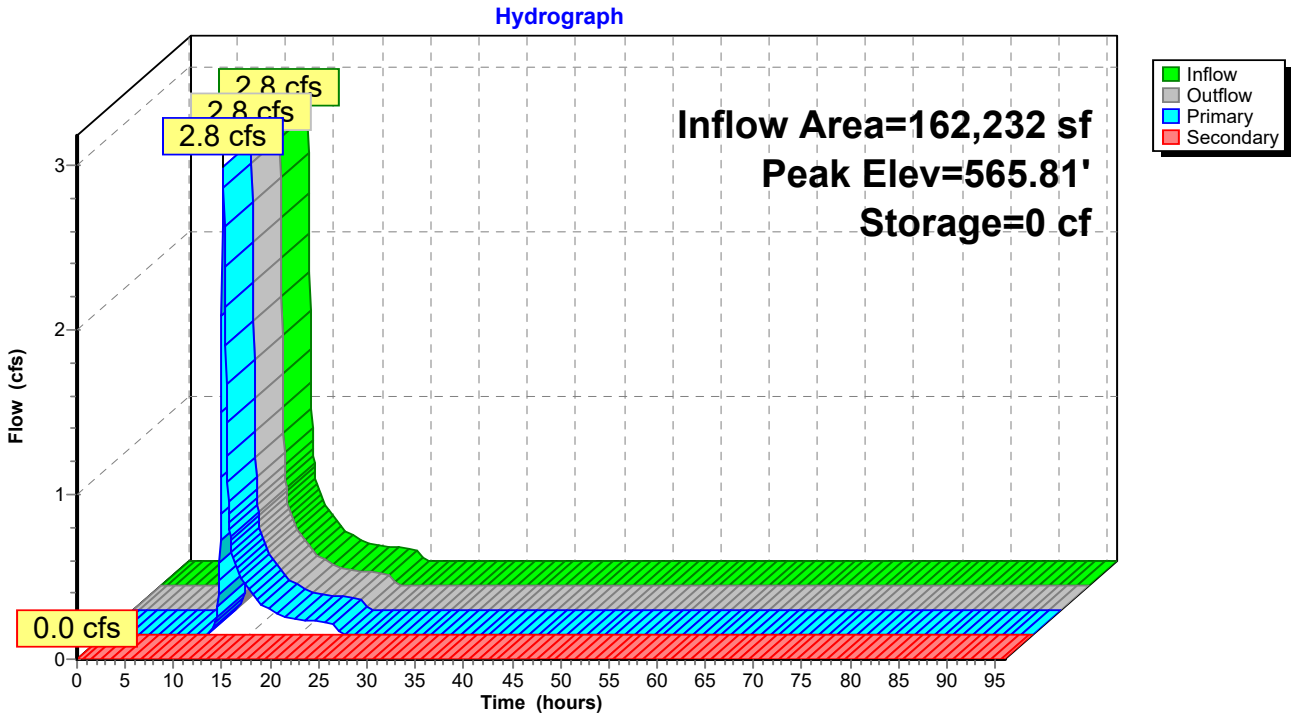
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
565.80	10	0	0
566.00	45	6	6
568.00	1,025	1,070	1,076
568.50	1,025	513	1,588

Device	Routing	Invert	Outlet Devices
#1	Primary	560.00'	**18.0" Round Culvert** L= 550.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 560.00' / 551.70' S= 0.0151 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	566.60'	**16.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#3	Secondary	568.00'	**50.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=14.8 cfs @ 12.24 hrs HW=565.81' (Free Discharge)
1=Culvert (Barrel Controls 14.8 cfs @ 8.38 fps)
2=Sharp-Crested Rectangular Weir (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=565.80' (Free Discharge)
3=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

Pond P501 P: Pond P501 P



Summary for Pond P502 P: Pond P502 P

Inflow Area = 86,237 sf, 17.89% Impervious, Inflow Depth = 1.09" for 2-Year event
Inflow = 2.4 cfs @ 12.10 hrs, Volume= 7,862 cf
Outflow = 0.1 cfs @ 17.79 hrs, Volume= 7,862 cf, Atten= 97%, Lag= 341.6 min
Discarded = 0.1 cfs @ 17.79 hrs, Volume= 7,862 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach R502 P : Reach R502 P
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach R502 P : Reach R502 P

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 555.92' @ 17.79 hrs Surf.Area= 4,446 sf Storage= 5,271 cf

Plug-Flow detention time= 963.0 min calculated for 7,857 cf (100% of inflow)
Center-of-Mass det. time= 963.9 min (1,822.7 - 858.8)

Volume	Invert	Avail.Storage	Storage Description
#1	553.50'	42,935 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
553.50	50	0	0
554.00	810	215	215
556.00	4,590	5,400	5,615
558.00	9,515	14,105	19,720
560.00	13,700	23,215	42,935

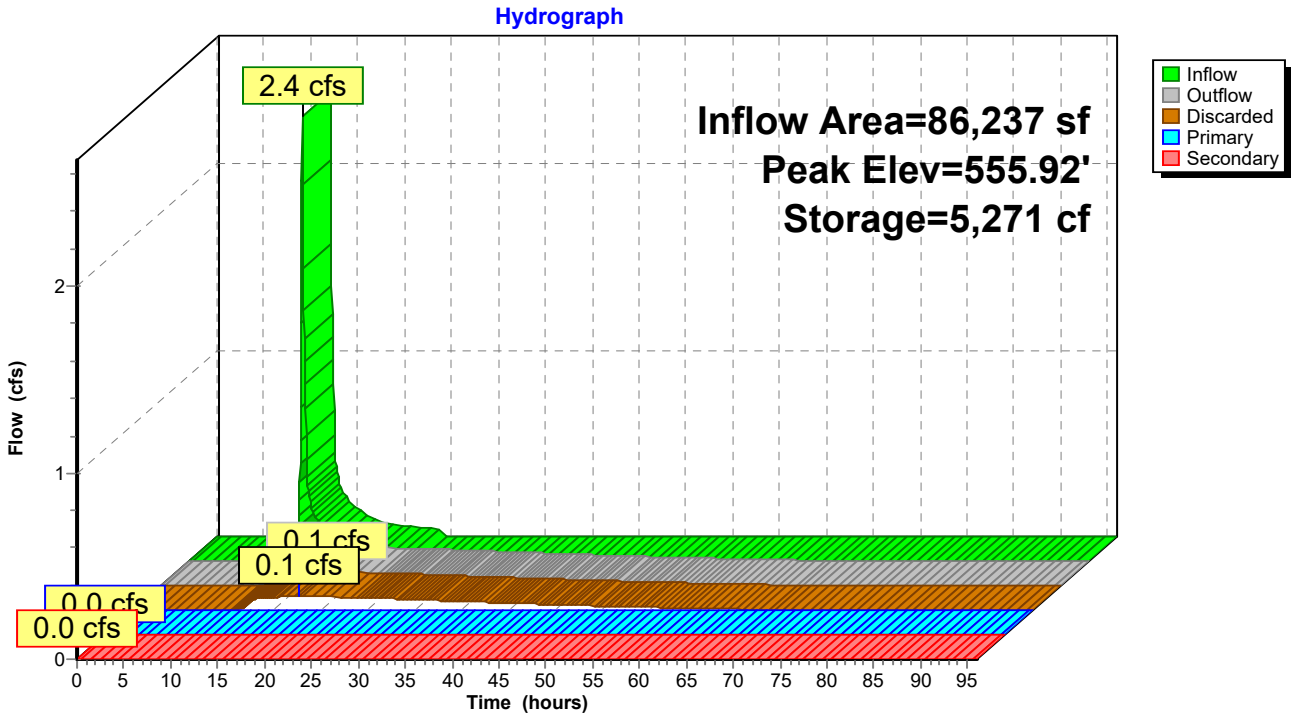
Device	Routing	Invert	Outlet Devices
#1	Primary	552.00'	**12.0" Round Culvert** L= 160.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 552.00' / 550.00' S= 0.0125 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	557.20'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	558.00'	**16.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#4	Secondary	559.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	553.50'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 551.00'

Discarded OutFlow Max=0.1 cfs @ 17.79 hrs HW=555.92' (Free Discharge)
└**5=Exfiltration** (Controls 0.1 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=553.50' (Free Discharge)
└**1=Culvert** (Passes 0.0 cfs of 3.8 cfs potential flow)
├**2=Orifice/Grate** (Controls 0.0 cfs)
└**3=Sharp-Crested Rectangular Weir** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=553.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond P502 P: Pond P502 P



Summary for Pond P503 P: Pond P503 P

Inflow Area = 82,329 sf, 25.04% Impervious, Inflow Depth = 1.21" for 2-Year event
Inflow = 2.3 cfs @ 12.14 hrs, Volume= 8,314 cf
Outflow = 1.9 cfs @ 12.22 hrs, Volume= 8,314 cf, Atten= 16%, Lag= 4.5 min
Discarded = 0.0 cfs @ 12.22 hrs, Volume= 292 cf
Primary = 1.9 cfs @ 12.22 hrs, Volume= 8,022 cf
Routed to Pond P501 P : Pond P501 P
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond P501 P : Pond P501 P

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 585.65' @ 12.22 hrs Surf.Area= 1,403 sf Storage= 541 cf

Plug-Flow detention time= 9.4 min calculated for 8,310 cf (100% of inflow)
Center-of-Mass det. time= 9.8 min (865.2 - 855.4)

Volume	Invert	Avail.Storage	Storage Description
#1	584.50'	7,018 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
584.50	30	0	0
585.00	135	41	41
586.00	2,085	1,110	1,151
587.00	4,465	3,275	4,426
587.50	5,900	2,591	7,018

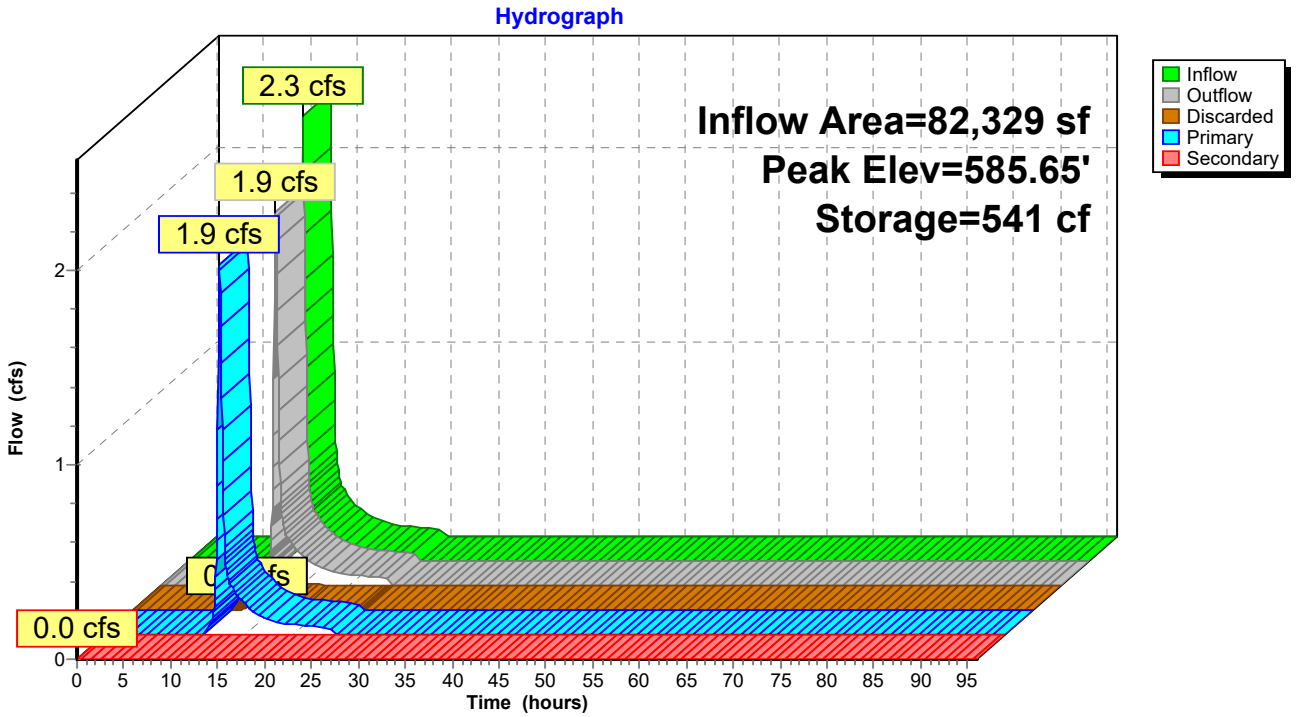
Device	Routing	Invert	Outlet Devices
#1	Primary	582.50'	**12.0" Round Culvert** L= 34.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 582.50' / 582.00' S= 0.0147 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	585.00'	**8.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	587.00'	**16.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#4	Secondary	587.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	584.50'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 582.00'

Discarded OutFlow Max=0.0 cfs @ 12.22 hrs HW=585.65' (Free Discharge)
└**5=Exfiltration** (Controls 0.0 cfs)

Primary OutFlow Max=1.9 cfs @ 12.22 hrs HW=585.64' (Free Discharge)
└**1=Culvert** (Passes 1.9 cfs of 6.2 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 1.9 cfs @ 2.73 fps)
└**3=Sharp-Crested Rectangular Weir** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=584.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond P503 P: Pond P503 P



Summary for Pond P505 P: Pond P505 P

[79] Warning: Submerged Pond P501 P Primary device # 1 OUTLET by 0.55'

Inflow Area = 175,429 sf, 18.50% Impervious, Inflow Depth = 0.96" for 2-Year event
Inflow = 3.0 cfs @ 12.23 hrs, Volume= 14,041 cf
Outflow = 0.1 cfs @ 19.60 hrs, Volume= 14,041 cf, Atten= 96%, Lag= 442.2 min
Discarded = 0.1 cfs @ 19.60 hrs, Volume= 14,041 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link L2 P : Ditch
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link L2 P : Ditch

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 552.25' @ 19.60 hrs Surf.Area= 5,686 sf Storage= 9,890 cf

Plug-Flow detention time= 1,174.8 min calculated for 14,033 cf (100% of inflow)
Center-of-Mass det. time= 1,175.7 min (2,045.6 - 869.9)

Volume	Invert	Avail.Storage	Storage Description
#1	549.50'	41,043 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
549.50	50	0	0
550.00	2,520	643	643
551.00	3,965	3,243	3,885
552.00	5,340	4,653	8,538
554.00	8,160	13,500	22,038
556.00	10,845	19,005	41,043

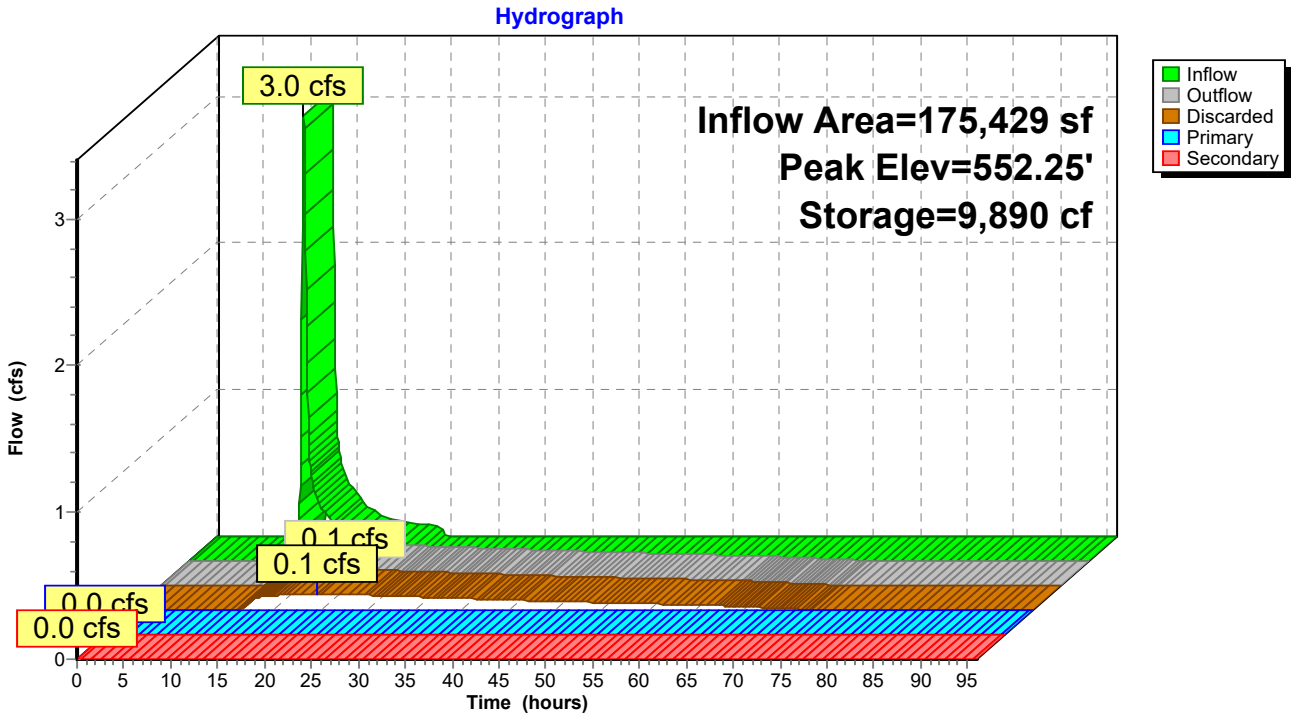
Device	Routing	Invert	Outlet Devices
#1	Primary	548.50'	**12.0" Round Culvert** L= 43.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 548.50' / 548.00' S= 0.0116 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	552.80'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	555.00'	**16.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#4	Secondary	555.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	549.50'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 547.00'

Discarded OutFlow Max=0.1 cfs @ 19.60 hrs HW=552.25' (Free Discharge)
└**5=Exfiltration** (Controls 0.1 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=549.50' (Free Discharge)
└**1=Culvert** (Passes 0.0 cfs of 2.7 cfs potential flow)
├**2=Orifice/Grate** (Controls 0.0 cfs)
└**3=Sharp-Crested Rectangular Weir** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=549.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond P505 P: Pond P505 P



Summary for Pond P701 P: Pond P701 P

Inflow Area = 91,083 sf, 17.79% Impervious, Inflow Depth = 1.21" for 2-Year event
Inflow = 2.1 cfs @ 12.22 hrs, Volume= 9,198 cf
Outflow = 1.2 cfs @ 12.52 hrs, Volume= 9,198 cf, Atten= 43%, Lag= 17.7 min
Discarded = 0.0 cfs @ 12.52 hrs, Volume= 1,857 cf
Primary = 1.2 cfs @ 12.52 hrs, Volume= 7,341 cf
Routed to Reach R702 P : Reach 701 P
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach R702 P : Reach 701 P

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 516.36' @ 12.52 hrs Surf.Area= 3,150 sf Storage= 2,858 cf

Plug-Flow detention time= 127.3 min calculated for 9,193 cf (100% of inflow)
Center-of-Mass det. time= 127.8 min (988.9 - 861.1)

Volume	Invert	Avail.Storage	Storage Description
#1	514.30'	11,978 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
514.30	50	0	0
515.00	1,000	368	368
516.00	2,100	1,550	1,918
518.00	7,960	10,060	11,978

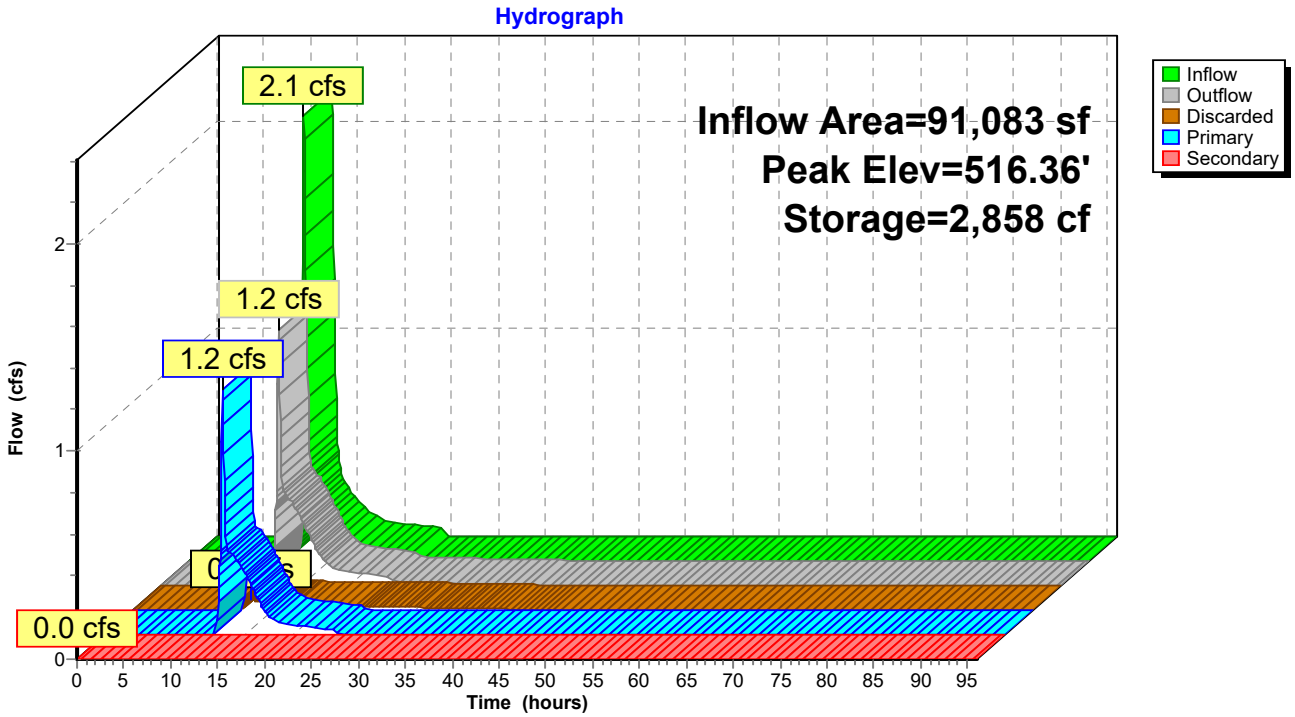
Device	Routing	Invert	Outlet Devices
#1	Primary	512.00'	**12.0" Round Culvert** L= 52.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 512.00' / 511.50' S= 0.0096 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	515.20'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	516.30'	**16.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#4	Secondary	517.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	514.30'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 512.00'

Discarded OutFlow Max=0.0 cfs @ 12.52 hrs HW=516.36' (Free Discharge)
└**5=Exfiltration** (Controls 0.0 cfs)

Primary OutFlow Max=1.1 cfs @ 12.52 hrs HW=516.36' (Free Discharge)
└**1=Culvert** (Passes 1.1 cfs of 7.0 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 0.4 cfs @ 4.79 fps)
└**3=Sharp-Crested Rectangular Weir** (Weir Controls 0.7 cfs @ 0.78 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=514.30' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond P701 P: Pond P701 P



Summary for Pond P702 P: Pond P702 P

Inflow Area = 181,154 sf, 22.95% Impervious, Inflow Depth = 1.34" for 2-Year event
Inflow = 5.5 cfs @ 12.15 hrs, Volume= 20,179 cf
Outflow = 0.3 cfs @ 15.61 hrs, Volume= 10,000 cf, Atten= 94%, Lag= 207.8 min
Primary = 0.3 cfs @ 15.61 hrs, Volume= 10,000 cf
Routed to Reach R702 P : Reach 701 P
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach R703 P : Reach 703 P

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 523.04' @ 15.61 hrs Surf.Area= 8,799 sf Storage= 13,038 cf

Plug-Flow detention time= 412.9 min calculated for 9,994 cf (50% of inflow)
Center-of-Mass det. time= 290.0 min (1,139.7 - 849.7)

Volume	Invert	Avail.Storage	Storage Description
#1	520.20'	1,398,243 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

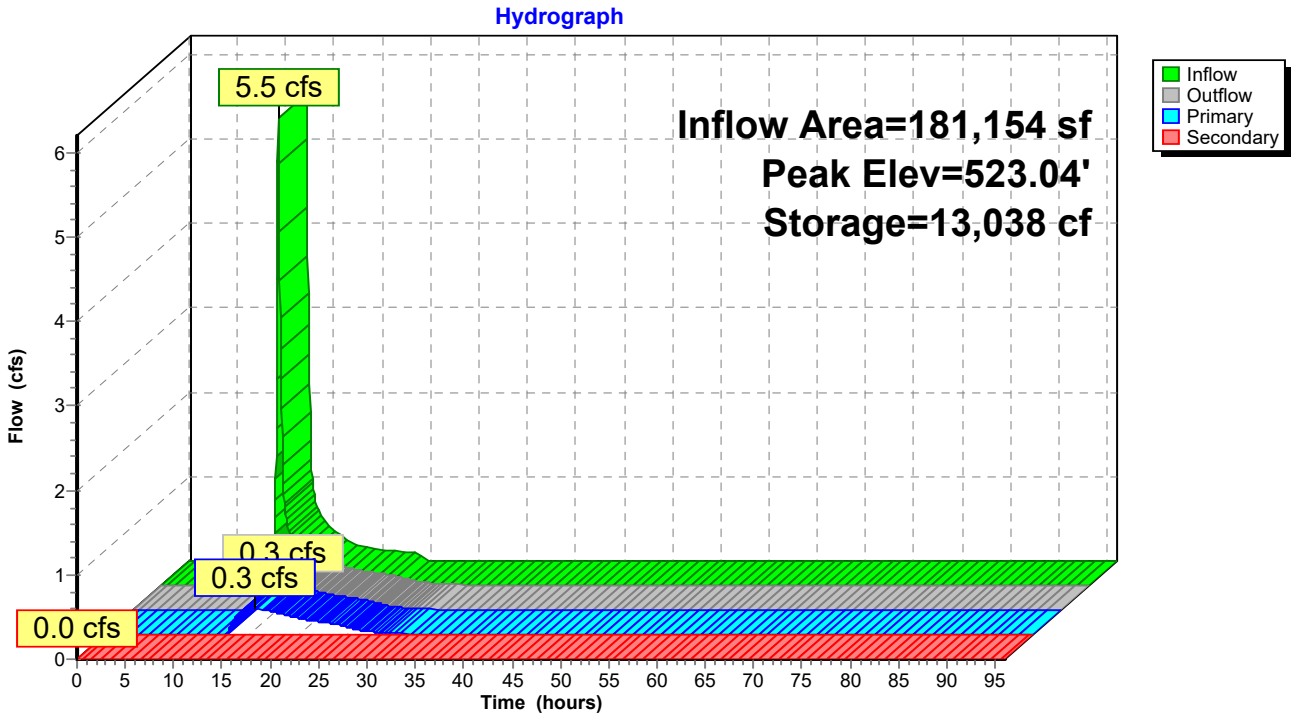
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
520.20	30	0	0
521.00	2,820	1,140	1,140
522.00	5,765	4,293	5,432
524.00	11,575	17,340	22,772
626.00	15,395	1,375,470	1,398,243

Device	Routing	Invert	Outlet Devices
#1	Primary	518.00'	**18.0" Round Culvert** L= 410.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 518.00' / 511.50' S= 0.0159 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	522.70'	**4.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	524.80'	**16.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#4	Secondary	525.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.4 cfs @ 15.61 hrs HW=523.04' (Free Discharge)
└**1=Culvert** (Passes 0.4 cfs of 15.0 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.4 cfs @ 2.03 fps)
└**3=Sharp-Crested Rectangular Weir** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=520.20' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond P702 P: Pond P702 P



Summary for Pond P703 P: Pond P703 P

540.5 for calculatioin purposes only

Inflow Area = 346,988 sf, 13.63% Impervious, Inflow Depth = 1.04" for 2-Year event
Inflow = 8.5 cfs @ 12.12 hrs, Volume= 30,001 cf
Outflow = 0.7 cfs @ 14.33 hrs, Volume= 30,001 cf, Atten= 92%, Lag= 132.6 min
Primary = 0.7 cfs @ 14.33 hrs, Volume= 30,001 cf
Routed to Reach R703 P : Reach 703 P
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond P702 P : Pond P702 P

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 536.92' @ 14.33 hrs Surf.Area= 10,883 sf Storage= 13,576 cf

Plug-Flow detention time= 229.6 min calculated for 30,001 cf (100% of inflow)
Center-of-Mass det. time= 229.1 min (1,092.8 - 863.7)

Volume	Invert	Avail.Storage	Storage Description
#1	534.00'	90,340 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

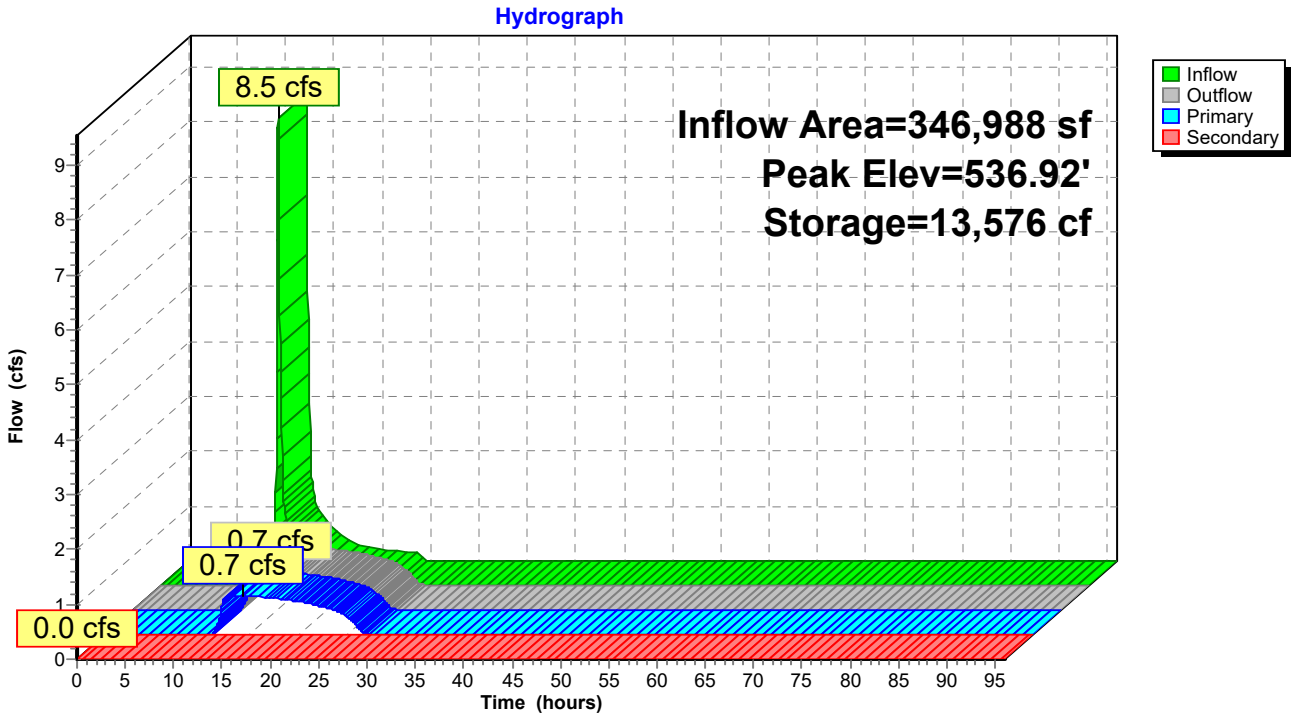
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
534.00	700	0	0
536.00	5,385	6,085	6,085
538.00	17,325	22,710	28,795
540.00	29,480	46,805	75,600
540.50	29,480	14,740	90,340

Device	Routing	Invert	Outlet Devices
#1	Primary	531.50'	**24.0" Round Culvert** L= 360.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 531.50' / 522.00' S= 0.0264 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	534.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	537.50'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	538.50'	**16.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#5	Secondary	540.00'	**20.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=0.7 cfs @ 14.33 hrs HW=536.92' (Free Discharge)
└**1=Culvert** (Passes 0.7 cfs of 31.8 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 0.7 cfs @ 7.99 fps)
├**3=Orifice/Grate** (Controls 0.0 cfs)
└**4=Sharp-Crested Rectangular Weir** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=534.00' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond P703 P: Pond P703 P

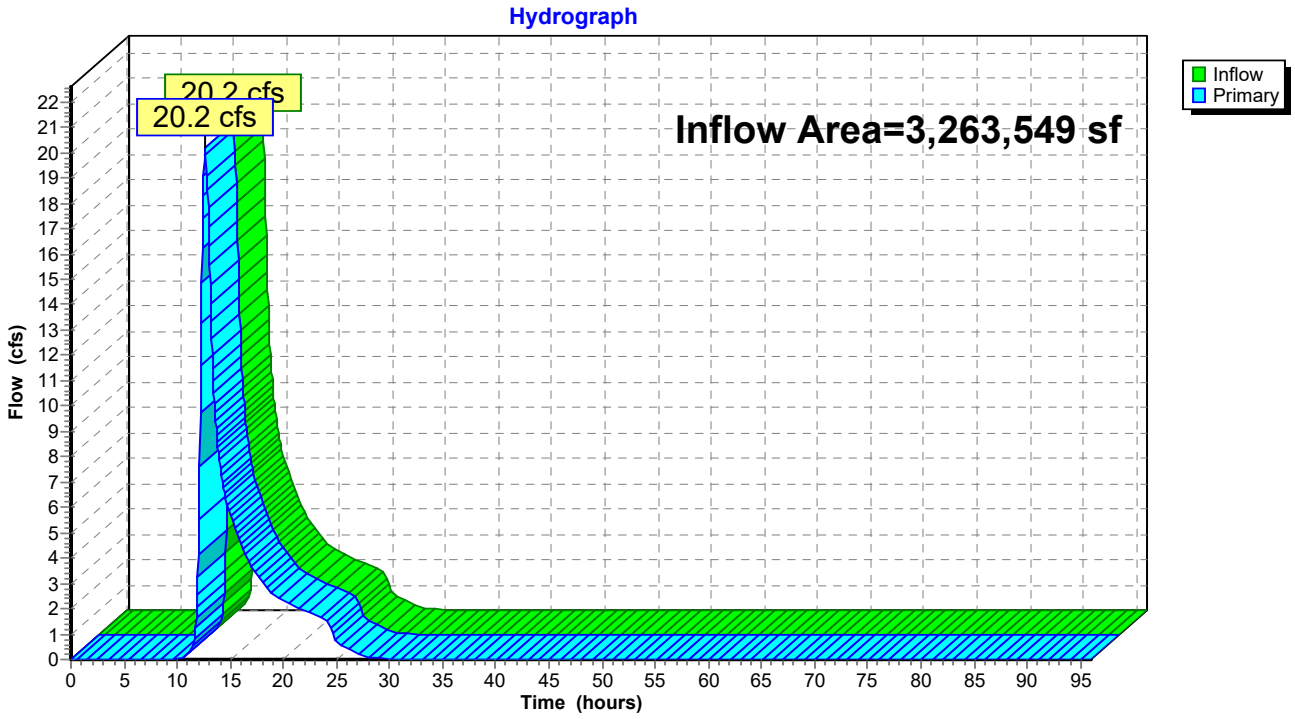


Summary for Link L2 P: Ditch

Inflow Area = 3,263,549 sf, 10.58% Impervious, Inflow Depth = 0.82" for 2-Year event
Inflow = 20.2 cfs @ 12.63 hrs, Volume= 223,104 cf
Primary = 20.2 cfs @ 12.63 hrs, Volume= 223,104 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link L2 P: Ditch



Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 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 S200 P: Subcat S200 P Runoff Area=290,544 sf 4.03% Impervious Runoff Depth=2.29"
Flow Length=1,490' Tc=62.5 min CN=75 Runoff=6.8 cfs 55,399 cf

Subcatchment S201 P: Subcat S201 P Runoff Area=96,709 sf 4.82% Impervious Runoff Depth=1.06"
Flow Length=575' Tc=26.7 min CN=58 Runoff=1.4 cfs 8,547 cf

Subcatchment S202 P: Subcat S202 P Runoff Area=40,444 sf 0.00% Impervious Runoff Depth=1.00"
Flow Length=465' Tc=14.4 min CN=57 Runoff=0.7 cfs 3,369 cf

Subcatchment S400 P: Subcat S400 P Runoff Area=373,885 sf 3.56% Impervious Runoff Depth=2.12"
Flow Length=1,125' Tc=24.7 min CN=73 Runoff=13.0 cfs 66,201 cf

Subcatchment S401 P: Subcat S401 P Runoff Area=39,667 sf 13.75% Impervious Runoff Depth=2.37"
Flow Length=215' Tc=10.6 min CN=76 Runoff=2.1 cfs 7,840 cf

Subcatchment S402 P: Subcat S402 P Runoff Area=93,224 sf 3.45% Impervious Runoff Depth=1.06"
Flow Length=795' Tc=18.4 min CN=58 Runoff=1.5 cfs 8,239 cf

Subcatchment S403 P: Subcat S403 P Runoff Area=163,769 sf 20.12% Impervious Runoff Depth=2.12"
Flow Length=150' Tc=9.1 min CN=73 Runoff=8.2 cfs 28,998 cf

Subcatchment S404 P: Subcat S404 P Runoff Area=97,529 sf 33.15% Impervious Runoff Depth=2.90"
Flow Length=130' Tc=10.9 min CN=82 Runoff=6.4 cfs 23,576 cf

Subcatchment S500 P: Subcat S500 P Runoff Area=484,459 sf 8.28% Impervious Runoff Depth=2.29"
Flow Length=1,060' Tc=47.3 min CN=75 Runoff=13.4 cfs 92,374 cf

Subcatchment S501 P: Subcat S501 P Runoff Area=79,903 sf 14.81% Impervious Runoff Depth=1.74"
Flow Length=380' Tc=16.8 min CN=68 Runoff=2.6 cfs 11,577 cf

Subcatchment S502 P: Subcat S502 P Runoff Area=86,237 sf 17.89% Impervious Runoff Depth=2.29"
Tc=6.0 min CN=75 Runoff=5.2 cfs 16,443 cf

Subcatchment S503 P: Subcat S503 P Runoff Area=82,329 sf 25.04% Impervious Runoff Depth=2.46"
Flow Length=330' Tc=9.3 min CN=77 Runoff=4.8 cfs 16,854 cf

Subcatchment S504 P: Subcat S504 P Runoff Area=277,905 sf 13.64% Impervious Runoff Depth=1.32"
Flow Length=745' Tc=18.2 min UI Adjusted CN=62 Runoff=6.2 cfs 30,490 cf

Subcatchment S505 P: Subcat S505 P Runoff Area=13,197 sf 0.00% Impervious Runoff Depth=2.21"
Tc=6.0 min CN=74 Runoff=0.8 cfs 2,426 cf

Subcatchment S700P: Subcat S700P Runoff Area=340,792 sf 1.99% Impervious Runoff Depth=1.97"
Flow Length=720' Tc=47.6 min CN=71 Runoff=7.9 cfs 55,848 cf

Subcatchment S701P: Subcat S701P Runoff Area=91,083 sf 17.79% Impervious Runoff Depth=2.46"
Flow Length=350' Tc=15.4 min CN=77 Runoff=4.5 cfs 18,646 cf

Subcatchment S702 P: Subcat S702 P Runoff Area=181,154 sf 22.95% Impervious Runoff Depth=2.63"
Flow Length=395' Tc=10.0 min CN=79 Runoff=11.1 cfs 39,707 cf

Subcatchment S703 P: Subcat S703 P Runoff Area=346,988 sf 13.63% Impervious Runoff Depth=2.21"
Flow Length=500' Tc=7.7 min CN=74 Runoff=19.0 cfs 63,782 cf

Subcatchment S800 P: Subcat S800 P Runoff Area=83,731 sf 4.42% Impervious Runoff Depth=2.05"
Flow Length=660' Tc=27.4 min CN=72 Runoff=2.7 cfs 14,269 cf

Reach R200 P: Reach R200 P Avg. Flow Depth=0.06' Max Vel=0.50 fps Inflow=1.9 cfs 11,916 cf
n=0.070 L=800.0' S=0.0213 '/' Capacity=433.1 cfs Outflow=1.3 cfs 11,916 cf

Reach R200A P: Reach R200A P Avg. Flow Depth=0.37' Max Vel=7.37 fps Inflow=1.9 cfs 11,916 cf
12.0" Round Pipe n=0.013 L=340.0' S=0.0353 '/' Capacity=6.7 cfs Outflow=1.9 cfs 11,916 cf

Reach R201 P: Reach R201 P Avg. Flow Depth=0.32' Max Vel=6.30 fps Inflow=1.4 cfs 8,547 cf
12.0" Round Pipe n=0.020 L=115.0' S=0.0696 '/' Capacity=6.1 cfs Outflow=1.4 cfs 8,547 cf

Reach R202 P: Reach R202 P Avg. Flow Depth=0.21' Max Vel=5.57 fps Inflow=0.7 cfs 3,369 cf
12.0" Round Pipe n=0.020 L=390.0' S=0.0885 '/' Capacity=6.9 cfs Outflow=0.7 cfs 3,369 cf

Reach R401 P: Reach R401 P Avg. Flow Depth=0.14' Max Vel=0.85 fps Inflow=2.1 cfs 7,840 cf
n=0.070 L=990.0' S=0.0273 '/' Capacity=271.5 cfs Outflow=1.3 cfs 7,840 cf

Reach R502 P: Reach R502 P Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.0 cfs 0 cf
n=0.070 L=975.0' S=0.0338 '/' Capacity=247.1 cfs Outflow=0.0 cfs 0 cf

Reach R504 P: Reach R504 P Avg. Flow Depth=0.28' Max Vel=1.22 fps Inflow=6.2 cfs 30,490 cf
n=0.070 L=1,120.0' S=0.0241 '/' Capacity=255.2 cfs Outflow=4.7 cfs 30,490 cf

Reach R702 P: Reach 701 P Avg. Flow Depth=0.28' Max Vel=1.13 fps Inflow=4.9 cfs 45,980 cf
n=0.070 L=135.0' S=0.0222 '/' Capacity=307.8 cfs Outflow=4.7 cfs 45,980 cf

Reach R703 P: Reach 703 P Avg. Flow Depth=0.14' Max Vel=0.70 fps Inflow=1.2 cfs 63,782 cf
n=0.070 L=815.0' S=0.0196 '/' Capacity=289.3 cfs Outflow=1.2 cfs 63,782 cf

Pond P403 P: Pond P403 P Peak Elev=548.55' Storage=13,824 cf Inflow=8.2 cfs 28,998 cf
Discarded=0.2 cfs 6,800 cf Primary=0.6 cfs 22,197 cf Secondary=0.0 cfs 0 cf Outflow=0.8 cfs 28,998 cf

Pond P501 P: Pond P501 P Peak Elev=565.81' Storage=0 cf Inflow=5.7 cfs 28,024 cf
Primary=5.7 cfs 28,024 cf Secondary=0.0 cfs 0 cf Outflow=5.7 cfs 28,024 cf

Pond P502 P: Pond P502 P Peak Elev=557.05' Storage=11,804 cf Inflow=5.2 cfs 16,443 cf
Discarded=0.1 cfs 16,443 cf Primary=0.0 cfs 0 cf Secondary=0.0 cfs 0 cf Outflow=0.1 cfs 16,443 cf

Pond P503 P: Pond P503 P Peak Elev=586.21' Storage=1,643 cf Inflow=4.8 cfs 16,854 cf
Discarded=0.0 cfs 407 cf Primary=3.1 cfs 16,447 cf Secondary=0.0 cfs 0 cf Outflow=3.2 cfs 16,854 cf

Pond P505 P: Pond P505 P Peak Elev=553.36' Storage=17,092 cf Inflow=6.1 cfs 30,449 cf
Discarded=0.2 cfs 20,165 cf Primary=0.5 cfs 10,284 cf Secondary=0.0 cfs 0 cf Outflow=0.7 cfs 30,449 cf

Pond P701 P: Pond P701 P Peak Elev=516.48' Storage=3,250 cf Inflow=4.5 cfs 18,646 cf
Discarded=0.1 cfs 2,194 cf Primary=4.3 cfs 16,452 cf Secondary=0.0 cfs 0 cf Outflow=4.4 cfs 18,646 cf

Pond P702 P: Pond P702 P Peak Elev=523.98' Storage=22,495 cf Inflow=11.1 cfs 39,707 cf
Primary=0.9 cfs 29,527 cf Secondary=0.0 cfs 0 cf Outflow=0.9 cfs 29,527 cf

Pond P703 P: Pond P703 P Peak Elev=538.28' Storage=33,895 cf Inflow=19.0 cfs 63,782 cf
Primary=1.2 cfs 63,782 cf Secondary=0.0 cfs 0 cf Outflow=1.2 cfs 63,782 cf

Link L2 P: Ditch Inflow=50.4 cfs 508,395 cf
Primary=50.4 cfs 508,395 cf

Total Runoff Area = 3,263,549 sf Runoff Volume = 564,585 cf Average Runoff Depth = 2.08"
89.42% Pervious = 2,918,421 sf 10.58% Impervious = 345,128 sf

Summary for Subcatchment S200 P: Subcat S200 P

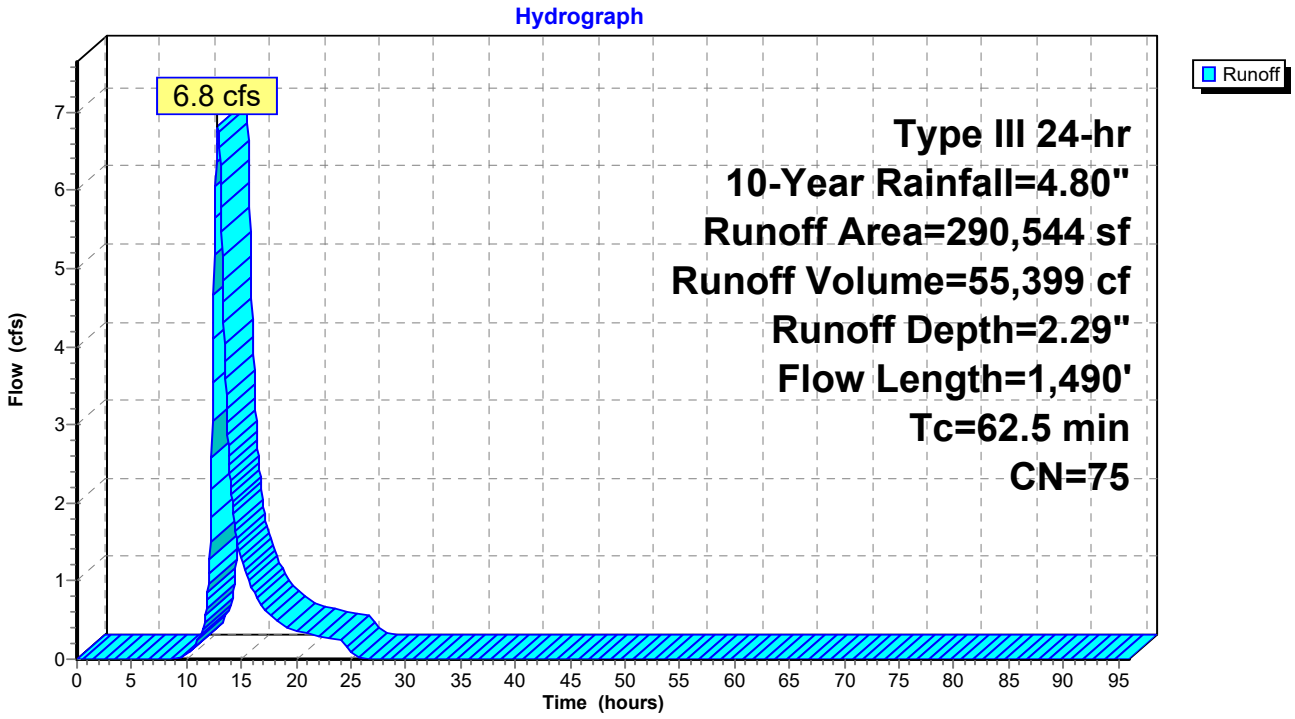
Runoff = 6.8 cfs @ 12.86 hrs, Volume= 55,399 cf, Depth= 2.29"
Routed to Link L2 P : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
147	98	Roofs, HSG C
1,906	98	Roofs, HSG C
1,193	98	Paved parking, HSG C
1,363	98	Paved parking, HSG C
495	70	Woods, Good, HSG C
2,373	74	>75% Grass cover, Good, HSG C
1,215	74	>75% Grass cover, Good, HSG C
4,844	74	>75% Grass cover, Good, HSG C
658	74	>75% Grass cover, Good, HSG C
1,645	74	>75% Grass cover, Good, HSG C
2,619	74	>75% Grass cover, Good, HSG C
1,972	74	>75% Grass cover, Good, HSG C
71	70	Woods, Good, HSG C
75,576	70	Woods, Good, HSG C
2,305	70	Woods, Good, HSG C
25,963	70	Woods, Good, HSG C
110,354	77	Woods, Good, HSG D
23,647	80	>75% Grass cover, Good, HSG D
2,213	98	Roofs, HSG D
454	98	Roofs, HSG D
142	77	Woods, Good, HSG D
753	77	Woods, Good, HSG D
368	55	Woods, Good, HSG B
510	55	Woods, Good, HSG B
2,875	70	Woods, Good, HSG C
1,695	98	Paved parking, HSG C
2,736	98	Roofs, HSG C
15,978	74	>75% Grass cover, Good, HSG C
1,008	74	>75% Grass cover, Good, HSG C
3,233	70	Woods, Good, HSG C
162	74	>75% Grass cover, Good, HSG C
71	74	>75% Grass cover, Good, HSG C
290,544	75	Weighted Average
278,837		95.97% Pervious Area
11,707		4.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0800	0.12		**Sheet Flow, uppermost**
					Woods: Light underbrush n= 0.400 P2= 3.20"
0.4	135	0.1100	5.34		**Shallow Concentrated Flow, on lots**
					Unpaved Kv= 16.1 fps
55.0	1,305	0.0250	0.40		**Shallow Concentrated Flow, above ditch**
					Forest w/Heavy Litter Kv= 2.5 fps
62.5	1,490	Total			

Subcatchment S200 P: Subcat S200 P



Summary for Subcatchment S201 P: Subcat S201 P

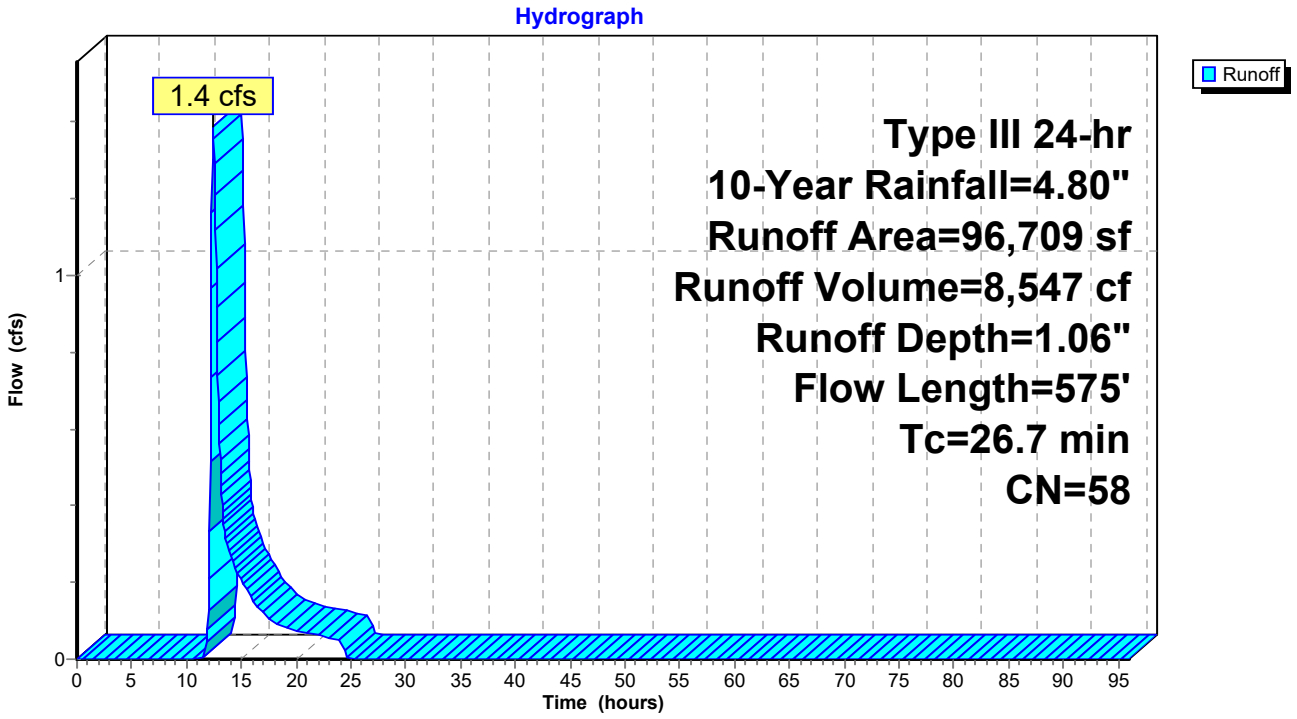
Runoff = 1.4 cfs @ 12.44 hrs, Volume= 8,547 cf, Depth= 1.06"
Routed to Reach R201 P : Reach R201 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
731	61	>75% Grass cover, Good, HSG B
1,695	55	Woods, Good, HSG B
74,781	55	Woods, Good, HSG B
2,189	61	>75% Grass cover, Good, HSG B
1,036	55	Woods, Good, HSG B
2,365	98	Roofs, HSG B
2,299	98	Paved parking, HSG B
4,529	61	>75% Grass cover, Good, HSG B
499	55	Woods, Good, HSG B
3,092	61	>75% Grass cover, Good, HSG B
1,740	70	Woods, Good, HSG C
1,738	74	>75% Grass cover, Good, HSG C
15	70	Woods, Good, HSG C
96,709	58	Weighted Average
92,045		95.18% Pervious Area
4,664		4.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	50	0.1000	0.13		**Sheet Flow, uppermost**
					Woods: Light underbrush n= 0.400 P2= 3.20"
0.2	50	0.0900	4.83		**Shallow Concentrated Flow, yard**
					Unpaved Kv= 16.1 fps
20.0	475	0.0250	0.40		**Shallow Concentrated Flow, above channel**
					Forest w/Heavy Litter Kv= 2.5 fps
26.7	575	Total			

Subcatchment S201 P: Subcat S201 P



Summary for Subcatchment S202 P: Subcat S202 P

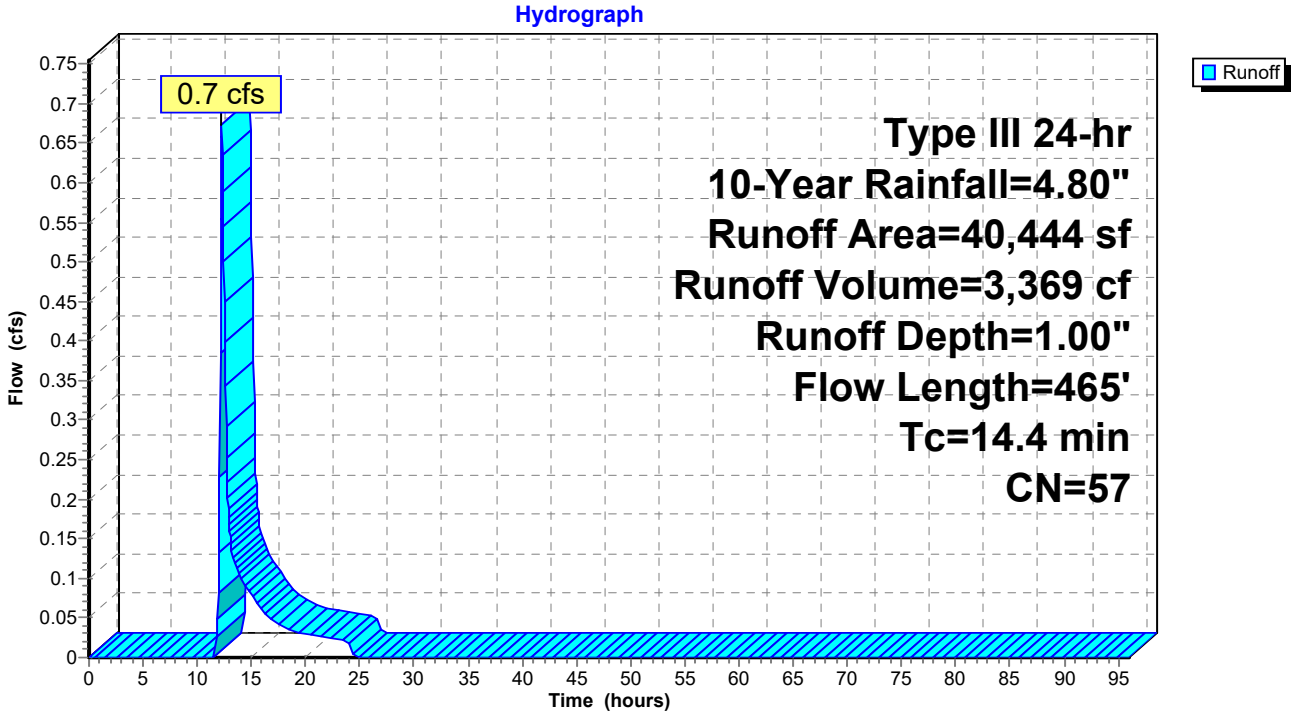
Runoff = 0.7 cfs @ 12.24 hrs, Volume= 3,369 cf, Depth= 1.00"
Routed to Reach R202 P : Reach R202 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
744	55	Woods, Good, HSG B
1,343	61	>75% Grass cover, Good, HSG B
27,977	55	Woods, Good, HSG B
10,366	61	>75% Grass cover, Good, HSG B
14	55	Woods, Good, HSG B
40,444	57	Weighted Average
40,444		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	50	0.0800	0.18		**Sheet Flow, uppermost** Grass: Dense n= 0.240 P2= 3.20"
9.1	225	0.0270	0.41		**Shallow Concentrated Flow, above channel and pipe** Forest w/Heavy Litter Kv= 2.5 fps
0.6	190	0.0605	5.16	103.26	**Trap/Vee/Rect Channel Flow, channel** Bot.W=4.00' D=2.00' Z= 3.0 '/' Top.W=16.00' n= 0.080 Earth, long dense weeds
14.4	465	Total			

Subcatchment S202 P: Subcat S202 P



Summary for Subcatchment S400 P: Subcat S400 P

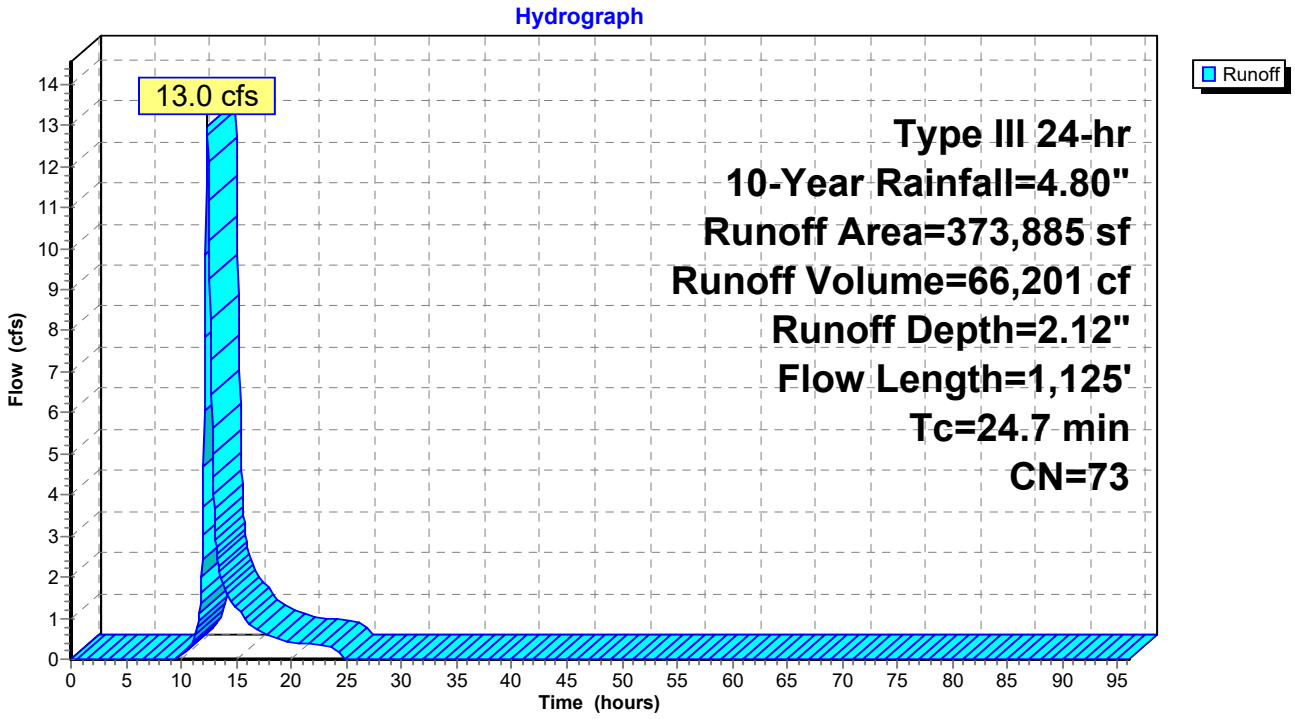
Runoff = 13.0 cfs @ 12.36 hrs, Volume= 66,201 cf, Depth= 2.12"
Routed to Link L2 P : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
181	70	Woods, Good, HSG C
16,816	74	>75% Grass cover, Good, HSG C
9,901	74	>75% Grass cover, Good, HSG C
5,763	74	>75% Grass cover, Good, HSG C
892	74	>75% Grass cover, Good, HSG C
3,067	70	Woods, Good, HSG C
39,249	74	>75% Grass cover, Good, HSG C
112	74	>75% Grass cover, Good, HSG C
12,077	74	>75% Grass cover, Good, HSG C
72	74	>75% Grass cover, Good, HSG C
180	74	>75% Grass cover, Good, HSG C
3,312	98	Roofs, HSG C
1,700	98	Roofs, HSG C
1,002	98	Roofs, HSG C
1,656	98	Roofs, HSG C
1,013	98	Paved parking, HSG C
2,142	98	Paved parking, HSG C
254	98	Paved parking, HSG C
1,288	98	Paved parking, HSG C
387	70	Woods, Good, HSG C
231	70	Woods, Good, HSG C
508	70	Woods, Good, HSG C
177,471	70	Woods, Good, HSG C
55,433	70	Woods, Good, HSG C
32,135	77	Woods, Good, HSG D
3,572	80	>75% Grass cover, Good, HSG D
2,343	80	>75% Grass cover, Good, HSG D
296	98	Roofs, HSG D
178	98	Roofs, HSG D
476	98	Paved parking, HSG D
178	77	Woods, Good, HSG D
373,885	73	Weighted Average
360,568		96.44% Pervious Area
13,317		3.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	50	0.0800	0.18		**Sheet Flow, uppermost**
					Grass: Dense n= 0.240 P2= 3.20"
20.0	1,075	0.0320	0.89		**Shallow Concentrated Flow, to ditch**
					Woodland Kv= 5.0 fps
24.7	1,125	Total			

Subcatchment S400 P: Subcat S400 P



Summary for Subcatchment S401 P: Subcat S401 P

Tc based on walkout elevation and lawn behind home

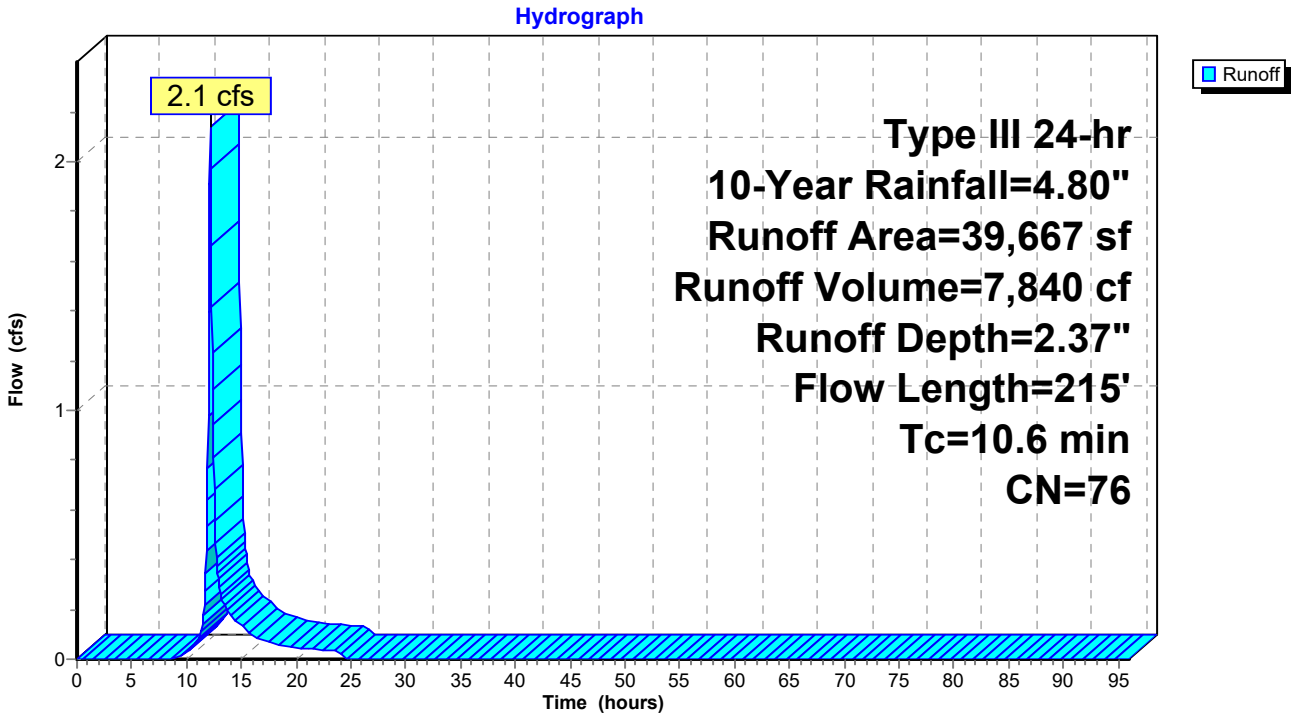
Runoff = 2.1 cfs @ 12.15 hrs, Volume= 7,840 cf, Depth= 2.37"
Routed to Reach R401 P : Reach R401 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
299	70	Woods, Good, HSG C
2,143	98	Paved parking, HSG C
3,312	98	Roofs, HSG C
11,155	70	Woods, Good, HSG C
22,758	74	>75% Grass cover, Good, HSG C
39,667	76	Weighted Average
34,212		86.25% Pervious Area
5,455		13.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.10		**Sheet Flow, uppermost** Grass: Dense n= 0.240 P2= 3.20"
0.8	105	0.0200	2.28		**Shallow Concentrated Flow, lawn area** Unpaved Kv= 16.1 fps
1.6	60	0.0160	0.63		**Shallow Concentrated Flow, woods above pipe and channel** Woodland Kv= 5.0 fps
10.6	215	Total			

Subcatchment S401 P: Subcat S401 P



Summary for Subcatchment S402 P: Subcat S402 P

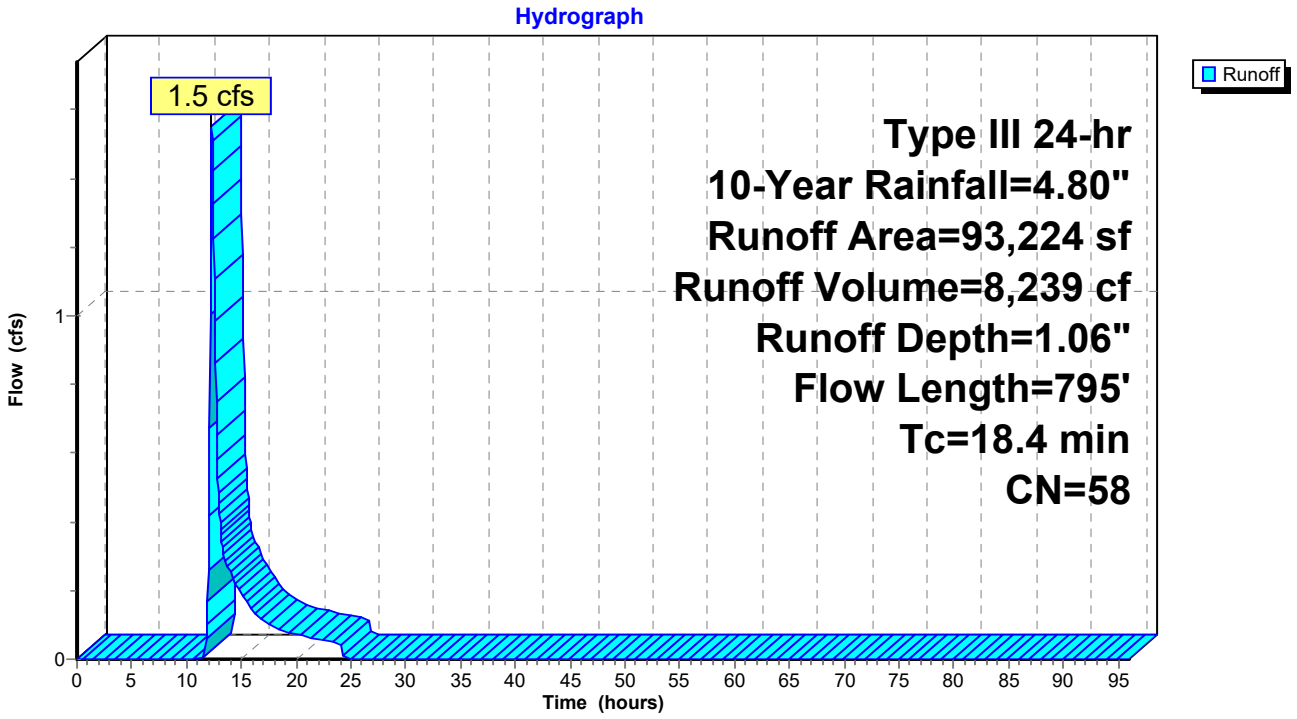
Runoff = 1.5 cfs @ 12.30 hrs, Volume= 8,239 cf, Depth= 1.06"
Routed to Link L2 P : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
76,881	55	Woods, Good, HSG B
350	55	Woods, Good, HSG B
3,802	61	>75% Grass cover, Good, HSG B
1,524	98	Roofs, HSG B
149	98	Roofs, HSG B
1,543	98	Paved parking, HSG B
6,327	61	>75% Grass cover, Good, HSG B
1,308	74	>75% Grass cover, Good, HSG C
37	70	Woods, Good, HSG C
1,303	70	Woods, Good, HSG C
93,224	58	Weighted Average
90,008		96.55% Pervious Area
3,216		3.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow, uppermost** Woods: Light underbrush n= 0.400 P2= 3.20"
5.0	270	0.0330	0.91		**Shallow Concentrated Flow, above channel and pipe** Woodland Kv= 5.0 fps
4.1	475	0.0084	1.92	38.48	**Trap/Vee/Rect Channel Flow, channel** Bot.W=4.00' D=2.00' Z= 3.0 '/' Top.W=16.00' n= 0.080 Earth, long dense weeds
18.4	795	Total			

Subcatchment S402 P: Subcat S402 P



Summary for Subcatchment S403 P: Subcat S403 P

Tc based on lawn for lot

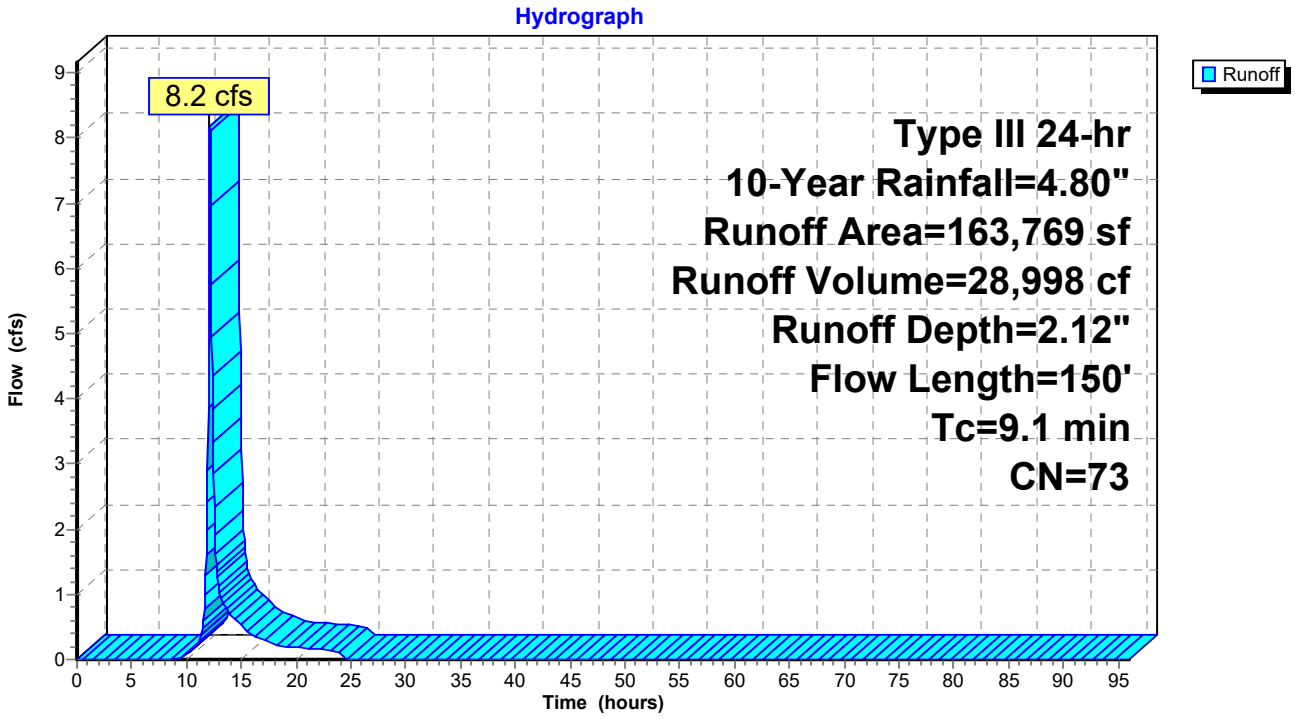
Runoff = 8.2 cfs @ 12.14 hrs, Volume= 28,998 cf, Depth= 2.12"
Routed to Pond P403 P : Pond P403 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
249	98	Roofs, HSG C
791	98	Roofs, HSG C
299	98	Roofs, HSG C
115	98	Paved parking, HSG C
1,577	70	Woods, Good, HSG C
2,089	74	>75% Grass cover, Good, HSG C
1,613	70	Woods, Good, HSG C
1,133	70	Woods, Good, HSG C
1,235	74	>75% Grass cover, Good, HSG C
4,825	74	>75% Grass cover, Good, HSG C
322	74	>75% Grass cover, Good, HSG C
8,593	74	>75% Grass cover, Good, HSG C
2,271	98	Roofs, HSG B
2,128	98	Paved parking, HSG B
340	98	Paved parking, HSG B
1,890	98	Paved roads w/curbs & sewers, HSG B
7,562	55	Woods, Good, HSG B
3,370	55	Woods, Good, HSG B
2,224	55	Woods, Good, HSG B
447	55	Woods, Good, HSG B
2,851	61	>75% Grass cover, Good, HSG B
315	61	>75% Grass cover, Good, HSG B
18,665	61	>75% Grass cover, Good, HSG B
6,689	55	Woods, Good, HSG B
2,470	55	Woods, Good, HSG B
611	98	Roofs, HSG B
506	98	Paved parking, HSG B
481	55	Woods, Good, HSG B
1,441	55	Woods, Good, HSG B
4,804	61	>75% Grass cover, Good, HSG B
861	74	>75% Grass cover, Good, HSG C
25,322	74	>75% Grass cover, Good, HSG C
961	74	>75% Grass cover, Good, HSG C
672	74	>75% Grass cover, Good, HSG C
84	74	>75% Grass cover, Good, HSG C
227	74	>75% Grass cover, Good, HSG C
2,260	74	>75% Grass cover, Good, HSG C
536	70	Woods, Good, HSG C
18,288	70	Woods, Good, HSG C
15,778	98	Paved roads w/curbs & sewers, HSG C
977	98	Paved parking, HSG C
1,245	98	Paved parking, HSG C
639	98	Paved parking, HSG C
118	98	Paved parking, HSG C
1,053	98	Paved parking, HSG C
56	98	Paved parking, HSG C
1,192	98	Paved parking, HSG C
1,037	98	Paved parking, HSG C
1,656	98	Roofs, HSG C
3,901	70	Woods, Good, HSG C
5,000	74	>75% Grass cover, Good, HSG C
163,769	73	Weighted Average
130,818		79.88% Pervious Area
32,951		20.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.10		**Sheet Flow, uppermost** Grass: Dense n= 0.240 P2= 3.20"
0.9	100	0.1500	1.94		**Shallow Concentrated Flow, woods on lot** Woodland Kv= 5.0 fps
9.1	150	Total			

Subcatchment S403 P: Subcat S403 P



Summary for Subcatchment S404 P: Subcat S404 P

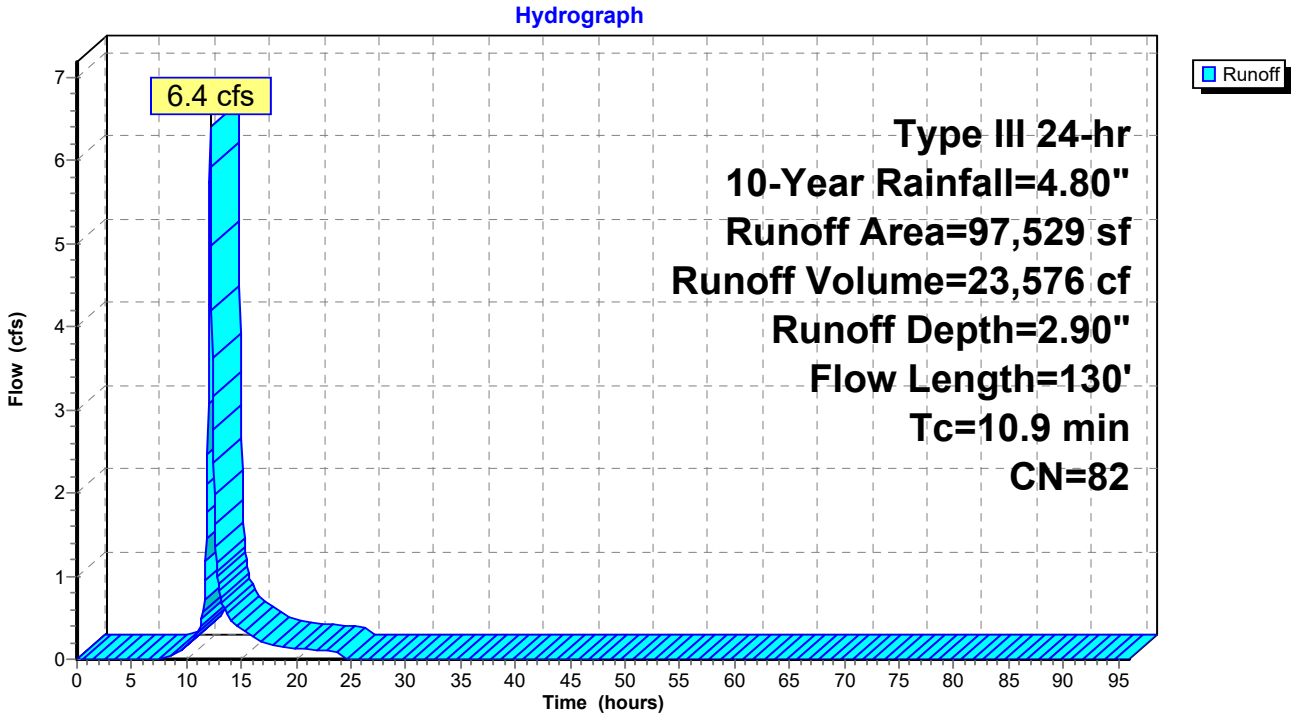
Runoff = 6.4 cfs @ 12.15 hrs, Volume= 23,576 cf, Depth= 2.90"
Routed to Link L2 P : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
167	74	>75% Grass cover, Good, HSG C
2,875	74	>75% Grass cover, Good, HSG C
676	74	>75% Grass cover, Good, HSG C
4,929	74	>75% Grass cover, Good, HSG C
971	70	Woods, Good, HSG C
5,612	70	Woods, Good, HSG C
55	98	Roofs, HSG C
916	98	Roofs, HSG C
1,041	98	Paved parking, HSG C
1,042	98	Paved parking, HSG C
1,725	98	Paved parking, HSG C
478	98	Paved parking, HSG C
1,177	98	Paved parking, HSG C
384	98	Paved parking, HSG C
459	74	>75% Grass cover, Good, HSG C
1,168	74	>75% Grass cover, Good, HSG C
580	74	>75% Grass cover, Good, HSG C
165	70	Woods, Good, HSG C
28	70	Woods, Good, HSG C
435	74	>75% Grass cover, Good, HSG C
321	74	>75% Grass cover, Good, HSG C
291	98	Paved parking, HSG C
67	98	Paved parking, HSG C
451	98	Paved parking, HSG C
368	98	Paved parking, HSG C
1,149	70	Woods, Good, HSG C
6,425	70	Woods, Good, HSG C
5,610	98	Paved roads w/curbs & sewers, HSG C
11,150	98	Paved roads w/curbs & sewers, HSG C
2,076	74	>75% Grass cover, Good, HSG C
8,934	74	>75% Grass cover, Good, HSG C
4,166	74	>75% Grass cover, Good, HSG C
471	74	>75% Grass cover, Good, HSG C
24	74	>75% Grass cover, Good, HSG C
7,933	74	>75% Grass cover, Good, HSG C
1,821	74	>75% Grass cover, Good, HSG C
2,988	80	>75% Grass cover, Good, HSG D
239	77	Woods, Good, HSG D
6,270	80	>75% Grass cover, Good, HSG D
4,584	98	Paved roads w/curbs & sewers, HSG D
3,352	77	Woods, Good, HSG D
309	98	Roofs, HSG D
264	98	Roofs, HSG D
1,425	98	Paved parking, HSG D
663	98	Paved parking, HSG D
253	98	Paved parking, HSG D
75	98	Paved parking, HSG D
370	80	>75% Grass cover, Good, HSG D
54	80	>75% Grass cover, Good, HSG D
213	80	>75% Grass cover, Good, HSG D
245	80	>75% Grass cover, Good, HSG D
85	77	Woods, Good, HSG D
97,529	82	Weighted Average
65,201		66.85% Pervious Area
32,328		33.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.1200	0.08		**Sheet Flow, uppermost**
					Woods: Dense underbrush n= 0.800 P2= 3.20"
0.4	80	0.0380	3.14		**Shallow Concentrated Flow, to Road A**
					Unpaved Kv= 16.1 fps
10.9	130	Total			

Subcatchment S404 P: Subcat S404 P



Summary for Subcatchment S500 P: Subcat S500 P

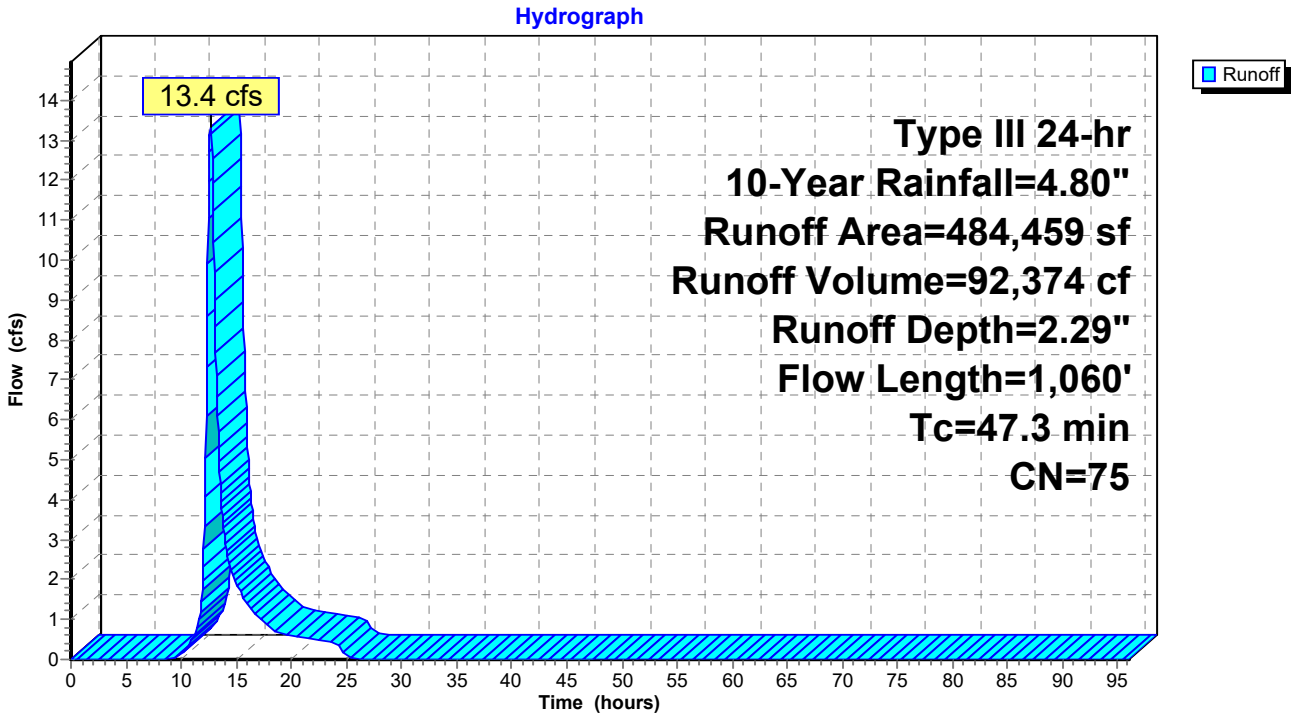
Runoff = 13.4 cfs @ 12.66 hrs, Volume= 92,374 cf, Depth= 2.29"
Routed to Link L2 P : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
9,388	74	>75% Grass cover, Good, HSG C
60,665	70	Woods, Good, HSG C
26,198	74	>75% Grass cover, Good, HSG C
16,018	74	>75% Grass cover, Good, HSG C
16,331	74	>75% Grass cover, Good, HSG C
14,669	98	Paved roads w/curbs & sewers, HSG C
756	74	>75% Grass cover, Good, HSG C
725	74	>75% Grass cover, Good, HSG C
816	98	Roofs, HSG C
2,360	98	Roofs, HSG C
2,360	98	Roofs, HSG C
1,080	98	Roofs, HSG C
437	98	Roofs, HSG C
2,360	98	Roofs, HSG C
1,123	98	Paved parking, HSG C
1,277	98	Paved parking, HSG C
1,795	98	Paved parking, HSG C
4,989	98	Paved parking, HSG C
2,187	98	Paved parking, HSG C
79	98	Paved parking, HSG C
646	98	Paved parking, HSG C
254	98	Paved parking, HSG C
379	74	>75% Grass cover, Good, HSG C
176	74	>75% Grass cover, Good, HSG C
588	74	>75% Grass cover, Good, HSG C
1,196	74	>75% Grass cover, Good, HSG C
4,845	70	Woods, Good, HSG C
933	70	Woods, Good, HSG C
1,315	70	Woods, Good, HSG C
724	98	Paved parking, HSG C
802	98	Paved parking, HSG C
7,741	74	>75% Grass cover, Good, HSG C
2,182	74	>75% Grass cover, Good, HSG C
2,480	74	>75% Grass cover, Good, HSG C
2,952	74	>75% Grass cover, Good, HSG C
1,204	74	>75% Grass cover, Good, HSG C
15,588	74	>75% Grass cover, Good, HSG C
4,215	74	>75% Grass cover, Good, HSG C
338	70	Woods, Good, HSG C
59,630	70	Woods, Good, HSG C
104,943	70	Woods, Good, HSG C
76,494	77	Woods, Good, HSG D
21,175	80	>75% Grass cover, Good, HSG D
1,923	98	Roofs, HSG D
151	98	Paved parking, HSG D
102	98	Paved parking, HSG D
2,133	77	Woods, Good, HSG D
3,737	70	Woods, Good, HSG C
484,459	75	Weighted Average
444,325		91.72% Pervious Area
40,134		8.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	50	0.0900	0.07		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
35.5	1,010	0.0360	0.47		**Shallow Concentrated Flow, to ditch** Forest w/Heavy Litter Kv= 2.5 fps
47.3	1,060	Total			

Subcatchment S500 P: Subcat S500 P



Summary for Subcatchment S501 P: Subcat S501 P

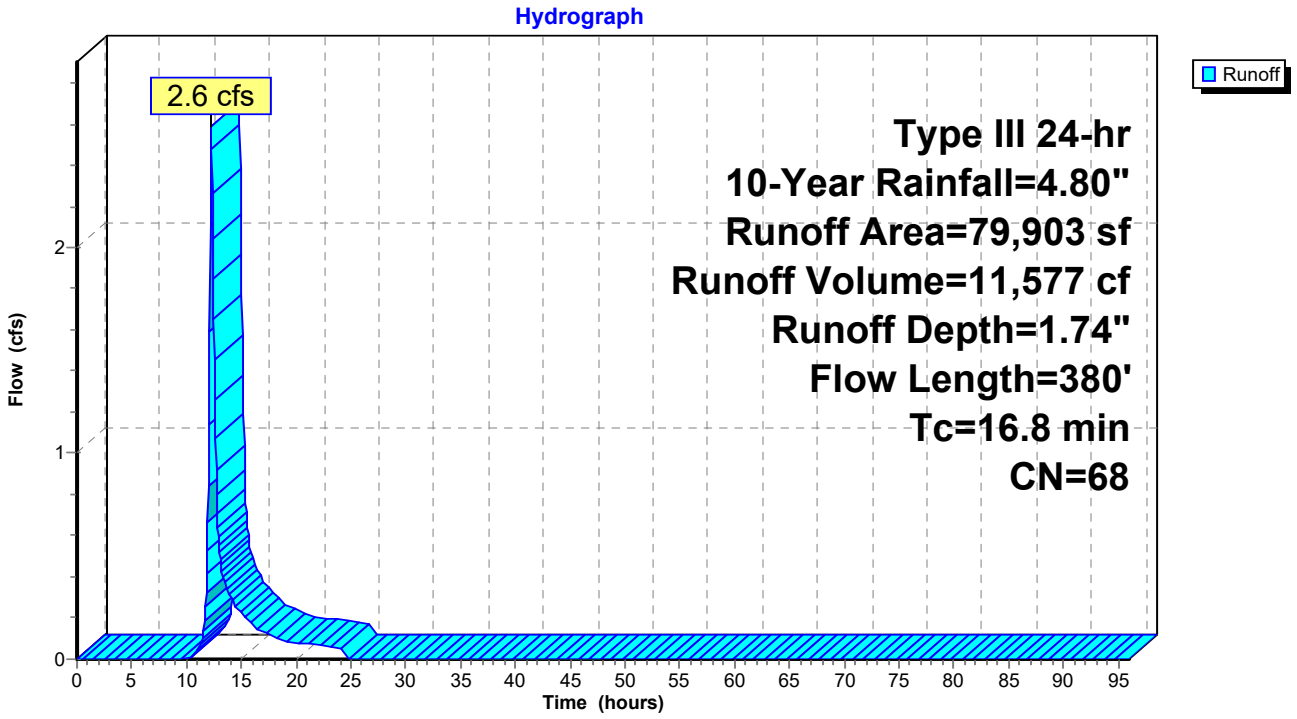
Runoff = 2.6 cfs @ 12.25 hrs, Volume= 11,577 cf, Depth= 1.74"
Routed to Pond P501 P : Pond P501 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
1,838	98	Roofs, HSG C
5,525	70	Woods, Good, HSG C
3,760	74	>75% Grass cover, Good, HSG C
6,142	74	>75% Grass cover, Good, HSG C
339	74	>75% Grass cover, Good, HSG C
81	70	Woods, Good, HSG C
6,958	61	>75% Grass cover, Good, HSG B
2,852	98	Paved roads w/curbs & sewers, HSG B
727	98	Paved parking, HSG B
5,343	55	Woods, Good, HSG B
14,295	55	Woods, Good, HSG B
714	61	>75% Grass cover, Good, HSG B
4,475	61	>75% Grass cover, Good, HSG B
4,540	61	>75% Grass cover, Good, HSG B
1,552	61	>75% Grass cover, Good, HSG B
1,209	61	>75% Grass cover, Good, HSG B
564	98	Roofs, HSG B
1,408	98	Paved parking, HSG B
3,688	55	Woods, Good, HSG B
676	55	Woods, Good, HSG B
792	74	>75% Grass cover, Good, HSG C
118	70	Woods, Good, HSG C
857	98	Paved parking, HSG C
3,586	98	Paved roads w/curbs & sewers, HSG C
7,864	74	>75% Grass cover, Good, HSG C
79,903	68	Weighted Average
68,071		85.19% Pervious Area
11,832		14.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow, uppermost**
					Woods: Light underbrush n= 0.400 P2= 3.20"
7.5	330	0.0850	0.73		**Shallow Concentrated Flow, above pipe**
					Forest w/Heavy Litter Kv= 2.5 fps
16.8	380	Total			

Subcatchment S501 P: Subcat S501 P



Summary for Subcatchment S502 P: Subcat S502 P

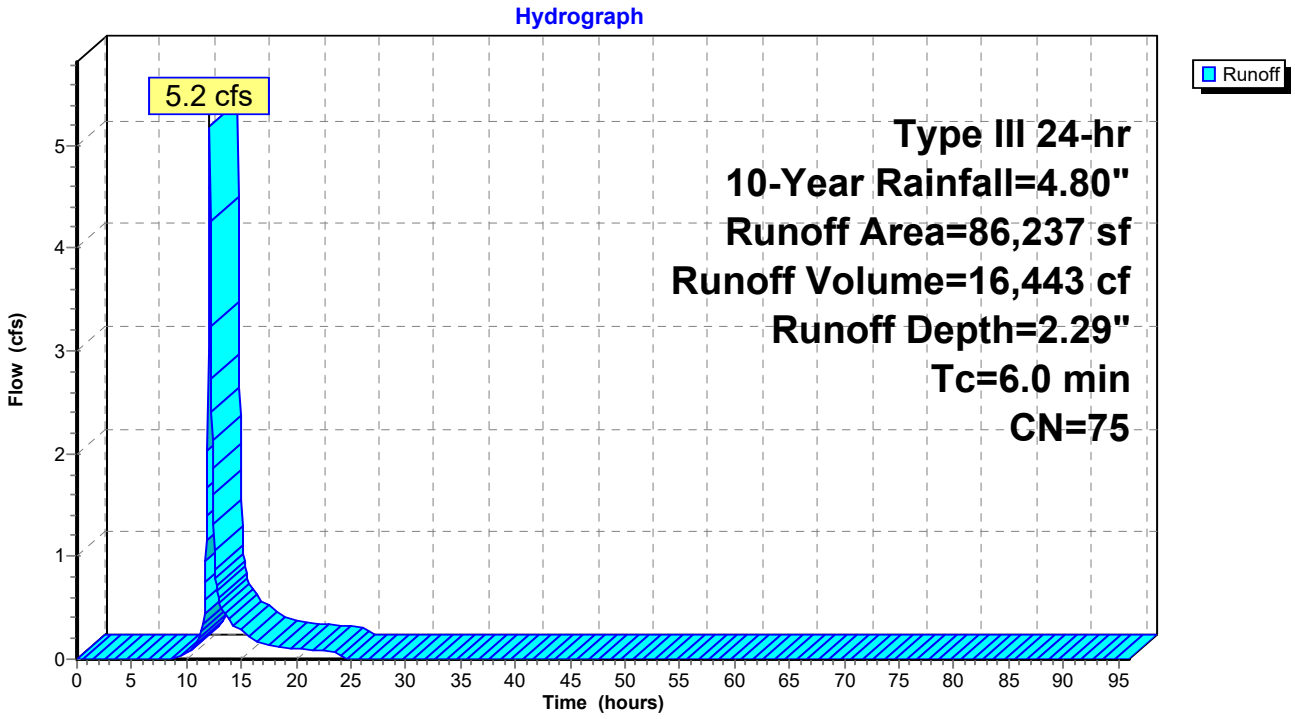
Runoff = 5.2 cfs @ 12.09 hrs, Volume= 16,443 cf, Depth= 2.29"
Routed to Pond P502 P : Pond P502 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
774	98	Paved parking, HSG C
211	98	Paved parking, HSG C
638	74	>75% Grass cover, Good, HSG C
4,747	74	>75% Grass cover, Good, HSG C
2,591	61	>75% Grass cover, Good, HSG B
440	98	Paved parking, HSG B
3,438	55	Woods, Good, HSG B
357	55	Woods, Good, HSG B
1,425	74	>75% Grass cover, Good, HSG C
8,594	70	Woods, Good, HSG C
7,746	70	Woods, Good, HSG C
131	74	>75% Grass cover, Good, HSG C
7,601	70	Woods, Good, HSG C
167	70	Woods, Good, HSG C
129	98	Paved parking, HSG C
55	98	Paved parking, HSG C
4,562	98	Paved parking, HSG C
13,013	74	>75% Grass cover, Good, HSG C
604	74	>75% Grass cover, Good, HSG C
392	74	>75% Grass cover, Good, HSG C
5,640	74	>75% Grass cover, Good, HSG C
9,254	98	Paved roads w/curbs & sewers, HSG C
337	70	Woods, Good, HSG C
13,391	70	Woods, Good, HSG C
86,237	75	Weighted Average
70,812		82.11% Pervious Area
15,425		17.89% Impervious Area

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

Subcatchment S502 P: Subcat S502 P



Summary for Subcatchment S503 P: Subcat S503 P

Tc based on lawn behind future home

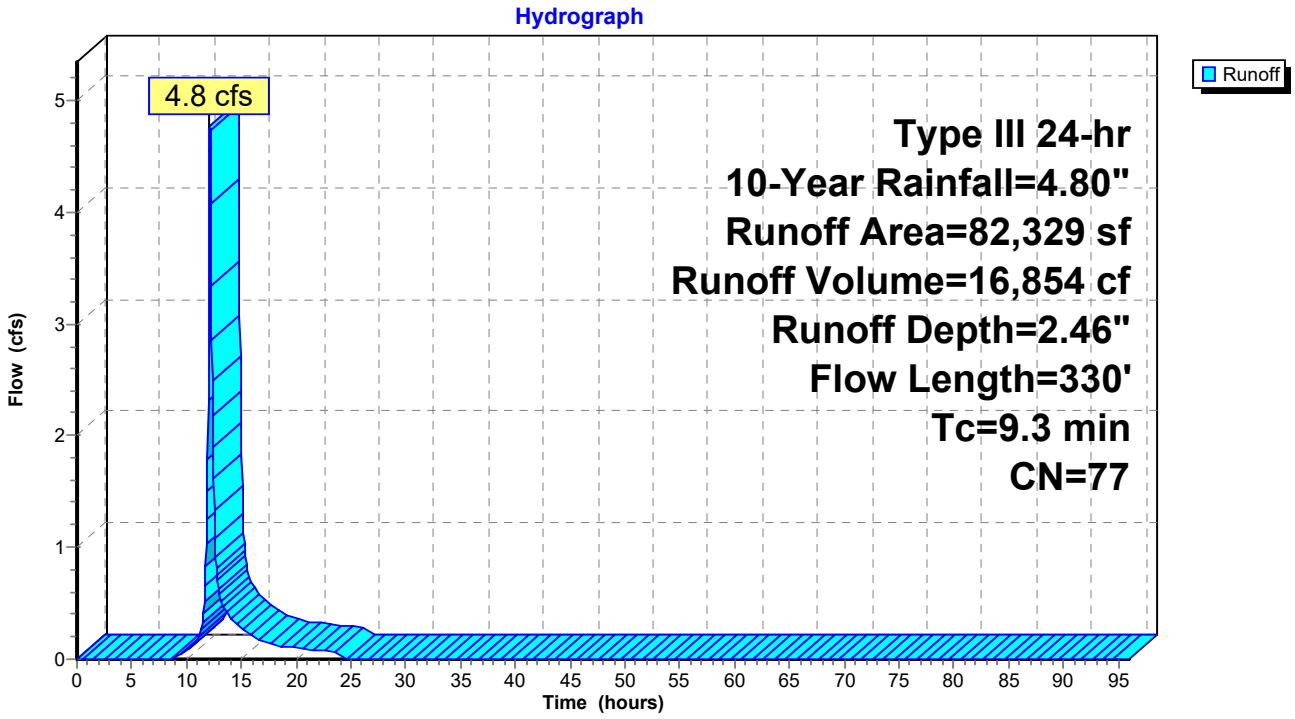
Runoff = 4.8 cfs @ 12.14 hrs, Volume= 16,854 cf, Depth= 2.46"
Routed to Pond P503 P : Pond P503 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
1,798	61	>75% Grass cover, Good, HSG B
2,567	61	>75% Grass cover, Good, HSG B
3,471	61	>75% Grass cover, Good, HSG B
198	61	>75% Grass cover, Good, HSG B
3,489	61	>75% Grass cover, Good, HSG B
8,567	98	Paved roads w/curbs & sewers, HSG B
578	98	Roofs, HSG B
1,963	98	Paved parking, HSG B
192	98	Paved parking, HSG B
1,559	98	Paved parking, HSG B
112	98	Paved parking, HSG B
216	55	Woods, Good, HSG B
2,353	55	Woods, Good, HSG B
197	61	>75% Grass cover, Good, HSG B
1,566	61	>75% Grass cover, Good, HSG B
280	74	>75% Grass cover, Good, HSG C
5,164	70	Woods, Good, HSG C
708	70	Woods, Good, HSG C
438	70	Woods, Good, HSG C
234	98	Paved parking, HSG C
325	98	Paved parking, HSG C
2,734	98	Roofs, HSG C
3,312	98	Roofs, HSG C
1,038	98	Paved roads w/curbs & sewers, HSG C
442	74	>75% Grass cover, Good, HSG C
4,889	70	Woods, Good, HSG C
31,694	74	>75% Grass cover, Good, HSG C
2,245	74	>75% Grass cover, Good, HSG C
82,329	77	Weighted Average
61,715		74.96% Pervious Area
20,614		25.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.10		**Sheet Flow, uppermost**
					Grass: Dense n= 0.240 P2= 3.20"
1.1	280	0.0710	4.29		**Shallow Concentrated Flow, to basin 503**
					Unpaved Kv= 16.1 fps
9.3	330	Total			

Subcatchment S503 P: Subcat S503 P



Summary for Subcatchment S504 P: Subcat S504 P

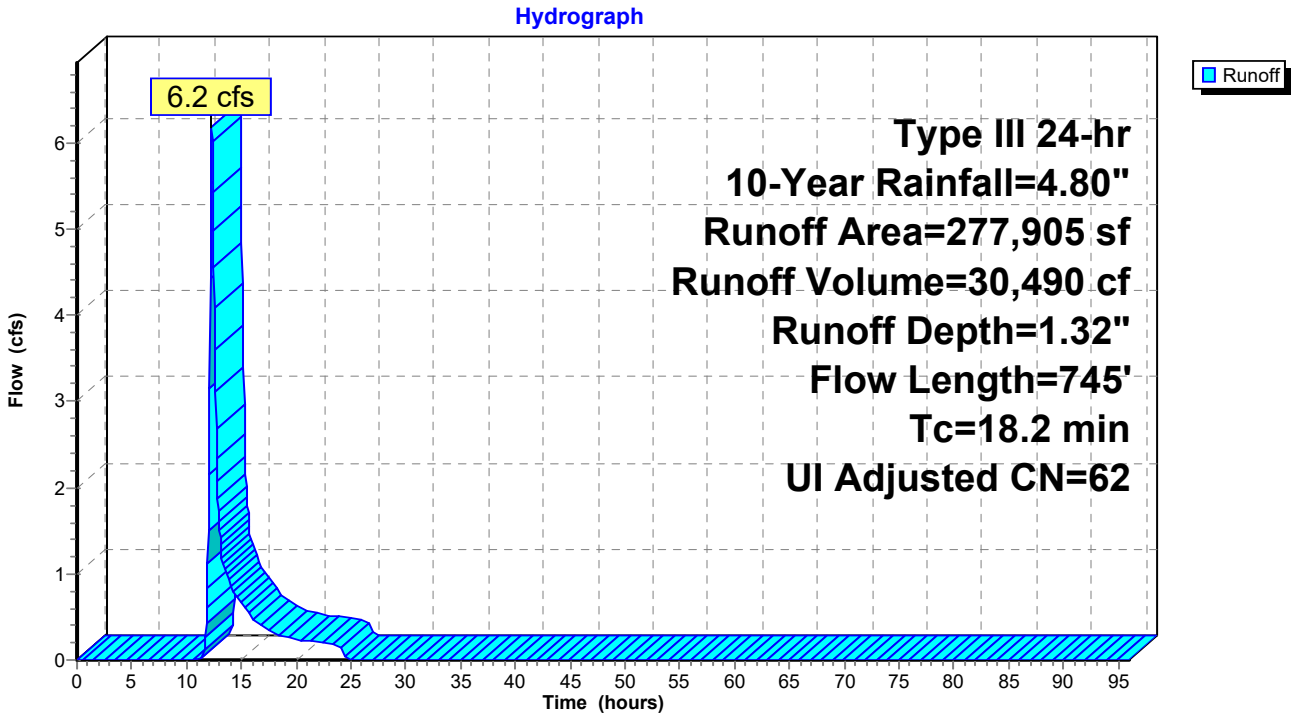
Runoff = 6.2 cfs @ 12.28 hrs, Volume= 30,490 cf, Depth= 1.32"
Routed to Reach R504 P : Reach R504 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Adj	Description
21,140	61		>75% Grass cover, Good, HSG B
90,440	55		Woods, Good, HSG B
683	61		>75% Grass cover, Good, HSG B
363	98		Paved roads w/curbs & sewers, HSG B
63	55		Woods, Good, HSG B
1,199	98		Roofs, HSG B
3,341	98		Roofs, HSG B
1,221	98		Roofs, HSG B
1,836	98		Roofs, HSG B
1,566	98		Roofs, HSG B
1,439	98		Paved parking, HSG B
2,655	98		Paved parking, HSG B
1,394	98		Paved parking, HSG B
2,691	98		Paved parking, HSG B
1,466	98		Paved parking, HSG B
51	98		Paved parking, HSG B
14,405	98		Paved parking, HSG B
240	98		Unconnected pavement, HSG B
266	98		Unconnected pavement, HSG B
1,057	98		Unconnected pavement, HSG B
1,830	98		Unconnected pavement, HSG B
897	98		Unconnected pavement, HSG B
10,972	61		>75% Grass cover, Good, HSG B
16,004	61		>75% Grass cover, Good, HSG B
1,750	61		>75% Grass cover, Good, HSG B
874	61		>75% Grass cover, Good, HSG B
19,439	61		>75% Grass cover, Good, HSG B
35	55		Woods, Good, HSG B
40	61		>75% Grass cover, Good, HSG B
57,008	55		Woods, Good, HSG B
13,834	55		Woods, Good, HSG B
1,370	55		Woods, Good, HSG B
2,234	55		Woods, Good, HSG B
73	70		Woods, Good, HSG C
1,307	70		Woods, Good, HSG C
2,722	74		>75% Grass cover, Good, HSG C
277,905	63	62	Weighted Average, UI Adjusted
239,988			86.36% Pervious Area
37,917			13.64% Impervious Area
4,290			11.31% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.10		**Sheet Flow, uppermost** Grass: Dense n= 0.240 P2= 3.20"
4.4	325	0.0610	1.23		**Shallow Concentrated Flow, above Forest Street** Woodland Kv= 5.0 fps
5.6	370	0.0480	1.10		**Shallow Concentrated Flow, below Forest Street** Woodland Kv= 5.0 fps
18.2	745	Total			

Subcatchment S504 P: Subcat S504 P



Summary for Subcatchment S505 P: Subcat S505 P

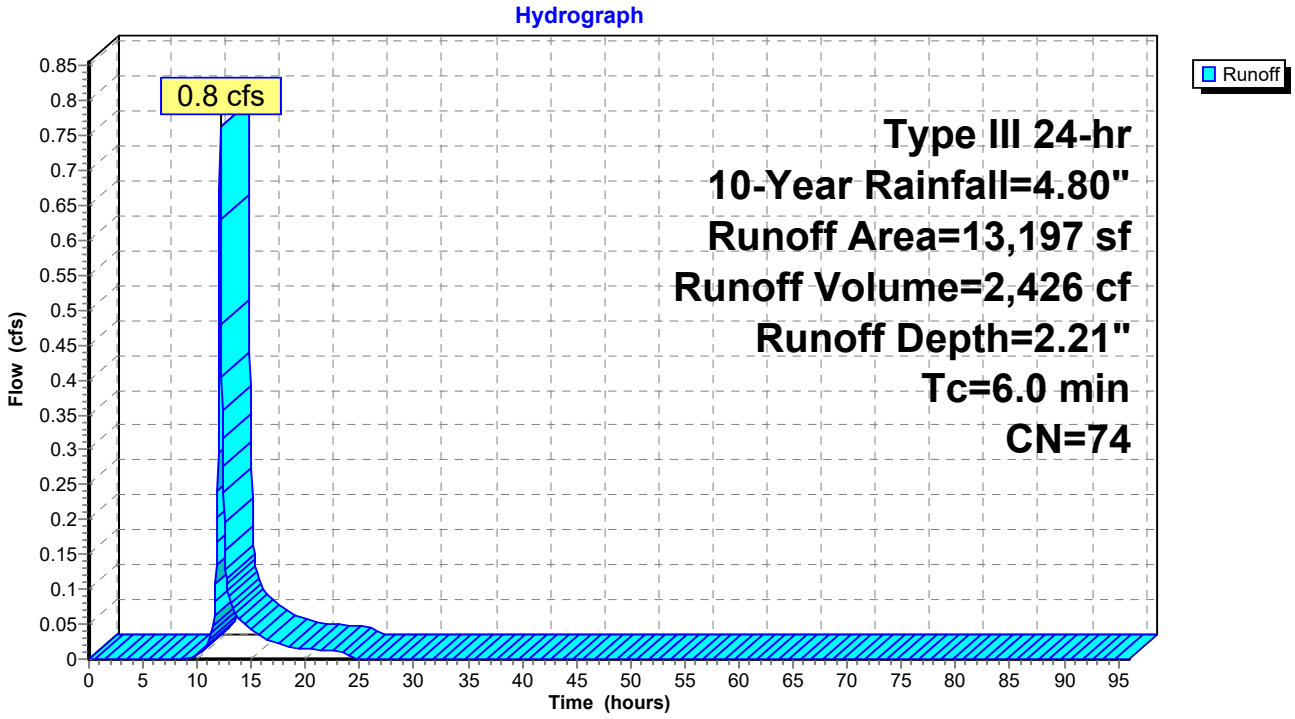
Runoff = 0.8 cfs @ 12.10 hrs, Volume= 2,426 cf, Depth= 2.21"
Routed to Pond P505 P : Pond P505 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
13,197	74	>75% Grass cover, Good, HSG C
13,197		100.00% Pervious Area

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

Subcatchment S505 P: Subcat S505 P



Summary for Subcatchment S700P: Subcat S700P

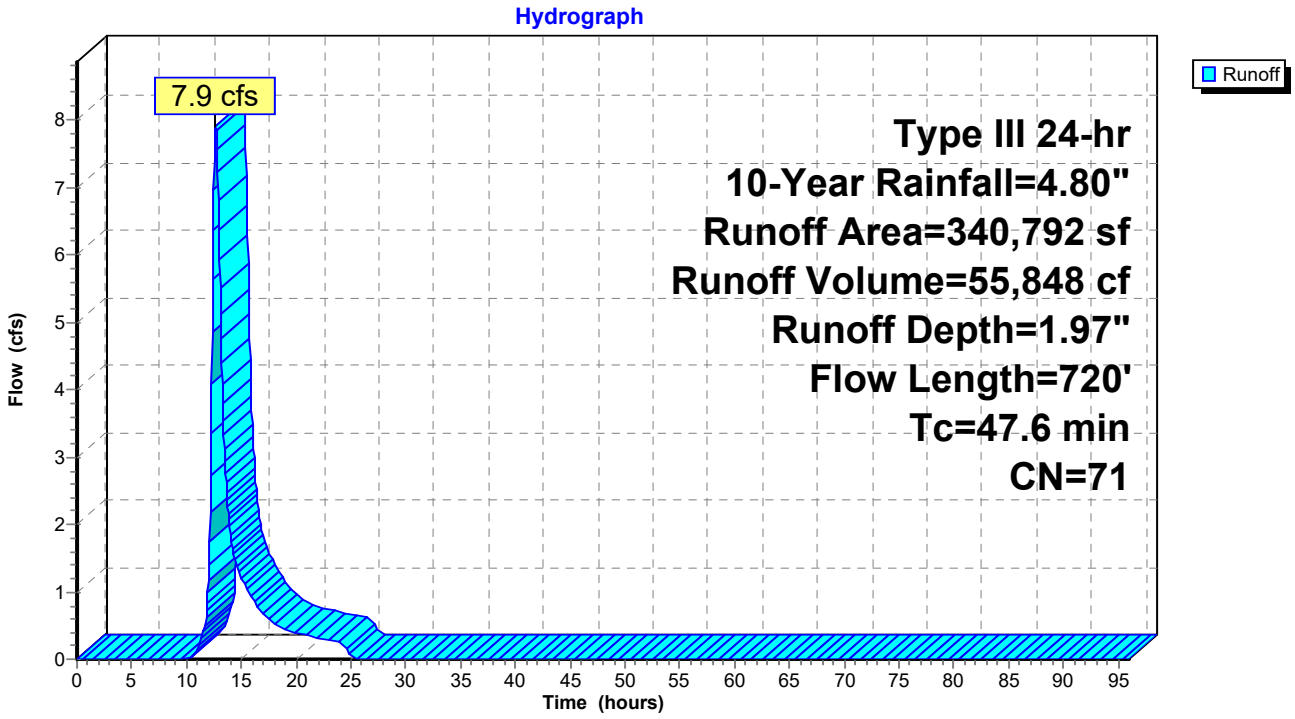
Runoff = 7.9 cfs @ 12.68 hrs, Volume= 55,848 cf, Depth= 1.97"
Routed to Link L2 P : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
37,111	74	>75% Grass cover, Good, HSG C
1,218	74	>75% Grass cover, Good, HSG C
2,795	74	>75% Grass cover, Good, HSG C
1,624	74	>75% Grass cover, Good, HSG C
289,700	70	Woods, Good, HSG C
2,232	98	Roofs, HSG C
1,656	98	Roofs, HSG C
2,166	98	Paved parking, HSG C
728	98	Paved parking, HSG C
327	70	Woods, Good, HSG C
455	70	Woods, Good, HSG C
780	70	Woods, Good, HSG C
340,792	71	Weighted Average
334,010		98.01% Pervious Area
6,782		1.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0800	0.07		**Sheet Flow, uppermost**
					Woods: Dense underbrush n= 0.800 P2= 3.20"
35.3	670	0.0160	0.32		**Shallow Concentrated Flow, to ditch**
					Forest w/Heavy Litter Kv= 2.5 fps
47.6	720	Total			

Subcatchment S700P: Subcat S700P



Summary for Subcatchment S701P: Subcat S701P

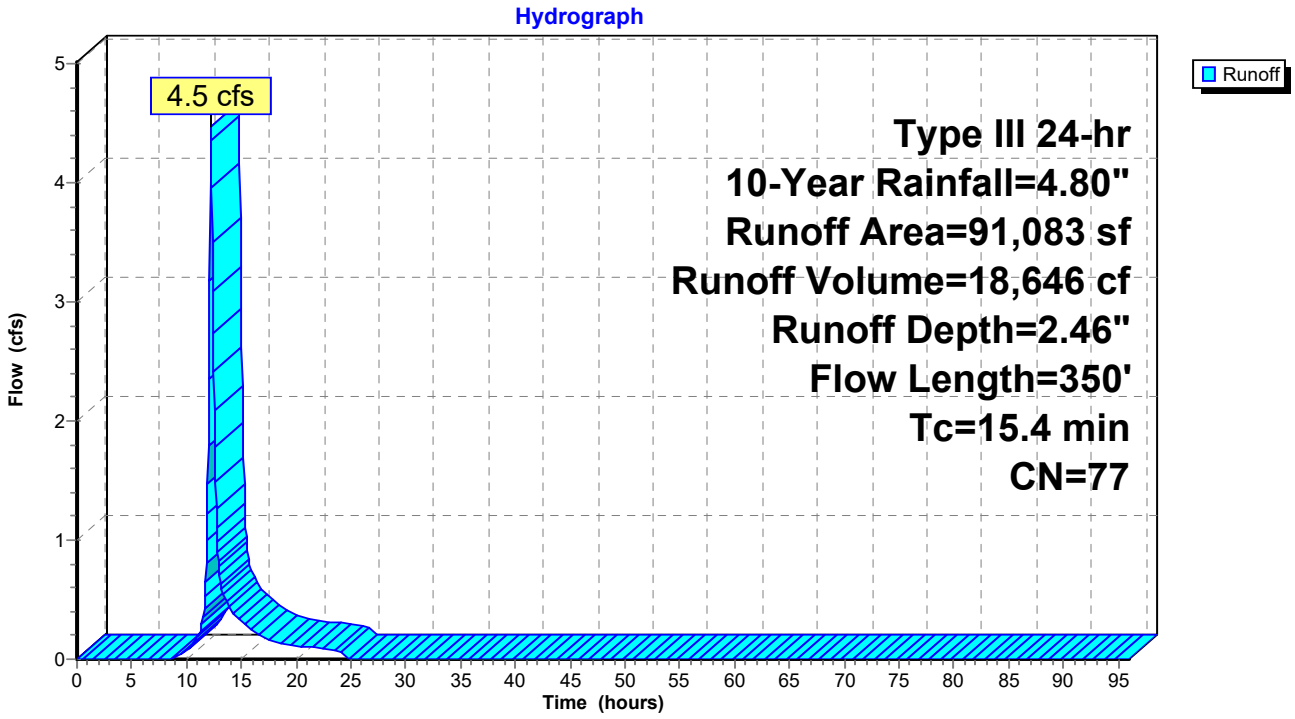
Runoff = 4.5 cfs @ 12.22 hrs, Volume= 18,646 cf, Depth= 2.46"
Routed to Pond P701 P : Pond P701 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
8,126	74	>75% Grass cover, Good, HSG C
6,133	74	>75% Grass cover, Good, HSG C
565	74	>75% Grass cover, Good, HSG C
25,718	74	>75% Grass cover, Good, HSG C
10,539	70	Woods, Good, HSG C
3,309	70	Woods, Good, HSG C
75	74	>75% Grass cover, Good, HSG C
205	74	>75% Grass cover, Good, HSG C
6,831	98	Paved roads w/curbs & sewers, HSG C
1,544	98	Roofs, HSG C
1,656	98	Roofs, HSG C
1,586	98	Paved parking, HSG C
1,132	98	Paved parking, HSG C
2,006	98	Paved parking, HSG C
605	98	Paved parking, HSG C
521	98	Paved parking, HSG C
234	98	Paved parking, HSG C
85	98	Paved parking, HSG C
513	74	>75% Grass cover, Good, HSG C
516	74	>75% Grass cover, Good, HSG C
244	74	>75% Grass cover, Good, HSG C
67	74	>75% Grass cover, Good, HSG C
3,665	70	Woods, Good, HSG C
523	70	Woods, Good, HSG C
8,674	70	Woods, Good, HSG C
1,039	70	Woods, Good, HSG C
1,235	70	Woods, Good, HSG C
3,737	74	>75% Grass cover, Good, HSG C
91,083	77	Weighted Average
74,883		82.21% Pervious Area
16,200		17.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.1200	0.08		**Sheet Flow, uppermost**
					Woods: Dense underbrush n= 0.800 P2= 3.20"
4.3	140	0.0480	0.55		**Shallow Concentrated Flow, above lawn**
					Forest w/Heavy Litter Kv= 2.5 fps
0.6	160	0.0800	4.55		**Shallow Concentrated Flow, across lawn to basin 701**
					Unpaved Kv= 16.1 fps
15.4	350	Total			

Subcatchment S701P: Subcat S701P



Summary for Subcatchment S702 P: Subcat S702 P

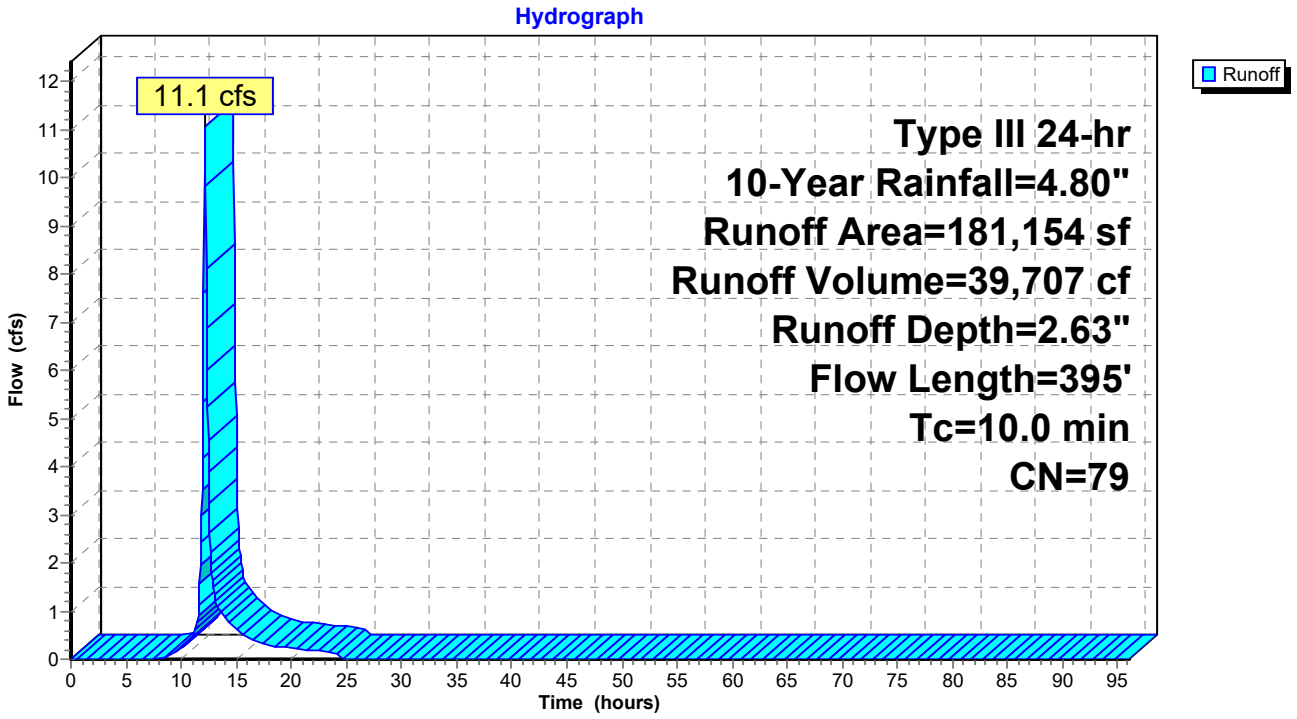
Runoff = 11.1 cfs @ 12.14 hrs, Volume= 39,707 cf, Depth= 2.63"
Routed to Pond P702 P : Pond P702 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
961	74	>75% Grass cover, Good, HSG C
1,199	70	Woods, Good, HSG C
3,578	70	Woods, Good, HSG C
992	74	>75% Grass cover, Good, HSG C
1,469	74	>75% Grass cover, Good, HSG C
1,015	74	>75% Grass cover, Good, HSG C
424	74	>75% Grass cover, Good, HSG C
287	70	Woods, Good, HSG C
74	70	Woods, Good, HSG C
17,926	70	Woods, Good, HSG C
7,387	70	Woods, Good, HSG C
2,388	98	Paved parking, HSG C
180	98	Paved parking, HSG C
446	98	Paved parking, HSG C
1,026	98	Paved parking, HSG C
975	98	Paved parking, HSG C
1,479	98	Paved parking, HSG C
1,022	98	Paved parking, HSG C
1,144	98	Paved parking, HSG C
179	98	Paved parking, HSG C
519	98	Paved parking, HSG C
669	98	Paved parking, HSG C
1,319	98	Roofs, HSG C
3,312	98	Roofs, HSG C
2,160	98	Roofs, HSG C
392	70	Woods, Good, HSG C
4,725	70	Woods, Good, HSG C
50,160	74	>75% Grass cover, Good, HSG C
9,468	74	>75% Grass cover, Good, HSG C
24,764	98	Paved roads w/curbs & sewers, HSG C
38,359	74	>75% Grass cover, Good, HSG C
1,156	74	>75% Grass cover, Good, HSG C
181,154	79	Weighted Average
139,572		77.05% Pervious Area
41,582		22.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.10		**Sheet Flow, uppermost**
					Grass: Dense n= 0.240 P2= 3.20"
1.8	345	0.0410	3.26		**Shallow Concentrated Flow, above Road B**
					Unpaved Kv= 16.1 fps
10.0	395	Total			

Subcatchment S702 P: Subcat S702 P



Summary for Subcatchment S703 P: Subcat S703 P

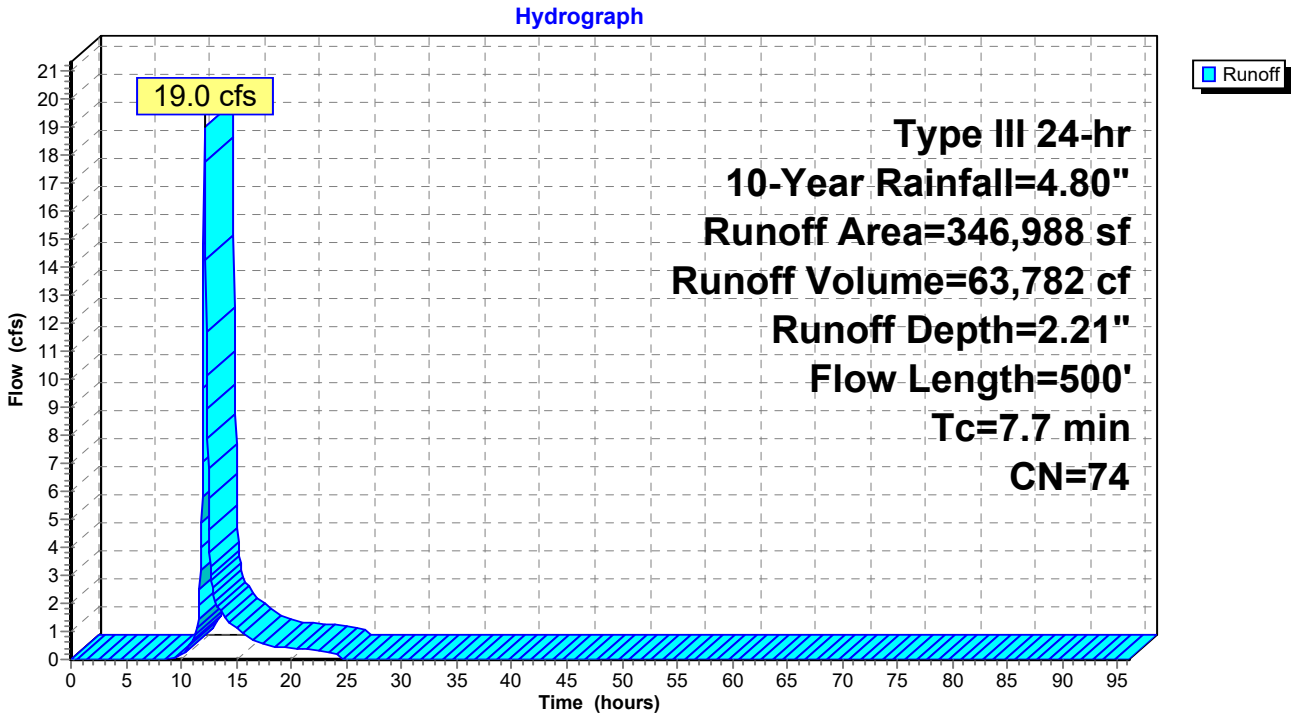
Runoff = 19.0 cfs @ 12.11 hrs, Volume= 63,782 cf, Depth= 2.21"
Routed to Pond P703 P : Pond P703 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
23,947	70	Woods, Good, HSG C
14,302	70	Woods, Good, HSG C
11,818	74	>75% Grass cover, Good, HSG C
25,861	74	>75% Grass cover, Good, HSG C
2,823	74	>75% Grass cover, Good, HSG C
14,333	61	>75% Grass cover, Good, HSG B
17,099	55	Woods, Good, HSG B
99	61	>75% Grass cover, Good, HSG B
881	98	Roofs, HSG B
705	98	Roofs, HSG B
45	98	Roofs, HSG B
481	98	Paved parking, HSG B
25	55	Woods, Good, HSG B
185	74	>75% Grass cover, Good, HSG C
429	74	>75% Grass cover, Good, HSG C
568	74	>75% Grass cover, Good, HSG C
419	74	>75% Grass cover, Good, HSG C
643	70	Woods, Good, HSG C
3,904	70	Woods, Good, HSG C
1,180	74	>75% Grass cover, Good, HSG C
1,039	74	>75% Grass cover, Good, HSG C
69,627	74	>75% Grass cover, Good, HSG C
1,501	70	Woods, Good, HSG C
457	70	Woods, Good, HSG C
615	70	Woods, Good, HSG C
551	70	Woods, Good, HSG C
163	70	Woods, Good, HSG C
3,386	70	Woods, Good, HSG C
66,370	70	Woods, Good, HSG C
3,744	98	Paved parking, HSG C
1,011	98	Paved parking, HSG C
1,047	98	Paved parking, HSG C
188	98	Paved parking, HSG C
1,186	98	Paved parking, HSG C
400	98	Paved parking, HSG C
160	98	Paved parking, HSG C
1,510	98	Paved parking, HSG C
2,068	98	Paved parking, HSG C
5,010	98	Paved parking, HSG C
585	98	Paved parking, HSG C
1,710	98	Roofs, HSG C
1,152	98	Roofs, HSG C
3,312	98	Roofs, HSG C
2,386	98	Roofs, HSG C
18,777	74	>75% Grass cover, Good, HSG C
16,951	70	Woods, Good, HSG C
1,464	74	>75% Grass cover, Good, HSG C
19,720	98	Paved roads w/curbs & sewers, HSG C
1,151	74	>75% Grass cover, Good, HSG C
346,988	74	Weighted Average
299,687		86.37% Pervious Area
47,301		13.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	50	0.1200	0.14		**Sheet Flow, uppermost** Woods: Light underbrush n= 0.400 P2= 3.20"
1.7	450	0.0770	4.47		**Shallow Concentrated Flow, above Road A** Unpaved Kv= 16.1 fps
7.7	500	Total			

Subcatchment S703 P: Subcat S703 P



Summary for Subcatchment S800 P: Subcat S800 P

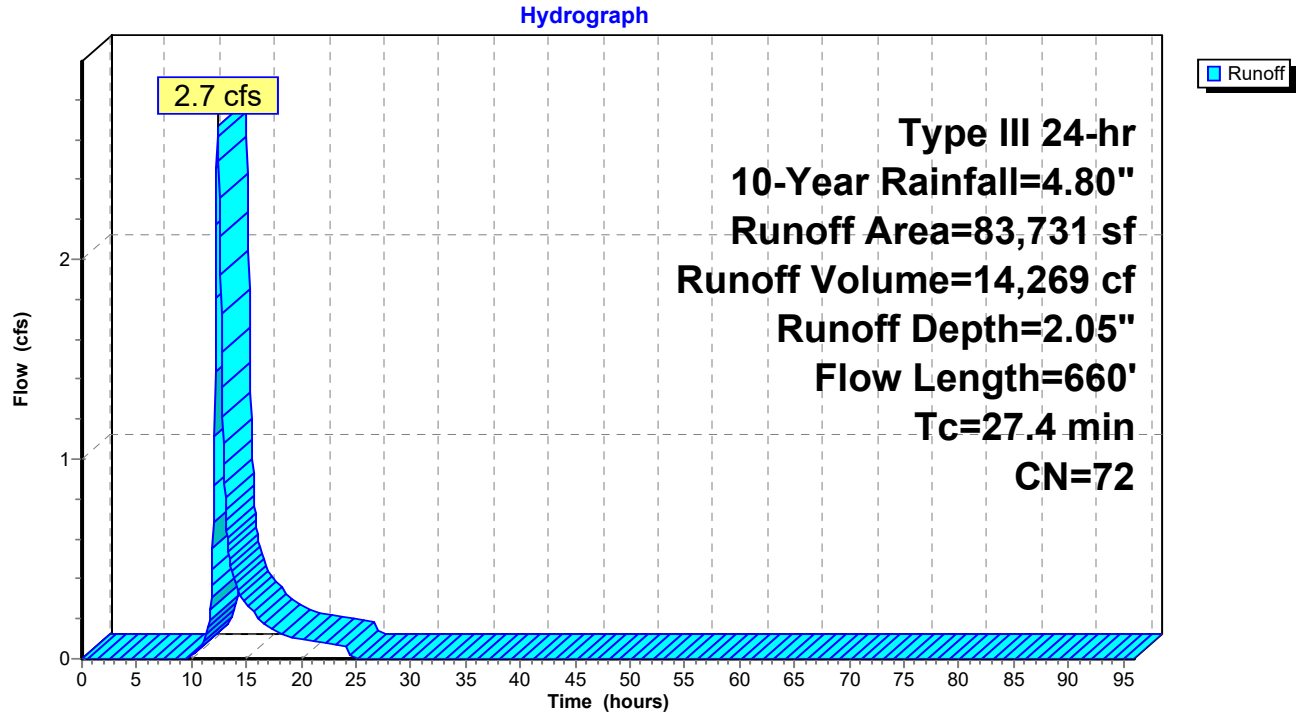
Runoff = 2.7 cfs @ 12.40 hrs, Volume= 14,269 cf, Depth= 2.05"
Routed to Link L2 P : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
1,710	98	Paved parking, HSG C
1,993	98	Roofs, HSG C
63,186	70	Woods, Good, HSG C
1,468	74	>75% Grass cover, Good, HSG C
448	74	>75% Grass cover, Good, HSG C
14,926	74	>75% Grass cover, Good, HSG C
83,731	72	Weighted Average
80,028		95.58% Pervious Area
3,703		4.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8	50	0.0600	0.06		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
13.6	610	0.0890	0.75		**Shallow Concentrated Flow, to offsite** Forest w/Heavy Litter Kv= 2.5 fps
27.4	660	Total			

Subcatchment S800 P: Subcat S800 P



Summary for Reach R200 P: Reach R200 P

Inflow Area = 137,153 sf, 3.40% Impervious, Inflow Depth = 1.04" for 10-Year event
Inflow = 1.9 cfs @ 12.43 hrs, Volume= 11,916 cf
Outflow = 1.3 cfs @ 13.18 hrs, Volume= 11,916 cf, Atten= 33%, Lag= 44.8 min
Routed to Link L2 P : Ditch

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.50 fps, Min. Travel Time= 26.7 min
Avg. Velocity = 0.25 fps, Avg. Travel Time= 53.0 min

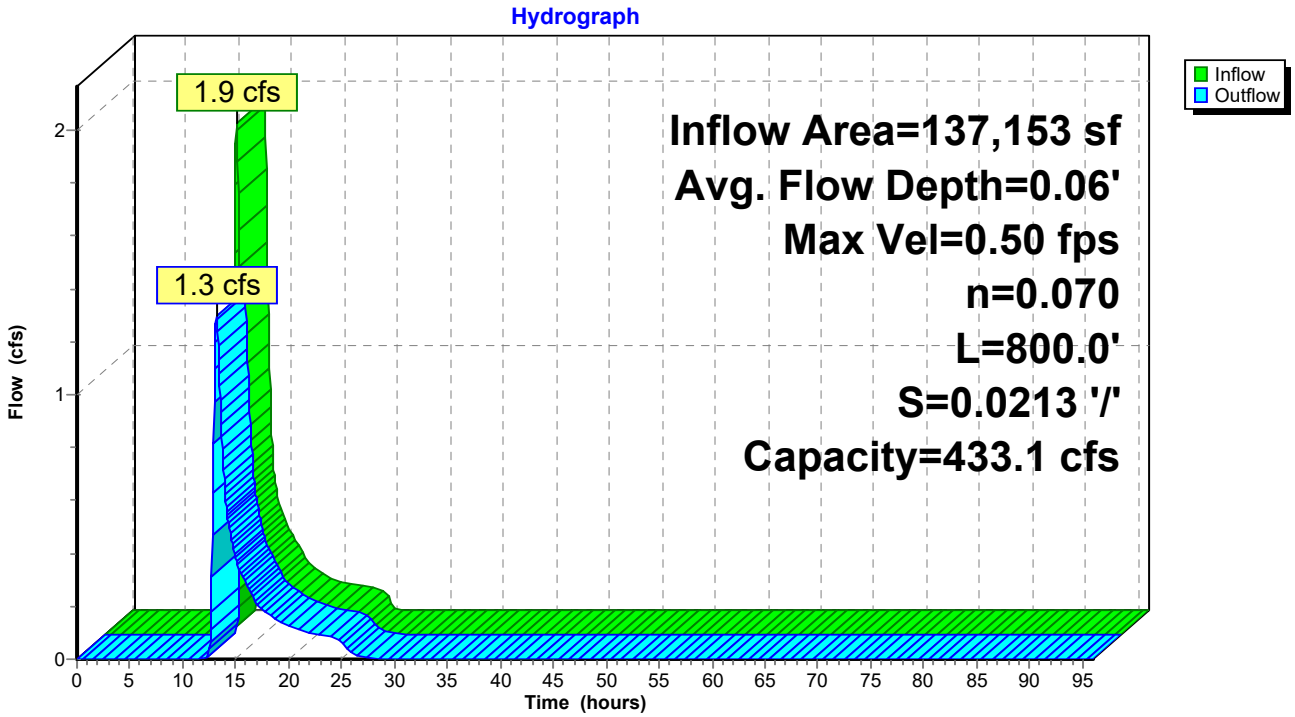
Peak Storage= 2,083 cf @ 12.73 hrs
Average Depth at Peak Storage= 0.06' , Surface Width= 40.65'
Bank-Full Depth= 2.00' Flow Area= 100.0 sf, Capacity= 433.1 cfs

Custom cross-section, Length= 800.0' Slope= 0.0213 '/'
Constant n= 0.070 Medium-dense brush, winter
Inlet Invert= 536.00', Outlet Invert= 519.00'

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	2.00	0.00
10.00	0.00	2.00
50.00	0.00	2.00
60.00	2.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Width (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	40.0	0.0	0	0.0
2.00	100.0	60.4	60.0	80,000	433.1

Reach R200 P: Reach R200 P



Summary for Reach R200A P: Reach R200A P

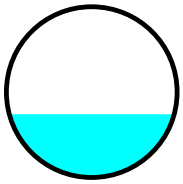
[52] Hint: Inlet/Outlet conditions not evaluated
[62] Hint: Exceeded Reach R201 P OUTLET depth by 0.06' @ 12.25 hrs
[62] Hint: Exceeded Reach R202 P OUTLET depth by 0.19' @ 12.50 hrs

Inflow Area = 137,153 sf, 3.40% Impervious, Inflow Depth = 1.04" for 10-Year event
Inflow = 1.9 cfs @ 12.41 hrs, Volume= 11,916 cf
Outflow = 1.9 cfs @ 12.43 hrs, Volume= 11,916 cf, Atten= 0%, Lag= 1.3 min
Routed to Reach R200 P : Reach R200 P

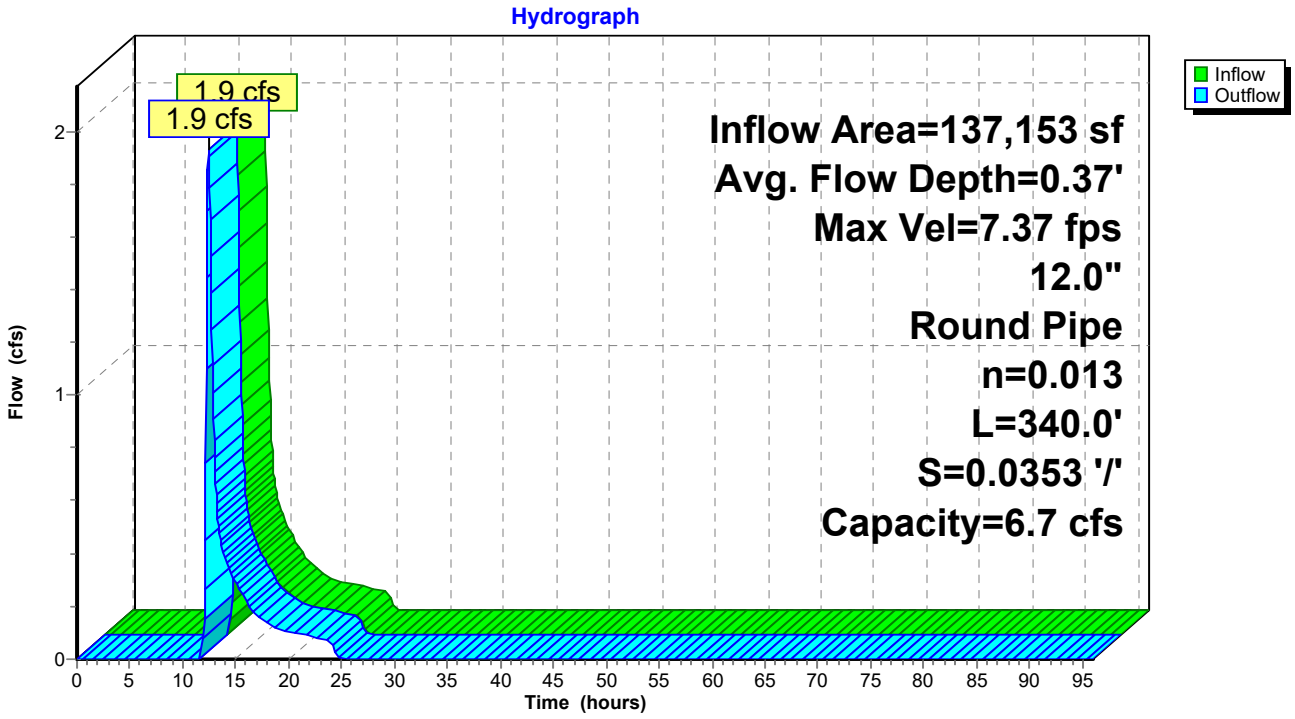
Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.37 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 3.48 fps, Avg. Travel Time= 1.6 min

Peak Storage= 89 cf @ 12.42 hrs
Average Depth at Peak Storage= 0.37' , Surface Width= 0.96'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.7 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 340.0' Slope= 0.0353 '/'
Inlet Invert= 554.00', Outlet Invert= 542.00'



Reach R200A P: Reach R200A P



Summary for Reach R201 P: Reach R201 P

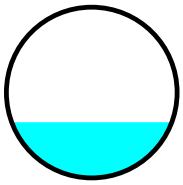
[52] Hint: Inlet/Outlet conditions not evaluated

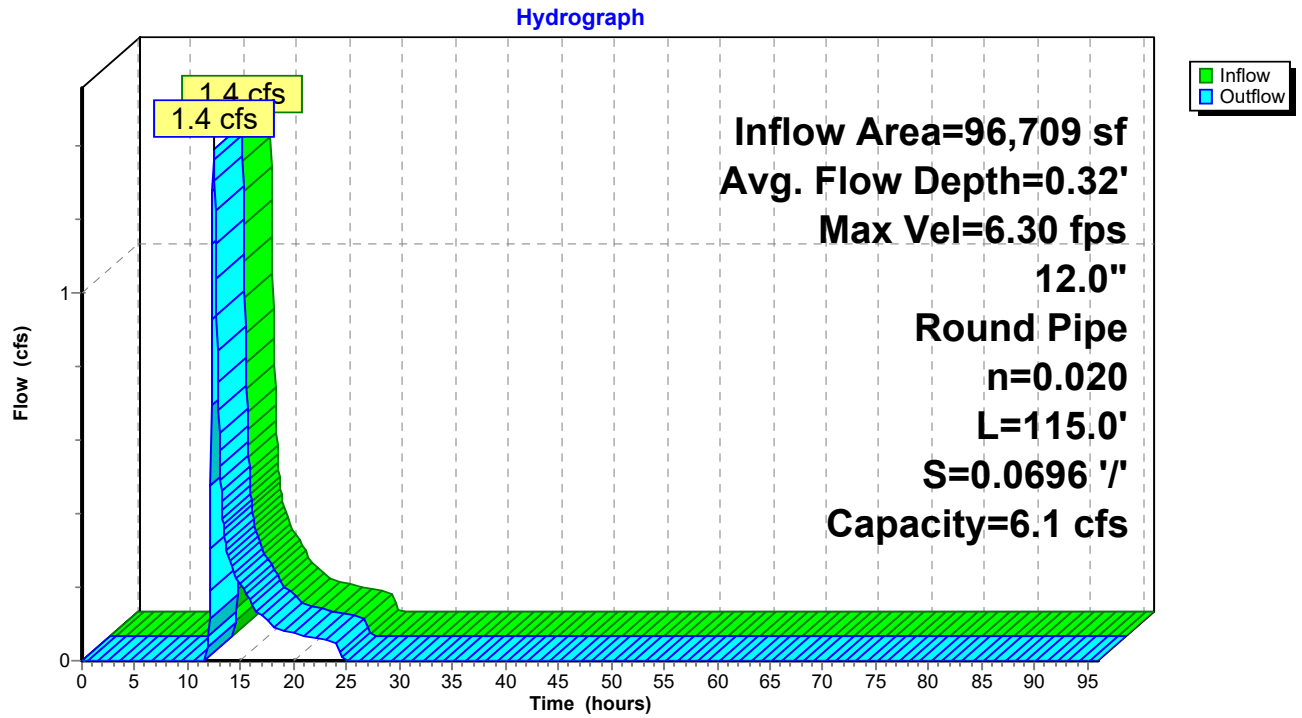
Inflow Area = 96,709 sf, 4.82% Impervious, Inflow Depth = 1.06" for 10-Year event
Inflow = 1.4 cfs @ 12.44 hrs, Volume= 8,547 cf
Outflow = 1.4 cfs @ 12.45 hrs, Volume= 8,547 cf, Atten= 0%, Lag= 0.6 min
Routed to Reach R200A P : Reach R200A P

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.30 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.99 fps, Avg. Travel Time= 0.6 min

Peak Storage= 25 cf @ 12.45 hrs
Average Depth at Peak Storage= 0.32' , Surface Width= 0.94'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.1 cfs

12.0" Round Pipe
n= 0.020 Corrugated PE, corrugated interior
Length= 115.0' Slope= 0.0696 '/'
Inlet Invert= 562.00', Outlet Invert= 554.00'





Summary for Reach R202 P: Reach R202 P

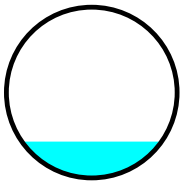
[52] Hint: Inlet/Outlet conditions not evaluated

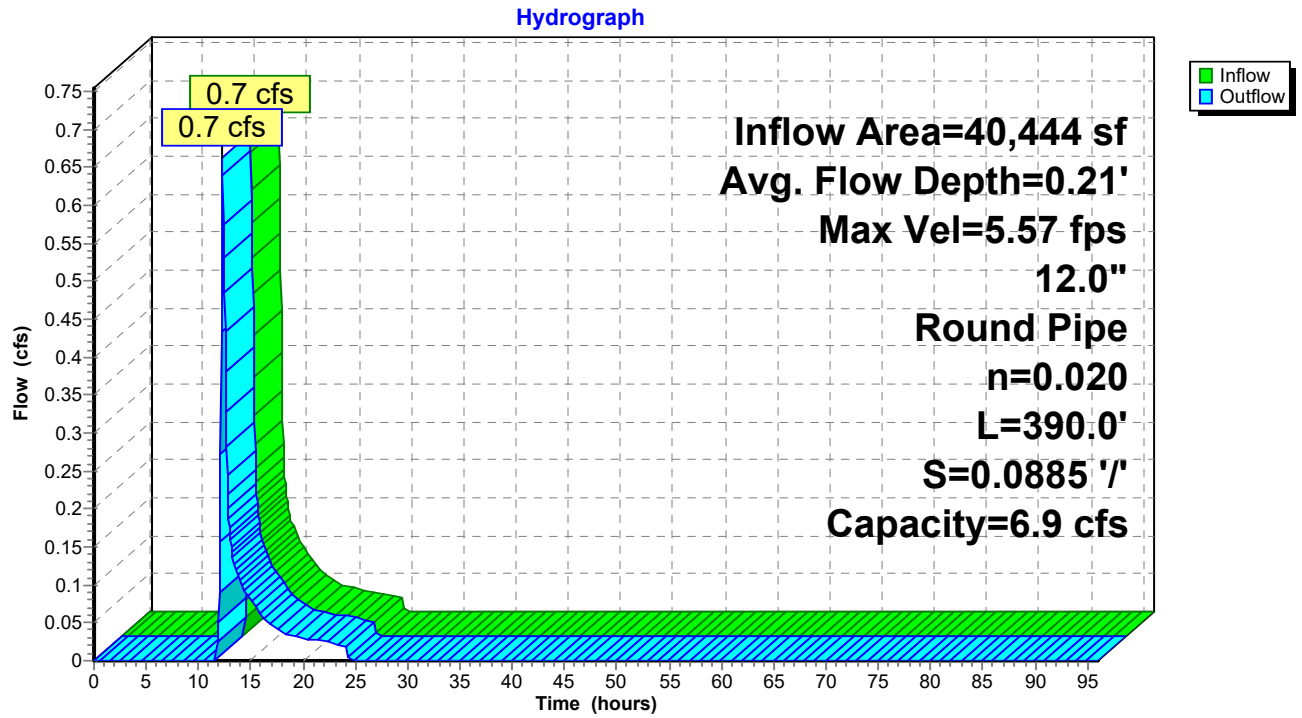
Inflow Area = 40,444 sf, 0.00% Impervious, Inflow Depth = 1.00" for 10-Year event
Inflow = 0.7 cfs @ 12.24 hrs, Volume= 3,369 cf
Outflow = 0.7 cfs @ 12.28 hrs, Volume= 3,369 cf, Atten= 2%, Lag= 2.1 min
Routed to Reach R200A P : Reach R200A P

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.57 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 2.51 fps, Avg. Travel Time= 2.6 min

Peak Storage= 47 cf @ 12.26 hrs
Average Depth at Peak Storage= 0.21' , Surface Width= 0.82'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.9 cfs

12.0" Round Pipe
n= 0.020 Corrugated PE, corrugated interior
Length= 390.0' Slope= 0.0885 '/'
Inlet Invert= 588.50', Outlet Invert= 554.00'





Summary for Reach R401 P: Reach R401 P

Inflow Area = 39,667 sf, 13.75% Impervious, Inflow Depth = 2.37" for 10-Year event
Inflow = 2.1 cfs @ 12.15 hrs, Volume= 7,840 cf
Outflow = 1.3 cfs @ 12.65 hrs, Volume= 7,840 cf, Atten= 38%, Lag= 29.9 min
Routed to Link L2 P : Ditch

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.85 fps, Min. Travel Time= 19.5 min
Avg. Velocity = 0.31 fps, Avg. Travel Time= 53.7 min

Peak Storage= 1,573 cf @ 12.32 hrs
Average Depth at Peak Storage= 0.14' , Surface Width= 13.39'
Bank-Full Depth= 2.00' Flow Area= 70.0 sf, Capacity= 271.5 cfs

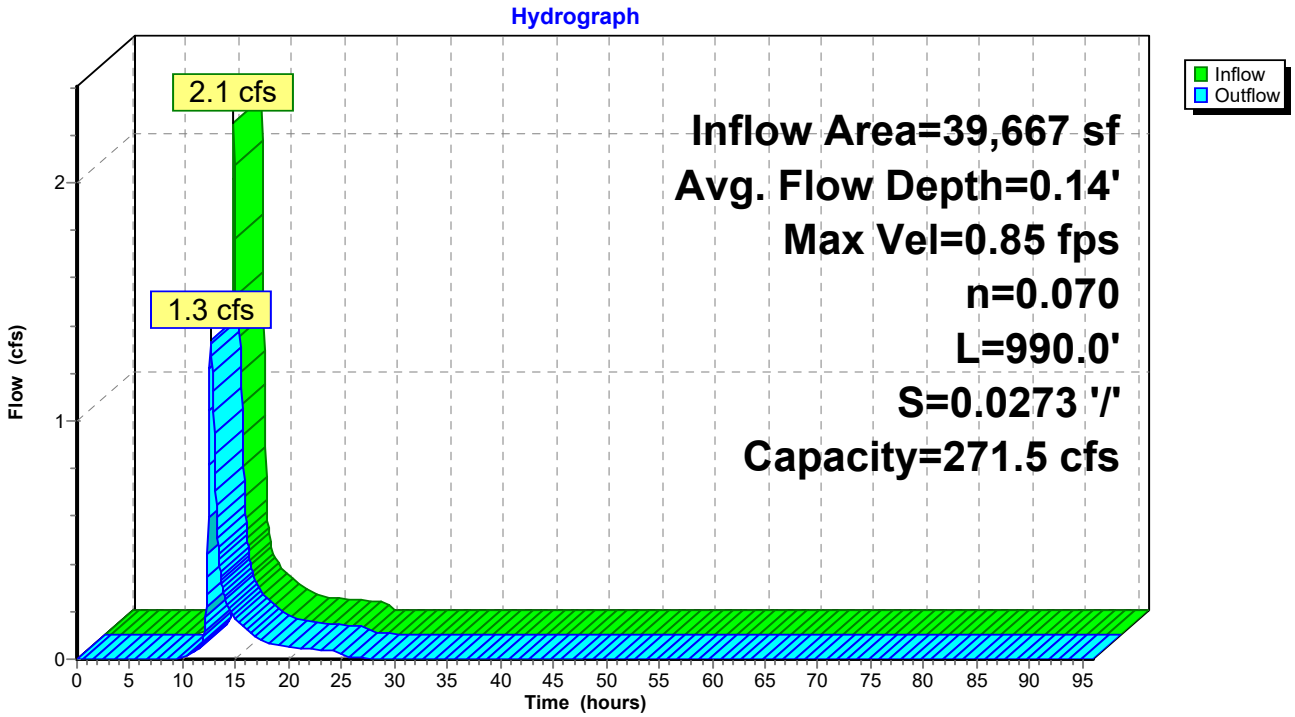
Custom cross-section, Length= 990.0' Slope= 0.0273 '/'
Constant n= 0.070 Medium-dense brush, winter
Inlet Invert= 546.00', Outlet Invert= 519.00'

‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	2.00	0.00
25.00	0.00	2.00
35.00	0.00	2.00
60.00	2.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Width (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	10.0	0.0	0	0.0
2.00	70.0	60.2	60.0	69,300	271.5

Reach R401 P: Reach R401 P



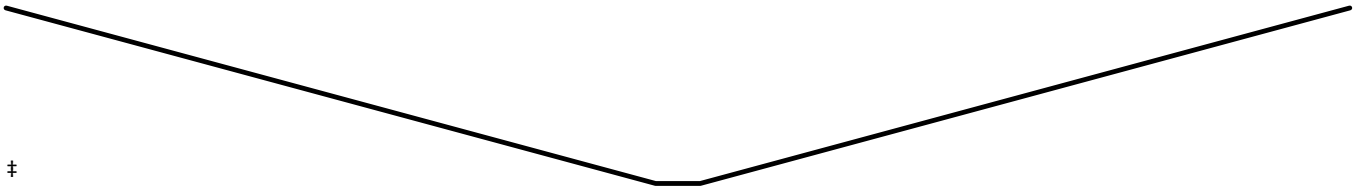
Summary for Reach R502 P: Reach R502 P

Inflow Area = 86,237 sf, 17.89% Impervious, Inflow Depth = 0.00" for 10-Year event
Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.0 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Routed to Link L2 P : Ditch

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 2.00' Flow Area= 62.0 sf, Capacity= 247.1 cfs

Custom cross-section, Length= 975.0' Slope= 0.0338 '/'
Constant n= 0.070 Medium-dense brush, winter
Inlet Invert= 548.00', Outlet Invert= 515.00'

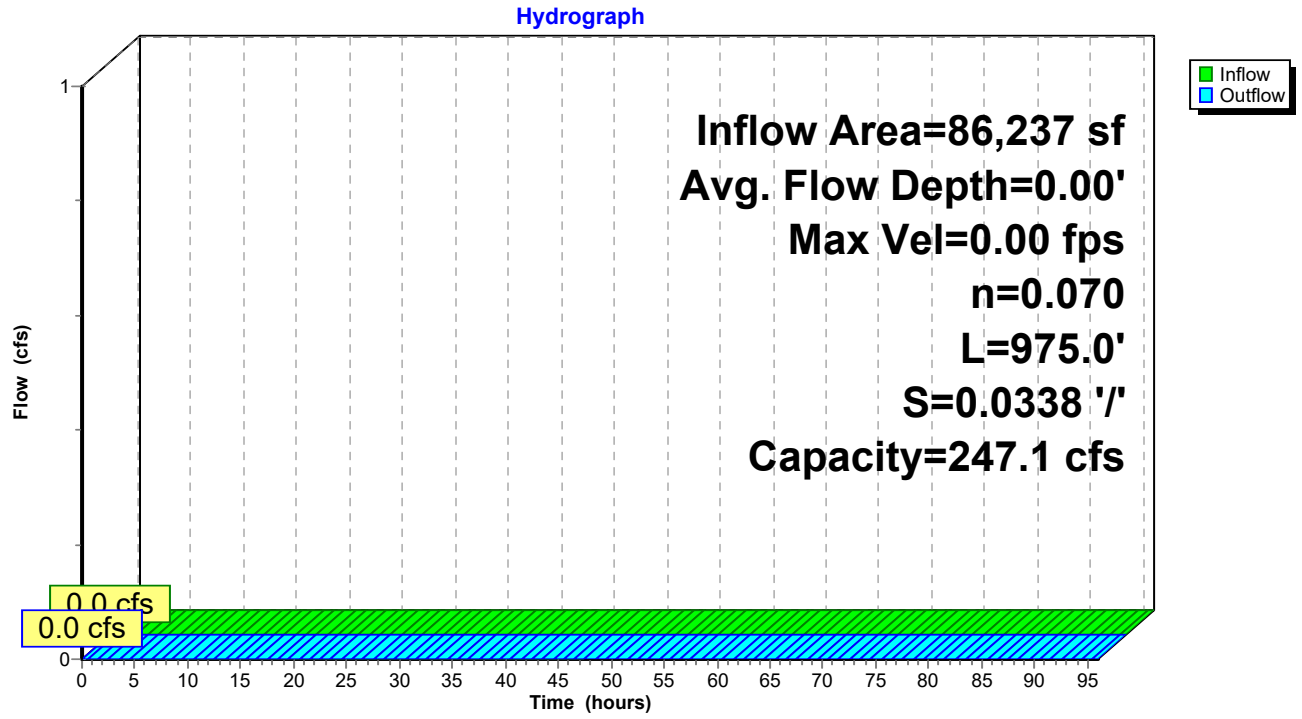


‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	2.00	0.00
29.00	0.00	2.00
31.00	0.00	2.00
60.00	2.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Width (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	2.0	0.0	0	0.0
2.00	62.0	60.1	60.0	60,450	247.1

Reach R502 P: Reach R502 P



Summary for Reach R504 P: Reach R504 P

Inflow Area = 277,905 sf, 13.64% Impervious, Inflow Depth = 1.32" for 10-Year event
Inflow = 6.2 cfs @ 12.28 hrs, Volume= 30,490 cf
Outflow = 4.7 cfs @ 12.74 hrs, Volume= 30,490 cf, Atten= 24%, Lag= 27.4 min
Routed to Link L2 P : Ditch

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.22 fps, Min. Travel Time= 15.3 min
Avg. Velocity = 0.41 fps, Avg. Travel Time= 45.2 min

Peak Storage= 4,326 cf @ 12.48 hrs
Average Depth at Peak Storage= 0.28' , Surface Width= 17.12'
Bank-Full Depth= 2.00' Flow Area= 70.0 sf, Capacity= 255.2 cfs

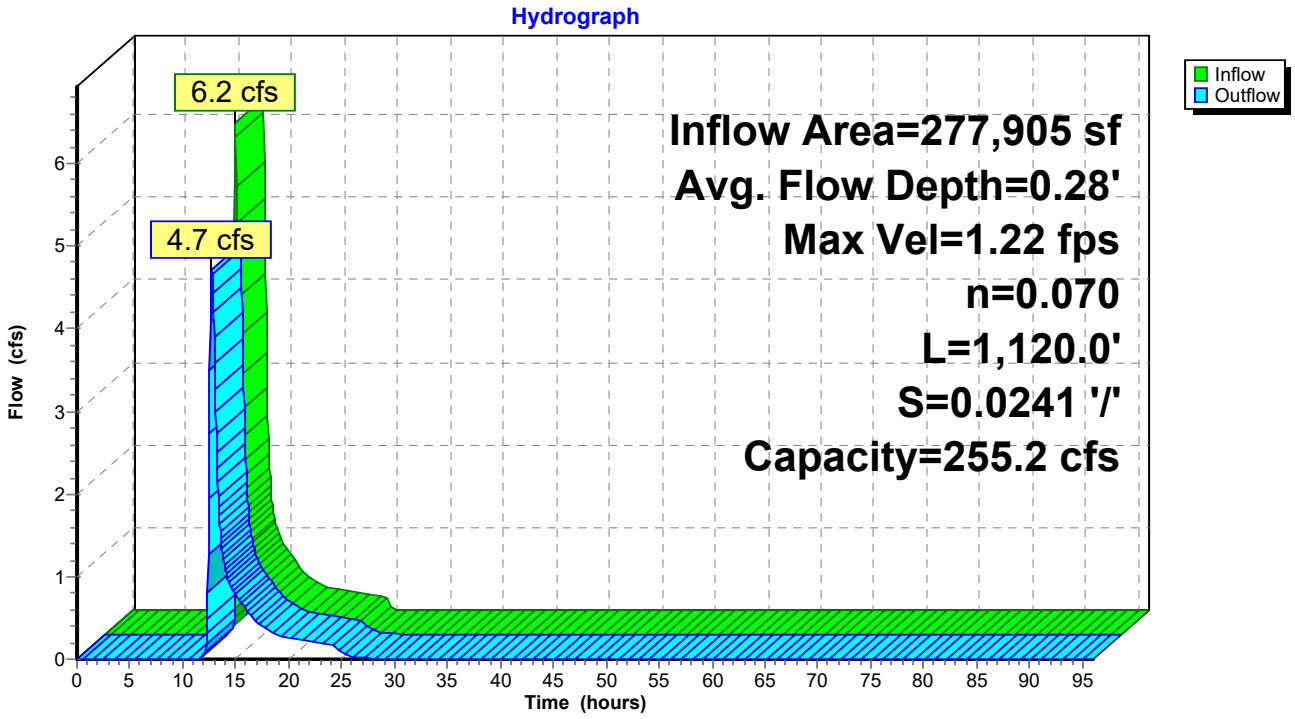
Custom cross-section, Length= 1,120.0' Slope= 0.0241 '/'
Constant n= 0.070 Medium-dense brush, winter
Inlet Invert= 546.00', Outlet Invert= 519.00'

‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	2.00	0.00
25.00	0.00	2.00
35.00	0.00	2.00
60.00	2.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Width (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	10.0	0.0	0	0.0
2.00	70.0	60.2	60.0	78,400	255.2

Reach R504 P: Reach R504 P



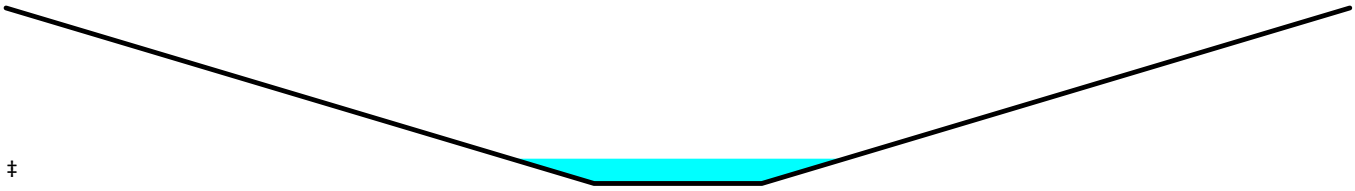
Summary for Reach R702 P: Reach 701 P

Inflow Area = 272,237 sf, 21.22% Impervious, Inflow Depth = 2.03" for 10-Year event
Inflow = 4.9 cfs @ 12.27 hrs, Volume= 45,980 cf
Outflow = 4.7 cfs @ 12.33 hrs, Volume= 45,980 cf, Atten= 3%, Lag= 4.0 min
Routed to Link L2 P : Ditch

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.13 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 0.38 fps, Avg. Travel Time= 6.0 min

Peak Storage= 572 cf @ 12.30 hrs
Average Depth at Peak Storage= 0.28' , Surface Width= 19.92'
Bank-Full Depth= 2.00' Flow Area= 90.0 sf, Capacity= 307.8 cfs

Custom cross-section, Length= 135.0' Slope= 0.0222 '/'
Constant n= 0.070 Medium-dense brush, winter
Inlet Invert= 511.00', Outlet Invert= 508.00'

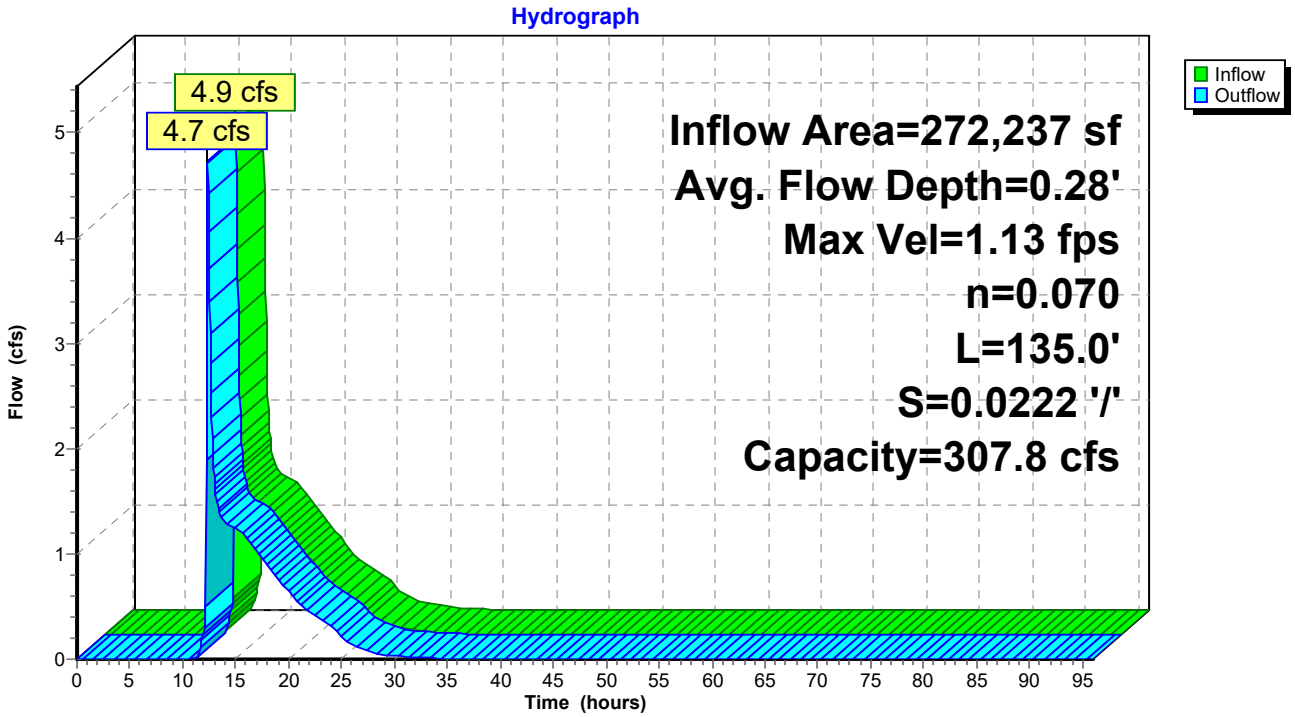


‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	2.00	0.00
35.00	0.00	2.00
45.00	0.00	2.00
80.00	2.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Width (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	10.0	0.0	0	0.0
2.00	90.0	80.1	80.0	12,150	307.8

Reach R702 P: Reach 701 P



Summary for Reach R703 P: Reach 703 P

Inflow Area = 346,988 sf, 13.63% Impervious, Inflow Depth = 2.21" for 10-Year event
Inflow = 1.2 cfs @ 14.76 hrs, Volume= 63,782 cf
Outflow = 1.2 cfs @ 15.31 hrs, Volume= 63,782 cf, Atten= 0%, Lag= 33.1 min
Routed to Link L2 P : Ditch

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.70 fps, Min. Travel Time= 19.4 min
Avg. Velocity = 0.46 fps, Avg. Travel Time= 29.5 min

Peak Storage= 1,373 cf @ 14.99 hrs
Average Depth at Peak Storage= 0.14' , Surface Width= 14.76'
Bank-Full Depth= 2.00' Flow Area= 90.0 sf, Capacity= 289.3 cfs

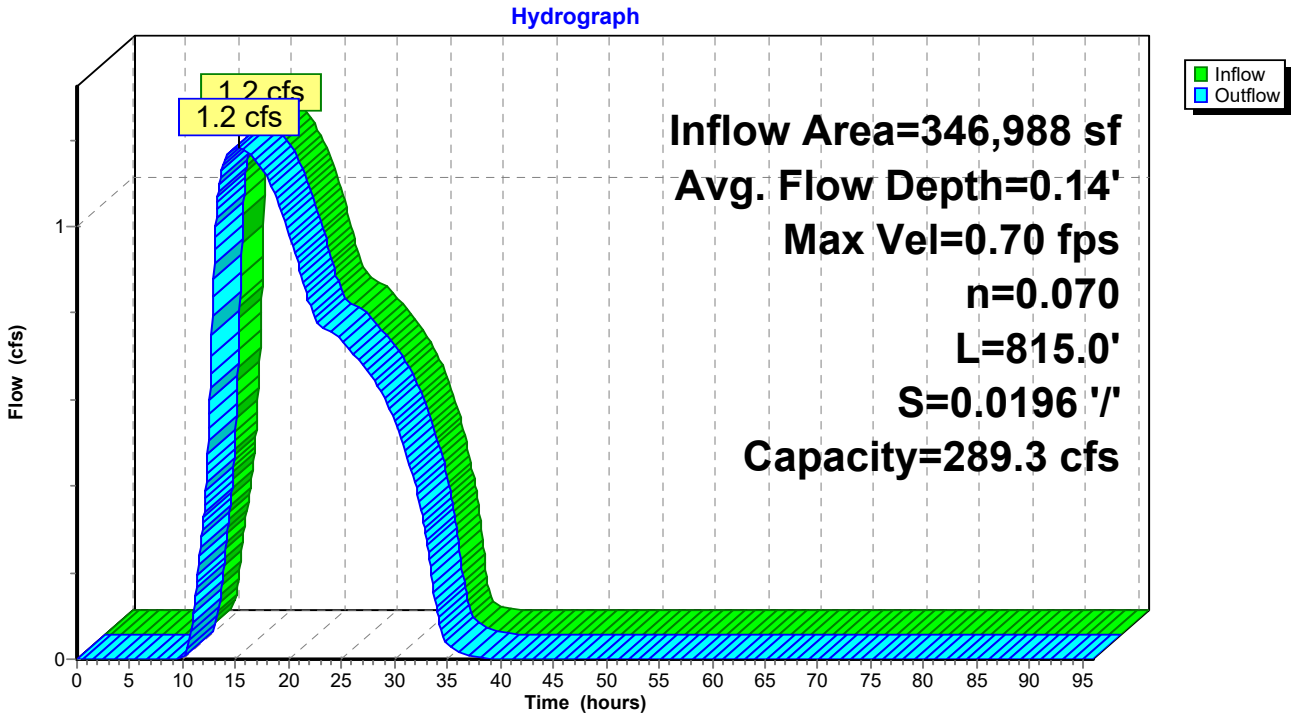
Custom cross-section, Length= 815.0' Slope= 0.0196 '/'
Constant n= 0.070 Medium-dense brush, winter
Inlet Invert= 520.00', Outlet Invert= 504.00'

‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	2.00	0.00
35.00	0.00	2.00
45.00	0.00	2.00
80.00	2.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Width (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	10.0	0.0	0	0.0
2.00	90.0	80.1	80.0	73,350	289.3

Reach R703 P: Reach 703 P



Summary for Pond P403 P: Pond P403 P

Inflow Area = 163,769 sf, 20.12% Impervious, Inflow Depth = 2.12" for 10-Year event
Inflow = 8.2 cfs @ 12.14 hrs, Volume= 28,998 cf
Outflow = 0.8 cfs @ 13.55 hrs, Volume= 28,998 cf, Atten= 90%, Lag= 84.5 min
Discarded = 0.2 cfs @ 13.55 hrs, Volume= 6,800 cf
Primary = 0.6 cfs @ 13.55 hrs, Volume= 22,197 cf
Routed to Link L2 P : Ditch
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link L2 P : Ditch

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 548.55' @ 13.55 hrs Surf.Area= 7,616 sf Storage= 13,824 cf

Plug-Flow detention time= 253.2 min calculated for 28,998 cf (100% of inflow)
Center-of-Mass det. time= 252.8 min (1,097.8 - 844.9)

Volume	Invert	Avail.Storage	Storage Description
#1	545.00'	26,863 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
545.00	730	0	0
546.00	2,380	1,555	1,555
547.00	4,045	3,213	4,768
548.00	6,350	5,198	9,965
549.00	8,640	7,495	17,460
550.00	10,165	9,403	26,863

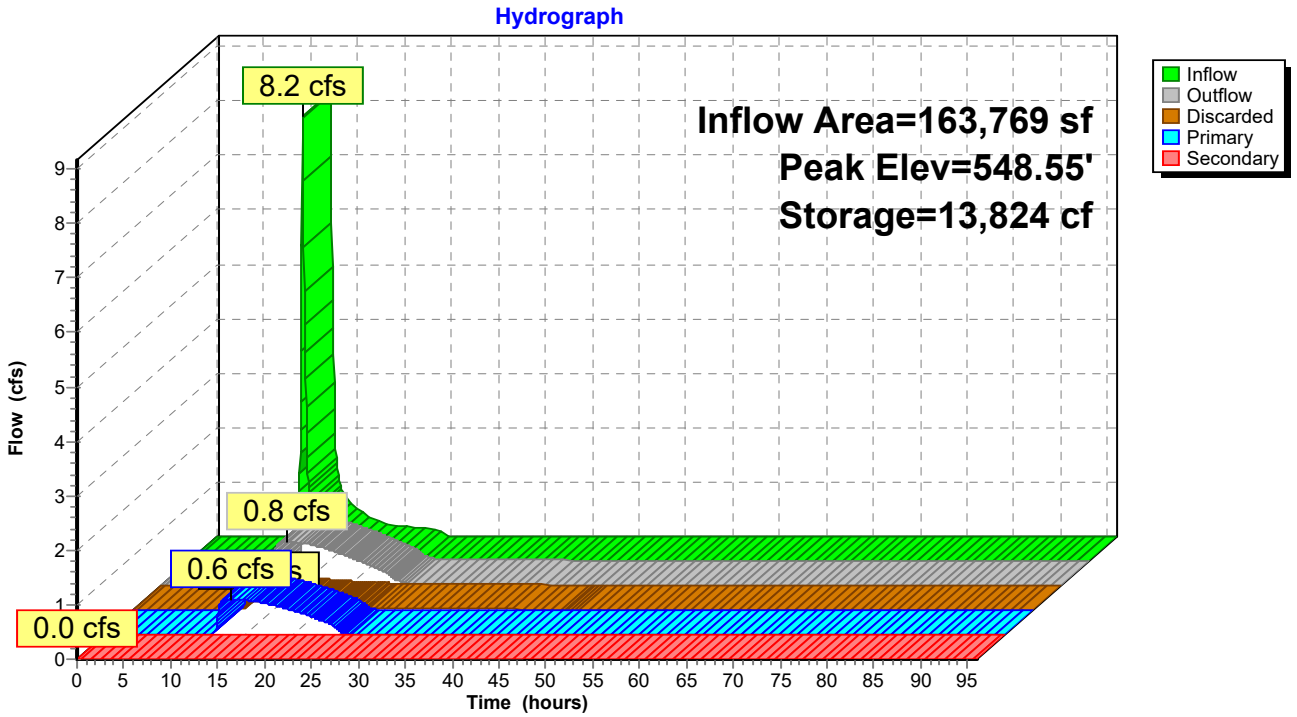
Device	Routing	Invert	Outlet Devices
#1	Primary	541.20'	**18.0" Round Culvert** L= 117.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 541.20' / 540.00' S= 0.0103 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	546.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	548.70'	**16.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#4	Secondary	549.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	545.00'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 543.00'

Discarded OutFlow Max=0.2 cfs @ 13.55 hrs HW=548.55' (Free Discharge)
└**5=Exfiltration** (Controls 0.2 cfs)

Primary OutFlow Max=0.6 cfs @ 13.55 hrs HW=548.55' (Free Discharge)
└**1=Culvert** (Passes 0.6 cfs of 19.7 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.6 cfs @ 7.44 fps)
  └**3=Sharp-Crested Rectangular Weir** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=545.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond P403 P: Pond P403 P



Summary for Pond P501 P: Pond P501 P

Device #4 is for calculation purposes only.

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[44] Hint: Outlet device #1 is below defined storage

Inflow Area = 162,232 sf, 20.00% Impervious, Inflow Depth = 2.07" for 10-Year event
Inflow = 5.7 cfs @ 12.25 hrs, Volume= 28,024 cf
Outflow = 5.7 cfs @ 12.25 hrs, Volume= 28,024 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.7 cfs @ 12.25 hrs, Volume= 28,024 cf
Routed to Pond P505 P : Pond P505 P
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond P505 P : Pond P505 P

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 565.81' @ 12.25 hrs Surf.Area= 12 sf Storage= 0 cf

Plug-Flow detention time= 0.0 min calculated for 28,009 cf (100% of inflow)
Center-of-Mass det. time= 0.0 min (849.5 - 849.5)

Volume	Invert	Avail.Storage	Storage Description
#1	565.80'	1,588 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

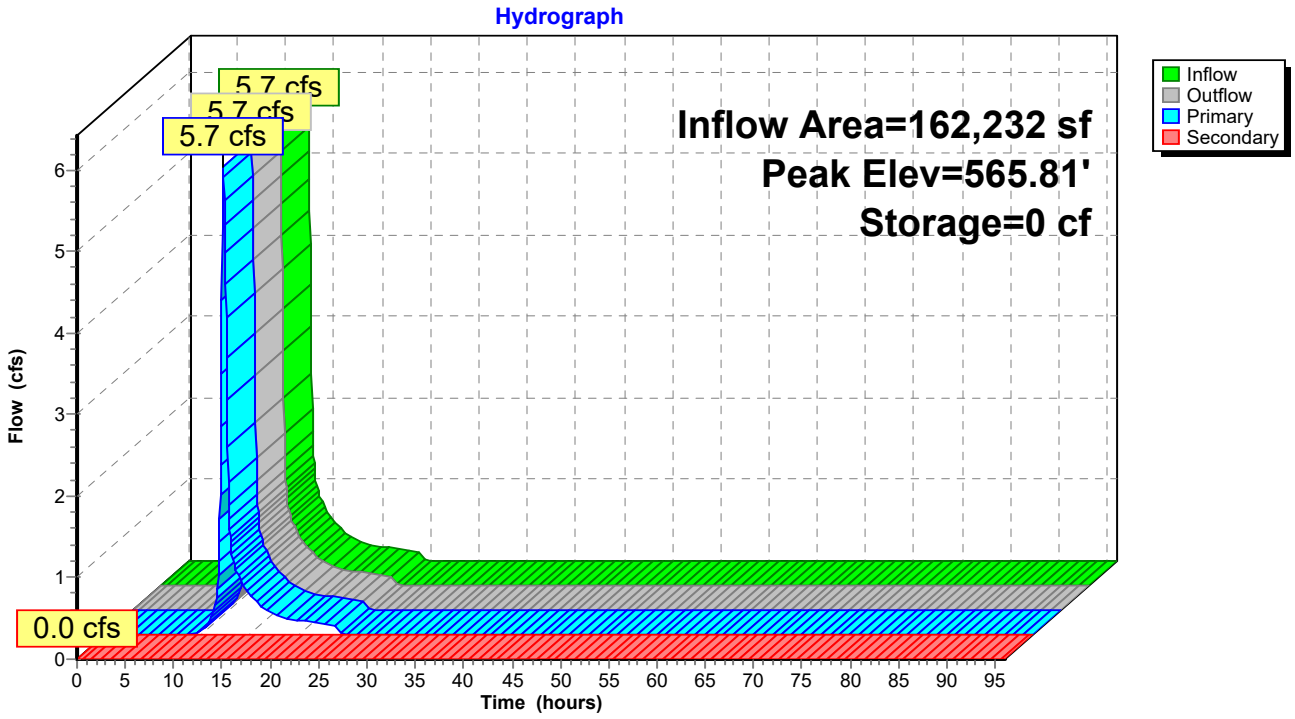
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
565.80	10	0	0
566.00	45	6	6
568.00	1,025	1,070	1,076
568.50	1,025	513	1,588

Device	Routing	Invert	Outlet Devices
#1	Primary	560.00'	**18.0" Round Culvert** L= 550.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 560.00' / 551.70' S= 0.0151 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	566.60'	**16.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#3	Secondary	568.00'	**50.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=14.8 cfs @ 12.25 hrs HW=565.81' (Free Discharge)
1=Culvert (Barrel Controls 14.8 cfs @ 8.38 fps)
2=Sharp-Crested Rectangular Weir (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=565.80' (Free Discharge)
3=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

Pond P501 P: Pond P501 P



Summary for Pond P502 P: Pond P502 P

Inflow Area = 86,237 sf, 17.89% Impervious, Inflow Depth = 2.29" for 10-Year event
Inflow = 5.2 cfs @ 12.09 hrs, Volume= 16,443 cf
Outflow = 0.1 cfs @ 17.94 hrs, Volume= 16,443 cf, Atten= 98%, Lag= 350.9 min
Discarded = 0.1 cfs @ 17.94 hrs, Volume= 16,443 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach R502 P : Reach R502 P
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach R502 P : Reach R502 P

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 557.05' @ 17.94 hrs Surf.Area= 7,180 sf Storage= 11,804 cf

Plug-Flow detention time= 1,259.3 min calculated for 16,435 cf (100% of inflow)
Center-of-Mass det. time= 1,260.6 min (2,097.5 - 836.9)

Volume	Invert	Avail.Storage	Storage Description
#1	553.50'	42,935 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
553.50	50	0	0
554.00	810	215	215
556.00	4,590	5,400	5,615
558.00	9,515	14,105	19,720
560.00	13,700	23,215	42,935

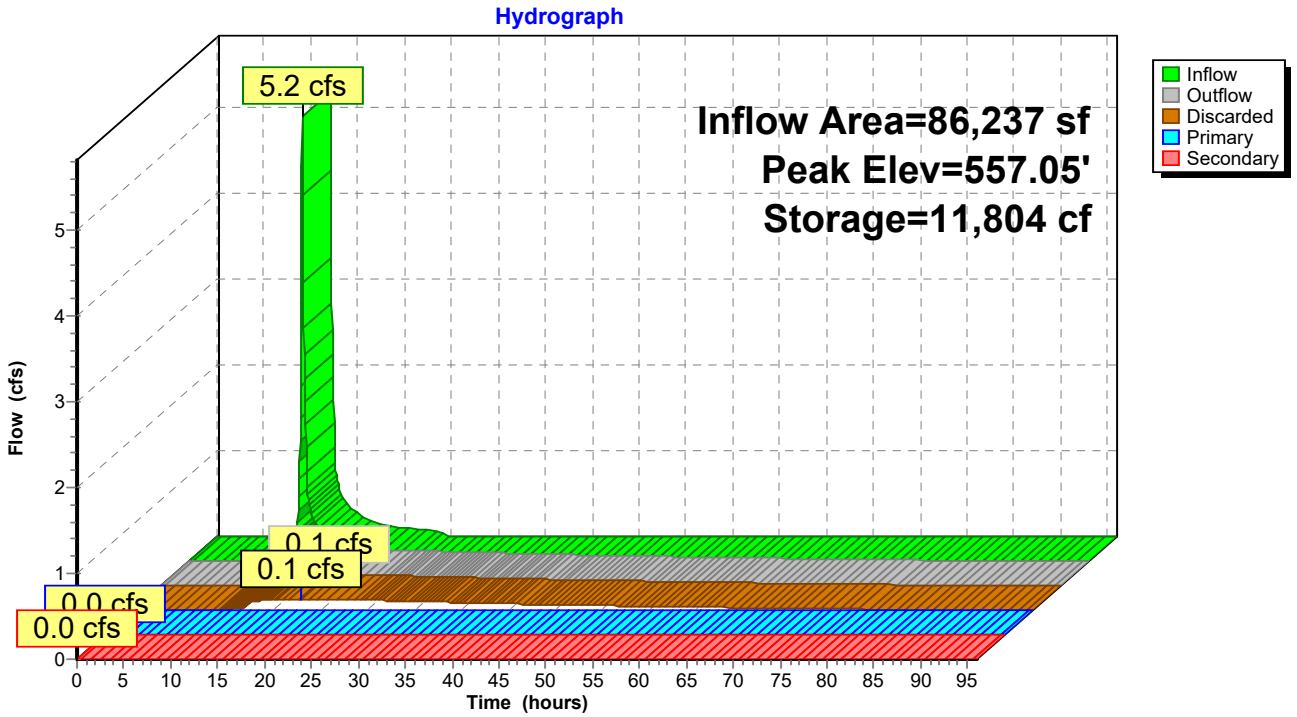
Device	Routing	Invert	Outlet Devices
#1	Primary	552.00'	**12.0" Round Culvert** L= 160.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 552.00' / 550.00' S= 0.0125 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	557.20'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	558.00'	**16.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#4	Secondary	559.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	553.50'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 551.00'

Discarded OutFlow Max=0.1 cfs @ 17.94 hrs HW=557.05' (Free Discharge)
└**5=Exfiltration** (Controls 0.1 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=553.50' (Free Discharge)
└**1=Culvert** (Passes 0.0 cfs of 3.8 cfs potential flow)
├**2=Orifice/Grate** (Controls 0.0 cfs)
└**3=Sharp-Crested Rectangular Weir** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=553.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond P502 P: Pond P502 P



Summary for Pond P503 P: Pond P503 P

Inflow Area = 82,329 sf, 25.04% Impervious, Inflow Depth = 2.46" for 10-Year event
Inflow = 4.8 cfs @ 12.14 hrs, Volume= 16,854 cf
Outflow = 3.2 cfs @ 12.27 hrs, Volume= 16,854 cf, Atten= 33%, Lag= 8.0 min
Discarded = 0.0 cfs @ 12.27 hrs, Volume= 407 cf
Primary = 3.1 cfs @ 12.27 hrs, Volume= 16,447 cf
Routed to Pond P501 P : Pond P501 P
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond P501 P : Pond P501 P

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 586.21' @ 12.27 hrs Surf.Area= 2,586 sf Storage= 1,643 cf

Plug-Flow detention time= 7.8 min calculated for 16,845 cf (100% of inflow)
Center-of-Mass det. time= 8.1 min (842.7 - 834.7)

Volume	Invert	Avail.Storage	Storage Description
#1	584.50'	7,018 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
584.50	30	0	0
585.00	135	41	41
586.00	2,085	1,110	1,151
587.00	4,465	3,275	4,426
587.50	5,900	2,591	7,018

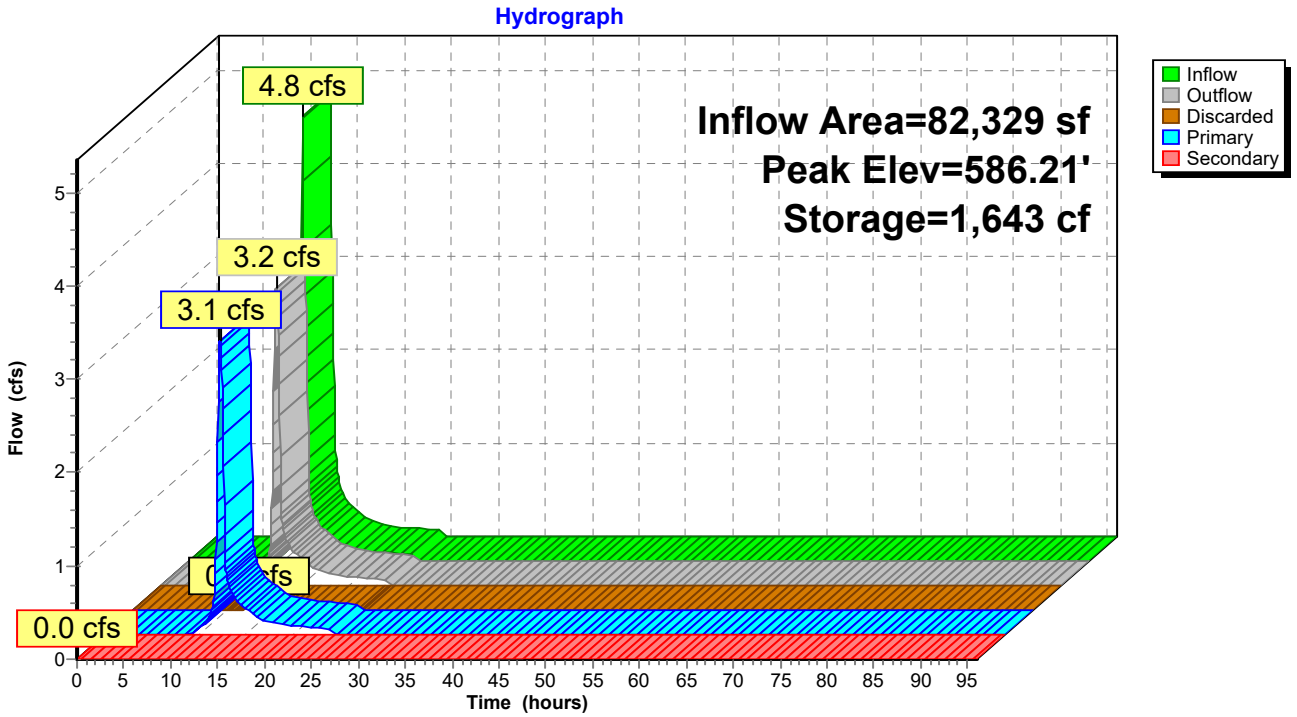
Device	Routing	Invert	Outlet Devices
#1	Primary	582.50'	**12.0" Round Culvert** L= 34.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 582.50' / 582.00' S= 0.0147 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	585.00'	**8.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	587.00'	**16.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#4	Secondary	587.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	584.50'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 582.00'

Discarded OutFlow Max=0.0 cfs @ 12.27 hrs HW=586.21' (Free Discharge)
└**5=Exfiltration** (Controls 0.0 cfs)

Primary OutFlow Max=3.1 cfs @ 12.27 hrs HW=586.21' (Free Discharge)
└**1=Culvert** (Passes 3.1 cfs of 6.8 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 3.1 cfs @ 4.50 fps)
└**3=Sharp-Crested Rectangular Weir** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=584.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond P503 P: Pond P503 P



Summary for Pond P505 P: Pond P505 P

[79] Warning: Submerged Pond P501 P Primary device # 1 OUTLET by 1.66'

Inflow Area = 175,429 sf, 18.50% Impervious, Inflow Depth = 2.08" for 10-Year event
Inflow = 6.1 cfs @ 12.24 hrs, Volume= 30,449 cf
Outflow = 0.7 cfs @ 14.19 hrs, Volume= 30,449 cf, Atten= 89%, Lag= 117.0 min
Discarded = 0.2 cfs @ 14.19 hrs, Volume= 20,165 cf
Primary = 0.5 cfs @ 14.19 hrs, Volume= 10,284 cf
Routed to Link L2 P : Ditch
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link L2 P : Ditch

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 553.36' @ 14.19 hrs Surf.Area= 7,255 sf Storage= 17,092 cf

Plug-Flow detention time= 920.6 min calculated for 30,434 cf (100% of inflow)
Center-of-Mass det. time= 922.0 min (1,770.7 - 848.7)

Volume	Invert	Avail.Storage	Storage Description
#1	549.50'	41,043 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
549.50	50	0	0
550.00	2,520	643	643
551.00	3,965	3,243	3,885
552.00	5,340	4,653	8,538
554.00	8,160	13,500	22,038
556.00	10,845	19,005	41,043

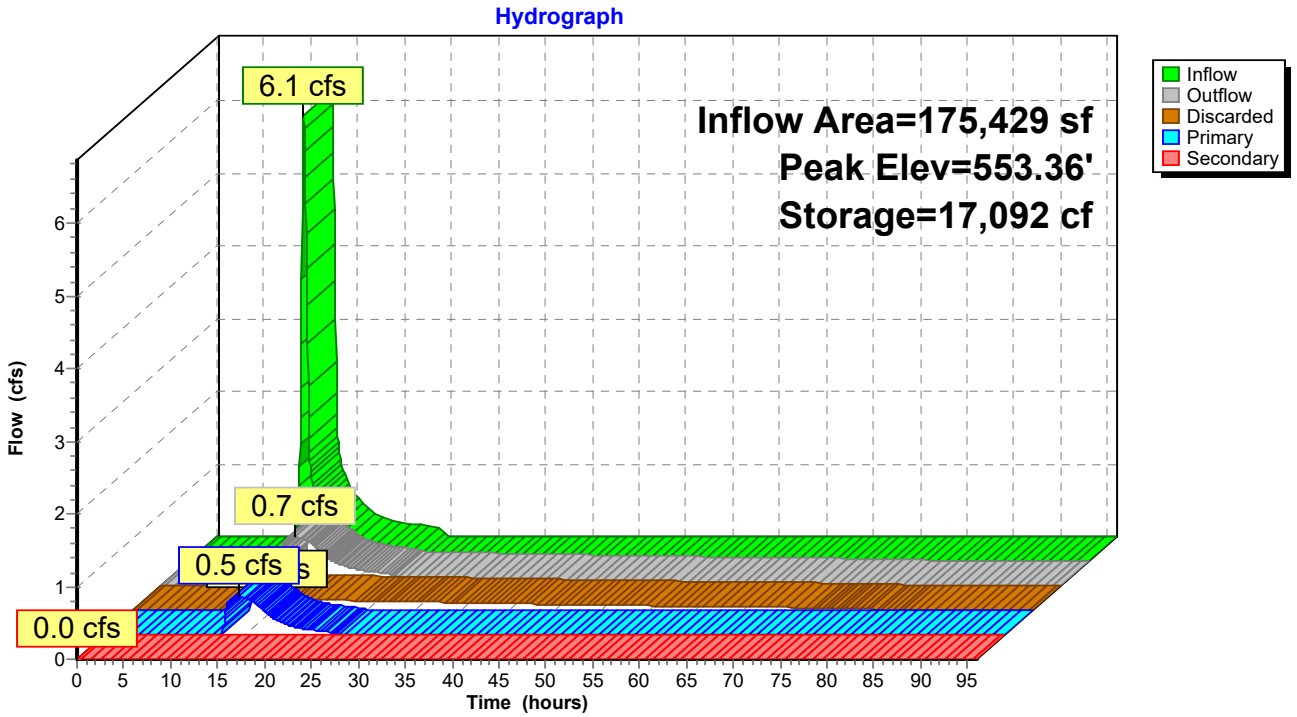
Device	Routing	Invert	Outlet Devices
#1	Primary	548.50'	**12.0" Round Culvert** L= 43.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 548.50' / 548.00' S= 0.0116 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	552.80'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	555.00'	**16.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#4	Secondary	555.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	549.50'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 547.00'

Discarded OutFlow Max=0.2 cfs @ 14.19 hrs HW=553.36' (Free Discharge)
└**5=Exfiltration** (Controls 0.2 cfs)

Primary OutFlow Max=0.5 cfs @ 14.19 hrs HW=553.36' (Free Discharge)
└**1=Culvert** (Passes 0.5 cfs of 7.8 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 0.5 cfs @ 2.67 fps)
└**3=Sharp-Crested Rectangular Weir** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=549.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond P505 P: Pond P505 P



Summary for Pond P701 P: Pond P701 P

Inflow Area = 91,083 sf, 17.79% Impervious, Inflow Depth = 2.46" for 10-Year event
Inflow = 4.5 cfs @ 12.22 hrs, Volume= 18,646 cf
Outflow = 4.4 cfs @ 12.26 hrs, Volume= 18,646 cf, Atten= 2%, Lag= 2.5 min
Discarded = 0.1 cfs @ 12.26 hrs, Volume= 2,194 cf
Primary = 4.3 cfs @ 12.26 hrs, Volume= 16,452 cf
Routed to Reach R702 P : Reach 701 P
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach R702 P : Reach 701 P

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 516.48' @ 12.26 hrs Surf.Area= 3,496 sf Storage= 3,250 cf

Plug-Flow detention time= 80.3 min calculated for 18,636 cf (100% of inflow)
Center-of-Mass det. time= 80.9 min (921.2 - 840.3)

Volume	Invert	Avail.Storage	Storage Description
#1	514.30'	11,978 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
514.30	50	0	0
515.00	1,000	368	368
516.00	2,100	1,550	1,918
518.00	7,960	10,060	11,978

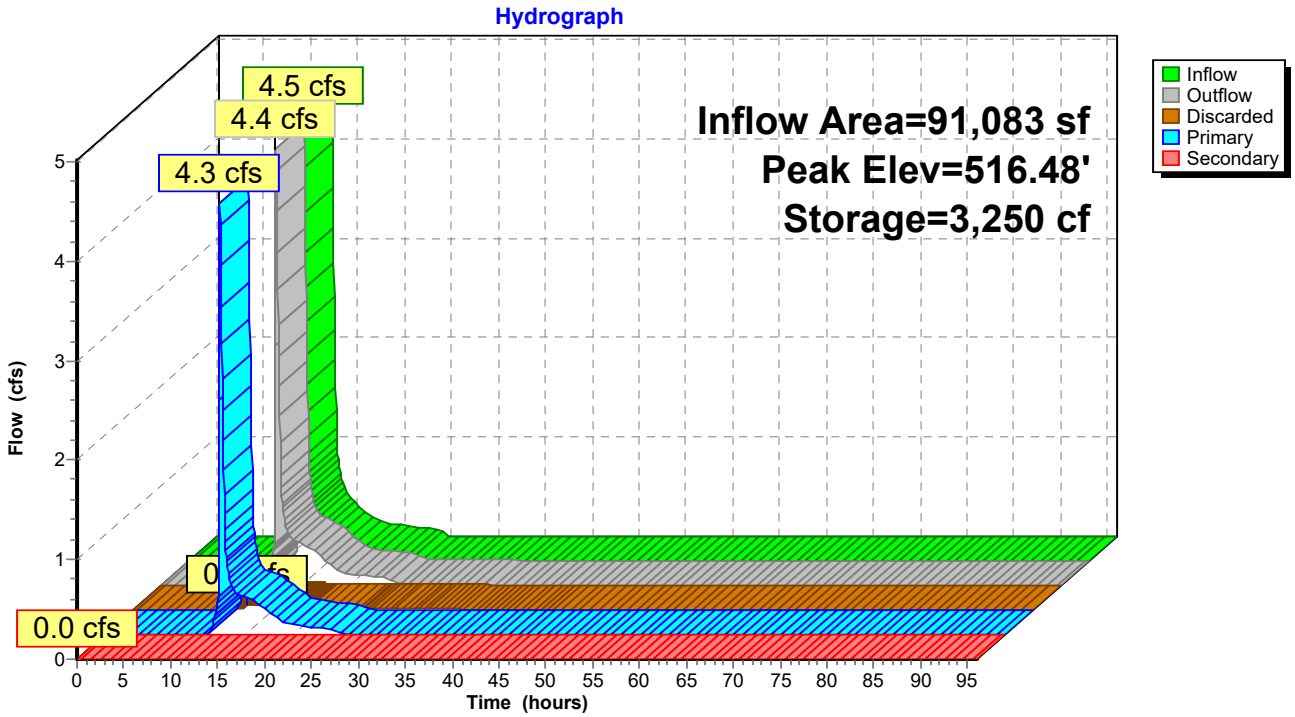
Device	Routing	Invert	Outlet Devices
#1	Primary	512.00'	**12.0" Round Culvert** L= 52.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 512.00' / 511.50' S= 0.0096 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	515.20'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	516.30'	**16.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#4	Secondary	517.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	514.30'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 512.00'

Discarded OutFlow Max=0.1 cfs @ 12.26 hrs HW=516.48' (Free Discharge)
└**5=Exfiltration** (Controls 0.1 cfs)

Primary OutFlow Max=4.3 cfs @ 12.26 hrs HW=516.48' (Free Discharge)
└**1=Culvert** (Passes 4.3 cfs of 7.1 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 0.4 cfs @ 5.07 fps)
└**3=Sharp-Crested Rectangular Weir** (Weir Controls 3.8 cfs @ 1.37 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=514.30' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond P701 P: Pond P701 P



Summary for Pond P702 P: Pond P702 P

Inflow Area = 181,154 sf, 22.95% Impervious, Inflow Depth = 2.63" for 10-Year event
Inflow = 11.1 cfs @ 12.14 hrs, Volume= 39,707 cf
Outflow = 0.9 cfs @ 13.91 hrs, Volume= 29,527 cf, Atten= 92%, Lag= 106.1 min
Primary = 0.9 cfs @ 13.91 hrs, Volume= 29,527 cf
Routed to Reach R702 P : Reach 701 P
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach R703 P : Reach 703 P

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 523.98' @ 13.91 hrs Surf.Area= 11,505 sf Storage= 22,495 cf

Plug-Flow detention time= 334.0 min calculated for 29,512 cf (74% of inflow)
Center-of-Mass det. time= 245.4 min (1,075.4 - 830.0)

Volume	Invert	Avail.Storage	Storage Description
#1	520.20'	1,398,243 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

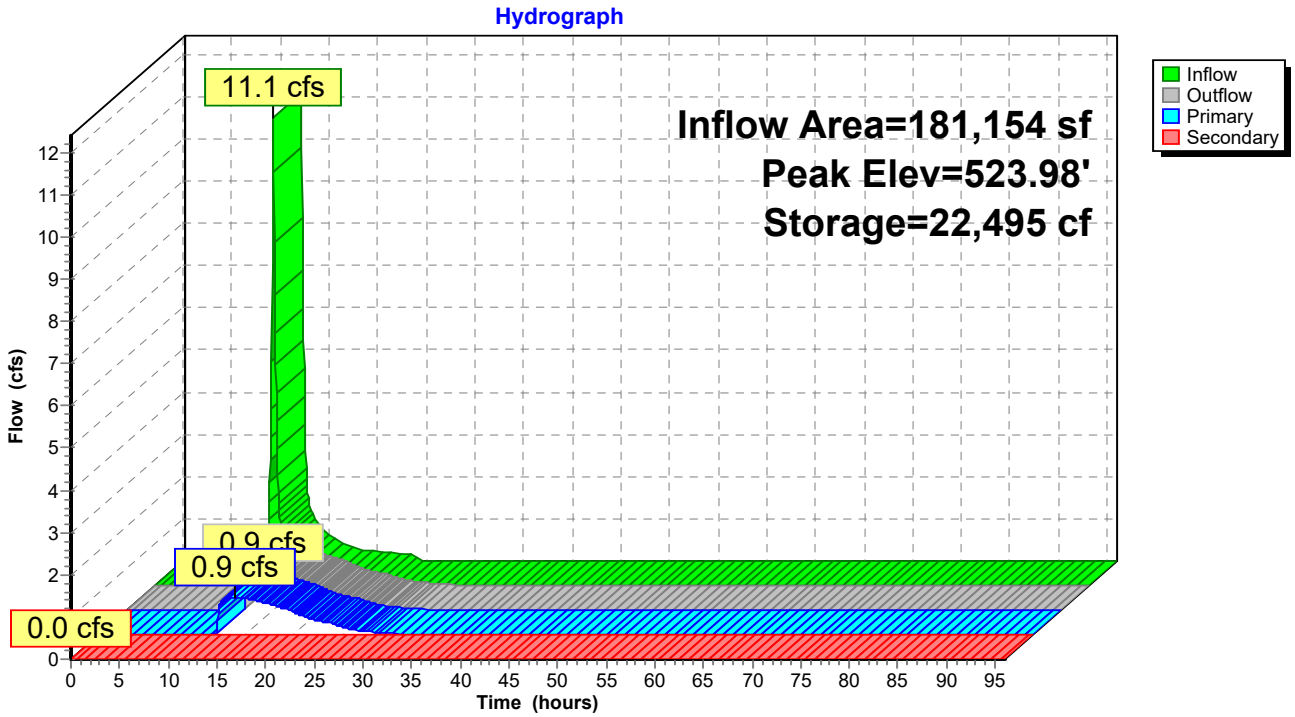
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
520.20	30	0	0
521.00	2,820	1,140	1,140
522.00	5,765	4,293	5,432
524.00	11,575	17,340	22,772
626.00	15,395	1,375,470	1,398,243

Device	Routing	Invert	Outlet Devices
#1	Primary	518.00'	**18.0" Round Culvert** L= 410.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 518.00' / 511.50' S= 0.0159 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	522.70'	**4.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	524.80'	**16.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#4	Secondary	525.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.9 cfs @ 13.91 hrs HW=523.98' (Free Discharge)
└**1=Culvert** (Passes 0.9 cfs of 15.7 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.9 cfs @ 5.07 fps)
└**3=Sharp-Crested Rectangular Weir** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=520.20' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond P702 P: Pond P702 P



Summary for Pond P703 P: Pond P703 P

540.5 for calculatioin purposes only

Inflow Area = 346,988 sf, 13.63% Impervious, Inflow Depth = 2.21" for 10-Year event
Inflow = 19.0 cfs @ 12.11 hrs, Volume= 63,782 cf
Outflow = 1.2 cfs @ 14.76 hrs, Volume= 63,782 cf, Atten= 94%, Lag= 158.8 min
Primary = 1.2 cfs @ 14.76 hrs, Volume= 63,782 cf
Routed to Reach R703 P : Reach 703 P
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond P702 P : Pond P702 P

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 538.28' @ 14.76 hrs Surf.Area= 19,030 sf Storage= 33,895 cf

Plug-Flow detention time= 380.7 min calculated for 63,749 cf (100% of inflow)
Center-of-Mass det. time= 380.9 min (1,221.9 - 841.0)

Volume	Invert	Avail.Storage	Storage Description
#1	534.00'	90,340 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

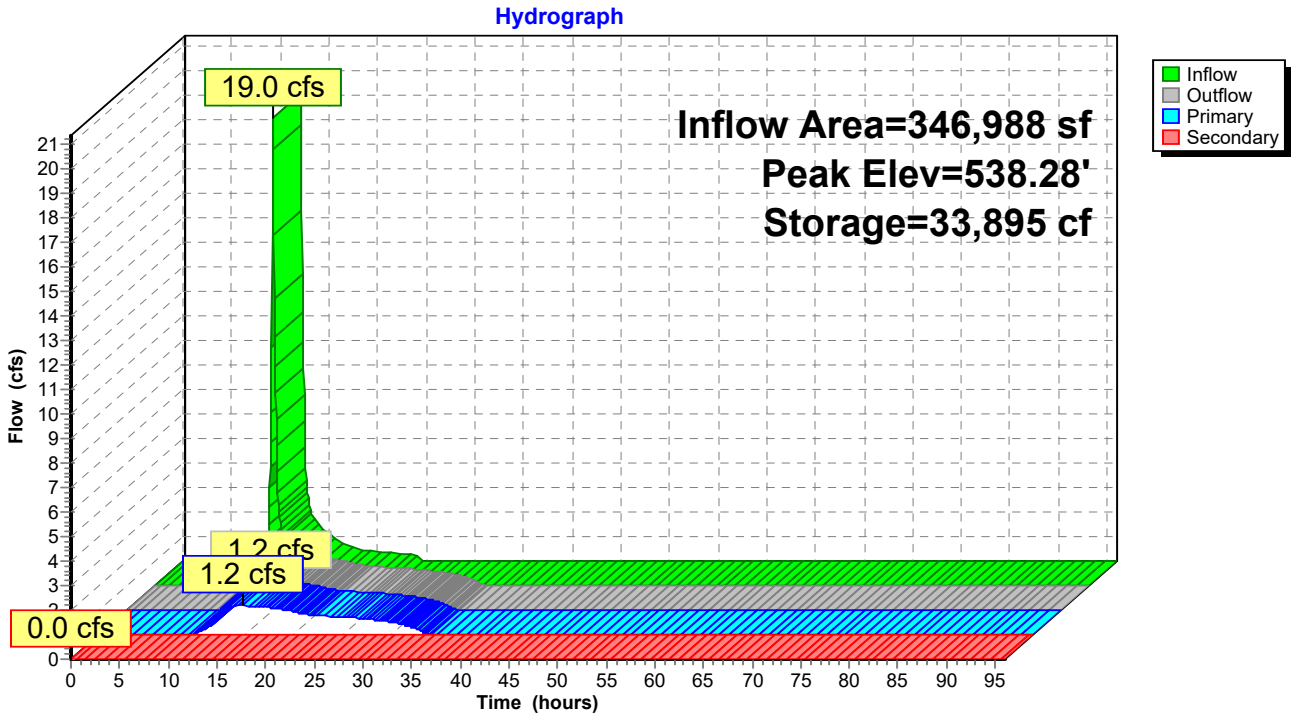
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
534.00	700	0	0
536.00	5,385	6,085	6,085
538.00	17,325	22,710	28,795
540.00	29,480	46,805	75,600
540.50	29,480	14,740	90,340

Device	Routing	Invert	Outlet Devices
#1	Primary	531.50'	**24.0" Round Culvert** L= 360.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 531.50' / 522.00' S= 0.0264 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	534.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	537.50'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	538.50'	**16.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#5	Secondary	540.00'	**20.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=1.2 cfs @ 14.76 hrs HW=538.28' (Free Discharge)
└**1=Culvert** (Passes 1.2 cfs of 36.4 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.9 cfs @ 9.77 fps)
  ├**3=Orifice/Grate** (Orifice Controls 0.3 cfs @ 3.77 fps)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=534.00' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond P703 P: Pond P703 P

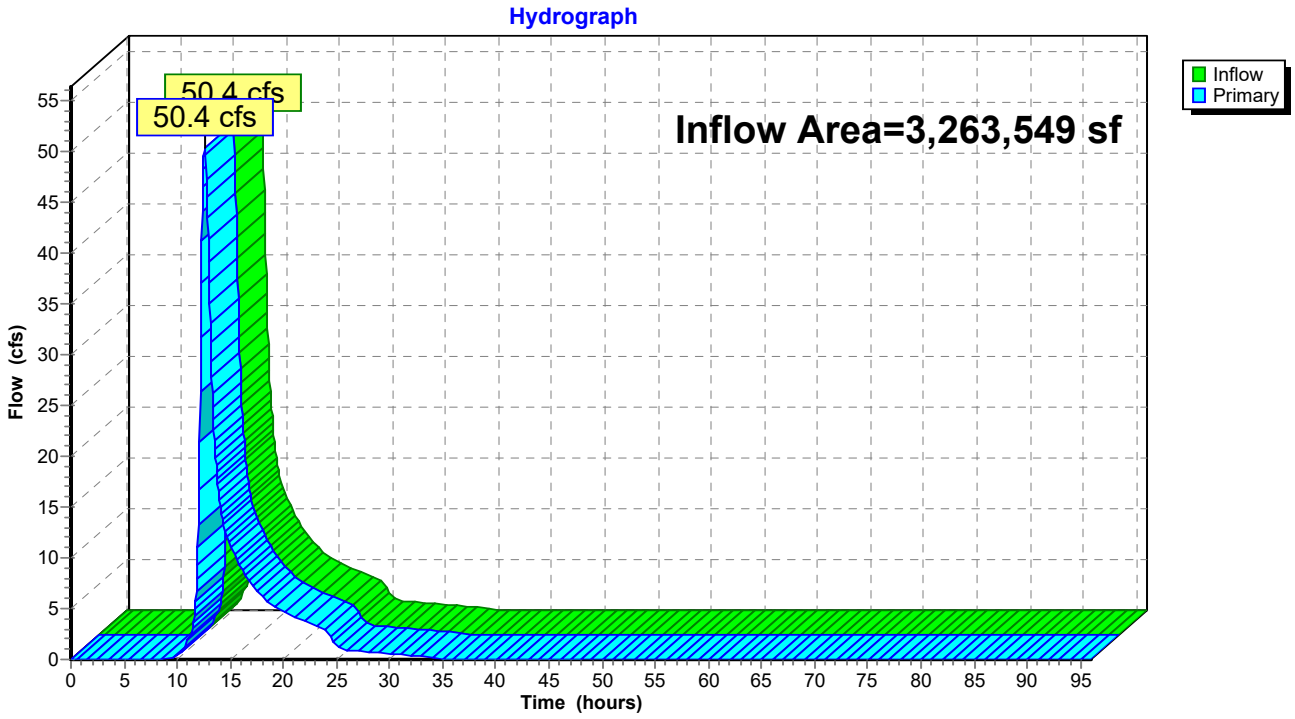


Summary for Link L2 P: Ditch

Inflow Area = 3,263,549 sf, 10.58% Impervious, Inflow Depth = 1.87" for 10-Year event
Inflow = 50.4 cfs @ 12.58 hrs, Volume= 508,395 cf
Primary = 50.4 cfs @ 12.58 hrs, Volume= 508,395 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link L2 P: Ditch



Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 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 S200 P: Subcat S200 P Runoff Area=290,544 sf 4.03% Impervious Runoff Depth=4.15"
Flow Length=1,490' Tc=62.5 min CN=75 Runoff=12.5 cfs 100,466 cf

Subcatchment S201 P: Subcat S201 P Runoff Area=96,709 sf 4.82% Impervious Runoff Depth=2.41"
Flow Length=575' Tc=26.7 min CN=58 Runoff=3.6 cfs 19,416 cf

Subcatchment S202 P: Subcat S202 P Runoff Area=40,444 sf 0.00% Impervious Runoff Depth=2.31"
Flow Length=465' Tc=14.4 min CN=57 Runoff=1.8 cfs 7,796 cf

Subcatchment S400 P: Subcat S400 P Runoff Area=373,885 sf 3.56% Impervious Runoff Depth=3.94"
Flow Length=1,125' Tc=24.7 min CN=73 Runoff=24.4 cfs 122,612 cf

Subcatchment S401 P: Subcat S401 P Runoff Area=39,667 sf 13.75% Impervious Runoff Depth=4.26"
Flow Length=215' Tc=10.6 min CN=76 Runoff=3.9 cfs 14,073 cf

Subcatchment S402 P: Subcat S402 P Runoff Area=93,224 sf 3.45% Impervious Runoff Depth=2.41"
Flow Length=795' Tc=18.4 min CN=58 Runoff=4.0 cfs 18,717 cf

Subcatchment S403 P: Subcat S403 P Runoff Area=163,769 sf 20.12% Impervious Runoff Depth=3.94"
Flow Length=150' Tc=9.1 min CN=73 Runoff=15.3 cfs 53,706 cf

Subcatchment S404 P: Subcat S404 P Runoff Area=97,529 sf 33.15% Impervious Runoff Depth=4.92"
Flow Length=130' Tc=10.9 min CN=82 Runoff=10.7 cfs 39,956 cf

Subcatchment S500 P: Subcat S500 P Runoff Area=484,459 sf 8.28% Impervious Runoff Depth=4.15"
Flow Length=1,060' Tc=47.3 min CN=75 Runoff=24.4 cfs 167,519 cf

Subcatchment S501 P: Subcat S501 P Runoff Area=79,903 sf 14.81% Impervious Runoff Depth=3.41"
Flow Length=380' Tc=16.8 min CN=68 Runoff=5.3 cfs 22,707 cf

Subcatchment S502 P: Subcat S502 P Runoff Area=86,237 sf 17.89% Impervious Runoff Depth=4.15"
Tc=6.0 min CN=75 Runoff=9.4 cfs 29,819 cf

Subcatchment S503 P: Subcat S503 P Runoff Area=82,329 sf 25.04% Impervious Runoff Depth=4.37"
Flow Length=330' Tc=9.3 min CN=77 Runoff=8.5 cfs 29,953 cf

Subcatchment S504 P: Subcat S504 P Runoff Area=277,905 sf 13.64% Impervious Runoff Depth=2.80"
Flow Length=745' Tc=18.2 min UI Adjusted CN=62 Runoff=14.3 cfs 64,868 cf

Subcatchment S505 P: Subcat S505 P Runoff Area=13,197 sf 0.00% Impervious Runoff Depth=4.04"
Tc=6.0 min CN=74 Runoff=1.4 cfs 4,445 cf

Subcatchment S700P: Subcat S700P Runoff Area=340,792 sf 1.99% Impervious Runoff Depth=3.72"
Flow Length=720' Tc=47.6 min CN=71 Runoff=15.3 cfs 105,743 cf

Subcatchment S701P: Subcat S701P Runoff Area=91,083 sf 17.79% Impervious Runoff Depth=4.37"
Flow Length=350' Tc=15.4 min CN=77 Runoff=8.0 cfs 33,138 cf

Subcatchment S702 P: Subcat S702 P Runoff Area=181,154 sf 22.95% Impervious Runoff Depth=4.58"
Flow Length=395' Tc=10.0 min CN=79 Runoff=19.2 cfs 69,206 cf

Subcatchment S703 P: Subcat S703 P Runoff Area=346,988 sf 13.63% Impervious Runoff Depth=4.04"
Flow Length=500' Tc=7.7 min CN=74 Runoff=35.2 cfs 116,879 cf

Subcatchment S800 P: Subcat S800 P Runoff Area=83,731 sf 4.42% Impervious Runoff Depth=3.83"
Flow Length=660' Tc=27.4 min CN=72 Runoff=5.1 cfs 26,718 cf

Reach R200 P: Reach R200 P Avg. Flow Depth=0.13' Max Vel=0.78 fps Inflow=5.0 cfs 27,213 cf
n=0.070 L=800.0' S=0.0213 '/' Capacity=433.1 cfs Outflow=4.0 cfs 27,213 cf

Reach R200A P: Reach R200A P Avg. Flow Depth=0.64' Max Vel=9.34 fps Inflow=5.0 cfs 27,213 cf
12.0" Round Pipe n=0.013 L=340.0' S=0.0353 '/' Capacity=6.7 cfs Outflow=5.0 cfs 27,213 cf

Reach R201 P: Reach R201 P Avg. Flow Depth=0.55' Max Vel=8.07 fps Inflow=3.6 cfs 19,416 cf
12.0" Round Pipe n=0.020 L=115.0' S=0.0696 '/' Capacity=6.1 cfs Outflow=3.6 cfs 19,416 cf

Reach R202 P: Reach R202 P Avg. Flow Depth=0.35' Max Vel=7.37 fps Inflow=1.8 cfs 7,796 cf
12.0" Round Pipe n=0.020 L=390.0' S=0.0885 '/' Capacity=6.9 cfs Outflow=1.8 cfs 7,796 cf

Reach R401 P: Reach R401 P Avg. Flow Depth=0.20' Max Vel=1.06 fps Inflow=3.9 cfs 14,073 cf
n=0.070 L=990.0' S=0.0273 '/' Capacity=271.5 cfs Outflow=2.6 cfs 14,073 cf

Reach R502 P: Reach R502 P Avg. Flow Depth=0.11' Max Vel=0.72 fps Inflow=0.3 cfs 8,860 cf
n=0.070 L=975.0' S=0.0338 '/' Capacity=247.1 cfs Outflow=0.3 cfs 8,860 cf

Reach R504 P: Reach R504 P Avg. Flow Depth=0.46' Max Vel=1.60 fps Inflow=14.3 cfs 64,868 cf
n=0.070 L=1,120.0' S=0.0241 '/' Capacity=255.2 cfs Outflow=11.7 cfs 64,868 cf

Reach R702 P: Reach 701 P Avg. Flow Depth=0.43' Max Vel=1.41 fps Inflow=10.5 cfs 89,578 cf
n=0.070 L=135.0' S=0.0222 '/' Capacity=307.8 cfs Outflow=10.4 cfs 89,578 cf

Reach R703 P: Reach 703 P Avg. Flow Depth=0.45' Max Vel=1.37 fps Inflow=13.2 cfs 116,889 cf
n=0.070 L=815.0' S=0.0196 '/' Capacity=289.3 cfs Outflow=11.1 cfs 116,889 cf

Pond P403 P: Pond P403 P Peak Elev=549.00' Storage=17,485 cf Inflow=15.3 cfs 53,706 cf
Discarded=0.2 cfs 8,578 cf Primary=9.4 cfs 45,126 cf Secondary=0.0 cfs 2 cf Outflow=9.6 cfs 53,706 cf

Pond P501 P: Pond P501 P Peak Elev=565.82' Storage=0 cf Inflow=9.5 cfs 52,064 cf
Primary=9.5 cfs 52,064 cf Secondary=0.0 cfs 0 cf Outflow=9.5 cfs 52,064 cf

Pond P502 P: Pond P502 P Peak Elev=557.89' Storage=18,643 cf Inflow=9.4 cfs 29,819 cf
Discarded=0.2 cfs 20,959 cf Primary=0.3 cfs 8,860 cf Secondary=0.0 cfs 0 cf Outflow=0.5 cfs 29,819 cf

Pond P503 P: Pond P503 P Peak Elev=586.97' Storage=4,289 cf Inflow=8.5 cfs 29,953 cf
Discarded=0.1 cfs 596 cf Primary=4.3 cfs 29,357 cf Secondary=0.0 cfs 0 cf Outflow=4.4 cfs 29,953 cf

Pond P505 P: Pond P505 P Peak Elev=554.96' Storage=30,498 cf Inflow=10.2 cfs 56,509 cf
Discarded=0.2 cfs 22,485 cf Primary=1.3 cfs 34,025 cf Secondary=0.0 cfs 0 cf Outflow=1.5 cfs 56,509 cf

Pond P701 P: Pond P701 P Peak Elev=516.60' Storage=3,723 cf Inflow=8.0 cfs 33,138 cf
Discarded=0.1 cfs 2,576 cf Primary=7.2 cfs 30,561 cf Secondary=0.0 cfs 0 cf Outflow=7.3 cfs 33,138 cf

Pond P702 P: Pond P702 P Peak Elev=525.00' Storage=34,414 cf Inflow=19.2 cfs 69,206 cf
Primary=6.0 cfs 59,017 cf Secondary=0.0 cfs 10 cf Outflow=6.0 cfs 59,027 cf

Pond P703 P: Pond P703 P Peak Elev=538.87' Storage=46,205 cf Inflow=35.2 cfs 116,879 cf
Primary=13.2 cfs 116,879 cf Secondary=0.0 cfs 0 cf Outflow=13.2 cfs 116,879 cf

Link L2 P: Ditch Inflow=116.4 cfs 982,363 cf
Primary=116.4 cfs 982,363 cf

Total Runoff Area = 3,263,549 sf Runoff Volume = 1,047,737 cf Average Runoff Depth = 3.85"
89.42% Pervious = 2,918,421 sf 10.58% Impervious = 345,128 sf

Summary for Subcatchment S200 P: Subcat S200 P

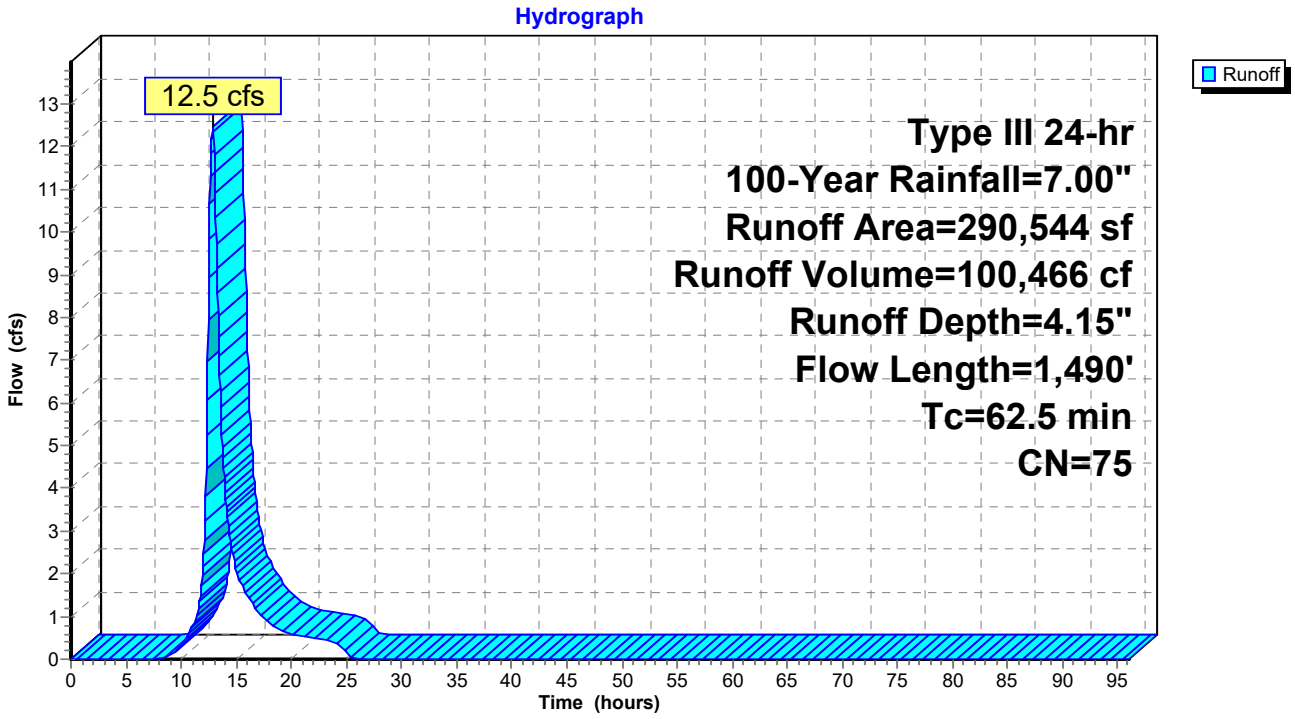
Runoff = 12.5 cfs @ 12.84 hrs, Volume= 100,466 cf, Depth= 4.15"
Routed to Link L2 P : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
147	98	Roofs, HSG C
1,906	98	Roofs, HSG C
1,193	98	Paved parking, HSG C
1,363	98	Paved parking, HSG C
495	70	Woods, Good, HSG C
2,373	74	>75% Grass cover, Good, HSG C
1,215	74	>75% Grass cover, Good, HSG C
4,844	74	>75% Grass cover, Good, HSG C
658	74	>75% Grass cover, Good, HSG C
1,645	74	>75% Grass cover, Good, HSG C
2,619	74	>75% Grass cover, Good, HSG C
1,972	74	>75% Grass cover, Good, HSG C
71	70	Woods, Good, HSG C
75,576	70	Woods, Good, HSG C
2,305	70	Woods, Good, HSG C
25,963	70	Woods, Good, HSG C
110,354	77	Woods, Good, HSG D
23,647	80	>75% Grass cover, Good, HSG D
2,213	98	Roofs, HSG D
454	98	Roofs, HSG D
142	77	Woods, Good, HSG D
753	77	Woods, Good, HSG D
368	55	Woods, Good, HSG B
510	55	Woods, Good, HSG B
2,875	70	Woods, Good, HSG C
1,695	98	Paved parking, HSG C
2,736	98	Roofs, HSG C
15,978	74	>75% Grass cover, Good, HSG C
1,008	74	>75% Grass cover, Good, HSG C
3,233	70	Woods, Good, HSG C
162	74	>75% Grass cover, Good, HSG C
71	74	>75% Grass cover, Good, HSG C
290,544	75	Weighted Average
278,837		95.97% Pervious Area
11,707		4.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0800	0.12		**Sheet Flow, uppermost**
					Woods: Light underbrush n= 0.400 P2= 3.20"
0.4	135	0.1100	5.34		**Shallow Concentrated Flow, on lots**
					Unpaved Kv= 16.1 fps
55.0	1,305	0.0250	0.40		**Shallow Concentrated Flow, above ditch**
					Forest w/Heavy Litter Kv= 2.5 fps
62.5	1,490	Total			

Subcatchment S200 P: Subcat S200 P



Summary for Subcatchment S201 P: Subcat S201 P

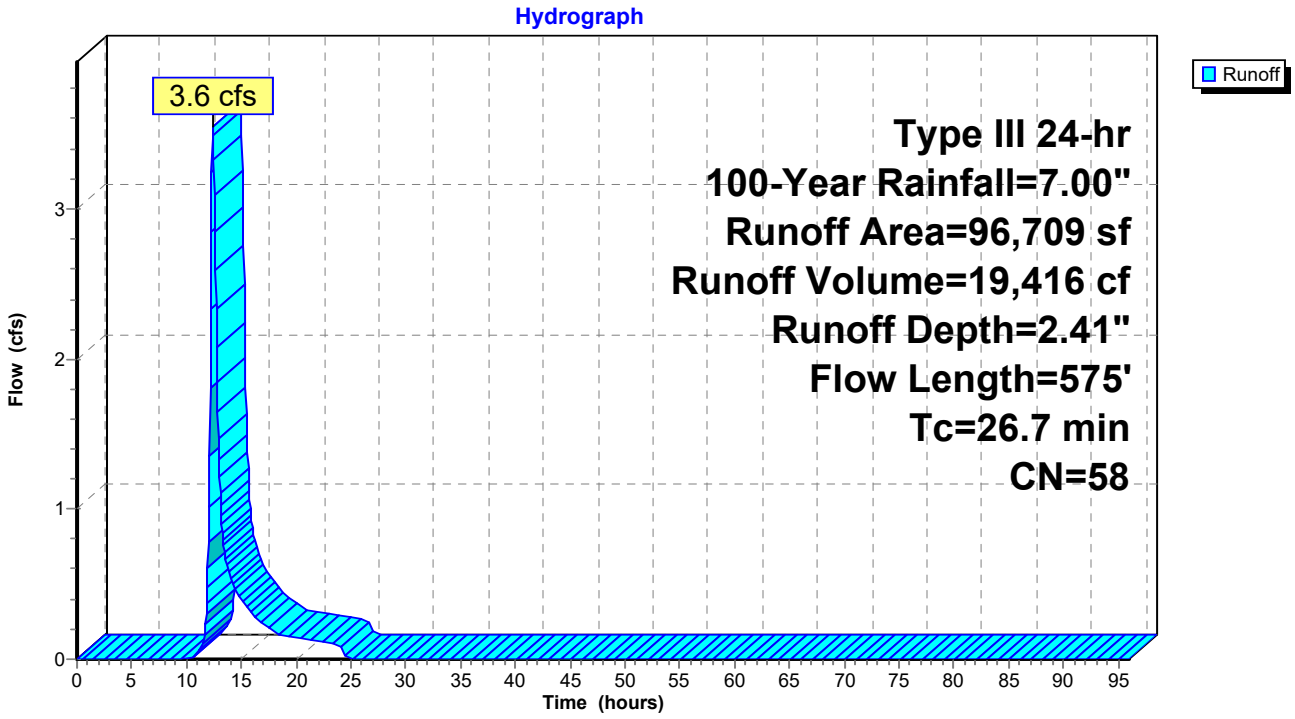
Runoff = 3.6 cfs @ 12.40 hrs, Volume= 19,416 cf, Depth= 2.41"
Routed to Reach R201 P : Reach R201 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
731	61	>75% Grass cover, Good, HSG B
1,695	55	Woods, Good, HSG B
74,781	55	Woods, Good, HSG B
2,189	61	>75% Grass cover, Good, HSG B
1,036	55	Woods, Good, HSG B
2,365	98	Roofs, HSG B
2,299	98	Paved parking, HSG B
4,529	61	>75% Grass cover, Good, HSG B
499	55	Woods, Good, HSG B
3,092	61	>75% Grass cover, Good, HSG B
1,740	70	Woods, Good, HSG C
1,738	74	>75% Grass cover, Good, HSG C
15	70	Woods, Good, HSG C
96,709	58	Weighted Average
92,045		95.18% Pervious Area
4,664		4.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	50	0.1000	0.13		**Sheet Flow, uppermost**
					Woods: Light underbrush n= 0.400 P2= 3.20"
0.2	50	0.0900	4.83		**Shallow Concentrated Flow, yard**
					Unpaved Kv= 16.1 fps
20.0	475	0.0250	0.40		**Shallow Concentrated Flow, above channel**
					Forest w/Heavy Litter Kv= 2.5 fps
26.7	575	Total			

Subcatchment S201 P: Subcat S201 P



Summary for Subcatchment S202 P: Subcat S202 P

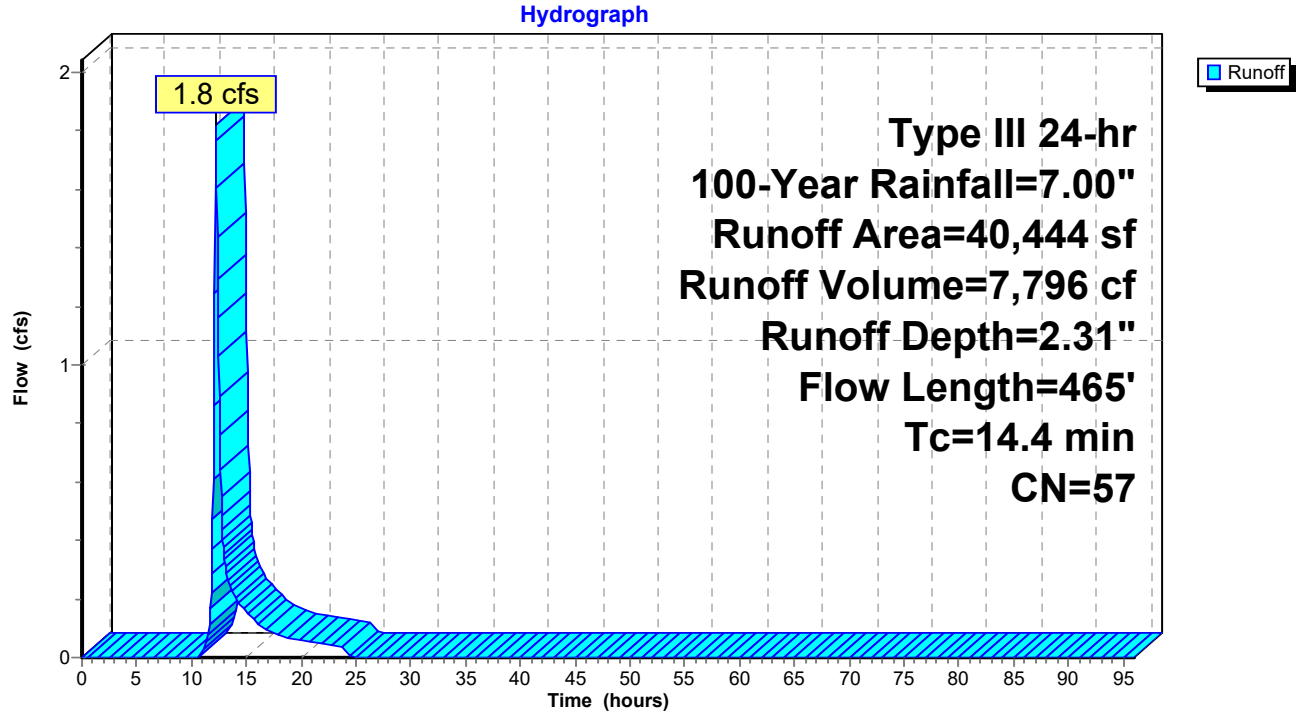
Runoff = 1.8 cfs @ 12.22 hrs, Volume= 7,796 cf, Depth= 2.31"
Routed to Reach R202 P : Reach R202 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
744	55	Woods, Good, HSG B
1,343	61	>75% Grass cover, Good, HSG B
27,977	55	Woods, Good, HSG B
10,366	61	>75% Grass cover, Good, HSG B
14	55	Woods, Good, HSG B
40,444	57	Weighted Average
40,444		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	50	0.0800	0.18		**Sheet Flow, uppermost** Grass: Dense n= 0.240 P2= 3.20"
9.1	225	0.0270	0.41		**Shallow Concentrated Flow, above channel and pipe** Forest w/Heavy Litter Kv= 2.5 fps
0.6	190	0.0605	5.16	103.26	**Trap/Vee/Rect Channel Flow, channel** Bot.W=4.00' D=2.00' Z= 3.0 '/' Top.W=16.00' n= 0.080 Earth, long dense weeds
14.4	465	Total			

Subcatchment S202 P: Subcat S202 P



Summary for Subcatchment S400 P: Subcat S400 P

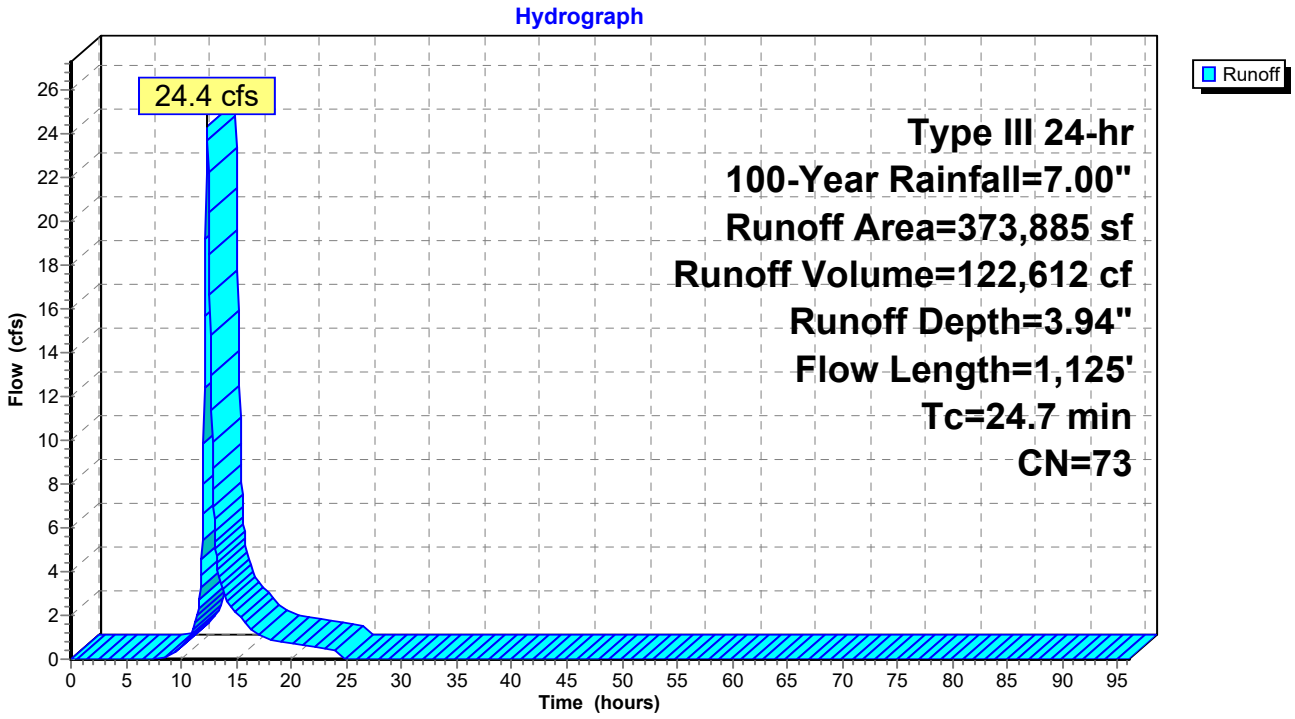
Runoff = 24.4 cfs @ 12.34 hrs, Volume= 122,612 cf, Depth= 3.94"
Routed to Link L2 P : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
181	70	Woods, Good, HSG C
16,816	74	>75% Grass cover, Good, HSG C
9,901	74	>75% Grass cover, Good, HSG C
5,763	74	>75% Grass cover, Good, HSG C
892	74	>75% Grass cover, Good, HSG C
3,067	70	Woods, Good, HSG C
39,249	74	>75% Grass cover, Good, HSG C
112	74	>75% Grass cover, Good, HSG C
12,077	74	>75% Grass cover, Good, HSG C
72	74	>75% Grass cover, Good, HSG C
180	74	>75% Grass cover, Good, HSG C
3,312	98	Roofs, HSG C
1,700	98	Roofs, HSG C
1,002	98	Roofs, HSG C
1,656	98	Roofs, HSG C
1,013	98	Paved parking, HSG C
2,142	98	Paved parking, HSG C
254	98	Paved parking, HSG C
1,288	98	Paved parking, HSG C
387	70	Woods, Good, HSG C
231	70	Woods, Good, HSG C
508	70	Woods, Good, HSG C
177,471	70	Woods, Good, HSG C
55,433	70	Woods, Good, HSG C
32,135	77	Woods, Good, HSG D
3,572	80	>75% Grass cover, Good, HSG D
2,343	80	>75% Grass cover, Good, HSG D
296	98	Roofs, HSG D
178	98	Roofs, HSG D
476	98	Paved parking, HSG D
178	77	Woods, Good, HSG D
373,885	73	Weighted Average
360,568		96.44% Pervious Area
13,317		3.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	50	0.0800	0.18		**Sheet Flow, uppermost**
					Grass: Dense n= 0.240 P2= 3.20"
20.0	1,075	0.0320	0.89		**Shallow Concentrated Flow, to ditch**
					Woodland Kv= 5.0 fps
24.7	1,125	Total			

Subcatchment S400 P: Subcat S400 P



Summary for Subcatchment S401 P: Subcat S401 P

Tc based on walkout elevation and lawn behind home

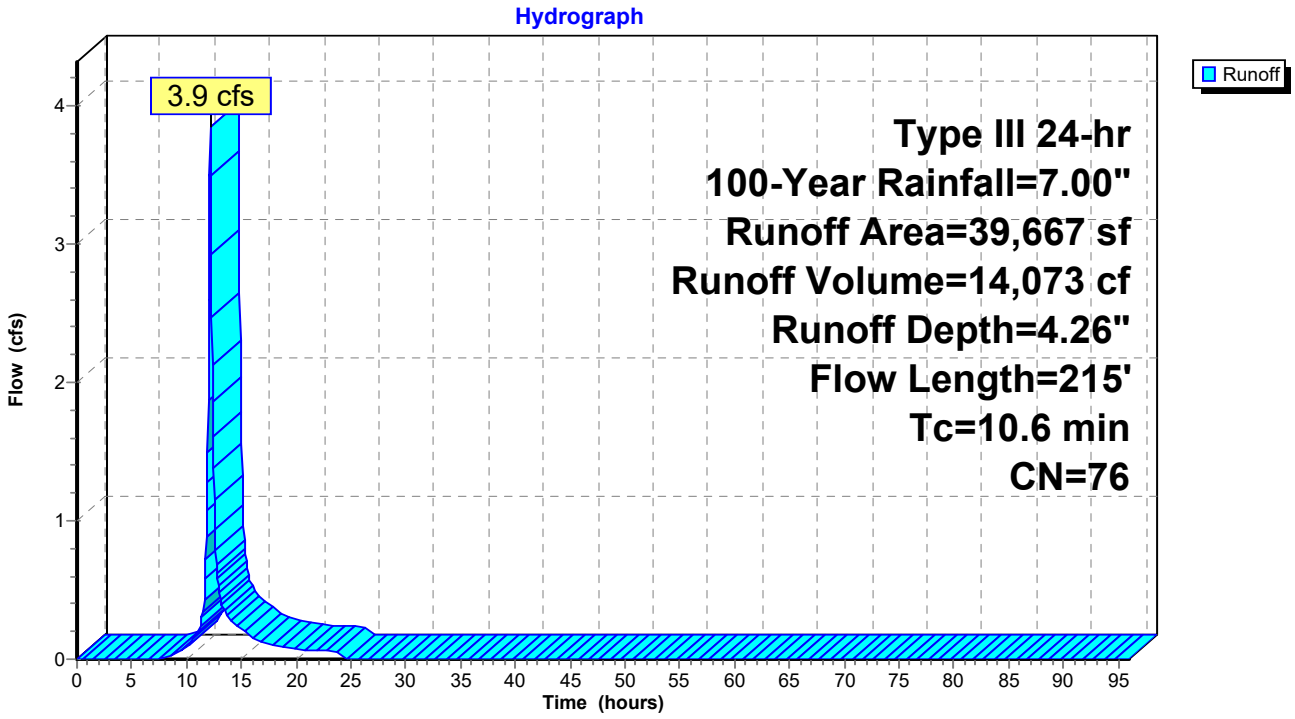
Runoff = 3.9 cfs @ 12.15 hrs, Volume= 14,073 cf, Depth= 4.26"
Routed to Reach R401 P : Reach R401 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
299	70	Woods, Good, HSG C
2,143	98	Paved parking, HSG C
3,312	98	Roofs, HSG C
11,155	70	Woods, Good, HSG C
22,758	74	>75% Grass cover, Good, HSG C
39,667	76	Weighted Average
34,212		86.25% Pervious Area
5,455		13.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.10		**Sheet Flow, uppermost**
					Grass: Dense n= 0.240 P2= 3.20"
0.8	105	0.0200	2.28		**Shallow Concentrated Flow, lawn area**
					Unpaved Kv= 16.1 fps
1.6	60	0.0160	0.63		**Shallow Concentrated Flow, woods above pipe and channel**
					Woodland Kv= 5.0 fps
10.6	215	Total			

Subcatchment S401 P: Subcat S401 P



Summary for Subcatchment S402 P: Subcat S402 P

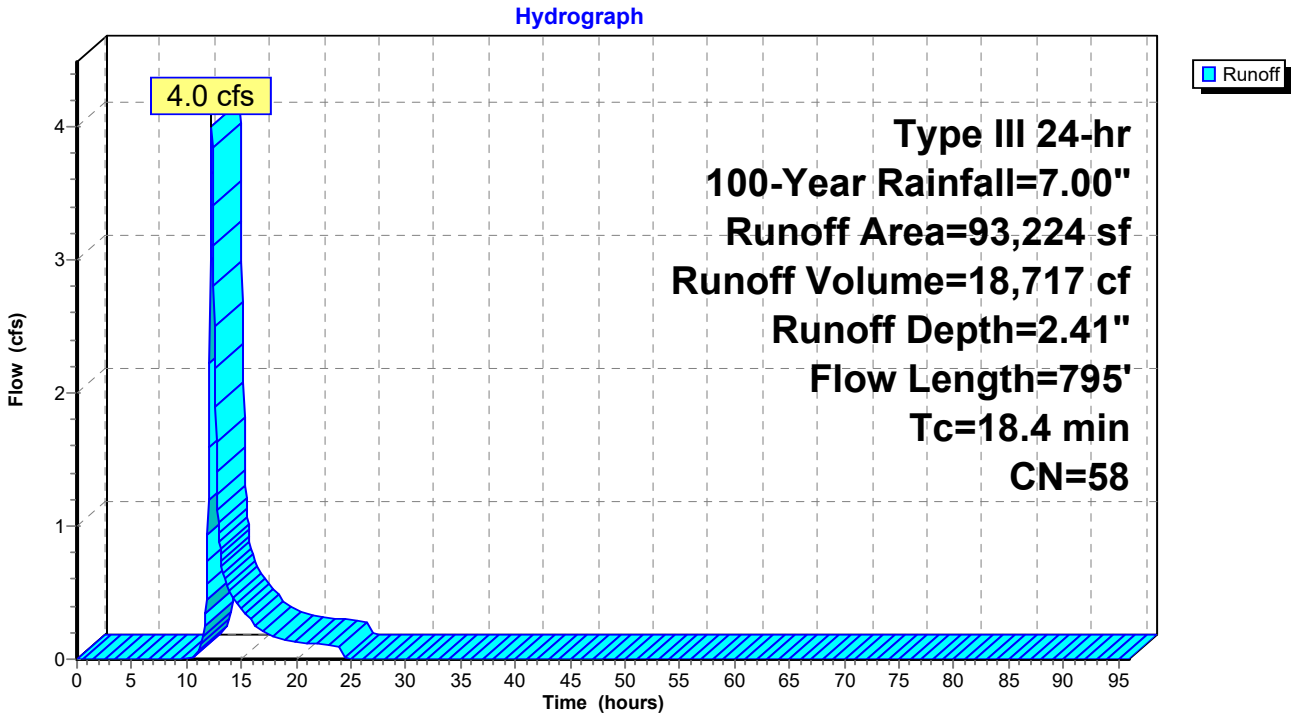
Runoff = 4.0 cfs @ 12.27 hrs, Volume= 18,717 cf, Depth= 2.41"
Routed to Link L2 P : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
76,881	55	Woods, Good, HSG B
350	55	Woods, Good, HSG B
3,802	61	>75% Grass cover, Good, HSG B
1,524	98	Roofs, HSG B
149	98	Roofs, HSG B
1,543	98	Paved parking, HSG B
6,327	61	>75% Grass cover, Good, HSG B
1,308	74	>75% Grass cover, Good, HSG C
37	70	Woods, Good, HSG C
1,303	70	Woods, Good, HSG C
93,224	58	Weighted Average
90,008		96.55% Pervious Area
3,216		3.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow, uppermost**
					Woods: Light underbrush n= 0.400 P2= 3.20"
5.0	270	0.0330	0.91		**Shallow Concentrated Flow, above channel and pipe**
					Woodland Kv= 5.0 fps
4.1	475	0.0084	1.92	38.48	**Trap/Vee/Rect Channel Flow, channel**
					Bot.W=4.00' D=2.00' Z= 3.0 '/' Top.W=16.00'
					n= 0.080 Earth, long dense weeds
18.4	795	Total			

Subcatchment S402 P: Subcat S402 P



Summary for Subcatchment S403 P: Subcat S403 P

Tc based on lawn for lot

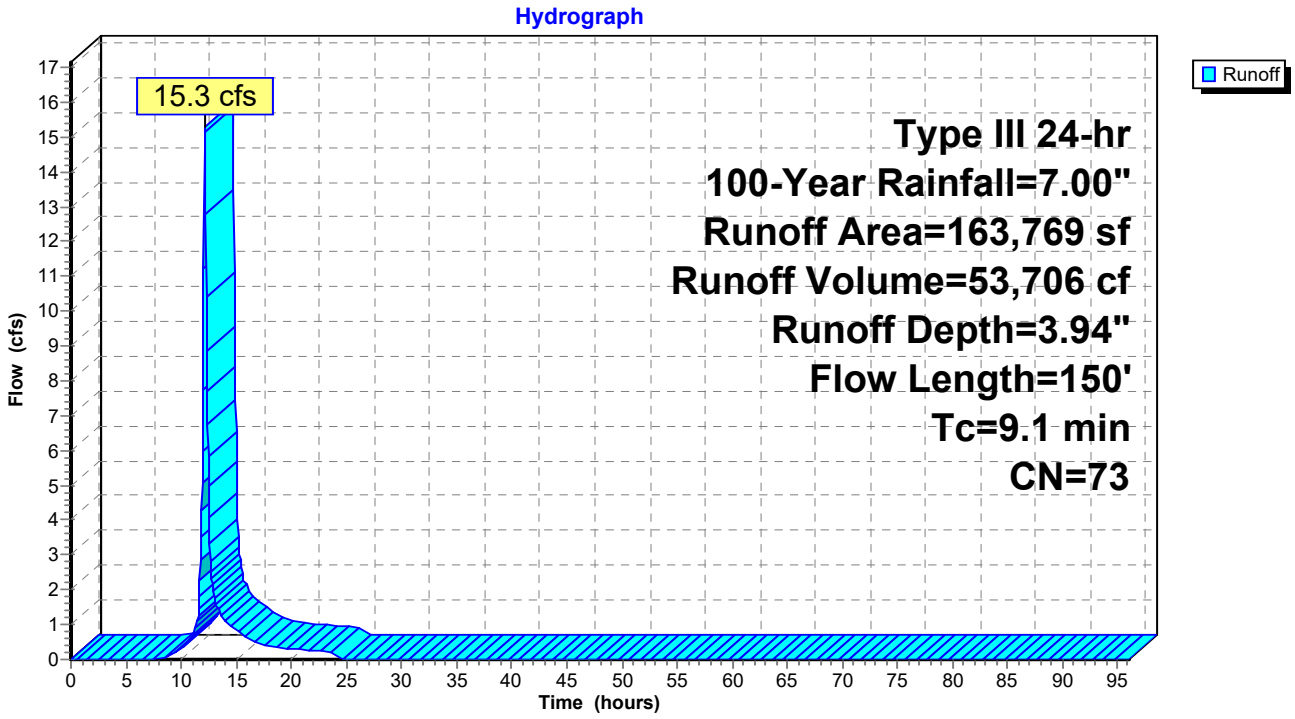
Runoff = 15.3 cfs @ 12.13 hrs, Volume= 53,706 cf, Depth= 3.94"
Routed to Pond P403 P : Pond P403 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
249	98	Roofs, HSG C
791	98	Roofs, HSG C
299	98	Roofs, HSG C
115	98	Paved parking, HSG C
1,577	70	Woods, Good, HSG C
2,089	74	>75% Grass cover, Good, HSG C
1,613	70	Woods, Good, HSG C
1,133	70	Woods, Good, HSG C
1,235	74	>75% Grass cover, Good, HSG C
4,825	74	>75% Grass cover, Good, HSG C
322	74	>75% Grass cover, Good, HSG C
8,593	74	>75% Grass cover, Good, HSG C
2,271	98	Roofs, HSG B
2,128	98	Paved parking, HSG B
340	98	Paved parking, HSG B
1,890	98	Paved roads w/curbs & sewers, HSG B
7,562	55	Woods, Good, HSG B
3,370	55	Woods, Good, HSG B
2,224	55	Woods, Good, HSG B
447	55	Woods, Good, HSG B
2,851	61	>75% Grass cover, Good, HSG B
315	61	>75% Grass cover, Good, HSG B
18,665	61	>75% Grass cover, Good, HSG B
6,689	55	Woods, Good, HSG B
2,470	55	Woods, Good, HSG B
611	98	Roofs, HSG B
506	98	Paved parking, HSG B
481	55	Woods, Good, HSG B
1,441	55	Woods, Good, HSG B
4,804	61	>75% Grass cover, Good, HSG B
861	74	>75% Grass cover, Good, HSG C
25,322	74	>75% Grass cover, Good, HSG C
961	74	>75% Grass cover, Good, HSG C
672	74	>75% Grass cover, Good, HSG C
84	74	>75% Grass cover, Good, HSG C
227	74	>75% Grass cover, Good, HSG C
2,260	74	>75% Grass cover, Good, HSG C
536	70	Woods, Good, HSG C
18,288	70	Woods, Good, HSG C
15,778	98	Paved roads w/curbs & sewers, HSG C
977	98	Paved parking, HSG C
1,245	98	Paved parking, HSG C
639	98	Paved parking, HSG C
118	98	Paved parking, HSG C
1,053	98	Paved parking, HSG C
56	98	Paved parking, HSG C
1,192	98	Paved parking, HSG C
1,037	98	Paved parking, HSG C
1,656	98	Roofs, HSG C
3,901	70	Woods, Good, HSG C
5,000	74	>75% Grass cover, Good, HSG C
163,769	73	Weighted Average
130,818		79.88% Pervious Area
32,951		20.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.10		**Sheet Flow, uppermost** Grass: Dense n= 0.240 P2= 3.20"
0.9	100	0.1500	1.94		**Shallow Concentrated Flow, woods on lot** Woodland Kv= 5.0 fps
9.1	150	Total			

Subcatchment S403 P: Subcat S403 P



Summary for Subcatchment S404 P: Subcat S404 P

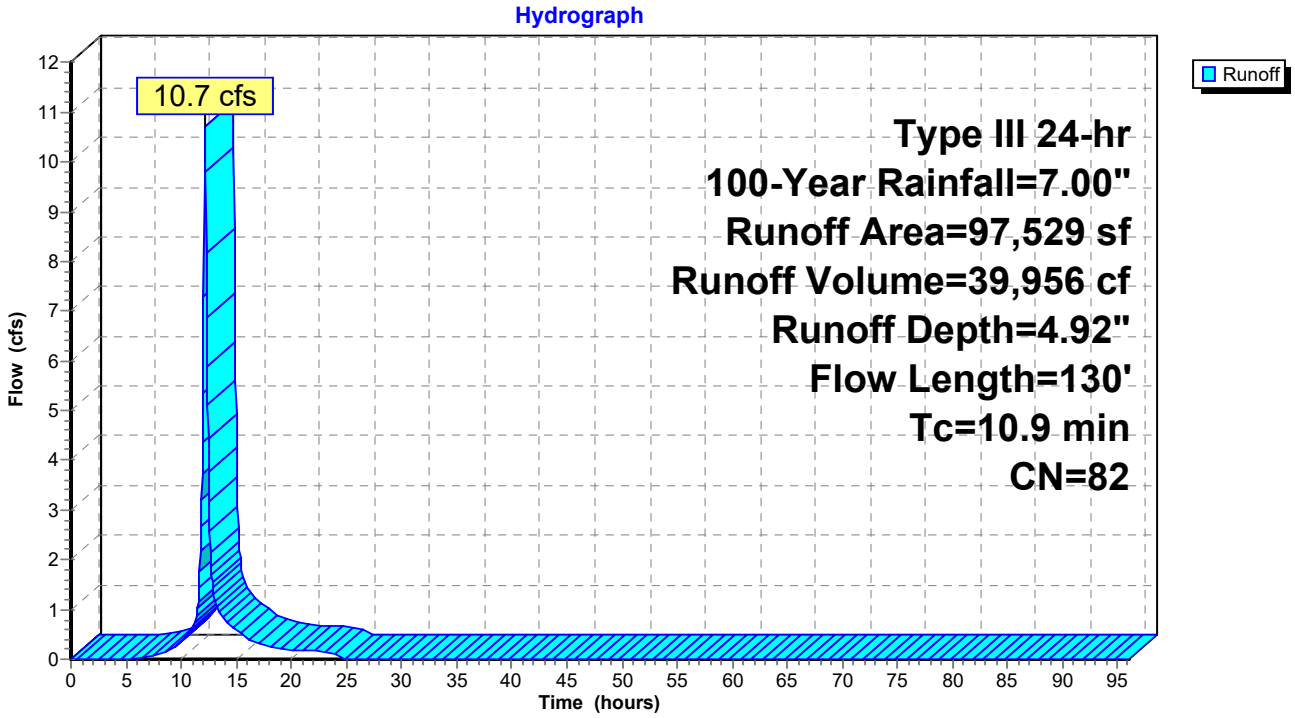
Runoff = 10.7 cfs @ 12.15 hrs, Volume= 39,956 cf, Depth= 4.92"
Routed to Link L2 P : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
167	74	>75% Grass cover, Good, HSG C
2,875	74	>75% Grass cover, Good, HSG C
676	74	>75% Grass cover, Good, HSG C
4,929	74	>75% Grass cover, Good, HSG C
971	70	Woods, Good, HSG C
5,612	70	Woods, Good, HSG C
55	98	Roofs, HSG C
916	98	Roofs, HSG C
1,041	98	Paved parking, HSG C
1,042	98	Paved parking, HSG C
1,725	98	Paved parking, HSG C
478	98	Paved parking, HSG C
1,177	98	Paved parking, HSG C
384	98	Paved parking, HSG C
459	74	>75% Grass cover, Good, HSG C
1,168	74	>75% Grass cover, Good, HSG C
580	74	>75% Grass cover, Good, HSG C
165	70	Woods, Good, HSG C
28	70	Woods, Good, HSG C
435	74	>75% Grass cover, Good, HSG C
321	74	>75% Grass cover, Good, HSG C
291	98	Paved parking, HSG C
67	98	Paved parking, HSG C
451	98	Paved parking, HSG C
368	98	Paved parking, HSG C
1,149	70	Woods, Good, HSG C
6,425	70	Woods, Good, HSG C
5,610	98	Paved roads w/curbs & sewers, HSG C
11,150	98	Paved roads w/curbs & sewers, HSG C
2,076	74	>75% Grass cover, Good, HSG C
8,934	74	>75% Grass cover, Good, HSG C
4,166	74	>75% Grass cover, Good, HSG C
471	74	>75% Grass cover, Good, HSG C
24	74	>75% Grass cover, Good, HSG C
7,933	74	>75% Grass cover, Good, HSG C
1,821	74	>75% Grass cover, Good, HSG C
2,988	80	>75% Grass cover, Good, HSG D
239	77	Woods, Good, HSG D
6,270	80	>75% Grass cover, Good, HSG D
4,584	98	Paved roads w/curbs & sewers, HSG D
3,352	77	Woods, Good, HSG D
309	98	Roofs, HSG D
264	98	Roofs, HSG D
1,425	98	Paved parking, HSG D
663	98	Paved parking, HSG D
253	98	Paved parking, HSG D
75	98	Paved parking, HSG D
370	80	>75% Grass cover, Good, HSG D
54	80	>75% Grass cover, Good, HSG D
213	80	>75% Grass cover, Good, HSG D
245	80	>75% Grass cover, Good, HSG D
85	77	Woods, Good, HSG D
97,529	82	Weighted Average
65,201		66.85% Pervious Area
32,328		33.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.1200	0.08		**Sheet Flow, uppermost**
					Woods: Dense underbrush n= 0.800 P2= 3.20"
0.4	80	0.0380	3.14		**Shallow Concentrated Flow, to Road A**
					Unpaved Kv= 16.1 fps
10.9	130	Total			

Subcatchment S404 P: Subcat S404 P



Summary for Subcatchment S500 P: Subcat S500 P

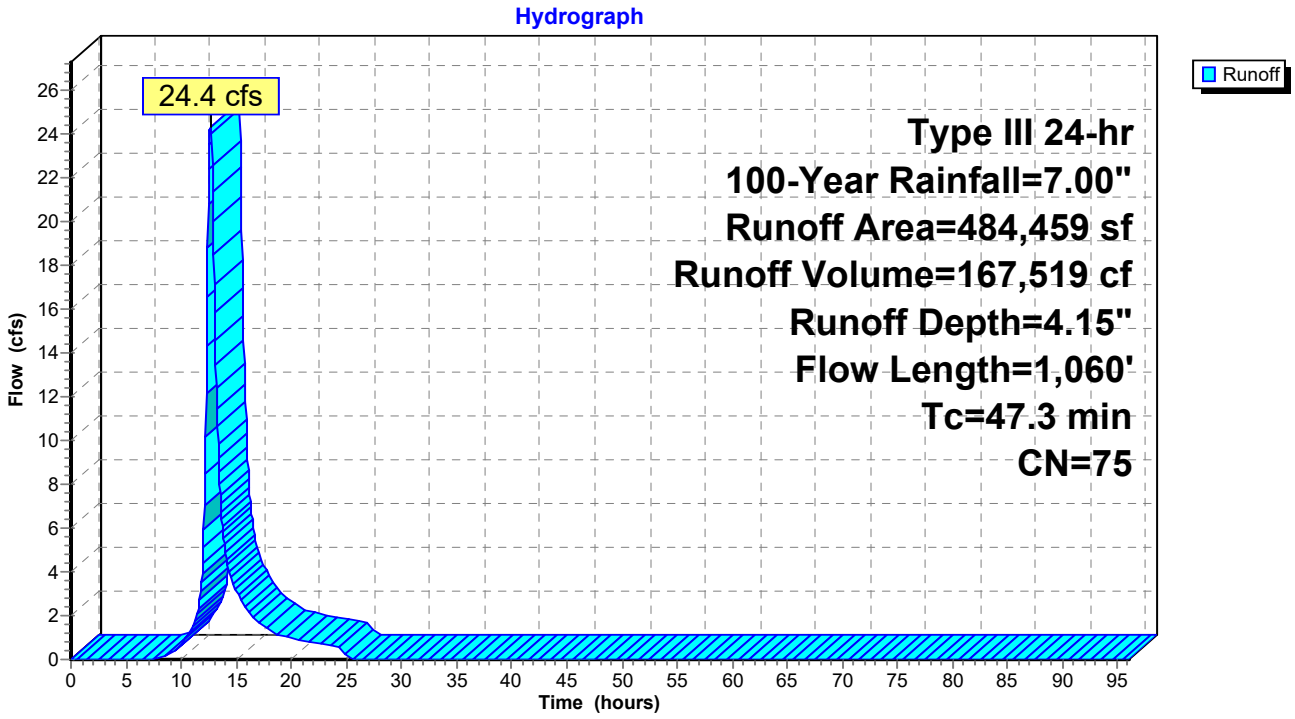
Runoff = 24.4 cfs @ 12.65 hrs, Volume= 167,519 cf, Depth= 4.15"
Routed to Link L2 P : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
9,388	74	>75% Grass cover, Good, HSG C
60,665	70	Woods, Good, HSG C
26,198	74	>75% Grass cover, Good, HSG C
16,018	74	>75% Grass cover, Good, HSG C
16,331	74	>75% Grass cover, Good, HSG C
14,669	98	Paved roads w/curbs & sewers, HSG C
756	74	>75% Grass cover, Good, HSG C
725	74	>75% Grass cover, Good, HSG C
816	98	Roofs, HSG C
2,360	98	Roofs, HSG C
2,360	98	Roofs, HSG C
1,080	98	Roofs, HSG C
437	98	Roofs, HSG C
2,360	98	Roofs, HSG C
1,123	98	Paved parking, HSG C
1,277	98	Paved parking, HSG C
1,795	98	Paved parking, HSG C
4,989	98	Paved parking, HSG C
2,187	98	Paved parking, HSG C
79	98	Paved parking, HSG C
646	98	Paved parking, HSG C
254	98	Paved parking, HSG C
379	74	>75% Grass cover, Good, HSG C
176	74	>75% Grass cover, Good, HSG C
588	74	>75% Grass cover, Good, HSG C
1,196	74	>75% Grass cover, Good, HSG C
4,845	70	Woods, Good, HSG C
933	70	Woods, Good, HSG C
1,315	70	Woods, Good, HSG C
724	98	Paved parking, HSG C
802	98	Paved parking, HSG C
7,741	74	>75% Grass cover, Good, HSG C
2,182	74	>75% Grass cover, Good, HSG C
2,480	74	>75% Grass cover, Good, HSG C
2,952	74	>75% Grass cover, Good, HSG C
1,204	74	>75% Grass cover, Good, HSG C
15,588	74	>75% Grass cover, Good, HSG C
4,215	74	>75% Grass cover, Good, HSG C
338	70	Woods, Good, HSG C
59,630	70	Woods, Good, HSG C
104,943	70	Woods, Good, HSG C
76,494	77	Woods, Good, HSG D
21,175	80	>75% Grass cover, Good, HSG D
1,923	98	Roofs, HSG D
151	98	Paved parking, HSG D
102	98	Paved parking, HSG D
2,133	77	Woods, Good, HSG D
3,737	70	Woods, Good, HSG C
484,459	75	Weighted Average
444,325		91.72% Pervious Area
40,134		8.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	50	0.0900	0.07		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
35.5	1,010	0.0360	0.47		**Shallow Concentrated Flow, to ditch** Forest w/Heavy Litter Kv= 2.5 fps
47.3	1,060	Total			

Subcatchment S500 P: Subcat S500 P



Summary for Subcatchment S501 P: Subcat S501 P

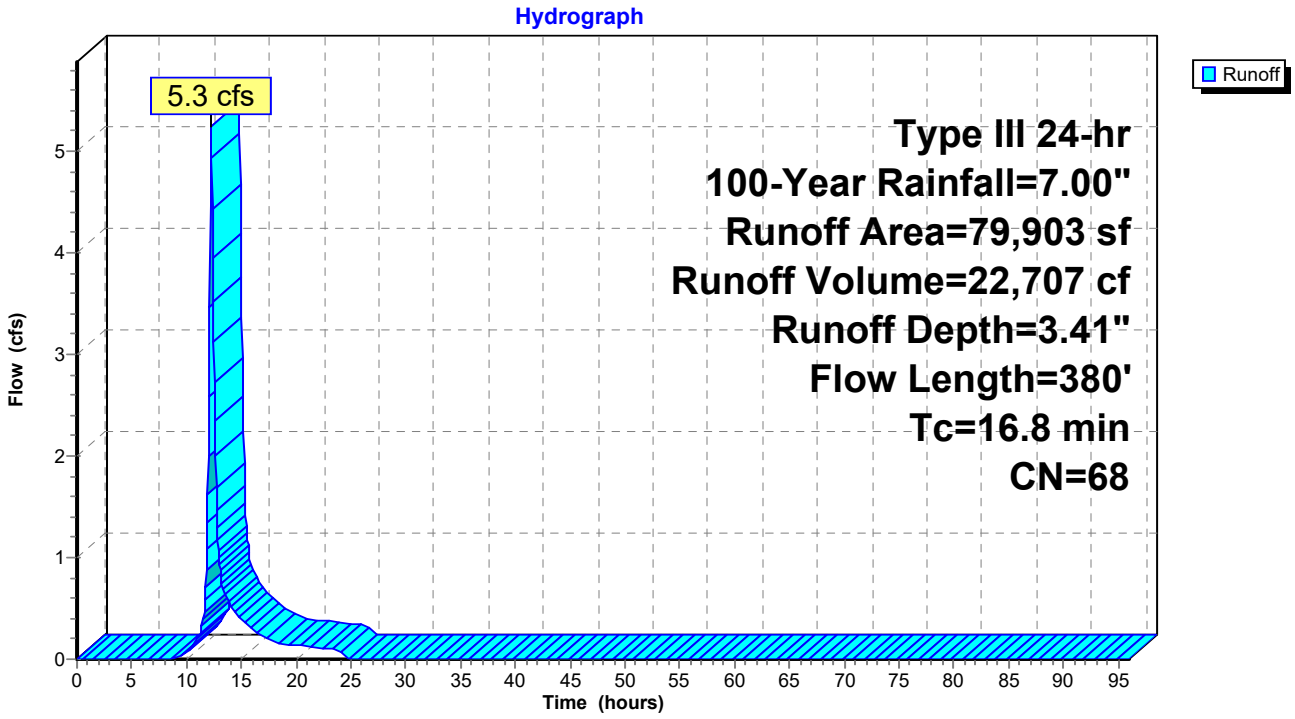
Runoff = 5.3 cfs @ 12.24 hrs, Volume= 22,707 cf, Depth= 3.41"
Routed to Pond P501 P : Pond P501 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
1,838	98	Roofs, HSG C
5,525	70	Woods, Good, HSG C
3,760	74	>75% Grass cover, Good, HSG C
6,142	74	>75% Grass cover, Good, HSG C
339	74	>75% Grass cover, Good, HSG C
81	70	Woods, Good, HSG C
6,958	61	>75% Grass cover, Good, HSG B
2,852	98	Paved roads w/curbs & sewers, HSG B
727	98	Paved parking, HSG B
5,343	55	Woods, Good, HSG B
14,295	55	Woods, Good, HSG B
714	61	>75% Grass cover, Good, HSG B
4,475	61	>75% Grass cover, Good, HSG B
4,540	61	>75% Grass cover, Good, HSG B
1,552	61	>75% Grass cover, Good, HSG B
1,209	61	>75% Grass cover, Good, HSG B
564	98	Roofs, HSG B
1,408	98	Paved parking, HSG B
3,688	55	Woods, Good, HSG B
676	55	Woods, Good, HSG B
792	74	>75% Grass cover, Good, HSG C
118	70	Woods, Good, HSG C
857	98	Paved parking, HSG C
3,586	98	Paved roads w/curbs & sewers, HSG C
7,864	74	>75% Grass cover, Good, HSG C
79,903	68	Weighted Average
68,071		85.19% Pervious Area
11,832		14.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow, uppermost**
					Woods: Light underbrush n= 0.400 P2= 3.20"
7.5	330	0.0850	0.73		**Shallow Concentrated Flow, above pipe**
					Forest w/Heavy Litter Kv= 2.5 fps
16.8	380	Total			

Subcatchment S501 P: Subcat S501 P



Summary for Subcatchment S502 P: Subcat S502 P

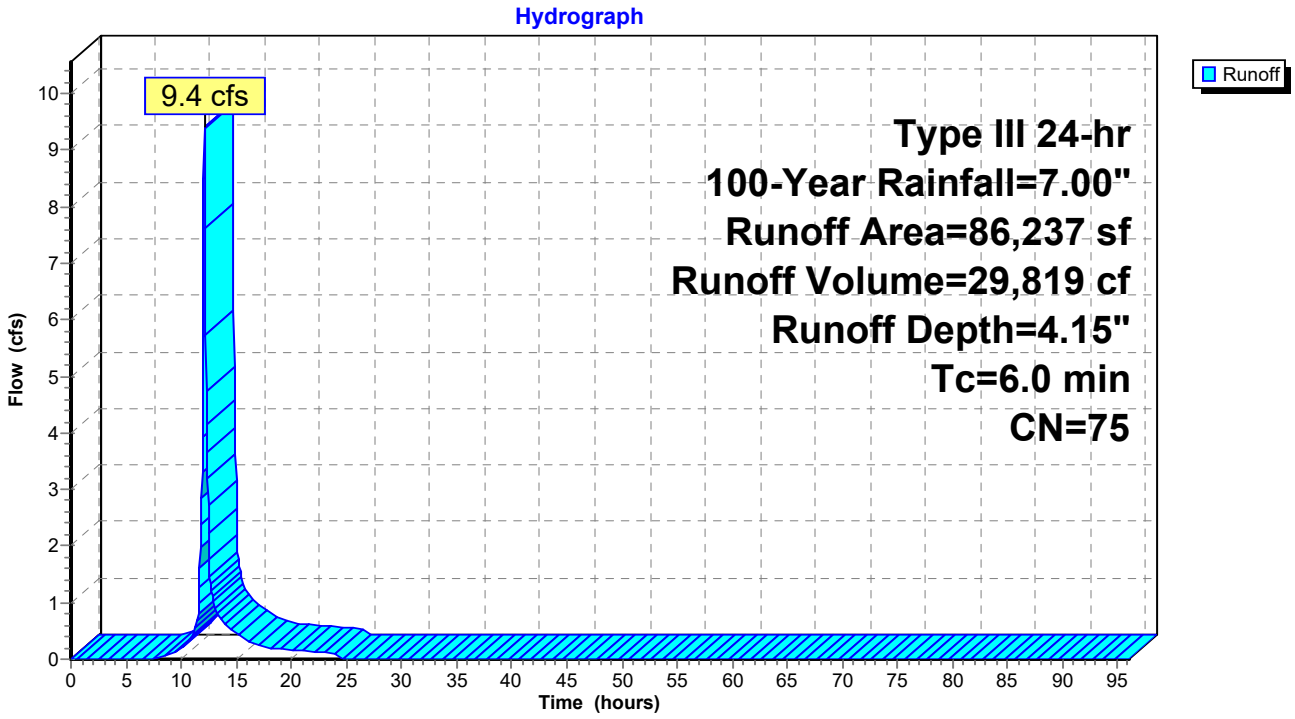
Runoff = 9.4 cfs @ 12.09 hrs, Volume= 29,819 cf, Depth= 4.15"
Routed to Pond P502 P : Pond P502 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
774	98	Paved parking, HSG C
211	98	Paved parking, HSG C
638	74	>75% Grass cover, Good, HSG C
4,747	74	>75% Grass cover, Good, HSG C
2,591	61	>75% Grass cover, Good, HSG B
440	98	Paved parking, HSG B
3,438	55	Woods, Good, HSG B
357	55	Woods, Good, HSG B
1,425	74	>75% Grass cover, Good, HSG C
8,594	70	Woods, Good, HSG C
7,746	70	Woods, Good, HSG C
131	74	>75% Grass cover, Good, HSG C
7,601	70	Woods, Good, HSG C
167	70	Woods, Good, HSG C
129	98	Paved parking, HSG C
55	98	Paved parking, HSG C
4,562	98	Paved parking, HSG C
13,013	74	>75% Grass cover, Good, HSG C
604	74	>75% Grass cover, Good, HSG C
392	74	>75% Grass cover, Good, HSG C
5,640	74	>75% Grass cover, Good, HSG C
9,254	98	Paved roads w/curbs & sewers, HSG C
337	70	Woods, Good, HSG C
13,391	70	Woods, Good, HSG C
86,237	75	Weighted Average
70,812		82.11% Pervious Area
15,425		17.89% Impervious Area

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

Subcatchment S502 P: Subcat S502 P



Summary for Subcatchment S503 P: Subcat S503 P

Tc based on lawn behind future home

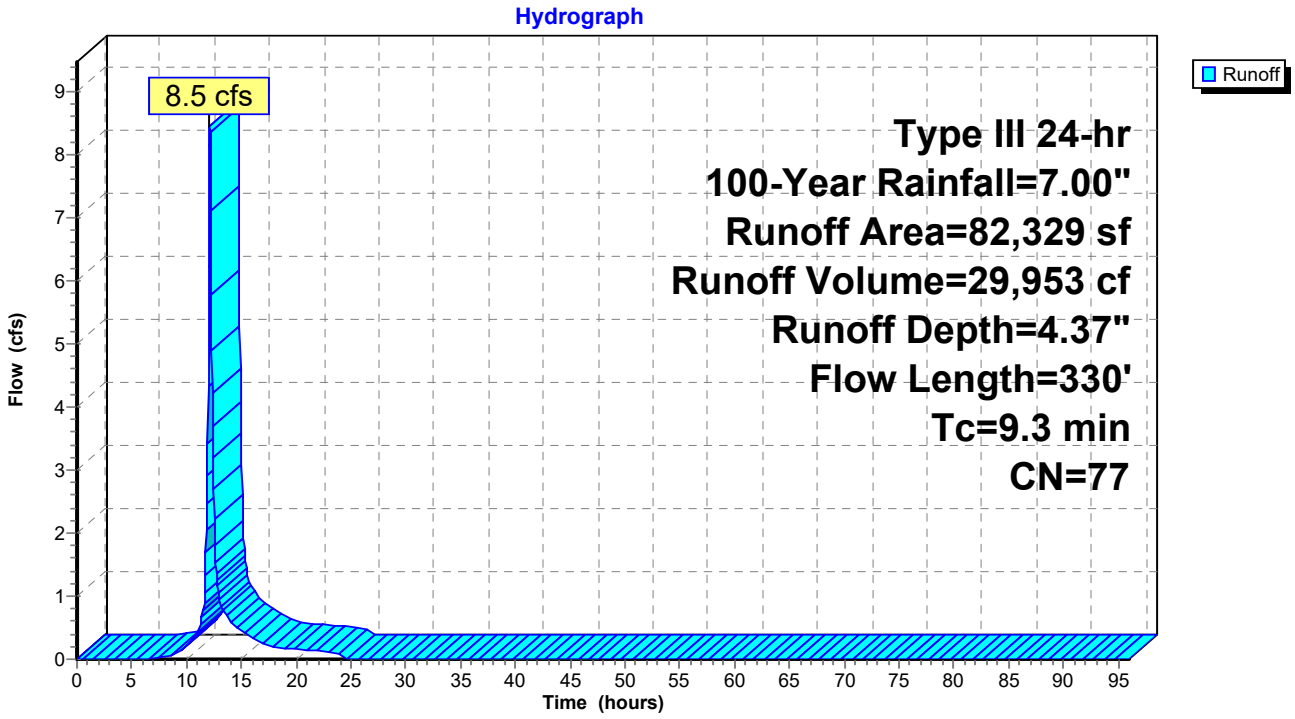
Runoff = 8.5 cfs @ 12.13 hrs, Volume= 29,953 cf, Depth= 4.37"
Routed to Pond P503 P : Pond P503 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
1,798	61	>75% Grass cover, Good, HSG B
2,567	61	>75% Grass cover, Good, HSG B
3,471	61	>75% Grass cover, Good, HSG B
198	61	>75% Grass cover, Good, HSG B
3,489	61	>75% Grass cover, Good, HSG B
8,567	98	Paved roads w/curbs & sewers, HSG B
578	98	Roofs, HSG B
1,963	98	Paved parking, HSG B
192	98	Paved parking, HSG B
1,559	98	Paved parking, HSG B
112	98	Paved parking, HSG B
216	55	Woods, Good, HSG B
2,353	55	Woods, Good, HSG B
197	61	>75% Grass cover, Good, HSG B
1,566	61	>75% Grass cover, Good, HSG B
280	74	>75% Grass cover, Good, HSG C
5,164	70	Woods, Good, HSG C
708	70	Woods, Good, HSG C
438	70	Woods, Good, HSG C
234	98	Paved parking, HSG C
325	98	Paved parking, HSG C
2,734	98	Roofs, HSG C
3,312	98	Roofs, HSG C
1,038	98	Paved roads w/curbs & sewers, HSG C
442	74	>75% Grass cover, Good, HSG C
4,889	70	Woods, Good, HSG C
31,694	74	>75% Grass cover, Good, HSG C
2,245	74	>75% Grass cover, Good, HSG C
82,329	77	Weighted Average
61,715		74.96% Pervious Area
20,614		25.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.10		**Sheet Flow, uppermost**
					Grass: Dense n= 0.240 P2= 3.20"
1.1	280	0.0710	4.29		**Shallow Concentrated Flow, to basin 503**
					Unpaved Kv= 16.1 fps
9.3	330	Total			

Subcatchment S503 P: Subcat S503 P



Summary for Subcatchment S504 P: Subcat S504 P

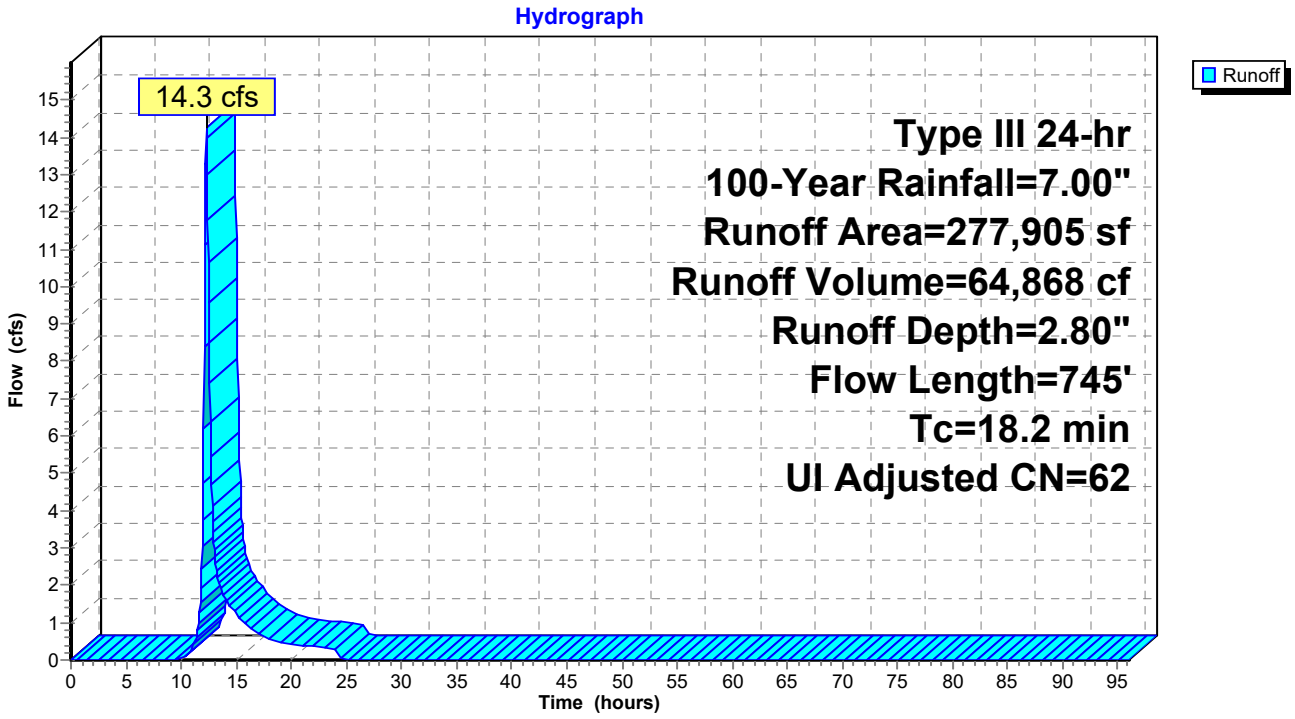
Runoff = 14.3 cfs @ 12.26 hrs, Volume= 64,868 cf, Depth= 2.80"
Routed to Reach R504 P : Reach R504 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Adj	Description
21,140	61		>75% Grass cover, Good, HSG B
90,440	55		Woods, Good, HSG B
683	61		>75% Grass cover, Good, HSG B
363	98		Paved roads w/curbs & sewers, HSG B
63	55		Woods, Good, HSG B
1,199	98		Roofs, HSG B
3,341	98		Roofs, HSG B
1,221	98		Roofs, HSG B
1,836	98		Roofs, HSG B
1,566	98		Roofs, HSG B
1,439	98		Paved parking, HSG B
2,655	98		Paved parking, HSG B
1,394	98		Paved parking, HSG B
2,691	98		Paved parking, HSG B
1,466	98		Paved parking, HSG B
51	98		Paved parking, HSG B
14,405	98		Paved parking, HSG B
240	98		Unconnected pavement, HSG B
266	98		Unconnected pavement, HSG B
1,057	98		Unconnected pavement, HSG B
1,830	98		Unconnected pavement, HSG B
897	98		Unconnected pavement, HSG B
10,972	61		>75% Grass cover, Good, HSG B
16,004	61		>75% Grass cover, Good, HSG B
1,750	61		>75% Grass cover, Good, HSG B
874	61		>75% Grass cover, Good, HSG B
19,439	61		>75% Grass cover, Good, HSG B
35	55		Woods, Good, HSG B
40	61		>75% Grass cover, Good, HSG B
57,008	55		Woods, Good, HSG B
13,834	55		Woods, Good, HSG B
1,370	55		Woods, Good, HSG B
2,234	55		Woods, Good, HSG B
73	70		Woods, Good, HSG C
1,307	70		Woods, Good, HSG C
2,722	74		>75% Grass cover, Good, HSG C
277,905	63	62	Weighted Average, UI Adjusted
239,988			86.36% Pervious Area
37,917			13.64% Impervious Area
4,290			11.31% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.10		**Sheet Flow, uppermost** Grass: Dense n= 0.240 P2= 3.20"
4.4	325	0.0610	1.23		**Shallow Concentrated Flow, above Forest Street** Woodland Kv= 5.0 fps
5.6	370	0.0480	1.10		**Shallow Concentrated Flow, below Forest Street** Woodland Kv= 5.0 fps
18.2	745	Total			

Subcatchment S504 P: Subcat S504 P



Summary for Subcatchment S505 P: Subcat S505 P

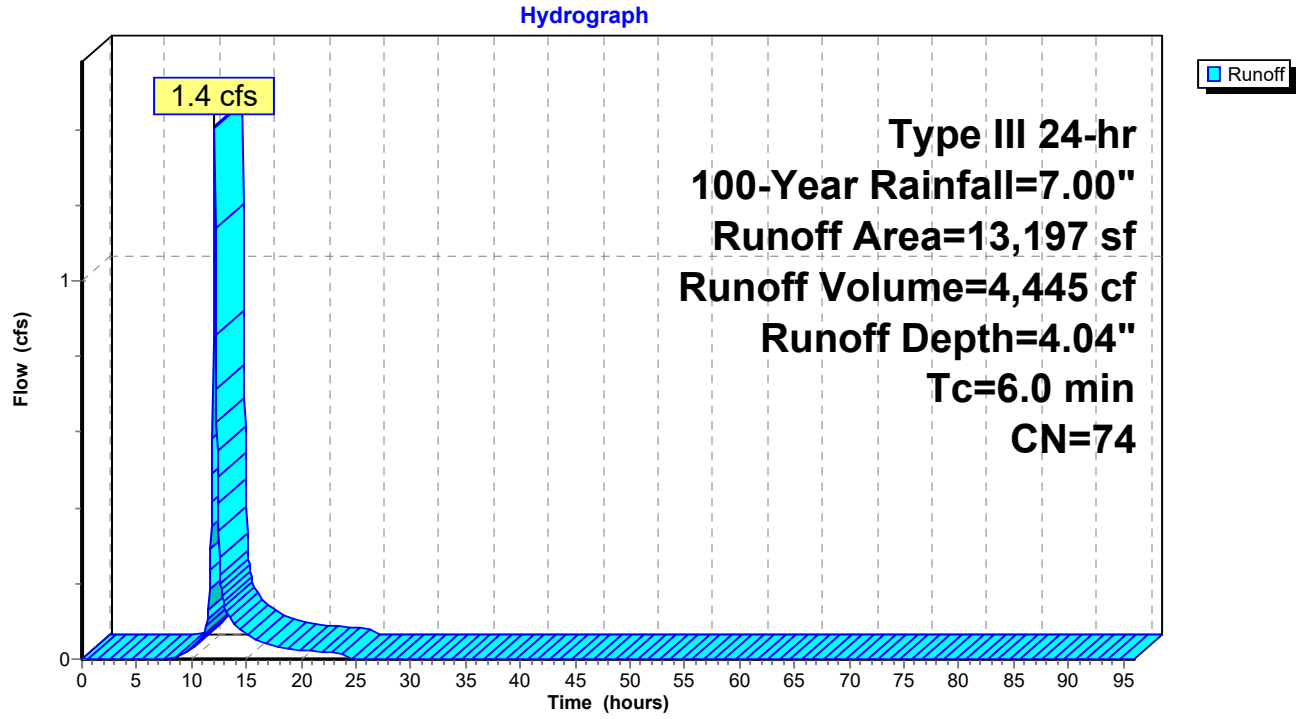
Runoff = 1.4 cfs @ 12.09 hrs, Volume= 4,445 cf, Depth= 4.04"
Routed to Pond P505 P : Pond P505 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
13,197	74	>75% Grass cover, Good, HSG C
13,197		100.00% Pervious Area

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

Subcatchment S505 P: Subcat S505 P



Summary for Subcatchment S700P: Subcat S700P

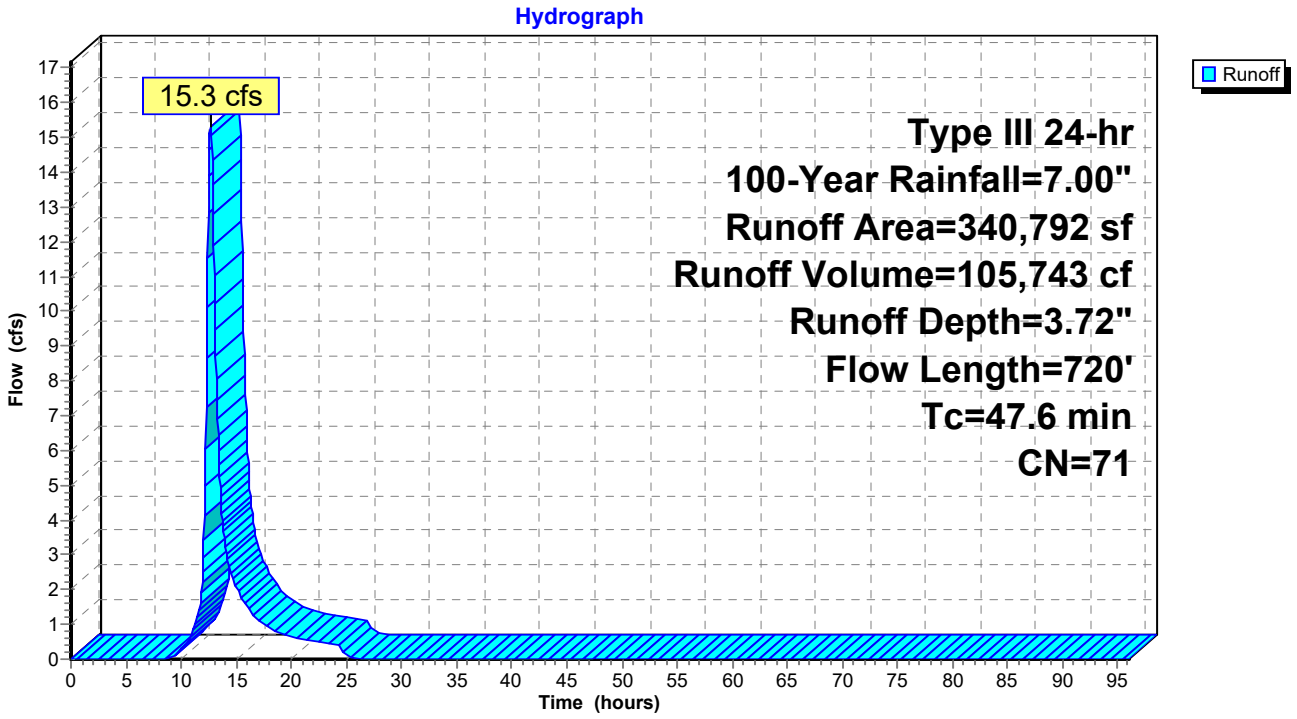
Runoff = 15.3 cfs @ 12.66 hrs, Volume= 105,743 cf, Depth= 3.72"
Routed to Link L2 P : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
37,111	74	>75% Grass cover, Good, HSG C
1,218	74	>75% Grass cover, Good, HSG C
2,795	74	>75% Grass cover, Good, HSG C
1,624	74	>75% Grass cover, Good, HSG C
289,700	70	Woods, Good, HSG C
2,232	98	Roofs, HSG C
1,656	98	Roofs, HSG C
2,166	98	Paved parking, HSG C
728	98	Paved parking, HSG C
327	70	Woods, Good, HSG C
455	70	Woods, Good, HSG C
780	70	Woods, Good, HSG C
340,792	71	Weighted Average
334,010		98.01% Pervious Area
6,782		1.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0800	0.07		**Sheet Flow, uppermost**
					Woods: Dense underbrush n= 0.800 P2= 3.20"
35.3	670	0.0160	0.32		**Shallow Concentrated Flow, to ditch**
					Forest w/Heavy Litter Kv= 2.5 fps
47.6	720	Total			

Subcatchment S700P: Subcat S700P



Summary for Subcatchment S701P: Subcat S701P

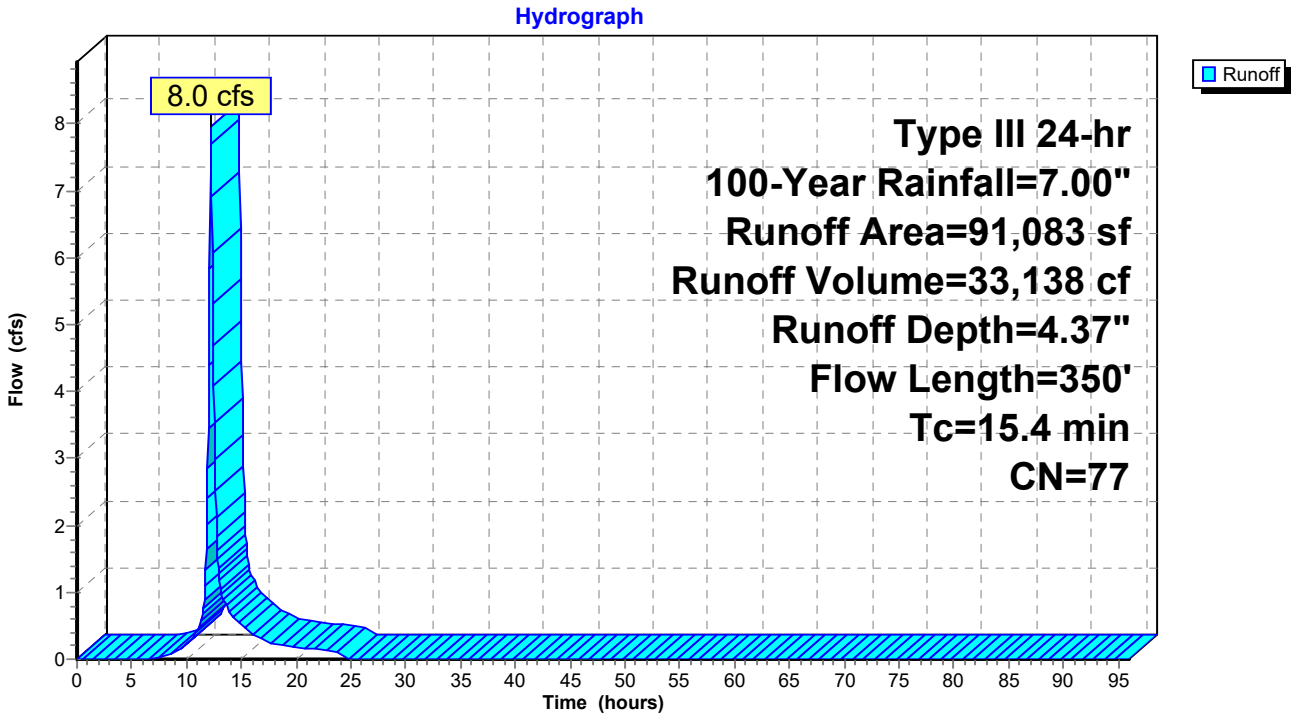
Runoff = 8.0 cfs @ 12.21 hrs, Volume= 33,138 cf, Depth= 4.37"
Routed to Pond P701 P : Pond P701 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
8,126	74	>75% Grass cover, Good, HSG C
6,133	74	>75% Grass cover, Good, HSG C
565	74	>75% Grass cover, Good, HSG C
25,718	74	>75% Grass cover, Good, HSG C
10,539	70	Woods, Good, HSG C
3,309	70	Woods, Good, HSG C
75	74	>75% Grass cover, Good, HSG C
205	74	>75% Grass cover, Good, HSG C
6,831	98	Paved roads w/curbs & sewers, HSG C
1,544	98	Roofs, HSG C
1,656	98	Roofs, HSG C
1,586	98	Paved parking, HSG C
1,132	98	Paved parking, HSG C
2,006	98	Paved parking, HSG C
605	98	Paved parking, HSG C
521	98	Paved parking, HSG C
234	98	Paved parking, HSG C
85	98	Paved parking, HSG C
513	74	>75% Grass cover, Good, HSG C
516	74	>75% Grass cover, Good, HSG C
244	74	>75% Grass cover, Good, HSG C
67	74	>75% Grass cover, Good, HSG C
3,665	70	Woods, Good, HSG C
523	70	Woods, Good, HSG C
8,674	70	Woods, Good, HSG C
1,039	70	Woods, Good, HSG C
1,235	70	Woods, Good, HSG C
3,737	74	>75% Grass cover, Good, HSG C
91,083	77	Weighted Average
74,883		82.21% Pervious Area
16,200		17.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	50	0.1200	0.08		**Sheet Flow, uppermost**
					Woods: Dense underbrush n= 0.800 P2= 3.20"
4.3	140	0.0480	0.55		**Shallow Concentrated Flow, above lawn**
					Forest w/Heavy Litter Kv= 2.5 fps
0.6	160	0.0800	4.55		**Shallow Concentrated Flow, across lawn to basin 701**
					Unpaved Kv= 16.1 fps
15.4	350	Total			

Subcatchment S701P: Subcat S701P



Summary for Subcatchment S702 P: Subcat S702 P

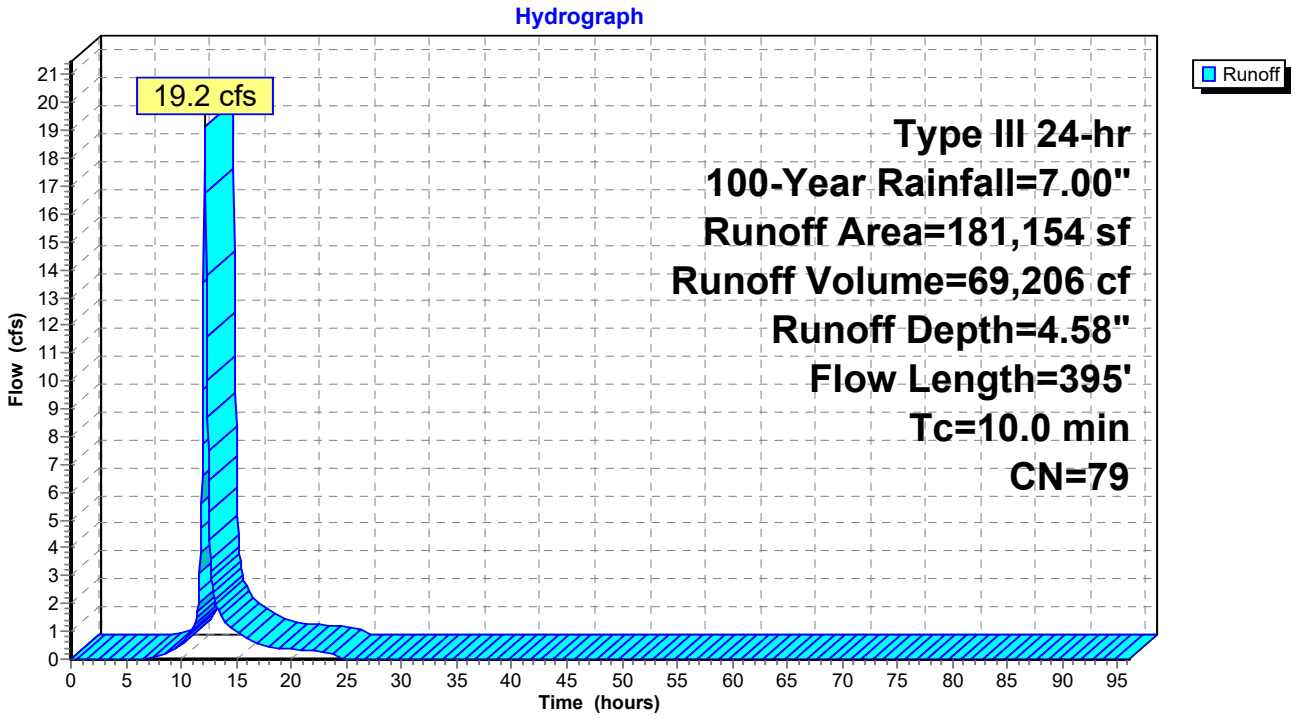
Runoff = 19.2 cfs @ 12.14 hrs, Volume= 69,206 cf, Depth= 4.58"
Routed to Pond P702 P : Pond P702 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
961	74	>75% Grass cover, Good, HSG C
1,199	70	Woods, Good, HSG C
3,578	70	Woods, Good, HSG C
992	74	>75% Grass cover, Good, HSG C
1,469	74	>75% Grass cover, Good, HSG C
1,015	74	>75% Grass cover, Good, HSG C
424	74	>75% Grass cover, Good, HSG C
287	70	Woods, Good, HSG C
74	70	Woods, Good, HSG C
17,926	70	Woods, Good, HSG C
7,387	70	Woods, Good, HSG C
2,388	98	Paved parking, HSG C
180	98	Paved parking, HSG C
446	98	Paved parking, HSG C
1,026	98	Paved parking, HSG C
975	98	Paved parking, HSG C
1,479	98	Paved parking, HSG C
1,022	98	Paved parking, HSG C
1,144	98	Paved parking, HSG C
179	98	Paved parking, HSG C
519	98	Paved parking, HSG C
669	98	Paved parking, HSG C
1,319	98	Roofs, HSG C
3,312	98	Roofs, HSG C
2,160	98	Roofs, HSG C
392	70	Woods, Good, HSG C
4,725	70	Woods, Good, HSG C
50,160	74	>75% Grass cover, Good, HSG C
9,468	74	>75% Grass cover, Good, HSG C
24,764	98	Paved roads w/curbs & sewers, HSG C
38,359	74	>75% Grass cover, Good, HSG C
1,156	74	>75% Grass cover, Good, HSG C
181,154	79	Weighted Average
139,572		77.05% Pervious Area
41,582		22.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.10		**Sheet Flow, uppermost**
					Grass: Dense n= 0.240 P2= 3.20"
1.8	345	0.0410	3.26		**Shallow Concentrated Flow, above Road B**
					Unpaved Kv= 16.1 fps
10.0	395	Total			

Subcatchment S702 P: Subcat S702 P



Summary for Subcatchment S703 P: Subcat S703 P

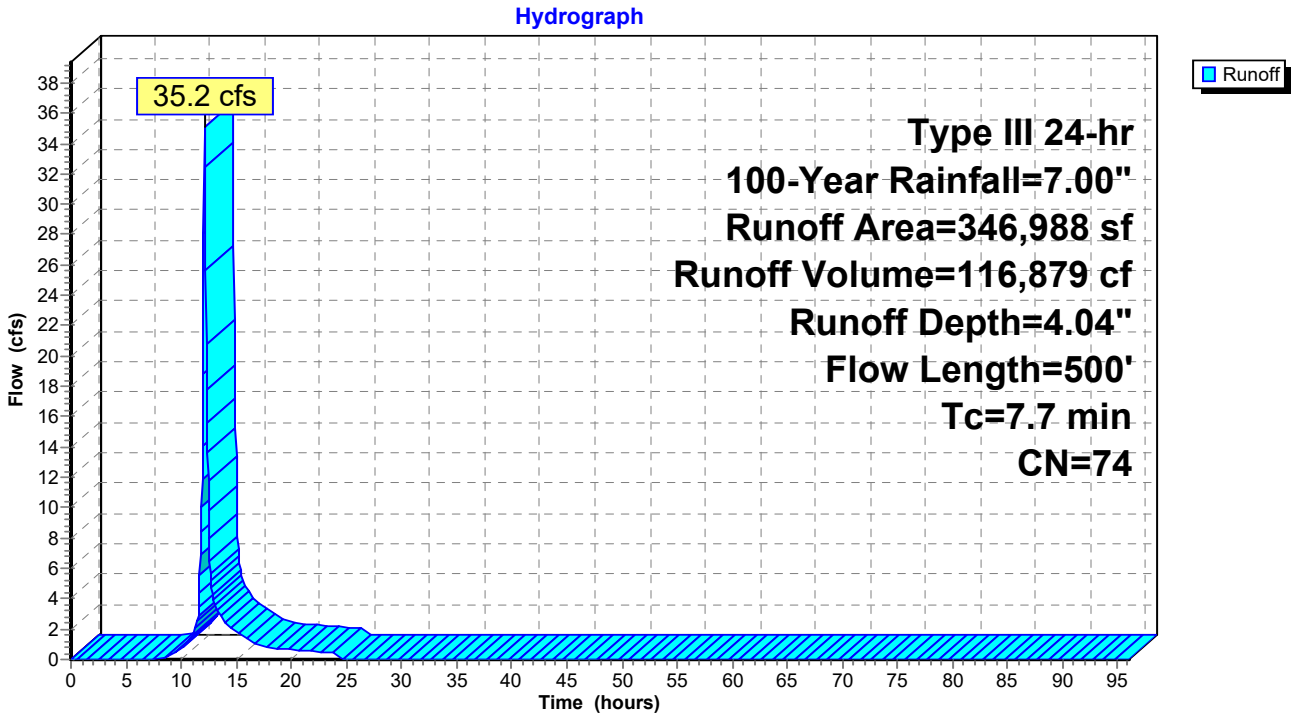
Runoff = 35.2 cfs @ 12.11 hrs, Volume= 116,879 cf, Depth= 4.04"
Routed to Pond P703 P : Pond P703 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
23,947	70	Woods, Good, HSG C
14,302	70	Woods, Good, HSG C
11,818	74	>75% Grass cover, Good, HSG C
25,861	74	>75% Grass cover, Good, HSG C
2,823	74	>75% Grass cover, Good, HSG C
14,333	61	>75% Grass cover, Good, HSG B
17,099	55	Woods, Good, HSG B
99	61	>75% Grass cover, Good, HSG B
881	98	Roofs, HSG B
705	98	Roofs, HSG B
45	98	Roofs, HSG B
481	98	Paved parking, HSG B
25	55	Woods, Good, HSG B
185	74	>75% Grass cover, Good, HSG C
429	74	>75% Grass cover, Good, HSG C
568	74	>75% Grass cover, Good, HSG C
419	74	>75% Grass cover, Good, HSG C
643	70	Woods, Good, HSG C
3,904	70	Woods, Good, HSG C
1,180	74	>75% Grass cover, Good, HSG C
1,039	74	>75% Grass cover, Good, HSG C
69,627	74	>75% Grass cover, Good, HSG C
1,501	70	Woods, Good, HSG C
457	70	Woods, Good, HSG C
615	70	Woods, Good, HSG C
551	70	Woods, Good, HSG C
163	70	Woods, Good, HSG C
3,386	70	Woods, Good, HSG C
66,370	70	Woods, Good, HSG C
3,744	98	Paved parking, HSG C
1,011	98	Paved parking, HSG C
1,047	98	Paved parking, HSG C
188	98	Paved parking, HSG C
1,186	98	Paved parking, HSG C
400	98	Paved parking, HSG C
160	98	Paved parking, HSG C
1,510	98	Paved parking, HSG C
2,068	98	Paved parking, HSG C
5,010	98	Paved parking, HSG C
585	98	Paved parking, HSG C
1,710	98	Roofs, HSG C
1,152	98	Roofs, HSG C
3,312	98	Roofs, HSG C
2,386	98	Roofs, HSG C
18,777	74	>75% Grass cover, Good, HSG C
16,951	70	Woods, Good, HSG C
1,464	74	>75% Grass cover, Good, HSG C
19,720	98	Paved roads w/curbs & sewers, HSG C
1,151	74	>75% Grass cover, Good, HSG C
346,988	74	Weighted Average
299,687		86.37% Pervious Area
47,301		13.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	50	0.1200	0.14		**Sheet Flow, uppermost** Woods: Light underbrush n= 0.400 P2= 3.20"
1.7	450	0.0770	4.47		**Shallow Concentrated Flow, above Road A** Unpaved Kv= 16.1 fps
7.7	500	Total			

Subcatchment S703 P: Subcat S703 P



Summary for Subcatchment S800 P: Subcat S800 P

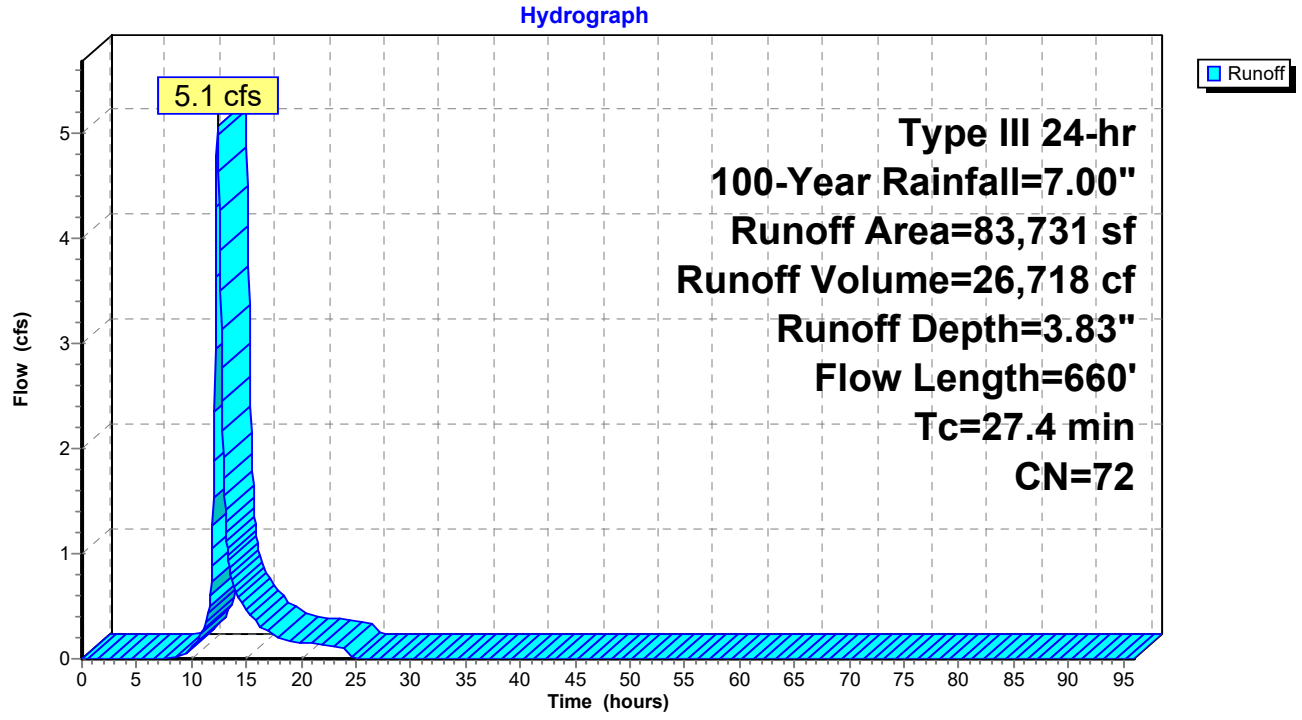
Runoff = 5.1 cfs @ 12.38 hrs, Volume= 26,718 cf, Depth= 3.83"
Routed to Link L2 P : Ditch

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
1,710	98	Paved parking, HSG C
1,993	98	Roofs, HSG C
63,186	70	Woods, Good, HSG C
1,468	74	>75% Grass cover, Good, HSG C
448	74	>75% Grass cover, Good, HSG C
14,926	74	>75% Grass cover, Good, HSG C
83,731	72	Weighted Average
80,028		95.58% Pervious Area
3,703		4.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8	50	0.0600	0.06		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
13.6	610	0.0890	0.75		**Shallow Concentrated Flow, to offsite** Forest w/Heavy Litter Kv= 2.5 fps
27.4	660	Total			

Subcatchment S800 P: Subcat S800 P



Summary for Reach R200 P: Reach R200 P

Inflow Area = 137,153 sf, 3.40% Impervious, Inflow Depth = 2.38" for 100-Year event
Inflow = 5.0 cfs @ 12.37 hrs, Volume= 27,213 cf
Outflow = 4.0 cfs @ 12.86 hrs, Volume= 27,213 cf, Atten= 19%, Lag= 29.4 min
Routed to Link L2 P : Ditch

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.78 fps, Min. Travel Time= 17.1 min
Avg. Velocity = 0.28 fps, Avg. Travel Time= 47.1 min

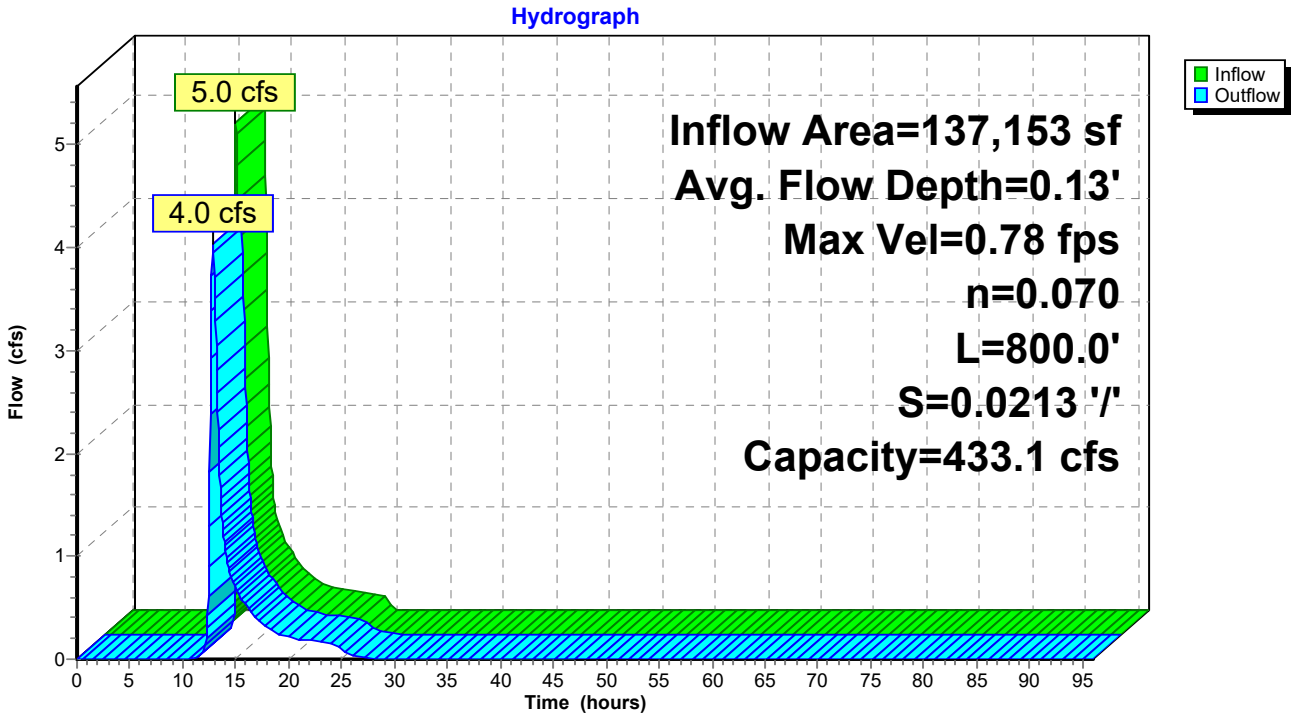
Peak Storage= 4,156 cf @ 12.58 hrs
Average Depth at Peak Storage= 0.13' , Surface Width= 41.28'
Bank-Full Depth= 2.00' Flow Area= 100.0 sf, Capacity= 433.1 cfs

Custom cross-section, Length= 800.0' Slope= 0.0213 '/'
Constant n= 0.070 Medium-dense brush, winter
Inlet Invert= 536.00', Outlet Invert= 519.00'

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	2.00	0.00
10.00	0.00	2.00
50.00	0.00	2.00
60.00	2.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Width (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	40.0	0.0	0	0.0
2.00	100.0	60.4	60.0	80,000	433.1

Reach R200 P: Reach R200 P



Summary for Reach R200A P: Reach R200A P

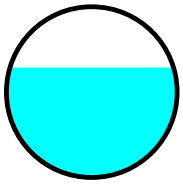
[52] Hint: Inlet/Outlet conditions not evaluated
[62] Hint: Exceeded Reach R201 P OUTLET depth by 0.12' @ 12.25 hrs
[62] Hint: Exceeded Reach R202 P OUTLET depth by 0.34' @ 12.45 hrs

Inflow Area = 137,153 sf, 3.40% Impervious, Inflow Depth = 2.38" for 100-Year event
Inflow = 5.0 cfs @ 12.36 hrs, Volume= 27,213 cf
Outflow = 5.0 cfs @ 12.37 hrs, Volume= 27,213 cf, Atten= 0%, Lag= 1.1 min
Routed to Reach R200 P : Reach R200 P

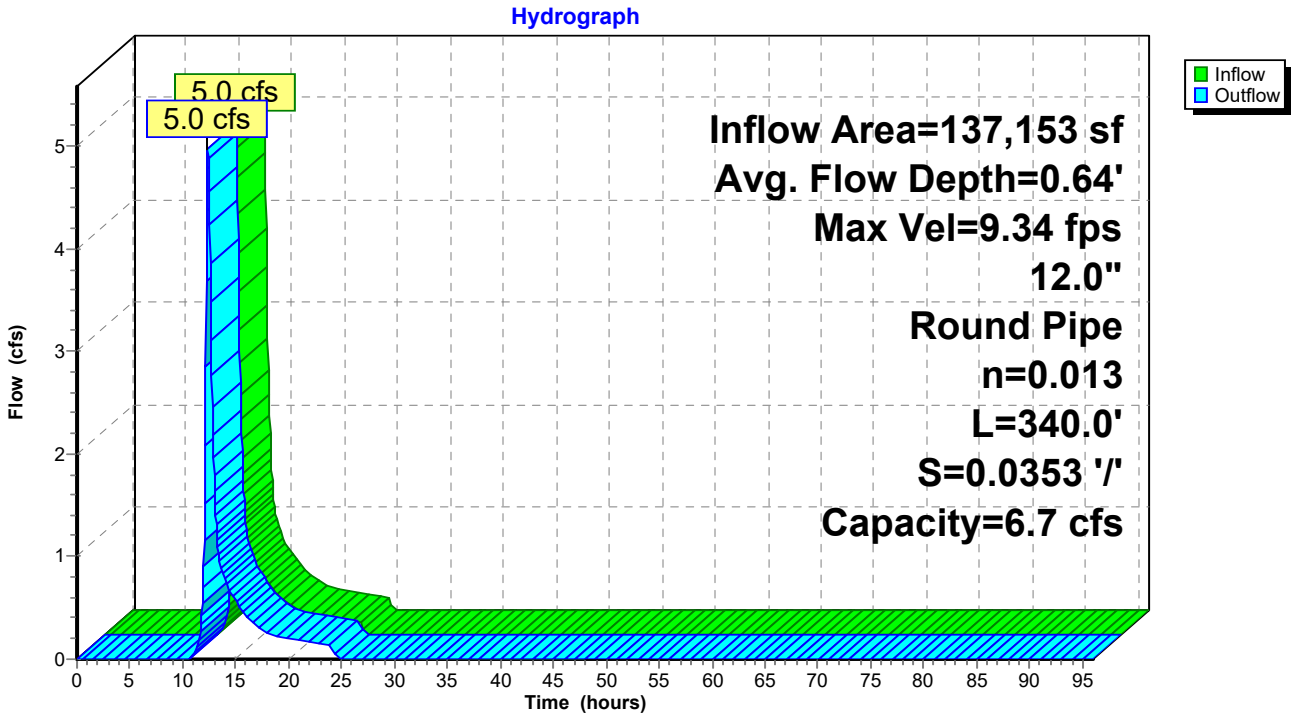
Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.34 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 4.18 fps, Avg. Travel Time= 1.4 min

Peak Storage= 181 cf @ 12.36 hrs
Average Depth at Peak Storage= 0.64' , Surface Width= 0.96'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.7 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 340.0' Slope= 0.0353 '/'
Inlet Invert= 554.00', Outlet Invert= 542.00'



Reach R200A P: Reach R200A P



Summary for Reach R201 P: Reach R201 P

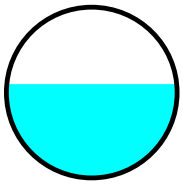
[52] Hint: Inlet/Outlet conditions not evaluated

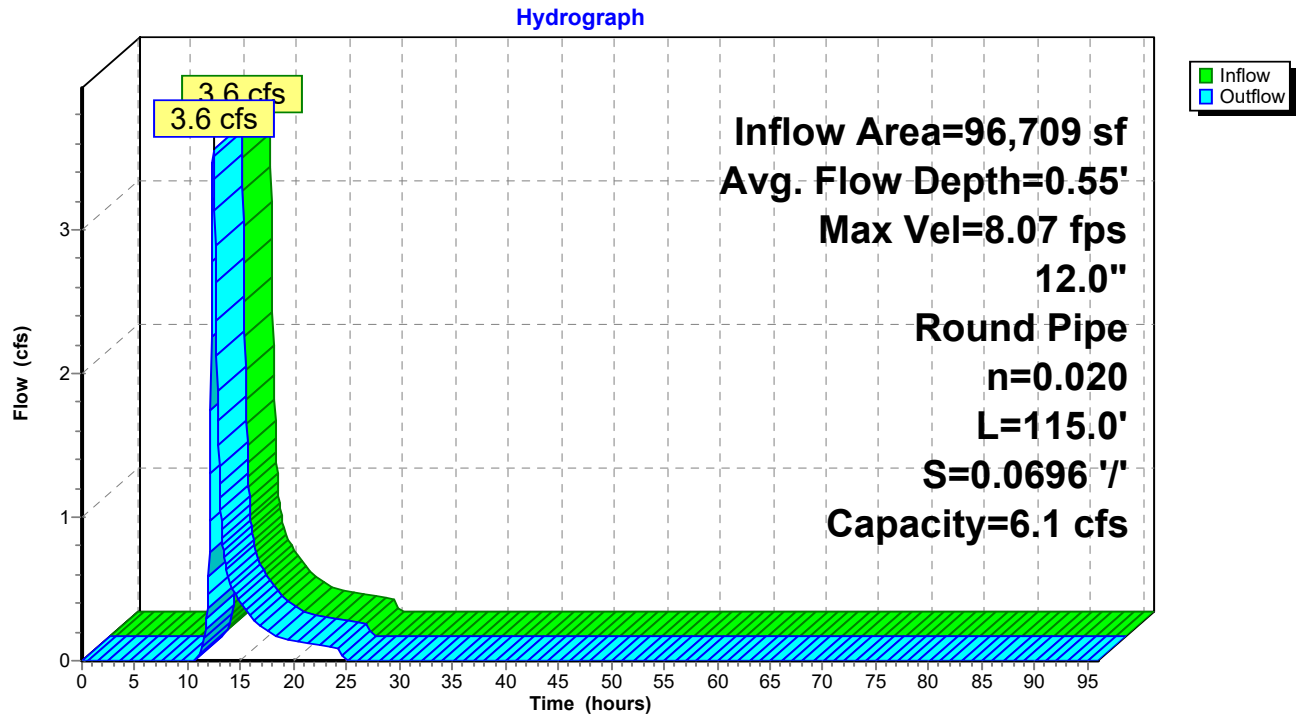
Inflow Area = 96,709 sf, 4.82% Impervious, Inflow Depth = 2.41" for 100-Year event
Inflow = 3.6 cfs @ 12.40 hrs, Volume= 19,416 cf
Outflow = 3.6 cfs @ 12.41 hrs, Volume= 19,416 cf, Atten= 0%, Lag= 0.4 min
Routed to Reach R200A P : Reach R200A P

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.07 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.59 fps, Avg. Travel Time= 0.5 min

Peak Storage= 51 cf @ 12.40 hrs
Average Depth at Peak Storage= 0.55' , Surface Width= 1.00'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.1 cfs

12.0" Round Pipe
n= 0.020 Corrugated PE, corrugated interior
Length= 115.0' Slope= 0.0696 '/'
Inlet Invert= 562.00', Outlet Invert= 554.00'





Summary for Reach R202 P: Reach R202 P

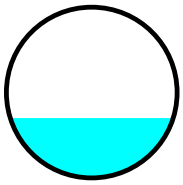
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 40,444 sf, 0.00% Impervious, Inflow Depth = 2.31" for 100-Year event
Inflow = 1.8 cfs @ 12.22 hrs, Volume= 7,796 cf
Outflow = 1.8 cfs @ 12.25 hrs, Volume= 7,796 cf, Atten= 2%, Lag= 1.8 min
Routed to Reach R200A P : Reach R200A P

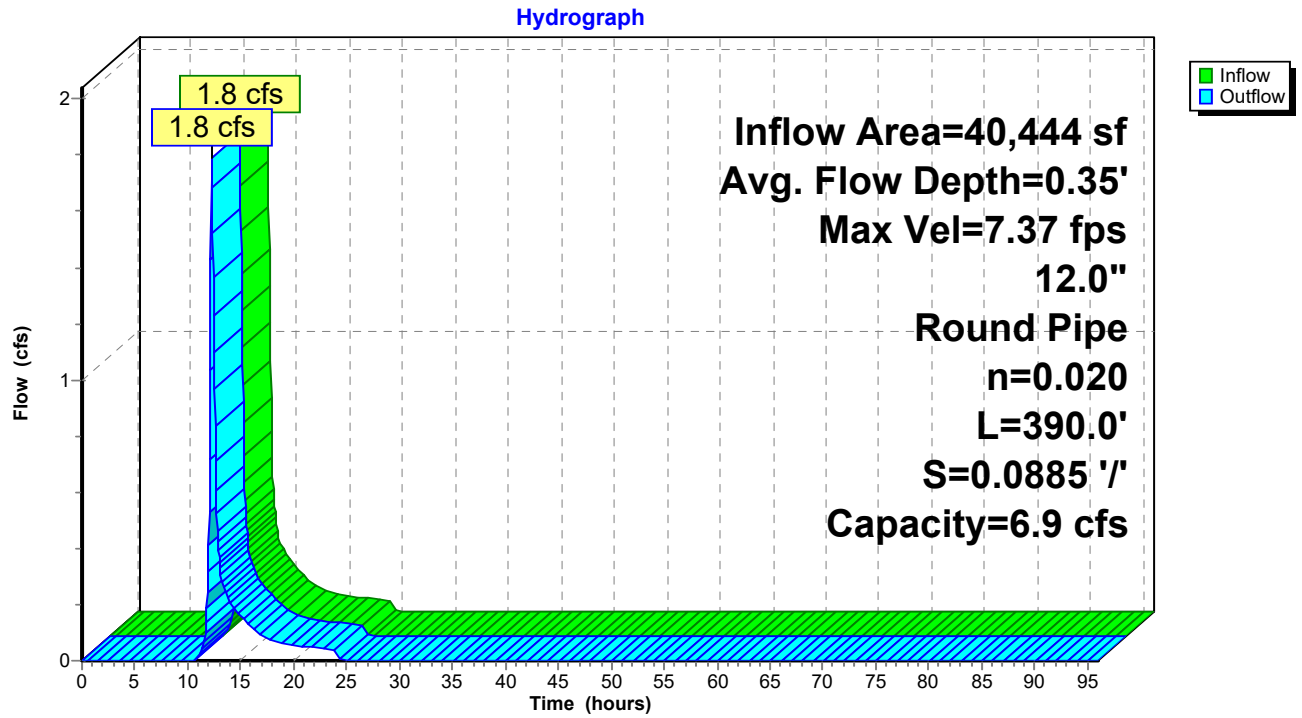
Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.37 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 3.05 fps, Avg. Travel Time= 2.1 min

Peak Storage= 95 cf @ 12.23 hrs
Average Depth at Peak Storage= 0.35' , Surface Width= 0.95'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.9 cfs

12.0" Round Pipe
n= 0.020 Corrugated PE, corrugated interior
Length= 390.0' Slope= 0.0885 '/'
Inlet Invert= 588.50', Outlet Invert= 554.00'



Reach R202 P: Reach R202 P



Summary for Reach R401 P: Reach R401 P

Inflow Area = 39,667 sf, 13.75% Impervious, Inflow Depth = 4.26" for 100-Year event
Inflow = 3.9 cfs @ 12.15 hrs, Volume= 14,073 cf
Outflow = 2.6 cfs @ 12.55 hrs, Volume= 14,073 cf, Atten= 32%, Lag= 23.8 min
Routed to Link L2 P : Ditch

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.06 fps, Min. Travel Time= 15.6 min
Avg. Velocity = 0.34 fps, Avg. Travel Time= 48.3 min

Peak Storage= 2,473 cf @ 12.28 hrs
Average Depth at Peak Storage= 0.20' , Surface Width= 15.00'
Bank-Full Depth= 2.00' Flow Area= 70.0 sf, Capacity= 271.5 cfs

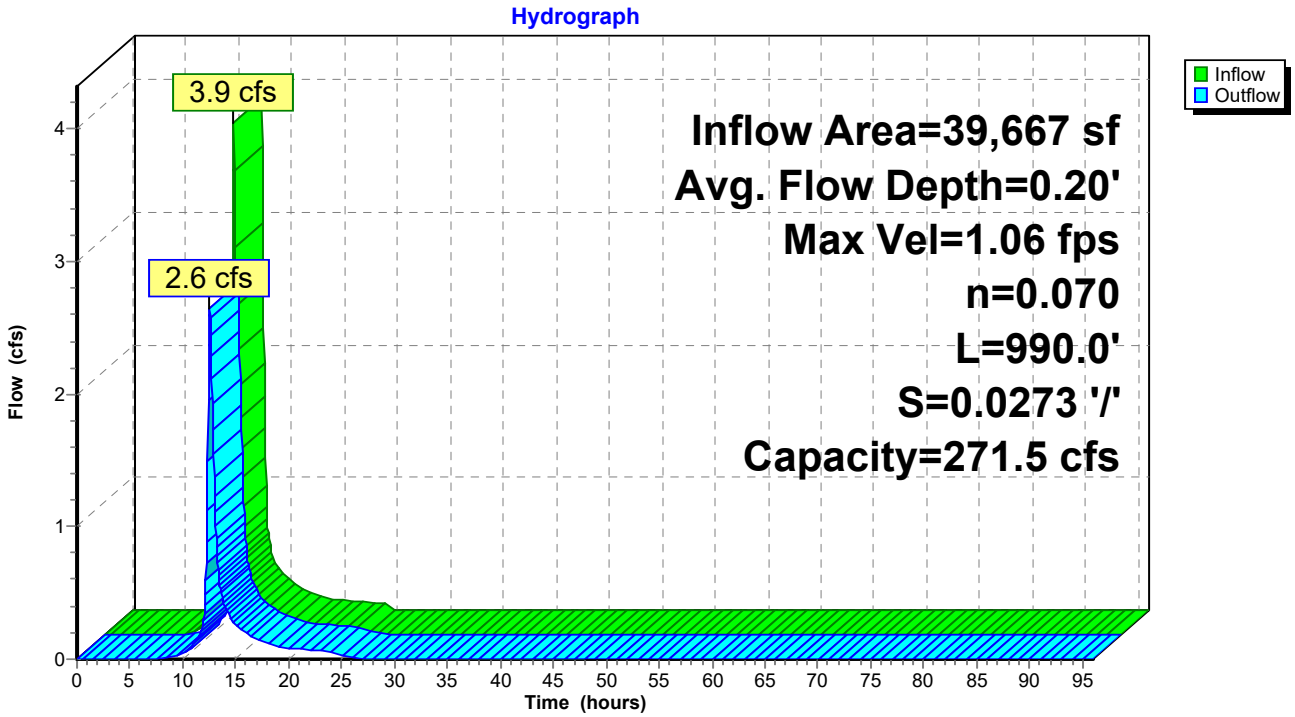
Custom cross-section, Length= 990.0' Slope= 0.0273 '/'
Constant n= 0.070 Medium-dense brush, winter
Inlet Invert= 546.00', Outlet Invert= 519.00'

‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	2.00	0.00
25.00	0.00	2.00
35.00	0.00	2.00
60.00	2.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Width (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	10.0	0.0	0	0.0
2.00	70.0	60.2	60.0	69,300	271.5

Reach R401 P: Reach R401 P



Summary for Reach R502 P: Reach R502 P

Inflow Area = 86,237 sf, 17.89% Impervious, Inflow Depth = 1.23" for 100-Year event
Inflow = 0.3 cfs @ 14.90 hrs, Volume= 8,860 cf
Outflow = 0.3 cfs @ 15.58 hrs, Volume= 8,860 cf, Atten= 0%, Lag= 40.4 min
Routed to Link L2 P : Ditch

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.72 fps, Min. Travel Time= 22.6 min
Avg. Velocity = 0.49 fps, Avg. Travel Time= 33.1 min

Peak Storage= 409 cf @ 15.20 hrs
Average Depth at Peak Storage= 0.11' , Surface Width= 5.32'
Bank-Full Depth= 2.00' Flow Area= 62.0 sf, Capacity= 247.1 cfs

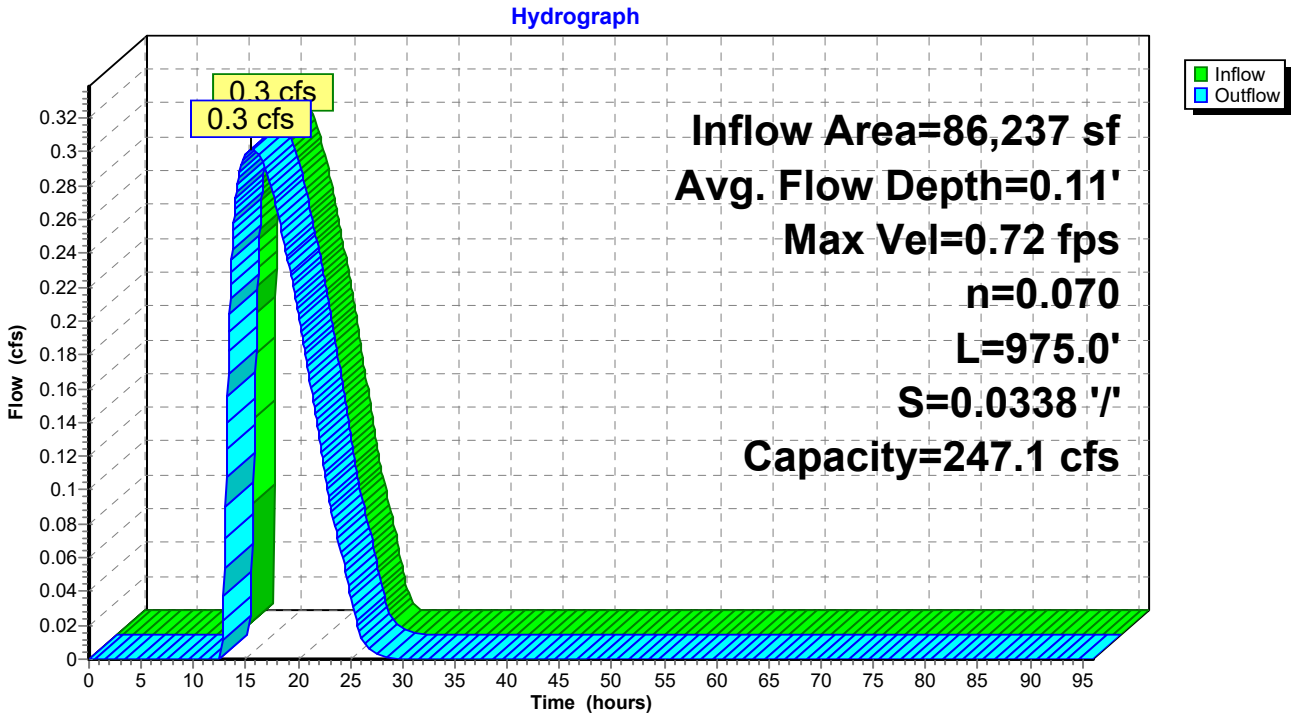
Custom cross-section, Length= 975.0' Slope= 0.0338 '/'
Constant n= 0.070 Medium-dense brush, winter
Inlet Invert= 548.00', Outlet Invert= 515.00'

‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	2.00	0.00
29.00	0.00	2.00
31.00	0.00	2.00
60.00	2.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Width (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	2.0	0.0	0	0.0
2.00	62.0	60.1	60.0	60,450	247.1

Reach R502 P: Reach R502 P



Summary for Reach R504 P: Reach R504 P

Inflow Area = 277,905 sf, 13.64% Impervious, Inflow Depth = 2.80" for 100-Year event
Inflow = 14.3 cfs @ 12.26 hrs, Volume= 64,868 cf
Outflow = 11.7 cfs @ 12.60 hrs, Volume= 64,868 cf, Atten= 18%, Lag= 20.3 min
Routed to Link L2 P : Ditch

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.60 fps, Min. Travel Time= 11.7 min
Avg. Velocity = 0.49 fps, Avg. Travel Time= 38.4 min

Peak Storage= 8,203 cf @ 12.41 hrs
Average Depth at Peak Storage= 0.46' , Surface Width= 21.59'
Bank-Full Depth= 2.00' Flow Area= 70.0 sf, Capacity= 255.2 cfs

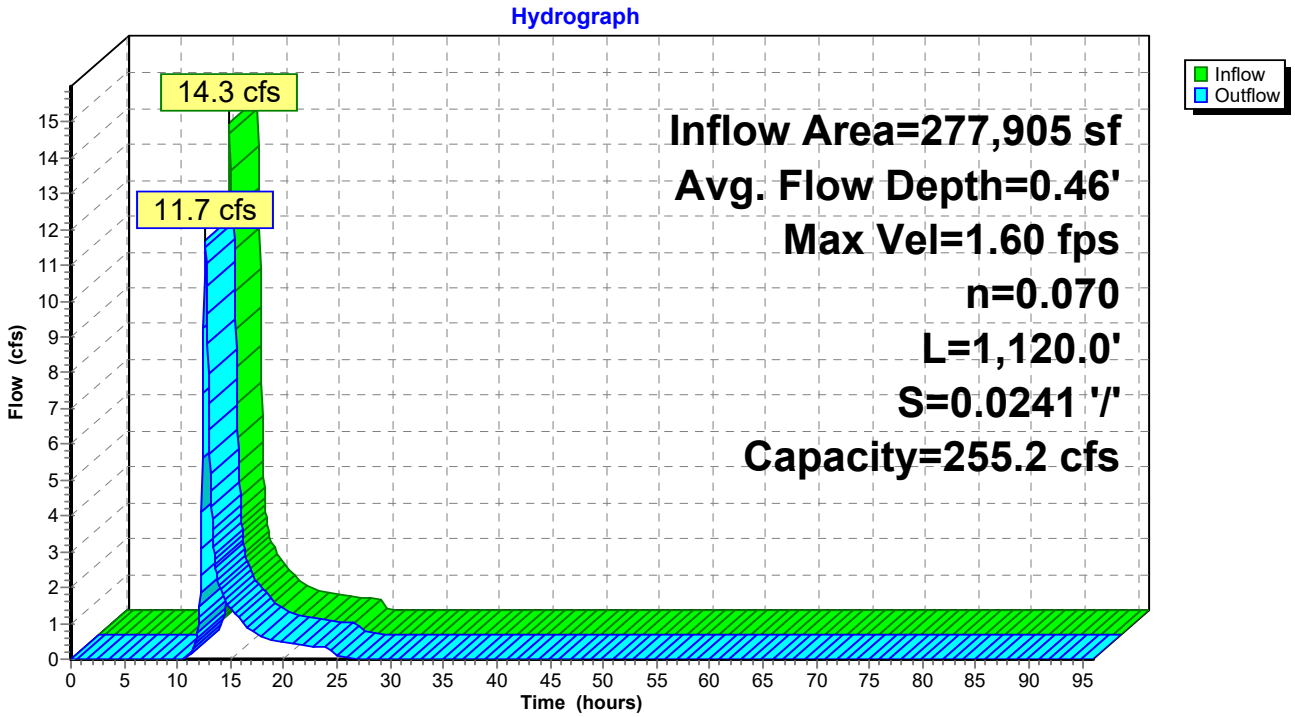
Custom cross-section, Length= 1,120.0' Slope= 0.0241 '/'
Constant n= 0.070 Medium-dense brush, winter
Inlet Invert= 546.00', Outlet Invert= 519.00'

‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	2.00	0.00
25.00	0.00	2.00
35.00	0.00	2.00
60.00	2.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Width (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	10.0	0.0	0	0.0
2.00	70.0	60.2	60.0	78,400	255.2

Reach R504 P: Reach R504 P



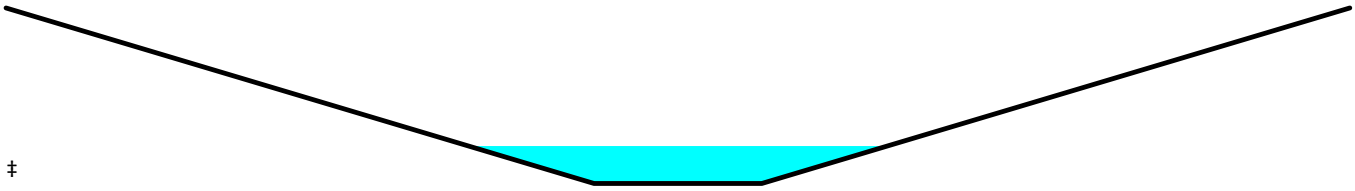
Summary for Reach R702 P: Reach 701 P

Inflow Area = 272,237 sf, 21.22% Impervious, Inflow Depth = 3.95" for 100-Year event
Inflow = 10.5 cfs @ 12.45 hrs, Volume= 89,578 cf
Outflow = 10.4 cfs @ 12.50 hrs, Volume= 89,578 cf, Atten= 1%, Lag= 2.9 min
Routed to Link L2 P : Ditch

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.41 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 0.43 fps, Avg. Travel Time= 5.3 min

Peak Storage= 1,005 cf @ 12.47 hrs
Average Depth at Peak Storage= 0.43' , Surface Width= 24.92'
Bank-Full Depth= 2.00' Flow Area= 90.0 sf, Capacity= 307.8 cfs

Custom cross-section, Length= 135.0' Slope= 0.0222 '/'
Constant n= 0.070 Medium-dense brush, winter
Inlet Invert= 511.00', Outlet Invert= 508.00'

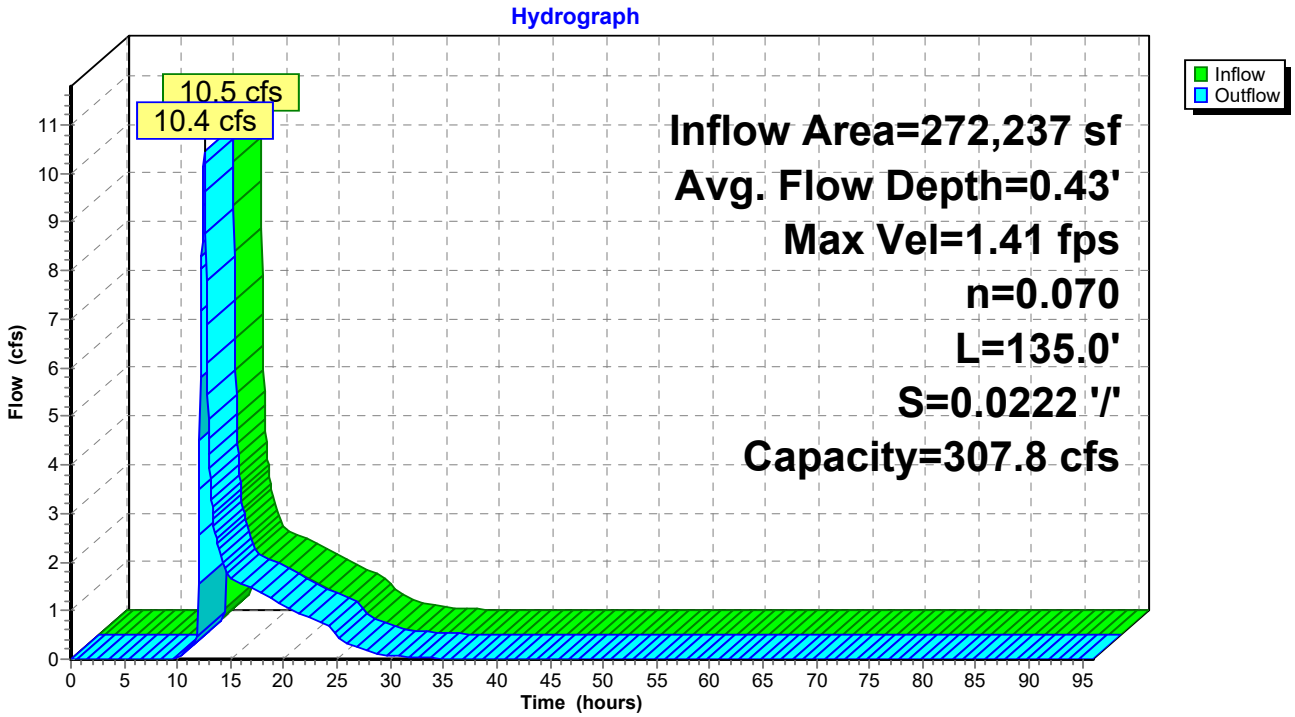


‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	2.00	0.00
35.00	0.00	2.00
45.00	0.00	2.00
80.00	2.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Width (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	10.0	0.0	0	0.0
2.00	90.0	80.1	80.0	12,150	307.8

Reach R702 P: Reach 701 P



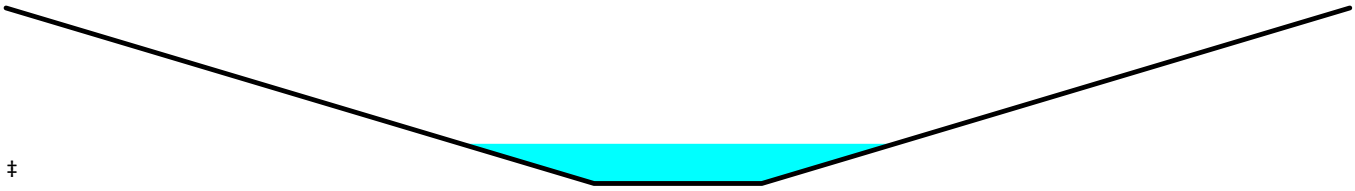
Summary for Reach R703 P: Reach 703 P

Inflow Area = 346,988 sf, 13.63% Impervious, Inflow Depth = 4.04" for 100-Year event
Inflow = 13.2 cfs @ 12.42 hrs, Volume= 116,889 cf
Outflow = 11.1 cfs @ 12.72 hrs, Volume= 116,889 cf, Atten= 16%, Lag= 18.6 min
Routed to Link L2 P : Ditch

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.37 fps, Min. Travel Time= 9.9 min
Avg. Velocity = 0.51 fps, Avg. Travel Time= 26.7 min

Peak Storage= 6,609 cf @ 12.56 hrs
Average Depth at Peak Storage= 0.45' , Surface Width= 25.84'
Bank-Full Depth= 2.00' Flow Area= 90.0 sf, Capacity= 289.3 cfs

Custom cross-section, Length= 815.0' Slope= 0.0196 '/'
Constant n= 0.070 Medium-dense brush, winter
Inlet Invert= 520.00', Outlet Invert= 504.00'

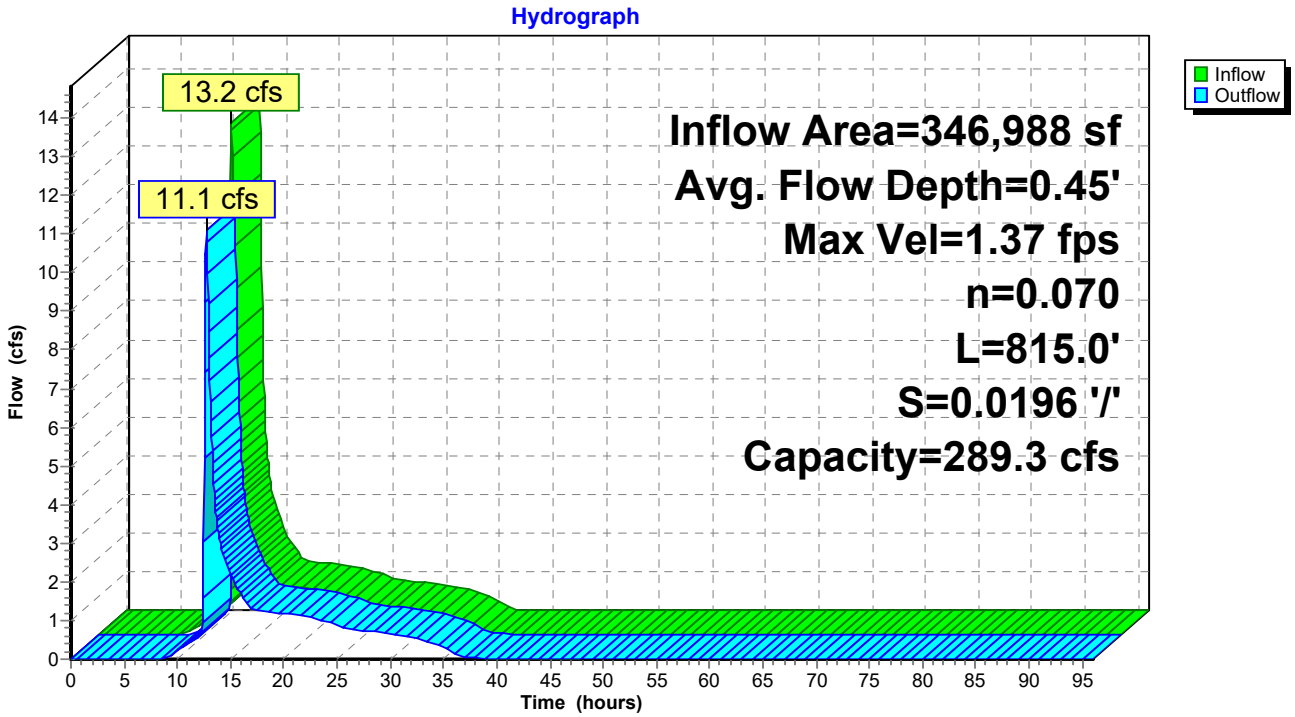


‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	2.00	0.00
35.00	0.00	2.00
45.00	0.00	2.00
80.00	2.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Width (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	10.0	0.0	0	0.0
2.00	90.0	80.1	80.0	73,350	289.3

Reach R703 P: Reach 703 P



Summary for Pond P403 P: Pond P403 P

Inflow Area = 163,769 sf, 20.12% Impervious, Inflow Depth = 3.94" for 100-Year event
Inflow = 15.3 cfs @ 12.13 hrs, Volume= 53,706 cf
Outflow = 9.6 cfs @ 12.28 hrs, Volume= 53,706 cf, Atten= 37%, Lag= 9.1 min
Discarded = 0.2 cfs @ 12.28 hrs, Volume= 8,578 cf
Primary = 9.4 cfs @ 12.28 hrs, Volume= 45,126 cf
Routed to Link L2 P : Ditch
Secondary = 0.0 cfs @ 12.30 hrs, Volume= 2 cf
Routed to Link L2 P : Ditch

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 549.00' @ 12.28 hrs Surf.Area= 8,644 sf Storage= 17,485 cf

Plug-Flow detention time= 188.6 min calculated for 53,678 cf (100% of inflow)
Center-of-Mass det. time= 189.3 min (1,016.4 - 827.1)

Volume	Invert	Avail.Storage	Storage Description
#1	545.00'	26,863 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
545.00	730	0	0
546.00	2,380	1,555	1,555
547.00	4,045	3,213	4,768
548.00	6,350	5,198	9,965
549.00	8,640	7,495	17,460
550.00	10,165	9,403	26,863

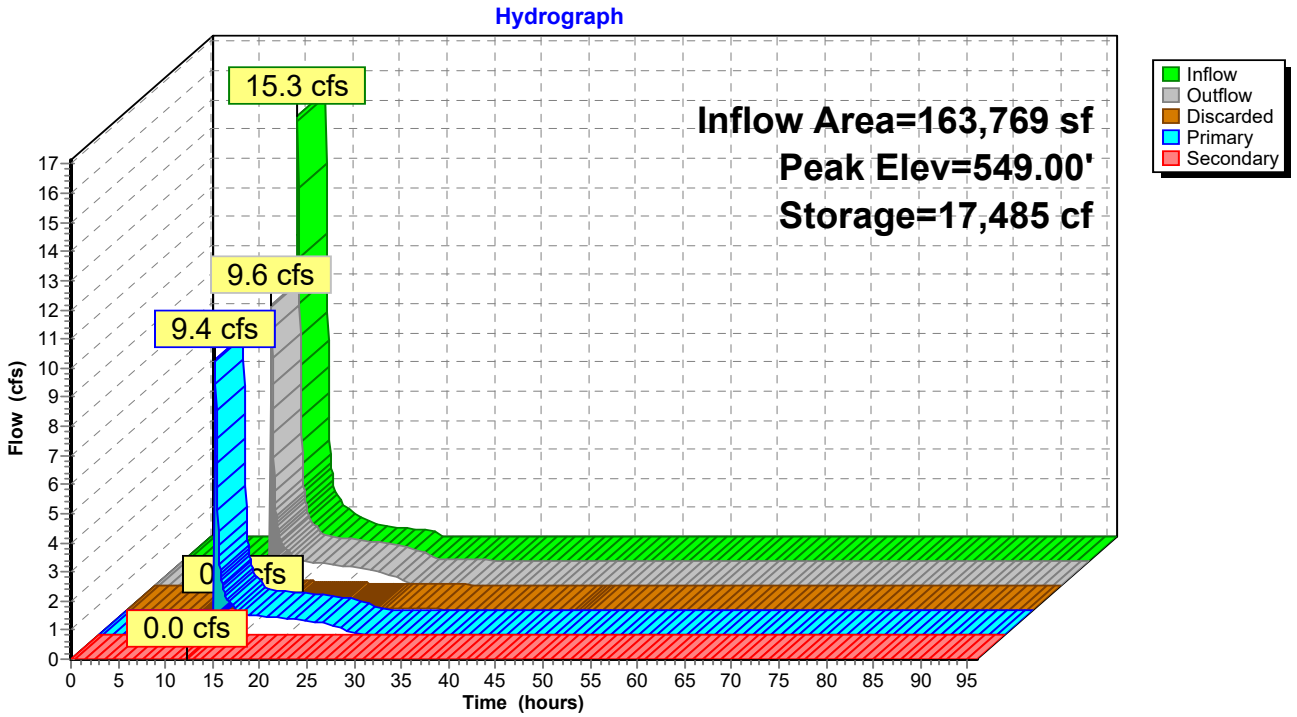
Device	Routing	Invert	Outlet Devices
#1	Primary	541.20'	**18.0" Round Culvert** L= 117.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 541.20' / 540.00' S= 0.0103 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	546.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	548.70'	**16.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#4	Secondary	549.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	545.00'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 543.00'

Discarded OutFlow Max=0.2 cfs @ 12.28 hrs HW=549.00' (Free Discharge)
└**5=Exfiltration** (Controls 0.2 cfs)

Primary OutFlow Max=9.3 cfs @ 12.28 hrs HW=549.00' (Free Discharge)
└**1=Culvert** (Passes 9.3 cfs of 20.4 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.7 cfs @ 8.11 fps)
  └**3=Sharp-Crested Rectangular Weir** (Weir Controls 8.6 cfs @ 1.79 fps)

Secondary OutFlow Max=0.0 cfs @ 12.30 hrs HW=549.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 0.0 cfs @ 0.10 fps)

Pond P403 P: Pond P403 P



Summary for Pond P501 P: Pond P501 P

Device #4 is for calculation purposes only.

[44] Hint: Outlet device #1 is below defined storage

Inflow Area = 162,232 sf, 20.00% Impervious, Inflow Depth = 3.85" for 100-Year event
Inflow = 9.5 cfs @ 12.25 hrs, Volume= 52,064 cf
Outflow = 9.5 cfs @ 12.25 hrs, Volume= 52,064 cf, Atten= 0%, Lag= 0.0 min
Primary = 9.5 cfs @ 12.25 hrs, Volume= 52,064 cf
Routed to Pond P505 P : Pond P505 P
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond P505 P : Pond P505 P

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 565.82' @ 12.25 hrs Surf.Area= 13 sf Storage= 0 cf

Plug-Flow detention time= 0.0 min calculated for 52,037 cf (100% of inflow)
Center-of-Mass det. time= 0.0 min (834.0 - 834.0)

Volume	Invert	Avail.Storage	Storage Description
#1	565.80'	1,588 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

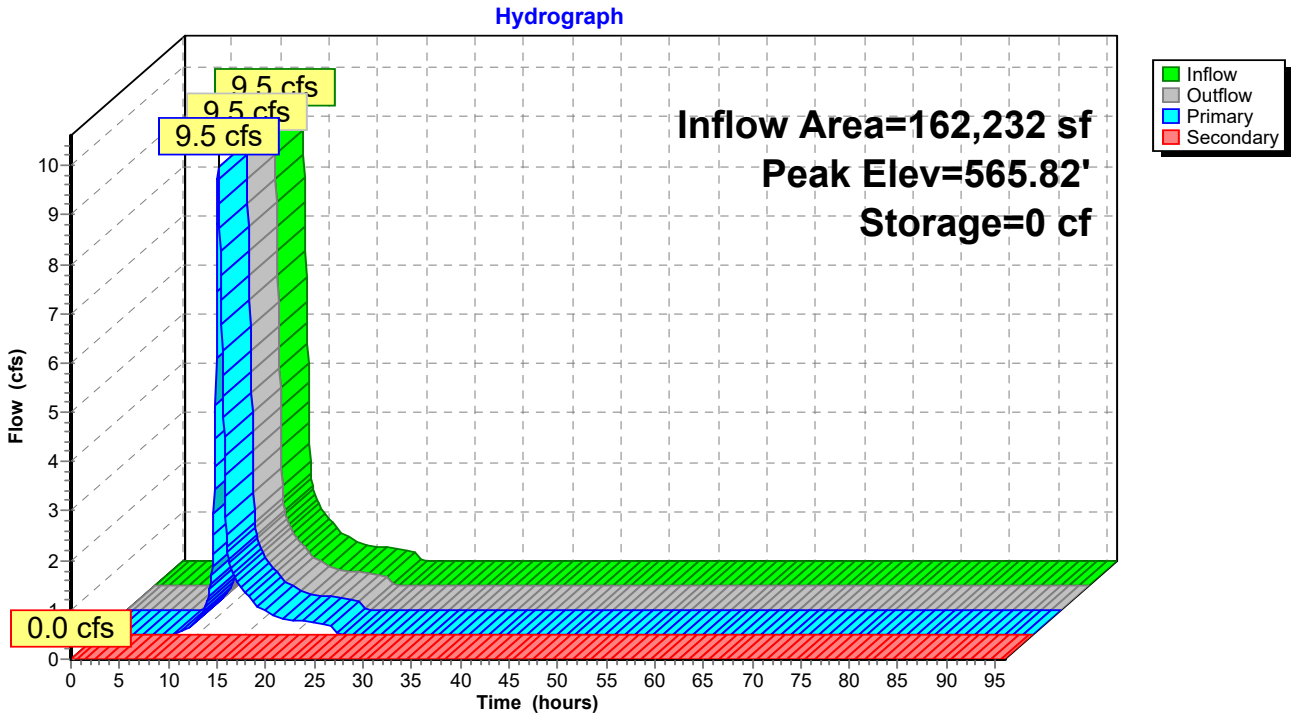
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
565.80	10	0	0
566.00	45	6	6
568.00	1,025	1,070	1,076
568.50	1,025	513	1,588

Device	Routing	Invert	Outlet Devices
#1	Primary	560.00'	**18.0" Round Culvert** L= 550.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 560.00' / 551.70' S= 0.0151 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Primary	566.60'	**16.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#3	Secondary	568.00'	**50.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=14.8 cfs @ 12.25 hrs HW=565.82' (Free Discharge)
1=Culvert (Barrel Controls 14.8 cfs @ 8.38 fps)
2=Sharp-Crested Rectangular Weir (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=565.80' (Free Discharge)
3=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

Pond P501 P: Pond P501 P



Summary for Pond P502 P: Pond P502 P

Inflow Area = 86,237 sf, 17.89% Impervious, Inflow Depth = 4.15" for 100-Year event
Inflow = 9.4 cfs @ 12.09 hrs, Volume= 29,819 cf
Outflow = 0.5 cfs @ 14.90 hrs, Volume= 29,819 cf, Atten= 95%, Lag= 168.7 min
Discarded = 0.2 cfs @ 14.90 hrs, Volume= 20,959 cf
Primary = 0.3 cfs @ 14.90 hrs, Volume= 8,860 cf
Routed to Reach R502 P : Reach R502 P
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach R502 P : Reach R502 P

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 557.89' @ 14.90 hrs Surf.Area= 9,232 sf Storage= 18,643 cf

Plug-Flow detention time= 980.4 min calculated for 29,819 cf (100% of inflow)
Center-of-Mass det. time= 980.3 min (1,800.0 - 819.7)

Volume	Invert	Avail.Storage	Storage Description
#1	553.50'	42,935 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
553.50	50	0	0
554.00	810	215	215
556.00	4,590	5,400	5,615
558.00	9,515	14,105	19,720
560.00	13,700	23,215	42,935

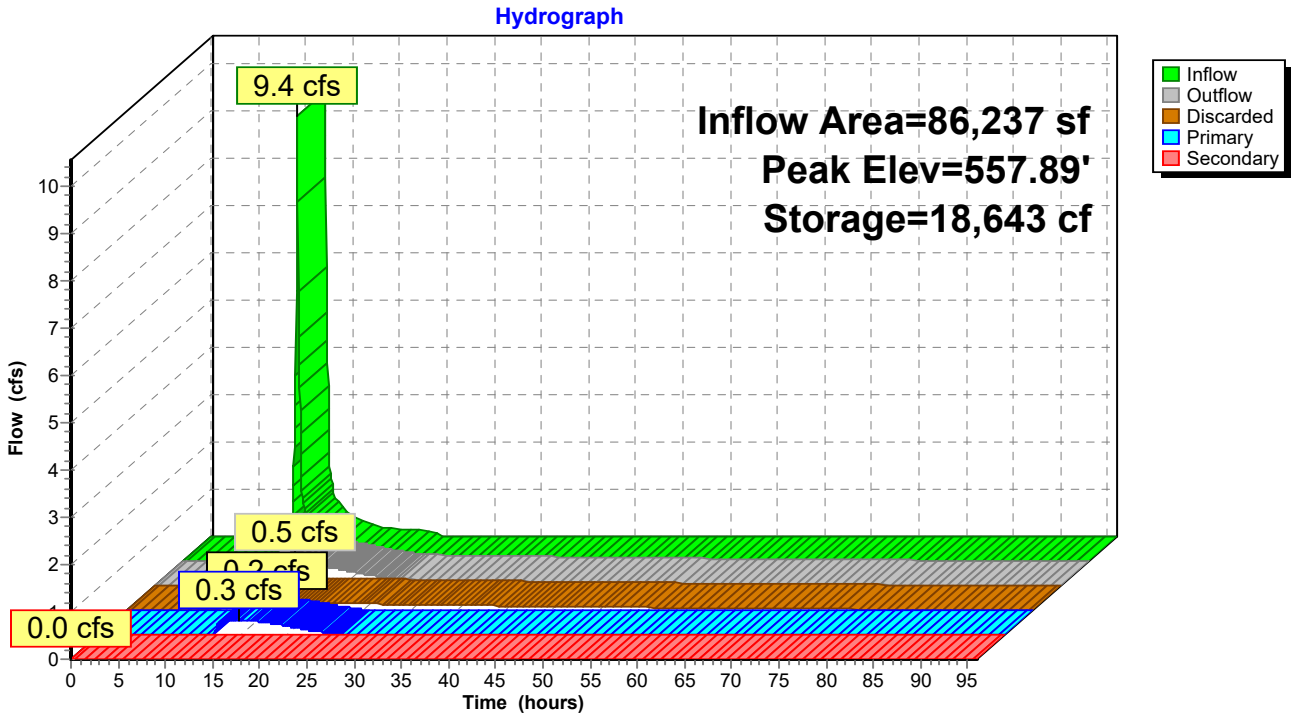
Device	Routing	Invert	Outlet Devices
#1	Primary	552.00'	**12.0" Round Culvert** L= 160.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 552.00' / 550.00' S= 0.0125 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	557.20'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	558.00'	**16.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#4	Secondary	559.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	553.50'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 551.00'

Discarded OutFlow Max=0.2 cfs @ 14.90 hrs HW=557.89' (Free Discharge)
└**5=Exfiltration** (Controls 0.2 cfs)

Primary OutFlow Max=0.3 cfs @ 14.90 hrs HW=557.89' (Free Discharge)
└**1=Culvert** (Passes 0.3 cfs of 6.5 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 0.3 cfs @ 3.47 fps)
└**3=Sharp-Crested Rectangular Weir** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=553.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond P502 P: Pond P502 P



Summary for Pond P503 P: Pond P503 P

Inflow Area = 82,329 sf, 25.04% Impervious, Inflow Depth = 4.37" for 100-Year event
Inflow = 8.5 cfs @ 12.13 hrs, Volume= 29,953 cf
Outflow = 4.4 cfs @ 12.34 hrs, Volume= 29,953 cf, Atten= 48%, Lag= 12.5 min
Discarded = 0.1 cfs @ 12.34 hrs, Volume= 596 cf
Primary = 4.3 cfs @ 12.34 hrs, Volume= 29,357 cf
Routed to Pond P501 P : Pond P501 P
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond P501 P : Pond P501 P

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 586.97' @ 12.34 hrs Surf.Area= 4,391 sf Storage= 4,289 cf

Plug-Flow detention time= 9.2 min calculated for 29,937 cf (100% of inflow)
Center-of-Mass det. time= 9.4 min (827.6 - 818.2)

Volume	Invert	Avail.Storage	Storage Description
#1	584.50'	7,018 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
584.50	30	0	0
585.00	135	41	41
586.00	2,085	1,110	1,151
587.00	4,465	3,275	4,426
587.50	5,900	2,591	7,018

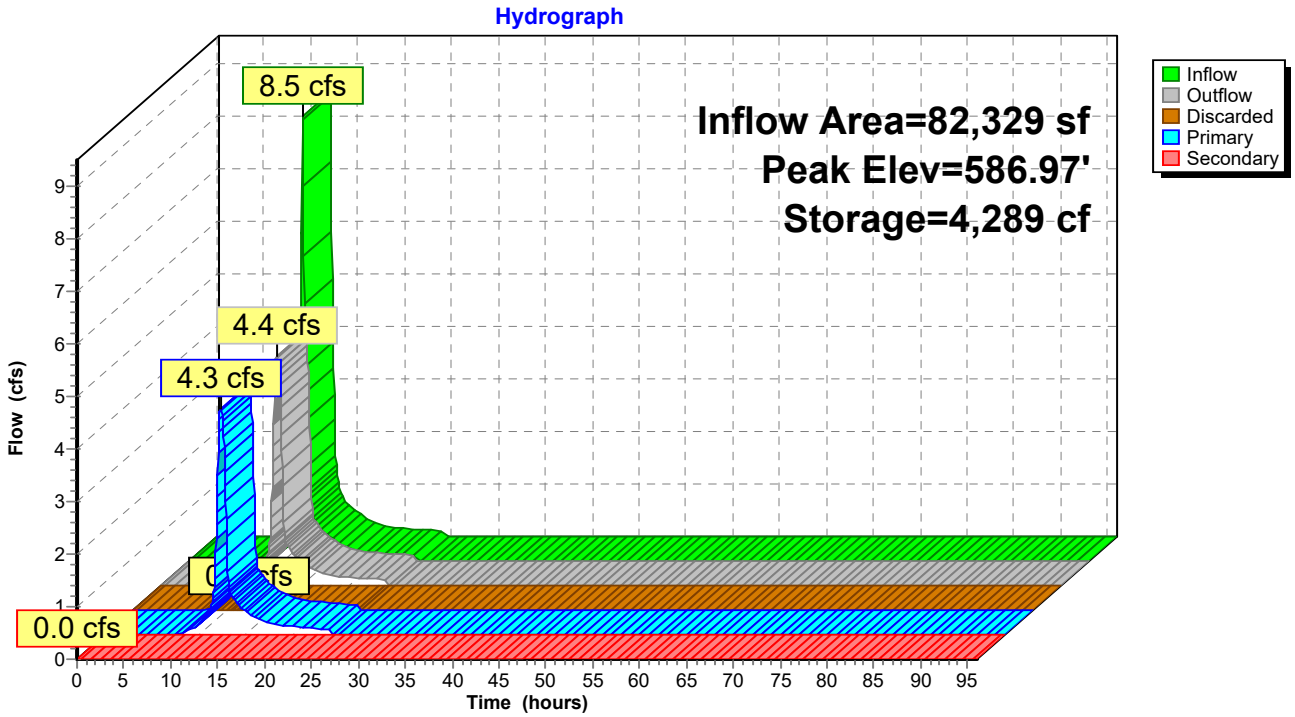
Device	Routing	Invert	Outlet Devices
#1	Primary	582.50'	**12.0" Round Culvert** L= 34.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 582.50' / 582.00' S= 0.0147 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	585.00'	**8.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	587.00'	**16.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#4	Secondary	587.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	584.50'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 582.00'

Discarded OutFlow Max=0.1 cfs @ 12.34 hrs HW=586.97' (Free Discharge)
└**5=Exfiltration** (Controls 0.1 cfs)

Primary OutFlow Max=4.3 cfs @ 12.34 hrs HW=586.97' (Free Discharge)
└**1=Culvert** (Passes 4.3 cfs of 7.5 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 4.3 cfs @ 6.15 fps)
└**3=Sharp-Crested Rectangular Weir** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=584.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond P503 P: Pond P503 P



Summary for Pond P505 P: Pond P505 P

[79] Warning: Submerged Pond P501 P Primary device # 1 OUTLET by 3.26'

Inflow Area = 175,429 sf, 18.50% Impervious, Inflow Depth = 3.87" for 100-Year event
Inflow = 10.2 cfs @ 12.24 hrs, Volume= 56,509 cf
Outflow = 1.5 cfs @ 13.44 hrs, Volume= 56,509 cf, Atten= 85%, Lag= 72.5 min
Discarded = 0.2 cfs @ 13.44 hrs, Volume= 22,485 cf
Primary = 1.3 cfs @ 13.44 hrs, Volume= 34,025 cf
Routed to Link L2 P : Ditch
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link L2 P : Ditch

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 554.96' @ 13.44 hrs Surf.Area= 9,450 sf Storage= 30,498 cf

Plug-Flow detention time= 600.2 min calculated for 56,480 cf (100% of inflow)
Center-of-Mass det. time= 601.7 min (1,434.7 - 833.1)

Volume	Invert	Avail.Storage	Storage Description
#1	549.50'	41,043 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
549.50	50	0	0
550.00	2,520	643	643
551.00	3,965	3,243	3,885
552.00	5,340	4,653	8,538
554.00	8,160	13,500	22,038
556.00	10,845	19,005	41,043

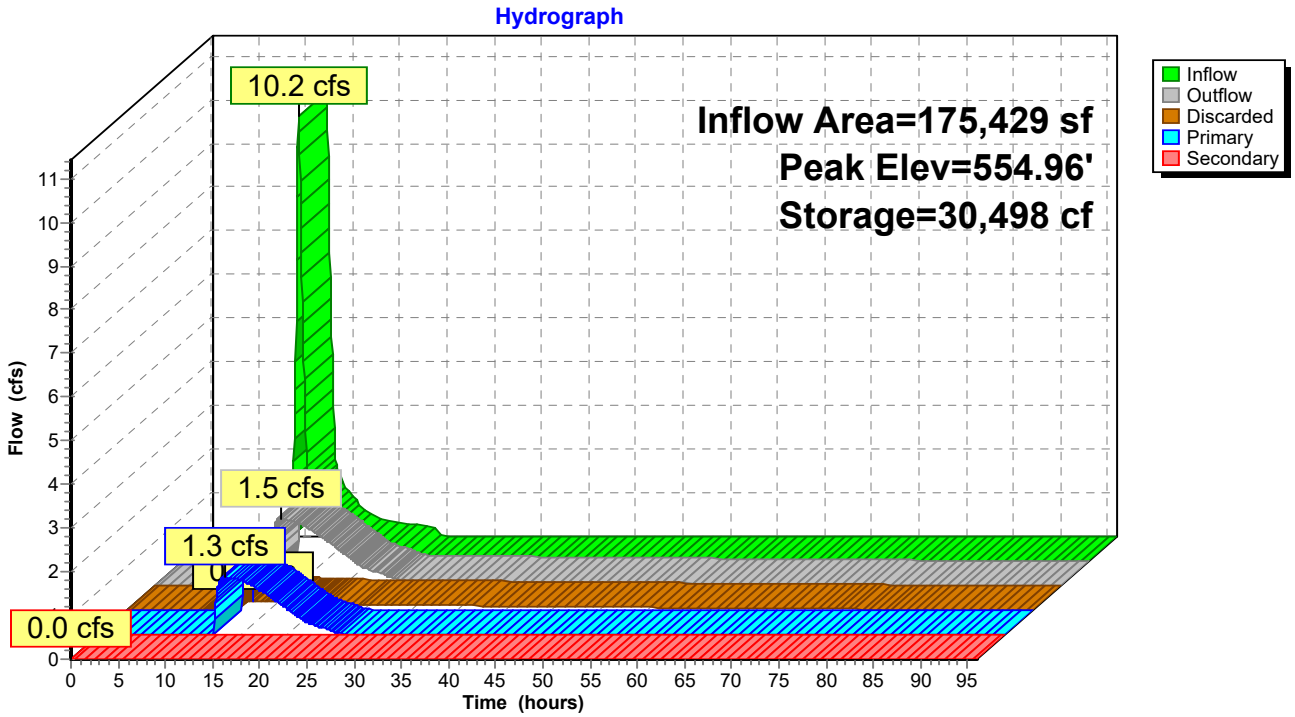
Device	Routing	Invert	Outlet Devices
#1	Primary	548.50'	**12.0" Round Culvert** L= 43.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 548.50' / 548.00' S= 0.0116 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	552.80'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	555.00'	**16.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#4	Secondary	555.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	549.50'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 547.00'

Discarded OutFlow Max=0.2 cfs @ 13.44 hrs HW=554.96' (Free Discharge)
└**5=Exfiltration** (Controls 0.2 cfs)

Primary OutFlow Max=1.3 cfs @ 13.44 hrs HW=554.96' (Free Discharge)
└**1=Culvert** (Passes 1.3 cfs of 9.1 cfs potential flow)
  └**2=Orifice/Grate** (Orifice Controls 1.3 cfs @ 6.66 fps)
  └**3=Sharp-Crested Rectangular Weir** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=549.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond P505 P: Pond P505 P



Summary for Pond P701 P: Pond P701 P

Inflow Area = 91,083 sf, 17.79% Impervious, Inflow Depth = 4.37" for 100-Year event
Inflow = 8.0 cfs @ 12.21 hrs, Volume= 33,138 cf
Outflow = 7.3 cfs @ 12.30 hrs, Volume= 33,138 cf, Atten= 9%, Lag= 5.3 min
Discarded = 0.1 cfs @ 12.28 hrs, Volume= 2,576 cf
Primary = 7.2 cfs @ 12.30 hrs, Volume= 30,561 cf
Routed to Reach R702 P : Reach 701 P
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach R702 P : Reach 701 P

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 516.60' @ 12.28 hrs Surf.Area= 3,871 sf Storage= 3,723 cf

Plug-Flow detention time= 56.7 min calculated for 33,120 cf (100% of inflow)
Center-of-Mass det. time= 57.3 min (881.1 - 823.8)

Volume	Invert	Avail.Storage	Storage Description
#1	514.30'	11,978 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
514.30	50	0	0
515.00	1,000	368	368
516.00	2,100	1,550	1,918
518.00	7,960	10,060	11,978

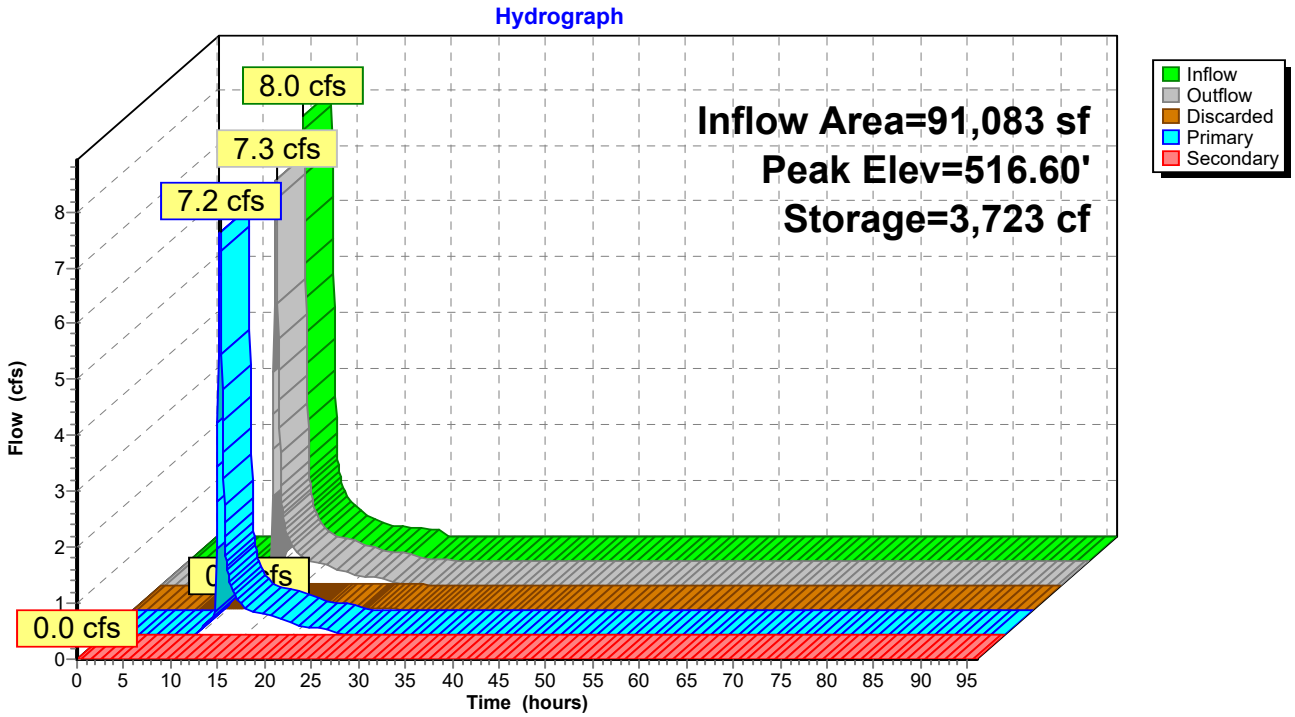
Device	Routing	Invert	Outlet Devices
#1	Primary	512.00'	**12.0" Round Culvert** L= 52.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 512.00' / 511.50' S= 0.0096 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	515.20'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	516.30'	**16.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#4	Secondary	517.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	514.30'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 512.00'

Discarded OutFlow Max=0.1 cfs @ 12.28 hrs HW=516.60' (Free Discharge)
└**5=Exfiltration** (Controls 0.1 cfs)

Primary OutFlow Max=7.2 cfs @ 12.30 hrs HW=516.60' (Free Discharge)
└**1=Culvert** (Barrel Controls 7.2 cfs @ 9.18 fps)
├**2=Orifice/Grate** (Passes < 0.5 cfs potential flow)
└**3=Sharp-Crested Rectangular Weir** (Passes < 8.6 cfs potential flow)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=514.30' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond P701 P: Pond P701 P



Summary for Pond P702 P: Pond P702 P

Inflow Area = 181,154 sf, 22.95% Impervious, Inflow Depth = 4.58" for 100-Year event
Inflow = 19.2 cfs @ 12.14 hrs, Volume= 69,206 cf
Outflow = 6.0 cfs @ 12.52 hrs, Volume= 59,027 cf, Atten= 68%, Lag= 22.6 min
Primary = 6.0 cfs @ 12.52 hrs, Volume= 59,017 cf
Routed to Reach R702 P : Reach 701 P
Secondary = 0.0 cfs @ 12.50 hrs, Volume= 10 cf
Routed to Reach R703 P : Reach 703 P

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 525.00' @ 12.52 hrs Surf.Area= 11,613 sf Storage= 34,414 cf

Plug-Flow detention time= 307.3 min calculated for 59,027 cf (85% of inflow)
Center-of-Mass det. time= 243.1 min (1,057.2 - 814.1)

Volume	Invert	Avail.Storage	Storage Description
#1	520.20'	1,398,243 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

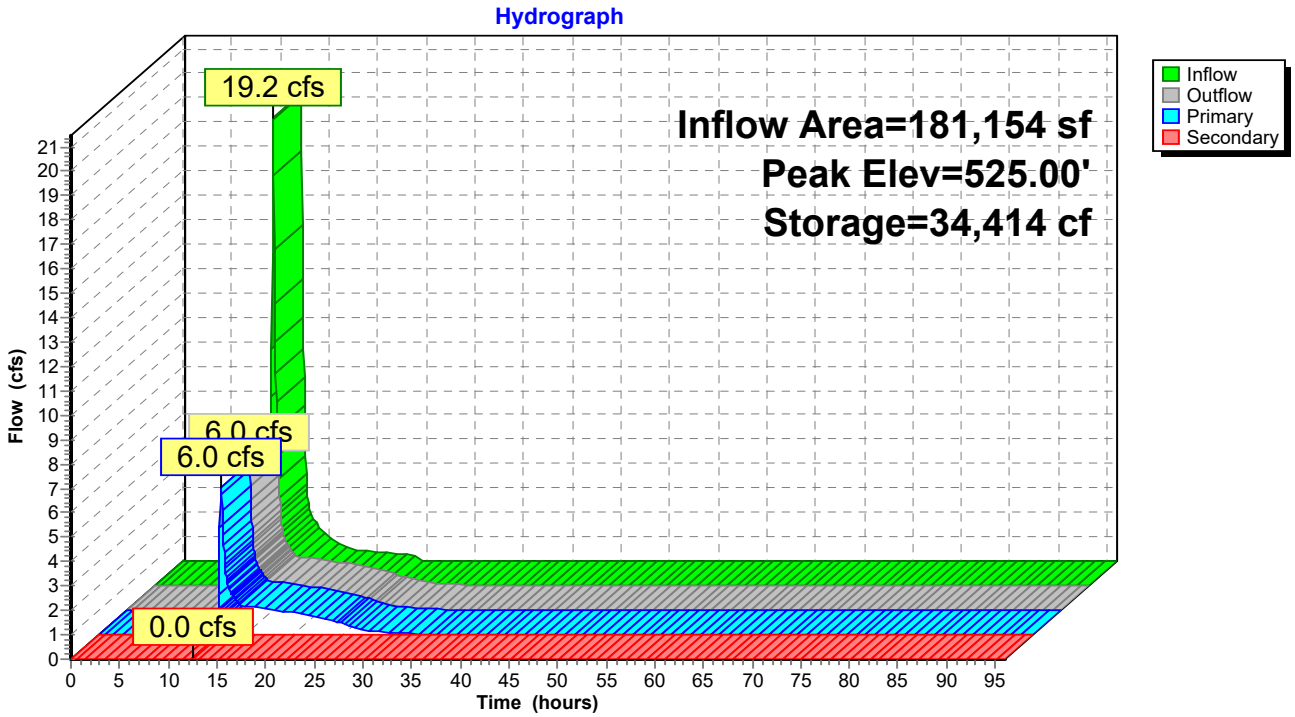
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
520.20	30	0	0
521.00	2,820	1,140	1,140
522.00	5,765	4,293	5,432
524.00	11,575	17,340	22,772
626.00	15,395	1,375,470	1,398,243

Device	Routing	Invert	Outlet Devices
#1	Primary	518.00'	**18.0" Round Culvert** L= 410.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 518.00' / 511.50' S= 0.0159 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	522.70'	**4.0" Vert. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	524.80'	**16.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#4	Secondary	525.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=6.0 cfs @ 12.52 hrs HW=525.00' (Free Discharge)
└**1=Culvert** (Passes 6.0 cfs of 16.4 cfs potential flow)
  └**2=Orifice/Grate** (Orifice Controls 1.2 cfs @ 7.04 fps)
  └**3=Sharp-Crested Rectangular Weir** (Weir Controls 4.7 cfs @ 1.47 fps)

Secondary OutFlow Max=0.0 cfs @ 12.50 hrs HW=525.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 0.0 cfs @ 0.12 fps)

Pond P702 P: Pond P702 P



Summary for Pond P703 P: Pond P703 P

540.5 for calculatioin purposes only

Inflow Area = 346,988 sf, 13.63% Impervious, Inflow Depth = 4.04" for 100-Year event
Inflow = 35.2 cfs @ 12.11 hrs, Volume= 116,879 cf
Outflow = 13.2 cfs @ 12.42 hrs, Volume= 116,879 cf, Atten= 62%, Lag= 18.2 min
Primary = 13.2 cfs @ 12.42 hrs, Volume= 116,879 cf
Routed to Reach R703 P : Reach 703 P
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond P702 P : Pond P702 P

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 538.87' @ 12.42 hrs Surf.Area= 22,622 sf Storage= 46,205 cf

Plug-Flow detention time= 287.6 min calculated for 116,818 cf (100% of inflow)
Center-of-Mass det. time= 287.9 min (1,111.5 - 823.5)

Volume	Invert	Avail.Storage	Storage Description
#1	534.00'	90,340 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

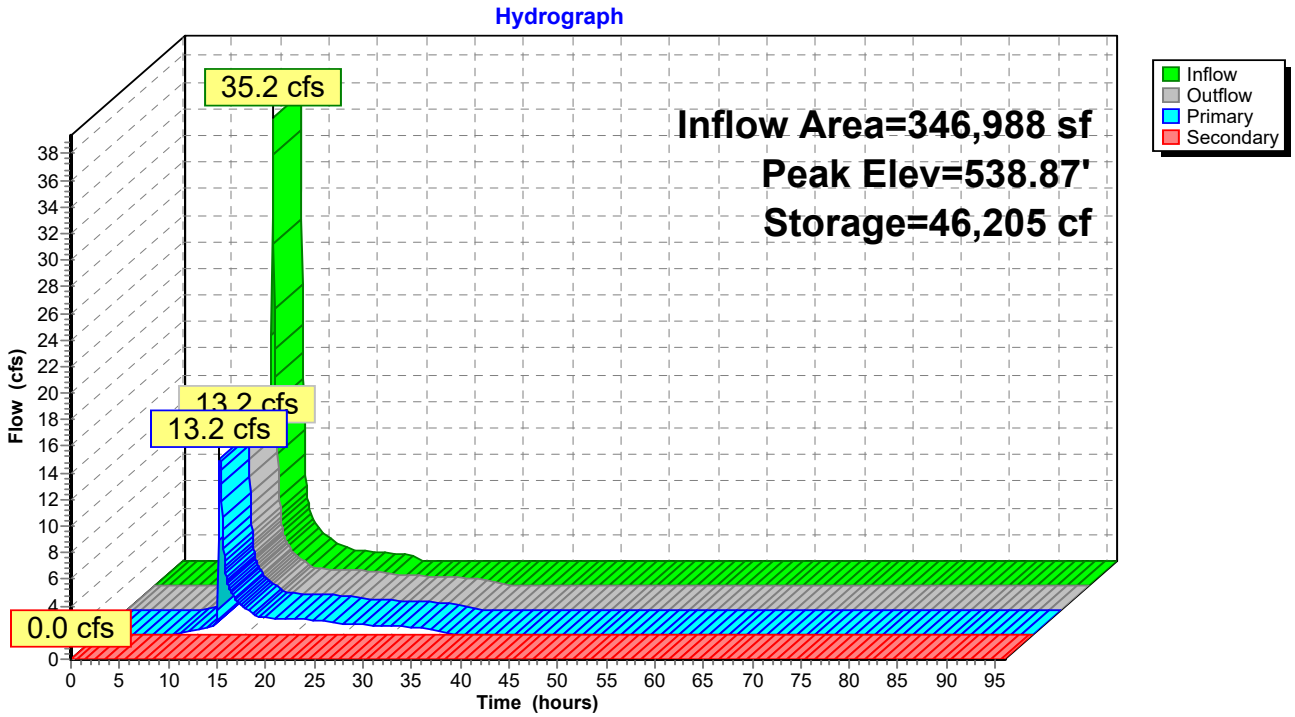
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
534.00	700	0	0
536.00	5,385	6,085	6,085
538.00	17,325	22,710	28,795
540.00	29,480	46,805	75,600
540.50	29,480	14,740	90,340

Device	Routing	Invert	Outlet Devices
#1	Primary	531.50'	**24.0" Round Culvert** L= 360.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 531.50' / 522.00' S= 0.0264 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	534.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	537.50'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	538.50'	**16.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#5	Secondary	540.00'	**20.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=13.1 cfs @ 12.42 hrs HW=538.87' (Free Discharge)
└**1=Culvert** (Passes 13.1 cfs of 38.2 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.9 cfs @ 10.44 fps)
  ├**3=Orifice/Grate** (Orifice Controls 0.5 cfs @ 5.28 fps)
  └**4=Sharp-Crested Rectangular Weir** (Weir Controls 11.8 cfs @ 1.99 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=534.00' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond P703 P: Pond P703 P

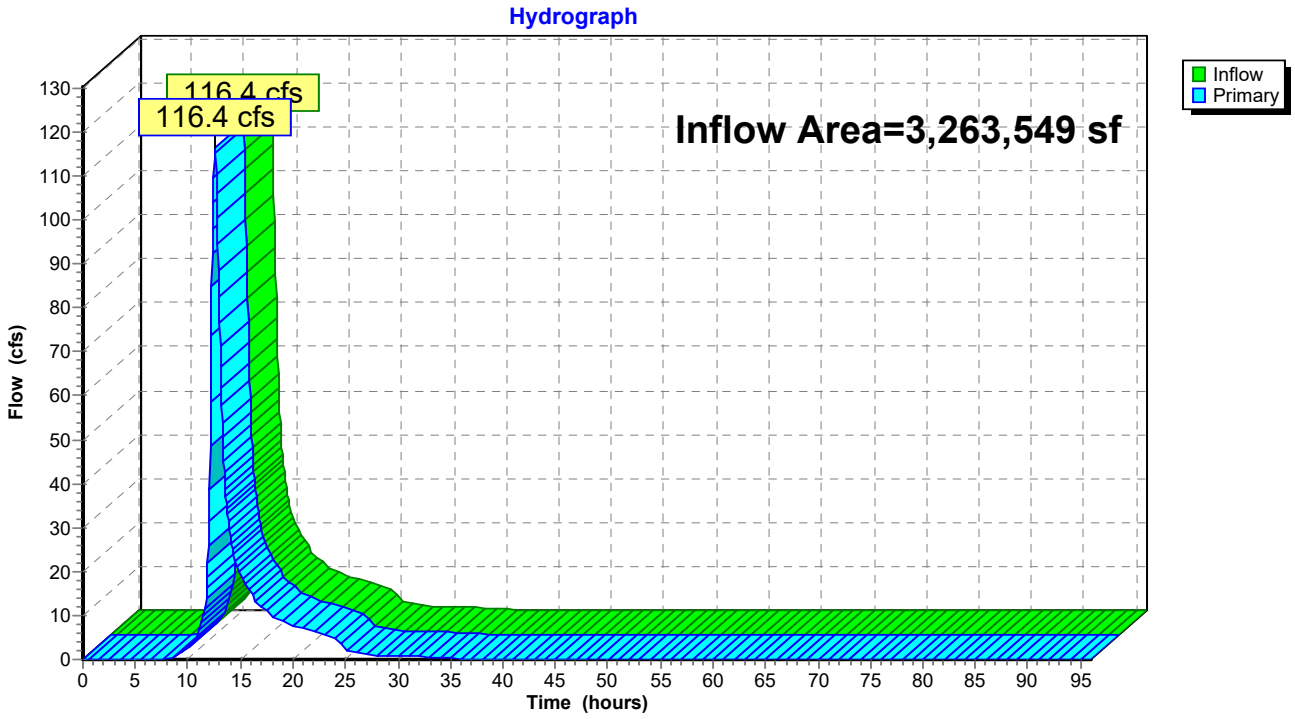


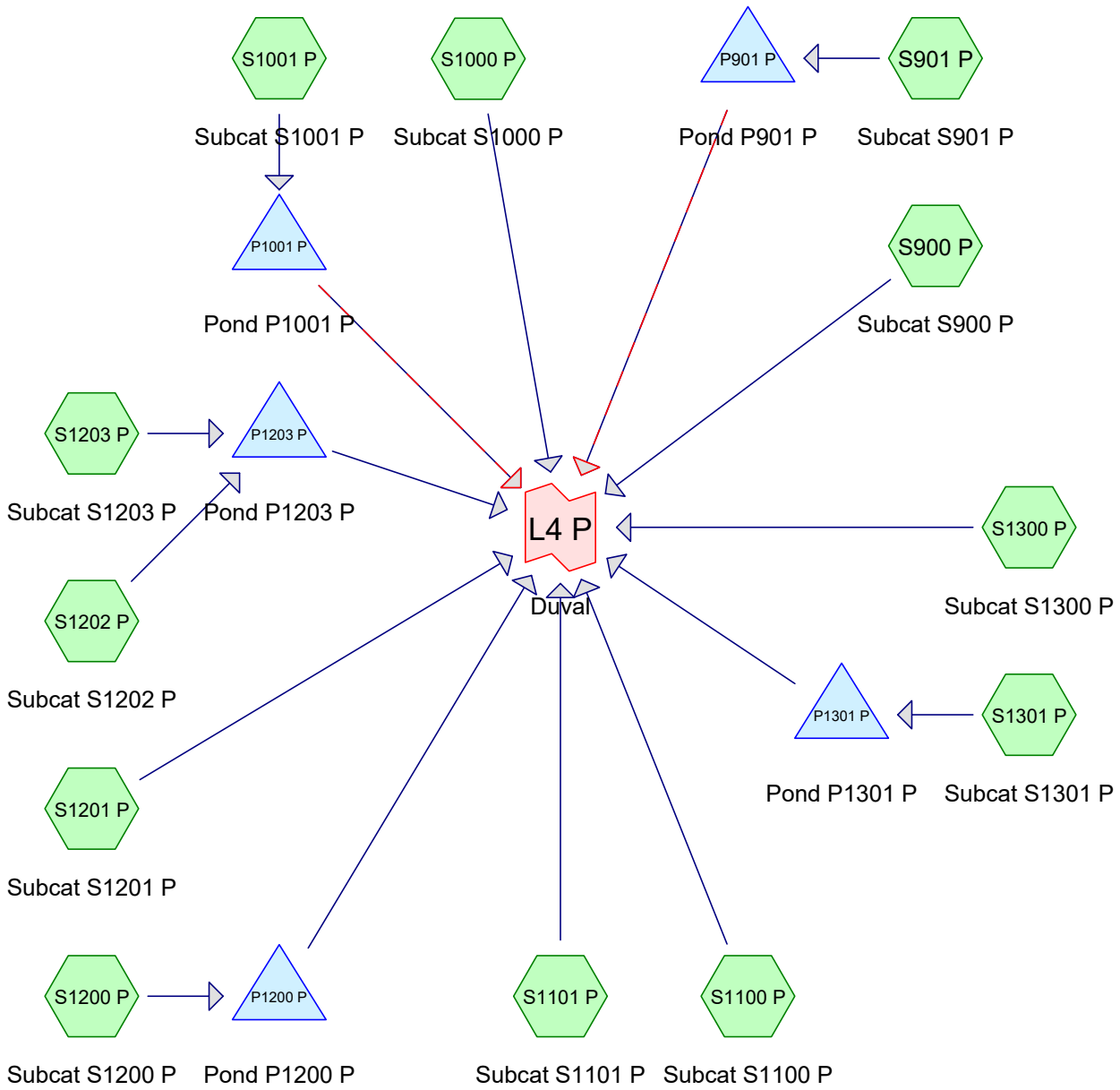
Summary for Link L2 P: Ditch

Inflow Area = 3,263,549 sf, 10.58% Impervious, Inflow Depth = 3.61" for 100-Year event
Inflow = 116.4 cfs @ 12.57 hrs, Volume= 982,363 cf
Primary = 116.4 cfs @ 12.57 hrs, Volume= 982,363 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link L2 P: Ditch





Subcat Reach Pond Link

Routing Diagram for 21-0083 Prop. Duval
Prepared by Land Design Collaborative
HydroCAD® 10.10-7a s/n 11266 © 2021 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
16,313	61	>75% Grass cover, Good, HSG B (S1001 P, S1100 P, S1101 P)
136,948	74	>75% Grass cover, Good, HSG C (S1000 P, S1001 P, S1100 P, S1101 P, S1200 P, S1201 P, S1202 P, S1203 P, S1300 P, S1301 P, S900 P, S901 P)
639	98	Paved parking, HSG B (S1001 P)
11,918	98	Paved parking, HSG C (S1000 P, S1001 P, S1200 P, S1201 P, S1202 P, S900 P, S901 P)
13,920	98	Paved roads w/curbs & sewers, HSG C (S1201 P, S1202 P, S1301 P, S901 P)
890	98	Roofs, HSG B (S1001 P)
9,159	98	Roofs, HSG C (S1000 P, S1001 P, S900 P, S901 P)
56,114	55	Woods, Good, HSG B (S1001 P, S1100 P, S1101 P)
85,948	70	Woods, Good, HSG C (S1000 P, S1001 P, S1100 P, S1101 P, S1200 P, S1201 P, S1203 P, S1300 P, S1301 P, S900 P, S901 P)
331,849	**72**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
73,956	HSG B	S1001 P, S1100 P, S1101 P
257,893	HSG C	S1000 P, S1001 P, S1100 P, S1101 P, S1200 P, S1201 P, S1202 P, S1203 P, S1300 P, S1301 P, S900 P, S901 P
0	HSG D	
0	Other	
331,849		**TOTAL AREA**

Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 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 S1000 P: Subcat S1000 P Runoff Area=38,088 sf 5.73% Impervious Runoff Depth=1.04"
Flow Length=355' Tc=12.5 min CN=74 Runoff=0.8 cfs 3,293 cf

Subcatchment S1001 P: Subcat S1001 P Runoff Area=57,796 sf 14.28% Impervious Runoff Depth=0.83"
Flow Length=495' Tc=11.1 min CN=70 Runoff=1.0 cfs 3,988 cf

Subcatchment S1100 P: Subcat S1100 P Runoff Area=50,836 sf 0.00% Impervious Runoff Depth=0.34"
Flow Length=510' Tc=15.3 min CN=58 Runoff=0.2 cfs 1,445 cf

Subcatchment S1101 P: Subcat S1101 P Runoff Area=19,869 sf 0.00% Impervious Runoff Depth=0.78"
Flow Length=210' Tc=11.4 min CN=69 Runoff=0.3 cfs 1,291 cf

Subcatchment S1200 P: Subcat S1200 P Runoff Area=18,672 sf 12.52% Impervious Runoff Depth=1.15"
Flow Length=135' Tc=8.5 min CN=76 Runoff=0.5 cfs 1,793 cf

Subcatchment S1201 P: Subcat S1201 P Runoff Area=16,267 sf 30.66% Impervious Runoff Depth=1.47"
Tc=6.0 min CN=81 Runoff=0.6 cfs 1,991 cf

Subcatchment S1202 P: Subcat S1202 P Runoff Area=5,851 sf 42.74% Impervious Runoff Depth=1.68"
Tc=6.0 min CN=84 Runoff=0.3 cfs 820 cf

Subcatchment S1203 P: Subcat S1203 P Runoff Area=3,703 sf 0.00% Impervious Runoff Depth=1.04"
Tc=6.0 min CN=74 Runoff=0.1 cfs 320 cf

Subcatchment S1300 P: Subcat S1300 P Runoff Area=14,331 sf 0.00% Impervious Runoff Depth=0.88"
Flow Length=135' Tc=14.1 min CN=71 Runoff=0.2 cfs 1,049 cf

Subcatchment S1301 P: Subcat S1301 P Runoff Area=7,597 sf 23.36% Impervious Runoff Depth=1.34"
Tc=6.0 min CN=79 Runoff=0.3 cfs 846 cf

Subcatchment S900 P: Subcat S900 P Runoff Area=46,131 sf 11.22% Impervious Runoff Depth=1.09"
Flow Length=160' Tc=7.3 min CN=75 Runoff=1.2 cfs 4,205 cf

Subcatchment S901 P: Subcat S901 P Runoff Area=52,708 sf 17.67% Impervious Runoff Depth=1.21"
Flow Length=245' Tc=6.3 min CN=77 Runoff=1.6 cfs 5,323 cf

Pond P1001 P: Pond P1001 P Peak Elev=552.24' Storage=1,621 cf Inflow=1.0 cfs 3,988 cf
Discarded=0.0 cfs 2,473 cf Primary=0.1 cfs 1,515 cf Secondary=0.0 cfs 0 cf Outflow=0.1 cfs 3,988 cf

Pond P1200 P: Pond P1200 P Peak Elev=533.74' Storage=707 cf Inflow=0.5 cfs 1,793 cf
Discarded=0.0 cfs 1,042 cf Primary=0.1 cfs 750 cf Outflow=0.1 cfs 1,793 cf

Pond P1203 P: Pond P1203 P Peak Elev=526.36' Storage=73 cf Inflow=0.4 cfs 1,140 cf
Discarded=0.0 cfs 74 cf Primary=0.3 cfs 1,066 cf Outflow=0.3 cfs 1,140 cf

Pond P1301 P: Pond P1301 P Peak Elev=526.24' Storage=265 cf Inflow=0.3 cfs 846 cf
Discarded=0.0 cfs 367 cf Primary=0.1 cfs 480 cf Outflow=0.1 cfs 846 cf

Pond P901 P: Pond P901 P Peak Elev=535.63' Storage=3,149 cf Inflow=1.6 cfs 5,323 cf
Discarded=0.1 cfs 4,738 cf Primary=0.0 cfs 584 cf Secondary=0.0 cfs 0 cf Outflow=0.1 cfs 5,323 cf

Link L4 P: Duval Inflow=3.4 cfs 17,670 cf
Primary=3.4 cfs 17,670 cf

Total Runoff Area = 331,849 sf Runoff Volume = 26,365 cf Average Runoff Depth = 0.95"
88.99% Pervious = 295,323 sf 11.01% Impervious = 36,526 sf

Summary for Subcatchment S1000 P: Subcat S1000 P

Tc based on lawn in front of home

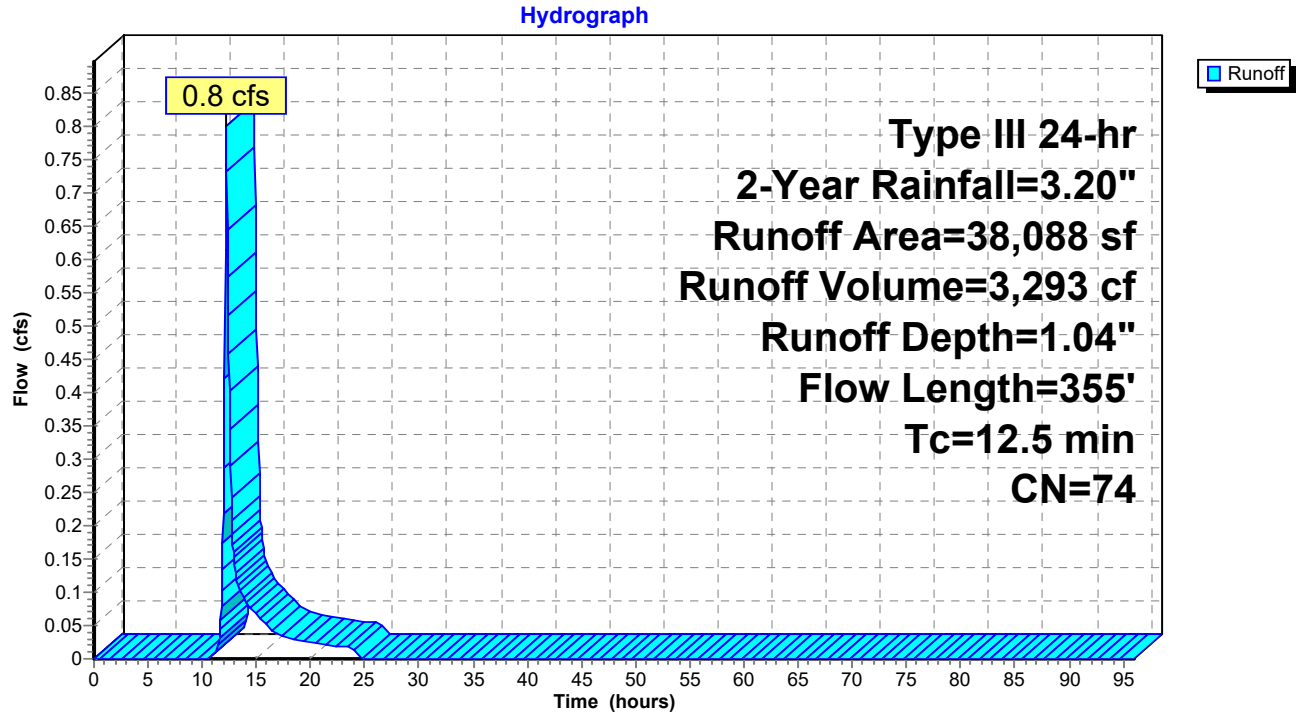
Runoff = 0.8 cfs @ 12.19 hrs, Volume= 3,293 cf, Depth= 1.04"
Routed to Link L4 P : Duval

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
819	98	Paved parking, HSG C
1,364	98	Roofs, HSG C
3,941	74	>75% Grass cover, Good, HSG C
1,040	70	Woods, Good, HSG C
16,598	70	Woods, Good, HSG C
14,326	74	>75% Grass cover, Good, HSG C
38,088	74	Weighted Average
35,905		94.27% Pervious Area
2,183		5.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.10		**Sheet Flow, uppermost** Grass: Dense n= 0.240 P2= 3.20"
4.3	305	0.0560	1.18		**Shallow Concentrated Flow, to offsite** Woodland Kv= 5.0 fps
12.5	355	Total			

Subcatchment S1000 P: Subcat S1000 P



Summary for Subcatchment S1001 P: Subcat S1001 P

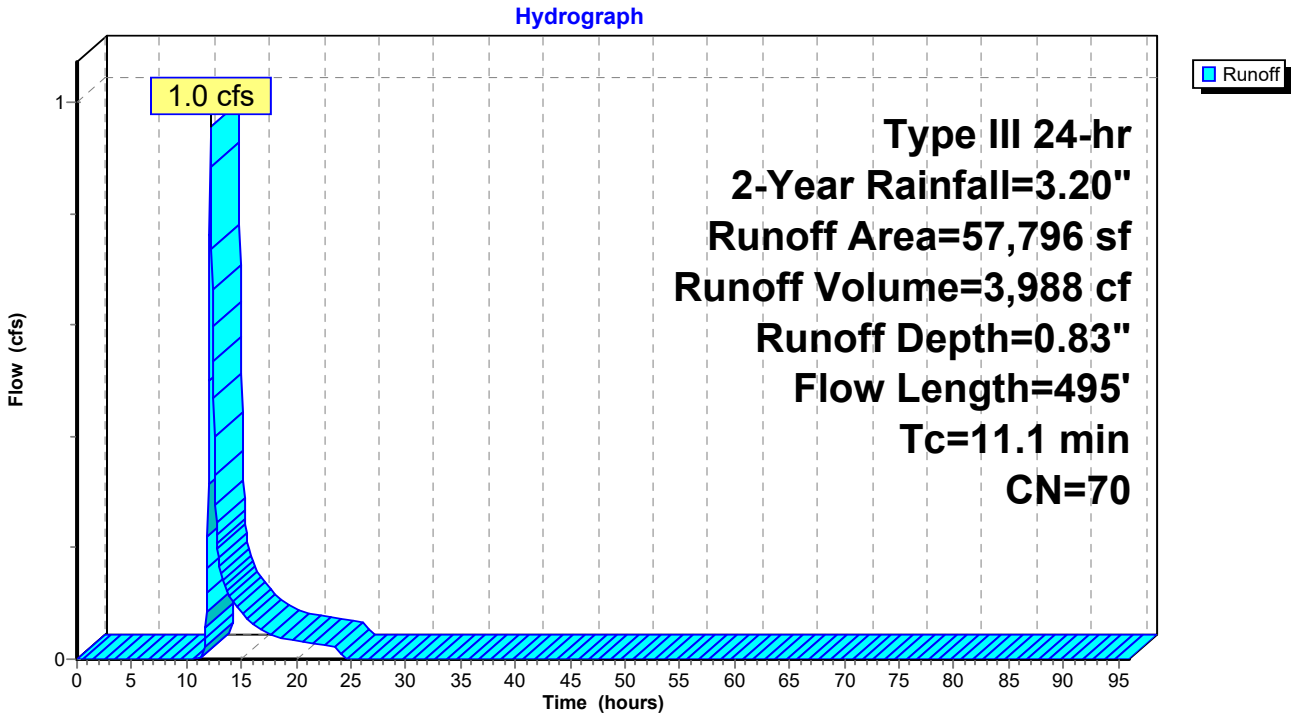
Runoff = 1.0 cfs @ 12.17 hrs, Volume= 3,988 cf, Depth= 0.83"
Routed to Pond P1001 P : Pond P1001 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
11,233	74	>75% Grass cover, Good, HSG C
5,474	74	>75% Grass cover, Good, HSG C
21	74	>75% Grass cover, Good, HSG C
890	98	Roofs, HSG B
639	98	Paved parking, HSG B
7,565	61	>75% Grass cover, Good, HSG B
16,153	55	Woods, Good, HSG B
6,397	70	Woods, Good, HSG C
1,874	70	Woods, Good, HSG C
825	70	Woods, Good, HSG C
3,406	98	Paved parking, HSG C
3,319	98	Roofs, HSG C
57,796	70	Weighted Average
49,542		85.72% Pervious Area
8,254		14.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	50	0.1500	0.09		**Sheet Flow, uppermost**
					Woods: Dense underbrush n= 0.800 P2= 3.20"
1.5	445	0.1000	5.09		**Shallow Concentrated Flow, to basin 1001**
					Unpaved Kv= 16.1 fps
11.1	495	Total			

Subcatchment S1001 P: Subcat S1001 P



Summary for Subcatchment S1100 P: Subcat S1100 P

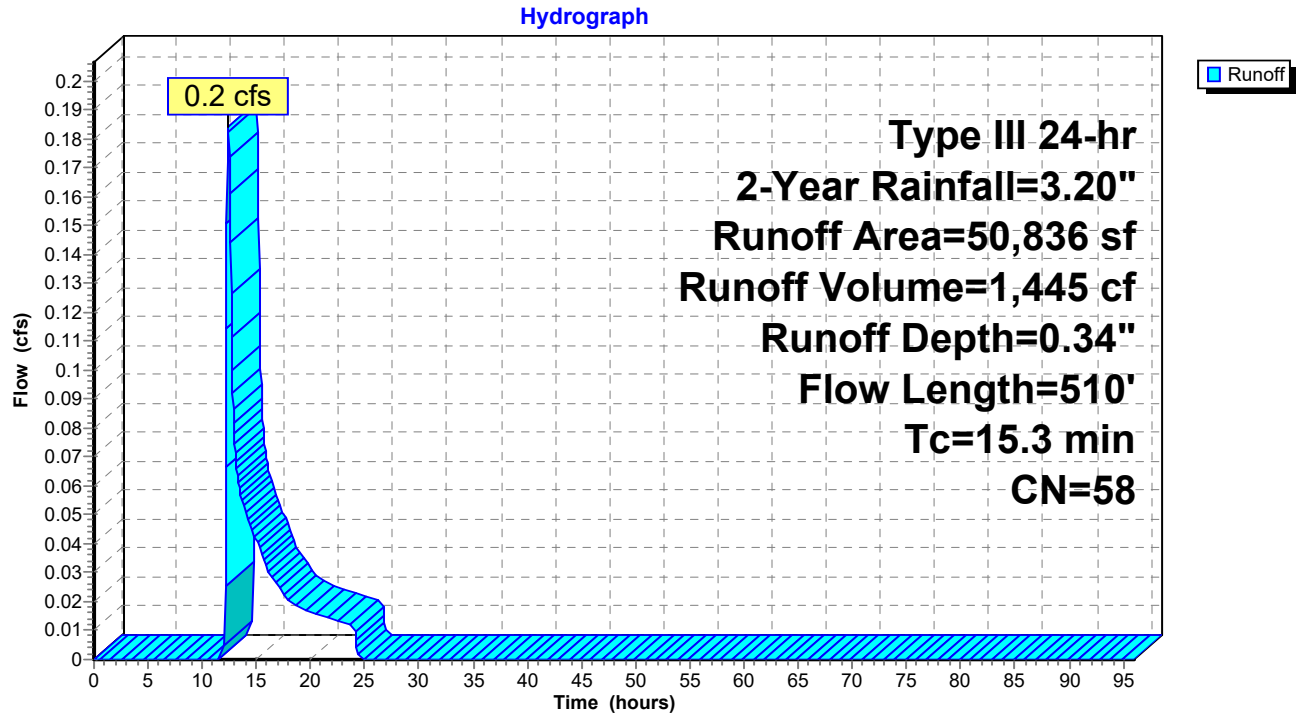
Runoff = 0.2 cfs @ 12.40 hrs, Volume= 1,445 cf, Depth= 0.34"
Routed to Link L4 P : Duval

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
36,361	55	Woods, Good, HSG B
4,522	61	>75% Grass cover, Good, HSG B
941	61	>75% Grass cover, Good, HSG B
3,042	61	>75% Grass cover, Good, HSG B
1,919	74	>75% Grass cover, Good, HSG C
4,051	70	Woods, Good, HSG C
50,836	58	Weighted Average
50,836		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.3	50	0.1000	0.07		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
3.3	135	0.0740	0.68		**Shallow Concentrated Flow, above channel** Forest w/Heavy Litter Kv= 2.5 fps
0.7	325	0.1020	7.77	155.45	**Trap/Vee/Rect Channel Flow, channel** Bot.W=4.00' D=2.00' Z= 3.0 '/' Top.W=16.00' n= 0.069 Riprap, 6-inch
15.3	510	Total			

Subcatchment S1100 P: Subcat S1100 P



Summary for Subcatchment S1101 P: Subcat S1101 P

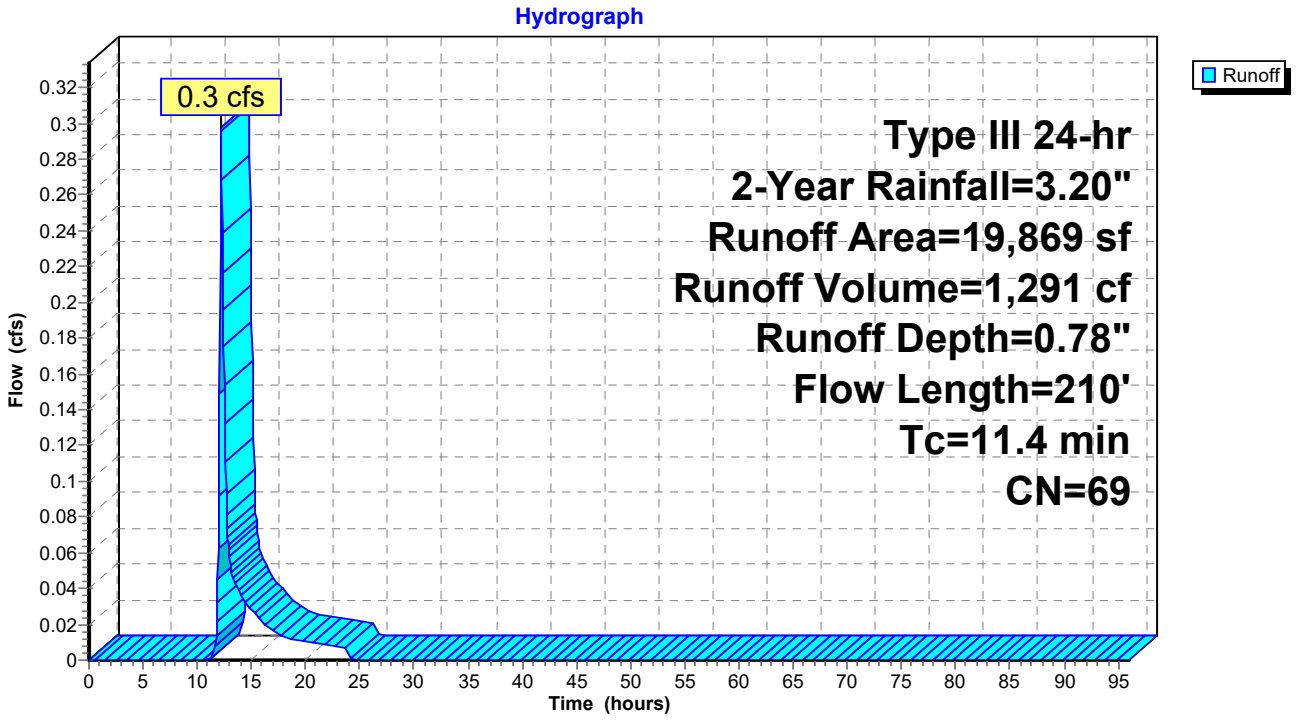
Runoff = 0.3 cfs @ 12.18 hrs, Volume= 1,291 cf, Depth= 0.78"
Routed to Link L4 P : Duval

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
3,600	55	Woods, Good, HSG B
243	61	>75% Grass cover, Good, HSG B
8,223	74	>75% Grass cover, Good, HSG C
7,803	70	Woods, Good, HSG C
19,869	69	Weighted Average
19,869		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.2000	0.10		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
2.9	160	0.1380	0.93		**Shallow Concentrated Flow, to offsite** Forest w/Heavy Litter Kv= 2.5 fps
11.4	210	Total			

Subcatchment S1101 P: Subcat S1101 P



Summary for Subcatchment S1200 P: Subcat S1200 P

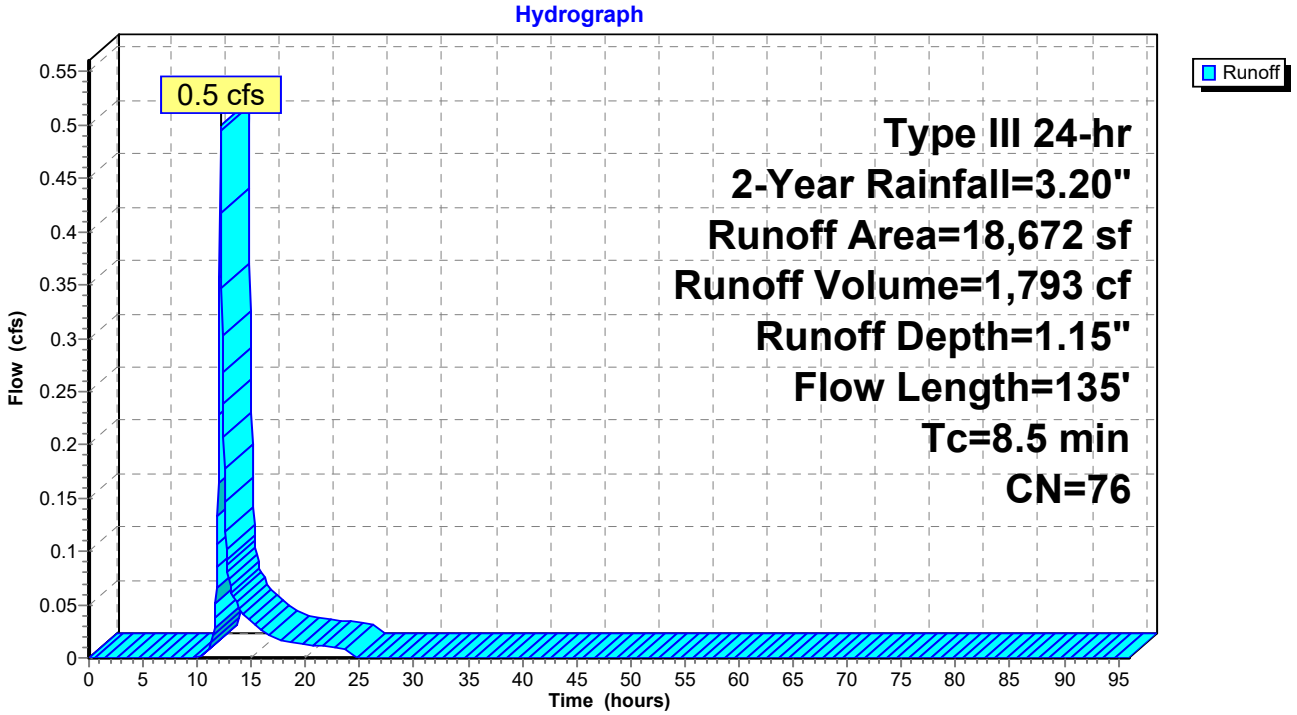
Runoff = 0.5 cfs @ 12.13 hrs, Volume= 1,793 cf, Depth= 1.15"
Routed to Pond P1200 P : Pond P1200 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
404	70	Woods, Good, HSG C
2,337	98	Paved parking, HSG C
9,988	74	>75% Grass cover, Good, HSG C
5,943	70	Woods, Good, HSG C
18,672	76	Weighted Average
16,335		87.48% Pervious Area
2,337		12.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	50	0.0700	0.11		**Sheet Flow, uppermost** Woods: Light underbrush n= 0.400 P2= 3.20"
1.0	85	0.0750	1.37		**Shallow Concentrated Flow, to basin 1200** Woodland Kv= 5.0 fps
8.5	135	Total			

Subcatchment S1200 P: Subcat S1200 P



Summary for Subcatchment S1201 P: Subcat S1201 P

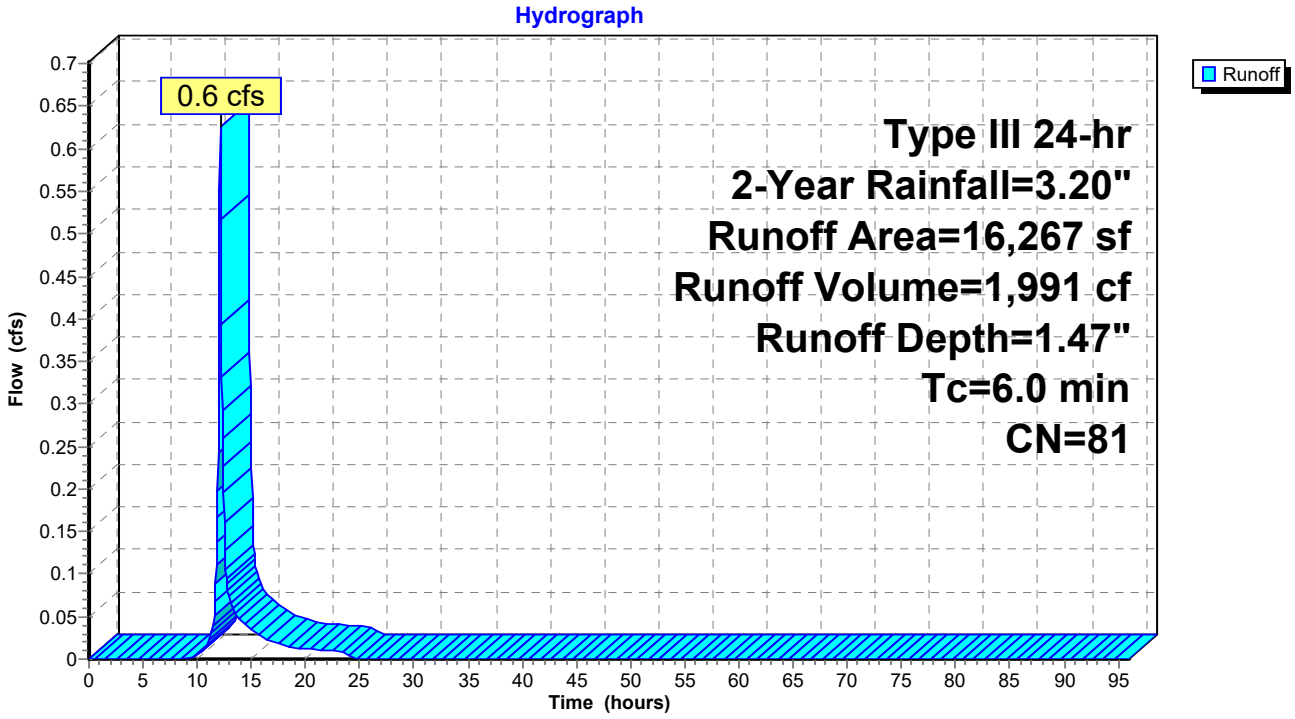
Runoff = 0.6 cfs @ 12.10 hrs, Volume= 1,991 cf, Depth= 1.47"
Routed to Link L4 P : Duval

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
1,396	70	Woods, Good, HSG C
6,007	74	>75% Grass cover, Good, HSG C
3,092	74	>75% Grass cover, Good, HSG C
4,184	98	Paved roads w/curbs & sewers, HSG C
804	98	Paved parking, HSG C
784	74	>75% Grass cover, Good, HSG C
16,267	81	Weighted Average
11,279		69.34% Pervious Area
4,988		30.66% Impervious Area

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

Subcatchment S1201 P: Subcat S1201 P



Summary for Subcatchment S1202 P: Subcat S1202 P

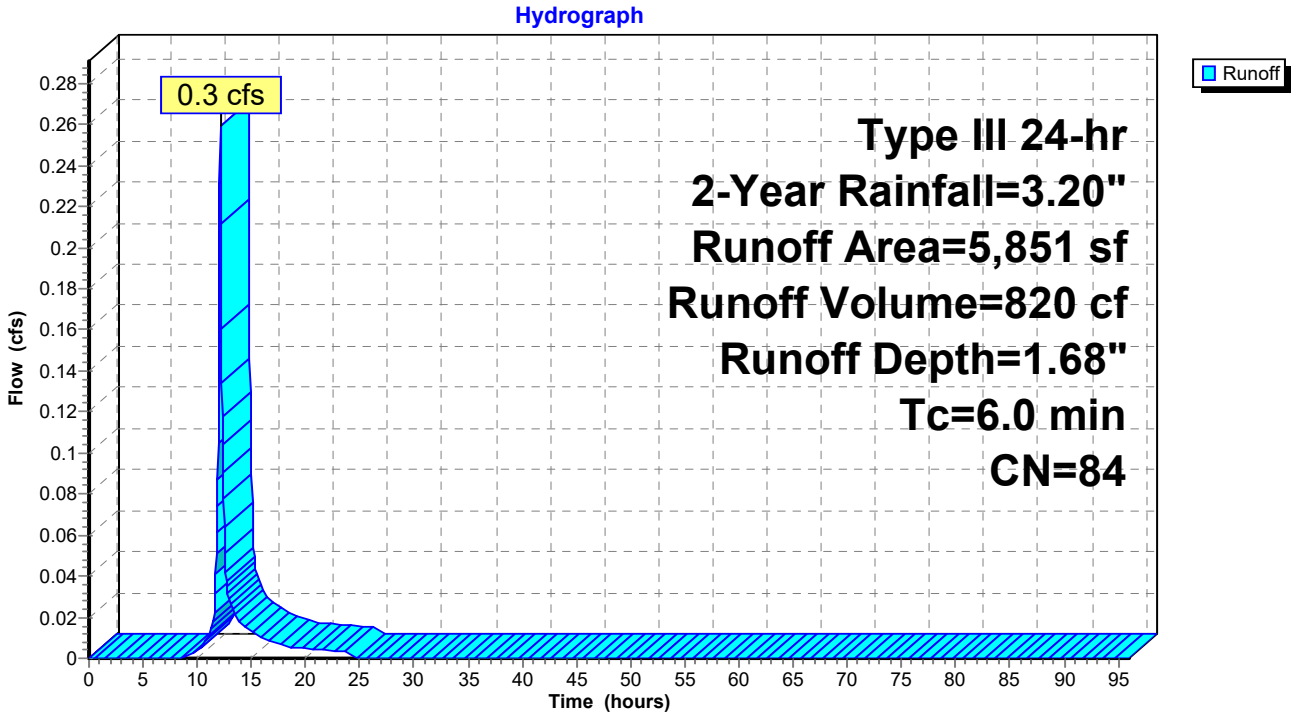
Runoff = 0.3 cfs @ 12.09 hrs, Volume= 820 cf, Depth= 1.68"
Routed to Pond P1203 P : Pond P1203 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
706	74	>75% Grass cover, Good, HSG C
711	98	Paved parking, HSG C
1,790	98	Paved roads w/curbs & sewers, HSG C
2,644	74	>75% Grass cover, Good, HSG C
5,851	84	Weighted Average
3,350		57.26% Pervious Area
2,501		42.74% Impervious Area

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

Subcatchment S1202 P: Subcat S1202 P



Summary for Subcatchment S1203 P: Subcat S1203 P

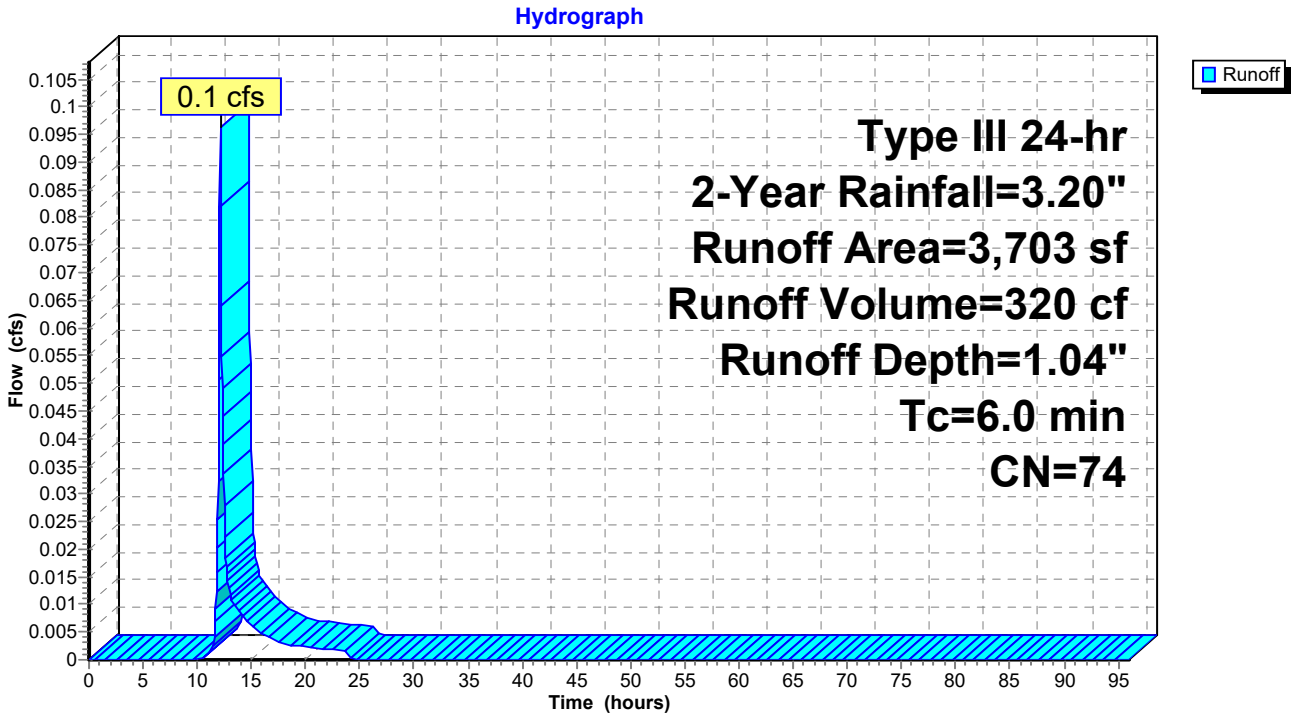
Runoff = 0.1 cfs @ 12.10 hrs, Volume= 320 cf, Depth= 1.04"
Routed to Pond P1203 P : Pond P1203 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
354	70	Woods, Good, HSG C
3,349	74	>75% Grass cover, Good, HSG C
3,703	74	Weighted Average
3,703		100.00% Pervious Area

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

Subcatchment S1203 P: Subcat S1203 P



Summary for Subcatchment S1300 P: Subcat S1300 P

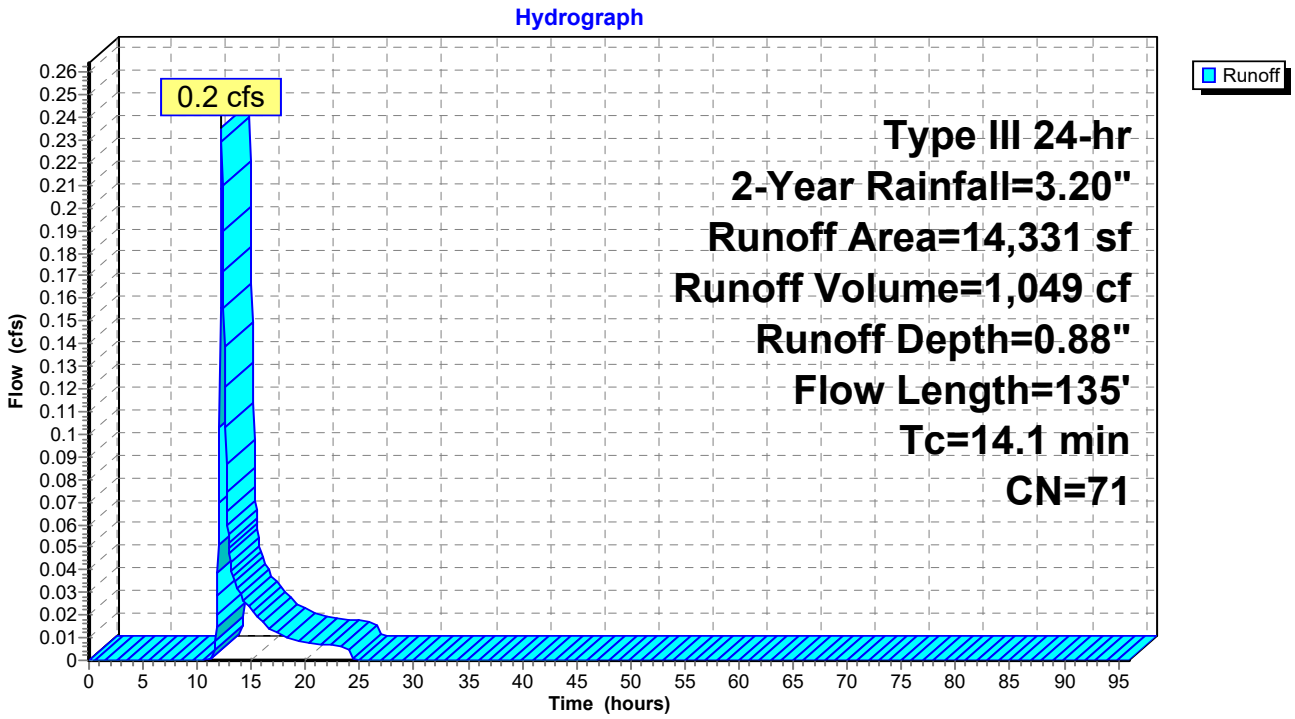
Runoff = 0.2 cfs @ 12.22 hrs, Volume= 1,049 cf, Depth= 0.88"
Routed to Link L4 P : Duval

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
8,396	70	Woods, Good, HSG C
5,299	74	>75% Grass cover, Good, HSG C
636	70	Woods, Good, HSG C
14,331	71	Weighted Average
14,331		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0800	0.07		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
1.8	85	0.1000	0.79		**Shallow Concentrated Flow, to offiste** Forest w/Heavy Litter Kv= 2.5 fps
14.1	135	Total			

Subcatchment S1300 P: Subcat S1300 P



Summary for Subcatchment S1301 P: Subcat S1301 P

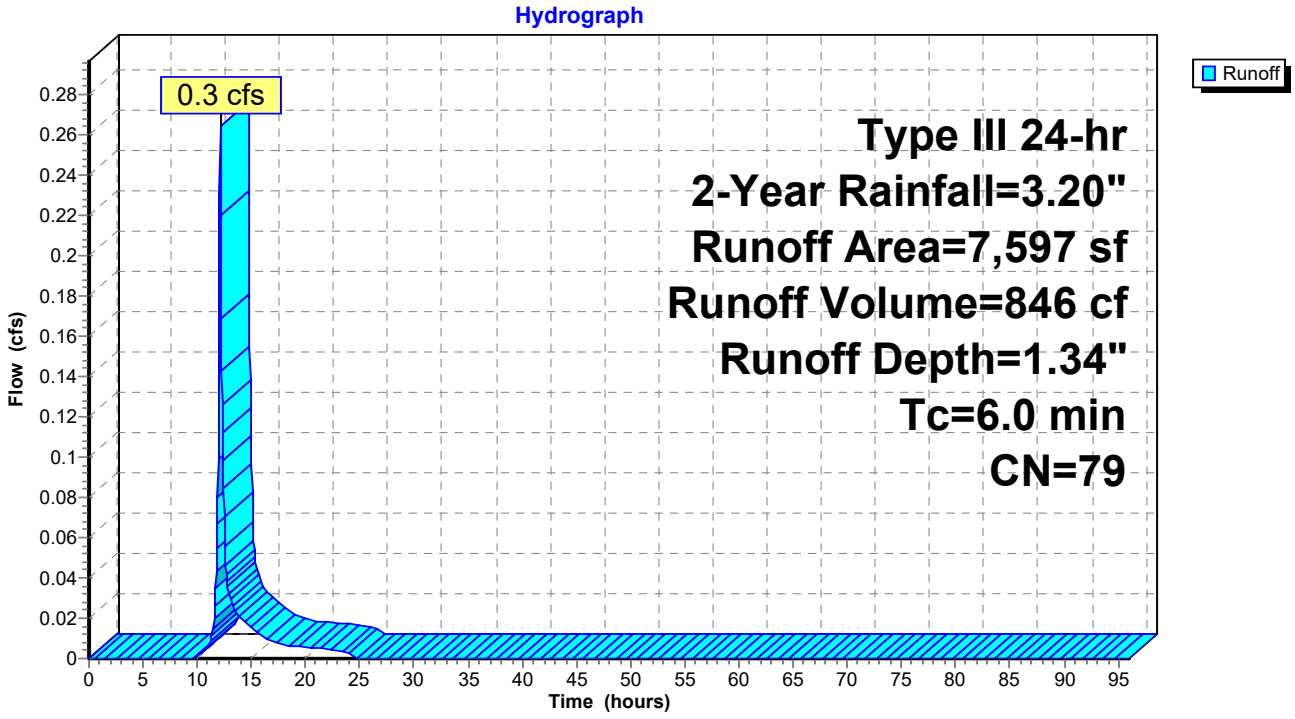
Runoff = 0.3 cfs @ 12.10 hrs, Volume= 846 cf, Depth= 1.34"
Routed to Pond P1301 P : Pond P1301 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
1,775	98	Paved roads w/curbs & sewers, HSG C
5,074	74	>75% Grass cover, Good, HSG C
748	70	Woods, Good, HSG C
7,597	79	Weighted Average
5,822		76.64% Pervious Area
1,775		23.36% Impervious Area

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

Subcatchment S1301 P: Subcat S1301 P



Summary for Subcatchment S900 P: Subcat S900 P

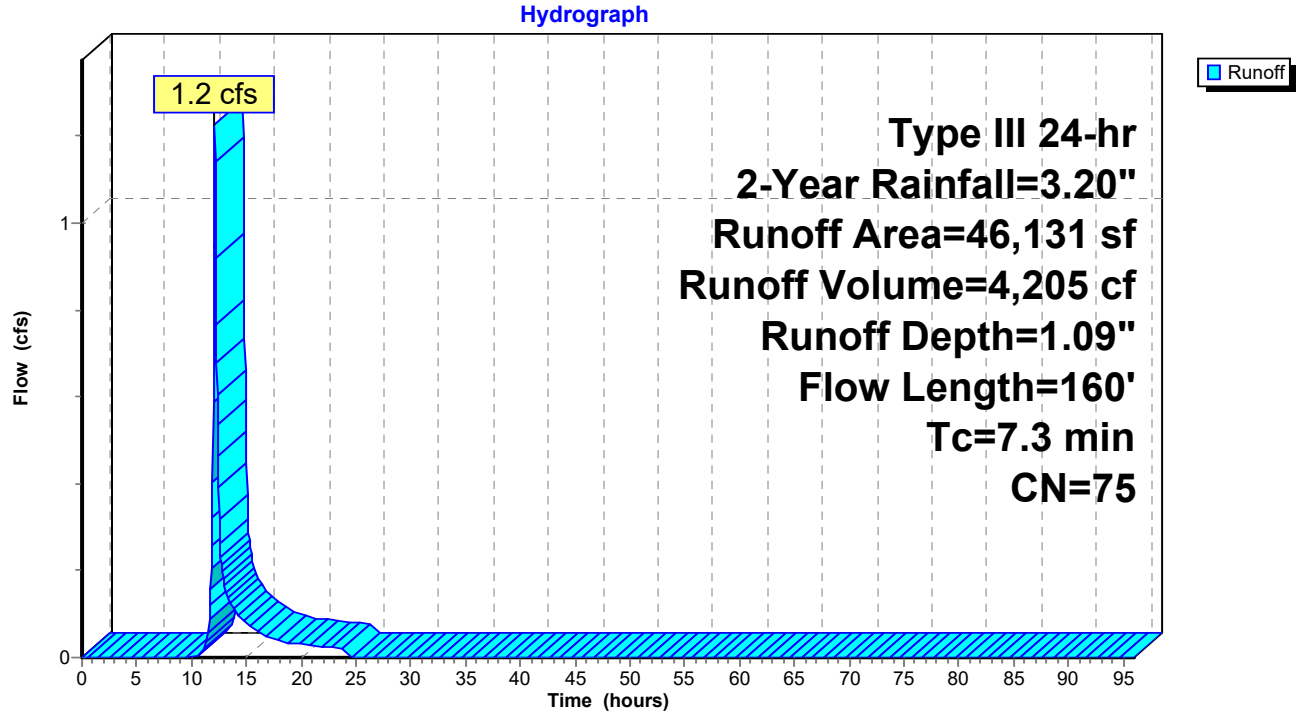
Runoff = 1.2 cfs @ 12.11 hrs, Volume= 4,205 cf, Depth= 1.09"
Routed to Link L4 P : Duval

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
12,641	70	Woods, Good, HSG C
1,863	98	Paved parking, HSG C
3,312	98	Roofs, HSG C
20,219	74	>75% Grass cover, Good, HSG C
2,725	74	>75% Grass cover, Good, HSG C
4,221	70	Woods, Good, HSG C
1,150	70	Woods, Good, HSG C
46,131	75	Weighted Average
40,956		88.78% Pervious Area
5,175		11.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	50	0.1200	0.14		**Sheet Flow, uppermost** Woods: Light underbrush n= 0.400 P2= 3.20"
1.3	110	0.0850	1.46		**Shallow Concentrated Flow, above channel** Woodland Kv= 5.0 fps
7.3	160	Total			

Subcatchment S900 P: Subcat S900 P



Summary for Subcatchment S901 P: Subcat S901 P

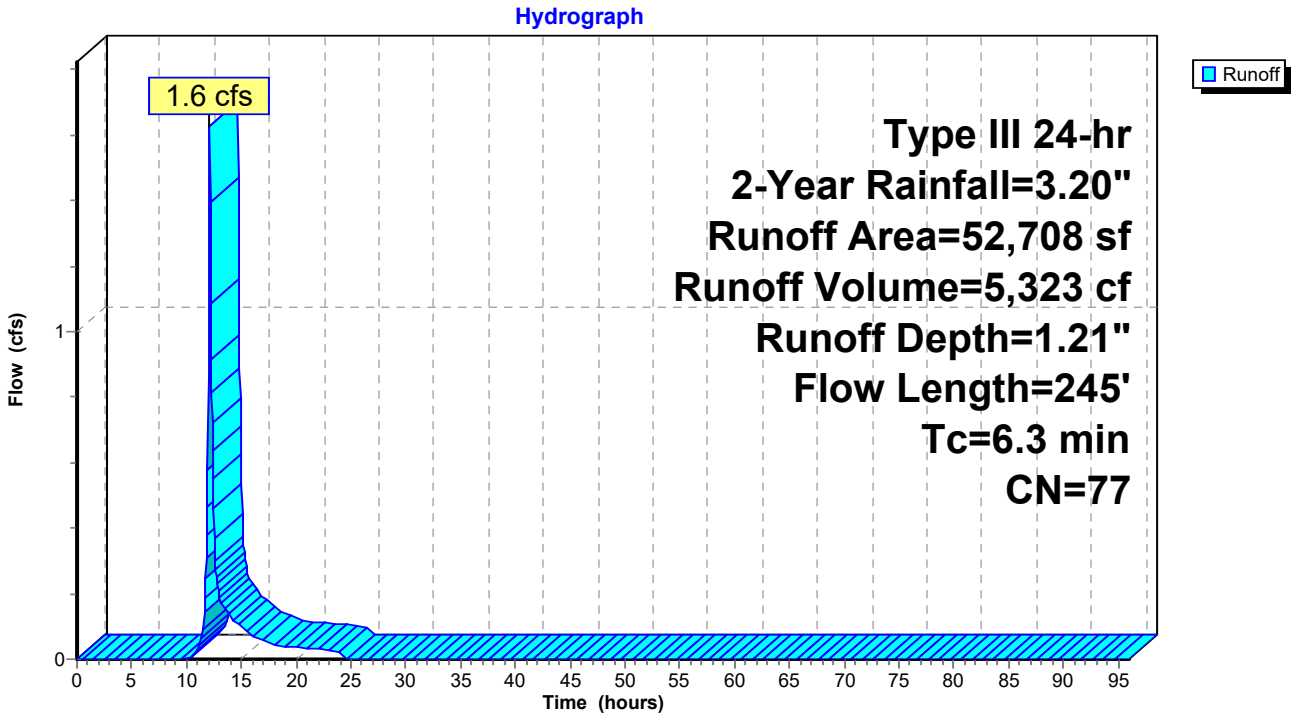
Runoff = 1.6 cfs @ 12.10 hrs, Volume= 5,323 cf, Depth= 1.21"
Routed to Pond P901 P : Pond P901 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
7,501	70	Woods, Good, HSG C
518	74	>75% Grass cover, Good, HSG C
793	74	>75% Grass cover, Good, HSG C
30	98	Paved parking, HSG C
1,372	98	Paved parking, HSG C
512	98	Paved parking, HSG C
1,164	98	Roofs, HSG C
64	98	Paved parking, HSG C
70	74	>75% Grass cover, Good, HSG C
3,970	70	Woods, Good, HSG C
101	74	>75% Grass cover, Good, HSG C
11,733	74	>75% Grass cover, Good, HSG C
6,171	98	Paved roads w/curbs & sewers, HSG C
18,565	74	>75% Grass cover, Good, HSG C
144	74	>75% Grass cover, Good, HSG C
52,708	77	Weighted Average
43,395		82.33% Pervious Area
9,313		17.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	50	0.1600	0.16		**Sheet Flow, uppermost**
					Woods: Light underbrush n= 0.400 P2= 3.20"
0.9	195	0.0510	3.64		**Shallow Concentrated Flow, above Road A**
					Unpaved Kv= 16.1 fps
6.3	245	Total			

Subcatchment S901 P: Subcat S901 P



Summary for Pond P1001 P: Pond P1001 P

Inflow Area = 57,796 sf, 14.28% Impervious, Inflow Depth = 0.83" for 2-Year event
Inflow = 1.0 cfs @ 12.17 hrs, Volume= 3,988 cf
Outflow = 0.1 cfs @ 13.25 hrs, Volume= 3,988 cf, Atten= 85%, Lag= 64.8 min
Discarded = 0.0 cfs @ 13.25 hrs, Volume= 2,473 cf
Primary = 0.1 cfs @ 13.25 hrs, Volume= 1,515 cf
Routed to Link L4 P : Duval
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link L4 P : Duval

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 552.24' @ 13.25 hrs Surf.Area= 2,289 sf Storage= 1,621 cf

Plug-Flow detention time= 371.8 min calculated for 3,986 cf (100% of inflow)
Center-of-Mass det. time= 372.3 min (1,252.8 - 880.5)

Volume	Invert	Avail.Storage	Storage Description
#1	551.00'	7,500 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
551.00	220	0	0
552.00	2,010	1,115	1,115
554.00	4,375	6,385	7,500

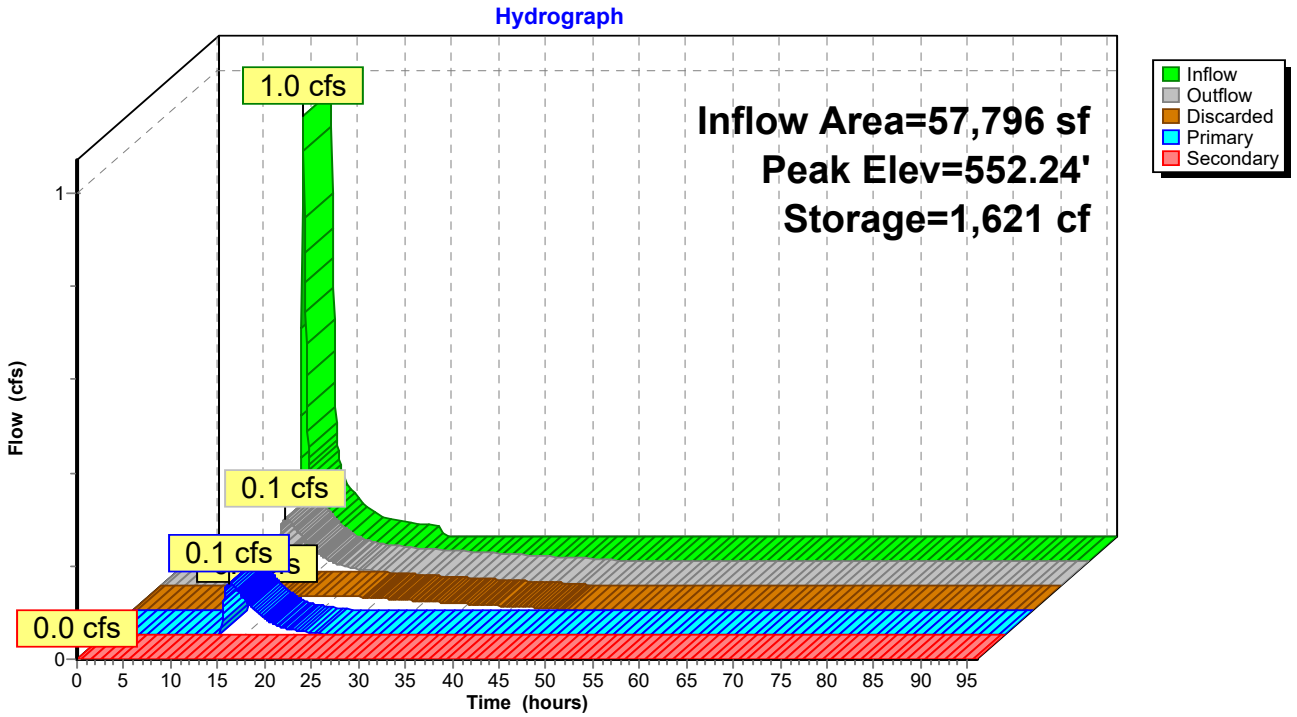
Device	Routing	Invert	Outlet Devices
#1	Primary	550.00'	**12.0" Round Culvert** L= 24.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 550.00' / 549.50' S= 0.0208 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	552.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	553.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#4	Discarded	551.00'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 548.00'

Discarded OutFlow Max=0.0 cfs @ 13.25 hrs HW=552.24' (Free Discharge)
└**4=Exfiltration** (Controls 0.0 cfs)

Primary OutFlow Max=0.1 cfs @ 13.25 hrs HW=552.24' (Free Discharge)
└**1=Culvert** (Passes 0.1 cfs of 5.0 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.1 cfs @ 1.65 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=551.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond P1001 P: Pond P1001 P



Summary for Pond P1200 P: Pond P1200 P

Inflow Area = 18,672 sf, 12.52% Impervious, Inflow Depth = 1.15" for 2-Year event
Inflow = 0.5 cfs @ 12.13 hrs, Volume= 1,793 cf
Outflow = 0.1 cfs @ 12.59 hrs, Volume= 1,793 cf, Atten= 75%, Lag= 27.8 min
Discarded = 0.0 cfs @ 12.59 hrs, Volume= 1,042 cf
Primary = 0.1 cfs @ 12.59 hrs, Volume= 750 cf
Routed to Link L4 P : Duval

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 533.74' @ 12.59 hrs Surf.Area= 932 sf Storage= 707 cf

Plug-Flow detention time= 383.7 min calculated for 1,793 cf (100% of inflow)
Center-of-Mass det. time= 383.3 min (1,241.2 - 857.9)

Volume	Invert	Avail.Storage	Storage Description
#1	532.00'	4,888 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

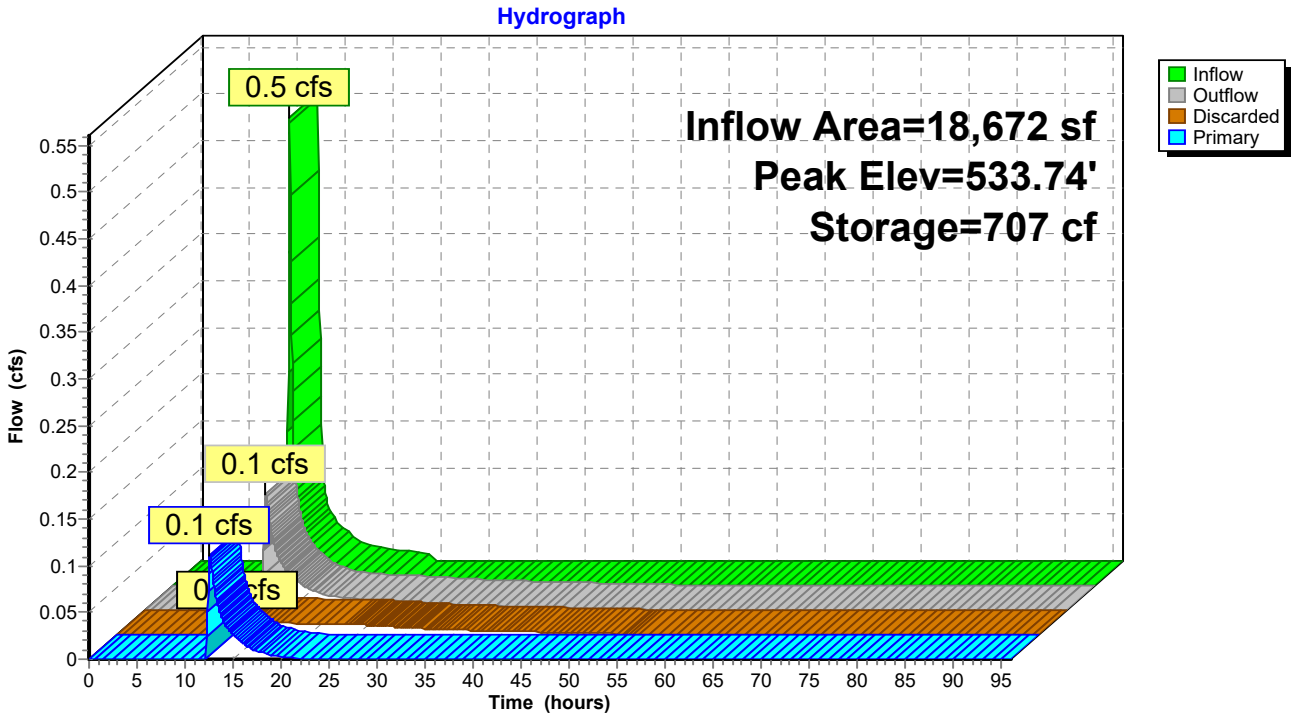
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
532.00	50	0	0
533.00	390	220	220
534.00	1,125	758	978
536.00	2,785	3,910	4,888

Device	Routing	Invert	Outlet Devices
#1	Primary	526.19'	**12.0" Round Culvert** L= 59.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 526.19' / 521.49' S= 0.0797 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	533.50'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	535.00'	**16.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#4	Discarded	532.00'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 530.00'

Discarded OutFlow Max=0.0 cfs @ 12.59 hrs HW=533.74' (Free Discharge)
└**4=Exfiltration** (Controls 0.0 cfs)

Primary OutFlow Max=0.1 cfs @ 12.59 hrs HW=533.74' (Free Discharge)
└**1=Culvert** (Passes 0.1 cfs of 10.0 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.1 cfs @ 1.66 fps)
  └**3=Sharp-Crested Vee/Trap Weir** (Controls 0.0 cfs)

Pond P1200 P: Pond P1200 P



Summary for Pond P1203 P: Pond P1203 P

Inflow Area = 9,554 sf, 26.18% Impervious, Inflow Depth = 1.43" for 2-Year event
Inflow = 0.4 cfs @ 12.10 hrs, Volume= 1,140 cf
Outflow = 0.3 cfs @ 12.14 hrs, Volume= 1,140 cf, Atten= 12%, Lag= 2.8 min
Discarded = 0.0 cfs @ 12.14 hrs, Volume= 74 cf
Primary = 0.3 cfs @ 12.14 hrs, Volume= 1,066 cf
Routed to Link L4 P : Duval

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 526.36' @ 12.14 hrs Surf.Area= 271 sf Storage= 73 cf

Plug-Flow detention time= 18.8 min calculated for 1,140 cf (100% of inflow)
Center-of-Mass det. time= 19.2 min (857.9 - 838.7)

Volume	Invert	Avail.Storage	Storage Description
#1	525.50'	1,340 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

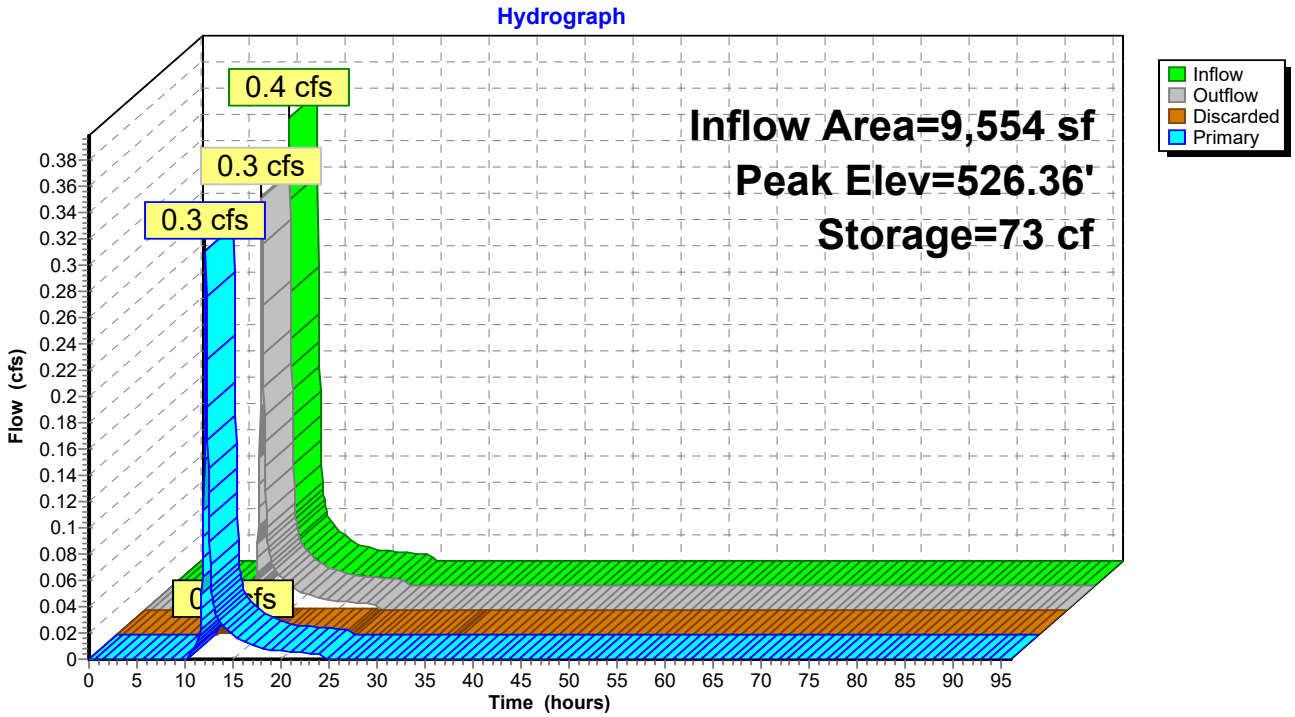
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
525.50	10	0	0
526.00	50	15	15
528.00	1,275	1,325	1,340

Device	Routing	Invert	Outlet Devices
#1	Primary	521.07'	**12.0" Round Culvert** L= 34.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 521.07' / 518.34' S= 0.0803 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	526.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	527.00'	**16.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#4	Discarded	525.50'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 518.00'

Discarded OutFlow Max=0.0 cfs @ 12.14 hrs HW=526.36' (Free Discharge)
└**4=Exfiltration** (Controls 0.0 cfs)

Primary OutFlow Max=0.3 cfs @ 12.14 hrs HW=526.36' (Free Discharge)
└**1=Culvert** (Passes 0.3 cfs of 8.3 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.3 cfs @ 2.04 fps)
  └**3=Sharp-Crested Vee/Trap Weir** (Controls 0.0 cfs)

Pond P1203 P: Pond P1203 P



Summary for Pond P1301 P: Pond P1301 P

Inflow Area = 7,597 sf, 23.36% Impervious, Inflow Depth = 1.34" for 2-Year event
Inflow = 0.3 cfs @ 12.10 hrs, Volume= 846 cf
Outflow = 0.1 cfs @ 12.33 hrs, Volume= 846 cf, Atten= 55%, Lag= 13.8 min
Discarded = 0.0 cfs @ 12.33 hrs, Volume= 367 cf
Primary = 0.1 cfs @ 12.33 hrs, Volume= 480 cf
Routed to Link L4 P : Duval

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 526.24' @ 12.33 hrs Surf.Area= 423 sf Storage= 265 cf

Plug-Flow detention time= 291.1 min calculated for 846 cf (100% of inflow)
Center-of-Mass det. time= 290.9 min (1,136.9 - 846.0)

Volume	Invert	Avail.Storage	Storage Description
#1	524.80'	1,920 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

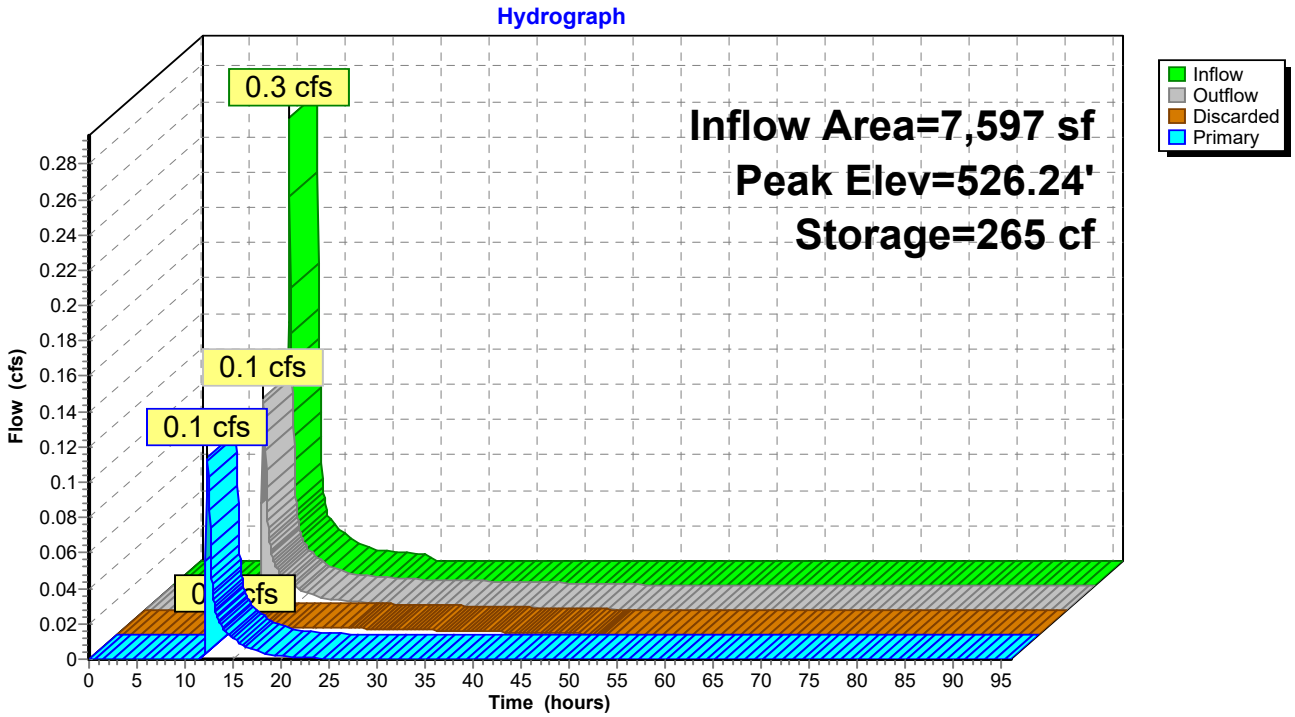
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
524.80	20	0	0
526.00	280	180	180
528.00	1,460	1,740	1,920

Device	Routing	Invert	Outlet Devices
#1	Primary	521.02'	**12.0" Round Culvert** L= 39.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 521.02' / 517.91' S= 0.0797 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	526.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	527.00'	**16.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#4	Discarded	524.80'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 518.00'

Discarded OutFlow Max=0.0 cfs @ 12.33 hrs HW=526.24' (Free Discharge)
└**4=Exfiltration** (Controls 0.0 cfs)

Primary OutFlow Max=0.1 cfs @ 12.33 hrs HW=526.24' (Free Discharge)
└**1=Culvert** (Passes 0.1 cfs of 8.2 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.1 cfs @ 1.67 fps)
  └**3=Sharp-Crested Vee/Trap Weir** (Controls 0.0 cfs)

Pond P1301 P: Pond P1301 P



Summary for Pond P901 P: Pond P901 P

Inflow Area = 52,708 sf, 17.67% Impervious, Inflow Depth = 1.21" for 2-Year event
Inflow = 1.6 cfs @ 12.10 hrs, Volume= 5,323 cf
Outflow = 0.1 cfs @ 15.20 hrs, Volume= 5,323 cf, Atten= 94%, Lag= 185.7 min
Discarded = 0.1 cfs @ 15.20 hrs, Volume= 4,738 cf
Primary = 0.0 cfs @ 15.20 hrs, Volume= 584 cf
Routed to Link L4 P : Duval
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link L4 P : Duval

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 535.63' @ 15.20 hrs Surf.Area= 3,498 sf Storage= 3,149 cf

Plug-Flow detention time= 696.8 min calculated for 5,323 cf (100% of inflow)
Center-of-Mass det. time= 696.5 min (1,549.1 - 852.7)

Volume	Invert	Avail.Storage	Storage Description
#1	533.50'	18,803 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
533.50	20	0	0
534.00	270	73	73
536.00	4,225	4,495	4,568
538.00	10,010	14,235	18,803

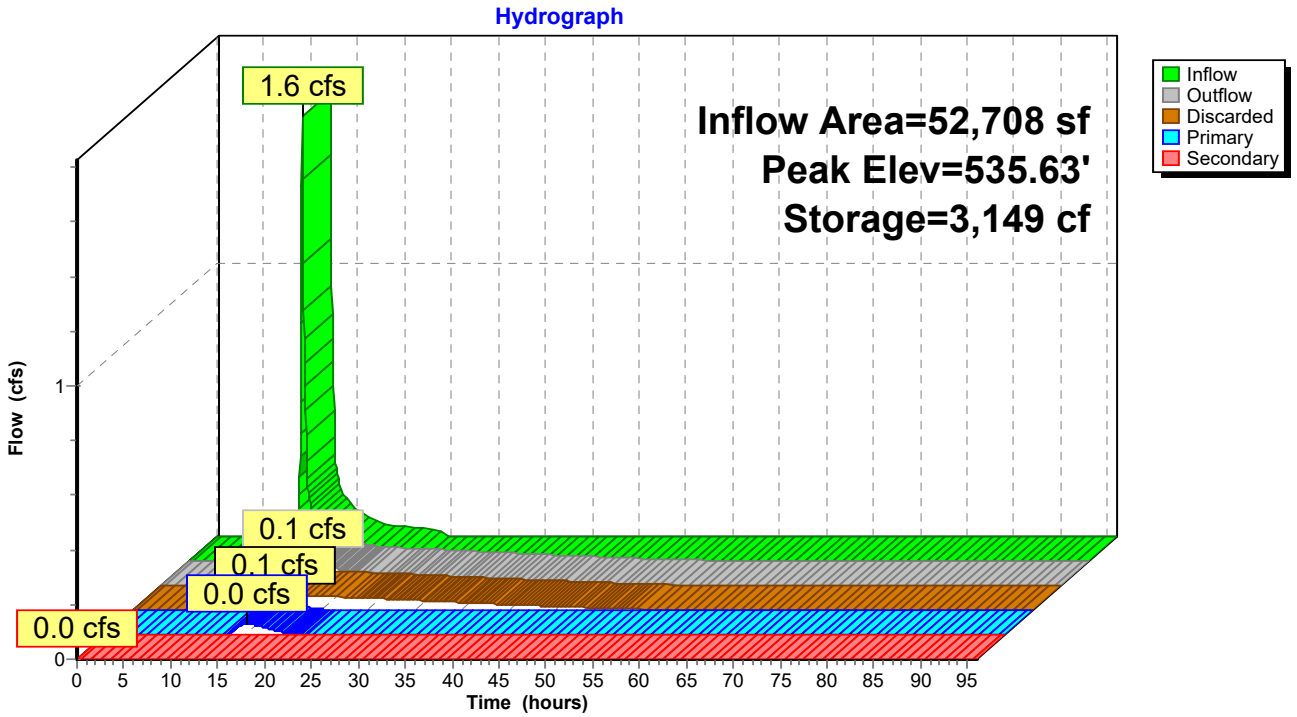
Device	Routing	Invert	Outlet Devices
#1	Primary	531.00'	**12.0" Round Culvert** L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 531.00' / 530.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	535.50'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	537.00'	**16.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#4	Secondary	537.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	533.50'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 531.00'

Discarded OutFlow Max=0.1 cfs @ 15.20 hrs HW=535.63' (Free Discharge)
└**5=Exfiltration** (Controls 0.1 cfs)

Primary OutFlow Max=0.0 cfs @ 15.20 hrs HW=535.63' (Free Discharge)
└**1=Culvert** (Passes 0.0 cfs of 7.7 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 0.0 cfs @ 1.24 fps)
└**3=Sharp-Crested Rectangular Weir** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=533.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond P901 P: Pond P901 P

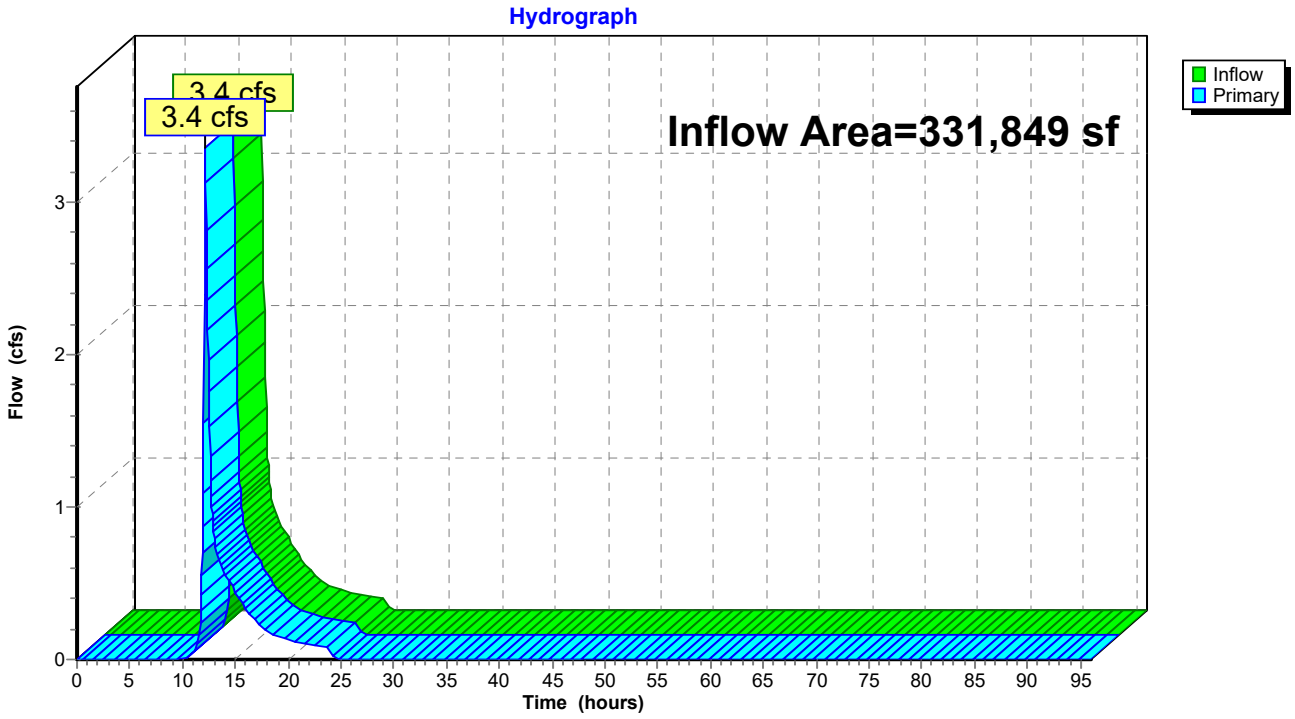


Summary for Link L4 P: Duval

Inflow Area = 331,849 sf, 11.01% Impervious, Inflow Depth = 0.64" for 2-Year event
Inflow = 3.4 cfs @ 12.15 hrs, Volume= 17,670 cf
Primary = 3.4 cfs @ 12.15 hrs, Volume= 17,670 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link L4 P: Duval



Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 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 S1000 P: Subcat S1000 P Runoff Area=38,088 sf 5.73% Impervious Runoff Depth=2.21"
Flow Length=355' Tc=12.5 min CN=74 Runoff=1.8 cfs 7,001 cf

Subcatchment S1001 P: Subcat S1001 P Runoff Area=57,796 sf 14.28% Impervious Runoff Depth=1.89"
Flow Length=495' Tc=11.1 min CN=70 Runoff=2.4 cfs 9,099 cf

Subcatchment S1100 P: Subcat S1100 P Runoff Area=50,836 sf 0.00% Impervious Runoff Depth=1.06"
Flow Length=510' Tc=15.3 min CN=58 Runoff=0.9 cfs 4,493 cf

Subcatchment S1101 P: Subcat S1101 P Runoff Area=19,869 sf 0.00% Impervious Runoff Depth=1.81"
Flow Length=210' Tc=11.4 min CN=69 Runoff=0.8 cfs 3,002 cf

Subcatchment S1200 P: Subcat S1200 P Runoff Area=18,672 sf 12.52% Impervious Runoff Depth=2.37"
Flow Length=135' Tc=8.5 min CN=76 Runoff=1.1 cfs 3,690 cf

Subcatchment S1201 P: Subcat S1201 P Runoff Area=16,267 sf 30.66% Impervious Runoff Depth=2.81"
Tc=6.0 min CN=81 Runoff=1.2 cfs 3,808 cf

Subcatchment S1202 P: Subcat S1202 P Runoff Area=5,851 sf 42.74% Impervious Runoff Depth=3.09"
Tc=6.0 min CN=84 Runoff=0.5 cfs 1,506 cf

Subcatchment S1203 P: Subcat S1203 P Runoff Area=3,703 sf 0.00% Impervious Runoff Depth=2.21"
Tc=6.0 min CN=74 Runoff=0.2 cfs 681 cf

Subcatchment S1300 P: Subcat S1300 P Runoff Area=14,331 sf 0.00% Impervious Runoff Depth=1.97"
Flow Length=135' Tc=14.1 min CN=71 Runoff=0.6 cfs 2,349 cf

Subcatchment S1301 P: Subcat S1301 P Runoff Area=7,597 sf 23.36% Impervious Runoff Depth=2.63"
Tc=6.0 min CN=79 Runoff=0.5 cfs 1,665 cf

Subcatchment S900 P: Subcat S900 P Runoff Area=46,131 sf 11.22% Impervious Runoff Depth=2.29"
Flow Length=160' Tc=7.3 min CN=75 Runoff=2.7 cfs 8,796 cf

Subcatchment S901 P: Subcat S901 P Runoff Area=52,708 sf 17.67% Impervious Runoff Depth=2.46"
Flow Length=245' Tc=6.3 min CN=77 Runoff=3.4 cfs 10,790 cf

Pond P1001 P: Pond P1001 P Peak Elev=552.99' Storage=3,682 cf Inflow=2.4 cfs 9,099 cf
Discarded=0.1 cfs 2,891 cf Primary=0.4 cfs 6,209 cf Secondary=0.0 cfs 0 cf Outflow=0.4 cfs 9,099 cf

Pond P1200 P: Pond P1200 P Peak Elev=534.28' Storage=1,320 cf Inflow=1.1 cfs 3,690 cf
Discarded=0.0 cfs 1,160 cf Primary=0.3 cfs 2,530 cf Outflow=0.3 cfs 3,690 cf

Pond P1203 P: Pond P1203 P Peak Elev=526.58' Storage=148 cf Inflow=0.7 cfs 2,186 cf
Discarded=0.0 cfs 92 cf Primary=0.5 cfs 2,095 cf Outflow=0.5 cfs 2,186 cf

Pond P1301 P: Pond P1301 P Peak Elev=526.57' Storage=436 cf Inflow=0.5 cfs 1,665 cf
Discarded=0.0 cfs 399 cf Primary=0.3 cfs 1,266 cf Outflow=0.3 cfs 1,665 cf

Pond P901 P: Pond P901 P Peak Elev=536.16' Storage=5,301 cf Inflow=3.4 cfs 10,790 cf
Discarded=0.1 cfs 5,530 cf Primary=0.3 cfs 5,260 cf Secondary=0.0 cfs 0 cf Outflow=0.4 cfs 10,790 cf

Link L4 P: Duval Inflow=8.5 cfs 46,808 cf
Primary=8.5 cfs 46,808 cf

Total Runoff Area = 331,849 sf Runoff Volume = 56,880 cf Average Runoff Depth = 2.06"
88.99% Pervious = 295,323 sf 11.01% Impervious = 36,526 sf

Summary for Subcatchment S1000 P: Subcat S1000 P

Tc based on lawn in front of home

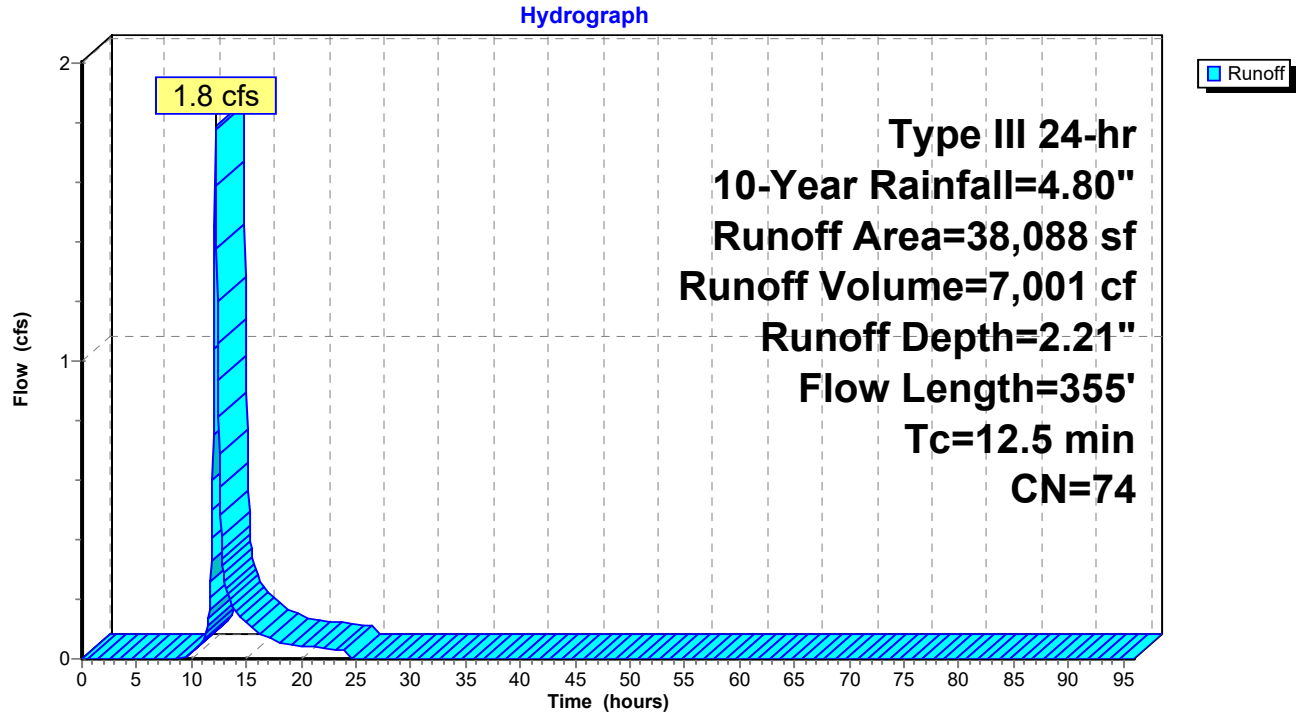
Runoff = 1.8 cfs @ 12.18 hrs, Volume= 7,001 cf, Depth= 2.21"
Routed to Link L4 P : Duval

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
819	98	Paved parking, HSG C
1,364	98	Roofs, HSG C
3,941	74	>75% Grass cover, Good, HSG C
1,040	70	Woods, Good, HSG C
16,598	70	Woods, Good, HSG C
14,326	74	>75% Grass cover, Good, HSG C
38,088	74	Weighted Average
35,905		94.27% Pervious Area
2,183		5.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.10		**Sheet Flow, uppermost** Grass: Dense n= 0.240 P2= 3.20"
4.3	305	0.0560	1.18		**Shallow Concentrated Flow, to offsite** Woodland Kv= 5.0 fps
12.5	355	Total			

Subcatchment S1000 P: Subcat S1000 P



Summary for Subcatchment S1001 P: Subcat S1001 P

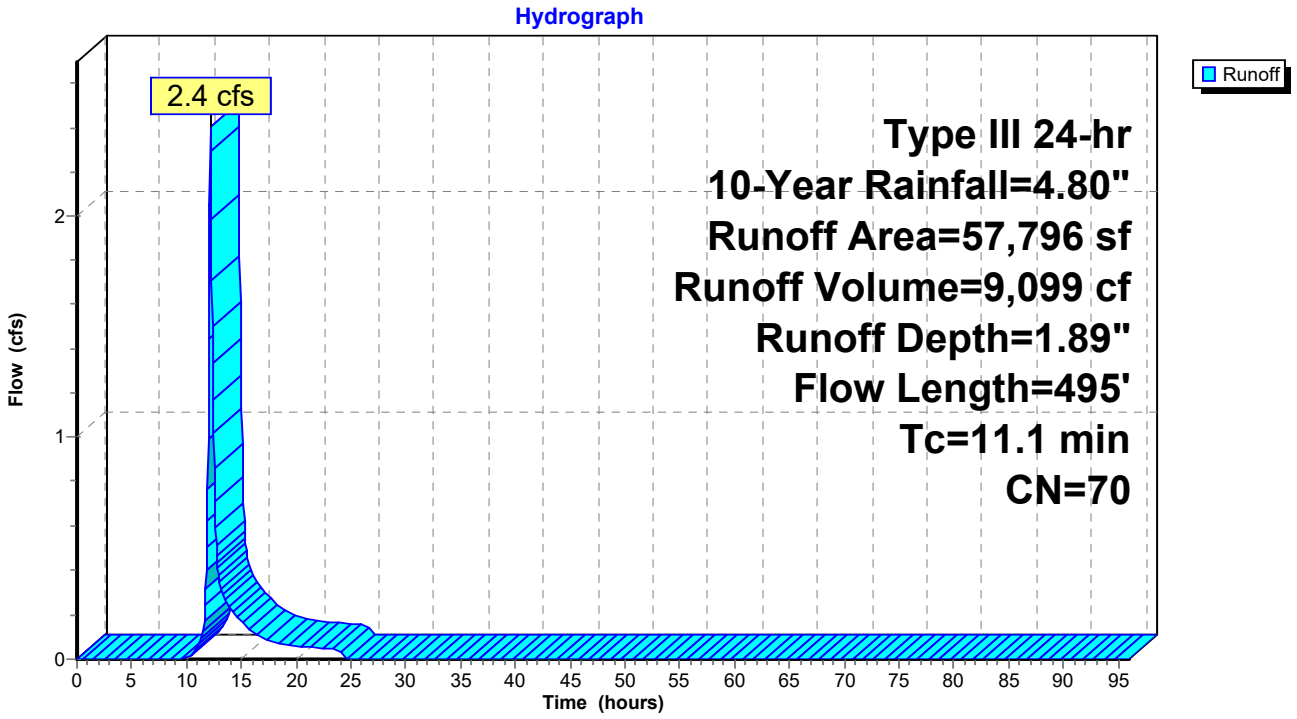
Runoff = 2.4 cfs @ 12.16 hrs, Volume= 9,099 cf, Depth= 1.89"
Routed to Pond P1001 P : Pond P1001 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
11,233	74	>75% Grass cover, Good, HSG C
5,474	74	>75% Grass cover, Good, HSG C
21	74	>75% Grass cover, Good, HSG C
890	98	Roofs, HSG B
639	98	Paved parking, HSG B
7,565	61	>75% Grass cover, Good, HSG B
16,153	55	Woods, Good, HSG B
6,397	70	Woods, Good, HSG C
1,874	70	Woods, Good, HSG C
825	70	Woods, Good, HSG C
3,406	98	Paved parking, HSG C
3,319	98	Roofs, HSG C
57,796	70	Weighted Average
49,542		85.72% Pervious Area
8,254		14.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	50	0.1500	0.09		**Sheet Flow, uppermost**
					Woods: Dense underbrush n= 0.800 P2= 3.20"
1.5	445	0.1000	5.09		**Shallow Concentrated Flow, to basin 1001**
					Unpaved Kv= 16.1 fps
11.1	495	Total			

Subcatchment S1001 P: Subcat S1001 P



Summary for Subcatchment S1100 P: Subcat S1100 P

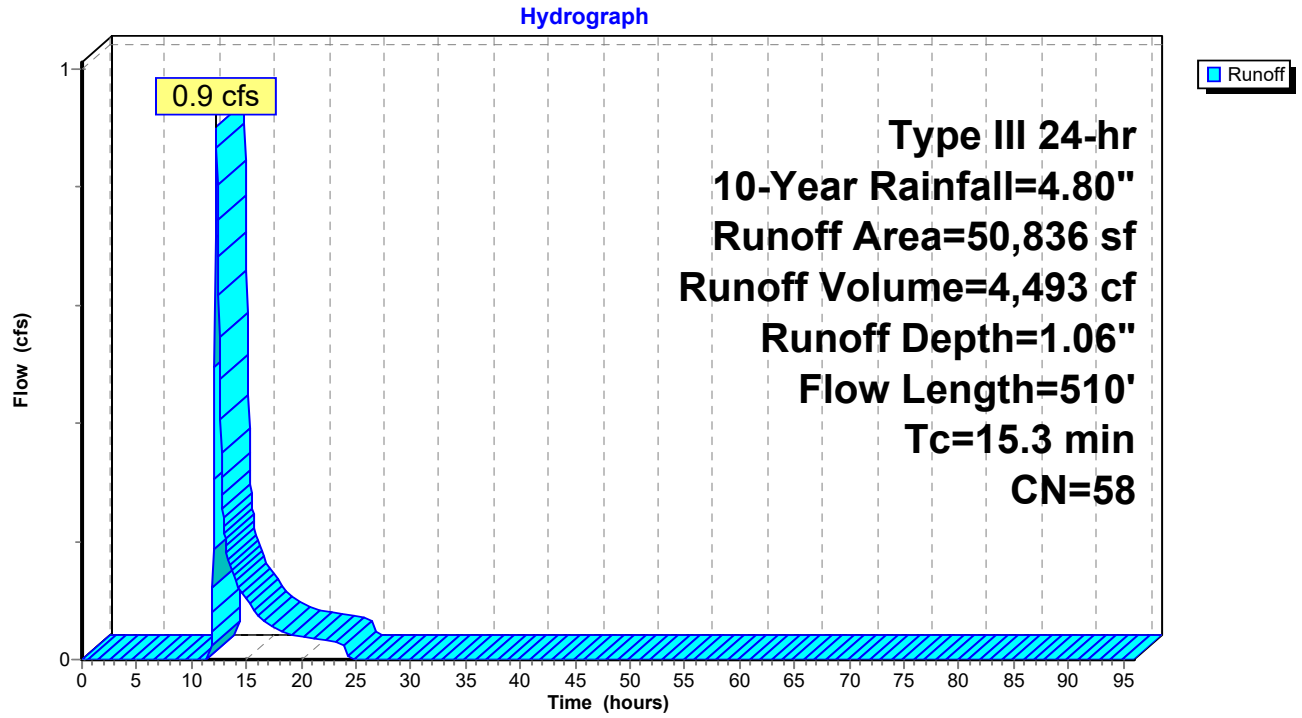
Runoff = 0.9 cfs @ 12.25 hrs, Volume= 4,493 cf, Depth= 1.06"
Routed to Link L4 P : Duval

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
36,361	55	Woods, Good, HSG B
4,522	61	>75% Grass cover, Good, HSG B
941	61	>75% Grass cover, Good, HSG B
3,042	61	>75% Grass cover, Good, HSG B
1,919	74	>75% Grass cover, Good, HSG C
4,051	70	Woods, Good, HSG C
50,836	58	Weighted Average
50,836		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.3	50	0.1000	0.07		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
3.3	135	0.0740	0.68		**Shallow Concentrated Flow, above channel** Forest w/Heavy Litter Kv= 2.5 fps
0.7	325	0.1020	7.77	155.45	**Trap/Vee/Rect Channel Flow, channel** Bot.W=4.00' D=2.00' Z= 3.0 '/' Top.W=16.00' n= 0.069 Riprap, 6-inch
15.3	510	Total			

Subcatchment S1100 P: Subcat S1100 P



Summary for Subcatchment S1101 P: Subcat S1101 P

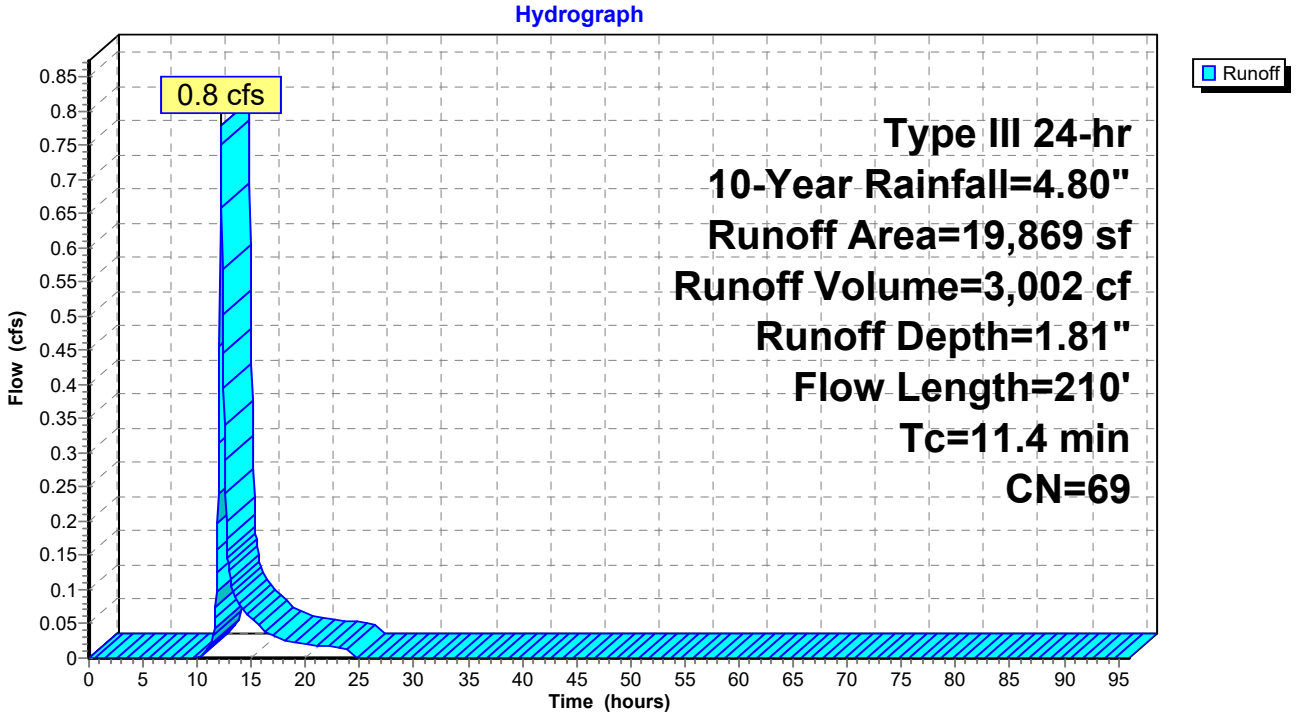
Runoff = 0.8 cfs @ 12.17 hrs, Volume= 3,002 cf, Depth= 1.81"
Routed to Link L4 P : Duval

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
3,600	55	Woods, Good, HSG B
243	61	>75% Grass cover, Good, HSG B
8,223	74	>75% Grass cover, Good, HSG C
7,803	70	Woods, Good, HSG C
19,869	69	Weighted Average
19,869		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.2000	0.10		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
2.9	160	0.1380	0.93		**Shallow Concentrated Flow, to offsite** Forest w/Heavy Litter Kv= 2.5 fps
11.4	210	Total			

Subcatchment S1101 P: Subcat S1101 P



Summary for Subcatchment S1200 P: Subcat S1200 P

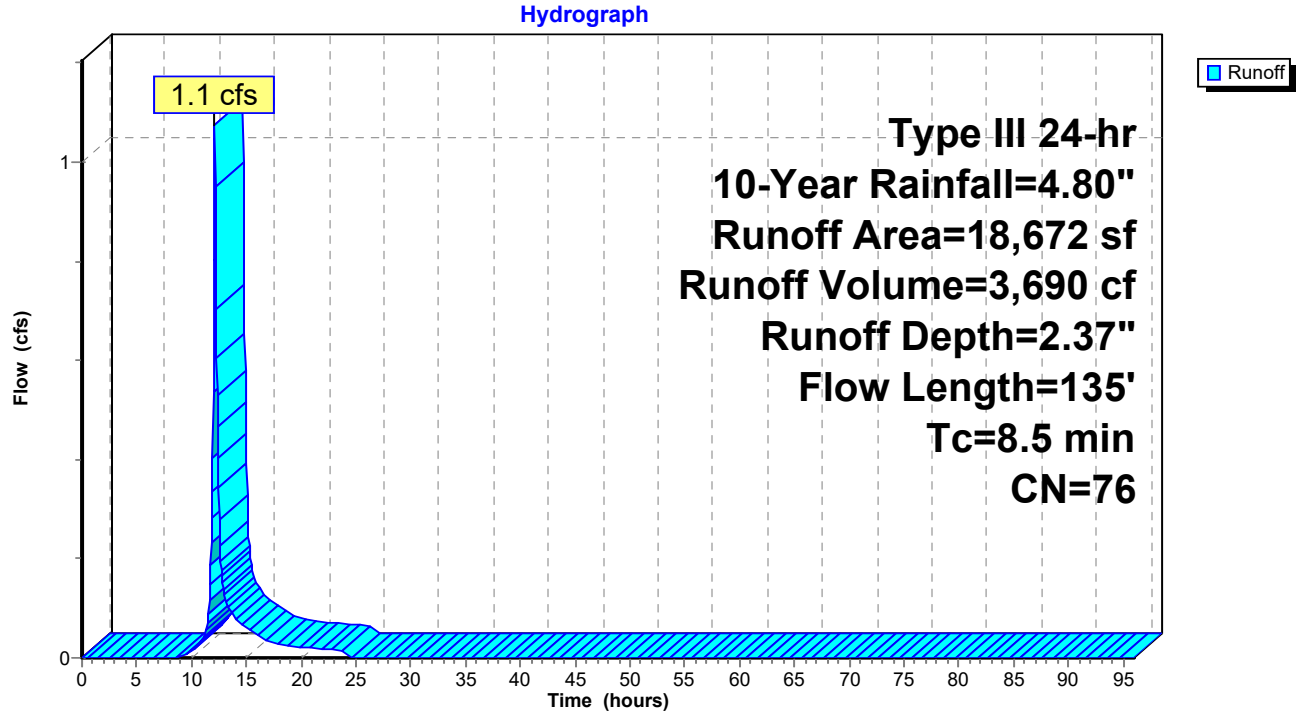
Runoff = 1.1 cfs @ 12.12 hrs, Volume= 3,690 cf, Depth= 2.37"
Routed to Pond P1200 P : Pond P1200 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
404	70	Woods, Good, HSG C
2,337	98	Paved parking, HSG C
9,988	74	>75% Grass cover, Good, HSG C
5,943	70	Woods, Good, HSG C
18,672	76	Weighted Average
16,335		87.48% Pervious Area
2,337		12.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	50	0.0700	0.11		**Sheet Flow, uppermost** Woods: Light underbrush n= 0.400 P2= 3.20"
1.0	85	0.0750	1.37		**Shallow Concentrated Flow, to basin 1200** Woodland Kv= 5.0 fps
8.5	135	Total			

Subcatchment S1200 P: Subcat S1200 P



Summary for Subcatchment S1201 P: Subcat S1201 P

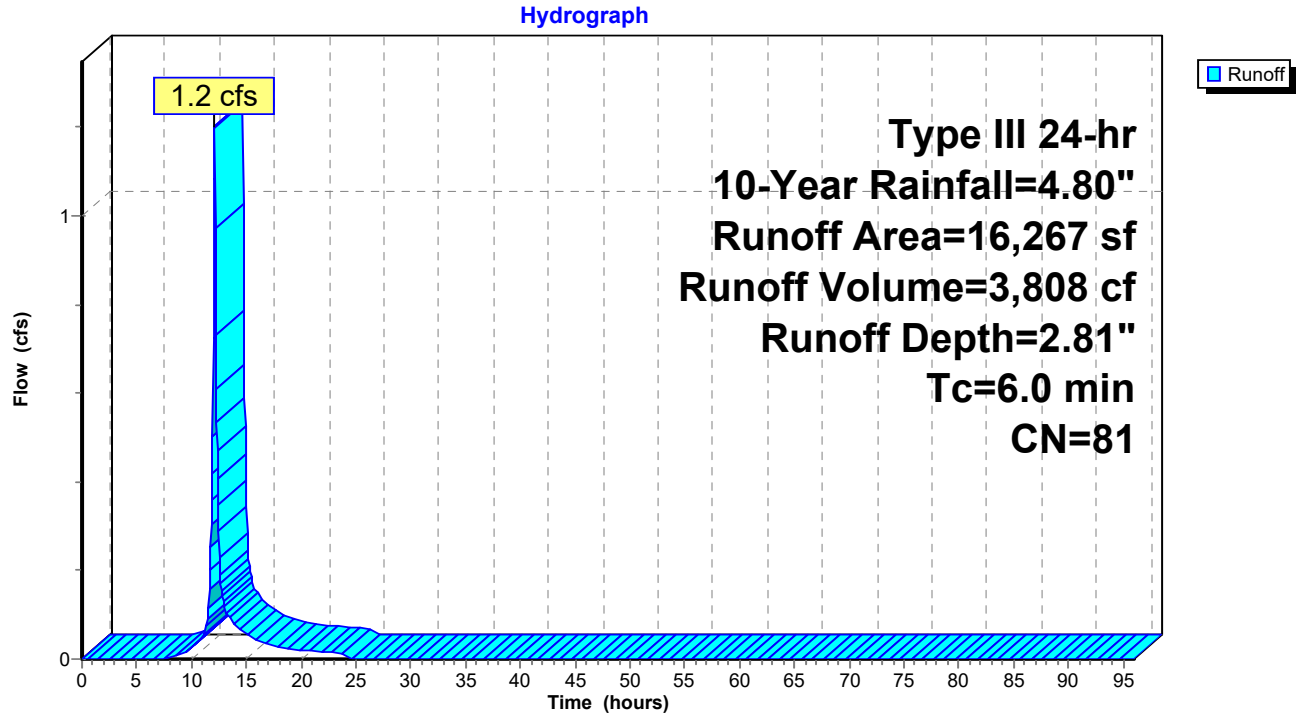
Runoff = 1.2 cfs @ 12.09 hrs, Volume= 3,808 cf, Depth= 2.81"
Routed to Link L4 P : Duval

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
1,396	70	Woods, Good, HSG C
6,007	74	>75% Grass cover, Good, HSG C
3,092	74	>75% Grass cover, Good, HSG C
4,184	98	Paved roads w/curbs & sewers, HSG C
804	98	Paved parking, HSG C
784	74	>75% Grass cover, Good, HSG C
16,267	81	Weighted Average
11,279		69.34% Pervious Area
4,988		30.66% Impervious Area

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

Subcatchment S1201 P: Subcat S1201 P



Summary for Subcatchment S1202 P: Subcat S1202 P

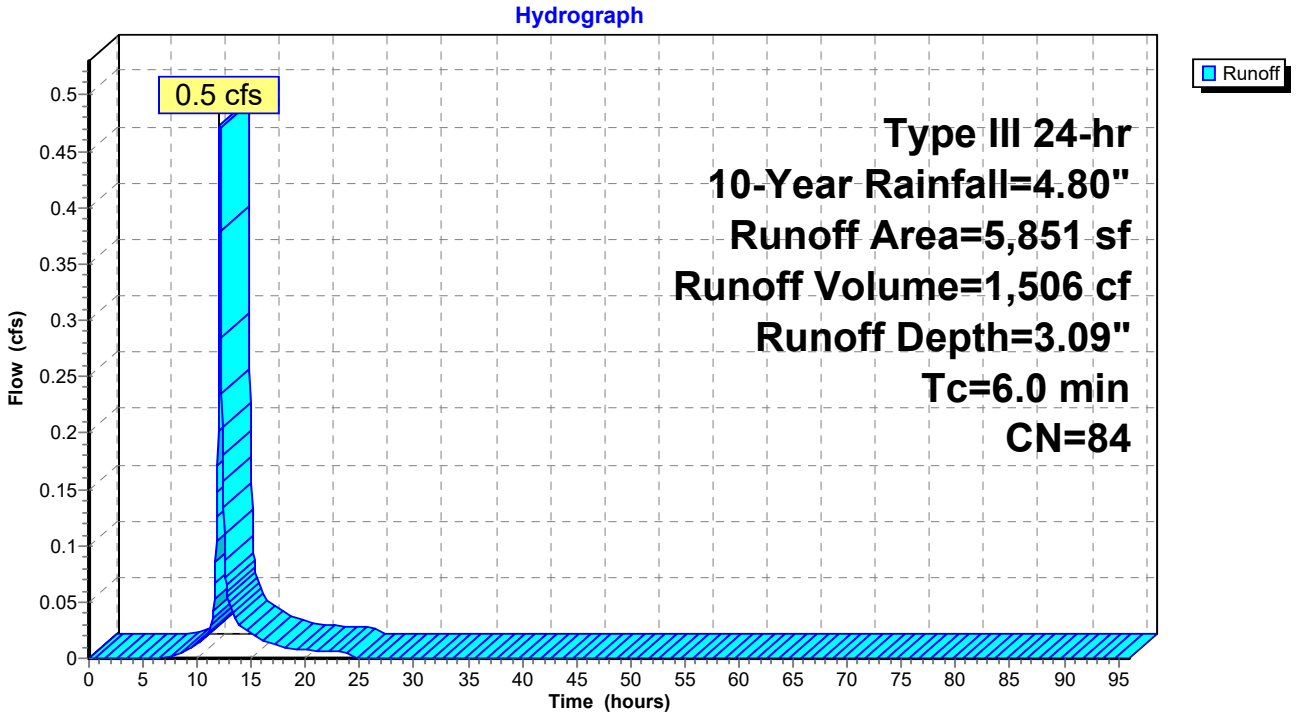
Runoff = 0.5 cfs @ 12.09 hrs, Volume= 1,506 cf, Depth= 3.09"
Routed to Pond P1203 P : Pond P1203 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
706	74	>75% Grass cover, Good, HSG C
711	98	Paved parking, HSG C
1,790	98	Paved roads w/curbs & sewers, HSG C
2,644	74	>75% Grass cover, Good, HSG C
5,851	84	Weighted Average
3,350		57.26% Pervious Area
2,501		42.74% Impervious Area

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

Subcatchment S1202 P: Subcat S1202 P



Summary for Subcatchment S1203 P: Subcat S1203 P

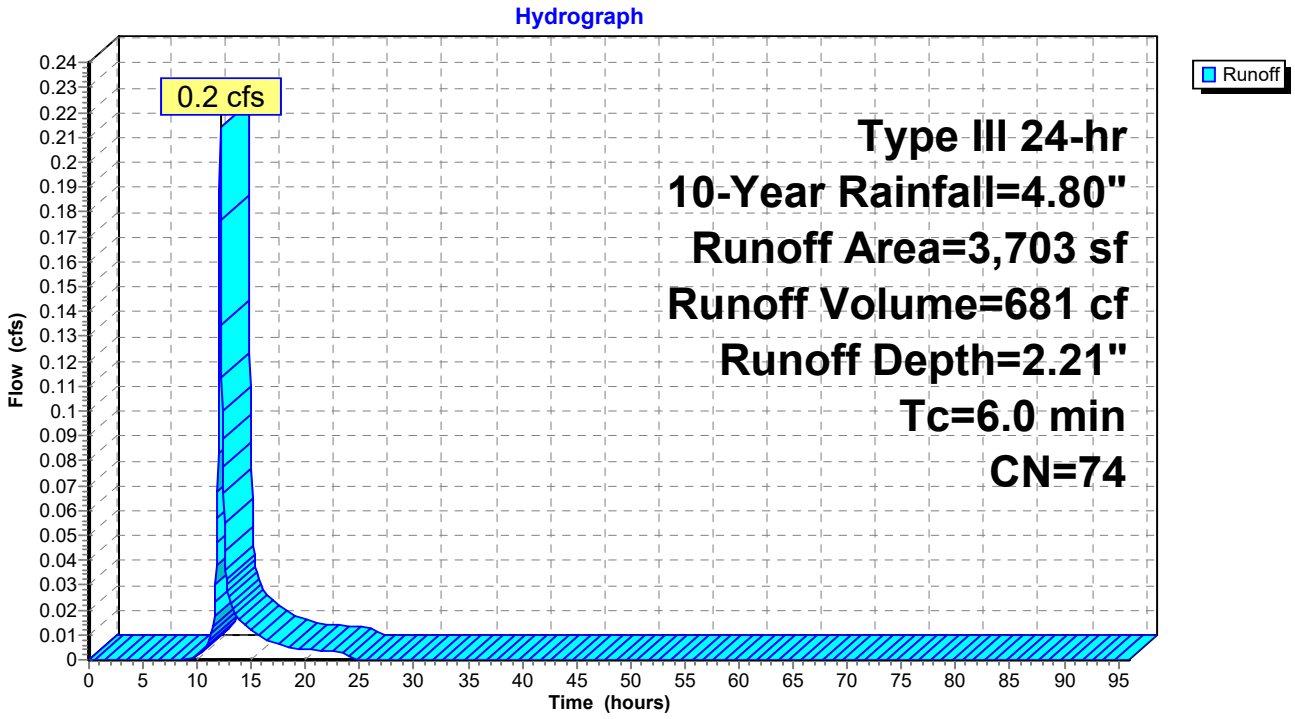
Runoff = 0.2 cfs @ 12.10 hrs, Volume= 681 cf, Depth= 2.21"
Routed to Pond P1203 P : Pond P1203 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
354	70	Woods, Good, HSG C
3,349	74	>75% Grass cover, Good, HSG C
3,703	74	Weighted Average
3,703		100.00% Pervious Area

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

Subcatchment S1203 P: Subcat S1203 P



Summary for Subcatchment S1300 P: Subcat S1300 P

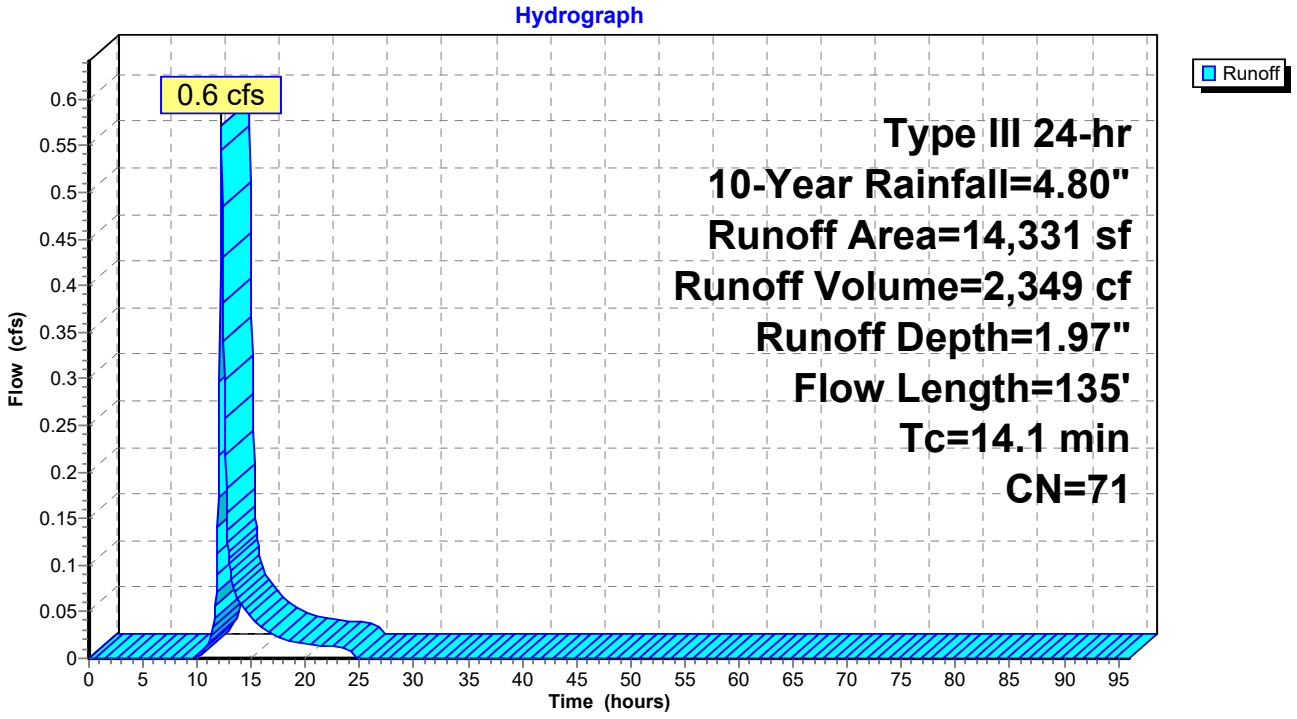
Runoff = 0.6 cfs @ 12.21 hrs, Volume= 2,349 cf, Depth= 1.97"
Routed to Link L4 P : Duval

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
8,396	70	Woods, Good, HSG C
5,299	74	>75% Grass cover, Good, HSG C
636	70	Woods, Good, HSG C
14,331	71	Weighted Average
14,331		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0800	0.07		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
1.8	85	0.1000	0.79		**Shallow Concentrated Flow, to offiste** Forest w/Heavy Litter Kv= 2.5 fps
14.1	135	Total			

Subcatchment S1300 P: Subcat S1300 P



Summary for Subcatchment S1301 P: Subcat S1301 P

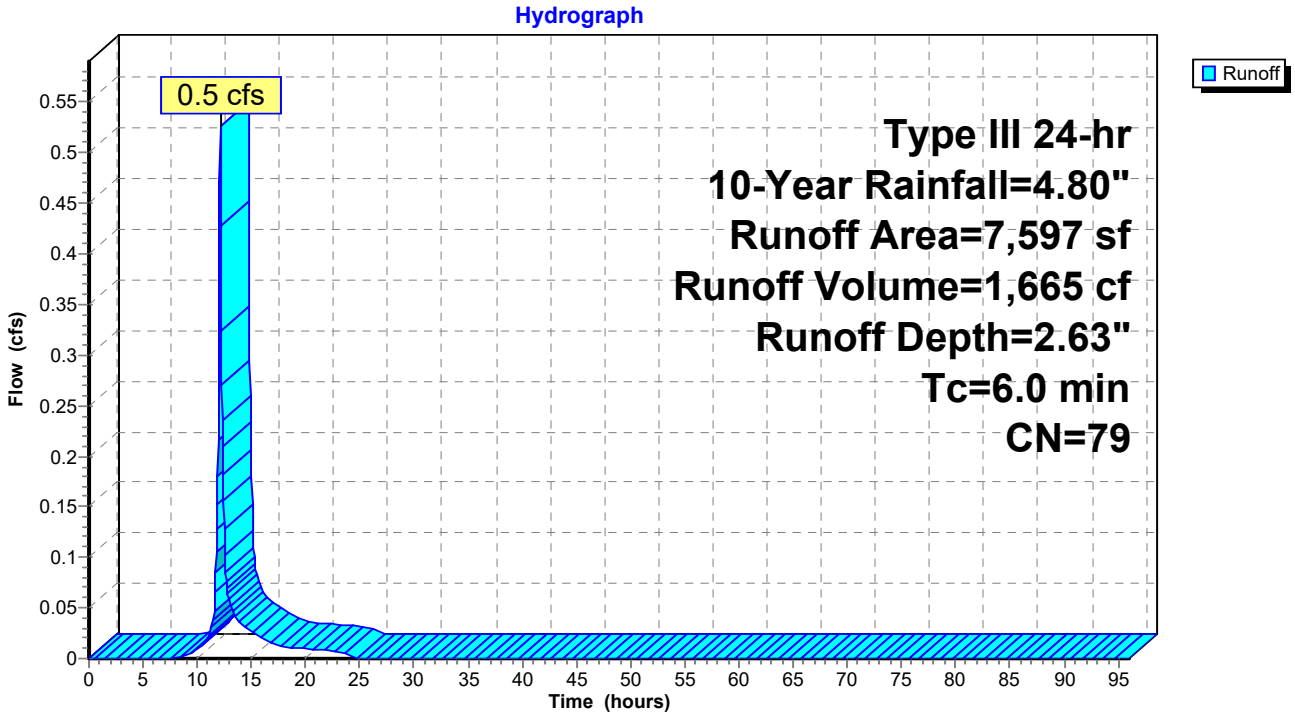
Runoff = 0.5 cfs @ 12.09 hrs, Volume= 1,665 cf, Depth= 2.63"
Routed to Pond P1301 P : Pond P1301 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
1,775	98	Paved roads w/curbs & sewers, HSG C
5,074	74	>75% Grass cover, Good, HSG C
748	70	Woods, Good, HSG C
7,597	79	Weighted Average
5,822		76.64% Pervious Area
1,775		23.36% Impervious Area

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

Subcatchment S1301 P: Subcat S1301 P



Summary for Subcatchment S900 P: Subcat S900 P

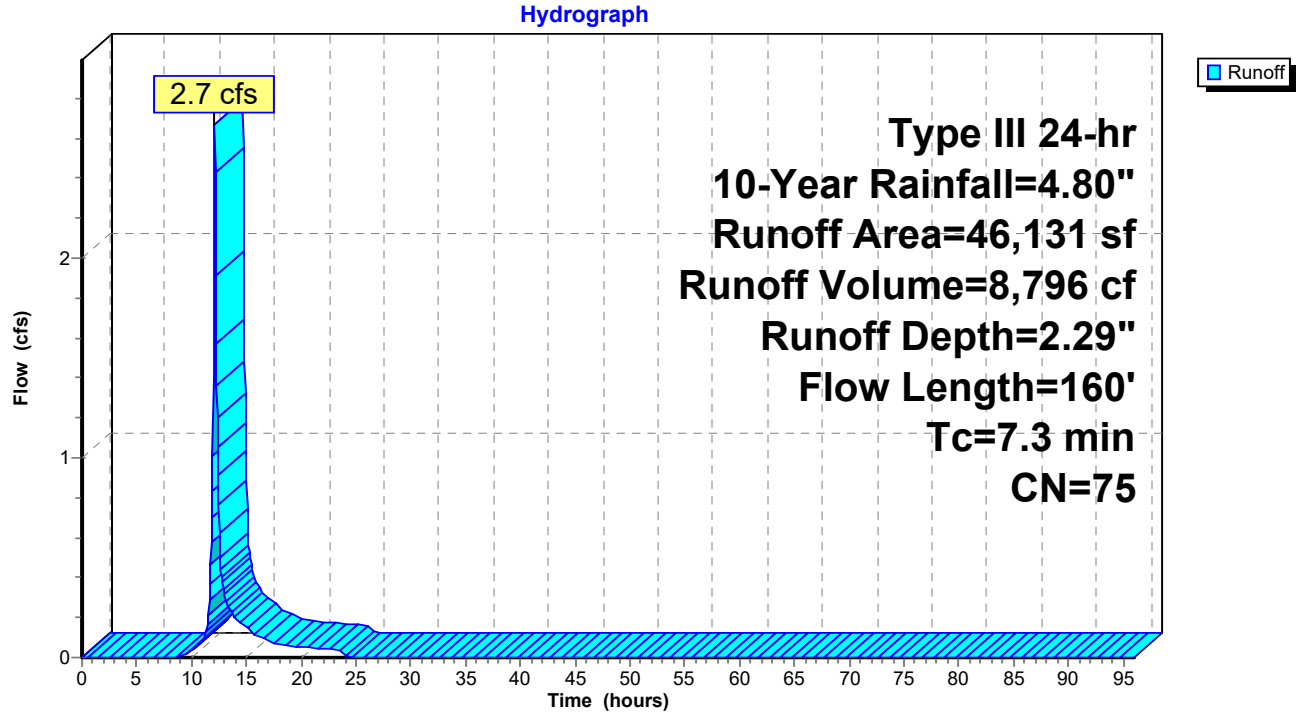
Runoff = 2.7 cfs @ 12.11 hrs, Volume= 8,796 cf, Depth= 2.29"
Routed to Link L4 P : Duval

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
12,641	70	Woods, Good, HSG C
1,863	98	Paved parking, HSG C
3,312	98	Roofs, HSG C
20,219	74	>75% Grass cover, Good, HSG C
2,725	74	>75% Grass cover, Good, HSG C
4,221	70	Woods, Good, HSG C
1,150	70	Woods, Good, HSG C
46,131	75	Weighted Average
40,956		88.78% Pervious Area
5,175		11.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	50	0.1200	0.14		**Sheet Flow, uppermost** Woods: Light underbrush n= 0.400 P2= 3.20"
1.3	110	0.0850	1.46		**Shallow Concentrated Flow, above channel** Woodland Kv= 5.0 fps
7.3	160	Total			

Subcatchment S900 P: Subcat S900 P



Summary for Subcatchment S901 P: Subcat S901 P

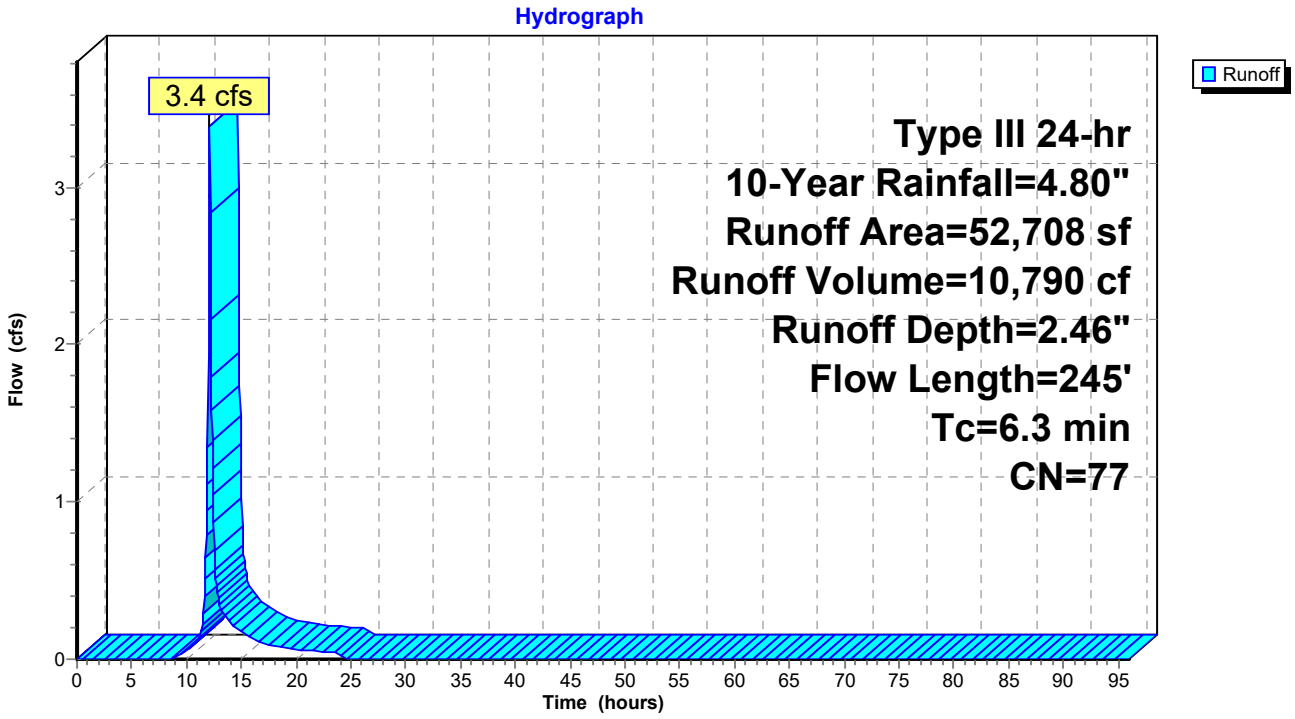
Runoff = 3.4 cfs @ 12.10 hrs, Volume= 10,790 cf, Depth= 2.46"
Routed to Pond P901 P : Pond P901 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.80"

Area (sf)	CN	Description
7,501	70	Woods, Good, HSG C
518	74	>75% Grass cover, Good, HSG C
793	74	>75% Grass cover, Good, HSG C
30	98	Paved parking, HSG C
1,372	98	Paved parking, HSG C
512	98	Paved parking, HSG C
1,164	98	Roofs, HSG C
64	98	Paved parking, HSG C
70	74	>75% Grass cover, Good, HSG C
3,970	70	Woods, Good, HSG C
101	74	>75% Grass cover, Good, HSG C
11,733	74	>75% Grass cover, Good, HSG C
6,171	98	Paved roads w/curbs & sewers, HSG C
18,565	74	>75% Grass cover, Good, HSG C
144	74	>75% Grass cover, Good, HSG C
52,708	77	Weighted Average
43,395		82.33% Pervious Area
9,313		17.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	50	0.1600	0.16		**Sheet Flow, uppermost**
					Woods: Light underbrush n= 0.400 P2= 3.20"
0.9	195	0.0510	3.64		**Shallow Concentrated Flow, above Road A**
					Unpaved Kv= 16.1 fps
6.3	245	Total			

Subcatchment S901 P: Subcat S901 P



Summary for Pond P1001 P: Pond P1001 P

Inflow Area = 57,796 sf, 14.28% Impervious, Inflow Depth = 1.89" for 10-Year event
Inflow = 2.4 cfs @ 12.16 hrs, Volume= 9,099 cf
Outflow = 0.4 cfs @ 12.81 hrs, Volume= 9,099 cf, Atten= 82%, Lag= 38.8 min
Discarded = 0.1 cfs @ 12.81 hrs, Volume= 2,891 cf
Primary = 0.4 cfs @ 12.81 hrs, Volume= 6,209 cf
Routed to Link L4 P : Duval
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link L4 P : Duval

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 552.99' @ 12.81 hrs Surf.Area= 3,180 sf Storage= 3,682 cf

Plug-Flow detention time= 222.5 min calculated for 9,095 cf (100% of inflow)
Center-of-Mass det. time= 223.1 min (1,077.7 - 854.6)

Volume	Invert	Avail.Storage	Storage Description
#1	551.00'	7,500 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
551.00	220	0	0
552.00	2,010	1,115	1,115
554.00	4,375	6,385	7,500

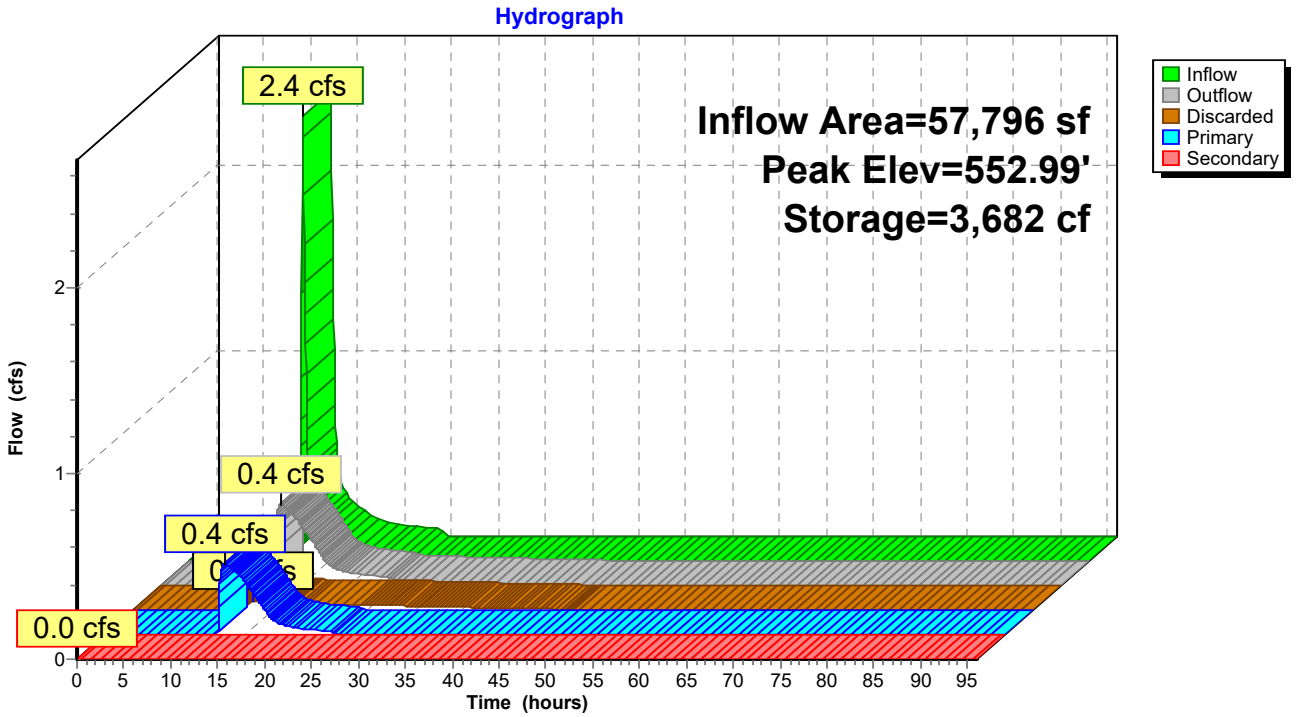
Device	Routing	Invert	Outlet Devices
#1	Primary	550.00'	**12.0" Round Culvert** L= 24.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 550.00' / 549.50' S= 0.0208 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	552.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	553.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#4	Discarded	551.00'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 548.00'

Discarded OutFlow Max=0.1 cfs @ 12.81 hrs HW=552.99' (Free Discharge)
└**4=Exfiltration** (Controls 0.1 cfs)

Primary OutFlow Max=0.4 cfs @ 12.81 hrs HW=552.99' (Free Discharge)
└**1=Culvert** (Passes 0.4 cfs of 6.0 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.4 cfs @ 4.37 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=551.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond P1001 P: Pond P1001 P



Summary for Pond P1200 P: Pond P1200 P

Inflow Area = 18,672 sf, 12.52% Impervious, Inflow Depth = 2.37" for 10-Year event
Inflow = 1.1 cfs @ 12.12 hrs, Volume= 3,690 cf
Outflow = 0.3 cfs @ 12.49 hrs, Volume= 3,690 cf, Atten= 67%, Lag= 22.2 min
Discarded = 0.0 cfs @ 12.49 hrs, Volume= 1,160 cf
Primary = 0.3 cfs @ 12.49 hrs, Volume= 2,530 cf
Routed to Link L4 P : Duval

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 534.28' @ 12.49 hrs Surf.Area= 1,354 sf Storage= 1,320 cf

Plug-Flow detention time= 214.8 min calculated for 3,688 cf (100% of inflow)
Center-of-Mass det. time= 215.7 min (1,052.2 - 836.6)

Volume	Invert	Avail.Storage	Storage Description
#1	532.00'	4,888 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

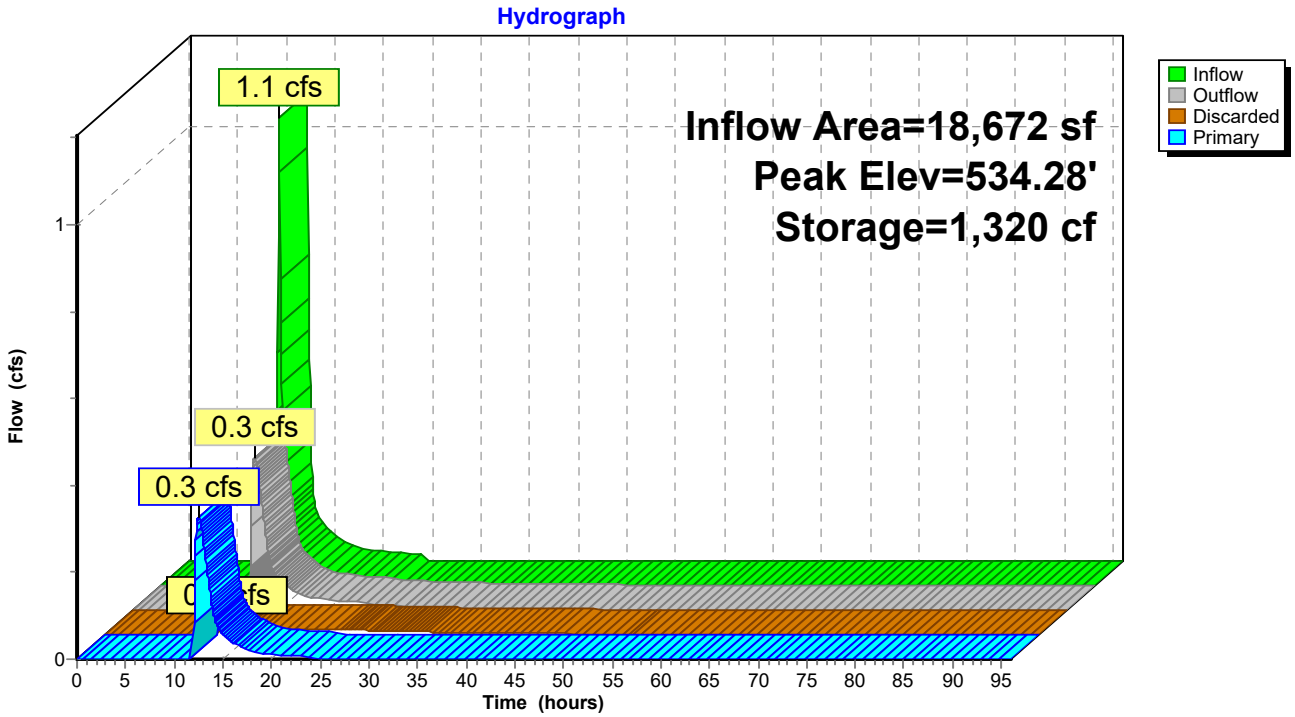
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
532.00	50	0	0
533.00	390	220	220
534.00	1,125	758	978
536.00	2,785	3,910	4,888

Device	Routing	Invert	Outlet Devices
#1	Primary	526.19'	**12.0" Round Culvert** L= 59.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 526.19' / 521.49' S= 0.0797 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	533.50'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	535.00'	**16.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#4	Discarded	532.00'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 530.00'

Discarded OutFlow Max=0.0 cfs @ 12.49 hrs HW=534.28' (Free Discharge)
└**4=Exfiltration** (Controls 0.0 cfs)

Primary OutFlow Max=0.3 cfs @ 12.49 hrs HW=534.28' (Free Discharge)
└**1=Culvert** (Passes 0.3 cfs of 10.4 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.3 cfs @ 3.76 fps)
  └**3=Sharp-Crested Vee/Trap Weir** (Controls 0.0 cfs)

Pond P1200 P: Pond P1200 P



Summary for Pond P1203 P: Pond P1203 P

Inflow Area = 9,554 sf, 26.18% Impervious, Inflow Depth = 2.75" for 10-Year event
Inflow = 0.7 cfs @ 12.09 hrs, Volume= 2,186 cf
Outflow = 0.5 cfs @ 12.16 hrs, Volume= 2,186 cf, Atten= 20%, Lag= 3.9 min
Discarded = 0.0 cfs @ 12.16 hrs, Volume= 92 cf
Primary = 0.5 cfs @ 12.16 hrs, Volume= 2,095 cf
Routed to Link L4 P : Duval

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 526.58' @ 12.16 hrs Surf.Area= 406 sf Storage= 148 cf

Plug-Flow detention time= 12.1 min calculated for 2,185 cf (100% of inflow)
Center-of-Mass det. time= 12.4 min (833.1 - 820.7)

Volume	Invert	Avail.Storage	Storage Description
#1	525.50'	1,340 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

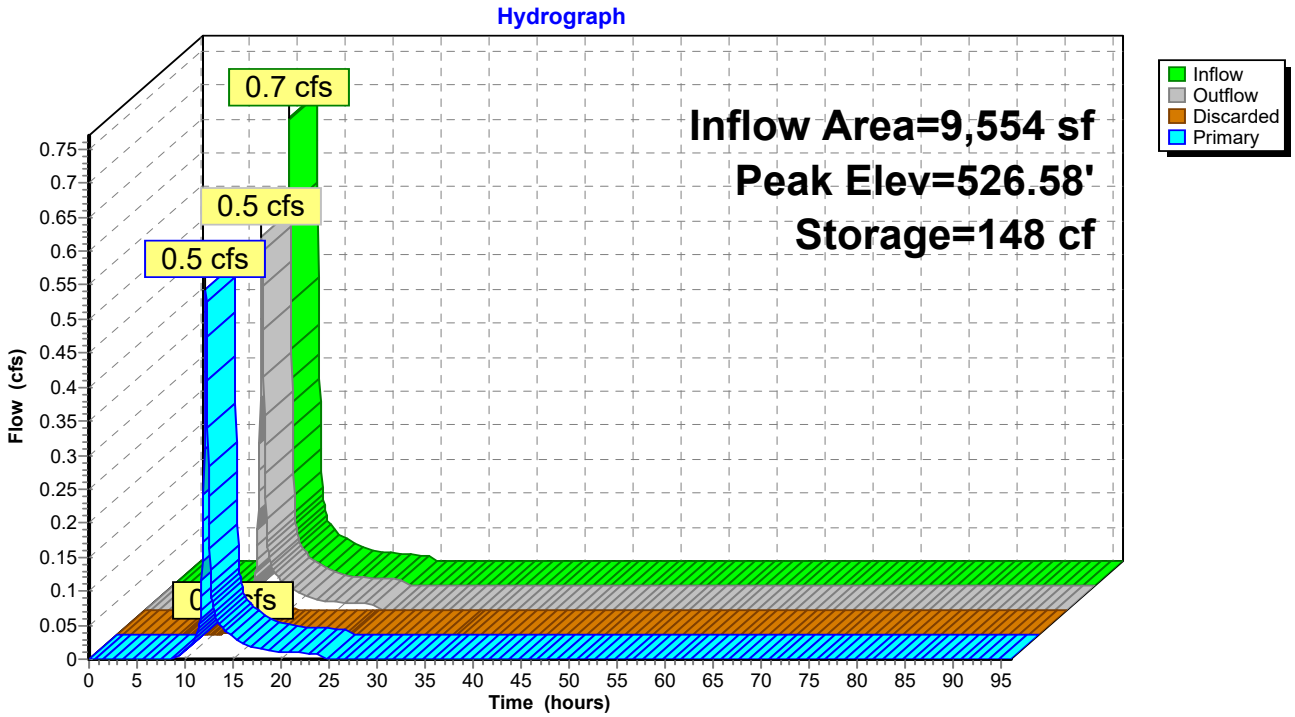
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
525.50	10	0	0
526.00	50	15	15
528.00	1,275	1,325	1,340

Device	Routing	Invert	Outlet Devices
#1	Primary	521.07'	**12.0" Round Culvert** L= 34.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 521.07' / 518.34' S= 0.0803 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	526.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	527.00'	**16.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#4	Discarded	525.50'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 518.00'

Discarded OutFlow Max=0.0 cfs @ 12.16 hrs HW=526.58' (Free Discharge)
└**4=Exfiltration** (Controls 0.0 cfs)

Primary OutFlow Max=0.5 cfs @ 12.16 hrs HW=526.58' (Free Discharge)
└**1=Culvert** (Passes 0.5 cfs of 8.5 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.5 cfs @ 2.76 fps)
  └**3=Sharp-Crested Vee/Trap Weir** (Controls 0.0 cfs)

Pond P1203 P: Pond P1203 P



Summary for Pond P1301 P: Pond P1301 P

Inflow Area = 7,597 sf, 23.36% Impervious, Inflow Depth = 2.63" for 10-Year event
Inflow = 0.5 cfs @ 12.09 hrs, Volume= 1,665 cf
Outflow = 0.3 cfs @ 12.25 hrs, Volume= 1,665 cf, Atten= 48%, Lag= 9.5 min
Discarded = 0.0 cfs @ 12.25 hrs, Volume= 399 cf
Primary = 0.3 cfs @ 12.25 hrs, Volume= 1,266 cf
Routed to Link L4 P : Duval

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 526.57' @ 12.25 hrs Surf.Area= 617 sf Storage= 436 cf

Plug-Flow detention time= 161.7 min calculated for 1,664 cf (100% of inflow)
Center-of-Mass det. time= 162.4 min (988.7 - 826.3)

Volume	Invert	Avail.Storage	Storage Description
#1	524.80'	1,920 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

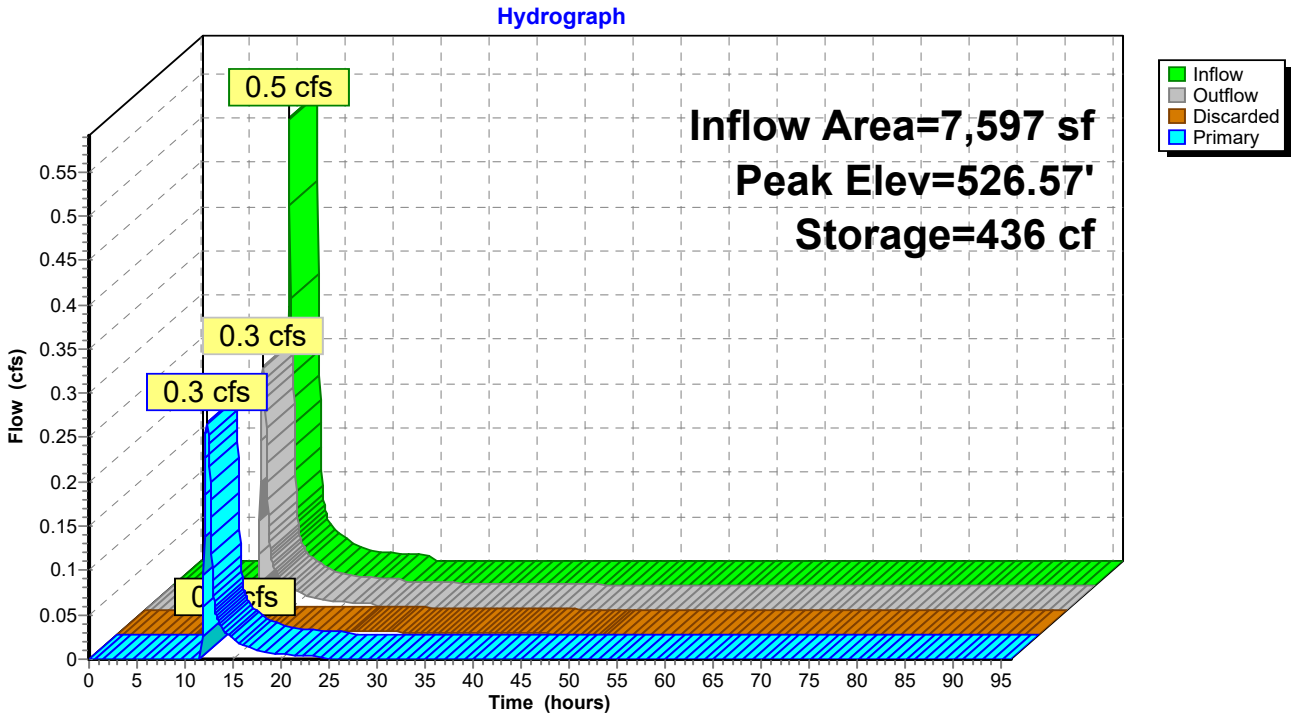
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
524.80	20	0	0
526.00	280	180	180
528.00	1,460	1,740	1,920

Device	Routing	Invert	Outlet Devices
#1	Primary	521.02'	**12.0" Round Culvert** L= 39.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 521.02' / 517.91' S= 0.0797 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	526.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	527.00'	**16.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#4	Discarded	524.80'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 518.00'

Discarded OutFlow Max=0.0 cfs @ 12.25 hrs HW=526.57' (Free Discharge)
└**4=Exfiltration** (Controls 0.0 cfs)

Primary OutFlow Max=0.3 cfs @ 12.25 hrs HW=526.57' (Free Discharge)
└**1=Culvert** (Passes 0.3 cfs of 8.5 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.3 cfs @ 3.06 fps)
  └**3=Sharp-Crested Vee/Trap Weir** (Controls 0.0 cfs)

Pond P1301 P: Pond P1301 P



Summary for Pond P901 P: Pond P901 P

Inflow Area = 52,708 sf, 17.67% Impervious, Inflow Depth = 2.46" for 10-Year event
Inflow = 3.4 cfs @ 12.10 hrs, Volume= 10,790 cf
Outflow = 0.4 cfs @ 12.97 hrs, Volume= 10,790 cf, Atten= 89%, Lag= 52.4 min
Discarded = 0.1 cfs @ 12.97 hrs, Volume= 5,530 cf
Primary = 0.3 cfs @ 12.97 hrs, Volume= 5,260 cf
Routed to Link L4 P : Duval
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link L4 P : Duval

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 536.16' @ 12.97 hrs Surf.Area= 4,700 sf Storage= 5,301 cf

Plug-Flow detention time= 433.8 min calculated for 10,784 cf (100% of inflow)
Center-of-Mass det. time= 434.8 min (1,266.7 - 831.9)

Volume	Invert	Avail.Storage	Storage Description
#1	533.50'	18,803 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
533.50	20	0	0
534.00	270	73	73
536.00	4,225	4,495	4,568
538.00	10,010	14,235	18,803

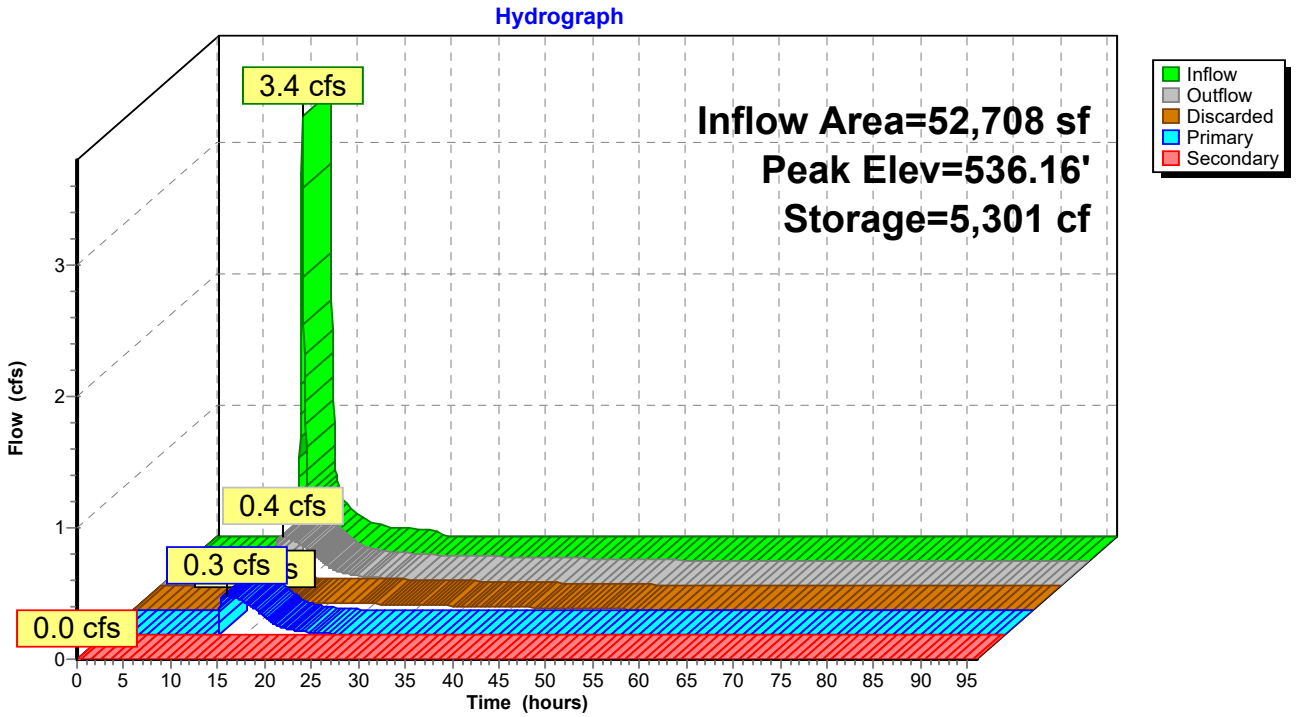
Device	Routing	Invert	Outlet Devices
#1	Primary	531.00'	**12.0" Round Culvert** L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 531.00' / 530.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	535.50'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	537.00'	**16.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#4	Secondary	537.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	533.50'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 531.00'

Discarded OutFlow Max=0.1 cfs @ 12.97 hrs HW=536.16' (Free Discharge)
└**5=Exfiltration** (Controls 0.1 cfs)

Primary OutFlow Max=0.3 cfs @ 12.97 hrs HW=536.16' (Free Discharge)
└**1=Culvert** (Passes 0.3 cfs of 8.2 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 0.3 cfs @ 3.40 fps)
└**3=Sharp-Crested Rectangular Weir** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=533.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond P901 P: Pond P901 P

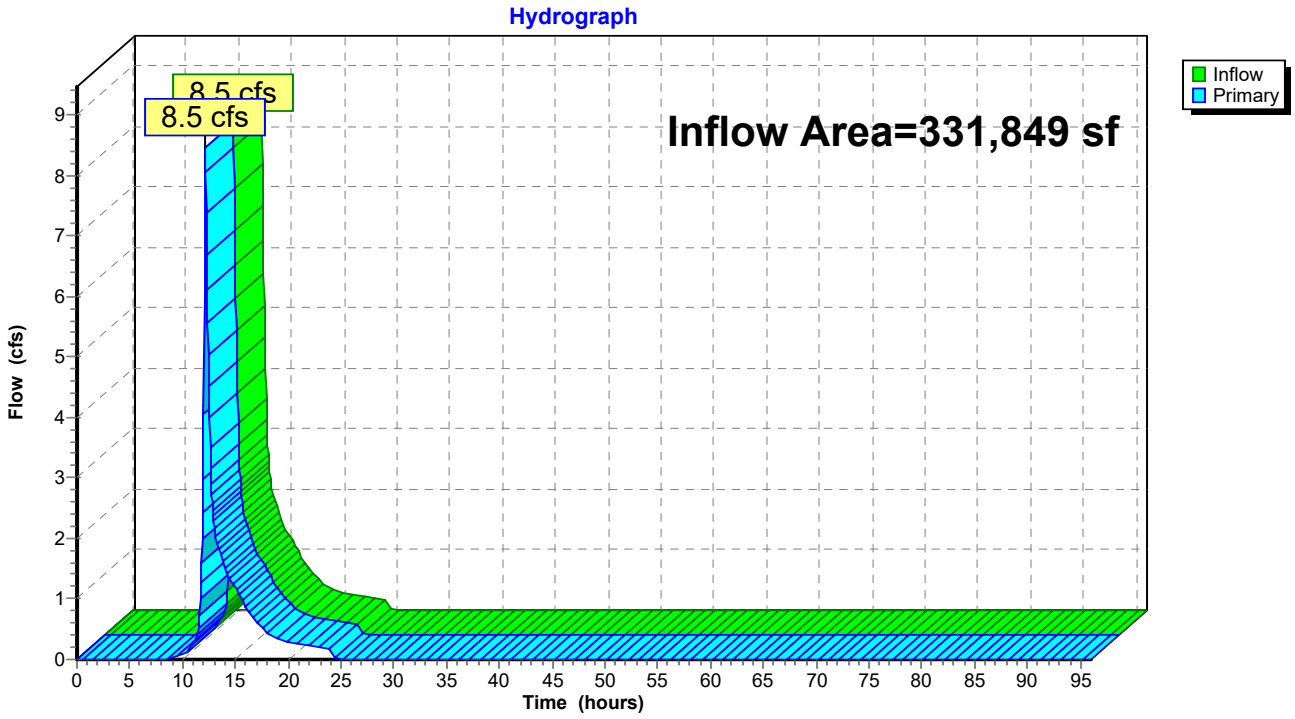


Summary for Link L4 P: Duval

Inflow Area = 331,849 sf, 11.01% Impervious, Inflow Depth = 1.69" for 10-Year event
Inflow = 8.5 cfs @ 12.16 hrs, Volume= 46,808 cf
Primary = 8.5 cfs @ 12.16 hrs, Volume= 46,808 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link L4 P: Duval



Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 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 S1000 P: Subcat S1000 P Runoff Area=38,088 sf 5.73% Impervious Runoff Depth=4.04"
Flow Length=355' Tc=12.5 min CN=74 Runoff=3.3 cfs 12,830 cf

Subcatchment S1001 P: Subcat S1001 P Runoff Area=57,796 sf 14.28% Impervious Runoff Depth=3.62"
Flow Length=495' Tc=11.1 min CN=70 Runoff=4.7 cfs 17,427 cf

Subcatchment S1100 P: Subcat S1100 P Runoff Area=50,836 sf 0.00% Impervious Runoff Depth=2.41"
Flow Length=510' Tc=15.3 min CN=58 Runoff=2.3 cfs 10,206 cf

Subcatchment S1101 P: Subcat S1101 P Runoff Area=19,869 sf 0.00% Impervious Runoff Depth=3.51"
Flow Length=210' Tc=11.4 min CN=69 Runoff=1.6 cfs 5,818 cf

Subcatchment S1200 P: Subcat S1200 P Runoff Area=18,672 sf 12.52% Impervious Runoff Depth=4.26"
Flow Length=135' Tc=8.5 min CN=76 Runoff=1.9 cfs 6,624 cf

Subcatchment S1201 P: Subcat S1201 P Runoff Area=16,267 sf 30.66% Impervious Runoff Depth=4.81"
Tc=6.0 min CN=81 Runoff=2.0 cfs 6,514 cf

Subcatchment S1202 P: Subcat S1202 P Runoff Area=5,851 sf 42.74% Impervious Runoff Depth=5.14"
Tc=6.0 min CN=84 Runoff=0.8 cfs 2,506 cf

Subcatchment S1203 P: Subcat S1203 P Runoff Area=3,703 sf 0.00% Impervious Runoff Depth=4.04"
Tc=6.0 min CN=74 Runoff=0.4 cfs 1,247 cf

Subcatchment S1300 P: Subcat S1300 P Runoff Area=14,331 sf 0.00% Impervious Runoff Depth=3.72"
Flow Length=135' Tc=14.1 min CN=71 Runoff=1.1 cfs 4,447 cf

Subcatchment S1301 P: Subcat S1301 P Runoff Area=7,597 sf 23.36% Impervious Runoff Depth=4.58"
Tc=6.0 min CN=79 Runoff=0.9 cfs 2,902 cf

Subcatchment S900 P: Subcat S900 P Runoff Area=46,131 sf 11.22% Impervious Runoff Depth=4.15"
Flow Length=160' Tc=7.3 min CN=75 Runoff=4.9 cfs 15,951 cf

Subcatchment S901 P: Subcat S901 P Runoff Area=52,708 sf 17.67% Impervious Runoff Depth=4.37"
Flow Length=245' Tc=6.3 min CN=77 Runoff=6.0 cfs 19,176 cf

Pond P1001 P: Pond P1001 P Peak Elev=553.26' Storage=4,582 cf Inflow=4.7 cfs 17,427 cf
Discarded=0.1 cfs 3,236 cf Primary=0.4 cfs 9,383 cf Secondary=3.3 cfs 4,809 cf Outflow=3.8 cfs 17,427 cf

Pond P1200 P: Pond P1200 P Peak Elev=534.98' Storage=2,480 cf Inflow=1.9 cfs 6,624 cf
Discarded=0.0 cfs 1,333 cf Primary=0.5 cfs 5,291 cf Outflow=0.5 cfs 6,624 cf

Pond P1203 P: Pond P1203 P Peak Elev=526.93' Storage=325 cf Inflow=1.2 cfs 3,753 cf
Discarded=0.0 cfs 114 cf Primary=0.8 cfs 3,640 cf Outflow=0.8 cfs 3,753 cf

Pond P1301 P: Pond P1301 P Peak Elev=526.97' Storage=729 cf Inflow=0.9 cfs 2,902 cf
Discarded=0.0 cfs 444 cf Primary=0.4 cfs 2,458 cf Outflow=0.4 cfs 2,902 cf

Pond P901 P: Pond P901 P Peak Elev=536.96' Storage=9,942 cf Inflow=6.0 cfs 19,176 cf
Discarded=0.1 cfs 6,830 cf Primary=0.5 cfs 12,347 cf Secondary=0.0 cfs 0 cf Outflow=0.6 cfs 19,176 cf

Link L4 P: Duval Inflow=17.8 cfs 93,693 cf
Primary=17.8 cfs 93,693 cf

Total Runoff Area = 331,849 sf Runoff Volume = 105,650 cf Average Runoff Depth = 3.82"
88.99% Pervious = 295,323 sf 11.01% Impervious = 36,526 sf

Summary for Subcatchment S1000 P: Subcat S1000 P

Tc based on lawn in front of home

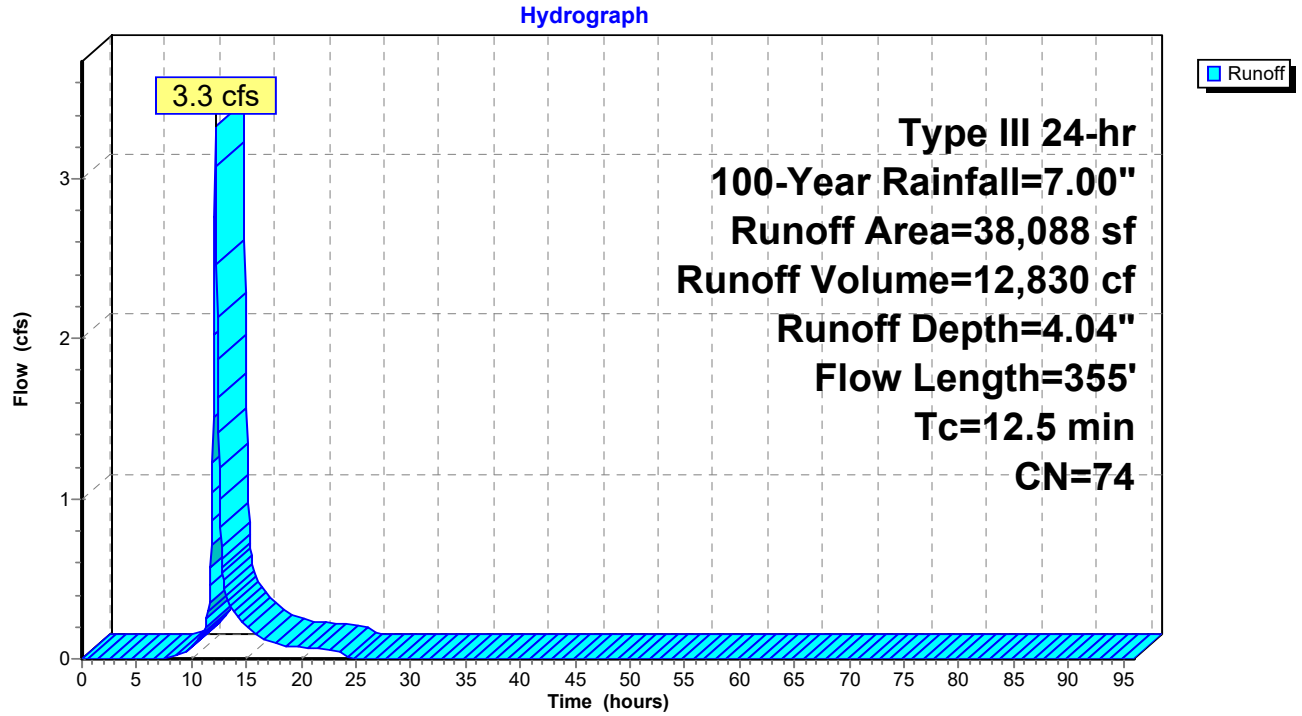
Runoff = 3.3 cfs @ 12.17 hrs, Volume= 12,830 cf, Depth= 4.04"
Routed to Link L4 P : Duval

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
819	98	Paved parking, HSG C
1,364	98	Roofs, HSG C
3,941	74	>75% Grass cover, Good, HSG C
1,040	70	Woods, Good, HSG C
16,598	70	Woods, Good, HSG C
14,326	74	>75% Grass cover, Good, HSG C
38,088	74	Weighted Average
35,905		94.27% Pervious Area
2,183		5.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.10		**Sheet Flow, uppermost** Grass: Dense n= 0.240 P2= 3.20"
4.3	305	0.0560	1.18		**Shallow Concentrated Flow, to offsite** Woodland Kv= 5.0 fps
12.5	355	Total			

Subcatchment S1000 P: Subcat S1000 P



Summary for Subcatchment S1001 P: Subcat S1001 P

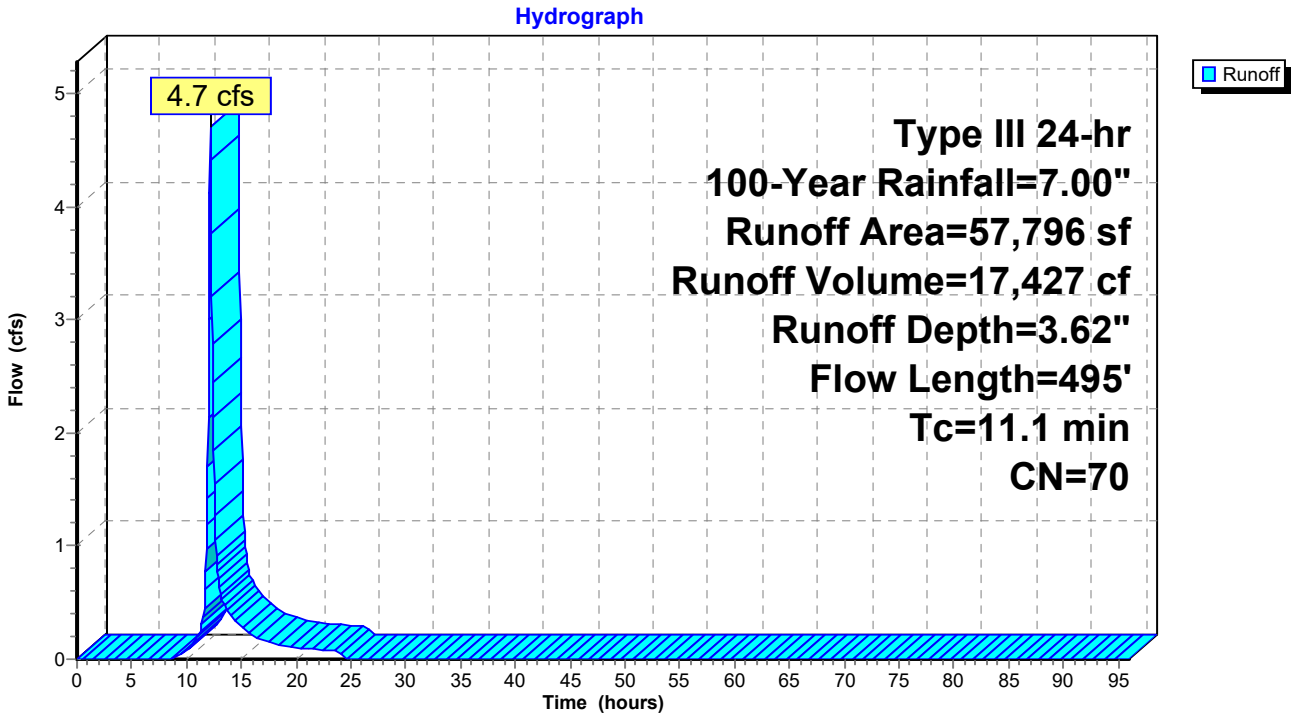
Runoff = 4.7 cfs @ 12.16 hrs, Volume= 17,427 cf, Depth= 3.62"
Routed to Pond P1001 P : Pond P1001 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
11,233	74	>75% Grass cover, Good, HSG C
5,474	74	>75% Grass cover, Good, HSG C
21	74	>75% Grass cover, Good, HSG C
890	98	Roofs, HSG B
639	98	Paved parking, HSG B
7,565	61	>75% Grass cover, Good, HSG B
16,153	55	Woods, Good, HSG B
6,397	70	Woods, Good, HSG C
1,874	70	Woods, Good, HSG C
825	70	Woods, Good, HSG C
3,406	98	Paved parking, HSG C
3,319	98	Roofs, HSG C
57,796	70	Weighted Average
49,542		85.72% Pervious Area
8,254		14.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	50	0.1500	0.09		**Sheet Flow, uppermost**
					Woods: Dense underbrush n= 0.800 P2= 3.20"
1.5	445	0.1000	5.09		**Shallow Concentrated Flow, to basin 1001**
					Unpaved Kv= 16.1 fps
11.1	495	Total			

Subcatchment S1001 P: Subcat S1001 P



Summary for Subcatchment S1100 P: Subcat S1100 P

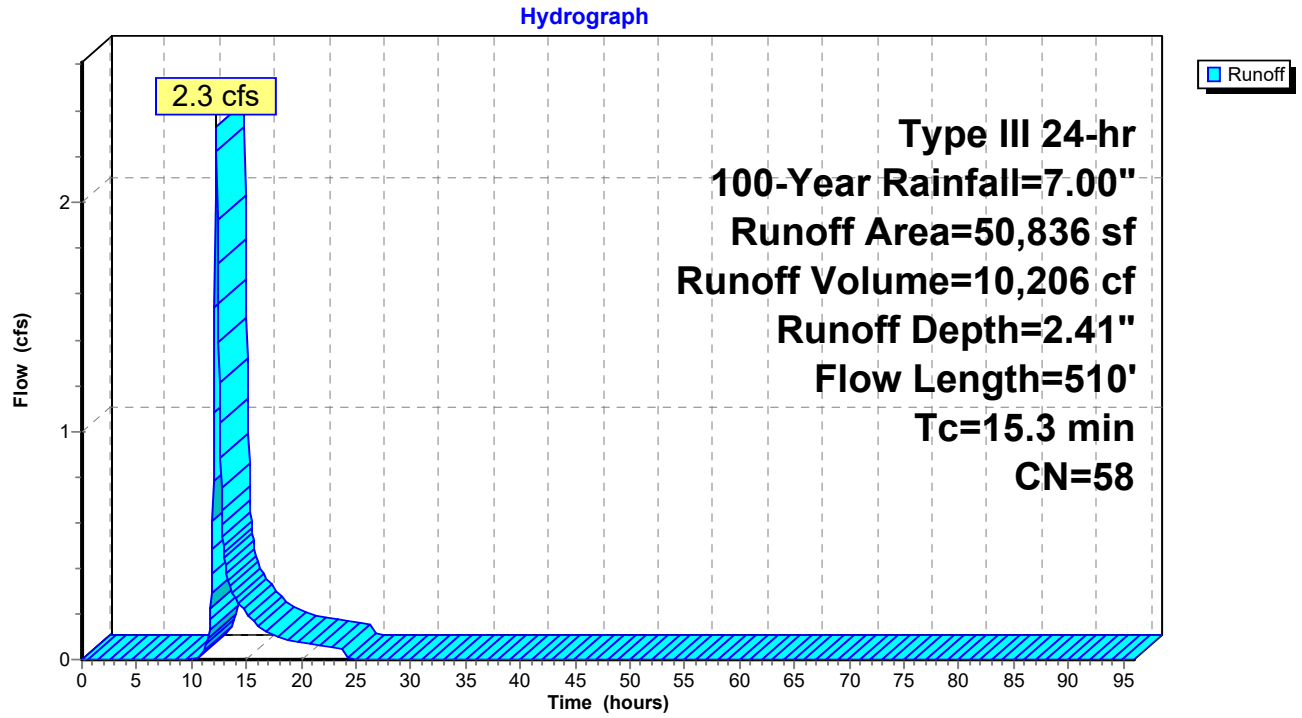
Runoff = 2.3 cfs @ 12.23 hrs, Volume= 10,206 cf, Depth= 2.41"
Routed to Link L4 P : Duval

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
36,361	55	Woods, Good, HSG B
4,522	61	>75% Grass cover, Good, HSG B
941	61	>75% Grass cover, Good, HSG B
3,042	61	>75% Grass cover, Good, HSG B
1,919	74	>75% Grass cover, Good, HSG C
4,051	70	Woods, Good, HSG C
50,836	58	Weighted Average
50,836		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.3	50	0.1000	0.07		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
3.3	135	0.0740	0.68		**Shallow Concentrated Flow, above channel** Forest w/Heavy Litter Kv= 2.5 fps
0.7	325	0.1020	7.77	155.45	**Trap/Vee/Rect Channel Flow, channel** Bot.W=4.00' D=2.00' Z= 3.0 '/' Top.W=16.00' n= 0.069 Riprap, 6-inch
15.3	510	Total			

Subcatchment S1100 P: Subcat S1100 P



Summary for Subcatchment S1101 P: Subcat S1101 P

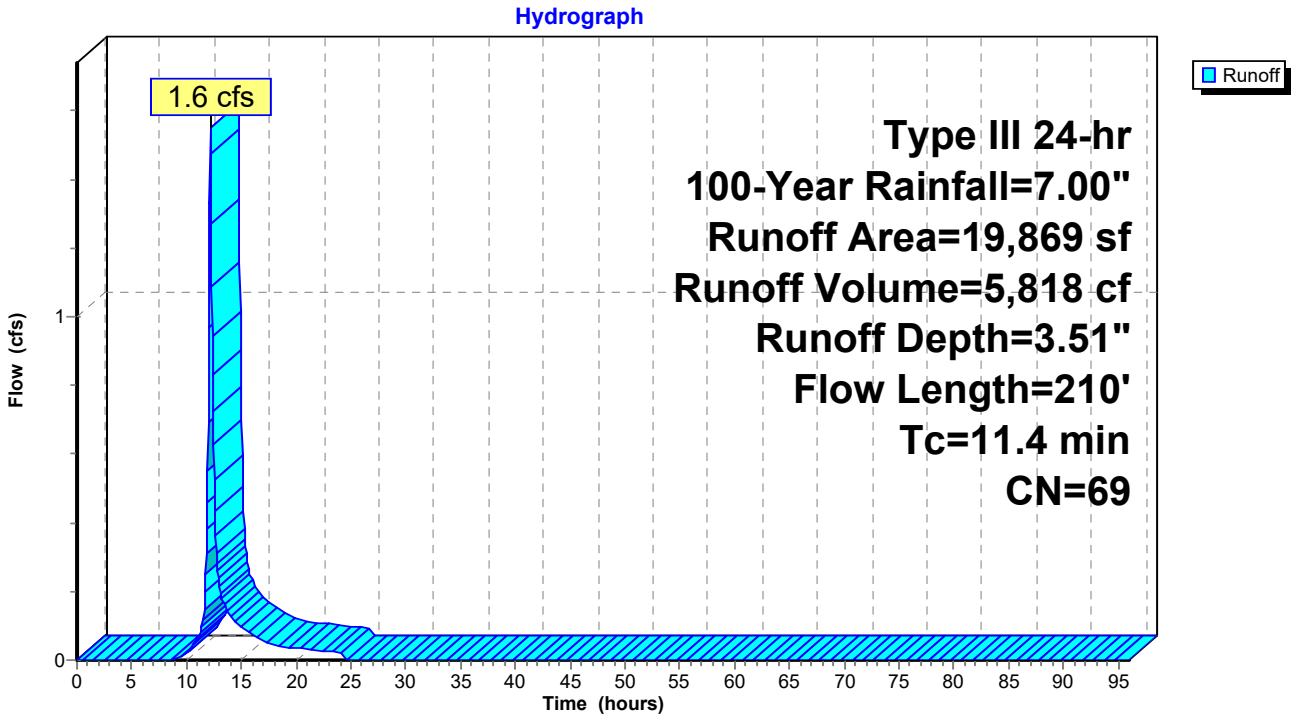
Runoff = 1.6 cfs @ 12.16 hrs, Volume= 5,818 cf, Depth= 3.51"
Routed to Link L4 P : Duval

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
3,600	55	Woods, Good, HSG B
243	61	>75% Grass cover, Good, HSG B
8,223	74	>75% Grass cover, Good, HSG C
7,803	70	Woods, Good, HSG C
19,869	69	Weighted Average
19,869		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.2000	0.10		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
2.9	160	0.1380	0.93		**Shallow Concentrated Flow, to offsite** Forest w/Heavy Litter Kv= 2.5 fps
11.4	210	Total			

Subcatchment S1101 P: Subcat S1101 P



Summary for Subcatchment S1200 P: Subcat S1200 P

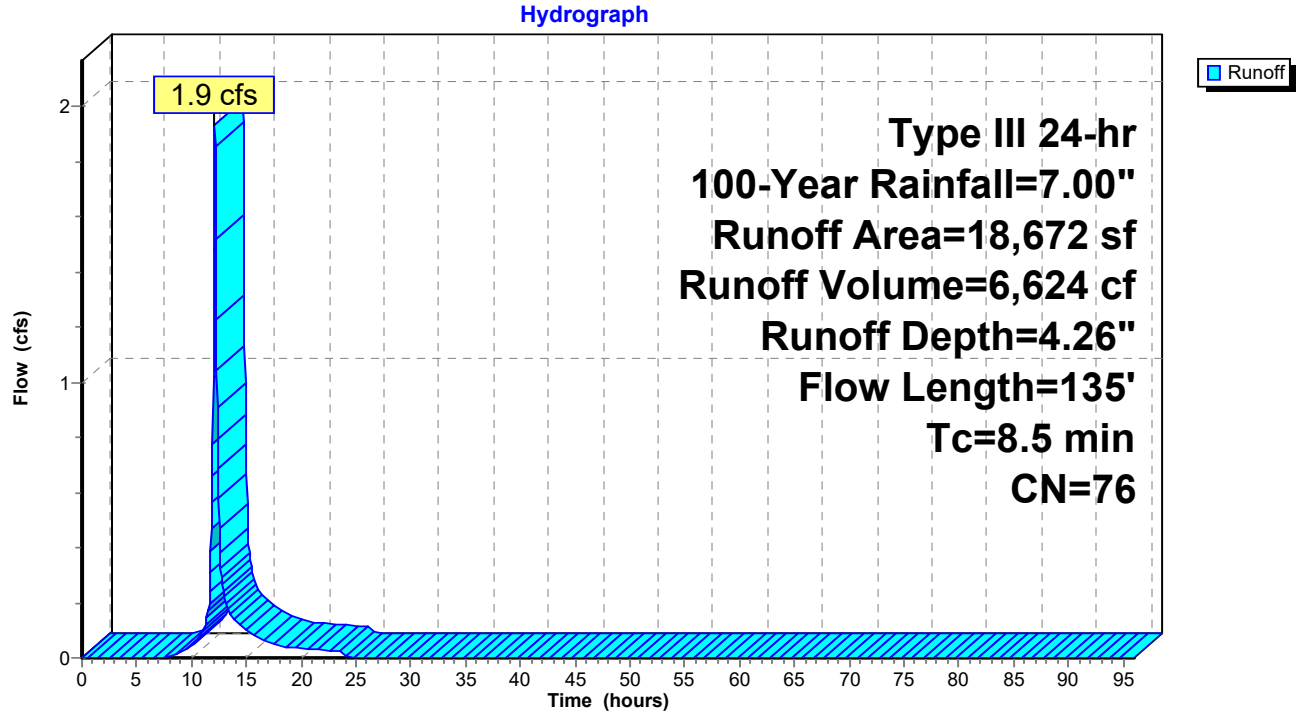
Runoff = 1.9 cfs @ 12.12 hrs, Volume= 6,624 cf, Depth= 4.26"
Routed to Pond P1200 P : Pond P1200 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
404	70	Woods, Good, HSG C
2,337	98	Paved parking, HSG C
9,988	74	>75% Grass cover, Good, HSG C
5,943	70	Woods, Good, HSG C
18,672	76	Weighted Average
16,335		87.48% Pervious Area
2,337		12.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	50	0.0700	0.11		**Sheet Flow, uppermost** Woods: Light underbrush n= 0.400 P2= 3.20"
1.0	85	0.0750	1.37		**Shallow Concentrated Flow, to basin 1200** Woodland Kv= 5.0 fps
8.5	135	Total			

Subcatchment S1200 P: Subcat S1200 P



Summary for Subcatchment S1201 P: Subcat S1201 P

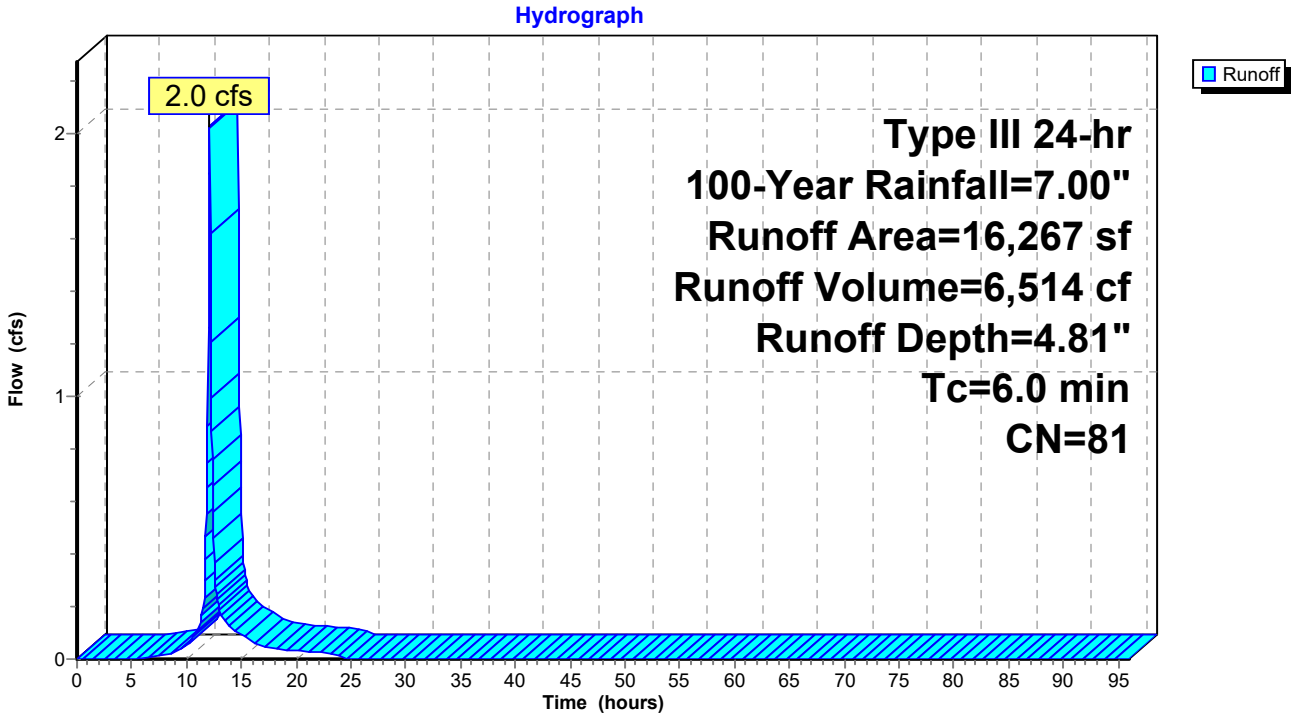
Runoff = 2.0 cfs @ 12.09 hrs, Volume= 6,514 cf, Depth= 4.81"
Routed to Link L4 P : Duval

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
1,396	70	Woods, Good, HSG C
6,007	74	>75% Grass cover, Good, HSG C
3,092	74	>75% Grass cover, Good, HSG C
4,184	98	Paved roads w/curbs & sewers, HSG C
804	98	Paved parking, HSG C
784	74	>75% Grass cover, Good, HSG C
16,267	81	Weighted Average
11,279		69.34% Pervious Area
4,988		30.66% Impervious Area

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

Subcatchment S1201 P: Subcat S1201 P



Summary for Subcatchment S1202 P: Subcat S1202 P

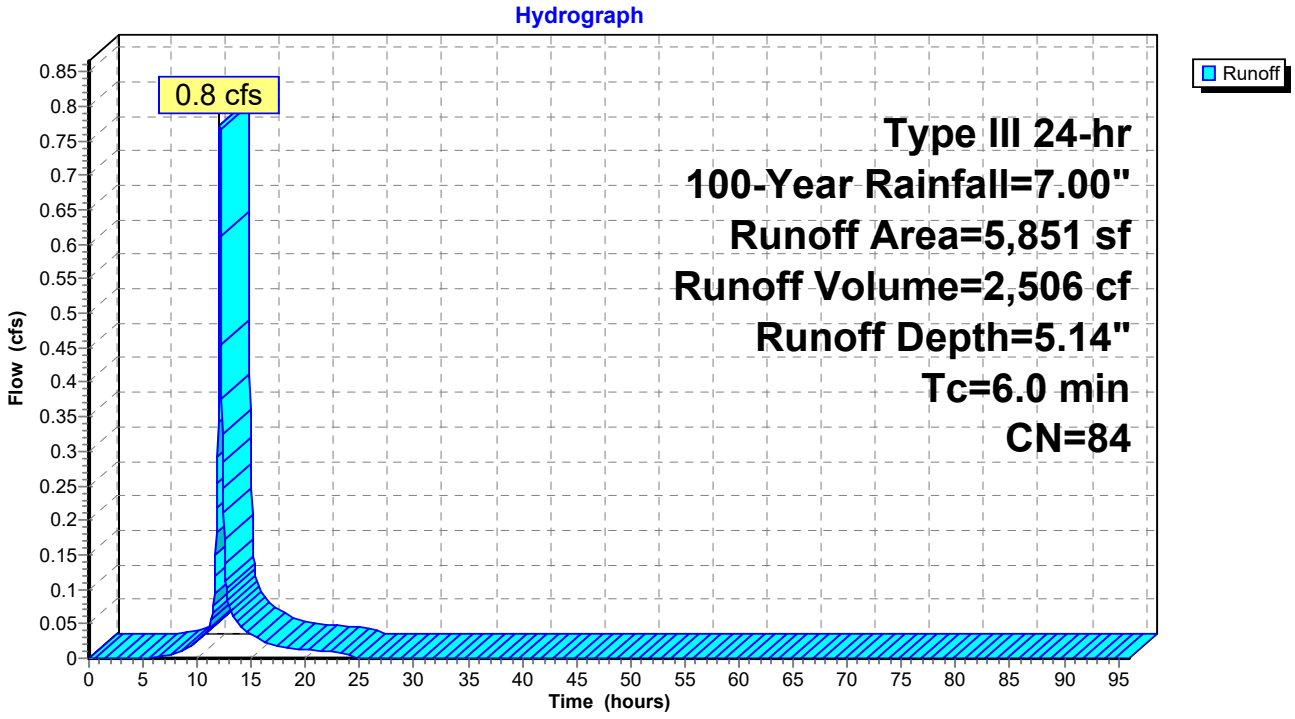
Runoff = 0.8 cfs @ 12.09 hrs, Volume= 2,506 cf, Depth= 5.14"
Routed to Pond P1203 P : Pond P1203 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
706	74	>75% Grass cover, Good, HSG C
711	98	Paved parking, HSG C
1,790	98	Paved roads w/curbs & sewers, HSG C
2,644	74	>75% Grass cover, Good, HSG C
5,851	84	Weighted Average
3,350		57.26% Pervious Area
2,501		42.74% Impervious Area

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

Subcatchment S1202 P: Subcat S1202 P



Summary for Subcatchment S1203 P: Subcat S1203 P

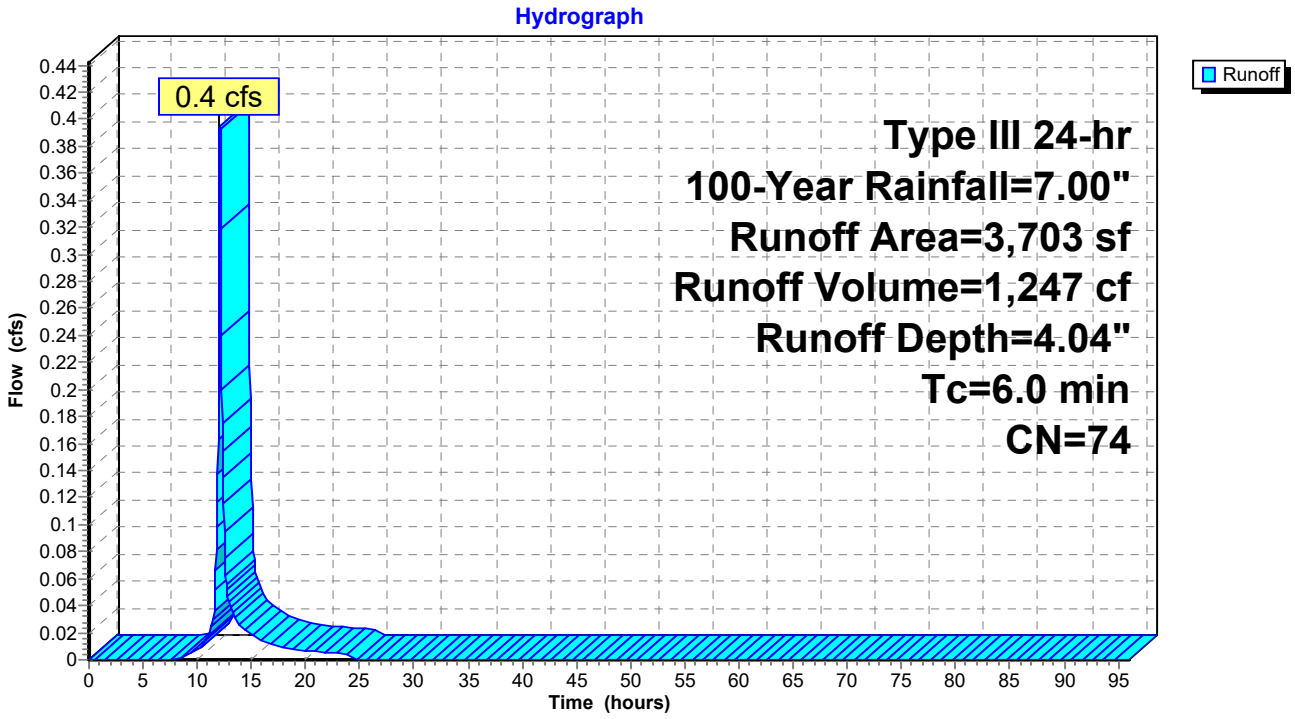
Runoff = 0.4 cfs @ 12.09 hrs, Volume= 1,247 cf, Depth= 4.04"
Routed to Pond P1203 P : Pond P1203 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
354	70	Woods, Good, HSG C
3,349	74	>75% Grass cover, Good, HSG C
3,703	74	Weighted Average
3,703		100.00% Pervious Area

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

Subcatchment S1203 P: Subcat S1203 P



Summary for Subcatchment S1300 P: Subcat S1300 P

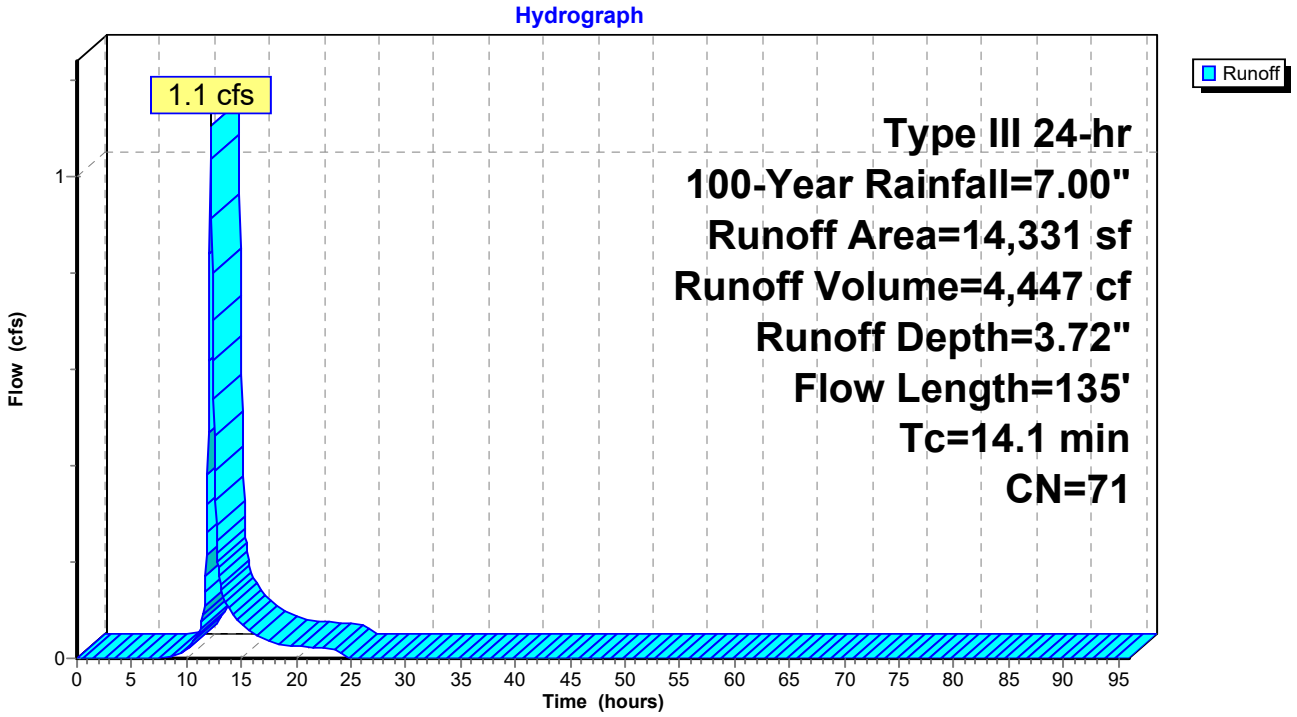
Runoff = 1.1 cfs @ 12.20 hrs, Volume= 4,447 cf, Depth= 3.72"
Routed to Link L4 P : Duval

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
8,396	70	Woods, Good, HSG C
5,299	74	>75% Grass cover, Good, HSG C
636	70	Woods, Good, HSG C
14,331	71	Weighted Average
14,331		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0800	0.07		**Sheet Flow, uppermost** Woods: Dense underbrush n= 0.800 P2= 3.20"
1.8	85	0.1000	0.79		**Shallow Concentrated Flow, to offiste** Forest w/Heavy Litter Kv= 2.5 fps
14.1	135	Total			

Subcatchment S1300 P: Subcat S1300 P



Summary for Subcatchment S1301 P: Subcat S1301 P

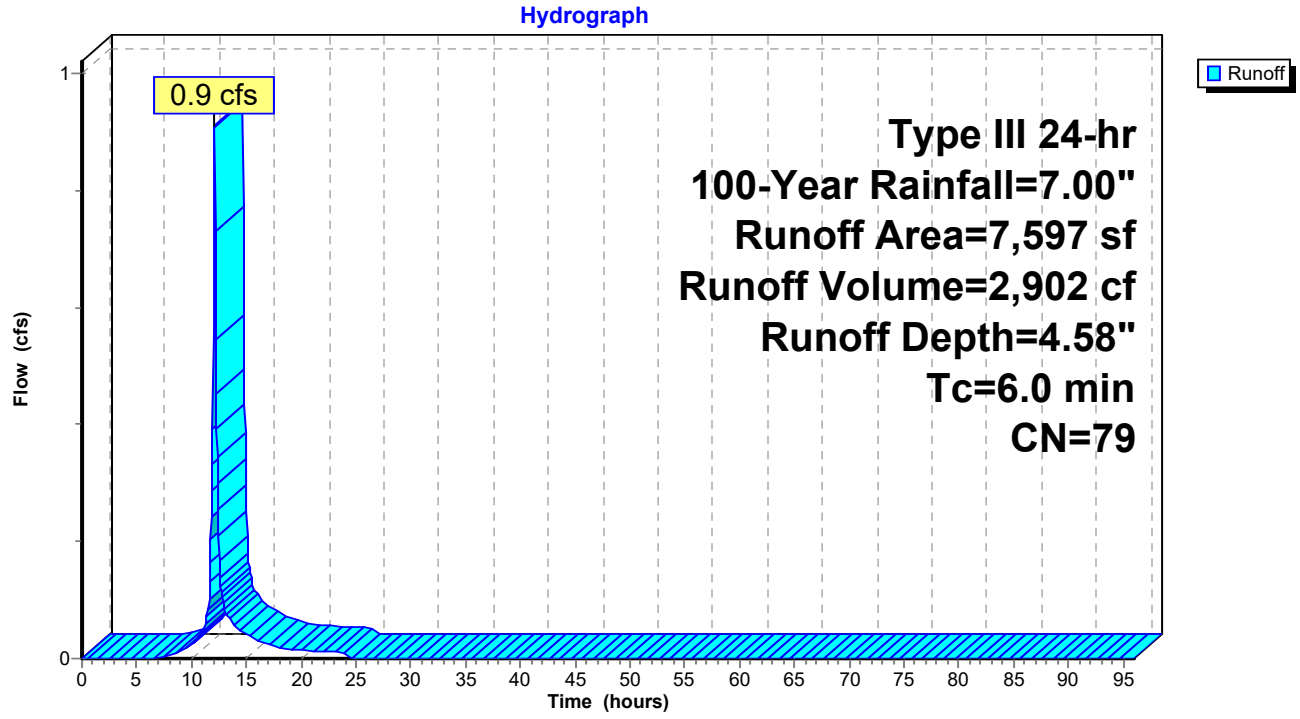
Runoff = 0.9 cfs @ 12.09 hrs, Volume= 2,902 cf, Depth= 4.58"
Routed to Pond P1301 P : Pond P1301 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
1,775	98	Paved roads w/curbs & sewers, HSG C
5,074	74	>75% Grass cover, Good, HSG C
748	70	Woods, Good, HSG C
7,597	79	Weighted Average
5,822		76.64% Pervious Area
1,775		23.36% Impervious Area

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

Subcatchment S1301 P: Subcat S1301 P



Summary for Subcatchment S900 P: Subcat S900 P

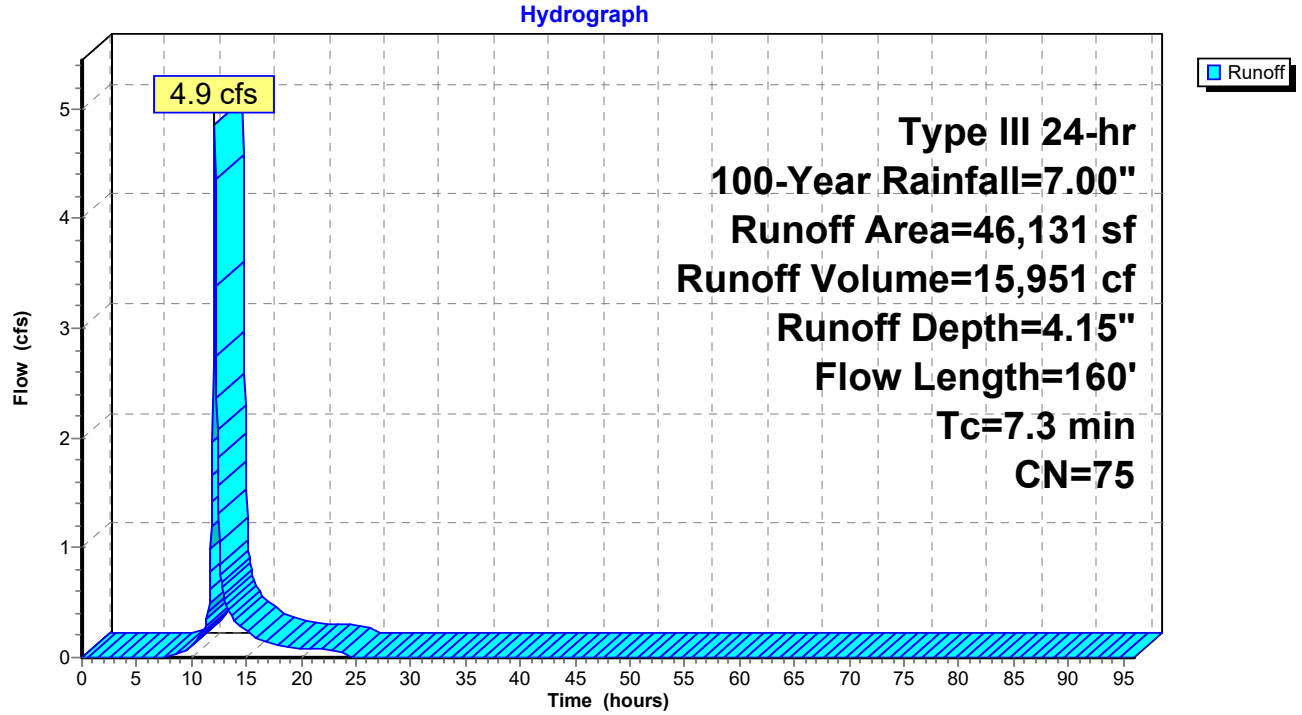
Runoff = 4.9 cfs @ 12.11 hrs, Volume= 15,951 cf, Depth= 4.15"
Routed to Link L4 P : Duval

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
12,641	70	Woods, Good, HSG C
1,863	98	Paved parking, HSG C
3,312	98	Roofs, HSG C
20,219	74	>75% Grass cover, Good, HSG C
2,725	74	>75% Grass cover, Good, HSG C
4,221	70	Woods, Good, HSG C
1,150	70	Woods, Good, HSG C
46,131	75	Weighted Average
40,956		88.78% Pervious Area
5,175		11.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	50	0.1200	0.14		**Sheet Flow, uppermost** Woods: Light underbrush n= 0.400 P2= 3.20"
1.3	110	0.0850	1.46		**Shallow Concentrated Flow, above channel** Woodland Kv= 5.0 fps
7.3	160	Total			

Subcatchment S900 P: Subcat S900 P



Summary for Subcatchment S901 P: Subcat S901 P

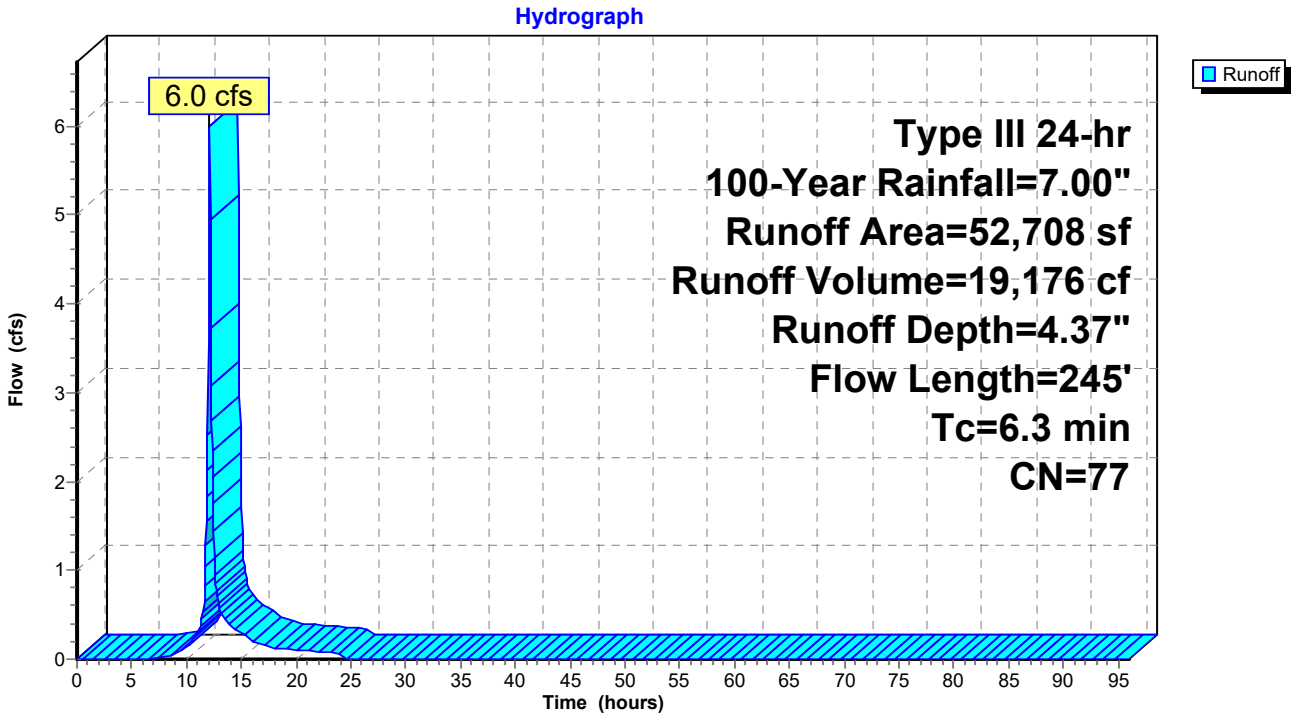
Runoff = 6.0 cfs @ 12.09 hrs, Volume= 19,176 cf, Depth= 4.37"
Routed to Pond P901 P : Pond P901 P

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.00"

Area (sf)	CN	Description
7,501	70	Woods, Good, HSG C
518	74	>75% Grass cover, Good, HSG C
793	74	>75% Grass cover, Good, HSG C
30	98	Paved parking, HSG C
1,372	98	Paved parking, HSG C
512	98	Paved parking, HSG C
1,164	98	Roofs, HSG C
64	98	Paved parking, HSG C
70	74	>75% Grass cover, Good, HSG C
3,970	70	Woods, Good, HSG C
101	74	>75% Grass cover, Good, HSG C
11,733	74	>75% Grass cover, Good, HSG C
6,171	98	Paved roads w/curbs & sewers, HSG C
18,565	74	>75% Grass cover, Good, HSG C
144	74	>75% Grass cover, Good, HSG C
52,708	77	Weighted Average
43,395		82.33% Pervious Area
9,313		17.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	50	0.1600	0.16		**Sheet Flow, uppermost**
					Woods: Light underbrush n= 0.400 P2= 3.20"
0.9	195	0.0510	3.64		**Shallow Concentrated Flow, above Road A**
					Unpaved Kv= 16.1 fps
6.3	245	Total			

Subcatchment S901 P: Subcat S901 P



Summary for Pond P1001 P: Pond P1001 P

Inflow Area = 57,796 sf, 14.28% Impervious, Inflow Depth = 3.62" for 100-Year event
Inflow = 4.7 cfs @ 12.16 hrs, Volume= 17,427 cf
Outflow = 3.8 cfs @ 12.26 hrs, Volume= 17,427 cf, Atten= 19%, Lag= 6.2 min
Discarded = 0.1 cfs @ 12.26 hrs, Volume= 3,236 cf
Primary = 0.4 cfs @ 12.26 hrs, Volume= 9,383 cf
Routed to Link L4 P : Duval
Secondary = 3.3 cfs @ 12.26 hrs, Volume= 4,809 cf
Routed to Link L4 P : Duval

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 553.26' @ 12.26 hrs Surf.Area= 3,499 sf Storage= 4,582 cf

Plug-Flow detention time= 141.0 min calculated for 17,418 cf (100% of inflow)
Center-of-Mass det. time= 141.7 min (977.2 - 835.6)

Volume	Invert	Avail.Storage	Storage Description
#1	551.00'	7,500 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
551.00	220	0	0
552.00	2,010	1,115	1,115
554.00	4,375	6,385	7,500

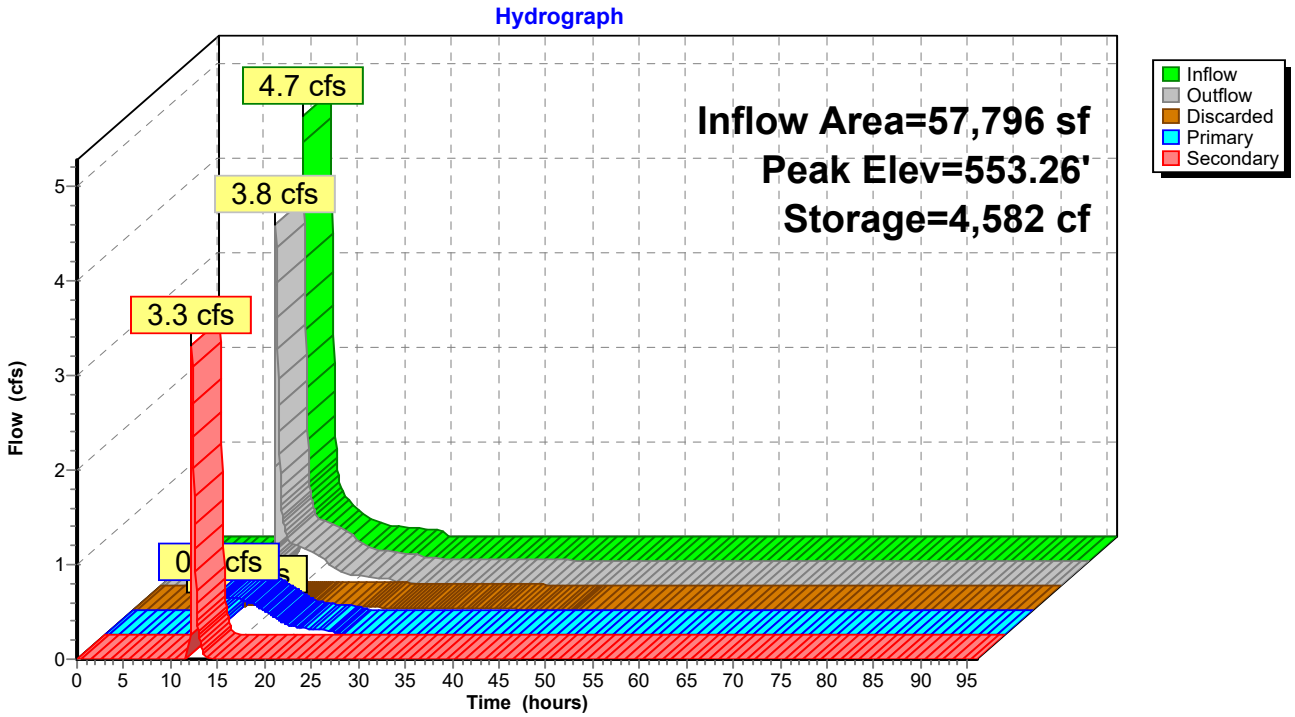
Device	Routing	Invert	Outlet Devices
#1	Primary	550.00'	**12.0" Round Culvert** L= 24.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 550.00' / 549.50' S= 0.0208 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	552.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	553.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#4	Discarded	551.00'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 548.00'

Discarded OutFlow Max=0.1 cfs @ 12.26 hrs HW=553.25' (Free Discharge)
└**4=Exfiltration** (Controls 0.1 cfs)

Primary OutFlow Max=0.4 cfs @ 12.26 hrs HW=553.25' (Free Discharge)
└**1=Culvert** (Passes 0.4 cfs of 6.3 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.4 cfs @ 5.02 fps)

Secondary OutFlow Max=3.2 cfs @ 12.26 hrs HW=553.25' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Weir Controls 3.2 cfs @ 1.27 fps)

Pond P1001 P: Pond P1001 P



Summary for Pond P1200 P: Pond P1200 P

Inflow Area = 18,672 sf, 12.52% Impervious, Inflow Depth = 4.26" for 100-Year event
Inflow = 1.9 cfs @ 12.12 hrs, Volume= 6,624 cf
Outflow = 0.5 cfs @ 12.53 hrs, Volume= 6,624 cf, Atten= 73%, Lag= 24.5 min
Discarded = 0.0 cfs @ 12.53 hrs, Volume= 1,333 cf
Primary = 0.5 cfs @ 12.53 hrs, Volume= 5,291 cf
Routed to Link L4 P : Duval

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 534.98' @ 12.53 hrs Surf.Area= 1,939 sf Storage= 2,480 cf

Plug-Flow detention time= 150.8 min calculated for 6,624 cf (100% of inflow)
Center-of-Mass det. time= 150.5 min (970.3 - 819.7)

Volume	Invert	Avail.Storage	Storage Description
#1	532.00'	4,888 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

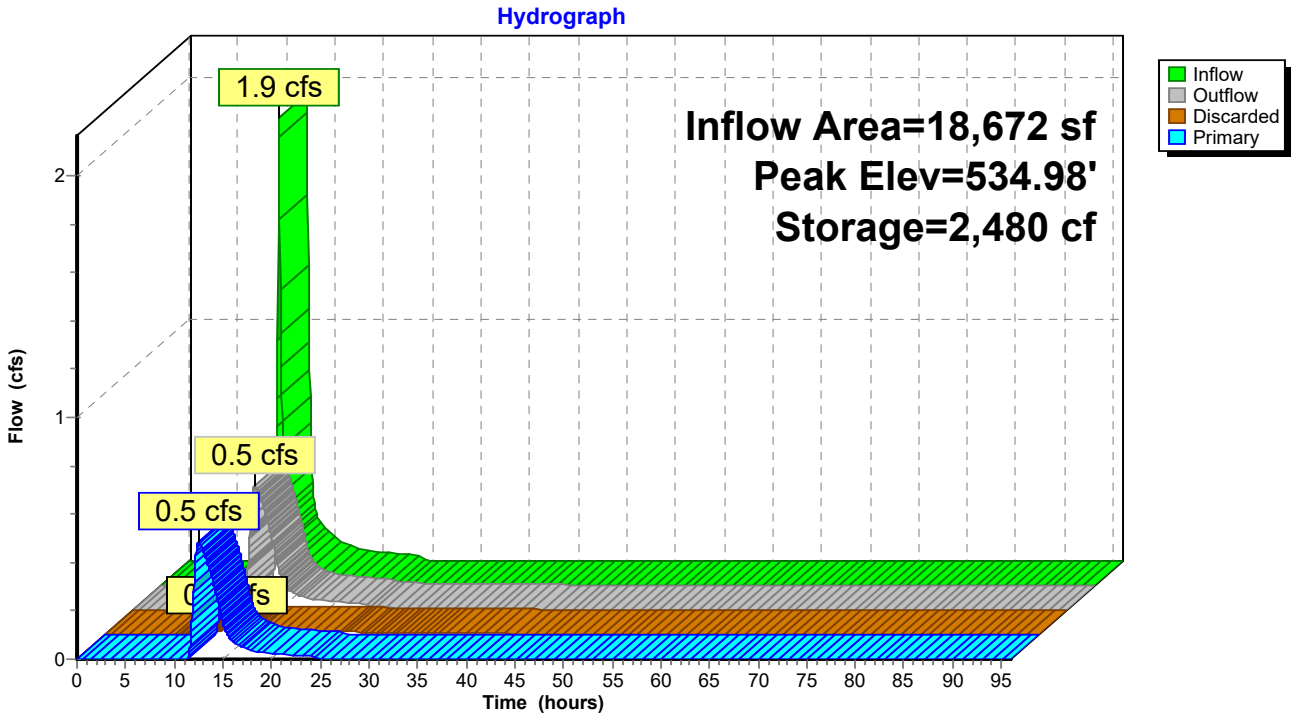
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
532.00	50	0	0
533.00	390	220	220
534.00	1,125	758	978
536.00	2,785	3,910	4,888

Device	Routing	Invert	Outlet Devices
#1	Primary	526.19'	**12.0" Round Culvert** L= 59.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 526.19' / 521.49' S= 0.0797 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	533.50'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	535.00'	**16.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#4	Discarded	532.00'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 530.00'

Discarded OutFlow Max=0.0 cfs @ 12.53 hrs HW=534.98' (Free Discharge)
└**4=Exfiltration** (Controls 0.0 cfs)

Primary OutFlow Max=0.5 cfs @ 12.53 hrs HW=534.98' (Free Discharge)
└**1=Culvert** (Passes 0.5 cfs of 10.9 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.5 cfs @ 5.52 fps)
  └**3=Sharp-Crested Vee/Trap Weir** (Controls 0.0 cfs)

Pond P1200 P: Pond P1200 P



Summary for Pond P1203 P: Pond P1203 P

Inflow Area = 9,554 sf, 26.18% Impervious, Inflow Depth = 4.71" for 100-Year event
Inflow = 1.2 cfs @ 12.09 hrs, Volume= 3,753 cf
Outflow = 0.8 cfs @ 12.18 hrs, Volume= 3,753 cf, Atten= 33%, Lag= 5.6 min
Discarded = 0.0 cfs @ 12.18 hrs, Volume= 114 cf
Primary = 0.8 cfs @ 12.18 hrs, Volume= 3,640 cf
Routed to Link L4 P : Duval

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 526.93' @ 12.18 hrs Surf.Area= 618 sf Storage= 325 cf

Plug-Flow detention time= 9.4 min calculated for 3,752 cf (100% of inflow)
Center-of-Mass det. time= 9.7 min (815.5 - 805.8)

Volume	Invert	Avail.Storage	Storage Description
#1	525.50'	1,340 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

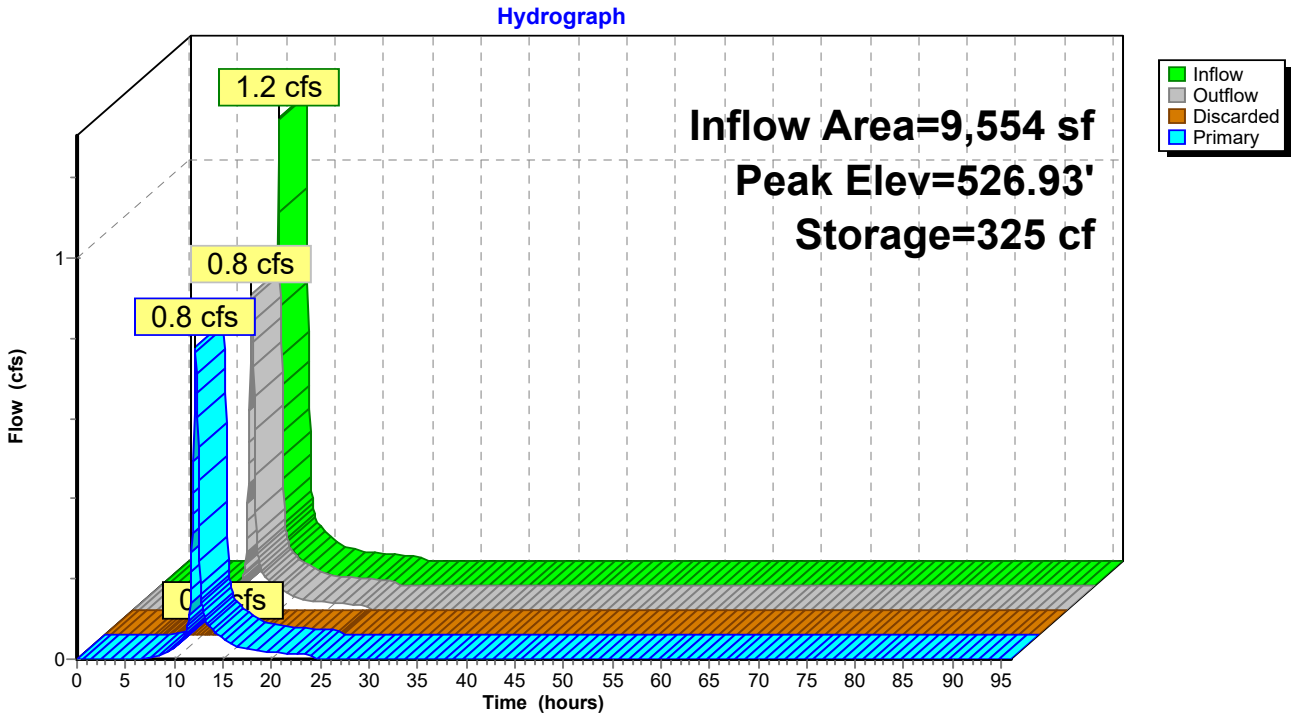
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
525.50	10	0	0
526.00	50	15	15
528.00	1,275	1,325	1,340

Device	Routing	Invert	Outlet Devices
#1	Primary	521.07'	**12.0" Round Culvert** L= 34.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 521.07' / 518.34' S= 0.0803 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	526.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	527.00'	**16.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#4	Discarded	525.50'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 518.00'

Discarded OutFlow Max=0.0 cfs @ 12.18 hrs HW=526.92' (Free Discharge)
└**4=Exfiltration** (Controls 0.0 cfs)

Primary OutFlow Max=0.8 cfs @ 12.18 hrs HW=526.92' (Free Discharge)
└**1=Culvert** (Passes 0.8 cfs of 8.7 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.8 cfs @ 3.95 fps)
  └**3=Sharp-Crested Vee/Trap Weir** (Controls 0.0 cfs)

Pond P1203 P: Pond P1203 P



Summary for Pond P1301 P: Pond P1301 P

Inflow Area = 7,597 sf, 23.36% Impervious, Inflow Depth = 4.58" for 100-Year event
Inflow = 0.9 cfs @ 12.09 hrs, Volume= 2,902 cf
Outflow = 0.4 cfs @ 12.31 hrs, Volume= 2,902 cf, Atten= 57%, Lag= 13.0 min
Discarded = 0.0 cfs @ 12.31 hrs, Volume= 444 cf
Primary = 0.4 cfs @ 12.31 hrs, Volume= 2,458 cf
Routed to Link L4 P : Duval

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 526.97' @ 12.31 hrs Surf.Area= 852 sf Storage= 729 cf

Plug-Flow detention time= 106.3 min calculated for 2,901 cf (100% of inflow)
Center-of-Mass det. time= 107.0 min (917.4 - 810.4)

Volume	Invert	Avail.Storage	Storage Description
#1	524.80'	1,920 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

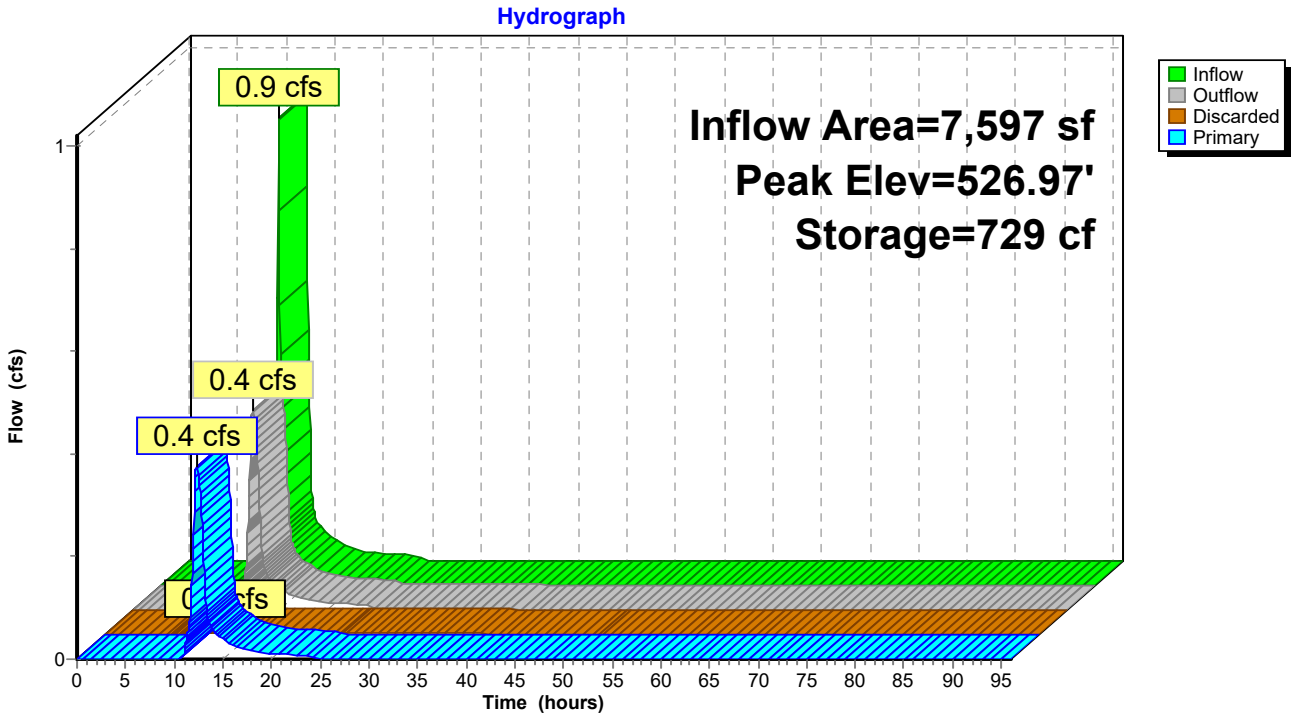
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
524.80	20	0	0
526.00	280	180	180
528.00	1,460	1,740	1,920

Device	Routing	Invert	Outlet Devices
#1	Primary	521.02'	**12.0" Round Culvert** L= 39.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 521.02' / 517.91' S= 0.0797 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	526.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	527.00'	**16.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#4	Discarded	524.80'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 518.00'

Discarded OutFlow Max=0.0 cfs @ 12.31 hrs HW=526.97' (Free Discharge)
└**4=Exfiltration** (Controls 0.0 cfs)

Primary OutFlow Max=0.4 cfs @ 12.31 hrs HW=526.97' (Free Discharge)
└**1=Culvert** (Passes 0.4 cfs of 8.8 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.4 cfs @ 4.31 fps)
  └**3=Sharp-Crested Vee/Trap Weir** (Controls 0.0 cfs)

Pond P1301 P: Pond P1301 P



Summary for Pond P901 P: Pond P901 P

Inflow Area = 52,708 sf, 17.67% Impervious, Inflow Depth = 4.37" for 100-Year event
Inflow = 6.0 cfs @ 12.09 hrs, Volume= 19,176 cf
Outflow = 0.6 cfs @ 13.00 hrs, Volume= 19,176 cf, Atten= 90%, Lag= 54.2 min
Discarded = 0.1 cfs @ 13.00 hrs, Volume= 6,830 cf
Primary = 0.5 cfs @ 13.00 hrs, Volume= 12,347 cf
Routed to Link L4 P : Duval
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link L4 P : Duval

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 536.96' @ 13.00 hrs Surf.Area= 6,996 sf Storage= 9,942 cf

Plug-Flow detention time= 346.3 min calculated for 19,166 cf (100% of inflow)
Center-of-Mass det. time= 347.4 min (1,162.8 - 815.4)

Volume	Invert	Avail.Storage	Storage Description
#1	533.50'	18,803 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
533.50	20	0	0
534.00	270	73	73
536.00	4,225	4,495	4,568
538.00	10,010	14,235	18,803

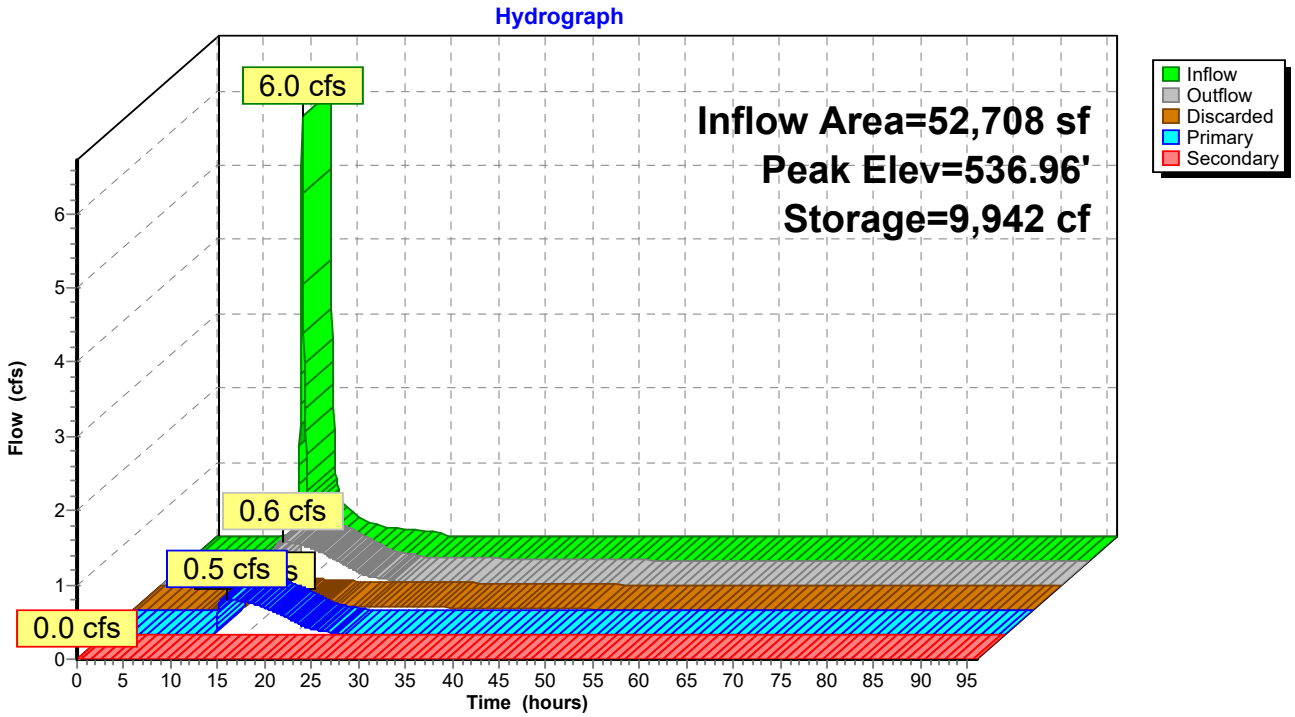
Device	Routing	Invert	Outlet Devices
#1	Primary	531.00'	**12.0" Round Culvert** L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 531.00' / 530.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	535.50'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	537.00'	**16.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#4	Secondary	537.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	533.50'	**0.520 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 531.00'

Discarded OutFlow Max=0.1 cfs @ 13.00 hrs HW=536.96' (Free Discharge)
└**5=Exfiltration** (Controls 0.1 cfs)

Primary OutFlow Max=0.5 cfs @ 13.00 hrs HW=536.96' (Free Discharge)
└**1=Culvert** (Passes 0.5 cfs of 8.8 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.5 cfs @ 5.47 fps)
  └**3=Sharp-Crested Rectangular Weir** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=533.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond P901 P: Pond P901 P

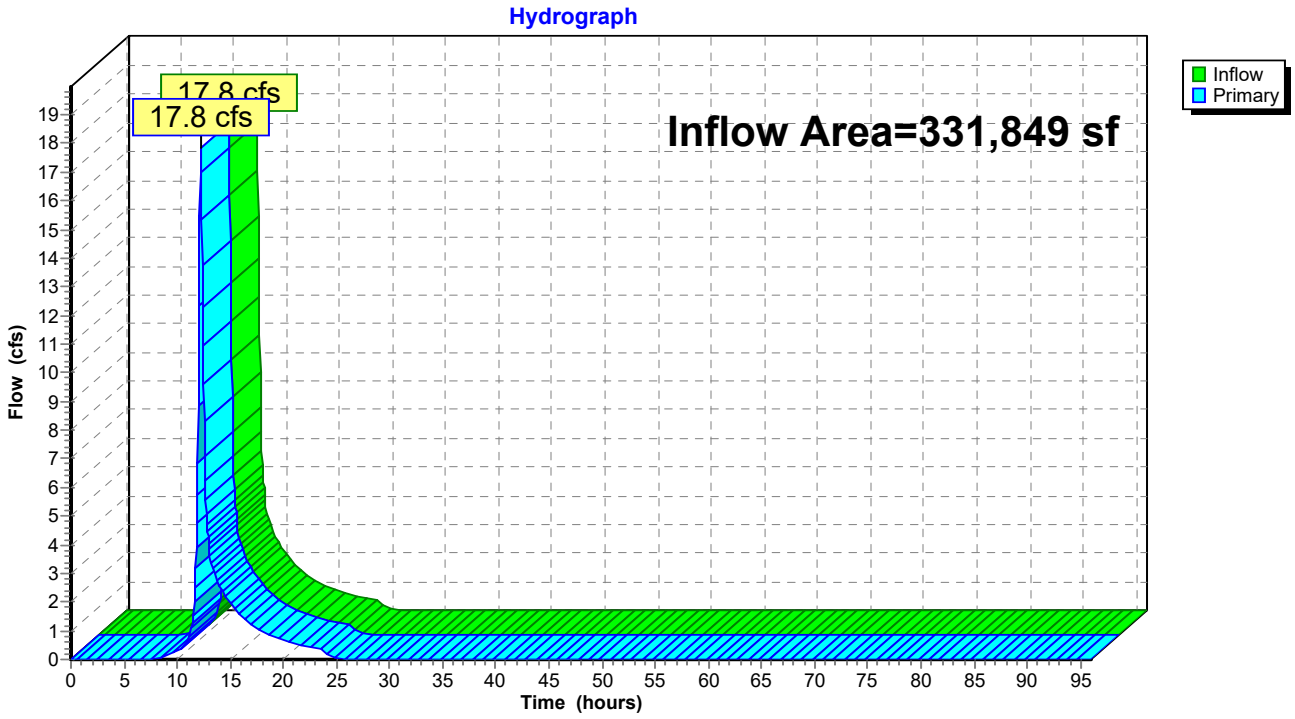


Summary for Link L4 P: Duval

Inflow Area = 331,849 sf, 11.01% Impervious, Inflow Depth = 3.39" for 100-Year event
Inflow = 17.8 cfs @ 12.20 hrs, Volume= 93,693 cf
Primary = 17.8 cfs @ 12.20 hrs, Volume= 93,693 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link L4 P: Duval



C) Water Quality Calculations (Standards 3, 4, 5, 6 & 7)

The proposed stormwater management system is comprised of deep sump hooded catch basins, stormwater quality structures, extended detention basins, infiltration basins, and an existing depression. Most of the new roadway pavement are directed to infiltration basins though some of the roadway and future single-family lot development will not discharge to infiltration basins. The requisite capture area adjustment is provided.

Standard 3)

Stormwater runoff is pretreated via deep sump, hooded catch basins, and water quality structures and then directed to the infiltration basins to provide recharge.

Standard 4)

TSS removal occurs in the deep sump, hooded catch basins (CB's) and water quality structures. Water quality volume is provided in stormwater treatment units (SWTU's) and infiltration basins. To provide the water quality volume, the following CB's and DMH's shall be CDS 2015-4 units:

CB-2B, -2011B, and -3011A

DMH-52, -401, -4032, -4042, -5011, - 5021, -5031, -7012, -7021, -7031, and -9011

CDS 2015-4 units provide 80% TSS and treat 1.4 cfs.

Standard 5)

This standard is not applicable.

Standard 6)

This standard is not applicable.

Standard 7)

The project is a mix of redevelopment and new development and has been designed to meet all standards.

MassDEP Stormwater Standard 3 | Project: Douglas / Sutton | Date: 2/10/2022
TSS Removal | Project No: 21-0083 | Page: C-2

Critical Area - Yes or No: No

Treatment Train Desc.: to infiltration basins

BMP Name	TSS Removal Rate	Starting TSS	Amount Removed	Remaining Load
CB's	25%	100%	25%	75%
CDS 2015-4	80%	75%	60%	15%
infiltration	80%	15%	12%	3%
	0%	3%	0%	3%
	0%	3%	0%	3%
		Total TSS Remaining:	3%	**OK**

MassDEP Stormwater Standard 3 | Project: Douglas / Sutton | Date: 2/10/2022
TSS Removal | Project No: 21-0083 | Page: C-3

Critical Area - Yes or No: No

Treatment Train Desc.: to detention basins and buffer zones

BMP Name	TSS Removal Rate	Starting TSS	Amount Removed	Remaining Load
CB's	25%	100%	25%	75%
CDS 2015-4	80%	75%	60%	15%
	0%	15%	0%	15%
	0%	15%	0%	15%
	0%	15%	0%	15%
		Total TSS Remaining:	15%	**OK**

Soil Group	B		0.35 inches		C		0.25 inches		D		0.1 inches		
	Area	S.F.	Volume	C.F.	Area	S.F.	Volume	C.F.	Area	S.F.	Volume	C.F.	Total Area S.F.
Existing (primarily offsite)													
roads	39,754		1,159		0		0		0		0		39,754
roofs	8,146		238		2,528		53		0		0		10,674
Total	47,900		1,397		2,528		53		0		0		**50,428**
Proposed (includes offsite)													
roads	56,400		1,645		243,450		5,072		7,729		64		307,579
roof	19,746		576		81,137		1,690		5,637		47		106,520
Total	76,146		2,221		324,587		6,762		13,366		111		**414,099**
Total Required (onsite only)													
	28,246	S.F.	824	C.F.	322,059	S.F.	6,710	C.F.	13,366	S.F.	111	C.F.	**7,645** C.F.

Subcats to recharge	Impervious Area (S.F.)	Subcats to no recharge	Impervious Area (S.F.)	Basin	Storage	Elevation
S300 P	576	S100 P	31,869	403	1,555	546.00
S403 P	32,951	S200 P	11,707			
S501 P	11,832	S201 P	4,664	503	41	585.00
S502 P	15,425	S202 P	0			
S503 P	20,614	S400 P	13,317	505	13,261	552.80
S505 P	0	S401 P	5,455			
S701 P	16,200	S402P	3,216	502	12,154	557.20
S702 P	41,582	S404 P	32,328			
S901 P	9,313	S500 P	40,134	701	589	515.20
S1001 P	8,254	S504 P	37,917			
S1200 P	2,337	S700 P	6,782	901	2,702	535.50
S1202 P	2,501	S703 P	47,301			
S1203 P	0	S800 P	3,703	1001	1,115	552.00
S1301 P	1,775	S900 P	5,175			
		S1000 P	2,183	1200	507	533.50
		S1100 P	0			
		S1101 P	0	1203	15	526.00
		S1201 P	4,988			
		S1300 P	0	1301	180	526.00
Total Impervious Area	163,360 S.F.		250,739 S.F.	Total Volume	**32,119** C.F.	

Total Impervious (proposed less existing) **363,671** S.F.

Capture Adjustment **2.23** Adjustment Factor Required Volume **17,019** C.F. **OK**

Use 5 minute Tc - 733 csm/in

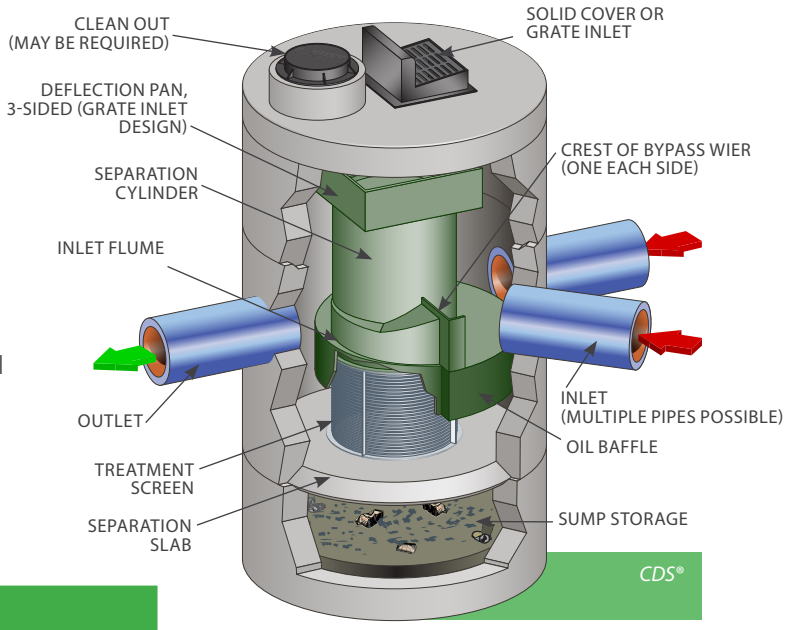
Subcat	Roads (S.F.)	Flow Rate cfs	DMH / CB
200	0	0.00	--
201	0	0.00	--
202	0	0.00	--
400	0	0.00	--
401	0	0.00	--
402	0	0.00	--
403	17,668	0.24	4032
404	21,344	0.30	4042
500	14,669	0.20	401
501	6,438	0.09	5011
502	9,254	0.13	5021
503	9,605	0.13	5031
504	363	0.01	52
505	0	0.00	--
700	0	0.00	--
701	6,831	0.09	7012
702	24,764	0.34	7021
703	19,720	0.27	7031
800	0	0.00	--
			--
900	0	0.00	--
901	6,171	0.09	9011
1000	0	0.00	--
1001	0	0.00	--
			--
1100	0	0.00	--
1101	0	0.00	--
1200	0	0.00	--
1201	4,184	0.06	2B
1202	1,790	0.02	2011B
1203	0	0.00	--
1300	0	0.00	--
1301	1,775	0.02	3011A

The CDS® System

Superior TSS and Trash Removal ...

The CDS is a hybrid technology that uses a combination of swirl concentration and indirect screening to separate and trap sediment, trash, debris, and hydrocarbons from stormwater runoff.

At the heart of the CDS system is a unique screening technology used to capture and retain sediment. The screen face is louvered so that it is smooth in the downstream direction. The effect created is called "Continuous Deflective Separation." The power of the incoming flow is harnessed to continually shear debris off the screen and to direct trash and sediment toward the center of the separation cylinder. This results in a screen that is self-cleaning and provides 100% removal of floatables and neutrally buoyant material debris 2.4 mm or larger, without blinding.



FEATURE	BENEFIT
Unique flow path and isolated storage sump	Excellent TSS capture and retention
Captures and retains 100% of floatables and neutrally buoyant debris 2.4 MM or larger	Superior trash removal
Self-cleaning screen	Ease of maintenance
Inline, offline, multiple inlet pipes, grate inlet, and drop inlet configurations available	Design flexibility
Internal bypass	Eliminates the need for additional structures
Clear access to sump and stored pollutants	Fast, easy maintenance

Learn More:
www.ContechES.com/cds

SELECT CDS APPROVALS

- Washington Department of Ecology (GULD) – Pretreatment
- New Jersey Department of Environmental Protection Certification (NJDEP)
- Canadian Environmental Technology Verification (ETV)
- MASTEP
- Connecticut DOT

The CDS system has been accepted and used extensively in all New England states for over 20 years with thousands of installations.

Product Flow Rates

CASCADE

Model	Treatment Rate (cfs)	Sediment Capacity[1] (CF)
CS-4	2.00	19
CS-5	3.50	29
CS-6	5.60	42
CS-8	12.00	75
CS-10	18.00	118

CDS

Model	Treatment Rate[2] (cfs)	Sediment Capacity[1] (CF)
1515-3	1.00	14
2015-4	1.40	25
2015-5	1.40	39
2015-6	1.40	57
2020-5	2.20	39
2020-6	2.20	57
2025-5	3.20	39
2025-6	3.20	57
3020-6	3.90	57
3025-6	5.00	57
3030-6	5.70	57
3035-6	6.50	57
4030-8	7.50	151
4040-8	9.50	151

VORTECHS

Model	Treatment Rate (cfs)	Sediment Capacity[3] (CF)
1000	1.60	16
2000	2.80	32
3000	4.50	49
4000	6.00	65
5000	8.50	86
7000	11.00	108
9000	14.00	130
11000	17.5	151
16000	25	192

STORMCEPTOR STC

Model	Treatment Rate (cfs)	Sediment Capacity[1] (CF)
STC 450i	0.40	46
STC 900	0.89	89
STC 2400	1.58	205
STC 4800	2.47	543
STC 7200	3.56	839
STC 11000	4.94	1086
STC 16000	7.12	1677

1 Additional sediment storage capacity available – Check with your local representative for information.

2 Treatment Capacity is based on laboratory testing using OK-110 (average D50 particle size of approximately 100 microns) and a 2400 micron screen.

3 Maintenance recommended when sediment depth has accumulated to within 12-18 inches of the dry weather water surface elevation.

STORMWATER SOLUTIONS

PIPE SOLUTIONS

STRUCTURES SOLUTIONS

NOTHING IN THIS CATALOG SHOULD BE CONSTRUED AS A WARRANTY. APPLICATIONS SUGGESTED HEREIN ARE DESCRIBED ONLY TO HELP READERS MAKE THEIR OWN EVALUATIONS AND DECISIONS, AND ARE NEITHER GUARANTEES NOR WARRANTIES OF SUITABILITY FOR ANY APPLICATION. CONTECH MAKES NO WARRANTY WHATSOEVER, EXPRESS OR IMPLIED, RELATED TO THE APPLICATIONS, MATERIALS, COATINGS, OR PRODUCTS DISCUSSED HEREIN. ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND ALL IMPLIED WARRANTIES OF FITNESS FOR ANY PARTICULAR PURPOSE ARE DISCLAIMED BY CONTECH. SEE CONTECH'S CONDITIONS OF SALE (AVAILABLE AT WWW.CONTECHES.COM/COS) FOR MORE INFORMATION.

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Revision 01/20

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D) Construction Period Pollution Prevention Plan, Long-Term Pollution Prevention Plan, and Long-Term Operations & Maintenance Plan (Standards 8, 9 & 10)

Standards 8 & 9)

Sutton Douglas Development, LLC, or their assigns are responsible for implementation of the Construction Period Pollution Prevention Plan, the Long-Term Operation & Maintenance Plan, and the Long-Term Pollution Prevention Plan for the 31-lot residential subdivision in Sutton and Douglas, Massachusetts.

The stormwater system is comprised of large undisturbed wooded, pervious areas (LID), some overland routing as well as catch basin and manhole, piped collection/conveyance systems and open stormwater detention and infiltration basins. Some CB's and DMH's are water quality structures (CDS 2015-4 units). All stormwater runoff from proposed impervious areas is pre-treated for TSS and water quality volume prior to be infiltrated or discharged off site.

Standard 10)

No illicit connections to the stormwater management system are proposed. The proposed residences will be served by individual on-site wastewater disposal systems (Title 5 systems) to be designed accordance with 314 CMR 5. These systems will provide additional recharge by keeping groundwater withdrawal from the individual wells on site.

Best Management Practice	Frequency Of Inspection	Maintenance (Inspect for these items) and Frequency (major storms being ½" of rain or more)	Inspection (Date) Maintenance (Yes/No)	Maintenance Performed (Date and Initial)
Natural Buffer	Daily	These areas are beyond the Limit of Work and are to be protected. Replace Limit of Work demarcation (flagging, berms/dikes, fencing or ECB's) when deteriorated. Should infringement into Natural Buffers occur, take corrective action immediately and implement mitigation measures (seeding, planting of native trees or shrubs) to restore Natural Buffers.		
Erosion Control Barriers (ECB)	Weekly and after major storms	Remove sediment before it has accumulated to one-half of the above-ground height of ECB's. Replace ECB's before they have deteriorated/decomposed to half their original height or every twelve (12) months, whichever comes first. Sediments to be removed and disposed of above the ECB line in an area to be stabilized later. Fabric to be disposed of offsite. Natural liners and wooden stakes may be left to decompose.		
Silt-sacks	Weekly and after major storms	Replace at least twice per year, or when sediment reaches two (2) inches in depth, or if flooding is observed. Dispose of materials offsite.		
Anti-tracking Pad	Daily	Replace at least one per year, or when effectiveness has diminished. Where sediment has been tracked-out offsite onto paved roads, sidewalks, or other paved areas offsite, remove the deposited sediment by the end of the same business day in which the track-out occurs or by the end of the next business day if track-out occurs on a non-business day. Remove the track-out by sweeping, shoveling, or vacuuming these surfaces, or by using other similarly effective means of sediment removal. Hosing or sweeping tracked-out sediment into any stormwater conveyance, storm drain inlet, or water of the U.S. (i.e., wetland or stream) is PROHIBITED.		

Best Management Practice	Frequency Of Inspection	Maintenance (Inspect for these items) and Frequency (major storms being ½" of rain or more)	Inspection (Date) Maintenance (Yes/No)	Maintenance Performed (Date and Initial)
Equipment Storage and Refueling	Daily	Storage or refueling of construction equipment within one hundred (100) feet of any stormwater conveyance, storm drain inlet, or water of the U.S. (i.e., wetland or stream) is PROHIBITED. Spill kits shall be readily available on site if refueling is to occur. All materials shall be disposed of offsite.		
Soil Stockpiles	Weekly and after major storms	Locate Stockpiles away from stormwater channels and conveyances. Provide ECB or Stone Check Dams around Stockpiles. Stockpiles that will remain unused for more than a month should be seeded with a quick cover crop such as Ryegrass (10-30 lbs./acres). Hosing or sweeping tracked-out sediment into any stormwater conveyance, storm drain inlet, or water of the U.S. (i.e., wetland or stream) is PROHIBITED.		
Sediment Basins	Weekly and after major storms	Remove floatables and any accumulated debris or as soon as observed. Remove accumulated sediment to maintain at least one-half of the design capacity and conduct all other appropriate maintenance to ensure the basin or impoundment remains in effective operating condition.		
Dust Control	Daily	Minimizing disturbed areas and rapid seeding/stabilization of disturbed areas is the preferred option. Water or an acceptable Dust Palliative should be used on haul roads to prevent dust from emanating and leaving the site or affecting Natural Buffers.		
Outlet & Channel Protection	Weekly and after major storm events	Observe slopes downgradient of Sediment Basins for stability, integrity, and erosion and repair immediately with seed or Turf Reinforcement Mat (TRM) and seed as necessary.		

Potential Source of Pollution	Protective Measures
Reportable Spill(s)	• The Owner or its representative is responsible to notify appropriate authorities of any spills of hazardous/harmful materials. • Should a spill bypass a containment device – catch basin, water quality structure, berm, etc. – and impact a stormwater detention or retention facility, the Owner shall be responsible for clean-up, mitigation and restoration of the facility to its original condition.
Lawn/Landscape Maintenance	• Clippings and yard waste shall not be disposed of in stormwater management facilities. • Pesticides and fertilizers shall only be stored on site in approved containers within a structure. • Pesticides and fertilizers shall be applied at the proper time of year in the minimal effective quantity/concentration. They should not be applied when severe rainfall events are forecast. • Use drought-tolerant species to limit watering requirements, and mulch and compost to retain soil moisture. Irrigate at appropriate times of day - early morning and late evening – for the minimal period necessary to restore soil moisture.
De-icing	• Application rates of de-icing materials shall be the minimum acceptable to adequately treat storm-specific conditions. Multiple treatments are preferred to use of excessive quantities during the initial response. • De-icing materials may not be stored on site. • Non-toxic and inert materials (sand/gravel) are preferable in areas adjacent to stormwater management facilities and wetland resource areas. For general use, calcium magnesium acetate (CMA), calcium chloride and potassium acetate are preferable to sodium chloride.
Snow Removal	• Snow shall be piled in pervious areas where melt water can infiltrate (as designated on the plan). • Snow shall not be piled within one hundred (100) feet of a wetland resource area. • Snow shall not be piled on catch basins, swales, or in stormwater basins. • Management of snow shall not create a nuisance or hazard. The Owner shall be responsible to remove snow from site if adequate area on site is not available. • Sediments deposited in snow storage areas shall be removed each spring and disposed of offsite.

Best Management Practice	Frequency Of Inspection	Maintenance (Inspect for these items) and Frequency	Inspection (Date) Maintenance (Yes/No)	Maintenance Performed (Date and Initial)
Street/Pavement Sweeping	Annually (March – April)	Annually (March – April). Paved areas to be swept of sediments, trash, and debris. Sediments to be removed and disposed off-site.		
Deep Sump Hooded Catch Basins	Quarterly	At least twice per year, or when sediment reaches two (2) feet in depth, or if flooding is observed. Remove floatables and sediment and dispose of off-site.		
Open Detention Basins	Monthly for first three (3) months Annually and after major storm events	At least twice per year or after major storm events. Remove trash and debris, mow the upper-stage, side slopes, embankment, and emergency spillway(s). Observe downgradient slopes for stability, integrity, and erosion and repair immediately. Re-seed slopes and bottom of basin to ensure dense vegetative cover. Remove sediment as necessary, but at least once every five (5) years.		
Open Infiltration Basins	Monthly for first three (3) months Annually and after major storm events	Annually or after major storm events. Remove trash and debris, mow the upper-stage, side slopes, embankment, and emergency spillway(s). Observe downgradient slopes for stability, integrity, and erosion and repair immediately. Re-seed slopes to ensure dense vegetative cover. Remove sediment as necessary, but at least once every five (5) years and scarify bottom of basin after removal.		
Grassed Channel / Drainage Swale	Monthly (mowing) Annually	Mow monthly during growing season. Remove sediment annually and re-seed (if necessary). Repair erosion and re-seed when necessary. Turf reinforcement mat (TRM) may be required.		
Outlet Protection	Monthly for first three (3) months	Annually or after major storm events. Observe downgradient slopes for stability, integrity, and erosion and repair immediately. Repair or replace stabilized outlet. Riprap or turf reinforcement mat (TRM) may be required.		

Best Management Practice	Frequency Of Inspection	Maintenance (inspect for these items) and Frequency	Inspection (Date) Maintenance (Yes/No)	Maintenance Performed (Date and Initial)
Outlet Protection (Cont'd)	Annually and after major storm events			

E) Soils Information

Soil Map—Worcester County, Massachusetts, Southern Part

Map Scale: 1:12,000 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 150 300 600 900

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

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: Worcester County, Massachusetts, Southern Part
Survey Area Data: Version 14, Sep 3, 2021

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

Date(s) aerial images were photographed: May 18, 2019—Jul 9, 2019

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1	Water	16.5	2.2%
3A	Scarboro and Walpole soils, 0 to 3 percent slopes	4.6	0.6%
51A	Swansea muck, 0 to 1 percent slopes	1.2	0.2%
71A	Ridgebury fine sandy loam, 0 to 3 percent slopes, extremely stony	13.9	1.9%
73A	Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony	48.1	6.4%
245C	Hinckley loamy sand, 8 to 15 percent slopes	0.7	0.1%
254A	Merrimac fine sandy loam, 0 to 3 percent slopes	1.5	0.2%
254B	Merrimac fine sandy loam, 3 to 8 percent slopes	6.6	0.9%
255A	Windsor loamy sand, 0 to 3 percent slopes	0.4	0.0%
300C	Montauk fine sandy loam, 8 to 15 percent slopes	7.6	1.0%
302B	Montauk fine sandy loam, 0 to 8 percent slopes, extremely stony	129.4	17.3%
302C	Montauk fine sandy loam, 8 to 15 percent slopes, extremely stony	14.3	1.9%
307B	Paxton fine sandy loam, 0 to 8 percent slopes, extremely stony	18.7	2.5%
307C	Paxton fine sandy loam, 8 to 15 percent slopes, extremely stony	1.6	0.2%
307E	Paxton fine sandy loam, 15 to 35 percent slopes, extremely stony	10.7	1.4%
310B	Woodbridge fine sandy loam, 3 to 8 percent slopes	2.9	0.4%
312B	Woodbridge fine sandy loam, 0 to 8 percent slopes, extremely stony	11.2	1.5%
315B	Scituate fine sandy loam, 3 to 8 percent slopes	1.2	0.2%
317B	Scituate fine sandy loam, 3 to 8 percent slopes, extremely stony	253.3	33.8%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
420B	Canton fine sandy loam, 3 to 8 percent slopes	7.6	1.0%
420C	Canton fine sandy loam, 8 to 15 percent slopes	6.2	0.8%
422B	Canton fine sandy loam, 0 to 8 percent slopes, extremely stony	148.5	19.8%
422C	Canton fine sandy loam, 8 to 15 percent slopes, extremely stony	26.7	3.6%
422E	Canton fine sandy loam, 15 to 35 percent slopes, extremely stony	15.9	2.1%
Totals for Area of Interest		**749.3**	**100.0%**

Commonwealth of Massachusetts
City/Town of DOUGLAS

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

A. Facility Information

SUTTON DOUGLAS DEVELOPMENT LLC
Owner Name

3 PJ MURPHY LANE
Street Address

135-12
Map/Lot #

HOPKINTON
City

MA
State

01748
Zip Code

B. Site Information

1. (Check one) ☑ New Construction ☐ Upgrade ☐ Repair

2. Soil Survey Available? ☑ Yes ☐ No If yes: NRCS SOIL SURVEY
Source

73A
302B
317B
422C
Soil Map Unit

WHITMAN SANDY LOAM, MONTAUK SANDY LOAM, SITUATE SANDY LOAM, CANTON SANDY LOAM
Soil Name

~~Soil Limitations~~

LOAMY SAND
Soil Parent material

KAME TERRACE
Landform

3. Surficial Geological Report Available? ☐ Yes ☐ No If yes:
Year Published/Source

Map Unit

SITUATE GRANITE GNEISS
Description of Geologic Map Unit:

4. Flood Rate Insurance Map Within a regulatory floodway? ☐ Yes ☑ No

5. Within a velocity zone? ☐ Yes ☑ No

6. Within a Mapped Wetland Area? ☐ Yes ☑ No If yes, MassGIS Wetland Data Layer:
Wetland Type

7. Current Water Resource Conditions (USGS):
Month/Day/ Year
Range: ☐ Above Normal ☑ Normal ☐ Below Normal

8. Other references reviewed:

Commonwealth of Massachusetts
City/Town of DOUGLAS

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 32/01 (Hole #) 3/24/21 (Date) AM (Time) SUNNY 30's (Weather) _____ (Latitude) _____ (Longitude:)

1. Land Use: WOODLAND (e.g., woodland, agricultural field, vacant lot, etc.) OAKS, PINES, MAPLES (Vegetation) FEW (Surface Stones (e.g., cobbles, stones, boulders, etc.) 2-8% (Slope (%)

Description of Location: _____

2. Soil Parent Material: LOAMY SAND KAME (Landform) BACKSLOPE (Position on Landscape (SU, SH, BS, FS, TS)

3. Distances from: Open Water Body _____ feet; Property Line _____ feet; Drainage Way _____ feet; Drinking Water Well _____ feet; Wetlands _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☑ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☑ Yes ☐ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log @ LOT 31

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-4"	Ap	SANDY LOAM	2.5Y 3/3								
4-18"	B1	↓	10YR 5/6								
18-130"	C	LOAMY SAND	5Y 6/2	47"	7.5YR 5/6	5%		10%			

Additional Notes:
EVIDENCE OF REDOX AT 29"
SEEPAGE AT 120"
GROUNDWATER AT 127"

Commonwealth of Massachusetts
City/Town of Douglas

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 321-02 (Hole #) 3/24/21 (Date) AM (Time) SUNNY 30's (Weather) _____ (Latitude) _____ (Longitude:)

1. Land Use: WOODLAND (e.g., woodland, agricultural field, vacant lot, etc.) OAKS, PINES, MAPLES (Vegetation) FEW (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 2-8% (Slope (%))

Description of Location: _____

2. Soil Parent Material: LOAMY SAND KAME (Landform) BACK SLOPE (Position on Landscape (SU, SH, BS, FS, TS))

3. Distances from: Open Water Body _____ feet; Drainage Way _____ feet; Wetlands _____ feet; Property Line _____ feet; Drinking Water Well _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☒ Yes ☐ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log @ LOT 19

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-4"	Ap	SANDY LOAM	2.5Y 3/3								
4-24"	B1	↓	10YR 5/6								
24-121"	C	LOAMY SAND	5Y 6/2	36"	7.5YR 5/6	5%		5%			

Additional Notes:
EVIDENCE OF REDOX @ 24"
INFERENCE @ 81"
GROUNDWATER @ 110"

Commonwealth of Massachusetts
City/Town of DOUGLAS

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 321-03 (Hole #) 3/24/21 (Date) AM (Time) SUNNY 30's (Weather) _____ (Latitude) _____ (Longitude:)

1. Land Use: WOODLAND (e.g., woodland, agricultural field, vacant lot, etc.) OAKS, PINES, MAPLES (Vegetation) FEW (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 2-8% (Slope (%))

Description of Location: _____

2. Soil Parent Material: LOAMY SAND / MED. SAND (Landform) KAME (Position on Landscape (SU, SH, BS, FS, TS)) BACKSLOPE

3. Distances from: Open Water Body _____ feet; Drainage Way _____ feet; Wetlands _____ feet; Property Line _____ feet; Drinking Water Well _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☑ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☑ Yes ☐ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log @ LOT 20

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-6"	Ap	SANDY LOAM	2.5Y 3/3								
6-25"	Bw	↓	10YR 5/6								
25-125"	C	LOAMY SAND	5Y 4/2	37"	7.5YR 5/6	5%		5%			

Additional Notes:
LENSES OF MED. SAND
INTERFACE @ 110"
GROUNDWATER @ 120"

Commonwealth of Massachusetts
City/Town of DOUGLAS

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 32/-04 (Hole #) 3/24/21 (Date) AM (Time) SUNNY 30'S (Weather) _____ (Latitude) _____ (Longitude:)

1. Land Use: WOODLAND (e.g., woodland, agricultural field, vacant lot, etc.) OAKS PINES MAPLES (Vegetation) FEW (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 2-8% (Slope (%))

Description of Location: _____

2. Soil Parent Material: LOAMY SAND Landform: KNOLL Position on Landscape (SU, SH, BS, FS, TS): BACKSLOPE

3. Distances from: Open Water Body _____ feet; Drainage Way _____ feet; Wetlands _____ feet; Property Line _____ feet; Drinking Water Well _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☑ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☑ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log @ LOT 21

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-2"	A	SANDY LOAM	2.5Y 3/3								
2-21"	B	↓	10YR 5/6								
21-138"	C	LOAMY SAND	5Y 6/2	40"	7.5YR 5/6	5%		10%			

Additional Notes:
EVIDENCE OF REDOX @ 27"
WETNESS OF SAND

Commonwealth of Massachusetts
City/Town of DOUGLAS

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 32/05 (Hole #) 3/24/21 (Date) AM (Time) SUNNY 30'S (Weather) _____ (Latitude) _____ (Longitude:)

1. Land Use: WOODLAND (e.g., woodland, agricultural field, vacant lot, etc.) OAKS, PINES, MAPLES (Vegetation) FEW (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 2-8% (Slope (%))

Description of Location: _____

2. Soil Parent Material: SANDY LOAM KAME (Landform) BACKSLOPE (Position on Landscape (SU, SH, BS, FS, TS))

3. Distances from: Open Water Body _____ feet; Drainage Way _____ feet; Wetlands _____ feet; Property Line _____ feet; Drinking Water Well _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☑ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☑ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log @ LOT 26

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-8"	AP	SANDY LOAM	2.5Y 3/3								
8-26"	BW		10YR 5/4								
26-110"	C		2.5Y 4/3	47"	7.5YR 5/6	5%		10%			

Additional Notes:
EVIDENCE OF REDOX @ 28"
REFUSAL AT 83"
LARGE ROUNDED BOULDERS

Commonwealth of Massachusetts
City/Town of DOUGLAS

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 321-06 (Hole #) 3/24/21 (Date) AM (Time) SUNNY 30'S (Weather) _____ (Latitude) _____ (Longitude:)

1. Land Use: WOODLAND (e.g., woodland, agricultural field, vacant lot, etc.) OAKS, PINES, MAPLES (Vegetation) FEW (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 2-8% (Slope (%))

Description of Location: _____

2. Soil Parent Material: LOAMY SAND KAME (Landform) BACKSLOPE (Position on Landscape (SU, SH, BS, FS, TS))

3. Distances from: Open Water Body _____ feet; Drainage Way _____ feet; Wetlands _____ feet; Property Line _____ feet; Drinking Water Well _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☑ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☑ Yes ☐ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log @ LOT 27

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-2"	Ap	SANDY LOAM	2.5Y 3/3								
2"-25"	Bw	"	10YR 5/6								
25-121"	C	LOAMY SAND	5Y 4/2	35"	7.5YR 5/6	5%		10%			

Additional Notes:
EVIDENCE OF REDOX @ 27"
LEDGE @ 80"
GROUNDWATER @ 118"
BIG ROCKS WITHIN HOLE

Commonwealth of Massachusetts
City/Town of Douglas

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 321-07 (Hole #) 3/24/21 (Date) AM (Time) SUNNY 30's (Weather) _____ (Latitude) _____ (Longitude:)

1. Land Use: WOODLAND (e.g., woodland, agricultural field, vacant lot, etc.) OAKS, PINES, MAPLES (Vegetation) FEW (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 2-8% (Slope (%))

Description of Location: _____

2. Soil Parent Material: LOAMY SAND KAME (Landform) BACKSLOPE (Position on Landscape (SU, SH, BS, FS, TS))

3. Distances from: Open Water Body _____ feet; Drainage Way _____ feet; Wetlands _____ feet; Property Line _____ feet; Drinking Water Well _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☑ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☑ Yes ☐ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log @ LOT 29

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-4"	Ap	SANDY LOAM	7.5YR 3/3								
4-30"	Bw	"	10YR 5/6								
30-140"	C	LOAMY SAND	5Y 4/2	47"	7.5YR 5/6	5%		10%	LOOSE SINGLE GRAIN		

Additional Notes:
EVIDENCE OF REDOX @ 33"
WEEPAGE @ 130"

Commonwealth of Massachusetts
City/Town of DOUGLAS

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 321-08 (Hole #) 3/24/21 (Date) AM (Time) SUNNY 30's (Weather) _____ (Latitude) _____ (Longitude:)

1. Land Use: WOODLAND (e.g., woodland, agricultural field, vacant lot, etc.) OAKS, PINES, MAPLES (Vegetation) FEW (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 2-8% (Slope (%))

Description of Location: _____

2. Soil Parent Material: LOAMY SAND Landform: KAME Position on Landscape (SU, SH, BS, FS, TS): BACKSLOPE

3. Distances from: Open Water Body _____ feet; Drainage Way _____ feet; Wetlands _____ feet; Property Line _____ feet; Drinking Water Well _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☑ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☑ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log @ LOT 26

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-6"	Ap	SANDY LOAM	7.5YR 3/3								
6-36"	Bw	"	10YR 5/6	37"	7.5YR 5/6	5%		10%	LOOSE SINGLE GRAIN		
36-131"	C	LOAMY SAND	5Y 6/2								

Additional Notes:
WEEPAGE @ 123"

Commonwealth of Massachusetts
City/Town of DOUGLAS

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 32-09 (Hole #) 3/24/21 (Date) AM (Time) SUNNY 30'S (Weather) _____ (Latitude) _____ (Longitude:)

1. Land Use: WOODLAND (e.g., woodland, agricultural field, vacant lot, etc.) OAKS, PINES, MAPLES (Vegetation) FEW (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 2-8% (Slope (%))

Description of Location: _____

2. Soil Parent Material: LOAMY SAND; KAME (Landform); BACKSLOPE (Position on Landscape (SU, SH, BS, FS, TS))

3. Distances from: Open Water Body _____ feet; Drainage Way _____ feet; Wetlands _____ feet; Property Line _____ feet; Drinking Water Well _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log @ LOT 30

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-10"	Ap	SANDY LOAM	2.5Y 3/3								
10-25"	Bw	"	10YR 5/6								
25-118"	C	LOAMY SAND	5Y 6/2	37"	7.5YR 5/6	5%		5%	LOOSE SINGLE GRAIN		

Additional Notes:
LENSES OF SAND

Commonwealth of Massachusetts
City/Town of DOUGLAS

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 321-10 (Hole #) 3/31/21 (Date) AM (Time) CLOUDY 50's (Weather) _____ (Latitude) _____ (Longitude:)

1. Land Use: WOODLAND (e.g., woodland, agricultural field, vacant lot, etc.) OAKS, PINES, MAPLES (Vegetation) FEW (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 2-8% (Slope (%))

Description of Location: _____

2. Soil Parent Material: LOAMY SAND | KAME (Landform) | BACKSLOPE (Position on Landscape (SU, SH, BS, FS, TS))

3. Distances from: Open Water Body _____ feet; Drainage Way _____ feet; Wetlands _____ feet; Property Line _____ feet; Drinking Water Well _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☑ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☑ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log @ LOT 2

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-4"	Ap	SANDY LOAM	5YR 2/1								
4-24"	Bw	↓	7.5YR 5/6								
24-95"	C	LOAMY SAND	7.5YR 4/4	38"	7.5YR 5/6	5%		10%	LOOSE SINGLE GRAIN		

Additional Notes:
REFUSAL @ 95"
EVIDENCE OF REDOX @ 32"

Commonwealth of Massachusetts
City/Town of DOUGLAS

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 321-11 (Hole #) 3/31/21 (Date) AM (Time) CLOUDY 50's (Weather) _____ (Latitude) _____ (Longitude:)

1. Land Use: WOODLAND (e.g., woodland, agricultural field, vacant lot, etc.) OAKS, PINES, MAPLES (Vegetation) FEW (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 2-8% (Slope (%))

Description of Location: _____

2. Soil Parent Material: LOAMY SAND Landform: KAME Position on Landscape (SU, SH, BS, FS, TS): BACKSLOPE

3. Distances from: Open Water Body _____ feet; Drainage Way _____ feet; Wetlands _____ feet; Property Line _____ feet; Drinking Water Well _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☑ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☑ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log @ LOT 3

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-4"	Ap	SANDY LOAM	5YR 2/1								
4-32"	Bw	↓	2.5YR 5/6								
32-123"	C	LOAMY SAND	2.5Y 6/4	56"	7.5YR 5/6	5%		15%	PLATY		

Additional Notes:
EVIDENCE OF REDOX @ 36"

Commonwealth of Massachusetts
City/Town of DOUGLAS

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 321-12 (Hole #) 3/31/21 (Date) AM (Time) CLOUDY 50's (Weather) _____ (Latitude) _____ (Longitude:)

1. Land Use: WOODLAND (e.g., woodland, agricultural field, vacant lot, etc.) OAKS, PINES, MAPLES (Vegetation) FEW (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 2-3% (Slope (%))

Description of Location: _____

2. Soil Parent Material: LOAMY SAND _____ KAME (Landform) BACKSLOPE (Position on Landscape (SU, SH, BS, FS, TS))

3. Distances from: Open Water Body _____ feet; Drainage Way _____ feet; Wetlands _____ feet; Property Line _____ feet; Drinking Water Well _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☐ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☐ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log @ LOT 4

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-3"	Ap	SANDY LOAM	5YR 2/1								
3-26"	Bw	4	2.5YR 5/4								
26-100"	C	LOAMY SAND	2.5YR 4/4	29"	7.5YR 5/6	5%					

Additional Notes:
TOP OF ROCK @ 48" / REFUSAL @ 100"
LENSES OF SAND

Commonwealth of Massachusetts
City/Town of DOUGLAS

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 321-13 (Hole #) 3/31/21 (Date) AM (Time) CLOUDY 50's (Weather) _____ (Latitude) _____ (Longitude:)

1. Land Use: WOODLAND (e.g., woodland, agricultural field, vacant lot, etc.) OAKS PINES, MAPLES (Vegetation) FEW (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 2-3% (Slope (%))

Description of Location: _____

2. Soil Parent Material: _____ Landform _____ Position on Landscape (SU, SH, BS, FS, TS)

3. Distances from: Open Water Body _____ feet Drainage Way _____ feet Wetlands _____ feet
Property Line _____ feet Drinking Water Well _____ feet Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☑ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☑ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log P 207 S

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-3"	Ap	SANDY LOAM	5YR 2/1								
3-27"	Bw	"	7.5YR 5/6								
27-85"	C	LOAMY SAND	7.5YR 6/4	30"	7.5YR 5/6	5%		15%	PLATY		

Additional Notes:
BOULDERS @ 85"
LENSES OF SAND

Commonwealth of Massachusetts
City/Town of DOUGLAS

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 321-14 (Hole #) 3/31/21 (Date) AM (Time) CLOUDY 50'S (Weather) _____ (Latitude) _____ Longitude:

1. Land Use: WOODLAND (e.g., woodland, agricultural field, vacant lot, etc.) OAKS, PINES, MAPLES (Vegetation) FEW (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 2-3% (Slope (%))

Description of Location: _____

2. Soil Parent Material: LOAMY SAND (Landform) KAME (Position on Landscape (SU, SH, BS, FS, TS)) BACKSLOPE

3. Distances from: Open Water Body _____ feet; Drainage Way _____ feet; Wetlands _____ feet; Property Line _____ feet; Drinking Water Well _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☑ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☑ Yes ☐ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log @ LOT 6

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-3"	Ap	SANDY LOAM	5YR2/1								
3-28"	Bw	"	2.5Y5/4								
28-122"	C	LOAMY SAND	2.5Y6/4	40"	7.5YR5/6	5%		10%	PLATY		

Additional Notes:
EVIDENCE OF REDOX @ 32" / SEEPAGE @ 112" / GROUNDWATER @ 120"
LENSES OF SAND

Commonwealth of Massachusetts
City/Town of DOUGLAS

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area*)

Deep Observation Hole Number: 321-15 (Hole #) 3/31/21 (Date) AM (Time) CLOUDY 50's (Weather) _____ (Latitude) _____ (Longitude:)

1. Land Use: WOODLAND (e.g., woodland, agricultural field, vacant lot, etc.) OAKS, PINES, MAPLES (Vegetation) FEW (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 2-5% (Slope (%))

Description of Location: _____

2. Soil Parent Material: LOAMY SAND KAME (Landform) BACKSLOPES (Position on Landscape (SU, SH, BS, FS, TS))

3. Distances from: Open Water Body _____ feet; Drainage Way _____ feet; Wetlands _____ feet; Property Line _____ feet; Drinking Water Well _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☑ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☑ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log @ LOT 7

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-9"	Ap	SANDY LOAM	5YR 2/1								
9-30"	B1	〃	2.5YR 5/6								
30-129"	C	LOAMY SAND	7.5YR 6/4	36"	7.5YR 5/4		20% →		PLATY		

Additional Notes:
LENSES OF SAND
SURFACE ROCKS AND BOULDERS

Commonwealth of Massachusetts
City/Town of DOUGLAS

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area*)

Deep Observation Hole Number: 321-16 (Hole #) 3/3/21 (Date) AM (Time) CLOUDY 50's (Weather) _____ (Latitude) _____ (Longitude:)

1. Land Use: WOODLAND (e.g., woodland, agricultural field, vacant lot, etc.) OAKS, PINES, MAPLES (Vegetation) FIELD (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 2-8% (Slope (%))

Description of Location: _____

2. Soil Parent Material: LOAMY SAND KAME (Landform) BACKSLOPE (Position on Landscape (SU, SH, BS, FS, TS))

3. Distances from: Open Water Body _____ feet; Drainage Way _____ feet; Wetlands _____ feet; Property Line _____ feet; Drinking Water Well _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☑ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☑ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log @ LOT 17

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-5"	Ap	SANDY LOAM	5YR 2/1								
5-28"	B	"	2.5Y 5/4								
28-110"	C	LOAMY SAND	2.5Y 4/4	35"	7.5YR 5/6	5%		10%	PLATY		

Additional Notes:
LENSES OF SAND
REFUSAL AT 110"

Commonwealth of Massachusetts
City/Town of DOUGLAS

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area*)

Deep Observation Hole Number: 321-17 (Hole #) 3/31/21 (Date) AM (Time) CLOUDY 50's (Weather) _____ (Latitude) _____ (Longitude:)

1. Land Use: WOODLAND (e.g., woodland, agricultural field, vacant lot, etc.) OAKS, PINES, MAPLES (Vegetation) FEW (Surface Stones (e.g., cobbles, stones, boulders, etc.) 2-8% (Slope (%)

Description of Location: _____

2. Soil Parent Material: LOAMY SAND KAME (Landform) BACKSLOPE (Position on Landscape (SU, SH, BS, FS, TS)

3. Distances from: Open Water Body _____ feet; Drainage Way _____ feet; Wetlands _____ feet; Property Line _____ feet; Drinking Water Well _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☑ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log LOT 16 OR LOT 18

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-4"	AP	SANDY LOAM	5YR 2/1								
4-29"	B	↓	7.5YR 5/6								
29-111"	C	LOAMY SAND	2.5Y 6/4	39"	7.5YR 5/6	5%		5%	PLATY		

Additional Notes:
LENSES OF SAND
EVIDENCE OF REDOX AT 33"
TOP OF ROCK AT 54"

Commonwealth of Massachusetts
City/Town of DOUGLAS

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 321-18 (Hole #) 3/31/21 (Date) AM (Time) CLOUDY 50s (Weather) _____ (Latitude) _____ (Longitude)

1. Land Use: WOODLAND (e.g., woodland, agricultural field, vacant lot, etc.) OAKS, PINES, MAPLES (Vegetation) FIELD (Surface Stones (e.g., cobbles, stones, boulders, etc.) 2-8% (Slope (%)

Description of Location: _____

2. Soil Parent Material: LOAMY SAND _____ KAME (Landform) BACKSLOPE (Position on Landscape (SU, SH, BS, FS, TS)

3. Distances from: Open Water Body _____ feet; Drainage Way _____ feet; Wetlands _____ feet; Property Line _____ feet; Drinking Water Well _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☑ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☑ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log @ LOT 9

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-4"	Ap	SANDY LOAM	5Y2 2/1								
4-28"	Bw	"	2.5Y 5/4								
28-105"	C	LOAMY SAND	2.5Y 6/4	36"	7.5YR 5/6	5%		5%	PLATY		

Additional Notes:
EVIDENCE OF REDOX AT 28"
LENSES OF SAND
REFUSAL AT 105"
SURFACE ROCKS AND BOULDERS

Commonwealth of Massachusetts
City/Town of DOUGLAS

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 321-19 (Hole #) 3/31/21 (Date) AM (Time) CLOUDY 50's (Weather) _____ (Latitude) _____ (Longitude:)

1. Land Use: WOODLAND (e.g., woodland, agricultural field, vacant lot, etc.) OAKS, PINES, MAPLES (Vegetation) FEW (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 2-8 (Slope (%))

Description of Location: _____

2. Soil Parent Material: MEDIUM SAND KAME (Landform) BACKSLOPE (Position on Landscape (SU, SH, BS, FS, TS))

3. Distances from: Open Water Body _____ feet; Drainage Way _____ feet; Wetlands _____ feet; Property Line _____ feet; Drinking Water Well _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log @ LOT 8

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0"-4"	Ap	SANDY LOAM	5Y 2/1								
4"-29"	Bw	"	2.5Y 5/6								
29"-99"	C	MED. SAND	2.5Y 6/4	32"	7.5YR 5/6	5%		10%			

Additional Notes:
TOP OF ROCK @ 99"

Commonwealth of Massachusetts
City/Town of DOUGLAS

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 321-20 (Hole #) 3/31/21 (Date) AM (Time) CLOUDY 50's (Weather) _____ (Latitude) _____ (Longitude:)

1. Land Use: WOODLAND (e.g., woodland, agricultural field, vacant lot, etc.) OAKS PINES MAPLES (Vegetation) FEW (Surface Stones (e.g., cobbles, stones, boulders, etc.) 2-5% (Slope (%)

Description of Location: _____

2. Soil Parent Material: MEDIUM SAND KAME (Landform) BACKSLOPE (Position on Landscape (SU, SH, BS, FS, TS)

3. Distances from: Open Water Body _____ feet; Drainage Way _____ feet; Wetlands _____ feet; Property Line _____ feet; Drinking Water Well _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☑ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☑ Yes ☐ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log @ LOT 10

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-5"	Ap	SANDY LOAM	5YR 2/1								
5-25"	B1U	LOAMY SAND	2.5Y 5/6								
25-99"	C	MED. SAND	2.5Y 6/4	56"	7.5YR 5/6	5%			LOOSE		

Additional Notes:
EVIDENCE OF REDOX @ 33"
GROUNDWATER AT 99"
MTH. LAUREL

Commonwealth of Massachusetts
City/Town of DOUGLAS

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 32/21 (Hole #) 3/31/21 (Date) AM (Time) CLOUDY 50's (Weather) _____ (Latitude) _____ (Longitude:)

1. Land Use: WOODLAND (e.g., woodland, agricultural field, vacant lot, etc.) OAKS, PINES, MAPLES (Vegetation) FEW (Surface Stones (e.g., cobbles, stones, boulders, etc.) 2-8% (Slope (%)

Description of Location: _____

2. Soil Parent Material: MEDIUM SAND KAME (Landform) BACKSLOPE (Position on Landscape (SU, SH, BS, FS, TS)

3. Distances from: Open Water Body _____ feet; Drainage Way _____ feet; Wetlands _____ feet; Property Line _____ feet; Drinking Water Well _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☑ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☑ Yes ☐ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log @ LOT 11

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0"-6"	Ap	SANDY LOAM	5YR 2/1								
6"-30"	Bw	LOAMY SAND	2.5Y 5/4	28"	7.5YR 5/6	5%		15%	LOOSE SINGLE GRAIN		
30"-103"	C	MED. SAND	2.5Y 6/4								

Additional Notes:
KEEPANCE AT 70"
ALOT OF COBBLES
WITH LAUREL

Commonwealth of Massachusetts
City/Town of DOUGLAS

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 321-22 (Hole #) 3/31/21 (Date) AM (Time) CLOUDY 50's (Weather) _____ (Latitude) _____ (Longitude:)

1. Land Use: WOODLAND (e.g., woodland, agricultural field, vacant lot, etc.) OAKS, PINE, MAPLES (Vegetation) FEW (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 2-8% (Slope (%))

Description of Location: _____

2. Soil Parent Material: FINE SAND KAME (Landform) BACKSLOPE (Position on Landscape (SU, SH, BS, FS, TS))

3. Distances from: Open Water Body _____ feet; Drainage Way _____ feet; Wetlands _____ feet; Property Line _____ feet; Drinking Water Well _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☑ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☑ Yes ☐ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log @ LOT 12

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-5"	Ap	SANDY LOAM	5YR 2/1								
5-18"	Bw	LOAMY SAND	2.5Y 5/6								
18-68"	C	FINE SAND	2.5Y 7/3					5%			

Additional Notes:
SEEPAGE AT 20"
GROUNDWATER AT 22"
REDOX THROUGHOUT
LENSES OF COURSE SAND

Commonwealth of Massachusetts
City/Town of DOUGLAS

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 321-23 (Hole #) 3/31/21 (Date) AM (Time) CLOUDY 50'S (Weather) _____ (Latitude) _____ (Longitude:)

1. Land Use: WOODLAND (e.g., woodland, agricultural field, vacant lot, etc.) OAKS, PINE, MAPLES (Vegetation) FEW (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 2-8% (Slope (%))

Description of Location: _____

2. Soil Parent Material: LOAMY SAND Landform: KAME Position on Landscape (SU, SH, BS, FS, TS): BACKSLOPE

3. Distances from: Open Water Body _____ feet; Drainage Way _____ feet; Wetlands _____ feet; Property Line _____ feet; Drinking Water Well _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☑ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☑ Yes ☐ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log @ LOT 14

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-8"	A	SANDY LOAM	5YR 2/1								
8-28"	B	"	7.5YR 5/6								
28-109"	C	LOAMY SAND	7.5YR 6/4	30"	7.5YR 5/6	5%		5%			

Additional Notes:
SEEPAGE AT 100"
EVIDENCE OF REDOX 18"
LENSES OF SAND

Commonwealth of Massachusetts
City/Town of DOUGLAS

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 321-24 (Hole #) 3/31/21 (Date) AM (Time) CLOUDY 50'S (Weather) _____ (Latitude) _____ (Longitude:)

1. Land Use: WOODLAND (e.g., woodland, agricultural field, vacant lot, etc.) OAKS, PINES, MAPLES (Vegetation) FEW (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 2-9% (Slope (%))

Description of Location: _____

2. Soil Parent Material: LOAMY SAND KAME (Landform) BACK-SLOPE (Position on Landscape (SU, SH, BS, FS, TS))

3. Distances from: Open Water Body _____ feet; Drainage Way _____ feet; Wetlands _____ feet; Property Line _____ feet; Drinking Water Well _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☐ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☐ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log @ LOT 13

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0"-8"	Ap	SANDY LOAM	5YR 2/1								
8"-28"	B1C	↓	2.5Y 5/6								
28"-108"	C	LOAMY SAND	2.5Y 6/4	28"	7.5YR 5/6	5%		5%			

Additional Notes:
SOIL WET
LENSES OF LOAM AT BOTTOM

Commonwealth of Massachusetts
City/Town of DOUGLAS

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area*)

Deep Observation Hole Number: 321-25 (Hole #) 3/31/21 (Date) 10AM (Time) CLOUDY 50's (Weather) _____ (Latitude) _____ (Longitude:)

1. Land Use: WOODLAND (e.g., woodland, agricultural field, vacant lot, etc.) OAKS, PINES, MAPLES (Vegetation) FEW (Surface Stones (e.g., cobbles, stones, boulders, etc.) 2-8% (Slope (%)

Description of Location: _____

2. Soil Parent Material: SANDY LOAM _____ KAME (Landform) BACKSLOPE (Position on Landscape (SU, SH, BS, FS, TS)

3. Distances from: Open Water Body _____ feet; Drainage Way _____ feet; Wetlands _____ feet; Property Line _____ feet; Drinking Water Well _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☑ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☑ Yes ☐ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log @ LOT 25

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-4"	Ap	SANDY LOAM	5YR 2/1								
4-25"	Bw	"	2.5Y 5/6								
25-66"	C1	LOAMY SAND	2.5Y 6/4	31"	7.5YR 5/6	5%					
66-107	C	SANDY LOAM	2.5Y 6/2								

Additional Notes:
DEEPAGE AT 98"
GROUNDWATER AT 109"

Commonwealth of Massachusetts
City/Town of POWNALL

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 32L-26 (Hole #) 3/31/21 (Date) AM (Time) CLOUDY 50's (Weather) _____ (Latitude) _____ (Longitude:)

1. Land Use: WOODLAND (e.g., woodland, agricultural field, vacant lot, etc.) OAKS, PINES, MAPLES (Vegetation) FEW (Surface Stones (e.g., cobbles, stones, boulders, etc.) 2-8% (Slope (%)

Description of Location: _____

2. Soil Parent Material: SANDY LOAM KAME (Landform) BACKSLOPE (Position on Landscape (SU, SH, BS, FS, TS)

3. Distances from: Open Water Body _____ feet; Drainage Way _____ feet; Wetlands _____ feet; Property Line _____ feet; Drinking Water Well _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☑ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☑ Yes ☐ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log @ LOT 24

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-3"	Ap	SANDY LOAM	5YR 2/1								
3-23"	Bw		2.5Y 5/6								
23-84"	C		2.5Y 6/4	27"	7.5YR 5/6	5%		5%			

Additional Notes:
SEEPAGE AT 30"
EVIDENCE OF REDOX AT 18"
LENSES OF FINE SAND

Commonwealth of Massachusetts
City/Town of DOUGLAS

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area*)

Deep Observation Hole Number: 321-27 (Hole #) 3/31/21 (Date) 10AM (Time) CLOUDY 50's (Weather) _____ (Latitude) _____ (Longitude:)

1. Land Use: WOODLAND (e.g., woodland, agricultural field, vacant lot, etc.) OAKS, PINES, MAPLES (Vegetation) FEW (Surface Stones (e.g., cobbles, stones, boulders, etc.) 2-8% (Slope (%)

Description of Location: _____

2. Soil Parent Material: SANDY LOAM Landform: KAME Position on Landscape (SU, SH, BS, FS, TS): BACKSLOPE

3. Distances from: Open Water Body _____ feet; Drainage Way _____ feet; Wetlands _____ feet; Property Line _____ feet; Drinking Water Well _____ feet; Other _____ feet

4. Unsuitable Materials Present: ☐ Yes ☑ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☑ Yes ☐ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Soil Log @ LOT 22

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-5"	Ap	SANDY LOAM	5YR 2/1								
5-27"	Bw		7.5YR 5/6								
27-105"	C		7.5YR 7/3	26"	7.5YR 5/6	5%		5%			

Additional Notes:
IMPERVIOUS AT 36"
LENSES OF SAND

Commonwealth of Massachusetts
City/Town of DOUGLAS

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

D. Determination of High Groundwater Elevation

1. Method Used:

	Obs. Hole #_____	Obs. Hole #_____
☑ Depth observed standing water in observation hole	_____ inches	_____ inches
☑ Depth weeping from side of observation hole	_____ inches	_____ inches
☑ Depth to soil redoximorphic features (mottles)	_____ inches	_____ inches
☐ Depth to adjusted seasonal high groundwater (S_h) (USGS methodology)	_____ inches	_____ inches

_____ Index Well Number

_____ Reading Date

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# _____ S_c _____ S_r _____ OW_c _____ OW_{max} _____ OW_r _____ S_h _____

2. Estimated Depth to High Groundwater: UNABLE inches

E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

☑ Yes ☐ No

b. If yes, at what depth was it observed (exclude A and O Horizons)? Upper boundary: UNABLE inches Lower boundary: _____ inches

c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

Commonwealth of Massachusetts
City/Town of DOUGLAS

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

F. Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

Signature of Soil Evaluator	Date 7/8/2021
LAWRENCE L. GREENE 2685	Expiration Date of License 6/30/2022
Typed or Printed Name of Soil Evaluator / License #	
Name of Approving Authority Witness	Approving Authority

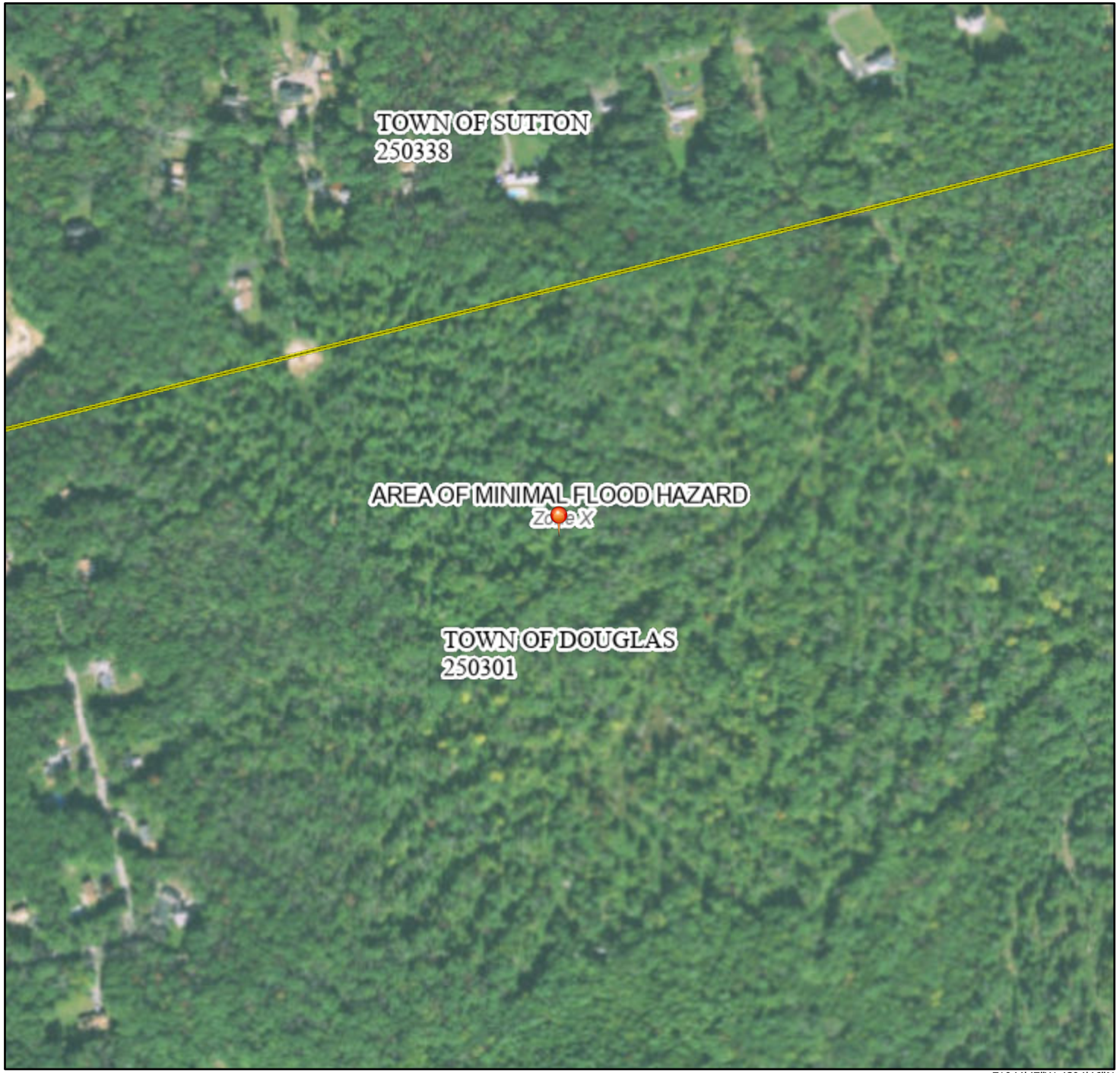
Note: In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

Field Diagrams: Use this area for field diagrams:

F) FEMA Flood Map

National Flood Hazard Layer FIRMette

71°45'24"W 42°5'13"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

71°44'47"W 42°4'46"N

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

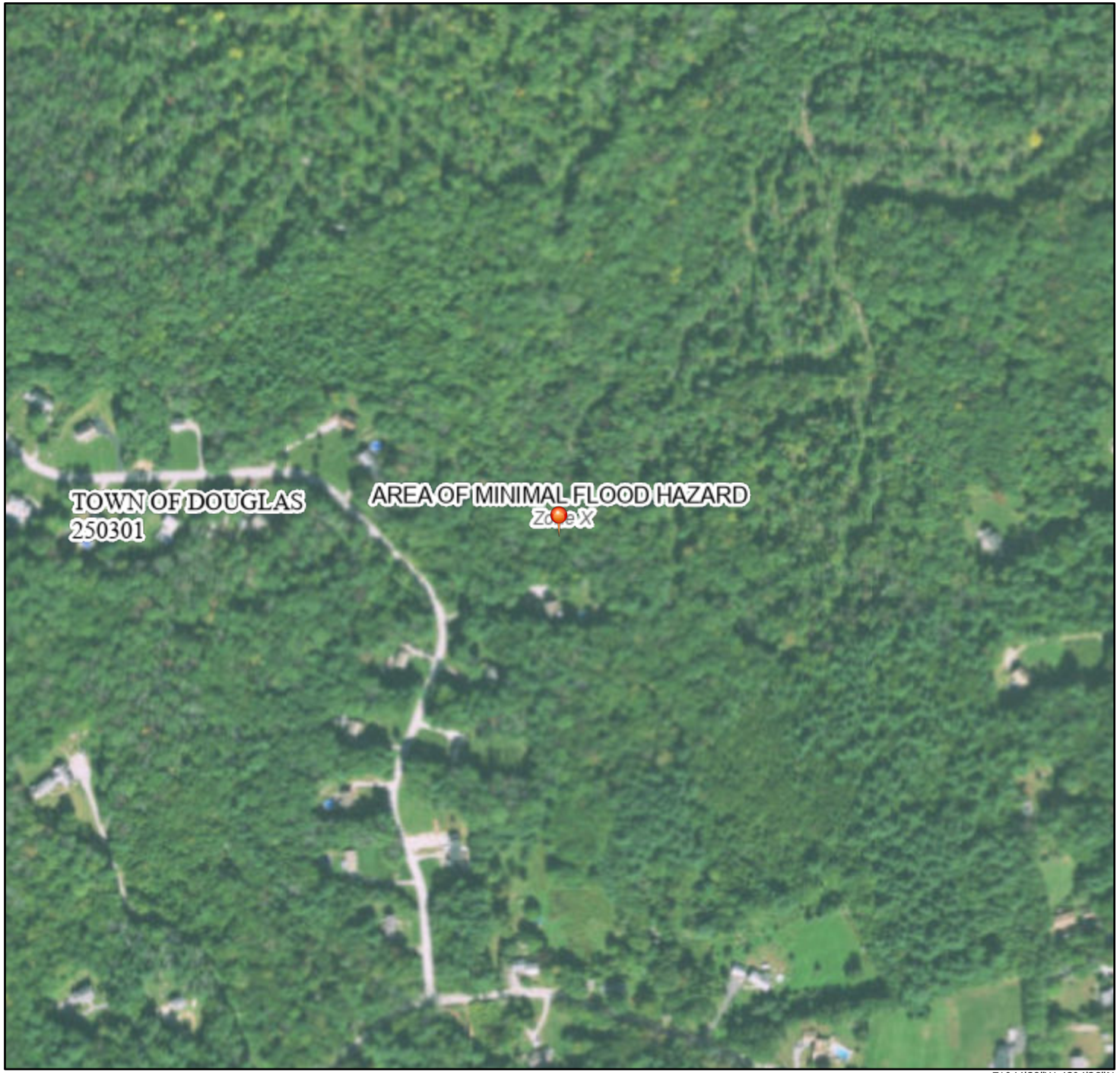
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 1/21/2021 at 10:02 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

71°45'16"W 42°4'55"N



71°44'38"W 42°4'28"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

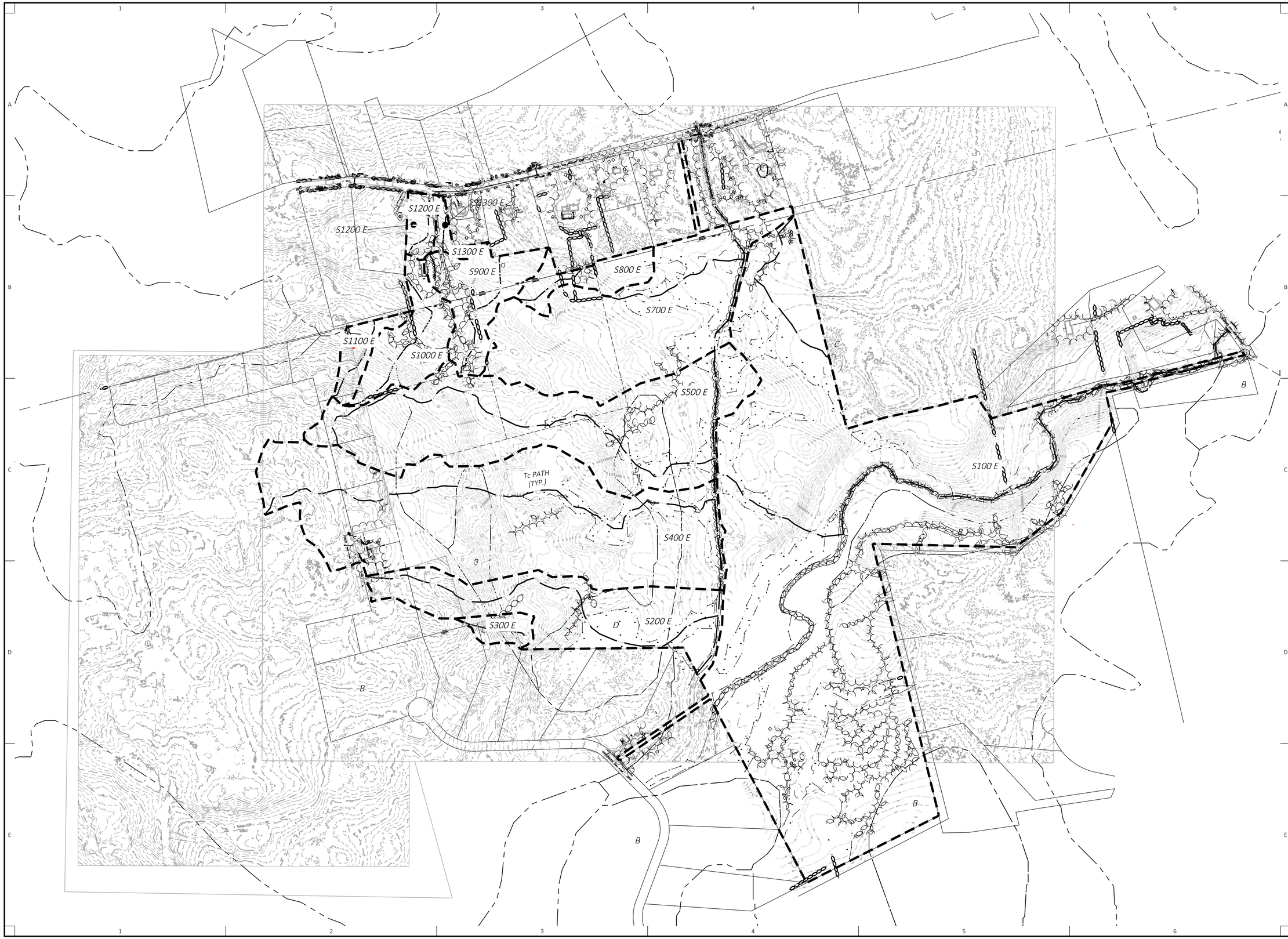
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 1/21/2021 at 9:54 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

G) Existing Watershed Map



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945 Concord Street, Suite 100
Framingham, MA 01701

Project Applicant:

Sutton Douglas Development LLC
c/o
FLYNN
build & develop™
945 Concord Street, Suite 100
Framingham, MA 01701

Project Title:

Definitive Plan
Sutton Douglas Development
Sutton, MA
(Worcester County)

Sheet Title:

EXISTING HYDROLOGY MAP

Local Permitting

No:	Date:	Revision | Issue:

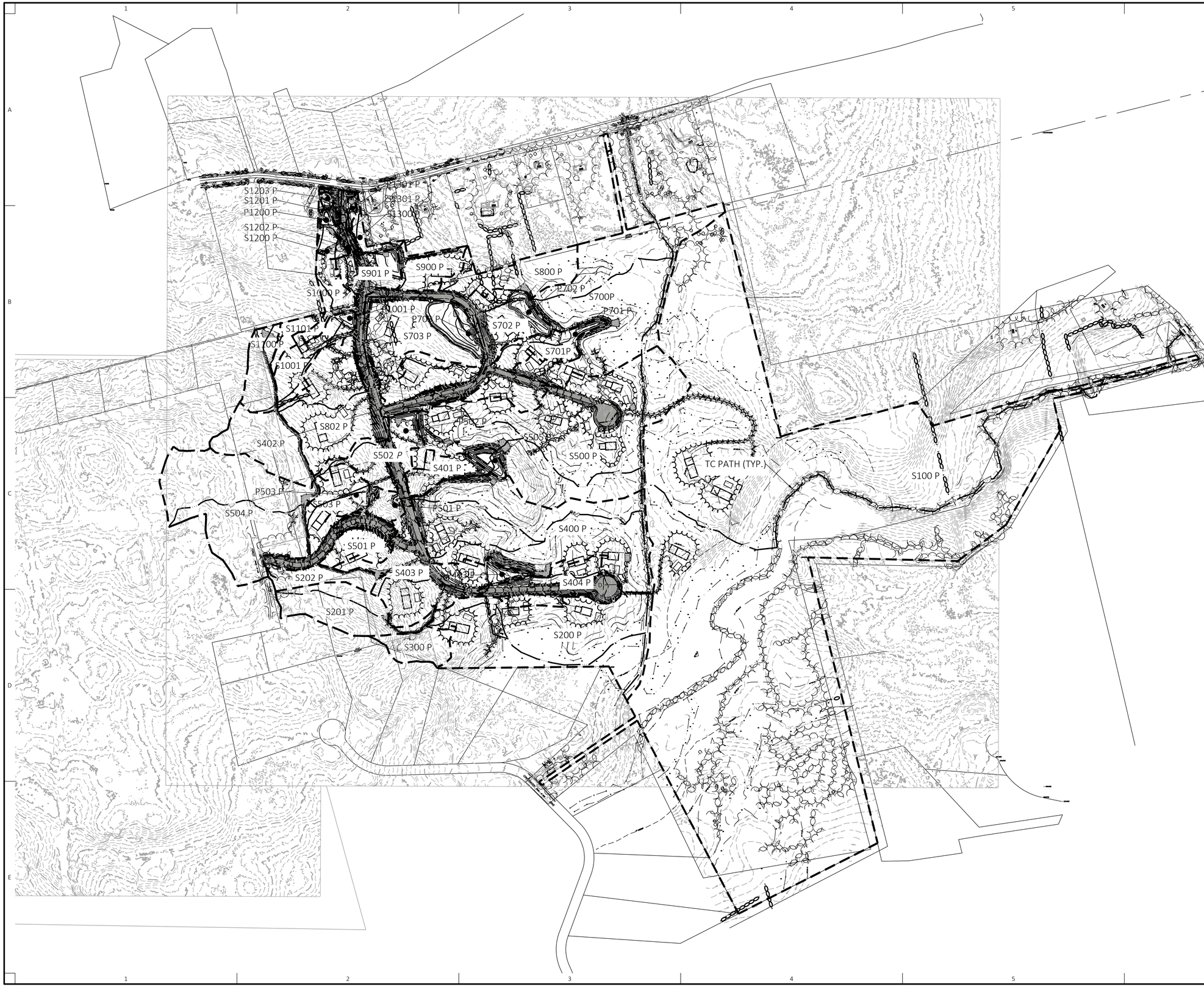
Drawn By:	Checked By:
Date: 02/10/2022	Project No.: 21-0083

0 100 200 300 400
Scale: 1" = 200'

Sheet No.:

G-2

H) Proposed Watershed Map



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Sutton Douglas Development
Sutton, MA
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PROPOSED HYDROLOGY MAP

Local Permitting

No:	Date:	Revision | Issue:

Drawn By: | Checked By:
Date: 02/10/2020 | Project No.: 21-0083

0 100 200 300 400
Scale: 1" = 200'

Sheet No.:

H-2

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