Here is custom text on the development view permit page

Permit #: CUP25-000003
Project #: 25-000147
Status: In Progress
Balance Due: $0.00
Address: 4565 Dane RD SW
Description: Dane Road SW Substation

Permit | Reviews | Documents | Inspections

Permit #: **CUP25-000003**
Permit Type: Conditional Use Permit
Sub Type: Conditional Use
Issue Date:
Expiration Date:

If this request involves more parcels than that listed above, please fill out the table (your PPN and zoning can be found on the Johnson County Property Information Viewer **https://gis.johnsoncountyiowa.gov/pds**)

PROPERTY INFORMATION

PARCEL ID (PPN)	ACRES IN PARCEL	CURRENT ZONING CLASSIFICATION
1032476001	37.57	A - Agricultural

PROJECT INFORMATION

Is this for a Utility-Scale Solar system?: No
Is this for a Commercial Communications Tower?: No

BH | BAIRDHOLM LLP
ATTORNEYS AT LAW

Lee E. Greenwald

1700 Farnam Street
Suite 1500
Omaha, NE 68102-2068
Tel: 402.344.0500
Fax: 402.344.0588
Direct: 402.636.8284
lgreenwald@bairdholm.com
www.bairdholm.com

August 13, 2025

VIA E-MAIL AND JOHNSON COUNTY PORTAL FOR DEVELOPMENT APPLICATIONS

Mr. Josh Busard, AICP, LEED AP, CFM
Director of Planning, Development and Sustainability
Johnson County, Iowa
913 S Dubuque Street
Iowa City, Iowa 52240-4281

Re: Application for Conditional Use Permit and Grading Permit for Dane Road SW Substation

Dear Mr. Busard:

On behalf of MidAmerican Energy Company ("Applicant"), we respectfully submit this application for: (i) a Conditional Use Permit ("CUP"), and (ii) a Grading Permit for the proposed Dane Road SW Substation (the "Project"). The Project is a public utility electrical substation.

The "Project Site" is near the intersection of Dane Road SW and Poweshiek Street SW in the Agricultural (A) zoning district of unincorporated Johnson County (PPN: 1032476001). Section 8:1.24(FF) of the Johnson County Unified Development Ordinance (the "Ordinance") authorizes public utility electrical substations in the Agricultural (A) zoning district by CUP.[1] Section 8:1.27(A)(3) authorizes advance grading permits for utility and infrastructure projects.

The Project is an integral component of the Triangle Solar Energy Project, a proposed utility-scale solar energy facility in Johnson County with a generation capacity of up to 150 megawatts. Applicant acknowledges and will comply with all additional requirements under the Ordinance prior to constructing the remaining components of the Triangle Solar Energy Project.

The purpose of the Project is to transform and route electricity from the Triangle Solar Energy Project to the electric grid for customer use. Thus, the Project will primarily consist of equipment foundations, electrical equipment, cable and steel infrastructure.

[1] All references are to the Johnson County Unified Development Ordinance unless stated otherwise.

Upon commercial operation, the Project will operate 24 hours a day, 7 days a week. Applicant's employees and agents will staff the Project on an as-needed basis and during regular inspections. Maintenance will occur during business hours except in case of an outage or other emergency.

No members of the general public will be authorized on the Project Site. Parking for Applicant's employees and agents will be contained within the security fence. The security fence will have visible "warning / no trespassing" signage in compliance with the Ordinance.

The Project will not have any occupied structures or restrooms. Thus, the Project will not require any wastewater or septic systems.

Following public notice and hearing, Applicant respectfully requests that the Johnson County Zoning Board of Adjustment (the "Board of Adjustment") approve a CUP for the Project. Applicant anticipates the Board of Adjustment may impose conditions of approval. If so, Applicant welcomes the opportunity to work with the Board of Adjustment to develop the conditions.

Applicant also respectfully requests that the Johnson County Director of Planning, Development and Sustainability approve a Grading Permit for the Project upon receiving this application to authorize site preparation during the CUP proceedings. The list below addresses the application requirements for a CUP and a Grading Permit under the Ordinance.

1. Contacts.

Primary Contact:

Lee E. Greenwald
Baird Holm LLP
1700 Farnam Street, Suite 1500
Omaha, Nebraska 68102
(402) 636-8284
lgreenwald@bairdholm.com

Secondary Contact:

Kelsy Ballard
MidAmerican Energy Company
4124 NW Urbandale Drive
Urbandale, Iowa 50322
(515) 242-3980
kelsy.ballard@midamerican.com

2. Application Forms. **Exhibit A** is the completed CUP application form. **Exhibit B** is the completed Grading Permit application form.

3. Application Fees. Applicant submitted payment of the $250 application fee for the CUP and the $500 application fee for the Grading Permit through the online Johnson County Portal for Development Applications.

4. Project Description. This cover letter and the Site Plan (defined below) contain the Project description.

5. Landowner Authorization. Applicant is authorized to permit and construct the Project pursuant to that certain Option and Purchase Agreement dated March 3, 2023, by and between Applicant and James W. Dane and Ruth T. Dane, husband and wife, as evidenced by

that certain Memorandum of Option and Purchase Agreement dated March 3, 2023 and recorded March 7, 2023 at the office of the Johnson County Recorder.

6. Site Plan. **Exhibit C** is the "Site Plan" for the Project, including the following:

- Structures;
- Property lines;
- Rights-of-way and access to public roads;
- Setbacks;
- Parking areas;
- Signage; and
- Security fencing.

Additionally, in compliance with Section 8:1.27(A)(3)(e), the Site Plan includes the following for purposes of the Grading Permit:

- Location of any sensitive areas;
- Location of soil erosion and sediment control measures;
- Limits of disturbance of grading activity; and
- Final proposed contours with elevations.

As shown on the Site Plan, the Project meets all site and development standards under the Ordinance, including, without limitation, setbacks, visual screening, security fencing and signage. Applicant requests no variances.

7. Soil Erosion and Sediment Control Plan. Section 8:3.7. **Exhibit C** contains a Soil Erosion and Sediment Control plan in compliance with the Ordinance.

8. Landscape Plan. Section 8:1.24(FF)(3). **Exhibit C** contains a Landscape Plan including visual screening in compliance with the Ordinance.

9. Sensitive Areas Ordinance. Section 8:3.5. Applicant does not anticipate impacts to any sensitive area under the Ordinance. **Exhibit D** is an approved partial sensitive area waiver pursuant to Section 8:3.5(A)(6) for all sensitive areas under the Ordinance except historic properties, wetlands and watercourses. Applicant has completed field studies for these sensitive areas and has commissioned archaeology and wetlands delineation reports. Applicant will supplement the partial sensitive areas waiver with said reports upon completion.

10. Stormwater Management Plan. Section 8:3.6(A)(4). **Exhibit E** is a Stormwater Management Plan in compliance with the Ordinance.

11. Decommissioning Plan. Section 8:1.24(FF)(4). **Exhibit F** is a Decommissioning Plan detailing removal of the Project upon discontinuation and restoration of the Project Site.

12. Municipal Review. Section 8:1.28(H)(2)(b). Applicant will cooperate with the cities of Iowa City and Hills to obtain official comment or waiver from each respective city council or its authorized representative prior to public hearing at the Board of Adjustment.

Thank you for receiving these applications. Please confirm they satisfy the requirements under the Ordinance.

Please schedule the CUP application for hearing before the Board of Adjustment as soon as possible and issue the Grading Permit at your earliest convenience. Should you have questions or need anything else, please let us know.

Sincerely,

Lee E. Greenwald

Enclosures

cc: MidAmerican Energy Company

Exhibit A

CUP Application Form

(PLEASE SEE ATTACHED)

Office Use Only		$	
	Date Filed	*Fee*	*Application Number*

JOHNSON COUNTY, IOWA

APPLICATION FOR: CONDITIONAL USE PERMIT

Application is hereby made for approval of a (state the official use as listed in the Johnson County UDO, and *briefly* describe the proposed use [e.g. Home Industry for Antique shop, Special Events for Corn Maze, etc.]):

Utility Facility, Public (Electrical Substation)

Section 8:1.24(FF) of the Johnson County Unified Development Ordinance

On property located at (street address if available or layman's description):

4565 Dane Road SW, Iowa City, Iowa 52240

Parcel Number(s): 1032476001

The property consists of 37.57 **total acres, and is currently zoned** Agricultural (A)

***Note**: This Conditional Use Permit is subject to any conditions outlined in chapter 8:1.23 of the Unified Development Ordinance and any other conditions deemed appropriate by the board of Adjustment to protect public health, safety, and welfare.*

The undersigned affirms that the information provided herein is true and correct. If applicant is not the owner, applicant affirms that the owner(s) of the property described on this application consent to this application being submitted, and said owners hereby give their consent for the office of Johnson County Planning, Development, and Sustainability to conduct a site visit and photograph the subject property.

James W. Dane and Ruth T. Dane
Name of Owner

MidAmerican Energy Company (Attn: Kelsy Ballard)
Name of Applicant (if different)

4124 NW Urbandale Drive, Urbandale, Iowa 50322
Applicant Street Address (including City, State, Zip)

(515) 242-2980
Applicant Phone

kelsy.ballard@midamerican.com
Applicant Email

Applicant Signature

See back page for Application Submittal Requirements and Checklist

Applications should be emailed to planning@johnsoncountyiowa.gov and delivered to the Planning, Development and Sustainability Office (913 South Dubuque Street, Iowa City, IA 52240)

The following items must be submitted for the application to be complete. Incomplete applications will be returned and will not be considered until the next submission deadline. Once submitted, county staff will review the materials and request revisions (if necessary). Once all revisions and outside reviews have been received, the application will be placed on the next available Board of Adjustment agenda.

If working with an engineer who can provide CAD or GIS line work, electronic submissions should be submitted in accordance with the PDS department's electronic submission guidelines (see below). Preference is that electronic submission is prior to hard copy submission, but will be accepted until 12:00 p.m. the day after the submittal deadline.

Initial each empty box below *to ensure you included all necessary information in the appropriate form for an application to be considered complete. Some items may require both electronic and physical copies.*

Item Required	Electronic Copy (PDF unless otherwise noted)	Hard copy
Application Fee (varies based on application. Fee: $250)		X
This application form with all information completed	x	(2) X
Brief cover letter explaining the proposed use including but not limited to the number of employees, parking facilities, days and hours of operation, estimate of maximum number of customers expected on site an any one time, provisions for water and wastewater, types of equipment to be used, signage, etc	X	X
Site plan identifying the access, structure(s) for the proposed use, parking areas, signage location, and addressing any Supplemental Conditions required by Chapter 8:1.23	X	X
If working with an engineer: CAD line work of the site plan, following the guidance below		
Proof of application to the Johnson County Health Department for a Public Health Zoning Application	N/A	
For requests to establish Utility Scale Solar (use area of 20 acres or less): • Completed "Application Checklist for Utility-Scale Solar Systems (Supplemental Conditions)", accompanied by all information outlined on said checklist. • Electronic Submission of all materials is required.	N/A	N/A
For requests for Commercial Communications Towers, include the following: • Sensitive Areas Analysis in compliance with the Sensitive Areas Ordinance, or an approved Sensitive Areas waiver. • Stormwater Management Plan (including soil erosion and sediment control) in compliance with the Stormwater Management regulations, or an approved waiver	N/A	

Electronic Submission Requirements for CAD line work:

- Must be in AutoCAD 2017 or older and .dwg format (.dxf is also acceptable, no .zip files will be accepted).
- Submissions must use Coordinate System: NAD_1983_StatePlane_Iowa_South_FIPS_1402_Feet
- If applicable, submission should include information for Sensitive Areas Analysis/Mapping and Stormwater/Soil Erosion Control infrastructure on the site. This includes any limits of disturbance or other impact areas.
- Submission should NOT include legends, legal descriptions, location maps, signature blocks, etc.

Exhibit B

Grading Permit Application Form

(PLEASE SEE ATTACHED)

GRADING PERMIT

913 S Dubuque St, Suite 204
Iowa City, IA 52240
Phone: (319) 356-6085
Fax: (319) 356-6084

STAFF USE ONLY
Received by:
Permit #:

4565 Dane Road SW, Iowa City, Iowa 52240
Job Site Address

1032476001
Parcel Number

N/A
Lot Number & Subdivision Name

James W. Dane and Ruth T. Dane
Name of Owner

MidAmerican Energy Company (Attn: Kelsey Ballard)
Name of Applicant (if different)

4124 NW Urbandale Drive, Urbandale, Iowa 50322
Applicant Street Address (including City, State, Zip)

(515) 242-2980
Applicant Phone

kelsy.ballard@midamerican.com
Applicant Email

Project Description
Utility Facility, Public (Electrical Substation)

The undersigned applicant agrees to comply with all County ordinances, State and Federal laws regulating erosion and sediment control and certifies under oath and penalties of perjury that the foregoing information is true and correct:

Applicant's Signature _____ **Date** 8/13/25

Johnson County grants this permit to proceed in accordance with the information shown on this application and after receipt of permit fee is acknowledged. This permit shall expire 24 months after the approval date below. All disturbed soils associated with this permit shall be contained on the site or this permit may be revoked.

Initial each item below *to confirm that you are aware of the following requirements.*

x *A Sensitive Areas Report at time of application.*

x *An Erosion and Sediment Control plan at time of application.*

x *A permit application fee of $500 at time of approval.*

Exhibit D

Sensitive Areas Ordinance Waiver

(PLEASE SEE ATTACHED)

PLANNING, DEVELOPMENT AND SUSTAINABILITY

PLANNING DIVISION

JOSH BUSARD
AICP, LEED-AP, CFM
DIRECTOR

NATHAN MUELLER, AICP, CFM
ASSISTANT DIRECTOR

WAIVER RESPONSE

Date: August 13, 2025
To: Eocene Environmental Group; Attn. Chant Eicke
From: Kasey Hutchinson, Environmental Regulations Coordinator
Re: Waiver Request, PPN 1032476001

Recently, your firm submitted a request to waive the Sensitive Areas requirements for a substation, PPN 1032476001. After review, the PDS Administrative Officer has issued the following decision regarding the request:

Request to waive Sensitive Areas: **Partial Approval**

- Waiver has been requested for all sensitive areas with the exception of Historic Properties and Wetlands. Waiver has been approved for all sensitive areas with the exception of Stream Corridors, Watercourses and Surface Water Bodies.
    - The distinct drainages evidenced in the aerial photos should be further assessed for sensitive criteria for Watercourses.
- The results of the field investigations should be provided as a sensitive areas report with the development application.

Please contact me at khutchinson@johnsoncountyiowa.gov if you have any questions.

Respectfully,

Kasey Hutchinson
Environmental Regulations Coordinator

913 SOUTH DUBUQUE STREET, SUITE 204 , IOWA CITY, IA 52240-4273
PHONE: (319) 356-6083 FAX: (319) 356-6084
www.johnson-county.com

Exhibit E

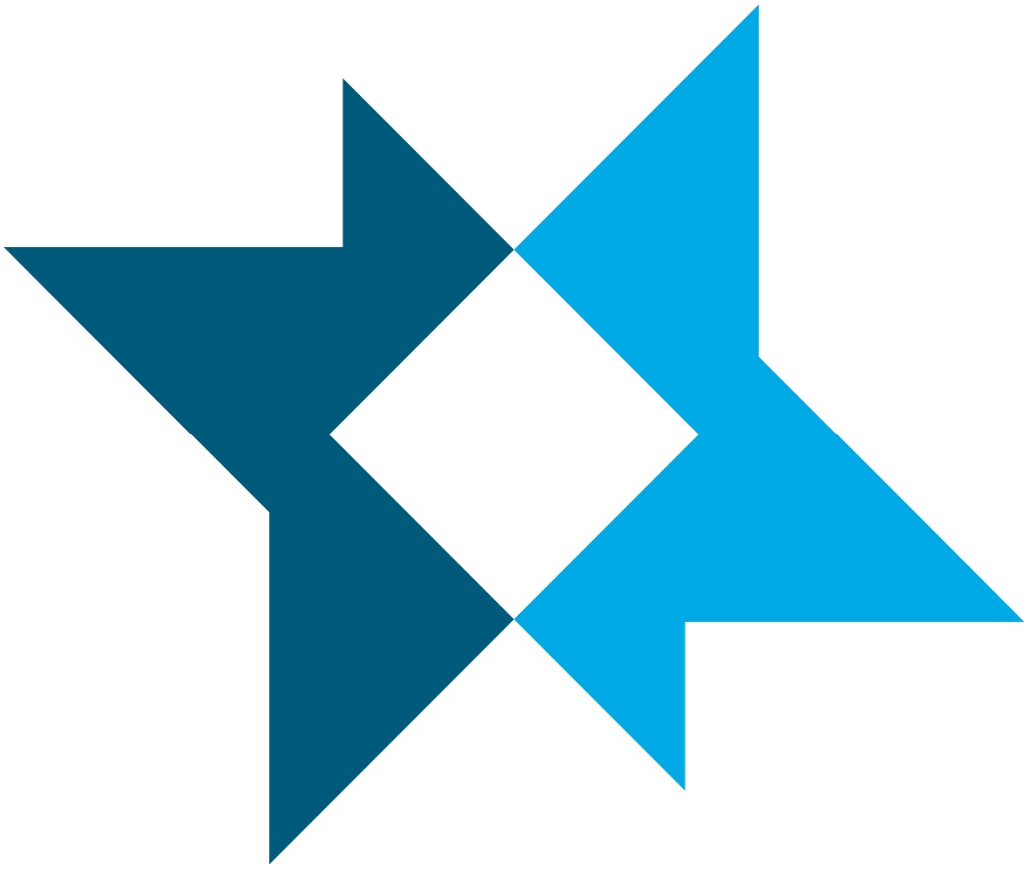
Stormwater Management Plan

(PLEASE SEE ATTACHED)

Storm Water Management Plan

Dane Road SW Substation

4565 Dane Rd SW, Iowa City, IA 52240



August 2025

Project ID: 0024M191.00

Solving our clients' toughest science and engineering challenges

Stormwater Management Plan

Project ID: 0024M191.00

Prepared for

Dane Road SW Substation

4565 Dane Rd SW, Iowa City, IA 52240

Prepared by

Foth Infrastructure & Environment, LLC

August 2025

Table of Contents

I. Project Description 2
II. Stormwater Design Requirements and Modeling Information 2
III. Water Quality Volume (WQv) 3
IV. Channel Protection Storage Volume 3
V. Overbank Flood Protection 3
VI. Extreme Flood Protection 3
VII. Stormwater Conveyance Design 4
VIII. Downstream Analysis 4
IX. List of Appendices 4

I. Project Description

The Triangle/Dane Road SW Substation is situated on a 37.57-acre site is located roughly 2 miles southwest of the Johnson County Fairgrounds, near the intersection of Dane Rd SW and Powershiek St SW. The eastern boundary runs along Dane Rd SW while the remaining share section lines with adjacent parcels. There is one developed parcel almost fully encompassed by the site, also sharing its eastern boundary with Dane Rd SW.

The site is currently an agricultural field with a local highpoint in the northeast corner, pitching the majority of the site to the southwest. Runoff from the pre-development site drains overland to a shallow drainageway that flows due south and exits the site. The developed parcel also contributes flow to the drainage way, with few notable stormwater BMPs in its existing condition.

For the purpose of stormwater management, the study area (7.32 acres) consists of the proposed development disturbance limits and the off-site capture from the existing parcel. The proposed development includes the construction of a substation, the associated driveways, and a wet detention basin. Moreover, it will be graded such that all post-development runoff will exit the study area at approximately the same location under pre-development conditions. Additionally, the remaining site area (30.25 acres) will be undisturbed and bypass the development while continuing to the same discharge location. The pre- and post-development drainage exhibits can be seen in Appendix A.

II. Stormwater Design Requirements and Modeling Information

Stormwater management was designed in accordance with the Johnson County Stormwater Ordinance. The ordinance follows the guidelines established in the Iowa Stormwater Management Manual (ISWW) and must meet the following criteria:

1. Water Quality Volume (WQv)
2. Channel Protection Storage Volume (Cpv)
3. Overbank Flood Protection (Qp)
4. Extreme Flood Protection (Qp)

An NRCS TR-55 model was constructed using HydroCAD v10.20-5c. The following design parameters were utilized:

a. Soil Characteristics
   Soil series within the study area include Hydrologic Soil Group(s) C and C/D, as identified by the USDA NRCS Web Soil Survey. A soil map is included in Appendix B.

b. Precipitation
   For TR-55 modeling, a 24-hour storm event has been simulated, using a Type II rainfall distribution. Rainfall values are based on the nine Iowa climatic sections in Bulletin 71, which was developed from NOAA Atlas 14 datasets for East Central Iowa (Region 06 of the Iowa Stormwater Management Manual).

Table 1. Design Rainfall Values (For East Central Iowa – Region 8)

Storm Event	Rainfall
1-year	2.60”
2-year	3.01”
5-year	3.75”
10-year	4.42”
25-year	5.44”
50-year	6.29”
100-year	7.22”
500-year	9.64”

c. Time of Concentration
SCS TR-55 methodology was used within the HydroCAD program to calculate the time of concentration (Tc) for pre- and post-development conditions. Tc is the cumulative total of sheet flow time, shallow concentrated flow time, and any open channel flow time (if applicable). The HydroCAD report is available in Appendix E.

d. FEMA Floodplain Analysis
The study area does not fall within a flood hazard zone. Floodplain maps are available in Appendix C.

III. Water Quality Volume (WQv)

The water quality volume (WQv) is the storage needed to capture and treat the runoff from 90% of the average annual rainfall. The design rainfall depth to be used for determining the WQv in Iowa is 1.25 inches. The following equations were used to determine the storage volume in cubic feet (cf):

$$WQv = (P * Rv * A)/12$$

Where P = rainfall depth in inches (1.25)
A = Area in Acres
Rv = volumetric runoff coefficient, calculated using the following:

$$Rv = 0.05 + 0.009(I)$$

Where I = the percent of impervious cover

The water quality volume will be treated in a wet detention basin. The basin is sized following procedures outlined in the ISWMM Chapter 9, Section 11 and modeled using HydroCAD version 10.20-5c. The water quality calculations can be viewed in Appendix D, and the HydroCAD report can be viewed in Appendix E.

The water quality volume needed for the proposed development is 13,667 cf and 37,300 cf is provided. The pretreatment volume must be 10% of the WQv, thus totaling 1,367 cf. Two sediment forebays are situated at each conveyance entrance to the basin. The cumulative volume of both pre-treatment practices is 2,148 cf.

IV. Channel Protection Storage Volume

The channel protection storage volume (CPv) is the volume required to store and release the 1 year developed runoff volume over a 24-hour period. The wet detention basin is used to meet the channel protection volume requirements for the proposed development area. The maximum allowable discharge rate was calculated in the HydroCAD model using the TR-55 method in accordance with the ISWMM. The model hydrograph and results can be viewed in Appendix E.

The CPv release rate must be less than 11.34 cfs. The pond releases 3.98 cfs during the CPv event through a 24” RCP culvert, satisfying the requirement.

V. Overbank Flood Protection

The overbank flood protection requires the 100-year post developed runoff rate be less than the 5-year pre-developed runoff rate.

The 5-year 24-hour pre-developed discharge rate is 20.87 cfs. The 100-year discharge is 19.05 cfs with a HW of 683.28. The 24” RCP culvert is utilized for all events. HydroCAD modeling results can be viewed in Appendix E.

VI. Extreme Flood Protection

Extreme flood protection requires that there be an emergency overflow spillway. The spillway shall be designed for the 100-year event, assuming the initial outlet controls are completely blocked. A minimum of one foot of freeboard should be provided, measured from the top of the water surface elevation for the extreme flood to the top of the dam embankment, not counting the emergency spillway.

For the wet detention basin, this spillway elevation is set at 683.50 and is 20 feet in width. Routing the 100-year inflow hydrograph through the basin with the outlet pipe inoperable produces with a peak discharge of 24.01 cfs at an elevation of 684.08. This is lower than the top of the berm at 685.00.

Table 2. Stormwater Management Summary

Design Requirement Summary Table			
		Required*	**Provided**
Rev	Recharge Volume*		
WQv	Water Quality Volume*	13,667 cf	37,300 cf
CPv (1-year)	Maximum Peak Release Rate (at outlet)	11.34 cfs	3.98 cfs
	High Water Elevation within Stormwater BMP		681.83
10-year	Maximum Peak Release Rate (at outlet)	20.87 cfs	10.27 cfs
	High Water Elevation within Stormwater BMP		682.41
100-year	Maximum Peak Release Rate (at outlet)	20.87 cfs	19.05 cfs
	High Water Elevation within Stormwater BMP		683.28
	Auxiliary Spillway Elevation		683.50
	Crest of Dam Elevation		685.00

VII. Stormwater Conveyance Design

Open channel grass swales were designed for conveyance to the wet detention treatment practice. The channel shape was designed to convey the peak flow from the WQv event while maintaining a minimum 2% channel slope. Swales were modeled in HydroCAD and can be viewed in Appendix E.

Culverts were designed for conveyance under the client-specific requirement of minimum 18” diameter pipes. Additionally, HydroCAD modeling was completed to ensure capacity for the 25-yr event. Results can be viewed in Appendix E. A drainage exhibit for channels and culverts is available in Appendix F.

VIII. Downstream Analysis

This project did not require a downstream analysis, as extended detention of the CPv is being provided and outflow rates are being controlled to natural rates (CN=71). Results can be viewed in the HydroCAD report in Appendix E.

IX. List of Appendices

Appendix A Pre- and Post-Development Drainage Exhibits

Appendix B NRCS Web Soil Survey Map

Appendix C FEMA Floodplain Maps

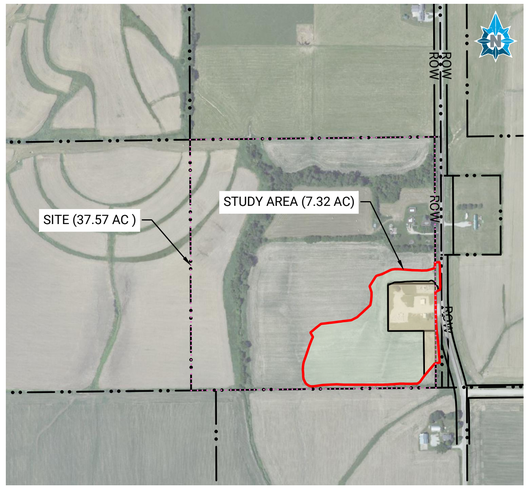
Appendix D Water Quality Calculations

Appendix E HydroCAD Report

Appendix F Channel and Culvert Drainage Exhibit

APPENDIX A

PRE- AND POST-DEVELOPMENT DRAINAGE EXHIBITS



SITE OVERVIEW

0 400' 800'

STUDY AREA (7.32 AC)

OFF-SITE Tc

OFF-SITE
1.85 AC
CN: 83
Tc: 6 MIN

PRE-DEV Tc

PRE-DEV
5.47 AC
CN: 82
Tc: 12 MIN

ROW

REV	DATE	DFTR	APP	DESCRIPTION

CONFIDENTIAL:

THIS DOCUMENT SHALL BE MAINTAINED CONFIDENTIALLY AS CRITICAL ENERGY INFRASTRUCTURE INFORMATION AND IS AVAILABLE TO MIDAMERICAN ENERGY COMPANY EMPLOYEES, BUT NOT TO MIDAMERICAN ENERGY COMPANY EMPLOYEES WORKING IN THE UNREGULATED RETAIL SERVICES DIVISION. PRIOR WRITTEN AUTHORIZATION IS REQUIRED FOR ACCESS BY ANY OTHER PERSON.

MIDAMERICAN ENERGY COMPANY.

0 50 100

DATE:	08-13-2025
DESIGNED:	BAM
DRAWN:	BAM
APPROVED:	CDH
SCALE:	AS SHOWN

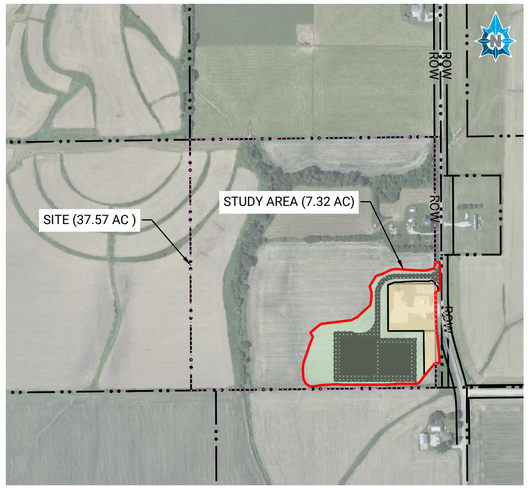
DANE ROAD SW SUBSTATION

IOWA CITY, IOWA

CONCEPTUAL

PRE-DEVELOPMENT EXHIBIT

STD



SITE OVERVIEW

0 400' 800'

PROPOSED DEVELOPMENT Tc

STUDY AREA (7.32 AC)

OFF-SITE Tc

OFF-SITE
1.85 AC
CN: 83
Tc: 6.0 MIN

UNCAPTURED
0.49 AC
CN: 74
Tc: 6.0 MIN

PROPOSED DEVELOPMENT
4.98 AC
CN: 89
Tc: 6.0 MIN

ROW

REV	DATE	DFTR	APP	DESCRIPTION

CONFIDENTIAL:

THIS DOCUMENT SHALL BE MAINTAINED CONFIDENTIALLY AS CRITICAL ENERGY INFRASTRUCTURE INFORMATION AND IS AVAILABLE TO MIDAMERICAN ENERGY COMPANY EMPLOYEES, BUT NOT TO MIDAMERICAN ENERGY COMPANY EMPLOYEES WORKING IN THE UNREGULATED RETAIL SERVICES DIVISION. PRIOR WRITTEN AUTHORIZATION IS REQUIRED FOR ACCESS BY ANY OTHER PERSON.

MIDAMERICAN ENERGY COMPANY.

0 50 100

DATE:	08-13-2025
DESIGNED:	BAM
DRAWN:	BAM
APPROVED:	CDH
SCALE:	AS SHOWN

DANE ROAD SW SUBSTATION

IOWA CITY, IOWA

CONCEPTUAL

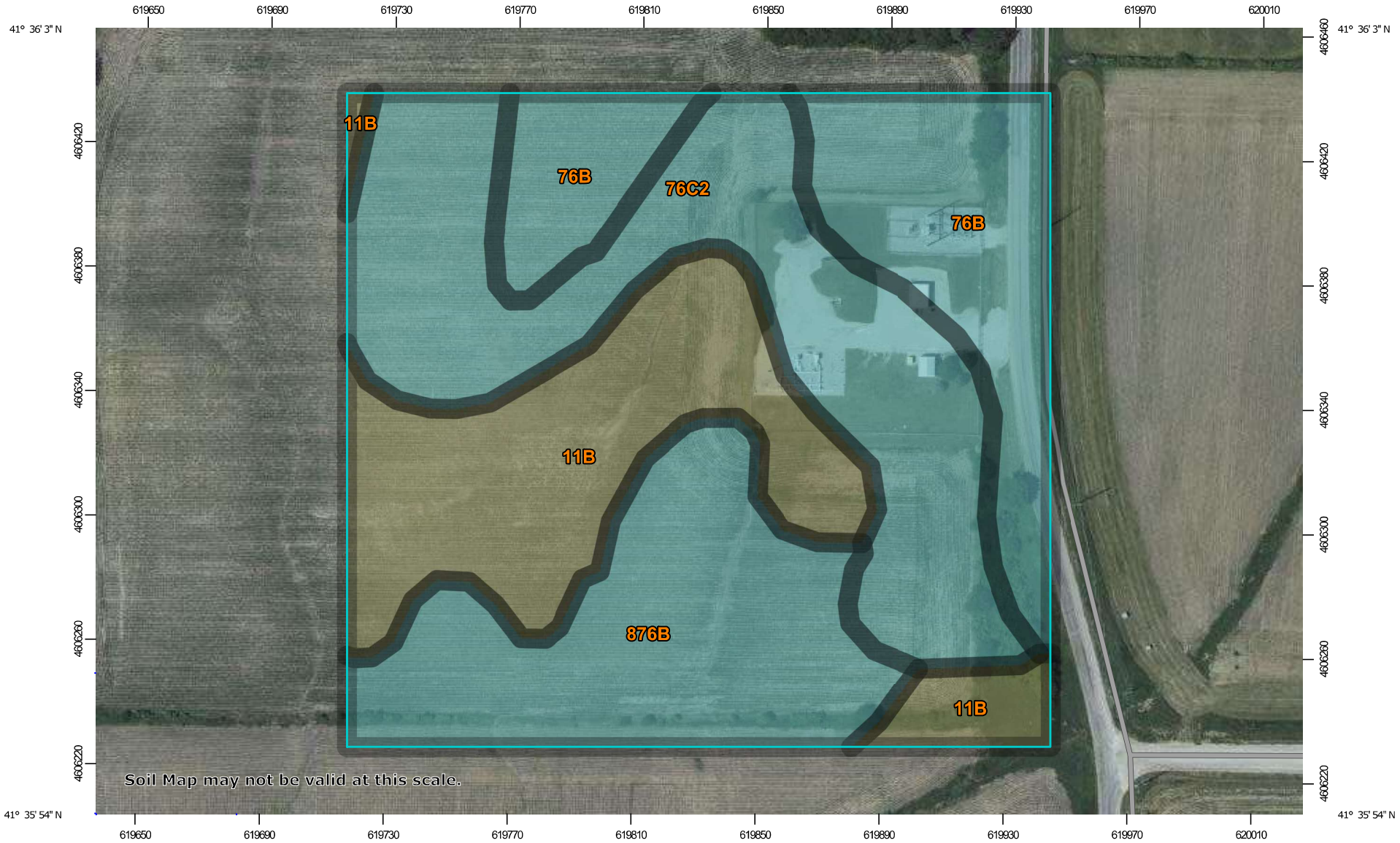
POST-DEVELOPMENT EXHIBIT

STD

APPENDIX B

NRCS WEB SOIL SURVEY MAP

Hydrologic Soil Group—Johnson County, Iowa
(Triangle/Dane Rd SW Substation)



Map Scale: 1:1,780 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 25 50 100 150

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

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

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

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: Johnson County, Iowa
Survey Area Data: Version 27, Aug 29, 2024

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

Date(s) aerial images were photographed: Jul 1, 2020—Nov 18, 2020

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
11B	Colo-Ely complex, 0 to 5 percent slopes	C/D	3.0	25.1%
76B	Ladoga silt loam, 2 to 5 percent slopes	C	2.5	20.9%
76C2	Ladoga silt loam, 5 to 9 percent slopes, eroded	C	3.7	31.3%
876B	Ladoga silt loam, terrace, 2 to 5 percent slopes	C	2.7	22.8%
Totals for Area of Interest			**11.8**	**100.0%**

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

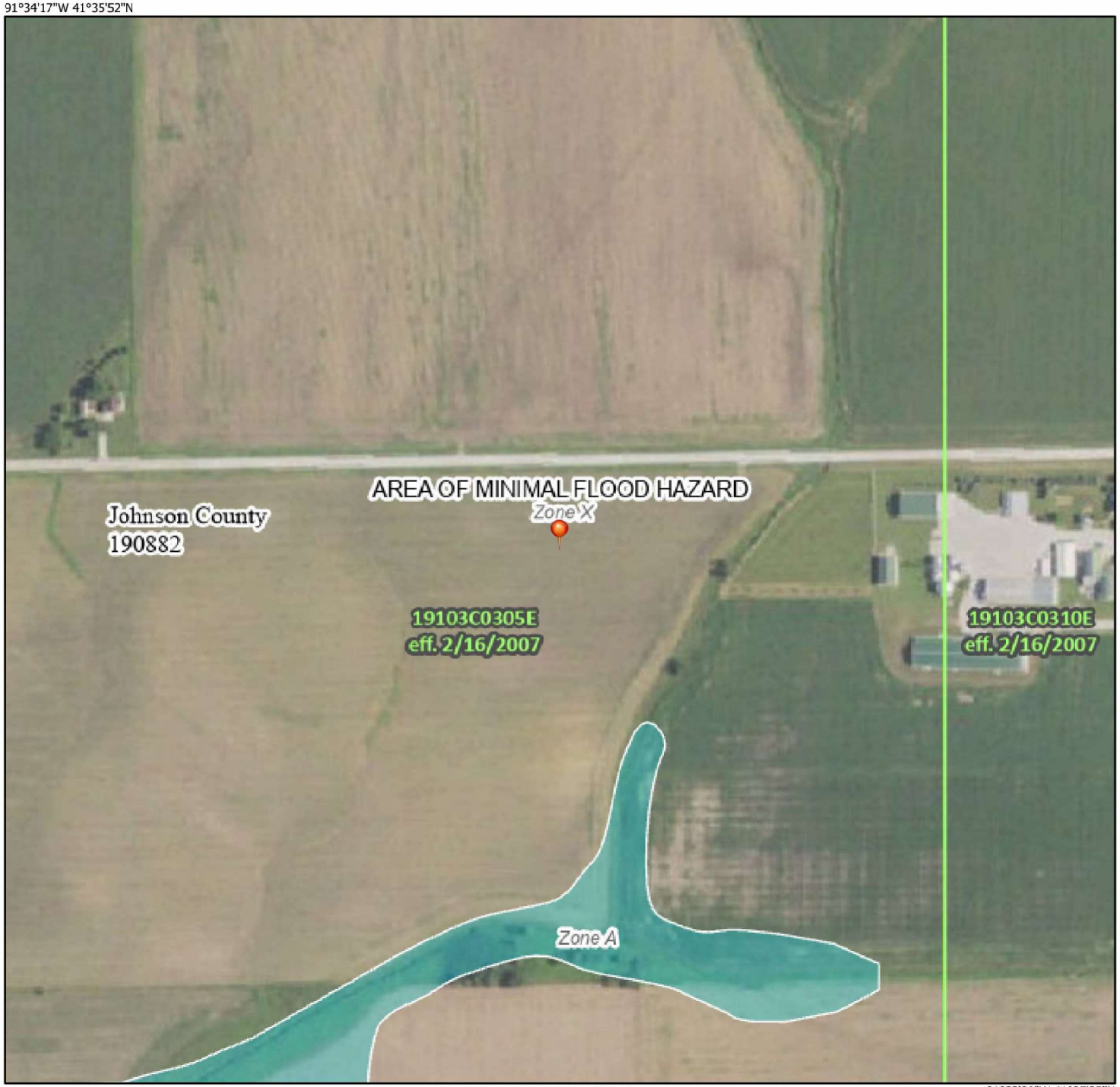
APPENDIX C

FEMA FLOODPLAIN MAPS

National Flood Hazard Layer FIRMette

FEMA

91°34'17"W 41°35'52"N



91°33'39"W 41°35'25"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

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 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- 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

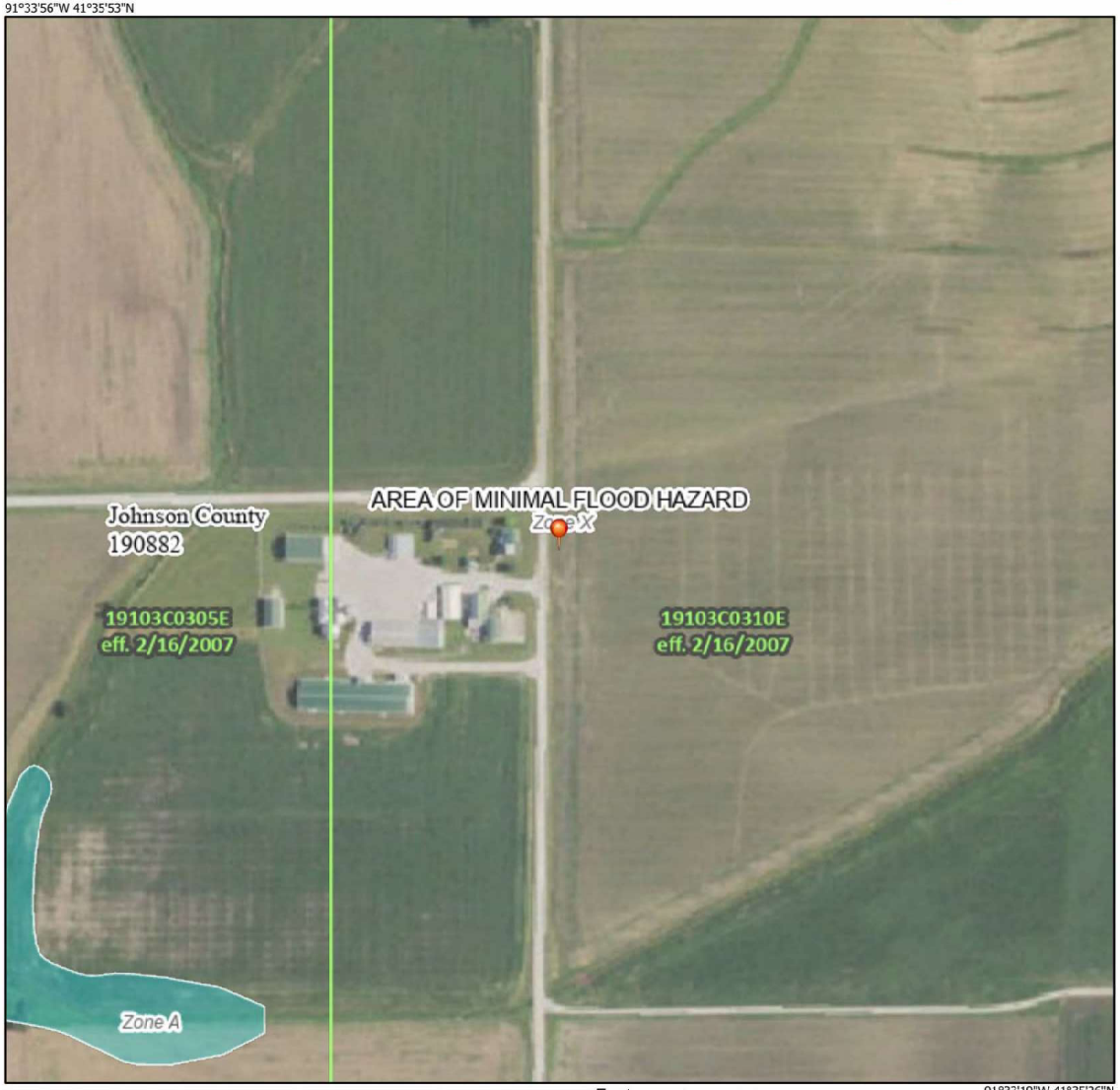
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 8/13/2025 at 7:10 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by 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

91°33'56"W 41°35'53"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

91°33'19"W 41°35'26"N

Basemap Imagery Source: USGS National Map 2023

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
- 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 8/13/2025 at 7:09 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.

APPENDIX D

WATER QUALITY CALCULATIONS

Watershed Data Entry Sheet

Project: 0 Date: 8/13/2025

Watershed Properties

Enter Data in Fields
Red Text = Area in acres, Green Text = CN, Blue Text = Y or N

Natural Condition Watershed Area (area in acres)	HSG A	B	C	D
Meadow in Good Condition	0	0	5.467	0

Total Watershed Area: 5.467 acres
CN for modeling natural conditions: 71

Existing Watershed Area (area in acres)	HSG A	B	C	D
Impervious*	0	0	0	0
Open Space (w/8" SQR)	0	0	0	0
Open Space (w/4" SQR)	0	0	0	0
Open Space (<4" SQR)	0	0	0	0
Row Crops (C+CR, good condition)	0	0	5.467	0
Other Areas	0	0	0	0
CN of Other Areas**	92	92	92	92
Other Areas Counted as Impervious for WQv calculation?			N	(Y/N)

Total Watershed Area: 5.467 acres Rv: 0.050
Effective Impervious Area: 0.0% WQv: 1,240
CN for most events: 81
Adjusted CN (for WQv event modeling): 73 Qa: 0.063

Proposed Watershed Area (area in acres)	HSG A	B	C	D
Impervious*	0	0	3.07	0
Open Space (w/>=8" SQR)	0	0	0	0
Open Space (w/>=4" SQR, <8")	0	0	1.911	0
Open Space (<4" SQR)	0	0		0
Row Crops (C+CR, good condition)	0	0	0	0
Other Areas	0	0	0	0
CN of Other Areas**	92	92	92	92
Other Areas Counted as Impervious for WQv calculation?			N	(Y/N)

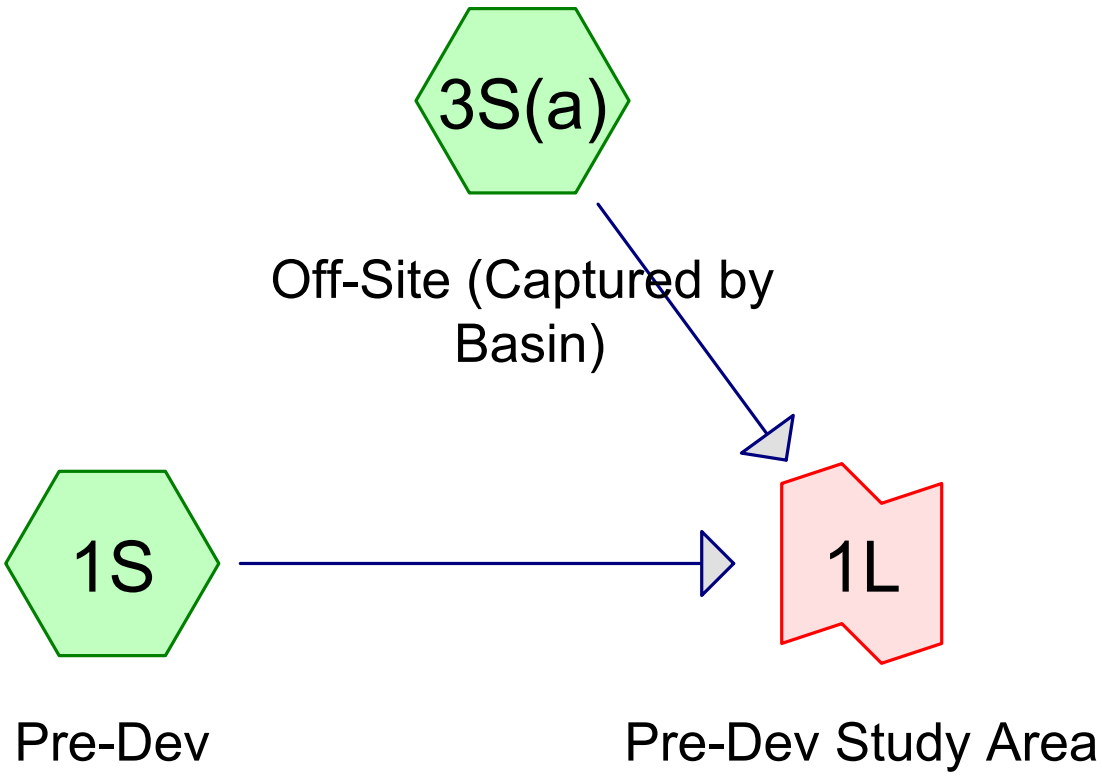
Total Watershed Area: 4.981 acres Rv: 0.605
Effective Impervious Area: 61.6% WQv: 13,667
CN for most events: 91
Adjusted CN (for WQv event modeling): 95 Qa: 0.756

** Do not include any impervious areas that are included as "Other Areas" (e.g. green roofs, etc.)*
*** Provide calculations of weighted CNs for "Other Areas" if more than one land use type*

APPENDIX E

HYDROCAD REPORT

PRE-DEV HYDROCAD REPORT



Subcat Reach Pond Link

Routing Diagram for DaneRdSW
Prepared by Foth & Van Dyke, LLC, Printed 8/13/2025
HydroCAD® 10.20-5c s/n 02551 © 2023 HydroCAD Software Solutions LLC

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-yr 24hr	Type II 24-hr		Default	24.00	1	2.60	2
2	2-yr 24hr	Type II 24-hr		Default	24.00	1	3.01	2
3	5-yr 24hr	Type II 24-hr		Default	24.00	1	3.75	2
4	10-yr 24hr	Type II 24-hr		Default	24.00	1	4.42	2
5	25-yr 24hr	Type II 24-hr		Default	24.00	1	5.44	2
6	50-yr 24hr	Type II 24-hr		Default	24.00	1	6.29	2
7	100-yr 24hr	Type II 24-hr		Default	24.00	1	7.22	2
8	500-yr 24hr	Type II 24-hr		Default	24.00	1	9.64	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.001	74	>75% Grass cover, Good, HSG C (3S(a))
0.512	98	Paved parking, HSG C (3S(a))
0.024	98	Roofs, HSG C (3S(a))
5.706	82	Row crops, SR + CR, Good, HSG C (1S, 3S(a))
0.078	98	Unconnected pavement, HSG C (3S(a))
7.321	**82**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
7.321	HSG C	1S, 3S(a)
0.000	HSG D	
0.000	Other	
7.321		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	1.001	0.000	0.000	1.001	>75% Grass cover, Good	3S(a)
0.000	0.000	0.512	0.000	0.000	0.512	Paved parking	3S(a)
0.000	0.000	0.024	0.000	0.000	0.024	Roofs	3S(a)
0.000	0.000	5.706	0.000	0.000	5.706	Row crops, SR + CR, Good	1S, 3S(a)
0.000	0.000	0.078	0.000	0.000	0.078	Unconnected pavement	3S(a)
0.000	**0.000**	**7.321**	**0.000**	**0.000**	**7.321**	**TOTAL AREA**	

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	3S(a)	0.00	0.00	122.0	0.0051	0.011	0.0	18.0	0.0	

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment1S: Pre-Dev Runoff Area=238,163 sf 0.00% Impervious Runoff Depth=1.07"
Flow Length=870' Tc=12.0 min CN=82/0 Runoff=8.37 cfs 0.488 af

Subcatchment3S(a): Off-Site (Captured by Runoff Area=80,720 sf 33.11% Impervious Runoff Depth=1.29"
Flow Length=744' Tc=6.0 min CN=76/98 Runoff=3.87 cfs 0.199 af

Link 1L: Pre-Dev Study Area Inflow=11.34 cfs 0.688 af
Primary=11.34 cfs 0.688 af

Total Runoff Area = 7.321 ac Runoff Volume = 0.688 af Average Runoff Depth = 1.13"
91.62% Pervious = 6.707 ac 8.38% Impervious = 0.614 ac

Summary for Subcatchment 1S: Pre-Dev

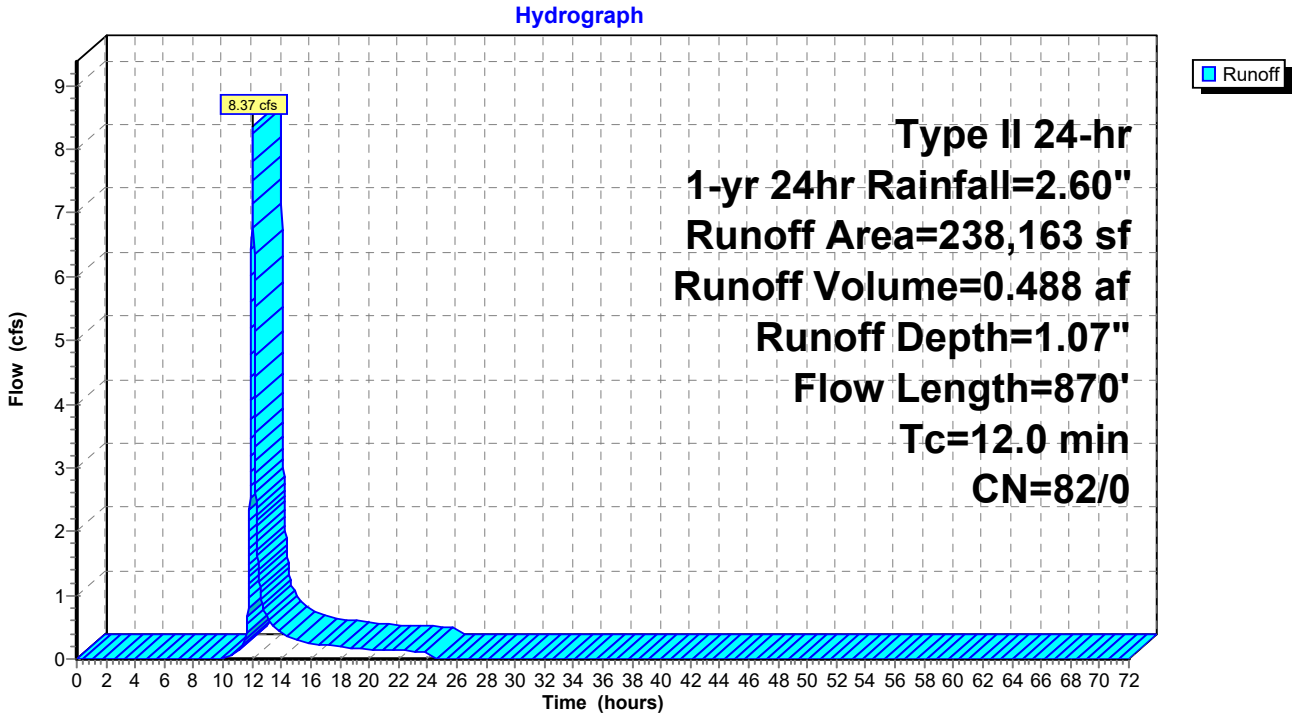
Runoff = 8.37 cfs @ 12.04 hrs, Volume= 0.488 af, Depth= 1.07"
Routed to Link 1L : Pre-Dev Study Area

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr 24hr Rainfall=2.60"

Area (sf)	CN	Description
238,163	82	Row crops, SR + CR, Good, HSG C
238,163	82	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	120	0.0454	0.49		**Sheet Flow, Sheet Flow** Cultivated: Residue<=20% n= 0.060 P2= 3.01"
8.0	750	0.0303	1.57		**Shallow Concentrated Flow, Shallow Conc Flow** Cultivated Straight Rows Kv= 9.0 fps
12.0	870	Total			

Subcatchment 1S: Pre-Dev



Summary for Subcatchment 3S(a): Off-Site (Captured by Basin)

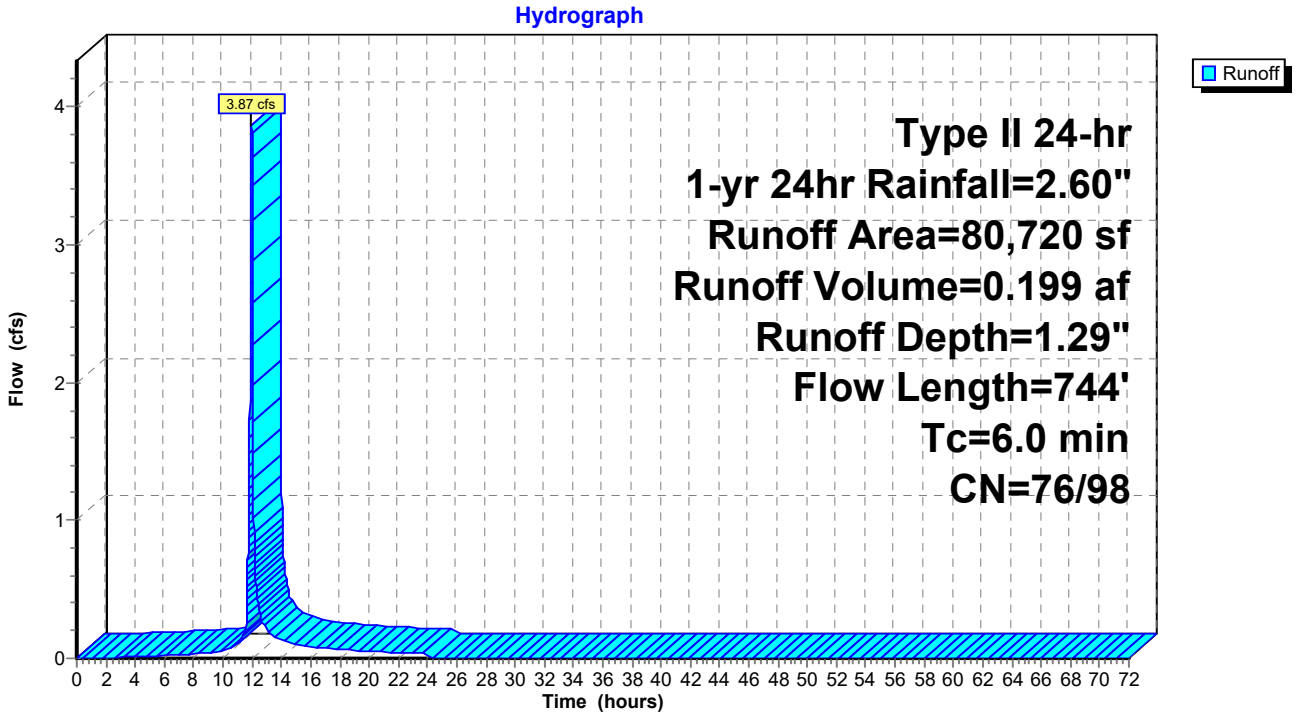
Runoff = 3.87 cfs @ 11.97 hrs, Volume= 0.199 af, Depth= 1.29"
Routed to Link 1L : Pre-Dev Study Area

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr 24hr Rainfall=2.60"

Area (sf)	CN	Description
10,378	82	Row crops, SR + CR, Good, HSG C
3,388	98	Unconnected pavement, HSG C
22,308	98	Paved parking, HSG C
43,614	74	>75% Grass cover, Good, HSG C
1,032	98	Roofs, HSG C
80,720	83	Weighted Average
53,992	76	66.89% Pervious Area
26,728	98	33.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	29	0.1534	2.35		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
1.2	100	0.0200	1.33		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.3	65	0.0463	3.23		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.8	174	0.0461	3.46		**Shallow Concentrated Flow, Shallow Conc Flow** Unpaved Kv= 16.1 fps
0.5	112	0.0714	4.01		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	142	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
2.4					**Direct Entry, User**
6.0	744	Total			

Subcatchment 3S(a): Off-Site (Captured by Basin)

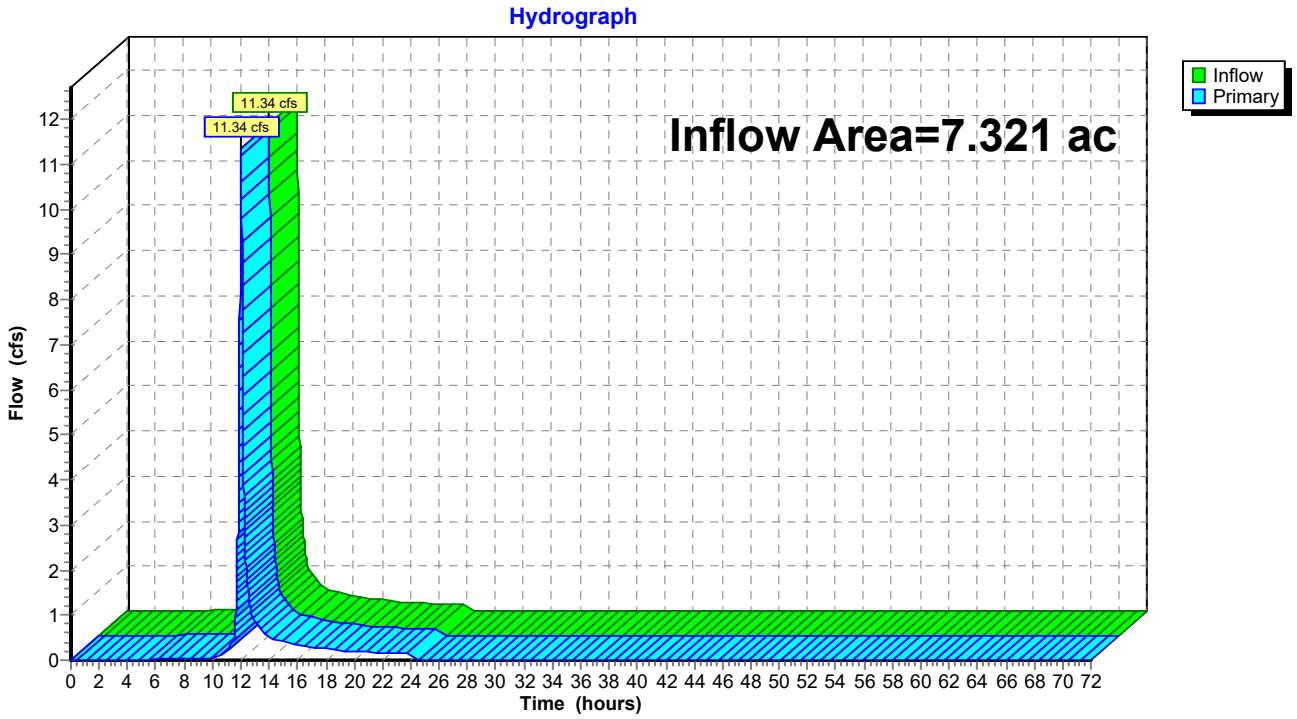


Summary for Link 1L: Pre-Dev Study Area

Inflow Area = 7.321 ac, 8.38% Impervious, Inflow Depth = 1.13" for 1-yr 24hr event
Inflow = 11.34 cfs @ 12.01 hrs, Volume= 0.688 af
Primary = 11.34 cfs @ 12.01 hrs, Volume= 0.688 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 1L: Pre-Dev Study Area



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment1S: Pre-Dev Runoff Area=238,163 sf 0.00% Impervious Runoff Depth=1.39"
Flow Length=870' Tc=12.0 min CN=82/0 Runoff=10.89 cfs 0.632 af

Subcatchment3S(a): Off-Site (Captured by Runoff Area=80,720 sf 33.11% Impervious Runoff Depth=1.60"
Flow Length=744' Tc=6.0 min CN=76/98 Runoff=4.85 cfs 0.248 af

Link 1L: Pre-Dev Study Area Inflow=14.63 cfs 0.879 af
Primary=14.63 cfs 0.879 af

Total Runoff Area = 7.321 ac Runoff Volume = 0.879 af Average Runoff Depth = 1.44"
91.62% Pervious = 6.707 ac 8.38% Impervious = 0.614 ac

Summary for Subcatchment 1S: Pre-Dev

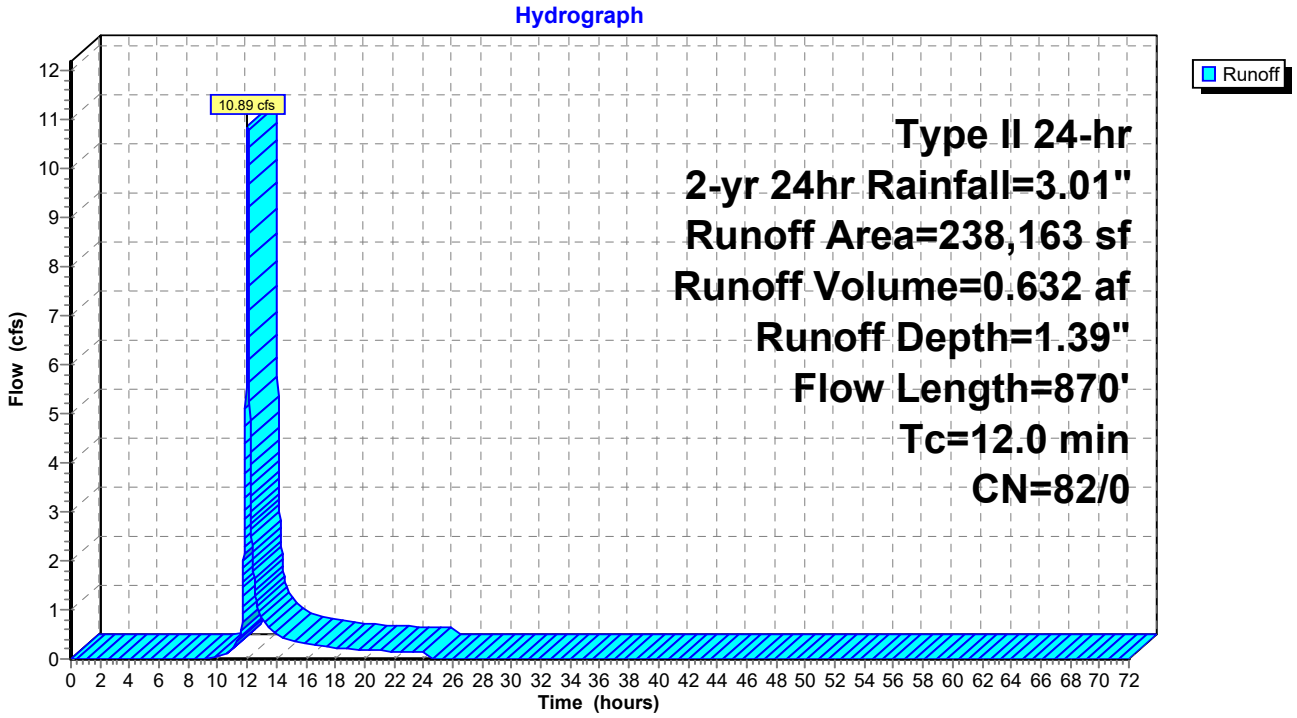
Runoff = 10.89 cfs @ 12.04 hrs, Volume= 0.632 af, Depth= 1.39"
Routed to Link 1L : Pre-Dev Study Area

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr 24hr Rainfall=3.01"

Area (sf)	CN	Description
238,163	82	Row crops, SR + CR, Good, HSG C
238,163	82	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	120	0.0454	0.49		**Sheet Flow, Sheet Flow** Cultivated: Residue<=20% n= 0.060 P2= 3.01"
8.0	750	0.0303	1.57		**Shallow Concentrated Flow, Shallow Conc Flow** Cultivated Straight Rows Kv= 9.0 fps
12.0	870	Total			

Subcatchment 1S: Pre-Dev



Summary for Subcatchment 3S(a): Off-Site (Captured by Basin)

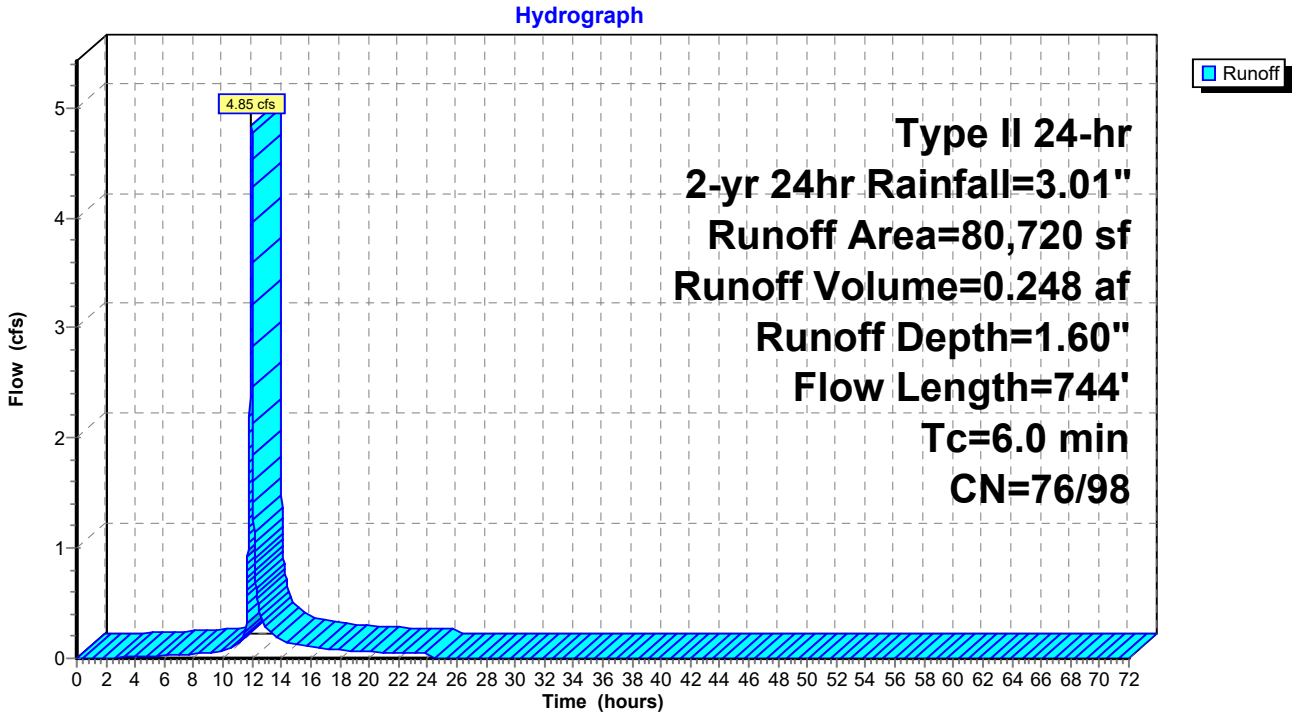
Runoff = 4.85 cfs @ 11.97 hrs, Volume= 0.248 af, Depth= 1.60"
Routed to Link 1L : Pre-Dev Study Area

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr 24hr Rainfall=3.01"

Area (sf)	CN	Description
10,378	82	Row crops, SR + CR, Good, HSG C
3,388	98	Unconnected pavement, HSG C
22,308	98	Paved parking, HSG C
43,614	74	>75% Grass cover, Good, HSG C
1,032	98	Roofs, HSG C
80,720	83	Weighted Average
53,992	76	66.89% Pervious Area
26,728	98	33.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	29	0.1534	2.35		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
1.2	100	0.0200	1.33		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.3	65	0.0463	3.23		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.8	174	0.0461	3.46		**Shallow Concentrated Flow, Shallow Conc Flow** Unpaved Kv= 16.1 fps
0.5	112	0.0714	4.01		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	142	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
2.4					**Direct Entry, User**
6.0	744	Total			

Subcatchment 3S(a): Off-Site (Captured by Basin)

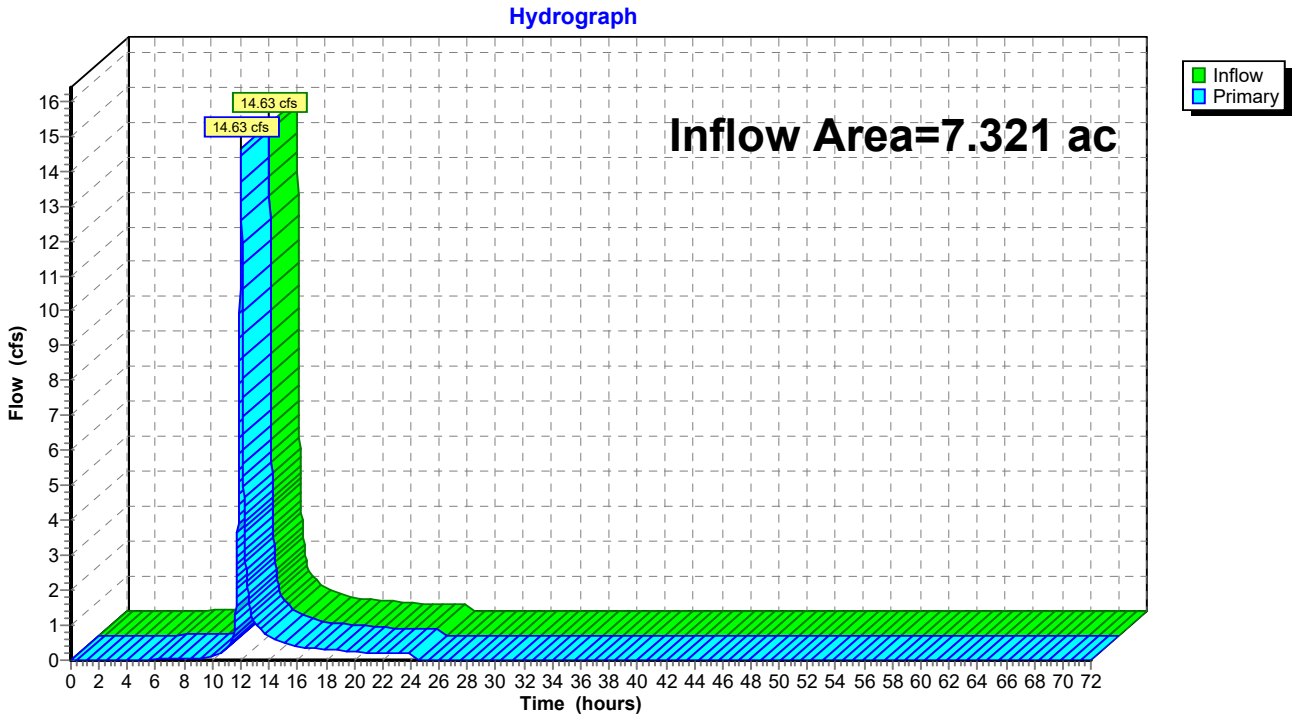


Summary for Link 1L: Pre-Dev Study Area

Inflow Area = 7.321 ac, 8.38% Impervious, Inflow Depth = 1.44" for 2-yr 24hr event
Inflow = 14.63 cfs @ 12.01 hrs, Volume= 0.879 af
Primary = 14.63 cfs @ 12.01 hrs, Volume= 0.879 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 1L: Pre-Dev Study Area



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment1S: Pre-Dev Runoff Area=238,163 sf 0.00% Impervious Runoff Depth=1.99"
Flow Length=870' Tc=12.0 min CN=82/0 Runoff=15.63 cfs 0.907 af

Subcatchment3S(a): Off-Site (Captured by Runoff Area=80,720 sf 33.11% Impervious Runoff Depth=2.20"
Flow Length=744' Tc=6.0 min CN=76/98 Runoff=6.69 cfs 0.340 af

Link 1L: Pre-Dev Study Area Inflow=20.87 cfs 1.247 af
Primary=20.87 cfs 1.247 af

Total Runoff Area = 7.321 ac Runoff Volume = 1.247 af Average Runoff Depth = 2.04"
91.62% Pervious = 6.707 ac 8.38% Impervious = 0.614 ac

Summary for Subcatchment 1S: Pre-Dev

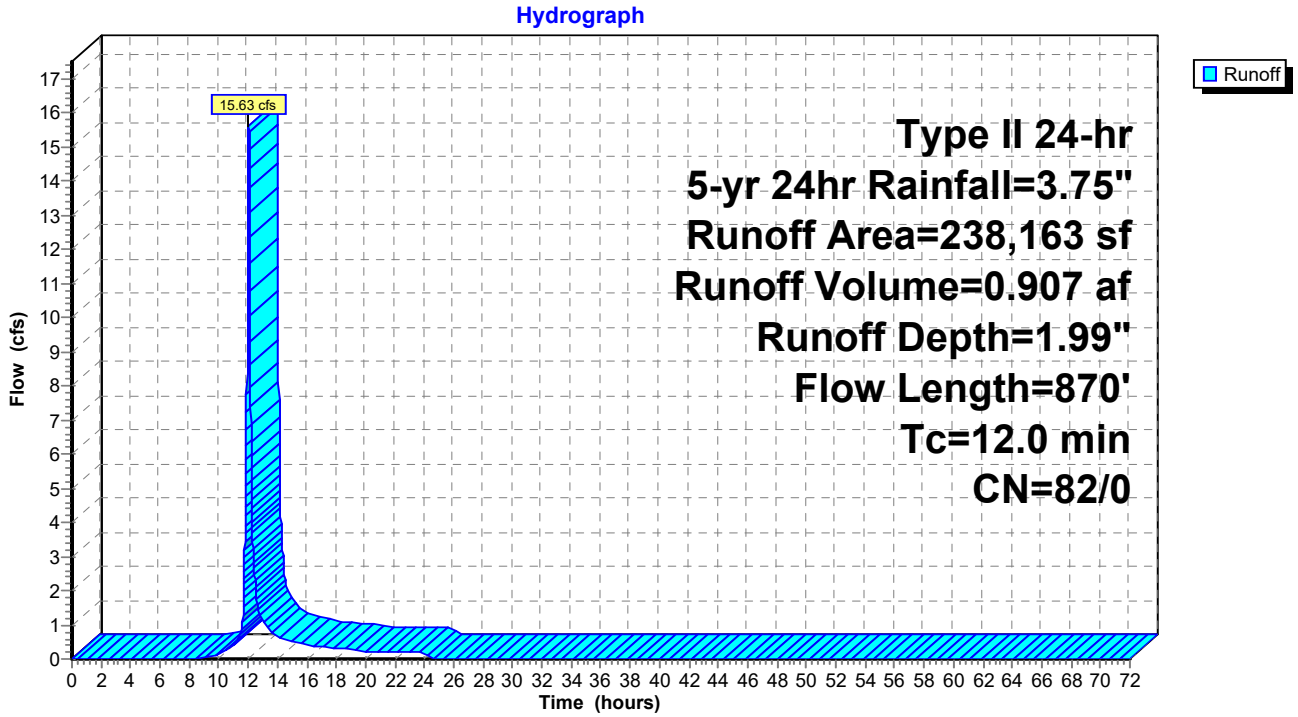
Runoff = 15.63 cfs @ 12.04 hrs, Volume= 0.907 af, Depth= 1.99"
Routed to Link 1L : Pre-Dev Study Area

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-yr 24hr Rainfall=3.75"

Area (sf)	CN	Description
238,163	82	Row crops, SR + CR, Good, HSG C
238,163	82	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	120	0.0454	0.49		**Sheet Flow, Sheet Flow** Cultivated: Residue<=20% n= 0.060 P2= 3.01"
8.0	750	0.0303	1.57		**Shallow Concentrated Flow, Shallow Conc Flow** Cultivated Straight Rows Kv= 9.0 fps
12.0	870	Total			

Subcatchment 1S: Pre-Dev



Summary for Subcatchment 3S(a): Off-Site (Captured by Basin)

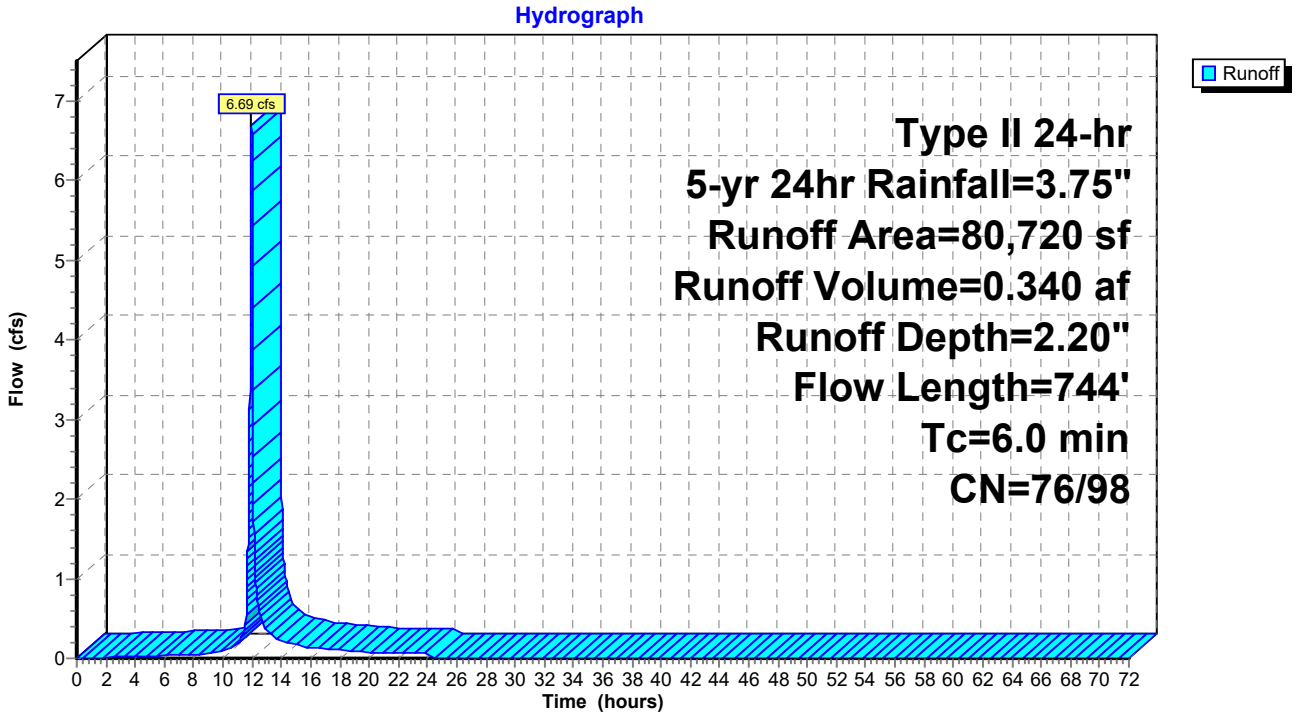
Runoff = 6.69 cfs @ 11.97 hrs, Volume= 0.340 af, Depth= 2.20"
Routed to Link 1L : Pre-Dev Study Area

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-yr 24hr Rainfall=3.75"

Area (sf)	CN	Description
10,378	82	Row crops, SR + CR, Good, HSG C
3,388	98	Unconnected pavement, HSG C
22,308	98	Paved parking, HSG C
43,614	74	>75% Grass cover, Good, HSG C
1,032	98	Roofs, HSG C
80,720	83	Weighted Average
53,992	76	66.89% Pervious Area
26,728	98	33.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	29	0.1534	2.35		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
1.2	100	0.0200	1.33		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.3	65	0.0463	3.23		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.8	174	0.0461	3.46		**Shallow Concentrated Flow, Shallow Conc Flow** Unpaved Kv= 16.1 fps
0.5	112	0.0714	4.01		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	142	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
2.4					**Direct Entry, User**
6.0	744	Total			

Subcatchment 3S(a): Off-Site (Captured by Basin)

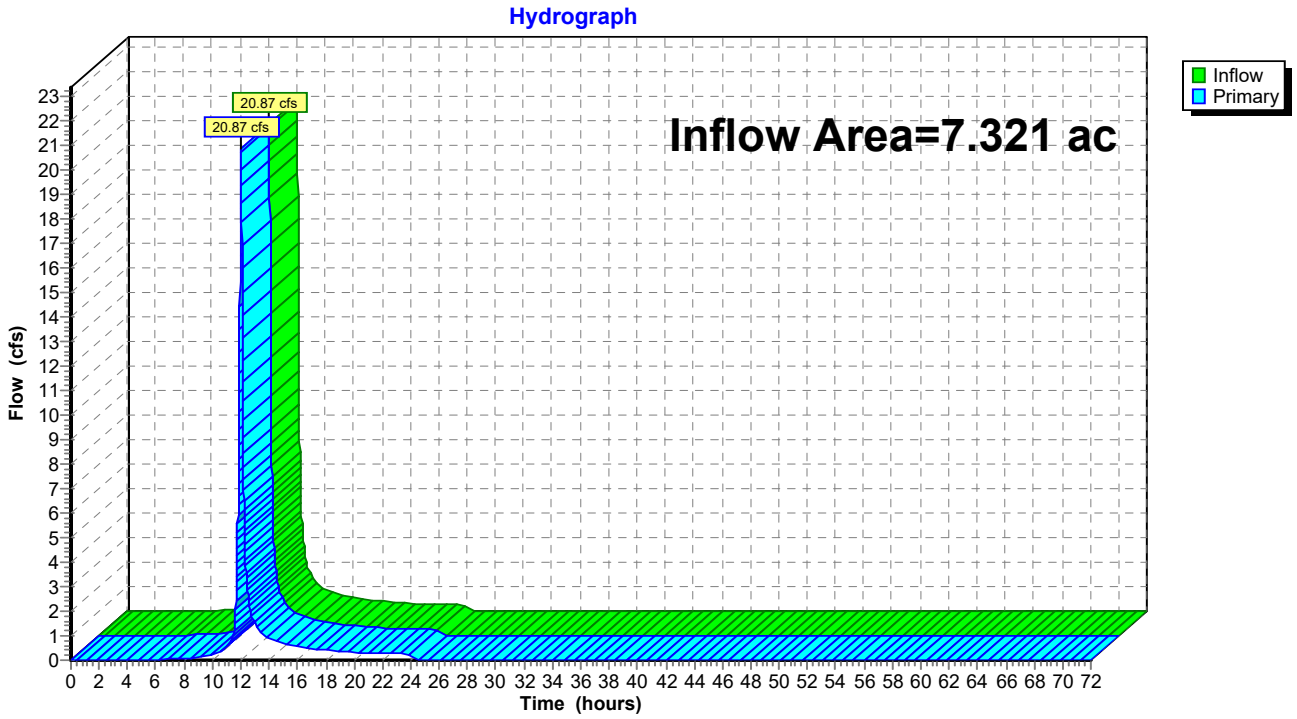


Summary for Link 1L: Pre-Dev Study Area

Inflow Area = 7.321 ac, 8.38% Impervious, Inflow Depth = 2.04" for 5-yr 24hr event
Inflow = 20.87 cfs @ 12.01 hrs, Volume= 1.247 af
Primary = 20.87 cfs @ 12.01 hrs, Volume= 1.247 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 1L: Pre-Dev Study Area



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment1S: Pre-Dev Runoff Area=238,163 sf 0.00% Impervious Runoff Depth=2.57"
Flow Length=870' Tc=12.0 min CN=82/0 Runoff=20.07 cfs 1.169 af

Subcatchment3S(a): Off-Site (Captured by Runoff Area=80,720 sf 33.11% Impervious Runoff Depth=2.77"
Flow Length=744' Tc=6.0 min CN=76/98 Runoff=8.43 cfs 0.427 af

Link 1L: Pre-Dev Study Area Inflow=26.71 cfs 1.597 af
Primary=26.71 cfs 1.597 af

Total Runoff Area = 7.321 ac Runoff Volume = 1.597 af Average Runoff Depth = 2.62"
91.62% Pervious = 6.707 ac 8.38% Impervious = 0.614 ac

Summary for Subcatchment 1S: Pre-Dev

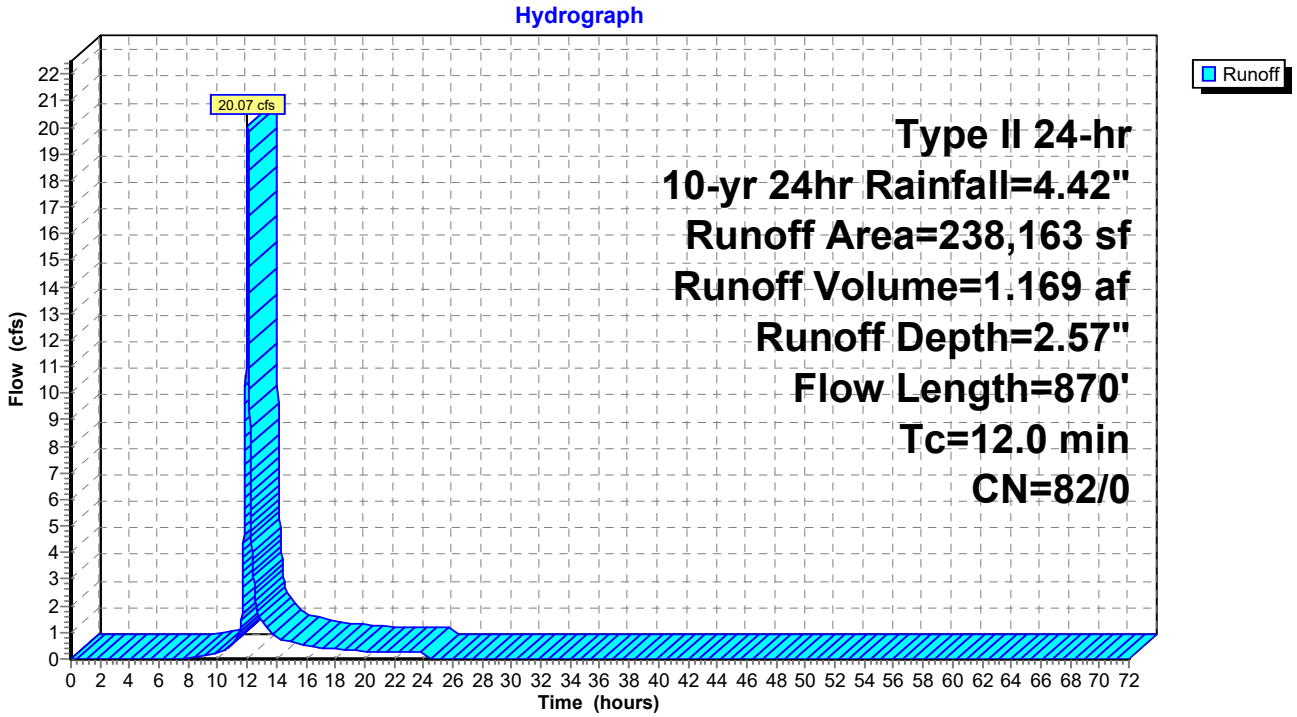
Runoff = 20.07 cfs @ 12.04 hrs, Volume= 1.169 af, Depth= 2.57"
Routed to Link 1L : Pre-Dev Study Area

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr 24hr Rainfall=4.42"

Area (sf)	CN	Description
238,163	82	Row crops, SR + CR, Good, HSG C
238,163	82	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	120	0.0454	0.49		**Sheet Flow, Sheet Flow** Cultivated: Residue<=20% n= 0.060 P2= 3.01"
8.0	750	0.0303	1.57		**Shallow Concentrated Flow, Shallow Conc Flow** Cultivated Straight Rows Kv= 9.0 fps
12.0	870	Total			

Subcatchment 1S: Pre-Dev



Summary for Subcatchment 3S(a): Off-Site (Captured by Basin)

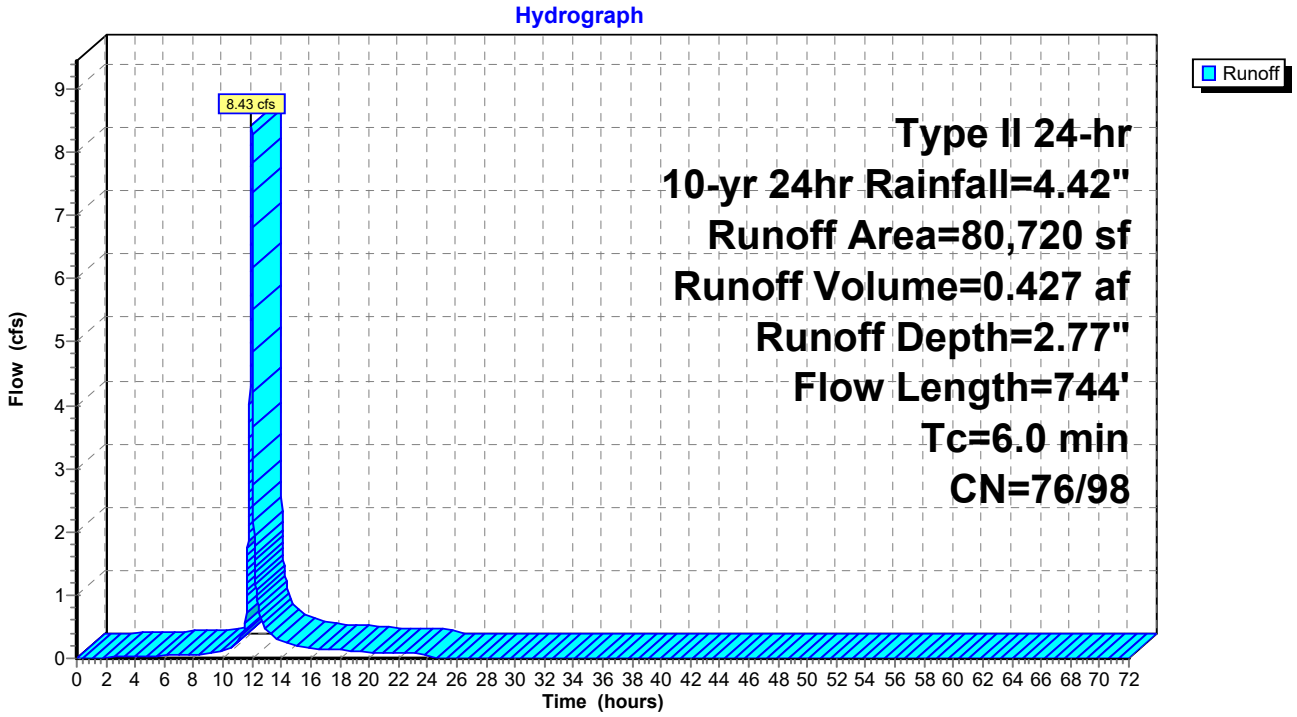
Runoff = 8.43 cfs @ 11.97 hrs, Volume= 0.427 af, Depth= 2.77"
Routed to Link 1L : Pre-Dev Study Area

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr 24hr Rainfall=4.42"

Area (sf)	CN	Description
10,378	82	Row crops, SR + CR, Good, HSG C
3,388	98	Unconnected pavement, HSG C
22,308	98	Paved parking, HSG C
43,614	74	>75% Grass cover, Good, HSG C
1,032	98	Roofs, HSG C
80,720	83	Weighted Average
53,992	76	66.89% Pervious Area
26,728	98	33.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	29	0.1534	2.35		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
1.2	100	0.0200	1.33		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.3	65	0.0463	3.23		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.8	174	0.0461	3.46		**Shallow Concentrated Flow, Shallow Conc Flow** Unpaved Kv= 16.1 fps
0.5	112	0.0714	4.01		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	142	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
2.4					**Direct Entry, User**
6.0	744	Total			

Subcatchment 3S(a): Off-Site (Captured by Basin)

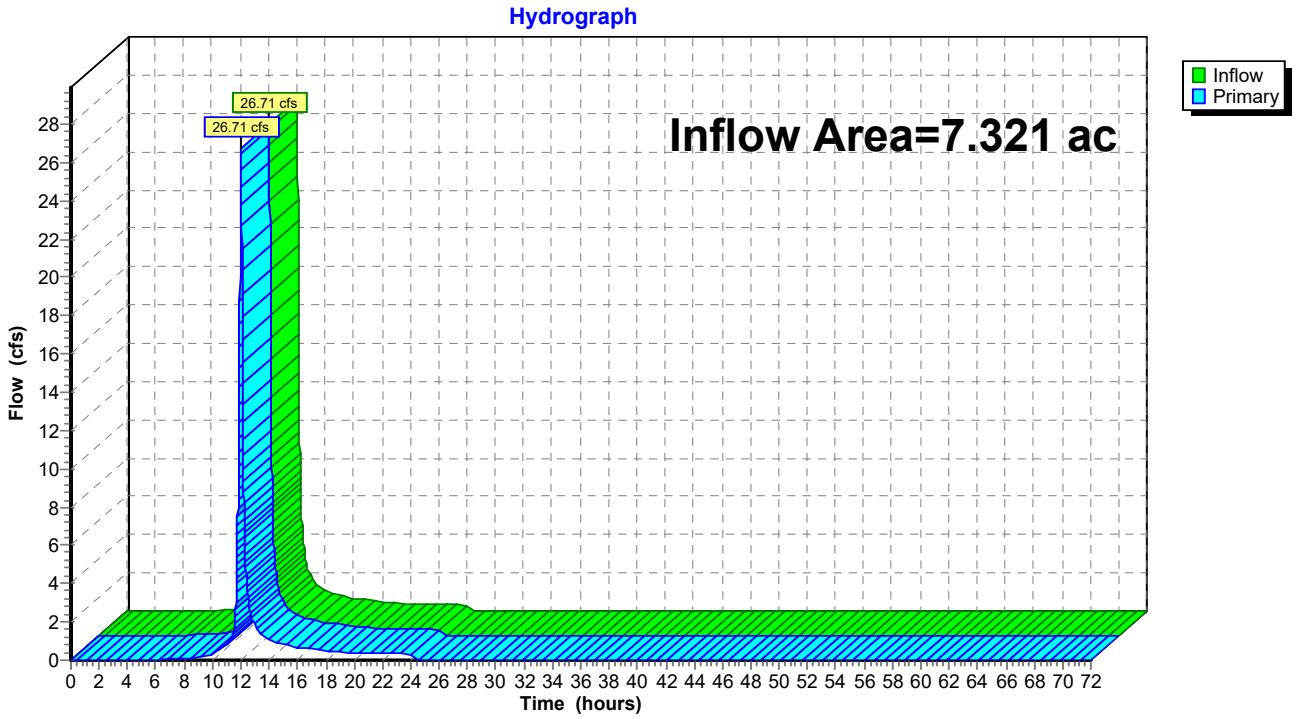


Summary for Link 1L: Pre-Dev Study Area

Inflow Area = 7.321 ac, 8.38% Impervious, Inflow Depth = 2.62" for 10-yr 24hr event
Inflow = 26.71 cfs @ 12.01 hrs, Volume= 1.597 af
Primary = 26.71 cfs @ 12.01 hrs, Volume= 1.597 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 1L: Pre-Dev Study Area



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment1S: Pre-Dev Runoff Area=238,163 sf 0.00% Impervious Runoff Depth=3.48"
Flow Length=870' Tc=12.0 min CN=82/0 Runoff=26.96 cfs 1.583 af

Subcatchment3S(a): Off-Site (Captured by Runoff Area=80,720 sf 33.11% Impervious Runoff Depth=3.66"
Flow Length=744' Tc=6.0 min CN=76/98 Runoff=11.15 cfs 0.566 af

Link 1L: Pre-Dev Study Area Inflow=35.81 cfs 2.149 af
Primary=35.81 cfs 2.149 af

Total Runoff Area = 7.321 ac Runoff Volume = 2.149 af Average Runoff Depth = 3.52"
91.62% Pervious = 6.707 ac 8.38% Impervious = 0.614 ac

Summary for Subcatchment 1S: Pre-Dev

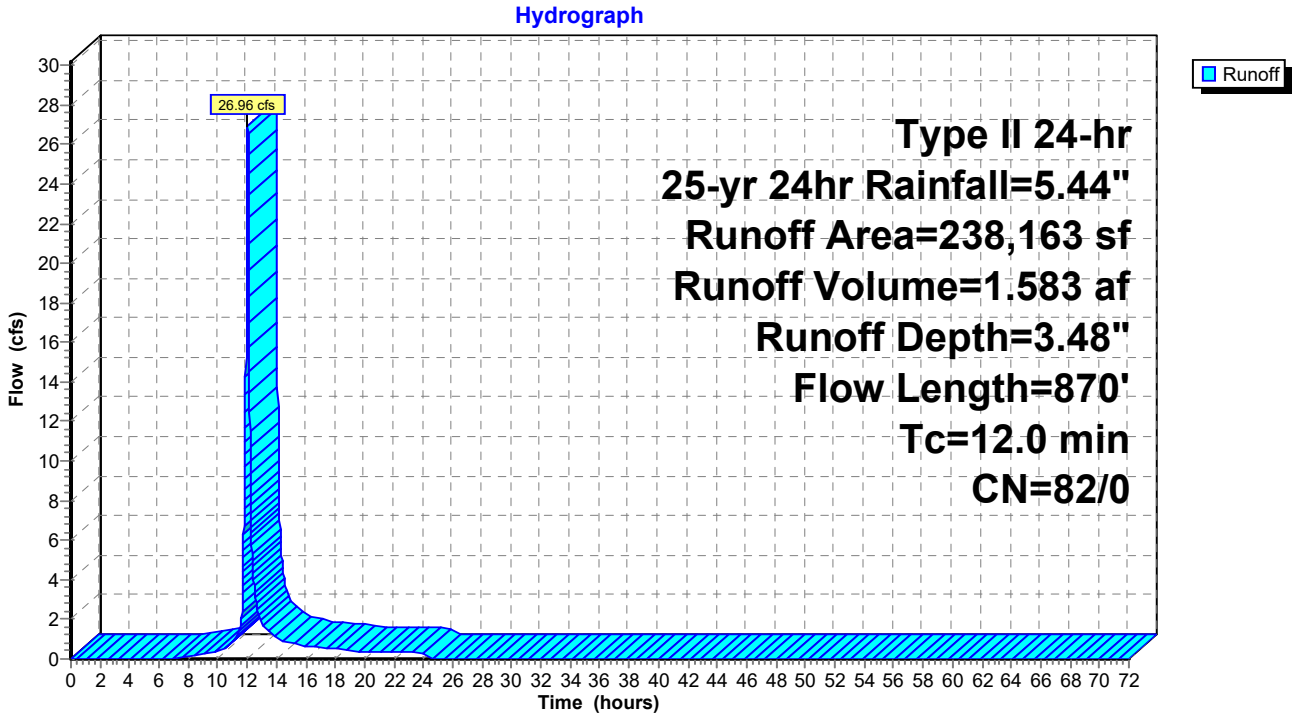
Runoff = 26.96 cfs @ 12.04 hrs, Volume= 1.583 af, Depth= 3.48"
Routed to Link 1L : Pre-Dev Study Area

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-yr 24hr Rainfall=5.44"

Area (sf)	CN	Description
238,163	82	Row crops, SR + CR, Good, HSG C
238,163	82	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	120	0.0454	0.49		**Sheet Flow, Sheet Flow** Cultivated: Residue<=20% n= 0.060 P2= 3.01"
8.0	750	0.0303	1.57		**Shallow Concentrated Flow, Shallow Conc Flow** Cultivated Straight Rows Kv= 9.0 fps
12.0	870	Total			

Subcatchment 1S: Pre-Dev



Summary for Subcatchment 3S(a): Off-Site (Captured by Basin)

[47] Hint: Peak is 126% of capacity of segment #6

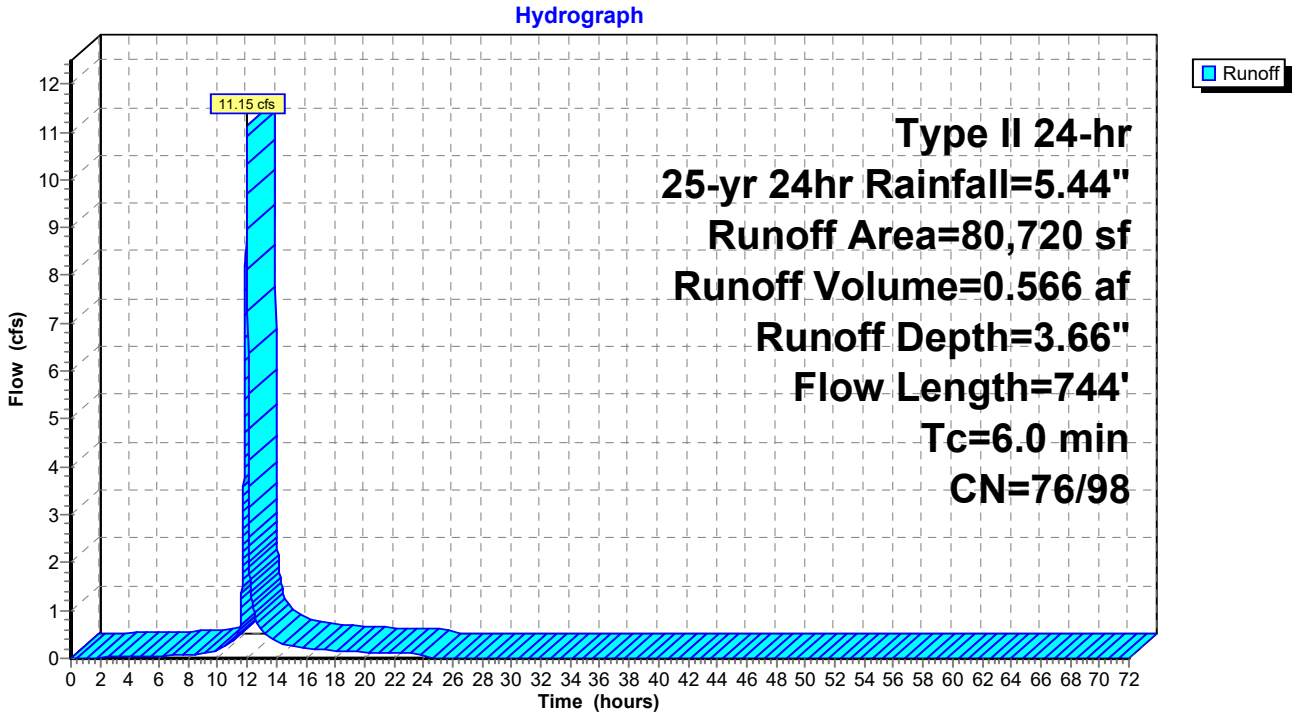
Runoff = 11.15 cfs @ 11.97 hrs, Volume= 0.566 af, Depth= 3.66"
Routed to Link 1L : Pre-Dev Study Area

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-yr 24hr Rainfall=5.44"

Area (sf)	CN	Description
10,378	82	Row crops, SR + CR, Good, HSG C
3,388	98	Unconnected pavement, HSG C
22,308	98	Paved parking, HSG C
43,614	74	>75% Grass cover, Good, HSG C
1,032	98	Roofs, HSG C
80,720	83	Weighted Average
53,992	76	66.89% Pervious Area
26,728	98	33.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	29	0.1534	2.35		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
1.2	100	0.0200	1.33		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.3	65	0.0463	3.23		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.8	174	0.0461	3.46		**Shallow Concentrated Flow, Shallow Conc Flow** Unpaved Kv= 16.1 fps
0.5	112	0.0714	4.01		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	142	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
2.4					**Direct Entry, User**
6.0	744	Total			

Subcatchment 3S(a): Off-Site (Captured by Basin)

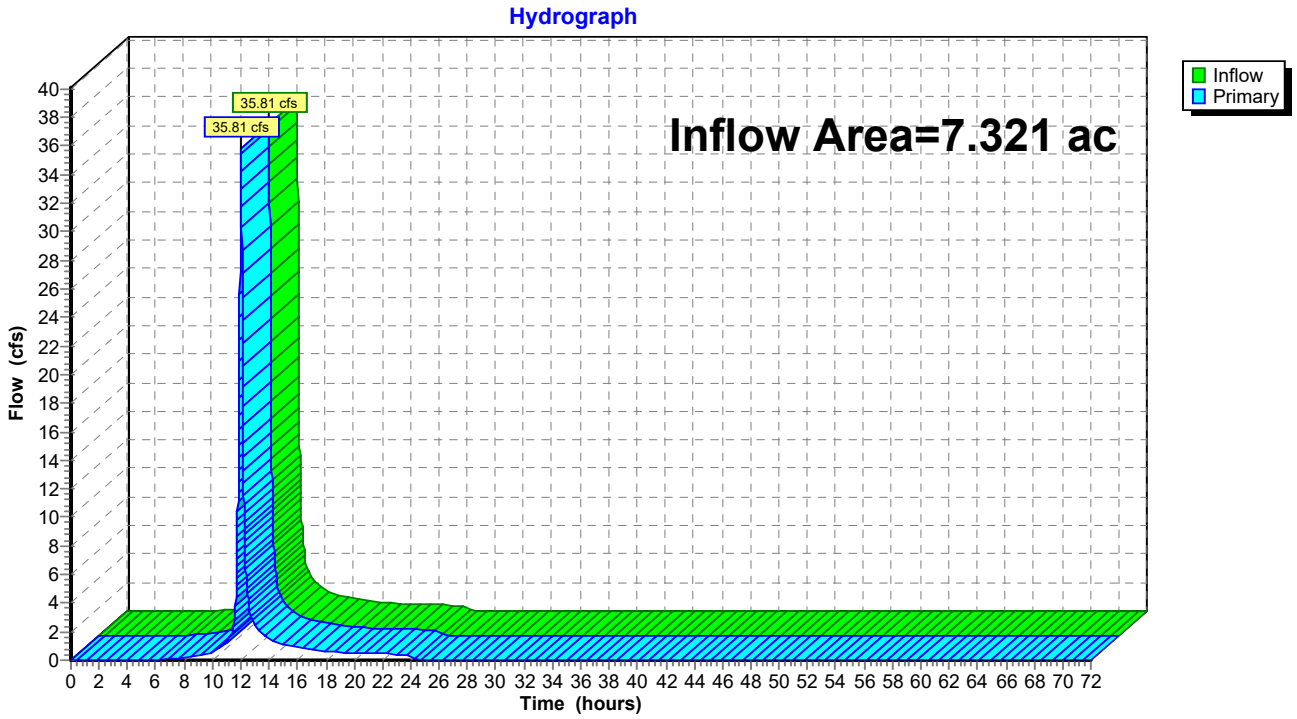


Summary for Link 1L: Pre-Dev Study Area

Inflow Area = 7.321 ac, 8.38% Impervious, Inflow Depth = 3.52" for 25-yr 24hr event
Inflow = 35.81 cfs @ 12.01 hrs, Volume= 2.149 af
Primary = 35.81 cfs @ 12.01 hrs, Volume= 2.149 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 1L: Pre-Dev Study Area



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment1S: Pre-Dev Runoff Area=238,163 sf 0.00% Impervious Runoff Depth=4.25"
Flow Length=870' Tc=12.0 min CN=82/0 Runoff=32.75 cfs 1.939 af

Subcatchment3S(a): Off-Site (Captured by Runoff Area=80,720 sf 33.11% Impervious Runoff Depth=4.43"
Flow Length=744' Tc=6.0 min CN=76/98 Runoff=13.45 cfs 0.685 af

Link 1L: Pre-Dev Study Area Inflow=43.48 cfs 2.623 af
Primary=43.48 cfs 2.623 af

Total Runoff Area = 7.321 ac Runoff Volume = 2.623 af Average Runoff Depth = 4.30"
91.62% Pervious = 6.707 ac 8.38% Impervious = 0.614 ac

Summary for Subcatchment 1S: Pre-Dev

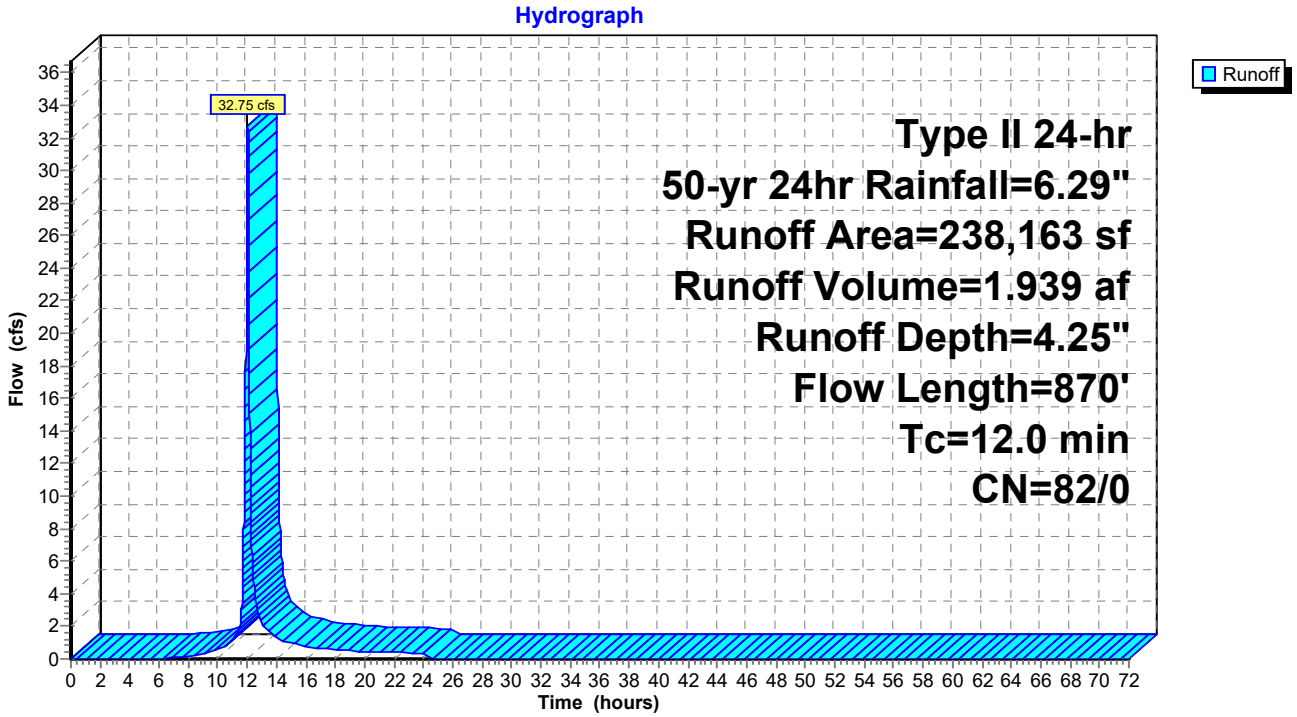
Runoff = 32.75 cfs @ 12.04 hrs, Volume= 1.939 af, Depth= 4.25"
Routed to Link 1L : Pre-Dev Study Area

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-yr 24hr Rainfall=6.29"

Area (sf)	CN	Description
238,163	82	Row crops, SR + CR, Good, HSG C
238,163	82	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	120	0.0454	0.49		**Sheet Flow, Sheet Flow** Cultivated: Residue<=20% n= 0.060 P2= 3.01"
8.0	750	0.0303	1.57		**Shallow Concentrated Flow, Shallow Conc Flow** Cultivated Straight Rows Kv= 9.0 fps
12.0	870	Total			

Subcatchment 1S: Pre-Dev



Summary for Subcatchment 3S(a): Off-Site (Captured by Basin)

[47] Hint: Peak is 152% of capacity of segment #6

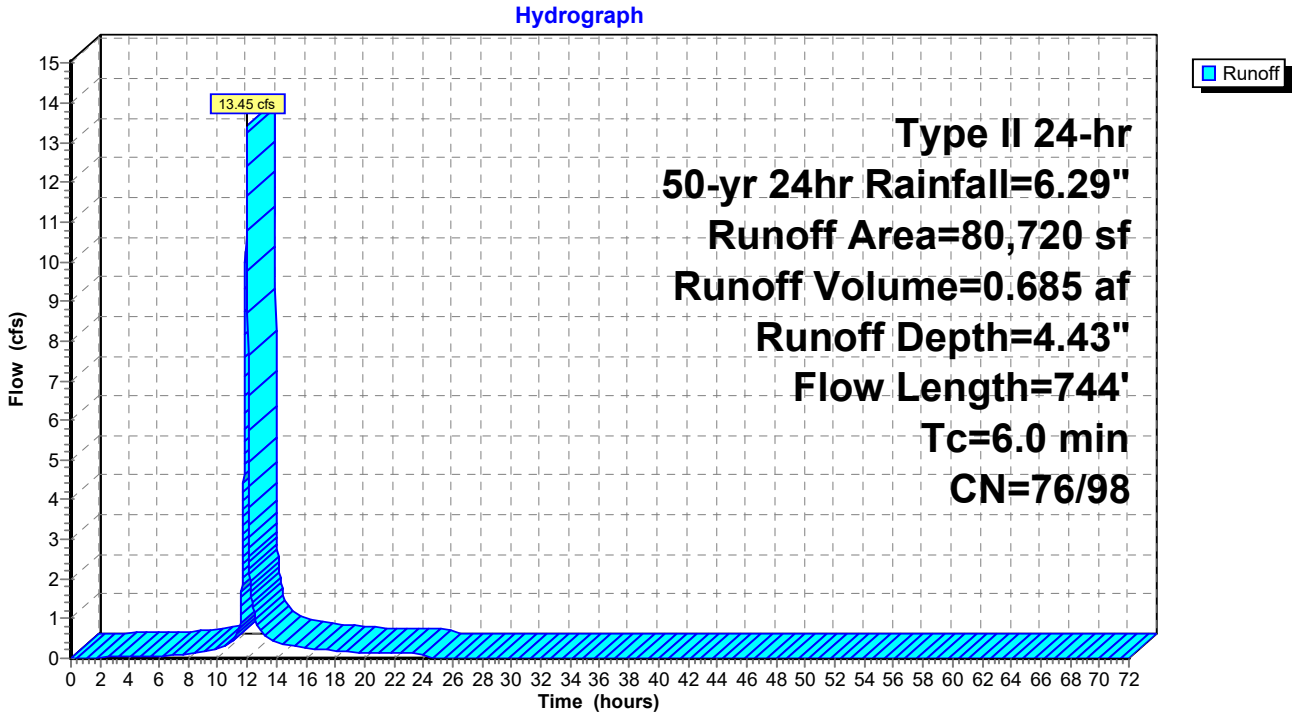
Runoff = 13.45 cfs @ 11.97 hrs, Volume= 0.685 af, Depth= 4.43"
Routed to Link 1L : Pre-Dev Study Area

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-yr 24hr Rainfall=6.29"

Area (sf)	CN	Description
10,378	82	Row crops, SR + CR, Good, HSG C
3,388	98	Unconnected pavement, HSG C
22,308	98	Paved parking, HSG C
43,614	74	>75% Grass cover, Good, HSG C
1,032	98	Roofs, HSG C
80,720	83	Weighted Average
53,992	76	66.89% Pervious Area
26,728	98	33.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	29	0.1534	2.35		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
1.2	100	0.0200	1.33		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.3	65	0.0463	3.23		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.8	174	0.0461	3.46		**Shallow Concentrated Flow, Shallow Conc Flow** Unpaved Kv= 16.1 fps
0.5	112	0.0714	4.01		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	142	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
2.4					**Direct Entry, User**
6.0	744	Total			

Subcatchment 3S(a): Off-Site (Captured by Basin)

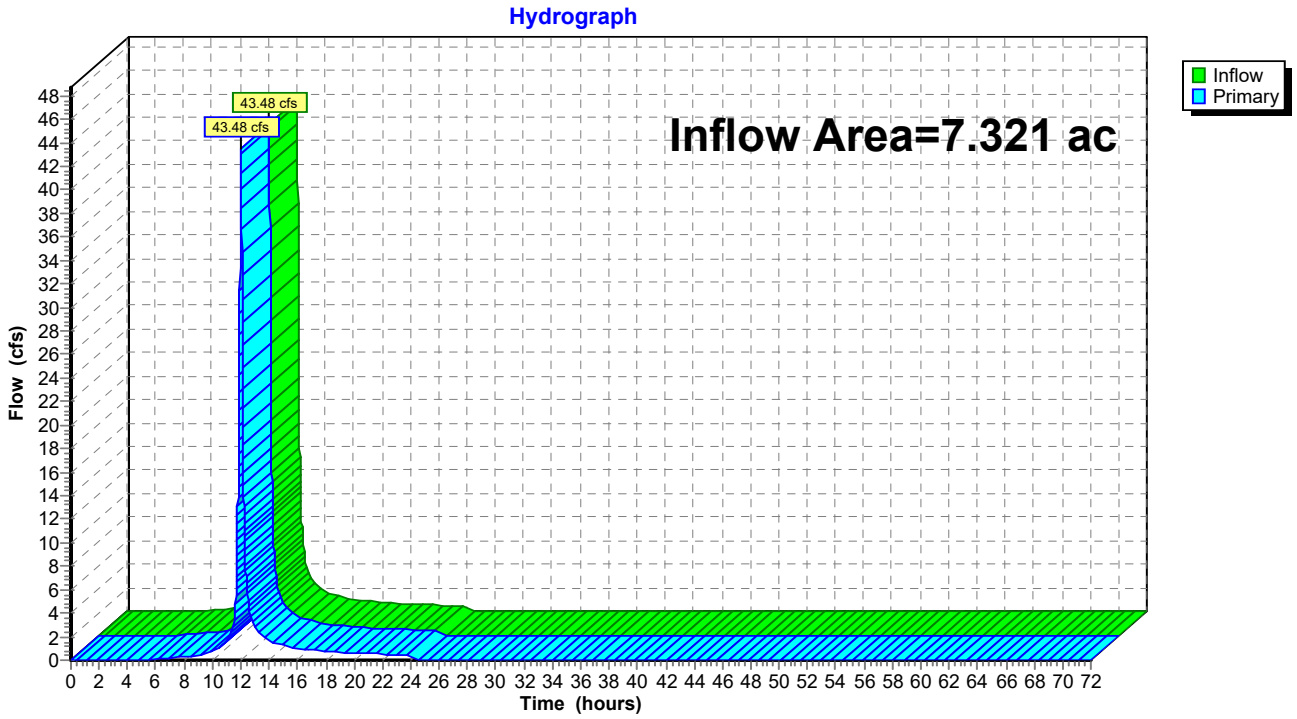


Summary for Link 1L: Pre-Dev Study Area

Inflow Area = 7.321 ac, 8.38% Impervious, Inflow Depth = 4.30" for 50-yr 24hr event
Inflow = 43.48 cfs @ 12.01 hrs, Volume= 2.623 af
Primary = 43.48 cfs @ 12.01 hrs, Volume= 2.623 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 1L: Pre-Dev Study Area



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment1S: Pre-Dev Runoff Area=238,163 sf 0.00% Impervious Runoff Depth=5.12"
Flow Length=870' Tc=12.0 min CN=82/0 Runoff=39.11 cfs 2.334 af

Subcatchment3S(a): Off-Site (Captured by Runoff Area=80,720 sf 33.11% Impervious Runoff Depth=5.29"
Flow Length=744' Tc=6.0 min CN=76/98 Runoff=15.99 cfs 0.817 af

Link 1L: Pre-Dev Study Area Inflow=51.91 cfs 3.151 af
Primary=51.91 cfs 3.151 af

Total Runoff Area = 7.321 ac Runoff Volume = 3.151 af Average Runoff Depth = 5.17"
91.62% Pervious = 6.707 ac 8.38% Impervious = 0.614 ac

Summary for Subcatchment 1S: Pre-Dev

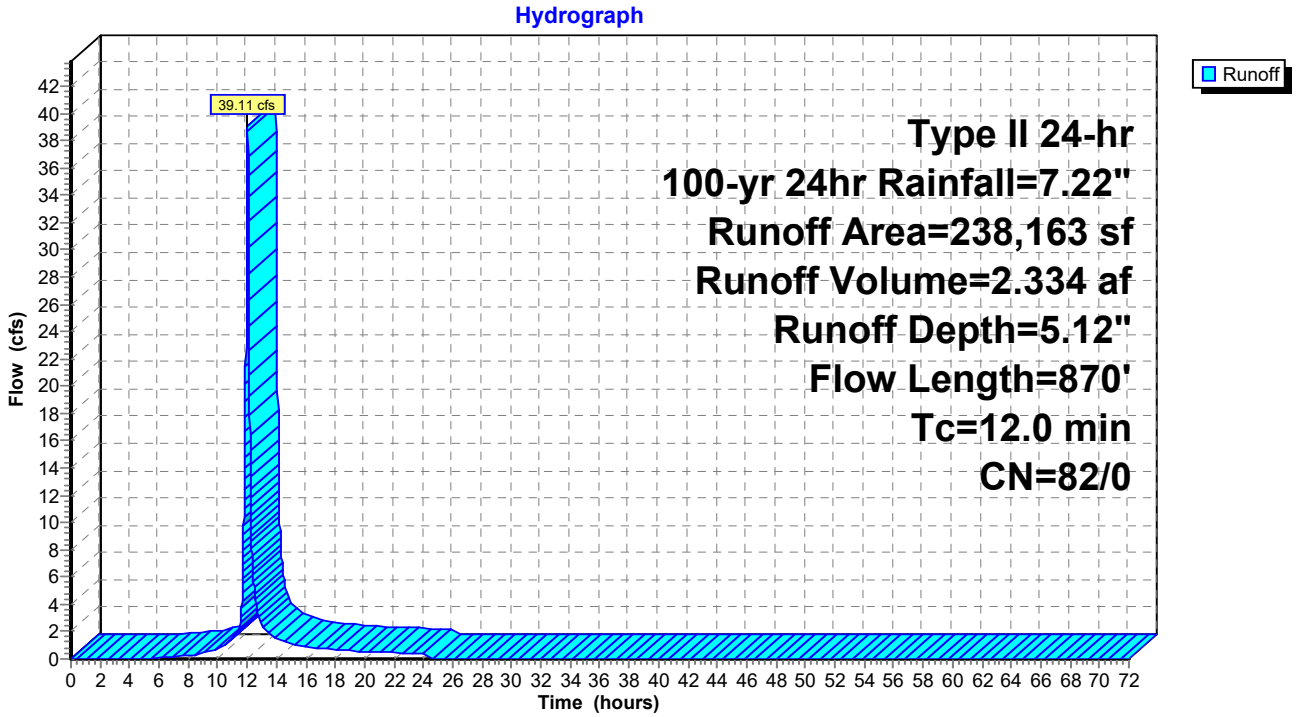
Runoff = 39.11 cfs @ 12.04 hrs, Volume= 2.334 af, Depth= 5.12"
Routed to Link 1L : Pre-Dev Study Area

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr 24hr Rainfall=7.22"

Area (sf)	CN	Description
238,163	82	Row crops, SR + CR, Good, HSG C
238,163	82	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	120	0.0454	0.49		**Sheet Flow, Sheet Flow** Cultivated: Residue<=20% n= 0.060 P2= 3.01"
8.0	750	0.0303	1.57		**Shallow Concentrated Flow, Shallow Conc Flow** Cultivated Straight Rows Kv= 9.0 fps
12.0	870	Total			

Subcatchment 1S: Pre-Dev



Summary for Subcatchment 3S(a): Off-Site (Captured by Basin)

[47] Hint: Peak is 180% of capacity of segment #6

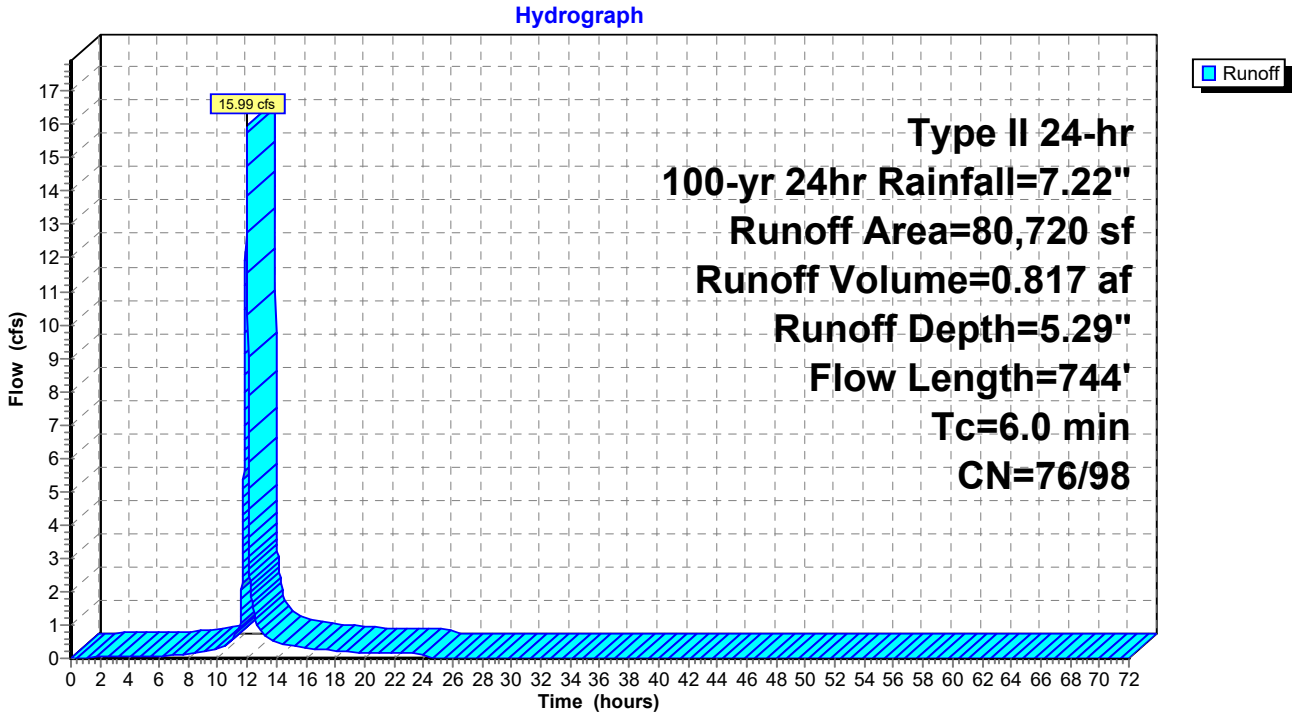
Runoff = 15.99 cfs @ 11.97 hrs, Volume= 0.817 af, Depth= 5.29"
Routed to Link 1L : Pre-Dev Study Area

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr 24hr Rainfall=7.22"

Area (sf)	CN	Description
10,378	82	Row crops, SR + CR, Good, HSG C
3,388	98	Unconnected pavement, HSG C
22,308	98	Paved parking, HSG C
43,614	74	>75% Grass cover, Good, HSG C
1,032	98	Roofs, HSG C
80,720	83	Weighted Average
53,992	76	66.89% Pervious Area
26,728	98	33.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	29	0.1534	2.35		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
1.2	100	0.0200	1.33		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.3	65	0.0463	3.23		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.8	174	0.0461	3.46		**Shallow Concentrated Flow, Shallow Conc Flow** Unpaved Kv= 16.1 fps
0.5	112	0.0714	4.01		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	142	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
2.4					**Direct Entry, User**
6.0	744	Total			

Subcatchment 3S(a): Off-Site (Captured by Basin)

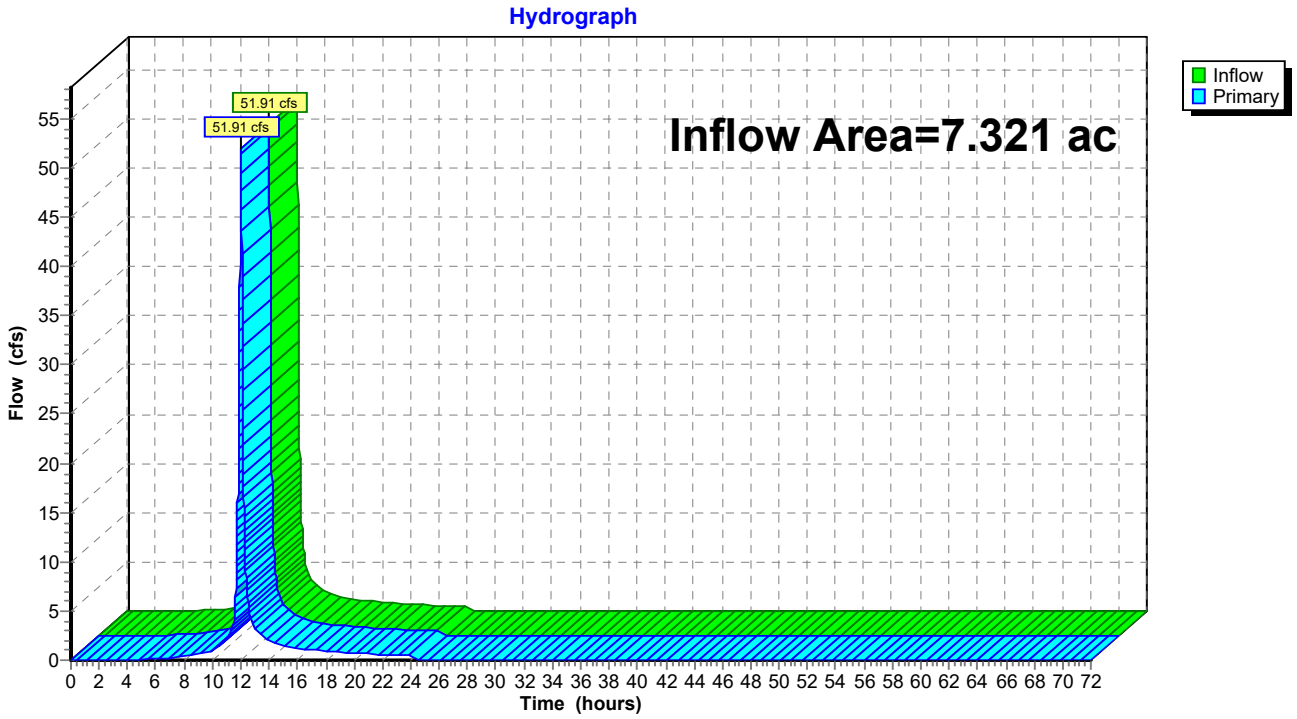


Summary for Link 1L: Pre-Dev Study Area

Inflow Area = 7.321 ac, 8.38% Impervious, Inflow Depth = 5.17" for 100-yr 24hr event
Inflow = 51.91 cfs @ 12.01 hrs, Volume= 3.151 af
Primary = 51.91 cfs @ 12.01 hrs, Volume= 3.151 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 1L: Pre-Dev Study Area



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment1S: Pre-Dev Runoff Area=238,163 sf 0.00% Impervious Runoff Depth=7.43"
Flow Length=870' Tc=12.0 min CN=82/0 Runoff=55.59 cfs 3.385 af

Subcatchment3S(a): Off-Site (Captured by Runoff Area=80,720 sf 33.11% Impervious Runoff Depth=7.57"
Flow Length=744' Tc=6.0 min CN=76/98 Runoff=22.64 cfs 1.170 af

Link 1L: Pre-Dev Study Area Inflow=73.87 cfs 4.554 af
Primary=73.87 cfs 4.554 af

Total Runoff Area = 7.321 ac Runoff Volume = 4.554 af Average Runoff Depth = 7.47"
91.62% Pervious = 6.707 ac 8.38% Impervious = 0.614 ac

Summary for Subcatchment 1S: Pre-Dev

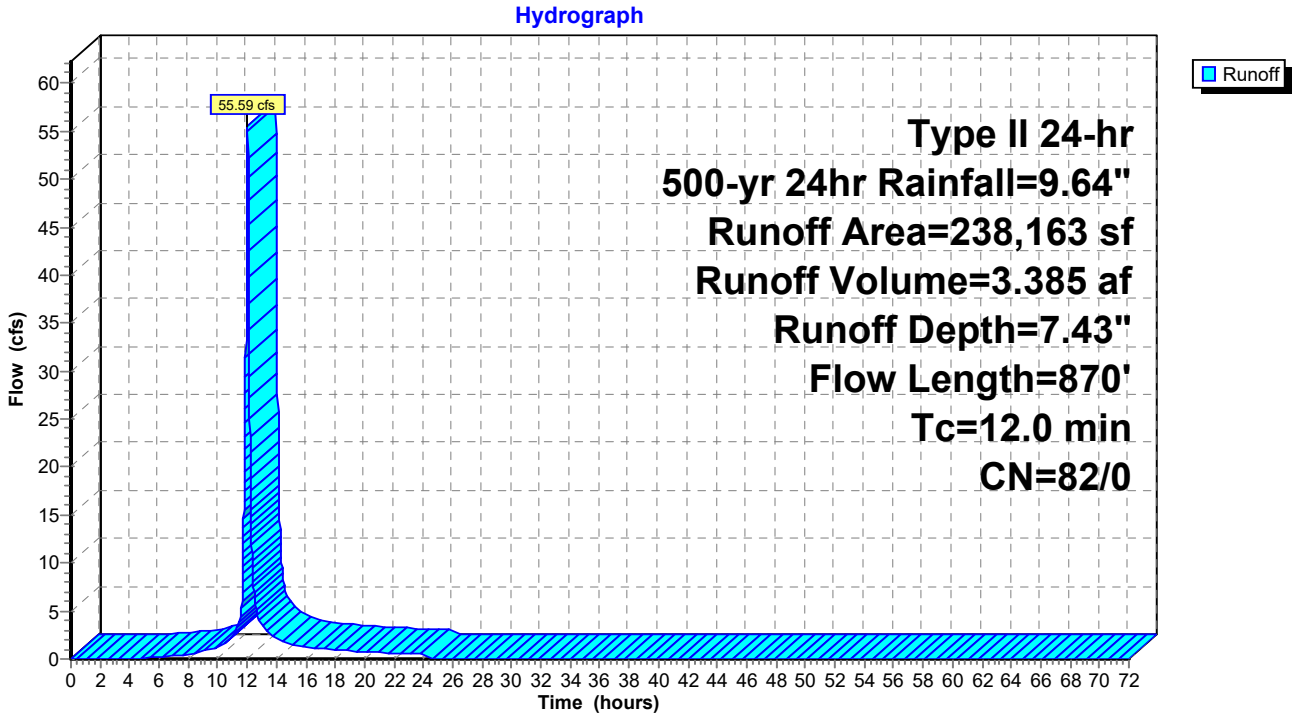
Runoff = 55.59 cfs @ 12.03 hrs, Volume= 3.385 af, Depth= 7.43"
Routed to Link 1L : Pre-Dev Study Area

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 500-yr 24hr Rainfall=9.64"

Area (sf)	CN	Description
238,163	82	Row crops, SR + CR, Good, HSG C
238,163	82	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	120	0.0454	0.49		**Sheet Flow, Sheet Flow** Cultivated: Residue<=20% n= 0.060 P2= 3.01"
8.0	750	0.0303	1.57		**Shallow Concentrated Flow, Shallow Conc Flow** Cultivated Straight Rows Kv= 9.0 fps
12.0	870	Total			

Subcatchment 1S: Pre-Dev



Summary for Subcatchment 3S(a): Off-Site (Captured by Basin)

[47] Hint: Peak is 255% of capacity of segment #6

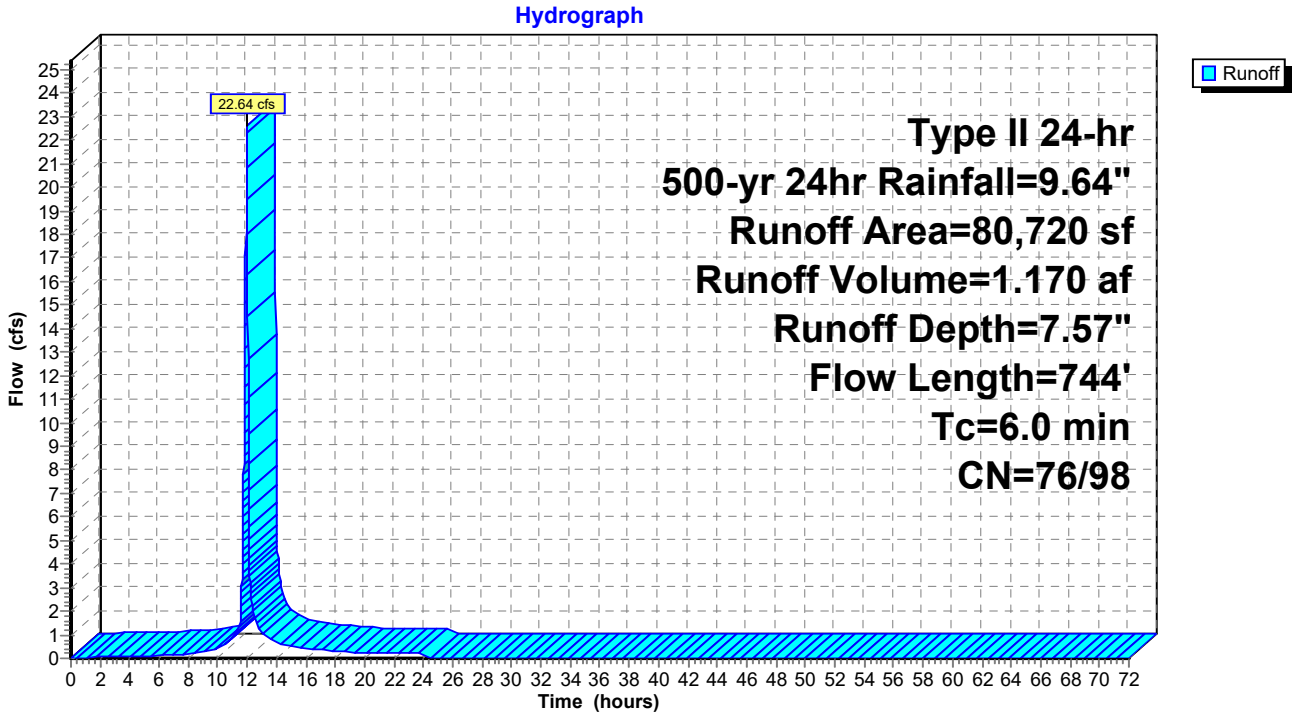
Runoff = 22.64 cfs @ 11.97 hrs, Volume= 1.170 af, Depth= 7.57"
Routed to Link 1L : Pre-Dev Study Area

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 500-yr 24hr Rainfall=9.64"

Area (sf)	CN	Description
10,378	82	Row crops, SR + CR, Good, HSG C
3,388	98	Unconnected pavement, HSG C
22,308	98	Paved parking, HSG C
43,614	74	>75% Grass cover, Good, HSG C
1,032	98	Roofs, HSG C
80,720	83	Weighted Average
53,992	76	66.89% Pervious Area
26,728	98	33.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	29	0.1534	2.35		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
1.2	100	0.0200	1.33		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.3	65	0.0463	3.23		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.8	174	0.0461	3.46		**Shallow Concentrated Flow, Shallow Conc Flow** Unpaved Kv= 16.1 fps
0.5	112	0.0714	4.01		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	142	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
2.4					**Direct Entry, User**
6.0	744	Total			

Subcatchment 3S(a): Off-Site (Captured by Basin)

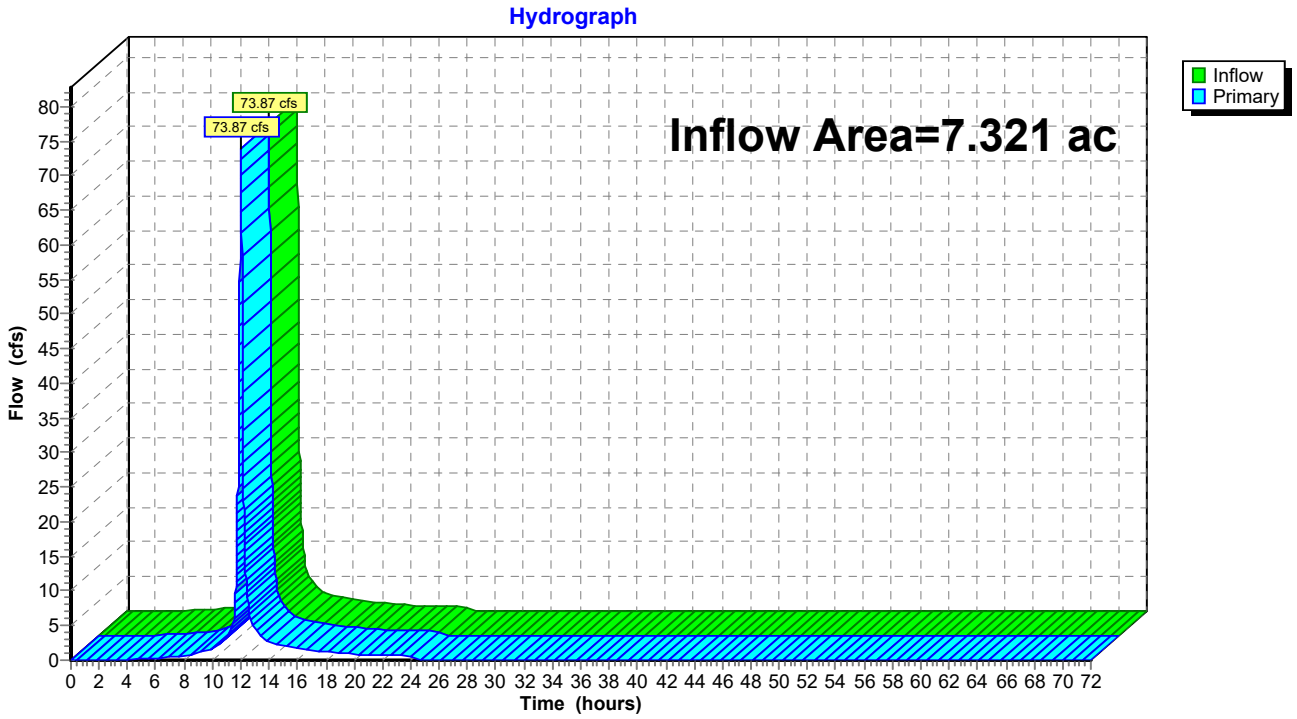


Summary for Link 1L: Pre-Dev Study Area

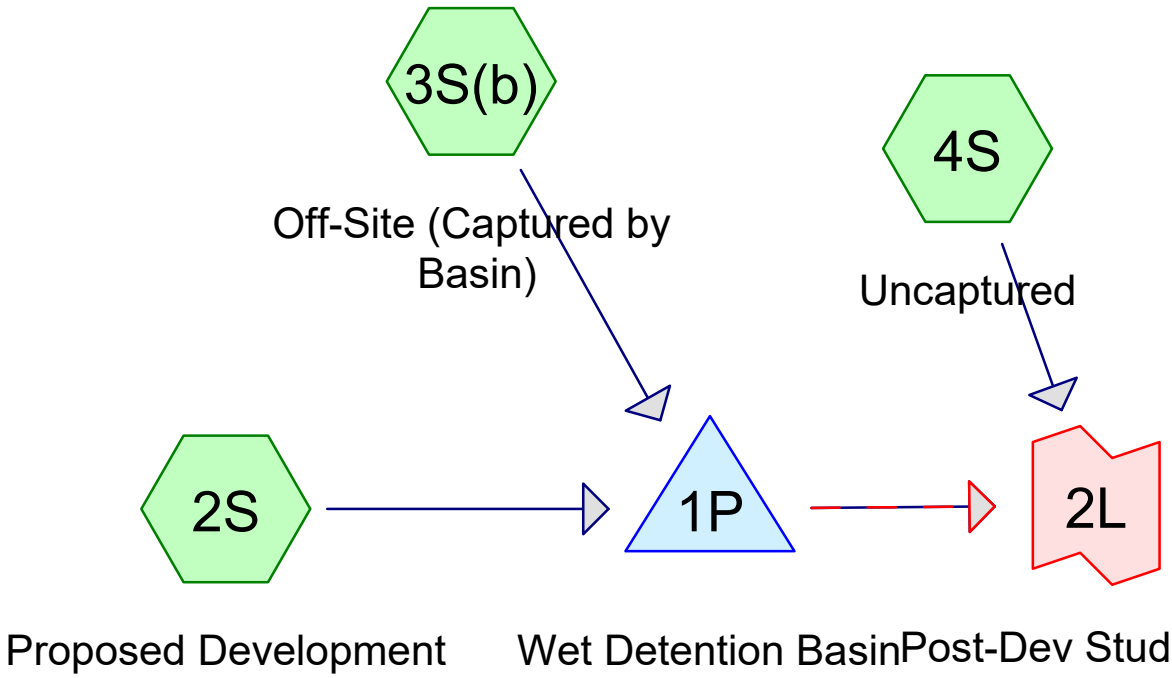
Inflow Area = 7.321 ac, 8.38% Impervious, Inflow Depth = 7.47" for 500-yr 24hr event
Inflow = 73.87 cfs @ 12.01 hrs, Volume= 4.554 af
Primary = 73.87 cfs @ 12.01 hrs, Volume= 4.554 af, Atten= 0%, Lag= 0.0 min

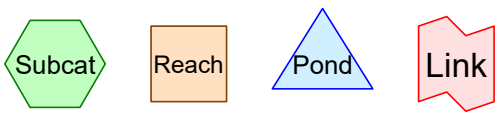
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 1L: Pre-Dev Study Area



POST-DEV HYDROCAD REPORT





Routing Diagram for DaneRdSW
Prepared by Foth & Van Dyke, LLC, Printed 8/13/2025
HydroCAD® 10.20-5c s/n 02551 © 2023 HydroCAD Software Solutions LLC

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-yr 24hr	Type II 24-hr		Default	24.00	1	2.60	2
2	2-yr 24hr	Type II 24-hr		Default	24.00	1	3.01	2
3	5-yr 24hr	Type II 24-hr		Default	24.00	1	3.75	2
4	10-yr 24hr	Type II 24-hr		Default	24.00	1	4.42	2
5	25-yr 24hr	Type II 24-hr		Default	24.00	1	5.44	2
6	50-yr 24hr	Type II 24-hr		Default	24.00	1	6.29	2
7	100-yr 24hr	Type II 24-hr		Default	24.00	1	7.22	2
8	500-yr 24hr	Type II 24-hr		Default	24.00	1	9.64	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.395	74	>75% Grass cover, Good, HSG C (2S, 3S(b), 4S)
1.196	98	Paved parking (gravel), HSG C (2S)
1.940	98	Paved parking, HSG C (2S, 3S(b), 4S)
0.024	98	Roofs, HSG C (3S(b))
0.238	82	Row crops, SR + CR, Good, HSG C (3S(b))
0.078	98	Unconnected pavement, HSG C (3S(b))
0.449	98	Water Surface, HSG C (2S)
7.321	**86**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
7.321	HSG C	2S, 3S(b), 4S
0.000	HSG D	
0.000	Other	
7.321		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	3.395	0.000	0.000	3.395	>75% Grass cover, Good	2S, 3S(b), 4S
0.000	0.000	1.940	0.000	0.000	1.940	Paved parking	2S, 3S(b), 4S
0.000	0.000	1.196	0.000	0.000	1.196	Paved parking (gravel)	2S
0.000	0.000	0.024	0.000	0.000	0.024	Roofs	3S(b)
0.000	0.000	0.238	0.000	0.000	0.238	Row crops, SR + CR, Good	3S(b)
0.000	0.000	0.078	0.000	0.000	0.078	Unconnected pavement	3S(b)
0.000	0.000	0.449	0.000	0.000	0.449	Water Surface	2S
0.000	**0.000**	**7.321**	**0.000**	**0.000**	**7.321**	**TOTAL AREA**	

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	2S	0.00	0.00	122.0	0.0051	0.011	0.0	18.0	0.0	
2	3S(b)	0.00	0.00	122.0	0.0051	0.011	0.0	18.0	0.0	
3	1P	681.00	680.00	36.5	0.0274	0.011	0.0	24.0	0.0	

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment2S: Proposed Runoff Area=216,969 sf 61.64% Impervious Runoff Depth=1.72"
Flow Length=832' Tc=6.0 min CN=74/98 Runoff=13.37 cfs 0.712 af

Subcatchment3S(b): Off-Site (Captured by Runoff Area=80,720 sf 33.11% Impervious Runoff Depth=1.29"
Flow Length=744' Tc=6.0 min CN=76/98 Runoff=3.87 cfs 0.199 af

Subcatchment4S: Uncaptured Runoff Area=21,193 sf 0.70% Impervious Runoff Depth=0.68"
Tc=6.0 min CN=74/98 Runoff=0.57 cfs 0.027 af

Pond 1P: Wet Detention Basin Peak Elev=681.83' Storage=17,684 cf Inflow=17.23 cfs 0.912 af
Primary=3.80 cfs 0.908 af Secondary=0.00 cfs 0.000 af Outflow=3.80 cfs 0.908 af

Link 2L: Post-Dev Study Area Inflow=3.98 cfs 0.935 af
Primary=3.98 cfs 0.935 af

Total Runoff Area = 7.321 ac Runoff Volume = 0.939 af Average Runoff Depth = 1.54"
49.63% Pervious = 3.633 ac 50.37% Impervious = 3.687 ac

Summary for Subcatchment 2S: Proposed Development

[47] Hint: Peak is 151% of capacity of segment #4

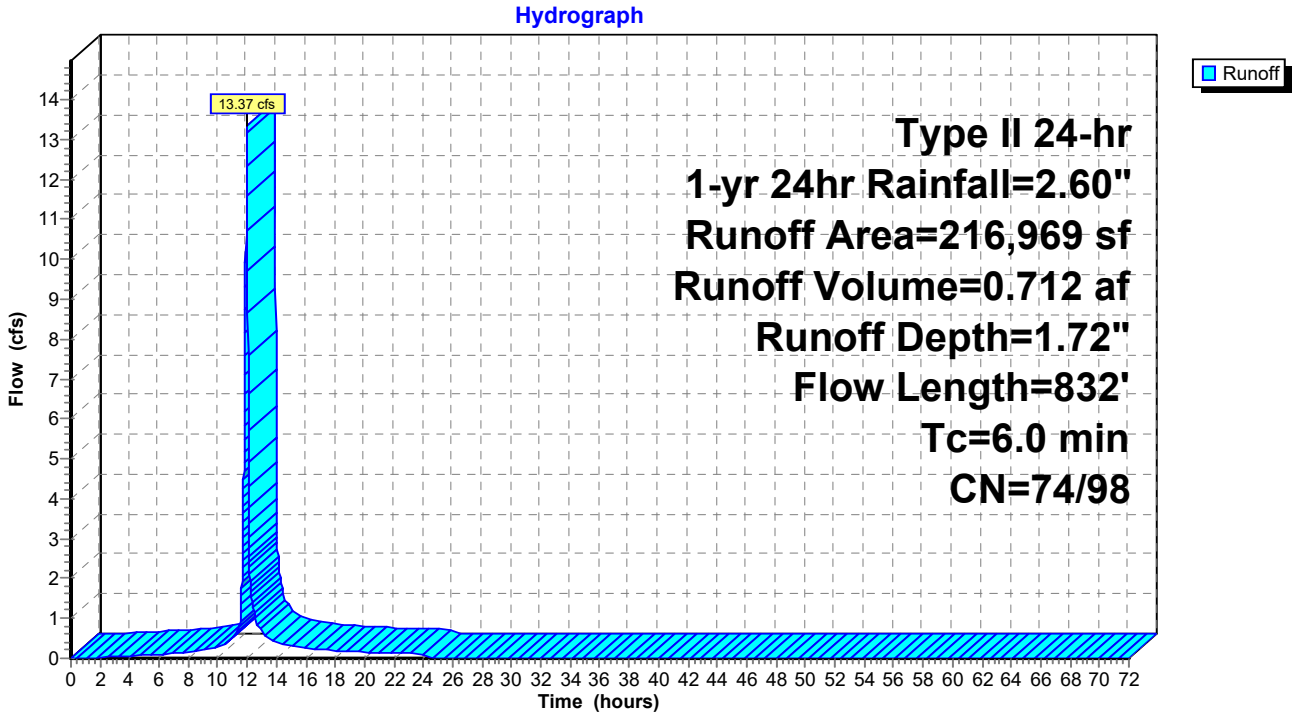
Runoff = 13.37 cfs @ 11.97 hrs, Volume= 0.712 af, Depth= 1.72"
Routed to Pond 1P : Wet Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr 24hr Rainfall=2.60"

	Area (sf)	CN	Description
	62,064	98	Paved parking, HSG C
*	52,112	98	Paved parking (gravel), HSG C
	83,229	74	>75% Grass cover, Good, HSG C
	19,564	98	Water Surface, HSG C
	216,969	89	Weighted Average
	83,229	74	38.36% Pervious Area
	133,740	98	61.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	127	0.0501	2.02		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.4	107	0.0623	5.07		**Shallow Concentrated Flow, Shallow Conc Flow** Paved Kv= 20.3 fps
0.4	333	0.0420	15.51	290.79	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	143	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
3.6					**Direct Entry, User**
6.0	832	Total			

Subcatchment 2S: Proposed Development



Summary for Subcatchment 3S(b): Off-Site (Captured by Basin)

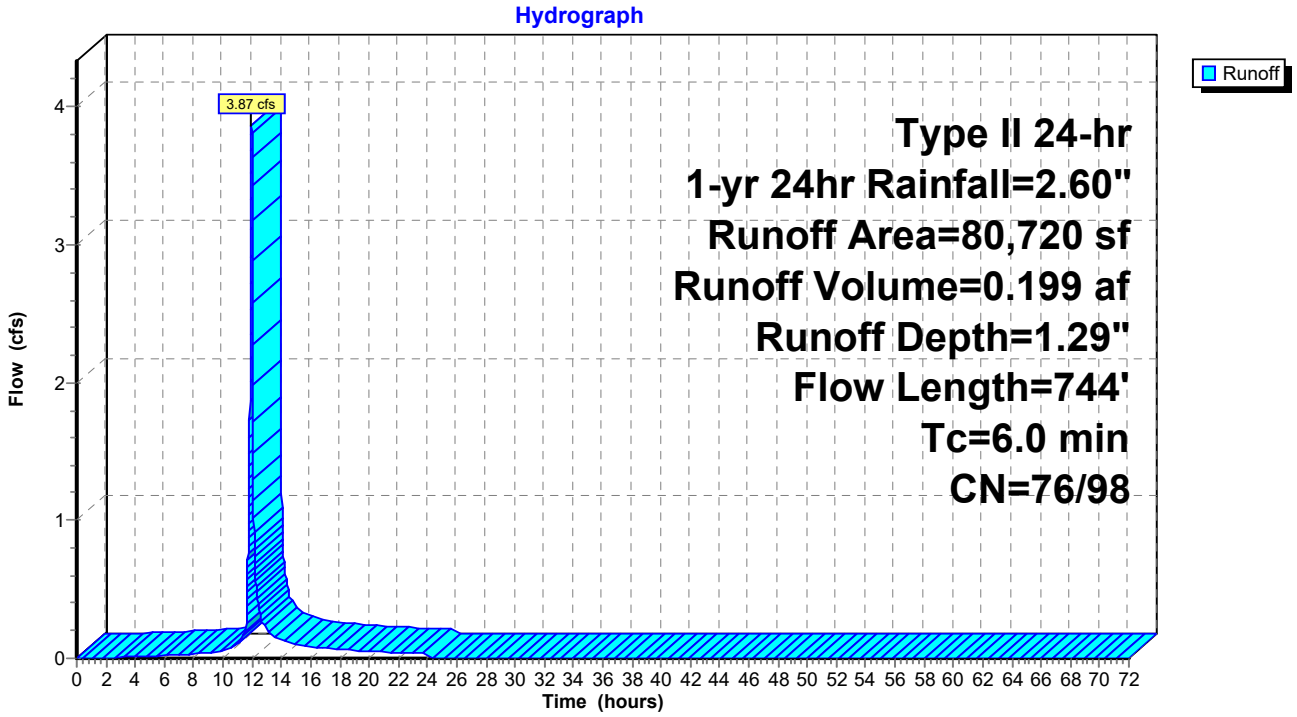
Runoff = 3.87 cfs @ 11.97 hrs, Volume= 0.199 af, Depth= 1.29"
Routed to Pond 1P : Wet Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr 24hr Rainfall=2.60"

Area (sf)	CN	Description
10,378	82	Row crops, SR + CR, Good, HSG C
3,388	98	Unconnected pavement, HSG C
22,308	98	Paved parking, HSG C
43,614	74	>75% Grass cover, Good, HSG C
1,032	98	Roofs, HSG C
80,720	83	Weighted Average
53,992	76	66.89% Pervious Area
26,728	98	33.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	29	0.1534	2.35		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
1.2	100	0.0200	1.33		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.3	65	0.0463	3.23		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.8	174	0.0461	3.46		**Shallow Concentrated Flow, Shallow Conc Flow** Unpaved Kv= 16.1 fps
0.5	112	0.0714	4.01		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	142	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
2.4					**Direct Entry, User**
6.0	744	Total			

Subcatchment 3S(b): Off-Site (Captured by Basin)



Summary for Subcatchment 4S: Uncaptured

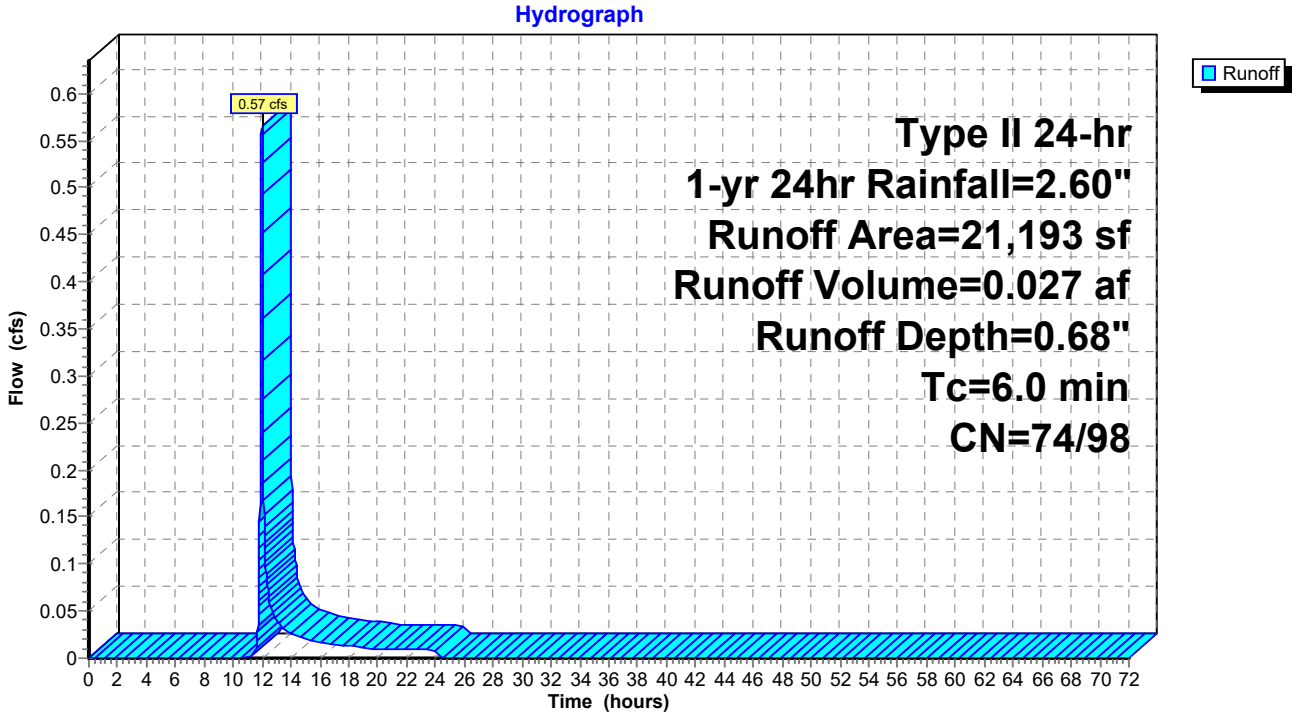
Runoff = 0.57 cfs @ 11.98 hrs, Volume= 0.027 af, Depth= 0.68"
Routed to Link 2L : Post-Dev Study Area

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr 24hr Rainfall=2.60"

Area (sf)	CN	Description
21,044	74	>75% Grass cover, Good, HSG C
149	98	Paved parking, HSG C
21,193	74	Weighted Average
21,044	74	99.30% Pervious Area
149	98	0.70% Impervious Area

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

Subcatchment 4S: Uncaptured



Summary for Pond 1P: Wet Detention Basin

Inflow Area = 6.834 ac, 53.90% Impervious, Inflow Depth = 1.60" for 1-yr 24hr event
Inflow = 17.23 cfs @ 11.97 hrs, Volume= 0.912 af
Outflow = 3.80 cfs @ 12.12 hrs, Volume= 0.908 af, Atten= 78%, Lag= 9.2 min
Primary = 3.80 cfs @ 12.12 hrs, Volume= 0.908 af
Routed to Link 2L : Post-Dev Study Area
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2L : Post-Dev Study Area

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 681.83' @ 12.12 hrs Surf.Area= 23,249 sf Storage= 17,684 cf

Plug-Flow detention time= 188.8 min calculated for 0.907 af (100% of inflow)
Center-of-Mass det. time= 186.2 min (966.2 - 780.0)

Volume	Invert	Avail.Storage	Storage Description
#1	681.00'	106,153 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

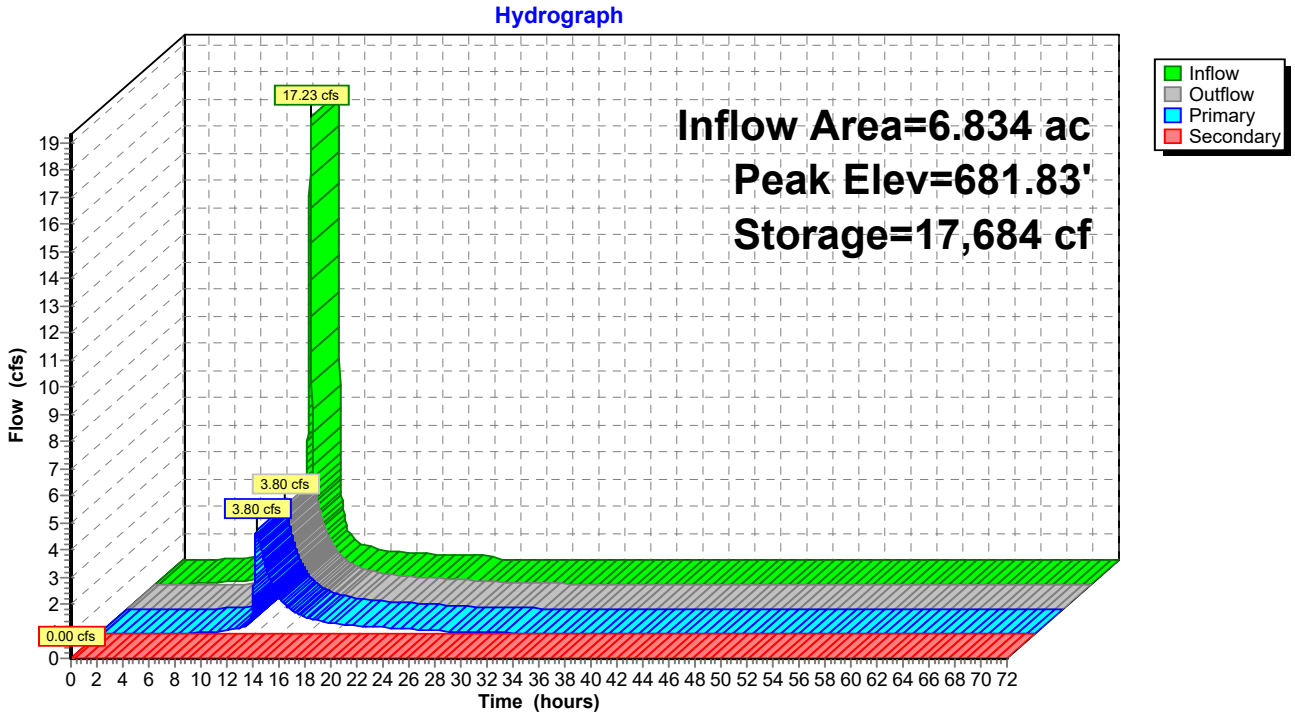
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
681.00	19,564	617.1	0	0	19,564
682.00	24,059	660.5	21,773	21,773	24,022
683.00	26,372	871.5	25,207	46,979	49,757
684.00	29,287	1,115.7	27,817	74,796	88,387
685.00	33,473	1,427.5	31,357	106,153	151,502

Device	Routing	Invert	Outlet Devices
#1	Primary	681.00'	**24.0" Round Culvert** L= 36.5' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 681.00' / 680.00' S= 0.0274 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Secondary	683.50'	**20.0' 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=3.80 cfs @ 12.12 hrs HW=681.83' (Free Discharge)
1=Culvert (Inlet Controls 3.80 cfs @ 3.10 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=681.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1P: Wet Detention Basin

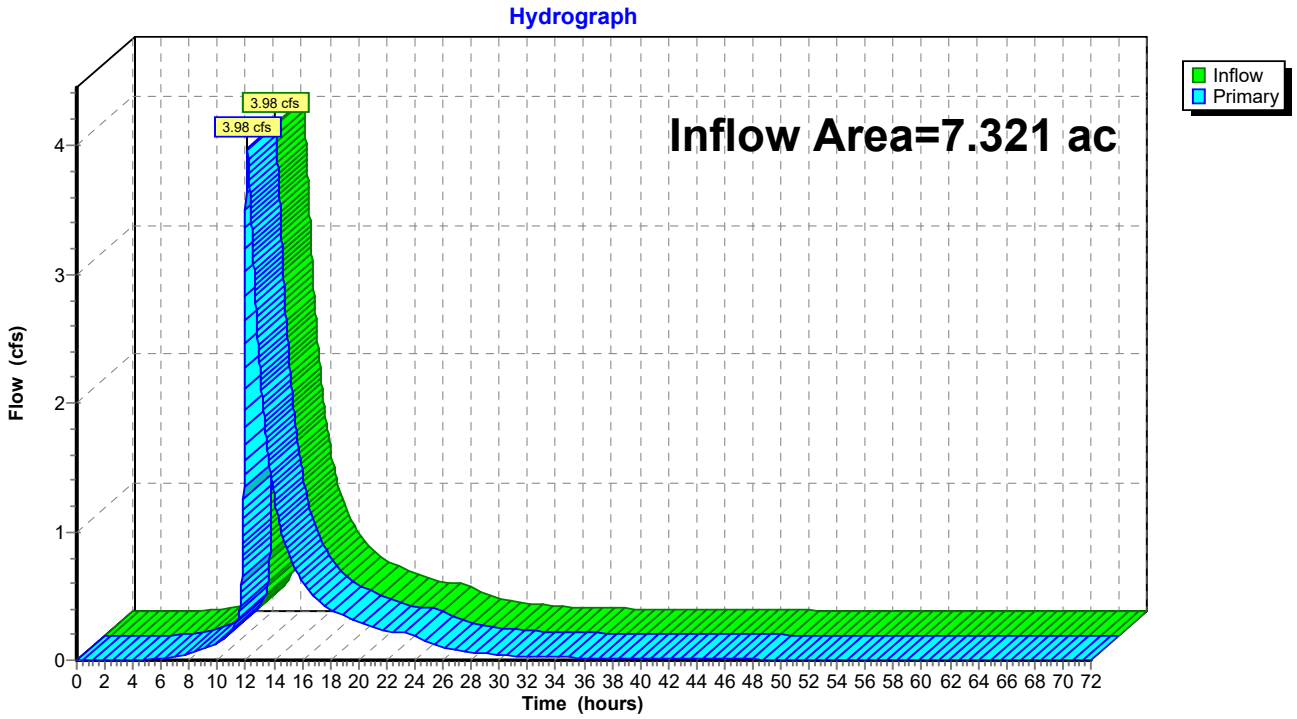


Summary for Link 2L: Post-Dev Study Area

Inflow Area = 7.321 ac, 50.37% Impervious, Inflow Depth > 1.53" for 1-yr 24hr event
Inflow = 3.98 cfs @ 12.08 hrs, Volume= 0.935 af
Primary = 3.98 cfs @ 12.08 hrs, Volume= 0.935 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 2L: Post-Dev Study Area



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment2S: Proposed Runoff Area=216,969 sf 61.64% Impervious Runoff Depth=2.06"
Flow Length=832' Tc=6.0 min CN=74/98 Runoff=16.08 cfs 0.856 af

Subcatchment3S(b): Off-Site (Captured by Runoff Area=80,720 sf 33.11% Impervious Runoff Depth=1.60"
Flow Length=744' Tc=6.0 min CN=76/98 Runoff=4.85 cfs 0.248 af

Subcatchment4S: Uncaptured Runoff Area=21,193 sf 0.70% Impervious Runoff Depth=0.93"
Tc=6.0 min CN=74/98 Runoff=0.79 cfs 0.038 af

Pond 1P: Wet Detention Basin Peak Elev=681.96' Storage=20,865 cf Inflow=20.93 cfs 1.104 af
Primary=4.99 cfs 1.100 af Secondary=0.00 cfs 0.000 af Outflow=4.99 cfs 1.100 af

Link 2L: Post-Dev Study Area Inflow=5.26 cfs 1.138 af
Primary=5.26 cfs 1.138 af

Total Runoff Area = 7.321 ac Runoff Volume = 1.142 af Average Runoff Depth = 1.87"
49.63% Pervious = 3.633 ac 50.37% Impervious = 3.687 ac

Summary for Subcatchment 2S: Proposed Development

[47] Hint: Peak is 181% of capacity of segment #4

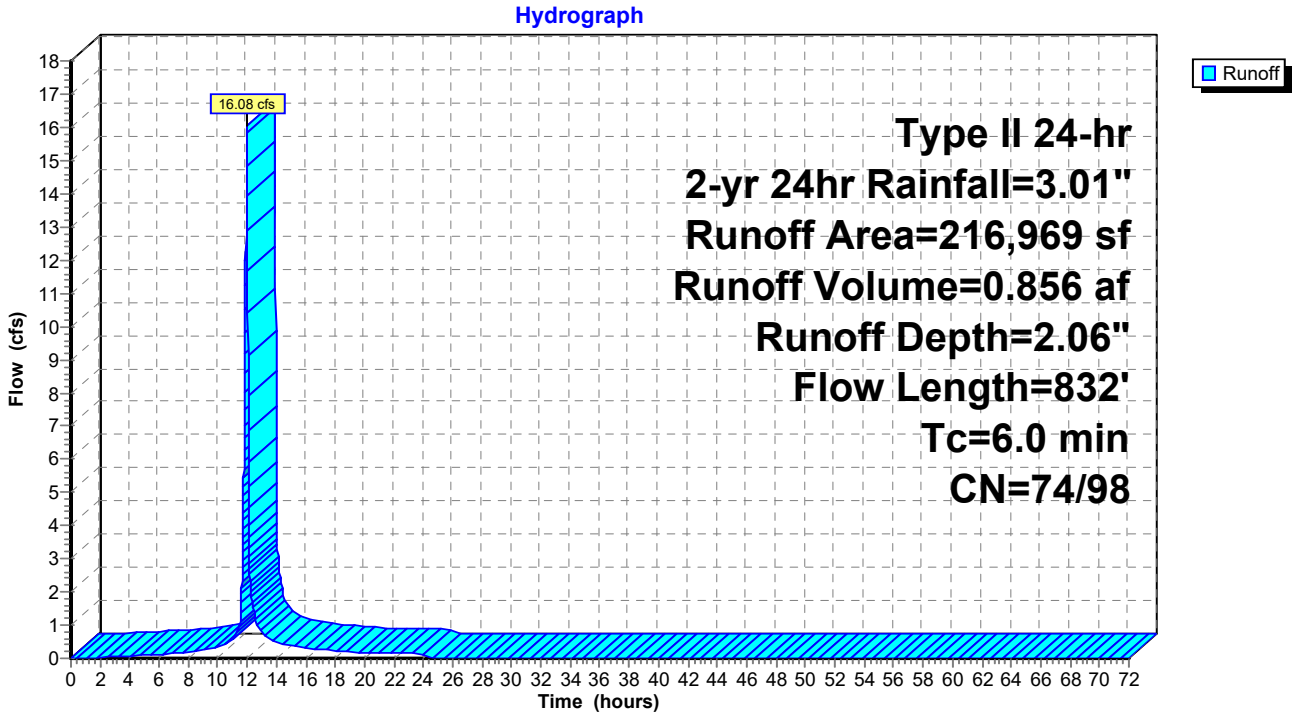
Runoff = 16.08 cfs @ 11.97 hrs, Volume= 0.856 af, Depth= 2.06"
Routed to Pond 1P : Wet Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr 24hr Rainfall=3.01"

	Area (sf)	CN	Description
	62,064	98	Paved parking, HSG C
*	52,112	98	Paved parking (gravel), HSG C
	83,229	74	>75% Grass cover, Good, HSG C
	19,564	98	Water Surface, HSG C
	216,969	89	Weighted Average
	83,229	74	38.36% Pervious Area
	133,740	98	61.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	127	0.0501	2.02		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.4	107	0.0623	5.07		**Shallow Concentrated Flow, Shallow Conc Flow** Paved Kv= 20.3 fps
0.4	333	0.0420	15.51	290.79	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	143	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
3.6					**Direct Entry, User**
6.0	832	Total			

Subcatchment 2S: Proposed Development



Summary for Subcatchment 3S(b): Off-Site (Captured by Basin)

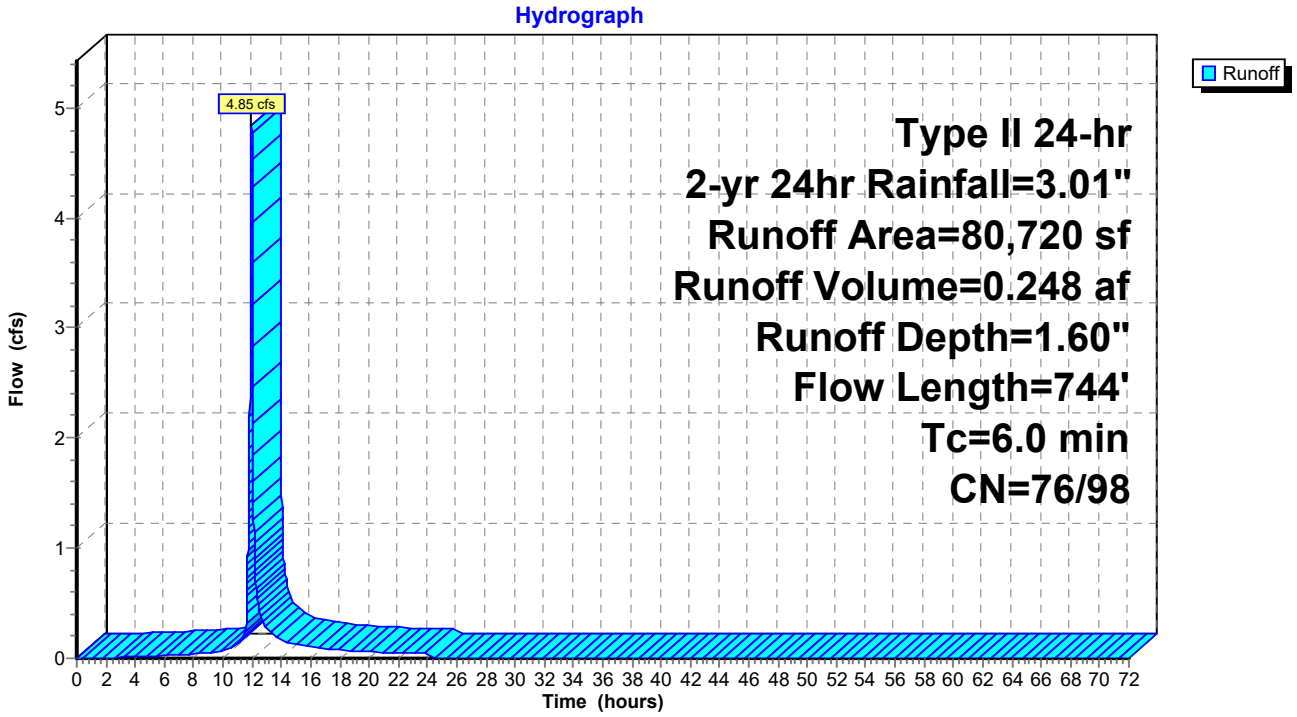
Runoff = 4.85 cfs @ 11.97 hrs, Volume= 0.248 af, Depth= 1.60"
Routed to Pond 1P : Wet Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr 24hr Rainfall=3.01"

Area (sf)	CN	Description
10,378	82	Row crops, SR + CR, Good, HSG C
3,388	98	Unconnected pavement, HSG C
22,308	98	Paved parking, HSG C
43,614	74	>75% Grass cover, Good, HSG C
1,032	98	Roofs, HSG C
80,720	83	Weighted Average
53,992	76	66.89% Pervious Area
26,728	98	33.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	29	0.1534	2.35		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
1.2	100	0.0200	1.33		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.3	65	0.0463	3.23		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.8	174	0.0461	3.46		**Shallow Concentrated Flow, Shallow Conc Flow** Unpaved Kv= 16.1 fps
0.5	112	0.0714	4.01		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	142	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
2.4					**Direct Entry, User**
6.0	744	Total			

Subcatchment 3S(b): Off-Site (Captured by Basin)



Summary for Subcatchment 4S: Uncaptured

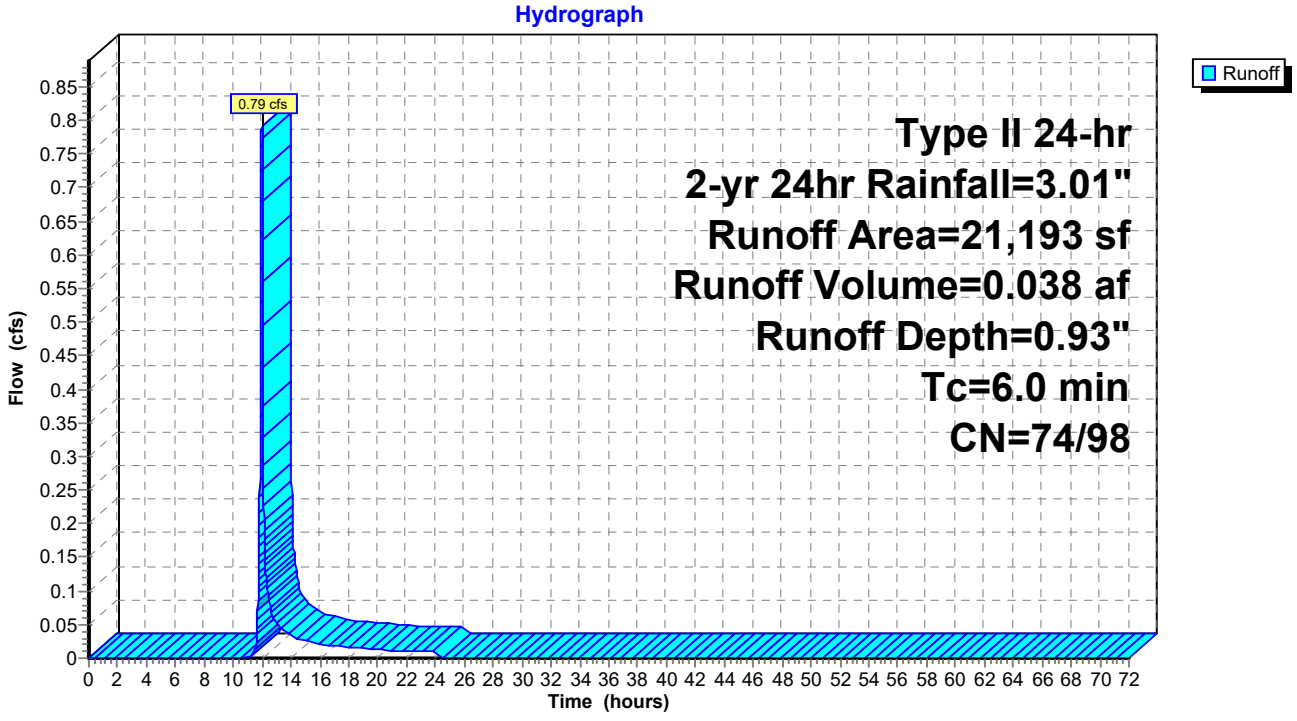
Runoff = 0.79 cfs @ 11.98 hrs, Volume= 0.038 af, Depth= 0.93"
Routed to Link 2L : Post-Dev Study Area

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr 24hr Rainfall=3.01"

Area (sf)	CN	Description
21,044	74	>75% Grass cover, Good, HSG C
149	98	Paved parking, HSG C
21,193	74	Weighted Average
21,044	74	99.30% Pervious Area
149	98	0.70% Impervious Area

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

Subcatchment 4S: Uncaptured



Summary for Pond 1P: Wet Detention Basin

Inflow Area = 6.834 ac, 53.90% Impervious, Inflow Depth = 1.94" for 2-yr 24hr event
Inflow = 20.93 cfs @ 11.97 hrs, Volume= 1.104 af
Outflow = 4.99 cfs @ 12.12 hrs, Volume= 1.100 af, Atten= 76%, Lag= 8.7 min
Primary = 4.99 cfs @ 12.12 hrs, Volume= 1.100 af
Routed to Link 2L : Post-Dev Study Area
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2L : Post-Dev Study Area

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 681.96' @ 12.12 hrs Surf.Area= 23,880 sf Storage= 20,865 cf

Plug-Flow detention time= 171.5 min calculated for 1.100 af (100% of inflow)
Center-of-Mass det. time= 169.4 min (947.3 - 778.0)

Volume	Invert	Avail.Storage	Storage Description
#1	681.00'	106,153 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

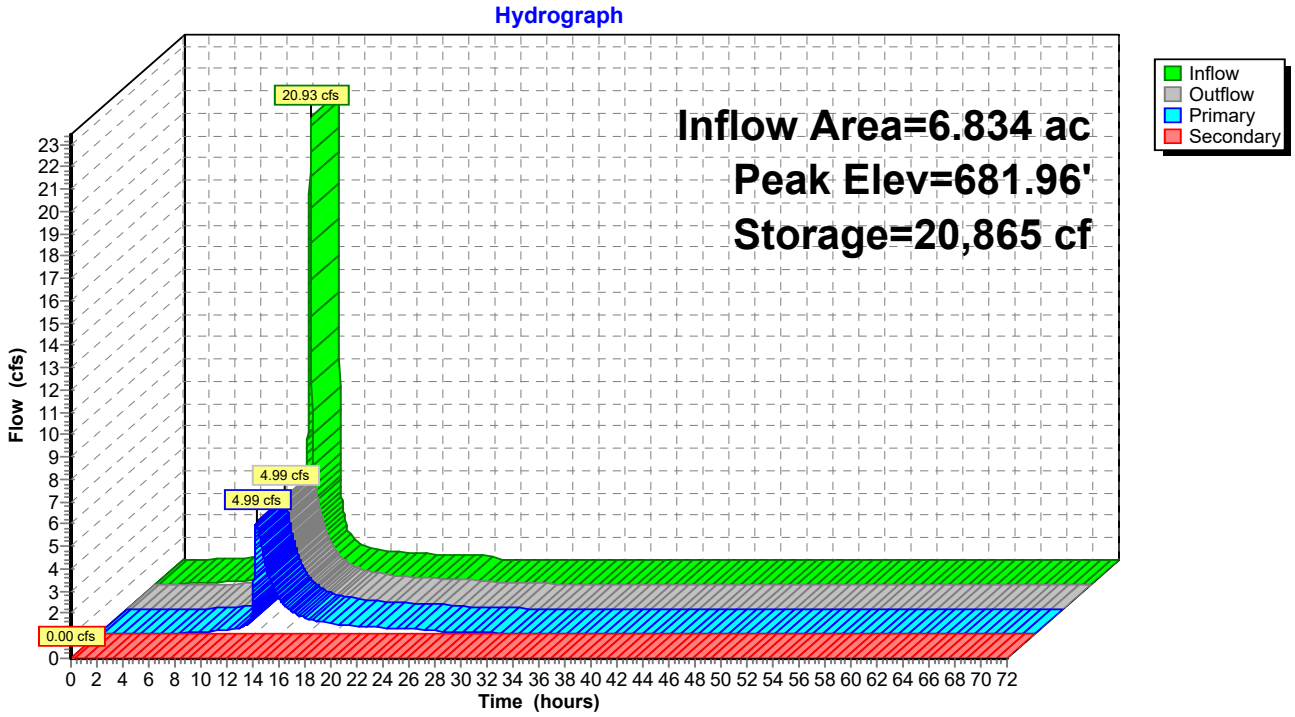
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
681.00	19,564	617.1	0	0	19,564
682.00	24,059	660.5	21,773	21,773	24,022
683.00	26,372	871.5	25,207	46,979	49,757
684.00	29,287	1,115.7	27,817	74,796	88,387
685.00	33,473	1,427.5	31,357	106,153	151,502

Device	Routing	Invert	Outlet Devices
#1	Primary	681.00'	**24.0" Round Culvert** L= 36.5' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 681.00' / 680.00' S= 0.0274 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Secondary	683.50'	**20.0' 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=4.99 cfs @ 12.12 hrs HW=681.96' (Free Discharge)
1=Culvert (Inlet Controls 4.99 cfs @ 3.34 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=681.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1P: Wet Detention Basin

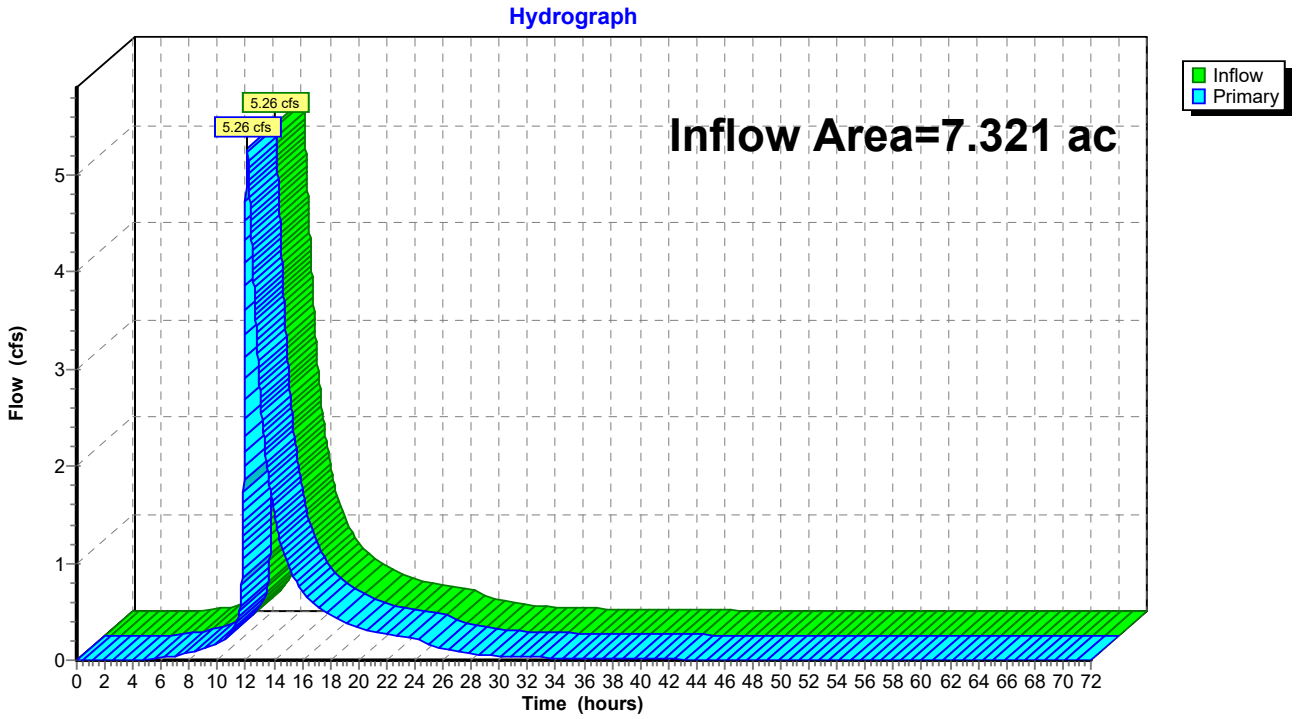


Summary for Link 2L: Post-Dev Study Area

Inflow Area = 7.321 ac, 50.37% Impervious, Inflow Depth > 1.86" for 2-yr 24hr event
Inflow = 5.26 cfs @ 12.07 hrs, Volume= 1.138 af
Primary = 5.26 cfs @ 12.07 hrs, Volume= 1.138 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 2L: Post-Dev Study Area



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment2S: Proposed Runoff Area=216,969 sf 61.64% Impervious Runoff Depth=2.71"
Flow Length=832' Tc=6.0 min CN=74/98 Runoff=21.13 cfs 1.125 af

Subcatchment3S(b): Off-Site (Captured by Runoff Area=80,720 sf 33.11% Impervious Runoff Depth=2.20"
Flow Length=744' Tc=6.0 min CN=76/98 Runoff=6.69 cfs 0.340 af

Subcatchment4S: Uncaptured Runoff Area=21,193 sf 0.70% Impervious Runoff Depth=1.43"
Tc=6.0 min CN=74/98 Runoff=1.24 cfs 0.058 af

Pond 1P: Wet Detention Basin Peak Elev=682.20' Storage=26,643 cf Inflow=27.82 cfs 1.465 af
Primary=7.35 cfs 1.460 af Secondary=0.00 cfs 0.000 af Outflow=7.35 cfs 1.460 af

Link 2L: Post-Dev Study Area Inflow=7.81 cfs 1.518 af
Primary=7.81 cfs 1.518 af

Total Runoff Area = 7.321 ac Runoff Volume = 1.523 af Average Runoff Depth = 2.50"
49.63% Pervious = 3.633 ac 50.37% Impervious = 3.687 ac

Summary for Subcatchment 2S: Proposed Development

[47] Hint: Peak is 238% of capacity of segment #4

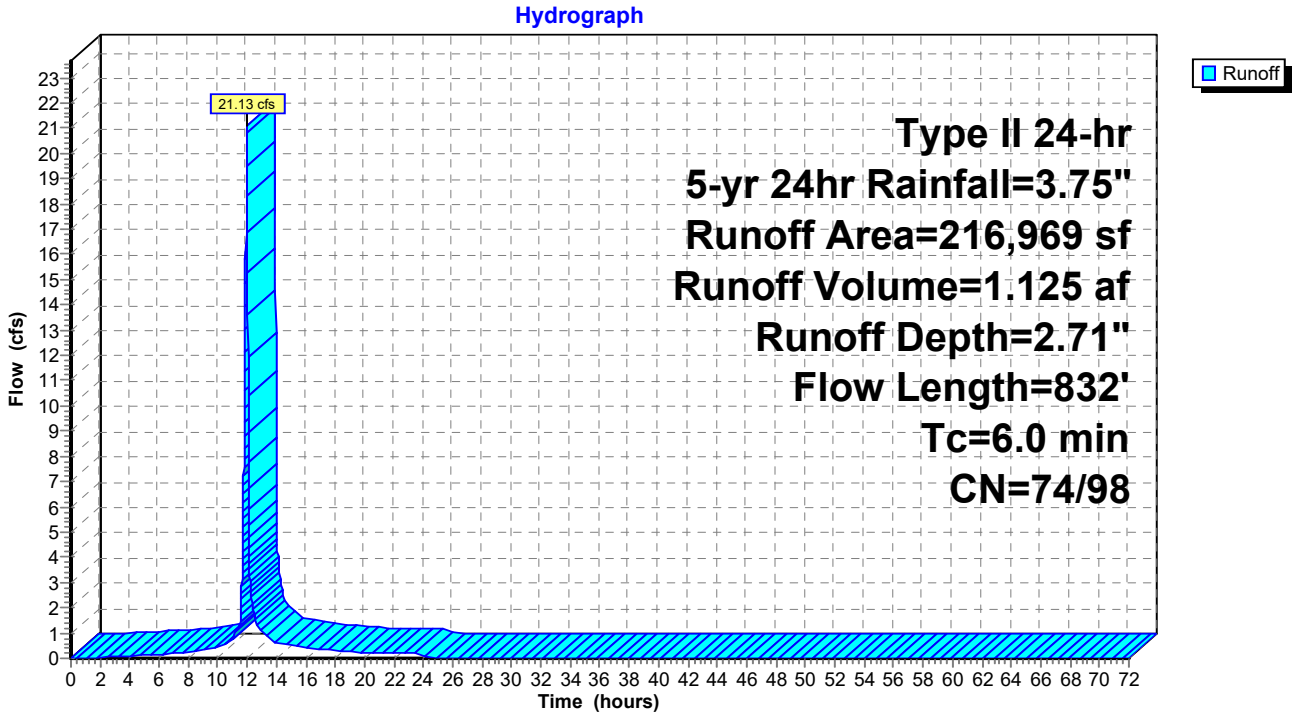
Runoff = 21.13 cfs @ 11.97 hrs, Volume= 1.125 af, Depth= 2.71"
Routed to Pond 1P : Wet Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-yr 24hr Rainfall=3.75"

	Area (sf)	CN	Description
	62,064	98	Paved parking, HSG C
*	52,112	98	Paved parking (gravel), HSG C
	83,229	74	>75% Grass cover, Good, HSG C
	19,564	98	Water Surface, HSG C
	216,969	89	Weighted Average
	83,229	74	38.36% Pervious Area
	133,740	98	61.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	127	0.0501	2.02		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.4	107	0.0623	5.07		**Shallow Concentrated Flow, Shallow Conc Flow** Paved Kv= 20.3 fps
0.4	333	0.0420	15.51	290.79	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	143	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
3.6					**Direct Entry, User**
6.0	832	Total			

Subcatchment 2S: Proposed Development



Summary for Subcatchment 3S(b): Off-Site (Captured by Basin)

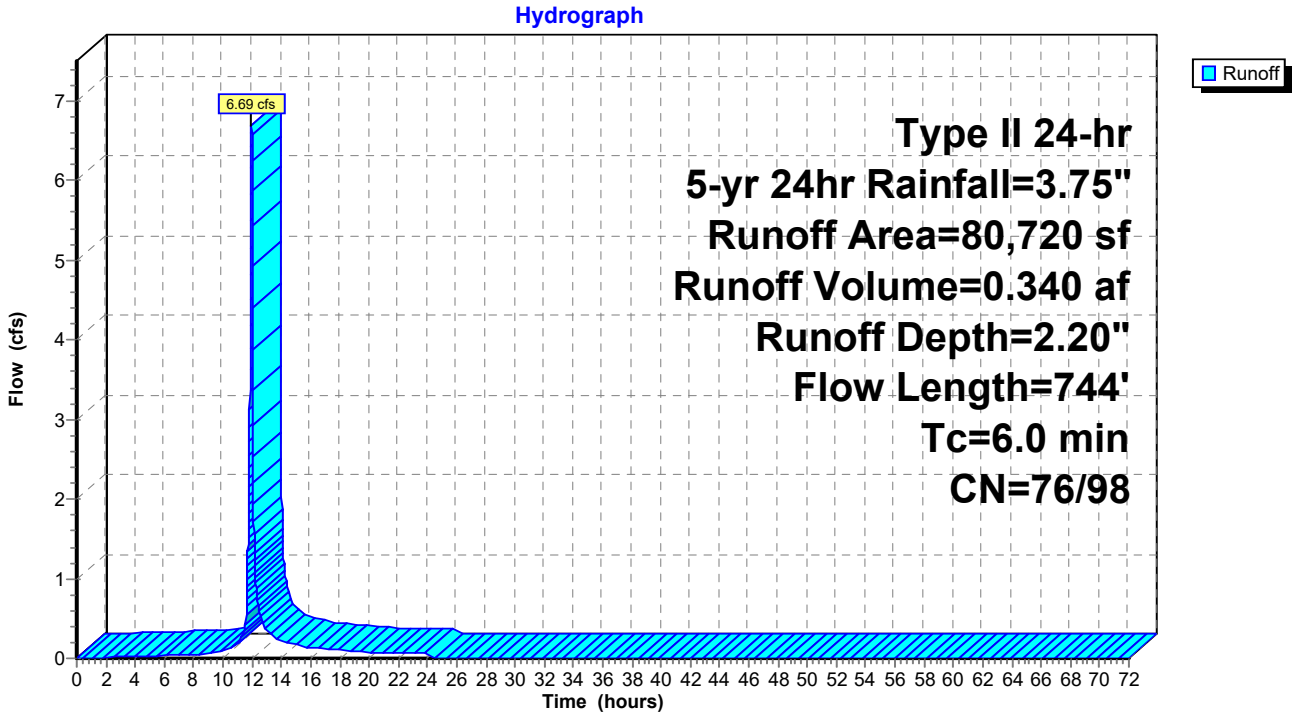
Runoff = 6.69 cfs @ 11.97 hrs, Volume= 0.340 af, Depth= 2.20"
Routed to Pond 1P : Wet Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-yr 24hr Rainfall=3.75"

Area (sf)	CN	Description
10,378	82	Row crops, SR + CR, Good, HSG C
3,388	98	Unconnected pavement, HSG C
22,308	98	Paved parking, HSG C
43,614	74	>75% Grass cover, Good, HSG C
1,032	98	Roofs, HSG C
80,720	83	Weighted Average
53,992	76	66.89% Pervious Area
26,728	98	33.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	29	0.1534	2.35		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
1.2	100	0.0200	1.33		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.3	65	0.0463	3.23		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.8	174	0.0461	3.46		**Shallow Concentrated Flow, Shallow Conc Flow** Unpaved Kv= 16.1 fps
0.5	112	0.0714	4.01		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	142	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
2.4					**Direct Entry, User**
6.0	744	Total			

Subcatchment 3S(b): Off-Site (Captured by Basin)



Summary for Subcatchment 4S: Uncaptured

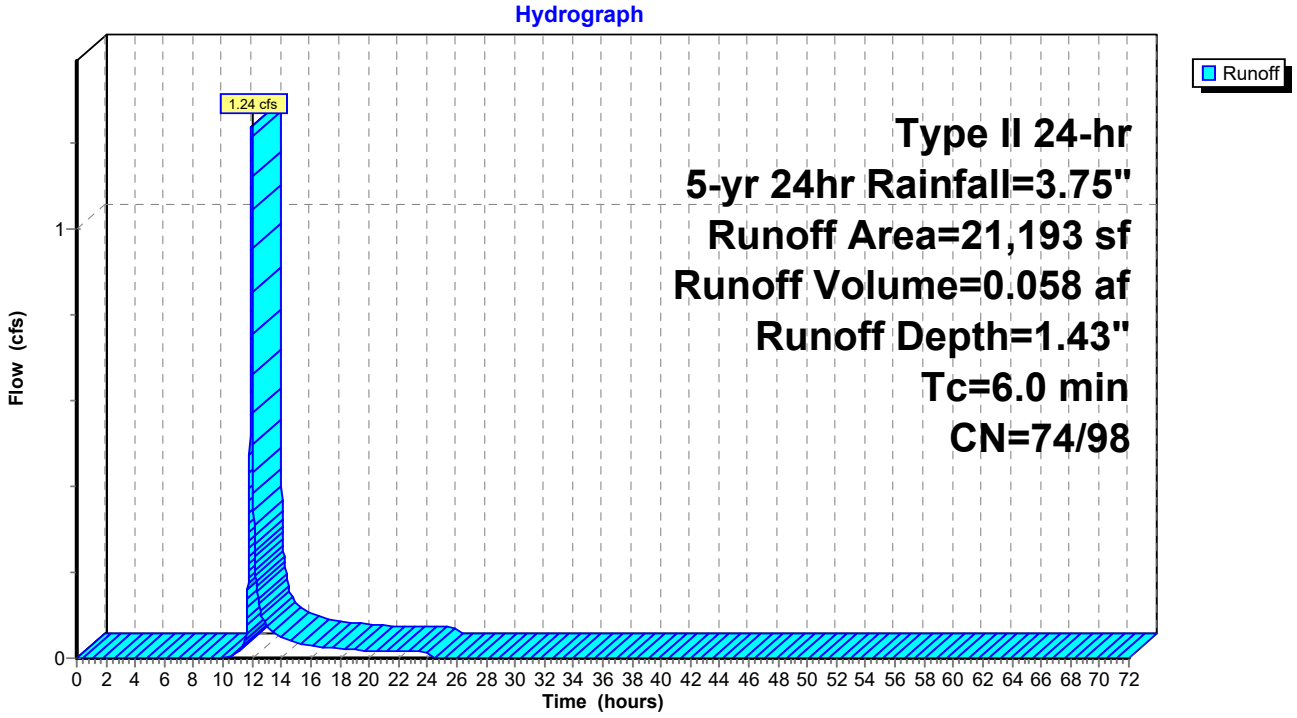
Runoff = 1.24 cfs @ 11.98 hrs, Volume= 0.058 af, Depth= 1.43"
Routed to Link 2L : Post-Dev Study Area

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-yr 24hr Rainfall=3.75"

Area (sf)	CN	Description
21,044	74	>75% Grass cover, Good, HSG C
149	98	Paved parking, HSG C
21,193	74	Weighted Average
21,044	74	99.30% Pervious Area
149	98	0.70% Impervious Area

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

Subcatchment 4S: Uncaptured



Summary for Pond 1P: Wet Detention Basin

Inflow Area = 6.834 ac, 53.90% Impervious, Inflow Depth = 2.57" for 5-yr 24hr event
Inflow = 27.82 cfs @ 11.97 hrs, Volume= 1.465 af
Outflow = 7.35 cfs @ 12.11 hrs, Volume= 1.460 af, Atten= 74%, Lag= 8.1 min
Primary = 7.35 cfs @ 12.11 hrs, Volume= 1.460 af
Routed to Link 2L : Post-Dev Study Area
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2L : Post-Dev Study Area

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 682.20' @ 12.11 hrs Surf.Area= 24,514 sf Storage= 26,643 cf

Plug-Flow detention time= 149.1 min calculated for 1.460 af (100% of inflow)
Center-of-Mass det. time= 147.6 min (922.5 - 774.9)

Volume	Invert	Avail.Storage	Storage Description
#1	681.00'	106,153 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

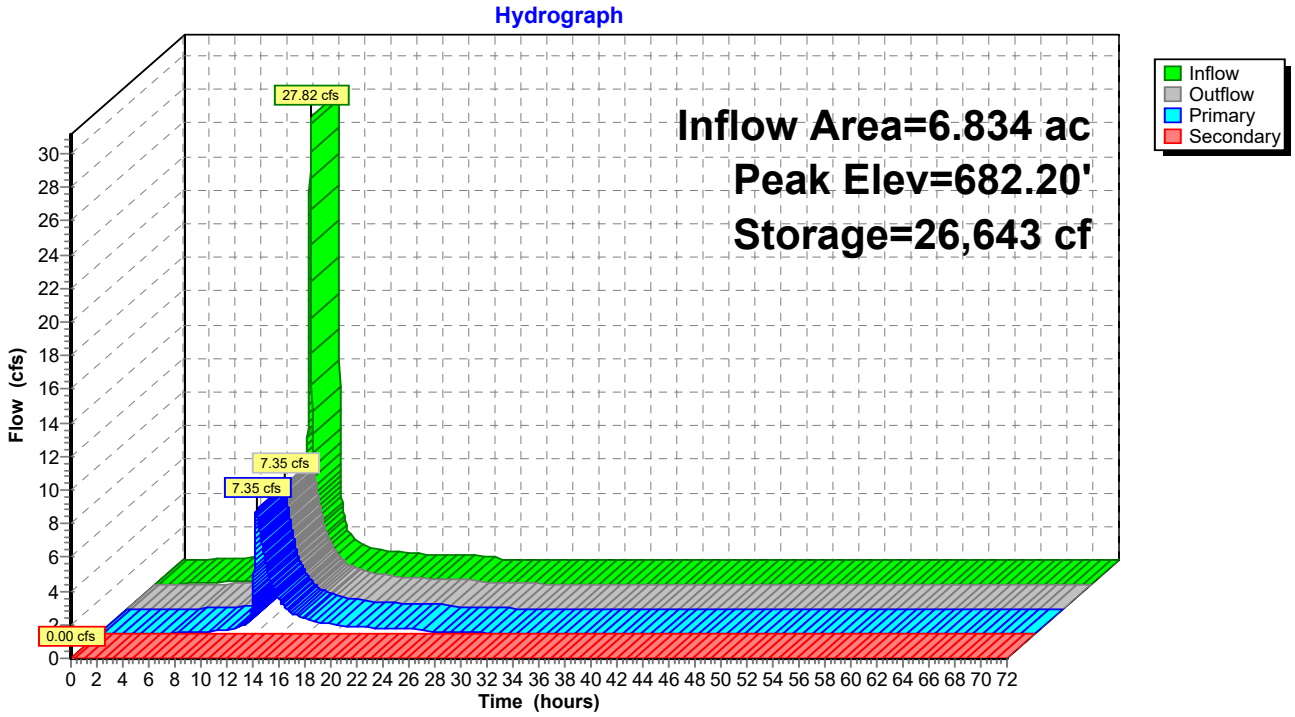
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
681.00	19,564	617.1	0	0	19,564
682.00	24,059	660.5	21,773	21,773	24,022
683.00	26,372	871.5	25,207	46,979	49,757
684.00	29,287	1,115.7	27,817	74,796	88,387
685.00	33,473	1,427.5	31,357	106,153	151,502

Device	Routing	Invert	Outlet Devices
#1	Primary	681.00'	**24.0" Round Culvert** L= 36.5' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 681.00' / 680.00' S= 0.0274 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Secondary	683.50'	**20.0' 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=7.34 cfs @ 12.11 hrs HW=682.20' (Free Discharge)
1=Culvert (Inlet Controls 7.34 cfs @ 3.73 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=681.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1P: Wet Detention Basin

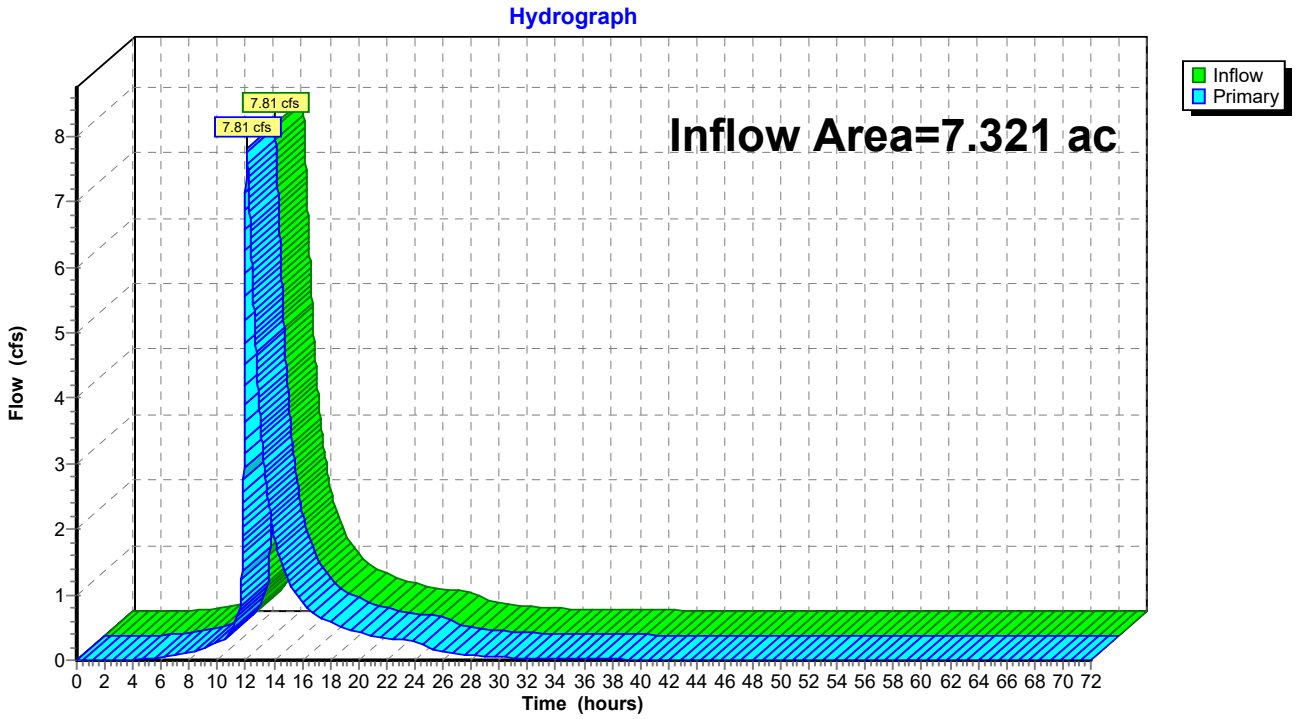


Summary for Link 2L: Post-Dev Study Area

Inflow Area = 7.321 ac, 50.37% Impervious, Inflow Depth > 2.49" for 5-yr 24hr event
Inflow = 7.81 cfs @ 12.06 hrs, Volume= 1.518 af
Primary = 7.81 cfs @ 12.06 hrs, Volume= 1.518 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 2L: Post-Dev Study Area



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment2S: Proposed Runoff Area=216,969 sf 61.64% Impervious Runoff Depth=3.31"
Flow Length=832' Tc=6.0 min CN=74/98 Runoff=25.80 cfs 1.375 af

Subcatchment3S(b): Off-Site (Captured by Runoff Area=80,720 sf 33.11% Impervious Runoff Depth=2.77"
Flow Length=744' Tc=6.0 min CN=76/98 Runoff=8.43 cfs 0.427 af

Subcatchment4S: Uncaptured Runoff Area=21,193 sf 0.70% Impervious Runoff Depth=1.93"
Tc=6.0 min CN=74/98 Runoff=1.68 cfs 0.078 af

Pond 1P: Wet Detention Basin Peak Elev=682.41' Storage=31,889 cf Inflow=34.23 cfs 1.802 af
Primary=9.60 cfs 1.798 af Secondary=0.00 cfs 0.000 af Outflow=9.60 cfs 1.798 af

Link 2L: Post-Dev Study Area Inflow=10.27 cfs 1.876 af
Primary=10.27 cfs 1.876 af

Total Runoff Area = 7.321 ac Runoff Volume = 1.880 af Average Runoff Depth = 3.08"
49.63% Pervious = 3.633 ac 50.37% Impervious = 3.687 ac

Summary for Subcatchment 2S: Proposed Development

[47] Hint: Peak is 291% of capacity of segment #4

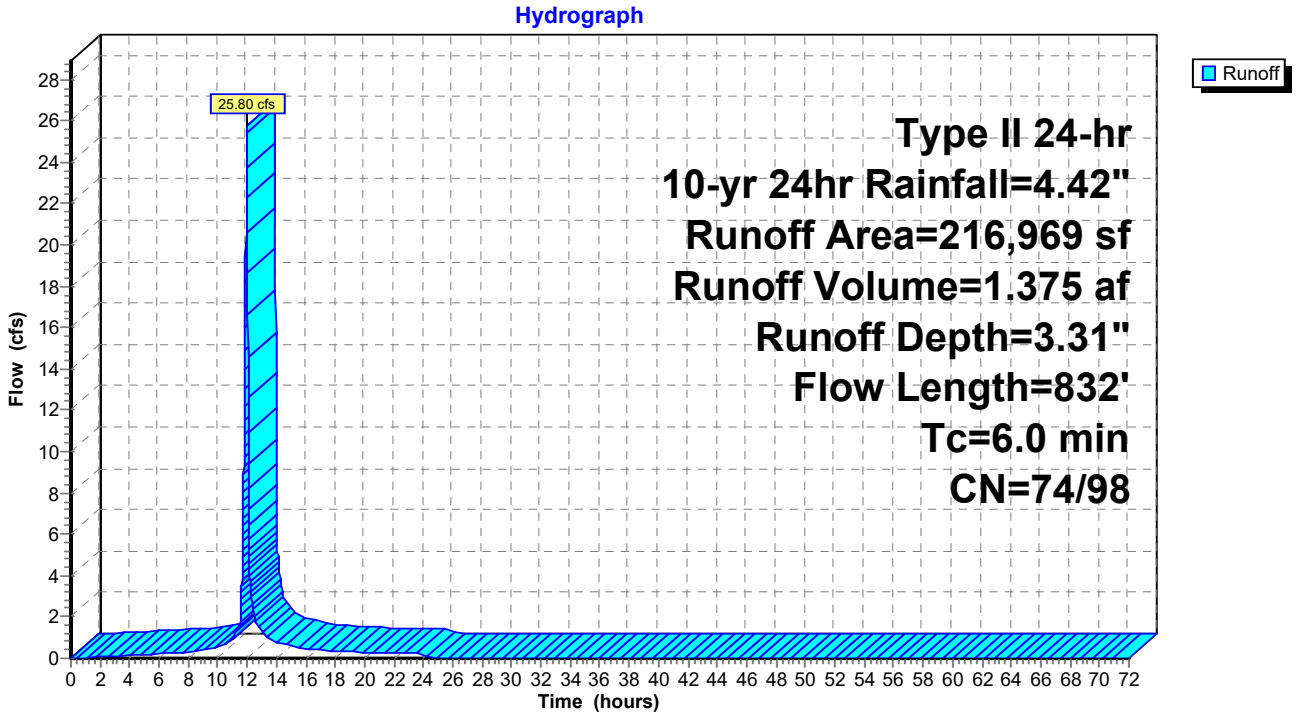
Runoff = 25.80 cfs @ 11.97 hrs, Volume= 1.375 af, Depth= 3.31"
Routed to Pond 1P : Wet Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr 24hr Rainfall=4.42"

	Area (sf)	CN	Description
	62,064	98	Paved parking, HSG C
*	52,112	98	Paved parking (gravel), HSG C
	83,229	74	>75% Grass cover, Good, HSG C
	19,564	98	Water Surface, HSG C
	216,969	89	Weighted Average
	83,229	74	38.36% Pervious Area
	133,740	98	61.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	127	0.0501	2.02		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.4	107	0.0623	5.07		**Shallow Concentrated Flow, Shallow Conc Flow** Paved Kv= 20.3 fps
0.4	333	0.0420	15.51	290.79	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	143	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
3.6					**Direct Entry, User**
6.0	832	Total			

Subcatchment 2S: Proposed Development



Summary for Subcatchment 3S(b): Off-Site (Captured by Basin)

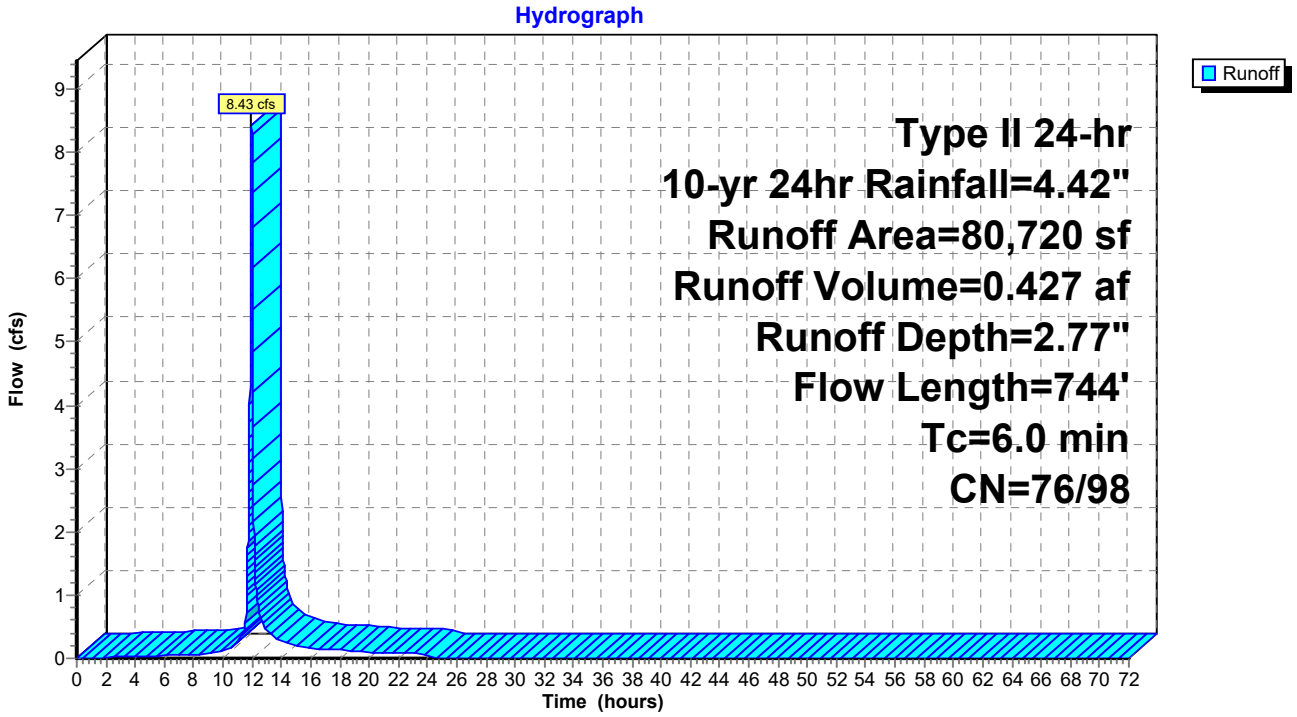
Runoff = 8.43 cfs @ 11.97 hrs, Volume= 0.427 af, Depth= 2.77"
Routed to Pond 1P : Wet Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr 24hr Rainfall=4.42"

Area (sf)	CN	Description
10,378	82	Row crops, SR + CR, Good, HSG C
3,388	98	Unconnected pavement, HSG C
22,308	98	Paved parking, HSG C
43,614	74	>75% Grass cover, Good, HSG C
1,032	98	Roofs, HSG C
80,720	83	Weighted Average
53,992	76	66.89% Pervious Area
26,728	98	33.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	29	0.1534	2.35		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
1.2	100	0.0200	1.33		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.3	65	0.0463	3.23		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.8	174	0.0461	3.46		**Shallow Concentrated Flow, Shallow Conc Flow** Unpaved Kv= 16.1 fps
0.5	112	0.0714	4.01		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	142	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
2.4					**Direct Entry, User**
6.0	744	Total			

Subcatchment 3S(b): Off-Site (Captured by Basin)



Summary for Subcatchment 4S: Uncaptured

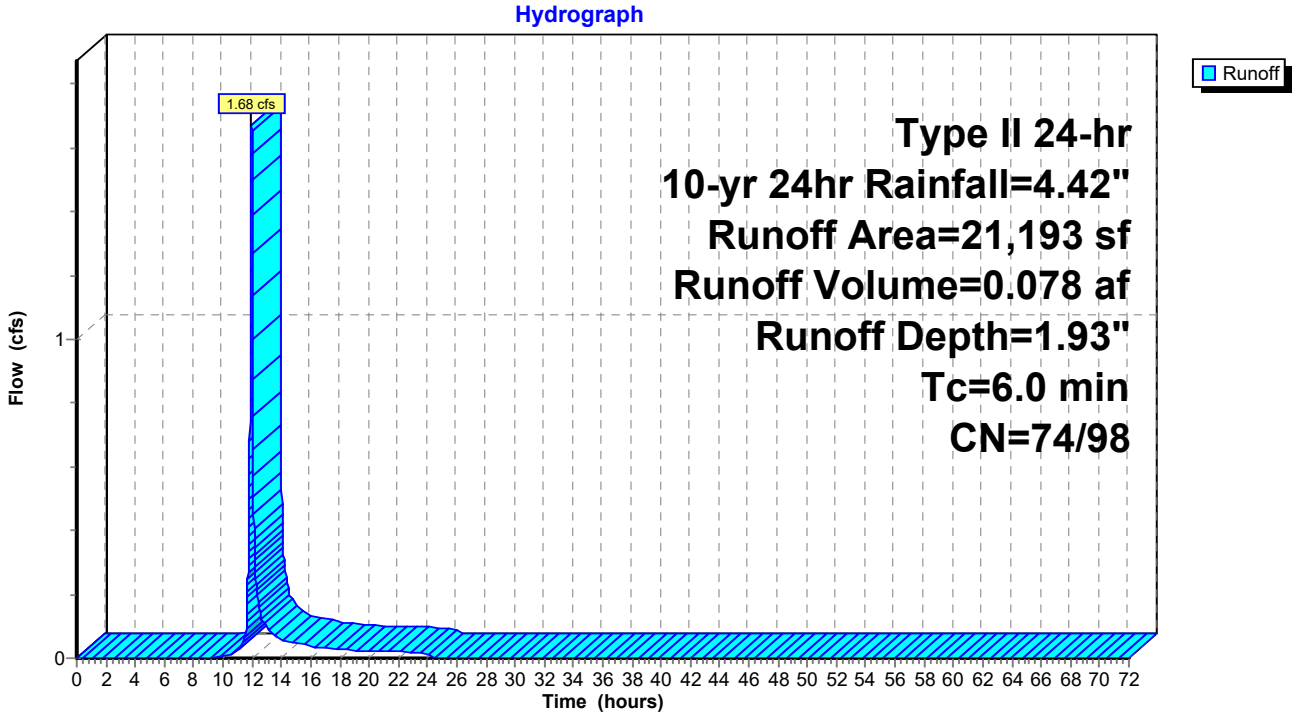
Runoff = 1.68 cfs @ 11.98 hrs, Volume= 0.078 af, Depth= 1.93"
Routed to Link 2L : Post-Dev Study Area

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr 24hr Rainfall=4.42"

Area (sf)	CN	Description
21,044	74	>75% Grass cover, Good, HSG C
149	98	Paved parking, HSG C
21,193	74	Weighted Average
21,044	74	99.30% Pervious Area
149	98	0.70% Impervious Area

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

Subcatchment 4S: Uncaptured



Summary for Pond 1P: Wet Detention Basin

Inflow Area = 6.834 ac, 53.90% Impervious, Inflow Depth = 3.16" for 10-yr 24hr event
Inflow = 34.23 cfs @ 11.97 hrs, Volume= 1.802 af
Outflow = 9.60 cfs @ 12.10 hrs, Volume= 1.798 af, Atten= 72%, Lag= 7.8 min
Primary = 9.60 cfs @ 12.10 hrs, Volume= 1.798 af
Routed to Link 2L : Post-Dev Study Area
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2L : Post-Dev Study Area

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 682.41' @ 12.10 hrs Surf.Area= 25,000 sf Storage= 31,889 cf

Plug-Flow detention time= 134.9 min calculated for 1.798 af (100% of inflow)
Center-of-Mass det. time= 133.7 min (906.3 - 772.5)

Volume	Invert	Avail.Storage	Storage Description
#1	681.00'	106,153 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

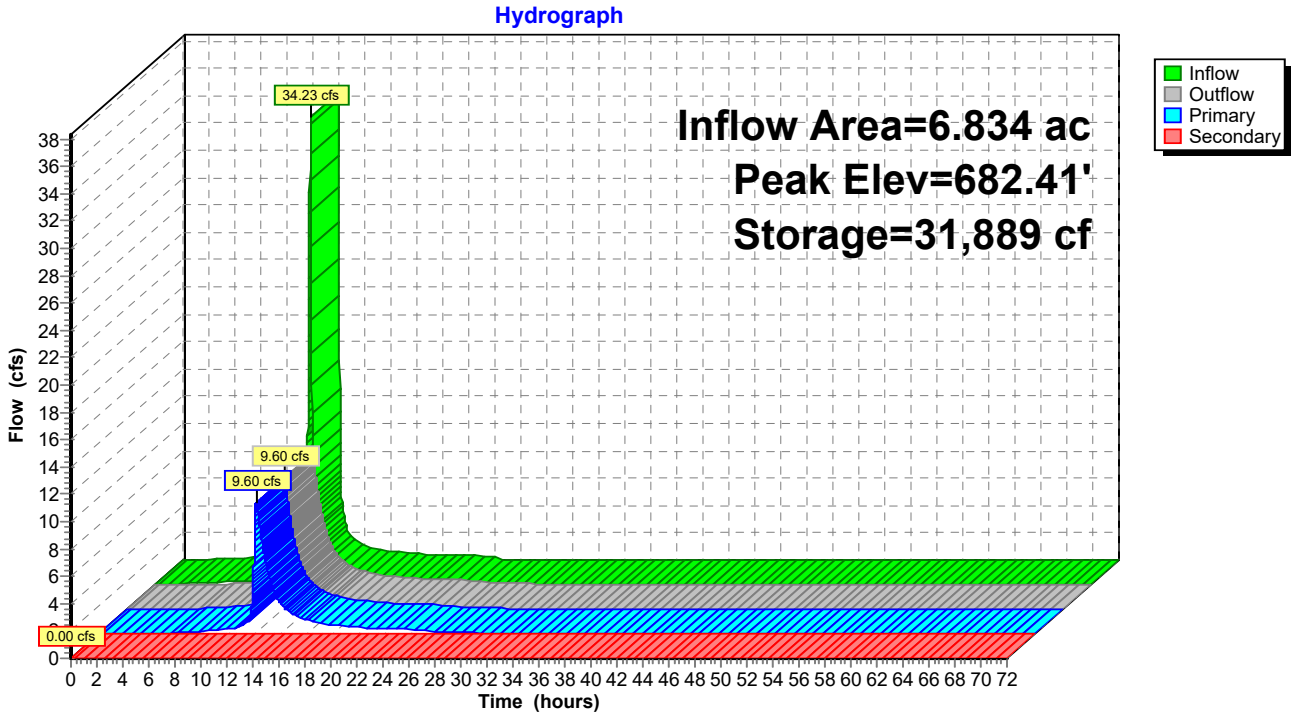
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
681.00	19,564	617.1	0	0	19,564
682.00	24,059	660.5	21,773	21,773	24,022
683.00	26,372	871.5	25,207	46,979	49,757
684.00	29,287	1,115.7	27,817	74,796	88,387
685.00	33,473	1,427.5	31,357	106,153	151,502

Device	Routing	Invert	Outlet Devices
#1	Primary	681.00'	**24.0" Round Culvert** L= 36.5' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 681.00' / 680.00' S= 0.0274 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Secondary	683.50'	**20.0' 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=9.60 cfs @ 12.10 hrs HW=682.41' (Free Discharge)
1=Culvert (Inlet Controls 9.60 cfs @ 4.05 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=681.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1P: Wet Detention Basin

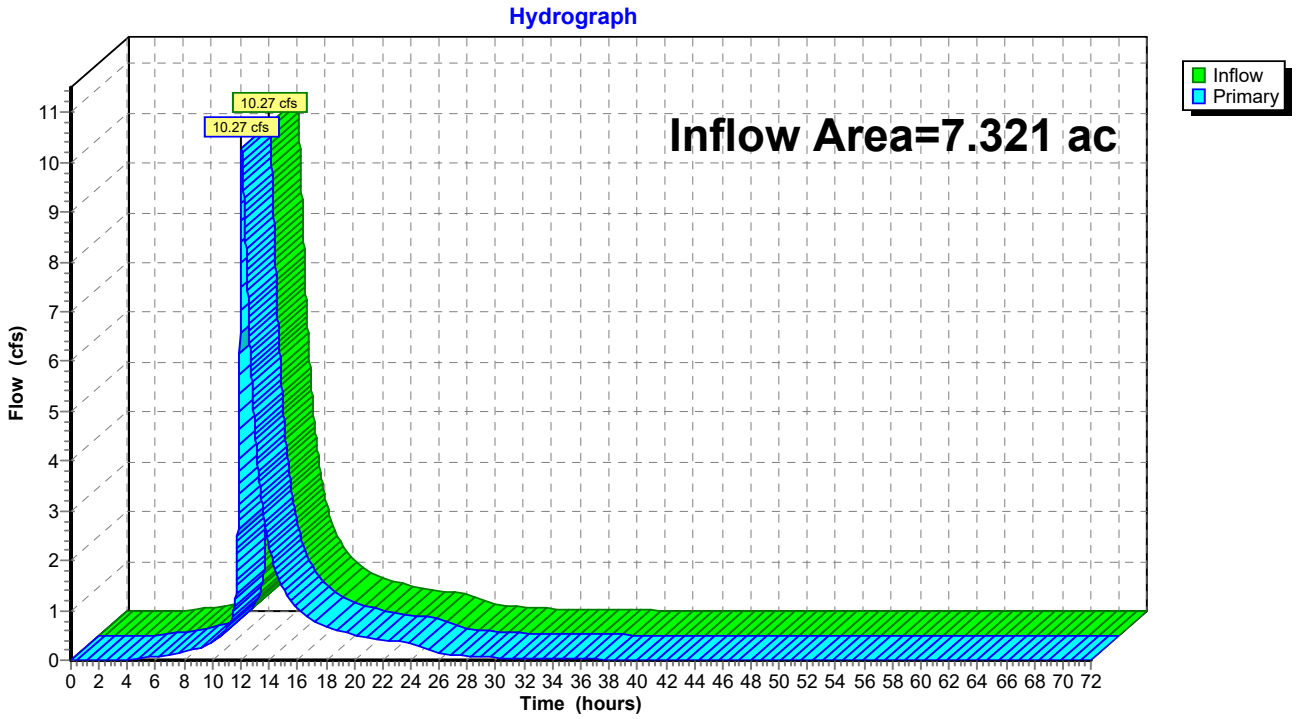


Summary for Link 2L: Post-Dev Study Area

Inflow Area = 7.321 ac, 50.37% Impervious, Inflow Depth > 3.08" for 10-yr 24hr event
Inflow = 10.27 cfs @ 12.06 hrs, Volume= 1.876 af
Primary = 10.27 cfs @ 12.06 hrs, Volume= 1.876 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 2L: Post-Dev Study Area



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment2S: Proposed Runoff Area=216,969 sf 61.64% Impervious Runoff Depth=4.25"
Flow Length=832' Tc=6.0 min CN=74/98 Runoff=33.04 cfs 1.764 af

Subcatchment3S(b): Off-Site (Captured by Runoff Area=80,720 sf 33.11% Impervious Runoff Depth=3.66"
Flow Length=744' Tc=6.0 min CN=76/98 Runoff=11.15 cfs 0.566 af

Subcatchment4S: Uncaptured Runoff Area=21,193 sf 0.70% Impervious Runoff Depth=2.74"
Tc=6.0 min CN=74/98 Runoff=2.37 cfs 0.111 af

Pond 1P: Wet Detention Basin Peak Elev=682.73' Storage=39,928 cf Inflow=44.19 cfs 2.330 af
Primary=12.93 cfs 2.326 af Secondary=0.00 cfs 0.000 af Outflow=12.93 cfs 2.326 af

Link 2L: Post-Dev Study Area Inflow=13.97 cfs 2.437 af
Primary=13.97 cfs 2.437 af

Total Runoff Area = 7.321 ac Runoff Volume = 2.441 af Average Runoff Depth = 4.00"
49.63% Pervious = 3.633 ac 50.37% Impervious = 3.687 ac

Summary for Subcatchment 2S: Proposed Development

[47] Hint: Peak is 373% of capacity of segment #4

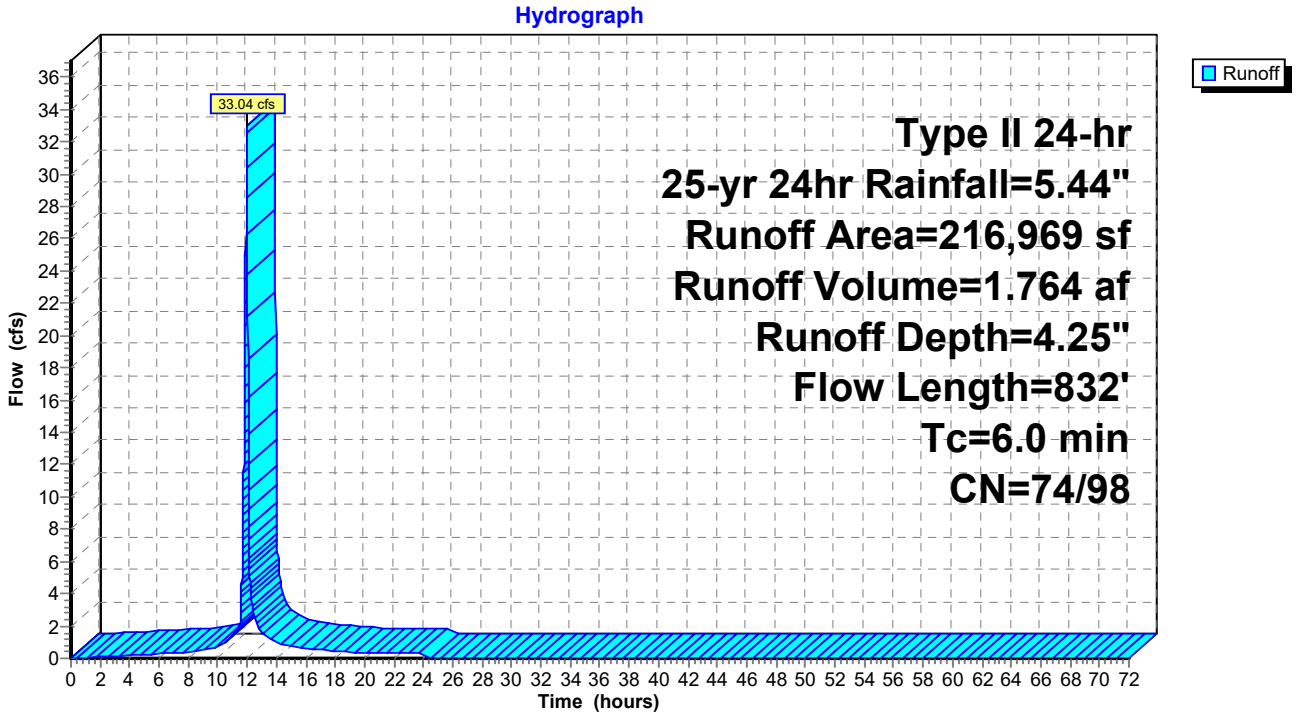
Runoff = 33.04 cfs @ 11.97 hrs, Volume= 1.764 af, Depth= 4.25"
Routed to Pond 1P : Wet Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-yr 24hr Rainfall=5.44"

	Area (sf)	CN	Description
	62,064	98	Paved parking, HSG C
*	52,112	98	Paved parking (gravel), HSG C
	83,229	74	>75% Grass cover, Good, HSG C
	19,564	98	Water Surface, HSG C
	216,969	89	Weighted Average
	83,229	74	38.36% Pervious Area
	133,740	98	61.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	127	0.0501	2.02		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.4	107	0.0623	5.07		**Shallow Concentrated Flow, Shallow Conc Flow** Paved Kv= 20.3 fps
0.4	333	0.0420	15.51	290.79	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	143	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
3.6					**Direct Entry, User**
6.0	832	Total			

Subcatchment 2S: Proposed Development



Summary for Subcatchment 3S(b): Off-Site (Captured by Basin)

[47] Hint: Peak is 126% of capacity of segment #6

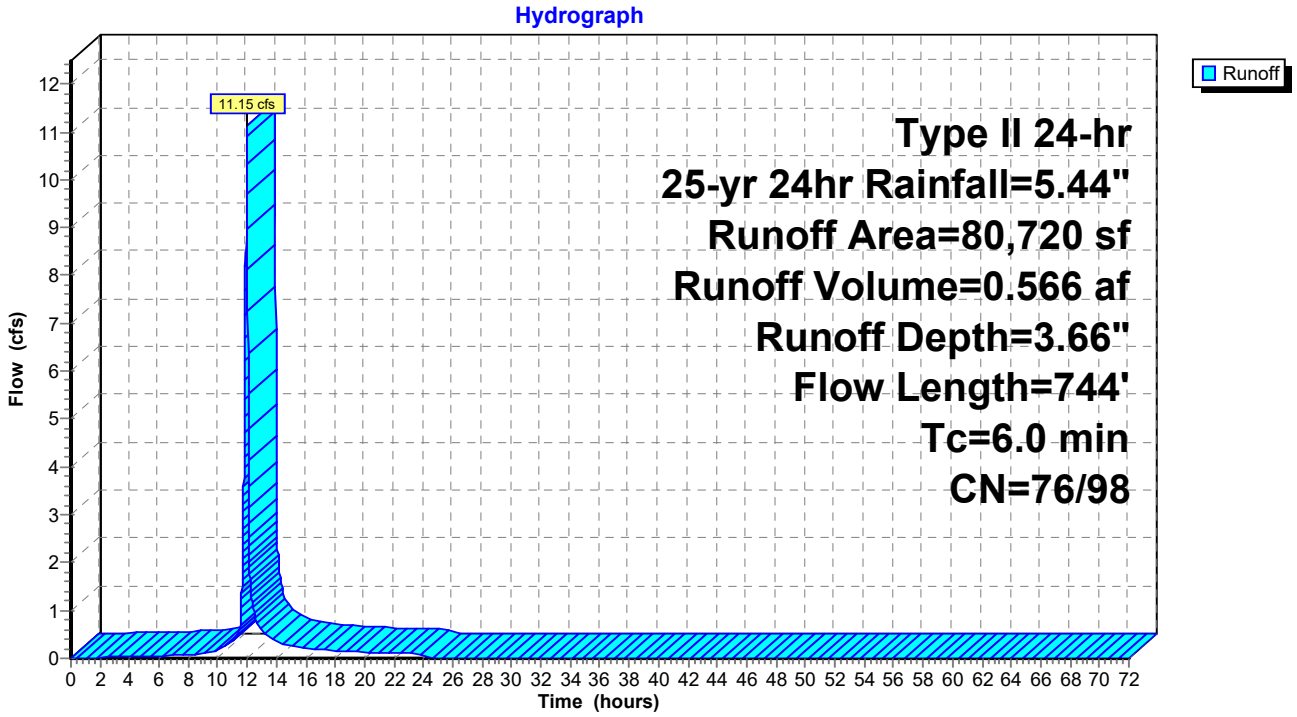
Runoff = 11.15 cfs @ 11.97 hrs, Volume= 0.566 af, Depth= 3.66"
Routed to Pond 1P : Wet Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-yr 24hr Rainfall=5.44"

Area (sf)	CN	Description
10,378	82	Row crops, SR + CR, Good, HSG C
3,388	98	Unconnected pavement, HSG C
22,308	98	Paved parking, HSG C
43,614	74	>75% Grass cover, Good, HSG C
1,032	98	Roofs, HSG C
80,720	83	Weighted Average
53,992	76	66.89% Pervious Area
26,728	98	33.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	29	0.1534	2.35		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
1.2	100	0.0200	1.33		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.3	65	0.0463	3.23		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.8	174	0.0461	3.46		**Shallow Concentrated Flow, Shallow Conc Flow** Unpaved Kv= 16.1 fps
0.5	112	0.0714	4.01		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	142	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
2.4					**Direct Entry, User**
6.0	744	Total			

Subcatchment 3S(b): Off-Site (Captured by Basin)



Summary for Subcatchment 4S: Uncaptured

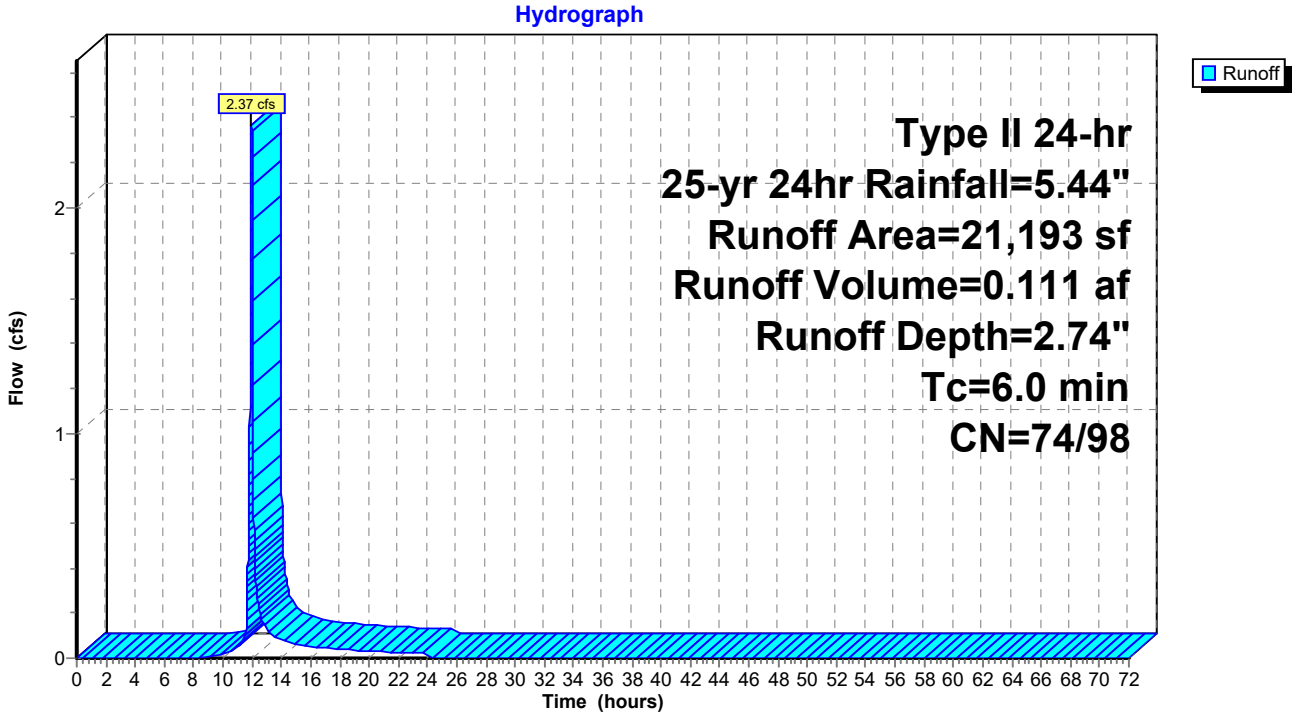
Runoff = 2.37 cfs @ 11.97 hrs, Volume= 0.111 af, Depth= 2.74"
Routed to Link 2L : Post-Dev Study Area

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-yr 24hr Rainfall=5.44"

Area (sf)	CN	Description
21,044	74	>75% Grass cover, Good, HSG C
149	98	Paved parking, HSG C
21,193	74	Weighted Average
21,044	74	99.30% Pervious Area
149	98	0.70% Impervious Area

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

Subcatchment 4S: Uncaptured



Summary for Pond 1P: Wet Detention Basin

Inflow Area = 6.834 ac, 53.90% Impervious, Inflow Depth = 4.09" for 25-yr 24hr event
Inflow = 44.19 cfs @ 11.97 hrs, Volume= 2.330 af
Outflow = 12.93 cfs @ 12.10 hrs, Volume= 2.326 af, Atten= 71%, Lag= 7.6 min
Primary = 12.93 cfs @ 12.10 hrs, Volume= 2.326 af
Routed to Link 2L : Post-Dev Study Area
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2L : Post-Dev Study Area

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 682.73' @ 12.10 hrs Surf.Area= 25,735 sf Storage= 39,928 cf

Plug-Flow detention time= 120.1 min calculated for 2.326 af (100% of inflow)
Center-of-Mass det. time= 118.8 min (888.3 - 769.5)

Volume	Invert	Avail.Storage	Storage Description
#1	681.00'	106,153 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

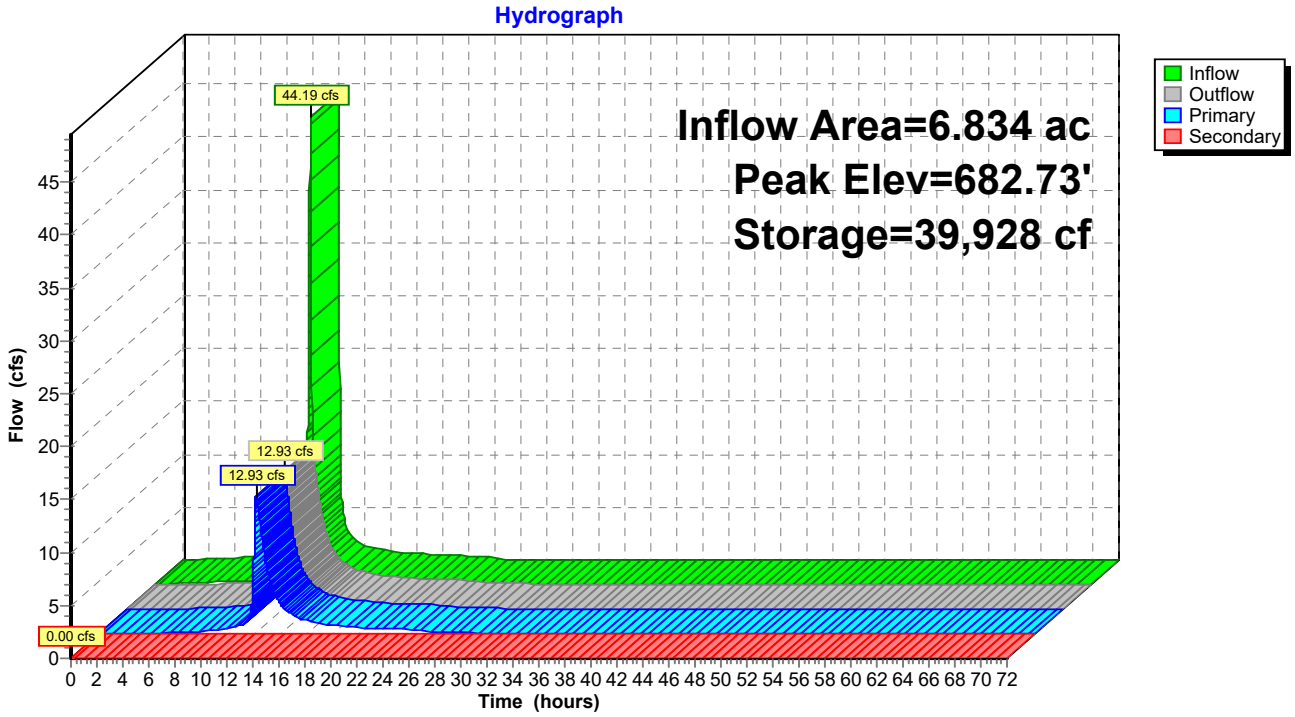
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
681.00	19,564	617.1	0	0	19,564
682.00	24,059	660.5	21,773	21,773	24,022
683.00	26,372	871.5	25,207	46,979	49,757
684.00	29,287	1,115.7	27,817	74,796	88,387
685.00	33,473	1,427.5	31,357	106,153	151,502

Device	Routing	Invert	Outlet Devices
#1	Primary	681.00'	**24.0" Round Culvert** L= 36.5' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 681.00' / 680.00' S= 0.0274 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Secondary	683.50'	**20.0' 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=12.92 cfs @ 12.10 hrs HW=682.73' (Free Discharge)
1=Culvert (Inlet Controls 12.92 cfs @ 4.48 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=681.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1P: Wet Detention Basin

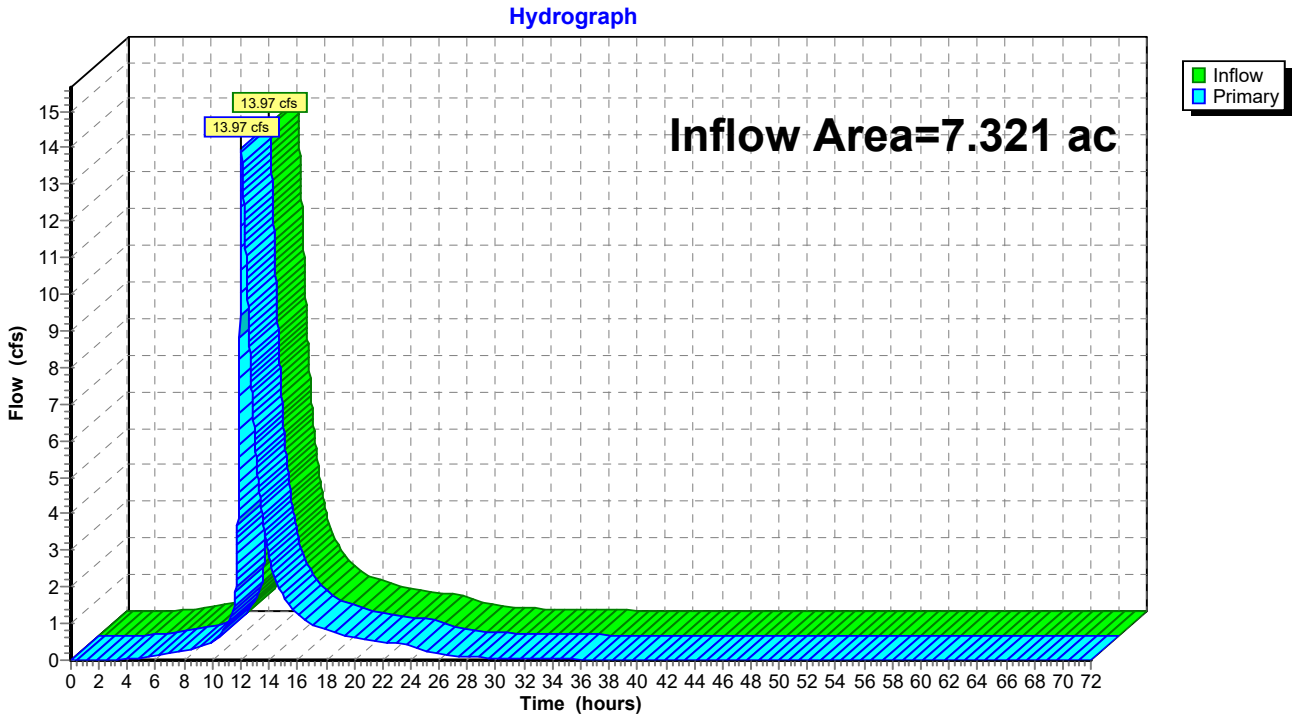


Summary for Link 2L: Post-Dev Study Area

Inflow Area = 7.321 ac, 50.37% Impervious, Inflow Depth > 3.99" for 25-yr 24hr event
Inflow = 13.97 cfs @ 12.05 hrs, Volume= 2.437 af
Primary = 13.97 cfs @ 12.05 hrs, Volume= 2.437 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 2L: Post-Dev Study Area



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment2S: Proposed Runoff Area=216,969 sf 61.64% Impervious Runoff Depth=5.05"
Flow Length=832' Tc=6.0 min CN=74/98 Runoff=39.15 cfs 2.094 af

Subcatchment3S(b): Off-Site (Captured by Runoff Area=80,720 sf 33.11% Impervious Runoff Depth=4.43"
Flow Length=744' Tc=6.0 min CN=76/98 Runoff=13.45 cfs 0.685 af

Subcatchment4S: Uncaptured Runoff Area=21,193 sf 0.70% Impervious Runoff Depth=3.45"
Tc=6.0 min CN=74/98 Runoff=2.97 cfs 0.140 af

Pond 1P: Wet Detention Basin Peak Elev=682.99' Storage=46,807 cf Inflow=52.60 cfs 2.779 af
Primary=15.09 cfs 2.775 af Secondary=0.00 cfs 0.000 af Outflow=15.09 cfs 2.775 af

Link 2L: Post-Dev Study Area Inflow=16.67 cfs 2.914 af
Primary=16.67 cfs 2.914 af

Total Runoff Area = 7.321 ac Runoff Volume = 2.919 af Average Runoff Depth = 4.78"
49.63% Pervious = 3.633 ac 50.37% Impervious = 3.687 ac

Summary for Subcatchment 2S: Proposed Development

[47] Hint: Peak is 442% of capacity of segment #4

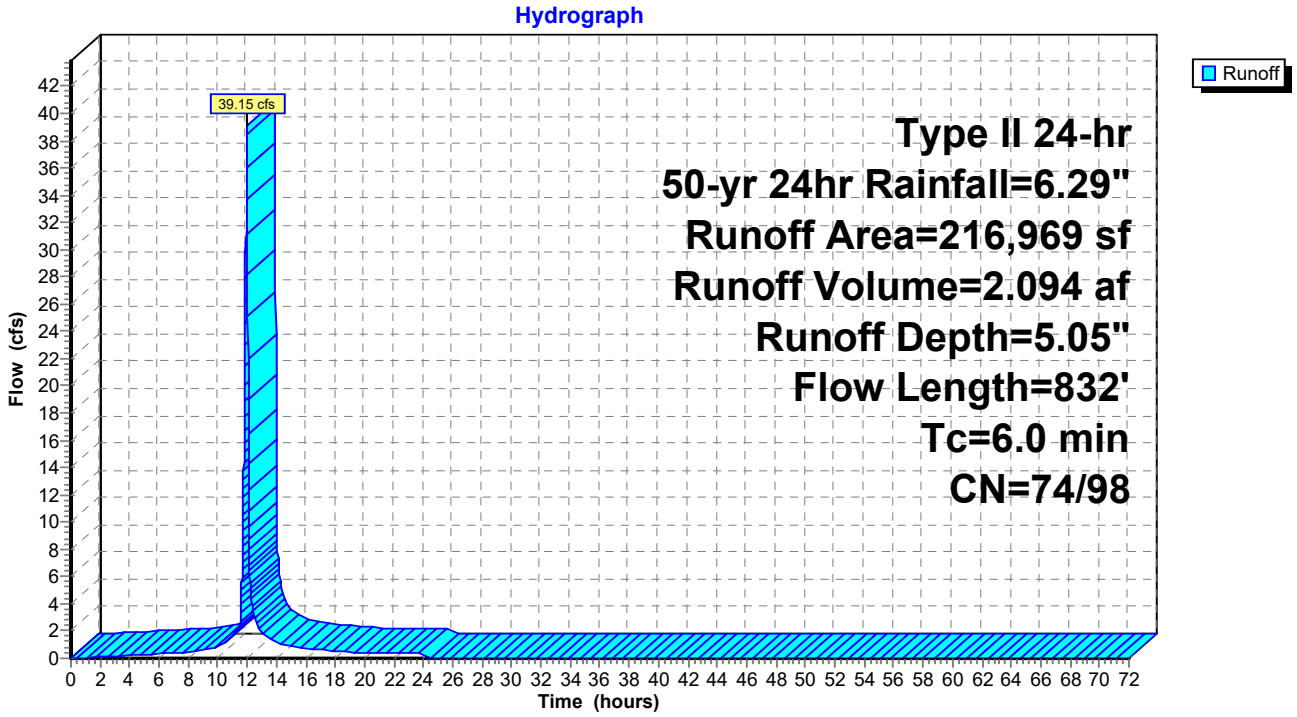
Runoff = 39.15 cfs @ 11.97 hrs, Volume= 2.094 af, Depth= 5.05"
Routed to Pond 1P : Wet Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-yr 24hr Rainfall=6.29"

	Area (sf)	CN	Description
	62,064	98	Paved parking, HSG C
*	52,112	98	Paved parking (gravel), HSG C
	83,229	74	>75% Grass cover, Good, HSG C
	19,564	98	Water Surface, HSG C
	216,969	89	Weighted Average
	83,229	74	38.36% Pervious Area
	133,740	98	61.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	127	0.0501	2.02		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.4	107	0.0623	5.07		**Shallow Concentrated Flow, Shallow Conc Flow** Paved Kv= 20.3 fps
0.4	333	0.0420	15.51	290.79	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	143	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
3.6					**Direct Entry, User**
6.0	832	Total			

Subcatchment 2S: Proposed Development



Summary for Subcatchment 3S(b): Off-Site (Captured by Basin)

[47] Hint: Peak is 152% of capacity of segment #6

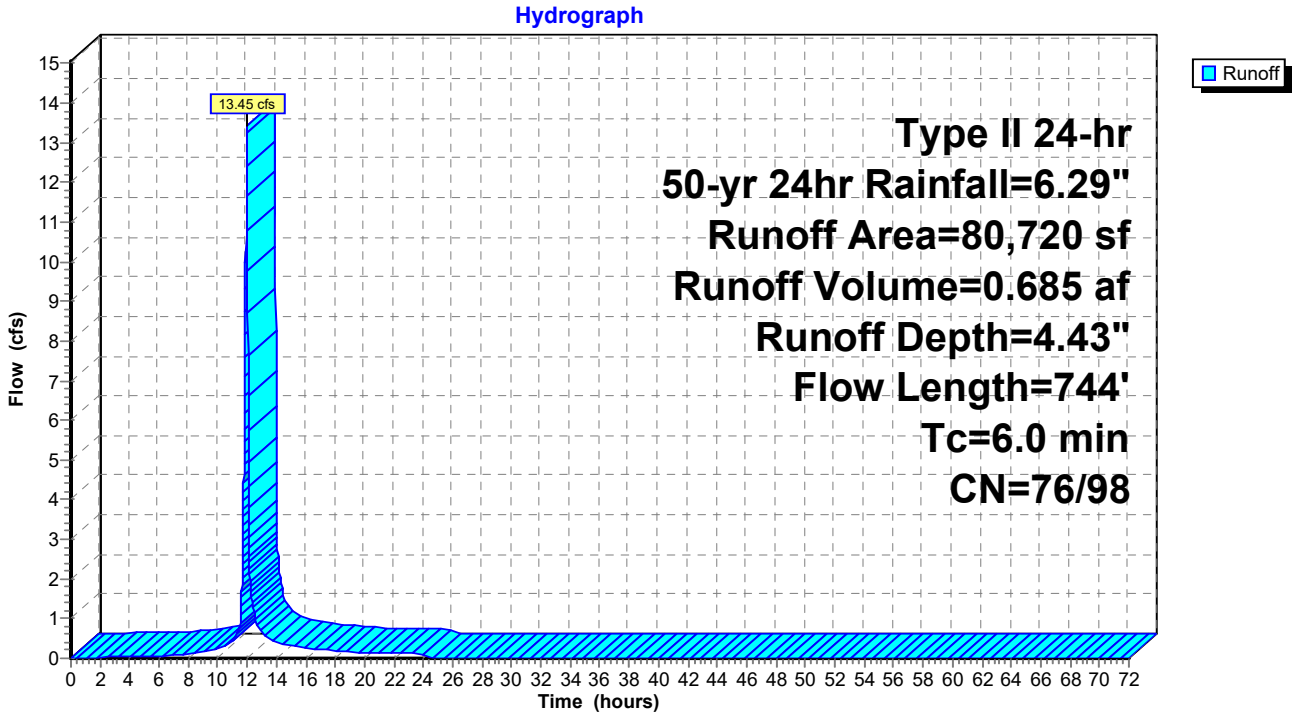
Runoff = 13.45 cfs @ 11.97 hrs, Volume= 0.685 af, Depth= 4.43"
Routed to Pond 1P : Wet Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-yr 24hr Rainfall=6.29"

Area (sf)	CN	Description
10,378	82	Row crops, SR + CR, Good, HSG C
3,388	98	Unconnected pavement, HSG C
22,308	98	Paved parking, HSG C
43,614	74	>75% Grass cover, Good, HSG C
1,032	98	Roofs, HSG C
80,720	83	Weighted Average
53,992	76	66.89% Pervious Area
26,728	98	33.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	29	0.1534	2.35		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
1.2	100	0.0200	1.33		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.3	65	0.0463	3.23		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.8	174	0.0461	3.46		**Shallow Concentrated Flow, Shallow Conc Flow** Unpaved Kv= 16.1 fps
0.5	112	0.0714	4.01		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	142	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
2.4					**Direct Entry, User**
6.0	744	Total			

Subcatchment 3S(b): Off-Site (Captured by Basin)



Summary for Subcatchment 4S: Uncaptured

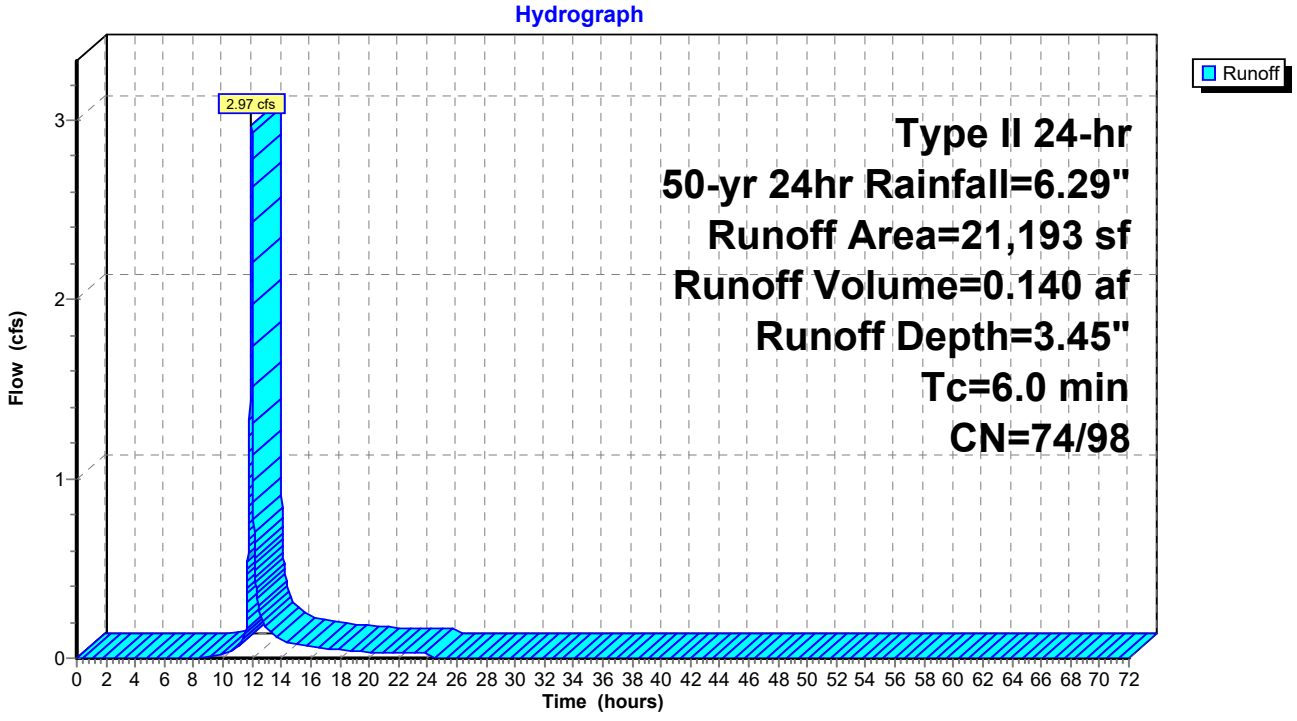
Runoff = 2.97 cfs @ 11.97 hrs, Volume= 0.140 af, Depth= 3.45"
Routed to Link 2L : Post-Dev Study Area

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-yr 24hr Rainfall=6.29"

Area (sf)	CN	Description
21,044	74	>75% Grass cover, Good, HSG C
149	98	Paved parking, HSG C
21,193	74	Weighted Average
21,044	74	99.30% Pervious Area
149	98	0.70% Impervious Area

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

Subcatchment 4S: Uncaptured



Summary for Pond 1P: Wet Detention Basin

Inflow Area = 6.834 ac, 53.90% Impervious, Inflow Depth = 4.88" for 50-yr 24hr event
Inflow = 52.60 cfs @ 11.97 hrs, Volume= 2.779 af
Outflow = 15.09 cfs @ 12.10 hrs, Volume= 2.775 af, Atten= 71%, Lag= 7.7 min
Primary = 15.09 cfs @ 12.10 hrs, Volume= 2.775 af
Routed to Link 2L : Post-Dev Study Area
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2L : Post-Dev Study Area

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 682.99' @ 12.10 hrs Surf.Area= 26,357 sf Storage= 46,807 cf

Plug-Flow detention time= 111.2 min calculated for 2.775 af (100% of inflow)
Center-of-Mass det. time= 110.1 min (877.3 - 767.3)

Volume	Invert	Avail.Storage	Storage Description
#1	681.00'	106,153 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

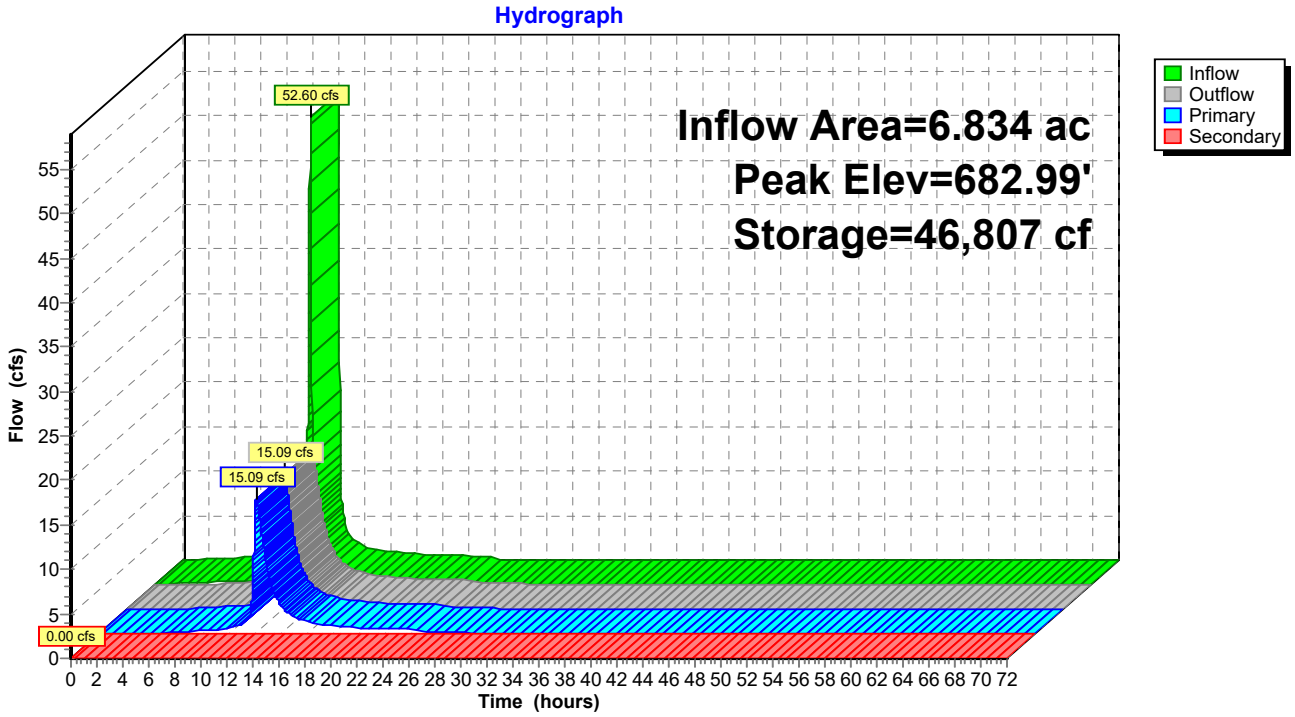
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
681.00	19,564	617.1	0	0	19,564
682.00	24,059	660.5	21,773	21,773	24,022
683.00	26,372	871.5	25,207	46,979	49,757
684.00	29,287	1,115.7	27,817	74,796	88,387
685.00	33,473	1,427.5	31,357	106,153	151,502

Device	Routing	Invert	Outlet Devices
#1	Primary	681.00'	**24.0" Round Culvert** L= 36.5' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 681.00' / 680.00' S= 0.0274 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Secondary	683.50'	**20.0' 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=15.10 cfs @ 12.10 hrs HW=682.99' (Free Discharge)
1=Culvert (Inlet Controls 15.10 cfs @ 4.81 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=681.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1P: Wet Detention Basin

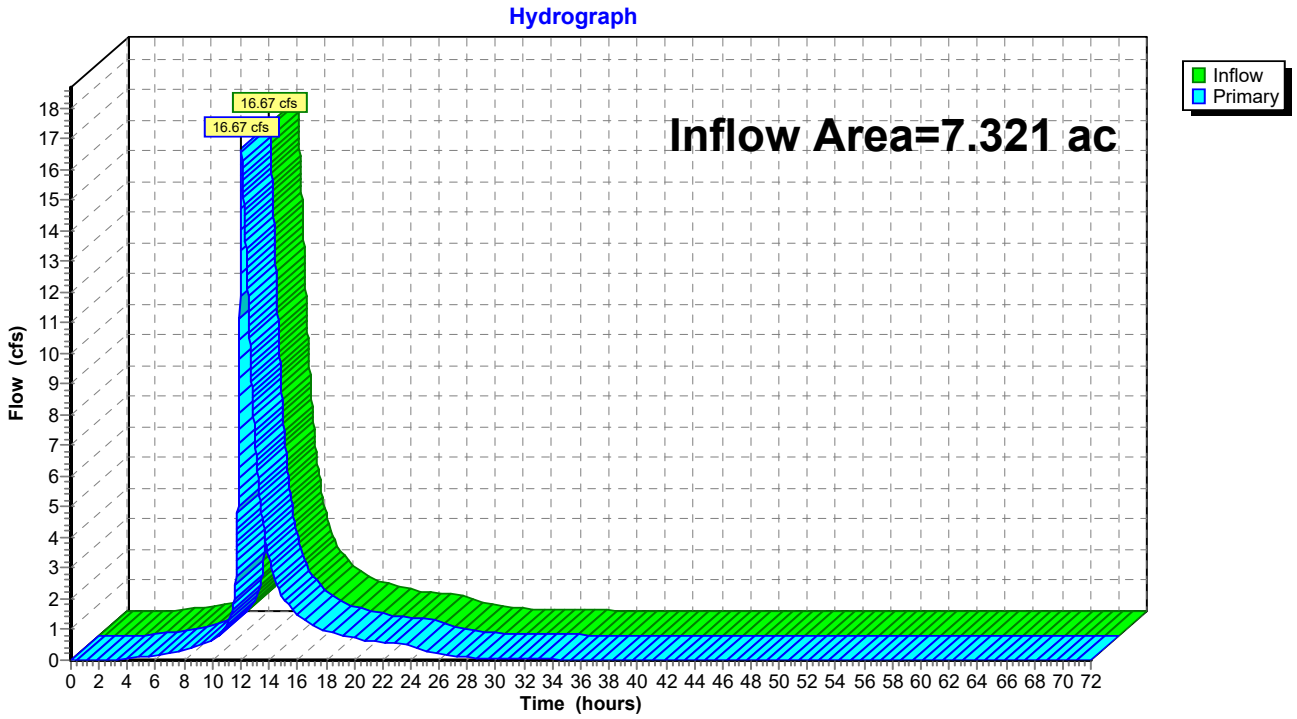


Summary for Link 2L: Post-Dev Study Area

Inflow Area = 7.321 ac, 50.37% Impervious, Inflow Depth > 4.78" for 50-yr 24hr event
Inflow = 16.67 cfs @ 12.03 hrs, Volume= 2.914 af
Primary = 16.67 cfs @ 12.03 hrs, Volume= 2.914 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 2L: Post-Dev Study Area



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment2S: Proposed Runoff Area=216,969 sf 61.64% Impervious Runoff Depth=5.93"
Flow Length=832' Tc=6.0 min CN=74/98 Runoff=45.88 cfs 2.460 af

Subcatchment3S(b): Off-Site (Captured by Runoff Area=80,720 sf 33.11% Impervious Runoff Depth=5.29"
Flow Length=744' Tc=6.0 min CN=76/98 Runoff=15.99 cfs 0.817 af

Subcatchment4S: Uncaptured Runoff Area=21,193 sf 0.70% Impervious Runoff Depth=4.25"
Tc=6.0 min CN=74/98 Runoff=3.64 cfs 0.172 af

Pond 1P: Wet Detention Basin Peak Elev=683.28' Storage=54,580 cf Inflow=61.87 cfs 3.277 af
Primary=17.14 cfs 3.273 af Secondary=0.00 cfs 0.000 af Outflow=17.14 cfs 3.273 af

Link 2L: Post-Dev Study Area Inflow=19.05 cfs 3.445 af
Primary=19.05 cfs 3.445 af

Total Runoff Area = 7.321 ac Runoff Volume = 3.450 af Average Runoff Depth = 5.65"
49.63% Pervious = 3.633 ac 50.37% Impervious = 3.687 ac

Summary for Subcatchment 2S: Proposed Development

[47] Hint: Peak is 518% of capacity of segment #4

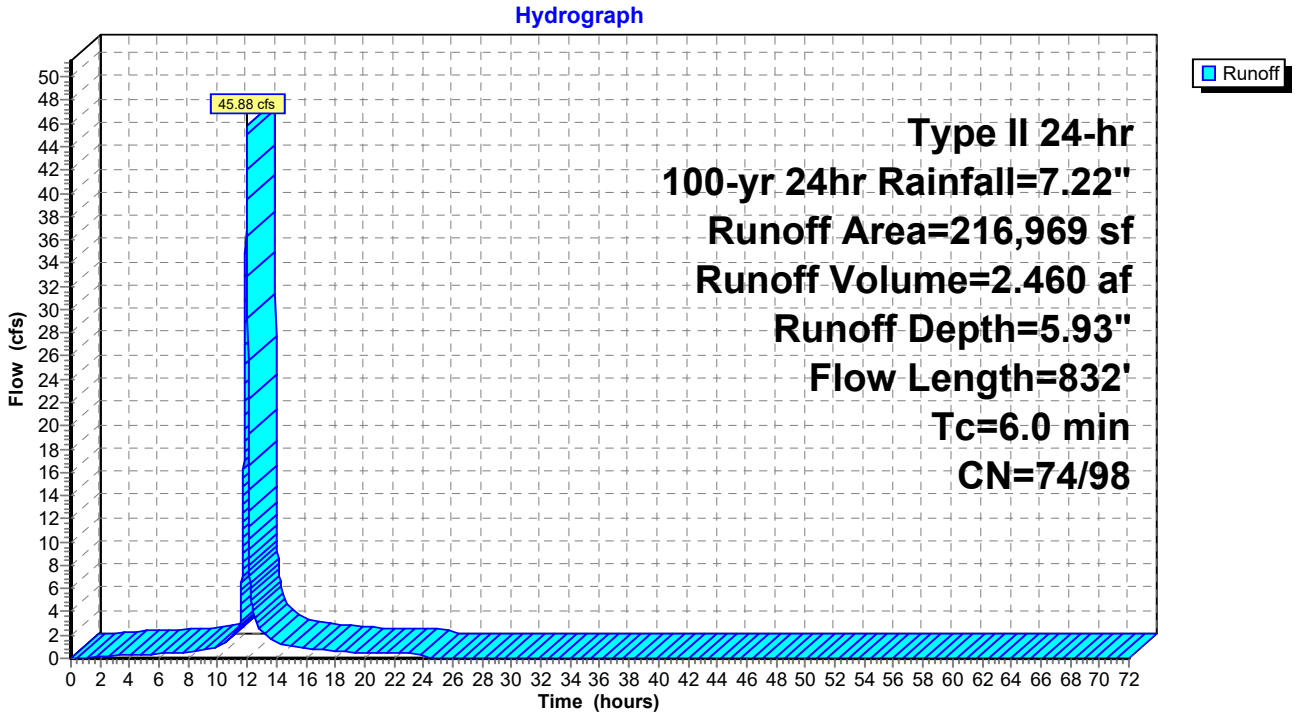
Runoff = 45.88 cfs @ 11.97 hrs, Volume= 2.460 af, Depth= 5.93"
Routed to Pond 1P : Wet Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr 24hr Rainfall=7.22"

	Area (sf)	CN	Description
	62,064	98	Paved parking, HSG C
*	52,112	98	Paved parking (gravel), HSG C
	83,229	74	>75% Grass cover, Good, HSG C
	19,564	98	Water Surface, HSG C
	216,969	89	Weighted Average
	83,229	74	38.36% Pervious Area
	133,740	98	61.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	127	0.0501	2.02		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.4	107	0.0623	5.07		**Shallow Concentrated Flow, Shallow Conc Flow** Paved Kv= 20.3 fps
0.4	333	0.0420	15.51	290.79	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	143	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
3.6					**Direct Entry, User**
6.0	832	Total			

Subcatchment 2S: Proposed Development



Summary for Subcatchment 3S(b): Off-Site (Captured by Basin)

[47] Hint: Peak is 180% of capacity of segment #6

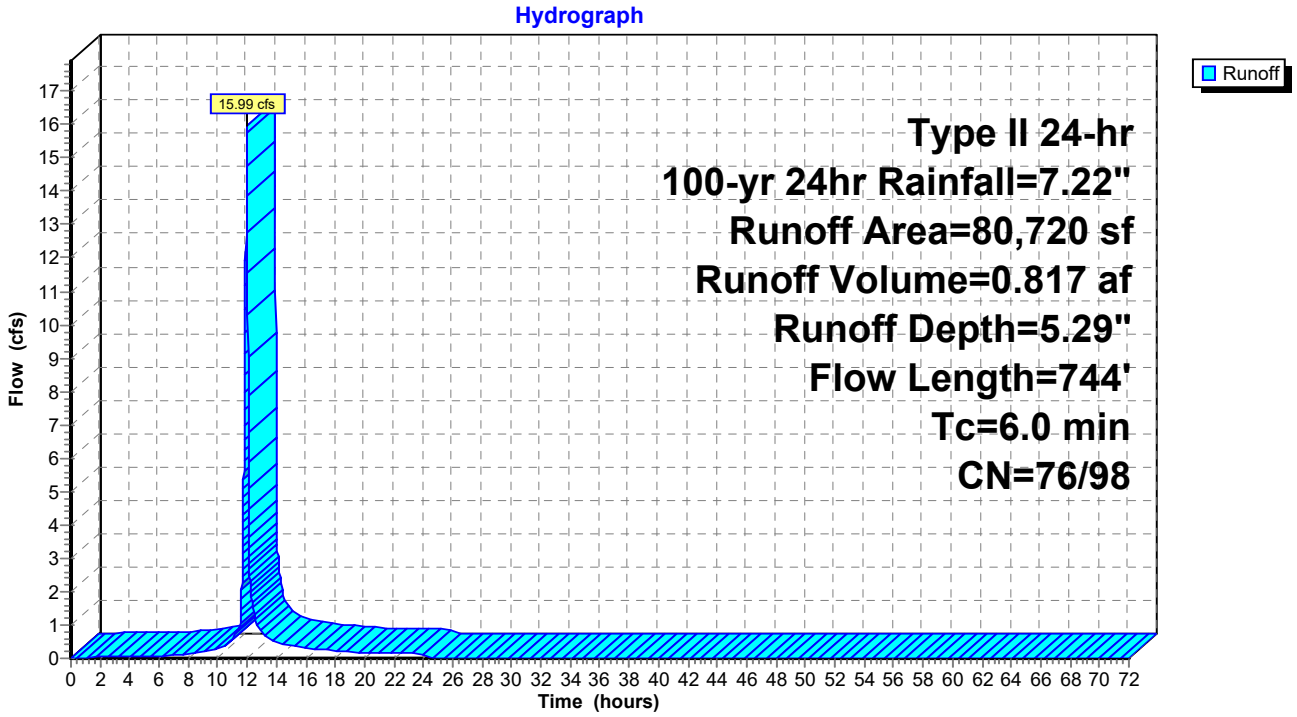
Runoff = 15.99 cfs @ 11.97 hrs, Volume= 0.817 af, Depth= 5.29"
Routed to Pond 1P : Wet Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr 24hr Rainfall=7.22"

Area (sf)	CN	Description
10,378	82	Row crops, SR + CR, Good, HSG C
3,388	98	Unconnected pavement, HSG C
22,308	98	Paved parking, HSG C
43,614	74	>75% Grass cover, Good, HSG C
1,032	98	Roofs, HSG C
80,720	83	Weighted Average
53,992	76	66.89% Pervious Area
26,728	98	33.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	29	0.1534	2.35		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
1.2	100	0.0200	1.33		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.3	65	0.0463	3.23		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.8	174	0.0461	3.46		**Shallow Concentrated Flow, Shallow Conc Flow** Unpaved Kv= 16.1 fps
0.5	112	0.0714	4.01		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	142	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
2.4					**Direct Entry, User**
6.0	744	Total			

Subcatchment 3S(b): Off-Site (Captured by Basin)



Summary for Subcatchment 4S: Uncaptured

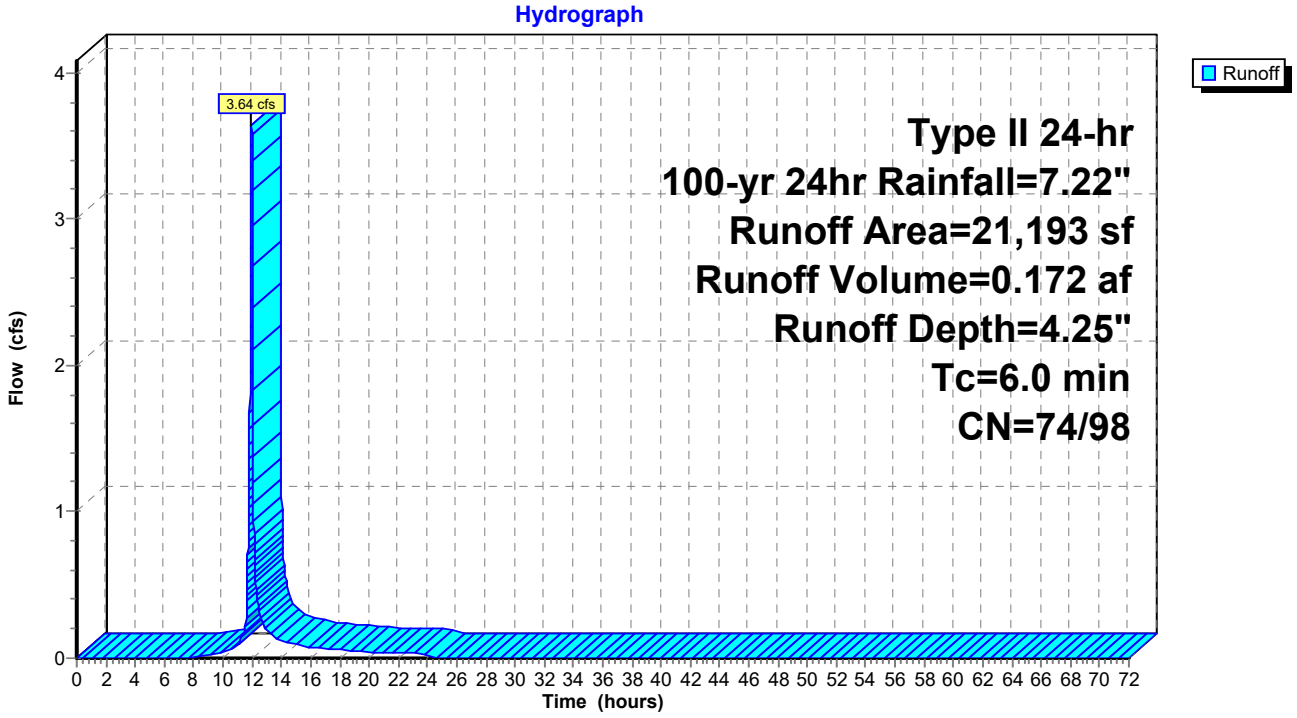
Runoff = 3.64 cfs @ 11.97 hrs, Volume= 0.172 af, Depth= 4.25"
Routed to Link 2L : Post-Dev Study Area

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr 24hr Rainfall=7.22"

Area (sf)	CN	Description
21,044	74	>75% Grass cover, Good, HSG C
149	98	Paved parking, HSG C
21,193	74	Weighted Average
21,044	74	99.30% Pervious Area
149	98	0.70% Impervious Area

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

Subcatchment 4S: Uncaptured



Summary for Pond 1P: Wet Detention Basin

Inflow Area = 6.834 ac, 53.90% Impervious, Inflow Depth = 5.75" for 100-yr 24hr event
Inflow = 61.87 cfs @ 11.97 hrs, Volume= 3.277 af
Outflow = 17.14 cfs @ 12.10 hrs, Volume= 3.273 af, Atten= 72%, Lag= 7.9 min
Primary = 17.14 cfs @ 12.10 hrs, Volume= 3.273 af
Routed to Link 2L : Post-Dev Study Area
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 2L : Post-Dev Study Area

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 683.28' @ 12.10 hrs Surf.Area= 27,184 sf Storage= 54,580 cf

Plug-Flow detention time= 104.0 min calculated for 3.273 af (100% of inflow)
Center-of-Mass det. time= 103.1 min (868.2 - 765.1)

Volume	Invert	Avail.Storage	Storage Description
#1	681.00'	106,153 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

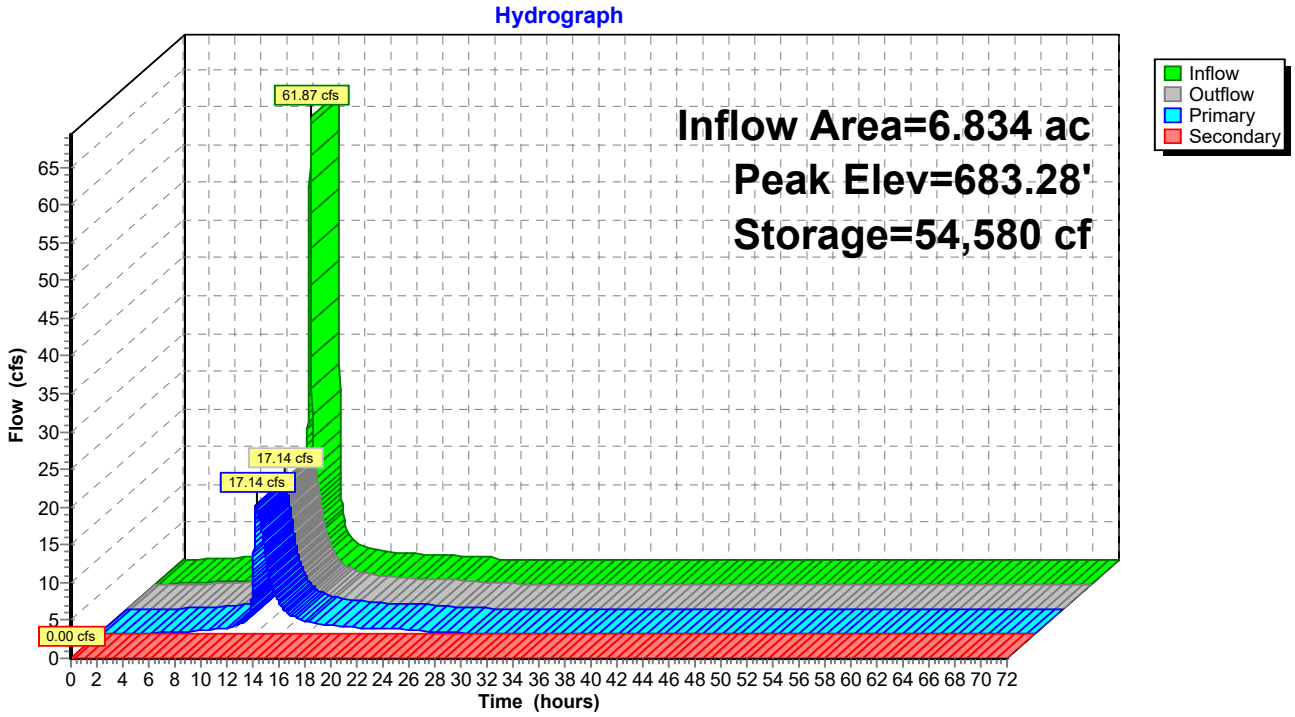
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
681.00	19,564	617.1	0	0	19,564
682.00	24,059	660.5	21,773	21,773	24,022
683.00	26,372	871.5	25,207	46,979	49,757
684.00	29,287	1,115.7	27,817	74,796	88,387
685.00	33,473	1,427.5	31,357	106,153	151,502

Device	Routing	Invert	Outlet Devices
#1	Primary	681.00'	**24.0" Round Culvert** L= 36.5' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 681.00' / 680.00' S= 0.0274 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Secondary	683.50'	**20.0' 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=17.14 cfs @ 12.10 hrs HW=683.28' (Free Discharge)
1=Culvert (Inlet Controls 17.14 cfs @ 5.46 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=681.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1P: Wet Detention Basin

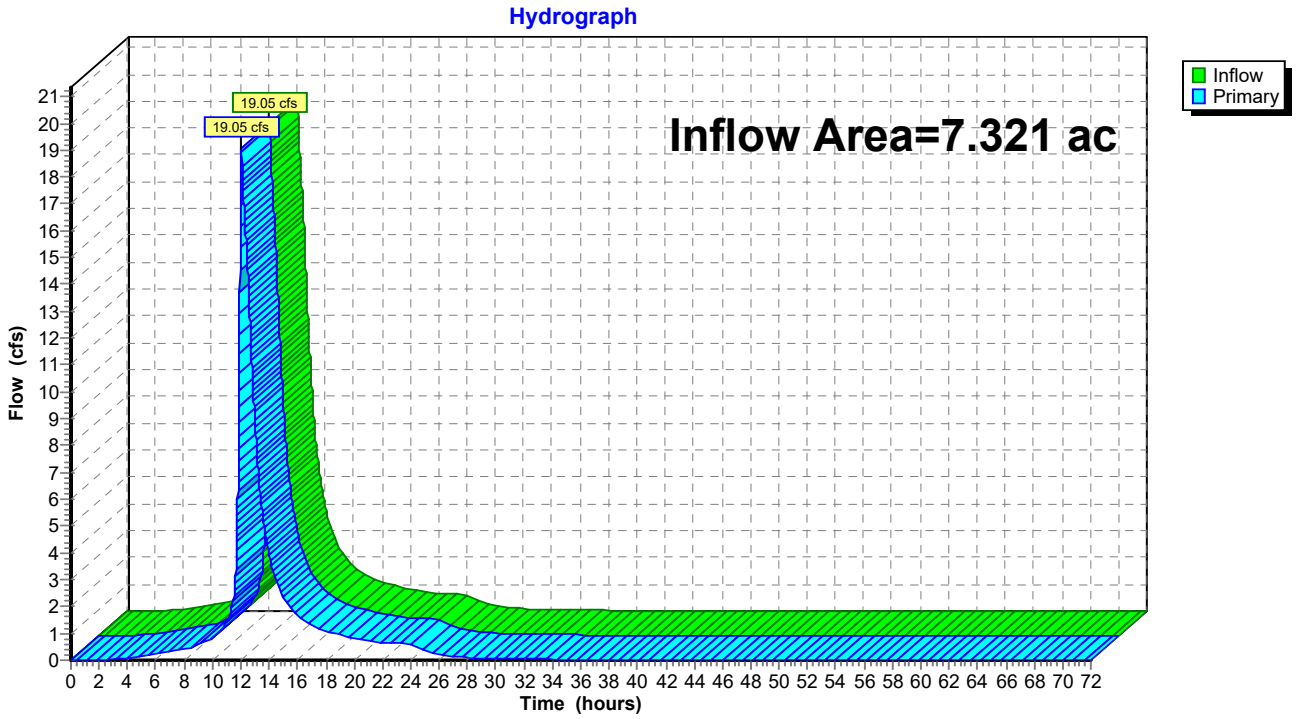


Summary for Link 2L: Post-Dev Study Area

Inflow Area = 7.321 ac, 50.37% Impervious, Inflow Depth > 5.65" for 100-yr 24hr event
Inflow = 19.05 cfs @ 12.03 hrs, Volume= 3.445 af
Primary = 19.05 cfs @ 12.03 hrs, Volume= 3.445 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 2L: Post-Dev Study Area



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment2S: Proposed Runoff Area=216,969 sf 61.64% Impervious Runoff Depth=8.25"
Flow Length=832' Tc=6.0 min CN=74/98 Runoff=63.48 cfs 3.426 af

Subcatchment3S(b): Off-Site (Captured by Runoff Area=80,720 sf 33.11% Impervious Runoff Depth=7.57"
Flow Length=744' Tc=6.0 min CN=76/98 Runoff=22.64 cfs 1.170 af

Subcatchment4S: Uncaptured Runoff Area=21,193 sf 0.70% Impervious Runoff Depth=6.44"
Tc=6.0 min CN=74/98 Runoff=5.41 cfs 0.261 af

Pond 1P: Wet Detention Basin Peak Elev=683.91' Storage=72,146 cf Inflow=86.13 cfs 4.596 af
Primary=20.90 cfs 4.401 af Secondary=13.45 cfs 0.191 af Outflow=34.35 cfs 4.591 af

Link 2L: Post-Dev Study Area Inflow=36.71 cfs 4.852 af
Primary=36.71 cfs 4.852 af

Total Runoff Area = 7.321 ac Runoff Volume = 4.857 af Average Runoff Depth = 7.96"
49.63% Pervious = 3.633 ac 50.37% Impervious = 3.687 ac

Summary for Subcatchment 2S: Proposed Development

[47] Hint: Peak is 716% of capacity of segment #4

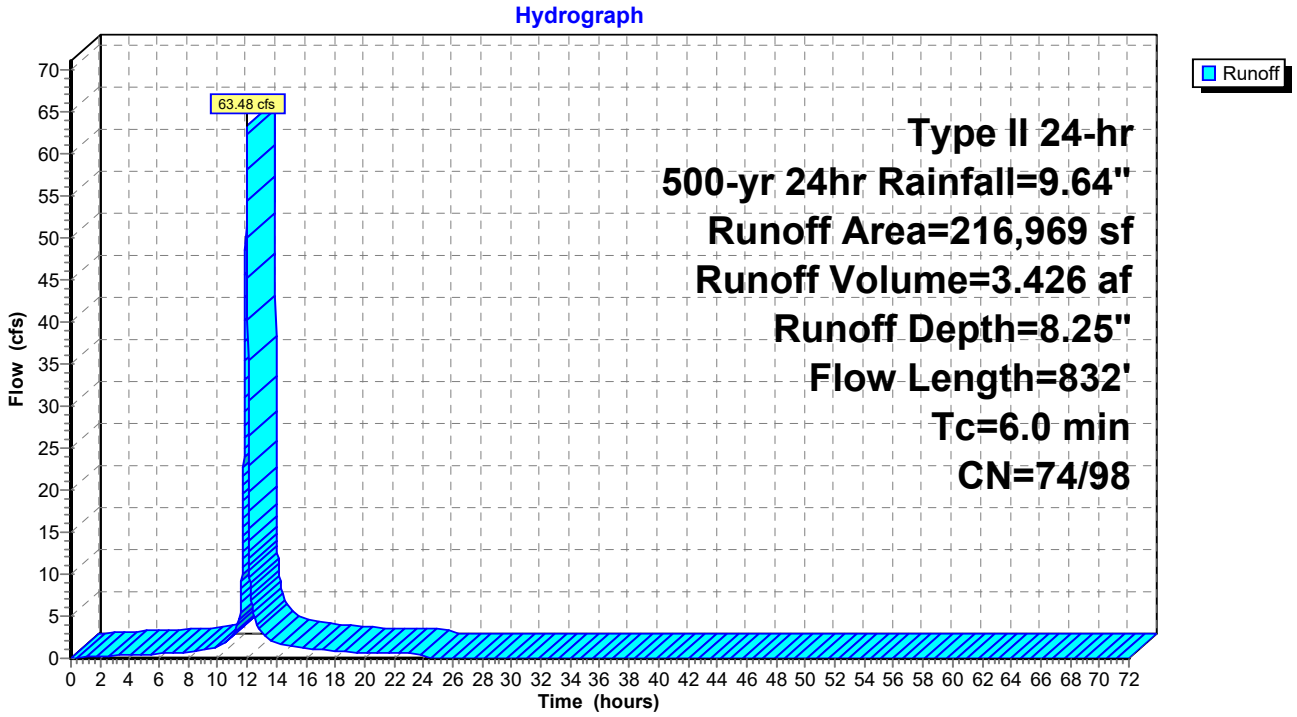
Runoff = 63.48 cfs @ 11.97 hrs, Volume= 3.426 af, Depth= 8.25"
Routed to Pond 1P : Wet Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 500-yr 24hr Rainfall=9.64"

	Area (sf)	CN	Description
	62,064	98	Paved parking, HSG C
*	52,112	98	Paved parking (gravel), HSG C
	83,229	74	>75% Grass cover, Good, HSG C
	19,564	98	Water Surface, HSG C
	216,969	89	Weighted Average
	83,229	74	38.36% Pervious Area
	133,740	98	61.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	127	0.0501	2.02		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.4	107	0.0623	5.07		**Shallow Concentrated Flow, Shallow Conc Flow** Paved Kv= 20.3 fps
0.4	333	0.0420	15.51	290.79	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	143	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
3.6					**Direct Entry, User**
6.0	832	Total			

Subcatchment 2S: Proposed Development



Summary for Subcatchment 3S(b): Off-Site (Captured by Basin)

[47] Hint: Peak is 255% of capacity of segment #6

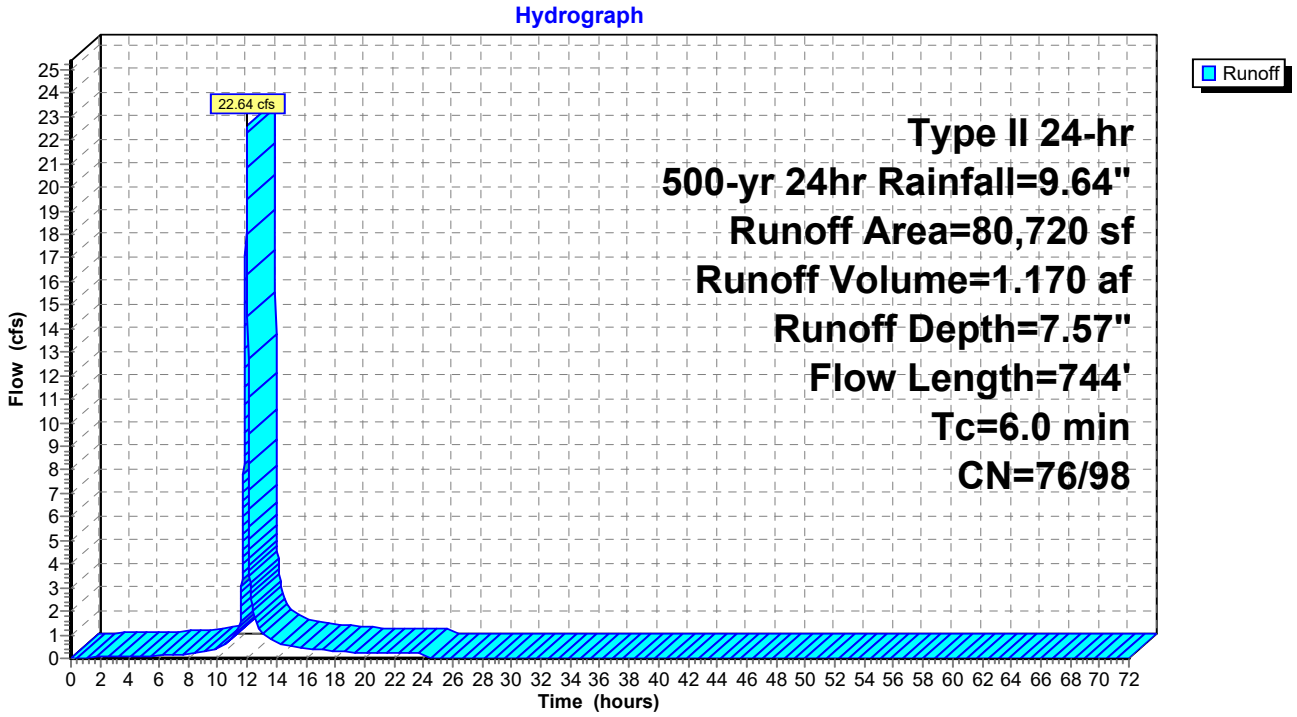
Runoff = 22.64 cfs @ 11.97 hrs, Volume= 1.170 af, Depth= 7.57"
Routed to Pond 1P : Wet Detention Basin

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 500-yr 24hr Rainfall=9.64"

Area (sf)	CN	Description
10,378	82	Row crops, SR + CR, Good, HSG C
3,388	98	Unconnected pavement, HSG C
22,308	98	Paved parking, HSG C
43,614	74	>75% Grass cover, Good, HSG C
1,032	98	Roofs, HSG C
80,720	83	Weighted Average
53,992	76	66.89% Pervious Area
26,728	98	33.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	29	0.1534	2.35		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
1.2	100	0.0200	1.33		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.3	65	0.0463	3.23		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.8	174	0.0461	3.46		**Shallow Concentrated Flow, Shallow Conc Flow** Unpaved Kv= 16.1 fps
0.5	112	0.0714	4.01		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	142	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
2.4					**Direct Entry, User**
6.0	744	Total			

Subcatchment 3S(b): Off-Site (Captured by Basin)



Summary for Subcatchment 4S: Uncaptured

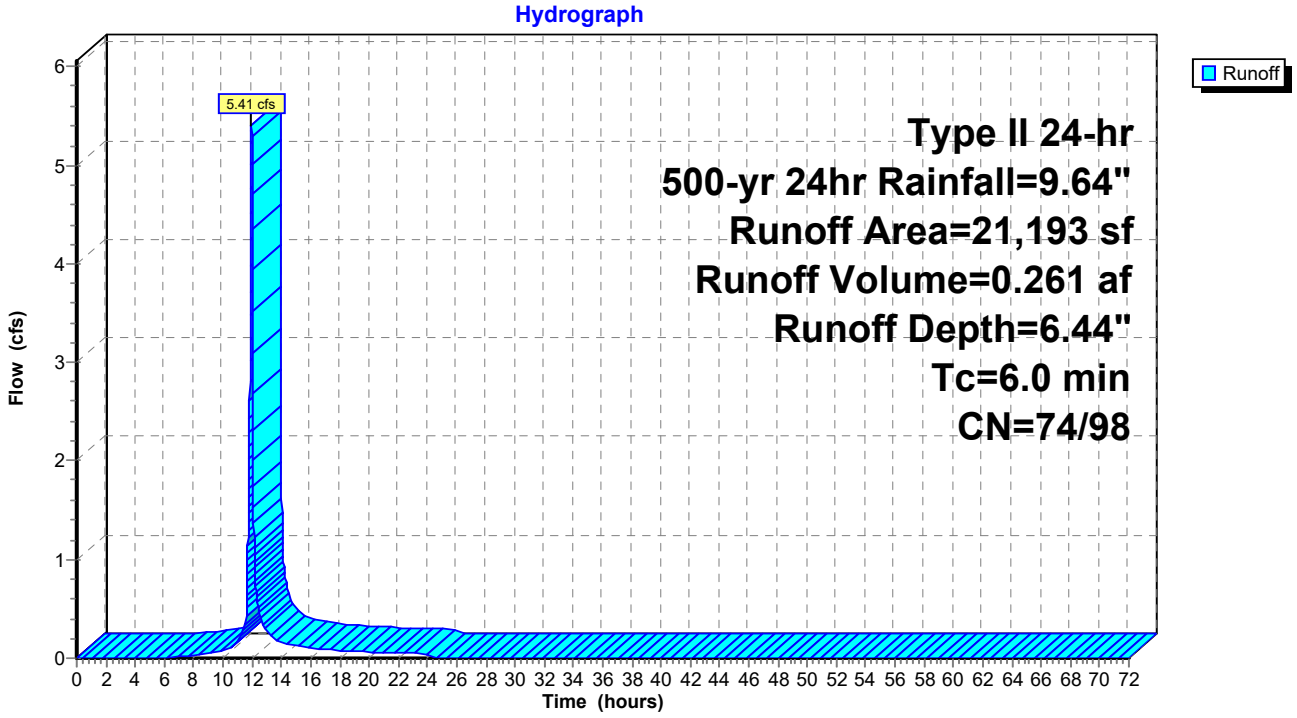
Runoff = 5.41 cfs @ 11.97 hrs, Volume= 0.261 af, Depth= 6.44"
Routed to Link 2L : Post-Dev Study Area

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 500-yr 24hr Rainfall=9.64"

Area (sf)	CN	Description
21,044	74	>75% Grass cover, Good, HSG C
149	98	Paved parking, HSG C
21,193	74	Weighted Average
21,044	74	99.30% Pervious Area
149	98	0.70% Impervious Area

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

Subcatchment 4S: Uncaptured



Summary for Pond 1P: Wet Detention Basin

Inflow Area = 6.834 ac, 53.90% Impervious, Inflow Depth = 8.07" for 500-yr 24hr event
Inflow = 86.13 cfs @ 11.97 hrs, Volume= 4.596 af
Outflow = 34.35 cfs @ 12.07 hrs, Volume= 4.591 af, Atten= 60%, Lag= 6.3 min
Primary = 20.90 cfs @ 12.07 hrs, Volume= 4.401 af
Routed to Link 2L : Post-Dev Study Area
Secondary = 13.45 cfs @ 12.07 hrs, Volume= 0.191 af
Routed to Link 2L : Post-Dev Study Area

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 683.91' @ 12.07 hrs Surf.Area= 29,016 sf Storage= 72,146 cf

Plug-Flow detention time= 89.8 min calculated for 4.591 af (100% of inflow)
Center-of-Mass det. time= 89.5 min (850.0 - 760.5)

Volume	Invert	Avail.Storage	Storage Description
#1	681.00'	106,153 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

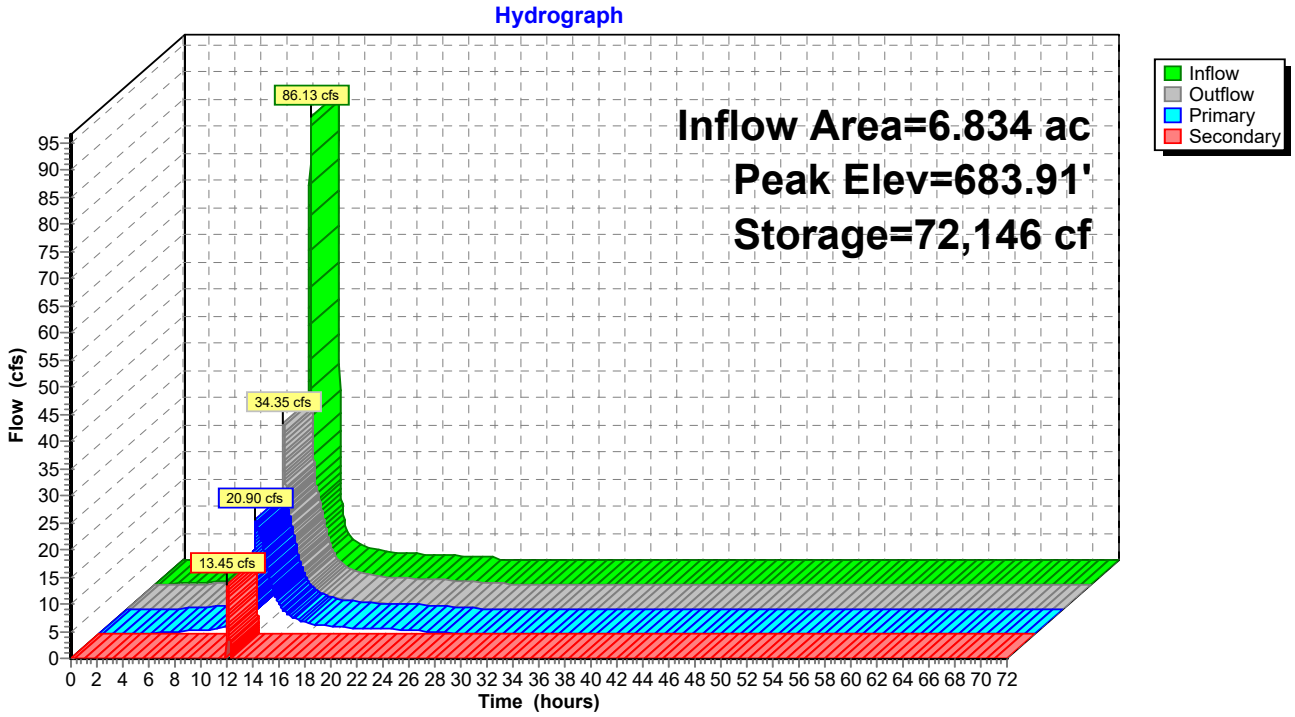
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
681.00	19,564	617.1	0	0	19,564
682.00	24,059	660.5	21,773	21,773	24,022
683.00	26,372	871.5	25,207	46,979	49,757
684.00	29,287	1,115.7	27,817	74,796	88,387
685.00	33,473	1,427.5	31,357	106,153	151,502

Device	Routing	Invert	Outlet Devices
#1	Primary	681.00'	**24.0" Round Culvert** L= 36.5' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 681.00' / 680.00' S= 0.0274 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Secondary	683.50'	**20.0' 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=20.90 cfs @ 12.07 hrs HW=683.91' (Free Discharge)
1=Culvert (Inlet Controls 20.90 cfs @ 6.65 fps)

Secondary OutFlow Max=13.39 cfs @ 12.07 hrs HW=683.91' (Free Discharge)
2=Broad-Crested Rectangular Weir (Weir Controls 13.39 cfs @ 1.64 fps)

Pond 1P: Wet Detention Basin

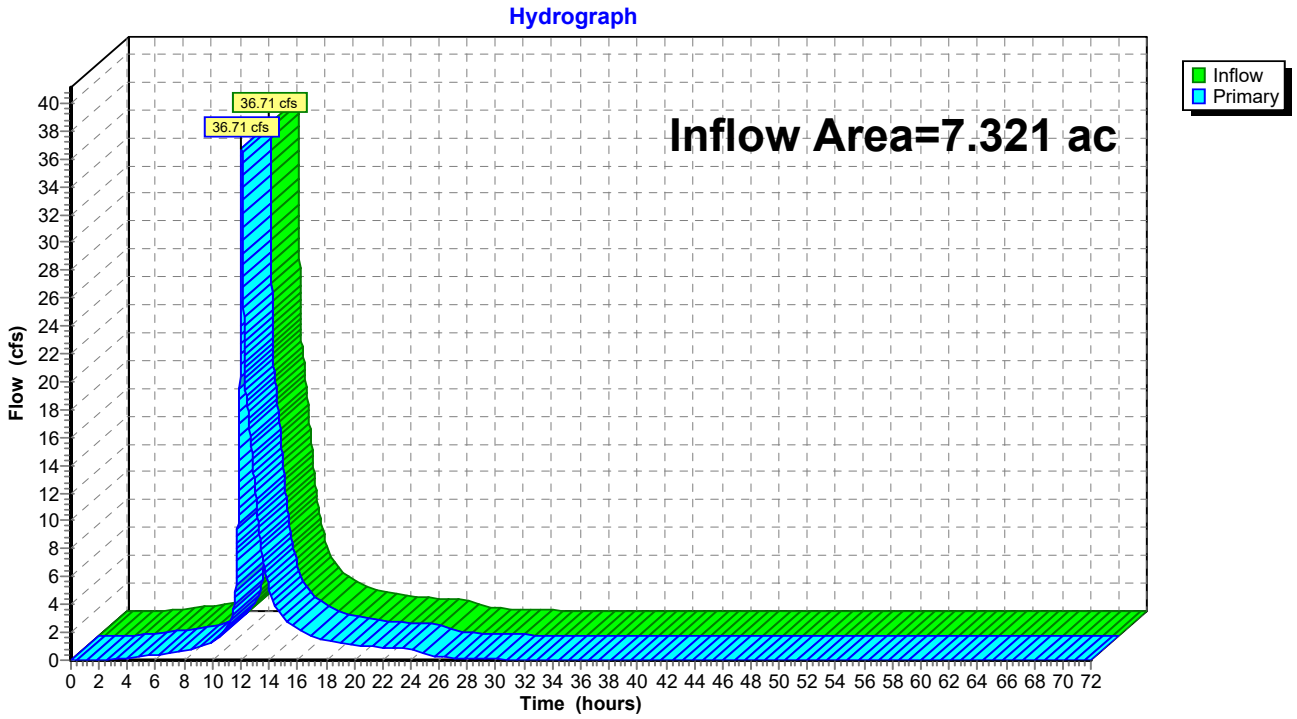


Summary for Link 2L: Post-Dev Study Area

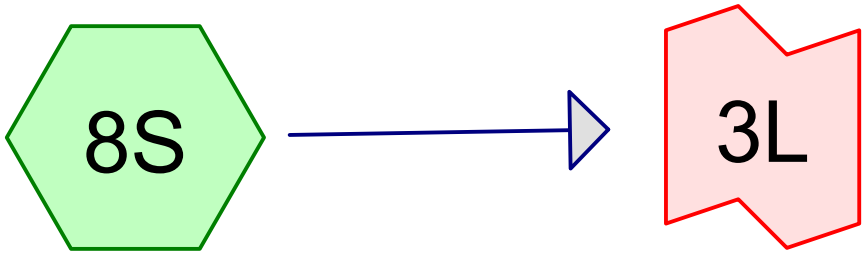
Inflow Area = 7.321 ac, 50.37% Impervious, Inflow Depth = 7.95" for 500-yr 24hr event
Inflow = 36.71 cfs @ 12.06 hrs, Volume= 4.852 af
Primary = 36.71 cfs @ 12.06 hrs, Volume= 4.852 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 2L: Post-Dev Study Area



NATURAL CONDITIONS HYDROCAD REPORT



Natural Condition Watershed

Pre-Dev Study Area

Subcat Reach Pond Link

Routing Diagram for DaneRdSW
Prepared by Foth & Van Dyke, LLC, Printed 8/13/2025
HydroCAD® 10.20-5c s/n 02551 © 2023 HydroCAD Software Solutions LLC

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-yr 24hr	Type II 24-hr		Default	24.00	1	2.60	2
2	2-yr 24hr	Type II 24-hr		Default	24.00	1	3.01	2
3	5-yr 24hr	Type II 24-hr		Default	24.00	1	3.75	2
4	10-yr 24hr	Type II 24-hr		Default	24.00	1	4.42	2
5	25-yr 24hr	Type II 24-hr		Default	24.00	1	5.44	2
6	50-yr 24hr	Type II 24-hr		Default	24.00	1	6.29	2
7	100-yr 24hr	Type II 24-hr		Default	24.00	1	7.22	2
8	500-yr 24hr	Type II 24-hr		Default	24.00	1	9.64	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.853	71	(8S)
5.467	71	Row crops, SR + CR, Good, HSG C (8S)
7.320	**71**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
5.467	HSG C	8S
0.000	HSG D	
1.853	Other	8S
7.320		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	1.853	1.853		8S
0.000	0.000	5.467	0.000	0.000	5.467	Row crops, SR + CR, Good	8S
0.000	**0.000**	**5.467**	**0.000**	**1.853**	**7.320**	**TOTAL AREA**	

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment8S: Natural Condition Runoff Area=7.320 ac 0.00% Impervious Runoff Depth=0.54"
Flow Length=870' Tc=12.0 min CN=71/0 Runoff=4.98 cfs 0.331 af

Link 3L: Pre-Dev Study Area Inflow=4.98 cfs 0.331 af
Primary=4.98 cfs 0.331 af

Total Runoff Area = 7.320 ac Runoff Volume = 0.331 af Average Runoff Depth = 0.54"
100.00% Pervious = 7.320 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 8S: Natural Condition Watershed

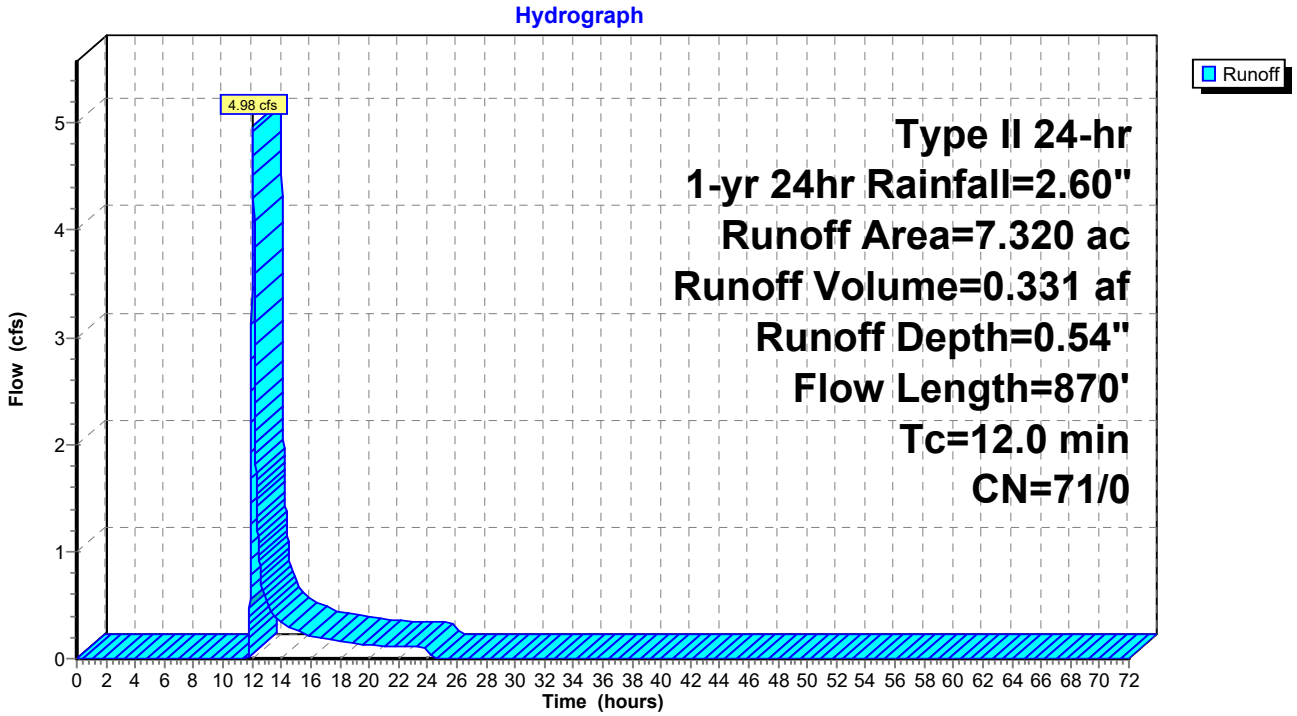
Runoff = 4.98 cfs @ 12.06 hrs, Volume= 0.331 af, Depth= 0.54"
Routed to Link 3L : Pre-Dev Study Area

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr 24hr Rainfall=2.60"

	Area (ac)	CN	Description
*	5.467	71	Row crops, SR + CR, Good, HSG C
*	1.853	71	
	7.320	71	Weighted Average
	7.320	71	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	120	0.0454	0.49		**Sheet Flow, Sheet Flow** Cultivated: Residue<=20% n= 0.060 P2= 3.01"
8.0	750	0.0303	1.57		**Shallow Concentrated Flow, Shallow Conc Flow** Cultivated Straight Rows Kv= 9.0 fps
12.0	870	Total			

Subcatchment 8S: Natural Condition Watershed

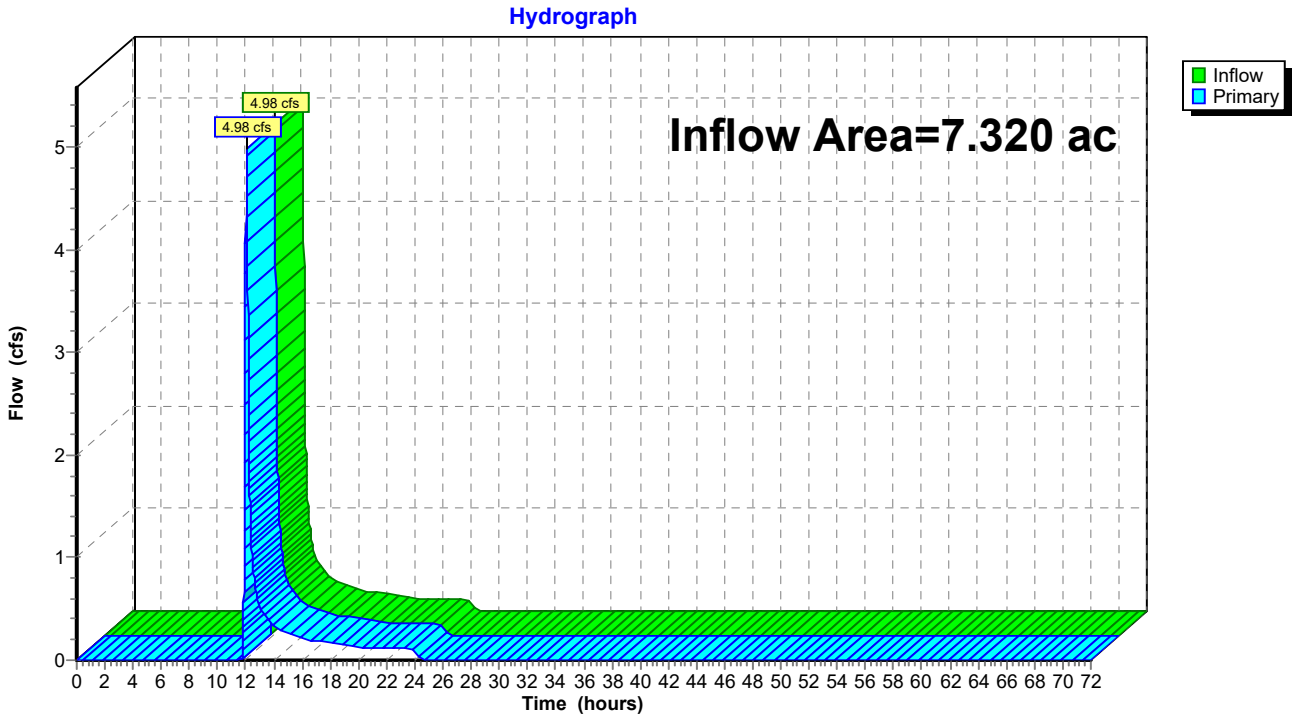


Summary for Link 3L: Pre-Dev Study Area

Inflow Area = 7.320 ac, 0.00% Impervious, Inflow Depth = 0.54" for 1-yr 24hr event
Inflow = 4.98 cfs @ 12.06 hrs, Volume= 0.331 af
Primary = 4.98 cfs @ 12.06 hrs, Volume= 0.331 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 3L: Pre-Dev Study Area



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment8S: Natural Condition Runoff Area=7.320 ac 0.00% Impervious Runoff Depth=0.77"
Flow Length=870' Tc=12.0 min CN=71/0 Runoff=7.46 cfs 0.467 af

Link 3L: Pre-Dev Study Area Inflow=7.46 cfs 0.467 af
Primary=7.46 cfs 0.467 af

Total Runoff Area = 7.320 ac Runoff Volume = 0.467 af Average Runoff Depth = 0.77"
100.00% Pervious = 7.320 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 8S: Natural Condition Watershed

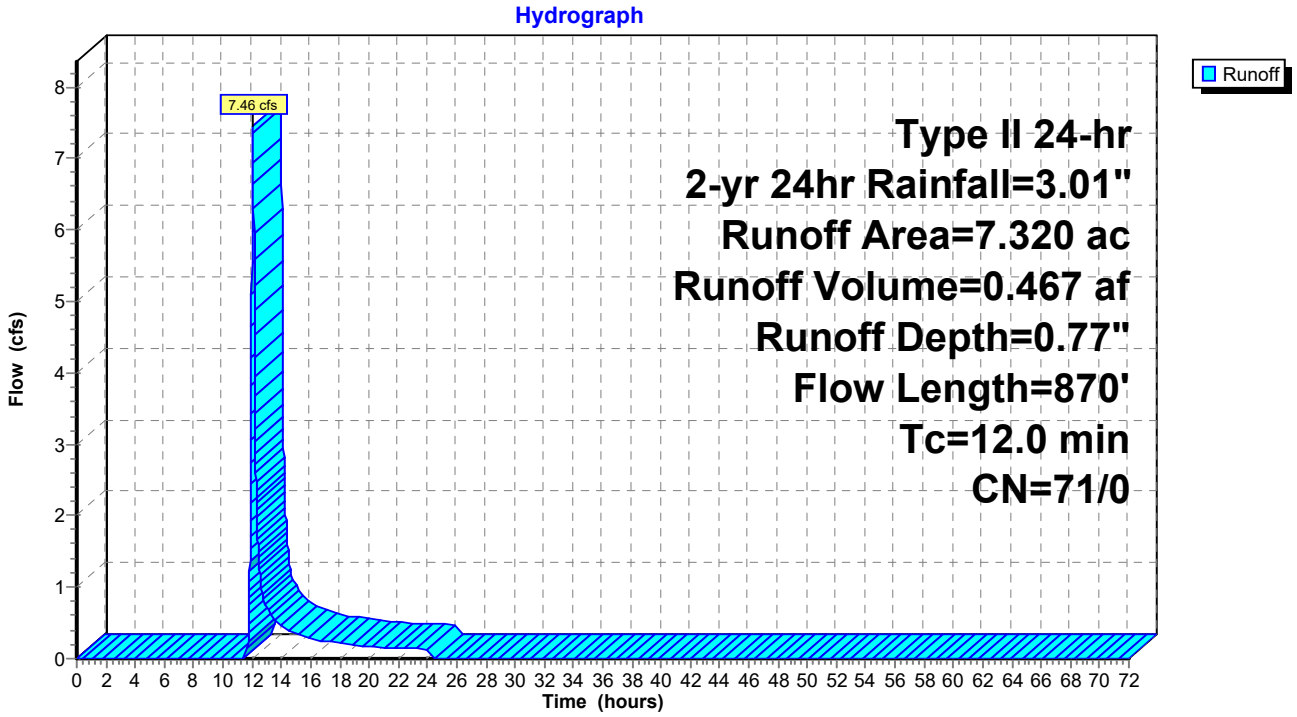
Runoff = 7.46 cfs @ 12.05 hrs, Volume= 0.467 af, Depth= 0.77"
Routed to Link 3L : Pre-Dev Study Area

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr 24hr Rainfall=3.01"

	Area (ac)	CN	Description
*	5.467	71	Row crops, SR + CR, Good, HSG C
*	1.853	71	
	7.320	71	Weighted Average
	7.320	71	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	120	0.0454	0.49		**Sheet Flow, Sheet Flow** Cultivated: Residue<=20% n= 0.060 P2= 3.01"
8.0	750	0.0303	1.57		**Shallow Concentrated Flow, Shallow Conc Flow** Cultivated Straight Rows Kv= 9.0 fps
12.0	870	Total			

Subcatchment 8S: Natural Condition Watershed

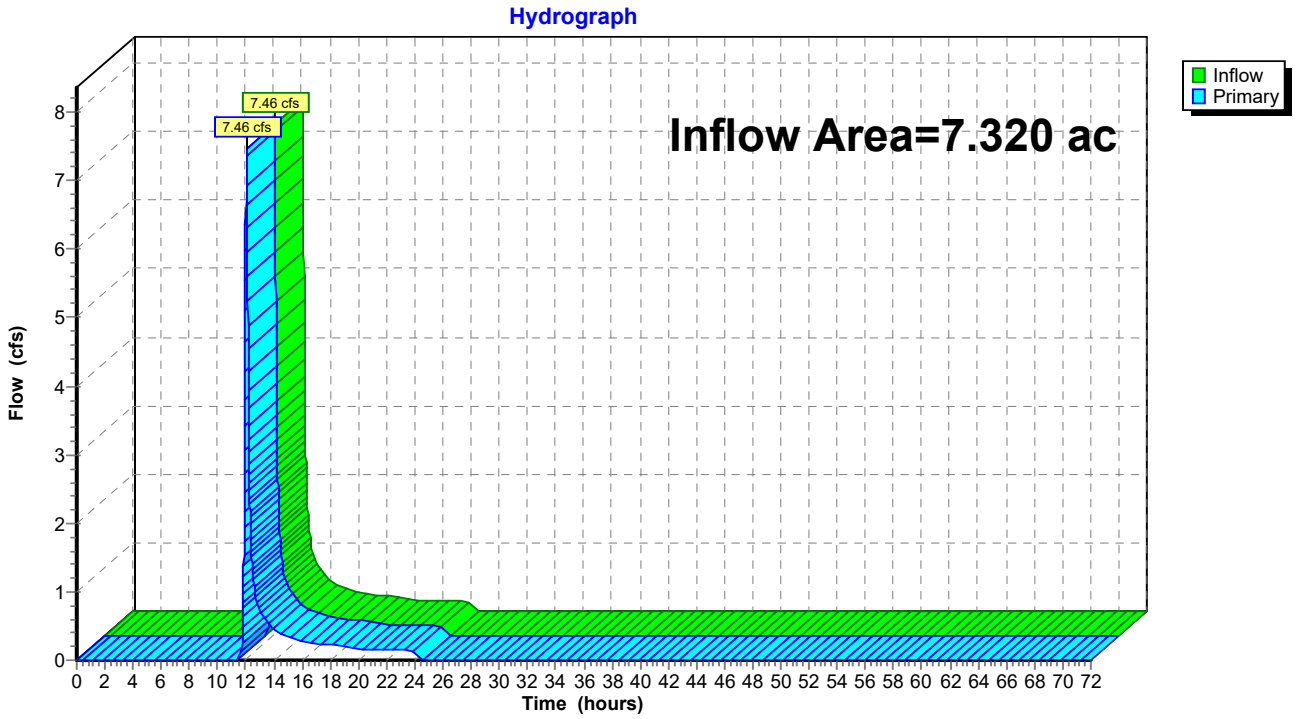


Summary for Link 3L: Pre-Dev Study Area

Inflow Area = 7.320 ac, 0.00% Impervious, Inflow Depth = 0.77" for 2-yr 24hr event
Inflow = 7.46 cfs @ 12.05 hrs, Volume= 0.467 af
Primary = 7.46 cfs @ 12.05 hrs, Volume= 0.467 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 3L: Pre-Dev Study Area



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment8S: Natural Condition Runoff Area=7.320 ac 0.00% Impervious Runoff Depth=1.23"
Flow Length=870' Tc=12.0 min CN=71/0 Runoff=12.52 cfs 0.748 af

Link 3L: Pre-Dev Study Area Inflow=12.52 cfs 0.748 af
Primary=12.52 cfs 0.748 af

Total Runoff Area = 7.320 ac Runoff Volume = 0.748 af Average Runoff Depth = 1.23"
100.00% Pervious = 7.320 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 8S: Natural Condition Watershed

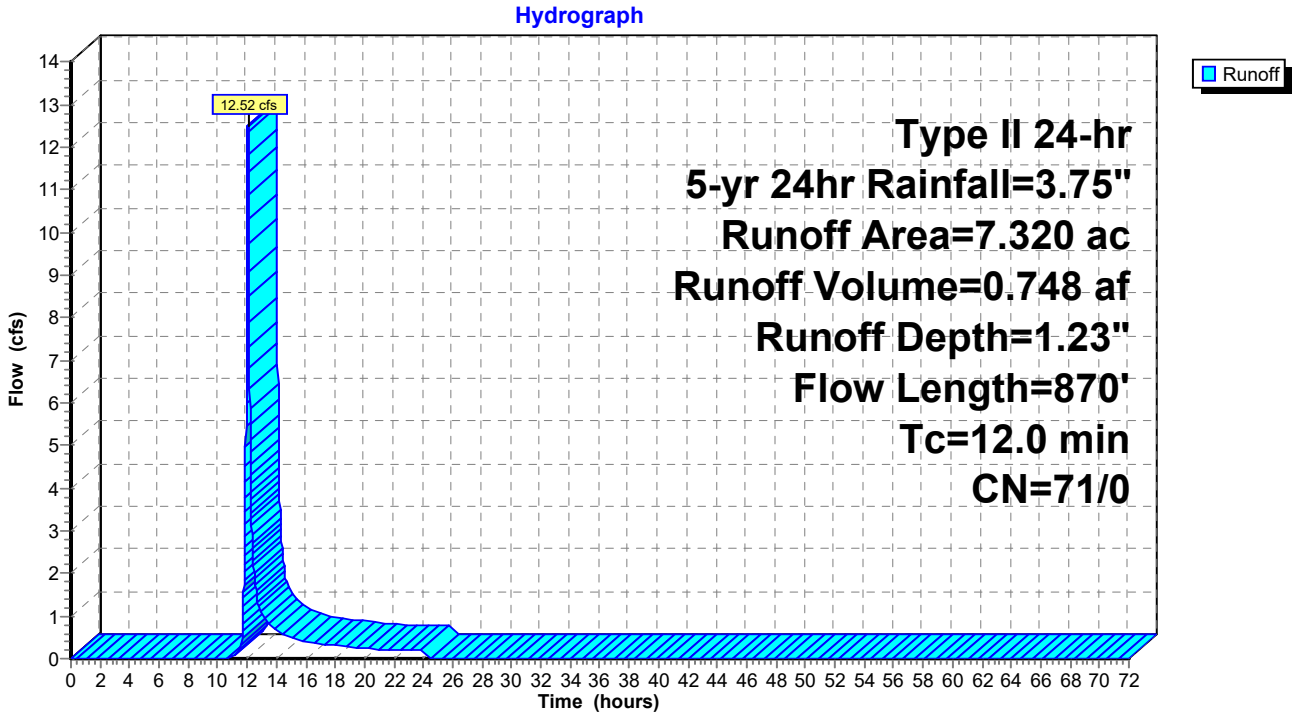
Runoff = 12.52 cfs @ 12.05 hrs, Volume= 0.748 af, Depth= 1.23"
Routed to Link 3L : Pre-Dev Study Area

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-yr 24hr Rainfall=3.75"

	Area (ac)	CN	Description
*	5.467	71	Row crops, SR + CR, Good, HSG C
*	1.853	71	
	7.320	71	Weighted Average
	7.320	71	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	120	0.0454	0.49		**Sheet Flow, Sheet Flow** Cultivated: Residue<=20% n= 0.060 P2= 3.01"
8.0	750	0.0303	1.57		**Shallow Concentrated Flow, Shallow Conc Flow** Cultivated Straight Rows Kv= 9.0 fps
12.0	870	Total			

Subcatchment 8S: Natural Condition Watershed

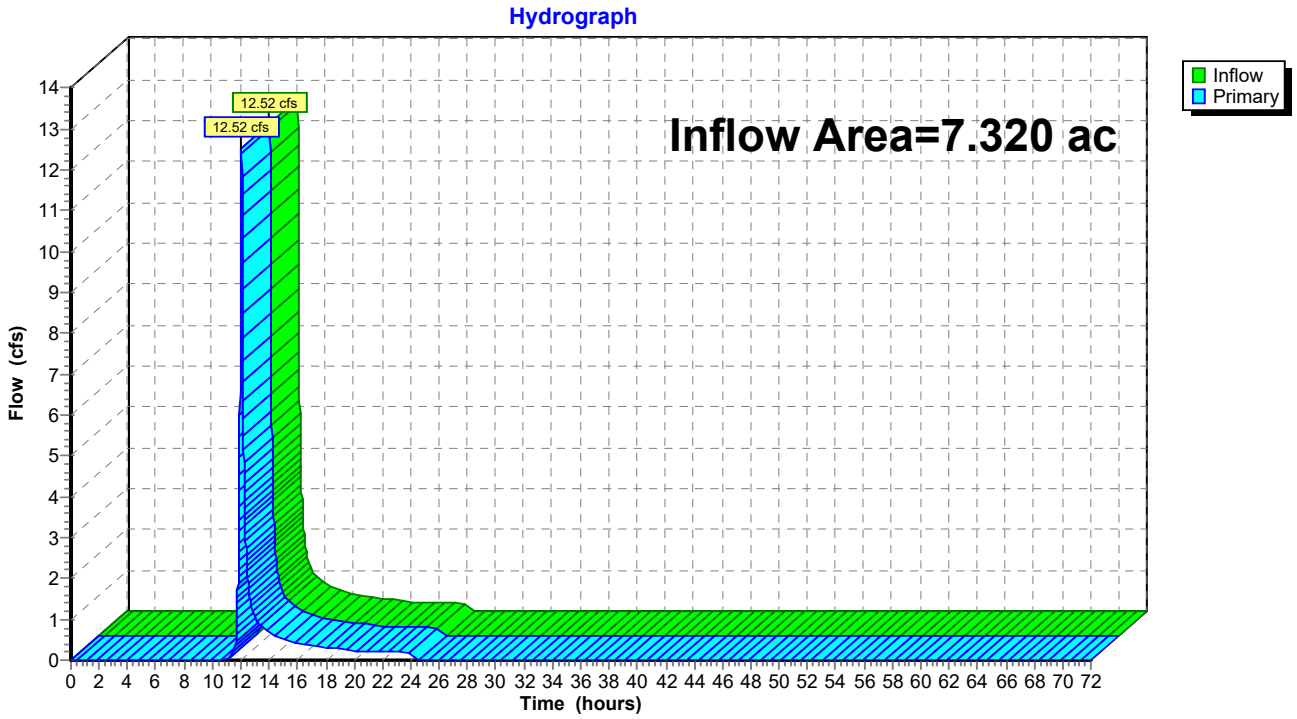


Summary for Link 3L: Pre-Dev Study Area

Inflow Area = 7.320 ac, 0.00% Impervious, Inflow Depth = 1.23" for 5-yr 24hr event
Inflow = 12.52 cfs @ 12.05 hrs, Volume= 0.748 af
Primary = 12.52 cfs @ 12.05 hrs, Volume= 0.748 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 3L: Pre-Dev Study Area



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment8S: Natural Condition Runoff Area=7.320 ac 0.00% Impervious Runoff Depth=1.69"
Flow Length=870' Tc=12.0 min CN=71/0 Runoff=17.56 cfs 1.030 af

Link 3L: Pre-Dev Study Area Inflow=17.56 cfs 1.030 af
Primary=17.56 cfs 1.030 af

Total Runoff Area = 7.320 ac Runoff Volume = 1.030 af Average Runoff Depth = 1.69"
100.00% Pervious = 7.320 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 8S: Natural Condition Watershed

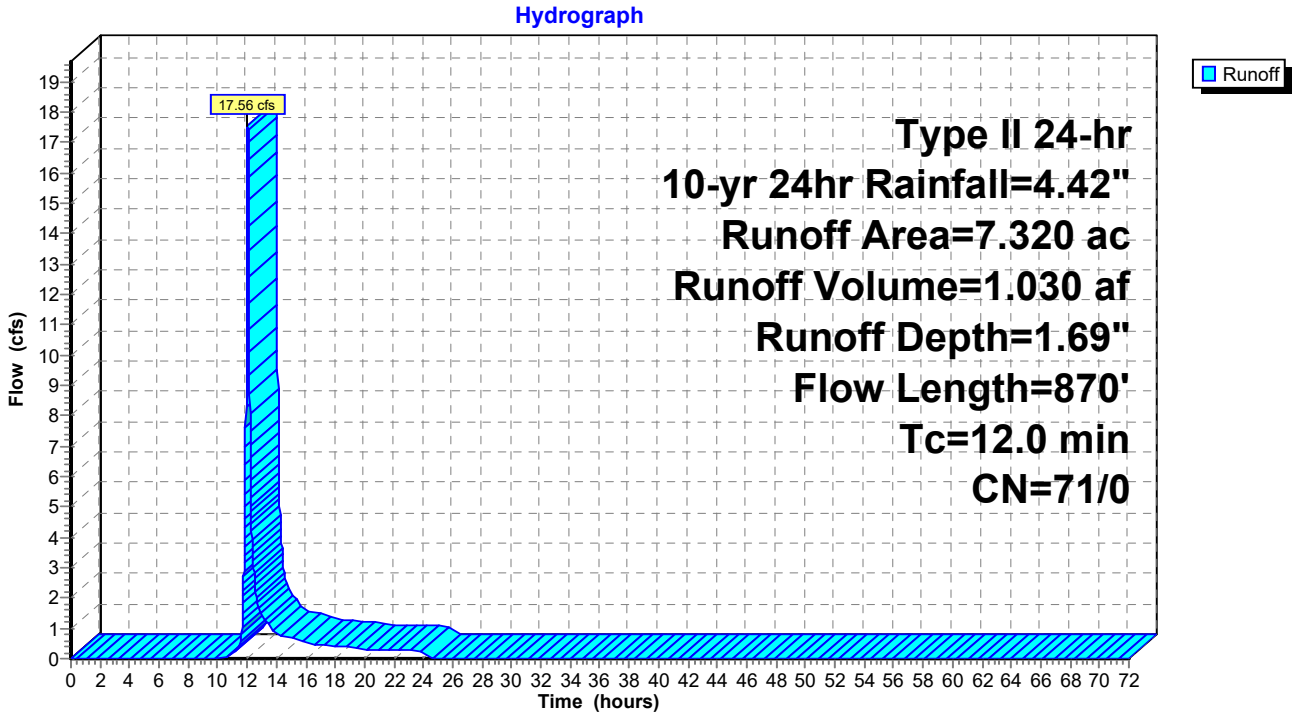
Runoff = 17.56 cfs @ 12.04 hrs, Volume= 1.030 af, Depth= 1.69"
Routed to Link 3L : Pre-Dev Study Area

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr 24hr Rainfall=4.42"

	Area (ac)	CN	Description
*	5.467	71	Row crops, SR + CR, Good, HSG C
*	1.853	71	
	7.320	71	Weighted Average
	7.320	71	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	120	0.0454	0.49		**Sheet Flow, Sheet Flow** Cultivated: Residue<=20% n= 0.060 P2= 3.01"
8.0	750	0.0303	1.57		**Shallow Concentrated Flow, Shallow Conc Flow** Cultivated Straight Rows Kv= 9.0 fps
12.0	870	Total			

Subcatchment 8S: Natural Condition Watershed

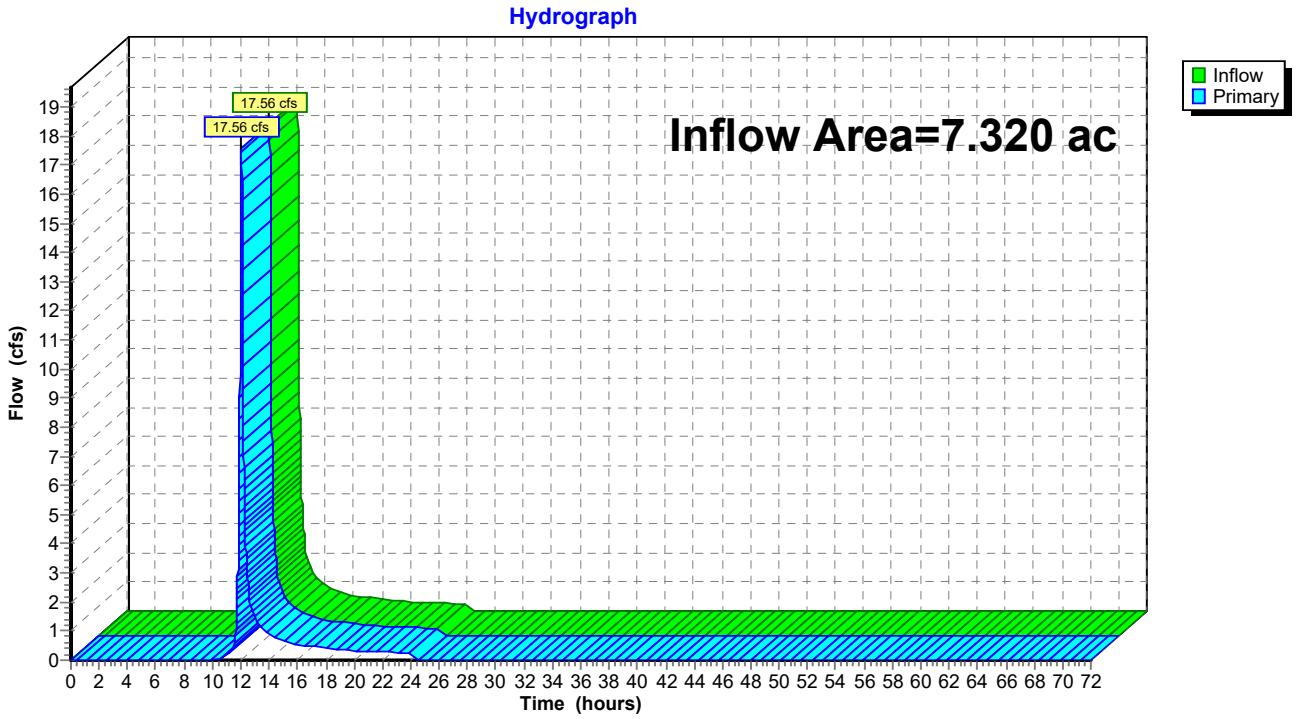


Summary for Link 3L: Pre-Dev Study Area

Inflow Area = 7.320 ac, 0.00% Impervious, Inflow Depth = 1.69" for 10-yr 24hr event
Inflow = 17.56 cfs @ 12.04 hrs, Volume= 1.030 af
Primary = 17.56 cfs @ 12.04 hrs, Volume= 1.030 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 3L: Pre-Dev Study Area



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment8S: Natural Condition Runoff Area=7.320 ac 0.00% Impervious Runoff Depth=2.45"
Flow Length=870' Tc=12.0 min CN=71/0 Runoff=25.78 cfs 1.497 af

Link 3L: Pre-Dev Study Area Inflow=25.78 cfs 1.497 af
Primary=25.78 cfs 1.497 af

Total Runoff Area = 7.320 ac Runoff Volume = 1.497 af Average Runoff Depth = 2.45"
100.00% Pervious = 7.320 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 8S: Natural Condition Watershed

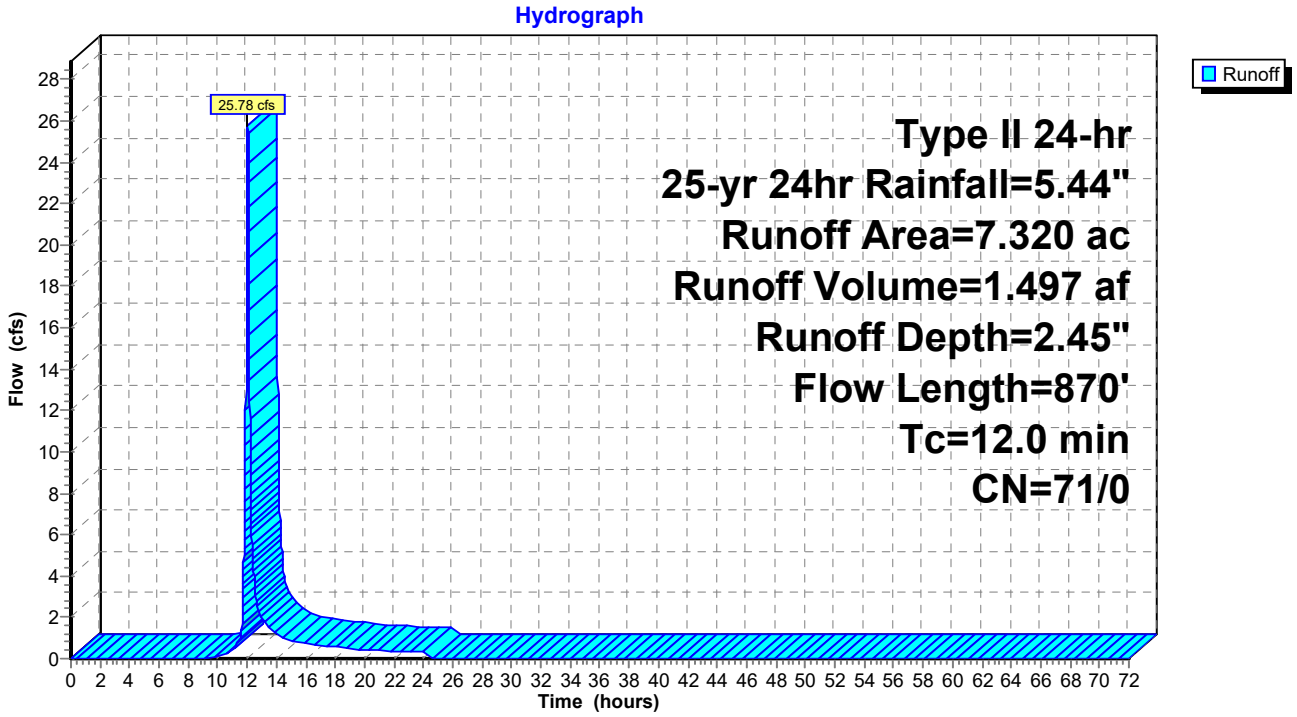
Runoff = 25.78 cfs @ 12.04 hrs, Volume= 1.497 af, Depth= 2.45"
Routed to Link 3L : Pre-Dev Study Area

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-yr 24hr Rainfall=5.44"

	Area (ac)	CN	Description
*	5.467	71	Row crops, SR + CR, Good, HSG C
*	1.853	71	
	7.320	71	Weighted Average
	7.320	71	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	120	0.0454	0.49		**Sheet Flow, Sheet Flow** Cultivated: Residue<=20% n= 0.060 P2= 3.01"
8.0	750	0.0303	1.57		**Shallow Concentrated Flow, Shallow Conc Flow** Cultivated Straight Rows Kv= 9.0 fps
12.0	870	Total			

Subcatchment 8S: Natural Condition Watershed

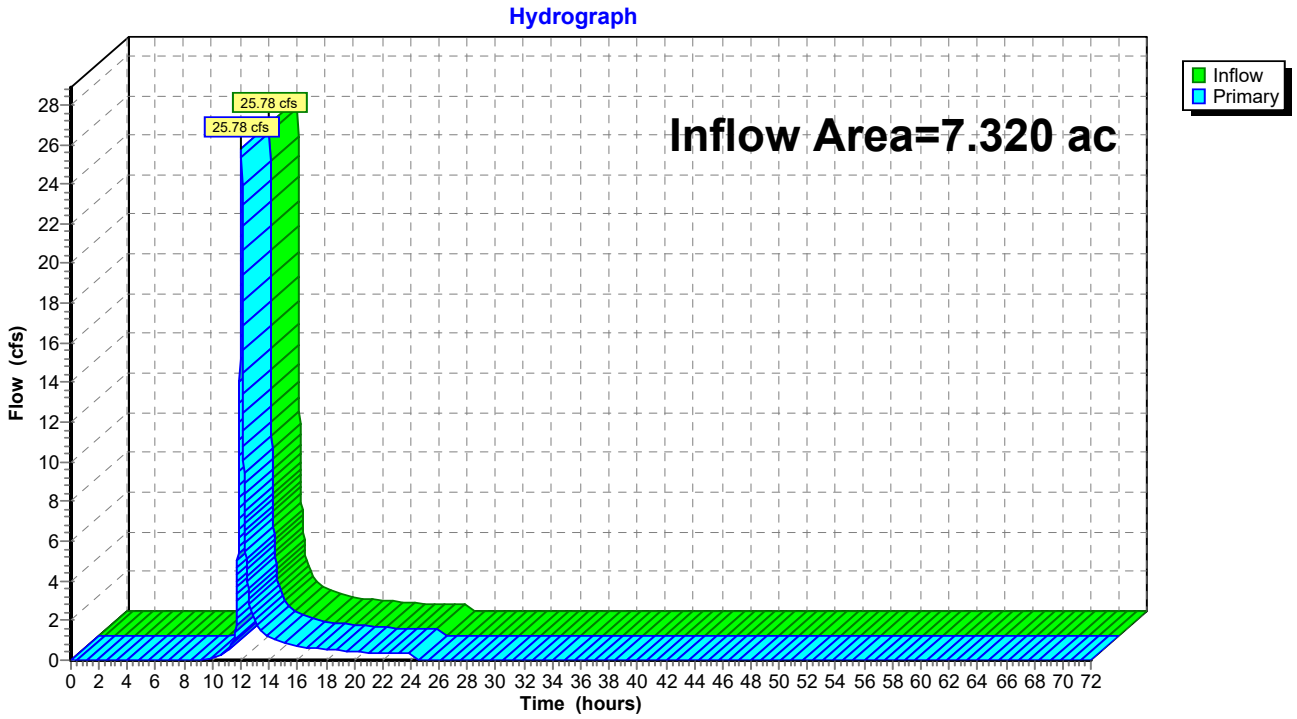


Summary for Link 3L: Pre-Dev Study Area

Inflow Area = 7.320 ac, 0.00% Impervious, Inflow Depth = 2.45" for 25-yr 24hr event
Inflow = 25.78 cfs @ 12.04 hrs, Volume= 1.497 af
Primary = 25.78 cfs @ 12.04 hrs, Volume= 1.497 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 3L: Pre-Dev Study Area



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment8S: Natural Condition Runoff Area=7.320 ac 0.00% Impervious Runoff Depth=3.13"
Flow Length=870' Tc=12.0 min CN=71/0 Runoff=32.97 cfs 1.912 af

Link 3L: Pre-Dev Study Area Inflow=32.97 cfs 1.912 af
Primary=32.97 cfs 1.912 af

Total Runoff Area = 7.320 ac Runoff Volume = 1.912 af Average Runoff Depth = 3.13"
100.00% Pervious = 7.320 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 8S: Natural Condition Watershed

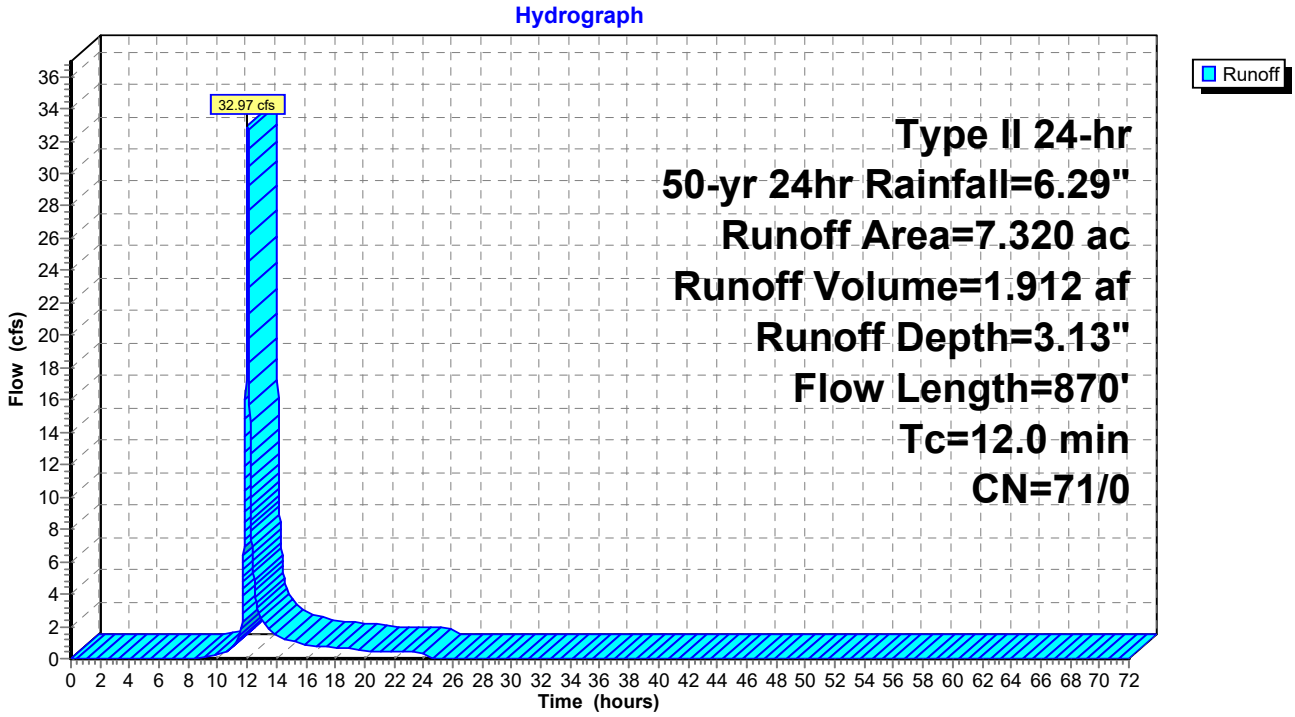
Runoff = 32.97 cfs @ 12.04 hrs, Volume= 1.912 af, Depth= 3.13"
Routed to Link 3L : Pre-Dev Study Area

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-yr 24hr Rainfall=6.29"

	Area (ac)	CN	Description
*	5.467	71	Row crops, SR + CR, Good, HSG C
*	1.853	71	
	7.320	71	Weighted Average
	7.320	71	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	120	0.0454	0.49		**Sheet Flow, Sheet Flow** Cultivated: Residue<=20% n= 0.060 P2= 3.01"
8.0	750	0.0303	1.57		**Shallow Concentrated Flow, Shallow Conc Flow** Cultivated Straight Rows Kv= 9.0 fps
12.0	870	Total			

Subcatchment 8S: Natural Condition Watershed

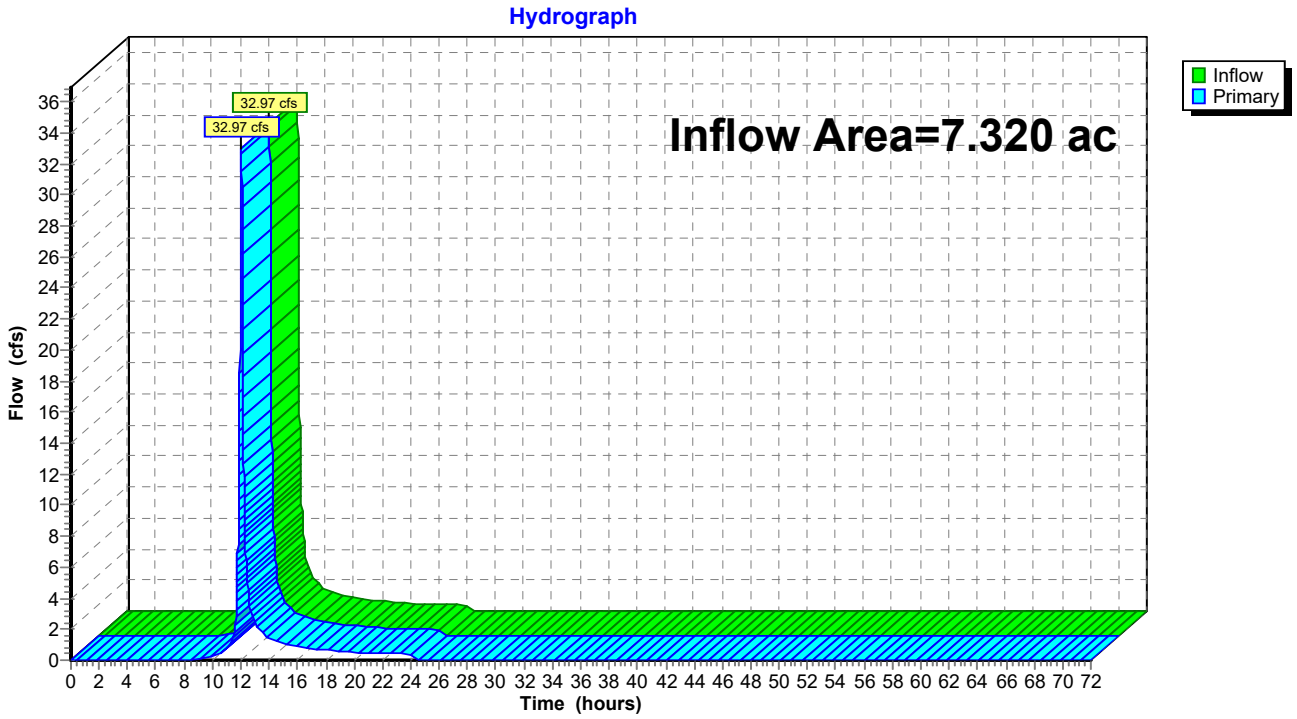


Summary for Link 3L: Pre-Dev Study Area

Inflow Area = 7.320 ac, 0.00% Impervious, Inflow Depth = 3.13" for 50-yr 24hr event
Inflow = 32.97 cfs @ 12.04 hrs, Volume= 1.912 af
Primary = 32.97 cfs @ 12.04 hrs, Volume= 1.912 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 3L: Pre-Dev Study Area



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment8S: Natural Condition Runoff Area=7.320 ac 0.00% Impervious Runoff Depth=3.91"
Flow Length=870' Tc=12.0 min CN=71/0 Runoff=41.08 cfs 2.385 af

Link 3L: Pre-Dev Study Area Inflow=41.08 cfs 2.385 af
Primary=41.08 cfs 2.385 af

Total Runoff Area = 7.320 ac Runoff Volume = 2.385 af Average Runoff Depth = 3.91"
100.00% Pervious = 7.320 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 8S: Natural Condition Watershed

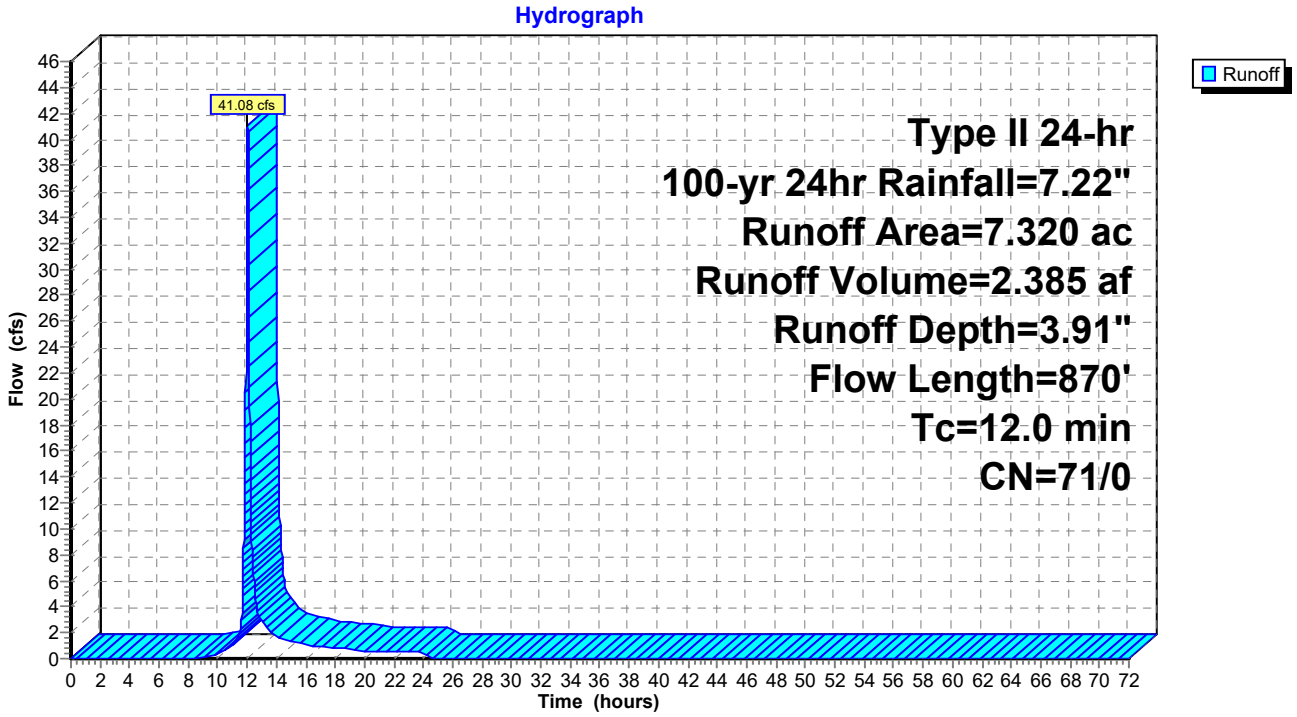
Runoff = 41.08 cfs @ 12.04 hrs, Volume= 2.385 af, Depth= 3.91"
Routed to Link 3L : Pre-Dev Study Area

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr 24hr Rainfall=7.22"

	Area (ac)	CN	Description
*	5.467	71	Row crops, SR + CR, Good, HSG C
*	1.853	71	
	7.320	71	Weighted Average
	7.320	71	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	120	0.0454	0.49		**Sheet Flow, Sheet Flow** Cultivated: Residue<=20% n= 0.060 P2= 3.01"
8.0	750	0.0303	1.57		**Shallow Concentrated Flow, Shallow Conc Flow** Cultivated Straight Rows Kv= 9.0 fps
12.0	870	Total			

Subcatchment 8S: Natural Condition Watershed

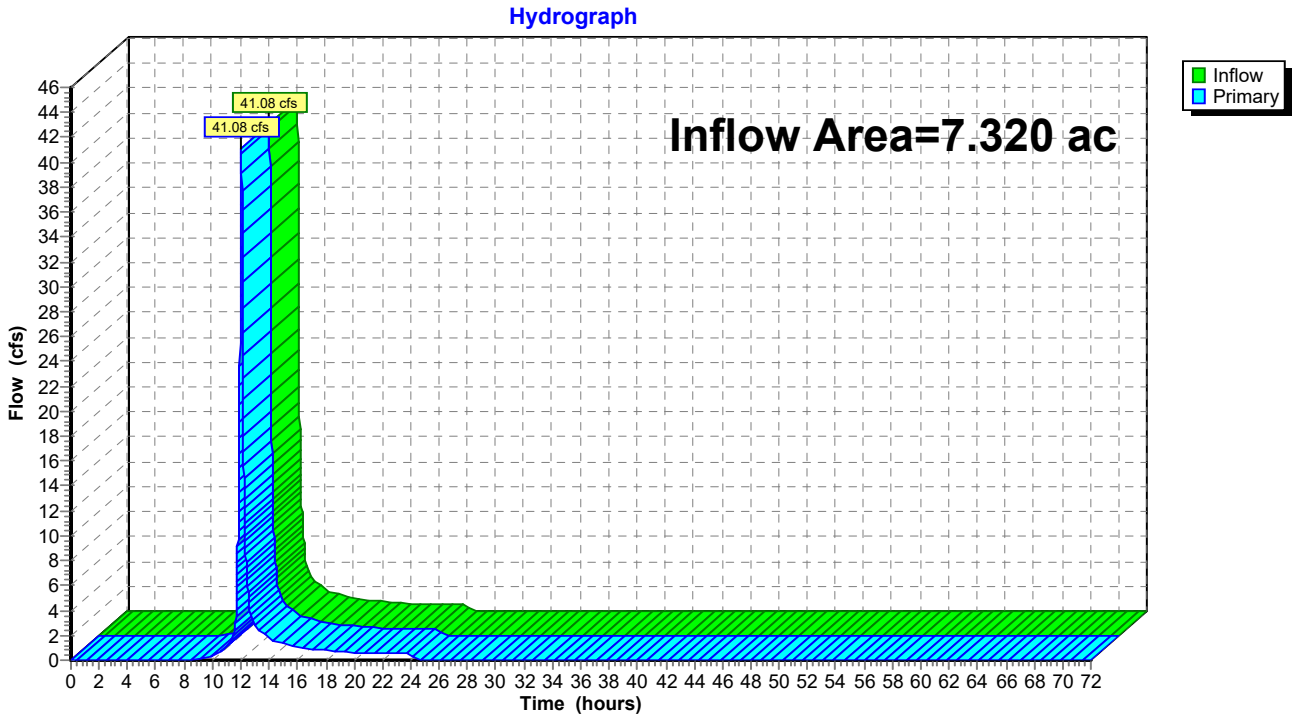


Summary for Link 3L: Pre-Dev Study Area

Inflow Area = 7.320 ac, 0.00% Impervious, Inflow Depth = 3.91" for 100-yr 24hr event
Inflow = 41.08 cfs @ 12.04 hrs, Volume= 2.385 af
Primary = 41.08 cfs @ 12.04 hrs, Volume= 2.385 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 3L: Pre-Dev Study Area



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment8S: Natural Condition Runoff Area=7.320 ac 0.00% Impervious Runoff Depth=6.03"
Flow Length=870' Tc=12.0 min CN=71/0 Runoff=62.78 cfs 3.679 af

Link 3L: Pre-Dev Study Area Inflow=62.78 cfs 3.679 af
Primary=62.78 cfs 3.679 af

Total Runoff Area = 7.320 ac Runoff Volume = 3.679 af Average Runoff Depth = 6.03"
100.00% Pervious = 7.320 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 8S: Natural Condition Watershed

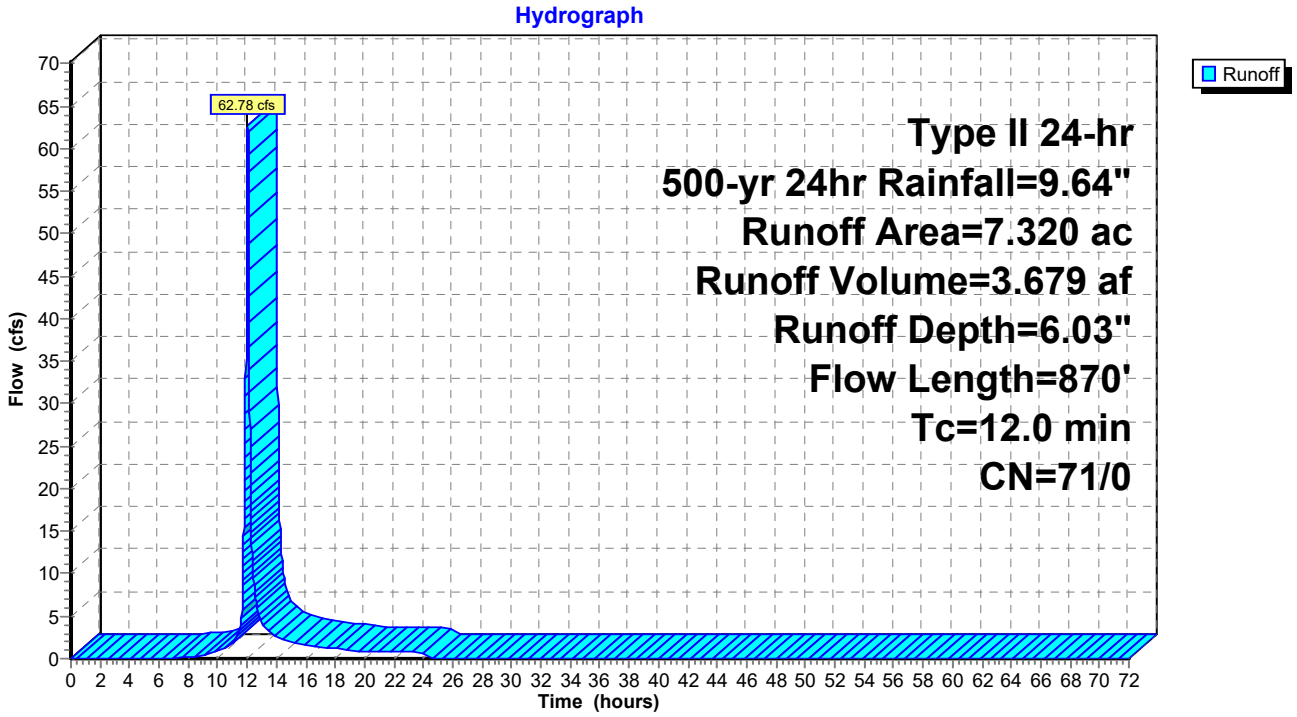
Runoff = 62.78 cfs @ 12.04 hrs, Volume= 3.679 af, Depth= 6.03"
Routed to Link 3L : Pre-Dev Study Area

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 500-yr 24hr Rainfall=9.64"

	Area (ac)	CN	Description
*	5.467	71	Row crops, SR + CR, Good, HSG C
*	1.853	71	
	7.320	71	Weighted Average
	7.320	71	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	120	0.0454	0.49		**Sheet Flow, Sheet Flow** Cultivated: Residue<=20% n= 0.060 P2= 3.01"
8.0	750	0.0303	1.57		**Shallow Concentrated Flow, Shallow Conc Flow** Cultivated Straight Rows Kv= 9.0 fps
12.0	870	Total			

Subcatchment 8S: Natural Condition Watershed

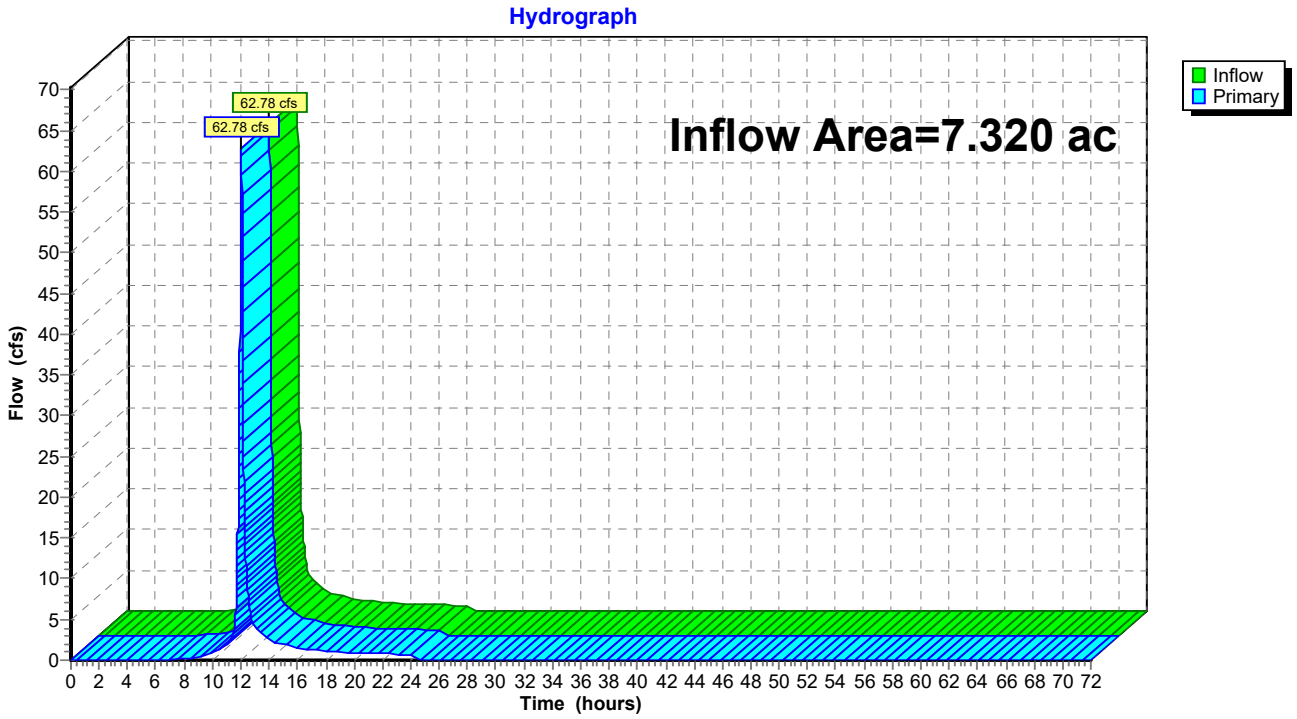


Summary for Link 3L: Pre-Dev Study Area

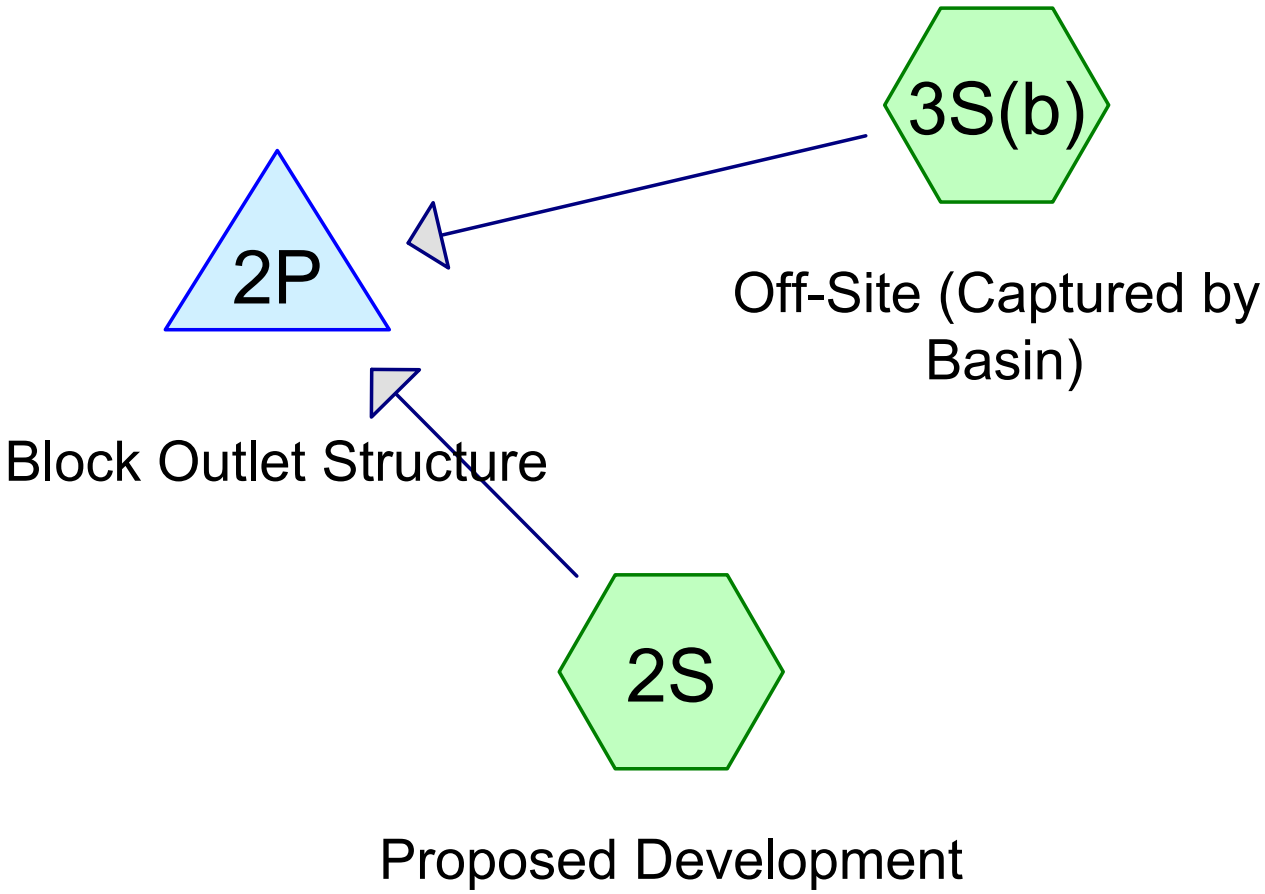
Inflow Area = 7.320 ac, 0.00% Impervious, Inflow Depth = 6.03" for 500-yr 24hr event
Inflow = 62.78 cfs @ 12.04 hrs, Volume= 3.679 af
Primary = 62.78 cfs @ 12.04 hrs, Volume= 3.679 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 3L: Pre-Dev Study Area



BLOCKED OUTLET HYDROCAD REPORT



Subcat Reach Pond Link

Routing Diagram for DaneRdSW
Prepared by Foth & Van Dyke, LLC, Printed 8/13/2025
HydroCAD® 10.20-5c s/n 02551 © 2023 HydroCAD Software Solutions LLC

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-yr 24hr	Type II 24-hr		Default	24.00	1	2.60	2
2	2-yr 24hr	Type II 24-hr		Default	24.00	1	3.01	2
3	5-yr 24hr	Type II 24-hr		Default	24.00	1	3.75	2
4	10-yr 24hr	Type II 24-hr		Default	24.00	1	4.42	2
5	25-yr 24hr	Type II 24-hr		Default	24.00	1	5.44	2
6	50-yr 24hr	Type II 24-hr		Default	24.00	1	6.29	2
7	100-yr 24hr	Type II 24-hr		Default	24.00	1	7.22	2
8	500-yr 24hr	Type II 24-hr		Default	24.00	1	9.64	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.912	74	>75% Grass cover, Good, HSG C (2S, 3S(b))
1.196	98	Paved parking (gravel), HSG C (2S)
1.937	98	Paved parking, HSG C (2S, 3S(b))
0.024	98	Roofs, HSG C (3S(b))
0.238	82	Row crops, SR + CR, Good, HSG C (3S(b))
0.078	98	Unconnected pavement, HSG C (3S(b))
0.449	98	Water Surface, HSG C (2S)
6.834	**87**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
6.834	HSG C	2S, 3S(b)
0.000	HSG D	
0.000	Other	
6.834		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	2.912	0.000	0.000	2.912	>75% Grass cover, Good	2S, 3S(b)
0.000	0.000	1.937	0.000	0.000	1.937	Paved parking	2S, 3S(b)
0.000	0.000	1.196	0.000	0.000	1.196	Paved parking (gravel)	2S
0.000	0.000	0.024	0.000	0.000	0.024	Roofs	3S(b)
0.000	0.000	0.238	0.000	0.000	0.238	Row crops, SR + CR, Good	3S(b)
0.000	0.000	0.078	0.000	0.000	0.078	Unconnected pavement	3S(b)
0.000	0.000	0.449	0.000	0.000	0.449	Water Surface	2S
0.000	**0.000**	**6.834**	**0.000**	**0.000**	**6.834**	**TOTAL AREA**	

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	2S	0.00	0.00	122.0	0.0051	0.011	0.0	18.0	0.0	
2	3S(b)	0.00	0.00	122.0	0.0051	0.011	0.0	18.0	0.0	

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment2S: Proposed Runoff Area=216,969 sf 61.64% Impervious Runoff Depth=1.72"
Flow Length=832' Tc=6.0 min CN=74/98 Runoff=13.37 cfs 0.712 af

Subcatchment3S(b): Off-Site (Captured by Runoff Area=80,720 sf 33.11% Impervious Runoff Depth=1.29"
Flow Length=744' Tc=6.0 min CN=76/98 Runoff=3.87 cfs 0.199 af

Pond 2P: Block Outlet Structure Peak Elev=682.72' Storage=39,710 cf Inflow=17.23 cfs 0.912 af
Outflow=0.00 cfs 0.000 af

Total Runoff Area = 6.834 ac Runoff Volume = 0.912 af Average Runoff Depth = 1.60"
46.10% Pervious = 3.150 ac 53.90% Impervious = 3.684 ac

Summary for Subcatchment 2S: Proposed Development

[47] Hint: Peak is 151% of capacity of segment #4

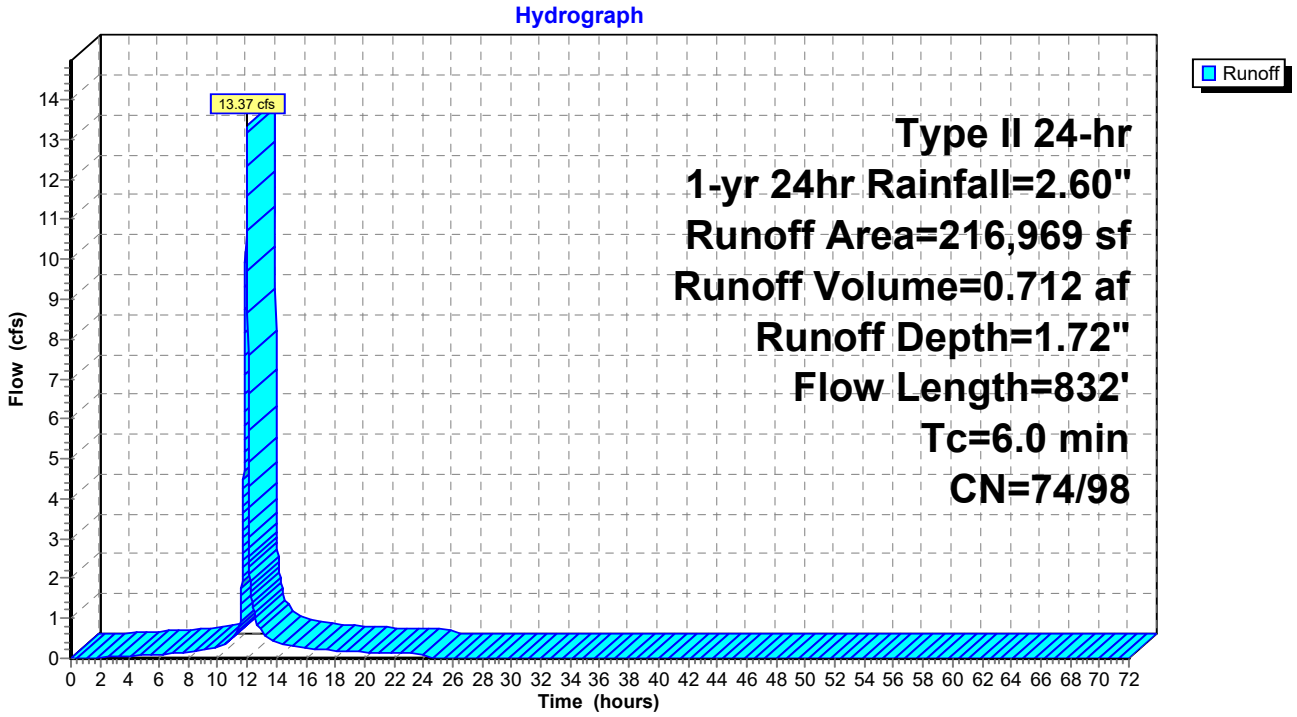
Runoff = 13.37 cfs @ 11.97 hrs, Volume= 0.712 af, Depth= 1.72"
Routed to Pond 2P : Block Outlet Structure

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr 24hr Rainfall=2.60"

	Area (sf)	CN	Description
	62,064	98	Paved parking, HSG C
*	52,112	98	Paved parking (gravel), HSG C
	83,229	74	>75% Grass cover, Good, HSG C
	19,564	98	Water Surface, HSG C
	216,969	89	Weighted Average
	83,229	74	38.36% Pervious Area
	133,740	98	61.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	127	0.0501	2.02		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.4	107	0.0623	5.07		**Shallow Concentrated Flow, Shallow Conc Flow** Paved Kv= 20.3 fps
0.4	333	0.0420	15.51	290.79	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	143	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
3.6					**Direct Entry, User**
6.0	832	Total			

Subcatchment 2S: Proposed Development



Summary for Subcatchment 3S(b): Off-Site (Captured by Basin)

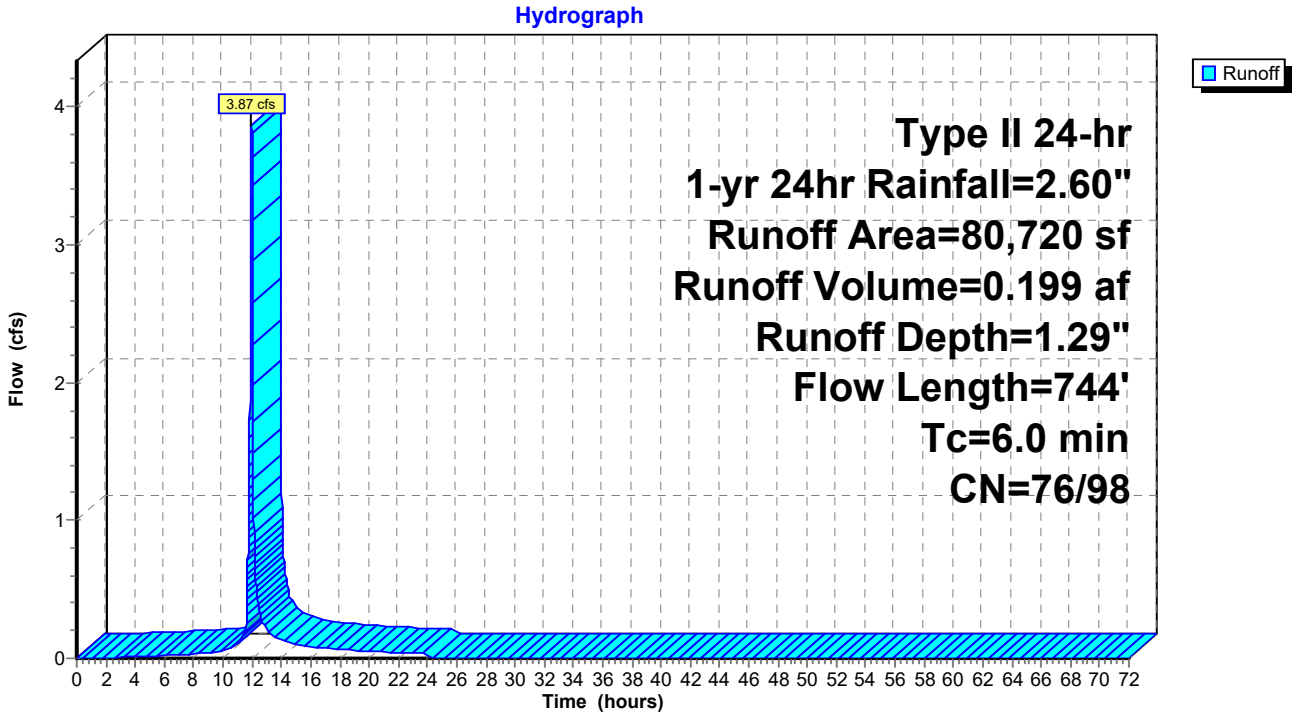
Runoff = 3.87 cfs @ 11.97 hrs, Volume= 0.199 af, Depth= 1.29"
Routed to Pond 2P : Block Outlet Structure

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr 24hr Rainfall=2.60"

Area (sf)	CN	Description
10,378	82	Row crops, SR + CR, Good, HSG C
3,388	98	Unconnected pavement, HSG C
22,308	98	Paved parking, HSG C
43,614	74	>75% Grass cover, Good, HSG C
1,032	98	Roofs, HSG C
80,720	83	Weighted Average
53,992	76	66.89% Pervious Area
26,728	98	33.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	29	0.1534	2.35		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
1.2	100	0.0200	1.33		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.3	65	0.0463	3.23		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.8	174	0.0461	3.46		**Shallow Concentrated Flow, Shallow Conc Flow** Unpaved Kv= 16.1 fps
0.5	112	0.0714	4.01		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	142	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
2.4					**Direct Entry, User**
6.0	744	Total			

Subcatchment 3S(b): Off-Site (Captured by Basin)



Summary for Pond 2P: Block Outlet Structure

Inflow Area = 6.834 ac, 53.90% Impervious, Inflow Depth = 1.60" for 1-yr 24hr event
Inflow = 17.23 cfs @ 11.97 hrs, Volume= 0.912 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 682.72' @ 24.34 hrs Surf.Area= 25,716 sf Storage= 39,710 cf

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

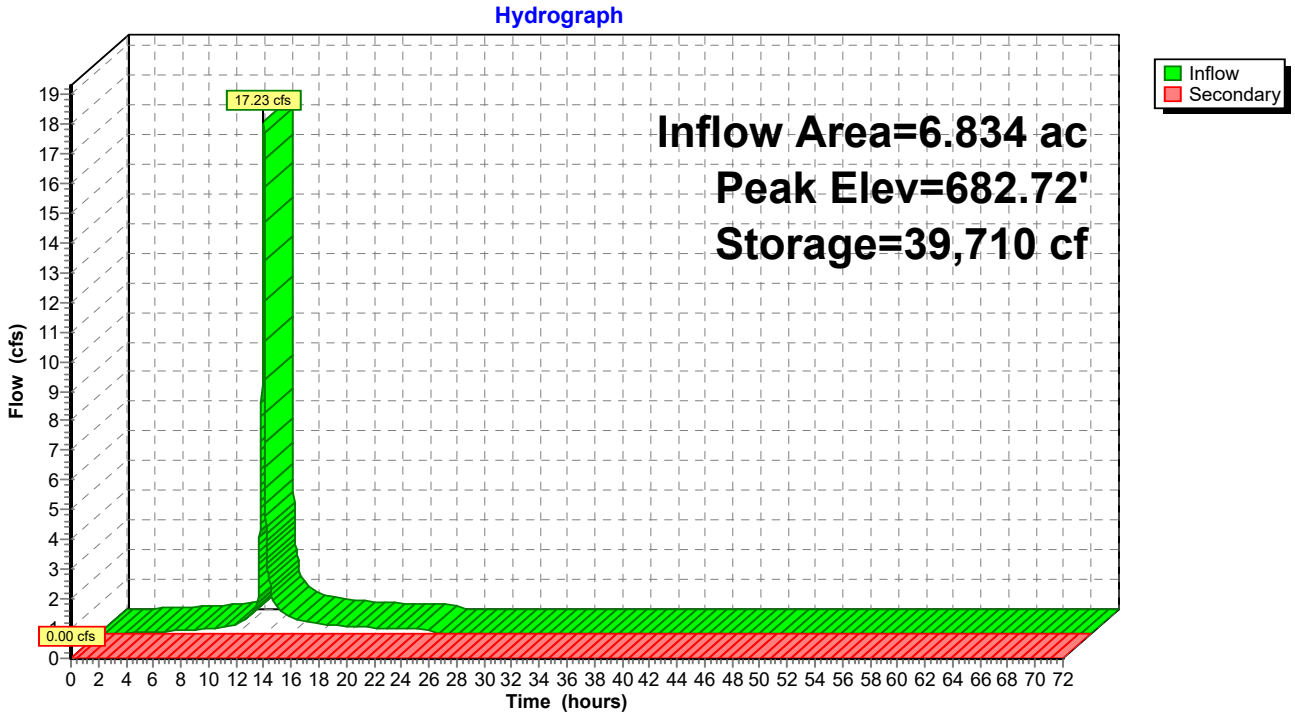
Volume	Invert	Avail.Storage	Storage Description
#1	681.00'	106,153 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
681.00	19,564	617.1	0	0	19,564
682.00	24,059	660.5	21,773	21,773	24,022
683.00	26,372	871.5	25,207	46,979	49,757
684.00	29,287	1,115.7	27,817	74,796	88,387
685.00	33,473	1,427.5	31,357	106,153	151,502

Device	Routing	Invert	Outlet Devices
#1	Secondary	683.50'	**20.0' 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

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=681.00' (Free Discharge)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 2P: Block Outlet Structure



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment2S: Proposed Runoff Area=216,969 sf 61.64% Impervious Runoff Depth=2.06"
Flow Length=832' Tc=6.0 min CN=74/98 Runoff=16.08 cfs 0.856 af

Subcatchment3S(b): Off-Site (Captured by Runoff Area=80,720 sf 33.11% Impervious Runoff Depth=1.60"
Flow Length=744' Tc=6.0 min CN=76/98 Runoff=4.85 cfs 0.248 af

Pond 2P: Block Outlet Structure Peak Elev=683.04' Storage=48,092 cf Inflow=20.93 cfs 1.104 af
Outflow=0.00 cfs 0.000 af

Total Runoff Area = 6.834 ac Runoff Volume = 1.104 af Average Runoff Depth = 1.94"
46.10% Pervious = 3.150 ac 53.90% Impervious = 3.684 ac

Summary for Subcatchment 2S: Proposed Development

[47] Hint: Peak is 181% of capacity of segment #4

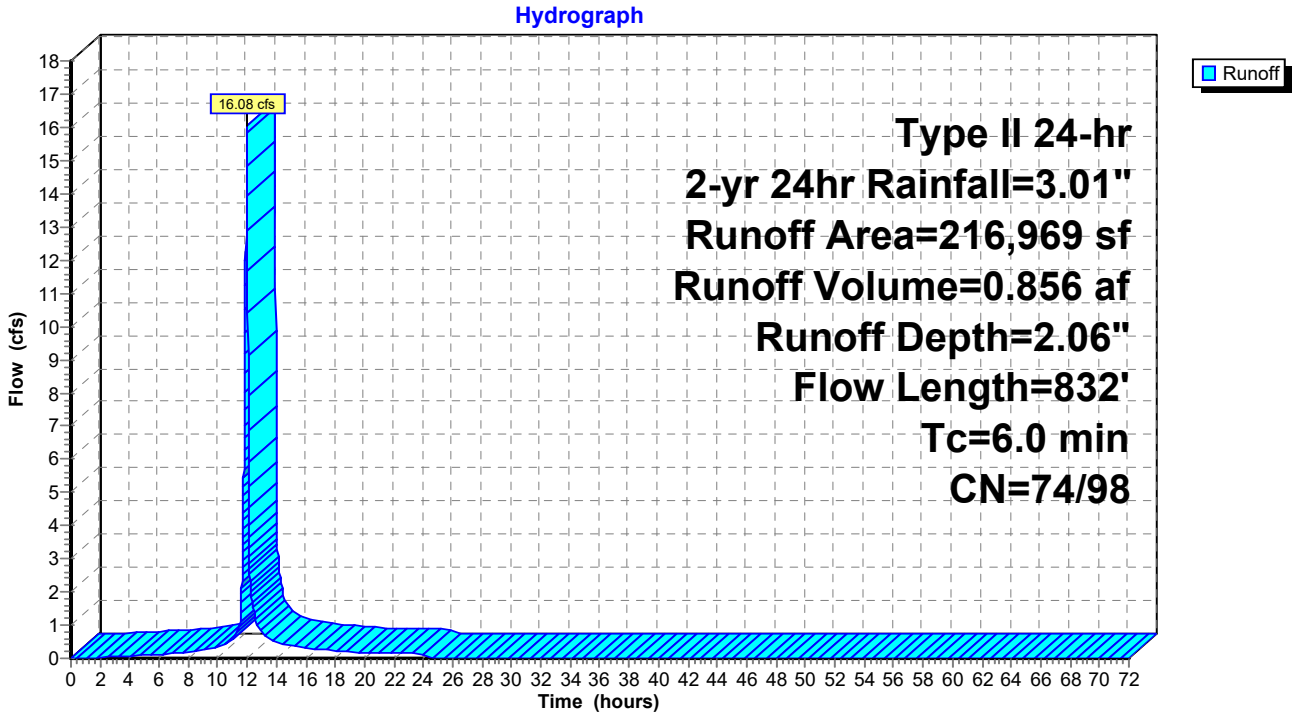
Runoff = 16.08 cfs @ 11.97 hrs, Volume= 0.856 af, Depth= 2.06"
Routed to Pond 2P : Block Outlet Structure

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr 24hr Rainfall=3.01"

	Area (sf)	CN	Description
	62,064	98	Paved parking, HSG C
*	52,112	98	Paved parking (gravel), HSG C
	83,229	74	>75% Grass cover, Good, HSG C
	19,564	98	Water Surface, HSG C
	216,969	89	Weighted Average
	83,229	74	38.36% Pervious Area
	133,740	98	61.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	127	0.0501	2.02		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.4	107	0.0623	5.07		**Shallow Concentrated Flow, Shallow Conc Flow** Paved Kv= 20.3 fps
0.4	333	0.0420	15.51	290.79	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	143	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
3.6					**Direct Entry, User**
6.0	832	Total			

Subcatchment 2S: Proposed Development



Summary for Subcatchment 3S(b): Off-Site (Captured by Basin)

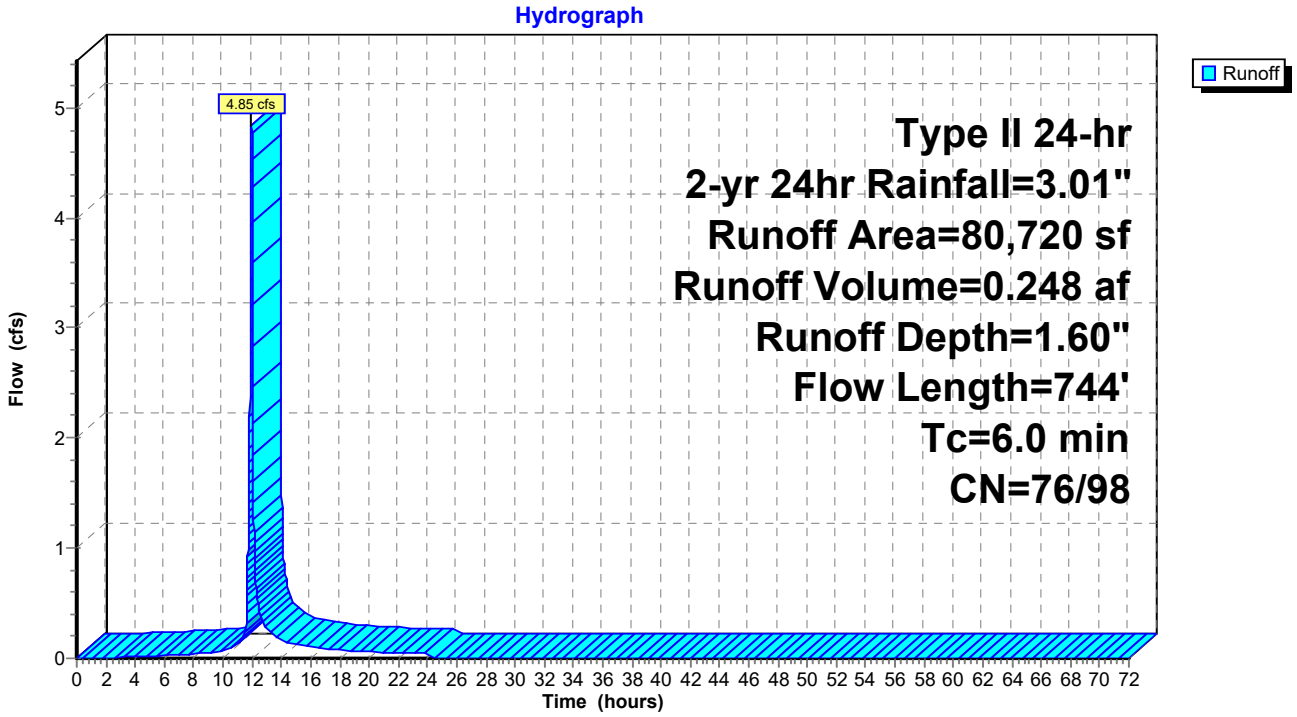
Runoff = 4.85 cfs @ 11.97 hrs, Volume= 0.248 af, Depth= 1.60"
Routed to Pond 2P : Block Outlet Structure

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr 24hr Rainfall=3.01"

Area (sf)	CN	Description
10,378	82	Row crops, SR + CR, Good, HSG C
3,388	98	Unconnected pavement, HSG C
22,308	98	Paved parking, HSG C
43,614	74	>75% Grass cover, Good, HSG C
1,032	98	Roofs, HSG C
80,720	83	Weighted Average
53,992	76	66.89% Pervious Area
26,728	98	33.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	29	0.1534	2.35		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
1.2	100	0.0200	1.33		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.3	65	0.0463	3.23		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.8	174	0.0461	3.46		**Shallow Concentrated Flow, Shallow Conc Flow** Unpaved Kv= 16.1 fps
0.5	112	0.0714	4.01		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	142	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
2.4					**Direct Entry, User**
6.0	744	Total			

Subcatchment 3S(b): Off-Site (Captured by Basin)



Summary for Pond 2P: Block Outlet Structure

Inflow Area = 6.834 ac, 53.90% Impervious, Inflow Depth = 1.94" for 2-yr 24hr event
Inflow = 20.93 cfs @ 11.97 hrs, Volume= 1.104 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 683.04' @ 24.34 hrs Surf.Area= 26,492 sf Storage= 48,092 cf

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

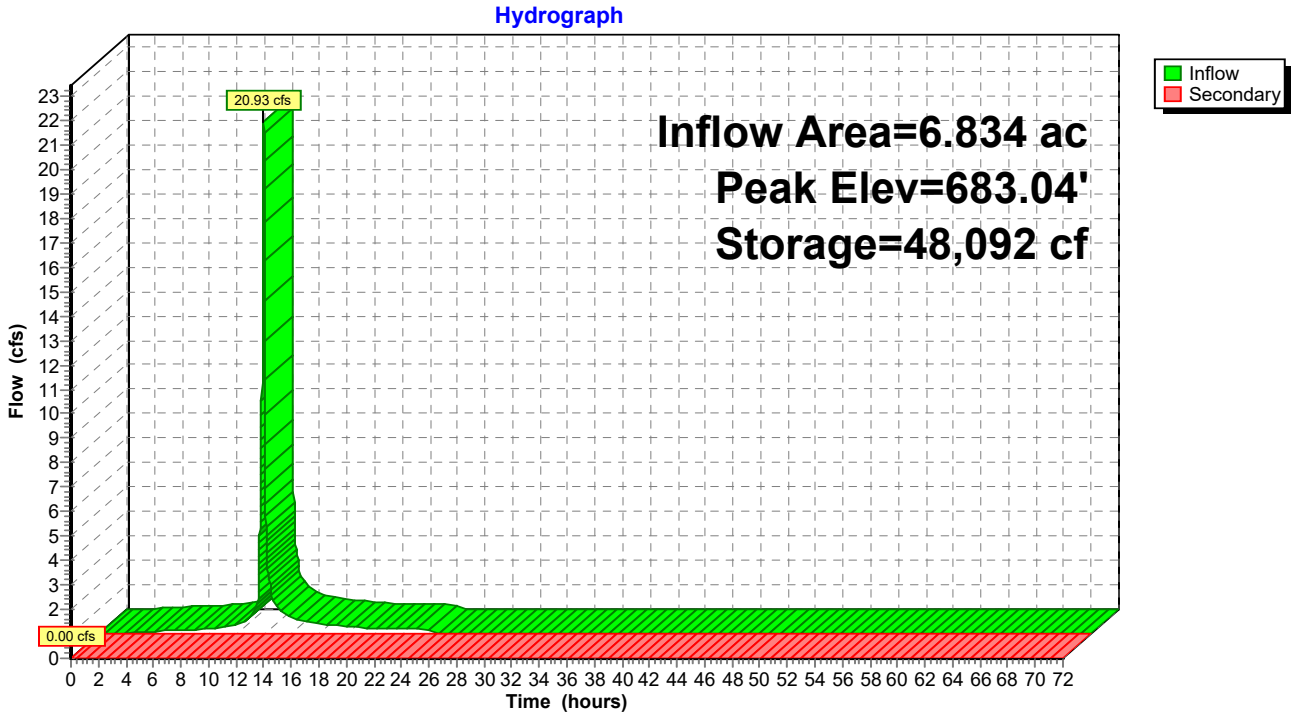
Volume	Invert	Avail.Storage	Storage Description
#1	681.00'	106,153 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
681.00	19,564	617.1	0	0	19,564
682.00	24,059	660.5	21,773	21,773	24,022
683.00	26,372	871.5	25,207	46,979	49,757
684.00	29,287	1,115.7	27,817	74,796	88,387
685.00	33,473	1,427.5	31,357	106,153	151,502

Device	Routing	Invert	Outlet Devices
#1	Secondary	683.50'	**20.0' 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

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=681.00' (Free Discharge)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 2P: Block Outlet Structure



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment2S: Proposed Runoff Area=216,969 sf 61.64% Impervious Runoff Depth=2.71"
Flow Length=832' Tc=6.0 min CN=74/98 Runoff=21.13 cfs 1.125 af

Subcatchment3S(b): Off-Site (Captured by Runoff Area=80,720 sf 33.11% Impervious Runoff Depth=2.20"
Flow Length=744' Tc=6.0 min CN=76/98 Runoff=6.69 cfs 0.340 af

Pond 2P: Block Outlet Structure Peak Elev=683.53' Storage=61,302 cf Inflow=27.82 cfs 1.465 af
Outflow=0.26 cfs 0.075 af

Total Runoff Area = 6.834 ac Runoff Volume = 1.465 af Average Runoff Depth = 2.57"
46.10% Pervious = 3.150 ac 53.90% Impervious = 3.684 ac

Summary for Subcatchment 2S: Proposed Development

[47] Hint: Peak is 238% of capacity of segment #4

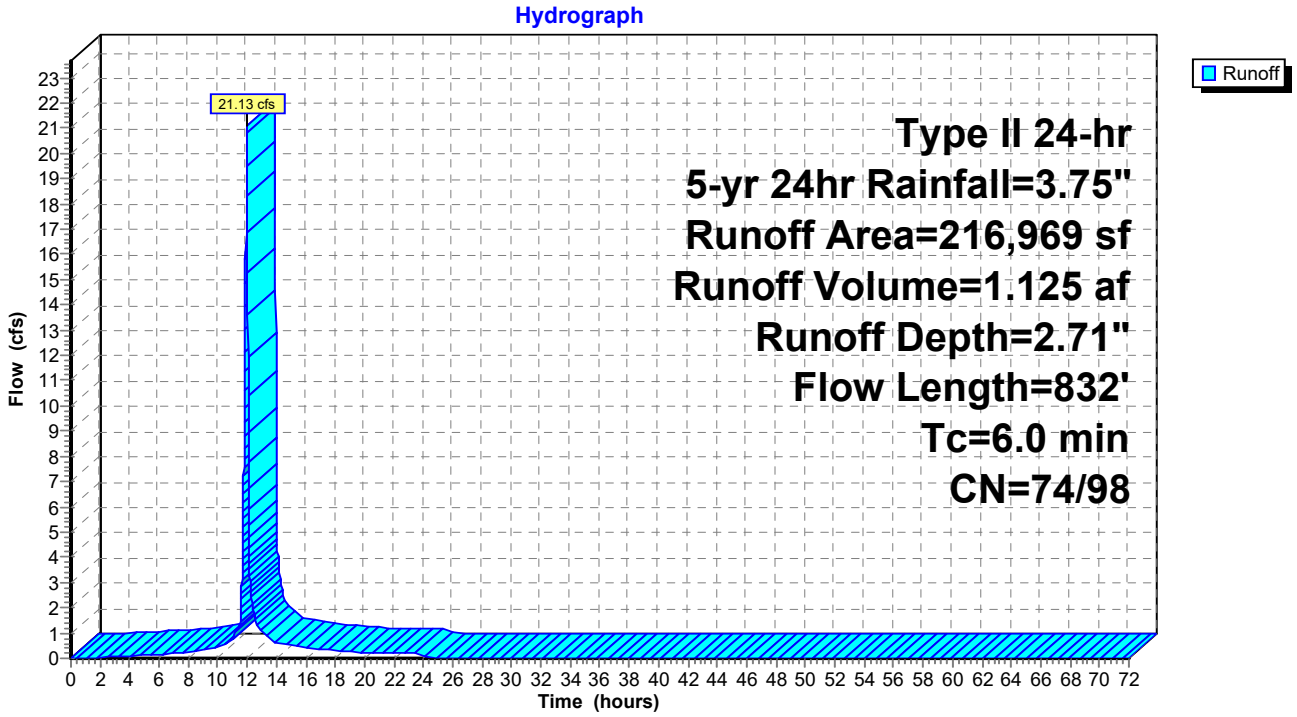
Runoff = 21.13 cfs @ 11.97 hrs, Volume= 1.125 af, Depth= 2.71"
Routed to Pond 2P : Block Outlet Structure

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-yr 24hr Rainfall=3.75"

	Area (sf)	CN	Description
	62,064	98	Paved parking, HSG C
*	52,112	98	Paved parking (gravel), HSG C
	83,229	74	>75% Grass cover, Good, HSG C
	19,564	98	Water Surface, HSG C
	216,969	89	Weighted Average
	83,229	74	38.36% Pervious Area
	133,740	98	61.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	127	0.0501	2.02		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.4	107	0.0623	5.07		**Shallow Concentrated Flow, Shallow Conc Flow** Paved Kv= 20.3 fps
0.4	333	0.0420	15.51	290.79	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	143	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
3.6					**Direct Entry, User**
6.0	832	Total			

Subcatchment 2S: Proposed Development



Summary for Subcatchment 3S(b): Off-Site (Captured by Basin)

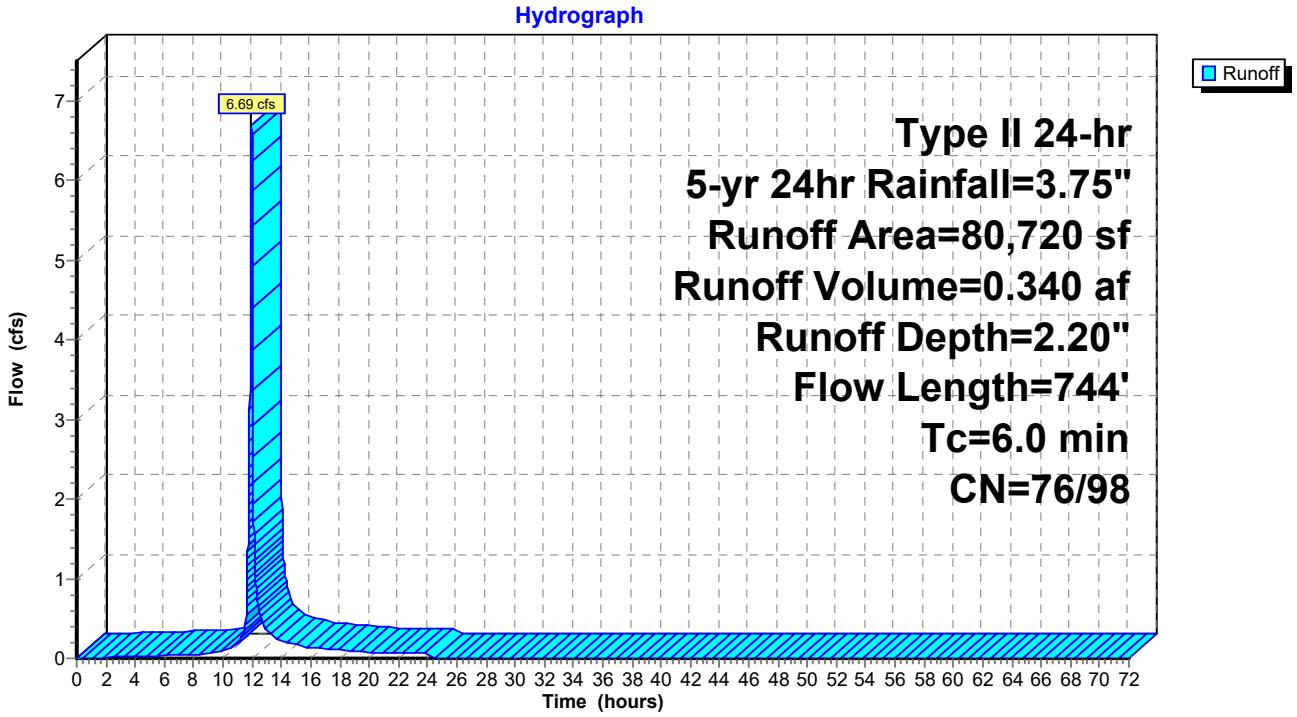
Runoff = 6.69 cfs @ 11.97 hrs, Volume= 0.340 af, Depth= 2.20"
Routed to Pond 2P : Block Outlet Structure

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-yr 24hr Rainfall=3.75"

Area (sf)	CN	Description
10,378	82	Row crops, SR + CR, Good, HSG C
3,388	98	Unconnected pavement, HSG C
22,308	98	Paved parking, HSG C
43,614	74	>75% Grass cover, Good, HSG C
1,032	98	Roofs, HSG C
80,720	83	Weighted Average
53,992	76	66.89% Pervious Area
26,728	98	33.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	29	0.1534	2.35		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
1.2	100	0.0200	1.33		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.3	65	0.0463	3.23		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.8	174	0.0461	3.46		**Shallow Concentrated Flow, Shallow Conc Flow** Unpaved Kv= 16.1 fps
0.5	112	0.0714	4.01		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	142	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
2.4					**Direct Entry, User**
6.0	744	Total			

Subcatchment 3S(b): Off-Site (Captured by Basin)



Summary for Pond 2P: Block Outlet Structure

Inflow Area = 6.834 ac, 53.90% Impervious, Inflow Depth = 2.57" for 5-yr 24hr event
Inflow = 27.82 cfs @ 11.97 hrs, Volume= 1.465 af
Outflow = 0.26 cfs @ 23.14 hrs, Volume= 0.075 af, Atten= 99%, Lag= 670.0 min
Secondary = 0.26 cfs @ 23.14 hrs, Volume= 0.075 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 683.53' @ 23.14 hrs Surf.Area= 27,892 sf Storage= 61,302 cf

Plug-Flow detention time= 1,071.9 min calculated for 0.075 af (5% of inflow)
Center-of-Mass det. time= 621.1 min (1,396.0 - 774.9)

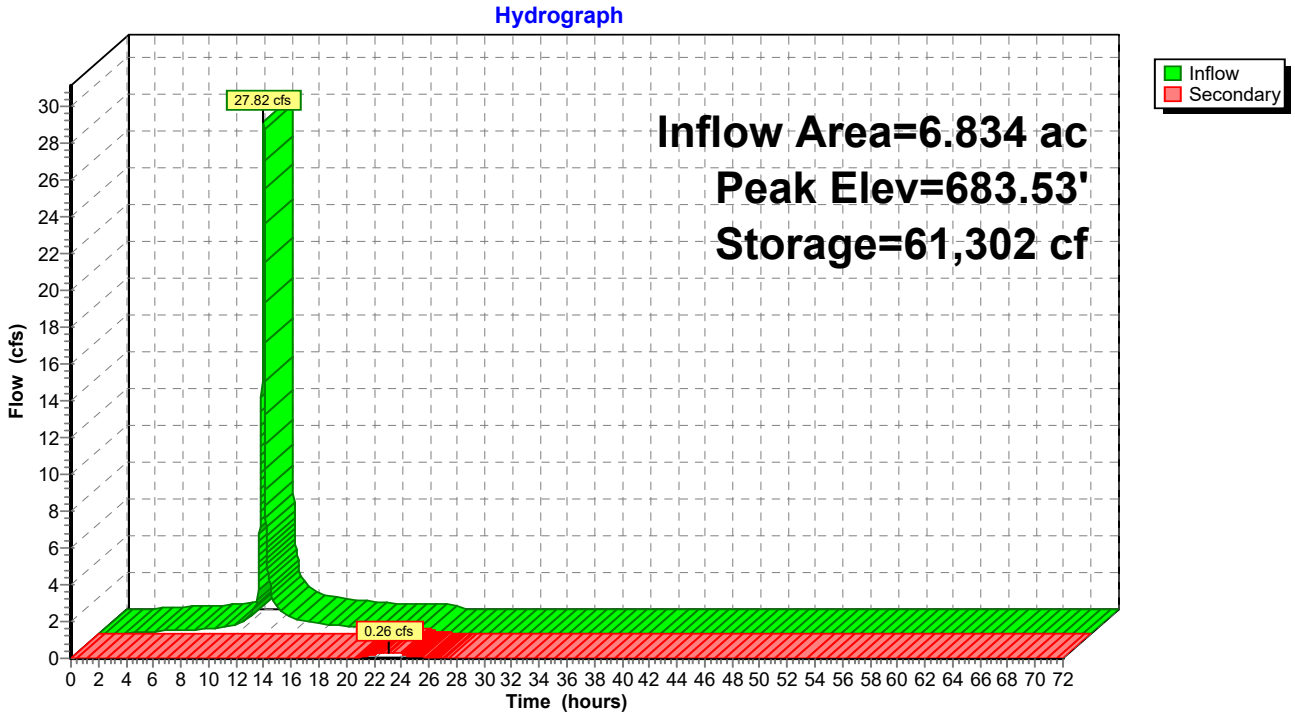
Volume	Invert	Avail.Storage	Storage Description
#1	681.00'	106,153 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
681.00	19,564	617.1	0	0	19,564
682.00	24,059	660.5	21,773	21,773	24,022
683.00	26,372	871.5	25,207	46,979	49,757
684.00	29,287	1,115.7	27,817	74,796	88,387
685.00	33,473	1,427.5	31,357	106,153	151,502

Device	Routing	Invert	Outlet Devices
#1	Secondary	683.50'	**20.0' 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

Secondary OutFlow Max=0.23 cfs @ 23.14 hrs HW=683.53' (Free Discharge)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 0.23 cfs @ 0.42 fps)

Pond 2P: Block Outlet Structure



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment2S: Proposed Runoff Area=216,969 sf 61.64% Impervious Runoff Depth=3.31"
Flow Length=832' Tc=6.0 min CN=74/98 Runoff=25.80 cfs 1.375 af

Subcatchment3S(b): Off-Site (Captured by Runoff Area=80,720 sf 33.11% Impervious Runoff Depth=2.77"
Flow Length=744' Tc=6.0 min CN=76/98 Runoff=8.43 cfs 0.427 af

Pond 2P: Block Outlet Structure Peak Elev=683.56' Storage=62,244 cf Inflow=34.23 cfs 1.802 af
Outflow=0.77 cfs 0.413 af

Total Runoff Area = 6.834 ac Runoff Volume = 1.802 af Average Runoff Depth = 3.16"
46.10% Pervious = 3.150 ac 53.90% Impervious = 3.684 ac

Summary for Subcatchment 2S: Proposed Development

[47] Hint: Peak is 291% of capacity of segment #4

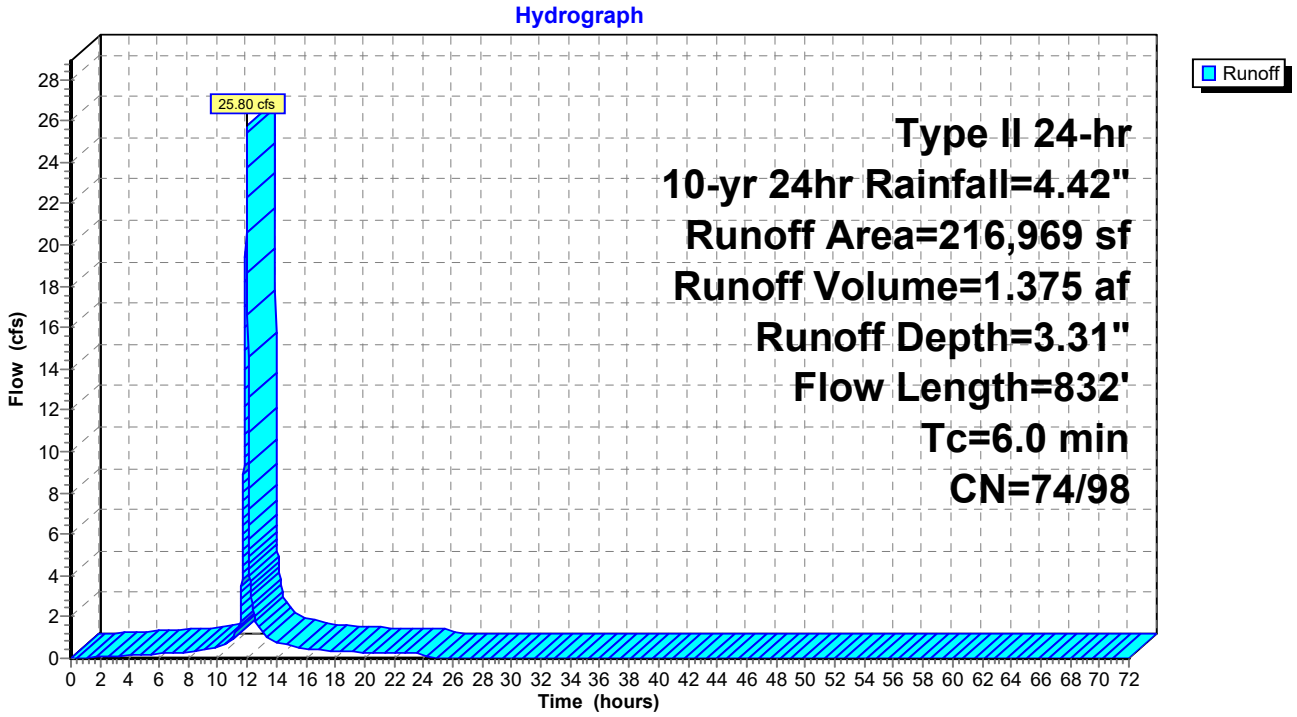
Runoff = 25.80 cfs @ 11.97 hrs, Volume= 1.375 af, Depth= 3.31"
Routed to Pond 2P : Block Outlet Structure

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr 24hr Rainfall=4.42"

	Area (sf)	CN	Description
	62,064	98	Paved parking, HSG C
*	52,112	98	Paved parking (gravel), HSG C
	83,229	74	>75% Grass cover, Good, HSG C
	19,564	98	Water Surface, HSG C
	216,969	89	Weighted Average
	83,229	74	38.36% Pervious Area
	133,740	98	61.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	127	0.0501	2.02		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.4	107	0.0623	5.07		**Shallow Concentrated Flow, Shallow Conc Flow** Paved Kv= 20.3 fps
0.4	333	0.0420	15.51	290.79	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	143	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
3.6					**Direct Entry, User**
6.0	832	Total			

Subcatchment 2S: Proposed Development



Summary for Subcatchment 3S(b): Off-Site (Captured by Basin)

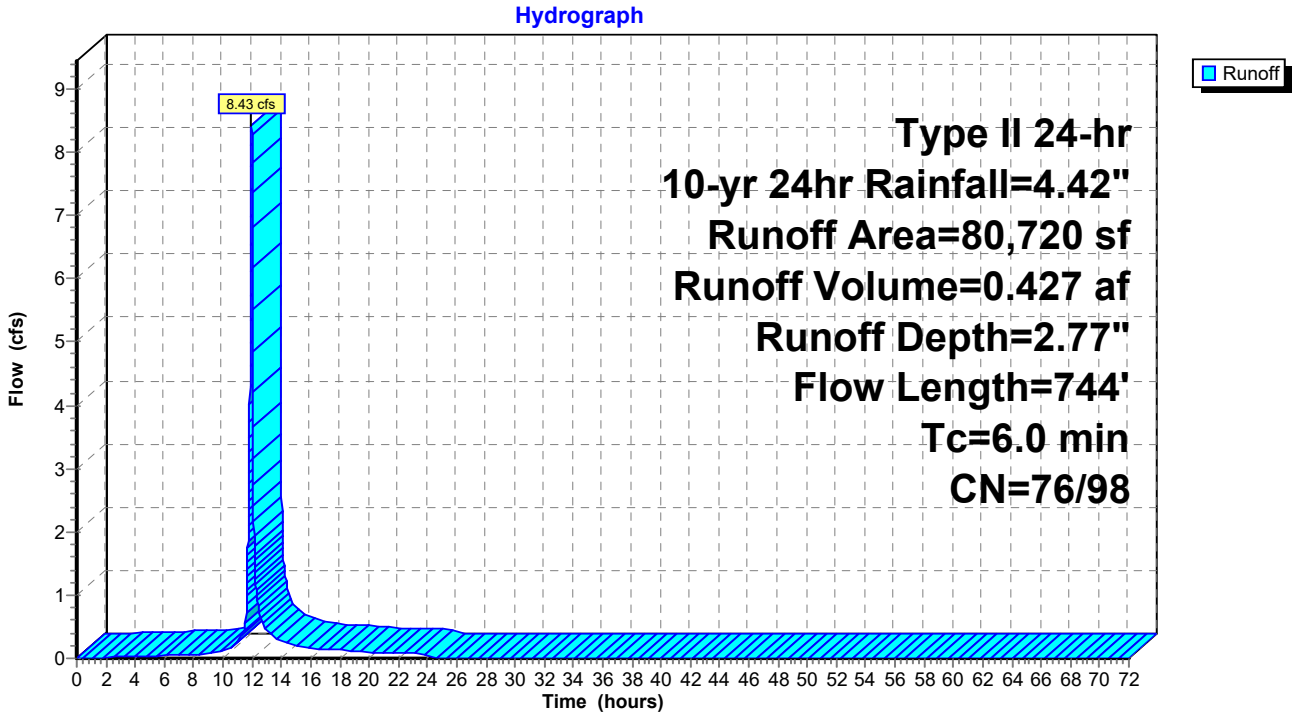
Runoff = 8.43 cfs @ 11.97 hrs, Volume= 0.427 af, Depth= 2.77"
Routed to Pond 2P : Block Outlet Structure

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr 24hr Rainfall=4.42"

Area (sf)	CN	Description
10,378	82	Row crops, SR + CR, Good, HSG C
3,388	98	Unconnected pavement, HSG C
22,308	98	Paved parking, HSG C
43,614	74	>75% Grass cover, Good, HSG C
1,032	98	Roofs, HSG C
80,720	83	Weighted Average
53,992	76	66.89% Pervious Area
26,728	98	33.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	29	0.1534	2.35		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
1.2	100	0.0200	1.33		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.3	65	0.0463	3.23		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.8	174	0.0461	3.46		**Shallow Concentrated Flow, Shallow Conc Flow** Unpaved Kv= 16.1 fps
0.5	112	0.0714	4.01		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	142	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
2.4					**Direct Entry, User**
6.0	744	Total			

Subcatchment 3S(b): Off-Site (Captured by Basin)



Summary for Pond 2P: Block Outlet Structure

Inflow Area = 6.834 ac, 53.90% Impervious, Inflow Depth = 3.16" for 10-yr 24hr event
Inflow = 34.23 cfs @ 11.97 hrs, Volume= 1.802 af
Outflow = 0.77 cfs @ 15.26 hrs, Volume= 0.413 af, Atten= 98%, Lag= 197.7 min
Secondary = 0.77 cfs @ 15.26 hrs, Volume= 0.413 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 683.56' @ 15.26 hrs Surf.Area= 27,990 sf Storage= 62,244 cf

Plug-Flow detention time= 556.6 min calculated for 0.413 af (23% of inflow)
Center-of-Mass det. time= 346.7 min (1,119.3 - 772.5)

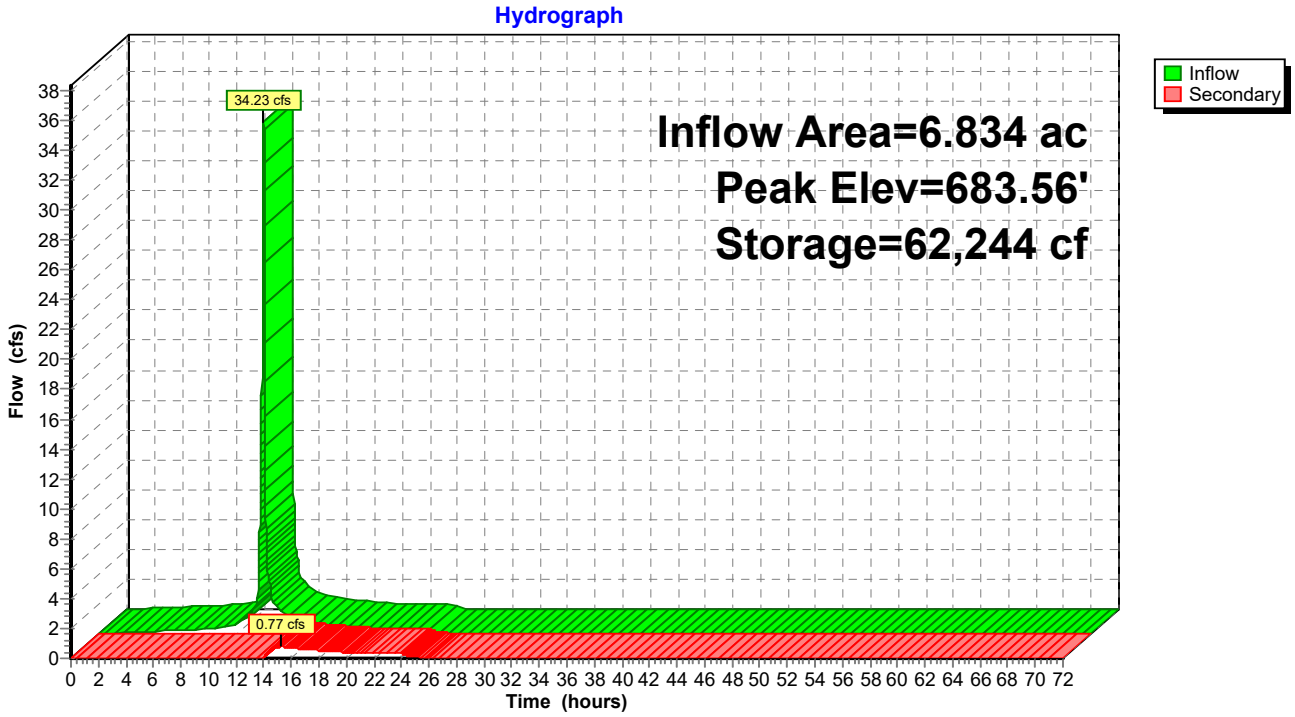
Volume	Invert	Avail.Storage	Storage Description
#1	681.00'	106,153 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
681.00	19,564	617.1	0	0	19,564
682.00	24,059	660.5	21,773	21,773	24,022
683.00	26,372	871.5	25,207	46,979	49,757
684.00	29,287	1,115.7	27,817	74,796	88,387
685.00	33,473	1,427.5	31,357	106,153	151,502

Device	Routing	Invert	Outlet Devices
#1	Secondary	683.50'	**20.0' 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

Secondary OutFlow Max=0.76 cfs @ 15.26 hrs HW=683.56' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 0.76 cfs @ 0.62 fps)

Pond 2P: Block Outlet Structure



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment2S: Proposed Runoff Area=216,969 sf 61.64% Impervious Runoff Depth=4.25"
Flow Length=832' Tc=6.0 min CN=74/98 Runoff=33.04 cfs 1.764 af

Subcatchment3S(b): Off-Site (Captured by Runoff Area=80,720 sf 33.11% Impervious Runoff Depth=3.66"
Flow Length=744' Tc=6.0 min CN=76/98 Runoff=11.15 cfs 0.566 af

Pond 2P: Block Outlet Structure Peak Elev=683.66' Storage=65,138 cf Inflow=44.19 cfs 2.330 af
Outflow=3.34 cfs 0.941 af

Total Runoff Area = 6.834 ac Runoff Volume = 2.330 af Average Runoff Depth = 4.09"
46.10% Pervious = 3.150 ac 53.90% Impervious = 3.684 ac

Summary for Subcatchment 2S: Proposed Development

[47] Hint: Peak is 373% of capacity of segment #4

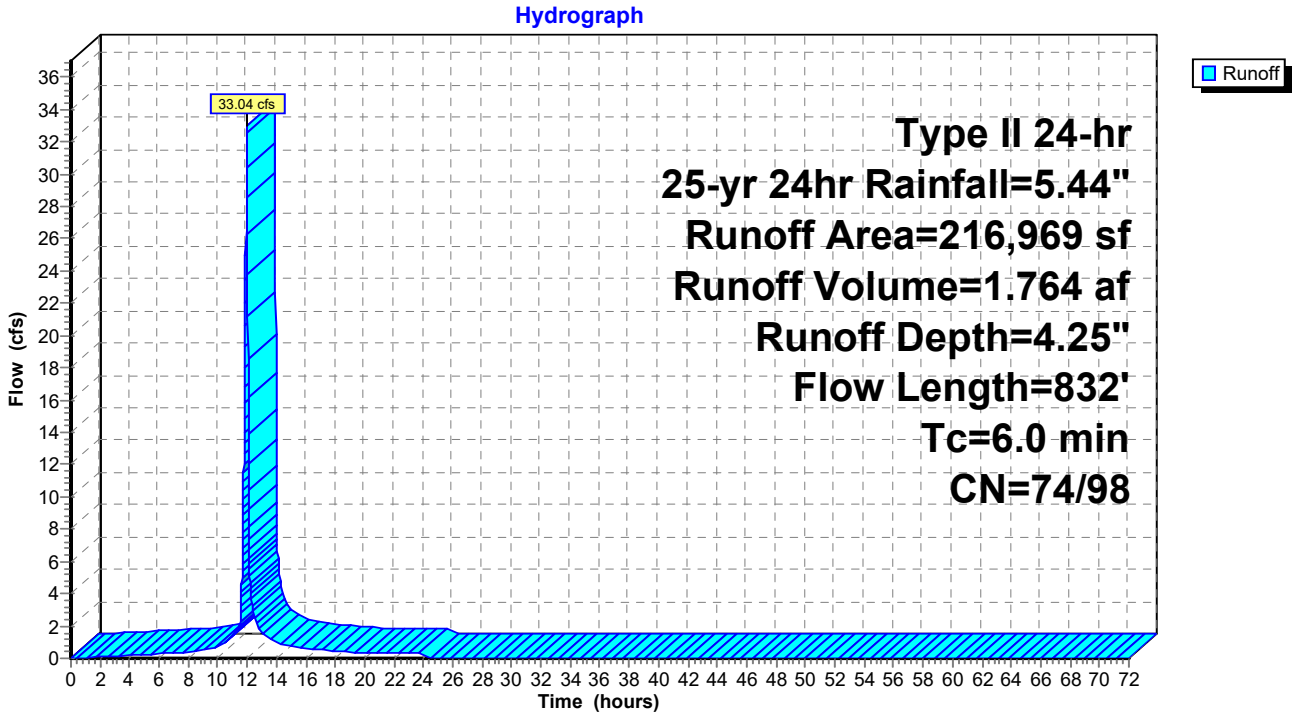
Runoff = 33.04 cfs @ 11.97 hrs, Volume= 1.764 af, Depth= 4.25"
Routed to Pond 2P : Block Outlet Structure

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-yr 24hr Rainfall=5.44"

	Area (sf)	CN	Description
	62,064	98	Paved parking, HSG C
*	52,112	98	Paved parking (gravel), HSG C
	83,229	74	>75% Grass cover, Good, HSG C
	19,564	98	Water Surface, HSG C
	216,969	89	Weighted Average
	83,229	74	38.36% Pervious Area
	133,740	98	61.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	127	0.0501	2.02		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.4	107	0.0623	5.07		**Shallow Concentrated Flow, Shallow Conc Flow** Paved Kv= 20.3 fps
0.4	333	0.0420	15.51	290.79	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	143	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
3.6					**Direct Entry, User**
6.0	832	Total			

Subcatchment 2S: Proposed Development



Summary for Subcatchment 3S(b): Off-Site (Captured by Basin)

[47] Hint: Peak is 126% of capacity of segment #6

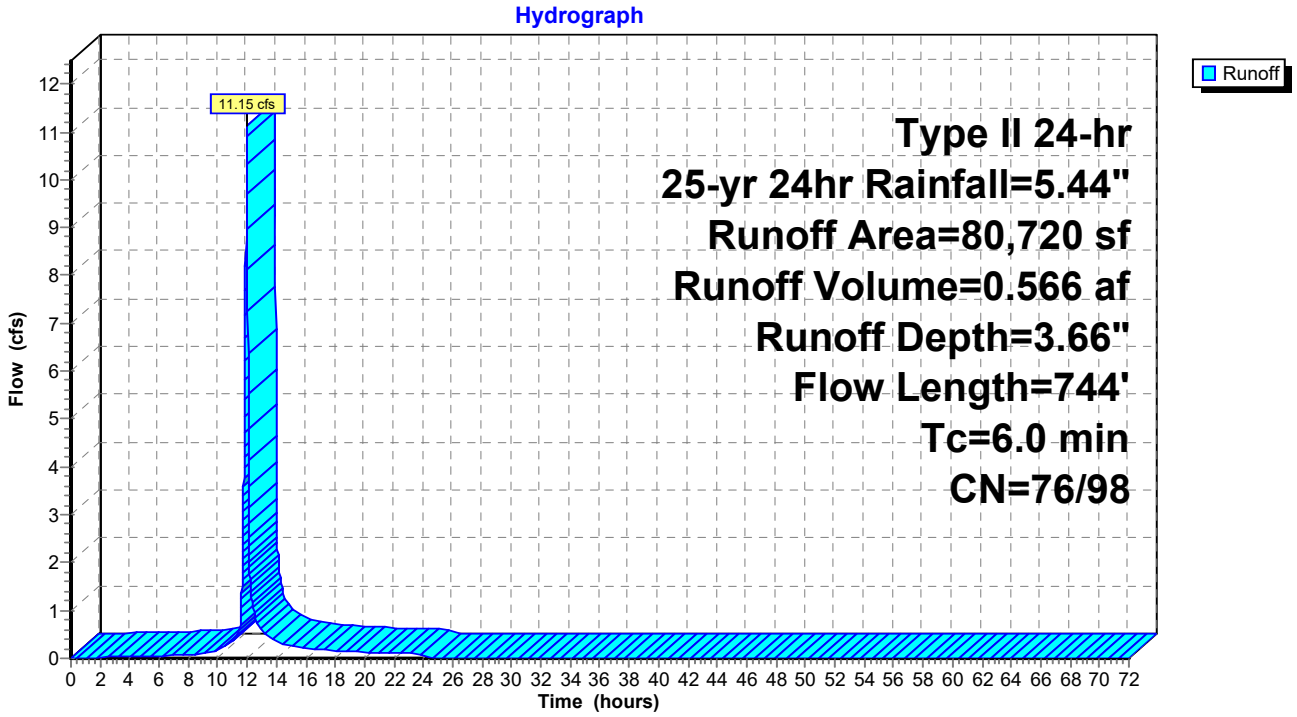
Runoff = 11.15 cfs @ 11.97 hrs, Volume= 0.566 af, Depth= 3.66"
Routed to Pond 2P : Block Outlet Structure

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-yr 24hr Rainfall=5.44"

Area (sf)	CN	Description
10,378	82	Row crops, SR + CR, Good, HSG C
3,388	98	Unconnected pavement, HSG C
22,308	98	Paved parking, HSG C
43,614	74	>75% Grass cover, Good, HSG C
1,032	98	Roofs, HSG C
80,720	83	Weighted Average
53,992	76	66.89% Pervious Area
26,728	98	33.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	29	0.1534	2.35		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
1.2	100	0.0200	1.33		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.3	65	0.0463	3.23		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.8	174	0.0461	3.46		**Shallow Concentrated Flow, Shallow Conc Flow** Unpaved Kv= 16.1 fps
0.5	112	0.0714	4.01		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	142	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
2.4					**Direct Entry, User**
6.0	744	Total			

Subcatchment 3S(b): Off-Site (Captured by Basin)



Summary for Pond 2P: Block Outlet Structure

Inflow Area = 6.834 ac, 53.90% Impervious, Inflow Depth = 4.09" for 25-yr 24hr event
Inflow = 44.19 cfs @ 11.97 hrs, Volume= 2.330 af
Outflow = 3.34 cfs @ 12.53 hrs, Volume= 0.941 af, Atten= 92%, Lag= 33.7 min
Secondary = 3.34 cfs @ 12.53 hrs, Volume= 0.941 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 683.66' @ 12.53 hrs Surf.Area= 28,292 sf Storage= 65,138 cf

Plug-Flow detention time= 348.5 min calculated for 0.941 af (40% of inflow)
Center-of-Mass det. time= 202.7 min (972.1 - 769.5)

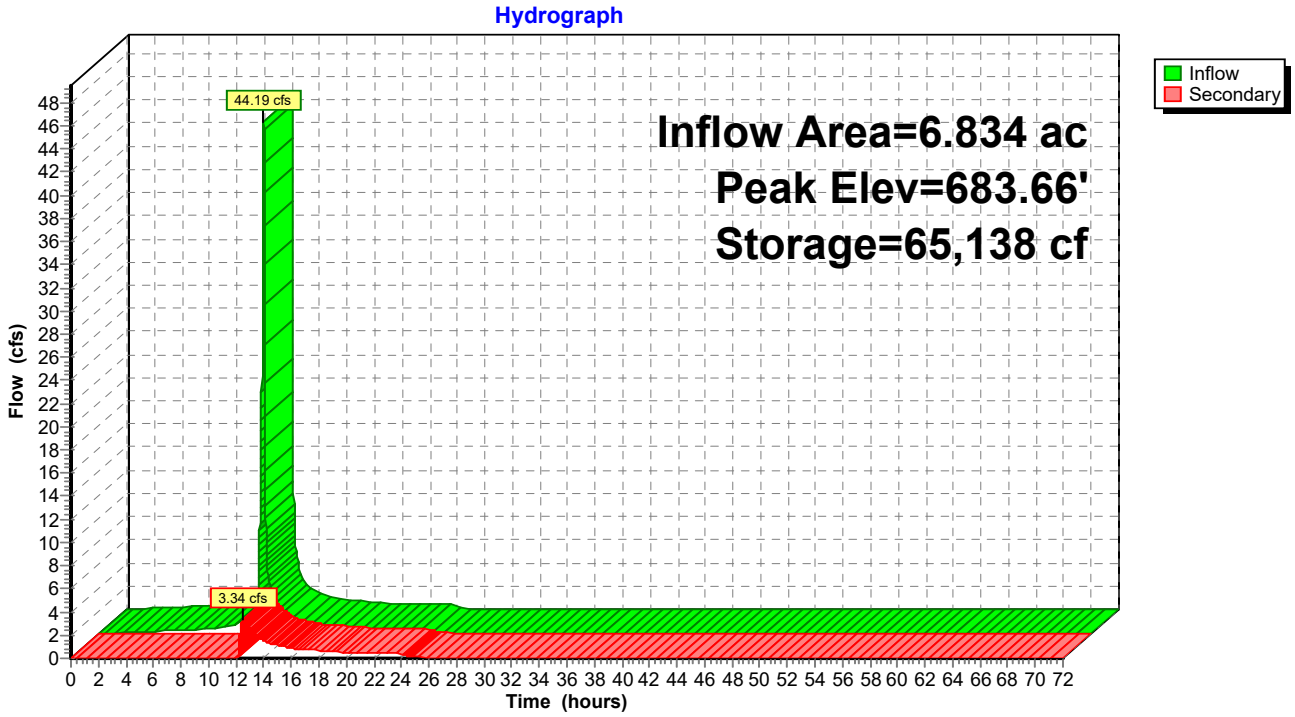
Volume	Invert	Avail.Storage	Storage Description
#1	681.00'	106,153 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
681.00	19,564	617.1	0	0	19,564
682.00	24,059	660.5	21,773	21,773	24,022
683.00	26,372	871.5	25,207	46,979	49,757
684.00	29,287	1,115.7	27,817	74,796	88,387
685.00	33,473	1,427.5	31,357	106,153	151,502

Device	Routing	Invert	Outlet Devices
#1	Secondary	683.50'	**20.0' 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

Secondary OutFlow Max=3.32 cfs @ 12.53 hrs HW=683.66' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 3.32 cfs @ 1.01 fps)

Pond 2P: Block Outlet Structure



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment2S: Proposed Runoff Area=216,969 sf 61.64% Impervious Runoff Depth=5.05"
Flow Length=832' Tc=6.0 min CN=74/98 Runoff=39.15 cfs 2.094 af

Subcatchment3S(b): Off-Site (Captured by Runoff Area=80,720 sf 33.11% Impervious Runoff Depth=4.43"
Flow Length=744' Tc=6.0 min CN=76/98 Runoff=13.45 cfs 0.685 af

Pond 2P: Block Outlet Structure Peak Elev=683.84' Storage=70,280 cf Inflow=52.60 cfs 2.779 af
Outflow=10.28 cfs 1.390 af

Total Runoff Area = 6.834 ac Runoff Volume = 2.779 af Average Runoff Depth = 4.88"
46.10% Pervious = 3.150 ac 53.90% Impervious = 3.684 ac

Summary for Subcatchment 2S: Proposed Development

[47] Hint: Peak is 442% of capacity of segment #4

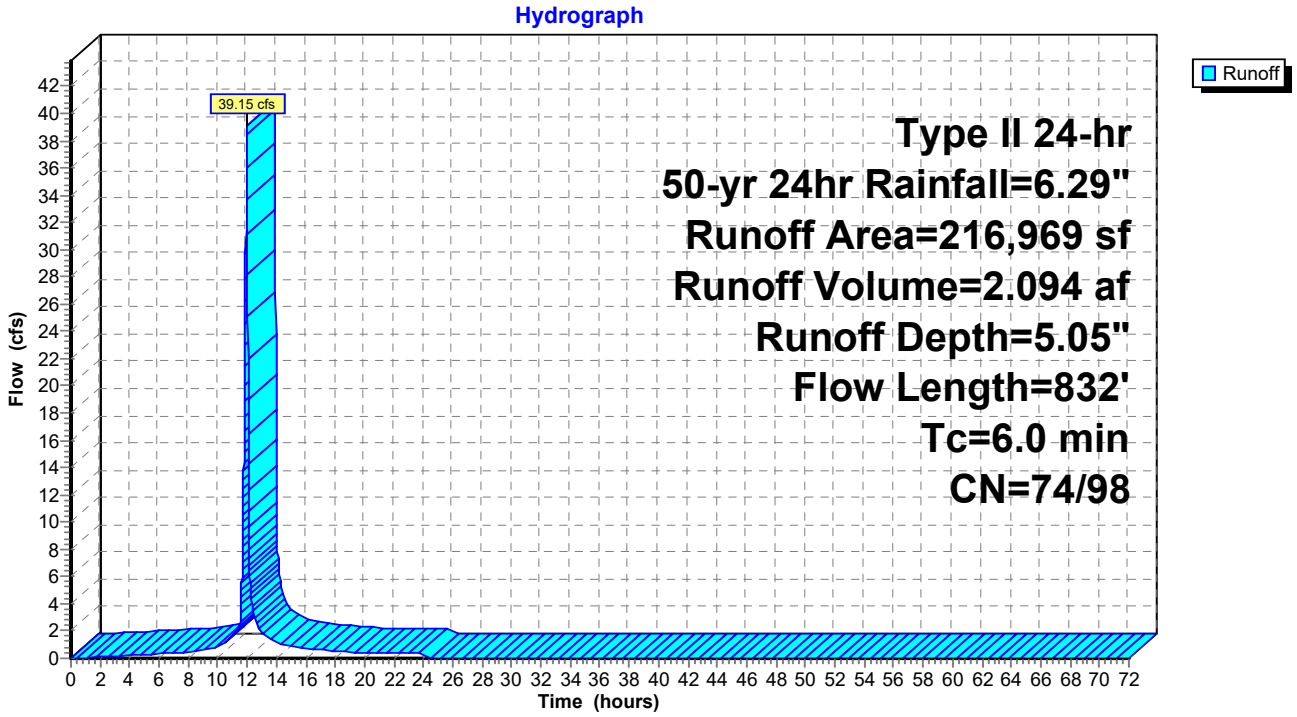
Runoff = 39.15 cfs @ 11.97 hrs, Volume= 2.094 af, Depth= 5.05"
Routed to Pond 2P : Block Outlet Structure

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-yr 24hr Rainfall=6.29"

	Area (sf)	CN	Description
	62,064	98	Paved parking, HSG C
*	52,112	98	Paved parking (gravel), HSG C
	83,229	74	>75% Grass cover, Good, HSG C
	19,564	98	Water Surface, HSG C
	216,969	89	Weighted Average
	83,229	74	38.36% Pervious Area
	133,740	98	61.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	127	0.0501	2.02		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.4	107	0.0623	5.07		**Shallow Concentrated Flow, Shallow Conc Flow** Paved Kv= 20.3 fps
0.4	333	0.0420	15.51	290.79	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	143	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
3.6					**Direct Entry, User**
6.0	832	Total			

Subcatchment 2S: Proposed Development



Summary for Subcatchment 3S(b): Off-Site (Captured by Basin)

[47] Hint: Peak is 152% of capacity of segment #6

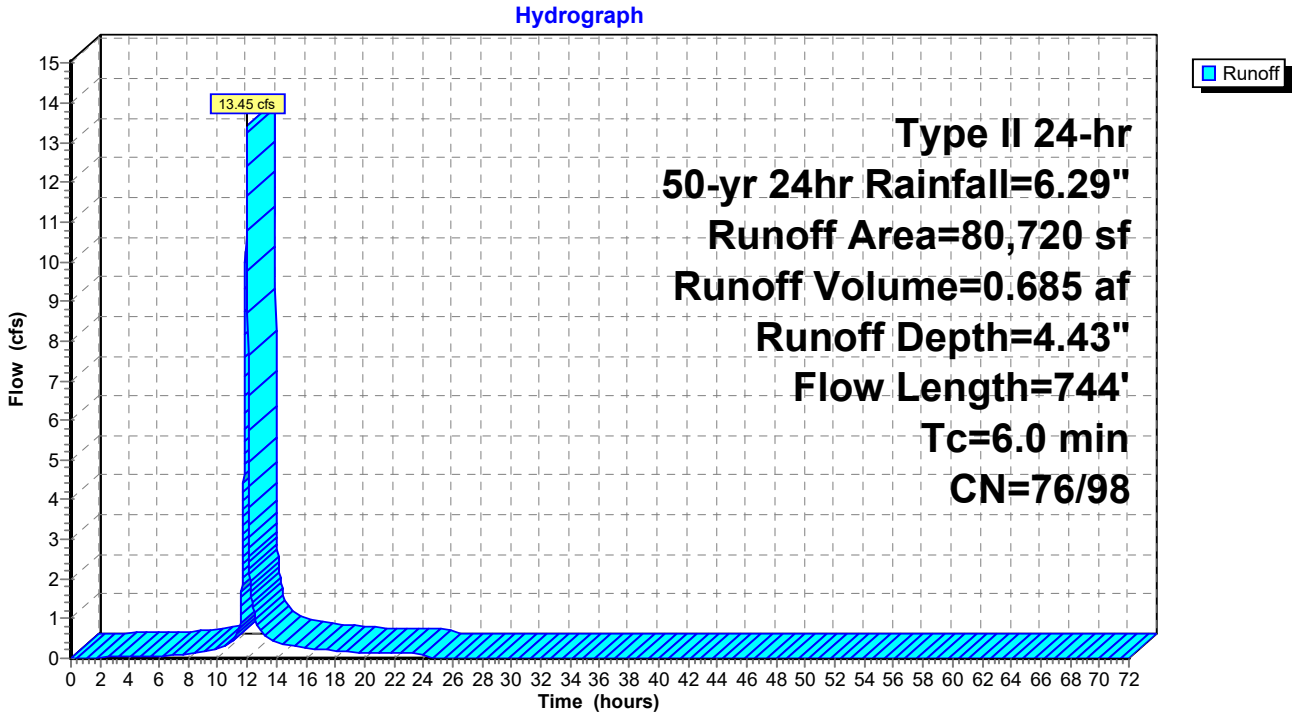
Runoff = 13.45 cfs @ 11.97 hrs, Volume= 0.685 af, Depth= 4.43"
Routed to Pond 2P : Block Outlet Structure

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-yr 24hr Rainfall=6.29"

Area (sf)	CN	Description
10,378	82	Row crops, SR + CR, Good, HSG C
3,388	98	Unconnected pavement, HSG C
22,308	98	Paved parking, HSG C
43,614	74	>75% Grass cover, Good, HSG C
1,032	98	Roofs, HSG C
80,720	83	Weighted Average
53,992	76	66.89% Pervious Area
26,728	98	33.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	29	0.1534	2.35		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
1.2	100	0.0200	1.33		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.3	65	0.0463	3.23		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.8	174	0.0461	3.46		**Shallow Concentrated Flow, Shallow Conc Flow** Unpaved Kv= 16.1 fps
0.5	112	0.0714	4.01		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	142	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
2.4					**Direct Entry, User**
6.0	744	Total			

Subcatchment 3S(b): Off-Site (Captured by Basin)



Summary for Pond 2P: Block Outlet Structure

Inflow Area = 6.834 ac, 53.90% Impervious, Inflow Depth = 4.88" for 50-yr 24hr event
Inflow = 52.60 cfs @ 11.97 hrs, Volume= 2.779 af
Outflow = 10.28 cfs @ 12.14 hrs, Volume= 1.390 af, Atten= 80%, Lag= 10.0 min
Secondary = 10.28 cfs @ 12.14 hrs, Volume= 1.390 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 683.84' @ 12.14 hrs Surf.Area= 28,824 sf Storage= 70,280 cf

Plug-Flow detention time= 283.1 min calculated for 1.390 af (50% of inflow)
Center-of-Mass det. time= 155.7 min (923.0 - 767.3)

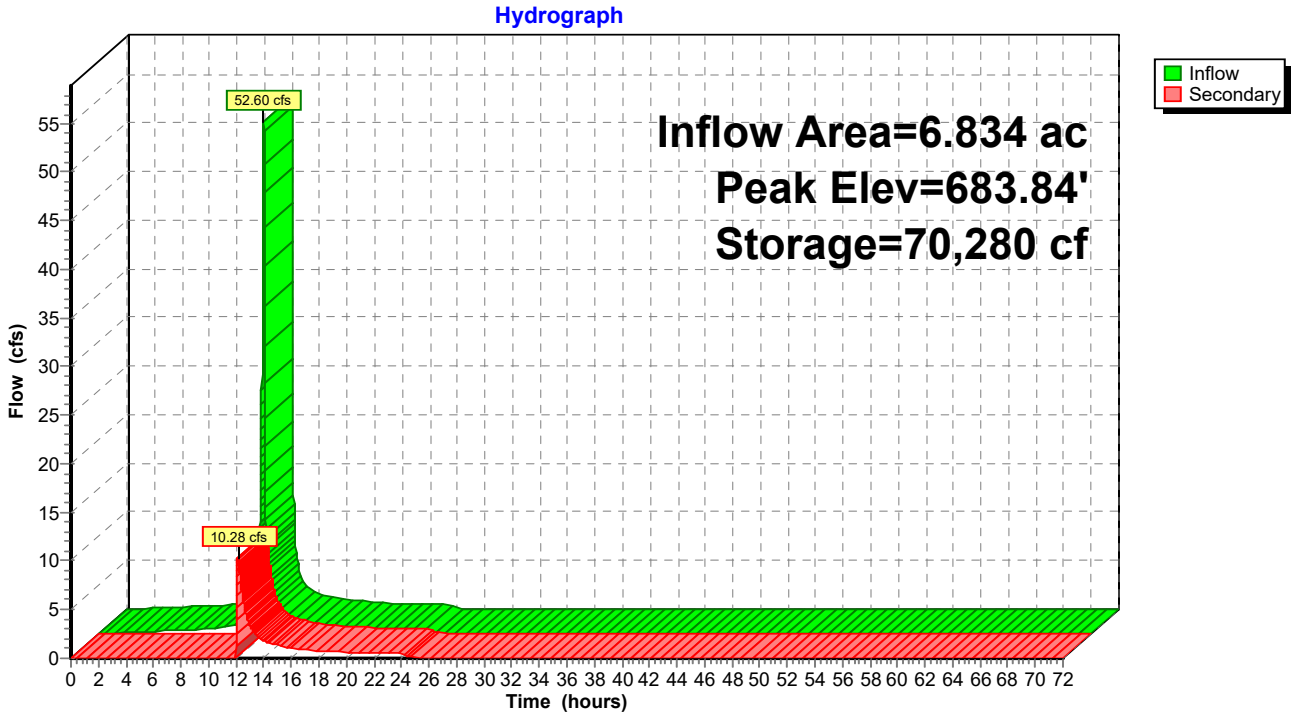
Volume	Invert	Avail.Storage	Storage Description
#1	681.00'	106,153 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
681.00	19,564	617.1	0	0	19,564
682.00	24,059	660.5	21,773	21,773	24,022
683.00	26,372	871.5	25,207	46,979	49,757
684.00	29,287	1,115.7	27,817	74,796	88,387
685.00	33,473	1,427.5	31,357	106,153	151,502

Device	Routing	Invert	Outlet Devices
#1	Secondary	683.50'	**20.0' 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

Secondary OutFlow Max=10.27 cfs @ 12.14 hrs HW=683.84' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 10.27 cfs @ 1.49 fps)

Pond 2P: Block Outlet Structure



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment2S: Proposed Runoff Area=216,969 sf 61.64% Impervious Runoff Depth=5.93"
Flow Length=832' Tc=6.0 min CN=74/98 Runoff=45.88 cfs 2.460 af

Subcatchment3S(b): Off-Site (Captured by Runoff Area=80,720 sf 33.11% Impervious Runoff Depth=5.29"
Flow Length=744' Tc=6.0 min CN=76/98 Runoff=15.99 cfs 0.817 af

Pond 2P: Block Outlet Structure Peak Elev=684.08' Storage=77,289 cf Inflow=61.87 cfs 3.277 af
Outflow=24.03 cfs 1.888 af

Total Runoff Area = 6.834 ac Runoff Volume = 3.277 af Average Runoff Depth = 5.75"
46.10% Pervious = 3.150 ac 53.90% Impervious = 3.684 ac

Summary for Subcatchment 2S: Proposed Development

[47] Hint: Peak is 518% of capacity of segment #4

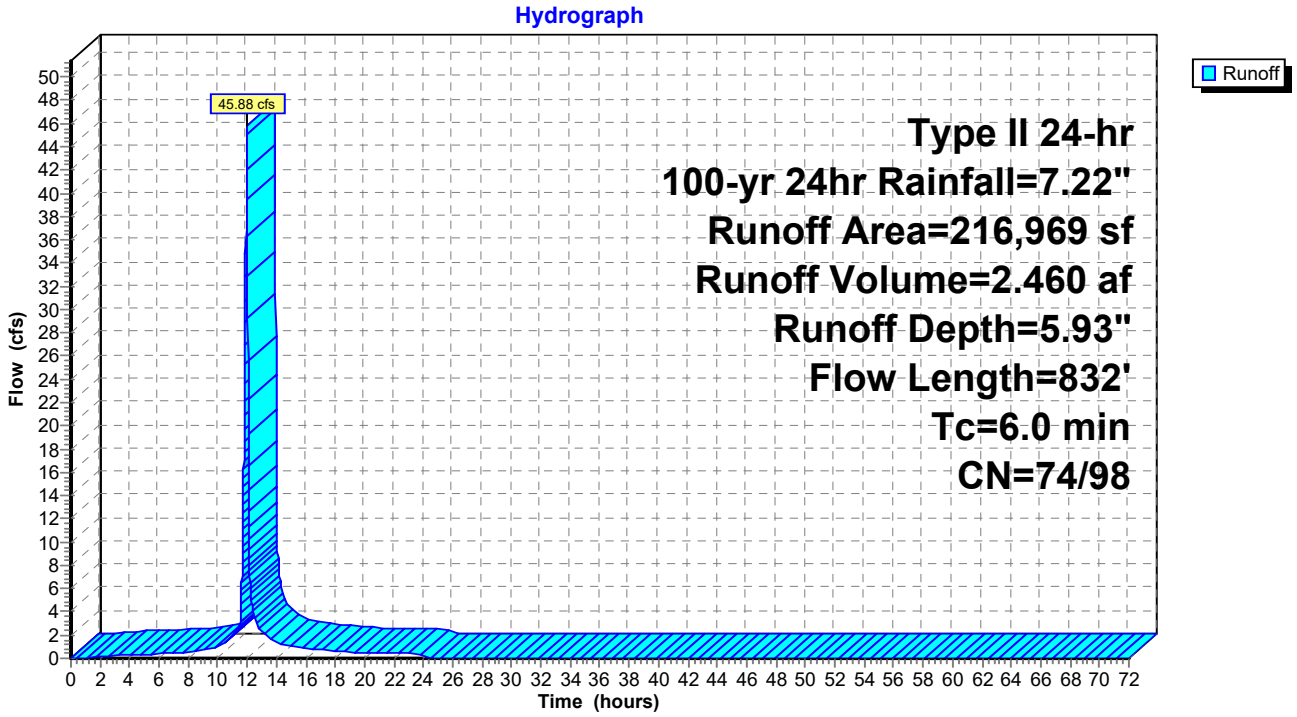
Runoff = 45.88 cfs @ 11.97 hrs, Volume= 2.460 af, Depth= 5.93"
Routed to Pond 2P : Block Outlet Structure

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr 24hr Rainfall=7.22"

	Area (sf)	CN	Description
	62,064	98	Paved parking, HSG C
*	52,112	98	Paved parking (gravel), HSG C
	83,229	74	>75% Grass cover, Good, HSG C
	19,564	98	Water Surface, HSG C
	216,969	89	Weighted Average
	83,229	74	38.36% Pervious Area
	133,740	98	61.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	127	0.0501	2.02		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.4	107	0.0623	5.07		**Shallow Concentrated Flow, Shallow Conc Flow** Paved Kv= 20.3 fps
0.4	333	0.0420	15.51	290.79	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	143	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
3.6					**Direct Entry, User**
6.0	832	Total			

Subcatchment 2S: Proposed Development



Summary for Subcatchment 3S(b): Off-Site (Captured by Basin)

[47] Hint: Peak is 180% of capacity of segment #6

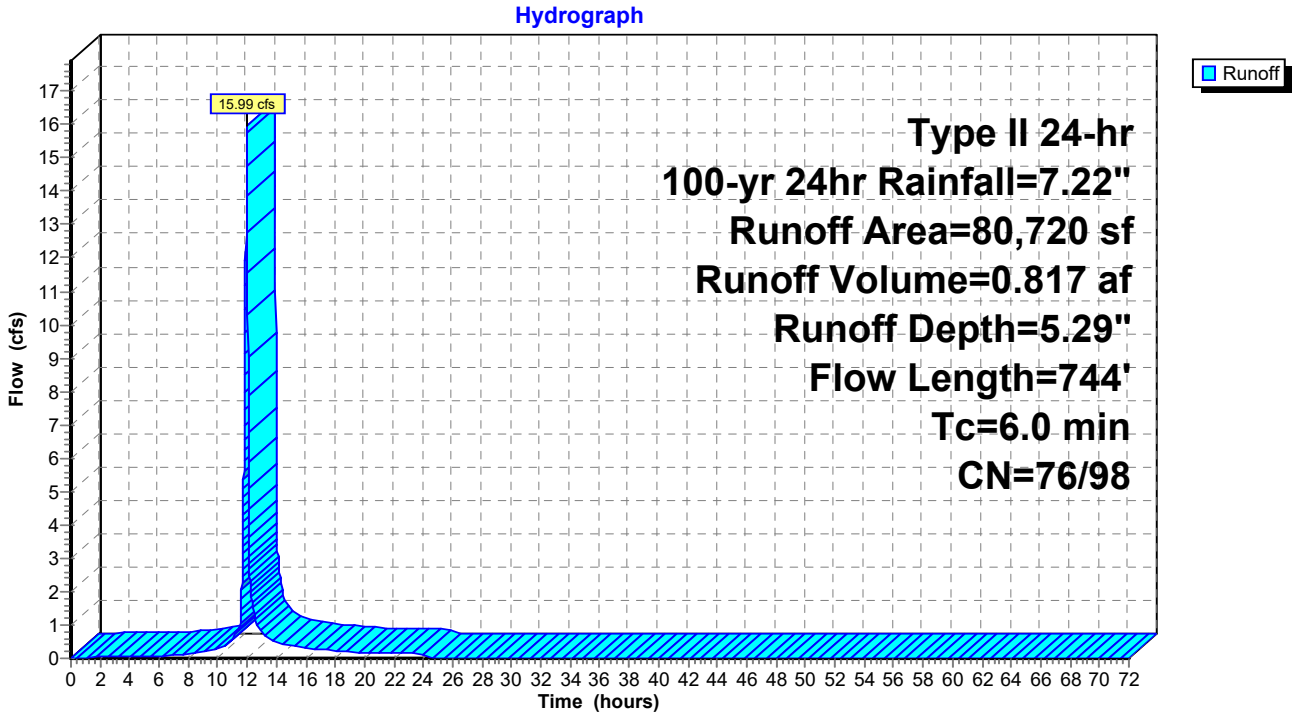
Runoff = 15.99 cfs @ 11.97 hrs, Volume= 0.817 af, Depth= 5.29"
Routed to Pond 2P : Block Outlet Structure

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr 24hr Rainfall=7.22"

Area (sf)	CN	Description
10,378	82	Row crops, SR + CR, Good, HSG C
3,388	98	Unconnected pavement, HSG C
22,308	98	Paved parking, HSG C
43,614	74	>75% Grass cover, Good, HSG C
1,032	98	Roofs, HSG C
80,720	83	Weighted Average
53,992	76	66.89% Pervious Area
26,728	98	33.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	29	0.1534	2.35		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
1.2	100	0.0200	1.33		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.3	65	0.0463	3.23		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.8	174	0.0461	3.46		**Shallow Concentrated Flow, Shallow Conc Flow** Unpaved Kv= 16.1 fps
0.5	112	0.0714	4.01		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	142	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
2.4					**Direct Entry, User**
6.0	744	Total			

Subcatchment 3S(b): Off-Site (Captured by Basin)



Summary for Pond 2P: Block Outlet Structure

Inflow Area = 6.834 ac, 53.90% Impervious, Inflow Depth = 5.75" for 100-yr 24hr event
Inflow = 61.87 cfs @ 11.97 hrs, Volume= 3.277 af
Outflow = 24.03 cfs @ 12.08 hrs, Volume= 1.888 af, Atten= 61%, Lag= 6.4 min
Secondary = 24.03 cfs @ 12.08 hrs, Volume= 1.888 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 684.08' @ 12.08 hrs Surf.Area= 29,630 sf Storage= 77,289 cf

Plug-Flow detention time= 244.9 min calculated for 1.888 af (58% of inflow)
Center-of-Mass det. time= 128.9 min (894.0 - 765.1)

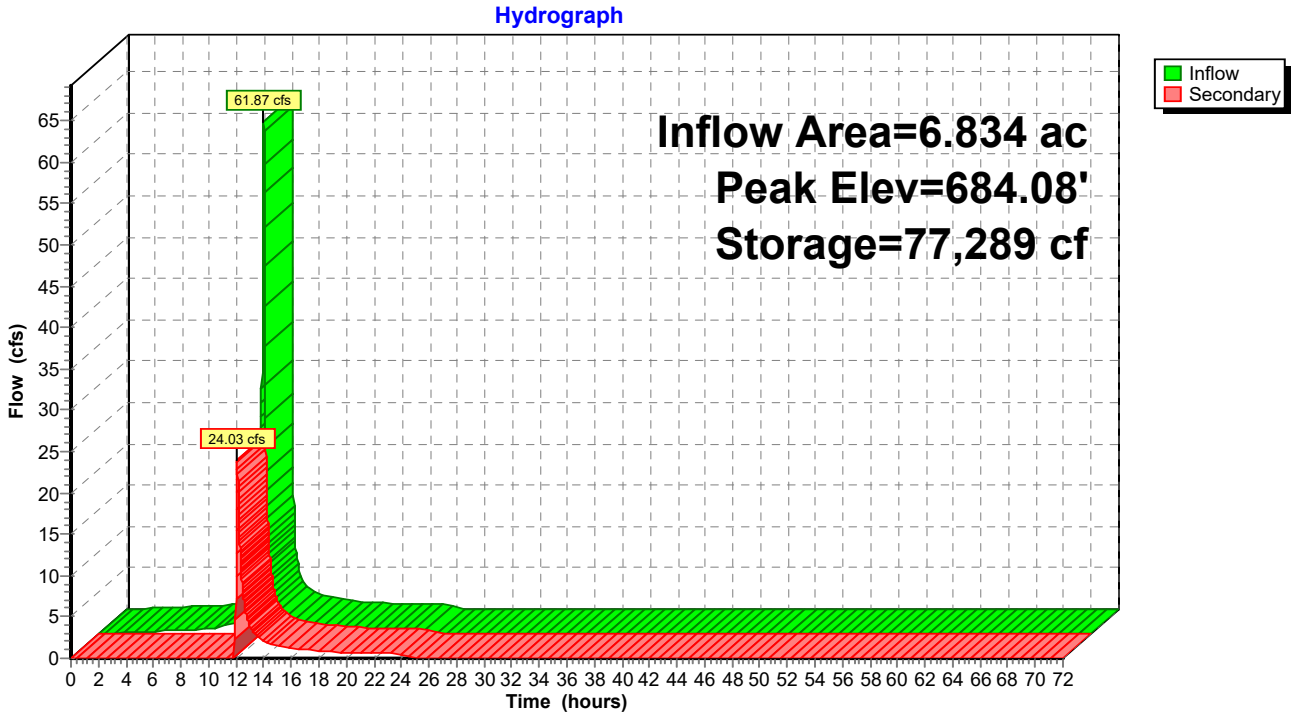
Volume	Invert	Avail.Storage	Storage Description
#1	681.00'	106,153 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
681.00	19,564	617.1	0	0	19,564
682.00	24,059	660.5	21,773	21,773	24,022
683.00	26,372	871.5	25,207	46,979	49,757
684.00	29,287	1,115.7	27,817	74,796	88,387
685.00	33,473	1,427.5	31,357	106,153	151,502

Device	Routing	Invert	Outlet Devices
#1	Secondary	683.50'	**20.0' 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

Secondary OutFlow Max=24.01 cfs @ 12.08 hrs HW=684.08' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 24.01 cfs @ 2.06 fps)

Pond 2P: Block Outlet Structure



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment2S: Proposed Runoff Area=216,969 sf 61.64% Impervious Runoff Depth=8.25"
Flow Length=832' Tc=6.0 min CN=74/98 Runoff=63.48 cfs 3.426 af

Subcatchment3S(b): Off-Site (Captured by Runoff Area=80,720 sf 33.11% Impervious Runoff Depth=7.57"
Flow Length=744' Tc=6.0 min CN=76/98 Runoff=22.64 cfs 1.170 af

Pond 2P: Block Outlet Structure Peak Elev=684.54' Storage=91,364 cf Inflow=86.13 cfs 4.596 af
Outflow=57.31 cfs 3.206 af

Total Runoff Area = 6.834 ac Runoff Volume = 4.596 af Average Runoff Depth = 8.07"
46.10% Pervious = 3.150 ac 53.90% Impervious = 3.684 ac

Summary for Subcatchment 2S: Proposed Development

[47] Hint: Peak is 716% of capacity of segment #4

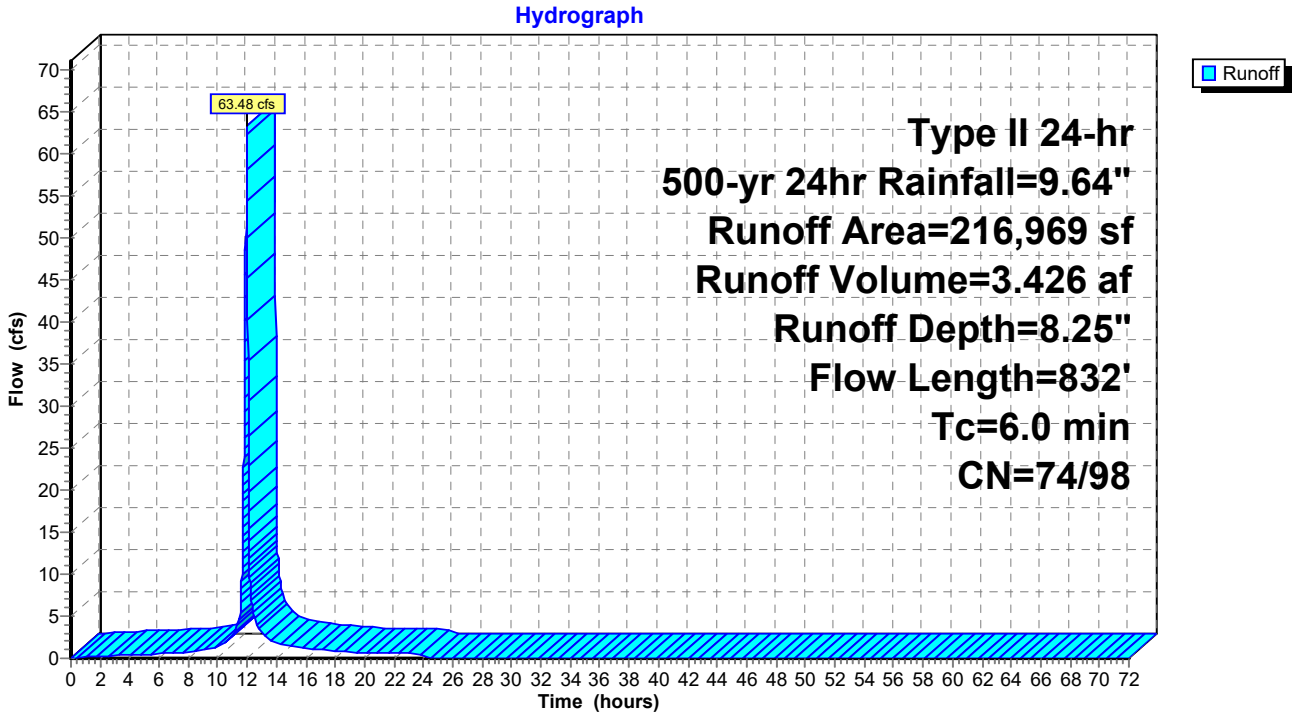
Runoff = 63.48 cfs @ 11.97 hrs, Volume= 3.426 af, Depth= 8.25"
Routed to Pond 2P : Block Outlet Structure

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 500-yr 24hr Rainfall=9.64"

	Area (sf)	CN	Description
	62,064	98	Paved parking, HSG C
*	52,112	98	Paved parking (gravel), HSG C
	83,229	74	>75% Grass cover, Good, HSG C
	19,564	98	Water Surface, HSG C
	216,969	89	Weighted Average
	83,229	74	38.36% Pervious Area
	133,740	98	61.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	127	0.0501	2.02		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.4	107	0.0623	5.07		**Shallow Concentrated Flow, Shallow Conc Flow** Paved Kv= 20.3 fps
0.4	333	0.0420	15.51	290.79	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	143	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
3.6					**Direct Entry, User**
6.0	832	Total			

Subcatchment 2S: Proposed Development



Summary for Subcatchment 3S(b): Off-Site (Captured by Basin)

[47] Hint: Peak is 255% of capacity of segment #6

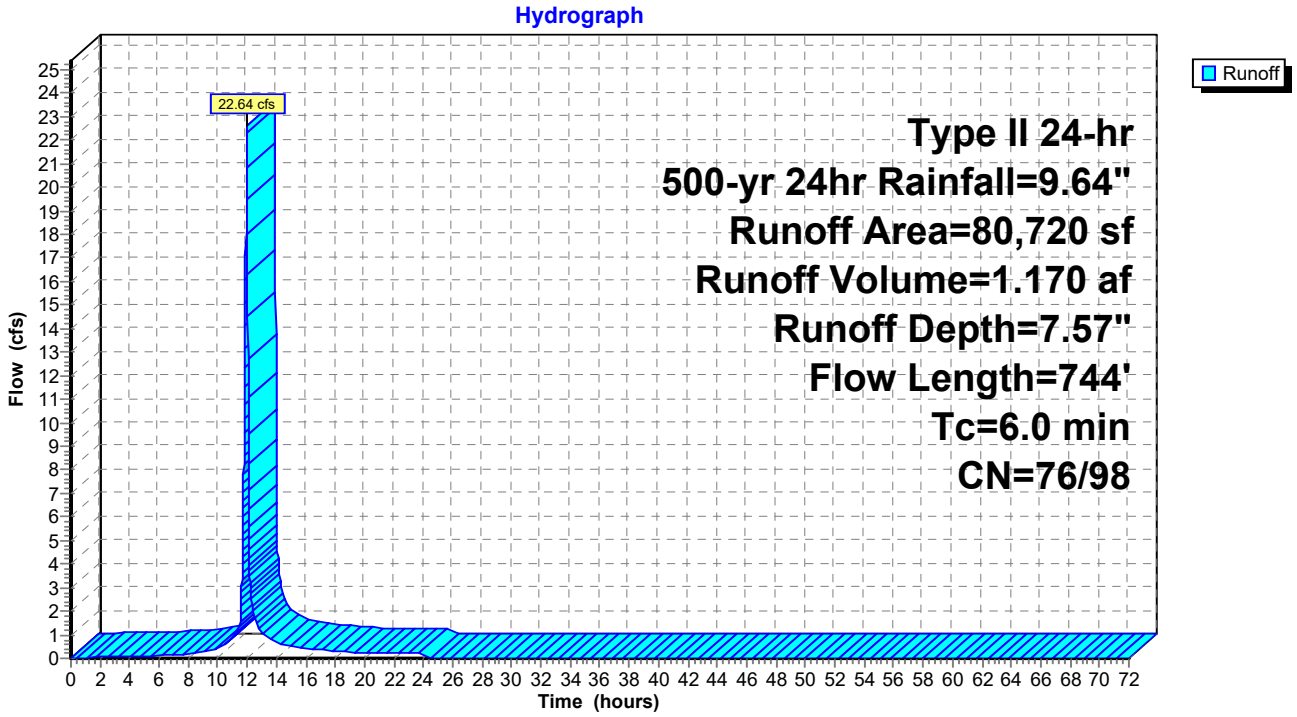
Runoff = 22.64 cfs @ 11.97 hrs, Volume= 1.170 af, Depth= 7.57"
Routed to Pond 2P : Block Outlet Structure

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 500-yr 24hr Rainfall=9.64"

Area (sf)	CN	Description
10,378	82	Row crops, SR + CR, Good, HSG C
3,388	98	Unconnected pavement, HSG C
22,308	98	Paved parking, HSG C
43,614	74	>75% Grass cover, Good, HSG C
1,032	98	Roofs, HSG C
80,720	83	Weighted Average
53,992	76	66.89% Pervious Area
26,728	98	33.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	29	0.1534	2.35		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
1.2	100	0.0200	1.33		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
0.3	65	0.0463	3.23		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.8	174	0.0461	3.46		**Shallow Concentrated Flow, Shallow Conc Flow** Unpaved Kv= 16.1 fps
0.5	112	0.0714	4.01		**Shallow Concentrated Flow, Shallow Conc Flow** Grassed Waterway Kv= 15.0 fps
0.4	122	0.0051	5.02	8.87	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.2	142	0.0175	10.01	187.70	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.022 Earth, clean & straight
2.4					**Direct Entry, User**
6.0	744	Total			

Subcatchment 3S(b): Off-Site (Captured by Basin)



Summary for Pond 2P: Block Outlet Structure

Inflow Area = 6.834 ac, 53.90% Impervious, Inflow Depth = 8.07" for 500-yr 24hr event
Inflow = 86.13 cfs @ 11.97 hrs, Volume= 4.596 af
Outflow = 57.31 cfs @ 12.04 hrs, Volume= 3.206 af, Atten= 33%, Lag= 4.1 min
Secondary = 57.31 cfs @ 12.04 hrs, Volume= 3.206 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 684.54' @ 12.04 hrs Surf.Area= 31,533 sf Storage= 91,364 cf

Plug-Flow detention time= 197.8 min calculated for 3.206 af (70% of inflow)
Center-of-Mass det. time= 97.8 min (858.4 - 760.5)

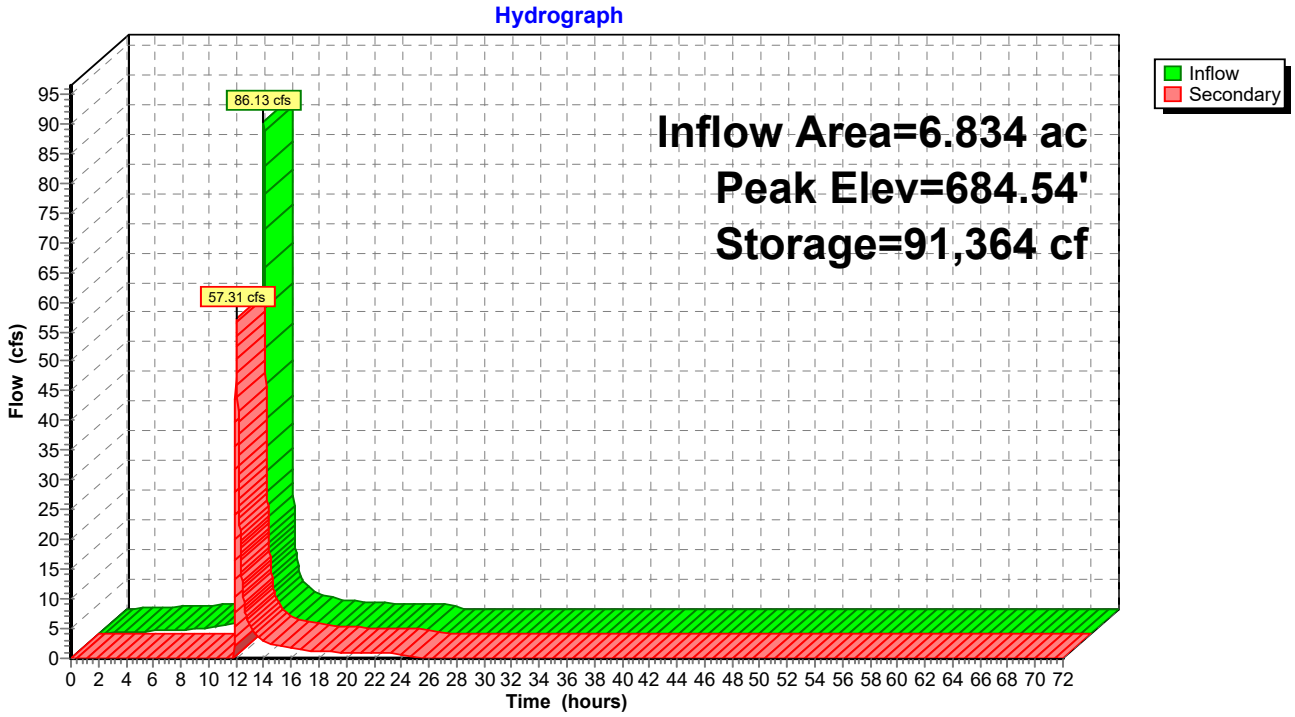
Volume	Invert	Avail.Storage	Storage Description
#1	681.00'	106,153 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
681.00	19,564	617.1	0	0	19,564
682.00	24,059	660.5	21,773	21,773	24,022
683.00	26,372	871.5	25,207	46,979	49,757
684.00	29,287	1,115.7	27,817	74,796	88,387
685.00	33,473	1,427.5	31,357	106,153	151,502

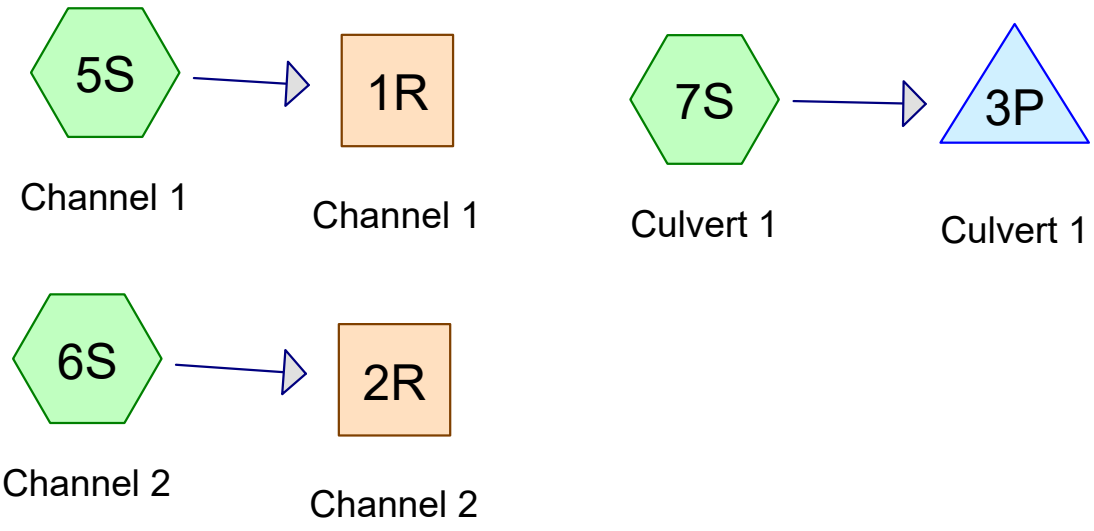
Device	Routing	Invert	Outlet Devices
#1	Secondary	683.50'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Secondary OutFlow Max=57.23 cfs @ 12.04 hrs HW=684.54' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 57.23 cfs @ 2.74 fps)

Pond 2P: Block Outlet Structure



CONVEYANCE DESIGN HYDROCAD REPORT



Subcat Reach Pond Link

Routing Diagram for DaneRdSW
Prepared by Foth & Van Dyke, LLC, Printed 8/13/2025
HydroCAD® 10.20-5c s/n 02551 © 2023 HydroCAD Software Solutions LLC

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-yr 24hr	Type II 24-hr		Default	24.00	1	2.60	2
2	2-yr 24hr	Type II 24-hr		Default	24.00	1	3.01	2
3	5-yr 24hr	Type II 24-hr		Default	24.00	1	3.75	2
4	10-yr 24hr	Type II 24-hr		Default	24.00	1	4.42	2
5	25-yr 24hr	Type II 24-hr		Default	24.00	1	5.44	2
6	50-yr 24hr	Type II 24-hr		Default	24.00	1	6.29	2
7	100-yr 24hr	Type II 24-hr		Default	24.00	1	7.22	2
8	500-yr 24hr	Type II 24-hr		Default	24.00	1	9.64	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.615	74	>75% Grass cover, Good, HSG C (5S, 6S)
2.285	98	Paved parking, HSG C (5S, 6S, 7S)
0.238	82	Row crops, SR + CR, Good, HSG C (6S, 7S)
3.138	**92**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
3.138	HSG C	5S, 6S, 7S
0.000	HSG D	
0.000	Other	
3.138		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.615	0.000	0.000	0.615	>75% Grass cover, Good	5S, 6S
0.000	0.000	2.285	0.000	0.000	2.285	Paved parking	5S, 6S, 7S
0.000	0.000	0.238	0.000	0.000	0.238	Row crops, SR + CR, Good	6S, 7S
0.000	**0.000**	**3.138**	**0.000**	**0.000**	**3.138**	**TOTAL AREA**	

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	3P	686.27	685.65	122.6	0.0051	0.011	0.0	18.0	0.0	

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment5S: Channel 1 Runoff Area=35,233 sf 46.62% Impervious Runoff Depth=1.46"
Tc=6.0 min CN=74/98 Runoff=1.86 cfs 0.098 af

Subcatchment6S: Channel 2 Runoff Area=52,370 sf 76.08% Impervious Runoff Depth=2.00"
Tc=6.0 min CN=77/98 Runoff=3.75 cfs 0.200 af

Subcatchment7S: Culvert 1 Runoff Area=49,099 sf 88.14% Impervious Runoff Depth=2.22"
Flow Length=582' Tc=6.0 min CN=82/98 Runoff=3.89 cfs 0.208 af

Reach 1R: Channel 1 Avg. Flow Depth=0.43' Max Vel=3.14 fps Inflow=1.86 cfs 0.098 af
n=0.030 L=396.0' S=0.0328 '/' Capacity=188.53 cfs Outflow=1.78 cfs 0.098 af

Reach 2R: Channel 2 Avg. Flow Depth=0.66' Max Vel=2.67 fps Inflow=3.75 cfs 0.200 af
n=0.030 L=442.0' S=0.0136 '/' Capacity=121.23 cfs Outflow=3.51 cfs 0.200 af

Pond 3P: Culvert 1 Peak Elev=687.08' Storage=49 cf Inflow=3.89 cfs 0.208 af
Outflow=3.88 cfs 0.208 af

Total Runoff Area = 3.138 ac Runoff Volume = 0.507 af Average Runoff Depth = 1.94"
27.18% Pervious = 0.853 ac 72.82% Impervious = 2.285 ac

Summary for Subcatchment 5S: Channel 1

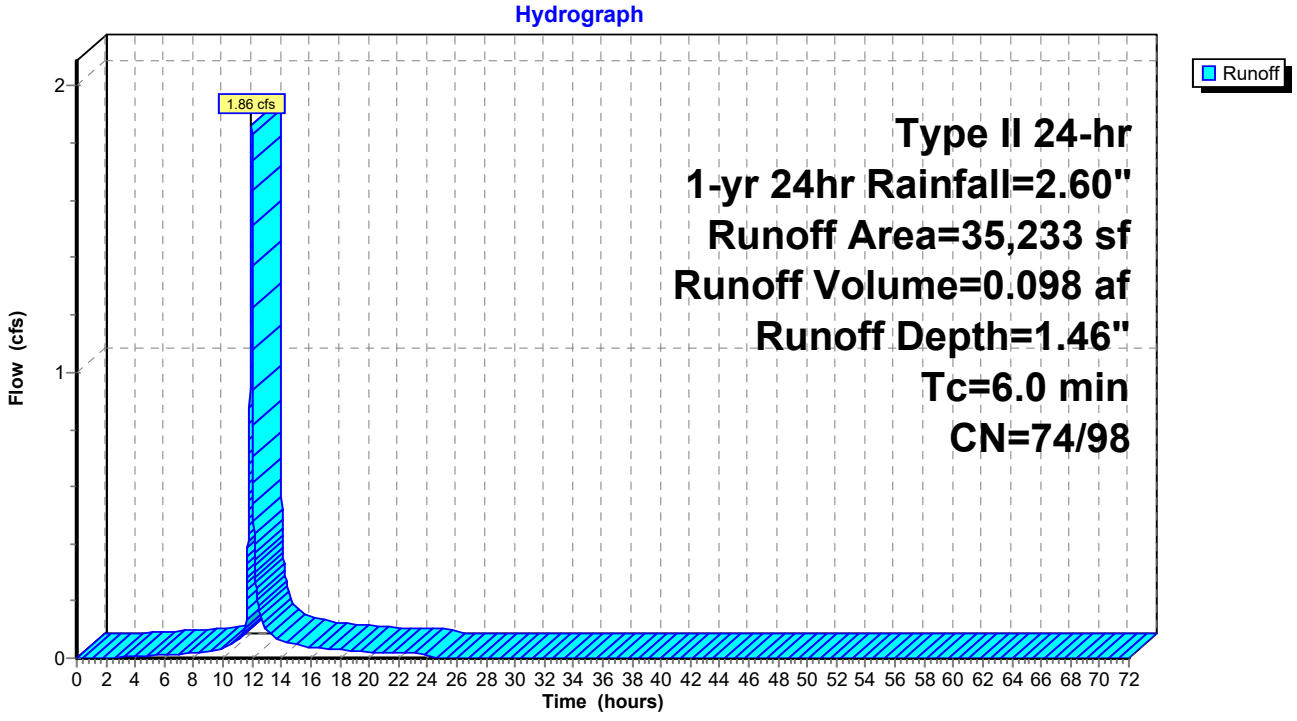
Runoff = 1.86 cfs @ 11.97 hrs, Volume= 0.098 af, Depth= 1.46"
Routed to Reach 1R : Channel 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr 24hr Rainfall=2.60"

Area (sf)	CN	Description
16,426	98	Paved parking, HSG C
18,807	74	>75% Grass cover, Good, HSG C
35,233	85	Weighted Average
18,807	74	53.38% Pervious Area
16,426	98	46.62% Impervious Area

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

Subcatchment 5S: Channel 1



Summary for Subcatchment 6S: Channel 2

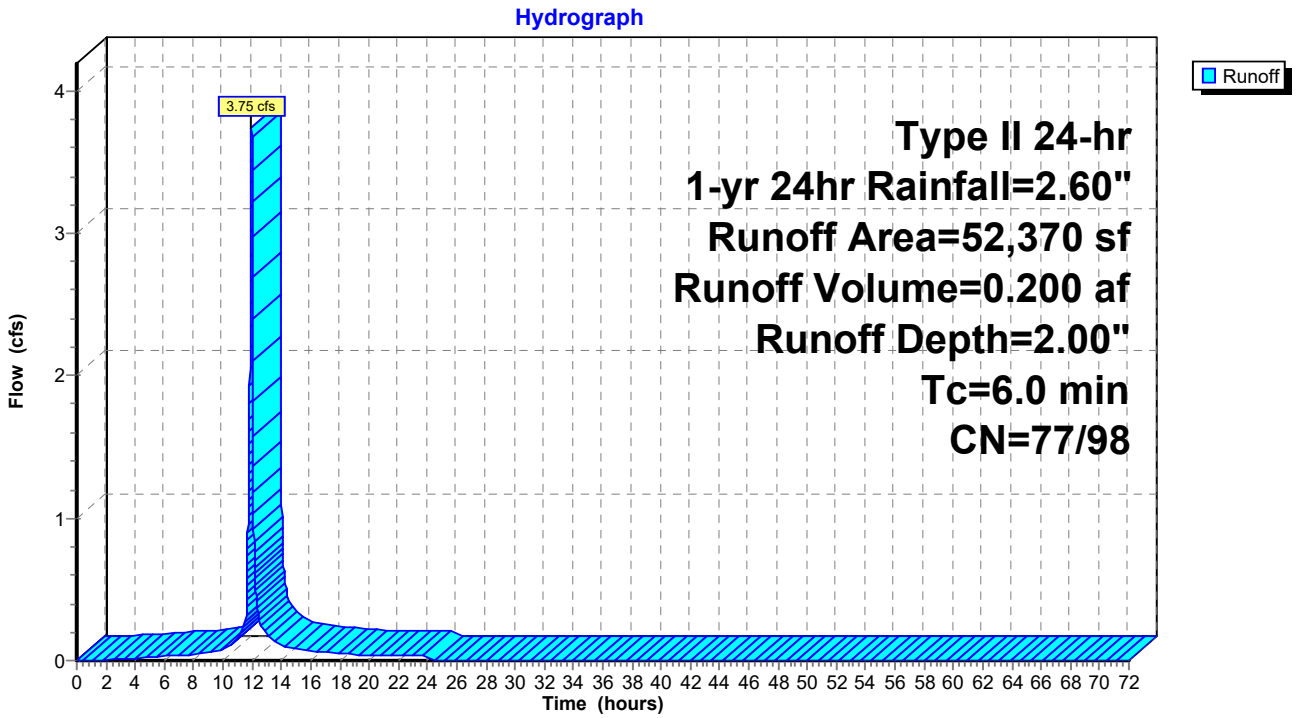
Runoff = 3.75 cfs @ 11.97 hrs, Volume= 0.200 af, Depth= 2.00"
Routed to Reach 2R : Channel 2

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr 24hr Rainfall=2.60"

Area (sf)	CN	Description
4,554	82	Row crops, SR + CR, Good, HSG C
39,843	98	Paved parking, HSG C
7,973	74	>75% Grass cover, Good, HSG C
52,370	93	Weighted Average
12,527	77	23.92% Pervious Area
39,843	98	76.08% Impervious Area

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

Subcatchment 6S: Channel 2



Summary for Subcatchment 7S: Culvert 1

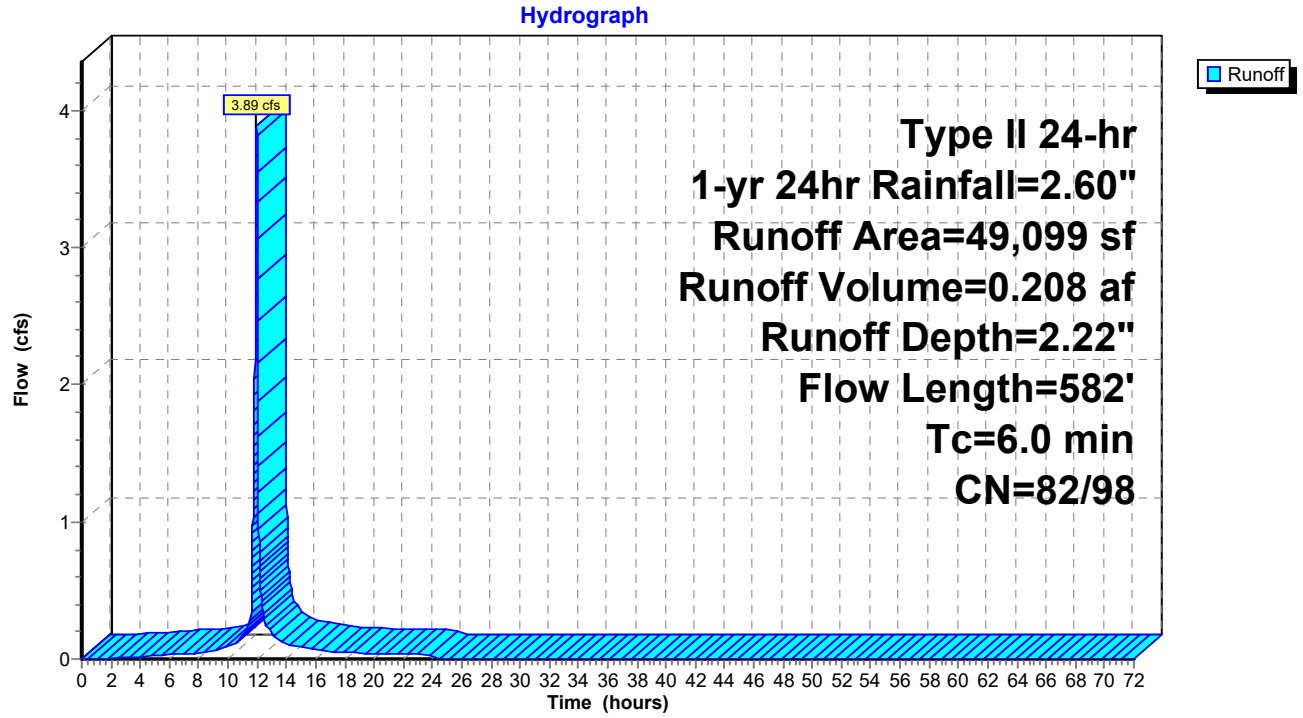
Runoff = 3.89 cfs @ 11.97 hrs, Volume= 0.208 af, Depth= 2.22"
Routed to Pond 3P : Culvert 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr 24hr Rainfall=2.60"

Area (sf)	CN	Description
43,275	98	Paved parking, HSG C
5,824	82	Row crops, SR + CR, Good, HSG C
49,099	96	Weighted Average
5,824	82	11.86% Pervious Area
43,275	98	88.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	76	0.0626	1.99		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
2.2	33	0.1030	0.25		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.01"
0.7	473	0.0423	11.41	214.00	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.030 Earth, grassed & winding
2.5					**Direct Entry, User**
6.0	582	Total			

Subcatchment 7S: Culvert 1



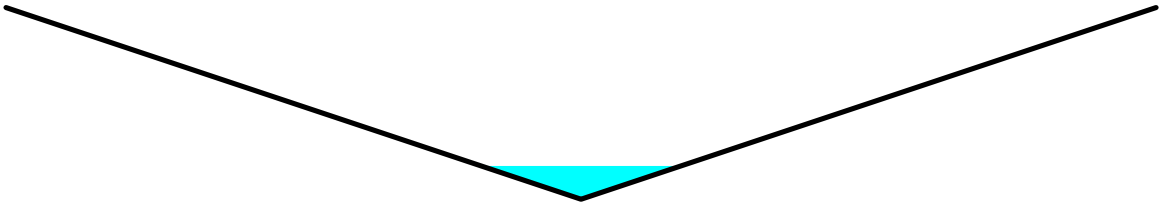
Summary for Reach 1R: Channel 1

Inflow Area = 0.809 ac, 46.62% Impervious, Inflow Depth = 1.46" for 1-yr 24hr event
Inflow = 1.86 cfs @ 11.97 hrs, Volume= 0.098 af
Outflow = 1.78 cfs @ 11.99 hrs, Volume= 0.098 af, Atten= 4%, Lag= 1.3 min

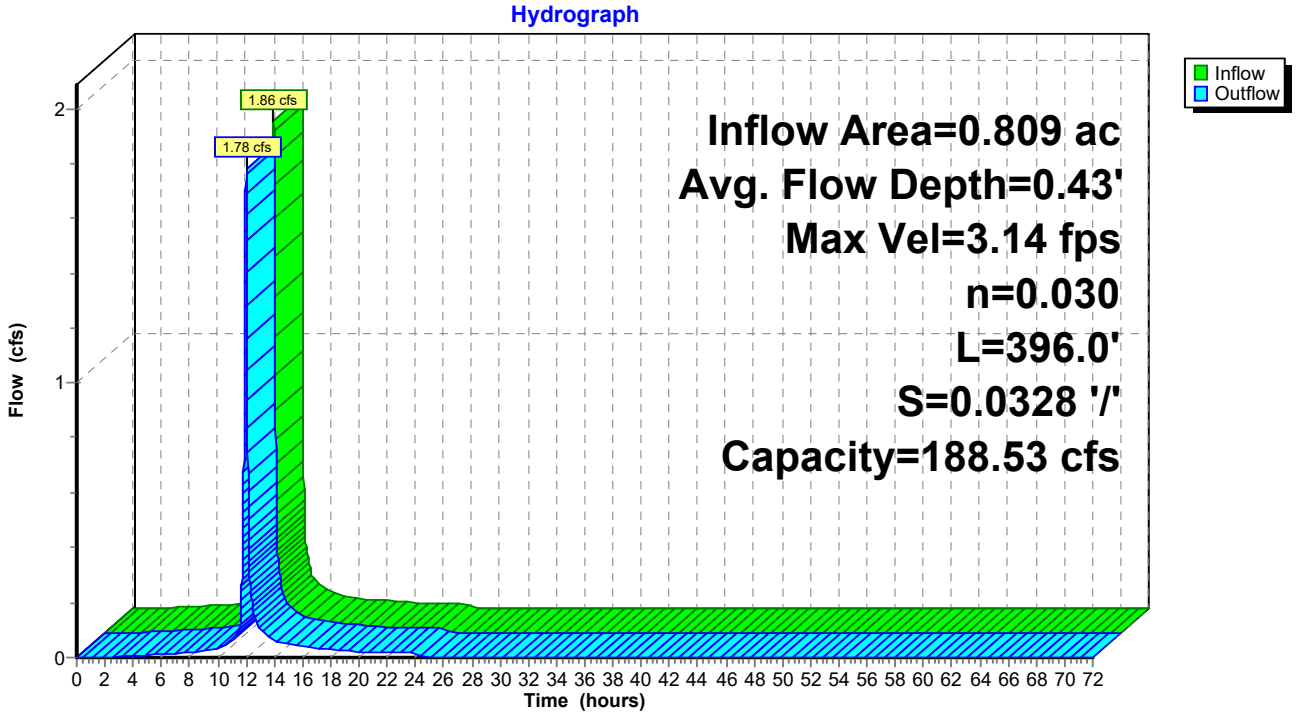
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.14 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 1.09 fps, Avg. Travel Time= 6.1 min

Peak Storage= 225 cf @ 11.99 hrs
Average Depth at Peak Storage= 0.43' , Surface Width= 2.61'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 188.53 cfs

0.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 15.00'
Length= 396.0' Slope= 0.0328 '/'
Inlet Invert= 697.00', Outlet Invert= 684.00'



Reach 1R: Channel 1



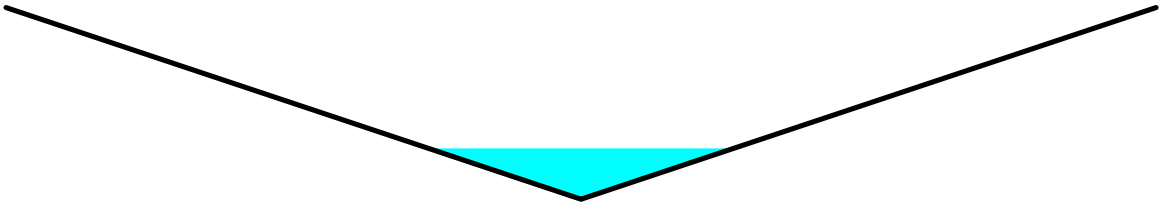
Summary for Reach 2R: Channel 2

Inflow Area = 1.202 ac, 76.08% Impervious, Inflow Depth = 2.00" for 1-yr 24hr event
Inflow = 3.75 cfs @ 11.97 hrs, Volume= 0.200 af
Outflow = 3.51 cfs @ 12.00 hrs, Volume= 0.200 af, Atten= 6%, Lag= 1.6 min

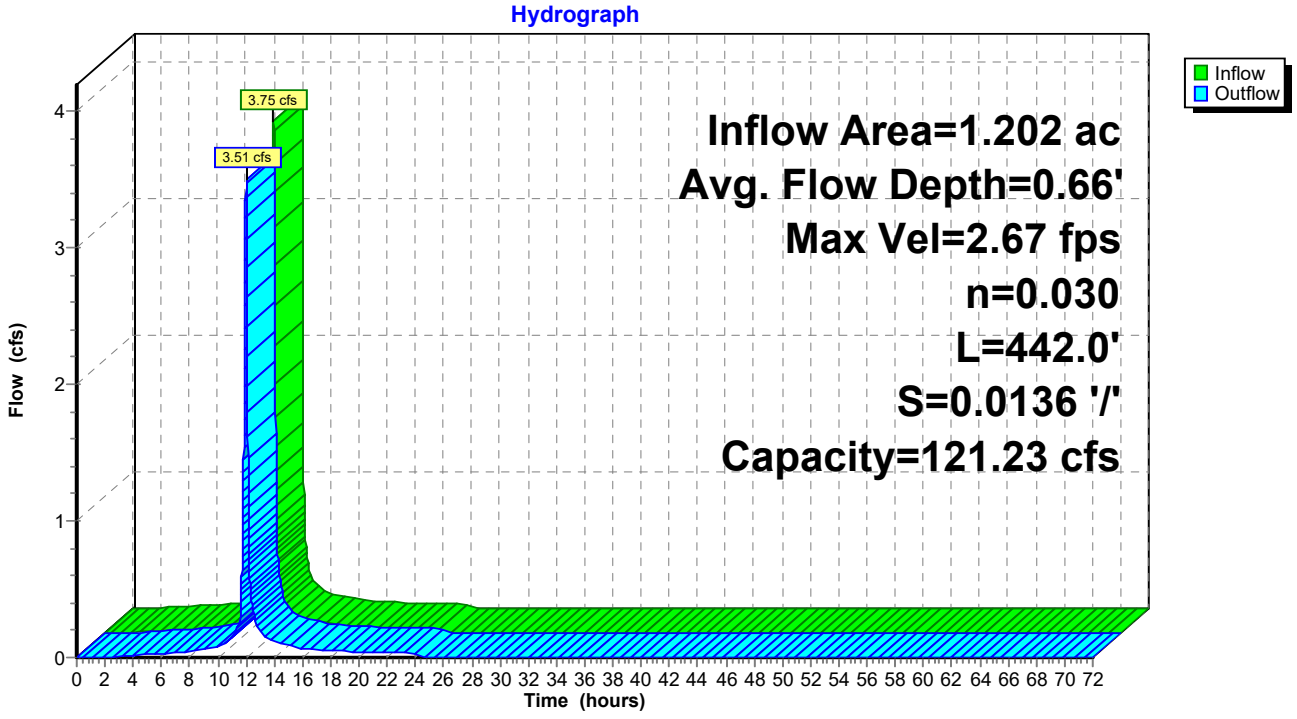
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.67 fps, Min. Travel Time= 2.8 min
Avg. Velocity = 0.90 fps, Avg. Travel Time= 8.2 min

Peak Storage= 581 cf @ 12.00 hrs
Average Depth at Peak Storage= 0.66' , Surface Width= 3.97'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 121.23 cfs

0.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 15.00'
Length= 442.0' Slope= 0.0136 '/'
Inlet Invert= 690.00', Outlet Invert= 684.00'



Reach 2R: Channel 2



Summary for Pond 3P: Culvert 1

Inflow Area = 1.127 ac, 88.14% Impervious, Inflow Depth = 2.22" for 1-yr 24hr event
Inflow = 3.89 cfs @ 11.97 hrs, Volume= 0.208 af
Outflow = 3.88 cfs @ 11.97 hrs, Volume= 0.208 af, Atten= 0%, Lag= 0.1 min
Primary = 3.88 cfs @ 11.97 hrs, Volume= 0.208 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 687.08' @ 11.97 hrs Surf.Area= 143 sf Storage= 49 cf

Plug-Flow detention time= 0.4 min calculated for 0.208 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (762.5 - 762.1)

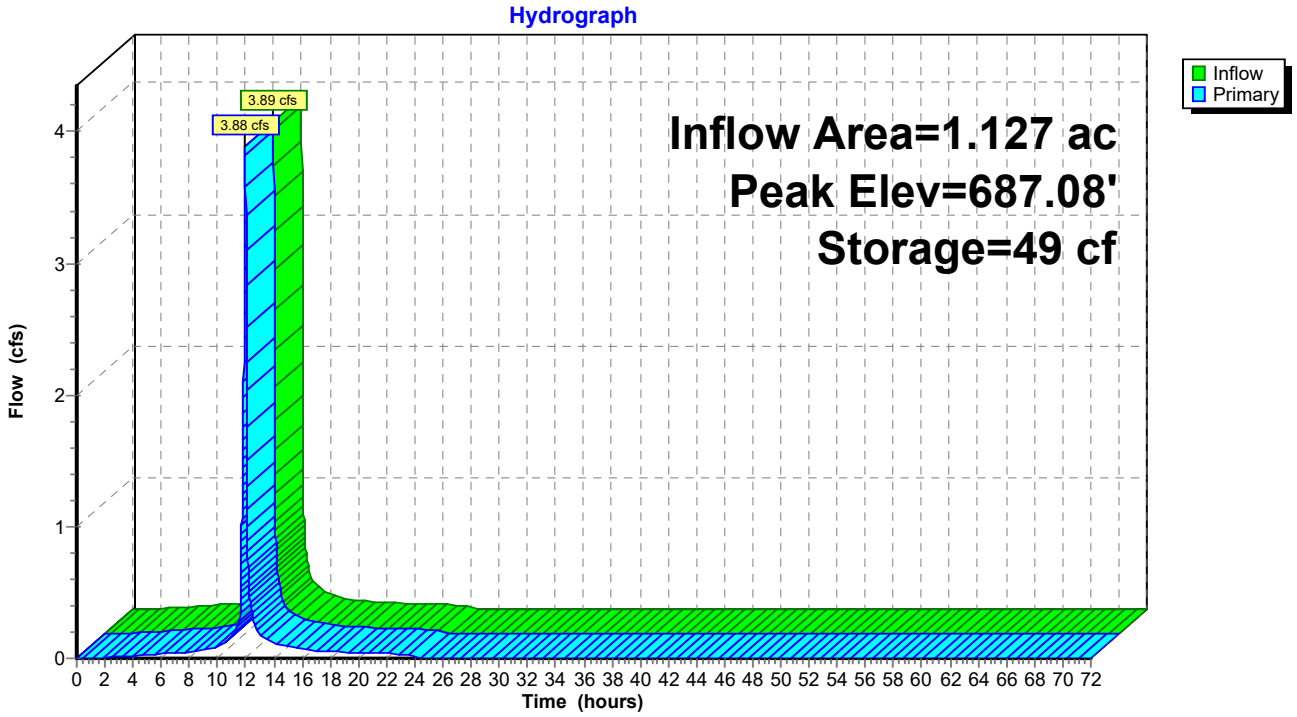
Volume	Invert	Avail.Storage	Storage Description
#1	686.26'	3,775 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
686.26	9	9.0	0	0	9
687.00	118	108.6	39	39	942
688.00	643	256.1	345	385	5,227
689.00	1,586	403.7	1,080	1,464	12,984
690.00	3,121	576.5	2,311	3,775	26,471

Device	Routing	Invert	Outlet Devices
#1	Primary	687.00'	**22.5' 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
#2	Primary	686.27'	**18.0" Round RCP_Round 18"** L= 122.6' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 686.27' / 685.65' S= 0.0051 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=3.87 cfs @ 11.97 hrs HW=687.08' (Free Discharge)
↑ **1=Broad-Crested Rectangular Weir** (Weir Controls 1.14 cfs @ 0.67 fps)
└ **2=RCP_Round 18"** (Barrel Controls 2.73 cfs @ 4.09 fps)

Pond 3P: Culvert 1



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment5S: Channel 1 Runoff Area=35,233 sf 46.62% Impervious Runoff Depth=1.78"
Tc=6.0 min CN=74/98 Runoff=2.29 cfs 0.120 af

Subcatchment6S: Channel 2 Runoff Area=52,370 sf 76.08% Impervious Runoff Depth=2.37"
Tc=6.0 min CN=77/98 Runoff=4.43 cfs 0.238 af

Subcatchment7S: Culvert 1 Runoff Area=49,099 sf 88.14% Impervious Runoff Depth=2.61"
Flow Length=582' Tc=6.0 min CN=82/98 Runoff=4.55 cfs 0.245 af

Reach 1R: Channel 1 Avg. Flow Depth=0.47' Max Vel=3.30 fps Inflow=2.29 cfs 0.120 af
n=0.030 L=396.0' S=0.0328 '/' Capacity=188.53 cfs Outflow=2.20 cfs 0.120 af

Reach 2R: Channel 2 Avg. Flow Depth=0.71' Max Vel=2.78 fps Inflow=4.43 cfs 0.238 af
n=0.030 L=442.0' S=0.0136 '/' Capacity=121.23 cfs Outflow=4.17 cfs 0.238 af

Pond 3P: Culvert 1 Peak Elev=687.10' Storage=52 cf Inflow=4.55 cfs 0.245 af
Outflow=4.55 cfs 0.245 af

Total Runoff Area = 3.138 ac Runoff Volume = 0.603 af Average Runoff Depth = 2.31"
27.18% Pervious = 0.853 ac 72.82% Impervious = 2.285 ac

Summary for Subcatchment 5S: Channel 1

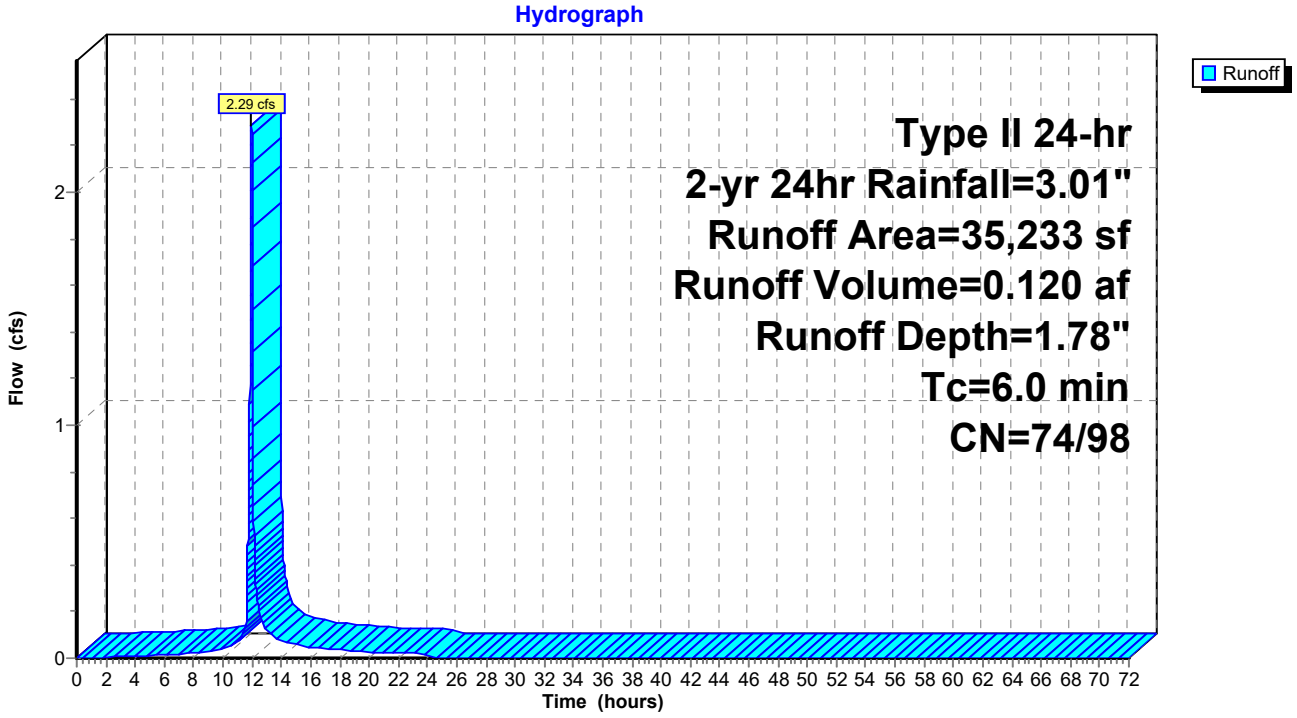
Runoff = 2.29 cfs @ 11.97 hrs, Volume= 0.120 af, Depth= 1.78"
Routed to Reach 1R : Channel 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr 24hr Rainfall=3.01"

Area (sf)	CN	Description
16,426	98	Paved parking, HSG C
18,807	74	>75% Grass cover, Good, HSG C
35,233	85	Weighted Average
18,807	74	53.38% Pervious Area
16,426	98	46.62% Impervious Area

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

Subcatchment 5S: Channel 1



Summary for Subcatchment 6S: Channel 2

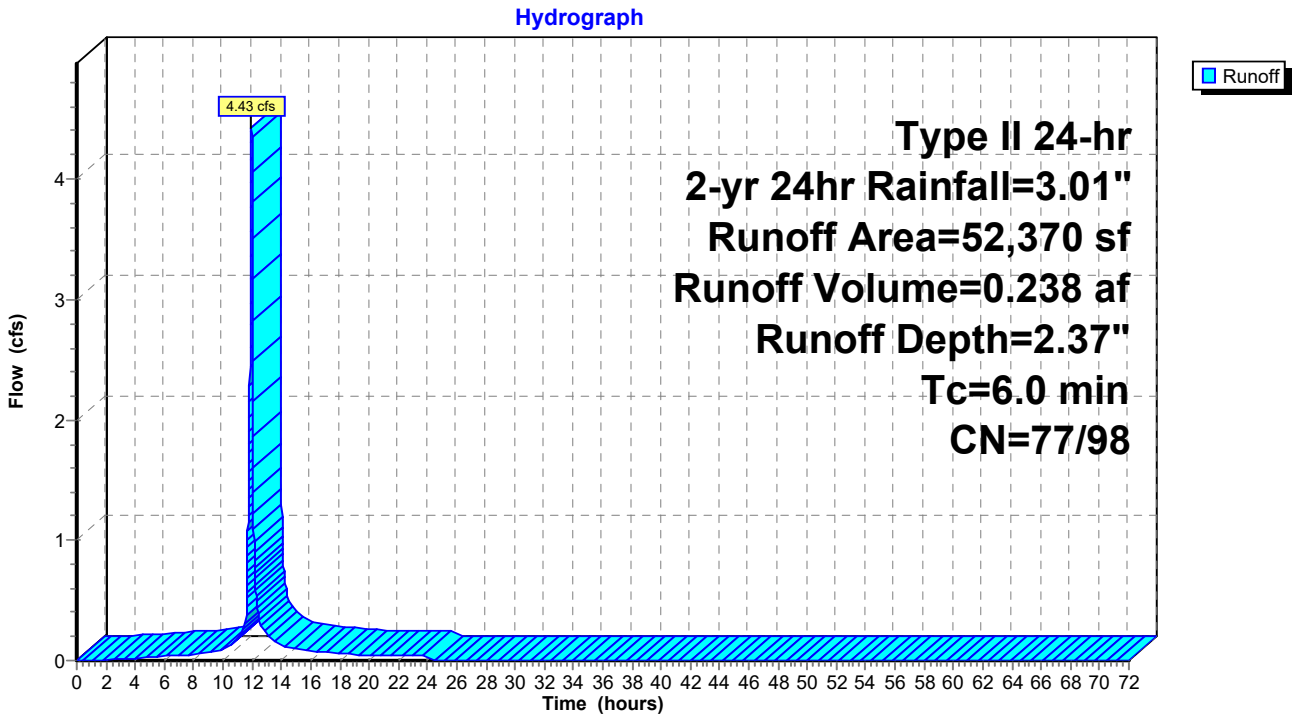
Runoff = 4.43 cfs @ 11.97 hrs, Volume= 0.238 af, Depth= 2.37"
Routed to Reach 2R : Channel 2

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr 24hr Rainfall=3.01"

Area (sf)	CN	Description
4,554	82	Row crops, SR + CR, Good, HSG C
39,843	98	Paved parking, HSG C
7,973	74	>75% Grass cover, Good, HSG C
52,370	93	Weighted Average
12,527	77	23.92% Pervious Area
39,843	98	76.08% Impervious Area

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

Subcatchment 6S: Channel 2



Summary for Subcatchment 7S: Culvert 1

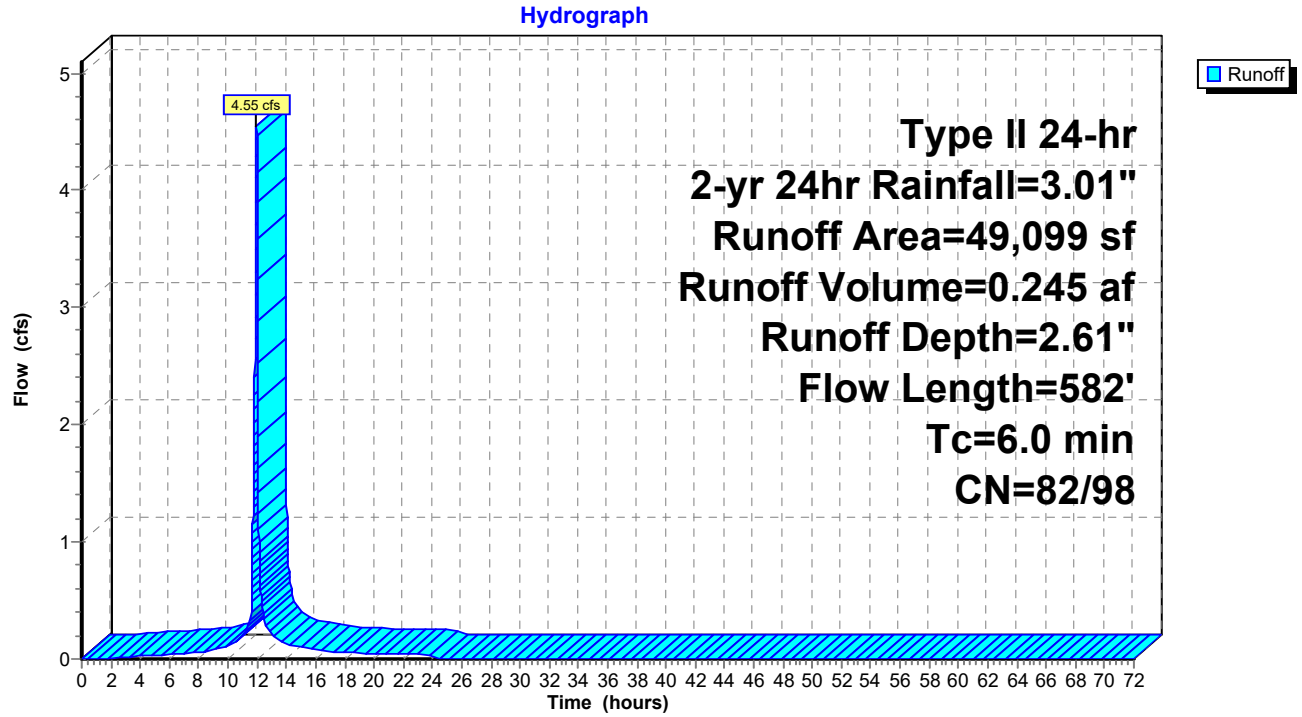
Runoff = 4.55 cfs @ 11.97 hrs, Volume= 0.245 af, Depth= 2.61"
Routed to Pond 3P : Culvert 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr 24hr Rainfall=3.01"

Area (sf)	CN	Description
43,275	98	Paved parking, HSG C
5,824	82	Row crops, SR + CR, Good, HSG C
49,099	96	Weighted Average
5,824	82	11.86% Pervious Area
43,275	98	88.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	76	0.0626	1.99		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
2.2	33	0.1030	0.25		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.01"
0.7	473	0.0423	11.41	214.00	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.030 Earth, grassed & winding
2.5					**Direct Entry, User**
6.0	582	Total			

Subcatchment 7S: Culvert 1



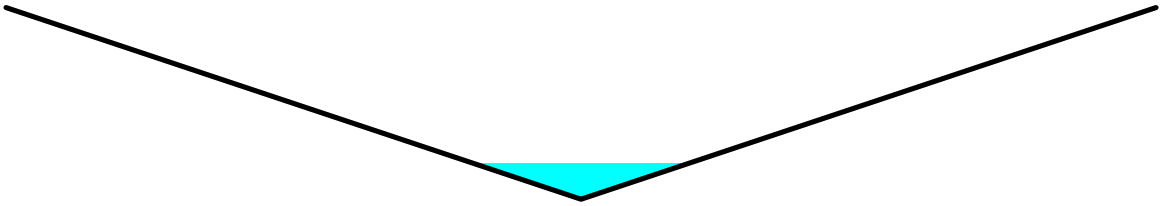
Summary for Reach 1R: Channel 1

Inflow Area = 0.809 ac, 46.62% Impervious, Inflow Depth = 1.78" for 2-yr 24hr event
Inflow = 2.29 cfs @ 11.97 hrs, Volume= 0.120 af
Outflow = 2.20 cfs @ 11.99 hrs, Volume= 0.120 af, Atten= 4%, Lag= 1.3 min

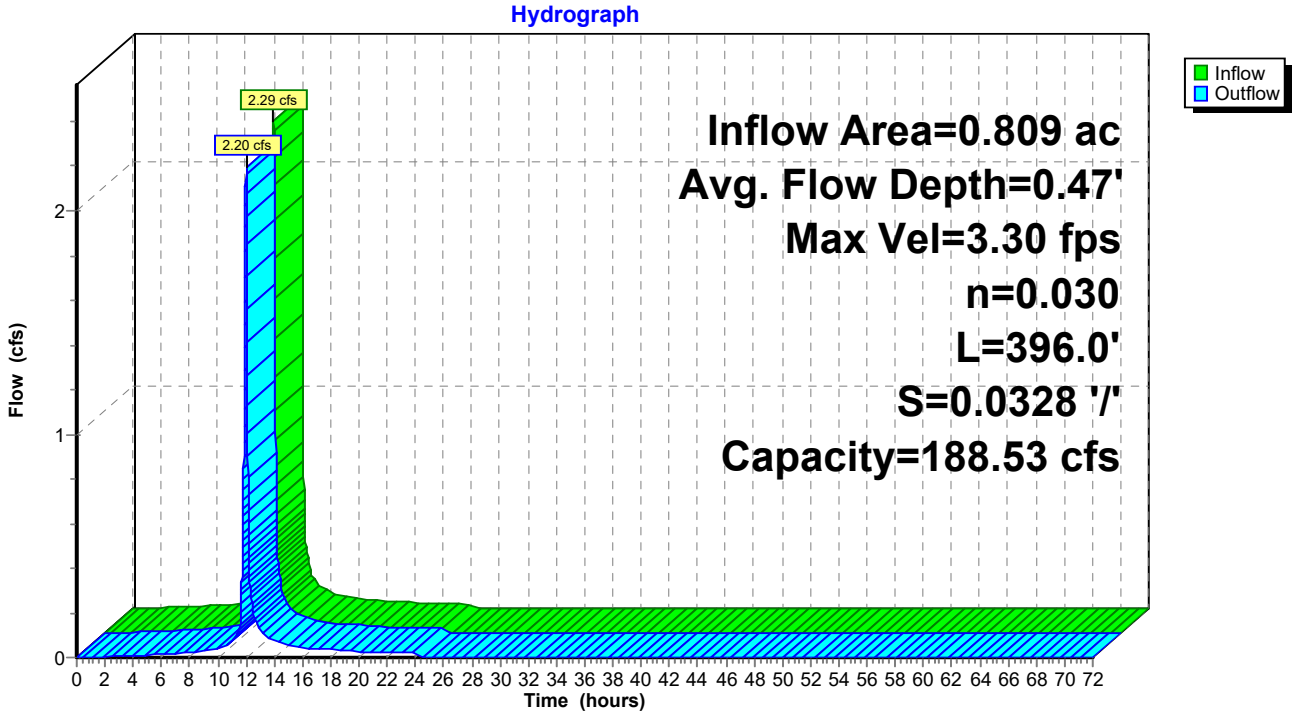
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.30 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 1.14 fps, Avg. Travel Time= 5.8 min

Peak Storage= 263 cf @ 11.99 hrs
Average Depth at Peak Storage= 0.47' , Surface Width= 2.82'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 188.53 cfs

0.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 15.00'
Length= 396.0' Slope= 0.0328 '/'
Inlet Invert= 697.00', Outlet Invert= 684.00'



Reach 1R: Channel 1



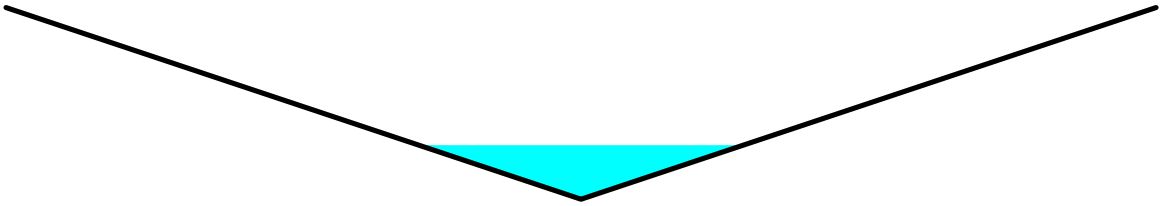
Summary for Reach 2R: Channel 2

Inflow Area = 1.202 ac, 76.08% Impervious, Inflow Depth = 2.37" for 2-yr 24hr event
Inflow = 4.43 cfs @ 11.97 hrs, Volume= 0.238 af
Outflow = 4.17 cfs @ 12.00 hrs, Volume= 0.238 af, Atten= 6%, Lag= 1.6 min

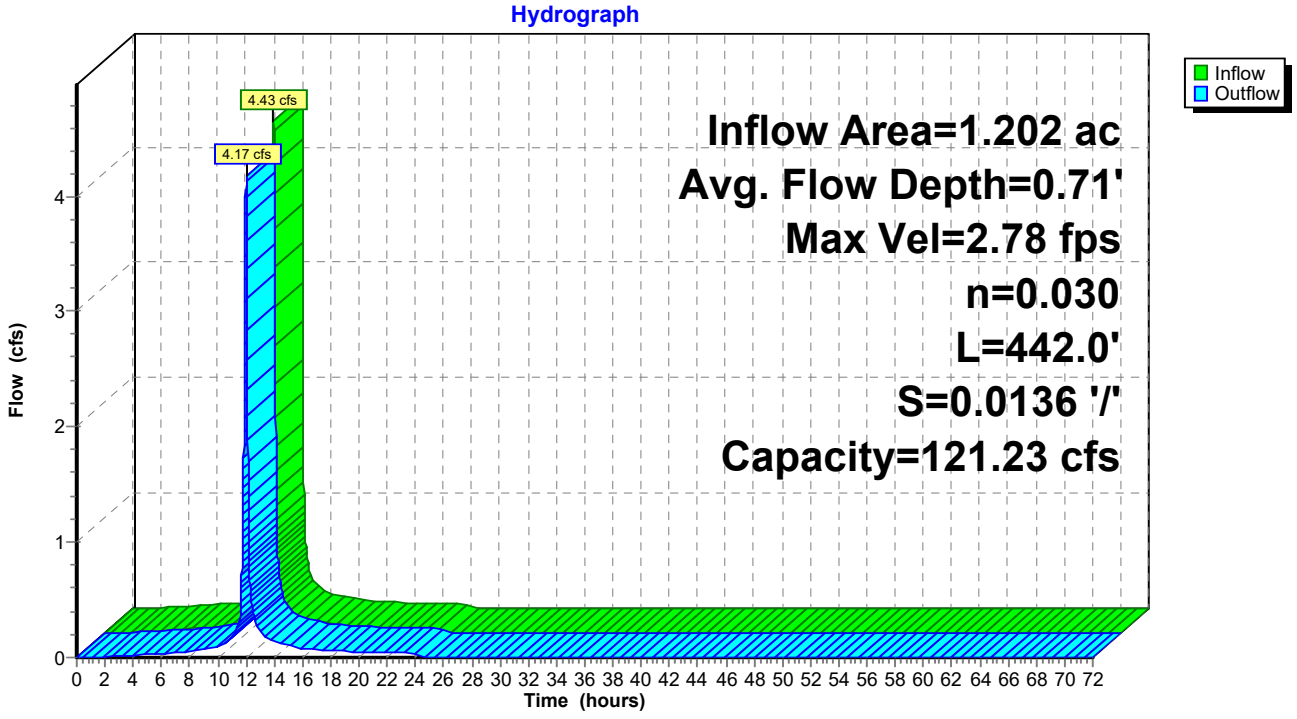
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.78 fps, Min. Travel Time= 2.6 min
Avg. Velocity = 0.94 fps, Avg. Travel Time= 7.8 min

Peak Storage= 662 cf @ 12.00 hrs
Average Depth at Peak Storage= 0.71' , Surface Width= 4.24'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 121.23 cfs

0.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 15.00'
Length= 442.0' Slope= 0.0136 '/'
Inlet Invert= 690.00', Outlet Invert= 684.00'



Reach 2R: Channel 2



Summary for Pond 3P: Culvert 1

Inflow Area = 1.127 ac, 88.14% Impervious, Inflow Depth = 2.61" for 2-yr 24hr event
Inflow = 4.55 cfs @ 11.97 hrs, Volume= 0.245 af
Outflow = 4.55 cfs @ 11.97 hrs, Volume= 0.245 af, Atten= 0%, Lag= 0.1 min
Primary = 4.55 cfs @ 11.97 hrs, Volume= 0.245 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 687.10' @ 11.97 hrs Surf.Area= 151 sf Storage= 52 cf

Plug-Flow detention time= 0.3 min calculated for 0.245 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (759.3 - 759.0)

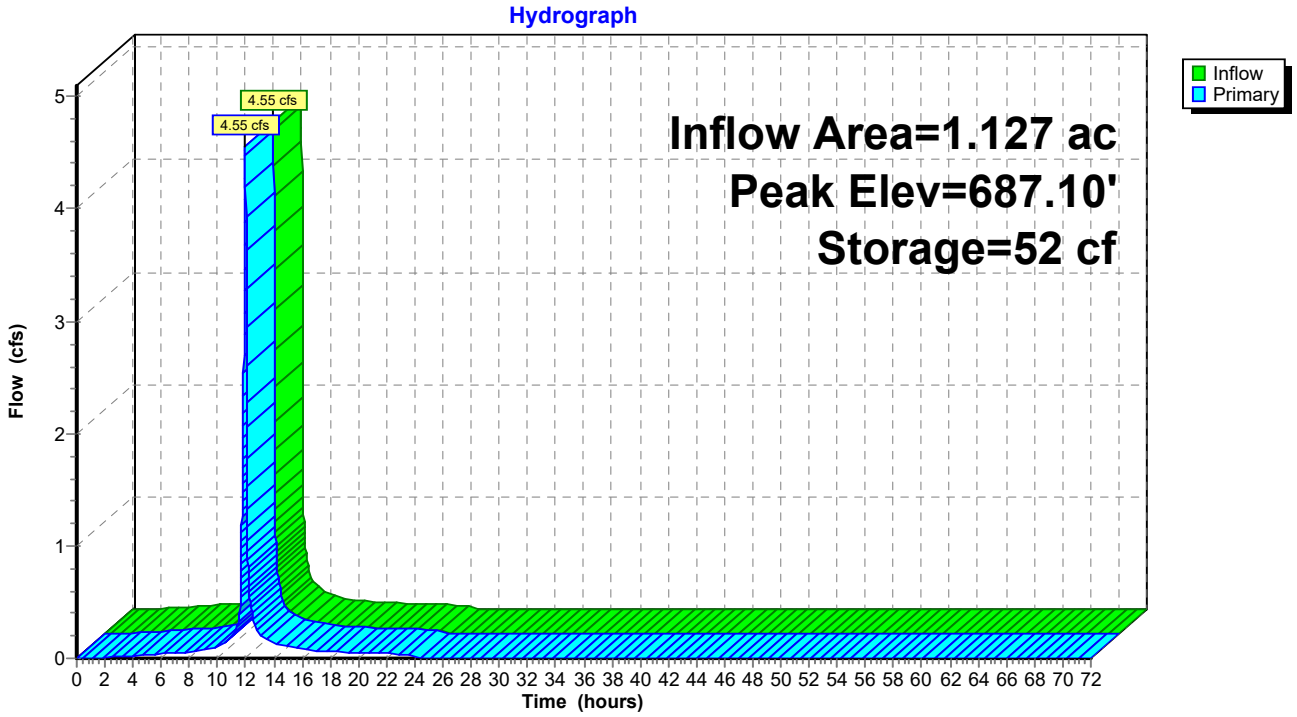
Volume	Invert	Avail.Storage	Storage Description
#1	686.26'	3,775 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
686.26	9	9.0	0	0	9
687.00	118	108.6	39	39	942
688.00	643	256.1	345	385	5,227
689.00	1,586	403.7	1,080	1,464	12,984
690.00	3,121	576.5	2,311	3,775	26,471

Device	Routing	Invert	Outlet Devices
#1	Primary	687.00'	**22.5' 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
#2	Primary	686.27'	**18.0" Round RCP_Round 18"** L= 122.6' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 686.27' / 685.65' S= 0.0051 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=4.52 cfs @ 11.97 hrs HW=687.10' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 1.67 cfs @ 0.76 fps)
└**2=RCP_Round 18"** (Barrel Controls 2.86 cfs @ 4.14 fps)

Pond 3P: Culvert 1



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment5S: Channel 1 Runoff Area=35,233 sf 46.62% Impervious Runoff Depth=2.39"
Tc=6.0 min CN=74/98 Runoff=3.09 cfs 0.161 af

Subcatchment6S: Channel 2 Runoff Area=52,370 sf 76.08% Impervious Runoff Depth=3.06"
Tc=6.0 min CN=77/98 Runoff=5.69 cfs 0.307 af

Subcatchment7S: Culvert 1 Runoff Area=49,099 sf 88.14% Impervious Runoff Depth=3.33"
Flow Length=582' Tc=6.0 min CN=82/98 Runoff=5.75 cfs 0.313 af

Reach 1R: Channel 1 Avg. Flow Depth=0.53' Max Vel=3.57 fps Inflow=3.09 cfs 0.161 af
n=0.030 L=396.0' S=0.0328 '/' Capacity=188.53 cfs Outflow=2.98 cfs 0.161 af

Reach 2R: Channel 2 Avg. Flow Depth=0.78' Max Vel=2.97 fps Inflow=5.69 cfs 0.307 af
n=0.030 L=442.0' S=0.0136 '/' Capacity=121.23 cfs Outflow=5.39 cfs 0.307 af

Pond 3P: Culvert 1 Peak Elev=687.13' Storage=58 cf Inflow=5.75 cfs 0.313 af
Outflow=5.75 cfs 0.313 af

Total Runoff Area = 3.138 ac Runoff Volume = 0.781 af Average Runoff Depth = 2.99"
27.18% Pervious = 0.853 ac 72.82% Impervious = 2.285 ac

Summary for Subcatchment 5S: Channel 1

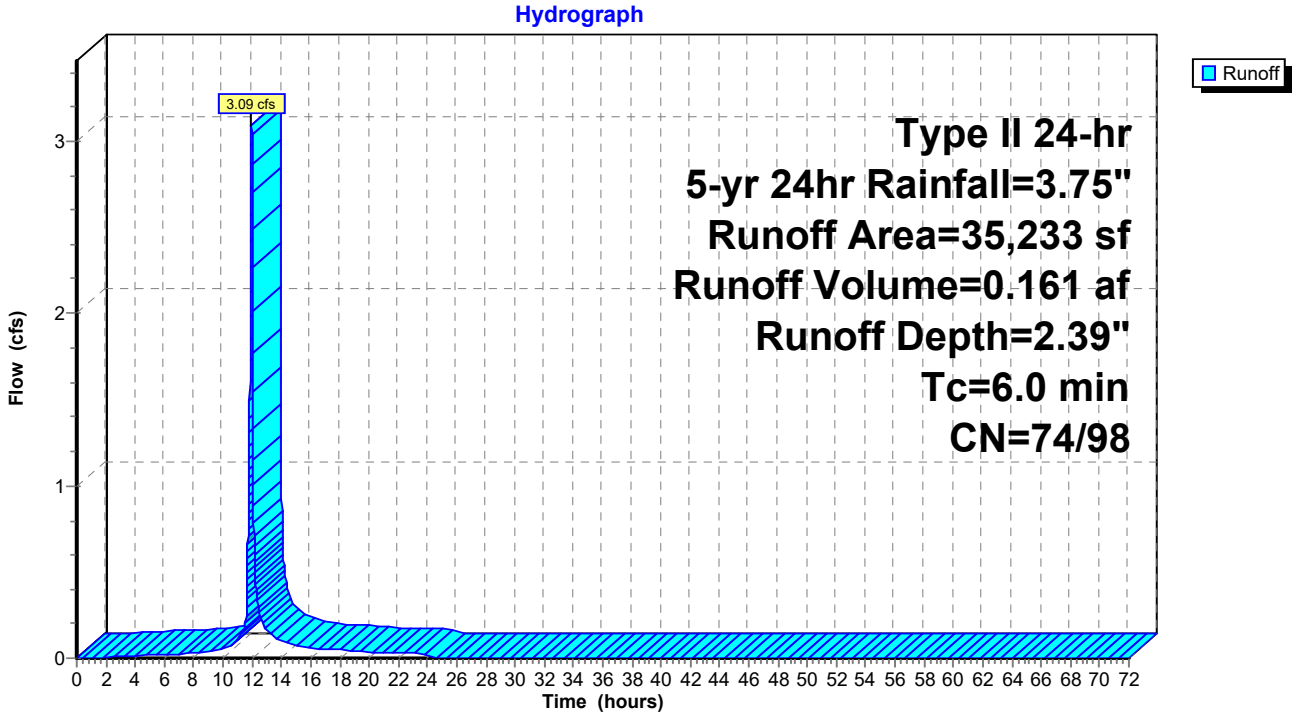
Runoff = 3.09 cfs @ 11.97 hrs, Volume= 0.161 af, Depth= 2.39"
Routed to Reach 1R : Channel 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-yr 24hr Rainfall=3.75"

Area (sf)	CN	Description
16,426	98	Paved parking, HSG C
18,807	74	>75% Grass cover, Good, HSG C
35,233	85	Weighted Average
18,807	74	53.38% Pervious Area
16,426	98	46.62% Impervious Area

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

Subcatchment 5S: Channel 1



Summary for Subcatchment 6S: Channel 2

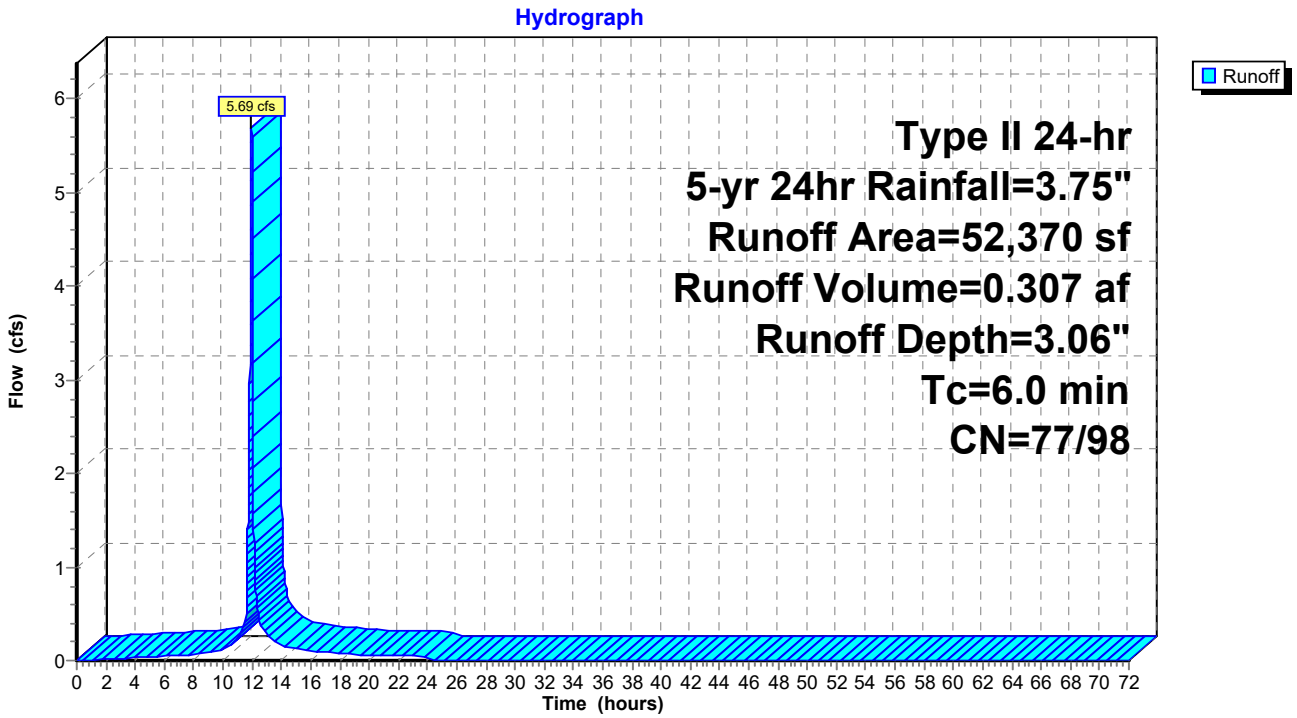
Runoff = 5.69 cfs @ 11.97 hrs, Volume= 0.307 af, Depth= 3.06"
Routed to Reach 2R : Channel 2

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-yr 24hr Rainfall=3.75"

Area (sf)	CN	Description
4,554	82	Row crops, SR + CR, Good, HSG C
39,843	98	Paved parking, HSG C
7,973	74	>75% Grass cover, Good, HSG C
52,370	93	Weighted Average
12,527	77	23.92% Pervious Area
39,843	98	76.08% Impervious Area

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

Subcatchment 6S: Channel 2



Summary for Subcatchment 7S: Culvert 1

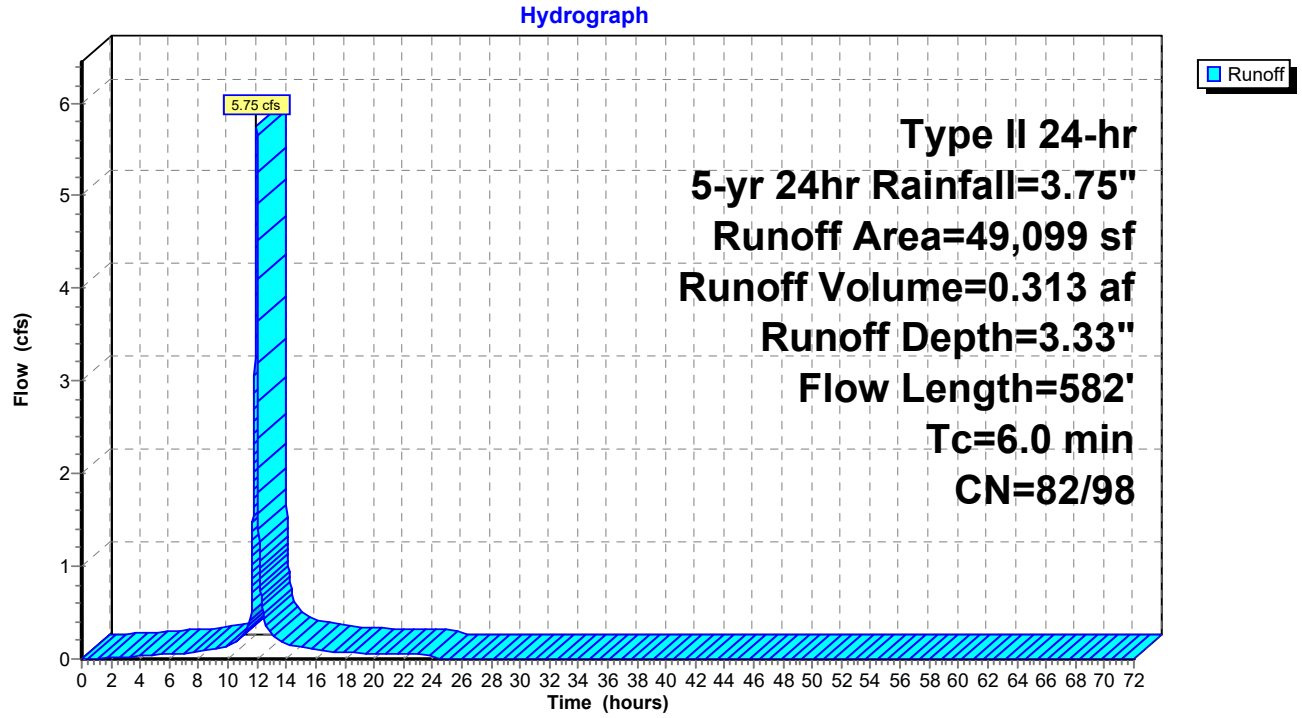
Runoff = 5.75 cfs @ 11.97 hrs, Volume= 0.313 af, Depth= 3.33"
Routed to Pond 3P : Culvert 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 5-yr 24hr Rainfall=3.75"

Area (sf)	CN	Description
43,275	98	Paved parking, HSG C
5,824	82	Row crops, SR + CR, Good, HSG C
49,099	96	Weighted Average
5,824	82	11.86% Pervious Area
43,275	98	88.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	76	0.0626	1.99		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
2.2	33	0.1030	0.25		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.01"
0.7	473	0.0423	11.41	214.00	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.030 Earth, grassed & winding
2.5					**Direct Entry, User**
6.0	582	Total			

Subcatchment 7S: Culvert 1



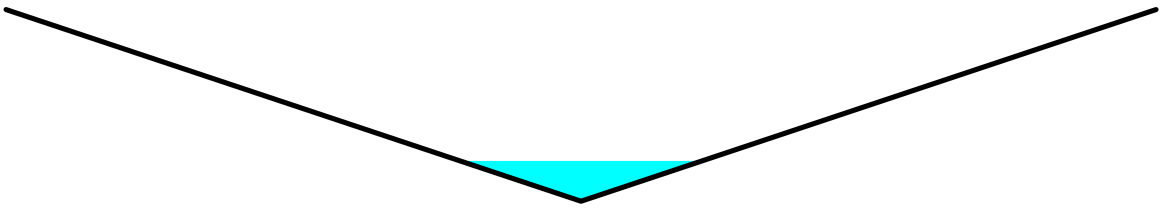
Summary for Reach 1R: Channel 1

Inflow Area = 0.809 ac, 46.62% Impervious, Inflow Depth = 2.39" for 5-yr 24hr event
Inflow = 3.09 cfs @ 11.97 hrs, Volume= 0.161 af
Outflow = 2.98 cfs @ 11.99 hrs, Volume= 0.161 af, Atten= 4%, Lag= 1.2 min

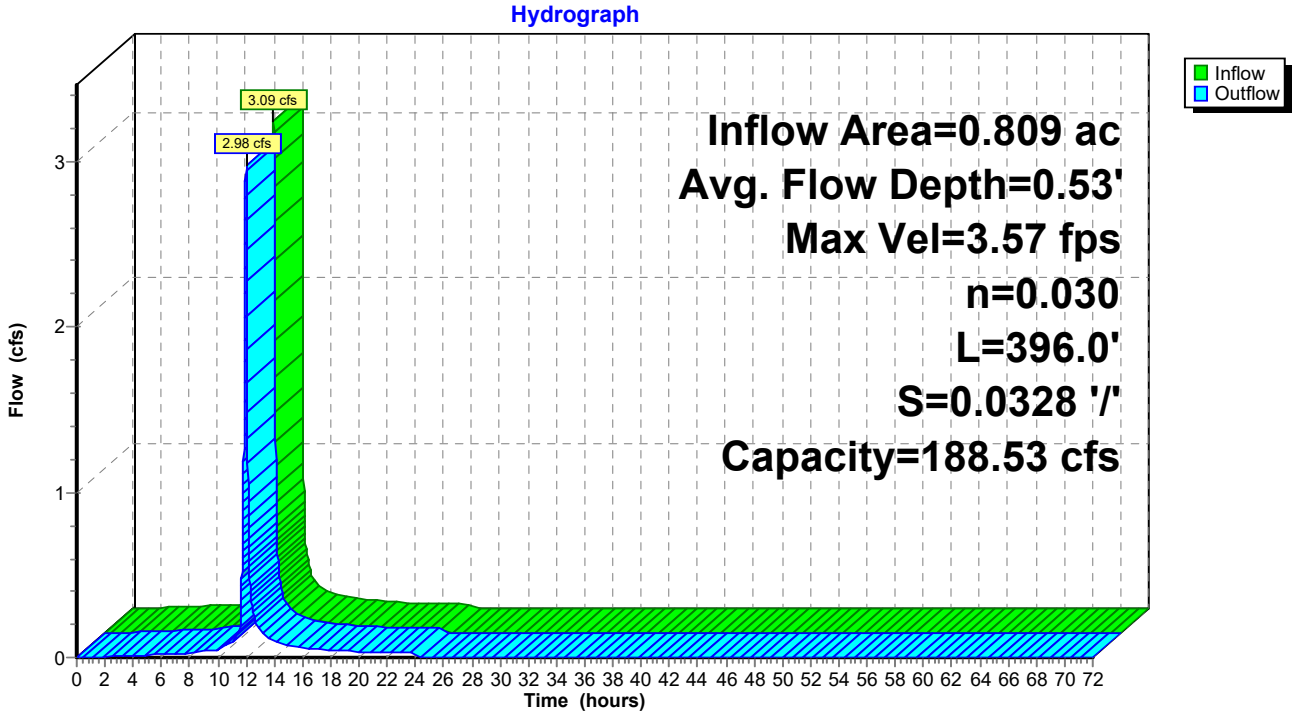
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.57 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 1.21 fps, Avg. Travel Time= 5.4 min

Peak Storage= 331 cf @ 11.99 hrs
Average Depth at Peak Storage= 0.53' , Surface Width= 3.17'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 188.53 cfs

0.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 15.00'
Length= 396.0' Slope= 0.0328 '/'
Inlet Invert= 697.00', Outlet Invert= 684.00'



Reach 1R: Channel 1



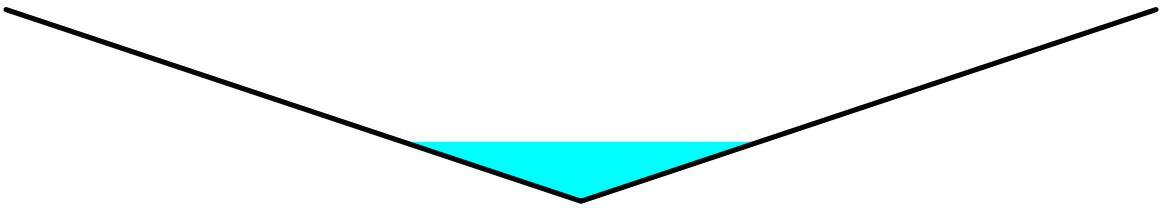
Summary for Reach 2R: Channel 2

Inflow Area = 1.202 ac, 76.08% Impervious, Inflow Depth = 3.06" for 5-yr 24hr event
Inflow = 5.69 cfs @ 11.97 hrs, Volume= 0.307 af
Outflow = 5.39 cfs @ 11.99 hrs, Volume= 0.307 af, Atten= 5%, Lag= 1.5 min

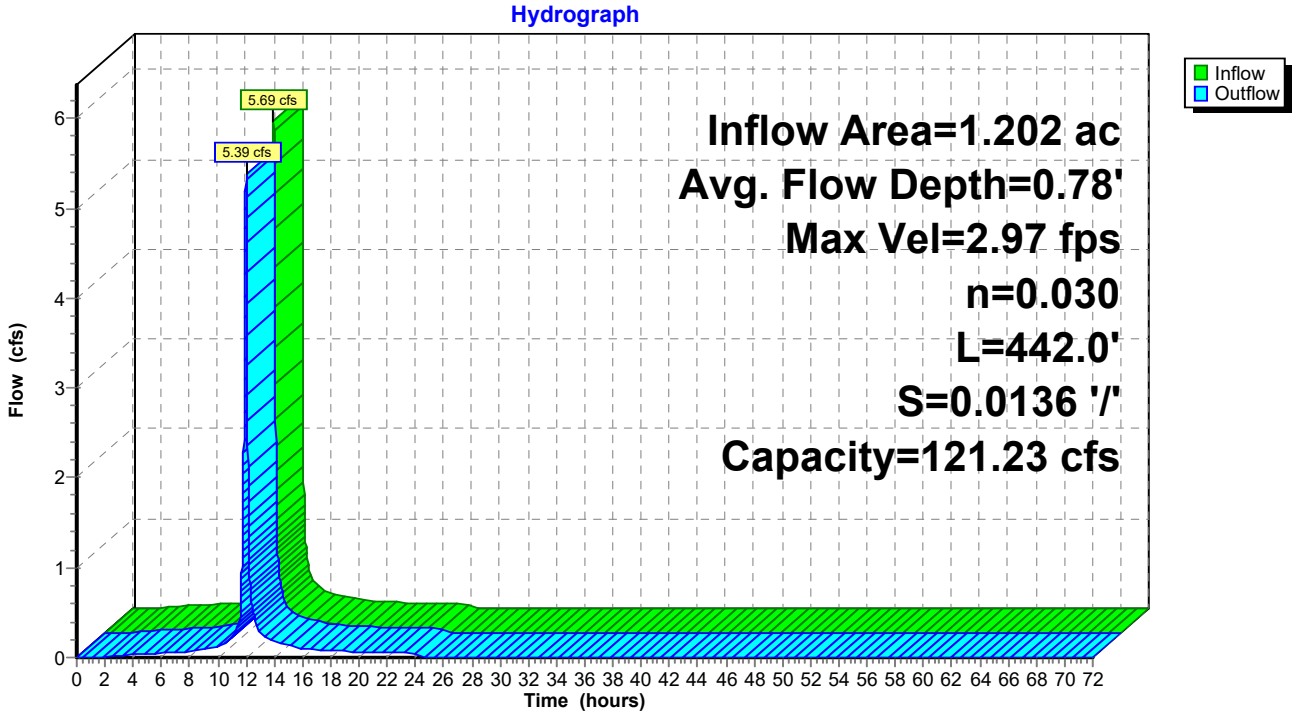
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.97 fps, Min. Travel Time= 2.5 min
Avg. Velocity = 1.00 fps, Avg. Travel Time= 7.4 min

Peak Storage= 802 cf @ 11.99 hrs
Average Depth at Peak Storage= 0.78' , Surface Width= 4.67'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 121.23 cfs

0.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 15.00'
Length= 442.0' Slope= 0.0136 '/'
Inlet Invert= 690.00', Outlet Invert= 684.00'



Reach 2R: Channel 2



Summary for Pond 3P: Culvert 1

Inflow Area = 1.127 ac, 88.14% Impervious, Inflow Depth = 3.33" for 5-yr 24hr event
Inflow = 5.75 cfs @ 11.97 hrs, Volume= 0.313 af
Outflow = 5.75 cfs @ 11.97 hrs, Volume= 0.313 af, Atten= 0%, Lag= 0.1 min
Primary = 5.75 cfs @ 11.97 hrs, Volume= 0.313 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 687.13' @ 11.97 hrs Surf.Area= 164 sf Storage= 58 cf

Plug-Flow detention time= 0.3 min calculated for 0.313 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (754.9 - 754.6)

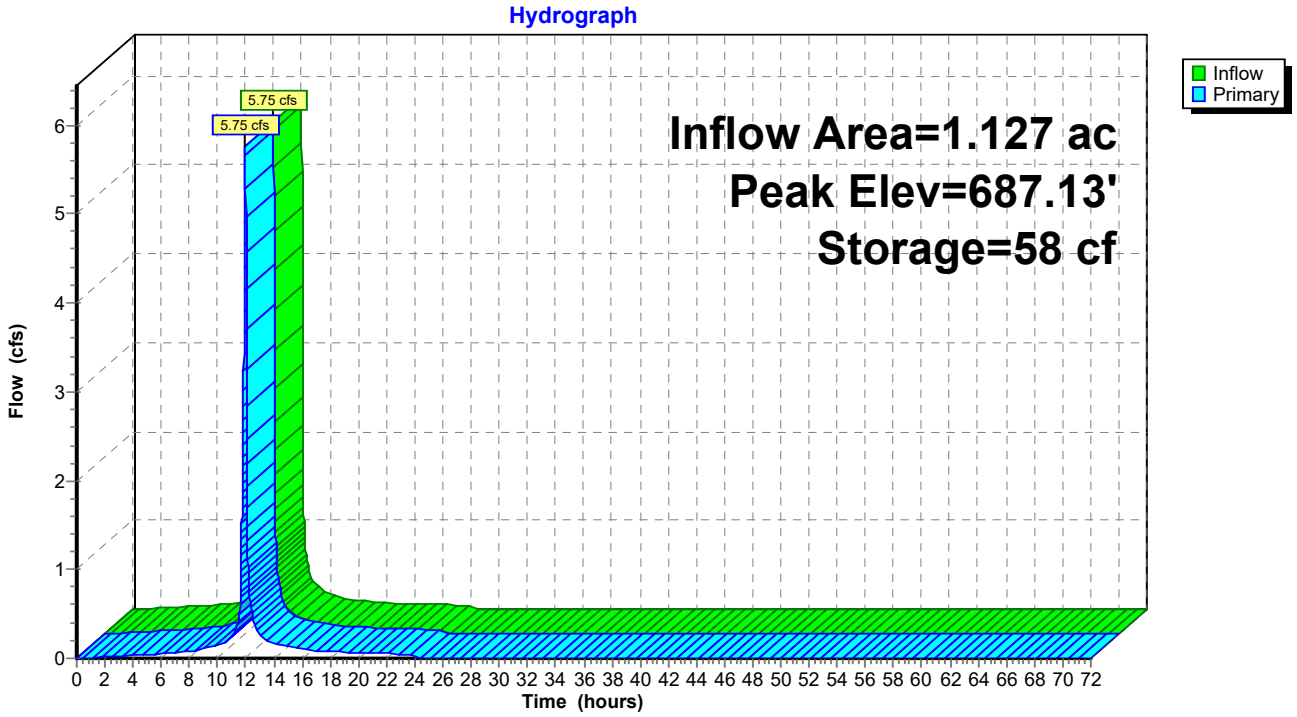
Volume	Invert	Avail.Storage	Storage Description
#1	686.26'	3,775 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
686.26	9	9.0	0	0	9
687.00	118	108.6	39	39	942
688.00	643	256.1	345	385	5,227
689.00	1,586	403.7	1,080	1,464	12,984
690.00	3,121	576.5	2,311	3,775	26,471

Device	Routing	Invert	Outlet Devices
#1	Primary	687.00'	**22.5' 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
#2	Primary	686.27'	**18.0" Round RCP_Round 18"** L= 122.6' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 686.27' / 685.65' S= 0.0051 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=5.73 cfs @ 11.97 hrs HW=687.13' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 2.66 cfs @ 0.89 fps)
└**2=RCP_Round 18"** (Barrel Controls 3.08 cfs @ 4.21 fps)

Pond 3P: Culvert 1



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment5S: Channel 1 Runoff Area=35,233 sf 46.62% Impervious Runoff Depth=2.97"
Tc=6.0 min CN=74/98 Runoff=3.84 cfs 0.200 af

Subcatchment6S: Channel 2 Runoff Area=52,370 sf 76.08% Impervious Runoff Depth=3.70"
Tc=6.0 min CN=77/98 Runoff=6.85 cfs 0.370 af

Subcatchment7S: Culvert 1 Runoff Area=49,099 sf 88.14% Impervious Runoff Depth=3.99"
Flow Length=582' Tc=6.0 min CN=82/98 Runoff=6.85 cfs 0.375 af

Reach 1R: Channel 1 Avg. Flow Depth=0.57' Max Vel=3.77 fps Inflow=3.84 cfs 0.200 af
n=0.030 L=396.0' S=0.0328 '/' Capacity=188.53 cfs Outflow=3.72 cfs 0.200 af

Reach 2R: Channel 2 Avg. Flow Depth=0.83' Max Vel=3.11 fps Inflow=6.85 cfs 0.370 af
n=0.030 L=442.0' S=0.0136 '/' Capacity=121.23 cfs Outflow=6.50 cfs 0.370 af

Pond 3P: Culvert 1 Peak Elev=687.16' Storage=63 cf Inflow=6.85 cfs 0.375 af
Outflow=6.84 cfs 0.375 af

Total Runoff Area = 3.138 ac Runoff Volume = 0.946 af Average Runoff Depth = 3.62"
27.18% Pervious = 0.853 ac 72.82% Impervious = 2.285 ac

Summary for Subcatchment 5S: Channel 1

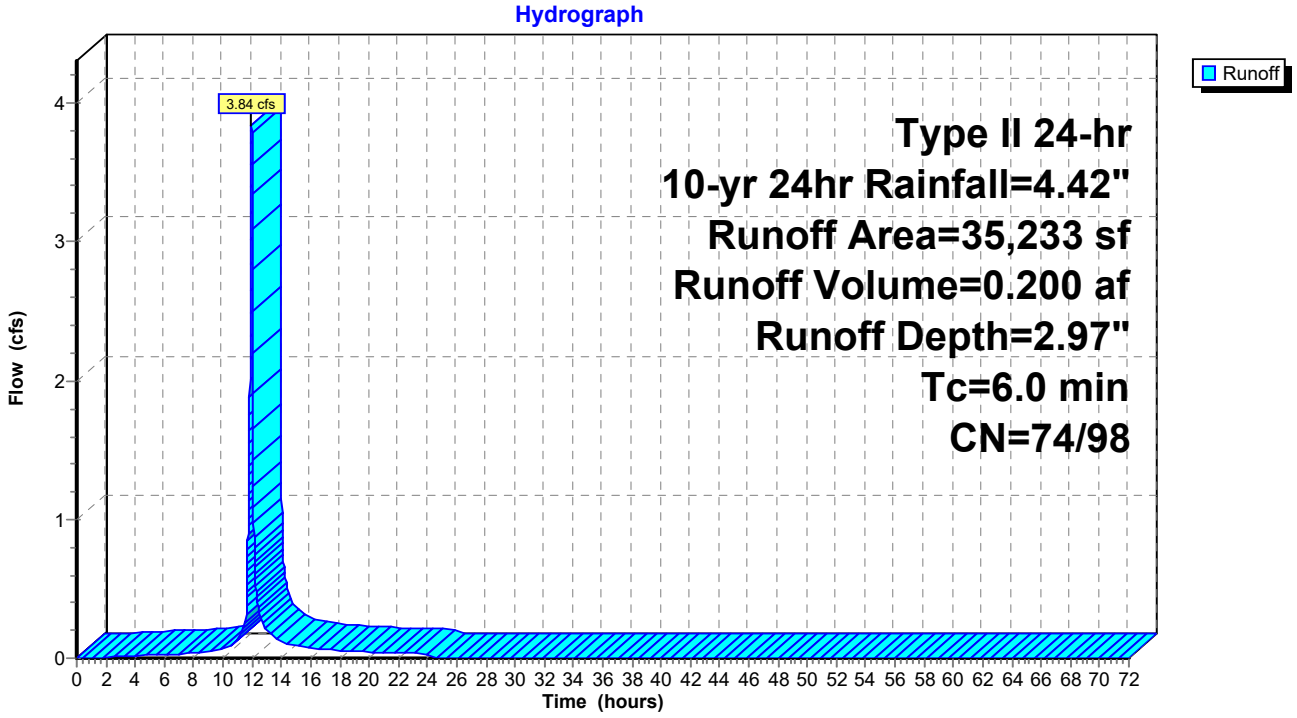
Runoff = 3.84 cfs @ 11.97 hrs, Volume= 0.200 af, Depth= 2.97"
Routed to Reach 1R : Channel 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr 24hr Rainfall=4.42"

Area (sf)	CN	Description
16,426	98	Paved parking, HSG C
18,807	74	>75% Grass cover, Good, HSG C
35,233	85	Weighted Average
18,807	74	53.38% Pervious Area
16,426	98	46.62% Impervious Area

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

Subcatchment 5S: Channel 1



Summary for Subcatchment 6S: Channel 2

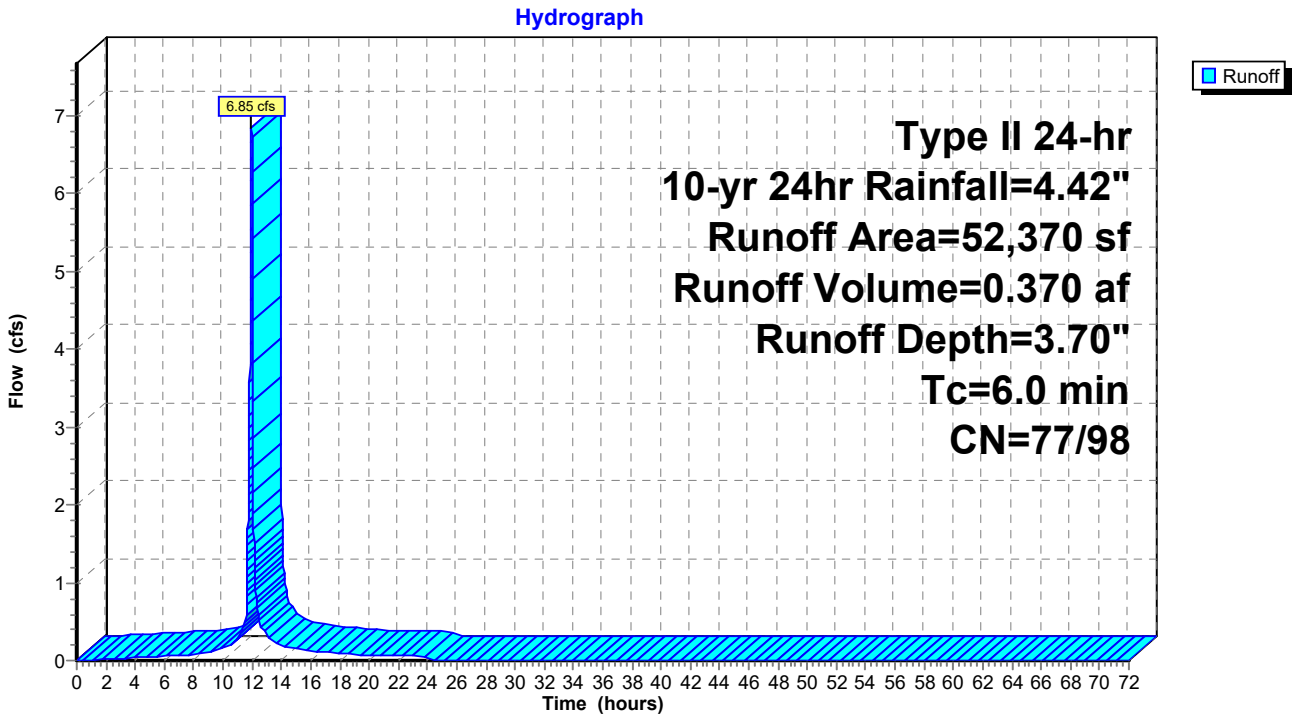
Runoff = 6.85 cfs @ 11.97 hrs, Volume= 0.370 af, Depth= 3.70"
Routed to Reach 2R : Channel 2

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr 24hr Rainfall=4.42"

Area (sf)	CN	Description
4,554	82	Row crops, SR + CR, Good, HSG C
39,843	98	Paved parking, HSG C
7,973	74	>75% Grass cover, Good, HSG C
52,370	93	Weighted Average
12,527	77	23.92% Pervious Area
39,843	98	76.08% Impervious Area

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

Subcatchment 6S: Channel 2



Summary for Subcatchment 7S: Culvert 1

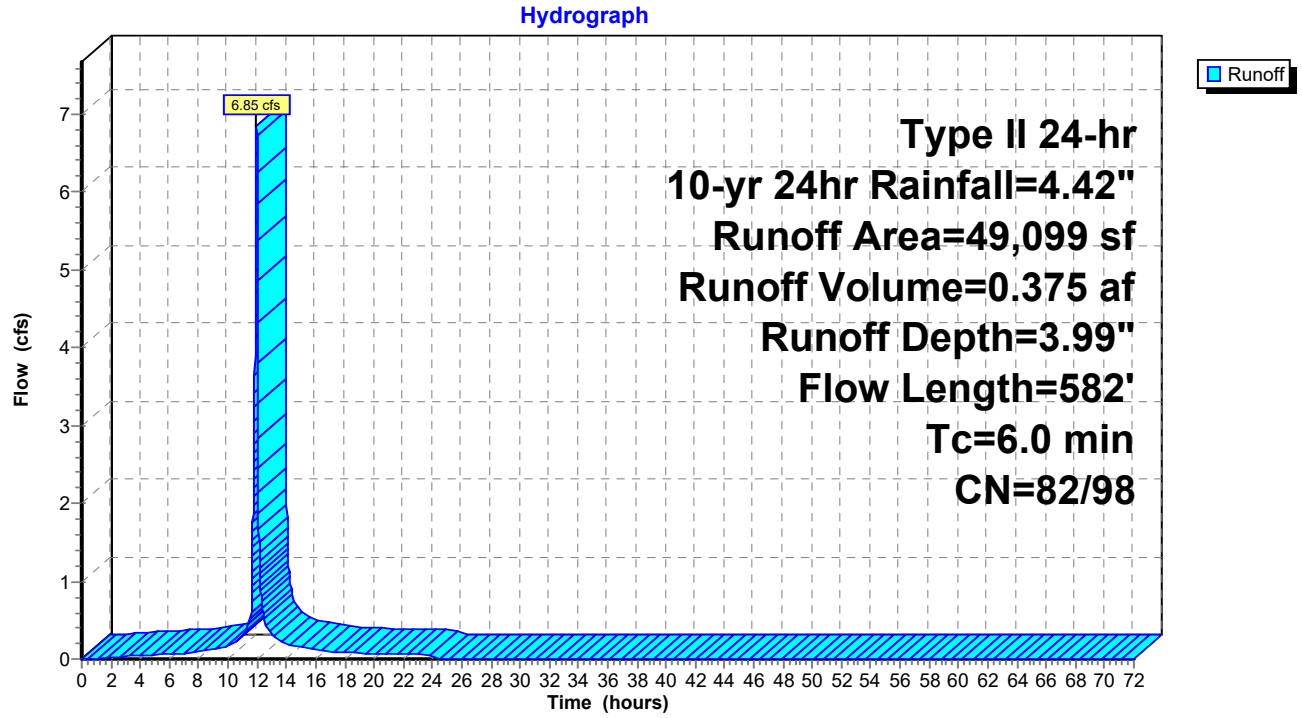
Runoff = 6.85 cfs @ 11.97 hrs, Volume= 0.375 af, Depth= 3.99"
Routed to Pond 3P : Culvert 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr 24hr Rainfall=4.42"

Area (sf)	CN	Description
43,275	98	Paved parking, HSG C
5,824	82	Row crops, SR + CR, Good, HSG C
49,099	96	Weighted Average
5,824	82	11.86% Pervious Area
43,275	98	88.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	76	0.0626	1.99		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
2.2	33	0.1030	0.25		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.01"
0.7	473	0.0423	11.41	214.00	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.030 Earth, grassed & winding
2.5					**Direct Entry, User**
6.0	582	Total			

Subcatchment 7S: Culvert 1



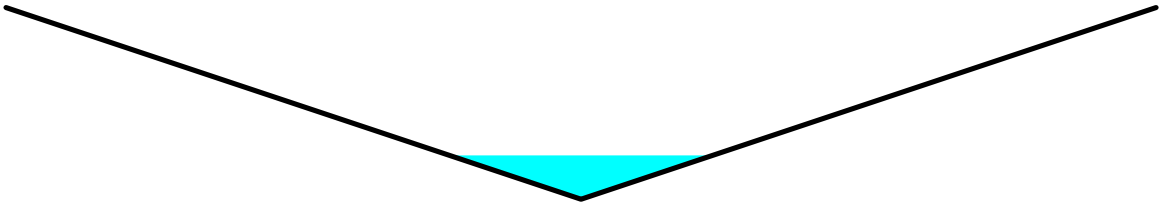
Summary for Reach 1R: Channel 1

Inflow Area = 0.809 ac, 46.62% Impervious, Inflow Depth = 2.97" for 10-yr 24hr event
Inflow = 3.84 cfs @ 11.97 hrs, Volume= 0.200 af
Outflow = 3.72 cfs @ 11.99 hrs, Volume= 0.200 af, Atten= 3%, Lag= 1.2 min

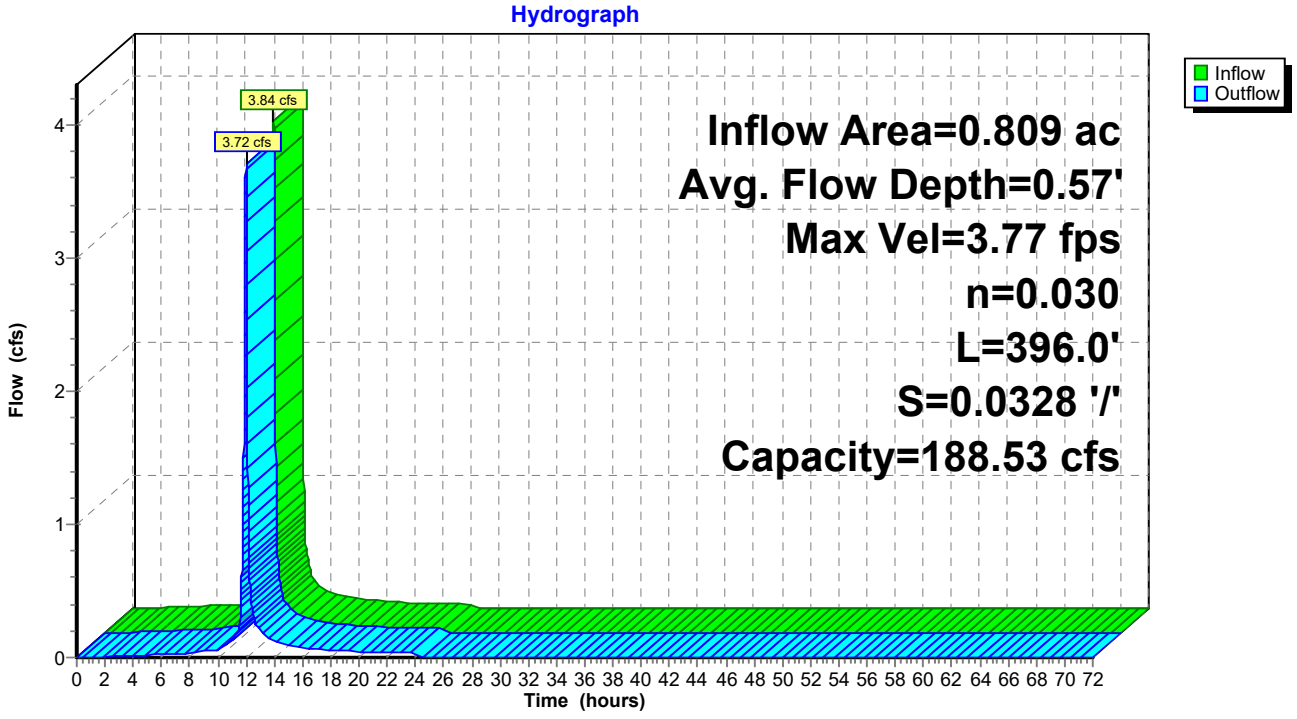
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.77 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 1.27 fps, Avg. Travel Time= 5.2 min

Peak Storage= 391 cf @ 11.99 hrs
Average Depth at Peak Storage= 0.57' , Surface Width= 3.44'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 188.53 cfs

0.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 15.00'
Length= 396.0' Slope= 0.0328 '/'
Inlet Invert= 697.00', Outlet Invert= 684.00'



Reach 1R: Channel 1



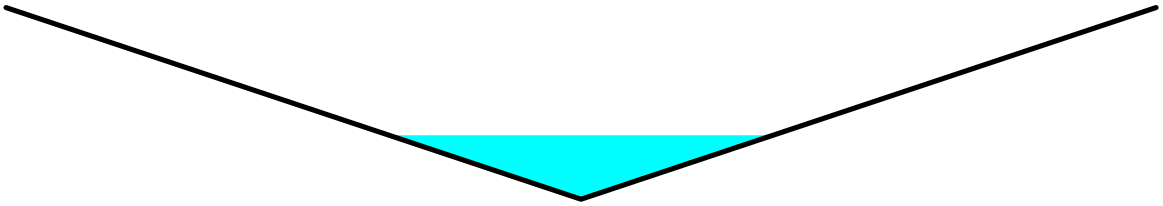
Summary for Reach 2R: Channel 2

Inflow Area = 1.202 ac, 76.08% Impervious, Inflow Depth = 3.70" for 10-yr 24hr event
Inflow = 6.85 cfs @ 11.97 hrs, Volume= 0.370 af
Outflow = 6.50 cfs @ 11.99 hrs, Volume= 0.370 af, Atten= 5%, Lag= 1.4 min

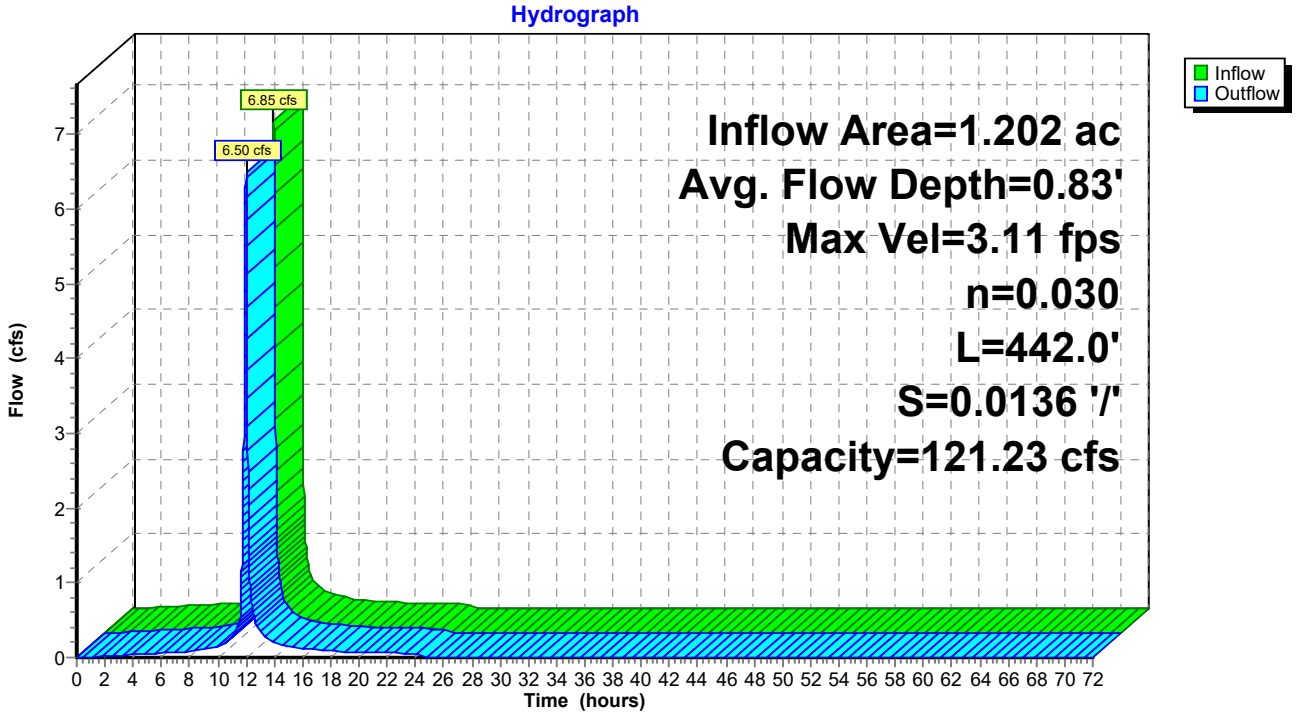
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.11 fps, Min. Travel Time= 2.4 min
Avg. Velocity = 1.04 fps, Avg. Travel Time= 7.1 min

Peak Storage= 924 cf @ 11.99 hrs
Average Depth at Peak Storage= 0.83' , Surface Width= 5.01'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 121.23 cfs

0.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 15.00'
Length= 442.0' Slope= 0.0136 '/'
Inlet Invert= 690.00', Outlet Invert= 684.00'



Reach 2R: Channel 2



Summary for Pond 3P: Culvert 1

Inflow Area = 1.127 ac, 88.14% Impervious, Inflow Depth = 3.99" for 10-yr 24hr event
Inflow = 6.85 cfs @ 11.97 hrs, Volume= 0.375 af
Outflow = 6.84 cfs @ 11.97 hrs, Volume= 0.375 af, Atten= 0%, Lag= 0.1 min
Primary = 6.84 cfs @ 11.97 hrs, Volume= 0.375 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 687.16' @ 11.97 hrs Surf.Area= 175 sf Storage= 63 cf

Plug-Flow detention time= 0.3 min calculated for 0.375 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (751.9 - 751.6)

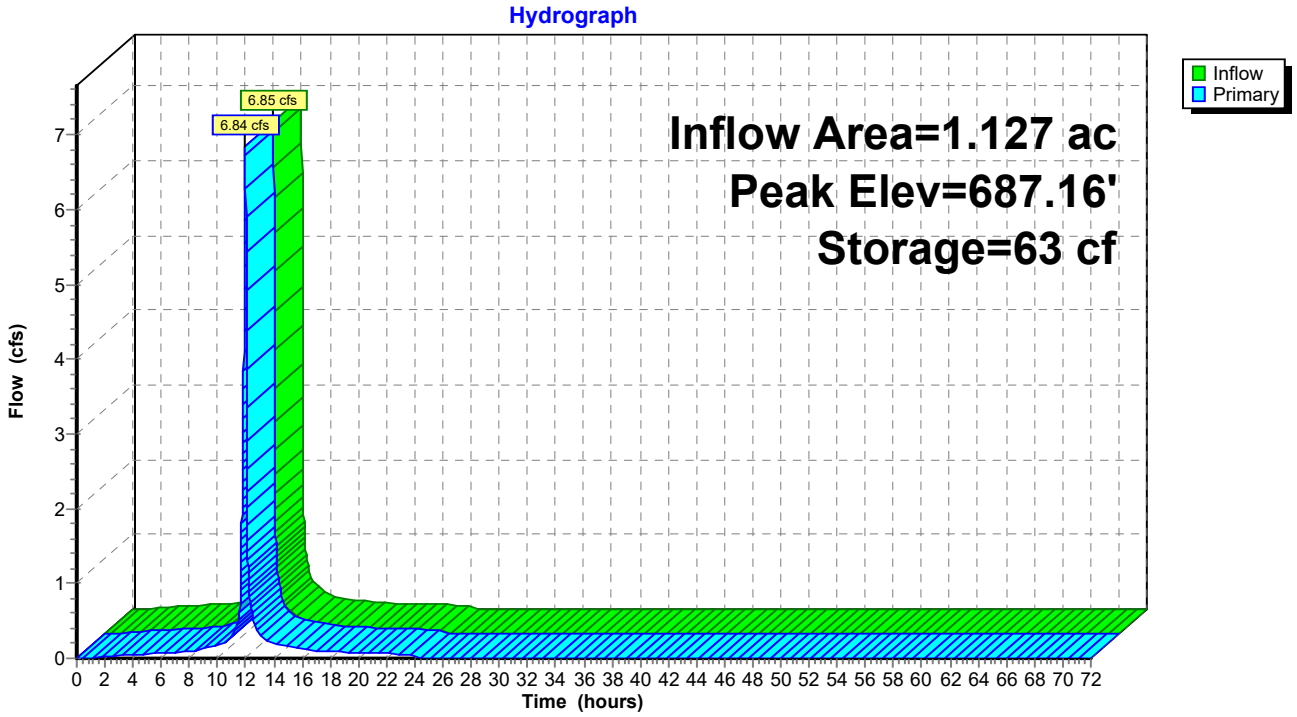
Volume	Invert	Avail.Storage	Storage Description
#1	686.26'	3,775 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
686.26	9	9.0	0	0	9
687.00	118	108.6	39	39	942
688.00	643	256.1	345	385	5,227
689.00	1,586	403.7	1,080	1,464	12,984
690.00	3,121	576.5	2,311	3,775	26,471

Device	Routing	Invert	Outlet Devices
#1	Primary	687.00'	**22.5' 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
#2	Primary	686.27'	**18.0" Round RCP_Round 18"** L= 122.6' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 686.27' / 685.65' S= 0.0051 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=6.83 cfs @ 11.97 hrs HW=687.16' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 3.57 cfs @ 0.98 fps)
2=RCP_Round 18" (Barrel Controls 3.26 cfs @ 4.27 fps)

Pond 3P: Culvert 1



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment5S: Channel 1 Runoff Area=35,233 sf 46.62% Impervious Runoff Depth=3.88"
Tc=6.0 min CN=74/98 Runoff=5.01 cfs 0.261 af

Subcatchment6S: Channel 2 Runoff Area=52,370 sf 76.08% Impervious Runoff Depth=4.67"
Tc=6.0 min CN=77/98 Runoff=8.61 cfs 0.468 af

Subcatchment7S: Culvert 1 Runoff Area=49,099 sf 88.14% Impervious Runoff Depth=5.00"
Flow Length=582' Tc=6.0 min CN=82/98 Runoff=8.51 cfs 0.469 af

Reach 1R: Channel 1 Avg. Flow Depth=0.63' Max Vel=4.03 fps Inflow=5.01 cfs 0.261 af
n=0.030 L=396.0' S=0.0328 '/' Capacity=188.53 cfs Outflow=4.87 cfs 0.261 af

Reach 2R: Channel 2 Avg. Flow Depth=0.91' Max Vel=3.30 fps Inflow=8.61 cfs 0.468 af
n=0.030 L=442.0' S=0.0136 '/' Capacity=121.23 cfs Outflow=8.22 cfs 0.468 af

Pond 3P: Culvert 1 Peak Elev=687.20' Storage=70 cf Inflow=8.51 cfs 0.469 af
Outflow=8.51 cfs 0.469 af

Total Runoff Area = 3.138 ac Runoff Volume = 1.199 af Average Runoff Depth = 4.59"
27.18% Pervious = 0.853 ac 72.82% Impervious = 2.285 ac

Summary for Subcatchment 5S: Channel 1

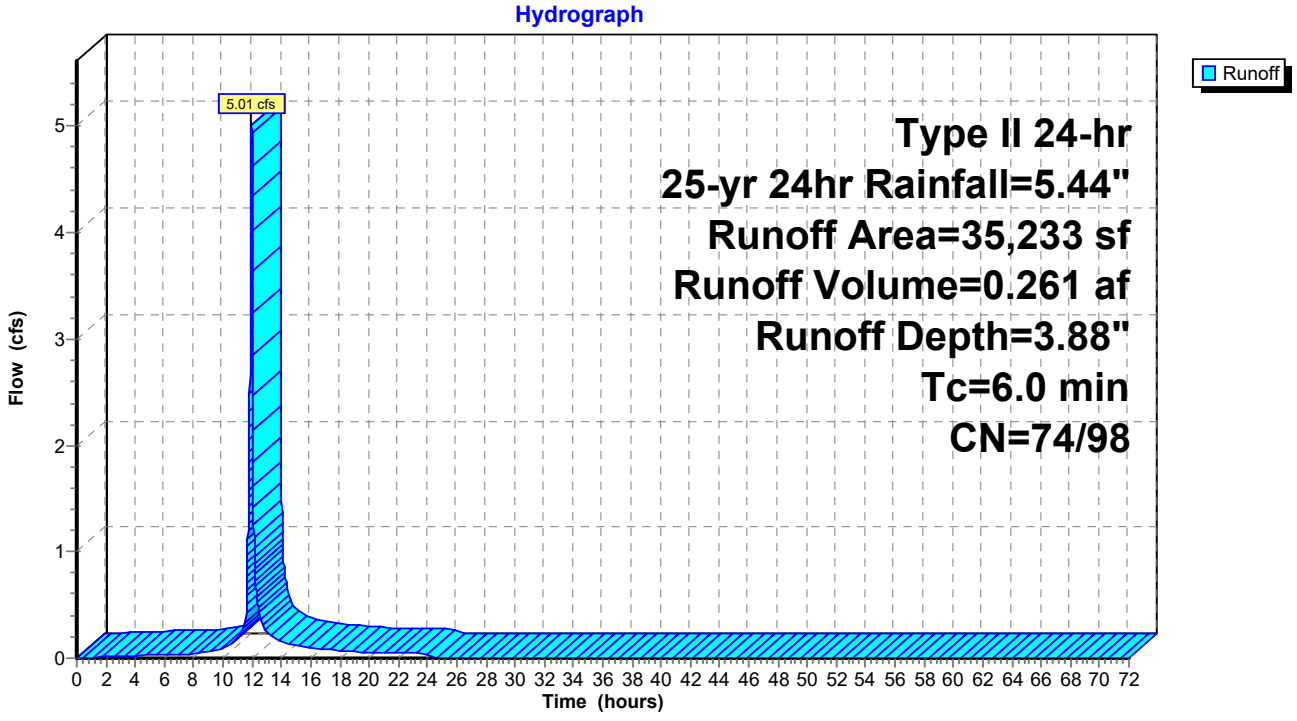
Runoff = 5.01 cfs @ 11.97 hrs, Volume= 0.261 af, Depth= 3.88"
Routed to Reach 1R : Channel 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-yr 24hr Rainfall=5.44"

Area (sf)	CN	Description
16,426	98	Paved parking, HSG C
18,807	74	>75% Grass cover, Good, HSG C
35,233	85	Weighted Average
18,807	74	53.38% Pervious Area
16,426	98	46.62% Impervious Area

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

Subcatchment 5S: Channel 1



Summary for Subcatchment 6S: Channel 2

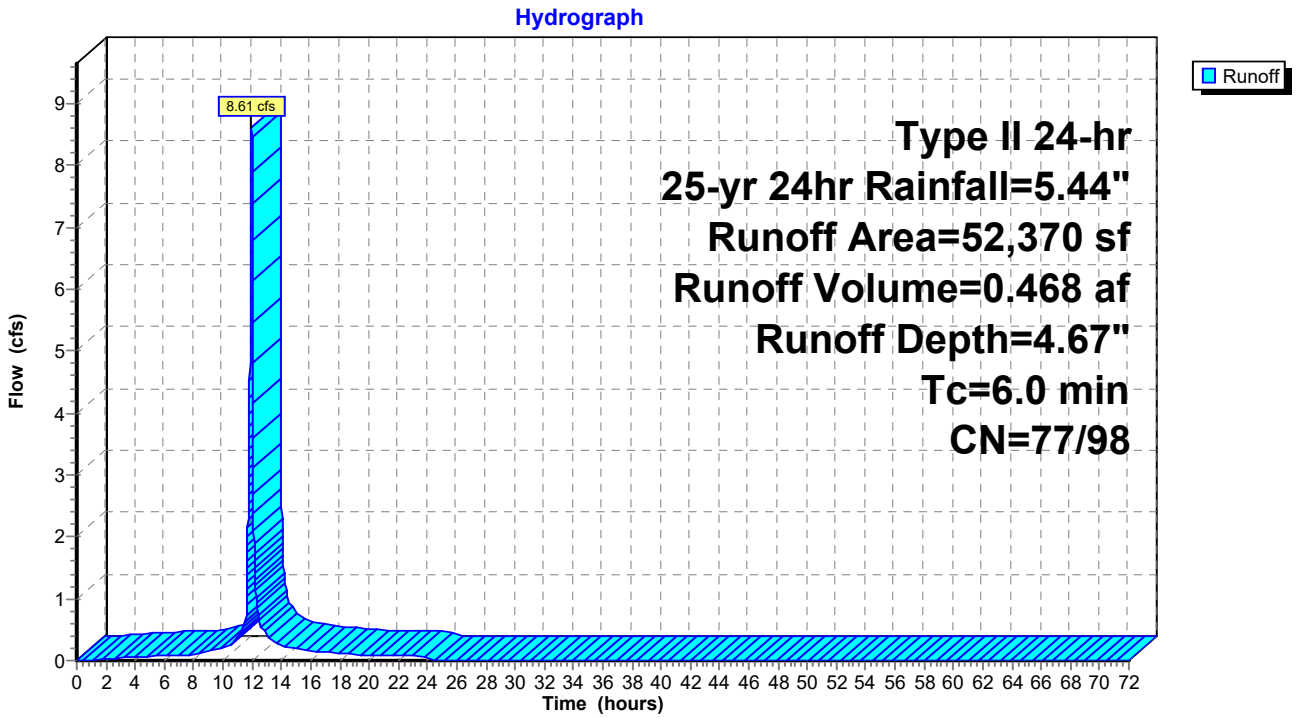
Runoff = 8.61 cfs @ 11.97 hrs, Volume= 0.468 af, Depth= 4.67"
Routed to Reach 2R : Channel 2

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-yr 24hr Rainfall=5.44"

Area (sf)	CN	Description
4,554	82	Row crops, SR + CR, Good, HSG C
39,843	98	Paved parking, HSG C
7,973	74	>75% Grass cover, Good, HSG C
52,370	93	Weighted Average
12,527	77	23.92% Pervious Area
39,843	98	76.08% Impervious Area

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

Subcatchment 6S: Channel 2



Summary for Subcatchment 7S: Culvert 1

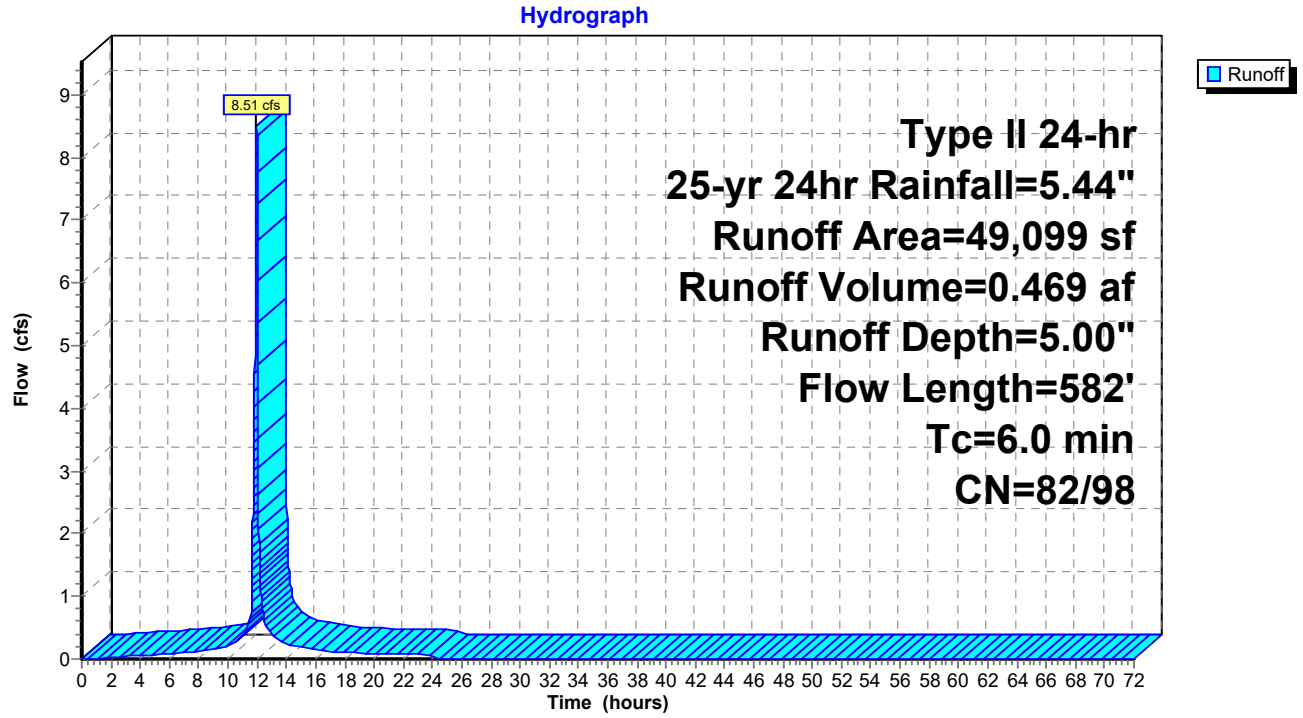
Runoff = 8.51 cfs @ 11.97 hrs, Volume= 0.469 af, Depth= 5.00"
Routed to Pond 3P : Culvert 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-yr 24hr Rainfall=5.44"

Area (sf)	CN	Description
43,275	98	Paved parking, HSG C
5,824	82	Row crops, SR + CR, Good, HSG C
49,099	96	Weighted Average
5,824	82	11.86% Pervious Area
43,275	98	88.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	76	0.0626	1.99		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
2.2	33	0.1030	0.25		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.01"
0.7	473	0.0423	11.41	214.00	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.030 Earth, grassed & winding
2.5					**Direct Entry, User**
6.0	582	Total			

Subcatchment 7S: Culvert 1



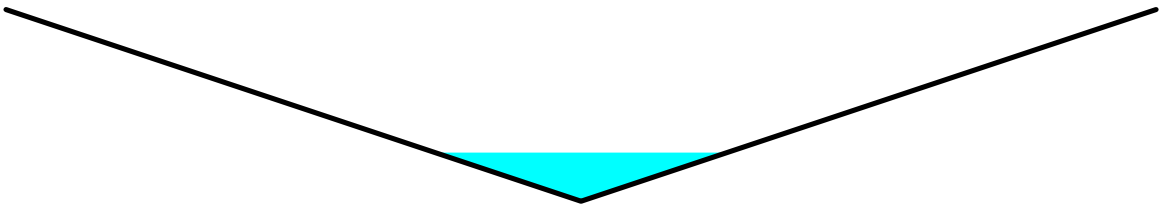
Summary for Reach 1R: Channel 1

Inflow Area = 0.809 ac, 46.62% Impervious, Inflow Depth = 3.88" for 25-yr 24hr event
Inflow = 5.01 cfs @ 11.97 hrs, Volume= 0.261 af
Outflow = 4.87 cfs @ 11.99 hrs, Volume= 0.261 af, Atten= 3%, Lag= 1.1 min

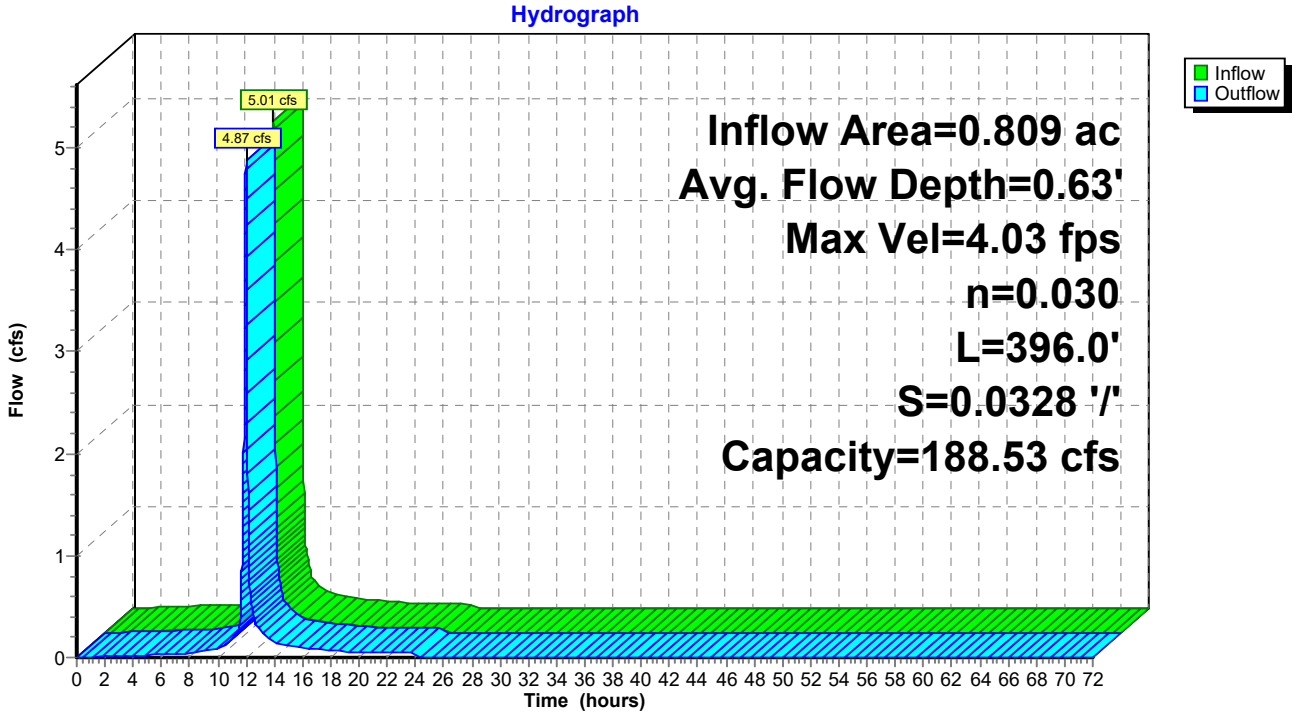
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.03 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 1.36 fps, Avg. Travel Time= 4.9 min

Peak Storage= 478 cf @ 11.99 hrs
Average Depth at Peak Storage= 0.63' , Surface Width= 3.81'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 188.53 cfs

0.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 15.00'
Length= 396.0' Slope= 0.0328 '/'
Inlet Invert= 697.00', Outlet Invert= 684.00'



Reach 1R: Channel 1



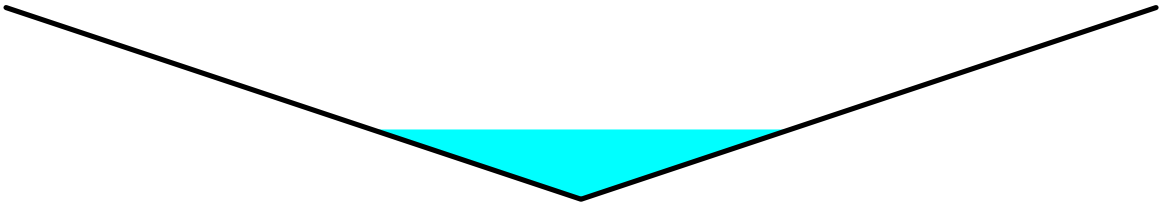
Summary for Reach 2R: Channel 2

Inflow Area = 1.202 ac, 76.08% Impervious, Inflow Depth = 4.67" for 25-yr 24hr event
Inflow = 8.61 cfs @ 11.97 hrs, Volume= 0.468 af
Outflow = 8.22 cfs @ 11.99 hrs, Volume= 0.468 af, Atten= 5%, Lag= 1.4 min

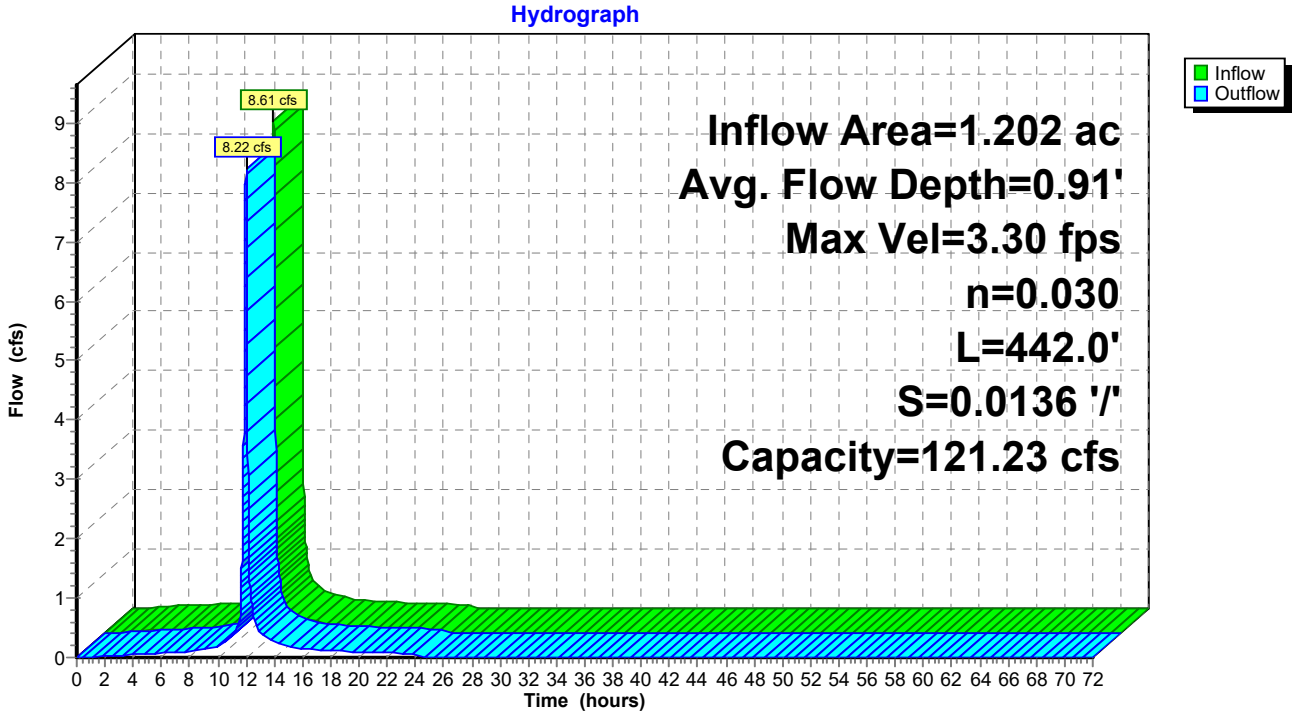
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.30 fps, Min. Travel Time= 2.2 min
Avg. Velocity = 1.11 fps, Avg. Travel Time= 6.7 min

Peak Storage= 1,101 cf @ 11.99 hrs
Average Depth at Peak Storage= 0.91' , Surface Width= 5.47'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 121.23 cfs

0.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 15.00'
Length= 442.0' Slope= 0.0136 '/'
Inlet Invert= 690.00', Outlet Invert= 684.00'



Reach 2R: Channel 2



Summary for Pond 3P: Culvert 1

Inflow Area = 1.127 ac, 88.14% Impervious, Inflow Depth = 5.00" for 25-yr 24hr event
Inflow = 8.51 cfs @ 11.97 hrs, Volume= 0.469 af
Outflow = 8.51 cfs @ 11.97 hrs, Volume= 0.469 af, Atten= 0%, Lag= 0.1 min
Primary = 8.51 cfs @ 11.97 hrs, Volume= 0.469 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 687.20' @ 11.97 hrs Surf.Area= 190 sf Storage= 70 cf

Plug-Flow detention time= 0.3 min calculated for 0.469 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (748.4 - 748.1)

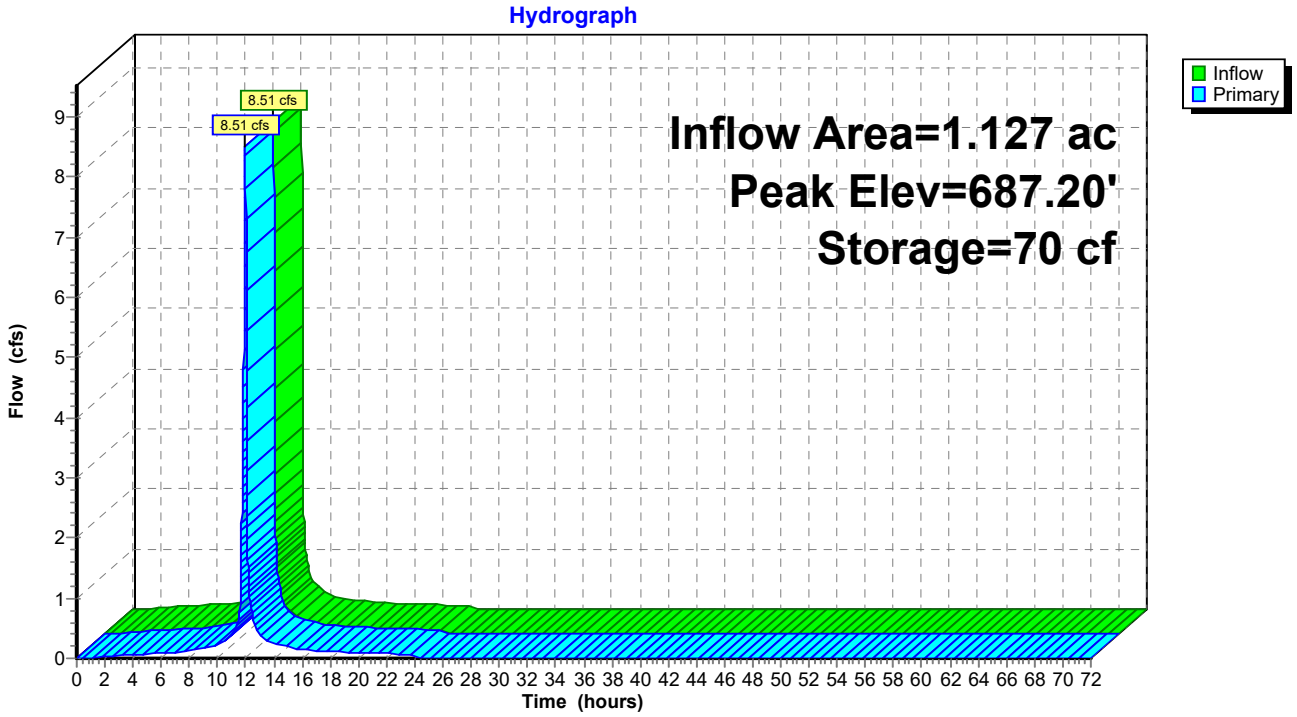
Volume	Invert	Avail.Storage	Storage Description
#1	686.26'	3,775 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
686.26	9	9.0	0	0	9
687.00	118	108.6	39	39	942
688.00	643	256.1	345	385	5,227
689.00	1,586	403.7	1,080	1,464	12,984
690.00	3,121	576.5	2,311	3,775	26,471

Device	Routing	Invert	Outlet Devices
#1	Primary	687.00'	**22.5' 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
#2	Primary	686.27'	**18.0" Round RCP_Round 18"** L= 122.6' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 686.27' / 685.65' S= 0.0051 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=8.48 cfs @ 11.97 hrs HW=687.20' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 4.97 cfs @ 1.09 fps)
└**2=RCP_Round 18"** (Barrel Controls 3.51 cfs @ 4.35 fps)

Pond 3P: Culvert 1



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment5S: Channel 1 Runoff Area=35,233 sf 46.62% Impervious Runoff Depth=4.65"
Tc=6.0 min CN=74/98 Runoff=6.01 cfs 0.314 af

Subcatchment6S: Channel 2 Runoff Area=52,370 sf 76.08% Impervious Runoff Depth=5.50"
Tc=6.0 min CN=77/98 Runoff=10.09 cfs 0.551 af

Subcatchment7S: Culvert 1 Runoff Area=49,099 sf 88.14% Impervious Runoff Depth=5.84"
Flow Length=582' Tc=6.0 min CN=82/98 Runoff=9.89 cfs 0.548 af

Reach 1R: Channel 1 Avg. Flow Depth=0.68' Max Vel=4.22 fps Inflow=6.01 cfs 0.314 af
n=0.030 L=396.0' S=0.0328 '/' Capacity=188.53 cfs Outflow=5.85 cfs 0.314 af

Reach 2R: Channel 2 Avg. Flow Depth=0.97' Max Vel=3.44 fps Inflow=10.09 cfs 0.551 af
n=0.030 L=442.0' S=0.0136 '/' Capacity=121.23 cfs Outflow=9.66 cfs 0.551 af

Pond 3P: Culvert 1 Peak Elev=687.23' Storage=76 cf Inflow=9.89 cfs 0.548 af
Outflow=9.89 cfs 0.548 af

Total Runoff Area = 3.138 ac Runoff Volume = 1.413 af Average Runoff Depth = 5.40"
27.18% Pervious = 0.853 ac 72.82% Impervious = 2.285 ac

Summary for Subcatchment 5S: Channel 1

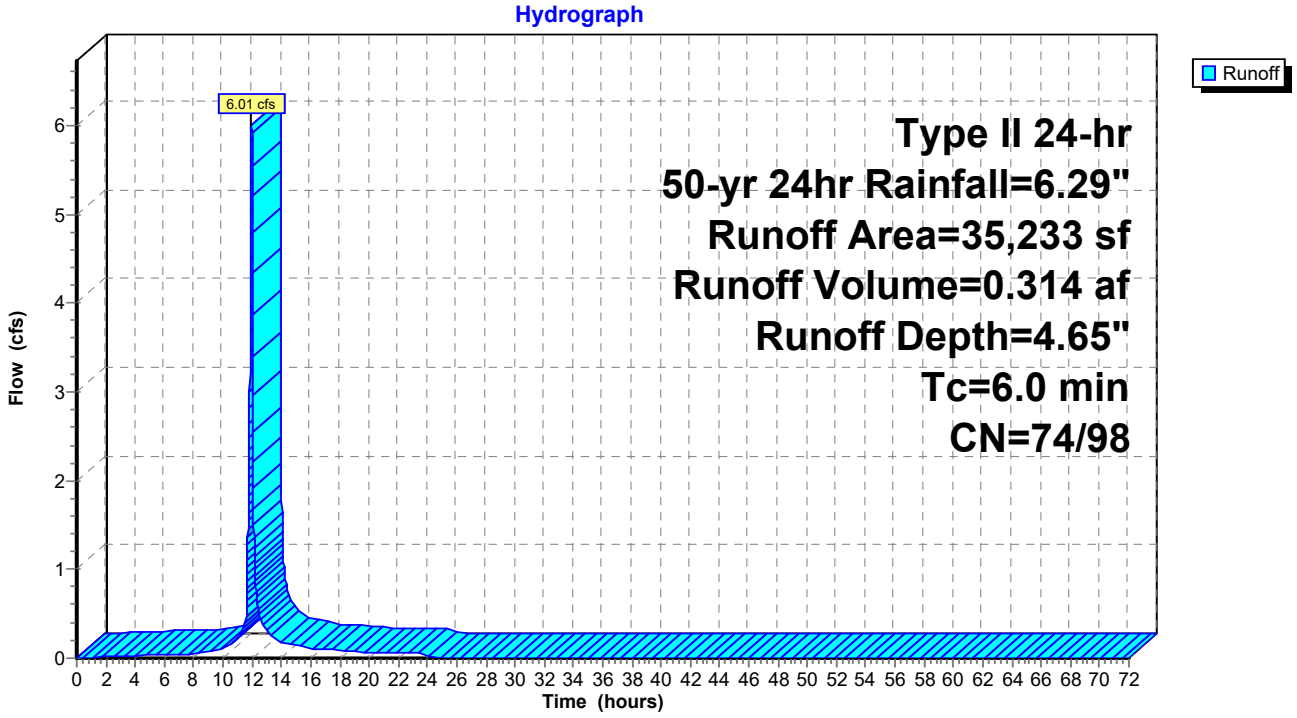
Runoff = 6.01 cfs @ 11.97 hrs, Volume= 0.314 af, Depth= 4.65"
Routed to Reach 1R : Channel 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-yr 24hr Rainfall=6.29"

Area (sf)	CN	Description
16,426	98	Paved parking, HSG C
18,807	74	>75% Grass cover, Good, HSG C
35,233	85	Weighted Average
18,807	74	53.38% Pervious Area
16,426	98	46.62% Impervious Area

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

Subcatchment 5S: Channel 1



Summary for Subcatchment 6S: Channel 2

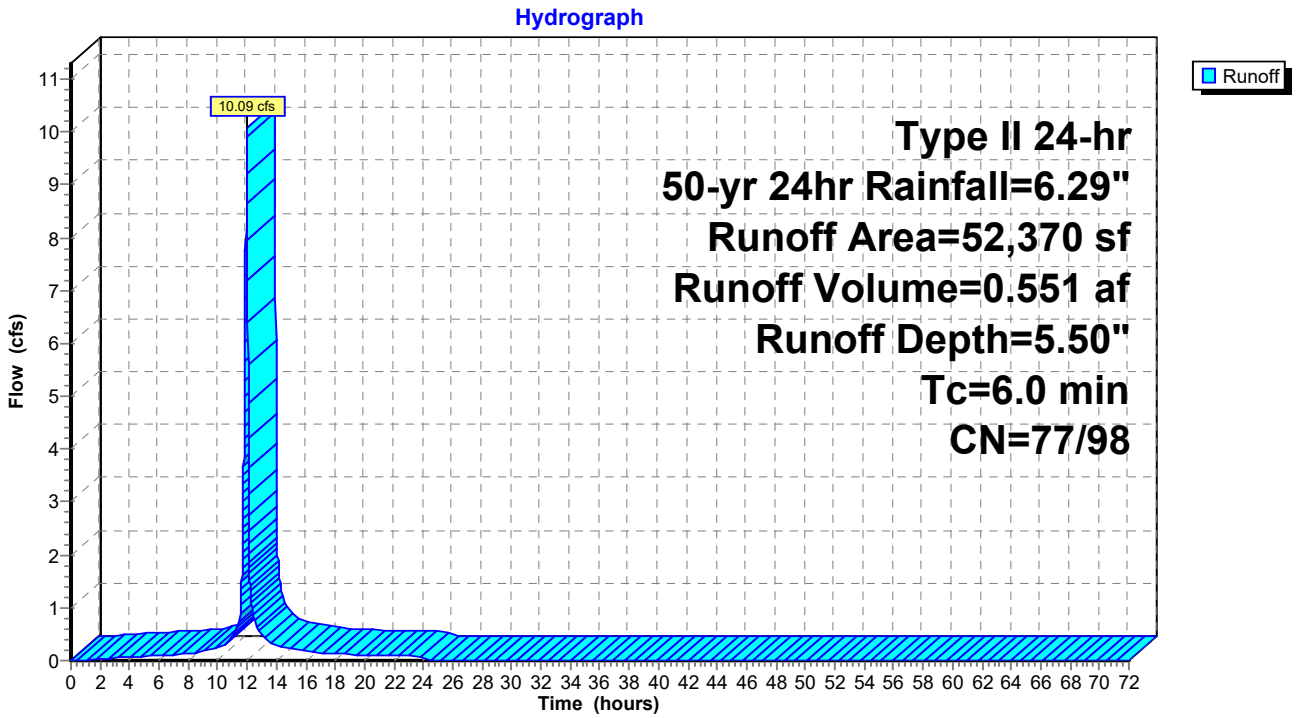
Runoff = 10.09 cfs @ 11.97 hrs, Volume= 0.551 af, Depth= 5.50"
Routed to Reach 2R : Channel 2

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-yr 24hr Rainfall=6.29"

Area (sf)	CN	Description
4,554	82	Row crops, SR + CR, Good, HSG C
39,843	98	Paved parking, HSG C
7,973	74	>75% Grass cover, Good, HSG C
52,370	93	Weighted Average
12,527	77	23.92% Pervious Area
39,843	98	76.08% Impervious Area

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

Subcatchment 6S: Channel 2



Summary for Subcatchment 7S: Culvert 1

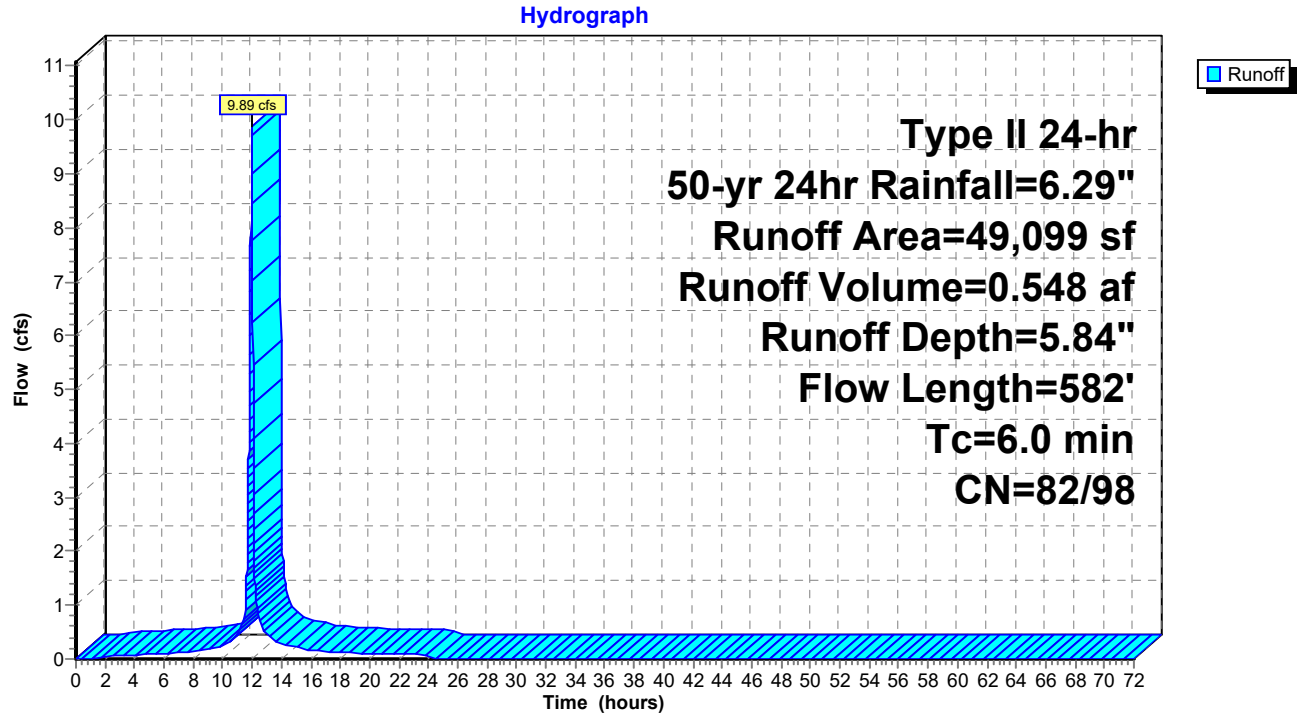
Runoff = 9.89 cfs @ 11.97 hrs, Volume= 0.548 af, Depth= 5.84"
Routed to Pond 3P : Culvert 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-yr 24hr Rainfall=6.29"

Area (sf)	CN	Description
43,275	98	Paved parking, HSG C
5,824	82	Row crops, SR + CR, Good, HSG C
49,099	96	Weighted Average
5,824	82	11.86% Pervious Area
43,275	98	88.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	76	0.0626	1.99		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
2.2	33	0.1030	0.25		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.01"
0.7	473	0.0423	11.41	214.00	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.030 Earth, grassed & winding
2.5					**Direct Entry, User**
6.0	582	Total			

Subcatchment 7S: Culvert 1



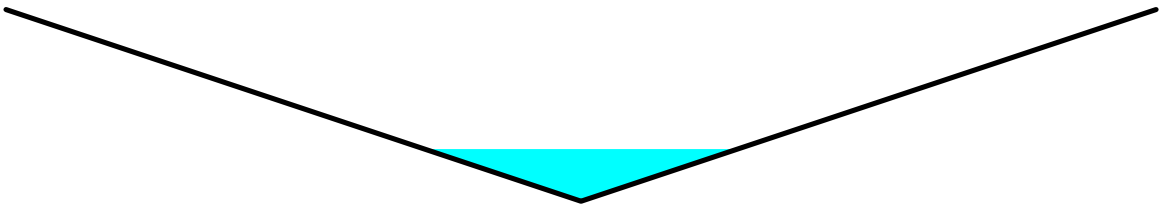
Summary for Reach 1R: Channel 1

Inflow Area = 0.809 ac, 46.62% Impervious, Inflow Depth = 4.65" for 50-yr 24hr event
Inflow = 6.01 cfs @ 11.97 hrs, Volume= 0.314 af
Outflow = 5.85 cfs @ 11.99 hrs, Volume= 0.314 af, Atten= 3%, Lag= 1.0 min

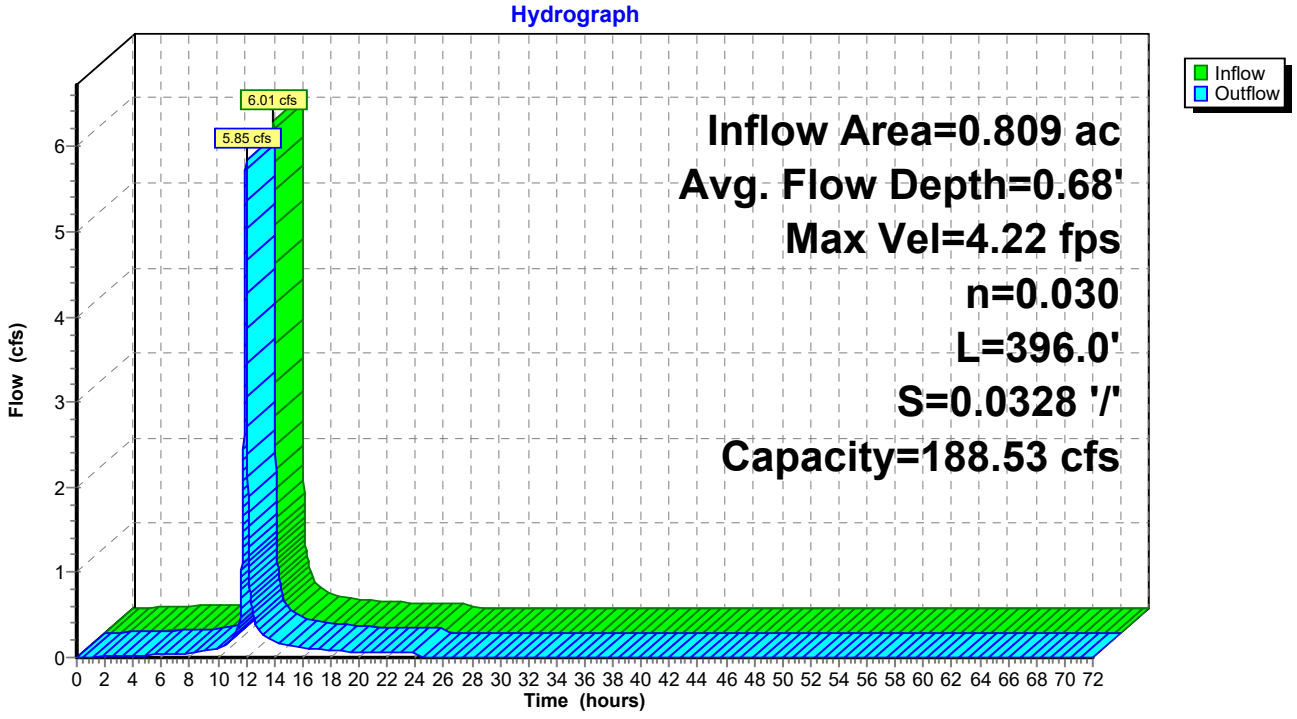
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.22 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 1.41 fps, Avg. Travel Time= 4.7 min

Peak Storage= 549 cf @ 11.99 hrs
Average Depth at Peak Storage= 0.68' , Surface Width= 4.08'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 188.53 cfs

0.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 15.00'
Length= 396.0' Slope= 0.0328 '/'
Inlet Invert= 697.00', Outlet Invert= 684.00'



Reach 1R: Channel 1



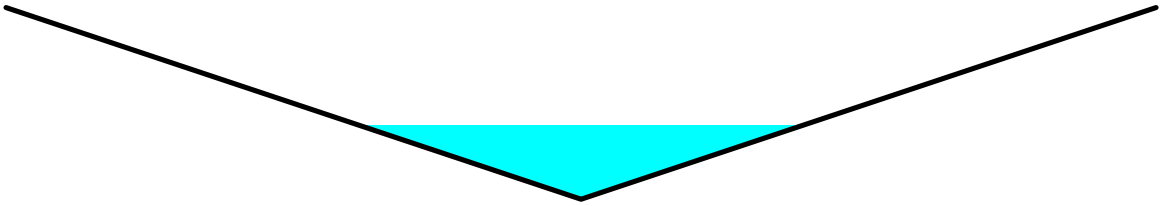
Summary for Reach 2R: Channel 2

Inflow Area = 1.202 ac, 76.08% Impervious, Inflow Depth = 5.50" for 50-yr 24hr event
Inflow = 10.09 cfs @ 11.97 hrs, Volume= 0.551 af
Outflow = 9.66 cfs @ 11.99 hrs, Volume= 0.551 af, Atten= 4%, Lag= 1.3 min

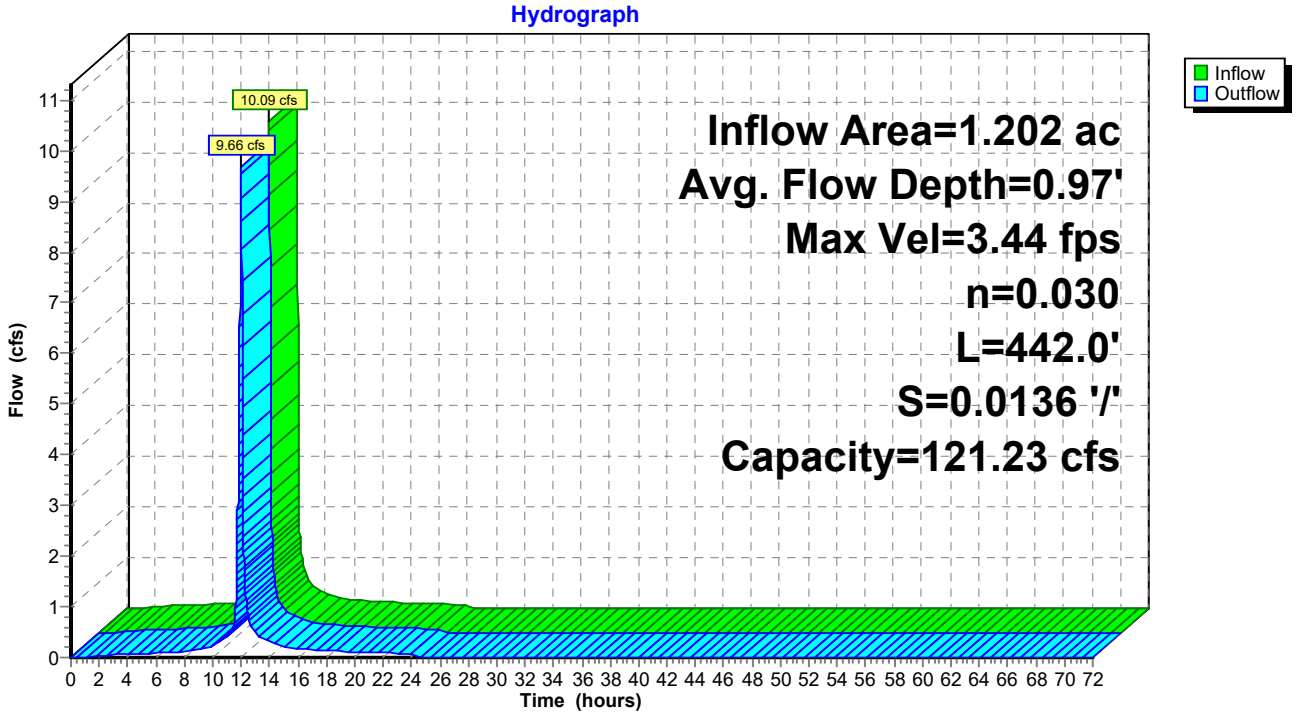
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.44 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 1.15 fps, Avg. Travel Time= 6.4 min

Peak Storage= 1,243 cf @ 11.99 hrs
Average Depth at Peak Storage= 0.97' , Surface Width= 5.81'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 121.23 cfs

0.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 15.00'
Length= 442.0' Slope= 0.0136 '/'
Inlet Invert= 690.00', Outlet Invert= 684.00'



Reach 2R: Channel 2



Summary for Pond 3P: Culvert 1

Inflow Area = 1.127 ac, 88.14% Impervious, Inflow Depth = 5.84" for 50-yr 24hr event
Inflow = 9.89 cfs @ 11.97 hrs, Volume= 0.548 af
Outflow = 9.89 cfs @ 11.97 hrs, Volume= 0.548 af, Atten= 0%, Lag= 0.1 min
Primary = 9.89 cfs @ 11.97 hrs, Volume= 0.548 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 687.23' @ 11.97 hrs Surf.Area= 203 sf Storage= 76 cf

Plug-Flow detention time= 0.3 min calculated for 0.548 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (746.1 - 745.8)

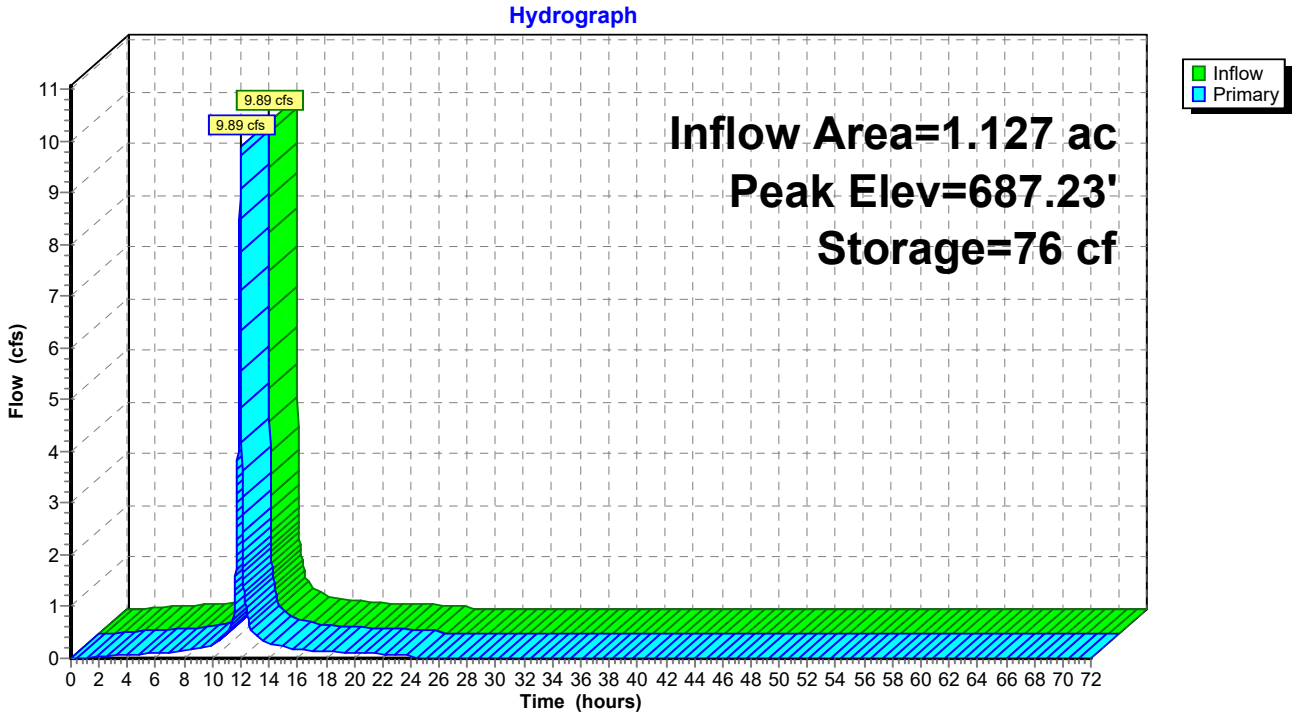
Volume	Invert	Avail.Storage	Storage Description
#1	686.26'	3,775 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
686.26	9	9.0	0	0	9
687.00	118	108.6	39	39	942
688.00	643	256.1	345	385	5,227
689.00	1,586	403.7	1,080	1,464	12,984
690.00	3,121	576.5	2,311	3,775	26,471

Device	Routing	Invert	Outlet Devices
#1	Primary	687.00'	**22.5' 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
#2	Primary	686.27'	**18.0" Round RCP_Round 18"** L= 122.6' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 686.27' / 685.65' S= 0.0051 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=9.88 cfs @ 11.97 hrs HW=687.23' (Free Discharge)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 6.17 cfs @ 1.18 fps)
└**2=RCP_Round 18"** (Barrel Controls 3.70 cfs @ 4.40 fps)

Pond 3P: Culvert 1



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment5S: Channel 1 Runoff Area=35,233 sf 46.62% Impervious Runoff Depth=5.51"
Tc=6.0 min CN=74/98 Runoff=7.11 cfs 0.372 af

Subcatchment6S: Channel 2 Runoff Area=52,370 sf 76.08% Impervious Runoff Depth=6.40"
Tc=6.0 min CN=77/98 Runoff=11.71 cfs 0.641 af

Subcatchment7S: Culvert 1 Runoff Area=49,099 sf 88.14% Impervious Runoff Depth=6.76"
Flow Length=582' Tc=6.0 min CN=82/98 Runoff=11.40 cfs 0.635 af

Reach 1R: Channel 1 Avg. Flow Depth=0.72' Max Vel=4.40 fps Inflow=7.11 cfs 0.372 af
n=0.030 L=396.0' S=0.0328 '/' Capacity=188.53 cfs Outflow=6.93 cfs 0.372 af

Reach 2R: Channel 2 Avg. Flow Depth=1.02' Max Vel=3.57 fps Inflow=11.71 cfs 0.641 af
n=0.030 L=442.0' S=0.0136 '/' Capacity=121.23 cfs Outflow=11.24 cfs 0.641 af

Pond 3P: Culvert 1 Peak Elev=687.26' Storage=83 cf Inflow=11.40 cfs 0.635 af
Outflow=11.40 cfs 0.635 af

Total Runoff Area = 3.138 ac Runoff Volume = 1.648 af Average Runoff Depth = 6.30"
27.18% Pervious = 0.853 ac 72.82% Impervious = 2.285 ac

Summary for Subcatchment 5S: Channel 1

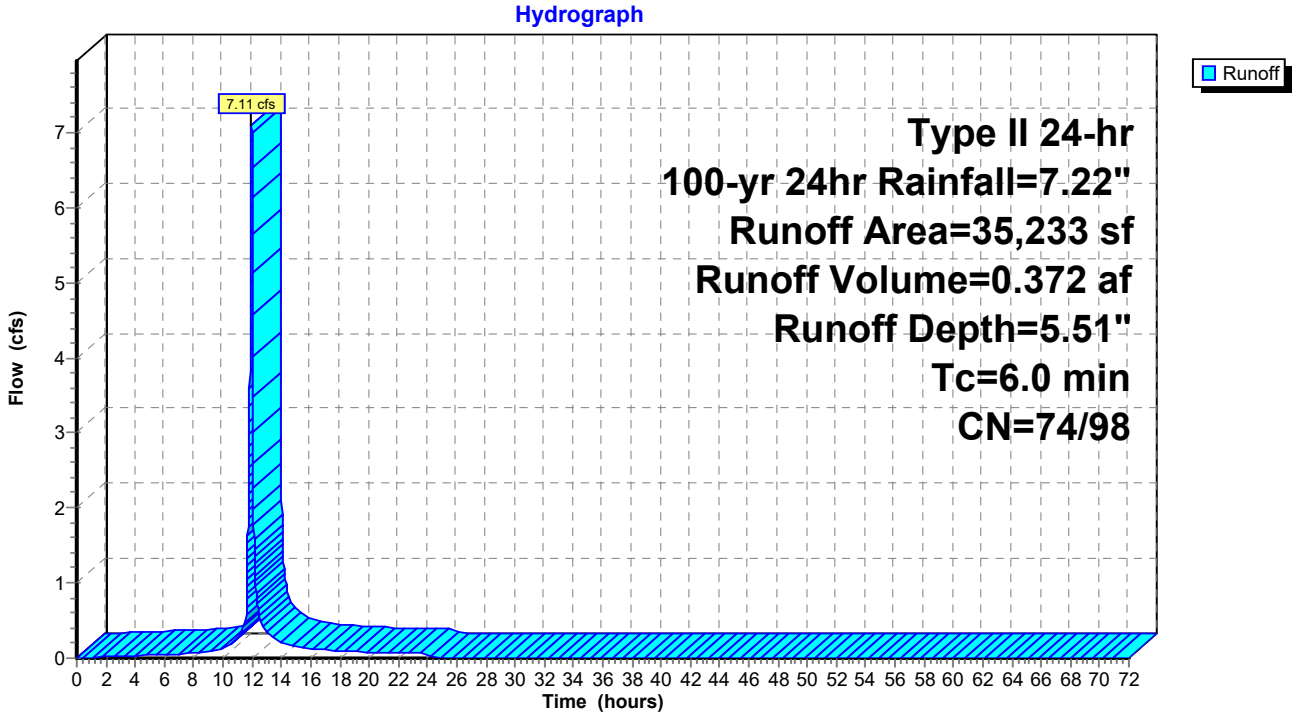
Runoff = 7.11 cfs @ 11.97 hrs, Volume= 0.372 af, Depth= 5.51"
Routed to Reach 1R : Channel 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr 24hr Rainfall=7.22"

Area (sf)	CN	Description
16,426	98	Paved parking, HSG C
18,807	74	>75% Grass cover, Good, HSG C
35,233	85	Weighted Average
18,807	74	53.38% Pervious Area
16,426	98	46.62% Impervious Area

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

Subcatchment 5S: Channel 1



Summary for Subcatchment 6S: Channel 2

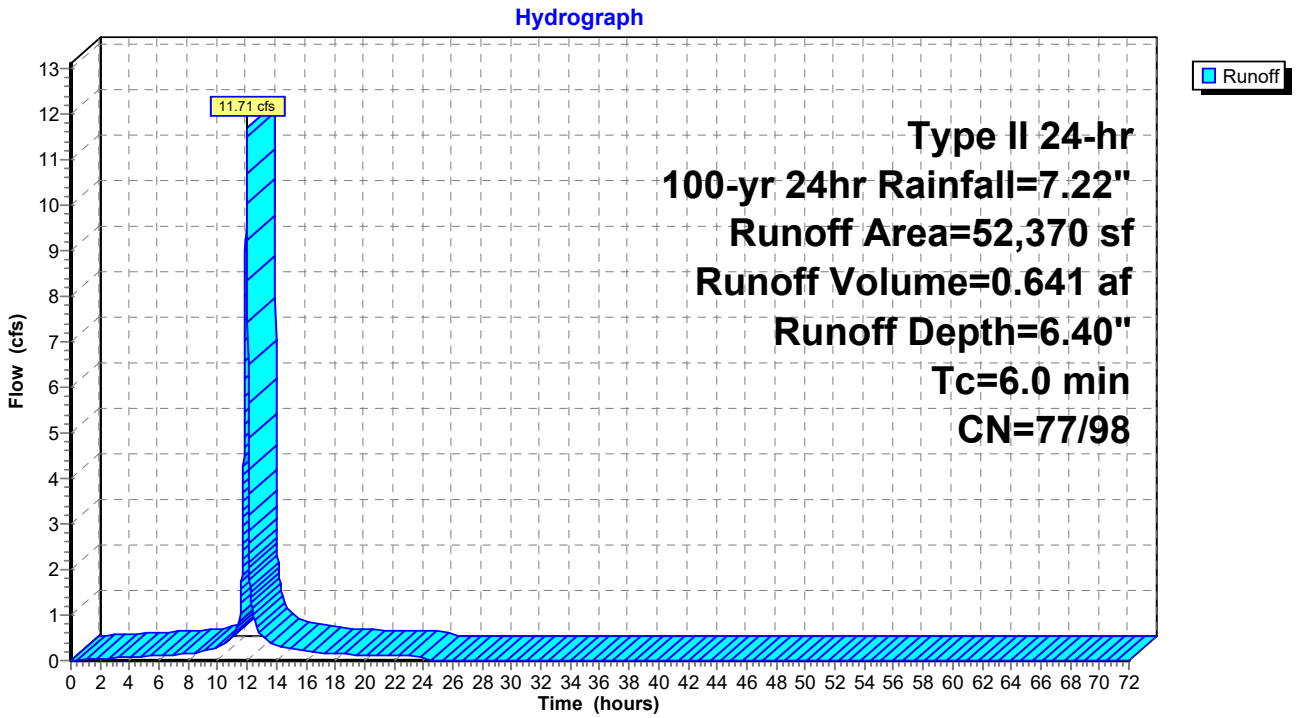
Runoff = 11.71 cfs @ 11.97 hrs, Volume= 0.641 af, Depth= 6.40"
Routed to Reach 2R : Channel 2

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr 24hr Rainfall=7.22"

Area (sf)	CN	Description
4,554	82	Row crops, SR + CR, Good, HSG C
39,843	98	Paved parking, HSG C
7,973	74	>75% Grass cover, Good, HSG C
52,370	93	Weighted Average
12,527	77	23.92% Pervious Area
39,843	98	76.08% Impervious Area

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

Subcatchment 6S: Channel 2



Summary for Subcatchment 7S: Culvert 1

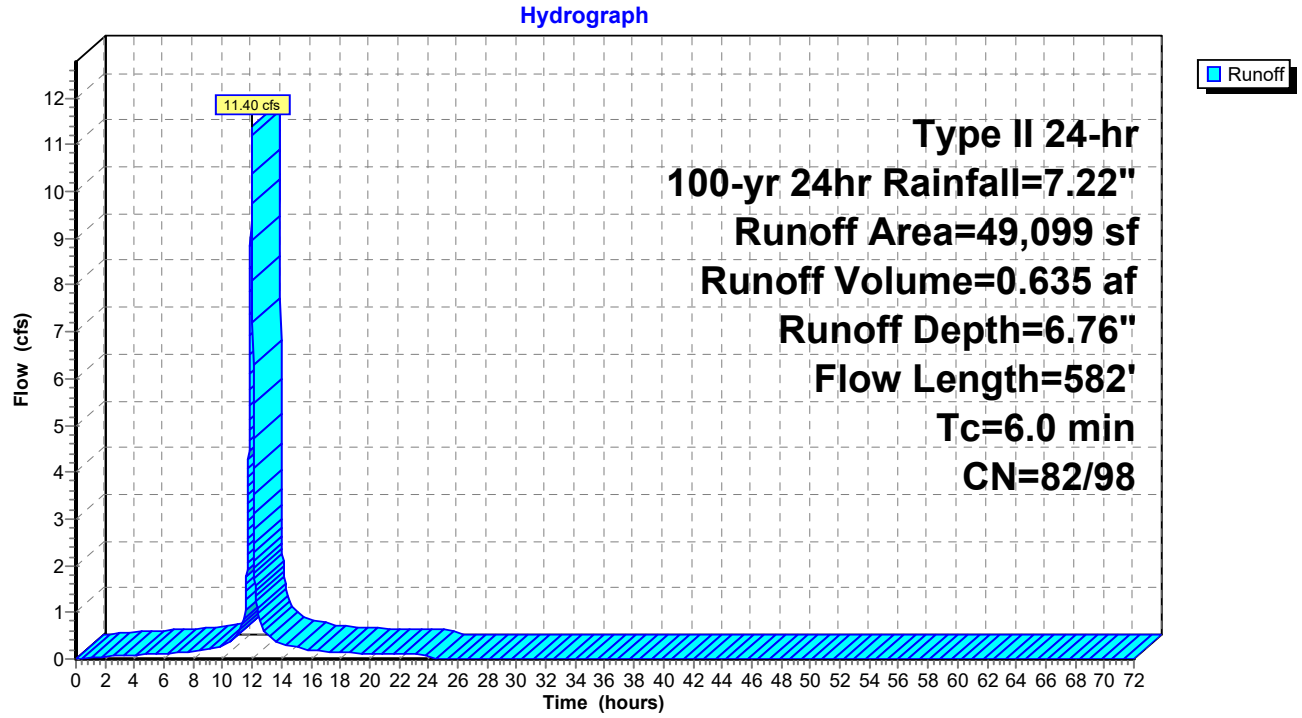
Runoff = 11.40 cfs @ 11.97 hrs, Volume= 0.635 af, Depth= 6.76"
Routed to Pond 3P : Culvert 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr 24hr Rainfall=7.22"

Area (sf)	CN	Description
43,275	98	Paved parking, HSG C
5,824	82	Row crops, SR + CR, Good, HSG C
49,099	96	Weighted Average
5,824	82	11.86% Pervious Area
43,275	98	88.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	76	0.0626	1.99		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
2.2	33	0.1030	0.25		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.01"
0.7	473	0.0423	11.41	214.00	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.030 Earth, grassed & winding
2.5					**Direct Entry, User**
6.0	582	Total			

Subcatchment 7S: Culvert 1



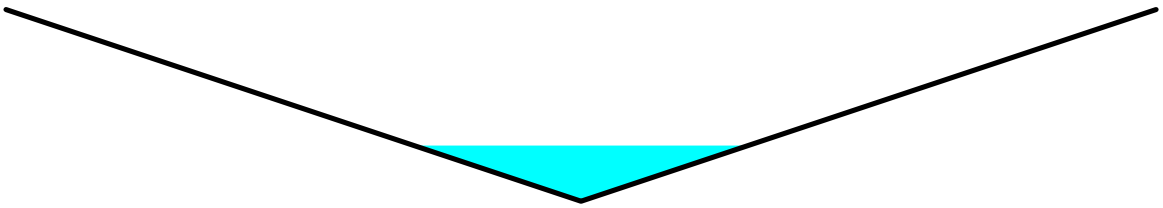
Summary for Reach 1R: Channel 1

Inflow Area = 0.809 ac, 46.62% Impervious, Inflow Depth = 5.51" for 100-yr 24hr event
Inflow = 7.11 cfs @ 11.97 hrs, Volume= 0.372 af
Outflow = 6.93 cfs @ 11.99 hrs, Volume= 0.372 af, Atten= 2%, Lag= 1.0 min

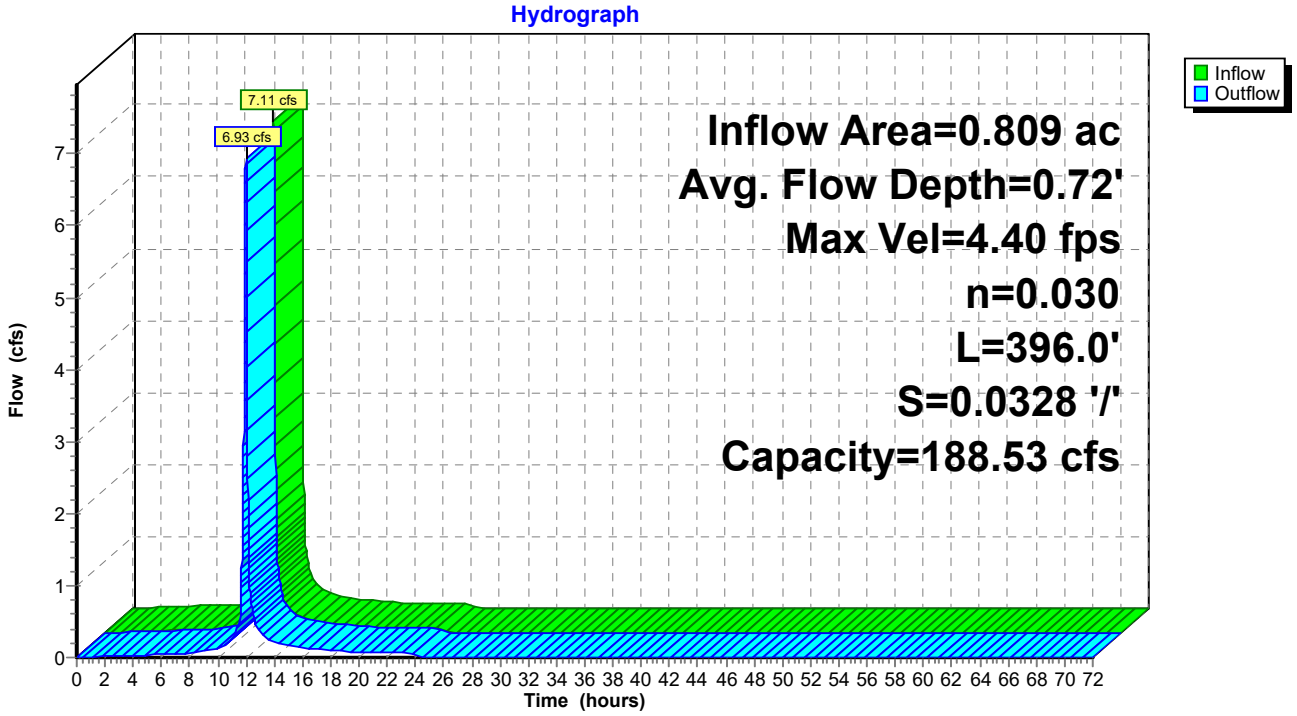
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.40 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 1.47 fps, Avg. Travel Time= 4.5 min

Peak Storage= 623 cf @ 11.99 hrs
Average Depth at Peak Storage= 0.72' , Surface Width= 4.35'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 188.53 cfs

0.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 15.00'
Length= 396.0' Slope= 0.0328 '/'
Inlet Invert= 697.00', Outlet Invert= 684.00'



Reach 1R: Channel 1



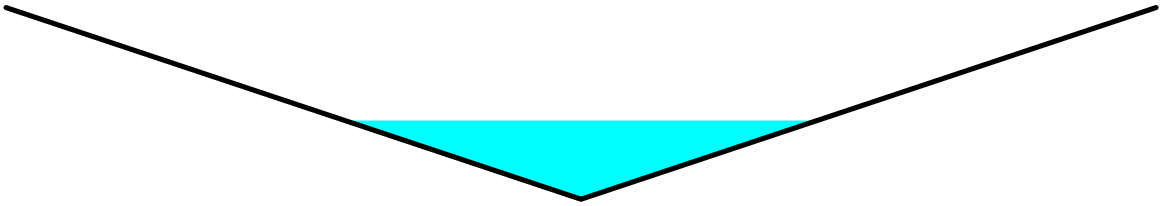
Summary for Reach 2R: Channel 2

Inflow Area = 1.202 ac, 76.08% Impervious, Inflow Depth = 6.40" for 100-yr 24hr event
Inflow = 11.71 cfs @ 11.97 hrs, Volume= 0.641 af
Outflow = 11.24 cfs @ 11.99 hrs, Volume= 0.641 af, Atten= 4%, Lag= 1.3 min

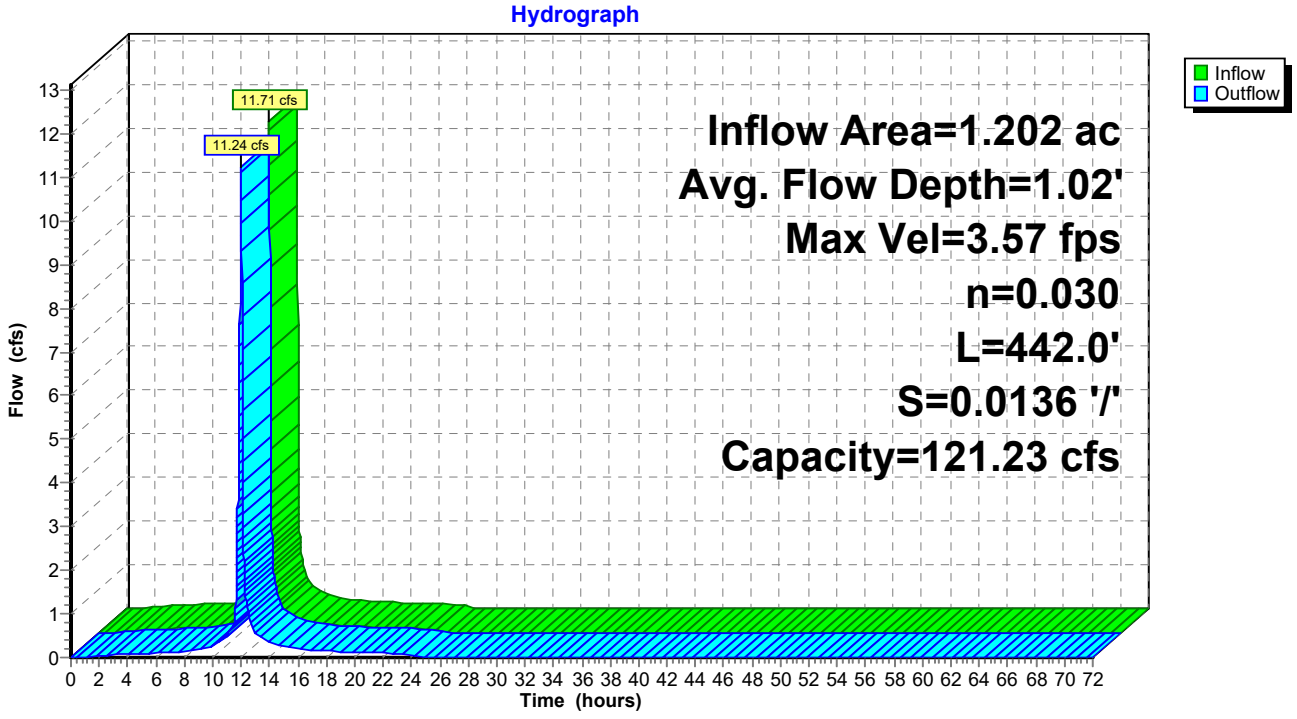
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.57 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 1.19 fps, Avg. Travel Time= 6.2 min

Peak Storage= 1,393 cf @ 11.99 hrs
Average Depth at Peak Storage= 1.02' , Surface Width= 6.15'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 121.23 cfs

0.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 15.00'
Length= 442.0' Slope= 0.0136 '/'
Inlet Invert= 690.00', Outlet Invert= 684.00'



Reach 2R: Channel 2



Summary for Pond 3P: Culvert 1

Inflow Area = 1.127 ac, 88.14% Impervious, Inflow Depth = 6.76" for 100-yr 24hr event
Inflow = 11.40 cfs @ 11.97 hrs, Volume= 0.635 af
Outflow = 11.40 cfs @ 11.97 hrs, Volume= 0.635 af, Atten= 0%, Lag= 0.1 min
Primary = 11.40 cfs @ 11.97 hrs, Volume= 0.635 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 687.26' @ 11.97 hrs Surf.Area= 215 sf Storage= 83 cf

Plug-Flow detention time= 0.3 min calculated for 0.635 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (744.0 - 743.8)

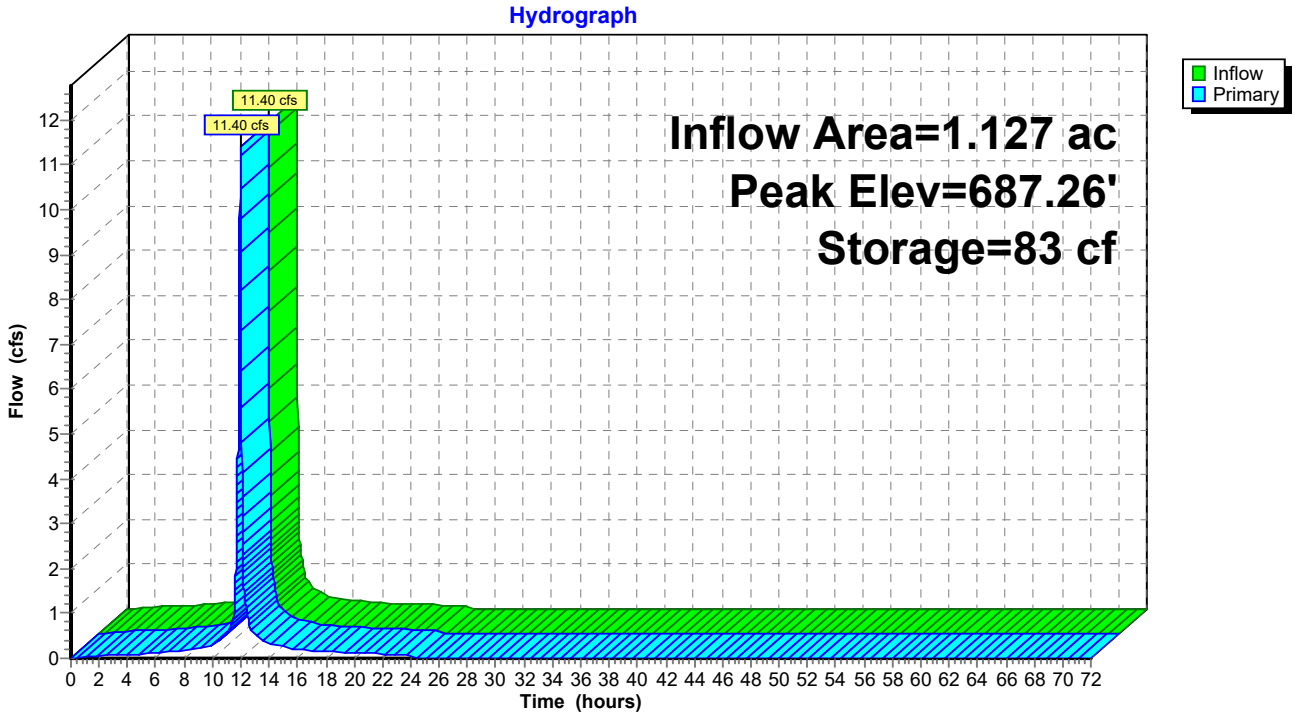
Volume	Invert	Avail.Storage	Storage Description
#1	686.26'	3,775 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
686.26	9	9.0	0	0	9
687.00	118	108.6	39	39	942
688.00	643	256.1	345	385	5,227
689.00	1,586	403.7	1,080	1,464	12,984
690.00	3,121	576.5	2,311	3,775	26,471

Device	Routing	Invert	Outlet Devices
#1	Primary	687.00'	**22.5' 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
#2	Primary	686.27'	**18.0" Round RCP_Round 18"** L= 122.6' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 686.27' / 685.65' S= 0.0051 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=11.38 cfs @ 11.97 hrs HW=687.26' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 7.48 cfs @ 1.26 fps)
2=RCP_Round 18" (Barrel Controls 3.90 cfs @ 4.46 fps)

Pond 3P: Culvert 1



Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment5S: Channel 1 Runoff Area=35,233 sf 46.62% Impervious Runoff Depth=7.81"
Tc=6.0 min CN=74/98 Runoff=9.98 cfs 0.526 af

Subcatchment6S: Channel 2 Runoff Area=52,370 sf 76.08% Impervious Runoff Depth=8.78"
Tc=6.0 min CN=77/98 Runoff=15.94 cfs 0.879 af

Subcatchment7S: Culvert 1 Runoff Area=49,099 sf 88.14% Impervious Runoff Depth=9.17"
Flow Length=582' Tc=6.0 min CN=82/98 Runoff=15.34 cfs 0.861 af

Reach 1R: Channel 1 Avg. Flow Depth=0.82' Max Vel=4.80 fps Inflow=9.98 cfs 0.526 af
n=0.030 L=396.0' S=0.0328 '/' Capacity=188.53 cfs Outflow=9.77 cfs 0.526 af

Reach 2R: Channel 2 Avg. Flow Depth=1.15' Max Vel=3.86 fps Inflow=15.94 cfs 0.879 af
n=0.030 L=442.0' S=0.0136 '/' Capacity=121.23 cfs Outflow=15.38 cfs 0.879 af

Pond 3P: Culvert 1 Peak Elev=687.34' Storage=99 cf Inflow=15.34 cfs 0.861 af
Outflow=15.34 cfs 0.861 af

Total Runoff Area = 3.138 ac Runoff Volume = 2.266 af Average Runoff Depth = 8.67"
27.18% Pervious = 0.853 ac 72.82% Impervious = 2.285 ac

Summary for Subcatchment 5S: Channel 1

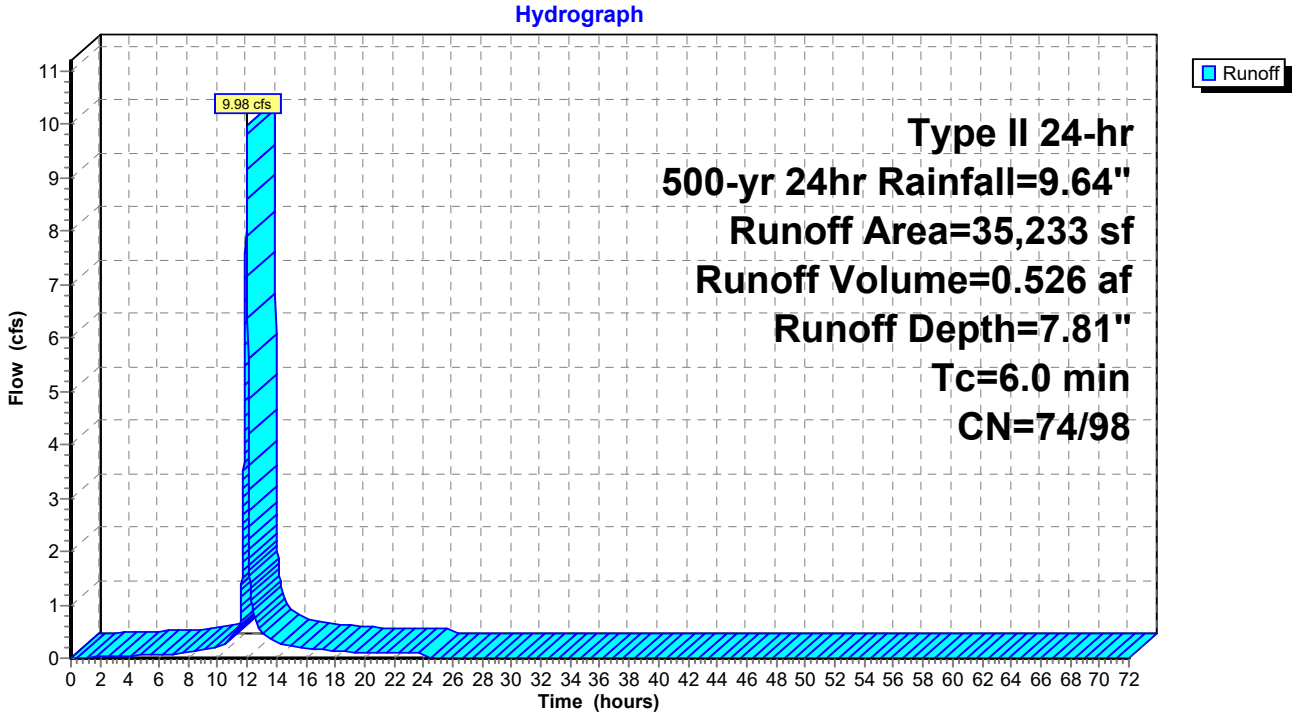
Runoff = 9.98 cfs @ 11.97 hrs, Volume= 0.526 af, Depth= 7.81"
Routed to Reach 1R : Channel 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 500-yr 24hr Rainfall=9.64"

Area (sf)	CN	Description
16,426	98	Paved parking, HSG C
18,807	74	>75% Grass cover, Good, HSG C
35,233	85	Weighted Average
18,807	74	53.38% Pervious Area
16,426	98	46.62% Impervious Area

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

Subcatchment 5S: Channel 1



Summary for Subcatchment 6S: Channel 2

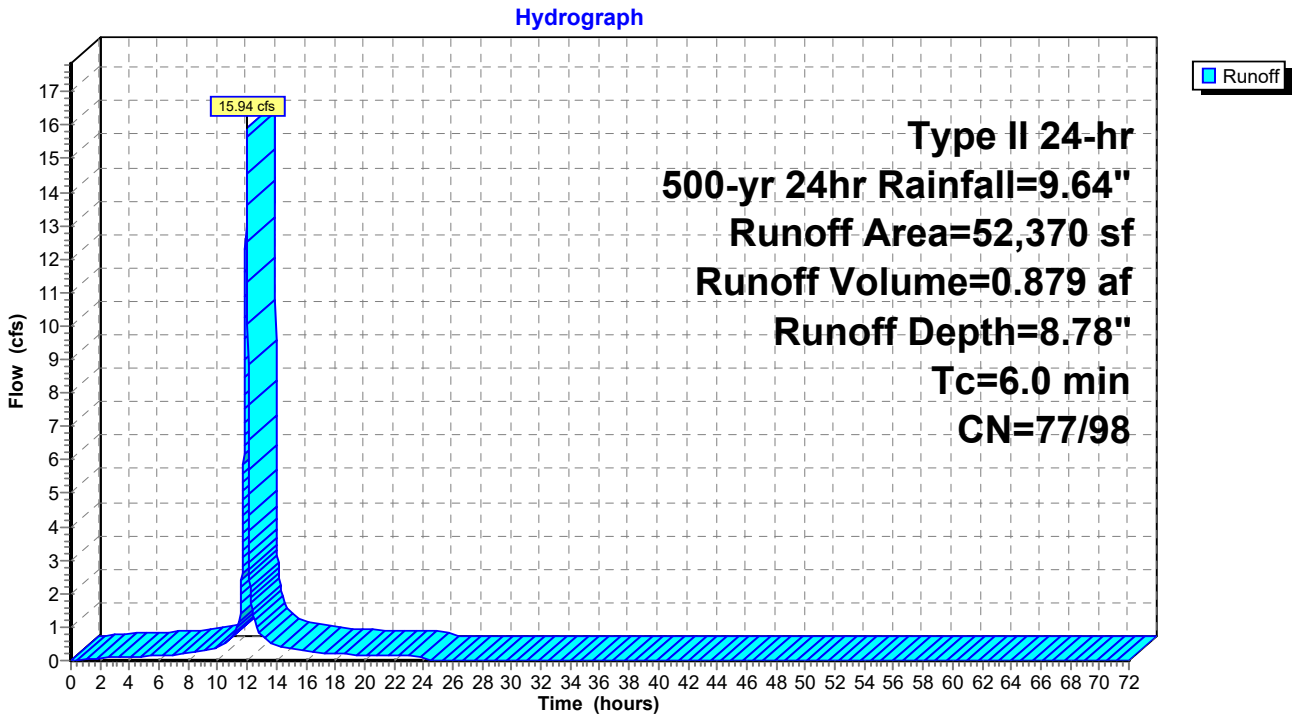
Runoff = 15.94 cfs @ 11.97 hrs, Volume= 0.879 af, Depth= 8.78"
Routed to Reach 2R : Channel 2

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 500-yr 24hr Rainfall=9.64"

Area (sf)	CN	Description
4,554	82	Row crops, SR + CR, Good, HSG C
39,843	98	Paved parking, HSG C
7,973	74	>75% Grass cover, Good, HSG C
52,370	93	Weighted Average
12,527	77	23.92% Pervious Area
39,843	98	76.08% Impervious Area

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

Subcatchment 6S: Channel 2



Summary for Subcatchment 7S: Culvert 1

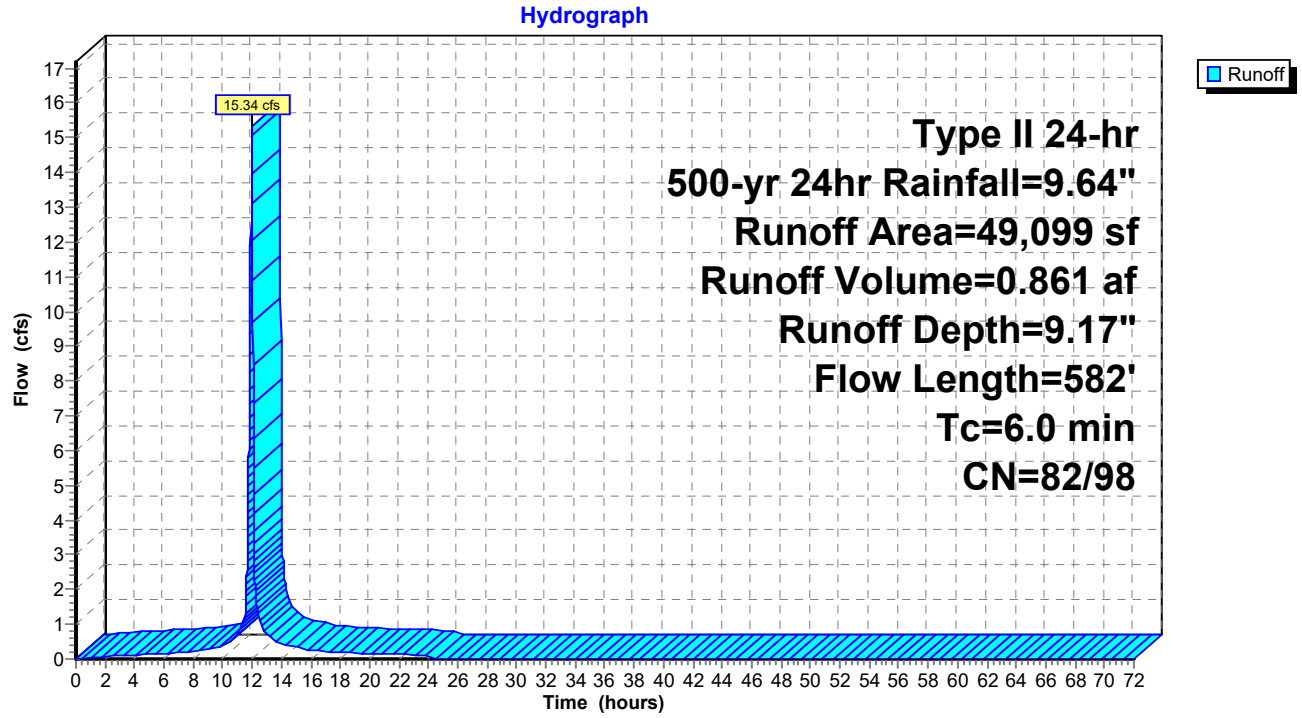
Runoff = 15.34 cfs @ 11.97 hrs, Volume= 0.861 af, Depth= 9.17"
Routed to Pond 3P : Culvert 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 500-yr 24hr Rainfall=9.64"

Area (sf)	CN	Description
43,275	98	Paved parking, HSG C
5,824	82	Row crops, SR + CR, Good, HSG C
49,099	96	Weighted Average
5,824	82	11.86% Pervious Area
43,275	98	88.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	76	0.0626	1.99		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.01"
2.2	33	0.1030	0.25		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.01"
0.7	473	0.0423	11.41	214.00	**Trap/Vee/Rect Channel Flow, Grass Channel** Bot.W=0.00' D=2.50' Z= 3.0 '/' Top.W=15.00' n= 0.030 Earth, grassed & winding
2.5					**Direct Entry, User**
6.0	582	Total			

Subcatchment 7S: Culvert 1



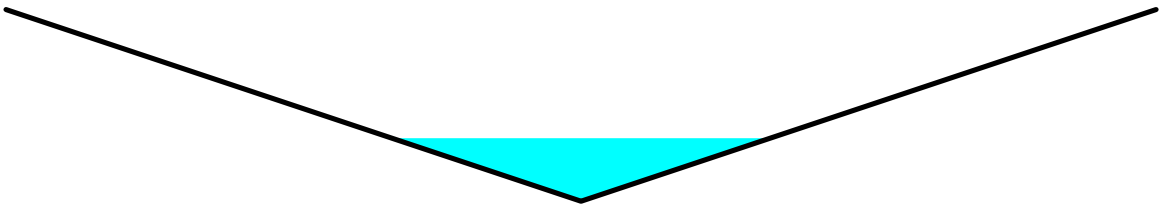
Summary for Reach 1R: Channel 1

Inflow Area = 0.809 ac, 46.62% Impervious, Inflow Depth = 7.81" for 500-yr 24hr event
Inflow = 9.98 cfs @ 11.97 hrs, Volume= 0.526 af
Outflow = 9.77 cfs @ 11.98 hrs, Volume= 0.526 af, Atten= 2%, Lag= 0.9 min

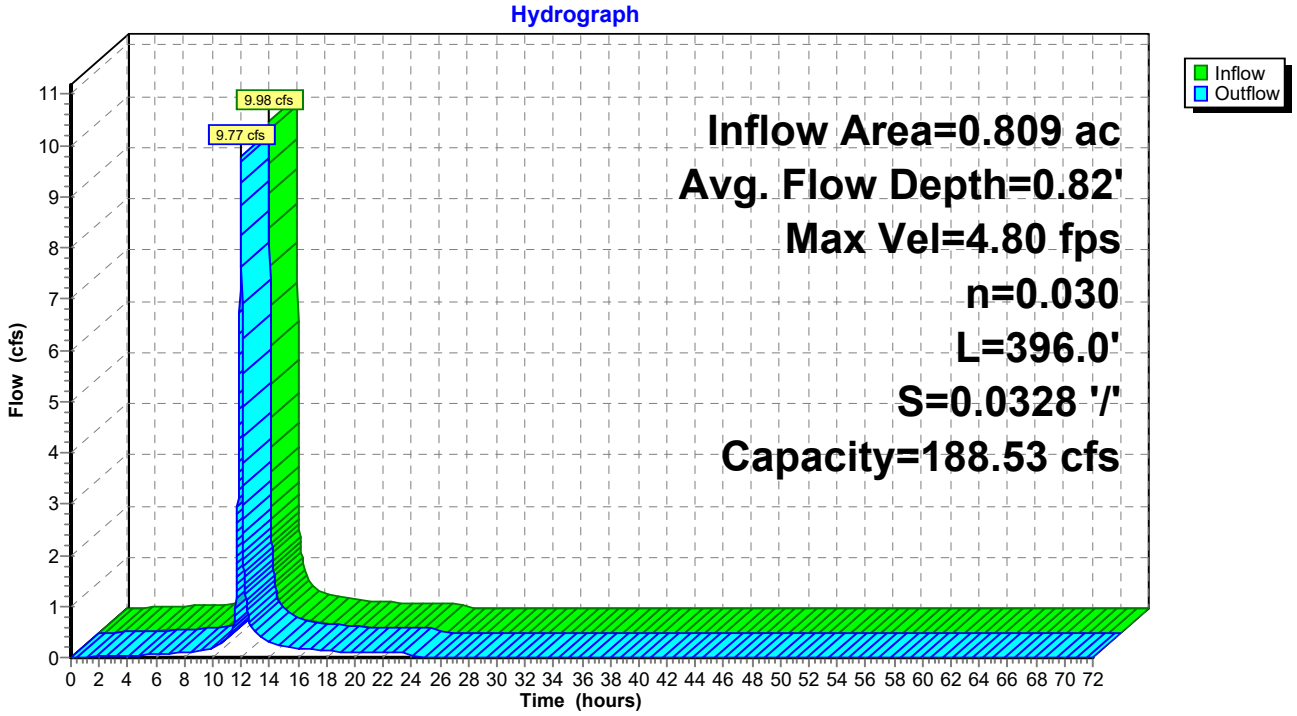
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.80 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 1.60 fps, Avg. Travel Time= 4.1 min

Peak Storage= 807 cf @ 11.98 hrs
Average Depth at Peak Storage= 0.82' , Surface Width= 4.94'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 188.53 cfs

0.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 15.00'
Length= 396.0' Slope= 0.0328 '/'
Inlet Invert= 697.00', Outlet Invert= 684.00'



Reach 1R: Channel 1



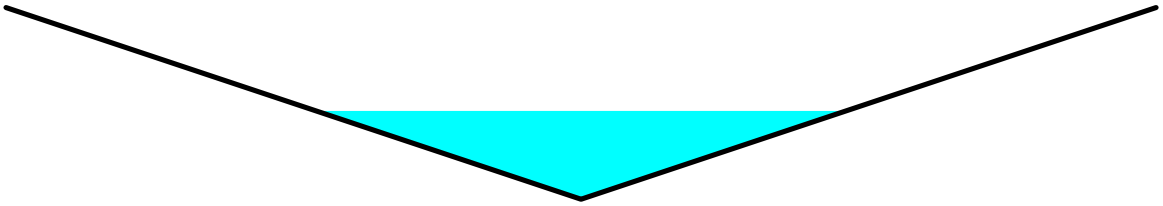
Summary for Reach 2R: Channel 2

Inflow Area = 1.202 ac, 76.08% Impervious, Inflow Depth = 8.78" for 500-yr 24hr event
Inflow = 15.94 cfs @ 11.97 hrs, Volume= 0.879 af
Outflow = 15.38 cfs @ 11.99 hrs, Volume= 0.879 af, Atten= 4%, Lag= 1.2 min

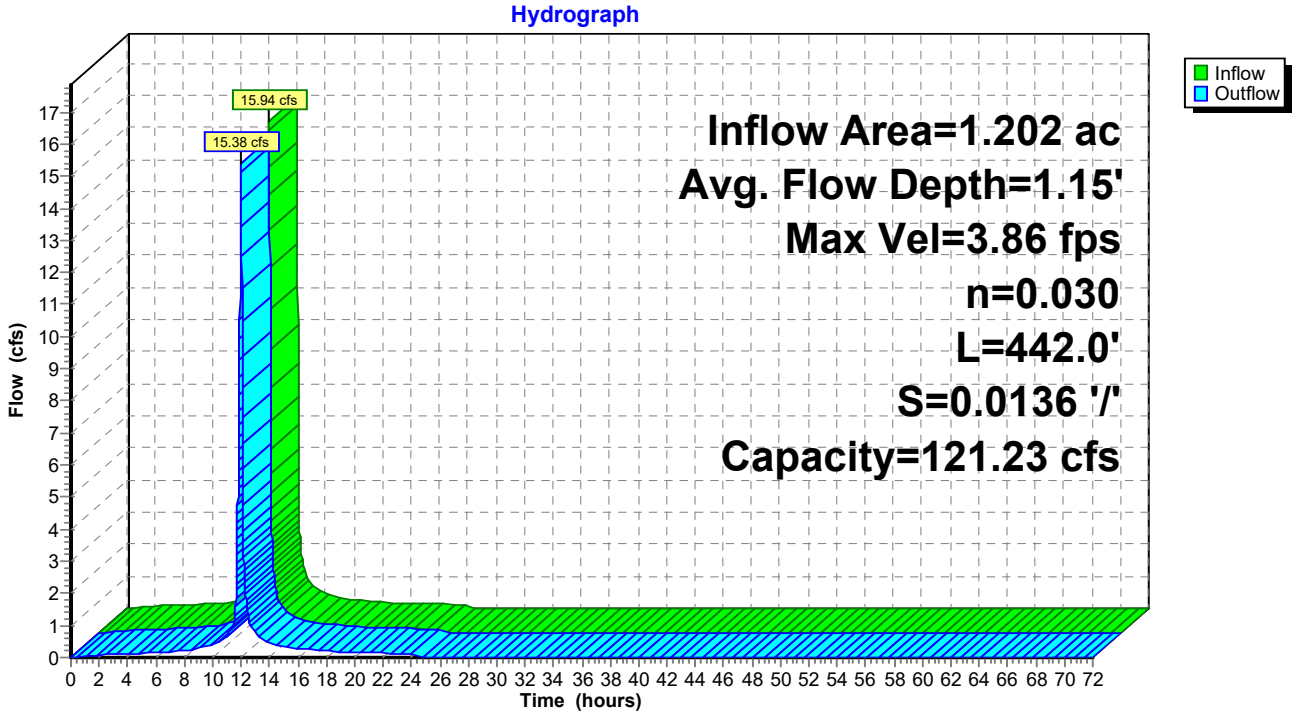
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.86 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 1.29 fps, Avg. Travel Time= 5.7 min

Peak Storage= 1,761 cf @ 11.99 hrs
Average Depth at Peak Storage= 1.15' , Surface Width= 6.92'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 121.23 cfs

0.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 15.00'
Length= 442.0' Slope= 0.0136 '/'
Inlet Invert= 690.00', Outlet Invert= 684.00'



Reach 2R: Channel 2



Summary for Pond 3P: Culvert 1

Inflow Area = 1.127 ac, 88.14% Impervious, Inflow Depth = 9.17" for 500-yr 24hr event
Inflow = 15.34 cfs @ 11.97 hrs, Volume= 0.861 af
Outflow = 15.34 cfs @ 11.97 hrs, Volume= 0.861 af, Atten= 0%, Lag= 0.1 min
Primary = 15.34 cfs @ 11.97 hrs, Volume= 0.861 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 687.34' @ 11.97 hrs Surf.Area= 247 sf Storage= 99 cf

Plug-Flow detention time= 0.2 min calculated for 0.861 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (740.1 - 739.9)

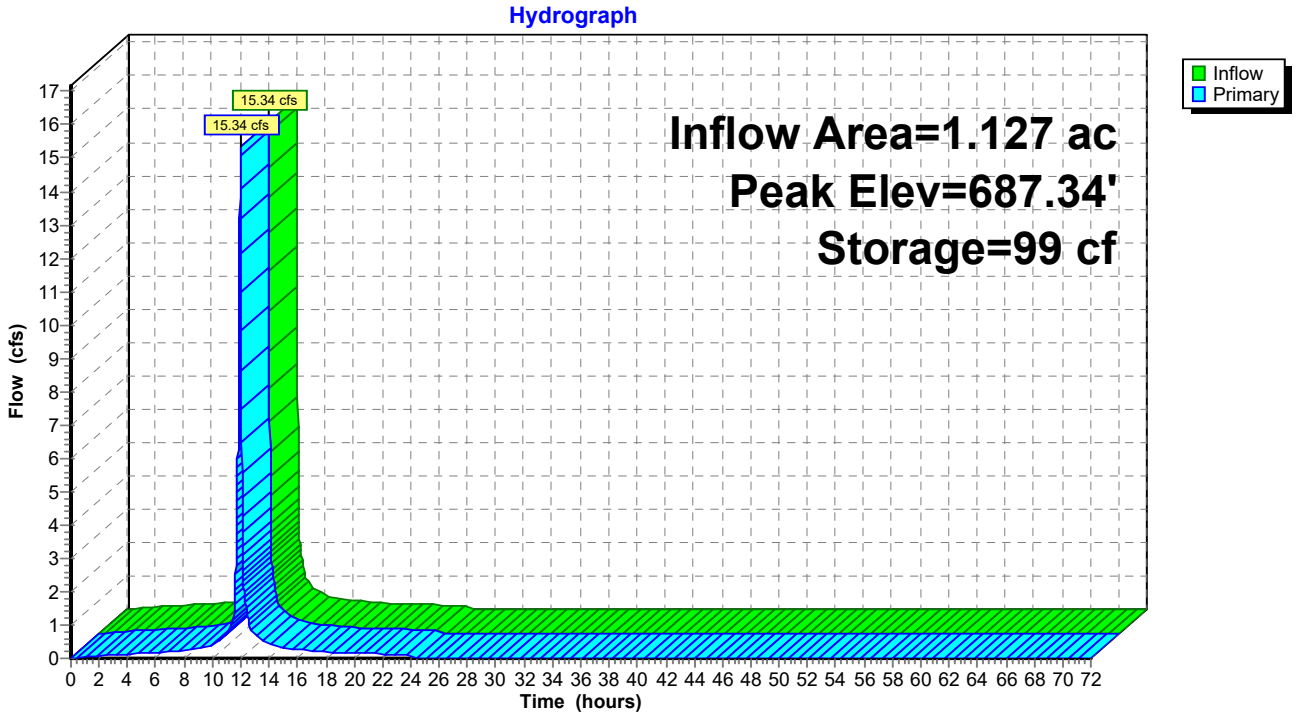
Volume	Invert	Avail.Storage	Storage Description
#1	686.26'	3,775 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
686.26	9	9.0	0	0	9
687.00	118	108.6	39	39	942
688.00	643	256.1	345	385	5,227
689.00	1,586	403.7	1,080	1,464	12,984
690.00	3,121	576.5	2,311	3,775	26,471

Device	Routing	Invert	Outlet Devices
#1	Primary	687.00'	**22.5' 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
#2	Primary	686.27'	**18.0" Round RCP_Round 18"** L= 122.6' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 686.27' / 685.65' S= 0.0051 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf

Primary OutFlow Max=15.30 cfs @ 11.97 hrs HW=687.34' (Free Discharge)
↑ **1=Broad-Crested Rectangular Weir** (Weir Controls 10.93 cfs @ 1.45 fps)
└ **2=RCP_Round 18"** (Barrel Controls 4.38 cfs @ 4.58 fps)

Pond 3P: Culvert 1

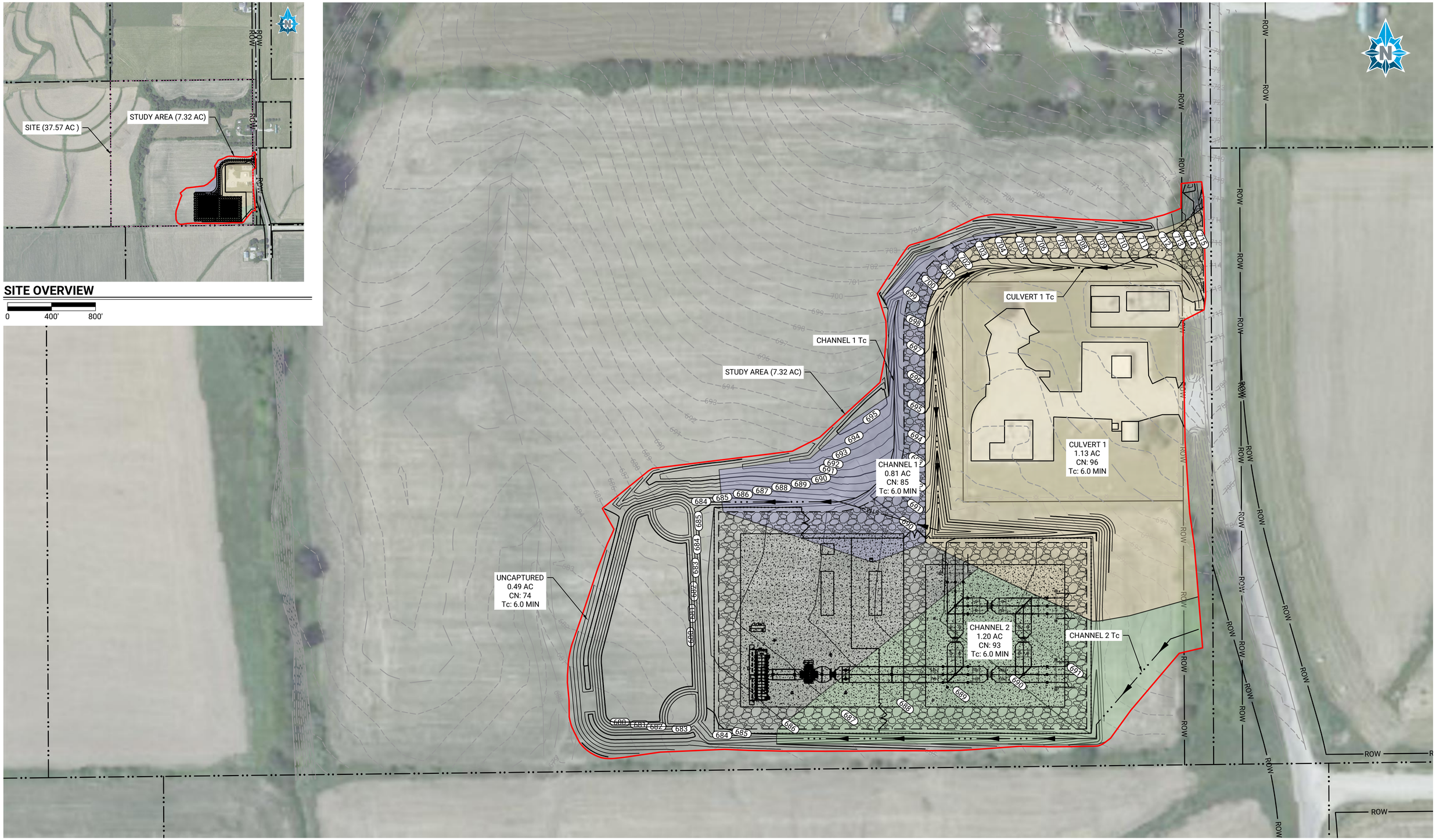


APPENDIX F

CHANNEL AND CULVERT DRAINAGE EXHIBIT

SITE OVERVIEW

0 400' 800'



REV	DATE	DFTR	APP	DESCRIPTION

CONFIDENTIAL:

THIS DOCUMENT SHALL BE MAINTAINED CONFIDENTIALLY AS CRITICAL ENERGY INFRASTRUCTURE INFORMATION AND IS AVAILABLE TO MIDAMERICAN ENERGY COMPANY EMPLOYEES, BUT NOT TO MIDAMERICAN ENERGY COMPANY EMPLOYEES WORKING IN THE UNREGULATED RETAIL SERVICES DIVISION. PRIOR WRITTEN AUTHORIZATION IS REQUIRED FOR ACCESS BY ANY OTHER PERSON.

MIDAMERICAN ENERGY COMPANY.

0 50 100

DATE:	08-13-2025
DESIGNED:	BAM
DRAWN:	BAM
APPROVED:	CDH
SCALE:	AS SHOWN

DANE ROAD SW SUBSTATION
IOWA CITY, IOWA

CONCEPTUAL
CHANNEL AND CULVERT DRAINAGE EXHIBIT

STD

Exhibit F

Decommissioning Plan

(PLEASE SEE ATTACHED

A DECOMMISSIONING PLAN FOR

Dane Road SW Substation

Johnson County, Iowa

AUGUST 13, 2025

PREPARED FOR:

MIDAMERICAN ENERGY COMPANY

PREPARED BY:

Westwood

Westwood

Decommissioning Plan

Dane Road SW Substation

Johnson County, Iowa

Prepared for:

MidAmerican Energy Company
666 Grand Avenue, Suite 500
Des Moines, IA 50309

Prepared by:

Westwood Professional Services
12701 Whitewater Drive, Suite 300
Minnetonka, MN 55343
(952) 937-5150

Project Number: 0070922.00

Date: August 13, 2025

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1.0 Introduction / Project Description 1
2.0 Proposed Future Land Use 1
3.0 Decommissioning Activities 1
3.1 Decommissioning of Project Components 2
3.1.1 Fencing 2
3.1.2 Substation Equipment and Foundations 2
3.1.3 Underground Cables and Lines 3
3.1.4 Overhead Cables 3
3.1.5 Access Roads 3
3.2 Reclamation 3
4.0 Best Management Practices (BMPs) 4
4.1 Construction Stormwater Practices 4
4.2 Permitting 4
4.3 Health and Safety Standards 4
5.0 Timeline 4

1.0 Introduction / Project Description

This Decommissioning Plan ("Plan") has been prepared for the Dane Road SW Substation ("Substation") in accordance with the Johnson County, Unified Development Ordinance. The purpose of the Plan is to describe the means and methods that can be used to remove all structures, foundations, underground cables, and equipment at the Substation and to reclaim and restore the land altered during the construction and operation of the Substation to its pre-development condition to the extent feasible.

The Substation is proposed by MidAmerican Energy Company ("Applicant") in Johnson County, Iowa. The Substation is proposed for construction on the west side of Dane Road SW near the intersection with Poweshiek Street SW. At the Substation, voltage will be stepped up for incorporation into the electrical grid. A generation tie line "gen-tie" will then connect the Substation to existing electrical transmission infrastructure. The Substation will be built within a general fenced area of approximately three acres.

The estimated life of the Substation can be over 100 years. At the end of the Substation's useful life, it may either be decommissioned or repowered with newer technology. The Plan identifies components which may be removed and areas that may be restored once the Substation surpassed its useful lifespan.

2.0 Proposed Future Land Use

Prior to the development of the Substation, the land use of the Substation area was agricultural. After all equipment and infrastructure is removed during decommissioning, any holes or voids created by poles, concrete pads, and other equipment will be filled in with native soil to the surrounding grade, and the site will be restored to pre-construction conditions to the extent practicable. Access roads and other areas compacted by equipment may be decompacted to a depth necessary to ensure drainage of the soil and root penetration prior to fine grading and tilling to a farmable condition. Please refer to Section 3.2 for a detailed description of reclamation activities.

3.0 Decommissioning Activities

The Substation will consist of two sides separated by chain link fence: the collector side will gather energy, and the interconnect side will prepare the electricity for connection with the grid. Overall, decommissioning of the Substation will include removing and hauling the electrical equipment off-site for resale or recycling; removing structural supports, equipment foundations, aggregate surfacing, fencing, access road, and other facility components and hauling for off-site recycling or disposal; and finally reclaiming the site to its pre-construction condition to the extent practicable.

All dismantling, removal, recycling, and disposal of materials generated during decommissioning will comply with rules, regulations, and prevailing Federal, State, and local laws at the time decommissioning is initiated and will use approved local or regional disposal or recycling sites as available. Recyclable materials will be recycled to the furthest extent practicable. Non-recyclable materials will be disposed of in accordance with State and Federal law.

During decommissioning, the landowners will be consulted to identify the extent and type of work to be completed. Some infrastructure, such as the access roads, may be left in place at the discretion of the landowner(s). If approved by the landowner, underground utility lines and support structures up to a depth of four (4) feet may be abandoned in place to minimize land disturbance and associated impacts to future land use.

3.1 Decommissioning of Project Components

3.1.1 Fencing

Fence parts, gates, and foundations will be removed from the site and reconditioned and reused, sold as scrap, recycled, or disposed of appropriately, at the Applicant's sole discretion, consistent with applicable regulations and industry standards.

3.1.2 Substation Equipment and Foundations

All substation equipment will be de-energized, removed, and hauled off-site for resale or recycling. On the collector side, equipment will include the following:

- One 34.5 – 161 kilovolt (kV) main power transformer
- Shelter Aisle Switchgear
- One 161kV Breaker
- One 161kV Disconnect Switch
- Instrument Transformers
- A capacitor Bank
- A control Enclosure with necessary generation relaying

On the interconnect side, equipment will include the following:

- Four 161kV Breakers
- Eight 161kV Disconnect Switches
- Four 161 kV Disconnect Switches w/MOD
- Line and Bus Instrument Transformers
- Three Dead End Take off Towers
- Primary and Secondary Station Service Transformers
- Control Enclosure with necessary relaying

Steel structural supports, foundations, and underground components shall be removed up to a depth of four (4) feet, unless another removal depth has been agreed upon with the landowner. Holes and voids will be backfilled to match surrounding grade.

The rock base will be removed using bulldozers and backhoes or front loaders and hauled from the site using dump trucks to be recycled or disposed at an off-site facility. Additionally, any permanent stormwater treatment facilities (e.g., infiltration ponds and engineered drainage swales) will be removed. Topsoil will be reapplied to match surrounding grade to preserve existing drainage patterns. Topsoil and subsoil will be decompacted in a manner to adequately restore the topsoil and sub-grade material to a reintroduction of farming or acceptable condition in agreement with the landowner(s).

3.1.3 Underground Cables and Lines

All underground cables and conduits shall be removed up to a depth of four (4) feet, unless another removal depth has been agreed upon with the landowner(s). In that case, cables may be cut and abandoned in place. If removed, the removal trench or other excavations will be backfilled and recompacted per standards. Topsoil will be redistributed across the disturbed area.

3.1.4 Overhead Cables

The overhead transmission lines will be destrung in the opposite manner that the conductor was installed, using pull trucks, reel trucks, tensioners, and pullers, in addition to standard equipment. Insulators and insulator gangs will also be removed from each tower. Once the wires are removed, the poles will be brought to the ground for disassembly. All removed equipment will be disassembled to sizes suitable for hauling, then loaded onto standard hauling trucks for off-site recycling or disposal.

3.1.5 Access Roads

The Substation access roads will be used for decommissioning purposes, after which removal of roads will be discussed with the landowner(s) and one of the following options will be pursued:

1. After final clean-up, roads may be left intact through mutual agreement of the landowner and the Applicant unless otherwise restricted.
2. If a road is to be removed, aggregate will be removed and shipped from the site to be reused, sold, or disposed of appropriately, at the Applicant's sole discretion, consistent with applicable regulations and industry standards. Clean aggregate can often be used as "daily cover" at landfills for no disposal cost. The subgrade will be decompacted in a manner to adequately restore the topsoil and sub-grade material to a density sufficient for reintroduction of farming. If available, topsoil that was stockpiled during the original construction will be distributed across the open area. If original topsoil is unavailable, new topsoil will be imported from a supplier to be distributed across the open area. Finally, the access road corridors will be tilled to an agricultural condition.

3.2 Reclamation

The Applicant will restore and reclaim the site to the pre-existing condition. The Applicant assumes that most of the site will be returned to farmland after decommissioning through implementation of appropriate measures to facilitate such uses. However, if no specific use is identified, the Applicant/Owner will vegetate the site with a seed mix approved by the local soil and water conservation district or similar agency. The goal of restoration will be to restore natural hydrology and plant communities to the greatest extent practicable while minimizing new disturbance and removal of native vegetation.

In addition to the reclamation activities described above for each decommissioning activity, all unexcavated areas compacted by equipment and activity during the decommissioning will be decompacted as needed to ensure proper density of topsoil consistent and compatible with the surrounding area and associated land use. If being returned to agricultural, the land will be tilled to an agricultural condition and/or planted with crops per landowner request.

4.0 Best Management Practices (BMPs)

4.1 Construction Stormwater Practices

During decommissioning, erosion and sediment control BMPs will be implemented to minimize potential for erosion of site soils and sedimentation of surface waters and waters of the state. Because decommissioning will entail disturbance of more than one acre of soil, the Applicant will prepare a Stormwater Pollution Prevention Plan (SWPPP) and obtain coverage with the Iowa Department of Natural Resources (DNR) under the National Pollutant Discharge Elimination System (NPDES) Permit Number 2 prior to initiating soil disturbing activities. Potential BMPs to be implemented during decommissioning activities are described below and will be subject to refinement in the SWPPP. The decommissioning team will review the permitting requirements at the time of decommissioning and obtain any other necessary permits, which may include a US Army Corps of Engineers (USACE) Section 404 Permit to Discharge Dredged or Fill Material.

4.2 Permitting

All decommissioning and reclamation activities will comply with Federal and State permit requirements. Decommissioning activities that will disturb more than one acre of soil will require coverage under the NPDES Permit Number 2 for construction stormwater. The permits will be applied for and received prior to decommissioning construction activities commencing. A SWPPP will be developed prior to filing for construction stormwater permit coverage.

If necessary for decommissioning activities, wetlands and waters permits will be obtained from the USACE or Iowa DNR. A Spill Prevention, Control, and Countermeasure (SPCC) Plan for decommissioning will likely also be required for decommissioning work.

4.3 Health and Safety Standards

Work will be conducted in strict accordance with the Applicant's health and safety plan. The construction contractor hired to perform the decommissioning will also be required to prepare a site-specific health and safety plan. All site workers, including subcontractors, will be required to read, understand, and abide by the plans. A site safety officer will be designated by the construction contractor to ensure compliance. This official will have stop-work authority over all activities on the site should unsafe conditions or lapses in the safety plan be observed.

5.0 Timeline

Decommissioning of the Substation will be initiated if the Substation has not operated for one year, or when it has otherwise surpassed its useful lifespan. It is anticipated that the decommissioning activities for the Substation can be completed in a 12-week period. The timeframe for decommissioning is tied to assumptions about the amount of equipment mobilized, the crew sizes, weather and climate conditions, and the productivity of the equipment and crews.

Exhibit C

Site Plan

(PLEASE SEE ATTACHED)

AUGUST 2025
DANE ROAD SW SUBSTATION
SUBSTATION

MID AMERICAN ENERGY
IOWA CITY
0025M191.00

CONCEPTUAL PLAN SET

UTILITY AND EMERGENCY TELEPHONE NUMBERS

Mid American Energy - IOWA CITY, IOWA
EMERGENCY: 911

OWNER CONTACT INFORMATION

MIDAMERICAN
DEANNA BLANCO
(515) 514-9196

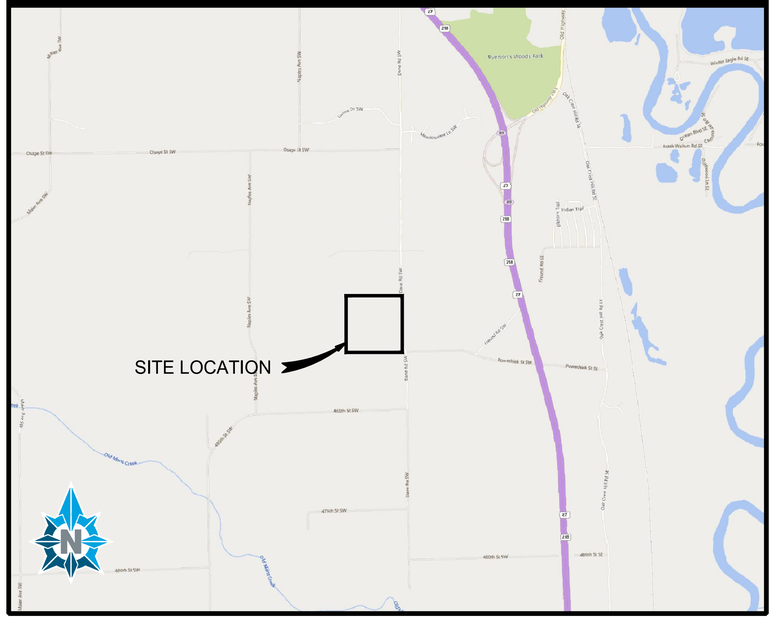
ENGINEER CONTACT INFORMATION

FOTH INFRASTRUCTURE & ENVIRONMENT, LLC
2121 INNOVATION COURT
P.O. BOX 5095
DE PERE, WI 54115-5095
PHONE: (920) 497-2500

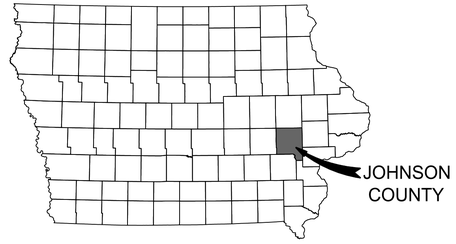
PROJECT ADDRESS

4565 DANE ROAD SW

LOCATION MAP



STATE & COUNTY LOCATION



STATE: Iowa COUNTY: Johnson

INDEX OF SHEETS

SHEET NO.	SHEET TITLE
G1.00	COVER SHEET
G2.00	LEGEND AND ABBREVIATIONS
G3.00	GENERAL NOTES
C1.00	EXISTING CONDITIONS
C1.10	OVERALL SITE LAYOUT
C3.00	GRADING PLAN
C4.00	EROSION CONTROL PLAN
C5.00	LANDSCAPE PLAN
C6.00-C6.02	DETAILS

VERTICAL DATUM:
NAVD88
HORIZONTAL DATUM:
IOWA COORDINATE REFERENCE SYSTEM
(IA83-SF), SOUTH ZONE, NAD83

ANY SURVEY MONUMENTS THAT ARE DAMAGED MUST BE REPLACED IN ACCORDANCE WITH IOWA STATE CODE

FOTH PROJ. #: 0025M191.00

FOTH INFRASTRUCTURE & ENVIRONMENT, LLC

SHEET #: G1.00

CADASTRAL / PLAT

	EXISTING	PROPOSED
EASEMENT - PERMANENT		
EASEMENT - TEMPORARY		
PROPERTY - PROPERTY LINE		
PROPERTY - RIGHT OF WAY	ROW	ROW
PROPERTY - RIGHT OF WAY MARKER	ROW	ROW
PROPERTY - SECTION LINES		
PROPERTY - SETBACK		

CONTROL

	EXISTING	PROPOSED
CONTROL POINT - GENERAL	CP	CP
CONTROL - IRON ROD, REBAR OR PIPE	IR RB IP	IR RB IP

PAVING AND TRANSPORTATION

	EXISTING	PROPOSED
BRIDGE - GENERAL		
RAILROAD - CONTROL BOX		
RAILROAD - CENTERLINE OF TRACKS		
RAILROAD - SIGNAL		
RAILROAD - TRACK (RAIL)		
ROADWAY - ASPHALT EDGE		
ROADWAY - ASPHALT PATTERN		
ROADWAY - CENTERLINE		
ROADWAY - CONCRETE EDGE		
ROADWAY - CONCRETE PATTERN		
ROADWAY - CURB		
ROADWAY - GRAVEL EDGE		
ROADWAY - GRAVEL PATTERN		
ROADWAY - GUARDRAIL		
ROADWAY - JOINTS		
ROADWAY - METER		
ROADWAY - SIGN - HIGHWAY	2M 141 FED 43 I-STATE 29 STATE A COUNTY	2M 141 FED 43 I-STATE 29 STATE A COUNTY
ROADWAY - WHEELSTOP		
SIDEWALK EDGE		
SIDEWALK PATTERN		

SITE TOPO

	EXISTING	PROPOSED
SITE - BUILDING FOUNDATION		
SITE - BUILDING OUTLINE		
SITE - FENCE - BARBED WIRE		
SITE - FENCE - CHAIN LINK		
SITE - FENCE - FIELD		
SITE - FENCE - WOOD		
SITE - GATE		
SITE - LIGHT	LIGHT - ORNAMENTAL; LIGHT - STREET	LIGHT - ORNAMENTAL; LIGHT - STREET
SITE - MAILBOX	MB	
SITE - BOULDER		
SITE - SEPTIC TANK		
SITE - SIGN - MISC		

GRADING AND EROSION CONTROL

	EXISTING	PROPOSED
CONTOUR - MAJOR WITH IDENTIFIER	695	695
CONTOUR - MINOR		
CONTOUR - MINOR - DEPRESSION		
ROADWAY - SLOPE INTERCEPT		
SILT FENCE		
SITE - GRADING LIMITS		
SITE - GRADING - RIPRAP BOUNDARY	TYPE 1; TYPE 2	TYPE 1; TYPE 2
SITE - GRADING - RIPRAP PATTERN		
SITE - SPOT ELEVATION	696.80	696.80
SITE - STOCKPILE - TOPSOIL		
TRACKOUT PAD		
WATTLE OR DITCH CHECK	ROCK FILTER BERM; WATTLE EROSION BALE	

DRAINAGE

	EXISTING	PROPOSED
DRAINAGE - DITCH - CENTERLINE		
DRAINAGE - DITCH - EDGE OF WATER		
DRAINAGE - FLOW		
DRAINAGE - POND EDGE		
DRAINAGE - TILE DRAIN	TD	TD
DRAINAGE - ARROW		

ELECTRIC

	EXISTING	PROPOSED
ELECTRICAL - EQUIPMENT	F FIRE ALARM BOX	F FIRE ALARM BOX
ELECTRICAL - JUNCTION BOX		
ELECTRICAL - LIGHT FIXTURE	UTILITY & LIGHT POLE	UTILITY & LIGHT POLE
ELECTRICAL - OVERHEAD CABLE	OHE	OHE
ELECTRICAL - PAVEMENT SENSOR		
ELECTRICAL - PEDESTAL		
ELECTRICAL - POLE	UTILITY POLE WITH TRANSFORMER	UTILITY POLE WITH TRANSFORMER
ELECTRICAL - TOWER		
ELECTRICAL - UNDERGROUND CABLE	E	E
ELECTRICAL - UNDERGROUND DUCT		
ELECTRICAL - UNDERGROUND STRUCTURE	E	E
ELECTRICAL - TRANSFORMER ENCLOSURE		

FUELS

	EXISTING	PROPOSED
FUEL		
NATURAL GAS - APPURTENANCE	PROBE VALVE G METER	PROBE VALVE G METER
NATURAL GAS - PIPE HIGH PRESSURE	GHP	
NATURAL GAS - PIPE MAIN	G	G
NATURAL GAS - PIPE SERVICE	G	G
NATURAL GAS - STRUCTURE	G	G
NATURAL GAS - VENT		

GEOTECHNICAL

	EXISTING	PROPOSED
GEOTECHNICAL - SOILS BOUNDARY		
GEOTECHNICAL - SOIL BORING	BORING #	BORING #

HYDROLOGY

	EXISTING	PROPOSED
EDGE OF WATER - RIVER OR STREAM		
EDGE OF WATER - LAKE OR POND		
FLOODPLAIN - 100 YEAR	100YR	
FLOODPLAIN - NON-REGULATORY		
WETLAND - BOUNDARY		
WETLAND - PATTERN		

LANDSCAPE AND VEGETATION

	EXISTING	PROPOSED
PLANTING - BUSH	CONF. DECD.	CONF. DECD.
PLANTING - EDGE		
PLANTING - EVERGREEN		
PLANTING - GROUND COVER		
PLANTING - SHRUB		
PLANTING - STUMP		
PLANTING - TREE	CONF. 10" DECD. 12"	CONF. 10" DECD. 12"
PLANTING - TREE LINE		

MISCELLANEOUS UTILITY

	EXISTING	PROPOSED
MISC. UTILITY		
MISC. UTILITY - GUY POLE, WIRE, ANCHOR		
MISC. UTILITY - MANHOLE	MH	MH
MISC. UTILITY - OVERHEAD CABLE	OH	OH
MISC. UTILITY - PIPE CASING		
MISC. UTILITY - POLE		
SITE - TRENCH DAM		

SANITARY SEWER

	EXISTING	PROPOSED
SANITARY SEWER (PLAN)	SAN	SAN
SANITARY SEWER (PROFILE)		
SANITARY FORCE MAIN (PLAN)	FM	FM
SANITARY FORCE MAIN (PROFILE)		
SANITARY SEWER - CLEANOUT		
SANITARY SEWER - LIFT STATION	LS	LS
SANITARY SEWER - STRUCTURE	SA	SA

STORM SEWER

	EXISTING	PROPOSED
STORM SEWER (PLAN)	STM	STM
STORM SEWER (PROFILE)		
STORM SEWER - CULVERT		
STORM SEWER - STRUCTURE	ST	ST
STORM SEWER - INLET OR CATCH BASIN		
STORM SEWER - LIFT STATION	LS	LS

WATER SERVICE

	EXISTING	PROPOSED
WATER - PIPE (PLAN)	W	W
WATER - PIPE (PROFILE)		
WATER - IRRIGATION	IRR	IRR
WATER - APPURTENANCE	W	W
WATER - HYDRANT		
WATER - STRUCTURE	W	W
WATER - VALVE	VALVE CURB STOP W	VALVE CURB STOP W
WATER - WELL	W	W

TELECOMMUNICATIONS

	EXISTING	PROPOSED
CABLE TELEVISION - OVERHEAD	OHC	OHC
CABLE TELEVISION - PEDESTAL		
CABLE TELEVISION - UNDERGROUND	CTV	CTV
FIBER OPTIC - UNDERGROUND CABLE	FO	FO
FIBER OPTIC - JUNCTION BOX/STRUCTURE	F	F
TELECOM - MISCELLANEOUS	(util)	(util)
TELEPHONE - BURIED	T	T
TELEPHONE - OVERHEAD CABLE	OHT	OHT
TELEPHONE - PEDESTAL		
TELEPHONE - STRUCTURE	T	T
TELEPHONE - SWITCH		

TRAFFIC CONTROL

	EXISTING	PROPOSED
CONSTRUCTION ACCESS POINT		
TRAFFIC CONTROL - BARREL		
ROADWAY - MARKING CENTER		
ROADWAY - MARKING EDGE		
ROADWAY - MARKING LANE		
ROADWAY - MARKING SYMBOL		
TRAFFIC SIGNAL		
TRAFFIC SIGNAL - EQUIPMENT		
TRAFFIC SIGNAL - JUNCTION BOX	PB	PB
TRAFFIC SIGNAL - LIGHT		
TRAFFIC SIGNAL - STRUCTURE	SI	SI
TRAFFIC SIGNAL - UNDERGROUND LOOP		

STATUS / PHASE

SANITARY SEWER - EXISTING	SAN
SANITARY SEWER - EXISTING SUE LVL A	SAN(A)
SANITARY SEWER - EXISTING SUE LVL B	SAN(B)
SANITARY SEWER - EXISTING SUE LVL C	SAN(C)
SANITARY SEWER - EXISTING SUE LVL D	SAN(D)
SANITARY SEWER - ABANDONED	~~SAN~~
SANITARY SEWER - REMOVED/DEMO	~~XXXXXXXXXXXX~~
SANITARY SEWER - PROPOSED	SAN
SANITARY SEWER - FUTURE	SAN

LIST OF STANDARD ABBREVIATIONS

△	CENTRAL ANGLE OR DELTA
ADT	AVERAGE DAILY TRAFFIC
AGGR	AGGREGATE
AH	AHEAD
ASPH	ASPHALT
B/B	BACK TO BACK
BARR	BARRICADE
BOC	BACK OF CURB
BK	BACK
BLDG	BUILDING
BM	BENCH MARK
BSMT	BASEMENT
C	CUT
C&G	CURB AND GUTTER
C/C	CENTER TO CENTER
CABC	CRUSHED AGGREGATE BASE COURSE
CB	CATCH BASIN
CE	CONSTRUCTION ENTRANCE
CIP	CAST IRON PIPE
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CNTY	COUNTY
CO	CLEAN OUT
CONC	CONCRETE
CONSTR	CONSTRUCTION
CONSTR JT	CONSTRUCTION JOINT
CP	CONTROL POINT
CTH	COUNTY TRUNK HIGHWAY
CTRL JT	CONTROL JOINT
CTV	CABLE TV
CU YD	CUBIC YARD
CS	CURB STOP
D	DEGREE OF CURVE
DD	DIRECTIONAL DRILLED
DEG	DEGREE
DIA	DIAMETER
DI	DUCTILE IRON PIPE
DISCH	DISCHARGE
DW	DRIVEWAY
E	EAST
E OR	ELECTRIC (IN LINE STYLES)
EA	EACH
EB	EAST BOUND
EBS	EXCAVATION BELOW SUBGRADE
ECS	EXTERNAL CHIMNEY SEAL
EL	ELEVATION
ELEC	ELECTRIC
EMB	EMBANKMENT
ENTR	ENTRANCE
EP	EDGE OF PAVEMENT
ET	ELECTRIC TRANSFORMER
EW	ENDWALL
EXC	EXCAVATION
EXIST	EXISTING
F	FILL
F/F	FACE TO FACE
FDN	FOUNDATION
FE	FIELD ENTRANCE
FERT	FERTILIZER
FH	FIRE HYDRANT
FIN GR	FINISHED GRADE
FL	FLOW LINE
FM	FORCE MAIN
FO	FIBER OPTIC
FT	FOOT
FTG	FOOTING
G	GAS
GV	GAS VALVE
GW	GUY WIRE
HDPE	HIGH DENSITY POLYETHYLENE
HORIZ	HORIZONTAL
HR	HANDICAP RAMP
HSE	HOUSE
HT	HEIGHT
I	INTERSECTION ANGLE
ICS	INTERNAL CHIMNEY SEAL
ID	INSIDE DIAMETER
IN	INCH
INL	INLET
INTERS	INTERSECTION
INV	INVERT
IP	IRON PIPE OR PIN
JCT	JUNCTION
L	LENGTH (OF CURVE)
LC	LONG CHORD OF CURVE
LP	LIGHT POLE
LS	LIFT STATION OR LUMP SUM
LT	LEFT
MAINT	MAINTENANCE
MATL	MATERIAL
MB	MAILBOX
MG	METER-GAS
MH	MANHOLE
MP	MARKER POST
MW	METER-WATER OR MONITORING WELL
N	NORTH
NB	NORTHBOUND
NC	NORMAL CROWN
NE	NORTHEAST
NO	NUMBER
NTS	NOT TO SCALE
NW	NORTHWEST
O	OIL
O&C	OIL & CHIP
OBLIT	OBLITERATE
OD	OUTSIDE DIAMETER
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVE
PED	PEDESTAL
PLE	PERMANENT LIMITED EASEMENT
PVMT	PAVEMENT
PCC	PORTLAND CEMENT CONCRETE
PE	PRIVATE ENTRANCE
PI	POINT OF INTERSECTION
PJF	PRE-FORMED JOINT FILLER
PL	PROPERTY LINE
POC	POINT OF CURVE
POT	POINT ON TANGENT
PP	POWER POLE
PRC URE	POINT OF REVERSE CURVATURE
PROJ	PROJECT
PROP	PROPOSED
PSI	POUND PER SQUARE INCH
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
PVC OR	POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVRC	POINT OF VERTICAL REVERSE CURVE
PVT	POINT OF VERTICAL TANGENCY
R	RANGE OR RADIUS
RCP	REINFORCED CONCRETE PIPE
REBAR	REINFORCEMENT BAR
REL	RELOCATE
REM	REMAINING
REQD	REQUIRED
RL	REFERENCE LINE
ROW	RIGHT-OF-WAY
RP	REFERENCE POINT
RR	RAILROAD
RT	RIGHT
RW	RETAINING WALL
S	SOUTH
SALV	SALVAGE
SAN	SANITARY
SC	STORM CONNECTION
SB	SOUTHBOUND
SDWK	SIDEWALK
SE	SOUTHEAST
SF	SILT FENCE
SIG	SIGNAL
SL	SANITARY LATERAL
SQ FT	SQUARE FEET
SHLDR	SHOULDER
SQ YD	SQUARE YARD
SSD	STOPPING SIGHT DISTANCE
STA	STATION
STD	STANDARD
STH	STATE TRUNK HIGHWAY
STM	STORM OR STORM SEWER
STP	SEWAGE TREATMENT PLANT
STRUCT	STRUCTURE OR STRUCTURAL
SW	SOUTHWEST
TAN	TANGENT
T	TOWN
T OR	TELEPHONE (IN LINE STYLE)
TEL	TELEPHONE
TEMP	TEMPORARY
TLE	TEMPORARY LIMITED EASEMENT
TOC	TOP OF CURB
TRANS	TRANSITION
TYP	TYPICAL
UG	UNDERGROUND
USH	US HIGHWAY
VC	VERTICAL CURVE
VERT	VERTICAL
VOL	VOLUME
W	WEST
WB	WESTBOUND
WM	WATER MAIN
WS	WATER SERVICE
WTP	WATER TREATMENT PLANT
WV	WATER VALVE
WWTP	WASTE WATER TREATMENT PLANT
YD	YARD

REV	DATE	DFTR	APP	DESCRIPTION

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MIDAMERICAN ENERGY COMPANY.

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DESIGNED: BAM
DRAWN: BAM
APPROVED: CDH
SCALE: AS SHOWN

DANE ROAD SW SUBSTATION
IOWA CITY, IOWA

CONCEPTUAL

LEGEND AND ABBREVIATIONS

STD

G2.00

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GENERAL PROJECT NOTES

CONSTRUCTION SEQUENCE

1. THE CONTRACTOR IS REQUIRED TO NOTIFY THE DNR OF ALL OFFSITE DISPOSAL LOCATIONS, INCLUDING ESTIMATED QUANTITIES, PRIOR TO EXPORTING MATERIAL FROM THE SITE.
2. ONCE CONSTRUCTION BEGINS CONTINUOUS PROGRESS MUST BE MADE UNTIL SUBSTANTIAL COMPLETION HAS BEEN OBTAINED.
3. CONTRACTOR SHALL INSTALL EROSION CONTROLS AT LOCATIONS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER BEFORE ANY GRADING ACTIVITIES TAKE PLACE.
4. CONTRACTOR SHALL INSTALL ALL TRAFFIC CONTROL AND ACCESS CONSTRUCTION WORK AREAS AS SHOWN.
5. TRAFFIC WILL BE MAINTAINED AT ALL TIMES.
6. CONTRACTOR SHALL STRIP / SALVAGE, STOCKPILE PRIOR TO CONSTRUCTION AND RESPREAD TO EXISTING TOPSOIL DEPTHS.
7. CONTRACTOR SHALL INSTALL DRIVEWAY CULVERTS AND RE-INSTALL ANY STORM SEWER DISTURBED DURING CONSTRUCTION.
8. RESTORATION SHALL BE COMPLETED PROMPTLY FOLLOWING APPROVED PIPE INSTALLATION AND BACKFILL OPERATIONS.
9. EROSION CONTROL DEVICES SHALL BE REMOVED AFTER VEGETATION IS ESTABLISHED.

GENERAL NOTES

1. CONTRACTOR SHALL NOT DISTURB WETLANDS DESIGNATED AS "RESTRICTED NO IMPACTS" (SEE EROSION CONTROL PLANS FOR LOCATIONS.
2. ALL TRAFFIC CONTROL SHALL BE IN COMPLIANCE WITH THE 2009 EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THESE PLANS AND SPECIAL PROVISIONS. SEE WISDOT S.D.D. 15 D 28-1 AND 15 D 20 FOR ADDITIONAL REQUIREMENTS.
3. CONTRACTOR SHALL REMOVE ALL SIGNS, PROTECT AND CONFIRM WITH OWNER PRIOR TO REINSTALLATION. OWNER MAY PROVIDE NEW SIGNAGE PRIOR TO INSTALLATION.
4. CONTRACTOR SHALL PROVIDE ACCESS TO TRAFFIC AT ALL TIMES. COORDINATE WITH PROPERTY OWNERS FOR ALL WORK BLOCKING DRIVEWAYS.
5. ALL MANHOLES SHALL BE ADJUSTED TO FINISHED GRADE. THIS WORK IS INCIDENTAL TO THE PROJECT UNLESS A SPECIFIC BID ITEM IS INCLUDED IN THE PROJECT MANUAL.
6. "WARNING / NO TRESPASSING" SIGNAGE AT FRONT OF SUBSTATION AND AT EVERY ENTRANCE

RESTORATION NOTES

1. SOIL LAYERS SHALL BE SEGREGATED DURING CONSTRUCTION ACTIVITIES, FOLLOWED BY REPLACEMENT OF SOILS IN KIND.
2. CLASS I TYPE B EROSION CONTROL MATTING WILL BE USED TO STABILIZE SLOPES WHERE CHANNELIZED FLOW IS PRESENT.
3. SEEDED AREAS SHALL BE WATERED DURING THE FIRST EIGHT WEEKS FOLLOWING INSTALLATION WHENEVER MORE THAN SEVEN CONSECUTIVE DAYS OF DRY WEATHER OCCUR.

UTILITY NOTES

1. CONTRACTOR IS RESPONSIBLE AND SHALL MAINTAIN ALL DRAINAGE WITHIN THE PROJECT WORK AREA, INCLUDING RIGHT-OF-WAY ACCESS LOCATIONS DURING CONSTRUCTION.
2. SUPPORT EXISTING UTILITIES AT CROSSINGS AS NECESSARY TO PREVENT DAMAGE OR INTERRUPTION OF SERVICE.

MATERIALS MANAGEMENT NOTES

1. DUE TO LIMITED SITE STORAGE AREA, ALL EXCAVATED MATERIAL WILL BE DISPOSED OF OFF SITE AND IS THE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR WILL NEED TO INFORM THE OWNER OF OFFSITE DISPOSAL OF EXCAVATED MATERIAL. IF DISPOSING OF FILL/EXCAVATED MATERIAL IN THE VILLAGE OF MOUNT PLEASANT A FILL PERMIT MUST BE OBTAINED BY THE CONTRACTOR FOR THE FILL SITE. IF MATERIAL IS TRANSPORTED OUTSIDE OF THE VILLAGE OF MOUNT PLEASANT THEN AN ACCEPTABLE HAUL ROUTE MUST BE APPROVED BY THE OWNER.
2. SEE CONSTRUCTION SEQUENCING NOTE #8 REGARDING TOPSOIL DETAILS.
3. IN THE EVENT OF A SPILL OR IF CONTAMINATED MATERIAL IS ENCOUNTERED, CONTACT RANDY MALEK OF THE WDNR WASTE RECYCLING AND REDUCTION PROGRAM TO DETERMINE APPROPRIATE ACTION.
4. CONTRACTOR SHALL DISPOSE OF ALL MISCELLANEOUS DEBRIS EXCAVATED ON THE PROJECT.

GENERAL PROJECT NOTES

5. CONTRACTOR SHALL COMPLETE STREET CLEANING OF CONSTRUCTION DEBRIS TRACKED OFF CONSTRUCTION SITE DURING MOBILIZATION, CONSTRUCTION ACTIVITIES AND DEMOBILIZATION.

SUBSURFACE UTILITY INFORMATION

1. WHERE PUBLIC UTILITY FIXTURES ARE SHOWN AS EXISTING ON THE PLANS OR ENCOUNTERED WITHIN THE CONSTRUCTION AREA, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE OWNERS OF THOSE UTILITIES PRIOR TO THE BEGINNING OF ANY CONSTRUCTION. THE CONTRACTOR SHALL AFFORD ACCESS TO THESE FACILITIES FOR NECESSARY MODIFICATION OF SERVICES. UNDERGROUND FACILITIES, STRUCTURES AND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE SURVEYS AND RECORDS, AND THEREFORE THEIR LOCATIONS MUST BE CONSIDERED APPROXIMATE ONLY. IT IS POSSIBLE THERE MAY BE OTHERS, THE EXISTENCE OF WHICH PRESENTLY NOT KNOWN OR SHOWN. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THEIR EXISTENCE AND EXACT LOCATION AND TO AVOID DAMAGE THERETO. NO CLAIMS FOR ADDITIONAL COMPENSATION WILL BE ALLOWED TO THE CONTRACTOR FOR ANY INTERFERENCE OR DELAY CAUSE BY SUCH WORK.
2. THE SUBSURFACE UTILITY INFORMATION SHOWN WITHIN THIS PLAN SET IS SHOWN TO UTILITY QUALITY LEVEL IN ACCORDANCE WITH THE LEGEND PROVIDED BELOW. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE38-02, ENTITLES STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA.

UTILITY QUALITY LEVELS

LEVEL D - INFORMATION COMES SOLELY FROM EXISTING UTILITY RECORDS

LEVEL C - SURVEYING ABOVE GROUND UTILITY FACILITIES, SUCH AS MANHOLES, VALVE BOXES, ETC; AND CORRELATING THIS INFORMATION WITH EXISTING UTILITY RECORDS.

LEVEL B - THE USE OF SURFACE GEOPHYSICAL TECHNIQUES TO DETERMINE THE EXISTENCE AND HORIZONTAL POSITION OF UNDERGROUND UTILITIES.

LEVEL A - THE USE OF NONDESTRUCTIVE DIGGING EQUIPMENT AT HORIZONTAL AND VERTICAL POSITION OF UNDERGROUND UTILITIES, AS WELL AS THE TYPE, SIZE, CONDITION, MATERIAL AND OTHER CHARACTERISTICS.

THE UNDERGROUND UTILITIES IN THIS DRAWING SET FOR THIS PROJECT ARE AS FOLLOWS: LEVEL D

GENERAL PROJECT NOTES

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SCALE: AS SHOWN

DANE ROAD SW SUBSTATION
IOWA CITY, IOWA

CONCEPTUAL

GENERAL NOTES

STD

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0 50 100
scale feet

SHEET NOTES:

1.

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DANE ROAD SUBSTATION
IOWA CITY, IOWA

CONCEPTUAL
EXISTING CONDITIONS

STD

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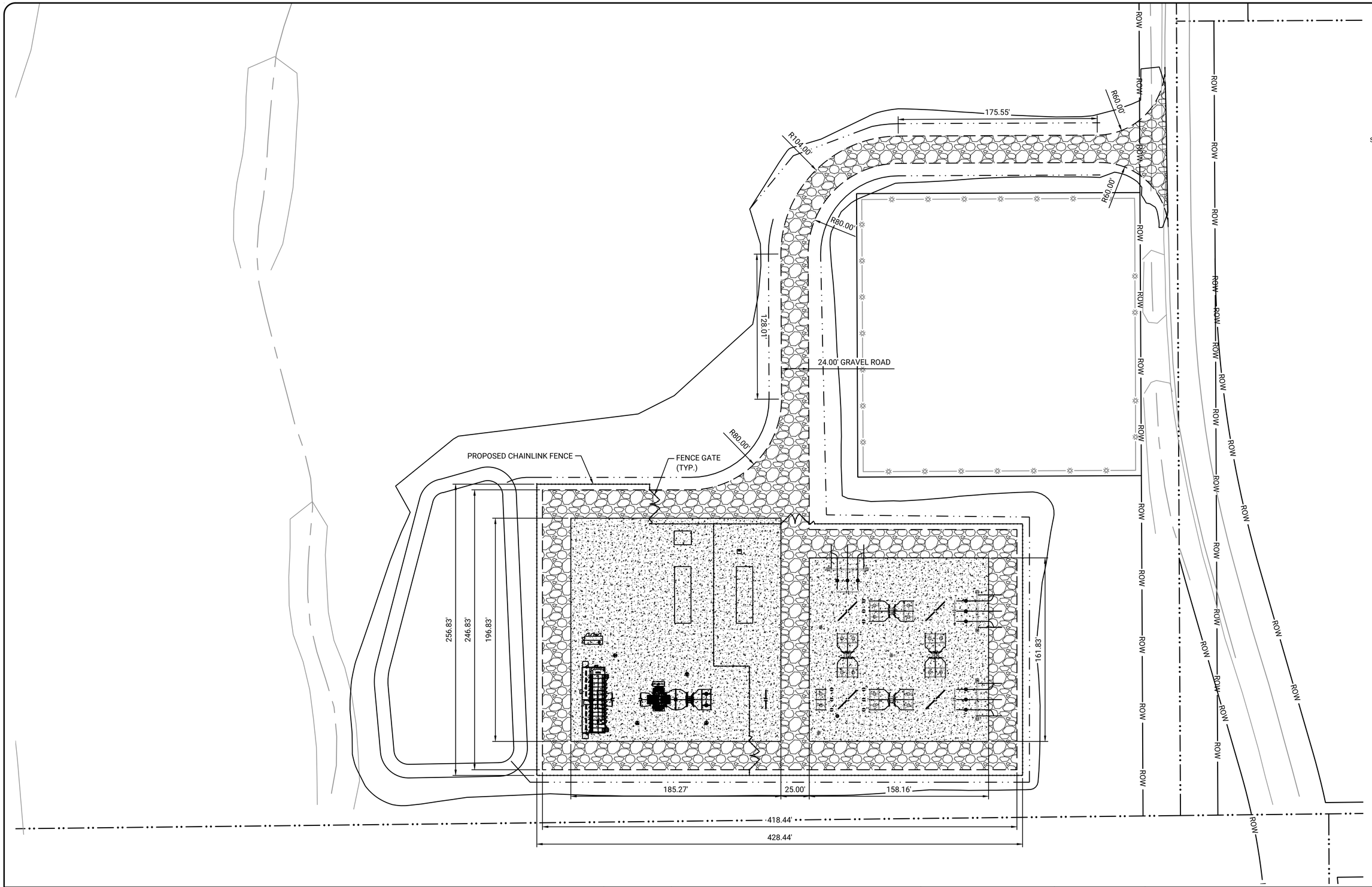

SHEET NOTES:

1. ALL ELECTRICAL EQUIPMENT TO BE PROVIDED BY OTHERS.

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DANE ROAD SW SUBSTATION
IOWA CITY, IOWA

CONCEPTUAL

OVERALL SITE LAYOUT

STD

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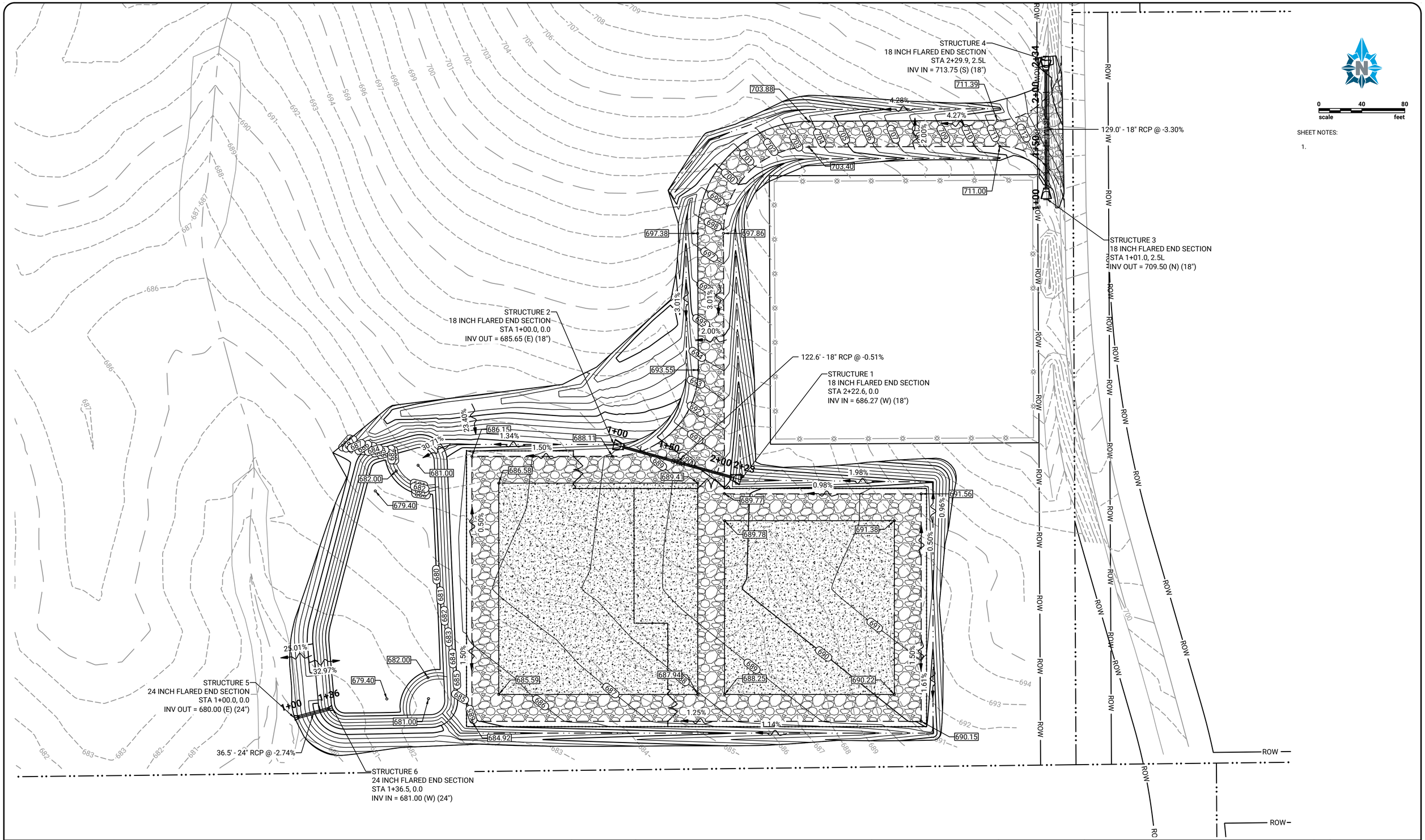

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DANE ROAD SW SUBSTATION
IOWA CITY, IOWA

CONCEPTUAL
GRADING PLAN

STD

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SILT FENCE (TYP.)

CONSTRUCTION ENTRANCE

RIPRAP

ROW

0 40 80
scale feet

SHEET NOTES:

1.

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CONCEPTUAL

EROSION CONTROL PLAN

STD

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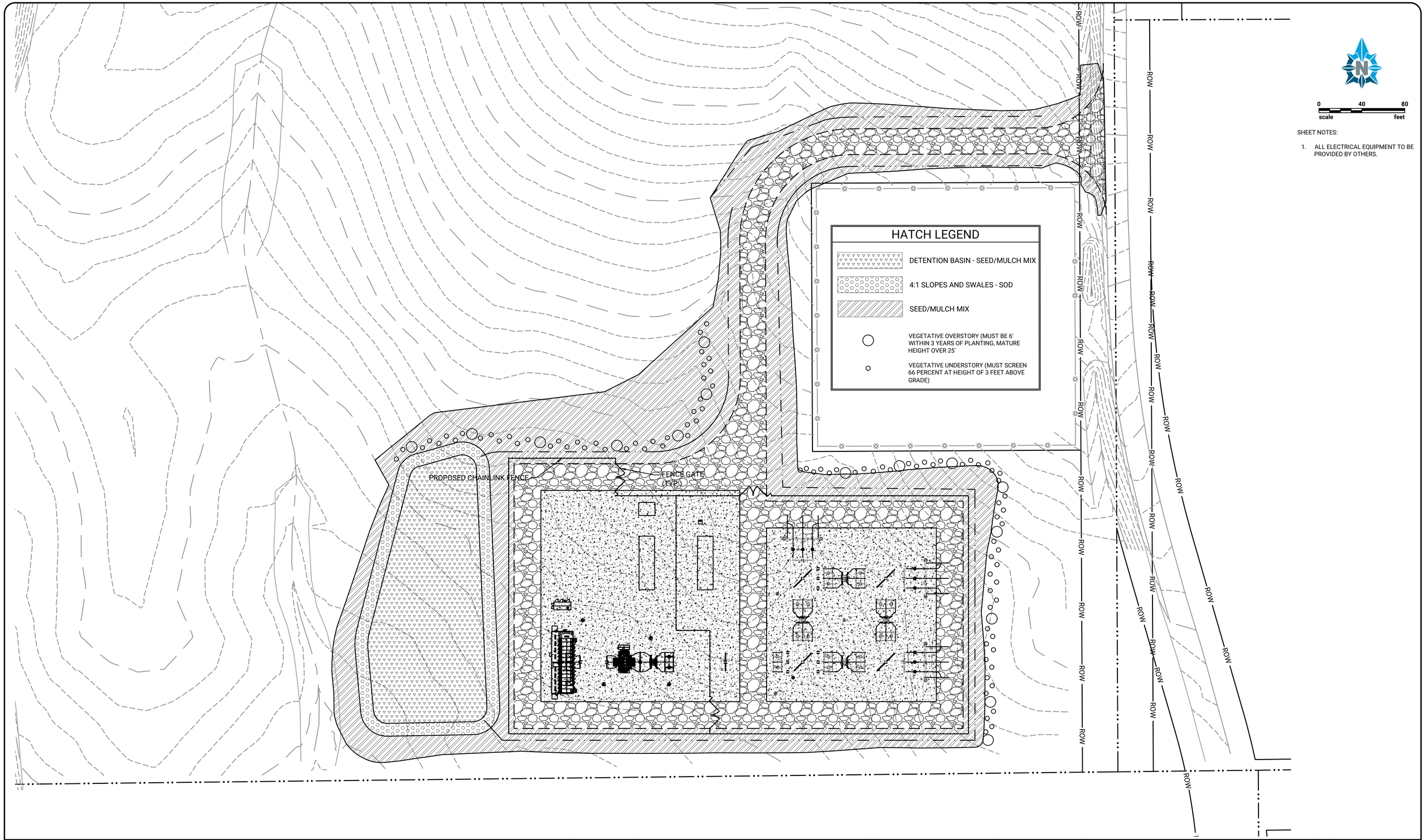

SHEET NOTES:

1. ALL ELECTRICAL EQUIPMENT TO BE PROVIDED BY OTHERS.

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DANE ROAD SW SUBSTATION
IOWA CITY, IOWA

CONCEPTUAL
LANDSCAPE PLAN

STD

C5.00

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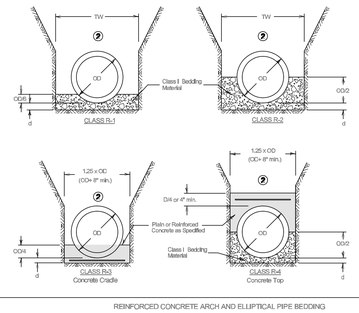
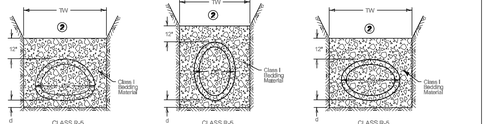
DO NOT USE ON PRIMARY ROADWAYS

RCP AND VCP CIRCULAR PIPE BEDDING ①



REINFORCED CONCRETE ARCH AND ELLIPTICAL PIPE BEDDING



Refer to sheet 2 for bury depth restrictions.

① Use Bedding Class R-1 or R-2 unless specified otherwise.

② Place remainder of bedding and backfill materials as specified in the contract documents.

Key

OD = Outside diameter of pipe
OS = Outside span of pipe
TW = Trench width at top of pipe:
Min. = OD+18 inches
Max.= 1.25xOD+12 inches OR 54 inches (whichever is greater)
d = Depth of bedding material below pipe:
OD/8 or OS/8, OR 4 inches (whichever is greater)

FIGURE 3010.102 | SHEET 1 OF 2

SUDAS | EDWARDT | SW-102 | FIGURE 3010.102 | STANDARD ROAD PLAN | SHEET 1 OF 2

RIGID GRAVITY PIPE TRENCH BEDDING

ALLOWABLE BURY DEPTH

CLASS III RCP

Pipe Diameter (in)	Class R-1 Bedding	Class R-2 bedding	Class R-3 & R-4 Bedding		
			No Steel	As=0.4%	As=1.0%
12	7'	10'	15'	19'	27'
15	8'	10'	15'	19'	27'
18	8'	11'	15'	22'	40'
21	8'	11'	15'	26'	40'
24	8'	12'	23'	36'	40'
27	10'	15'	30'	40'	40'
30	11'	15'	29'	40'	40'
33	11'	15'	28'	40'	40'
36	11'	15'	27'	40'	40'
42	11'	15'	26'	38'	40'
48	11'	15'	26'	36'	40'
54	11'	15'	25'	34'	40'
60	11'	15'	25'	33'	40'
66	11'	15'	24'	32'	40'
72	11'	15'	24'	32'	40'

As = Area of Steel Reinforcing

CLASS IV RCP

Pipe Diameter (in)	Class R-1 Bedding	Class R-2 Bedding	Class R-3 & R-4 Bedding		
			No Steel	As=0.4%	As=1.0%
12	12'	15'	23'	28'	40'
15	12'	15'	23'	32'	40'
18	13'	15'	23'	40'	40'
21	13'	18'	40'	40'	40'
24	16'	23'	40'	40'	40'
27	19'	30'	40'	40'	40'
30	19'	29'	40'	40'	40'
33	19'	28'	40'	40'	40'
36	19'	28'	40'	40'	40'
42	18'	27'	40'	40'	40'
48	18'	26'	40'	40'	40'
54	18'	25'	40'	40'	40'
60	18'	25'	40'	40'	40'
66	18'	25'	40'	40'	40'
72	18'	24'	40'	40'	40'

As = Area of Steel Reinforcing

CLASS V RCP

Pipe Diameter (in)	Class R-1 Bedding	Class R-2 Bedding	Class R-3 & R-4 Bedding		
			No Steel	As=0.4%	As=1.0%
12	18'	23'	33'	40'	40'
15	19'	34'	40'	40'	40'
18	19'	30'	40'	40'	40'
21	28'	40'	40'	40'	40'
24	34'	40'	40'	40'	40'
27	40'	40'	40'	40'	40'
30	40'	40'	40'	40'	40'
33	40'	40'	40'	40'	40'
36	40'	40'	40'	40'	40'
42	37'	40'	40'	40'	40'
48	35'	40'	40'	40'	40'
54	33'	40'	40'	40'	40'
60	32'	40'	40'	40'	40'
66	31'	40'	40'	40'	40'
72	31'	40'	40'	40'	40'

As = Area of Steel Reinforcing

EXTRA STRENGTH VCP

Pipe Dia. (in)	Bedding Class				
	R-1	R-2	R-3 & R-4		
			No Steel	As=0.4%	As=1.0%
6	25"	30"	37"	30"	30"
8	20"	26"	30"	30"	30"
10	18"	23"	30"	30"	30"
12	16"	20"	30"	30"	30"
15	15"	19"	28"	30"	30"
18	14"	18"	27"	30"	30"
21	15"	22"	30"	30"	30"
24	16"	26"	30"	30"	30"
27	20"	30"	30"	30"	30"
30	19"	29"	30"	30"	30"
33	20"	30"	30"	30"	30"
36	20"	30"	30"	30"	30"
39	19"	29"	30"	30"	30"
42	18"	28"	30"	30"	30"

As = Area of Steel Reinforcing

CONCRETE ARCH PIPE

Pipe Size (Rise x Span)	Equiv. Dia. (in)	Pipe Class	
		A-III	A-IV
18 x 11	16	6'	11'
22 x 13	18	6'	11'
25 x 16	21	6'	13'
29 x 18	24	7'	15'
36 x 22	30	8'	16'
44 x 27	36	8'	14'
51 x 31	42	8'	15'
59 x 36	48	8'	15'
65 x 40	54	8'	15'
73 x 45	60	8'	14'
88 x 54	72	9'	14'

Based on Class R-5 bedding

HORIZONTAL ELLIPTICAL RCP

Pipe Size (Rise x Span)	Equiv. Dia. (in)	Pipe Class	
		HE-III	HE-IV
14 x 23	18	12'	22'
19 x 30	24	15'	29'
22 x 34	27	15'	28'
24 x 38	30	15'	27'
27 x 42	33	15'	27'
29 x 45	36	15'	26'
32 x 49	39	15'	26'
34 x 54	42	15'	25'
38 x 60	48	15'	25'
43 x 68	54	15'	24'
48 x 76	60	15'	24'
53 x 83	66	15'	24'
58 x 91	72	15'	24'
63 x 98	78	15'	23'
68 x 106	84	15'	23'

Based on Class R-6 bedding

VERTICAL ELLIPTICAL RCP

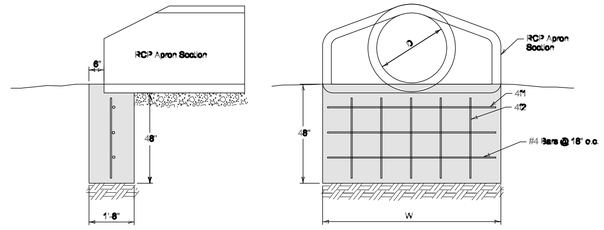
Pipe Size (Rise x Span)	Equiv. Dia. (in)	Pipe Class		
		VE-III	VE-IV	VE-VI
23 x 14	18	15'	19'	22'
30 x 19	24	15'	18'	34'
34 x 22	27	11'	20'	40'
38 x 24	30	12'	23'	40'
42 x 27	33	15'	30'	40'
45 x 29	36	15'	29'	40'
49 x 32	39	15'	29'	40'
54 x 34	42	15'	28'	40'
60 x 38	48	15'	27'	40'
66 x 43	54	15'	27'	40'
72 x 48	60	15'	26'	40'
82 x 53	66	15'	25'	40'
91 x 58	72	15'	25'	40'
98 x 63	78	15'	25'	40'
106 x 68	84	15'	24'	40'

Based on Class R-6 bedding

FIGURE 3010.101 | SHEET 1 OF 2

SUDAS | EDWARDT | SW-102 | FIGURE 3010.101 | STANDARD ROAD PLAN | SHEET 2 OF 2

RIGID GRAVITY PIPE TRENCH BEDDING



REINFORCING BAR LIST

D	W	Mark	Size	Length	Count
12"	2'-4"	4f1	4	2'-0"	3
		4f2	4	3'-8"	2
15"	2'-10 ½"	4f1	4	2'-6 ½"	3
		4f2	4	3'-8"	2
18"	3'-5"	4f1	4	3'-1"	3
		4f2	4	3'-8"	3
24"	4'-6"	4f1	4	4'-2"	3
		4f2	4	3'-8"	3
30"	5'-7"	4f1	4	5'-3"	3
		4f2	4	3'-8"	4
36"	6'-8"	4f1	4	6'-4"	3
		4f2	4	3'-8"	5
42"	7'-3"	4f1	4	6'-11"	3
		4f2	4	3'-8"	5
48"	7'-10"	4f1	4	7'-5"	3
		4f2	4	3'-8"	6
54"	8'-5"	4f1	4	8'-1"	3
		4f2	4	3'-8"	6
60"	8'-11"	4f1	4	8'-7"	3
		4f2	4	3'-8"	6
66"	8'-11"	4f1	4	8'-7"	3
		4f2	4	3'-8"	6
72"	10'-0"	4f1	4	9'-8"	3
		4f2	4	3'-8"	7
78"	10'-7"	4f1	4	10'-3"	3
		4f2	4	3'-8"	7
84"	11'-1"	4f1	4	10'-9"	3
		4f2	4	3'-8"	8

FIGURE 4030.221 | SHEET 1 OF 1

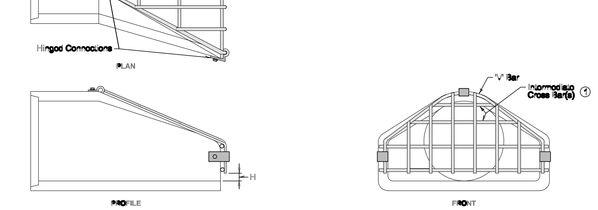
SUDAS | 4030.221 | SHEET 1 OF 1

SUDAS Standard Specifications

RCP APRON SECTION FOOTING

Provide guard dimensions as to with type of apron provided. Ensure "V" Bar completely rests on apron.

① All guards must include at least one intermediate cross bar. For pipe diameter, or equivalent diameter, ≤ 60 inches or greater, use one intermediate cross bars equally spaced.



ROUND		ARCH		ELLIPTICAL	
PIPE SIZE	H	EQUIVALENT DIAMETER	H	EQUIVALENT DIAMETER	H
12"	26"	18" to 24"	4"	18"	3"
15"	3"	30" to 36"	5"	24"	4"
18" - 24"	4"	42" to 54"	6"	30" to 36"	5"
27" - 36"	5"	60" to 72"	7"	42" to 54"	6"
42" - 54"	6"			60"	7"
60" - 72"	7"				
78" - 90"	8"				

BAR SIZES

	PIPE SIZE (DIA. or EQUIV.)	HOLE DIA. REQ'D	BOLT DIA.	BAR SIZE
ROUND	12" - 24"	7/8"	3/4"	3"
	27" - 48"	1"	7/8"	1"
	54" - 60"	1 1/8"	1"	1 1/2"
ARCH	up to 24" eq.	1"	7/8"	3"
	30" to 48"	1 1/8"	1"	1"
	54" to 72"	1 1/8"	1"	1 1/2"
ELLIP.	up to 24" eq.	1"	7/8"	3"
	30" to 48"	1 1/8"	1"	1"
	54" to 60"	1 1/8"	1"	1 1/2"

BOLT LENGTH = PIPE WALL THICKNESS + 2½"

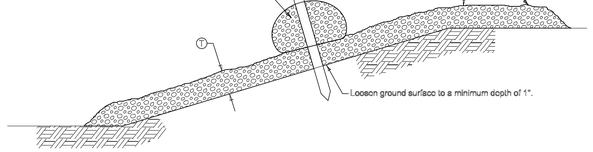
FIGURE 4030.222 | SHEET 1 OF 1

SUDAS | 4030.224 | SHEET 1 OF 1

SUDAS Standard Specifications

CONCRETE PIPE APRON GUARD

Compost blanket may be vegetated or unvegetated as specified in the contract documents.



COMPOST BLANKET DETAIL

MINIMUM COMPOST BLANKET THICKNESS

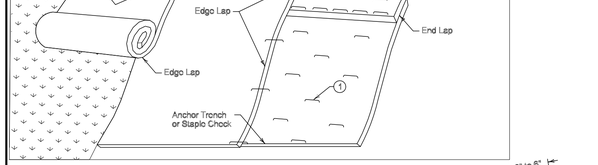
SLOPE	BLANKET THICKNESS (T)
3:1	3"
≤ 4:1	2"

FIGURE 9040.101 | SHEET 1 OF 1

SUDAS | 3 | 2029 Edition | 9040.101 | SHEET 1 OF 1

SUDAS Standard Specifications

COMPOST BLANKET



① Secure blanket to ground according to manufacturer's recommended anchoring pattern and anchor density (minimum 1.3 anchors per square yard).

② Install staples at 1 foot on center.

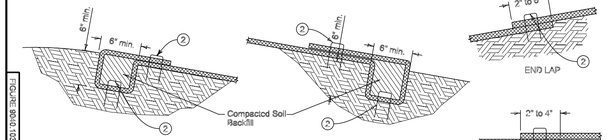


FIGURE 9040.103 | SHEET 1 OF 1

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SUDAS Standard Specifications

ROLLED EROSION CONTROL PRODUCT (RECP) INSTALLATION ON SLOPES

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DANE ROAD SW SUBSTATION
IOWA CITY, IOWA

CONCEPTUAL
DETAILS

STD

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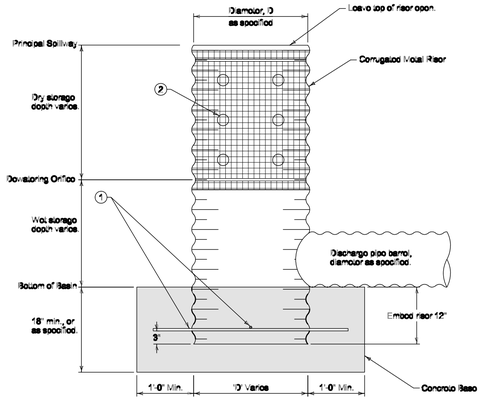

Elevations and dimensions not given are as specified in the contract documents.

1. Drill four, 3/8 inch diameter holes, 3 inches from bottom of riser pipe and insert, c/c, #4 bars in an "X" configuration.
   Length of bars = D+16 inches
2. Provide perforation configuration as specified in the contract documents.

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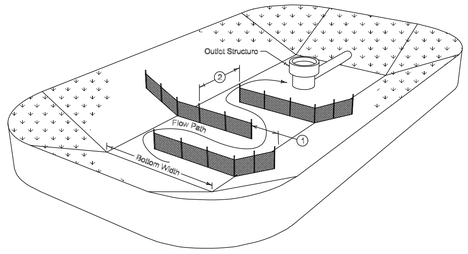
SUDAS 9040.115

SHEET 1 OF 1

SUDAS Standard Specifications

SEDIMENT BASIN DEWATERING DEVICE (PERFORATED RISER)

FIGURE 9040.115 SHEET 1 OF 1



Sediment baffles improve sediment capture by increasing the length that flow must travel through a sediment basin or sediment trap.

1. Construct sediment baffle by installing rows of silt fence across the bottom of the sediment basin or sediment trap leaving an opening equal to 75% of the bottom width on alternating sides.
2. Install the number of baffles specified in the contract documents. Space baffles evenly between the inlet and outlet of the basin or trap.

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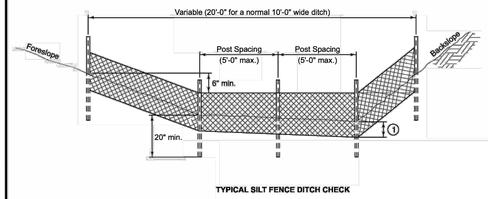
SUDAS 9040.117

SHEET 1 OF 1

SUDAS Standard Specifications

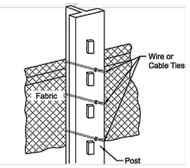
SEDIMENT BAFFLE

FIGURE 9040.117 SHEET 1 OF 1

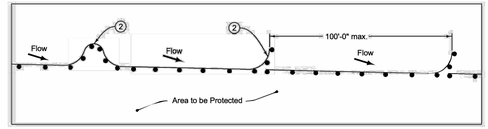


TYPICAL SILT FENCE DITCH CHECK

1. Insert 12 inches of fabric a minimum of 6 inches deep (fabric may be folded below the ground line).
2. Install silt fence for perimiter control with a maximum run length of 100 feet. At the downstream end of each run, turn the silt fence up the slope for 20 feet as shown to construct a 'J-Hook' to contain runoff. At the contractor's option, the silt fence may terminate and restart at the J-hook or may be installed continuously through the J-hook.



ATTACHMENT TO POST



TYPICAL SILT FENCE INSTALLATION FOR PERIMITER CONTROL

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SUDAS 9040.119

SHEET 1 OF 2

SUDAS Standard Specifications

SILT FENCE

FIGURE 9040.119 SHEET 1 OF 2

1. Secure blanket to ground according to manufacturer's recommended anchoring pattern and anchor density (minimum 1.7 anchors per square yard).
2. Install staples at 1 foot on center.
3. Install staple checks at 100 foot intervals for channel slopes less than 2.5%.
4. Install blanket checks for the following slopes:
   2.5% - 3% 100 ft. intervals
   3% - 5% 50 ft. intervals
   5% - 7% 25 ft. intervals

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ROLLED EROSION CONTROL PRODUCT (RECP) INSTALLATION IN CHANNELS

FIGURE 9040.104 SHEET 1 OF 1

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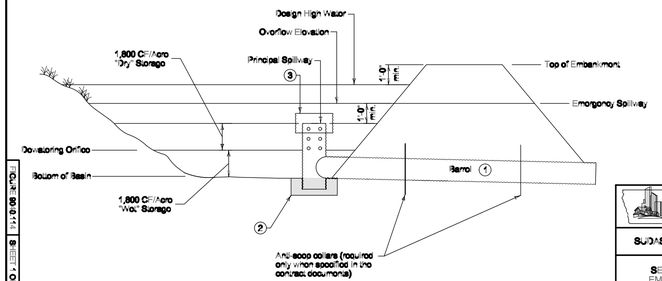
SHEET 1 OF 1

SUDAS Standard Specifications

RIP RAP FOR PIPE OUTLET ONTO FLAT GROUND

FIGURE 9040.110 SHEET 1 OF 1

1. Barrel length and diameter as specified in the contract documents.
2. Riser pipe and base dewatering device: See Figure 9040.115.
3. Anti-vortex device: See Figure 9040.116.



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SUDAS 9040.114

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SEDIMENT BASIN WITH EMERGENCY SPILLWAY

FIGURE 9040.114 SHEET 1 OF 1

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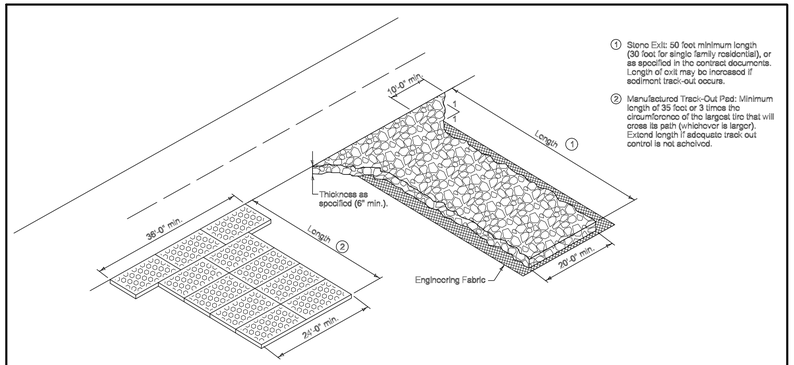


① Stone Exit: 50 foot minimum length (30 foot for single family residential), or as specified in the contract documents. Length of exit may be increased if sediment track-out occurs.

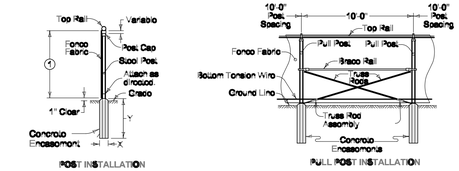
② Manufactured Track-Out Pad: Minimum length of 35 feet or 3 times the circumference of the largest tire that will cross its path (whichever is larger). Extend length if adequate track out control is not achieved.

STABILIZED CONSTRUCTION EXIT

SUDAS Standard Specifications

SUDAS 9040.128 — SHEET 1 of 1

FIGURE 9040.128 | SHEET 1 OF 1



POST INSTALLATION

PULL POST INSTALLATION

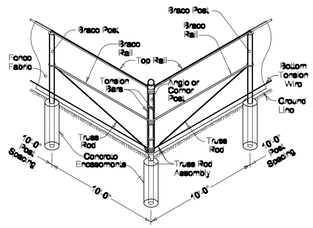
Fence fabric on roadway side of post. For certain curves, stream crossings, or other locations, the Contractor has the option to place fabric on the side of the post away from the roadway.

Residential chain link fence does not include braces, truss rod assembly, tension wire, tension bar, tension band, or grounds

① Fabric width as specified in the contract documents.

② For fence heights greater than 6 feet, the depth of the fence post footing is 3 feet plus 3 inches for each 1 foot in height over 6 feet.

③ Install the fence on the roadway side of the right-of-way when specified in the contract documents.

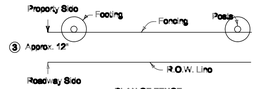


ANGLE OR CORNER POST INSTALLATION

FENCE POST FOOTING DEPTH AND DIAMETER

USE IN FENCE	FENCE HEIGHT					
	4'-0" and less		Over 4'-0" to 8'-0"		Over 8'-0"	
	X	Y	X	Y	X	Y
Line and Brace Posts	0'-8"	3'-0"	0'-10"	3'-0"	1'-0"	②
Terminal Posts*	0'-10"	3'-0"	1'-0"	3'-0"	1'-4"	②

*Includes corner, angle, end, and pull posts.



PLAN OF FENCE

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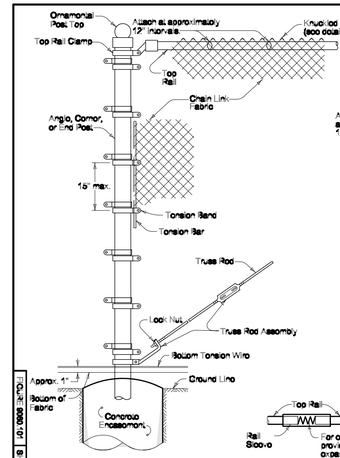
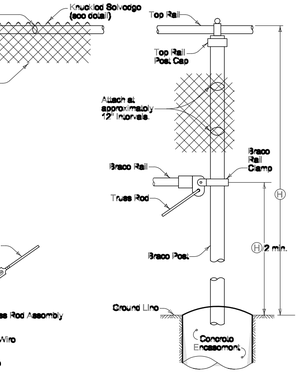
CHAIN LINK FENCE

SUDAS 9060.101 — SHEET 1 OF 2

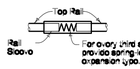
FIGURE 9060.101 | SHEET 1 OF 2



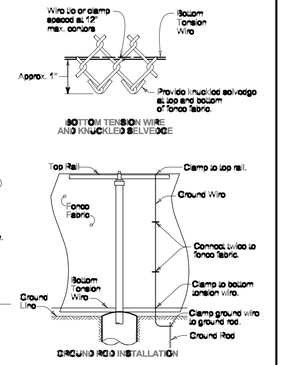
ANGLE, CORNER, OR END POST ASSEMBLY



BRACE POST ASSEMBLY



RAIL SLEEVE



BOTTOM TENSION WIRE AND KNUCKLED SELVEDGE

GROUND ROD INSTALLATION

SUDAS Standard Specifications

CHAIN LINK FENCE

SUDAS 9060.101 — SHEET 2 OF 2

FIGURE 9060.101 | SHEET 2 OF 2

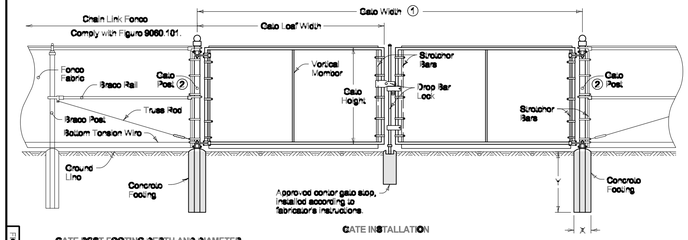
6' AND LESS — OVER 6' UP TO 16' — OVER 16' UP TO 18'

FRAME PATTERNS FOR VARIOUS GATE OPENINGS

① Double swing gate is required only for widths greater than 16 foot. Exact details of gate design are subject to approval of the Engineer. Furnish gate with approved stops, latch, and means for locking. Install as recommended by the manufacturer.

② End post used to terminate run of fence if no gate is proposed.

③ Horizontal members are required only if the fabric height is 8 foot or greater.



GATE INSTALLATION

GATE POST FOOTING DEPTH AND DIAMETER

GATE HEIGHT	GATE LEAF WIDTH	X	Y
6'-0" or less	4'-0" or less	0'-10"	3'-0"
6'-0" or less	over 4'-0" to 10'-0"	0'-12"	3'-0"
6'-0" or less	over 10'-0" to 18'-0"	1'-2"	3'-0"
over 6'-0"	6'-0" or less	0'-10"	3'-0"
over 6'-0"	over 6'-0" to 12'-0"	1'-0"	3'-0"
over 6'-0"	over 12'-0" to 18'-0"	1'-4"	3'-6"
over 6'-0"	over 18'-0" to 24'-0"	1'-6"	4'-0"

SUDAS Standard Specifications

CHAIN LINK GATE

SUDAS 9060.102 — SHEET 1 OF 1

FIGURE 9060.102 | SHEET 1 OF 1

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APPROVED: CDH
SCALE: AS SHOWN

DANE ROAD SW SUBSTATION
IOWA CITY, IOWA

CONCEPTUAL
DETAILS

STD

C6.02

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